Vermont Western Corridor
Transportation Management Plan

FINAL REPORT

February 2010

Prepared For:

Vermont Agency of Transportation
Chittenden County Metropolitan Planning Organization
Addison County Regional Planning Commission
Bennington County Regional Commission
Chittenden County Regional Planning Commisssion
Northwest Regional Planning Commission
Rutland Regional Planning Commission

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Disclaimer Statement

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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1 Introduction

1.1 Purpose of the Study

The Vermont Agency of Transportation (VTrans), the Chittenden County Metropolitan Planning Organization (CCMPO), and the five Regional Planning Commissions (RPCs) along western Vermont partnered to develop a multimodal Transportation Management Plan for the western corridor, spanning from the Massachusetts to the Canadian border. The five Regional Planning Commission partners are Addison County RPC, Bennington County RC, Chittenden County RPC, Northwest RPC, and Rutland RPC.

Development of a multimodal Plan was deemed necessary by the state and its regional partners, to determine the most effective ways to improve the infrastructure and operations as well as maximize the efficiencies of the transportation system in western Vermont thus improving the economic opportunities of the region.

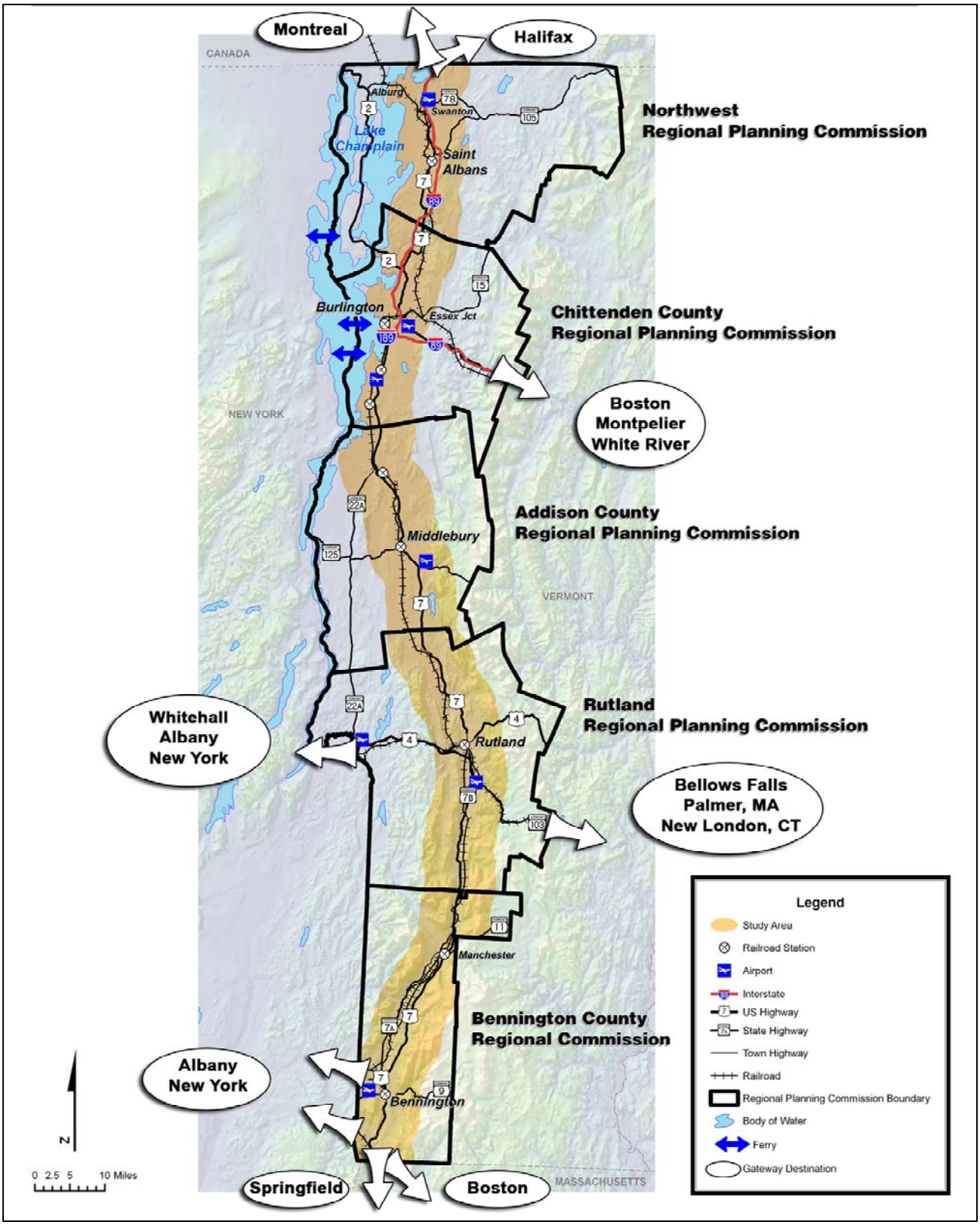
The purpose of this study is to evaluate transportation, land use and related conditions and create a Transportation Management Plan that presents a unified, long-term vision for managing and improving the transportation network in western Vermont. As an initial effort to coordinate planning over a vast study area, the plan presents a broad vision and a framework for transportation improvements, investment policies and strategies. The plan also identifies transportation system deficiencies and offers examples of possible solutions but it does not recommend specific projects, especially as it addresses highway deficiencies in the study area. Continuing the ongoing collaboration among the study partners, through a systematic planning process, will be key to developing and implementing specific projects and programs consistent with the recommendations of this plan. As all responsible parties continue to maintain and improve the western corridor, the information contained in this report and each of its appendices should be used to develop projects to overcome bottlenecks, upgrade the transportation system, improve safety and travel times along the corridor in a manner consistent with local land use policy.

The plan is being coordinated with the Vermont Agency of Transportation's ongoing project development efforts in the corridor, across all transportation modes.

1.2 Study Area

The term "Western Corridor" refers to the project study area (Figure 1-1), which stretches approximately 200 miles between the Massachusetts and the Quebec borders. Centered on highway US 7, the study area extends approximately five miles to the east and five miles to the west of the railroad-highway axis. While this area is the primary focus of the study, consideration is also given to parallel routes (e.g. VT 22A) and regional connections beyond the 10-mile wide study area. US 7 is the primary highway corridor through most of the study area, except north of Burlington where I-89 runs parallel to US 7. While I-89 was not a major focus of this study, its role in providing regional and interstate connections and accommodating truck traffic was considered in developing strategies that could be applied in the corridor.

Figure 1-1: Study Area and Regional Connections



Near Vergennes, VT 22A branches to the west of US-7, while in southern Vermont VT 7A provides a local alternate route through Manchester and communities to the south. Several highways provide east-west connections through the study area, notably US 4, VT 9 and US 2. The Vermont Rail System and New England Central Railroad both operate rail services in the corridor.

The Burlington International Airport and Rutland Southern Vermont Regional Airport offer commercial air service, and several smaller general aviation airports are located throughout the corridor.

Larger communities along the Western Corridor include: Swanton, St Albans, greater Burlington area, Middlebury, Brandon, Rutland, and Bennington. A number of smaller towns and villages line the corridor as well, with the highest concentrations of population and development in Chittenden County.

1.3 Study process

The study process involved the following major elements;

- Existing and Future Conditions
- Corridor Vision, Goals and Objectives
- Candidate Strategies and Actions
- Implementation Plan

A Steering Committee consisting of representatives from VTrans, CCMPO, participating RPCs, and the Federal Highway Administration (FHWA) guided the plan's development whereas a Study Advisory Committee with representation from the study partners, railroads, economic development and other interested parties provided policy guidance throughout this effort. Public participation and comment informed all elements of the plan.

1.3.1 Existing and Future Conditions

Existing Conditions

The initial study efforts focused on documenting and analyzing existing conditions in the study area to establish a clear understanding of the corridor issues and concerns. Excerpts from the *Existing Conditions* report are presented in *Chapter 2, Overview of Corridor Conditions*, and the comprehensive report is included in *Appendix A*. The consultant team in close collaboration with the Steering Committee convened several topic-specific Focus groups (see section 1.3.6, *Public involvement*), who provided input into this effort.

The existing conditions analysis provides an overview of the operational characteristics of existing transportation infrastructure and services, including highway, trucks, rail, public transit, intercity bus, airports, water, and bicycle and pedestrian facilities. Highway and rail facilities external to the study area that serve as gateways to regional, national, and international transportation networks are considered as well.

Additionally, the existing conditions analysis included a thorough review of demographics for each of the six counties and larger communities in the study area; land use conditions including development patterns, densities, zoning and major trip generators; environmental constraints in relation to topography, wetlands and water resources, visual/aesthetic characteristics; and economic trends, including regional strengths and weaknesses with respect to economic development.

Projected Future Conditions

The study next considered how economic, demographic, land use and transportation conditions in the Western Corridor might change over time. Excerpts from the *Future Conditions* report are included in *Chapter 2, Overview of Corridor Conditions*, and the comprehensive report on projected conditions in the corridor for the year 2030 is included in *Appendix B*.

The conditions described in the report represent a "no action" situation in which no new transportation improvements are presumed other than four major projects that are already planned for implementation. The projects are: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans. The report includes a discussion of future trends in freight transportation and the projected future of the truck and rail industries. It places particular emphasis on freight movements and associated trucking and railroad operations, which have emerged as key concerns for this corridor. The report also includes analyses of traffic operating conditions for major highway segments and intersections under forecast peak traffic conditions in 2030.

1.3.2 Study Vision, Goals, and Objectives

Following evaluation of corridor conditions, the study team worked with the project's Steering Committee and Study Advisory Committee to develop a shared vision for the western corridor that encompasses desired future characteristics. The vision is not strictly limited to transportation considerations. Instead it constitutes a sweeping statement that includes aspirations relating to quality of life, economic vitality, the environment and community character.

The study team also developed specific goals and objectives to support the corridor vision. Goals describe the primary means to achieve the corridor vision, while objectives identify specific elements relating to each study goal. These corridor goals and objectives formed the basis for analyzing the overall benefits of each management strategy, as described in the following section.

These elements are presented in *Chapter 3, Vision, Goals and Objectives*.

1.3.3 Candidate Strategies and Actions

Strategy Development

A broad range of strategies and actions were developed to address transportation needs that were identified through evaluation of existing and future corridor conditions, participation of the steering and study advisory committees, and consultation with the study focus groups. These candidate strategies were broadly defined actions that targeted a diverse range of corridor issues, including:

- Traffic and truck operations and safety on highways;
- Rail freight operation and market share;
- Public transportation and intercity travel;
- Land use;
- Traveler information and travel demand;
- Pedestrian, bicycle and other travel modes; and,
- Environmental and community impacts.

Descriptions of all strategies considered are presented in *Appendix C, Evaluating Strategies*.

"Visioning" Exercise

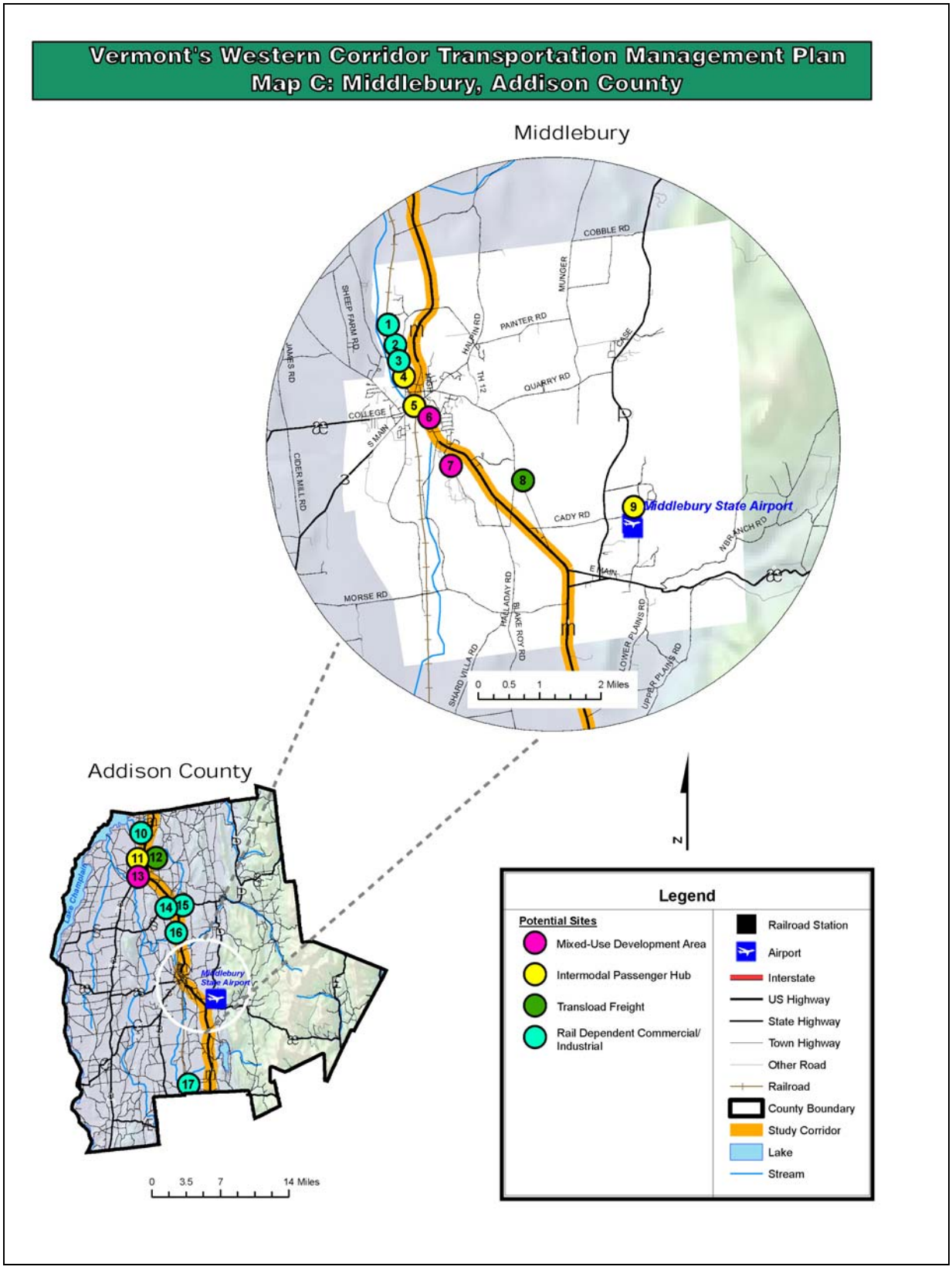
Steering committee members and other stakeholders participated in a "Visioning" exercise that served both to provide valuable input into strategy development for the study and to enable committee members to gain a better understanding of the unique characteristics and interdependencies of several of the strategies under consideration.

Initially, the exercise involved an unconstrained discussion of potential corridor solutions that could help achieve the study vision. A follow-up session focused on more specific consideration of opportunities to identify potential areas to develop the following:

- Mixed-use growth centers in towns and villages that are conducive to residential and mixed-use growth from both land use and transportation perspectives;
- Intermodal centers (Passenger Hubs) to provide convenient and comfortable access to transit services and rail passenger service as well as improve transfer opportunities between different modes of travel;
- Transload facilities, to facilitate the transfer of freight between trucks and trains; and,
- Locations suitable for rail-dependent industrial/commercial locations.

Appendix D, Corridor Visioning, documents this process. Figure 1-2, illustrates the "visioning" exercise outcome for Addison County—see *Appendix D* for visioning maps for the other participating regions. The results of this effort helped shape corridor strategies presented in Chapter 4, *Implementation and Action Plan*. Outcomes of the *"Visioning exercise"* could be used by planning agencies as a starting point for subsequent detailed evaluation of these concepts.

Figure 1-2: "Visioning" Map for Addison County



Evaluating Strategies

Strategies recommended in the Implementation and Action Plan (Chapter 4) were evaluated with the participation of the Steering Committee, Study Advisory Committee and various focus groups. An evaluation process helped inform the selection of recommended strategies and actions. This process involved evaluating the candidate strategies against a diverse range of criteria to highlight potential benefits and impacts. Because the candidate strategies under consideration vary in specificity, the process relied to a large extent on qualitative evaluations that made use of professional judgment and available quantifiable data.

Evaluation criteria were developed in relation to the specific goals and objectives for the study (see Chapter 3, *Vision, Goals and Objectives*). Candidate strategies received scores ranging from +5 (strongly beneficial) to -5 (strongly negative) for each of the identified criteria.

Strategies also received an overall evaluation rating in relation to each of the corridor's five goals. These ratings are based on the individual criteria scores weighted to reflect their relative importance with regard to achieving the corresponding goal. Goal ratings are presented in a range of up to five pluses (+) or minuses (-) to simplify comparison.

Appendix C, Evaluating Strategies, documents the results of the evaluation process.

1.3.4 Implementation and Action plan

The Implementation and Action Plan is presented in Chapter 4. This Plan details the strategies recommended by the study and identifies both near and longer-term actions needed to advance them. These actions generally involve planning and other activities that will result in the development and implementation of specific projects and programs throughout the corridor.

In many ways, the Implementation and Action Plan is a toolbox of potential actions that provide a framework for addressing transportation and related issues in the corridor. Selection and development of discrete strategies will be the responsibility of individual agencies (VTrans, RPCs/CCMPO, Railroads, etc.), but this plan identifies those families of actions that best meet goals and objectives established for the corridor as a whole.

Recommendations in the Implementation and Action Plan are presented in relation to the study goals and objectives that they support. Recommendations in some cases are based on broad support for several study goals, while in other cases target a single, specific corridor objective.

1.3.5 Study Development and Oversight

A consultant team led by Parsons Brinckerhoff (PB) was hired to assist with the development of the Western Corridor Transportation Management Plan. Other consultant firms working on the plan were Cambridge Systematics, Inc., who led efforts in the areas of economic analysis and freight assessment; Fitzgerald & Halliday, Inc., who coordinated the public involvement process; and Stantec, Inc., who conducted traffic operations analyses.

Steering Committee

A study Steering Committee met on a monthly basis to guide the plan development, coordinate public involvement and other outreach activities, review draft study material and to provide guidance to the project manager and the consultant team. Members of the Steering Committee included representatives of each of the regional planning commissions (RPCs), the Chittenden Country Metropolitan Planning Organization (CCMPO), the Vermont Agency of Transportation (VTrans) and Federal Highway Administration (FHWA).

Study Advisory Committee

A Study Advisory Committee also met at key points during the study process to review and comment on study material. The committee was made up of representatives from the Steering Committee along with railroads, freight operators and economic development representatives. Study Advisory Committee meetings were held at critical junctures of this multiyear project: shortly after project initiation to work on visioning and identify issues; several months into the study to further discuss issues and possible solutions; and to review the prioritization measures and strategies.

1.3.6 Public Involvement

The consultant team worked closely with the Steering Committee to initiate a broad-based public involvement effort to inform and to seek input from the communities located in the Western Corridor. The principal components of the public involvement effort included holding focus group meetings, regional forums, development of a project website, and the circulation of project newsletters. In addition, the CCMPO and RPCs briefed committees and community members on study efforts, and conducted surveys to gather input concerning the development of various aspects of the plan. Details of the public outreach efforts are provided in *Appendix G*—some highlights are discussed below.

Newsletters and Website

A study website was developed for the western corridor study and can be accessed at www.vtwesterncorridor.org . The website includes an overview of the study, project documents and updates, meeting notes, and a comment form. In addition, project newsletters have been developed at critical junctures of the study and are available on the website. The newsletters provided updates on the study effort and publicized upcoming study activities.

Focus Groups

Two series of focus group meetings were held to explore and provide feedback on key issues, needs and possible solutions. The initial focus group meetings were held in April 2008 and June 2008 and concentrated on the following key issue areas: rail freight, economic development, livable communities, and freight trucking. Participants voiced some common themes. They said more effective communication, coordination, and leadership is needed at all levels of government to improve mobility for people and goods, promote economic vitality and provide mode choices in the Western Corridor. Most groups agreed that maintenance and upgrade of the existing transportation infrastructure is crucial to Vermont's economic health and global competitiveness. More than one group was eager to see projects in the pipeline completed as quickly as possible.

Many thought the general public, business and community leaders and political leadership need a better understanding of transportation issues, particularly the importance of transportation to the overall health and economy of Vermont. Truckers wondered if people in communities that placed restrictions on truck travel understood that these restrictions can lead to higher prices and less efficient delivery. Others expressed frustration that funding for transportation is inadequate and communities have few options for getting money other than the property tax.

Mobility and choice of transportation modes were considered important in groups organized around the topics of economic development and livable communities. Social service providers said mobility enables people to be integrated into community life; lack of mobility leads to isolation. Transit needs to be easily and frequently available. Sidewalks and bicycle facilities should be put in place for people to get around by means other than cars—especially in villages and downtown areas.

Focus groups comprised of freight interests had specific improvements they'd like to see in the Western Corridor. They said transportation priorities should be focused on bringing Vermont's rail track and bridges up to the national weight standard. Preservation of rail frontage should also be a priority, they felt, just as water frontage is preserved for "best and highest use"; and highway improvements should be concentrated where trucks have problems in the Western Corridor – between Rutland and Shelburne, especially in Middlebury, and south of Rutland where Route 7 has not been improved.

A common theme among the groups was that the corridor needs a balanced transportation system that supports all modes of travel.

A second set of focus group meetings were held in April 2009. Preliminary plan recommendations were discussed at these meetings, with focus group members participating in the refinement and ultimate selection of recommended strategies.

Public Meetings

During May and June of 2009 the study team held a series of public meetings in each of the regional planning areas and in Montpelier at the Vermont Rail Advisory Council meeting, to present and review the plan strategies being considered and the evaluation process. While feedback at these meetings showed a range of diverse opinions, common themes heard included;

- Recognition of the value of collaborative planning effort by partner agencies;
- Interest in preserving and enhancing various quality of life aspects;
- Interest in emphasizing safety;
- Interest in limiting traffic impacts to communities, particularly in regard to trucks; and
- Support for improved regional and interstate connections, whether by bus or rail.

2 Overview of Corridor Conditions

This chapter summarizes key findings from the *Existing Conditions* report and *Future Conditions* report for the Vermont Western Corridor. The full reports are included in *Appendix A* and *Appendix B* respectively.

2.1 Existing Conditions

Vermont's Western Corridor spans approximately 200-miles between the Massachusetts and the Canadian border, centering on US 7 and encompassing the north-south rail lines. The study area is illustrated in Figure 1-1.

Demographics

The population of the counties that comprise the Western Corridor is estimated at 343,600 (2006), or slightly more than 50% of the state's population. Chittenden County is by far the most densely populated, with 150,100 residents and a population density of 272 persons per square mile.

Demographic trends generally mirror national trends in many regards. Average household size in the corridor is decreasing, a result of smaller family sizes and higher percentages of single-person households. Vermont's population is aging, both in terms of average age and number of elderly residents.

Median home prices range from $162,000 in Rutland County to $240,100 in Chittenden County. 93 percent of corridor households own one or more motor vehicles.

Economic Characteristics

Overall, the Western Corridor has a relatively robust economy, with unemployment rates lower than the national average in most locations and employment growth in recent years consistent with national trends. However, some parts of the corridor are clearly experiencing stronger economic conditions than others. Addison and Chittenden Counties show the strongest economic growth, while Bennington and Rutland Counties the weakest.

Consistent with nation trends, the Western Corridor has seen strong job growth in service industries, and a slight decline in manufacturing jobs since 1990. In 2005, service sector jobs accounted for 41 percent of employment in the corridor.

Land Use

Land uses vary considerably along the corridor. Corridor-wide, eight (8) percent of land is developed, 25 percent is used for agriculture, and the remaining majority of land is forested, wetland, or water. Agricultural uses are particularly prevalent in Addison and Franklin counties, with predominately forested lands in Bennington and Rutland counties.

The corridor includes fifteen large communities of 5,000 persons or more; Burlington, South Burlington, Colchester, St. Albans, Essex, Milton, Shelburne, Williston, Winooski, Middlebury, Vergennes, Rutland and Bennington.

Environment

Much of the land in the Western Corridor is undeveloped forests, wetlands and water. Views along U.S. Route 7 range from open views across fields, to views of farm houses and barns within the rural landscape, distant views of the Adirondacks, Green Mountains and Lake Champlain, and forested areas. Route 7 is one of Vermont's most scenic roadway corridors, and sections of the highway are designated as part of the Lake Champlain Scenic Byway.

By contrast, within village and town centers, there are relatively dense clusters of commercial and residential development. The corridor's long history of agricultural use and its pattern of densely settled small towns and villages in a rural setting contribute to its distinctive character. In recent decades, however, commercial and residential development stretching out from existing settlement areas has begun to erode this traditional settlement pattern and encroach upon natural and agricultural areas. With this increased development, the visual integrity and contrast between rural and developed has also begun to blur. Many of these new developments are more spread out and have very little relationship to each other or landscape buffer.

Highways

The primary north-south highway facilities within the Western Corridor are US Route 7 (US 7), Vermont Routes 7A and 22A, (VT 7A and VT 22A) and Interstate 89 (I-89) north of Burlington. US 7 is the only highway facility that operates for the entirety of the Western Corridor. All but I-89 have a primary function of providing access to adjacent properties while also serving as the principal arterial through the urban centers. There are some exceptions to these general characterizations: US 7 as it traverses the Green Mountain National Forest is a median divided limited access highway between Bennington and Manchester with VT 7A serving as the principal urban arterial and alternate intercity highway. Immediately south of Rutland through Clarendon, US 7 provides limited access and is median divided with at-grade intersections. From Burlington north to the Canada border, Interstate I-89 is the primary inter-city highway as US 7 retains the property access, urban arterial, and alternate intercity. Other major highways that connect the Western Corridor to the rest of the region including Vermont routes 9, 11, 103, 125, 15, 78, and 105 and US routes 4 and 2 (see Figure 1.1)

Level of Service (LOS) analyses were conducted to assess traffic operations for contiguous highway segments outside of town/village centers for US 7, VT 7A and VT 22A. In addition, a number of major intersections (typically where two state highways meet) were assessed in downtowns and villages. Due to the length of the western corridor, varied geometry and character of the highways as well as the number of intersections in the study area, it was decided at the onset of the project to consolidate rural segments and select a manageable number of major intersections to study. There are several additional intersections in urban/town centers and growth areas that experience congestion and should be evaluated at a more micro-corridor analysis level. *Appendix A* provides detail information on highway segments and intersections selected for LOS analyses.

Under peak conditions, signalized intersections selected for analysis were found to operate with overall favorable level of service (LOS) throughout the corridor. The most congested

intersection locations operate at LOS D (moderate congestion) in Rutland at both US 7 intersections with US 4, and also in Bennington at the US 7 intersections with VT 7A and VT 9. The Winooski "Circulator" also presents various operational problems that are not easily assessed. It is important to note that an overall good LOS (≥ C) does not necessarily mean that all approach legs of the intersection operate at that level. More detail analyses are needed for intersections that experience congestion on specific approach legs. Especially in urban settings where queues and approach capacities of closely spaced intersections are the deciding factors in the overall operation and safety of an intersection.

Several highway segments throughout the corridor operate under congested conditions (LOS E) during peak periods. Lack of passing opportunities and moderate posted speed limits (40 mph to 45 mph) affect traffic flow on these segments. See *Appendix A* for details.

Appendix F, High Crash Locations, identifies locations on the corridor where crash rates are among the highest in the state of Vermont. Thirteen highway segments and fifteen intersections in the Western Corridor are among the top 100 locations statewide for each category in terms of crash frequency and severity.

Trucks and Freight

Trucks move 86 percent of the freight tonnage in Vermont, amounting to just over 40 million tons annually and worth $35.7 billion[1]. This mode share is higher in Vermont than in nearby states such as Maine where trucks carry 70 percent of cargo by weight. Contributing factors to the high truck percent might include substandard railroad infrastructure (below National standard), Vermont's landlocked status (lack of ports) and the easy access—within a days drive—to intermodal terminals in neighboring states and Canada.

Aside from the Interstate, the highest truck volumes on corridor roadways (over 1,000 trucks per day) are on U.S. 7 south of Burlington and through Rutland, U.S. 4 west of Rutland, and VT 9 west of Bennington. Most of the rest of U.S. 7 shows volumes ranging between 500 and 1,000 trucks per day.

Railroads – Freight and Passenger

The railroad infrastructure in the Western Corridor includes the 122-mile route between North Bennington and Burlington, owned by the State of Vermont and operated as part of the Vermont Rail System (VRS), a privately-owned company. The line connects with two other VRS-operated routes – the Green Mountain railroad traveling to the southeast toward Bellows Falls and the Clarendon & Pittsford traveling west to New York State at Rutland and with Pan Am Railways west of Bennington. Rail service to the northern portion of the study area is provided by the privately-owned New England Central Railroad (NECR) which links up with the VRS via a connection from Essex Junction to Burlington (identified as the Winooski Branch).

[1] FHWA's Freight Analysis Framework 2, 2006, *http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm*.

NECR travels north to East Alburg where it connects directly to Canadian National Railway (CN), a major Class I railroad and with CSX in Massachusetts.

Most rail freight traffic in Vermont serves a diverse range of business enterprises and is interstate in nature, either traveling into, out of or through Vermont. Common types of commodities transported via rail include: agricultural products; lumber and building materials; petroleum products for residential/commercial use; mining, quarrying, and earth products; cement; marble and granite; sodium and calcium chloride; and newsprint and a variety of chemical products for manufacturers.

Based on FHWA's Freight Analysis Framework 2 data for Vermont, freight moving by rail in 2006 accounted for 6 million tons valued at $5.4 billion, representing approximately 13 percent of all the freight moving in the state by weight.

The most significant rail issue in the Western Corridor is that rail weight limits are lower than the national standard and it does not allow for fully loaded 286,000 pound railcars to travel in this corridor. Other important issues include track condition and classification that affect operating speeds on some track segments as well as some clearance restrictions.

Amtrak intercity rail passenger service operates in the Western Corridor via two routes that each operate a pair of trains daily (one northbound and one southbound). The *Ethan Allen Express (Trains 290/291)* operates from New York City to Rutland via Whitehall, NY using the tracks of the Clarendon & Pittsford Railway to serve Castleton, Fair Haven and Rutland. The *Vermonter (Train 54/55)* operates from Washington, DC via New Haven, CT, Springfield, MA, and White River Junction. The Vermonter traverses the state entirely on NECR trackage, stops at Essex Junction – serving the greater Burlington area - and terminates at St Albans.

Intermodal and Other Transfer Facilities

Containers on flatcars (COFC) and trailers on flat cars (TOFC) represent the most common type of intermodal freight movement. TOFC/COFC is currently carried on Vermont rail lines, although there currently are no termination or origination points in the state. Vermont's shippers and receivers access TOFC/COFC services via terminals in the region. The closest ramps are located in New York (Albany), Quebec (Montreal), and Massachusetts (Worcester and Palmer).

There are a number of facilities in Vermont that support non-TFC/COFC "intermodal" transfers from rail to truck or storage and truck or storage to rail. These facilities are principally related to the bulk handling of material. Significant commodities handled by these facilities, include lumber, salt, fuel oil, gasoline, propane, steel products, bricks, plastics, and chemicals. There is no single comprehensive listing of bulk transfer, transload, or warehousing facilities, as most of these are privately owned and operated.

Public Transit

Bus service is provided by regional transit operators;

- Green Mountain Transit Agency (GMTA) in Franklin County;
- Chittenden County Transportation Authority (CCTA) in Chittenden County;
- Addison County Transit Resources (ACTR) in Addison County;

- Marble Valley Regional Transit District (MVRTD "The Bus") in Rutland County; and,
- The Green Mountain Community Network, Inc., ("Green Mountain Express") in Bennington County

Services typically include routes that provide local connections between communities within the regions and circulation within the larger towns. While it is possible to traverse the corridor using public transit services, schedules, hours of operation and transfer arrangements make longer, inter-regional trips difficult.

Intercity Bus

Though provided historically throughout the corridor, currently there is no intercity bus serving the entire Western Corridor. Intercity service in the state is provided by Greyhound (formerly Vermont Transit Lines service) and it serves only Burlington via the I-89 corridor, Montpelier, White River Junction, Bellows Falls and Brattleboro. Yankee Trails also operates a service between Bennington and Albany, NY via Hoosick Falls four days a week.

Airports

Air movements currently account for less than one percent, or 12 thousand tons, of all the freight moving in Vermont by weight, yet over two percent, or $1 billion, by value. This highlights the high-value, low-weight nature of air freight shipments, which consist primarily of electronics, food, chemicals, mail and other time-sensitive goods. As the service sector of Vermont's economy continues to grow, the share of air shipments relative to other types of movements in the state will likely expand.

Currently six airlines provide scheduled air passenger service to the Burlington International Airport, and Cape Air offers passenger service between Boston, MA and Rutland. In addition to Rutland, the Western Corridor is served by three other state-owned airports: in Franklin County (Highgate), Middlebury and Bennington (William H. Morse). Privately owned public use airports are located in Shelburne and Vergennes (Basin Harbor).

Water Transportation

Ferry services accommodating bicyclists, pedestrians, passenger vehicles and trucks are operated on Lake Champlain at four locations to the west of the study area. These crossings provide connections between the study area and neighboring New York. Grand Isle to Plattsburgh, NY operates year round on a 24 hour basis. This is essentially a shuttle–type operation with approximately 76 round trips daily (12-minute one-way crossing time). Burlington-Port Kent, NY operates from late spring through early fall with a one hour crossing time. Charlotte – Essex, NY operates year round with increased frequency being provided from late spring through early fall. The crossing time is 20 minutes. All routes can accommodate vehicles up to 40 tons, though some Burlington runs have 20 ton weight limits. In addition, the Ticonderoga Ferry operates May through October and serves the same users including trucks up to 15 tons with three trips per hour from 8:00 am to 6:00 pm (7:00 pm in summer).

With the closure of the Lake Champlain Bridge in the fall of 2009, demand for ferry services connecting New York and Vermont increased significantly. Long term impacts to these services are difficult to ascertain at this point.

Bicycle and Pedestrian Facilities

The *Vermont Bicycle and Pedestrian Plan* is VTrans' policy document for addressing the development and accommodations of bicycle and pedestrian facilities on a regional and statewide basis. Individual regions also plan for bicycle and pedestrian accommodations through their local plans. Most state highways throughout the corridor are included in the regional on-road bicycle network, but they are not necessarily reflected in local plans, which tend to emphasize shared use paths and trail networks. Factors that affect the comfort level of cyclists - traffic volumes, % trucks, vehicle speeds, lane and shoulder widths - vary considerably by route and segment. A number of "rail-trails" and shared use paths (Deleware & Hudson, Missisquoi Valley Rail Trail and Burlington Bikeway) have been developed within the corridor as well, that serve both commuter and recreational needs.

Most towns and villages have sidewalks within the town centers and central neighborhoods. Designated bike lanes are more common in urban and developed areas. Along rural highways, sidewalks and designated bike lanes are uncommon. The Western Corridor planning process did not invest a significant amount of resources examining corridor-wide bicycle and pedestrian facilities, infrastructure opportunities and issues due to the more localized nature of these facilities. Ongoing planning efforts that follow this study should expand the focus and understanding of corridor-wide bicycle and pedestrian options.

2.2 Future Conditions

Population and demographic data and projections from *Woods and Pool (2007)* was used to provide information on conditions in the Western Corridor by 2030. For detailed information see *Appendix B*, *Future Conditions*.

Demographics

By 2030, the population of the Western Corridor is projected to reach 439,200 - an increase of 96,600 people (28 percent) compared to 2005. Nearly half of the projected population growth, - 44,100 people - is expected to occur in the greater Burlington area (Chittenden County). All counties are expected to experience population growth.

Grand Isle and Addison Counties are expected to see the largest relative increase in population, with increases of 63.6 percent and 51.5 percent respectively. Between 2005 and 2030, Rutland County will see the slowest rate of increase, though the population is still expected to increase by 9,400 new residents (or 14.8 percent).

Economic Characteristics

The fastest growing industry is expected to be the service sector, growing by 53 percent and adding over 53,000 jobs. This represented more than two-thirds of all new jobs in the corridor. Construction, government, retail, wholesale trade and transport also are expected to show double-digit increases on a percentage basis. The manufacturing sector is expected to decline slightly, losing 1,000 jobs (3 percent). These projections largely reflect current regional and national trends showing a shift away from manufacturing and into services and other sectors of the economy. The employment base is expected to trend towards smaller companies and self-employment.

Economic growth will continue to be stronger in the Burlington region, which benefits from Interstate highway access, an international airport as well as growth industries in Burlington. It is possible, however, that the past few decades' trend of growth on the periphery of the Burlington region may slow or be reversed by broader economic and demographic forces including higher energy prices, a "back to the city" movement, and greater interest in efficient land use as a strategy for reducing energy consumption and greenhouse gas emissions.

Highways

Traffic projections for future analysis year of 2030 were derived from the VTrans' Travel Demand Forecasting Model. To establish a 2030 base line, the future conditions model run presumes no additional transportation improvements in the corridor other than the following planned major projects;

- Bennington Bypass
- Chittenden County Circumferential Highway
- Middlebury Rail Spur
- St. Albans Federal Street Extension

Level of Service (LOS) analyses were conducted for all highway segments and selected intersections in the study area. *Appendix B* provides detailed LOS results for study highways and intersections.

Traffic growth is expected on all major study highways. On US 7, the greatest increases – 8,000 vehicles per day over current volumes - are forecasted north and south of Burlington. Other major routes in the Burlington area are also expected to experience substantial growth in traffic.

Compared to today's levels, traffic volumes on US 7 are forecast to grow by an average of 36 percent. Substantial increases in daily traffic (greater than 40 percent) are expected on US 7, north of Burlington to the Canadian border, south of Burlington to Brandon, in the Manchester area (on US 7 and VT 7A), as well as on VT 22A. Traffic growth on US 7 is generally expected to be lower to the south, except as noted around Manchester.

Truck volumes in 2030 are projected to average between 1,000 and 2,000 trucks per day along most of the US 7 corridor. Truck traffic is forecast to grow at a somewhat higher rate than automobile traffic – 40 to 60 percent across most of the corridor. This is consistent with national trends in freight traffic and a result of increasing economic output as well as changes in shipping patterns. The highest volume increases (500 to 750 trucks per day) along US 7 are forecasted south and north of Rutland, on some segments between Vergennes and Burlington, and in Colchester.

By 2030, ten of the 27 roadway segments that were analyzed in this study are expected to operate at LOS E. Of the 14 signalized intersections studied, two are expected to operate at an overall LOS E. As discussed in previous sections, intersections with approach LOS less than C for rural areas or capacity and queue issues in urban areas should be evaluated further. Some improvement in traffic conditions is expected in Bennington due to the completion of the Bennington Bypass.

Freight Movements

In 2006 over 47 million tons of freight, worth over $43 billion, was transported into, out of, within, and through Vermont via all available modes. By 2030 those figures are expected to increase to 82 million tons of freight worth over $113 billion. That is an increase of 73 percent in terms of tonnage, and 160 percent in terms of value. The disparity in growth rate for tons and dollars is the result of a continuing increase in goods that have high value relative to their weight, such as small packages and high technology equipment vs. raw materials.

Freight traffic to and from other states is expected to increase about twice the rate of internal traffic (84 vs. 44 percent), while international traffic is expected to increase about three times as fast (118 percent).

Even though trucking will remain the dominant mode of moving freight in Vermont, railroad transportation is anticipated to increase by 63%. This suggests that there is an opportunity for rail to capture some freight cargoes which presently are transported by truck, based on commodity types and shipment patterns. There will be a continuing need to invest in infrastructure upgrades throughout the western corridor (from Bennington to the Canadian border) to ensure that the rail network is operationally compatible with the larger national rail system.

Passenger Rail

Improvements to the *Vermonter* route on NECR's line and others to the south to accommodate higher passenger train speeds and a planned extension of the *Ethan Allen* from Rutland to Burlington will provide higher levels of service to the corridor but are highly dependent on the state receiving Federal Rail Grant funding. Expansion of passenger rail south of Rutland to Bennington and Hoosick Junction, NY would also increase rail service in the western corridor.

2.3 Summary of Key Issues

In summary, the key issues identified in the Western Corridor for the future analysis year of 2030 include:

- Localized highway congestion and safety concerns will require further evaluation and monitoring that might lead to capacity improvements and/or combination of land use and transportation solutions;
- Projected growth in trucking activity will be much higher than increases in general traffic;
- Interest in improving and expanding public transportation services (both bus and rail);
- Interregional connections to external networks (highways, air and rail);
- Need to improve rail infrastructure; and,
- Need to reinforce the links between transportation, land use, economic vitality, and quality of life.

3 Vision, Goals and Objectives

The vision statement developed for this plan represents the broader aspirations for the corridor and its communities over time. Five goals have been identified to direct future actions in support of this corridor vision. Objectives associated with each goal identify specific means by which the goals may be achieved.

3.1 Corridor Vision

"Western Vermont is served by a safe, balanced, fully-integrated multimodal transportation system that provides regional mobility, travel choices, fosters economic vitality, and supports sustainable growth. The transportation system supports compact land use patterns and preserves the vibrant communities along the Western Corridor."

3.2 Goals and Objectives

The Vermont Western Corridor Transportation Management Plan has five primary goals:

- Highways - Improve highway system efficiencies and safety in Vermont's Western Corridor.
- Freight - Improve freight movements in the Western Corridor.
- Public transportation - Increase public transportation use and enhance regional connectivity for passenger travel.
- Economic vitality - Support corridor investments that promote economic vitality in the region.
- Quality of life - Implement efficient, sustainable and context-sensitive transportation strategies that support a high quality of life in Western Corridor communities.

3.2.1 Highways

Goal: Improve highway system efficiencies and safety in Vermont's Western Corridor.

Context plays an important role in determining suitable design and performance characteristics associated with highways and major roadways. The objectives under this goal recognize that a different balance of priorities are needed in towns and villages compared to less developed rural areas.

Objective 1: Improve traffic operations, safety and travel reliability for highway segments between urbanized areas/village centers.

Objective 2: Balance regional mobility needs with local transportation priorities and plans within towns and village centers. Improve safety within these areas.

3.2.2 Freight

Goal: Improve freight movements in the Western Corridor.

Three specific objectives define the elements associated with improving freight movements in the corridor:

Objective 1: Improve travel times and reliability on Western Corridor highways to provide improved service to freight customers.

Objective 2: Improve infrastructure, services and intermodal connections to improve the efficiency of all freight modes, with particular emphasis on increasing the share of freight hauled by rail and air freight traffic.

Objective 3: Identify and encourage preservation of high-priority rail line frontage for businesses that use rail services. Create additional rail frontage as part of commercial property development.

3.2.3 Public Transportation

Goal: Increase public transportation use and enhance regional connectivity for passenger travel.

A number of specific objectives further define ways to achieve the goal of increased use of public transportation and improve regional passenger travel:

Objective 1: Provide well-coordinated local, regional and interstate public transportation serving the communities along the corridor.

Objective 2: Improve access to public transportation services (bus and rail) and linkages/connections between travel modes.

Objective 3: Establish passenger rail service and supporting facilities throughout the length of the Western Corridor.

Objective 4: Improve travel options in the Western Corridor by providing a range of modal choices.

3.2.4 Economic Vitality

Goal: Support corridor investments that promote economic vitality in the region.

Three objectives to gauge transportation's role in supporting economic vitality in the region were identified:

Objective 1: Maintain and strategically improve transportation infrastructure to support businesses in Western Vermont.

Objective 2: Increase employment and tourism activity in the Western Corridor.

Objective 3: Facilitate growth in passenger and freight traffic at airports within the Western Corridor consistent with airport Master Plans and the state's Airport System and Policy Plan.

3.2.5 Quality of Life

Goal: Implement efficient, sustainable and context-sensitive transportation strategies that support a high quality of life in Western Corridor communities.

The quality of life goal generally seeks to reduce or mitigate potential adverse effects associated with transportation infrastructure and services. Specific objectives are:

Objective 1: Maintain air quality "attainment" status under the federal Clean Air Act for all Western Vermont counties.

Objective 2: Reduce or mitigate the adverse effects of truck traffic within town and village centers where feasible.

Objective 3: Support commercial and residential settlement patterns concentrated in compact villages and urban centers separated by rural countryside, consistent with state, regional and local plans.

Objective 4: Provide safe, inviting and convenient pedestrian and bicycle accommodations that connect travel modes and provide access and circulation within communities. Plan and build streets and other transportation infrastructure with all users in mind.

Objective 5: Limit adverse environmental and community impacts of transportation infrastructure and services.

4 Implementation and Action Plan

The Implementation and Action Plan (Plan) outlines steps to advance transportation, land use and related strategies recommended by the Vermont Western Corridor Transportation Management Plan. Recommended strategies have been selected based on their potential to achieve the study's vision, goals and underlying objectives for the nearly 200-mile long Western Corridor. The strategies described in the plan are in most cases broadly defined actions that provide a framework for subsequent planning efforts by state, regional and local agencies to develop and implement specific improvements and programs.

4.1 Moving Forward

This study involved a collaborative effort by the Chittenden County Metropolitan Planning Organization (CCMPO); Regional Planning Commissions (RPCs) for Bennington County, Rutland County, Addison County, Chittenden County, and the Northwest Region (Franklin and Grand Isle Counties); and the Vermont Agency of Transportation (VTrans). Furthermore, the study group worked with the Federal Highway Administration (FHWA), Vermont Rail Systems, New England Central Railroad and other regional stakeholders during the course of the study. Through this process, a precedent for regional coordination of transportation planning along the Western Corridor has been established.

Continuing cooperative planning efforts will be essential in supporting the development and implementation of specific projects based on the strategies that are recommended in this plan. Ongoing coordination will help ensure that improvements that advanced are compatible with one another and consistent with overall corridor goals. By working together, communities, groups and agencies along the corridor should also have a stronger voice in advocating for priorities.

A *Western Corridor Working Group* will be formed at the completion of this study to continue coordinated planning efforts and further advance actions recommended in the Implementation and Action Plan. The working group will include representatives from all organizations that participated during the development of this study (RPCs, CCMPO, VTrans and other interested stakeholders). An important function of the Working Group will be to bring diverse stakeholders together (local, regional, and state agencies, property owners, businesses and others) into agreement on mutually beneficial land use and transportation strategies and actions to address issues identified in this Plan and develop mechanisms and interagency agreements for cooperatively pursuing the strategies. This Plan will serve as a "blueprint for action" for the planning agencies, municipalities, and other stakeholders in the corridor.

An important "next step" for the planning agencies in the corridor is to prioritize key short corridor segments in their region for more detail evaluation of issues and refinement of multimodal strategies recommended in the Plan that are appropriate for that particular segment. The responsibility of the planning agencies will also extend to ensuring that plans for individual segments are compatible with those of adjacent segments and with the Western Corridor Transportation Management Plan, to the extent possible.

A major challenge in developing strategies for this corridor, is that the type, condition, availability and use of transportation infrastructure and services varies considerably over the corridor – as do the land use objectives and plans of the many communities in the corridor. The transportation needs of the businesses – current and future - are highly diverse. Residents have strong but varied perspectives with respect to community character, services and ambiance. Of equal importance – there are varying degrees of "affordability" with respect to improving transportation up and down the corridor. For these reasons, great care will need to be taken in identifying the "boundaries" of a sub-corridor segments and its priority relative to other segments. The guiding principals for identifying boundaries are included in the Vermont Corridor Management Handbook (VTrans, July 2005).

Also consistent with the Handbook, segment studies should be *Collaborative*, meaning that transportation agencies, local governments, businesses and the public all participate in plotting a balanced set of realistic transportation and land use strategies for that segment. Ideally, a successful corridor management plan is one that state and regional agencies, municipalities, and other stakeholders in the corridor agree with, and use as a blueprint for both transportation and land use planning, regulation and decision-making.

4.2 Recommended Strategies and Actions

Table 4-1 lists recommended strategies and identifies which goal(s) are the basis for their selection. While recommended strategies were selected primarily on the basis of their support for one or two study goals, many strategies would support other study goals as well. *Appendix C, Evaluating Strategies*, details the evaluation of candidate strategies and actions relative to each of the study goals. The study goals and underlying objectives are described in *Chapter 3, Vision, Goals and Objectives*.

Table 4-1: Recommended strategies and basis for selection

Strategy		Highways	Freight	Public transportation	Economic vitality	Quality of life
H1	Improve signalized intersections	X	X			
H2	Improve local circulation	X		X	X	X
H3	Implement access management	X				
H4	Highway realignment and widening	X	X		X	
H5	Minor roadway reconfiguration	X	X			
H6	Safety improvements	X	X			
F1	Increase rail load ratings		X	X	X	
F2	Improve truck access to rail and airports		X		X	
F3	Establish additional transload facilities		X		X	
F4	Market rail-served properties		X		X	
F5	Preserve rail frontage for best uses		X			
T1	Expand and improve public transportation services			X		X
T2	Expand passenger rail service and intercity/interstate bus services			X	X	X
T3	Develop additional intermodal centers (Passenger Hubs)			X		
T4	Establish additional park-and-ride lots and intercept facilities			X		
T5	Expand travel demand management programs			X		X
T6	Improve traveler information	X	X	X	X	
T7	Improve bicycle and pedestrian accommodations			X	X	X
T8	Reduce border crossing delays for future passenger rail services			X		
E1	Improve airport infrastructure		X		X	
Q1	Region-wide operating agreement					X
Q2	Comprehensive truck noise mitigation/management program					X
Q3	Streetscape improvements				X	X
Q4	Implement traffic calming measures					X
Q5	Encourage use of alternative fuel vehicles					X
Q6	Encourage compact, mixed-use development within towns			X		X

Strategies are presented in the order discussed in the sections that follow.
X = Primary basis for selection (strategy may support additional goals as well – see Appendix C)

4.2.1 Plan Organization

The Implementation and Action Plan (Plan) is organized according to the study goals. Strategies are assigned an identification number that begins with a letter indicating the section under which the strategy is discussed:

H – Strategy is described under Highway actions (section 4.3);

F – Strategy is described under Freight actions (section 4.4);

T – Strategy is described under Public transportation actions (section 4.5);

E – Strategy is described under Economic vitality actions (section 4.6); and,

Q – Strategy is described under Quality of life actions (section 4.7).

Strategies that were selected on a basis of supporting multiple goals are discussed in detail in one section only, but identified under each of the other relevant sections as well.

Given the breadth of this study, recommended plan elements have been developed to varying levels of specificity depending on the nature of the strategy and amount of available supporting data and information. For example, strategy *H1: Improve signalized intersections* includes examples of potential improvements to facilities with capacity problems that were identified through detailed Level of Service (LOS) analyses. The potential improvements presented in Table 4-2 should not be construed as a list of future projects but rather should be treated as a starting point to address capacity or safety problems at specific locations. Conversely, strategy *F3: Improve truck access to rail facilities and airport* is a concept that has not yet been studied to the same degree of detail. In this case, the necessary near-term action is to further evaluate and identify specific needs.

The Plan recommends numerous strategies—several by mode (highway, rail, freight, public transportation) and others by category (economic vitality, quality of life)—all were developed to address corridor Goal(s) and Objective(s). However, the US 7 corridor varies greatly with respect to function and utility over its approximately 200 mile length in Vermont. As state and regional stakeholders move towards implementation of the Plan, it is crucial to look at multimodal solutions for issues facing the Western Corridor. Strategies addressing specific issues should be evaluated together at a more detailed sub-corridor level to select and prioritize appropriate actions.

More information on each strategy's benefits (or in some cases impacts) in relation to the study goals is presented in *Appendix C, Evaluating Strategies*.

4.3 Highway actions

These strategies were selected primarily on the basis of their ability to support the goal of improving traffic operations and safety on corridor roadways. Highway strategies were developed for both the developed areas/town centers (H1, H2, H3, H6) and the rural segments (H1, H4, H5, H6) of the western corridor. Some highway strategies are applicable throughout the western corridor. Recommended actions are:

Improve signalized intersections (Strategy H1)

Improve local circulation (Strategy H2)

Implement access management strategies (Strategy H3)

Highway realignment and widening (Strategy H4)

Minor roadway reconfiguration (lane and shoulder widths) (Strategy H5)

Safety improvements (Strategy H6)

Strategy T6: *Improve traveler information*, is also recommended as a means to improve highway safety and reliability. Strategy T6 is described later under *Public transportation actions*.

4.3.1 Traffic Improvements in Towns and Developed areas

One objective under this goal is to balance regional mobility needs with local transportation priorities and plans within towns and village centers and improve safety within these areas.

H1: Improve signalized intersections

Traffic signals are generally located within urbanized areas or at the intersection of major highways in the Western Corridor. Due to changes in traffic volumes and travel patterns, signals should be evaluated and timings adjusted on a regular basis to ensure that they are operating efficiently. In some cases, upgrading signal control and detection equipment could improve traffic flow and reduce travel delays, particularly in locations where signals are closely spaced. Where congestion is especially severe, additional lanes or turn pockets may be warranted.

This Plan recommends that roundabouts should be considered as potential treatments at locations where traffic control upgrades are warranted. Roundabouts are preferred at certain locations because they allow vehicles to proceed through intersections without stopping and generally decrease the risk of higher-severity collisions. In 2002, the Vermont State Legislature directed VTrans "to carefully examine and pursue the opportunities for construction of roundabouts at intersections determined to pose safety hazards for motorists" (Act 141, Section 37). However, roundabouts also require more land area compared to other traffic control devices, especially two lane roundabouts that are required to accommodate high traffic volumes. Two lane roundabouts can also present unique challenges for pedestrians with visual impairments as they rely upon their hearing to detect gaps in the traffic and determine when to cross. In two lane roundabouts the ability to detect gaps is often masked by the sounds generated by the second lane of traffic. A quantitative analysis based on costs and benefits of a proposed traffic control facility (traffic signals or roundabouts) should be conducted and results considered in selecting the appropriate treatment for a specific location.

This study evaluated existing (2005) and projected year (2030) conditions at major intersections on federal aid highways. Detailed Level of Service (LOS) analyses were conducted for 26 intersections in the western corridor using 2005 existing traffic data and 2030 estimated traffic data from the no-action scenario and the results are presented in the *Existing Conditions* report (Appendix A) and *Future Conditions* report (Appendix B) respectively. A number of corridor intersections are projected to experience congestion by the year 2030. Examples of improvement options for those intersections with either future LOS ≤ D or with deteriorating LOS compared to the 2005 conditions are described in Table 4-2.

Near-term and longer-term actions

- Develop a schedule to monitor traffic volumes and operations at signalized intersections and update signal timings as necessary.
- Prioritize congested intersections and/or sub-corridors around these congested facilities for more detailed evaluation and selection of preferred improvements. Table 4-2 lists major highway intersections in the western corridor that are projected to experience congestion in the future analysis year 2030. This table also presents examples of possible solutions for consideration at these facilities—more detailed evaluation is needed to develop preferred alternatives, typically through a scoping process. Similar strategies could be applied to other signalized intersections along the corridor.
- Conduct detailed intersection and/or sub-corridor evaluations of the prioritized congested locations.
- Consider roundabouts as a possible alternative during planning and analyses of improvements at intersections that experience congestion and safety issues in the corridor.
- Recommend improvements for programming under the Transportation Improvement Program (STIP/TIP) or Statewide Safety Program.
- Upgrade signal controller equipment and where appropriate provide vehicle detection and interconnect traffic signals to improve traffic flow along the corridor and reduce travel delay. Improvements to adjacent traffic signals along corridor segments should be considered at the same time to standardize equipment and maximize the efficiency of the signal control system.

Actions to be led by VTrans, RPCs or CCMPO and local Municipalities, depending on responsibility for maintenance and operation of specific intersections.

Table 4-2: Examples of Improvement Options at Congested Signalized Intersections

US 7 / US 2	Colchester
2005 Traffic Conditions Intersection: LOS C Projected 2030 Traffic Conditions Intersection: LOS E Congested Movements: US 2 EB Left LOS F (98 sec) US 7 NB Left LOS F (111 sec) US 7 SB Thru LOS F (125 sec)	Discussion This intersection of the Roosevelt Highway (US 2) and the Ethan Allan Hwy (US 7) at Chimney Corner is projected to operate at LOS E conditions by the year 2030. Adjacent access to I-89 just to the west of the intersection attracts traffic to this location, resulting in heavy turning movements. Example Options for Addressing Congested Movements • Addition of a second eastbound left-turn pocket improves LOS to D or better for all movements (after adjusting traffic signal timing). This action would also require widening US 7 to the east to create a second receiving lane for turning traffic. • The potential for additional turn pockets to better serve the northbound left turn or southbound right turn movements from US 7 appears limited since many of these vehicles are destined for I-89 and would need to remain in a single, outside turn lane to access these northbound on-ramp. • Replacement of existing signalized intersection with a roundabout. • Addition of a second entrance to the I-89 northbound onramp, with access directly from US 7 north of the intersection. This would involve reconfiguring the on-ramp to include a merge area or intersection to accept two entrances.

Burlington US 7/US 2	Burlington
2005 Traffic Conditions Intersection: LOS C Projected 2030 Traffic Conditions Intersection: LOS E Congested Movements: US 2 EB Thru LOS E (59 sec) Main St WB Left LOS E (86 sec) Main St WB Thru LOS E (70 sec) US 7 SB Thru LOS E (74 sec)	Discussion S Willard St carries US 7 and US 2 through Burlington, north of Main St. US 2 turns east on Main St, while US 7 continues toward the south. S Willard St has one travel lane in each direction and no turn lanes at the Main St intersection. Left turn pockets are provided on Main St, which also carries one travel lane in each direction. The intersection is located in an established residential neighborhood. Example Options for Addressing Congested Movements • Add left turn pockets on S. Willard - The curb to curb width on S Willard St is approximately 35 feet, which is sufficient but parking may need to be prohibited near the intersection. This change could improve intersection operations to LOS D, with all movements in the LOS C and D range. • Add an additional east-west lane on Main St within the existing right-of-way (approx. 75-feet between existing sidewalks). • Revised signal phasing. Consider elimination of exclusive pedestrian phase.

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans. Examples of Improvement options are based on 2030 capacity analyses for intersections with LOS ≤ D or deteriorating LOS compared to current conditions.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.

Table 4-2, Continued

US 7 / I-189 off-ramps	South Burlington
2005 Traffic Conditions Intersection: LOS B Projected 2030 Traffic Conditions Intersection: LOS D Congested Movements: SB Thru LOS E (73 sec)	Discussion Heavy traffic volumes associated with the I-189 ramps mix with local trips and longer-distance regional trips on US 7. The roadway cross-section is essentially built-out to a maximum configuration given the cross-section of the overpass over I-189 and adjacent properties. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Widen the I-189 off-ramp to provide an additional turn lane (2 left turns, 1 through, 1 right turn). • Add a lane on US 7 in each direction between Farrell Road and Hannaford Drive. This would result in an excessively wide road profile that might not be conducive to pedestrians crossing the roadway.

US 7 / Swift St	South Burlington
2005 Traffic Conditions Intersection: LOS B Projected 2030 Traffic Conditions Intersection: LOS D Congested Movements: WB Left LOS F (100 sec) WB Rt LOS F (187 sec) SB Left LOS F (119 sec)	Discussion This intersection is impacted by its proximity to the I-189 on-ramp and the traffic accessing that route. Swift St itself experiences high traffic volumes due to a lack of alternate routes. Poorly operating movements are those turning movements associated with traffic traveling to or from Swift St. Through movements on US 7 operate adequately. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Consider construction of parallel road segments to improve network connectivity and provide alternate routes for local trips. • Capacity improvements to Swift St. approach and I-189 on-ramp. • Add a lane on US 7 in each direction between Farrell Road and Hannaford Drive. This would result in an excessively wide road profile that might not be conducive to pedestrians crossing the roadway.

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans. Examples of Improvement options are based on 2030 capacity analyses for intersections with LOS ≤ D or deteriorating LOS compared to current conditions.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.

Table 4-2, Continued

US 7 / Allen Rd	South Burlington
2005 Traffic Conditions Intersection: LOS B Projected 2030 Traffic Conditions Intersection: LOS C Congested Movements: WB Thru LOS E (67 sec) SB Left LOS F (120 sec)	Discussion US 7 has recently been improved in this area to provide a 5-lane cross section plus bus pullouts as well as designated bike lanes. Under higher travel demands in the future, traffic turning to/from US 7 at Allen Rd is projected to experience longer delays typical of LOS E and F conditions. Through movements and the intersection as a whole are expected to operate adequately. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Consider construction of parallel road segments to improve network connectivity and provide alternate routes for local trips. • Widen Allen Road to provide an additional left turn pocket.
US 7 / VT22A	Ferrisburgh
2005 Traffic Conditions Intersection: LOS B Projected 2030 Traffic Conditions Intersection: LOS C Congested Movement: EB Left LOS E (72 seconds)	Discussion VT 22A intersects with US 7 at a T-intersection. Low volume Locust Ln also intersects US 7 nearby. The left turn from VT 22A to northbound US 7 is forecast to operate at LOS E by 2030. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. Longer cycle length may be appropriate here. • Replacement of the existing signal with a high-speed rural roundabout—which is a roundabout that is designed to facilitate higher speed approaches. A roundabout at his location may also improve safety. This would require additional right-of-way, though adjacent land is undeveloped. • Widen US 7 and VT 22A to provide additional lanes in the vicinity of the intersection.
US 7 / US 4 (to Woodstock)	Rutland City
2005 Traffic Conditions Intersection: LOS D Projected 2030 Traffic Conditions Intersection: LOS D Congested Movement: NB Thru LOS E (149 sec) SB Left LOS F (70 sec)	Discussion The opposing northbound through and southbound left turn movements are projected to operate at LOS E and F conditions respectively by 2030. The intersection is constrained by adjacent developed properties. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Widen roadway to provide a dual left turn lane from southbound US 7 to US 4 (would require a 2nd eastbound lane segment on US 4 also). • Widen US 7 to provide additional through lanes. • Close west leg of intersection (driveway) to reallocate signal time to other movements.

Table 4-2, Continued

US 7 / US 4 (to NY)	Rutland City
2005 Traffic Conditions Intersection: LOS D Projected 2030 Traffic Conditions Intersection: LOS D Congested Movements: EB Left LOS E (71 sec) NB Left LOS E (69 sec) WB Left LOS E (55 sec)	Discussion High left turning volumes that cross the predominate north-south movements contribute to congestion at this location. This intersection has ample room for expansion. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Consider operating the eastbound and westbound left turning movements as permitted+protected operations and reallocate signal time to other movements. • Widen to provide dual left turn lanes • Replace intersection with a high-speed rural roundabout—which is a roundabout that is designed to facilitate higher speed approaches.

US 7 / VT 9	Bennington
2005 Traffic Conditions Intersection: LOS D Projected 2030 Traffic Conditions Intersection: LOS D Congested Movements: EB Left LOS E (62 sec) NB Left LOS F (83 sec) SB Left LOS F (105 sec)	Discussion Traffic volumes at the intersection of US 7 and VT 9 in downtown Bennington are relatively low, but turning vehicles are projected to experience significant delay. The adjacent developed properties preclude widening to provide additional lanes. Example Options for Addressing Congested Movements • Periodically investigate traffic signal timing and refine as necessary. • Consider operating left turns as permitted and protected operations, which could significantly reduce delay for turning vehicles.

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans. Examples of Improvement options are based on 2030 capacity analyses for intersections with LOS ≤ D or deteriorating LOS compared to current conditions.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.

H2: Improve local circulation

In some locations, major routes such as US 7 carry a substantial share of local trips due to lack of connectivity within the local street grid. Improvements to the local street network to improve local circulation would decrease traffic and turning movements on major arterials, and in turn reduce congestion and improve safety. However, such improvements should be designed to discourage longer-distance trips on the corridor from using local streets to bypass congested areas. This can be achieved through application of appropriate traffic calming measures and adherence to local and residential streets standards to discourage pass-though traffic.

Near-term actions

- Working with towns and villages, identify locations in towns and villages where lack of network connections forces local traffic to rely on major highways for local circulation. Update long-range plans to include identified improvements.
- Implement low-cost improvements aimed at improving local circulation, such as changes in traffic control or wayfinding guidance (signage) geared toward local traffic.

On-going actions

- As (re)development occurs within the Town/Village/Growth Centers in the corridor, plan for and construct local road connections, parallel routes, and other road improvements to provide additional routes for local traffic. Consider implementing traffic calming improvements to discourage through traffic.
- Develop plans for developer (traffic impact) fees, special assessment districts, etc. to build necessary local street connections.

Actions to be led by RPCs/CCMPO and local Municipalities in consultation with VTrans and Developers.

H3: Implement access management strategies

Access management strategies are intended to reduce and improve access points to roadways, which can improve both traffic flow and safety. They can be implemented through the development of standards that guide how new (or redeveloped) properties may access the roadway, or as specific capital projects designed to improve roadway design elements (e.g. – turn lanes), consolidate driveway and other access points, or otherwise improve access points. VTrans has developed a comprehensive access management program that describes the benefits of access management techniques, presents a toolkit of "best practices", and defines regulatory and design standards for six categories of access management that are based on highway classification and context. These resources provide a foundation for expanding and applying access management techniques throughout the corridor.

Near-term and longer-term actions

- Assist municipalities in drafting land use plans and regulations that require good access design in the development or redevelopment process
- Continue support for VTrans' access management and access improvement programs for state highways.

- Develop and implement access management standards for key roadways managed by local agencies that are consistent with VTrans' statewide program.
- Identify locations in developed areas (towns and villages) where roadway improvements or redesigned access could confer significant benefits. These typically will include developed areas in and around towns, though typically outside of downtown. Develop and implement capital projects at these locations to consolidate, standardize and improve access.

Actions to be led by RPCs or CCMPO in consultation with local Municipalities and VTrans.

4.3.2 Traffic Improvements in Outlying Areas

A second objective under the goal of improving highway efficiency and safety is to: improve traffic operations, safety and travel reliability for highway segments between urbanized areas/village centers. Travel reliability refers to the consistency of travel conditions on a corridor, including the ability to recover or limit impacts associated with incidents.

H1: Improve signalized intersections

Outside town and village centers, traffic signals are generally located at intersections of major (usually state) highways. Due to changes in traffic volumes and travel patterns, signals should be evaluated and timings adjusted on a regular basis to ensure that they are operating efficiently. In some cases, upgrading signal control and detection equipment could improve traffic flow and reduce travel delays.

This Plan strongly recommends that roundabouts should be considered as potential treatments at locations in outlying areas where traffic control upgrades are warranted. Roundabouts are preferred at certain locations because they allow vehicles to proceed through intersections without stopping and generally decrease the risk of higher-severity collisions. In 2002, the Vermont State Legislature directed VTrans "to carefully examine and pursue the opportunities for construction of roundabouts at intersections determined to pose safety hazards for motorists" (Act 141, Section 37). However, roundabouts also require more land area compared to other traffic control devices, especially two lane roundabouts that are required to accommodate high traffic volumes. A quantitative analysis based on costs and benefits of a proposed traffic control facility (traffic signals or roundabouts) should be conducted and results considered in selecting the appropriate treatment for a specific location.

H4: Highway realignment and widening

US 7 and other major highway corridors are constructed to varying standards, based largely on when each specific segment was designed and built. Older segments generally have narrower lanes and shoulders and alignments that correspond to lower design speeds. These segments have posted speed limits of 40 mph or 45 mph. Segments that have been reconstructed or repaved in more recent years are following more closely the Vermont Design Standards with improved alignments and in general with 12-foot lanes and 8-foot shoulders for segments posted at 50 mph.

Outside of developed areas, corridor highways are exclusively two-lane roads (one lane each direction), except for short climbing lane or passing lane segments. In terms of basic lane

capacity, two-lanes are sufficient to accommodate existing and projected year-2030 traffic volumes in most locations. There are a few select locations though, that widening to provide additional lanes merits further consideration.

Highway recommendations to construct additional lanes, which would typically involve conversion to a divided highway, are costly and would involve considerable impacts to the built and/or natural environment. For these reasons, the likely applicability of large-scale highway reconstruction or expansion is limited. Instead, more limited improvements such as targeted widening to provide passing lanes or climbing lanes at key locations may have higher feasibility from both a funding and implementation standpoint. Similarly, smaller-scale improvements that address lane and shoulder widths (see strategy H5 discussion that follows), but do not involve substantial highway re-alignment could confer some of the travel reliability and safety benefits associated with a full reconstruction. Where it's feasible, this Plan recommends that rural section improvements should raise the posted speed limit to 50 mph which should be the standard for travel outside developed areas in the western corridor.

Table 4-3 provides example of improvement options for specific 2-lane corridor segment that exhibit LOS < D in 2030 under the no-action scenario. Note that traffic analysis of current and future conditions indicates that increased capacity is not warranted on most rural segments of US 7.

In summary, types of projects that may evolve from this general strategy include:

- Selectively improve segments to provide additional climbing lanes or passing lanes. These projects would provide additional passing opportunities, primarily benefiting safety and travel reliability, with modest improvements in capacity. They could be implemented selectively and therefore at lower cost and with fewer impacts than broader scale realignment and expansion of highway segments.
- Increase posted speed limit to 50 mph by upgrading highway segments with LOS ≤ D to Vermont Design Standards, including lane widths, shoulder widths, and improved alignment. The primary aim of these projects would be to improve travel speeds and reliability for passengers and freight. Safety benefits could be expected as well, but should be evaluated on a case-by-case basis, as actions that increase travel speeds may also tend to increase the severity of crashes.
- Reconstruct and expand highway segments to add additional travel lanes to increase the capacity of the roadway.

<u>Near-term and longer-term actions</u>

- Prioritize 2 lane rural segments, from the list presented in Table 4-3, to address poor LOS (less than D) and lower-speed conditions. Develop preferred alternatives to upgrade specific segments though the scoping process.
- In coordination with the recommended safety improvements (see strategy H6 below), develop and prioritize projects to address locations where highway crash history indicates improved alignment and roadway geometry are needed. Update regional priorities to include these projects into the Transportation Improvement Program (STIP/TIP).

Actions to be led by RPCs/ CCMPO and VTrans.

H5: Minor roadway reconfiguration (lane and shoulder widths)

Minor roadway reconfiguration would maintain current alignments, but improve roadway geometry through either (1) restriping to delineate lane and shoulder locations on existing paved areas, or (2) modestly widening the roadway to increase the paved area available for shoulders. Such actions would be much less costly than full reconstruction of roadway segments and would have fewer impacts to the built or natural environment. Improved travel reliability and safety are the primary justifications for such actions, as speed and capacity benefits are negligible. Application of this strategy is most appropriate either as an interim measure, or in locations where the roadway alignment and capacity are generally sufficient.

Near-term and longer-term actions

- Prioritize locations and develop specific proposals, covering multiple locations, to address corridor segments with lane and shoulders widths that are lower than appropriate standards and the current and/or future LOS is less than D, as identified in Table 4-3. Recommend improvements for programming in the statewide capital program, as appropriate.
- Based on the results of more detailed safety analysis on corridor segments (see strategy H6 below), implement minor reconfiguration improvement to address locations where highway collision history indicates such changes could be beneficial.
- Consider applicability of this scale of improvement as an interim measure at locations with identified congestion or safety issues. Consider implementing improvements in conjunction with necessary maintenance activities, such as pavement overlays, to minimize disruption and costs.

Actions to be led by VTrans, RPCs and CCMPO.

Table 4-3: Examples of Improvement Options on Rural and Suburban Highway Segments

US 7 Swanton Existing Traffic Conditions LOS E Traffic volume: 552 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 35 mph Traffic volume: 705 vehicles (Design hour total both directions)	Segment #2: (VT 78 – St Albans town line north) Discussion Segment volumes are modest, but alignment and limits travel speeds. Passing opportunities are very limited. • The posted speed limit is 40 mph. • Lane widths are generally 12 feet with shoulders typically 5 to 6 feet. • Additional travel lanes are not necessary Example Options for Improving Highway Segments (2030 conditions) • Restripe to 11-foot lanes and add one foot to the shoulder to improve consistency with current standards for a 40 mph posted speed. • Realign to allow a posted speed of 50 mph to improve operations to LOS D and a higher avg travel speed. • Selective widening to provide periodic passing lanes and improve passing opportunities, which is a key contributor to the poor LOS.
US 7 Milton Existing Traffic Conditions LOS D Traffic volume: 1244 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 39 mph Traffic volume: 1756 vehicles (Design hour total both directions)	Segment #5 (Bartlett Rd –Andrea Ln south) Discussion This segment experiences high peak traffic volumes. Passing opportunities are very limited. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet with shoulders typically 3 to 4 feet. • Highway alignment already allows 50 mph posted speed Example Options for Improving Highway Segments (2030 conditions) • Widening to provide 8-foot shoulders could benefit travel reliability and improve safety, and improve average travel speeds by +2 mph to +3 mph. Lanes are already 12-feet wide. • Selective widening to provide periodic passing lanes may improve travel reliability by increasing passing opportunities, potentially improve LOS to D, and increase average speeds by up to +5mph. • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.
3. See Figure 4-1 for segment locations and LOS information.

Table 4-3, Continued

US 7 Milton-Colchester 2005 Traffic Conditions LOS D Traffic volume: 1244 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 41 mph Traffic volume: 1756 vehicles (Design hour total both directions)	Segment #6 (Andrea Ln south – US 2) Discussion This segment experiences high peak traffic volumes. Passing opportunities are very limited. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet with shoulders typically 8 feet. • Lane and shoulder widths meet current standards. • Highway alignment already allows 50 mph posted speed. Example Options for Improving Highway Segments (2030 conditions) • Selective widening to provide periodic passing lanes may improve travel reliability by increasing passing opportunities. • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).
US 7 Colchester South 2005 Traffic Conditions LOS E Traffic volume: 1741 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 35 mph Traffic volume: 2422 vehicles (Design hour total both directions)	Segment #8 (Blakely Rd – Rathe Rd) Discussion This segment experiences very high peak volumes. Passing is generally not allowed on this segment. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet with shoulders typically 8 feet. • Lane and shoulder widths meet current standards. • Highway alignment already allows 50 mph posted speed. Example Options for Improving Highway Segments (2030 conditions) • Widening to provide additional travel lanes would achieve LOS B and free-flow speeds (50+ mph).

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.
3. See Figure 4-1 for segment locations and LOS information.

Table 4-3, Continued

US 7 Charlotte 2005 Traffic Conditions LOS D Traffic volume: 1302 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 41 mph Traffic volume: 1830 vehicles (Design hour total both directions)	Segment #9 (Shelburne Town Line south – Ferry Rd / VT F5) Discussion This segment experiences high peak traffic volumes. Passing opportunities are limited. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet with shoulders typically 8 feet. • Lane and shoulder widths meet current standards. • Highway alignment already allows 50 mph posted speed. Example Options for Improving Highway Segments (2030 conditions) • Selective widening to provide periodic passing lanes may improve travel reliability by increasing passing opportunities, potentially improve LOS to D, and increase average speeds by up to +5mph. • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).
US 7 Charlotte-Ferrisburgh 2005 Traffic Conditions LOS D Traffic volume: 1,176 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 38 mph Traffic volume: 1,619 vehicles (Design hour total both directions))	Segment #10 (Ferry Rd / VT F5 – Ferrisburgh town line north) Discussion This segment experience high peak traffic volumes. Passing opportunities are limited. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet, though shoulders are typically less than 2 feet. • Highway alignment already allows 50 mph posted speed. Example Options for Improving Highway Segments (2030 conditions) • Widening to provide 8-foot shoulders could benefit travel reliability and improve safety, and improve average travel speeds by +2 mph to +3 mph. Lanes are already 12-feet wide. • Selective widening to provide periodic passing lanes would improve passing opportunities. • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.
3. See Figure 4-1 for segment locations and LOS information.

Table 4-3, Continued

US 7 Ferrisburgh	Segment #11 (Ferrisburgh town line north – VT 22A)
2005 Traffic Conditions LOS D Traffic volume: 1,313 vehicles (Design hour total both directions)	Discussion This segment experiences high peak traffic volumes. Passing is allowed on much of this segment, but opposing traffic volumes limit passing opportunities. • The posted speed limit is 50 mph. • Lane widths are generally 12 feet with shoulders typically 8 feet. • Lane and shoulder widths meet current standards. • Highway alignment already allows 50 mph posted speed.
Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 38 mph Traffic volume: 1842 vehicles (Design hour total both directions)	Example Options for Improving Highway Segments (2030 conditions) • Selective widening to provide periodic passing lanes would improve passing opportunities. • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).
US 7 Middlebury North	Segment #14 (Middlebury town line north – Main St / VT 30)
2005 Traffic Conditions LOS E Traffic volume: 1,113 vehicles (Design hour total both directions)	Discussion Segment volumes moderately high, but alignment limits travel speeds. Passing is generally not allowed on this segment. • The posted speed limit is 40 mph. • Lane widths are generally 12 feet, though shoulders are typically less than 3 feet.
Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 31 mph Traffic volume: 1499 vehicles (Design hour total both directions)	Example Options for Improving Highway Segments (2030 conditions) • Widening to provide 8-foot shoulders may benefit travel reliability and improve safety. Lanes are already 12-feet wide. • Selective widening to provide periodic passing lanes would improve passing opportunities. • Realigning to allow a posted speed of 50 mph is projected to improve avg travel speed to 41 mph • Widening to provide additional travel lanes would achieve LOS A and free-flow speeds (50+ mph).

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.
3. See Figure 4-1 for segment locations and LOS information.

Table 4-3, Continued

VT 7A Manchester South 2005 Traffic Conditions LOS E Traffic volume: 880 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 36 mph Traffic volume: 1162 vehicles (Design hour total both directions)	Segment #23 (south of Manchester – Arlington town line north) Discussion Segment volumes are moderate, but alignment limits travel speeds. Passing opportunities are limited. • The posted speed limit is 45 mph. • Lane widths are generally 12 feet, though shoulders are typically less than 3 feet. • Realignment and higher posted speeds not recommended due to highway's context and status as alternate to US 7. • Traffic volumes do not justify additional travel lanes. Example Options for Improving Highway Segments (2030 conditions) • Widening to provide 8-foot shoulders may benefit travel reliability and improve safety, improve LOS to D, and improve average travel speeds by +3 mph to +4 mph. • Selective widening to provide periodic passing lanes would improve passing opportunities, which is a key contributor to the poor LOS.
VT 7A Arlington 2005 Traffic Conditions LOS E Traffic volume: 616 vehicles (Design hour total both directions) Projected 2030 Traffic Conditions LOS E Calculated Avg Travel Speed: 32 mph Traffic volume: 814 vehicles (Design hour total both directions)	Segment #24 (Arlington town line north – VT 313) Discussion Segment volumes are relatively modest, but alignment limits travel speeds. Passing is generally not allowed on this segment. • The posted speed limit is 40 mph. • Lane widths are generally 12 feet, though shoulders are typically less than 2 feet. • Realignment and higher posted speeds not recommended due to highway's context and status as alternate to US 7. • Traffic volumes do not justify additional travel lanes. Example Options for Improving Highway Segments (2030 conditions) • Widening to provide 8-foot shoulders may benefit travel reliability and improve safety, and improve average travel speeds by +3 mph to +4 mph. • Selective widening to provide periodic passing lanes would improve passing opportunities.

Notes:

1. Capacity analyses were conducted for current conditions and 2030 "no action" scenario, where no new improvements are presumed other than four major projects: the Bennington Bypass; the Circumferential Highway in Chittenden County; the Middlebury Rail Spur; and the Federal Street Extension in St. Albans.
2. The examples presented in this table should not be construed as a list of future projects but rather as discrete options that could be evaluated together with other land use and transportation options in addressing capacity and safety issues at specific locations.
3. See Figure 4-1 for segment locations and LOS information.

Figure 4-1: LOS Information and Two-Lane Rural Segments Locations

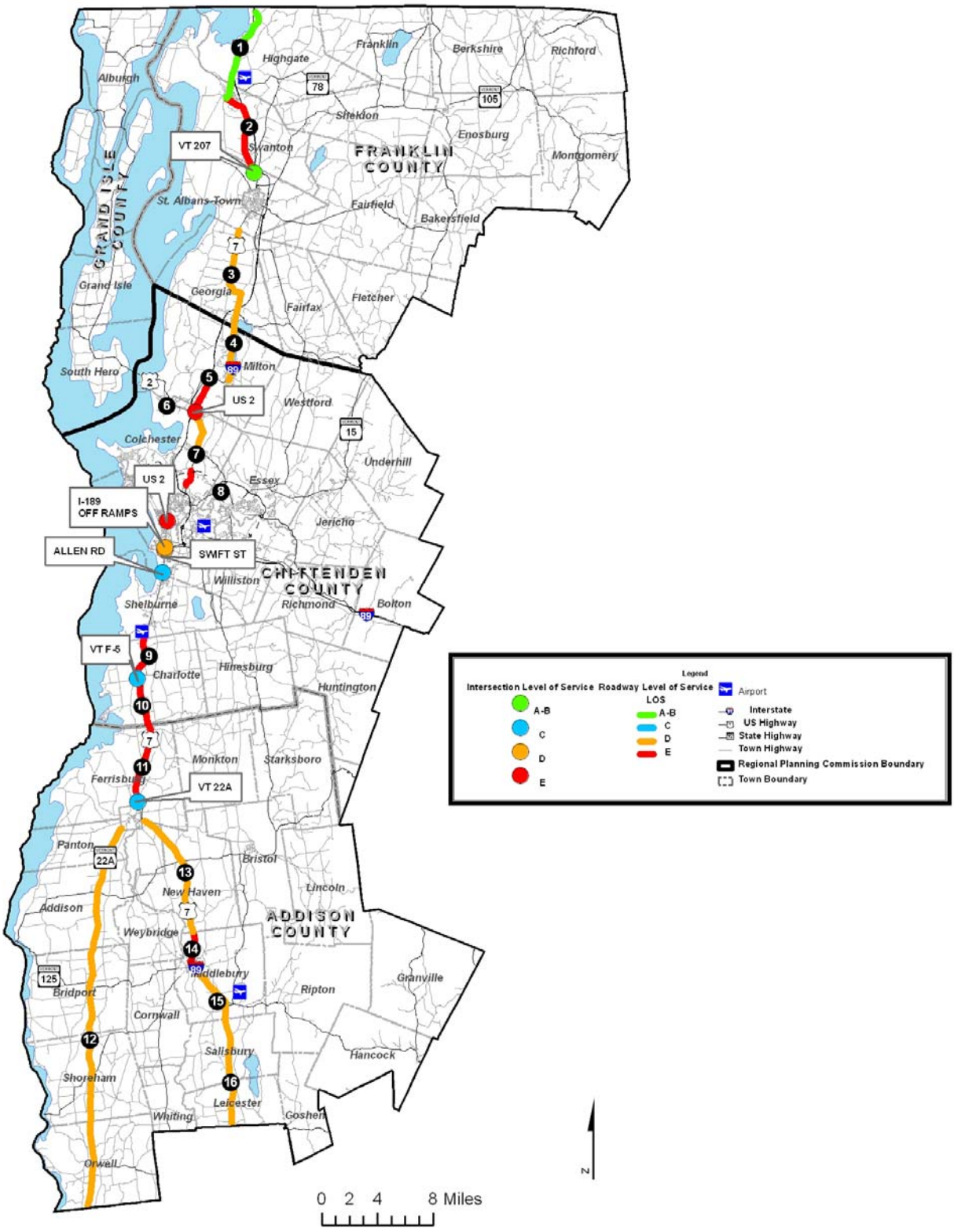
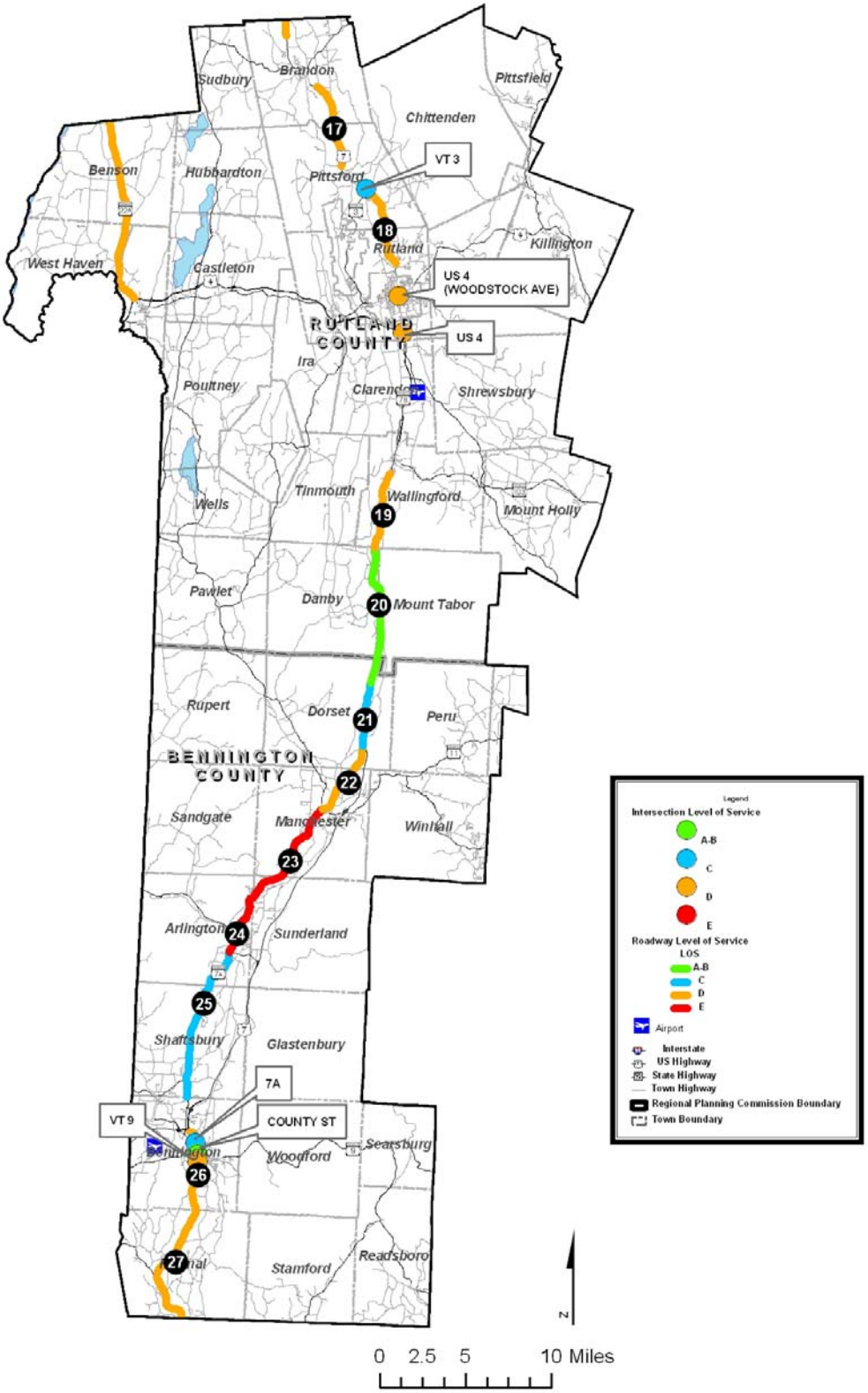


Figure 4-1 (*Continued*): LOS Information and Two-Lane Rural Segments Locations



4.3.3 Safety

H6: Safety improvements

The intent of this strategy is to improve highway safety by addressing High Crash Locations (HCL)—sections and intersections—in the Western Corridor. According to VTrans' Highway Crash Location Report (2003 – 2007), 15 of the top 100 HCL intersections and 13 out of the top 100 HCL sections in the State are located along US 7. VTrans is addressing safety on Vermont's highways though various programs including the Highway Safety Improvement Program (HSIP) and the High Risk Rural Roads Program (HRRR).

Highway safety does not depend solely on road geometrics and traffic flows but also on human behavior, enforcement and other factors. Vermont's Strategic Highway Safety Plan (SHSP) has taken a broad look at the safety issue—the plan was developed in 2006 and is currently being implemented by stakeholders from Vermont's diverse safety community. The SHSP's core mission is to "Minimize the occurrence and severity of crashes, related human suffering and economic losses on the Vermont transportation network…" the SHSP is comprehensive and focuses on **E**ngineering, **E**ducation, **E**nforcement and **E**mergency Medical Services.

<u>Near-term actions</u>

- Work regionally/locally in coordinating with the statewide HSIP program to continue to monitor and prioritize HCL (sections and intersections) in the Western Corridor, both on US 7 and other major routes.
- Identify HCL in the corridor that could benefit from short-term, low cost improvement strategies.
- Implement low cost safety improvement strategies.
- Continue participation and support of the SHSP process. Work to implement SHSP elements throughout the corridor.
- Continue participation in multi-disciplinary Road Safety Audit Reviews (RSARs).
- Identify and prioritize safety issues at railroad crossing.

<u>On-going actions</u>

- Consider safety implications in the implementation of all transportation improvements.

<u>Longer-term actions</u>

- Develop and implement safety improvement strategies for all HCL in the Western Corridor on an on-going basis.

Actions to be led by VTrans, RPCs/CCMPO in collaboration with affected municipalities.

4.4 Freight Actions

Actions to improve freight service in the Western Corridor include strategies designed to improve freight and rail efficiency, improve access to freight terminals and services, and increase rail market share. Recommended actions are:

- Invest in rail infrastructure in order to achieve load rating standards of 286,000 lb. for rail/bed and 315,000 lb for new bridges (Strategy F1)
- Improve truck access to rail facilities and airports (Strategy F2)
- Further explore with shippers, receivers, rail and truck operators the potential for additional transload facilities within the corridor to provide efficient intermodal (truck and rail) connectivity (Strategy F3)
- Market rail-served properties to appropriate businesses (Strategy F4)
- Strategically select appropriate rail frontage to preserve for commercial or industrial development uses that will/could utilize rail services (Strategy F5)

Also recommended as means of improving truck travel times and reliability and thus improving freight movements in the corridor are several highway strategies described previously;

- Improve signalized intersections (Strategy H1)
- Highway realignment and widening (Strategy H4)
- Minor roadway reconfiguration (lane and shoulder widths) (Strategy H5)
- Safety improvements (Strategy H6)

Two additional strategies described later under *Public transportation* and *Economic vitality actions* would also address travel reliability for freight and goods movement;

- Expand traveler information (Strategy T6)
- Improve infrastructure at key airports in the Western Corridor (Strategy E1)

4.4.1 Travel Reliability and Safety of Highways for Freight Movements

Highway strategies described in previous sections also support improved travel reliability for truck movements. Strategies H1, H4, H5 and H6 are specifically recommended for their benefits to truck, as well as automobile travel.

4.4.2 Improve Rail Efficiency

F1: Invest in rail infrastructure in order to achieve load rating standards of 286,000 lb. for rail/bed and 315,000 lb for new bridges.

Rail infrastructure in the Western Corridor must be maintained and improved to standards that allow for cost effective operations and connections to the national rail network. The primary goal is to accommodate the railroad industry standard loaded car weight of 286,000 pounds. Currently, much of the rail infrastructure in Vermont cannot accommodate heavy carloads that

are commonplace elsewhere (particularly for bulk shipments such as grains, aggregates, etc). As a result, some shippers in Vermont must have their products shipped in partially loaded railcars, an inefficient and costly prospect, or instead by truck.

The critical infrastructure components that dictate the rail loading standards are bridges and track/bed. VTrans manages an ongoing program to upgrade the State owned Western Corridor rail lines, to the so-called "286 capability." In addition, the Vermont legislature mandated that all new rail structures (bridges) achieve the standard of 315,000 lbs where feasible.

Near-term and longer-term actions

- Continue upgrading the freight rail infrastructure to the 286,000 lb standard for track and 315,000 lb standard for new bridges in the Western Corridor—from Bennington to the Canadian border and all connecting links, including Burlington to Essex Junction. This includes improvements to the first priority route, as identified in the VT State Rail & Policy Plan, 2006, of the segment of the Western Corridor between Florence and Rutland.
- Reconsider designation of other first priority routes during the next rail plan update. The viability and service potential of specific out-of-state "gateway" connections have recently changed, resulting in corresponding changes in some rail freight traffic patterns in the state during the past year. If these are sustained, the route between Rutland and Hoosick Junction, NY will have greater importance and may warrant consideration as a higher priority as well.
- Maintain coordination with neighboring states and Canada to cooperatively identify needs and opportunities for railroad infrastructure and service improvements which can be mutually beneficial.

On-going actions

- Ensure that rail infrastructure is maintained to retain load ratings.

Actions to be led by VTrans, Railroads, the Vermont Rail Council, and the RPCs/CCMPO.

4.4.3 Improve Access to Freight Terminals and Services

F2: Improve truck access to rail facilities and airports

Actions

In order to maintain an efficient intermodal freight network in the corridor it is necessary to provide trucks with safe and efficient access to railroad freight and airport cargo facilities. These roadways need to be designed, constructed, and maintained to safely accommodate appropriate truck weight and length requirements consistent with Vermont law.

Near-term actions

- Identify and prioritize roadway upgrades to safely accommodate truck traffic to existing rail freight yards and airport cargo terminals. The routes should not compromise the safety and quality of life in residential neighborhoods and should be designed to accommodate trucks of all legal dimensions and weights.

Longer-term actions

- Improve gates and terminal facilities at rail and airport facilities to accommodate existing and anticipated security requirements which may result in screening or queuing of trucks at entrance points.

Actions to be led by private facility owners/operators support from the host Municipalities, Railroads and Airport Operators in coordination with VTrans, RPCs/CCMPO.

F3: Establish additional transload facilities to provide efficient intermodal (truck and rail) connectivity

Rail/Truck transload facilities are locations on railroad lines where shipments can be transferred between trucks and railroad cars, thereby enhancing the opportunity for rail shipments as supported by local trucking activity. The transload facilities are assumed to handle general merchandise and bulk shipments, but do not encompass containers or trailers which are typically handled at large mechanized intermodal terminals.

Transfer of commodities can be directly between train and truck, or interim storage facilities can be employed, such as warehouses and storage tanks. Such facilities already exist along the Western Corridor rail lines, but developing additional facilities could improve the geographical distribution and improve access for shippers. Conversely, establishing additional transload facilities would increase switching requirements for the railroads and could slow train schedules as loads are picked up and dropped off at the additional sites. In deciding whether and where to establish new transload facilities, this balance of increased access to markets more intensive operating requirements and additional capital and maintenance costs for the railroads must be examined. VTrans currently offers a rail enhancement program that shares the cost of rail facilities, including rail sidings, three ways between VTrans, the Railroad and the shipper.

Near-term actions

- Continue to offer the three-way Railroad Enhancement Program.
- Conduct a market feasibility study to determine those locations best suited for locating new transload facilities based on potential to generate additional rail freight traffic and/or reduce shippers' costs. The location, number and types of sites to be developed should to be coordinated with the operating railroad throughout the Corridor in a systematic manner.
- Either in conjunction with or following the market feasibility study, select potential new or existing transload sites for further development. A long-range visioning exercise conducted with RPC/MPO members helped identify general locations where these facilities may be located (see Appendix D). Specific sites should be:
    - Located along railroad lines, preferably within the railroad right-of-way that provide sufficient space for placing of railcars, land area for any ancillary buildings and support facilities and efficient truck access.
    - Zoned accordingly and compatible with existing activities in the immediate area including residential and commercial operations.

Longer-term actions

- Where practical, initiate construction of new, or expansion of existing, transload facilities, and adjust railroad service schedules as needed to accommodate use of the facilities. The construction activity would be coordinated by the railroads, probably in partnership with transload facility owners/operators. The facility owners/operators could be shippers/receivers or third-party transportation logistics-type firms.

Actions to be led by RPCs, CCMPO and Regional Development Corporations (RDCs) working with VTrans, freight shippers and railroad operators, with support from municipalities for land use compatibility and zoning compliance.

4.4.4 Increase Rail Market Share

F4: Market rail-served properties to appropriate businesses

Properties that can be best served by rail are often leased to a company that does not use rail service, while some businesses that could benefit from the efficiencies of freight rail service are located off of existing rail corridors and unable to find (or are unaware of) suitable locations with rail access. Establishing a program to increase the awareness of available rail-served properties and match potential clients with these properties could contribute to increased use of rail in the corridor. Such a program would be aimed at decision makers, corporate real estate professionals, entrepreneurs and private businesses.

One example of such a program is administered by the Pennsylvania Department of Transportation, which established an online directory that identifies over 200 properties across the state with rail access. The database includes other important site location information that would be useful to site locator decision makers as well. A similar database of rail-served properties could be compiled by the Municipalities/RPCs/CCMPO/Regional Development Corporations (RDCs) for use by commercial real estate brokers and the Vermont Department of Economic Development.

Near-term actions

- Develop a Rail Freight Properties Directory. Once compiled, this directory could be made available on-line.
- Work with the State of Vermont and RDCs to incorporate the directory on their web site—possibly under a Commercial Property Locator section.

Longer-term actions

- Maintain and update the directory.

Action to be led by the Western Corridor Working Group and RDCs/ACCD with support from, Railroad Operators and Municipalities.

F5: Encourage preservation of appropriate rail frontage for commercial or industrial development uses that will/could utilize rail services

The number of developable properties in the Western Corridor that are located with access to rail and have other attributes suitable for rail-dependent uses, such as adequate parcel size,

good roadway access, appropriate zoning, lack of environmental constraints and compatible neighboring land uses is limited. Preserving or providing incentives to reserve such sites for business and industrial uses that can benefit from rail access could increase the share of freight movements that travel by rail.

The preservation of these properties is a land use issue that needs to be managed by each municipality in collaboration with the RPCs/CCMPO and the railroad.

Near-term actions

- RPCs/CCMPO lead efforts to work with local municipalities and the railroads to identify and strategically select properties that currently have access to rail and could be developed as rail-served businesses.
- Identify new properties that may be appropriate for development (or redevelopment) as rail served businesses. Considerations that should be taken into account (at a minimum) should include: roadway access, adjacent uses, natural resources and municipal plans.
- Draft sample zoning language that would limit use and development of properties to industrial/light industrial uses, with a stated preference for rail-served businesses.

Longer-term actions

- Once the specific properties are identified, the RPCs could then work with railroad and municipalities to incorporate the selected rail-served businesses into regional and town plans as appropriate.

Actions to be led by RPCs/CCMPO in collaboration with Municipalities and the Rail Freight Operators.

4.5 Public Transportation Actions

These actions are aimed at increasing use of public transportation, enhancing regional connectivity and improving travel options. Recommended actions are:

- Expand and improve public transportation services throughout the corridor (Strategy T1)
- Expand passenger rail service and intercity/interstate bus services (Strategy T2)
- Develop additional intermodal centers (passenger hubs) (Strategy T3)
- Establish additional park-and-ride lots and intercept facilities (Strategy T4)
- Expand travel demand management programs (Strategy T5)
- Improve traveler information (Strategy T6) and education/marketing to use services already in place.
- Improve bicycle and pedestrian accommodations (Strategy T7)
- Work with Canadian and US entities to reduce international border crossing delays for passenger rail (Strategy T8)

Also recommended as a means of supporting transit usage and improving the viability of other travel options is strategy Q6: Encourage compact, mixed-use development within towns, which is described later under *Quality of life actions*.

4.5.1 Expand and Improve Transit Services

T1: Expand and improve public transportation services

Public transit services in the corridor are currently provided by individual transit agencies in each region of the corridor; Addison County Transit Resources (ACTR), Chittenden County Transportation Authority (CCTA), The Green Mountain Community Network, Inc., Marble Valley Regional Transit District (MVRTD "The Bus"), and Green Mountain Transit Agency (GMTA) in Franklin and Grand Isle counties. In addition to transit routes within their respective regions, connecting services to adjacent regions are provided, though such connections are limited and hours of operation and schedule coordination limit the usefulness of these connections in many cases.

<u>Near-term actions</u>

- Each transit provider in the corridor should conduct system planning to increase the efficiency and effectiveness of their services, operation and coordination with human service transportation as well as to improve connections with other passenger transportation services within and beyond their service area.

<u>Longer-term actions</u>

- Expand service coverage area and increase service frequencies. Explore public-private partnership opportunities to support services.
- Implement transit improvements in conjunction with related actions (see below).

Actions to be led by Regional Transit Agencies and VTrans in collaboration with RPCs/CCMPO and Municipalities.

Related strategies

Transit service refinements and expansion would benefit from coordinated implementation with the other actions recommended in this section, including establishing park-and-ride lots and intercept facilities (T4), creating intermodal centers (T3), and improving bicycle and pedestrian accommodations (T7) to provide better access to transit. Enabling and encouraging compact, mixed-use development (Q6) will help create the concentration of activity needed to support transit and public transportation services, while travel demand management (T5) and traveler information (T6) programs would increase awareness and encourage use of transit services.

T2: Expand passenger rail and intercity/interstate bus service

Passenger Rail Service

The State of Vermont contracts with Amtrak to provide Intercity Passenger services on two routes into Vermont:

Amtrak's Ethan Allen Express originates in Penn Station, New York City and terminates in Rutland Vermont. The State supported portion of the route begins at the Albany/Rensselaer station and includes stops at Schenectady, Saratoga Springs, and Fort Edward in New York State, Castleton and finally Rutland, Vermont. Amtrak operates two trains per day (one in each direction) each day at a maximum speed of 60 mph on the Clarendon & Pittsford Railway. Latest ridership data indicates that this service has about 3,900 riders per month and has seen a 6% annual growth in ridership over the past couple of years.

Amtrak's Vermonter originates in Washington, DC and operates on the Northeast Corridor up to New Haven, Connecticut where it heads north on the Springfield line to Springfield, Massachusetts. North of that point begins the Vermont state supported service that stops at Amherst, Massachusetts, Brattleboro, Bellows Falls Vermont, Claremont New Hampshire, Windsor, White River Junction, Randolph, Montpelier, Waterbury, Essex Junction and terminating in St. Albans, Vermont. The latest ridership figures indicate that the Vermonter had 74,016 passengers over the 12 month period that ended September 30th, 2009. The latest ridership data for this service indicate that there was a moderate growth between 2008 and 2009 (around 2%) and a more substantial growth over a two year period (around 17%).

There has been a long history of interest in implementing additional passenger rail service in the Western Corridor. In the latest VT State Rail & Policy Plan (2006) developed by VTrans the existing Vermonter and Ethan Allen Amtrak services were designated as the first priority. The second priority identified in the Policy Plan is upgrading the route between Rutland and Burlington, which is also consistent with establishing passenger rail along the western corridor. Also, an on-going effort known as ABRBE (Albany/Bennington/Rutland/Burlington/Essex Junction) has been focusing on establishing passenger rail service throughout the western corridor (including southwest Vermont).

Near-term actions

- Continue ongoing initiatives to upgrade rail throughout the length of Vermont's Western Corridor to accommodate and improve passenger rail service (NY-Bennington-Rutland-Burlington-St. Albans).
- Use American Recovery and Reinvestment Act (ARRA) of 2009 funding and/or other funding streams to upgrade rail infrastructure (rail/bed/bridges) at identified high-priority segments in the corridor. This is a necessary step in meeting the long-held goal of expanding and improving intercity rail passenger service in the Western Corridor. Through the ARRA High Speed and Intercity Passenger Rail discretionary grant application Vermont is seeking to:
  - Improve infrastructure (CLP and VTR lines) to increase speeds and expand Amtrak's Ethan Allen service north of Rutland, to Burlington with a stop in Middlebury; and
  - Improve infrastructure (NECR line) to increase speeds and on time performance of the Vermonter service from Swanton to the Massachusetts border, through Essex Junction and White River;
  - Initiate a joint planning study with New York State to develop a new service to serve the Vermont communities between Rutland and Hoosick Junction, NY and the New York communities between Hoosick and Rensselaer, as well as the communities between Rensselaer, NY and the stations served in New York up to Rutland. The vision is to have multiple frequencies in a "loop" system that would provide service to those communities. One of the products of the work will be a service development plan.

Longer-term actions

- Initiate discussions among all relevant stakeholders regarding extension of passenger rail service to Montreal (see Recommendation T8).
- Complete additional infrastructure upgrades necessary to extend/initiate passenger rail service in the corridor. These improvements include:
  - Assessment/Improvements to at-grade crossings, as necessary
  - Improvements to the corridor signal system to comply with the *Rail Safety Improvement Act of 2008*, as required.
  - Development of business plan for the long-term funding of operating and maintenance costs.

Actions to be led by VTrans and Railroads in collaboration with Amtrak and RPCs/CCMPO.

Intercity Bus Service

The level of intercity bus service in the corridor has declined markedly over the last 20 years, partially as a result of deregulation of the intercity bus industry. Nationally and in Vermont, intercity bus operators have reduced or eliminated service to smaller communities, focusing instead on carrying passengers over longer distances between major terminals or hubs. For example, Greyhound has eliminated service in much of the corridor, now serving only Burlington.

The Vermont Public Transportation Policy Plan addressed this issue in the following policy statement:

> *VTrans will support a vital intercity bus network in Vermont, serving both intra-state travel and travel to other metropolitan areas in New York, New England, and Quebec by providing attractive and accessible facilities (park-and-rides with bus shelters) at convenient locations along major travel corridors.*

Near-term and longer-term actions

- A VT Western Corridor Intercity Bus Service Restoration Plan is recommended, including the following elements;
  - Determine key markets and ridership potential;
  - Identify specific routes and service levels that are needed in the corridor;
  - Recommend a process for implementing the restoration of service. Successful approaches to implementing intercity bus service in other areas has included contracting with a private transit service provider to operate intercity-type service with support by purchasing vehicles (by utilizing federal funds – Section 5311 (f) or CMAQ) and providing terminal space/maintenance facilities; or purchasing buses for existing public transit providers and working out a funding program for operation of the service.
  - Secure long-term funding to support services

Action to be led by Western Corridor Working Group in coordination with regional Transit Providers, Greyhound and other intercity bus operators.

4.5.2 Improve Access to Transit

T3: Develop a network of intermodal centers (Passenger Hubs) to improve connectivity among the various modal choices

Intermodal centers or passenger hubs are facilities designed to provide comfortable, convenient access to transit services and transfer opportunities between different routes or modes of travel. Potential sites should be centrally located to population centers, have good access to roads and possibly be located adjacent to railroad corridors to allow for potential passenger rail service in the future. Passenger intermodal centers may be located in established downtowns and village centers as well as new growth areas or could be developed in conjunction with park-and-ride and intercept facilities.

A visioning process was conducted to identify potential locations for intermodal centers. These were selected based on compatible land uses and zoning, proximity to residential and commercial uses, location along rail corridors and/or bus lines and similar factors. The exercise was not intended to determine market feasibility for development of intermodal centers at any given locations, but rather as a starting point for identifying siting opportunities. Identified locations are shown in *Appendix D*.

Near-term actions

A coordinated effort will be necessary to maintain or expand existing intermodal facilities and to develop new facilities as they become necessary or as opportunities for development occur. This coordinated effort will entail the following primary steps:

- Identification by Public Transit Providers and RPCs/CCMPO of locations and specific sites where intermodal centers would facilitate connectivity and projection of when intermodal centers may be beneficial. Potential intermodal hub locations identified in this study (Appendix D) can form a starting point for this effort. This could be part of the system's planning effort conducted by regional Public Transit Providers and RPCs/CCMPO in coordination with municipalities and VTrans.
- Identification by RPCs/CCMPO/Municipalities of opportunities to integrate intermodal centers with other public or private developments in the planning/design phase.
- Modification of municipal master plans and zoning, as necessary, to accommodate intermodal centers. Modifications to enable and promote supportive land uses (see strategy Q6) should also be considered at this time.
- Coordination among RPCs/CCMPO, Transit Providers, VTrans and municipality to identify potential funding opportunities, including public private partnerships, for development of intermodal passenger hubs.

Longer-term actions

- Plan and implement transportation/transit services to intermodal centers.
- Promote and expand services to intermodal centers.
- Plan for and facilitate supportive land use development (higher-density residential, mixed use) in proximity to intermodal centers.

Action to be led by RPCs/CCMPO, regional Transit Agencies and Municipalities in coordination with VTrans.

Related strategies

The development of intermodal centers should be undertaken in coordination with several other recommended strategies. Park-and-ride lots and intercept facilities (T4) can be co-located with intermodal centers to provide auto access to transit and public transportation services. Expansion of transit services (T1) and implementation of passenger rail and interstate bus service (T2) should be focused around new intermodal centers. Enabling and encouraging compact, mixed-use development (Q6) will help create the concentration of activity needed to support transit and public transportation services.

T4: Park-and-ride lots and intercept facilities

Park-and-ride lots and intercept facilities expand access to public transportation services and provide opportunities for ridesharing and parking management strategies. In locations where high demand is anticipated, specific development of a park-and-ride lot may be warranted (e.g., at an intermodal passenger hub). A more economical and cost-effective approach in many cases however could be to enter into a formal or informal leasing arrangements with existing land owners who have excess parking during peak commuting hours. These "leased lot" park-and-

rides are typically established at churches or other organizations with large parking lots that are underutilized during the weekday.

Near-term actions

- Identify potential park-and-ride and intercept locations along existing and planned transit routes, or at proposed intermodal centers. These evaluations should take into account the frequency and schedule of transit services, ridership potential (market), and opportunities for leased lots or new construction.
- Investigate the feasibility of a leased-lot pilot program along the western corridor. Identify the potential for this type of program and to develop approaches to resolve some of the typical concerns such as traffic impacts, snow clearing requirements, and lease and liability terms.
- Coordinate with RPCs/CCMPO, transit agencies and VTrans to identify potential funding opportunities and timeframes for developing new park-and-ride lots and intercept facilities.
- Continue the Municipal Park and Ride Program.

Long-term actions

- Design/permit/construct park-and-rides and intercept facilities in coordination with the development of intermodal centers or at other high-demand locations.
- Proactively explore opportunities to co-develop park-and-ride and intercept facilities with other public or private land uses to increase the level of activity, reduce development costs, and promote security at lot locations.

Action to be led by RPCs/CCMPO, regional Transit Agencies, Municipalities in consultation with VTrans

Related strategies

Park-and-ride lots and intercept facilities can be co-located with intermodal centers (T3) to provide auto access to transit and public transportation services. Expansion of transit services (T1) and implementation of passenger rail and interstate bus service (T2) should serve park-and-ride lot and intercept facility locations to the extent possible. Travel Demand Management programs (T5) and Traveler information systems (T6) can be used to promote and encourage the use of park-and-ride lots and intercept facilities. Secure bicycle parking and safe travel by bicyclists and pedestrians (T7) should also be offered at these facilities.

4.5.3 Increase Travel Options and Information

T5: Expand Travel Demand Management program

VTrans has initiated the GO Vermont Program to increase cost effective travel options across the State. The GO Vermont Program provides information and services for carpools, vanpools, public transit and other modes of passenger transportation. GO Vermont also maintains a web site which provides links to carsharing services, bicycle information, transit services, telecommuting information, employer support programs, transit/bicycle tax incentives and

other transportation alternatives. The program plans to offer automated ridematching services in the near future.

The GO Vermont program is an effective and efficient means of implementing travel demand management in the corridor and can improve the effectiveness of transportation services. Recommended actions focus on expanding the programs offered by GO Vermont to provide even greater travel resources and reach additional markets.

Near-term and longer-term actions

- Support the expansion of the GO Vermont program, both in existing and new markets.
- Use Go Vermont as a means of coordinating travel information for services and programs provided by the various transportation agencies (including transit providers) across regional boundaries in the Western Corridor.
- Develop *Parking Management Plans* for many of the downtowns within the corridor. Strategies to limit the supply of parking and to manage it through pricing can encourage alternative mode use or trip chaining on foot. One of the definitions of trip chaining is when visitors park downtown once and then visit multiple locations on foot. Downtown visitors will do this if walking is easier and safer (with adequate pedestrian accommodations) than driving either because of parking scarcity or pricing. This is effective in compact city/town/village centers that have a strong demand by visitors, such as Burlington, Rutland or Middlebury.

Action to be led by VTrans, RPCs/CCMPO and municipalities in coordination with local transit agencies.

T6: Expand traveler information systems

VTrans manages an initiative called ConnectVermont aimed at developing and deploying a comprehensive information system for travelers. The program's vision is to deliver this information through all available types of media, such as websites, road signs, radio stations and traditional media, via all types of devices, including laptops, PDA's, cellular phones and car radios. The program currently includes multiple ways to identify road conditions and construction related delays.

In addition to the roadway related traveler information, enhanced public transit system traveler information would provide cost effective enhancements to the transportation system of the corridor. This could include a number of different initiatives.

Near-term actions

- Bus and train location information – Automated location systems that identify the current location of buses or AMTRAK trains in service. This information can be transmitted to signs at bus stops, cell phones, or computers. This could be implemented for each public transit provider as funds are available. CCTA is currently in the process of implementing this type of service.
- Publication of travel information directed to both residents and tourists. Consider coordinating these efforts with the GO Vermont Program.

- Continued support of the ConnectVermont initiative for the implementation of a roadway condition information network.
- Plan for longer-term implementation of consistent Intelligent Transportation Systems elements in the corridor that will form the basis for future traveler information systems.

Longer-term actions

- Corridor-wide traveler information systems – The bus location information networks for each service provider can be compiled in a corridor-wide system which will help travelers make connections between service providers.
- Implement roadway condition information network throughout the corridor.

Action to be led by VTrans in coordination with AMTRAK and local transit agencies, RPCs/CCMPO.

T7: Strengthen and expand pedestrian and bicycle improvement programs in local communities

VTrans developed the Vermont Pedestrian and Bicycle Policy Plan in January 2008. This Plan not only outlines bicycle and pedestrian policy, goals and objectives, and actions but highlights the status of bicycling and walking in the State. This policy plan identifies current actions, new actions, and long-term actions for VTrans, the MPO/RPCs and other stakeholders. Most of the actions in this plan are applicable to the State as a whole and for the Western Corridor to strengthen and expand pedestrian and bicycle improvement programs in local communities.

Recommendations for strengthening bicycle and pedestrian programs, facilities and accommodations in the corridor focus on highlighting ways in which the "strategic actions" in the statewide policy plan can most effectively be applied within the study corridor.

Near-term and Longer-term actions

- Encourage adoption by municipalities and assist in drafting of language relating to bicycle and pedestrian needs (such as bicycle parking) in development ordinances.
- Develop "Complete Streets" policies that fully integrate access for all users in street design standards. Integrate multi-modal transportation guidelines into local land use regulations and local and regional land use and transportation plans.
- Use municipal and regional citizen committees to provide input on bicycle and pedestrian activities on the local and regional level.
- Encourage commuting by bicycle and walking by providing information regarding facilities and amenities at businesses, retail areas and other destinations. These efforts would ideally be implemented as part of the broader travel demand management program (T5) described previously.
- Plan, build and maintain accessible pedestrian facilities that are fully integrated into commercial and urban areas, village centers, and appropriate rural locations. Use the *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* as a framework for project development.
- Develop walkway programs to build key missing segments, especially near schools, parks, senior housing and other generators of pedestrian activity.

- Develop regional bicycle plans that identify the compatibility of routes for bicycling and recommended specific improvements to upgrade roadways to accommodate bicycles.

Action to be led by, RPCs/CCMPO and municipalities in coordination with VTrans

T8: Work with Canadian and US entities to reduce international border crossing delays for passenger rail

This strategy addresses the need to provide expedited inspection of passenger trains at the United States – Canada border, while maintaining necessary vigilance in securing the international border. Delays to rail transportation services can negatively impact operating costs and service reliability. Unlike highway border crossings whereby additional inspection lanes can be added, trains are inspected individually and inspection difficulties with one passenger will delay the entire train. It should be noted that the Western Corridor does not, at present, have rail passenger service which extends across the border into Canada. However, the predecessor to the present-day *Vermonter* formerly operated to Montreal and delays incurred by border crossing inspections of passengers were cited as one of the reasons for discontinuing the service.

<u>Near-term and longer-term actions</u>

- Support efforts to engage U.S. Customs and Border Protection, Department of Homeland Security and the Canada Border Services Agency to study potential means of reducing delays incurred during border crossings for passenger rail services.
- Passenger clearance through US Customs is a system-wide issue for Amtrak, which affects its New York – Montreal *Adirondack* service, New York – Toronto *Maple Leaf* service as well as west coast trains operating between Seattle and Vancouver. One potential approach may be to have passengers "pre-cleared" at terminal stations such as Montreal. This and other potential approaches would require study by all stakeholders.

Actions to be led by the State of Vermont/VTrans, Amtrak and Railroad Operators with the participation of the US Customs and Border Protection, Department of Homeland Security, and Canada Border Services Agency. Support from Vermont's congressional delegation should be pursued.

4.6 Economic Vitality Actions

Many of the actions recommended previously under other goals also would support economic development objectives to improve air and rail access to Vermont and support Vermont businesses. These include:

- Improve local circulation (Strategy H2)
- Highway realignment and widening (Strategy H4)
- Invest in rail infrastructure (track and bridges) in order to achieve the national standard of 286,000 lb. load rating and eliminate current clearance restrictions where practical (Strategy F1)
- Improve truck access to rail facilities and airports (Strategy F2)
- Establish transload facilities where practicable to provide efficient intermodal (truck and rail) connectivity (Strategy F3)
- Market rail-served properties to appropriate businesses (Strategy F4)
- Expand passenger rail service and intercity/interstate bus services (Strategy T2)
- Improve traveler information (Strategy OPT-4)
- Improve bicycle and pedestrian accommodations (Strategy T7)

One additional action is specifically recommended to improve air access to Vermont:

- Improve infrastructure at key airports in the Western Corridor (Strategy E1)

4.6.1 Improve Air Access in Vermont

E1: Improve infrastructure at key airports in the Western Corridor

The Western Corridor is served by the only two commercial service airports in the state, Burlington International Airport and Rutland Southern Vermont Regional Airport. According to *The Economic Impact of Vermont's Public-Use Airports – Final Technical Report (April 2003)*, the total statewide on-airport economic impact for all public-use airports in Vermont is over $276 million. Burlington International Airport is a primary aviation economic generator for air transportation in the Western Corridor and for the state as a whole. At approximately $242.5 million, Burlington International Airport comprises 88 percent of the on-airport statewide economic impact total. The total economic impact for Rutland Southern Vermont Regional Airport is significantly smaller at $7.5 million, or 3 percent of the statewide total.

The airports are an important component of the transportation network in the corridor. In February 2007, VTrans completed the *Vermont Airport System and Policy Plan* which took a strategic approach in identifying 20 year needs of the system. In addition to identifying the specific prioritized needs at each of the airports, it also included policy-related recommendations that can improve the performance of the system.

Near-term and longer term actions

- Implement improvements identified for each airport as identified in the *Vermont Airport System and Policy Plan.*
- Develop intermodal and multimodal ground access plans for each of the airports in the corridor. The development of these plans would require the coordinated effort of the airport operator, the local regional transit authority/provider, VTrans District Transportation Administrator, the local municipalities and the RPCs/CCMPO. The intermodal ground access plans should identify the most effective ways to enhance access to the airport though utilization of various modes including rental cars, taxi, bus and bike. Truck access needs to be safely accommodated to meet the airport's needs.
- Continue efforts by VTrans staff, airport operators, and regional planners to work with municipalities to modify municipal master plans and zoning codes as needed in the areas surrounding airports to ensure future land uses that are compatible with the airport's Master Plans and their intended uses.

Action to be led by VTrans and/or Airport Operators with coordination from RPCs/CCMPO

4.6.2 Support Vermont Businesses

The other strategies noted at the beginning of the *Economic vitality actions* section support economic vitality in the region through reducing business and shipping costs, supporting tourist activities, and improving access from outside of the region. In addition, the *Quality of life actions* described in the following section that preserve or enhance the appearance and character of towns and villages along the corridor are also likely to positively benefit businesses supported by tourism.

4.7 Quality of Life Actions

Quality of Life actions are those aimed at improving the environment – either natural or built – through reducing or mitigating impacts associated with transportation services and infrastructure. Recommended Quality of Life Actions are:

- Explore the feasibility of a region-wide operating agreement to assist in the seamless operation of truck travel throughout the corridor while minimizing impacts to the communities. (Strategy Q1)
- Explore the feasibility of a comprehensive truck noise mitigation/management program (Strategy Q2)
- Develop and implement streetscape improvements (Strategy Q3)
- Implement traffic calming measures (Strategy Q4)
- Encourage use of alternative fuel vehicles and supporting infrastructure (Strategy Q5)
- Encourage compact, mixed use development within identified growth areas in urban village areas to improve mobility (Strategy Q6)

Also recommended for their support of quality of life objectives are several strategies described previously;

- Improve local circulation (Strategy H2)
- Expand and improve public transportation services throughout the corridor (Strategy T1)
- Expand passenger rail service and intercity/interstate bus services (Strategy T2)
- Improve bicycle and pedestrian accommodations (Strategy T7)

4.7.1 Reducing Traffic Impacts in Communities

Q1: Explore the feasibility of a region-wide operating agreement to assist in the efficient operation of truck travel throughout the corridor while minimizing impacts to corridor communities.

A region-wide operating agreement is envisioned as a means to assist in the efficient operation of truck travel through the corridor and ensure consistent application of regulations along the corridor, pertaining to truck travel. This strategy would be implemented as a Memorandum of Understanding between local municipalities that defines consistent and compatible transportation operating policies and mitigation strategies. The content of the agreement is subject to negotiation between the involved agencies and may change over time.

It would be advantageous to hold a "summit" to discuss the truck impacts and potential solutions that can be instituted corridor wide and at the same time consider the potential operating and economic impacts of potential solutions on area businesses and truck operators. The goal is to develop an approach to address local impacts in a manner that is consistent corridor-wide, rather than shifting impacts from one community to another but also to facilitate a seamless operation of trucks in the corridor.

Near-term actions

- Identify and define parameters for those elements to be covered in the agreement, including any relevant local regulations currently in force. This could involve a number of efforts;
  - Identify existing truck and/or traffic regulations in the corridor that could be incorporated into the agreement.
  - Work with local communities to identify other issues that should be addressed in the operating agreement.
  - Work with trucking industry, shippers/receivers and other affected parties to identify potential concerns and impacts.
- Coordinate with VTrans and local municipalities to define agreement structures and build support.

Longer-term actions

- Administer agreement and modify as needed through an ongoing coordinated effort

Actions to be coordinated by the Western Corridor Working Group in collaboration with Municipalities, Trucking Industry and Economic Development Corporations.

Q2: Explore the feasibility of a comprehensive truck noise mitigation/management program

A noise mitigation program could include elements to address noise through actions directed at reducing noise generation, masking or buffering noise, and/or through land use and planning actions to locate more sensitive receptors (residences, hospitals, schools) away from noisy transportation facilities (airports, railroads, highways).

Near-term actions

- Explore the feasibility of a corridor-wide noise management program that broadly addresses noise issues occurring throughout the corridor. The intent of the program is to study and identify potential solutions to identified noise issues.
- Encourage communities to consider transportation impacts – including noise – in their long-range planning and regulatory efforts.
- Consider regulatory changes to reduce noise impacts in towns and villages.

Longer-term actions

- Consider the use of "quiet pavements" when repaving highways.
- Consider streetscape and traffic calming techniques as means to reduce roadway noise.
- Explore the feasibility of using the corridor-wide noise management program as a means to either directly implement or administer funding to local/regional agencies to locally implement noise management strategies.

Actions to be coordinated by the RPCs and CCMPO in collaboration with Municipalities, Trucking Industry and Economic Development Corporations and in consultation with VTrans.

Q3: Streetscape improvements

The towns and villages of the Western Corridor are important components of the high quality of life experienced by many of the residents along the corridor. The Vermont state legislature identified the importance of downtowns across Vermont by establishing the Vermont Downtown Program (VDP) in 1994 as a way to stem the slow abandonment of downtowns by businesses. The importance of maintaining a vibrant town or village center, whether an officially designated downtown or not, is that they help reduce vehicle travel and minimize environmental impacts from sprawl type development. Additionally, improved streetscapes typically result in a safer and more attractive environment for walking and bicycling which reduces town/village congestion. All towns and villages along the corridor would benefit from improvements to streetscapes, aesthetics and "complete street" roadway designs (meaning the examination of all aspects of the roadway including sidewalks, crosswalks, bike lanes, freight loading areas etc.).

Near-term actions

- The Vermont Downtown Program has initiated a reinvestment in the infrastructure in downtowns across the corridor. Communities along the Western Corridor should continue to support and utilize this program to the extent possible as a means of enhancing the streetscapes of downtowns along the corridor.
- Develop streetscape plans and regulations tailored to individual towns and villages along the corridor. These plans should develop proposed guidelines that address:
  - Sidewalk inventory, conditions and suitability, crosswalks and pedestrian facilities;
  - Shade trees and landscaping;
  - Bicycle accommodations;
  - Street lighting;
  - Parking;
  - Driveways and access management;
  - Building and signage design standards; and,
  - Other street furniture (e.g. – benches, public amenities) and architectural elements.

Longer-term actions

- Incorporate streetscape elements into municipal plans and implement as new development or redevelopment occurs.
- Incorporate streetscape improvements into transportation projects. Include even if they are not funded by VTrans. Combine these improvements with pedestrian, bicycle, and traffic calming improvements as appropriate.
- Pursue grant funding from a variety of sources to implement streetscape improvements in key commercial and residential areas of towns and villages. In addition to transportation funding programs, investigate community and economic development funding options.

Actions to be led Municipalities and the RPCs/CCMPO.

Q4: Implement traffic calming measures

Traffic calming measures can help to improve safety and reduce impacts associated with vehicle traffic by lowering vehicle speeds in towns and villages. The *Vermont Agency of Transportation Traffic Calming Study and Approval Process for State Highways (2003)* provides a well-developed framework for considering and implementing appropriate traffic calming measures on major routes within the Western Corridor. Traffic calming measures may also be appropriate on local streets at key locations to limit pass-through/bypass vehicle traffic.

Near-term actions

- Work with local communities to identify locations that could benefit from traffic calming improvements. Ideally, a specific traffic calming plan should be developed for each community that is consistent with VTrans' traffic calming approval process.
- Implement small-scale traffic calming elements (signing, lane striping, etc) consistent with the identified plan in the near-term.

Longer-term actions

- Incorporate traffic calming features in future roadway, transit, and development projects, consistent with the community's traffic calming plan. Combine with and incorporate bicycle and pedestrian improvements, as appropriate.

Actions to be led RPCs/CCMPO and local municipalities.

4.7.2 Sustainability

Q5: Encourage use of alternative fuel vehicles and supporting infrastructure

Using alternative fuels to power vehicles can reduce the nation's dependence on imported petroleum and reduce harmful pollutants and exhaust emissions. Many alternative fuels can be domestically produced and derived from renewable sources. One of the leading proponents for increasing the use of alternative fuels is the Clean Cities program, sponsored by the U.S. Department of Energy. The Vermont Clean Cities Coalition (VCCC) was initiated in 2001 as the local affiliate of the Clean Cities program.

Clean Cities supports local efforts to adopt practices that contribute to the reduction of petroleum consumption, including programs to promote alternative fuels and advanced vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction. The Clean Cities strategies for encouraging the use of alternative fuel vehicles include:

- Providing information on the benefits and availability of alternative fuels and vehicles.
- Targeting niche markets that are well suited for alternative fuels, such as airports, delivery vehicles, shuttle services, municipalities, transit agencies, and school districts.
- Building more alternative fueling infrastructure.
- Developing local and state incentives for the use of alternative fuels.

Vermont has made significant strides in encouraging the use of alternative fuels. These include:

- Passage of the Alternative Fuel and Advanced Vehicle Research and Development Tax Credit. Vermont businesses that qualify as a high-tech business, involved exclusively in the design, development, and manufacture of alternative fuel vehicles, hybrid electric vehicles, and electric vehicles (EVs) or energy technology involving fuel sources other than fossil fuels, are eligible for up to three of the following tax credits: 1) payroll income tax credit; 2) qualified research and development income tax credit; 3) export tax incentive; 4) small business investment tax credit; and 5) high-tech growth tax credit. Certain limits and restrictions apply.
- Support of the Vermont Biodiesel Project, which is a public/private partnership between the Vermont Biofuels Association, the Vermont Fuel Dealers Association, the Vermont Sustainable Jobs Fund and the Vermont Department of Public Service. The primary goals of this project are to build demand for and increase supply of biofuels in the state. Initial project efforts involved creating a commercial-focused program targeting large buyers that would be willing to use biodiesel blends for heating, transportation and other equipment.

Near-term and longer-term actions

- Continue support to the Vermont Clean Cities Coalition, the Vermont Biodiesel Program and other similar programs.
- Encourage development of needed alternative fuel supporting infrastructure, such as biodiesel service stations or charging stations for hybrids/electric vehicles.
- Consider implementing a program to encourage the acquisition of alternative fuel vehicles (AFVs) by local government agencies. Such a program could be modeled on the New Jersey Alternative Fuel Vehicle Rebate Program, which was supported by $500,000 in Congestion Mitigation and Air Quality Improvement (CMAQ) funding and modeled on a rebate program funded by the U.S. Department of Energy (DOE).

Actions to be led by the Clean Cities program with support from the RPCs/CCMPO

Q6: Encourage compact, mixed use development within identified growth areas in urban/village areas to improve mobility

Many potential benefits can be realized by continuing the historic settlement pattern of compact, mixed use urban/village areas separated by rural countryside throughout the Western Corridor. From a transportation perspective, this type of development pattern reduces costs associated with the operation and maintenance of roadways (as well as other public infrastructure), is more conducive to travel by transit, walking and bicycling, and is likely to reduce the overall number and length of vehicle trips in the corridor. Other (non-transportation) benefits of concentrating development in towns and villages include reduced impacts to natural resources, and increased potential for economic vitality of towns and villages.

Near-term actions

- Encourage local communities to adopt planning and zoning techniques that result in compact, mixed-use development patterns. Some general strategies could include:
  - Allowing more compact and intensive, but appropriately scaled, development in and around the village areas;

- Limiting the type and intensity of development that can occur in outlying areas or offering incentives to preserve these areas;
- Providing incentives for mixed use development;
- Establishing provisions that allow for creative site development (e.g. shared parking, alternative access configurations, shared/enhanced public spaces);
- Encouraging development of schools, preschools and day care centers in ways which reduce travel demand; and
- Reducing/eliminating parking requirements where it can be demonstrated as appropriate.

- Continue to coordinate land use and transportation planning efforts, through the collaborative statewide Transportation Planning Initiative (TPI) between VTrans and the RPCs as well as the coordinating efforts between the CCMPO and the CCRPC.

Longer-term actions

- On-going implementation of near-term actions.
- Monitor development patterns and transportation investments and adjust as necessary.

Actions to be led the RPCs/CCMPO, local municipalities and State of Vermont

Appendix A
Existing Conditions

Vermont Western Corridor

Transportation Management Plan

Existing Conditions Report

September 2008

Prepared For:

Vermont Agency of Transportation
Chittenden County Metropolitan Planning Organization
Addison County Regional Planning Commission
Bennington County Regional Commission
Chittenden County Regional Planning Commisssion
Northwest Regional Planning Commission
Rutland Regional Planning Commission

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1. Introduction

The purpose of this report is to document and analyze existing conditions in the study area to establish a clear understanding of the corridor issues and concerns. The study area encompasses a 200-mile north-south corridor between the Canadian and Massachusetts borders centered on Route 7 and the paralleling rail line (Vermont Rail System and New England Central), see Figure 1.1, Western Corridor Region Map. The study area extends approximately five miles to the east and five miles to the west of the railroad-highway axis. The report describes the Western Corridor's economic base and recent economic trends; regional strengths and weaknesses with respect to economic development; goals and objectives for economic growth; and transportation deficiencies and needs related to economic development.

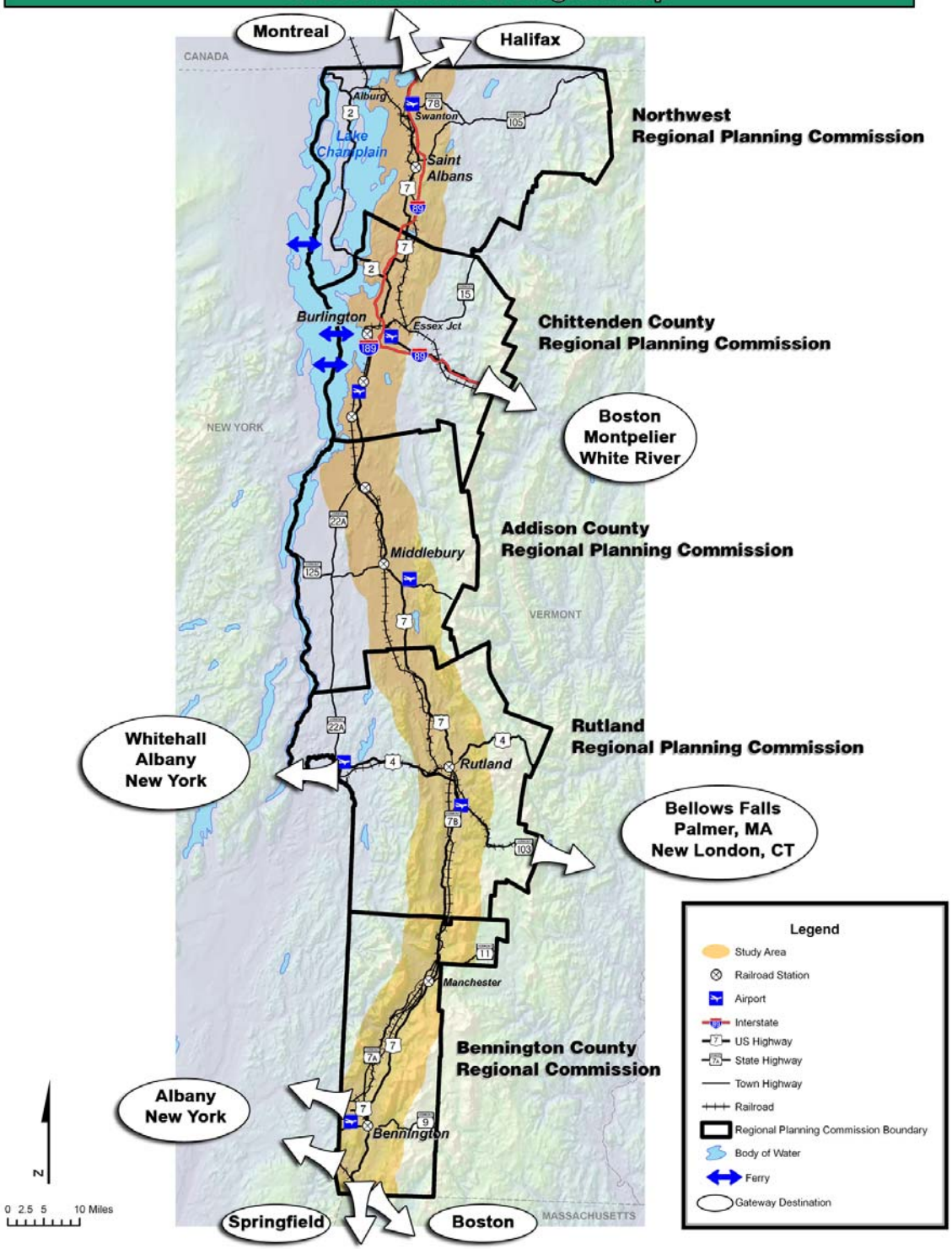
A description of demographics is provided based on the six counties that comprise the study area; Bennington, Rutland, Addison, Chittenden, Franklin and Grand Isle. Communities with populations of 5,000 are selected for further demographic and economic analysis.

The Western Corridor's land use conditions are described with particular attention to development patterns, densities, zoning, and major trip generators. Environmental constraints in relation to topography, wetlands and water resources, visual/aesthetic are also addressed in the Existing Conditions report.

The report provides an overview of the operational characteristics of existing modes of transportation; highway, trucks, rail, public transit, intercity bus, airports, water as well as bicycle and pedestrian facilities. Attention has been given to additional highway and rail facilities which provide connections within the study area and to these connections which serve as gateways to regional, national, and international transportation networks.

Information for the Existing Conditions report is based on quantitative data, regional plans, prior studies, site visits, and input from regional planning agencies. The Existing Conditions report not only establishes an understanding of current conditions and identifies major regional issues, but also provides a baseline for assessing future conditions, the subsequent analysis phase of this study.

Figure 1.1
Western Corridor Region Map



2. Demographics

2.1 Population

At approximately 335,300, the population of the six counties that comprise Vermont's Western Corridor was over 50 percent of Vermont's population in 2000. Approximately 45 percent of the Western Corridor's population is in Chittenden County. Chittenden County is home to one-fourth of Vermont's population as well as to some of the largest cities and towns in Vermont. Burlington is the state's largest city with an estimated population of 38,358 in 2006. Other large cities and towns in the county are Essex, Colchester and South Burlington. Rutland in Rutland County and Bennington in Bennington County are two other cities that have large populations comparable to those of Chittenden County.

Between 1990 and 2000, adjacent Chittenden and Addison counties grew at rates close to the statewide average of 8.2 percent. Grand Isle was the fastest growing county with a population growth rate of 29.8 percent. Grand Isle's growth was due in large part to the suburbanization of the county as more people who work in Burlington chose to reside in the County. Franklin County, northernmost of the study area, also grew faster than average with a growth rate of 13.6 percent during this period. Franklin County also has a significant and growing commuter population. Between 2000 and 2006, Grand Isle and Franklin Counties' populations increased by 12.3 percent and 6.1 percent, respectively, during this more recent period.

Population projections by the Vermont Department of Labor indicate continued growth for the State, but at roughly half the rate of the nation. While the northwestern counties have experienced above average population growth, the opposite is true in the south. Between 1990 and 2000, Bennington and Rutland counties experienced minimal growth rates at 3.2 percent and 2 percent, respectively. The populations in these counties and others have been affected by net out-migration. Since the 2000 Census, overall population growth has remained modest.

Population growth in Chittenden County is projected to slow. Grand Isle and Franklin Counties are projected to remain the fastest growing counties. As Grand Isle County's growth rate diminishes slightly by the year 2020, however, Franklin County's growth is forecast to remain strong. See Table 2.1, Population.

The study area has a wide range of population densities. At over 4,850 residents per square mile, Winooski City has the highest density followed by Burlington (3,771), St. Albans City (3,768), and Rutland City (2,264). At 33 residents per square mile, Franklin has the lowest population density followed by Alburg (67), Charlotte (86) and Brandon (98).

Table 2.1 Population

Geographic Area	1990	2000	2006 (est)	% Change 1990-2000	% Change 2000-2006	% of Vermont (2000)	Density, 2000 (per sq mi)
Vermont	**562,758**	**608,827**	**623,908**	**8.2**	**2.5**	**100.0**	**65.82**
Western Corridor	**307,999**	**335,257**	**343,634**				
Addison County	***32,953***	***35,974***	***37,057***	***9.2***	***3.0***	***5.9***	***46.71***
Middlebury town	8,034	8,183	8,193	1.9	0.1	1.3	209.66
Vergennes city	2,578	2,741	2,746	6.3	0.2	0.5	1,141.11
Bennington County	***35,845***	***36,994***	***36,929***	***3.2***	***-0.2***	***6.1***	***54.70***
Bennington town	16,451	15,737	15,349	-4.3	-2.5	2.6	370.88
Chittenden County	***131,761***	***146,571***	***150,069***	***11.2***	***2.4***	***24.1***	***271.91***
Burlington city	39,127	39,824	38,358	1.8	-3.7	6.5	3,770.56
Charlotte town	3,148	3,569	3,689	13.4	3.4	0.6	86.05
Colchester town	14,731	16,986	17,180	15.3	1.1	2.8	460.52
Essex town	16,498	18,626	19,264	12.9	3.4	3.1	477.48
Milton town	8,404	9,479	10,347	12.8	9.2	1.6	184.19
Shelburne town	5,871	6,944	7,063	18.3	1.7	1.1	285.65
South Burlington city	12,809	15,814	17,014	23.5	7.6	2.6	894.01
Williston town	4,887	7,650	8,178	56.5	6.9	1.3	252.15
Winooski city	6,649	6,561	6,318	-1.3	-3.7	1.1	4,586.14
Franklin County	***39,980***	***45,417***	***48,187***	***13.6***	***6.1***	***7.5***	***71.29***
Franklin town	1,068	1,268	1,329	18.7	4.8	0.2	32.83
St. Albans city	7,339	7,650	7,409	4.2	-3.2	1.3	3,768.22
St. Albans town	4,606	5,324	6,030	15.6	13.3	0.9	141.75
Swanton town	5,636	6,203	6,472	10.1	4.3	1.0	128.14
Grand Isle County	***5,318***	***6,901***	***7,751***	***29.8***	***12.3***	***1.1***	***83.53***
Alburg town	1,362	1,952	2,084	43.3	6.8	0.3	66.61
Rutland County	***62,142***	***63,400***	***63,641***	***2.0***	***0.4***	***10.4***	***67.99***
Brandon town	4,223	3,917	3,925	-7.2	0.2	0.6	97.61
Rutland city	18,230	17,292	16,964	-5.1	-1.9	2.8	2,264.01
Rutland town	3,781	4,038	4,118	6.8	2.0	0.7	209.74

Source: U.S. Census Bureau - Census of Population & Housing, 2000 Summary File 1 Table P1 and U.S. Census Bureau - Population Division.

2.2 Household Income

Vermont's median household income in 1999 was $40,856. Ten towns in the Western Corridor exceed the median household income. Seven of these towns were in Chittenden County. Bennington, Burlington and Winooski are among the municipalities with the lowest median household incomes. In large part, the low income can be attributed to the student population in these three communities. The Town of Alburg in Grand Isle County and the City of Rutland in Rutland County had median household incomes significantly below the State average. Income can also be influenced by the mix of industries and occupations in an area as well as the proportion of part-time and seasonal jobs. These latter jobs can lower the annual median, although they may pay a competitive hourly wage.

2.3 Housing Growth, Value and Ownership

In 2000, the total number of housing units in Vermont was 294,382, an increase of 8.5 percent from 1990. The number of housing units increased in the Western Corridor from 137,184 in 1990 to 149,744 in 2000. Although 12,650 housing units were added in the Western Corridor between 1990 and 2000, the proportion of the State's total housing units remained the same at approximately 43 percent. Of these additional housing units, an estimated 59 percent were constructed in Chittenden County alone. Milton, Shelburne, South Burlington and Williston experienced the greatest increases in Chittenden County. Overall, the remainder of the Western Corridor experienced slight increases in the number of housing units.

According to the Vermont Department of Labor, the number of statewide homes sold in Vermont declined approximately 10 percent, from 8,306 in 2000 to 7,487 in 2006. The median price of residential homes increased by approximately 66 percent during the same period. The Statewide median price of homes sold was $197,000 in 2007. Chittenden County had the highest median home price at $240,100 and Rutland County had the lowest at $162,000. The decline in the number of homes sold is consistent with a national trend of a slowing housing market. Additionally, properties are taking longer to sell and new home construction is slowing.

Over half (56 percent) of the housing units in Vermont were owner-occupied in 2000. The Western Corridor counties exceeded or met this average with the exception of Grand Isle County whose owner-occupancy rate was 48.2 percent. However, the owner-occupancy rate in Grand Isle County increased by about 10 percent between 1990 and

2000. In general, the percentage of owner-occupied housing units in the Western Corridor was stable between 1990 and 2000.

Overall, average household size is decreasing, because of increased numbers of single-person households and decreasing family size. As a result, a greater number of housing units will be needed to house the same number of people in the future, as shown on Table 2.2, Housing Units, Median Housing Value and Income.

2.4 Age Characteristics

The most unique demographic statistics involve the age of Vermont's population. Compared to other states, Vermont's population is aging more rapidly. According to U.S. Census Bureau estimates, Vermont will rank eleventh among the 50 states in the percentage of residents 65 years of age and older by 2010. In 2030, Vermont's population is forecast to be the eighth oldest state in the country. Vermont's population of children aged 0 to 14 years has been decreasing, while the population of residents 55 years and older has been growing significantly. The aging of the state, combined with an out-migration of young people will continue to challenge Vermont's workforce.

The number of elderly and their proportion of Chittenden County's total population is increasing, while the proportion of the County's total population who are 18 years old and younger is declining. This affects the demand for certain types of goods and services (such as housing) and for certain types of public facilities and services (such as schools and special transportation services). Chittenden County's population is growing, but at a lower rate than in recent decades. This trend also affects the growth in demand for goods, public facilities and services.

Generally speaking, the northwest corner of the State is younger and more homogenous than the rest of the state regarding age distribution. Franklin County has the highest proportion of residents under the age of 18 years (28.1 percent), while Bennington and Rutland counties have about 18 percent and 15 percent of its population in the over 65 years old group respectively. See Table 2.3, Age Characteristics, for data.

Table 2.2 Housing Units, Housing Value and Income, 1990 and 2000

Geographic Area	Total Housing Units (1990)	Owner Occupied Housing Units (1990) (%)	Total Housing Units (2000)	Owner Occupied Housing Units (2000) (%)	Median Housing Unit Value (2000) ($)	Median Household Income (1999) ($)
Vermont	**271,214**	**53.60**	**294,382**	**56.67**	**111,200**	**40,856**
Western Corridor	**137,184**		**149,744**			
Addison County	***14,022***	***60.40***	***15,312***	***63.88***	***116,200***	***43,142***
Middlebury town	2,687	57.70	2,805	55.90	120,200	37,723
Vergennes city	970	60.00	1,032	61.92	95,600	37,763
Bennington County	***18,501***	***51.40***	***19,403***	***54.63***	***113,300***	***39,926***
Bennington town	6,392	58.10	6,574	57.24	94,900	33,706
Chittenden County	***52,095***	***59.80***	***58,864***	***63.35***	***136,500***	***47,673***
Burlington city	15,480	38.20	16,398	40.12	127,600	33,070
Charlotte town	1,329	67.70	1,500	72.33	263,100	62,313
Colchester town	5,922	60.10	6,727	64.72	131,300	51,429
Essex town	6,310	70.90	7,170	75.56	141,400	58,441
Milton town	3,009	78.90	3,505	82.65	120,500	49,379
Shelburne town	2,350	76.40	2,741	76.87	179,700	68,091
South Burlington city	5,437	68.20	6,498	66.96	134,700	51,566
Williston town	1,874	78.20	3,036	81.52	159,200	61,467
Winooski city	2,926	38.70	3,015	38.34	115,000	30,592
Franklin County	***17,250***	***60.20***	***19,191***	***65.56***	***99,900***	***41,659***
Franklin town	677	44.20	736	50.82	96,100	39,926
St. Albans city	3,241	46.50	3,376	47.63	96,900	37,221
St. Albans town	2,115	59.10	2,257	67.74	112,100	46,875
Swanton town	2,423	63.30	2,689	65.08	99,500	41,086
Grand Isle County	***4,135***	***37.90***	***4,663***	***48.18***	***126,000***	***43,033***
Alburg town	1,086	37.80	1,259	50.28	84,900	33,148
Rutland County	***31,181***	***52.10***	***32,311***	***55.40***	***97,200***	***36,743***
Brandon town	1,654	66.10	1,710	69.65	87,700	35,810
Rutland city	8,083	49.70	7,919	50.26	89,100	30,478
Rutland town	1,520	74.70	1,761	74.11	135,700	44,420

Source: U.S. Census Bureau - Census of Population & Housing, 2000 Summary Files 1 and 3 and 1990.

Table 2.3 Age Characteristics

Geographic Area	Median Age (2000)	Total Population (2000)	Population Under 18 Years of Age	% of Total Under 18	Population 65 Years of Age and Over	% of Total Over 65
Vermont	**37.70**	**608,827**	**147,523**	**24.2**	**77,510**	**12.7**
Western Corridor		**335,257**	**81,430**		**39,346**	
Addison County	***36.10***	***35,974***	***8,949***	***24.9***	***4,065***	***11.3***
Middlebury town	26.60	8,183	1,431	17.5	1,088	13.3
Vergennes city	32.60	2,741	778	28.4	311	11.3
Bennington County	***40.30***	***36,994***	***8,758***	***23.7***	***6,167***	***16.7***
Bennington town	37.90	15,737	3,698	23.5	2,796	17.8
Chittenden County	***34.20***	***146,571***	***34,513***	***23.5***	***13,780***	***9.4***
Burlington city	29.20	39,824	6,331	15.9	4,092	10.3
Charlotte town	39.20	3,569	1,059	29.7	275	7.7
Colchester town	32.60	16,986	3,833	22.6	1,093	6.4
Essex town	36.50	18,626	5,197	27.9	1,519	8.2
Milton town	34.50	9,479	2,721	28.7	551	5.8
Shelburne town	40.90	6,944	1,920	27.6	1,068	15.4
South Burlington city	36.20	15,814	3,415	21.6	2,067	13.1
Williston town	38.80	7,650	2,106	27.5	896	11.7
Winooski city	32.90	6,561	1,413	21.5	889	13.5
Franklin County	***35.70***	***45,417***	***12,759***	***28.1***	***5,004***	***11.0***
Franklin town	36.40	1,268	375	29.6	141	11.1
St. Albans city	35.20	7,650	1,955	25.6	1,073	14.0
St. Albans town	37.90	5,324	1,372	25.8	719	13.5
Swanton town	36.50	6,203	1,716	27.7	775	12.5
Grand Isle County	***40.10***	***6,901***	***1,712***	***24.8***	***850***	***12.3***
Alburg town	38.50	1,952	495	25.4	274	14.0
Rutland County	***39.50***	***63,400***	***14,739***	***23.2***	***9,480***	***15.0***
Brandon town	39.30	3,917	968	24.7	536	13.7
Rutland city	39.30	17,292	3,919	22.7	3,144	18.2
Rutland town	45.40	4,038	892	22.1	758	18.8

Source: U.S. Census Bureau - Census of Population & Housing, 2000 Summary Files 1 and 3.

2.5 Auto Ownership

In 2000, there were over 224,000 vehicles owned by Vermont households. Of this number, 54 percent belonged to residents in the Western Corridor counties. Auto ownership increased by about 16 percent between 1990 and 2000 in both the state and Western Corridor. In general, counties in Western Vermont exhibited similar vehicular ownership patterns with those of the State.

In 2000, the majority of households (44 percent) own two vehicles, 33 percent own one vehicle, 16 percent own three or more vehicles and 7 percent do not own a vehicle. These percentages are generally consistent with 1990 U.S. Census Bureau data. Households in Chittenden County own 43 percent and 23 percent of all vehicles owned by households in the Western Corridor and in the State of Vermont respectively. These percentages are consistent with Chittenden County's high residential population. In 2000, the most transit-dependent municipalities were Bennington, Burlington, Winooski, and the Cities of St. Albans and Rutland. On average, 14 percent of households in these municipalities did not own a vehicle. See Table 2.4, Vehicle Ownership by Household (2000), below for data.

Table 2.4 Vehicle Ownership by Household, 2000

Geographic Area	1 Vehicle	Percent Owned	2 Vehicles	Percent Owned	3 or More Vehicles	Percent Owned	No Vehicles	Percent Owned
Vermont	**80,892**	**34**	**103,737**	**43**	**39,544**	**16**	**16,461**	**7**
Western Corridor	**42,741**	**33**	**56,773**	**44**	**21,106**	**16**	**8,950**	**7**
Addison County	***3,993***	***31***	***5,960***	***46***	***2,552***	***20***	***563***	***4***
Middlebury town	1,107	42	1,036	39	282	11	232	9
Vergennes city	404	41	359	37	148	15	68	7
Bennington County	***5,093***	***34***	***6,180***	***42***	***2,406***	***16***	***1,167***	***8***
Bennington town	2,453	40	2,195	36	728	12	813	13
Chittenden County	***18,651***	***33***	***25,247***	***45***	***8,542***	***15***	***4,012***	***7***
Burlington city	6,703	42	5,175	33	1,659	10	2,348	15
Charlotte town	216	17	733	57	312	24	17	1
Colchester town	1,942	32	2,947	48	1,002	16	253	4
Essex town	2,089	30	3,351	48	1,301	19	272	4
Milton town	793	24	1,734	52	764	23	51	2
Shelburne town	740	28	1,344	51	484	18	64	2
South Burlington city	2,236	35	3,033	48	657	10	406	6
Williston town	833	29	1,512	52	560	19	16	1
Winooski city	1,374	47	1,007	34	148	5	415	14
Franklin County	***4,994***	***30***	***7,620***	***45***	***3,101***	***18***	***1,050***	***6***
Franklin town	95	22	233	54	100	23	3	1
St. Albans city	1,273	39	1,183	37	345	11	434	13
St. Albans town	503	27	960	52	333	18	40	2
Swanton town	757	33	937	40	469	20	166	7
Grand Isle County	***765***	***28***	***1,274***	***46***	***598***	***22***	***124***	***4***
Alburg town	276	35	325	41	145	18	45	6
Rutland County	***9,245***	***36***	***10,492***	***41***	***3,907***	***15***	***2,034***	***8***
Brandon town	547	35	687	44	275	17	63	4
Rutland city	3,365	45	2,399	32	567	8	1,121	15
Rutland town	594	35	767	45	245	14	85	5

Source: U.S. Census Bureau - Census of Population & Housing, 2000.

2.6 Educational Attainment

The educational attainment of the Western Corridor counties is generally consistent with that of the State of Vermont. Twenty-nine percent of the population aged 25 years and over has earned a Bachelor's Degree or higher in Vermont. With 41 percent earning a Bachelor's Degree or higher, Chittenden County's population has a higher level of educational attainment (especially college graduates) than the population of Vermont and the other Western Corridor counties, an important economic development asset. Franklin County had the fewest graduates. See Table 2.5, Educational Attainment of Population (%) in (2000), below for data.

Table 2.5 Educational Attainment of Population (%), 2000

	Vermont	Addison County	Bennington County	Chittenden County	Franklin County	Grand Isle County	Rutland County
High school graduate or equivalent	86	86	85	91	83	84	84
Bachelor's degree or higher	29	30	27	41	17	25	23

Source: U.S. Census Bureau, 2000, Summary File 3 (SF3).

2.7 Race/Ethnicity

In 2000, the population in Vermont was 96.8 percent white, 0.5 percent African American, and 1.0 percent Asian. The Hispanic/Latino population comprised 1.0 percent of Vermont's population. Vermont's racial and ethnic profile is consistent with the counties comprising the Western Corridor.

3. Economic Characteristics

This section discusses the economic base and recent economic trends in Vermont's Western Corridor. The discussion is based on a review of both quantitative data on employment by industry, as well as regional plans, goals, and objectives related to economic development. Overall, the Western Corridor has a relatively robust, if not thriving, economy, with unemployment rates lower than the national average in most locations and overall employment growth in recent years consistent with national trends. However, some parts of the corridor are clearly experiencing stronger economic conditions than others, with Addison and Chittenden Counties showing the strongest economic growth and Bennington and Rutland Counties the weakest.

3.1 Employment

With a labor force of approximately 89,000 (residents who are 16 years of age or older) and 95,000 jobs (place of employment and one-third of the State's); Chittenden County is the state's largest employment center. Many workers from Addison, Franklin and Grand Isle counties commute into Chittenden County to work.

Together, the Western Corridor counties had 55.6 percent of the State's labor force in 2006. Of this total, 25 percent of the labor force was from Chittenden County. See Table 3.1, Labor Force, 2006.

Table 3.1 Labor Force, 2006

Region	Labor Force	% of State
Addison County	22,500	6.2
Burlington County	20,900	5.8
Chittenden County	89,400	24.8
Franklin County	26,650	7.4
Grand Isle County	4,350	1.2
Rutland County	36,650	10.2
Total, Western Corridor	**200,450**	**55.6**
Vermont	361,000	100.0

Source: Vermont Department of Labor, Economic and Labor Market Information Section, http://www.vtlmi.info/labforce.cfm.

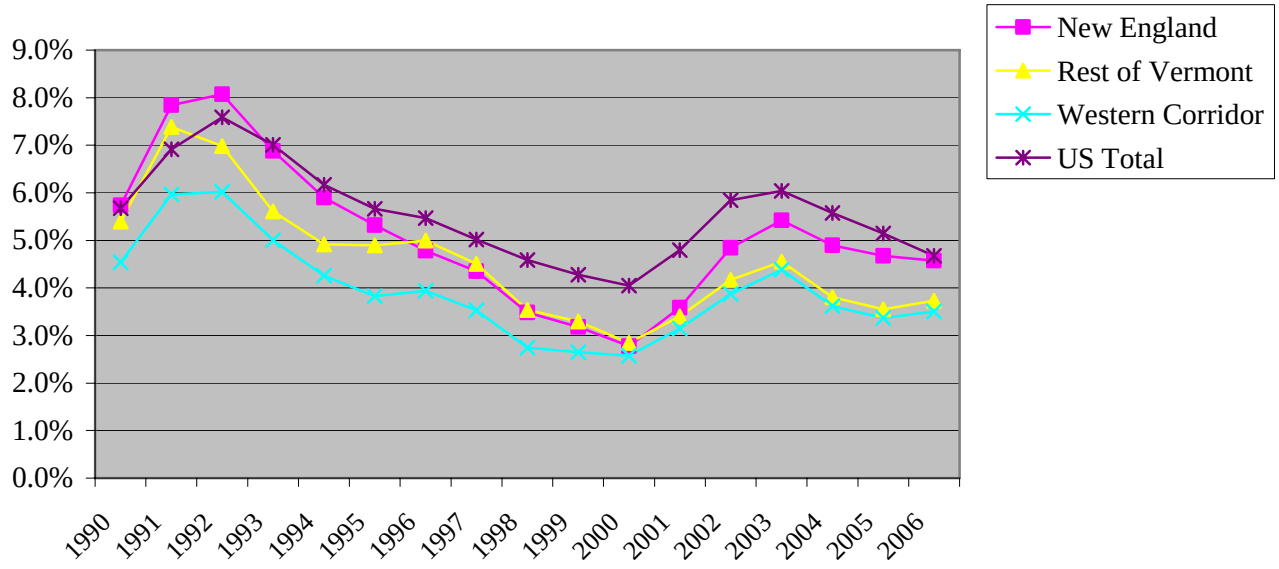
Between 2000 and 2005, Vermont added approximately 4,500 jobs, increasing by 1.5 percent. In the Western Corridor, Bennington County experienced the greatest net job loss at -6.0 percent. Grand Isle added jobs at the fastest rate at almost 19 percent over this period.

3.2 Unemployment

One of the most frequently observed economic indicators is the unemployment rate, with higher relative rates indicating potential economic distress and very low rates being a sign of more robust conditions and possible tightness in the labor market. The unemployment rate, as calculated by the U.S. Bureau of Labor Statistics (BLS), measures the percentage of persons in the labor force that are unable to find a job.

As shown in Figure 3.1, Unemployment in Vermont vs. Comparison Regions (1990-2006), the unemployment rate in the Western Corridor has been lower than the average for the rest of Vermont, New England, and the U.S. as a whole from 1990 to 2006. The region's annual unemployment rate in 2006 was 3.5 percent and was even lower (3.2 percent) in Chittenden County, the region's most populous county. Unemployment rates in the same year for the U.S. and New England were 4.7 and 4.6 percent, respectively. These low unemployment rates typically indicate robust local economic conditions, but with the potential for labor shortages, especially for skilled positions. Unemployment rates do vary substantially by county, reaching a high of 5.1 percent in Grand Isle County. Employment by Residence, 2006 is depicted in Table 3.2 and Table 3.3 shows Unemployment Rates by County and Region, 2002-2006, the most recent five-year period.

Figure 3.1 Unemployment in Vermont's Western Corridor vs. Comparison Regions, 1990-2006



Source: Bureau of Labor Statistics Local Area Unemployment Statistics – Labor Force Data by County, http://www.bls.gov/lau/home.htm.

Table 3.2 Employment by Residence, 2006

	Vermont	Addison County	Bennington County	Chittenden County	Franklin County	Grand Isle County	Rutland County	Western Corridor Total
Labor Force	361,000	22,500	20,900	89,400	26,650	4,350	36,650	200,450
Unemployment	13,000	700	750	2,850	1,100	200	1,400	7,000
Rate (%)	3.6	3.2	3.6	3.2	4.1	5.0	3.8	3.8
Employment	348,000	21,800	20,150	86,550	25,250	4,150	35,250	193,150
Employment % of State	100	6.3	5.8	24.9	7.3	1.2	10.1	55.6

Source: Vermont Department of Labor, Economic and Labor Market Information Section, http://www.vtlmi.info/labforce.cfm

Table 3.3 Unemployment Rates by County and Region, 2002 - 2006

Region	2002	2003	2004	2005	2006
Addison	3.6%	4.0%	3.5%	3.2%	3.2%
Bennington	4.7%	4.9%	4.0%	3.6%	3.6%
Chittenden	3.5%	3.9%	3.2%	3.1%	3.2%
Franklin	4.2%	4.9%	4.1%	3.8%	4.1%
Grand Isle	4.9%	5.8%	4.8%	5.0%	5.1%
Rutland	4.1%	4.9%	4.1%	3.6%	3.9%
Total, Western Corridor	**3.9%**	**4.4%**	**3.6%**	**3.4%**	**3.5%**
Rest of Vermont	4.2%	4.6%	3.8%	3.6%	3.7%
New England	4.8%	5.4%	4.9%	4.7%	4.6%
United States	5.9	6.0%	5.6%	5.1%	4.7%

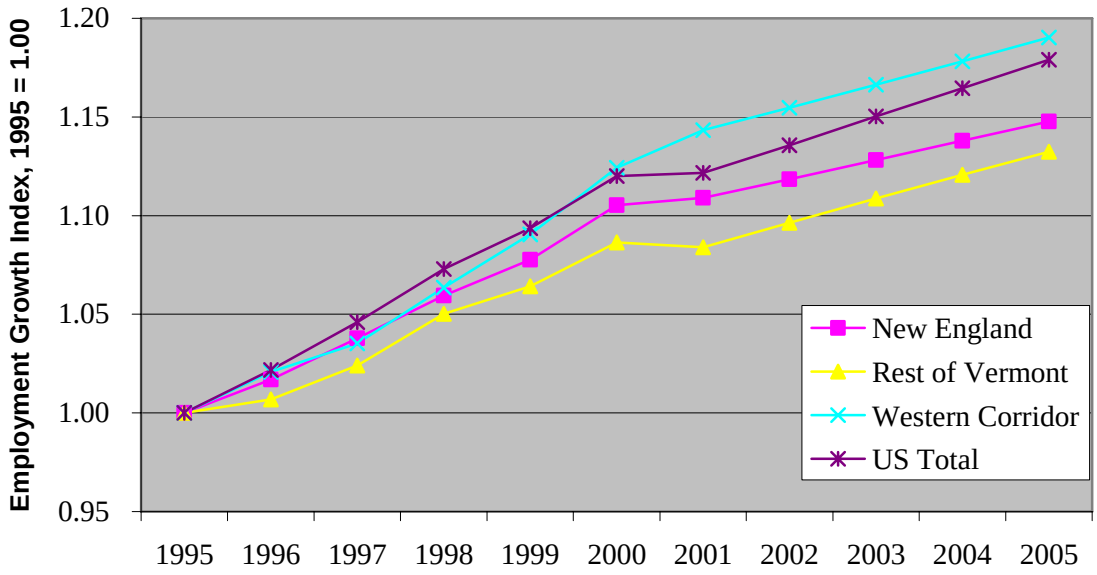
Source: Bureau of Labor Statistics, Local Area Unemployment Statistics – Labor Force Data by County, http://www.bls.gov/lau/home.htm.

3.3 Employment Growth

One of the most tangible measures of a region's economic vitality is employment growth. Vermont's Western Corridor added jobs faster than the U.S. as a whole during the second half of the 1990s, although since then, the Corridor's growth has been consistent with national increases (see Figure 3.2, Employment Growth for the Western Corridor vs. Comparison Regions, 1995-2005). Employment growth in the Western Corridor has continued to outpace New England and the rest of Vermont. From 1995 to 2005, aggregate employment growth in the Corridor was 19 percent, compared to 13 percent for the rest of the state, 15 percent for New England, and 18 percent for the U.S. as a whole. This growth represents almost 40,000 new jobs in the Corridor. Much of this growth occurred in Chittenden County, which expanded its employment base from 106,000 to 128,000 (21 percent) over this time period; however, in terms of percentage growth Addison County experienced the largest increase, going from 18 to 24 thousand jobs, representing a 32 percent increase. Rutland County experienced the lowest employment growth over this time period, with only a six percent increase.

Consistent with national trends, growth has slowed somewhat since 2000, with a net growth of only six percent for the region as a whole, ranging from two percent in Bennington and Rutland Counties to 10 percent in Addison County, compared with five percent for the U.S. as a whole. Employment growth by county from 1995 – 2005 and 2000 – 2005 is shown in Table 3.4.

Figure 3.2 Employment Growth for the Western Corridor vs. Comparison Regions, 1995-2005 (1995=1.00)



Source: http://www.bea.gov/regional/reis/ (Regional Economic Accounts).

Table 3.4 Employment Growth by County and Region, 1995 – 2005 and 2000 - 2005

Region	1995 – 2005	2000 - 2005
Addison	32%	10%
Bennington	14%	2%
Chittenden	21%	7%
Franklin	24%	9%
Grand Isle	22%	6%
Rutland	6%	2%
Total, Western Corridor	**19%**	**6%**
Rest of Vermont	13%	4%
New England	15%	4%
United States	18%	5%

Source: http://www.bea.gov/regional/reis/ (Regional Economic Accounts).

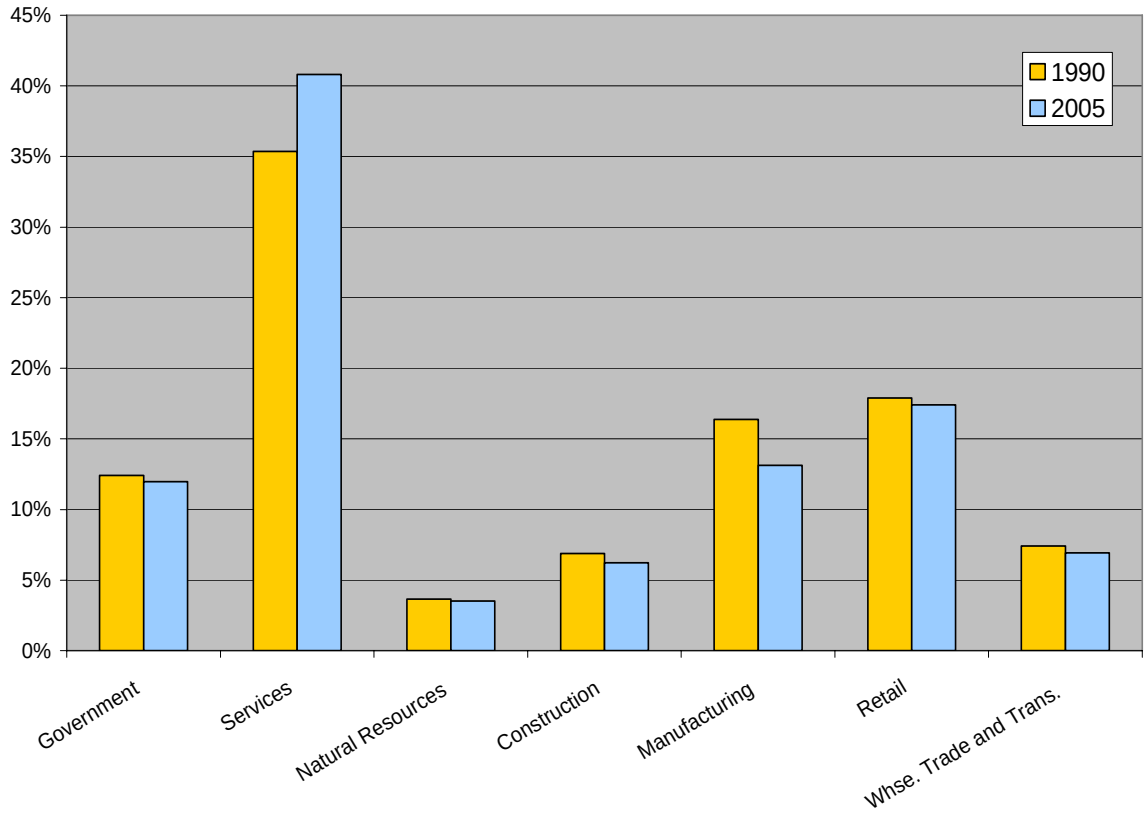
A more detailed analysis of trends by industry is presented in the next section.

3.4 Industry Analysis

3.4.1 Industry Overview

After an economic slowdown in the early 1990s (reflected in the spike in the unemployment rate in Figure 3.1) with limited job growth, the decade between 1995 and 2005 emerged as a period of strong employment growth for the Western Corridor economy. As shown in Figure 3.3, Western Corridor Employment Shares by Major Industry Sector 1990 and 2005, the economic structure of the Western Corridor has changed since 1990 as the services sector (the sector that combines professional, technical, managerial, administrative services, in addition to finance, insurance and real estate) experienced rapid growth, while the share of jobs in nearly every other industry sector either dropped or remained the same. While some sectors, such as retail, natural resources, and government, experienced a slight drop in their share of total employment, they have nonetheless grown significantly. The retail sector added over 9,000 jobs (a 20 percent increase), while government and natural resources each grew by 19 percent (representing six and two thousand jobs respectively). The growth in these two sectors, along with growth in construction and business services, should be reflected in increased demand for freight services, especially trucking, parcel delivery, and air cargo.

Figure 3.3 Western Corridor Employment Shares by Major Industry Sector, 1990 and 2005



Source: Woods & Poole, 1990 and 2005.

Table 3.5, Western Corridor Employment by Industry Sector, shows growth by industry over the 1990 – 2005 time period. Growing by 42 percent or 37,500 jobs, the services industry led job growth in the Western Corridor– accounting for nearly 65 percent of the region's job growth during this period. Many Vermont industries are small companies that provide specialized products. Manufacturing was the only major industry sector in the Western Corridor to lose jobs between 1990 and 2005. With a loss of approximately 500 jobs, its share of the region's employment fell from 16.4 percent in 1990 to 13.1 percent in 2005. The decline in manufacturing reflects a national trend.

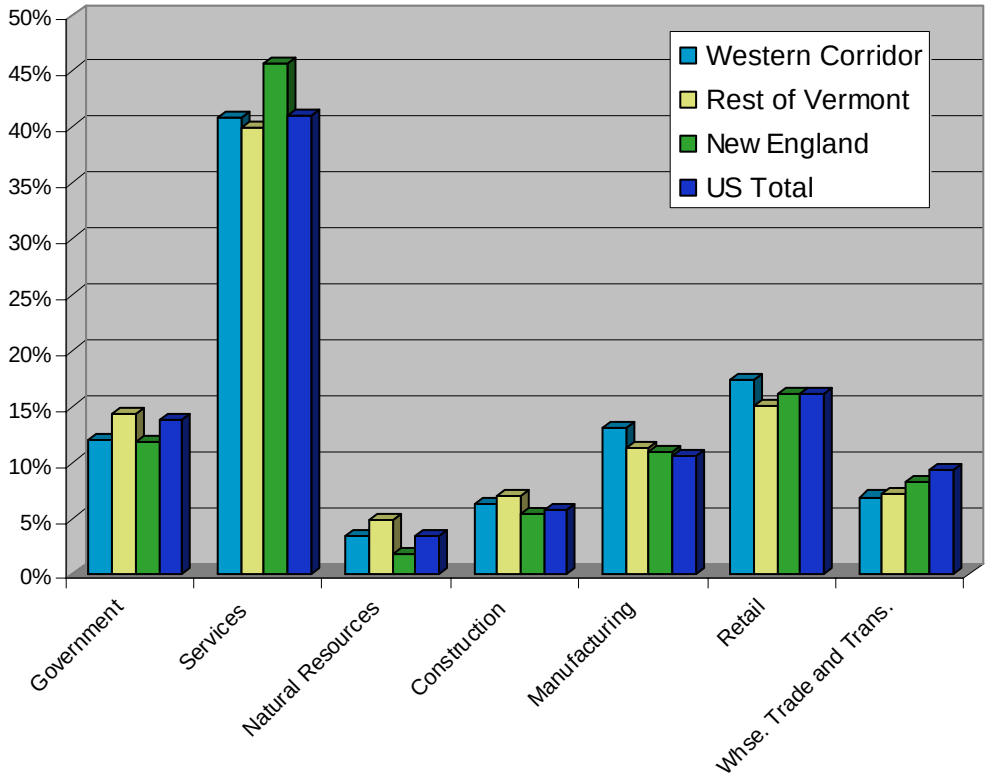
Table 3.5 Western Corridor Employment by Industry Sector, 1990-2005
(in thousands of jobs)

	Govern-ment	Services	Natural Resources	Con-struction	Manu-facturing	Retail	Wholesale Trade & Transport.	Total
1990	31.2	88.8	9.2	17.3	41.1	44.9	18.6	251.0
2005	37.0	126.3	10.9	19.3	40.6	53.9	21.4	309.5
Difference	5.9	37.5	1.7	2.0	(0.5)	9.0	2.8	58.4
% Diff.	18.8%	42.3%	18.6%	11.5%	-1.1%	20.0%	15.1%	23.3%

Source: Woods & Poole.

Figure 3.4, Western Corridor Economic Structure vs. Comparison Regions, shows the distribution of jobs by industry sector and contrasts it to the rest of Vermont, all of New England, and the U.S. for 2005. As shown, the Western Corridor's economy resembles that of the U.S. and its surrounding regions, with the services industry being the primary source of employment, followed by retail, government, manufacturing, wholesale trade and transportation, and natural resources. The Western Corridor's share of manufacturing jobs is still slightly higher than government jobs (which is not the case for any of the comparison regions). As shown in Table 3.6, Changes in Jobs by Industry Sector and County, however, the number of manufacturing jobs has been declining over the past 15 years, while government jobs have increased by nearly 20 percent.

Figure 3.4 Western Corridor Economic Structure vs. Comparison Regions, 2005



Source: Woods & Poole, 2005.

Table 3.6, Changes in Jobs by Industry Sector and County, shows the total change in jobs by industry sector over the 1990 – 2005 period for each county in the Western Corridor and for comparison regions, while Table 3.7, Percent Change in Jobs by Industry Sector and County, shows the percent change in jobs. The services sector grew most rapidly in Addison, Franklin, and Grand Isle Counties, while showing the greatest absolute increase of any sector (18,000 jobs) in Chittenden County. The natural resources sector grew by double digits in all except Franklin County. Construction showed a decline in Rutland County, a small increase in Bennington County, and larger increases elsewhere. Manufacturing increased in Chittenden and Franklin Counties, but showed double-digit declines in Addison, Rutland, and Grand Isle Counties. The retail and government sectors showed relatively strong growth in all counties. Wholesale trade and transport increased most rapidly in Bennington County (82 percent), showing more modest increases elsewhere and a minor decline (three percent) in Rutland County.

Table 3.6 Changes in Jobs by Industry Sector and County, 1990 – 2005 *(in thousands)*

	All Sectors	Govern-ment	Services	Natural Resources	Con-struction	Manu-facturing	Retail	Wholesale Trade & Transport.
Addison	6.81	0.40	4.31	0.51	0.59	(0.37)	1.17	0.21
Bennington	10.76	1.15	6.11	0.28	0.23	(0.20)	1.88	1.31
Chittenden	28.21	2.39	18.25	0.40	1.17	1.85	3.15	0.99
Franklin	6.10	0.85	3.13	0.10	0.18	0.48	0.88	0.47
Grand Isle	0.68	0.07	0.46	0.06	0.06	(0.02)	0.03	0.03
Rutland	5.89	1.01	5.27	0.36	(0.24)	(2.20)	1.88	(0.20)
Western Corridor	**58.45**	**5.87**	**37.54**	**1.71**	**2.00**	**(0.46)**	**8.98**	**2.81**

Source: Woods & Poole.

Table 3.7 Percent Change in Jobs by Industry Sector and County, 1990 - 2005

	All Sectors	Govern -ment	Services	Natural Resources	Con-struction	Manu-facturing	Retail	Wholesale Trade & Transport.
Addison	39%	22%	69%	30%	43%	-14%	44%	22%
Bennington	25%	28%	38%	23%	7%	-3%	20%	82%
Chittenden	28%	18%	50%	27%	19%	11%	18%	12%
Franklin	35%	30%	68%	6%	17%	18%	28%	30%
Grand Isle	42%	27%	88%	26%	32%	-33%	10%	34%
Rutland	8%	11%	21%	13%	-5%	-19%	15%	-3%
Western Corridor	**23%**	**19%**	**42%**	**19%**	**12%**	**-1%**	**20%**	**15%**
Rest of Vermont	21%	18%	33%	21%	8%	7%	13%	23%
New England	15%	7%	33%	28%	21%	-21%	12%	14%
United States	26%	14%	46%	9%	39%	-6%	24%	25%

Source: Woods & Poole.

The next subsections discuss industry sector trends in more detail and also discuss their contributions to freight demand in the region.

3.4.2 Services Sector

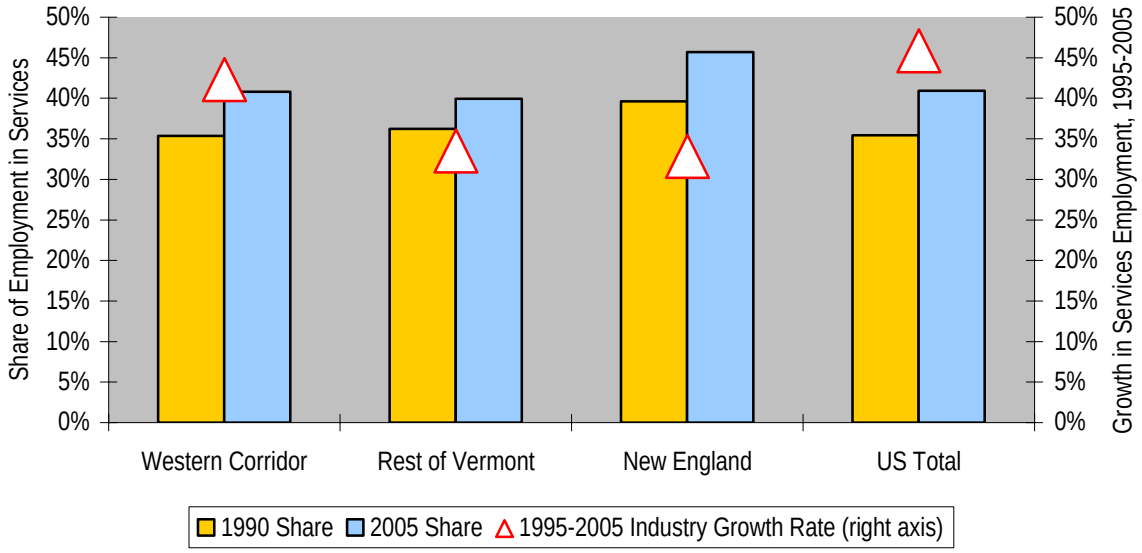
The Western Corridor, like the U.S., is continuing to experience a long-term shift in employment from manufacturing and agriculture to services-based industries. The broad "services sector" employs far more people than any other sector in the Western

Corridor, accounting for 126,000 out of the region's 309,000 total jobs in 2005.[1] The sector's share of total employment in the Western Corridor was the same as the U.S. average (41 percent) in 2005. Contrary to perception, the shift to services has created a huge demand for freight services, especially courier, air cargo, and truck services.

Figure 3.5, Services Employment (1990-2005); Western Corridor vs. Comparison Regions, compares the services sector's share of total employment (bars) and growth rate (triangles) for the Western Corridor with the Rest of Vermont, New England, and the U.S. covering the 1990 to 2005 period. New England (including Vermont) has a slightly higher share of jobs in services than the U.S., the Western Corridor, and the rest of the state. However, the Western Corridor and the U.S. both experienced faster growth in its services industries over the 15 year span than the other two regions. Between 1990 and 2005, the services industries grew by 42 percent in the Western Corridor and 45 percent in the U.S. By contrast, the growth rate in New England was 33 percent, and 34 percent for the rest of Vermont.

[1] The broad "services sector" includes the finance, information, healthcare, real estate, management, professional and business services, leisure and hospitality, and other services industries.

Figure 3.5 Services Employment (1990-2005); Western Corridor vs. Comparison Regions

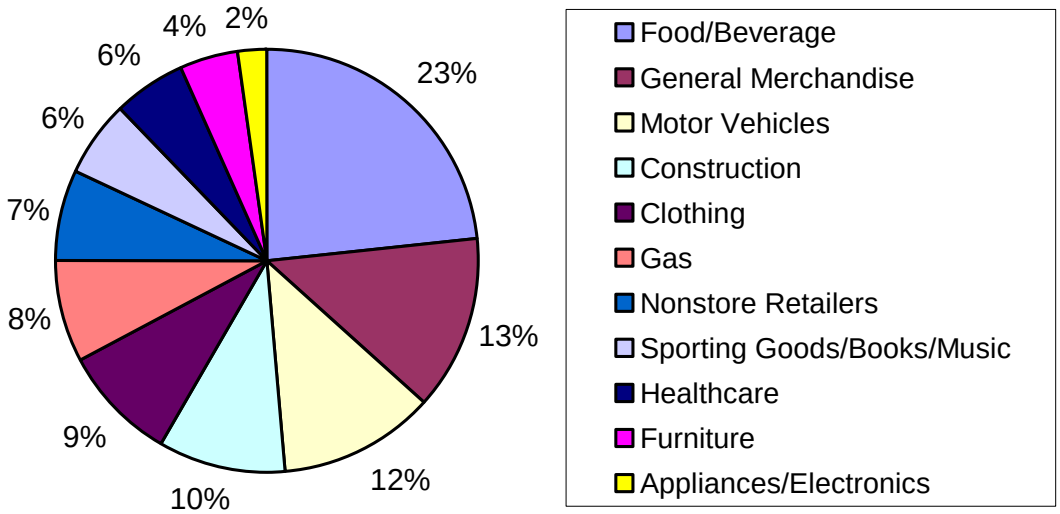


Source: Woods & Poole.

3.4.3 Retail Sector

The retail sector accounts for a major share of employment in the Western Corridor (approximately 17 percent). The industry serves not only the region's year-round residents, but also seasonal residents and visitors to the region's mountains and ski resorts. The region attracts well-heeled travelers and is recognized as a significant tourist destination during the winter. Figure 3.6, Western Corridor Retail Employment by Industry, 2005, shows a breakdown of retail employment by industry. The food industry plays a major role in the economy, supporting over 20 percent of the region's retail-related jobs. The food industry is followed by general merchandise (13 percent), motor vehicles (12 percent), and construction items (10 percent).

Figure 3.6 Western Corridor Retail Employment by Industry, 2005



Source: http://www.census.gov/epcd/cbp/view/cbpview_hist.html (CBP Historical Data).

3.4.4 Construction Sector

Even though the construction sector is a relatively small portion of the Western Corridor's economy, accounting for 19,000 jobs or 6 percent of employment, the industry is nonetheless a significant generator of freight transportation. Much of the raw material needed for construction of buildings and roads frequently moves by train, and both small- and large-scale construction sites are serviced by trucks carrying a range of materials. The reliability of the transportation system (highways and rail) is crucial to keep construction projects on schedule and within budget.

The region's population, jobs, and tourism growth has stimulated demand for housing, infrastructure, hotels, and commercial space. This, in turn, has spurred moderate growth in the Western Corridor's construction industry which saw employment grow by 12 percent between 1990 and 2005. As shown in Table 3.8, Western Corridor Distribution of Construction Jobs, the majority of construction jobs in the region were focused on residential buildings (41 percent) followed by nonresidential buildings (24 percent). An additional 24 percent of jobs were related to utilities, and a small portion, two percent, was dedicated to highways, streets, bridges, and other heavy construction work.

Table 3.8 Western Corridor Distribution of Construction Jobs, 2005

Industry	Jobs
Residential Buildings	41%
Nonresidential Buildings	24%
Utilities	24%
Highway/Streets/Bridges and Other Heavy Construction	2%
Other	8%
Total	**100%**

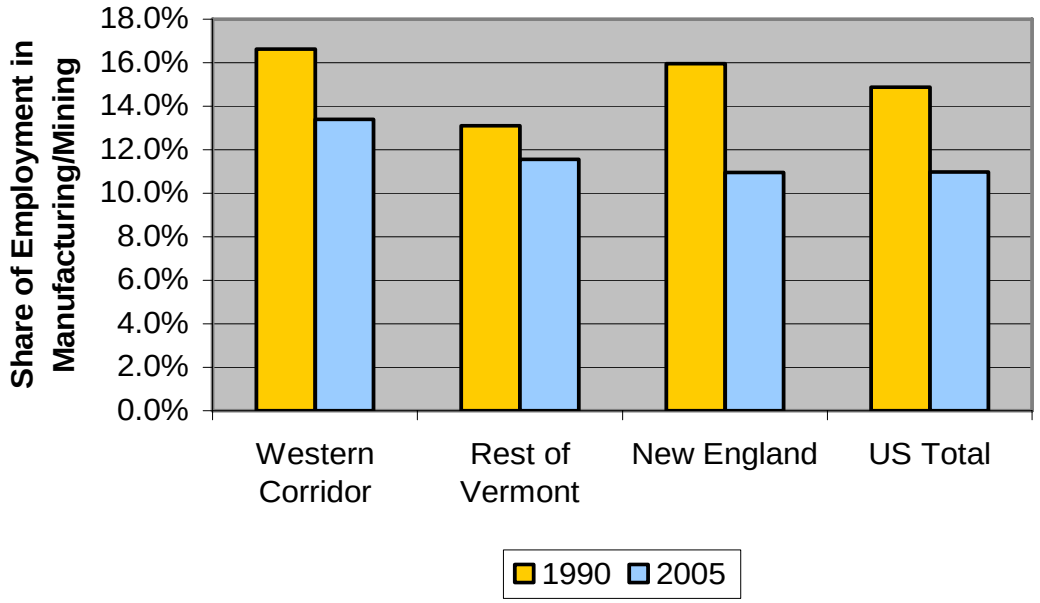
Source: http://www.census.gov/epcd/cbp/view/cbpview_hist.html (CBP Historical Data).

3.4.5 Manufacturing Sector

Manufacturing accounts for 13 percent of the jobs in the Western Corridor. As Figure 3.7, Manufacturing Employment, Western Corridor vs. Comparison Regions, illustrates, this number is higher than the rest of the state, New England, and the U.S. Manufacturing activity in the region provides competitive wages as well as significant export and niche growth opportunities such as electronics, transportation equipment and food. Manufacturing is dependent on freight services to keep production running and to deliver finished products. The timeliness and reliability of the transportation system are imperatives for most manufacturers. Over the last two decades, the logistics techniques used by manufacturers have changed dramatically – all as part of a broader effort to control costs and increase productivity. This has included a transition from large, consolidated shipments to supply warehouse inventories capable of feeding a plant for weeks at a time to much more frequent and smaller deliveries, precisely sequenced for just-in-time manufacturing. As a result of these efforts to reduce inventory costs, the reliability and timeliness of freight movements have become crucial to manufacturers and industry is pushing a stronger reliance on trucks.

Manufacturing employment in the Western Corridor has remained nearly identical for the last 15 years, decreasing slightly from 41,300 jobs to 40,600 thousand from 1990 to 2005. This trend has been occurring in most states nationwide, as jobs are shifted overseas with cheaper production costs. The void has been filled primarily by service jobs throughout the region.

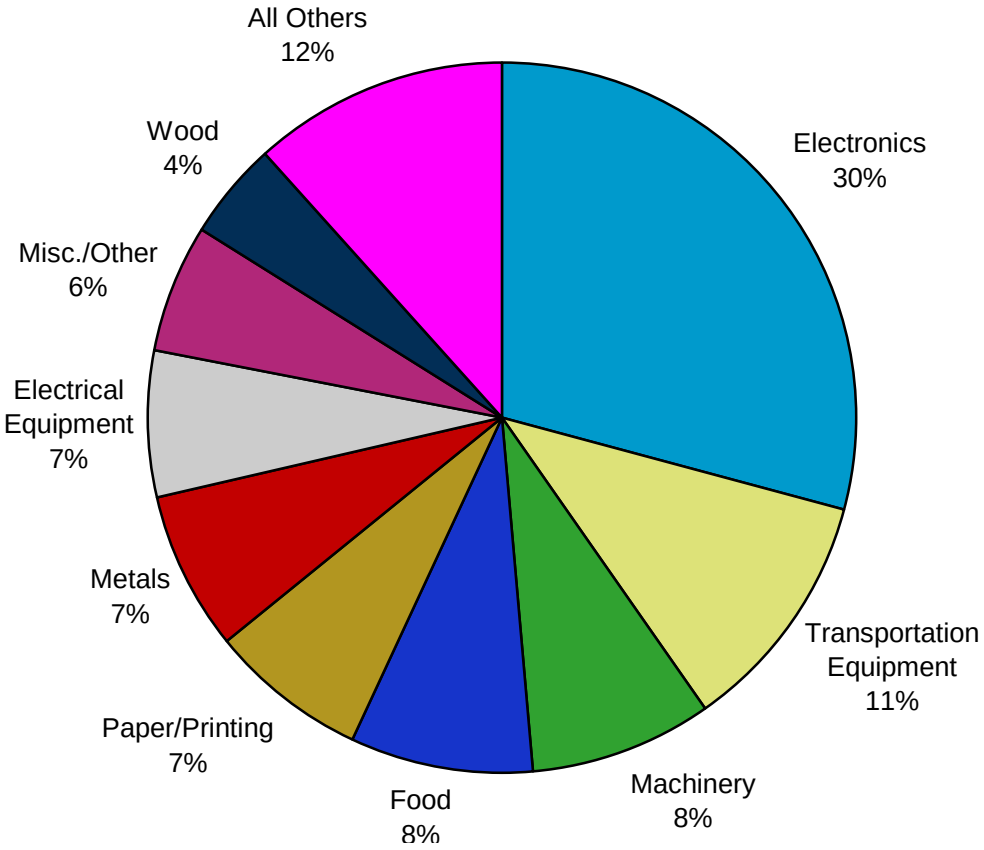
Figure 3.7 Manufacturing Employment 1990-2005, Western Corridor vs. Comparison Regions



Source: Woods & Poole.

According to the 2005 County Business Patterns, electronic products comprised the largest manufacturing industry in the Western Corridor, employing nearly one-third of all manufacturing jobs (see Figure 3.8, Western Corridor, Manufacturing Employment by Industry). This was followed by transportation equipment and machinery (11 percent and eight percent respectively). While manufacturing is unlikely to generate huge numbers of new jobs in the future, the industry offers higher income levels and attracts skilled workers while helping to diversify the Western Corridor's economy. The reliability and connectivity provided by the region's transportation system will be important factors contributing to the future health of the manufacturing industry.

Figure 3.8 Western Corridor, Manufacturing Employment by Industry, 2005



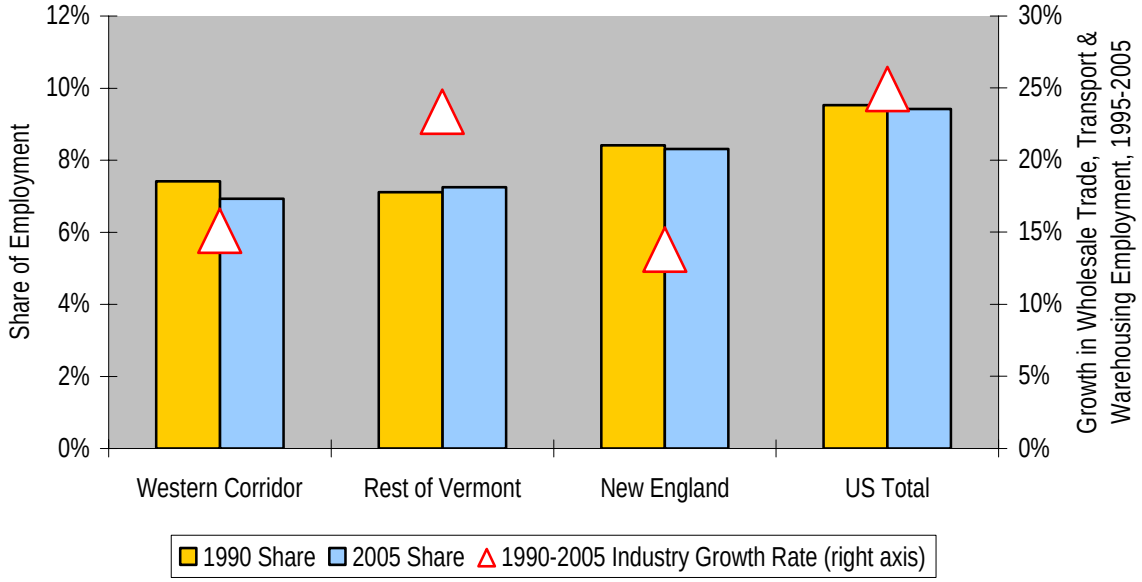
Source: http://www.census.gov/epcd/cbp/view/cbpview_hist.html (CBP Historical Data).

3.4.6 Wholesale Trade, Transportation, and Warehousing Sector

Trade and the movement of goods have emerged as a fast-growing industry in Vermont's Western Corridor economy. As illustrated in Figure 3.9, Wholesale Trade, Transportation, Warehousing, Employment, the sector's growth is consistent with New England as a whole (15 percent vs. 14 percent growth from 1990 to 2005), but lower than for the U.S. (25 percent) and the rest of Vermont (23 percent). Between 1990 and 2005, this sector grew by some 3,000 jobs in the Western Corridor. The sector's growth in the state is linked to the increasing size of the state's population and economy. A rising population requires more goods and merchandise to keep itself fed, furnished, sheltered, and entertained. Distribution and warehouse facilities located within and nearby the Western Corridor help keep the region supplied with materials.

As with other industries, the efficiency of the region's transportation system is crucial to the wholesale trade, transportation, and warehousing industries. The handling and distribution of cargoes supports thousands of jobs and is essential to the operations of the region's businesses, but rising congestion levels can lead to reduced productivity in this sector.

Figure 3.9 Wholesale Trade, Transportation, and Warehousing Employment, 1990-2005

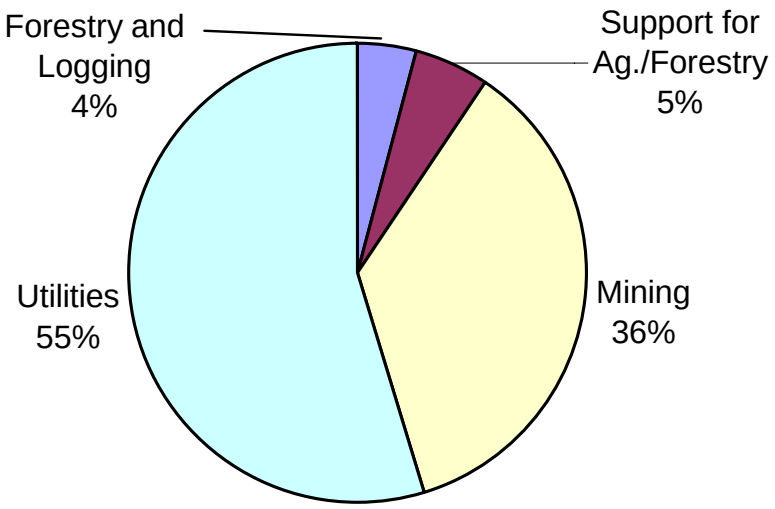


Source: http://www.bls.gov/lau/home.htm (Bureau of Labor Statistics, Local Area Unemployment Statistics - Labor Force Data by County).

3.4.7 Natural Resources Sector

The natural resources sector includes activities related to agriculture, farming, utilities, and mining. These industries accounted for just four percent of jobs in the Western Corridor, or approximately 11,000 jobs. However the industry has grown at more than double the rate of the U.S. over the past 15 years (19 percent for the Western Corridor vs. nine percent for the U.S. from 1990 to 2005). As Figure 3.10, Western Corridor, Natural Resources Employment by Industry, illustrates, the utilities industry (primarily power generation, distribution, and natural gas distribution) accounts for over half of the jobs in this sector, with mining representing most of the remainder.

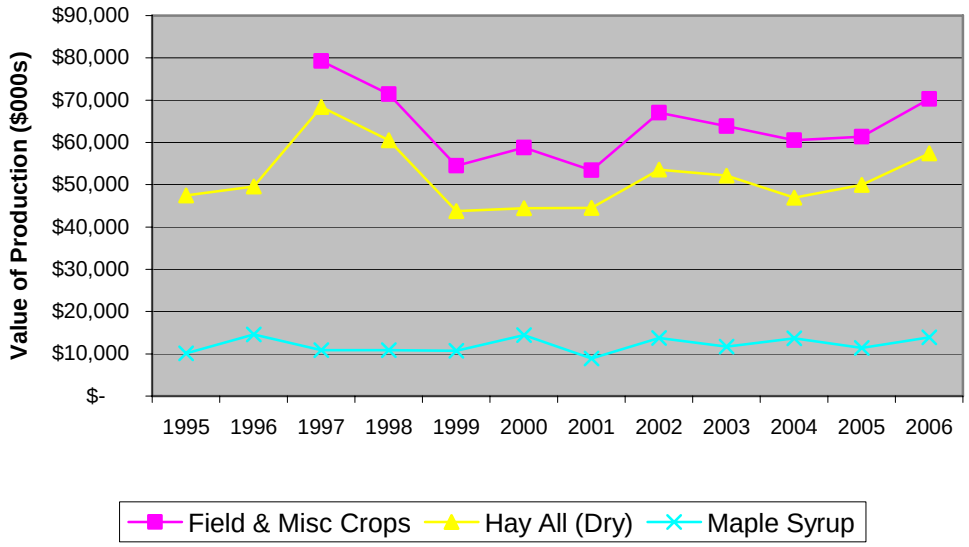
Figure 3.10 Western Corridor, Natural Resources Employment by Industry, 2005



Source: http://www.census.gov/epcd/cbp/view/cbpview_hist.html (CBP Historical Data).

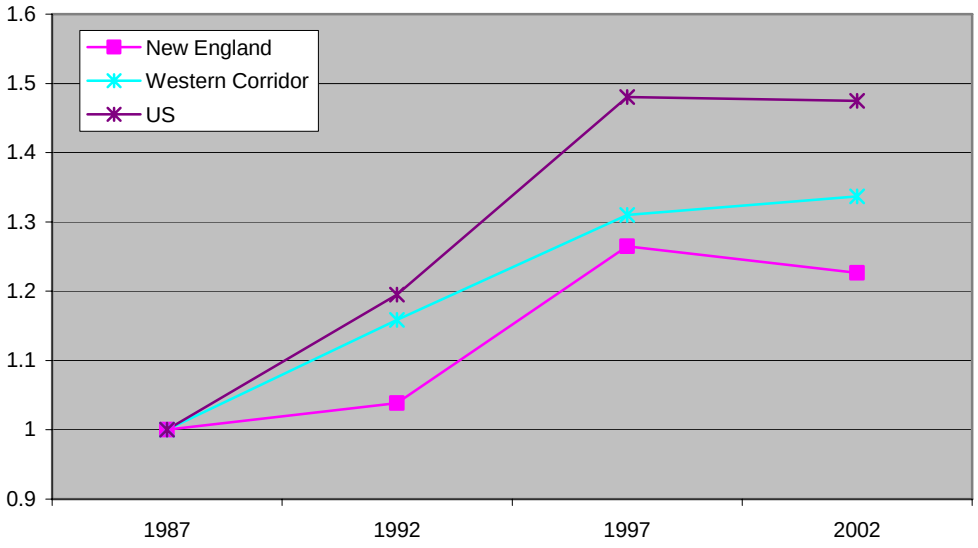
Mining jobs are focused mainly in non-metallic minerals such as crushed and broken limestone and other stones in addition to construction sand and gravel. In terms of agriculture, the region's top products include field crops, hay, and maple syrup, as shown in Figure 3.11, Value of Agricultural Production by Commodity in Vermont. The value and volume of these agricultural products have fluctuated over the past decade and are generally at the same level as they were in 1995. As Figure 3.12, Market Value Index for Agricultural Production, illustrates, the market value of agricultural production in the region has grown faster than in New England, but slower than for the U.S. as a whole.

Figure 3.11 Value of Agricultural Production by Commodity in Vermont, 1995-2006



Source: National Agricultural Statistics Service, Vermont Report and Statistics, http://www.nass.usda.gov/Statistics_by_State/Vermont/index.asp.

Figure 3.12 Market Value Index for Agricultural Production, 1987-2002



Source: U.S. Department of Agriculture, Census of Agriculture, http://www.agcensus.usda.gov.

3.5 Economic Development Plans, Goals, and Objectives

This section discusses issues related to freight and economic development in the Western Corridor that have been identified in recent regional and project-specific plans and studies. The section includes a discussion of the Corridor's economic base and recent economic trends; regional strengths and weaknesses with respect to economic development; goals and objectives for economic growth; and transportation deficiencies and needs related to economic development.

3.5.1 Relevant Studies and Plans

A number of relevant project and corridor studies and plans prepared within the past 10 to 12 years have identified key issues, made recommendations for transportation and other improvements to enhance freight transport as well as support economic development:

- Corridor-wide proposals and reports recommending freight infrastructure improvements for the Western Corridor, including the Western Vermont Freight Transportation Gateway (*c.f. NHS/Railway Corridors: A Proposal for Cost Effective Enhancements of the Rural Transportation Infrastructure*, Matthew Sternberg, May 2002);
- Studies related to the Rutland rail yard, including *Marketing Evaluation for Future Economic Development Relating to the Rutland Railyard Relocation Project* (Corporate Logistics for Vermont Rail Council, 2005) and the Rutland Rail Yard Environmental Impact Statement (Rutland Redevelopment Authority, in progress);
- Middlebury studies including the *Middlebury/Route 7 Corridor Management Study* (Addison County Regional Planning Commission, 1998), *Middlebury Rail Spur Study* (R.L. Banks & Associates, Inc., 1996), and *OMYA Quarry Material Alternative Transport Legislative Study*, Volumes 1-3, Economic and Environmental Report (DuBois & King, Inc., 1999);
- *US 7 Winooski to Georgia Corridor Study* (CCMPO and NWRPC, 2001); and
- St. Albans area studies including the *Exit 20 Transportation Improvement Financing Plan* (Northwest Regional Planning Commission, 2006), *Federal Street Corridor Update* (RSG Inc., 2005), and US 7 – VT 105 Alignment Study.

3.5.2 Economic Base and Trends

In addition to the quantitative analysis provided above, regional planning documents have discussed economic trends in the respective planning regions of the corridor. These trends are generally consistent with those described above, but some additional

details are provided in the regional documents. Current economic conditions and trends vary somewhat across the corridor, although some common themes can be identified.

Significant employment centers in the corridor include Bennington, Rutland, Middlebury, Vergennes, the greater Burlington area, and St. Albans. Consistent with national economic trends, there is a general trend away from heavy industry and towards the service and high-technology sectors. Employment in agriculture and forestry has declined. However, traditional rural industries as well as manufacturing remain an important part of the economic base throughout the corridor. In the Rutland area, some of the strongest sectors include mining, wood product manufacturing, and nonmetallic mineral product manufacturing. The employment base throughout the corridor is shifting towards smaller companies and away from the traditional large manufacturers, and self-employment rates are high. Employers are becoming "leaner" and more flexible.

The southern part of the corridor has important economic linkages (reflected in commuting, business services, access to airports, etc.) to Albany, New York, which is just 45 miles from Bennington. The central and northern part of the corridor, especially Middlebury to the Canadian border, is more closely linked to the Burlington metropolitan area economy. Economic growth has been strongest in the northern part of the corridor (Burlington and north), which has benefited from Interstate highway access as well as close proximity to Burlington.

In the greater Burlington region, economic activity is shifting towards the region's core (Chittenden County) and away from its rural periphery. Communities on the fringes of Burlington have been transforming from rural farming communities into bedroom and recreational communities. Towns with the greatest growth are along major roads radiating from region's core, including Route 7. Annual growth in growth regional product is forecast at 2.9 percent through 2035, corresponding to a 71 percent increase in jobs compared to 2000 levels.

Local and global economic trends bear some implications for freight transportation in the region. In particular, smaller, technology-based production processes and just-in-time delivery systems are leading to more frequent shipments and more vehicles.

In addition, most companies are relying exclusively on truck transport for freight goods movement, leading to an increase in 53-foot tractor-trailers and oversized loads of pre-assembled goods on the region's roadways. Several businesses do ship and receive freight by rail, but on the whole the railways are not currently used as a major means of transport for materials in the region.

3.5.3 Regional Development Associations

Regional Development Associations (RDAs) are non-profit organizations that aim to promote regional economic development. Their primary functions are to integrate and coordinate the activities of all local development groups and undertake activities to accomplish common objectives within its region.

There are five active RDAs in the Western Corridor study area:

- Addison County Regional Development Corporation
- Bennington County Industrial Corporation
- Franklin County Industrial Development Corporation
- Greater Burlington Industrial Corporation
- Rutland Economic Development Corporation

Specific functions can include land development strategies, marketing, loan and business resource assistance programs. RDAs assist with business relocations and/or business expansions and encourage the development of new jobs. These organizations work with local communities and businesses to promote industrial expansion and create partnerships. Ultimately, this is so communities may build competitiveness and capitalize on market opportunities.

3.5.4 Regional Strengths and Weaknesses

Regional planning and economic development documents have noted a number of strengths and weaknesses affecting the ability of the region to develop economically. Strengths include the region's natural beauty and high quality of life, which are a draw for companies and employees to locate in the region, as well as for tourists to visit. The region also has a rich natural resource base, including minerals, forest products, and agriculture, as well as a strong history of processing and manufacturing utilizing these resources.

Some noted weaknesses include:

- A limited amount of skilled workforce;
- High electricity rates (40 percent higher than New York State);

- Inadequate telecommunications infrastructure in some of the more rural areas;
- Lack of direct access to the Interstate highway system south of Burlington, and the rail freight system suffers from deficiencies as well;
- The perception of Vermont as a state where it is difficult to do business, with a cumbersome permitting process; and
- Limited venture capital (particularly important in Burlington).

3.5.5 Goals and Objectives for Economic Growth

Regional plans throughout the corridor identify a number of common objectives for economic growth and transportation. In particular:

- Economic development should provide satisfying and rewarding job opportunities, while strengthening both traditional and emerging sectors of the economy. Employment should be encouraged at all levels of the wage stream.
- Economic development should support "smart growth." Most municipalities have a desire for compact, mixed-use commercial and residential development in their city, village, and town centers, instead of additional low-density, auto-oriented development. Business and industry should be encouraged to locate in areas served by existing infrastructure, including highway and rail transportation as well as sewer and water. Growth should be consistent with locally-designated growth priority areas. Industrial development should locate in designated industrial parks in or near urban or village centers.
- Transportation investments should also support "smart growth." Specific investments that can support freight and industrial smart growth include access to highway-rail intermodal terminals and industrial parks.
- Preserving the region's natural beauty and character is important, and development should avoid environmentally sensitive locations.

3.5.6 Transportation Issues

Regional and project-level plans have noted the following deficiencies and needs specifically with respect to the transportation system's ability to support economic development:

- There is interest in improved rail freight service throughout the corridor. In Bennington County, surveys of area businesses and economic development officials indicate that several existing businesses would benefit from improved rail freight service. Availability of viable freight service is seen as very important in efforts to attract new businesses to the area.

- Of major importance are improvements to railroad facilities, specifically the upgrading of tracks and bridges to handle fully-loaded 286,000-pound railcars and resolving clearance issues, bringing tunnels, and highway bridges over railroads, into conformance with modern railroad standards. The Rutland rail yard is operating near capacity and is a bottleneck to rail traffic due to inefficient switching operations.
- There is only a limited amount of rail frontage to accommodate rail-related industrial uses and transload facilities. Frequently, prime trackside development sites are taken by uses unrelated to rail.
- Unacceptable roadway traffic levels of service, particularly for trucks, are noted in central Bennington, Rutland, and Middlebury. In Bennington, completion of additional bypass segments (especially the northeast segment) is viewed as being important to achieving economic development and downtown revitalization objectives.
- Lack of access to an Interstate highway is a deficiency for most of the corridor south of Burlington. However, the northern part of the corridor has stronger transportation access as it is directly served by I-89.
- In the Burlington region, management of the Route 7 corridor is an objective to provide that traffic operations do not substantially deteriorate as growth occurs.
- Interstate access improvements are desired such as in the vicinity of St. Albans, including a connector road to the St. Albans industrial area and intermodal terminal.
- Regional airports within the corridor are important economic assets; investment in these should continue. A runway extension at Rutland Southern Vermont Regional Airport has been proposed.

4.0 Land Use

The following section describes existing land use conditions and development patterns in the Western Corridor as well as the historical trends and policies that have shaped development in the corridor. The purpose of this section is to establish an understanding not only of current conditions, but also a baseline for assessing, in the subsequent analysis phase of this study, how land use conditions may change in the future. Data on existing land use, development patterns, densities, zoning, major trip generators has been gathered from existing land use plans, prior studies, site visits, and input from regional planning agencies. This is important because of the impact land use has on travel patterns.

4.1 Land Use Development Patterns in the Western Corridor

The Western Corridor study area is approximately 200 miles long and extends between the Massachusetts and the Quebec borders. To the west, the study area is bordered by New York State. To the east, mountain ranges have limited development and caused the historical development of the corridor to follow the natural terrain, resulting in a north-south orientation along Route 7 for both roadways and railroads.

Figure 4.1, Western Corridor Land Cover, depicts land cover in six categories: forest, agriculture, wetlands, developed, water and barren lands. Table 4.1, Western Corridor Land Cover, shows the breakdown of land cover for the Western Corridor and by county. This information is based on data from the University of Vermont's Spatial Analysis Lab in 2002.

Figure 4.1
Western Corridor Land Cover

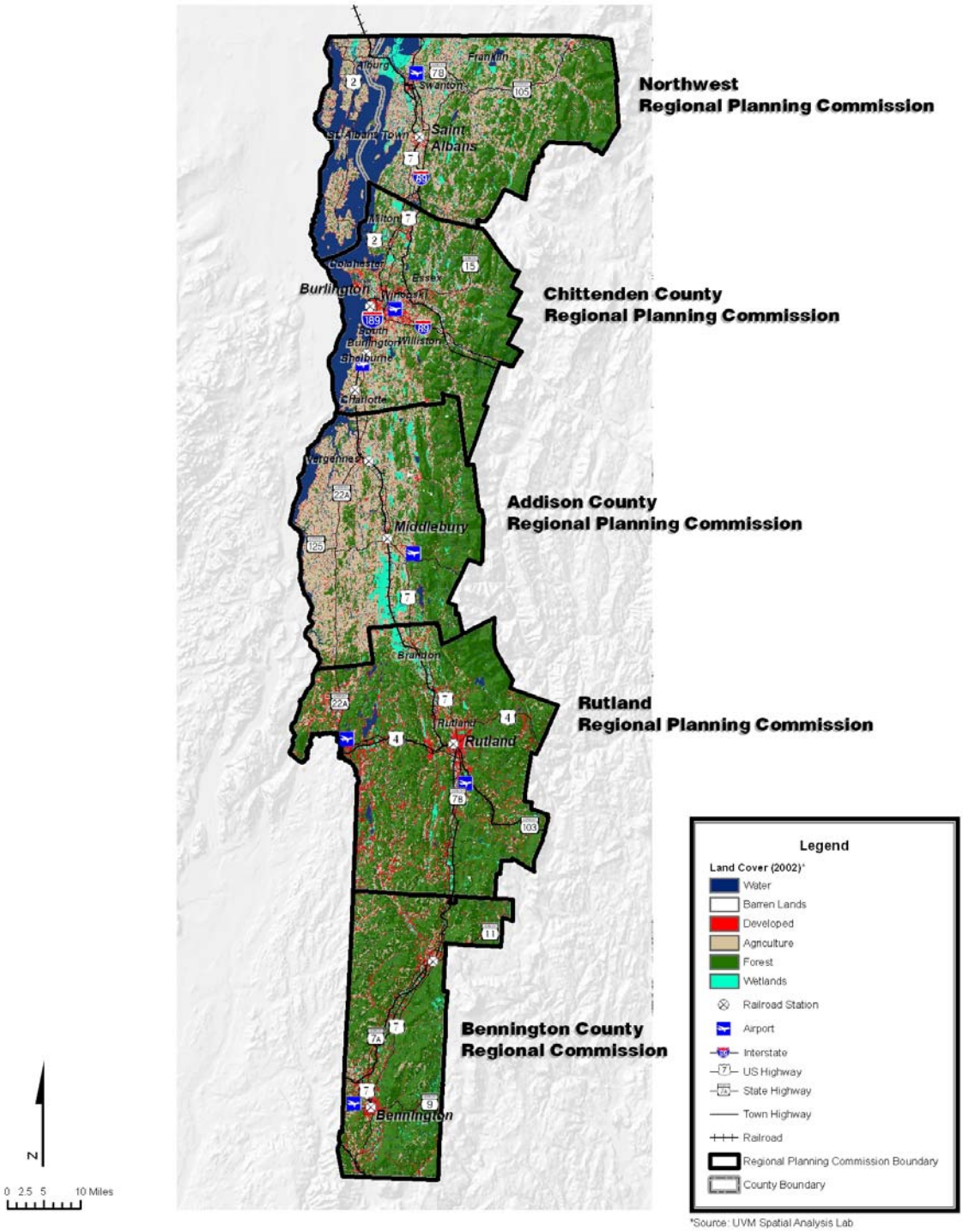


Table 4.1 Western Corridor Land Cover (%)

Land Cover Type	Western Corridor	Addison County	Bennington County	Chittenden County	Northwest	Rutland County
Forest	50.8%	39.1%	71.3%	44.8%	34.6%	66.5%
Agriculture	24.8%	40.7%	12.5%	25.9%	31.8%	12.7%
Wetlands	4.7%	4.8%	2.3%	8.1%	4.9%	3.2%
Developed	7.8%	5.2%	9.0%	8.1%	4.9%	11.7%
Water	12.8%	10.0%	4.8%	17.9%	23.8%	5.7%
Barren Lands	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%

Source: University of Vermont's Spatial Analysis Lab, 2002.

Despite continuing conversion of the rural landscape into a highway oriented pattern of land use development, much of the corridor remains rural with small towns and villages dotting the landscape. The corridor includes one large metropolitan region in Chittenden County and a smaller one in Addison County. The corridor includes several larger communities of 5,000 persons or more including Burlington, South Burlington, Charlotte, Colchester, St. Albans, Essex, Milton, Shelburne, Williston, Winooski, Middlebury, Vergennes, Williston, Rutland and Bennington. These have been the subject of demographic and economic analysis in the report and are listed in Table 4.1, Western Corridor Sub-Regions and Major Municipalities.

The corridor passes through five regional planning commission (RPC) areas—including the Chittenden County Metropolitan Organization (MPO) area—which form sub-regions of the study area, as shown in Table 4.2. Over half of the population and employed persons in Vermont reside in the five study sub-regions.

Table 4.2 Western Corridor Sub-Regions and Major Municipalities

RPC/MPO Sub-Region	Population	2000 Residents Employed	Selected Municipalities	Population	Residents Employed
Northwest RPC	*46,417*	*23,065*			
			St. Albans	7,650	3,886
			St. Albans town	5,324	2,682
			Franklin	1,268	702
			Swanton	6,203	3,418
Chittenden County MPO & RPC	*146,571*	*80,787*			
			Burlington	38,889	21,335
			S. Burlington	15,814	8,500
			Essex Jct.	8,591	4,990
			Winooski	6,561	3,360
			Colchester	16,986	9,642
			Charlotte	3,569	1,904
			Milton	9,479	5,433
			Shelburne	6,944	3,737
			Williston	7,650	4,162
			Essex	18,626	10,602
Addison County RPC	*35,289*	*19,500*			
			Middlebury	8,183	3,882
			Vergennes	2,741	1,459
Rutland RPC	*63,400*	*31,629*			
			Rutland city	17,292	8,104
			Brandon	3,917	2,084
			Rutland town	4,038	2,176
Bennington County RPC	*36,994*	*18,680*			
			Bennington	15,737	7,680
Totals	**328,671**	**173,661**		**205,462**	**109,738**
Vermont	608,207	317,134			
WC as percent of VT	54	55			

Source: 2000 U.S. Census, Summary File 1 (SF 1) and Summary File 3 (SF 3).

The following describes existing land use conditions in each of the sub-regions of the study area.

4.4.1 Northwest Sub-Region

Located at the northern end of the study area, the Northwest Sub-Region adjoins Quebec, Canada to the north, New York to the west, and Chittenden County to the south. This sub-region of over 44,000 persons is mostly rural and contains only four population centers of 5,000 or more. Figure 4.2, Northwest Region Land Cover, depicts land cover for this sub-region.

Franklin County

St. Albans City: St. Albans is the largest municipality in the region with a population of nearly 8,000 in 2000. St. Albans, with its historic district, has a mixed use downtown with commercial uses on the west side of Route 7. This traditional town center has two- to four- story brick and wood frame structures. Downtown St. Albans appears healthy with few, if any, vacant storefronts. On the east side of Route 7 is Taylor Park lined with five churches. Traffic congestion in the center is moderate downtown with very few trucks because I-89 is parallel to Route 7. Angled parking on both sides of Route 7 may cause traffic delays. The New England Central railroad tracks are parallel Route 7 to the west. The passenger railroad station is near the center of town.

South of town along Route 7, new automobile-oriented commercial development and relatively dense residential development predominates. Once outside of town, Route 7 becomes a two-lane roadway with views of Lake Champlain and mountains.

To the north of the town center, most of the recent development has been automobile-oriented commercial malls.

St. Albans Town: With a population of 5,324 in 2000, St. Albans Town completely surrounds St. Albans City. St. Albans is located in a beautiful valley between the Green Mountains and Lake Champlain. A predominately agricultural community, St. Albans is host to the Vermont Maple Festival, an event which attracts thousands of visitors annually.

Franklin Town: The Town of Franklin is a small rural community with a population of 1,268 in 2000. Franklin is situated close to the Canadian border and bounded to the west by Lake Champlain. Lake Carmi, the fourth largest natural lake entirely within Vermont, is centrally situated in Franklin.

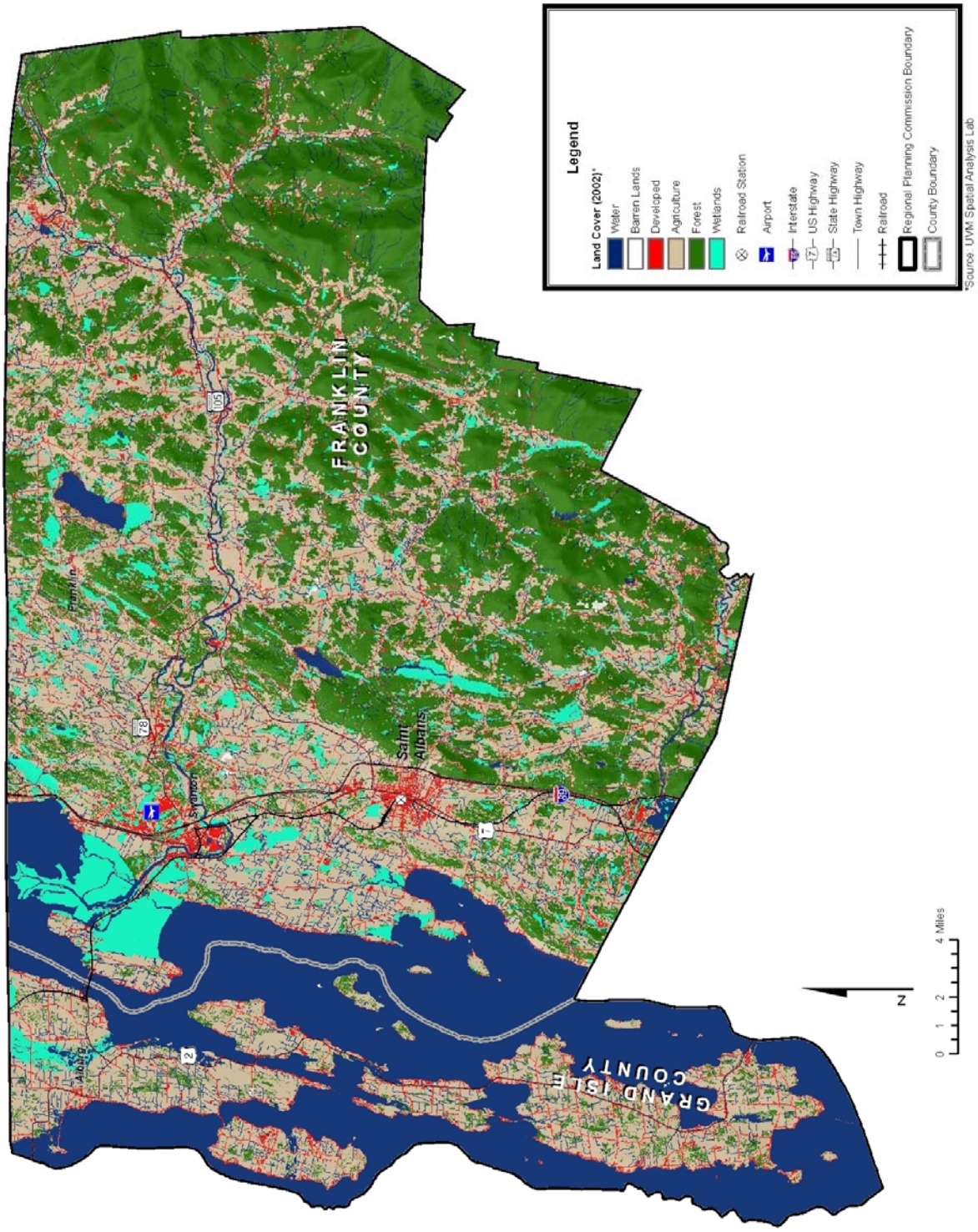
Swanton Town: With a population of 6,203 in 2000 and covering 41,408 acres, Swanton is quite rural in nature. Lake Champlain is located to the west and the Missisquoi River runs right through Swanton

Grand Isle County

Three main islands comprise Grand Isle County. The islands are connected to the mainland and each other by a series of causeways and bridges. A year-round ferry service operated between Grand Isle and Plattsburgh, New York.

Alburg Town: Although a considerable amount of traffic passes through Alburg, it has managed to withstand commercial development and remain a primarily agricultural town. In 2000, the population of Alburg was 1,952. Alburg is a peninsula which projects southward from Canada into Lake Champlain. With a significant amount of lakeshore property, Alburg is a popular destination for summer homes and camps.

Figure 4.2
Northwest Region Land Cover



4.4.2 Chittenden County Sub-Region

The Chittenden County sub-region is the most developed segment of the study area with nearly 147,000 persons in 2000, nearly half of the entire Western Corridor's study area population. Historically, the pattern of development has been concentrated in urban and village centers that are surrounded by rural countryside. But now, there is evidence of a much more dispersed pattern of development in the County. Figure 4.3, Chittenden County Land Cover, depicts land cover for this sub-region.

Winooski City: With a population of 6,561 in 2000, approaching Winooski from the north, Route 7 is built up with a high school and mixed commercial uses. More trucks travel on this section of Route 7 to service the area. In the center of Winooski, several new housing/retail complexes are under construction or recently completed. The historic Champlain Mill retail/restaurant/museum complex is located along the Winooski River.

Burlington City: Burlington, the largest urban area within the Corridor (almost 39,000 persons in 2000), has more than double the population of any community in the study area. It is the home of the University of Vermont with 11,000 students and 1,100 faculty members, a major activity center in the region. Almost 2,000 students are at Champlain College. In downtown Burlington, commercial uses include many student-oriented shops and restaurants. The commercial area extends to the Waterfront Ferry terminal and train station, within a few blocks of Route 7. Route 7 passes through residential areas with historic homes and Champlain College. The Winooski-Burlington bike route is along Route 7 (N. Winooski Avenue). Parking is located along both sides of Route 7 in north Burlington. At the Shelburne/South Willard/St. Paul Streets intersection south of town, merging traffic creates congestion. Strip commercial development is located along Route 7 in South Burlington. During rush hour traffic conditions are congested heading north to I-189 and I-89 with more truck traffic.

South Burlington City: South Burlington with nearly 16,000 persons in 2000 abuts Burlington on the south and east. It is characterized by a low-density automobile oriented development pattern, with large housing developments, retail centers, motels and highway commercial uses. South Burlington is in the midst of implementing a plan for a "New Downtown" District. Commercial, residential, municipal, recreational and

cultural facilities will comprise the "New Downtown" District. As part of this plan, a 45-acre undeveloped parcel adjacent to Market Street is slated for over $15 million in transportation, infrastructure, environmental and public space investments in the next five years.

Shelburne Town: North of the town, Route 7 is a boulevard with a landscaped median dividing the roadway that is attractive. With 6,944 persons, the town has a small, attractive and vibrant village area with the Shelburne Museum just south of the village. Route 7 south of the Shelburne is a higher speed, undivided arterial highway. Development is more planned and controlled in this area, affording views to Lake Champlain and mountains.

Colchester Town: Colchester is one of county's largest towns with nearly 17,000 persons in 2000. St. Michael's College is located on a 440-acre campus in Colchester and has 2,000 students and 150 faculty members. The campus is located near I-89 and Route 15. North of Colchester, development includes a 108-space Park and Ride facility at the intersection of Route 2 and Route 7. In general, much of the land is either farms or undeveloped. Approaching the center of town, there are isolated subdivisions, including the new Country Meadows subdivision with single family homes and the Severance Corners Village Center multifamily development at the intersection of Blakely Road and Route 7, which is under construction. The development is intended to result in a compact mixed use village with open space. The design of Severance Corners is intended to reflect the traditional villages and small towns historically developed throughout New England. The Vermont Center for Emerging Technologies, an incubator for technology startups, recently built a facility in Colchester. More development is located closer to Burlington, with Shaws, Costco, truck sales, and suburban office buildings.

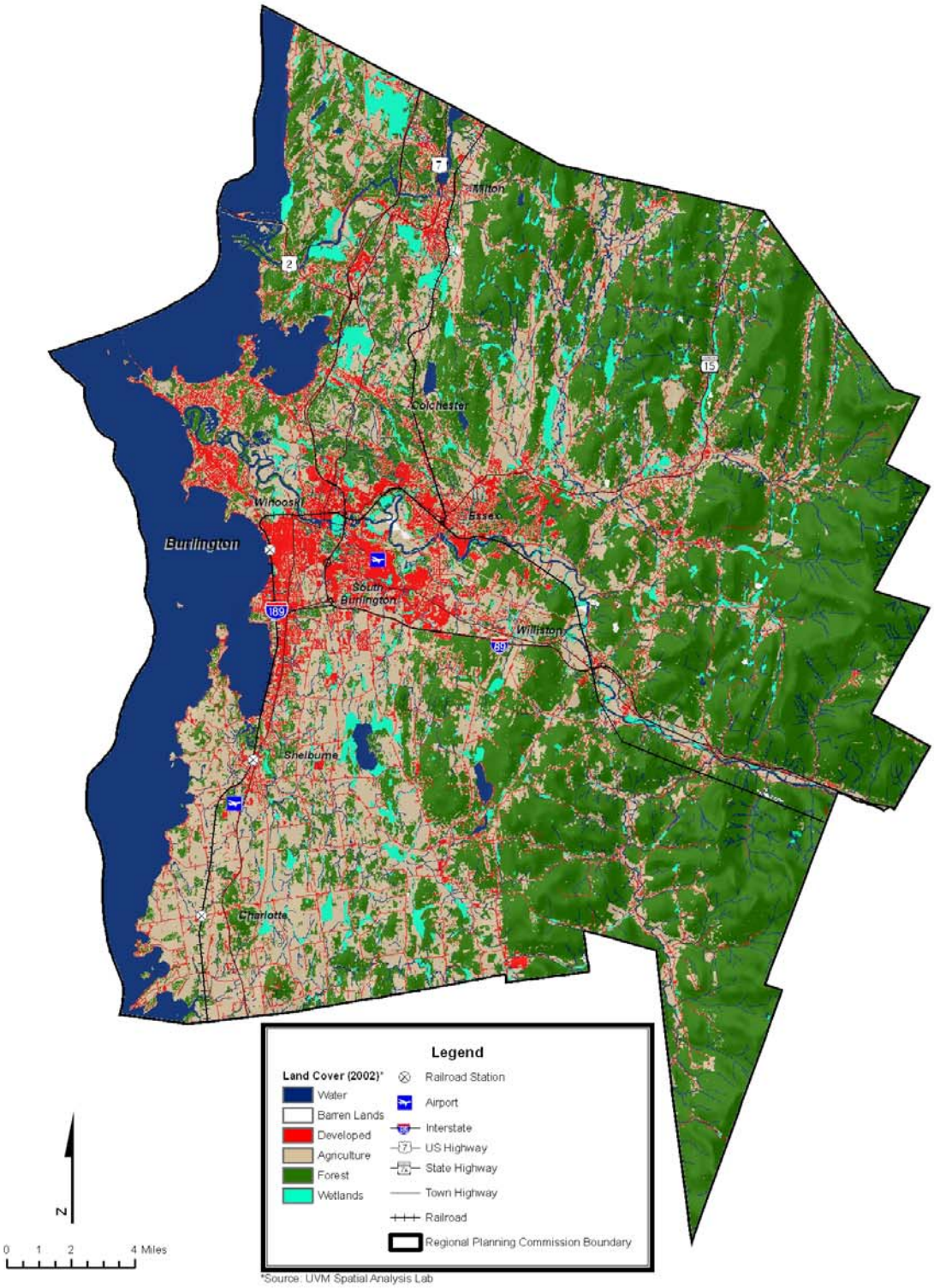
Charlotte Town: With an estimated 3,500 residents in 2000, Charlotte is located in the Champlain Valley. The town is set on a series of hills and ridges overlooking Lake Champlain. A large network of working farms and forests are situated in Charlotte. Specifically, Charlotte's industries include orchards, dairies, berry farms, and livestock operations.

Essex Junction: Located between the Green Mountains and Lake Champlain, Essex is considered to be a modern suburban community. With18,626 residents in 2000, Essex is also home to IBM, one of the nation's advanced computer chip manufacturing plants. Essex is easily accessible by air, rail, ferry and bus.

Milton Town: Milton is located at the mouth of the Lamoille River and just south of Arrowhead Mountain Lake. With a population of 9,479 in 2000, Milton is primarily considered to be a bedroom community of Burlington. Efforts are underway to attract businesses to an industrial park on the site of the former Catamount Stadium.

Williston Town: A suburban community with a population of 7,650 residents in 2000, Williston is considered to be Vermont's busiest retail district. The community is located near Burlington International Airport and is accessible from I-89. The Green Mountain Range is just east of Williston.

Figure 4.3
Chittenden County Land Cover



*Source: UVM Spatial Analysis Lab

4.4.3 Addison Sub-Region

Middlebury, Vergennes and Bristol are the Addison sub-region's employment centers with approximately 70 percent of the region's 35,000 residents (2000). Major employment sectors include education, manufacturing, retail trade, agriculture, forestry and construction. The service sector, which includes jobs in education and health services, is the largest sector of the region's economy. Tourism is also a growing sector of the region's economy. The region's large employers include Middlebury College, Goodrich Corporation, and Porter Medical. Figure 4.4, Addison County Land Cover, depicts land cover for this sub-region.

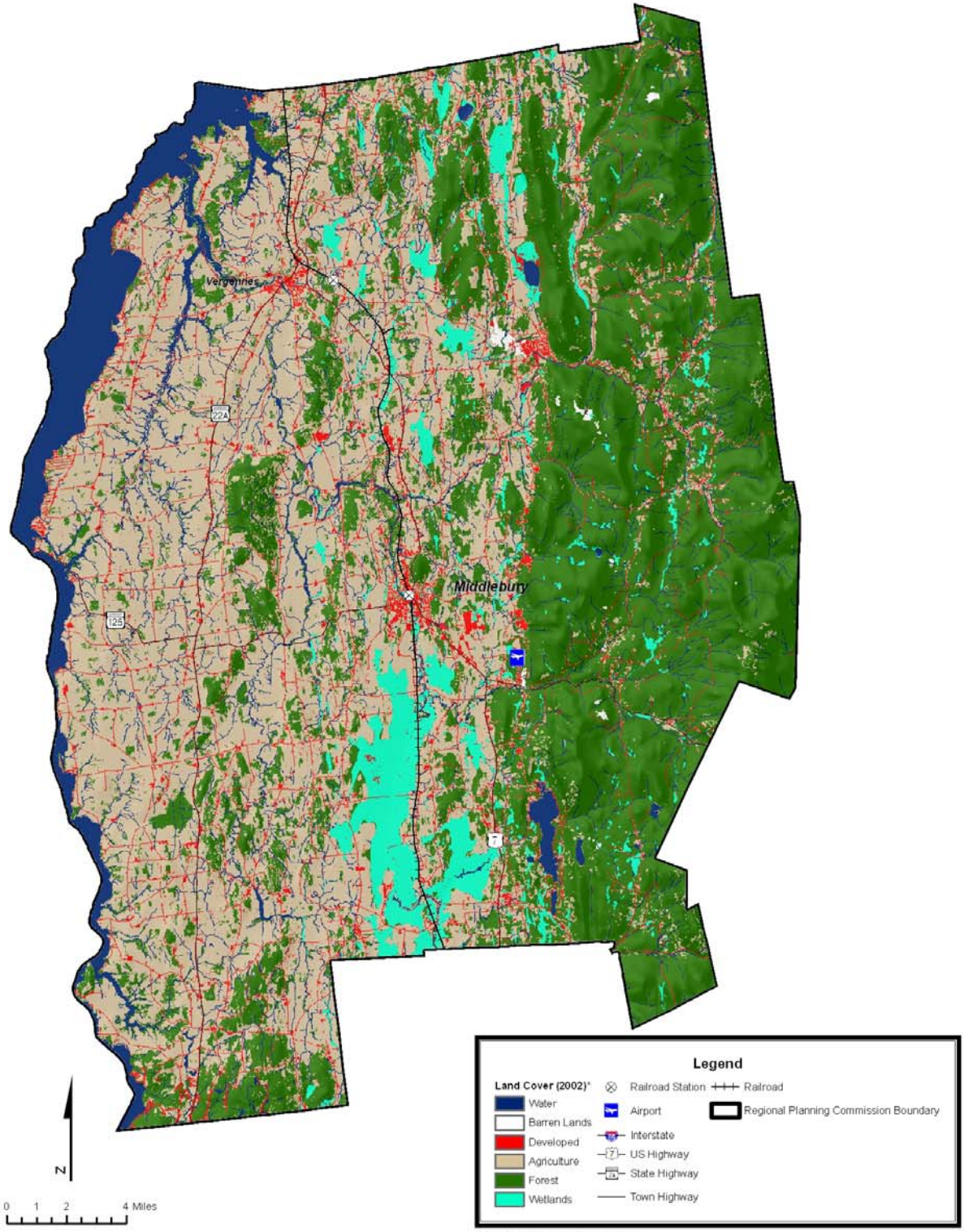
Middlebury Town: Centrally located in Addison County and situated between Burlington and Rutland, Middlebury is influenced by Addison County's growth and the flow of goods and people moving along the Route 7 corridor. Middlebury is situated at the hub of a converging network of state and local highways, and traffic is increasing. As a result, Middlebury has concentrated commercial, industrial and moderate-density residential growth.

The town is characterized by a strong sense of history, community and place. With a strong economic base, Middlebury is well-preserved, has traditional New England village character and had a population of 8,183 in 2000.

Middlebury provides the major portion of the health and social services, housing, employment and governmental functions for the region. The healthy main shopping street is located just off Route 7, and not affected by the heavy truck traffic through town on Route 7. Founded in 1800, Middlebury College, a four-year liberal arts college, with nearly 2,400 students, is located west of the town center. The College operates its own shuttle bus service. Railroad tracks traverse the center of town, in a cut. The Middlebury Bus provides service to and from Burlington. South Village is under construction south of town. An attractive new Courtyard by Marriott Hotel was recently opened, located on Route 7, south of the town.

Vergennes City: Off Route 7, on Route 22A, Vergennes has preserved its historic village character and its commercial district appears healthy. In 2000, Vergennes' population was 2,741.

Figure 4.4
Addison County Land Cover



*Source: UVM Spatial Analysis Lab

4.4.4 Rutland Sub-Region

The Rutland sub-region is comprised of 27 communities which include one urban center, Rutland City; economic activity centers including Brandon, Pittsford, Rutland Town, and Wallingford; and numerous smaller villages surrounded by agricultural and forest land. The rural landscape is dominated by mountain ranges, valleys, lakes and rivers, marble quarries. Development patterns established in the late 19th century, that were linked to the growth of the marble, slate and forestry industries and the arrival of the railroad, exist today. Figure 4.5, Rutland County Land Cover, depicts land cover for this sub-region.

In 2000, the population was 63,000, the second most populous region in the Western Corridor. Nearly two-thirds of the County's housing units were single-family in 2000. The number of seasonal homes in Rutland County grew dramatically in the 1980s and now account for 16 percent of all homes in the County.[2]

Rutland City: Rutland City, located at the juncture of Routes 7 and 4, is the sub-region's major economic and population center with a 2000 population of 17,292. The downtown commercial core is surrounded by single-family and multi-family residential development and some industrial uses. The street pattern, established in the 19th century, remains today. The downtown is characterized by many historic buildings.

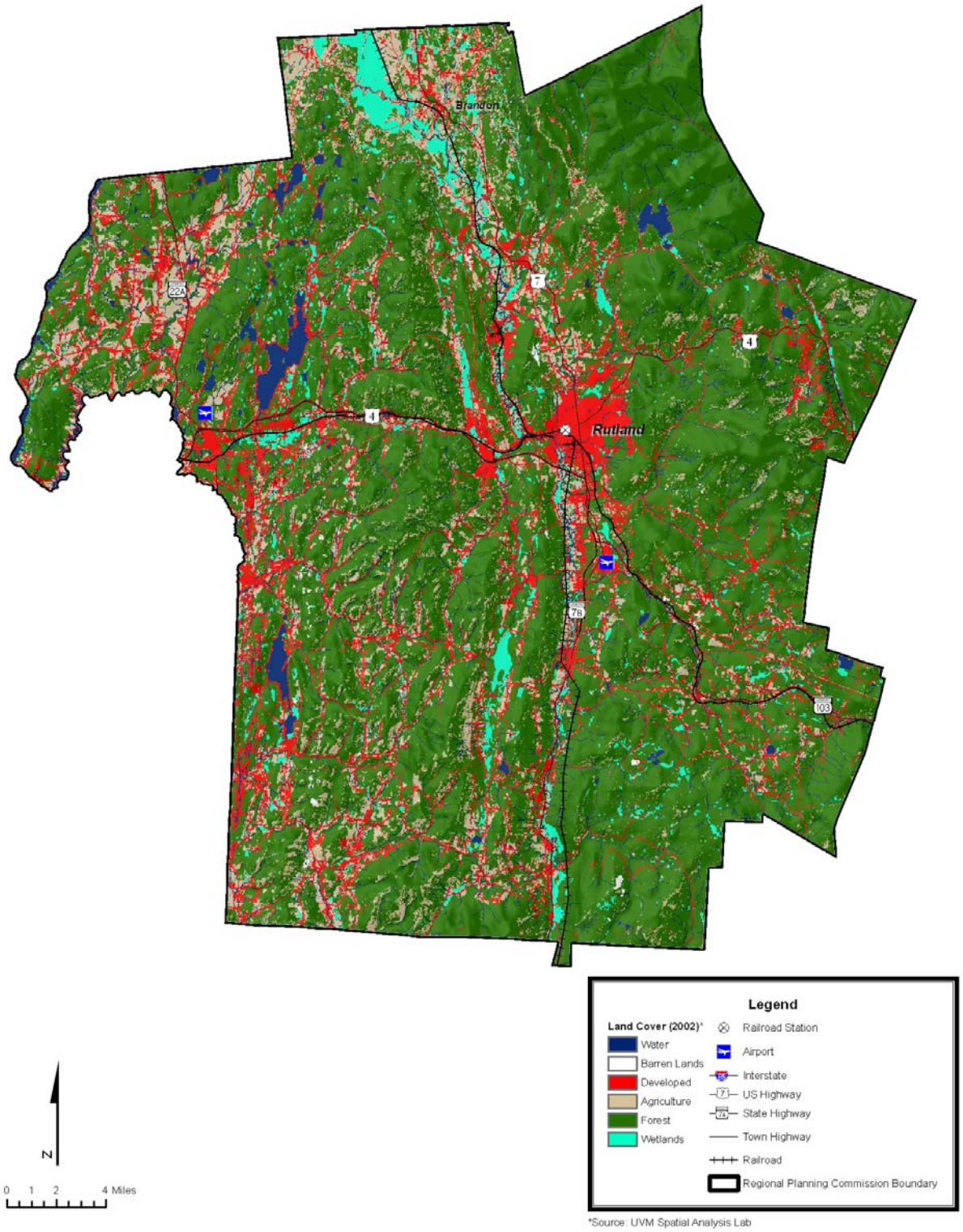
Rutland appears to have a healthy downtown; the Wal-Mart shopping center downtown has reinforced the downtown economy. Route 7 is extremely congested even though it is east of the center of Rutland, which may be the result of many traffic signals. The Amtrak Station building downtown is located adjacent to the Wal-Mart parking lot. South of town, at Route 4 West, there are many highway commercial uses including three new motels.

Rutland Town: With a population of just over 4,000 in 2000, Rutland Town completely surrounds Rutland City. Rutland Town is located in a broad valley running north-south between the Taconic Mountain Range and the main range of the Green Mountains. The valley contains rich agriculture fields, orchards, pastures and meadows. Rutland Town is located in a year-round resort area and the Rutland Southern Vermont Regional Airport is nearby.

[2] Ibid.

Brandon Town: Many trucks pass through the center of Brandon on Route 7, slowing traffic. Route 7 winds through the village; the traffic makes an uncomfortable situation for pedestrians. Brandon has a historic village center and 3,917 residents in 2000. South of the village, there is free standing commercial. Otter Valley High School is located directly along Route 7. A large marble plant near Florence is visible from Route 7.

Figure 4.5
Rutland County Land Cover



*Source: UVM Spatial Analysis Lab

4.4.5 Bennington Sub-Region

The Bennington sub-region is almost the same size as the Addison County sub-region with a population of 37,000 in 2000. The Bennington sub-region consists of many well-defined village and town centers interspersed by agricultural valleys and forested mountains. Figure 4.6, Bennington County Land Cover, depicts land cover for this sub-region. Route 7A also connects historic districts on the National Register. With the exception of Bennington and Sunderland, every town in the region experienced some degree of population growth during the 1990's. The villages within the Bennington sub-region offer a mix of commercial and moderately dense residential development, and community facilities.

The sub-region's two urban centers, Bennington with 15,737 residents and Manchester with 4,180 residents, are the primary population and employment centers in the region. Commercial areas in Bennington's central business district and Manchester Center serve a multi-town customer base. Jobs in these two towns represent 79 percent of the regional employment. Between 2000 and 2007, Manchester experienced a 4.2 percent increase in employment whereas Bennington's employment remained stable. Manchester's job growth is related to growth in the retail sector and support services, particularly related to factory outlet stores.

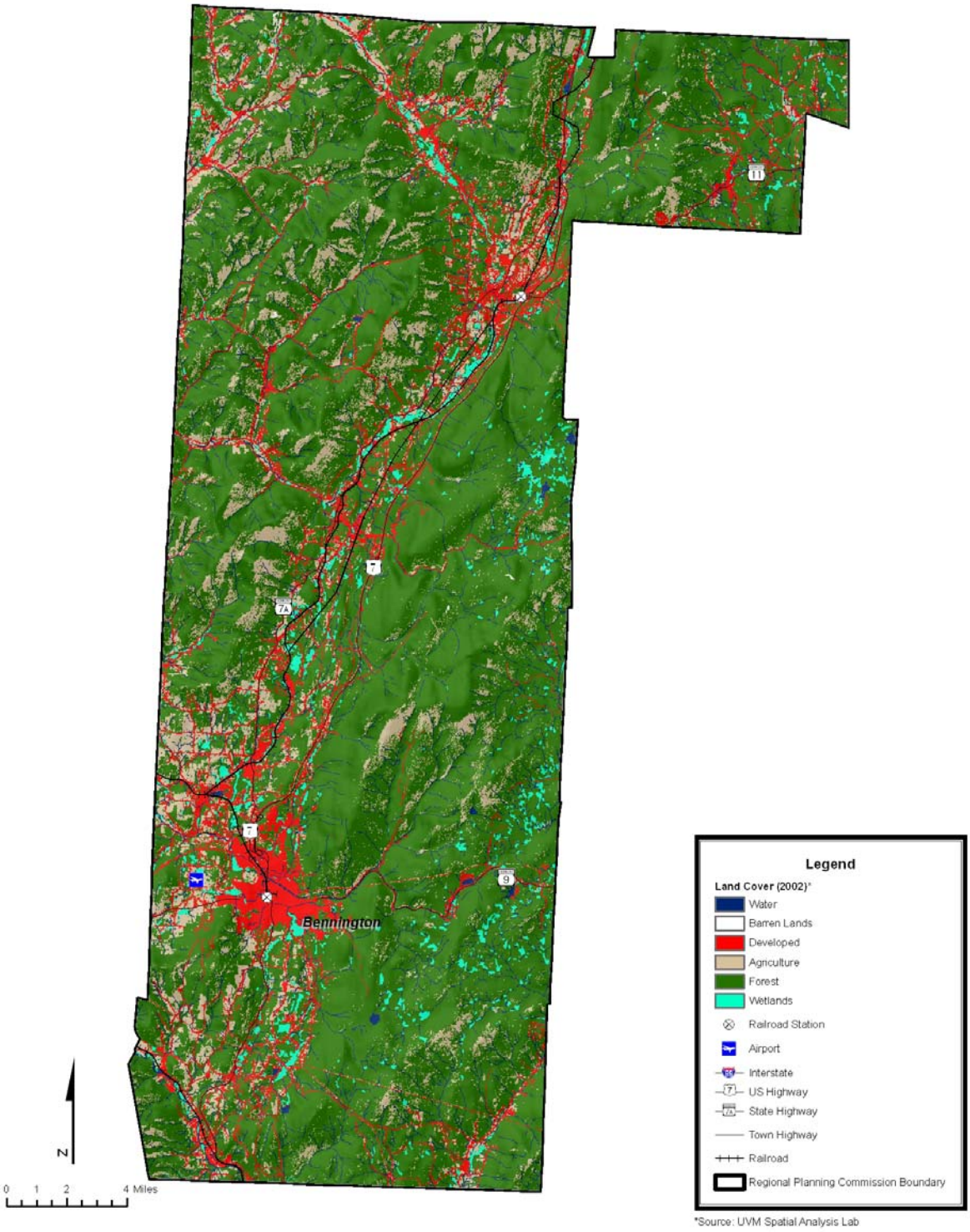
Tourism is particularly important to the region's economy with lodging for nearly 6,000 visitors and several thousand seasonal residents. Ski area development is important in some rural areas. Bromley Ski Area, with 43 trails on 300 acres, and Stratton Ski Area, with 90 trails on 600 acres, are destination resorts with hotels, restaurants, vacation condominiums and retail stores. The industry is promoting year-round use.

Route 7A is parallel to Route 7 between East Dorset and Bennington. While most of the businesses are on Route 7A, Route 7 functions effectively as a bypass road for through traffic while the historic route serves businesses and residents. This is the only part of the region where Route 7 could be considered a bypass.

Bennington Town: Commercial activity in Bennington is organized in distinct centers, including the historic downtown, several shopping plazas and roadside businesses. These shopping centers include Ames, Hannaford Plaza, Monument Plaza and Bennington Square. Established in 1932, Bennington College, a four year college with an enrollment of nearly 750 students, is located on a 470-acre campus in a residential area near the center of Bennington. Bennington's diverse economy also includes manufacturing with recent trends away from heavy industry toward service and high technology sectors.

Manchester Town: Nestled at the foot of 3,816-foot Mount Equinox, Manchester is a very attractive historic tourist oriented village, especially along Route 7A. The dominant retail activities in Manchester tend to be associated with seasonal tourism. Quite different from Manchester Town, Manchester Center is a shopper's paradise. Many of the businesses in Manchester Center are corporate outlets. The destination Equinox Resort and Spa is located here. South of Manchester, the elevation of Route 7 reaches 1,500 feet above sea level, and Route 7 has two lanes with a climbing lane added on hills.

Figure 4.6
Bennington County Land Cover



4.5 Land Use Policy and Zoning

The five regional plans for the study area (Northwest Regional Plan, Chittenden County Regional Plan, Addison County Regional Plan, Rutland Regional Plan, and Bennington County Regional Plan) establish land use policies based on goals for the future. A consistent concern expressed in these plans is directing new growth primarily to urban and village centers, while maintaining the character of rural areas and preserving natural resources. Supportive policies also address providing critical infrastructure to support growth in designated locations; and promoting future economic development by providing transportation improvements to state highways and connections to the interstate highway system north of Burlington. Implementation tools for these policies include zoning, public investments in infrastructure, special planning studies, historic/design review districts, special tax districts, and public/private initiatives to encourage development or redevelopment. Zoning regulations are summarized for a representative town for each sub-region.

4.5.1 Northwest Region

The Proposed 2007 Northwest Regional Plan indicates that residential and/or mixed use development in growth centers would be a positive addition. Commercial strip development along transportation corridors should be discouraged in favor of clustered development.

The Northwest Regional Planning Commission has divided the region into land use planning areas to encourage conservation of resources and a development pattern that maintains the character and quality of life.[3] These planning areas include Agricultural Resource Lands, Forest Resource Lands, Conservation Resource Lands, Low Density Development Areas, Growth Centers, and Sub-Regional Growth Centers. The Agricultural (39 percent of sub-region), Forest and Conservation Resource (25 percent of sub-region combined) Lands represent areas that are generally not suitable for development. The Low Density Lands represent 16 percent of the sub-region. Within this area, cluster development such as Planned Unit Development is encouraged to conserve open space. There is one Regional Growth Center (St Albans) and five Sub-Regional Growth Centers in the Northwest Region. These areas were considered to have capacity to accommodate greater activity and to serve as economic and cultural hubs for surrounding towns.

[3] Northwest Regional Plan, October 2007.

The City of St. Albans' 2007 land development regulations are divided into the following zoning districts:

Low Density Residential (LDR)
High Density Residential District (HDR)
Central Business Subdistrict (B-1)
Transitional Business Subdistrict (B-2)
Service-Industrial District (S-IND)
Flood Hazard Overlay District (FHOD)

The Town of Alburg has developed Interim Zoning Regulations to provide for orderly community growth in a manner that serves to implement the Town Plan. These bylaws are enacted as an interim measure while the municipality considers options for growth within the community during the current town plan update. The Town of Alburg is divided into two zoning districts: Village and Rural Lands.

4.5.2 Chittenden County

The Regional Plan defines five Planning Areas based on the unique character of each area and identifies specific policies for each. These include Metropolitan Planning Areas, Transition Planning Areas, Enterprise Planning Areas, Village Planning Areas and Rural Planning Areas.

Metropolitan Planning Areas are intended to be regional or sub-regional centers for jobs, housing, and community facilities and have an urbanized character. Of the seven designated Metropolitan Planning Areas, the largest include Burlington, Colchester, South Burlington, and Winooski, followed in size by Essex Junction, Essex Town, Williston and Milton. Policies for Metropolitan Planning Areas include more intensive land use and development density, higher priority for public sewer and water infrastructure and transportation investments, infill development, minimizing impacts to natural resources, and consistency with local plans.

By contrast, Rural Planning Areas are intended to preserve Vermont's traditional rural character. The Regional Plan designates nearly 85 percent of the County as rural, including farmsteads, pastures, crop fields, woodlands, wetlands and meadows. Policies for Rural Planning Areas encourage land use for recreation, conservation, agriculture; small scale residential development; clustered development to maintain open space, and a lower level priority for water and sewer infrastructure improvements.

According to a 2003 CCRPC Regional Build-out Analysis, at maximum build-out under current zoning, the County would add 47,000 dwelling units (or about 75 percent more) and 157 million square feet of commercial building area (about 390 percent more). This would result in a very different pattern of development that would be concentrated in urban and village centers surrounded by rural countryside. While current zoning would allow for 157 million additional square feet of commercial building area, which suggests their would be ample supply of land for future development, much of this land lies outside urban and village areas.

The Town of Essex Zoning Regulations establishes 15 zoning districts and two overlay districts. Zoning districts include:

- Agricultural Residential District (AR)
- Residential District (Low, Medium, High Density) (R1, R2, and R3)
- Residential Business District (RB)
- Center District (CTR)
- Retail Business District (B1)
- Industrial District (I1)
- Mixed Use Development District (MXD)
- Mixed Use Development-Commercial District (MXD-C)
- Mixed Use Development –Planned Unit Development District (MXD-PUD)
- Resource Preservation District (RPD-1)
- Historic Preservation-Design Control District (HP-DC)
- Open Recreation District (O1)
- Conservation District (C1)

The Overlay Districts include the Business-Design Control Overlay District (B-DC) and the Floodplain Overlay District (C2).

4.5.3 Addison County

Nearly every town in the Addison sub-region has designated a village or mixed-use planning region, typically located in the historic village centers. Middlebury, Vergennes and Bristol have downtown business districts and separately designated industrial areas.

Most towns have identified some area of higher density residential use. Many of these are located near village centers. The Regional Plan encourages the use of cluster/PUD developments to protect regionally significant resources.

Rural and Agricultural Uses include areas designated for residential uses on lots greater than two-acres in size. Agriculture constitutes the primary land use in much of the area. Single-family residences are usually permitted uses on larger lot sizes. Some towns include outdoor recreation as either a permitted or conditional use in these land use areas and in Forest or Conservation Land Use areas.

Forestry is recognized as one of the most important resources in the region and many municipalities have set up districts that preserve and support forestry. Conservation areas are distributed throughout the region. These areas include much of the higher elevation land on the eastern border of the region, which is designated in 25-acre conservation districts, and land along many rivers and abutting several major wetlands and marshes.

Middlebury's 2005 Town Plan envisions striking "a balance between embracing growth and change and steadfastly preserving the Town's unique historical, cultural, and natural assets." Enhancing the downtown as a pedestrian center and creating public parking is addressed in Middlebury's 2005 Town Plan. Court Street/Route 7 is a significant traffic congestion problem in Middlebury.

Middlebury is in the process of updating its 1995 zoning regulations. Under the proposed 2008 zoning regulations, zoning districts include:

- Agricultural Rural Residential (ARR) Zone,
- Medium Density Residential (MDR) Zone,
- High Density Residential (HDR) Zone which includes Planned Unit Development (PUD)

- Office Apartment (OFA) Zone
- Village Residential Commercial (VRC) Zone
- Central Business District (CBD) Zone
- General Commercial (GC) Zone
- Industrial (IND) Zone
- Airport (AIR) District
- Forest / Conservation (FOR/CON) Zone
- Institutional (INS) Zone
- Protected Highway District (PHD)

In addition, the Middlebury proposed zoning regulations provide special regulations for land adjacent to Route 7. The proposed zoning regulations also provide special provisions for the preservation of farmland, wildlife habitat and scenic views.

4.5.4 Rutland County

Stated goals of the Rutland Regional Plan include protecting the character of rural areas and resource areas by discouraging scattered development and incompatible land uses, promoting intensive land uses and development only in areas where adequate public services, facilities, and employment centers are available, and preservation of the quality of life.

To accomplish these goals, the Rutland Regional Plan directs development to metropolitan areas and designated growth areas. "High density" areas, which include Urban Centers, Sub-regional Centers, Industrial / Business Parks, and Rutland Southern Vermont Regional Airport, are those areas suitable for large scale development and are within or contiguous to development areas in the downtown, or commercial and industrial centers.

The City of Rutland's first zoning ordinance was adopted in1948. Accordingly, existing land use is generally patterned after that ordinance, the exceptions being existing uses when the ordinance was passed, and those uses allowed by the granting of variances. Most of those variances have been in the residential zones to allow higher densities.

Nearly 90 percent of Rutland's area is zoned for various types of housing, while 12 percent is zoned for business and industry. Of the housing types, 56 percent is for single family homes and 24 percent is for multi-family units.

Table 4.3, City of Rutland's Zoning Districts, provides an estimate of the number of acres and percentages of the various zoning districts.

Table 4.3 City of Rutland's Zoning Districts

Zoning District	Acres	Percent
Residence A (RA)	3,700	71%
Residence B (RB)	751	14%
Residence C (RC)	165	3%
Business A (BA)	2	-
Business B (BB)	185	4%
Business/Entertainment (BE)	60	1%
Industrial (I)	367	7%
Total	**5,230**	**100%**

4.5.5 Bennington County

As stated in the 2002 Bennington Regional Plan, "If development is allowed to sprawl outward from urban areas and villages without proper controls, the intervening open lands will eventually disappear and the region will have lost much of its distinctive rural character and appeal." The Bennington Regional Plan therefore establishes a framework of policies and regulatory tools, such as tax incentives, private initiatives, that support a vision for future of the region. These policies manage the intensity and extent of development outside designated growth areas and attempt to control strip roadside development outside roadside commercial districts.

The Town of Bennington's Municipal Land Use and Development Regulations are based on land use district designations. There are over 15 designated land use districts in Bennington. Specific uses and dimensional standards are established for each district. There is a Route 7A Corridor Overlay District (CO) which is in a primarily rural area. There are strict standards for proposed commercial development in this overlay district.

4.6 Development Trends

The following is a summary of development trends in the entire Western Corridor and each sub-region:

In general, development is concentrated in city, town and village centers, along the western corridor. However, a low density, highway oriented commercial development pattern is evident in the corridor as well. This is most noticeable south of Burlington, Rutland and Middlebury and east of St. Albans towards I-89. In addition, development beyond the cities and towns is widely dispersed.

Generally, there is less new development in the southern segment of the study area (Bennington). In the southern segment, steep topography and poor highway links to the regional Interstate highway system result in the relatively greater isolation of the area.

Most towns and cities appear economically healthy, despite traffic congestion. Only Bennington at the southern end of the study area has some vacant storefronts downtown. Winooski's and Burlington's downtowns have experienced significant new residential construction. Manchester's thriving factory outlets have experienced some closings, relocations and some expansion. Rutland's downtown is healthy with many financial service companies; however, there are some vacant storefronts. A suburban style shopping center with a large parking field, which includes a Wal-Mart, is located in downtown Rutland. This downtown site has contributed to Rutland's economic viability.

Strip commercial developments with multiple access points along Route 7 are most noticeable in South Burlington, Shelburne and Ferrisburgh, but also south of Rutland near the interchange with Route 4 West. Isolated commercial, residential and industrial development is beginning to appear in an otherwise predominantly rural landscape between the towns.

Despite scattered developments, the rural landscape is still beautiful and varied with spectacular views of distant mountains and Lake Champlain, rushing waterfalls at dammed rivers and creeks and extensive farmlands.

4.6.1 Northwest Region

At the northern end of the study area, the Northwest Region is undergoing a transition from predominantly agricultural to a more diversified economy that involves industry, tourism, services, small businesses, and residential development. Significant population growth and new development is concentrated mainly in the towns bordering Chittenden County and along I-89. Other towns in the region, away from I-89, particularly along the region's northern borders, have little or no development and a stagnant or declining employment base.

A series of transportation improvements is anticipated in the Exit 20 area of I-89. Commercial development is on the rise most dramatically in St. Albans at Interstate 89 Exits 19 and 20. Since I-89 parallels Route 7, St. Albans experiences little through truck traffic.

4.6.2 Chittenden County

Chittenden County's growth rate is slowing and its share of the total population of the northwest Vermont region is declining. In addition, the average household size in the County is decreasing. In general, from 1960 to 2000, the suburban ring communities experienced high growth rates, while the urban core communities experienced the opposite. From 1982 to 2002, the total amount of land in farms decreased 33 percent and the proportion of all land in farms decreased by nearly 11 percent. As shown on Figure 4.7, Existing Land Use Types in Chittenden County, the land use pattern is low density despite efforts to control sprawl.

Almost 95 percent of employers in the County have fewer than 50 employees. However, medium (50 to 250 employees) and large employers (250+ employees), represent a significant share of the County's total employment. The County's largest employers include IBM, Fletcher Allen Health Care, the University of Vermont, Chittenden Corporation, and General Electric, which have a combined total employment of more than 15,000.

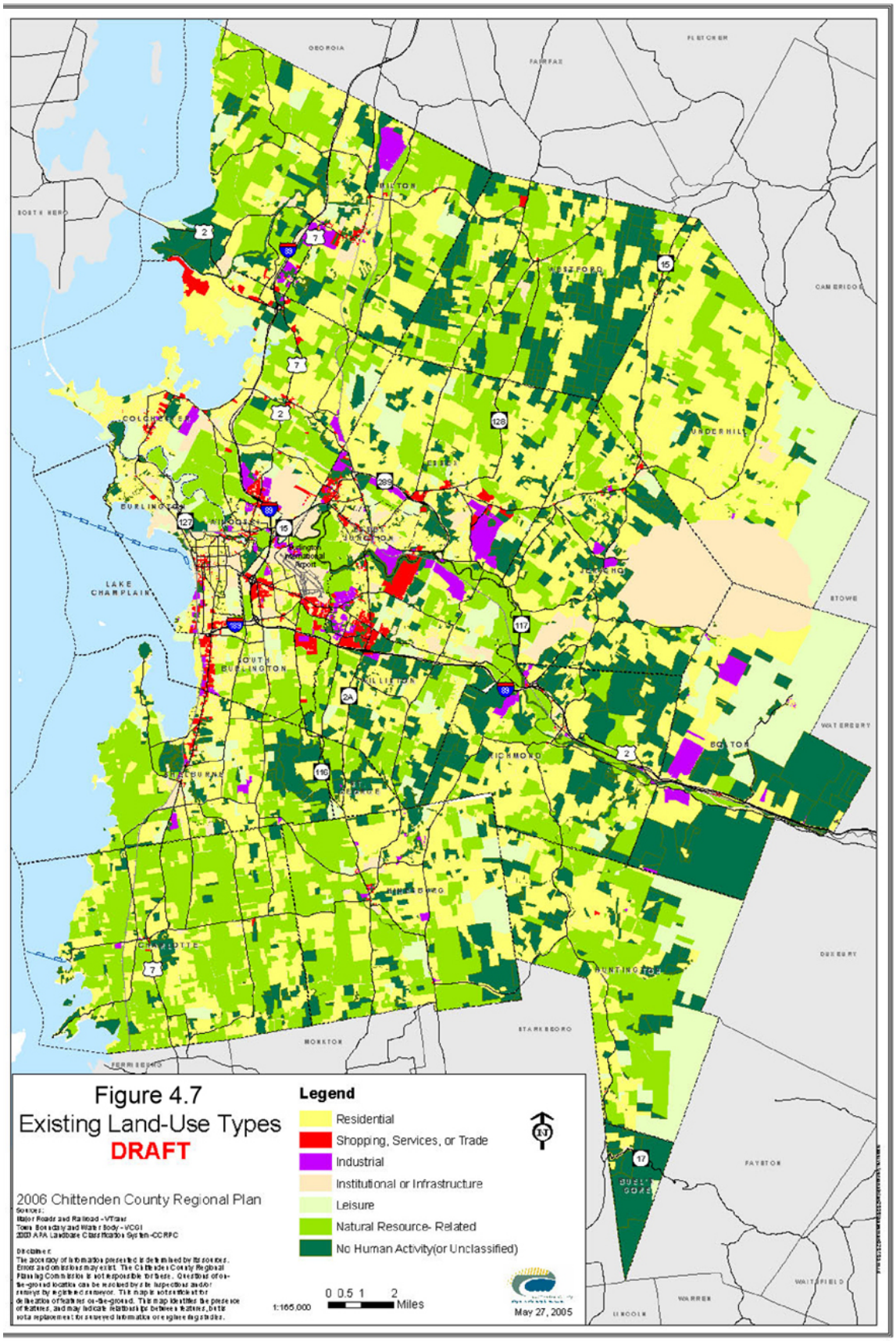


Figure 4.7
Existing Land-Use Types
DRAFT
2006 Chittenden County Regional Plan
Legend
Residential
Shopping, Services, or Trade
Industrial
Institutional or Infrastructure
Leisure
Natural Resource- Related
No Human Activity(or Unclassified)
0 0.5 1 2
Miles
1:165,000
May 27, 2005
LAKE CHAMPLAIN
BURLINGTON
SOUTH BURLINGTON
WESTFORD
UNDERHILL
RICHMOND
BOLTON
HUNTINGTON
CHARLOTTE
STOWE
WATERBURY
DUXBURY
FAYSTON
WARREN
WAITSFIELD
LINCOLN
MONKTON
STARKSBORO
FERRISBURG
GEORGIA
FAIRFAX
FLETCHER
CAMBRIDGE
SOUTH HERO
Burlington International Airport

4.6.3 Addison County

In Addison County, population growth rates have been declining in recent decades. In general, rural towns have been growing at or above the average rate for the region while the more densely settled areas are growing at rates below the regional average. Average household size continues to decrease. As a result, the number of housing units will need to increase at a higher rate.

Agriculture and forestry have played a central role in defining the character of the Addison Region and have historically been, and continue to be, significant parts of the region's economy. The trend in agriculture is toward fewer, larger dairy farms in the region. There is also a trend towards small operations focused on non-dairy or specialty-food products.

While the landscape is still dominated by sweeping views of open fields and distant mountains, development has begun to erode the traditional pattern of villages surrounded by open land. Scattered commercial and residential development is a significant change in historic landscape patterns and contributes to an erosion of village edges.[4]

The workforce in Addison County is growing and many are commuting to Chittenden County. The County's population increased 15 percent between 1995 and 2005, and the number of commuters from Addison to Chittenden County increased over 40 percent between 1990 and 2000. Due to changes in the delivery of freight, the number of large trucks traveling on the highways is increasing.

4.6.4 Rutland County

Over the past 50 years, land use in Rutland County has changed dramatically from agricultural and timber production, marble quarrying and slate mining to a more diverse economy with manufacturing and service-based businesses of various sizes. Agriculture does remain, but to a lesser extent. Rutland City's population has been steadily declining since the 1970s, while the population of rural towns has been steadily increasing. Since 1990, growth has been minimal, increasing at less than 2 percent, the second lowest rate in the state.[5]

Population continues to shift within Rutland County. Rutland City is expected to lose 6 percent of population in the next 15 years, while the outlying and dispersed towns of Benson, Hubbardton and Killington are expected to experience increases of 25 percent.

[4] ACRPC, Route 7 Visual Analysis, May 2005.

[5] Rutland Regional Plan, May 2006.

Accompanying this is a trend toward decreasing household size. The pattern of development is spreading out. Ownership of seasonal and occasional use homes is substantial, many due to the nearby large Killington Resort and Pico Mountain. Seasonal home production is spreading outside traditional boundaries and into agricultural and forest land.

Employment is concentrated in major population centers. For example, in 1999, Rutland City provided 46 percent of all jobs in Rutland County. The 2006 Rutland Regional Plan noted that in general, commercial uses are becoming larger.

4.6.5 Bennington County

Bennington County has a diverse economy which is comprised of manufacturing, agriculture, tourism, and more recently, retail and technology. The Town of Bennington remains the largest and most important center of population and economic activity in southwestern Vermont. It also contains important educational, governmental, health care, and cultural institutions that serve the County and surrounding rural areas in Vermont, Massachusetts and New York. Residential and commercial development outside of the Town of Bennington is of a much lower density.

The 2000 U.S. Census reported that there were 36,994 people living in Bennington County, with 43 percent residing in Bennington Town. The population increased by 3.2 percent between 1990 and 2000. At an estimated 20,000, Bennington County's workforce is relatively stable.

The Green and Taconic Mountain Ranges remain forested and free of development. The County's natural beauty and high quality of life are key components to attracting quality companies and employees.

Although recent population growth has been light, economic development in the area and the ability for people to commute to businesses in larger metropolitan areas is likely to result in a growing population and demand for housing. There is a sufficient amount of land physically capable of supporting the housing demand.

4.7 Public Facilities

Public facilities are distributed throughout the study area and are concentrated in urban areas and town and village centers. These facilities, which typically include town halls, community centers, libraries, churches, police and fire stations, post offices, and schools, have traditionally provided a focal point for community activity and contribute to a "sense of place".

4.8 Parks and Recreation

There are numerous parks and recreational facilities within the study area which are important to the quality of life of residents and to the regional economy. Recreational facilities are operated by municipalities, the State of Vermont, the U.S. Forest Service, and non-profit and private groups. The public parks operated by the Vermont Department of Forests, Parks and Recreation and the U.S. Forest Service are among the most popular in the region.

The diverse range of parks and recreation facilities in the study area include the following:

Green Mountain National Forest: The most extensive of the parks and recreation facilities in the study area and the entire state is the Green Mountain National Forest, which covers parts of Manchester, Sunderland, Bennington and Rutland Counties. The Green Mountain National Forest has grown to almost 400,000 acres that stretch across nearly two-thirds the length of Vermont. The scenic beauty of Vermont's Green Mountains offers recreation opportunities throughout the year for hikers, skiers, campers, fishing or hunting enthusiasts, or wildlife observers. Lakes Champlain and Bomoseen and the many other lakes in the region provide a significant recreational draw.

Centennial Woods Natural Area: located in Burlington and South Burlington is one of the most popular of University of Vermont's natural areas with over 65 acres of mature conifer stands, mixed hardwoods, fields, streams, and wetland areas. Within the city limits of Burlington and adjacent to the UVM campus, this area has a well developed trail system.

Maquam Bay Wildlife Management Area in Swanton consists of 872 acres. The land is owned by the State of Vermont and managed by the Vermont Fish & Wildlife Department. Part of the WMA is south of Route 36 west of town and the remainder is along the lakeshore northwest of Route 36. The area around Swanton is perhaps the

most well known place in Vermont that supported permanent Native American settlements. Farming is still an important activity in the area.

Missisquoi National Wildlife Refuge (NWR), adjacent to the Maquam Bay Wildlife Management Area), includes an extensive delta. Together, the WMA and NWR conserve the largest wetland complex on Lake Champlain. This area acts as an important travel corridor for wildlife moving to and from Missisquoi NWR.

Otter Creek Wildlife Management Area (WMA) in Rutland County is a 1,139-acre tract that is owned by the State of Vermont and managed by the Vermont Fish & Wildlife Department. The vast majority, 1,036 acres, lies in the town of Mount Tabor, with the remaining 103 acres in Danby. Otter Creek WMA is open to regulated hunting, trapping, fishing, hiking and wildlife viewing.

There are six ski resorts in the Western Corridor comprising almost 1,700 skiable acres, as seen in Table 4.4, Ski Resorts in the Western Corridor. The majority of these ski resorts are concentrated in the central part of the corridor within the Green Mountain Range. According to the Vermont Ski Association, the ski resorts are:

Table 4.4 Ski Resorts in the Western Corridor

Resort	Town	County	Skiable Acres
Bolton Valley Resort	Bolton	Chittenden	165
Bromley Mountain	Manchester	Bennington	177
Cochran's Ski Area	Richmond	Chittenden	15
Killington Resort	Killington	Rutland	1,001
Middlebury College Snow Bowl	Middlebury	Addison	120
Pico Mountain	Killington	Rutland	214
Total			**1,692**

Source: Vermont Ski Association.

Killington Resort is the largest ski and snowboard resort in the northeast United States. In the spring, summer and fall, many ski resorts offer hiking and other recreational activities. There are about a dozen cross country ski areas in the region. Ski areas draw from throughout the state and the world. International visits are growing at a rapid rate.

Town-owned recreational parks are also important to local communities. Parks such as Willow Park and recreation center in Bennington and provide a range of activities. These may include summer day camps, softball fields, volleyball, basketball, as well as community events.

4.9 Agricultural Characteristics

The Western Corridor's long history of agricultural use is even today one of the area's notable features. Throughout the study area, however, the total amount of land in farming has been declining in recent decades. The conversion of farmland to residential and commercial use is one of the most significant land use trends in the study area.

In the Northwest Region, nearly 39 percent of the region is considered "Agricultural Resource Lands", which represent some of the best farmland in the region. Approximately half the land area remains in commercial agricultural production.

Franklin County generated more than 24 percent of Vermont's farm sales in 2002 and was the most productive agricultural county in the state. However, farming in Franklin and Grand Isle has steadily declined in recent decades. In general, farms in Grand Isle County are significantly smaller in size (82 acres on average) and are more diversified than farms in Franklin County.

According to the U.S. Census of Agriculture, between 1982 and 2002, the total amount of land in farming in Chittenden County decreased from 114,372 acres to 76,679 acres, a 33 percent decline.[6] At the same time, the average farm size decreased from 226 to 162 acres, a decrease of 28 percent.

Addison County's dairy farms are becoming smaller in number, yet larger in size. There is also a trend toward small operations focused on non-dairy or specialty-food products.

According to the 2002 Census of Agriculture, farms in Rutland County totaled 623 farms with a total of 121,200 acres. In the preceding five years, however, the Rutland sub-region lost 7,000 acres of farmland to development. In addition, the average size of farms in Rutland County decreased 28 percent from 269 acres in 1992 to 195 acres in 2002.

In Bennington County, farming is limited to the fertile valleys and therefore not as significant as other parts of the region, but is still important to the local economy. In 2002, Bennington County had 41,126 acres of farmland. Forests cover approximately 72 percent of the County's total land area.

[6] 2006 Chittenden County Regional Plan.

4.10 Cultural, Natural and Archaeological Resources

More than 120 individual properties and historic districts listed on the National Register of Historic Places are located within one-mile of Route 7 within the Western Corridor study area. There are seven state owned historic sites in the region. The following is a summary of these study area resources:

St. Albans has several individual sites listed on the National Register Historic Register and the St. Albans Historic District. The centers of Brandon, Charlotte and Vergennes also have National Register Historic Districts.

There are 13 historic districts within one mile of Route 7 in the Burlington area, including the Battery Street Historic District, the Buell Street--Bradley Street Historic District, University Green Historic District and the City Hall Park Historic District. In addition there are 20 historic properties, including Burlington Montgomery Ward Building and the Chittenden County Courthouse.

There are several historic properties in Middlebury as well as the Middlebury Village Historic District.

There are two historic districts within one mile of Route 7 in the Rutland area, the Rutland Courthouse Historic District and the Rutland Downtown Historic District. In addition, there are five historic properties within one mile of Route 7 in the Rutland area. These include Proctor-Clement House, Baxter, H. H., Memorial Library, and the Arthur Perkins House.

The town centers, villages, and hamlets of the Bennington sub-region contain numerous historic structures. Several historic village centers have been placed on the National Register of Historic Places including Dorset, Manchester Village, Old Bennington, Bennington, North Bennington, and Arlington. The Bennington Regional Plan designates a Historic-Scenic Overlay for the entire length of Route 7A. This area is noted for its scenic resources. Route 7A also connects historic districts listed on the National Register.

4.11 Major Utilities and Package Plants

A number of public and quasi-public utilities, facilities, and services are present in the study area:

The Northwest sub-region is served by eight municipal wastewater treatment plants. All of these systems, with the exception of Swanton, saw increases in metered usage between 1995 and 1997. Four systems have an uncommitted reserve capacity of 20 percent or less, the threshold at which the state must be notified and initial planning for expansion undertaken.

Lake Champlain is a primary source of public water systems in Grand Isle County, and supplies the major portion of water to the St. Albans City system, the largest system in the region. Thirty-four public water systems draw water from a total of 56 sources in Franklin and Grand Isle Counties. More than 68 percent of these sources access groundwater and the remaining systems draw water from surface water sources.

There are 12 public wastewater-treatment facilities in Chittenden County, serving Burlington, Colchester Town, Colchester Fire District #1, Essex Town, Village of Essex Junction, Hinesburg, Milton, Richmond, Shelburne South Burlington, Williston, and Winooski. In 2000, these facilities collectively served an area of almost 27,600 acres (eight percent of the County's land area) and were approved to serve almost 39,000 acres (11 percent of the County's land area). In 2000, these facilities treated over 12 million gallons of wastewater per day, had permitted capacity to treat over 17.8 million gallons per day, and had uncommitted reserve capacity for treating 3.7 million gallons per day. Nonetheless, CCRPC's 2002 sewage-treatment capacity study found that the development of certain areas in the County would more than exhaust the remaining allocated treatment capacity for those areas.

In Chittenden County, the public-water system provides water to about 135,000 residents and thousands of employers.

- The Champlain Water District (CWD) is a municipally-chartered, consolidated water district and the County's largest water supplier, with 18,400 residential connections and 2,600 nonresidential connections in 12 water systems (Colchester Town, Colchester Fire District #1, Colchester Fire District #3, Village of Essex Junction, Essex Town, Village of Jericho, Mallets Bay Water Company, Milton, Shelburne, South Burlington, Williston, and Winooski).

- The Burlington Department of Public Works (BDPW) has about 10,000 connections within the City of Burlington and Colchester Fire District #2.

Both the CWD and the BDPW use Lake Champlain as a water source. Private households and employers that are not served by public systems depend on wells to access groundwater.

Only 22 percent of Addison Region households are served by a wastewater treatment facility. The majority of residents rely on on-site septic systems to treat waste. In Addison County, there are 13 community water systems, nine school water systems and over 30 other public water supplies in the Addison Region. Approximately 45 percent, or 6,000, of the region's households are connected to a public water supply in Addison County. The remaining 55 percent obtain drinking water from private or shared wells and springs.

There are 14 municipal sewage treatment facilities in the Rutland County which serve almost 10,000 households and scores of businesses and industries. They range in size from the Rutland City Water Pollution Control Facility with a design capacity of 3.97 million gallons per day (mgd), to a .045 mgd capacity facility in Benson. All provide secondary treatment of effluent.

In Rutland County, there are 23 municipal water systems serving portions of 16 municipalities. Most of these systems rely on groundwater as their source of water, although Rutland City, which has the largest system, is supplied by surface waters. In addition to the municipal systems, there are more than 20 privately operated public systems in the region, most of which are relatively small. Outside of the service territories of public systems, water is generally obtained from on-site wells or springs.

There are two municipal sewage systems in the Bennington area serving the growth centers of Bennington and Manchester. These systems have adequate capacity to support planned growth for the next several years.[7] The Town of Pownal, has designed a new system to serve developed areas of Pownal, Pownal Center and North Pownal. This area is among the highest priorities in the state for improved service.

The Bennington area is served by a number of public water supply systems, ranging from small systems for clustered residential units, to large municipal systems serving Bennington and Manchester. These systems are either owned publicly or privately held. In Bennington, the water supply system serves a residential population of approximately 13,000 and concentrations of non-residential development. The Town of

[7] Bennington Regional Plan, 2002.

Bennington owns and operates a 4.0 MG/D (million gallons per day) water filtration plant. The Morgan Springs water source has been integrated with the municipal system. Some of the Morgan Springs water is also sold to a commercial bottled water company.

5.0 Environmental Constraints

5.1 Topography

The Northwest Region of Vermont is part of the Northern Forest, which covers 26 million acres of mostly contiguous forest across northern New York, Vermont, New Hampshire, and Maine. Franklin County's topography changes dramatically from the Champlain Valley in the west to the Green Mountains in the east. Farmland is concentrated in the Champlain Valley and extends east along the Missisquoi River Valley. East of the Champlain Valley, the topography becomes hillier and more forested. Conversion, alteration and fragmentation of forestland and other wildlife habitat has become an increasing concern in the Northern Forest and in Vermont.

The Northwest Regional Planning Commission (NRPC) completed a Development Constraints Analysis by identifying development constraints and overlaying them in GIS. Fourteen weighted criteria, such as streams, soil types, slope, were considered. For Franklin County, 68 percent of the land area was considered moderate, severe, or absolutely constrained. For Grand Isle, 89 percent of the land area was considered moderate, severe, or absolutely constrained.

Within the Northwest sub-region, 25 percent of the region is designated as Conservation and Forest Resource Lands. This land is recognized as being particularly well suited to tree growth and may also include natural resource constraints on development such as wetlands, and floodplains, wildlife and scenic resources.

The Champlain Valley extends along Vermont's western border from Franklin and Grand Isle Counties, along the length of Lake Champlain, the sixth largest fresh water lake in the U.S. It encompasses the western edge of Rutland County. Stretching eastward from the lake's shore to the spine of the Green Mountains, the Champlain Valley is the most heavily populated and productive agricultural region in Vermont. Burlington, Vermont's largest city is located on the lake and the city extends to the central section of the valley.

The Chittenden County sub-region's landscape has a rich diversity ranging from forests and waterbodies. The density of land uses varies from rural areas such as farms, dispersed residences and villages to urbanized areas ranging from small cities to suburban areas. Roughly half the land in Chittenden County is developed. According to the 2006 Chittenden County Regional Plan, approximately 53 percent of the County's total land area has "some development" and 47 percent has "no development".

Topography in the Addison County sub-region is quite varied. The shores of Lake Champlain define the western edge of the county. The middle of the landscape is primarily agricultural interspersed with open meadows and forests. The rural pattern of villages and small industrial towns within a rural setting established in the late 18th century remains today. Running north to south, the Green Mountains traverse the eastern perimeter of the Addison County sub-region.

The Rutland sub-region's key features are its numerous valley farms, forested hills, slate and marble quarries, hamlets, villages, and its urban center, Rutland. Development has generally occurred in the valleys between mountain ranges, along road, rail, and water transportation routes. The Rutland sub-region has two mountain ranges; the Green and Taconic Mountain. The Vermont Valley is located in a narrow valley between the Green and Taconic Mountains, extending north-south through the approximate center of Rutland County. The Southern Green Mountains form most of the eastern border of Rutland County and extend southwards into Massachusetts. The Northern Green Mountains begin in the Town of Chittenden and extend northward the length of the State.

In the Bennington County area, valley lands and the lower slopes of the mountains and hills tend to be best suited for development. In the Bennington region, upland forests including the Green Mountain National Forest comprise cover approximately 226,500 acres, or 72 percent of the region's land area and represent the most extensive planning area.[8] With increasing altitude, average temperatures drop, precipitation amounts increase, soils become very shallow and poorly drained, and natural plant and animal communities become more susceptible to environmental disturbances. Lands within the region that lie at elevations above 2,500 feet are particularly fragile and warrant special protection. While all of the towns within the region contain some lands at high elevations, towns that lie largely within the Green Mountain physiographic region tend to have the highest average elevations and the greatest acreages above 2,500 feet. Overall, approximately 44,720 acres of land, or 12.1 percent of the Bennington region, occur above 2,500 feet. Because of severe environmental constraints, these areas are generally unsuitable for development.

The scenic landscapes of the Bennington region derive from the area's distinctive physiography. These basic characteristics of the land – topography, bedrock and glacial geology, soils, and waterways – have also strongly influenced the type, location, and intensity of land use within the region. The majority of the Bennington region falls within three physiographic zones: the Green Mountains on the east, the Taconic Range on the west, and the Vermont Valley lying between these two upland areas.

[8] Bennington Regional Plan, 2002.

The ridgeline of the Green Mountains tends generally northward through the region, rising abruptly 1,500 to 2,000 feet from the valley to the west. The Green Mountains form a divide between the Connecticut River and the Hudson River/Lake Champlain watersheds; most of the drainage in the Bennington region is directed to the west. In many places the bedrock of the mountains is exposed, particularly in areas of steep slope and at high elevations. Many peaks along the ridge rise above 3,000 feet in elevation, the loftiest of them being Glastenbury Mountain at over 3,700 feet.

Facing the Green Mountains across the Vermont Valley is the Taconic Range, the dominant topographic feature on the western side of the region. Topographic relief in this region is considerable as the valleys between the mountains (several of which exceed 3,000 feet in elevation) lie at relatively low elevations. The highest point in the Bennington region, the summit of Mount Equinox at over 3,800 feet, is in the Taconic Range. These mountains are underlain with economically important marbles and slates found at lower elevations and in the valleys.

The Vermont Valley, a narrow southern extension of the Champlain Valley, runs down the center of the Bennington region. The valley is approximately three miles wide in the south. Elevations in the valley range from 600 feet to somewhat over 1,000 feet.

5.2 Wetlands and Water Resources

Wetlands are a critical component of Vermont's ecosystems and are central to maintaining water quality, providing erosion control and storing flood waters. A wide variety of plant and animal life are supported by wetlands. Vermont's wetlands are part of the Atlantic Flyway, a major route taken by migratory birds. A significant number of plants on the Vermont Threatened and Endangered Species List are dependent on wetlands.

Franklin and Grand Isle Counties include a total of approximately 35,525 acres of wetlands. This represents 6.2 percent and a 17.3 percent of the total land area for each, respectively. Franklin and Grand Isle Counties rank among the top ranked counties in the state for ratio of wetlands to total land area with Grand Isle County, by a wide margin, ranked first.

About 17,500 acres of wetlands have been identified in Chittenden County (five percent of the County's land area). A watershed plan has been prepared for the Lamoille River watershed and one is being prepared for the Northern Lake Champlain Basin. These watershed plans assess land-use and development to protect water resources.

The majority of Cornwall Swamp, one of Vermont's most important and largest interior wetlands, is in Addison County and partially in Rutland County. Considered a National Natural Landmark by the National Park Service, Cornwall Swamp extends over 15 square miles.

In the Addison Region, due to topography and soils, the groundwater recharge area for much of the region is in the Green Mountain National Forest. Drought and contamination are the major concerns relating to groundwater in the region.

There are numerous water resources in the Rutland Region. There are estimated to be more than 22,227 acres of major wetlands. The Southern Green Mountains in Rutland County feed water principally to the Otter Creek, and eastern slopes feed the Connecticut River. Chittenden Reservoir, an artificial impoundment, is located in a valley between mountains in the region's northeast corner. Otter Creek, the primary water body in the County, flows north through the center of the Valley.

In the Bennington sub-region, concentrations of wetlands are found in river valleys and on the high plateau of the Green Mountains. There are some 10,889 acres of wetlands in Bennington County; of these, 4,916 acres are forested wetlands and 4,576 acres are of the "scrub-shrub" variety. Open water wetlands, including those characterized by emergent vegetation, cover about 1,253 acres of land.

The two largest lakes in the Bennington region are Sucker Pond (51 acres) in Stamford and Bourn Pond (48 acres) in Sunderland. However, there are many small lakes and ponds that serve many important functions. Four main river systems in the Bennington region. The Mettawee River rises in Dorset and flows north through Rupert, Pawlet (in Rutland County), and New York State where its waters are directed into a canal that leads to Lake Champlain.

5.3 Visual/Aesthetic

The Route 7 corridor is one of Vermont's most scenic roadway corridors. Sections of the Route 7 corridor are part of the Lake Champlain Scenic Byway. In northwest Vermont, from north to south, the Lake Champlain Scenic Byway consists of Route 2 through Grand Isle County and a portion of Chittenden County. On Route 7, the Lake Champlain Scenic Byway traverses through the communities of Milton, Colchester, Essex, Burlington, Shelburne and Charlotte. The Lake Champlain Scenic Byway also goes through the communities of Middlebury and Vergennes in Addison County.

The visual and aesthetic character of the Route 7 corridor is formed by its topography, with sweeping vistas of the Green Mountains to the east, and the Adirondacks and Lake Champlain to the west. The Vermont Valley is a narrow valley region between the Taconic Mountains on the west and the Green Mountains on the east. It runs roughly from the Brandon area at the northern end to Bennington in the south. The corridors historic settlement patterns dating from colonial times also contribute to its visual and aesthetic character. In particular, the corridor's long history of agricultural use and its pattern of densely settled small towns and villages in a rural setting contribute to its distinctive character.

Views along Route 7 range from open views across fields, views of farm houses and barns within the rural landscape, distant views of mountains and Lake Champlain, and forested areas. By contrast, within village and town centers, there are relatively dense clusters of commercial and residential development. In recent decades, however, commercial and residential development stretching out from existing settlement areas has begun to erode this traditional settlement pattern. With this increased development, the visual integrity and contrast between rural and developed has also begun to blur. Many of these new developments are more spread out and have very little relationship to each other or landscape buffer.

6.0 Highway Transportation

6.1 Existing Conditions on Sections of the Corridor Roadways

The primary highway facilities within the Western Corridor are US Route 7 (US 7) and VT Routes 7A and 22A, (VT 7A and VT 22A) and Interstate 89 (I-89). All but I-89are essentially north-south and for the most part two-lane roadways; only US 7 operates for the entirety of the 180 mile Western Corridor. All serve as the primary connections between Western Corridor cities and towns. All but I-89 have a primary function of providing access to adjacent properties while also serving as the principal arterial through the urban centers.

There are some exceptions to theses general characterizations. ,Where US 7 traverses the Green Mountain National Forest as a median-divided limited access highway between Bennington and Manchester , VT 7A serves as the principal urban arterial and alternate intercity highway. Immediately south of Rutland through Clarendon, US 7 provides limited access and is median-divided with at-grade intersections. From Burlington north to the Canada border, Interstate I-89 is the primary inter-city highway as US 7 retains the property access, urban arterial, and alternate intercity highway functions.

In order to establish the operational performance of US 7, VT 7A and VT 22A, the roadway characteristics which contribute to travel delay were investigated. Contiguous two-lane roadway segments outside the urban (and village) centers with similar characteristics and intersections within the corridor's villages and town centers were selected and analyzed.

Design hour volumes (2008) were calculated for each roadway segment and each intersection movement. Analysis was then performed in order to depict the levels of service for the two-lane roadway segments and intersections.

6.1.1 Level of Service

The applied Level of Service (LOS) methodologies are based on the concepts contained in the Highway Capacity Manual (HCM)[9]. These concepts apply qualitative measures that characterize operational conditions within a traffic stream and the driver's perception of these conditions. Essentially, level of service relates to driver delay and comfort. On two-lane roadways delay is expressed in terms of the average travel speed and the percent of time spent following another vehicle. For each roadway segment in this study, independent of its length, a single level of service has been determined for these planning purposes Where poor levels of service have been determined, a particular geometric, control and/or volume condition exists over some portion of the analysis segment.

[9] Published in 2000 by the Transportation Research Board.

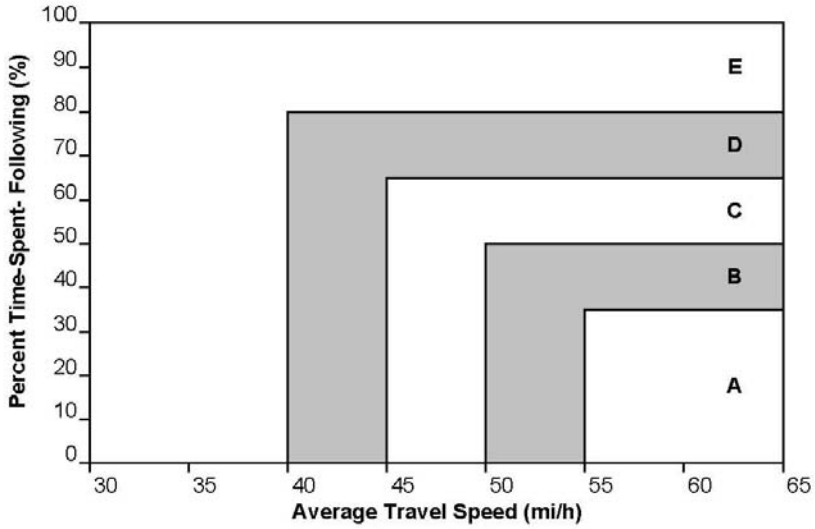
At signalized intersections, the level of service is based on the average control delay per vehicle. The methodology enables a level of service assessment for each approach to the intersection and for each movement on the approach. Moreover, an overall intersection level of service measure has been identified on the basis of average delay per vehicle passing through the intersection. At intersections that are controlled by "Stop" or "Yield" signs, per standard practice, the average delays experienced on the controlled approaches were calculated and then associated with a level of service.

6.1.2 Two-Lane Roadway Level of Service Analysis

On two-lane, two-way highways, lane changing and passing are possible only in the face of oncoming traffic in the opposing lane. Passing demand increases rapidly as traffic volumes increase, and passing capacity (opportunity) in the opposing lane declines as its volume increases. Level of service criteria uses both percent time-spent-following and average travel speed. It is important to note that roadways with lower design speeds and low speed limits will limit the level of service that can be achieved according to the definitions established in the HCM. Lane width, shoulder width, no-passing zones, truck percentage, roadway grades in general, and the directional split of traffic flow are all factors in the calculation of the percent time-spent-following and the average travel speed, which in turn are level of service criteria. The HCM defines six levels of service for two-lane roadways as graphically depicted in the HCM and illustrated in Figure 6.1, LOS Criteria for Two-Lane Highways in Class I – efficient mobility is paramount on Class I Two-Lane Highways as defined in the HCM. LOS is briefly summarized below with an associated upper level service volume:

- LOS A is the highest quality of traffic service when drivers are able to travel at their desired speed. Average speeds would be 55mph or greater, and delays due to following another vehicle would be experienced no more than 35 percent of the time in serving as many as 490 passenger cars per hour (pc/h).
- LOS B corresponds to 50 mph or greater speeds, with delays due to following another vehicle occurring no more than 50 percent of the time and a service volume of 780 pc/h.
- LOS C corresponds to 45 mph or greater speeds, with percent- time-spent-following not more than 65 percent and a service volume of 1,190 pc/h.
- LOS D involves great difficulty in passing while demand is high. Speeds of 40 mph are possible with 80 percent of the time spent following and being delayed by other vehicles. The maximum service flow rate is 1,830 pc/h.
- LOS E involves speeds below 40 mph or greater speeds are possible with not more than 80 percent time-spent-following. The capacity of the two-lane highway is defined by LOS E service volume of 3,200 pc/h.
- LOS F conditions exist when traffic demand exceeds capacity.

Figure 6.1 LOS Criteria (graphical) for Two-Lane Highways in Class I



Source: Highway Capacity Manual, 2000.

Special considerations were made for the Western Corridor Transportation Plan project regarding the two-lane roadway LOS analysis when using the Highway Capacity Software (HCS+). These are:

- The estimated free flow speed attainable under LOS A is seven mph greater than the posted speed limit.
- Where one or a series of grades in excess of seven percent exist, suggesting a mountainous terrain segment, separate upgrade and downgrade analysis segments are not used for each grade. Instead, a combined segment is considered with an adjusted free flow speed reduction of five mph.
- Where a climbing lane is present within the combined mountainous segmentor on a rolling segment, no free flow speed adjustment was made.
- Design hour volumes are associated with each segment section based on the highest and most frequently occurring Average Annual Daily Traffic (AADT) observations, or estimates from VTrans traffic volume data sources and the K factor (ratio of 30th highest hour volume to the AADT) associated with the nearest Continuous Traffic Count (CTC) station.
- Directional distribution is based on the north-south proportions of the evening peak hour volume derived from VTrans observed intersection turning movement counts.
- Lanes are assumed to be 12 feet wide.

- In-vehicle field observations throughout the rural roadway segments of the corridor provided approximate locations of posted speed limits, shoulder width estimates, and location of "No Passing" pavement markings and truck climbing lanes.
- VTrans' Route Logs were used to identify significant roadway grades.

6.1.3 Intersection Level of Service Analysis

Level of service for signalized intersections, as well as for intersections controlled by "Stop" and "Yield" signs, is measured in terms of average delay. Study calculations are in accordance with the Highway Capacity Manual except for the "Yield" sign controlled Circulator Roadway in Winooski. The Intersection Capacity Utilization (ICU)[10] evaluation procedures accompanying the Synchro Software was applied to the Circulator. The delay at signalized intersections has several components including time slowing, time stopped and time moving in a queue.

Synchro software was used for each intersection analysis, again applying the HCM method where possible. The number of lanes is the primary factor and 2008 Design hourly volumes were calculated based on best available VTrans CTC station data. Actual signal phasing and timing were used where available; otherwise, typical phasing and timing were applied. The signalized LOS calculations are sufficiently detailed for planning purposes; design would require many other operational factors. Stop-controlled intersections analyses are influenced by acceptable gaps in through traffic, which can differ by location; however, default critical and acceptable gap values were employed. On the "Yield" controlled approaches at the Circulator, some aspects of the geometry are similar to roundabouts; however others are not. The level of service is highly dependent on the perception of acceptable gaps which, in turn, is significantly influenced by lane use and drivers' use of turn signals. Assumptions were made in the absence of field data.

[10] Published in 2003 by Trafficware.

Table 6.1, Intersection Level of Service and Associated Delay, summarizes intersection Level of Service and associated delay.

Table 6.1 Intersection Level of Service and Associated Delay

LOS	Stop Control (Seconds)	Traffic Signal Control (Seconds)
A	<10	<10
B	>10 and <15	>10 and <20
C	>15 and < 25	>20 and <35
D	>25 and < 35	>35 and <55
E	>35 and <50	>55 and <80
F	>50	>80

Source: Highway Capacity Manual, 2000.

6.2 Western Corridor Roadway and Intersection Operations

The following sections describe the roadway conditions by segment along US 7, VT 7A and VT 22A. The descriptions are presented in a north-to-south progression. Intersections are addressed within the segment descriptions. Levels-of service for the segments are depicted graphically for each county an accompanying Figures 6.2 through 6.6. A summary of the Level of Service analysis for the roadway segments is presented at the end of this section in Table 6.2, Western Corridor – Two-Lane Highways in Class I. Level of Service analysis for the intersections is summarized in Table 6.3, Intersection Level of Service and Summary Data.

6.2.1 Northwest Region

Starting at the Canadian Border, a 6.5-mile segment of US 7 in **Highgate** was analyzed to the Swanton town line. This segment is level (grades less than 5 percent), has 2 to 4 foot shoulders, and operates with a 50 mph speed limit and 35 percent no passing zones. A corridor low design hour volume of 110 vehicles results in a 52.3 average travel speed correlating with LOS B.

Vermont Route 78 (VT 78) is an alternate route to/from the Canadian border via its connection to Interstate 87 in New York State. VT 78 intersects US 7 twice as these routes merge and cross. US 7 operates east of VT 78 north of their northernmost intersection and VT 78 operates to the east of US 7 south of their southernmost intersection. At the southerly intersection, VT 78 westbound is "Stop" sign controlled and operates at LOS D. At the northerly intersection, US 7 "westbound" is the "Stop" sign controlled approach and also operates at LOS D under the 2008 design hour condition.

In **Swanton**, the two-lane roadway extends to the St. Albans town line from the beginning of the state highway south of Swanton's common. This 6-mile segment with 3 to 4 foot shoulders over level terrain has no passing zones over 90 percent of its length and a speed limit of 40 mph. A computed 35.2 average travel speed corresponds to LOS E for the 552 vehicle design hour volume including 40 trucks.

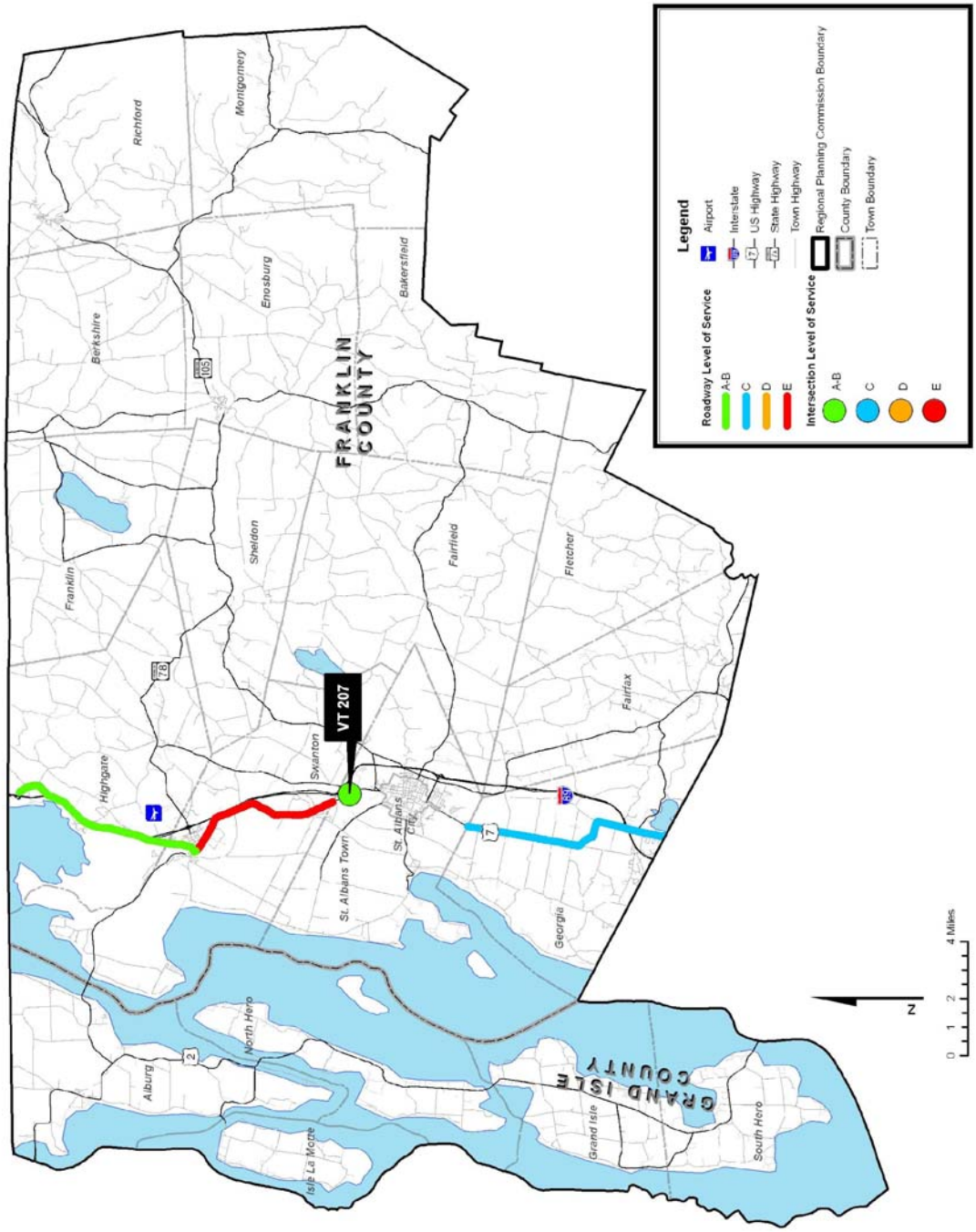
St Albans Town, along US 7 north of the City, is urbanized with dense commercial and retail development on both sides of US 7 from the Swanton town line north of the Vermont Route 207 (VT 207) intersection. Several retail development driveway intersections with US 7 along the northern end of St Albans Town are signalized, as is the VT 207 intersection. The VT 207 intersection lies immediately west of I-89 Exit 20 and the traffic signal at this intersection critically controls the traffic flows from I-89 to points north and south on US 7. Under existing conditions, all approaches include two lanes which provide one through lane on US 7 and a dedicated lane for each intersection turning movement, and results in LOS B overall.

US 7 is controlled at several signalized intersections through the urban center of **St Albans City** including the access road to I-89 Exit 19, Vermont Route 36, Vermont Route 38, and others. Immediately north of the City in St Albans Town, Vermont Route 105 (VT 105) intersects US 7 as an unsignalized intersection. Single lane approaches are provided at this intersection, where the "Stop" controlled VT 105 approach operates at LOS F under the 2008 design hour volume.

A 5.5-mile two-lane roadway segment of US 7 extends from the St Albans City Line to I-89 Exit 18 in **Georgia**. The rolling terrain with grades of 5 to 7 percent, 3 to 4 foot shoulders, 70 percent no passing results in an average travel speed of 46.0 and 57.7 percent time-spent-following relating to LOS D for the 491 design hour volume including 35 trucks.

A 3-mile two-lane roadway segment of US 7 lies partially in Georgia and partially in **Milton**, extending from a point south of I-89 Exit 18 to North of Milton's Village. The terrain over this segment is level. Shoulders are 2 feet wide. The speed limit is 50 mph with 90 percent no-passing along the length. This segment serves a 552 vehicle design hour volume including about 35 trucks. The resulting average travel speed, 45.4 mph and 59.3 percent time-spent-following indicates LOS D.

Figure 6.2
Northwest Region Level of Service



6.2.2 Chittenden County

Three US 7 two-lane roadway segments were identified and analyzed in **Milton.** Two are south and one north of Milton's village center. The two segments to the south are contiguous, north and south of Andrea Lane. Both operate with 50 mph speed limits, serve 1,244 vehicles including 80 trucks in the design hour volume with very similar no passing restrictions: 90 percent to the north; and 85 percent to the south.. North of Andrea Lane, the 1-mile segment operates with 3 to 4 foot shoulders resulting in an average travel speed of 42.3 and 76.1 percent time-spent-following indicating LOS D. South of Andrea Lane, the 1.5-mile segment operates with 8 to 10 foot shoulders resulting in an average travel speed of 44.0 and the same percent time-spent-following also indicating LOS D.

The intersection of US 7 and US Route 2 (US 2) in **Colchester** is a signalized intersection adjacent to I-89 Exit 17. The northbound US 7/ US 2 approach provides for left turns with a dedicated lane and protected signal phase. A right turn lane is provided on the southbound US 7 approach. Two lanes on the eastbound US 2 approach provide a lane each for left and right turns. The overall intersection operates at LOS C under the 2008 design hour volume condition with left turn movements operating at LOS D.

Two segments in Colchester were analyzed: a one mile segment from Blakely Road to Rathe Road and a two-mile segment between VT 2A and US 2. Both segments operate over rolling terrain with a 50 mph speed limit. The northern Colchester segment serves 1,256 vehicles including 109 trucks in the design hour with 2 to 4 foot shoulders and 40 percent no passing zones resulting in an average travel speed of 42.8 mph (LOS D) and percent time spent following of 74.3 percent (LOS D). The southern segment serves 1,741 vehicles including 150 trucks in the design hour with 8 to 10 foot shoulders but no passing provisions resulting in an average travel speed of 40.7 mph. The combination of corridor highest volume on this two-lane segment with no passing provision results in the one segment on the corridor which exceeds the LOS E threshold for percent time-spent-following at 84.3 percent.

US 7 continues south into a commercial center where VT 15 crosses the corridor. These two major roadways provide access to the **Winooski** CBD. The confluence of traffic flows is controlled with a rectangular roundabout/rotary-type one way flow circulation pattern. The US 7 approaches into the "Circulator", as it is known, are under "Yield" sign control. Other Circulator features are:

- Adjacent service roads on the north and west sides of the rectangle,
- Two-lane northbound and southbound roadways on the longer sides;
- Single lane eastbound and westbound roadways on the shorter sides;
- A signalized pedestrian crossing of US 7 through the midsection.

The operation of the Circulator is highly dependant on circulating drivers' use of turn signals to indicate right turns from shared use lanes. Assuming an even distribution of the 2008 design hour volume on the southbound circulator roadway lanes and 50 percent turn signal use on the westbound circulator roadway lane, the US 7 approaches operate at LOS E.

US 7 passes through mixed commercial areas, residential neighborhoods, the **Burlington** Central Business District (CBD), and more mixed commercial and residential areas to the north of the city. US 7 has numerous traffic signal controlled intersections including its intersection with US 2 in the CBD. This intersection operates with left turn lanes on the US 2 approaches and single lane approaches on US 7. The traffic signal has heavy pedestrian demand served by a pedestrian phasing which significantly influences the LOS C overall operation with regularly occurring pedestrian phases.

The US 7 intersection with I-189 lies within **South Burlington** but operates as part of the City of Burlington's signal system. This intersection serves approximately 4,500 vehicles during the 2008 design hour and operates at LOS B overall.

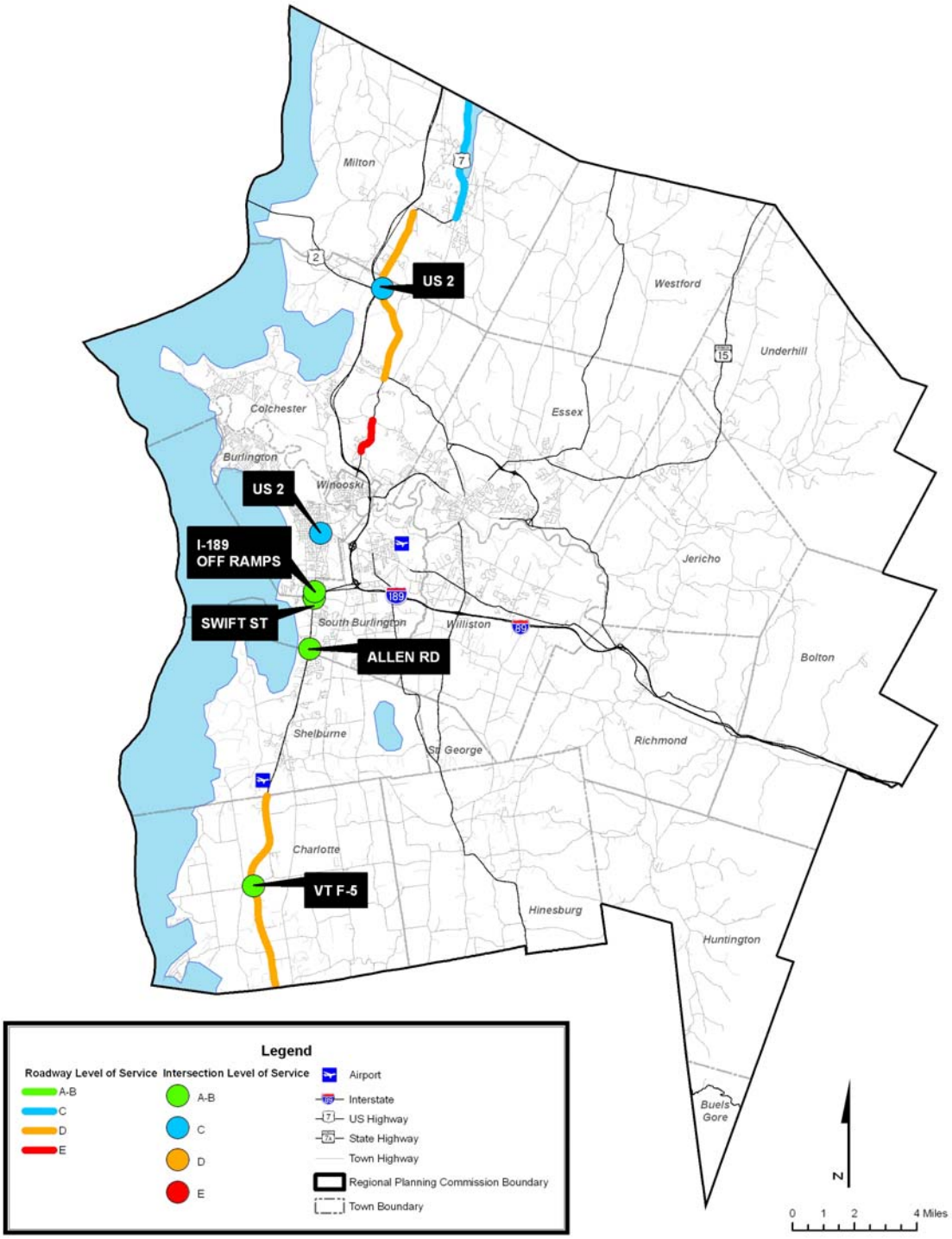
In **South Burlington** north of the recent US 7 reconstruction, a six-intersection signal system provides access to a very dense area of retail and commercial development, and for through traffic to/from Interstate 189 (I-189). The Swift Street intersection is included in this signal system and operates at an overall LOS B with a similar volume of 4,500 vph; however, the southbound left turn movement design hour volume at this intersection exceeds capacity. Farther south in South Burlington there are several other signalized intersections that were included in the recent "Shelburne Road" improvement to a five-lane cross-section.

The "Shelburne Road" project started about one mile north of **Shelburne** village. The US Route 7 (Shelburne Road) cross section improvements include a median divided roadway with two through lanes in both directions, left turn lanes , U-turn provisions for cars and trucks, and twelve signalized intersections. The closer spaced signals to the north are part of the South Burlington- Shelburne signal system which prioritizes progression of through traffic. These intersections operate at acceptable levels of service including the Allen Road intersection which operates at LOS B overall with some minor approaches and left turn movements operating at LOS D, with a US 7 design hour volume through this intersection of approximately 2,500 vph.

Flow on US 7 on the two lane roadway is interrupted by a traffic signal controlled intersection within Shelburne village and by another south of the village. The intersection of US 7 and Vermont Route F5 (VT F5) in **Charlotte** is also traffic signal controlled. A northbound left turn lane and signal phase are provided enabling the intersection to operate at LOS B overall.

Two 3-mile segments of US 7 in Charlotte were analyzed as two-lane highways. The northern segment runs from the Shelburne town line to a point just north of the VT F5 intersection. The southern segment extends from a point south of VT F5 to the Ferrisburgh town line. Both traverse rolling terrain and the extent of no-passing zones is similar at 70 percent in the north and 80 percent in the south. The south segment volume is about 10 percent less than the north segment's 1,302 vph design hour volume with a common 11 percent trucks. The major difference is 8 to 10 shoulders on the north segment and 1 to 2 foot shoulders present in the southern segment. The north segment has a 44.7 mph average travel speed and 76.4 percent time-spent-following which are within the LOS D range. The south segment has a computed average travel speed of 41.1 mph and 74.4 percent time-spent-following with a LOS of E.

Figure 6.3
Chittenden County Level of Service



6.2.3 Addison County

From the Charlotte town line US 7 runs five miles through **Ferrisburgh** as a two-lane roadway over rolling terrain to an intersection with VT 22A. The roadway has 8 to 10 foot wide shoulders and no passing indicated over 40 percent of the segment. The design hour volume is slightly greater than 1,300 vph including 140 trucks. The average travel speed of 44.7 mph and 75.0 percent time-spent-following indicate LOS D.

The US 7 intersection with VT 22A forms a T-type intersection which is controlled by a traffic signal. A northbound left turn lane and signal phase are provided at this intersection, which operates overall at LOS B and all movements at LOS C or above.

Route 22A, south of its intersection with US 7, serves as the principal arterial through **Vergennes'** downtown. Several signalized intersections within the downtown serve as collector roads providing access to US 7. From the Vergennes town line south to US 4 in Fairhaven the two-lane VT 22A roadway traverses 39 miles. From north to south, 22A passes through **Panton, Addison, Bridport, Shoreham, Orwell, Benson, West Haven, and Fairhaven**. With the exception of short segments through the smaller villages along this route, the speed limit is 50 mph. There is some variation in shoulder width, but generally, 1 to 2 foot shoulders are present. No-passing zones are identified over 30 percent of the segment. A southbound climbing lane is provided on one of the steeper grades. The 570 design hour volume including a corridor-high 15.7 percent trucks (90 peak hour trucks), travel at a computed average travel speed of 45.7 mph and 53.3 percent-time- spent- following of which correlate with LOS D

From the Ferrisburgh to the Middlebury town lines, a 9-mile segment extends through the towns of **New Haven and Waltham.** The grades through this segment frequently exceed 7 percent and therefore identified as mountainous. The highway configuration responds to this condition with four climbing lanes in the southbound direction and two in the northbound direction. Ample shoulders are provided throughout with widths of 8 to 10 feet. The posted speed limit is 50 mph and no-passing zones comprise just 30 percent of the segment. The 903 design hour volume is lower than that through Middlebury. Approximately 100 trucks are present during the design hour. This segment operates with an average travel speed of 47 mph and 66.9 percent time-spent-following indicative of LOS D.

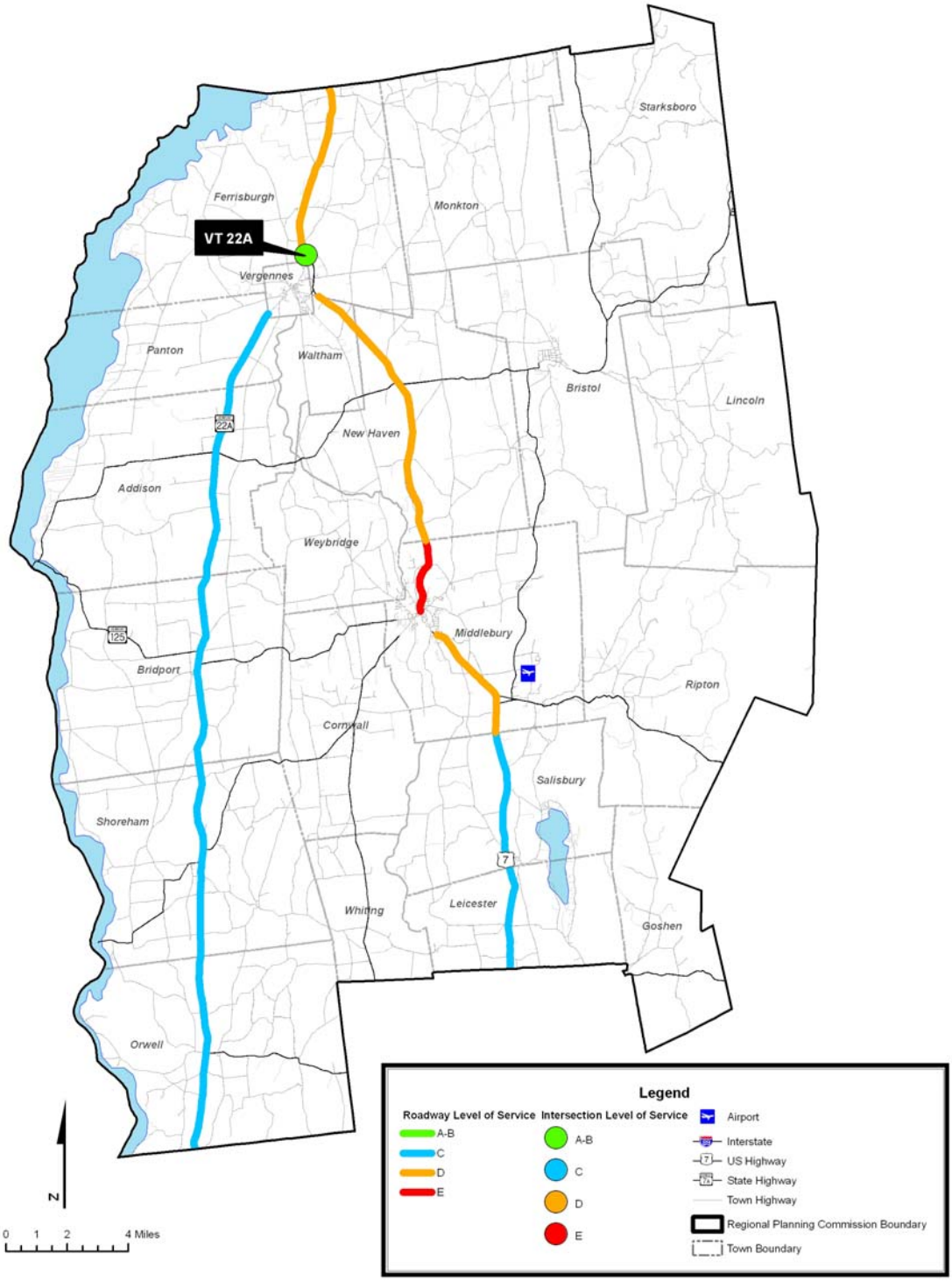
A short 1-mile segment of a two-lane roadway in Middlebury north of Court Square was analyzed due to the reduced 40 mph speed limit. It features 2 to 4 foot shoulders and100 percent no passing. The directionality of peak traffic, a 55%-45% split contrasts with the peak period directional splits to the south. This segment operates at LOS E with an average travel speed of 33.2 mph.

US 7 serves Middlebury as a principal arterial through its town center. A six-intersection traffic signal system between Court Square and the Plaza Center Drive intersection, and one other traffic signal north of the Square, control the flow on US 7 through this urban segment. Within the Court Square area, US 7 is routed on one-way streets about the Court Square common. Vermont Route 125 (VT 125) forms two other intersections with US 7, one serves eastbound VT 125 and Vermont Route 30 traffic turning north onto US 7 and the other (Seymore Street) serves eastbound traffic turning south onto US 7. This pair of unsignalized Route 125 intersections with US 7, north of the Court Square one way circulation, operate at LOS B for right turns onto US 7/ VT 125 and LOS E for left turns onto US 7 under the 2008 design volume conditions.

In Middlebury design hour volumes increase by about 25 percent over adjacent roadway segments north and south of the town. The design hour volume is approximately 1,100 vehicles including over 90 peak hour trucks and the peak period traffic is highly directional with 70 percent traveling in the peak direction. On the 3.5-mile two-lane roadway segment in the southern end of the town beginning south of the Plaza Driveway intersection, there are ample passing opportunities with only 20 percent no passing and 8 to 10 foot wide shoulders. The calculated average travel speed is 47.2 mph with 67.8 percent time-spent-following indicative of LOS D. VT 125 intersects US 7 within this segment; however with a southbound left turn lane and a northbound acceleration lane the intersection has little influence on the flow of through vehicles on US 7.

From the Middlebury town line, the two lane US 7 roadway passes through the towns of **Leicester and Salisbury** to the northern end of Brandon. This 10-mile segment traverses level terrain with grades less than 5 percent, shoulders 5 to 8 feet wide, a 50 mph speed limit and no passing over just 20 percent of its length. The 862-vehicle design hour volume including over 100 trucks exhibits a 65 percent peak directionality and experiences LOS C with average travel speed of 48.4. mph. and 60.7 percent time-spent-following.

Figure 6.4
Addison County Level of Service



6.2.4 Rutland County

Within **Brandon** village, the speed limit is reduced to 40, 35, and 25 mph. Angle parking is provided along US 7 and Vermont Route 73 (VT 73) jogs across the corridor forming two unsignalized intersections. The northerly intersection with just 70 vehicles on the eastbound approach operates at LOS C. The westbound "Stop" sign controlled VT73 approach of the more southerly intersection has greater design hour volume (227 vph) and operates at LOS D.

Near Humiston Drive in Brandon, a 6-mile two lane roadway segment posted for 50 mph begins. This segment with 2 to 4 foot shoulders and 40 percent no passing ends north of **Pittsford** Village near Kendall Hill Road. Directionality of the 884 vehicle design hourly volume on US 7 is 60 percent in one direction. The design volume of 884 vehicles including 85 trucks, combined with the rolling terrain results in a 44.6 average travel speed, 66.8 percent time-spent-following and LOS D.

Through the village of Pittsford, the speed limit is also incrementally reduced to 25 mph. Additionally, on-street parking serves to slow traffic north of the Vermont Route 3 (VT 3) intersection with US 7. The "Stop" sign controlled eastbound approach operates at LOS D.

The two-lane US 7 roadway continues into the north portion of **Rutland Town**. The 5-mile analysis segment begins at a point just south of the VT 3 intersection in Pittsford to Chittenden Road. The terrain includes some grades in excess of 7 percent and recognized as mountainous for this two-lane analysis. The roadway shoulders are narrow at 1 to 2 feet. The speed limit is 50 mph. Passing is not allowed on 50 percent of the segment; however, a truck climbing lane is provided for southbound traffic The 982 vehicle design hour volume including approximately 80 trucks in combination with these conditions results in LOS E operation as indicated by the computed average travel speed of 41.7and 70.0 percent time-spent-following.

US 4 joins US 7 from the east and both routes are designated on the same roadway into **Rutland City**. This traffic signal controlled intersection, whose fourth leg is a retail driveway, operates with dedicated left turn lanes on all approaches and two on the westbound approach. The intersection operates at LOS D overall under 2008 design hour volume conditions with the eastbound approach operating at capacity and the southbound left turn exceeding capacity.

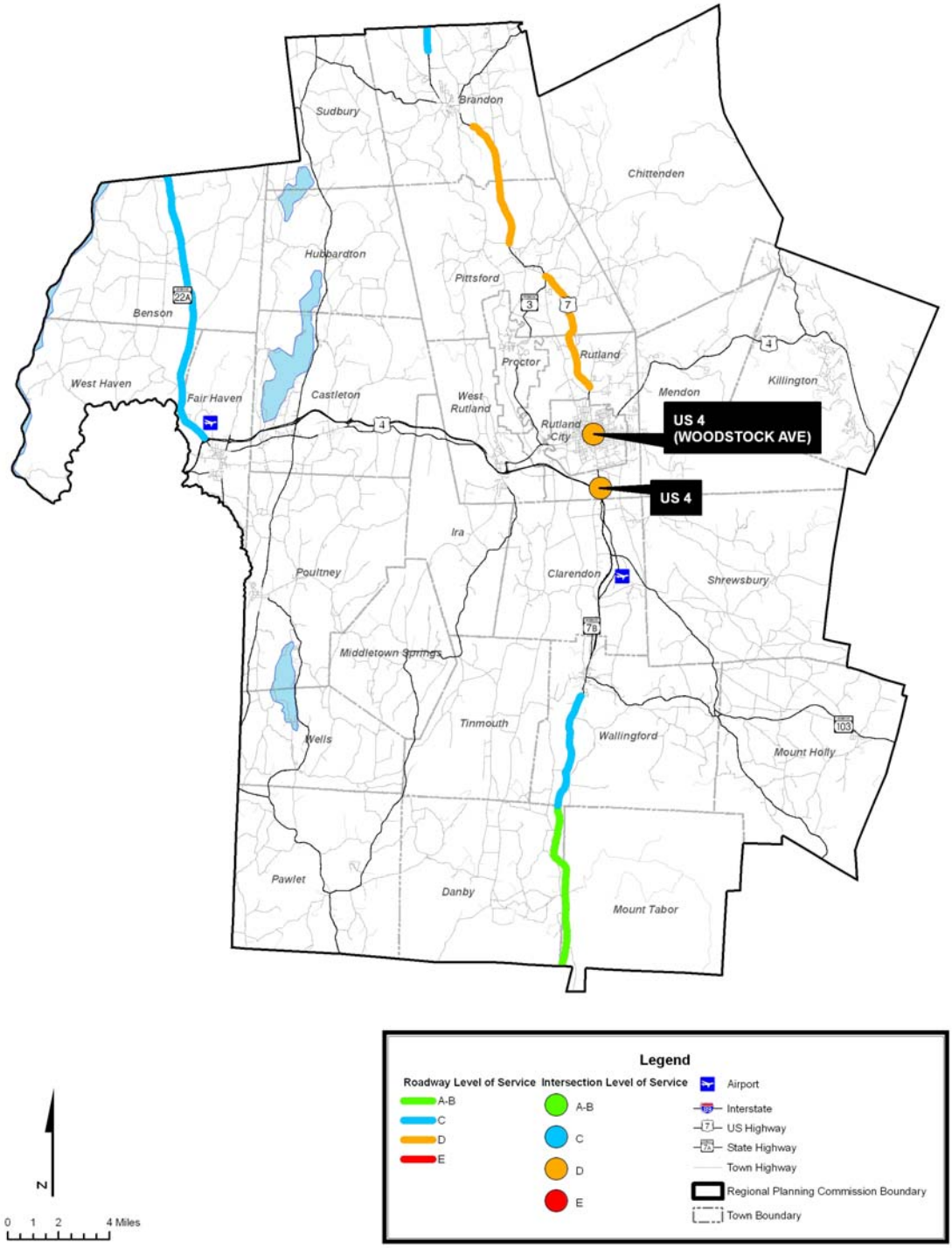
Multiple through lanes on US 7 are provided within Rutland Town and City where adjacent land has been developed and, in general, there is no median in the roadway. Traffic signal control governs the through traffic flow with many coordinated signals operating within a signal system. South of the City, US 4 breaks off to the west from US 7 opposite the southern driveway to the Diamond Run Mall. This intersection is under traffic signal control has designated turn lanes and signal phasing for left turns is provided. Overall the intersection operates at LOS D; however, the northbound and eastbound left turn movements meet or exceed their capacity.

Continuing to the south, through **Clarendon and into Wellington,** US 7 operates as a divided multi-lane highway with signalized intersections at major crossings, median breaks for other unsignalized intersections and no access from adjacent properties. US 7 within **Wallingford** village is characterized by a 30 mph speed limit, on street parking, and the signalized intersection of Vermont Route 140 .

South of Wallingford village, US 7 crosses Otter Creek and continues through **Danby**. This 6.5 mile segment includes 1 to 2 foot shoulders over rolling terrain. The speed limit is 50 mph and no passing zones exist over 35 percent of the segment. The truck percentage is high at 14.2 percent which translates to 75 peak hour trucks among the 530 design hour volume. LOS D operation is indicated by the 45.2 mph average travel speed and 55.6 percent time-spent-following.

US 7 continues from the Danby town line through **Mt. Tabor** and into **Dorset** over the next 6.5 miles. The terrain remains level while shoulders widen to 8 to 10 feet and no-passing zones reduce further to 10 percent. Correspondingly, the two-lane operation improves to LOS C with a calculated average travel speed of 51.3 mph.

Figure 6.5
Rutland County Level of Service



6.2.5 Bennington County

The unsignalized intersection of VT 7A and US 7 lies north of the **Dorset-Manchester** town line. The VT 7A approach operates at LOS C under "Stop" sign control. US 7 traverses three miles from Sweeney Lane in Dorset south to this intersection. The design hour volume is 498 vehicles with approximately 45 trucks. The speed limit is 50 mph. The roadway is on level terrain with only 20 percent of the segment marked for no-passing. Shoulder widths are 1-2 feet. The calculated average travel speed is 46.6 mph resulting in LOS D operation.

US 7 continues south through Manchester, Sunderland, Glastonbury, Shaftsbury and into Bennington as a limited access highway with three interchanges. A 55 mph speed limit and truck climbing lanes provide optimal operating conditions for the 2008 design hour volume which is less than 700 vehicles per hour.

On the alternate route heading into the Manchester village center, a 3.5-mile segment of VT 7A includes 5 to 6 foot shoulders on grade level terrain with 50 percent no passing zones and a 50 mph speed limit. These characteristics provide a relatively high 930-vehicle design hour volume including 60 trucks with a 67.1 percent-time-spent-following indicative of LOS D operation.

As US Route 7 passes to the east of the village as a limited access highway. The northbound and southbound off ramps form T-type intersections with VT 11 at Exit 3 in Manchester. The unsignalized northbound ramp and low volume southbound ramp operate at LOS D and C respectively.

In Manchester, a 4.5-mile segment south of the village center carries 880 vehicles during the design hour including 40 trucks. The speed limit on this similarly rolling section is slightly greater at 45 mph. A northbound truck climbing lane and other passing provisions yields an average travel speed of 37.3 mph associated with LOS E.

Continuing from the Manchester town line to **Arlington,** the design hour volume is 616 including 29 trucks. The speed limit drops to 40 mph with no provisions for passing and consequently a 33.2 mph average speed results in LOS E.

VT 7A continues through Arlington into **Shaftsbury**. A southbound climbing lane is provided on this segment which carries 540 design hour vehicles including an estimated 40 heavy vehicles. A speed limit of 50 mph from the Route 313 intersection in Arlington through Shaftsbury to the Bennington town line affords LOS D operations where passing is prohibited on 90 percent of the 6-mile segment with 3-4 foot shoulders given the calculated average travel speed of 45.5 mph and percent time-spent-following of 61.0

VT 7A intersects US 7 at the north end of Bennington. The northbound and southbound approaches have 4 lanes and there are 3 lanes on the VT 7A eastbound and westbound approaches. Overlapping left and right turn lanes and phasing on all approaches result in an overall LOS D. The particularly heavy northbound left turn design hour volume exceeds the capacity of that movement under optimized timing.

Within Bennington's downtown Vermont Route 9 intersects US 7. This signalized intersection, with separate left turn lanes and phasing, operates at LOS D overall. Farther north at the County Street / US 7 intersection, all but one of the single lane approaches operate at LOS B while the intersection operates at LOS B overall under a two-phase signal control.

South of the Bennington downtown area to the Pownal town line, a 2-mile segment of US 7 in Bennington serves the 804 vehicle design hour volume on rolling terrain. The segment's 1 to 2 foot shoulders and no passing opportunity results in an average travel speed of 42.7 mph and a 68.3 percent-time-spent-following which both indicate LOS D.

In Pownal, the operation of the 8-mile length of mountainous US 7 roadway extending to the Massachusetts border is aided by one southbound and two northbound truck climbing lanes. With a 50 mph posted speed limit, the effect of 3 to 4 foot shoulders and steep grades result in an average travel speed of 45.3 mph despite only 20 percent "No-Passing" over the segment. The 804 design hour vehicles, including about 50 trucks, result in a calculated percent-time-spent-following of 62.2 percent. LOS D is governed by both criteria on this segment.

Figure 6.6
Bennington County Level of Service

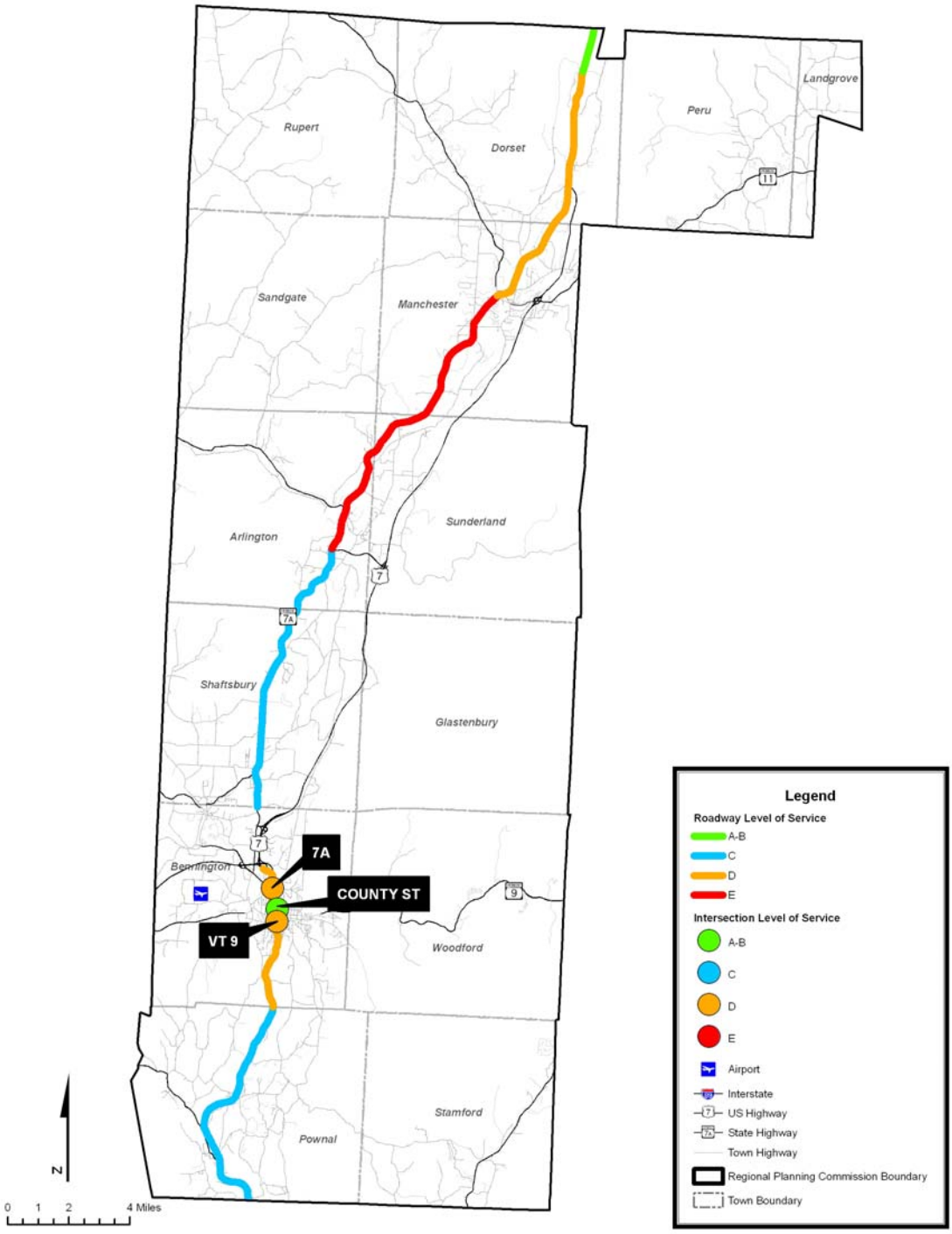


Table 6.2 Western Corridor – Two-Lane Roadway Segment Analysis Data and Level of Service

Towns	Endpoints North	Endpoints South	Route	Access Points	Geometrics Length (miles)	Geometrics Terrain Type	Geometrics Shoulder (feet)	Truck Climbing Lanes	2006 Volume Total AADT	2006 Volume K Factor	Speed Limit (mph)	No Passing %	Truck %	Directional Split	2006-2008 Growth	2008 AADT	2008 DHV	LOS
Franklin County																		
Highgate	Canada Border	N of VT 78	US 7	13	6.5	level	2 to 4		890	11.8	50	35%	8.5%	60_40	1.04	930	110	B
Swanton	State Highway S	St Albans TL N	US 7	20	6.0	level	3 to 4		4,500	11.8	40	90%	7.4%	60_40	1.04	4,680	552	E
St Albans - Georgia	St Albans CL	N of Exit 18	US 7	14	5.5	rolling	3 to 4		4,000	11.8	50	70%	6.8%	60_40	1.04	4,160	491	C
Georgia - Milton	S of Exit 18	Milton Village	US 7	9	3.0	level	2		4,500	11.8	50	90%	6.7%	60_40	1.04	4,680	552	C
Chittenden County																		
Milton	S of Bartlett Rd	S of Andrea Ln	US 7	2	1.0	level	3 to 4		10,500	11.5	50	90%	6.4%	65_35	1.03	10,820	1,244	D
Milton to Colchester	S of Andrea Ln	North of US 2	US 7	8	1.5	level	8 to 10		10,500	11.5	50	85%	6.4%	70_30	1.03	10,820	1,244	D
Colchester North	S of US 2	N of VT 2A	US 7	1	2.0	rolling	2 to 4		10,600	11.5	50	40%	8.7%	75_25	1.03	10,920	1,256	D
Colchester South	Blakely Rd	Rathe Rd	US 7	4	1.0	rolling	8 to 10		14,700	11.5	50	100%	8.7%	65_35	1.03	15,140	1,741	E
Charlotte	Shelburne TL	N of VT F5	US 7	3	3.0	rolling	8 to 10	1 NB	12,400	10.4	50	70%	11.0%	50_50	1.01	12,520	1,302	D
Charlotte to Ferrisburgh	S of VT F5	Ferrisburgh TL	US 7	3	3.0	rolling	1 to 2		11,200	10.4	50	80%	11.0%	50_50	1.01	11,310	1,176	D
Addison County																		
Ferrisburgh	Ferrisburgh TL	VT 22A	US 7	11	5.0	rolling	8 to 10		12,500	10.4	50	40%	10.7%	50_50	1.01	12,630	1,313	D
Panton-Addison-Bridport-Shoreham Orwell-Benson-West Haven-Fairhaven	Vergennes TL	US 4	VT 22A	61	39.0	Level	1 to 2	1 SB	4,700	11.9	50	30%	15.7%	55_45	1.02	4,790	570	C
Waltham-New Haven	Ferrisburg TL	Middlebury TL	US 7	16	9.0	mountainous	8 to 10	4 SB - 2 NB	8,200	10.8	50	30%	10.7%	55_45	1.02	8,360	903	D
Middlebury North	Middlebury TL	State Highway	US 7	0	1.0	rolling	2 to 4		10,100	10.8	40	100%	8.3%	55_45	1.02	10,300	1,113	E
Middlebury South	Centre Plaza	Salisbury TL	US 7	5	3.5	level	8 to 10		10,000	10.7	50	20%	9.2%	70_30	1.02	10,200	1,091	D
Salisbury - Leicester - Brandon	Salisbury TL	Larch Ln	US 7	13	10.0	level	5 to 8		7,900	10.7	50	20%	11.9%	65_35	1.02	8,060	862	C
Rutland County																		
Brandon- Pittsford	Hunniston Dr	Kendall Hill Rd	US 7	8	6.0	rolling	2 to 4		8,100	10.7	50	40%	9.7%	60_40	1.02	8,260	884	D
Pittsford - Rutland	VT 3	Chittenden Rd	US 7	20	7.0	mountainous	1 to 2	1 SB	9,000	10.7	50	40%	8.4%	55_45	1.02	9,180	982	D
Clarendon - Wallingford	Rutland TL	End of median	US 7	7 mile multilane urban arterial					13,700	10.7	55	NA	8.0%	NA	1.01	13,800	1,480	**
Wallingford-Danby	River	Danby TL	US 7	11	6.5	rolling	1 to 2		4,900	10.7	50	35%	14.2%	55_45	1.01	4,950	530	C
Mt Tabor-Dorset	Danby TL	Sweeney Ln	US 7	17	6.5	level	8 to 10		4,600	10.7	50	10%	9.3%	55_45	1.01	4,650	497	B
Bennington County																		
Dorset	Sweeney Ln	N of VT 7A	US 7	7	3.0	level	1 to 2		4,600	10.7	50	20%	9.3%	55_45	1.01	4,650	498	C
Manch.-Sunderland-Shaftsbury-Glastonbury	S of VT 7A	End of median	US 7	23 mile freeway					6,300	10.7	55	NA	15.8%	NA	1.01	6,360	680	***
Manchester - North	S of VT 7A	N of Village	VT 7A	10*	3.5	level	5 to 6		7,400	12.2	50	50%	6.4%	55_45	1.03	7,620	930	D
Manchester - South	S of Village	Arlington TL	VT 7A	12*	4.0	rolling	1 to 2	1 NB	7,000	12.2	45	70%	4.8%	55_45	1.03	7,210	880	E
Arlington	Arlington TL	VT 313	VT 7A	8*	2.5	rolling	1 to 2		4,900	12.2	40	100%	4.8%	55_45	1.03	5,050	616	E
Arlington-Shaftsbury	VT 313	Bennington TL	VT 7A	13*	6.0	rolling	3 to 4	1 SB	4,300	12.2	50	90%	7.4%	55_45	1.03	4,430	540	C
Bennington	South of Downtown	Pownal TL	US 7	2	2.0	rolling	1 to 2		7,100	11.0	50	100%	6.1%	50_50	1.03	7,310	804	D
Pownal	Pownal TL	MA Border	US 7	20	8.0	mountainous	3 to 4	1 SB -2 NB	7,100	11.0	50	20%	5.5%	50_50	1.03	7,310	804	C

Notes: * Estimated; **Multilane arterial with higher speeds and ability to pass and without delay except at signalized intersections; *** Freeway with higher speeds and ability to pass.

Table 6.3 Intersection Level of Service and Summary Data

Town	US 7 Intersection	Signal?	Level of Service Analysis												Overall HCM LOS
			US 7 Eastbound			US 7 Westbound			US 7 Northbound			US 7 Southbound			
			Left	Thru	Rt.	Left	Thru	Rt.	Left	Thru	Rt.	Left	Thru	Rt.	
Franklin County															
Swanton	VT 78 (Merchants Row)	N					C						A		
Swanton	VT 78	N					C						A		
St. Albans Town	VT 207	Y				B		B		B	A	B	A		B
St. Albans City	VT 105	N					F						A		
Chittenden County															
Colchester	US 2	Y	D		A				D	B			C	A	C
Winooski	VT 15	N									E		E		
Burlington	US 2	Y	B	C		C	D			B			D		C
South Burlington	I-189 Off Ramps	Y				D	D	A		B			C		B
South Burlington	Swift Street	Y				D		D		A		F	A		B
South Burlington	Allen Road	Y		C			D	C	D	B		D	A		B
Charlotte	VT F-5	Y		B			B		A	B			B		B
Addison County															
Ferrisburgh	VT 22A	Y	C		B				C	A			B	A	B
Middlebury	VT 125 / VT 30	N		E						A					
Middlebury	VT 125 / Seymore Street	N		B						A					
Middlebury	VT 125	N				C		A					A		
Rutland County															
Brandon	VT 73 (North)	N		B						A					
Brandon	VT 73 (South)	N					D						A		
Pittsford	VT 3	N		D						A					
Rutland City	US 4 (Woodstock Ave.)	Y		E		C	C		D	D	C	F	D		D
Rutland Town	US 4	Y	F	D	D	D	D	D	E	C		D	C	C	D
Bennington County															
Dorset	VT 7A	N		B						A					
Manchester	VT 11 (SB Off Ramps)	N											C		
Manchester	VT 11 (NB Off Ramps)	N		A						D					
Bennington	VT 7A	Y	D	D	C	D	D	C	F	C	C	D	D	C	D
Bennington	County Street	Y		B			C			B			B		B
Bennington	VT 9	Y	D	D		E	D		D	C		E	C		D

6.3 Workforce Travel Patterns

6.3.1 Means of Transportation

In 2000, an estimated 75 percent of commuters in the Western Corridor drove to work alone and 13 percent carpooled. With approximately a 1 percent usage rate, public transportation was not heavily relied upon. Five percent of commuters walked and less than one percent biked as a means to get to work. Commuting patterns of the 173,585 workers aged 16 and over in the Western Corridor were similar to those of the State of Vermont.

Residents of Franklin, St. Albans and Swanton in Franklin County had the highest carpool rates, at 20, 18 and 21 percent respectively. The towns of Brandon and Rutland had the highest drive-alone rates at 81 and 84 in that order.

At 62 percent, Burlington in Chittenden County had a relatively low drive-alone-to-work rate. Burlington had a high walk to work rate at 17 percent. Four percent of workers in both Burlington neighboring Winooski used public transportation to go to work. Chittenden County transit users represented half the riders in the State.

Middlebury in Addison County had an estimated 60 percent of commuters who drove alone to work; the lowest percentage in the corridor. Instead of using public transportation, the 24 percent of workers who walked was the highest value in the Western Corridor.

The average travel time to work for residents of Vermont was 22 minutes. At 15 and 17 minutes, Middlebury and Burlington were among the communities with the shortest travel times to work. Grand Isle County commuters had the longest travel times, 30 minutes or more. Table 6.4, Commuter Patterns – Means of Transportation, depicts this information in more detail.

Table 6.4 Commuter Patterns – Means of Transportation, 2000

Geographic Area	Average Travel Time to Work (minutes)	Total Workers 16 Years of Age and Over	Drove Alone	% Drove Alone	Carpooled	% Carpooled	Public Transportation	% Using Public Transportation	Walked	% Walked	Bicycled	% Bicycled
Vermont	**21.64**	**311,839**	**234,388**	**75**	**37,191**	**12**	**2,208**	**0.7**	**17,554**	**5.6**	**977**	**0.3**
Addison County	23.23	18,503	13,192	71	2,005	11	41	0.2	1,599	8.6	56	0.3
Middlebury town	15.06	3,772	2,263	60	296	8	10	0.3	904	24.0	38	1.0
Vergennes city	22.14	1,348	979	73	140	10	8	0.6	139	10.3	9	0.7
Bennington County	19.06	18,320	13,922	76	2,151	12	130	0.7	934	5.1	63	0.3
Bennington town	16.24	7,519	5,409	72	935	12	48	0.6	648	8.6	50	0.7
Chittenden County	19.75	79,670	60,619	76	8,581	11	1,186	1.5	5,144	6.5	424	0.5
Burlington city	16.82	20,848	13,016	62	2,499	12	802	3.8	3,500	16.8	250	1.2
Charlotte town	25.05	1,859	1,355	73	208	11	0	0.0	51	2.7	0	0.0
Colchester town	19.72	9,569	7,821	82	929	10	27	0.3	443	4.6	33	0.3
Essex town	18.85	10,458	8,661	83	1,105	11	101	1.0	159	1.5	34	0.3
Milton town	25.32	5,625	4,212	75	760	14	9	0.2	40	0.7	8	0.1
Shelburne town	20.09	3,470	2,762	80	334	10	12	0.3	130	3.7	9	0.3
South Burlington city	15.10	8,440	6,727	80	659	8	90	1.1	427	5.1	65	0.8
Williston town	18.54	4,081	3,478	85	279	7	0	0.0	43	1.1	12	0.3
Winooski city	18.91	3,282	2,421	74	456	14	122	3.7	182	5.5	4	0.1
Franklin County	25.59	22,578	16,544	73	3,728	17	43	0.2	908	4.0	29	0.1
Franklin town	28.89	682	443	65	137	20	0	0.0	31	4.5	0	0.0
St. Albans city	18.00	3,775	2,787	74	671	18	16	0.4	201	5.3	22	0.6
St. Albans town	23.55	2,555	1,934	76	463	18	10	0.4	46	1.8	0	0.0
Swanton town	24.54	3,136	2,128	68	662	21	0	0.0	153	4.9	0	0.0
Grand Isle County	33.36	3,466	2,559	74	571	16	8	0.2	81	2.3	3	0.1
Alburgh town	36.85	879	633	72	134	15	0	0.0	31	3.5	0	0.0
Rutland County	20.62	31,048	24,181	78	3,463	11	183	0.6	1,484	4.8	51	0.2
Brandon town	24.80	1,871	1,511	81	215	11	0	0.0	90	4.8	0	0.0
Rutland city	15.10	8,028	5,789	72	1,175	15	112	1.4	566	7.1	11	0.1
Rutland town	16.73	2,103	1,770	84	160	8	11	0.5	34	1.6	2	0.1

Source: US Census Bureau, 2000, Summary File 3 (SF 3).

6.3.2 Location of Travel

At 95 percent, the vast majority of residents work within the Western Corridor. Very few Western Corridor residents leave the corridor for work and very few non-corridor residents come into the corridor for work.

The percentage of workers who work outside their county of residence fluctuates. Only 9 percent of Chittenden County residents left the county for employment. On the other hand, 43 percent of Grand Isle County residents worked outside the county. In large

part, these patterns were consistent with the location of the Western Corridor's employment centers. Statewide, only 22 percent of workers worked outside their county of residence.

Grand Isle County had 1,700 commuters or 50 percent of its workforce traveling to Chittenden County. The number of residents who left Grand Isle County to work (1,700) was greater than the number of people who lived in Grand Isle and stayed there to work (1,100).

Franklin and Grand Isle counties had the highest percent of its workforce leaving the county for employment (32%). With 7,300 commuters, Franklin County had the largest number traveling into Chittenden County for jobs. Another 1,130 workers traveled from Chittenden County into Franklin County. Sixty-four percent of Franklin County residents remained in Franklin County to work.

At 93 percent, Chittenden County had the highest percentage of residents who lived and worked in the same county. Almost 87 percent of Rutland County's residents stayed in Rutland County to work. Nearly 6,000 and 4,200 residents left Chittenden and Rutland counties respectively to work in neighboring counties. The number of employees in the neighboring counties was evenly distributed.

Seventy-one percent of Addison County residents remained in Addison County to work. However, 4,000 residents traveled to work in Chittenden County whereas only 940 of Chittenden County residents worked in Addison County.

An interesting anomaly was that 20 percent of workers in the town of Bennington reported that they worked outside of the State of Vermont. This percentage was significantly higher than the 7 percent of Vermont residents who worked outside the State. This is apparently because many workers commute to jobs in neighboring New York State.

Approximately 83 percent of Bennington County residents worked in Bennington County. At almost ten percent, the county had the highest percentage of residents working outside the State, commuting to either New York or Massachusetts. Of the ten percent, the majority (over 6 percent) worked in Massachusetts. Over ten percent of workers came from either New York (9.9) or Massachusetts to work in Bennington County (1.7). It is interesting to note that the Western Corridor did not have many commuters coming from other Vermont counties.

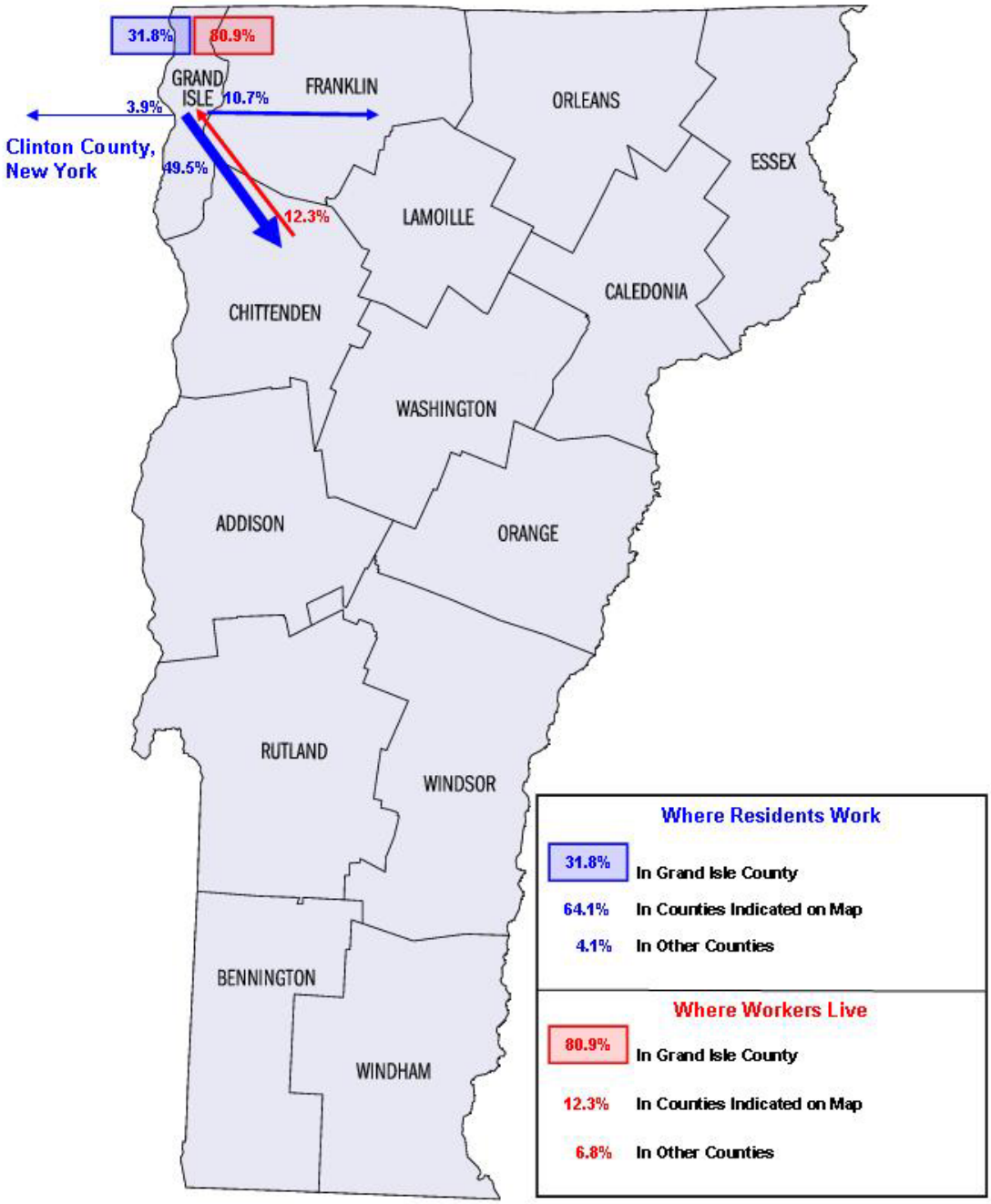
Table 6.5, Location of Workers 16 Years of Age and Over, presents an overall picture of inter-county travel patterns for communities in the Western Corridor. The following twelve graphics depict county of residence to place of work and workers in counties to place of work in more detail. Figures 6.7 – 6.18 graphically depict commuter patterns residents to place of work and workers from place of residence for each county in the Western Corridor.

Table 6.5 Location of Workers 16 Years of Age and Over, 2000

Geographic Area	Worked Outside Town or City of Residence	Percent Worked Outside Town or City of Residence	Worked Outside County of Residence	Percent Worked Outside County of Residence	Worked Outside Vermont	% Worked Outside Vermont	Worked at Home	Total Number of Workers
Vermont	**202,707**	**65.7**	**66,901**	**21.7**	**21,346**	**6.9**	**17,651**	**308,605**
Addison County	11,934	62.5	5,433	28.4	270	1.4	1,469	19,106
Middlebury town	805	55.3	355	24.4	62	4.3	233	1,455
Vergennes city	822	60.3	462	33.9	13	1.0	66	1,363
Bennington County	8,968	58.1	3,195	20.7	2,296	14.9	984	15,443
Bennington town	1,617	47.0	789	23.0	683	19.9	348	3,437
Chittenden County	53,557	84.7	5,572	8.8	801	1.3	3,323	63,253
Burlington city	9,694	82.0	1,240	10.5	231	2.0	655	11,820
Charlotte town	1,435	72.7	265	13.4	41	2.1	234	1,975
Colchester town	7,399	91.3	329	4.1	66	0.8	310	8,104
Essex town	6,110	83.9	724	9.9	116	1.6	336	7,286
Milton town	4,220	89.1	319	6.7	19	0.4	178	4,736
Shelburne town	2,536	82.8	286	9.3	18	0.6	223	3,063
South Burlington city	5,702	82.4	677	9.8	112	1.6	432	6,923
Williston town	3,015	83.6	297	8.2	53	1.5	243	3,608
Winooski city	2,795	91.3	158	5.2	40	1.3	68	3,061
Franklin County	16,546	63.2	8,158	31.2	223	0.9	1,254	26,181
Franklin town	515	71.1	138	19.1	4	0.6	67	724
St. Albans city	2,171	61.4	1,258	35.6	32	0.9	72	3,533
St. Albans town	1,871	63.6	945	32.1	22	0.7	102	2,940
Swanton town	2,242	68.8	801	24.6	44	1.4	172	3,259
Grand Isle County	2,655	48.8	2,363	43.4	219	4.0	203	5,440
Alburg town	617	46.5	546	41.1	100	7.5	65	1,328
Rutland County	19,554	74.1	4,216	16.0	1,140	4.3	1,476	26,386
Brandon town	1,093	69.0	429	27.1	14	0.9	47	1,583
Rutland city	2,633	73.4	533	14.9	126	3.5	295	3,587
Rutland town	1,401	86.7	91	5.6	29	1.8	95	1,616

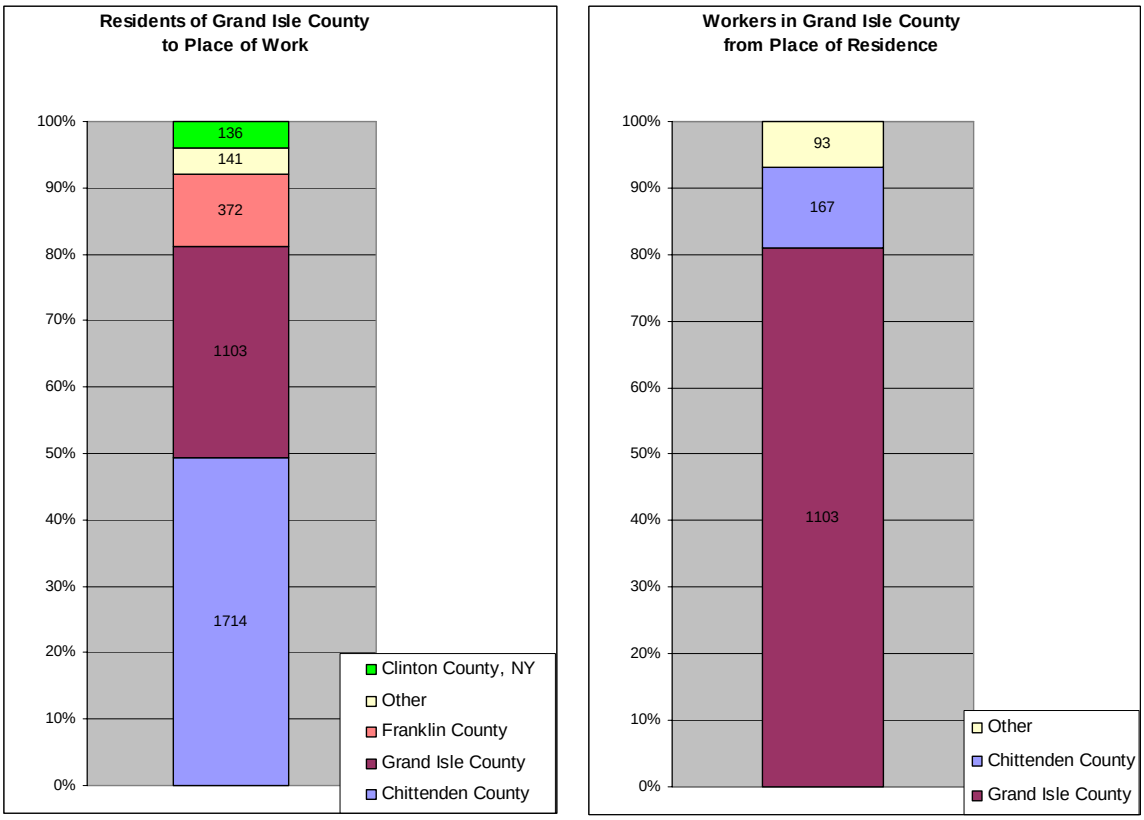
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.7 Northwest Region - Grand Isle County Workforce Travel Patterns



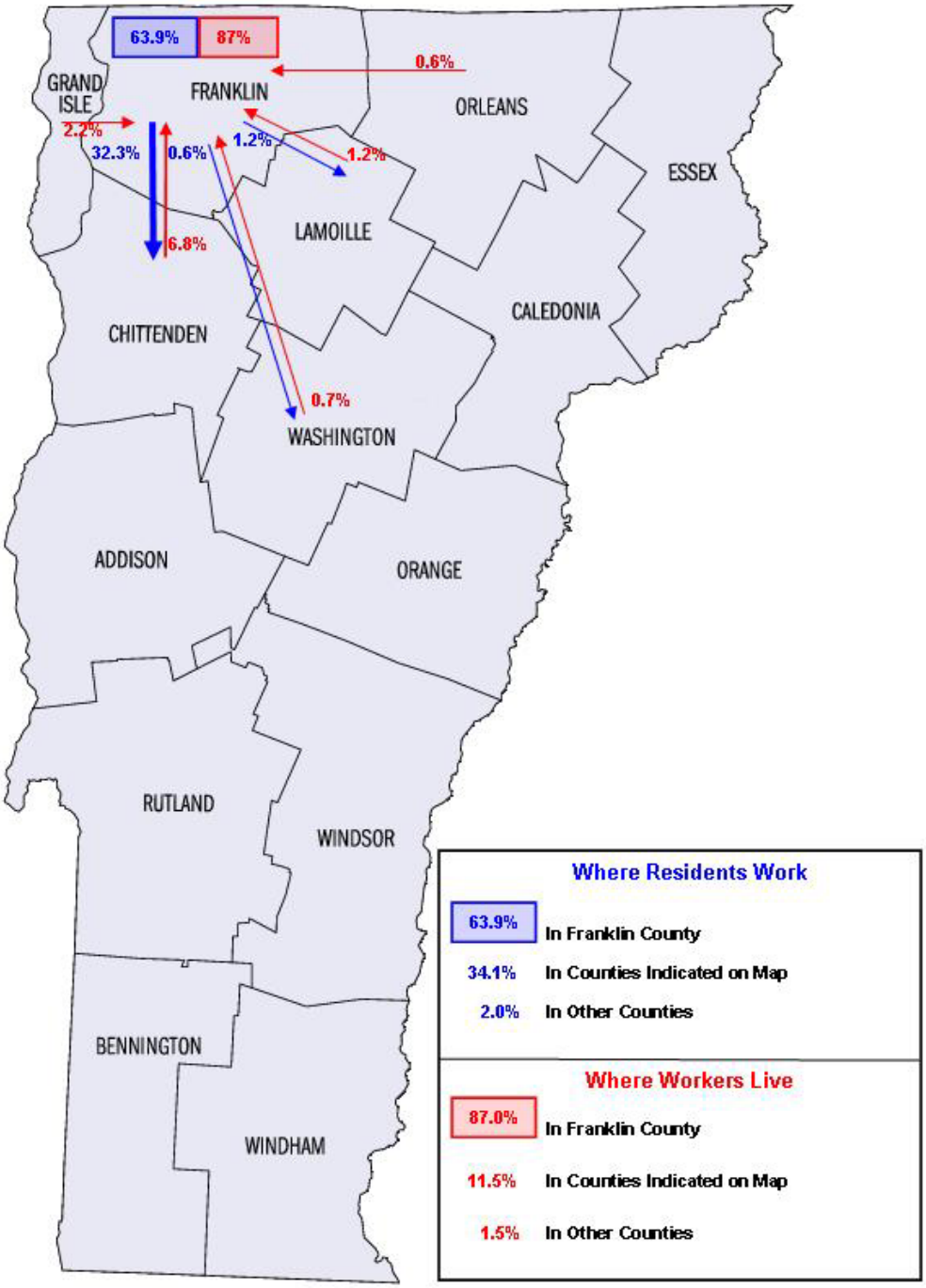
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.8
Northwest Region
Grand Isle County Residents to Place of Work and Workers from Place of Residence



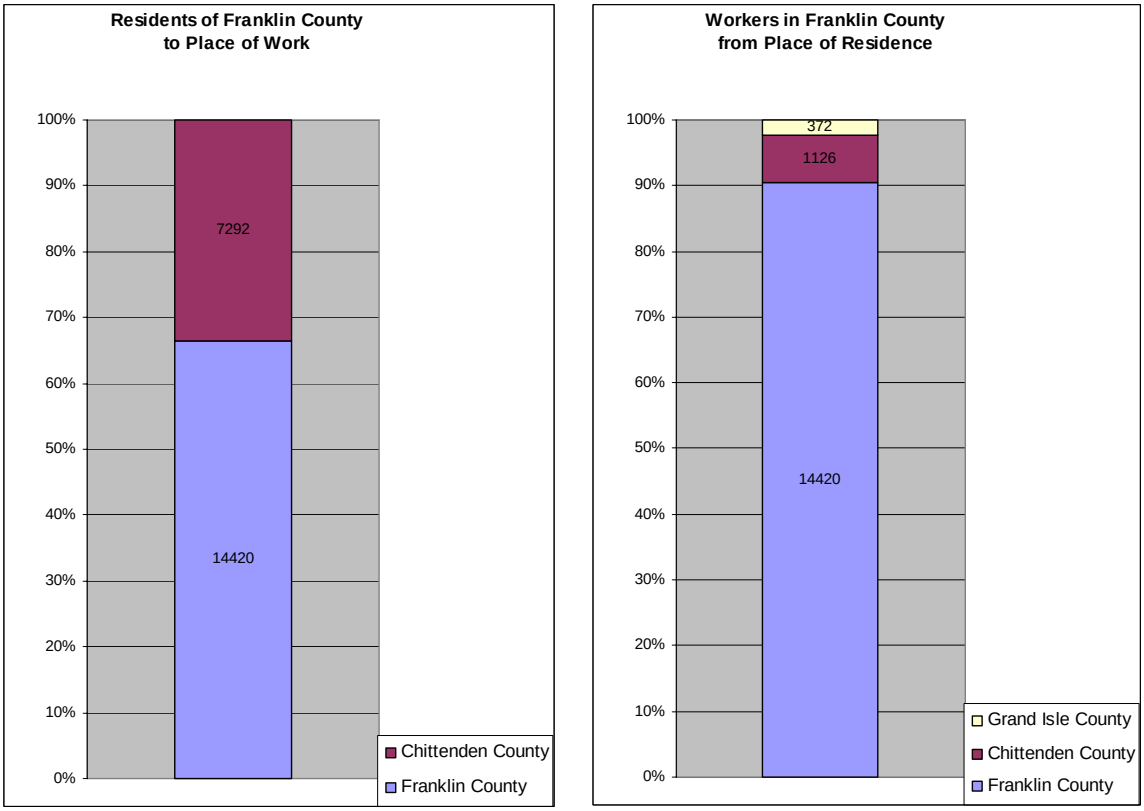
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.9 Northwest Region - Franklin County Workforce Travel Patterns



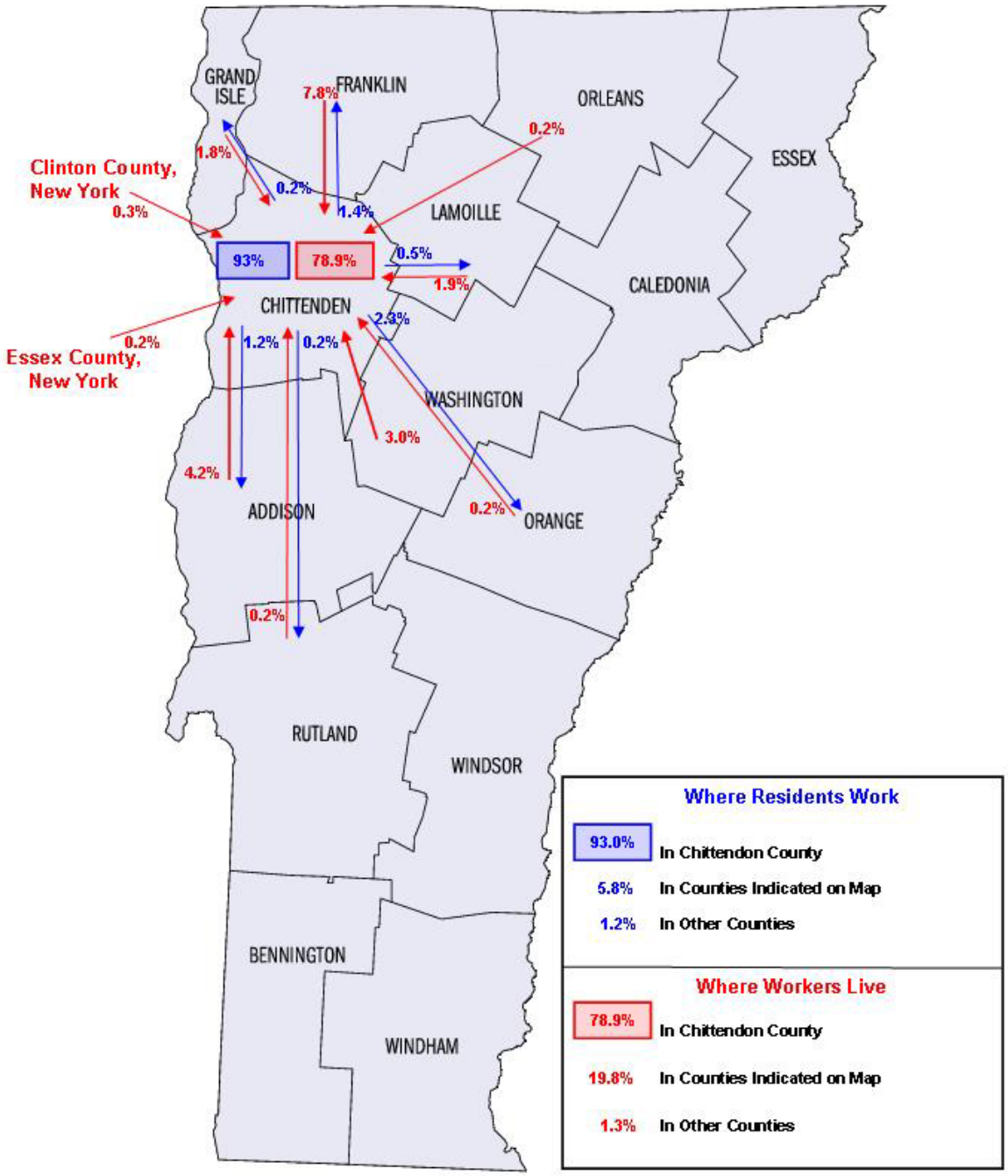
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.10
Northwest Region
Franklin County Residents to Place of Work and Workers from Place of Residence



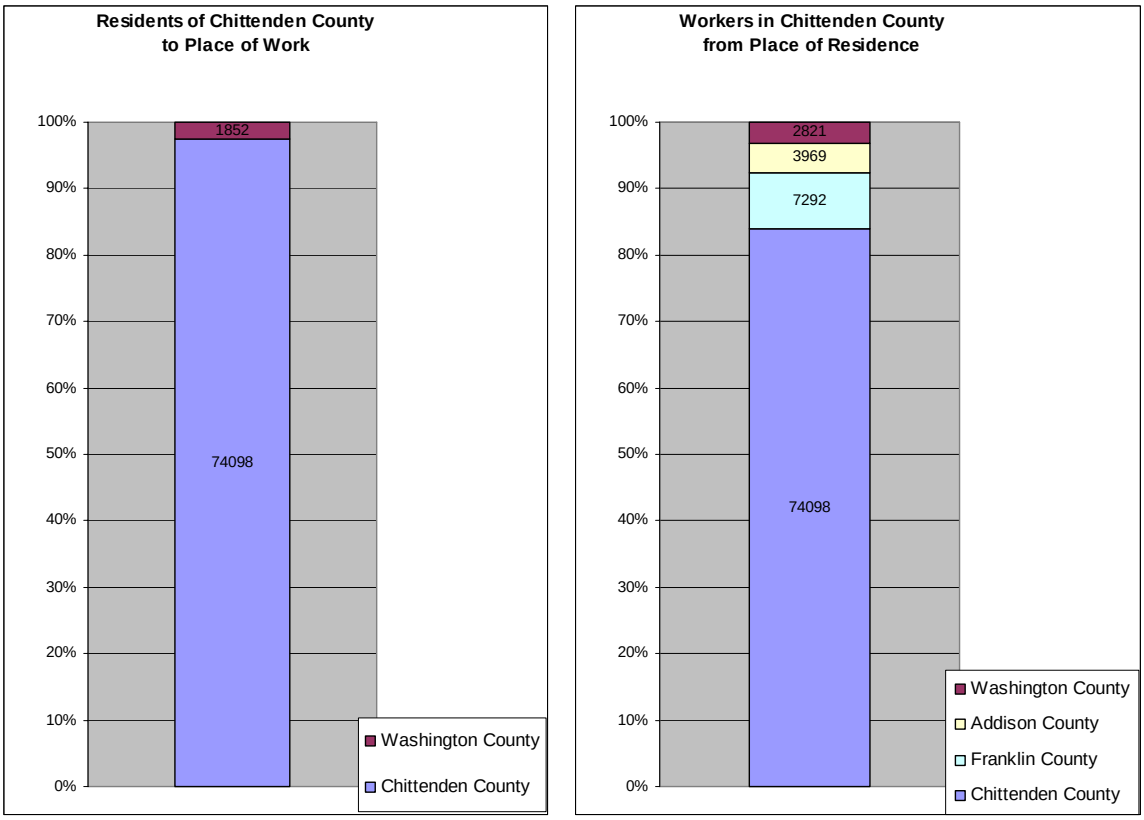
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.11 Chittenden County Workforce Travel Patterns



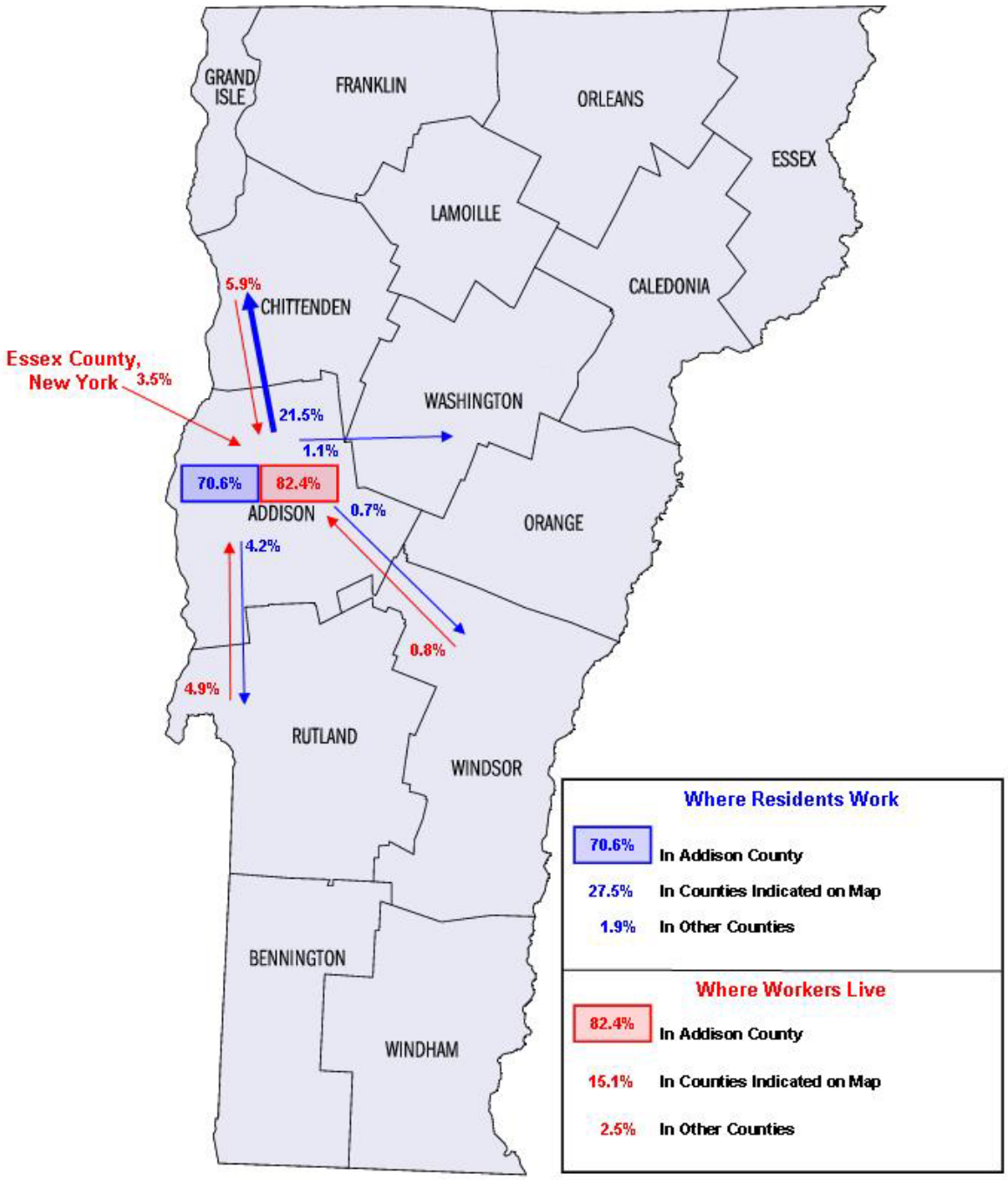
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.12
Chittenden County
Residents to Place of Work and Workers from Place of Residence



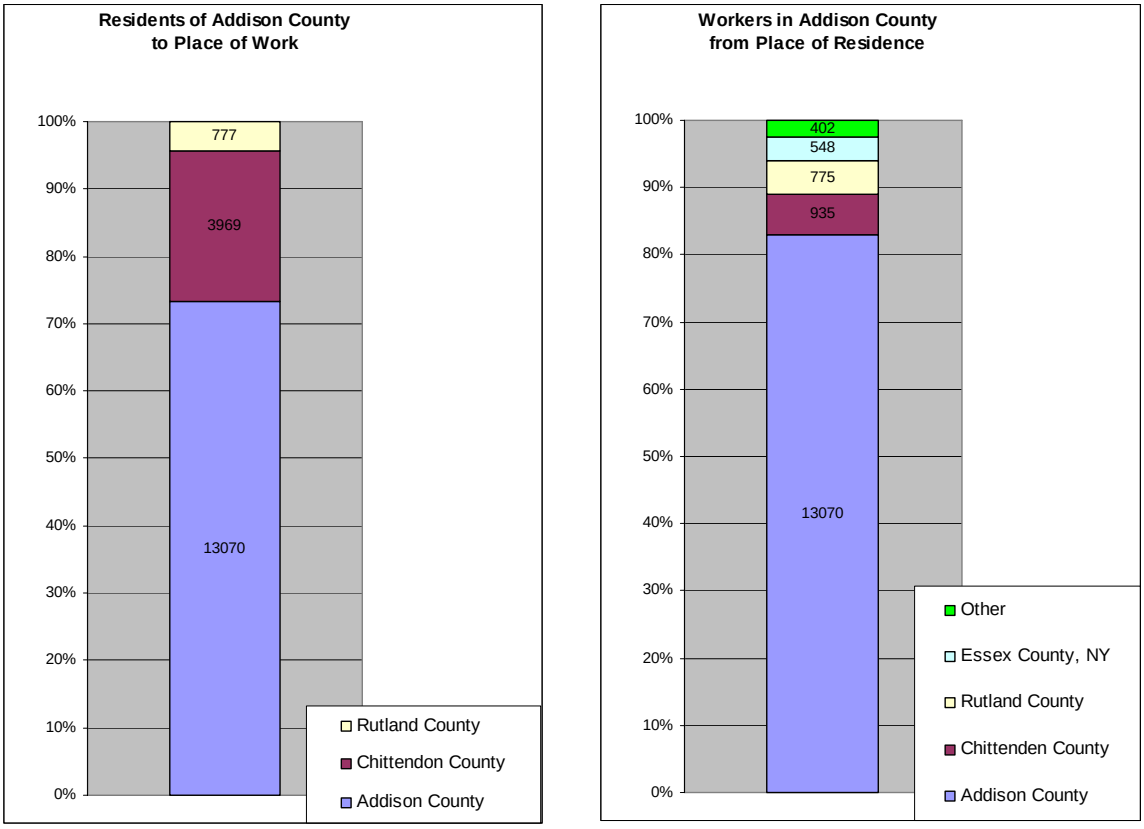
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.13 Addison County Workforce Travel Patterns



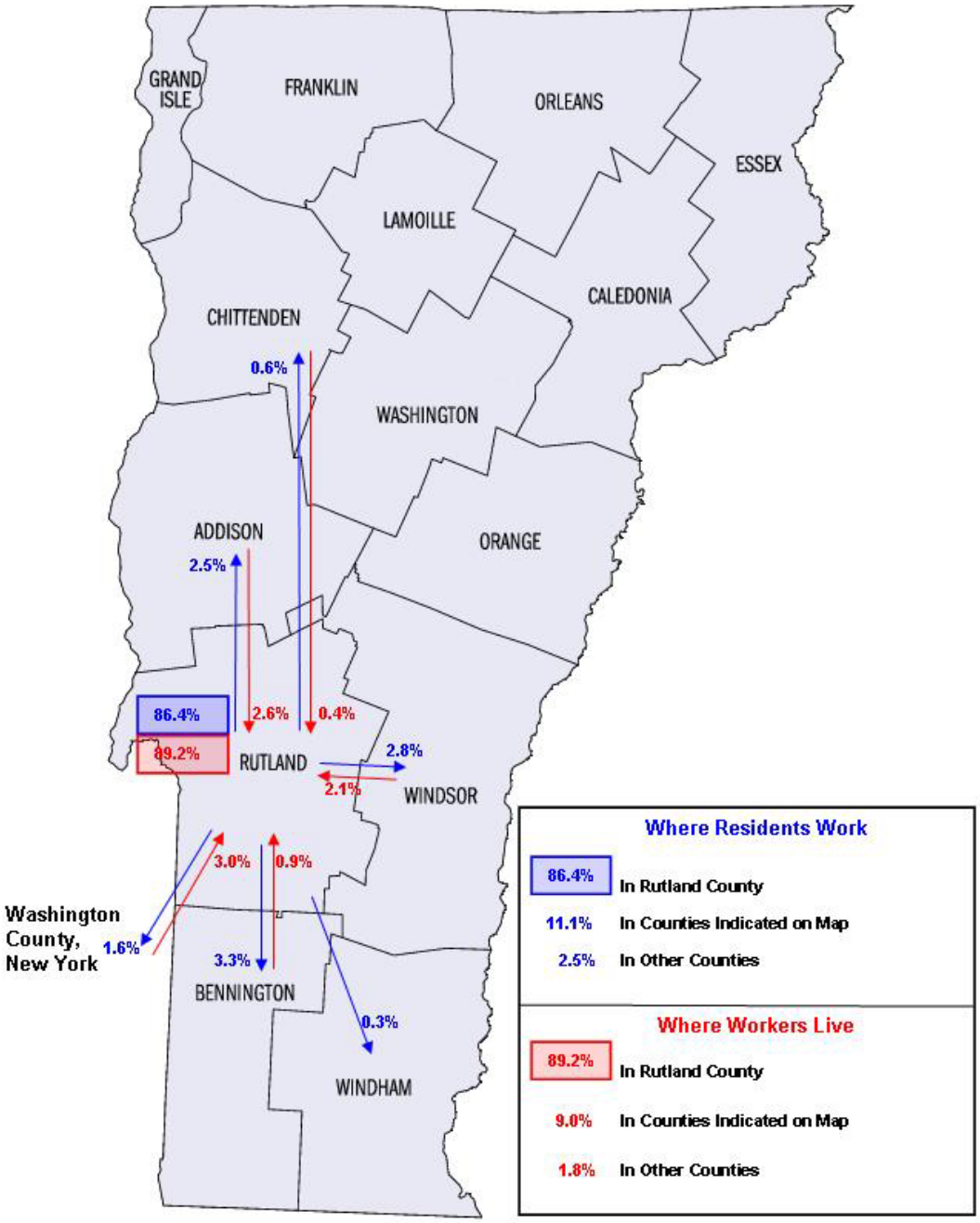
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.14
Addison County Residents to Place of Work and Workers from Place of Residence



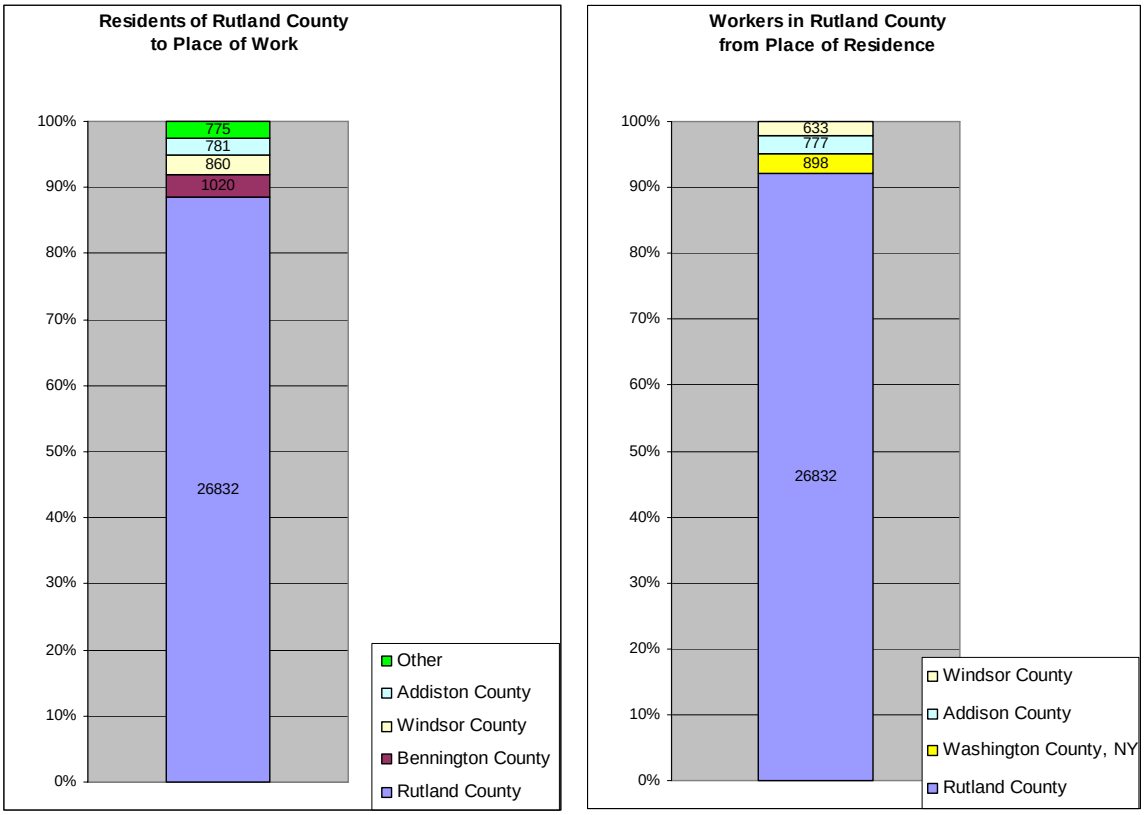
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.15 Rutland County Workforce Travel Patterns



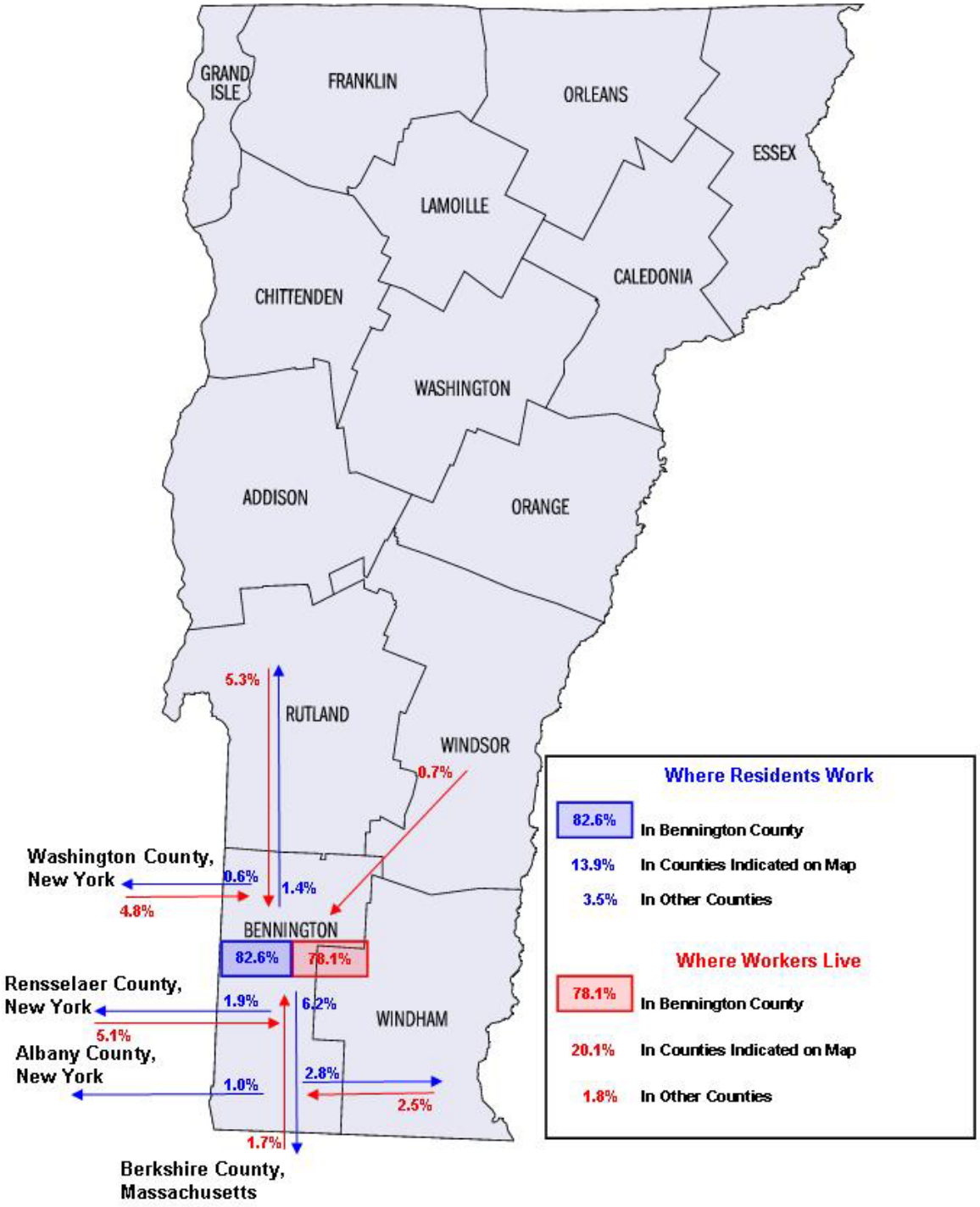
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.16
Rutland County Residents to Place of Work and Workers from Place of Residence



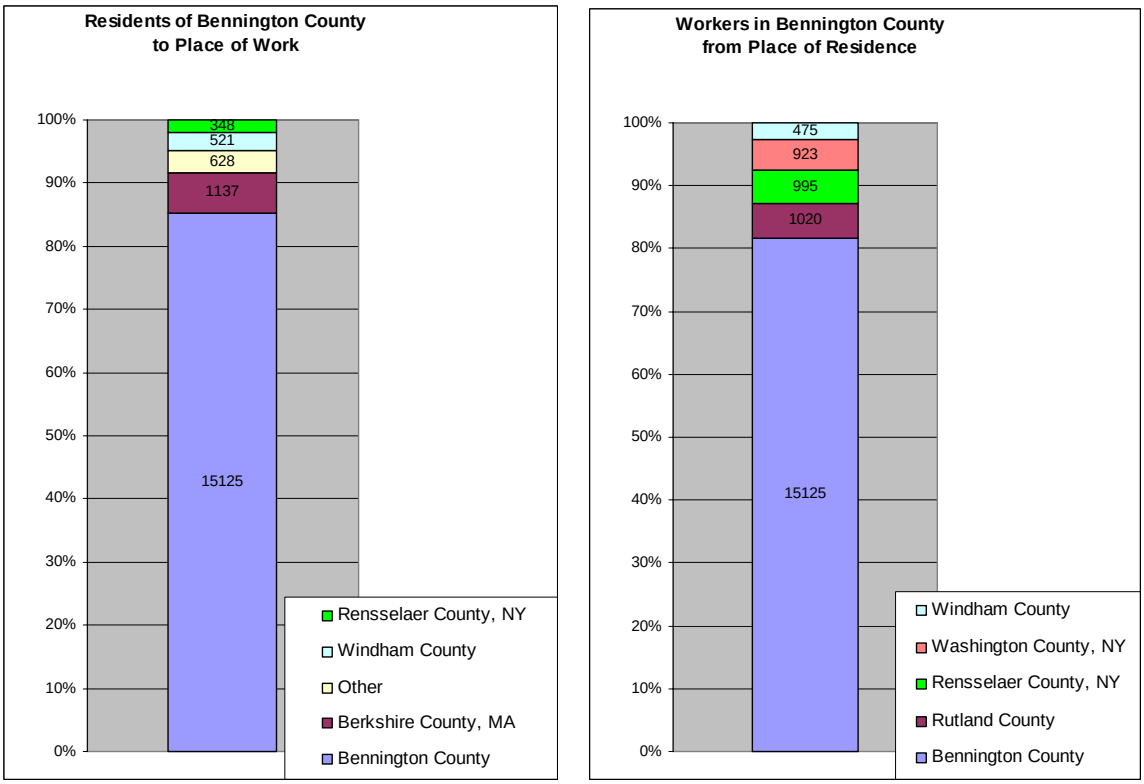
Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.17 Bennington County Workforce Travel Patterns



Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

Figure 6.18
Bennington County –
Residents to Place of Work and Workers from Place of Residence



Source: US Census Bureau, 2000, Residence MCD/County to Workplace MCD/County Flows for Vermont.

7.0 Freight and Trucks

This section discusses patterns of freight movement in the Western Corridor. The information presented includes:

- Commodity flow data describing the types of freight being transported in and out of the region;
- Border crossing data on the number of vehicle crossings and commodity volumes across the Canadian border;
- The Vermont truck network; and
- Truck volumes on major roadways.

7.1 Freight Movements and Commodity Flows

This section discusses the types of commodities moving into, out of, and within the state; the modes on which these commodities are traveling; and the origins and destinations of commodities flowing across the state's borders. Current commodity data are only readily available for the State of Vermont as a whole. Nevertheless, even the statewide data provide useful insights into the types of commodities being transported through the Western Corridor, which comprises a significant portion of the state. The commodity flow data utilized in this project are derived from the second generation of the Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF2). The FAF provides estimates of commodity flows and related freight transportation activity among states, sub-state regions (for larger states), and major international gateways. This version of FAF utilizes 2002 data along with forecast information and projects it to 2006. FAF provides data on origin, destination, commodity, and mode using three measures of goods movement – tons, ton miles, and value of goods moved.

In addition to the FAF, more detailed commodity flow data were previously analyzed for the 2001 Vermont Statewide Freight Study, using a proprietary dataset (the TRANSEARCH data purchased from Reebie Associates). While not completely current, these data provide some insights into the origins and destinations of commodities by county within the Western Corridor.

7.1.1 Overall Commodity Movements

As shown in Table 7.1, Freight Flows in Vermont by Direction of Travel, over 47 million tons of freight, worth over $43 billion, were transported into, out of, within, and through Vermont via truck, rail, air, and water modes in 2006. A brief description of freight flows by direction is provided below.

- *Outbound* movements accounted for 11.2 million tons with a value of $19.0 billion.
- *Inbound* movements accounted for 11.7 million tons with a value of $14.1 billion.
- *Intrastate* movements (entirely within Vermont) accounted for 8.2 million tons with a value of $4.8 billion.
- *Canadian through* movements accounted for 6.3 million tons with a value of $5.5 billion.
- *U.S. through* movements account for an additional, unknown tonnage and value. (The FAF2 commodity flow database used for this study did not include a viable form of estimating all through moves for the state, and as a result the only through moves that are included are cross-border through moves – from Canada to any U.S. state through Vermont's border crossings or vice-versa).
- The outbound, inbound, and Canadian through movements may include some freight bound to other countries such as Asian or European trading partners.

Table 7.1 Freight Flows in Vermont by Direction of Travel

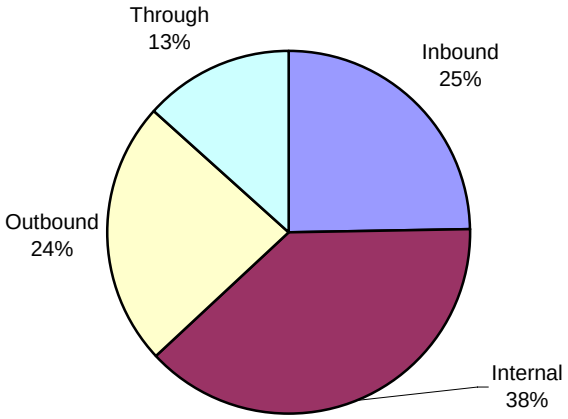
Direction	Tons	%	Dollars	%
Inbound	11,664,201	24.6	$14,135,593,200	32.5
Outbound	11,165,419	23.6	$19,023,254,600	43.7
Internal	18,209,716	38.5	$ 4,819,100,000	11.1
Through Border Trade	6,311,890	13.3	$ 5,509,549,000	12.7
Through trade, U.S. – U.S.	N/A		N/A	
Total	**> 47,351,225**	100	**> $43,487,496,800**	100

N/A – Not Available

Source: Federal Highway Administration, Freight Analysis Framework (2006), http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

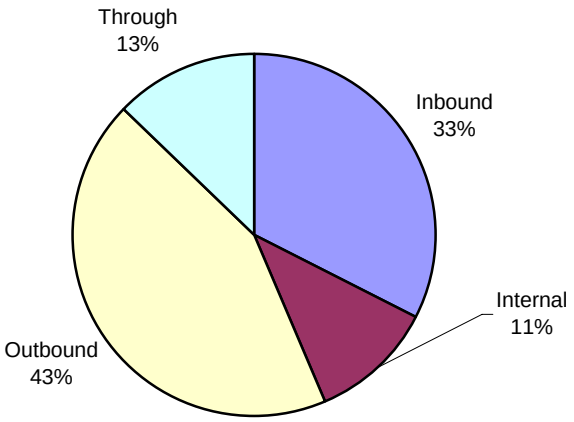
Figures 7.1 and 7.2 show the percentage of trade for each of these movements, by weight and volume. While these figures do not reflect U.S. – U.S. through shipments, they nevertheless illustrate some interesting trends. Intrastate shipments make up the most significant portion of the overall freight shipments in the state (38 percent by weight). This high volume is partially attributed to traffic moving from/to warehouses and other secondary distribution facilities, and drayage traffic from/to intermodal rail yards. However, as Figure 7.2 reflects, internal shipments have a very low value per ton compared to external shipments; they account for 38 percent of total shipments by weight, yet only 11 percent by value. The primary commodities moved within the state, as measured by weight, were gravel, logs, sand, and cereal grains, accounting for over 50 percent of all internal freight flows. It is also interesting to note that while inbound and outbound shipments are relatively equal in terms of weight, outbound shipments account for a much larger portion of shipments by value (43 vs. 33 percent).

Figure 7.1 Total Freight Flows by Type of Movement, by Weight (not including U.S. – U.S. through flows)



Source: Federal Highway Administration, Freight Analysis Framework (2006), http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

Figure 7.2 Total Freight Flows by Type of Movement by Value (not including U.S. – U.S. through flows)



Source: Federal Highway Administration, Freight Analysis Framework (2006), http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

Examining commodity movements by county from the older TRANSEARCH data, Chittenden County is by far the largest recipient of inbound flows (2,917 thousand tons annually), reflecting the goods needed to serve its population base. Chittenden County also represents the largest source of outbound flows (625 thousand tons annually), but Rutland County produces almost as much outbound tonnage (541 thousand tons annually), especially reflecting the mining operations and associated products produced in that county. Table 7.2, Commodity Flows by County, shows inbound and outbound flows by county.

Table 7.2 Commodity Flows by County

Direction	Inbound	Outbound
Addison	202.5	91.1
Bennington	235.3	207.8
Chittenden	2,916.6	624.6
Franklin	356.8	141.8
Grand Isle	6.7	0.7
Rutland	649.2	541.1

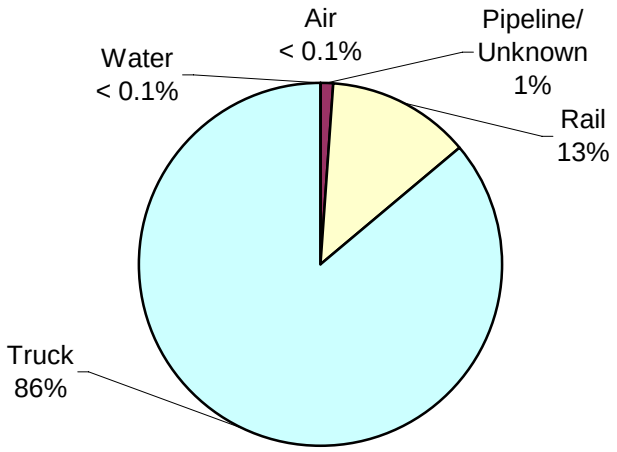
Values are in 1,000s.

Source: VTrans Vermont Statewide Freight Study, 2001.

7.1.2 Commodity Movement by Mode

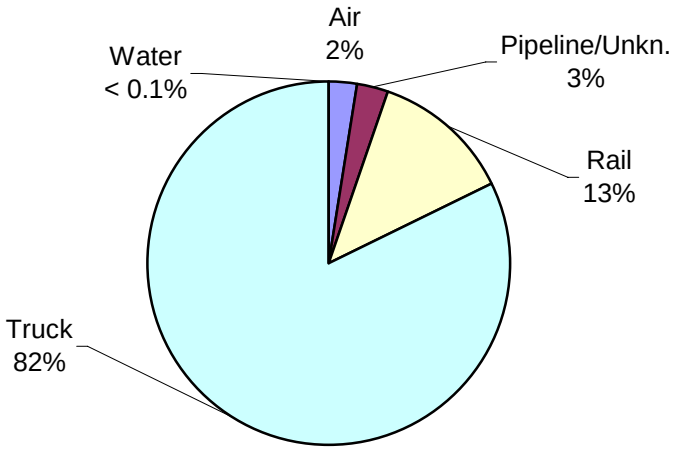
Like most states, Vermont is dependent on trucks for movement of most of its freight. As shown in Figure 7.3, Mode Split by Weight, trucks moved 86 percent of the freight tonnage going into, out of, through, and within the state, amounting to just over 40 million tons annually. As Figure 7.4, Mode Split by Value, illustrates, trucks also handled over 80 percent of the commodities transported by value, representing $35.7 billion. This total is higher than in nearby states such as Maine, in which trucks carry 70 percent of cargo by weight. However, this might be expected given the lack of railroad infrastructure which is compatible with the national network with Class I railroads in terms of weight capacity and clearances. Also, in any region trucks normally provide the last link in the transportation chain, transporting all types of commodities from their intermediate destinations, such as seaports or rail terminals, to their final destinations.

Figure 7.3 Mode Split by Weight, 2006



Source: FHWA's Freight Analysis Framework 2, 2006, *http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm*.

Figure 7.4 Mode Split by Value, 2006



Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

Rail movements accounted for 6 million tons valued at $5.4 billion, representing approximately 13 percent of all the freight moving into, out of, within, and through the state by weight. Coal and gravel are the top commodities transported by rail.

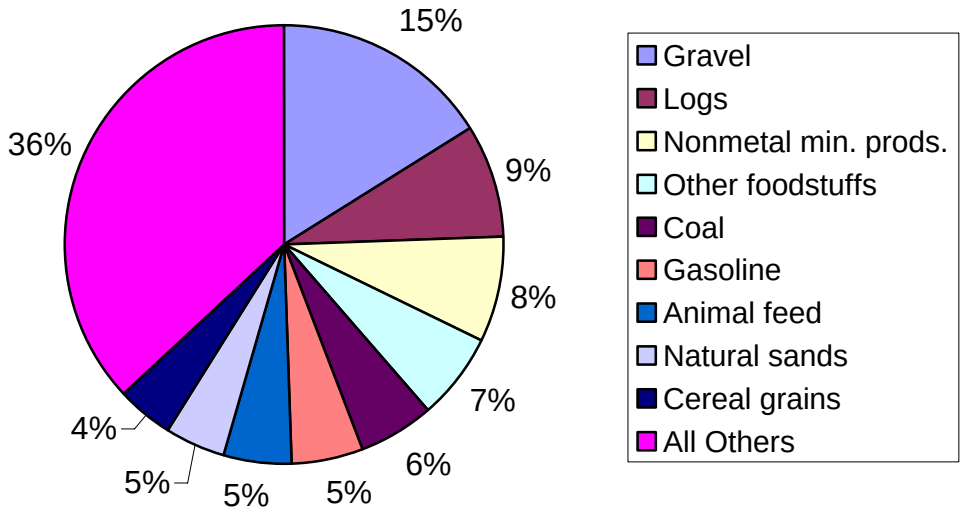
Air movements currently account for less than one percent, or 12 thousand tons, of all the freight moving in Vermont by weight, yet over two percent, or $1 billion, by value. This disparity between shipment weight and shipment value highlights the high-value, low-weight nature of air freight shipments, which consist primarily of electronics, food, chemicals, and mail. As the service sector of Vermont's economy continues to grow, the share of air shipments relative to other types of movements in the state will likely expand.

7.1.3 Top Commodities

Figures 7.5 (Top Commodities by Weight) and 7.6 (Top Commodities by Value) illustrate the top commodities moving into, out of, and within the State of Vermont in 2006 by both weight and value. The top five commodity groups in 2006 accounted for 45 percent of the total flows, or 18 million tons, by weight. These commodity groups consisted of gravel (15 percent); logs and other wood in the rough (9 percent); nonmetallic mineral products (8 percent); food (7 percent); and coal (6 percent). Each of these commodities accounted for over two million tons.

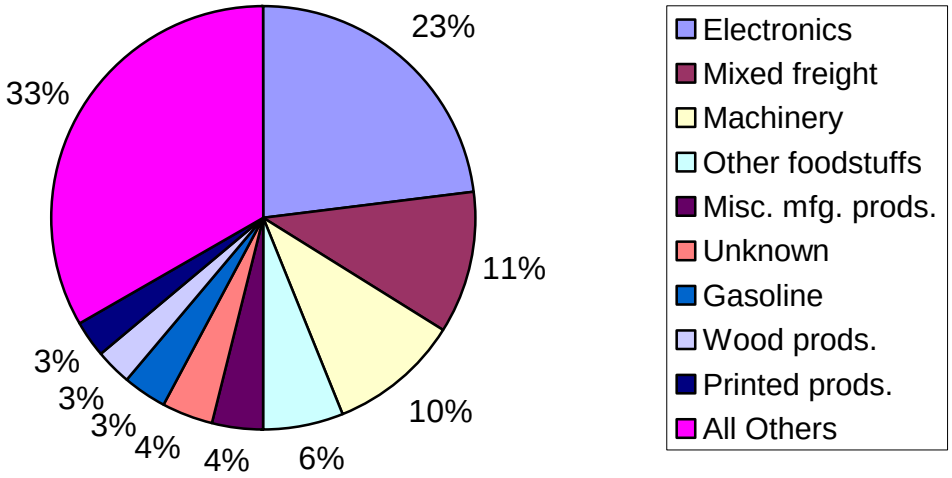
When shipment value is considered, the top commodity groups change significantly. While the top five commodities by weight account for 55 percent of the volume transported, these commodities only account for 9 percent of the value. The top five commodity groups, when analyzed by shipment value, accounted for 55 percent of the total flows by value, a figure of over $20 billion. These commodity groups consisted of electronics (23 percent); mixed freight (11 percent); machinery (10 percent); food (6 percent); and other manufacturing products (4 percent).

Figure 7.5 Top Commodities by Weight, 2006



Source: FHWA's Freight Analysis Framework 2, 2006, *http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm*.

Figure 7.6 Top Commodities by Value, 2006



Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

The top commodity analysis highlights several key points for the State of Vermont. First, although the top five commodities make up the majority of the freight transported (by weight), Vermont transports a wide array of goods. In fact, each of the top 15 commodities (by weight) accounted for over one million tons, and each of the top nine

by value accounted for over $1 billion. That said, particular attention must be paid to gravel, nonmetallic minerals, and logs and other wood products, which combine to make up over 35 percent of all commodities transported (by weight), and can have a significant impact on the state's transportation infrastructure.

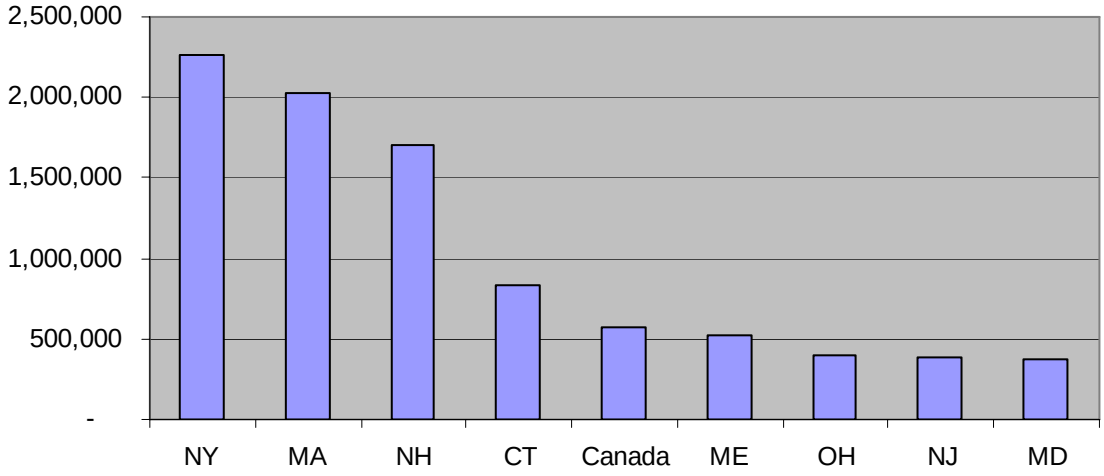
7.1.4 Top Trading Partners

In addition to the commodity flow data reported above, it is also important to identify Vermont's key trading partners. A better understanding of where the state's shipments are originating and terminating is an important step in understanding length of haul, market penetration, and modal preference.

In 2006 the State of Vermont exported over 11 million tons, valued at $19 billion. As can be seen in Figure 7.7, Top Trading Partners Outbound by Weight, Vermont's outbound shipments (by weight) are largely destined for other states in the Northeast. In fact, over

half of the outbound shipments by weight are destined for New England or New York. As illustrated below, New York, Massachusetts, and New Hampshire stand out from the remaining states for their high trade volume. Canadian shipments (either through Vermont's borders or any other state), also account for a significant portion of outbound trade.

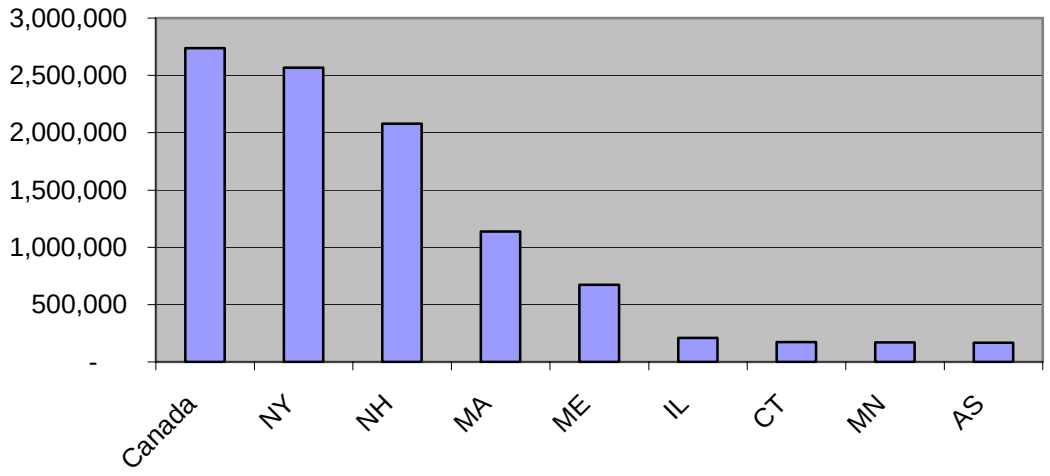
Figure 7.7 Top Trading Partners Outbound by Weight
Outbound by Weight, Tons per Year



Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

In 2006 Vermont imported 11.6 million tons valued at $14.1 billion. As with the outbound shipments, the majority of Vermont's imports (57 percent by volume and 49 percent by value) come from either New England or New York. As can be seen in Figure 7.8, Top Trading Partners Inbound by Weight, Canada plays a much stronger role in the imports than the exports, as it is the state's major trading partner for inbound goods with over 2.7 million tons and nearly $3 billion.

Figure 7.8 Top Trading Partners Inbound by Weight
Inbound by Weight, Tons per Year



Source: FHWA's Freight Analysis Framework 2, 2006, *http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm*.

An analysis of Vermont's trading partners reveals the state's strong ties to its surrounding region. Over 60 percent of Vermont's commodities traded (by weight) goes to or comes from the New England or New York; furthermore, over 50 percent of the value traded originates in or is destined to one of these regions. Within these regions, the biggest trading partners are New York (4.8 million tons and $6.0 billion), New Hampshire (3.8 million tons and $2.1 billion), and Massachusetts (3.2 million tons and $6.3 billion). Canada also plays a key role in trade with Vermont accounting for 3.3 million tons and $4.7 billion of the trade originating in, or destined for, Vermont.

7.2 Cross Border Trade

This section summarizes the commodity flows by land between the United States and Canada via several ports of entry/exit in Vermont. The section also covers the domestic portion of these international trips, including the mode used and origin or destination.

7.2.1 Trade by Direction

In 2006, 6.3 million tons of goods with a combined value of $5.5 billion were traded between other U.S. states and Canada through Vermont. This does not include the trade originating in or destined for Vermont, as presented in the previous section. As Table 7.3 (Through Cross-Border Flows by Direction of Travel) illustrates, the vast majority of these goods were transported to Canada from the U.S., with these shipments accounting for 85 percent of the trade by weight (5.4 million tons) and 72 percent by value ($3.9 billion).

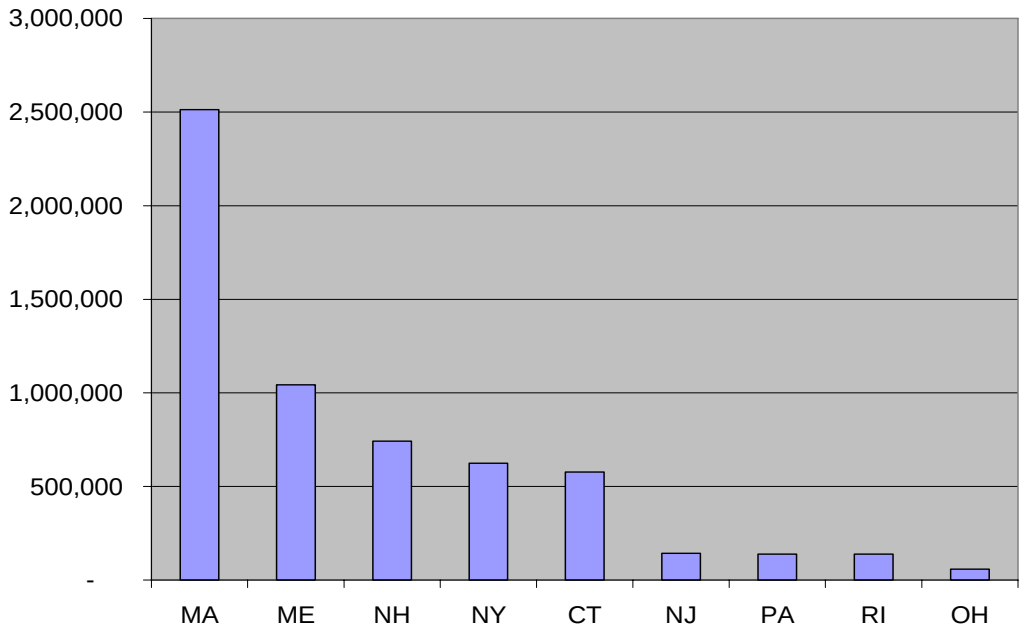
Table 7.3 Through Cross-Border Flows by Direction of Travel

Direction	Tons	Dollars
Northbound	5,383,560	$3,906,398,200
Southbound	924,982	$1,549,199,000
Total	**6,308,542**	**$5,455,597,200**

Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

As with domestic trade, the majority of goods moving through Vermont's gateways to and from Canada originated or terminated in the Northeast region—New England and New York account for nearly 90 percent of these shipments by weight (5.6 million tons), and over 75 percent by value ($4.2 billion). Annual tons shipped by the top U.S. States using Vermont's border crossings is depicted in Figure 7.9.

Figure 7.9 Top U.S. States Using Vermont's Border Crossings, by Weight
Annual Tons Shipped



Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

7.2.2 Mode Split for Cross-Border Trade

The FAF dataset provides the mode used for the domestic leg of the movement. Given that these are land movements, the domestic mode is likely to be the same as the main mode for the trip from its origin or destination in Canada. Table 7.4, Mode Split for Shipments on Vermont's Border Crossings, illustrates the mode split for cross border shipments, both in terms of weight and value. The difference in weight and value distributions highlights the nature of truck versus rail movements. While trucks handle 59 percent of the weight transported, these goods account for 84 percent of the value; on the other hand, rail commodities make up 41 percent of the weight and just 16 percent of the value transported.

Table 7.4 Mode Split for Shipments on Vermont's Border Crossings
By Weight and Value

	Tons	Dollars
Rail	41%	16%
Truck	59%	84%

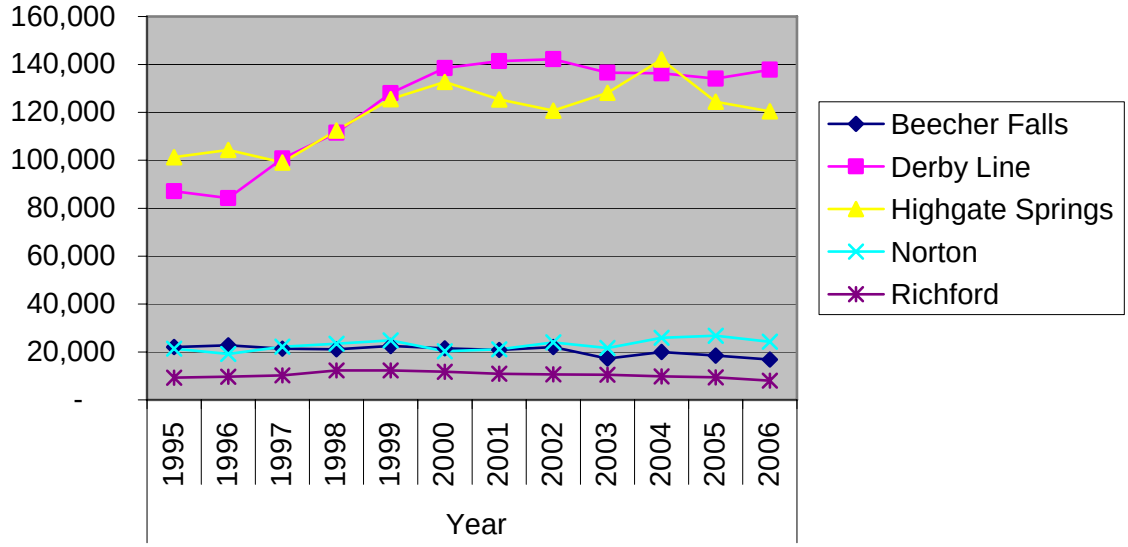
Source: FHWA's Freight Analysis Framework 2, 2006, http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

7.2.3 Cross-Border Trade Volumes by Location

Figure 7.10 and Figure 7.11 show the flow of trucks and rail containers across Vermont's borders over the last decade, from the Bureau of Transportation Statistics' Transtats Database. The state has five border crossings at Beecher Falls, Derby Line, Highgate Springs, Norton, and Richford. Highgate Springs and Richford are located in the Western Corridor. Highgate Springs has the higher crossing volumes as it serves the terminus of I-89 and U.S. 7 as well as Canadian National. Richford is located farther east, serving VT 105 and also the Montreal, Maine, and Atlantic Railway (which connects to eastern Vermont rather than the Western Corridor).

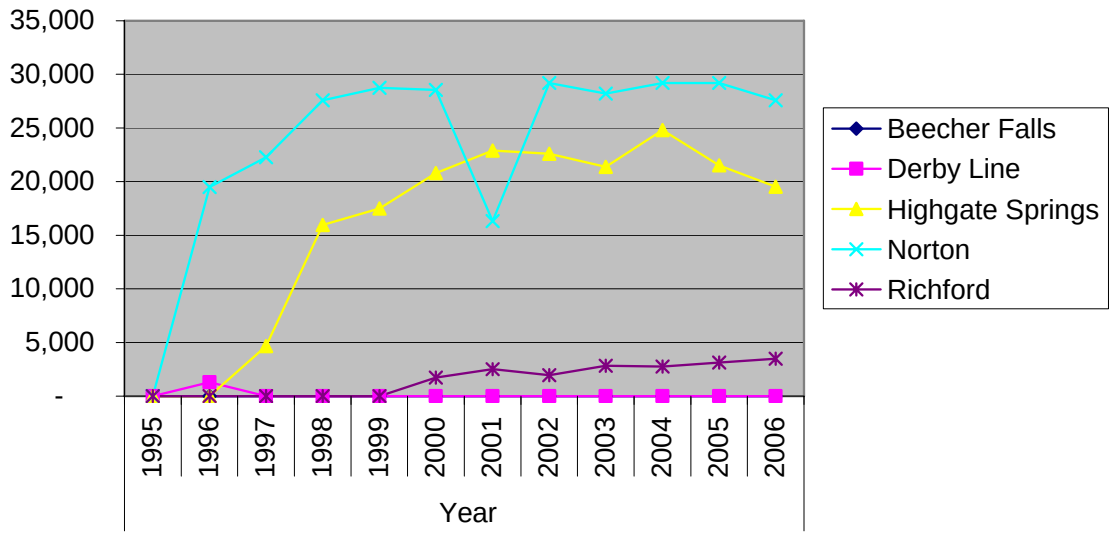
As illustrated, the Highgate Springs and Derby Line (I-91) locations handle the largest portion of truck crossings, with 120,000 and 137,000 trucks respectively during 2006. The three remaining locations handled a combined 49,000 trucks during the same year. Truck trade experienced a significant increase from 1996 to 2000 and has fluctuated at about the same level ever since. Rail crossings primarily take place at the Highgate Springs and Norton locations, which handled 20,000 and 28,000 containers respectively. The trend for container trade mirrors that of trucks, increasing from 1995 to 2000 and then fluctuating around the same level since then.

Figure 7.10 Border Crossing Locations by Trucks



Source: Bureau of Transportation Statistics, TranStats (2006), http://www.transtats.bts.gov.

Figure 7.11 Border Crossing Locations by Rail Container



Source: Bureau of Transportation Statistics, TranStats (2006), http://www.transtats.bts.gov.

7.3 Truck Network

Vermont's commercial vehicle network provides a preferred highway routing for goods through the state and carries the bulk of the state's truck traffic. Vermont statute (Title 23, Section 1432c) contains the definition of the truck network and establishes limits on the lengths of vehicles that can operate on different portions of the highway network. Figure 12 shows the four components of Vermont's commercial vehicle network:

- **National Network –** Limited access (no overall length limit; limits on semitrailers in tractor-semitrailer combinations of 53 feet; limits on trailers or semitrailers in tractor-semitrailer-trailer combinations of 28 feet);

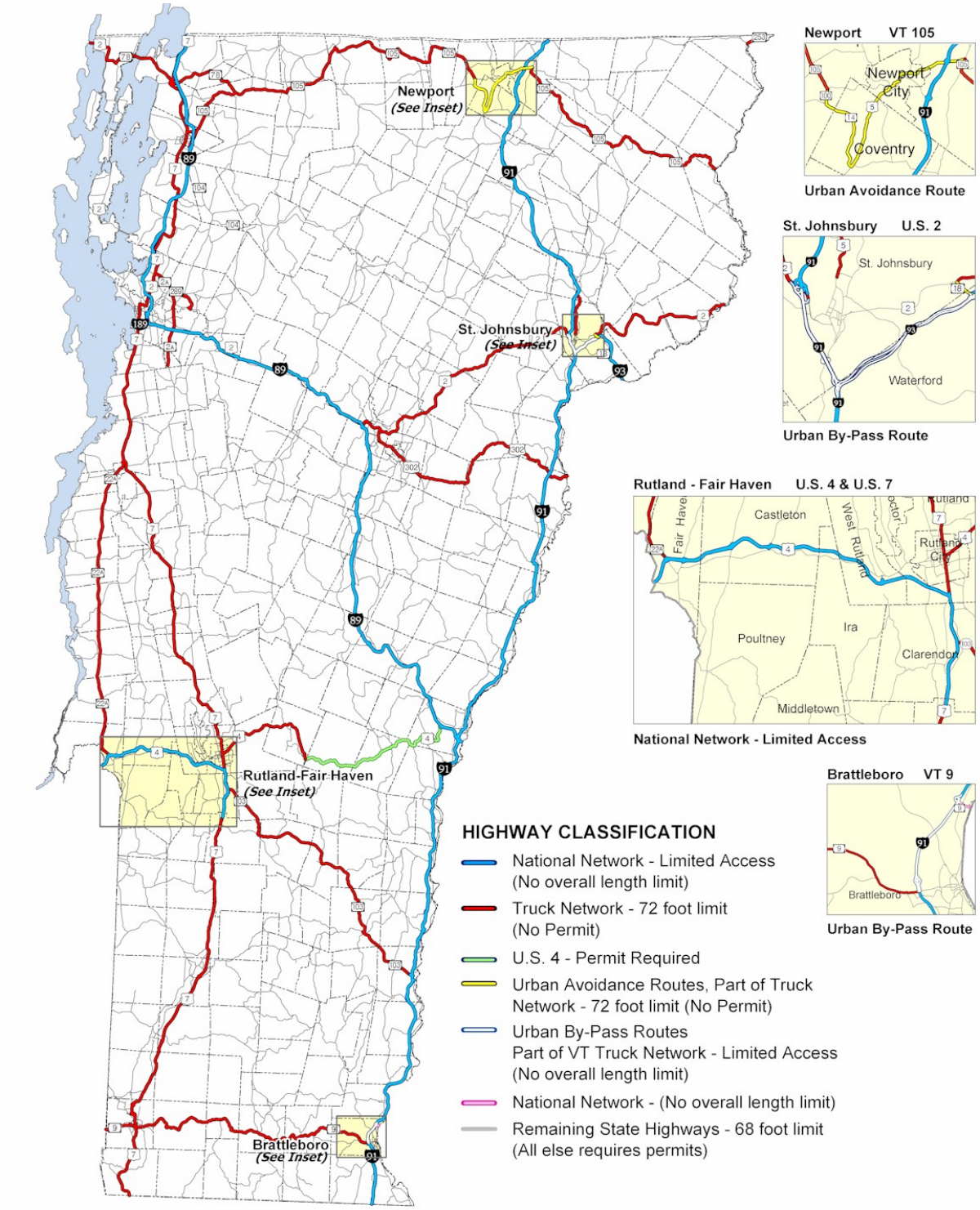
- **Truck Network –** No permit required for trucks less than 72 feet (including 53-foot tractor-trailer combinations);

- **U.S. 4 (east of Killington) –** Trucks with overall length between 68 and 72 feet may operate with single or multiple trip permits provided that the distance from the kingpin of the semitrailer to the center of the rearmost axle is not greater than 43 feet;

- **Remaining State Highways –** All trucks over 68 feet must obtain a permit. Trucks between 68 feet and 72 feet with trailer length of 23 feet or less may obtain a single or multiple use permit for no fee. Trucks between 68 feet and 72 feet with longer trailers may obtain a single trip permit at no fee. Trucks over 72 feet may obtain a single trip permit for a $20 fee – additional insurance is required for trucks over 100 feet.

Western Corridor roadways running north-south that are part of the truck network include the entire length of U.S. 7 as well as I-89 from Burlington north to the border, and VT 22A from Vergennes to U.S. 4 at Fair Haven (providing the most direct route from Burlington to I-87 in New York State). East-west truck routes in the Corridor include VT 9 through Bennington, VT 103 from Bellows Falls to Rutland, U.S. 4 through Rutland, and U.S. 2/VT 78/VT 105 across the northern tier of the state. VT 2A and 289 serve as local truck routes in the Burlington area. Of these roads, only I-89 and U.S. 4 west of Rutland are part of the National Network.

Figure 7.12 Vermont Commercial Vehicle Network

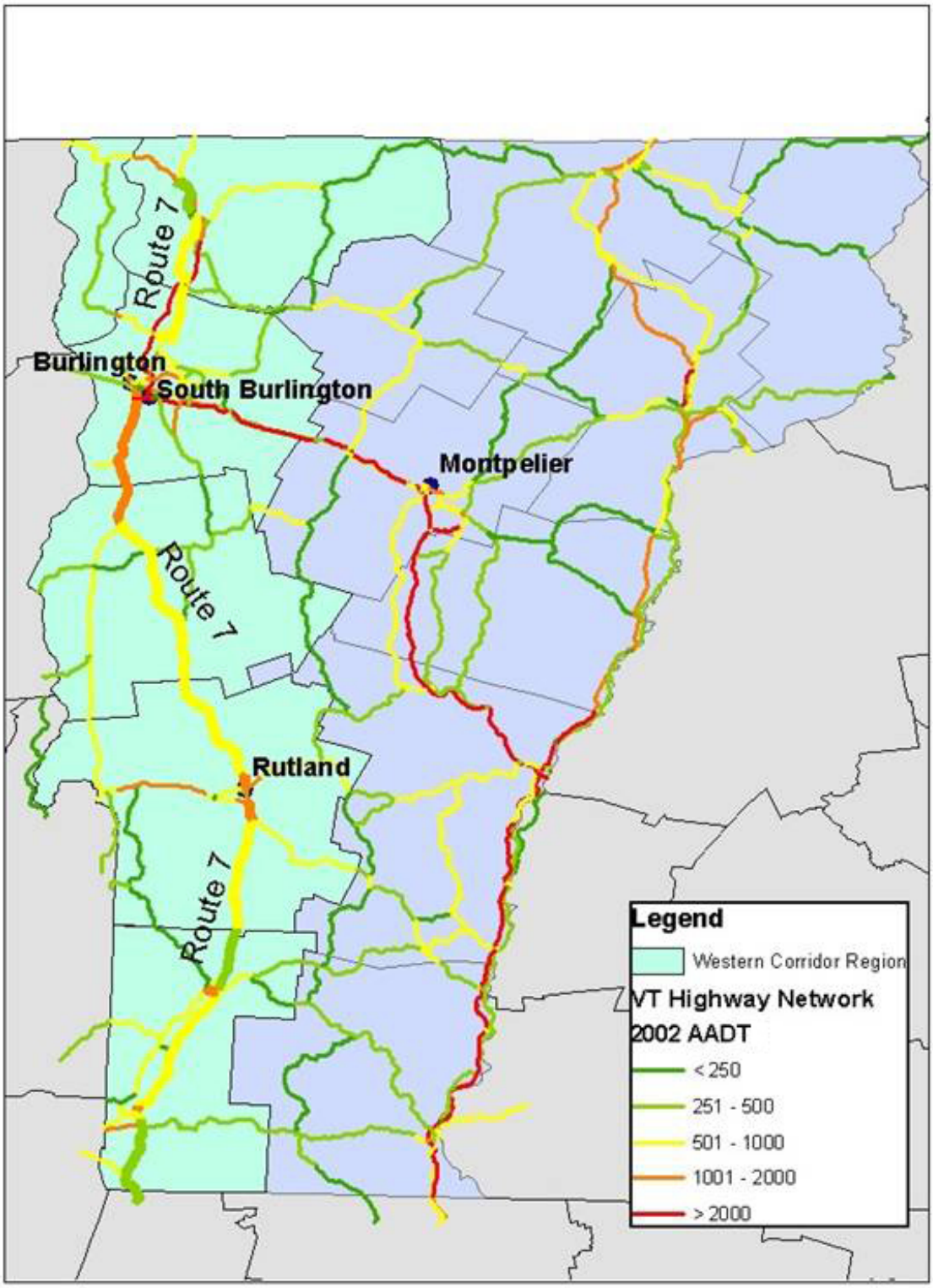


Source: Vermont Highway System Policy Plan, 2005.

7.4 Truck Traffic and Trends

Figure 7.13 shows truck volumes on the Vermont highway network as of 2002, based on FAF data. The highest volumes in the Western Corridor are (as might be expected) on I-89. The highest volumes on other corridor roadways (over 1,000 trucks per day) are on U.S. 7 south of Burlington and through Rutland, U.S. 4 west of Rutland, and VT 9 west of Bennington. Most of the rest of U.S. 7 shows volumes ranging between 500 and 1,000 trucks per day.

Figure 7.13 Truck Volumes on Major Vermont Highways, 2002



Source: Federal Highway Administration, Freight Analysis Framework.

7.5 Intermodal Connectors

National Highway System (NHS) connectors are the public roads connecting major intermodal terminals to the NHS – the federally-designated system of roads most important to the nation's economy, defense, and mobility. Table 7.5 shows the NHS intermodal connectors in Vermont's Western Corridor as designated by FHWA. Three intermodal facilities are served, all in Chittenden County: the Amtrak Station in Essex Junction, Burlington International Airport, and the Vermont Railway Rail Yard.

Table 7.5 National Highway System Intermodal Connectors

Facility	Type	Connector No.	Connector Description	Length
Amtrak Station, Essex Junction	AMTRAK Station	1	VT 15, between Station and Circumferential Hwy (I-289)	1.68
Burlington International Airport	Airport	1	Airport Dr, between the Airport entrance and US 2	0.45
Burlington International Airport	Airport	1	Airport Dr, Kennedy Dr between the Airport Entrance and I-189	1.96
Vermont Railway Rail Yard, Burlington	Truck/Rail Facility	1	Battery St, Main St, US 2 between the Vermont Railway Rail Yard and I-89	2.1
Vermont Railway Rail Yard, Burlington	Truck/Rail Facility	2	Southern Connector between the Vermont Railway Rail Yard and I-189 (Projected)	2.3

Source: Federal Highway Administration, http://www.fhwa.dot.gov/planning/nhs/intermodalconnectors/vermont.html.

7.6 Canadian Border Truck Crossings

Quebec has always been an important trading partner with Vermont, and with the Canadian dollar increasing in value as compared to its United States counterpart, visitors from Canada are crossing the border in greater numbers and delays could hurt Vermont tourism and business. The main border crossing for the study corridor crossing is on I-89 at Highgate. While private automobiles can cross the border at numerous locations, only certain crossings are designated for commercial vehicles (trucks). Delays of up to several hours have been caused by high traffic volumes, new security protocols and passport requirements for US and Canadian residents crossing the border—Western Hemisphere Travel Initiative (WHTI) proposed by Department of Homeland Security—and lack of adequate staffing.

One recommendation that has been made to address this problem is to open all lanes at peak times. The Vermont congressional delegation has suggested that passport requirements be postponed until 2009. In addition to inconvenience, drivers and transportation companies are incurring costs due to delays, wasted fuel and environmental pollution. The border crossing situation could become a "competitive disadvantage" for the State and the study corridor area. Specific numbers for Vermont have not been obtained, but a 2004 Ontario Chamber of Commerce report entitled "Cost of Border Delays to Ontario" states that delays are costing the Canadian and US economies over $13.6 billion annually.

8.0 Railroads

This section provides an overview of the railroad network in the Western Corridor of Vermont. This includes information such as line mileage, ownership and condition; railroad classifications; freight activity; and passenger services. The information in this chapter has been mainly extracted from Vermont's 2006 State Rail and Policy Plan.

8.1 Routes/Network/Ownership

The railroad infrastructure in the Western Corridor is dominated by the 122 mile route between North Bennington and Burlington, owned by the State of Vermont and operated as part of the Vermont Rail System. The line connects with two other VRS-operated routes – the Green Mountain railroad and the Clarendon & Pittsford – at Rutland. As originally constructed, the line from North Bennington to Burlington continued northwards through Grand Isle to Alburg, where it turned west to Ogdenburg on the Saint Lawrence River. When the State of Vermont negotiated purchase of the rail line from the trustees of the bankrupt Rutland Railroad in 1964, the route from Burlington north was deemed to be economically unviable and was not acquired for rail operations by the State. This section was then abandoned and no longer exists as a railroad route. Rail service to the northern portion of the study area is now achieved over the tracks of the privately-owned New England Central Railroad which links up with the VRS operation via a connection from Essex Junction to Burlington (identified as the Winooski Branch). New England Central Railroad connects directly to CN, a major Class I railroad in Vermont and with CSX to the south.

The present-day railroad network in Vermont's Western Corridor consists of approximately 250 miles of railroad right-of-way out of the state's total 748 miles. Of this length, approximately 160 miles are owned by the state. The railroad network in Vermont, of which 578 miles are active, is an integral part of the regional, national and international rail transportation networks. Most railroad activity in Vermont is freight traffic, although passenger service is an important component of rail operations. The following section provides an overview of the inventory and operation of the network in the Western Corridor. In 2006, six railroad companies were operating or had trackage rights on active lines in the Corridor. Table 8.1, Vermont Western Corridor Active Rail Lines, lists these railroads, their ownership and track mileage. Inactive lines are presented later in this section.

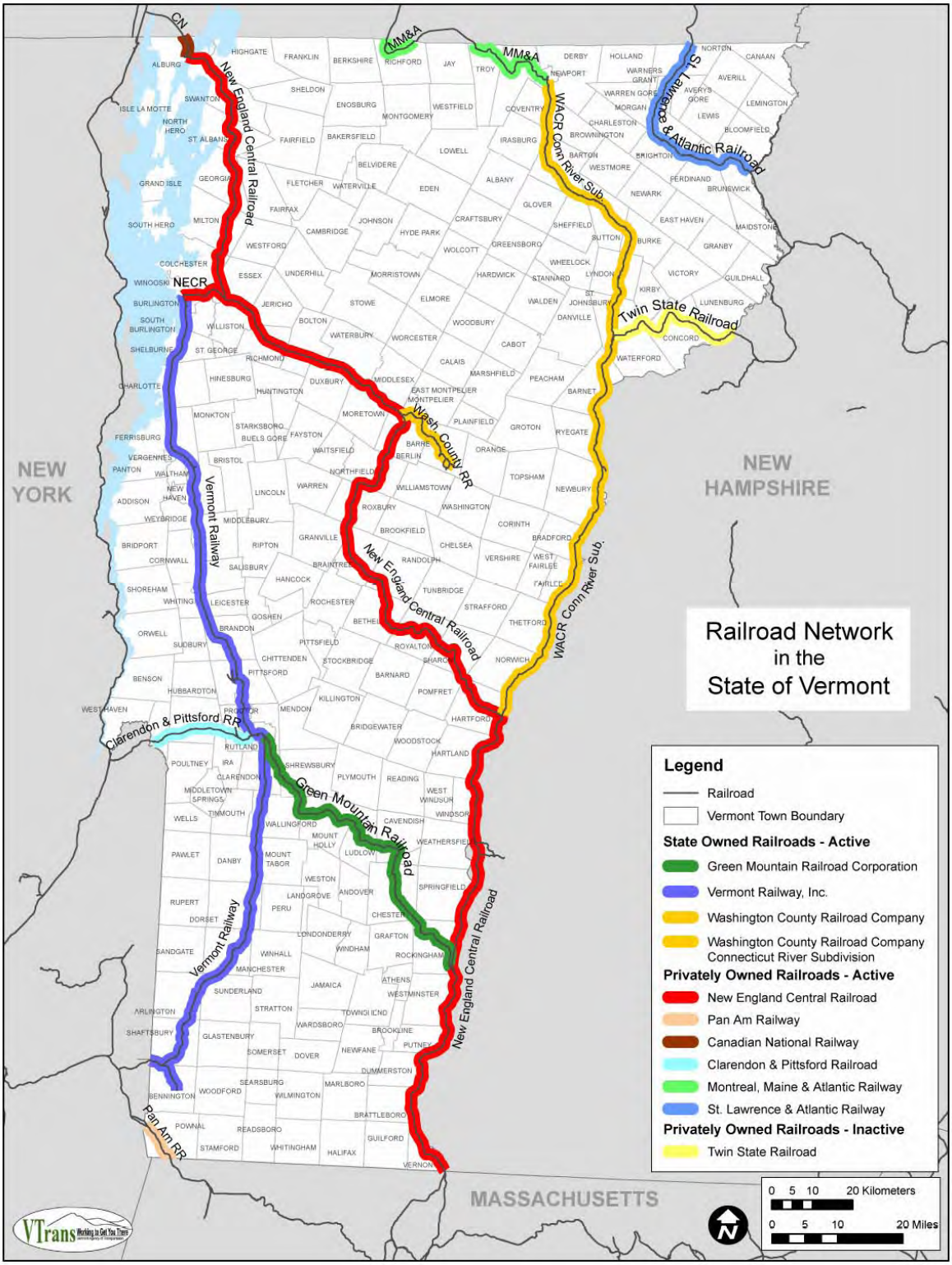
Table 8.1 Vermont Western Corridor Active Rail Lines

Rail Line	Ownership	Track Mileage
Clarendon & Pittsford (CLP)	Private	17.88
Green Mountain Railroad (GMRC)	State Owned	20.7
New England Central RR (NECR)	Private	63.4
Vermont Railway (VTR)	State Owned	139.75
Pan Am Railway (PAR)	Private	6.28
Canadian National (CN)	Private	3
Total Active Mileage		251.01
Total Active Mileage State Owned		**160.45**

Source: Vermont State Rail and Policy Plan, 2006.

These railroads are briefly described in the following section and shown in Figure 8.1, Railroad Network in the State of Vermont.

Figure 8.1 Railroad Network in the State of Vermont



Source: Vermont State Rail and Policy Plan, 2006.

Clarendon and Pittsford Railroad (CLP) - The CLP is a privately-owned and operated railroad with a total of 25 miles of track, of which 18 are in Vermont and seven are in New York State. The CLP operates between Rutland and Whitehall, New York, acting as a "bridge line" carrier for all commodities from Canadian Pacific Railway moving to and from the Vermont Railway and the Green Mountain Railroad. GMRC's "Green Mountain Gateway" to Bellows Falls handles rail freight to and from the New England Central Railroad, Providence and Worcester Railroad Company, and the MassCentral Railroad. CLP also hosts Amtrak passenger service between Whitehall, New York and Rutland, and it directly serves Vermont's largest rail shipper, OMYA, Inc., at Florence by a branch line. The line meets 286,000 lb. weight standards and the condition of the line (Federal Railroad Administration Class 3, or 40 mph for freight) is adequate for the types and volume of traffic that it currently serves.

Green Mountain Railroad (GMRC) – GMRC is state-owned and privately operated with a long term lease partnership with the State of Vermont. It provides freight services between Rutland and Bellows Falls over 50 miles of track. Approximately 20 miles of track fall in the Western Corridor region, covering the portion from the City of Rutland to the Windsor County border. GMRC began operations in 1965 and pays a percentage of its gross revenues to the State of Vermont. Its primary freight connections are with Pan Am Railway (PAR) and New England Central Railroad at Bellows Falls, Vermont Railway at Rutland, Canadian Pacific Railway at Rutland, and CSX Transportation at Palmer, Massachusetts through a haulage arrangement with NECR. It provides seasonal excursion passenger services between Bellows Falls and Chester. Portions of the rail line are identified for improvement in the near future to accommodate the demand for heavier weight carloads.

New England Central Railroad (NECR) - NECR is a wholly-owned subsidiary of RailAmerica, Inc and is part of a rapidly expanding international family of over 50 railroads. NECR operates 325 miles from the Canadian border at East Alburg, to New London, Connecticut on Long Island Sound. Annual carloads handled by the NECR are in excess of 38,000, with a wide variety of products. Approximately 63 miles of NECR track fall in the Western Corridor region from the Canadian border down through Burlington and up to the Washington County border.

NECR has interchange locations with both Class I and regional connecting carriers as follows: Canadian National at East Alburg, CSX Transportation at Palmer, Massachusetts, Green Mountain Railroad at Bellows Falls; Boston & Maine / Pan Am Railways and the Washington County Railroad, Connecticut River Division, and the Claremont Concord Railroad at White River Junction and Claremont Junction, New Hampshire; Massachusetts Central Railroad at Palmer, Massachusetts; Providence & Worcester Railroad at New London and Willimantic, Connecticut; Vermont Railway at Burlington via the Winooski Branch; and the Washington County Railroad at Montpelier

Junction. Additionally the Bellows Falls interchange with the Green Mountain Railroad serves as a connection to the Norfolk Southern and Canadian Pacific railroads via a haulage agreement with the Green Mountain Railroad.

NECR has several distribution and warehouse centers located on the line. These centers, located in Vermont, Massachusetts and Connecticut, handle lumber, paper, plastic, steel, aluminum, and food products. NECR has access to intermodal facilities via its interchange connection with Massachusetts Central Railroad in Palmer, Massachusetts where complete facilities are operated for the handling of intermodal traffic loading and unloading.

NECR hosts the Vermonter Amtrak service from the CSX connection in Palmer to its termination in St. Albans. The line between White River Junction and its connection with CN in East Alburg is identified as a segment of the Boston-Montreal High Speed Rail Corridor, which is part of the FRA-designated Northern New England High Speed Rail Corridor. Portions of the rail line are identified for improvement in the near future to accommodate the demand for heavier weight carloads.

Vermont Railway (VTR) - VTR is state-owned and privately operated with a long term lease partnership with the State of Vermont since 1964. It provides both freight and passenger services along its system route. The VTR runs from Burlington through Rutland to North Bennington, where a spur goes to Bennington, and then continues on to Hoosick Junction, New York, where it connects to PAR. VTR currently has freight interchanges with Canadian Pacific Railway (via CLP) at Whitehall, New York, New England Central Railroad at Burlington, Green Mountain Railroad at Rutland, and Pan Am Railway at Hoosick Junction. VTR currently operates 127 miles of track within Vermont. It hosts Amtrak passenger service at Rutland and specialty excursion trains throughout the year. Portions of the rail line are identified for improvement in the near future to accommodate the demand for heavier weight carloads Track improvements were recently made between Manchester and Rutland.

Pan Am Railways (PAR) – PAR it the name of the holding company formerly known as Guilford Rail System. PAR operations include the seven miles of the former Boston and Maine Railroad main line from Mechanicville, NY to Lowell, MA across the southwest corner of Vermont. This route provides an interchange with the Vermont Railway at Hoosick Junction, NY.

Canadian National (CN) – CN operates three miles of track in Vermont that connects New England Central Railroad to its through line to Montreal and other Canadian destinations.

8.1.1 Railroad Classification

The Association of American Railroads (AAR) classifies railroads based on revenue and mileage; these classifications include:

- Class I railroads – These railroads are the largest, and account for 93 percent of railroad freight revenue.[11] Class I railroads are defined as having operating revenues of $289.4 million or more.[12]

- Regional railroads – These railroads operate and maintain 29 percent of the American railroad industry's route mileage.[13] Regional railroads are line haul railroads operating at least 350 miles of track and/or earning revenue of at least $40 million.

- Short Line railroads – These railroads are line haul railroads below the regional criteria, including railroads that perform only switching and terminal operations.

Table 8.2 shows track mileage based on AAR classifications in Vermont and the Western Corridor. There are three miles of Class I railroad, which are owned by Canadian National and operated by NECR. Regional railroads are PAR and NECR as shown in Figure 8.2.

Table 8.2 Track Mileage by Association of American Railroads (AAR) Classification in Vermont and the Western Corridor

AAR Classification	Mileage in VT	Mileage in WC
Class I	3	3
Regional	219	70
Local	378	178
Total	**600**	**251**

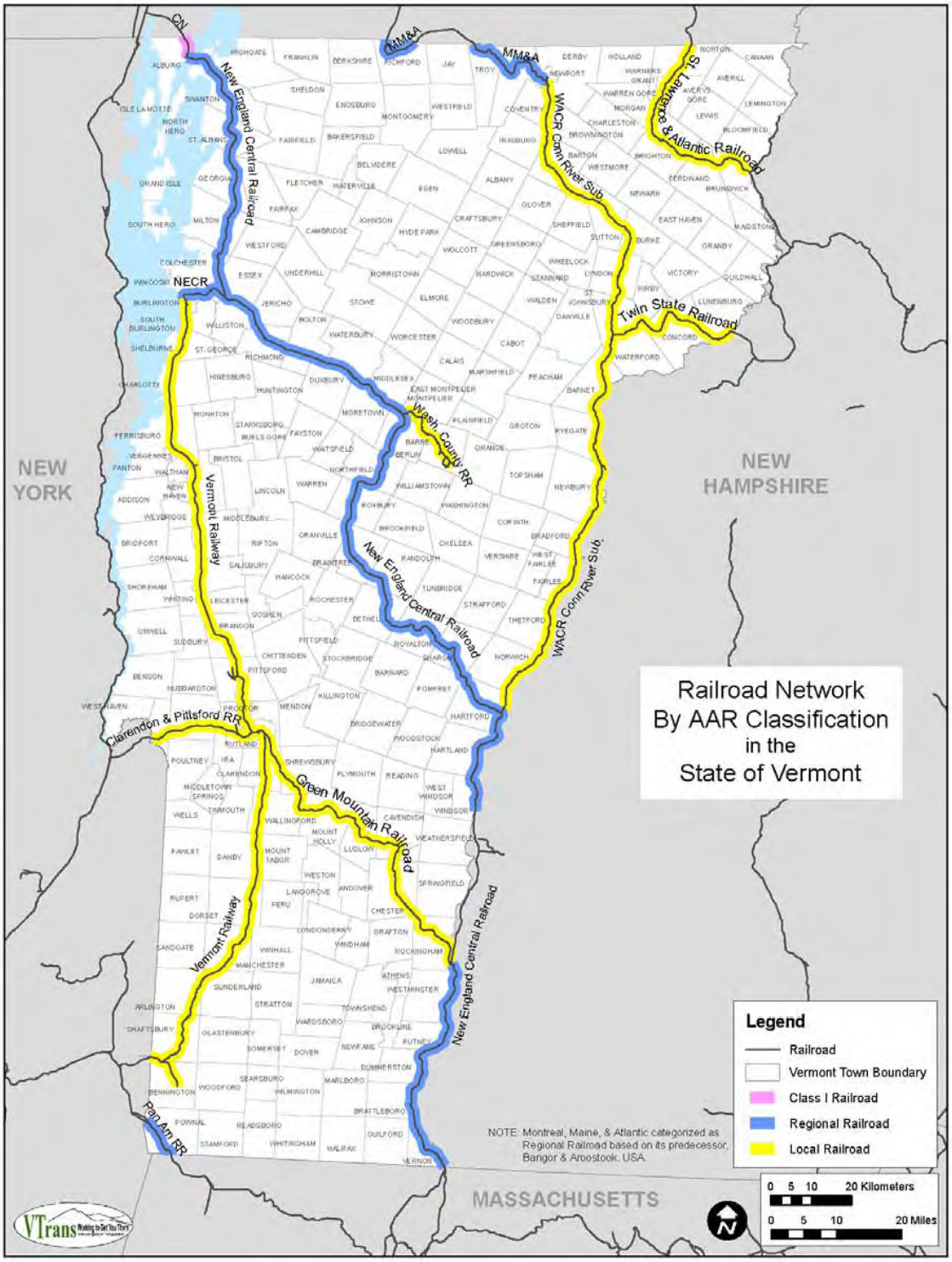
Source: Vermont State Rail and Policy Plan, 2006.

[11] Railroad Facts, 2004 Edition, Association of American Railroads, page 8.

[12] Surface Transportation Board designation for 2004. Revenue value adjusted annually.

[13] American Short Line and Regional Railroad Association website.

Figure 8.2 Railroad Network by Association of American Railroads (AAR) Classification in Vermont



Source: Vermont State Rail and Policy Plan, 2006.

8.1.2 Track Classification

The Federal Railroad Administration (FRA) has established minimum track safety standards requirements and maintenance levels for railroad operations. These track safety standards establish maximum operating speeds depending on the FRA classification of a given section of track and is depicted in Table 8.3, FRA Track Standards. The FRA uses six classification levels for track with maximum permissible operating speeds for passenger and freight service increasing as the classification number increases. The assigned classification number is based on the condition of the track and as such is an indicator of the existing quality of the track and supporting structures. The assigned classification number can be increased by improvements to the track and right-of-way with associated improvements in maintenance standards. Recently, the FRA has adopted three additional track classifications pertaining to operation of passenger trains at speeds in excess of 90 mph.

Table 8.3 Federal Railroad Administration Track Standards

Over track that meets all of the requirements prescribed in this part for-	The maximum allowable operating speed for freight trains is -	The maximum allowable operating speed for passenger trains is -
Excepted track	10 mph	N/A
Class 1 track	10 mph	15 mph
Class 2 track	25 mph	30 mph
Class 3 track	40 mph	60 mph
Class 4 track	60 mph	80 mph
Class 5 track	80 mph	90 mph
Class 6 track	N/A	110 mph
Class 7 track	N/A	125 mph
Class 8 track	N/A	160 mph
Class 9 track	N/A	200 mph

N/A – Not Available

Source: Vermont State Rail and Policy Plan, 2006

At present Class 3 is the highest track classification used in Vermont and main line track upgrading programs in the state are intended to achieve the Class 3 standard (40 mph freight and 60 mph passenger) wherever possible.

Within the Western Corridor the track conditions and utilization are described in the following segment descriptions. For reference, the accompanying Figure 8.3, Western Corridor Railroad Segments, depicts the various identifying intermediate station and

junction locations, including designated railroad "mileposts". The milepost designations are not continuous along the entire length of the Western Corridor since each railroad uses its own endpoints for starting the mileage designations.

East Alburg to St Albans:

Freight Service – maximum speed of 25 mph
This sixteen mile northernmost segment of the New England Central Railroad is known as its Swanton Subdivision and provides its connection with the Canadian National (CN) Railroad leading to Montreal and other destinations in Canada and the mid-western United States.

Passenger Service
No passenger service is operated on this segment.

St. Albans to Essex Junction: to Burlington:

Freight Service - maximum speed of 40 mph
This 28 mile segment forms the northernmost portion of New England Central's Roxbury Subdivision. As such this is part of the railroad's through freight route between Canada and the southern New England coast. St Albans is also the base of operations for local freight switching operations extending south to Burlington and Montpelier. The milepost designation for St Albans shown on Figure 8.3 is based on its location at the end of the Roxbury Subdivision.

Passenger Service – maximum speed of 60 mph
Amtrak's Vermonter service operates daily via Essex Junction to its terminus at St. Albans. Trains are serviced at St. Albans for the return trip southwards.

Essex Junction to Burlington:

Freight Service – maximum speed of 10 mph
This segment consists of the entire eight mile Winooski Branch of the New England Central Railroad and is used to interchange freight traffic with the Vermont Railway.

Passenger Service
No passenger service is operated on this segment. Recent studies have been undertaken to examine the feasibility of establishing passenger service on this segment, both to provide a connection into Burlington for Amtrak's Vermonter and to provide commuter service along the corridor.

Burlington to Charlotte:

Freight Service - maximum speed of 40 mph
This 12-mile segment is the northernmost portion of the Vermont Railway and is currently used for freight service only.

Two freight trains (one in each direction) operate at a between Burlington and Rutland every day. Primary customers on this segment include transloading of bulk materials at Burlington Yard and an interchange with the New England Central Railroad north of the yard.

Freight rail traffic in this segment is expected to steadily expand over the next several years.

Passenger Service
There is no passenger service operated on this segment other than a seasonally run excursion train. There was commuter rail train service from Burlington to Charlotte that was developed to provide service during reconstruction of US Route 7. Rail stations and support facilities including platforms and parking lots, as well as infrastructure upgrades such as track improvements and grade crossing warning signals were installed in order to operate this service. However, this commuter rail demonstration service was discontinued in 2003.

Burlington currently does not have direct intercity passenger rail service. The nearest service is provided by Amtrak's Vermonter station stop at Essex Junction on the New England Central Railroad (about seven miles away). This service to New York City via New Haven, Connecticut is less direct than the route via Albany, New York.

Charlotte to Vergennes:

Freight Service - maximum speed of 40 mph
This 10-mile segment currently is used for freight service only. Two freight trains (one in each direction) operate between Burlington and Rutland every day. Primary customers on this segment include a feed mill operated in Vergennes.

Freight rail traffic in this segment is expected to steadily expand over the next several years.

Passenger Service
No passenger service is currently operated on this segment.

Vergennes to Middlebury:

Freight Service - maximum speed of 40 mph
Existing freight service on this 13-mile segment includes two freight trains (one in each direction) each day that operate at between Burlington and Rutland. Primary customers on this segment include a bulk oil transloading facility in Middlebury.

Freight rail traffic in this segment is expected to steadily expand over the next several years.

Passenger Service
There is currently no passenger service on this segment.

The State of Vermont would like to extend the Amtrak intercity passenger rail service from Rutland to Burlington at some time in the future.

Middlebury to Rutland Junction:

Freight Service - maximum speed of 40 mph
The existing freight volumes on this 31-mile segment are the highest of any between Burlington and Rutland. Four freight trains operate per day (two in each direction). Primary customers include a large mineral processing plant (OMYA) located off of the segment between Rutland Junction and Middlebury in Florence. In addition, large transloading facilities operate in both Rutland and Middlebury.

Proposed freight volumes are expected to expand significantly in the next several years. Inbound shipments of granular materials mined from OMYA's quarries near Middlebury to their plant in Florence currently move by truck primarily over US Route 7. Although there is parallel rail service available on the corridor, there is no direct rail line into the quarry at Middlebury.

There are currently plans to construct a rail connection to the quarry. When this happens, virtually all of the raw material shipments to the plant from the quarry would move by rail. This would significantly reduce the amount of truck traffic on the congested stretch of Route 7 south of Middlebury.

In addition to the rail connection, the track and bridges on this segment would have to be upgraded to handle the additional traffic and heavier axle loadings (286,000 lbs.).

Passenger Service
There is currently no passenger service operated on this segment.

Rutland Junction to Rutland:

Freight Service – maximum speed of 40 mph
Existing freight service on this segment includes 6 to 8 regular trains per day (3 to 4 in each direction).

This segment is also the primary freight connection to the rest of the rail network in the United States via the Clarendon & Pittsford Railway line from Rutland Junction, VT to Whitehall, NY.

This segment is also where VTR interchanges traffic with the Canadian Pacific Railway and the Green Mountain Railway (part of the VTR System).

Significant freight transloading between rail and truck is also performed at VTR's intermodal and classification yard in Rutland.

Freight levels are projected to increase in this segment over the next several years. There is also a proposal to relocate the existing rail yard in Rutland from its current urban location downtown to an area south of US Route 4 near Clarendon. This would minimize the current rail / highway conflicts downtown and release a large parcel of land for economic development by the City of Rutland.

Passenger Service – maximum speed of 20 mph
This is the only segment of the Vermont Railway that currently has scheduled passenger rail service. Amtrak operates two intercity passenger trains (one in each direction) each day at a maximum speed of 60 mph (on the Clarendon & Pittsford Railway). This service originates in New York City and runs on CP Rail's tracks to Whitehall, NY where it then runs on the Clarendon & Pittsford Railway to Rutland Junction, VT. The train then runs on the Vermont Railway for one mile to the downtown Rutland Station (at 20 mph) where the train is then turned and serviced for the return trip to New York City.

The State of Vermont would like to extend this Amtrak intercity passenger rail service from Rutland to Burlington at some time in the future.

Rutland to North Bennington:

Freight Service – maximum speed of 25 mph
The existing freight service on this 55-mile segment includes two to four trains per week (one in each direction / twice per week) as needed depending on seasonal variations and specific customer needs.

The primary customers on this segment are a feed mill at North Bennington, a quarry at Shaftsbury, a propane distributor in Dorset, and a lumber yard at Manchester.

Some sections of track between Rutland and Bennington operate at 25 mph, some operate at 10 mph, but other sections are considered to be below FRA Class I standards or what is defined by the FRA as "Excepted Track". This means that only limited freight usage is allowed at 10 mph or less, and no passenger service is permitted.

Passenger Service
As mentioned above, there is currently no passenger service operated on this segment.

The State of Vermont has had plans to extend the Amtrak intercity passenger rail service to Manchester in the past. There are no current plans for this service extension at this time.

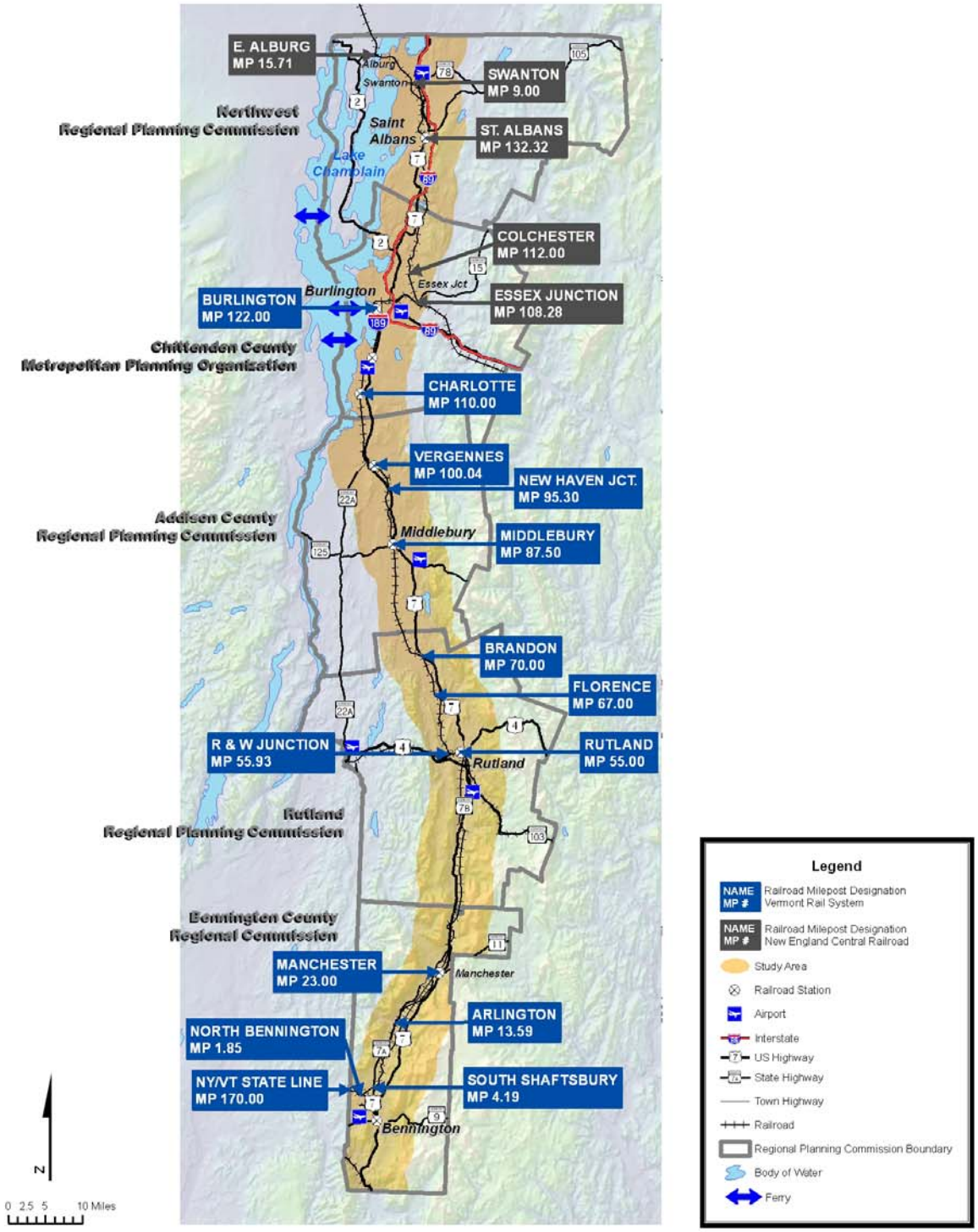
North Bennington to Hoosick Junction, NY:

Freight Service – maximum speed of 40 mph
Freight service was recently (April 2008) restored on this five-mile segment that extends into New York State, but is owned by the State of Vermont. Initial freight movement has consisted of OMYA slurry tank cars destined for points in Maine.

Although there are no freight customers on this segment, it provides a connection at Hoosick Junction that allows for the interchange of rail traffic with the Pan Am Railway (PAR). It is anticipated that reactivation of this trackage and connection to PAR will lead to additional freight traffic on this portion of the Vermont Railway.

Passenger Service
There is currently no passenger service operated on the segment.

Figure 8.3
Western Corridor Railroad Segments



8.2 Freight Activity, Traffic Density, and Services

This section summarizes the operational characteristics of freight and passenger railroads operating in Vermont's Western Corridor.

Most freight traffic in Vermont serves a diverse range of business enterprises and is interstate in nature, either traveling into, out of or through Vermont. Historic freight traffic volume information can be found in the Vermont Rail Capital Investment Policy Plan Report (2001), and the State Rail & Policy Plan Update (2006). Common types of freight, which are described in this section, include agricultural products; lumber and building materials; petroleum products for residential/commercial use; mining, quarrying, and earth products; cement; marble and granite; sodium and calcium chloride; and newsprint and a variety of chemical products for manufacturers.

Freight activity by rail line segment is presented in Table 8.4 and shown in Figure 8.4. Carloadings are the total number of rail cars using the line each year, and density is the total weight of freight carried along the line, expressed in million gross tons per year.

The Clarendon and Pittsford Railroad Company – CLP handles originating traffic including limestone, logs and lumber products. Bridge traffic includes alcohol, acid, clay, cement products, petroleum products, rock salt, grain products, lumber products, plastics, rubber, coal, food products, and paper products. Between Rutland and Whitehall, NY, the CLP operates two through freight trains daily and one switcher at Florence.

Green Mountain Railroad Corporation – GMRC handles originating and terminating traffic including construction products, fertilizer, petroleum products, rock salt, metals, wallboard, logs and lumber, silicon, slate and hay. Bridge traffic includes alcohol/acid, clay/cement, petroleum products, logs and lumber products, plastics/rubber, coal and wood pulp. Between Rutland and Bellows Falls, GMRC operates two through freight trains per day on a six-day-a-week basis, and two switchers a day, one each in Bellows Falls and Ludlow.

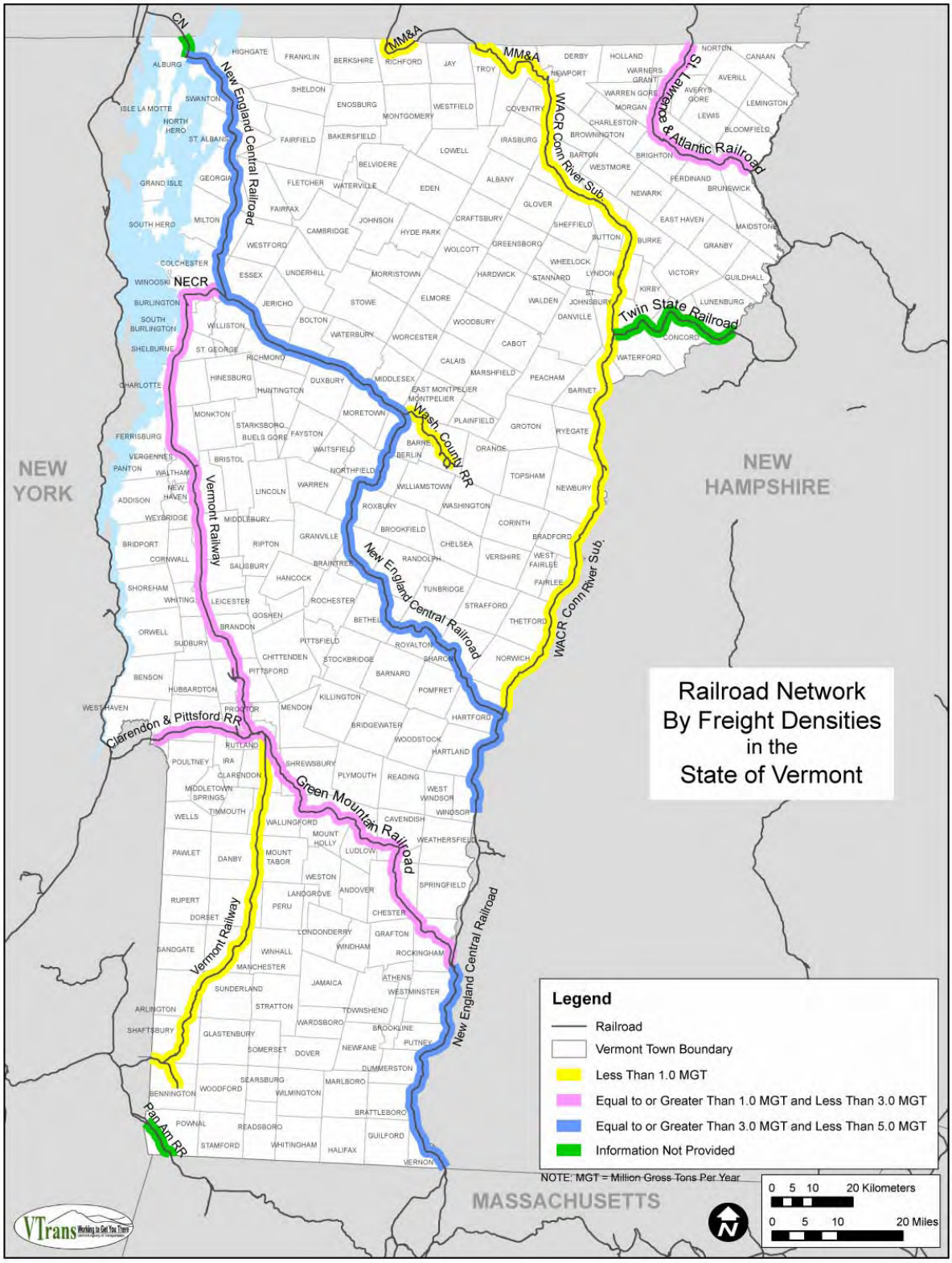
New England Central Railroad Company, Inc. - NECR carries farm products; metallic ores; coal; non-metallic minerals; food or kindred products; lumber or wood products; pulp, paper or allied; chemicals or allied; petroleum or coal products; rubber or misc. plastic; clay, concrete glass or stone; primary metal products; fabricated metal products; electrical machinery; transportation equipment; miscellaneous waste and scrap; mixed shipments; and hazardous material. NECR operates a combination of line haul and local switching, the latter being based at St. Albans and White River Junction.

Vermont Railway, Inc. – VTR handles originating and terminating traffic including corn, limestone products, rock salt, petroleum products, calcium chloride, grains, lumber, fertilizers, potassium chloride, sand and plastics. Between Rutland and Burlington, VTR operates two through freight trains per day (one in each direction) with one local between Florence and Rutland and switchers at Rutland and Burlington. Between Rutland, Bennington and Hoosick Falls, a through freight train operates four days a week. Primary customers on the Burlington-Rutland segment include: major transloading of bulk materials at Burlington Yard; an interchange with New England Central Railroad at the north end of Burlington Yard; a feed mill in Vergennes; a bulk oil transloading facility in Middlebury; a large mineral processing plant (OMYA) in Florence; and large transloading facilities in Middlebury and Rutland. Between Rutland and Burlington primary customers are: a feed mill at North Bennington; a quarry at Shaftsbury; a propane distributor in Dorset; and a lumber distributor in Manchester.

Table 8.4 Rail Line Density by Operator

	Line Segments		2003 Freight Traffic	
Railroad	**From**	**To**	**Carloadings**	**Density (MGT)**
CLP	Rutland	NY State Line	16,051	2.09
	Florence Beach		7,976	1.04
GMRC	Rutland	Bellows Falls	10,886	1.42
NECR	Total Carloading of NECR Line Segments listed below		36,410	
	Essex	Burlington		1.10
	East Alburg	St. Albans		4.02
	St. Albans	Essex		4.66
	Essex	White River Jct.		3.58
	White River Jct.	Bellows Falls		3.29
	Bellows Falls	MA State Line		4.45
VTR	Burlington	Middlebury	8,909	1.16
	Middlebury	Rutland	15,749	2.05
	Rutland	Bennington	289	0.04
	Bennington	NY State Line	Less than 0.04	
	Bennington Branch		Less than 0.04	
CN	Operated by NECR			
PAR	MA State Line to NY State Line		Not Reported	

Figure 8.4 Railroad Network by Freight Densities in the State of Vermont



Source: Vermont State Rail and Policy Plan, 2006.

8.3 Intermodal and Other Transfer Facilities

Containers on flatcars (COFC) and trailers on flat cars (TOFC) represent the most common type of intermodal freight movement. TOFC/COFC is currently carried on Vermont rail lines, although there currently are no termination or origination points in the state. Vermont's shippers and receivers access TOFC/COFC services via terminals in the region. The closest ramps are located in New York (Albany), Quebec (Montreal), and Massachusetts (Worcester and Palmer).

There are a number of facilities in Vermont that support non-TOFC/COFC "intermodal" transfers from rail to truck or storage and truck or storage to rail. These facilities are principally related to the bulk handling of material. Significant commodities handled by these facilities, include lumber, salt, fuel oil, gasoline, propane, steel products, bricks, plastics, and chemicals. These facilities are generally classified by their functions: bulk transfers, transload, and warehousing.

- **Bulk transfers** are generally movements of a single product to a terminal. Products, such as fuel oil, are unloaded into storage facilities or transferred directly from one mode to another at these facilities.
- **Transload facilities** are consolidation and distribution points for outbound and inbound commodities.
- **Warehousing** is the third type of intermodal movement. Warehousing refers simply to commodities that are stored at a warehouse facility for continued movement via rail or truck.

There is no single comprehensive listing of bulk transfer, transload, or warehousing facilities, as most of these are privately owned and operated. An example of a transload facility in Vermont is the Riverside Railroad Center, located on the Green Mountain Railroad in Bellows Falls, owned by the GMRC.

The railyards in Burlington and Rutland serve as major switching points in the Corridor and also serve local customers with bulk transfer facilities. The Burlington Rail Yard is the northern terminus for VTR's operations. It is located on the western edge of the city adjacent to Lake Champlain. The 47-acre yard extends approximately two miles from Home Avenue in the south to King Street in the north. According to the 2001 Burlington and Rutland Rail Yard Relocation Study, the yard received on the average 50 to 60 cars per day and generally had approximately 100 cars within its limits. Six facilities were serviced directly from the yard. The rail traffic that terminates or originates at the yard is typically loaded from trucks or directly to the customer's facility that is located within or adjacent to the yard.

Located in downtown Rutland near the fairgrounds, the 48-acre Rutland Rail Yard is utilized by several Vermont Rail Systems' railroads. The primary purpose of this railyard is to facilitate the through movement of freight. The yard is also used for equipment maintenance, maintenance-of-way vehicles, car and engine storage, and administration. As of 2001, approximately 200 cars per day ran through the yard and the yard had 10 local customers.

The potential may exist for Vermont's railroads to provide additional rail routes and profit from increased intermodal bridge traffic as well as provide businesses in Vermont with timely and efficient transportation options. There have been many changes in the dynamics of intermodal and transload movements which are impacting the volume of this type of freight. These include modified regulations regarding trucking service hours, the increase in fuel prices, changes in international port and shipping flows due to the increased size of transatlantic ships, and the general growth of freight movements.

In the past opportunities to develop intermodal freight facilities have been constrained by Vermont's relative proximity to competitive intermodal facilities in Albany, Springfield, Worcester, Auburn and Montreal. Changes in the industry, such as the phenomenal and continuing growth of intermodal service in the United States and Canada and the increasing development of short-haul intermodal routes by large (Class I) railroads, have created conditions at a national level that are more favorable for intermodal freight facilities. However, Vermont railroads continue to believe that intermodal terminals are not feasible in the state, at least in the near term, and that investment is instead needed in bulk transfer facilities.

In order for Vermont's railroads to fully capitalize on changing freight traffic flows, improvements to many of Vermont's transload freight facilities would be required. Presently, many of the freight facilities in the state do not fully meet the needs of the railroad or the community. In the Western Corridor, particular concerns have been raised regarding: congestion and constraints on future growth at the existing Rutland Rail Yard and the potential for relocating this facility; community impacts at the Burlington Rail Yard; and access to the rail yard in St. Albans.

8.4 Rail Passenger Service

Amtrak intercity rail passenger service operates into the Western Corridor via two services which operate a pair of trains (northbound and southbound) daily. The *Ethan Allen Express (Trains 290/291)* operates from New York to Rutland via Whitehall, NY using the tracks of the Clarendon & Pittsford Railway to serve Fairhaven and Rutland

Station. The train is "turned" at Rutland for the return trip to New York. Amtrak's *Vermonter (Train 54/55)* operates from Washington, DC via New Haven, Connecticut and traverses Vermont entirely on New England Central Railroad trackage. The *Vermonter* serves Burlington via a station stop at Essex Junction and terminates at St Albans station.

Vermont is one of several states that provide financial support for the operation of intercity trains by Amtrak. Ridership on the two Vermont-subsidized trains has been increasing in the past two years. Total ridership and usage of the three Western Corridor stations is shown in Table 8.5, Amtrak in Vermont – Select Stations, 2006 and 2007. Some of the decline has been attributed to competition from low-cast airlines operating from Burlington International Airport, plus the reduction in train services. The *Ethan Allen* service was reduced from two to one northbound train in 2001, and in 2003 the *Vermonter*'s bus connection between St Albans and Montreal was discontinued by the operator, Vermont Transit.

Table 8.5 Amtrak in Vermont – Select Stations, 2006 and 2007

		2006 ONS/OFFS	2007 ONS/OFFS
Vermonter	St. Albans	2,575	2,665
	Essex Junction	10,265	13,378
Ethan Allen Express	Rutland	15,861	16,399
	Vermonter	**56,157**	**65,538**
Total Service Ridership	**Ethan Allen Express**	**43,574**	**44,198**

Source: VTrans.

The area is also served tangentially by Amtrak's *Adirondack* (Train 68/69) which operates between New York and Montreal along the western shores of Lake Champlain. The station stop at Port Kent, NY provides a shuttle connection to a seasonal ferry service operating between Port Kent and downtown Burlington.

In addition to intercity services, passenger service operated in the Western Corridor area includes seasonal tourist excursion trains on the *Green Mountain Flyer* (Bellows Falls – Rutland) and the *Champlain Valley Flyer* (along the shore of Lake Champlain).

A commuter rail service was also initiated in December 2000 over 13 miles of the Vermont Railway between Burlington and Charlotte. The service was originally conceived to alleviate congestion on US Route 7. The anticipated roadway construction project was delayed and did not reach its maximum level of activity during operation of the commuter service. Based on the relatively light ridership, the State Legislature elected not to continue funding of this service and it was discontinued at the end of February 2003. However, future expansion of passenger rail service along the entire Bennington– Rutland–Burlington-Essex rail corridor remains a goal of the state. Ongoing track and infrastructure improvements along this corridor (termed the Albany-Bennington-Rutland-Burlington-Essex or "ABRBE" corridor) are being carried out with the goal of improving opportunities both freight and passenger services along this route.

9.0 Public Transit

Local public transportation supports economic development by virtue of providing access to employment, by enhancing personal mobility and by providing transportation alternatives for visitors and tourists. A combination of fixed routes and deviated fixed routes (sometimes termed "flex" services) are provided, reflecting the area's primarily rural and low density character. Fixed route services operate on a specific street and roadway routing according to a fixed schedule. Route deviation services have a specified routing and schedule, but have the operational flexibility to leave (or deviate) from the route for a pre arranged pick up or drop off.

Commuter bus service is generally defined as town-to-town service operating during the morning and afternoon peak periods. It can be viewed as a more flexible and less costly alternative to commuter rail. The state has supported commuter-oriented services such as the LINK Express routes between St. Albans and Burlington and between Middlebury and Burlington, and the state has worked to restore service between Bennington and Burlington through connections between public service providers.

Service providers within the Western Corridor area are described as follows. Ridership figures are for the Year 2005 and were obtained from the VTrans 2007 Public Transportation Policy Plan.

Addison County Transit Resources (ACTR) – operates three deviated fixed routes and demand response services to the Middlebury area. In 2006 ACTR inaugurated a Saturday service between Middlebury and Burlington similar to the LINK express route operated by the Chittenden County Transit Authority on weekdays. Annual fixed route boardings are 53,955.

Chittenden County Transportation Authority (CCTA) – operates fixed route, demand response and shuttle services focused on the Authority's five member communities (Burlington, Essex, South Burlington, Shelburne and Winooski) with additional service to Williston and Colchester. Commuter services are provided along the I-89 corridor north to St. Albans, along the I-89 corridor southeast to Montpelier and along the US Route 7 corridor south to Middlebury. A local service route to Burlington International Airport operates seven days a week. Annual fixed route boardings are 1,888,254. CCTA also runs a LINK Express between Burlington and Montpelier, Burlington and Montpelier, and Burlington and St. Albans.

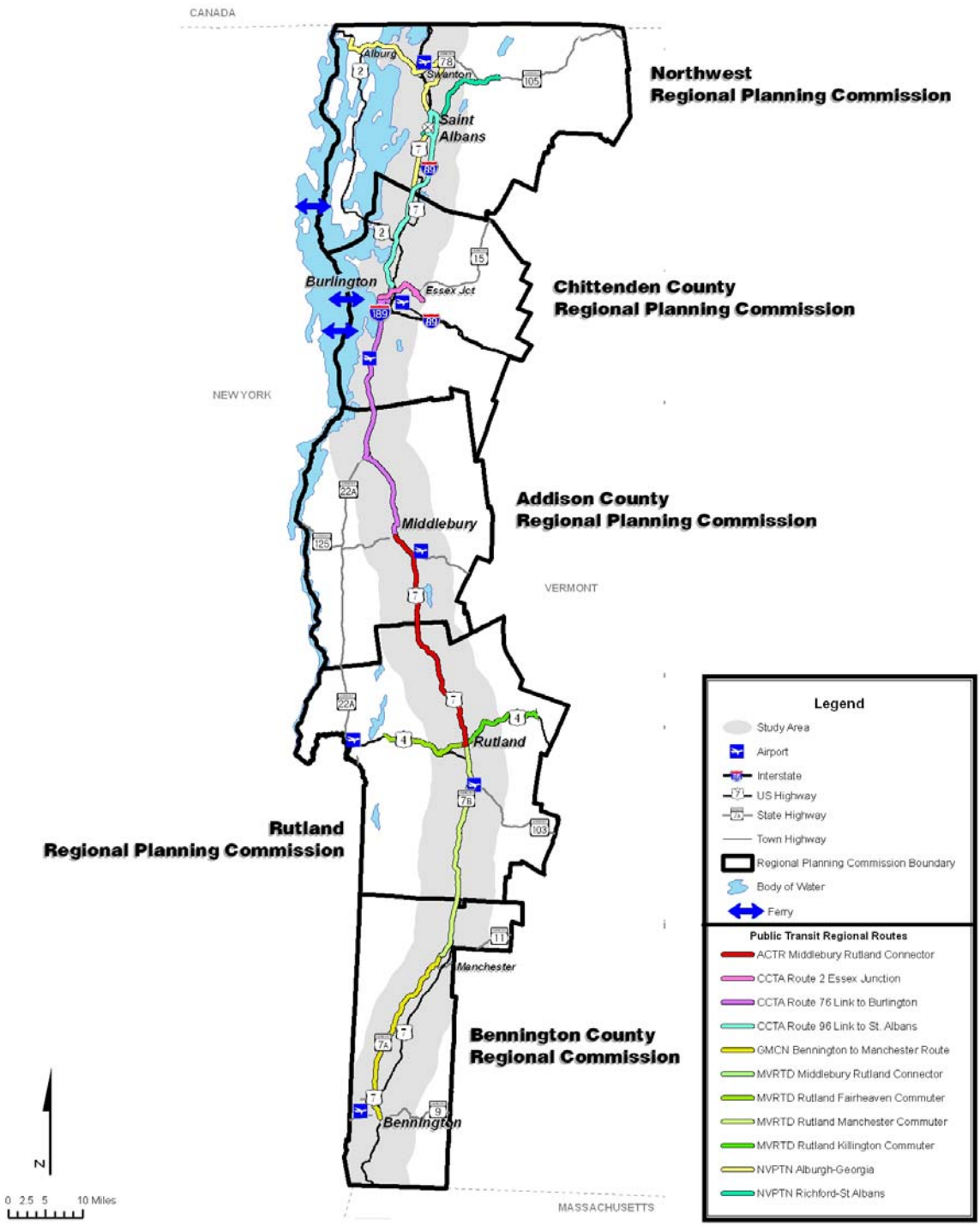
The Green Mountain Community Network, Inc., a private not-for-profit organization manages the Green Mountain Express, which has provided transportation services in and around Bennington County since 1985. Fixed route services include: Shopper's Express, Bennington to Manchester, Bennington to Pownal, North Bennington and Shaftsbury.

Marble Valley Transit District (MVRTD "The Bus") – operates fixed route service in the greater Rutland area. Service includes four "in city" fixed routes and two commuter routes terminating at Manchester and Fair Haven. Fixed route service is also provided for tourists and employees to the Killington resort area 365 day a year. During the winter season a connecting service is operated between the Amtrak "*Ethan Allen*" and the Okemo Mountain Resort. Annual fixed route boardings, including the seasonal services, are 724,148. This operation is the largest non-urban transit provider in Vermont.

Northwest Vermont Public Transit Network (NVPTN – "The Network") - operates two deviated fixed routes in Franklin and Grand Isle counties. Annual ridership is 13,243.

Based on the services provided by these operators, it is possible to traverse the corridor using public transit services as indicated in Figure 9.1, Public Transit Regional Routes. However, schedules, hours of operation and transfer arrangements could be further coordinated to reduce travel times and better accommodate potential riders.

Figure 9.1
Public Transit Regional Routes



10.0 Intercity Bus

As a result of changing demographic patterns and competition from low-cost airlines, intercity bus operators have sought to abandon service to smaller communities, focusing instead on carrying passengers over longer distances between major terminals or hubs. White River Junction functions as such a hub Vermont. New terminals are often located at sites with good access to interstate highways and with ample parking.

11.0 Airports

The Western Corridor is served by the only two commercial service airports in the state, Burlington International Airport and Rutland Southern Vermont Regional Airport. According to The Economic Impact of Vermont's Public-Use Airports – Final Technical Report (April 2003), the total economic impact in business sales (revenues) for all public-use airports in Vermont is over $276 million. Bennington International Airport is the primary economic generator for the Western Corridor and the state as a whole. At approximately $242.5 million, Burlington International Airport comprises 88 percent of the statewide total. The total economic impact business sales (revenues) for Rutland Southern Vermont Regional Airport is significantly smaller at $7.5 million, or 3 percent of the statewide total.

Burlington International is owned by the City of Burlington and is presently served by US Airways, United, Continental Express, JetBlue, Delta Connection and Northwest Airlink providing service to Chicago, Detroit, Washington DC, Philadelphia, New York City, Cincinnati, Cleveland, Atlanta and Orlando.

At Burlington the current split between business and pleasure travel is 66 percent and 34 percent respectively. Canadian passengers account for 25 to 30 percent of the business at the airport, and the facility is cost competitive (if not advantageous) with Montreal for Canadians flying to US destinations. There were 707,395 enplanements (passengers getting on a departing aircraft) at Burlington Airport in 2007, a 2.4 percent increase from last year. The number of deplanements (passengers getting off an arriving aircraft) was similar for the same year at 703,350. The number of enplanements and deplanements both increased by 2.4 percent from the previous year.

Air Cargo services are provided by Continental Express, United Airlines and, USAirways and two "pure cargo" carriers – Federal Express and ABX Air also operate from the airport. In 2006, an estimated 10,720 tons of freight (4,360 enplaned tons and 6,360 deplaned tons) was transferred at Burlington International Airport. Enplaned freight increased by 3.7 percent from last year whereas deplaned freight declined by 2.3 percent for the same time period.

Burlington International has the longest runway in the state – Runway 15/33 at 8,320 feet accommodating aircraft up to 335,000 pounds with dual tandem landing gear and 175,000 pounds with dual wheeled landing gear.

Two of the seven federally designated NHS Intermodal Connectors in Vermont are at Burlington International Airport. The two connectors are Airport Drive between the Airport Entrance and U.S. 2 and Kennedy Drive between U.S. 2 and I-189. These highway segments were selected due to their importance as primary links for the movements of freight and passengers from intermodal facilities to the Interstate and principal arterials on the NHS.

According to the 2007 Airport System Plan Capital Plan, the West and Northwest Land Acquisition Projects are the most expensive projects at 15 and 13 million respectively. There is also a Taxiway Development project with a total cost of 10 million.

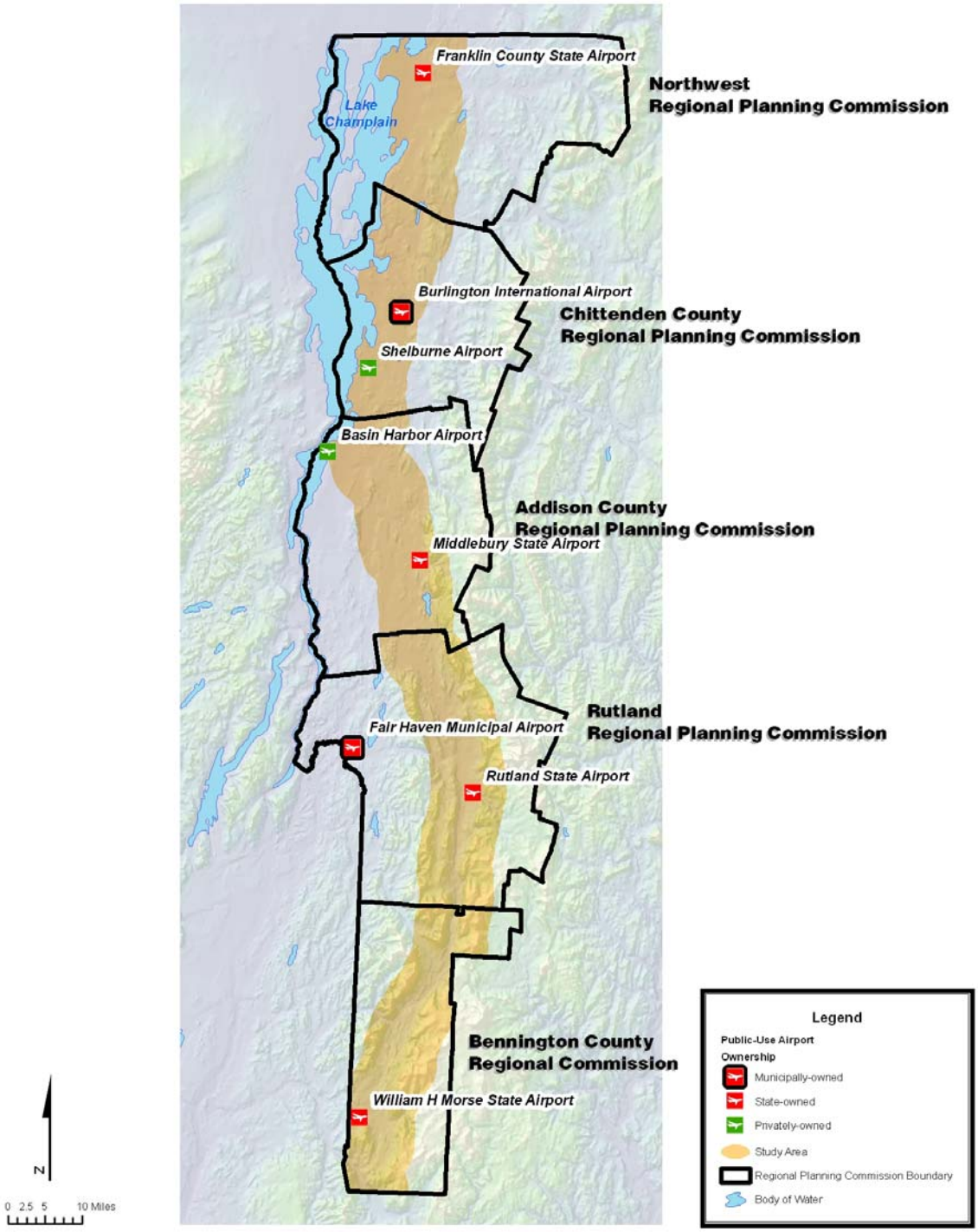
Rutland Southern Vermont Regional Airport is situated approximately 70 miles south of Burlington and is owned and operated by the State of Vermont Agency of Transportation. Passenger service is provided by CapeAir, serving Boston Logan Airport. Access to the airport is via Airport Road, which is easily accessible from Route 103 and is approximately six miles south of the intersection of Routes 4 and 7.

Total operations in 2006 were 29,224 with 1,456 commuter airline operations. FedEx and UPS both fly to and from Rutland Southern Vermont Regional Airport. FedEx also has a distribution center in an industrial park abutting the airport property and a large number of area businesses use the airport.

Rutland Southern Vermont Regional Airport is affected by a federal safety rule change that keeps larger corporate and charter planes from using the field. A longer runway will enable larger aircraft to utilize this airport. Lengthening Runway 1/19, the main runway, from 4,000 to 6,000 feet is estimated to cost $40 million. Any action on lengthening the runway is years in the future. Presently this runway is 5,000 feet with a maximum weight of 68,000 pounds with dual wheel gear.

In addition, the Western Corridor is served by one other municipally-owned airport: Fair Haven; by three other state -owned facilities: Franklin County in Highgate, Middlebury and William H. Morse in Bennington; and by two privately owned public use airports: Shelburne and Basin Harbor in Vergennes. The locations are shown on Figure 11.1, Western Corridor Airports.

Figure 11.1
Western Corridor Aiports



12.0 Water Transportation

Services accommodating passenger vehicles and trucks are operated on Lake Champlain at four locations in the northern part of the study area. Lake Champlain is 108 miles long and 12 miles across at its widest point. It flows north into the Richeleau and St Lawrence Rivers of Quebec and connects to the Hudson River to the south via the Lake Champlain Canal. Three Lake Champlain ferries are operated by Lake Champlain Transportation Company and one is operated by Fort Ticonderoga Ferry. The company dates back to 1826. The Fort Ticonderoga Ferry provides historic scenic seven-minute daytime crossings on Lake Champlain between Ticonderoga New York and Shoreham Vermont, connecting The Lake George and Adirondack regions of New York with the Middlebury and Central Green Mountain areas of Vermont.

Presently four crossings are operated with a total of nine vessels. These crossings provide a connection between the study area and neighboring New York. Advance reservations are not required. The vessels have reinforced hulls and propulsion systems that enable them to negotiate winter ice on the Lake.

Grand Isle to Plattsburgh (NY) operates year round on a 24 hour basis. Year round service began in 1976, and a 24 hour service began in 1999. The one-way crossing time is 12 minutes. This is essentially a shuttle–type operation with approximately 76 round trips daily. The maximum vehicle weight 40 tons. The operator advertises this service as a connection between I-87 in New York and I-89 in Vermont

Burlington-Port Kent (NY) operates from late Spring through early Fall with a one hour crossing time. Maximum vehicle weight is 20 – 40 tons. Again, the operator advertises the service as a connection between I-87 and I-89.

Charlotte – Essex (NY) operates year round with increased frequency being provided from late Spring through early Fall. The crossing time 20 is minutes. Maximum vehicle weight is 40 tons. The operator advertises the service as a connection between US 7 in Vermont and I-87 in New York.

13.0 Bicycle and Pedestrian Facilities

The Vermont Bicycle and Pedestrian plan is VTrans' policy document for addressing the development of bicycle and pedestrian facilities. Since it is regional in scope, the Transportation Management Plan may not ultimately address all of the bicycle and pedestrian facilities throughout the Western Corridor.

The components which constitute the bicycle and pedestrian infrastructure are typically defined as:

- Sidewalks and crosswalks – usually located in city and village centers
- Bicycle lanes – marked lanes typically within city or village centers
- Shared lanes – on low volume roads
- Roadway shoulders on higher volume local roads and state highways
- Shared use paths – off road facilities that are better suited for children, older riders, etc.
- Rail trails – share use paths that utilize abandoned railroad rights-of-way

Most state highways throughout the corridor are included in the regional on-road bicycle network, but they are not necessarily reflected in local plans, which tend to emphasize shared use paths and trail networks. The state highways typically connect residential, commercial, industrial areas and transportation centers and can therefore be viewed as the backbone of a regional bicycle transportation network. For the purposes of identifying transportation management / improvement plans, the inclusion of features which will enhance the function and safety of the bicycle network – including coordination with on-street parking, widening and paving of shoulders, needs to be a key part of the planning process. Facilities which provide only a local or recreational purpose would be considered only on an exceptional basis.

14.0 Major Regional Issues

Preparation of the Existing Conditions Report has entailed the review of a number of regional planning documents, personal contacts and the solicitation of input from and initial set of focus group for the project. This process has identified a number of issues pertaining to the ability of the Western Corridor to continue to develop economically. Strengths include the region's natural beauty and high quality of life, which are a draw for companies and employees to locate in the region, as well as for tourists to visit. The region has abundant cultural and historic resources. The workforce has remained relatively stable while exhibiting the trend associated with the shift from the industrial and manufacturing sectors to technical and service based employed. The region also has a rich natural resource base, including minerals, forest products, and agriculture, as well as a strong history of processing and manufacturing utilizing these resources.

Some of the major issues of concern include:

- The lack of direct access to the Interstate highway system south of Burlington;
- An arterial road network that has capacity and safety concerns and various locations;
- A railroad system that needs furthering upgrading in terms of physical capacity in order to be fully compatible with the national rail network, thereby encouraging the use of rail by new customers while retaining existing customers;
- The need to sustain and develop key transportations connections, or "gateways', that link the Western Corridor to the national and international transportation network;
- Regional transit systems that need to better serve the needs of employers and people with mobility concerns;
- The need to provide employment opportunities and lower cost housing to help attract and retain younger age workers and their families;
- Relatively high utility rates Inadequate telecommunications infrastructure in some of the more rural areas;
- The perception of Vermont as a state where it can be complicated to establish and expand businesses, with a cumbersome permitting process, and;
- A need to have the general public better understand and appreciate the overall importance of transportation systems and the associated funding mechanisms in sustaining the region's economic vitality.

An overriding concern is that transportation systems support "smart growth." The regions have a desire for compact, mixed-use commercial and residential development in their city, village, and town centers, instead of additional low-density, auto-oriented development. Business and industry should be encouraged to locate in areas served by existing infrastructure, including highway and rail transportation as well as sewer and water. Industrial development should locate in designated industrial parks in or near urban or village centers. There is also a concern that developed properties situated along rail lines be preserved for future use by business which depend on rail for shipping and receiving.

As this project is focused on transportation concerns associated with the Western Corridor, those regional topics arising from the Existing Conditions Report which directly pertain to transportation functions will be the subject of further examination as the project advances. These issues include:

Rail freight service improvements throughout the corridor: Area businesses and economic development officials have indicated that existing businesses would benefit from improved rail freight service. The availability of viable freight service is seen as very important in efforts to attract and retain new businesses to the area.

Rail facility infrastructure upgrades throughout the corridor: specifically the upgrading of bridges to handle the national standard of fully loaded 286,000-pound railcars and resolving clearance issues, bringing tunnels, and highway bridges over railroads, into conformance with current national railroad standards. The location and capacity of freight rail yards is also a concern.

Remediation of unacceptable roadway traffic levels of service: These problems have been particularly noted in urban centers along the corridor including Bennington, Rutland and Middlebury. In Bennington, completion of additional bypass segments (especially the northeast segment) are viewed as being important to achieving economic development and downtown revitalization objectives. Management of the Route 7 corridor is an objective to ensure that traffic operations do not substantially deteriorate as growth occurs.

Measures to deal with the impact of truck traffic on downtowns: There is concern in a number of communities, especially given the recent interest and momentum towards downtown revitalization.

Lack of access to an Interstate highway: This is a concern for most of the corridor south of Burlington area. However, the northern part of the corridor has stronger transportation access as it is directly served by I-89.

Emphasis on the role of the regional airports: Commercial air service, air cargo and executive business / corporate air service are viewed as being critical for business development in the Western Corridor. The Burlington and Rutland facilities are important economic assets and investment in these should continue.

Expansion of regional transit services: These systems have been expanding and have been developing a coordinated set of services along the Western Corridor. There is a need to further refine these services to enhance access to employment and housing opportunities, particularly as concerns Transit Oriented Development, and to address the needs of persons with mobility concerns.

Improvements to transportation gateways: These entail connections from the Western Corridor to the national and international transportation network. Concerns include basic infrastructure and the need to provide efficient processing at international border crossings.

As development of the Western Corridor Transportation Plan moves forward, these issues will be examined more fully as various future scenarios and strategies are developed.

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Appendix B
Future Conditions

Vermont Western Corridor

Transportation Management Plan

Future Conditions Report

January 2009

Prepared For:

Vermont Agency of Transportation

Chittenden County Metropolitan Planning Organization

Addison County Regional Planning Commission

Bennington County Regional Commission

Chittenden County Regional Planning Commisssion

Northwest Regional Planning Commission

Rutland Regional Planning Commission

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1. Introduction

The purpose of this report is to identify projected economic, demographic and transportation conditions in the Western Corridor for the year 2030. Conditions described represent a "no action" situation, which presumes no new transportation improvements other than those planned major projects that are programmed for implementation. The horizon year of 2030 is a 25-year projection beyond the information presented in the Western Corridor Existing Conditions Report. The structure of this report generally follows that of the Existing Conditions report, with particular emphasis on issues pertaining to freight movements and the associated trucking and railroad operations, which have emerged as key concerns for this corridor.

Traffic projections presented in the Future Conditions report are derived from the State of Vermont's travel demand forecasting model. Since the Future Conditions report represents a "no action" scenario, the analysis presumes no additional transportation improvements in the corridor other than the following planned major projects;

- Bennington – Bypass
- Chittenden County - Circumferential Highway
- Middlebury Rail Spur
- St Albans Federal Street

The Bennington Bypass and the Circumferential Highway projects represent significant capacity improvements to the highway system and, as such, are reflected in the travel demand forecasting model's assumed 2030 roadway network. The Middlebury Rail Spur Project has published a Final Environmental Impact Statement (FEIS) identifying a preferred alternative and its projected changes in truck volumes have been incorporated in the Future Conditions traffic analysis.

The Future Conditions report assumes no additional Western Corridor passenger rail service beyond what is currently operating (Amtrak-operated *Ethan Allen* and *Vermonter* services). Public transit services are assumed to operate within the context of the existing service network and providers.

2. Future Economic and Demographic Conditions

2.1 Employment

Projections of employment by county and industry in the Western Corridor were taken from Woods & Poole, a private provider of population and demographic data and projections. Table 2.1 shows projected growth for each of the Western Corridor counties and for the rest of Vermont in comparison. Overall job growth in the Western Corridor is projected to be just over 30 percent, which is slightly higher than the rest of the state (29 percent). Employment growth is expected in all six counties, with the largest absolute growth (43,000 jobs) is forecast in the Burlington region (Chittenden County), which is expected to generate over half of the corridor's total employment growth. The next highest growth is projected in Addison County (11,300 new jobs, a 47 percent increase). Rutland County shows the lowest projected job growth on a percentage basis (13 percent), though is still expected to add 5,000 new jobs by 2030.

Table 2.1 Employment Growth by County, 2005 - 2030 *(in thousands of jobs)*

County	2005	2030	Change	% Change
Addison	24.2	35.5	11.3	46.7%
Bennington	26.9	34.0	7.0	26.1%
Chittenden	128.0	171.0	43.0	33.6%
Franklin	23.6	30.7	7.1	30.1%
Grand Isle	2.3	3.5	1.2	51.7%
Rutland	38.8	43.8	5.0	13.0%
Total, Western Corridor	**243.8**	**318.4**	**74.6**	**30.6%**
Rest of Vermont	181.6	230.7	49.1	27.0%
State Total	**425.4**	**549.1**	**123.7**	**29.1%**

Source: Woods & Poole (2007)

Table 2.2 shows employment projections by industry sector. The fastest growing industry is expected to be the service sector, growing by 53 percent and adding over 53,000 jobs – over two-thirds of all new jobs in the corridor. Construction, government, retail, and wholesale trade and transport also are expected to show double-digit increases on a percentage basis. The manufacturing sector is expected to decline slightly, losing 1,000 jobs (3 percent). These projections largely reflect current trends showing a shift away from manufacturing and into services and other sectors of the economy. The employment base is expected to trend towards smaller companies and self-employment.

Economic growth will continue to be stronger in the Burlington region, which is home to growth industries and benefits from access to a comprehensive transportation system consisting of the Interstate and other highways, rail, aviation and public transit. It is possible, however, that the past few decades' trend of growth on the periphery of the Burlington region may slow or be reversed by broader economic and demographic forces including higher energy prices, a "back to the city" movement, and greater interest in efficient land use as a strategy for reducing energy consumption and greenhouse gas emissions.

Table 2.2 Western Corridor Employment by Industry Sector, 2005 – 2030 *(in thousands of jobs)*

	Govern-ment	Services	Natural Resources	Con-struction	Manu-facturing	Retail	Wholesale Trade & Transport.	Total
2005	29.5	100.3	8.5	15.1	32.2	41.1	17.1	243.8
2030	36.8	153.7	9.3	19.9	31.2	47.5	20.0	318.4
Change	7.3	53.4	0.8	4.8	(1.0)	6.4	2.9	74.6
% Change	25%	53%	9%	32%	-3%	16%	17%	31%

Source: Woods & Poole (2007)

2.2 Population

According to Woods & Poole data, by 2030 the population of the Western Corridor is projected to reach 439,200 - an increase of 96,600 people compared to 2005 - and will comprise fifty-six percent of the state's population (see Table 2.3). The Western Corridor's population is forecast to grow at a slightly faster rate than Vermont as a whole (28.2 and 25.5 respectively). Almost half of the projected population growth, 44,100 people, is expected to occur in the greater Burlington area (Chittenden County). This represents a 44.1 percent increase over today's population. All counties are expected to experience population growth.

Grand Isle and Addison Counties are expected to see the largest relative increase in population, with increases of 63.6 percent and 51.5 percent respectively. Between 2005 and 2030, Rutland County will see the slowest rate of increase, though the population is still expected to increase by 9,400 new residents (or 14.8 percent).

Table 2.3 Population Growth by County, 2005 - 2030 *(in thousands)*

County	2005	2030	Change	% Change	% of Vermont (2030)	2030 Population Density (persons per sq. mi.)
Addison	36.9	55.9	19.0	51.5%	7.2%	73
Bennington	36.9	44.8	7.9	21.4%	5.7%	66
Chittenden	149.6	193.7	44.1	29.5%	24.8%	359
Franklin	47.9	59.2	11.3	23.6%	7.6%	93
Grand Isle	7.7	12.6	4.9	63.6%	1.6%	152
Rutland	63.6	73	9.4	14.8%	9.3%	78
Total, Western Corridor	**342.6**	**439.2**	**96.6**	**28.2%**	**56.2%**	**121**
Rest of Vermont	279.8	342.1	62.3	22.3%	43.8%	
State Total	**622.4**	**781.4**	**159.0**	**25.5%**	**100%**	

Source: Woods & Poole (2007)

Between 2005 and 2030, the number of households in the Western Corridor is projected to grow from 134,640 to 176,040, a 30.7 percent increase. This percent increase is consistent with the state as a whole. Number of households is expected to grow at a slightly higher rate than the corresponding population growth by county, which indicates decreasing household sizes. This is consistent with local and national trends showing to increased numbers of single-person households and decreasing family size. See Table 2.4, Number of Households by County (2005-2030).

Table 2.4 Number of Households by County, 2005 – 2030 (in thousands)

County	2005	2030	Change	% Change
Addison	13.68	21.42	7.74	56.6%
Bennington	15.1	18.83	3.73	24.7%
Chittenden	58.5	77.03	18.53	31.7%
Franklin	17.92	22.19	4.27	23.8%
Grand Isle	3.17	5.37	2.2	69.4%
Rutland	26.27	31.2	4.93	18.8%
Total, Western Corridor	**134.64**	**176.04**	**41.4**	**30.7%**
Rest of Vermont	116.23	151.5	35.27	30.3%
State Total	**250.87**	**327.54**	**76.67**	**30.6%**

Source: Woods & Poole (2007)

2.3 Age Characteristics

Measured by median age, Vermont is currently the nation's second-oldest state. The median age and share of older residents is expected to increase over time. According to the U.S. Census bureau, Vermont will be among ten states whose population is projected to have more people 65 and older than under 18 by 2030.

As with the state as a whole, the Western Corridor's population is projected to be older on average in 2030 than it is today, with substantial increases in the number of residents over 65 years of age. According to Woods & Poole data, 24.5 percent of the Western Corridor's population is forecast to be over 65 years of age, double the share in 2005.

Conversely, the population of residents 18 years of age and under is forecast to decrease slightly within the Western Corridor from 21.6 percent in 2005 to 19.6 percent in 2030. The decline in population is consistent with the state as a whole. Addison, Franklin and Chittenden counties tend to have slightly younger populations, while Grande Isle and Rutland counties have older populations than the state in general. Bennington County is unique in that it has both a large segment of the population over 65 as well as a relatively large under 18 population. See Table 2.5, Percent Population Over 65 Years of Age (2005-2030) and Table 2.6, Percent Population Under 18 Years of Age (2005-2030).

Table 2.5 Percent Population Over 65 Years of Age, 2005 - 2030

County	2005	2030
Addison	11.5%	23.3%
Bennington	17.7%	28.4%
Chittenden	10.2%	22.2%
Franklin	11.0%	21.9%
Grand Isle	12.6%	26.6%
Rutland	15.3%	31.0%
Total, Western Corridor	**12.3%**	**24.5%**
Rest of Vermont	14.3%	27.5%
State Total	**13.2%**	**25.8%**

Source: Woods & Poole (2007)

Table 2.6 Percent Population Under 18 Years of Age, 2005 - 2030

County	2005	2030
Addison	21.5%	20.4%
Bennington	20.7%	19.6%
Chittenden	21.3%	19.4%
Franklin	25.3%	21.9%
Grand Isle	20.1%	16.7%
Rutland	20.3%	18.0%
Total, Western Corridor	**21.6%**	**19.6%**
Rest of Vermont	20.9%	19.4%
State Total	**21.3%**	**19.5%**

Source: Woods & Poole (2007)

The aging of Vermont's population could lead to a shortage of people of working age and lead to other changes in the economy. For example, the elderly spend less on housing, travel, cars and clothing and more on health care. An increase in the number of elderly persons will also have direct implications in terms of transportation needs as well, since older populations are more likely to depend on transit services for mobility. Hence, the demand for public transportation services—including more flexible services such as paratransit—is likely to increase as Vermont's elderly population grows.

2.4 Household Income

In 2030, Vermont's mean household income is projected to be $96,774, a 26.1 percent increase from 2005 (see Table 2.7). On the whole, the mean household income is greater than that of the State's. Mean household income in the Western Corridor is predicted to be $102,259 by 2030, a 25.7 percent increase from 2005. Chittenden County has the highest forecasted 2030 mean household income of $111,314 whereas Grand Isle County has the lowest at $75,724. At 5.3 percent, Grand Isle County has the lowest percent change in mean household income between 2005 and 2030.

Table 2.7 Mean Household Income by County, 2005 – 2030 *(in 2004 dollars)*

County	2005	2030	Change	% Change
Addison	$74,274	$95,375	$21,101	28.4%
Bennington	$79,529	$96,994	$17,465	22.0%
Chittenden	$89,492	$111,314	$21,822	24.4%
Franklin	$76,178	$99,764	$23,586	31.0%
Grand Isle	$71,941	$75,724	$3,783	5.3%
Rutland	$72,692	$94,147	$21,455	29.5%
Total, Western Corridor	**$81,365**	**$102,259**	**$20,894**	**25.7%**
Rest of Vermont	$71,390	$90,402	$19,012	26.6%
State Total	**$76,744**	**$96,774**	**$20,031**	**26.1%**

Source: Woods & Poole (2007)

3. Future Traffic Conditions

3.1 Traffic Volumes for 2030

3.1.1 Forecasting Methodology

The Vermont Statewide Travel Demand Model (model) is a tool for developing projections of traffic volumes on Vermont roadways. The model is based on observed (actual) conditions for a base year of 2000. Household data, including auto availability, is based on the 2000 Census, and employment data is from March 2000 Department of Employment and Training information. Future year traffic projections are derived from forecast changes in households and employment by major employment types, which are based on state-level control totals sub-allocated to regions, towns, and traffic analysis zones (TAZs) based on past trends as well as knowledge of local factors that might influence future growth.

Household and employment forecasts in the model were available for the year 2020. To update the model to year-2030 conditions, these data were extrapolated to 2030. Since the model represents a "no action" condition, the 2030 roadway network includes only existing roads with the addition of four major planned projects, as described in Section 1. The roadway network was most recently updated in 2007 and was verified to make sure that all current and programmed projects in the Western Corridor were included.

Two additional adjustments were made to the statewide model traffic forecasts to account for differences in future truck traffic growth. As discussed in more detail in Chapter 4, truck volume forecasts from the national Freight Analysis Framework 2 (FAF2) dataset show somewhat greater percentage growth than the overall statewide model VMT forecasts – typically ranging from 40 to 60 percent between 2002 and 2030, with over 60 percent in some locations. To account for the greater expected truck volume growth, the model volumes for 2030 were adjusted based on the truck percentage growth rates from the FAF2 dataset. Truck volumes by roadway segment were identified based on the most recent data on "percentage trucks by segment", then the number of trucks was increased so that the percentage change in trucks matched the FAF2 dataset, and the total volume was recalculated. The model was then re-run to determine the revised VMT and travel speeds as a result of the increased traffic.

The second adjustment involved removing the truck traffic that will be eliminated on US 7 when the Middlebury Rail Spur is completed within the next few years (estimated construction year is 2012). The Final Environmental Impact Statement (FEIS) for the $34 million Middlebury Rail Spur identifies the preferred alternative as a new rail spur running 3.3 miles from Omya's Middlebury quarry to Vermont Railway's main line. According to the FEIS, in 2030 the spur will result in a daily reduction of 276 trucks on US 7 between Omya's quarry in Middlebury and the Verpol plant in Pittsford. These trips were manually removed from the statewide model for the corresponding segments along US 7.

3.1.2 Traffic Growth (2000 to 2030)

Figure 3.1 shows forecast changes in daily traffic volumes from 2000 to 2030 on major road segments in the Western Corridor. These data are also expressed in relative terms (percent growth over current volumes) in Figure 3.2

Traffic volumes are expected to increase by more than 8,000 vehicles per day at four locations along US 7:

- North of Burlington (Winooski to Colchester);
- South Burlington to Vergennes;
- In the Middlebury area; and
- In South Rutland.

The largest increases – over 8000 vehicles per day – are forecast north and south of Burlington. Other major routes in the Burlington area are also expected to experience substantial growth in traffic.

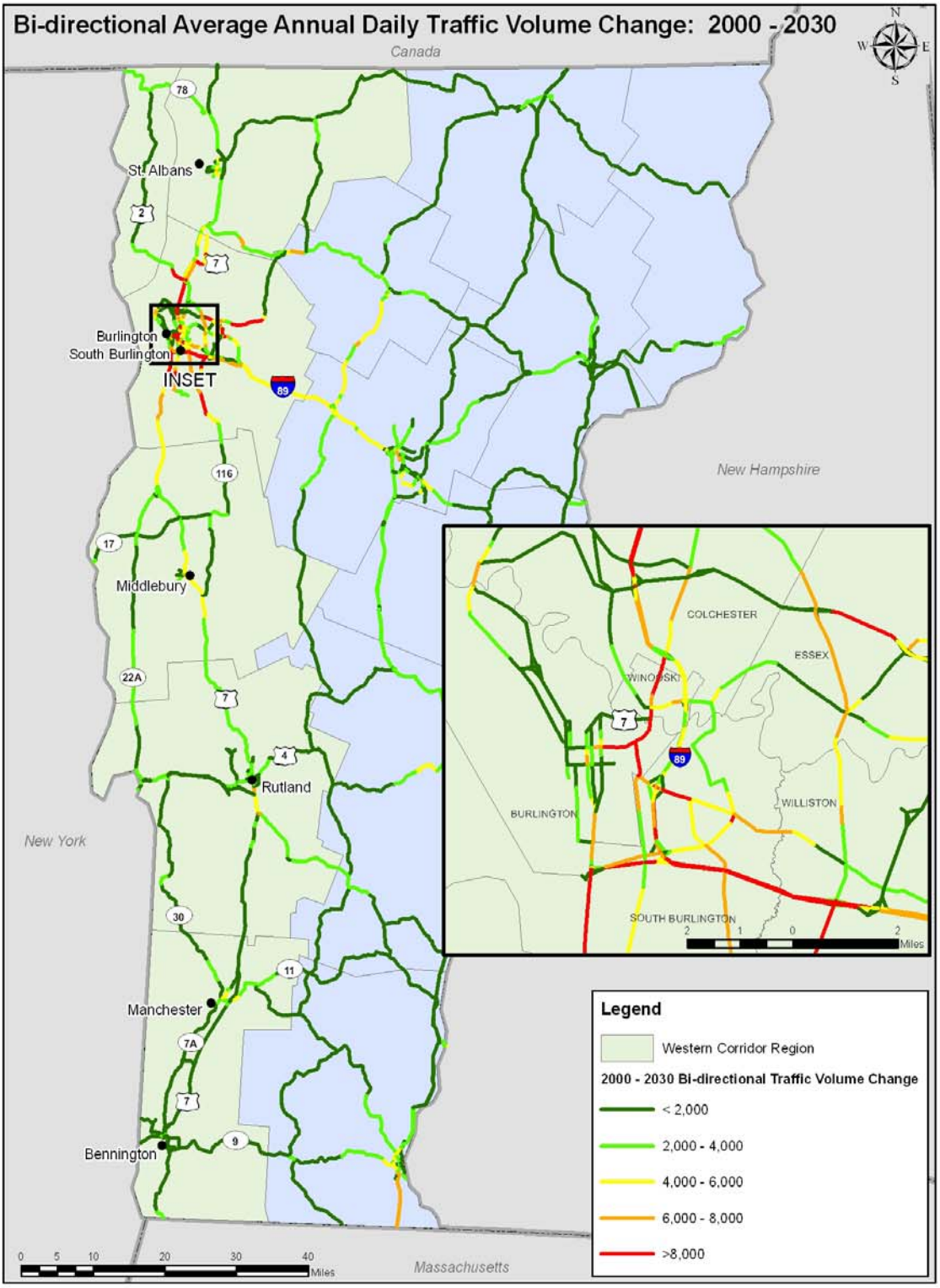
Compared to today's levels, traffic volumes are forecast to grow by an average of 36 percent on the US 7 corridor. The highest levels of relative growth on US 7 (greater than 40 percent) are forecast as these locations:

- North of Burlington (Winooski to the Canadian border);
- South Burlington to Brandon; and
- In the Manchester area.

Traffic growth on US 7 is generally expected to be lower to the south, except as noted around Manchester.

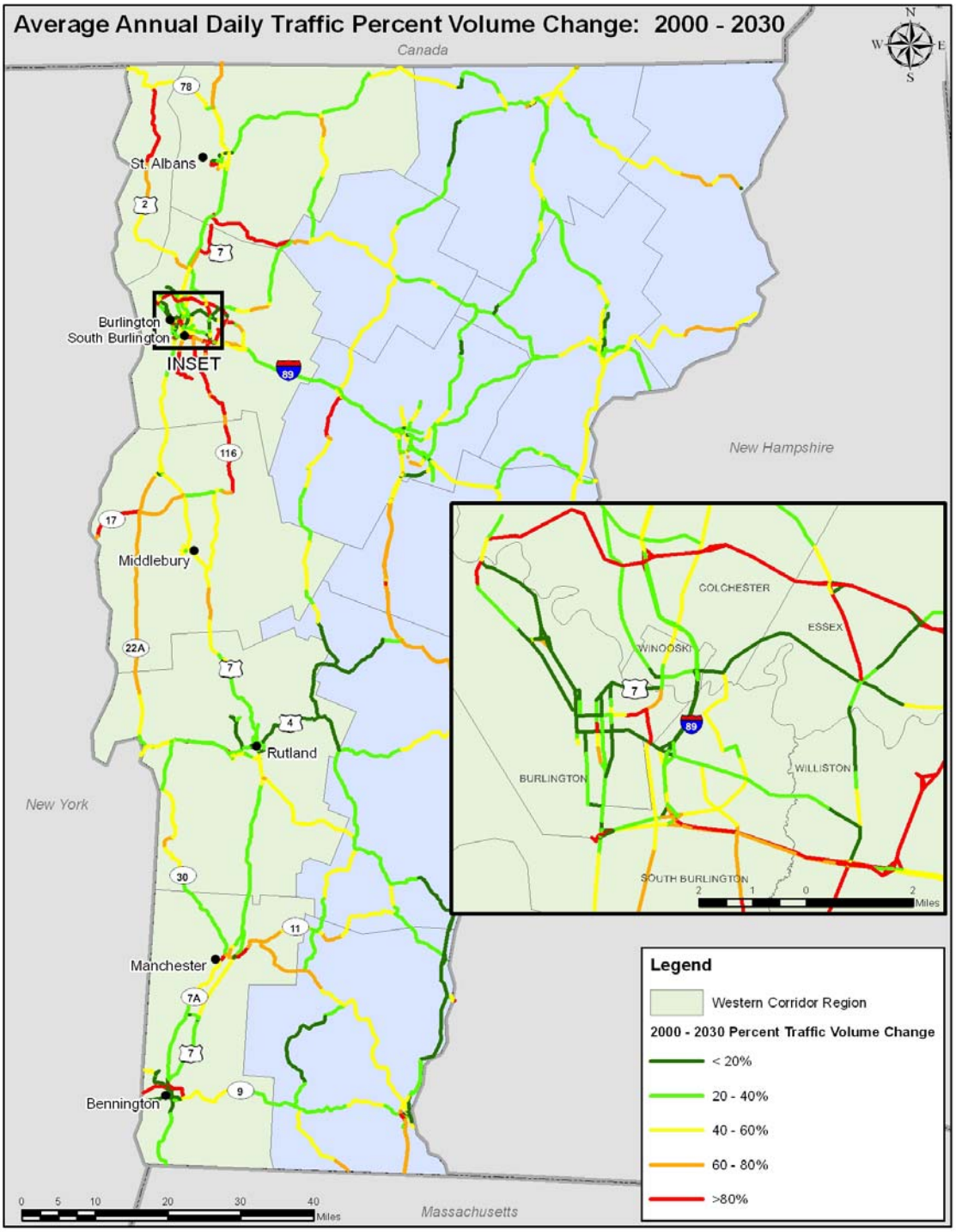
Traffic on I-89 is forecast to grow by 20 to 60 percent in most locations between Burlington and the Canadian border; segments with the most significant volume increases (over 8,000 vehicles per day) are located in the Burlington area. Other roadways will see substantial percentage increases in traffic volumes by 2030 as well, although they generally carry fairly light traffic today and the absolute increases will be fairly modest. These segments include portions of VT 22A, VT 116 south of Burlington, US 2 north of Burlington, and VT 7A between Manchester and Bennington.

Figure 3.1 Forecast Growth in Traffic Volumes, 2000 – 2030



Source: VTrans Statewide Model

Figure 3.2 Forecast Percentage Growth in Traffic Volumes, 2000 – 2030



Source: VTrans Statewide Model

3.2 Highway Performance for 2030

3.2.1 LOS Methodology

Level of Service (LOS) is a measure that characterizes traffic conditions based on a driver's perception. Although LOS is a qualitative concept, it is based on quantitative measures that vary depending on the type of facility being studied. These LOS concepts were explained in detail in the Existing Conditions Report. Six LOS designations (from A to F) are defined in the Transportation Research Board's 2000 Highway Capacity Manual (HCM)[1]. LOS A represents fully uncongested operating conditions; LOS B through LOS D designate intermediate operating conditions; LOS E denotes highly congested conditions that occur when the roadway's capacity is being approached; and LOS F designates extremely congested, breakdown conditions.

For the two-lane roadway LOS analyses—applied for rural road segments outside of the urban/village centers—average travel speed and percent time spent following a vehicle are used to determine LOS. Both measures are closely related to the ability of vehicles to pass and travel without the delay associated with following another vehicle. Where geometrics or development density prompt no passing zones and where increased traffic volumes contribute to the inability to pass, level of service is negatively affected. Trucks also have a particular influence on the ability to pass, speeds, and level of service on two lane highways.

For intersection LOS analyses—applied to selected signalized and unsignalized intersections within urban/village centers—average vehicle delay is used to determine LOS. Signalized intersection capacity analysis results summarize the delay for all intersection approaches and movements. Unsignalized intersection analysis provide estimates of delay for only the STOP controlled approaches, while the major movements through the intersection are not addressed as there is no delay to those through traffic movements.

3.2.2 LOS Results

Tables 3.1 and 3.2 summarize LOS results for two-lane rural highways segments and selected intersections in the study area. Expected future increases in traffic volume, consistent with historical trends and quantified through the use of the statewide transportation demand model were used to establish the baseline corridor capacity for 2030 . Projected traffic volume growth varies along the corridor, as do existing traffic volumes. Planned roadway improvement projects will accommodate the increased volume along some segments, while other segments are expected to accommodate the expected growth without any improvements. By 2030, ten (10) of the 25 roadway segments are expected to operate at LOS E. Of the 14 signalized intersections studied, two (2) are expected to operate at overall intersection LOS E.

Within the Northwest RPC (see Figure 3.3), traffic is expected to grow between 31 and 90 percent by 2030. Level of service will decrease on two-lane roadway segments in St Albans, Georgia and Milton where traffic growth is greatest—falling from LOS C to D. However, no

[1] Published in 2000 by the Transportation Research Board.

additional segments will reach LOS E levels. Significant additional delay is expected on the unsignalized Route 78 approach to the US 7 intersection in Swanton.

Within Chittenden County (see Figure 3.4), where traffic growth is expected to range between 18 and 46 percent, all US 7 two-lane segments will operate at LOS E, except in Colchester (north of VT 2A and South of US 2). The signalized US 7 intersections with US 2 in Colchester and Burlington will operate at LOS E and the Winooski Circulator intersection with VT 15 will operate at LOS F conditions with significant delays. The Shelburne Road intersections in South Burlington analyzed for this study are expected to accommodate the future growth. The VT F-5 intersection in Charlotte will also accommodate the growth with a drop to LOS C.

Within Addison County (see Figure 3.5), traffic growth projections are between 34 and 46 percent. However, truck percentages are expected to drop between South Middlebury and Pittsford as a result of the Middlebury Rail Spur. The two-lane segment through Ferrisburgh will drop to LOS E as future volumes significantly increase the percent time spent following on this segment. On the VT 22A segment and the US 7 segment in Salisbury, Leicester and northern Brandon, the LOS will drop from C to D. The VT 22A and US 7 signalized intersection will accommodate growth with a drop to LOS C. The minor movements at unsignalized intersections will experience significant additional delay.

Within Rutland County (see Figure 3.6), traffic growth is expected to range between 21 and 36 percent and roadway segments will generally accommodate the growth. The Pittsford–Brandon roadway project will increase shoulder width and reduce the no passing restrictions with added truck climbing lanes outside their urban centers. The signalization of the southern VT 73 intersection in Brandon will provide needed improvements.

Within Bennington County (see Figure 3.7), the 7 to 53 percent range of growth expected for US 7 reflects the effect of the completion of the Bennington Bypass on US 7 volumes. On US 7 and VT 7A segments, the LOS does not deteriorate except in Pownal where LOS D is expected. Increased delay is expected at the unsignalized intersection minor approaches. The overall LOS of the signalized intersections in Bennington accommodates future volumes and in particular the VT 7A intersection improves to LOS C due to reduced volumes.

Table 3.1 Two - Lane Roadway Segment Year-2030 Growth Projections and Level of Service

	Towns	Endpoints North	Endpoints South	Route	Access Points	Geometrics Length (miles)	Geometrics Terrain Type	Geometrics Shoulder (feet)	Truck Climbing Lanes	2006 K Factor	Speed Limit (mph)	No Passing %	Direction Split	2008 AADT	2008 DHV	2008 Truck %	2008 LOS	2030 AADT	2030 DHV	2030 Truck %	2030 LOS
	Franklin County (Northwest RPC)																				
1	Highgate	Canada Border	N of VT 78	US 7	13	6.5	level	2 to 4		11.8	50	35%	60_40	930	110	8.5	B	1,290	152	8.4	B
2	Swanton	State Highway S	St Albans TL N	US 7	20	6.0	level	3 to 4		11.8	40	90%	60_40	4,680	552	7.4	E	5,970	705	8.3	E
3	St Albans - Georgia	St Albans CL	N of Exit 18	US 7	14	5.5	rolling	3 to 4		11.8	50	70%	60_40	4,160	491	6.8	C	6,060	715	6.7	D
4	Georgia - Milton	S of Exit 18	Milton Village	US 7	9	3.0	level	2		11.8	50	90%	60_40	4,680	552	6.7	C	8,430	995	5.3	D
	Chittenden County																				
5	Milton	S of Bartlett Rd	S of Andrea Ln	US 7	2	1.0	level	3 to 4		11.5	50	90%	65_35	10,820	1,244	6.4	D	15,270	1,756	6.3	E
6	Milton to Colchester	S of Andrea Ln	North of US 2	US 7	8	1.5	level	8 to 10		11.5	50	85%	70_30	10,820	1,244	6.4	D	15,270	1,756	6.3	E
7	Colchester North	S of US 2	N of VT 2A	US 7	1	2.0	rolling	2 to 4		11.5	50	40%	75_25	10,920	1,256	8.7	D	12,510	1,439	8.7	D
8	Colchester South	Blakely Rd	Rathe Rd	US 7	4	1.0	rolling	8 to 10		11.5	50	100%	65_35	15,140	1,741	8.7	E	21,060	2,422	9.3	E
9	Charlotte	Shelburne TL	N of VT F5	US 7	3	3.0	rolling	8 to 10	1 NB	10.4	50	70%	50_50	12,520	1,302	11	D	17,600	1,830	11.3	E
10	Charlotte to Ferrisburgh	S of VT F5	Ferrisburgh TL	US 7	3	3.0	rolling	1 to 2		10.4	50	80%	50_50	11,310	1,176	11	D	15,570	1,619	10.3	E
	Addison County																				
11	Ferrisburgh	Ferrisburg TL	VT 22A	US 7	11	5.0	rolling	8 to 10		10.4	50	40%	50_50	12,630	1313	10.7	D	17,710	1,842	10.9	E
12	Panton-Addison-Bridport-Shoreham-																				
12	Orwell-Benson-West Haven-Fairhaven	Vergennes TL	US 4	VT 22A	61	39.0	Level	1 to 2	1 SB	11.9	50	30%	55_45	4,790	570	15.7	C	6,770	805	15.6	D
13	Waltham-New Haven	Ferrisburg TL	Middlebury TL	US 7	16	9.0	mountainous	8 to 10	4 SB - 2 NB	10.8	50	30%	55_45	8,360	903	10.7	D	11,610	1,253	11.1	D
14	Middlebury North	Middlebury TL	State Highway	US 7	0	1.0	rolling	2 to 4		10.8	40	100%	55_45	10,300	1,113	8.3	E	13,890	1,499	7.2	E
15	Middlebury South	Centre Plaza	Salisbury TL	US 7	5	3.5	level	8 to 10		10.7	50	20%	70_30	10,200	1,091	9.2	D	12,960	1,387	6.3	D
16	Salisbury - Leicester - Brandon	Salisbury TL	Larch Ln	US 7	13	10.0	level	5 to 8		10.7	50	20%	65_35	8,060	862	11.9	C	11,290	1,208	9.9	D
	Rutland County																				
17	Brandon- Pittsford	Humiston Dr	Kendall Hill Rd	US 7	8	6.0	rolling	2 to 8	1 NB -1 SB	10.7	50	20%	60_40	8,260	884	9.7	D	10,250	1,097	8.3	D
18	Pittsford - Rutland	VT 3	Chittenden Rd	US 7	20	7.0	mountainous	2 to 4	1 SB	10.7	50	40%	55_45	9,180	982	8.4	D	11,050	1,182	9.9	D
na	Clarendon - Wallingford	Rutland TL	End of median	US 7	7 mile multilane urban arterial					10.7	55	NA	NA	13,800	1,480	8	*	18,700	2,001	8.4	*
19	Wallingford-Danby	River	Danby TL	US 7	11	6.5	rolling	1 to 2		10.7	50	35%	55_45	4,950	530	14.2	C	6,270	670	16	D
20	Mt Tabor-Dorset	Danby TL	Sweeney Ln	US 7	17	6.5	level	8 to 10		10.7	50	10%	55_45	4,650	497	9.3	B	5,720	612	10.7	B
	Bennington County																				
21	Dorset	Sweeney Ln	N of VT 7A	US 7	7	3.0	level	1 to 2		10.7	50	20%	55_45	4,650	498	9.3	C	5,720	612	10.8	C
na	Manch.-Sunderland-Shaftsbury-Glastonbu	S of VT 7A	End of median	US 7	23 mile freeway					10.7	55	NA	NA	6,360	680	15.8	*	8,890	951	19.8	*
22	Manchester - North	S of VT 7A	N of Village	VT 7A	10*	3.5	level	5 to 6		12.2	50	50%	55_45	7,620	930	6.4	D	11,310	1,379	6.2	D
23	Manchester - South	S of Village	Arlington TL	VT 7A	12*	4.0	rolling	1 to 2	1 NB	12.2	45	70%	55_45	7,210	880	4.8	E	9,530	1,162	5.2	E
24	Arlington	Arlington TL	VT 313	VT 7A	8*	2.5	rolling	1 to 2		12.2	40	100%	55_45	5,050	616	4.8	E	6,670	814	5.2	E
25	Arlington-Shaftsbury-	VT 313	Bennington TL	VT 7A	13*	6.0	rolling	3 to 4	1 SB	12.2	50	90%	55_45	4,430	540	7.4	C	5,290	646	8.9	C
26	Bennington	Downtown	Pownal TL	US 7	2	2.0	rolling	1 to 2		11.0	50	100%	50_50	7,310	804	6.1	D	7,630	839	6.5	D
27	Pownal	Pownal TL	MA Border	US 7	20	8.0	mountainous	3 to 4	1 SB -2 NB	11.0	50	20%	50_50	7,310	804	5.5	C	8,450	930	6.6	D

Geometric Changes in Blue reflects Brandon Pittsford Project improvements by 2030

Table 3.2 Year-2030 Intersection Level of Service and Summary Data

Western Corridor Intersection Level of Service Summary (1/22/09)															
			Level of Service Analysis												
									US 7			US 7			Overall
Town	US 7 Intersection		Eastbound			Westbound			Northbound			Southbound			HCM
		Signal?	Left	Thru	Rt.	Left	Thru	Rt.	Left	Thru	Rt.	Left	Thru	Rt.	LOS
Franklin County (Northwest RPC)															
Swanton	VT 78 (Merchants Row)	N					E						A		
Swanton	VT 78	N					D						A		
St. Albans Town	VT 207	Y				B		B		B	B	B	A		B
St. Albans City	VT 105	N					F						A		
Chittenden County															
Colchester	US 2	Y	F		A				F	C			F	B	E
Winooski	VT 15	N									F		F		
Burlington	US 2	Y	C	E		E	E			C			E		E
South Burlington	I-189 Off Ramps	Y				D	D	A		B			E		D
South Burlington	Swift Street	Y				F		F		B		F	A		D
South Burlington	Allen Road	Y		C			E	C	D	C		F	B		C
Charlotte	VT F-5	Y		D			B		A	C			C	A	C
Addison County															
Ferrisburgh	VT 22A	Y	E		B				C	B			D	A	C
Middlebury	VT 125 / VT 30	N		F						A					
Middlebury	VT 125 / Seymore Street	N		C						B					
Middlebury	VT 125	N				E		B					A		
Rutland County															
Brandon	VT 73 (North)	N		B						A					
Brandon	VT 73 (South)	Y		E		D		C		D		C	A		C
Pittsford	VT 3	N		F						A					
Rutland City	US 4 (Woodstock Ave.)	Y		E		D	C		D	E	C	F	D		D
Rutland Town	US 4	Y	E	D	D	D	D	D	E	D		D	D	C	D
Bennington County															
Dorset	VT 7A	N		C						A					
Manchester	VT 11 (SB Off Ramps)	N					A						D		
Manchester	VT 11 (NB Off Ramps)	N		A						F					
Bennington	VT 7A	Y	D	C	C	D	C	C	D	C	B	D	C	C	C
Bennington	County Street	Y		B			C			B			B		B
Bennington	VT 9	Y	E	D		F	D		D	C		F	C		D

Denotes reduction in LOS 2008 -2030
Denotes improvement in LOS 2008 -2030

Figure 3.3 Northwest Region Projected (2030) Level of Service

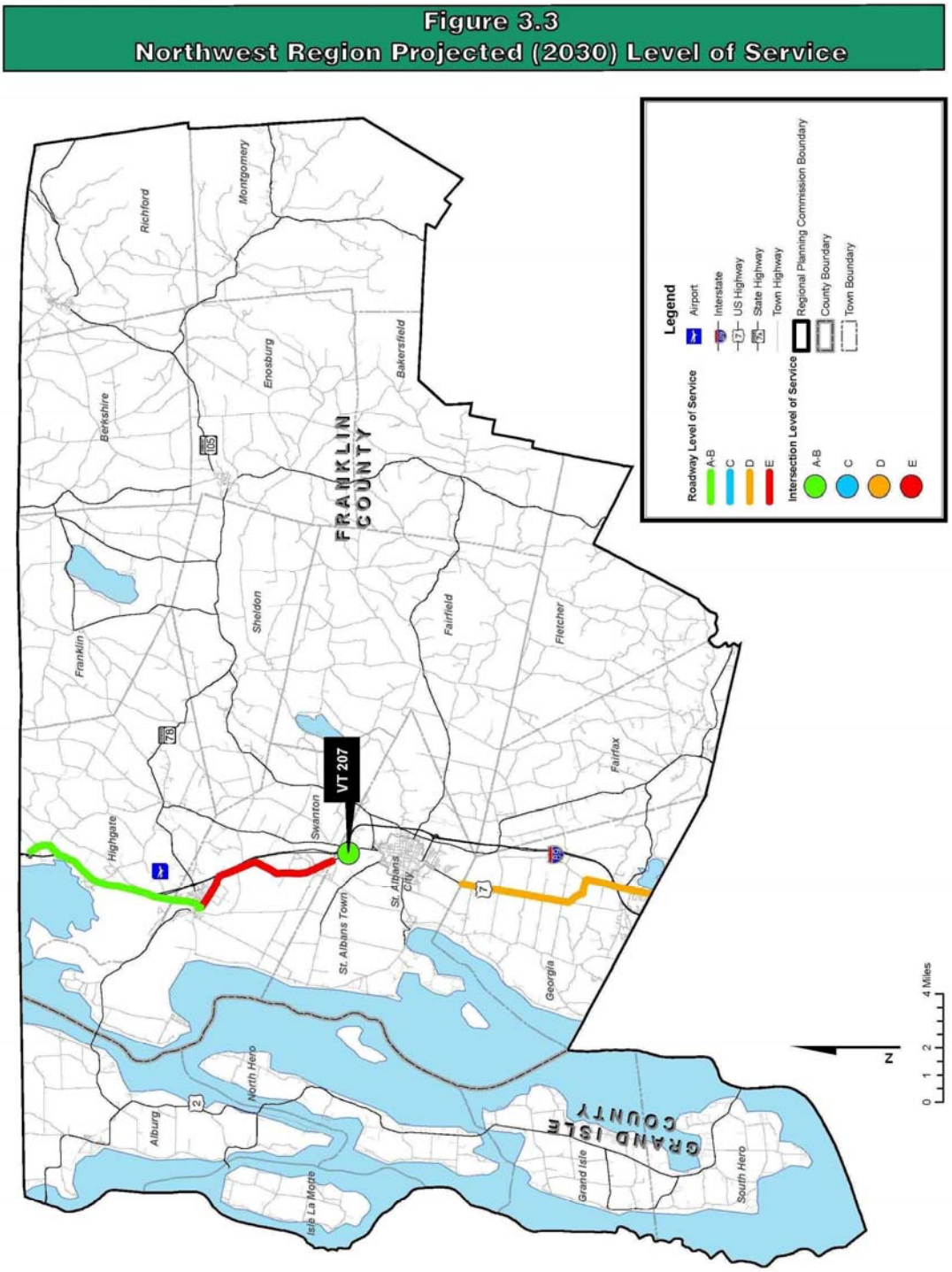


Figure 3.4 Chittenden County Projected (2030) Level of Service

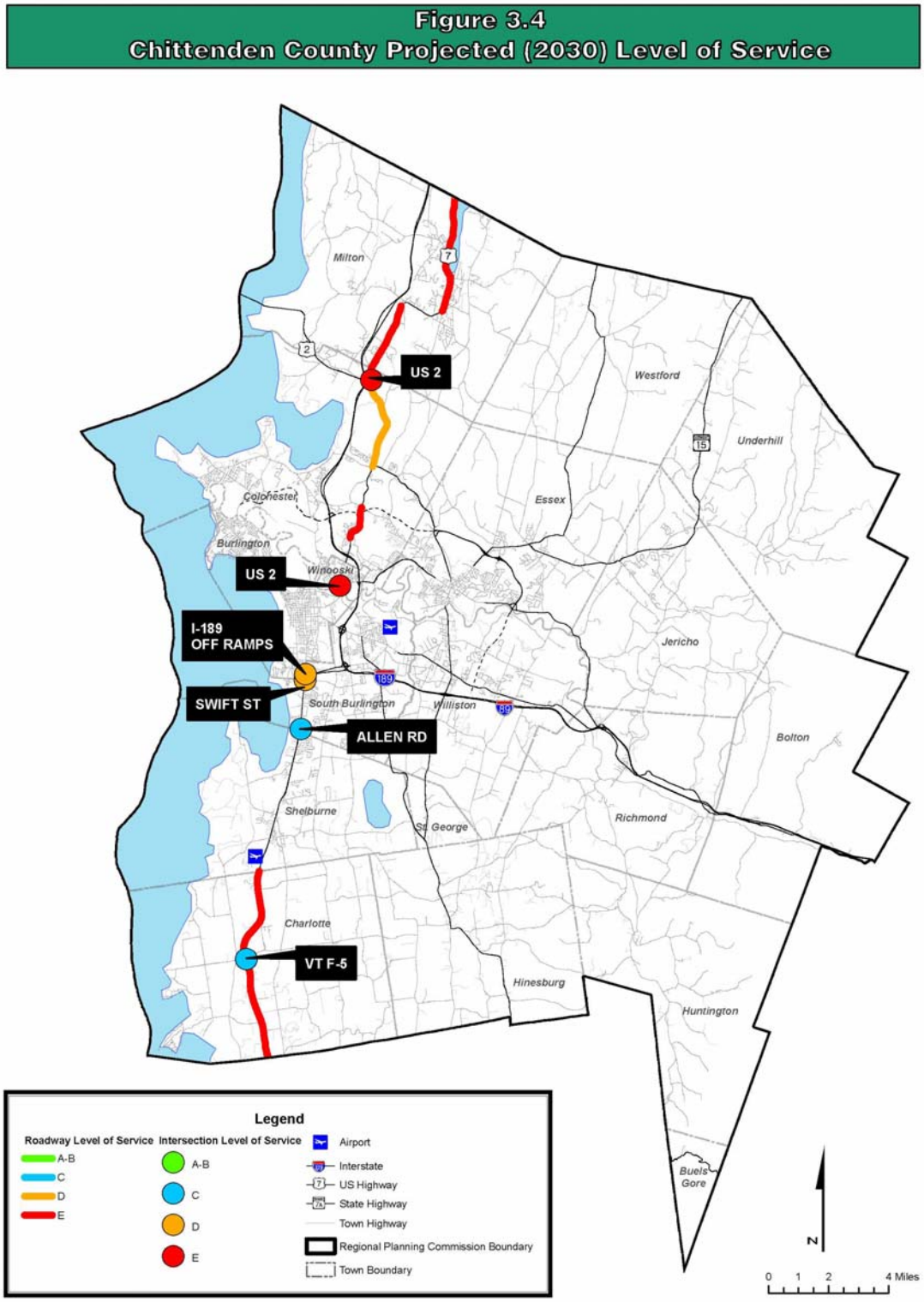


Figure 3.5 Addison County Projected (2030) Level of Service

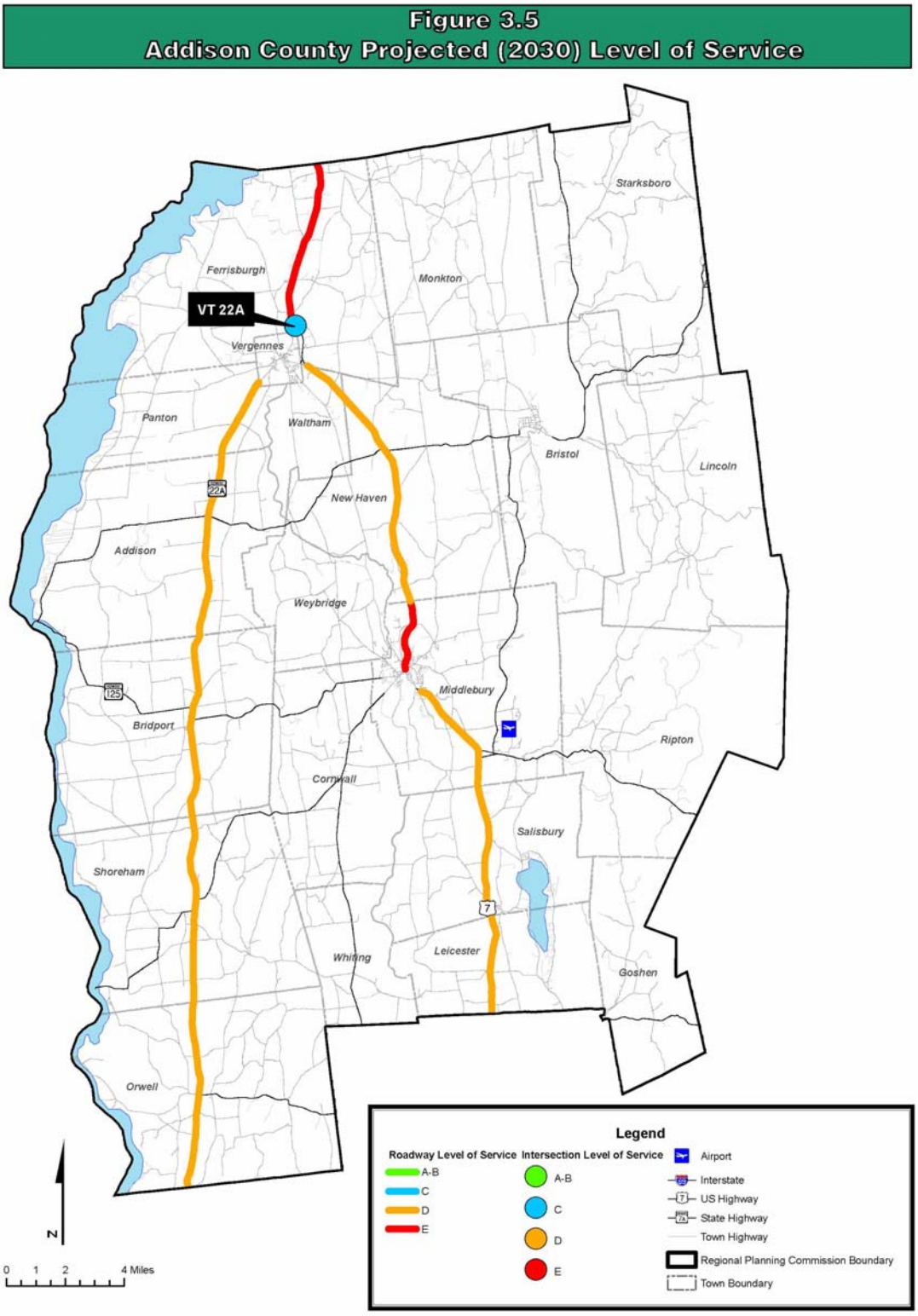


Figure 3.6 Rutland County Projected (2030) Level of Service

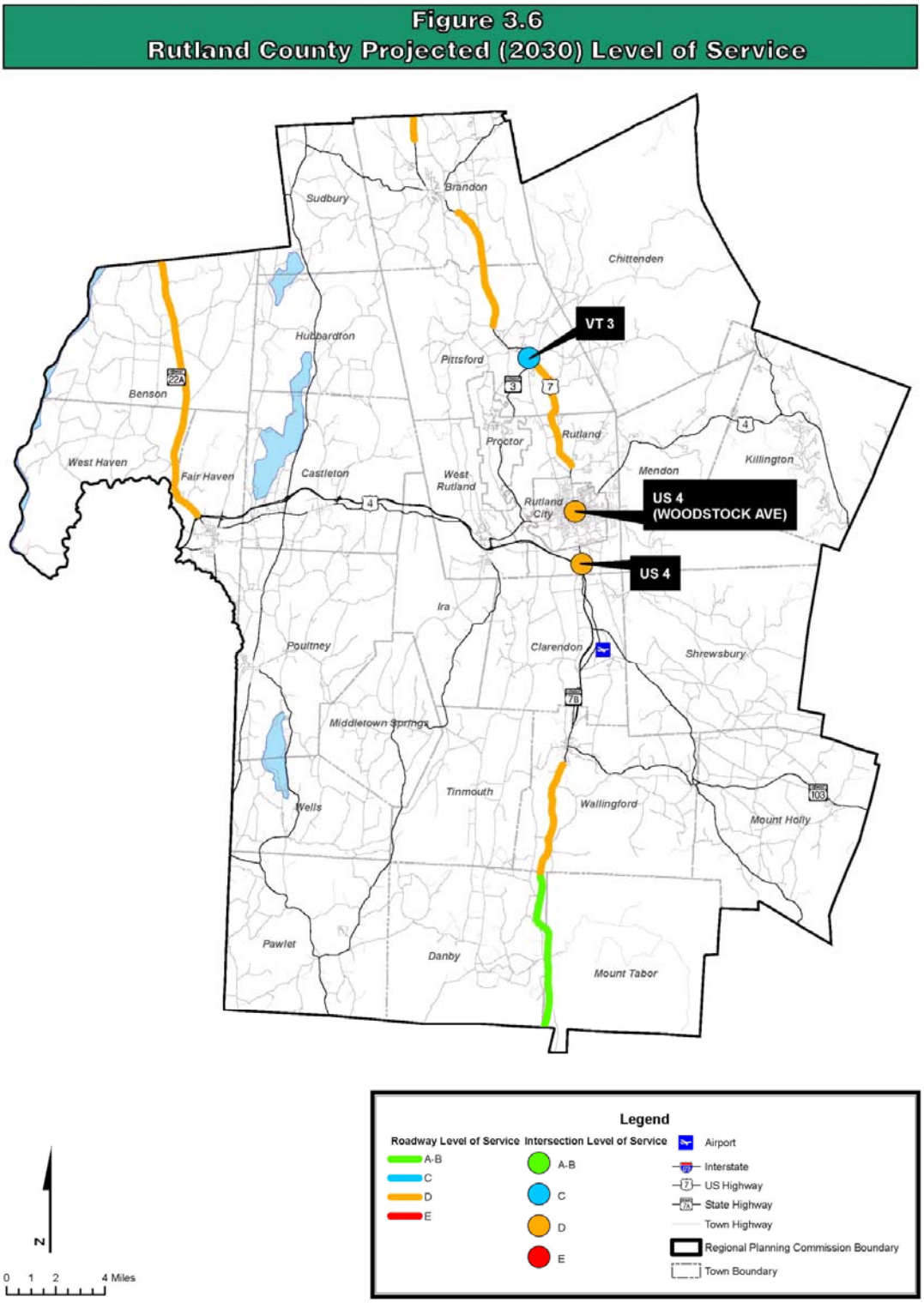
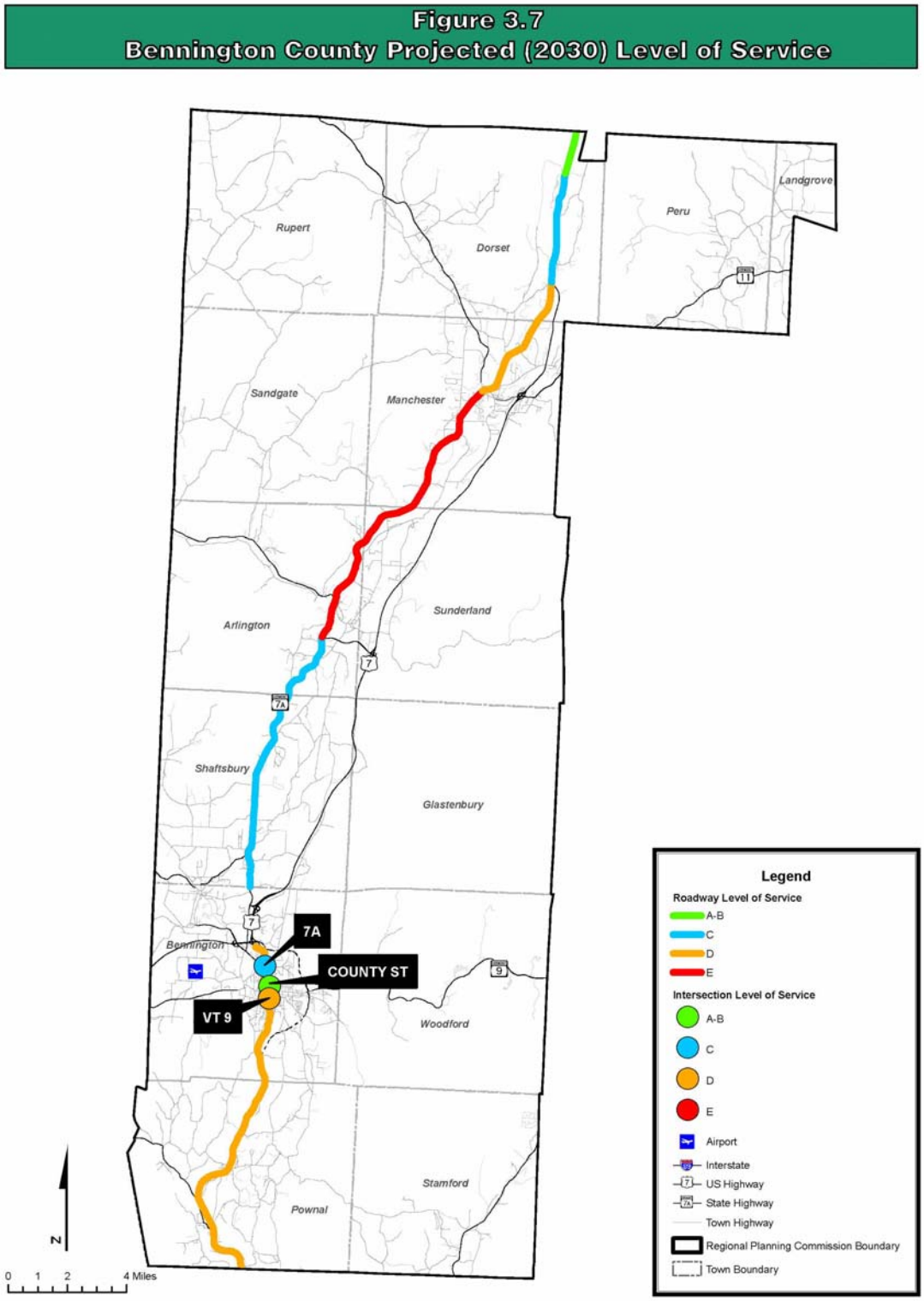


Figure 3.7 Bennington County Projected (2030) Level of Service



4. Trends in Freight Transportation

This section provides an overview of the future of freight transportation in Vermont's Western Corridor transportation network and its context within the State's and the nation's overall freight transportation activities. The section first discusses data sources, then presents information on commodity flow projections and truck traffic projections. It concludes by discussing key trends in the truck and rail industries. No forecasts of rail traffic by route were available, and therefore rail flows corresponding to the truck flows presented here could not be shown.

4.1 Data Sources

Freight traffic projections were drawn from the Federal Highway Administration's (FHWA) Freight Analysis Framework 2 (FAF2) which provides state-to-state commodity flow data. FAF2 uses 2002 as the base year and contains projections for 2006, 2010, and at five-year increments through 2035. The dataset includes commodity movement by highway, rail, water, air, and pipeline modes. The FAF2 forecasts depict the demand for goods movement between regions, taking into account industry, regional, national and international economic trends to estimate trade flows by commodity and mode. FAF2 also assigns flows using the truck mode to estimate truck traffic volumes on a national network consisting of major highways. Truck volume forecasts have only been produced for 2002 and 2035.

The FAF2 forecasts, which are produced by Global Insight and FHWA, are based largely on two economic models from Global Insight: Global Insight's economic forecasting model of the U.S. economy, which is used to develop national forecasts of freight volumes by commodity and mode; and Global Insight's Regional state economic models, which are used to disaggregate flows to a state level and to major roadway links (for truck traffic). The dataset additionally incorporates forecasts of international trade flows by major port from Global Insight's World Trade Model. Since the underlying economic forecasts driving the FAF2 freight forecasts represent a different source than the Woods & Poole county-level economic forecasts cited in Chapter 2, the forecasts as described in these two sections are not necessarily consistent with each other. Because the Global Insight economic forecasts are proprietary and not made available as part of the FAF2 dataset, they could not be evaluated for consistency with the Woods & Poole forecasts.

It should be noted that while FAF2 provides a reasonable forecast for freight flows based on data available at the time of publication, like any forecast it is subject to uncertainty. The two main uncertainty factors discussed here are the current economic situation and the number of freight generators (shipping and receiving) in Vermont.

- **Current economic situation.** FAF2 forecasts are based on healthy economic growth forecasts for the State of Vermont from Global Insight's model of the U.S. economy, and were originally developed in the early 2000's. The recession that is currently affecting the country is likely to have an immediate short-term impact on freight shipments to and from Vermont. Reduced consumption of goods by the population extends to lower production and generation of outbound goods such as construction products due to lack of demand. The timeframe over which this impact will extend is not known.

- Number of freight generators in the state. Regardless of the strength of the economy, freight output in Vermont is generated by a relatively small number of shippers. Hence, if a major shipper were to exit the market, the impact on cargo could be significant. On the other hand, shipments could increase significantly as well if one or two major producers were to move to Vermont.

4.2 Commodity Flow Forecasts

4.2.1 Freight Movement by Mode and Direction

Table 4.1 shows projected freight growth by direction (inbound to Vermont, outbound from Vermont, internal, and international through movements) by tonnage, while Table 4.2 shows the same information by dollar value of commodities shipped.[2] In 2006 over 47 million tons of freight, worth over $43 billion, was transported into, out of, within, and through Vermont via truck, rail, air, and water modes. By 2030, as shown in Table 4.1 below, those figures are expected to increase to 82 million tons of freight worth over $113 billion. That is an increase of 73 percent in terms of tonnage, and 160 percent in terms of value. The disparity in growth rate for tons and dollars is the result of a continuing increase in goods that have high value relative to their weight, such as small packages and high technology equipment vs. raw materials. Freight traffic to and from other states is expected to increase about twice the rate of internal traffic (84 vs. 44 percent), while international traffic is expected to increase about three times as fast (118 percent). While the tonnage of goods moved may appear to be the primary determinant of the impact of freight on Vermont's transportation system, the value is also important. Higher-value goods are likely to be more time-sensitive and shippers will be willing to transport them on smaller vehicles. This trend may lead to disproportionate increases in truck traffic although these increases will include smaller trucks such as parcel delivery vehicles.

[2] U.S. through traffic is not available in the FAF2 dataset and is not shown in these tables.

Table 4.1 Freight Growth in Vermont by Direction and Tons *(thousands)*

Direction	2006	2030	Difference	% Change
Inbound	11,664	21,488	9,824	84%
Outbound	11,165	20,523	9,358	84%
Internal	18,210	26,162	7,952	44%
Intl. Through	6,312	13,752	7,440	118%
Total	**47,351**	**81,925**	**34,574**	**73%**

Source: FHWA FAF2

Table 4.2 Freight Growth in Vermont by Direction and Dollars *(millions)*

Direction	2006	2030	Difference	% Change
Inbound	$ 14,136	$ 32,236	$ 18,100	128%
Outbound	$ 19,023	$ 45,693	$ 26,669	140%
Internal	$ 4,819	$ 11,163	$ 6,343	132%
Intl. Through	$ 5,510	$ 24,185	$ 18,675	339%
Total	**$ 43,487**	**$ 113,276**	**$ 69,788**	**160%**

Source: FHWA FAF2

FAF2 projects that in the future Vermont's freight movements will continue to grow across all modes, although truck traffic is projected to grow at a faster rate than rail (Table 4.3). This speaks to both the increases in high-value goods shipped and the available infrastructure in the state, which consists primarily of interstate highways, major state roadways as well as lower-speed regional and short-line railroads. The "Other Intermodal" classification includes a variety of shipments, in particular parcel service, which, along with air cargo, tends to have a high value-weight ratio. This is reflected in the projected growth in value for those two modes (Table 4.4), which is significantly higher than the projected growth in weight (Table 4.3). Despite the somewhat different growth rates, overall modal shares are expected to remain similar in 2030 to what they are in 2006 (Table 4.5), especially when measured by tonnage.

Table 4.3 Freight Growth in Vermont by Mode and Tons *(thousands)*

Mode	2006	2030	Difference	% Difference
Air	12	27	15	131%
Other Intermodal	279	472	193	69%
Pipeline & Unknown	2,553	3,991	1,439	56%
Rail	3,773	6,157	2,384	63%
Truck	40,732	71,270	30,538	75%
Water	3	8	5	139%
Grand Total	**47,351**	**81,926**	**34,574**	**73%**

Table 4.4 Freight Growth in Vermont by Mode and Dollars *(millions)*

Mode	2006	2030	Difference	% Difference
Air	$ 1,043	$ 4,830	$ 3,787	363%
Other Intermodal	$ 4,003	$ 14,550	$ 10,547	263%
Pipeline & Unknown	$ 1,685	$ 2,285	$ 600	36%
Rail	$ 1,015	$ 2,780	$ 1,765	174%
Truck	$ 35,726	$ 87,919	$ 52,193	146%
Water	$ 15	$ 911	$ 895	5918%
Grand Total	**$ 43,487**	**$ 113,276**	**$ 69,788**	**160%**

Table 4.5 Mode Share by Weight and Value in Vermont (2006-2030)

Mode	2006 by Weight	2030 by Weight	2006 by Value	2030 by Value
Air	0%	0%	2%	4%
Other Intermodal	1%	1%	9%	13%
Pipeline & Unknown	5%	5%	4%	2%
Rail	8%	8%	2%	2%
Truck	86%	87%	82%	78%
Water	0%	0%	0%	1%
Grand Total	**100%**	**100%**	**100%**	**100%**

4.3 Commodity Projections

For the purpose of this analysis, commodities have been grouped into nine major categories. These are presented in Table 4.6 along with their current and forecast traffic volumes and each commodity's overall growth rank. As illustrated, three commodity groups (agriculture/farm/food, manufactured goods, and waste) are expected to increase shipments by over 5 million tons, while two more (energy/chemicals and construction products) are projected to increase by more than 4 million tons. Growth is projected across all commodities, with waste (316 percent), miscellaneous (160 percent), and metals/metal products (151 percent) leading the way on a percentage basis. The lowest growth volumes projected are for lumber/wood/paper and equipment/machinery/vehicles, at just over 1 million tons each.

Table 4.6 Freight Growth by Commodity in Vermont, Tons *(thousands)*

Commodity Group	2006	2030	Difference	% Diff.
Agriculture/Farm/Food	9,864	15,707	5,843	59%
Construction Products	13,052	17,380	4,328	33%
Energy/Chemical Products	7,657	12,142	4,484	59%
Equipment/Machinery/Vehicles	1,220	2,319	1,099	90%
Lumber/Wood/Paper	4,659	5,672	1,013	22%
Manufactured Goods	4,861	10,482	5,620	116%
Metals/Metal Products	1,325	3,324	1,999	151%
Misc./Unknown	3,023	7,871	4,848	160%
Waste	1,690	7,029	5,340	316%
Grand Total	**47,351**	**81,926**	**34,574**	**73%**

In terms of dollar value, shipments of manufactured goods and the equipment / machinery / vehicles category are projected to grow the most, with growth of $30.8 and $18.3 billion respectively (Table 4.7). These two categories combined account for over 70 percent of the projected growth in traffic, measured by value.

Table 4.7 Freight Growth by Commodity in Vermont, Dollars *(millions)*

Commodity Group	2006	2030	Difference	% Diff.
Agriculture/Farm/Food	$ 5,421	$ 8,263	$ 2,842	52%
Construction Products	$ 1,190	$ 1,494	$ 304	26%
Energy/Chemical Products	$ 3,173	$ 5,147	$ 1,973	62%
Equipment/Machinery/Vehicles	$ 6,449	$ 24,739	$ 18,290	284%
Lumber/Wood/Paper	$ 919	$ 1,264	$ 345	38%
Manufactured Goods	$ 18,740	$ 49,536	$ 30,796	164%
Metals/Metal Products	$ 1,545	$ 3,874	$ 2,329	151%
Misc./Unknown	$ 5,807	$ 17,978	$ 12,171	210%
Waste	$ 242	$ 980	$ 738	304%
Grand Total	**$ 43,487**	**$113,276**	**$ 69,788**	**160%**

Given the projections for growth in truck traffic, it is important to analyze the potential for new traffic to be diverted to rail. Some of products that are more likely to be rail-oriented include construction products, wood products, agriculture/farm/food, and paper. As illustrated above, all of these commodity groups are projected to grow significantly in terms of weight, in particular agriculture/farm/food products (5.8 million tons) and construction products (4.3 million tons). Shippers for these commodities may be targeted in the future for potential diversion to rail.

4.4 Trading Partners

Vermont's top trading partners (in terms of tons) are projected to remain the same in 2030 (Table 4.8). The state's primary trading partner is itself, accounting for 44 percent of all its trade in 2006. By 2030 that share is expected to drop to 38 percent, mainly due to robust growth in trade with the rest of New England (104 percent growth or 9.7 million tons), the Mid-Atlantic (74 percent or 4.3 million tons), and Canada (113 percent or 3.7 million tons). Trade to and from these three regions is expected to account for 53 percent of Vermont's total trade in 2030; that number, coupled with internal trade would make up over 90 percent of freight by weight.

Table 4.8 Vermont's Trading Partners, Tons *(thousands)*[1]

Trade Partner	2006	2030	Difference	% Diff.
Internal	18,210	26,162	7,953	44%
New England	9,337	19,081	9,744	104%
Mid-Atlantic	5,782	10,039	4,257	74%
Canada	3,307	7,038	3,731	113%
East North Central	1,278	1,792	514	40%
South Atlantic	1,123	1,148	25	2%
Others	2,003	2,913	910	45%
Total	**41,039**	**68,174**	**27,135**	**66%**

[1]Totals are lower than those shown in previous tables because the analysis of trading partners does not include flows between the rest of the U.S. and Canada.

In terms of dollars, the top trading partners change slightly, with the Pacific region substituting for the East North Central (Table 4.9). The most significant difference, however, is that while internal trade is the largest source of freight in the state in 2006 and 2030, it drops to fourth in terms of value. That is likely due to the nature of internal shipments which are more likely to include high-weight/low-value cargo than long-haul shipments. Instead, New England shipments account for the largest percent of trade in 2006 and 2030 with approximately 29 percent measured by value. Mid-Atlantic and Canadian trade account for the second and third most flows in 2030, combining for nearly $19 billion or 35 percent.

Table 4.9 Vermont's Trading Partners, Dollars *(millions)*

Trade Partner	2006	2030	Difference	% Diff.
New England	$ 11,007	$ 25,722	$ 14,715	134%
Mid-Atlantic	$ 8,402	$ 17,441	$ 9,039	108%
Canada	$ 4,819	$ 14,422	$ 9,603	199%
Internal	$ 4,652	$ 11,163	$ 6,510	140%
Pacific	$ 2,192	$ 4,675	$ 2,483	113%
South Atlantic	$ 1,943	$ 4,069	$ 2,126	109%
Others	$ 4,963	$ 11,599	$ 6,636	134%
Total	**$ 37,978**	**$ 89,091**	**$ 51,113**	**135%**

4.5 Truck Traffic Forecasts

Truck traffic forecasts were also obtained from FAF2 as described above. Figure 4.1 shows the average annual daily truck traffic for Vermont and the Western Corridor in 2030, while Figure 4.2 shows the absolute change in traffic between 2002 and 2030 and Figure 4.3 shows the percentage change in truck traffic. Truck volumes for 2030 were interpolated from the 2002 and 2035 FAF2 data.

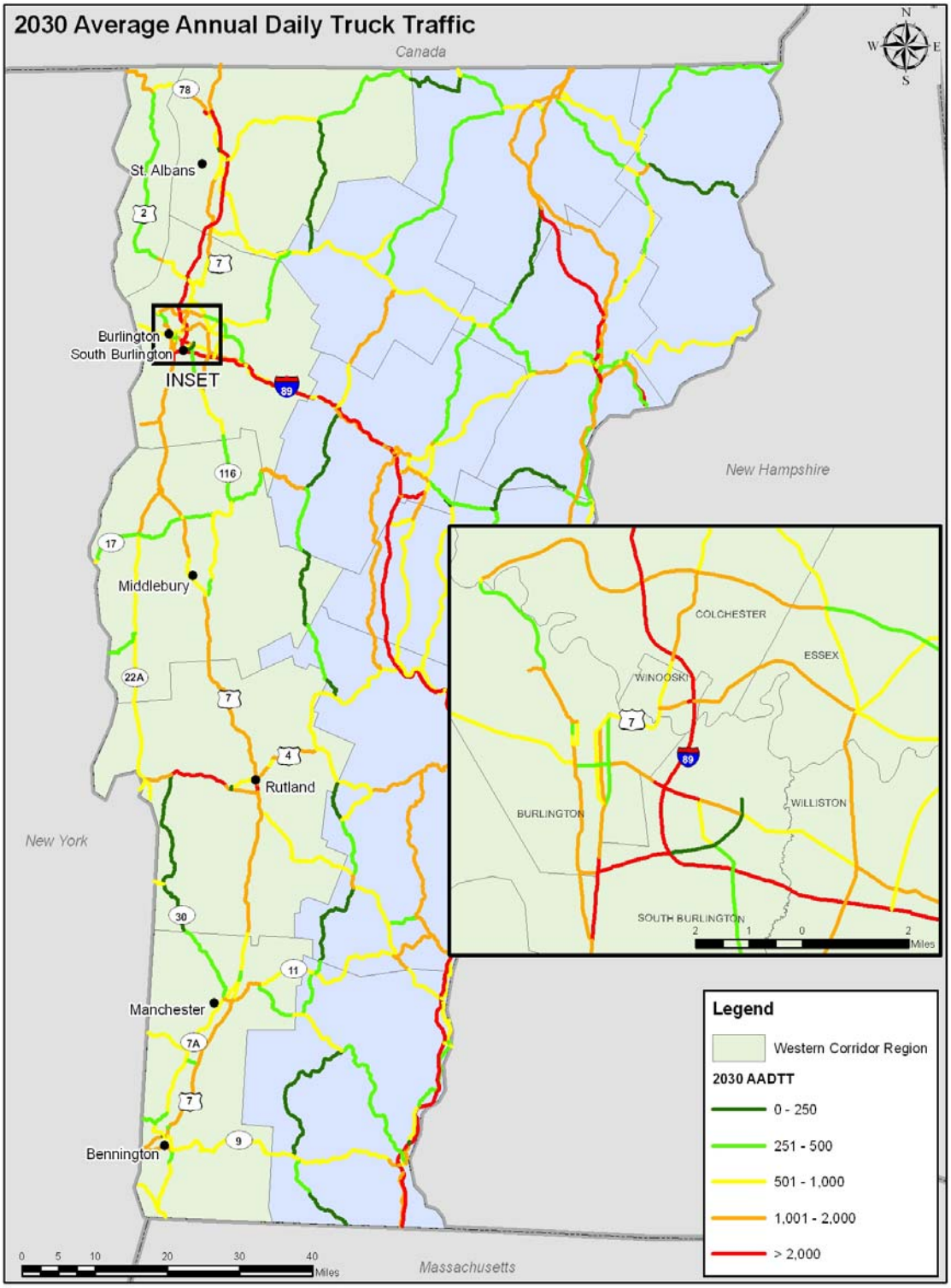
Truck volumes in 2030 are projected to average between 1,000 and 2,000 trucks per day along most of the US 7 corridor. Truck traffic is forecast to grow at a somewhat higher rate than automobile traffic—40 to 60 percent along most segments of the corridor between 2002 and 2030, compared to 30 to 40 percent for general traffic per the statewide model over a slightly different timeframe (2000 – 2030). This is consistent with national trends in freight traffic and a result of increasing economic output as well as changes in shipping patterns. The highest volume increases (500 to 750 trucks per day) are forecasted along the following US 7 segments:

- South of Rutland and just north of U.S. 4;
- On some segments between Vergennes and Burlington; and
- In Colchester.

Increases in the range of 250 to 500 trucks per day are forecast along most other parts of US 7.

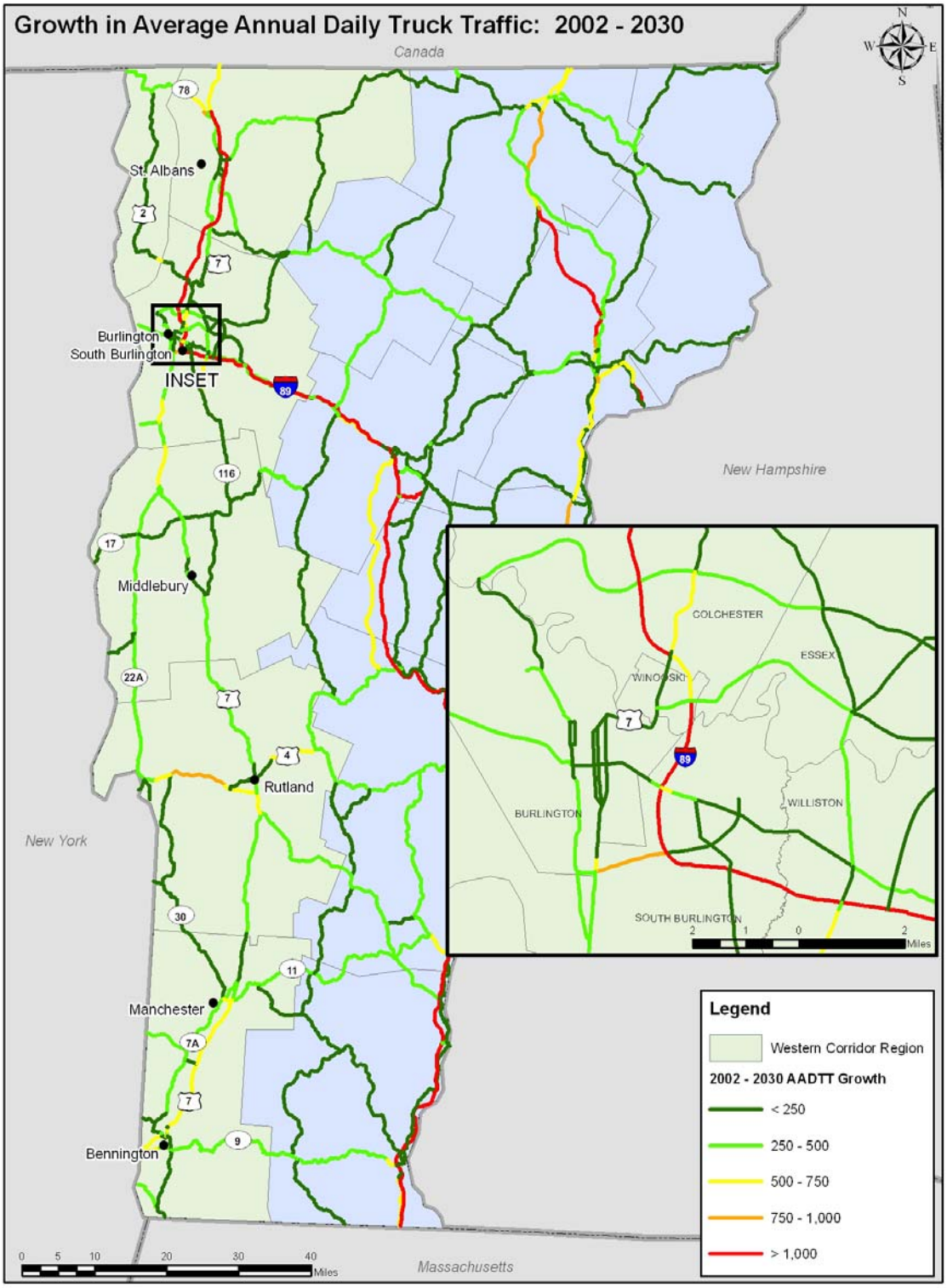
Regarding other Western Corridor roadways, truck volumes on most of I-89 are expected to increase by over 1,000 vehicles per day, while volumes along VT 7A and 22A are expected to increase in the range of 250 to 500 vehicles per day. These represent growth rates of 60 to 80 percent on I-89, or in the range of 40 to 60 percent on VT 7A and 22A. Traffic on U.S. 4 west of Rutland is also expected to increase significantly, by 60 to 80 percent or 500 to 750 trucks per day.

Figure 4.1 Average Annual Daily Truck Traffic (AADTT) in 2035



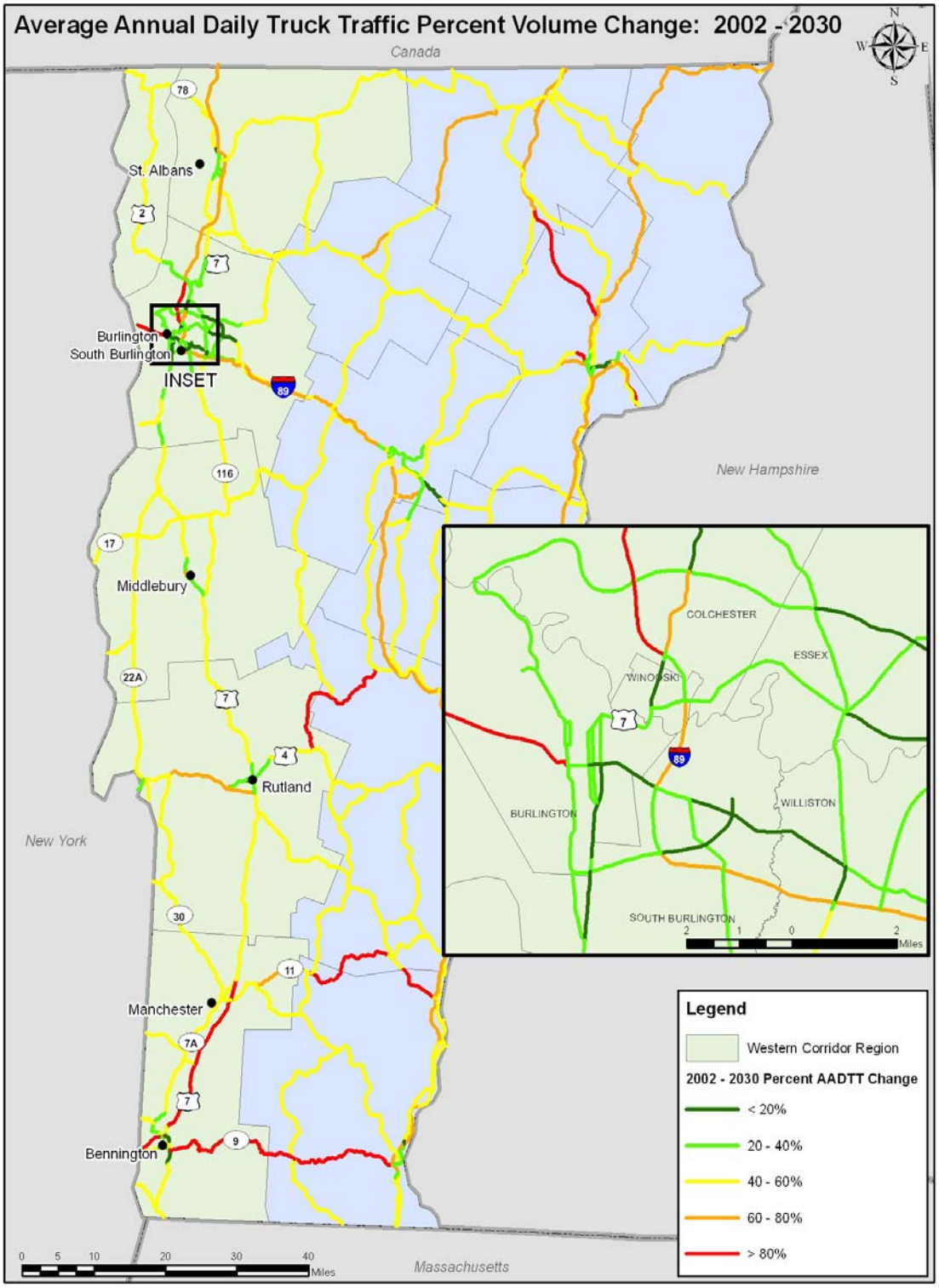
Source: Freight Analysis Framework 2 (FAF2), FHWA

Figure 4.2 Growth in Average Annual Daily Truck Traffic (AADTT), 2002-2030



Source: Freight Analysis Framework 2 (FAF2), FHWA

Figure 4.3 Percent Growth in Average Annual Daily Truck Traffic (AADTT), 2002-2030



Source: Freight Analysis Framework 2 (FAF2), FHWA

5. Future of the Truck and Rail Industries

This section provides a brief overview of freight trends in Vermont, in particular how truck and rail transportation is expected to evolve over the foreseeable future.

5.1 Trucking

For the foreseeable future, trucks will continue to dominate freight transportation in North America. In 2006 trucks handled over 86% of Vermont's total freight flows by weight, and commonly available forecasts assume that this share will be maintained through 2030.[3] The characteristics of trucks are superior to the alternatives from the standpoint of service, and the ubiquity of a quality road network permits direct access to almost all shippers and receivers. Trucks provide the fastest, most flexible, and to a certain degree most reliable method of transportation. Furthermore, unless a shipper and receiver both have rail sidings, trucks must provide the last link of transportation from or to the origin/destination.

However, trucks face a variety of performance challenges that are expected to improve the competitive position of rail and water modes. This advantage would accrue primarily towards rail as water freight transportation is not a major factor in Vermont.

- *Fuel* represents a far larger component of operating costs for truckers than for railroads, such that the anticipated substantial rise in petroleum costs will affect truckers disproportionately.
- The *availability of truck drivers*, particularly for overnight long-haul routes, has constrained capacity since the mid-1990s. While the industry has alleviated this shortage to some extent with improvements in pay, demographics and working conditions ensure that this shortfall will continue, if not worsen, not withstanding the current economic recession.[4]
- *Limited infrastructure capacity* will dampen productivity as well, as roadways become more congested, travel times increase, and service becomes less reliable. Vermont's economy heavily relies on inter-state and cross-border trade, where goods must travel over severely congested highways. Most observers believe that congestion will continue to worsen, as any expansion in highway capacity will fail to keep pace with the expected increase in demand.

[3] The FHWA's Freight Analysis Framework 2 and other commonly used forecasts model market share on an industry/commodity basis, with the assumption that relative modal performance (economic and service) will not change over time. Over a longer period, beyond five or more years, this is often not case, as the relative differences in modal cost and service performance, shifts in logistics practices, etc. can and do result in shifts between modes.

[4] The substantial slowdown in global economic activity that began during 2008 has ameliorated the driver shortage for now, as unemployment has increased and demand for freight transportation has declined. See Rick Romell, *Downturn creates glut of drivers,* Milwaukee Journal Sentinel, December 27, 2008 (http://www.jsonline.com/business/36788039.html).

Congestion along Vermont's highway network is currently concentrated in the urban areas at peak travel times, but anticipated traffic growth may produce challenges in the future. As Figure 4.3 shows, truck traffic along Vermont roadways (in particular the Western Corridor) is forecast to increase in the range of 60 to 80 percent between 2002 and 2035. While truck traffic alone will not create bottlenecks, the combined effect of passenger and truck traffic is enough to start creating issues around the Burlington metro area in the Western Corridor, as illustrated in Figure 3.1. Traffic around this area is expected to increase by around six to eight thousand vehicles per day, with some portions experiencing over 8,000 additional vehicles daily.

To some extent, motor carrier productivity improvements can offset but not overcome the anticipated detrimental trends in costs and service performance. While substantial (roughly 50 percent) fuel efficiency gains are possible through advanced technologies such as hybrid and fully electric propulsion for short-haul trucks, their potential benefits to long-haul fleets are far more modest. For long-haul trucking, continued improvements in equipment technology and deployment efficiencies may produce up to 20 percent in effective fuel savings through 2050. This does not include potential changes in truck size and weight which could provide further benefits, but also raise complex policy issues.

The impact of these trends will to some extent differ by region and Vermont's low density and typically short length of haul makes alternative options, including rail, less viable. Nonetheless it is important to explore alternative methods for transporting the region's freight, in which rail presents the most important option.

5.2 Rail Transportation

Construction of the railroads in Vermont and New England in general has been heavily intertwined with the development of the region's economy, and some of the oldest rail lines in North America are located here. As population built up and industry developed to tap the region's abundant natural wealth during the 19th Century, railroads quickly followed. Reflecting the complete superiority of rail technology over competing modes during that era, a dense network was built throughout the region. In 1924, the peak year for active railroad mileage in New England, Vermont had 1,000 miles of railroad.

The rail industry in New England entered into widespread decline years before such declines became apparent in other parts of the country. The generally low traffic density, the development of roads, and the decline in the region's industrial base that began during the 1920s first led to a lack of reinvestment, followed by retrenchment and abandonment of many lines. Abandonments have been extensive, with declines in route-miles of 50 percent or more in many New England states, with Vermont faring somewhat better with 578 miles of active line in 2005. Many of the surviving lines have been economically marginal, which has led to recurring financial difficulties for their owners and public sector involvement to retain service. Vermont was an early leader, when in 1963 it purchased the assets of the bankrupt Rutland Railway and leased them to a new startup, the Vermont Railway. Since then, several additional acquisitions have increased total state-owned mileage in active rail use to 305 miles.

Most railroad traffic in Vermont is freight, although passenger service is an important component. Eight small (Surface Transportation Board designated Class II and III) and one

large (Class I) railroad companies were operating or had trackage rights on active lines in the Western Corridor. Except for Canadian National (CN's) short connection in northwestern Vermont, no large (Class I) railroads directly enter the state. However, Vermont's railways have one or more connections to all but one of the major Class I railroads operating in the eastern U.S. including CN, Canadian Pacific (CP), and CSX, and the fourth, Norfolk Southern (NS), may become accessible when the Pan Am Southern transaction is approved. Table 5.1 lists these railroads, their ownership and track mileage.

Table 5.1 Vermont Western Corridor Active Rail Lines

Rail Line	Ownership	Track Mileage
Clarendon & Pittsford (CLP)	Private	17.88
Green Mountain Railroad (GMRC)	State Owned	20.70
New England Central RR (NECR)	Private	63.40
Vermont Railway (VTR)	State Owned	139.75
Pan Am Railway (PAR)	Private	6.28
Canadian National (CN)	Private	3 .00
Total Active Mileage		251.01
Total Active Mileage State Owned		**160.45**

Source: Vermont State Rail and Policy Plan, 2006.

These railroads handled approximately 3.8 million tons of freight in 2006 consisting primarily of construction products (gravel and non-metallic minerals accounted for 1.4 million tons), manufactured goods (942,000 tons), coal and chemicals (680,000 tons), and agriculture, farm, and food products (487,000 tons). Rail accounted for approximately 8 percent of total freight traffic in Vermont in that year, and the FAF II forecast rail to maintain its mode share in 2030, expanding tonnage handled to 6.2 million tons, or a percentage increase of 63 percent.

Given the rather small rail traffic base in Vermont, it is difficult to rely on general trends to predict future volumes. The appearance or departure of a single shipper can, and indeed has, produced double-digit percentage changes in traffic volumes. However, the trends for the railroad industry versus its modal competitors at least imply an environment that will be conducive to significant growth. In comparison to the trucking sector, the relative fuel efficiency (two to four times as efficient as truck), labor and capacity constraints on the highway side, lower rail costs, as well as lesser environmental impacts make rail an attractive option. However, in order to realize this potential, certain issues must be understood and overcome. Some apply to the railroad industry in general, and others to the specific conditions found in Vermont:

- The *Class I railroads' business model* has been evolving to emphasize long-haul, hub-to-hub or point-to-point, service in high density corridors. This is the least operationally complex type of service, and it takes advantage of low average cost of line-haul movements. With this approach, the Class I railroads also are attempting to change operational practices to get more throughput from existing infrastructure. This has meant practices such as utilizing longer trains, standardizing equipment with fewer car options, trying to get customers on industrial leads and spurs to make their own site improvements, and supporting transload centers and consolidation facilities.

- The impact of these changes on Vermont's railways has been both positive and negative. It has meant increasing reliance on shortlines to provide "last mile" of service to the shippers or receivers, which includes not only physical service but also customer management, activities that shortlines excel at over their Class I brethren. At the same time, the large railroads have been demanding higher volumes from their shortline connections, which can impact the quality of rail service available. Transload centers established along Class I main lines sometimes are in direct competition with shortlines that could provide "last-mile" carload service. Finally, with economics and service performance favoring long hauls exceeding 800 miles or more, the short haul that is typical of Vermont and New England traffic greatly reduces the potential traffic that may be divertible to rail.

- Infrastructure conditions among regional and shortline railroads usually reflect track curvature, gradient and frequently located customer sidings, which limit potential speeds, irrespective of how good the track structure may be. Signal systems are absent or more rudimentary than those used by Class I railroads. As a result, train speeds are low, typically 40 mph or less for freight trains, and operations are far less automated. Although these conditions are usually adequate for existing business, many carriers, including Vermont's major railroads, struggle to maintain track at minimal commercially acceptable levels, and are unable to accommodate some modern rolling stock.[5] With the large railroads transitioning from 263,000 to 286,000 pounds for the standard allowable maximum car weight, the ability to handle these heavier cars has become a particular concern; for many shortlines, failure to accommodate this new standard will compromise their competitive position.

  Ongoing public investment has been critical to maintaining the continued viability of Vermont's rail infrastructure, both on the state-owned portions, as well as sporadically on privately owned segments. In the U.S. 7 corridor, completion of ongoing improvements will be necessary to improve the commercial potential of the rail lines, as present conditions do not support the new higher weight cars, nor offer travel times that will be beneficial to attracting new users.

- Intermodal service offers great potential to the railroads for making inroads into markets that they currently do not serve. While the focus in recent years has been on supporting growth in international container traffic, recent lackluster international trade volumes have brought renewed attention to domestic intermodal services. NS' Crescent Corridor and Patriot Corridor will bring new and improved intermodal service to New England including Vermont. A large new intermodal terminal in Albany, as well as an expanded Ayer, Massachusetts facility will offer significant opportunities for expanding rail market share on certain lanes to Chicago and the southeast. However, greater use of truck connections to these terminals by Vermont shippers would not benefit its railways, and could indeed serve as a competitive alternative to existing carload traffic. While existing freight volumes appear to be insufficient to support an intermodal terminal in Vermont's most densely developed regions, this option should be reviewed

[5] Substantial exceptions to typically mediocre small railroad track conditions do exist among Vermont's railroads where they handle passenger service, as on the New England Central and the Clarendon & Pittsford. Competitive passenger service requires higher speeds, typically 59 mph or higher, which in-turn requires better track.

on a regular basis. The requirements for a successful service are quite simple: sufficient volume to operate daily (five days a week) dedicated trains. For small railroads, 10,000 units per year are a good starting point, while for the large Class I railroads the required minimum is 50,000 or more units.

6. Conclusion

The conditions and trends identified in this report suggest that many of the Western Corridor transportation issues previously raised and documented in the Existing Conditions Report will continue to be of paramount importance in the future.

Continuing population and employment growth will contribute to increased automobile and truck traffic, which will place further demands on the existing highway system and will result in the degradation of Levels-of-Service for specific segments of US 7. Trucking activity in Vermont's Western Corridor is likely to see a growth which exceeds the general increase in traffic volumes in most locations. Improvements will be needed to preserve highway mobility and travel reliability as well as enhance safety along this corridor.

Vermont's freight movements will continue to grow across all modes. In 2006 over 47 million tons of freight, worth over $43 billion, was transported into, out of, within, and through Vermont via truck, rail, air, and water modes. By 2030 those figures are expected to increase to 82 million tons of freight worth over $113 billion, an increase of 73 percent in terms of tonnage, and 160 percent in terms of value.

Truck is by far the dominant mode of transporting goods in Vermont by volume and value, both today and in the future. Air traffic and "Other Intermodal" modes that include parcel service are expected to grow at a faster rate than truck or rail, especially when looking at value of goods being transported. However, their overall mode share is relatively low. Even though freight movements by rail are anticipated to increase, the overall share of freight carried by rail is expected to stay about the same in the future.

Demographic trends towards an aging population suggests that there will be an increasing need for improved public transportation services and facilities to deal with a population that will be increasingly less able to depend on driving itself. The recent increases in gasoline and diesel fuel prices, while having temporarily abated, are likely to re-emerge and this factor also suggests an increasing role for alternatives other than the reliance on personal automobiles.

A review of pending transportation projects indicates that while there are no planned expansions of passenger rail service in the Western Corridor beyond the present operations, ongoing improvements to the Corridor's railroad infrastructure can serve as a basis for implementing additional rail passenger service in the future. In the interim, continued expansion and maturing of the Corridor's bus-oriented transit network is anticipated.

Appendix C
Evaluating Strategies

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Evaluating strategies

Strategies recommended by this plan were selected with the participation of the steering committee, study advisory committee and focus groups. An evaluation process helped inform this effort. Candidate strategies were assessed against a diverse range of criteria and assigned scores to reflect how were they supported each criterion. Summary ratings corresponding to the five study goals were calculated based on the criteria scoring. These ratings offer insight into the potential for candidate strategies to support the study's goals.

The evaluation process involved these steps:

- Identify evaluation criteria that reflect the study's goal and specific objectives.
- Weight criteria to reflect their relative contribution to the overall rating for the relevant study goal.
- Use available qualitative and quantitative information to score strategies on a scale from +5 (strongly beneficial) to -5 (strongly negative) for each of the identified criteria.
- Determine the overall goal rating based on weighted scores for relevant evaluation criteria. Goal ratings are presented in a range of up to five pluses (+) or minuses (-), simplify comparison and prevent confusing goal ratings with scoring for the evaluation criteria.

The evaluation results were considered by the project team and steering committee in selecting recommended actions, but were not the sole basis for recommendations. Public input, knowledge of local and regional considerations, and the collective grouping of strategies to address all study objectives were also taken into account. In some cases, strategies that did not receive high goal ratings still were deemed the most effective at addressing specific objectives, and therefore carried forward.

Evaluation criteria

Table C-1 lists the evaluation criteria used to assess candidate strategies and shows the weights used to develop ratings that correspond to each study goal. Goal ratings are calculated by multiplying the weight by the score for each relevant criteria, and then standardizing the ratings on a -5 to +5 scale. The study's five goals are:

- Highways - Improve highway system efficiencies and safety in Vermont's Western Corridor.
- Freight - Improve freight movements in the Western Corridor.
- Public transportation - Increase public transportation use (rail and bus) and enhance regional connectivity for passenger travel.
- Economic vitality - Support corridor investments that promote economic vitality in the region.
- Quality of life - Implement efficient, sustainable and context-sensitive transportation strategies that support a high quality of life in Western Corridor communities.

Table C-1: Evaluation criteria and weighting

Goal	Weight	Evaluation Criteria	
Highways	23%	Highway performance	Enhances highway system performance (travel speeds, LOS, etc.).
	33%	Safety	Improves transportation system safety.
	27%	Reliability	Improves travel reliability and predictability.
	17%	Local circulation	Improves circulation and/or improves access within towns and villages.
Freight	30%	Rail/air share of freight	Increases share of freight/goods transported by rail and/or air.
	23%	Access to rail	Improves truck access to the rail network.
	18%	Freight travel times	Improves freight travel times.
	29%	Freight reliability	Improves freight travel time reliability.
Public transportation	14%	Transit coverage/frequency	Improves public transit service coverage and frequency.
	17%	Transit travel times/reliability	Improves public transit reliability and reduces travel times.
	19%	Access to transit	Improves access to public transit.
	22%	Transit ridership	Increases transit ridership.
	17%	Travel options	Improves corridor travel options and alternatives.
	11%	Passenger rail	Increases potential for implementing corridor-wide passenger rail service.
Economic vitality	57%	Supports businesses	Creates infrastructure investment supportive of Western Vermont businesses.
	27%	Multiple uses of R.O.W.	Utilization of transportation right-of-way to provide multiple benefits.
	16%	Airport utilization	Improves utilization of airport facilities in Western Vermont.
Quality of life	11%	Air quality	Preserves air quality within the corridor.
	11%	Environment effects	Limits other environmental impacts.
	17%	Traffic impacts to towns	Minimizes impacts to town/village centers from truck traffic.
	19%	Bike/Ped	Improves access to pedestrian/bicycle network.
	23%	Concentrated development	Concentrates development in towns and villages.
	19%	Reduced fossil fuel use	Decreases reliance on fossil fuels and/or other non-renewable fuel sources.

Table C-2 shows the relationship between individual criterion and specific study objectives. At least one criterion was established for each study objective.

Table C-2: Relation of Goals and objectives to evaluation criteria

Goal and Objective	Relevant Evaluation Criteria
Highways	
Objective 1: Improve traffic operations, safety and travel reliability for highway segments between urbanized areas/village centers	✓ Highway performance ✓ Safety ✓ Reliability Local circulation
Objective 2: Balance regional mobility needs with local transportation priorities and plans within towns and village centers. Improve safety within these areas.	✓ Highway performance ✓ Safety ✓ Reliability ✓ Local circulation
Freight	
Objective 1: Improve travel times and reliability on Western Corridor highways to provide improved service to freight customers.	Rail/air share of freight Access to rail ✓ Freight travel times ✓ Freight reliability
Objective 2: Improve infrastructure, services and intermodal connections to improve the efficiency of all freight modes, with particular emphasis on increasing the share of freight hauled by rail and air freight traffic.	✓ Rail/air share of freight ✓ Access to rail ✓ Freight travel times ✓ Freight reliability
Objective 3: Identify and encourage preservation of high-priority rail line frontage for businesses that use rail services. Create additional rail frontage as part of commercial property development.	✓ Rail/air share of freight ✓ Access to rail Freight travel times Freight reliability

Table C-2, continued

Goal and Objective	Relevant Evaluation Criteria	
Public transportation		
Objective 1: Provide well-coordinated local, regional and interstate public transportation serving the communities along the corridor.	✓	Transit coverage/frequency
	✓	Transit travel times/reliability
		Access to transit
		Transit ridership
		Travel options
	✓	Passenger rail
Objective 2: Improve access to public transportation services (bus and rail) and linkages/connections between travel modes.		Transit coverage/frequency
		Transit travel times/reliability
	✓	Access to transit
	✓	Transit ridership
	✓	Travel options
		Passenger rail
Objective 3: Establish passenger rail service and supporting facilities throughout the length of the Western Corridor		Transit coverage/frequency
		Transit travel times/reliability
		Access to transit
		Transit ridership
		Travel options
	✓	Passenger rail
Objective 4: Improve travel options in the Western Corridor by providing a range of modal choices.		Transit coverage/frequency
		Transit travel times/reliability
		Access to transit
		Transit ridership
	✓	Travel options
		Passenger rail

Table C-2, continued

Goal and Objective	Relevant Evaluation Criteria
Economic vitality	
Objective 1: Maintain and strategically improve transportation infrastructure to support businesses in Western Vermont	✓ Supports businesses ✓ Multiple uses of R.O.W. ✓ Airport utilization
Objective 2: Increase employment and tourism activity in the Western Corridor.	✓ Supports businesses Multiple uses of R.O.W. ✓ Airport utilization
Objective 3: Facilitate growth in passenger and freight traffic at airports within the Western Corridor.	Supports businesses Multiple uses of R.O.W. ✓ Airport utilization

Table C-2, continued

Goal and Objective	Relevant Evaluation Criteria	
Quality of life		
Objective 1: Maintain air quality "attainment" status under the federal Clean Air Act for all Western Vermont counties.	✓	Air quality
		Environment effects
		Traffic impacts to towns
		Bike/Ped
		Concentrated development
	✓	Reduced fossil fuel use
Objective 2: Reduce or mitigate the adverse effects of truck traffic within town and village centers where feasible.		Air quality
		Environment effects
	✓	Traffic impacts to towns
		Bike/Ped
		Concentrated development
		Reduced fossil fuel use
Objective 3: Support commercial and residential settlement patterns concentrated in compact villages and urban centers separated by rural countryside, consistent with State and local plans.		Air quality
		Environment effects
	✓	Traffic impacts to towns
	✓	Bike/Ped
	✓	Concentrated development
		Reduced fossil fuel use
Objective 4: Provide safe, attractive and convenient pedestrian and bicycle accommodations that connect travel modes and provide access and circulation within communities. Plan and build streets and other transportation infrastructure with all users in mind.		Air quality
		Environment effects
		Traffic impacts to towns
	✓	Bike/Ped
	✓	Concentrated development
		Reduced fossil fuel use
Objective 5: Limit adverse environmental and community impacts of transportation infrastructure and services.	✓	Air quality
	✓	Environment effects
		Traffic impacts to towns
		Bike/Ped
	✓	Concentrated development
	✓	Reduced fossil fuel use

Recommended strategies

Evaluation findings, ratings and criteria scoring are presented for strategies recommended in the *Implementation and Action Plan* (chapter 4). Each recommended strategy has been assigned an identification number that corresponds to the study goal that is most strongly supported. Strategies are described in corresponding sections of chapter 4:

- H – Strategy is described under Highway action;
- F – Strategy is described under Freight actions;
- T – Strategy is described under Public transportation actions;
- E – Strategy is described under Economic vitality actions; and,
- Q – Strategy is described under Quality of life actions (section 4.7).

Strategies that were selected on a basis of supporting multiple goals are discussed in detail in one section of the *Implementation and Actions Plan* only, but identified under each of the other relevant sections as well.

Other candidate strategies are briefly described in this appendix as well. These are assigned identification letters beginning with O – for "Other strategies."

H1: Improve signalized intersections

Description

Travel times in the corridor can be adversely affected by the performance of traffic signals primarily in two ways; (1) Congestion at signalized intersections can be a significant source of travel delay along the corridor, and (2) poor coordination or progression between nearby traffic signals can impact the flow of traffic along the corridor, resulting in unnecessary stops and disrupting the steady flow of traffic.

The aim of this strategy to address these sources of travel delay through a combination of actions:

- Improve signal timing, install traffic signal detection, and upgrade signal controller equipment;
- Provide additional lanes or turn pockets at congested intersections to increase capacity;
- Redesign the intersection using an alternative configuration. This could include replacing an existing signalized intersection with a roundabout, for example.

The objective of this strategy is to improve Level of Service (LOS) to LOS C or better, consistent with Vermont Agency of Transportation design standards. Traffic operations for primary movements should take precedence over minor or side-street movements. Chapter 4, Implementation Plan, discusses potential applications in detail, though this strategy could be applied elsewhere along the corridor as well.

Evaluation

Basis for Recommendation

This strategy is recommended primarily as a basis for improving highway performance and local circulation under, which also benefits truck operations consistent with objectives under the freight goal.

Evaluation

Study Goal	Score
Highways	++++
Freight	++
Public Transportation	+
Economic Vitality	++
Quality of Life	+

Evaluation Criteria

Highways	
Highway performance	4
Safety	2
Reliability	2
Local circulation	3
Freight	
Rail/air share of freight	-1
Access to rail	1
Freight travel times	3
Freight reliability	2
Public Transportation	
Transit coverage/frequency	1
Transit travel times/reliability	2
Access to transit	0
Transit Ridership	1
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	-1
Traffic impacts to towns	1
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

The strategy also shows benefits relating to all of the other study goals as well.

Key Benefits

- Would reduce congestion at key locations in towns and villages. Most congested intersections could be improved to LOS C or better conditions.
- Trucks and buses would benefit from congestion reduction in towns as well, which could reduce travel times and improve travel reliability.
- Improved travel times, reliability and local circulation would benefit area businesses.
- Localized reduction in vehicle emissions is likely as idling and stops are reduced at congested intersections,

Key Impacts

- Some improvements (e.g. - providing additional lanes) would require additional right-of-way, impacting adjacent properties. Selection and design of specific improvements will be an important factor in the ability to implement any intersection improvement strategy

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Physical improvements to signalized intersections are typically eligible for grant funding.

Potential range of costs

Capital Costs: **$ - $$**

Operations and Maintenance:**$**

Costs would vary depending on the specific improvement implemented, and are therefore discussed here in broad ranges of cost categories (see sidebar).

Evaluation and adjustment of signal timings can be accomplished for modest costs and often within existing programs. Such efforts require periodic collection of traffic count data and modeling to determine optimal signal timings.

Updating traffic signal controller equipment, adding detection, interconnecting signals all involve moderate capital costs, as do reconfiguring intersections to provide additional lanes, turn pockets or alternative configurations are likely to be costlier in most cases. Operations and maintenance costs can typically be accommodated within existing signal maintenance programs.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

H2: Improve local circulation

Description

Improvements to the local street network to promote local circulation and connectivity would decrease traffic and turning movements on major arterials, and in turn reduce congestion and improve safety on major routes, such as US 7. Circulation improvements could include any of several specific actions:

- Improve wayfinding/signage to make better use of existing network.
- Evaluate street patterns (one-way or two-way), channelization, traffic control, and parking regulations to identify revisions to the existing street network to better accommodate local circulation.
- Construct new local roadway connections, either as public works projects or through development/permitting requirements.

These improvements could be implemented in conjunction with streetscape, pedestrian, bicycle, and transit access improvements.

Evaluation

Basis for Recommendation

This strategy is recommended primarily as a basis for improving travel reliability and local circulation under the highway goal, as well as a broad range of benefits across the other study goals.

Key Benefits

- Increases accessibility and connectivity within towns and villages. Such improvements would further benefit local businesses and help support planned growth in communities.
- Highway performance and travel reliability would benefit from greater reliance on other streets for local circulation.

Evaluation

Study Goal	Score
Highways	++++
Freight	++
Public Transportation	++
Economic Vitality	++
Quality of Life	++

Evaluation Criteria

Highways	
Highway performance	2
Safety	2
Reliability	2
Local circulation	5
Freight	
Rail/air share of freight	0
Access to rail	1
Freight travel times	1
Freight reliability	2
Public Transportation	
Transit coverage/frequency	1
Transit travel times/reliability	2
Access to transit	2
Transit Ridership	1
Travel options	2
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	1
Environment Effects	-1
Traffic impacts to towns	1
Bike/Ped	2
Concentrated development	3
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Less concentration of local traffic on major through routes and reduction of turning movements may reduce the frequency of crashes on these routes.
- Access to transit services may benefit from local circulation improvements. Some new or refined routing opportunities may develop as a result of local circulation improvements as well.
- Pedestrians and bicyclists will benefit from addition route choices and favorable route characteristics (lower traffic volumes, slower speeds).

Key Impacts

- Construction of new road segments may have adverse affects on the immediate environment (built or natural).
- Some traffic might use local streets to bypass congested areas. This should be discouraged through consideration of potential for divert trips during the planning stages for specific improvements and application of appropriate traffic calming measures to discourage pass-though traffic.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Developer impact fees and grants are two potential funding sources for capital projects associated with this strategy.

Potential range of costs

Capital Costs: **$ - $$$**

Operations and Maintenance:**$**

Costs would vary depending on the specific improvement implemented.

Wayfinding/signage, channelization and traffic control changes involve low capital costs and negligible operations and maintenance (O&M) costs.

Construction of new local roadways connections is capital intensive (moderate to high).

O&M costs can typically be accommodated within existing O&M programs.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

H3: Implement access management

Description

Access management involves modifying how access to roadways is provided, which can improve both traffic flow and safety. Strategies are typically implemented through development standards that guide how new or redeveloped properties may access the roadway. In some cases, capital projects designed to address existing roadway elements may be implemented. These might focus on consolidating existing driveways and other access points.

VTrans has developed a comprehensive access management program that describes the benefits of access management techniques, presents a toolkit of "best practices", and defines regulatory and design standards for six categories of access management that are based on highway classification and context. These resources provide a foundation for expanding and applying access management techniques throughout the corridor.

Evaluation

Basis for Recommendation

This strategy is recommended for its strong support of highway objectives.

Key Benefits

- Improves safety by reducing potential conflicts with turning vehicles.
- Improves traffic flow.
- Improves environment for pedestrians, bicyclists, transit users and potentially businesses by simplifying accessibility, reducing conflicts with vehicles, and improving visual character.

Key Impacts

- May reduce accessibility if not properly designed.

Evaluation

Study Goal	Score
Highways	+++++
Freight	+
Public Transportation	+
Economic Vitality	+
Quality of Life	+

Evaluation Criteria

Highways	
Highway performance	2
Safety	4
Reliability	3
Local circulation	4
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	2
Freight reliability	2
Public Transportation	
Transit coverage/frequency	1
Transit travel times/reliability	2
Access to transit	1
Transit Ridership	1
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	2
Concentrated development	0
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans, including the VTrans Access Management program.
- Typically implemented as part of development or through use of developer impact fees. May qualify for some grant programs if part of a larger roadway redevelopment effort (potentially including streetscape, intersection improvements, etc.).

Potential range of costs

Capital Costs: **$ - $$**

Operations and Maintenance:**$**

Implementation of access management strategies as part of the development process does not involve significant public costs, other than efforts necessary to implement and administer development regulations.

In cases where specific capital improvements are initiated by a public agency to improve access management on a corridor, costs would vary by location and the scope of the project, with capital costs typically in the moderate range.

Operations and maintenance (O&M) costs can typically be accommodated within existing O&M programs.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

H4: Highway realignment and expansion

Description and potential applications

This strategy involves reconstruction of highway segments to include any of the following elements;

- Improve highway alignment and geometric features to achieve a 50-mph posted speed.
- Provide periodic passing lanes to provide opportunities to safely pass slower moving traffic.
- In cases where significant congestion is forecast, widen highway segments to provide additional travel lanes.

The strategy is intended for application along higher-speed segments in rural or lightly developed areas. Any of these options would typically involve reconstructing the roadway to improve alignment and widening to provide 12-foot lanes with 8-foot shoulders, consistent with applicable design standards.

Improving traffic operations and safety are the two primary objectives addressed by this strategy. In many cases, upgrading the roadway alignment and geometry alone could improve travel speeds and levels-of-service considerably, though in a few cases widened to provide addition lanes would be necessary to achieve notable increases in speed and levels-of-service. Chapter 4, Implementation Plan, describes potential application of this strategy in the corridor.

Justification for improvement based on safety considerations should be in-part based on segment-specific analysis of accident history as proposed under strategy *H6, Safety improvements.*

Evaluation

Basis for Recommendation

Realignment and expansion of major corridors is recommended primarily in support of the highway goal as a means of reducing travel times and improving safety on the corridor. The strategy also

Evaluation

Study Goal	Score
Highways	++++
Freight	++
Public Transportation	+
Economic Vitality	++
Quality of Life	--

Evaluation Criteria

Highways	
Highway performance	5
Safety	2
Reliability	4
Local circulation	0
Freight	
Rail/air share of freight	-2
Access to rail	1
Freight travel times	3
Freight reliability	3
Public Transportation	
Transit coverage/frequency	1
Transit travel times/reliability	2
Access to transit	0
Transit Ridership	1
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	-1
Environment Effects	-5
Traffic impacts to towns	-1
Bike/Ped	1
Concentrated development	-3
Reduced fossil fuel use	-1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

would improve conditions for trucks and is expected to result in positive economic benefits associated with reducing travel costs for area businesses as well.

Key Benefits

- Could improve travel speeds considerably on segments that are congested or have lower speed limits (under 50 mph currently). This is particularly true in cases where the roadway is both realigned and expanded to provide additional travel lanes.
- Improving the alignment and geometric characteristics of roadway segments to current design standards would address some safety concerns along the corridor, though higher resulting travel speeds could offset these improvements to some degree. Safety benefits would need to be evaluated on a case-by-case basis.
- Reduced travel times and improved travel reliability would benefit business that are dependent on transportation of good, materials, or personnel by automobile or truck.

Key Impacts

- Widening would in most cases require acquisition of additional right-of-way. Open spaces, natural areas, and animal habitats would likely be affected. This is particularly true if roadway segments are expanded to provide additional travel lanes or reconfigured as divided highways.
- Capacity improvements are likely to attract addition vehicle and truck traffic and could have some negative affect on air quality and fossil fuel consumption.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Projects stemming from this strategy are likely to be eligible for funding through capacity and safety grant programs.

Potential range of costs

Capital Costs: **$$$**

Operations and Maintenance:**$ - $$**

The capital costs associated with construction and/or expansion of roadways are high.

Additional operations and maintenance (O&M) costs are typically low to moderate, relative to current O&M expenses.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

H5: Minor roadway reconfiguration

Description

Short of realigning the roadway as proposed under H4, corridor segments could be improved to provide lane and shoulder widths consistent with VTrans' design standards, which call for 12-foot lanes with 8-foot shoulders on 50mph segments, and 11-foot lanes with 8-foot shoulders for highway segments with lower posted speeds. Chapter 4, Implementation Plan, details potential application in the corridor.

Evaluation

Basis for Recommendation

Realignment and expansion of major corridors is recommended primarily as a means of reducing travel times and improving safety on the corridor. The strategy also would improve conditions for trucks that use improved segments, and would improve conditions for bicyclists and pedestrians on rural segments by providing widened shoulders.

Traffic conditions and travel times could benefit as well, though these improvements would be modest.

Key Benefits

- Increased shoulder width provides space to clear break downs or accidents, improving travel reliability and safety.
- Roadways with lane and shoulder widths that are consistent with applicable standards should experience lower accident rates than those with sub-standard features.
- Wider shoulders will provide additional space for bicyclists. They are also better suited to accommodate the occasional pedestrian on rural segments.

Key Impacts

- May have some adverse affect on immediately adjacent environmental features.

Evaluation

Study Goal	Score
Highways	+++
Freight	+
Public Transportation	+
Economic Vitality	
Quality of Life	+

Evaluation criteria

Highways	
Highway performance	2
Safety	3
Reliability	3
Local circulation	0
Freight	
Rail/air share of freight	-1
Access to rail	0
Freight travel times	1
Freight reliability	3
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	2
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	-2
Traffic impacts to towns	0
Bike/Ped	3
Concentrated development	0
Reduced fossil fuel use	0

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Wider roadways may increase the incidence of speeding.
- Projects stemming from this strategy may to be eligible for funding through safety grant programs.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$**

Costs would vary depending on the specific location, length of section to be improved, and existing conditions. In generally, minor shoulder widening/reconfiguration projects are likely to involve moderate capital costs, though larger scale projects could require higher levels of funding.

Additional operations and maintenance costs are minimal.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

H6: Safety improvements

Description

The intent of this strategy is to improve highway safety through multifaceted efforts, including engineering and design solutions to address high-accident locations and educational efforts aimed at improving knowledge of and adherence to safe travel practices.

VTrans has several safety plans/programs in place, including the Highway Safety Improvement Program (HSIP), the High Risk Rural Roads Program (HRRR), Strategic Highway Safety Plan (SHSP). The near- and longer-term actions described in Chapter 4, Implementation and Action Plan largely focus on effectively applying these programs and addressing High Crash Locations (HCL)—sections and intersections—in the Western Corridor. According to VTrans' Highway Crash Location Report (2003 – 2007), 15 of the top 100 HCL intersections and 13 out of the top 100 HCL sections in the State are located along US 7.

Evaluation

Basis for Recommendation

This strategy is selected as a means of directly addressing safety and travel reliability in the corridor for all users, including autos, trucks, bicycles, and pedestrians.

Key Benefits

- Existing programs provide data that can be used to identify and prioritize high-accident locations.
- Physical and/or operation improvements may be developed to reduce the frequency or severity of accidents at identified high-priority locations.
- Educational campaigns can help shape driver, bicyclist, and pedestrian behaviors in ways that improve safety (e.g. – seatbelt campaigns).

Evaluation

Study Goal	Score
Highways	++++
Freight	+
Public Transportation	+
Economic Vitality	
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	0
Safety	5
Reliability	3
Local circulation	0
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	3
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	2
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	1
Traffic impacts to towns	1
Bike/Ped	2
Concentrated development	0
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Key Impacts

- None.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Strategy largely focuses on corridor applications for the existing VTrans safety programs.

Potential range of costs

Capital Costs: **$ - $$$**

Operations and Maintenance:**$ - $$**

The capital costs associated with any recommended safety improvements could vary considerably. Many potential actions are likely to be low to moderate in cost, however.

Ongoing safety programs will identify physical, operational, enforcement or programmatic improvements to address safety. The additional administrative costs of enhancing and focusing these programs in the corridor will be low to moderate.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

F1: Improve rail infrastructure (increase load ratings)

Description

Currently, much of the rail infrastructure in Vermont cannot accommodate heavy carloads that are commonplace elsewhere (particularly for bulk shipments such as grains, aggregates, etc). As a result, some shippers in Vermont must have their products shipped in partially loaded railcars, an inefficient and costly prospect, or instead by truck. This strategy seeks to improve rail infrastructure in the Western Corridor to accommodate the railroad industry standard loaded car weight of 286,000 pounds. In cases of major structures with a long design life, achieve the anticipated future standard of 315,000 lbs, consistent with the VTrans' Rail Policy Plan. The critical infrastructure components that dictate the rail loading standards are bridges and track/roadbed.

Track improvements to upgrade weight limits – if coupled with grade crossing and signal system improvements - will also facilitate higher train speeds than are allowed today.

Evaluation

Basis for Recommendation

Upgrading rail infrastructure is recommended for its potential to support the freight, public transportation, and economic vitality goals. Upgraded rail infrastructure will improve the economic viability of shipping by rail – particularly for bulk cargos – and is may attract additional shipments. Infrastructure improvements will

Key Benefits

- Increases weight limits to level consistent with national standards, which allows Vermont shippers to ship full loads.
- Improved rail infrastructure may allow higher speeds on some segments of track (depending on classification).

Evaluation

Study Goal	Score
Highways	+
Freight	+++
Public Transportation	+
Economic Vitality	+++
Quality of Life	

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	1
Freight	
Rail/air share of freight	3
Access to rail	0
Freight travel times	1
Freight reliability	2
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	1
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	4
Economic Vitality	
Supports businesses	3
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	1
Environment Effects	-3
Traffic impacts to towns	2
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Provides infrastructure upgrades that are needed to accommodate passenger rail service in the corridor.

Key Impacts

- Potential community impacts (noise, delays and safety at rail crossings) due to increased rail traffic.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Strategy affirms current VTrans' rail program priorities.

Potential range of costs

Capital Costs: **$$$**

Operations and Maintenance:**$ - $$**

Major rail infrastructure projects require substantial capital funding.

Operations and maintenance (O&M) costs may range from low to moderate levels, depending on the scope of maintenance activities (beyond current levels).

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

F2: Improve truck access to rail and airports

Description

In order to maintain an efficient intermodal freight network in the corridor it is necessary to provide trucks with safe and efficient access to railroad freight and airport cargo facilities. These roadways need to be designed, constructed, and maintained to safely accommodate appropriate truck weight and length requirements consistent with Vermont law.

Evaluation

Basis for Recommendation

This strategy is recommended for its potential to improve freight access to rail and air transport services and related potential to increase the market for these modes. Economic vitality objectives are supported as well.

Key Benefits

- Improves access to rail and air transportation, which could improve freight/goods travel time and reliability, as well as expand rail and air shipping opportunities to more potential users.
- Potential to increase the use of existing air and rail services. Leverages existing infrastructure investments in these modes.
- May facilitate some shift in goods movement from trucks to other modes.

Key Impacts

- Facilities/improvements need to be sited to minimize impacts to neighboring land uses.

Universal Considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	
Freight	+++
Public Transportation	
Economic Vitality	++
Quality of Life	

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	2
Access to rail	3
Freight travel times	1
Freight reliability	2
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	3
Quality of Life	
Air quality	0
Environment Effects	-2
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$ - $$**

Costs associated with improving roadway access to rail and air facilities will vary depending on the specific project definitions, but will typical fall within the moderate category. Major roadway expansion or similarly scaled access improvements could be costlier.

Operations and maintenance (O&M) costs can typically be accommodated within existing O&M programs, though some additional operations costs may be required if access improvements involve security monitoring enhancements.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

F3: Establish additional transload facilities

Description

Providing additional transload facilities at strategic locations along the Western Corridor could improve access to rail for bulk shippers. Rail/Truck transload facilities are locations on railroad lines where shipments can be directly transferred between trucks and railroad cars, thereby enhancing the opportunity for rail shipments as supported by local trucking activity. The transload facilities are assumed to handle general merchandise and bulk shipments, but do not encompass containers or trailers which are typically handled at large mechanized intermodal terminals. Such facilities already exist along the Western Corridor rail lines, but developing additional facilities would improve the geographical distribution of these facilities.

Evaluation

Basis for Recommendation

Establishing additional transload facilities is recommended in support of freight objectives, including potential to increase share of freight hauled by rail and improving access to rail. This strategy also establishes infrastructure that benefits businesses who currently or could potentially ship cargo by rail.

Key Benefits

- Increases access to the rail network and provides new or improved opportunities to ship by rail.
- Reduces the distance cargo must be trucked to access rail transfer facilities.
- May facilitate some shift in goods movement from trucks to other modes.

Key Impacts

- Establishing additional transload facilities would increase switching requirements for the railroads and could slow train schedules as loads are picked up and dropped off at the additional sites.

Evaluation

Study Goal	Score
Highways	
Freight	+++
Public Transportation	
Economic Vitality	+++
Quality of Life	+

Evaluation Criteria

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	3
Access to rail	4
Freight travel times	1
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	3
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	1
Environment Effects	-2
Traffic impacts to towns	1
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	2

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Facilities need to be sited to minimize impacts to neighboring land uses. Consideration of trucking routes and their impacts is needed as well.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$$**

Constructing new transload facilities will involve moderate to high capital costs, depending on the scale of the facility constructed. Moderate additional operating costs are expected also, though these may be partially or fully incurred by the railroads, shippers or other private entities, rather than public agencies.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

F4: Market rail-served properties

Description

Establishing a program to increase the awareness of available rail-served properties and match potential clients with these properties could contribute to increases use of rail in the corridor. Such a program would be aimed at decision makers, corporate real estate professionals, entrepreneurs, and private businesses.

Evaluation

Basis for Recommendation

Establishing a program to market rail-served properties is selected as a means of improving rail freight access and market share, and as a means to provide transportation infrastructure supportive of businesses.

Key Benefits

- Potential to increase share of freight hauled by rail.
- Improved access to rail for businesses that locate/relocate along the rail corridor.
- Increased utilization of properties adjacent to rail corridor by uses that may benefit from rail service.
- Supports relocation or establishment of rail-dependent businesses to Vermont.

Key Impacts

- None.

Universal Considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	
Freight	+++
Public Transportation	
Economic Vitality	++
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	4
Access to rail	3
Freight travel times	0
Freight reliability	1
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	1
Environment Effects	0
Traffic impacts to towns	1
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$**

Operations and Maintenance:**$$**

This strategy would involve low capital costs, but moderate operations costs to administer.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

F5: Preserve rail frontage for best uses

Description

The number of developable properties in the Western Corridor that are located with access to rail and have other attributes suitable for rail-dependent uses, such as adequate parcel size, good roadway access, appropriate zoning and compatible neighboring land uses is limited. Preserving or providing incentives to reserve such sites for business and industrial uses that can benefit from rail access could increase the share of freight movements that travel by rail.

The preservation of these properties is a land use issue that needs to be managed by each municipality in collaboration with the RPCs/MPO.

Evaluation

Basis for Recommendation

Establishing a program to reserve key locations for uses that rely on access to rail service is selected as a means of improving rail freight access and market share.

Key Benefits

- Potential to increase share of freight hauled by rail.
- Improved access to rail for businesses that locate/relocate along the rail corridor.
- Increased utilization of properties adjacent to rail corridor by uses that may benefit from rail service.
- Supports relocation or establishment of rail-dependent businesses to Vermont.

Key Impacts

- Limits the potential uses for selected sites.

Universal Considerations

- Strategy is generally believed to be consistent with applicable state, federal and local policies,

Evaluation

Study Goal	Score
Highways	
Freight	+++
Public Transportation	
Economic Vitality	+
Quality of Life	++

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	4
Access to rail	3
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	1
Environment Effects	2
Traffic impacts to towns	2
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

standards and plans. This should be evaluated in greater detail as the program is formalized.

Potential range of costs

Capital Costs: **$**

Operations and Maintenance:**$ - $$**

This strategy would involve low capital costs, and low to moderate operating costs to administer.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T1: Expand and improve public transportation services.

Description

Public transit services in the corridor are currently provided by individual transit agencies in each region of the corridor; Addison County Transit Resources (ACTR), Chittenden County Transportation Authority (CCTA), The Green Mountain Community Network, Inc., Marble Valley Transit District (MVRTD "The Bus"), and Northwest Vermont Public Transit Network (NVPTN – "The Network"). In addition to transit routes within their respective regions, connecting services to adjacent regions are provided, though such connections are limited and hours of operation and schedule coordination limit the usefulness of these connections in many cases.

Evaluation

Basis for Recommendation

Expanding public transportation services is recommended based on its support for a broad range of public transportation objectives and its potential to improve air quality and reduce fossil fuel consumption if auto trips are replaced by transit trips.

Key Benefits

- Increases travel options and provides alternatives to auto travel.
- Expands coverage and service frequencies, which should attract additional riders.
- May modestly reduce auto travel and fossil fuel use, improve air quality.
- Improves local circulation and supports development within towns and villages.

Key Impacts

- May introduce buses on new streets (noise).

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	++
Freight	
Public Transportation	++++
Economic Vitality	+
Quality of Life	+++

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	1
Local circulation	3
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	1
Public Transportation	
Transit coverage/frequency	5
Transit travel times/reliability	2
Access to transit	3
Transit Ridership	3
Travel options	3
Passenger rail	0
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	3

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$$$**

Capital costs to acquire additional transit vehicles and ongoing operations and maintenance costs are substantial.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T2: Expand passenger rail service and intercity/interstate bus services.

Description

Passenger rail and interstate bus services in the Western Corridor are limited. Amtrak operates the Ethan Allen service with one passenger trains in each direction daily between New York City and Rutland. The Vermonter provides service between Burlington and New York, but travels largely outside of the Western Corridor through Montpelier, White River Junction, Springfield, MA and New Haven, CT.

Implementation of new or continued passenger rail service by necessity must first focus on the maintenance and upgrade of the track for freight rail system, including increasing weight capacity to the "286 standard" (F1) and regular railroad maintenance activities necessary to maintain the state of good repair of the line.

The level of interstate bus service in the corridor has declined markedly over time, partially a result of deregulation of the intercity bus industry. Nationally and in Vermont, intercity bus operators have reduced or eliminated service to smaller communities, focusing instead on carrying passengers over longer distances between major terminals or hubs. Reestablishing service along the corridor would improve connections to major cities outside of Vermont and could in some cases serve as a precursor to eventual establishment of passenger rail service.

Evaluation

Basis for Recommendation

Expanding interstate transportation services – both bus and rail – supports a broad range of public transportation, economic vitality and quality of life objectives.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	++++
Economic Vitality	+++
Quality of Life	++

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	1
Local circulation	1
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	1
Public Transportation	
Transit coverage/frequency	3
Transit travel times/reliability	1
Access to transit	3
Transit Ridership	3
Travel options	3
Passenger rail	5
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	2
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	2
Reduced fossil fuel use	3

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Key Benefits

- Improve travel options for longer distance and out of state travel.
- Provides new options for regional and interstate travel. Currently, auto travel is the only viable option for many locations within the corridor.
- Support businesses, particularly tourism.
- Uses existing roads and rail to expand range of services.
- May modestly reduce auto travel and fossil fuel use, improve air quality.

Key Impacts

- None.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Potential range of costs

Capital Costs: **$$$**

Operations and Maintenance:**$$$**

Capital costs and operations and maintenance costs associated with expanding passenger rail service in the corridor are high.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T3: Develop additional intermodal centers (passenger hubs).

Description

Intermodal centers are facilities designed to provide comfortable, convenient access to transit services and transfer opportunities between different routes or modes of travel. Potential sites should be centrally located to population centers, have good access to roads, and be located adjacent to railroad corridors to allow for potential passenger rail service in the future. Hubs may be located in established downtowns and village centers as well as new growth areas, or could be developed in conjunction with park-and-ride facilities.

A visioning process was conducted to identify locations where intermodal passenger hubs could potentially be located. These were selected based on compatible land uses and zoning, proximity to residential and commercial uses, location along rail corridors and/or bus lines, and similar factors. The exercise was not intended to determine market feasibility for development of a passenger hub at any given locations, but rather as a starting point for identifying siting opportunities. Identified locations are shown in Appendix D.

Evaluation

Basis for Recommendation

Establishing intermodal centers is recommended in support of a broad range of public transportation objectives. In particular, intermodal centers would improve access, coordination and transfers between public transportation services.

Key Benefits

- Improves access to public transportation services and ability to easily and comfortably transfer between services.
- Allows for more efficient deployment of transit services (routing and scheduling).
- Supports concentrated development in town centers.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	++++
Economic Vitality	+
Quality of Life	++

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	3
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	3
Transit travel times/reliability	0
Access to transit	3
Transit Ridership	3
Travel options	2
Passenger rail	3
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	2
Reduced fossil fuel use	2

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- May indirectly reduce auto travel and fossil fuel use, improve air quality.

Key Impacts

- May attract vehicle trips if co-located with parking facilities.
- Need to be sited with compatible land uses and infrastructure.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$$**

Capital costs may be moderate to high, depending on the size and location of individual facilities. Moderate addition operations and maintenance costs are expected as well.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T4: Establish additional park-and-ride lots & intercept facilities

Description

Park-and-ride lots and intercept facilities expand access to public transportation services (bus and potentially passenger rail), provide opportunities for carpooling and help reduce congestion in downtown areas. In locations where high demand is anticipated, specific development of a park-and-ride lot may be warranted (e.g. – at an intermodal passenger hub). A more economical and cost-effective approach in many cases however could be to enter into leasing arrangements with existing land owners who have excess parking during peak commuting hours. These "leased lot" park-and-rides are typically established at churches or other organizations with large parking lots that are underutilized during the weekday.

Evaluation

Basis for Recommendation

Establishing park-and-ride lots and intercept facilities is recommended as a means of improving access to transit and supporting growth in transit ridership as well as help alleviate congestion in downtown areas.

Key Benefits

- Improves access to public transportation services, particularly in less densely developed areas.
- Increases the effective range of transit without extending service coverage area.
- Modestly reduces auto travel and fossil fuel use, improve air quality.

Key Impacts

- Likely to attract additional auto trips to lot locations.
- For dedicated lots, requires conversion of land to parking rather than some other use.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	+++
Economic Vitality	
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	2
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	3
Transit travel times/reliability	0
Access to transit	4
Transit Ridership	2
Travel options	3
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	1
Airport utilization	0
Quality of Life	
Air quality	2
Environment Effects	-1
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	-1
Reduced fossil fuel use	3

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Ensuring that facilities are well-maintained and have appropriate amenities, such as lighting, will be important. Explore opportunities to co-locate Park-and-Ride facilities with commercial development.

Potential range of costs

Capital Costs: **$ - $$$**

Operations and Maintenance:**$$**

Capital costs are low for lease-lot programs, and moderate to high for construction of new parking facilities. Operations and maintenance costs are likely to be moderate.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T5: Expand travel demand management programs.

Description

VTrans has initiated the GO Vermont Program to increase cost effective travel options across the State. The GO Vermont Program provides information and services for carpools, vanpools, public transit and other modes of alternative transportation. The GO Vermont program is an effective and efficient means of implementing travel demand management in the corridor, and can improve the effectiveness of transportation services provided. Recommended actions detailed in Chapter 4, Implementation and Action Plan focus on expanding the programs offered by GO Vermont to provide even greater travel resources and reach additional markets.

Evaluation

Basis for Recommendation

This strategy is recommended based on its potential to increase the effectiveness and awareness of travel options, support use existing transit services, and address quality of life objectives.

Key Benefits

- Provides additional travel options and raises awareness of existing options.
- Potential to reduce auto travel while increasing bike, pedestrian and transit use.
- May reduce fossil fuel use, improve air quality.
- Cost-effective means of supporting other existing transportation services.

Key Impacts

- None.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Strategy expands the existing GO Vermont Program.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	+++
Economic Vitality	+
Quality of Life	++

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	1
Local circulation	2
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	1
Public Transportation	
Transit coverage/frequency	2
Transit travel times/reliability	1
Access to transit	0
Transit Ridership	2
Travel options	4
Passenger rail	2
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	3
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	2
Concentrated development	1
Reduced fossil fuel use	3

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$ - $$**

Operations and Maintenance:**$$**

TDM programs generally do not involve significant capital costs, unless specific capital improvements are identified and funded through the program, (e.g. – bike lockers, bus shelters, etc.). Additional administrative and operating costs are a matter of policy, and are likely to be moderate.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T6: Improve traveler information.

Description

VTrans manages an initiative called ConnectVermont aimed at developing and deploying a comprehensive information system for travelers. The program's vision is deliver this information through all available types of media, such as websites, road signs, radio stations and traditional media, via all types of devices, including laptops, PDA's, cellular phones and car radios. The program currently includes multiple ways to identify road conditions and construction related delays.

In addition to the roadway related traveler information, enhanced public transit system traveler information would provide cost effective enhancements to the transportation system of the corridor. This could include a number of different initiatives.

Evaluation

Basis for Recommendation

Improving traveler information provides benefits across all of the study's goals.

Key Benefits

- Improves highway safety and reliability for all users by providing real-time information on road, weather, and construction conditions.
- Can simplify and improve understanding of how to use public transportation services. May attract additional riders by making increasing awareness of available services and improving confidence and comfort in using them.
- Improves efficient use of existing transportation infrastructure and services.

Key Impacts

- None.

Evaluation

Study Goal	Score
Highways	+++
Freight	++
Public Transportation	+++
Economic Vitality	++
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	0
Safety	2
Reliability	3
Local circulation	2
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	2
Freight reliability	3
Public Transportation	
Transit coverage/frequency	2
Transit travel times/reliability	1
Access to transit	1
Transit Ridership	2
Travel options	2
Passenger rail	2
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	2
Airport utilization	1
Quality of Life	
Air quality	1
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	2

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Strategy is based on existing statewide programs.

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$$**

Moderate to high capital costs will be involved in deploying traveler information systems within the corridor, depending on the applications implemented.

Moderate additional administrative and operating costs would be incurred as well.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T7: Improve bicycle and pedestrian accommodations.

Description

Recommendations for improving bicycle and pedestrian accommodations in the corridor focus on highlighting ways in which the "strategic actions" in the Vermont Pedestrian and Bicycle Policy Plan (January 2008) can most effectively be applied within the study corridor.

Evaluation

Basis for Recommendation

Improving bicycle and pedestrian facilities is recommended as a means of improving travel options, supporting Vermont businesses, and addressing several quality of life objectives.

Key Benefits

- Provides additional or improved travel options for shorter distance trips, particularly in towns and villages.
- Pedestrian access, and to a lesser extent bicycle access, is key to most retail and commercial businesses.
- Improved pedestrian accommodations can increase the viability of commercial districts.
- Improved pedestrian and bicycle safety.
- May modestly reduce auto travel and fossil fuel use, improve air quality.

Key Impacts

- None.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	++
Freight	
Public Transportation	++
Economic Vitality	++
Quality of Life	+++

Individual Criteria Scores

Highways	
Highway performance	0
Safety	3
Reliability	0
Local circulation	1
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	1
Transit Ridership	1
Travel options	4
Passenger rail	1
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	1
Airport utilization	0
Quality of Life	
Air quality	3
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	5
Concentrated development	2
Reduced fossil fuel use	2

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$ - $$$**

Operations and Maintenance:**$ - $$**

Capital costs could vary considerably, depending on the range of improvements implemented. Many lower costs improvements could be pursued (e.g. - signing, enhanced crosswalks, etc.), though capital improvements such as new sidewalks will involve moderate to high costs. Additional operations and maintenance costs will generally be low to moderate.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

T8: Reduce international border crossing delays

Description

This strategy addresses the need to provide expedited inspection of passenger trains at the United States – Canada border, while maintaining necessary vigilance in securing the international border. Delays to rail transportation services can negatively impact operating costs and service reliability. Unlike highway border crossings whereby additional inspection lanes can be added, trains are inspected individually and inspection difficulties with one passenger car (should passenger service to Canada be instituted in the future) will delay the entire train.

Evaluation

Basis for Recommendation

Reducing border delays is recommended as a means of making any future passenger rail service viable.

Key Benefits

- Future international passenger rail service will benefit as success of such services likely depends in part on efficient border-crossing procedures.

Key Impacts

- None, though procedures and protocols need to be developed in ways that meet homeland security requirements.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.
- Need to coordinate and maintain consistency with Homeland Security requirements.

Potential range of costs

Capital costs could vary considerably depending on whether changes are largely procedural (low capital costs), or if upgrade infrastructure is required (moderate to high capital costs).

Evaluation

Study Goal	Score
Highways	+
Freight	++
Public Transportation	+
Economic Vitality	++
Quality of Life	

Individual Criteria Scores

Highways	
Highway performance	1
Safety	0
Reliability	0
Local circulation	1
Freight	
Rail/air share of freight	1
Access to rail	0
Freight travel times	2
Freight reliability	3
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	1
Access to transit	0
Transit Ridership	1
Travel options	0
Passenger rail	2
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	0
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

E1: Improve airport infrastructure.

Description

The Western Corridor is served by the only two commercial service airports in the state, Burlington International Airport and Rutland Southern Vermont Regional Airport, as well as other smaller municipal airports.

Infrastructure at airports in the Western Corridor must be maintained and improved in order to remain viable. In February 2007, VTrans completed the *Vermont Airport System and Policy Plan*, which identifies the specific prioritized needs at each of the airports in the state and also included policy-related recommendations that can improve the performance of the system.

Evaluation

Basis for Recommendation

Improving airport infrastructure is recommended as a means to improve movement of time-sensitive and high-value goods by air, as well as to support of economic vitality objectives associated with Vermont businesses and utilization of airport facilities. This strategy also is intended to support air passenger service.

Key Benefits

- Maintains and improves viability of airports for goods movement and passenger connections to national destinations.
- Supports tourism by improving access to the region.

Key Impacts

- Localized environmental effects associated with expansion of airport facilities.

Universal Considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	+
Freight	+
Public Transportation	+
Economic Vitality	++
Quality of Life	

Individual Criteria Scores

Highways	
Highway performance	0
Safety	1
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	1
Access to rail	0
Freight travel times	1
Freight reliability	1
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	3
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	0
Airport utilization	3
Quality of Life	
Air quality	0
Environment Effects	-2
Traffic impacts to towns	0
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	0

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Strategy is based on VTrans' Airport System and Policy Plan program.

Potential range of costs

Capital Costs: **$$ - $$$**

Operations and Maintenance:**$ - $$**

Moderate to high levels of funding are needed to implement the recommended capital improvements in the Airport System and Policy Plan. Moderate additional operating and maintenance costs may be incurred as well.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q1: Region-wide operating agreement.

Description

A region-wide operating agreement is envisioned as a means to ensure consistent application of regulations along the corridor, particularly pertaining to truck travel. This strategy would be implemented as a Memorandum of Understanding between local municipalities that defines consistent and compatible transportation operating policies and mitigation strategies.

The intent of this strategy is to develop an approach to address local traffic impacts in a manner that is consistent corridor-wide, rather than shifting impacts from one community to another. The content of the agreement is subject to negotiation between the involved agencies and may change over time, but could include topics such as whether truck movements through town would be restricted by time of day, preferred truck routes, and other mitigation strategies.

Evaluation

Basis for Recommendation

Establishing a region-wide operating agreement is recommended as a means of reducing traffic impacts in towns and villages in a consistent manner.

Key Benefits

- Would outline consistent and compatible operating regulations in towns and villages along the corridor.
- Would potentially improve truck travel reliability by reducing the potential for different or inconsistent regulations along different sections of the corridor.

Key Impacts

- Depending on the provisions of the agreement, could adversely affect truck traffic's ability to move through the corridor.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	
Economic Vitality	
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	0
Safety	1
Reliability	2
Local circulation	0
Freight	
Rail/air share of freight	0
Access to rail	-1
Freight travel times	-1
Freight reliability	2
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	1
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	0
Traffic impacts to towns	4
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	-1

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Additional considerations

- Strategy is generally consistent with applicable state, federal and local policies, standards and plans, though this is dependant on the specific provisions of the agreement. This should be evaluated in greater detail as the program is formalized.

Potential range of costs

Capital Costs: **$**

Operations and Maintenance:**$ - $$**

This strategy would involve minimal capital costs, and low to moderate administrative costs to implement and monitor.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q2: Comprehensive truck noise mitigation/management program.

Description

A noise mitigation program could include elements to address noise through actions directed at reducing noise generation, masking or buffering noise, and/or through land use and planning actions to locate more sensitive receptors (residences, hospitals, schools) away from noisy transportation facilities (airports, railroads, highways). Noise programs could include both regulatory changes as well as physical improvements, such as the use of "quiet pavements."

Evaluation

Basis for Recommendation

Establishing noise mitigation and management programs is recommended as a means of reducing traffic impacts in towns and villages.

Key Benefits

- Would reduce noise impacts associated with traffic and trucks in sensitive locations, such as residential areas on busy segments.

Key Impacts

- Depending on the provisions of the agreement, could adversely affect truck traffic's ability to move through the corridor. This is true for regulatory aspects (hours of operation, use of compression brakes, etc), though not for physical improvements such as use of quiet pavements.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	
Freight	-
Public Transportation	
Economic Vitality	
Quality of Life	+

Individual Criteria Scores

Highways	
Highway performance	0
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	0
Access to rail	-1
Freight travel times	0
Freight reliability	-2
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	0
Traffic impacts to towns	4
Bike/Ped	0
Concentrated development	1
Reduced fossil fuel use	0

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$ - $$**

Operations and Maintenance:$ - **$$**

Capital costs would vary depending on the application. Some program and policy elements would have low capital costs, while those involving physical improvements (e.g. - noise barriers, repaving with quieter pavements, etc.) would involve moderate capital expenses. Low to moderate operating costs will be incurred to administer and monitor the program as well.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q3: Streetscape improvements.

Description

Streetscape improvements could help reestablish or enhance the character of towns and villages along the Western Corridor through the coordinated implementation of elements such as street trees, lighting, improved sidewalks, landscaping and similar features. In many cases, streetscape improvements should be implemented jointly with traffic calming or pedestrian improvements to fully realize potential safety and quality of life objectives.

Additionally, improved streetscapes typically result in a safer and more attractive environment for walking and bicycling which reduces town/village congestion. All towns and villages along the corridor would benefit from improvements to streetscapes, aesthetics and "complete street" roadway designs (meaning the examination of all aspects of the roadway including sidewalks, crosswalks, bike lanes, freight loading areas etc.).

Evaluation

Basis for Recommendation

Streetscape improvements are recommended as means of reducing the visual, noise, and character impacts associated with highways in towns and villages.

Key Benefits

- Streetscape improvements can result in a safer and more attractive environment for walking and bicycling. This in turn may reduce need for auto use within towns and villages.
- Recognizes the roadway as a multifaceted facility with many different users (e.g. - pedestrians, bicyclists, transit riders) and purposes (e.g. – shopping, commuting, socializing).
- Enhances local business activity by improving aesthetics, reducing traffic impacts (noise and visual impacts), and increasing pedestrian traffic.

Evaluation

Study Goal	Score
Highways	+
Freight	
Public Transportation	
Economic Vitality	++
Quality of Life	+++

Individual Criteria Scores

Highways	
Highway performance	0
Safety	1
Reliability	0
Local circulation	1
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	2
Multiple uses of R.O.W.	1
Airport utilization	0
Quality of Life	
Air quality	0
Environment Effects	2
Traffic impacts to towns	3
Bike/Ped	3
Concentrated development	2
Reduced fossil fuel use	0

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

- Improved character in towns and villages is conducive to residential and mixed-use growth in those areas.

Key Impacts

- Improvements require ongoing or periodic maintenance.

Additional considerations

- Strategy is largely consistent with applicable state, federal and local policies, standards and plans. However, Vermont's "Road to Affordability" policy deemphasizes and eliminates many streetscape elements.

Potential range of costs

Capital Costs: **$$**

Operations and Maintenance:**$ - $$**

Capital costs associated with streetscape improvements are generally moderate; lower when implemented as part of the design for a new or reconstructed roadway, and higher in some retrofit applications. Costs can vary considerably depending on the elements included.

Moderate additional operations and maintenance costs are typical, depending again on the elements present.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q4: Implement traffic calming measures.

Description

Traffic calming measures can help to improve safety and reduce impacts associated with vehicle traffic by lowering vehicle speeds in towns and villages. The *Vermont Agency of Transportation Traffic Calming Study and Approval Process for State Highways (2003)* provides a well-developed framework for considering and implementing appropriate traffic calming measures on major routes within the Western Corridor. Traffic calming measures may also be appropriate on local streets at key locations to limit pass-through/bypass vehicle traffic.

Evaluation

Basis for Recommendation

Traffic calming measures are recommended to improve safety and reduce traffic impacts in towns and villages.

Key Benefits

- Improves safety by reducing vehicle speeds in towns and villages where pedestrians, bicyclists, and turning traffic are prevalent.
- Reduces traffic noise and slows vehicles to speeds that are compatible with the character of more urbanized settings.

Key Impacts

- Minor reduction in vehicle travel times through towns and villages are possible if posted speeds are reduced, through most traffic calming measures are likely to be implemented as means of reducing travel speeds to currently posted limits.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans, including the VTrans Traffic Calming Study and Approval Process for State Highways (2003).

Evaluation

Study Goal	Score
Highways	++
Freight	
Public Transportation	
Economic Vitality	+
Quality of Life	++

Individual Criteria Scores

Highways	
Highway performance	-1
Safety	4
Reliability	0
Local circulation	1
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	-1
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	-1
Access to transit	0
Transit Ridership	0
Travel options	0
Passenger rail	0
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	-1
Environment Effects	0
Traffic impacts to towns	4
Bike/Ped	2
Concentrated development	1
Reduced fossil fuel use	0

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$$**

Operations and Maintenance:**$ - $$**

Capital costs associated with traffic calming improvements are generally moderate; lower when implemented as part of the design for a new or reconstructed roadway, and higher in some retrofit applications. Costs can vary considerably depending on the elements included.

Low to moderate additional operations and maintenance costs are typical, depending again on the elements present.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q5: Encourage use of alternative fuel vehicles

Description

Using alternative fuels (to fossil fuels) to power vehicles can reduce the nation's dependence on imported petroleum and reduce harmful pollutants and exhaust emissions. This strategy aims to increase the use of alternative fueled vehicles in the Western Corridor though continued support for ongoing efforts such as the Vermont Clean Cities Coalition (VCCC).

Evaluation

Basis for Recommendation

Encouragi8ng use of alternative fuel vehicles is recommended as a means of reducing fossil fuel consumption and improving air quality.

Key Benefits

- Reduces reliance on non-renewable fossil fuels.
- Improves air quality.

Key Impacts

- None, presuming that alternative fuel technologies are adequately vetted.

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Evaluation

Study Goal	Score
Highways	
Freight	
Public Transportation	+
Economic Vitality	
Quality of Life	+++

Individual Criteria Scores

Highways	
Highway performance	0
Safety	0
Reliability	0
Local circulation	0
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	0
Freight reliability	0
Public Transportation	
Transit coverage/frequency	0
Transit travel times/reliability	0
Access to transit	0
Transit Ridership	0
Travel options	2
Passenger rail	0
Economic Vitality	
Supports businesses	0
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	4
Environment Effects	1
Traffic impacts to towns	2
Bike/Ped	0
Concentrated development	0
Reduced fossil fuel use	4

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Potential range of costs

Capital Costs: **$ - $$**

Operations and Maintenance:**$ - $$**

Depending on the program definition, moderate costs could be involved in establishing or enhancing infrastructure to support alternative fuel vehicles. This could be in the form of capital improvements or incentives to private entities to implement such facilities.

Low to moderate additional operations and maintenance costs are expected.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Q6: Encourage compact, mixed-use development within towns

Description

Encourage mixed-use development, concentrated in towns and villages, through implementation of zoning and land use regulations, state and/or local incentives, or similar mechanisms to focus growth within targeted areas. Land use and transportation planning should be coordinated and direct new growth toward areas that can best be served by existing and planned transportation infrastructure and services.

Evaluation

Basis for Recommendation

This strategy is recommended in support of both public transportation and quality of life objectives. Compact, mixed-use development encourages transit, bicycle, and pedestrian use, can reduce (auto) trip making, and protect undeveloped lands.

Key Benefits

- Reduces costs associated with the operation and maintenance of roadways (as well as other public infrastructure)
- Is more conducive to travel by transit, walking and bicycling
- May reduce the overall number and length of vehicle trips in the corridor.
- Reduced impacts to natural resources
- Increased potential for economic vitality of towns and villages.

Key Impacts

- Increase localized congestion in towns and villages (though not necessarily overall).
- Effective planning needed to ensure growth occurs in a manner that supports existing/desired character.

Evaluation

Study Goal	Score
Highways	++
Freight	+
Public Transportation	+++
Economic Vitality	+
Quality of Life	+++++

Individual Criteria Scores

Highways	
Highway performance	2
Safety	1
Reliability	1
Local circulation	0
Freight	
Rail/air share of freight	0
Access to rail	0
Freight travel times	1
Freight reliability	1
Public Transportation	
Transit coverage/frequency	2
Transit travel times/reliability	1
Access to transit	2
Transit Ridership	2
Travel options	2
Passenger rail	2
Economic Vitality	
Supports businesses	1
Multiple uses of R.O.W.	0
Airport utilization	0
Quality of Life	
Air quality	3
Environment Effects	4
Traffic impacts to towns	0
Bike/Ped	4
Concentrated development	5
Reduced fossil fuel use	3

- Range -5(highly adverse) to +5 (very effective)
- 0 = no effect or not applicable

Additional considerations

- Strategy is consistent with applicable state, federal and local policies, standards and plans.

Potential range of costs

Capital Costs: **$**

Operations and Maintenance:**$**

This strategy primarily involves policy development and implementation within the current responsibilities of local and regional government agencies. Therefore, additional expenses are expected to be minimal.

Estimated cost ranges are illustrative of order of magnitude costs typical for similar projects and programs. Detailed cost estimating has not been undertaken at this point given the conceptual nature of the proposed strategies.

Reported cost ranges are as follows:

Capital Costs

$	Low - Typically under $250,000
$$	Moderate - Typically $250,000 to $2.5 million
$$$	High - Typically over $2.5 million

Operations and Maintenance (or Administrative) Costs

$	Low - can be absorbed into ongoing O&M efforts for no or little additional cost.
$$	Moderate – requires some additional operating and/or maintenance costs
$$$	High - Significant additional costs associated with regular operating costs (fuel, labor, etc) and/or maintenance.

Other strategies considered

Other strategies considered during the course of the study are listed here. These strategies were developed to varying degrees of detail, with some being incorporated (as noted) in other strategies.

While these strategies were not selected as recommended elements of the Western Corridor Transportation Management Plan, some may still have applicability at the local level.

O1: Upgrade stop controlled intersections

Two-way stop controlled intersections (stop signs on the minor axis, free-flow on the highway corridor) may merit improvement on a case-by-case basis, though the strategy is not a priority from a corridor-wide standpoint.

VTrans' design standards call for LOS D or better conditions for these side-street approaches when their volume exceeds 100 vehicles per hour (150 for a multi-lane approach).

Intersections may be upgraded to accommodate higher side-street volumes and improve LOS by means of;

- Conversion to a roundabout;
- Addition of turn pockets or refuges;
- Installation of a traffic signal.

In cases where traffic signal installation is proposed, AASHTO's MUTCD traffic signal warrants should also be considered since the addition of traffic signals can increase delay on the primary route and may have unintended adverse impacts on safety if applied under improper conditions. Traffic signals will only be considered in cases with heavy side-street volumes and where other measures (roundabouts or lane/pocket improvements) are not practical.

O2: Passing lanes

Strategy has been incorporated into H4: Highway realignment and expansion.

Consider the addition of an additional single-direction (non-competitive) travel lane on segments with LOS E or F conditions under projected (2030) design hour traffic volumes. These would be provided intermittently to allow passing opportunities.

O3: Climbing lanes

Add a climbing lane on segments with LOS E or F conditions under projected (2030) design hour traffic volumes where grades are likely to result in slow moving traffic.

O4: Adjust highway weight limits

Change weight limits on Interstate Highways to be consistent with neighboring states and provide options for trucks that may otherwise be restricted to using US 7 and other state routes. Changing interstate weight limits requires initiation of a federal approval process.

O5: Redirect traffic to alternate routes

More efficiently utilize the existing roadway network through increased promotion of alternate routes that are designed to accommodate higher traffic volumes or are underutilized (e.g. – longer distance trips to I-89/I-91, I-87, or VT-22A)

O6: Improve or eliminate railroad grade crossings

Strategy has been incorporated into H6: Safety improvements.

Construct grade crossing improvements at locations identified by VTrans as priority locations within the corridor to improve highway grade-crossing safety. Evaluate the possible closure of some grade crossings when appropriate alternate crosses exist.

O7: Establish truck bypass routes on existing roadways

Implement truck bypass routes (on existing roadways) in towns and villages where alternate routes could potentially reduce adverse impacts of truck traffic on the community. Possible examples include an alternative truck route to the OMYA transload facility along VT 116, or use of VT 17 as an alternative to VT22A through Vergennes. Ensure that infrastructure is adequate for designation as a truck route.

O8: Provide incentives to ship by rail

Develop a program of additional incentives to improve the relative competiveness of rail freight.

O9: Expand freight coop and broker programs

Enhance existing efforts to bundle or broker shipping. These programs involve contracting with railroads for the use of a certain number of railcars, thereby obtaining a discounted rate. The broker then obtains shipments for the cars from various shippers within the Western Corridor service area. Individual shippers would obtain a better rate as opposed to securing cars individually; the railroad / car owners would be guaranteed revenue associated with a certain number of car movements; and the broker would be actively soliciting shipments for the allocated railcars thereby performing a marketing function for the railroad.

O10: Preserve transportation corridors

Preserve defunct transportation corridors for future transportation related uses (rail bank, land bank, etc).

O11: Promote appropriate land use near airports

Reserve land adjacent to sensitive transportation uses (e.g. – airports) though easement or purchase and actively manage the right-of-way.

O12: Increased marketing of transit programs

Elements of this strategy may be implemented through T5: Expand TDM programs and T6: Improve traveler information.

Develop and implement coordinated marketing and public information campaigns to increase awareness and use of public transit services..

O13: Consider alternative transit fare structures

Work with transit providers to develop alternative fare structures or develop fare subsidy programs to encourage public transit ridership by decreasing user costs.

O14: Expand feeder bus and paratransit services

Elements of this strategy could be incorporated as part of T1: Expand and improve public transportation services, at the discretion of the local transit service providers.

Expand the use of feeder bus routes and paratransit services that utilize flexible routing and scheduling to expand the range of public transportation services (for bus, rail and air passengers).

O15: Improve ferry-bus linkages

This strategy could be incorporated as part of T1: Expand and improve public transportation services, at the discretion of the local transit service providers.

Improve transit connections and options for ferry users by providing transit services coordinated with ferry arrivals/departures and parking adjacent to ferry terminals.

O16: Expand car sharing programs

Strategy could be incorporated as part of T5: Expand travel demand programs.

Expand existing carsharing programs in western Vermont (Carshare Vermont in Burlington or Zipcar in Middlebury).

O17: Educational campaign

Strategy could be incorporated as part of T5: Expand travel demand programs.

Institute a campaign to education the public, businesses and decision-makers with regard to transportation issues and challenges.

O18: Promote rail services

Encourage closer cooperation between VTrans and Department of Economic Development to promote rail services in Vermont, perhaps designating a staff person to be the liaison between these agencies.

O19: Use rights-of-way for multiple uses

Utilize existing transportation right-of-way for other infrastructure investments (e.g. fiber optic cable).

O20: Streamline transportation permitting

Explore methods to streamline and improve coordination between permitting agencies to simplify and fast-track development of transportation infrastructure.

O21: Expand tourism and travel information programs

Strategy could be incorporated as part of T5: Expand travel demand program and/or T6: Improve traveler information

Coordinate with the "Go Vermont!" campaign to prepare and distribute information to tourists regarding travel choices and options along the Western Corridor. Improve ticketing and connections to further enhance this benefit.

O22: Internet and telecom improvements

Upgrade infrastructure where lacking to increase the potential to conduct business by phone and internet, reducing the need to travel. Investigate the potential for implementation of remote work centers.

Appendix D
Corridor Visioning

Vermont Western Corridor
Transportation Management Plan
January 22, 2009

Review of Visioning Exercise

Overview of the Visioning Process

A visioning exercise for the Western Corridor was conducted during the Steering Committee meeting of November 20, 2008. This built on a preceding meeting of the Regional Planning Commission representatives in October 2008. The intent of the November visioning exercise was to initiate discussion on potential locations for four types of land use activities that could be considered for the Vermont Western Corridor Transportation Management Plan. These land use activities are:

Growth Centers
Specific areas of communities along the corridor could be designated as growth centers to encourage more compact and mixed use development within walking distance to existing (or future) transit services and retail/commercial areas. Such land use development activities and patterns have the potential to reduce the number and length of vehicle trips by replacing them with transit or walking trips. These development activities and patterns also create opportunities to accommodate many different trip purposes in a single area (e.g., school, home and shopping trips). Growth centers should be located in areas with good access to transit and shopping, typically in or near downtowns.

Intermodal Centers (Passenger Hubs)
Intermodal centers (or passenger hubs) are facilities designed to allow comfortable access to transit services as well as transfer opportunities between different routes or modes of travel. Potential sites should be centrally located to population centers, have good access to roads, and be located adjacent to railroad corridors to allow for potential passenger rail service in the future. Hubs may be co-located with growth centers, or could be developed in other areas in conjunction with park-and-ride facilities.

Transload Freight Facility
Transload freight facilities accommodate transfers of product between truck and rail. Potential transload freight facilities should be located along existing railroad tracks or sidings and have good highway access. They should be located away from residential areas and other land uses sensitive to noise and traffic.

Rail Dependent Industrial/Commercial Land Uses
Some lands located adjacent to existing railroad corridors could be reserved for use by commercial and industrial activities that are rail-dependent or could become so.. This strategy would provide businesses with both rail transport and truck transport options and increase efficiency of transport.

The Visioning process involved a workshop exercise where Regional Planning Commission (RPC) staff and other Steering Committee members reviewed aerial photos of the six major urban centers in the 200-mile long study area with the consultant team.

The participant stakeholders considered existing and planned conditions, in conjunction with the desired characteristics associated with each of the four types of activities summarized above, to preliminarily determine potentially compatible sites. These potential sites were mapped and sent back to the RPC staff for further review and comment.

The potential sites identified, in conjunction with existing and future conditions information, will form a starting point for developing and evaluating scenarios that involve these land use activities.

Summary of Stakeholder Input

The maps and tables on the following pages map the results of the visioning exercise. As summarized in Table 1 below, a total of 92 potential sites have been identified by the stakeholders. These potential sites are starting points for subsequent scenario development and evaluation, and the number of sites considered is not necessarily a predictor of the number of sites that will ultimately be recommended. Realistically, the recommended number of potential sites will most likely be much lower based on consideration of market demand and competitive locations.

Table 1: Potential Site Summary of Vermont Western Corridor

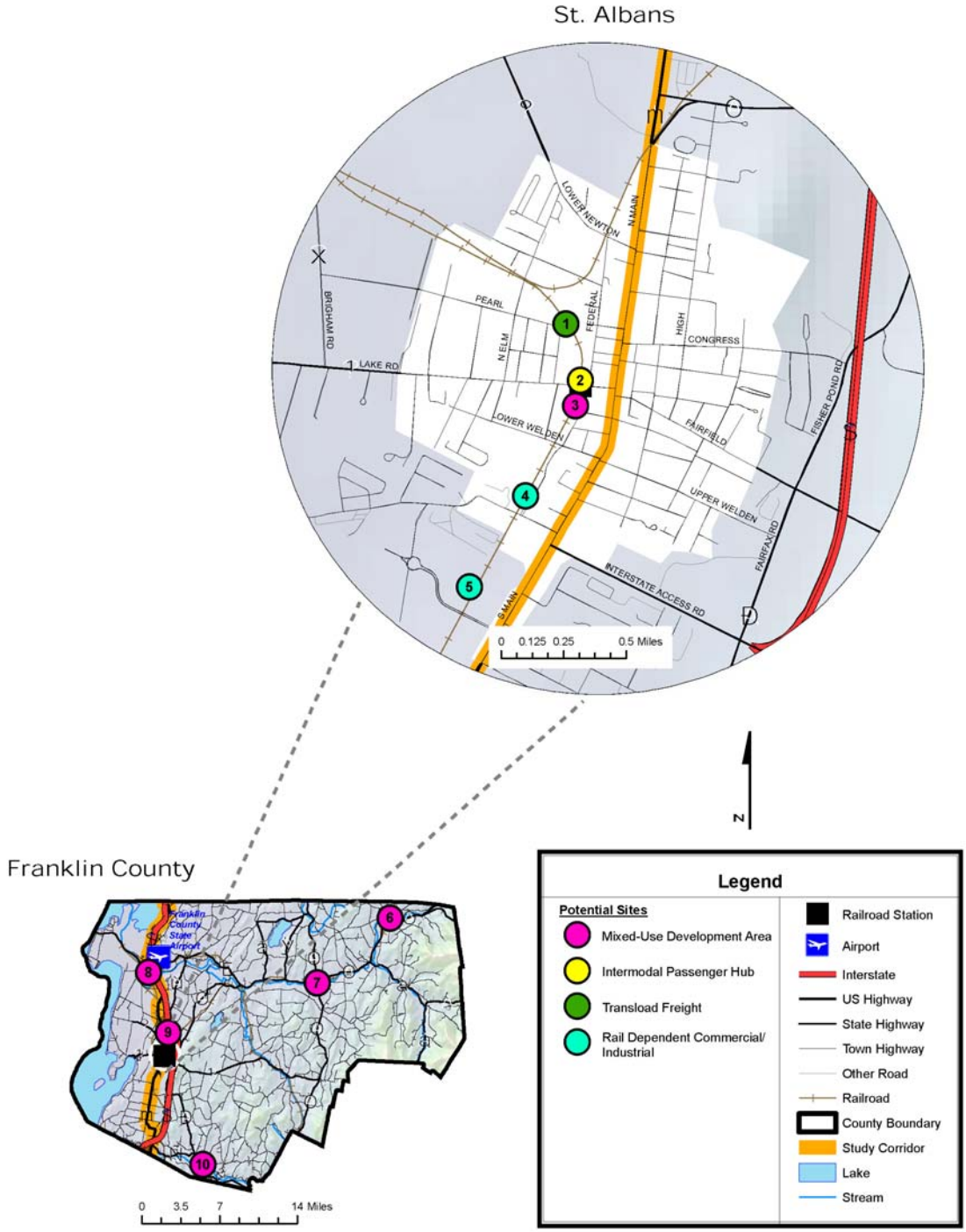
	Growth Center	Intermodal Passenger Hub	Transload Freight	Rail Dependent Industrial/ Commercial	Total *
St. Albans, Franklin County	6	1	1	2	10
Burlington, Chittenden County	12	6	3	3	23
Middlebury, Addison County	3	4	2	8	17
Rutland, Rutland County	4	1	6	4	15
Manchester and Bennington, Bennington County	3	2	3	15	23
Total	28	14	17	33	92

* Totals do not equal some of the sub-categories because some sites may have duplicate potential applications.

See Map A on the following page for locations.

A. St. Albans, Franklin County			
ID	**Name**	**Type**	**Notes**
1	Proposed New England Central Railroad Transload Facility	Transload Freight	This transload facility would be sited on the existing NECR rail road. Both road and rail infrastructure would need to be improved to accommodate the increase in loading and offloading activity.
2	Proposed St. Albans Intermodal Passenger Hub	Intermodal Passenger Hub	The intermodal passenger hub could be located near the existing Amtrak station and headquarters of the NECR. In addition to passenger rail service, this facility would have access to public bus transportation and taxi service.
3	St. Albans City	Growth Center	
4	St. Albans City Industrial Park	Rail Dependent Commercial/ Industrial	This existing industrial park has rail siding access with businesses that may be able to utilize rail for their shipping needs.
5	St. Albans Town Industrial Park	Rail Dependent Commercial/ Industrial	This existing industrial park has rail siding access with businesses that may be able to utilize rail for their shipping needs.
6	Richford	Growth Center	
7	Enosburg Falls	Growth Center	
8	Alburgh Village	Growth Center	
9	Swanton Village	Growth Center	
10	Fairfax	Growth Center	

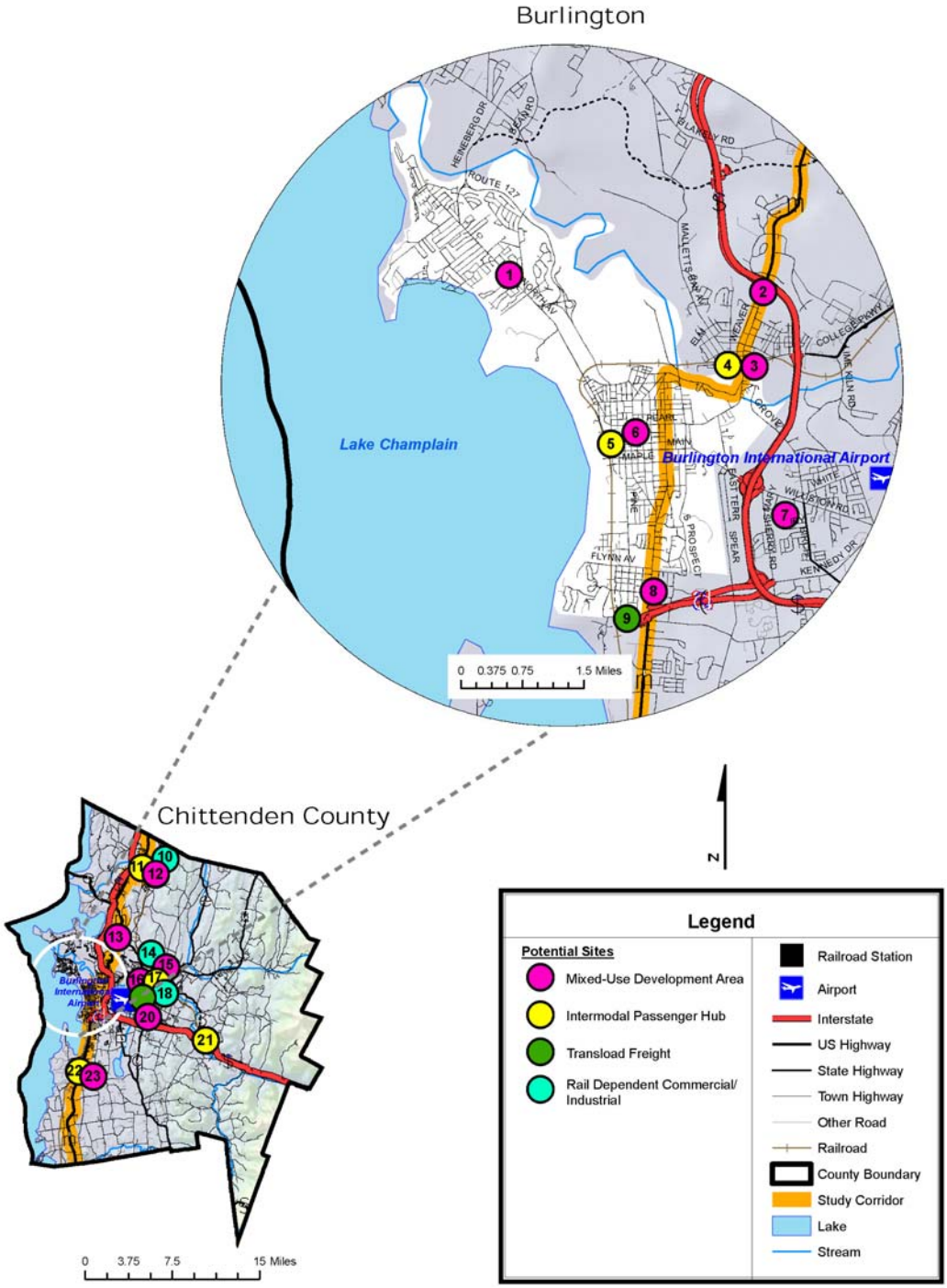
Vermont's Western Corridor Transportation Management Plan
Map A: St. Albans, Franklin County



See Map B on the following page for locations.

B. Burlington, Chittenden County			
ID	**Name**	**Type**	**Notes**
1	Burlington	Growth Center	New North End
2	Colchester	Growth Center	Exit 16
3	Winooski	Growth Center	Downtown
4	Winooski	Intermodal Passenger Hub	Downtown
5	Burlington	Intermodal Passenger Hub	Main Street Landing
6	Burlington	Growth Center	Downtown Burlington
7	South Burlington	Growth Center	City Center
8	South Burlington	Growth Center	Route 7/Farrel Street
9	South Burlington	Transload Freight	Queen City Park Road
10	Milton	Rail Dependent Commercial/Industrial	Near Husky
11	Milton	Intermodal Passenger Hub	
12	Milton	Growth Center	Village Area
13	Colchester	Growth Center	Severance Corners
14	Essex	Rail Dependent Commercial/Industrial	Senecal Property/Circ/Rail
15	Essex	Growth Center	Essex Town Center
160	Essex Junction	Growth Center	5 Corners
17	Essex Junction	Intermodal Passenger Hub	5 Corners
18	Essex Junction	Rail Dependent Commercial/Industrial or Transload	IBM. Could be Transload if Circ Hwy is built.
19	Essex Junction	Transload Freight	IBM
20	Williston	Growth Center	Taft Corners
21	Richmond	Intermodal Passenger Hub	I-89/Exit 11/Park-and-ride
22	Shelburne	Intermodal Passenger Hub	Station
23	Shelburne	Growth Center	Shelburne Village

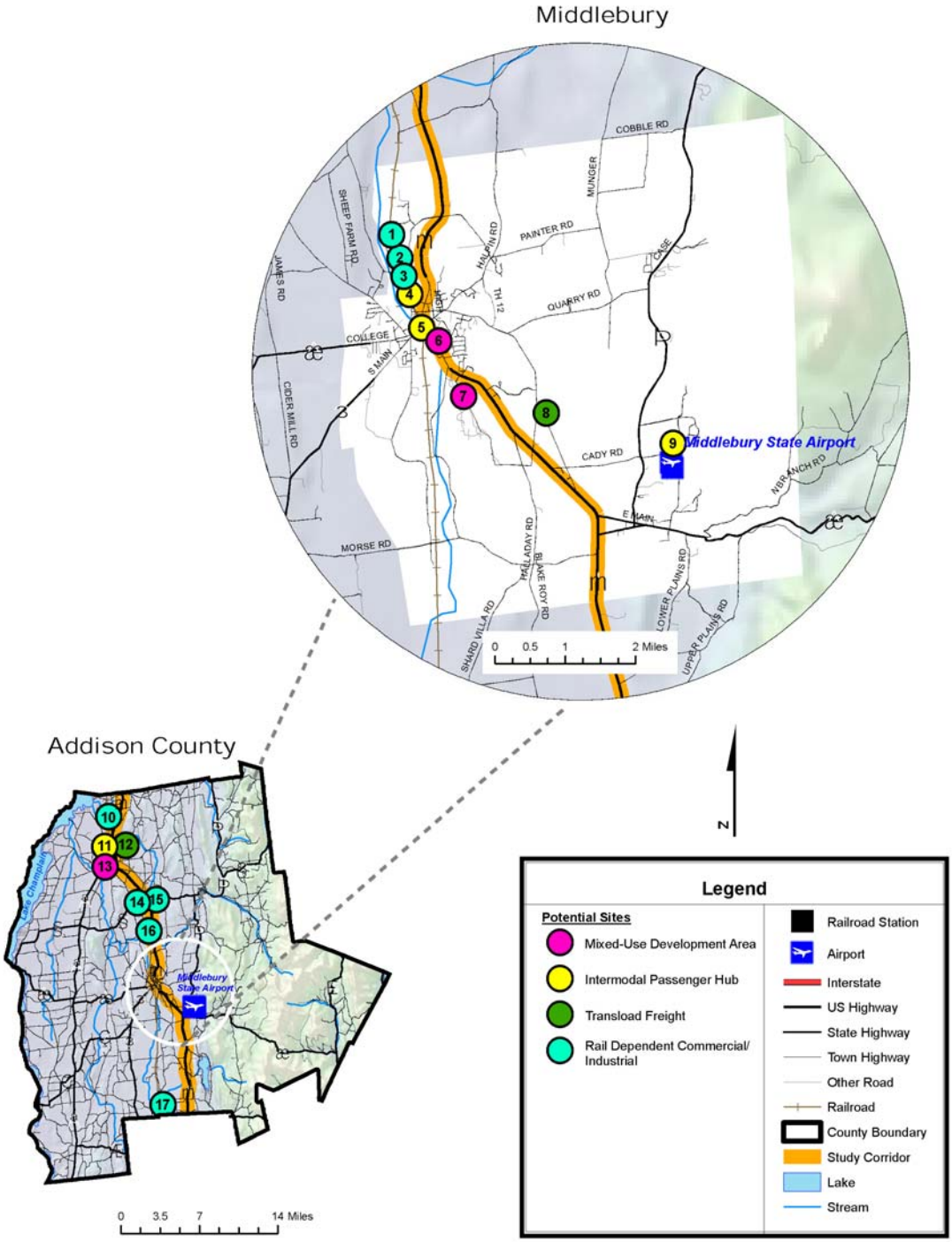
Vermont's Western Corridor Transportation Management Plan
Map B: Burlington, Chittenden County



See Map C on the following page for locations.

C. Middlebury, Addison County			
ID	**Name**	**Type**	**Notes**
1		Rail Dependent Commercial/Industrial	
2		Rail Dependent Commercial/Industrial	
3		Rail Dependent Commercial/Industrial	
4		Intermodal Passenger Hub	
5		Intermodal Passenger Hub	
6	Center Village	Growth Center	
7	South Village	Growth Center	
8	OMYA Rail Spur	Transload Freight	
9		Intermodal Passenger Hub	
10		Rail Dependent Commercial/Industrial	Ferrisburgh – Denmar –spur
11	Vergennes/ Ferrisburgh Route 22A/Route 7	Intermodal Passenger Hub	Park and ride and historic train station
12	Vergennes – Meigs Road Rail Spur	Transload Freight	75 Meigs Road – DR Trimmers
13		Growth Center	Vergennes
14		Rail Dependent Commercial/Industrial	New Haven Junction – Hudson/Salisbury - spur
15		Rail Dependent Commercial/Industrial	New Haven Junction – white pavement plant - spur
16		Rail Dependent Commercial/Industrial	New Haven rail spur Pike Industries
17		Rail Dependent Commercial/Industrial	Leicester rail spur Propane storage

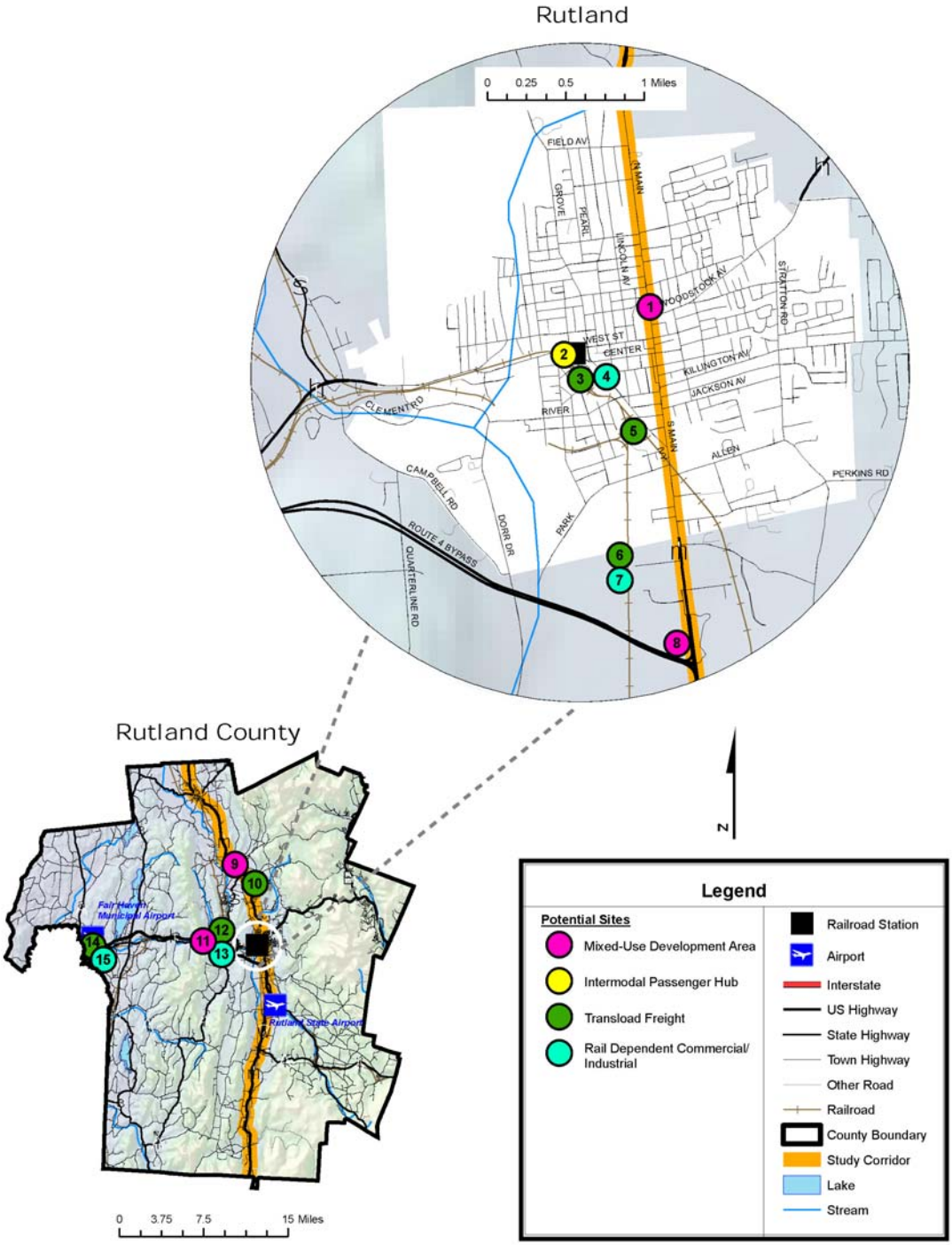
Vermont's Western Corridor Transportation Management Plan
Map C: Middlebury, Addison County



See Map D on the following page for locations.

D. Rutland, Rutland County			
ID	**Name**	**Type**	**Notes**
1		Growth Center	Route 7 and Route 4 - east
2	Amtrak Station	Intermodal Passenger Hub	
3	Brandon	Transload Freight	By Railroad Tracks and Union Street
4	Brandon	Rail Dependent Commercial/Industrial	By Railroad Tracks and Union Street
5	Rutland Rail yard	Transload Freight	
6	New Rail yard	Transload Freight	
7		Rail Dependent Commercial/Industrial	
8		Growth Center	Route 7 and Route 4 - west
9		Growth Center	Route 7 north of Rutland
10	Florence	Transload Freight	OMYA – where rail crosses Whipple Hollow Road
11	West Rutland	Growth Center	Intersection of Route 4 and BR4
12	West Rutland	Transload Freight	Intersection of Route 4 and BR4
13	West Rutland	Rail Dependent Commercial/Industrial	Intersection of Route 4 and BR4
14	Fair Haven	Transload Freight	
15	Fair Haven	Rail Dependent Commercial/Industrial	

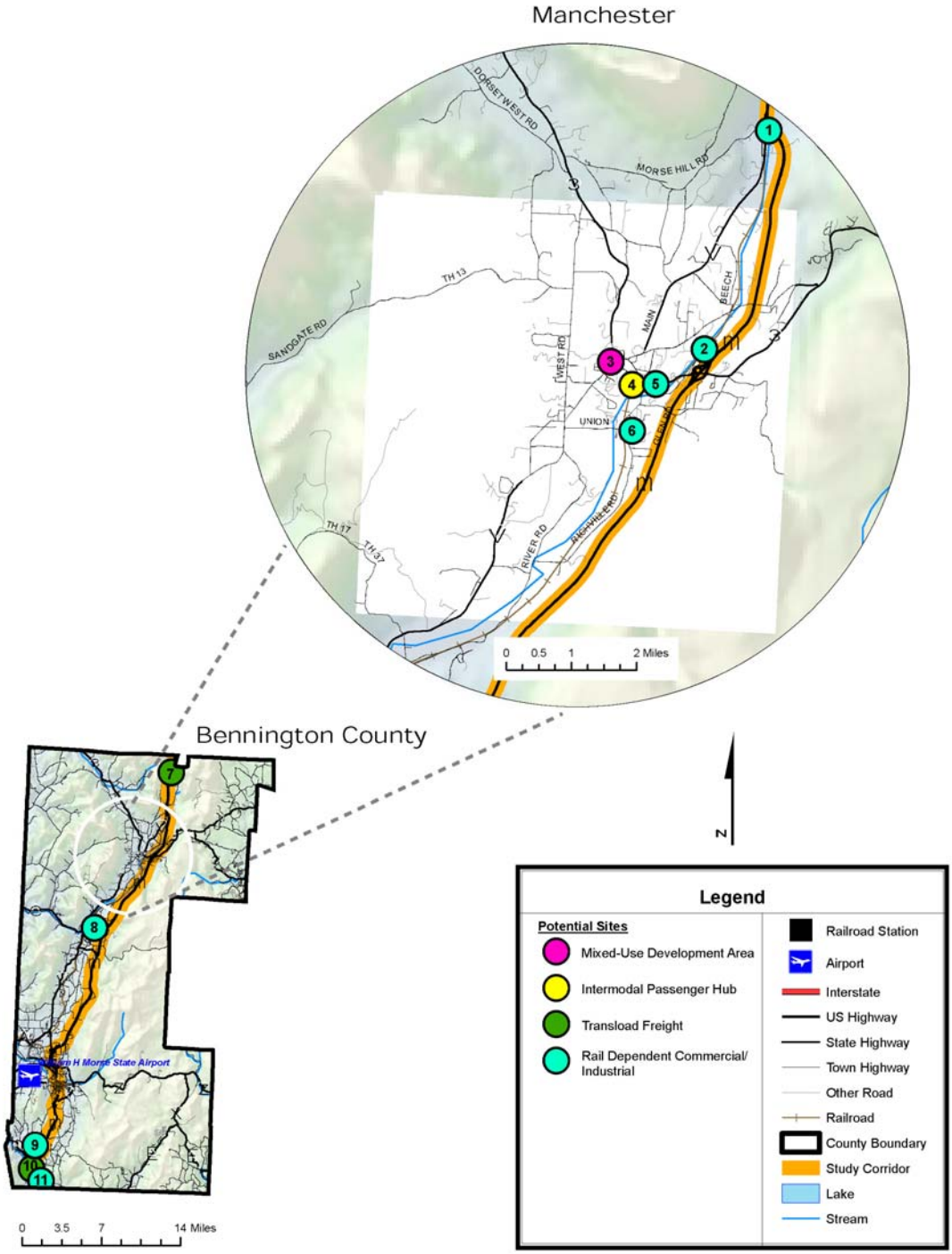
Vermont's Western Corridor Transportation Management Plan
Map D: Rutland, Rutland County



See Map E on the following page for locations.

E. Manchester, Bennington County			
ID	**Name**	**Type**	**Notes**
1	East Dorset Business Park	Rail Dependent Commercial/Industrial	Located directly on Vermont Railway line
2	Taconic Business Park	Rail Dependent Commercial/Industrial	Located directly on Vermont Railway line
3	R.K. Miles	Rail Dependent Commercial/Industrial	Lumber / building materials, on rail
4	Downtown Manchester	Growth Center	In process of becoming GC, exhibits principles
5	Future Palace Hotel	Intermodal Passenger Hub	Potential rail station / intermodal center
6	Former Wallace Computers	Rail Dependent Commercial/Industrial	Spur line accesses site
7	Haskins Gas	Rail Dependent Commercial/Industrial	Propane Gas Facility
8	Town of Arlington	Rail Dependent Commercial/Industrial	Businesses and industries at East Arlington Road and Chittenden Drive
9	Green Mountain Racetrack	Rail Dependent Commercial/Industrial	Pownal
10	Green Mountain Racetrack	Transload Freight	Pownal
11	Mack Molding Industrial Site	Rail Dependent Commercial/Industrial	Pownal – 1007 VT Route 346

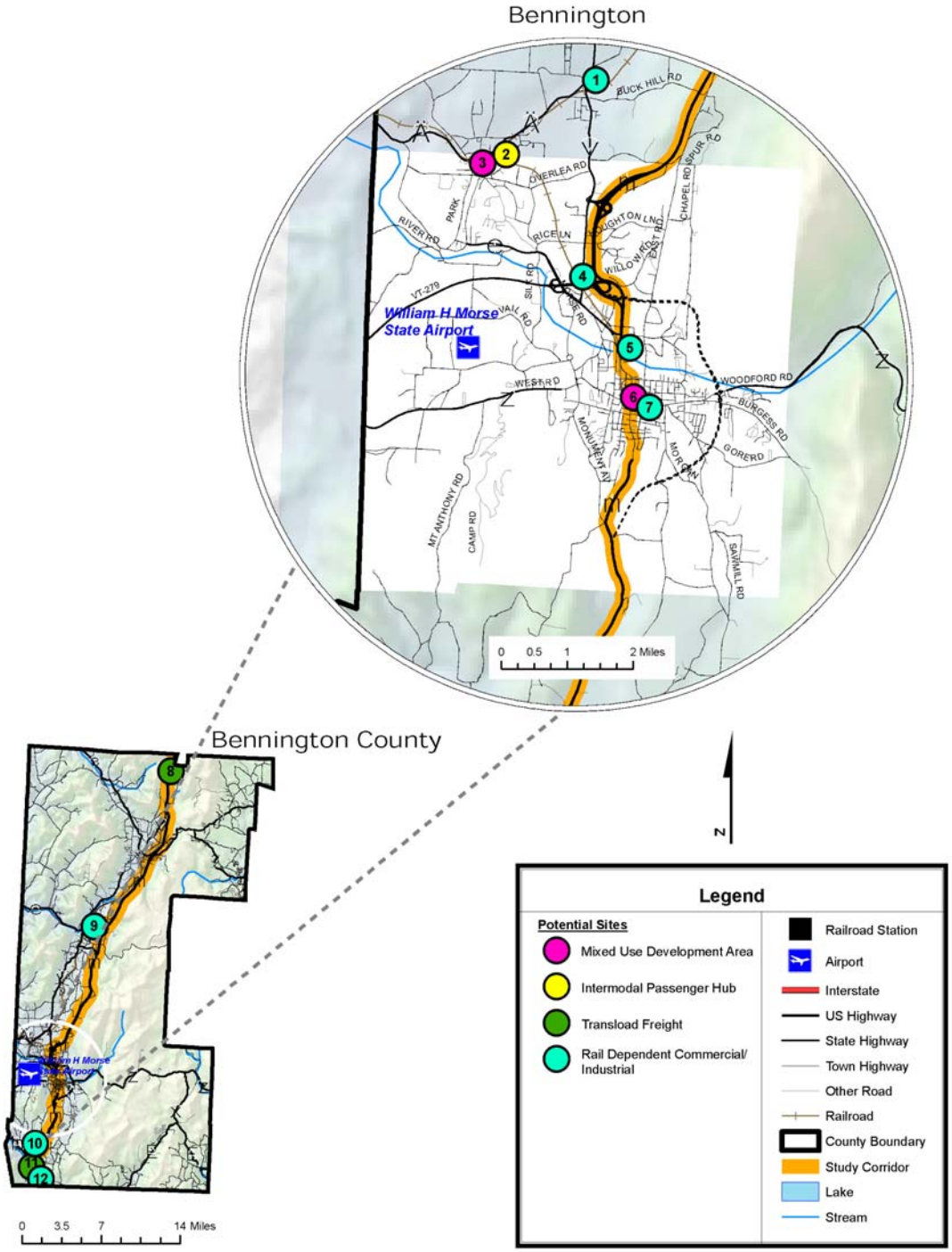
Vermont's Western Corridor Transportation Management Plan
Map E: Manchester, Bennington County



See Map F on the following page for locations.

F. Bennington, Bennington County			
ID	**Name**	**Type**	**Notes**
1	W.E. Dailey materials	Rail Dependent Commercial/Industrial	Leader in regional precast components
2	North Bennington Train Station	Intermodal Passenger Hub	Potential future passenger rail station
3	Village of North Bennington	Growth Center	Not a designated Growth Center, but exhibits principles
4	Former Johnson Controls site	Rail Dependent Commercial/Industrial	Located directly on Bennington rail spur
5	Former Benmont Paper site	Rail Dependent Commercial/Industrial	Located directly on Bennington rail spur
6	Downtown Bennington	Growth Center	Granted Growth Center designation in 2008
7	BankNorth parking lot	Rail Dependent Commercial/Industrial	GMCN park and ride
8	Haskins Gas	Transload Freight	Propane Gas Facility
9	Town of Arlington	Rail Dependent Commercial/Industrial	Businesses and industries at East Arlington Road and Chittenden Drive
10	Green Mountain Racetrack	Rail Dependent Commercial/Industrial	Pownal
11	Green Mountain Racetrack	Transload Freight	Pownal
12	Mack Molding Industrial Site	Rail Dependent Commercial/Industrial	Pownal – 1007 VT Route 346

Vermont's Western Corridor Transportation Management Plan
Map F: Bennington, Bennington County



Appendix E
Freight Diversion Potential

Memorandum

TO: Eleni Churchill, Chittenden County MPO

FROM: Andreas Aeppli, Nathan Higgins, and Chris Porter, Cambridge Systematics

DATE: June 17, 2009

RE: Vermont Western Corridor Transportation Management Study – Freight Diversion Case Studies

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Introduction

PB Americas and Cambridge Systematics are conducting a study for the Chittenden County metropolitan planning organization (MPO) and Vermont Western Corridor stakeholders to develop a Transportation Management Plan for Vermont's Western Corridor. The general goals of this effort are to:

- Maximize highway system efficiencies and increase safety in Vermont's Western Corridor;
- Improve freight movements in the Western Corridor;
- Increase public transportation use and enhance regional connectivity for passenger travel;
- Support corridor investments that promote economic vitality in the region; and
- Preserve the quality of life of communities along the Western Corridor.

Expanding the use of rail carload and intermodal goods movement by area shippers is one potential strategy that may help achieve at least four of these five goals. By increasing the use of the Western Corridor rail system, the growth in truck traffic along the Corridor might be reduced, and with it, the associated community, environmental and safety impacts. However, significant gains will not occur without improvements to the existing rail service. Most potential shippers do not have direct access to the rail network, and the service offerings often do not meet their requirements, even where the shipment characteristics are rather suitable for transportation by rail. Strategies such as adding direct carload service to a customer's siding, building conveniently-located transload facilities, providing more frequent and/or reliable rail service, and offering incentives to shippers, could facilitate shifting some Western Corridor freight traffic from truck to rail.

In this memorandum, the issues and opportunities for diverting freight traffic from highway to rail are examined through a series of interviews with area industries whose logistics

requirements are potentially appropriate for the carload rail service that is available along the corridor. A summary of findings is presented in this memorandum, with detailed findings for each firm interviewed provided in Attachment A. (Attachment A is provided under separate cover, as in its current form it should be a considered a draft for internal use only, pending validation of information and approval of its public use by the firms interviewed.) The interviews sought information that could be used to:

1. Assess the potential for managing/reducing the growth in truck traffic along the corridor by increasing rail shipments;
2. Recognize impediments to this potential diversion; and
3. Identify potential policy responses that could facilitate diversion from truck to rail.

While freight predominantly travels over the region's highways, the entire corridor is served by rail, with the Vermont Railway System operating over state-owned tracks all the way from Bennington to Burlington, and the New England Central north to the Canadian border near St. Albans. Prior to the present dominance of highway-based freight logistics, these rail lines once were the principal arteries by which freight entered and exited the Western Corridor region, and even distributed freight within the region. Starting in the late 1920s, a lengthy evolution in supply chain logistics that was brought on by dramatic changes in transportation and sourcing options ultimately made rail service attractive to only a small subset of shippers. Those that presently use rail have a supply chain that is suitable to rail service characteristics – typically bulk commodities moving in high volumes. They are likely to be long-term users of rail and thus understand its idiosyncrasies, which are truly foreign to the vast majority that ship by truck.

The degree to which a shipper may select rail for transporting goods depends on four elements:

- *Shipment characteristics*: volume, frequency, nature of commodity;
- *Access to rail network*: either directly with plant siding, or indirectly via transload or intermodal terminal;
- *Service Requirements*: travel time, reliability, frequency; and
- *Cost*: transport cost, along with related charges such as equipment, transloading, warehousing and administration.

These attributes all sum up to a total logistics cost, i.e. the overall cost, direct and indirect, to ship a commodity. The total logistics costs vary for each modal alternative and each shipment. Bulk goods, such as cement or petroleum products, are particularly suitable for transport by rail. Highly efficient specialized rolling stock (such as cement hoppers, petroleum tank cars, etc.) and high-capacity loading and unloading equipment, combined with lower rates versus truck, generally provide a significant cost advantage to rail over truck for these types of commodities, even after offsetting for the longer and less reliable travel times. This cost advantage is particularly strong for heavy, high volume goods hauled 750 miles or more; for shorter hauls it is considerably diminished, but cost savings may still be present in some instances, particularly when operational requirements are simple and available volumes are high.

For manufactured goods, potential advantages from using rail are less clear-cut, as more extensive adaptation of supply chain logistics to the characteristics of rail service is required. Differences in travel time and reliability and the limited reach of the rail network figure more prominently into the decision process of manufacturers. Furthermore, with higher valued goods, shipment size becomes a critical consideration. With a standard railcar handling the equivalent of two to three highway trailerloads of goods, its available capacity is often far in excess of what a receiver is willing to accept. While this can sometimes be addressed by staging shipments through a distribution center, it introduces inventory requirements and additional handling that is not necessary for truck.

The declining reach of the nationwide rail network, combined with the dispersion of freight-handling businesses away from rail lines, complicates the shipping of carload freight directly to a receiver. The availability of transloading and intermodal facilities can ameliorate these barriers to varying degrees. Transloading facilities permit the shifting of goods between highway and rail vehicles through the physical transfer of the transported commodity. Although relatively simple to establish, transloading does introduce additional costs, travel delays, and complexity and raises the risk of damage and inventory loss. Bulk goods are well suited for transloading, as the process of transferring between modes is generally uncomplicated and of modest cost. Intermodal service avoids the en-route transferring of goods between different modal vehicles, and thus can substitute directly for an all-truck move. However, it still is more complex and generally slower than an all-highway move, since the trailer or container must be handed off between modes.

While both carload service and transloading are available to Western Corridor firms, Vermont does not presently have an intermodal terminal. For southern Vermont, the nearest terminals are located around Albany, NY and Springfield, MA, while for northern Vermont, terminals located in Montreal are closest. Intermodal service that is truck competitive and economically efficient requires traffic volumes that do not currently exist along the Western Corridor, nor are likely to occur over the next five to ten years.

Given the characteristics of today's rail and truck service offerings, it is difficult to argue that a substantial portion of present goods movement occurring along the Western Corridor could readily be transitioned to rail. Most freight along the corridor is not suitable for rail haulage, being generally characterized by short hauls, small volumes, and distribution in locations where rail service is not available. However, a new generation of larger shippers, along with the potential for some innovative service offerings, does offer some opportunities to increase rail volumes along the corridor over time. This could achieve both a reduction in the growth of truck traffic, while also improving the competitive position of these firms and the economic viability of the railways serving the region. These issues are explored through the case studies discussed in the following sections.

Approach

To accomplish the goals set forth above, the consultant undertook a limited survey of freight shippers and receivers along the Western Corridor. These interviews were conducted both

through field visits and via phone, using an interview guide that sought out qualitative and quantitative information (see Attachment B). The questions sought in-depth information on the logistics practices of each of these firms, and their potential adaptability to using rail for inbound and/or outbound shipments through direct carload or transload service. In addition, respondents were queried about more general issues of freight transportation in Vermont, including facility conditions, regulatory and border crossing experience.

The study focused on firms that handle a considerable amount of freight that is suitable for rail shipment. An initial list of potential respondents was drawn from a variety of sources including Dun and Bradstreet, the Study Advisory Committee, and prior consultant contacts. These respondents were selected based on their geographic location along the corridor, the type of goods handled, volumes shipped, and whether they currently receive and/or ship goods by rail, have used rail in the past, or have expressed prior interest in using rail. An effort was made to achieve geographic representation along the entire corridor, and inclusion of the sectors most dependent on inter-state freight shipping in the region, i.e., manufacturing, dairy, feed, and petroleum fuels.

In March and April, 2009 the consultant contacted approximately 20 firms, of which nine agreed to participate. Facility locations covered the full range of the corridor and all five counties. Excepting Franklin County, each county was represented by at least two respondent firms. The firms for which interviews were completed are shown in Table 1.

Table 1 Western Corridor Firms Interviewed

Firm	Location(s)	Business Activity
Bennington Iron Works	Bennington	Structural steel manufacturing
Blue Seal Feeds, Inc.	Brandon	Animal feeds
Carris Reels	Rutland	Cable reels
Champlain Oil Company	Burlington	Distillates and gasoline
DR Power Equipment	Vergennes, Shelburne	Lawn and garden equipment
J. P. Carrara & Sons	Middlebury	Pre-cast concrete and ready mix
NSK Steering Systems, Inc.	Bennington	Automotive steering columns
St. Albans Cooperative Creamery	St. Albans	Dairy products
Ultramar/Valero Oil	Burlington, Rutland, Middlebury	Distillates and gasoline

Results from each of the interviews were compiled and are provided in Attachment A. These reports represent a "snapshot" in time, and specifically reflect the supply chain logistics that existed at the time of the interviews. These firms and the markets they serve are very dynamic: the sourcing of inbound materials may change, functions within a facility might be relocated or eliminated, or a firm enters or withdraws from a geographic and/or product market. In all cases, respondents were happy to provide an overview of their firm's supply chain and logistics strategies, and offered many useful insights and perspectives.

Findings and Conclusions

Results and findings on the core questions regarding potential increased use of rail can be summarized as follows:

- Potentially diverted traffic is assumed to be carried in carload service, either directly from customer sidings, or transload facilities. In some instances, intermodal service was found to be more suitable – and indeed some of our respondents currently use it - but with terminals located outside of the region, intermodal shipments will not reduce truck traffic on Vermont's Western Corridor, and could even potentially increase it. Encouraging shippers that do not have carload-suitable traffic to use intermodal nevertheless is sensible from a policy standpoint. Once this traffic is built up to a sufficiently high level (at least 10,000-15,000 trailers/containers annually), then an intermodal terminal located within Vermont may become economically viable. Several of the respondents have followed the Norfolk Southern (NS)/Pan Am Railways venture, which will create a more seamless service to the Southeastern U.S., and are aware of plans to build a new intermodal terminal at Mechanicville, NY.
- The potential diversion of traffic from truck to rail carload along the Western Corridor from the nine respondents ranges from 5,000 to 6,000 annual truckloads,[1] or about 13 percent of the respondents' total volume of inbound and outbound shipments, based on conditions at the time of the interviews.[2]
- Most of the potentially divertible truck flows are for inbound commodity flows that are typical rail-oriented bulk products such as grain feeds, cement, and petroleum fuels and some manufactured goods (e.g., structural steel). As previously discussed, bulk products are generally quite suitable for carload rail shipping, and thus are more likely to be diverted than manufactured products. The results are summarized by Vermont destination county, origin city, state, or region, loading type and commodity in Table 2.

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[1] This estimate would be reduced to 4,000 to 5,000 annual truckloads, considering expected changes to the logistics supply chain of one interviewed company that were not anticipated at the time the interviews were conducted. This firm will be moving production for one of their products to a plant located in another state, reducing the potential for diverting shipments to rail at the Vermont facility.

[2] For comparison, a previous analysis conducted for the Western Corridor study used aggregate commodity flow data to estimate the potential for diversion from truck to rail, based simply on shipment distance (over 250 miles) and commodity type (those with demonstrated propensity to use rail, based on national data). This analysis estimated a potential reduction on the order of 40,000 to 45,000 annual truckloads in the Western Corridor, or about 4 percent of total truck traffic ("Western Corridor Mode Shift and Truck Trip Reduction Analysis," memorandum from Chris Porter and Andreas Aeppli of Cambridge Systematics, Inc., to Eleni Churchill, CCMPO, December 23, 2008). While it is likely that other firms not interviewed would also have the potential to divert some goods from truck to rail, the fact that the case study divertible volume is only about 12-15 percent of the previous estimate confirms that the previous estimate probably represents an upper bound on the volume of realistically divertible shipments.

- The potential for significant outbound traffic is more limited, as most of these products are manufactured goods. Although some could be handled in carload service, more generally they are better suited for intermodal container or trailer service that is not presently available in Vermont. Potential outbound traffic is entirely manufacturing-based, as is summarized in Table 3.
- Few respondents mentioned the lack of transload facilities as an impediment to using rail per se. However, in order to facilitate use of rail service, convenient access to the network is obviously necessary. In one example, a respondent indicated that locating a transload facility along the planned Omya Middlebury Spur would greatly increase their likelihood of using rail than if they had to drive to Middlebury or another line-side town. In another example, limited storage capacity of a line-side facility has diminished the maximum potential rail usage.

Table 2 Potential Inbound Divertible Shipments to Interviewed Firms in Western Corridor (Annual Truckloads)

			Commodity Type					
Destination County	**Origin**	**Loading Type**	**Grains**	**Mfg. Goods**	**Metal products**	**Minerals (incl. Cement)**	**Wood and paper products**	**Grand Total**
Addison	**Catskill, NY**	Transload				550		550
	Montreal	Transload				500		500
Bennington	**Connecticut**	Carload			400			400
	Texas	Transload		540				540
	Mid-West	Transload		1,040				1,040
	Port of NY	Transload		312				312
Rutland	**Albany, NY**	Carload	1,000					1,000
	Connecticut	Carload					36	36
	Pennsylvania	Carload					36	36
	Port of NY	Carload					240	240
Grand Total			**1,000**	**1,892**	**400**	**1,050**	**312**	**4,654**

Table 3 Potential Outbound Divertible Shipments from Interviewed Firms in Western Corridor (Annual Truckloads)

			Commodity Type	
Origin County	**Destination**	**Loading Type**	**Mfg. Goods**	**Grand Total**
Bennington	**Southeast**	Transload	728	728
Rutland	**Mid-West**	Carload	150	150
Grand Total			**878**	**878**

- The Albany, NY and the Montréal, QC regions are important sources for high-volume bulk goods such as cement and petroleum fuels. While rail is used in some instances, there appears to be an opportunity to expand volumes from these regions through improvements in rail service and transload facilities. Shipments from these locations involve at least two

railroads, including a Class I carrier for whom this short-haul traffic is not very attractive. As a result, the quality of service has been indifferent at best. One means to potentially improve this service would be for Vermont's two major carriers to negotiate trackage rights agreements with the owning carriers that would allow them to operate into these markets with their own equipment and train crews. The outcome would be far better single-line service, similar to what has been successfully accomplished in other locations on both NS and CSX.

- Many respondents expressed interest in expanding their use of rail for their inbound and/or outbound logistics, and had generally realistic perceptions of the advantages and limitations of shipping by rail. A few have tried to increase their use of rail in recent years, of which one respondent had been successful and the others not, for a variety of reasons.
- Major impediments to rail, where shipment characteristics otherwise may be suitable, are as follows:
  - Short haulage distance;
  - Can't get there from here;
  - Complex logistics when compared to truck; and,
  - Poor and unreliable travel times when compared to truck.

Policy Implications

Even with the small sample size, respondents were clear and fairly consistent in discussing the challenges associated with increasing rail system usage along the Western Corridor. They further provided valuable feedback on many of the policy options that have been discussed earlier in this study, and surfaced at least one potentially promising option that had not previously been identified. The primary takeaways from the standpoint of potential policy actions are as follows:

- Investment and siting assistance for transload facilities may be helpful, but there is no need for a proliferation of them. For most shippers, the difference in trucking 15 versus 40 miles to the nearest facility is far less important than having consistent, quality rail service.
- Administrative and financial incentives to expand lineside bulk storage facilities would provide a boost for some traffic. Several respondents noted that existing bulk storage facilities were too small to effectively handle the demands of modern logistics, which has reduced their ability to use rail.
- Expanding market reach for Vermont's rail operators to the nearby Montreal and Albany regions is institutionally complex, but could provide substantial benefits to Vermont shippers at little or no direct cost. Although the State of Vermont wields no direct influence on the commercial relationships among carriers, the State could initiate a discussion with the affected carriers, and perhaps facilitate the negotiation of agreements.

- Other incentives to use rail, such as short-term subsidies for new shippers, did not generate much of a response from this group. However, with shippers being very cost sensitive, this option should be further examined.
- Maintaining a rail alternative along the U.S. 7 corridor requires continued investment in the infrastructure of both the private and state-owned rail systems. This includes not just capital investment to bring the property to a state of good repair, but also to adapt it to meet modern business requirements. For example, one respondent mentioned congestion in the Rutland yard as being the cause of delays to their service.
- Access to suitable rolling stock was not cited as a concern, perhaps because most rail-divertible traffic would be inbound rather than outbound. Given the current availability of equipment from third parties, this should not pose an issue, at least in the present economic climate.
- Finally, perhaps the greatest opportunity to divert traffic from highway to rail is the Omya spur near Middlebury. Completion of this spur will not only permit shifting quarry traffic to rail, but will also open up access to another nearby major bulk shipper.

Attachment A Findings by Firm

Champlain Oil – Chittenden County

354 Dorset St.
So. Burlington, VT 05403
Keith White, Transportation Manager
802 864-5380 x228; www.champlainoil.com

Industry Type	Fuel Oil
Current Rail Access	Transload Outbound
Current Rail Use	Transload Outbound
Establishment Size (employment/revenue)	Small (40)/$26.3 million[1]
Western Corridor Shipper Volumes (truckloads)	Large (6,000-8,500)

Company Profile

Corporate Structure, History, and Plant Location – Champlain Oil is an independently owned and operated petroleum products wholesaler firm (NAICS 424720) in South Burlington that was established in 1933. Its primary business is supplying and selling transportation fuels at its own 40 Jiffy Mart gas station and convenience store locations and supplying other independently owned gas stations. The company also provides heating oil to a small number of customers. Demand for petroleum products has been down in recent months as a result of the recession.

Trucks, Trains, and Logistics – Champlain Oil leases seven tractors from Ryder and owns specialized trailers. The company manages logistics in-house. Champlain Oil delivers product 24 hours a day and seven days a week. They employ two drivers for each truck who drive a combined 600,000-700,000 miles over the three year lease. The deliveries are day trips with an out and back pattern. Each truck can hold between 8,500 and 9,000 gallons of petroleum product.

[1] D&B Million Dollar Database

Modal Selection Strategies - Champlain Oil picks up the petroleum product at bulk terminal facilities throughout the northeast and delivers the product to about 180 customers in eastern New York, Vermont, and western New Hampshire. The company's logistics are a perfect match for truck carriage. The company pulls large volumes of petroleum product from multiple storage terminals and delivers small batches of about 4,000 gallons (half of a truckload) to many customers. This type of origin-destination and volume mix is best suited for truck.

Traffic

Inbound

Champlain Oil does not truly have any inbound traffic because they do not have a production plant nor do they operate a secondary storage facility. They are the final link in the oil supply chain before the product is sold to the individual consumer at a gas station.

Outbound

Champlain oil sources petroleum products at various secondary storage terminals in Portland, ME; Burlington; Revere, MA; Albany, NY; Walpole, NH; or Portland, ME. They deliver petroleum products to 180 customers throughout eastern New York, Vermont, and Western New Hampshire including their own Jiffy Mart locations, various independently owned locations, and several municipalities.

Terminal origins that are relevant to Vermont's western corridor include the Global and Ultramar/Valero terminals in Burlington; the Global Albany terminal, and the Ultramar/Valero Montreal terminal. Figure 1 is a map that shows the location of the terminals in orange, the distribution area in grey, and the company headquarters in black. Table 1 describes Champlain Oil's shipping volumes from the petroleum terminals to the final customer.

Table A-1 – Champlain Oil Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Petroleum Products	Burlington, VT (Global) : Customer	3,640 – 5,460 (10-15 trucks per day)	None	0%
Petroleum Products	Burlington, VT (Ultramar) : Customer	1,092 (3 trucks per day)	None	0%
Petroleum Products	Albany, NY (Ultramar): Customer	N/A	None	0%
Petroleum Products	Montreal, (Ultramar) : Customer	1,456 – 1,820 (4-5 trucks per day)	None	0%

Potential for Rail

Champlain Oil will not shift its traffic to rail. There is potential, however, for a shift in traffic patterns. If the Ultramar/Valero terminal in Burlington were expanded, Champlain Oil could

draw a larger volume of petroleum products from Burlington in lieu of making the trip to Montreal for product pickup. This would not reduce the overall trip distance along the Western Corridor because the deliveries are out-and-back day trips with customers in northern Vermont. Shifting the traffic to Burlington would essentially flip the travel patterns, creating a load, drive, deliver, home pattern as opposed to the current drive, load, deliver, home pattern.

Infrastructure and Other Notes

- Champlain Oil feels that the available transportation infrastructure is adequate;
- While there was no specific issue with the infrastructure, there was a general feeling that there were just too many people on the roads for the truckers to operate efficiently;
- Champlain Oil spends about $1,000 per driver in license fees, endorsements, etc. to legally cross the border into Canada;
- The company drivers use the Highgate (primary) and Champlain (secondary) as their border crossings;
- The Champlain crossing has FastPass installed, but queues are 40 deep as a rule;
- The Highgate crossing does not have FastPass installed.

Ultramar/Valero Marketing and Supply (M&S) – Chittenden, Addison, and Rutland Counties

19 Homer Ave Ste 2, Queensbury, NY, USA 12804-2039
www.valero.com/www.ultramar.ca

Industry Type	Fuel Oil Distribution
Current Rail Access	Siding Outbound
Current Rail Use	Siding Outbound
Establishment Size (employment/revenue)	Large (36)/$2.7 million[2]
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Ultramar/Valero M&S is an oil distributor (NAICS 541611) located in Queensbury, NY and headquartered in Montreal, Quebec that is a fully owned subsidiary of Valero Energy Corporation, headquartered in San Antonio, TX. The

[2] D&B Million Dollar Database

Queensbury location manages supply to customers throughout New England with fuel oil from two main terminals, a Montreal secondary storage facility and Quebec City Refinery in Saint-Romuald, Québec. Albany, NY, is an alternate Valero supply source for the Western Corridor, is supplied by barge from New York, but is not managed by the Queensbury group. Demand for petroleum products has been down in recent months as a result of the recession. Expectations are that petroleum demand will continue to decline over the next year.

Trucks, Trains, and Logistics – Ultramar/Valero M&S uses independent carriers for trucking into Vermont and Canadian National (CN), New England Central Railroad (NECR), and Vermont Railway Incorporated (VTR) for railing into the secondary storage facilities in Rutland, Burlington, and Middlebury. The company manages logistics in-house.

Modal Selection Strategies - Ultramar/Valero M&S has two major supply points – Montreal, Quebec and Quebec Saint-Romuald. The Montreal supply point is supplied by rail and vessel from the Quebec City Refinery. The Albany alternative supply point is supplied by barge via New York Harbor. Gasoline and distillate products from Montreal are delivered to customers throughout New England by truck. Ultramar/Valero M&S uses three secondary bulk storage facilities in Vermont – Burlington, Rutland, and Middlebury. Gasoline and distillate products are supplied by rail from the Quebec City Refinery to the secondary Vermont terminals and are delivered to customers throughout Vermont by truck.

Traffic

Inbound

Ultramar/Valero M&S sources crude oil from foreign sources for its Quebec City Refinery. The Montreal bulk storage facility and the Vermont secondary storage facilities are supplied by the Quebec City Refinery. Refined product for the Albany bulk storage facility from the Gulf Coast via New York.

Table A-2 – Ultramar/Valero M&S Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Petroleum Products	Gulf Coast via New York Harbor : Albany	N/A	N/A	0%
Crude Oil	Foreign Sources : Quebec City	N/A	N/A	0%
Petroleum Products	Quebec City : Montreal	N/A	N/A	0%
Petroleum Products	Quebec City : Rutland, Middlebury, Burlington	5,000 – 6,000	N/A	0%

Outbound

The Montreal bulk storage facility supplies two separate customers north of Middlebury in Vermont – petroleum wholesalers and other direct Ultramar/Valero M&S customers. The Albany bulk storage facility supply customers south of Middlebury.

Table A-3 – Ultramar/Valero M&S Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Petroleum Products	Montreal : Customers in Middlebury and North	N/A	None	0%
Petroleum Products	Montreal : Secondary Storage	None	N/A	0%
Petroleum Products	Albany : Customer	N/A	None	0%

Potential for Rail

There are two possibilities for Ultramar/Valero M&S to increase rail use. If the Burlington Airport were to add a rail siding and large storage facilities, Ultramar/Valero M&S could rail petroleum products instead of trucking them. If the Ultramar/Valero M&S terminal in Burlington were expanded, local petroleum product wholesalers could source petroleum product from Burlington instead of sourcing in Montreal. This would not, however, reduce the overall trip distance along the Western Corridor because the deliveries are out-and-back day trips with customers in northern Vermont. Shifting the traffic to Burlington would essentially flip the travel patterns, creating a load, drive, deliver, home pattern as opposed to the current drive, load, deliver, home pattern.

Infrastructure and Other Notes

- CN and NECR are acceptable carriers but VTR is excellent;
- There were no specific issues with the infrastructure;
- It might help to increase the speed limit from 50 mph to 55 mph;
- Common carriers have large trailers but are not able to use them on Vermont roads due to oversize, overweight issues – this is a burden;
- The company drivers use the Highgate, Derby Line, and Champlain, Vermont gateways to cross the border into Canada; and
- The railroads own the Vermont secondary storage facilities.

Blue Seal Feeds, Inc. – Rutland County

PO Box 8000, Londonderry, NH 03053
Bill Whitney, Transportation Manager
800-225-7917 x108; www.blueseal.com

Industry Type	Dairy Feed Mill
Current Rail Access	Siding Inbound Siding Outbound
Current Rail Use	Siding Inbound
Establishment Size (employment/revenue)	Small (25)/$19.1million[3]
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Blue Seal Feeds, Inc. is a Farm Supplies Merchant Wholesaler (NAICS 424910) selling dairy feed based in Brandon. The company has locations in Richford; New York; and Maryland that specialize in different animals feeds such as pet, alpaca, emu, and horse feed. A fully owned subsidiary of Muscatine Foods Corp., based in Muscatine, IA, company headquarters are located in Londonderry, NH. The Brandon location was originally a store, but as markets shifted, it has expanded to a functional grain mill. The market for dairy feed has been in severe decline as a result of the recession.

Trucks, Trains, and Logistics – Blue Seal Feeds, Inc. logistics are handled out of the Londonderry, NH headquarters. Inbound grain is carried in private rail cars owned by the seller (e.g. Cargill), rail cars leased by Blue Seal Feeds (from Chicago and Southern Illinois Rail Car), trucks operated by the seller (e.g. Horizon Milling), or trucks hauled by small independent carriers (e.g. Hewitt Trucking). They own a fleet of trucks and employ drivers for outbound feed.

Modal Selection Strategies - Blue Seal Feeds, Inc. uses rail for shipping whenever possible. Inbound grain, shipped over long distances, is an ideal commodity for rail – heavy and inexpensive. There are some grain sources, however, that do not provide a good rail market pair with the Brandon plant; these are shipped by truck (e.g. New York and eastern Canada). Outbound traffic is shipped exclusively by truck. Customers are located within 100 miles of the Brandon mill, with each receiving a blend of feed designed specifically for their specific dairy cattle; rail is not an option for this delivery type.

[3] D&B Million Dollar Database

Traffic

Inbound

Blue Seal Feeds' Brandon location sources corn from New York, Ontario, or Michigan depending on the time of year; soybeans from the Midwest; distiller grains from Indiana; canola meal from Quebec; wheat middlings from New York;, and milling residue from Massachusetts. Grains sourced in Michigan are subject to an 'alphabet soup' of railroad interchanges, each of which add time and expense to a trip and makes it more likely to be shipped by truck. The shipping distances between Canada or New York and Brandon are too short to make rail viable. Grain shipped from the Midwest and Indiana is an ideal rail commodity carried over ideal rail distances; as such, these products are carried by rail. The sources of the grains, however, are dynamic. For example, the company is working to procure wheat middlings from Buffalo, NY that can be delivered by rail rather than from Albany by truck even while the east controls the middling market. Also, the corn is now sourced from Albany, NY because the region's farmers lost a bet (they grew a lot of corn with the expectation that a corn ethanol plant would be built, but it never opened) and were left with a surplus of corn to be sold.

Table A-4 – Blue Seal Feeds, Inc. Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Corn Distillates	Mid-West : Brandon, VT	N/A	N/A	0%
Corn and Wheat Middlins	Albany, NY : Brandon, VT	1,000	N/A	100%
Corn	Ontario : Brandon, VT	N/A	N/A	0%
Corn	Quebec : Brandon, VT	N/A	N/A	0%

Outbound

Blue Seal Feeds, Inc. delivers dairy feed to farms within a 100 mile radius of the Brandon facility. Farms have been consolidating as fewer farmers own more land and process more milk on more land. Each farm has unique conditions and requires unique blends of dairy feed. The mill at Brandon creates unique blends of dairy feed for each of these farms and delivers the product in company owned trucks; a shipping pattern ideal for trucks.

Table A-5 – Blue Seal Feeds, Inc. Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Dairy Feed	Brandon, VT : Farms within 100 mile radius	N/A	None	0%

Potential for Rail

Blue Seal Feeds uses trucks to ship corn from Albany, NY to Brandon. If Vermont Railway were granted trackage rights to Albany the total number of railroad exchanges would drop, the shipments would become less expensive, and the travel time would be reduced. This would make rail from Albany to Brandon more likely and could shift approximately 1,000 trucks in the western corridor of Vermont to rail.

Infrastructure and Other Notes

- "Once upon a time, you could set your watch by the railroad. If a car came into Whitehall before 1 am, you know you were going to have it that same day at the plant. Now, if a car comes into Whitehall, it could be a couple of days until you get it into the plant."
- Getting by fine without a switch at the north end of the siding.
- No issues with western corridor roadway infrastructure.
- Experience congestion in Middlebury for '15 minute rush' every day.
- Find Vermont flexible with oversize and overweight permits.

Carris Reel – Rutland County

439 West St., Rutland, VT 05701
Mike Curran, President and CEO
(802) 773-9111

Industry Type	Manufacturing
Current Rail Access	Siding Inbound Siding Outbound
Current Rail Use	Siding Inbound
Establishment Size (employment/revenue)	Small (30)/$0.5
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Carris Reel is an independently owned and operated plastic, plywood, and lumber spool manufacturing company headquartered in Rutland, Vermont established in 1951 with six manufacturing locations in the U.S. and one in Canada. The market outlook is stable with no significant prospects for growth. Carris Reel makes spools for wire and cable manufacturers.

Trucks, Trains, and Logistics – Carris Reel handles logistics in-house. Most inbound and outbound materials are shipped in nine company owned and operated trucks. JB Hunt or

another third party carrier carries long haul outbound trips. The company buys trucks new or slightly used and operates them until the mileage reaches 800,000 miles. Rail shipments of domestic plywood come in shipper owned cars.

Modal Selection Strategies - Carris Reel uses truck almost exclusively for inbound and outbound traffic for two reasons: the feeling that trucking firm customer service is far better than that of rail and the fact that the outbound product is delivered just-in-time (e.g. product made in Rutland on a Tuesday at 3 pm is delivered to Southern New Jersey on Wednesday morning). There are occasions when traffic is carried by boxcar on rail - inbound plywood from the southeast U.S. is carried by rail because of the distance, weight, and volume of the material.

Traffic

Inbound

Carris Reel currently sources plywood from the southeast U.S. by rail and uses a carload per day. Plywood from the southeast is the only commodity, inbound or outbound, that is shipped by rail. Inbound Russian plywood is imported into the Port of New York and picked up on backhaul trips by truck when the price of Russian plywood is lower than domestic materials. The company receives three truckloads each of steel from Connecticut and paper core products from Pennsylvania. They source the plastic pellets for plastic reels from sellers around New England.

Table A-6 – Carris Reel Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Plywood	Russia : Rutland, VT via Port of NY	240	Siding	100%
Plywood	Southeast US : Rutland, VT	None	N/A	N/A
Steel	CT : Rutland, VT	36	Siding	100%
Paper Core	PA :Rutland, VT	36	Siding	100%

Outbound

Carris Reel ships seven truckloads of finished product to customers located along the east coast, along I-81 from Baltimore, MD to the Canadian border (with most customers located in Massachusetts and Connecticut areas) and one truckload as far west as the Mississippi River. The company ships to East Coast customers using its fleet of trucks and drivers and uses large transportation companies such as JB Hunt to ship to their Michigan distribution center. It should be noted that JB Hunt, for example, provides a service and might use intermodal rail to meet service requirements.

Table A-7 – Carris Reel Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential	Percent

			Rail Access	to Rail
Plastic Reels	Rutland, VT: Everywhere	N/A	None	0%
Wooden Reels	Rutland, VT : Michigan	150	Siding/ IMX	100%
Wooden Reels	Rutland, VT: Mid-Atlantic and Northeast	950	None	0%

Potential for Rail

There is potential for Carris Reel to shift the future inbound Russian plywood traffic from the Port of New York if Vermont Railway were given trackage rights to access the port. The company could shift inbound steel products to rail by consolidating shipments with Bennington Iron Works, which also gets their inbound steel from Connecticut. Carris Reel has potential to use intermodal for outbound traffic to the Midwest but the intermodal terminals are not well located at the manufacturing plant (the closest intermodal terminal is in Syracuse, NY) or the destination warehouse and distribution center in Michigan (the closest intermodal terminal is in Chicago, IL). However, if Vermont were to construct an intermodal terminal then the Vermont to Chicago intermodal move would become far less onerous. Approximately 426 trucks per year would be removed from Vermont's western corridor if Carris Reel could shift the inbound and outbound traffic to rail.

Infrastructure and Other Notes

- The lack of roads in Vermont is not going to make any company move. Conversely, the lack of roads will not bring any new company into Vermont.
- Vermont Railway treats Carris Reel well.
- Canadian buyers pick up products and handle border crossings.

JP Carrara and Sons – Addison County

2464 Case St., Middlebury, VT 05753
PJ Carrara, General Manager
802-388-6363 x229; pj@jpcarrara.com

Industry Type	Precast/Ready-Mix Concrete/Aggregates
Current Rail Access	None

Current Rail Use	None
Establishment Size (employment/revenue)	Medium (100)/$13.9[4]
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – JP Carrara and Sons is an independently owned and operated ready-mix and pre-cast concrete manufacturing plant (NAICS 3273) located in Middlebury since the 1960s. The company has headquarters in Rutland and plants in Crown Point, NY and at the headquarters in Rutland. The Middlebury plant is the largest of the three, absorbing 60 percent of the inbound cement.

Trucks, Trains, and Logistics – JP Carrara and Sons handles logistics in-house and owns a fleet of 15 tractors and trailers. The trucks main objective is to haul precast concrete. Between the three plant locations in Vermont, there are 24 trucks designed to haul ready-mix concrete. If the company successfully negotiates a shift to rail, they would rent rail cars.

Modal Selection Strategies - JP Carrara and Sons uses trucks for inbound and traffic exclusively because there are no rail transload facilities nearby. The logistics people have a desire to use rail for inbound cement movements and have been investigating locations for transload facilities and negotiating transload options with their suppliers. They have three storage containers on site to hold the concrete; a 120,000 lb. container for flyash and 160,000 lb. containers for both type 2 and type 3 concrete. They supply the storage containers on a daily basis.

Traffic

Inbound

JP Carrara sources approximately 500 annual truckloads of inbound cement from Montreal, Canada and 550 annual truckloads of cement from Catskill, NY. They source 260 truckloads of flyash from Fall River, MA.

Table A-8 – JP Carrara and Sons Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Cement	Montreal, Canada : Middlebury, VT	500	Transload	100%
Cement	Catskill, NY :	550	Transload	100%

[4] D&B Million Dollar Database

	Middlebury, VT			
Fly Ash	Fall River, MA : Middlebury, VT	260	Transload	0%

Outbound

JP Carrara and Sons delivers outbound ready-mix products in company trucks to specific locations within 25 miles of the Middlebury plant. They deliver 2,400 annual truckloads of outbound pre-cast concrete to specific job sites in New England and Eastern New York. Pre-cast outbound traffic is lumpy – there are either 30 outbound truckloads in a day or zero.

TableA-9 – JP Carrara and Sons Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Hollow Core	Middlebury, VT : Various	330 trucks per job (included in 2,400)	Transload / IMX	0%
Pre Cast Concrete	Middlebury, VT : New England and Eastern New York	2,400	None	0%
Ready Mix	Middlebury, VT : 20-25 mile radius	N/A	None	0%

Potential for Rail

There is potential for a portion of JP Carrara's inbound and outbound traffic to shift to rail. Inbound cement is an ideal candidate for making a shift to rail; it is heavy, bulk-style, and does not require just-in-time delivery. This shift can occur if JP Carrara is either granted access to an existing or planned rail siding and transload facility, such as OMYA's siding, or if they are granted access to their own transload facility. If the cement plant in Catskill begins using their rail siding and JP Carrara is granted access to a transload facility then they could shift 550 annual truckloads to rail. The Canadian cement supplier already ships by rail. If JP Carrara were granted access to a transload facility then they could shift 500 annual truckloads from truck to rail. With access to a transload facility, there is potential for some of the outbound hollow core concrete shipments to go by rail. These shipments are large and are shipped in large quantities to specific job sites. If there were rail unloading facilities near the destination then access to a transload facility at the origin would allow some portion of the annual deliveries to be shipped via rail.

Infrastructure and Other Notes

- PJ Carrara feels that border crossing is fairly easy while his staff feel that certification for crossing is becoming onerous
- His drivers experience no delay at crossing
- Champlain is the primary border crossing

- Certain stretches of roadway are good but others do not have shoulders and are not good at all
- Use 116 as a bypass around Middlebury but need to use the one-lane bridge
- 125 westbound is in poor condition
- Middlebury can get pretty congested

Country Home Products /DR Power Equipment –Addison and Chittenden Counties

127 Meigs Rd., Vergennes, VT 05491 and 6221 Shelburne Rd., Shelburne, VT 05482-7101
Steve Charles, Logistics Manager
802-877-1200 x1171

Industry Type	Manufacturing
Current Rail Access	Siding
Current Rail Use	None
Establishment Size (employment/revenue)	Large (150)/$100-150
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Country Home Products is an independently owned and operated umbrella company over DR Power Equipment and Neuton Lawn Mower Co.. Country Home Products headquarters is located in Vergennes with major manufacturing operations (90 percent of total manufacturing) in Shelburne. DR Power outsources 10 percent of its manufacturing to manufacturing partners in Indiana, and Pennsylvania, for example.

Trucks, Trains, and Logistics – ABF Trucking, is their largest carrier of inbound parts and outbound orders to customers outside of New England- about 80% of their overall shipments. DR Power uses Land Air (10 percent), New England Motor Freight and three others (10 percent) for inbound parts and outbound customer shipments within New England and the US east coast. They ship inbound and outbound products in less-than-truckload (LTL) amounts. They own one 28′ straight truck and use that to shuttle parts between the factory and the warehouse. They ship 35,000-40,000 pieces of freight per year.

Modal Selection Strategies:

Country Home Products strives to minimize the inventory of parts and finished product. They used to use milk runs for picking up inbound parts but found that became a lot of work for the truck scheduler and that it required them to carry a lot of inventory. The manufacturing plant

produces 90 percent of products, on-demand, for mail-order customers (mainly homeowners) throughout the U.S. They attempt to minimize production unless they have been ordered, which reduces total inventory and reduces the risk that the parts will not be used. Customers want reliable service but do not require JIT or fast delivery service. They choose the lowest cost transportation so that they can maximize their profits on a per-shipment basis.

Country Home Products is starting to sell a larger percentage of their cordless, electric lawnmower product line to major US retailers- a switch from their traditional direct marketing to consumer approach. In some cases, these retailers control the LTL carrier selection and do require JIT delivery.

Traffic

Inbound

Country Home Products receives inbound shipments of parts from multiple locations in Asia and many states in the U.S. The parts arrive on pallets in 4-5 less-than-truckload trucks per week from anywhere east of the Mississippi river and less than container load quantities from international locations. They source five to ten 40′ containers a week of finished Neuton cordless,electric lawn mowers from February through May. The containers originate in Taiwan and arrive at the Port of New Jersey where they are are then railed to Montreal, picked up by truck, and transported to their warehouse in Essex, VT. They also import containers of finished products via Portland, Or. for west coast customers.

Table A-10 – Country Home Products Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Machine Parts/Finished Goods	Every State : Shelburne, VT	1,040	None	0%
Lawn Mowers	Asia :Essex, VT via Port of NJ and MTL	200	None	0%

Outbound

Country Home Products ships finished products to the entire U.S. They have three primary shipping locations- Shelburne, Essex and Vergennes. In Shelburne, they have a small dock, only able to fit two-three trucks at a time. This requires them to turnover trucks at least twice a day, sending out less-than-truckload (LTL) shipments to destinations that vary day by day. ABF collects the finished products after delivery of inbound parts and line-hauls the goods to their Williston, VT terminal, then dispatches their trucks to various ABF depots where they repackage trucks for final delivery to customer or hold the shipments for pickups by customers.

Table A-11 – Country Home Products Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential	Percent

			Rail Access	to Rail
Variety of Outdoor Power Equipment	Shelburne, VT: US	832	Transload / IMX	25%
Lawn Mowers	Williston, VT: US	208	Transload / IMX	0%

Potential for Rail

Country Home Products has some potential to shift to rail if they change the way they do business. If they were willing and able to carry larger inventory of goods, then they could consolidate orders of finished products, pack it in a rail car, and deliver to a regional US warehouses for local delivery to customers by LTL carriers or cartage companies. In today's economic climate, this is not possible. Challenges to using rail include: their customer base which is primarily residential homeowners, located in rural USA, more handling of the product and fitting a wide variety of their product line into containers or boxcars. If the State of Vermont were to subsidize storage space, Country Home Products could hold more trucks on dock for longer at which point they could build weekly loads outbound to key markets. This would also create a potential for intermodal service to markets such as Chicago. The existing rail siding in S. Burlington (VTR) would require considerable upgrading.

Infrastructure and Other Notes

- Country Home Products picks up inbound containers by truck in Montreal to avoid reporting the harmonized tariff code and the harbor maintenance fee. It costs $600 to pick up a container in Montreal and $1,000 in Boston, MA.
- It is faster to ship a container into Newark than into Montreal Port.
- They have found that the rail link on CN/CP from Vancouver to Montreal during their primary import season was very unreliable. They advertise 32-38 day transit time from Taiwan but are actually getting 40-50 days transit time. Bad winter weather, inconsistent service from the Canadian railways and congestion at the Port of Vancouver caused delays to their supply chain.
- Country Home Products is considering a switch of inbound container to the Port of Boston in 2010.

St. Albans Cooperative Creamery – Franklin County

140 Federal St., St. Albans VT 05478
Rob Hirss, Operations Manager
802.524.6581 xt. 219; Rob_Hirss@stalbanscooperative.com; www.stalbanscooperative.com

Industry Type	Dairy
Current Rail Access	Siding
Current Rail Use	None
Establishment Size (employment/revenue)	Medium (67)/$275.5[5]
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Saint Albans Cooperative Creamery is a fluid milk and dry, condensed, and evaporated dairy product manufacturer (NAICS 311511 and 311514) owned by a cooperative of about 500 dairy farmers throughout northern Vermont and northeastern New York. The Creamery is headquartered in Saint Albans. The farmers' cooperative was established in 1919. In the 1960's Whiting Milk went bankrupt and the farmers purchased the creamery. The trend in the dairy business is that there are fewer farms but that they are getting larger.

Trucks, Trains, and Logistics – The Coop plans their own logistics and leases insulated tankers with one exception: a third of the inbound fluid milk into the Creamery is from non-member farmers. In this case, the farmers and trucking companies handles the logistics. Fluid milk trucks can hold between 50,000 and 60,000 pounds of milk. The milk is cooled at the farm and delivered within hours in the insulated tanker trucks. Inbound and outbound traffic is contract to independent trucking companies such as (McDermott's for farm pickup and Richard Green or P&C for the Creamery's outbound shipments). They work with other cooperatives to gain efficiencies. That is, they might pick up non-cooperative farms along the way if it this improves overall system efficiency. Canadian shipments are handled by Canadian trucking companies or the purchasing customer.

Modal Selection Strategies - When fluid milk is picked up at the 500 farms located throughout northern Vermont and northeastern New York, it is delivered to either the creamery in Saint Albans or directly to the customer, generally dairy product producers like cheese or ice cream. This many-to-one or many-to-many shipping pattern with short distances and low volume is an ideal match for truck movements. Most milk products produced at the Creamery such as cream, condensed, and powdered milks are shipped via truck to a few large customers on a regular basis. These shipments are made via truck because there is no rail siding on the receiving end.

Traffic

Inbound

[5] D&B Million Dollar Database

The Creamery Coop sources about 13,000 annual truckloads of fluid milk (based on half of 650 million pounds of fluid milk per year and 50,000 – 60,000 pounds per truckload) from dairy farms in northern Vermont and northeastern New York. They source this milk from the farms both Cooperative members and non-members. The fluid milk is picked up by truck and delivered to the Creamery seven days a week.

Table A-12 – Saint Albans Cooperative Creamery Equipment Inbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Fluid Milk	500 dairy farms and other dairy farms : St. Albans	13,000	None	0%

Outbound

The Creamery Coop sources about 13,000 annual truckloads of fluid milk (based on 55 million pounds of fluid milk per month and 50,000 – 60,000 pounds per truckload) from dairy farms in northern Vermont and northeastern New York for direct customer delivery. The fluid milk is picked up by truck and delivered directly to the Dean Foods in Lynn and Franklin, MA, and to Via Cheese in Swanton seven days a week. They source 1,200 annual truckloads of fluid milk from their farmers for direct customer delivery to other customers like Cabot in Middlebury, Sharon, MA, and Hood in Concord, NH and between 260 and 1,560 truckloads destined for Canadian cheese makers.

The Creamery processes 13,000 truckloads of fluid milk from which they produce cream, condensed milk, and powdered milk that is shipped out to the same markets as the fresh milk (e.g. Dean Foods, Via Cheese) and to Canada cheese makers (based on between 5-6 and 20-30 loads per week).

Table A-13 – Saint Albans Cooperative Creamery Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Fluid Milk	500 dairy farms : Dean Foods in Lynn, MA	7,200	None	0%
Fluid Milk	500 dairy farms : Dean Foods in Franklin, MA	3,600	None	0%
Fluid Milk	500 dairy farms : Via Cheese in Swanton, VT	2,400	None	0%
Fluid Milk	500 dairy farms : Other customers	1,200	None	0%
Powder, Cream, Condensed Milk	St. Albans : Dean Foods in Lynn and Franklin, MA	N/A	None	0%
Powder, Cream, Condensed Milk	St. Albans : Ben and Jerry's	N/A	None	0%
Powder, Cream, Condensed Milk	St. Albans : Dean Foods	N/A	None	0%
Fluid Milk	500 dairy farms : Canada	260 – 1,560	NA	0%

Potential for Rail

If there were rail sidings on both ends of the market pair, timing would become an issue – the milk will only stay cold for two days in the hottest months of the year. If rail reliability and travel times were improved rail would likely become a more competitive option for the large market pair shipping.

Infrastructure and Other Notes

- There are significant oversize/overweight issues in New Hampshire, but it is the responsibility of the individual trucker to handle those issues.
- Within Vermont, there is an issue with local rules and conditions in a few localities. On Hinesburg Rd., for example, weight restrictions on bridges cause the drivers to drive around to get to the customer.
- Canadian trucking companies come and pick up milk and handle border crossing issues.

NSK Steering Systems, Inc. –Bennington County

110 Shields Dr., Bennington, VT 05201
802-442-5448

Industry Type	Manufacturing
Current Rail Access	N/A
Current Rail Use	N/A
Establishment Size (employment/revenue)	Medium (300-100)/$NA
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile & Traffic

Corporate Structure, History, and Plant Location – NSK Steering Systems is a steering column manufacturer located in Bennington. The company has 15 locations and is headquartered in Ann Arbor, MI. The Bennington manufacturing plant was established in 1988. The plant is located in Bennington because of tax credits and proximity to former owners.

NSK's shipping patterns are changing significantly since the firm was interviewed, due to a plant location to another state anticipated later in 2009. Findings from the interviews regarding logistics and potential modal diversion are not reported here due to company concerns that they do not reflect future conditions.

Infrastructure and Other Notes

- Shipping is a huge cost because trucking companies cannot get back hauls from Vermont so they charge a premium.
- Drivers hate US-9 because of Woodford mountain.
- Bennington roads are too narrow to make corners for 53' trailers.
- Congestion in Bennington is bad.

Bennington Iron Works – Bennington County

458 Morse Rd., Bennington, VT 05201-1660
Curt Morin, President and CEO
(802) 442-3145

Industry Type	Manufacturing
Current Rail Access	None

Current Rail Use	None
Establishment Size (employment/revenue)	Medium (65)[6]/$20
Western Corridor Shipper Volumes (truckloads)	Large (N/A)

Company Profile

Corporate Structure, History, Plant Location – Bennington Iron Works is a privately held and independently owned and operated fabricated structural metal and miscellaneous metals manufacturing (NAICS 332312 and 332323) located in Bennington. They make structural steel for industrial, commercial, and residential buildings. The facility was started in 1968 in Bennington because the founder lived in Bennington and owned real estate in the area. They are experiencing a downturn due to the economic recession. It is unclear whether the market will turn around by next year.

Trucks, Trains, and Logistics – Bennington Iron Works owns two tractors, one driver, and 24 trailers. The shippers of the inbound traffic handle shipping and logistics. The company trucks generally haul about 50 percent of the total outbound traffic. Small independent carriers like Carlos Trucking out of Pittsfield, MA haul the remainder of the outbound traffic. The demand for Bennington Iron Works products is defined by the outdoor building season in New England and New York as builders want to enclose buildings for work through the winter. Generally, the manufacturing facility is busy early summer and demand builds through the fall.

Modal Selection Strategies - Bennington Iron Works produces structural steel on-demand for specific job sites throughout New England and New York. The company has used rail for inbound traffic in the past, when there was a public rail siding north of Bennington, but the heavy materials and lack of on-site equipment made the process cumbersome and expensive. The company uses trucks to handle outbound traffic because it goes to specific locations that are different for each order.

Traffic

Inbound

Bennington Iron Works sources its inbound goods from two steel mills in Connecticut – Infra Metals in Bridgeport, CT and Bushwick Metals in Wallingford, CT. It receives 160 to 187 annual truckloads from Wallingford (based on 40 percent of 6,000-7,000 tons of inbound traffic) and 240 to 280 annual truckloads from Bridgeport (based on 60 percent of 6,000-7,000 tons of inbound traffic).

Table A-14 – Bennington Iron Works Inbound Traffic Patterns

[6] D&B Million Dollar Database

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Steel	Wallingford, CT : Bennington, VT	160 – 187 40% of 6,000 – 7,000 tons	Siding	100%
Steel	Bridgeport, CT : Bennington, VT	240 – 280 60% of 6,000 – 7,000 tons	Siding	100%

Outbound

Bennington Iron Works ships between 400 and 467 annual truckloads (based on 6,000 – 7,000 annual outbound tons) finished structural steel product to specific job sites in a 175-mile radius (about a days drive) within New England and New York with most of the customers located in Massachusetts and New Hampshire.

Table A-15 – Bennington Iron Works Outbound Traffic Patterns

Commodity	Origin : Destination	Annual Truckloads	Potential Rail Access	Percent to Rail
Structural Steel	Bennington, VT: Various job sites in New England, NY.	400 – 467	None	0%

Potential for Rail

There is some potential for some of Bennington Iron Works inbound or outbound traffic to ship by rail. If there were a transload facility nearby where there were specialized loading and unloading equipment, the steel could be shipped by rail. In addition, if there were a job site that happened to be close to a rail terminal, improved access near Bennington Iron Works would allow for shipping on rail to the final destination. If inbound traffic from Connecticut were shifted to rail, this would remove 400 – 467 annual truckloads from Vermont's western corridor.

Infrastructure and Other Notes

- Working out of Bennington is difficult – it is an hour drive to the NY Thruway to the west via US-9 and requires a mountain pass, which is difficult in the winter time.
- Traffic flow on US-7 is generally OK.
- Most of customers are in NH and MA so they use US-9 for normal operations.

Attachment B Shipper Discussion Guide

PB/Cambridge Systematics is conducting a study on behalf of the VT US-7 Corridor Study Group to develop a Western Corridor Transportation Management Plan. The general goals of this effort are to:

- Maximize highway system efficiencies and increase safety in Vermont's Western Corridor;
- Improve freight movements in the Western Corridor;
- Increase public transportation use and enhance regional connectivity for passenger travel;
- Support corridor investments that promote economic vitality in the region; and
- Preserve the quality of life of communities along the Western Corridor.

One element that we are examining is the potential for shifting freight traffic that is currently moving within the US-7 corridor by truck to rail. Such a shift could occur through the implementation of direct carload service to a customer's siding or a transload operation, whereby rail provides the long-haul service, and customer pickup and/or delivery occurs via highway. This would require a transloading operation at one or both ends of the shipment, where goods are switched between modes. Two rail lines, the Vermont Rail System (VRS) from Burlington south to Bennington, and the New England Central between Burlington (Essex Junction) and the Canadian border serve the US-7 corridor. Both offer direct carload service to lineside industries as well as through transloading, but neither have intermodal terminals in Vermont.

To better understand the potential for increasing use of the rail lines along the US-7 corridor, the consultant is conducting interviews with a select group of freight shippers and receivers in the region. This group has been selected on the basis of the type of goods handled, volumes shipped, and whether they currently receive and/or ship goods by rail, have used rail in the past, or have expressed prior interest in using it. We are seeking in-depth information on the logistics practices of each of these firms, and their potential adaptability to using rail for inbound and/or outbound shipments through direct carload or transload service.

The result of these interviews will be a series of case studies that describe different types of shippers and their traffic, their suitability to using rail, how it might be accomplished, and the impacts on the US-7 corridor if such a shift were to occur. Furthermore, it will help identify what, if any, policy actions might facilitate such a shift. We are looking for your creative ideas and input. All of the discussions will be held in confidence, unless a respondent firm has given their approval to reveal their identity.

1) Business:
   - Nature and size of business conducted at this site
     - Headquarters location
   - Company structure: independent, division or facility within a larger company
   - Respondent's position
   - Types of customers served
   - Range of products
   - Longevity in this facility and reasons for location
   - Competitive geography
     - Territory served, limitations to territory, and location of competitors
   - Anticipated changes: facility expansion/contraction, production shifts, relocation, etc.

2) Traffic Patterns:
   - *Inbound*: products, tonnage, usage of commercial modes (TL, LTL, small package, rail intermodal, rail carload, air), control (freight purchasing by respondent or supplier), seasonality
     - Numbers of trucks, types (vans, reefers, tanks, etc.), sizes (tractor/trailer, straight truck, step van, etc), typical payload, private vs. for-hire
     - Origins: a) within VT Western Corridor, rest of Vermont, New England region, domestic elsewhere, Canada cross-border, outside North America; b) volume distribution (e.g. tons/unit from each); c) main modes; d) local facilities (airports, transloading terminals)
   - *Outbound*: products, tonnage, usage of commercial modes (TL, LTL, small package, rail intermodal, rail carload, air), control (freight purchased by respondent or receiver), seasonality
     - Numbers of trucks, types (vans, reefers, tanks, etc.), sizes (tractor/trailer, straight truck, step van, etc), typical payload, private vs. for-hire
     - Destinations: a) within VT Western Corridor, rest of Vermont, New England region, domestic elsewhere, Canada cross-border, outside North America; b) volume distribution (e.g. tons/units to each); c) main modes; d) local facilities (airports, transloading terminals)

- Private truck fleet, if any: number and type of trucks, volume, range of operation (or average length of haul), role (e.g. brings in product from warehouse, or used for customer deliveries), why used

- Expected change: growth, modal usage, shifts in sourcing or market areas (major origins/destinations), export/import activity and ports

- *Specific characteristics* of top/relevant traffic that may be suitable for handling by rail:

Inbound Traffic						
	Commodity	**Origin**	**Mode** (TL, LTL, PVT etc.)	**Annual Volume**	**Shipment Frequency**	**Shipper rail served?**
Ex.	*Bulk cement*	*Albany, NY*	*TL – bulk carrier*	*5,000 tons*	*250 /yr., approx. 1/day*	*Yes, CSX*
1						
2						
3						
4						
5						
Outbound Traffic						
	Commodity	**Destination**	**Mode** (TL, LTL, PVT etc.)	**Annual Volume**	**Shipment Frequency**	**Consignee rail served?**
Ex.	*Cheese*	*White River Junction, VT*	*PVT – Reefer*	*1,000 tons*	*50 /yr., approx. 1/wk.*	*No*
1						
2						
3						
4						
5						

3) <u>Operating Conditions</u>

- Facility

  - Access: road conditions, turning, signage, clearance, truck restrictions, weather

  - Transloading point (port, airport, rail yard) access

  - Rail spur or rail yard access

  - Capacity to hold/store inbound or outbound product(s)

- U.S. 7 Corridor in Vermont
  - Major routes used by the respondent, and their conditions
  - Service disruptions and delays
    - (1) Cost and difficulty imposed (e.g. asset utilization, driver compensation and retention)
    - (2) Limited access: key places whose improvement/development would help carrier operations

4) <u>Service Requirements</u>

- Inbound and outbound: transit expectations, importance of reliability, usage and precision of appointments (e.g. fixed time appointment and late after 15 minutes), equipment supply, visibility
- Rationale: e.g. customer requirements, low inventory logistics, limited dock space, etc.
- Effects of service failure
- Adequacy of service, and its effects
  - Comparison of levels of service to other regions
  - Constraints imposed on business
- Influence on carrier and modal usage
  - Use of different modes (truck, rail, air, water)
  - Technology and visibility requirements
  - Perception and prior experience with rail

- Has use of rail been considered? If so, how was it examined?

5) <u>Supply Chain Structure</u>

- Position of facility within flow of goods from basic inputs to final product delivery to consumer.
- Staging and consolidation of goods
- Modal usage across chain
- Inventory points, levels, practices
- Logistics strategy and anticipated changes

Appendix F
High Accident Locations

This document is exempt from discovery or admission under 23 USC 409.

Vermont Agency of Transportation

Statewide Sections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	1	US-7	Principal Arterial (u)	South Burlington	1.278 - 1.578	3240	5	169	0	22	151	8.629	95.27	11.039	$13,588
	2	DORSET ST., SOUTH BURLINGTON	Urban Collector (u)	South Burlington	3.700 - 4.000	19178	5	204	0	29	184	4.549	19.428	4.27	$14,285
#	3	VT-103	Principal Arterial (r)	Ludlow	1.976 - 2.276	9981	5	43	0	16	32	1.883	7.868	4.178	$25,265
* #	4	VT-11	Minor Arterial (r)	Springfield	4.740 - 5.040	11157	5	59	0	11	51	2.474	9.658	3.903	$16,346
	5	VT-63	Minor Arterial (r)	Barre Town	0.909 - 1.209	5074	5	32	0	33	17	2.96	11.519	3.89	$58,538
	6	WILDER STATE HIGHWAY	Non-Federal-Aid Collectors, Rural (r)	Hartford	0.200 - 0.500	4514	5	9	0	3	6	0.94	3.641	3.872	$22,633
	7	VT-100	Minor Arterial (r)	Weston	0.258 - 0.558	2963	5	21	0	6	18	3.386	12.945	3.822	$21,543
	8	FAS 0125 (VT 35 & 121 TH)	Major Collector (r)	Athens	2.860 - 3.160	440	5	5	0	2	3	5.457	20.755	3.803	$25,660
	9	PEARL ST., BURLINGTON	Minor Arterial (u)	Burlington	0.000 - 0.300	8893	5	97	0	17	83	5.475	19.922	3.638	$15,689
	10	I-189	Interstate, Urban (r)	Burlington, South Burlington	0.000 - 0.240	38600	5	66	0	14	53	0.869	3.123	3.592	$17,244
	11	US-7	Major Collector (r)	St. Albans Town	1.898 - 2.198	15593	5	70	0	24	53	2.349	8.199	3.49	$23,816
	12	VT-9	Principal Arterial (r)	Woodford	2.731 - 3.031	3700	5	17	0	9	12	2.406	8.391	3.486	$33,300
#	13	US-5	Minor Arterial (r)	Newport City	1.301 - 1.601	12979	5	58	0	11	48	2.397	8.162	3.404	$16,240
* #	14	VT-100	Minor Arterial (r)	Morristown	5.198 - 5.498	8753	5	42	0	12	33	2.607	8.764	3.36	$21,007
	15	US-7	Principal Arterial (r)	Rutland Town	0.664 - 0.964	24098	5	69	0	20	58	1.559	5.229	3.352	$21,638
	16	VT-9	Principal Arterial (r)	Marlboro	1.757 - 2.057	4600	5	19	0	2	18	2.276	7.544	3.314	$12,674
#	17	VT-12	Major Collector (r)	Northfield	3.953 - 4.253	6185	5	32	0	7	26	2.868	9.449	3.294	$17,666
	18	FAS 0175 (VT 53 TH)	Major Collector (r)	Salisbury	2.540 - 2.840	683	5	6	0	1	5	4.979	16.045	3.222	$15,067

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Vermont Agency of Transportation

Statewide Sections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	19	VT-31	Major Collector (r)	Wells, Poultney	1.500 - 0.044	840	5	7	1	3	3	4.743	15.22	3.208	$190,171
	20	LINCOLN AVE., RUTLAND CITY	Urban Collector (u)	Rutland City	0.200 - 0.500	1200	5	17	0	1	16	8.09	25.875	3.198	$10,171
	21	ST. PAUL ST., BURLINGTON	Urban Collector (u)	Burlington	0.200 - 0.500	7967	5	73	0	13	61	5.265	16.735	3.178	$15,688
#	22	US-2	Principal Arterial (u)	Burlington, South Burlington	0.689 - 0.158	33262	5	346	1	58	302	5.992	18.999	3.17	$18,738
#	23	US-2	Principal Arterial (u)	South Burlington	0.558 - 0.858	26800	5	279	0	55	235	6.135	19.014	3.098	$16,746
	24	US-5	Major Collector (r)	Burke, Sutton	4.079 - 0.059	791	5	6	0	3	5	4.812	13.854	2.878	$32,700
	25	FAS 0135	Major Collector (r)	Springfield	0.000 - 0.300	1800	5	11	0	0	11	3.911	11.161	2.853	$7,500
	26	VT-242	Major Collector (r)	Jay	0.132 - 0.432	1000	5	7	0	5	5	4.545	12.785	2.812	$43,143
#	27	WEST RUTLAND-RUTLAND (BR US-4)	Minor Arterial (u)	Rutland City	1.255 - 1.555	7751	5	67	0	15	57	5.614	15.788	2.812	$18,224
#	28	VT-2A	Minor Arterial (u)	Essex	0.578 - 0.878	10650	5	87	0	15	77	5.306	14.92	2.811	$15,759
	29	MIDDLE ROAD, MILTON	Urban Collector (u)	Milton	2.500 - 2.800	2590	5	26	0	21	14	6.687	18.335	2.741	$46,765
	30	VT-100	Minor Arterial (r)	Wardsboro	2.133 - 2.433	1304	5	8	0	5	5	4.186	11.205	2.676	$37,750
	31	VT-108	Major Collector (r)	Stowe	7.700 - 8.000	1500	5	9	0	1	8	4.1	10.958	2.672	$12,544
	32	VT-9	Principal Arterial (r)	Woodford	6.431 - 6.731	3400	5	12	0	1	11	2.459	6.446	2.62	$11,283
	33	VT-100	Minor Arterial (r)	Dover	0.617 - 0.917	4313	5	19	0	6	15	3.08	8.046	2.611	$22,626
	34	VT-104	Major Collector (r)	St. Albans Town	1.108 - 1.408	3700	5	17	0	13	10	3.25	8.391	2.581	$44,865
#	35	US-7	Major Collector (r)	St. Albans Town, St. Albans City	1.046 - 0.213	4000	5	18	0	8	12	3.187	8.219	2.578	$28,511
#	36	US-7	Principal Arterial (r)	Brandon	3.604 - 3.904	8374	5	23	0	7	19	1.962	5.016	2.556	$22,296

Vermont Agency of Transportation

Statewide Sections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
#	37	US-7	Minor Arterial (u)	St. Albans City	1.313 - 1.613	12162	5	88	0	22	68	5.189	13.215	2.546	$19,020
	38	VT-100	Minor Arterial (r)	Dover	3.917 - 4.217	1400	5	8	0	3	6	4.11	10.437	2.538	$25,463
	39	US-2	Principal Arterial (r)	Alburgh	1.000 - 1.300	4385	5	14	0	8	9	2.303	5.831	2.531	$35,050
	40	COLCHESTER AVE., BURLINGTON	Minor Arterial (u)	Burlington	0.100 - 0.400	19547	5	130	0	18	119	4.827	12.147	2.516	$14,190
	41	EAST AVE., BURLINGTON	Minor Arterial (u)	Burlington	0.000 - 0.300	10873	5	79	0	17	65	5.287	13.27	2.509	$17,554
	42	S UNION ST., BURLINGTON	Principal Arterial (u)	Burlington	0.600 - 0.900	3520	5	41	0	6	35	8.481	21.274	2.508	$14,144
	43	GAGE ST., BENNINGTON	Urban Collector (u)	Bennington	0.100 - 0.400	1800	5	18	0	8	13	7.303	18.264	2.5	$28,928
	44	I-89	Interstate, Rural (r)	Randolph	34.000 - 34.300	14200	5	25	0	12	15	1.288	3.215	2.495	$29,892
	45	US-5	Major Collector (r)	Hartford	2.461 - 2.761	6791	5	26	0	5	22	2.806	6.992	2.491	$16,519
#	46	US-7	Principal Arterial (u)	Burlington	1.140 - 1.440	9452	5	89	0	6	84	7.072	17.198	2.431	$10,645
*	47	VT-107	Minor Arterial (r)	Bethel	3.200 - 3.500	6523	5	24	0	7	18	2.788	6.72	2.409	$21,054
	48	LINCOLN AVE., ST. ALBANS CITY	Urban Collector (u)	St. Albans City	0.200 - 0.500	534	5	7	0	0	7	9.973	23.942	2.4	$7,500
	49	FAS 0257	Major Collector (r)	Hardwick	0.000 - 0.300	2013	5	10	0	0	10	3.799	9.073	2.388	$7,500
	50	FAS 0129	Major Collector (r)	Westminster	5.420 - 5.720	800	5	5	0	3	2	4.799	11.415	2.378	$34,740
	51	PINE ST., BURLINGTON	Minor Arterial (u)	Burlington	0.800 - 1.100	8660	5	62	0	4	58	5.501	13.076	2.376	$10,429
	52	US-7	Principal Arterial (r)	Bennington	1.012 - 1.312	6679	5	18	0	10	9	2.072	4.922	2.374	$33,139
	53	US-5	Major Collector (r)	Lyndon	1.091 - 1.391	5166	5	20	1	7	15	2.993	7.071	2.361	$81,640
*	54	VT-15	Minor Arterial (r)	Johnson	3.967 - 4.267	9533	5	31	0	8	26	2.559	5.939	2.32	$19,942

Vermont Agency of Transportation

Statewide Sections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
#	55	US-5	Major Collector (r)	Windsor	3.478 - 3.778	6455	5	23	0	8	16	2.839	6.507	2.291	$23,617
	56	FAS 0136 (VT-143 TH)	Major Collector (r)	Springfield	0.900 - 1.200	1580	5	8	0	7	5	4.045	9.248	2.285	$50,975
	57	I-91	Interstate, Urban (r)	Brattleboro	9.000 - 9.300	21003	5	26	0	5	21	0.99	2.261	2.283	$16,231
	58	US-7	Major Collector (r)	St. Albans Town	2.298 - 2.598	4700	5	18	0	4	15	3.063	6.995	2.283	$18,006
	59	VT-102	Major Collector (r)	Guildhall	5.600 - 5.900	850	5	5	0	3	2	4.73	10.744	2.271	$34,740
	60	VT-9	Principal Arterial (r)	Marlboro	0.557 - 0.857	4600	5	13	0	7	7	2.276	5.161	2.267	$32,523
#	61	US-5	Minor Arterial (r)	Newport City	2.401 - 2.701	9449	5	30	0	11	22	2.564	5.798	2.261	$24,897
	62	VT-100	Major Collector (r)	Whitingham	7.410 - 7.710	1340	5	7	0	0	7	4.221	9.541	2.26	$7,500
	63	VT-17	Major Collector (r)	Fayston	1.463 - 1.763	1100	5	6	0	4	2	4.438	9.962	2.244	$37,767
	64	FAS 0237	Major Collector (r)	Morristown	0.640 - 0.940	1900	5	9	0	3	6	3.856	8.651	2.243	$22,633
	65	FAS 0176	Major Collector (r)	Bethel	5.000 - 5.300	1360	5	7	0	8	3	4.205	9.401	2.235	$63,671
#	66	VT-4A	Major Collector (r)	Castleton	3.162 - 3.462	4159	5	16	0	5	11	3.157	7.026	2.225	$21,688
	67	I-91	Interstate, Rural (r)	Sheffield	150.400 - 150.700	4900	5	10	1	3	7	1.679	3.727	2.219	$136,120
* #	68	VT-100	Minor Arterial (r)	Morristown	6.098 - 6.398	11426	5	34	0	10	29	2.461	5.435	2.207	$21,956
#	69	VT-36	Minor Arterial (u)	St. Albans City	0.366 - 0.666	9661	5	63	0	17	52	5.395	11.91	2.207	$20,465
	70	FAS 0125 (VT 35 & 121 TH)	Major Collector (r)	Townshend	0.000 - 0.300	1400	5	7	0	3	5	4.173	9.132	2.187	$28,029
	71	VT-108	Major Collector (r)	Stowe	0.900 - 1.200	8900	5	28	0	10	24	2.64	5.746	2.176	$25,321
	72	US-7	Major Collector (r)	Georgia	0.946 - 1.246	8935	5	28	0	9	23	2.637	5.723	2.169	$23,164
	73	VT-38	Major Collector (r)	St. Albans Town	1.581 - 1.881	2297	5	10	0	7	5	3.671	7.951	2.165	$40,780
	74	VT-12	Major Collector (r)	Northfield	1.653 - 1.953	1422	5	7	0	2	5	4.157	8.991	2.162	$20,471

Vermont Agency of Transportation

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H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
*	75	US-5	Minor Arterial (r)	Derby	0.321 - 0.621	10877	5	32	0	10	26	2.487	5.373	2.16	$22,625
	76	US-4	Principal Arterial (r)	Rutland Town	0.025 - 0.325	11100	5	24	0	9	16	1.837	3.949	2.149	$24,838
	77	FAS 0209	Major Collector (r)	Hinesburg	0.800 - 1.100	3649	5	14	1	11	5	3.261	7.007	2.148	$126,386
	78	VT-15	Minor Arterial (r)	Walden	4.244 - 4.544	2400	5	10	0	4	6	3.575	7.61	2.128	$25,660
#	79	US-7	Principal Arterial (u)	Winooski City	0.247 - 0.547	11656	5	92	0	36	66	6.846	14.416	2.105	$26,080
	80	US-7	Principal Arterial (r)	Pittsford	2.595 - 2.895	9646	5	21	0	11	13	1.898	3.976	2.095	$32,352
	81	VT-17	Major Collector (r)	Starksboro, Buel's Gore	5.212 - 0.103	950	5	5	0	2	3	4.603	9.613	2.088	$25,660
	82	VT-17	Major Collector (r)	Buel's Gore, Fayston	2.703 - 0.263	950	5	5	0	3	3	4.603	9.613	2.088	$36,240
	83	VT-17	Major Collector (r)	Fayston	0.363 - 0.663	950	5	5	1	6	0	4.603	9.613	2.088	$293,480
	84	NORTH AVE., BURLINGTON	Minor Arterial (u)	Burlington	1.900 - 2.200	14400	5	83	1	16	71	5.051	10.527	2.083	$30,469
#	85	VT-14	Major Collector (r)	Hartford	1.100 - 1.400	4195	5	15	0	4	12	3.15	6.53	2.073	$20,107
	86	VT-114	Major Collector (r)	East Haven	0.272 - 0.572	960	5	5	0	0	5	4.591	9.512	2.071	$7,500
	87	US-2	Principal Arterial (r)	Alburgh	4.000 - 4.300	4700	5	12	0	0	12	2.263	4.663	2.06	$7,500
	88	VT-30	Minor Arterial (r)	Wells	1.427 - 1.727	988	5	5	0	0	5	4.489	9.243	2.058	$7,500
	89	US-7	Principal Arterial (r)	Wallingford	5.514 - 5.814	6921	5	16	0	6	11	2.054	4.222	2.054	$24,994
#	90	VT-78	Principal Arterial (r)	Swanton	6.771 - 7.071	8100	5	18	0	9	13	1.978	4.058	2.051	$31,867
	91	FAS 0171	Major Collector (r)	Sunderland	2.410 - 2.710	973	5	5	0	0	5	4.576	9.385	2.05	$7,500
	92	US-5	Major Collector (r)	Bradford	2.363 - 2.663	6287	5	20	0	5	15	2.857	5.81	2.033	$18,850
	93	FAS 0208	Major Collector (r)	Charlotte	2.800 - 3.100	991	5	5	0	3	3	4.555	9.215	2.022	$36,240

Vermont Agency of Transportation

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H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	94	VT-11	Major Collector (r)	Chester	5.377 - 5.677	4356	5	15	1	9	10	3.121	6.289	2.015	$113,407
	95	VT-62	Freeway/Expressway (u)	Barre City	1.066 - 1.366	10740	5	24	0	17	15	2.026	4.081	2.014	$42,158
	96	VT-100	Minor Arterial (r)	Plymouth	5.981 - 6.281	1300	5	6	0	5	3	4.189	8.429	2.012	$47,833
	97	VT-112	Minor Arterial (r)	Halifax	4.000 - 4.300	1300	5	6	0	1	5	4.189	8.429	2.012	$15,067
	98	HILL ST., BARRE CITY	Urban Collector (u)	Barre City	0.000 - 0.300	3493	5	24	0	6	19	6.241	12.549	2.01	$19,163
	99	FAS 0223	Major Collector (r)	Bolton	0.400 - 0.700	1000	5	5	0	1	4	4.545	9.132	2.009	$16,580
	100	VT-242	Major Collector (r)	Jay	2.432 - 2.732	1000	5	5	0	1	4	4.545	9.132	2.009	$16,580
	101	EAST STATE ST., MONTPELIER	Urban Collector (u)	Montpelier	0.000 - 0.300	2253	5	17	0	0	17	6.913	13.781	1.993	$7,500
	102	VT-289	Freeway/Expressway (u)	Essex	0.000 - 0.300	15200	5	31	0	8	27	1.879	3.725	1.982	$20,184
	103	FAS 0247	Major Collector (r)	Wolcott	0.200 - 0.500	1600	5	7	0	4	4	4.032	7.99	1.981	$34,514
	104	US-7	Principal Arterial (r)	Leicester	1.277 - 1.577	6158	5	14	1	11	8	2.114	4.152	1.963	$127,993
	105	FAS 0237	Major Collector (r)	Stowe	0.000 - 0.300	2300	5	9	0	2	7	3.67	7.147	1.947	$17,589
	106	US-2	Principal Arterial (r)	Danville	1.508 - 1.808	5127	5	12	1	6	5	2.214	4.274	1.93	$125,408
*	107	VT-17	Minor Arterial (r)	New Haven	6.221 - 6.521	3900	5	13	0	10	6	3.158	6.088	1.927	$44,154
	108	VT-9	Principal Arterial (r)	Wilmington, Marlboro	6.918 - 0.057	4604	5	11	1	4	6	2.275	4.363	1.917	$127,873
	109	US-5	Minor Arterial (r)	Hartford	3.661 - 3.961	9718	5	26	0	6	22	2.548	4.886	1.917	$18,554
#	110	VT-100	Minor Arterial (r)	Ludlow	4.351 - 4.651	2400	5	9	0	11	5	3.575	6.849	1.915	$68,822
	111	VT-9	Principal Arterial (r)	Marlboro	7.157 - 7.457	5200	5	12	0	2	10	2.206	4.214	1.91	$15,067
	112	VT-100	Minor Arterial (r)	Dover, Stratton	5.517 - 0.270	1400	5	6	0	4	4	4.11	7.827	1.904	$40,267

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H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	1	BARRETT ST., BURLINGTON, COLCHESTER AVE., BURLINGTON	Minor Arterial (u)/Urban Collector (u)	Burlington	0.130 - 0.140	8050	5	50	0	11	41	1.014	3.403	3.354	$17,788
	2	VT. 127 BELTLINE, BURLINGTON, <5009>	Freeway/Expressway (u)	Burlington	1.340 - 1.500	5493	5	9	0	2	7	0.303	0.897	2.957	$17,589
#	3	BURLINGTON (ALTERNATE US-7), MAIN ST., BURLINGTON	Principal Arterial (u)	Burlington	0.990 - 1.010	18635	5	106	0	14	95	1.102	3.116	2.827	$13,708
	4	MAIN ST., BURLINGTON, ST. PAUL ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	0.250 - 0.270	11025	5	51	0	6	46	0.925	2.534	2.737	$12,988
	5	VT-104, ST. ALBANS ST. HWY. SOUTH	Minor Arterial (r)/Major Collector (r)	St. Albans Town	1.520 - 1.640	13358	5	68	1	43	47	1.055	2.789	2.642	$55,547
#	6	US-7, VT-15, W. ALLEN ST., WINOOSKI CITY, E. CANAL ST., WINOOS, W. CENTER ST., WINOO, <T0000>	Principal Arterial (u)/Minor Arterial (u)	Winooski City	0.040 - 0.230	30144	5	183	0	38	153	1.38	3.326	2.409	$17,255
	7	VT-12, VT-64	Major Collector (r)	Northfield	1.980 - 2.080	4826	5	20	0	11	12	0.949	2.27	2.391	$33,595
	8	VT-2A, MARSHALL AVE., WILLISTON	Principal Arterial (u)	Williston	3.320 - 3.340	22630	5	104	0	25	88	1.069	2.518	2.354	$19,063
	9	VT-112, FAS 0111 (VT 8A TH)	Minor Arterial (r)/Major Collector (r)	Halifax/Whitingham	5.810 - 0.140	1570	5	11	0	6	5	1.711	3.839	2.243	$32,264
#	10	US-7, VT-36	Minor Arterial (u)	St. Albans City	1.240 - 1.260	16075	5	51	0	7	44	0.813	1.738	2.137	$13,731
#	11	BURLINGTON (ALTERNATE US-7), NORTH ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	1.620 - 1.640	8650	5	32	0	5	27	0.973	2.027	2.083	$14,594
	12	MIDDLE ROAD, MILTON, RAILROAD STREET, MILTON	Urban Collector (u)	Milton	2.960 - 3.020	6300	5	20	0	3	18	0.847	1.739	2.051	$14,685
#	13	US-2, S PROSPECT ST., BURLINGTON, <T0000>	Principal Arterial (u)/Urban Collector (u)	Burlington	0.220 - 0.240	28630	5	83	0	10	76	0.781	1.588	2.031	$13,241
#	14	US-2, VT-116, PATCHEN ROAD, SOUTH BURLINGTON	Principal Arterial (u)/Urban Collector (u)	South Burlington	0.990 - 1.010	29045	5	84	0	7	77	0.78	1.584	2.03	$11,283

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	15	N CHAMPLAIN ST., BURLINGTON, NORTH ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	0.290 - 0.310	7600	5	28	0	7	22	1	2.018	2.018	$19,118
	16	US-4, I-89	Principal Arterial (r)/Minor Arterial (r)	Hartford	6.430 - 6.590	6777	5	22	0	12	14	0.92	1.778	1.932	$33,627
#	17	US-2, DORSET ST., SOUTH BURLINGTON	Principal Arterial (u)/Urban Collector (u)	South Burlington	0.490 - 0.500	42040	5	109	0	7	103	0.739	1.42	1.92	$10,484
	18	ELM ST., BARRE CITY, FRANKLIN ST, BARRE CITY, SUMMER ST., BARRE CITY	Urban Collector (u)	Barre City	0.130 - 0.140	8850	5	24	0	3	21	0.784	1.485	1.894	$13,175
	19	VT-15, VT-100	Minor Arterial (r)	Morristown	0.820 - 0.920	14483	5	37	0	10	29	0.74	1.399	1.891	$20,176
	20	EVELYN ST., RUTLAND CITY, MERCHANTS ROW, RUTLAND CITY, STRONGS AVE., RUTLAND CITY	Principal Arterial (u)/Urban Collector (u)	Rutland City	0.000 - 0.010	10250	5	33	0	8	26	0.939	1.764	1.877	$18,733
	21	VT-191, WESTERN / MT. VERNON ST., NEWPORT CITY	Minor Arterial (r)	Newport City	0.890 - 0.910	3100	5	11	0	3	8	1.052	1.944	1.846	$19,882
#	22	US-7, NORTH ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	2.710 - 2.730	6000	5	21	0	7	16	1.054	1.917	1.819	$23,348
	23	VT-62, BERLIN STATE HIGHWAY, FISHER RD., BERLIN	Freeway/Expressway (u)/Minor Arterial (u)	Berlin	1.300 - 1.400	21868	5	68	0	29	51	0.953	1.703	1.787	$28,185
	24	NORTH ST., BURLINGTON, PARK ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	0.140 - 0.160	7350	5	24	0	4	21	1.007	1.789	1.775	$15,379
	25	COLCHESTER AVE., BURLINGTON, EAST AVE., BURLINGTON	Minor Arterial (u)	Burlington	0.430 - 0.450	21250	5	53	0	4	50	0.773	1.366	1.766	$11,068
	26	PATCHEN ROAD, SOUTH BURLINGTON, WHITE ST., SOUTH BURLINGTON	Urban Collector (u)	South Burlington	0.080 - 0.100	13900	5	31	0	6	26	0.713	1.222	1.713	$16,529
#	27	US-4, US-5, VT-14	Minor Arterial (r)/Major Collector (r)	Hartford	9.360 - 9.410	17608	5	55	0	10	48	1.006	1.711	1.701	$16,164

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	28	ELM ST., BRATTLEBORO, FLAT ST., BRATTLEBORO	Minor Arterial (u)/Urban Collector (u)	Brattleboro	0.140 - 0.150	2800	5	11	0	6	5	1.297	2.152	1.658	$32,264
	29	COLCHESTER AVE., BURLINGTON, PEARL ST., BURLINGTON, S PROSPECT ST., BURLINGTON, <T0000>	Minor Arterial (u)/Urban Collector (u)	Burlington	0.000 - 0.010	20700	5	53	0	19	42	0.847	1.402	1.655	$24,908
	30	US-2, VT-78, TOWN ROAD 0004	Principal Arterial (r)	Alburgh	6.180 - 6.280	6170	5	16	0	13	8	0.861	1.42	1.648	$46,731
#	31	VT-15, DION ST., WINOOSKI CITY	Principal Arterial (u)/Urban Collector (u)	Winooski City	0.570 - 0.590	20300	5	50	0	24	36	0.826	1.349	1.632	$30,792
#	32	US-2, US-7, MAIN ST., BURLINGTON	Principal Arterial (u)	Burlington	0.000 - 0.010	22000	5	70	0	8	64	1.074	1.743	1.623	$12,903
#	33	VT-11, VT-106	Minor Arterial (r)/Major Collector (r)	Springfield	3.950 - 4.030	16350	5	49	0	11	40	1.018	1.642	1.611	$17,998
* #	34	US-2, SO. BURLINGTON (FAP 121-1 KENNEDY DRIVE), AIRPORT DRIVE, SOUTH BURLINGTON	Principal Arterial (u)/Minor Arterial (u)	South Burlington	1.880 - 1.910	29539	5	120	0	19	104	1.384	2.225	1.608	$14,876
	35	US-5, VT-123	Minor Arterial (r)	Westminster	5.140 - 5.240	6250	5	16	3	6	13	0.887	1.402	1.581	$241,556
	36	US-7, FAS 0198, TOWN ROAD 0001	Principal Arterial (r)/Major Collector (r)	Ferrisburgh	6.860 - 7.020	11950	5	24	0	15	15	0.697	1.1	1.577	$37,750
#	37	VT-36, CATHERINE ST., ST. ALBANS CITY, FEDERAL ST., ST. ALBANS CITY	Minor Arterial (u)/Urban Collector (u)	St. Albans City	0.750 - 0.770	13450	5	35	0	10	27	0.915	1.425	1.558	$20,900
*	38	VT-110, FAS 0206, TOWN ROAD 0084, <T0125>	Major Collector (r)	Barre Town	1.020 - 1.080	4860	5	13	0	5	8	0.947	1.465	1.546	$24,962
	39	COUNTY RD., BENNINGTON, PARK ST., BENNINGTON, <T0000>	Minor Arterial (u)/Urban Collector (u)	Bennington	0.460 - 0.480	7150	5	21	0	16	10	1.04	1.609	1.546	$43,876
*	40	VT-2A, US-7	Principal Arterial (u)/Minor Arterial (u)	Colchester	2.400 - 2.430	11650	5	52	0	4	48	1.581	2.445	1.546	$10,992

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	41	MAIN ST., BURLINGTON, PINE ST., BURLINGTON	Principal Arterial (u)/Minor Arterial (u)	Burlington	0.160 - 0.180	9600	5	44	0	8	36	1.634	2.511	1.536	$15,755
#	42	VT-100, VT-103	Principal Arterial (r)/Minor Arterial (r)	Ludlow	5.040 - 5.090	8285	5	20	0	6	14	0.88	1.322	1.503	$21,120
#	43	US-7, PEARL ST., BURLINGTON	Principal Arterial (u)/Minor Arterial (u)	Burlington	2.420 - 2.440	18620	5	75	0	22	54	1.471	2.207	1.499	$20,917
	44	WEST RUTLAND-RUTLAND (BR US-4), PLEASANT ST., WEST RUTLAND	Principal Arterial (u)/Urban Collector (u)	West Rutland	0.570 - 0.650	2550	5	9	0	1	8	1.295	1.933	1.492	$12,544
	45	VT. 127 TH, COLCHESTER, PORTER POINT RD., COLCHESTER	Minor Arterial (u)/Urban Collector (u)	Colchester	0.860 - 0.940	14900	5	36	0	10	28	0.897	1.323	1.474	$20,528
#	46	US-7, VT-36	Minor Arterial (u)	St. Albans City	1.210 - 1.230	16670	5	36	0	8	29	0.807	1.183	1.464	$17,797
	47	COBBLE HILL ROAD, BARRE TOWN, HILL ST., BARRE TOWN, WINDY WOOD ROAD, BARRE TOWN	Urban Collector (u)	Barre Town	1.020 - 1.050	3950	5	10	0	3	8	0.949	1.387	1.461	$21,870
*	48	US-5, FAS 0325	Major Collector (r)	Hartford	3.050 - 3.080	12834	5	26	0	3	24	0.763	1.11	1.453	$13,027
	49	VT-15, FAS 0324	Minor Arterial (r)	Wolcott	3.190 - 3.350	5347	5	13	0	19	5	0.92	1.332	1.447	$80,200
	50	VT-10, VT-106	Minor Arterial (r)	Springfield	0.750 - 0.830	6541	5	15	0	4	11	0.877	1.256	1.431	$19,607
	51	VT-8, VT-9	Principal Arterial (r)/Major Collector (r)	Searsburg	2.610 - 2.700	3804	5	9	0	5	4	0.911	1.296	1.422	$32,722
	52	NORTH ST., BURLINGTON, N UNION ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	0.620 - 0.640	7800	5	20	0	2	18	0.994	1.404	1.412	$12,040
#	53	VT-12, VT-15A	Major Collector (r)	Morristown	3.270 - 3.300	7925	5	17	0	1	16	0.845	1.175	1.389	$10,171
#	54	FAS 0302, FAS 0309 (VT 139 TH)	Major Collector (r)	Richford	1.580 - 1.620	2000	5	6	0	2	4	1.186	1.643	1.385	$22,633
#	55	US-2, WHITE ST., SOUTH BURLINGTON	Principal Arterial (u)/Urban Collector (u)	South Burlington	0.860 - 0.880	27855	5	55	0	1	54	0.785	1.081	1.377	$8,325

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	56	US-5, VT-10A, I-91	Major Collector (r)	Norwich	0.990 - 1.060	12450	5	24	0	5	20	0.768	1.056	1.375	$17,271
* #	57	US-7, BURLINGTON (ALTERNATE US-7)	Principal Arterial (u)	Burlington	3.050 - 3.070	16030	5	45	0	7	39	1.129	1.538	1.361	$14,729
* #	58	VT-100, FAS 0238	Minor Arterial (r)/Major Collector (r)	Morristown	5.620 - 5.680	12464	5	33	0	5	29	1.069	1.45	1.357	$14,606
	59	US-5, FAS 0129, TOWN ROAD 0043	Major Collector (r)	Putney	0.630 - 0.710	7603	5	16	0	4	13	0.853	1.153	1.35	$19,319
#	60	VT-11, VT-103	Principal Arterial (r)/Minor Arterial (r)	Chester	5.070 - 5.110	10721	5	22	0	5	19	0.833	1.124	1.349	$18,500
	61	US-5, VT-114, VT-122	Major Collector (r)	Lyndon	3.740 - 3.820	12240	5	23	0	12	16	0.77	1.029	1.335	$32,817
	62	US-5, I-91	Minor Arterial (u)	St. Johnsbury	0.560 - 0.700	2300	5	7	0	7	3	1.262	1.667	1.321	$56,114
	63	VT-15, VT-100, FAS 0239	Minor Arterial (r)/Major Collector (r)	Hyde Park	1.780 - 1.880	11005	5	29	0	16	18	1.094	1.443	1.319	$33,841
* #	64	US-7, STRONGS AVE., RUTLAND CITY	Principal Arterial (u)	Rutland City	0.580 - 0.600	29500	5	73	0	27	57	1.029	1.355	1.316	$25,422
* #	65	VT-11, FAS 0136 (VT-143 TH)	Minor Arterial (r)/Major Collector (r)	Springfield	4.590 - 4.620	15500	5	38	0	7	33	1.028	1.343	1.306	$16,258
#	66	VT-116, FAS 0199, TOWN ROAD 0003	Minor Arterial (r)/Major Collector (r)	Bristol	6.590 - 6.670	7000	5	20	0	8	12	1.198	1.565	1.306	$25,660
	67	VT. 127 BELTLINE, BURLINGTON, <5009>	Freeway/Expressway (u)	Burlington	0.830 - 0.940	14333	5	8	0	1	7	0.237	0.305	1.289	$13,175
	68	VT-4A, VT-30	Minor Arterial (r)/Major Collector (r)	Castleton	1.760 - 1.860	11324	5	29	0	15	19	1.088	1.403	1.289	$32,276
	69	US-2, VT-2A	Principal Arterial (u)/Minor Arterial (u)	Williston	1.420 - 1.440	28175	5	92	0	23	76	1.392	1.789	1.285	$19,421
	70	ALLEN ST., ST. ALBANS CITY, LOWER WELDON ST., ST. ALBANS CITY	Urban Collector (u)	St. Albans City	0.000 - 0.010	4700	5	10	0	3	8	0.909	1.165	1.281	$21,870

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#	71	VT-14, SEMINARY ST., BARRE CITY	Minor Arterial (u)/Urban Collector (u)	Barre City	1.330 - 1.350	7010	5	17	0	5	13	1.045	1.328	1.271	$21,294
	72	VT-11, VT-30	Minor Arterial (r)	Winhall	3.030 - 3.230	7651	5	15	0	5	14	0.846	1.074	1.268	$24,633
	73	US-2, FAS 0209	Major Collector (r)	Richmond	2.690 - 2.770	8946	5	17	0	2	15	0.823	1.041	1.264	$12,841
#	74	VT-100, VT-108	Minor Arterial (r)/Major Collector (r)	Stowe	3.290 - 3.370	15220	5	36	0	2	34	1.031	1.296	1.256	$10,022
*	75	VT-110, US-302, TOWN ROAD 0030	Minor Arterial (r)/Major Collector (r)	Barre Town	1.090 - 1.120	7882	5	21	1	11	12	1.168	1.459	1.248	$86,757
#	76	BURLINGTON (ALTERNATE US-7), PEARL ST., BURLINGTON	Principal Arterial (u)/Minor Arterial (u)	Burlington	1.310 - 1.330	18500	5	62	0	10	52	1.472	1.836	1.246	$14,823
	77	VT-103, VT-131	Principal Arterial (r)/Major Collector (r)	Cavendish	2.740 - 2.900	8145	5	14	0	8	9	0.758	0.941	1.241	$35,050
*	78	US-7, LAKE ROAD, MILTON, TOWN ROAD 0080	Minor Arterial (u)/Urban Collector (u)	Milton	5.800 - 5.960	8900	5	20	0	6	15	0.993	1.231	1.239	$21,495
#	79	VT-9, PLEASANT ST., BENNINGTON, UNION ST., BENNINGTON	Principal Arterial (u)/Urban Collector (u)	Bennington	4.810 - 4.830	12850	5	26	0	16	15	0.898	1.108	1.234	$36,881
	80	US-7, MAIN ST.(WESTFORD RD)., MILTON	Minor Arterial (u)/Urban Collector (u)	Milton	5.000 - 5.080	10675	5	23	0	5	20	0.957	1.18	1.233	$18,022
	81	US-2, FAS 0218	Principal Arterial (r)/Major Collector (r)	Concord	10.580 - 10.740	2697	5	6	0	2	4	0.995	1.219	1.225	$22,633
#	82	US-5, VT-44, FAS 0148	Major Collector (r)	Windsor	3.340 - 3.400	8644	5	16	0	2	14	0.829	1.014	1.222	$13,175
	83	VT. 127 BELTLINE, BURLINGTON, MANHATTAN DRIVE, BURLINGTON, PARK ST., BURLINGTON	Freeway/Expressway (u)/Principal Arterial (u)	Burlington	0.000 - 0.010	16450	5	34	1	11	26	0.934	1.132	1.211	$56,674
	84	US-5, VT-25	Major Collector (r)	Bradford	1.380 - 1.480	8768	5	16	0	7	9	0.827	0.999	1.208	$27,363

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* #	85	US-7, WEST RUTLAND-RUTLAND (BR US-4), <T0000>	Principal Arterial (u)	Rutland City	1.270 - 1.290	30190	5	67	0	9	59	1.026	1.216	1.184	$13,710
	86	VT-2A, I-89	Minor Arterial (u)	Williston	2.880 - 2.960	11952	5	22	0	4	20	0.86	1.008	1.171	$16,436
*	87	US-7, VT-127, BAY RD., COLCHESTER	Principal Arterial (u)/Minor Arterial (u)	Colchester	3.400 - 3.480	11195	5	38	0	14	29	1.592	1.859	1.168	$25,213
	88	US-4, VT-100, FAS 0159	Principal Arterial (r)	Killington	2.270 - 2.370	9654	5	16	0	7	12	0.778	0.908	1.166	$28,769
	89	DEWEY ST., BENNINGTON, ELM ST., BENNINGTON	Urban Collector (u)	Bennington	0.860 - 0.880	8250	5	14	0	2	13	0.796	0.929	1.166	$14,521
	90	VT-15, SUSIE WILSON RD.,ESSEX JUNCTION VILLAGE	Principal Arterial (u)/Urban Collector (u)	Essex	0.510 - 0.660	34204	5	55	0	12	47	0.761	0.881	1.157	$17,951
	91	MAIN ST., BURLINGTON, S UNION ST., BURLINGTON	Principal Arterial (u)	Burlington	0.520 - 0.540	18010	5	42	0	18	30	1.108	1.277	1.153	$28,029
	92	US-2, NO. WILLISTON ROAD, WILLISTON, OAK HILL ROAD, WILLISTON	Minor Arterial (u)/Urban Collector (u)	Williston	3.730 - 3.750	10370	5	21	0	6	17	0.962	1.109	1.152	$21,186
#	93	US-7, LOWER WELDON ST., ST. ALBANS CITY, UPPER WELDON ST., ST. ALBANS CITY	Minor Arterial (u)/Urban Collector (u)	St. Albans City	0.940 - 0.960	14865	5	28	0	4	24	0.898	1.032	1.148	$13,986
	94	VT-30, FAS 0122 (VT-315 TH)	Minor Arterial (r)	Rupert	0.050 - 0.210	3230	5	7	0	7	3	1.041	1.187	1.139	$56,114
#	95	VT-9, DEPOT ST., BENNINGTON, WASHINGTON ST., BENNINGTON	Principal Arterial (u)/Urban Collector (u)	Bennington	4.260 - 4.280	12300	5	23	0	4	21	0.906	1.024	1.13	$16,048
#	96	VT-15, I-89	Principal Arterial (u)	Winooski City	0.700 - 0.720	20570	5	46	0	13	36	1.085	1.225	1.129	$20,820
	97	KELLOGG ROAD, ESSEX, SUSIE WILSON RD., ESSEX	Urban Collector (u)	Essex	0.020 - 0.040	20570	5	28	0	4	24	0.661	0.745	1.127	$13,986
*	98	VT-116, SO. BURLINGTON (FAP 121-1 KENNEDY DRIVE)	Principal Arterial (u)/Minor Arterial (u)	South Burlington	3.230 - 3.310	24736	5	72	0	14	60	1.415	1.594	1.126	$16,536

Vermont Agency of Transportation

Statewide Intersections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
#	99	VT-14, VT-15	Minor Arterial (r)/Major Collector (r)	Hardwick	1.520 - 1.570	7405	5	18	0	4	15	1.184	1.331	1.124	$18,006
	100	VT-15, VT-108	Minor Arterial (r)/Major Collector (r)	Cambridge	5.080 - 5.180	8999	5	21	0	5	17	1.137	1.278	1.123	$18,667
	101	COUNTY RD., BENNINGTON, DEPOT ST., BENNINGTON	Urban Collector (u)	Bennington	0.170 - 0.190	7950	5	13	0	14	6	0.803	0.896	1.115	$60,431
	102	US-7, I-89	Principal Arterial (u)	Colchester	0.170 - 0.230	19320	5	43	0	5	38	1.095	1.219	1.112	$12,779
	103	VT-14, PINE HILL ROAD, BARRE TOWN, TOWN ROAD 0019	Minor Arterial (u)/Urban Collector (u)	Barre Town	2.970 - 3.070	5950	5	13	0	7	7	1.083	1.197	1.104	$32,523
	104	N UNION ST., BURLINGTON, S UNION ST., BURLINGTON, <T0000>	Principal Arterial (u)	Burlington	0.000 - 0.010	5800	5	16	0	3	13	1.37	1.511	1.102	$16,013
	105	VT-207, I-89	Major Collector (r)	St. Albans Town	0.280 - 0.310	7600	5	13	0	9	8	0.853	0.937	1.097	$41,238
*	106	US-2, VT-117	Minor Arterial (r)/Major Collector (r)	Richmond	0.900 - 0.950	7132	5	17	0	3	14	1.193	1.306	1.094	$15,512
	107	VT-2A, EAST ROAD, COLCHESTER, MILL POND ROAD, COLCHESTER	Minor Arterial (u)/Urban Collector (u)	Colchester	1.430 - 1.510	13750	5	25	0	7	20	0.911	0.996	1.093	$20,812
	108	US-7, VT-7A, TOWN HWY. NO. 28 (KOCHER DR.), BENNINGTON	Principal Arterial (u)/Minor Arterial (u)	Bennington	4.100 - 4.200	24802	5	70	0	42	43	1.414	1.546	1.092	$36,347
	109	NORTH AVE., BURLINGTON, NORTH ST., BURLINGTON	Minor Arterial (u)/Urban Collector (u)	Burlington	0.180 - 0.200	13800	5	25	0	3	22	0.91	0.992	1.089	$12,948
	110	VT-16, FAS 0255	Minor Arterial (r)/Major Collector (r)	Greensboro	0.240 - 0.400	1850	5	6	0	1	5	1.64	1.777	1.083	$15,067
	111	US-4, FAS 0168	Principal Arterial (r)/Major Collector (r)	Hartford	3.310 - 3.390	10639	5	15	0	3	12	0.715	0.772	1.08	$16,580
#	112	BURLINGTON (ALTERNATE US-7), ST. PAUL ST., BURLINGTON	Principal Arterial (u)/Urban Collector (u)	Burlington	0.360 - 0.380	10300	5	19	0	3	17	0.938	1.01	1.076	$15,063

Vermont Agency of Transportation

Statewide Intersections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	113	VT-25, US-302	Minor Arterial (r)	Orange	0.220 - 0.280	3494	5	7	0	3	4	1.021	1.097	1.074	$26,957
*	114	VT-9, VT-100, TOWN ROAD 0033	Principal Arterial (r)/Minor Arterial (r)	Wilmington	2.990 - 3.050	9610	5	16	0	1	15	0.852	0.912	1.07	$10,338
	115	VT. 127 BELTLINE, BURLINGTON, PLATTSBURG AVE., BURLINGTON	Freeway/Expressway (u)/Minor Arterial (u)	Burlington	3.280 - 3.350	10955	5	23	0	1	22	1.075	1.15	1.069	$9,474
#	116	US-302, HILL ST., BARRE CITY	Principal Arterial (u)/Urban Collector (u)	Barre City	2.550 - 2.570	11850	5	21	0	8	13	0.912	0.971	1.063	$24,795
	117	US-2, VT-2B, TOWN ROAD 0040	Principal Arterial (r)/Major Collector (r)	Danville	7.250 - 7.430	7301	5	11	2	5	7	0.778	0.825	1.061	$237,909
	118	VT-10A, I-91	Major Collector (r)	Norwich	0.170 - 0.250	12050	5	18	0	7	12	0.773	0.818	1.058	$25,572
#	119	US-7, SWIFT ST., SOUTH BURLINGTON, <0189>	Principal Arterial (u)/Urban Collector (u)	South Burlington/Burlington	1.720 - 0.010	40450	5	58	0	14	48	0.743	0.785	1.056	$18,976
	120	US-4, FAS 0168, TOWN ROAD 0008	Principal Arterial (r)/Major Collector (r)	Hartford	2.440 - 2.540	10046	5	14	0	4	11	0.724	0.763	1.054	$21,007
	121	BATTERY ST., BURLINGTON, MAIN ST., BURLINGTON	Principal Arterial (u)	Burlington	0.220 - 0.240	15600	5	34	0	1	33	1.134	1.194	1.052	$8,835
* #	122	VT-14, VT-62, US-302	Freeway/Expressway (u)/Principal Arterial (u)	Barre City	1.200 - 1.210	25100	5	42	0	9	34	0.871	0.916	1.051	$17,407
	123	VT-17, VT-22A	Minor Arterial (r)	Addison	8.320 - 8.440	5762	5	10	0	3	7	0.904	0.95	1.051	$21,120
*	124	VT-117, FAS 0213	Minor Arterial (r)/Major Collector (r)	Richmond	0.650 - 0.750	6500	5	15	0	4	11	1.217	1.264	1.038	$19,607
	125	US-5, VT-14	Major Collector (r)	Coventry	0.550 - 0.670	4370	5	8	0	1	7	0.972	1.003	1.031	$13,175
	126	MATTISON ROAD, BENNINGTON, RICE LN., BENNINGTON	Urban Collector (u)	Bennington	0.000 - 0.010	2500	5	5	0	2	3	1.066	1.095	1.027	$25,660
	127	VT-100, VT-105	Minor Arterial (r)	Newport Town	3.870 - 4.030	5238	5	9	0	7	4	0.924	0.941	1.018	$44,478

Vermont Agency of Transportation

Statewide Intersections - Ranking by Actual/Critical Ratio

Years: 2003 - 2007

H.C.L No.	/3.	Route	System	Town	Mileage	ADT	Years	Crashes	Fatalities	Injuries	PDO Crashes	Critical Rate	Actual Rate	Ratio Actual/Critical	Severity Index ($/Accident/1.)
	128	VT-15, VT-104	Minor Arterial (r)	Cambridge	1.750 - 1.880	6864	5	11	0	3	9	0.868	0.878	1.011	$20,564
#	129	VT-14, PROSPECT ST., BARRE CITY	Minor Arterial (u)/Urban Collector (u)	Barre City	1.120 - 1.140	15900	5	26	0	4	23	0.887	0.896	1.009	$14,773
	130	VT-7A	Minor Arterial (u)	Bennington	0.100 - 0.120	13650	5	21	0	5	17	0.838	0.842	1.005	$18,667
	131	US-4, US-7	Principal Arterial (r)		18.730 - 18.820	21300	5	26	0	8	22	0.665	0.668	1.005	$22,623

Note: /1--Average Cost per fatality, injury or PDO is based on 2005 National Safety Council Estimates:
Fatality $1,150,000; Injury $52,900; Property Damage Only $7500.
/2--Routes are logged from south to north and from west to east.
/3.--HCL No. corresponds to statewide ranking by Actual/Critical ratio (separate listing in report).

*** This HCL is within the limits of an anticipated project as identified in the FY2009 Capital Program. Paving projects not included.**
 # Section involves Class 1 Town Highway mileage.

Appendix G
Public Outreach

Focus Group Meetings

Focus Group Meeting Summaries:

- Freight Focus Group – Middlebury, April 1, 2008.
- Freight Focus Group – Middlebury, April 1, 2008.
- Livable Communities Focus Group – East Middlebury, July 4, 2008.

Revised Strategies following Focus Group Review at two meetings:

- Burlington Focus Group Meeting – April 1, 2009
- Rutland Focus Group Meeting – April 2, 2009

Vermont Western Corridor Transportation Management Plan
Focus Group on Freight
Tuesday, April 1st, 1 p.m.
Middlebury College

Attendees	
Name	**Affiliation**
Daryl Benoit	Chittenden County Metropolitan Planning Organization (CCMPO)
Eleni Churchill	CCMPO
Mike Coates	CCMPO-Technical Advisory Committee
Dana Eidsness	Vermont Agency of Commerce & Community Development
Charles Hunter	New England Central Railroad
Adam Lougee	Addison County Regional Planning Commission
Costa Pappis	Vermont Agency of Transportation, Policy & Planning Div.
Nancy Rice	Vermont Agency of Transportation, Rail Section
Brian Searles	Burlington International Airport
Dave Wulfson	Vermont Railway, Inc.

Consultant study team members in attendance: Jan Okolowicz, Parsons Brinckerhoff; Christopher Porter, Cambridge Systematics; Ruth Fitzgerald and Laurel Stegina, Fitzgerald & Halliday, Inc.

A focus group was organized to gain a better understanding of freight issues in Vermont's Western Corridor. Because of the fact that the trucking interests who had committed to attend did not actually attend, the group discussion was primarily focused on rail issues (freight and passenger) rather than the broader topic of freight.

Key points of agreement were as follows:

- Vermont needs to get up to the **national rail weight standard**
- Vermont needs to **streamline** development permitting processes
- The corridor needs a **balanced transportation system** that supports all modes
- **A comprehensive program of education** is needed of the general public, business and community leaders and political leadership (at all levels of government) regarding transportation issues and the importance of transportation to the overall health and economy of Vermont
- This project should result in an **implementation plan**, with clear designation of **responsibility for making the action items happen**
- Projects already in the planning stages or in the pipeline should be completed as quickly as possible
- More **financial resources** need to be generated from both the **public and private sectors**
- **Preservation** of **rail frontage** should be a priority, just as water frontage is preserved for "best and highest use"
- **Railroads and shippers** need to work together in a **cooperative effort** to sustain and expand rail services.

The following is a summary of participant comments:

RAIL

Regulatory/Standards

- In the Western Corridor Vermont Rail System operates approximately 120 route miles and New England Central about 40 miles. The NECR trackage is privately-owned.
- *High priority:* Vermont needs to get up to the national 286,000 pound railroad capacity weight standard as soon as possible to prevent the state from becoming a freight "island"
    - Vermont is behind other states on this issue
    - Businesses may choose to locate elsewhere because of it
    - This issue is preventing some businesses from expanding
    - This is critical for inbound freight
    - Some businesses are choosing to use trucks or off-loading from rail to truck at out-of-state locations, adding to overall freight costs
- Follow-through with implementation of projects is difficult due to
    - The length of time to get a project implemented, due to environmental review requirements as well as the transportation planning and programming process
    - The cost of projects vs. funding available
    - The need to address community concerns (visual impacts, noise, environmental, traffic studies, etc.)
- Clearances are not sufficient for double-stack container rail cars
- Outline the roadblocks and procedural constraints related to project compliance with Act 250
- Streamline environmental documentation and permitting processes so projects (already approved) can move ahead faster

Operations/Management

- Why are businesses that could be using rail not using rail?
    - Time-of-delivery demands and scheduling issues
    - Cost
    - Capacity
- Rail cars are not being loaded to full capacity due to substandard track weight ratings, which impacts everyone (e.g., shippers and consumers are paying more per unit)
- Price of gas may eventually tip balance from truck to rail, as increases in gas prices are immediately passed on to the consumer, although we are not yet close to this tipping point
- Currently, rail is a better alternative than truck for hauling bulk commodities such as oil, lumber, solid waste, construction debris
- Improved rail system could provide a competitive advantage to bulk business in Addison County
- Retail goods would be very difficult to shift to rail — retailers have their own distribution systems and typically do not carry enough of any specific item to warrant bulk transport
- Rail co-ops are needed to advocate and promote rail, purchase rail car space, and execute projects for rail

- Network reliability is a concern — if one link fails (e.g., due to a tunnel collapse), the whole system will be down — The North Avenue Tunnel on the rail connection between Burlington and Essex Junction is a concern.

Education and Outreach

- There is a general lack of understanding at all levels — the public, elected leaders (particularly local and state), the business community, and state and regional agencies — about the importance of rail to the state's economy and environment
- Education and outreach is needed to link the importance of rail investments to the state's economy and environment
- People need to understand "what's in it for me"
- The public needs to contact state legislators and urge rail investment

Land Use

- The majority of rail users is located "off-line" and need trucking to transfer goods to and from rail lines.
- Ideal situation is a user with a direct rail siding — however if the business is sold to a non-rail concern, this ideal industrial/commercial site is lost for rail service.
- There is only a limited amount of rail frontage (like waterfront). Therefore, the ***best*** use of the land needs to be identified and municipal land use controls and other incentives put in place to preserve land with rail frontage for businesses that will use the rail line — the state cannot afford to lose such prime industrial sites
- Establish an industrial "railhead" land trust
- Provide model zoning ordinances to municipalities for preserving rail frontage
- Attract businesses that will use the rail line with tax incentives
- Acknowledge that there are rational reasons (like tax revenues) that municipalities fill vacant lots with any type of economic development. There need to be strategies and mechanisms (incentives or disincentives) in place to counter this
- Encourage large retailers, that currently have regional distribution centers for trucks (e.g., Home Depot, Lowes), to consider rail instead
- Focus development projects for rail within growth centers
- Establish industrial centers with rail sidings and foreign trade zones. Bulk transport becomes more efficient when there are multiple companies in one place, due to economies of scale with local labor and equipment
- Devise land use mechanisms for rail (e.g., "rail routes" that mimic benefits to trucks for using designated truck routes)
- Coordinate all of these land use efforts at federal, state, regional, and local levels (as appropriate)

Environmental/Quality of Life Issues

- Potential threat of being designated an air quality non attainment area may be an incentive to use rail more
- Profitability may not need to be the benchmark for rail investment. Rail is better for Vermont's:
    - Quality of life

- Environment and climate change issues. Increased use of rail has been identified as a greenhouse gas mitigation strategy by the State

Funding

- There is limited funding and fiscal constraints need to be overcome
- State funding or other local funding is needed to provide the local match to leverage Federal dollars
- Grab "low-hanging fruit" or projects that get biggest bang for buck
- Build on and tap into Vermont's history and heritage of rail investment
- Opportunities for funding include FRA Rail Infrastructure loan program for infrastructure upgrades and improvements. One problem is that private rail operators using publicly-owned rail lines cannot pledge the public assets as collateral for these loans.
- Would private sector be interested in buying rail lines and then improve them and maintain them? (Problem — scrap value may be worth more to them resulting in loss of rail resource — so how do we ensure that they are kept as operating rail lines?).
- This study could provide a blueprint for the level of rail investment needed to provide corresponding economic benefits in the Western Corridor

CANADIAN BORDER AND INTERNATIONAL ISSUES

- Security has become heightened at the U.S.-Canadian border, and there are more daily truck safety checks, causing truck traffic delays
- Because border delays are increasing for trucks, there is currently more demand for the use of rail
- Truck-only lanes are being added to the highway to reduce border delays. This is causing temporary construction delays right now
- Some passenger rail service across the Canadian border was discontinued in part because of security delays (i.e., Amtrak's Montrealer)
- A future issue is rail delays due to border security checks
  - VACIS (X-ray machine used for security) is being deployed on U.S. side of border with Canada
  - These security checks will be increased over time — used to check only a few trains per year — now every train will be examined.
- How will incentives to use the Port of Halifax impact the Western Corridor?
  - Will CN continue to re-purchase short or regional rail lines that it had previously "spun-off"? It has done this recently.
  - There may be a revenue opportunity — impose user fees

ROADWAY ISSUES

- Route 7 has limited truck capacity
- Traffic congestion is leading to companies to moving to other less congested states
- Maintenance costs for highway improvements are high
- It's time-consuming and expensive to get permit for an overweight truck

- Each transportation mode has a niche
  - There is recognition that trucks do some things better than rail — what's needed is a balanced system

AIR TRANSPORT ISSUES

- A strong air transport system is important
- Burlington Airport undergoing eight-acre expansion project to accommodate air freight
- FedEx and DHL operate their own services — UPS utilizes a contractor.

INTERMODAL ISSUES

- Competing interests between and among transportation modes and priorities
- Vermont is served by intermodal centers in surrounding states (i.e., Palmer, West Springfield and Worcester in MA, Montreal in Quebec, Auburn in Maine, etc.)
  - Vermont becomes a thru state for intermodal rail traffic
  - Not enough volume for an intermodal terminal (trailers or containers) in Vermont — would need a minimum of 2,000 lifts per month to justify the investment
  - Transload facilities (transfer of bulk commodities) are feasible and desirable— these need to be sited alongside the rail line and can be difficult to construct due to the need for ACT 250 permits.

LEADERSHIP/POLITICAL/JURISDICTIONAL ISSUES

- Strong, committed leadership is needed for rail to become a funded priority in Vermont
  - Governor
  - State Legislature
  - Agency of Transportation
- Agency of Transportation has a road/highway focus
- Institute four-year political terms for governor and legislature
  - Benefits longer-term thinking
  - Less focus on re-election
- Investments in rail infrastructure are harder to support politically if it involves a choice between improving the rail or the roads because rail is perceived as serving a smaller constituency
- Difficult to pass multi-year rail investment package through legislature, as funding is based on annual budget
- Need a coordinated vision for a balanced transportation system (for all modes)
- Need an implementation plan with true leadership and clear responsibilities
- Need to build consensus
- Vermont doesn't need to do more studies — rather, implement the projects that have already been studied

GENERAL COMMENTS

- Other states are doing better at attracting business (i.e., New Hampshire, Massachusetts, New Jersey)
- Be aware of GRIP projects and strategies and fold into or otherwise address in Western Corridor plan
- Be aware of CCMPO Work Plan with respect to freight initiatives
    - Marketing/Survey
        - How can freight be moved differently? Look at thresholds for shifting from truck to rail
        - Identify more uses of and benefits from freight
    - Freight coop
        - Advocate and promote rail
        - Purchase and/or broker rail car space
    - Work with municipalities on:
        - Zoning and other land use tools that will help preserve rail corridors and sidings
        - Trans-load infrastructure
- The Vermont Department of Economic Development can assist Western Corridor study with surveys, data, outreach

Vermont Western Corridor Transportation Management Plan
Focus Group on Economic Development
Wednesday, April 2nd, 9 a.m.
Middlebury College

Attendees	
Name	**Affiliation**
Eleni Churchill	Chittenden County Metropolitan Planning Organization (CCMPO)
Tom Donahue	Rutland Region Chamber of Commerce
Keith Dunn	Westminster Cracker
Bill Gillam	South Station
Richard Hosking	Vermont Agency of Transportation, Rail Section
Robert Huth	Middlebury College
Ed Morrow	Northshire Bookstore
Jim Moulton	Addison County Transit Resources
Ellen Ogden	Vermont Cheese Council
John O'Kane	IBM
Dick Pembroke	Former Chair House Transportation Committee
Mike Quinn	Vermont Department of Economic Development
Parker Riehle	Vermont Ski Areas Association
Jamie Stewart	Addison County Economic Development Corporation

Consultant study team members in attendance: Jan Okolowicz, Parsons Brinckerhoff; Christopher Porter, Cambridge Systematics; Ruth Fitzgerald and Laurel Stegina, Fitzgerald & Halliday, Inc.

A focus group was organized to gain a better understanding of economic development issues in Vermont's Western Corridor.

Key points of agreement were as follows:

- **Implementation of transportation projects** that have undergone planning process and are already in the pipeline should be carried out as quickly as possible ("pull the trigger")
- Projects take **far too long** to happen
- **Maintenance of existing transportation infrastructure** — which is often neglected — is critical to Vermont's economy. More critical than new projects is maintaining the existing infrastructure in good repair.
- Assumptions and comments about Vermont's "**quality of life"** should not be used to deny or avoid the realities of the state's **transportation and infrastructure shortcomings**
- The corridor (and Vermont) need a **seamless intermodal transportation system** — with **more links** between modes and **more connections** to major destinations

- **A comprehensive program of education** is needed of the general public, business and community leaders and political leadership (at all levels of government) regarding transportation issues and the importance of transportation to the overall health and economy of Vermont
- More effective **communication, coordination, and leadership** is needed at all levels of government and during all stages of project development
- **Funding** (e.g., through the existing gas tax, user fees) which is ***dedicated exclusively*** to transportation infrastructure should be a top priority

Following is a summary of participant comments:

REGULATORY/STANDARDS

- Bring Vermont up to the national 286,000 pound railroad capacity weight standard
- Follow-through with implementation of projects is difficult due to
  - The length of time to get a project implemented due to environmental review requirements as well as the transportation planning and programming process
  - The cost of projects vs. funding available
  - The need to address community concerns (visual impacts, noise, environmental, traffic studies, etc.)
- Vermont should look at all policies and statutes on the books and clean-house
- Take the bureaucracy out of the ACT 250 process. Streamline the permitting process — it's hard to get even a "clean business" permitted in Vermont

OPERATIONS/MANAGEMENT

- Maintain existing roads and bridges and make improvements to neglected infrastructure — identified as a near-universal priority
- "Pull the trigger" on projects that have undergone the required planning process and where local funding is available (i.e., implement the projects that are already in the planning phase before planning too many other projects)
  - Examples of projects that have been delayed or the no-build alternative has been selected after considerable money has been spent on studying various build alternatives:
    - Circ Highway
    - Rutland Rail Yard
    - Middlebury Rail Spur
    - Bennington Bypass
- Work towards a seamless transportation system
- Railroads and smaller shippers/receivers should work together to try and see how shippers/receivers can cooperatively buy in bulk and use rail instead of truck.
- Railroads should create rate incentives (e.g., discounted rates for rail users)
- The population density of Vermont is much different than Tokyo, Japan. However, Tokyo provides an example of:
  - A seamless transportation system
  - How user fees can pay for infrastructure

ECONOMY

- The economy as it exists today (with centralized large industrial/manufacturing clusters) will not be the same in the future. The economy of the future is more likely to be decentralized (with smaller dispersed professional and educational services). Company sizes are likely to be in the low hundreds, not thousands. Accordingly, transportation infrastructure needs will also be different
- There is a need for more high-paying "green" manufacturing jobs in the Western Corridor

PUBLIC INFORMATION/EDUCATION AND OUTREACH

- Devote money to public information/education and emphasize the benefits of alternative transportation modes (i.e., public transportation)
- Educate the general public on the connections between transportation and economic development
- Educate legislators and provide them with incentives to listen and participate in the planning process
- A personalized, customer-friendly approach is important to public education
- Tourism information should be designed to instruct visitors on how to use public transportation in the Western Corridor
- Business people need to come to the table and discuss issues in public, not hide

LAND USE

- There is ongoing work-in-progress on smart growth strategies for Vermont
    - Includes affordable housing (there is a low inventory in Vermont)
    - There is also a thin housing inventory for those in middle income bracket
    - There are plenty of upper income houses. However, these more expensive houses are not always located where they are needed. As a result, people live farther away from work and commute longer distances
- Allow increased density and clustering of residential developments, but resultant construction of taller, closely spaced buildings may be a problem for community acceptance.
- Focus development in specific economic growth areas
- Local communities may be resistant to changes that would reduce sprawl
- Waste water treatment reform is needed — in Vermont only a municipality can build a treatment facility — this forces developers to build septic systems on larger lots.
- An example of creative change: Currently, fuel is brought to Middlebury College from outside the state by rail, but the fuel is transferred to truck for delivery to the College. In the future, Middlebury College will have its own biomass plant that uses wood chips, relying less on the transportation system

QUALITY OF LIFE

- Entrepreneurs come to Vermont for the state's quality of life, and they overcome obstacles to do business in Vermont
- Quality of life is personal — it's in the eye of the beholder
- Good roads/transportation is an important aspect of quality of life
- Quality of life is different for incoming affluent residents versus long-time residents
- Quality of life discussions should include more demographic groups (e.g., young adults) — future economic viability will be driven by the ability to attract and retain young people
- Shouldn't use "quality of life" as an excuse to overlook other social and economic concerns, otherwise this may come back to bite us someday
- Understand what a broader cross-section of Vermont needs in terms of infrastructure
- Why would a Middlebury College graduate want to stay in Vermont?
    - There is no night life
    - There is no affordable housing
    - There is a poor access to the health care system

FUNDING

- Priorities need to be developed for transportation investments. Who will set the priorities?
- The infrastructure problems are known, but there isn't enough funding available to solve them. How can state government spend money more effectively and efficiently?

<u>Funding Streams</u>

- There needs to be a dedicated revenue stream for improvements to transportation infrastructure
- Funding streams may come from:
    - Public-private partnerships
    - Gas tax increase
    - Public sector solutions
- Match and leverage private sector contributions
- There needs to be a federal funding stream for freight rail
- All transportation revenues should stay in the transportation fund
- Rail revenues should go to a dedicated rail fund for improving rail infrastructure
- Air revenues go to dedicated air fund
- Share benefits and contributions from
    - In-kind services
    - Impact fees
- Securing a local match is an issue; the project may or may not be a local priority

<u>Taxes/Incentives</u>

- Establish an earmarked gas tax, with all revenues to benefit transportation in the Western Corridor

- While Vermont already has a gas tax, some of the funds raised from this gas tax are currently distributed for non-transportation purposes. Establish a *dedicated* fund from revenue raised from the gas tax, so that *all* revenue raised from the existing gas tax goes to transportation infrastructure. Then, increase the gas tax.
    - There will be a short-term impact to businesses
    - Business okay with a short-term impact, as long as revenue goes back into transportation infrastructure for long-range benefits
- Establish a vehicle tax related to the energy efficiency of the vehicle
- Don't raise taxes — find another way to raise revenues
- Create state-sponsored incentives (e.g., tax credits) and state subsidies (e.g., state match to leverage federal dollars) for rail transportation infrastructure improvements
- Create incentives to foster inter-municipal and regional cooperation
    - Example: Fund interregional bus transit service from Bennington to Rutland
- Create a program (like Food Stamps) for an energy efficient vehicle taxi service to help people get to a central location where they can pick-up public transit to get to work
- Use gas tax as a disincentive to dependence on the automobile
- Gas tax is a good way of getting people/users to pay for infrastructure
    - As price goes up, there is an incentive to use other modes of transportation
- Attract new business with tax benefits and a skilled workforce

<u>User Fees</u>

- How should the state collect money from users of the transportation system?
- Establish reasonable and dedicated user fees to benefit the Western Corridor
- Think of rail corridors as infrastructure/utility corridors which can accommodate other uses such as fiber optic lines.
- The state could double its revenue with lease payments of rail lines
- Private railroads pay to lease/use publicly-held rail infrastructure. These lease payments that go to the state should be used for the purpose of rail improvements
- Heavier users and more frequent users of rail lines should pay more

<u>Other Comments</u>

- There is no need to raise more revenue if we keep the transportation revenues in the transportation fund
- Divert money from social services and use for transportation
- With higher gas prices and gas tax, the State of Vermont can assist low-income families with getting to work

LEADERSHIP/POLITICAL/JURISDICATIONAL/COORDINATION ISSUES

- Better coordination is needed between and among federal, state, local levels
    - There is a lack of coordination and scheduling/programming of funding
    - This has an impact on local partners
- Vermont Agency of Transportation needs to
    - Be more intermodal in its thinking
    - Complete projects

    - Involve the private sector
    - Provide leadership
- Stop the state legislature from micro-managing projects
- Work within existing structures and agencies rather than create new umbrella agency to help improve coordination
- Leadership with interest in, understanding of, and drive to do something about the issues is needed
- There is no system in place for rewarding good local leadership (e.g., elected officials, and community and business leaders)
- Bring local people together, build and reward for reaching consensus
- Local control is the curse of Vermont (example: there are 14 regional tourism groups)
- Need a central dispatch center to coordinate small operations, groups, entities, transportation providers
- It's easier for politicians to fund studies than projects
- Studies sit on a shelf unless there is someone who takes responsibility, owns the project, and makes it happen
    - Project champions (public and/or private sector) are needed
- Reduce state and federal study redundancies
- Get Congressman Patrick Leahy involved in the transportation planning process (e.g., send him a copy of this study upon completion)
- Establish a moratorium on new studies until Vermont implements what has already been planned

PUBLIC TRANSPORTATION

- Public transportation plays an important role in getting workers to jobs; ridership is increasing as gas prices increase
- Increase investment in public transportation in certain key areas
- Instead of spending money on private ownership of cars at a cost of $6,000 per car per year, use a small percentage (10%) of that money to create a comprehensive, convenient public transportation system with:
    - Seamless service
    - Frequent service
    - Good geographic distribution
- It is easier to schedule transit stops at major employers (like IBM) than lots of smaller employers
- Western Corridor now has a well coordinated "linked" public transit bus system.
- Regional coordination among local transit services requires good managers.
- Taxis needed to support public transit service — some people need door-to-door service
- Invest in the passenger rail system

FREIGHT — RAIL AND TRUCK TRANSPORT

- Private railroads should reach out to the public sector to enlist support for rail freight

- Larger companies (like OMYA) should reach out to smaller companies to identify how more businesses can use rail
    - This is happening through GRIP
    - Regional Planning Agencies are involved in this process
- Moving heavy freight is very different than moving people – they rely on different funding streams
- Improve rail for freight; this will also help passenger rail
- Prioritize the Burlington-Manchester Corridor (both road and rail improvements)
- Woodstock is a truck (freight) bottleneck. This needs to be resolved.
- Many freight shipments are time-sensitive and in small quantities — would be difficult or impossible to shift to rail
- Border crossing delays and flight delays can create critical losses of customers
- Investigate how to support smaller businesses in reducing costs and moving freight more efficiently, e.g., by establishing shipping cooperatives

ROADWAY ISSUES

- Lack of highway connections to Interstates (e.g., I-87) in the central and southern part of the corridor is a major disadvantage — current access is via "backroads"
- Improve the U.S. Route 7 corridor — it is the region's "main street"
- Bennington Bypass in place — now need Rutland and Middlebury bypasses.
- Maximize return on infrastructure investments. Spend less on beautification projects.
- Use the roadway classification system to prioritize higher classified roads for state funding. Give local control to municipalities for lower classification roadways.
- Technology will change the types of vehicles on the road in the future
    - There will be more electric alternatives
    - There will be more opportunities to share vehicles

AIR TRANSPORT ISSUES

- Expansion of air travel options (e.g., Cape Air to Rutland, shared corporate jets) has made a huge difference and will be increasingly important to the economy
- Prioritize airport improvements
- Rutland Airport runway extension and instrument landing system (ILS) installation paid for by local business dollars — can't get state and federal agencies on the same schedule. Larger issues here — permits are ready but funding isn't in place; then when the funding becomes available permits have expired so everything is continually delayed.
- Increase the length of some runways, e.g. Middlebury Airport

INTERMODAL ISSUES

- Better intermodal public transportation connections and communications are needed (e.g., shuttles from airports to towns)
- Demand that intermodalism be a consideration on every project

Livable Communities Focus Group

Western Corridor Transportation Management Plan
Wednesday, June 4, 2008, 1 – 4pm
Waybury Inn, East Middlebury

Attendees	
Name	**Affiliation**
Scott Bascom	Vermont Agency of Transportation
Eleni Churchill	Chittenden County Metropolitan Planning Organization (CCMPO)
Fred Dunnington	Town Planner, Town of Middlebury
William Finger	Town Manager, Town of Middlebury
Dolly Fleming	Community of Vermont Elders
Kate Lampton	Former Executive Director, Champlain Valley Greenbelt Alliance
Jim Moulton	Addison County Transit Resources
Jenny Nixon-Carter	Rutland Area Physical Activity Coalition
Diane Novack	Southwest Vermont Council on Aging
Dean Pierce	Town Planner, Town of Shelburne
Jennifer Wallace-Brodeur	Chair of Livable Communities Project Burlington, AARP Vermont

Consultant study team members in attendance: Jan Okolowicz and Alison Felix, Parsons Brinckerhoff; Ruth Fitzgerald and Jill Barrett, Fitzgerald & Halliday, Inc.

MAJOR THEMES:

- Mobility enables people to be integrated into community life; lack of mobility leads to isolation.
- Transit needs to be available and at frequent intervals.
- Infrastructure (sidewalks and bicycle facilities) should be put in place for people to get around by means other than cars.
- Conserve open space and direct development to town centers as a transportation management tool and also for mobility/quality of life.
- Local communities are constrained in raising funds to solve local problems because taxation beyond property taxes requires special approval from the state legislature.
- There is a “lack of teeth” in regional planning due to fierce protection of local control in our culture which leads to poor coordination and financial inefficiency among communities.
- We should follow the “complete street” philosophy that our streets should have a better balance among modes, and not be dominated by cars.
- More awareness and leadership is needed regarding transportation issues and their associated costs.

What is a "livable community?"

- People have full access and connection to community life. This is especially challenging for seniors. For example, seniors can get transportation to visit the doctor but not for other trips.
- An integrated community, with mixed land uses.
- The majority of daily needs are met locally, many within walking distance.
- Living is affordable.
- There is infrastructure (sidewalks and bicycle facilities) in place for people to get around by more than cars. Sidewalks are present and well maintained.
- Community is real, not contrived; it evolves naturally or organically over time.
- People are engaged in the community.

What needs to be done to create livable communities?

- Better integration of specialized housing (elderly, assisted living, disabled populations) within communities.
- Greater understanding and removal of the subtle barriers that impair enjoyment and mobility within communities. Examples include street furniture to provide respite and walk signals with longer cycles so pedestrians can more comfortably cross streets.
- Leadership. Government should change "business as usual" style of operating to be more responsive and collaborative in its approach.
- Subcultures should be affirmed, appreciated and integrated into community life.
- Communities need numerous gathering places for people to mingle.
- Green space, historic buildings and local culture should be preserved.
- There is a need to promote the concept of the common good and to do things for the benefit of the community.
- A "culture of thoughtful risk-taking" should be pursued to accomplish difficult tasks that will result in big improvements. For example, the Town of Middlebury is building a second bridge over the river to relieve congestion that is choking its town center.
- Find ways to communicate with a public that gets information from dispersed sources, not a common media.
- Encourage development of good jobs within communities.
- Strive for multi-modal and seamless transportation connections.
- Preserve the historic fabric of a community (e.g; open space and buildings).

What are the issues/barriers to creating livable communities?

- More creative leadership is needed at every level.
- "Break down the silos" that prevent collaborative approaches to problems/service delivery.

- Local communities are constrained in raising funds to solve local problems. Special permission to tax its citizens beyond what is allowable by property taxes must be given by the state legislature on a case-by-case basis.
- Land use and transportation needs are interrelated but local people and policies do not often consider this link.
- There needs to be a radical shift in how we think about the world. For one hundred years we have been viewing our communities through the lens of the automobile. We need to expand the assumption that people will drive to include other modes of transportation.
- Why are all other modes of travel besides the car seen as an "alternative?" By using that vocabulary it implies the automobile has primacy over other ways of travel.
- Planning for communities should be more integrated with other jurisdictions so there are compatible goals. For example, communities may want slower speeds in their town centers whereas roads are often designed and managed by the state for higher speeds. Or, one community may approve a land use that may have a negative impact on its neighboring town.
- There is a "lack of teeth" in regional planning due to fierce protection of local control in our culture. This leads to poor coordination among communities.
- Lack of public understanding of issues/problems communities face.
- People should be mobilized to tackle problems and become engaged in their communities.
- The public has relinquished control over community planning to the technicians. They perceive issues as too complex and do not know when or how to interact with decision-makers. Projects take too long to resolve/implement for the public to maintain a continued interest.
- There are few advocates for bus riders.
- Inter-regional transit is inadequate or non-existent.
- Attempts at passenger rail were not successful because the equipment was perceived as being out-dated and service was not timely.
- Truck traffic through communities is a problem.
- People need to understand the real cost of supporting automobiles. If only a fraction spent on that mode were put into other modes there would be significant improvements in service.

What could be recommended as part of this study to improve livability in the Western Corridor?

<u>Transportation</u>

- More frequent transit and intra-city routes.
- Develop parallel systems in the corridor. Invest in rail to support freight while developing more transportation choices on highways/roads.
- Let the market 'work things out.'

- Understand land use patterns and how the road functions before deciding what tools to use to make improvements.
- Give pedestrians more priority over cars. For example, setting the timer at crosswalks to allow more seconds to cross would make a big difference in people's willingness and ability to walk.
- Follow the "complete street" philosophy that our streets should have a better balance among users, and not be dominated by cars.
- Increase use and availability of park and ride programs. Actively promote and build infrastructure at these lots.
- Identify private, informal lots already in use for park and ride programs.
- Make state regulations less arduous.
- The state should require bike racks on buses in every region. Currently the decision whether to buy a rack is made by the regional transit districts.
- The state should encourage multi-modalism.
- Create incentives for carpooling and transit usage.
- Look to public/private partnerships to fund transportation improvements.
- Modifications to Route 7 must include bicycle and pedestrian infrastructure. Dedicated bike lanes would be terrific.
- There should be well-maintained sidewalks in every town.
- Vermont's "Smooth Ride" (highway paving) program should also include road shoulders for bicyclists.
- "Un-suspend" the bike funding program. For the last 4-5 years, only projects being supported are those that are already in the pipeline.
- Change criteria #5 in Act 250 to include all modes when evaluating impacts.
- Create independent car sharing stations along Route 7 in cooperation with Car Share VT (like ZipCar program).
- Support the Rideshare program now under state purview.
- Create a licensed hitchhiking program.

Community Development

- It is important for people to be close to where they work as it gives them more time and money to invest in their community.
- Need downtown development with higher densities.
- Town Planners need to better understand the transportation picture.
- Conserve open space and direct development to town centers as a transportation management tool. Keeping open space reduces curb cuts and promotes efficiency of movement.
- Study should be mindful of the "silver tsunami," a growing elderly population who wants to age in place. There are 11,000 low wage earners who support elderly people living in their homes. Transportation for these workers is an issue that could perhaps be eased by transit or ridesharing.
- Integrate transportation (not just traffic considerations) with every development decision. An intermodal approach should be taken when reviewing plans. For example, is there connectivity to downtown, is there transit, are there sidewalks?

- Utilize revenue from impact fees to benefit all modes.
- Enable regions to have regional gas taxes at county or sub-regional levels.
- State siting of schools, hospitals and public buildings needs to change so they are supported by transit.
- Regional land use authorities need to have regulatory powers.
- Support the 'Vermont Downtown Program.'
- Create incentives for people to travel to urban cores.

Public Awareness

- Educate the public on the true cost of car ownership and driving.
- Discourage energy inefficiencies in all aspects of our lives.
- Encourage telecommuting.
- Communities and other public entities should coordinate event and meeting schedules so people can carpool and take transit.
- Create a local options tax for transit.
- More awareness/leadership is needed regarding transportation issues and costs.
- Educate a broad spectrum of the public.

Vermont Western Corridor
Transportation Management Plan
April 21, 2009

Post-Focus Group Candidate Strategies and Actions

Highway Strategy		Description
HWY-1	Improve signalized intersections where LOS E or F conditions are experienced.	Potential improvements at signalized intersections to address severe congestion, characterized by Level of Service (LOS) E or F conditions, include: – Providing additional lanes or turn pockets; – Improving signal timing, or upgrading traffic signal detection, coordination and controller equipment; – Redesigning the intersection as a roundabout. VTran's standards call for designing new facilities to a LOS C or better standard, but recognize that lower LOS standards may be appropriate in certain situations (especially in more urbanized areas). The ability to achieve LOS C should be considered in the evaluation of this strategy.
HWY-2	Upgrade high-use, congested two-way stop controlled intersections.	VTran's design standards call for LOS D or better conditions for these side-street approaches when their volume exceeds 100 vehicles per hour (150 for a multi-lane approach). Intersections may be upgraded to accommodate higher side-street volumes and improve LOS by means of; – Conversion to a roundabout; – Addition of turn pockets or refuges; – Installation of a traffic signal. In cases where traffic signal installation is proposed, AASHTO's MUTCD traffic signal warrants should also be considered since the addition of traffic signals can increase delay on the primary route and may have unintended adverse impacts on safety if applied under improper conditions. Traffic signals will only be considered in cases with heavy side-street volumes and where other measures (roundabouts or lane/pocket improvements) are not practical.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Highway Strategy		Description
HWY-3	Widen roadway segments to provide additional lanes in both directions on arterial segments with LOS E or F conditions.	Consider widening to provide additional travel lane(s) on segments with LOS E or F conditions under projected (2030) design hour traffic volumes.
HWY-4	Provide intermittent passing lanes on arterial segments with LOS E or F conditions.	Consider the addition of an additional single-direction (non-competitive) travel lane on segments with LOS E or F conditions under projected (2030) design hour traffic volumes. These would be provided intermittently to allow passing opportunities.
HWY-5	Install climbing lanes along State highways within the corridor where warranted due to volumes and speed reductions.	Add a climbing lane on segments with LOS E or F conditions under projected (2030) design hour traffic volumes where lack of passing opportunities appear to impact LOS.
HWY-6	Increase lane and shoulder width to meet VTran's Design Standards (outside of town centers).	In rural and less-developed areas, the corridor could be updated to meet VTran's design standards for lane and shoulder width. Relevant VTran's standards are 12-foot lanes with 8-foot shoulders for 50mph segments, and 11-foot lanes with 8-foot shoulders for segments with lower posted speeds. Note that within towns and villages, different considerations apply, and in come cases, narrowing of lanes to achieve traffic calming may be warranted (see QL-3 and QL-5).
HWY-7	Implement a comprehensive, corridor-wide safety improvement program.	Identify and implement improvements to address safety issues for any locations identified through FHWA's "Five Percent Reports" for 2006-08.
HWY-8	Establish weight limits on Interstate highways that are consistent with neighboring states.	Change weight limits on Interstate Highways to be consistent with neighboring states and provide options for trucks that may otherwise be restricted to using US 7 and other state routes.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Highway Strategy	Description
HWY-9 Circulation improvements within urban/village centers.	Study and make changes to improve vehicle circulation within urban /village centers, including evaluating street patterns (one-way or two-way), access management, turn pockets, signalization/traffic control, wayfinding/signage, short-term and long-term parking, etc.). These improvements could be implemented in conjunction with streetscape, pedestrian, bicycle, and transit access improvements identified as Quality of Life (QL) measures.
HWY-10 Region-wide operating agreement.	Implement a region-wide agreement among local municipalities that defines consistent and compatible transportation operating policies (e.g. – truck hours of operation, truck routes, municipal regulations, etc.) and mitigation strategies.
HWY-11 Redirect traffic to alternate routes.	More efficiently utilize the existing roadway network through increased promotion of alternate routes that are designed to accommodate higher traffic volumes or are underutilized (e.g. – longer distance trips to I-89/I-91, I-87, or VT-22A)
HWY-12 Improve or reduce the number of highway-rail grade crossings	Construct grade crossing improvements at locations identified by VTrans as priority locations within the corridor to improve highway grade-crossing safety. Evaluate the possible closure of some grade crossings when appropriate alternate crosses exist.

Additional Notes on HWY Strategies:

- Additional strategy added to distinguish between widening to provide additional lanes (HWY-3), intermittent non-competitive passing lanes (HWY-4), and climbing lanes (HWY-5)
- Significant disagreement over whether HWY-8 (Increase Interstate Weight Limits) should move forward as a strategy. Some felt that this could be counter to the stated objective of increasing rail freight movements, while others thought that obtaining federal approval would be very difficult. Those who favored keeping the strategy pointed to the limited options available for over-weight trucks, impact to non-interstate highways, and

inconsistency with neighboring states, all of whom have higher weight limits on their interstate facilities. Some suggested that increased limits might be considered only on those segments that are parallel to and provide a direct alternative to VT-7 (i.e. – north of Burlington).

Rail/Freight Strategy		Comments
FT-1	Designate truck routes and implement town center truck bypass routes using existing roadways.	Implement truck bypass routes (on existing roadways) in towns and villages where alternate routes could potentially reduce adverse impacts of truck traffic on the community. Possible examples include an alternative truck route to the OMYA transload facility along VT 116, or use of VT 17 as an alternative to VT22A through Vergennes. Ensure that infrastructure is adequate for designation as a truck route.
FT-2	Invest in rail infrastructure (track and bridges) in order to achieve the national standard of 286,000 lb. load rating and eliminate current clearance restrictions..	Increase the quality of rail infrastructure to allow higher loads, consistent with national standards and the VT State Rail and Policy Plan. (See additional FT notes following this table).
FT-3	Establish a regional network of transload facilities to provide efficient intermodal (truck and rail) connectivity.	Develop a regional network of transload facilities to improve intermodal connectivity and increase rail freight mode share.
FT-4	Improve access between truck facilities and rail facilities or airports.	Improve access routes (roads) that connect major truck routes to rail facilities or airports to improve access to intermodal connections.
FT-5	Implement additional incentives for shippers to use rail rather than trucks,	Develop a program of additional incentives to improve the relative competiveness of rail freight.
FT-6	Improve rail service reliability.	Work with railroads to improve consistency in providing scheduled service to shippers.
FT-7	Work with Canadian and US entitles to reduce international border crossing constraints for freight and passenger rail.	Streamline the customs and inspection process for freight and passenger rail services to decrease travel times across the US – Canadian border.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Rail/Freight Strategy		Comments
FT-8	Expand and promote the freight shipper cooperative or broker program.	Enhance existing efforts to bundle or broker shipping. These programs involve contracting with railroads for the use of a certain number of railcars, thereby obtaining a discounted rate. The broker then obtains shipments for the cars from various shippers within the Western Corridor service area. Individual shippers would obtain a better rate as opposed to securing cars individually; the railroad / car owners would be guaranteed revenue associated with a certain number of car movements; and the broker would be actively soliciting shipments for the allocated railcars thereby performing a marketing function for the railroad.

Additional Notes on Rail/Freight Strategies:

- Re: FT-2. It was noted that national rail standards are trending toward allowing heavier loads. VTrans policy currently calls for application of a 315,000 lb. limit when being reconstructed. How should the study account for this trend?
- Strategy to improving railroad grade crossings was moved to Highways section (HWY-12).

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Land Use Strategy		Comments
LU-1	Implement Access Management Strategies	Encourage consolidation of highway access points (driveways and side streets) to reduce traffic and safety impacts to major corridors. Provisions for transit access and bicycle/pedestrian-friendly connections should be part of access management strategies. Implement Access Management Guidelines as to guide (re)development.
LU-2	Encourage compact, mixed-use and transit-oriented development within towns and villages to improve mobility for all.	Implement and enforce zoning and land use regulations, adequate public facilities ordinances, state and/or local incentives, or similar mechanisms to focus commercial and residential growth within towns and villages. Targeted areas near transit centers and commercial areas could be targeted for denser residential development or location of specialized housing for transit dependent populations (elderly, assisted living, disabled) This would increase walking opportunities and access to transit.
LU-3	Encourage preservation of appropriate rail frontage for commercial or industrial that will/could utilize rail services.	Establish legal mechanisms to reserve or provide incentives to preserve strategic properties with rail frontage for commercial or industrial that will/could utilize rail services. Ensure that those properties also have highway access.
LU-4	Preserve abandoned transportation corridors and rights-of-way.	Preserve defunct transportation corridors for future transportation related uses (rail bank, land bank, etc).
LU-5	Promote appropriate land use near airports.	Reserve land adjacent to sensitive transportation uses (e.g. – airports) though easement or purchase and actively manage the right-of-way.

Additional Notes on Land Use Strategies:

- Combined former strategies concerning location of special-needs housing and transit-oriented development with LU-2, Compact, Mixed use Development.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Alternatives to Single Occupancy Vehicle (SOV) Travel(i.e., Public Transit, Bike, Pedestrian, Demand Management)		Comments
ALT-1	Expand system of Park-and-Ride facilities and improve existing facilities.	Create additional Park-and-Ride facilities to allow access to transit services and carpooling (ridesharing) at strategic locations. Ensure that facilities are well-maintained and have appropriate amenities, such as lighting. Explore opportunities to co-locate Park-and-Ride facilities with commercial development.
ALT-2	Improve corridor-wide public transportation services.	Provide new or expanded transit service and improve connections between current public transportation services (physical connections and scheduled transfers) to improve the viability of public transportation for longer corridor trips and for service to transit dependents such as seniors, persons with disabilities and low income families.
ALT-3	Develop a network of intermodal passenger hubs to improve connectivity among the various modal choices.	Develop a network of intermodal passenger hubs that improve access and coordinate transfers at locations with good access to bus and (potential) rail and with high accessibility to people, employment and shopping.
ALT-4	Expand traveler-information systems	Develop and implement a system of Intelligent Transportation Systems technologies to provide travel information. Examples include real-time congestion/travel conditions information, transit schedules (timetables and/or real-time info), ride matching services, etc. These may be implemented through a combination of web-based, roadside and publicly accessible features.
ALT-5	Increase the visibility of public transit in the corridor through effective marketing	Develop and implement coordinated marketing and public information campaigns to increase awareness and use of public transit services.
ALT-6	Consider alternative public transit fare structures to promote ridership.	Work with transit providers to develop alternative fare structures or develop fare subsidy programs to encourage public transit ridership by decreasing user costs.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Alternatives to Single Occupancy Vehicle (SOV) Travel(i.e., Public Transit, Bike, Pedestrian, Demand Management)		Comments
ALT-7	Expand passenger rail and intercity bus service	Expand passenger rail service within the corridor to both provide regional connections as well as connect communities to key destinations out of state. Investigate both commuter rail and intercity rail service options.
ALT-8	Expand Travel Demand Management (TDM) program	Develop a coordinated program of strategies aimed at reducing vehicle trips, particularly during peak periods and in congested regions. These programs could be directed toward the public in general, or to major employers, industries, etc. They can also include voluntary or mandatory (legislated) elements.
ALT-9	Improve local feeder bus and paratransit services and connectivity.	Expand the use of feeder bus routes and paratransit services that utilize flexible routing and scheduling to expand the range of public transportation services (for bus, rail and air passengers).
ALT-10	Strengthen and expand pedestrian and bicycle improvement programs in local communities	Develop programs to identify, prioritize and implement bicycle and pedestrian facilities in communities along the corridor consistent with the VT Bicycle and Pedestrian Policy Plan. Programs should consider design standards, current practices, and specific projects aimed at improving bicycle and pedestrian comfort, access and safety.
ALT-11	Improve ferry/transit intermodal linkages	Improve transit connections and options for ferry users by providing transit services coordinated with ferry arrivals/departures and parking adjacent to ferry terminals.
ALT-12	Expand car-sharing programs.	Expand existing carsharing programs in western Vermont (Carshare Vermont in Burlington or Zipcar in Middlebury).
ALT-13	Educational Campaign	Institute a campaign to education the public, businesses and decision-makers with regard to transportation issues and challenges.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Economic Development		Comments
ED-1	Market rail-served properties to appropriate businesses.	In cooperation with railroads, encourage economic development organizations and realtors to market rail served properties to appropriate businesses.
ED-2	Promote Vermont's rail services.	Encourage closer cooperation between VTrans and Department of Economic Development to promote rail services in Vermont, perhaps designating a staff person to be the liaison between these agencies.
ED-3	Utilize Right-of-Way for other infrastructure investments	Utilize existing transportation right-of-way for other infrastructure investments (e.g. fiber optic cable).
ED-4	Improve airport infrastructure at key airports in the Western Corridor.	Improve runways and related facilities to meet standards consistent with airport classification in Vermont's Air Policy Plan and with each airport's master plan.
ED-5	Improve and streamline permitting process for transportation infrastructure projects which are consistent with this corridor management plan.	Explore methods to streamline and improve coordination between permitting agencies to simplify and fast-track development of transportation infrastructure.
ED-6	Design and distribute travel and tourism information	Coordinate with the "Go Vermont!" campaign to prepare and distribute information to tourists regarding travel choices and options along the Western Corridor. Improve ticketing and connections to further enhance this benefit.

Post-Focus Group Candidate Strategies and Actions, continued

April 21, 2009

Quality of Life		Comments
QL-1	Encourage use of alternative fuel vehicles and supporting infrastructure.	Encourage use of alternative fuel vehicles through a marketing campaign and possible financial or regulatory incentives. Support development of necessary infrastructure, such as fueling centers.
QL-2	Improve internet networking, telecommunications, and cellular phone capabilities.	Upgrade infrastructure where lacking to increase the potential to conduct business by phone and internet, reducing the need to travel. Investigate the potential for implementation of remote work centers.
QL-3	Implement traffic calming in town / village centers.	Implement traffic calming measures geared toward reducing travel speeds in developed areas such as town/village centers. These measures aim to improve the environment for pedestrians by slowing vehicle traffic, and also reduce noise associated with vehicles (especially trucks) in communities.
QL-4	Develop a comprehensive noise mitigation/management program	Develop a coordinated program to investigate and implement solutions to address truck and traffic noise, especially in towns and villages. Potential strategies include truck diversion to alternate routes, use of quieter pavements, traffic calming (see QL-3), and architectural treatments (sound walls, plantings, etc).
QL-5	Improve streetscape, aesthetics and design of major routes within/through towns and villages.	Update street and development standards within populated areas to result in streets that reduce adverse impacts of roadway traffic and which are more aesthetically pleasing, which encourages urban health and pedestrian activity.

Additional Notes on QL Strategies:

- Some concern was expressed over how adverse traffic impacts (QL-3 and QL-4) are characterized, since people will perceive impacts differently. Some also suggested that the criteria should note that the need for freight movements needs to be balanced with managing impacts.
- Some skepticism was expressed over implementing QL-2 as originally described.

Public Meetings

May 20, 2009
7:00 p.m.
Addison County Regional Planning Commission
14 Seminary Street
Middlebury

May 27, 2009
7:00 p.m.
Northwest Regional Planning Commission
Franklin-Grand Isle Workforce Investment Board (WIB) Training Facility
Precision Tools
10 Precision Lane
Swanton

May 28, 2009
7:00 p.m.
Rutland Regional Planning Commission
Rutland Regional Medical Center
Leahy Center – Conference Room A
160 Allen Street,
Rutland

June 2, 2009
9:00 a.m.
Chittenden County Regional Planning Commission
Chittenden County Metropolitan Planning Organization
110 West Canal Street (CCMPO new office location)
Winooski

June 3, 2009
1:00 p.m.
Vermont Agency of Transportation (Rail Council)
National Life Building – Board Room, 5th floor
1 National Life Drive
Montpelier

June 3, 2009
7:00 p.m.
Bennington Regional Planning Commission
The Equinox Hotel
Bennington Room
3567 Main Street
Manchester Village

Meeting Summary

Vermont Western Corridor
Addison County Open House – Middlebury, VT
May 20, 2009

A brief introduction was provided. This project is now nearing completion after a nearly two-year analysis, strategy formulation and evaluation process. In addition to a series of public open houses being held this month, , there have been several Focus Group meetings and regular Study Advisory Committee meetings.

Following a presentation covering corridor conditions, study goals and objectives, and preliminary recommendations, the floor was opened for questions and discussion. The key issues discussed included:

Some audience members were surprised at the level of projected congestion projected for Route 7 north of Middlebury. The consultants noted that these were projected conditions for year 2030 and were also affected by the lower design speed for that particular segment of the corridor.

The population increase projected for Addison County was brought into question as potentially being too high. The consultants noted that the study was conducted at a broad enough level that moderately lower (or higher) growth rates shouldn't affect study recommendations, but that the issue should be revisited prior to any detailed analysis that may be needed to plan and design specific studies in subsequent efforts.

Audience members debated the merits of the planned OMYA rail spur. Some thought that it was an effective way to reduce trucks on area roadways, whereas others felt the environmental and community impacts were too high.

Residents were concerned about potential improvements to allow over-height railroad traffic on the Western Corridor (e.g. – increase the height of bridges) and the effects they could have on communities such as Middlebury.

Audience members raised concern over the changes in the past few years to the bus services in the corridor and the impact to connectivity between communities along the corridor and locations outside the corridor, such as Albany, NY or Boston, MA.

Interest was expressed in the planned development of passenger rail service in the corridor. The discussion included identification of planned federal grant applications, interaction between freight and passenger rail services and potential benefits to rail service to communities in the corridor.

Audience members expressed a range of viewpoints on the benefits of expanding roadway capacity vs. limiting impacts to the environment and communities.

Interest was expressed in goals that recognize the importance of preserving community character, energy efficiency/sustainability, and economic vitality.

BOARD OF COMMISSIONERS MEETING
NORTHWEST REGIONAL PLANNING COMMISSION
May 27, 2009
Draft Meeting Minutes

The meeting of the Board of Commissioners was held at F-GI Training Center in Swanton.

Commissioners: See attached.
Staff: Catherine Dimitruk and Bethany Remmers
Guests: Steve Rolle and John Weston from PB America, Inc.
Quorum was present to conduct business.

WELCOME, INTRODUCTIONS, OPENING REMARKS

Chair R. Larose welcomed everyone at 7:02 PM followed by roll call attendance and introductions.

OPPORTUNITY FOR PUBLIC COMMENT

No public comment was received.

WESTERN CORRIDOR STUDY PRESENTATION

Steve Rolle and John Weston consultants from PB America, Inc., briefed the board on the Vermont Western Corridor Transportation Management Plan. They talked about the project partners which included four RPC's and the MPO. The study area includes a 10-mile corridor that includes Route 7 and the New England Central Railroad line and Vermont Railways. The five goals of the project are to improve freight movements, enhance public transit and passenger rail service, support investment to promote economic development and enhance quality of life in the corridor. The consultants highlighted some of the key strategies and answered questions from board members.

A. Beaderstadt asked how you make cross-border trade while balancing security concerns. E. Gelinas asked why Route 2 was not included in the study. S. Rolle explained that many of the strategies for the Route 7 corridor could apply to Route 2. P. Larner asked if bypasses were recommended in the study. S. Rolle replied that the study group decided in the beginning to not consider bypasses as a corridor wide strategy, though they might be the best solution in individual cases. C. Leach was concerned that Route 78 was also not included in the study. The board discussed the possibility of shifting truck traffic to rail and the possibility of increasing the weight limits on the interstate. C. Steen and other board members expressed some concerns that this study does not include any new ideas for the corridor, and noted that there needs to be a process to implement these ideas.

MINUTES OF THE APRIL 2009 MEETING

R. Roberge moved to approve the minutes. M. Guernsey seconded. The motion carried.

COMMISSION REPORTS

Executive Committee: No activity to report.

Finance/Operations: No activity to report, will meet next week to discuss FY2010 budget.

Personnel: No activity to report.

Policy/Project Review: M. Guernsey noted that the committee heard a presentation from Lowe's on their proposal to build a new store in St. Albans Town. The board discussed the Georgia Mountain Wind Project. K. Waite noted that the Town of Georgia hosted three public forums about the project. Public comment on the project seemed split on the project and the selectboard highlighted the concerns and passed them along to the public service board. K. Waite noted that he did not think the scale was large enough to justify the municipal permitting exemption. D. Peirce expressed concern that hydroelectric power was being abandoned in the state. N. Hunt agreed that we need a comprehensive energy plan for the state. M. Guernsey clarified that the board can't make a decision on whether it likes wind power or not but rather if the project fits into the regional plan. H. Garrett noted that the committee spent a lot of time reviewing the issue. B. Kittell asked whether the issue should be tabled until the other side can be heard. M. Guernsey noted that the first hearing would be held June 9. S. Jensen asked whether the regional plan supports the project. M. Guernsey noted that the committee found that regional plan supports renewable energy and this project fits the plan.

B. Kade moved to approve to accept the Policy/Project Review report. P. Larner seconded. The motion carried 26 in favor, 2 opposed. K. Waite abstained.

Transportation Advisory Committee (TAC): No activity to report, the TAC did not meet in May.

VT Assoc. of Planning and Development Agencies (VAPDA): No activity to report.

Vermont Economic Progress Council (VEPC): No activity to report.

Downtown Development Board (DDB): No activity to report.

Office: C. Dimitruk reported that she has been working on the budget and work program for next year. She announced that the NRPC received a $200,000 brownfields planning grant and that St. Albans City received $400,000 for Brownfield's clean-up activities. The NRPC and Enosburg Falls Elementary and Middle Schools also received a Safe Routes to School Grant.

B. Remmers reported that she has been giving a lot of support to towns relating to the stimulus package and the two transportation grant opportunities related to the stimulus. She noted that she has been preparing for the traffic count season. She also coordinated a round table for road foremen and commissioners at the Abbey to discuss the possibility of jointly purchasing materials.

MUNICIPAL PLANNING CONTRACTS

C. Dimitruk presented municipal projects to be approved by the board. Town of St. Albans Town Plan: $15,250, Berkshire Town Plan: $10,300, Fairfax Bylaws: $10,850, Swanton Town Plan: $5,000, Lamoille County Planning Commission: $6,950. The Lamoille County Planning Commission contract is for small planning projects that LCPC does not have the current staffing capabilities to complete. K. Waite asked if these three projects could be completed by existing NRPC staff. C. Dimitruk said that they could.

H. Garrett moved to accept these contracts. A. Beaderstadt seconded. The motion carried.

REGIONAL ENERGY COMMITTEE

C. Dimitruk noted that at a previous board meeting, there was general consensus that it would be good to set up a regional energy committee. NRPC hosted a public meeting of interested local officials and citizens, and there was interest in setting up a committee and developing a regional energy program. The proposed committee would be modeled after the TAC where one member could be nominated by each town and there would be five at-large members that would represent certain interest groups. As part of the ARRA Community Energy Block Grant, each RPC will receive $80,000 to do regional energy planning, to be spent over three years. This regional energy committee could help guide how that money would be spent.

C. Leach made a motion to create a Regional Energy Committee as proposed. B. Johnson seconded. The motion carried.

OTHER BUSINESS

M. Guernsey noted that on January 1, 2009, the Green Mountain Transit Agency took over operations of the Network. Currently there is not representation from the region on the board. C. Dimitruk is working with GMTA to get one representative from the NRPC and another from the city. She noted that the other member municipalities of the GMTA board contribute to the local match.

ADJOURN

B. Kade moved to adjourn; M. Guernsey seconded. The motion carried.

The meeting adjourned at 8:50 PM.

MINUTES
RUTLAND REGIONAL TRANSPORTATION COUNCIL
Rutland Region Medical Center
May 28, 2009

ATTENDANCE:

COMMUNITY	NAME		COMMUNITY	NAME	
Benson	Daryl Burlett Tom Bartholomew	X	Pawlet	Eric Mach Stanley Zavistaski (alt.)	
Brandon	Richard Baker	X	Pittsford	Peg Flory John Haverstock (alt.)	 X
Castleton	Patrick Eagan Charles Jacien	X	Poultney	Andy Donaghy Jonas Rosenthal	
Chittenden			Proctor	James Hall Bruce Baccei	X X
Clarendon	Dave Potter Robert Bixby (alt.)	X	Rutland Town	Charlie Shields Fred Nicholson (alt)	 X
Danby			Rutland City	David Allaire Sharon Davis	X X
Fairhaven	Cindy Adams		Shrewsbury		
Hubbardton	Patrick Eagan	X	Sudbury	Tom Williams	X
Ira			Tinmouth	Tom Schmelzenbach	X
Killington	David Rosenblum	X	Wallingford	Charles Angel	X
Mendon	Don Westebbe		Wells	Joel Davidson	
Middletown Sp.	William Reed		West Haven		
Mt. Holly	David Hoeh	X	West Rutland	Sean Barrows Mary Ann Goulette (alt)	X
Transit	Minga Dana Ellen Atkinson Richard Mihlrad	X X X	Aviation	Peter Fisk Dave Carman	X
Rail	Fran Garrow				

X=HERE

Steve Rolle- PB
John Weston-PB
Gordon Dritschilo- Rutland Herald
Mark Blucher- Staff
Susan Schreibman - Staff

CALL TO ORDER: Richard Baker (Brandon) called the Committee to order at 7:00 p.m.

APPROVAL OF AGENDA: The agenda was approved with no changes.

PRESENTATION – Vermont's Western Corridor Transportation Management Plan- Steve Rolle and John Weston- PB

Steve Rolle began the presentation by explaining that this study has been ongoing for the past 1.5 years and the study area extends along Route 7 and the parallel railroad corridors, extending from the borders with

Canada and Massachusetts. It is a unique study in its length of 195 miles and its focus for cohesive strategies. The study is a joint effort of VTrans, Chittenden County Metropolitan Planning Organization and the 5 Regional Planning Commissions. Public involvement has included two meetings of 4 focus groups and a website, newsletters, articles and this series of public meetings.

The vision for the study is a broader perspective than just transportation issues, extending into quality of life, economic development and travel choices. A key aspect of this is the development of a program or process that can continue beyond the end of the study and that work is towards common goals. The end product will not be specific projects, but rather a framework. The study goals are to improve the highway system, improve freight movements, and enhance public transit and passenger rail service and usage, support investments to promote economic development and to enhance the quality of life. The goals led to more specific objectives, one of which is balancing the regional mobility aspect with quality of life issues in the villages.

Future conditions (2030) show that there is congestion north and south of Rutland, where Level of Service (LOS) is projected to be "D." The 2 intersections of Route 7 with US 4, both east and west also have north and south also are "D." Truck traffic in on US 7, US 4 west and VT 22A will increase 40-50% over the next 20 year period. Richard Baker asked if that assumed the Middlebury Spur was built and the answer was affirmative. Strategies were then evaluated against objectives and 50 potential solutions and actions were developed. The options were evaluated against a range of criteria and how well they met the stated goals. There is a lot of overlap as many options serve multiple goals. Presently feedback is sought on the recommendations and then these will be finalized. A draft report is expected at the beginning of July and finalized in August.

TAC members asked questions starting with Peter Fisk who asked what is meant by improving air service. Rolle said this involves improving access such as the highway connections to airports. Fisk asked about the recommendations from VT's Facility Plans/master plans as these address specific projects for the several general aviation service airports within the corridor. Rolle said there is no reason to recreate what is already stated in the State's plans as needed. Tom Schmelzenbach asked about the full listing of criteria and the scoring in relation to cost. Rolle said all strategies will be in the draft plan and that the scoring is not tied to cost as these are not always so specific so the evaluation is tied to the impacts. The total ranked score is not necessarily the best expenditure of funds but rather one must look at the highest ranking options with the lowest costs and then it will be up to the locals to arrange and prioritize the strategies. Minga Dana asked about the VTrans data from 2005 and if more recent data was available and Rolle answered that 2005 was the base data. Since the study is broad based as more specificity in actions is considered, using more recent data may be critical but not at this point. Charlie Angel stated that shipping by rail is lower in cost than by truck though there is no local off- loading facility. Rolle said that future sites for transload facilities were identified and if there is a market for such a facility in a Region, that Region should work towards siting one. The study showed that even in the future, much freight can not be shifted to rail, and only would reduce future truck traffic by 10%.

John Haverstock said that VTrans has territorial issues and when Pittsford asked about posting signs along US 7 in the village to prohibit engine brakes, they were told no. Rolle said that VTrans and communities need to work jointly on these policies and this study is one step in that process. Collective actions may lead to success. Richard Mihlrad asked what the entity is that hold this back and TAC members responded that it is politics, the road structure and the lack of a connection to the interstate. Jim Hall said that a transload facility was proposed to be located between Rutland and Fair Haven and it was not supported. David Rosenblum spoke about lacking a connection to an interstate and Mihlrad said that if that problem is solved, other problems will be solved. John Weston mentioned that at their presentation in Swanton, the focus was on economic development which those TASC members felt was hampered by the lack of a good transportation system. Patrick Eagan added that there is a considerable amount of truck traffic on VT 22A which lack shoulders and is inadequate. Rolle said that the recommendations from this study will apply not only to US 7 but also to VT 22A. Tom Williams said that his business must rely on air travel for parts and that they do not

have time to wait for shipments by rail or truck. Tom Schmelzenbach asked if the conclusion is that with investment in one strategy will lead to economic development and the response was that the study does not have that level of specificity, but that you can tell if a strategy has a positive impact on economic development.

Richard Baker asked to what extent the study was developed outside of VTrans as the former Secretary had a policy called the Road to Affordability and this opposed recommendations like streetscape improvements as frivolous. Weston replied that VTrans was one sponsor of the study however they spoke up about some issues. There will need to be choices made when strategies advance. Baker noted that he was glad to see that good ideas were not suppressed. He added that if everything else is put on the shelf, this is still the first productive cooperative effort with the MPO and RPCs. John Weston said that this was also mentioned last night.

STAFF, MEMBERS AND PUBLIC ISSUES

Susan Schreibman spoke about the project prioritization process and how the RRTC had identified the potential substitution of realignment of VT103 in Wallingford for a widening and bring VT22A up to state standards in Benson and West Haven. The project prioritization was submitted to VTrans prior to the town of Wallingford officially responding. This is the first time guidance has been given for substituting projects and she explained that the Legislature and VTrans want to insure that communities are aware of the decision and that input from them be sought and considered. It is very unlikely that a town would willingly give up a project in favor of another in another town and that this is the difference between local and regional planning. She told the members that she and Mark Blucher went to the Wallingford Selectboard and discussed this. Their formal response, which disagreed with the proposed substitution, is expressed in a letter in the packet. She asked the TAC to formally decide how it would like to proceed. Richard Baker added that over the years the TAC has had to prune projects to balance the region's needs. Charlie Angel said that he is not opposed to upgrading VT22A but does not want to give up the opportunity to upgrade VT103- it is an accident waiting to happen and the major east-west corridor in the Region. In winter it is icy and accidents occur.

Tom Williams added that we have not put on one new project per year. Tom Schmelzenbach asked about the timeframe for this and has money been spent on VT 103. Schreibman responded that no significant funding has been spent. The question was posed to Dave Potter about how the Legislature feels and he said that it is an issue of local control. Our first priority has been US7 and this has taken away from other projects such as VT103. VT 22A would be less of an investment than what is required to fix VT 103 and it is a question of which project is more apt to be done. There was land for sale adjacent to the curve on VT103 but unfortunately the State does not respond like that. Patrick Eagan suggested keeping both on the books and Schreibman said that every year we submit the new projects and that none are included in VTrans' list and this substitution is the first time that we have been given an opportunity to add a project. Richard Baker suggested that we keep both on the books but make the substitution. Tom Williams noted the volume of truck traffic on VT 22A. Dave Potter made the motion to keep VT 103 on the books but make the proposed substitution as we have a better chance of moving the project on VT 22A forward. Baker suggested that the motion be divided into 2 motions. David Rosenblum asked about the improvements on the southern end of VT103 and if VTrans would extend these north and Baker responded that these are drainage and pavement improvements. Fred Nicholson asked if anyone knew the condition of the train trestle as given the renewed emphasis on rail, this could have implications on the VT 103 project.

Dave Potter made a motion to reconfirm the recommendation to VTrans to widen and improve VT22A in place of realignment of VT103. Charlie Angel opposed the motion. Richard Baker said that we are trying to balance the Region's needs and work collectively, not stomp on any municipality. Mark Blucher said that the first project for the Region is the US 7 upgrade and that others will follow. Peter Fisk said that we still are not dealing with the choke points and that there is no east-west corridor but we have US7, VT 22A and VT30. Tom Williams said that firemen take VT73 to US 7 rather than travel on VT30. Richard Baker called for the vote and the ayes have it with Rutland Town abstaining for lack of Knowledge and the Chair not voting. The

second motion to retain VT 103 on the project prioritization list passed unanimously. A letter will be sent by staff to the Wallingford Selectboard to explain this.

Susan Schreibman reported that the Way to Go Week was a success in the Rutland Region. A handout was distributed which elaborated on participation and Minga Dana reported that the MVRTD contributed the fares from two weeks, totaling $1160, to the Community Cupboard.

The summary of the FY2010 work program is in the packet with highlights on new or expanded efforts for next year.

Paving has begun on VT4A and weekly reports are available.

Members Issues- Fred Nicholson said that he worked for the state for 33 years, on all of VTrans' bridge projects. All the rules and regulations come from the federal government and to implement the Western Corridor improvements will be difficult. Pots of funding are separate, can't be mixed and the challenge is to figure out the federal regulations. PB did not look at the regulations in the study, groups have to figure out how to do the work, working together and making the regulations work for you. In Wallingford the problem is that there are different pots of money for rail versus roadway versus bridges and that is difficult to make such a complicated project come together.

Peter Fisk reported that Dave Carman had intestinal surgery.

CONSENT ITEMS

The minutes from April 23, 2009 were approved after changing the typo of substation to substitution on page 3.

The meeting was adjourned at 8:43 p.m.

For the Council,
Susan Schreibman, Staff

CHITTENDEN COUNTY METROPOLITAN PLANNING ORGANIZATION
TRANSPORTATION ADVISORY COMMITTEE - MINUTES

DATE: Tuesday, June 2, 2009
TIME: 9:00 a.m.
PLACE: CCMPO Offices, 110 West Canal Street, Suite 202, Winooski, VT

Present:
George Gerecke, TAC Chair, Williston
Jeanne K. Wilson, Hinesburg
Ed Wildman, Huntington
Amy Bell, VTrans
Bernie Gagnon, Shelburne
Dan Bradley, Burlington
Robin Pierce, Essex Junction
Chris Jolly, FHWA
Paul Craven, Railroad Industry
Mike Coates, Business Representative
Matthew Langham, VTrans
Meredith Schuft, Institutions Representative
Jane Marvin, Seniors Representative
Gary Estus, Westford
Dean Bloch, Charlotte
Seth Jensen, Jericho
Bruce Hoar, South Burlington

MPO Staff: Michele Boomhower, Executive Director
Jason Charest, Transportation Engineer
Daryl Benoit, Transportation Planner
Christine Forde, Senior Transportation Planner
Bryan Davis, Transportation Planner
Peter Keating, Senior Transportation Planner
Eleni Churchill, Senior Transportation Planner
Janet Botula, Admin/Communications Assistant

Others: Charles Hunter, NECR
Bruce Seifert, Burlington CEDO
Karen Paul, Burlington City Council
Sandrine Thibault, Burlington Planning and Zoning
Roger Derby, Colchester Selectboard/CCRPC Board
Jon Moore, CCTA
Charlie Baker, CCRPC
Julie Potter, CCRPC
Steve Rolle, PB Americas, Inc.
John Weston, PB Americas, Inc.

Chair George Gerecke called the meeting to order at 9:05 a.m. The agenda was amended to include a change to the FY09 year of the FY08-11 TIP. It was determined that it would be discussed as Item 6b.

1. <u>Consent Agenda</u>

No items were on the Consent Agenda

2. <u>Approval of Minutes</u>

A MOTION WAS MADE TO APPROVE THE MINUTES OF APRIL 7, 2009 BY ED WILDMAN AND SECONDED BY MIKE COATES. THE MOTION PASSED UNANIMOUSLY.

3. <u>Public Comments</u>

No members of the public were present

4. <u>FY 2010 – 2013 Transportation Improvement Program</u>

Christine Forde presented an overview of the TIP process, noting that last year's TIP was not updated. She went on to describe:

- The TIP development process,
- project and use categories,
- the function and performance preservation categories which includes corridors/streetscapes (including illustrative projects which are listed but have no funding),
- intersections (some of which are active, others stalled, and others illustrative),
- paving as well as bridge preservation,
- the capacity expansion category,
- bike/pedestrian improvements,
- intermodal and transit.

Mike Coates expressed concern about the cost of the EIS process for Exit 12B and the need to control the monies spent on the process. Chris Jolly responded that it's difficult to control as the EIS process is fairly complicated and alternatives must be looked at etc. The best way is to have a well defined scope of work and manage the contract as it moves along. Amy Bell noted that an EIS is a federal requirement that all agencies are required to follow. Chris mentioned that the good news was that this was a new clean project without a long history and perhaps we can learn from past projects. George Gerecke stated that it is important to be aware of the possible legal challenges as well.

Christine then went on to list projects that have been completed in 2009 as well as those that have been delayed. She distributed a table which showed projects with both one and two year delays. Mike Coates was concerned that there was nothing about rail in the TIP. Christine responded that Federal Railroad Administration (FRA) monies were not in the TIP and that there were no rail projects that she was aware of. Mike noted the St. Albans to Burlington rail upgrade project and he proposed that the TAC and MPO Board support it by transferring $5.2 million in FHWA rail funds to this in order to bring the track from the Canadian border to Burlington up to the 286 Standard. New England Central Railroad (NECR) is putting up a 20% match which is a good chunk of the money necessary. The project will lead to an improved track speed between Burlington and Essex Junction for a potential future commuter line. He stated that there will be a Rail Council meeting and this will be on the agenda. If the TAC can support this it will help to carry the project forward.

There was a lengthy discussion about including the rail project in the TIP with Michele encouraging the idea of sending a message that the Board endorsed this project and that, through the TIP process, we are serious about it. Mike Coates again stressed the importance of taking advantage of NECR's willingness to provide a match of approximately $1 million. Although the project stretches from the Canadian border to Burlington, the TAC and MPO only have authority over the part in Chittenden County. It will be necessary to get the part outside of Chittenden County approved in the STIP.

A MOTION WAS MADE BY MIKE COATES, SECONDED BY ROBIN PIERCE, THAT THE BOARD AND TAC SUPPORT THE TRANSFER OF $3 MILLION IN FHWA FUNDS TO THE FRA FOR RAIL IMPROVEMENTS BETWEEN MILTON AND BURLINGTON AND THAT THIS AMOUNT BE ADDED TO THE TIP. THE MOTION PASSED WITH VTRANS VOTING AGAINST.

Matt brought up four issues in the TIP that VTrans was concerned about. These included pushing Champlain Parkway funding out to future years than currently proposed, transit funding concerns, moving some Exit 12B funding to future years, and adjusting the regional line items for Traffic Signal Optimization and Safety funds. Michele recommended that the TAC approve the TIP with the exception of the VTrans concerns and then revisit those items next month. Christine stated that the recommendation

is to warn the public hearing for July and that it would be a good idea to approve the TIP with the exceptions.

A MOTION WAS MADE BY DAN BRADLEY AND SECONDED BY BRUCE HOAR TO ADOPT THE TIP MINUS THE ITEMS ADDRESSED BY MATT LANGHAM BUT INCLUDING THE WESTERN RAIL CORRIDOR FUNDS FOR THE BURLINGTON TO MILTON UPGRADE. THE MOTION PASSED UNANIMOUSLY WITH VTRANS ABSTAINING.

The agenda was changed to allow for the public presentation of the Draft Western Corridor Management Plan which was scheduled for 10:00 a.m.

8. <u>Western Corridor Transportation Management Plan</u>

A PowerPoint presentation was made by Steve Rolle of PB Americas, Inc. summarizing the work done thus far by the consultant along with the study's preliminary recommendations. He stressed that at this point there are recommended actions and strategies but no specific projects. It was noted that there will be two more public meetings with final recommendations due by June 22. The Draft Implementation Plan will be prepared by July 30th and a public comment period will be open until August 1st.

Michele summarized by saying that this has been a multi-year comprehensive project. Some opportunities that have come up in the meantime: a couple of federal stimulus competitive grants for passenger rail and freight. We will be able to use the findings from this study to support grant applications. It's good timing as those evaluating the applications like to see documentation such as this study. She appreciates all of the time and effort by those who have been a part of the process.

Paul Craven asked about what would happen at the conclusion of the study. Michele responded that working groups will be organized to make sure the project does not sit on a shelf. She expected the RPC's in the Corridor will make up some of the membership and that the group would meet quarterly or at least several times per year. Paul then asked about funding and Michele stated that it may be through grants or federally authorized spending. Paul asked about ABRBE (**A**lbany, **B**ennington, **R**utland, **B**urlington, and **Essex**) funds but Michele thought it was too hard to tell at this point as ABRBE funds are already over-obligated. She felt that recommendation will dovetail with the proposed projects in Jefford's earmarks. She further stated that there was lots of activity in the plan but nothing was targeted to specific funding. The plan should be helpful in re-emphasizing problems and perhaps be helpful in getting funding. The consultant stated that continued coordination is the real value of the study.

5. <u>Transportation Action Grant Recommendation</u>

Bryan Davis explained that the TAG program is the result of FHWA finding nearly $400,000 in federal transportation planning funds that have accumulated from years past. In March 2009 the CCMPO announced Round 2 to member municipalities and local nonprofit organizations stating that $100,308 (this amount includes the required 20% local match) would be available for transportation-related planning projects. The review committee consisting of Peter Keating, Jason Charest, Jane Marvin, Bernie Gagnon, George Gerecke and Amy Bell evaluated the seven applications that were submitted. Based on 10 criteria, as well as the merits, quality, and eligibility of each application, the committee recommended the full funding of four projects: CarShare Vermont: $30,620, the Town of Jericho: $15, 500, the Town of Huntington: $25,000; and Local Motion: $28,536. The review committee also recommended that the balance of funds (totaling $652) be awarded to the Town of Jericho to enable their project to be closer to applying for engineering/construction funds.

A MOTION TO RECOMMEND TAC APPROVAL OF THE REVIEW COMMITTEE RECOMMENDATIONS WAS MADE BY JANE MARVIN AND SECONDED BY GARY ESTUS. THE MOTION PASSED UNANIMOUSLY.

6. <u>Item 6 was delayed until later in the meeting</u>

6b. Item 6b was also delayed

7. Sidewalk Grant Application Reviewers

Peter Keating announced that applications for the Sidewalk Grant were due on June 5 and that volunteers would be needed to help review the applications. Jane Marvin and Bruce Hoar agreed to assist and George Gerecke stated that he might be able to help.

6. TIP Amendment

Christine Forde stated that this TIP amendment, to add a new project to the FY09 year of the TIP for reconstruction of a previously existing pedestrian bridge in Jericho, had been discussed at the May Board meeting and that the Board had warned this amendment for a Public Hearing in June. Seth Jensen explained that part of this bridge on Route 15 by the Red Mill fell into the river and, that it is a major piece of the Town's pedestrian infrastructure. He has been working with VTrans and they now have the necessary easements. The TAC is requested to endorse the Board's ruling. There was a question about the funding and Michele explained that there was $45,000 in anticipated earmark funding from Senator Sanders for project engineering. Requests have been made to move forward on the project but other than the $45,000, it is considered an "illustrative" project.

A MOTION TO ENDORSE THE BOARD'S WARNING OF THE TIP AMENDMENT WAS MADE BY DAN BRADLEY AND SECONDED BY JANE MARVIN. THE MOTION PASSED UNANIMOUSLY.

6b. FY2008 Transportation Improvement Program

Christine briefly described the requested changes to the FY09 year of the FY08-11 TIP as being: a) the addition of $1,627,014 in FY09 for the resurfacing of the Exit 16-17 areas of I-89 in both the north and southbound lanes, b) the addition of $221,950 in FY09 for the installation of fire preemptive detectors and hardware at six intersection along US7 in Colchester, and c) the addition of $190,000 in FY09 for a Transportation Enhancement Grant award for the installation of midblock crosswalks in twenty-nine locations in South Burlington.

A MOTION TO APPROVE THE AMENDMENTS TO THE FY09 YEAR OF FY08-11 TIP WAS MADE BY DAN BRADLEY AND SECONDED BY AMY BELL. THE MOTION PASSED UNANIMOUSLY.

9. Status of Projects and Subcommittee Reports

Jason Charest reported that Hinesburg and Richmond have been selected to participate in the High Risk Rural Roads program. They will be contacted soon by Jason or VTrans and will be eligible to receive a safety audit or corridor review. He is also working on a TPI task to collect sufficiency ratings on rural major collectors. The bulk of the work will be compiled by our interns while they're out in the field. Jason also discussed a dynamic striping project in Underhill.

Daryl Benoit reported that the interns have started doing traffic counts for VTrans and various municipalities. He mentioned that towns should get their data requests in early. They are also working on paving assessments in Charlotte and Richmond and a culvert and sign inventory in Huntington.

Bryan Davis stated that the projects selected through the first round of the TAG program are moving forward. He mentioned his involvement with the June 1 kickoff of the Burlington Safe Street Collaborative which is fostering respect by all parties using the roadways. He also attended a planning meeting for the Burlington Bike Fest, another program which promotes walking and biking. He announced that CarShare Vermont now has between 200 and 250 members. Their next step is to expand the program to Winooski and to add a pickup truck. He reminded everyone that the next Road Managers meeting takes place on July 14th in Colchester.

Christine Forde reported that several scoping projects are now wrapping up: a) the Staples Third Lane project which will help to improve congestion issues for those exiting Burlington onto I-89 southbound, b) the Exit 12b alignment study – although they are waiting for comments from VTrans. (This project still needs a funding plan and an EIS as there are environmental constraints), c) three intersections: James Brown Dr./2A, US2/North Williston Road roundabout and VT15/Ethan Allen Ave. She also mentioned activity on new bridge projects two of which are located in Huntington, and one in Essex.

Peter Keating stated that Way to Go week grew by double digits this year to 3,500 participants up from 2,900 last year. An awards ceremony will take place at ECHO on June 5th. Negotiations are still in the works for the handoff of the program to VEIC. He further reported that the MTP advisory committee met in April. He plans to have another meeting with them later this month. He also met with a group representing various Natural Resource agencies to introduce them to the MTP and begin the federally required consultation process. He will be looking to them for further input as the project moves forward this fall. Peter reported that Dave Roberts had mailed out a RFQ to various consultants for the Chittenden County Transportation Technical Assistance Program. The applications are due on June 26. He will be needing assistance for reviewing the submittals and asked for volunteers. Bernie Gagnon agreed to assist.

Eleni Churchill reported that the Exit 16 Transportation Management Plan was coming to completion. The first and second draft have been submitted and reviewed. She will be meeting with VTrans soon and hopes to have the project finished by the end of June. She also mentioned that she has received the first phase draft report of the VT2A Access Management Study in Essex Junction. The second phase will involve the "crescent" road idea around the Five Corners.

Michele discussed her recent dealing with the legislature some of which involved the innovative financing of I-89 Exit 12B. The private developer, the Burlington Airport, the MPO, and the City of South Burlington made several presentations to the legislature seeking endorsement of an approach to fund the local share match of the proposed interchange and to move it towards the EIS phase. There will be a final presentation on the alignment study and a kick off meeting for the innovative finance approach in late June. Michele also met with VTrans to discuss the seven recommendations by the Blue Ribbon Committee on Innovative Finance to determine which ones could be worked on collaboratively. She was pleased to see that Blue Ribbon recommendations make their way into the legislative process. She also mentioned that she has received a list of the projects that will receive funding from Round 2 of the ARRA funds. Although no Chittenden County projects were included we may end up better off as these will free up funding for projects with fewer requirements. She was excited that the UPWP had passed.

10. <u>CCMPO May Board Meeting Report</u>

The Board approved the UPWP, warned a TIP amendment public hearing for the Jericho Pedestrian Bridge, endorsed the Essex to Burlington rail project, and heard a report on State Transportation Legislation.

11. <u>Chairman/s/Member's Items</u>

Amy Bell distributed the updated VTrans organization chart and mentioned that it was also available on the web.

The meeting adjourned at 11:35 am.

Respectfully submitted,

Janet Botula

Meeting Summary

Vermont Western Corridor
Bennington County Open House – Manchester, VT
June 3, 2009

A brief introduction was provided. This project is now nearing completion after a nearly two-year analysis and evaluation process. In addition to these public open houses, which are intended to solicit community feedback on preliminary study findings and recommendations, there have been several Focus Group meetings and regular Study Advisory Committee meetings.

Following a presentation covering corridor conditions, study goals and objectives, and preliminary recommendations, the floor was opened for questions and discussion. The key issues discussed included:

An audience member noted that within the past few days a fatal head-on collision had occurred on a nearby segment of Route 7. A question was raised as to the apparent lack of proposed physical improvements for Route 7 aimed at improving safety. Expansion of Route 7 to a barrier-separated, divided highway was suggested. The consultants noted that the study is intended as a program-level look at coordinating transportation improvements throughout the corridor, and that specific project-level recommendations are not an outcome of the study. In general, extensive widening/expansion of Route 7 is not among the study recommendations due to costs, environmental/community impacts, and projected traffic levels. However, localized improvements (to be further studied and selected at the local/regional level) are recommended to address specific congestion or safety issues. Also among the proposed recommendations is support and potential expansion of existing efforts to prioritize and address specific locations based on ongoing tracking of collision history information. It was also noted that some improvements may actually have unintended adverse effects on safety too. For example, wider travel lanes tend to increase the speeds at which driver's travel.

There was considerable discussion among the attendees concerning the apparent disregard by motorists of existing posted speed limits, "no passing zones", etc. It was felt that the problem is primarily driven by local drivers who have familiarity with area roadways and enforcement practices.

One attendee expressed concern about the Management Plan's proposed roadway improvements having the potential to create a Route 7 "super highway" in Bennington County. The consultants explained that the various intersection and capacity improvements have been formulated to deal with site-specific in a manner appropriate to the local area. There are no plans to intensify the overall function or highway character of Route 7.

One attendee questioned the desirability of investing public money in passenger rail, noting that the rail service loses money and continually requires public subsidy. The

consultants responded that they proposed passenger rail actions are consistent with current VTrans rail program initiatives and noted that most transportation services and infrastructure rely on public funding.

There was considerable discussion among some attendees about the need for the communities in the southern portions of the Western Corridor to protect their rail project interests to ensure that they receive a fair share of funding and operating initiatives. The Vermont Rail Council always meets in Montpelier – this puts southern areas like Manchester at a disadvantage in terms of sending representatives to meetings.

A comment was made that the Management Plan should take note of the Pan Am Southern / Norfolk Southern proposal to upgrade rail racks through Mechanicville NY. The Amtrak Ethan Allen service could then be re-routed from Albany through this area into Bennington to access the Western Corridor and serve communities south of Rutland.

An attendee commented on the lack of existing bus service in the Western Corridor. The consultant replied that the Management Plan proposes and expansion of the existing public regional bus transit services, notably with regard to providing connections between these services which would create a corridor-long bus service. The consultant also noted that there had been discussions about re-instituting an intercity bus service through the corridor. This could connect all the way into Albany, New York. In order to attract a private operator a public subsidy would likely be required. It was noted that Greyhound / Vermont Transit exited the Route 7 corridor market in the mid-1990's in part because of a lack of business.

One resident expressed concern about the possibility of additional trucking activity in residential areas in and near town centers. There are problems now with trucks and motorcycles using roads that once were quiet residential streets. The consultants noted that proposals for various rail/freight/intermodal sites require that access to and from these locales be appropriate for trucking activity and be removed from residential and sensitive commercial activities.

A suggestion was made that study goals should include benefits to the local/regional economies and energy efficiency.

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MINUTES SUBJECT TO CORRECTION BY THE VERMONT RAIL COUNCIL. CHANGES, IF ANY, WILL BE RECORDED IN THE MINUTES OF THE NEXT MEETING OF THE COUNCIL.

VERMONT RAIL COUNCIL
MINUTES OF MEETING
NATIONAL LIFE BUILDING
MONTPELIER, VERMONT
June 3, 2009

MEMBERS PRESENT: Scott Rogers (Chairman)

John Cook	Rick Moulton
Dave Wulfson	Dave Allaire
George Barrett	Chris Andreasson
Charlie Moore	Charles Hunter
Mike Coates	Rep. Sonny Audette
Rep. Bill Aswad	Joann Erenhouse

OTHERS PRESENT:
Robert Ide, VTrans Rail Operations Section
Charlie Miller, VTrans Rail Operations Section
Bob Atchinson, VTrans Rail Operations Section
Doug Zorzi, VTrans
Clay Poitras, VTrans
Costa Pappis, VTrans
Scott Bascom, VTrans
Susan Clark, VTrans
Gina Campoli, VTrans
Stephen Vantire, State Auditor's Office
Jan Okolowicz, Parsons Brinkerhoff
Stephen Rolle, Parsons Brinkerhoff
John Wilson, Jacobs
Michael Desrochers, Jacobs Engineering
David Holst-Grubbe, Clean Diesel Tech.
MaryAnn Jakubowski, Castleton Depot, LLC
Mary Anne Michaels, VRS
Chris Parker, VRAN
Matt Levin, VCE
Roger Thompson, FHWA
Tom Macaulay, Rutland Redevelopment Authority
Dave Crawford, Essex Junction Village Manager
Robin Pierce, Essex Junction Development Director
Sawyer Joecks, Village of Essex Junction
Bill Hollister, Amtrak
Eleni Churchill, CCMPO
Richard Currier, NH Central Railroad
Brad Worthen, Burlington Airport
Pete Synder, citizen

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1. Call to Order & Approval of Minutes

Charlie Moore asked if states offering match money are given an advantage to receive funding. Rob Ide was not certain to what degree. Mr. Moore asked for an example of a regional application. Mr. Ide envisioned an application from the Council of New England Governors (CONEG) or an application packaged to cover as large an area as possible. Rep. Audette suggested mentioning money available for freight on the western corridor (Jeffords earmark) in the application. Mr. Ide agreed, noting though that it is difficult to program the Jeffords earmark money until what is happening with stimulus money is known.

George Barrett asked for a delineation of the western corridor in Vermont. Mr. Ide stated the rail corridor starts at the border in East Alburgh and goes south to St. Albans to Essex to Burlington to Hoosick, New York. Sonny Audette added the legislature included study of Bennington to Whitehall.

Rob Ide mentioned New Hampshire is trying to rejoin the high speed rail corridor, but a corridor has already been identified outside of New Hampshire. Matt Levin asked if the Knowledge Corridor has been factored in as well. Mr. Ide confirmed it is part of the conversation.

Mike Coates recalled the impetus for the interstate highway system was national defense and asked if there is any tie in to passenger rail corridors and national defense. Bill Hollister said Amtrak works closely with the TSA and Department of Homeland Security. Charlie Miller stated in the break out groups at the FRA meeting on 6/2/09 there was discussion of a national system that corridors will tie into on the necessity side, not the national defense side.

Chris Andreasson asked if stimulus money is available to upgrade rail to 286,000 pound capacity. Mr. Ide stated the larger pool of money is for passenger service and if rail bed improvements are done for passenger rail service then freight will move faster as well. Mr. Andreasson asked if Amtrak is reviewing the state percentage to maintain service. Mr. Ide said discussion has begun on the new contract. There do not appear to be significant new charges. At the recent FRA meeting there was a suggestion that federal money be used in a shared role with state money to subsidize Amtrak service. Bill Hollister said Amtrak has been tasked by Congress to do a pricing model for all the states.

John Cook asked about international connections with Amtrak. Rob Ide confirmed conversations about again going to Montreal have begun. Mr. Hollister said there is a big boost in city pairs by marketing the service in between. Amtrak provides marketing money for states to promote routes in their territory. Joann Erenhouse suggested presenting the idea of making it easier for Canadians to come to this country to spend money rather than US citizens going to Canada to shop.

Charles Hunter briefed the Council on the application by New England Central Railroad ($69 million package) which will result in a savings of approximately 40 minutes in run time on the Vermonter route. Rail America will provide some matching funds.

5. Freight Report

Charles Hunter reviewed the presentation on NECR given to the legislature in 2009. NECR operates and maintains 218 miles of track in Vermont, spends approximately $7 million on Vermont goods and services annually and up to $7 million in capital investment, employs about 100 people, has a payroll over $4 million, and handled over 77,000 Amtrak passengers on the NECR route in 2008. In the current economic climate business is off 30%.

George Barrett commented without the work that was done by NECR on the Burlington tunnel movement of cars by rail would not be possible.

Dave Wulfson reported business is off for Vermont Railways as well and as a result the labor force has been reduced. Auto transport is on the horizon for Vermont Railways. The Hoosick Jct. connection with Norfolk Southern has started though there are delays due to construction farther south on the line. Other projects include rail installation north of Rutland, ties south of Rutland, work from Whitehall to Fair Haven with the $1.5 million from New York, work from Fair Haven to West Rutland with FRA funding, rail work on the Green Mountain Railroad, and ties and surface work on the Connecticut River line north of St. Johnsbury. Transport of lumber and construction goods is off due to the decline in the building and construction business. Transportation of rock from the quarry in Barre is still being discussed. As fuel costs improve the project is being resurrected. Mr. Wulfson stressed the need to improve bridges on the rail lines to support heavier weights.

There was mention of the Middlebury rail spur. The EIS is complete and the Record of Decision is to be issued by FHWA in the next couple of weeks.

6. Passenger Rail Subcommittee Report

Charlie Moore reported the Passenger Rail Subcommittee met on May 21st and discussed Amtrak ridership, DMU cars, preservation of the Ethan Allen Express service, Train Day, and the western corridor as the priority (Vermonter going to Montreal). A developer from Palmer discussed with the group having the Vermonter stop in Palmer, MA.

7. Infrastructure Subcommittee Report

Mike Coates reported the subcommittee met on May 21st and discussed the possibility of using stimulus money to do the needed work on state owned rail bridges to bring the bridges up to standard for weight and safety. Rob Ide acknowledged bridges are an extreme challenge facing the state. There was discussion of bonding for repairs of bridges for safety purposes and carry over of state funds. Scott Rogers noted there is a budget deficit in FY09 of $7.5 million and carry over funds from programs may be used to eliminate the deficit. The rail budget is $20 million of which $11 million is federal funds and $9 million is state funds with Amtrak being about $4 million of the state amount. Rick Moulton observed highway bridges are incremental, but rail is only as good as its weakest link. If a bridge is closed then the entire line is shut down. Rob Ide assured the

state is not advocating running trains over unsafe bridges. Bridges are inspected on an on-going basis.

Mike Coates read legislation by Rep. Aswad relative to VTrans preparing a comprehensive detailed project plan to create passenger rail service from Burlington to Rutland to Bennington to Albany, NY and delivering the plan to the House and Senate committees on transportation by June 30, 2009. Mike Coates also read Section 113 (ABRB) of H.438 FY10 Transportation Program Conference Report regarding the western rail corridor.

8. Discussion of Essex-Burlington/NECR Proposal

Dave Crawford, Manager of the Village of Essex Junction, reviewed the proposal to upgrade the Burlington to East Alburgh rail line, noting the project is an important piece of the western corridor upgrade which can be done this construction season. NECR is providing the 20% match (over $1 million) to the earmarked funds for the western corridor. The project is a public/private cooperative effort and has broad regional support.

MOTION by Mike Coates, SECOND by George Barrett, that the Vermont Rail Council supports and requests that VTrans implement the project to improve the western corridor section of rail from Burlington to East Alburgh to 286,000 pound standard by utilizing the SAFTEA-LU earmarked funds secured by Sen. Jeffords which will be supplemented by New England Central Railroad's commitment to provide a private capital investment for the required 20% rail funding match, and further, the Vermont Rail Council supports the inclusion of safety multi-use paths through the Village of Essex Junction with funding coming from other sources.

<u>DISCUSSION</u>: Chris Andreasson asked if the project could jeopardize the work on Bridge #219. Rob Ide confirmed money for Bridge #219 is from the Jeffords earmark. If VTrans had confirmation about the stimulus money the situation may be different. Of the $26.85 million of the Jeffords earmark $3.6 million is authorized as of 6/2/09. If stimulus money is not available then there is more pressure on the Jeffords earmark. It is an issue of making choices in spending, stated Mr. Ide. From 2011 to 2013 there will be $4 million expended for Bridge #219. In 2010 final design will be done at a cost of $700,000. Charlie Moore pointed out the state does not have to provide match money for the proposed project in Essex Jct., but does have to provide a match for the bridge work. Doug Zorzi noted work on Bridge #219 is for 286,000 pound capacity and to fix existing problems. Joann Erenhouse asked if the upgrade from Burlington to East Alburgh is included in the stimulus money application. Rob Ide stated VTrans budgeted for the work under a known revenue source. The situation with stimulus money is not known at this time, but will likely be known before completing the work on Bridge #219. There was further discussion of spending the Jeffords earmark on the Burlington-Essex project versus Bridge #219. Rob Ide read the federal statute on SAFETEA-LU which notes the priority as the Middlebury rail spur, improving passenger rail from Manchester to Rutland to Charlotte and freight rail through major cities. Dave Wulfson mentioned the priority list

prepared by the Infrastructure Committee which included 286,000 pound capacity from Florence to Rutland to Bellows Falls to Brattleboro and Amtrak service from Rutland to Burlington. Mike Coates assured the Infrastructure Committee has not changed the priorities. Dave Wulfson recalled Vermont Railways has also offered to provide match money on projects in the past. Charlie Moore stated the earmarked funds have been idle long enough. There is now opportunity for a private company providing match money for a project and the Rail Council should support the proposal, urged Mr. Moore. George Barrett suggested the upgrade from Alburgh to Burlington should be in the stimulus application. Rob Ide stated the Jeffords earmark will remain if stimulus money is used on the western corridor. The earmarked funds can be used in other areas if the state can provide match money. Chris Andreasson suggested amending the motion to say the Rail Council believes the project (rail line between Alburgh and Burlington) should be a top priority and VTrans should do all that can be done to do this project and maintain Bridge #219 as a top priority as well. Tom Macauley (Rutland) recalled the western corridor money is based on fees from the Middlebury rail spur to pay the local match. The impact of not completing the work on Bridge #219 and not being able to move material south and not using the GRIP model needs to be considered. Charles Hunter stated NECR prioritizes bridges and funding so bridges do not fail. The plan is to do the bridge work on Bridge #219 in 2013 so the bridge obviously is not going to collapse any time soon. Joann Erenhouse commented it is a slippery slope to set priorities unless a better offer is received. Mike Coates stressed the state should be flexible enough to make a change. The proposal will provide 286,000 pound capacity from the border to Burlington, said Mr. Coates, and the project is high profile as people will see something being done on the railroad. Sonny Audette stated the proposal is a win-win for the state and will help take cars off the road. People will use a commuter rail service from Essex to Burlington. In addition, continued Rep. Audette, private funds are helping with the cost of the work. Brad Worthen, transportation consultant for Burlington Airport, recalled there was another project with matching funds from a private business and the project was completed very fast. Mr. Worthen announced a meeting on 6/4/09 at the Burlington Airport to discuss rail interaction with the airport. Growth in passenger numbers is anticipated and the improved rail corridor will be greatly utilized, confirmed Mr. Worthen. Scott Rogers pointed out the motion is a recommendation, not an implementation directive. VTrans will take the matter under advisement. Funding is the issue. Rob Ide suggested getting an opinion on the matter from Rail Council members not in attendance. There were no further comments.

VOTING: all ayes except one abstention (Dave Wulfson); motion carried.

9. Other Business

Proposal for Bonding for Rail

Sonny Audette suggested staff develop a proposal for bonding for rail, especially bridge work.

10. Next Meeting/Agenda Items

Next Meeting: September 2, 2009 at 1 p.m. to 4 p.m. in Rutland (specific location to be announced).

11. Adjournment

MOTION by Mike Coates, SECOND by John Cook, to adjourn the meeting.
VOTING: unanimous; motion carried.

The meeting was adjourned at 4:05 p.m.

RScty: M.E.Riordan

Newsletters and Corridor Updates

Vermont Western Corridor
Transportation Management Plan

Spring 2008

Transportation Study Underway in Western Corridor

The Vermont Agency of Transportation, the Chittenden County Metropolitan Planning Organization, and five Regional Planning Commissions along western Vermont are partnering in an effort to develop a Transportation Management Plan for western Vermont, from the Massachusetts state line to the Canadian border.

The Plan will determine the most effective ways to improve the transportation system in western Vermont over the next 20 years. Recommended strategies are expected to promote economic vitality in the region while maintaining Vermont's unique and valued quality of life. The Plan is being funded by funds provided by the Vermont Agency of Transportation and the Federal Highway Administration.

"This effort, guided by communities in western Vermont, will provide a blueprint for wisely investing resources to enhance and balance our transportation systems in the years ahead," said Scott Johnstone, Executive Director of the Chittenden County Metropolitan Planning Organization. "We want to be strategic about how we use limited resources to both get the most impact and to respond to needs identified by our communities."

Agency of Transportation Secretary Neale Lunderville agreed and added: "To successfully serve Vermont's needs, we must optimize the use of our existing transportation systems and develop the necessary connections between rail, highway and public transportation so they form a seamless web of options for both passengers and freight. This study will guide our work and help us accomplish this essential goal."

The Plan will also explore ways to coordinate land use and transportation planning, encourage collaboration and connectivity among regions, promote innovative, fiscally sound financing and investment solutions with minimum impacts to the human and natural environment.

There will be several opportunities for public input throughout the development of the Plan. Regional public forums and focus groups will be held and a project website, www.vtwesterncorridor.org, has been set up for the public to access information and to provide comments on-line.

The five commissions partnering on the Western Corridor Transportation Management Plan are: Addison County Regional Planning Commission, Bennington County Regional Commission, Chittenden County Regional Planning Commission, Northwest Regional Planning Commission and Rutland Regional Planning Commission.

A consultant team lead by PB Americas, Inc. was hired to assist in the development of the Plan. The study was initiated in August 2007 and the estimated completion date is June 2009.

Study Goals

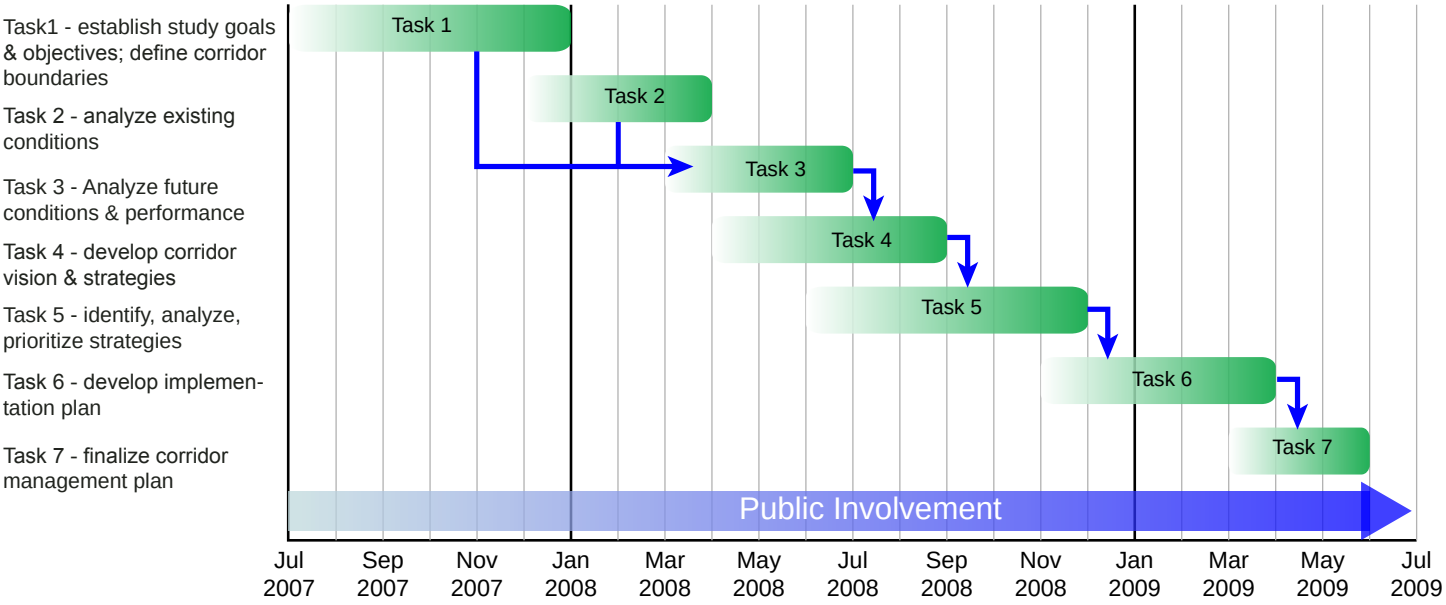
1. Maximize transportation system efficiencies and improve safety
2. Improve freight movements in the Western Corridor
3. Coordinate land use and transportation planning
4. Enhance intra- and inter-regional connectivity
5. Encourage collaboration among regions
6. Use transportation investment to promote economic vitality
7. Promote innovative, fiscally sound financing and investment solutions
8. Minimize impacts to the human and natural environment

Vermont's Western Corridor at a Glance...

- Over 50 % of Vermont's population lives in the Western Corridor's six counties – about 335,300 people. Nearly half (45%) live in Chittenden County.
- More than 120 individual properties and historic districts listed on the National Register of Historic Places in the Western Corridor are located within one-mile of Route 7.
- In 2000, an estimated 75%of commuters in the Western Corridor drove to work alone,13% carpooled, 1% used public transportation, 5% walked and less than 1% biked as a means to get to work.
- In 2000, only 9% of Chittenden County residents left the county for employment. On the other hand, 43% of Grand Isle County residents worked outside the county.
- The Vermont's Western Corridor has approximately 240 miles of railroad right-of-way out of the State's total 748 miles.
- Approximately 80% of Vermont's daily rail freight traffic passes through the Rutland yard.
- Vermont's only two commercial airports in the state, Burlington International Airport and Rutland State Airport are located in the Western Corridor.
- US Highway 7 was constructed between 1920 and 1928. It was officially added to the US Highway System in 1926. Most of the route through Vermont is still the original route.

Be sure to visit us at
www.vtwesterncorridor.org

Project Schedule:



Study Advisory Committee

This study will be guided by an advisory committee with representatives from the Vermont Agency of Transportation, Chittenden County Metropolitan Planning Organization, and five partnering Regional Planning Commissions and other key organizations.

Addison County Regional Planning Commission

Bennington County Regional Commission

Chittenden County Metropolitan Planning Organization

Chittenden County Regional Planning Commission

Federal Highway Administration

New England Central Railroad

The Northwest Regional Planning Commission

OMYA

Rutland Economic Development Corporation

Rutland Regional Planning Commission

Town of Bennington

Vermont Rail System

Vermont Agency of Transportation

Contact for Information:
Eleni Churchill
Chittenden County Metropolitan Planning Organization
802-660-4071 x11
echurchill@ccmpo.org

Vermont Western Corridor
Transportation Management Plan

Fall 2008

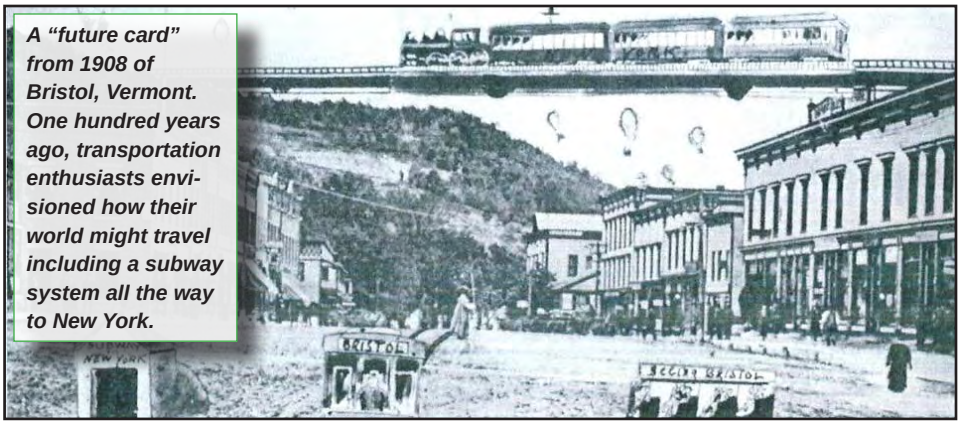
Report released on existing conditions in Vermont's Western Corridor

A well thought-out planning process requires an understanding both of where you are, and where you want to go.

The Western Corridor consultant team, working with the Study Advisory Committee, has just released an Existing Conditions Report that identifies economic, transportation and environmental issues. They spent this past winter and spring researching and analyzing conditions throughout the corridor. A copy of this report is available on the project website, www.vtwesterncorridor.org.

According to Jan Okolowicz, Project Manager for the consultant team developing the Western Corridor Transportation Management Plan, the most challenging part of this work was the need to assemble all information derived from local, regional, state and national sources into a single document which addresses the corridor as a whole.

The Existing Conditions Report identifies economic conditions along the corridor in the context of the larger state and national perspectives. Natural resources, recreational and environmental issues are also examined.



A "future card" from 1908 of Bristol, Vermont. One hundred years ago, transportation enthusiasts envisioned how their world might travel including a subway system all the way to New York.

The report also examines how traffic performance varies along the corridor, how rail operations are presently conducted, the patterns of freight movement, and the role played by public transit, aviation and ferry services. Some selected facts of interest from the report are listed in this newsletter.

The preparation of the Existing Conditions Report was aided by four Focus Groups (see page 2) that were held this past spring. One of the most significant conclusions of all of these efforts is that the Western Corridor plays a key role in the economic and social well-being of Vermont.

The transportation challenges that are being addressed along the corridor will be of benefit to the entire state.

The next step in developing the plan will be to develop a vision for the corridor. This will be reflected in the analysis of future conditions and proposed transportation and land use strategies. A primary concern is directing new growth to designated growth areas such as village and urban centers while maintaining the character of rural areas and preserving natural resources.

What we have learned so far...

- Over 47 million tons of freight worth over $43 billion was transported into, out of, through, and within Vermont in 2006.
- The top five commodity groups in terms of tonnage were gravel, logs and other rough woods, non-metallic minerals, food and coal.
- When freight value is considered, the top commodity groups consist of electronics, mixed freight, machinery, food and other manufactured products.
- Much of the value associated with Vermont's freight transportation is related to origins and destinations outside the state. Accordingly, connections with the national transportation network, notably highways and railroads, are crucial to the state's economic well-being.
- Trucks currently handle 86% of the freight tonnage moved into, out of, within, and through Vermont compared to 13% moved by railroads. This relative difference between truck and rail freight volumes is characteristic of the New England region.
- The importance of rail cannot be underestimated particularly as concerns the transport of heavier bulk commodities which do not lend themselves to transport by highway trucking.

continued on back page

Focus groups talk about mobility, livability, freight and the economy in Vermont's Western Corridor

Ruth Fitzgerald of Fitzgerald & Halliday, Inc. leads economic development focus group discussion.

They came from different communities and from different walks of life. Yet people who participated in four separate focus groups held in April and June voiced some common themes.

They said more effective communication, coordination, and leadership is needed at all levels of government to improve mobility for people and goods, promote economic vitality and provide mode choices in the Western Corridor.

Most groups agreed that maintenance and upgrade of the existing transportation infrastructure is crucial to Vermont's economic health and global competitiveness. More than one group was eager to see projects in the pipeline completed as quickly as possible. They said, "Let's pull the trigger" to complete these projects.

Many participants agreed that Vermont needs to streamline approval processes for developments and projects. One group suggested establishing a review panel made up of all parties involved in the permitting process, state and local, creating a more proactive partnership, between government and the private sector.

Many thought the general public, business and community leaders and political leadership need a better understanding of transportation issues, particularly the importance of transportation to the overall health and economy of Vermont. Truckers wondered if people in communities that placed restrictions on truck travel understood that these restrictions can lead to higher prices and less efficient delivery. Others expressed frustration that funding for transportation is inadequate and communities have few options for getting money other than the property tax.

Mobility and choice of transportation modes were considered important in groups organized around the topics of economic development and livable communities. Social service providers said mobility enables people to be integrated into community life; lack of mobility leads to isolation. Transit needs to be easily and frequently available. Sidewalks and bicycle facilities should be put in place for people to get around by means other than cars—especially in villages and downtown areas.

Focus groups comprised of freight interests had specific improvements they'd like to see in the Western Corridor. They said transportation priorities should be to bring Vermont's rail track and bridges up to the national weight standard. Preservation of rail frontage should also be a priority, they felt, just as water frontage is preserved for "best and highest use"; and highway improvements should be concentrated where trucks have problems in the Western Corridor – between Rutland and Burlington, especially in Middlebury.

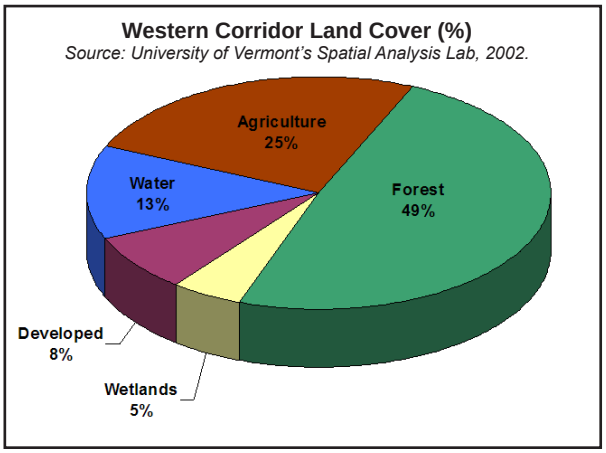
A common theme among the groups was that the corridor needs a balanced transportation system that supports all modes of travel.

Focus groups help determine needs in the Western Corridor.

continued from page one

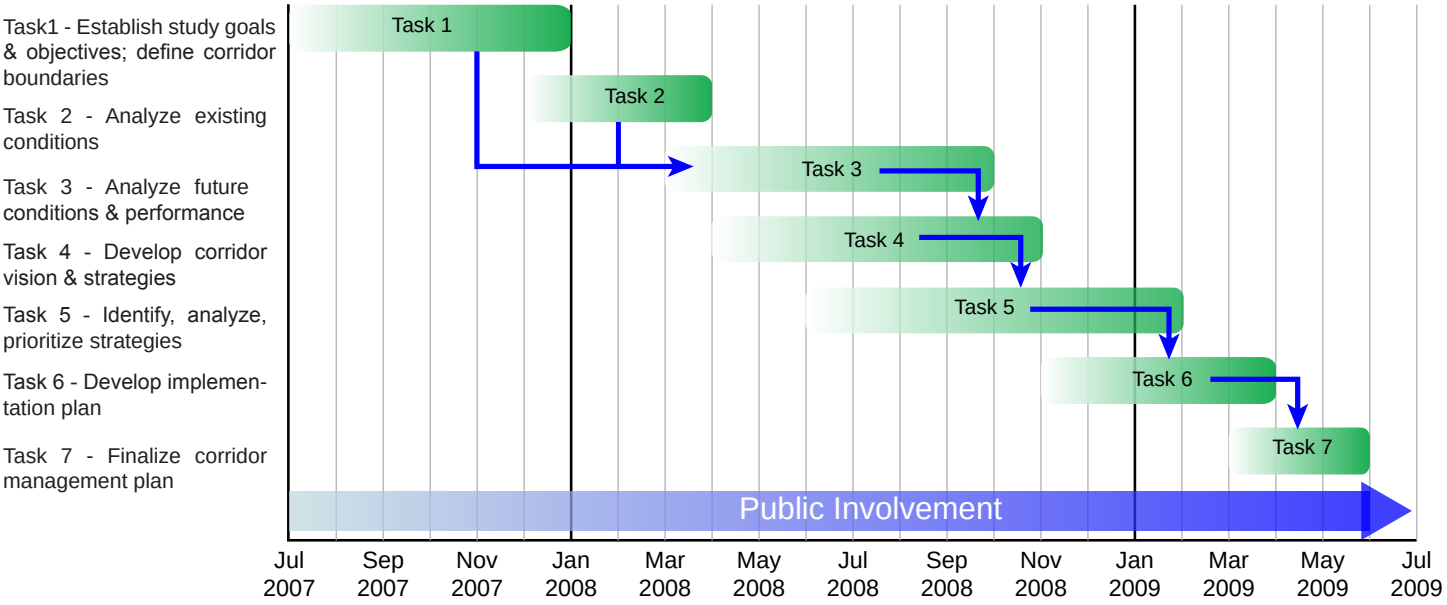
What we have learned so far...

- Shipments taking place entirely within the state (intrastate) represent 38% of the total freight tonnage, but only 11% of the total freight value.
- Approximately 250 miles of railroad right-of-way lie in the Western Corridor, and the corridor is served by six railroad operators.
- Based on a ranking where Level of Service (LOS) A is a top grade and LOS F is the lowest grade, over 37% of the corridor roadway segments analyzed operate at LOS C or better, 44% perform at LOS D, and 19% perform at LOS E.
- About 69% of the signalized corridor intersections analyzed perform at LOS C or better. About 46% of unsignalized corridor intersections analyzed have at least one movement that operates at a LOS lower than C.
- Middlebury has the highest percentage of workers who walk to their jobs - 24%.



- Over 50% of Vermont's labor force lives and works in the Western Corridor.

Project Schedule:



Study Advisory Committee

This study is being guided by an advisory committee with representatives from the Vermont Agency of Transportation, Chittenden County Metropolitan Planning Organization, the five partnering Regional Planning Commissions, and other key organizations, as listed below:

Addison County Regional Planning Commission • Bennington County Regional Commission • Chittenden County Metropolitan Planning Organization • Chittenden County Regional Planning Commission • Federal Highway Administration • New England Central Railroad • The Northwest Regional Planning Commission • OMYA • Rutland Economic Development Corporation • Rutland Regional Planning Commission • Town of Bennington • Vermont Rail System • Vermont Agency of Transportation

Study Consultant Team: Parsons Brinckerhoff with Cambridge Systematics, Inc., Stantec, Inc. and Fitzgerald & Halliday, Inc.

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802-660-4071 x11
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For more information about the study, visit:
www.vtwesterncorridor.org

Thoughtful planning creates a more walkable Manchester community

Twenty years ago, Manchester residents worried about how a burst of new outlet stores would change the character of its downtown.

After years of careful planning, the town has successfully balanced commercial growth and the traffic that comes with it.

Town planner Lee Krohn believes there are fewer automobiles in downtown Manchester than in the mid 90's because more people are walking. Lee says Manchester was fortunate to have active volunteer boards who used planning grants as a "launching pad to look more expansively" on how to manage growth.

One of the things Lee noticed when he came to town in 1989 was that people who shopped at different stores didn't walk between them but repeatedly moved their car from one store parking lot to another.

The town decided to try to get people walking more and driving less. It wanted to make downtown more comfortable for pedestrians instead of making streets wider with more turning lanes to better accommodate cars.

Manchester used a mix of zoning tools and incentives as well as impact fees paid by developers to create a downtown that balances the needs of pedestrians and vehicles. Some of the strategies were:

- Bring buildings closer to street, with no off-street parking in front
- "Fill in" the gaps in downtown, often allowing more dense development of vacant or underutilized lots in exchange for pedestrian amenities
- Encourage mixed use
- Make pedestrian connections to and between rear lots
- Build sidewalks and paths
- Limit curb cuts
- Create very visible signs for its abundant parking lots

The town asked private developers to include and pay for sidewalks in their development plans and to grant easements to allow shared use of individually owned parking lots.

Impact mitigation fees paid by private developers helped fund 10 % of a significant junction improvement project and a park/ride kiosk program.

Lee Krohn says a town should approach downtown development incrementally, parcel by parcel. Planners need to be patient and capitalize on opportunities as they come up because change will not happen all at once.

He also believes in trying things on a small scale to see if they work before launching into big ticket projects. For example, the town is now planning a roundabout at a key downtown location, the junction of Route 11 and 7A, because a nearby roundabout installed in 1996 was accepted by local residents. The first roundabout was put in with the financial backing of a private business owner who needed access. The roundabout provided good access while calming traffic before entering the heart of downtown and built community support for this type of traffic feature.

Manchester has also found a good solution to rid the downtown of some of its unsightly above ground utility wires and poles. Faced with sticker shock of burying the lines, the town discovered they could "clean up" the visual impact of utilities with a combination of limited burying and "hiding" utility wires and poles behind main buildings.

Lee Krohn would like to see zoning move from a "command and control approach to be incentive based, using rules to accomplish goals" because sometimes zoning rules don't allow the kind of buildings people prefer. For example, Manchester's existing zoning limits commercial buildings to 3,000 sq feet (a strategy to limit growth of outlets and make building more human scale.) But an informal survey of residents revealed that the two most beloved buildings in town were more than twice that size!

According to Lee, Manchester will continue to work on shaping its downtown, by creating and locating buildings with curb appeal that people can easily get to on foot.

Manchester Town Planner, Lee Krohn

Manchester "Park and Walk" sign

Corridor Plan Update

Vermont Western Corridor Transportation Management Plan

January 2009

ON TAP...

Jan:	Review Future Condition Report & Corridor Vision & Goals
Feb:	Finalize Future Conditions Analyze & Begin Prioritizing Strategies
Mar:	Finalize Strategies

Transportation Management Plan is Underway in the Western Corridor

Who's involved?

The Vermont Agency of Transportation, Chittenden County Metropolitan Planning Organization, and five Regional Planning Commissions (RPCs) along Vermont's Western Corridor are partnering in an effort to develop a Transportation Management Plan for western Vermont, from the Massachusetts state line to the Canadian border.

The five commissions partnering in the Western Corridor Transportation Management Plan are: Addison County Regional Planning Commission, Bennington County Regional Commission, Chittenden County Regional Planning Commission, Northwest Regional Planning Commission and Rutland Regional Planning Commission.

A consultant team lead by PB Americas, Inc. was hired to assist in the development of the Plan. The Plan is funded by the Vermont Agency of Transportation (VTrans) and the Federal Highway Administration and is guided by a Study Advisory Committee made up of representatives from the Regional Planning Commissions, freight operators, economic development, Chittenden Country Metropolitan Planning Organization and VTrans.

Work on developing the plan began 18 months ago and is expected to be completed by June 2009.

What is the purpose of the plan?

The Plan will determine the most effective ways to improve the transportation system in western Vermont over the next 20 years. Recommended strategies are expected to promote economic vitality in the region, while maintaining Vermont's unique and valued quality of life.

The Plan will also explore ways to coordinate land use and transportation planning, encourage collaboration and connectivity among regions, and promote innovative, fiscally sound financing and investment solutions with minimum impacts to the human and natural environment.

The Western Corridor Transportation Management Plan is ***not*** intended to formulate specific projects. Rather, it will offer a framework for transportation investment policies and strategies. The plan is being coordinated with the Vermont Agency of Transportation's ongoing project development efforts in the Corridor, including various railroad initiatives.

What are the key steps?

Key steps in developing the plan are:

1. Identify/understand existing conditions and issues
2. Identify future growth and analyze conditions in the corridor
3. Establish Vision and Goals for the Corridor
4. Identify transportation and land use strategies to realize the Corridor Vision
5. Prioritize strategies and develop an Implementation Plan
6. Seek public review and comment
7. Finalize plan

What's been done so far?

Step 1: Existing conditions have been identified, analyzed and documented in an Existing Conditions Report. The Report is available on the project website: www.vtwesterncorridor.org.

Step 2: A draft Future Conditions Report is in progress and will be released in January 2009.

Steps 3: Draft Corridor Vision and Goals statements will be released in January 2009.

Step 4: Preliminary multimodal strategies that address corridor issues are being developed.

What does the Existing Conditions Report say?

This report used quantitative data, regional plans, prior studies, site visits, focus groups and input from regional planning agencies to describe development patterns, densities, zoning, major trip generators, environmental constraints and resources. Existing modes of transportation, highway (passenger and freight), rail, public transit, airports, water as well as bicycle and pedestrian facilities were also characterized.

Four focus groups were also conducted to obtain information about corridor issues. These groups were organized around the topics of economic development, freight (rail and truck) and livable communities. Some of the major issues of concern identified by focus group participants were:

- Lack of direct access to the Interstate highway system south of Burlington
- Highway capacity deficiencies (for truck traffic) between Rutland and Burlington
- Safety concerns at specific locations along the corridor
- Need to upgrade the Vermont rail system to national rail standards
- Need for key "gateways' that connect the Western Corridor to national and international transportation networks
- Regional transit systems that better serve the needs of employers and people with mobility concerns
- Relatively high utility rates and inadequate telecommunications infrastructure in some rural areas
- The perception of Vermont as a state where it can be complicated to establish and expand businesses, with a cumbersome permitting process
- Better public understanding and appreciation of the overall importance of the transportation system to sustain the region's economic vitality

Some specific transportation concerns identified in the Existing Conditions Report that will be more closely examined include:

- Rail infrastructure upgrades – e.g. upgrading track and bridges to handle the national standard of fully loaded 286,000-pound railcars and resolving clearance issues
- Improve highway capacity between urban/village centers along the Western Corridor—enhance travel reliability of freight moved by trucks
- Remediation of traffic congestion in urban centers along the corridor particularly in Bennington, Rutland, Middlebury and greater Burlington area
- Mitigating impact of truck traffic on downtowns
- Expansion of regional transit services to access employment and housing opportunities
- Improvements to transportation gateways, especially more efficient processing at international border crossings.

How much growth is expected in the Corridor?

The project team is preparing a draft Future Conditions Report which will identify economic, demographic, traffic and overall transportation network conditions in the Western Corridor for the future planning year of 2030. This Report builds on the data presented in the Existing Conditions Report released in September 2008 and will form the basis for evaluating the opportunities and impacts of the various strategies developed.

The Future Conditions Report will place particular emphasis on trucking and railroad freight issues. General traffic is expected to grow by 30 to 40 percent from 2000 to 2030, with a greater percentage increase projected for trucks. This growth mirrors the Western Corridor's forecasted overall job growth of just over 30 percent from 2005 to 2030. Freight shipments by truck are forecast to grow at a faster rate than rail freight shipments, reflecting an improved access to truck services and highway infrastructure as compared to rail. Based on this prediction, the potential for shifting truck shipments to rail is currently being examined.

The Draft Future Conditions Report will be reviewed by the RPC participants in January 2009 and will be finalized in early February after receipt of comments.

What should the Western Corridor look like in 2030?

Representatives from the Vermont Agency of Transportation, Chittenden County Metropolitan Planning Organization and the five Regional Planning Commissions met with the consultant team in fall 2009 to develop the Corridor's Vision and Goals as well as identify strategies that might be implemented to better manage transportation system functions and sustain economic activity in the Western Corridor. Out of these discussions, the following future scenarios were developed and will be analyzed in the next couple of months:

Roadway Improvements – Capacity improvements at selected intersections and roadway segments (typically signalization, turning or passing lanes) will be identified. Safety will be also addressed throughout the corridor.

Growth Centers – Locations were identified, typically in town and village centers, where maximum residential and commercial build-out can occur, thereby allowing for more walking or public transit trips to places of employment, shopping and recreational venues.

Truck to Rail Diversion of Freight – A methodology is being developed to identify a "reasonable" percent of freight that could be shifted from truck to rail. Consequences of truck traffic reductions on the highways will be explored.

Freight Transload Facilities – Locations were identified, typically close to railroad lines, where transfer of commodities between rail and trucks can occur. These facilities can serve to reduce longer distance trucking, although the final pick-up or delivery of commodities is usually performed by truck.

Rail–Served Development Sites - Sites were identified, preferably previously developed commercial or industrial parcels, situated adjacent to active rail lines thereby allowing for railroads and economic development agencies to attract businesses which can utilize rail freight. The overall intent is to preserve these sites for occupancy by railroad related businesses.

Can truck freight be shifted to rail?

That's a critical question, especially after initial study data pointed toward an increasing percentage of freight being carried by trucks rather than rail. As a result, an analysis was conducted to provide a general estimate of the amount of truck-hauled freight that has the potential to be shifted to rail if rail infrastructure and access conditions are substantially improved. The analysis is based on commodity flow data from the US Department of Transportation (2006) supplemented by a survey of Vermont freight shippers conducted in 2000 as part of the Statewide Freight Plan. Two separate approaches are being utilized to identify the potential for shifting freight from truck to rail services:

- Assume that, with upgrades to rail infrastructure, the railroads' share of specific freight commodities in Vermont can increase to match the national railroad share for these commodities; and
- Examine Vermont commodities (originating or received) that are (a) shipped longer distances and (b) are likely to be shipped by rail based on national trends.

It should be noted that the diversion potential is limited to freight commodities suitable for rail transport which already comes to Vermont. For example, some commodities which constitute a large portion of long-distance railroad shipments nationally, such as coal, do not occur in Vermont.

This diversion methodology is currently under review and will be finalized by the end of January 2009. The Chittenden County Metropolitan Planning Organization and RPC participants are also developing a supplemental commodity shippers' survey, to be undertaken in January/February 2009, which will provide additional insight into commodity shippers' preferences and concerns.

How can the public have a voice on the plan?

There are several avenues for the public to express their opinions on the development of the Western Corridor Transportation Management Plan. Study documents are posted on the website, www.vtwesterncorridor.org. There is a comment form people can fill out and the names and contact information of key project participants is available.

Citizens can also speak with their local Regional Planning Commission representative on the Study Advisory Committee. Contact information is on the website.

In late April and early May 2009, a series of public meetings will be scheduled to present information and to receive public feedback on selected strategies and an implementation plan detailed in the Western Corridor Transportation Management Plan. These meetings will be scheduled so that public comments can be considered before the plan is finalized. Information about the upcoming public meetings will also be available on the website.

Corridor Plan Update

Vermont Western Corridor Transportation Management Plan

February 2009

www.vtwesterncorridor.org

ON TAP...

Feb:	• Finalize Future Conditions
Mar:	• Analyze & Begin Prioritizing Strategies
Apr:	• Focus Groups Review Strategies • Finalize Strategies

What are the Transportation Plan's Goals and Objectives?

Members of the study's Steering Committee and the consultant team have been hard at work developing goals, objectives, and criteria to evaluate and prioritize proposed strategies. The goals and objectives for the Vermont Western Corridor Transportation Management Plan broadly define aspirations for the transportation system's performance and role in community. The prioritization process is necessary to classify the potential effectiveness of the many strategies that are being considered to meet those goals.

Proposed Vision Statement

Western Vermont is served by a safe, balanced, fully-integrated multimodal transportation system that provides regional mobility, travel choices, fosters economic vitality, and supports sustainable growth. The transportation system supports compact land use patterns and preserves the vibrant communities along the Western Corridor.

The study is quite broad in scope, considering a range of roadway, freight, transit, land use and policy strategies to address transportation needs along the 195-mile corridor. The prioritization process therefore needs to allow for consideration of a broad and diverse set of criteria. While some benefits may be measured quantitatively through specific analyses, qualitative measures will also play an important role in determining strategy benefits and effectiveness.

Candidate prioritization criteria are being developed to relate to each of the specific study goals, as well as additionally measure how feasible the strategy is to implement.

The draft prioritization criteria being developed may change as additional input is received and the evaluation process is finalized. Each of the potential strategies that have been identified through this planning effort will be measured against the full range of the criteria as a way to evaluate how effective they can be in meeting the goals and objectives established by the plan. The relative importance, or weights, of specific criteria will be established in consultation with the steering committee and the public.

The DRAFT goals and potential prioritization criteria under consideration for use in the Vermont Western Corridor study are:

Goal A: Maximize highway system efficiencies and increase safety in Vermont's Western Corridor

Objective 1: Improve traffic operations, safety and travel reliability for highway segments between urbanized areas/village centers

Objective 2: Balance regional mobility needs with local circulation and access within urbanized areas/village centers and improve safety within these areas

Potential Prioritization Criteria:

- Enhances highway system performance (traffic operations)
- Improves transportation system safety
- Improves transportation system reliability
- Improves local vehicular circulation

Goal B: Improve freight movements in the Western Corridor

Objective 1: Improve travel time reliability on Western Corridor highways

Objective 2: Improve infrastructure, services and intermodal connections which will facilitate increases in rail and air freight traffic in the corridor

Objective 3: Preserve rail line frontage for businesses that use rail services

Potential Prioritization Criteria:

- Increases share of freight transported by rail and air
- Improves access to the rail network
- Improves freight travel times
- Improves freight travel time reliability

Contact information: Eleni Churchill, Phone: (802) 660-4071 ext. 11, echurchill@ccmpo.org

Goal C: Increase public transportation use and enhance regional connectivity for passenger travel

Objective 1: Provide well coordinated public transit service between urbanized areas/village centers in the Western Corridor and to key destinations outside of the corridor.

Objective 2: Improve access to public transit services and linkages between travel modes.

Objective 3: Establish passenger rail service throughout the length of the Western Corridor

Objective 4: Improve travel options in the Western Corridor

Potential Prioritization Criteria:

- Improves public transit service coverage and frequency
- Improves public transit reliability and travel times
- Improves access to public transit
- Increases transit ridership
- Improves corridor travel options and alternatives
- Increases potential for implementing corridor-wide passenger rail service

Goal D: Support corridor investments that promote economic vitality in the region

Objective 1: Maintain and strategically improve transportation infrastructure to support businesses in Western Vermont

Objective 2: Increase employment and tourism activity in the Western Corridor

Objective 3: Facilitate growth in passenger and freight traffic at the state airports within the Western Corridor.

Potential Prioritization Criteria:

- Creates infrastructure investment supportive of Western Vermont businesses
- Utilization of transportation right-of-way to provide multiple benefits
- Improves use of airport facilities in Western Vermont

Goal E: Preserve the quality of life of communities along the Western Corridor

Objective 1: Maintain air quality "attainment" status under the federal Clean Air Act for all Western Vermont counties.

Objective 2: Minimize effects of truck traffic impacts within town and village centers.

Objective 3: Support the historic settlement pattern of compact villages and urban centers separated by rural countryside.

Objective 4: Provide safe, attractive and convenient pedestrian and bicycle accommodations that connect all travel modes and provide access and circulation within communities. Plan, design and implement roadways with all users in mind.

Objective 5: Limit adverse environmental and community impacts of transportation infrastructure and services.

Potential Prioritization Criteria:

- Preserves air quality within the corridor
- Limits other environmental impacts
- Minimizes impacts to town/village centers from truck traffic
- Improves access to pedestrian/bicycle network
- Concentrates development in towns and villages.

Other Considerations

- Consistent with applicable established design standards and policies.
- Consistent with State/Regional plans
- Level of government and local support
- Capital cost requirements
- Level of annual operational costs
- Applicable funding availability
- Level of personnel resources required

Draft Future Conditions Report is under review

The consultant team has recently prepared a draft Future Conditions report which is under review by the five Regional Planning Commissions in the Western Corridor.

The purpose of this report is to identify projected economic, demographic and transportation conditions in the Western Corridor for the year 2030. Future trends in freight transportation and the future of the truck and rail industries are also discussed in this report. It places particular emphasis on freight movements and associated trucking and railroad operations, which have emerged as key concerns for this corridor.

Future transportation conditions and performance described in the report represent a "no action" situation for all modes operating in the corridor—no new major highway, rail, bicycle, pedestrian or public transportation (bus and rail) improvements are included in this scenario other than projects that are already planned and programmed for implementation.

The "no action" scenario provides the study team with a baseline condition to which potential multimodal strategies to improve the corridor will be compared to.

The Draft Future Conditions report will be available February 27 for public review on the project's website, www.vtwesterncorridor.org.

The Western Corridor Transportation Management Plan is being guided by a Study Advisory Committee with members from VTrans, Chittenden County Metropolitan Planning Organization, the five Regional Planning Commissions in the Western Corridor and other organizations.

Contact information: Eleni Churchill, Phone: (802) 660-4071 ext. 11, echurchill@ccmpo.org

Appendix H
Public Comments and Responses

Village Manager's Office
2 Lincoln Street
Essex Junction, VT 05452
www.essexjunction.org

David A. Crawford
Village Manager
dave@essexjunction.org

office: (802) 878-6944
Fax: (802) 878-6946
Cell: (802) 881-9599

MEMORANDUM

TO: **CCMPO**
FROM: David A. Crawford, Village Manager
Robin Pierce, Development Director
DATE: December 31, 2009

SUBJECT: DRAFT TRANSPORTATION MANAGEMENT PLAN (DECEMBER 2009)

Some of the comments below may very well be implicit in the Draft Plan. However, it would be beneficial to have the fact that the Western Corridor's northern termination point is at East Alburgh underscored each time the Corridor is mentioned. There are times where the Corridor description seems to stop at Burlington. The symbiotic relationship between the state's transportation networks and the fact that an existing resource, rail, can offer positive benefits that impact tourism, air quality, quality of life, economic vitality, sustainable, (compact), growth is underutilized. The general document also becomes project specific at times. How can this be balanced?

Should the funding source for the Study be mentioned?

There is no mention of Essex Junction/ Town of Essex as one of the larger communities in the Western Corridor. Combined we are the second largest community in the State. Essex Junction is a critical link between the eastern and western corridors. This is not teased out, nor is the potential Homeland Security Benefits of the Burlington to Essex Junction connection.

Land use policy and transportation planning are intertwined. We need to look holistically at the benefits upgrading the rail has on reducing wear and tear on our historic settlements and roads network. There is a symbiotic relationship between all transportation networks. Improving one (e.g., rail upgrade Burlington to Alburgh) can take pressure (funding, maintenance, and congestion) off the other. This example could also remove large freight trucks from our rural roads reducing the impact of such vehicles on our historic settlements and buildings.

There is no mention of the Jeffords Earmark. There is no mention of NECR's offer of the twenty percent matching funds to complete the Burlington to Alburgh line. There is no mention of NRPC, CCMPO, VTRAC, Burlington, Winooski, Colchester, St. Albans and Essex Junction

support of the NECR rail upgrade proposal. This excludes a major proposal supported by some of the largest communities in the State from the document.

Below are sequential comments on the Draft Study.

Projected Future Conditions.

1.3.3 Candidate Strategies and Actions.
Rail freight and truck freight separated. Public transportation bundled into one, not separated by road/rail/cycling/pedestrian.

Railroads – Freight and Passenger.
Burlington to North Bennington owned by the state, operated by Vermont Rail System. There is no mention of this being run by a private owner with profits going to the private owner. ***'Rail service in the northern portion of the study area is provided by privately owned NECR'.*** In this instance private company benefits are called out. Inconsistency?

Highways.

Improvements mentioned include the Middlebury Rail Spur – project specific statement in a general document.
'Traffic growth anticipated especially north and south of Burlington. Truck volumes in 2030: 1,000 to 2,000 a day along Rte 7. Truck traffic is forecast to grow between 40-60% across most of the corridor. Ten of the 27 Roadway segments analyzed are expected to operate at LOS-E. ***Railroad freight movements expected to increase by 63% although, trucks will remain dominant. There is an opportunity for rail to capture some freight cargoes – continuing need to invest in infrastructure upgrades to ensure that the rail network is operationally compatible with the larger national rail system throughout the Western Corridor.'*** That is, to Alburgh.

Passenger Rail.

Improvements said to be highly dependent on ARRA funds. ***"Expansion of rail south of Rutland to Bennington and Hoosick Junction, NY should achieve rail service throughout the Western Corridor"***
Not so: the corridor is longer than this – it goes to Alburgh.

3 Vision, Goals, and Objectives.
'Economic vitality – support corridor investments and promote economic vitality in the region.' Support NECR offer to trigger use of Jeffords Earmark? This is an example of a public/ private initiative that would be beneficial to all and has happened previously, e.g., the Burlington tunnel reconstruction.

3.2.1 Highways.
Goal – Improve highway system efficiencies and safety in Vermont's Western Corridor.
Objective 1. Improve travel and safety between urban areas and village centers. RAIL?
Objective 2. -Balance regional mobility needs with local transport priorities and plans.
Northern section most productive?

3.2.3 Public Transportation.
GOAL – Increase public transportation use and enhance regional connectivity for passenger travel'. Improve International connections, to Montreal from Burlington?
Objective 3. Establish passenger rail service and supporting facilities throughout the length of

the Western Corridor.
Objective 4. Improve travel options – range of modal choices. To increase the modal choices what else could be added that isn't there already – commuter rail?

3.2.4 Economic Vitality.
GOAL – Support corridor investments that promote economic vitality in the region.
Objective 1. Maintain and strategically improve transportation infrastructure to support businesses in Western Vermont. Along the Western Corridor?
Objective 2. Increase employment and tourism activity along the Western Corridor. Improved rail between Burlington and Montreal?
Objective 3. Facilitate growth in passenger and freight traffic at airports within the Western Corridor consistent with airport master plans and the states airport system and policy plan. There is a large benefit to be gained by Burlington Airport if the rail link between Montreal and Burlington is improved.

3.2.5 Quality of Life.

GOAL – Implement efficient, sustainable and context sensitive transportation strategies that support a high quality of life in Western Corridor communities.
Objective 1. Maintain air attainment status. More freight on the rail lines, less trucks on the roads will help with our air attainment status.
Objective 2. Reduce or mitigate the adverse effects of truck traffic within town and village centers where possible. Rail Freight?
Objective 5. Limit adverse environmental and community impacts of transportation infrastructure and services. More rail?

4.1 Moving Forward. 'An important next step for the planning agencies in the corridor is to prioritize key short corridor segments for more evaluation of issues and refinement of multimodal strategies recommended in the Plan that are appropriate for that particular segment. Responsibilities extend to ensuring such plans are compatible with those of adjacent segments and with the Western Corridor Transportation Management Plan.' This statement sets the Western Corridor Management Plan as a Benchmark, which all proposals for the Corridor can be measured against. As the Burlington to Alburgh portion of the Western Corridor is not consistently called out in the Plan, this statement can negatively affect any future proposals for this section. Burlington to Alburgh is the 'low hanging fruit' in terms of cost, implementation time, and probable benefits from increased connectivity with our closest major metropolitan area – Montreal. The fiscal and strategic importance of this link should be emphasized in the Corridor Plan.

Table 4.1 Recommended Strategies and Basis for Selection.
H2 Improve Local Circulation. If it is for trucks, Quality of Life should be un-ticked.
F1 though F5 should also have Quality of Life ticked
F5 should have Economic Vitality and Quality of Life ticked.
Q3, 4, and 5 should have Economic Vitality ticked.

4.3 Highway Actions
No mention of the Crescent Connector I Essex Junction and possible cross road reconfiguration at the 5 Corners.

4.4 Freight Actions.
Invest in rail infrastructure (track and bridges) in order to achieve national load rating standards. Add throughout the full length of the Western Corridor?

***4.4.2 Improve Rail Efficiency*.**
Invest in rail infrastructure in order to achieve the national standards of 286 for rail/bed and 315 for bridges load ratings. The current system is an "inefficient and costly prospect" for some shippers, who may chose trucks instead. Increasing the affects of freight trucks on our built and natural environments, and quality of life.

***Near and Long Term actions. Continue upgrading the rail infrastructure in the Western Corridor*. *Includes improvements to the first priority route, as identified in the VT State Rail and Policy Plan 2006 – segment between Florence and Rutland. Reconsider designation of other first priority routes during next rai*l *plan update. "Gateway" connections have recently changed, resulting in corresponding changes in some rai*l *freight traffic patterns in the state during the year. If these are sustained the route between Rutland and Hoosick Junction, NY will have greater importance and may warrant consideration as a higher priority as well. Maintain coordination with neighboring states and Canada to cooperatively identify needs and opportunities for railroad infrastructure improvements which can be mutually beneficial'*.

The link from Alburgh to Burlington is an international gateway that can benefit Vermont residents and businesses. Strengthening this connection will have major benefits along the Western Corridor. Upgrading rail along the routes that carry the most freight in Vermont will have immediate positive impact. The Essex Junction to East Alburgh section carries the highest tonnage of freight in Vermont. This is not mentioned in the Corridor Plan. From East Alburgh to St. Albans, the density is 4.02 million gross tons annually. St. Albans to Essex Jct. handles 4.66 GTMs. These figures are more than double the tonnage handled on other state rail lines. At the present time no funds are targeted for the upgrade of this section to the 286 standard. This project meets many criteria in the Vermont Rail Plan, including supporting current (1st priority route-Vermonter) and future (2nd priority route) intercity rail passenger routes, and upgrading freight lines to 286K (2nd priority route in the plan.)

What are the gateway connection changes that have occurred that would give the route between Rutland and Hoosick Falls higher priority than it currently has? Is there a reasoned justification for this statement?

Town of Charlotte
ESTABLISHED 1762

January 6, 2010

Eleni Churchill, Senior Transportation Planner
CCMPO
110 West Canal Street, Suite 202
Winooski, Vermont 05404-2109

Re: Vermont Western Corridor Transportation Management Plan

Eleni,

Thank you for the opportunity to comment on the Vermont Western Corridor Transportation Management Plan. Time has not allowed the Charlotte Selectboard as a whole to come up with comments, but since planning of this corridor is important to our town, I felt I should pass along a few of my own observations about the Plan.

Generally, the Plan is very good and represents careful thought about future needs, improvements and the coordination of various forms of transportation in western Vermont.

Here are a few additional thoughts and questions:

1. The town of Charlotte is already practicing many of the recommendations made in the Western Corridor Transportation Management Plan in order to maintain Route 7 as the major artery through town. However, Route 7 also serves our local transportation needs, with accesses to town roads and with some existing residential, business and agricultural accesses. The Charlotte Town Plan discusses measures to minimize the impact of Route 7 expansion on the local community and the integration of alternative modes of travel across and along the corridor.

   The Transportation Management Plan acknowledges the importance of integrating local needs through increased safety at major intersections, but could go further to identify safety issues in rural areas along Route 7 and measures to accommodate local travel. These may include consideration of additional "turn pockets" for side roads and the establishment of safe pedestrian/bicycle and agricultural crossing points such as the tunnel planned for southern Charlotte.

2. Safety of the intersection of Route 7 and F-5 has been a long-standing concern in Charlotte, and traffic in the West Village of Charlotte has been a

159 FERRY ROAD P.O. BOX 119 CHARLOTTE, VERMONT 05445-0119
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growing concern, especially with increased traffic to and from the Charlotte Ferry with the closing of the Champlain Bridge. In addition to monitoring the intersection for efficiency of traffic movement and vehicle safety, future modifications to the intersection should allow for safe pedestrian/bicycle crossing. This is supported by the Charlotte Town Plan. This intersection is the major link between the east and west sides of Route 7 for our community.

3. The Charlotte Town Plan also supports re-starting commuter rail service or creating new light rail service to Charlotte. The Transportation Management Plan discusses rail expansion for freight and intercity passenger rail service. The reestablishment of commuter rail service is not discussed. I suspect that our community would like to see further consideration of the use of rail, as an alternative to driving, for commuting and other local transportation needs.

4. Every winter we are reminded of the hazards of quickly changing winter driving conditions, and Route 7, with its greater volume and speed of traffic, seems to have a high number of serious traffic accidents in rural sections. What measures are being taken to improve road surfaces to increase safety, improve techniques to clear the roads of snow and ice, decrease response times of the State highway crews, and warn drivers of hazardous driving conditions?

5. The closing of the Champlain Bridge was an unexpected event and has raised awareness of the importance of transportation links between New York State and Vermont. We have seen increased traffic to and from the Charlotte Ferry. A section may need to be added to the Transportation Management Plan that addresses the short term (during bridge construction) and long term transportation needs related to travel between the two states.

Thanks again for the chance to comment on the Plan.

Sincerely,

Jenny Cole

Jenny Cole, Charlotte Selectboard Member

Town of Charlotte
ESTABLISHED 1762

January 6, 2010

Ms. Eleni Churchill, Senior Transportation Planner
CCMPO
110 West Canal Street
Winooski, VT 05404

Re: Comments on draft Western Corridor Management Plan dated November 9, 2009

Dear Eleni,

I am submitting comments as the Selectboard Assistant and Town Planner and as the Town's TAC representative, but I want to be clear that neither the Selectboard or Planning Commission has had a chance to review these comments. I will, however, say that I have read comments to be submitted by Jenny Cole of the Selectboard, and I agree with and support her comments.

- The report is impressive in its breadth. It is to be expected that a report that covers such a large and varied area would not be extremely specific in its recommendations.

- The report generally presents a balanced and well thought-out vision, with supporting goals, objectives and strategies.

- My main substantive concern is that the report does not analyze in much detail the transportation interfaces between Vermont and New York State, which I think does have an impact on the corridor.

- Related to the point above, the report does not discuss the ferry service in much detail, other than to say that it exists. There is no documentation of usage levels, no mention that ferry service is run by a private company (except in the appendix), and no discussion of fleet condition or planned replacements or upgrades. I believe the importance of the ferry service is not just due to the recent closure of the Crown Point Bridge.

- On page 4-34 of the report, for Strategy T7 (Strengthen and expand pedestrian and bicycle improvement programs in local communities) at the fifth bullet, it would seem appropriate to add "and at appropriate rural locations" to the end of the first sentence (and add a few words to complete phrases) so it would read "Plan, build and maintain accessible pedestrian facilities that are fully integrated

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into commercial developments, urban and village centers, and appropriate rural locations."

- The following "Other Strategies" seem worthy of considering for inclusion in the Plan:
    1. O-15 Improve ferry-bus linkage
    2. O-18 Promote rail services
    3. O-19 Use Rights-of-way for multiple uses—a possible additional use of the railroad right-of-way is the Champlain Path.

- The report includes a few technical and/or typographical errors:
    1. On page 2-2, Charlotte population was estimated to be 3,569 in 2000 (U.S. Census) and 3761 in 2008 (State of Vermont)
    2. On page 4-10, there is a description of Charlotte having "honey houses"—this is likely to be Ferrisburgh.
    3. On page 4-27, there is a description of Charlotte having commercial strip development—it seems this is likely referring to Ferrisburgh.
    4. In Appendix B, in Table 3.2 Charlotte is included in Addison County
    5. In Appendix B, in Tables 4.2 & 4.3, it appears Route 7 between F-5 and the Shelburne town line has a higher AADTT than either south of F-5 or in Shelburne—this seems curious.

Thank you for the ability to submit these comments!

Sincerely,

Dean Bloch, Charlotte Selectboard Assistant and Town Planner

The UNIVERSITY of VERMONT

CAMPUS PLANNING SERVICES
http://www.uvm.edu/~plan/

January 5, 2010

To:
Eleni Churchill
Senior Transportation Planner
Chittenden County Metropolitan Planning Organization
110 West Canal Street
Winooski, VT 05404

Re: Comments to Draft Western Corridor Transportation Management Plan

Dear Eleni,

Thank you for the email invitation to view the Draft Western Corridor Transportation Management Plan from November 30, 2009 and submit comments, which we are doing here. This draft plan has a wealth of information and can be a useful tool to address the transportation issues at hand. I hope our comments can aid in this process.

1. There is one mention of the (former) Champlain Bridge issue -- the closure of the bridge has emphasized how critical the links to New York State are. I know this is a late breaking issue, but maybe this could be addressed more in the final plan. Perhaps more redundancy is necessary, such as more ferries, or more public transit from ferry docks. This could be a great opportunity to expand public transit options. Perhaps people would continue to utilize public transit and use the ferry (without their cars) even when the bridge reopens, IF these are convenient and cost-effective enough.

2. This study assumes that the Circ Highway is one of 4 projects that get implemented -- this might not be a valid assumption...

3. Rte 22A is not, strictly speaking, in the study corridor but it is a significant north/south corridor and very critical for the NYS connection. Maybe there should be reference to how this corridor affects Route 7?

4. Bike/ped issues were not included in the main goals, and de-emphasized in the main points of the study "due to the localized nature of (these) facilities". The study should include more prominently the bike/ped points it does make

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(later in the text), and emphasize best practices and standards. Also, bike/ped facilities should be considered everywhere -- not just in some "localized" areas. The study seems to contradict itself since it does include bike/ped strategies and even notes on p. 19 that the "back to the city" movement might curb sprawl, which would add to the importance of bike/ped facilities.

5. The study's assumption is that only 4 major transportation projects get completed -- what about any bike/ped initiatives that have already been funded, or existing TDM strategies already in place? Might these not reduce projected traffic increases, especially on Route 7 in and around the Burlington area?

6. As mentioned previously, the main strategies should definitely include an increase in bike/ped facilities as well as an increase in TDM measures. These can improve safety, economic vitality, quality of life AND reduce numbers of vehicles on the roads, which will improve efficiency. All these are the main goals of the plan.

7. Table 4-1: Recommended strategies and basis for selection: see attached marked up page.

a. Some of the strategies affect many more of the goals than marked. Bike/ped and TDM and public transit can all improve air quality, quality of life, reduce congestion as well as promote public health and sustainability. This is not really emphasized in this plan.

b. I question whether highway widening (i.e. adding lanes) can really accomplish highway efficiency. Studies have shown that highway widening ADDS vehicles to the roadway system and in the long run does nothing to reduce congestion (other than completing "missing links" etc). The study itself notes that a "possible" recommendation to expand Shelburne Road in South Burlington in specific areas "might" create a problem for pedestrian crossing... So why include road widening at all?

8. There are many, many examples of highway improvements in the text and very few examples of other improvements. This certainly puts an emphasis on highway improvements over public transit improvements, bike/ped facilities and TDM.

9. The draft study recommends 50 mph as a standard speed for state routes outside of villages, towns and cities. So why recommend "improvements" that will increase speeds by "2-3 mph" to "50+ mph" on roads that are already posted at 50 mph?

10. There are no examples for 4.5.1 "expand and improve public transportation services", whereas there are many examples of highway

– 3 – January 5, 2010

improvements. This gives a clear message that highway improvements are the most important part of the study. It would be easy to add something obvious like "coordinate services between providers to create coordinated service for the entire length of the corridor" and other needs that are clearly articulated elsewhere (but buried) in the study.

There is no ridership data provided, whereas other vehicle-related data is included in the study. Appropriate consultants should be hired who have the requisite public transit background, if needed, so that transit data and improvements can be better developed.

11. The connection between rail and bus ridership should be acknowledged, as well as the need to coordinate between modes and the need to connect in both timing and geography. For example, it is noted that ridership on the Amtrak Vermonter (St. Albans/NYC) went up last year, but no connection was made that at the same time, the direct bus from Burlington to NYC was canceled.

12. Section 4.5.3, T5 "Expand TDM" refers mainly to GO Vermont, which seems to coordinate and provide information re TDM but does not seem to actually expand TDM options such as car sharing, transit expansion etc. TDM should be emphasized with more details, options and expansion of existing resources such as CATMA, CarShare VT and more.

13. For bike/ped facilities: does it make sense to identify routes and improvements for something like La Route Verte or Lake Champlain Bikeways?

14. Strategy Q6 "encourage compact mixed use development within towns": the plan should mention the designated growth areas/downtowns that the state defines; this plan could promote coordination with these efforts and possible incentives for coordination/combination.

Thank you for the opportunity to participate in this process. If our department can be of more assistance, please do not hesitate to contact me at 656-3217.

Sincerely,

Lani Ravin

Lani Ravin, AICP
Associate Planner

Cc: Linda Seavey, Director, Campus Planning Services

Table 4-1: Recommended strategies and basis for selection

Strategy		Highways	Freight	Public transportation	Economic vitality	Quality of life
H1	Improve signalized intersections	X	X			
H2	Improve local circulation	X		X	X	X
H3	Implement access management	X				
H4	Highway realignment and widening	X	X		X	
H5	Minor roadway reconfiguration	X	X			
H6	Safety improvements	X	X			
F1	Increase rail load ratings		X	X	X	
F2	Improve truck access to rail and airports		X		X	
F3	Establish additional transload facilities		X		X	
F4	Market rail-served properties		X		X	
F5	Preserve rail frontage for best uses		X			
T1	Expand and improve public transportation services	X		X	X	X
T2	Expand passenger rail service and intercity/interstate bus services	X		X	X	X
T3	Develop additional intermodal centers (Passenger Hubs)	X		X	X	X
T4	Establish additional park-and-ride lots and intercept facilities	X		X	X	X
T5	Expand travel demand management programs	X		X	X	X
T6	Improve traveler information	X	X	X	X	
T7	Improve bicycle and pedestrian accommodations	X		X	X	X
T8	Reduce border crossing delays for future passenger rail services	X		X	X	X
E1	Improve airport infrastructure		X		X	
Q1	Region-wide operating agreement					X
Q2	Comprehensive truck noise mitigation/management program					X
Q3	Streetscape improvements			X	X	X
Q4	Implement traffic calming measures			X	X	X
Q5	Encourage use of alternative fuel vehicles					X
Q6	Encourage compact, mixed-use development within towns	X		X	X	X

Strategies are presented in the order discussed in the sections that follow.
X = Primary basis for selection (strategy may support additional goals as well – see Appendix C)

Implementation and Action Plan 4-3 (P26) November 2009

Final Draft Western Corridor Transportation Management Plan

Public Comments and Responses

Comments from the Municipality of Essex Junction:

Some of the comments below may very well be implicit in the Draft Plan. However, it would be beneficial to have the fact that the Western Corridor's northern termination point is at East Alburgh underscored each time the Corridor is mentioned. There are times where the Corridor description seems to stop at Burlington. The symbiotic relationship between the state's transportation networks and the fact that an existing resource, rail, can offer positive benefits that impact tourism, air quality, quality of life, economic vitality, sustainable, (compact), growth is underutilized. The general document also becomes project specific at times. How can this be balanced?

Response: As indicated in numerous sections of the draft Western Corridor Transportation Management Plan (Plan) and Appendices, the study area extends from the Massachusetts to the Canadian border for both the highway and the rail system— therefore specifically to add East Alburgh every time the corridor is referred to is not necessary. The assessment that increased rail usage in the corridor will have an overall positive impact on the economic vitality, quality of life, etc. in the corridor is supported by the proposed rail strategies in this Plan.

The statement that this "*Plan does not recommend specific projects but rather identifies transportation system deficiencies and offers examples of possible solutions*" is mainly directed at the highway system in the study area—the language was clarified in the report. As far as the rail system is concerned, the project's Steering and Stakeholder Committees agreed that the ultimate goal is to upgrade the entire rail system in the Western Corridor (and the state) to 286,000 lb capacity as well as improve and expand passenger rail service in the corridor. The state's Rail Policy Plan priorities and recommendations were supported by the two committees and were incorporated in this Plan as well as rail segments identified for upgrades in the VTrans' ARRA application.

Should the funding source for the Study be mentioned?

Response: Indicating the funding source for this study (Jefford's Earmark) does not change the goal and objectives of the study which was to review, analyze and develop strategies to balance all modes of transportation in the corridor.

There is no mention of Essex Junction/ Town of Essex as one of the larger communities in the Western Corridor. Combined we are the second largest community in the State.

Essex Junction is a critical link between the eastern and western corridors. This is not teased out, nor is the potential Homeland Security Benefits of the Burlington to Essex Junction connection.

> **Response:** Please see Appendix A for an extensive discussion on larger communities in the study area. No Homeland Security issues were discussed in this Plan for either the rail or the highway system in western Vermont.

Land use policy and transportation planning are intertwined. We need to look holistically at the benefits upgrading the rail has on reducing wear and tear on our historic settlements and roads network. There is a symbiotic relationship between all transportation networks. Improving one (e.g., rail upgrade Burlington to Alburgh) can take pressure (funding, maintenance, and congestion) off the other. This example could also remove large freight trucks from our rural roads reducing the impact of such vehicles on our historic settlements and buildings.

> **Response:** Land use and multimodal transportation strategies developed in this Plan support the discussion above.

There is no mention of the Jeffords Earmark. There is no mention of NECR's offer of the twenty percent matching funds to complete the Burlington to Alburgh line. There is no mention of NRPC, CCMPO, VTRAC, Burlington, Winooski, Colchester, St. Albans and Essex Junction support of the NECR rail upgrade proposal. This excludes a major proposal supported by some of the largest communities in the State from the document.

> **Response:** With the exception of ARRA funding, to address rail improvements to the entire length of the corridor, no other funding sources (public/private partnerships, state or federal funds) are discussed in this report—this discussion is too specific for this type of planning study.

Below are sequential comments on the Draft Study.

<u>Projected Future Conditions</u>

1.3.3 Candidate Strategies and Actions.

Rail freight and truck freight separated. Public transportation bundled into one, not separated by road/rail/cycling/pedestrian.

> **Response:** The way to bundle the strategies was extensively discussed and decided by the Steering Committee. The Committee recognizes that there is more than one way to present these strategies.

<u>Railroads – Freight and Passenger</u>

Burlington to North Bennington owned by the state, operated by Vermont Rail System. There is no mention of this being run by a private owner with profits going to the private owner. ***'Rail service in the northern portion of the study area is provided by privately owned NECR'.*** In this instance private company benefits are called out. Inconsistency?

Response: Language was added to clarify this point (see page 2-3).

Highways.

Improvements mentioned include the Middlebury Rail Spur – project specific statement in a general document.

Response: Four major projects with significant traffic implications for US 7 (in 2030) were included in the future conditions analyses. These projects are: the Middlebury Rail Spur (and its effect on US 7), the Circumferential Highway in Chittenden County, the Bennington Bypass and the Federal Street in St. Albans.

'Traffic growth anticipated especially north and south of Burlington. Truck volumes in 2030 1,000 to 2,000 a day along Rte 7. Truck traffic is forecast to grow between 40-60% across most of the corridor. Ten of the 27 Roadway segments analyzed are expected to operate at LOS-E
Railroad freight movements expected to increase by 63% although, trucks will remain dominant. There is an opportunity for rail to capture some freight cargoes – continuing need to invest in infrastructure upgrades to ensure that the rail network is operationally compatible with the larger national rail system throughout the Western Corridor.' That is, to Alburgh.

Response: Please see previous response on this issue.

Passenger Rail
Improvements said to be highly dependent on ARRA funds. "Expansion of rail south of Rutland to Bennington and Hoosick Junction, NY should achieve rail service throughout the Western Corridor" Not so: the corridor is longer than this – it goes to Alburgh.

Response: The Plan language is corrected (see page 2-8).

3 Vision, Goals, and Objectives

'Economic vitality – support corridor investments and promote economic vitality in the region.' Support NECR offer to trigger use of Jeffords Earmark? This is an example of a public/ private initiative that would be beneficial to all and has happened previously, e.g., the Burlington tunnel reconstruction.

Response: Please see previous response on this issue.

3.2.1 Highways.
Goal – Improve highway system efficiencies and safety in Vermont's Western Corridor.
Objective 1. Improve travel and safety between urban areas and village centers. RAIL?
Objective 2. -Balance regional mobility needs with local transport priorities and plans.
Northern section most productive?

Response: These objectives refer to the highway corridors (US 7, VT 7A, VT 22A and I-89) in the study area. Objective 1 focuses on the rural segments of the corridors and Objective 2 focuses on the corridor segments that that go through downtowns, village centers and growth areas.

3.2.3 Public Transportation
GOAL – Increase public transportation use and enhance regional connectivity for passenger travel'.

Improve International connections, to Montreal from Burlington?

Response: Connections to Montreal are supported by the Plan. A possible future passenger rail service to Montreal is included in strategy T8 (see page 4-36).

***Objective 3. Establish passenger rail service and supporting facilities throughout the length of the Wester*n *Corridor*.**
Objective 4. Improve travel options – range of modal choices. To increase the modal choices what else could be added that isn't there already – commuter rail?

Response: Options include more direct intercity/interstate bus service in the corridor as well as expanded passenger rail service. These options are further defined in the strategies under the Expand and Improve Transit Services category (beginning at page 4-28).

***3.2.4 Economic Vitality*.**
***GOAL – Support corridor investments that promote economic vitality in the region*.**
Objective 1. Maintain and strategically improve transportation infrastructure to support businesses in Western Vermont. Along the Western Corridor?

Response: Western Vermont refers to the Western Corridor.

Objective 2. Increase employment and tourism activity along the Western Corridor. Improved rail between Burlington and Montreal?

Response: This Plan supports future passenger rail along the whole length of the western corridor with the priorities clearly defined.

Objective 3. Facilitate growth in passenger and freight traffic at airports within the Western Corridor consistent with airport master plans and the states airport system and policy plan. There is a large benefit to be gained by Burlington Airport if the rail link between Montreal and Burlington is improved.

Response: The Committee agrees and the proposed strategies in this plan support this position.

3.2.5 Quality of Life.

GOAL – Implement efficient, sustainable and context sensitive transportation strategies that support a high quality of life in Western Corridor communities.
Objective 1. Maintain air attainment status. More freight on the rail lines, less trucks on the roads will help with our air attainment status.

Response: The Committee agrees and the proposed strategies in this plan support this position.

Objective 2. Reduce or mitigate the adverse effects of truck traffic within town and village centers where possible. Rail Freight?

Response: This objective refers to noise mitigation and congestion related to truck traffic.

Objective 5. Limit adverse environmental and community impacts of transportation infrastructure and services. More rail?

Response: The benefits of rail are articulated in other sections of the Plan.

4.1 Moving Forward. 'An important next step for the planning agencies in the corridor is to prioritize key short corridor segments for more evaluation of issues and refinement of multimodal strategies recommended in the Plan that are appropriate for that particular segment. Responsibilities extend to ensuring such plans are compatible with those of adjacent segments and with the Western Corridor Transportation Management Plan.' This statement sets the Western Corridor Management Plan as a Benchmark, which all proposals for the Corridor can be measured against. As the Burlington to Alburgh portion of the Western Corridor is not consistently called out in the Plan, this statement can negatively affect any future proposals for this section. Burlington to Alburgh is the 'low hanging fruit' in terms of cost, implementation time, and probable benefits from increased connectivity with our closest major metropolitan area – Montreal. The fiscal and strategic importance of this link should be emphasized in the Corridor Plan.

Response: The Western Corridor Transportation Management Plan is a planning and not a regulatory or policy document. The general strategies developed in this Plan will be further developed during more focused micro-corridor evaluations and project development processes.

Table 4.1 Recommended Strategies and Basis for Selection.
H2 Improve Local Circulation. If it is for trucks, Quality of Life should be un-ticked.
F1 though F5 should also have Quality of Life ticked
F5 should have Economic Vitality and Quality of Life ticked.
Q3, 4, and 5 should have Economic Vitality ticked.

Response: The Steering committee discussed the basis for selecting these strategies at great length. Any changes on this table will force the re-evaluation of all 50 strategies considered in this project using a pair-wise comparison and evaluation criteria developed for each category/goal and the weights developed for each criterion.

4.3 Highway Actions

No mention of the Crescent Connector I Essex Junction and possible cross road reconfiguration at the 5 Corners.

Response: These are specific highway concepts/future projects that were not analyzed since they are outside the study area's highway network/corridors.

4.4 Freight Actions.
Invest in rail infrastructure (track and bridges) in order to achieve national load rating standards. Add throughout the full length of the Western Corridor?

Response: Language added (see page 4-23)

4.4.2 Improve Rail Efficiency
Invest in rail infrastructure in order to achieve the national standards of 286 for rail/bed and 315 for bridges load ratings. The current system is an "inefficient and costly prospect" for some shippers, who may chose trucks instead. Increasing the effects of freight trucks on our built and natural environments, and quality of life. Near and Long Term actions. Continue upgrading the rail infrastructure in the Western Corridor. Includes improvements to the first priority route, as identified in the VT State Rail and Policy Plan 2006 – segment between Florence and Rutland. Reconsider designation of other first priority routes during next rail plan update. "Gateway" connections have recently changed, resulting in corresponding changes in some rail freight traffic patterns in the state during the year. If these are sustained the route between Rutland and Hoosick Junction, NY will have greater importance and may warrant consideration as a higher priority as well. Maintain coordination with neighboring states and Canada to cooperatively identify needs and opportunities for railroad infrastructure improvements which can be mutually beneficial'.

The link from Alburgh to Burlington is an international gateway that can benefit Vermont residents and businesses. Strengthening this connection will have major benefits along the Western Corridor. Upgrading rail along the routes that carry the most freight in Vermont will have immediate positive impact. The Essex Junction to East Alburgh section carries the highest tonnage of freight in Vermont. This is not mentioned in the Corridor Plan. From East Alburgh to St. Albans, the density is 4.02 million gross tons annually. St. Albans to Essex Jct. handles 4.66 GTMs. These figures are more than double the tonnage handled on other state rail lines. At the present time no funds are targeted for the upgrade of this section to the 286 standard. This project meets many criteria in the Vermont Rail Plan, including supporting current (1st priority route-Vermonter) and future (2nd priority route) intercity rail passenger routes, and upgrading freight lines to 286K (2nd priority route in the plan.)

What are the gateway connection changes that have occurred that would give the route between Rutland and Hoosick Falls higher priority than it currently has? Is there a reasoned justification for this statement?

Response: The changes we are referring to concern the Pan Am Railways (PAR) and Norfolk Southern Railway Company (NS) recent governmental approval (from the Surface Transportation Board) for their proposed Pan Am Southern joint venture in Massachusetts, clearing the way for millions of dollars in rail infrastructure investments that could potentially have a significant impact on freight movements in Vermont through the Hoosick Junction-Bennington-Rutland rail corridor.

Comments from the Municipality of Charlotte:

The town of Charlotte is already practicing many of the recommendations made in the Western Corridor Transportation Management Plan in order to maintain Route 7 as the major artery through town. However, Route 7 also serves our local transportation needs, with accesses to town roads and with some existing residential, business and agricultural accesses. The Charlotte Town Plan discusses measures to minimize the impact of Route 7 expansion on the local community and the integration of alternative modes of travel across and along the corridor. The Transportation Management Plan acknowledges the importance of integrating local needs through increased safety at major intersections, but could go further to identify safety issues in rural areas along Route 7 and measures to accommodate local travel. These may include consideration of additional "turn pockets" for side roads and the establishment of safe pedestrian/bicycle and agricultural crossing points such as the tunnel planned for southern Charlotte.

> **Response:** The Plan considered safety issues when developing strategies for deficient highway sections and intersections. VTrans' High Crash Location Report (2003-2007) was used to identify locations with safety issues but due to the length of this corridor (≈ 200 miles) no detailed safety analyses were conducted for each problem location. Specific safety issues could be addressed through other CCMPO programs/efforts.

Safety of the intersection of Route 7 and F-5 has been a long-standing concern in Charlotte, and traffic in the West Village of Charlotte has been a growing concern, especially with increased traffic to and from the Charlotte Ferry with the closing of the Champlain Bridge. In addition to monitoring the intersection for efficiency of traffic movement and vehicle safety, future modifications to the intersection should allow for safe pedestrian/bicycle crossing. This is supported by the Charlotte Town Plan. This intersection is the major link between the east and west sides of Route 7 for our community.

> **Response:** Monitoring of the US 7/F-5 intersection and other local roads in Charlotte could be accomplished through other CCMPO programs/efforts. Please contact the CCMPO to discuss any concerns and possible solutions.

The Charlotte Town Plan also supports re-starting commuter rail service or creating new light rail service to Charlotte. The Transportation Management Plan discusses rail expansion for freight and intercity passenger rail service. The reestablishment of commuter rail service is not discussed. I suspect that our community would like to see further consideration of the use of rail, as an alternative to driving, for commuting and other local transportation needs.

> **Response:** Committee members (Steering and Stakeholders) felt that the establishment of passenger rail service in the western corridor was a priority at this point in time. The possibility of re-establishing and expanding commuter rail services in the western corridor should be included in any future evaluation of travel options in the corridor as this plan moves to the implementation phase.

Every winter we are reminded of the hazards of quickly changing winter driving conditions, and Route 7, with its greater volume and speed of traffic, seems to have a high number of serious traffic accidents in rural sections. What measures are being taken to improve road surfaces to increase safety, improve techniques to clear the roads of snow and ice, decrease response times of the State highway crews, and warn drivers of hazardous driving conditions?

> **Response:** Hazardous driving conditions are important issues but the scope of work for the Western Corridor Transportation Management Plan did not include an evaluation of pavement material, snow removal techniques or emergency response issues.

The closing of the Champlain Bridge was an unexpected event and has raised awareness of the importance of transportation links between New York State and Vermont. We have seen increased traffic to and from the Charlotte Ferry. A section may need to be added to the Transportation Management Plan that addresses the short term (during bridge construction) and long term transportation needs related to travel between the two states.

> **Response:** Unfortunately, the closing of the Champlain Bridge occurred after the final draft Plan was completed. A comprehensive analysis of the transportation links between New York and Vermont and the evaluation of the impacts from the closure of the Champlain Bridge is an important effort that needs to be undertaken separately from this Plan.

The report is impressive in its breadth. It is to be expected that a report that covers such a large and varied area would not be extremely specific in its recommendations.

The report generally presents a balanced and well thought-out vision, with supporting goals, objectives and strategies.

My main substantive concern is that the report does not analyze in much detail the transportation interfaces between Vermont and New York State, which I think does have an impact on the corridor. Related to the point above, the report does not discuss the ferry service in much detail, other than to say that it exists. There is no documentation of usage levels, no mention that ferry service is run by a private company (except in the appendix), and no discussion of fleet condition or planned replacements or upgrades. I believe the importance of the ferry service is not just due to the recent closure of the Crown Point Bridge.

> **Response:** It is acknowledged that the transportation links (ferry service and bridge) between New York and Vermont were not evaluated in great detail in this Plan. These transportation links were outside the major North-South study area centered on the US 7 Corridor. We believe that a separate study should look into these issues in much more detail, particularly in light of the recent Champlain Bridge closure.

On page 4-34 of the report, for Strategy T7 (Strengthen and expand pedestrian and bicycle improvement programs in local communities) at the fifth bullet, it would seem appropriate to add "and at appropriate rural locations" to the end of the first sentence

(and add a few words to complete phrases) so it would read "Plan, build and maintain accessible pedestrian facilities that are fully integrated into commercial developments, urban and village centers, and appropriate rural locations."

Response: Language added (see page 4-35).

The following "Other Strategies" seem worthy of considering for inclusion in the Plan:

- 0-15 Improve ferry-bus linkage
- 0-18 Promote rail services
- 0-19 Use Rights-of-way for multiple uses-a possible additional use of the railroad right-of-way is the Champlain Path.

Response: We believe that all strategies mentioned in the Plan and Appendices have merit. Each strategy was evaluated and ranked based on criteria developed for each category/goal and the strategies that were not included in the Implementation Plan did not rank high—please see Appendix C for more information.

The report includes a few technical and/or typographical errors:

On page 2-2, Charlotte population was estimated to be 3,569 in 2000 (U.S. Census) and 3761 in 2008 (State of Vermont). Corrected.

On page 4-10, Appendix A, there is a description of Charlotte having "honey houses" this is likely to be Ferrisburgh. Corrected.

On page 4-27, Appendix A, there is a description of Charlotte having commercial strip development-it seems this is likely referring to Ferrisburgh. Corrected.

In Appendix B, in Table 3.2 Charlotte is included in Addison County. Corrected.

In Appendix B, in Tables 4.2 & 4.3, it appears Route 7 between F-5 and the Shelburne town line has a higher AADTT than either south of F -5 or in Shelburne-this seems curious.

Response: These figures show estimated future (2030) truck traffic on state routes in Vermont using the FHWA's Freight Analysis Framework 2 (FAF2) data for the state. These estimates might not be very accurate in predicting truck traffic for short sections of the highway network but can provide us fairly accurate estimates—based on historical trends—of the percent change in truck traffic for substantial segments of a highway corridor, in this case US 7.

Comments from UVM (Campus Planning Services):

There is one mention of the (former) Champlain Bridge issue --the closure of the bridge has emphasized how critical the links to New York State are. I know this is a late breaking issue, but maybe this could be addressed more in the final plan. Perhaps more redundancy is necessary, such as more ferries, or more public transit from ferry docks. This could be a great opportunity to expand public transit options. Perhaps people would continue to utilize public transit and use the ferry (without their cars) even when the bridge reopens, IF these are convenient and cost effective enough.

Response: Please see previous responses/discussion on this issue.

This study assumes that the Circ Highway is one of 4 projects that get implemented -- this might not be a valid assumption...

Response: The Steering Committee decided that since these 4 major projects are included in the regional long range transportation plans and are sufficiently advanced that they should be included in the analyses.

Rte 22A is not, strictly speaking, in the study corridor but it is a significant north/south corridor and very critical for the NYS connection. Maybe there should be reference to how this corridor affects Route 7?

Response: Rural segments of VT 22A were analyzed for current and future conditions as well as the intersection of US 7/VT 22A. Please see Appendices A and B as well as Table 4-2 in the draft Plan.

Bike/ped issues were not included in the main goals, and de-emphasized in the main points of the study "due to the localized nature of (these) facilities". The study should include more prominently the bike/ped points it does make (later in the text), and emphasize best practices and standards. Also, bike/ped facilities should be considered everywhere --not just in some "localized" areas. The study seems to contradict itself since it does include bike/ped strategies and even notes on p. 19 that the "back to the city" movement might curb sprawl, which would add to the importance of bike/ped facilities.

Response: Bike and pedestrian strategies are important and are included in this plan under the *Quality of Life* Goal but due to the length of this corridor and the planning level that issues were analyzed we did not invest a significant amount of resources examining corridor-wide bicycle and pedestrian facilities, infrastructure opportunities and issues. These issues are best studied and analyzed within a much more focused study area.

The study's assumption is that only 4 major transportation projects get completed --what about any bike/ped initiatives that have already been funded, or existing TDM strategies already in place? Might these not reduce projected traffic increases, especially on Route 7 in and around the Burlington area?

Response: These 4 projects were selected due to their significant impact on future vehicle traffic on the entire US 7 Corridor.

As mentioned previously, the main strategies should definitely include an increase in bike/ped facilities as well as an increase in TDM measures. These can improve safety, economic vitality, quality of life AND reduce numbers of vehicles on the roads, which will improve efficiency. All these are the main goals of the plan.

Table 4-1: Recommended strategies and basis for selection: see attached marked up page. Some of the strategies affect many more of the goals than marked. Bike/ped and TDM and public transit can all improve air quality, quality of life, reduce congestion as well as promote public health and sustainability. This is not really emphasized in this plan.

> **Response:** The Steering committee discussed the selection of these strategies at great length. Any changes on this table will force the re-evaluation of all 50 strategies considered in this project using evaluation criteria developed for each category/goal and the weights developed for each criterion.

I question whether highway widening (Le. adding lanes) can really accomplish highway efficiency. Studies have shown that highway widening ADDS vehicles to the roadway system and in the long run does nothing to reduce congestion (other than completing "missing links" etc). The study itself notes that a "possible" recommendation to expand Shelburne Road in South Burlington in specific areas "might" create a problem for pedestrian crossing ... So why include road widening at all?

> **Response:** Highway widening was proposed as a possible solution in rural sections that experience significant congestion. This solution will need to be evaluated further through a more focused scoping effort.

There are many, many examples of highway improvements in the text and very few examples of other improvements. This certainly puts an emphasis on highway improvements over public transit improvements, bike/ped facilities and TDM.

> **Response:** Strategies proposed in this Plan support various system enhancements for all modes of transportation (highways, rail, public transit, and bike/ped).

The draft study recommends 50 mph as a standard speed for state routes outside of villages, towns and cities. So why recommend "improvements" that will increase speeds by "2-3 mph" to "50+ mph" on roads that are already posted at 50 mph?

> **Response:** Posted speed limits, for study area highways, are often quite different than the average travel speeds on those segments. The LOS calculation for two lane rural highways is based on average travel speeds and percent time spend following a vehicle.

There are no examples for 4.5.1 "expand and improve public transportation services", whereas there are many examples of highway improvements. This gives a clear message that highway improvements are the most important part of the study. It would be easy to add something obvious like "coordinate services between providers to create coordinated service for the entire length of the corridor" and other needs that are clearly articulated elsewhere (but buried) in the study. There is no ridership data provided,

whereas other vehicle-related data is included in the study. Appropriate consultants should be hired who have the requisite public transit background, if needed, so that transit data and improvements can be better developed.

Response: Public transit issues are discussed in the Plan. The Steering Committee believed that system planning carried out by each Provider and the State's Public Transit Policy Plan are better venues to be more specific on ridership data, routes, etc. than this Plan.

11: The connection between rail and bus ridership should be acknowledged, as well as the need to coordinate between modes and the need to connect in both timing and geography. For example, it is noted that ridership on the Amtrak Vermonter (St. Albans/NYC) went up last year, but no connection was made that at the same time, the direct bus from Burlington to NYC was canceled.

Response: The Plan discusses the necessity of interconnectivity between transportation modes as well as the lack of direct intercity bus in the corridor (see Pubic Transportation Actions)

Section 4.5.3, T5 "Expand TDM" refers mainly to GO Vermont, which seems to coordinate and provide information re TDM but does not seem to actually expand TDM options such as car sharing, transit expansion etc. TDM should be emphasized with more details, options and expansion of existing resources such as CATMA, CarShare VT and more.

Response: All resources mentioned above are very important for Chittenden County but Action 4.5.3 focuses on programs that are statewide/corridor-wide.

For bike/ped facilities: does it make sense to identify routes and improvements for something like La Route Verte or Lake Champlain Bikeways?

Strategy Q6 "encourage compact mixed use development within towns": the plan should mention the designated growth areas/downtowns that the state defines; this plan could promote coordination with these efforts and possible incentives for coordination/combination.