Vermont Long Range Transportation Plan

January, 2002

VERMONT TRANSPORTATION PLANNING

State of Vermont
Agency of
Transportation
National Life Building
Drawer 33
Montpelier, VT
05633-5001

VTrans Working to Get You There

A Message From The Secretary

In 1995, VTrans developed a long-range transportation plan that brought significant new direction to how we think about and invest in transportation.

Since that time, many changes have taken place. We have begun to invest in public transit and passenger rail as viable alternatives to the single-occupant vehicle. The agency has reorganized, implementing a project manager system to improve communications with all interested parties, and to speed up the time it takes to complete a project. New design standards for roads and bridges have been developed. A program to allow towns to manage their own projects - the "local transportation facilities" program - has been put in place with great success. VTrans works closely with advisory councils for rail, air, and public transportation.

We think we are on the right path. What we need to do is keep moving forward on that path, toward *managing the transportation system* to achieve all our goals with the greatest efficiency possible.

Many thanks to all those who made comments on the draft of this plan. While it has not been possible to incorporate each and every comment, they have been utilized to the extent possible. The level of concern and thoughtfulness shown in the comments we received was truly invigorating and resulted in substantial improvements to the plan.

Sincerely,

Brian Searles, Secretary of Transportation

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Vision and Mission Statement

The Vermont Agency of Transportation's (VTrans') vision is to preserve, develop, and enhance an integrated transportation system to support Vermont's quality of life and economic well-being.

VTrans' mission is to work cooperatively to plan for and accommodate the need for movement of people and commerce in a safe, reliable, cost-effective, environmentally responsible, and equitable manner.

■ Agency Goals

To accomplish our mission we will work towards the following goals:

1. Support and maintain Vermont's transportation system and promote efficient operations of that system;

2. Promote and support the use and connection of appropriate forms of transportation;

3. Support Vermont's economy by providing appropriate transportation access to all areas of the state;

4. Cooperate with Vermont residents, towns, regions, other state agencies, and interested parties in making transportation decisions that balance the needs of the human and natural environments;

5. Seek adequate, stable funding and staffing to support mission requirements;

6. Provide employee training and skills enhancement to build a strong, professional work force;

7. Encourage and recognize innovation, flexibility, and excellence; and

8. Foster communication and promote teamwork.

Four Principal Questions

Meeting our goals and implementing changes revolves around four principal questions that have evolved from VTrans' strategic planning efforts. Those four questions are:

1. Are you satisfied that the transportation system in Vermont is safe?

2. Are you satisfied that the financial investment in Vermont's transportation system is paying off?

3. Are you satisfied that Vermont's transportation solutions respect the natural environment?

4. Are you satisfied with the length of time that it takes to get yourself and your goods to another place?

Executive Summary

The Vermont Agency of Transportation (VTrans) conducted this update of the Long-Range Transportation Plan to review and revise the recommendations of the Long-Range Transportation Plan of 1995. While the 1995 Plan set a new course of action for the agency, the update of the Plan reviews the findings of the previous plan and offers a new set of recommendations to guide VTrans for the next five-year period.

The plan was developed in consideration of the VTrans Vision and Mission Statement. It provides a visionary framework for transportation planning, design, construction, operation, and maintenance in Vermont. The three objectives from the previous plan were further refined during this plan update process and are stated as follows:

- **Manage the state's existing transportation system facilities to provide capacity, safety, and flexibility in the most effective and efficient manner.** This reflects the need to maintain and preserve existing transportation facilities, and to reconstruct those components of the system whose useful life-span has passed. These activities need to be managed in a coordinated manner that recognizes the overall connectivity of the state's transportation system.

- **Improve all modes of Vermont's transportation system to provide Vermonters with choices.** Vermonters have more transportation choices in recent years. The key to keeping these choices viable is intermodal connections. This reflects the need to focus attention on the links between various transportation modes. Seamless connections between modes ensures that Vermont's transportation system is intermodal, not just multimodal.

- **Strengthen the economy, protect and enhance the quality of the natural environment, and improve Vermonters' quality of life.** Quality of life, the natural environment, and economic well-being are affected by the condition and performance of the state's transportation system. The state's transportation system needs to support desired land use patterns while accommodating new travel demands and shifts in usage.

All transportation activity in Vermont takes place with safety of the travelling public as a primary concern. Safety was not discussed in the 1995 plan, but should be actively pursued via specific safety-oriented programs.

Plan Overview

The plan update consisted of several phases of work, including an inventory of transportation plans and services; a telephone survey of 1,200 Vermont residents; an analysis of the circumstances that have changed since 1995; coordination with the regional planning commissions (RPCs) and metropolitan planning organization (MPO); and development of this report.

The transportation inventory phase included review of recent policy plans and capital investment plans for various transportation modes, including rail, public transportation, and aviation. Regional transportation plans, prepared by the 12 regional planning commissions and the metropolitan planning organization, were also reviewed. "In-reach" sessions were conducted with VTrans staff members to identify viewpoints and issues with regard to Vermont.

The telephone survey built upon the questions asked during the 1995 telephone survey. Throughout Vermont, 5,265 numbers were contacted to inquire about their activities and opinions pertaining to transportation. The results and opinions from the 1,204 completed surveys are one of the inputs to this plan. The results of the survey clearly echo the four principal questions developed as part of VTrans Strategic Planning Process.

An analysis of changing transportation conditions was completed based upon funding considerations, VTrans organizational changes, federal transportation legislation, and the development of recent policies and plans in Vermont. Considerable attention was given to the significant amount of work that has been accomplished by VTrans while implementing the previous Long-Range Transportation Plan.

Public coordination activities included presentations at the RPC's/MPO's Transportation Advisory Committees (TACs). This document compiles the important issues and recommendations identified during this Long-Range Transportation Plan update.

Recommendations

Numerous transportation issues and challenges face VTrans and Vermont in the coming years. The issues identified in this plan update are generally organized by transportation mode; however, several other jurisdictional, administrative, organizational, or demographic factors that affect the transportation system are also identified. While the horizon year for this plan update is 2021, the recommendations provided are focused on a five-year implementation schedule because the plan will be reviewed and updated again in 2006. The recommendations summarized below consist of both ongoing activities recommended for continuation or refinement, and new issues for Vermont or VTrans that will require a sustained, coordinated effort to be successfully implemented. The recommendations are organized according to the three overall objectives of the plan, plus a fourth category dealing with VTrans' performance.

■ Manage the state's existing transportation system facilities to provide capacity, safety, and flexibility in the most effective and efficient manner.

Safety

- Develop new safety and security programs in response to the terrorist events of September 11, 2001.
- Continue to develop and use tools such as the Safety Management System to promote a safe transportation system.

System Management / Maintenance

- Continue to use the pavement, bridge, and maintenance management systems to maintain all facilities. Develop a program that over time upgrades those facilities that are currently below desired serviceability criteria.
- Serviceability criteria should be developed as part of an overall transportation asset management program.

Access Management

- Develop access management guidelines to enable compatible land development while preserving traffic flow

Intelligent Transportation Systems (ITS)

- Further examine the role that ITS can play to manage transportation issues.

Aging Population

- Continue to monitor population figures and incorporate an aging community in planning for transportation.

■ Improve all modes of Vermont's transportation system to provide Vermonters with choices.

Funding

- Continue to advantageously use flexible federal funds;
- Strongly oppose any federal efforts to reduce the availability of flexible federal funds;
- Continue to explore innovative financing mechanisms;
- Encourage the Vermont Legislature to limit transfers from the Transportation Fund to other, non-transportation-related programs; and
- Encourage the Vermont Legislature to routinely adjust transportation revenue sources to keep pace with the Consumer Price Index (CPI).

Project Backlog

- Continue to address the project backlog and implement "shelf projects."

Intermodalism

- Identify and enhance the state's key intermodal connections;
- Appoint an "intermodal coordinator" with duties similar to those of the bike and pedestrian coordinator;
- Consider financial incentives for transportation providers to enable successful intermodal connections; and
- Investigate the use of ITS tools to reinforce intermodal connections.
- Coordinate with state and municipal agencies and appropriate private partners to continue to educate the public on safety issues and good safety practices.

Transportation Modes

- Complete a roadway system modal plan.
- Continue to implement and update each modal policy and capital investment plan.

Public Involvement

Continue to use public involvement efforts to gather input for VTrans planning and project development activities.

Project Scoping Process

Continue to use and refine the project scoping process

Traffic Calming

- Continue to implement traffic calming measures where and when appropriate.

Roundabouts

- Continue to study and implement roundabouts where appropriate.

Park-and-Ride Lots

- Explore the use of shared facilities (those that are not solely owned or operated by VTrans such as churches, shopping centers, etc.) to expand the primary park-and-ride lot system.
- Develop park and ride facilities in areas of the state that currently do not have them.

■ Strengthen the economy, protect and enhance the quality of the natural environment, and improve Vermonters' quality of life.

Air Quality

- Continue to play an active role to support other state agencies' efforts to improve Vermont's air quality.

Alternative Fuel Vehicles (AFV)

- Adopt a policy regarding expanding the use of alternative fuel vehicles as fleet vehicles where appropriate.

Wildlife Crossings and Fish Passages

- Continue to work with the Vermont Agency of Natural Resources and other partners to develop specific policies and guidelines for effectively addressing fish passages and wildlife crossings in transportation decisions and projects.

Stormwater Management

- Continue to work with the Vermont Agency of Natural Resources to improve stormwater management at transportation facilities and projects.

Vermont Watershed Initiative

- Work with the watershed councils in each of the the watersheds to assist in the writing of plans and their successful implementation.

Transportation and Land Use Connections

- Develop transportation projects that adhere to the state's emerging Smart Growth policy; and

■ VTrans' Performance

Performance Measures

- Develop and refine the performance measurement system to better manage resources.

Strategic Planning Process

- Continue to implement the strategic planning process and incorporate recommendations outlined in this Plan.

Long-Range Plan Updates

- Develop a coordinated schedule for update of the Long-Range Plan, Regional Transportation Plans, and Modal policy and capital investment plans.

Regional Transportation Plan Updates

- Continue to work with the RPCs and MPO to assist them in developing Regional Transportation Plan Updates.

The recommendations summarized above are intended to provide VTrans with a realistic and balanced framework to guide Vermont's transportation resources and policies through the beginning of the new millennium. One of the keys to Vermont's economic vitality and continued quality of life lies in maintaining a balance among the various aspects of life that depend upon or interface with the state's transportation system, such as personal mobility, a clean environment, preservation of land, recreational opportunities, careful allocation of energy resources, and a competitive business environment. This Long-Range Transportation Plan is the vehicle by which VTrans can continue on its charted course to guide transportation policy and implement a transportation program in concert with that policy. This Plan also represents a commitment on the part of VTrans to deal with the hard issues that must be addressed to provide a transportation system that will serve all Vermonters, enhance economic opportunities, protect the environment, and preserve quality of life.

1.0 Introduction

1.1 History of the Plan

This Long-Range Transportation Plan updates the original document prepared for VTrans in 1995. That plan was the first statewide transportation plan. It was completed in response to the 1991 federal transportation legislation known as ISTEA (Intermodal Surface Transportation Efficiency Act). ISTEA established the statewide transportation planning process as a primary mechanism for cooperative decision-making throughout the state. Several other objectives of the legislation included: coordination between state and metropolitan plans, continuous public involvement during the planning process, development of a fiscally constrained State Transportation Improvement Process (STIP), and statewide development of transportation plans and programs.

In 1998, ISTEA's successor legislation known as the Transportation Equity Act for the 21st Century (TEA-21) was authorized. TEA-21 calls for ongoing federal reliance on a cooperative statewide transportation planning process that is comprehensive and continuing. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) jointly administer the program. Included in the TEA-21 legislation is the requirement that states continue to prepare and revise their long-range transportation plans.

This Vermont Long-Range Transportation Plan Update is intended to identify and build upon the achievements and changes that have occurred in Vermont over the last five years. The strategies and objectives identified in the first plan were continued for development of this plan. The update responds to the changes in organization, administration, and policies of VTrans while also reflecting the current transportation issues identified by Vermonters.

1.2 The 1995 Plan's Three Primary Objectives

The 1995 Vermont Long-Range Transportation Plan included three major objectives for transportation investments. These objectives have largely remained the same and are explained in the following sections.

1.2.1 Maintain Existing Transportation Facilities

An essential element of the long-range transportation plan is to maintain the transportation facilities that already exist in Vermont. These facilities include roadways, airports, railroads, ferry terminals, bridges, public transit systems and vehicles, and

bicycle and pedestrian facilities. As of the year 2001, the state of Vermont public roadway infrastructure includes 14,001 miles of roads that include over 320 miles of Interstate Highways; 2,384 miles of State Highways; and 11,297 miles of Town Highways. Along the non-Interstate roadways in the state, there are 3,965 bridges six feet or over in length, of which VTrans is responsible for maintaining 2,379 structures. There are over 700 miles of railroad in the state, of which the state owns approximately 340 miles. Additionally, there are 17 public use airports in Vermont, including 10 state-owned, two municipally-owned, and five privately-owned airports. Four ferry terminals provide ferry service via a private provider across Lake Champlain.

1.2.2 Improve All Modes of Transportation to Provide Vermonters with Choices

Vermont's transportation system is a multimodal system. No specific mode of transportation should receive all of the state's attention or funding. In the past, transportation plans have been largely highway and automobile-oriented plans. While highway transportation remains the dominant form of passenger transportation in the state, there is an increasing need for development of other transportation alternatives to provide greater travel choices for Vermonters, as well as to provide transportation services to those that do not drive.

The state should continue to provide balanced funding to all transportation modes so that opportunities for intermodal services can be fully achieved. A weak transportation mode (resulting from insufficient funding) affects the reliability of the entire transportation system.

1.2.3 Strengthen the Economy and Improve Vermonters' Quality of Life

Transportation investments have direct and indirect economic impacts for the residents of Vermont. New and improved transportation facilities typically provide a safer, shorter, or more direct trip to market for the state's products. Additionally, improved passenger facilities allow a greater number of Vermonters and visitors more choices while traveling between and among the state's regions. Conversely, much of what makes Vermont such a special place to live and visit is the high quality of life and cherished natural environment in the state. New and expanded transportation facilities must be carefully considered to ensure that they do not upset this delicate balance or negatively impact Vermont's high quality of life.

1.3 Modifications to Primary Objectives

The three themes identified above are still relevant for this plan update with the following modifications:

1. **Maintain Existing Transportation Facilities:** As was raised in the public involvement process, the facility must be in maintainable condition or else VTrans is throwing money away. VTrans needs to identify facilities in poor condition, and plan and prioritize appropriate improvements.

2. **Improve All Modes Of Transportation:** Vermonters have more transportation choices than ever. VTrans has established a multimodal system and for that system to be successful, the links or intermodal connections must be convenient and efficient. VTrans should strive to improve the system's intermodal connections. Improvements may include new facilities for any mode, where appropriate.

3. **Strengthen the Economy:** Decisions need to consider the relationship between land use and transportation during development of system recommendations.

The exact wording of the primary objectives of this plan may be found at the beginning of the Executive Summary.

1.4 Primary Activities

Development of this plan update involved a series of work efforts intended to highlight the new activities and changes of the past five years that have been experienced within both VTrans and Vermont. The rest of the document will highlight the results of this effort. The primary activities that occurred during the plan update are listed below:

- Review of Modal Policy Plans;
- Review of Regional Transportation Plans;
- Conducting in-reach sessions with VTrans Staff;
- Discussions with Transportation Providers;
- Discussions with Regional Planning Commissions/Metropolitan Planning Organization staff;
- Public Opinion Survey of over 1,200 Vermonters; and
- Presentations to RPC/MPO Transportation Advisory Committee Meetings.

2.0 What Has Happened Since the Last Plan?

2.1 VTrans Activities Since 1995

Since the publication of the 1995 plan, several efforts relating to transportation planning have been accomplished. Modal systems plans are now in place to assist in multimodal planning, and Vermont State Design Standards have been crafted to provide for transportation facilities that fit the state's character without compromising safety. VTrans has also endorsed a formal process for scoping and design of transportation projects, and modal capital investment plans are underway to assist VTrans and the Legislature in identifying, prioritizing, and funding projects. These activities have been key in implementing the 1995 Long-Range Plan and its supplemental Strategic Plan.

In addition, a new logo has been developed for the agency to reflect the revised thinking beyond just highways to a truly multimodal system. The logo is supplemented by a caption – "Working to Get You There" which reflects VTrans' mission and the role of the agency.

The following sections describe the recent activities in more detail. The timeline provided in Table 2.1 identifies major plans and studies completed in the past five years.

2.2 Agency Strategic Plan

At the conclusion of the 1995 Vermont Long-Range Transportation Plan, VTrans developed a strategic plan that identified 29 strategies to support the Long-Range Plan goals. These strategies were aimed at moving VTrans forward and sought implementation of specific items to accomplish the goals for the agency. Several committees were formed to implement and evaluate the findings of the plan. One of the outcomes of the strategic planning process was a significant reorganization of several VTrans divisions.

The strategic plan implementation process was reviewed again in late 1997, and during 1998 and 1999, the VTrans Executive Staff met several times to discuss continuing steps. In November 1999, the four principal questions were developed to focus further improvements within VTrans. These four key questions are now part of the agency's mission and goal statement.

Table 2.1 Timeline of Recent Vermont Transportation Reports

Statewide Plans	Year	Regional Plans
	1994	• Addison County Regional Plan • Franklin-Grand Isle Regional Planning and Development Commission Long-Range Regional Transportation Plan • Regional Transportation Plan of the Upper Valley Lake Sunapee Region
• Long-Range Transportation Plan • Strategic Plan	1995	• Windham Regional Transportation Plan • Bennington County Regional Transportation Plan • Rutland Regional Transportation Plan • Southern Windsor County Regional Transportation Plan
	1996	• Central Vermont Regional Transportation Plan • Lamoille County Regional Transportation Plan • Northeast Kingdom Regional Transportation Plan
• State Design Standards • Project Scoping Process	1997	• A 20-Year Vision for Transportation in Chittenden County
• Vermont Airport System Policy Plan • Vermont Intercity Bus Study • Vermont Bicycle and Pedestrian Plan • Community Summer Outreach Forums	1998	• Two-Rivers Ottauquechee Regional Transportation Plan
• Vermont Rail Policy Plan	1999	
• Vermont Public Transit Policy Plan • Vermont Airport Capital Facilities Program Plan • Vermont Statewide Freight Study • Community Summer Outreach Forums	2000	
• VTrans Performance Measures • Long-Range Transportation Plan Update • Vermont Rail Capital Investment Policy Plan	2001	

During 2001, the strategic planning process at VTrans has focused on the need to develop performance measures, including output and outcome measures. Outputs are the measurable amounts of products or services provided. Outcomes reflect the actual results achieved. The development of performance measures is an ongoing process.

2.3 Design Standards

The Vermont State Standards for Construction, Reconstruction, and Rehabilitation of Roadways and Bridges were developed with two purposes in mind:

- To provide clear technical direction to the designers of transportation projects in Vermont; and

- To achieve roadway and bridge designs which provide access, mobility, and safety for users, and which are sensitive to the social and environmental context of Vermont.

The Standards present the minimum physical design parameters and guidelines of bridges and roadways in Vermont. In some cases they change and in other cases they augment the Standards previously used by VTrans, and the American Association of State Highway and Transportation Officials (AASHTO). All transportation projects in Vermont must be designed to minimize negative impacts on natural resources, historic, scenic, or other community values, while also providing reasonable roadway widths, grades, sight distances, etc.

2.4 Regional Transportation Plans

As part of the data collection effort for this update, the regional transportation plans that were prepared subsequent to the original long-range plan have been reviewed. Through the Transportation Planning Initiative, VTrans has collaborated with the regional planning commissions and metropolitan planning organization to carry out transportation planning for the state. Figure 2.1 identifies the locations of the Regional Planning Commissions and the Metropolitan Planning Organization. The regional transportation plans were prepared from 1994 through 1998 and most are currently being updated. These plans and the long-range plan need to be coordinated and should complement each other.

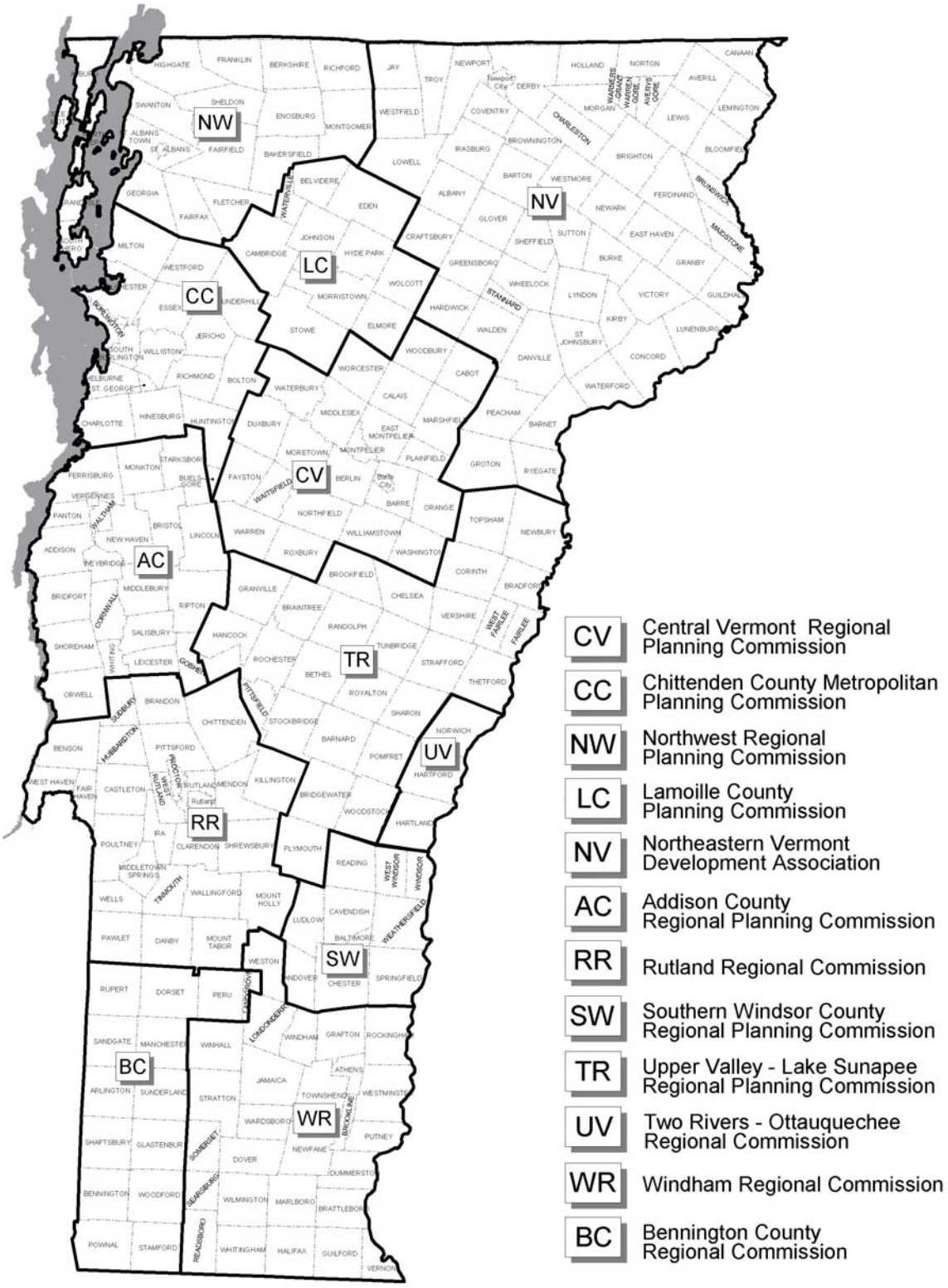


Figure 2.1 - Vermont's Regional Planning Commissions

Regional Transportation Plans - Overview

The reports generally had similar goals and addressed similar issues. Most of the regions described the planning process that went into developing the regional transportation plan and each region provided an inventory of their current transportation network. The plans indicated the desire to focus on maintenance of the existing highways and bridges. Concern was expressed for preserving the scenic character and economic prosperity of villages, town centers and downtowns. Some of the regions expressed the need for a modified functional classification system to better reflect highway uses. Some of the regions indicated that design standards are not sensitive enough to the character of the regions. However, it is assumed that the recently developed design standards addressed this. Generally, the regions would like to see expanded transit service, passenger rail service and rail freight movements, as well as more park-and-ride facilities and the development of intermodal centers. Many of the regions did not address technology issues such as intelligent transportation systems (ITS), telecommunications and alternative fuel vehicles. Some of the regional transportation plans expressed the need for implementing planning tools like access management and traffic calming. Many of the regions identified a desire to limit strip development and sprawl within their region.

2.5 Statewide Modal System Plans

Since the publication of the last Long-Range Transportation Plan in 1995, various plans have been prepared by VTrans to address the individual modes of the Vermont transportation system. The plans typically included reviews of programs and policies in effect, and included recommendations for implementing new policies and programs. The four modal system plans completed include:

2.5.1 Aviation

In 1997 the Vermont Legislature directed VTrans to review its aviation funding policies and procedures, provide direction for public investment in airports, investigate underlying policy assumptions, and to identify steps to move toward a more intentional and targeted approach to improving air facilities. The request resulted in the preparation of the 1998 "Vermont Airport System Policy Plan."

2.5.2 Rail

VTrans completed a Rail Policy Plan in 1998. The report included an examination of the overall operating structure and financial arrangements of rail services operating in the state of Vermont. The plan included a set of proposed policies to address the present, near-term, and long-term needs of Vermont's rail network.

2.5.3 Bicycle and Pedestrian

Authorized in November 1998, the Bicycle and Pedestrian plan culminated in a series of recommendations for implementation at the state, regional, and local level. The plan includes a set of design guidelines and policy statements.

2.5.4 Public Transportation

In January 2000, the state of Vermont adopted a Public Transportation Policy Plan to guide transit service providers under a comprehensive yet flexible plan. The Policy Plan is intended to provide comprehensive and continuous guidance in the state's development of its public transportation program. The results of this vision will guide the state in its development of an equitable, multimodal, statewide public transportation system.

2.5.5 Roadway System

VTrans is currently working on a modal system plan for roads and bridges throughout Vermont. It is anticipated that this plan will be completed in late 2002.

2.6 Modal Capital Investment Plans

To provide specific information regarding transportation investment, VTrans has prepared Capital Investment Policy Plans for aviation and rail. The intent of these plans is to provide a repeatable mechanism to identify, prioritize and fund transportation projects. These plans are helping guide VTrans and the Legislature in the decision-making process. As the need to do transportation projects outgrows the availability of funding, smarter spending becomes even more critical.

VTrans is also in the process of updating the "short-range transit plans" that were previously prepared for each of the transit providers. These plans have a three-to-five year timeframe, and collectively will recommend improvements and identify a capital plan for transit investment.

2.7 Management Systems

As part of ISTEA legislation state transportation departments were required to develop several state management systems. Since that time many of the management systems (in TEA-21) have become optional. VTrans has developed and maintained the following management systems:

- Bridge Management System;
- Pavement Management System; and
- Maintenance Management System.

VTrans also maintains a Highway Performance Monitoring System. Although this is not a management system, it is instrumental in monitoring highway conditions and expenditures.

2.7.1 Safety Management System

Safety is the most important transportation issue for Vermont residents (see figure 3.4 in the next chapter).

To insure that transportation safety receives the systematic emphasis it deserves, in 2000 VTrans started development of a Safety Management System. A staff position was dedicated full-time to implement this system. A steering committee of executive staff are providing overall guidance for the effort. An initial study inventoried current safety practices, identified needs, and developed strategies for implementing improved safety practices. The effort is consistent with the America Association of State Highway Transportation Officials (AASHTO) Strategic Highway Safety Plan, and is moving into a second phase of more detailed analysis and beginning implementation. The system has also identified performance measure goals to be obtained in a ten-year time frame.

It is also anticipated that organizational changes will be put in place in 2002 to allow for effective implementation of the safety management system and other roadway safety improvements.

2.8 VTrans Organizational Changes

In addition to the numerous projects and plans that were completed in the past five years, there were also several organizational changes within VTrans. These recent realignments were completed to provide better operations within the Agency with respect to each individual transportation mode. The current VTrans organizational structure is provided in Figure 2.2. The Rail, Aviation, and Public Transportation (RAPT) Division was dissolved, and these modes were shifted to other divisions within VTrans. Aviation is now under

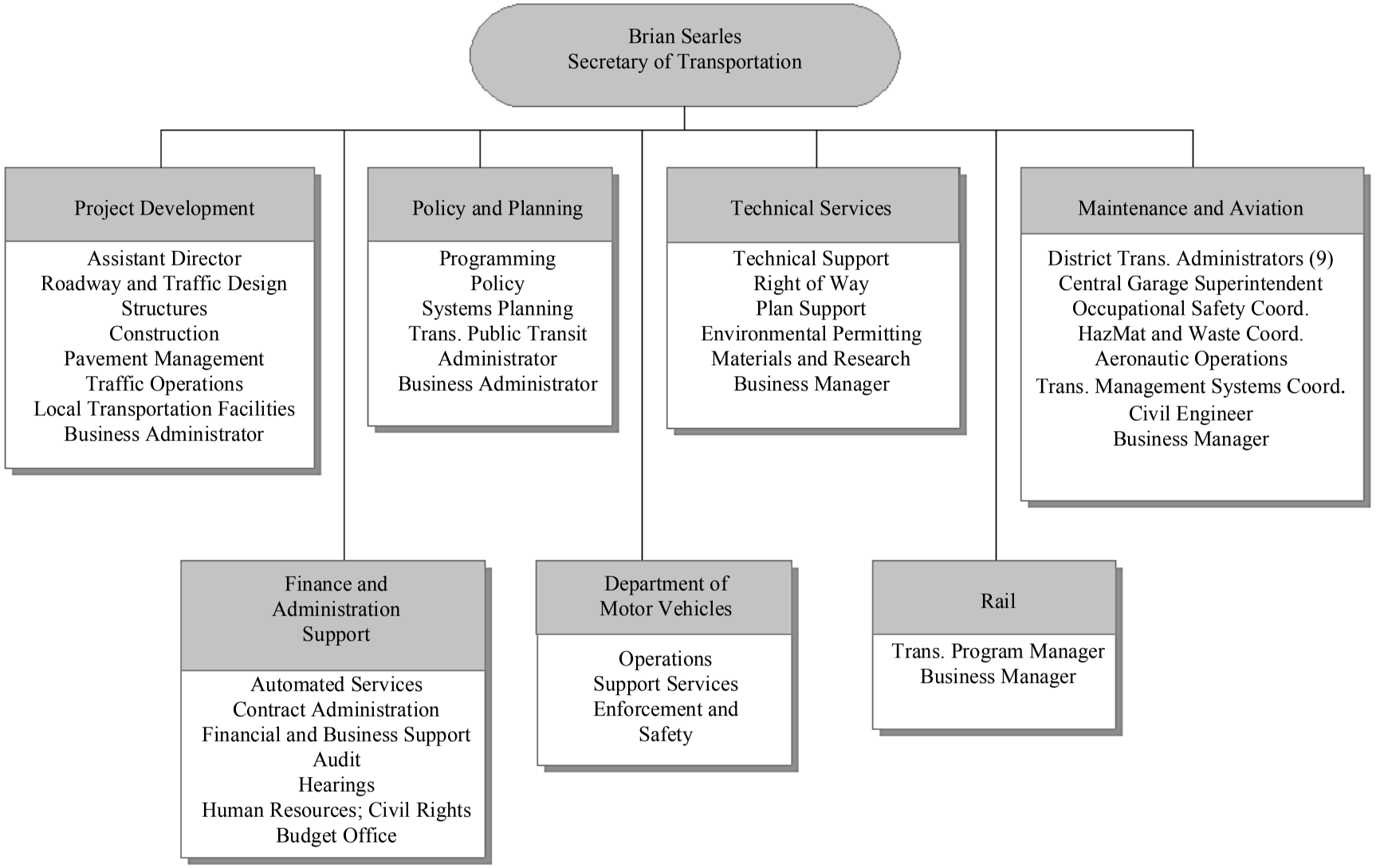
the jurisdiction of the "Maintenance and Aviation Division." Public transportation is now part of the Policy and Planning Division. A separate division, the Rail Division, has been created for rail services. Since 1995, there has also been a complete turnover of executive staff. Three new executive staff positions (directors) have been added to head newly-created divisions: Technical Services, Rail, and Project Development. Not shown in the diagram is the Special Projects Unit, devoted to supervising large projects, reporting directly to the Secretary.

One of the actions identified in the Strategic Plan was to implement a project manager system. The creation of the Project Development division enabled the agency to become more customer-oriented. The Project Development division provides a single contact (a project manager) for each project at the agency. This has resulted in program managers for structures, aviation, paving, local transportation facilities, rail, public transportation and roadways. The project manager can direct the scoping process, monitor project progress, respond to questions, and provide specific project details. In the past a citizen may have needed to talk to several agency staff to obtain several pieces of project-related information. Now the project manager is the single point of contact.

Before 2000, most central office staff were located in two buildings, 133 State Street and the National Life Building in Montpelier. Almost all members of the central office staff have now been consolidated at the National Life Building. This has assisted in streamlining and improving the efficiency of the day-to-day operations of the agency.

The Department of Motor Vehicles, which is part of VTrans, remains at 120 State Street.

Figure 2.2 Vermont Agency of Transportation



3.0 Public Involvement

Vermonters have a long tradition of holding public meetings and inviting community members to voice their opinions about issues. VTrans is similarly committed to public involvement efforts in the process of making decisions about transportation in Vermont. Historically, the agency has requested public input on a continual basis, as well as for specific projects.

The Transportation Planning Initiative (TPI) is the primary tool for ongoing public interaction. Established in 1992, the TPI is a partnership between the agency's Policy and Planning Division, the Chittenden County MPO, and the regional planning entities throughout the state. The regional partners act as coordinating forums for the municipalities to identify and discuss transportation issues on an ongoing basis.

In addition to the TPI, the agency has engaged in a number of major public involvement initiatives since the 1995 Vermont Long-Range Transportation Plan. These are discussed below.

3.1 Recent and Ongoing VTrans Public Involvement Activities

3.1.1 Community Visits

Since 1996, senior staff at VTrans have regularly conducted twice-yearly visits throughout Vermont, holding meetings with transportation officials and the public, legislators and the media. The usual format is for the Secretary and Deputy Secretary of Transportation to engage in a conversation with the Regional Planning Commissions, their Transportation Advisory Committees and other interested parties. Discussion topics typically revolve around the projects VTrans is working on in that part of the state, and priorities for program and budget decisions in the General Assembly.

3.1.2 Summer 1998 Community Outreach Forums

During the summer of 1998, VTrans conducted community outreach forums to gauge the public's interest in the transportation system. After the passage of the TEA-21 legislation, federal funding for transportation in Vermont was expected to increase. Also, it had been three years since the first Long-Range Transportation Plan was completed, thus it was thought that public opinions might have shifted.

During June and July, VTrans worked with regional planning groups on a series of eight public forums. In August, VTrans hosted a two-day transportation summit at Killington for more than 100 Vermonters with a broad spectrum of backgrounds from all parts of the state. Overall, during the summer comments were collected from close to 1,000 Vermonters. More than 650 attended the forums, 150 sent their ideas directly to the agency, and more than 100 participated in the two-day summit.

The meetings helped to focus on the numerous conflicts and contradictions that exist in seeking to set transportation priorities. Several themes emerged and VTrans learned a lot about Vermonters' views of the agency and Vermont's transportation needs.

- First, the majority of the Vermonters who attended the forums and summit wanted the agency to continue the policy of maintaining the existing infrastructure; and
- Second, they endorsed multiple modes of transportation that offer Vermonters choice and investments that foster economic development and maintain Vermont's quality of life.

3.1.3 Modal Policy Plans Development

Public involvement was an ongoing activity during the development of the three modal policy plans completed since the 1995 Long-Range Transportation Plan. For each plan, VTrans and the project team used public meetings with the Transportation Advisory Committees (TAC) as the primary means of soliciting public input. For the Aviation Policy Plan, a survey of 2,000 Vermont businesses, aviation facility visits, and contacts with specific airport tenants also provided valuable public input to the study.

3.1.4 Project Development

Project development includes public participation at several key steps. The agency has a detailed project development manual which explains opportunities for public involvement.

3.1.5 Special Studies

The agency conducts special studies on topics of concern to the General Assembly. Generally, these topics have significant public interest and the studies are designed to facilitate ongoing public dialog. Recent examples include studies of Route 4 truck traffic, commuter fringe benefits, and accommodating large trucks on rural roads.

3.1.6 Other Ongoing Public Involvement Activities

In an effort to keep its customers informed, VTrans prepares several periodic publications. These include newsletters, an annual report, and specific project informational briefings.

The annual report is printed in the fall and provides information on latest agency happenings, updates on each of the transportation programs/divisions and spotlights employees of the year.

3.2 Public Involvement Activities Conducted for the LRTP Update

The development of this Long-Range Transportation Plan update continued the VTrans commitment to public involvement. Activities were conducted to reach out to members of the public, local and regional jurisdictions, and VTrans employees to receive input on the plan update. To reach the public, a telephone survey provided travel pattern and opinion data from over 1,200 Vermonters. The results of these surveys were then presented to each of the 12 regional planning commissions to garner further public involvement and interactions regarding the major issues in Vermont. Additionally, a follow-up survey was conducted with members of the Transportation Advisory Committees (TAC) for each regional planning commission. These surveys sought to further clarify transportation issues raised by the public. Lastly, "in-reach" interviews were conducted with various VTrans employees to garner an "insider's perspective" on the pertinent issues to be addressed in this Long-Range Transportation Plan update. The following sections discuss each of these activities and their results.

3.2.1 Public Opinion Survey Regarding Transportation in Vermont

As part of the 1995 Transportation Plan, VTrans commissioned a poll of Vermont residents. The opinions of over 1,200 Vermonters were surveyed in a sample that reflected the population of the state. As part of this Plan, a similar survey of 1,200 residents was conducted. Many of the survey questions from 1995 were repeated to determine how opinions have changed over time. In addition, new questions were asked to address issues that have become a concern since the 1995 Plan.

Households were selected at random and contacted by telephone. Of the over 5,600 numbers called, 36 percent agreed to participate in the survey.

Respondents were asked a series of questions to determine:

- Usage of transportation facilities in the state, including highways and facilities related to other modes;
- Experiences with traffic congestion and attitudes toward it;

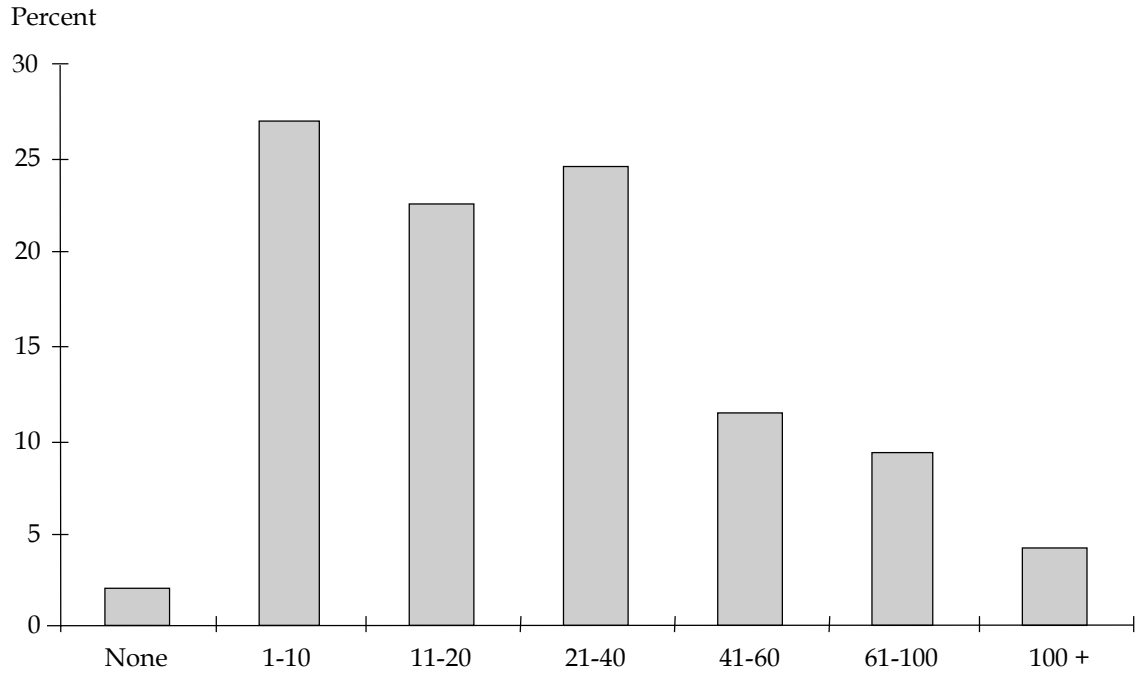
- Feelings about how VTrans currently allocates its funding;
- Suggestions for the future focus of VTran's efforts; and
- Attitudes and ideas about limiting urban sprawl.

Automobile Usage

Vermonters make extensive use of the transportation system in the state, but by far the most prevalent means of travel is by private vehicles on the highway. More than 98 percent of Vermonters (including those from households without vehicles) ride in personal vehicles on a given day. The average daily distance driven was 36 miles, an increase from 32 miles per day as identified in the 1995 survey (Figure 3.1). More than three-quarters of the vehicle miles traveled by Vermont adults were completed by using single occupancy vehicles.

The automobile is the preferred mode for travel to work. Eighty-one percent of commuters drive alone. The average one-way distance to work was 15 miles with more than one-half traveling less than 10 miles. People traveling in single-occupancy vehicles (SOV) tended to drive shorter distances. The average work trip distance has remained unchanged from the 15.4-mile average identified in the 1995 Plan.

Figure 3.1 Daily Miles Driven



The automobile is also the preferred mode of travel for trips of more than 75 miles. Eighty-six percent of those long-distance trips are by automobile, seven percent are by airplane, four percent by bus, and less than two percent by other modes.

Almost 64 percent of Vermonters could not conceive of circumstances or policies that would encourage them to drive less, an increase from the 57 percent who held the same opinion in the 1995 survey (Figure 3.2). Of those who gave a reason why they might drive less, 11 percent cited better public transit (compared with 15 percent in the 1995 survey) and eight percent cited higher gasoline prices (compared with five percent in the 1995 survey).

Traffic Congestion

Traffic congestion is not a major problem for most residents, but those who are affected have had to change their behavior in response to congestion. About 43 percent of the Vermonters indicated that they have experienced congestion. Of those 43 percent who have experienced congestion, more than 70 percent indicated that it has caused them to change their behavior. The most common response, 87 percent, is to change the travel route (Figure 3.3). Even among those who have experienced congestion, most view congestion as not having a major negative impact on their quality of life. Only nine percent of those who experience congestion thought that congestion had a major effect on their lives (giving it a rating of eight or more on a scale where 10 is the most negative).

Figure 3.2 Circumstances That Would Cause Less Driving

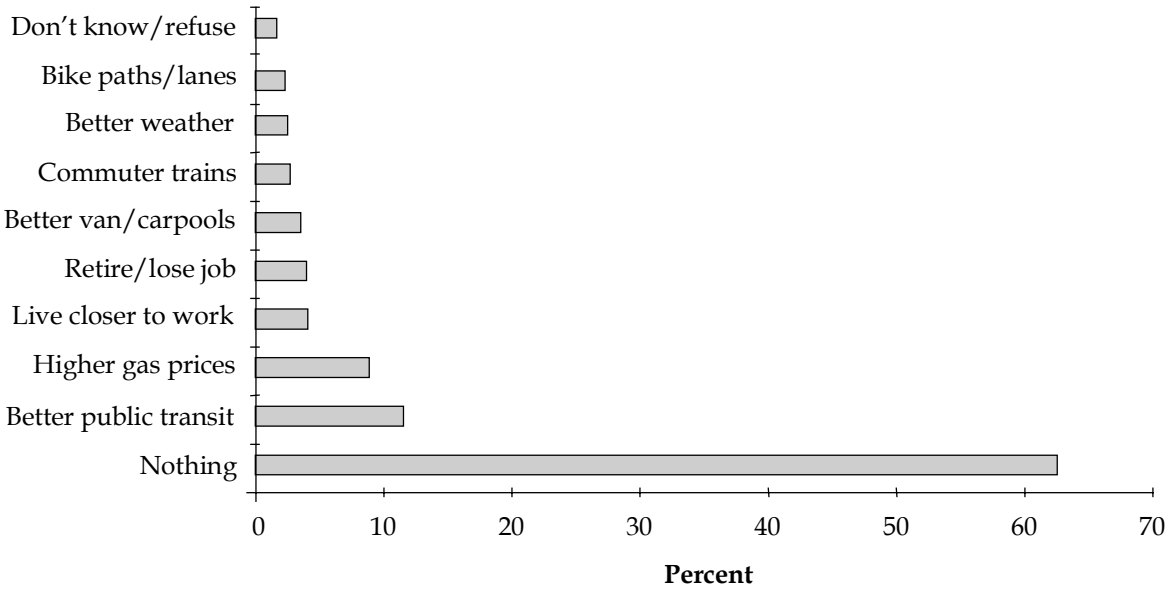
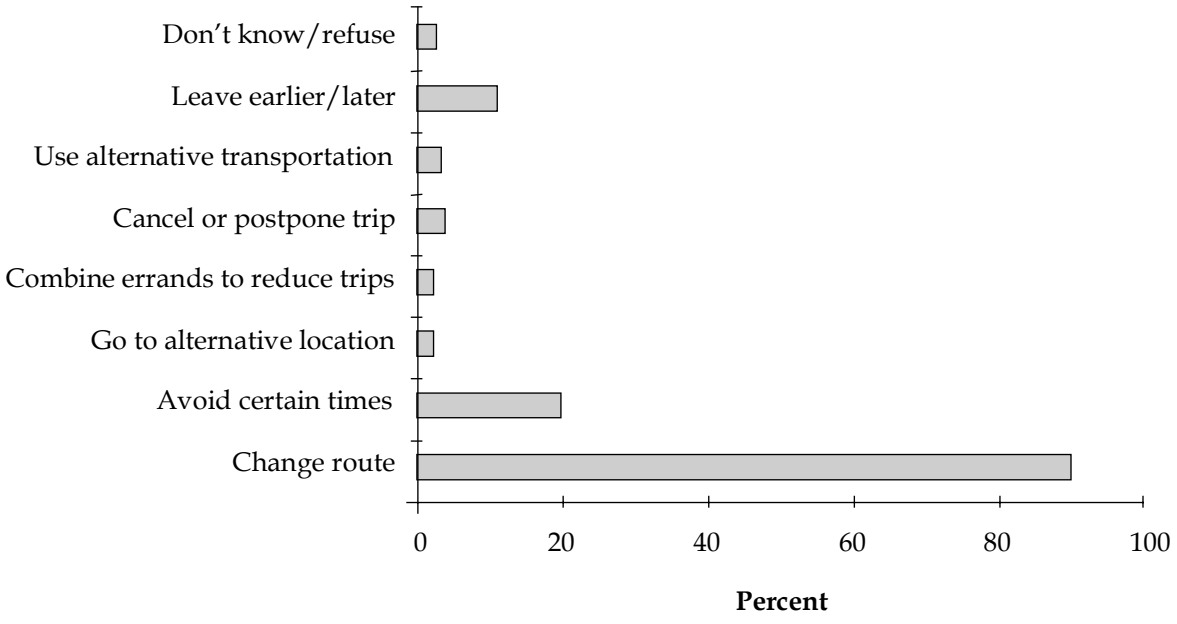


Figure 3.3 Response to Congestion



Two-thirds of the Vermonters who have experienced congestion believe that congestion levels vary from season to season. However, there is not agreement on which is the worst season. Fall is considered to be the worst by 37 percent, winter by 32 percent and summer by 27 percent.

Fewer residents indicated that they experience congestion than in 1995. In the 1995 survey, 60 percent indicated that they experience congestion. The response of those who experience congestion was roughly the same. In 1995, 77 percent of the respondents indicating that they changed their behavior with 77 percent of those changing behavior indicated that they changed routes. It should be noted that the definition of congestion was left to the respondent. The change between the 1995 and 2000 surveys most likely indicates that residents will now tolerate more traffic delays before classifying it as congestion rather than indicating an actual reduction in congestion.

Highway Conditions

For the most part Vermonters believe that highway conditions are as good or better than most other states or than they were on Vermont highways five years ago. About 41 percent felt that highway conditions in Vermont were better than other states and 29 percent did not see a difference. Twenty percent of Vermonters rated the current conditions of Vermont's highways as worse than other states. Ten percent did not provide a rating. This rating is similar to that of the 1995 survey. That survey found that on a scale of one to 10 (with 10 as much better than, five as the same as, and one as much worse than), Vermonters rated the condition of Vermont highways as a 6.4 compared to other states.

Concerning the condition of Vermont's highways compared to five years ago, 35 percent felt that conditions had improved and 35 percent did not see a difference. Twenty percent rated the condition as worse than five years ago. Nine percent did not provide a rating. This rating is also similar to that of the 1995 survey. That survey found that on a scale of one to 10 scale (with 10 as much better and one as much worse), Vermonters rated the condition of Vermont highways as a 5.9 compared to five years before.

Allocation of Resources

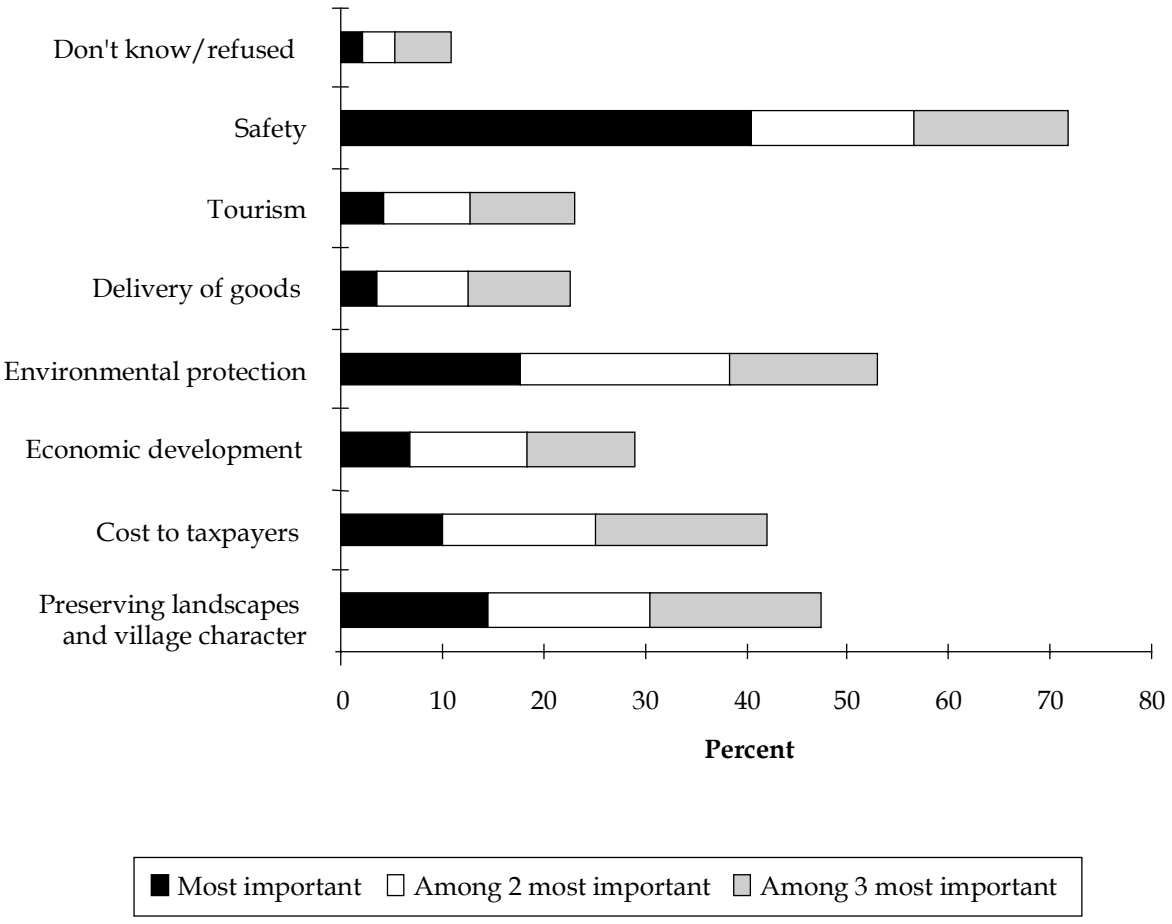
More than two-thirds of Vermonters are satisfied with VTrans' overall allocation of funds. VTrans currently spends about 70 percent of its funds on paving and maintaining highways and repairing bridges, 15 percent on new roadway projects, and 15 percent on non-highway programs. When asked if they would make the same allocation of funds, more than 70 percent said they would do so. Only 21 percent said they would allocate the funds differently.

Of the 21 percent who would change the allocation, 54 percent said they would increase the share of the funds going to maintaining highways and bridges while 27 percent said they would reduce the share. Of those who would change the allocation, 36 percent said they would increase the share going to new highway construction while an almost equal amount, 37 percent, said the share should be reduced. Opinion was similarly divided on non-highway projects. Of those who would change the allocation, 38 percent said they would increase the share going to non-highway programs while an almost equal number, 40 percent, said the share should be reduced.

Important Issues

When asked about changing the emphasis VTrans places on particular issues, most respondents preferred to leave current priorities in place. Of the issues that they were asked to rank, safety clearly came first, ranking among the top three issues by over 72 percent of the respondents (Figure 3.4). Other issues that were ranked by more than 40 percent of respondents were environmental protection with 53 percent, preserving landscapes and village character with 47 percent and cost to taxpayers with 43 percent.

Figure 3.4 Most Important Issues



Vermonters were also asked about 12 specific issues and their opinion as to whether more or less resources should be provided, including the following:

- Bridge repair and replacement;
- Bicycle and pedestrian paths;
- Summer road paving;
- Safety;
- Projects to relieve traffic congestion;
- Winter snow and ice removal;
- Public transportation;
- Air quality;
- Traffic law enforcement;
- Landscape and village preservation;
- New road construction; and
- Increased mobility.

When asked about which areas they favored devoting more or less resources, the responses by Vermonters were very similar to those of the 1995 survey (Table 3.1). Recognizing that more resources for one area mean fewer resources for other areas or an increase in transportation-related taxes, the only issue that Vermonters agreed in both surveys should have more resources is bridge repair and replacement. Fifty-one percent in the current survey favored devoting more resources to bridges compared to 54 percent in the 1995 survey. The top three issues as ranked by the percentage who favored more resources remained the same as in the 1995 survey (bridges, bike paths, paving, and safety). The rank order changed, with safety now ranked higher. The percentage of people who felt that more resources were warranted for safety was 49 percent in the current survey compared to 39 percent in the 1995 survey.

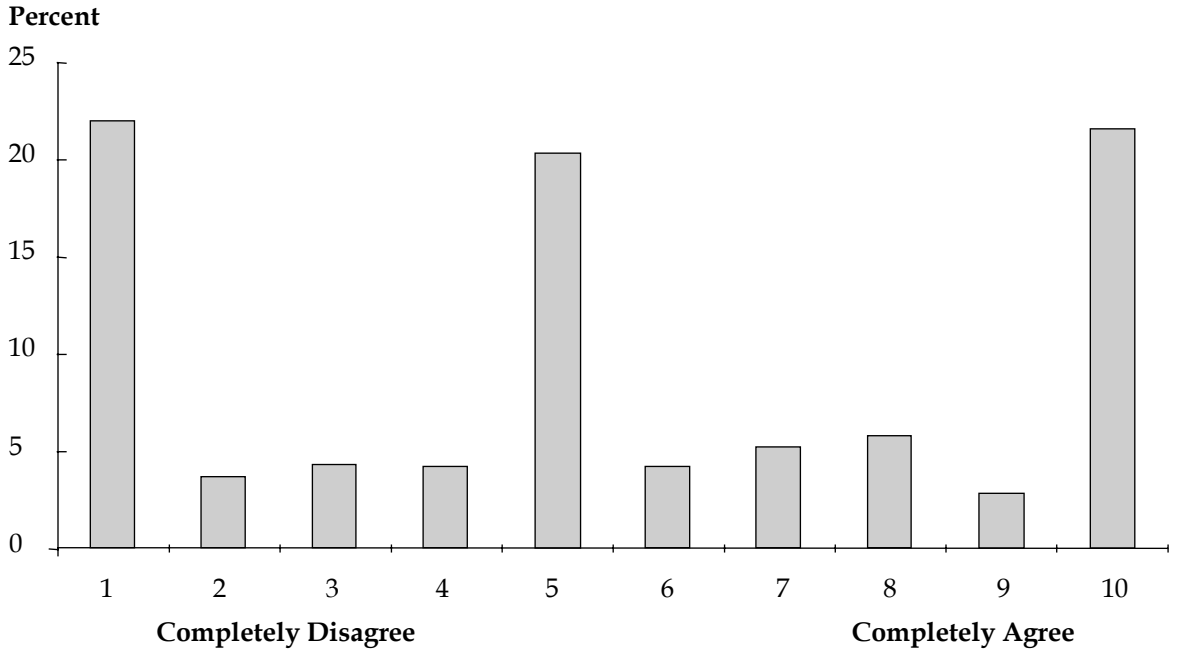
Sprawl

The issue of urban sprawl and the degree to which VTrans should take an active role in limiting sprawl is a deeply polarizing issue among Vermonters. Among the survey respondents, 40 percent of Vermonters agree to some extent that the natural environment has deteriorated, compared to 34 who disagree to some extent. However, on a scale of one to 10 (where one is completely disagree and 10 is completely agree), the most frequent responses were complete disagreement at 22 percent, complete agreement at 21 percent, and completely neutral at 20 percent (Figure 3.5). When asked specifically about whether VTrans should take a role in limiting urban sprawl, a similar polarization was evident. Twenty-two percent of the respondents completely disagreed that VTrans should take a role in limiting sprawl, 22 percent completely agreed, and 20 percent were neutral.

Table 3.1 Responses to Changing the Share of Resources Devoted

	Greater Share	Lesser Share	Same Share	Don't Know/ Refuse
Bridge Repair and Replacement	51%	4%	41%	4%
Safety	49%	3%	44%	4%
Bicycle and Pedestrian Paths	41%	17%	37%	4%
Summer Road Repair and Re-Paving	39%	7%	50%	4%
Preserving Landscapes	36%	10%	50%	4%
Projects to Relieve Traffic	36%	14%	45%	6%
Air Quality	34%	7%	53%	6%
Enforcement of Traffic Laws	33%	11%	53%	3%
Public Transportation	31%	15%	47%	7%
Winter Snow and Ice Removal	30%	4%	63%	3%
New Road Construction	28%	22%	46%	5%
Increased Mobility	18%	14%	59%	10%

Figure 3.5 VTrans Should Take an Active Role in Reducing Sprawl



Among those who thought that VTrans should take a role in limiting sprawl, nearly one-half felt that the most important action VTrans should take to limit sprawl is to concentrate on maintaining existing roads.

3.2.2 Transportation Advisory Committee Followup

Also part of the update activities, project team members attended Transportation Advisory Committee (TAC) meetings at most of the Regional Planning Commissions (RPCs) and at the Chittenden County Metropolitan Planning Organization (MPO). A brief presentation was made and an opportunity for questions and comments was provided. The TACs are generally comprised of local citizens and town officials with interest in transportation. Meetings were attended in the Fall of 2000 and Winter of 2001.

3.2.3 Regional Planning Commission / Metropolitan Planning Organization Surveys

The Regional Planning Commissions and Metropolitan Planning Organization work on local and regional transportation issues on a daily basis. Their insight is a valuable asset to the planning process and it was felt beneficial to contact staff at each of the RPCs/MPO to discuss issues and concerns associated with the long-range plan update. A survey was developed and each RPC/MPO contacted for input. Some of the RPCs responded through interactive telephone conversations while others prepared written summaries of the questions. The survey questions included:

- What are some of the major changes that have occurred in your region over the last five years?
- What issues do you see affecting transportation in your region?
- What are some of the "hot topics" in your region?
- How has the project development process been working in your region?
- How do you use the Long-Range Transportation Plan and what topics would you like to see emphasized in the Update?
- Other comments or concerns regarding the Update?

The following highlights are noted for each question.

What are some of the major changes that have occurred in your region over the last five years?

- Rapid growth and development.
- Enhanced fixed-route bus service.

- Gradual change in the way people think about how to solve transportation problems. Interesting solutions, such as roundabouts, traffic calming, and access management.
- Paving program has both quantity and quality.
- Job growth and lack of housing.
- More traffic – increase in traffic volumes.
- More bicycle and pedestrian funding and projects.

What issues do you see affecting transportation in your region?

- Discussion and action in the area of rail transportation;
- Interest in developing more and enhanced bicycle and pedestrian facilities;
- Access to the interstate system;
- Increase in truck traffic;
- Maintaining village character;
- Traffic calming;
- Housing demand;
- Rail and Airports will gain importance;
- Need for more efficient and effective public transportation;
- Relationship to natural environment/physical features; and
- Lack of funding to bring projects to construction.

What are some of the current hot topics in your region?

- Airport expansion/Master Plan update;
- Regional Plan update;
- Discussion of modification to Transit Funding formulas at the state level;
- East-west corridor/highway;
- Truck traffic;
- Rail issues – crossings;
- Maintaining and improving public transit options;
- Improved transit for the elderly and disabled;

- Public transit to major New England airports;
- Funding for local roads and bridges and maintenance of bridges;
- Roundabouts;
- Access management; and
- Bypasses.

How has the project development process been working in your region?

- Generally quite well – although sometimes projects stall.
- Opportunities for input is appreciated by local officials and residents.
- The Level of Improvement (LOI) policy can hurt lower classified roads.
- Environmental solutions are sometimes chosen before issues are fully considered – Is Agency of Natural Resources behind solution? – can't tell in Scoping.
- Not happy – implementation is slow.
- Disconnect process from political process.
- Have a moratorium on new projects.
- Funding is disproportional – state should develop formula for fairness.
- Has improved over time.
- Process is good at involving the public.

How do you use the Long-Range Transportation Plan and what topics would you like to see emphasized in the update?

- Used as a general reference tool;
- True multi and intermodal planning, with clearer intra and interagency communication and coordination, as well as better interregional coordination and communication.
- Provide guidance on how the process works and the state programs.
- Emphasize system preservation, multimodalism, including public transit and bike and pedestrian facilities.
- Budget and money are always a problem.
- The multimodal system classification.

- "Maintain what we have" – is good but current application is not adequate – should poorly constructed roads be maintained as poorly constructed roads?
- Emphasize rail improvements.
- State should consider developing Access Management Regulations.

Other comments or concerns?

- The modal plans are a positive step for the Agency;
- State needs to do better in public process – public meetings are held after the State Transportation Improvement Program (STIP) and budget have been set; and
- Update must be realistic about future funding.

3.2.4 VTrans Employees In-Reach

A sometimes-overlooked tool to collect valuable information about any agency is an employee in-reach exercise. For the plan update, various VTrans employees, representing several different VTrans divisions, were contacted individually for their input and opinions regarding the success of the 1995 plan. Each staff member was asked to comment on how effective the plan was, and what issues should be included in an update. The information gleaned from this exercise was very valuable, and yielded a unique "insider's perspective" on several issues and challenges that are addressed in the plan update.

The following sections highlight the major issues facing Vermont. The next section identifies issues that are related to specific transportation modes. Other categories of issues include general transportation issues (not mode-specific), funding issues, and Vermont demographics. These important issues are addressed in later sections of this report.

4.0 Transportation Modes

4.1 Roadways

Of the various transportation facilities in Vermont, the most widely used are the roadways. Roadways are used for many types of travel in the state, including passenger, freight, public transportation, bicycle, and pedestrian. The 14,000 miles of roads in Vermont vary from the local roads that provide direct access to adjacent land, to the limited access interstate highways, such as Interstates 89, 91, and 93, that provide a very high degree of mobility. Jurisdiction of roadways includes a mixture of federal, state, and local control. Several important transportation issues are relevant to roadways. The following sections describe the service provided by roads in the state, their associated jurisdiction levels, recent studies and policy plans, and the present and future challenges pertaining to roadways in Vermont.

4.1.1 Facilities and Services

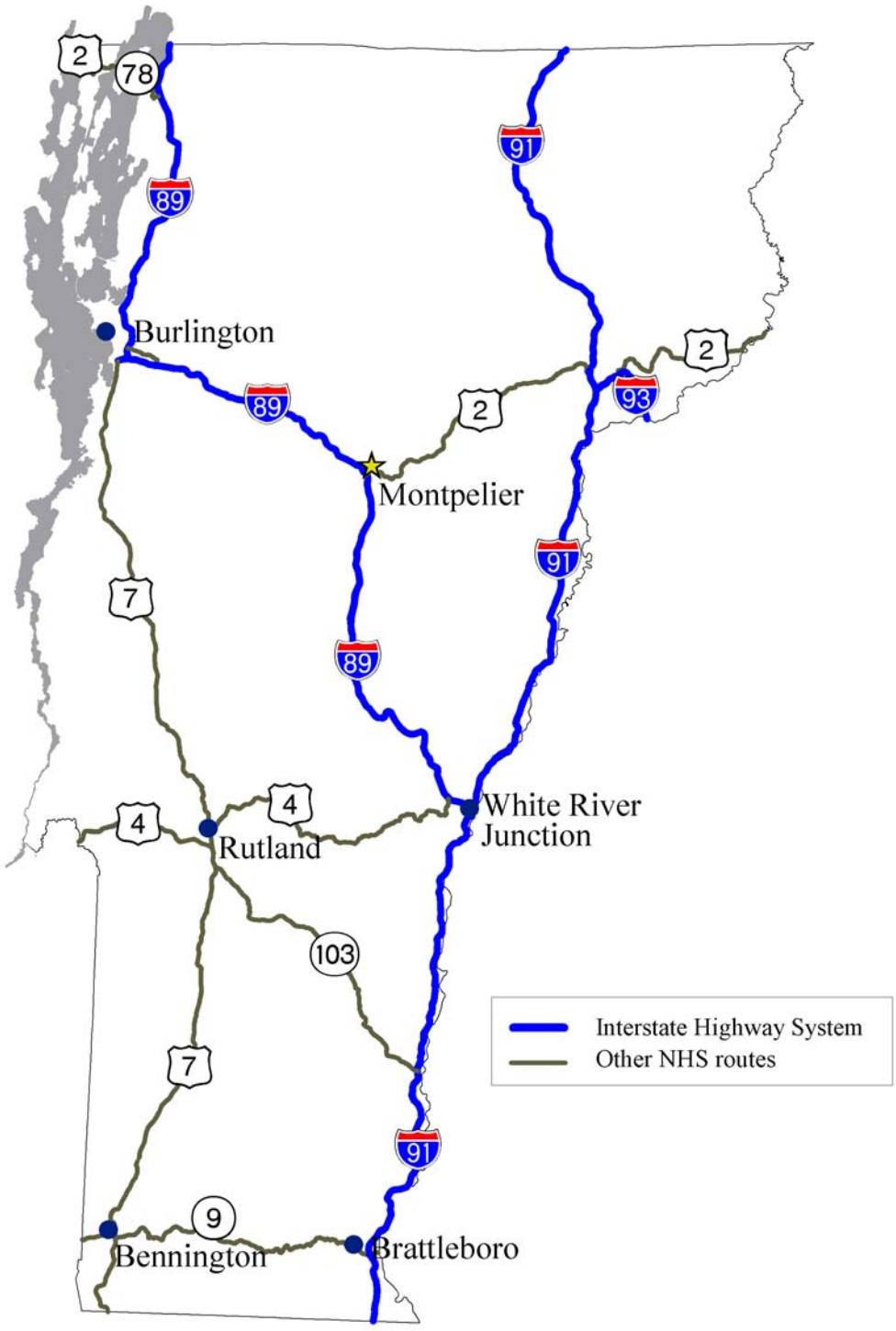
Interstates

Interstate highways in Vermont include Interstates 89, 189, 91, and 93. The Interstate highway system provides limited access roadways with high capacity and traveling speeds. The Interstate highway network connects Vermont to Massachusetts, New Hampshire, and the rest of the United States and Canada.

National Highway System

The National Highway System (NHS) was designated in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The roads that are part of the NHS are typically major roads that connect important regional destinations. Much of the NHS roadways are non-interstate system roadways. In Vermont, the non-interstate roads designated in the National Highway System consist of Route 9 from Brattleboro to Bennington, Route 103 from Rockingham to Clarendon, Route 4 from Fair Haven to Hartford, Route 7 from Pownal to Burlington, Route 78 from Swanton to Alburg, Route 2 from Alburg to the New York state line, and Route 2 from Montpelier to Guildhall. (See Figure 4.1)

Figure 4.1 Vermont's National Highway System (NHS)



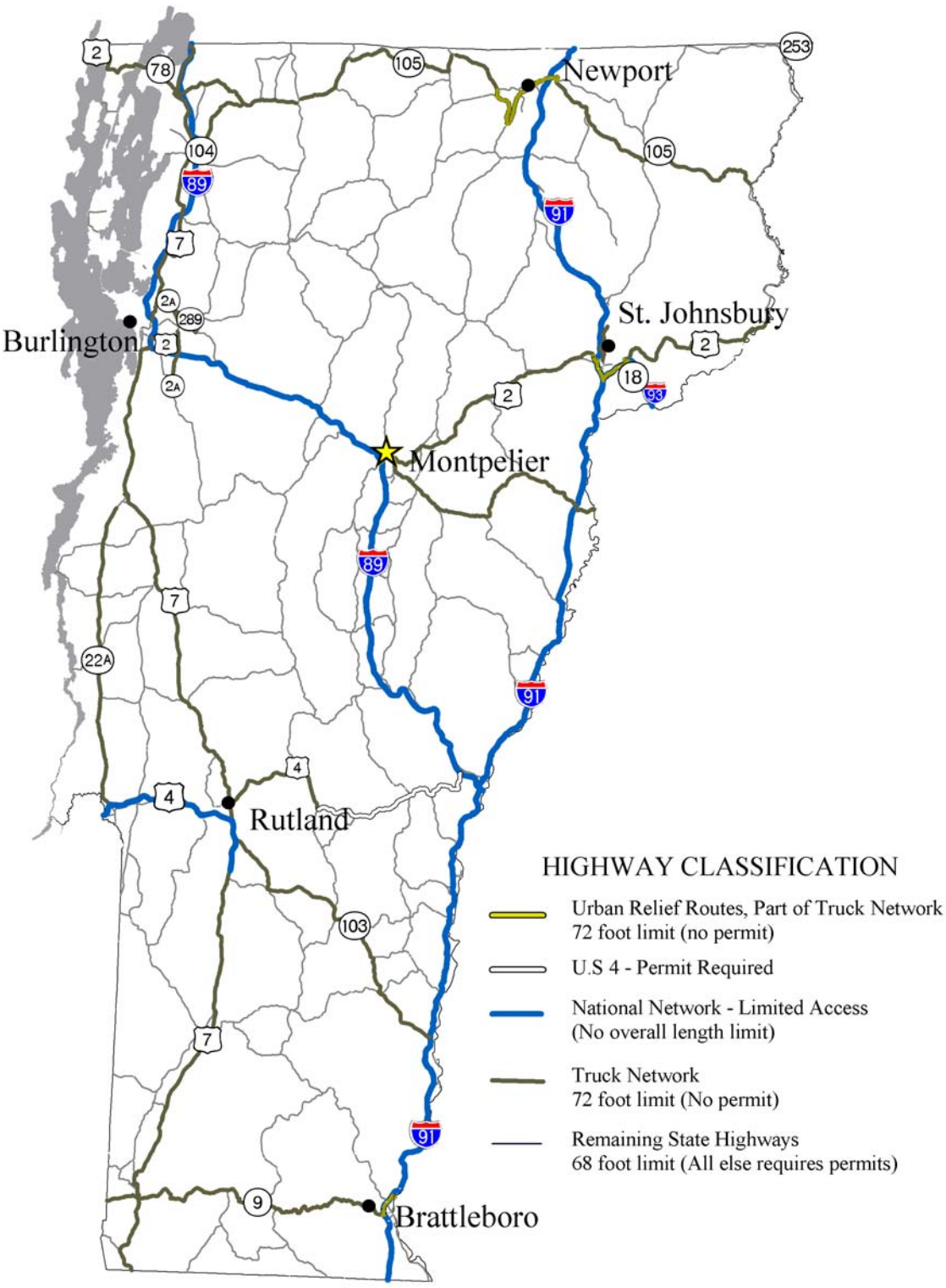


Figure 4.2 Vermont's Truck Network

State Highways

State highways in Vermont include the roadways maintained by the state that are not part of the National Highway System or Interstate roadway systems. These roads may include less traveled roadways, or those highways that connect smaller population centers throughout the state. In Vermont, there are approximately 1,146 miles of arterial highway and approximately 1,162 miles of collector roadways in the state that are part of this system.

Vermont Truck Network

The Vermont Truck Network was designated by statute in 2000 (Title 23, Section 1432c). The Vermont Truck Network consists of all or sections of 15 Interstate highways, United States and Vermont routes (see Figure 4.2). The formation and acceptance of this network was a critical issue for both the private industry and the citizens of Vermont. The shippers, receivers, and truckers were being constrained significantly in key freight corridors and the public was extremely concerned with trucks in small town centers. The approval of this network was a major step forward, however these conflicting concerns will continue to permeate the trucking environment.

Local Roads

Local roads in Vermont include all other roads not classified above. These roadways may be maintained by one of the local jurisdictions throughout the state. There are over 11,300 miles of local roads in the state (approximately 80 percent of the 14,000 miles of roads in the state). Typically, local roads provide the greatest access to land, yet provide the least amount of mobility (measured by capacity and travel speed).

4.1.2 Jurisdiction

By tradition, ownership or jurisdiction of roadways is vested in one level of government. Yet most roadways transcend borders and are very important to the roadway system of the entire region or state. As such, coordination between neighboring towns, regions, and states is often required to maintain a consistent roadway network. Typical challenges include local governments' desire to control issues of design and location, yet have other levels of government (typically state or federal) fund the cost of the project.

Federal Highway Administration (FHWA)

The Federal Highway Administration (FHWA) provides federal government funds from the U.S. Department of Transportation (DOT) to the state of Vermont for construction and repair of roadways. The FHWA and VTrans jointly administer these federal funds in Vermont. VTrans is responsible for the actual design and implementation of most road

and bridge projects, with FHWA having a review and oversight role, especially on major bridge and interstate highway projects.

State Highways

The state of Vermont retains jurisdiction over the highways in the network that are funded by state transportation funds. On these roadways, VTrans controls the design, operation, and maintenance of the roadways. However, coordination and cooperation with local governments is still a necessary process to minimize the impacts of construction and maintenance projects on the state highways.

Local Level

Local road projects are largely under the control of local governments. Each town or city may provide the entire construction and maintenance funding for the roadways using local funding sources. Therefore, most local road projects are conducted using local government plans and procedures. However, VTrans provides approximately $34 Million annually to local governments for technical services, special studies, emergency relief, and actual roadway maintenance. Despite the use of state funds, most of these projects are controlled and managed at the local level.

4.1.3 Recent Studies/Documents

Design Standards

The most recent design standards pertaining to roadways in Vermont are included in the "Vermont State Standards for Construction, Reconstruction and Rehabilitation of Roadways and Bridges." The document was published in October 1997, and became effective the following year. The standards present the minimum physical design parameters and guidelines of bridges and roadways in Vermont. The standards are based upon the assumption that contextual and situational issues for each project must be identified early in the design process, before geometric values are selected. The process allows for the successful integration of both "quantitative" parameters and "qualitative" parameters. The standards reflect changes to transportation policy on the state and national levels as initiated in the 1991 ISTEA legislation, the goals of the previous long-range plan, modifications of the project development process, and interagency planning agreements between VTrans, the Vermont Agency of Natural Resources (ANR), the Vermont Division for Historic Preservation (DHP), and others.

Other design-related documents include recent studies on guardrails and traffic calming.

4.1.4 Issues, Challenges, and Opportunities

Access Management

Access management refers to the control of the number and location of highway access points permitted along a section of roadway. The use of access management provides an opportunity to improve safety, reduce congestion, and maintain capacity along arterial streets and highways. These roads are the state highways that provide vital connections where no interstate or national highway system roadways exist. Access management is a key issue for reducing the need, in the long term, to implement new projects that provide growth in roadway capacity. Since access management ultimately becomes a land use issue (shaping and defining the way land may be developed along roadways), cooperation and coordination with local governments is very beneficial.

The primary issue confronting VTrans with regard to access management is the method of implementation. There are two ways the state may control access along highways. One option is to purchase the access and development rights of the property along the roadway. While this has the potential of becoming an expensive option, it leaves the ultimate decision to provide access with VTrans. The second method of implementing access management is to develop a disciplined permitting process to regulate the number and type of access points along roadways. As with all permitting procedures, legal appeals and challenges have the potential to weaken the implementation of access management using the permitting technique.

Traffic Calming

Traffic calming techniques involve the use of physical changes in the roadway to reduce vehicle speeds. In urban and village areas, these techniques serve to safely balance the needs of all users of the roadway, including bicyclists and pedestrians. By slowing traffic speeds, traffic-calming devices increase the reaction time available to motorists, pedestrians, and bicyclists, thereby creating more opportunities for all users to safely share the roadway. Traffic calming also allows communities to enhance the aesthetic elements of a roadway by decreasing the overall pavement width and increasing landscaped areas.

In most cases, traffic calming is a cost-effective method to provide safe at-grade road crossings for bicyclists and pedestrians. Traffic calming devices should be considered along a roadway corridor or through a village area where pedestrian access is encouraged. These techniques need to be compatible with adjacent land uses.

A wide range of traffic-calming techniques are available. Some of the more common techniques are:

- Installation of roundabouts, including splitter islands, at intersections to serve as "gateway" treatments to village centers;
- Reduction of the motor vehicle travel lane width in village areas;
- Center islands and pedestrian refuges at crossing locations in the roadways;
- On street parking;
- Bulbouts at crosswalks to reduce distances for pedestrian crossings;
- Enhanced roadway lighting;
- Separated sidewalks and curbing and textured pedestrian crossings (paving brick, cement concrete, granite pavers, etc.);
- Pavement markings; and
- Raised crosswalks.

VTrans has developed a series of standard drawings for several traffic calming devices. The drawings were distributed to the Regional Planning Commissions and the Chittenden County Metropolitan Planning Organization. The Vermont Legislature has provided $100,000 for a demonstration project to determine the effectiveness of traffic calming devices in small urban areas throughout the state.

Roundabouts

Roundabouts are beginning to appear in Vermont. Used in other countries around the world, modern roundabouts are gaining popularity throughout the United States. Unlike traditional traffic rotaries, these smaller diameter intersection improvements have a yield-on-entry rule and physically prohibit circulation at high speed. Roundabouts can enhance an intersection's overall capacity, as well as decrease the likelihood and severity of accidents. Other advantages of roundabouts include the ability to remove existing traffic signals, increase capacity, and provide an opportunity for landscaping or "gateway" symbols.

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems are being implemented around the country as a means of improving operation of the nation's roadways without increasing capacity via expensive capital projects. The applications of ITS are as varied as the technology required to make the project successful. The types of ITS projects include using advanced roadway sensors to monitor and manage traffic flow; development of centralized traffic management centers; and the use of highway advisory radio and variable message signs to provide information and optional routing to travelers. Other ITS applications include Traveler Information Systems that use real time information to provide roadway conditions and congestion levels. In Vermont, ITS applications have not been implemented on a large scale. However, the state has been working cooperatively with Maine and New Hampshire for implementation of a tri-state Traveler Information System. Once fully implemented, the system will be a showcase for the type of jurisdictional relationships that are necessary to successfully implement trans-border ITS systems. Currently, VTrans is completing a strategic plan for ITS investments across the state.

Bypasses

In the past, bypasses were constructed with the intention that through traffic would have a means of avoiding the congestion and traffic in the downtown or village center. However, bypasses may facilitate the development of land outside the center of town, and depending on how access is managed, can lead to new local traffic and congestion on the bypass facility. As such, the decision to construct a bypass should be carefully considered. Bypasses are expensive capital projects and lead to new highway maintenance responsibilities. Bypasses can help to maintain village centers and facilitate traffic flow. One important consideration related to bypasses is whether or not to finish uncompleted bypass routes that have been under consideration for many years. The General Assembly is currently in the midst of a multi-year discussion of major bypass projects around Burlington and Bennington. These projects have been divided into segments, and funding and eventual completion is being discussed on a segment-by-segment basis.

East – West Highway Connections

An issue of importance to many residents of Vermont and to the economic development community is the provision of adequate highway connections between the eastern and western parts of the state. Currently, the primary east-west access roadways are Routes 105, 15, 2, 4, 103, and 9. None of these highways provide the advantages of a limited access four-lane road in terms of ease and travel time, except for Route 4 between Rutland and the New York border. There is a decades-long history of discussions and studies about how the east – west connections can be improved in a way that does not negatively impact the surrounding communities. There have been no obvious or easy solutions. These studies and discussions focused basically on highway solutions – including improving the existing roadways, constructing bypasses, and the potential for constructing a new highway – and not alternative modes of transportation.

In May of 1999, the Vermont Legislature mandated VTrans to develop a report on the movement of freight by rail and commercial motor vehicles along an east-west corridor

from Rutland to the New Hampshire border. This report synthesized previous studies related to the feasibility of constructing a new highway or reconstructing existing highways, and any combination of the two, and took into consideration the resources available to the state, the current transportation capital program and project development plan. The report was also analyzed the potential to increase rail freight shipments through the corridor.

NHS Designation/Functional Classification

An outcome of the designation of several rural Vermont highways as part of the National Highway System (NHS) is that many of these roads pass through town and village centers. The continued success and high quality of life of these towns and villages is part of what draws so many visitors to the state. VTrans needs to work carefully with the established design requirements for these NHS roadways to ensure that any improvements do not take away from the character of these towns. Modified design requirements for the NHS (as described in the Vermont State Design Standards) should be considered in all town and village centers. Functional classification should be periodically updated.

Park-and-Ride Facilities

One way to reduce the negative impacts of increased driving throughout Vermont is to provide additional park-and-ride facilities to encourage commuters (especially long-distance commuters) to carpool. A primary system of park and rides has been developed by VTrans. Currently, there are 23 primary park-and-ride lots in the state. The program has funding for the provision of between one and two additional park-and-ride lots per year.

Rest Areas

Rest areas provide information, increase road safety by reducing driver fatigue, and give truck drivers necessary areas to rest during long-haul trips. Commercial vehicles are a vital link in the nation's freight infrastructure. Operators of commercial vehicles involved in interstate commerce are regulated by Federal Hours of Service Regulations, which limit the number of hours a driver can legally drive. To ensure that these drivers have sufficient opportunity to rest, the Federal Highway Administration (FHWA) is evaluating the nation's current commercial parking facilities to determine if they are sufficient to meet current and future demand. All states were asked to compile data on their commercial vehicle parking facilities and forward it to the FHWA as part of this national effort. In response to this request, the state of Vermont inventoried the commercial parking facilities on its Truck Network. The results of the inventory have been integrated into an interactive GIS map that allows users to see a summary of a parking facility, as well as photographs of it by clicking on its location on the map. The inventory data are also stored in a Microsoft Access database.

Speed Enforcement

The Vermont Department of Motor Vehicles (DMV) has teamed up with state and local police to address the issue of excessive speed in Vermont. Through a coordinated effort,

the agencies enforce posted speed limits on Vermont's roadways. Routes 89 and 91 have been specifically targeted for examination. The agency also routinely and diligently patrols for drunk drivers. Random road checks are held to catch drivers who are over the legal limit for alcohol consumption.

Vehicle Emissions and Safety Inspections

In 1999, the Vermont DMV implemented a statewide emissions inspection program requiring annual testing of cars manufactured after 1996. While this program detected deficiencies in emissions systems, it was not required that they be repaired. Beginning in January 2001, however, repair of emission deficiencies is mandatory.

In addition, the DMV has developed a cooperative program of random roadside safety inspections. These programs are only operated during summer months due to safety issues associated with ice and snow during winter months. The random roadside safety inspection program is operated in conjunction with area law enforcement agencies who check vehicles for valid inspection stickers, as well as functioning safety features such as headlights, horns, windshields, and turning signals. Since its inception, the roadside safety inspections have received positive feedback from the public.

Trucking Permits

Vermont is working to provide the trucking industry with a more efficient highway infrastructure, while also ensuring enforcement of existing regulation and laws. In 2000, the Vermont Truck Network was created by statute. This network opened up several key corridors to trucks measuring 72 feet or less. For example, U.S. 4 through Woodstock became available as an east/west highway for larger trucks previously restricted. Vermont is also cracking down on violations in the commercial trucking industry. In July 2000, the DMV received funding for nine new truck enforcement officers. The truck enforcement officers have the same authority as regular police officers, plus additional capabilities to conduct random truck inspections. The purpose of the officers is to reduce trucking violations such as prohibited hours or road restrictions.

4.2 Bicycling and Walking

Bicycling and walking are two transportation modes that are receiving increased attention in the transportation community. Both modes are viewed not only as a form of healthy recreation, but also as a viable means of personal mobility. The following sections identify the types of services available to bicyclists and pedestrians, the interaction of local, regional and state roles regarding bicycle and pedestrian facilities, recent documents that discuss these transportation modes, and important issues affecting bicyclists and pedestrians and making infrastructure improvements for them.

4.2.1 Facilities and Services

Although the operational needs of bicyclists and pedestrians vary, the two human-powered transportation modes are typically considered together because each mode frequently uses or interacts with the roadway system. Additionally, where facilities are separated from the roadway system, often both bicyclists and pedestrians share them. The following infrastructure elements are available to bicyclists and pedestrians in Vermont.

Sidewalks and Crosswalks

The most important component of Vermont's pedestrian infrastructure is the provision of sidewalks with safe crosswalks. The state of Vermont is working with local communities to assist them in the installation of sidewalks and crosswalks. Sidewalks and crosswalks are also routinely incorporated in larger roadway projects.

Roadways

Bicycling is permitted in Vermont on all public roads unless specifically prohibited by law, such as along the interstate highways, and certain limited access roadways. Adequate paved shoulder width provides space for bicyclists on higher volume roads where conflicts between bicyclists and motor vehicles are more likely. Bicycle routes have been designated along some roadways in the state. The most notable example is the network of designated routes around Lake Champlain referred to as the Lake Champlain Bikeways. The core bicycle route around the lake is over 350 miles in length, and includes sections in Vermont, New York, and Quebec.

Bicycle Lanes

Bike lanes are used in urban or village areas to clearly delineate a portion of the roadway for use by bicyclists. They are distinguished from normal road shoulders by the addition of pavement markings and signs. Bike lanes are especially useful to provide bicyclists with access and continuity of facilities in developed areas where the roadway must serve all transportation modes.

Shared-Use Paths

Shared-use paths are designed for a variety of users, including both bicyclists and pedestrians. This type of infrastructure has been very popular in many communities throughout the state. Shared-use paths are used to make connections between specific origins and destinations that are not served well by the existing road network. They are also used to provide short, direct connections that would otherwise require additional trip length by using the road network. Shared-use paths are especially appropriate for less experienced riders, particularly children and the elderly.

Rail Trails

Rail Trails are a unique type of shared use path that utilizes inactive, abandoned or railbanked railroad corridors. Rail Trails are well suited to provide both transportation and recreation as they provide direct long distance connections between population centers, growth areas and employment centers. Rail Trails also have the added benefit of preserving the integrity of a corridor for future railroad use. In Vermont the majority of rail trails are state owned.

Trails

Trails, in distinction from the facilities discussed in this plan, are typically unpaved, rural, and generally used for recreation. Vermont maintains a number of trails throughout the state for hiking, mountain biking, snowmobiling, and horseback riding. It is possible that trails can be used to make a transportation connection where no other alternative exists or where a significant short cut is provided.

4.2.2 Jurisdiction

State Role

VTrans' primary support role is through the state's Bicycle and Pedestrian Program. VTrans' Bicycle and Pedestrian Coordinator administers the program statewide. The program utilizes its annual budget of nearly $6 million to provide system improvements and education to the bicycle and pedestrian community. The Bicycle and Pedestrian Program has been particularly successful both in increasing ridership and developing new shared use paths,sidewalks and on-road bicycle facilities. VTrans is working to ensure that regardless of how a bicycle or pedestrian facility is developed or funded, that it meets all applicable state and federal standards and consistently results in a well-designed, cost effective and safe improvements.

Regional Roles

The regional planning entities are supportive of bicycle and pedestrian modes of transportation and work in partnership with VTrans in the development of bicycle and pedestrian infrastructure. Regional entities are closer to the end users of the system and

can provide valuable coordination in the development of projects spanning multiple municipalities. The Vermont Bicycle and Pedestrian Plan identifies the following suggestions for regional involvement in bicycle and pedestrian supportive programming:

- Inventory existing facilities;
- Assess existing facility use and future needs, including identification of primary bicycle routes and shoulder improvements, potential rail trails, multi-use paths, sidewalks and pedestrian facilities, potential intermodal connections, and traffic calming needs;
- Prioritize desired future facilities and/or facility improvements;
- Develop regional facilities linking neighboring municipalities;
- Encourage and assist local communities to assess pedestrian needs, including development of a site plan review of major development proposals to evaluate pedestrian and bicycle needs and linkages;
- Formulate pedestrian-oriented design recommendations or guidelines for local site review processes; and
- Encourage participation by bicycle and pedestrian interests on regional transportation advisory committees.

Local/Municipal Roles

Local and municipal support is the key to project implementation for bicycle and pedestrian infrastructure. The Vermont Bicycle and Pedestrian Plan encourages municipalities to:

- Assess local needs for bicycle and pedestrian access and mobility;
- Build and maintain local bicycle and pedestrian facilities when desired and feasible;
- Coordinate facility planning and development with adjacent communities and regions;
- Enact local by-laws and subdivision regulations that enhance compact settlement and encourage bicycling and walking;
- Evaluate bicycle and pedestrian needs within the plan review of local development proposals and require developers to invest in bicycle and pedestrian facilities whenever possible; and
- Encourage the formation of local citizen advisory committees for bicycle and pedestrians activities.

Similarly, local bicycle and pedestrian organizations should be encouraged to:

- Provide insight and expertise into bicycle and pedestrian planning activities;

- Participate in transportation advisory committees and planning forums;
- Assist planners with primary bicycle route identification, inventories of bicycle and pedestrian needs, and other information needs; and
- Support safety and education programs.

Private Support

Building quality of life is something that involves the entire community. Public/private partnerships allow communities to provide the resources valued by their community in a time of limited public resources. Private companies should be encouraged to promote bicycling and walking as legitimate modes of travel. To accomplish this, the private sector should:

- Encourage bicycle and pedestrian commuting by providing showers and bicycle parking facilities
- Encourage employees to walk or bike to work at least occasionally to help promote physical fitness
- Build sidewalks and shared use paths that connect to larger bicycle and pedestrian networks within communities.

4.2.3 Recent Studies/Documents

Bicycle and Pedestrian Plan

In December of 1998, VTrans adopted the Bicycle and Pedestrian Plan. This plan was developed in accordance with Section 1033 of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and Section 1202 of the Transportation Equity Act of the 21st Century (TEA-21) of 1998. The planning process included extensive involvement from a bicycle and pedestrian advisory committee made up of bicycle users, pedestrian and bicycle advocates, professional transportation planners, engineers, and bicycle tour operators, as well as state and regional public officials. The results of this study provide a framework for program and policy development to improve access and mobility for bicyclists and pedestrians. The Plan established a new direction in agency policy that encourages integration of the needs of bicyclists and pedestrians in all projects and supports the development of a wide range of bicycle and pedestrian facilities rather than a sole focus on shared-use paths.

Design Manual

The most important project on the horizon for the bicycle and pedestrian program is a Bicycle and Pedestrian Facilities Design Manual. Although there are numerous state and national documents available to guide the design of bicycle and pedestrian facilities, designers often don't have access to all of them. The VT Design Manual will pull together

information from all of these sources and will also tailor design guidance to the scale of Vermont. This document is scheduled for completion in the fall of 2002 and will provide guidelines for the provision of bicycle and pedestrian infrastructure improvements.

4.2.4 Issues, Challenges, and Opportunities

Project Complexity and Funding

One of the challenges facing communities and the VTrans Bicycle and Pedestrian program is that, as the basic bicycling and walking network is completed, the connections that need to be made to complete networks are increasingly complex and expensive. Very often, these critical connections include structures to bridge barriers such as water, limited access highways or railroads. Creative solutions will need to be developed to address the potential environmental impacts of these projects as well as ways to fund them. The current budget for the bicycle and pedestrian program cannot absorb the cost of all of these important connections.

Integration

There are often situations where the scope of traditional projects does not allow for minor improvements that could benefit bicyclists and pedestrians. This is especially true regarding the provision of sidewalks or bike lanes in conjunction with a paving project that goes through a village area. Other low cost facilities that should be routinely considered in all transportation projects are bike parking, benches, and signs.

Maintenance at the Local Level

Maintenance of bicycle and pedestrian infrastructure is an important issue in terms of infrastructure development. While VTrans has programs to help communities fund the initial design and construction of bicycle and pedestrian facilities, the municipalities are responsible for future maintenance of those facilities. Oftentimes towns struggle to meet long term maintenance needs and opt not to build a facility rather than face the uncertainty of future maintenance costs. VTrans could provide some information regarding actual maintenance costs as well as cost benefits of providing bicycle and pedestrian infrastructure.

Availability of Data

There are many areas where adequate data relative to bicycling and walking are not available. These include data about the level of bicycle and pedestrian use for transportation, helmet use for all ages, maintenance costs and the financial benefits of bicycle and pedestrian facilities based on local economic development and deferred health care costs from increases in physical fitness. VTrans should seek partners in other agencies to help develop and disseminate data for these topics.

Crosswalks

Pedestrian-friendly crosswalks should be included along with traffic-calming measures in areas where pedestrian access is encouraged. Important in these measures is the development of. A number of techniques can be employed in the creation of pedestrian friendly crosswalks. These include center islands in roadways to provide pedestrian refuge from traffic. Additionally, bulb-out construction can reduce the crossing distance for pedestrians and improve safety. Textured pedestrian crossings and pavement markings can also create a pedestrian zone –heightening awareness and improve pedestrian safety. Additionally, there are innovations in crosswalk design that can improve safety. VTrans should target the use of these innovative methods in areas of high pedestrian travel or high pedestrian crash rates.

Rack-and-Ride Bus Programs

Many of Vermont's transit providers, including the Chittenden County Transportation Authority, Advance Transit, Brattleboro Town and Village Bus, Deerfield Valley Transit Association, Northwest Vermont, Northwest Vermont Public Transit Network, and Marble Valley Transit Authority are promoting the use of bike racks on buses to improve intermodal connections on their systems. Provision of this feature expands the service area for persons able to access fixed-route services by bicycle allowing them to complete one or both ends of their trip with this mode. Transit providers should view the installation of bike racks on buses as an opportunity to expand their intermodal connectivity. In addition, bike facilities such as racks and lockers should be considered as complementary infrastructure needs at major transit centers.

Rail Trails

Vermont currently has 60+ miles of rail trails with an additional 100+ miles under consideration. As the owner of much of the statewide rail infrastructure the state has a unique opportunity to preserve inactive railroad cooridors for future transportation use via interim use as a rail trail. While these inactive rail corridors once converted to a trail provide opportunities including recreation, transportation, economic development and physical fitness for communities the process for achieving consensus regarding conversion to a trail can be very controversial. Long-term maintenance and oversight of state owned rail trails is also an ongoing concern – as the trails often pass through many towns and jurisdictions. VTrans should continue to foster partnerships with local, regional and statewide groups, organizations and other state agency's to develop, fund, oversee and manage rail trail projects.

Relationship to VT State Standards

The "Vermont State Standards for the Design of Roadways Construction, Reconstruction, and Rehabilitation on Freeways, Roads, and Streets" includes standards for roadway and shoulder width based on the functional classification of the roadways and vehicle volumes and speeds. The standards were developed with the needs of bicyclists and pedestrians in mind. VTrans is refining this work through the creation of a bicycle and

pedestrian facility and design manual that will assist local agencies address the access and safety needs of bicyclists and pedestrians.

Mode Choice

Since implementation of the Bicycle and Pedestrian Plan, interest and visibility of bicycle and pedestrian programs has increased significantly. The success of paths and trails has contributed to the increased visibility and public support of bicycling and walking as viable forms of transportation. Vermont should maintain its commitment to all bicycle and pedestrian facilities and to institutionalizing bicycle and pedestrian needs on all transportation projects. This will help promote bicycling and walking as non-polluting healthy alternative to single occupancy vehicles. VTrans has not yet had an opportunity to determine its impact on commuter choices, however, it is hoped that the 2000 Census figures will show an increased percentage of Vermonters using low-impact transportation

4.3 Railroads

Historically, railroads were the vital transportation link connecting Vermont's towns and villages with the rest of the region. After many years of declining usage in the 1960s, the state of Vermont became the first state in the country to purchase railroads to protect and preserve them as vital transportation corridors. This early state action demonstrates Vermont's understanding of the social, economic, and environmental importance of rail service within Vermont. This commitment to rail continues today. Table 4.1 identifies important statistics pertaining to Vermont's railroads. Figure 4.3 depicts the location of Vermont's railroads.

Table 4.1 Vermont's Rail Program

Category	2000 (Estimate)	2001 (Projected)	2002 (Projected)
Passenger Ridership (The Vermonter)	85,000	85,000	85,000
Passenger Ridership (Ethan Allen Express)	39,500	41,250	43,500
Freight-Tonnage Hauled	2,650,000	2,800,000	2,940,000
State-Owned Track Improvements (% of system)	10%	10%	10%
Number and Percent of Rail/ Highway Crossings Rated >70	407 (61%)	414 (62%)	420 (62.1%)

Source: 2000 VTrans Annual Report

4.3.1 Facilities and Services

Passenger

Vermont has entered into a contractual relationship with Amtrak for two intercity passenger services: the Vermonter and the Ethan Allen Express. Initiatives to expand the scope of Vermont's rail passenger services into commuter rail operations have begun with inauguration of the Burlington – Charlotte "Champlain Valley Flyer." Additional initiatives now in the design stage include the Albany-Bennington-Rutland-Burlington (ABRB) rail project, which seeks to provide upgraded facilities to support competitive intercity rail passenger service. Another effort now underway is the possible use of the Essex Junction – Burlington rail corridor to accommodate commuter and intercity rail passenger services. The most recent study of future passenger rail service through Vermont is a feasibility study of High-Speed Rail (HSR) service between Boston and Montreal.

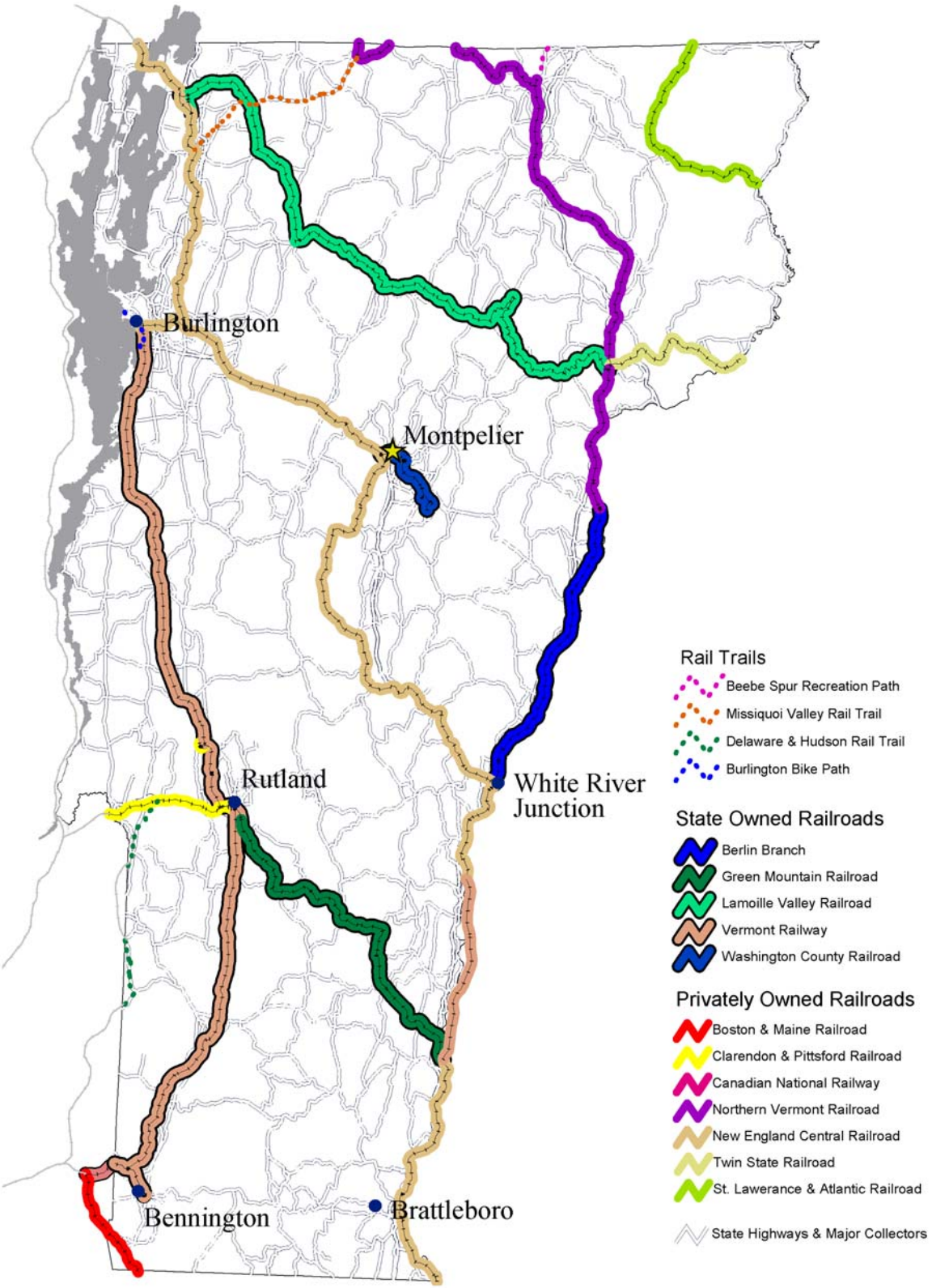


Figure 4.3 – Vermont's Rail Network

Freight

While passenger and freight services share operations on approximately 50 percent of the rail line mileage in the state, the remainder of the mileage is used exclusively for freight service. Freight lines thus provide the foundation upon which passenger services are operated, and in their own right are key links to the national transportation network. Rail is responsible for moving the second greatest amount of freight into and out of Vermont. Almost seven percent of Vermont's freight, by weight, is transported by rail. Rail is used for the movement of several key commodities. The four largest commodities transported by this mode (non-metallic minerals; clay, concrete, and glass; stone; and food and kindred products) account for 75 percent of the mode's total. Ten railroads currently are operating in Vermont, consisting of the following: Boston and Maine Corporation; Canadian National Railway; Clarendon & Pittsford Railroad Company; Green Mountain Railroad Corporation; Vermont Railway Inc.; Washington County Railroad; New England Central Railroad Company; Northern Vermont Railroad; Saint Lawrence and Atlantic Railroad Company; and Twin State Railroad Company. VTrans works with freight operators and shippers to improve the rail facilities. Engineering studies have been prepared to identify needed improvements to tracks, bridges, and system clearances to ensure that Vermont's rail lines are fully compatible with the ever increasing car weights and clearances required to access the nation's rail network. In so doing, Vermont is also working with other states to ensure that railroads provide shippers with choices to access a coordinated regional rail system.

4.3.2 Jurisdiction

The state of Vermont owns approximately 340 miles of the more than 700 miles of rail lines in Vermont. The state has a long tradition of investing in ownership and upgrading rail lines, dating back to the 1960s. The state-owned lines are operated under lease by private railroad operators, constituting a long-term partnership between the public and private sectors. The rest of the rail line miles are privately-owned and operated.

In recognition of importance of managing rail passenger services, Vermont has reactivated the Vermont Transportation Authority (VTA) to oversee the Champlain Valley Flyer service. VTA will play an increasing role in overseeing future service expansions and in coordinating various intermodal connections at passenger stations. These efforts also include the goal of working towards 100 percent Americans with Disability Act (ADA) accessibility at all passenger rail facilities.

VTrans also works in partnership with neighboring states to seek opportunities for new services. The recently designated Boston–Montreal high-speed rail corridor is a joint collaboration among Vermont, New Hampshire and Massachusetts. Vermont also works with other states at the federal level to develop programs and obtain funding for rail projects of regional benefit.

4.3.3 Recent Studies/Documents

In seeking ways to better utilize Vermont's rail assets, VTrans has undertaken recent studies to address the particular needs of passenger and freight rail services.

The Vermont Rail Policy Plan, completed in 1998, identified policies that VTrans should adopt to develop the State's rail facilities.

The Rail Capital Investment Plan, completed in 2001, contains strategies for prioritizing among rail capital investments.

4.3.4 Issues, Challenges, and Opportunities

Funding Track Improvements

Much of Vermont's railroad system is old and in some cases is in relatively poor condition. The state continues to work with its railroad partners to upgrade these facilities. While federal funding for new passenger facilities and programs is available, only limited opportunities exist for funding freight investments. TEA-21, the successor to ISTEA, has done little to address this acknowledged shortcoming. In recognition of this continuing need, VTrans established a Railroad Enhancement program that provides a joint "state-railroad-shipper" funding partnership for developing rail freight facilities.

Safety

Vermont has recognized that safety, notably with respect to grade crossings, is an important issue. VTrans has undertaken a multi-year program to inspect, evaluate, and prioritize grade crossings that are in need of repair and upgrading. VTrans uses the federal Rail Highway Crossing program to identify and improve rail crossing safety across the state. The funding formula for this program is 90 percent federal and 10 percent state funding.

Coordination

The Vermont Rail Council, created in 1992 by Governor Dean, continues to provide insight, experience, and advice for the development of rail services and projects. The Council has participated in the preparation of passenger service initiatives and has provided input into various planning, policy, and engineering studies addressing the overall concerns of Vermont's railroads.

Freight and Intermodal Connections

Intermodal transportation is considered an efficient method for moving freight because it maximizes the service strengths of each mode. While some intermodal service exists in Vermont today, there is a strong desire to expand its use to achieve a better modal balance and to moderate existing truck traffic on Vermont highways. The Vermont Statewide Freight Study included an assessment of the feasibility of enhancing rail/truck intermodal

services in Vermont. It identified specific issues associated with intermodal service, considered the benefits of improved intermodal service, and evaluated the role the state in promoting and implementing new and improved intermodal services. The study describes rail/truck intermodal service and its application to Vermont shippers and receivers, and presents recommendations for new and improved service opportunities. Intermodal has been defined to include a full range of rail/truck transfer operations, including transload, warehousing, and bulk transfer facilities, as well as the traditional trailers or containers moved on rail flatcars. This definition was developed to meet the needs of shippers and receivers in Vermont.

There are a number of facilities in Vermont that provide transload services from rail to truck and truck to rail. The facilities are principally related to the handling of bulk material. Significant commodities include lumber, fuel oil, gasoline, propane, steel products, marble ore, bricks, plastics, and chemicals. The types of facilities are generally classified by their functions: bulk transfers, transload, and warehousing. This type of service is offered and marketed by Vermont's railroads. Shippers and receivers contacted as part of the study identified a need for expanded and improved service of this type.

In 1997, the state of Vermont completed a study of railroad clearance restrictions for double-stacked trains. The report concluded that there are 30 obstructions within the state. The obstructions included 24 roadway bridges, two tunnels, and four thru-truss railroad bridges. To effectively expand movements of containerized cargo on Vermont rail lines, double-stacked clearance improvements must be made. The principal opportunity for double-stacked container movements is from the Vermont rail system connection to the Canadian rail lines. The main lines of both Canadian National and Canadian Pacific have double-stacked clearances connecting to the Midwest and the Canadian Ports on east and west coasts. The Vermont rail system connects to both of these carriers. The possible routes include the lines of New England Central, Clarendon and Pittsford with Green Mountain Railroad, and the Northern Vermont. Each of these potential routes converge in the Bellows Falls area, north of the Bellows Falls Tunnel, located on the New England Central line. Vermont currently is evaluating clearance improvement options for the Bellows Falls Tunnel.

4.4 Public Transportation

Public transportation is a key component of VTrans' long-term plan to enhance alternative methods of transportation. In 2000, Vermont was projected to top three million one-way public transportation trips for the first time since VTrans administered the program. VTrans' Policy and Planning Division manages state and federal funding programs for the operation and capital expenditures of Vermont's transit providers and social service agencies. The Agency also provides technical assistance to non-profit transit operators. In addition, the agency works statewide to provide rideshare and capital assistance programs for organizations providing transportation services to the elderly and persons with disabilities.

4.4.1 Facilities and Services

Intercity Bus

Vermont is connected to nearby major urban areas by Vermont Transit intercity bus service. However, the number of routes and frequency of service have diminished during the past several decades. VTrans has been exploring the possibility of re-introducing some of these discontinued routes.

Local Public Transportation Service Providers

Working at the community level, Vermont's Agency of Transportation provides funding for public transportation services throughout the state through a series of 14 local and regional service providers. Approximate service areas are depicted on Figure 4.4. A listing of the service providers and the communities they serve follows:

Advance Transit (AT)

Serving Lebanon NH, Hanover NH, White River Junction, VT, and surrounding towns, Advance transit is a bi-state regional transit system that operates six fixed-route services.

Addison County Transit Resources (ACTR)

Serving Addison County, ACTR is a public transit agency that provides both fixed-route and paratransit services. The service works closely with several local social service agency providers to collaborate for the good of the community, including home delivery of meals and Medicaid transportation.

Chittenden County Transit Authority (CCTA)

Serving five municipalities in Chittenden County, the CCTA provides fixed-route and paratransit service. The CCTA also provides transportation services for Medicaid recipients through the Department of Social Welfare.

Deerfield Valley Transportation Authority (DVTA)

Serving the Dover and Wilmington areas, DVTA is a relatively new agency formed in 1996. DVTA provides transportation in rural areas previously unserved by public transit.

Green Mountain Chapter – American Red Cross (GMCARC)

Serving Bennington County, the GMCARC provides transportation services to persons with disabilities, the elderly, and other persons with transportation disadvantages. These services include fixed-route, demand responsive, and ride match services.

Marble Valley Regional Transit District (MVRTD)

Serving Rutland County, MVRTD is the largest non-urban transit system in Vermont. MVRTD provides fixed-route, demand response and paratransit service. The agency also provides transportation service for local social service agencies.

Northwest Vermont Public Transit Network (NVPTN)

Serving Franklin and Grand Isle Counties, NVPTN provides fixed-route, demand responsive services, and Medicaid services within the district.

Rural Community Transportation, Inc. (RCT)

Serving the entire Northeast Kingdom and Lamoille County, RCT serves a diverse client base through a transportation brokerage system.

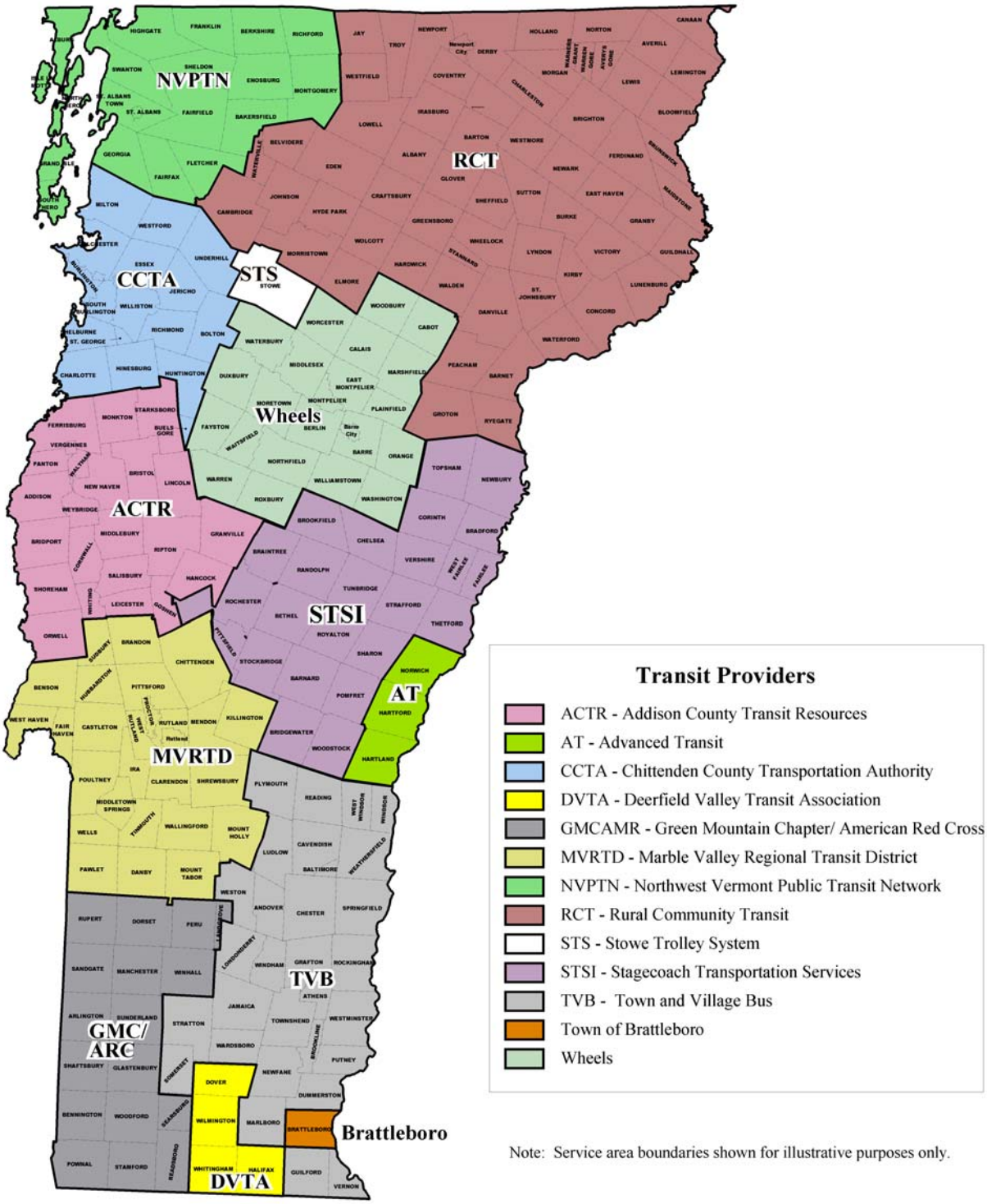
Special Services Transportation Agency (SSTA)

Serving Colchester and Chittenden County, SSTA provides fixed-route and paratransit transportation to its service area. SSTA is also the provider of CCTA's paratransit service.

Stagecoach Transportation Services, Inc. (STSI)

Serving Orange and Northern Windsor Counties, STSI provides local transportation services, as well as monthly regional services.

Figure 4.4 – Vermont's Public Transportation Providers



Stowe Trolley System (STS)

Serving the Town of Stowe, STS operates a municipal transit system, including a trolley route, as well as a number of shuttle routes. The town also operates special event and visitor shuttles to serve seasonal demand.

Town & Village Bus (TVB)

Serving Springfield, Bellows Falls, Chester, Ludlow, Windsor, Brattleboro, and Stratton Mountain TVB operates deviated fixed-route services, seasonal employment shuttles, and social service agency transportation programs.

Town of Brattleboro

Brattleboro provides a single fixed-route public transportation service supplemented by Medicaid and Rideshare programs. Town and Village Bus is contracted to provide the service.

Wheels Transportation Services, Inc. (Wheels)

Serving Washington and Orange Counties, Wheels is a non-profit community brokerage providing a wide array of transportation services, including fixed-route, paratransit, and demand responsive services. Wheels also provides commuter rideshare services, transportation services for social service agencies, route deviation, subscription and seasonal transportation.

4.4.2 Recent Studies/Documents

1995 Short-Range Transit Plans

In the mid 1990s, each of the transit system providers prepared a short-range (five years) plan. The plans developed service goals and objectives, developed a service description, evaluated performance, evaluated service demand and coverage, and made service improvement recommendations. The plans also included a capital and financial component. Public information meetings were held and riders and pedestrians were interviewed. The plans provided the transit providers with a resource and a program to improve their systems. These plans are being updated during 2001 and 2002.

Intercity Bus Study

In 1998, VTrans completed the *Vermont Statewide Intercity Bus Study*, which included recommendations on a number of ways to improve intercity bus service in Vermont, including better coordination among intercity bus services, local transit providers, and passenger rail.

Public Transportation Policy Plan

In January 2000, the state of Vermont adopted a Public Transportation Policy Plan to guide transit services under a comprehensive yet flexible plan. The Policy Plan is intended to provide comprehensive and continuous guidance in the state's development of its public transportation program. After completion of the Policy Plan, the Vermont Legislature developed priorities for public transportation based on the recommendations of the plan. The Legislature also established the Public Transportation Advisory Committee (PTAC), a body charged with developing ongoing recommendations for improving public transportation in Vermont. Lastly, the Legislature directed the PTAC to develop a funding formula for public transportation in Vermont. While the policy does not establish benchmarks for the state's public transportation system nor does it develop project implementation procedures, it does establish a vision of public transportation for Vermont. The results of this vision will guide the state in its development of an equitable, multimodal, statewide public transportation system.

4.4.3 Issues, Challenges, and Opportunities

Transit Dependent and Choice Riders

Vermont's 1995 Long-Range Transportation Plan presented public transit under the heading of Transportation for the Disadvantaged. This plan update recognizes that while public transit will continue to serve the needs of the transit-dependent, it should also strive to provide a transportation alternative to automobile use. The provision of a different mode choice necessitates the development of intermodal connections for passenger rail, airline, and intercity bus passengers. While public transit systems in Vermont will continue to meet the needs of the transit dependent, they should also be configured to take advantage of opportunities to capture the discretionary traveler market.

Access to Jobs

The U.S. Congress established the Access to Jobs and Reverse Commute Grant program in 1998 as Section 3037 of the Transportation Equity Act for the 21st Century (TEA-21). The purpose of this program is to help former Welfare recipients and other low-income workers remove the barrier of transportation in their attempts to find employment, as well as to provide access to suburban job locations previously inaccessible by public transportation. Sponsored by the Federal Transit Administration, Vermont has received funding every year since the program's inception. The funding is intended to provide transportation linkages between low-income persons and employment opportunities.

Coordination with Human Service Agencies

Many potential users of public transportation systems are client groups of Human Service Agencies. Title 49 U.S.C. Section 5310 authorizes U.S. DOT, through VTrans, to make grants to private nonprofit corporations and associations to provide transportation services. These services meet the special needs of elderly persons and persons with disabilities for whom mass transportation services are unavailable, insufficient, or inappro

priate. State law (24 VSA, Chapter 126) directs Human Service Agencies to purchase client transportation through public transit systems when these transit services are appropriate and cost-efficient. The 5310 program is a resource that facilitates this process.

The 5310 program puts a strong emphasis on regional coordination of these services, in order to assure a more equitable distribution of services, to respond better to regional characteristics, and to allow for increased stakeholder input. This regional interagency coordination should thus result in operations that are more efficient.

Public Transportation in a Rural State Setting

Providing service in rural settings is a challenge for public transportation providers. Densities of origins or destinations may not be high enough to support fixed-route service or service at viable frequencies. For this reason, rural agencies must explore creative programs that provide service to individual users' needs. These programs may include demand response or route deviation services.

Paratransit Service Limitations

The Americans with Disabilities Act requires communities with fixed-route transit service operated by public bodies to provide complementary paratransit service within a band of three-fourths of a mile on either side of all non-commuter fixed routes. Provision of this service, particularly in rural communities can be difficult as trips may be very costly due to long trip times, and potential passengers may not have trip origins and destinations within the agency's operating district.

Financial Commitment

The Agency of Transportation must address long-term financing strategies for public transportation operators. As Vermont's transportation needs continue to grow, the operators must address the provision of new transportation services. To meet these needs, VTrans should provide financial guidance for multiple-year funding commitments as opposed to the current annual funding cycle. The agency should also have contingency plans to support projects upon termination of funding sources such as the Congestion Mitigation and Air Quality (CMAQ) or Access to Jobs funding.

State and Local Administrative Partnership

VTrans staff and local agencies should work in partnership to improve communications and increase understanding of transit operations at the community level.

4.5 Aviation

4.5.1 Facilities and Services

Figure 4.5 shows Vermont's 17 public use airports. Two of these airports (Burlington and Rutland) have scheduled passenger airline service and the remaining 15 are general aviation airports. Of the 17 airports, municipalities own two, five are privately-owned, and 10 are owned by the state of Vermont. Vermont's state-owned airports create economic and quality of life benefits and provide a choice for longer distance travel and shipment of goods. The 10 state-owned airports have runway lengths between 2,500 and 5,498 feet and most are operated with non-precision navigational aid. Two of the airports have no navigational aid. The 1999-based aircraft figures range from one (John H. Boylan State Airport) to 65 (Franklin County State Airport). All of the state-owned airports provide on-site jobs and have various forms of on-site tenants and other amenities such as hangars, tie-downs, terminal buildings, and parking. Some airports are also used for air shows. Several of the airports also serve the Vermont State Police and the National Guard. Airports and the Civil Air Patrol also provide essential services and facilities for search and rescue activities. Some of Vermont's airports also have freight and parcel services (UPS, FedEx, Air Now, etc.) and many accommodate charter and corporate services that utilize Vermont's airports. In addition, almost all provide on site airplane maintenance services.

The Burlington International Airport (BIA) has and will continue to be the major source of scheduled commercial airline service in the state. In order to enhance competitiveness BIA has added low-cost passenger service via Jet Blue and other carriers.

Many residents also travel to other major airports (Albany, Hartford, Boston, and Manchester) for their air passenger service needs. These other airports are used because they provide Vermonters with shorter driving distance, cheaper fares, or schedules that are more convenient.

Safety Concerns

In light of the terrorist events of September 11, 2001, VTrans is taking a hard look at safety and security for air travelers, air freight, and air facilities. As this is written, many things are still in a state of flux and details are yet to emerge. The Federal Aviation Administration (FAA) has issued emergency amendments to their regulations, many of which may become permanent.

Capital construction projects may be needed as well as increased attention to operations. A significant portion of the parking facilities at BIA are within 300 feet of the terminal building. Fencing and other security measures may be needed at the general aviation airports. A coherent understanding of the needed enhanced safety and security concerns is likely to emerge during 2002.

Figure 4.5 Vermont's Public Use Airports

Table 4.2 summarizes the based aircraft and estimated operations at the 10 state-owned airports.

Table 4.2 Characteristics of State-Owned Airports

Airport	Runway Length (Feet)	Based Aircraft	Estimated Operations (Annual)
Middlebury	2,500	48	35,500
Knapp	5,001	50	32,500
Rutland	5,000	43	30,000
Morse	3,700	42	27,500
Franklin County	3,000	65	25,300
Hartness	5,498	30	9,800
Morrisville - Stowe	3,700	25	18,800
Newport	4,000	16	6,500
Caledonia County	3,000	19	2,050
Boylan	2,650	1	200
Hartness	5,498	30	9,800

Source: Vermont's Airport System Policy Plan, 1998.

4.5.2 Jurisdiction

The way in which Vermont has chosen to develop and support its airport system is unique. Its major airport (Burlington) is owned by the city and five of its public use airports are privately-owned. As mentioned previously, 10 airports in Vermont are owned by the state and administered by VTrans.

VTrans' Aviation Program is now located in the Maintenance and Aviation Division. This has improved the efficiency and effectiveness of the management and maintenance of state airport facilities. The Aviation Program's goals include preserving and strengthening the state's aviation infrastructure, providing a safe aviation environment for users of the system, promoting aviation-related activities and providing for expanded travel opportunities and goods movement.

4.5.3 Recent Studies/Documents

Over the past few years two key documents have been developed for Vermont's state-owned airports by VTrans: Airport System Policy Plan and Airport Capital Facility Program. The policy plan addresses the 10 state airports, plus Burlington International Airport. The Airport System Policy Plan objectives included:

- Identify and assess existing state aviation funding policies and procedures;
- Provide overall direction for public investment in airports;
- Investigate the underlying policy assumptions; and
- Identify steps to move toward a more intentional and targeted approach to improving air facilities.

The Airport System Policy Plan identified and analyzed a great many airport issues and subjects. Three important recommendations were:

- Vermont needs to develop an overall systematic approach to determine what investments the airports need, and how the state can plan for and provide for those needs.
- VTrans needs more funds for aviation to reduce the amount of deferred maintenance, meet FAA minimum standards, and make improvements to non-FAA eligible facilities.
- Create a Vermont State Aviation Council to recommend policy for VTrans.

A significant amount of the recommendations from the Airport System Policy Plan have been implemented. The Aviation Council is now active and serves as a forum for aviation-related issues, as well as assisting VTrans in developing aviation policy. An accounting system for aviation activities has now been established to accurately track airport costs and expenditures. A State Airport Classification system has been adopted. Using these accomplishments, the Airport Capital Facility Program has been successfully developed and implemented to annually identify, and prioritize capital projects at publicly-owned airports in the five- and 20-year timeframes. This provides for wiser use of limited resources over time.

In past years, the state had been doing the minimum to keep the airports operating and open. This resulted in a decline in the facilities condition and a project approach of fix the worst first. VTrans must also meet minimum standards set by the Federal Aviation Administration that tailors the capital investments. In 2000, VTrans adopted the Airport Capital Facility Program that provides a prioritization model for projects. This program will be a vital tool for the Agency and the Legislature in identifying and funding aviation projects.

Another goal is to have all of the state airports update their Airport Master Plan or Layout Plan every 10 years. This assists in project identification and provides input into the Capital Facilities Program. It is anticipated that this will be complete in 2001.

4.5.4 Issues, Challenges, and Opportunities

Like the other modes, there are many issues and challenges in keeping the airport system safe and efficient. Issues and challenges that face VTrans include:

- **Increased Attention to Air Safety and Security –** The terrorist events of September 11, 2001 have changed the way that air safety and security will be implemented in the United States. Vermont will participate as appropriate in federal and state programs designed to increase air safety and security in response to the new level of terrorist threat.
- **Compliance With Current FAA Standards –** VTrans must maintain the state-owned airports to comply with current FAA safety standards. Many FAA-funded capital improvements are directed by FAA priorities. The majority of FAA funds go toward these 90 percent federal share capital projects.

- **Ownership –** The State of Vermont presently owns 10 airports. In the future, it may be prudent to explore options with respect to privatization. Public versus private ownership of airports is a complicated issue and needs to be handled with great depth and sensitivity. Topics such as liability, the 20-year maintenance assurances that come with any federal capital grant, and funding are issues that do not lend themselves well to private ownership.

- **Economic Development –** One of the conclusions of the airport policy plan states "Any state or region which desires to maintain its economic competitiveness must recognize, and deal with, this growing dependence on Aviation" and "From a state policy and decision-making perspective, the economic roles performed by the airports may be as important as their transportation roles." Airports are an opportunity for economic development and should be promoted at the local and state levels.

- **Air Passenger Service Should Be Competitive With Adjacent Major Airports –** To capture the Vermont-based passenger aviation market the BIA must be attractive and competitive with adjacent major airports. While travelers from some parts of the state will naturally continue to use other airports due to their proximity, actions should continue to be taken to keep BIA as an appealing choice. Examples of such actions include some recent accomplishments: establishment of regional jet service, with national connections, to New York City and Washington, DC, a cooperative marketing relationship with Albany International Airport. and developing one with the other New England regional airports and the establishment of the Vermont State Airports web site (www.vermontairports.com).

- **Ground Transportation to Adjacent Major Airports –** People who cannot drive (or choose not to drive) to regional airports would have the option of using these airports if better public transportation were available to connect with these facilities. This is an issue of some concern in the southern part of the State.

- **Provide Air Cargo Services –** The need for reliable and efficient air freight services was mentioned repeatedly through the public involvement process of the Airport System

Policy Plan. Nationally, overnight express mail use is increasing and Vermont's airports will continue to play an important role in supporting this activity.

- **Need to Adapt to Market Changes and Demand –** Aviation use is on the increase nationally. Recently the FAA stated that airways are becoming congested and that the airway system is operating at or near capacity. VTrans needs to ensure that its airports can compete on the national market in the future. The New England State's Regional System Planning initiative that includes the six states, Massport and the FAA is an example of a creative adaptation to address the congestion at Boston's Logan Airport.

- **Coordination With Other Organizations and Agencies –** VTrans should continue to coordinate with state and regional Tourism and Economic Development agencies, BIA, regional and local planners and towns, as well as other New England states (above) to promote the airports in Vermont. Continued involvement in national organizations, such as NASAO, AOPA, etc. as well as our congressional delegation helps provide Vermont with a greater voice at the national/FAA level.
- **Passage of AIR-21 –** This federal reauthorization of the FAA and accompanying state apportionment is providing the highest level of airport funding ever. This 90 percent federal funding, for the first time, provides entitlements for general aviation airports. This windfall for Vermont will provide for greater levels of annual capital improvements but at the same time restricts VTrans' flexibility in where it can use those funds.
- **The Aviation Insurance "Crisis" –** This issue revolves around the trend of commercial aviation insurance carriers discontinuing and/or dramatically increasing the cost of aviation insurance. Coverage, if it can be obtained, is often more limited in scope. This problem has affected operators at most state-owned airports as well as around the country. Flight schools, FBOs and charter operators are finding it difficult and far more expensive to purchase hull, liability, and premises insurance. Meanwhile, small-business operators nationally and here in Vermont are either going out of business or raising prices to absorb their dramatic rate increases. Some creative solutions are being worked on by VTrans with the assistance of the Aviation Council. This is a major issue for Vermont and its state-owned airports, and should continue to be explored in the future.

4.6 Ferry

Another transportation mode that is part of Vermont's multimodal tradition is ferry service across Lake Champlain. Before bridges and improved roadways provided other options, ferry service across the lake provided the fastest connection west to New York State. Although the ferry operations are private businesses, they provide a service that connects to the roadway system, and reduces driver time, as well as the number of vehicles traveling on Vermont's roads.

4.6.1 Facilities and Services

There are two private ferry operators on Lake Champlain. The Ticonderoga Ferry provides service between Fort Ticonderoga, New York and Larrabee's Point in Shoreham Vermont. The ferry connects New York and Vermont Routes 73 and 74. The service is the oldest ferry operating on Lake Champlain, in continuous organized service since 1799.

The Lake Champlain Transportation Company provides three ferry crossings of Lake Champlain. The farthest north, the "Interstate Connection" connects Grand Isle, Vermont and Plattsburgh, New York. The "Scenic Line" provides service between Burlington, Vermont and Port Kent, New York. The "Southern Crossing" connects Charlotte, Vermont and Essex, New York.

4.6.2 Jurisdiction

Since these ferries are private corporations, they are not under jurisdiction of VTrans. However, given the status of Lake Champlain as a federal waterway, all employees and equipment used for the services are periodically inspected and qualified by the United States Coast Guard (USCG). The USCG has the authority to suspend services if proper safety practices are not being followed.

4.6.3 Issues, Challenges, and Opportunities

Public Role

While the ferries have been successfully operated for many years as private businesses, the state should consider what role it could serve if the businesses ceased operations. The ferries provide short and direct connections between Vermont and New York State. Without their operations, additional vehicular travel would be placed on the highway network of northwestern Vermont. Other states successfully provide water ferry services as part of their transportation departments or public transportation authorities. If there is

a future need for this type of state-sponsored service in Vermont, VTrans should consider what role it could serve.

Highway Connections/Intermodalism

With the continued operation of the ferries, the connections to the ferry system remain vital intermodal linkages. VTrans should continue to support highway and other transportation improvements in Vermont that facilitate coordinated transportation service with the existing ferries.

5.0 General Transportation Issues

5.1 Tourism

Accommodating all of the annual visitors to Vermont poses both challenges and opportunities to the state. Given the significance of tourism to the state's economy, it is important to efficiently provide transportation services and information to Vermont's visitors.

Vermont is a recurring destination for many visitors because of the state's high quality of life, rural setting, serene natural environment, and quaint walkable town and village centers. Future transportation improvements targeted for visitors and the tourism industry should focus on maintaining the qualities that draw people to the state.

Of specific interest to the transportation community is providing good facilities and a good experience to the many visitors who tour Vermont by bicycle.

5.2 Economic Development/Transportation Connection

5.2.1 The Increasing Importance of Trade

As both population and economic growth are occurring throughout the state, Vermonters must carefully evaluate their transportation investment decisions to ensure they uphold the quality of life that Vermonters desire while simultaneously capitalizing on future growth and economic opportunities. Economic growth, especially when it includes rising per capita incomes, is a positive trend for a region, but it also places more demand and stress on existing highways, airports, and rail lines. Investments to maintain and enhance Vermont's transportation infrastructure require significant revenue. While the economy has grown, causing an increase in available revenue, the growth of state funds dedicated to transportation has not grown proportionately. It is imperative that during periods of economic prosperity, the state capitalizes on increased revenue streams by investing in Vermont's infrastructure. This form of expenditure will enhance Vermont's competitiveness in the regional economy.

As increased trade and globalization occur, Vermont must be ready to capitalize on its location advantages. Technological advances and the expansion of free trade agreements, such as NAFTA, will allow Vermont to profit from its unique geographic location. Efficient transportation, particularly freight transportation, will be vital to maintaining Vermont's competitive advantage. Additionally, the designation of Vermont as a high-speed rail corridor state further increases its attractiveness.

5.2.2 Evolution of Production and Logistics

Changes in industrial structure and the organization of production are having impacts on the patterns and requirements for Vermont's freight transportation industry. Manufacturing is becoming "leaner" and more flexible. Recent national trends include smaller technology-based production processes, just-in-time delivery systems, specialized and differentiated products, and a reduction in product cycle time. These technological production advances have shifted the nature of commercial transportation from a system based on the support of mass manufacturing and mass retail to a system in which production is based on consumer demand, tracked in real time through information technology. Outsourcing is also becoming more common and improvements in communications technology is allowing the decentralization of manufacturing, with activities taking place at different sites, often closer to consumer markets or sources of cheap labor.

Just-in-time production requires more frequent shipments, increasing the number of vehicle movements. Decentralization of manufacturing processes also leads to an increase in the total number of freight movements required for production. As transportation is increased to take advantage of lower-cost labor supplies or production facilities, demand will increase for truck and air freight to transport lower weight, higher value goods. Truck and rail transport services will increase as demand rises for heavier goods. All of these issues are important to distribution of goods throughout Vermont in the 21st century economy.

Another trend in transportation is the influence of e-commerce. E-commerce will accelerate the ability to tailor manufacturing and retailing to the needs of individual businesses and consumers. In the consumer market, unconsolidated residential truck deliveries will be substituted for consolidated deliveries to stores. As businesses find it easier to develop long-distance relationships, local distributors may become regional and regional distributors may become international.

5.2.3 Regional Growth Differences and Rural Development

Vermont's economic growth has not occurred evenly across the state. Larger communities have been growing faster than Vermont's more rural communities. Reaching these communities requires infrastructure. Many local areas will find improvements in public infrastructure and services necessary to compete. Communities that have reliable access to multimodal transportation facilities will have a competitive advantage over those that do not. Growth opportunities in rural communities may include further development of tourism and increased value added activities for the area's agricultural production such as the construction of food processing facilities. Both of these industries require investment in transportation infrastructure.

5.2.4 Vermont's Transportation Investments

Transportation is the key to any state's economic advantage. Vermont is no exception. Vermonters must evaluate and prioritize their infrastructure needs to create the best

transportation network possible to meet their economic and quality of life goals. Several factors are key to this, including the following:

- Continued maintenance and upgrade of Vermont's existing transportation infrastructure;
- Support Vermont's rail network, including strategic upgrades of facilities and support of the high-speed rail corridor designation; and
- Development, where advantageous, of transportation infrastructure improvements.

5.3 The Natural and Built Environment

As shown by the public survey, in Vermont the public has indicated a strong desire for transportation projects to respond to the natural, scenic, and cultural landscape (see Figure 3.4). Only safety ranked higher in priority.

5.3.1 Context-Sensitive Design

To respond to the natural and built environment, transportation projects should be designed in awareness of the context of their surroundings. VTrans is committed to the principles of context sensitive design (from the 1998 workshop, *Thinking Beyond the Pavement: A National Workshop on Integrating Highway Development With Communities and the Environment)*.

- The project satisfies the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops.
- The project is a safe facility for both the user and the community.
- The project is in harmony with the community, and it preserves environmental, scenic, aesthetic, historic, and natural resource values of the area, i.e., exhibits context sensitive design.
- The project exceeds the expectations of both designers and stakeholders and achieves a level of excellence in people's minds.
- The project involves efficient and effective use of the resources (time, budget, community) of all involved parties.
- The project is designed and built with minimal disruption to the community.

- The project is seen as having added lasting value to the community.

Further, to achieve context sensitive design, an inclusive process is necessary. The desirable characteristics of an inclusive design process are:

- Communication with all stakeholders is open, honest, early, and continuous.

- A multidisciplinary team is established early, with disciplines based on the needs of the specific project, and with the inclusion of the public.

- A full range of stakeholders is involved with transportation officials in the scoping phase. The purposes of the project are clearly defined, and consensus on the scope is forged before proceeding.

- The highway development process is tailored to meet the circumstances. This process should examine multiple alternatives that will result in a consensus of approach methods.

- A commitment to the process from top agency officials and local leaders is secured.

- The public involvement process, which includes informal meetings, is tailored to the project.

- The landscape, the community, and valued resources are understood before engineering design is started.

- A full range of tools for communication about project alternatives is used (e.g., visualization).

The Vermont Project Development Process (see Section 5.5, below) has been developed with these principles in mind.

5.3.2 Air Quality

Despite increases in population and vehicle miles traveled, the quality of air in Vermont has improved significantly in the past few decades. Vermont is in attainment status for U.S. Environmental Protection Agency (EPA) standards. Since the passing of the Federal Clean Air Act in 1970 and with it the formation of the U.S. EPA, regulations have been developed to protect our health and quality of life. Also in 1970, Vermont instituted its Air Pollution Control Program to protect Vermont's environment. These events represented the first significant attempts to measure the air quality and to control air pollution sources on a state or national level.

Since these regulations have been established, the most egregious pollutant sources have been reduced significantly. Mandatory regulation on stationary sources and the elimination of lead from gasoline have dramatically reduced airborne lead levels. Vermont's air lead levels have declined by more than 90 percent from the 1970s, and are currently well below federal air standards. Technological improvements in combustion efficiency at stationary sources and reductions in federal automotive emission standards have reduced carbon monoxide (CO) levels in Vermont by more than 50 percent during this same time period.

Vermont's sulfur dioxide (SO_2) levels have also been reduced due to reformulation of fuels and more efficient emission controls. While the amount of SO_2 generated in the state of Vermont is well below federal standards, sulfur emissions from neighboring states transported by wind currents continue to threaten Vermont's quality of life. Acid rain has affected sensitive ecosystems in high-elevation lakes and streams, and sulfate (SO_4) dominated haze or smog can occur as a result of atmospheric transport of emissions from upwind sources to Vermont, where the mountainous terrain enhances rainfall.

Because of Vermont's small size, low population, and relatively small industrial base, it has the lowest overall emissions of any state in the nation. However, from a per-capita basis, the state ranks only about average, emitting slightly more than 1,200 pounds of volatile organic compounds (VOC), nitrogen oxides (NOx), and carbon monoxide (CO) per person in 1992, a rate higher than many of our neighboring states. As large industrial sources are controlled, our emissions are less heavily influenced by large industries, and increasingly the direct result of personal fuel consumption. Activities such as heating our homes and driving our cars ultimately affect the quality of our air. Since 1970, automotive traffic in Vermont has more than doubled accounting for about 60 percent of statewide emissions of VOCs and CO and nearly 80 percent of NOx emissions. It is only through technological improvement and regulation that Vermont's air quality has improved.

While levels of many air pollutants in Vermont have declined, concentrations of ground level ozone have remained virtually unchanged since the 1970s. Formed from reactions of NOx and VOCs in the presence of sunlight, ground level ozone poses a threat to human health and the environment, including damage to sensitive trees like white ash and black cherry. While automotive emission standards have produced substantial reductions in the VOC and NOx emissions per mile traveled, increased vehicle use has offset these gains. As a result, total motor vehicle emissions of VOCs have declined only slightly over the past two decades and, in the case of NOx, total emissions have actually slightly increased. If current growth rates of vehicle traffic continue, statewide emissions of both NOx and VOCs may start to increase over the next few years despite further improvements in automotive emission standards for new cars.

Federal, state, and local regulatory programs can make important contributions in improving the quality of Vermont's air through increased regulation, advancement, and support of technology and through incentive programs. Vermont continues to make improvements in this area most significantly with its newly inaugurated vehicle inspection and maintenance program. To become sustainable in the foreseeable future, however, Vermont must reduce its dependence on single passenger, gasoline-powered vehicles. Some initial steps Vermont can adopt to improve air quality include:

- Require mandatory installation of (Stage II) vapor recovery systems at gas stations;
- Support the use of alternative fuels through vehicle purchase incentive programs and the development of fueling facilities;
- Invest in ride-sharing and improved mass transit systems to reduce vehicle miles traveled in single occupancy vehicles;
- Continue to support the planning, design, and construction of pedestrian and bicycle facilities to encourage walking and bicycling for short trips; and
- Implement development regulations to produce smart growth and reduce sprawl.

5.3.3 Advanced Vehicle Technology

Recent advances in vehicle technology have resulted in the opportunity for an increased use of alternative fuel vehicles (AFV) in Vermont. VTrans has supported these developments by acquiring four new hybrid-electric passenger vehicles for use as fleet vehicles. The four Toyota Prius vehicles were the first of their kind purchased in Vermont, and are used as regular VTrans fleet vehicles. The cars will be evaluated for continued use within VTrans.

AFVs have potential applications beyond fleet vehicle use in Vermont. AFVs may also influence future public transportation services in Vermont. Various new bus propulsion systems include electric power, compressed natural gas (CNG), diesel-electric hybrids, and new cleaner burning diesel engines.

In addition to more efficient use of fossil fuels, VTrans is actively interested in alternative fuel vehicles. VTrans is a major partner in the Vermont Clean Vehicles Coalition, the state's public-private partnership for alternative fuel vehicles; and E-Vermont, a long-standing non-profit entity which has conducted significant research and promotion activies for electric vehicles.

5.3.4 Act 250

Since 1970, Act 250 has been Vermont's primary legislation on environmental protection. The goals of Act 250 are to protect the environment through balanced development that is compatible with state, regional, and local issues. The Act provides a forum for Vermont's communities to express their views on projects affecting, or potentially affecting their environment.

As stated in the initial legislation, Act 250 was necessary "to regulate and control the utilization and usages of lands and the environment to insure that, hereafter, the only usages which will be permitted are not unduly detrimental to the environment, will promote the general welfare through orderly growth and development and are suitable to the demands and needs of the people of this state...." The legislation requires that construction projects, including the development of transportation infrastructure, must obtain a land use permit.

Act 250 initially called for the development of a state land use plan. This plan was to be accompanied by a permitting system created by the Act. The state plan would provide a statewide goal, while the permitting system would allow local and regional impacts to be considered. While the Statewide plan was never adopted, state interests are incorporated into the review process through the participation of state agencies. Regional interests are represented, since developments must comply with regional plans. It is local municipalities, however, that have the greatest authority in local land use decisions.

To receive a permit, projects are required to satisfy ten criteria. Criteria 1 (water and air pollution), 5 (unreasonable traffic congestion), and 7 (unreasonable burden on other municipal services) are key components in the evaluation of transportation projects.

5.3.5 Wildlife Crossings and Fish Passages

Transportation facilities have impacts on wildlife through roadkills, habitat loss, habitat fragmentation, and disruption of the surrounding environment. VTrans has taken some notable steps to reduce and avoid these impacts on certain transportation projects. VTrans will continue to work with the Vermont Agency of Natural Resources and other partners to develop specific policies and guidelines for effectively addressing wildlife crossings in transportation decisions and projects.

There are thousands of culverts throughout the State that provide necessary drainage for roadways, railways, and other transportation facilities. However, certain transportation culverts also pass natural streams. These culverts are often invisible to the traveling public, as are the significant impacts they have on stream ecosystems and fish habitat. If these culverts are not designed for fish passage they can be insurmountable barriers to fish and other aquatic organisms and terrestrial wildlife that follow stream corridors. The most effective way to ensure fish passage through culverts and restore the surrounding stream ecosystems is to create natural stream beds through the culverts. VTrans will continue to work with the Vermont Agency of Natural Resources and other partners to develop specific policies and guidelines for effectively addressing fish passages and stream restoration in transportation decisions.

5.3.6 Stormwater Management

Stormwater management in Vermont is being enhanced under the requirements of the Phase 2 Rule of the federal Clean Water Act, and also the State of Vermont Act 114, "An Act Relating to Preventing Watercourses from Flooding."

Clean Water Act Phase 2 Rule

Since the passage of the Clean Water Act, the quality of our Nation's waters has improved dramatically. However, despite this progress, degraded waterbodies still exist. In Vermont 126 surface waters, including rivers, streams, lakes, and ponds are listed as impaired on the Vermont Year 2000 List of Waters. This represents approximately 33% of

Vermont's rivers and streams and approximately 10% of Vermont's lakes and ponds. The list of impaired waters is compiled under the requirement of Section 303(d) of the Clean Water Act.

The Storm Water Phase 2 Final Rule is the next step in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted storm water runoff. The Phase 2 Final Rule, published in the Federal Register on December 8, 1999, requires National Pollutant Discharge Elimination System (NPDES) permit coverage for storm water discharges from designated sources. The requirements of the Phase 2 Rule are applicable to some of the activities and facilities of VTrans. VTrans will continue to work with the Vermont Agency of Natural Resources to develop a general permit that will assist VTrans to effectively comply with this rule.

Act 114 Stormwater Runoff

The 2000 Vermont General Assembly passed Act 114, which found that improving management of stormwater runoff is necessary to reduce stream channel instability, pollution, sedimentation, and local flooding, all of which have adverse impacts on the water and land resources of the state. As required under the Act, the Vermont Agency of Natural Resources is developing an enhanced stormwater management program. VTrans is involved in reviewing the technical and implementation recommendations for the program.

5.3.7 Vermont Watershed Initiative

As required by 10 V.S.A. § 1253(d), the Vermont Agency of Natural Resources is writing basin plans for the 17 designated watersheds in Vermont. The statute requires that this be a public process. VTrans has participated in the drafting of statewide Guidelines for Watershed Planning. VTrans has also committed staff to represent the Agency on the Watershed Councils in each of the watersheds to assist in the writing of the plans and the successful implementation.

5.3.8 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed into law on February 11, 1994. The purpose of this legislation was to focus federal oversight on the environmental and human health conditions of minority and low-income communities to achieve environmental protection for all people. The Order directed federal agencies to develop strategies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order also promotes nondiscrimination in federal programs substantially affecting human health and the environment and provides minority and low-income communities access to public information and an opportunity for public participation in matters relating to human health or the environment.

The goal of environmental justice is to ensure that all people, regardless of race, national origin or income, are protected from disproportionate impacts of environmental hazards. To be classified as an environmental justice community, residents must meet certain criteria regarding minority and/or low-income status. Environmental justice is a program for people facing environmental problems regarding issues of equity and fairness.

5.3.9 Small Towns, Villages, and Downtowns

A strong part of Vermont's appeal is the many small towns and villages with historic, walkable town centers with churches, shops, public spaces, restaurants and houses all in close proximity. Many of these towns are located at roadway crossings throughout the state. In the years since these towns were founded, their proximity to the roadway network has provided them with significant economic opportunities and convenience. However, as the number of vehicle miles traveled in Vermont continues to increase, and the size of trucks and amount of truck freight increases, the negative aspects of the towns' proximity to roadways have become more apparent. Traffic congestion disrupts the quality of life and small town feel. In larger communities with traditional downtown centers, many of the same issues arise.

For safety reasons (as well as quality-of-life considerations), it is essential for drivers to reduce speed in small town/village centers and historic downtowns. Traffic calming techniques can be used to accommodate through traffic at a pace and scale appropriate to these areas.

Transportation projects can include design features which enhance the functionality and quality of life for residents. Examples of such features include preservation or enhancement of on-street parking, new or redefined pedestrian walkways and crossings, pedestrian scale lighting, coordinated signage, preservation and enhancement of street tree plantings, and landscaping of adjacent public spaces and facilities. These types of design features are also essential for preserving the historic character of town/village centers and downtowns, and should be a routine part of transportation project design where appropriate.

The Vermont Downtown Program

In 1995 Governor Howard Dean announced a new initiative – the Vermont Downtown Program. Administered through Agency of Commerce and Community Development (ACCD), the program works to coordinate state programs and activities, using state projects to bring new private investment to downtown areas.

- **Downtowns** are defined as the traditional central business districts of communities, characterized by a cohesive core of multi-storied commercial buildings, often interspersed with civic, religious, and residential buildings and public spaces, arranged along a main street and intersecting side streets and served by public infrastructure, that have served as the center for socioeconomic interaction in the community.

- **Growth centers** are one or more areas of a community designated by the municipality in its municipal plan, adopted under the provisions of 24 VSA 4384-4387, and/or designated by the regional planning commission in its regional plan adopted under 24 VSA 4348, 4348a, 4348b, to accommodate a significant amount of the growth anticipated by the municipality over the coming 20 years, and which are distinct, centrally-oriented organizations of uses, densities, circulation, structures and other elements.

5.3.10 Historic Preservation Review Streamlining

Section 106 of the regulations implementing the National Historic Preservation Act (1966) require the Agency of Transportation to consider the effects of its federally–assisted projects on historic properties. Historic Properties are those buildings, sites, and districts that meet the published National Register criteria. Section 4(f) of the Department of Transportation Act regulations goes somewhat further. It states that the Federal Highway Administration may participate in a project that adversely affects a historic property only if there is no prudent and feasible alternative, and, that all possible measures must be taken to minimize harm to historic properties.

In addition to requiring systematic and rigorous review of agency undertakings, these laws, particularly Section 106, provide opportunities for streamlining review procedures through the development of programmatic agreements (PA). The VT statewide Section 106 PA executed in February 2001 and developed in partnership with the VT Division for Historic Preservation, FHWA, and the Federal Advisory Council, streamlines review by replacing the standard 3-step review process with one, in-house review for virtually all highway projects. The unprecedented delegation of authority is founded on the PA Manual of Standards and Guideline's guiding principles: early identification of historic resources; comprehensive public input in project development and; close interagency coordination.

5.3.11 Archaeological Resources

Federal and State laws and regulations have been in place now for more than 30 years to help in the protection and preservation of our important archaeological resources. VTrans reviews projects according to the standards within Section 106 of the National Historic Preservation Act and the Advisory Council's Regulations on Protection of Historic Properties (36 CFR 800).

GIS Database for Archaeology

VTrans and the State Historic Preservation Office (SHPO) are coordinating efforts by gathering information from survey files on all previously recorded archaeological sites in Vermont. This information will be converted into a GIS format for use in planning and reviewing projects for archaeological resources. Information in this format may allow for the development of a comprehensive inventory of archaeological site types and possible statewide and watershed-wide predictive models that will enhance the efficiency of archaeological resource review.

Public Education and Outreach for Archaeology

The Guidelines for Archaeological Studies (1989, revised 2001) incorporate the Secretary of the Interior Standards for conducting archaeological studies and emphasize the importance of interpreting project information findings to the public. The goal of public education is to provide information about significant sites within their context and to encourage others to consider the importance of these resources. The VTrans archaeology staff is working with SHPO and archaeological consultants to develop education and outreach programs that provide an understanding of resources in a variety of innovative formats both immediate and long-term. These efforts are being directed toward local communities, individuals and special interest groups where the project is taking place.

Historic Front Yard Archaeology Study

This study is being conducted to determine whether or not the potential exists for locating significant archaeological sites within a variety of historic front yard contexts. This information will help to determine the degree of archaeological study necessary in historic front yard areas that will be impacted by agency projects and thus further streamline the review process.

VT Archaeology Guidelines Revision

SHPO, in consultation with VTrans, is working to develop revised guidelines that are clear and concise for both the professional consultant and those in project planning. Creative design proposals are encouraged that are appropriate to the scope of the project and the type of expected resource. The goal is to make the process more efficient especially in those situations where no archaeological sites are encountered within a project area after study. The required product in this situation will be an augmented end of field letter without further need for a full report.

5.4 "Smart Growth" – Transportation and Land Use

While the term "smart growth" is relatively new, the basic concept of good land use planning is not new to Vermont, nor is the recognition of the linkage between transportation investment and land use.

For the purpose of statewide policy, "smart growth" has been defined by two state agencies, the Agency of Commerce and Community Development (ACCD) and the Agency of Natural Resources (ANR). Their working definition of Smart Growth in Vermont is as follows: "Smart Growth is community development that recognizes the link between the quality of life and development patterns and practices. Smart Growth aims

to achieve a balance among economic growth, community livability, and environmental protection".

Vermont does not have a single entity called the "smart growth" program. However, a number of strategies and policies have been identified by ACCD that cumulatively promote "smart growth" in a coherent fashion. These include:

- Act 250 (1970) - Criteria 9(A) impact of Growth; 9(H) Costs of Scattered Development; 9(K) Development Affecting Public Investments; 9(L) Rural Growth Areas; and Criterion 10 Conformance with Duly Adopted Local or Regional Plan
- Land Gains Tax (1973, 1987) - taxes profits on short-term speculation in land
- Housing Conservation Trust Fund (1987) – direct investment of state funds in land preservation (farms, natural areas) and affordable housing
- Act 200 (1988) – created local, regional, and state land use planning goals, including maintaining the historic settlement pattern of compact village and urban centers separated by rural countryside
- Growth Centers Pilot Project (1993-1995) – affected several state policies, including targeting HUD funds to downtowns
- Vermont Downtown Program (1997) – public/private partnership resulting in downtown development incentive legislation in 1998
- Interstate Interchange Policy (1999) – encourages appropriate development activities at interstate interchanges
- Interstate Interchange Executive Order (2001) – mandates interagency cooperation to implement the interstate interchange policy

As noted in section 5.3.4, above, local municipalities have the greatest say in land use decisions. However, via the development of transportation improvements and new projects, VTrans indirectly influences land development patterns in the state. VTrans supports the applicable "smart growth" strategies and policies listed above, and as appropriate, will coordinate with other state agencies to implement them.

5.5 Project Development Process

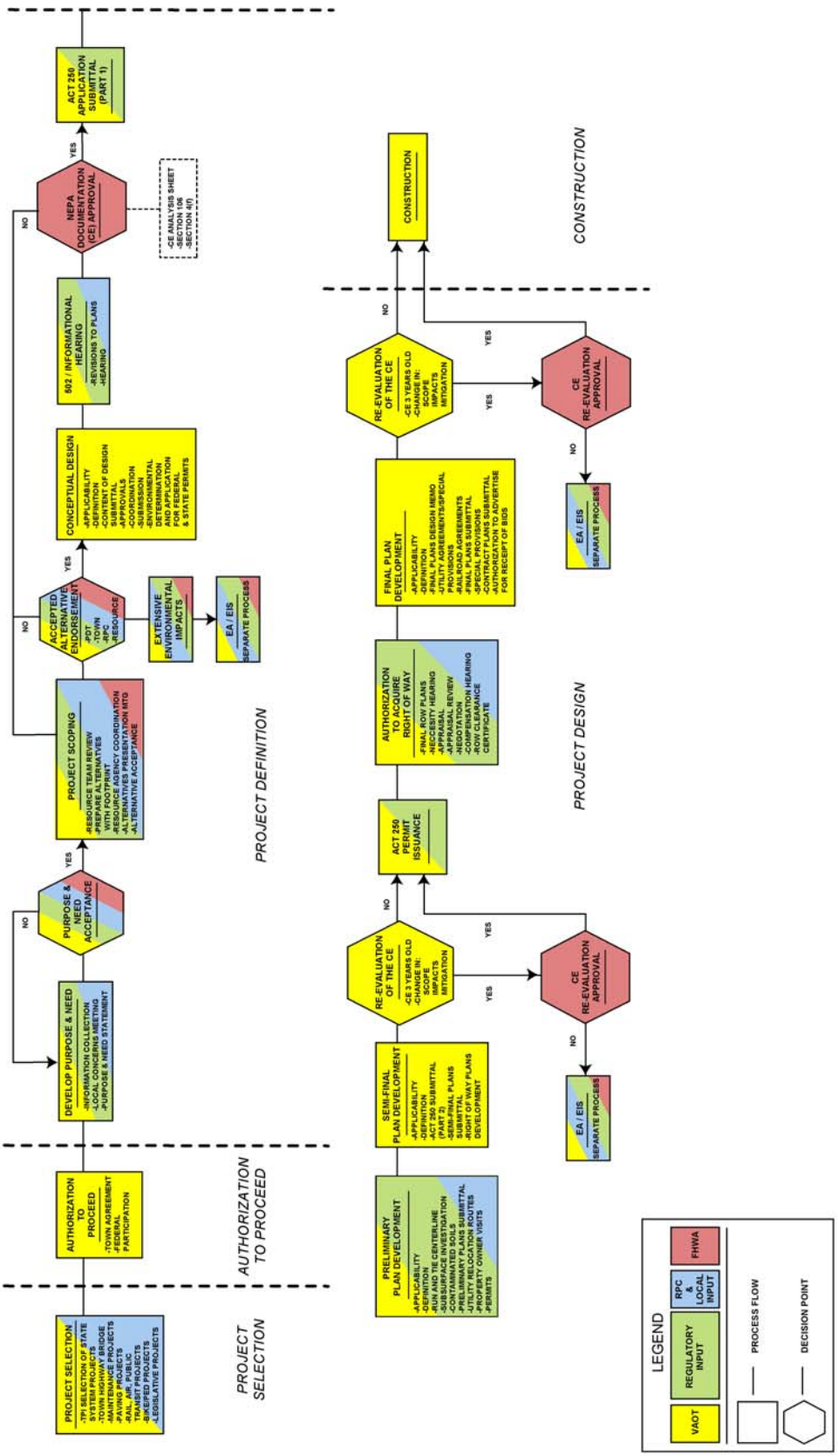
VTrans formalized its project development process and published a Project Development Process manual that outlines steps necessary for scoping and design of transportation projects. To facilitate this effort, VTrans also initiated a project manager system. Each project now has a single point of reference at VTrans and this enables a VTrans employee to see a project through the entire process. This defined process also enhances the planning partnership with the municipalities and regional planning commissions/metropolitan planning organization, and permits several opportunities for public involvement. The process does a good job of getting local officials and citizens involved and keeping them informed.

The process is described in the flow diagram shown on Figure 5.1. The process starts with a data collection effort and a local concerns meeting. From this a purpose and need statement is developed and then the process moves to scoping where alternatives are developed and evaluated. After the alternatives meeting a preferred alternative is chosen and a conceptual design is prepared. The approvals and permit process is started and a 502 informational hearing is held.

After NEPA documentation and Act 250 are considered the design process begins. Preliminary, semi final and then final design plans are prepared. Right-of-way issues are considered and project specifications and special provisions are prepared. After the design process is complete and funding in place the project is ready for construction. The manual provides guidance in this area as well.

In the interviews conducted in preparing this plan, reactions to the project development process were mixed. Some thought that the process worked well and that it assisted in keeping them informed and the locals involved. Others stated that implementation is slow and sometimes VTrans project managers are too busy. VTrans should continue to refine the process as more is learned through application and should allocate the necessary staff to manage the projects. The process is a step in the right direction towards involving the customer and providing them with information.

Figure 5.1 Project Development Process



5.6 Freight Movement Issues

The transportation infrastructure in Vermont has met the needs of the businesses based here, but not without creating some inefficiencies, additional costs to shippers and receivers, and restricted modal selection.

Due to the rural character and mountainous topography of Vermont, the highway system does not provide trucks with efficient access to all parts of the state. Specifically, there are no east/west limited access highways. Industry representatives agree that there should be improvements to the existing east/west highway corridors in Vermont. Another key issue for truck movements is the variations in local road postings. To access some areas, a trucking company must acquire multiple permits, which can be an extremely time consuming and costly activity.

The rail system provides good geographic coverage. This was recently improved upon by the reactivation of the Wells River section along the eastern border. However, the rail system has weight and clearance limits that affect its ability to function effectively in the regional, national, and North American rail system. The maximum weight limit for almost all of the system is 263,000 pounds per car. This is an issue as Class I railroads are typically operating at 286,000 pounds or above. This creates operational problems for interline traffic destined for or moving through Vermont from other railroads. In addition, there is only one route in the state that is double-stack cleared, the St. Lawrence & Atlantic Route in the northeastern corner of the state. However due to its location, this route does not affect the truck routes via I-89 and I-91. Another factor affecting rail service in Vermont is the reduced number of direct rail sidings and the limited number of transload facilities.

The airport system consists primarily of state and municipality-owned airports. A limited amount of freight is moved into and out of Vermont by air. It represents less than 0.1 percent by weight. Currently, not all parts of Vermont have access to next day, overnight courier service. Consideration is currently being given to expanding the capabilities of some sites to improve this situation.

5.7 Transportation Planning Initiative

The Transportation Planning Initiative (TPI) was developed in 1992 in response to the request for greater local involvement in transportation planning activities. The state and federal governments recognized the need to involve citizens and local officials in the identification and development of solutions to transportation problems. Outside of the jurisdiction of the Chittenden County Metropolitan Planning Organization (MPO), each of the 11 Regional Planning Commissions (RPC) develops plans and policies as part of the TPI. To address the need for extensive local involvement in the transportation planning process and to guide the development of regional transportation plans, the RPCs created regional transportation advisory committees, or "TACs."

Much work has been accomplished via the TPI over the past eight years, including training of regional staff in elements of transportation planning, developing regional transportation plans, goals and objectives, and the identification and prioritization of desired transportation improvements for each region. However, defining the future direction of the TPI is an important issue to maintain local participation and enthusiasm for the transportation planning process in Vermont.

5.8 Coordination with Other State Agencies

Through the formal project scoping and design process, VTrans has enhanced coordination with the Agency of Natural Resources, Department of Historic Preservation and the Department of Agriculture. Coordination among these agencies is key in planning and implementing transportation projects in Vermont. VTrans continues to foster improved coordination with these agencies on a number of different projects. For example, VTrans has recently begun working with ANR on an informal basis to develop strategies to keep air quality in attainment of federal standards.

5.9 Region-Wide Coordination

A significant number of transportation issues require discussion and coordination at the region-wide level. Vermont is engaged in a number of partnerships with the other New England states, neighboring New York State, and the province of Quebec. VTrans is also a participant in regional alliances that include the entire northeast part of the American continent.

Examples of these partnerships and alliances include the Council of Northeast Governors, the I95 Corridor Coalition, the Northeast Association of State Transportation Planning Officials, the Tri-State Rural Advanced Traveler Information System, the Regional Aviation System, and the Eastern Border Transportation Coalition.

5.10 Telecommuting

In the mid-1990s there was considerable interest in telecommuting. A number of pilot studies were conducted and there was a flurry of papers presented at national transportation conferences. This flurry seems to have died down. There has been no identifiable large-scale movement in the transportation sector, either nationally or in Vermont, toward replacing journey-to-work trips with telecommuting.

However, it appears that more Americans are telecommuting each year. A recent survey conducted by the International Telework Association and Council showed that about one out of five workers engage in telecommuting. According to the survey:

> *"The typical teleworker works at least one full day per week away from the traditional office environment, lives in the northeast or western regions of the U.S, has a college education, is 35 to 44 years of age and married.*
>
> *Teleworking is most often found at either a very small or very large company, with teleworkers holding a managerial or sales position and earning $40,000 or more annually. Teleworking is most common within real estate, management of enterprises, and the information industries.*"

The International Telework Association is a non-profit group that promotes telecommuting, and their survey appears to have defined telecommuting quite inclusively. More information, both general in nature and related to the survey, is available on their website at www.telecommute.org.

The overall impact of telecommuting on the transportation system remains hard to judge. VTrans will continue to monitor telecommuting trends and take action as appropriate.

6.0 Financing Trends

6.1 Trends in Transportation Revenue

The funding that will be available to support transportation policies, programs, and projects will affect the transportation plan that can be developed for Vermont. Transportation agencies are facing the common problem of balancing burgeoning investment needs with limited resources, and the state's fiscal health and priorities will determine how well these needs will be met by the Plan.

The trend analyses presented in this chapter are based mostly on straight-line extrapolations of past trends. There are significant limitations to this approach, but there is not sufficient information to justify a different set of assumptions. In light of these limitations, this analysis is intended only as a baseline for comparing potential revenues with potential needs. A straight-line approach has the virtue of being relatively simple, and can serve as the basis for more complex scenarios which may perhaps be developed in other forums. The reader is asked to keep this caveat in mind when reading this chapter.

Funds to support the transportation system in Vermont are provided primarily by federal and state transportation funds. The federal government maintains dedicated trust funds, supported by user-fees. These trust funds have been operated in a manner that makes the federal support of the transportation system almost entirely supported by user-fees. Vermont's fund for transportation is supported by taxes on the sale of motor fuels and by fees and taxes on the sale and use of motor vehicles. These revenues can be expected to grow at a rate consistent with the growth in Vermont's economy.

6.1.1 Federal Funds

Highway

The federal Highway Trust Fund (HTF) is supported by user-fees on motor fuels, tires, and heavy trucks. Vermont's payments into the Highway Accounts of the HTF are currently over $78 million per year. Vermont has historically received more from the HTF than it has made in payments. Since the establishment of the HTF in 1956, Vermont has made total payments of over $1 billion and has received over $2 billion, although in recent years the ratio of receipts to payments has been closer to 150 percent.

Under TEA-21, the "minimum apportionment" that Vermont receives is expected to provide an average of $122 million annually. This represents an increase in funding of almost $43 million annually from the levels of the prior transportation authorization act, ISTEA. For fiscal years 2002 and 2003, the final years of TEA-21, Vermont's apportion

ment is expected to be $128 million annually. As a means of controlling the federal deficit, the amount that Vermont is allowed to expend annually, obligational authority, has historically been approximately 90 percent of the apportionments. Since the federal budget is expected to be balanced, for purposes of forecasting available funds it is assumed that future obligational authority will equal the apportionments.

The Congressional Budget Office (CBO) and Office of Management and Budget (OMB) both generate 10-year forecasts for HTF revenues. The CBO growth estimate (2.3 percent), after adjusting for inflation, is slightly higher than the OMB estimate (1.9 percent) For purposes of this Plan an average of the two or just under 2.1 percent per year is used. This growth rate is less than typical estimates of growth in the economy because HTF revenues are based on excise taxes that are not automatically adjusted to account for future inflation.

Using the TEA-21 apportionments for 2001 through 2003 and applying the growth rate to the 2003 appropriation produces the expected federal HTF apportionments to Vermont through 2025 as shown in Table 6.1. The amount over the 25-year period of the plan that will be available to Vermont is expected to amount to almost $4 billion.

Table 6.1 Expected Federal Highway Funding

Years	Funding (Millions)
2001 to 2005	$644
2006 to 2010	$710
2011 to 2015	$786
2016 to 2020	$872
2012 to 2025	$966
Total	**$3,978**

Under TEA-21 the federal HTF funding is provided primarily in the following four program areas:

1. The Interstate Maintenance and National Highway System programs, which provide funding for roadways that serve long-distance interstate travel represents on average 38 percent of the HTF funding.

2. The Bridge program, which provides assistance to rehabilitate and replace bridges on public roadways, represents 17 percent of the funding.

3. The Surface Transportation Program, which provides flexible funding that may be used on any federal aid eligible project, represents on average 25 percent of the HTF funding.

4. The remaining 20 percent is provided for air quality, planning, research and other programs. The actual amounts received by program is not of a concern in forecasting future funding since considerable transfers of funding between programs is allowed.

Transit

The Federal Transit Administration (FTA) provides funding for transit under a number of programs, including the following:

- The Urbanized Formula program (Section 5307) provides funding to the Chittenden County Transit Authority, the only eligible agency under this program;

- The Non-urban and Rural Transit Assistance program (Section 5311) provides funding to transit operators in rural areas and urban areas with a population less than 50,000; and

- The Elderly and Persons with Disabilities program (Section 5310) provides funding to private and non-profit agencies meeting the transportation needs of senior citizens and persons with disabilities.

In addition, FTA occasionally provides additional funding under special programs such as the Access to Jobs Grants.

The basic transit programs are well established and have been continued for funding under TEA-21. TEA-21 provides that 80 percent of the funding for transit programs comes from the Mass Transit Account of the Highway Trust Fund (HTF) and that 20 percent comes from the general funds. The appropriations to Vermont are done on an annual basis, the most recent being federal fiscal year 2001. The amounts appropriated were $821,000 for Section 5307; $278,000 for Section 5310; and $1.15 million for Section 5311. While the individual appropriations for 2002 and 2003 have not been made at this time, assuming that Vermont's share of the federal transit funding remains constant, amounts can be estimated for these remaining years of TEA-21 based on the national authorizations. For the period beyond TEA-21, annual funding estimates were produced based on the estimated increase in the HTF of 2.1 percent per year. This rate of increase is used because 80 percent of the federal funding for transit is from the HTF. As shown in Table 6.2, approximately 80 million in federal funds will be available for transit in Vermont, with 37 percent of that amount available to CCTA, 51 percent available to rural transit and 12 percent available for transportation to the elderly and persons with disabilities.

In addition to the amounts shown in Table 6.2, Vermont has also historically provided for transfers from federal highway programs to transit programs. The Section 5307 and 5311 funding made available to Vermont is used for operating and administrative expenses. In order to fund transit capital projects, Vermont has in the past transferred Surface Transportation Program funds to purchase new vehicles. In FY 2000 VTrans transferred $3.7 million for this purpose. Vermont has also used the federal Congestion Mitigation Air Quality funds provided to fund operating expenses for new transit services. In FY 2000, VTrans provided $1.5 million for this purpose. These amounts, while substantial, have not been included in Table 6.2, because these funds are not dedicated for transit purposes and have already been included in Table 6.1.

Table 6.2 Forecasts of Federal Transit Funding

	S.5307 Urban ($ Millions)	S.5310 Elderly and Disabilities ($ Millions)	S.5311 Rural ($ Millions)	Total ($ Millions)
2001 to 2005	$4.59	$6.43	$1.56	$12.58
2006 to 2010	$5.23	$7.32	$1.77	$14.33
2011 to 2015	$5.81	$8.13	$1.97	$15.90
2016 to 2020	$6.44	$9.02	$2.18	$17.64
2020 to 2025	$7.15	$10.00	$2.42	$19.57
Total	**$29.22**	**$40.90**	**$9.90**	**$80.02**

Aviation

The Federal Aviation Administration provides funding for commercial and general aviation airports in Vermont from the Airport & Airway Trust Fund, which receives its revenue from aviation excise taxes on airline tickets, cargo, and general aviation fuel. Funding is made available through authorizing legislation, the most recent of which is the Aviation Investment and Reform Act for the 21st Century (AIR-21). AIR-21, which was enacted in April of 2000, provides for assistance for primary commercial airports based on the number of passengers boarding. Burlington International Airport (BIA) receives approximately $3 million under the primary airport entitlement program. AIR-21 also provides entitlement funding to general aviation airports based on the needs identified in the National Plan of Integrated Airport Systems (NPIAS). General aviation airports in Vermont are expected to receive $900,000 annually under the most recent NPIAS. For purposes of forecasting expected revenue under the federal aviation programs, it is assumed that this level of funding will continue for the 25-year period of the Plan. The federal aviation funding would amount to $75 million for BIA and $22 million for general aviation airports.

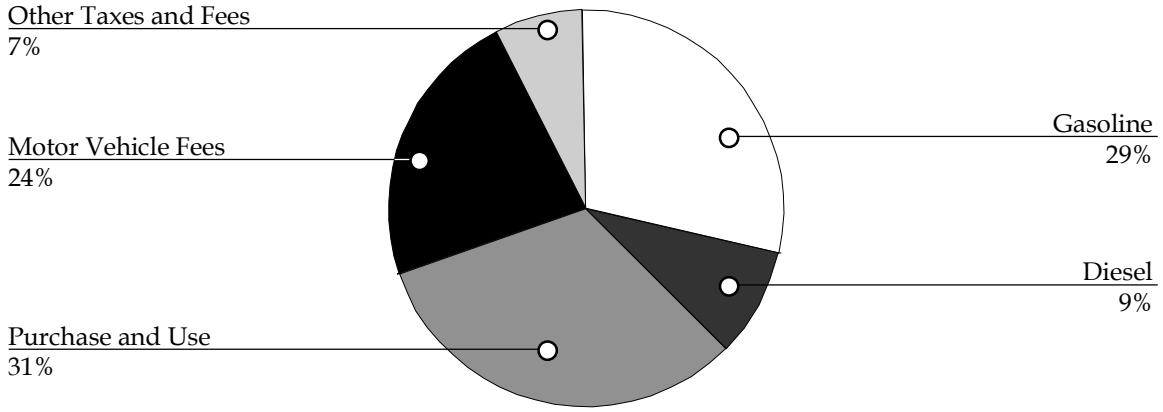
6.1.2 Vermont Transportation Funding

Transportation Fund

Vermont maintains a dedicated State Transportation Fund to provide for transportation appropriations. Vermont's Transportation Fund receives revenue from the Motor Fuel Tax, and the purchase and registration of motor vehicles. Together these taxes and fees raise approximately $180 million for the Transportation Fund in the proportions shown in Figure 6.1. The 19-cent per gallon tax on gasoline and the 17-cent tax per gallon on diesel (26 cents for vehicles over 10,000 pounds) raise almost 38 percent of the total revenue to

the Transportation Fund. The six percent tax on the value of vehicles at the time of purchase or first registration raises 31 percent of Transportation Fund revenue. The motor vehicle fees, including the $20 operator license, the $43 registration fee for cars and the $132.08 to $3,260.75 registration fee for trucks depending on weight, raise 24 percent of the revenue while other taxes and fees raise seven percent.

Figure 6.1 Sources of Vermont Transportation Fund



While motor vehicle fees and the motor fuel taxes have been adjusted over time, they do not have an automatic mechanism to adjust for inflation. This has resulted in disparities in the inflation adjusted receipts from these sources. Figure 6.2 shows the history of motor fuel tax receipts in Vermont. While the value of the receipts in current year dollars shows continuous increase during the period of the 1970s, when inflation was at its highest and the fuel tax rate remained fairly constant, there was a steady decline in the inflation adjusted value of motor fuel tax revenues. This situation was corrected by a series of motor fuel tax increases over time. Historically the gasoline tax has been set at 20 cents per gallon in 1999 inflation-adjusted dollars. The gas tax was most recently increased to 20 cents per gallon in 1997 (one cent goes to the Petroleum Cleanup Fund). The motor fuel tax currently provides about $70 million annually to the Vermont Transportation Fund, which is near its highest inflation-adjusted levels. Given the sensitivity of the value of these funding sources to inflation, the tax rates and fees should be continually monitored and adjusted to ensure state transportation revenue remains stable.

The Transportation Fund revenues are expected to grow slowly over the next 25 years. The economic model used in preparing the 1995 Plan indicated that, after adjusting for inflation, the growth in revenues would range from 0.7 to 2.0 percent per year. The growth in the federal HTF has been estimated at a compound rate of 2.1 percent for the entire country. Given Vermont's stable population and economy compared to the rest of the U.S., the lower growth estimate from the 1995 Plan is taken as more realistic in comparison to the expected growth in the federal revenues. At this rate of growth, the revenues available to Vermont's Transportation Fund over the next 25 years will be $4.7 billion as shown in Table 6.3.

Figure 6.2 Vermont Motor Fuel Tax Receipts

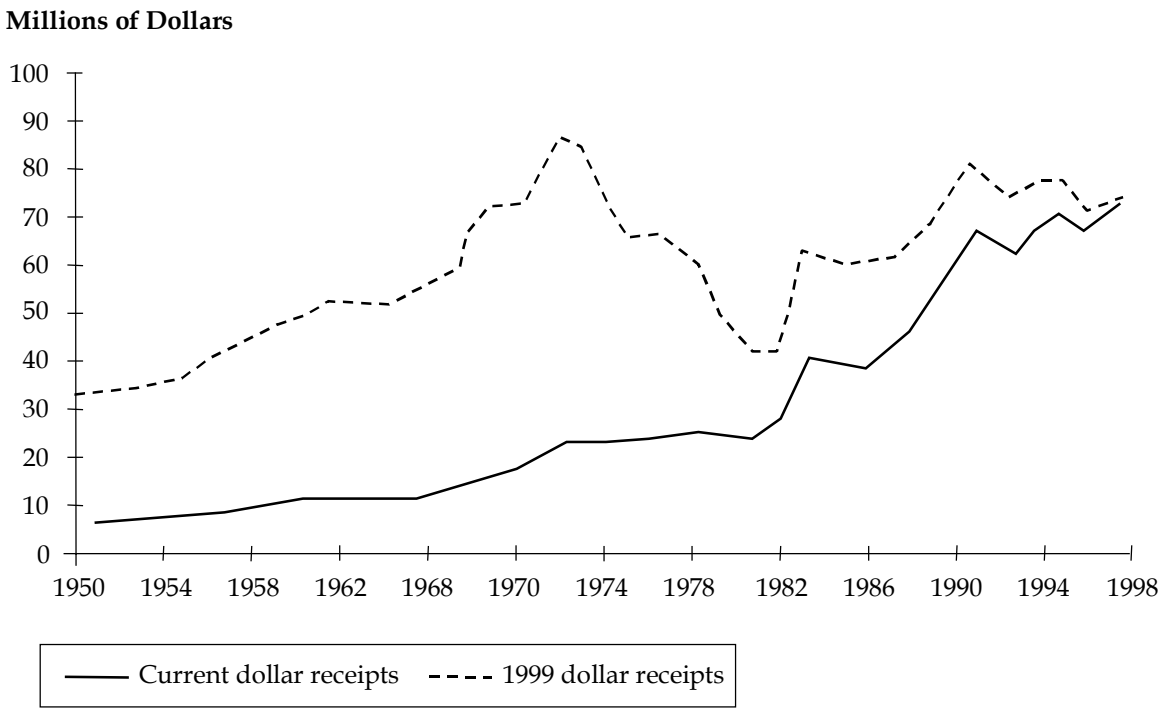


Table 6.3 Growth in Vermont's Transportation Fund

Time Period	Total Revenue (millions)
2001 to 2005	$871
2006 to 2010	$902
2011 to 2015	$934
2016 to 2020	$967
2020 to 2025	$1,002
Total	**$4,676**

Unlike the federal transportation funding, Vermont does not maintain separate accounts for highways and transit programs. The Transportation Fund also provides for capital and operating assistance to transit providers. The transit assistance is typically used to provide the matching funds to federal transit funding. The matching requirement for federal funds varies depending on the program and whether the funding is used for operating or capital projects. Accordingly, the annual amount of state transit funding will vary depending on the mix of operating and capital projects. In Fiscal Year 2000, $3.8 million was provided by Vermont for transit assistance.

6.1.3 Vermont's Transportation Revenue Compared to the U.S.

The transportation revenue available to Vermont is comparable to the national averages for state governments. The motor fuel tax rate on gasoline in Vermont is 19 cents per gallon. The average state gasoline tax is 19.96 cents per gallon. Motor fuel taxes constitute 2.7 percent of the revenue to the Vermont. Motor fuel taxes also constitute 2.7 percent of total state revenues in the U.S. Vermont's fuel taxes are also similar to the U.S. on a per capita basis. State fuel taxes raise $106 per capita in Vermont compared to $104 per capita in the all of the U.S.

6.1.4 Transfers of Funding

Transportation revenues in Vermont have been directly transferred between the Transportation Fund and the General Fund. From 1990 to 1999, according to the Legislature's Joint Fiscal Office, $9.9 million was transferred from the general fund to the transportation fund and $29.6 million was transferred from the transportation fund to the General fund.

In addition, in recent years significant amounts of Transportation Fund revenues have been used to fund the state's general fund operations. From fiscal years 1996 to 2000, a

total of $211 million from the Transportation Fund has been used to fund other state functions, as shown in Table 6.4.

Table 6.4 "Non-Traditional" Appropriations from the Transportation Fund

	Appropriation (in millions)				
Purpose	**1996**	**1997**	**1998**	**1999**	**2000**
General Government	$9.94	$10.18	$9.77	$6.90	$9.52
Protection to People and Property	$24.16	$25.53	$26.27	$26.41	$26.59
Human Services	$1.28	$1.90	$1.94	$1.94	$1.94
Education	$1.32	$1.31	$0.64	$3.68	$3.68
Natural Resources	$0.75	$0.97	$0.97	$1.00	$1.00
Commerce and Community Development	$2.03	$2.19	$2.35	$2.60	$0.16
Miscellaneous	$0.00	$0.01	$0.00	$0.74	$1.98
Total	**$39.48**	**$42.09**	**$41.95**	**$43.26**	**$44.86**

The transfers to the General Fund and the non-traditional uses have made it possible for Vermont to accomplish deficit reduction without increasing taxes. The definition of "non-traditional" appropriations is controversial, but the continuation of these types of appropriations from the Transportation Fund must be considered in any assessment of future Transportation Fund revenues. If these transfers continue and increase from 2000 levels at a rate consistent with an annual inflation rate of 2.7 percent per year, the total amount transferred over the next 25 years would amount to $1.5 billion.

6.1.5 Summary of Transportation Revenues

The total resources that will be available to Vermont for transportation purposes is the sum of the monies available from the Federal Highway and Transit programs and Vermont's Transportation Fund. That amount is expected to amount to $8.8 billion through 2025. This is presuming that the $45 million appropriated annually from the Transportation Fund that has been used for non-transportation purposes is available for transportation purposes. Without this funding, the available resources would be $7.2 billion.

6.2 Trends In Transportation Expenditures

The funding needs of Vermont's transportation system will of course depend on the choices made for investments. While this Plan is not intended to specifically identify the transportation investments, it is important to determine the magnitude of the funding required. Within the limitations noted in the caveat to readers at the beginning of this chapter, a good indication of the funding requirements may be obtained by examining the history of transportation expenditures.

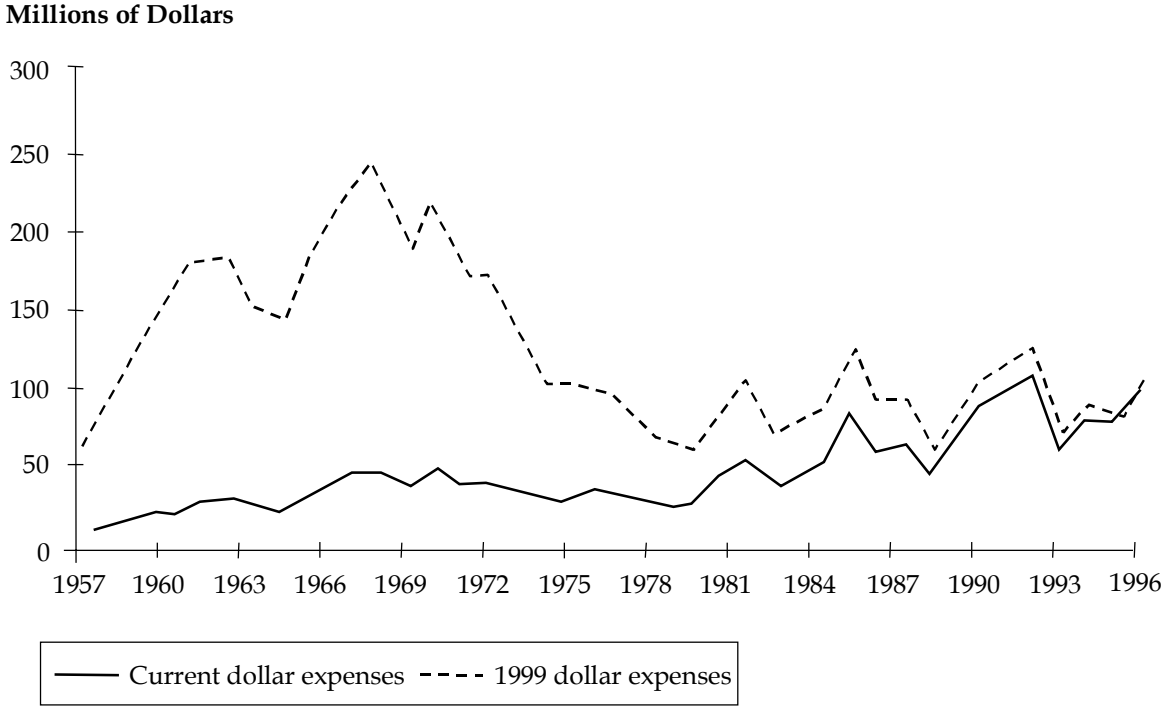
The Federal Highway Administration has been tracking state highway expenditures for many years as part of its *Highway Statistics* series. These expenditures were examined for the period of time from the start of the Highway Trust Fund in 1956. In addition the current expenditures on local highways, public transportation, rail, and aviation have been examined and projected into the future.

Please see the following pages for a discussion of transportation expenditures.

6.2.1 Highway Capital Expenditures

The history of highway capital expenditures is shown in Figure 6.3, in both current-year expenditures, and expenditures adjusted for inflation. The expenditures, as adjusted for inflation, clearly show the growth in spending during the start of the Vermont's interstate highway construction in the 1960s and its decline as the highways were completed in the 1970s. Since the completion of the interstate highways, the expenditures on capital projects have remained constant. Over the 1990s, capital expenditures have averaged $100 million in inflation adjusted dollars. For purposes of identifying the funding needs through 2025, it is assumed that this amount of funding in 1999 dollars will be needed and further that inflation will continue at the 2.7 percent rate it has averaged during the 1990s. At this rate, the total capital needs of the highway system would be $3.7 billion.

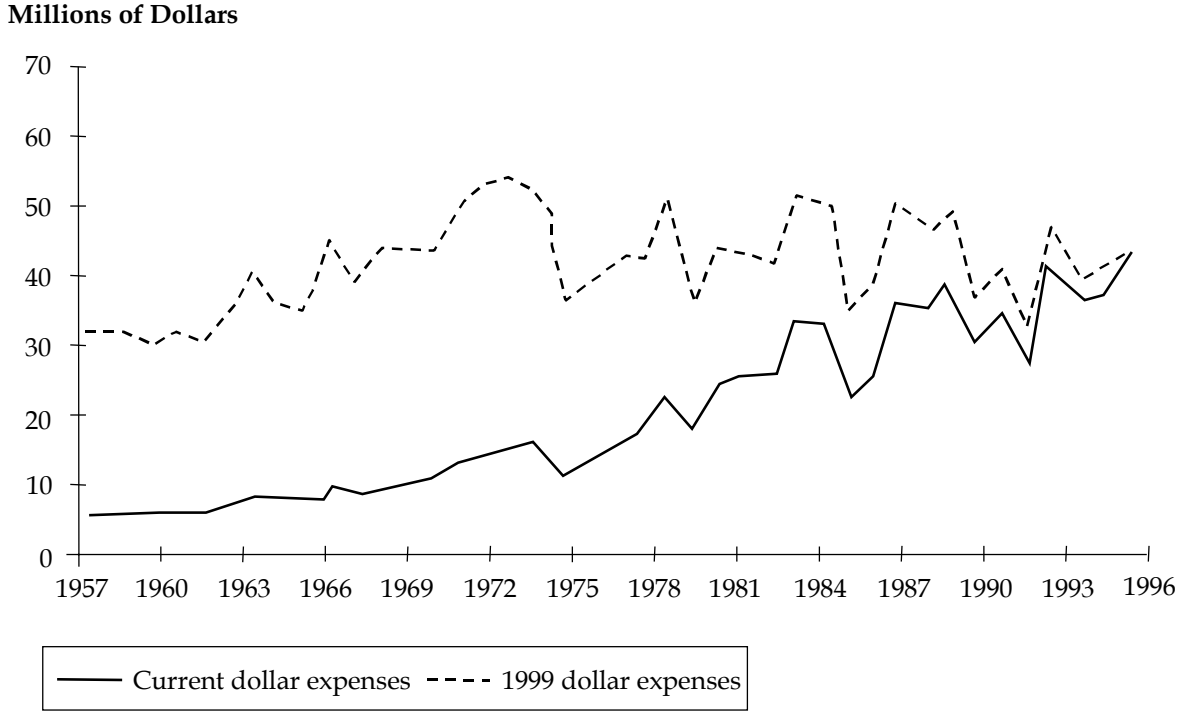
Figure 6.3 State Highway Capital Expenditures



6.2.2 Highway Maintenance Expenditures

The history of the state of Vermont's highway maintenance expenditures shown in Figure 6.4 in both current year expenditures and expenditures adjusted for inflation over that time. While maintenance spending shows a steady growth in current year dollars, when adjusted for inflation, the spending shows a much more erratic pattern. This pattern reflects a tendency identified in the 1995 Plan to defer maintenance, particularly preventive maintenance during periods of fiscal shortfalls in state budgets. With the adoption of the 1995 Plan, the state adopted a policy of preventive maintenance as a means of reducing future capital costs. That commitment is shown in the increasing level of maintenance expenditure in both current and inflation adjusted dollars. The current level of expenditure is $50 million per year. For purposes of identifying the funding needs through 2025, it is assumed that this amount of funding in 1999 dollars will be needed and further that inflation will continue at the 2.7 percent annual rate it has averaged during the 1990s. At this rate the total maintenance needs of the highway system would be $1.7 billion.

Figure 6.4 State Highway Maintenance Expenditures



6.2.3 Local Highway Expenditures

In addition to funding the capital and maintenance needs of the state highway system, Vermont has provided assistance from the Transportation Fund to local cities and towns for highway purposes. The distribution of expenditures on these functions has changed very little since the adoption of the 1995 Plan. A comparison between the distribution of local expenses by function from the 1995 Plan and the present is shown in Table 6.5. As before, maintenance and construction constitute the largest share of local expenses.

Function	1994	1998
Construction	25.5%	26.1%
Engineering	1.8%	1.8%
Finance	2.2%	2.5%
Administration	5.3%	4.9%
Snow Removal	17.4%	17.7%
Maintenance	47.8%	47.0%

Table 6.5 Distribution of Local Highway Expenditures

Vermont has recognized the importance of the local roads and bridges to the overall transportation system and has provided funding through town highway bridge programs and grants to local governments to help maintain the viability of the system. In fiscal year 2000, $49 million was made available for town programs, largely from the Transportation Fund. For purposes of identifying the funding needs through 2025, it is assumed that this amount of funding will be needed and further that inflation will continue at the 2.7 percent annual rate it has averaged during the 1990s. At this rate the total local funding provided by the state would be $1.8 billion over the next 25 years.

6.2.4 Public Transportation, Rail, and Aviation Expenditures

Vermont also provides, through the VTrans budget, funding to cover expenditures for public transportation, rail, and aviation. The federal and state funding on these programs amounts to $28 million in FY 2000. This includes $5.6 million federal and $4.4 million in state operating assistance for transit and $3.4 million in federal and $636,000 in state capital assistance. The total transit expenditure amounts to $10.2 million in federal assistance and $5.1 million in state assistance for public transportation. Expenditures on aviation in Fiscal Year 2000 amounted to $4.9 million in total state and federal funding. Rail expenditures amounted to $10 million in federal and state funding.

For the purpose of identifying the funding needs through 2025, it is assumed that this amount of funding will be needed and further that inflation will continue at the 2.7 percent annual rate it has averaged during the 1990s. At this rate the total public transportation expenditures supported by the state would amount to $312 million in federal funds and $133 million in state funds over the next 25 years. The total aviation and

rail expenditures supported by the state would amount to $540 million over the next 25 years. The cumulative expenditures on public transportation, rail, and aviation would amount to $1 billion.

6.2.5 Comparisons of Vermont Expenditures to U.S. Totals

On the basis of transportation's share of all expenditure and on the basis of expenditures per capita, transportation expenditures in Vermont are higher compared to the U.S. averages. Expenditures on highways represent 7.75 percent of state spending in Vermont compared to 5.53 percent of all state spending in the U.S. Highway expenditures by the state amount to $288 per capita in Vermont compared to $191 for the U.S. This disparity is due in part to the climate in Vermont and to the age of the highway infrastructure. Vermont spends far less of its highway budget on capital expenses: 38 percent compared to 57 for all state highway spending in the U.S.

Vermont also spends more than the U.S. average on transit, on the basis of its share of all state expenditures and on the basis of expenditures per capita. Transit subsidies amount to 0.07 percent of the state spending compared to 0.01 percent for the entire U.S. On a per capita basis, Vermont's state expenditures on transit subsidies are $2.68 compared to $0.37 for the entire U.S.

6.2.6 Summary of Transportation Expenditures

Bearing in mind the simplistic assumptions behind this analysis, total funding needed to support the trends in transportation expenditures amounts to $8.2 billion over the next 25 years.

This is slightly less than the $8.8 billion in total revenue over the next 25 years that was identified section 6.1.5. The $8.8 billion is available only if there are no non-transportation agency appropriations from the Transportation Fund. If these funds continue to be transferred from the Transportation Fund, there would be a shortfall in funding amounting to $1 billion.

The amounts shown above consider only funding in the aggregate. As mentioned above, the trend of current federal transit expenditures would amount to $312 million over the next 25 years. The transit formula funding available to Vermont from federal programs during this same period is expected to amount to only $80 million. The federal transit expenditures are based on the assumption that the present practice of transferring federal highway funds to transit will continue.

The expected funding is also based on an assumption that current levels of historical expenditures would continue. It is recognized that the historical modal emphasis of the VTrans programs is changing. Until more specific information is available, it is assumed for purposes of estimating future funding needs that, even if the level of expenditures by mode changes, the cumulative cost of all transportation programs will remain within these historical totals. It should also be noted that historically a major portion of the highway capital

program was for infrastructure preservation. One major infrastructure preservation expenditure that may increase considerably in the future is the replacement of highway bridges that were constructed during the major construction program of the 1960s and that will reach the end of their expected service life during the next 25 years.

Further, the amounts above include only the federal and state funds expected to be expended on transportation. It does not included local highway transit or airport funding that would also be necessary to support the overall transportation program. It is assumed that the revenues to meet these expenditures will also continue to be available.

6.3 Innovative Funding In Use

Major transportation projects can be extremely costly. It is not unusual for transportation projects to cost tens, if not hundreds, of millions of dollars. The cost of any one project may by itself represent a considerable share of Vermont's transportation budget in any given year. These large transportation projects also tend to take many years to complete and to have economic lives measured in terms of decades. It is, therefore, prudent for Vermont to examine methods to finance transportation projects that are cost-effective, manage cash flow requirements, and provide greater flexibility. Vermont needs to have available a variety of innovative financing mechanisms to advance our transportation programs.

The U.S. Department of Transportation currently offers a number of programs that make it easier to finance transportation projects. These tools are primarily geared toward assisting in managing a project's cash flow or providing up front credit to get the project going. None are expected to be adequate to meet all the financial requirements of Vermont's transportation investments. The applicability of these innovative financing techniques will be dependent on identification of an adequate source of capital funding for proposed improvements.

6.4 Investment Tools

Some tools are best suited to make it possible to secure the up-front financing necessary to undertake a transportation project.

6.4.1 Flexible Match

Flexible match allows the value of private and certain state or local contributions – including publicly-owned property – to be used to satisfy the non-federal matching requirement for federal-aid funding. Since Vermont could solicit private contributions, as well as use other federal agency funds, this tool could expand the range of options available for contributing the local match that would be needed for federal-aid highway

funding. The usefulness of this tool depends on the specific financing package assembled for each specific project.

Toll Credits

The non-federal share of a project's cost may be met through a soft match of toll credits. A state can earn such toll credits to the extent that it spends excess toll revenues (revenues not needed for debt service, returns to investors, or the operation and maintenance of toll facilities) on its highway system. Currently, Vermont has made arrangements to use the toll revenues from ferries operated by the Lake Champlain Transportation Company. These credits do not provide any funding in themselves but may make it possible to undertake a project with federal funding at greater than the normal 80 percent participation.

6.5 Cash Flow Tools

6.5.1 Advance Construction

This tool gives Vermont the option of using state funds to advance a federal-aid project, while preserving its right to receive federal-aid reimbursements in the future. There is no commitment of federal funds to the project until the state converts the project to federal aid. This procedure would allow Vermont to begin an eligible project even if it does not currently have sufficient federal aid for the federal share of project costs, but expects to have federal funds in the future.

Vermont has successfully used this technique in recent years, which allows non-federal funds to be used to advance Vermont projects while preserving the *eligibility* for federal-aid reimbursements in future years. It is only useful if federal funding in a future year will be available to cover the conversion of project costs.

6.5.2 STP Simplification

For Surface Transportation Program projects, federal-aid funds may now be matched across the full state program rather than on a project-by-project basis. This method simplifies state record keeping, reduces paperwork, and improves project delivery. Given the importance of STP funding in Vermont, this method could provide significant flexibility to the state.

6.6 Vermont State Infrastructure Bank (SIB)

Authorized by the Vermont General Assembly in June 1997, the SIB is a cooperative program involving the Vermont Economic Development Authority (VEDA), FHWA, and the

Vermont Agency of Transportation. The SIB is similar to a lending institution. It holds state and federal transportation money and makes it available at or below current market rates to eligible parties interested in making transportation improvements within the state. The projects must be part of the current state capital investment program, and can be either part of the federal highway (Title 23) or federal transit (Title 49) sections of the United States Code. The SIB may loan money to finance projects, or use the money as collateral to gain favorable financing elsewhere. Eligible borrowers include municipalities, regional development corporations, or other state entities. Additionally, private sector interests that have entered into a contract with one of the above public entities are also eligible.

As the SIB funds are repaid, they can be loaned to other organizations to make additional improvements. The terms of repayment cannot exceed 30 years, and repayments of the loans must commence no later than five years after project completion. The result is that projects are completed sooner than they would be otherwise, and revolving use of the funds allows additional projects to be funded without requiring any additional state or federal money. The SIB was capitalized with $1.8 million. Additional funding was not provided as part of TEA-21. To date two loans of $500,000 have provided for the construction of intermodal rail to truck fuel oil transfer stations in Rutland and Hartford and a third loan of $575,000 is pending for a similar facility in East Montpelier. As these loans are repaid, and the SIB is replenished, new loans will be made.

An 11 member Board conducts oversight of the program with responsibilities, including approving and selecting projects. VEDA provides staffing of the program. A local match of 20 percent equity contribution is required for all SIB loans. The Board has the ability to reduce equity to 10 percent under special circumstances.

Security requirements may vary according to the type of assistance offered to each project. However, a project must have an identified revenue source adequate to amortize the debt. The state of Vermont is not liable for obligations made under the SIB program.

6.7 Level of Improvement

The 1995 Transportation Plan outlined the concept of "Level of Improvement" (LOI) as a tool to help Vermont invest strategically. LOI is designed to seek new ways to maintain highways at high levels of efficiency and safety with limited financial resources. The goal of the program is to provide for essential improvements and not to develop all highways to the ideal engineering design standards indicated by their functional classification. The concept respects the environmental, cultural and historical setting of highways; allows for more projects to be undertaken because individual project costs are reduced; and advances projects more quickly because controversies may be avoided.

VTrans has adopted LOI as an essential part of its project development process. Major transportation projects involving extensive improvements are targeted toward major corridors. Other parts of the system will receive less extensive improvements, depending on how heavily they are used, and how important they are to statewide mobility.

Three major factors are used to classify roadways into LOI investment categories: highway functional class; average daily traffic; and, truck volumes. Highway functional classes consist of Interstates/freeways, other principal arterials, minor arterials in urban areas, minor arterials in rural areas, major collectors and urban collectors. Different average annual daily traffic ranges are defined depending on the functional class. Truck volumes weighted to account for actual payloads, also define ranges for different functional classes.

Improvements are classified as reconstruction, rehabilitation, or preservation. Reconstruction projects include improvements that will bring the highway or bridge into compliance with the appropriate Vermont design standards. Reconstruction may involve the addition of capacity. Rehabilitation involves work within the existing roadway. The purpose of rehabilitation projects is to extend the service life of a roadway or bridge. Preservation is the minimum improvements at the lowest capital costs that preserve the service life of a roadway or bridge.

Generally, interstate/freeways, other principal arterials, and high-volume minor arterials are eligible for all three type of improvements. For minor arterials, reconstruction is only considered on roadways with average daily volumes and truck loadings above average levels (5,000 AADT in urban areas and 2,500 ADT in rural areas). Low-volume roads are eligible for rehabilitation or preservation only.

VTrans staff makes the initial determination of the appropriate LOI category. Projects in the reconstruction and rehabilitation categories receive detailed review. The VTrans Secretary makes final approval of the LOI determination.

6.8 Project Selection

The 1995 Plan outlined a number of approaches to allocate transportation funds and to select projects. The goal outlined was to invest transportation capital in a strategic manner that advanced the goals of Vermont's transportation agency. This concept builds on the Transportation Planning Initiative (TPI) that VTrans established in 1992 with the endorsement of the Vermont General Assembly. That initiative outlined a public involvement process that ensures that the public, communities, and regional commissions play a significant role in determining what transportation problems are addressed and how they are addressed.

The objective is to develop a prioritized list of transportation needs on the state highway system based on regional needs and the concerns of the municipalities. VTrans Policy and Planning Division, with regional participation, combines these lists into one list and prioritizes it on a statewide level. In Chittenden County, consistent with its designation as a Metropolitan Planning Organization (MPO) under federal law, the MPO has the responsibility of selecting and preparing a list of projects, referred to as the Transportation Improvement Program (TIP), which is consistent with available funding. The TIP is included in the list of projects that VTrans will implement.

Certain categories of projects also go through additional steps in selection. Town highway bridge projects are selected based on an indication of need from a structural inspection and an evaluation using the bridge management system. Town projects require a local

match and must be initiated by the municipality. The appropriate Maintenance District Transportation Administrator selects maintenance projects.

The Transportation Enhancement Advisory Council reviews enhancement Projects. Guidance for rail project selection is found in the Rail Capital Investment Policy Plan, and guidance for airport is found in the Air Capital Facilities Program. Similar guidance information for public transit projects is being developed in cooperation with the Public Transit Advisory Committee.

6.8.1 Policy Plans

To provide the overall, ongoing guidance in the development of transportation programs, VTrans prepares Policy Plans covering individual transportation modes and programs. VTrans has prepared the Statewide Bicycle and Pedestrian Plan (1998), the Rail Policy Plan (1998) and the Public Transportation Policy Plan (2000). VTrans has undertaken the update of a State Freight Plan, and the Aviation Policy Plan. Each of these Plans, as well as others that will be prepared, serve to further define the goals and objectives on specific transportation modes or programs and are developed through an open collaborative process. The specific transportation projects that will be selected for programming will be based on how well they meet the objectives of these Policy Plans.

7.0 Vision of the Future

Developing a long-range transportation plan requires a consideration of some of the changes predicted to occur in the state in the future. The previous long-range transportation plan expressed potential shifts relating to population, employment and the economic base of Vermont. In the five years since that plan, no major event has occurred to challenge those findings. In general, Vermont's population is continuing to grow and its economic base is continuing to diversify into service and information sectors.

Please see following pages for a discussion of demographics and vehicle miles traveled (VMT).

7.1 Vermont Demographic Projections

The latest population projections for this plan are based on data provided by the United States Census Bureau. As presented in the previous plan, the population of Vermont is expected to increase in the future; however, the gain in population is slight in comparison to high-growth states, such as California and Florida. By 2025, the population of the state is forecast to be close to 700,000 residents as shown in Figure 7.1.

As shown in Figure 7.2, one of the demographic shifts that will have transportation implications is the increasing number and percentage of state residents that are over age 65. In 1995, approximately 71,000 Vermont residents were over the age of 65. By 2025, that number is projected to nearly double to 138,000. This is comparable to events occurring across the country, as the "Baby Boom" generation reaches retirement age. The transportation options available to this growing segment of the state's population may largely determine their degree of mobility.

Figure 7.1 Vermont Population Projection

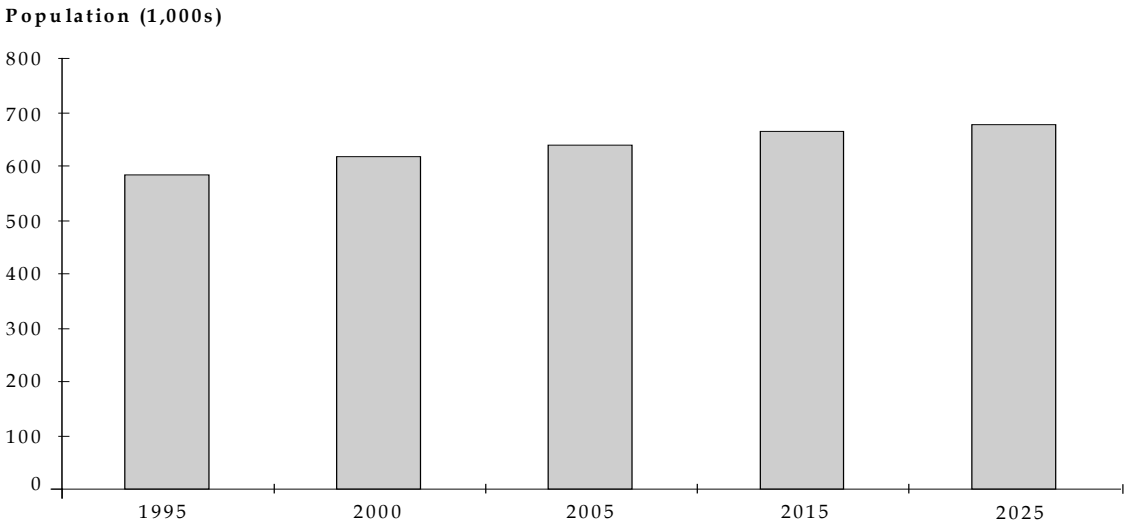
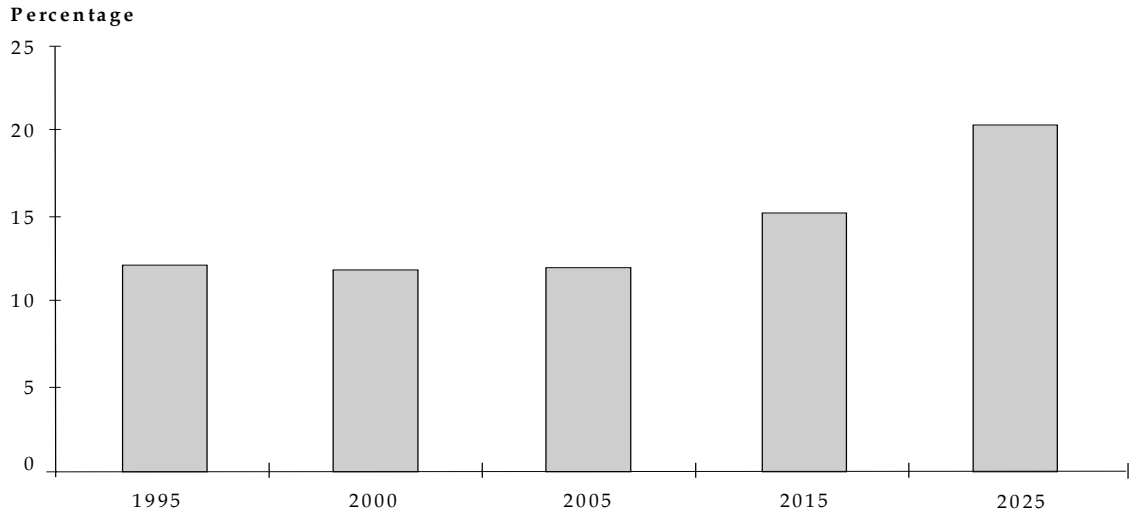


Figure 7.2 Percentage of Population Over Age 65



7.2 Vermont Vehicle Miles Traveled (VMT) Projections to 2020

VMT is a key indicator of the use of roads. Since about 1950, VMT has been increasing quite steadily in America at about double the rate of increase in the population. Vermont has been about the same as the rest of the country in following this trend. Figure 7.3 shows VMT in Vermont dating back several decades.

To estimate VMT in the future, the most common method is to extrapolate past trends. Between 1950 and 2000, VMT increased in Vermont at an average annual rate of about 3.5% per year. Projecting this rate of increase forward gives an estimate of 13 billion vehicle-miles per year, double the present VMT.

There has been some discussion in Vermont about whether VMT is, in fact, starting to level off. Looking at the past ten years shows a significantly slower rate of growth than the long-term trend. Between 1990 and 2000 VMT increased in Vermont at an average annual rate of 1.1%. Projecting this rate of increase forward gives an estimate of about 8 billion vehicle-miles travelled in the year 2020.

For purposes of this plan, these two estimates form a "high" and "low" growth scenario, with the actual rate of increase probably falling somewhere in between. Figure 7.4 shows these projections in graphical form.

Figure 7.3 Vermont Vehicle Miles of Travel

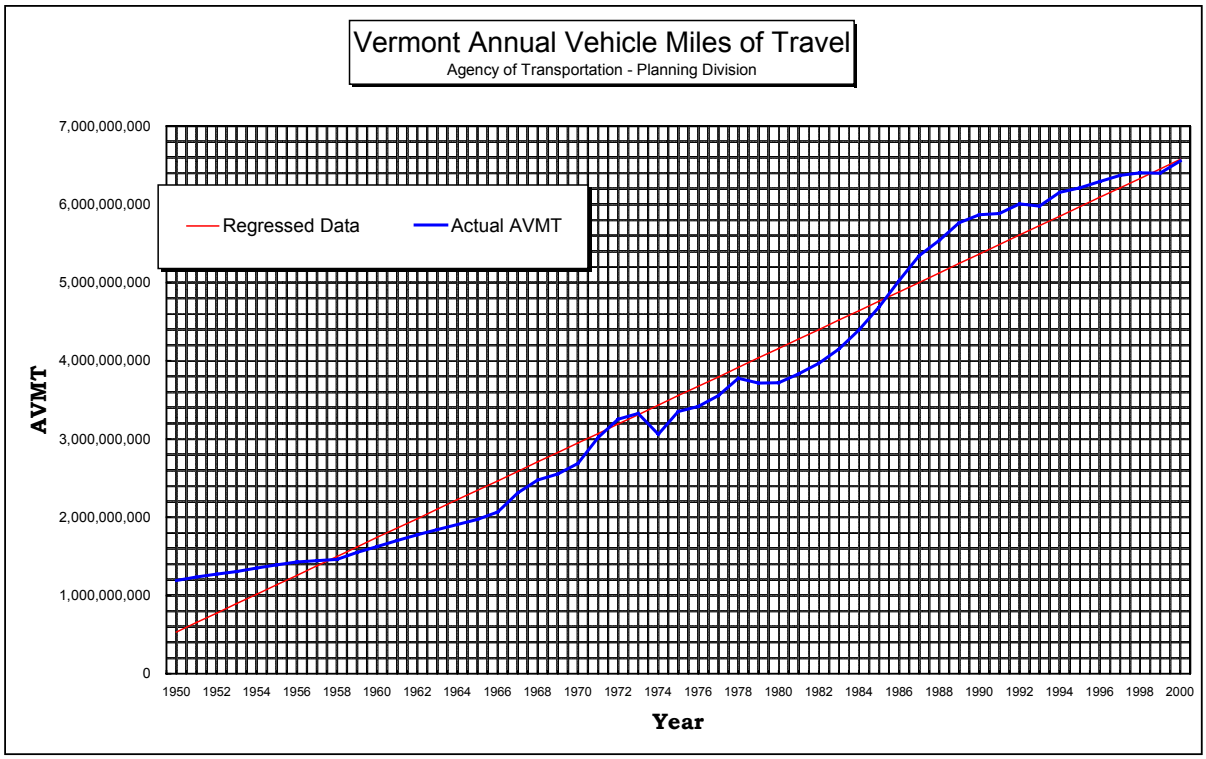
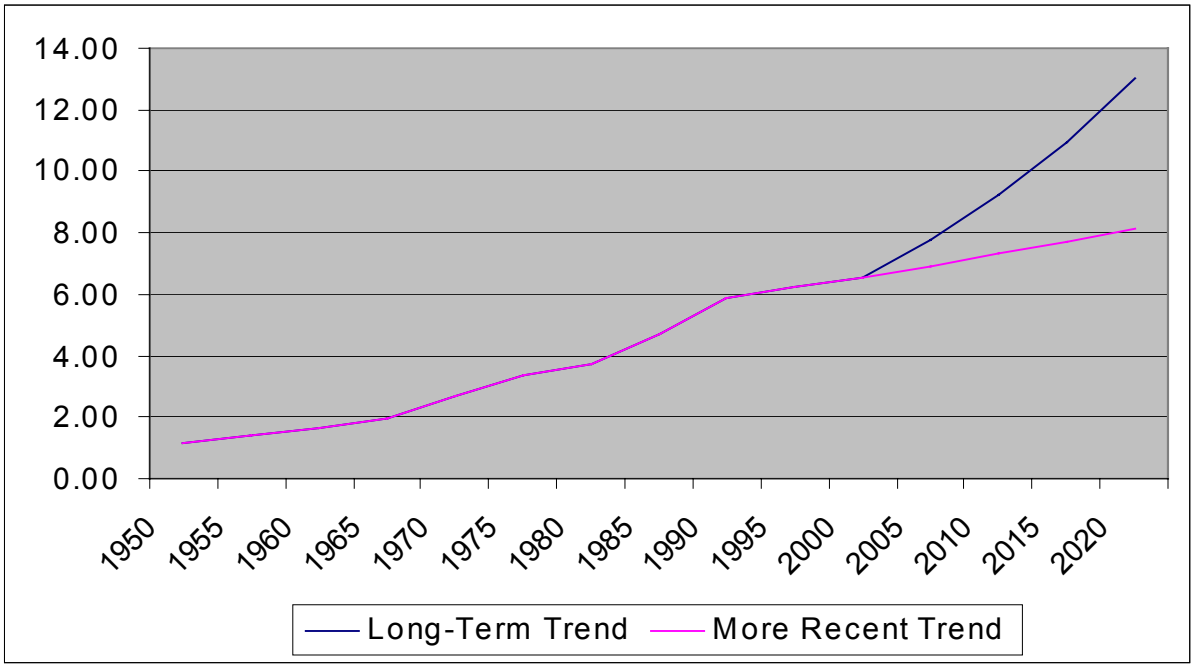


Figure 7.4 Projected Annual VMT



7.3 Population Shifts

While the previous sections highlighted what is occurring and projected to occur with the demographics in Vermont, it is very important to understand the national trends that are occurring and their potential impacts. The largest population gains in the United States continue to occur in the south and west. What this means to Vermont as a state and to the northeast as a region is that there is a gradual loss of representative influence and power in the national government. As the states and regions outside of New England gain a larger share of the total U.S. population, they will garner an increasing amount of the federal funds and programs to improve transportation. In Vermont, it will be increasingly important to work with other states in the northeast to leverage federal funding for transportation. Previous examples of this type of cooperative effort include the I-95 Corridor Coalition, Eastern Border Transportation Coalition, and the Coalition of Northeastern Governors (CONEG). Continuing these efforts and implementing new cooperative agreements will be increasingly important to maintain sufficient funding and support from the federal government.

7.4 Vermont's Future

In the 1995 Long Range Transportation Plan, a detailed review of population, economic and employment trends was conducted. As described above, no major changes have altered the economic, employment or population trends identified in that plan. As a result, the following general statements, originally included in the 1995 plan, are presented again as guiding principles for Vermont's transportation system:

- Transportation should reflect Vermont's scale and foster the quality of life of the people who live here.
- Transportation planning should be integrated at the state and local levels, so that subsequent actions by the various levels of government are compatible.
- Transportation planning should be linked with community and economic development, land use planning, the preservation of natural and cultural resources, tourism, health care, and national needs. These are the key factors in maintaining the state's quality of life.
- The transportation system shapes our communities, and in turn is shaped by our communities and their patterns of development. This fact should guide transportation decisions.
- Investment in town centers should encourage compact settlements.
- Downtowns can benefit from pedestrian facilities and public transit.

- Traffic calming can ensure that people are respected, as cars and bicycles are accommodated.

- Enhancements such as streetscape improvements, parking facilities and better signs improve the transportation system and add vibrancy to communities.

- Bicycle and pedestrian facilities should be introduced and expanded within town centers, and connections established between town centers.

- VTrans should continue to manage highway access to discourage strip development. Highways function better when driveways and turning movements are limited, but strip development thrives when they are not.

- Vermonters want a voice in transportation decision-making, and they want a ready source of good information in order to participate effectively.

- VTrans should continue to improve its communication skills in order to promote more timely and meaningful public involvement.

- Vermont should use its current transportation system fully and efficiently. VTrans must emphasize the importance of maintaining the existing transportation system, an important state asset that should not be allowed to depreciate.

- Transportation policy should encourage an intermodal transportation system by providing a connected and coordinated system, to provide the level of service and range of choice needed to support the future Vermont economy and lifestyle.

- Mobility on key links in the transportation system, especially rail and highway, is the key factor for strategic capital investment.

- Rail travel for work, tourism, and other trips should be promoted to the extent practicable.

7.4.1 ISTEA, TEA-21, and Beyond

The first Vermont Long Range Transportation Plan was written during the final years of the 1991 ISTEA legislation. Since that time, ISTEA's successor legislation, TEA-21, became effective in 1998, and is now in its final years of implementation. The next federal transportation legislation is still an unknown; however, it will certainly have an impact on the amount and type of funding available to Vermont for future transportation projects. Although the legislation is still unwritten, it is likely that many of the more popular aspects of ISTEA and TEA-21 may find continued emphasis in the new bill. This could include a continued emphasis on multimodal and intermodal connections, funding for Transportation Enhancements, and the ability to "flex" funding from highway to transit (and vice versa). VTrans should remain poised to respond to the new funding legislation (and all future funding legislation) to maximize the benefits to the Vermont transportation system.

8.0 Implementation Strategies

The previous sections of this plan identified major transportation-related issues that are important to VTrans and to Vermont. These issues will likely guide the state for the next 20 years, as the "Vision of the Future" becomes reality. From the long list of issues and challenges in the Long-Range Transportation Plan update, the implementation strategies discussed in this section address the most pressing concerns facing VTrans and Vermont over the next five years. This Plan will be updated again in 2006, at that time these implementation strategies will be revisited and modifications or new strategies will be developed to cover the next five-year period (2006 through 2011).

The following sections describe the list of recommendations. These recommendations were conceived to support the three primary objectives of this plan update and VTrans strategic planning, and are listed under those headings. Several of the recommendations pertain to the continuation of VTrans actions or programs that are already in effect and providing the results essential to move the state forward. Other recommendations deal with new issues for Vermont or VTrans, and therefore will require a sustained, coordinated effort to be successfully implemented.

8.1 Manage the state's existing transportation system facilities to provide capacity, safety, and flexibility in the most effective and efficient manner.

8.1.1 Safety

- Develop new safety and security programs in response to the terrorist events of September 11, 2001.

- Continue to develop and use tools such as the Safety Management System to encourage and promote a safe transportation system. Seventy-two percent of the telephone survey respondents said that "safety" is the most important transportation issue. This encompasses the safe design of transportation facilities, not only for motorists but also for pedestrians, bicyclists, transit passengers, the disabled, school children and other groups. Safety also encompasses the timely response of emergency and rescue services, enforcement of laws and penalties addressing speeding, unsafe vehicles, drunk driving and "road rage."

- Coordinate with state and municipal agencies and appropriate private partners to continue to educate the public on safety issues and good safety practices. Better

coordination can increase the effectiveness of existing safety programs that address topics including driver education, licensing, and targeted public programs such as "Operation Lifesaver."

8.1.2 System Management / Maintenance

- Continue to use and refine the existing maintenance, bridge, and pavement management systems to program routine transportation maintenance. Expand such maintenance programs to other applicable modes such as rail. Maintenance is a major component of how VTrans manages the state's transportation system. Programmed maintenance can prevent the need for the untimely and costly replacement of pavements, bridges and other transportation system assets.

- Identify the long term need to reconstruct or replace components of the state's transportation system which have exceeded their useful life-span. All components of the transportation system have a useful life-span which can be fully achieved by proper maintenance. However, maintenance cannot address the longer term eventuality of upgrading or reconstructing components of the system as their life-span is reached. System management recognizes the need to provide for the reconstruction or replacement of components in a coordinated manner so that age or obsolescence does not undermine the performance of the state's transportation system.

8.1.3 Access Management

- Continue to implement access management guidelines to enable compatible land development while preserving traffic flow.

8.1.4 Intelligent Transportation Systems (ITS)

- Further examine the role that ITS can play to manage transportation issues. Potential expanded applications include Automated Traveler Information Systems (ATIS), intermodal connection information, and public transportation coordination and information dissemination

8.1.5 Aging Population

- Continue to monitor population figures and incorporate an aging community in planning for transportation. Over the next 25 years, the state's population over age 65 is expected to increase by 67,000 residents. This represents 20 percent of the state's total population. Through specific legislation, Vermont supports the concept of "Aging in Place" and therefore reasonable measures should be taken to provide for this impending change to the state's demographic mix.

8.2 Improve all modes of Vermont's transportation system to provide Vermonters with choices.

8.2.1 Funding

- Continue to advantageously use flexible federal funds. The flexible use of federal transportation dollars has been permitted since 1991's ISTEA legislation. Flexibility allows the State to use transportation funds where the State's needs are the greatest, thereby providing more opportunities for transportation improvements.

- Vermont should strongly oppose any federal efforts to reduce the availability of flexible federal funds. As future transportation legislation is enacted, it is possible that new funding guidelines could restrict the use of funding flexibility.

- Continue to explore innovative financing mechanisms. Vermont is a national leader in the utilization of innovative financing mechanisms. These mechanisms have permitted the State to take maximum advantage of non-traditional funding sources and to better manage cash flow.

- Encourage the Vermont Legislature to limit transfers from the Transportation Fund to other, non-transportation-related programs

- Encourage the Vermont Legislature to routinely adjust transportation revenue sources to keep pace with the Consumer Price Index (CPI). Transportation revenue sources such as the gasoline tax, motor vehicle registration fees and driver licensing fees are raised on a unit cost basis. Therefore, periodic adjustments to the tax rates are necessary to sustain purchasing power.

8.2.2 Project Backlog

- Continue to address the project backlog and implement "shelf projects." VTrans should continue to maintain a queue of "ready to go" projects on the shelf ("shelf plans") so that as funding is allocated by the legislature, there is no delay in starting construction. The challenge for VTrans is to develop enough projects that there is always something ready, however, too many shelf projects can lead to expired permits, or changing environmental conditions.

8.2.3 Intermodalism

- Identify and enhance the state's key intermodal connections. The previous Long-Range Transportation Plan identified the need to increase the mode choice opportunities for Vermonters. An important next step is better coordination and connections between different transportation modes.

- Appoint an "intermodal coordinator" with duties similar to those of the bike and pedestrian coordinator. The intermodal coordinator would work with all of the transportation providers in the state to facilitate information sharing thereby making intermodal connections seamless.

- Consider financial incentives for transportation providers to enable successful intermodal connections. Incentives would reward providers willing to participate in coordination.

- Investigate the use of ITS tools to reinforce intermodal connections. With new technology and a comprehensive approach, ITS can greatly enhance the opportunities for information sharing that will enable greater intermodal coordination.

8.2.4 Transportation Modes

- Continue to implement and update each modal policy and capital investment plan. These plans, written after the previous Long-Range Transportation Plan was completed in 1995, provide a primary list of recommendations for short-term implementation. Several of their recommendations have been highlighted in the sections below. The roadway mode plan has not yet been completed.

Roadways

- Continue the development of a roadway plan that comprehensively addresses the needs of Vermont's roadway system. While the roadway system is separately addressed by maintenance plans, safety reviews, traffic studies, and proposed new projects, no singular plan covers the roadway system as an element of the larger transportation system in Vermont. The plan should address all roadways in the state that are under some level of state jurisdiction, including the Vermont National Highway System (NHS) roadways, Vermont state highways, and local roadways that receive state funding. The plan should state a vision for the roadway system in Vermont, including its role and function in the state's intermodal transportation network.

Bicycle and Pedestrian

- VTrans should continue to support a bicycle and pedestrian program with at least one coordinator, who should be funded regardless of federal support for the position;

- Develop a Vermont bicycle and pedestrian design manual;

- VTrans should provide greater emphasis to developing a broader range of bicycle and pedestrian activities and facilities in Vermont;

- Pedestrian and bicyclist needs should continue to be considered within transportation improvement projects;
- VTrans should ensure that future roadway improvements, paving projects and bicycle and pedestrian facilities consider aesthetic impacts of projects;
- Vermont should provide additional funding to create a small grants program within the bicycle and pedestrian program to allow municipalities an opportunity to fund small, cost-effective projects;
- VTrans should permit local project management of bicycle and pedestrian projects where possible;
- The Department of Motor Vehicles should incorporate bicycle and pedestrian safety education into the manual for driver education and incorporate bicycle and pedestrian safety question(s) into the motor vehicle licensing examination; and
- VTrans should undertake a public awareness, education, safety, and promotion program.

Public Transportation

- Develop service measures for all public transportation providers;
- Maintain the recent significant increases in state funding of public transportation; and
- Continue to provide assistance to public transit agencies and to update short-range transit plans.

Aviation

- Keep all state-owned airports open in accordance with FAA minimum standards;
- Increase funding to enhance the safety and capabilities of Vermont's airports; and
- Continue to involve the Vermont Aviation Council.

Railroad

- Preserve and protect rail corridors statewide;
- Increase opportunities for rail transportation in Vermont; and
- Continue to involve the Vermont Rail Council.

8.2.5 Public Involvement

- Continue to use public involvement efforts to gather input for VTrans planning and project development activities. Vermont has a long history of conducting local public meetings to discuss the challenges and opportunities facing local communities. VTrans is a leader in the use of public involvement to deliver transportation projects that meet communities' expectations for participation and coordination.

8.2.6 Project Scoping Process

- Continue to use and refine the project scoping process. Although in some cases project implementation has been slow, the process has been successful at information sharing and getting local officials and residents involved.

8.2.7 Traffic Calming

- Continue to implement traffic calming measures where and when appropriate. The protection and enhancement of the quality of life in Vermont's towns and communities is directly influenced by successful traffic calming projects. Further development of traffic calming "typical standards" should be pursued to expand the scope and range of potential applications. Measurable successes of traffic calming projects such as accident reductions and speed reductions should be collected and analyzed to determine what types of applications are most effective at achieving safety improvements.

8.2.8 Roundabouts

Continue to study and implement roundabouts where appropriate.

8.2.9 Park-and-Ride Lots

- Explore the use of shared facilities (those that are not solely owned or operated by VTrans such as churches, shopping centers, etc.) to expand the primary park-and-ride lot system. The shared use facilities will form an important secondary component of the system. Continued development of park-and-ride facilities will depend on available land near primary roadways, and the participation of local and regional governments. Intermodal coordination of both primary and secondary park-and-ride lots should be pursued further. Options for intermodal coordination include support and use by transit providers, and use of ITS technology to improve dissemination of information. These actions will make these facilities more convenient and attract new users.

8.3 Strengthen the economy, protect and enhance the quality of the natural environment, and improve Vermonters' quality of life.

8.3.1 Air Quality

- Continue to play an active role to support other State agencies' efforts to improve Vermont's air quality.

8.3.2 Alternative Fuel Vehicles (AFVs)

- Adopt a policy regarding expanding the use of alternative fuel vehicles as fleet vehicles where appropriate. The State Clean Air Committee may recommend the continued use of AFVs in place of regular vehicles where the AFVs meet the agency's operational requirements.

8.3.3 Wildlife Crossings and Fish Passages

- VTrans will continue to work with the Vermont Agency of Natural Resources and other partners to develop specific policies and guidelines for effectively addressing fish passages and wildlife crossings in transportation decisions and projects.

8.3.4 Stormwater Management

- VTrans will continue to work with the Vermont Agency of Natural Resources to improve stormwater management at transportation facilities and projects.

8.3.5 Vermont Watershed Initiative

- VTrans staff will work with the watershed councils in each of the the watersheds to assist in the writing of plans and their successful implementation.

8.3.6 Transportation and Land Use Connections

- Strive to develop transportation projects that adhere to the State's emerging Smart Growth policies. Smart Growth is community development that recognizes the link between the quality of life and development patterns and practices. Smart Growth

aims to achieve a balance among economic growth, community livability, and environmental protection.

8.4 VTrans' Performance

8.4.1 Performance Measures

- Develop and refine the performance measurement system to better manage resources. VTrans is developing performance measures for all divisions and incorporating them into annual agency strategic overviews. VTrans may lead other state agencies in the implementation of the performance measures. The shift to performance-based budgets will probably not occur for at least five years.

8.4.2 Strategic Planning Process

- Continue to implement the strategic planning process and incorporate recommendations outlined in this Plan. The strategic planning process resulted from the previous Long-Range Transportation Plan.

8.4.3 Long-Range Plan Updates

- Develop a coordinated schedule for update of the Long-Range Plan, Regional Transportation Plans, and Modal policy and capital investment plans. This will help to ensure that plans support and are consistent with one another.

8.4.4 Regional Transportation Plan Updates

- Continue to work with the RPCs and MPO to assist them in developing Regional Transportation Plan Updates. Newly-updated plans should be consistent with this statewide LRTP, however they may provide specific guidance about each region's transportation projects.