

6. TRANSPORTATION

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EXECUTIVE SUMMARY

This transportation section of the Addison County Regional Plan (the “Plan”), duly adopted on May 14, 2008, carries the statutory authority of the Plan. Its purpose is to analyze, plan for, explain and prioritize the transportation needs of the region.

VISION

This Plan’s vision promotes maintenance and limited new development of a safe, integrated transportation system to move people and freight within and through the region now and in the future.

GOALS AND OBJECTIVES

Specific goals and objectives implement the Plan’s vision of preserving and improving the transportation network. Each objective is supported in a following section by Recommended Actions.

PRESERVATION AND SUSTAINABILITY OF INFRASTRUCTURE

1. Implement cost-effective system maintenance and improvements that promote system safety, preservation, and hazard mitigation on a priority basis.
2. Develop limited new infrastructure designed to reduce congestion, promote safety and enhance economic development.
3. Improve important local roads and collectors that are currently subjected to regular flooding and flood damage.
4. Improve safety and design at high-crash locations.
5. Minimize damage to the road system by farm vehicles, without negatively impacting the economic viability of the agricultural economy.
6. Identify, protect and secure local sources of maintenance and construction materials, such as gravel and stone, to maintain and improve the transportation infrastructure.
7. Support roundabouts at intersections where they represent a feasible option for improved safety and performance, especially along major travel corridors at intersections identified by congestion analysis as failing in the future.
8. Support and help to implement efficiency- oriented changes to federal and state permitting and project development processes to promote cost-effective, time-sensitive project construction.
9. Work to identify alternative funding mechanisms that will allow projects to be implemented even if projected state and federal transportation shortfalls materialize.

10. Support land development patterns concentrated in and around downtowns and village centers to preserve Vermont's historic settlement pattern of villages and rural areas.
11. Improve major corridors and preserve the function of the arterial highways while simultaneously working to preserve healthy village communities impacted by these corridor movements.
12. Improve safety and system performance by keeping thru traffic and freight off of the local road system and on the arterial network.
13. Reduce congestion by improving the worst performing intersections identified in the urban areas of Addison County and on the side roads intersecting US 7 in Ferrisburgh.

Energy and Environment

1. Encourage development of alternative fuels, technologies and infrastructure to reduce dependence on fossil fuels, support local energy economic initiatives and mitigate or reduce greenhouse gas emissions.
2. Address mobility issues related to an aging population, increasing transportation costs and energy scarcity.
3. Encourage development and use of practical and economically viable public transit and other alternative modes of transportation.
4. Encourage and enable walking and biking.
5. Reduce roadway impacts on water quality and improve disaster preparedness.

Economic Opportunities

1. Identify and implement opportunities to remove freight and passenger travel from the roadway system and on to alternative modes of transport such as rail.
2. Develop rail infrastructure to provide local economic development opportunities to the region's businesses.
3. Create healthy and accessible local communities by supporting road network improvements to reduce the impacts of vehicular traffic on downtown and village areas.
4. Support Addison County's position as a popular destination for bicyclists.
5. Improve identified problem areas on the VT Truck Network.

RECOMMENDED ACTIONS

Preservation and Sustainability of Infrastructure

1. Bridges and Roadways. Approximately 44% of the roadway miles in Addison County are eligible for rehabilitation or reconstruction and roughly 46% of the bridges are either structurally or functionally deficient. The Plan recommends rehabilitation or reconstruction of these structures. See this Plan's Implementation Plan, supplemented by the ACRPC TAC Project Priority List, which is updated annually for details.
2. Develop the Cross Street Bridge in Middlebury.
3. Improve Route 73, or roads that provide alternative routes during flooding, like the Leicester/Whiting Road.
4. Support efforts to develop a comprehensive methodology for improved reporting of crash locations on local and collector roads in Addison County. Utilize this information to improve high crash locations.
5. Encourage farms and government agencies to work cooperatively to develop cost-effective operating procedures to preserve local roads.
6. Support the efforts of Addison County Transit Resources (ACTR) to expand facilities and service to address growing needs.
7. Encourage VTrans to adopt a design/build program that promotes innovative construction of state infrastructure.
8. Support a municipal bonding option for town-managed projects and development of other financing options.
9. Utilize access management to preserve arterial corridors, particularly US 7 and VT 22A and improve north-south mobility.
10. Support the construction of roundabouts or other intersection improvements on US 7 in Middlebury and Ferrisburgh.

Energy and Environment

1. Encourage municipalities to adopt hazard mitigation plans and implement best management practices for stormwater culvert and ditch design.
2. Encourage infill development to achieve densities capable of supporting transit oriented development.
3. Support development of sidewalks, paths, and other pedestrian friendly infrastructure in village centers and other areas of dense population.

Economic Opportunities

1. Support and implement important initiatives, including the Gateway Rural Improvement Project (“GRIP”), a component of which is the Middlebury Rail Spur, and the results of the Western Corridor Study.
2. Support trans-load facilities that provide local opportunity and reduce truck traffic on US 7, such as proposed in conjunction with the Middlebury Rail Spur, where economically and environmentally feasible.
3. Participate in the planning process underway for the rehabilitation/reconstruction of the Crown Point Bridge to ensure that the bridge remains functional at all times to support the region’s economy.
4. Implement traffic calming on local and collector roads, especially the Monkton Bristol Road and in Middlebury in order to encourage through traffic to use the arterial system.

6.1 INTRODUCTION

The Addison County Regional Planning Commission (ACRPC) re-adopted the current Addison County Regional Plan as a whole in 2005. Chapter 6, the Transportation Plan, was last updated in 1995. This 2007 update to the Transportation Plan recommends specific short-term and long-term actions that can be taken to support the ACRPC's goals and improve transportation. The recommendations are based on an inventory and assessment of existing conditions of the Addison County transportation system and future traffic projections that account for planned development patterns.

This report contains the following sections:

- Vision and Goals
- Recommendations and Implementation Plan
- Transportation Analysis

6.2 VISION AND GOALS

The ACRPC developed the vision and goals for this update by revising the 1995 Transportation Plan's vision and goal statements to reflect current priorities and outlooks. In addition, the 2005 Regional Plan identified overall goals that link transportation with the regional economy. These have been integrated into these statements to reiterate their importance.

6.2.1 VISION

To develop and maintain a safe, integrated, multimodal transportation system for people and freight to meet current and future needs.

6.2.2 GOALS FOR THE TRANSPORTATION SYSTEM

Infrastructure

1. Efficiently and effectively maintain the transportation infrastructure.
2. Ensure that the maintenance and construction of existing and future facilities is economically feasible.
3. Enable limited new infrastructure designed to reduce congestion, promote safety and enhance economic development, such as the Cross Street Bridge in Middlebury.

Energy & Environment

1. Address growing energy concerns by using the most efficient transportation means feasible.
2. Avoid negative impacts to the environment and minimize greenhouse gas emissions.
3. Support development of infrastructure which will promote and enable the use of alternative fuels and/or transportation systems.

Economy

1. Provide sufficient capacity, reliability, and flexibility to support a strong and diverse economy that provides opportunity and growth to the region.
2. Strengthen Addison County's economic role in Vermont's Western Corridor while simultaneously supporting the economic vitality of the region's downtowns.
3. Provide adequate connections to neighboring regions in support of commerce and commutes to work.

Preservation & Sustainability

1. Be economically and environmentally sustainable in order to meet the mobility needs of future generations.
2. Coordinate transportation planning and programming with other regions.
3. Be compatible with the land use planning efforts of local and regional plans.
4. Supply alternative transportation opportunities in both outlying and populated areas.
5. Assure that freight needs are addressed and freight passage is as efficient as possible without detriment to the quality of life in local communities.
6. Maintain and improve mobility along arterial highways to reduce through traffic on collector and local roads.
7. Balance safety, convenience, cost, energy efficiency, environmental protection, economic growth and recreation.

6.3 RECOMMENDATIONS AND IMPLEMENTATION PLAN

6.3.1 INTRODUCTION

In order to support the ACRPC's goals and improve transportation in Addison County, the Regional Transportation Plan includes recommendations and an implementation plan for transportation improvements. This Plan is not a complete and final list of recommendations, but rather a working document to guide future recommendations that support the Vision and Goals.

The recommendations are organized into Policies (Section 6.3.2), Projects (Section 6.3.3), and Planning Initiatives (Section 6.3.4).¹ When appropriate, the recommendations are further broken down into transportation modes. An implementation plan (Section 6.3.5) was developed to realize the recommendations and identify timeframes, estimated order-of-magnitude costs, potential funding sources, lead agencies and potential partners, and next steps. The implementation plan is provided at the end Section 6.3.5.

The Addison County Transportation Advisory Committee (TAC) is made up of members appointed by each town (one member per town) and advises the full commission on transportation-related issues. The TAC prioritizes all transportation projects annually. The prioritization plan is a living document and the most current prioritization should be the standing document for this plan.

6.3.2 POLICIES

This section recommends regional policies for addressing identified issues and achieving the Plan's goals.

Several of the policy recommendations address the County's deteriorating transportation infrastructure and consequent increasing maintenance needs. The costs of replacement materials have been growing while available funding is dwindling. It is critical that the existing system be maintained and preserved and projects that improve safety be a priority.

Policies for accommodating major corridor movements (particularly those to and from Chittenden County) focus on shifting traffic from local and collector roads to arterial highways such as US 7, VT 22A, and VT 116. They support the goal of maintaining and improving mobility along arterial highways while addressing congestion and traffic

¹ For the purposes of this plan, "policies" are principles that will guide regional planning decisions. "Projects" are specific items and tasks that will have a tangible result, even if they first require a scoping study be performed to identify solutions. Some of the items listed in the 'Projects' section are actually summaries of specific projects that have been grouped together and that are listed in Table 1. "Planning initiatives" are action items that further a project and/or will result in a formal plan or study.

conflicts in village centers. Likewise, employing tools such as travel demand management (TDM) techniques, access management, and planning regulations can help improve operations on the existing network.

Encouraging transportation alternatives like rail and bus transit, bicycling, and walking addresses growing energy concerns, minimizes negative impacts on the environment, and promotes economic and environmental sustainability. Improving rail can help assure that freight needs are addressed. However, any improvements should be balanced against impacts to the quality of life in the local community.

Recommendations:

- Prioritize system preservation, maintenance, flood and hazard mitigation and upgrade projects.
- Prioritize safety improvement projects.
- Develop a prioritization plan (separate from the current TAC prioritization) for routine and general maintenance projects.
- Utilize the network of roads to serve travel demand to and from Chittenden County consistent with their function:
 - Traffic that does not originate or end in a particular town (Monkton, Bristol, or Ferrisburgh for example) should be encouraged to use the arterial highways of VT 116 or US 7 by preserving their capacity and travel speeds along rural sections.
 - Class 2 town highways, such as the Monkton Ridge Road, Silver Street, and Bristol Road should safely accommodate travel between adjacent communities at moderate travel speeds (35-45 miles per hour). These speeds will provide reasonable travel times between adjacent communities but are not attractive for longer distance trips.
- Evaluate roundabouts as alternatives to signals.
- Employ access management, particularly on US 7 and state routes.
- Use travel demand management techniques (e.g. developmental regulations and limits on traffic generation) where appropriate.
- Encourage new developments to have sidewalks and use traffic calming elements and traditional neighborhood design principles such as mixed-use, village-style development incorporating on-street parking and grid street alignments, where appropriate. i
- Contain speeders and reckless drivers through police enforcement. This Plan encourages safe driving and supports greater police enforcement to improve safety throughout Addison County.

- Encourage alternative modes such as public transportation, walking, and bicycling. Promote shared rights of way among vehicles, bicycles, and pedestrians.ii
- Ensure that highway and bridge projects are designed with consideration to the needs of bicyclists and pedestrians, using the guidelines provided in the VTrans Pedestrian and Bicycle Facility Planning and Design Manual (2002).iii
- Support planning efforts and projects that allow for improved and coordinated rail and truck freight movements along the western corridor.
- Support cost-effective upgrades to rail infrastructure for freight and passenger service, to potentially include developing industry standards such as double-stacked cars and 286,000 pound cars.
- Maintain an Airport Protection Zone to protect the Middlebury State Airport's approaches from vertical impediments and potential conflicts with surrounding land uses.iv

6.3.3 PROJECTS

This section identifies projects that should be pursued to address existing and future issues, as well as projects recommended by previous plans.

6.3.3.1 Roadway

These projects target specific maintenance and repair needs to address the deteriorating infrastructure, especially on arterial roads, to improve corridor mobility. They support the goal of efficiently and effectively maintaining the transportation infrastructure. While major roadways that regularly flood have been noted (VT 73 and the Leicester-Whiting Road), local roads at risk of river flooding and stormwater run-off damage should be addressed through mitigation measures that reduce repeat failures and allow for anticipated flooding. Local emergency management and hazard mitigation plans should recognize and respond to these events.

Several safety recommendations employ traffic calming to respond to the need to slow traffic speeds in village centers for the safety of pedestrians. A secondary benefit to traffic calming in downtown areas is preservation of village and neighborhood character.

Location-specific recommendations address congestion in the 'hot spots' identified in the existing and future conditions analyses. They also offer strategies for maintaining level of service and suggest segregating different types of traffic onto designated roadways; for example, the Lake Champlain Byways will attract recreational/tourist traffic and preserve other key corridors for business and freight traffic. Addressing traffic conflicts in village centers and managing the roadways efficiently will support the goals of improving safety and attracting economic opportunity.

The region-wide goal to improve major corridors and to preserve the function of the arterial highways – particularly US 7 and VT 22A - and improve north-south mobility.

Recommendations (in no particular order):

- Perform feasibility/scoping studies for deficient road segments as needed.
- Address issues identified by VTrans Road Safety Audit Reviews (RSARs) (including all RSARs and High Risk Rural Road evaluations over the life of this document). (See implementation plan for more information.)
- Support efforts to develop a comprehensive methodology for identifying under-reported crash locations on the local road system
- Pursue recommended remedies for addressing safety issues on VT 17 in New Haven between miles 6.22 and 6.52.v
- Correct deficient vertical and horizontal alignments on VT 116.
- Reconstruct VT 22A – South Water Street – MacDonough Drive intersection in Vergennes (specifically, install traffic signal and make other design improvements). vi
- Address congestion by adding turn lanes, traffic signals, roundabouts, or optimization of traffic signals as appropriate. (See implementation plan for more information.)
- Construct Cross Street Bridge and related network improvements in Middlebury. vii
- Implement traffic calming measures to improve safety and preserve quality of life. Separate the most vulnerable travelers such as cyclists and pedestrians from truck traffic by providing sidewalks, well marked cross walks, and appropriate bicycle facilities in village centers and downtowns along truck routes. Specific measures have been identified for Bristol, Monkton, Starksboro, Bridport, Addison and Shoreham.viii
- Pursue Lake Champlain Byways designation for Downtown Improvement District in Middlebury and VT22A in Vergennes.ix
- Where appropriate on major corridors, widen shoulders, construct truck climbing lanes and pull-offs to enable safe passing along rural segment of roadways.x

6.3.3.2 Bridges & Culverts

This recommendation addresses deficiencies in the bridge and culvert network. However, identification of diverse funding sources to pay for the needed repairs may be a prerequisite for any work to be done.

The Crown Point Bridge over Lake Champlain is very important for Vermont and Addison County. The connection which the bridge provides between Vermont and New York is critical for the regional economy. New York and Vermont have formed a public advisory committee to plan for the rehabilitation or replacement of the bridge.

Recommendation:

- Repair or replace deficient roadway and rail bridges as necessary. Projects will need to preserve the architectural significance of certain bridges and address their environmental sensitivity.

6.3.3.3 Public Transportation

Transit is a vital piece of any transportation system. This Plan strongly supports transit bus service and land use planning in such a way that development supports efficient transit. The Addison County Transit Resources (ACTR) Strategic Plan provides further detail as to specific actions and details.

Recommendations:

- Encourage continued consideration of the multi-modal transportation center in Middlebury.
- Support actions that provide ACTR with the resources needed to provide optimum service.
- Support connectivity between transit and bicycling and walking.
- Incorporate transit planning into town plans.

6.3.3.4 Freight: Rail & Truck

The Middlebury Rail Spur and General Transload Facility are expected to address traffic conflicts in village centers while creating economic opportunity for businesses. Moreover, they support the goal of assuring that freight needs are addressed without detriment to the quality of life in local communities.

Recommendation:

- Encourage the use of rail freight where practical and economically feasible.
- Encourage construction of the Middlebury Rail Spur and General Transload Facility to prevent the addition of more trucks to existing traffic and to reduce existing truck traffic on US 7.^{xi}

6.3.3.5 Bicycle & Pedestrian

Bicycle and pedestrian projects encourage the use of these modes not just for recreation, but also for utilitarian trips such as commuting to work. These projects can attract economic opportunity by making Addison County a destination for tourists and bicycle enthusiasts. In addition, they sustain the goals of encouraging energy-efficient and environmentally-benign modes, as well as providing a safe and sustainable transportation system.

Recommendations:^{xii}

- Improve facilities in Vergennes and Middlebury, which will be focal points for the 400th anniversary celebration of the discovery of Lake Champlain.^{xiii}
- Address the deficiencies, opportunities and projects identified by the 2002 Addison County Regional Bicycle and Pedestrian Plan.

6.3.3.6 Air Transportation

Support the maintenance and continued viability of the Middlebury Airport.

Recommendations:^{xiv}

- Extend the runway at Middlebury Airport from 2,500 feet to 3,700 feet.
- Construct additional hangars and parking at Middlebury Airport.

6.3.4 PLANNING INITIATIVES

This section recommends planning initiatives to address identified issues and support the vision and goals of the Plan.

6.3.4.1 Administrative

At the current rate of infrastructure deterioration, a severe transportation funding shortage is anticipated in the coming years. Planning ahead to identify new and diverse funding sources will help alleviate the pressure exerted on the transportation system. Vermont is not funding the Class 2 roads and structures programs sufficiently to allow towns to maintain roads and structures at current levels without using local revenues. Creative funding programs, including those that are locally controlled, can help to pay for needed repairs in a more timely basis and address the rising costs of replacement materials. New access to private sources of gravel and stone and continued access to other sources must be ensured to avoid shortages and increased costs. Availability of quality material has been an issue in the past and will continue to be one in the future.

Managing agricultural transportation and stormwater run-off would help to preserve the roadways and drainage system. Accepted Agricultural Practices and regulations should address the impact of heavy farm equipment on roadways and stormwater management.

Recommendations:

- Diversify funding/identify new funding sources in all areas (roadway infrastructure, transit, etc.) to maintain and improve the transportation system. Address rising maintenance costs and develop strategies for confronting them.
- Address the limited availability of materials needed to maintain and improve the transportation infrastructure.
- Encourage farms and government agencies to use “best management practices” and work to minimize damage to the road system.
- Participate in the Public/Agency Advisory Committee on the rehabilitation/replacement of the Crown Point/Lake Champlain Bridge.

The ACRPC requests that VTrans:

- Designate a point person to re-engineer the state agency design & permitting processes.
- Lobby to amend federal regulations and work with the State Historic Preservation Office to establish “significant” and practical standards for archaeology.
- Support the design/build criteria (VTrans currently has none).
- Support alternative financing options.

6.3.4.2 Roadway

These planning initiatives address long-range projects and respond to both the deteriorating transportation infrastructure and the increasing amount of work necessary to maintain it.

Recommendations:

- The Western Corridor Transportation Management Plan is currently underway. After it is complete:
 - Update alternatives analysis for VT 22A Bypass in Vergennes.¹
 - Develop a corridor plan for VT 116/Monkton-Bristol Road.
 - Pursue byways designation for VT 30.
- Perform Highway Needs Assessment, Project Prioritization & Upgrades Evaluation for:
 - Leicester-Whiting Road and VT 73 (address drainage and flooding)
 - VT 17 (especially between US 7 in New Haven and VT 116 in Bristol)
- Include Middlebury US 7 Bypass Project (intersecting US 7 at Exchange Street/Happy Valley Road and just north of Boardman Street) as in town master plans.^{xv}
- Include Vergennes VT 22A Bypass Project as in city and town master plans.^{xvi}

¹ The 1995 Preliminary Design Report suggests reviewing zoning around the proposed alignment and developing maps to preserve the right-of-way. The “near-west” alternative has been identified as the preferred alignment, and extends from VT 22A near the Panton town line and rejoins VT 22A at the underpass with railroad.

- Monitor intersections on VT 116 at Route 17 south and north of the Village of Bristol to ensure they provide sufficient capacity, particularly for north-south movements to and from eastern Chittenden County.
- Study the feasibility of upgrading existing roads to divert truck traffic from village centers.
- Develop strategies to address through traffic in residential neighborhoods.xvii

6.3.4.3 Public Transportation

These initiatives are intended to provide efficient and useful transit bus service to maximize ridership.

Recommendations:

- Monitor demand to ensure that public transportation service is supported by Park-n-Ride capacity. If warranted, upgrades and/or additional facilities would require additional investment.
- Continue to create pilot programs to explore new services.xviii
- Study the feasibility of commuter service to New York State and/or routes between Crown Point and Middlebury.xix

6.3.4.4 Freight: Rail & Truck

Addison County should position itself to take advantage of its location in Vermont's Western Corridor. Establishing a plan to address freight needs without detriment to the quality of life in local communities will help to respond to existing problems while preventing future ones. In addition, the 2003 Addison County Emergency Planning Committee Hazardous Materials Flow Study showed that a significant volume of hazard material travels through the region and this is a concern.

Recommendation:

- Develop a regional strategic freight plan to position Addison County for future economic opportunity and avoid conflicts with villages and quality of life.
- Encourage towns to develop hazard mitigation plans.

6.3.4.5 Bicycle & Pedestrian

These action items encourage bicycling and walking to support the goals of addressing growing energy concerns by using the most efficient transportation means feasible, avoiding and minimizing negative impacts to the environment, and providing a safe and sustainable transportation system. They also preserve village character and often provide traffic calming benefits.

Recommendations:^{xx}

- See specific plans in Implementation Plan.

6.3.5 IMPLEMENTATION PLAN

The implementation plan presented in Table 1 on page 25 lists specific action items to implement the recommendations described above. It identifies the implementation time frame, order of magnitude cost estimates, the lead agency and potential partners and identifies the next steps for each recommendation.

6.3.5.1 Implementation Time Frame

The time frame provides an approximation of when a recommendation(s) could be constructed or put into service. The timing considers the anticipated effort necessary for engineering, public outreach, right-of-way acquisition, environmental documentation and other permitting, and construction.

6.3.5.2 Order of Magnitude Cost Estimates

Cost estimates for recommendations from other studies and plans have been used when available. Cost estimates from studies completed in 2002 or earlier were adjusted to 2007 dollars using the U.S. Department of Labor/Bureau of Labor Statistics Inflation Calculator.¹

When cost estimates were not available from other studies and plans, the Plan derives cost figures from sources such as the VTrans Bicycle and Pedestrian Facility Unit Cost Report and the New York State Department of Transportation list of Typical Construction Costs by Project Type. Cost estimates for other projects are based on unit costs applied to approximate quantities of construction items, plus percentage allowances for right-of-way acquisition (15%–20% depending on location), traffic control during construction (10%–40%), storm water management and drainage (maximum of 30%), engineering design and permitting (25%), and a 20% contingency.

¹ Available at: <http://www.bls.gov/cpi/>.

6.3.5.3 Potential Funding Sources

6.3.5.3.1 Federal and State Transportation Funds

Federal transportation funds are provided through several standard programs and typically require a non-federal match. The match is most often covered with state funds (approved by the Legislature) and local funds (in municipal capital budgets approved by local elected officials and/or local voters). Non-federal matches could also be provided from private sector sources.

Federal/state programs that may fund some portion of the recommendations include the following: Surface Transportation Program/VTrans Capital Program (STP); Transportation Enhancement Program (TE); Bicycle and Pedestrian Program (B/P); and the Congestion Mitigation and Air Quality (CMAQ) program.

6.3.5.3.2 Local Funds

Local funds can be used to match federal- or state-funded projects or to finance the complete cost of a project. Property taxes are the primary source of local funds, but other sources, such as impact fees, can be used to help pay for transportation projects.

- **Traffic Impact Fees** – Through impact fees, new developments pay a “fair-share” of the costs related to updating and improving infrastructure based on the amount of “impact” the development would have on that infrastructure. Impact fees are calculated to pay for a specific list of projects that are identified in locally adopted ordinances and have helped to pay for roadway widening projects, intersection improvements, sidewalks, bike paths, buses, and ride share programs.
- **Municipal Bonds** – Some municipalities choose to use municipal bonds to fund large infrastructure projects. Local governments have several options available to raise revenue for paying back a bond. The most common options are briefly described below. Careful review of the advantages of each method, including reliable estimates on how these options affect local tax rates, is necessary before selecting an appropriate funding mechanism.

6.3.5.3.3 Private Funds

Developers, institutions such as Middlebury College, or any entity that seeks to develop or redevelop land, are charged impact fees and often pay for and implement additional modifications to the transportation system. These

contributions are negotiated through the development review process but may also arise through the planning and project development processes.

6.3.5.4 Project Leader

This column in the implementation plan table suggests which entity might be best positioned to lead the project implementation effort.

6.3.5.5 Project Partners

This column in the implementation plan table identifies other agencies, institutions, and public- or private-sector organizations that could support implementation of a project. These organizations may provide oversight and review functions (e.g., VTrans), technical assistance and programming of funds, financial and implementation assistance, or assistance with public outreach and support.

6.3.5.6 Next Steps

These are the first steps, or actions, that should be initiated by the project leaders. Often a next step involves the VTrans Project Development and Scoping process. This process is applicable to all projects that use federal and state funds, and involves creation of a purpose and need statement, evaluation of alternatives, selection of a locally preferred alternative, and a public input process. Following approval of the locally preferred alternative by the VTrans project definition team, a project moves through various design phases and environmental documentation.

TABLE 1: IMPLEMENTATION POLICY PLAN

			Implementation									
	Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Policies	Addison County	System preservation and safety are the ACRPC's two top priorities for transportation	X			1,5,12,13	Regional		↑	ACRPC	Towns, VTrans, US DOT	Identify maintenance and safety improvement projects
	Addison County	Develop a prioritization plan (separate from the current TAC prioritization) for routine and general maintenance projects	X			1,2,8	Regional			ACRPC	Towns	Develop prioritization methodology
	Addison County	Improve mobility in Addison- Chittenden Corridors (shift corridor movements from local/collector roads to arterials)		X		5,6,8,9,12	Corridor			ACRPC	VTrans, towns	Identify improvements to arterials which would attract traffic from local and collector roads; implement traffic calming on local and collector roads to discourage high-speed through traffic
	Addison County	Evaluate roundabouts as alternatives to signalization	X			12	Regional			ACRPC	VTrans, towns	Where appropriate, include roundabouts in all alternatives evaluations for intersection improvements
	Addison County	Employ access management		X		12	Regional	Policy/Not Applicable		ACRPC	VTrans, towns	As opportunities arise, reduce curb cuts, consolidate driveways, etc.
	Addison County	Use travel demand mangement	X			5,7,9,12,13	Local			Towns	ACRPC, VTrans	Implement development regulations and limits on traffic generation as appropriate.
	Addison County	Encourage developers to use traffic calming and traditional neighborhood design principles in their projects	X			5,7,9,12,13	Local			Towns	ACRPC, VTrans	Implement development regulations as appropriate; enforce in site review.
	Addison County	Encourage mixed use, village style development incorporating on-street parking and grid street alignments			X	4,9,13	Local			Towns	ACRPC	Include in Town Plan and revise zoning ordinances
	Addison County	Contain speeders and reckless drivers through police enforcement. This Plan encourages safe driving and supports greater police enforcement to improve safety throughout Addison County.	X			13	Regional		↓	Towns	State Police, DMV	Work with police and Department of Motor Vehicles on enforcement.

			Implementation										
	Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps	
Policies (continued)	Addison County	Encourage alternative modes such as transit, walking and bicycling; promote shared rights of way among vehicles, bicycles and pedestrians	X			3,4,5,6,7,10,13	Local			Towns	ACRPC, ACTR	Apply for "Bicycle Friendly Community" designation with the League of American Bicyclists; complete sidewalk and crosswalk inventories; complete basic maintenance projects; improve existing Park-n-Rides; include signs to promote roadway sharing.	
				X		3,4,5,6,7,10,13	Local				Towns	ACRPC, ACTR	Install bicycle storage and parking facilities; complete system plans for each town; complete conceptual alignment analyses and scoping studies; plan for new Park-n-Rides where appropriate; monitor transit service and adjust as needed
					X	3,4,5,6,7,10,13	Local				ACRPC	Towns, VTrans	Develop connections between towns; pursue compliance with ADA standards; construct projects based on conceptual alignment alternatives
	Addison County	Include alternative modes in infrastructure designs (use Bicycle and Pedestrian Design Standards in bridge and roadways projects)		X		3,4,5,6,7,10,13	Corridor	Policy/Not Applicable		ACRPC	VTrans, towns	Include design elements for bicycles, pedestrians, and transit in all projects where appropriate	
	Addison County	Support planning efforts and projects that allow for improved and coordinated rail and truck freight movements along the western corridor	X			5,6,11	Regional			ACRPC	VTrans	Ensure that plans and policies take into consideration the findings and recommendations of the Western Corridor Transportation Management Plan when it is released	
	Addison County	Support cost-effective rail enhancements for passenger and freight service			X	5,6,8,10,11,12	Regional			VTrans	Vermont Railway, Inc., Federal Railroad Administration, AMTRAK	Monitor conditions: if rail improvements become feasible, initiate planning studies to determine the best alternatives for the region	
	Middlebury	Maintain an Airport Protection Zone	X			1,5,6,9	Local			Town of Middlebury	ACRPC	Review zoning around airport to ensure that airport's approaches are protected from vertical impediments and potential conflicts with surrounding land uses	

				Implementation									
		Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Projects	Roadways	Addison County	Address deficient road segments as needed		X		1	Local	To Be Determined	Federal, state & local transportation funds	Towns	VTrans, ACRPC	Conduct scoping studies
		Ferrisburgh: US 7 - Little Chicago/ Middlebrook	Address existing safety issues and future congestion forecasted in 2030	X			1,5,6,12,13	Local	To Be Determined	Federal, state & local transportation funds, state Hazard Elimination Program	Town of Ferrisburgh	ACRPC, VTrans, US DOT	Address safety issues identified in VTrans Road Safety Audit Reviews, including possible realignment of side roads to eliminate offset; perform intersection studies to determine best strategies for addressing congestion (include turn lane warrant analyses, signal warrant analyses, roundabout evaluation, consider signal optimization or coordination where appropriate).
		Ferrisburgh: US 7 - Stage/Old Hollow	Address existing safety issues and future congestion forecasted in 2030	X			1,5,6,12,13	Local	To Be Determined	Federal, state & local transportation funds, state Hazard Elimination Program	Town of Ferrisburgh	ACRPC, VTrans, US DOT	Address safety issues identified in VTrans Road Safety Audit Reviews, including improvements to signs and pavement markings; perform intersection studies to determine best strategies for addressing congestion (include turn lane warrant analyses, signal warrant analyses, roundabout evaluation, consider signal optimization or coordination where appropriate); look for opportunity to coordinate with paving project.
		Salisbury-Lake Dunmore Road	Address safety concerns, including improvements to signs, sight distances, and drainage	X			1,5,12,13	Local	To Be Determined	Federal, state & local transportation funds, state Hazard Elimination Program	Town of Salisbury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Addison County	Support efforts to develop methodology to identify under-reported crash locations	X			1,5,12,13	Regional	Not applicable		VTrans	ACRPC	Monitor research publications in the event that a methodology is developed; monitor crash reports to identify potential hazard locations.
		New Haven: VT 17	Address existing safety issues between mile 6.22 and 6.52: relocate East Street and reduce the crest at intersection of VT 17 and Sawyer St		X		1, 13	Regional	\$300,000	Federal, state & local transportation funds, state Hazard Elimination Program	VTrans	ACRPC, US DOT	Acquire right of way for the realignment of East Street, pursue design work in 2007 Highway Safety Improvement Program
		VT 116	Correct horizontal and vertical alignment deficiencies			X	5,12	Regional	To Be Determined	Federal, state & local transportation funds	VTrans	ACRPC, US DOT	Identify problem areas; conduct scoping studies

				Implementation									
		Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Projects (continued)	Roadways (continued)	Addison	Apply traffic calming elements identified by previous studies	X			11	Local	\$325,000*	↑	Town of Addison, ACRPC	VTrans	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Bridport	Apply traffic calming elements identified by previous studies	X			11	Local	\$1.6 million*		Town of Bridport, ACRPC	VTrans	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Monkton Ridge and Monkton Boro	Apply traffic calming elements identified by previous studies		X		11	Local	\$3.25 million*	Federal and State Transportation Improvement Funds, transportation enhancement funds, local funds	Town of Monkton, ACRPC	VTrans	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Shoreham	Apply traffic calming elements identified by previous studies	X			11	Local	\$247,000*	↓	Town of Shoreham, ACRPC	VTrans	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Starksboro	Apply traffic calming elements identified by previous studies	X			11	Local	\$1.9 million*		Town of Starksboro, ACRPC	VTrans	Scoping/project development- Include on list of projects to be scoped in an annual work program; look for opportunity to coordinate with paving project
		Vergennes: VT 22A - South Water/ MacDonough	Reconstruct intersection	X (Phase 1)	X (Phase 2)		1,5,6,12	Local	\$240,000	Phase 1: Municipal capital budget or incorporate in sidewalk project Phase 2: State/Federal/Local Funds	City of Vergennes	ACRPC, VTrans, US DOT	Pursue recommendation to install a traffic signal and video detector and make intersection modifications described in VT 22A-South Water Street-MacDonough Drive Intersection Study by RSG, October 2006. Proceed with permitting; develop preliminary design plans.
		Middlebury-US 7 & Exchange Street	Enhance US 7-Exchange Street Gateway/construct the proposed roundabout		X		5,12	Local	\$710,000	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program

			Implementation											
			Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Projects (continued)	Roadways (continued)	Middlebury-US 7 & Hannaford Plaza	Construct the proposed roundabout		X		5,12	Local	\$2 million	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program	
		Middlebury: VT 30 - VT 125	Address congestion	X			1,5,6,12	Local	Included in Cross Street Bridge project		Town of Middlebury	ACRPC, VTrans, US DOT	Roundabout is suggested as part of the Middlebury Cross Street Bridge Proposal, February 2006.	
		Middlebury: US 7 - Creek Road	Address congestion/construct roundabout		X		1,5,6,12	Local	\$1.1 million	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program	
		Middlebury-US 7 & Foote/Middle Road S.	Address congestion/construct roundabout		X		1,5,6,12	Local	\$1.1 million	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program	
		Middlebury: Elm-Exchange-Seymour	Address congestion forecasted in 2030			X	1,5,6,12	Local	To Be Determined	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans, US DOT	Perform intersection studies to determine best strategies for addressing congestion (include turn lane warrant analyses, signal warrant analyses, roundabout evaluation, consider signal optimization or coordination where appropriate).	
		Middlebury: US 7 - Boardman									Town of Middlebury			
		Vergennes: VT 22A - Panton									City of Vergennes			
		Middlebury	Construct Cross Street Bridge Project (including related network improvements: roundabout at College & South Main Streets and new connector road behind Memorial Gymnasium)	X			5,6,9,11,12	Local	\$16 million	Town Reserve Fund, Municipal Capital Budget, State and Federal Transportation Funds, Tax Increment Financing (assuming Middlebury obtains Growth Center designation)	Town of Middlebury	ACRPC, VTrans, US DOT	Conceptual designs completed 2/2006; identify additional funding sources; update prior plans and environmental permits; proceed with project design.	
		Middlebury-US 7 & Charles/ Monroe	Realign intersection to eliminate offset of Charles and Monroe		X		5,12	Local	\$253,000*	STIP, transportation enhancement grants, Designated Downtown funding, municipal capital budget, Transportation Improvement District, developers	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program	

				Implementation									
		Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Projects (continued)	Roadways (continued)	Middlebury-Court-Mary Hogan and Court-Water intersections	Improve intersections		X		5	Local	\$409,000 and \$117,000 respectively*	STIP, transportation enhancement grants, Designated Downtown funding, municipal capital budget, Transportation Improvement District, developers	Town of Middlebury	ACRPC, VTrans, US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program
		Middlebury (Downtown Improvement District) and Vergennes (VT 22A)	Pursue Lake Champlain Byways designation for specified areas	X			6,7,13	Regional	To Be Determined	Municipal capital budgets, Local Business Associations, National Scenic Byways program, state transportation funds	ACRPC	Middlebury and Vergennes, National Scenic Byways Program, State of Vermont, Addison County Regional Marketing Organization	Consult the Addison County-Lake Champlain Byways Local Advisory Committee to continue designation process
		US 7, VT 22A, VT 116, VT 17, VT 125	Corridor improvements (shoulder widening, truck climbing lanes, etc.)			X	5,6,7,12	Regional	Shoulder widening- \$1 million per mile New 2000' passing lane- \$430,000	Federal, state & local transportation funds	ACRPC	VTrans	Identify problem areas; conduct scoping studies
	Bridges	VT 116-four structurally deficient bridges	1. Bristol-New Haven River Bridge 2. Bristol-Baldwin Creek Bridge 3. Bristol- Notch Brook Bridge 4. Starksboro-Lewis Creek Bridge		X		1,5	Regional	\$550 per square foot for replacement	Federal, state & local transportation funds	VTrans	US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program
		VT 125- three deficient bridges	1. Ripton-Middlebury River Bridge (structurally deficient) 2. Cornwall- Lemon Fair River Bridge (structurally deficient) 3. Middlebury-Battell Bridge (functionally deficient)		X		1,5	Regional	\$550 per square foot for replacement	Federal, state & local transportation funds	VTrans	US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program
		VT 17-two structurally deficient bridges	1. Weybridge- Otter Creek Bridge 2. Addison- Dead Creek Bridge		X		1,5	Regional	\$550 per square foot for replacement	Federal, state & local transportation funds	VTrans	US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program
		Middlebury	Repair railroad bridges		X		1,5	Regional	To Be Determined	Federal, state & local transportation funds	VTrans	US DOT	Scoping/project development- Include on list of projects to be scoped in an annual work program

			Implementation										
		Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Projects (continued)	Transit	Addison County	Support actions which provide ACTR with the resources needed to provide optimum service	X			3,5,7,8,10,12,13	Regional	Not applicable		ACTR	ACRPC	Continue pursuing recommendations described in 2003 <i>ACTR Strategic Plan</i> , the 2003 <i>Short Range Transit Plan</i> , and the 2006 <i>Addison County Transit Study</i> .
		Middlebury	Encourage continued consideration of the Multi-Modal Transportation Center		X		3,4,5,6,7,10,12,13	Local	\$3.55 million	VTrans, Transportation Enhancement Program funds, Designated Downtown grants, Historic Preservation grants, Federal Transit Administration	Town of Middlebury	ACRPC, US DOT	Conceptual Design Study completed 12/2002; identify funding sources ; finalize parking needs; work with adjacent property owners to address concerns; initiate NEPA documentation process
		Addison County	Support connectivity between transit and bicycling and walking.	X			3,5,7,10,12,13	Regional	Not applicable		Towns	ACRPC, VTrans	Encourage towns to plan for effective connections between modes.
		Addison County	Incorporate transit planning into town plans.	X			3,5,7,10,12,13	Regional	Not applicable		Towns	ACTR, ACRPC, VTrans	Encourage towns to work with ACTR to incorporate transit in plans.
	Freight	Addison County	Encourage the use of rail freight where practical and economically feasible.	X			3,5,6,7,8,11,12,13	Regional	Not applicable		ACTR	VTrans, towns, private entities	Identify opportunities for freight movements to shift from truck to rail
		Middlebury	Construct Middlebury Rail Spur and Transload Facility		X		5,6,8,11,12	Regional	\$35 million	GRIP/federal earmarks, OMYA, private companies, Vermont Railway Inc,	OMYA	ACRPC, Town of Middlebury, VTrans, US DOT	Proceed with environmental permitting and conceptual design
	Bike & Ped	Middlebury & Vergennes	Improve facilities for Célébration Champlain	X			3,4,5,6,7,10,13	Local	\$82,000	Scenic Byways Grants, Community Development Block Grants, Lake Champlain Basin Program, Middlebury Downtown Improvement District Frunds, VTrans Capital Budget, Transportation Enhancement Grants	Town of Middlebury, City of Vergennes, Middlebury Business Association, Addison County Chamber of Commerce	ACRPC, Célébration Champlain, VTrans, National Scenic Byways Program	Planning - assess needs for walking tour and identify a preferred route; install directional signs, interpretive signs and markers; develop web-based walking tour,
		Addison County	Pursue the projects identified in the Regional Bicycle and Pedestrian Plan	X			3,4,5,6,7,10,13	Local	To Be Determined	VTrans, Transportation Enhancement Program funds, Park-n-Ride Program funds, municipal budget, federal transportation funds	Towns	ACRPC, VTrans	Scoping/project development - Include on list of projects to be scoped in an annual work program
	Air	Middlebury airport	Extend runway from 2,500 to 3,700 feet; construct additional hangars and parking		X		1,5,6	Local	To Be Determined	Federal, state & local transportation funds	ACRPC, Town of Middlebury	VTrans	Scoping/project development - Include on list of projects to be scoped in an annual work program

*Cost estimates from plans or studies completed in 2002 or earlier were updated using the US Department of Labor/Bureau of Labor Statistics Inflation Calculator.

				Implementation										
		Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps	
Planning Initiatives	Administrative	Addison County	Diversify transportation funding and address rising maintenance costs		X		1,7,13	Regional	↑ Not Applicable ↓		ACRPC	VTrans, Towns, ACTR	Identify new funding sources and strategies; improve diversity in funding	
		Addison County	Address limited availability of infrastructure materials	X			1,2,5	Regional			ACRPC	VTrans, US DOT	Develop and expand access to private sources of gravel and stone	
		Addison County	Encourage farms and government agencies to use best management practices and work to minimize damage to the road system	X			1,4,5,6,7,13	Regional			VTrans		ACPRC, towns	Work with state agencies that develop Accepted Agricultural Practices to mitigate farm impacts on roads and stormwater management
		Addison County	Participate in Public Advisory Committee on the rehabilitation/replacement of the Crown Point/Lake Champlain Bridge	X			1,5	Interstate			ACRPC		VTrans, NYSDOT	Consult NYSDOT and VTrans for next steps
		VTrans	Designate a point person to re-engineer the VTrans design & permitting process.; Lobby to amend federal regulations; SHIPO should have “significant” standards for archaeology; Support the design/build criteria; Support alternative financing	X			1,2,5,13	State			VTrans		ACRPC, US DOT	Coordinate with VTrans to demonstrate interest, need and support for these initiatives.
	Roadway	Addison County	Improve Addison-Chittenden corridor movements and shift corridor movements to appropriately designed roadways	X			5,8,11,12	Regional	\$10,000 to \$30,000	Federal, state & local transportation funds	ACRPC	CCMPO, VTrans	Develop corridor plan for VT 116/Monkton-Bristol Road after Western Corridor Transportation Management Plan (WCTMP) is complete	
		Addison County	Pursue byways designation for VT 30	X			12,13	Regional	Not Applicable		ACRPC	VTrans, towns	Consult VTrans for next steps in byways designation process (after WCTMP is complete)	
		Leicester-Whiting Road and VT 73	Address drainage and flooding issues	X			1,2,5,12,13	Regional	\$10,000 to \$30,000	Federal, state & local transportation funds	ACRPC	VTrans, towns	Perform highway needs assessment, project prioritization, and upgrades evaluation	
		VT 17 between US 7 in New Haven and VT 116 in Bristol	Repair roadway segments	X					\$10,000 to \$30,000	Federal, state & local transportation funds				

				Implementation									
				Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead
Planning Initiatives (cont.)	Roadway (cont.)	Middlebury-US 7	Include Middlebury Bypass Project in town master plan	X			5,11,12	Local, Regional	Not Applicable		VTrans	US DOT	Maintain project in plans for long term achievement
		Vergennes-VT 22A	Include bypass project in town plan; investigate rail as alternative to bypass			X	5,11,12	Local, Regional	Bypass project estimated to cost \$15.4 million*	Federal and state transportation funds	VTrans	US DOT	After WCTMP is complete, update Alternatives Analysis; prepare Trasnportation Improvement Program Element; initiate VTrans scoping procedures; amend city and town master plans; reserve rights-of-way through municipal mapping procedures; adjust zoning ordinances; continue public participation in roadway design; investigate rail freight options
		VT 116	Monitor capacity at VT 116-VT 17 intersections both north and south of Bristol		X		1,5,12	Regional	Not Applicable		ACRPC	VTrans	Periodically analyze congestion and queues to ensure there is enough capacity at the intersections
		Addison County	Study feasibility of upgrading existing roads to divert truck traffic from village centers		X		6,11,12	Regional	\$10,000 to \$30,000	Federal, state & local transportation funds	ACRPC	VTrans, Towns	Conduct feasibility studies
		Addison County, Middlebury	Address through traffic in residential neighborhoods		X		5,12	Regional, Local	\$10,000 to \$30,000	Federal, state & local transportation funds	ACRPC, Town of Middlebury	VTrans, US DOT	Planning- identify desirable connections and problem areas, develop mitigation strategies
	Passenger Transportation	Addison County	Monitor transit demand to ensure that service continues to be adequately supported by Park-n-Rides		X		3,4,5,10	Regional	ACTR		ACTR	ACRPC	Monitor transit demand
		Addison County	Continue to create pilot programs to explore potential ACTR services	X			1,3,4,5,7,8,10,12,13	Regional	ACTR		ACTR	ACRPC	Continue current pilot study program
		Addison County	Study feasibility of commuter service to NY State and/or routes between Crowne Point & Middlebury and between Crowne Point & Vergennes		X		1,3,4,5,10	Interstate, Regional	\$210,000 (annual operating + initial capital costs)	ACTR, federal, state & local transportation funds	ACTR	ACRPC	Identified as a medium priority service improvement in the 2006 <i>Addison County Transit Study</i> ; pursue high priority projects first (listed in 'Projects' section of this Implementation Plan)
	Freight	Addison County	Position region for future economic opportunity and to accommodate freight without detriment to quality of life in local communities		X		5,6,7,8,11,12	Regional	Not Applicable		ACRPC	VTrans	Develop strategic freight plan (after WCTMP is completed)
		Addison County	Encourage towns to develop hazard mitigation plans.	X			7,13	Regional	Not Applicable		Towns	ACRPC, VTrans	Develop plans.

			Implementation											
			Location	Description	Short-term (less than 5 years)	Mid-term (less than 10 years)	Long-term (over 10 years)	Goals Addressed	Level	Capital Cost	Potential Funding Sources	Lead	Potential Partners	Next Steps
Planning Initiatives (cont.)	Bike & Ped	Vergennes & Ferrisburgh	Develop pedestrian trail along US 7		X		3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	VTrans, Transportation Enhancement Program funds, municipal budget, federal transportation funds	Town of Ferrisburgh, City of Vergennes	ACRPC	Complete feasibility study	
		Bristol	Develop separated path along New Haven River between South Street and Lincoln Road		X		3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	VTrans, Transportation Enhancement Program funds, municipal budget, federal transportation funds	Town of Bristol	ACRPC	Conduct feasibility study	
		Middlebury	Complete local bicycle and pedestrian system plan	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Middlebury	ACRPC	Develop plan	
		Middlebury	Consider bikeways and pathways in East Middlebury		X		3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Middlebury	ACRPC	Conduct feasibility study	
		Middlebury	Consider link between Wright Park and Chipman Hill	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Middlebury	ACRPC, VTrans	Conduct feasibility study	
		Bristol	Complete sidewalk inventory	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Bristol	ACRPC	Complete inventory	
		Ferrisburgh	Complete local bicycle and pedestrian system plan	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Ferrisburgh	ACRPC	Develop plan	
		Monkton & Ferrisburgh	Consider paving segments of South Middlebrook Road and Shellhouse Mountain Road (both Class III town highways)		X		1,5	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Monkton, Town of Ferrisburgh	VTrans	Investigate demand, study feasibility	
		Leicester	Complete conceptual alignment analysis of route around Lake Dunmore and Fern Lake	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Leicester	ACRPC	Develop study	
		Waltham	Complete conceptual alignment analysis for connection to path by Maple Street/Otter Creek	X			3,4,5,6,7,10,13	Local	\$10,000 to \$30,000	Federal, state & local transportation funds	Town of Waltham	ACRPC	Develop study	

6.4 TRANSPORTATION ANALYSIS

This section of the report provides an inventory and assessment of existing conditions in the region, as well as estimates future travel demand.

6.4.1 PREVIOUS PLAN REVIEW

Previous studies and plans were reviewed to determine what goals and recommendations have already been made for specific areas in the county. Appendix A summarizes the findings of the approximately thirty plans and studies completed since the 1995 plan.

6.4.2 REGIONAL DEMOGRAPHICS AND LAND USE

6.4.2.1 Population and Employment Trends

Addison County is a rural area centered on Middlebury, the largest town in the region and the location of regional medical facilities, large employers, and a college. The 2005 population of Addison County was approximately 37,000 people and was distributed as shown in Figure 1. Projections (based on past population trends) in Section 6.3, Population and Housing, of the Addison County Regional Plan estimated that Addison County would grow at about 1 to 1.5 percent annually, which is a faster rate than that expected for the rest of Vermont. By 2025, forecasts predict the county will have a total population between 44,400 and 51,300. Section 6.3 of the Regional Plan further notes that while growth has traditionally occurred most heavily in the northern areas of the region, this trend is beginning to shift to more central towns like Addison and New Haven.

The Economy Section of the Regional Plan (Section 5) notes that in 2000, there were approximately 18,000 Addison County residents in the workforce. Middlebury, Vergennes, and Bristol are the major employment centers within the region (as shown in Figure 1 and Figure 2). Addison County also has a significant role relative to surrounding counties. Census data in Section 5 of the Regional Plan indicates that the predominant worker flows are from Middlebury and the northern half of Addison County into Chittenden County. Another major flow is from Addison County to Rutland County. For workers entering the region from other counties (mainly Chittenden and Rutland), the major destinations are Middlebury, Vergennes, Bristol and Ferrisburgh. Nearly a quarter of the workforce commutes to Chittenden County, and mostly to Burlington and South Burlington, specifically. Greater detail on employment trends is provided in Section 5 of the Regional Plan.

The majority of employers in Addison County (80%) are small businesses with less than ten employees. Middlebury College (in Middlebury) and Goodrich Corporation (in Vergennes) are the two largest employers in the county, employing about 1900 people combined. Employer sizes are noteworthy for planning transportation alternatives such as employer transit pass programs.

Figure 1: Population Distribution and Employment Centers

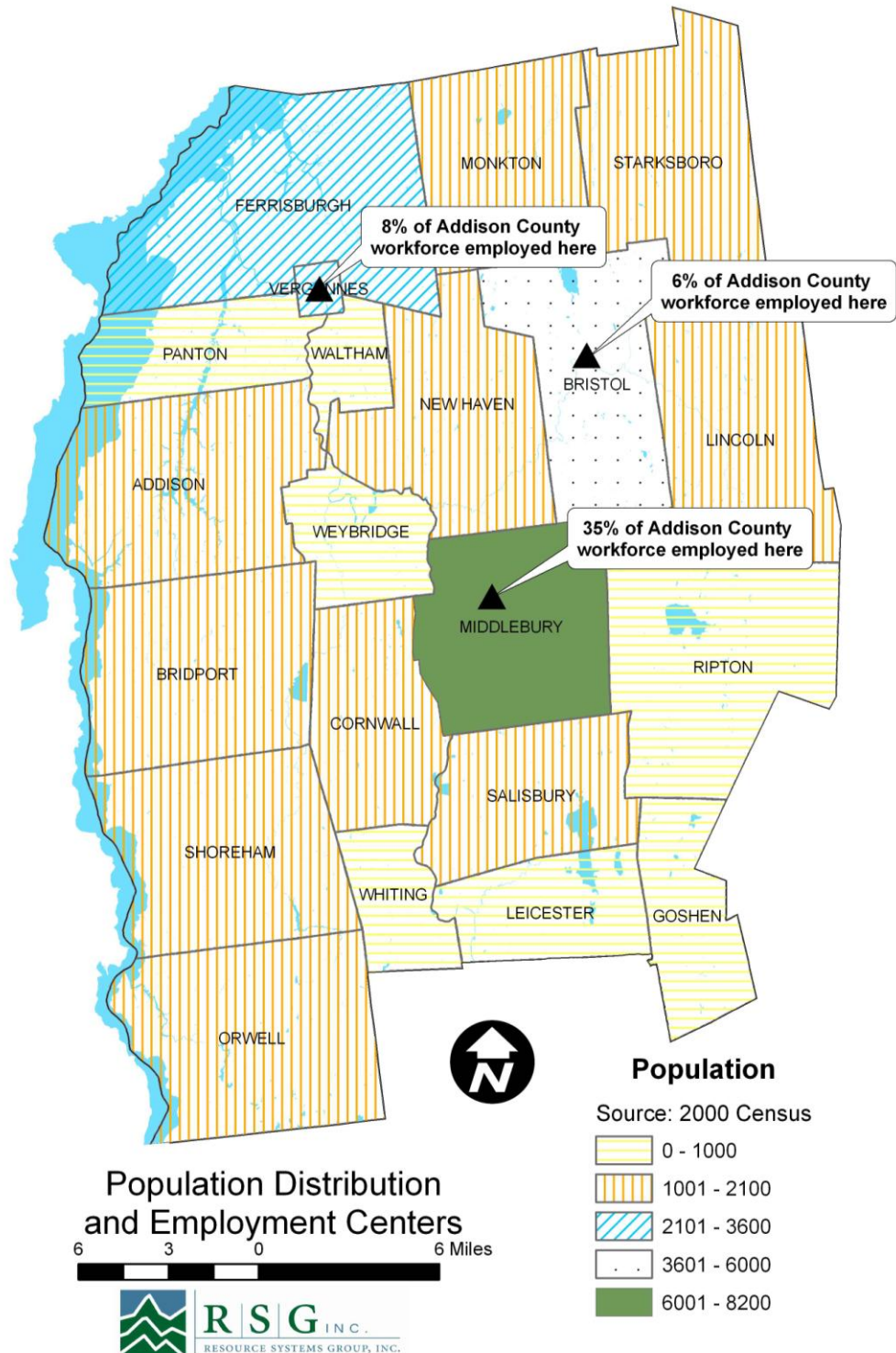
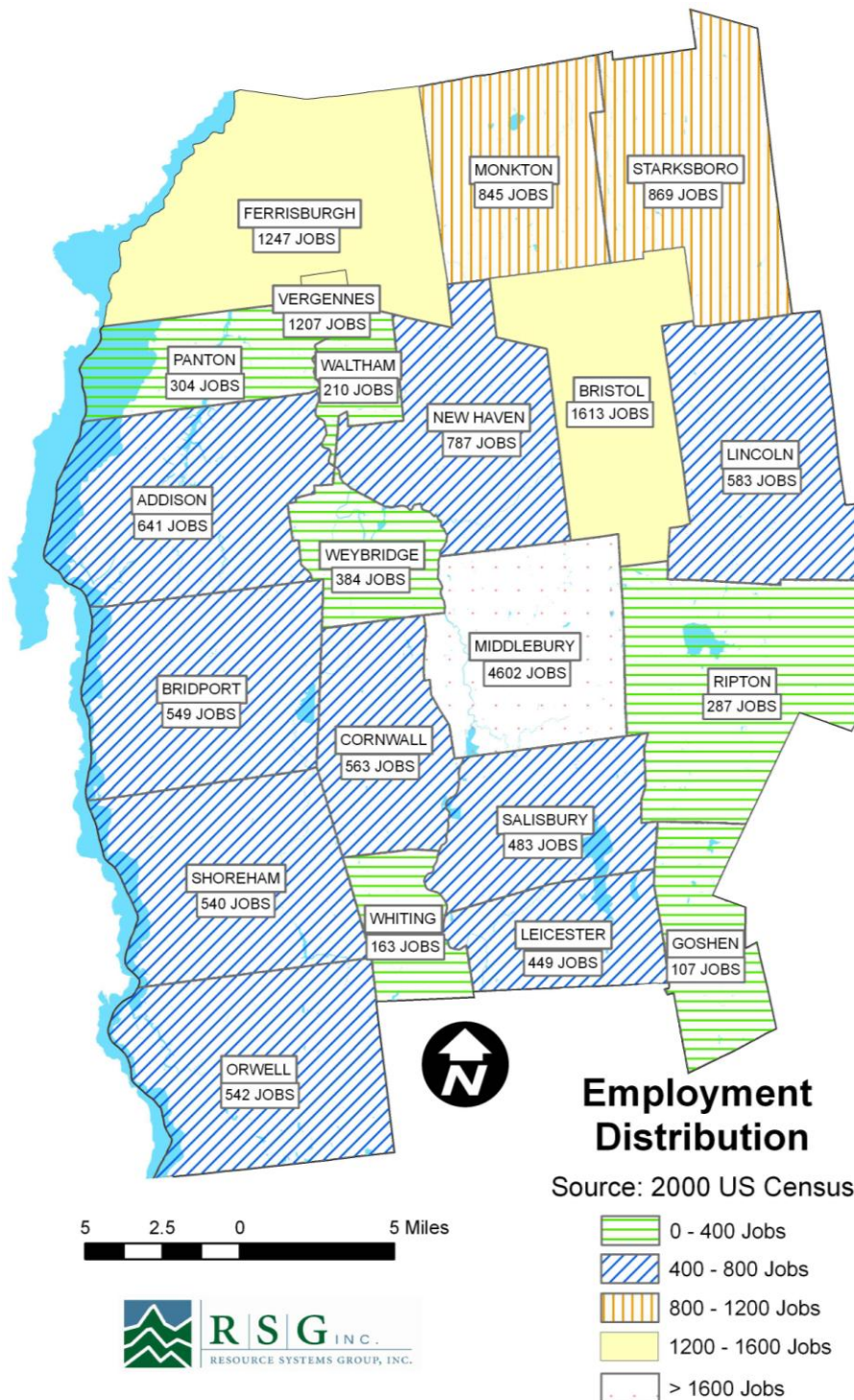


Figure 2: Employment Distribution



6.4.2.2 Land Use Patterns

Consistent with the patterns shown in employment centers and population density, Middlebury is home to the major trip attractors and generators in the county, followed by Vergennes and Bristol. Section 8 (Future Land Use) of the Addison County Regional Plan identifies four types of land use regions to direct future growth:

- Village, Industrial, Commercial and Mixed Uses
- High Density Residential Use
- Rural and Agricultural Planning Regions
- Forestry, Conservation and Floodplain Regions.

While the regions are generalized from town plans, they appear to continue with established trends: rural and agricultural areas dominate the county, particularly Addison, Bridport, Monkton, Shoreham and Orwell. Forest and conservation lands are primarily in the eastern part of the county, namely Goshen, Ripton, Starksboro, Lincoln and significant portions of Bristol and Middlebury. Nearly every town has a village center to accommodate commercial, industrial and mixed uses. Salisbury has the largest proportion of high density residential, while other towns show relatively scattered regions of this land use.

Land uses described in Section 8 of the Regional Plan are Village, Industrial, Commercial and Mixed Uses; High Density Residential Use Regions; Rural and Agricultural Planning Regions; and Forestry, Conservation and Floodplain Regions.

Major natural resources in Addison County include National Forest, the Otter Creek Basin and the Dead Creek Wildlife Management Area. In particular, the annual flooding of Otter Creek influences transportation planning as well as land use planning.

6.4.3 INVENTORY OF EXISTING TRANSPORTATION SYSTEM

The following sections describe the characteristics of the transportation system for each mode: roadway, bicycle & pedestrian, rail, air, transit, and ferry.

6.4.3.1 Roadway Network

6.4.3.1.1 Roadway Classifications

Functional class refers to the road's service characteristics, which define a continuum between vehicular mobility and land access. On one end of the functional class spectrum, roadways such as interstate highways are designed for maximum vehicular mobility while limiting access to adjacent land. At the other end, local streets are designed for a high level of access to adjacent land, which, in turn, reduces the mobility of vehicles along the road. US 7 is

the only principal arterial and provides the major north-south connection for the region. Many of the major corridors (VT 22A, VT 17, VT 116) in Addison County are classified as rural minor arterials. With the exception of local roads, most of the remaining roads (including VT 125) are classified as major collectors. Table 2 describes the miles of roadway in Addison County by functional class as well as the annual vehicle miles traveled (VMT) on each. Figure 3 shows the functional classifications of the roadways in the study area.

A town can request that the State classify a roadway as a particular function by contacting its Regional Planning Commission and submitting a formal request to the VTrans Policy and Planning Division Director.

Table 2: Summary of Roadways in Addison County by Functional Class (source: VTrans)

		Miles of Roadway in County	Annual VMT (millions)
Rural	Functional Class		
	Principal Arterial	26.6	82.5
	Minor Arterial	89.4	102.8
	Major Collector	154.1	88.2
	Minor Collector	53.1	9.8
	Local	686.3	109.2
Urban	Principal Arterial	5.4	22.5
	Minor Arterial	3.6	6.1
	Collector	8.4	6.9
	Local	35.7	14.5

Figure 3: Highway Functional Class

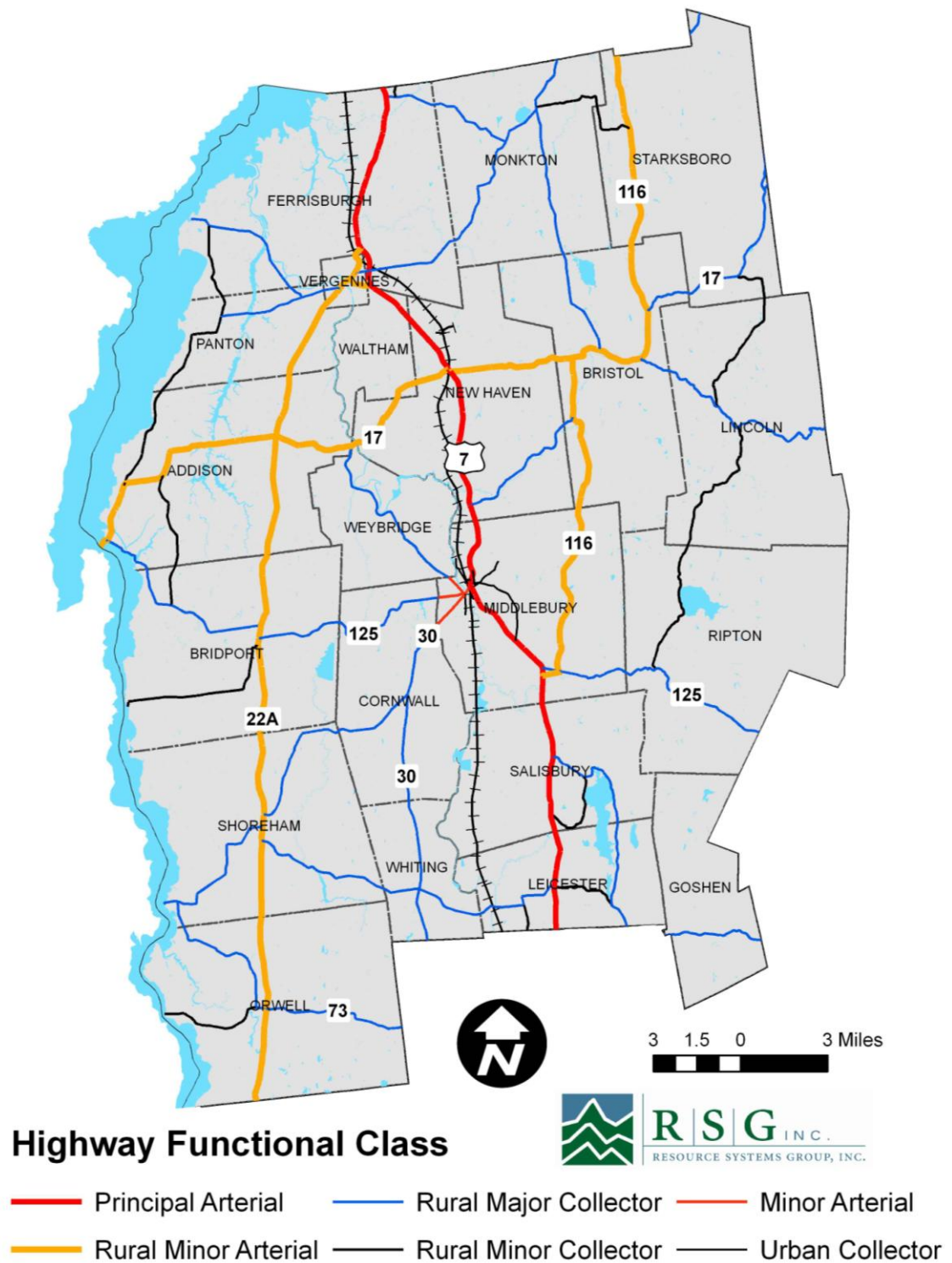


Figure 4 shows the jurisdiction of the highways in Addison County. VTrans has established a roadway classification system to identify the levels of jurisdiction over each section of road across the state. These classifications identify whether, for example, VTrans or the Town is responsible for pot hole patching on a particular section of road. The following categories are used by VTrans¹:

State Route: Forms the primary transportation network through the State. State routes include all state numbered highway routes not designated as Class 1 town highways. The State routes are the responsibility of VTrans.

Class 1 Town Highway: Forms the extension of state numbered highway routes through a town, and which carry a state highway route number. Class 1 town highways are subject to concurrent responsibility and jurisdiction between the Municipality and VTrans on several matters. VTrans is responsible for scheduled surface maintenance or resurfacing while municipalities are responsible for pot hole patching, crack filling, etc; VTrans is responsible for center line pavement markings, while municipalities are responsible for sidewalks, crosswalks and parking. VTrans has exclusive authority to designate Class 1 highways. Gateways to village centers are often located on Class 1 roadways, so the streetscapes of these roads need to serve the dual purpose of welcoming visitors and calming traffic by signifying the entrance to a downtown.

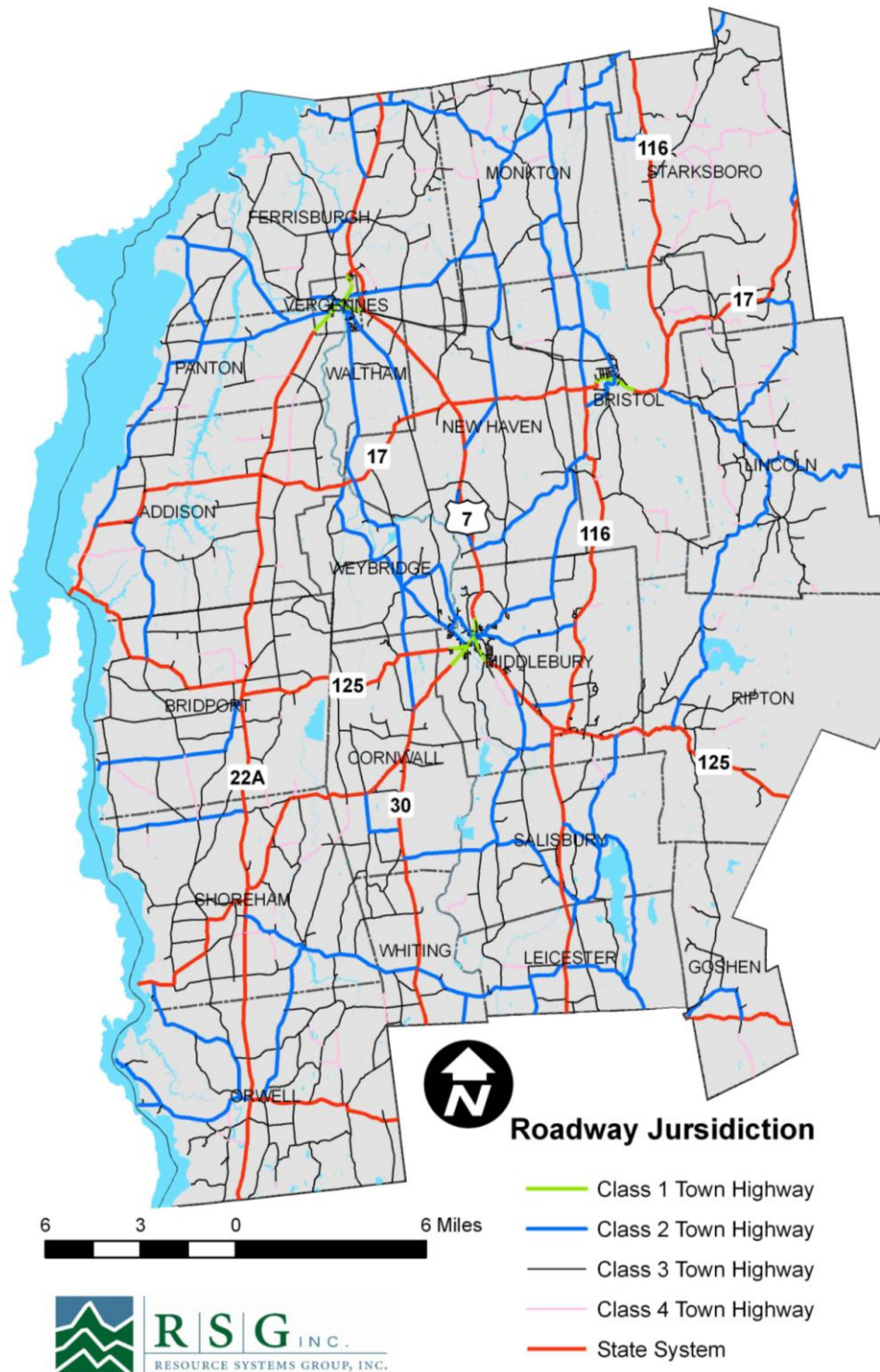
Class 2 Town Highway: Those town highways selected as the most important highways in each town. As far as practicable they shall be selected with the purposes of securing trunk lines of improved highways connecting two towns and to places which by their nature have more than a normal amount of traffic. The selectboard, with the approval of the Vermont Agency of Transportation, shall determine which highways are to be Class 2 highways. Class 2 highways are primarily the responsibility of municipalities. VTrans is responsible for center line pavement markings if municipalities notify VTrans of the need to replace them, while municipalities are responsible for sidewalks, crosswalks and parking. Class 2 mileage normally may not exceed 25 percent of the total Class 2 and Class 3 mileage in the municipality.

Class 3 Town Highway: All other town highways that are "negotiable under normal conditions all seasons of the year by a standard pleasure car." Class 3 town highways, including sidewalks, crosswalks, and parking, are the responsibility of municipalities.

Class 4 Town Highway: All other town highways are considered Class 4 town highways. The majority of these receive limited or no maintenance. They are negotiable at your own risk, usually impassable in winter, and referred to as "jeep trails" at other times of the year. Class 4 town highways, including sidewalks, crosswalks, and parking, are the responsibility of municipalities.

¹ Road classification description sources: VTrans "Handbook for Local Officials" (2004) and NVDA Online Transportation Glossary.

Figure 4: Roadway Jurisdiction



6.4.3.1.2 National Highway System

The National Highway System (NHS) consists of Interstate and Defense Highways and principal arterial roads essential for interstate and regional commerce, travel, national defense, intermodal transfer facilities, international commerce, and border crossings. The only roadway in Addison County that is part of the NHS is US 7.

6.4.3.1.3 Vermont Truck Network

The Vermont Legislature established the Vermont Truck Network,¹ where trucks with overall lengths less than 72 feet (including 53-foot tractor-trailer combinations) may travel without permits. In general, the Truck Network is defined as all of the NHS routes, plus VT 22A between its intersections with US 7 and US 4, VT 105 in its entirety, and VT 104 from I-89 Exit 19 to VT 105. The roads that are not part of the NHS were added to the truck network based on the volume of truck traffic and/or through the legislative decision making process. Figure 5 shows the Vermont Truck Network in Addison County.

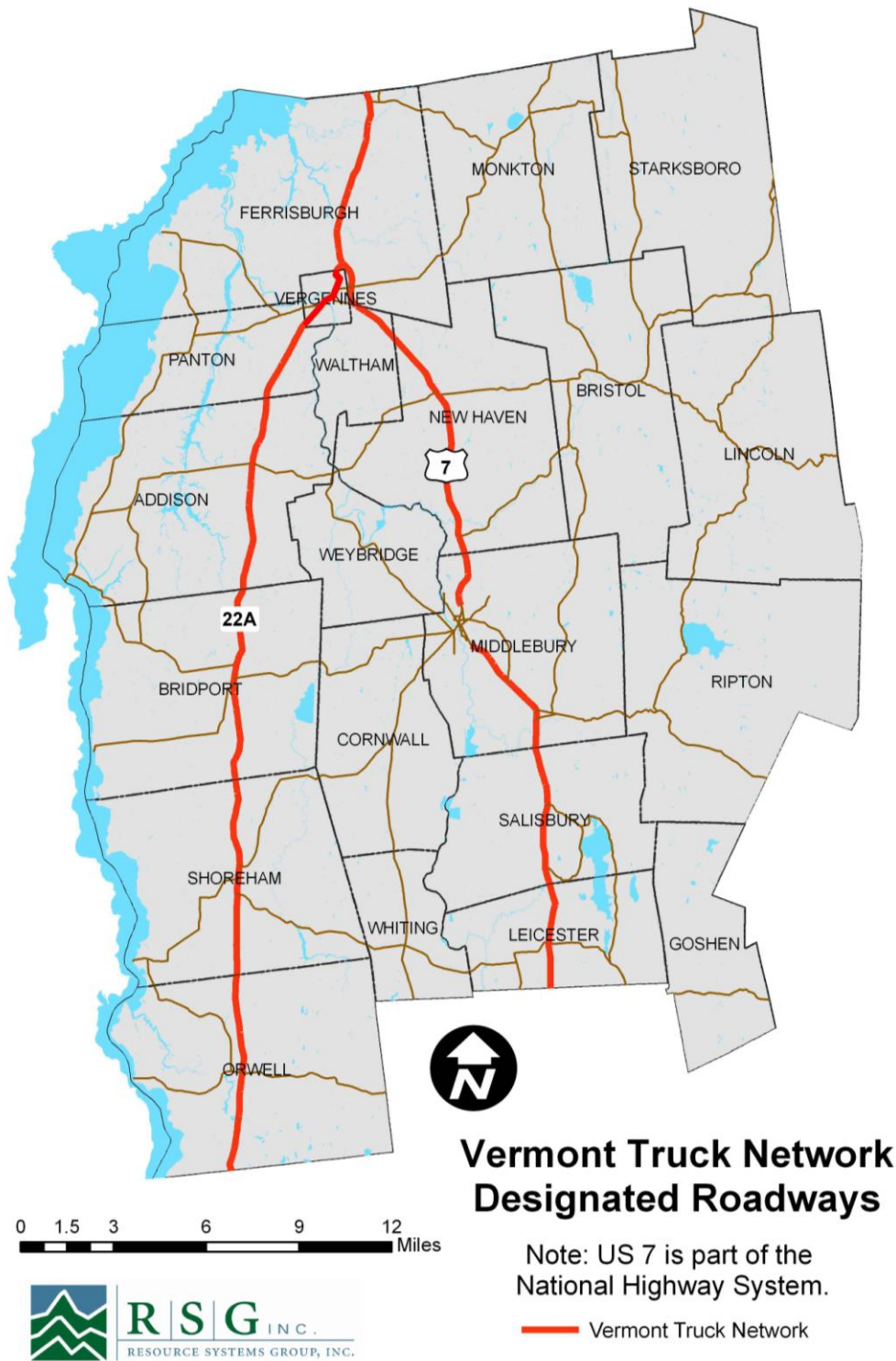
Inclusion on the truck network does not affect design standards, which are governed by functional class, AADT, and truck traffic. However, the Truck Network is important because it may make the corridor more attractive to businesses that depend on large trucks with overall lengths up to 72 feet. At the same time, encouraging large trucks in the corridor may be undesirable from a quality of life perspective because they are noisy, increase congestion because they take longer to start and are more difficult to maneuver through intersections, and are not necessarily compatible with pedestrian and bicycle travel.

6.4.3.1.4 VTrans Access Management Classification System and Standards

VTrans has established an Access Management Program that assigns all segments of the State's Highway System into one of six access management categories. The guidelines provide the basis for access permitting on state highways and are used in the planning and development of VTrans roadway construction projects. Existing access points are not required to meet the design standards. However, the standards are applied to all new access permits and construction projects.

¹ Title 23 V.S.A. Section 1432 as amended by the 2000 Vermont Legislature.

Figure 5: Vermont Truck Network



The *Access Management Program Guidelines* have two sections. Section One describes the characteristics of each access category in terms of functional class and average annual daily traffic and the associated access management standards. The access management guidelines, which are summarized in Table 3, specify whether or not direct access from the roadway to adjacent property is permitted, the type of driveway design factors to be considered, and type of turning movement allowed (traffic operations).

Assuming a permit application satisfies the requirements of Section One, Section Two of the *Access Management Program Guidelines* provides specific geometric standards for driveway width and turning radii, surfacing and pavement markings, need for turn lanes, corner sight distance, spacing between driveways, and corner clearances between driveways and intersections with public streets.

The access management categories within Addison County are shown in Figure 6 and include:

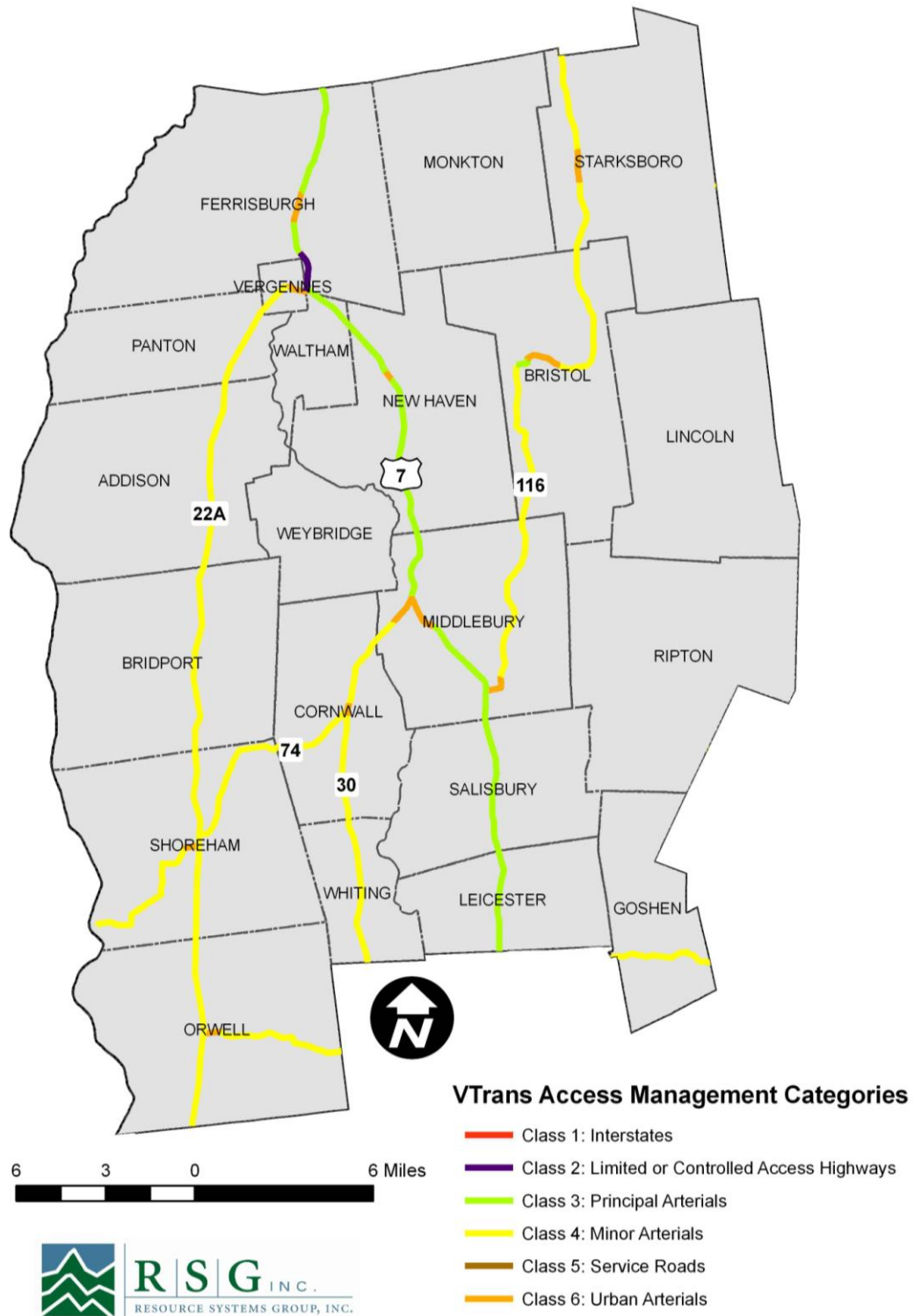
- Category 2: Limited or Controlled Access Highways – A small section of US 7 in Ferrisburgh between New Haven Road and VT 22A;
- Category 3: Principal Arterials – the length of US 7 in Addison County, from the Chittenden County line to the Rutland County line;
- Category 4: Minor Arterials – VT 116 from the Chittenden County line to the intersection with US 7 in Middlebury, VT 74, VT 30, and VT 100;
- Category 6: Urban Sections – in village centers such as Orwell, Shoreham, Cornwall, Middlebury, New Haven, Bristol, Vergennes, Ferrisburgh, and Starksboro.

These categories were designated by the Transportation Advisory Committees (TAC) of the ACRPC in consultation with VTrans based on functional classification, average annual daily traffic, local plans and zoning, and existing and future land use.

Table 3: VTrans Access Management Categories

Access Category	Functional Class and AADT Characteristics	Direct Property Access	Driveway Design Factors	Traffic Operations and Movements Allowed	Design Features
1	- Interstates	No	Not Applicable	Access only provided at Interchanges with public highways	Grade-Separated Interchanges
2	- Other Principal Arterials - Limited Access Major Collectors	No – Except by Access Rights	Number, Spacing and Locations	Access at intersections with public highways	At-Grade or Grade-Separated intersections at ½ to 1 mile intervals
3	- Other Principal Arterials - Minor Arterials (AADT > 5,000) - Non-limited Access Major Collectors on State Highway and Class 1 Town Highways (AADT greater than 5,000)	Deny, Restrict or Allow	Number, Spacing and Locations	May limit turning movements	- Physical Barriers (Medians or Islands) - Traffic signal spacing requirements - Left and/or Right Turn Lanes Required - Spacing of public highway intersections that are or may be signalized (1/4 to ½ mile)
4	- Minor Collectors - Minor Arterials and Class 1 Town Highways (< 5,000 AADT) - Non-limited Access Major Collectors on State Highway and Class 1 Town Highways (Less than 5,000 AADT)	Yes	Number, Spacing and Locations	All turns in & out May limit turning movements	- Spacing of public highway intersections that are or may be signalized (1/4 to ½ mile)
5	- Frontage or Service Road	Yes	Number and location	All turns in and out	- Traffic signal spacing not less than 500 feet.
6	- May have any functional class but are urban in nature.	Deny, restrict, or allow	Number and location		- Traffic signal spacing not less than 500 feet.

Figure 6: Access Management Categories



6.4.3.1.5 Byways Program

In 1991, ISTEA created the National Byways Program to identify distinctive roadways which preserve scenic, cultural, and natural qualities. Vermont participates in this federal program via the Vermont Byways Program. A Vermont Byway is a roadway, or a broader corridor centered on a roadway, with at least one of six intrinsic qualities related to archeological, cultural, historic, natural, recreational, or scenic resources that should be preserved or enhanced. The *Vermont Byways Program Manual* was developed to describe how a roadway can be nominated for and designated a Vermont Byway. In Addison County there are two designated byways: one in Vergennes and one in Middlebury. Additionally, a corridor management plan exists for the major roadways throughout the region.

6.4.3.1.6 Intersections

Most of the intersections in Addison County are controlled with Stop signs. There are a few signalized intersections in Middlebury and Vergennes, as well as on US 7 at the intersections with VT 22A and with Monkton Road and at the intersection of Main Street and North Street in Bristol. In November 2006, VTrans conducted signal and turn-lane warrant analyses at the US 7 – Old Hollow Road in Ferrisburgh: several warrants were met for the signal; a left-turn lane was found to be warranted for the northbound and southbound directions. A signal warrant analysis at the US 7 – Little Chicago Road intersection in Ferrisburgh in April 2004 showed that the warrants were not met with the exception of the peak hour warrant (7:00-8:00AM). Also in Ferrisburgh, a September 1999 left-turn lane warrant was met for the US 7 – Greenbush Road intersection. In Middlebury, the 2004 US 7/Exchange Street Intersection Study indicated that the signal warrant was met and recommended that a roundabout alternative be pursued.

Roundabouts as an alternative to traffic signals have been explored at several intersections along US 7 in Middlebury, and have been identified as the preferred alternative. They are listed in the Implementation Plan.

To be consistent in design along the corridor, roundabouts should be evaluated as alternatives for intersections on US 7 in Ferrisburgh as well.

6.4.3.2 Structures

According to the VTrans Structure Inventory, there are 213 transportation-related structures in Addison County. Of these structures, 137 are bridges (including four covered bridges on the National Register of Historic Places). Table 4 summarizes the jurisdiction and type of structure. State structures are those which are part of the Interstate or State highway system, while town structures are part of the town

highway system. Long structures are 20 feet or longer; short structures are less than 20 feet but greater than six feet.

Table 4: Summary of Structures

Town Long (> 20')	87
State Long (> 20')	57
State Short (> 6' and < 20')	75
Total	213

One of Addison County's most significant structures is the Champlain Bridge, which links Addison (Chimney Point), Vermont and Crown Point, New York via Route 17. Constructed in 1929, the bridge has both historic and engineering significance. The New York State Department of Transportation (NYSDOT) and VTrans are working together to determine whether the bridge should be rehabilitated or reconstructed and have set a tentative date of 2012 to begin bridge work.¹

6.4.3.3 Pedestrian and Bicycle Facilities

In a transportation network, the role of walking cannot be overstated. Every trip begins and ends with walking. Transit trips often involve a higher degree of walking, and potential deficiencies exist at transit stops where adequate pedestrian facilities are lacking. Therefore, if deficiencies in the pedestrian network exist, it could potentially affect transit ridership.

Walking can be both recreational and utilitarian, and has significant health, economic, environmental, and social benefits. To support this mode (and those closely associated with it, like transit), specific facilities dedicated to pedestrians are necessary. Improving walkability positively impacts health, transportation system performance and maintenance, fuel consumption and the environment. Particularly in high density areas with walkable distances between origins and destinations, identifying opportunities for pedestrian investments will result in a more effective transportation system. Such opportunities are noted in detail in the 2002 Addison County Regional Bicycle and Pedestrian Plan, and often entail simple improvements such as crosswalks and traffic calming.

The pedestrian infrastructure in Addison County is concentrated in the higher density areas: Middlebury, Vergennes, and Bristol. These facilities are comprised mainly of

¹ NYSDOT Press Release, March 9, 2007, "New York and Vermont Announce Crown Point Bridge Panel," available at www.nysdot.gov.

sidewalks in the village center, although Vergennes also has a designated walking path. In addition to these larger towns, there are sidewalks along River Road, Quaker Street, and Lincoln-Ripton Road in Lincoln, and in the Orwell village center. The Addison County Regional Bicycle and Pedestrian Plan lists other significant pedestrian areas throughout Addison County.

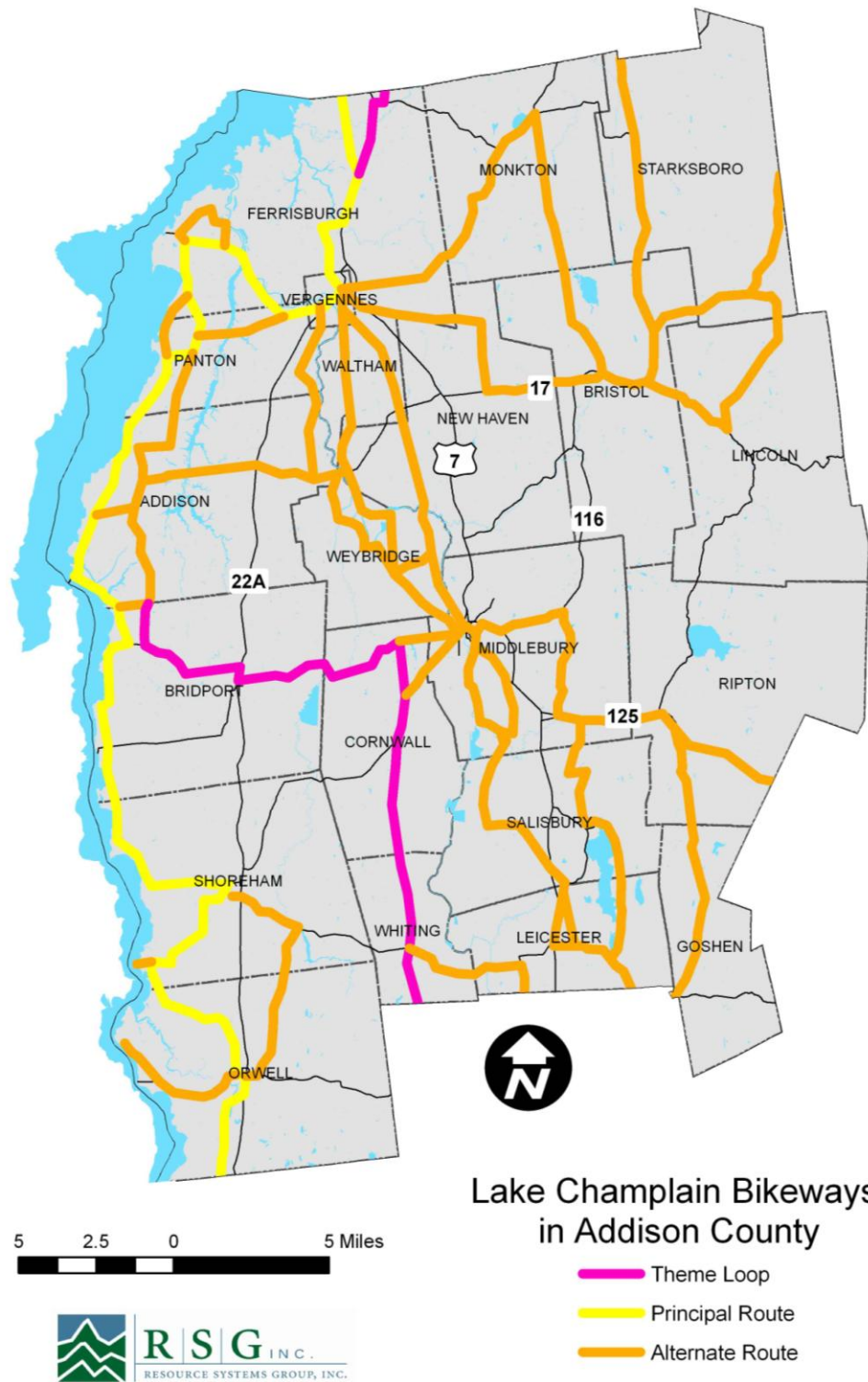
The Vermont Bicycle and Pedestrian Plan suggests that walking should not only be recognized as a valuable transportation mode, but also encouraged as such:

According to national surveys (FHWA, 1990, 1994) 7.2 percent of all trips are made by walking. Of these, only one out of five trips involves travel to or from work, and less than 2 percent involve on-the-job travel. National surveys also reveal that one-quarter of trips by all modes are one mile or less in distance and that the average pedestrian trip length is 0.6 mile (FHWA 1990). This suggests that a significant number of trips made by other travel modes could be made on foot, if conditions were better. Because many Vermonters live in compact villages, many residents and visitors alike would be served by pedestrian facilities that are within the 0.6 mile range of an average walker.¹

The Lake Champlain Bikeways are a network of roadways identified as bikeways that entirely encompass Lake Champlain; the extent of the Bikeways in Addison County is shown in Figure 7. Addison County has been noted as a popular area for bicyclists because of its scenic beauty and low volume roadways. The Cornwall Path Committee is an active group seeking to improve the pedestrian and bicycle friendliness of VT 30 and VT 125 from Middlebury to Cornwall.

¹ State of Vermont Bicycle and Pedestrian Plan, December 1998, page 28.

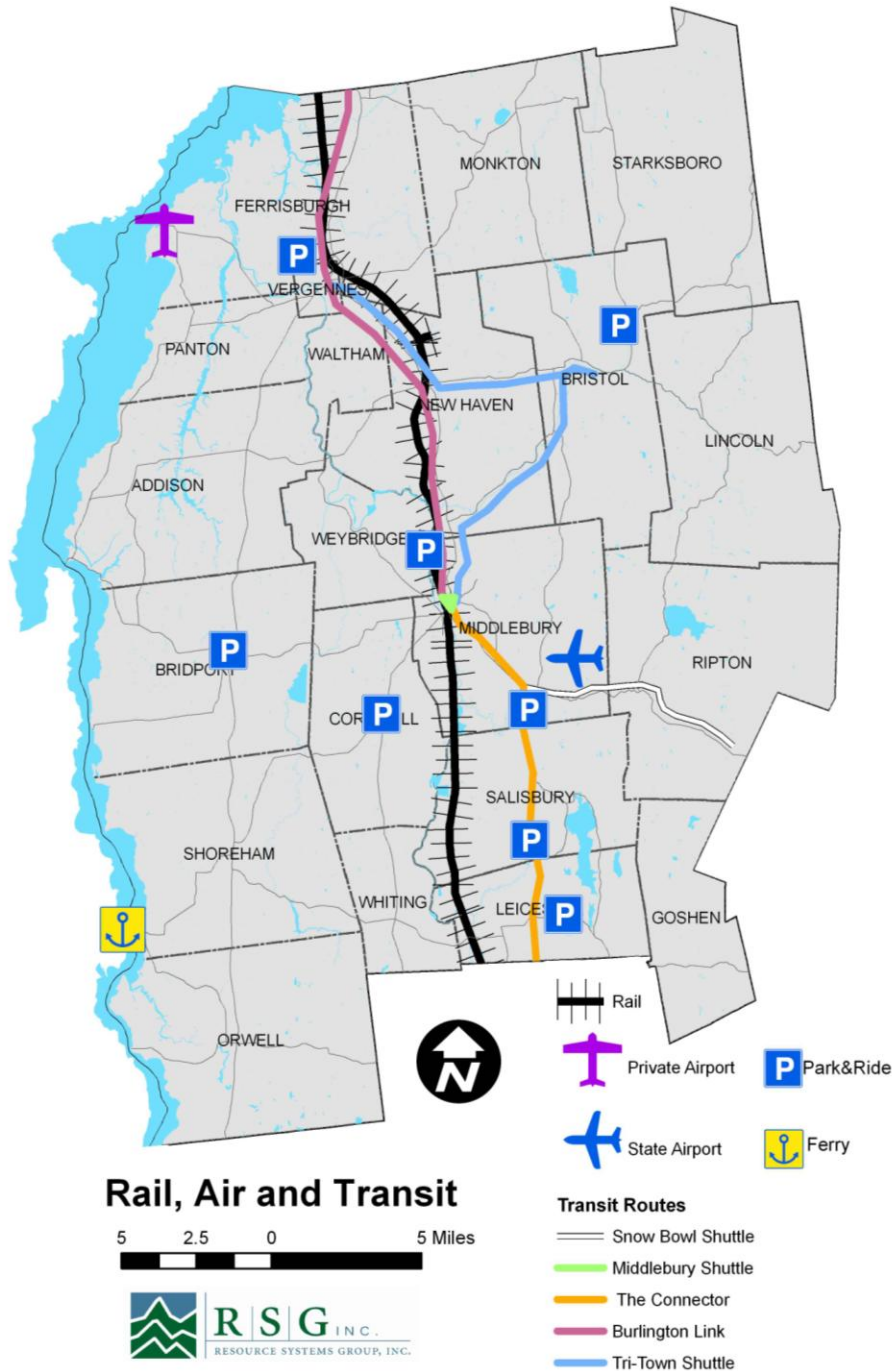
Figure 7: Lake Champlain Bikeways in Addison County



6.4.3.4 Public Transit, Rail, Air & Water Transportation

Addison County is served by the transit, rail, air and ferry facilities shown in Figure 8. The following sections describe these services in more detail.

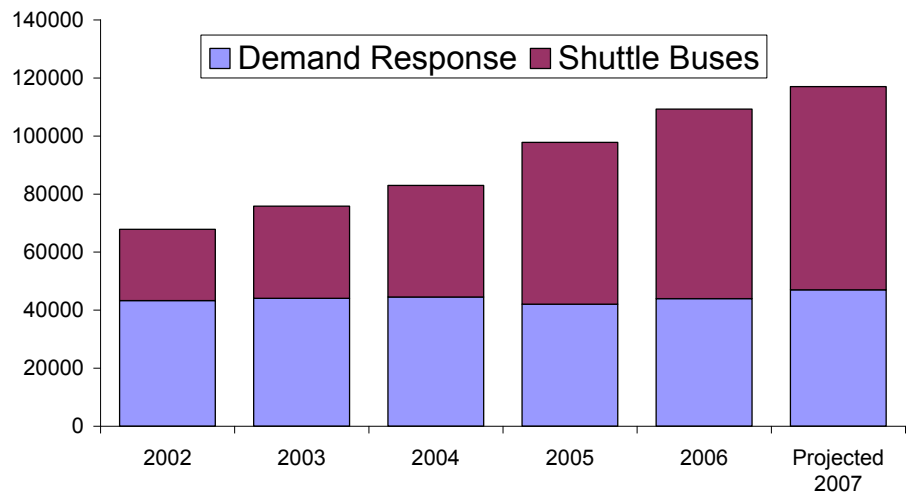
Figure 8: Rail, Air, Transit and Ferry Services



6.4.3.4.1 Transit

Addison County Transit Resources (ACTR) is the county's primary transit provider and provides a mix of transit services throughout the region. ACTR has shown strong growth in recent years (see Figure 9) and given demographic and energy supply/demand projections, ACTR will experience increased demand in the future. This plan supports transit and ACTR in fulfilling its mission, meeting its strategic goals, and serving the growing demand for transit in Addison County.

Figure 9: ACTR Annual Ridership (source: ACTR)¹



The regional plan also supports other services where appropriate.

Specialized Transit

ACTR's Specialized Transit services provide door-to-door service to Addison County's Medicaid, elderly and disabled residents. Most service is provided by volunteer drivers who use their own vehicles and are reimbursed on a per mile basis. However, if volunteer drivers are not available, trips will also be served by taxi. ACTR has lift-equipped vehicles for riders with wheelchairs.

¹ Chart does not include routes to Rutland or Burlington.

ACTR attempts to accommodate all trips regardless of the destination. Most trips are provided within the county, but service is also common to medical facilities in Burlington, Rutland, White River Junction and Hanover/Lebanon NH. In addition, ACTR occasionally provides medical trips to locations as far away as Boston. Specialized Transit serves approximately 900 passenger trips per week.

6.4.3.4.2 *Park-and-Rides*

There are a total of nine Park-and-Rides in Addison County. These facilities serve transit and/or carpools. The Bristol and Ferrisburgh/Vergennes facilities are considered the two official state Park-n-Rides, having received grants from the VTrans Park-n-Ride program. Many of the lots are informal with few, if any, amenities (such as bicycle racks, public telephones, lights, or shelter). VTrans' 2004 Park-and-Ride Study identifies other areas where Park-and-Ride facilities are needed, such as New Haven near the intersection of US 7 and VT 17, and Addison near the intersection of VT 17 and VT 125.

6.4.3.4.3 *Freight*

Addison County's only rail line runs through the Western Vermont Transportation Corridor; it includes no rail yards or transfer facilities. The VTrans-owned line is classified as a local railroad (a railroad that is line haul and operates less than 350 miles of track) and is operated by Vermont Railway, Inc. (VTR). The Federal Railroad Administration (FRA) designates the line as Class 2, meaning that 25 mph is the maximum safe operating speed for freight trains given the condition of the track.¹

The Middlebury Rail Spur concept was developed in response to the approval of increased extraction levels at the Omya quarry in Middlebury, which would in turn add to the existing number of large trucks on the road and likely put Omya in violation of its Act 250 permit. Currently, it is anticipated that the Middlebury Rail Spur project would include a general transload facility and not just eliminate the addition of large trucks to the roadway, but lower existing truck volumes by transference of those trips to rail. Moreover, the Spur and its associated facilities are expected to benefit several other businesses in the vicinity in addition to Omya. The 1996 Middlebury Rail Spur Study estimated that there were 260 trucks on US 7 in Middlebury, making up 11.5% of total traffic, and noted that total traffic between Middlebury and Florence was projected to rise more than 33% by

¹ There are five FRA classes that dictate safe operating speeds (ranging from 10 mph to 80 mph) for freight and passenger trains depending on track condition.

2012.¹ Assuming that truck traffic increases at the same rate as total traffic, this suggests that there would be approximately 346 trucks by 2012.

Significant constraints to freight movement in Middlebury pose difficulties for both truck and rail. Aside from projected truck traffic, geometric constraints (such as inadequate curb radii) at intersections along US 7 in Middlebury hinder large truck movements. The two rail bridges in Middlebury at Merchants Row and at Main Street are rated as deficient and do not provide enough clearance to accommodate the new standard double-stacked rail cars. While raising the bridges would provide clearance for the new car heights, the Town has concerns about how this would impact the downtown and what the safety implications of freight moving through the downtown area might be.

Currently there are two planning initiatives underway concerning rail. The first is the Western Corridor Transportation Management Study, in which the ACRPC is a participant and which is designed to improve and interconnect the entire Western Corridor.

The second is the Gateway Rural Improvement Pilot (GRIP), a \$30 million SAFETEA-LU pilot program² that focuses on the Western Vermont Transportation Corridor centered on US 7 and the parallel railway. The purpose of the program is “to demonstrate the benefits of a freight transportation gateway program to a rural rail corridor.” The Western Vermont Transportation Corridor was selected because it is in a rural area and is an intermodal corridor that includes an international border crossing. It is expected to clearly show community, transportation, safety, and environmental impacts of the project by the transference of trips from the highway mode to rail. The GRIP is particularly significant because it represents a multimodal (highway and rail) strategy to address transportation issues.

The GRIP is comprised of four improvement projects: the Rutland Railyard Relocation, the Middlebury Spur and Freight Transfer Facility, the St. Albans Connector, and improvements to the Bennington-Rutland-Burlington-Essex main line (including increasing the weight capacity to accommodate 286,000 pound cars and upgrading the system to facilitate passenger service along the line). These projects would translate to an estimated reduction in large truck

¹ Middlebury Rail Spur Study, 1996, pages 44-45.

² Section 1946 of SAFETEA-LU

trips through Brandon by 70,000 per year, according to the GRIP Program Description¹.

The 2006 *Vermont State Rail Plan* estimates that freight rail tonnage will increase by 2.4% annually in the next five years, due in large part to Omya, Inc., which is located in Florence, Rutland County on the same rail line that runs through Addison County. The major contributor to the freight growth is a quarry near Middlebury: the stone from the quarry is transported via truck through Brandon to Florence, which is the reason for consideration of a Middlebury Spur.

There is currently no passenger rail service in Addison County, although the Vermont State Rail Plan notes that there has been consideration of service between Bennington and Burlington/Essex Junction via Rutland. This service would likely use the rail line in Addison County, which would need major upgrades for passenger trains. Such upgrades are part of the line improvements mentioned in the GRIP.

6.4.3.4.4 Air Transportation

There are two airports in Addison County: the facility at Middlebury is state owned and operated, while the one at Basin Harbor in Vergennes is privately owned. The Middlebury facility is a local service airport, meaning that it primarily caters to personal and recreational aircraft, but also has some commercial flights, flight training and corporate flights. There are 50 aircraft based at Middlebury (mostly single-engine) and an estimated 45,600 annual operations². The runway at Middlebury is 2500 feet long with an asphalt surface that is in good condition.

The Basin Harbor airport is a specialty service facility for single-engine and smaller aircraft (e.g. ultra-lights and gliders). The airport is closed during the winter and there is an average of 40 aircraft operations per week: 95% of these operations are transient general aviation and 5% are military. The runway at Basin Harbor is 3000 feet long with a turf surface that is in good condition.³

According to the 2006 Airport System Policy Plan, there are three national service airports (meaning that they “connect the local, regional, and statewide economy to the national and global economy”) that serve Addison

¹ The GRIP Program Description estimates that one rail car carries an equivalent amount of freight as four trucks.

² 2005 Middlebury Town Plan, page 125.

³ Source for Middlebury and Basin Harbor airport statistics is www.airnav.com.

County: Burlington International, Edward F. Knapp State (in Berlin), and Rutland State.

6.4.3.4.5 Water Transportation

Ferries on Lake Champlain provide a valuable connection between New York and Vermont. The Ticonderoga Ferry connects Addison County at Shoreham with Ticonderoga, New York. This historical ferry was first established in 1759 and operates seasonally on a cable system.



The Ticonderoga Ferry

Source: <http://www.middlebury.net/tiferry/>

6.4.4 TRAVEL DEMAND

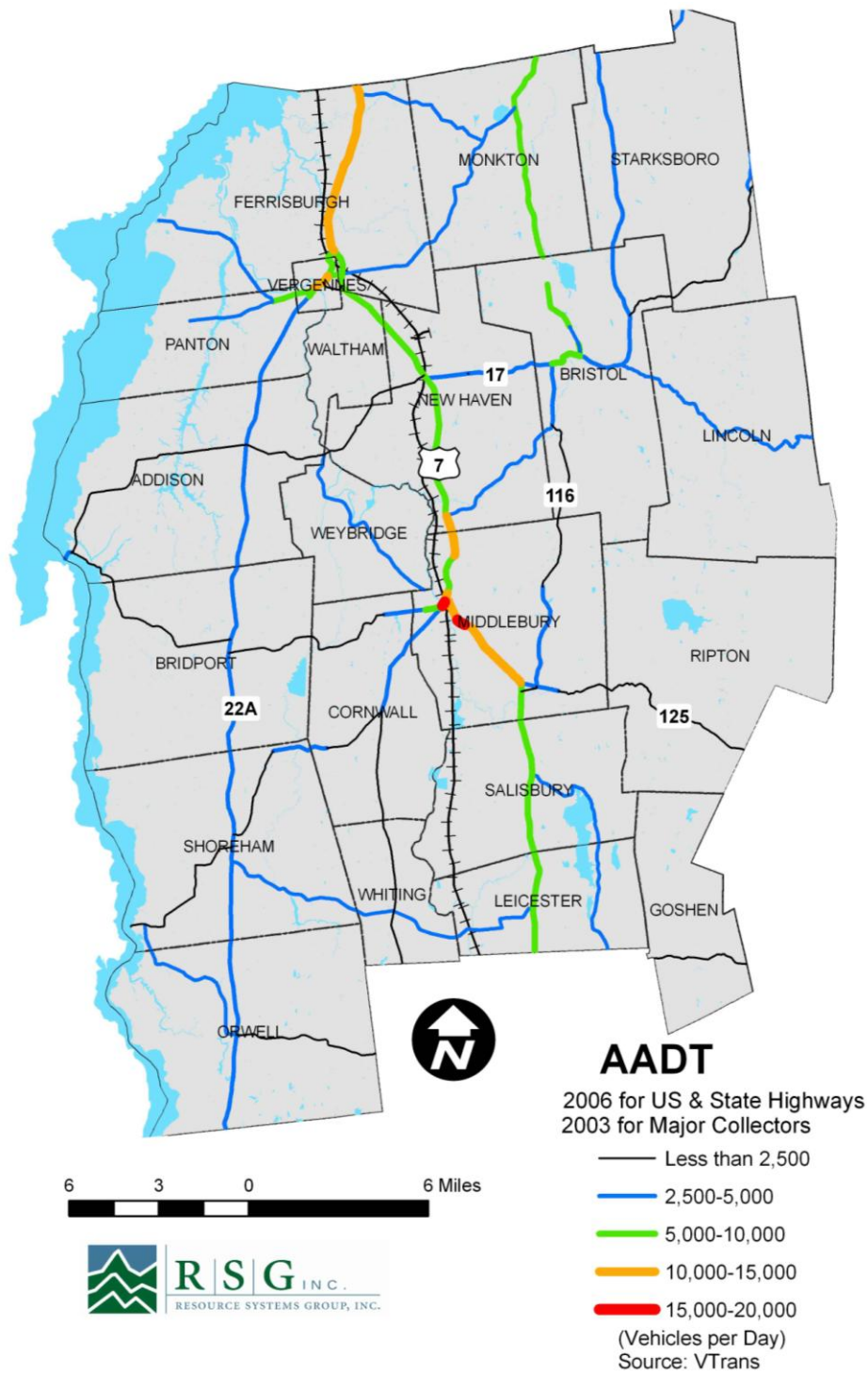
6.4.4.1 Transportation Demographics

About 24% of Addison County's population will reach or be approaching retirement age in the next ten years, meaning that alternatives such as transit will need to be available to ensure mobility for the aging population. The 2006 Addison County Transit Study summarizes the distribution of transit-dependent populations. For whatever reason, these populations do not have the option of driving a private vehicle from their origin to their destination. Therefore, demand for transportation alternatives such as transit service is expected to be higher in these areas. Middlebury, Vergennes, Bristol, Shoreham, and Leicester have high concentrations of some of these sub-populations, suggesting that those areas are most in need of transportation alternatives.

6.4.4.2 Traffic Volumes

Average Annual Daily Traffic (AADT) is an estimate of the number of vehicles per day that will travel over a particular roadway; it is the average of 24-hour traffic volume counts measured every day for one year. Figure 10 shows the 2003 and 2006 AADT in Addison County. US 7 has the highest AADT in the region followed by Monkton-Bristol Road. VT 22A has the next highest AADT, followed by sections of VT 74, VT 17 and VT 116.

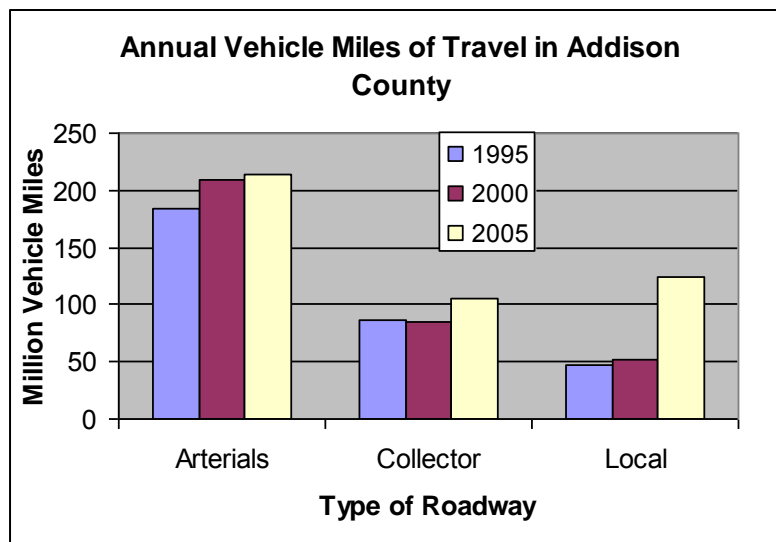
Figure 10: 2003 & 2006 AADT



Vehicle miles travelled (VMT) in Addison County increased from 346 million in 2000 to 443 million in 2005¹, an increase of 28%. Figure 11 illustrates that this growth was mostly on local roads: VMT on local roads more than doubled between 2000 and 2005.

Figure 11: Annual VMT by Type of Roadway

(source: VTrans Highway Research Data Electronic Publications)



6.4.4.2.1 Journey to Work

2000 US Census data indicates that in Addison County, Middlebury has the lowest share of commuters who drive alone to work (Table 5). Goshen has a particularly high share of carpooling (about one-quarter of all commuters). Addison, Monkton and Lincoln have the longest travel times to work at approximately 31 minutes, while Middlebury has the shortest at 15 minutes. Middlebury also has the highest pedestrian mode share of all the towns in Addison County (24%) followed by Vergennes (10.6%). Table 5 also shows that Bridport has a very high pedestrian mode share; the Addison County Regional Bicycle and Pedestrian Plan notes that walking is very popular in the Bridport village area, which may help to explain these high figures. On county-wide average, nearly one in ten employed people work from home.

¹ Source: VTrans Highway Research Data.

Table 5: Mode Splits (percentages) for Commuting to Work (source: 2000 Census)

	Drove Alone	Carpooled	Public Transportation	Walked	Other	Worked at Home	Mean Travel Time to Work (minutes)
Addison	73.3	11.8	-	6.2	0.4	8.3	30.9
Bridport	69.1	7.8	-	8.4	2	12.8	21.8
Bristol	75.4	13.5	0.5	4	1.2	5.5	26.5
Cornwall	75.4	8.8	-	3.6	0.2	12	17.4
Ferrisburgh	73.8	8.9	-	6.1	0.9	10.3	25
Goshen	71.4	24.8	-	-	-	3.8	29.2
Leicester	82.8	9.6	-	1	0.4	6.8	27.1
Lincoln	75.6	11.4	-	3.9	1.3	7.8	30.5
Middlebury	60	7.8	0.3	24	1.7	6.2	15.1
Monkton	75.4	14	-	2.7	0.5	7.4	30.7
New Haven	75.3	10.9	-	2.9	1.2	9.7	22.1
Orwell	71.5	8.8	0.7	6.1	0.7	12.3	23.9
Panton	73.4	15	-	4	2.3	5.4	25.3
Ripton	80.6	9.5	0.6	1.6	-	7.6	25.5
Salisbury	73.7	11.7	-	1.9	1.5	11.2	20.8
Shoreham	67.5	14.9	0.3	5.1	0.7	11.5	25
Starksboro	80.3	11.5	0.2	2.6	0.4	5	32.1
Vergennes	72.6	10.4	0.6	10.3	1.2	4.9	22.1
Waltham	72.6	10.4	-	2.3	-	14.7	23.1
Weybridge	73.5	10.9	-	4.4	0.7	10.5	17.7
Whiting	78.4	12.6	-	4.2	1.1	3.7	27.3
<i>County Total</i>	<i>71.3</i>	<i>10.8</i>	<i>0.2</i>	<i>8.6</i>	<i>1.1</i>	<i>7.9</i>	<i>23.2</i>

6.4.4.2.2 Truck Traffic

VT 22A is a major truck route and carries the largest number of large trucks in the region (defined as tractor-trailer trucks) as shown in Figure 12. US 7 between VT 22A in Vergennes and the Chittenden County line carries the second highest amount. There is also a significant number of trucks on US 7 between Middlebury and the Rutland County line, which is mostly attributable to trucks carrying material from the quarry outside of Middlebury south to the plant in Rutland County. Other than these areas, truck traffic appears to be concentrated in the northwest area of the county, which may be due to proximity to Chittenden County and to access to New York State via the Champlain Bridge at Chimney Point in Addison.

The Vermont Statewide Freight Study¹ notes that national trends such as deregulation of the trucking industry, continued decline of railroads, and a shift in the Northeast economy from manufacturing to services all lead to an increase in truck volumes and sizes. This directly affects places like Brandon and Vergennes, since a large truck is extremely conspicuous in a small village center. As shown in Figure 13, the study notes that trucks are responsible for 90% of the freight moving into, out of, and through Vermont. The Vermont Truck Network was established in 2001 to address not only the issue of large trucks in village centers, but also the physical constraints facing freight transport providers on Vermont roadways. While the Truck Network has alleviated these issues in several areas, the study recommends that the network be continually monitored to ensure that it is addressing the concerns of the surrounding communities.

¹ Prepared for the Vermont Agency of Transportation in 2001 by Cambridge Systematics, Inc..

Figure 12: Truck Volumes

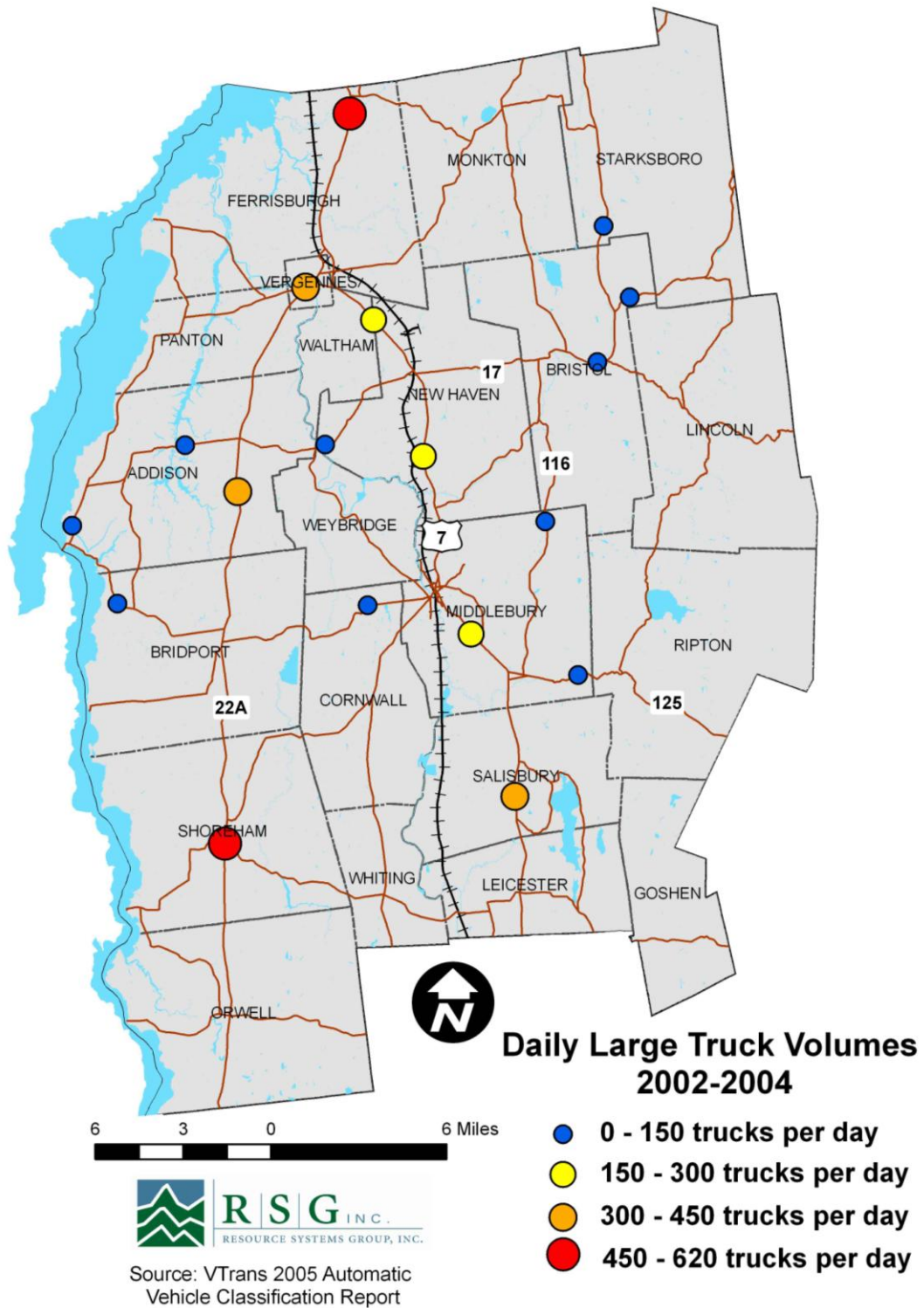
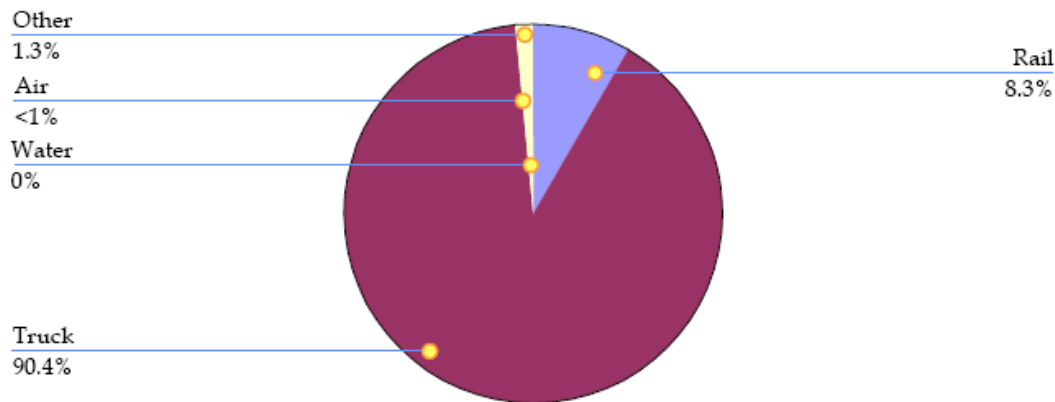


Figure 13: Statewide Mode Share for All Freight Movements (from Vermont Statewide Freight Study)



Rail has been considered as an alternative to trucking, although two significant restrictions limit the ability of the rail network to replace truck trips: weight limits on rail car loads and tunnel clearances. Until weight limits on the rail network are increased to handle 286,000 pound (minimum) loads and tunnel clearances are high enough to accept double-stacked cars, the Vermont rail network will be severely limited in amount of freight that it can shift from truck to rail.

Key conclusions and recommendations of the Statewide Freight Study that are relevant to Addison County are:

- There should be improvements to US 7 and VT 22A, which comprise the north/south corridor along the western border, in order to meet the concerns of citizens as well as economic needs. Specifically, trucks in village centers should be addressed.
- The fact that the Vermont rail network cannot accommodate double-stacked cars and those weighing 286,000 pounds or greater presents a significant limitation to freight moving into or through Vermont, and thereby forces the freight to be transported via truck. While the rail network provides adequate geographic coverage, the weight and clearance limitations prevent the state from pursuing a market opportunity.

6.4.5 TRANSPORTATION SYSTEM PERFORMANCE

This section describes the safety and crash analyses, infrastructure sufficiency ratings, and congestion analyses for select intersections throughout the region.

6.4.5.1 Safety

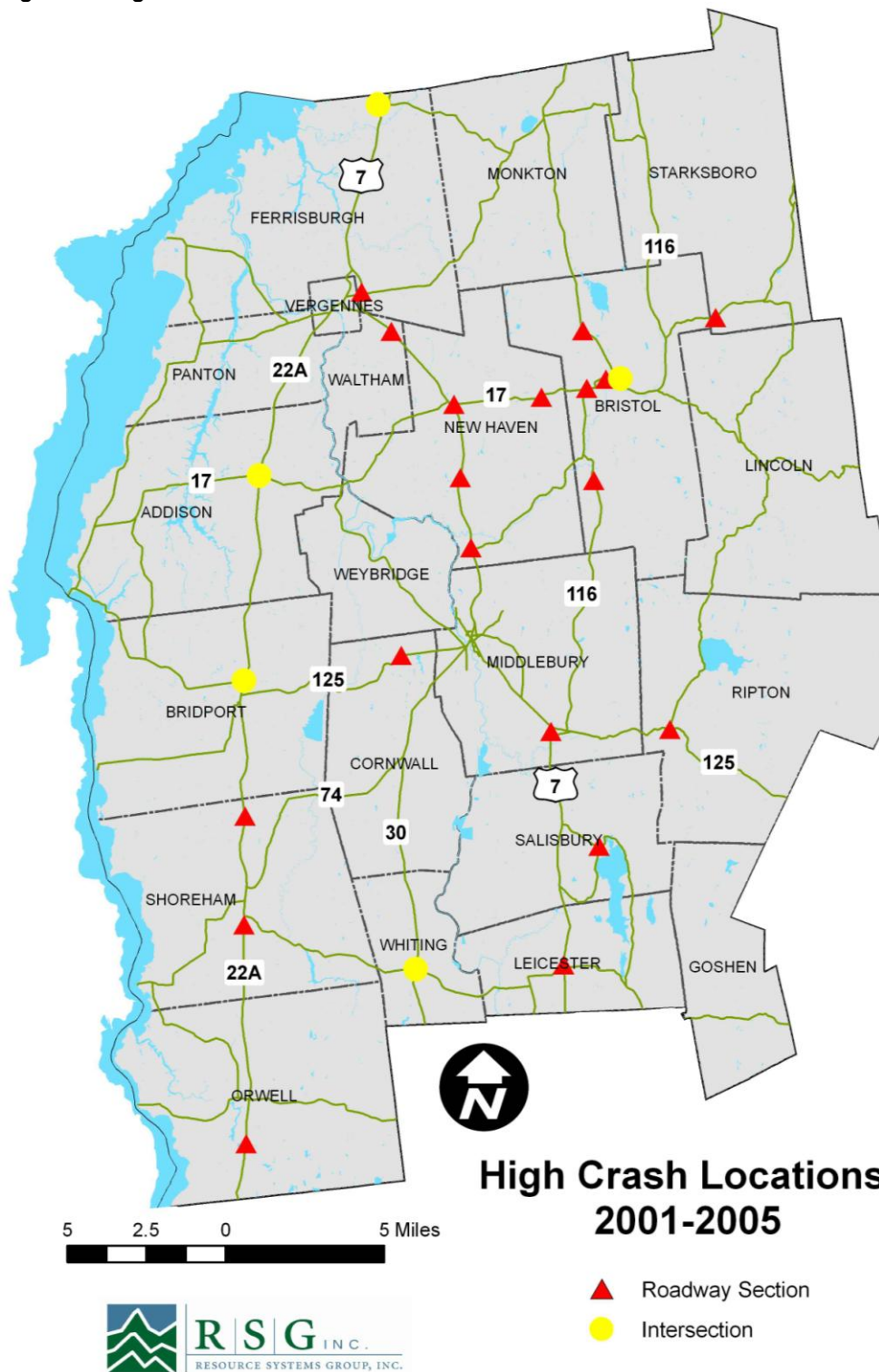
Figure 14 summarizes High Crash Locations (HCLs) in Addison County identified by VTrans for the years 2001-2005. It is VTrans policy to base its safety analyses on crashes involving injuries, fatalities, or those that exceed \$1,000 in property damage on federal aid highways. VTrans analyzes the number of crashes occurring along road segments and intersections and compares the frequency and severity to statewide averages for similar facilities. The locations with the highest crash rates are identified as HCLs. In order to be classified as an HCL, an intersection or road section (0.3 mile section) must meet two conditions: 1) it must have at least 5 crashes over a 5-year period; and 2) the actual crash rate of the location (number of crashes per million vehicles) must exceed a critical crash rate. The critical crash rate is based on the average crash rates of similar roadways in the state and is related to the functional class of the highway and whether it is located in an urban or rural area. Nineteen roadway sections and five intersections in Addison County meet the VTrans definition of HCL.

In 2005 and 2006 VTrans performed Road Safety Audit Reviews for the intersections of US 7 - Little Chicago Road/Middlebrook Road and US 7 - Stage Road/Old Hollow Road, and for Lake Dunmore Road in Salisbury. The fact that these locations were audited indicates that they have potential safety issues. The latter two locations are also identified High Crash Locations in the most recent VTrans analysis. The Road Safety Audit Reviews identify problems and recommend improvements, such as warning signs, drainage, road markings, curbing, and roadway realignment.

The Federal Highway Administration (FHWA) requires each state to report 5% of its most severe safety needs. VTrans' 2006 report to the FHWA includes road segments on VT 17 in New Haven and on VT 22A in Shoreham. While there are not any potential remedies listed for the Shoreham location, improvements to the New Haven segment are estimated to cost \$300,000 and include relocating East Street and reducing the crest at VT 17 – Sawyer Street. This design work is to be pursued during FY2007.¹

¹ Vermont 2006 Five Percent Report, available at: <http://safety.fhwa.dot.gov/fivepercent/06vt.htm>.

Figure 14: High Crash Locations



6.4.5.2 Infrastructure Sufficiency

6.4.5.2.1 Highway

Highway Sufficiency Ratings were developed to evaluate how well a roadway meets the standard in terms of structural condition, safety, and service. The rating scale is based on a maximum of 100 points, with 50 points devoted to structural condition, 25 to safety, and 25 to service.¹ Structural condition estimates a road's load-carrying ability and is based on the roadway's foundation, drainage, and pavement conditions. Safety is based on width, sight distances, crash frequency, and alignment and grade data. Service is based on efficiency of traffic movement, average highway speed, and the presence of excessive grades or restrictions that encumber travel (such as clearance).

Basic sufficiency ratings are adjusted for the volume of traffic the roadway carries. Roadway sections which score between 40 and 60 points are eligible for federal funding for rehabilitation; those with scores below 40 are eligible for complete reconstruction funding. Table 6 and Figure 15 summarize highway sufficiency ratings for roadways in Addison County. Appendix B shows roadways with ratings under 60. As of 2001, there were no state highways in Addison County with sufficiency ratings of less than 40 points; as of 2003, there were four sections of town highways scoring below 40.

Table 6: Summary of Highway Sufficiency Ratings (State Highways and Town Highway Major Collectors)

Rating Category	Points	Miles of Roadway in Addison County in that Category	% of Total
Good	100-60	147.4	57%
Rehabilitation	60-40	100.6	39%
Reconstruction	<40	12.6	5%
	<i>Total</i>	<i>260.6</i>	<i>100%</i>

¹ The VTrans Highway Sufficiency Rating Manual (1997) provides more information.

Figure 15: Highway Sufficiency Ratings

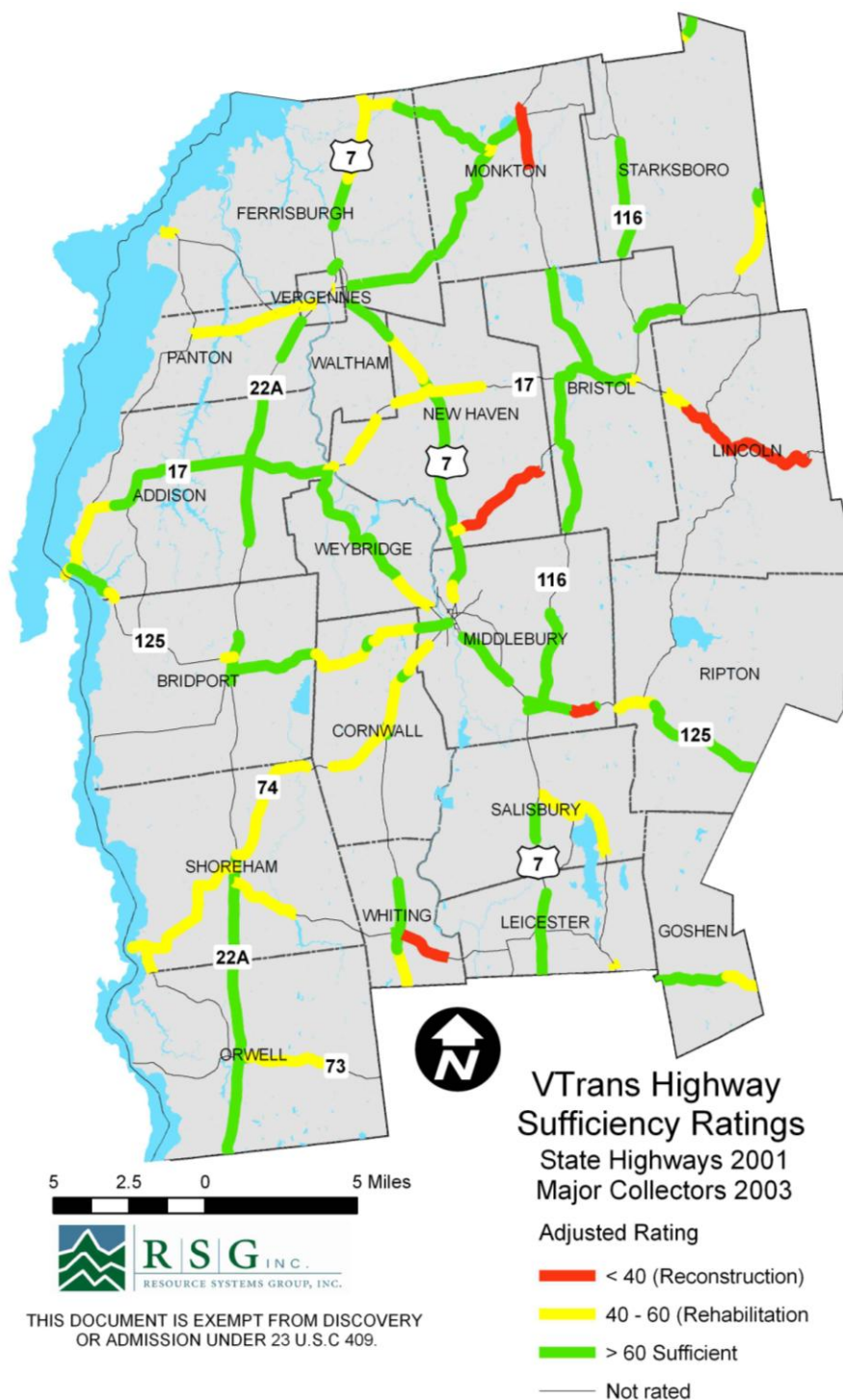


Table 7 compares the 1991 ratings of the most poorly rated roadways cited in the 1995 Long Range Transportation Plan to their 2001 ratings.

Table 7: Updated Ratings for Lowest Ranking Roadways Cited in 1995 Plan

Route	Area	1991 rating	2001 rating ¹
VT 22A	Orwell, Shoreham	38.7	Over 70
VT 17	Weybridge, New Haven, Waltham	41.8	Over 70 (New Haven)
VT 125	Middlebury, Ripton	41.8	Most sections over 60

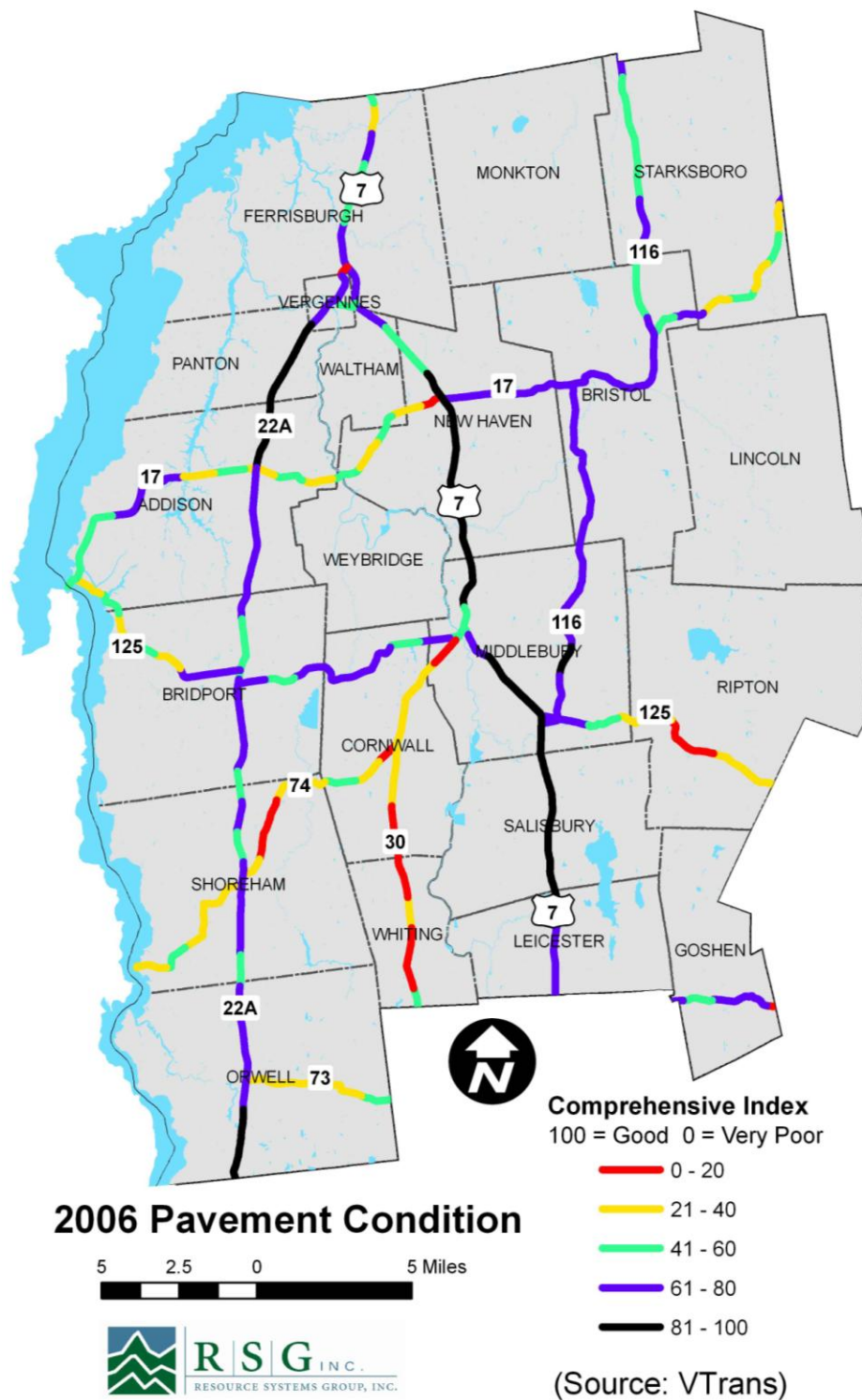
The most highly rated roadways in 1991 were US 7 north of Middlebury and in New Haven (rated 71.2) and Route 125 in Addison and Bridport (rated 70.0).

As pavement condition is a significant element in determination of the highway sufficiency rating, 2006 condition data from VTrans is provided in Figure 16. VT 30, VT 74, and VT 125 have the poorest pavement condition in Addison County; US 7 and portions of VT 22A are in the best condition.

It should also be noted that the amount of agriculture in Addison County means that large farm equipment often travels on roadways in order to access non-adjacent parcels. The intensity and frequency of the equipment moving on Addison's rural roads causes serious damage to the infrastructure. Although the volume of farm equipment may appear insignificant compared to the volume of private vehicles and large commercial trucks, their destructive capacity is much greater and warrants management.

¹ The 1995 Plan does not provide the specific location of roadway. Therefore, a general description of the ratings for sections in that vicinity is provided rather than an exact rating score.

Figure 16: Pavement Condition 2006



6.4.5.2.2 Bridges

VTrans inspects bridges longer than 20 feet in length on public roads on a two year cycle to evaluate the deficiency status and derive the sufficiency rating.¹ These two performance measures are based on the condition of the bridge's major structural elements, appraisal rating, structural adequacy and safety, functional obsolescence (does the bridge have enough capacity to meet current and future demands?) and how essential the bridge is to the public (that is, how long a detour would be required if the bridge were not usable). While deficiency status indicates the condition of the structure, the sufficiency rating determines eligibility for federal funding. The sufficiency rating is a score of 0 to 100: a rating of less than 50 means that the structure is eligible for federal replacement or rehabilitation funds; a score between 50 and 80 makes the structure eligible for federal rehabilitation funds.

Table 8 summarizes bridge sufficiency ratings by town for all structures more than 20' long on public roads.

¹ VTrans Structures Section 2007 Annual Report, page 7, states: "Guided by federally defined data collection and personnel requirements, bridges located on public roads in excess of 20 feet in total length receive regular biennial inspections to ensure safety to the traveling public. Short structures, those measuring between 6 and 20 feet along centerline, located on the Interstate and State Highway systems have a condition inspection performed once every 60 months. In either case however, a more frequent inspection is performed if conditions warrant."

Table 8: Number of Not Deficient, Structurally Deficient, and Functionally Deficient Bridges by Town

	Not Deficient	Structurally Deficient	Functionally Deficient	Total Bridges
Addison	2	1	0	3
Bridport	3	1	1	5
Bristol	5	4	0	9
Cornwall	1	1	0	2
Ferrisburg	6	5	2	13
Goshen	4	0	0	4
Leicester	1	2	0	3
Lincoln	4	4	4	12
Middlebury	6	3	2	11
Monkton	1	0	1	2
New Haven	5	4	1	10
Orwell	5	0	0	5
Panton	0	0	1	1
Ripton	6	1	3	10
Salisbury	1	3	1	5
Shoreham	2	1	1	4
Starksboro	6	2	2	10
Vergennes	1	0	0	1
Waltham	0	0	0	0
Weybridge	4	1	1	6
Whiting	0	0	0	0
Total	63	33	20	116

Appendix C provides VTrans 2006 bridge sufficiency ratings for structurally and functionally deficient and “Not Deficient” bridges. Consistent with the criteria for evaluating bridge sufficiency, the majority of structurally deficient bridges are rated less than 50, meaning that they are eligible for replacement funds; the majority of functionally deficient bridges are rated between 50 and 80, meaning that they are eligible for rehabilitation funds.

Lincoln and Ferrisburgh have the highest number of deficient bridges, followed by Middlebury and New Haven. In addition, of the major corridors in Addison County, VT 116 has the highest number of deficient bridges (four); US 7 and VT 125 each have three and VT 17 has two. VT 125 crosses Otter Creek via the Battell Bridge in Middlebury, which is functionally deficient at a 61.8 rating and is the only means of crossing Otter Creek for commercial vehicles (including ambulances) in the Middlebury area. According to the 2005 Middlebury Town Plan, the bridge experiences the highest levels of traffic in the town, a fact which is regionally significant because of Middlebury's role as the region's largest employment center and the home of the regional hospital. The 2007 Middlebury Town Plan states that constructing the Cross Street Bridge:

would do the most to help move downtown traffic and provide the best overall emergency access for fire, police and ambulance vehicles. Additionally, the bridge would support the economic vitality of the downtown by providing direct access to public parking and enabling mixed use, downtown development of the Bakery Lane area. The Cross Street Bridge would have the effect of reducing traffic congestion in the Court Square area and on the Battell Bridge by about 60%. This would benefit downtown pedestrian safety, relieve the backup around Court Square, and reduce noise and air pollution around the greens and in the downtown shopping district.¹

6.4.5.3 Constraints to Truck Travel

Some roadways have curves and grades that constrain truck travel. The VTrans *Truck Network Improvements Prioritization Study* (Vanasse Hangen Brustlin, 2001) explains that roadways with curves greater than 8 degrees or grades that exceed 5% over 1000 feet or 7% over 500 feet create unsafe and inefficient barriers to truck travel. VT 74, VT 73 east of Orwell, and VT 125 have the most constraints, although each of the east-west corridors in Addison County has severe design limitations to truck traffic. The sharp curves and steep slopes of VT 22A in Vergennes also present safety issues.

Roadway condition (such as drainage and foundation) also constrains truck travel. Routes that regularly flood, such as VT 73 and Leicester-Whiting Road force trucks and commercial vehicles to take excessively long detours since shorter alternatives are not available.

¹ 2007 Middlebury Town Plan Section 11.1, p. 118.

6.4.5.4 Pedestrian Network

While pedestrian access is critical throughout Addison County, it is especially important in the dense village centers such as Middlebury, Vergennes and Bristol. It is important that the pedestrian network be maintained in these areas and throughout Addison County because a network in poor condition will discourage people from walking and provide them with an incentive to drive. This is particularly true in the winter, when snow and ice discourage walking and frost heaves can damage sidewalks.

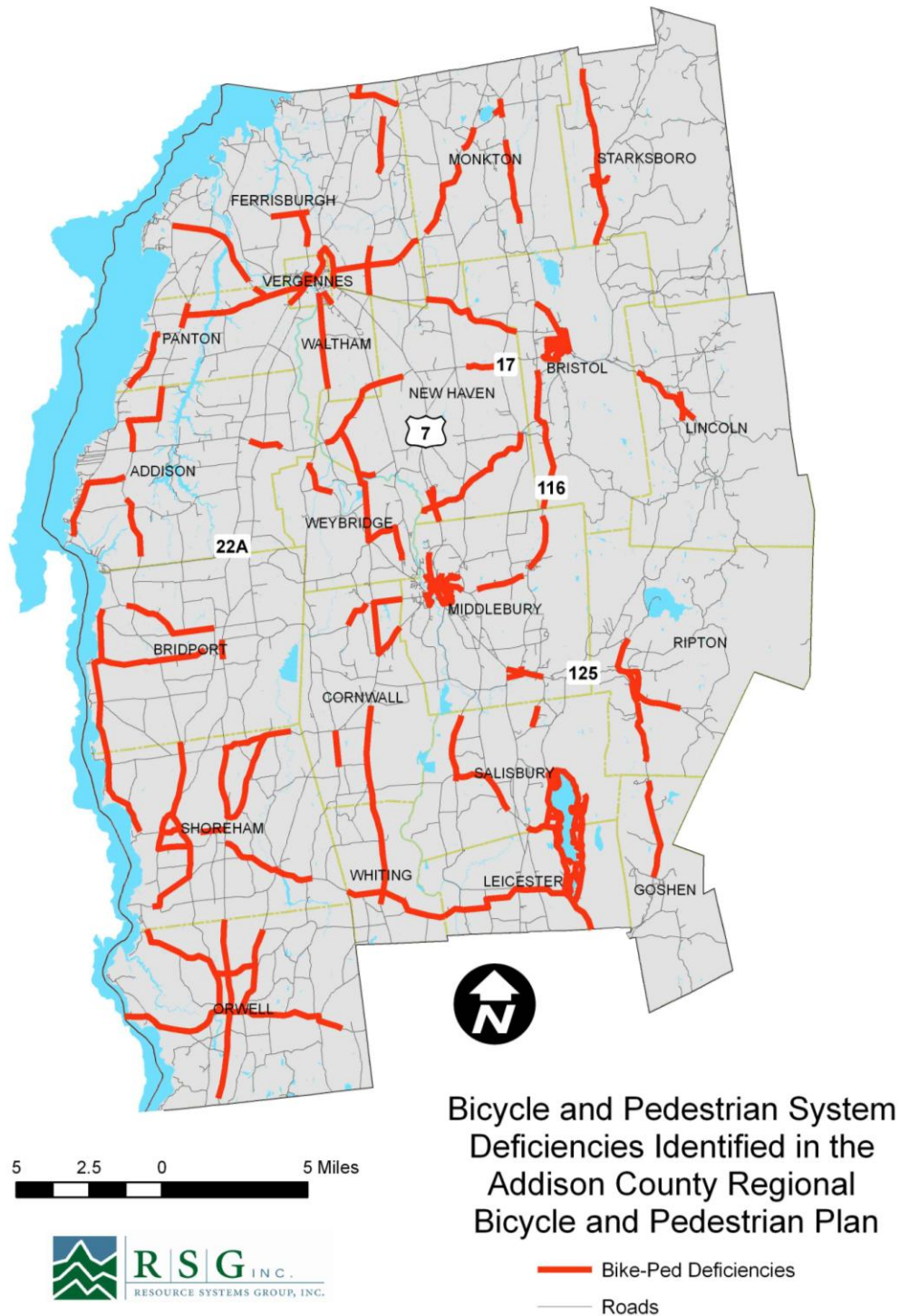
6.4.5.5 Bicycle Network

The 2002 Addison County Regional Bicycle and Pedestrian Plan assesses bike-pedestrian needs throughout the area. While Figure 17 shows the locations of these deficiencies on the bicycle network, the Regional Bicycle and Pedestrian Plan provides more detail as to specific needs and solutions. The most common deficiencies are:

- Inadequate shoulders on high volume rural highways
- Poor sight distances
- Excessive vehicle speeds
- Hazardous intersections
- Inadequate crosswalks
- Lack of signs
- Functional gaps in system due to lack of or inadequacy of facilities

Any roadway that is too narrow or provides unsafe conditions for bicyclists should be evaluated to ensure that it meets the Vermont State Design Standards. Improving the safety of the system will encourage the use of alternative modes for both recreation and utilitarian purposes (like commuting). Moreover, supporting land use patterns that efficiently support the use of alternatives like transit, walking, and bicycling will promote the use of these modes.

Figure 17: Bicycle and Pedestrian System Deficiencies (source: 2002 Addison County Regional Bike-Pedestrian Plan)



6.4.5.6 2007 Congestion Analysis

Congestion analyses have been conducted at select intersections (Figure 18) to provide a clear picture of congestion throughout the region under existing conditions. This section explains the methodology used to assess congestion and presents delay, level of service and queuing results for the study intersections in the base year 2007.

Raw traffic counts taken between 2002 and 2006 have been modified to represent the design hour volume (DHV)¹ in the base year 2007. These volumes are used to estimate existing delay, level of service, and queuing.

6.4.5.6.1 LOS Methodology

Level-of-Service (LOS) is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. The 2000 Highway Capacity Manual (HCM) defines six grades to describe the level of service at an intersection. Level-of-service is based on the average delay per vehicle. Table 9 shows the various level-of-service grades, qualitative descriptions, and quantitative definitions for unsignalized and signalized intersections.

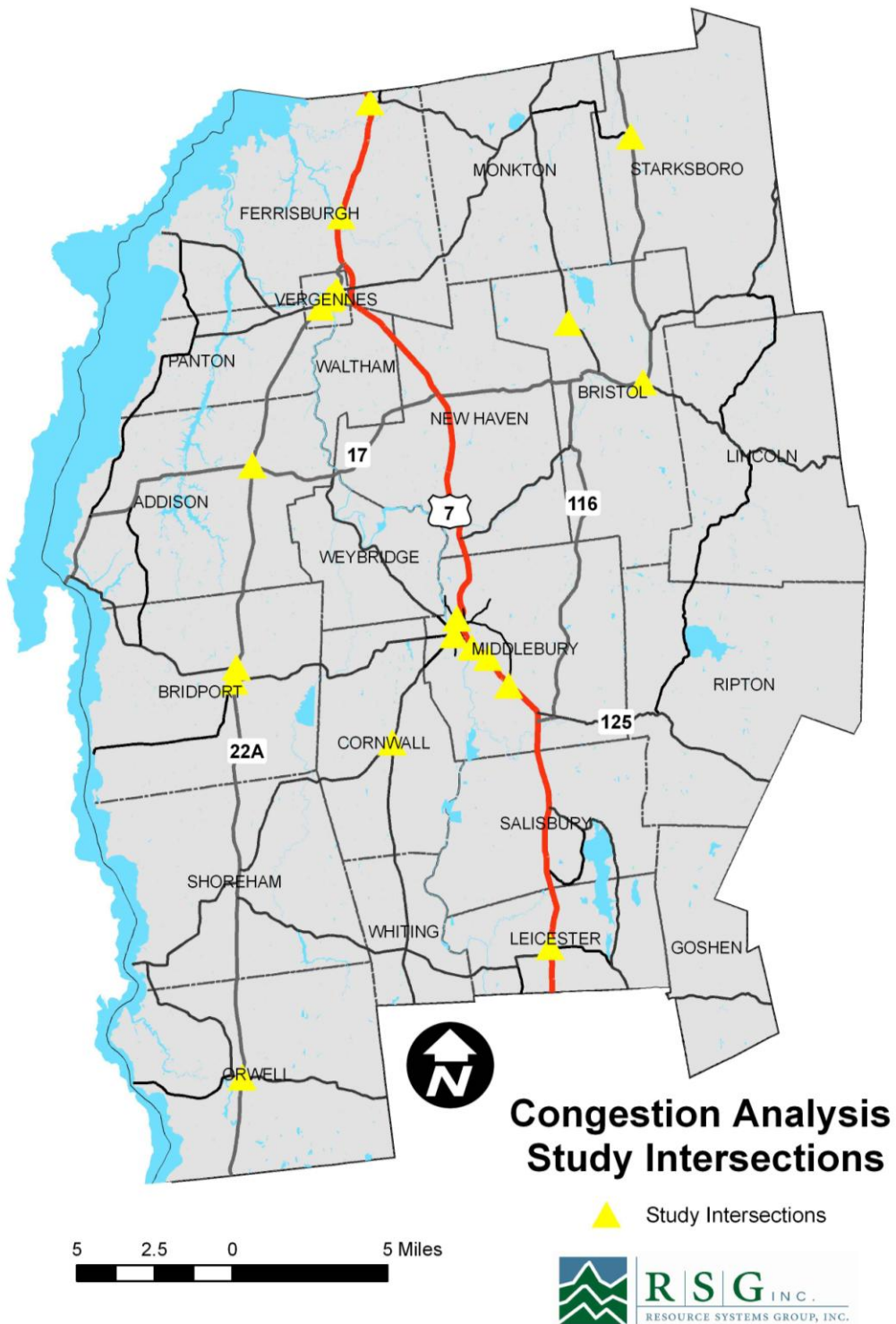
Table 9: Intersection LOS Criteria

LOS	CHARACTERSTICS	SIGNALIZED DELAY (sec)	UNSIGNALIZED DELAY (sec)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short delays	10.1-20.0	10.1-15.0
C	Average delays	20.1-35.0	15.1-25.0
D	Long delays	35.1-55.0	25.1-35.0
E	Very long delays	55.1-80.0	35.1-50.0
F	Extreme delays	80.0<	50.1<

The VTrans policy on LOS states that principal and minor arterials in urban or village areas will generally be designed for a level of service C or better. However, in heavily developed urban areas, reduced level of service criteria such as E or F may be appropriate as judged on a case by case basis. For the purpose of this study, the assumed performance target is LOS D or better.

¹ The DHV is the 30th highest hour of traffic for the year and is used as the design standard in Vermont.

Figure 18: Study Intersections used in Congestion Analysis



The results for delay, LOS and queue lengths are based on the adjusted volumes described above. Summary tables are provided in Appendix D. The results indicate that LOS is worse during the PM peak than during the AM peak. In particular, some approaches in the urban areas of Middlebury and Vergennes and at US 7 – Old Hollow Road in Ferrisburgh have an LOS of E or F. The Middlebury US 7 signal coordination project was completed in July 2007, and is showing initial signs of improvement in congestion along the US 7 corridor in Middlebury. The US 7 Corridor should be monitored to determine if there is need for further intersection improvements.

6.4.5.7 2030 Congestion Analysis

6.4.5.7.1 Development of 2030 Volumes

Volumes for the year 2030 were forecasted by applying the statewide 20-year growth factor for rural primary and secondary roads to the base year 2007 volumes. The statewide factor was slightly larger than the 20-year growth factors for individual counters, so the statewide factor (1.26) was used in order to be conservative.

In addition, volumes from permitted or anticipated development in the larger towns of Vergennes, Bristol, and Middlebury were included in the forecasts to reflect expansion in those growth areas. Appendix E shows developments that were included in the projected 2030 volumes.

The LOS and 95th percentile queuing results for the 2030 AM and PM peak hours are shown in Table 10 and Table 11, respectively. The results are based on the forecasted volumes described above and assume that no improvements have been made to the existing network (for example, the Cross Street Bridge has not been built nor have any roundabouts been constructed). The LOS, delays, and vehicle queues are reported for each approach of each intersection. Table 10 and Table 11 indicate that LOS is worst in the urban areas of Vergennes and Middlebury, and on the side streets intersecting US 7 in Ferrisburgh. LOS in Middlebury is particularly deficient, with an estimated AM queue of over 40 vehicles for the eastbound VT 125 approach of the VT 30 – VT 125 intersection.

Table 10: 2030 AM Peak Hour LOS and Queues

Study Intersections	Eastbound			Westbound			Northbound			Southbound		
	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)
<i>Ferrisburg</i>												
US 7 - Old Hollow Road	D	31.8	1	E	42.2	3	A	1.4	0	A	0.4	0
US 7 - Little Chicago	F	68	4	F	68.3	3	A	1.5	0	A	0.2	0
<i>Starksboro</i>												
VT 116 - States Prison Hollow	A	9.1	0				A	0.4	0	0	0	0
<i>Vergennes</i>												
Main - Monkton (signalized)				B	12.3	3	B	19.7	11	B	14.9	5
VT 22A - Green (signalized)	A	9.3	1	B	11.5	3	B	16.3	8	B	15.1	7
VT 22A - S. Water	D	34.6	2	F	59.7	2	A	1	0	A	0.8	0
VT 22A - Panton	C	21.6	3				A	1.2	0	0	0	0
<i>Addison</i>												
VT 22A - VT 17	A	9.3	N/A	A	8.4	N/A	A	9.3	N/A	A	8.7	N/A
<i>Bristol</i>												
Burpee - Monkton				0	0	0	B	10.3	1	B	10.7	1
VT 116 - Lincoln				B	11.7	1	0	0	0	A	0.4	0
<i>Middlebury</i>												
Elm - Exchange - Seymour	C	23.4	N/A	C	20.1	N/A	B	14.6	N/A	C	18.2	N/A
VT 30 - VT 125	F	859.6	42				A	9.6	0	0	0	0
US 7 - Creek Rd	F	65.9	1				A	0.5	0	0	0	0
US 7 - Boardman				D	30.1	2	0	0	0	A	5.4	1
US 7 - Foote	E	48.3	0	F	61.4	2	A	0.1	0	A	1	0
<i>Bridport</i>												
VT 125/West Market - VT 22A	B	10.2	0	B	12.2	0	A	2.1	0	A	0.3	0
VT 125 (east) - VT 22A				B	11.7	0	0	0	0	A	3.7	0
<i>Cornwall</i>												
VT 30 - VT 74	B	13.8	2				A	0.2	0	0	0	0
<i>Leicester</i>												
US 7 - Leicester-Whiting/Fern Lake	C	19.8	1	C	15.2	1	A	0.7	0	A	0.6	0
<i>Orwell</i>												
VT 73 - VT 22A	A	8.3	N/A	A	8.3	N/A	A	8.5	N/A	A	8.7	N/A

N/A = Not Available

Indicates LOS E

Indicates LOS F

Indicates no approach in that direction.

Table 11: 2030 PM Peak Hour LOS and Queues

Study Intersections	Eastbound			Westbound			Northbound			Southbound		
	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)
<i>Ferrisburg</i>												
US 7 - Old Hollow Road	D	32.4	1	F	211.2	9	A	0.8	0	A	1	0
US 7 - Little Chicago	F	71.1	3	F	59.3	2	A	0.7	0	A	0.6	0
<i>Starksboro</i>												
VT 116 - States Prison Hollow	B	10.3	0				A	0.4	0	0	0	0
<i>Vergennes</i>												
Main - Monkton (signalized)				B	15.7	7	C	25.6	N/A	D	49.5	N/A
VT 22A - Green (signalized)	B	10.3	2	B	14	5	D	37.8	N/A	D	44.1	N/A
VT 22A - S. Water	F	85	5	F	278.9	6	A	1	0	A	1.5	0
VT 22A - Panton	F	137.5	14				A	0.9	0	0	0	0
<i>Addison</i>												
VT 22A - VT 17	A	9.7	N/A	A	9.2	N/A	A	9.3	N/A	B	11	N/A
<i>Bristol</i>												
Burpee - Monkton				A	0.3	0	B	10.5	1	B	12.1	2
VT 116 - Lincoln				C	15.1	1	0	0	0	A	1.9	0
<i>Middlebury</i>												
Elm - Exchange - Seymour	F	245	N/A	F	79.1	N/A	C	20.4	N/A	F	128.5	N/A
VT 30 - VT 125	F	N/A	N/A				B	11.1	0	0	0	0
US 7 - Creek Rd	F	521	13				A	1.7	0	0	0	0
US 7 - Boardman				F	50	4	0	0	0	A	4.8	1
US 7 - Foote	F	73	0	F	475.1	9	A	0.1	0	A	1.6	0
<i>Bridport</i>												
VT 125/West Market - VT 22A	B	10.8	0	B	14.8	0	A	4.1	0	A	0.4	0
VT 125 (east) - VT 22A				B	12.7	0	0	0	0	A	2	0
<i>Cornwall</i>												
VT 30 - VT 74	B	12	0				A	0.3	0	0	0	0
<i>Leicester</i>												
US 7 - Leicester-Whiting/Fern Lake	C	21.3	1	C	17.1	1	A	0.2	0	A	2	0
<i>Orwell</i>												
VT 73 - VT 22A	A	8.4	N/A	A	8.6	N/A	A	9.2	N/A	A	9.2	N/A

N/A = Not Available

Indicates LOS E

Indicates LOS F

Indicates no approach in that direction.

6.4.5.8 Rail

The most significant issue facing rail across Vermont is the deterioration and obsolescence of the infrastructure. The Vermont Rail Policy Plan (2006) explains that 286,000-pound cars have become the new industry standard; therefore, railways with weight limits that only accommodate up to 263,000-pound cars (which the Vermont Railways line in Addison County does) are below standard and are deficient. The Vermont Railways line in Addison County has been identified as a second-priority route for statewide upgrades to a 286,000-pound weight limit.

Double-stacked container railcars have also become standard for international maritime shipping and to accommodate them, a clearance of 20'8" is necessary. The Vermont Railways line had nine clearance restrictions as of 1997, but some of these (including two bridges in Middlebury) may not be feasible to mitigate. Furthermore, the Vermont Railways line is not a state priority for upgrades relative to other rail lines in Vermont. The Middlebury Rail Spur, however, has been identified as one of the state's top priorities for an intermodal transfer facility.

The Rail Policy Plan states that "the operation of passenger trains depends upon the existence of freight railroads." Therefore, freight upgrades will take precedence over upgrades to passenger service. The Rail Policy Plan places Addison County's rail line in a second tier of priorities statewide.

6.4.6 PUBLIC PARTICIPATION

6.4.6.1 Public Outreach Meetings

The ACRPC held four public meetings in Middlebury, Bristol, Vergennes, and Shoreham during May and June 2007 to present a preliminary draft of the plan, discuss current conditions and issues, and solicit comments, concerns, and questions from the public. Resource Systems Group, Inc., the Plan consultant, facilitated the meetings with assistance from the ACRPC and the Plan Steering Committee. Appendix F contains comments received at the meetings.

6.4.6.2 Summary of Road Foremen's Meeting

The County Road Foremen's Meeting was held on December 12, 2006. The three most significant issues raised were 1) the need for better enforcement and education, 2) rising costs, and 3) the priority of maintenance projects. Other concerns raised at the meeting are listed in Appendix G.

6.4.7 FUTURE CONDITIONS

This section discusses trends, issues, and opportunities that will need to be considered for the planning year 2030.

6.4.7.1 Aging Population

The Addison County Regional Plan indicates that in 2000, approximately 11% of the population (or almost 4,000 people) were over age 65. It is estimated that this segment of the population will nearly double by 2030.¹ This group will increasingly rely on transportation alternatives like transit and carpooling for mobility.

ACTR currently provides free, but limited, services to people over age 60 and people with disabilities. In addition to transportation to and from medical, social, and employment activities, Special Services include Meals-on-Wheels delivery and transportation to meal sites in Bristol, Bridport, Middlebury, and Vergennes. ACTR also coordinates a Rideshare/Carpooling program in the region. The growing segment of the population over age 65 will add to the current demand for these services, indicating that special services, routes and schedules will need to be expanded and that more funding will be required. VTrans and the Agency of Human Services currently work with transit service providers like ACTR under the United We Ride program to improve mobility options through greater coordination of transportation services. In addition to providing service, communicating mobility options is critical, such as through transportation support and information networks and multi-media public education campaigns.²

6.4.7.2 Agricultural Industry

Many in Addison County rely on dairy farming to make a living. Recently there has been a shift from small farms to larger ones with more cattle and more acreage. The larger herds produce more manure and require more feed, which is grown on the additional acreage. The transport of feed and manure requires ever larger vehicles with extra carrying capacity. This farm equipment often travels on town and state roads and their impacts on the infrastructure are serious, causing extreme damage to the roadway and its drainage system. Exacerbating the issue is the fact that the harvest (when agriculture-related trips are at their peak) often coincides with wet weather, when the roadway is most susceptible to damage. The vehicles also track mud and other material onto the roadway, causing safety concerns.

The drainage system is also heavily impacted by the size and management of the farms. Proper stormwater management is necessary on farm lands so that run-off does not overwhelm ditches, culverts, bridges, and other points where the drainage system intersects the roadway infrastructure.

Maintenance resources are already limited by materials and funds, and this is exacerbated by the lack of regulation and management of farm equipment on the

¹ Working Paper #4, Vermont Long Range Transportation Business Plan Draft.

² In May 2007, the AAA Foundation for Traffic Safety released a report describing a pilot program designed to help seniors maintain mobility after they stop driving: AAA Foundation for Traffic Safety, *Alternatives for Seniors Who No Longer Drive*, Washington, DC: May 2007.

roadways and the farms' impacts on drainage. Working with the agricultural community and their related government agencies to monitor practices and design management techniques is necessary to ensure that the effects of the agricultural industry do not negatively impact the communities which they support and which in turn support them.

6.4.7.3 Affordability

For several years, there has been increasing concern from Vermonters about the affordability of living in Vermont. Presently, the average cost of owning and operating a car in Vermont is \$6,000-\$7,000 per year. Current trends suggest that this cost will increase sharply and fuel prices will be substantially higher than they are now. While unable to solve everyone's transportation needs, a comprehensive public transportation system would enable many families with two working adults to become one-car households – thus significantly reducing their expenses and improving their economic circumstances. Further recognition of these trends may improve investment in public transportation and provide new opportunities for additional service expansion to meet this and other goals.

6.4.7.4 Public Transit Infrastructure

Addison County Transit Resources' (ACTR's) mission focuses on three elements: economic, social, and environmental health. Specifically, this means providing a transportation alternative that is more economical to a household than the single-occupant vehicle, conveniently meets the mobility needs of all segments of the population, and reduces fossil fuel consumption and vehicle emissions. As fuel prices rise, environmental regulations to curb climate change expand, and more people rely on transit for their mobility, the demand for transit services will grow. While the state has invested a significant amount in public transit, more funding opportunities, particularly local ones, will be necessary to meet future needs. The ACTR Strategic Plan and the Addison County Transit Study recommend projects and strategies to position ACTR for the future. These are discussed in the Recommendations section of this Plan. Without investments in an ACTR facility and expansion of services, it will be difficult to meet the challenge of these issues.

6.4.7.5 Emerging Trends

Population trends described on page 3-10 in the Population and Housing section of this Plan suggest that the region's population will grow faster than the rest of Vermont in the coming years. The county population is projected to increase by 9,000-16,000 residents by 2025, based on past trends. This reflects a 26 to 45% population increase. The Plan also suggests that areas like New Haven and Addison are likely to be among the fastest growing towns in the region.

Concurrent with this update is the development of the Vermont Long Range Transportation Business Plan (VT LRTBP) for VTrans. This section highlights the

emerging trends identified in the VT LRTBP and considers what they might mean for Addison County.

There is a growing focus on regulation of greenhouse gas emissions and transportation fuel consumption. In Vermont, 46% of the state's carbon emissions come from the transportation sector. It is likely that fossil fuel demand management will be directed by economics, as interruptions in supply cause prices to rise and consumers seek less expensive alternatives. However, in areas where alternatives such as public transportation, walking, or bicycling are not available or feasible, the supply of alternative fuels will be expected to make up the gap. In the short term, tax breaks and other incentives may help to promote alternative fuels and make the transition to using them more gradual.

It will be imperative to increase state investment in public transportation and other alternative modes. Early indications are that environmentally focused organizations, institutions and foundations will be investing more funds in climate change initiatives. ACTR will need to look to these and other opportunities for innovative local match funds.

For areas like Addison County, the best way to deal with this trend will be to focus on mixed land uses and densities that will support efficient transportation modes like transit, walking, and bicycling.

- The VT LRTBP describes a trend towards decentralization of land use. Vermont's land use policy speaks to continuing the traditional pattern of compact village centers and guides development to specified areas in order to manage growth and curb sprawl. It is difficult for public transportation to operate efficiently in rural areas, and relatively low funding for transit exacerbates the issue. However, the aging population will require that transit alternatives are provided.
- Supporting growth in villages and downtowns may help to guide growth for more efficient land uses and densities and counter the decentralization trend.
- The VT LRTBP explains that despite residential decentralization, jobs are being located in more centralized areas. Employment is becoming more service-oriented and manufacturing jobs will continue to decline. Estimates cited in the VT LRTBP suggest that overall, the economic outlook is positive through 2030 and global trade and freight are expected to rise.
- This trend is especially hopeful for Addison County, given its position in the Western Corridor of Vermont and its shared border with New York State. Currently, the Chittenden County Metropolitan Planning Organization, VTrans, and the five regional planning commissions along the western corridor (Chittenden County, Addison County, Bennington County, Northwest, and Rutland) are developing a Western Corridor Transportation Management Plan. In order to achieve an efficient and pro-active transportation system, this plan will consider both personal and freight movements as well as the highway and rail infrastructures which carry them.

Given the economic opportunities that the Western Corridor presents for Addison County, it will be best to carefully follow the progress of this plan and be prepared to fully respond to its recommendations.

- In addition, guiding land use and development towards efficient and sustainable patterns will be the best way to address this trend. While land use patterns may be difficult to counteract, market-driven transportation costs may help to influence individual choices.
- The Telecommunications Act promotes broadband and wireless access throughout the state, reflecting the trend towards comprehensive information technology services even in a largely rural state like Vermont. The widespread coverage is expected to have significant impacts on the economy as it attracts businesses to the state and allows for greater communication without physical transportation.
- Supporting the technology infrastructure is a prerequisite to attracting economic opportunity to Addison County, especially in light of the trend towards centralized, service-oriented employment and the possibility of increases in global trade and freight. Reliable and widely available telecommunications will be a necessity to realize the benefits of these opportunities.
- The VT LRTBP describes two financial likelihoods: a projected state funding gap of \$3 to \$8 billion (cumulative) between 2006-2030, and the possibility that states will only be eligible, at most, for an amount of federal funding proportional to what they contribute to the Highway Trust Fund. Since Vermont is a “donee” state and receives \$1.90 for every dollar that it contributes to the Fund, this would be a massive change for transportation funding.¹ Either of these scenarios – much less both- would require creative and diverse strategies to securing funds to maintain and improve the transportation system.
- The rise in freight will be significant because of Addison County’s role in Vermont’s western corridor. The Gateway Rural Improvement Pilot (GRIP) described earlier is intended to demonstrate the impacts of shifting freight movements from truck to rail in this corridor. The \$30 million program involves the Rutland Railyard Relocation, the Middlebury Spur and Freight Transfer Facility, the St. Albans Connector, and improvements to the Bennington-Rutland-Burlington-Essex main line. One of the significant concerns in Addison County is the impact of large trucks in village centers and on the quality of life. The Middlebury Rail Spur is expected to remove a significant number of trucks from the roadway in Addison County.

¹ “Taking the High Road, A Metropolitan Agenda for Transportation Reform”, Table 4-4, page 88; The Brookings Institution, 2005. Highway Trust Fund Account Receipts and Apportionments, by State, 1998-2003.

- Another significant issue for rail freight is the ability of a line to carry double stacked cars and/or cars at the new standard weight of 286,000 pounds. If the GRIP improves this segment of the Vermont Railways line to accommodate these cars, the western corridor would gain a significant advantage.

APPENDICES

APPENDIX A

Previous Plan Review

As a first step in this update to the Regional Transportation Plan, previous studies and plans were reviewed to determine what goals and recommendations have already been made for specific areas in the county. The table below summarizes the findings of the approximately thirty plans and studies completed since the 1995 plan. More detailed descriptions of each plan follow the table.

Title	Date	By	For	Summary of Findings/Recommendations
Corridor and Roadway Studies				
U.S. Route 7 – An Economic Lifeline	1998	Wilbur Smith Associates	VTrans	<ul style="list-style-type: none"> • Developed Twenty Year Transportation Improvement Program (TIP) • Park-and-Ride and public transport demonstrations • Improvements to highway safety & operations • Improvements to bicycle and pedestrian facilities • Realignments to VT 22A/US7 in Vergennes and US 7 in Middlebury • Enhancements to railroad between Burlington and Rutland • Construction of Middlebury Cross Street Bridge • Address diversion of traffic from US 7 to side streets
Middlebury/Route 7 Corridor Management Study	11/98	Oman Analytics, Community Planning & Design, Kathleen Ryan-Landscape Architect	ACRPC	<ul style="list-style-type: none"> • Address congestion caused by Emma Willard triangle in Middlebury • Providing alternative routes on the network • Restrict cut-through traffic in residential neighborhoods • Improvements to Court Street • Roundabouts identified as preferred alternative (over signalization) at US 7 – Exchange, US 7 – Emma Willard, US 7 – Charles/Monroe, and US 7 – Creek • Mixed-use, village-style development incorporating on-street parking and grid street alignments in the Village South area • Manage access • Use travel demand management techniques (e.g. developmental regulations and limits on traffic generation)
US Route 7/ Court Street Signalization Improvements	7/03	Dufresne-Henry	VTrans and FHWA	<ul style="list-style-type: none"> • Plans to synchronize signals on US 7 between Hannaford Plaza and Court Square • Improve pedestrian crossings at Hannaford Plaza, Creek Road, Charles Avenue, Mary Hogan Drive and Court Square
Middlebury U.S. Route 7 Corridor Improvements – Addendum	2/05	Dufresne-Henry	VTrans and the Town of Middlebury	<ul style="list-style-type: none"> • Roundabouts (single or double lane) identified as preferred alternative (over signalization) at US 7 – Middle, US 7 – Centre, and US 7 – Creek • Cost estimate for roundabouts: \$3,249,000 • Double lane design is adequate in all 2028 scenarios; single lane is inadequate in one of the scenarios

Title	Date	By	For	Summary of Findings/Recommendations
Vergennes Route 22A Bypass Preliminary Design Report	11/95	Community Planning & Design	Vergennes TAC and ACRPC	<ul style="list-style-type: none"> • Identified "near-west" corridor – extending from VT 22A near Pantown town line and rejoining VT 22A at underpass with railroad- as the preferred alignment • Add bypass project to Addison Regional Transportation Improvement Program • Include bypass in city and town master plans • Develop maps to preserve right-of-way • Review zoning around proposed bypass • Examine rail alternatives
Analysis of a Year-Round East/West Route in So. Addison/No. Rutland County	12/95	DuBois & King	ACRPC	<ul style="list-style-type: none"> • Leicester-Whiting Road geometry and two of the bridges on that corridor are deficient • Rehabilitate at least one of the bridges on the L-W Road • Improve safety at L-W Road – US 7 intersection • Perform scoping study to identify alternatives that would improve overall east-west transportation during periods of flooding, address truck traffic during flooding, ensure emergency vehicle access, and address natural resources
Middlebury Gap Corridor Mgmt Plan	4/96	ACRPC and Two Rivers-Ottawaquechee Regional Commission		<ul style="list-style-type: none"> • Maintain roadway in its existing condition to minimize disruption to the area • VTrans decisions should include active participation from local stakeholders
Lake Champlain Byways: Addison County Corridor Management Plan	01/00	ACRPC		<ul style="list-style-type: none"> • Lake Champlain Byways in Addison County would be VT 22A from Rutland County to Vergennes and US 7 from Vergennes to Chittenden County • City of Vergennes has requested designation for VT 22A within its city limits • Town of Middlebury has requested designation for its core area • Addison and Bridport do NOT want byways designation
Addison County Emergency Planning Committee Hazardous Materials Flow Study	9/03	Smart Mobility	ACRPC TAC and Addison County Emergency Planning Committee	<ul style="list-style-type: none"> • Purpose of study to determine volume, composition, and route of hazardous materials being transported through Addison County • VT 22A and US 7 north of Vergennes carry the majority of hazardous materials, ranging between 50 to 100 trucks per weekday • US 7 south of Middlebury carries the next highest amount with 25 to 50 trucks per weekday • Majority of trucks carrying hazardous materials (69%) contain flammable liquids that are non-polar/water-immiscible • Almost all accidents involving hazardous materials occur between 8AM and 7PM in the summer, and the majority of these occur on VT 22A and US 7 north of Vergennes

Title	Date	By	For	Summary of Findings/Recommendations
Célébration Champlain Strategic Plan	8/05	Lakes to Locks Passage, Inc.	FHWA National Scenic Byway Program	<ul style="list-style-type: none"> • Reconstruct MacDonough Drive in Vergennes • Construct Vergennes Pedestrian Bridge • Create Middlebury Downtown Walking Tour • Develop Vergennes Park & Ride/Visitor Center • Develop Middlebury Information Center & Creek Walk • Develop Vergennes Rail-Trail
Local Studies				
Traffic Calming and Non-Vehicular Routes for Five Addison County Towns	9/97	Oman Analytics and Kathleen Ryan- Landscape Architect	ACRPC	<ul style="list-style-type: none"> • Starksboro preferred alternative: reconfiguration of the roadway cross-section from a rural design to a curbed, urban design as well as the addition of on-street parking to maximize traffic calming, pedestrian accessibility, and village enhancement • Monkton Boro preferred alternative: speed humps should be installed to reduce vehicle speeds at minimum expense and disruption • Monkton Ridge preferred alternative: roundabout at the south entrance to the town and reconstruction of the “dog leg” area, as well as a transition from a rural cross-section to an urban one through the town center • Addison preferred alternative: divider islands, curbs, and access management • Bridport preferred alternative: improve operational conditions at the VT 22A intersections with 125W, 125E, Crown Point, and the school access road and conduct comprehensive study of parking in the Grange area • Shoreham preferred alternative: use zoning to preserve the area as is
Greater Vergennes Traffic Impact Feasibility Study	7/02	Dufresne- Henry	ACRPC	<ul style="list-style-type: none"> • Pursue Capital Improvement Plan, followed by engineering studies, petitioning VTrans to set standards regarding the effects of truck traffic, law enforcement, and implementation of traffic calming measures • Pursue Intelligent Transportation System (ITS) solutions and regulatory changes on a system-wide basis • Greater Vergennes Truck Route should be included in the Addison County TIP

Title	Date	By	For	Summary of Findings/Recommendations
Downtown Bristol Traffic Study	2/03	Lamoureux & Dickinson	ACRPC	<ul style="list-style-type: none"> • Improve downtown parking facilities • Improve bicycle and pedestrian facilities • Improve traffic flow and conditions • Conduct a feasibility study for a separated path along the New Haven River between South Street and Lincoln Road • Close access points and add green space and curbing to Brooks/Shaws Shopping Center • Reconfigure access points at intersection of West and Maple Streets • Reconfigure parking, make signal adjustments, and include traffic calming elements at intersection of West, North, and South Streets • Traffic-calming project on VT 116 between Airport Drive and Lincoln Road
US 7/ Exchange St. Intersection (Middlebury)	9/04	Dufresne- Henry	ACRPC	<ul style="list-style-type: none"> • Improve safety and sight distances • Reduce delay on the Exchange Street approach • Accommodate future growth • Gateway enhancements • Identified roundabout as preferred alternative
2005 Middlebury Town Plan	6/05	Town of Middlebury		<ul style="list-style-type: none"> • Encourage use of public transit • Improve pedestrian & bicycle facilities downtown • Plan for new network links • Plan for mixed use development to make the transportation-land use connection • Use zoning to limit/reduce high traffic or turning movement generators on US 7 • Use development review process and traffic impact evaluations to preserve safety and level-of-service • Construct roundabouts on US 7 at Creek Road, Middle Road, Hannaford Plaza, and Exchange Street • Realign Charles Avenue-Monroe Street intersection with US 7 • Improve US 7 intersections with Mary Hogan and with Water Street • Improve access from Main Street and plan for public parking in the Marble Works • Build Cross Street Bridge • Promote rail improvements • Promote Multi-Modal Transportation Center • Support the Middlebury Rail Spur (provided it serves other businesses in addition to Omya) • Plan for Easterly Bypass • Designate scenic roads

Title	Date	By	For	Summary of Findings/Recommendations
Middlebury Cross Street Bridge Proposal	2/06	Town of Middlebury		<ul style="list-style-type: none"> Construct Cross Street Bridge Construct roundabout at intersection of Cross Street and Main Street Construct a one-way connecting road across from Weybridge Street, behind Memorial Gymnasium between College Street and South Main Street; include a signal at intersection with South Main Street Make College Street one-way southbound between roundabout and Weybridge Street Install signal (to be coordinated with others along US 7) at Cross Street intersection with Court Street
VT 22A-S. Water - MacDonough Intersection Study	10/06	RSG	City of Vergennes and ACRPC	<ul style="list-style-type: none"> Install traffic signal Reconfigure southwest corner of VT 22A and MacDonough Drive to include more parking, accommodate a proposed sidewalk, provide more green space, and improve access management by eliminating an improper curb cut
Rail and Public Transportation				
Middlebury Rail Spur Study	2/96	Banks & Associates, Engineers Inc. of VT, Dr. George Wilson	VTrans	<ul style="list-style-type: none"> Feasible options to convert Omya truck trips to rail trips are 1) construct a rail spur from the Omya quarry to the existing rail line; or 2) truck the loads to the rail line using a proposed bypass around Middlebury; Option 2 is only feasible if a Middlebury bypass is constructed Future planning for Route 7 should include Omya truck traffic and include rail alternatives to reduce congestion and emissions
Middlebury Multi-Modal Transportation Center	Feasibility Study 10/01; Conceptual Design Study 12/02	Stevens & Associates	ACRPC	<ul style="list-style-type: none"> The old train station is the preferred alternative site By 2015 there would be over 160 rail and bus daily boardings and alightings at the site Initiate discussions with the VTrans Rail Division and Vermont Railway regarding signalized pedestrian crossings and the location of on-street parking and the train platform Identify renovation and operational funding sources Develop plans to meet parking requirements
Short-Range Transit Plan for Addison County	7/95	CGA Consulting Services	Addison County Transit Resources (ACTR)	<ul style="list-style-type: none"> Strengthen ridematch and ride share programs Secure bids to provide the Middlebury transit route Explore funding mechanisms Purchase new buses Implement Route 7 service, Middlebury Town Bus and demand-based demonstration service in two areas of the county
Short-Range Public Transportation Plan for Addison County Transit Resources	3/03	KFH Group	VTrans	<ul style="list-style-type: none"> Revise existing Job Access Reverse Commute Middlebury route and the existing Bristol, Vergennes, and Middlebury shuttle route Provide feeder service to commuter rail lines (if implemented) Provide commuter service to Burlington and to Rutland along Route 7 and to New York State at Chimney Point Implement additional fixed schedule rural services Coordinate with human service agencies Regularly evaluate the Middlebury College services

Title	Date	By	For	Summary of Findings/Recommendations
Addison County Transit Resources Fiscal Year 2004-2008 Strategic Plan	9/03	Revisions	ACRPC and ACTR	<ul style="list-style-type: none"> • Expand service • Increase diversity and stability in funding sources • Develop public relations and marketing systems • Develop employee training and evaluation programs • Move into new administrative and operational facilities • Improve operational efficiency • Continue to develop internal leadership and a pro-active, well-informed board • Create pilot programs to explore new services • Pursue various funding sources • Develop operations manuals • Expand the board and engage members in marketing activities
Addison County Transit Study	6/06	Edwards and Kelcey	ACRPC and ACTR	<ul style="list-style-type: none"> • Revise local Middlebury service hours and provide 45-minute headways • Add a second bus to the Tri-Town Shuttle and split service into two routes: one between Middlebury and Bristol and the other between Middlebury and Vergennes • Add round trips (one during the morning peak hour and one during the evening peak hour) to the Middlebury/Burlington Link • Consider implementation of commuter routes between Crowne Point and Middlebury and between Rutland and Middlebury
Bicycle and Pedestrian				
Addison County Regional Bicycle and Pedestrian Plan	7/02	Wilbur Smith Associates and LandWorks	ACRPC	<ul style="list-style-type: none"> • Enhance bicycle and pedestrian modes through provision of a safe and convenient network and promotion of shared rights of way among vehicles, bicycles, and pedestrians • Encourage context-sensitive design • Shared use path projects should address private property owners' interests along the proposed route in the earliest stages • Include bike and pedestrian facilities in bridge repair projects • Require new developments to have sidewalks and use traffic calming elements and traditional neighborhood design principles • Improve signage, provision of bicycle racks, and positioning of crosswalks
New Haven Sidewalk Feasibility Study	2003	Summit Engineering, Inc.	-	<ul style="list-style-type: none"> • Feasibility study for a pedestrian connection in New Haven between the Town Green and the Beeman Elementary School, the Town Library, and the Municipal Offices • Preferred alternative: sidewalk on one side of the roadway with crossings where sight distances are adequate
Weybridge Bicycle & Pedestrian Study	9/04	LandWorks	Town of Weybridge	<ul style="list-style-type: none"> • Pursue bicycle and pedestrian facility improvements (such as signage, roadway striping, and sidewalks) along Morgan Horse Farm, Pulp Mill Bridge, Hamilton, and Quaker Village Roads

Title	Date	By	For	Summary of Findings/Recommendations
Town of Cornwall – Bicycle and Pedestrian Planning and Feasibility Study	10/05	Erik Sandblom Engineering & Consulting	Town of Cornwall and ACRPC	<ul style="list-style-type: none"> • Preferred alignment to connect the Village of Cornwall with the Town of Middlebury: a shared use path along the south and east sides of Route 30, depending on right-of-way data • If preferred alternative is not viable option because of right-of-way data, an alternative of shared lanes on the roadway should be pursued • Preferred alignment along Route 125 is a shared use path from James Road to the Middlebury College paths
Vergennes & Ferrisburgh Multi-Use Path and Sidewalk Planning and Feasibility Study	3/06	Wilbur Smith Associates	Town of Ferrisburgh and City of Vergennes	<ul style="list-style-type: none"> • Preferred alternative for a bicycle and pedestrian connection between New Haven Road in Vergennes and the proposed Park-and-Ride north of Route 22A in Ferrisburgh and for extending the sidewalk on Route 22A/North Main Street in Vergennes to the Park-and-Ride: a 10-foot path that would begin at East Street in Vergennes and later split into two separate links as it travels north

APPENDIX B

Highway Sufficiency Ratings (sorted by Adjusted Rating)¹ (Source: VTrans)

2001 Sufficiency Ratings: State Highways					2003 Sufficiency Ratings: Town Hwy Major Collectors				
Route Name	Town	Begin Mileage	End Mileage	Adjusted Rating	Route Name	Town	Begin Mileage	End Mileage	Adjusted Rating
VT 125	Middlebury	2.59	3.43	40.10	FAS 188	Lincoln	6.37	1.09	32.30
VT 74	Shoreham	9.61	0.61	42.90	FAS 199	Monkton	5.53	3.39	35.70
VT 125	Cornwall	2.60	3.26	43.80	FAS 160	Whiting	1.40	3.16	36.90
VT 125	Ripton	0.15	1.09	44.40	FAS 183	New Haven	3.84	0.43	38.00
VT 74	Shoreham	5.24	9.61	45.80	FAS 188	Lincoln	4.65	6.37	40.20
US 7	Ferrisburg	5.64	7.29	46.80	FAS 188	Lincoln	0.21	0.90	42.50
VT 17	Starksboro	5.21	2.75	47.90	FAS 188	Bristol	0.00	0.21	44.60
VT 30	Cornwall	3.96	5.54	48.10	FAS 188	Lincoln	0.90	1.89	46.20
VT 74	Cornwall	0.61	2.90	50.40	FAS 183	New Haven	0.00	3.84	46.60
VT 17	Addison	0.00	3.22	50.50	FAS 160	Shoreham	2.44	1.00	46.80
US 7	Middlebury	5.71	6.15	50.80	FAS 160	Shoreham	0.00	2.19	47.00
VT 74	Shoreham	4.71	5.24	51.50	FAS 186	Ferrisburg	0.00	0.53	49.00
VT 125	Cornwall	0.00	2.24	52.20	FAS 186	Vergennes	0.00	0.57	50.50
VT 30	Cornwall	5.84	6.36	52.70	FAS 188	Lincoln	1.89	3.36	54.80
US 7	New Haven	5.87	7.69	52.80	FAS 186	Panton	0.53	1.34	54.80
VT 30	Middlebury	0.00	0.55	53.20	FAS 181	Weybridge	0.00	2.06	54.80
VT 116	Bristol	7.25	8.17	54.00	FAS 198	Monkton	2.92	3.20	54.90
VT 17	New Haven	5.08	0.60	55.40	FAS 156	Shoreham	0.00	4.95	55.70
VT 125	Ripton	1.09	1.52	55.70	FAS 175	Leicester	0.29	0.10	57.00
VT 74	Shoreham	0.00	4.71	56.20	FAS 160	Shoreham	2.19	2.44	58.10
VT 73	Orwell	3.41	0.32	56.40	FAS 199	Monkton	5.00	5.53	58.20
VT 17	Weybridge	0.00	3.46	56.40	FAS 198	Ferrisburg	0.00	0.94	58.30
VT 73	Orwell	0.59	0.91	56.70	FAS 175	Salisbury	0.28	4.15	59.20
VT 125	Addison	1.60	4.94	56.80	FAS 184	Panton	0.00	2.90	59.30
VT 73	Orwell	0.91	3.41	56.80	FAS 182	Vergennes	0.00	0.12	59.40
VT 125	Bridport	4.94	5.24	57.40	FAS 212	Starksboro	0.00	0.17	60.00
US 7	Ferrisburg	4.38	5.10	57.60					
VT 116	Bristol	0.42	3.43	58.10					
VT 73	Goshen	6.12	0.06	58.70					
VT 30	Whiting	0.00	1.28	59.10					
VT 125	Cornwall	3.26	4.26	59.70					
VT 73	Goshen	2.44	3.61	59.90					

¹ THIS INFORMATION IS EXEMPT FROM DISCOVERY OR ADMISSION UNDER 23 U.S.C 409.

APPENDIX C

VTrans Bridge Sufficiency Ratings: Structurally and Functionally Deficient Bridges

(source: VTrans; SD=Structurally Deficient; FD=Functionally Deficient)

Town Name	Route Name	Bridge No	Features Intersected	Location	Bridge Type	Federal Sufficiency Rating	Deficiency Status
BRISTOL	VT116	00008	NEW HAVEN RIVER	2.5 MI S JCT. VT.17 W	PONY TRUSS/MAYBE	2.0	SD
MIDDLEBURY	SEYMORE	00001	OTTER CREEK	SEYMORE STREET	DB BURR ARCH COV BR	19.9	SD
BRISTOL	C2005	00031	NEW HAVEN RIVER	0.2 MI TO JCT W CL1 TH1	STEEL PONY TRUSS	20.7	SD
SALISBURY	FAS 0175	00006	SUCKER BROOK	3.7 MI E JCT. U.S.7	CONCRETE SLAB	26.0	SD
FERRISBURGH	C3026	00029	LITTLE OTTER CREEK	0.82 MI TO JCT W C3 TH35	STEEL BM W TIMBER DK	26.6	SD
SALISBURY	C2001	00008	OTTER CREEK	0.7 MI TO JCT W CL3 TH14	TOWN LATTICE COV BR	30.8	SD
FERRISBURGH	US7	00137	LITTLE OTTER CREEK	1.1 MI N JCT. VT.22A	STEEL BEAM	31.0	SD
NEW HAVEN	FAS 0183	00010	NEW HAVEN RIVER	1.1 MI E JCT. U.S.7	STEEL BEAM	31.7	SD
NEW HAVEN	US7	00129	NEW HAVEN RIVER	4.8 MI S JCT. VT.17 E	STEEL BEAM	33.0	SD
RIPTON	VT125	00015	MIDDLEBURY RIVER	4.6 MI E JCT US 7	CONCRETE T-BEAM	33.1	SD
LEICESTER	FAS 0160	00006	OTTER CREEK	2.6 MI W JCT. U.S.7	WELDED PLATE GIRDER	35.1	SD
CORNWALL	VT125	00009	LEMON FAIR RIVER	3.5 MI E JCT. VT.22A S	STEEL BEAM	35.3	SD
BRISTOL	VT116	00012	BALDWIN CREEK	0.1 MI N JCT. VT.17 E	STEEL BEAM	36.8	SD
NEW HAVEN	C3007	00026	OTTER CREEK	0.5 MI TO JCT C3 TH 25	STEEL THRU TRUSS	37.6	SD
BRISTOL	VT116	00006	NOTCH BROOK	2.7 MI S JCT. VT.17 W	CONCRETE SLAB	43.0	SD
LINCOLN	C3006	00046	NEW HAVEN RIVER	@ JCT W CL2 TH1	STEEL PONY TRUSS	43.3	SD
NEW HAVEN	C2005	00030	NEW HAVEN RIVER	0.25 MI TO JCT W US7	CONCRETE T-BEAM	43.8	SD
MIDDLEBURY	VT30	00102	VT 30 OVER VT RR	0.1 MI S JCT. U.S.7	CONC. ENCASED STL BM	43.9	SD
BRIDPORT	C3027	00024	POTASH BROOK	0.5 MI TO JCT W CL3 TH28	STEEL BEAM	45.4	SD
LINCOLN	C3033	00018	NEW HAVEN RIVER	AT JCT TH 33 & C2 TH 1	STEEL BEAM	45.7	SD
STARKSBORO	C3022	00051	LEWIS CREEK	0.3 MI TO JCT W VT116	STEEL BM W TIMBER DK	47.5	SD
LINCOLN	FAS 0188	00019	NEW HAVEN RIVER	4.0 MI E JCT VT 116	2 SPAN ROLLED BEAM	49.8	SD
FERRISBURGH	FAS 0198	00012	LEWIS CREEK	0.8 MI E JCT. U.S.7	STEEL BEAM	51.8	SD
WEYBRIDGE	VT17	00008	OTTER CREEK	3.0 MI E JCT VT 22A	STEEL BEAM	51.9	SD
FERRISBURGH	US7	00139	LEWIS CREEK	4.9 MI N JCT. VT.22A	CONT. STEEL BEAM	53.0	SD
MIDDLEBURY	MERRW	00002	MER ROW OVER VT RR	MERCHANTS ROW	CONC. ENCASED STL BM	53.9	SD
SHOREHAM	VT74	00002	LEMON FAIR RIVER	3.3 MI W JCT. VT.30	STEEL BEAM	54.5	SD
SALISBURY	C2001	00004	LEICESTER RIVER	0.04 MI TO JCT W CL2 TH4	CONCRETE T-BEAM	56.6	SD
FERRISBURGH	C2005	00011	LITTLE OTTER CREEK	0.32 MI TO JCT W US7	3 SPAN ROLLED BM	57.8	SD
LINCOLN	C2003	00016	BEAVER RIVER	@ JCT W CL3 TH8	STEEL BEAM	59.2	SD
ADDISON	VT17	00004	DEAD CREEK	2.3 MI W JCT. VT.22A	STEEL BEAM	60.1	SD
STARKSBORO	VT116	00015	LEWIS CREEK	3.4 MI N JCT. VT.17 E	STEEL BEAM	73.5	SD
LEICESTER	C3012	00004	LEICESTER RIVER	0.74 MI TO JCT W CL2 TH1		*41.9	SD
MIDDLEBURY	C3010	00023	MUDDY BRANCH	0.4 MI TO JCT C3 TH 8	TOWN LATTICE COV BR	39.8	FD
LINCOLN	C3045	00047	NEW HAVEN RIVER	0.01 MI TO JCT W CL2 TH1	ROLLED BM W TIMBER DK	48.0	FD
LINCOLN	FAS 0188	00015	BEAVER MEADOW BROOK	3.1 MI E JCT. VT.116	STEEL BEAM	50.0	FD
NEW HAVEN	C3009	00019	BR LITTLE OTTER CRK	0.2 MI TO JCT C3 TH 8	STEEL BEAM	54.7	FD
LINCOLN	C3009	00048	NEW HAVEN RIVER	@ JCT W CL2 TH1	STEEL BEAM	55.6	FD
STARKSBORO	C3039	00018	LEWIS CREEK	1.1 MI TO JCT W VT116	STEEL BM W TIMBER DK	60.2	FD
MIDDLEBURY	VT125	00013	MIDDLEBURY RIVER	1.6 MI E JCT. U.S.7	CONCRETE ARCH	61.8	FD
SHOREHAM	C3048	00024	LEMON FAIR RIVER	0.9 MI TO JCT W CL2 TH1	STEEL PONY TRUSS	65.7	FD
MONKTON	C3034	00021	LITTLE OTTER CREEK	0.2 MI TO JCT W CL2 TH1	CONC ENCASED STL BM	65.9	FD
FERRISBURGH	C3034	00033	LITTLE OTTER CREEK	0.75 MI TO JCT W C3 TH14	STEEL BEAM	66.5	FD
FERRISBURGH	C3035	00028	MUD CREEK	0.12 MI TO JCT W C3 TH36	STEEL BEAM	66.5	FD
RIPTON	C3018	00017	SO.BR.MIDDLEBURY RIV	0.1 MI TO JCT W VT125	ROLLED BEAM	66.7	FD
BRIDPORT	C2001	00005	W. BR. DEAD CREEK	0.1 MI TO JCT W CL3 TH17	ROLLED BEAM	67.7	FD
PANTON	FAS 0184	00003	DEAD CREEK	3.2 MI W JCT. VT.22A	ROLLED BEAM	67.9	FD
RIPTON	C3011	00016	MIDDLEBURY RIVER	0.04 MI TO JCT W C3 TH14	ROLLED BEAM	68.3	FD
LINCOLN	C2001	00012	BROOK	0.1 MI TO JCT C3 TH 5	STEEL BEAM	69.0	FD
WEYBRIDGE	C3012	00011	LEMON FAIR RIVER	0.06 MI TO JCT W CL3 TH5	STEEL BEAM	69.0	FD
RIPTON	C2001	00003	N.BR.MIDDLEBURY R.	0.6 MI TO JCT C3 TH 3	ROLLED BEAM	71.6	FD
SALISBURY	C2004	00003	LEICESTER RIVER	0.75 MI TO JCT W VT53	CONCRETE SLAB	71.6	FD
STARKSBORO	C3006	00053	BALDWIN CREEK	0.01 MI TO JCT W VT17	STEEL BEAM	82.1	FD

VTrans Bridge Sufficiency Ratings: Not Deficient Bridges

Town Name	Route Name	Bridge No	Features Intersected	Location	Bridge Type	Federal Sufficiency Rating	Deficiency Status
VERGENNES CITY	VT22A	00027	OTTER CREEK	1.5 MI S JCT. U.S.7	STEEL BEAM	49.5	ND
MIDDLEBURY	US7	00125	MIDDLEBURY RIVER	0.5 MI. S. JCT. VT- 125 E	STEEL BEAM	52.8	ND
ORWELL	FAS 0156	00004	NORTH FORK CREEK	2.0 MI W JCT VT 22A	ROLLED BEAM	56.8	ND
MIDDLEBURY	VT30	00101	OTTER CREEK	0.2 MI S JCT. U.S.7	MASONRY ARCH	59.9	ND
WEYBRIDGE	C2002	00006	OTTER CREEK	0.04 MI TO JCT W CL3 TH9	2 SPN. CONT. STL. BM	63.6	ND
BRIDPORT	C3044	00022	W.BR.DEAD CREEK	0.6 MI TO JCT W VT125	STEEL BM W TIMBER DK	65.3	ND
BRISTOL	VT116	00011	NEW HAVEN RIVER	1.8 MI S JCT. VT.17 E	CURVED WD PLT GIRDER	65.4	ND
FERRISBURGH	FAS 0197	00009	LITTLE OTTER CREEK	0.2 MI TO JCT W CL3 TH36	STEEL BEAM	67.0	ND
LEICESTER	US7	00120	LEICESTER RIVER	6.4 MI N JCT. VT.73 W	2 SPAN ROLLED BEAM	67.3	ND
LINCOLN	FAS 0188	00017	NEW HAVEN RIVER	4.6 MI E JCT VT 116	PRESTRESSED BOX BM.	67.5	ND
STARKSBORO	C3025	00050	LEWIS CREEK	0.3 MI TO JCT W VT116	CONCRETE SLAB	67.8	ND
BRIDPORT	VT125	00003	E. BR. DEAD CREEK	1.1 MI W JCT. VT.22A N	CONCRETE T-BEAM	67.9	ND
FERRISBURGH	FAS 0186	00010	DEAD CREEK	3.6 MI W JCT. VT.22A	STEEL BEAM	68.2	ND
BRISTOL	C4027	00020	LITTLE NOTCH BROOK	0.2 MI TO JCT W CL3 TH43	ROLLED BEAM	68.8	ND
MIDDLEBURY	C3023	00021	MIDDLEBURY RIVER	0.05 MI TO JCT W VT125	STEEL BEAM	70.0	ND
RIPTON	C3003	00015	N. BR. MIDDLEBURY R.	0.3 MI TO JCT C2 TH 1	STEEL BEAM	70.7	ND
NEW HAVEN	C2004	00011	NEW HAVEN RIVER	0.01 MI TO JCT W CL2 TH2	PRESTRESS CONC. TBM	71.6	ND
BRIDPORT	C2001	00004	POTASH BROOK	0.3 MI TO JCT W CL3 TH27	ROLLED BEAM	71.9	ND
MONKTON	C2006	00022	LEWIS CREEK	0.17 MI TO JCT W C3 TH19	STEEL BEAM	72.3	ND
RIPTON	C3014	00014	MIDDLE BR. MIDDLEBURY R.	0.1 MI E OF JCT TH2	PRECAST CONSPAN ARCH	73.0	ND
GOSHEN	C2001	00002	BR. OF NESHOBIE R.	0.25 MI TO JCT W CL3 TH2	ROLLED BEAM	73.3	ND
LINCOLN	C2001	00013	COTA BROOK	0.5 MI TO JCT W CL2 TH2	PRECAST CONC. SLAB	73.6	ND
WEYBRIDGE	C2002	00007	OTTER CREEK	0.08 MI TO JCT W CL3 TH9	3 SPN. CONT. STL. BM	73.7	ND
GOSHEN	C3015	00009	NESHOBIE RIVER	0.1 MI TO JCT W VT73	TIMBER BEAM	74.5	ND
LINCOLN	C2001	00014	NEW HAVEN RIVER	0.2 MI TO JCT C3 TH 5	STEEL BEAM	75.0	ND
FERRISBURGH	C3019	00032	SOUTH SLANG BROOK	1.9 MI TO JCT W CL2 TH5	PRESTRESS BOX BEAM	75.2	ND
MIDDLEBURY	C3033	00020	MIDDLEBURY RIVER	0.05 MI TO JCT RT 125	WELDED PLATE GIRDER	75.4	ND
BRISTOL	VT116	00010	NEW HAVEN RIVER	2.0 MI S JCT. VT.17 E	WELDED PLATE GIRDER	75.5	ND
NEW HAVEN	C3008	00025	VERMONT RAILWAY	0.7 MI TO JCT W US7	WELDED CURVED GIRDER	77.7	ND
SHOREHAM	C3035	00025	LEMON FAIR RIVER	0.1 MI TO JCT W CL3 TH19	PRESTRESS CONC. SLAB	77.9	ND
RIPTON	C3018	00010	GOSHEN BROOK	0.45 MI TO JCT S VT125	GLU-LAM WD DK PANELS	78.0	ND
RIPTON	C3010	00012	N.BR.MIDDLEBURY R.	@ JCT OF TH1 & TH10	CONCRETE SLAB	78.0	ND
MIDDLEBURY	C2010	00011	MIDDLEBURY RIVER	0.05 MI TO JCT W C3 TH19	STEEL BEAM	78.4	ND
ADDISON	C3004	00022	E BR DEAD CREEK	1.7 MI W JCT VT 22A	STEEL BEAM	80.1	ND
FERRISBURGH	C3050	00030	VERMONT RAILWAY	0.7 MI TO JCT W CL2 TH2	WELDED PLATE GIRDER	80.6	ND
BRISTOL	VT17	00013	BALDWIN CREEK	1.0 MI E JCT. VT.116 N	CONCRETE SLAB	80.8	ND
ORWELL	C2002	00003	S. FORK EAST CREEK	0.3 MI TO JCT W VT73	ROLLED BEAM	81.5	ND
STARKSBORO	C2003	00019	LEWIS CREEK	0.3 MI TO JCT W VT116	STEEL BEAM	81.7	ND
WEYBRIDGE	C3017	00010	LEMON FAIR RIVER	0.9 MI TO JCT W CL3 TH5	STEEL BEAM	82.3	ND
BRISTOL	C2005	00011	NEW HAVEN RIVER	0.01 MI TO JCT W C3 TH22	WELDED GIRDER	82.4	ND
ORWELL	C3027	00012	EAST CREEK	0.25 MI TO JCT W VT22A	PRESTRESS CONC. SLAB	82.4	ND
WEYBRIDGE	FAS 0181	00005	LEMON FAIR RIVER	1.5 MI S JCT. VT.17	WELDED PLATE GIRDER	82.6	ND
LINCOLN	C3033	00044	NEW HAVEN RIVER	0.1 MI TO JCT C3 TH 36	PS/PT CONCRETE SLAB	85.1	ND
ADDISON	C3024	00020	E.BR.DEAD CREEK	0.65 MI TO JCT W VT22A	STEEL BEAM	85.8	ND
SALISBURY	C3008	00007	MIDDLEBURY RIVER	0.85 MI TO JCT W CL3 TH7	STEEL BEAM	86.1	ND
GOSHEN	C3002	00016	BR. OF NESHOBIE R.	@ JCT W CL2 TH1	ROLLED BEAM	86.4	ND
SHOREHAM	FAS 0160	00008	LEMON FAIR RIVER	2.4 MI E JCT. 22A	STEEL BEAM	86.9	ND
NEW HAVEN	C3020	00017	BR LITTLE OTTER CRK	0.2 MI TO JCT C3 TH 8	STEEL BEAM	87.2	ND
STARKSBORO	C3026	00049	LEWIS CREEK	0.1 MI E OF JCT VT 116	CONCRETE SLAB	88.2	ND
RIPTON	C3021	00011	S0.BR.MIDDLEBURY RIV	0.10 MI S OF VT125	PRECAST VOIDED SLAB	88.9	ND
FERRISBURGH	C3035	00034	LITTLE OTTER CREEK	0.3 MI TO JCT W CL3 TH36	STEEL BEAM	89.2	ND
ORWELL	C3010	00011	LEMON FAIR RIVER	0.4 MI TO JCT W CL3 TH4	PRESTRESS CONC. SLAB	89.9	ND
FERRISBURGH	C2006	00007	LEWIS CREEK	1.5 MI N JCT US 7	WELDED PLATE GIRDER	91.1	ND
GOSHEN	C3002	00018	SUCKER BROOK	3.1 MI TO JCT W CL3 TH5	GLUE LAM.TIMBER SLAB	91.5	ND
ORWELL	C3025	00009	LEMON FAIR RIVER	1.0 MI N JCT VT 73	CONCRETE SLAB	92.6	ND
NEW HAVEN	C3024	00022	BROOK	0.3 MI S JCT VT 17	CONCRETE SLAB	93.7	ND
STARKSBORO	FAS 0211	0007S	HUNTINGTON RIVER	0.1 MI N JCT. VT.17	MULTI PLATE ARCH	*78.9	ND
MIDDLEBURY	C2006	00010	MUDDY BRANCH	0.8 MI TO JCT C2 TH 6	MULTI PLATE ARCH	*79.5	ND
NEW HAVEN	VT17	00011	BROOK	0.2 MI E JCT. U.S.7	3 CGMP	*84.3	ND
RIPTON	VT125	00014	MIDDLEBURY RIVER	4.2 MI E JCT. U.S.7	TWIN RC BOX	*87.3	ND
STARKSBORO	VT17	00024	HUNTINGTON RIVER	6.7 MI E JCT. VT.116 N		*88.4	ND
STARKSBORO	FAS 0211	00011	HUNTINGTON RIVER	0.2 MI N JCT. VT.17	MULTI PLATE ARCH	*90.1	ND
CORNWALL	C3006	00002	BEAVER BROOK	0.6 MI TO JCT C3 TH 16		*90.8	ND

APPENDIX D

Level-of-Service Summary Tables

The LOS Summary tables show LOS, delay and 95th percentile queue lengths for each approach of each intersection. The only signalized intersections in the analysis are Main – Monkton and VT 22A – Green in Vergennes.

2007 AM Peak Hour LOS and Queues

Study Intersections	Eastbound			Westbound			Northbound			Southbound		
	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)
<i>Ferrisburg</i>												
US 7 - Old Hollow Road	C	19.9	1	C	22.6	1	A	1.2	0	A	0.3	0
US 7 - Little Chicago	D	26.1	1	D	28.4	1	A	1.1	0	A	0.1	0
<i>Starksboro</i>												
VT 116 - States Prison Hollow	A	9	0				A	0.4	0	0	0	0
<i>Vergennes</i>												
Main - Monkton (signalized)				B	11.9	2	B	16.2	7	B	13.7	4
VT 22A - Green (signalized)	A	9.1	1	B	10.2	2	B	12.9	5	B	12.7	118
VT 22A - S. Water	C	18.8	1	C	18.6	1	A	0.6	0	A	0.6	0
VT 22A - Panton	B	14	1				A	1	0	0	0	0
<i>Addison</i>												
VT 22A - VT 17	A	8.6	N/A	A	8	N/A	A	8.5	N/A	A	8.2	N/A
<i>Bristol</i>												
Burpee - Monkton				0	0	0	A	9.9	0	B	10.1	1
VT 116 - Lincoln				B	10.6	1	0	0	0	A	0.4	0
<i>Middlebury</i>												
Elm - Exchange - Seymour	B	10.9	N/A	B	10.5	N/A	A	9.5	N/A	B	10.6	N/A
VT 30 - VT 125	F	132.6	14				A	8.7	0	0	0	0
US 7 - Creek Rd	D	26.9	0				A	0.2	0	0	0	0
US 7 - Boardman				C	16.1	1	0	0	0	A	2.9	0
US 7 - Foote	C	23.8	0	C	21.5	1	A	0	0	A	0.6	0
<i>Bridport</i>												
VT 125/West Market - VT 22A	A	9.7	0	B	11.1	0	A	2	0	A	0.2	0
VT 125 (east) - VT 22A				B	10.8	0	0	0	0	A	3.6	0
<i>Cornwall</i>												
VT 30 - VT 74	B	11.8	1				A	0.2	0	0	0	0
<i>Leicester</i>												
US 7 - Leicester-Whiting/Fern Lake	C	15.1	0	B	12.7	1	A	0.6	0	A	0.5	0
<i>Orwell</i>												
VT 73 - VT 22A	A	7.9	N/A	A	7.9	N/A	A	8	N/A	A	8.2	N/A

N/A = Not Available

2007 PM Peak Hour LOS and Queues

Study Intersections	Eastbound			Westbound			Northbound			Southbound		
	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)	LOS	Delay (sec/veh)	Queue Length (veh)
<i>Ferrisburg</i>												
US 7 - Old Hollow Road	C	20.5	1	E	44.8	3	A	0.6	0	A	0.7	0
US 7 - Little Chicago	D	31.4	1	D	29.7	1	A	0.5	0	A	0.5	0
<i>Starksboro</i>												
VT 116 - States Prison Hollow	A	9.8	0				A	0.4	0	0	0	0
<i>Vergennes</i>												
Main - Monkton (signalized)				B	14.2	5	B	18.9	10	B	17.1	7
VT 22A - Green (signalized)	A	9.8	2	B	12	3	B	18.7	N/A	B	18.8	N/A
VT 22A - S. Water	C	24.9	1	E	48.1	2	A	0.6	0	A	1.1	0
VT 22A - Panton	D	27.4	4				A	0.7	0	0	0	0
<i>Addison</i>												
VT 22A - VT 17	A	8.9	N/A	A	8.5	N/A	A	8.6	N/A	A	9.4	N/A
<i>Bristol</i>												
Burpee - Monkton				A	0.3	0	B	10.1	0	B	10.9	1
VT 116 - Lincoln				B	12.6	1	0	0	0	A	1.8	0
<i>Middlebury</i>												
Elm - Exchange - Seymour	C	23.2	N/A	C	16.5	N/A	B	11.8	N/A	C	19.4	N/A
VT 30 - VT 125	F	690.1	32				A	9.4	0	0	0	0
US 7 - Creek Rd	E	43.3	3				A	0.7	0	0	0	0
US 7 - Boardman				C	16.7	1	0	0	0	A	2.1	0
US 7 - Foote	D	28.6	0	E	40.5	2	A	0	0	A	0.7	0
<i>Bridport</i>												
VT 125/West Market - VT 22A	B	10.1	0	B	13	0	A	3.9	0	A	0.4	0
VT 125 (east) - VT 22A				B	11.4	0	0	0	0	A	1.9	0
<i>Cornwall</i>												
VT 30 - VT 74	B	11	0				A	0.3	0	0	0	0
<i>Leicester</i>												
US 7 - Leicester-Whiting/Fern Lake	C	16.3	0	B	13.9	0	A	0.2	0	A	1.8	0
<i>Orwell</i>												
VT 73 - VT 22A	A	8	N/A	A	8.1	N/A	A	8.5	N/A	A	8.5	N/A

N/A = Not Available

APPENDIX E

Other developments included in the 2030 traffic projections.

Bristol	Approximately 10 lots for single family homes
Vergennes	Comfort Hill-9 single family homes
	Bourgeois (Parts 1&2)- 57 single family homes and 12 condos
	Amory Lane-20 units of affordable housing
	Champlain Valley Christian School
Middlebury	2005 Town Plan estimates 300 new dwelling units by 2015

APPENDIX F

PUBLIC MEETING COMMENTS

The following are comments received from public meeting attendees as well as comments sent to the RPC.

Middlebury May 29, 2007

7:00- Ilsley Library

The bar chart showing growth in ACTR annual ridership does not include the routes to Rutland or to Burlington.

It doesn't seem appropriate that VT 125 is classified as a collector and not an arterial.

The bike-ped map showing road segments that are designated Lake Champlain Byways does not address the deficiencies in the system.

People don't feel safe on the bike system. The network does not provide adequate access for bicyclists.

Middlebury needs to be more bike-friendly. Treat bike as a transportation mode, not just a recreational activity. Get people out of their cars.

Expand the Snow Bowl Shuttle service. The service currently focuses on students, but commuters should be accommodated as well. Understood that funding is a challenge, but this should be pursued if/when possible.

Why not consider Rail Diesel Cars (RDCs)/Diesel Multiple Units (DMUs) for passenger rail?

All of VT 30 and VT 125 in Middlebury are already designated Lake Champlain Byways.

All of the issues that have been presented are focused around cars. Why reinforce this mode when it is creating environmental problems and is dependent on an unsecure fuel source?

Plan for alternative fuels, for instance, General Motors is coming out with the Volt Car, so look for ways to create a widespread infrastructure- electrical outlets in public spaces to plug in cars.

There should be more discussion of major future trends, such as those presented in the VT LRTBP- growth, climate change, energy crunch scenarios.

Include bike lanes in corridor improvements.

Do not include truck climbing lanes in corridor improvements. Make truck and SOV travel inconvenient so that alternatives are more attractive. Help shift truck to rail.

Support the ACTR expansion.

Don't "monitor transit demand to *maintain* level of service"- expand service to meet demand. Currently, there is more demand for transit than there is service available. It's not a case of monitoring, it's a case of rising to meet demand.

US 7-Middlebury bypass; this project is not being actively pursued by the Town of Middlebury. To be practical, VTrans doesn't even have the money to update the EIS, so don't plan on the bypass- look into other projects that are feasible, and also evaluate whether the Middlebury signal coordination, construction of the Cross Street Bridge, intersection improvements (including roundabouts) may eradicate the need for the bypass. Wait until the money is available before pursuing the EIS.

New roads are a low priority.

If the growth scenario is realized and population growth is faster than it has been, there will be more congestion and environmental impacts. In the short-term, SOV demand will continue, but may shift to electric cars. Create the infrastructure to support this. Road maintenance needs will have to be addressed.

One of the challenges is how to reflect the true costs of driving to drivers. If people could really see how much they spend on driving alone, it would affect their decision making.

Airports- remove the recommendation to extend the runway length. Civil aviation is a dying field, and Middlebury airport is centered on recreation.

Leave the runway lengthening in the plan because it will accommodate larger planes.

The plan should address future issues more, and not be so based on past trends. Position Addison County to respond to climate change and fuel supply interruptions, as well as issues like affordability (in terms of transportation projects and household expenses). Position the county to not rely so heavily on single-occupant-vehicles.

Bristol, May 31, 2007

7:00- Holley Hall

How can regional and local communities help reduce emissions to prevent areas from entering air quality non-attainment? What pro-active steps can they take?

What is the plan for Bristol/Monkton Road?

Some people like the idea of putting traffic through Bristol village.

The VT 116 – Lincoln Gap Road intersection is very dangerous. Anecdotal evidence indicates many near-misses. The new bridge railing hides approaching objects.

Be clear on the difference between a roundabout and a traffic circle.

Bicycling and walking are very important for health as well as the environment. Widening shoulders, using gravel shoulders on VT 116 both north and south of Bristol village would be good. (Although gravel is not good for bicycles or horses.)

Adjust the state aid formula- if the town pays for widening shoulders or building sidewalks, then they could get more money for state aid to local roads.

Rush hour traffic is bad in Middlebury; the area needs alternate routes on the network.

Extend transit service to Lincoln and Ripton.

One attendee explained that he lives in Lincoln and works in Burlington. He usually commutes on VT 116. For 2 weeks he tried using the Burlington-Middlebury LINK service, but it was too long and inconvenient, adding a lot of travel time to his commute. The VT 116 corridor has a lot of potential for transit service!

Don't make VT 116 like US 7. Lots of people use VT 116 for pleasure/recreation. It should be a multi-modal corridor that promotes all types of use.

Bristol-Monkton-Hinesburg should work together for a regional solution to transportation issues.

Burpee Road-Plank Road may be a high crash location.

The Middlebury Spur includes other businesses besides Omya. The general transload facility serves other companies as well.

New Haven used to handle more lumber, but now the rail car delivery service is not reliable. The private rail companies need to improve the service.

Why doesn't ACTR connect to the train service in Port Henry, NY? ACTR is considering service to NY, but it is one of the lower priority improvements.

What are the restrictions to freight movement in the western corridor? Isn't Addison County missing out on economic opportunities by not improving the rail line to accommodate double-stacking and heavier cars? What would these improvements entail?

One of the challenges to public transit is people who work individually and need to travel throughout the region for work. These people need their cars and can't use public transit.

ACTR service is very good. As a passenger, you have to do your homework to use the service to your advantage, but ACTR does a very good job.

Provide examples of how other rural areas handle transit, both in the US and in other countries.

DMUs and RDCs can be a very good option for rural areas.

Making transportation costs more visible is required to change people's travel behavior.

ACTR is wonderful, but it needs to expand.

How can people find out about carpool opportunities? Both ACTR and the state websites have ride matching services.

What about convertible buses that can travel both on pavement and on rail? (Like the rail company trucks that can crank down a set of wheels to ride on the tracks.) That might be a transit service to consider.

There is a lot of waste in having a system of school buses picking up students in rural areas, yet the buses do not allow non-students to get a ride to the same area. There should be one system that everyone can ride. Often these school buses are nearly empty.

It is discouraging to see the large number of parents driving their kids to school.

Biking and walking are extremely important.

There needs to be a coordinator or task force to make sure that these projects and ideas are implemented.

Be specific as to which bridges are priorities for repair/improvement. Is the South Street bridge on the list?

Vergennes June 11, 2007

7:00- Bixby Library

Does the Regional Bike-Ped Plan include a connection between Main Street/VT 22A/US 7 and New Haven Road? This may be along the rail trail.

Consider using steam engines for ferries/barges to move people/freight.

How can Park&Rides be encouraged? Lots of support for Park&Rides.

Be clear that roundabouts are not preferred over signals, but are mentioned so that they will be included in an alternatives analysis along with signals to determine the best type of control for an intersection.

Is there any hope for changing truck routes while still attracting economic opportunity to downtown? Be careful not to move trucks to an even less appropriate location, like past a school. The trucks were routed down 22A so that they wouldn't go past a school, which was a worse scenario.

Concerns over local road traffic. Need a policy to shift more money to local roads since they are getting more traffic and consequently more damage.

Advocates of the bypass realize that it needs to be sensitive to local businesses so that tourist traffic is still attracted to downtown.

AADT map shows 2000 data. Can we obtain more up-to-date data?

Public transit should be a priority.

Work with large employers like Middlebury College and Goodrich to develop employer incentives for transit and alternatives. Make sure that these sites are well-served by transit.

Network improvements and alternative routes might be achieved by connecting deadend/cul-de-sacs.

Get things done- don't plan things to death!

Consider a Park&Ride lot on VT 116 closer to the village of Bristol.

Need better connectivity at locations where there is transit.

The Tri-Town shuttle is great and should maybe be expanded, if appropriate. But consider a direct link between Middlebury and Vergennes.

CCTA should work with large businesses (like Goodrich, etc.) so that they are served by the LINK route to Burlington.

Transit service should focus on the ends of routes-the hubs- to expand ridership/improve service.

Definitely pursue employer participation for transit services.

Shoreham June 12, 2007

7:00- Shoreham Fire House

Safety is a significant concern, especially along VT22A

Look at intersection of VT 22A with Shoreham/Whiting Road

Consider creating a gateway at the entrance of Shoreham to slow traffic down

Look at intersection of VT22A with VT 74- visibility is an issue

VT 74 and School Street- visibility is an issue here as well, especially when making a left-turn from VT 74 onto School Street

While traffic calming is generally good, bulb-outs on a truck route are very scary when trying to pass an oncoming truck from the other direction since they narrow down the roadway. This is particularly bad when facing oncoming farm equipment or when snow has been piled high on the side of the road.

VT 30 also gets trucks even though it is not a designated truck route.

Make more alternative routes and improve connectivity.

How can there be economic development when VTrans underfunds projects? Need the transportation system in place before economic development can happen.

If Chittenden County would fix their housing shortage, Addison County wouldn't have a transportation problem. There would be more centralized land use, better mobility, and a better quality of life. There are location-efficient mortgages available.

Just as corridor movements should not occur on local roads, local traffic should not use arterials. Improve connectivity. Potential recommendation could be "Encourage connectivity of local and connector roads to decrease use of arterials for local trips."

Boardman Street in Middlebury is an example of a street that does not connect. If it were a connection, it might relieve some of the pressure on the US7-Foote intersection.

Although Lincoln Gap Road is identified as having a low sufficiency rating, VT 17, VT 125, VT 30, and VT 74-the east-west roads- should have a higher funding priority than Lincoln Gap Road.

There should be more action and less planning. Projects are planned to death. How can VTrans say they don't have money to build projects when they shell out money for more and more plans? (Although the Shelburne Road Reconstruction was cited as an example of a project that took forever but was worth the wait.)

Like the idea of frontage roads.

Restricting left-turns may help mobility. Left-turning vehicles (particularly in Middlebury) clog up traffic.

For the new ACTR Facility, consider sharing the Connor facility.

ACTR should charge fares.

The Tri-Town Shuttle should include direct links between Vergennes and Middlebury. It should be more direct.

Consider a Shoreham to Middlebury ACTR route.

Middlebury College should take the lead in an employer incentive program to find alternative ways for its employees for get to work.

The Mobil Station in Shoreham could be a site for a Park&Ride.

Make the recommendation that organizations and agencies holding large meetings include rideshare information to attendees so that they can plan ahead since they will be coming and going at the same time.

Look at mode split- data may need to be updated.

Ride share program needs better marketing.

ACTR needs more convenient schedules. Some people are transit-captive riders but can't use the service because it doesn't offer any flexibility.

Large employers should consider using flex-schedules. Around 3:00 in Middlebury, several major employers close or have shift changes and commuters flood the town.

What ever happened to the Three Mile Bridge in Middlebury? Right-of-ways have already been given out and the bridge is not cost-effective.

Consider charging bicycle-user fees, maybe a licensing fee.

People in very rural, decentralized areas don't consider bicycling as a regular transportation mode.

Main roads are treacherous for bicyclists.

Lake Champlain Bikeways are an empty designation. They seem to imply safety, but that is not the case.

There are bike-truck conflicts.

Need to address agricultural vehicles in the plan. The vehicles are so wide that when they pass each other on the road, they end up going onto the shoulder and destroying it, and often they destroy the roadside ditches. Yet the state considers this an 'Accepted agricultural practice.' Also, farms sometimes buy land that is not adjacent to their land and doesn't have an off-road connection, so they must transport the equipment on the regular roads.

A rail bypass in Middlebury would be perfect for addressing the fact that the line there cannot be improved to accommodate the new weight and height standards.

Consider satellite parking in Middlebury on US 7, VT 30, and VT 125. It could be served by a jitney or trolley to transport tourists and keep their cars out of the city. This plan should occur before land prices increase and it is no longer feasible. The parking lots could include info/tourist booths. Develop a Middlebury Walking Tour. Keep cars outside the city, use *small* buses.

APPENDIX G

ISSUES RAISED AT THE ROAD FOREMEN'S MEETING

Better enforcement of truck restrictions and speed limits

Monkton Ridge Road is heavily traveled because it is the shortest path to Chittenden County. An effort must be made to reduce high speed traffic on the road.

Weight restrictions on some roads are being ignored.

Richville Road is being used by through-traveling trucks.

Agriculture

Drainage from large farms needs to be better managed.

Agricultural equipment puts a heavy strain on Addison County's roads by damaging the infrastructure and increasing maintenance and repair needs. Management programs for agricultural and related transportation should be considered by VTrans.

Project Development & Management

Roadway projects need to have a streamlined development process. The VTrans Local Transportation Facilities process is cumbersome and difficult because foremen still need to deal with the bureaucracy.

Design life and appropriate maintenance cycles should be communicated to road foremen in order to maximize the functional life and safety of roadways and structures. There needs to be better guidance as to how to handle unknown variables.

There needs to be equity of paving projects.

The VTrans decision-making process should be more transparent to ensure better equity.

Town grants from VTrans should consider AADT.

Addison County is part of VTrans District 5, which includes most of Chittenden County. Addison County needs are sometimes "second fiddle" to Chittenden County needs. Addison County should be removed from District 5 and be combined with another rural district.

Costs are exploding, and there has been no explanation as to why this is happening.

Money in the Transportation Fund should remain dedicated to transportation projects.

Focus on the basics. There is a large need for gravel, plow blades, and asphalt.

The number one priority for transportation is state maintenance of its roadways and structures. Maintenance projects should be completed before new facility projects such as new intersections or roadways. Roadway condition is as much a safety issue as other facility deficiencies.

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- ⁱ Recommended in *Middlebury/Route 7 Corridor Management Study* by Oman Analytics and Kathleen Ryan, 1998.
- ⁱⁱ Recommended in the 2002 *Addison County Regional Bicycle and Pedestrian Plan*.
- ⁱⁱⁱ Recommended in the 2002 *Addison County Regional Bicycle and Pedestrian Plan*.
- ^{iv} Recommended in the 2005 *Middlebury Town Plan*.
- ^v Vermont 2006 Five Percent Report, available at: <http://safety.fhwa.dot.gov/fivepercent/06vt.htm>.
- ^{vi} Recommended in *Célébration Champlain Strategic Plan* by Lakes to Locks Passage, 2005 and *VT 22A-S.Water-MacDonough Intersection Study* by RSG, 2006.
- ^{vii} Recommended in the 2005 *Middlebury Town Plan*.
- ^{viii} Recommended in *Traffic Calming and Non-Vehicular Routes for Five Addison County Towns* by Oman Analytics and Kathleen Ryan, 1997 and *Downtown Bristol Traffic Study* by Lamoureux and Dickinson, 2003.
- ^{ix} Recommended in *Lake Champlain Bypass: Addison County Corridor Management Plan* by ACRPC, 2000.
- ^x The 2001 Statewide Freight Study recommends that improvements be made to US 7 and VT 22A to meet the needs of local residents as well as the regional economy.
- ^{xi} 2005 Middlebury Town Plan, p. 124.
- ^{xii} Unless otherwise noted, the following were recommended in the 2002 *Addison County Regional Bicycle and Pedestrian Plan*.
- ^{xiii} Recommended in *Célébration Champlain Strategic Plan* by Lakes to Locks Passage, 2005
- ^{xiv} The following were recommended in the 2005 Middlebury Town Plan.
- ^{xv} Recommended in *US Route 7: An Economic Lifeline* by WSA, 1998.
- ^{xvi} Recommended in *Vergennes Route 22A Bypass Preliminary Design Report* by Community Planning & Design, 1995.
- ^{xvii} Recommended in *US Route 7: An Economic Lifeline* by WSA, 1998 and in *Middlebury/Route 7 Corridor Management Study* by Oman Analytics and Kathleen Ryan, 1998.
- ^{xviii} Recommended in the *Short Range Transit Plan* (2003), the *Addison County Transit Study* (2006) and the draft 4/13/07 Progress Report for the *ACTR Strategic Plan* 2003.
- ^{xix} Recommended in the *Short Range Transit Plan* (2003) and the *Addison County Transit Study* (2006).
- ^{xx} The following were recommended in the 2002 *Addison County Regional Bicycle and Pedestrian Plan*; many are paraphrased from Table 6 of that plan.