VIRGINIA SURFACE TRANSPORTATION PLAN 2035

www.vtrans.org

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DRPT Virginia Department of Rail and Public Transportation

VDOT Virginia Department of Transportation

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Acronyms and Abbreviations

APTA: American Public Transportation Association
ART: Arlington County Bus System
ATM: Active Traffic Management
BRAC: Base Relocation and Closure Program
CCL: Critical Condition Index
CLRP: Constrained Long Range Plan
CoSS: Corridors of Statewide Significance
CTB: Commonwealth Transportation Board
CTF: Commonwealth Transportation Fund
CVO: Commercial Vehicle Operations
DMV: Department of Motor Vehicles
DOAV: Department of Aviation
DRTP: Virginia Department of Rail and Public Transportation
DVMT: Daily Vehicle Miles Traveled
EPG: Engineer Proving Ground
FRA: Federal Railroad Administration
FRED: Fredericksburg Regional Transit
FTA: Federal Transit Administration
GPS: Global Positioning System
HERS: Highway Economic Requirements System
HOV: High Occupancy Vehicle
HRT: Hampton Roads Transit
ICM: Integrated Corridor Management
ITS: Intelligent Transportation Systems
LOS: Level of Service
MPO: Metropolitan Planning Organization
MWAA: Metropolitan Washington Airports Authority

NEC: Northeast Corridor Regional
NEPA: National Environmental Policy Act
NPA: NPA Data Services, Inc.
NS: Norfolk Suffolk
OIPI: Office of Intermodal Planning and Investment
PAT: Petersburg Area Transit
PDC: Planning District Commission
PPTA: Public-Private Transportation Act
PRTC: Potomac and Rappahannock Transportation Commission
REX: Richmond Highway Express
SAFETEA-LU: Safe, Affordable, Flexible, Efficient Transportation Equity Act - Legacy for Users
SGR: State of Good Repair
SLCS: Shoulder as a Travel Lane
SMS: Statewide Mobility System
SOV: Single Occupancy Vehicle
STARS: Strategically Targeted Affordable Roadway Solutions
STRAHNET: Strategic Highway Network
TDM: Transportation Demand Management
TSP: Transit Signal Priority
VDOT: Virginia Department of Transportation
VPA: Virginia Port Authority
VRE: Virginia Rail Express
VSM: Virginia State Model
VSTP: Virginia Surface Transportation Plan
VTRC: Virginia Transportation Research Council
WATA: Williamsburg Area Transit Authority
WHS: Washington Headquarters Service
WMATA: Washington Metropolitan Area Transit Authority


DRAWBRIDGE AHEAD
PREPARE TO STOP
WHEN FLASHING
DRAWBRIDGE AHEAD
PREPARE TO STOP
WHEN FLASHING

Chapter 1: The 2035 Virginia Surface Transportation Plan

Whether children take the bus or bicycle to school, employees take the train to work, or residents drive to the grocery store, transportation is critical to the lives of all Virginians, and is essential for the Commonwealth's continued economic vitality.

The year 2035 seems like a long time from now, but it will be here before we know it. We spend years planning, saving and investing in our personal lives so that we will be better off tomorrow than we are today. Will the current infrastructure be in a satisfactory condition to use in the future? Will the transportation choices we have today satisfy the transportation needs we will have tomorrow? Will we have a quality of life that allows Virginians to spend more time with their families and less time in traffic?

CHALLENGES & OPPORTUNITIES

Demographic shifts, aging infrastructure, growth pressures and economic challenges are on the horizon. However, new and emerging technologies, combined with behavioral changes and new work standards provide us with many opportunities to address these challenges in proactive, efficient and cost-effective ways (see Figure 1). The 2035 Virginia Surface Transportation Plan (VSTP) provides multimodal transportation recommendations for future transportation options in the Commonwealth during these challenging times.

Under the direction of the Secretary of Transportation, the Virginia Department of Transportation (VDOT) and the Virginia Department of Rail and Public Transportation (DRPT) coordinated the development of this 2035 Virginia Surface Transportation Plan. The VSTP provides an overview of existing and future ransportation conditions throughout the Commonwealth on a statewide and regional level. In addition to this report, the 2035 VSTP recommendations are also provided in an executive summary map for easy reference.

VTRANS2035: THE PRECURSOR

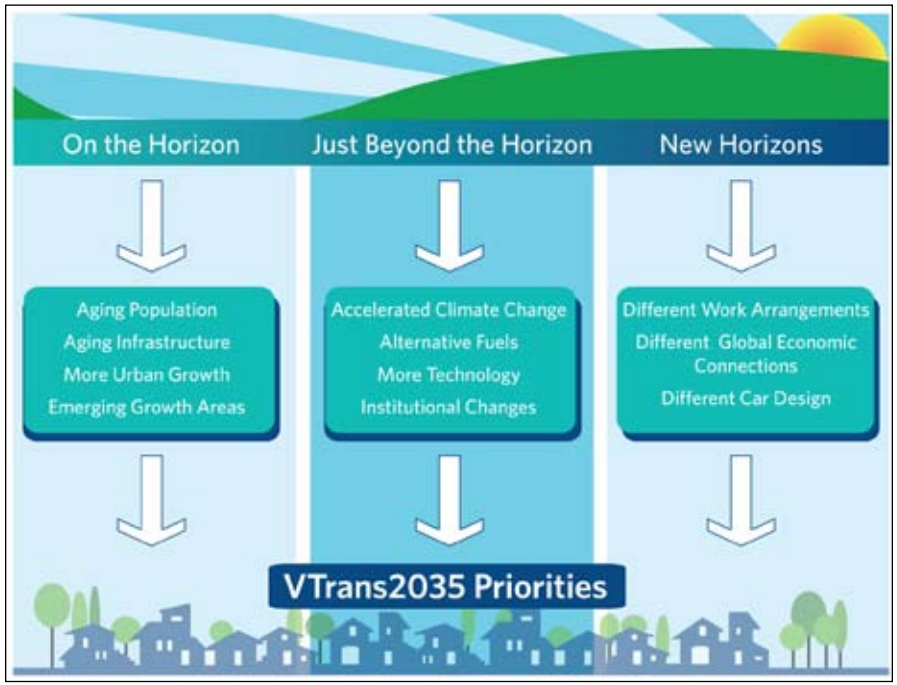
The 2035 VSTP follows on the heels of VTrans2035, Virginia's long-range multimodal transportation plan. The Code of Virginia (§33.1-23.03) and federal regulations (23CFR450.214) require the Commonwealth Transportation Board (CTB) to develop a statewide multimodal long-range transportation plan every five years. It is a policy document that frames the vision for the future and identifies the critical steps that must be taken to make that vision a reality. The Secretary of Transportation's Office, through the Office of Intermodal Planning and Investment (OIPI), led the development of VTrans2035 involving Virginia's five statewide transportation agencies – Department of Aviation (DOAV), Department of Motor Vehicles (DMV), DRPT, Virginia Port Authority (VPA) and VDOT.

VTrans2035 sets forth an overall vision and seven transportation policy goals, setting the foundation for the future transportation in the Commonwealth. VTrans2035 identifies key transportation investment priorities to achieve its goals, and establishes actions to ensure the investment priorities become a reality.

THE VSTP AND VTRANS2035

Although VTrans2035 and the VSTP are separate documents, they share many commonalities. All proposed solutions and recommendations included in the 2035 VSTP were developed based on the policy framework established by VTrans2035. The two documents share the same goals and investment priorities. The socioeconomic and demographic forecasts from

Figure 1: What's on the Horizon?



VTrans2035 form the basis of the background data included in the VSTP. Public comment received from over 200 people during the summer of 2009 was used to shape both the final VTrans2035 document and this VSTP.

ACTIONS AND STRATEGIES FOR THE FUTURE

Identification of performance measures will provide decision-makers with an assessment of potential impacts of transportation improvements. There is a growing consensus that new sources of transportation revenue must be identified to sustain transportation performance over the long term. Performance-based scenario analysis supports this point by examining the long-term impact of funding the transportation system through 2035 at various levels. Part of the VTrans2035 analysis included the use of models and data for all modes to estimate the long-term impacts on Virginia's transportation system performance if there is no change in the current funding situation. Not surprisingly, deterioration in performance is expected. Major findings are:

- Overall performance is expected to decline. A significant degradation in system condition is expected along with significant changes in mobility and economic vitality as transit services are cut and both highway and roadway needs go unmet.

- Virginia would need to commit at least $1.3 to $1.4 billion per year to maintain current conditions.

COMMONWEALTH TRANSPORTATION BOARD (CTB)

The 17-member CTB establishes the administrative policies for Virginia's transportation system. The CTB also allocates highway funding to specific projects, locates routes and provides funding for airports, seaports and public transportation.

Figure 2: VTrans2035

Table 1: VTrans2035 Investment Priorities

Investment Priority Group	Investment Priority	Preliminary Planning Estimate of Unfunded Need (2009$)**
Make Strategic Investment in Infrastructure for the Future – For Example* (Total Need)	Plan for and Invest in High Speed Rail or Intercity Rail Between Washington, D.C., Richmond, and Hampton Roads and Expand Metrorail and/or Commuter Rail, Including Supporting Land Uses, in the I-95 Corridor	$3.4 - $5.5 Billion
	Freight Rail Along I-81	$0.8 - $1.2 Billion
	Tunnels and Bridges in Hampton Roads	$7.8 - $11.3 Billion
	Smart System Technology Leadership	$2.2 - $3.1 Billion
Address Environmental, Safety, and Maintenance Needs	Use Sustainable and Environmentally Sensitive Methods	Varies Depending on Project and Criteria
	Provide Safe Operations and Services	$184 - $258 Million/Year
	Repair Deficient Pavements	$278 - $389 Million/Year
	Rehabilitate Structurally Deficient Bridges	$150 - $210 Million/Year
	Ensure State of Good Repair in Transit	$148 - $207 Million/Year
Enhance Economic Competitiveness (Total Need)	Expand the Port and Related Intermodal Facilities and Services	$7.7 - $11.0 Billion
	Support Dulles International Airport and Growth of the Dulles Corridor	$1.7 - $2.5 Billion
	Connect High Speed and Intercity Rail with Regional Transit Systems	$2.8 - $4.0 Billion
	Improve Freight Mobility	$14.1 - $20.5 Billion
	Improve Rural Connectivity	Varies Depending on Project
	Complete Unfinished PPTAs and Review and Refine PPTA Process to Effectively Leverage Private Dollars for Publicly Beneficial Projects	$3.8 - $5.8 Billion
	Develop Master Plans for Needs of Corridors of Statewide Significance	Utilize Existing Intermodal Funds
Minimize Congestion	Integrate Regional Land Uses and Highway Capacity	Requires a Dedicated Funding Source
	Implement Pricing, Advanced Technology, and Demand Management	Requires a Dedicated Funding Source
	Increase Transit Usage and Supporting Land Uses	$128 - $143 Million/Year

*There are several examples of crucial game-changing infrastructure investments. These four are offered as examples because of their potential impacts on both a regional and statewide basis.

**Unfunded needs are preliminary order-of-magnitude planning estimates and are subject to revision as additional information becomes available. Estimates are in 2009 dollars; the range of costs reflects allowance for contingencies. The priorities should not be summed because some improvements are included in more than one priority. For example, the Third Crossing is included in three priorities: Tunnels and Bridges in Hampton Roads; Expand the Port; and Improve Freight Mobility.

Table 2: VTrans2035 Actions and Strategies for the Future

Funding/Investment	Planning Process	Staff Resources
• Invest More in Transportation • Establish Strategic Infrastructure Investment Fund • Establish Transit Enhancement Fund • Consider Regional Transportation and Land Use Performance Measures in Allocation of Primary Formula and Discretionary Funds • Establish Integrated Transportation/ Land Use Grant Program - Establish Sustainable Development Patterns - Provide Funding Support for Regional Land Use Scenario Plans - Assist with Implementation of Transfer of Development Rights Programs and Designation of Urban Development Areas. • Consider Corridors of Statewide Significance in Funding Decisions • Continue to Fund the Multimodal Planning Fund	• Develop VTrans2035 Action Plan • Develop Regional Transportation and Land Use Performance Measures and Goals for Urban Regions • VDOT to Coordinate Right-of-Way Usage for Provision of Fiber Optic Connections • Prepare Corridors of Statewide Significance Master Plans • Review Corridors of Statewide Significance Periodically • Continue Surface Transportation Plan and Other Modal Plans • Support Use of Economic Planning Tools • Support Dynamic Dialogue with State, Regional, and Local Partners • Align Subsequent VTrans Updates with Administration Cycles	• Maintain and Enhance the Office of Intermodal Planning and Investments • Continue the VTrans Multimodal Advisory Committee

As the VSTP is updated over the next five years, an even greater integration of multimodal planning is expected; in keeping with Virginia's policy guidance Virginians envision a multimodal transportation system that is safe, strategic, and seamless. VTrans2035 identified strategies that have been adopted by the CTB to address future transportation needs. Strategies relevant to the VSTP include:

- Invest More in Transportation. The General Assembly must substantially raise investment in transportation to keep Virginia moving.
- Establish Strategic Infrastructure Investment Fund. This fund would allow for the implementation of game-changing megaprojects such as high speed rail. The projects initially would be funded through existing sources, while new resources should be sought to continue and accelerate implementation.
- Establish Transit Enhancement Fund. This fund would be used for major transit construction improvements to expand transit capacity and leverage local and federal dollars. Local governments would be required to make commitments to provide supportive development patterns along corridors where transit expansion occurs.

- Minimize Congestion. Implement pricing and demand management strategies, among other improvements.

- Consider Regional Transportation and Land Use Performance Measures in Allocation of Primary Formula and Discretionary Funds. This funding guidance would encourage transportation and land use coordination.

- Consider Corridors of Statewide Significance (CoSS) in Funding Decisions. The CoSS needs should be part of the considerations when making transportation funding decisions.

- Continue to Fund the Multimodal Planning Fund. This fund has been used for training, planning assistance, studies, development of the statewide transportation plan, and preparation of the Transportation Performance Reports. At a minimum these efforts should continue.

- Establish Integrated Transportation/Land Use Grant Program. This grant program would be used to:

  - Establish Sustainable Development Patterns. Funds would be used for transportation improvements to local governments with land use plans that encourage compact developments.

  - Provide Funding Support for Regional Land Use Scenario Plans. Providing technical assistance or financial support to local jurisdictions to develop regional land use scenario plans that determine development patterns that are in harmony with transportation planning decisions.

  - Assist with Implementation of Transfer of Development Rights Programs and Designation of Urban Development Areas. Grants to local jurisdictions would help put in place local plans to concentrate growth which would reduce per capita vehicle miles traveled and reduce congestion.

What are Corridors of Statewide Significance?

The Corridors of Statewide Significance (CoSS) represent multimodal connections to the Commonwealth's activity centers. This system consists of corridors to help people and goods move between Virginia's regions and to areas outside Virginia. The corridors are transportation facilities that must be protected to ensure appropriate levels of mobility to allow for long-distance travel. Legislation enacted in 2009 requires the corridors to be designated by the Commonwealth Transportation Board and for local governments to note the corridors on transportation maps and in comprehensive plans.

There are 11 existing CoSS throughout Virginia. The purpose of which is to provide a multimodal statewide perspective to guide localities in their land use and transportation plans. Virginia must take steps now to ensure the appropriate balance of development, transportation capacity, and natural resources. The CoSS are a first step in ensuring that these corridors are invested in and protected for the future.

THE 2035 VIRGINIA SURFACE TRANSPORTATION PLAN

The VSTP will be used as a guiding document that identifies multimodal solutions. As Virginia seeks to address specific transportation problems, the recommendations identified in the following chapter offer a range of solutions for consideration. Many alternative solutions are recommended in this plan, such as employing Intelligent Transportation Systems (ITS) and Transportation Demand Management (TDM) strategies to improve the efficiency of existing infrastructure. VDOT and DRPT will use these recommendations to pursue the development of a fully integrated analysis that demonstrates the benefits of multiple modes working together in a coordinated solution. This will require significant effort and will be a goal that the transportation agencies of the Commonwealth continue to work toward. It is anticipated that this analysis will be completed for inclusion in the next update of the Virginia Surface Transportation Plan. Likewise, creating a link between transportation and land use can also help increase the mobility of Virginia residents. For example, development patterns can directly influence future transportation needs as follows:

DENSITY: Increased development density increases the need for transit and promotes mixed use development.

MIXED-USE: Multiple land use types in the same area can reduce vehicle trips by containing a trip's origin and destination in the same site, and by promoting walking and/or biking.

DESIGN: Development design that accommodates walking, biking and transit also serves to reduce vehicle trips.

These concepts comprise the elements of both smart growth and transit-oriented design. Broader elements of site and community design, such as greenways and street networking can also contribute to reduced vehicle travel, reduced congestion on main roads, and improve the mobility and quality of life for Virginia's residents.

The planning and construction of new highways, implementation and expansion of public transportation systems, and other transportation improvements affect existing land uses and plans for future development. The type and pattern of development influence travel patterns, and influence demand for transportation facilities. In Virginia, land use is regulated by local governments, while transportation planning and funding decisions are generally made at the state level.

Improving the coordination between transportation and land use planning is essential for ensuring mobility throughout the Commonwealth. VDOT and DRPT are both committed to working closely with local governments and stakeholders to improve the coordination between transportation and land use in Virginia.

The VSTP was developed by VDOT and DRPT to promote the efficient, cost-effective and sustainable planning of the Commonwealth's surface transportation system.

HOW WAS THE PUBLIC INVOLVED

Public input was an essential component in the development of the VSTP and all plans and studies that contributed to its content. Members of the public provided feedback on the recommendations through a series of public meetings, held in various locations throughout the state in coordination with the VTrans2035 public outreach effort. Four separate meetings were held as follows:

Monday, June 22, 2009

- Mary Henderson Middle School, Falls Church, Virginia
- 35 Attendees

Wednesday, June 24, 2009

- Maggie Walker Governor's School, Richmond, Virginia
- 31 Attendees

Thursday, June 25, 2009

- Hampton Roads Planning District Commission, Chesapeake, Virginia
- 25 Attendees

Thursday, July 9, 2009

- Hidden Valley High School, Roanoke, Virginia
- 30 Attendees

In addition to on-site meetings, a virtual open house was made available through the VTrans website from Monday, June 22 through Tuesday, July 21, 2009. The virtual site included all materials available at the on-site meetings and included supplemental explanation to guide participants through the site. A total of 130 people submitted their comments through the virtual open house site during this time period. In addition, the VSTP was available for public comment from June 16 to July 31, 2010. **Over 360 comments were received during this 45 day period.**

THE VSTP REGIONS

Five regions were established for the purpose of organizing the VSTP recommendations. The five VSTP regions are based on the nine VDOT Construction and Maintenance District boundaries. The VSTP regions are for data presentation purposes only and are not intended to represent or imply any realignment or reconfiguration of the VDOT Construction and Maintenance Districts. The five VSTP regions and associated Construction and Maintenance districts are comprised as follows:

Valley and Ridge Region

- Staunton District
- Salem District
- Bristol District

Northern Region

- Northern Virginia District

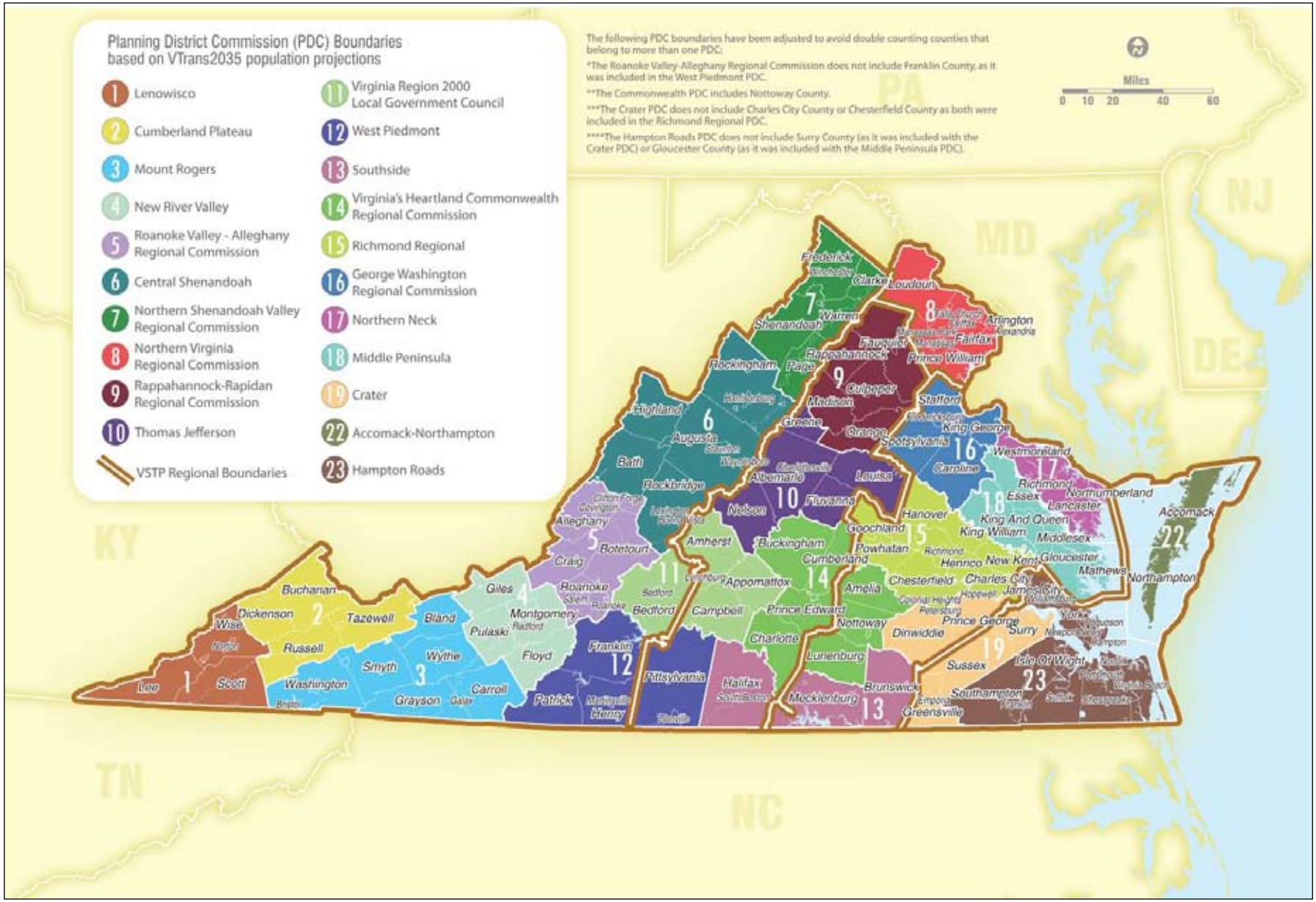
Blue Ridge Region

- Culpeper District
- Lynchburg District

Piedmont Region

- Fredericksburg District
- Richmond District

Figure 3: PDC and VSTP Region Boundaries



WHAT ARE VDOT CONSTRUCTION AND MAINTENANCE DISTRICTS?

The Virginia General Assembly established the first State Highway Commission in 1906. The original mission of the Commission was, "to maintain, operate, and construct the primary system of highways around the Commonwealth." The first 4,000 miles of Virginia's highway system were established in 1918. In order to facilitate the allocation of new federal highway funds, the General Assembly designated eight construction districts. Those districts remain in place today with one addition: the Northern Virginia District was added in 1983.

WHAT ARE PLANNING DISTRICT COMMISSIONS (PDC)?

A Planning District Commission is a political subdivision of the Commonwealth. In 1968, Virginia identified planning districts based on the community of interest among its counties, cities, and towns. There are 21 PDCs in Virginia. They are made up of elected officials and citizens appointed to the Commission by member local governments. The Commission selects an Executive Director responsible for managing daily operations. Commission offices are located generally in a central location for the region as determined by the Commission charter.

Virginia's PDCs provide a variety of technical and program services to member local governments, such as management services for program implementation, land use planning services and mapping, and an opportunity for regional public involvement in the planning process added in 1983.

All demographic data used throughout this document are based on estimates provided by NPA Data Services Inc. and the Virginia Employment Commission for VTrans2035. This data was generated at the Planning District Commission (PDC) level. Figure 3 is a map of the Commonwealth's 21 PDCs and the overlying VSTP regions. The demographic and socioeconomic forecasts included in Chapters 2, 3 and 6 of this document are all based on this data; thus, the discussion of the data will be at the PDC regional level.

THE VSTP MODAL ELEMENTS

At its core, the VSTP is a coordinated multimodal plan for Virginia that includes findings and recommendations for highways, public transportation (including bus and rail transit) and human services transportation, rail, freight, and bicycle and pedestrian modes. In addition, the VSTP includes findings and recommendations for transportation demand management strategies (carpooling, vanpooling, teleworking, etc.) and intelligent transportation systems (ITS). The role of each of these modal elements in the VSTP is summarized in this chapter.

Department of Rail and Public Transportation (DRPT)

State agency responsible for rail, public transit, and commuter services initiatives in Virginia.

PUBLIC TRANSPORTATION ELEMENT

Virginia, like many states across the country, is experiencing a surge in the use of public transportation and demand for new and expanded public transportation systems. At the same time, the Commonwealth's public transit vehicles and infrastructure are aging and current funding levels are unlikely to maintain transit assets to the state of good repair standards established by the Federal Transit Administration (FTA). Virginia is focusing on maintaining the assets public transportation operators currently have,

maintaining acceptable levels of service and looking toward the future to keep up with population growth and economic conditions. The public transportation element of the VSTP focuses on balancing three key goals: maintaining current public transportation assets and infrastructure in a state of good repair; expanding capacity by introducing and improving services to areas that have a growing or unmet demand for transit; and identifying the need for investing in major capital projects, including rapid transit systems.

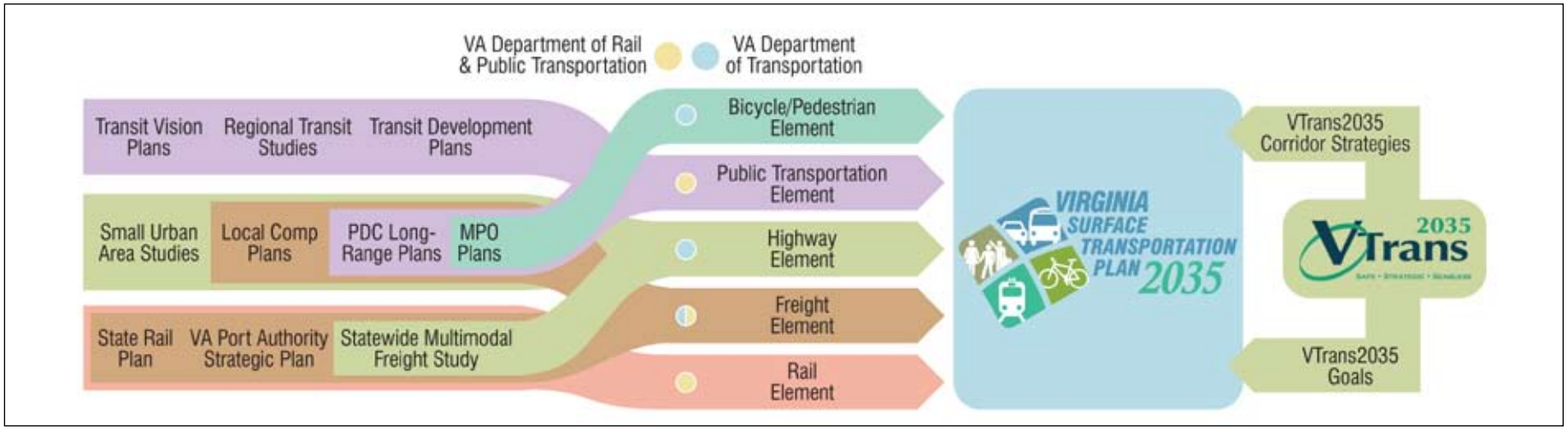
The public transportation element of the VSTP and corresponding recommendations were developed based on the framework established by the VTrans2035 goals. Recommendations of the public transportation element are reviewed on an annual basis, and major updates occur every five years in conjunction with VTrans updates. Trends in employment and population throughout the Commonwealth play a critical role in understanding where the demand for transit will continue or grow in the future, requiring the maintenance and/or expansion of public transportation services. In addition to assessing areas that currently have transit services, areas throughout the state that exhibit the necessary characteristics to support new or expanded services were also identified. Transit Development Plans and Vision Plans from operators, regions and localities across the state were also analyzed to identify measures needed to keep up with current and future transit demand. Recommendations were also coordinated with long-range planning recommendations from:

- Metropolitan Planning Organization (MPO) Plans
- Planning District Commission (PDC) Regional Long-Range Plans*
- Transit Development Plans
- Regional Transit Studies
- Transit Vision Plans

Recommendations focusing on maintaining a state of good repair, implementing new and expanded services, and improving system operations through greater use of technology were developed for public transportation, human services transportation, and transportation demand management (TDM).

**Note that many PDCs are still developing Regional Long-Range Plans at the time of this writing.*

Figure 4: Plan Element Flow Chart



RAIL ELEMENT

Rail transportation plays an important role in Virginia's evolving transportation network. It reduces highway congestion and air pollution by redirecting cargo from trucks to rail and diverting people from cars to passenger rail. DRPT is responsible for identifying and updating rail needs, priority corridors, and capacity chokepoints across the state through the development of a Statewide Rail Plan.

State of Good Repair
Standard of maintenance required by the FTA to ensure safe and reliable service by public transportation systems.

Transportation Demand Management
Comprises strategies and methods for reducing automobile usage, such as promoting carpooling, transit, telecommuting, and non-motorized transportation.

Fixed Route Bus and Rail Transit
Fixed route services follow a published route and schedule that provide local or regional travel.

Demand Response Transit
Form of public transportation characterized by flexible routing and scheduling of small/medium vehicles providing pick-up and drop-off services at locations according to passengers' needs. Paratransit service is provided to those who cannot use fixed route service.

Human Services Transportation
Provides transportation service to individuals with disabilities, older adults, and low income individuals.

The Statewide Rail Plan[1] is updated every five years and addresses new challenges and opportunities for passenger and freight rail in Virginia. The current plan was completed in 2008.

The 2008 Statewide Rail Plan provides high-level information on existing rail conditions and programs in Virginia today as well as rail needs for the future, with a focus on identifying key corridors and potential investments to meet the Commonwealth's transportation goals.

Virginia's rail planning recommendations are project specific and they have a particularly strong focus on developing higher speed passenger rail and improving current infrastructure to accommodate this type of service. The list of recommendations is updated every five years in conjunction with VTrans updates and is coordinated with long-range planning recommendations from:

- Virginia Port Authority Strategic Plan
- VDOT's long-range highway planning recommendations

FREIGHT ELEMENT

Virginia completed its first Statewide Multimodal Freight Study in 2009. The study identifies the Commonwealth's freight-supporting infrastructure, forecasts traffic and future needs, and provides recommendations for statewide transportation planning and programming policies. The Multimodal Office coordinated this effort across four modal agencies – VDOT, DOAV, VPA and DRPT. A multimodal freight advisory committee comprised of private and public sector stakeholders provided input to and feedback on the Freight Study and provided recommendations to the Secretary of Transportation that include issues, needs, and concerns of the Commonwealth's private freight industry.

1 http://www.drpt.virginia.gov/studies/default.aspx

The Virginia Statewide Multimodal Freight Study:

- provides an inventory of the existing freight network by its key components: highway, rail, air, ports, intermodal facilities and connectors, and distribution centers;
- identifies current and future needs on the system;
- addresses the economic impact of freight movement at a high level;
- provides recommendations for statewide transportation planning and programming policies; and
- includes an extensive program of coordination among public sector agencies, including regional planning bodies, and outreach to public and private stakeholders.

The Freight Study includes recommendations for strategic capital investment and policy. The list of recommendations is updated every five years in conjunction with VTrans updates and is coordinated with long-range planning recommendations from:

- Metropolitan Planning Organization (MPO) Plans
- Planning District Commission (PDC) Regional Long-Range Plans*
- Local Comprehensive Plans
- State Rail Plan
- VDOT's long-range highway planning recommendations

BICYCLE AND PEDESTRIAN ELEMENT

The Policy for Integrating Bicycle and Pedestrian Accommodations[2] stipulates that VDOT initiate all highway construction and maintenance projects with the presumption that the projects shall accommodate bicycling and walking. VDOT has embarked on a three-tiered approach to further integrate the policy in daily VDOT business practices, which includes:.

**Note that many PDCs are still developing Regional Long-Range Plans at the time of this writing.*

- Development of a Bicycle Policy Plan
- Development of a Pedestrian Policy Plan
- Implementation Plan for both the Bicycle and Pedestrian Policy Plans

VDOT is currently developing a Statewide Bicycle Policy Plan that provides a framework to implement the bicycle portion of that policy and establishes a vision for the future of bicycling in the Commonwealth. It builds upon past VDOT initiatives to ensure that bicycle facilities are an integral component of the transportation system. It provides goals and objectives, recommends actions, and sets a platform for the development of a series of performance measures that will track progress over time. The Statewide Bicycle Policy Plan specifically addresses the following areas:

- The Plan provides strategies for enhancing the implementation of the Policy for Integrating Bicycle and Pedestrian Accommodations approved by the CTB in 2004.
- It establishes policies to guide the planning and design of bicycle facilities.
- It identifies opportunities for enhancing coordination between and within the various levels of VDOT, as well as with stakeholders outside of the organization.
- It recommends training programs needed for professionals who are responsible for planning and designing bicycle facilities.
- It sets forward benchmarks for tracking the implementation over time.

The Bicycle Policy Plan does not identify specific bicycle and pedestrian projects, but provides planning level guidance and policies that have been integrated into the recommendations of the VSTP and addresses the need for providing access, connectivity, and integration across individual modes to make bicycling a safe and feasible commuting and recreational alternative.

2 http://www.vdot.virginia.gov/programs/bk-default.asp

HIGHWAY ELEMENT

Using the VTrans2035 goals, VDOT evaluated the performance of the highway system, identified deficiencies, and developed suggested highway improvements to support the highway element of the VSTP. Recommended roadway improvements include capacity expansion (widening existing and adding new facilities), spot improvements (interchange improvements, intersection improvements), ITS and transportation demand management (High Occupancy Vehicle or HOV, Park and Ride, Bike/Ped). From the highway perspective, the VSTP will be used to help identify highway projects for inclusion in the Six-Year Improvement Program and areas for potential public-private transportation projects. It is important to note that the VSTP is a 20-year long-range plan and is not a construction plan. Inclusion of a recommendation in the plan does not represent a commitment to implementation.

The highway element of the VSTP focuses on a Statewide Mobility System (SMS) network of roadways. The SMS network represents the highway system of statewide significance and totals 5,769 centerline miles. The SMS identifies highway facilities that are essential to the movement of people and goods ensuring that all regions of Virginia are reasonably accessible.

The highway element of the VSTP and corresponding recommendations were developed based on the framework established by the VTrans2035 goals and priorities. VDOT's long-range highway planning recommendations focus on improving safety, improving the condition of pavements and structures, and relieving congestion. Recommendations are updated every five years in conjunction with VTrans updates and coordinated with long-range planning recommendations from:

- Metropolitan Planning Organization (MPO) Plans
- Planning District Commission (PDC) Regional Long-Range Plans*
- Small Urban Area Studies
- Local Comprehensive Plans
- Statewide Multimodal Freight Study

While the VSTP is the state's plan and some recommendations may vary from those presented in the MPO plans, the MPO recommendations were used as the basis for developing the list of suggested projects within each urban study area. MPOs and PDCs were afforded an opportunity to review all VSTP highway recommendations during the development of this plan.

VSTP DOCUMENT LAYOUT

The VSTP includes proactive, forward-thinking recommendations for highway, public transportation, rail, and freight modes embracing VTrans2035 policy-level recommendations. The VSTP may guide not only future transportation investments but also the policies and initiatives necessary to meet the needs and fulfill the vision presented in the plan. This plan consists of the following elements and chapters:

CHAPTER 2: Changes in Population, Employment and Travel in Virginia
Chapter 2 focuses on the existing and future trends for population and employment growth, daily vehicle miles traveled (DVMT) and jobs / housing balance. Analyses of anticipated changes in these demographic and socioeconomic characteristics provide us with a clear picture of where we are now and where we are heading as a Commonwealth. These changes will have a direct impact on our needs for highway, public transportation, rail, freight, and non-motorized transportation infrastructure.

**Note that many PDCs are still developing Regional Long-Range Plans at the time of this writing.*

CHAPTER 3: Existing Transportation Facilities in Virginia
Virginia has an extensive multimodal transportation system. Virginia's transportation agencies are being asked not only to keep these assets in good condition, but also to expand the supply. Stewardship of these transportation assets is becoming increasingly challenging as both financial and staff resources are shrinking. Chapter 3 provides an overview of the existing transportation assets for each of the modal elements (Highway, Public Transportation, Rail, Freight, Bicycle and Pedestrian) throughout the Commonwealth, an overview of the anticipated future conditions for these modes, and their relationship to transportation needs.

CHAPTER 4: Developing the Recommendations
Today, decision-makers face unprecedented challenges in funding the operation, maintenance and expansion of the transportation system. Virginians want a quality transportation system that provides a good quality of life and economic prosperity. Fundamentally, it must be safe, reliable and seamless. It will use state-of-the-practice technology to increase public communication, safety and effectiveness across all transportation modes. To achieve these goals and the goals of VTrans2035, Virginia must be proactive and identify innovative, forward-thinking solutions for the future of transportation throughout the Commonwealth. Chapter 4 indicates the methodology used in the development of the detailed recommendations.

CHAPTER 5: Transportation Funding in Virginia
To address the expansive transportation needs of the Commonwealth there must be innovative, collaborative funding mechanisms as well as streamlined and enhanced collaboration. Chapter 5 provides an overview of each of these areas and how they affect transportation decision-making and the implementation of the recommendations, strategies and policies identified in Chapter 6.

Statewide Mobility System (SMS)*
The 5,769 miles of interstate and primary roads that are essential to the movement of people and goods in Virginia.

Centerline Miles
Actual length of roadway in one direction of travel.

ITS
Intelligent Transportation Systems are a broad range of information and electronic technologies that improve transportation safety and mobility.

HOV – High Occupancy Vehicle
Generally used to describe a lane or lanes dedicated to passenger vehicles transporting more than one individual.

Six-Year Improvement Program
Document approved by the CTB that allocates funding for transportation projects proposed for construction, development or study in the next six fiscal years.

CHAPTER 6: VSTP Recommendations
Chapter 6 includes a comprehensive listing of recommendations, strategies, and policies from all modes to address the goals. This chapter is organized into five sub-sections, one for each VSTP region, which provide an overview of the characteristics, needs and recommendations specific to these areas of the Commonwealth.

*For more detail on the SMS see p. 39.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River Bend
Stony Point Rd

Chapter 2: Changes in Population, Employment and Travel in Virginia

Analysis of anticipated changes in employment, population and other characteristics provide a clear picture of where we are and where we are heading as a Commonwealth. These socioeconomic factors have a direct relation to the demands placed on Virginia's transportation network. According to the 2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report prepared for VTrans2035 by the Virginia Transportation Research Council (VTRC), there are a number of forecasted changes that will impact the future of transportation. Each of these changes present unique challenges. These challenges, along with the transportation policy goals set forth in VTrans2035, provide a basis for the multimodal recommendations in the VSTP.

POPULATION

- Between 2010 and 2035, Virginia's population will grow by about one third from slightly more than 8 million to approximately 10.9 million (Figure 5).[3]
- Between 2010 and 2035, the number of people per household will generally decrease in a uniform fashion across the state, from 2.62 in 2010 to 2.54 in 2035.
- Population growth rates will vary between approximately 3% (Cumberland Plateau PDC) and 73% to 80% (George Washington Regional Commission).
- The majority of population increases will occur in the Northern Virginia, Hampton Roads, Richmond and Fredericksburg PDCs. Specifically, these four regions will be responsible for approximately 81% of Virginia's population growth for the period 2010 through 2035, adding an estimated 2.34 million persons.
- The number of senior citizens (age 65 or older) in Virginia will double between now and 2035.[4] Currently, an estimated 11.8% of the Commonwealth's population are 65 years and older, 14.1% of the population have a disability (population age 5 and over), and 9.9% of the population are below the poverty level. Therefore, a critical part of ensuring effective mobility for all Virginians is to identify the current and future unmet need for human service transportation.[5]
- The millennial generation, or Generation Y (usually defined as those born between the years 1977 and 1994[6]), is the largest generation in the United States (US) and will have just as significant an influence on how products and services are developed and delivered as the baby boomer generation. The Commonwealth's transportation system will need to serve the commute and travel patterns of this large group.

Figure 5: Virginia Population Forecast

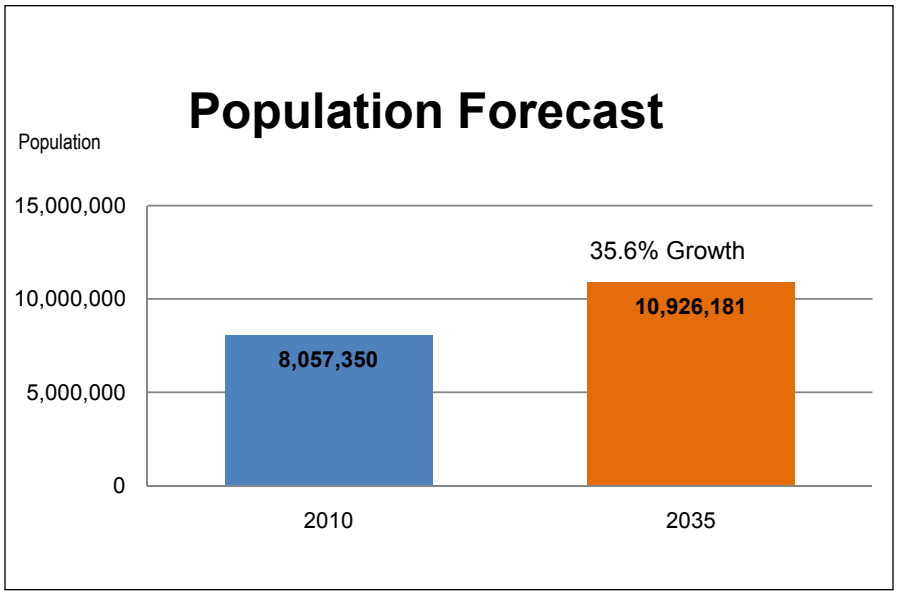
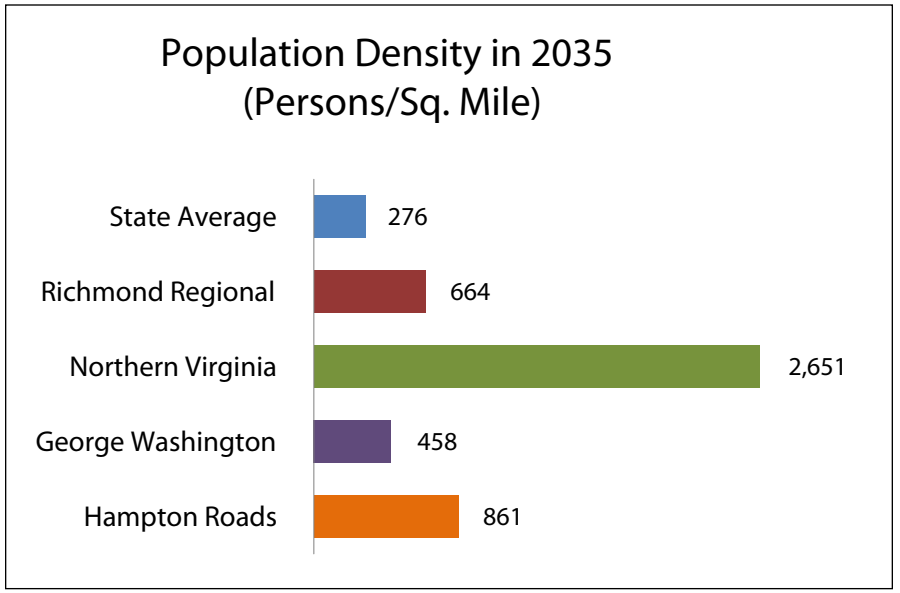


Figure 6: Population Density in 2035



3 VTrans2035

4 Virginia Statewide Public Transportation Plan, 2010

5 Virginia Statewide Public Transportation Plan, 2010

6 "Getting Inside Gen Y - Generation Y - Statistical Data Included." *American Demographics*. 1Sep 2001

- The average population density in 2035 throughout the Commonwealth is expected to be 276 persons per square mile[7], compared to the 2008 average density of 200 persons per square mile. In 2035, Northern Virginia, Hampton Roads, Richmond and the George Washington PDCs are expected to have the highest population densities in the state as illustrated in Figure 6.

Challenge: Increasing and aging populations impact transportation needs and decisions in a number of ways. General increases in population result in more people wanting to go to more places, producing increased travel demand and congestion. Depending on where the population increases take place, increasing the extent to which roadways can accommodate more vehicles, providing increased opportunity for transit and non-motorized transportation options, or a combination of strategies must be considered. An increase in aging populations and other potentially transit-dependent groups adds another element to the challenge of providing accessible transportation services since many of these individuals reside in less densely-populated areas of Virginia.

Figures 7 and 8 illustrate the expected population and population change, respectively, by PDC.

EMPLOYMENT

- Between 2010 and 2035, total employment is anticipated to grow by almost one half, increasing from 5.21 million to 7.75 million.
- Like population, much of the employment related growth (84%) will be focused in the Northern Virginia (1.28 million), Richmond (0.37 million), Hampton Roads (0.35 million) and George Washington (0.15 million) PDCs, as illustrated in Figure 9.
- Employment growth rates will vary between 8% (West Piedmont and Southside) and 90% (George Washington).

7 Virginia Transportation Research Council, 2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses, VTrans2035, July 2009

Figure 7: 2035 Projected Population by PDC

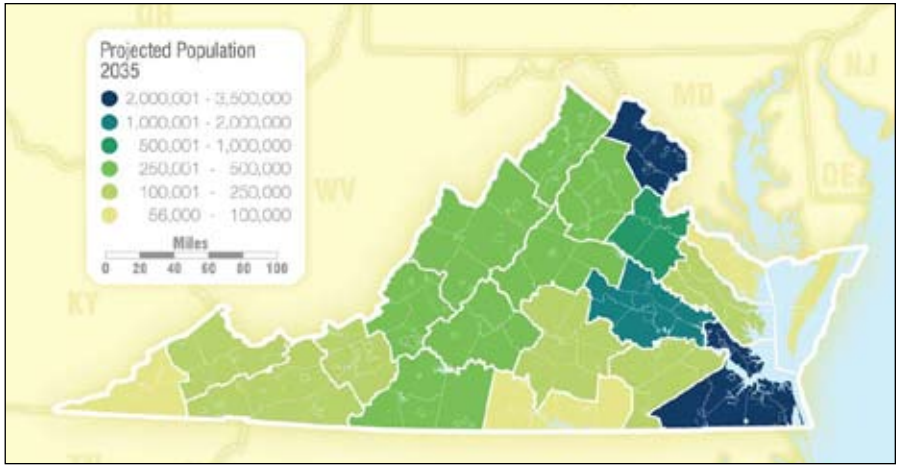
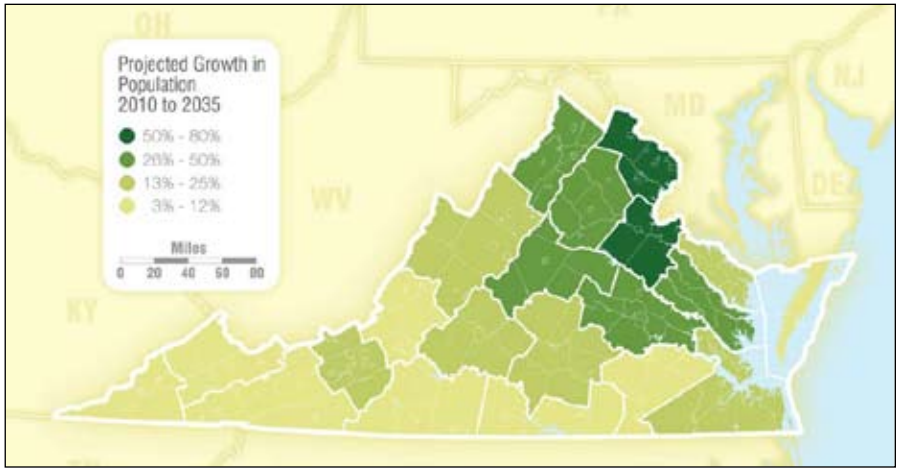


Figure 8: Projected Population Change by PDC (2010 – 2035)



The following PDC boundaries have been adjusted to avoid double counting counties that belong to more than one PDC.

*The Roanoke Valley-Alleghany Regional Commission does not include Franklin County, as it was included in the West Piedmont PDC.

**The Commonwealth PDC includes Nottoway County.

***The Crater PDC does not include Charles City County or Chesterfield County as both were included in the Richmond Regional ODC.

****The Hampton Roads PDC does not include Surry County (as it was included with the Crater PDC) or Gloucester County (as it was included with the Middle Peninsula PDC.)

- By 2035, approximately 75% of the state's employment will reside within the boundaries of four PDCs - Richmond, Northern Virginia, Hampton Roads PDC and George Washington Regional Commission.

Figures 10 and 11 illustrate the expected total employment and employment change throughout the Commonwealth, respectively.

Challenge: Increasing employment presents a number of challenges and opportunities for transportation. Aware of the impact that their employees commuting patterns have on air quality and congestion, many employers have begun offering alternative work schedules, the opportunity to work from home (teleworking) and discounted transit fares (these are a few of the strategies known as transportation demand management or TDM). Knowing that an increase in employment is coming, there is the opportunity to be proactive in determining where these jobs may locate and encouraging denser development that fosters increased demand for transit.

Figure 9: 2035 Employment

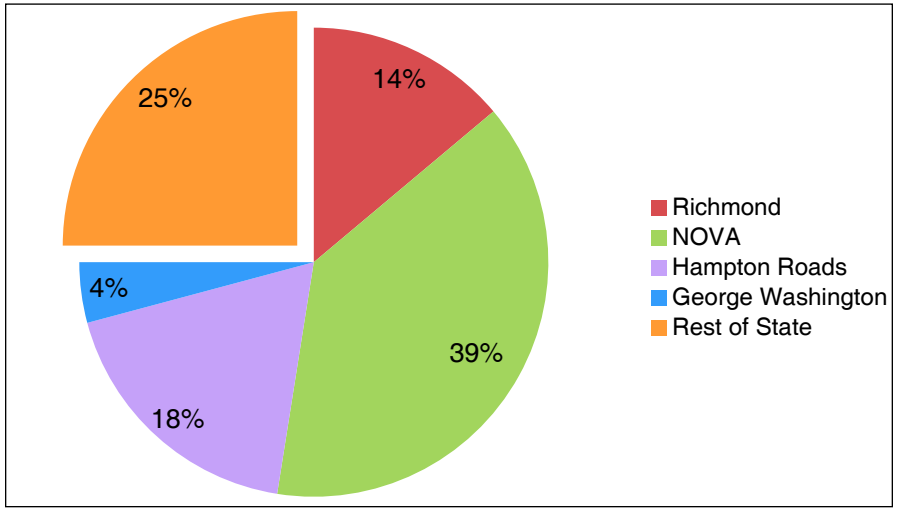


Figure 10: Projected 2035 Employment by PDC

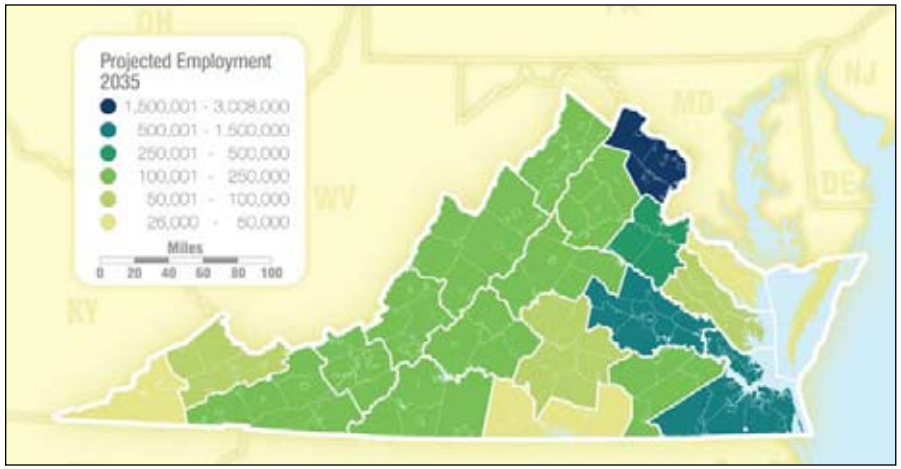
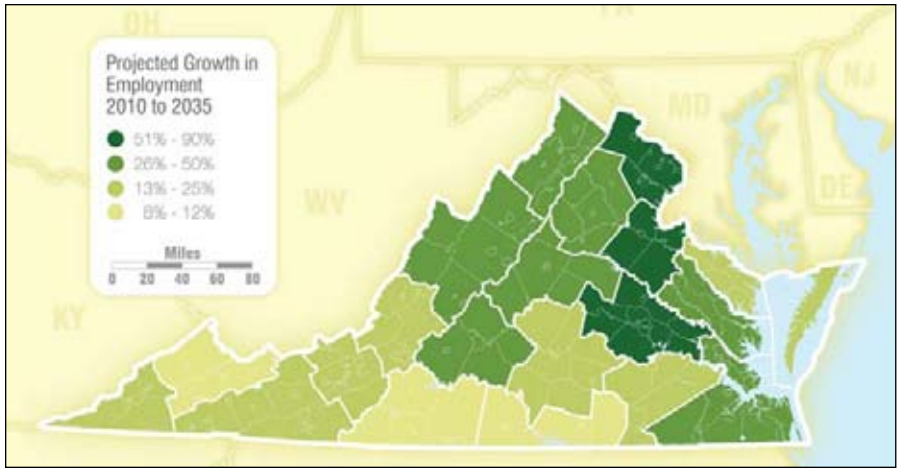


Figure 11: Employment Change by PDC (2010 – 2035)



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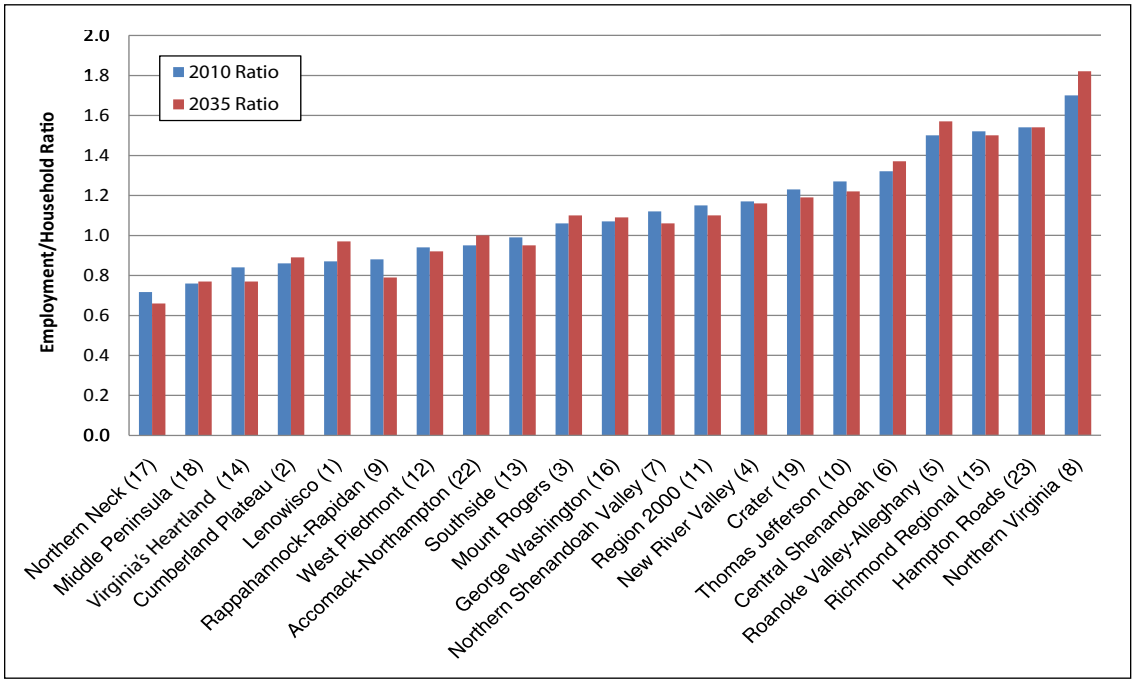
JOBS TO HOUSING RATIO

The term "jobs to housing ratio" is commonly used to describe the relationship between available housing and available jobs in a specific area. A jobs to housing ratio of 2:1 is typically promoted as an ideal balance that provides jobs and retail opportunities for all of the population within an area. A jobs to housing ratio greater than 1 indicates that more employment than housing exists within the jurisdiction. A more balanced jobs to housing ratio tends to reduce an area's contribution to regional traffic congestion, noise and air pollution by encouraging citizens to live and work locally.

- Between 2010 and 2035 wage and salary employment is expected to increase by 45% in Virginia, compared to an increase in households of about 40%.
- Statewide the jobs to households ratio will increase from 1.41 in 2010 to 1.46 in 2035.
- The four PDCs with the highest job to household ratio are Northern Virginia, Hampton Roads, Richmond and Roanoke, as illustrated in Figures 12 and 13. Two of these PDCs, Northern Virginia and Roanoke, are expected to increase faster than the state average increase between 2010 and 2035, resulting in an even greater imbalance of jobs to housing.
- PDCs forecasted to have declining ratios, such as Northern Neck, Piedmont and Rappahannock-Rapidan, indicate a potential imbalance between the location of housing and the proximity of available jobs. This imbalance could result in longer commutes to the closest surrounding areas where jobs are available[8].

Figure 12: Jobs to Housing Ratio (2010 and 2035)



Challenge: To the degree that a balance is achieved between local jobs and housing, there is greater opportunity for local residents to work close to where they live. It is important to note, however, that a simple numerical balance in the jobs/housing ratio does not necessarily indicate that local residents have adequate opportunity to work in their community. Other factors, such as the match between local resident employee skills and the skills required for local jobs, and the match between local job compensation levels and local housing prices, also influence a community's actual jobs/housing relationship[9].

8 Virginia Transportation Research Council, 2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses, VTrans2035, July 2009

9 City of Sunnyvale , California. Downtown Specific Plan of 2003

When housing growth fails to keep pace with job growth, housing cost goes up. When too few jobs exist in relation to the number of houses, unemployment rises. In both cases, an imbalance results in longer commutes (either to homes or jobs outside the region). These longer commutes add to overall travel and related greenhouse gas emissions and also contribute to traffic congestion.

DAILY VEHICLE MILES TRAVELED AND TRANSIT TRIPS

The combined trends in population, employment and jobs/housing balance affect the total amount of daily vehicle miles traveled (DVMT) and the extent to which transit is a competitive mode choice. The ratio of statewide DVMT per lane-mile of the roadway system has steadily increased since 1980, meaning that the demand placed on the transportation network is increasing faster than supply. Total DVMT is also one indicator of carbon emissions, or greenhouse gas emissions.

- An estimate by VTRC identified a DVMT of 371.7 million by 2035, compared to 222.2 million in 2006. Approximately 67% to 70% of this DVMT was attributed to the George Washington, Hampton Roads, Northern Virginia, and Richmond PDCs.

Figure 14: 2035 DVMT

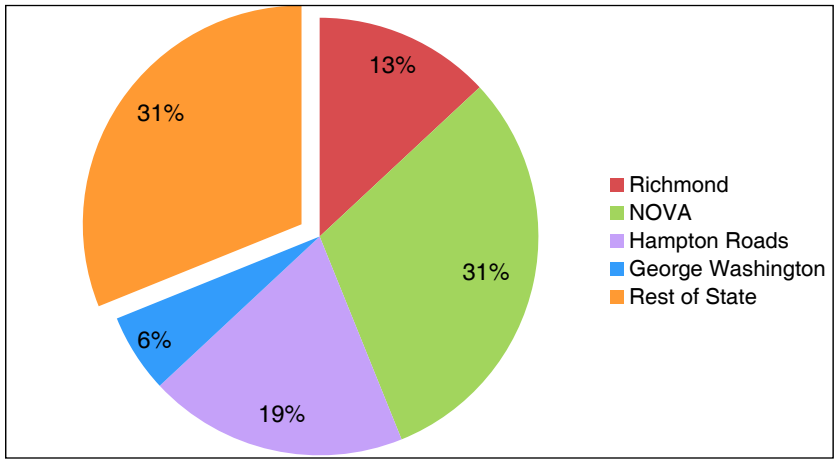


Figure 13: Projected 2035 Jobs to Housing Ratio by PDC

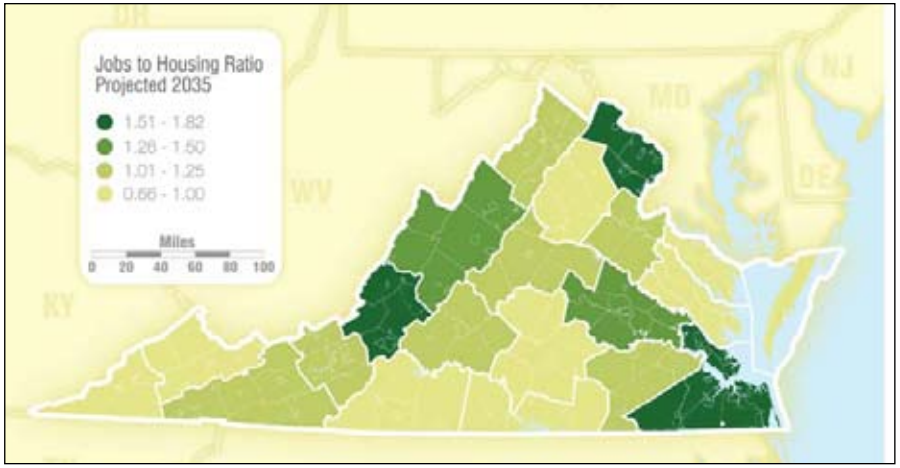
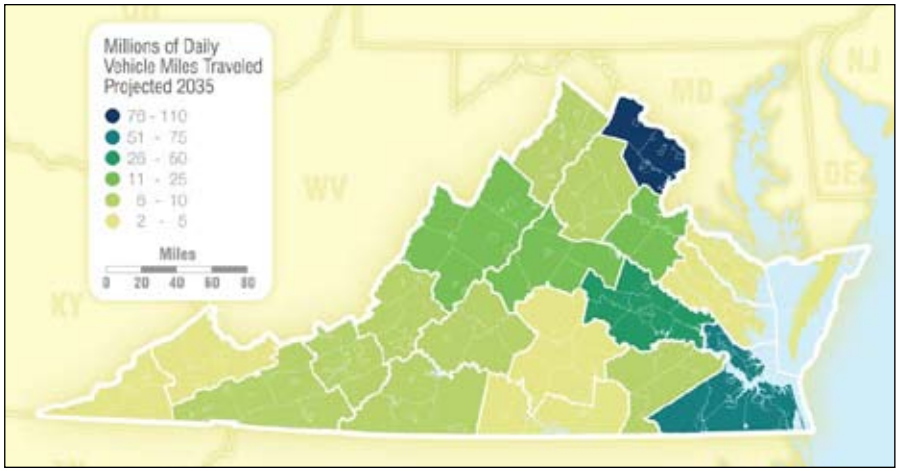


Figure 15: Projected 2035 Daily Vehicle Miles Traveled by PDC



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**The Commonwealth PDC includes Nottoway County.

***The Crater PDC does not include Charles City County or Chesterfield County as both were included in the Richmond Regional ODC.

****The Hampton Roads PDC does not include Surry County (as it was included with the Crater PDC) or Gloucester County (as it was included with the Middle Peninsula PDC).

- Figures 14 and 15 show that the highest projected DVMT within any PDC occurs in Northern Virginia, followed by the Hampton Roads and Richmond PDCs.
- The 2035 transit demand forecast was 352 to 360 million transit trips, which is almost double the 2007 value of 192 million trips. Most of these trips (60%) were attributable to the rail and bus service provided by the Washington Metropolitan Transit Authority in Northern Virginia[10].

Challenge: The increasing DVMT within the state's largest urban areas means that travel is growing on roads that in many cases are already congested. However, this trend presents an opportunity to encourage greater transit use or other forms of travel demand management (such as HOV lanes) where DVMT is concentrated in high-volume travel corridors. Highway investments in these corridors also have the potential for a high degree of cost-effectiveness due to the high volume of traffic served. The freight component of DVMT also may be affected by congestion in urban regions, which can increase the cost of goods movement. Providing increased or more accessible interstate rail capacity for freight movement can also offer relief to high-volume traffic corridors.

10 Virginia Transportation Research Council. 2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses, VTrans2035. July 2009

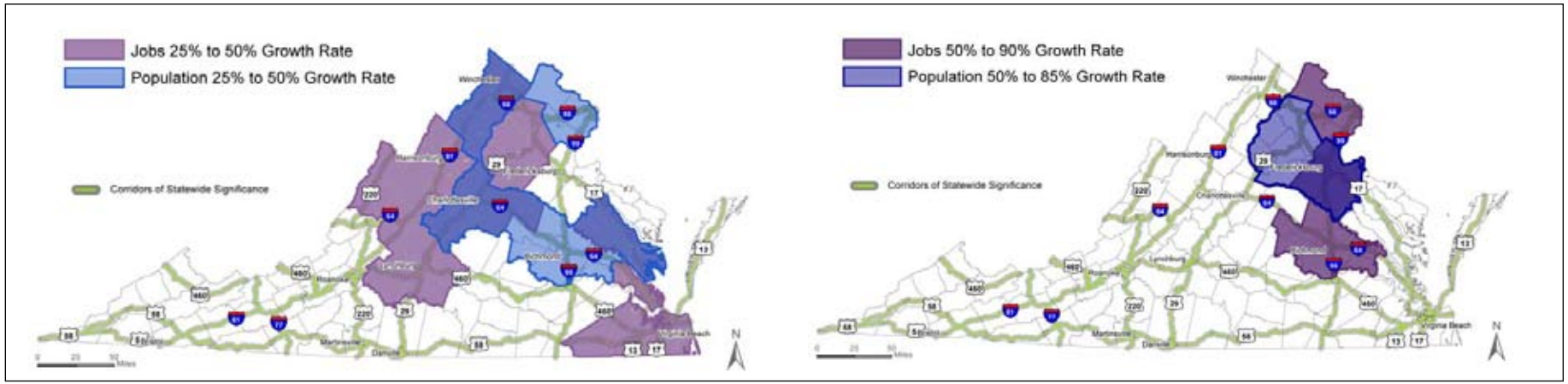
WHAT DOES THIS TELL US?

Virginia's current major urban areas will continue to grow and expand outwards. This is illustrated in Figure 16. Communities along the I-95 corridor between Northern Virginia and Richmond are expected to continue to capitalize on the economic growth in our nation's and Commonwealth's capitals. Both job and population increases in the range of 50% to 85% between 2010 and 2035 are anticipated in the Fredericksburg region, while residential growth is expected to outpace job growth southwest of Washington, D.C. Other areas will continue to grow, particularly areas located within the VSTP Valley and Ridge and Blue Ridge Regions, but at slower rates compared to the growth north of Richmond. This growth can be generally described as occurring in the I-64, Route 29 and I-81 corridors[11].

The needs of these fast growing areas present real challenges such as how to preserve roadway capacity, expand transit and focus growth in locations accessible by the current transportation network. These challenges lead to opportunities for looking at multimodal transportation options and encouraging more transit-friendly development with a focus on decreasing DVMT by improving proximity of households and jobs.

11 VTrans2035

Figure 16: Growth Areas

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Chapter 3: Existing Transportation Facilities in Virginia

Virginia is expected to see continued growth in population and employment despite the current economic downturn. Virginia already has an extensive multimodal surface transportation system consisting of highway, rail, and bus services. Virginia's transportation system includes elements of varying size and complexity. The Commonwealth has some of the largest highway networks, rail networks, and public transportation systems in the country; it also has some of the nation's smallest shortline railroads and simplest transit systems. This chapter examines the current performance of the multimodal system, with an eye on potential future needs that will arise from the forecast growth.

VTrans2035 sets the foundation for the future of transportation in the Commonwealth, and provides direction for the development of the VSTP. The VTrans2035 plan identified the following common themes that guide the needs of Virginia's transportation infrastructure across all modes:

- Congestion ranks as a major issue for Virginia's long-term competitiveness and quality of life.
- Investment in transit, as well as both passenger and freight rail, will support Virginia's key economic engines (including Dulles International Airport and Port of Virginia), and at the same time would address safety, congestion, and climate change issues.
- Technology provides opportunities to increase capacity in a cost-efficient, sustainable, and environmentally sensitive manner.
- Land use decisions must be better coordinated with transportation planning and investment decisions to better address congestion, regional accessibility, climate change, and the cost of transportation improvements.
- There are unmet maintenance needs now, and as the transportation system grows, the costs to maintain the system will increase.
- As transportation needs continue to grow; long-term trends in fuel consumption as well as inflation are adversely affecting traditional funding mechanisms for transportation investment.

This chapter provides an overview of the existing transportation assets for each of the modal elements (Public Transportation, Rail (including freight rail), Bicycle and Pedestrian, and Highway (including truck freight)), and an overview of the future conditions for these modes and their relationship to transportation needs.

PUBLIC TRANSPORTATION

DRPT is the lead state agency for supporting the Commonwealth's transit systems. DRPT keeps Virginia mobile by working with 285 (and growing) local and regional planning partners and public transportation providers across the Commonwealth to deliver reliable, cost-effective, and efficient transportation services to citizens and visitors. To ensure that limited resources are applied cost-effectively, DRPT continuously identifies and updates public transportation needs across the state through various planning and programming efforts.

The Commonwealth is focusing on maintaining transit assets, maintaining acceptable levels of service, looking toward the future to keep up with employment and population growth, and supporting economic development. The public transportation element of the VSTP focuses on balancing three key goals for transit: maintaining current public transportation assets and infrastructure in a state of good repair; expanding capacity by introducing and improving services to areas that have an unmet or growing demand for public transportation; and investing in major capital projects, including rapid transit service. In addition to fixed route bus and rail transit, DRPT is also improving upon and expanding transportation choices through TDM services, human services transportation and ITS. Each of these elements plays a crucial role in the maintenance and expansion of public transportation services in Virginia and reducing demand on Virginia's road network.

Public transportation plays a key role in increasing access and mobility for Virginia residents by enabling more efficient use of the transportation network, saving time, conserving energy, and providing economic benefits to the customers and communities served. Currently, there are 59 public transit providers in Virginia serving urban, small urban and rural communities. A total of 46 systems provide fixed route service. Of these 46 providers, 18 of them also provide some form of demand-response service. In addition, eight systems offer only demand-responsive transit service, focusing on serving the elderly and physically challenged. The largest fixed route system is managed by the Washington Metropolitan Area Transit Authority (WMATA). WMATA operates the sixth largest bus system in the country and the second largest rail system.

In addition to public transit service, DRPT works with 56 human service transportation agencies and 18 TDM agencies to further deliver quality public transportation and mobility options. Out of 134 independent localities

Table 3: Virginia Transportation at a Glance

Mode	Statistic
Highways	Approximately 70,800 miles of Roadways, approximately 57,729 state-maintair
	20,879 Structures (Bridges and Culverts)
	8 Toll Roads/Bridges, 2 operated by VDOT
	137 miles of High Occupancy Vehicle (HOV) Lanes
	330 Park and Ride facilities, 114 operated by VDOT
	41 total safety Rest Areas
	3,250 miles of Scenic Byways
Bicycle and Pedestrian	2 US Bicycle Routes (US Bike Route 1 and US Bike Route 76)
Public Transportation	59 Public Transit Systems
	18 Transportation Demand Management agencies
	56 Human Service Agencies
Rail	Approximately 3,200 miles of track
	2 Class I Freight Railroads, 9 Class III Freight Railroads and 1 non-FRA classified I Railroad
	1 Passenger Railroad (Amtrak)
Ports	4 Marine Terminals
	1 Inland Port
Airports	9 Commercial Service Airports
	57 General Aviation Airports

in Virginia (95 counties and 39 cities, plus one town that is not independent), 32 of them are currently not served by public transit.

Public Transportation: Moving Forward

The population and employment increases discussed in Chapter 2 will result in an increased demand for mobility options. Population increase in the urban crescent of Northern Virginia, Richmond, and Hampton Roads will result in an increased demand for fixed-route bus and rail transit and TDM resources such as carpools/vanpools, ride connection services, and teleworking. An example of the critical need for public transportation capacity expansion and major investment is the ongoing extension of Metrorail to Dulles International Airport by the Metropolitan Washington Airports Authority (MWAA) in cooperation with DRPT, WMATA, Fairfax County and Loudoun County. The Dulles Metrorail Extension will result in travel time savings, expand the reach of the existing regional Metrorail system, and enhance connectivity between modes in the region. Phase II specifically will extend metrorail from Tysons Corner to Dulles International Airport effectively linking metrorail and bus transit to the airport, and providing connectivity between this critical airport asset and Washington D.C.

At the same time, areas with lower population growth still have increasing public transportation needs, specifically in relation to demand responsive and human services transportation, which provide an economic lifeline to these areas.

The Commonwealth's aging population is also growing significantly, both in urban and rural areas. A relatively high percentage of this demographic group is transit-dependent. Providing travel options will require new transit services in areas of the Commonwealth that are currently without service as well as expanding and diversifying the services of existing transit systems. DRPT will play a key role in working and coordinating with other state, local and regional agencies who strive to provide human services transportation. DRPT will appropriately administer the available federal funding in support of regional mobility coordinators to serve each of the 21 PDCs. These coordinators will assist the PDCs to understand the regional-specific human services transportation needs and to coordinate with human service agencies to ensure coordination in serving those in need.

Mode Share:
The proportion of people that use each of the various modes of transportation.

Another significant demographic development is the entry of the sizable Generation Y usually defined as those born between the years 1977 and 1994,[12] or "millennial generation." Overall, Generation Y prefers walkability to auto dependency and is more committed to using public transportation, carpool/vanpool, or teleworking often in support of a more urban lifestyle[13] However, as the largest generation in the US they will have one of the most significant impacts on the road network if alternative transportation choices are not made available to them. Alleviating congestion and providing convenient travel options can be a strategy to attract and retain the new generation of skilled workers and improve the overall quality of life in Virginia's metropolitan areas.

To ensure that the existing and future demand is met with quality public transportation and mobility options, the Commonwealth of Virginia is focusing on maintaining the transit assets that they currently have, maintaining acceptable levels of service, and looking toward the future to keep up with population growth and economic conditions. The public transportation element of the VSTP focuses on the following four initiatives to maintain and enhance public transportation services throughout the Commonwealth: transit (demand-response and fixed-route bus and rail transit), TDM (carpool, vanpool, teleworking), human services transportation and ITS.

12 "Getting Inside Gen Y - Generation Y - Statistical Data Included." *American Demographics*. 1Sep 2001

13 Virginia Statewide Public Transportation Plan, 2010

TRANSIT SERVICES

Planning for existing and future transit services requires that DRPT balance three key goals: achieve and maintain state of good repair; meet future transit demand with appropriate capacity expansion; and invest in major rapid transit capital projects.

State of Good Repair:

DRPT is tasked with ensuring that the operators of transit assets maintain and replace their fleet inventory to meet the state of good repair (SGR) useful life standards that have been established by the FTA. As defined by the FTA, an asset or system is in SGR when no backlog of capital needs exists – hence all asset needs, such as preventive maintenance and rehabilitation, have been addressed and no capital asset exceeds its useful life. Addressing deferred maintenance and replacement of transit vehicles, facilities, and infrastructure that are reaching the end of their useful lives is an increasing priority of transit agencies throughout Virginia. Achieving a state of good repair for Virginia's transit systems is critical to accomplishing many of Virginia's transportation goals.

Aggressively pursuing state of good repair will provide a range of significant benefits to the Commonwealth's transit systems and overall transportation system:

The useful life of transit vehicles, based on the FTA SGR standard:

- Large Bus (35 – 40') = 12 years (or 500,000 miles)
- Medium Heavy-Duty Bus (30') = 10 Years (or 350,000 miles)
- Medium Light-Duty Bus (25' – 35') = 5 years (or 150,000 miles)
- Small Buses, Vans, and Sedans = 4 Years (or 100,000 miles)
- Rail Vehicles = Approximately 35 Years

Return on Investment in Public Transportation

According to the American Public Transportation Association (APTA) "for every $1 billion invested in public transportation capital and operations, an average of 36,000 jobs is supported; these 36,000 jobs result in roughly $3.6 billion of business sales and generate nearly $500 million in federal, state, and local tax revenues." Depending on local conditions, this translates into $9 being generated in economic return for every $1 invested in public transportation.

- Safety – Safety is the primary concern of users of the Commonwealth's transportation network. Failing transit vehicles, equipment and infrastructure risk the safety of riders and other users of the transportation network. Transit agencies with vehicles and equipment that are not in a SGR have to adopt less than optimal operating plans to address safety concerns, reducing overall service levels.
- Service Performance – SGR also affects transit service performance, particularly maintaining or improving service reliability. A transit service's on-time performance and ability to maintain speed partly depend on the condition of vehicles and their guideways. In addition to transit vehicles or guideway infrastructure, information systems also require maintenance.
- Operating Expenses and Revenues – Achieving SGR helps control operating expenses. Scheduled preventive maintenance has demonstrated significant lifetime cost savings over ad-hoc or deferred maintenance. The age and condition of vehicles also affect how often they are taken out of service for repairs and maintenance. These disruptions in vehicle availability can increase the number of vehicles and number of service hours needed to meet passenger demand. If service is performing poorly due to breakdowns, this impacts reliability and in turn decreases ridership and farebox revenue.

- Federal Requirements – Federal programs such as "New Starts" place an emphasis on SGR in their review criteria. Local transit agencies with high quality SGR records can better position themselves in competing for federal capital assistance opportunities.
- Environmental Performance – Vehicles and equipment in good repair generally have better performance in terms of their environmental impact and energy efficiency. Newer and well-maintained engines operate more efficiently and produce fewer emissions than those lacking timely maintenance or that are past their useful life.

While additional funding will be required to achieve and maintain SGR, DRPT can play a key role in helping to maximize the Commonwealth's transit assets. In that regard, DRPT has already taken important steps in meeting SGR goals for the Commonwealth's transit systems. The SGR need in Virginia is primarily documented in a dynamic fashion by DRPT's asset management reporting system. This system relies on quarterly (or more frequent) updates of asset inventory by transit grantees statewide. Based on the FTA useful life standards, average unit costs for asset replacement, and standard inflation assumptions, DRPT has the ability to monitor and summarize the long-term SGR needs.

Another key component to ensuring the SGR is to address overall preventive maintenance needs for transit vehicle fleets and infrastructure. Ensuring that transit agencies have adequate maintenance plans for both vehicles and other types of equipment, as well as transit infrastructure is a priority of DRPT. These maintenance plans would help transit providers get the longest effective life out of assets before they are replaced and reduce their expenses for routine maintenance.

Meeting future demand (capacity expansion)

In order to keep up with existing and anticipated future transit demand, improvements must be made to the existing transit infrastructure. Investments such as providing more railcars on overcrowded urban lines; expanding bus routes and adding more frequent service in cities and suburbs; promoting TDM such as carpool, vanpool and teleworking; and providing demand-response and commuter services in rural areas provide a variety of benefits. These investments will provide congestion relief to the 70% of Virginia's population that will live in urban regions by the year 2035. Improvements will also make transit a viable choice in small cities and many suburban areas where the growth rate exceeds the state average.

Improvements to transit will also provide a vital transportation link in areas where population growth is not expected to drastically increase. By providing services in rural areas that can be tailored to the needs of those who do not or cannot drive, transit services continue to help these communities remain attractive places to live. While these services also support regional economic development, they are more importantly key economic lifelines for individuals in areas where public transportation provides the vital and sometimes only connection to health care and employment destinations.

Capital projects

The anticipated growth in population and jobs will result in increased demand on transit systems, especially in urban areas, requiring fixed-route capacity expansion, including rapid transit service. A significant number of these jurisdictions are places where projected population growth exceeds 25% over the 25-year plan period. Highway expansion alone cannot meet the significant growth in travel within the Commonwealth.

Developing new services and systems that encourage more people to use transit, such as light rail and bus rapid transit, suburban express bus routes to major employment centers, and rural demand-response services in communities with no public transit options, will be crucial. These types of investments will increase mobility in congested urban areas, increase mobility to people who cannot drive, provide transportation choices, and encourage economic development and employment.

TRANSPORTATION DEMAND MANAGEMENT

TDM focuses on the provision of commuter services, strategies and policies aimed at reducing the need to drive alone. TDM Strategies include:

- Encouraging companies to establish teleworking and flexible hours
- Matching carpoolers and establishing vanpools
- Coordinating with VDOT to build Park and Ride lots
- Working with communities to expand commuter transit services
- Promoting planning strategies such as transit-oriented development
- Coordinating regional TDM plans and programs

The successful implementation of these strategies results in a more efficient use of road space by reducing the number of vehicles, shifting some trips to off-peak hours to reduce rush hour traffic, and eliminating some trips altogether with teleworking.

HUMAN SERVICES TRANSPORTATION

In many areas of the Commonwealth, transit services are an essential part of the transportation infrastructure. Transit increases access and mobility for Virginia residents that are mobility-challenged, disabled, or have limited transportation options. Sharing resources and services among human service agencies that provide transportation, from dial-a-ride programs and van services to taxi vouchers and volunteer drivers, provides a direct benefit to populations in need. Statewide human services transportation coordination strategies include:

- Statewide: Identification of best practices and uniform methods to ensure efficiency and cost-effectiveness among state agencies that provide public transportation.
- Regional: Creation of Regional Mobility Coordinating Boards to help agencies plan and provide community and human service transit across jurisdictions. Managed by a Regional Mobility Coordinator, each Board would provide a "one-stop shop" for people to get information and make transportation arrangements.

Investment in coordinated human services transportation empowers growing numbers of older adults and people with disabilities to live independently, provides a means for low-income people to get to work or school, increases transit service efficiency and improves quality by centralizing schedules, coordinating funding, and making use of all available vehicles.

INTELLIGENT TRANSPORTATION SYSTEMS FOR TRANSIT

ITS is the application of advanced technologies to optimize the performance of surface transportation systems. For public transportation, ITS includes a wide range of advance communications and electronic technologies such as Global Positioning System (GPS) responders on transit vehicles, credit card style fare cards and "countdown" signals at rail stations. Over the past 15 years, transit operators across the country have embraced ITS applications and demonstrated benefits in terms of improved customer service and satisfaction, better on-time performance, and reduced capital and operating costs. Many transit operators in Virginia have been pioneers in the deployment of such technologies and have been independently deploying technology applications to improve operational performance and customer service. Significant additional benefits can be envisioned by coordinating and promoting this ITS activity to provide an improved return on investment, greater deployment efficiency, a higher level of functionality through system interaction, and consistency of service delivery among transit operators.[14]

ITS for transit includes a wide range of advanced communications and electronic technologies such as GPS responders on vehicles, credit-card style fare cards and "countdown" signs at transit stations. DRPT is working with transit providers across the state to plan and implement ITS improvements. These improvements make transit systems more flexible, efficient and responsive to customer needs. In addition, transit planners can use ITS-based information to identify emerging needs for service and to fine-tune existing routes so they run more smoothly and quickly.

14 DRPT, Intelligent Transportation Systems Strategic Plan. 2009

The location, approximate service area and existing public transportation infrastructure throughout the Commonwealth are illustrated in Figure 17.

RAIL

Rail systems in Virginia consist of passenger and freight service. Norfolk Southern (NS) and CSX own and operate two major freight rail systems. The passenger railroads in Virginia are currently operated by Amtrak and Virginia Railway Express (VRE). Virginia's geography puts it at the center of the Mid-Atlantic area, and the current rail system positions it as a major crossroads for freight movement between the west/southeast/south and the northeast portions of the United States. Virginia is also well positioned on the Amtrak lines to be able to travel by rail northwards to New York, south to Florida or New Orleans, and west to Chicago, as well as points beyond these locations.

The overall rail system includes approximately 3,200 miles of track throughout the Commonwealth, all owned by the freight railroads. Of this 3,200-mile system, 2,020 miles (63%) are owned by NS and 850 miles (26%) are owned by CSX. The Commonwealth's shortline/switching railroads own less than 10% of system mileage. The passenger services operate on tracks owned by the freight railroad[15].

PASSENGER RAIL

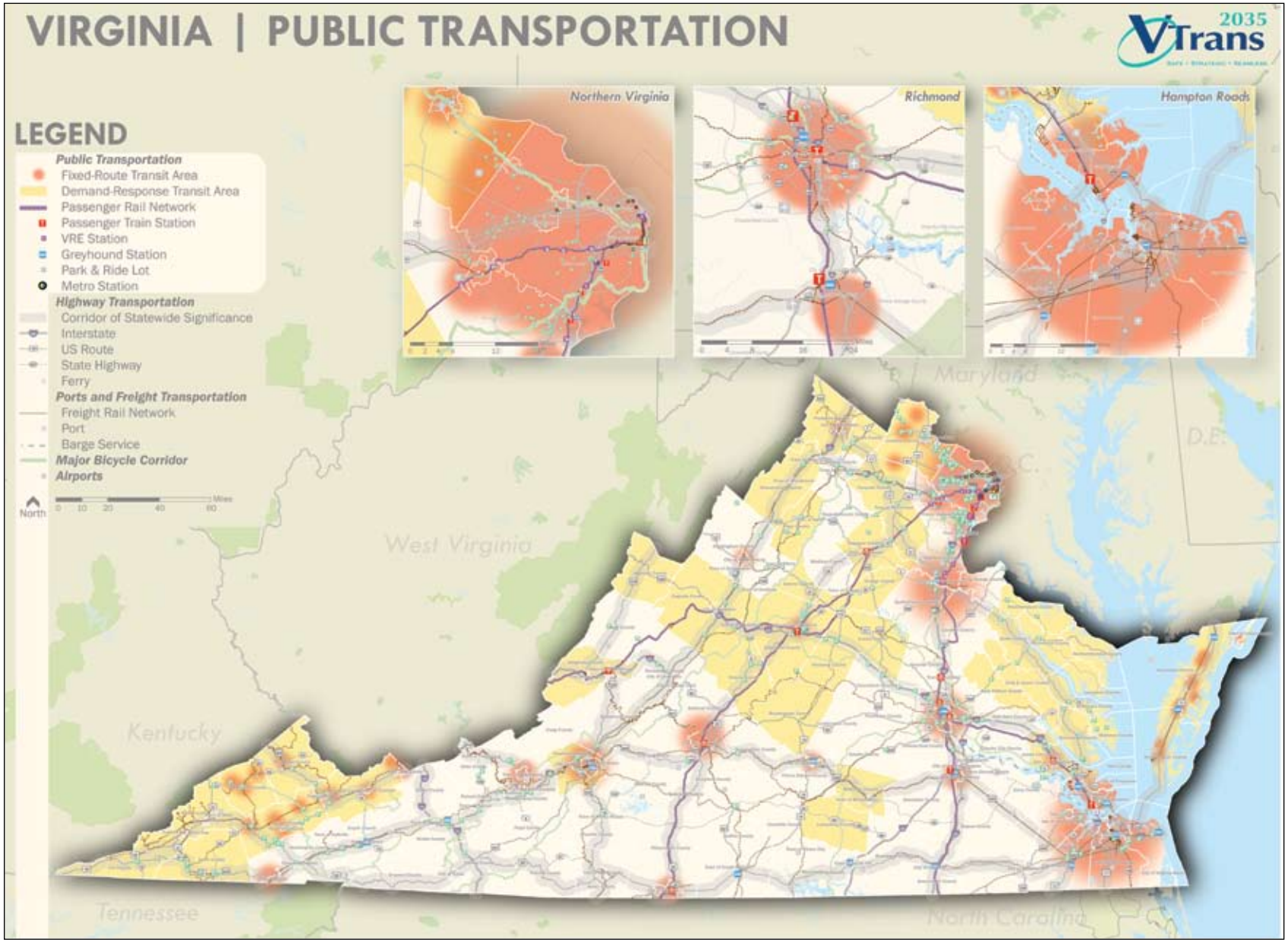
The two passenger systems are VRE and Amtrak. Collectively, these two passenger railroads carried nearly 3.9 million passengers during 2007. VRE operates passenger trains on a 90-mile system connecting Washington, DC, with Fredericksburg and Manassas, Virginia. From Union Station in the District of Columbia, the Fredericksburg and Manassas lines share the same right-of-way for approximately 9.6 miles, to a point just south of Alexandria, Virginia, where they diverge. In Virginia, VRE is a tenant over the NS (to Broad Run) and CSX (to Fredericksburg) systems, and contracts with Amtrak to operate the trains. VRE operates a fleet of 29 revenue trains and carried over 3.4 million annual passengers in Fiscal Year (FY) 2007 and 3.6 million in FY 2008. Beginning in July 2010 VRE will be contracting with Keolis America to operate the trains.

There are eight Amtrak services that operate through Virginia. They include:

- NORTHEAST CORRIDOR REGIONAL (NEC): Amtrak's NEC regional service runs between Boston, MA and Washington, DC with continuing service to Newport News, VA. A new extension from Washington, DC to Lynchburg, VA began service on September 30, 2009. The NEC regional route serves 14 stops within Virginia, with a total of 41 train trips every week in each direction.
- LORTON-SANFORD (AUTO TRAIN SERVICE): The Auto Train is a direct, non-stop service from Lorton, Virginia, to Sanford, Florida. The Auto Train only allows passengers with automobiles or motorcycles, and operates one southbound and one northbound train daily. This Amtrak route includes 159 miles in Virginia and had annual 2007 ridership of 108,911 passengers from Virginia.
- NEW YORK-WASHINGTON-CHARLOTTE-ATLANTA-NEW ORLEANS (Crescent Service): The Crescent service has 228 miles and six stops in Virginia. One southbound and one northbound train operate daily and in 2007 had a total of 33,550 passengers from Virginia.
- NEW YORK-WASHINGTON-RALEIGH-CHARLOTTE (Carolinian Service): The Carolinian has 175 miles and five stops in Virginia. One train trip is made daily in the northbound and southbound directions. In 2007, this service had annual ridership of 33,221 passengers from Virginia.
- CHICAGO-INDIANAPOLIS-LOUISVILLE-CINCINNATI-WASHINGTON (Cardinal Service): There are six stops on the 228 miles in Virginia of the Cardinal route that operates from Washington, DC to Chicago, IL. Westbound and eastbound trains operate three times a week and in 2007 had 17,004 passengers from Virginia.

15 Virginia Statewide Rail Plan

Figure 17: Virginia's Public Transportation Assets Map



** Note: A full-sized map can be viewed at http://www.vtrans.org.*

- NEW YORK-WASHINGTON-RALEIGH-JACKSONVILLE (Silver Meteor/ Silver Star/Palmetto Service): There are five stops on the 175 miles in Virginia of these three Amtrak routes. The Palmetto serves Savannah, GA, the Silver Star serves Miami, FL via Columbia, SC and the Silver Meteor serves Miami via Charleston, SC. One train operates daily in each direction on each route, resulting in 21 weekly northbound and southbound trips. In 2007 the number of annual riders from Virginia was 18,997 on the Palmetto, 17,754 on the Silver Star, and 10,602 on the Silver Meteor.

Passenger Rail: Moving Forward

Virginia has an ambitious rail agenda of alleviating congestion and creating a rail system appropriate for future passengers. The challenge is finding the resources to get it all done. While many projects have been identified, the expansion of rail in Virginia faces both operational and financial challenges. Demand for passenger rail service is growing across the state. VRE is approaching capacity and ridership is expected to double in the next 20 years. Improved passenger rail service is needed along the major corridors within the Commonwealth. At the same time, the state's freight rail partners are carrying increased volumes of freight traffic and will require capacity expansion and other capital investment before accepting additional passenger service. Meanwhile, Amtrak is shifting its strategic focus to passenger rail corridors, with states becoming purchasers of service and bearing increased financial responsibility of regional train services.

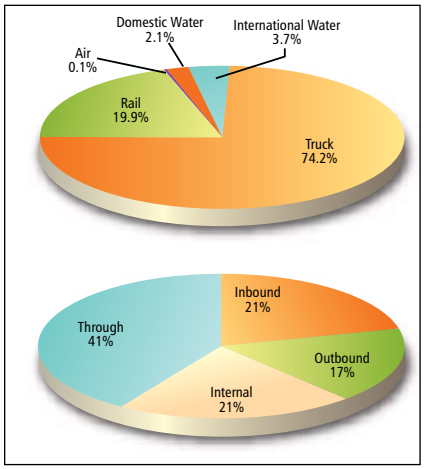
FREIGHT RAIL

The Association of American Railroads estimated in 2005 that 2,426,523 carloads of freight traveled through Virginia with approximately 178,423,334 tons of goods moved. The most recent data from the US Department of Transportation (2004) indicates that Virginia's intermodal transportation system moved over 900 million tons of freight. Both international and domestic cargo is expected to grow significantly over the next 25 years. Another important aspect of Virginia's freight rail system is its international and domestic intermodal terminal network. These terminals provide the interface between freight rail and other transportation modes, including highway and water. The main commodity moved on Virginia's rail system is coal.

Class I – The two main Class I railroads operating in Virginia are Norfolk Southern and CSX Transportation. The vast majority of Virginia's freight rail track infrastructure is owned by these two Class I railroads with only about 10% being owned by the shortline railroads.

Class III – Shortlines act as the originating and terminating railroads for approximately one-third of all rail shipments, often providing the first or last link in business-to-business delivery by providing the intensive switching operations that are not profitable for the Class I railroads. Shortline tracks must handle 286,000 pound capacity railcars and container shipments in order to interface effectively with the Class I railroads. There are nine Federal Railroad Administration (FRA) Class III shortline railroads in Virginia. Several shortlines operate on leased trackage or trackage rights of Class I railroads. The Deepwater Terminal Railroad is not classified by FRA. There are no Class II railroads in Virginia.

Figure 18: Virginia Freight Tonnage by Mode and Direction



Freight: Moving Forward

Freight transportation has grown dramatically, fueled by the growth and spread of population and economic activity within the US and the increasing interdependence of economies across the globe brought about by foreign trade. Freight cargo in the nation is expected to double from 15 billion tons in 2005 to approximately 30 billion tons in 2035. While it is anticipated that the vast majority of this freight will be handled by trucks, highway congestion and the increasing cost of fuel make an increase in the modal shift from trucks to rail a necessity.

Today, approximately 50% of Virginia's total output, 28% of its Gross State Product, and 34% of its employment are from freight-related industries that depend heavily on the movement of raw materials, intermediate goods, and/or finished products. The movement of existing freight tonnage by mode and direction and a projection of the increase in tonnage associated with each mode to 2035 are illustrated in the Figures 18 and 19, respectively.

Over the next two decades, the forecast is for significant growth in the demand for freight movement into, out of, within, and through Virginia. Some of the Commonwealth's freight infrastructure is well positioned to accommodate this growth, but much of its infrastructure will be challenged – from normal wear and tear; growth in the amount, type and location of freight movement; from increased passenger traffic over shared highway and rail corridors; and environmental pressures associated with higher freight volumes and/or denser development patterns in and around major freight facilities and corridors. Almost 80% of Virginia's freight tonnage has an origin or a destination in another state – including 40% which is simply passing through Virginia on its way to and from other states – so growth and freight improvements in other states, or the lack thereof, could significantly affect conditions in Virginia.[16]

16 VTrans2035 Issue Paper on Freight

Figure 19: Virginia Freight Projections by Mode (2035)

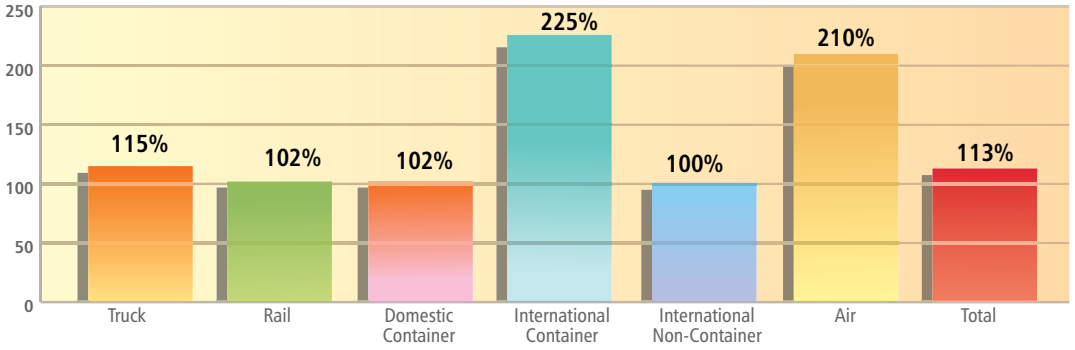


Figure 20: Existing State Rail Assets Map

Improvements in rail infrastructure along key corridors will not only improve freight rail operations, but will help to alleviate truck congestion along key highway corridors. Planned improvements along the Crescent Corridor will expand rail capacity, diverting freight shipments from highway to rail along I-81, I-20, I-40, I-75, I-85 and Route 29. Figure 20 illustrates the existing passenger and freight rail assets.

BICYCLE AND PEDESTRIAN

The VDOT Bicycle and Pedestrian Program promotes bicycling and walking throughout Virginia. Some of the major roles and responsibilities are:

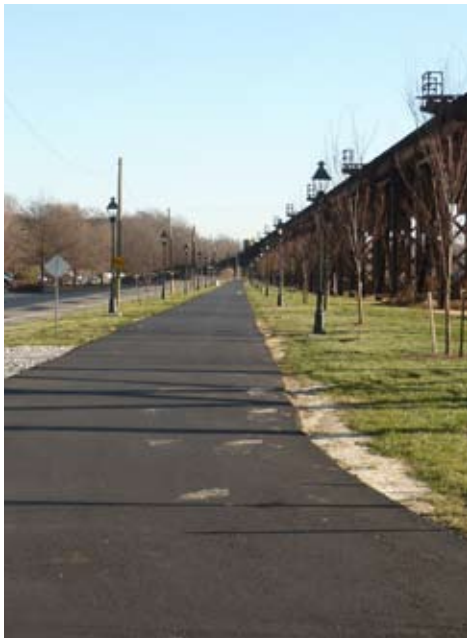
- Planning assistance to state, regional and local transportation planners for:
  - Bicycle or pedestrian studies or plans
  - Design standards
  - Education and training
  - Encouragement of biking opportunities (i.e. shared-use)
  - Improving compliance with the Americans with Disabilities Act
- Bicycle and Pedestrian policy implementation
- Activity coordination for various bicycle stakeholders
- Bicycle and pedestrian education and safety programs

VDOT's 2004 Policy for Integrating Bicycle and Pedestrian Accommodations[17] requires all highway construction and maintenance projects to be initiated with the presumption that the projects shall accommodate bicycling and walking. Exceptions to this policy requirement must meet one of six criteria (i.e. safety would be compromised). Since adoption, VDOT has conducted two successful internal audits of the bicycle and pedestrian program showing the new policy statement has been interpreted and implemented. Figure 21 identifies major bicycle corridors on a state-wide level. This map does not include all local and regional networks throughout the Commonwealth.

17 http://www.vdot.virginia.gov/programs/bk-default.asp

BICYCLING AND PEDESTRIAN FACILITIES IN VIRGINIA

Virginia offers a variety of scenic and historic areas, miles of rural roads, and a wide variety of off-road trails ranging from local loops designed for children and families to challenging mountain routes that attract experienced riders and racers. A small percentage of commuting trips are currently made by bicycle (less than 2% by most estimates).



Virginia Capital Trail

VDOT has developed a free statewide bicycle route map designed primarily for recreational cyclists and tourists.

Examples of some major recreational bicycle routes include:

UNITED STATES BICYCLE ROUTES: Both United States numbered bicycle routes, US Bicycle Routes 1 and 76, run through Virginia. With a total of 838 miles of the US bike routes, Virginia has more mileage of these routes than any other state.

NORTHERN VIRGINIA: The Northern Virginia Regional Park Authority maintains many miles of biking, hiking, horseback, jogging, and nature trails of varying lengths in the 45-mile Washington and Old Dominion Railroad Regional Park. The 17-mile Mount Vernon Trail offers a variety of places to visit, including George Washington's home on the Potomac River. Arlington County has miles of on-road bike lanes and off-road shared-use paths.

VIRGINIA CAPITAL TRAIL: The Virginia Capital Trail is a bicycle and pedestrian trail extending beyond the Historic Triangle from the Canal Walk in the heart of Richmond's upscale Shockoe Valley to the Governor's Mansion in Colonial Williamsburg, paralleling historic Route 5. Currently, the Virginia Capital Trail has 8 of its 55 miles open to the public in James City County and an additional 7.5 miles open in Charles City County. The Greensprings Phase opened in 2006, and the Chickahominy Phase opened in 2007. The entire trail has an estimated completion date of 2013.

VIRGINIA CREEPER TRAIL: The Virginia Creeper Trail, Virginia's premier rail-trail, stretches 35 miles from Abingdon through Damascus to the North Carolina state line near Whitetop. This trail is open to hiking, biking, and horseback riding, and is located along the inactive Carolina Railroad corridor. It has become one of the most popular bicycling trail destinations in the eastern United States.

EAST COAST GREENWAY: Passing through Virginia, the East Coast Greenway is a developing trail system, spanning nearly 3,000 miles as it winds its way between Canada and Key West, linking all the major cities of the eastern seaboard. The Virginia Capital Trail, US Bike Route 1, and the Tobacco Heritage Trail are a part of the East Coast Greenway.

Figure 21 identifies major bicycle corridors on a state-wide level. This map does not include all local and regional networks throughout the Commonwealth.

Bicycle and Pedestrian: Moving Forward

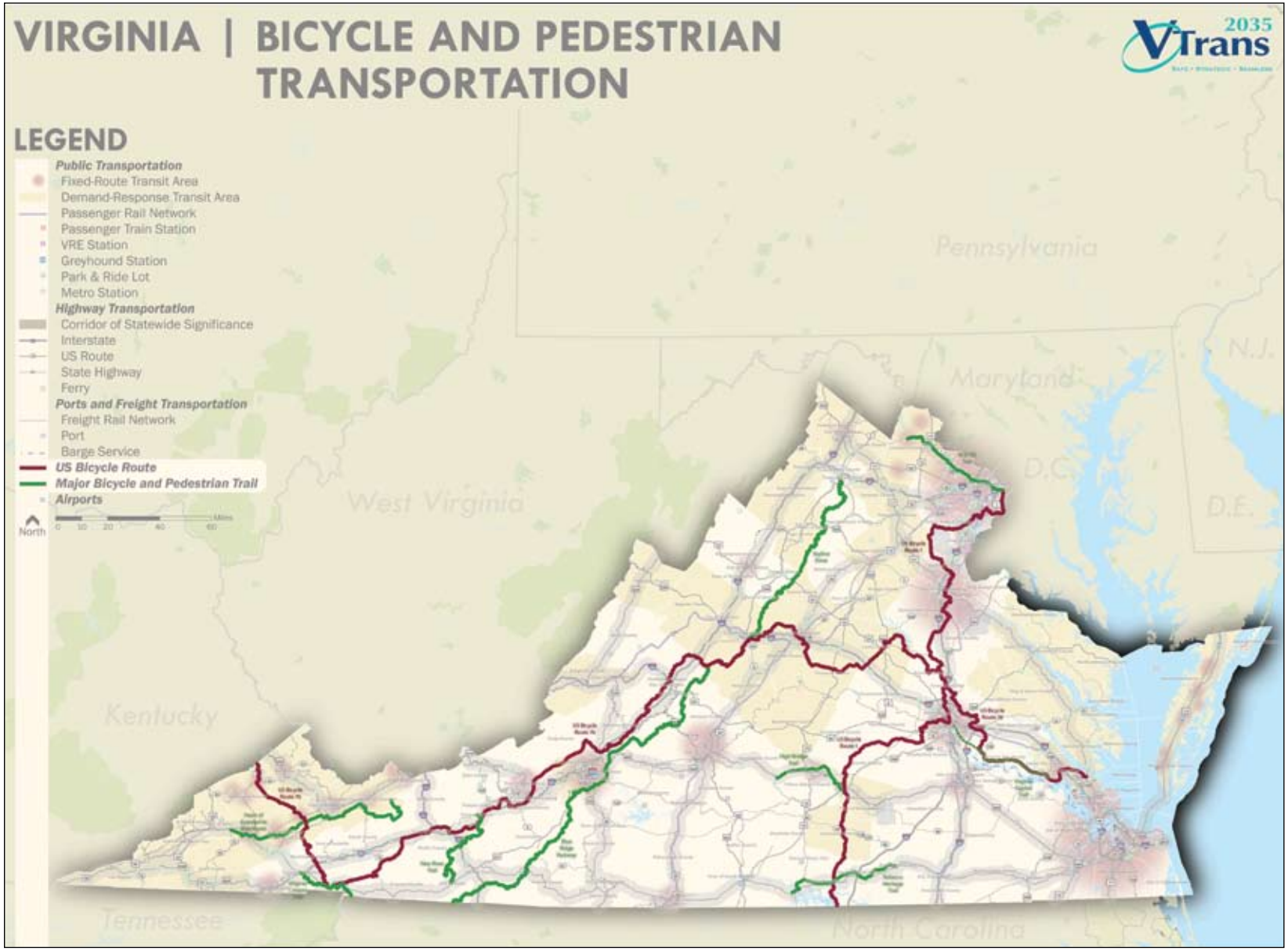
Bicycling conditions vary significantly throughout Virginia, ranging from excellent conditions on designated trails and rural roadways with low traffic volumes, to extremely poor conditions on congested and/or higher speed roadways. In many areas of the Commonwealth, breathtaking country scenery, quaint towns, and various historic, natural and cultural resources provide an ideal setting for bicycling, offering cyclists several of the best places to ride in the country.

In contrast, in many suburban areas, residential and commercial growth has created high volumes of motor vehicle traffic and has raised concerns about the safety of bicyclists. Roadway cross sections may not include paved shoulders, therefore bicyclists must share travel lanes with motor vehicles. On some roadways without bicycle accommodations, travel lane widths are narrow and traffic speeds are high. There is tremendous opportunity to increase the number of trips as more people ride bicycles in communities with well-developed bicycle networks. Nearly half of all travel trips taken in the US are 3 miles or less in length; 28% are less than 1 mile – both are distances that offer ideal opportunities to convert automobile trips to bicycle trips. Surveys show higher levels of bicycle commuting in cities that have invested in bicycle infrastructure. Forty-nine percent of active bicyclists who did not currently commute by bicycle said they would sometimes commute by bicycle if there were safe bike lanes. [18,19] VDOT continues to seek to incorporate improvements for bicyclists and pedestrians in high growth areas as an alternative to single occupant vehicle (SOV) travel.

18 U.S. Census Bureau, American Community Survey, 2008

19 Harris Poll Data published by Bicycling Magazine, April 1991 and by Rodale Press, 1992

Figure 21: Virginia's Bicycle and Pedestrian Assets Map



** Note: A full-sized map can be viewed at http://www.vtrans.org.*

HIGHWAYS

VDOT maintained 57,729 center line miles of roadway in 2007, the third largest system in the country, behind only North Carolina and Texas. These roadways are comprised of interstate, primary, secondary, and frontage roads:

- Interstate – 1,119 miles of four-to-ten lane highways that connect states and major cities.
- Primary – 7,999 miles of two-to-eight lane roads that connect cities and towns with each other and with interstates.
- Secondary – 48,281 miles of local connector or county roads. These generally are numbered 600 and above. Arlington and Henrico counties maintain their own county roads.
- Frontage – 330 miles of frontage roads.

As discussed in Chapter 1, the highway element of the Surface Transportation Plan focuses on a SMS network of roadways, and the ability of that system to accommodate passenger and freight traffic. The SMS network represents the highway system of statewide significance and includes 5,769 lane miles. **Although the SMS is comprised of just 8% of Virginia's highway miles, it carries a majority of the traffic within Virginia, accounting for 66% of all vehicle miles traveled on the Commonwealth's highway system.** The SMS includes highway facilities that are essential to the movement of people and goods, ensuring that all regions of Virginia are reasonably accessible.

Table 4: Motor Vehicle Statistics

Year	Population	Licensed Drivers	Registered Vehicles	VMT (millions)	VDOT Maintained Lane-miles
1987	5,932,200	4,070,041	4,660,657	54,834	115,938
1992	6,394,000	4,771,656	5,124,916	63,447	118,767
1997	6,737,000	5,021,813	5,724,096	74,142	121,198
2002	7,293,500	5,189,497	6,659,560	75,263	123,658
2007	7,712,091	5,436,825	7,500,308	82,077	125,365
2008	7,769,089	5,475,069	7,503,921	82,279	125,756

Source: Virginia Department of Motor Vehicles, (www.dmv.virginia.gov/webdoc/pdf/tss03.pdf)

Statewide Mobility System (SMS)

The SMS is made up of routes that typically support high-speed, long distance travel and permit inter-regional connectivity. The SMS is comprised of:

- National Highway System
  - Strategic Highway Network (STRAHNET)
  - STRAHNET connectors
  - Intermodal connectors
- Hurricane evacuation routes
- Multilane primaries that provide regional connectivity
- Other primaries that serve as vital links

In 2007, Virginians traveled over 82 billion vehicle miles, the equivalent of over 3.2 million times around the globe. Since 1987, vehicle miles of travel (VMT) in Virginia has grown at an average rate of 2.3% per year through 2007. Table 4 and Figure 22 show data on population, number of licensed drivers, number of registered vehicles, VMT, and number of VDOT maintained lane-miles in Virginia from 1987 to 2008. These illustrate that VMT has increased by 50%, outpacing the population growth. During the same time period, the number of VDOT state-maintained lane miles, however, increased only 8%, resulting in an imbalance between supply and demand[20].

20 VTrans2035

Virginia's average commute time to work in 2007 was 26.8 minutes, the eighth highest in the nation. While higher than North Carolina (23.3 minutes) and Tennessee (23.8 minutes), this average is lower than Maryland's 31.1 minutes. The national average is 25.3 minutes. North Dakota had the least traffic delays of all states with an average commute time of 16.1 minutes[21]. Congestion problems are most serious in the heavily populated Northern Virginia and Hampton Roads regions. Locally, the US Census measured the average commute time for 27 of Virginia's larger counties and cities in 2006. The highest average commute times were all in the northern area of the state, specifically in Prince William County (39.5 minutes) and Stafford County (39.2 minutes). The City of Lynchburg (16.3 minutes) had the lowest commute time in the Census study.

In addition to commute time, Level of Service (LOS) is another congestion measure used to determine the effectiveness of the Commonwealth's highways. It is measured using the letters A through F, with A being best and F being worst. LOS A is described as conditions where traffic flows at or above the posted speed limit and all motorists have complete mobility between lanes. The LOS on the SMS network continues to decline and by the year 2035, 75% of the Interstate and 29% of the Primary system are anticipated to be deficient (LOS D,E,F). Figures 23 and 24 illustrate this trend.

Furthermore, an examination of congested speeds on select corridors indicates that if no additional lane miles are constructed on the SMS, the traveling public can expect significant decreases in average speed as demonstrated in Table 5.

21 http://vaperforms.virginia.gov/indicators/transportation/trafficCongestion.php

Figure 22: Percent Increase in Population, Licensed Drivers, Registered Vehicles, VMT, and Lane-Miles (1987-2008)

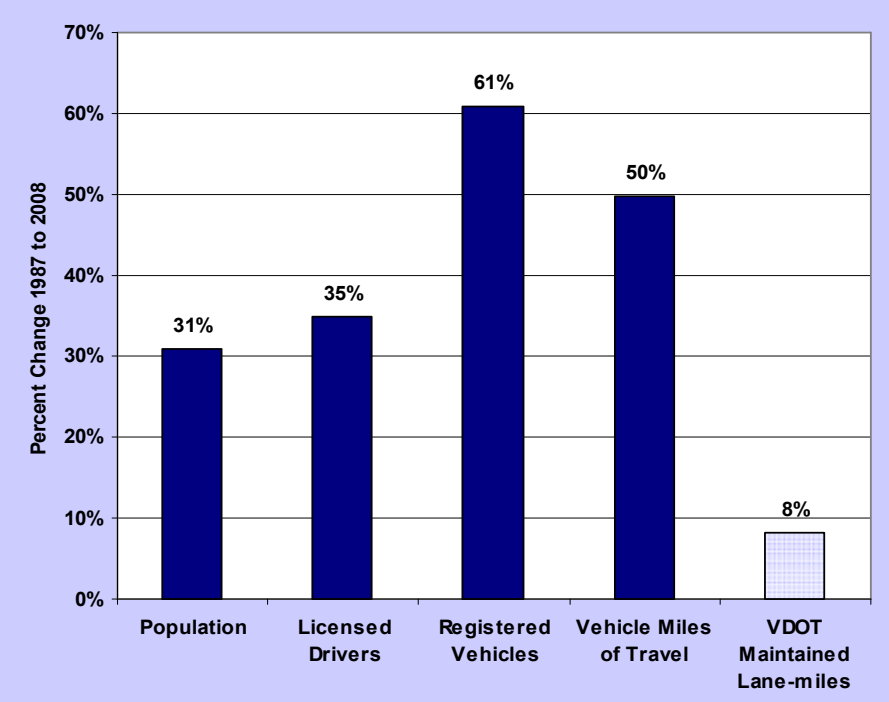


Table 5: Percent Decrease in Average Peak Hour Speed on Select Facilities (2008-2035)

Route	From	To	% Decrease in Average Peak Hour Speed 2008 - 2035
I-95	Fredericksburg north corporate limits	I-395/495	82%
I-64	Jefferson Avenue, City of Newport News	I-564	26%
I-81	I-581	Route 220	49%
I-64	Route 288, Goochland County	Staples Mill Road	81%
I-66	Fauquier County, Route 17/55 west	Route 17/55 east	35%
I-81	Frederick County, I-66	Route 627	47%
I-81	City of Harrisonburg, Port Republic Road	Route 33	48%
I-264	I-64, City of Norfolk	Independence Blvd.	78%

Figure 23: Statewide Mobility System 2007 Level of Service

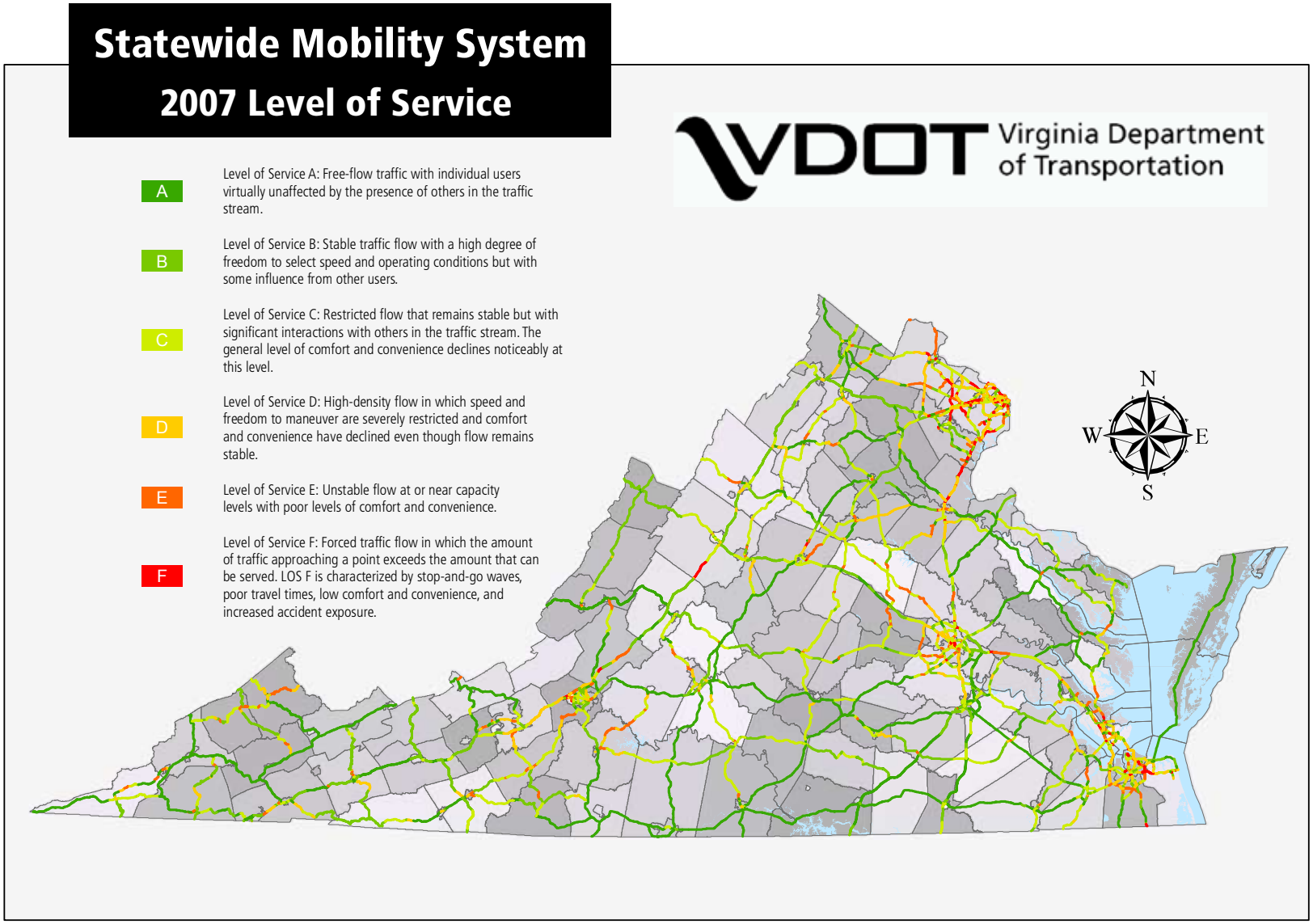
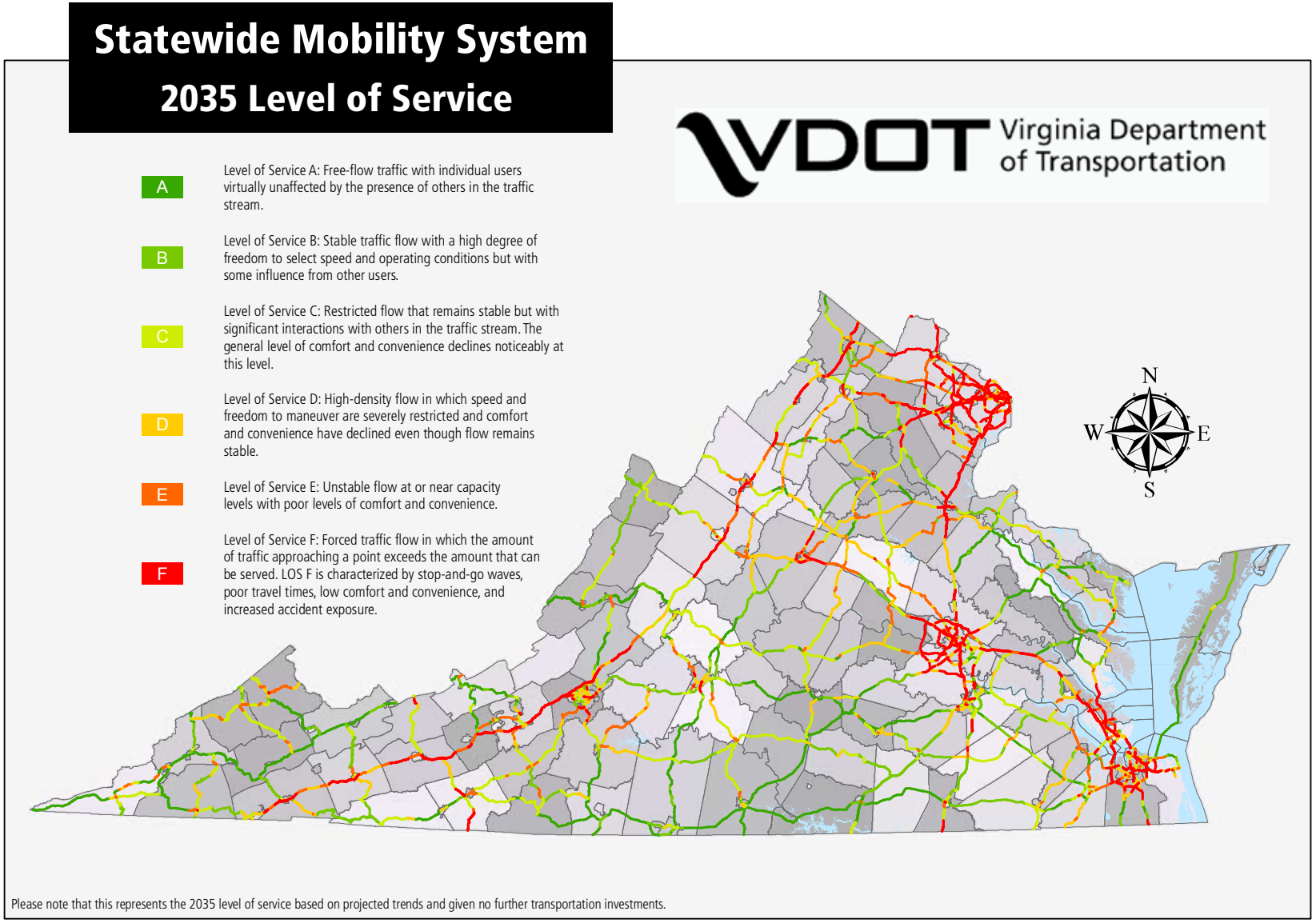


Figure 24: Statewide Mobility System 2035 Level of Service



As the state's roadways become more congested and the LOS continues to decline, the condition of the pavement and structures that are the foundation of the state's transportation infrastructure continues to degrade.

Pavement: The percent of deficient pavements has increased over the past several years, requiring additional funds to stabilize and improve conditions. In 2008, approximately 21% of the Interstate and 24% of the Primary system had deficient pavements. VDOT has a target that the percent of deficient pavements should not exceed 18% on the Interstate or Primary systems and a standard not to exceed 31% on the Secondary system. The performance trend for pavement within the Commonwealth has not been positive in recent years, requiring additional funds to stabilize and improve conditions (Figure 25).

Structures: In addition to pavement, VDOT has a target to have no more than 8.0% of its bridges and culverts considered structurally deficient. A structurally deficient bridge or culvert does not imply that it is likely to collapse or is unsafe. It means that there are elements of the facility that need to be monitored and/or repaired. The 2007 and 2008 performance just missed the target as 8.4% of structures were structurally deficient in both years. The anticipated design life of a bridge is approximately 50 years. While technology may increase the lifespan of bridges, in the next 20 years the percentage of structures 50 years or older will double from 34% to 71% (Figure 26). This suggests the need for a greater investment in the maintenance of structures to meet the desired performance target.

Safety: All of the above identified issues - congestion, LOS, pavement and structure condition - play a role in the safety of Virginia's roadways. Motor vehicle crashes are considered a transportation issue within the Commonwealth of Virginia, thus, VDOT is charged with identifying measures to improve the safety of the state's roadway infrastructure. The rate of motor vehicle related injuries and deaths can be assessed using traditional transportation-oriented measures such as VMT, the level of congestion, or the type of facility. Virginia has the 12th safest system in the country by these measures and the death rate has shown a reduction over time. The statewide decrease in fatalities and injuries is illustrated in Figure 27.

Figure 25: Percent Deficient Pavement

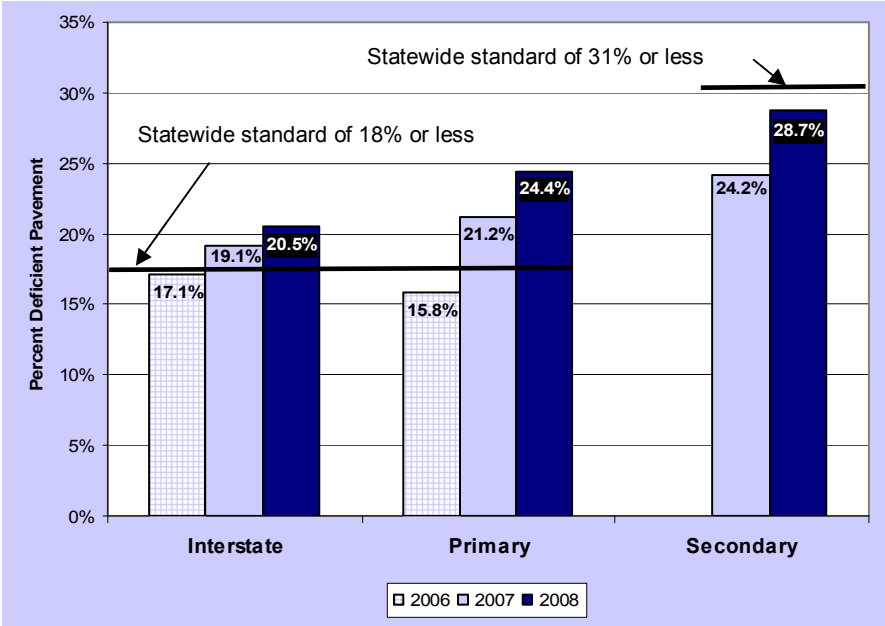
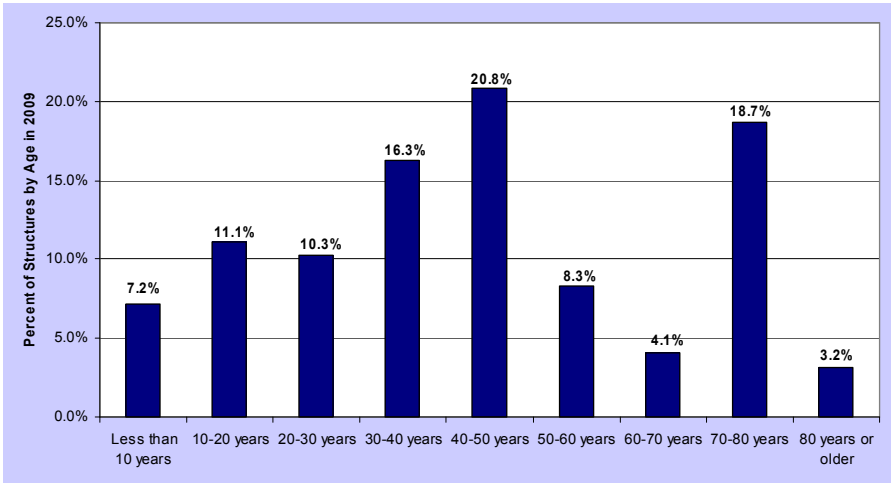


Figure 26: Percent Structures by Age (2009)



VDOT's safety partners (including the Department of Motor Vehicles, Department of Health, State Police and local law enforcement) continue to implement efforts to improve traffic safety in Virginia using the goals in the Strategic Highway Safety Plan[22]. This plan establishes a transportation safety charter and sets up realistic goals for reducing annual deaths from motor vehicle crashes by 100 and annual injuries by 4,000 statewide within the next five years.

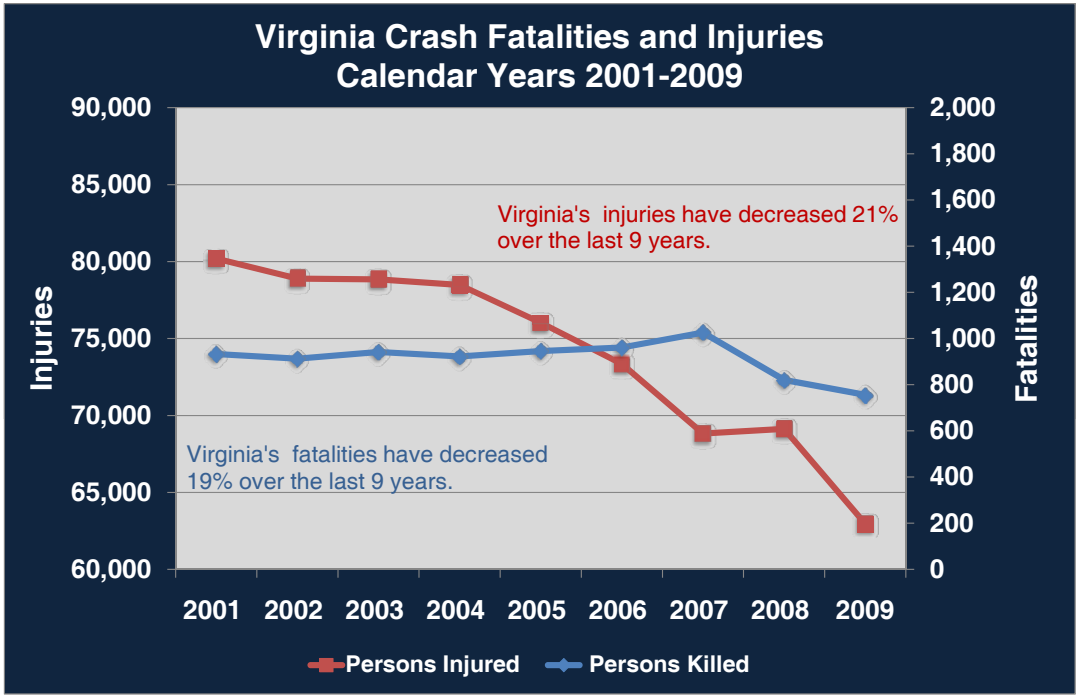
The Commonwealth has identified the following key measures to reduce injuries and deaths in Virginia:

- Raise public awareness and develop a safer driving culture.
- Focus on young drivers, aggressive drivers, impaired drivers and seat belt use through legislation, education, enforcement, and adjudication.
- Improve intersection safety for all users in congested areas.
- Minimize consequences in cases of roadway departure.
- Incorporate transportation safety planning into all levels of government.
- Improve traffic records system to be more accurate and up to date.

With strong support from safety partners and Virginia citizens, there is confidence that the implementation of this plan will bring transportation safety in Virginia to a new level and ultimately realize the goal of providing the safest transportation system in the nation.

22 http://www.virginiadot.org/info/hwysafetyplan.asp

Figure 27: Virginia Crash Fatalities and Injuries (2001-2009)



Source: Department of Motor Vehicles, Virginia Highway Safety Office

Highways: Moving Forward

Anticipated increases in population, employment and related number of vehicle miles traveled as identified in Chapter 2, all have an impact on the current and future condition of Virginia's highway assets. For decades, Virginia has expanded its highway system to address these needs, which means that over time the cost of maintenance has grown dramatically. The rapidly growing number of deficient bridges (structures) and miles of deficient pavement are creating a maintenance backlog that must be addressed to preserve the safety and efficiency of the roadway system. Virginia must look beyond the past practices of adding new pavement, and focus on maintaining current assets; seeking innovative ways to address congestion; providing transportation alternatives; and embracing additional countermeasures to provide travel options and manage demand.

Maintenance: Addressing the maintenance needs of Virginia's highway infrastructure is a primary focus for VDOT. To meet this challenge, Virginia will implement a pavement management system capable of generating recommendations for the most economical set of activities to preserve and extend pavement life. Virginia will also continue to make use of both maintenance and construction funds to repair, rehabilitate and, when appropriate, reconstruct pavements and bridges.

Roadway Improvements: While the VSTP contains recommendations for additional capacity to the highway system, this alone will not meet all of the forecast demand. Thus, the VSTP has identified the need for increased reliance on ridesharing, improving facilities that are currently HOV, and identifying facilities that have the potential for future HOV expansion. Expansion of HOV facilities provides both passenger and freight benefits as it moves more passenger vehicles into these lanes, allowing increased capacity for trucks. Also, opportunities for expansion of existing and development of new Park and Ride facilities have been identified.

Park and Ride Facilities: There are 330 Park and Ride facilities available to commuters throughout the Commonwealth. Most of these facilities are regularly operating at capacity, evidencing Virginian's commitment to carpooling. Providing additional Park and Ride facilities throughout the state will further encourage ridesharing and support transit, as well as aid in reducing congestion and maintenance needs along Virginia's roadways.

MPO Long-Range Plans were examined in order to identify existing regional recommendations for Park and Ride facilities. Additionally, some regions have conducted Park and Ride studies or have developed transit plans that recommend locations for new or expanded facilities. The recommendations in these sources were compiled and reviewed by VDOT. Following this initial review, MPOs and PDCs were given the opportunity to make additional suggestions for new or expanded Park and Ride facilities. Since not all of the regions have completed Park and Ride studies or transit plans, VDOT plans to conduct a statewide Park and Ride study beginning in 2010. This study will evaluate the existing inventory of Park and Ride facilities and identify current and future Park and Ride needs throughout the state.

Short-Term Operational and Safety Planning: VDOT has initiated the Strategically Targeted Affordable Roadway Solutions (STARS) program to better incorporate operational improvements into the highway planning process. Traditionally, the planning process has focused on long-term, high-cost capital improvements for the transportation system. However, today's funding challenges often make it difficult to implement large-scale highway improvements. The STARS program focuses on identifying and implementing short-term, low-cost roadway improvements aimed at improving efficiency, capacity, and safety.

Through the STARS program, VDOT will conduct a thorough examination of Virginia's Interstate and Primary highway systems to identify short/mid-term improvements for operational capacity and safety of the road system.

These improvements have the following characteristics:

- are low cost (less than $5,000,000 for interstates, less than $2,000,000 for primaries)
- address identified mobility and/or safety problems
- require minimal Preliminary Engineering and right-of-way
- can be implemented quickly (12-24 months)

Example improvements include:

- turn lanes – construction or extension
- ramps – extend acceleration or deceleration lanes
- access management – consolidate entrances, close crossovers, improve inter-parcel access
- improve sight distance
- reconfigure/reconstruct intersections – install roundabout, realign approaches, install signal system
- install shoulders or medians
- signage and pavement marking

To date, the first phase of the STARS program has analyzed and developed recommendations for 80 study area sites throughout the Commonwealth. Phase I STARS recommendations on the SMS are included in this plan. The ensuing phases are anticipated to address 136 additional study areas.

Public-Private Partnerships: A public-private transportation project is one in which a public agency partners with a private firm in planning, financing, constructing, and/or operating a road, bridge or other facility. In Virginia, the Public-Private Transportation Act (PPTA) of 1995 authorized state agencies and local governments to execute agreements with private firms to develop, construct, and/or operate transportation facilities. The PPTA is only for projects that provide an innovative method of construction or financing that can deliver a project in a faster or less costly manner. Typically, these projects involve tolling or some other method for the private entity to recoup investment costs. Transportation facilities provided for under the PPTA are roads, bridges, tunnels, overpasses, ferries, mass transit, vehicle parking, or similar commercial facilities used for the transportation of persons or goods.

By partnering with the private sector to build needed infrastructure, Virginia can move forward on projects in a timelier manner than would be possible using traditional funding sources and construction methods - capitalizing on the best technology, financing methods, engineering and innovation.

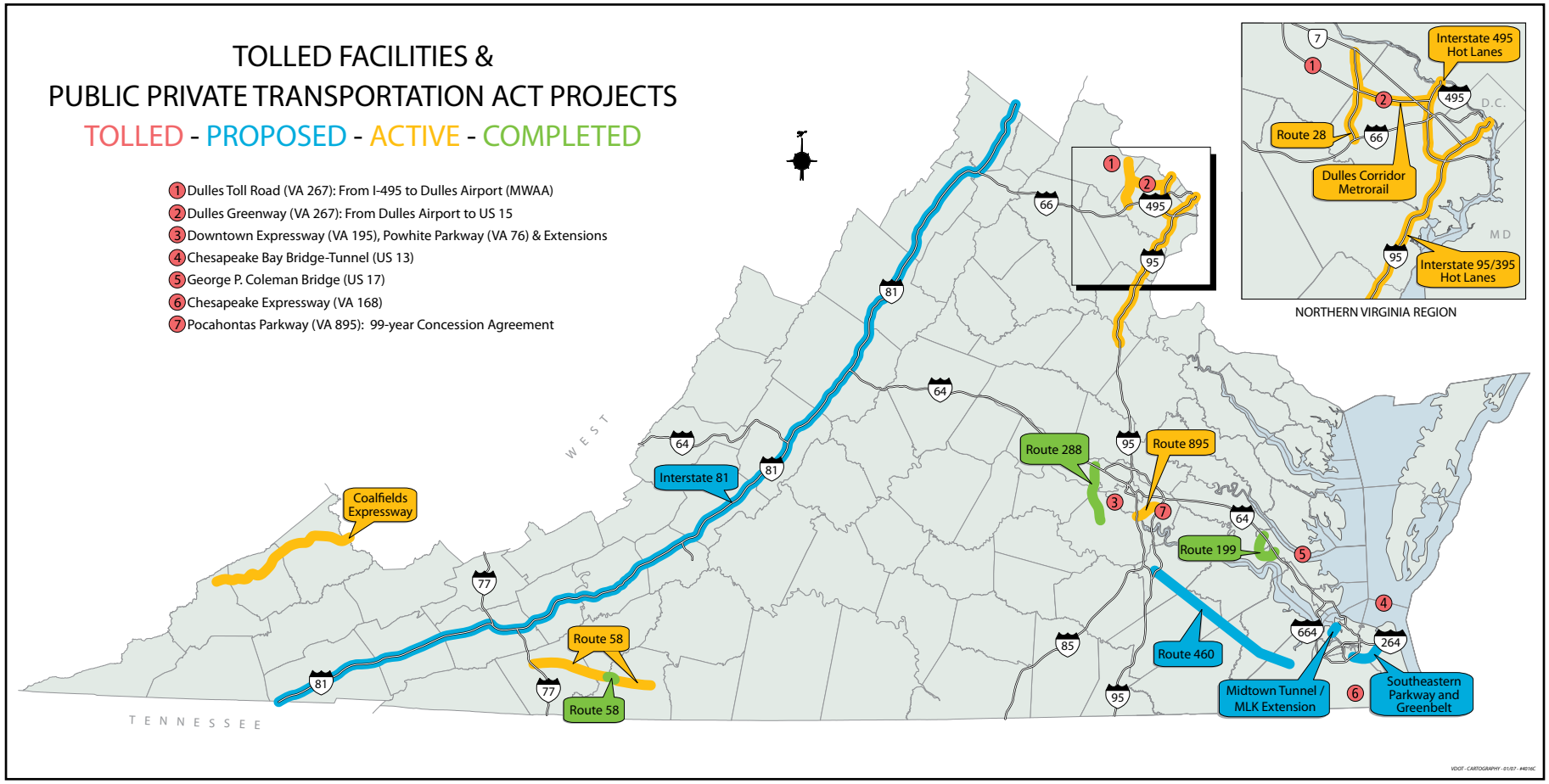
As of 2009, six contracts, including four highway projects, have been completed under the PPTA with a combined contract value of $929 million. With limited federal funding or revenue in the future, VDOT will continue to pursue a sustainable, consistent, and competitive program focused on the development and implementation of successful PPTA projects. Figure 28 illustrates current tolled, proposed, active (underway) and completed PPTA projects.

Operations and Intelligent Transportation Systems: Use of advanced technologies will allow us to use the existing highway capacity as effectively as possible. Over the next 25 years, the highway network can be instrumented with some of those technologies and operational programs that show the most potential for effectively and reliably moving people and goods while reducing the impact on the environment. This includes the deployment of state-of-the-practice surveillance, detection and traveler information dissemination devices on the busiest highways and arterials. It also includes the implementation of Active Traffic Management (ATM) projects along approximately two dozen high-growth corridors where congestion is anticipated.

ATM, which has been effectively used for years in Europe, includes strategies such as queue warning, junction control, speed harmonization, hard shoulder usage and dynamic re-routing. All of these strategies are focused on using real-time data from the road network to immediately adjust conditions so as to reduce incidents and congestion. Other strategies may include urban congestion pricing projects. In the most congested locations, putting a price on use of the highway during peak periods is a way of harnessing the power of the market to reduce traffic congestion as less critical or more discretionary rush-hour highway travel shifts to other transportation modes or to off-peak periods.

To provide reliable travel to customers, smart work zone management and integrated weather maintenance programs will need to be implemented. Moving forward, the need to be more fully integrated with transit will be critical, a vital component being a multimodal trip planning tool that would give travelers real time decision-making information on highway and transit options. Advanced Park and Ride management systems and other integration enhancements will also provide benefits to the system.

Figure 28: Public-Private Transportation Act Projects Map



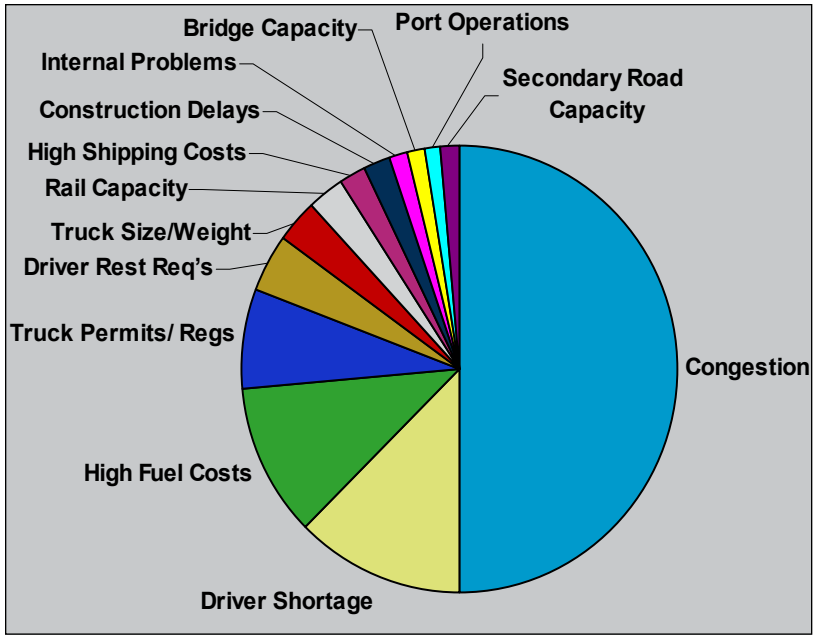
VDOT has initiated a multi-faceted approach to integrate operations and ITS solutions into Virginia's transportation system. This includes the following initiatives:

- The Six Year Operation Improvements Program: A prioritized list of ITS and operations projects immediately needed throughout the state.
- Statewide Systems Operations Program: Provides a "change management" framework for business actions to move the Department towards mainstreaming its systems operations program.
- Long Range ITS Operations Plan: Developed to guide VDOT operations and ITS development activities over the next decade that promote safety, mobility and emergency response.
- ITS Architecture: Developed to support deployment of ITS to facilitate seamless movement of passenger and freight traffic in the Commonwealth.
- Communications Master Plan: Serves as a guide to help effectively document, plan and design a communications system capable of meeting the current and future needs of VDOT's ITS and Operations Program.
- Transportation Sector Specific Plan: Provides an overarching strategic approach for the protection of transportation critical infrastructure.

Next-Generation Technologies and Intellidrive: VDOT is actively involved in the US Department of Transportation's (USDOT) national IntelliDrive initiative. IntelliDrive relies on next generation technologies and applications with and between vehicles, roadways, and devices (such as consumer electronics) in the vehicle to achieve significant safety, mobility and environmental improvements. For example, IntelliDrive can be installed at intersections and in vehicles to help drivers avoid collisions. Vehicles equipped with IntelliDrive are also able to detect environmental conditions, making it possible to one day know traffic conditions along every major street in urban areas as well as along every interstate highway across the nation. This technology will help improve safety and congestion by providing drivers with more information upon which to base their transportation decisions.

Figure 29: Statewide Freight Plan Stakeholder Input

IDENTIFIED ISSUES



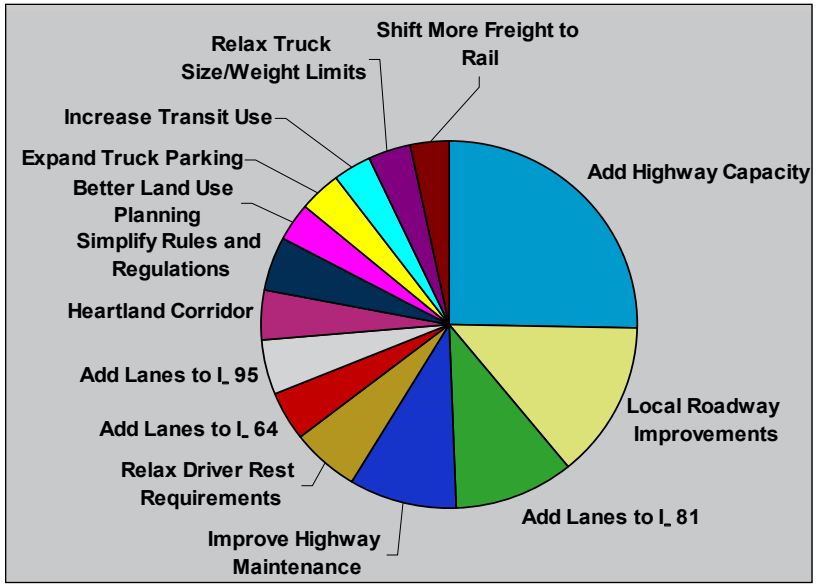
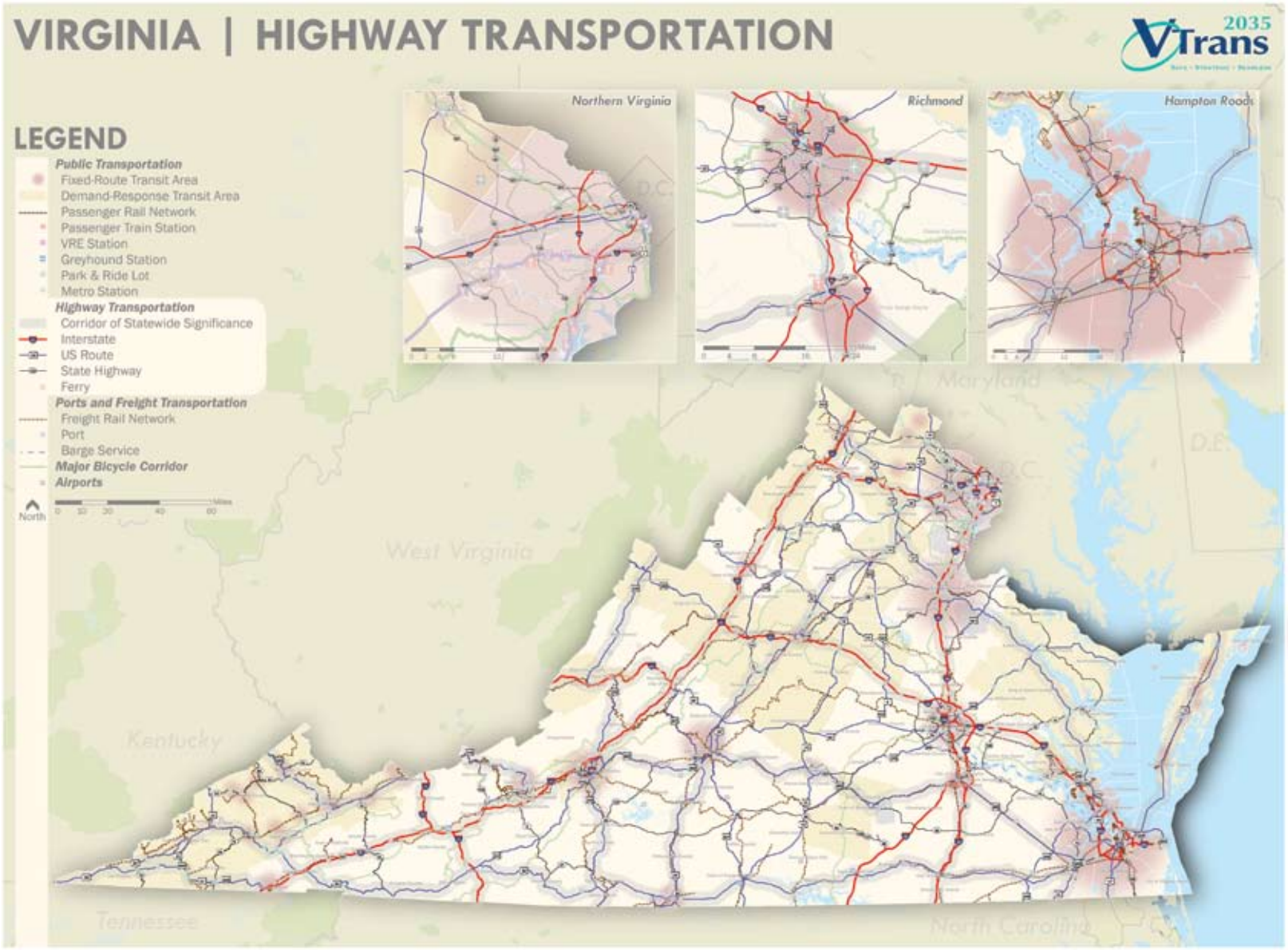


Figure 30: Virginia's Highway Assets Map



** Note: A full sized version can be viewed at http://www.vtrans.org.*

TRUCK FREIGHT

In 2004, Virginia's highway system accommodated 680 million tons of freight – the equivalent of 55 million loaded units, or a line of trucks going around the world nearly 30 times – moving more than 200 billion ton-miles (Ton-mile = one ton of freight moving a distance of one mile).

Critical freight-related issues facing Virginia's highway system today include:

- Roadway and bridge/tunnel condition
- Safety and emergency response
- System performance
- Intermodal connectivity
- Environment
- Industry support and partnership
- Time and mode shifting
- Funding

Freight issues and freight strategies were identified by stakeholders across Virginia as part of the Statewide Multimodal Freight Study. These issues and strategies are highlighted in Figure 29 on page 48.

Stakeholders were consistent in citing congestion as Virginia's top freight issue because so many of them are dependent on trucking, and because congestion means higher costs, less reliability, and more difficulty in operating their businesses. Based on Federal Highway Administration's (FHWA) Highway Economic Requirements System (HERS) model for Virginia, in 2005, trucks on Virginia's roads experienced an estimated 8.4 million hours of delay, with an equivalent cost of $278 million. The HERS model suggests that with average annual roadway maintenance and improvement expenditures of $2.7 billion per year – close to what Virginia currently spends – Virginia truck delay could increase to 14.0 million hours in year 2035, with an equivalent cost of $466 million in current dollars.

Current freight highway bottlenecks identified during the Virginia Statewide Multimodal Freight Study process include:

- Major urbanized regions with high levels of congestion (Northern Virginia, Hampton Roads, Richmond)
- Major national through-travel corridors (I-95, I-81)
- Intersections of major highway arteries (I-495/I-95, I-77/I-81, I-64/I-295/I-95)
- Routes with few or no alternatives (Hampton Roads Bridge Tunnel, Monitor Merrimac Memorial Bridge Tunnel)
- Access into and out of heavily used marine terminal facilities, and links between marine terminals and related inland facilities and warehouse/distribution centers.

Many of these bottlenecks are addressed by VSTP recommendations for the highway element including, but not limited to, I-95/395/495 HOT lanes, I-66 improvements, I-81 improvements, Route 460 and the Third Crossing. A map of the existing highway assets can be found in Figure 30 on page 49.

MARITIME HIGHWAYS

Over the last decade, there has been a significant effort by the US Department of Transportation to encourage states and metropolitan regions to consider the benefits of waterway transportation as an alternative to traditional freight surface transportation modes. There are numerous port regions on the nation's coasts and thousands of miles of navigable inland waterways through which to transport goods by barge or domestic cargo ships. The vast inland waterway system of Virginia provides the Commonwealth an alternative not universally available to all states.

Virginia's only short-sea service from Norfolk to Baltimore by the Chesapeake Bay was joined by a new service from Norfolk to Richmond via the James River in the fall of 2008. The 64-Express, as it is called, was started by

the cooperative effort of the Port of Richmond, with the assistance of the Richmond Regional Planning Commission, the Virginia Port Authority, and the US Maritime Administration.

In 2009, the two services moved 58,457 containers combined. The Chesapeake Service operates with four round-trip runs per week. The James River Service is operating with one round trip per week. Both services anticipate growth which has the potential to reduce truck traffic in the I-95 and I-64 corridors, respectively.

The VTrans Multimodal Advisory Committee has recommended supporting short-sea initiatives as an alternative for building capacity between the Hampton Roads Port region and domestic markets in and out of state. The Commonwealth is committed to ensuring the sustainability of this highly beneficial service.

Chapter 4: Developing the Recommendations

Virginia's continued investment in its transportation system is vital to the safe and efficient movement of people and goods and to the entire Commonwealth's economic well-being. Every element of Virginia's economy relies on the transportation system in order to function and thrive. Today, decision-makers face unprecedented challenges in funding the operation, upkeep, and expansion of the transportation system. As demonstrated in Chapters 2 and 3, the forecast growth in population and employment combined with the current state of the transportation network and VTrans2035 vision, sets the stage for the development of a range of transportation improvement recommendations. Virginians want a quality transportation system that provides a good quality of life and economic prosperity. Fundamentally, it must be safe, reliable, and seamless. Progressively, it will use state-of-the-practice technology to increase public communication, safety and effectiveness across all transportation modes.[23]

To achieve these goals, and the goals of VTrans2035, Virginia must be proactive by identifying innovative, forward-thinking solutions for the future of transportation throughout the Commonwealth. This chapter includes an overview of the methodologies used in developing the recommendations for each of the modal elements.

23 VTrans2035

PUBLIC TRANSPORTATION

Recommendations for the public transportation element are compiled from several different planning documents from DRPT:

- Statewide Public Transportation Plan Capacity Expansion Report
- Statewide Public Transportation Plan Corridors of Statewide Significance Report
- DRPT Statewide Intelligent Transportation Systems Strategic Plan
- Transportation Demand Management Plans
- Statewide Human Service Transportation Plan

All of these documents can be found on DRPT's website at www.drpt.virginia.gov.

DRPT staff obtained review comments from transit agencies, TDM agencies and PDCs pertaining to the recommendations from these plans. DRPT, in collaboration with VDOT, presented the transit, TDM, ITS and human services transportation recommendations to the MPOs and other stakeholders via a webinar in June, 2009. Members of the public provided feedback on the recommendations through a series of public meetings, held in various locations throughout Virginia in coordination with the VTrans2035 public outreach effort.

CAPACITY EXPANSION

In order to keep up with the existing and anticipated future demand for public transportation, investment in expanding transit capacity will be necessary to manage urban congestion, provide a viable mobility option in small cities and suburbs, and provide transportation for those who cannot drive. The Statewide Public Transportation Plan's Capacity Expansion Report identifies areas and recommendations to keep up with existing and anticipated future transit demand based on:

- Population and employment growth
- Transit Development Plans
- Regional Transit Studies
- Metropolitan Planning Organizations Long Range Transportation Plans
- Planning District Commission Coordinated Human Service Transportation Plans

INTELLIGENT TRANSPORTATION SYSTEMS

ITS improvements encompass a wide range of advanced communications and electronic technologies to make transit systems more flexible, efficient and responsive to customer needs. Transit planners can use ITS-based information to identify emerging needs for service and fine-tune existing routes to run more smoothly and quickly. The ITS Strategic Plan presents a coordinated approach for ITS deployment across the state based on customer needs. Recommendations from the ITS Strategic Plan include technologies for transit operations, customer amenities, service planning, fare collection, security, and maintenance.

TRANSPORTATION DEMAND MANAGEMENT

TDM focuses on the provision of commuter services, strategies and policies aimed at reducing the tendency to drive alone. The successful implementation of these strategies results in a more efficient use of road space by fewer vehicles, a reduction in rush hour traffic by shifting some trips to off-peak hours, and the elimination of some trips altogether with teleworking.

HUMAN SERVICES TRANSPORTATION

Human services transportation fills critical mobility gaps for Virginia residents who live outside public transit service areas, need to access jobs or services outside public transit service hours, or need more personal or specialized services to travel. Human service agencies are specifically designed to

meet the mobility needs of older adults, people with disabilities and people with lower incomes.

The recommendations from the Statewide Human Services Transportation Plan are not specific to different regions in Virginia. Rather, the plan identifies an array of possible initiatives and a mobility management strategy, all of which are valid throughout Virginia, with actions at the state, regional and local levels.

Ultimately, the goals identified in VTrans2035 set the foundation for the future of transportation in Virginia. The recommendations for public transportation investments identified in the VSTP support the VTrans2035 goals (Table 6) to further the vision for Virginia's transportation system.

LAND USE

The Commonwealth recognizes the economic, environmental, health and social benefits of compact and walkable communities that support transit. It has also recognized the various costs of dispersed land use patterns, which support only very limited public transportation services and result in auto-dependent lifestyles. The rising cost of finite fossil fuel, congested roadways and longer commutes have contributed to growing demand for local community planning models that emphasize the link between compact, mixed-use, land development patterns and efficient transportation options. The success of local public transportation services depends on this link and DRPT has been playing an increasing role in promoting it through its various programs.

Table 6: Public Transit Investments Compared to VTrans2035 Goals

Public Transportation Investment	VTrans2035 Goals						
	Safety and Security	System Maintenance and Preservation	Mobility, Connectivity and Accessibility	Economic Vitality	Environmental Stewardship	Coordination of Transp. and Land Use	Program Delivery
State of Good Repair	X	X	X				
Meeting Future Demand (Capacity Expansion)			X	X	X	X	
Major Capital Projects		X	X	X		X	
Transportation Demand Management			X	X	X	X	
Intelligent Transportation Systems	X	X	X				X
Coordinated Human Services Transportation			X				X

- Land use considerations are an important component of DRPT's Transit Service Design Guidelines, adopted in November 2008. DRPT developed the guidelines to aid its procedures for evaluating applications for new transit service. The guidelines encourage local transit providers to consider factors such as household and employment density, station area characteristics, and development trends while planning their transit services. In accordance with the principles set forth by the guidelines, transit providers and local governments are increasingly coordinating their planning efforts.
- DRPT has invested in planning for transit-oriented development along with improvements in rail passenger service and stations in the I-95/I-64 rail corridor. Station area planning has been conducted in communities such as Ashland and Newport News. Although the focus of the project has been on intercity rail stations, these areas would serve as nodes for local mass transit networks. In the future, these rail stations and their surrounding communities may support new and expanded transit networks.
- DRPT has helped coordinate land use planning with local and regional transit planning initiatives. DRPT is working in cooperation with Hampton Roads Transit (HRT) and the Williamsburg Area Transit Authority (WATA) on Phase 2 of the regional Hampton Roads Transit Vision Plan, the first phase of which was completed in April 2009. Phase 2 will continue the planning process from Phase 1 by evaluating the transit corridor proposals, analyzing future land use patterns along the corridors given market expectations and making recommendations for policies or strategies to guide coordinated short and long-term transit and land use planning. In this manner, the Phase 2 study works closely with Hampton Roads local governments to strengthen the Phase 1 recommendations by tying them more closely to land use policies and development trends.

RAIL

Rail recommendations are sorted by VSTP Region and are organized into the following categories for each of the regional subsections. Recommendations are developed for 10 categories:

- Class I and Shortline Railroad Improvements, including the Norfolk Southern Heartland and CSX National Gateway Corridors
- Rail Improvements to Virginia Ports
- Passenger Rail Improvements for VRE and Amtrak
- Southeast High-Speed Rail

All recommended improvements address one or more of the following:

- Alleviating highway congestion, reducing energy demands and reducing pollutants by reducing passenger car and truck freight traffic
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry and improved capacity at Virginia's ports
- Improving passenger rail by enhancing system performance and adding capacity
- Providing the foundation for a six-year funding plan, which supports the long-range vision for rail in Virginia through 2035

FREIGHT

Recommendations specific to freight rail are addressed under the rail recommendations. Trucking and other highway-related freight needs and recommendations are based on highway improvements and are included with the recommendations for the highway element sorted by VSTP Region. Freight recommendations were formulated by analyzing the multimodal interaction and movement of both truck and rail freight. Two basic strategies were employed to form recommendations - data analysis and public outreach. In particular:

- The Virginia State Model (VSM) was updated to consider freight mode choice effects by utilizing truck network and auto travel demand information as well as a freight rail network analysis. Analysis addressing the Virginia truck network, truck travel patterns, the national and Virginia freight rail network, and freight rail travel patterns allowed for the investigation of the interaction of truck and rail freight, as well as the possibility of diversions of freight from one mode to another.

- Benefit/cost analysis was also conducted to ensure a proper return on investment since the consideration of economic impacts was deemed vital to formulating the appropriate recommendations. The cost/benefit analysis included the estimation of direct transportation effects, such as travel times and system performance; estimation of monetary impacts, such as value of time savings, accident reduction and cost savings; estimation of economic impacts, such as jobs and income; and a capital and operation life-cycle cost analysis.

After draft findings and recommendations were formulated and analyzed, agency, public, and stakeholder outreach was utilized to finalize recommendations. Outreach efforts included regional public meetings to gain feedback from the general public and regional planning staff interested in freight activities. Also, various agencies and stakeholders were consulted. Example agencies and stakeholders include; state and federal transportation, economic development and environmental agencies; major county and city government staff members; Virginia's MPOs and PDCs; and various educational and research institutes.

BICYCLE AND PEDESTRIAN

The CTB adopted the Policy for Integrating Bicycle and Pedestrian Accommodations (hereafter called the Policy) in 2004. In order to further integrate the Policy in daily VDOT business practices, a three-tiered approach is being implemented. VDOT is first completing the State Bicycle Plan, which will be designed to improve the implementation of the bicycle element of the Policy. Subsequently, a State Pedestrian Plan and a State Bicycle and Pedestrian Policy Implementation plan will be completed. The recommendations from the State Bicycle Plan are not specific to any one region of the state, but focus on building and enhancing VDOT's bicycle policies across the Commonwealth.

The State Bicycle Plan will establish means to continue integrating the Policy, as it relates to bicycling. Additionally, it will establish means to enable VDOT to continue to serve in a coordinating role with other agencies and organizations throughout Virginia that are involved in promoting safe bicycling. The State Bike Plan provides the following guiding recommendations to enhance the implementation and integration of non-motorized modes of transportation throughout the state:

- Clarify policies with regard to bicycle accommodations
- Provide staff training and guidance to integrate the Policy requirements in projects and programs
- Improve outreach and coordination on bicycle issues
- Measure and evaluate progress

HIGHWAY

Development of highway recommendations for the SMS consists of five steps:

1. VDOT first performed a complete roadway inventory update for those routes on the SMS. This update included verifying the existing roadway geometry (number of lanes, presence of curb and gutter, presence of sidewalks, etc.) and operational characteristics (location of signals, speed limits, directionality, etc.), as well as updating available traffic data for the roadways.
2. Once the SMS roadway inventory was updated, VDOT analyzed the roadways for deficiencies in capacity and safety. Recommendations were developed to address safety issues at locations with high crash rates or high numbers of fatalities, as well as where congestion issues were identified.
3. The draft list of recommendations underwent a review by VDOT staff, as well as by MPOs and PDCs throughout the state, and comments and suggested changes were incorporated into the recommendations where applicable.
4. The recommendations then underwent an evaluation using information on infrastructure condition, which included deficient pavement and structures based on the following criteria:
    - Deficient pavement was defined using the Critical Condition Index or CCI which categorizes pavement condition into pavement index values. Based on this review, recommendations were grouped into five ranges corresponding to condition categories: excellent, good, fair, poor, and very poor. These categories in turn correspond to a likelihood of corrective action.
    - Deficient structures were defined using the National Bridge Inspection Standards. The condition of different parts of a bridge is rated on a scale of 0 to 9 (with 9 being "excellent" and zero being "failed"). A structurally deficient bridge is one for which the deck (riding surface), the superstructure (supports immediately beneath the driving surface) or the substructure (foundation and supporting posts and piers) is rated in condition 4 or less.

Steps in identifying deficiencies on the SMS network:

- Perform a level of service analysis based on methodology established by the Transportation Research Board's Highway Capacity Manual to identify capacity deficiencies for the plan years 2007 and 2035. Capacity deficiencies were defined as LOS D or worse for rural areas, and LOS E or worse for urban areas.
- Examine crash density along corridors and at intersections. Focused on locations that ranked in the top 25% of crash density.
- Review Constrained Long Range Plans (CLRP) as well as transit studies completed by Richmond, Fredericksburg and Hampton Roads MPOs for proposed park and ride lot locations. Incorporated recommendations into Surface Transportation Plan
- Identify opportunities for operational or low cost improvements where facilities were approaching capacity, using VDOT's STARS program.
- Review CLRPs and available regional bike/ped studies to identify bike/ped recommendations on the SMS network.
- Coordinate with VDOT Operations and Securities Division to identify locations appropriate for operational or ITS solutions.

5. Finally, each of the identified highway recommendations underwent an environmental review. The potential for each of the recommendations having environmental impacts was based on the number of potential environmental issues identified in this analysis. Environmental issues analyzed included:
    - Threatened and endangered species
    - Wetlands
    - Agricultural and forestal districts
    - Conservation districts
    - Virginia Outdoor Foundation easements
    - Historic properties

The final recommendations for the highway element also include:

Park and Ride: Park and Ride recommendations have been mapped for each of the regions and are included on each of the regional maps found in each subsection of Chapter 6. An independent Park and Ride study will be conducted in the near future to provide further detail for recommendations identified in the VSTP and develop new locations for potential Park and Ride facilities.

Recommended Improvements to Existing Highway Facilities: Major improvements (e.g. widening, realignment) are highlighted for some of the more regionally significant projects on the VSTP Summary Map. A complete listing of all road improvement recommendations is included within Chapter 6.

It is important to note that the highway recommendations represent a needs assessment of identified deficiencies on the Statewide Mobility System network as required by state legislation. § 33.1-23.03 of the Code of Virginia requires the state to "conduct a comprehensive review of statewide transportation needs in a Statewide Transportation Plan setting forth assessment of capacity needs for all corridors of development areas." While the highway recommendations do provide a suggested build solution to these deficiencies, there is no assumption that all projects identified will be constructed. There are insufficient funds to complete every recommended solution contained in the plan, and solutions must be prioritized and approved by the CTB, local jurisdictions, and MPOs in metropolitan areas before becoming projects. It is anticipated that the identification of these deficiencies will encourage all stakeholders involved to develop coordinated, innovative solutions beyond those provided herein.

Recommendations for Construction of New Roadways:
Recommended new roadways are included along with their typical section (number of lanes). Alignments depicted are for planning purposes only.

Other Recommended Highway Improvements: Other recommended highway improvements include spot improvements such as turn lanes, access management, pedestrian accommodations, pavement markings, interchange reconstruction, etc.

Intelligent Transportation Systems: ITS recommendations have been mapped for each. Potential ITS recommendations for the Commonwealth are comprised of the following:

- **Integrated Corridor Management (ICM):** Integrated Corridor Management is the coordination of individual network operations between parallel facilities that creates an interconnected system capable of cross network travel management. The key to managing corridors effectively is achieving integration among the operations of different networks in the corridor rather than focusing on the optimization of individual networks. A coordinated effort between networks along a corridor can effectively manage the total capacity of a corridor in a way that will result in reduced congestion and increased trip reliability.
- **Active Traffic Management (ATM):** This has been effectively used for years in Europe, and includes strategies such as queue warning, junction control, speed harmonization, hard shoulder usage, and dynamic re-routing. All of these strategies are focused on using real-time data from the road network to immediately adjust conditions so as to reduce incidents and use the existing capacity as effectively as possible.
- **Traveler Information:** Real-time information provided to travelers. Applications include electronic signs warning of accidents, congestion, or hazardous driving conditions.
- **Commercial Vehicle Operations (CVO):** CVO is an ITS application for freight trucks. Trucks are equipped with applications such as a navigation system, dashboard computer and digital communications equipment. CVO can improve monitoring, tracking, and timing of freight traffic.
- **Traffic Detection and Monitoring:** Traffic detection helps provide accurate, complete and timely traffic data, which is critical to the effective management of the transportation network. Examples of detection and monitoring devices include video surveillance, loop sensors and speed monitoring radars.

- **Shoulder as Travel Lane/Shoulder Lane Control Systems (SLCS):** Wide shoulders can be used as travel lanes by re-striping the facility and making some roadside improvements for safety reasons. This modification can potentially increase the facility's capacity.
- **High Occupancy Toll (HOT) Lanes:** HOT lanes are tolled lanes that operate alongside existing highway lanes to provide users with a faster and more reliable travel option. Buses, carpools (HOV-3), motorcycles and emergency vehicles will have free access to HOT lanes. Drivers with fewer than three occupants can choose to pay to access the lanes. Tolls for the HOT lanes will change according to traffic conditions to regulate demand for the lanes and keep them congestion free, even during peak hours.
- **Transit Signal Priority (TSP):** TSP uses an installed device on transit vehicles that sends optical or sonic pulses to communicate with traffic signals. Traffic signal priority is used to combat roadway congestion and increase the speed of on road transit options. Traffic signal receivers detect an approaching transit vehicle and can prolong green lights or decrease the cycle time of red lights, giving the transit vehicle priority.

RELATIONSHIP TO VTRANS2035 GOALS

The highway recommendations identified in each of the following regional subsections directly support the goals of VTrans2035. The relationship between individual recommendations and specific goals is identified in the recommendation tables and supporting narrative. Not all VTrans2035 goals are tied to specific recommended improvements. For the more programmatic VTrans2035 goals of Coordinating Transportation and Land Use, Program Delivery, and Environmental Stewardship, VDOT addresses compliance using a number of approaches:

Land Use

Improving the coordination between transportation and land-use planning is essential for ensuring mobility throughout the Commonwealth. VDOT is working with various stakeholders to develop regulations to improve the coordination between transportation and land use planning in Virginia. Through these regulations and requirements, VDOT strives to provide a balanced and efficient transportation system for citizens of the Commonwealth.

Traffic Impact Analysis Regulations: This regulation directs localities to submit a traffic impact analysis to VDOT for review and comment. The regulation applies to development proposals that would significantly impact the state transportation system, and impacts local government comprehensive plans/plan amendments and traffic impact analyses for certain rezoning applications, site plans, and subdivision plats.

Access Management Regulations and Standards: The main goal of access management is to preserve and improve the efficient operation of state highways through the control of access points. The 2007 General Assembly enacted legislation (Chapter 274) to require VDOT to implement the regulations and the design standards in phases according to a highway's functional classification.

Subdivision Street Acceptance Regulations: Recently, the number of streets being accepted into the system and the levels of congestion have increased while transportation funding has decreased, resulting in a situation where existing policy must be revisited.

Urban Development Areas: This regulation requires that high growth localities establish areas appropriate for high density growth. The urban development area must incorporate principles of new urbanism and traditional neighborhood development.

The most significant aspect of the revised regulation is that it introduces a change in public policy regarding the design and function a street must meet in order to be added to the state system. In essence, the regulation revises the public-private partnership between the Commonwealth and the development community.

Program Delivery

VDOT has maintained a quarterly report card since 2003 on performance on the core business outcomes of construction and maintenance contracts. Depicting contracts completed on time and on budget, it provides a snapshot of how well current projects are meeting their schedules and budgets. The public is able to see current performance via VDOT's public website that includes the "Dashboard." VDOT continues to set annual performance targets for construction, maintenance, safety, finance, and congestion.

Environmental Stewardship

Linking Planning and National Environmental Policy Act (NEPA):

Developing a better link between the transportation planning and environmental review processes for transportation projects has long been a goal of transportation agencies. Despite the fact that highway and public transportation projects must flow from metropolitan and statewide transportation plans, studies performed and decisions reached as part of transportation planning traditionally have not been used in conducting environmental analyses under NEPA.

Federal and state transportation agencies are now working to ensure that statewide and metropolitan transportation planning is the foundation for highway and transit project decisions. Performing a "planning level" environmental analysis on transportation projects identified in a long-range plan, such as the VSTP, is one tool used by professionals in linking Planning and NEPA. The results of this analysis are included in the listing of highway recommendations found in Chapter 6.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Chapter 5: Transportation Funding in Virginia

One of the key elements to the continued health of the Virginia economy will be the extent to which the transportation network can continue to provide mobility to both people and goods. The recommendations of the VSTP focus on providing for the continued mobility necessary to maintain an economically competitive Commonwealth. The wide range of recommendations encompasses much more than can ever be realized. How will Virginia pay for the continued upkeep and improvements of the transportation network? The way forward to meet future funding challenges is still unclear. Amidst this discussion, it is worthwhile to affirm the significant, positive economic benefits of transportation investments – and be reminded why investment is prudent and necessary. It is also worthwhile to examine the current sources of transportation revenue and potential strategies for the future.

The Commonwealth recently completed a comprehensive study of the short- and long-term economic impacts of six years of public spending to build, operate, and maintain Virginia's transportation system. The following summarizes the main findings of the economic analysis of the Six-Year Improvement Program (FY09-14). All impacts are on the Virginia economy specifically. Additional impacts outside the Commonwealth could occur as well.

Jobs

- Short-term: 14 jobs per $1 million capital spending
- Long-term: 59 jobs per $1 million capital spending, an average of $23,500/year for 26 years.

Business Sales

- Short-term: $1.7 million in additional business sales per $1 million
- Long-term: $7.8 million in business sales per $1 million capital spending, an average of $3.1 billion/year for 26 years.

Worker Income

- Short-term: $0.6 million in additional worker income per $1 million
- Long-term: $2.6 million in worker income per $1 million capital spending, an average of $1 billion/year for 26 years.

Benefit-Cost

- Virginia's Six-Year Improvement Program is a good investment, with a ratio of $4 returned for every dollar investment.

HOW IS TRANSPORTATION FUNDED?

The challenge of generating revenues for transportation investments in Virginia is more acute now than at any other time in modern history. Population growth continues to outpace the construction of new capacity as highlighted in Figure 31. Additionally, over the past five years, the Commonwealth has reorganized its transportation agencies, introduced a performance-based process for strategic investment decision-making, and made difficult financial decisions to increase efficiency. A reduction in spending now will affect Virginia's infrastructure long into the future.

Figure 31: Change in Population and Road Capacity since 1987

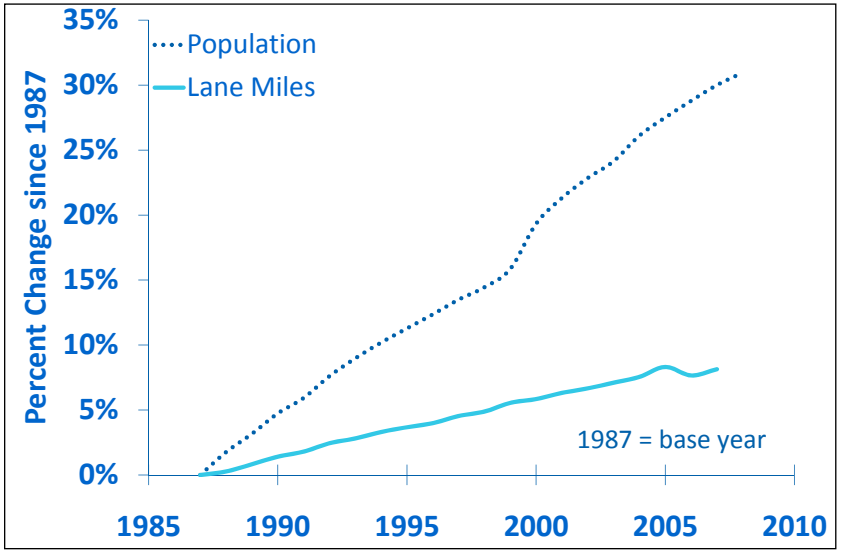
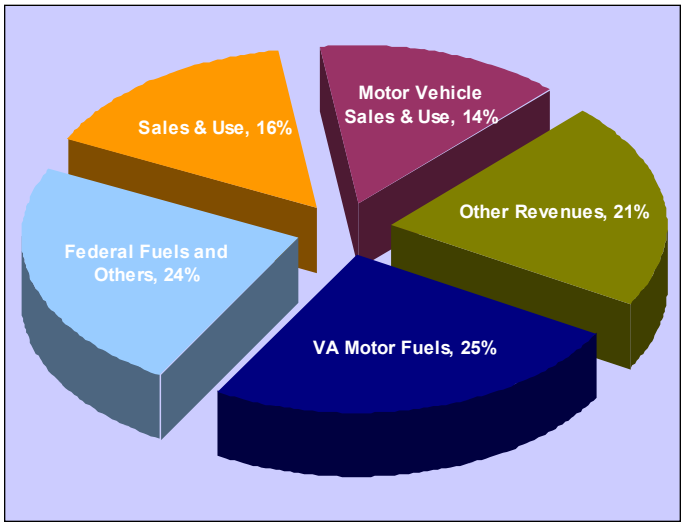


Figure 32: Transportation Funding in Virginia



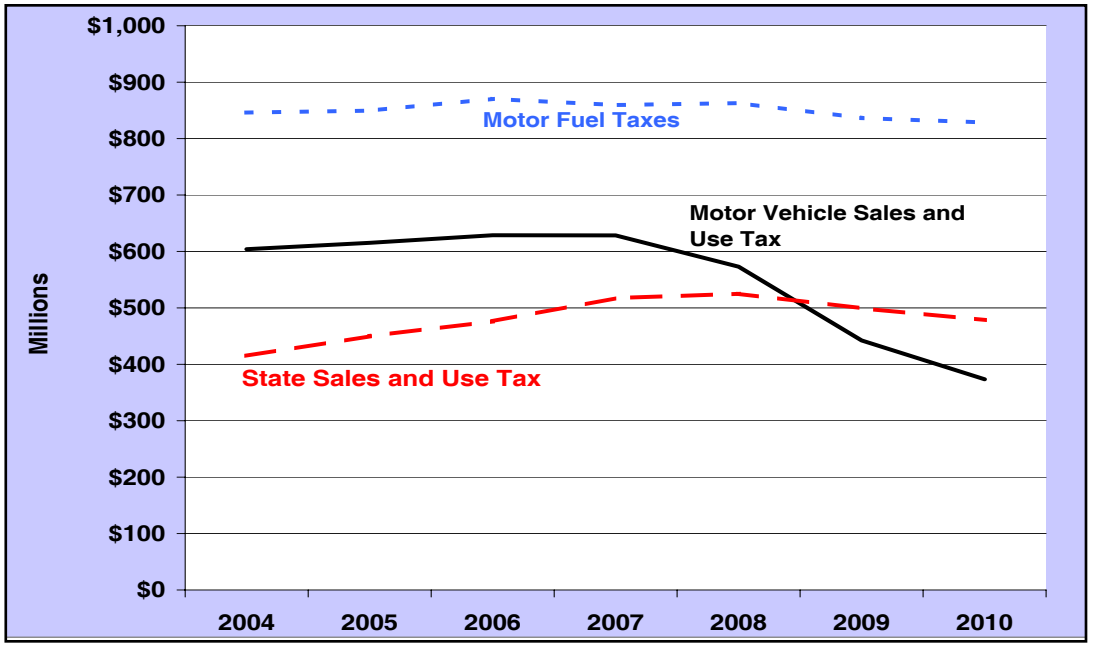
The updated revenue estimate for the Commonwealth Transportation Fund (CTF) for FY 2010 – 2015 was reduced by $900 million, bringing the overall revenue shortfall since the spring of 2008 to approximately $4.6 billion. Even with a modest economic recovery, CTF revenue collections are not expected to return to FY 2008 levels until FY 2012.

The federal revenue outlook is uncertain as well. The current federal transportation legislation, known as SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act - Legacy for Users), expired on September 30, 2009. The details of the next transportation legislation are unknown and will likely follow a period of continuing resolutions. Until the new federal legislation is passed, it will be difficult to estimate with certainty future federal revenues.

As indicated in Figure 32, Virginia currently draws from a number of revenue sources to fund its transportation program; revenues linked to transportation user fees are by far the greatest source of revenues. State and federal fuels taxes and the state motor vehicle sales and use tax together comprise approximately 63% of current transportation revenues.

The current economic crisis has had a profoundly negative effect on transportation revenues in Virginia. While all of the Commonwealth's revenue sources are in decline, those generated from the vehicle sales and use taxes have suffered the steepest decline as indicated in Figure 33. Rising unemployment, stagnant wages, and uncertainty over the outcome of the restructuring of two domestic automobile manufacturers have contributed to the drop in vehicle sales and subsequently, tax revenues. Inflation has eroded the value of the state fuel tax since Virginia raised the tax 22 years ago, in 1987. The 17.5-cent tax has lost

Figure 33: Major Taxes for Transportation Funding



over half of its purchasing power and is now worth 8 cents, compared to its value in 1987. Each of the major revenue sources is described briefly below.

- The Virginia Motor Fuels Tax is a tax of 17.5 cents per gallon on gasoline, and has remained at that rate since 1987. Virginia has the 9th lowest combined tax on gasoline, with 41 states and the District of Columbia having higher combined gas tax rates. As shown in Figure 34, states range in the taxes they assess from a low of only eight cents per gallon in Alaska to a high in California that averages 46.1 cents per gallon
- Federal Aid Highway Grants are disbursed from the Federal Highway Trust Fund, and contributes significantly to Virginia transportation spending. The tax is currently 18.4 cents per gallon on gasoline.
- The Motor Vehicle Sales and Use Tax is a tax assessed on the purchase of vehicles at the rate of 3% of the price of sale.
- The Virginia Sales and Use Tax is a 5% tax assessed on all retail sales in the Commonwealth.

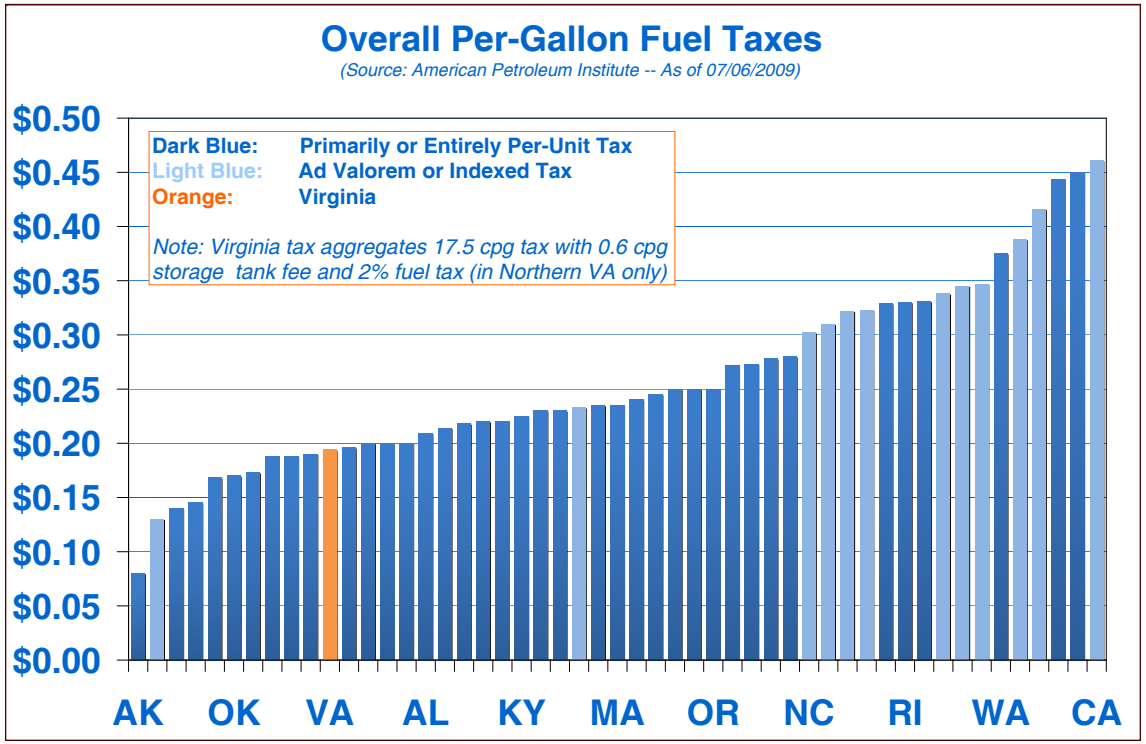
By law, the current transportation revenue resources must be used to finance the following activities (in order): debt service, support to other state agencies, highway maintenance and operations (including payments to localities), administrative and support services, planning and research, environmental monitoring and compliance, and finally, construction. As the costs, in particular, of debt service and maintenance and operations increase, funding for construction decreases.

State transportation revenue forecasts have continued to decline since the spring of 2008. The US national economy deteriorated more than was anticipated in FY 2009. Similar to the nation, the Virginia economy shed more jobs than was expected. The depression in housing has continued to adversely affect Virginia's economic performance, and will continue to do so in the immediate future.

Federal regulations require that each state provide a minimum 20% funding match in order to obtain federal funds for allowable highway expansion and reconstruction projects. The potential to leverage this 4 to 1 match of federal and state/local dollars is at risk as Virginia devotes increasing resources to maintenance.

The decline in revenue has occurred while the price of raw materials used in transportation-related construction, such as steel and asphalt, climbed to record high levels during the middle of this decade and remained so until the recession. Increased maintenance and operations costs, along with increasing transportation capacity needs have far outpaced declining revenues. Factors such as increasingly fuel-efficient engine technologies and alternative fuels will further reduce the value of the fuel tax.

Figure 34: Virginia Drivers Pay 9th Lowest Fuel Tax



Virginia has responded to its financial challenges by reducing highway construction, transit grants, VDOT staff and VDOT services. In addition to restructuring its departments, Virginia has also shifted its expenditures to address ever-growing infrastructure maintenance needs. The Commonwealth is making cuts to construction projects while focusing on maintaining assets (pavement rehabilitation and bridge repair), responding to emergencies and mitigating congestion. VDOT continues to review its programs and services to find efficiencies and reductions. The maintenance of existing transportation assets to ensure the safety of the public remains the first priority. VDOT is committed to utilizing available transportation resources for the greatest benefit of the Commonwealth and the traveling public. However, with the continued decline in transportation revenue, significant deterioration in performance can and should be expected. Without additional revenues, funding will continue to be focused on maintenance of the existing system, and congestion levels will increase, along with reduced average speeds and increased travel delays.

FUNDING RAIL IN VIRGINIA

Virginia has an ambitious rail agenda of alleviating congestion and creating a rail system appropriate for future passenger and freight growth. The challenge is finding the resources to get it all done. Factors influencing the funding picture for Virginia's rail projects are:

- Demand for passenger service is growing statewide, as rising gasoline prices and less attractive aviation options increase demand for VRE and Amtrak service.
- Freight railroads are also seeing greater demand on their systems. Capacity expansion and other capital investments will be necessary before additional passenger service can be implemented.
- Freight rail operates at a profit and freight railroads have a responsibility to their shareholders to remain profitable. Passenger rail in the United States requires public investment in capital improvements and a subsidy for operations.
- Virginia has several potential funding options for passenger and freight rail. These options vary according to their source, uses and availability.
- The Commonwealth is fortunate to have created a dedicated funding source for freight and passenger rail capital investment – the Rail Enhancement Fund (using a portion of the dedicated rental car tax), the Rail Preservation Program for shortline railroads and Rail Capital Bonds. Virginia carefully manages its funding programs, setting minimum partner contributions and requiring that public benefits produced by rail projects exceed the Commonwealth's investment.
- New federal funding is expected to become available in the form of capital grants for passenger rail projects. Virginia will have to prepare by developing corridor/service and financial plans in order to compete for federal funds.
- Opportunities to partner with other states for rail corridor development yielding new passenger and freight services.

While many projects have been identified, the expansion of rail in Virginia faces both operational and financial challenges. Demand for passenger rail service is growing across the state. VRE is approaching capacity and ridership is expected to double in the next 20 years. Improved passenger rail service is needed along the major corridors within the Commonwealth. At the same time, the state's freight rail partners are carrying increased volumes of freight traffic and will require capacity expansion and other capital investment before accepting additional passenger service. This increase in freight rail traffic is beneficial to the state transportation system as trucks – which create greater congestion and emissions – are removed from the roadways.

Meanwhile, Amtrak is shifting its strategic focus to passenger rail corridors, with states becoming purchasers of service and bearing increased financial responsibility. Supporting this shift is a new movement in Congress that proposes to authorize significantly increase funding for Amtrak and capital grants to states for passenger rail projects.

In 2008, DRPT published a Statewide Rail Resource Allocation Plan describing each of the funding options, including public-private partnerships and funding sources that have been specifically authorized to support the state's capital improvements on privately owned rail lines in Virginia, as well as other state, local and federal funding sources. The Plan also contains an analysis that the long-term capital and operating funding required to implement the freight and passenger rail recommendations contained in the Statewide Rail Plan. The Statewide Rail Plan and the Statewide Rail Resource Allocation Plan are located at http://www.drpt.virginia.gov/studies.

FUNDING PUBLIC TRANSPORTATION

The Transportation Trust Fund revenues are distributed by formula to the Highway Construction Fund, the Mass Transit Trust Fund, the Airport Fund and the Port Fund. The 78.7% distributed to the Highway Construction Fund is managed by VDOT and distributed through the related allocation formulas for construction. The 14.7% provided to the Mass Transit Trust Fund supports transit operations, capital and special programs and are managed by DRPT. In addition to the allocation from the Transportation Trust Fund, public transportation receives funding from a variety of other funding sources.

Funding for public transportation is focused on meeting the following objectives that will provide Virginia with a comprehensive approach to facing its transportation challenges:

- Maintaining existing service and keeping it in a state of good repair
- Expanding statewide capacity to meet the needs of a growing economy and population
- Investing in major rapid transit capital projects to assist in managing congestion

An overview of each of these funding objectives is included on the following pages.

FUNDING RECOMMENDATION CATEGORY 1
SUPPORT VIRGINIA'S EXISTING TRANSIT SERVICE: MAINTAIN SERVICE IN A STATE OF GOOD REPAIR

Existing transit service is performing a critical role in providing an economic lifeline and supporting economic development throughout the state. Virginia's existing transit service will require significant funding just to continue to operate and maintain the existing service, without adding any additional transit capacity or service. Existing transit service requires an on-going commitment of state operating funding, as well as support for the capital investments to replace the vehicles, supporting facilities and infrastructure used in service.

Maintaining a state of good repair is only a first step, since current system levels of transit will not adequately support the increasing population and changing demographics of the Commonwealth, but it forms the cornerstone for public transportation's future in Virginia.

The overall recommendation to support Virginia's existing transit service has two major components: (1) providing a minimum level of state operating subsidy to allow local jurisdictions to effectively plan for the future, and (2) committing state funds to an on-going investment in maintaining transit assets in a state of good repair. .

Recommendation #1: **Provide state operating support at a minimum of 20% of total transit expense**

Virginia's current level of state operating assistance reflects the strain on state finances; current levels of operating support from the state have dropped to about 16%, well below pre-recession levels and the level intended by the General Assembly when it provided additional revenue to support state operating funding in 2007. Transit agencies also receive funding from passenger fares, support from federal grants and local government, and certain ancillary sources such as advertising revenue, as illustrated in Table 7. Any reduction in state operating support could result in a reallocation of resources that may impact the number of hours of service that can be provided or cause a diminishing quality of the fleet and facilities used to support transit.

By providing a predictable 20% minimum funding level from the state, even as the cost of service grows, Virginia will provide a key foundation for transit agencies challenged with managing many other unpredictable funding sources. With a minimum threshold of 20% state funding, transit agencies can move forward to balance their operating budgets with an appropriate

blend of periodic fare increases, careful management of federal grant resources eligible to support operating budgets, and requests for local funding.

This recommendation is to restore operating assistance to a minimum of 20% in the years to come, thus allowing more solid planning by transit agencies and a foundation on which to build future investments in capacity and service expansion. The total operating assistance funding gap, if funded between 2010 and 2035, would total **$1.8 billion**, as demonstrated in Table 8, and require about $39 million annually expressed in 2009 dollars.

Recommendation #2: **Achieve and maintain a state of good repair on existing service**

Virginia already has a sizable investment in transit. Virginia transit agencies and service providers currently have a fleet estimated at more than 3,200 vehicles (Table 9), plus support facilities, stations and infrastructure. Maintaining a SGR for these assets is essential to ensuring that these assets continue performing their vital function and remain safe, reliable, and efficient.

SGR is a nation-wide challenge, and achieving and maintaining SGR is a particular focus of states and localities across the nation. Sometimes funding for system expansion takes precedence over asset maintenance and replacement. Funding limitations have often forced transit agencies to defer all but critical maintenance in order to provide more service. While Virginia has utilized bond funding to accelerate asset replacement, the state currently has an estimated SGR backlog need of $417 million. This represents the costs to replace aging fleets of buses and other transit vehicles and the buildings and infrastructure needed to keep them operating. The total cost to maintain Virginia's transit assets across all sources of current and potential funding is $8.1 billion between 2010 and 2035. This investment would be

Table 7: FY2010 Statewide Transit Operating Funds

	Dollars (millions)	Percent
Total Cost	729	
Funding		
Fares	314	43%
Federal	65	9%
State	101	14%
Local	228	31%
Other	21	3%
Total Funding	729	100%

Table 8: Projected Growth in Transit Operating Expenses ($ millions)

	2010	2015	2025	2035	Total 2010-2035
Total Cost	729	924	1,177	1,446	28,789
State Funding					
Current Projections	101	119	160	215	3,951
Percent projected	14%	13%	14%	15%	14%
At 20%	146	185	235	289	5,758
Additional	45	66	75	74	1,807

Table 9: Vehicle Assets of Transit Providers

Buses	1,708
Vans	904
Metrorail Cars	328
Other Small Vehicles	163
Commuter Rail Cars	91
Commuter Locomotives	18
Ferry Boats	3
Total	3,215

allocated across the various asset categories as shown in Table 10.

A number of different sources are drawn on to fund Virginia's capital asset replacement needs. These sources include state formula funding and bond proceeds, federal formula funds and special appropriations, and local funds. Current projections of funding between 2010 and 2035 total $5 billion across all sources, as represented in Table 11.

If all $5 billion in projected capital funding is applied to SGR needs, Virginia will still face a $3.1 billion gap for SGR funding. This would require about $80 million in additional annual funding (expressed in 2009 dollars). If funded similarly to current asset replacement (i.e. with 50 percent federal funding support), it would require $32 million of additional state funds annually, $40 million in new or reprogrammed federal funding, and $8 million annually provided by local communities as a match.

If this investment is not achievable over the life of the plan, the average age of transit assets will increase. Agencies will face increasing maintenance costs, which could result in service reductions or higher than planned fare increases.

In order to fully support the operating and capital funding needs of Virginia's existing transit service, approximately $3.1 to $4.3 billion of new state funding will need to be identified over the 2010 to 2035 time period, depending on the level of additional federal funding available to fill the capital funding gap.

Just taking care of existing service and existing capital assets will not be adequate for Virginia in the long term. Virginia's population is projected to grow significantly between now and 2035. If no additional transit service is added, current capacity will be saturated and customers who would normally be attracted to transit will find other means to travel, putting increased pressure on highways, roads and other infrastructure. This context lays the groundwork for the next category of recommendations.

Table 10: State of Good Repair Needs 2010-2035 ($ billions)

Buses	$ 1.5
Vans	$ 0.4
Commuter Rail	$ 0.2
Facilities/Infrastructure	$ 1.6
WMATA	$ 4.5
Total	$ 8.1

Table 11: Projected Capital Funding 2010-2035 ($ billions)

Projected Transportation Trust Fund	
State Revenue	$ 1.1
Projected Local Match	$ 0.5
Projected Federal Match	$ 1.6
Subtotal	$ 3.2
Projected Bond Funds	
State WMATA "Beyond Metro Matters"	$ 0.5
Projected Federal "BMM"	$ 0.5
State Bond Other	$ 0.6
Projected Local March	$ 0.2
Subtotal	$ 1.8
Projected Available Total	$ 5.0
Funding Gap	$ 3.1
Potential* State	$ 2.5
Potential* Local	$ 0.6

** Potential estimates assume no additional funding and an 80/20 state/local funding split.*

FUNDING RECOMMENDATION CATEGORY 2 — EXPANDING STATEWIDE CAPACITY TO MEET THE NEEDS OF A GROWING ECONOMY AND POPULATION

All areas of the state face a growing need for transit service, whether due to rapid economic and population growth, or due to specific demographic characteristics. Transit plays a critical role in communities by providing service that helps manage congestion and supporting economic development. In many small urban and rural areas, transit also provides critical services that are an economic lifeline to key population segments, including many with limited or no access to automobiles. Providing service to this population segment is often critical to the livelihoods of the individuals served, as well as providing a tool to support economic investment in workplaces and service industries that can rely on transit to get their workers and customers to their businesses.

While Virginia has many small urban and rural areas that already provide transit service, much of it is demand response, and this service is not necessarily sufficient to meet the current and future needs of their residents and workers. In many other cases, transit service is not provided at all, even though demographic conditions would suggest that economic lifeline transit service would be an appropriate investment.

The VSTP makes two recommendations for capacity expansion to address service gaps: (1) providing service to jurisdictions that currently provide no service, and (2) expanding service in jurisdictions that currently provide limited service. These recommendations are discussed in detail below.

Recommendation #3: **Add economic lifeline service in jurisdictions that currently provide no service**

Numerous small jurisdictions throughout Virginia have characteristics supportive of transit service, but do not currently provide it. A small, but significant investment in transit vehicles along with limited support facilities and operating funding could fund to as many as 32 jurisdictions throughout Virginia.

Over the 2010 to 2035 time period, up to 241,000 revenue hours of additional service will be required. This additional service can be provided for a relatively modest capital and operating subsidy investment by Virginia. Total 2010 to 2035 capital funding is estimated at $135 million, and total operating funding at a minimum 20% state match of $63 million.

Recommendation #4: **Increase economic lifeline service in jurisdictions that currently provide insufficient service**

Numerous small urban and rural jurisdictions throughout Virginia have characteristics supportive of transit service, but currently provide insufficient service. Additional service is warranted based on observing the level of transit in Virginia communities with similar demographic characteristics, and identifying an average level of service as an achievable minimum. A small, but significant, investment in transit vehicles, related support facilities and operating funding could fund an improvement in economic lifeline service throughout Virginia.

Over the 2010 to 2035 time period, up to 189,000 revenue hours of additional service will be required.

This additional service can be added for a relatively modest capital and operating subsidy investment by Virginia. Total 2010 to 2035 capital funding is estimated at $106 million, and total operating funding at a minimum 20% state match at $56 million.

The first four transit recommendations of the VSTP are a critical foundation for the remaining two recommendations. Without first establishing a state of good repair, providing stable operating funding for local transit providers, and filling in significant service gaps, positioning Virginia's transit agencies to respond to the demands of a growing population and economy will not be effective.

The VSTP recommends funding in support of statewide capacity expansion, as this investment is essential to maintaining the current transit market share. Without such an investment, Virginia's efforts to manage congestion in urban areas will be dramatically affected.

Recommendation #5: **Provide capital and operating funding to increase transit capacity**

Virginia's population is expected to grow by 36% between 2010 and 2035, putting significant pressure on transit agencies to increase service and fleet. Investments are expected through a blend of bus service expansion, demand response service increases, and even limited ferry, light rail, metro and commuter rail service capacity increases. However, this funding recommendation is not adequate to fund every potential expansion, especially if requiring high capital investment. This recommendation focuses primarily on capacity expansion, rather than developing expensive new infrastructure.

In order to meet the need for expanding transit service simply to meet the needs of a growing population, Virginia will find it necessary to make capital investments estimated at $2.2 billion over the next 25 years, and also identify approximately $1.7 billion in additional state operating funding (assuming a 20 percent state match). This investment in capacity expansion is equivalent to additional annual funding (in 2009 dollars) of approximately $57 million and $44 million respectively.

FUNDING RECOMMENDATION CATEGORY 3: INVESTING IN MAJOR RAPID TRANSIT CAPITAL PROJECTS TO ASSIST IN MANAGING CONGESTION

Recommendation #6: **Study, plan and construct major rapid transit capital projects**

The final category of funding recommendation is in providing investment in major rapid transit capital projects, with a focus on managing congestion and increasing transit market share. These investments are primarily in modes such as Metrorail, bus rapid transit, light rail, streetcar and commuter rail, and are focused on attracting significant numbers of new riders to public transit.

The funding anticipated for this recommendation will be to create a Transit Enhancement Fund requiring approximately $52 million of annual funding at 2009 dollar levels, or $2.0 billion between 2010 and 2035. These funds would be combined with available federal and local funding in order to maximize their impact.

Based on an ability to study, plan and construct five-six major projects during the 2010 to 2035 time period, additional state operating assistance of $217 million in total is anticipated, providing the minimum 20% match that the state endeavors to provide.

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NORTHERN
PIEDMONT
BLUE RIDGE
VALLEY & RIDGE
EASTERN

Chapter 6: VSTP Recommendations

Earlier chapters described the changes in demographics that influence surface transportation demands, the need for additional investment, the benefits of investing in transportation, and the general types of improvements required. This chapter identifies specific recommendations for each of the VSTP modal elements organized among the five VSTP regions. Each of the regional sections includes the following information:

REGIONAL CONTEXT: The regional context discusses the regional, inter- and intrastate functions of the area as a whole. Each of the five regions has its own unique economic, geographic, and socioeconomic characteristics. These functions and characteristics play an important role in how the transportation infrastructure for each region has evolved and in decisions for improving and enhancing transportation in the future.

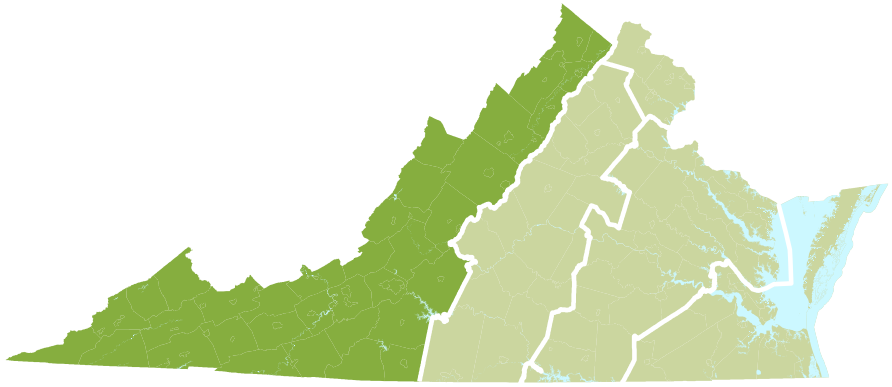
TRANSPORTATION FACILITIES: The Commonwealth of Virginia has an extensive network of transportation facilities. The summary of transportation facilities focuses on the key components of each of the VSTP elements (highway, public transportation, freight, rail, bicycle and pedestrian). Specifically, the summary focuses on those existing assets that characterize the region.

CHARACTERISTICS: Analysis of changes in population, employment and DVMT between 2010 and 2035 provide a picture of where the region is and where it is headed in terms of these key factors. Data, charts and a summary of the estimated changes for each of the five VSTP regions is included in each of the regional write-ups.

REGIONAL MAP: The regional map provides a spatial snapshot of regional recommendations and illustrates how each of the identified VSTP regions is impacted by surrounding jurisdictions.

RECOMMENDATIONS: Recommendations for each of the five VSTP elements are included in list form at the end of each of the regional subsections. Recommendations lists are organized by the five transportation elements (highway, public transportation, rail, freight, bicycle and pedestrian).

REGION 1:
VALLEY AND RIDGE



The western region of Virginia is an area of interstate commerce nestled among the scenic beauty of the Shenandoah and Blue Ridge Mountains. The coal, agriculture, logging, and food processing industries generate goods and commodities that are transported throughout the nation. The area provides several corridors for road and rail freight movement, providing connections between Ohio, West Virginia, Tennessee, Kentucky, and North Carolina with many warehouses and distribution centers along the way. In addition, many natural, cultural, historic, and recreational resources of national importance draw tourists from across the nation to the area.

Across the state, Virginia's population is aging, and this is particularly true in the rural and suburban areas. The commuting patterns in the northern counties of the Valley and Ridge Region toward the Northern Virginia employment centers will continue as the population grows. As the population ages and as congestion worsens, residents and commuters in this region will increasingly rely on public transportation alternatives and teleworking. Freight commerce will continue, and the emergence of green technology to foster clean and sustainable communities will intensify support for strategies that promote high-occupancy travel and the utilization of railways for passenger and freight movement.

PDCs in the Valley and Ridge Region

- Lenowisco
- Cumberland Plateau
- Mount Rogers
- New River Valley
- Roanoke Valley - Alleghany Regional Commission
- Northern Shenandoah Valley Regional Commission
- Virginia Region 2000 Local Government Council
- West Piedmont

Strategies for the Valley and Ridge Region

- Construct I-73
- Provide Safety Improvements
- Enhance Demand Response Transit
- ITS
- Expand Freight Rail Service
- Begin Passenger Rail Service
- Increase Park and Ride Capacity
- Increase and Improve Bicycle and Pedestrian Facilities

To address anticipated trends, transportation investments that support intermodal freight commerce can support the continued economic vitality of the region. Providing spot improvements at interchanges and adding truck climbing lanes will increase safety and alleviate bottlenecks. Introducing or increasing demand response transit and continuing to invest in intra-city transit can improve mobility, connectivity and accessibility of Virginia's transportation system. Further investment in transportation demand management techniques and expansion of the Park and Ride facilities will provide alternatives to single occupant vehicles, potentially reducing congestion while promoting environmental stewardship.

MULTIMODAL FACILITIES AND SERVICES: VALLEY & RIDGE REGION

Fixed Route (FR) & Demand Response (DR) Transit (12):

- Blacksburg Transit (FR/DR)
- Bristol Transit (FR/DR)
- District Three Public Transit (FR)
- Four County Public Transit (FR/DR)
- Graham Transit (FR)
- Harrisonburg Department of Public Transit (FR/DR)
- Mountain Empire Older Citizens Transit (DR)
- Pulaski Area Transit (FR)
- RADAR (RF/DR)
- Valley Metro (FR/DR)
- Virginia Regional Transit (FR/DR)
- Winchester Transit (FR/DR)

Human Service Transportation (19):

- Friendship Industries
- Goodwill Industries of The Valleys
- Grafton
- Junction Center for Independent Living
- Mount Rogers Community Services Board
- New River Valley Community Services
- Northwestern Community Services
- Piedmont Community Services
- Pleasant View
- Rockbridge Area CSB
- Rockbridge Area Occupational Center, Inc.
- Rockbridge Area Transportation System
- Shen-Paco Industries
- Shenandoah Area Agency on Aging
- Southern Area Agency on Aging
- Stepping Stones
- The Arc of Harrisonburg/Rockingham
- Valley Program for Aging Services
- Vector Industries

Transportation Demand Management (3):

- Central Shenandoah MPO
- RIDE Solutions
- Valley Commuter Assistance Program

Freight Rail (1):

- Norfolk Southern Crescent Corridor

Short Line (3):

- Chesapeake Western Railroad
- Shenandoah Valley Railroad
- Winchester and Western Railroad

Passenger Rail (2):

- Amtrak Crescent Route
- Amtrak Northeast Corridor

Port Facilities (1):

- Virginia Inland Port

Airports (21):

- Blue Ridge
- Bridgewater Air Park
- Eagle's Nest
- Front Royal-Warren County
- Grundy Municipal
- Ingalls Field
- Lee County
- Lonesome Pine
- Luray Caverns
- Mountain Empire
- New London
- New Market
- New River Valley
- Roanoke Regional
- Shenandoah Valley Regional
- Smith Mountain Lake
- Tazewell County
- Twin County
- Virginia Highlands
- Virginia Tech
- Winchester Regional

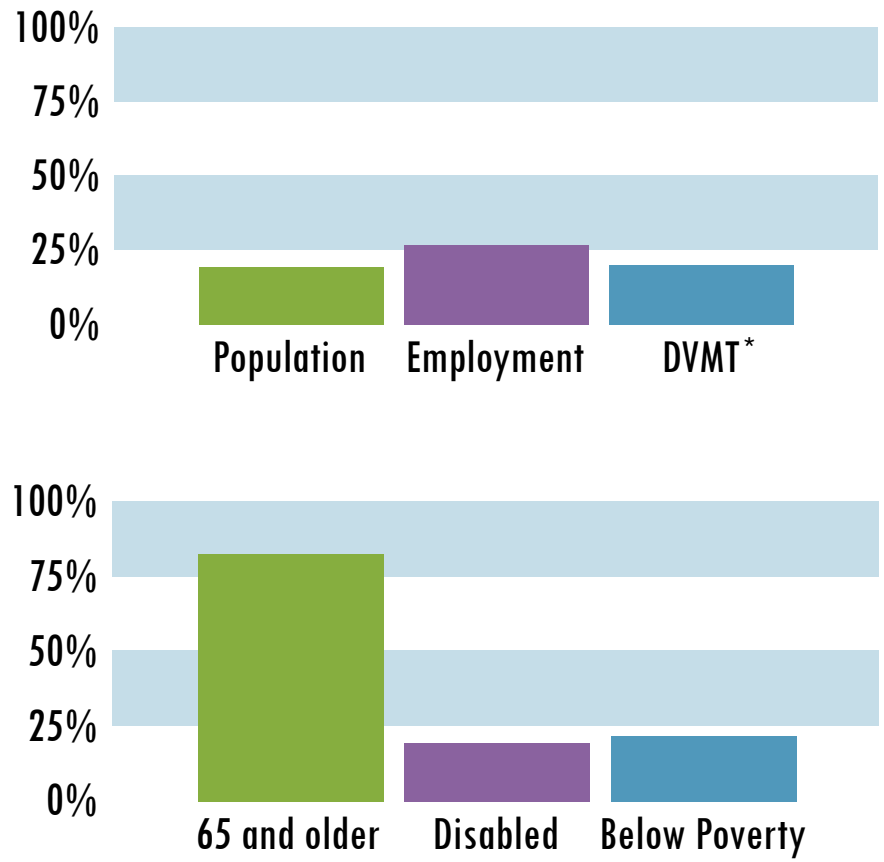
TRANSPORTATION FACILITIES AND SERVICES

The Norfolk Southern Crescent Corridor runs along the Appalachian Mountains in the western part of the state and is generally defined by I-81, a multi-lane interstate that stretches from Tennessee to New York, with a large portion paralleling the Appalachian Mountains in Virginia. Nationally, the interstate serves as a major trucking and freight corridor along the east coast and provides an interstate connection between Virginia and cities such as Harrisburg, Pennsylvania and Syracuse, New York and also provides connection to the southern United States. I-81 is one of the top eight truck routes in the US and the most important and heavily used trucking corridor in Virginia. I-81 carries tourists, travelers, a growing number of intra-valley commuters, and more than a third of all college students in Virginia.

Other major highways that support mobility in the Valley and Ridge Region are US Route 11 which serves as a local parallel to I-81, and US 220, a scenic, mountainous roadway that provides key access to West Virginia, serves as a logging route and provides access to tourist activities including multiple ski resorts. The corridor also provides access between I-81 and I-64, running between Roanoke and Clifton Forge. This part of the route is frequently used as a shortcut by freight and passenger traffic alike wishing to travel from northbound I-81 to westbound I-64 or from eastbound I-64 to southbound I-81.

There are 12 transit services operating within the Valley and Ridge Region providing fixed route and demand response services, along with express transit options that operate along the I-81 corridor, connecting larger urban areas. Transit services such as the Valley Connector, offer service to both Washington DC and Dulles Airport and the Smartway Bus operated by Valley Metro, offers service between Blacksburg and Roanoke. To fill critical mobility gaps for Virginians who do not have access to a personal automobile and live outside of public transit service areas, 19 human service agencies exist in the Valley and Ridge Region, two in the Bristol district, five in the Salem district, and 12 in the Staunton district. In addition to the above identified transit services, Rockbridge County, the City of Lexington and the Town of Buena Vista are in the process of determining the feasibility of transit services to serve their citizens. The City of Radford and Radford University are also collaborating on a study to determine the feasibility of transit services.

Figure 35: Valley and Ridge Regional Characteristics Percent Change (2010 - 2035)



US Bike Route 76, a major national bike route, also runs in the Valley and Ridge Region, offering another modal option. Norfolk Southern's Crescent Corridor provides access to the Virginia Inland Port. Norfolk Southern rail

** DVMT: Daily Vehicle Miles Traveled (2006-2035)*

lines run along the entire I-81 corridor, supporting its role as a major freight corridor. The Valley and Ridge Region has three Transportation Demand Management agencies that help to promote strategies like carpooling, vanpooling, work-from home initiatives and flexible work hours in the Front Royal, Central Shenandoah, and Roanoke areas (Valley Commuter Assistance Program, Central Shenandoah MPO, and RIDE Solutions).

The Valley and Ridge Region has two commercial and 19 other general aviation airports throughout the region. Roanoke Regional Airport in Roanoke County and Shenandoah Valley Regional Airport in Augusta County provide passenger air travel with service on major commercial airlines. The region's many air facilities serve a variety of passenger and freight needs. The on-ground transportation connection between the airport and a passenger's or good's final destination is critical to the serviceability and success of the region's airports.

CHARACTERISTICS

The Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report completed by VTRC identifies a number of trends that will impact transportation in the future. Increases in population will impact the amount of traffic on the roadway and demand for transportation alternatives, impacting commuters and those traveling through Virginia. This trend will impact both passenger and freight traffic along the highway.

Figure 35 illustrates the percent change in population, employment and DVMT between 2010 and 2035 for the Valley and Ridge Region. This data is also outlined in Table 12 by PDC.

Population: Table 12 shows the increases in population projections to 2035 for each planning district impacting the Valley and Ridge Region. All areas are expecting increases in population between 2010 and 2035, however at differing rates. For example, the Northern Shenandoah Valley area is expecting approximately 37% growth, the highest in the region. Region 2000 and the New River Valley and Roanoke Valley-Alleghany planning districts are all expecting growth slightly above 17%. The remaining jurisdictions have projected growth rates in the single digits. In all, the region is expecting approximately 15% growth, but its share of the total state population will decline by approximately 4% from 25% in 2010 to 21% in 2035.

Employment: Like population, employment in all areas of the region is projected to increase between 2010 and 2035. However, employment growth in the region is projected to be much higher than population growth and more evenly distributed. The average employment rate increase for the region is 23%. The Cumberland Plateau and West Piedmont planning districts are expecting significantly less growth than the average, whereas the Northern Shenandoah Valley planning district is expecting significantly higher employment growth. Also like population, the region's share of the total state employment will decline by approximately 3.5%.

Daily Vehicle Miles Traveled: The average increase of DVMT for planning districts in the Valley and Ridge Region is approximately 17% between 2006 and 2035. All but three districts are expecting a 25% or more increase in DVMT, with the New River Valley planning district expecting the most growth at 52%. Two of the remaining planning districts are projecting DVMT growth at slower rates; Roanoke Valley (14%) and Central Shenandoah (1%). However, Mount Rogers planning district is expecting a decrease in DVMT by approximately 23%.

Table 12: Valley and Ridge Region Characteristics by PDC

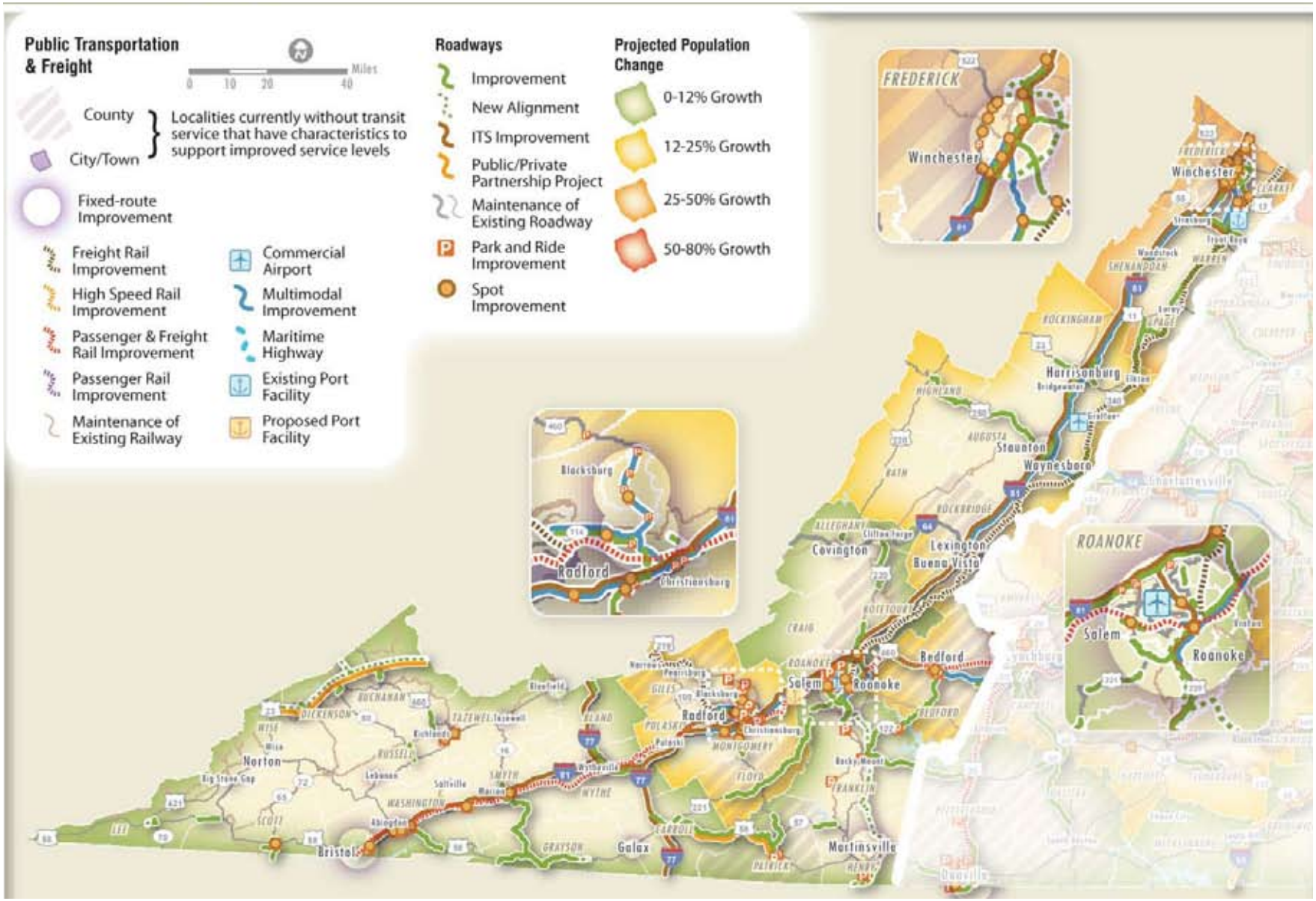
Population	2010 Forecast	2035 Forecast[24]	Absolute Change	Percent Change
Lenowisco (1)	91,910	96,803	4,893	5%
Cumberland Plateau (2)	112,940	116,592	3,652	3%
Mount Rogers (3)	190,050	204,663	14,613	8%
New River Valley (4)	170,200	199,490	29,290	17%
Roanoke Valley-Alleghany (5)	266,590	287,762	21,172	8%
Central Shenandoah (6)	277,850	330,428	52,578	19%
Northern Shenandoah Valley (7)	224,660	308,542	83,882	37%
Region 2000 (11)	245,130	288,340	43,210	18%
West Piedmont (12)	245,930	258,456	12,526	5%
Regional Total	1,825,260	2,091,076	265,816	15%
State Total	**8,057,350**	**10,926,181**	**2,868,831**	**36%**

Employment (Jobs)	2010 Forecast	2035 Forecast	Absolute Change	Percent Change
Lenowisco (1)	40,990	49,430	8,440	21%
Cumberland Plateau (2)	49,270	55,067	5,797	12%
Mount Rogers (3)	108,600	127,453	18,853	17%
New River Valley (4)	94,140	116,894	22,754	24%
Roanoke Valley-Alleghany (5)	194,030	231,188	37,158	19%
Central Shenandoah (6)	173,230	222,831	49,601	29%
Northern Shenandoah Valley (7)	125,510	171,866	46,356	37%
Region 2000 (11)	141,780	180,560	38,780	27%
West Piedmont (12)	118,890	128,640	9,750	8%
Regional Total	1,046,440	1,283,929	237,489	23%
State Total	**5,206,470**	**7,753,739**	**2,547,269**	**49%**

Daily Vehicle Miles Traveled (DVMT)	Actual VMT in 2006	2035 DVMT Based on Population (in Millions)	Absolute Change	Percent Change
Lenowisco (1)	2,339,690	3.1	760,310	32%
Cumberland Plateau (2)	2,598,506	3.7	1,101,494	42%
Mount Rogers (3)	8,406,318	6.5	-1,906,318	-23%
New River Valley (4)	4,151,411	6.3	2,148,589	52%
Roanoke Valley-Alleghany (5)	7,991,329	9.1	1,108,671	14%
Central Shenandoah (6)	10,295,020	10.4	104,980	1%
Northern Shenandoah Valley (7)	7,715,190	9.8	2,084,810	27%
Region 2000 (11)	6,627,796	9.1	2,472,204	37%
West Piedmont (12)	6,539,111	8.2	1,660,889	25%
Regional Total	56,664,372	66.2	9,535,628	17%
State Total	**222,178,082**	**345.4**	**123,221,918**	**55%**

24 Forecasts are based upon a calculated mid-range for growth as identified in the 2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses Report.

Figure 36: Valley and Ridge Region Recommendations Map



PUBLIC TRANSPORTATION RECOMMENDATIONS

In the Valley and Ridge Region, and across the entire state, Virginia's public transportation systems must maintain a state of good repair for fleet vehicles and maintenance equipment. DRPT recognizes and prioritizes state of good repair through its asset management database and funding requirements. State of good repair specifics were discussed in Chapter 3 and funding is discussed in-depth in Chapter 5.

The highest population growth in this region is focused in the north, mainly in the Northern Shenandoah Valley planning district, where the recommendations for transit service improvements are primarily focused on improving options for commuters, including:

- Focused Expansion of Fixed Route Coverage (e.g. local bus service between Winchester and Front Royal)
- Increased Transportation Demand Management
- Increased Demand Response Service

Generally, estimated population growth gradually decreases to the south. The jurisdictions in the middle of the region, including Central Shenandoah, Region 2000, and New River Valley planning districts are expected to experience a moderate amount of population growth. In response to this trend, recommended transit improvements for these jurisdictions are balanced between expanding the current transit options for commuters, and establishing transit service for the rural population and include:

- Increasing Demand Response Services
- Expanding Fixed Route Coverage (e.g. expanding the current routes of services in major cities like Roanoke or Blacksburg)
- Introducing Transportation Demand Management

The remaining areas within the Valley and Ridge Region (Lenowisco, Cumberland Plateau, Mount Rogers, West Piedmont, and Roanoke Valley-Alleghany planning districts) will experience slow population growth. Transit in these areas should be focused on providing services to the rural population, especially older adults, persons with disabilities, and persons with lower incomes. The transit recommendations for these areas focus on:

- Introducing Demand Response Services
- Increasing Human Services Transportation

In addition to the improvements listed above, the following jurisdictions do not currently have transit service but exhibit the population growth characteristics required to support introduced transit service:

- Frederick County
- Rockbridge County
- Lexington City
- Buena Vista City
- Botetourt County
- Bedford County
- Bedford City
- Giles County
- City of Radford
- Floyd County
- Patrick County

Transportation demand management strategies for the Valley and Ridge Region are identified according to geographic setting as in Table 13.

Table 13: TDM Strategies for the Valley and Ridge Region

Geographic Setting	Jurisdictions	TDM Strategies
Small Urban Areas	Roanoke MPO, Bristol MPO, Winchester MPO, Blacksburg-Christiansburg-Montgomery MPO, Kingsport Area MPO	Expand employer outreach, especially in suburban centers
		Primary focus on resident / commute travel
		Promote carpool and vanpool for long-distance commutes to areas outside region
		Promote teleworking to residents
		Develop transit links to urban and suburban employment
		Integrate TDM into the land development processes; encourage mixed-use
		Integrate TDM into local planning, MTPs, PDC Long Range Transportation Plans (LRTP)
		Enhance cross-jurisdictional coordination for TDM
Non-Urban Areas	All other areas	Primarily residence-based programs for commuting within and outside the area
		Promote teleworking to residents
		Establish modest commute outreach in areas with no current program
		Support long-distance commute markets
		Coordinate with neighboring employment areas for outbound commuting
		Integrate TDM into local planning, MTPs, LRTPs

As outlined by Table 14, the transit agencies in the Valley and Ridge Region have the following ITS investment recommendations for the next six years, as identified in the DRPT Statewide ITS Strategic Plan.

Table 14: ITS Investments for the Valley and Ridge Region

Transit Agency	ITS Investments in the Next 6 Years					
	Transit Operations	Customer Amenities	Service Planning	Fare Collection	Security	Maintenance/ Management
Blacksburg Transit		x			x	
Bristol Transit						
District Three Public Transit	x		x			
Four County Transit					x	
Greater Roanoke Transit Company	x		x		x	
Harrisonburg Dept of Public Tran.	x	x	x		x	
Mountain Empire Older Citizens Inc.						
Pulaski Area Transit						
RADAR		x		x	x	x
Town of Bluefield - Graham Transit						
Virginia Regional Transit	x	x	x		x	x
Winchester Transit	x	x	x			

RAIL RECOMMENDATIONS

The rail recommendations for the Valley and Ridge Region shown in Table 15 represent those projects within identified transportation corridors that will increase the freight shipments to and from ports, improve commuter and intercity rail within regions of the Commonwealth and other freight improvement projects identified by Class and shortline railroads in Virginia.

All improvements address one or more of the following:

- Reducing passenger car and truck freight traffic to alleviate highway congestion, reduce energy demands and reduce pollutants
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry, and improved capacity at Virginia's ports
- Improving passenger rail by enhancing system performance and adding capacity

Table 15: Rail Recommendations for the Valley and Ridge Region

Crescent Corridor Project (I-81, I-20, I-40, I-75 and I-85)	
Phase I - Priority Capacity Improvements	Completion of Manassas to Front Royal capacity improvements.
Phase II - Secondary Capacity Improvements	Additional capacity and reliability improvements on the Shenandoah, Piedmont, Manassas, Heartland and Bristol lines.
Phase III - Remaining Capacity Improvements	Remaining capacity, train reliability, and speed improvements on the Shenandoah, Piedmont, Manassas, Heartland and Bristol lines.

I-81/Route 29 Intercity Passenger Rail Project	
Phase I (Lynchburg)	Add one daily train between Washington, DC and Lynchburg Kemper Street Station as a demonstration project for three years beginning in 2009.
	Increase commuter capacity in the VRE service area.
	Complete the capacity study for the entire project corridor from Washington, DC to Bristol and Lynchburg.
	Increase capacity for a second train to Lynchburg with construction of second main line track between Nokesville and Calverton.
Phase III (Bristol) and IV (Richmond)	Provide train service from Bristol to Richmond and from Bristol to Washington, DC.

HIGHWAY RECOMMENDATIONS

The Valley and Ridge Region is distinctly rural in character with the I-81 corridor serving as the "backbone" of the region. The corridor stretches from Bristol on the Virginia/Tennessee border to the south up to Winchester near the Virginia/ West Virginia border in the north. The recommendations for this region focus on providing access to maintain the area's economic vitality and to move people and goods across and through the unique geography of the Appalachian Mountains. The geography of the region also impacts the safety of the roadways and the following recommendations aim to address those concerns as well. Park and Ride improvements are also recommended to serve the large number of people commuting between Winchester-Northern Virginia, Roanoke–Blacksburg-Lynchburg and Bristol-Tennessee.

Park and Ride Recommendations: The Valley and Ridge Region currently has approximately 40 Park and Ride facilities. Eight new facilities have been identified as needed, five of which will be located within the Town of Blacksburg. In addition, Park and Ride facilities in Botetourt County, Roanoke and Montgomery Counties are recommended for expansion. These facilities are identified in Figure 36.

Other Recommendations: In addition to the Park and Ride recommendations, the multiple highway recommendations are included in Figure 36 and listed in Tables 16 to 20. The Highway Recommendation Table Reference Guide (Figure 37) provides explanation of the multiple elements included in the highway recommendation tables.

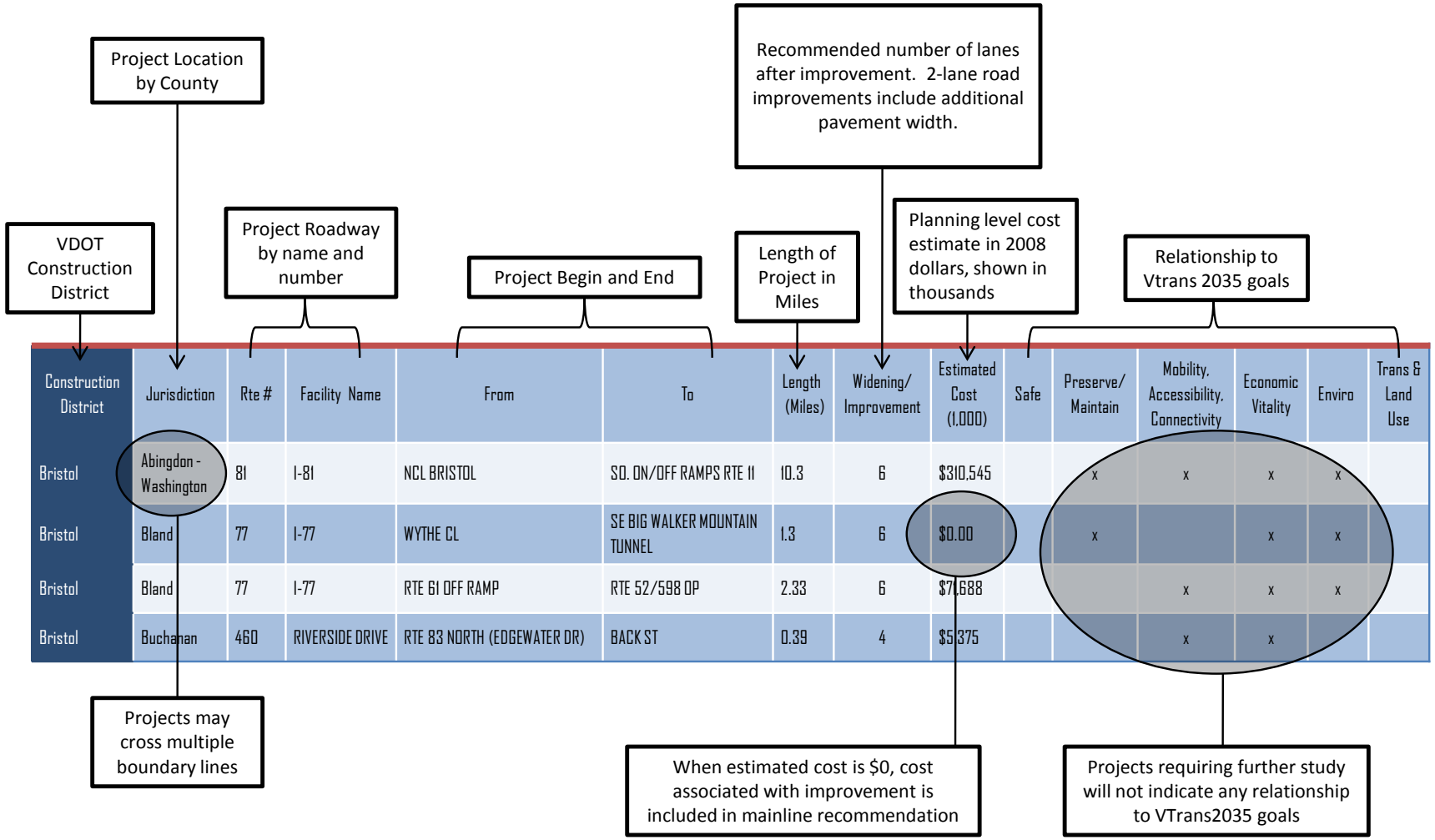
How the Recommendations are Organized: The highway recommendations identified in the following pages address the performance measures presented in Chapter 4. These include: congestion; roadway capacity; safety; and maintenance. The highway recommendations support the goals established in VTrans2035: Safety and Security; System Maintenance and Preservation; Mobility, Accessibility and Connectivity; Economic Vitality; Environmental Stewardship; and Coordination of Transportation and Land Use.[25] The recommendations have been related to these goals in the tables that follow. Recommendations are presented in the following categories:

- Recommendations to Existing Facilities – These recommendations represent improvements to the current roadway network. It is assumed any structures or interchanges that fall within the limits of the recommendation will be improved along with the roadway. It should also be noted that any recommendations identified as an improvement to 2 lanes denotes additional lane width to an existing 2-lane roadway.
- Recommendations to New Locations – These recommendations represent new facilities that would be added to the roadway network.
- Recommendations for Further Study – These are recommendations where a need has been identified, but alternatives are still being analyzed.
- Other Recommendations – recommendations that do not fall into the above categories. Examples include interchange and intersection improvements, standalone bridge replacements, re-striping and access management.
- ITS Recommendations – Intelligent Transportation System recommendations (as described in Chapter 4).
- Park and Ride Recommendations – These are recommendations for new Park and Ride lots or expansion to existing Park and Ride lots. Specifics for Park and Rides are not provided as each location will need to be studied to identify an appropriate location and level of demand.

25 Not all VTrans2035 goals were tied to specific recommended improvements. For the VTrans2035 goals of Linking Land Use and Transportation, Program Delivery, Environmental Stewardship, VDOT addresses compliance at the program level as discussed in Chapter 4 of the VSTP.

Figure 37: Highway Recommendation Table Reference Guide

Highway Recommendation Table Reference Guide*



Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Abingdon - Washington	81	I-81	NCL BRISTOL	SO. ON/OFF RAMPS RTE 11	10.3	6	$310,545		x	x	x	x	
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$0.00		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		

*It is recognized that with any highway project there is a potential for community concerns that will need to be addressed prior to projects advancing.

Table 16-1: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$39,125		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		
Bristol	Buchanan	460	RIVERSIDE DRIVE	BACK ST	.12 MI NO. SCL GRUNDY	1.25	4	$18,199			x	x		
Bristol	Dickenson	80	SANDLICK DR	SCL HAYSI	RTE 83 SOUTH	0.27	2	$1,463	x		x	x	x	
Bristol	Dickenson	83	CUMBERLAND SCENIC HIGHWAY	RTE 1014	RTE 1001	0.61	3	$4,942	x		x	x	x	
Bristol	Dickenson	83	MAIN ST	RTE 63 EAST	RTE 80 EAST	1.09	2	$6,223	x		x	x	x	
Bristol	Dickenson	83	SANDLICK DR	RTE 80 WEST	RTE 63 EAST	0.34	2	$1,913			x	x	x	
Bristol	Grayson	16	TROUTDALE HIGHWAY	RTE 58 NORTH	SMYTH CL	8.74	2	$56,017				x		
Bristol	Grayson	58	HIGHLANDS PKWY - TROUTDALE HIGHWAY - WILSON HIGHWAY	RTE 751 EAST	RTE 703	26.11	2	$169,414		x		x		
Bristol	Lee	58	TRAIL OF THE LONESOME PINES - MAIN ST	RTE T-1206	.17 ME RTE 648	0.82	2	$5,112	x		x	x	x	
Bristol	Lee	58	JONES ST	RTE 58 ALT	RTE T-1204	0.26	3	$2,106	x			x	x	
Bristol	Lee	58	JONES ST	RTE T-1204	ECL JONESVILLE	0.48	2	$2,991	x		x	x	x	

Table 16-2: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Bristol	Lee - Scott	58	WILDERNESS RD - DUFF PATT HIGHWAY	RTE 612 WEST	RTE 1500	5.26	3	$40,832	x			x		
Bristol	Russell	80	THE REDBUD HIGHWAY	RTE 19 EAST	RTE 67	4.5	2	$30,808	x		x	x	x	
Bristol	Scott	71	EAST JACKSON STREET	RTE T-904	ECL GATE CITY	0.85	2	$6,357		x		x	x	
Bristol	Smyth	16	SUGAR GROVE HIGHWAY	GRAYSON C.L.	RTE 689	12.99	3	$184,374		x	x	x		
Bristol	Smyth	16	SO. COMMERCE STREET	RTE 689	.06 MI NO. SCL MARION	2.18	2	$13,831	x		x	x		
Bristol	Smyth	16	B F BUCHANAN HIGHWAY - PARK BLVD	NCL MARION	RTE 348	2.52	2	$19,461			x	x	x	
Bristol	Smyth	107	WHITETOP RD	NB RAMP RTE I - 81	RTE 11	0.32	2	$3,355			x	x	x	
Bristol	Washington	58	JEB STUART HIGHWAY	ROUTE 677	RTE 712 NORTH	5	4	$55,409	x	x	x	x		
Bristol	Washington	58	JEB STUART HIGHWAY	RTE 712 NORTH	RTE 1202	3.94	4	$40,144			x	x		
Bristol	Wise	23	MAIN ST	RTE 83	RTE 23 BYP N.(POUND)	1.22	4	$14,368		x		x	x	
Bristol	Wythe	77	I-77	NCL WYTHEVILLE	BLAND CL	4.57	4	$47,021				x		
Bristol	Wytheville	77	I-77	RTE I-81 WEST	NCL WYTHEVILLE	0.82	6	$38,135		x		x	x	

Table 16-3: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Bristol	Wytheville - Wythe	81	I-81	RTE I-77 NORTH	OFF RAMP TO 619	10.59	8	$321,037		x	x	x		
Salem	Bedford	122	MONETA RD	RTE 801	SCL BEDFORD	9.79	2	$74,152		x	x			
Salem	Bedford	460	W LYNCHBURG SALEM TNPK	BOTETOURT CL	RTE 831 WEST	10.81	4	$69,703				x		
Salem	Bedford	501	LEE JACKSON HIGHWAY	RTE 761 (HOLCOMB ROCK RD)	AMHERST CL	12.97	2	$90,641		x				
Salem	Botetourt	11	LEE HIGHWAY	.41 MI NORTH ROANOKE CL	RTE 220	2.42	4	$46,630	x	x	x		x	
Salem	Botetourt	81	I-81	RTE 220 ALT	RTE 779 Overpass	1.41	6	$94,065		x	x	x		
Salem	Botetourt	220	CLOVERDALE ROAD	RTE 11	RTE I-81	0.07	6	$1,542	x		x	x	x	
Salem	Carroll	77	I-77	RTE 58	RTE 620	4.18	6	$115,353			x	x	x	
Salem	Carroll	221	FLOYD PIKE	RTE 58	RTE 100	1.44	4	$13,201			x	x	x	
Salem	Floyd	8	LOCUST ST	NCL FLOYD	RTE 748	0.5	4	$7,125	x		x	x	x	
Salem	Floyd	221	FLOYD HIGHWAY SOUTH	RTE 787	RTE T-1004	11.24	2	$76,887				x		
Salem	Floyd - Roanoke	221	BENT MOUNTAIN ROAD - FLOYD HIGHWAY NORTH	RTE 615 NORTH	RTE 708(IVY RIDGE RD)	22.26	2	$170,448		x		x		
Salem	Franklin	40	OLD FRANKLIN TURNPIKE	ECL ROCKY MOUNT	RTE 876E	5.92	2	$50,001	x	x	x	x	x	

Table 16-4: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environ ment	Trans and Land Use
Salem	Henry	57	FAIRYSTONE PARK HIGHWAY	PATRICK CL	RTE 674	3.89	4	$36,760	x		x	x	x	
Salem	Henry	57	FAIRYSTONE PARK HIGHWAY	RTE 674	RTE 57 ALT	1.97	4	$21,898	x		x	x		
Salem	Montgomery	8	WEBBS MILL ROAD	FLOYD CL	RTE 616	4.05	2	$29,039	x		x	x		
Salem	Montgomery	8	WEBBS MILL ROAD	RTE 616	RTE 669	0.83	4	$12,096	x		x	x		
Salem	Montgomery	8	RINER ROAD	RTE 669	SCL CHRISTAINSBURG	4.37	4	$45,024			x	x		
Salem	Montgomery	114	PEPPERS FERRY ROAD	ENT RADFORD ARSONAL	RTE 460 BUS	6.5	4	$69,248	x		x	x		
Salem	Patrick	8	WOOLWINE HIGHWAY	RTE 58 NORTH	RTE 40	10.11	2	$60,212				x		
Salem	Pulaski	11	BROAD ST - LEE HIGHWAY	RTE T-746	.19 MI EAST RTE 747	4.67	4	$50,789	x		x	x		
Salem	Pulaski	600	BELSPRING ROAD	RTE 114	RTE 623	1.22	2	$8,526	x		x	x	x	
Salem	Roanoke	11	WILLIAMSON ROAD	LIBERTY ROAD	10TH STREET	0.51	4	$8,934	x				x	

Table 16-5: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environ ment	Trans and Land Use
Salem	Roanoke	11	WILLIAMSON ROAD	NCL ROANOKE	RTE 1821	1.4	4	$26,501			x		x	
Salem	Roanoke	220	FRANKLIN ROAD	FRANKLIN CL	SCL ROANOKE	6.46	6	$79,115		x	x	x		
Salem	Roanoke	221	BENT MOUNTAIN ROAD	ROUTE 1999	RTE 688 (COTTON HILL RD)	4.75	4	$46,883		x	x			
Salem	Roanoke	221	BENT MOUNTAIN ROAD	RTE 688 (COTTON HILL RD)	RTE 735 (COLEMAN RD)	0.86	4	$8,041			x			
Salem	Roanoke	419	ELECTRIC ROAD	WCL ROANOKE	RTE 221 (BRAMBLETON RD)	2.21	6	$80,447	x	x	x		x	
Salem	Roanoke - Botetourt	460	ORANGE AVENUE	11TH STREET	RTE 738 EAST INT.	5.04	6	$69,480			x	x		
Salem	Roanoke - Botetourt - Salem	81	I-81	RTE 112	RTE 220 ALT	13.16	8	$396,905		x	x	x		
Salem	Roanoke-Salem	81	I-81	RTE 647	RTE 112	4.99	6	$69, 590		x	x	x		
Salem	Rocky Mount	122	MONETA RD - BOOKER T WASHINGT ON HIGHWAY	RTE 40	RTE 801	26.89	4	$418,096	x	x	x	x		
Salem	Salem	11	APPERSON DRIVE	COLORADO STREET	ECL SALEM	2.02	4	$36,473			x			
Salem - Staunton	Botetourt - Allegheny	220	MARKET AVE	RTE 43Y(OR 870)	RTE 60 BUS	14.05	4	$215,358		x	x			
Staunton	Alleghany	60	GRAFTON ST	RTE 220	I-64	0.66	4	$9,601			x	x	x	

Table 16-6: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Staunton	Alleghany	220	N. ALLEGHANY AVENUE	COVINGTON NCL	RTE 687	1.61	2	$10,526				x	x	
Staunton	Augusta	81	I-81	RTE 262	RTE 250	2.45	6	$81,189	x		x	x		
Staunton	Augusta	81	I-81	RTE 250	RTE 275	2.72	8	$75,802	X		X	X		
Staunton	Augusta	81	I-81	RTE 275	RTE 612	2.08	6	$48,751	x		x	x		
Staunton	Augusta	340	EAST SIDE HIGHWAY	.42 MI NORTH RTE 611	RTE 612	3.13	2	$20,591	x		x			
Staunton	Augusta	250	CHURCHVILLE AVENUE	RTE 42 EAST	WCL STAUNTON	4.93	2	$46,654		x	x			
Staunton	Clarke	340	LORD FAIRFAX HIGHWAY	RTES 522/277	.12 MI SOUTH RTES 50/17	3.8	4	$50,119			x			
Staunton	Clarke	522	FRONT ROYAL PIKE	RTES 340/277	0.13 MI SOUTH RTES 340/277	1.78	6	$30,650		x		x	x	
Staunton	Frederick	7	BERRYVILLE PIKE	ECL WINCHESTER	CLARKE CL	3.69	6	$42,347		x		x		
Staunton	Frederick	50	JOHN S MOSBY HIGHWAY	ECL WINCHESTER	CLARKE CL	5.59	6	$101,947	x	x			x	
Staunton	Frederick	81	I-81	RTE 277	RTE 37	3.05	6	$57,664			x	x		
Staunton	Frederick	81	I-81	RTE 7	RTE 672	5.58	6	$156,889			x	x		
Staunton	Frederick - Winchester	81	I-81	RTE 37	RTE 7	5.63	8	$172,205	x			x		

Table 16-7: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Staunton	Harrisonburg	33	EAST MARKET STREET	VINE STREET	RTE I-81	0.61	6	$16,429		x	x	x	x	
Staunton	Harrisonburg - Rockingham	81	I-81	NORTH RIVER BRIDGE	RTE 11 CONN RAMP	12.27	6	$448,493			x	x		
Staunton	Highland	250	HIGHLAND TNPK	ECL MONTEREY	AUGUSTA CL	18.51	2	$127,183		x				
Staunton	Page	340	MAIN ST - BUSINESS RTE 340	RTE 340	SCL LURAY	11.6	2	$84,136			x	x		
Staunton	Page	340	US HWY 340	RTE T-602	RTE 211	11.23	4	$92,841		x	x	x		
Staunton	Page - Rockingham	340	STUART AVE - N. EAST SIDE HIGHWAY	NCL ELKTON	SCL SHENANDOAH	4.32	2	$29,796			x	x	x	
Staunton	Page - Warren	340	US HWY 340 -STONEWALL JACKSON HIGHWAY	NCL LURAY	RTE 619	21.67	2	$156,219	x	x	x	x		
Staunton	Rockingham	33	RAWLEY PIKE	RTE 613	RTE 701 WEST	4.11	2	$33,633	x		x	x		
Staunton	Rockingham	33	RAWLEY PIKE	RTE 701 WEST	WCL HARRISONBURG	1.59	4	$17,532			x	x	x	
Staunton	Rockingham	33	SPOTSWOOD TRAIL	UNIVERSITY BOULEVARD	RTE 276	3.36	6	$43,320	x			x	x	

Table 16-8: Valley and Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Environment	Trans and Land Use
Staunton	Rockingham	340	S. EAST SIDE HIGHWAY	RTE 649	RTE 754	2.97	2	$19,718				x	x	
Staunton	Staunton	250	CHURCHVILLE AVENUE	THORNROSE AVENUE	AUGUSTA STREET	0.32	3	$4,378	x					
Staunton	Warren	522	FRONT ROYAL PIKE - WINCHESTER RD	RTE I-66	CLARKE CL	5.77	6	$53,631		x		x		
Staunton	Waynesboro	340	DELPHINE AVENUE	MAIN STREET	4TH STREET	0.57	4	$28,500			x		x	

Table 17: Valley and Ridge Region Recommendations to Existing Facilities Identified for Further Study

									VTrans2035 Goals Addressed*					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Salem	Botetourt	220	ROANOKE RD	ROUTE 11	RTE T-630	8.53	6	$97,952						
Salem	Botetourt	220	BOTETOURT RD	RTE T-630	1 MILE NORTH OF RTE 1204	1.26	4	$6,144						
Salem	Floyd - Patrick - Carroll	58	DANVILLE PIKE - JEB STUART HIGHWAY	RTE 820	ROUTE 600	15.75	4	$156,848						
Salem	Patrick	58	JEB STUART HIGHWAY	E RTE 58 BYPASS	W RTE 58 BUSINESS	13	4	$136,257						
Salem	Roanoke	419	ELECTRIC ROAD	RTE 221(BRAMBLETON AVE)	RTE 685(KEAGY RD)	2.23	6	$55,320						
Salem	Roanoke - Botetourt	220	CLOVERDALE ROAD	RTE 460	ROUTE 11	5.04	6	$51,837						
Staunton	Augusta	250	HANKEY MT HIGHWAY	HIGHLAND CL	2.5 MI WEST RTE 716	1.98	3	$17,125						
Staunton	Augusta	250	HANKEY MT HIGHWAY	2.5 MI WEST RTE 716	RTE 728	9.08	2	$61,681						
Staunton	Augusta	250	HANKEY MT HIGHWAY - CHURCHVILLE AVENUE	RTE 728	RTE 42 EAST	5.93	2	$40,506						

**Recommendations have not been related to VTrans2035 goals as projects require further study*

Table 18: Valley and Ridge Region Recommendations to New Locations

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length(Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Buchanan	460	RELOC RT 460	KENTUCKY S.L.	COAL FIELDS EXPWY	8.72	4	$530,182			x	x	x	
Bristol	Grayson	58	INDEPEND BYP	ROUTE 703	RTE 888	3.21	4	$93,200			x	x	x	
Bristol	Lee	58	JONESVILLE BYP	ROUTE 58 W.	ALT ROUTE 58 N.	3.8	4	$41,254			x			
Bristol	Lee	58	PENNINGTON GAP BYPASS	0.41 MW WCL PENNINGTON GAP	.50 MILE EAST OF ECL PENNINGTON GAP	3.52	4	$158,400			x			
Bristol	Scott	224	MOCASSIN GAP BYPASS	ROUTE 58/23	ROUTE 72	1.02	4	$16,000	x		x			
Bristol	Washington	140	RTE 140 EXT	N.C.L. ABINGDON	RT 19	1.1	4	$65,943	x		x		x	
Bristol	Wise	58	BIG STONE GAP BYPASS	0.8MW WCL BSG	ROUTE 23	0.72	4	$90,826	x		x			
Bristol	Wise-Dickenson	561	COAL FIELDS EXP	RTE 23 BYPASS	BUCHANAN C.L.	26.4	4	$1,200,000			x	x		
Salem	Henry-Franklin-Roanoke	73	I-73	NORTH CAROLINA SL	I-581/RTE 220	63.04	4	$3,921,037	x		x	x		
Staunton	Frederick	37	WINCHESTER BY-PASS	RTE 37 W	RTE I-81 N	2.4	4	$96,953	x		x			
Staunton	Frederick	37	WINCHESTER BY-PASS	Rte. 642	RTE I-81 NORTH	14.88	4	$449,245	x		x			

Table 19-1: Valley and Ridge Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve /Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	City of Bristol	81	I-81			Exit 7 - additional capacity needed on ramps and cross streets. Poor access control adjacent to on/off ramps. Limited ROW.	$20,000						
Bristol	Scott	23		TENNESSEE SL	SCL WEBER CTY	Provide safety improvements along corridor (heavy traffic from Tennessee)	$5,000	x					
Bristol	Scott	23		RTE T-1106 NORTH	W RTE 23 BUS ON RAMP	Signal improvement along corridor to provide congestion relief. Recommendation E-2 from Kingsport 2030 CLRP	$225	x					
Bristol	Scott	23				Construct grade separated interchange at intersection of Route 23 and Route 224/58.	$40,000	x		x			
Bristol	Scott	58	HILTON RD			Phase II of Moccasin Gap Bypass project. Provide grade separated interchange at 224/58.	$42,000	x		x			
Bristol	Scott	70		E BUS RTE 23	W RTE 23 BUS ON RAMP	Signal improvements along corridors to provide congestion relief. Recommendation E-2 from Kingsport 2030 CLRP	$45						
Bristol	Smyth	81	I-81			Improve interchange at Exit 35	$0	x		x			
Bristol	Smyth	81	I-81			Improve interchange at Exit 47	$0	x		x			
Bristol	Tazewell	19	Trail of the Lonesome Pine	RTE 609	RTE 460	Install additional advance warning sign and convert existing flashers to actuated warning flashers	$37						
Bristol	Tazewell	460		BUCHANAN CL	ROUTE 806	Provide safety improvements along corridor. Poor horizontal curvature. Widening will be very costly.	$10,000	x					
Bristol	Tazewell	460				Construct left turn lane at Route 460 / 19 interchange (Claypool Hill) to alleviate safety and capacity issues.	$500	x		x			
Bristol	Town of Abingdon	81	I-81			Rural diamond interchange design at Exit 17 cannot adequately handle the current level of traffic. Significant congestion. Poor access management adjacent to on/off ramps. Interchange and cross street need to be modified and upgraded.	$20,000	x		x			x
Bristol	Washington	81	I-81			Improve interchange at Exit 14	$0	x		x			

Table 19-2: Valley and Ridge Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Washington	81	I-81			Improve interchange at Exit 19	$0	x		x			
Salem	Bedford	460	E LYNCHBURG SALEM TNPK	RTE 668 WEST	RTE 811	Provide paved shoulder lane and implement access management along corridor.	$3,000	x		x		x	x
Salem	Bedford	501	LEE-JACKSON HIGHWAY			Relocate intersection with Route 647 to improve safety/sight distance and provide turn lane.	$500	x		x			
Salem	Botetourt	81	I-81			Comprehensive improvements to existing Exit 150 interchange to address congestion, safety and access management problems.	$100,000	x		x			x
Salem	Botetourt	81	I-81			Improve Troutville interchange per MPO CLRP. Cost included in widening project on I-81.	$0	x		x			
Salem	City of Bedford	460	BLUE RIDGE AVENUE			Restripe ramp from Business 460 to 460 (westbound) and add additional lane	$1,000	x		x			
Salem	City of Roanoke	581	I-581			Improve interchange at Elm Ave.	$10,000	x		x			
Salem	City of Roanoke	581	I-581			Valley View Interchange Phase II - UPC 16595 - Upgrade interchange. Existing interchange provides partial access and does not facilitate all movements.	$70,000	x		x			
Salem	City of Salem	11	APPERSON DRIVE			Intersection improvement at Electric Road (Route 419) per Roanoke MPO CLRP.	$6,485	x		x			
Salem	Montgomery	8	WEBBS MILL RD			Add turn lanes at Intersection of Riner (Rte 8) & Fairview Church Rd (Rte 669)	$250	x		x			
Salem	Montgomery	8	RINER RD			Add turn lanes at the intersection of Riner (Rte. 8) and Smith Creek Rd. (Rte. 675) per MPO 2030 CLRP.	$250	x		x			
Salem	Montgomery	81	I-81			Improve I-81 (Route 177) interchange due to ramp deficiencies and pending development. Recommendation from Montgomery County.	$0	x		x	x		
Salem	Montgomery	114	PEPPERS FERRY BLVD			Construct turn lanes at intersection of Peppers Ferry (Rte. 114) and Rolling Hills (Rte. 1286) per MPO 2030 CLRP.	$250	x		x			

Table 19-3: Valley and Ridge Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Salem	Montgomery	460		RTE 114 EB ON RAMP	BUS RTE 460 WB OFF RAMP	Add ramp for southbound Route 460 to westbound Rout 460 business per MPO 2030 CLRP.	$340	x		x			
Salem	Roanoke	419	ELECTRIC ROAD	RTE 904(ST ARKEY RD)	RTE 221(BRAMBLETON AVE)	Create acceleration lanes, upgrade signals to mast arms, provide sidewalks, remove guardrail, install intersection lighting, install plowable pavement markers, lengthen turn lanes, close roads	$100	x		x		x	
Salem	Town of Blacksburg	460				CLRP recommendation for grade separated interchange on 460 Bypass at Southgate Drive.	$16,000			x			
Salem	Town of Christiansburg	81	I-81			Improve I-81 / Main St. (Route 8) interchange for operations per MPO CLRP.	$3,000	x		x			
Staunton	Augusta	64	I-64			Improve Interchange at Rt. 285	$37,000	x		x			
Staunton	City of Harrisonburg	33	EAST MARKET STREET	I-81	UNIVERSITY BOULEVARD	Construct turn lanes and provide pedestrian accommodations per 2030 CLRP	$280	x		x		x	
Staunton	Clarke	340	LORD FAIRFAX HIGHWAY			Provide Safety Improvements at intersection of Routes 340/17/50.	$5,000	x					
Staunton	Clarke	522	FRONT ROYAL PIKE			Provide Grade Separated Interchange at Route 340	$30,000	x		x			
Staunton	Frederick	37				New interchange to improve Rte 11 #25	$30,000						
Staunton	Frederick	37				Improve interchange at Rte 50 #28	$2,000						
Staunton	Frederick	37				Construct new diamond interchange with realignment of Merrimans Lane #27	$10,000						
Staunton	Frederick	37				Improve interchange at Rte 522 #29	$25,000						
Staunton	Frederick	37				Improve interchange to allow medical center access to western campus #29A	$2,000						

Table 19-4: Valley and Ridge Region Other Recommendations

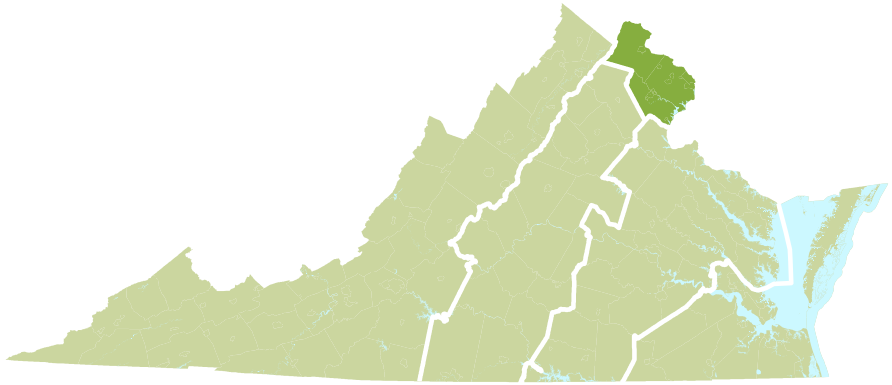
								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Staunton	Frederick	81	I-81			Replace 3 lane bridge and relocate Waverly Rd. per MPO CLRP.	$9,300		x	x			
Staunton	Frederick	81	I-81			Construct new grade separated interchange with Rte 37 expansion per WinFred2030 CLRP	$96,000						
Staunton	Frederick	81	I-81			Improve Interchange at Exit 310 (Route 37) as recommended in Win-Fred 2030 CLRP.	$69,920	x		x			
Staunton	Frederick	81	I-81			Construct new grade separated interchange at I-81/Battaille Dr.	$59,000			x			
Staunton	Frederick	81	I-81			Improve to directional interchange at I-81/Routes 17/50/522 as recommended in Win-Fred 2030 CLRP	$109,000	x		x			
Staunton	Frederick	81	I-81			Improve Interchange at I-81 / Route 7 as recommended in Win-Fred 2030 CLRP.	$49,000	x		x			
Staunton	Frederick	81	I-81			Improve interchange at I-81 / Route 11 per MPO 2030 CLRP.	$58,000	x		x			
Staunton	Frederick	81	I-81			Ramp intersection turn lane improvements at I-81 / Route 669 interchange per 2030 CLRP.	$700	x		x			

Table 20: Valley and Ridge Region Highway ITS Recommendations

(A description of ITS project types can be found on pp. 59-60)

						VTrans2035 Goals Addressed					
Route	**Limits**	**Short-Term (0-7 years)**	**Mid-Term (8-15 years)**	**Long-Term (16-25 years)**	**Other**	**Safe**	**Preserve/ Maintain**	**Mobility, Accessibility, Connectivity**	**Economic Vitality**	**Enviro**	**Trans & Land Use**
I-64	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-64			ATM	Intellidrive		x		x		x	
I-64	MP 87 to MP 136		Traveler Information	Intellidrive	Climbing lanes from MP 97 to MP 104	x		x		x	
I-64			ATM			x		x		x	
I-64			CVO			x		x		x	
I-66	Rt.15 to I-81		Traffic Detection & Monitoring	Intellidrive		x		x		x	
I-77	Entire Length	Fog Detection	ATM			x		x		x	
I-77		Install fiber & power	Improved Tunnel Operations	Intellidrive		x		x		x	
I-77		Fund installation of stopgates				x		x		x	
I-81	MP 1 to MP 324		Traveler Information	Intellidrive		x		x		x	
I-81			ATM			x		x		x	
I-81			CVO			x		x		x	
US 220			Traveler Information			x		x		x	
US 220			ATM			x		x		x	

REGION 2: NORTHERN



PDCs in the Northern Region

- Northern Virginia Regional Commission

Strategies for the Northern Region

- Increase Use of Congestion Pricing
- Increase Use of HOT Lanes
- Add Bus Rapid Transit
- Increase Road, Transit and Freight Capacity
- Increase Use of ITS
- Increase Use of TDM
- Increase and Improve Bicycle and Pedestrian Facilities

The Northern Region is expanding as a center of global economic importance. Factors fueling expansion include growth in government and service related industries, as well as emerging sectors such as high tech, biomedical and biotech, energy and environmental research, and communications. The region is also home to Dulles International Airport, which serves as both an international gateway and economic engine for the state.

It is likely the workforce will continue to be diverse, highly mobile, well-educated, and transient. The region will continue to attract creative and innovative employees and employers from around the world as long as mobility is maintained and congestion is managed. At the same time, the population in the region will continue to mature as the proportion of the population over age 65 increases. Trends toward smaller households, more diverse populations and more compact, higher density, mixed-use communities will likely flourish.

The population growth rate for the Northern Region is the highest in the state. In addition, employment growth and future projections for DVMT in the Northern Region show that the demand for more transportation options is growing faster than in any other region. To address the anticipated demographic trends and changes, increased transit capacity and accessibility is necessary. Strategies to accommodate the demand for transit include: increasing fixed-route bus service frequencies and expanding fixed-route coverage; extending VRE service; increasing the frequency of inter-city passenger rail; and expanding the use of streetcars and Bus Rapid Transit. Expanding freight rail capacity will provide an opportunity to relieve congested highways from additional freight traffic. Transportation demand management strategies and ITS techniques should be further expanded to reduce congestion and enhance the reliability of transportation services. In addition, expanding the capacity and improving the connectivity of the road network and providing improvements to the major radial connectors will help maintain a high level of mobility in the region.

An example of the needed public transportation capacity expansion and major investment is the extension of Metrorail to Dulles by the MWAA in cooperation with DRPT, WMATA, Fairfax County and Loudoun County. The project is comprised of a 23.1-mile extension of Metrorail (a 22% increase in track miles for the existing 106.3 mile Metrorail system) in the rapidly growing Dulles Corridor in Fairfax and Loudoun Counties. The Dulles Corridor is home to several of the Washington, DC metropolitan region's most dynamic and rapidly growing activity centers, including Tysons Corner, Dulles International Airport, Reston, Herndon and eastern Loudoun County. The project will provide high-quality, high-capacity transit service in this burgeoning corridor. The Dulles Metrorail Extension will result in travel time savings, expand the reach of the existing regional Metrorail system, offer an alternative to automobile travel and support future development along the corridor.

MULTIMODAL FACILITIES AND SERVICES: NORTHERN REGION

Fixed Route (FR) & Demand Response (DR) Transit (9):

- Alexandria DASH (FR)
- Arlington Transit (FR/DR)
- Fairfax Connector (FR)
- Fairfax CUE (FR)
- Loudoun County Transit (FR)
- Potomac & Rappahannock Transportation Commission (PRTC) (FR)
- Virginia Railway Express (VRE) (FR)
- Virginia Regional Transit (FR/DR)
- Washington Metropolitan Area Transit Authority (WMATA) (FR/DR)

Human Service Transportation (3):

- ECHO.INC
- Jewish Community Center of Northern Virginia
- The Arc of Greater Prince William

Transportation Demand Management (8):

- Alexandria Local Motion
- Arlington County Commuter Assistance Program
- DATA
- Fairfax County Ridesources
- Link
- Loudoun County Rideshare
- PRTC OMNIMATCH
- TYTRAN

Freight Rail (2):

- CSX National Gateway Corridor
- Norfolk Southern Crescent Corridor

Short Line (1):

- Shenandoah Valley Railroad

Passenger Rail (2):

- Amtrak Crescent Route
- Amtrak Northeast Corridor

Highway (2):

- High Occupancy Vehicle (HOV) Lanes
- Park and Ride

Airports (4):

- Leesburg Municipal
- Manassas Regional
- Ronald Reagan Washington National
- Washington Dulles International

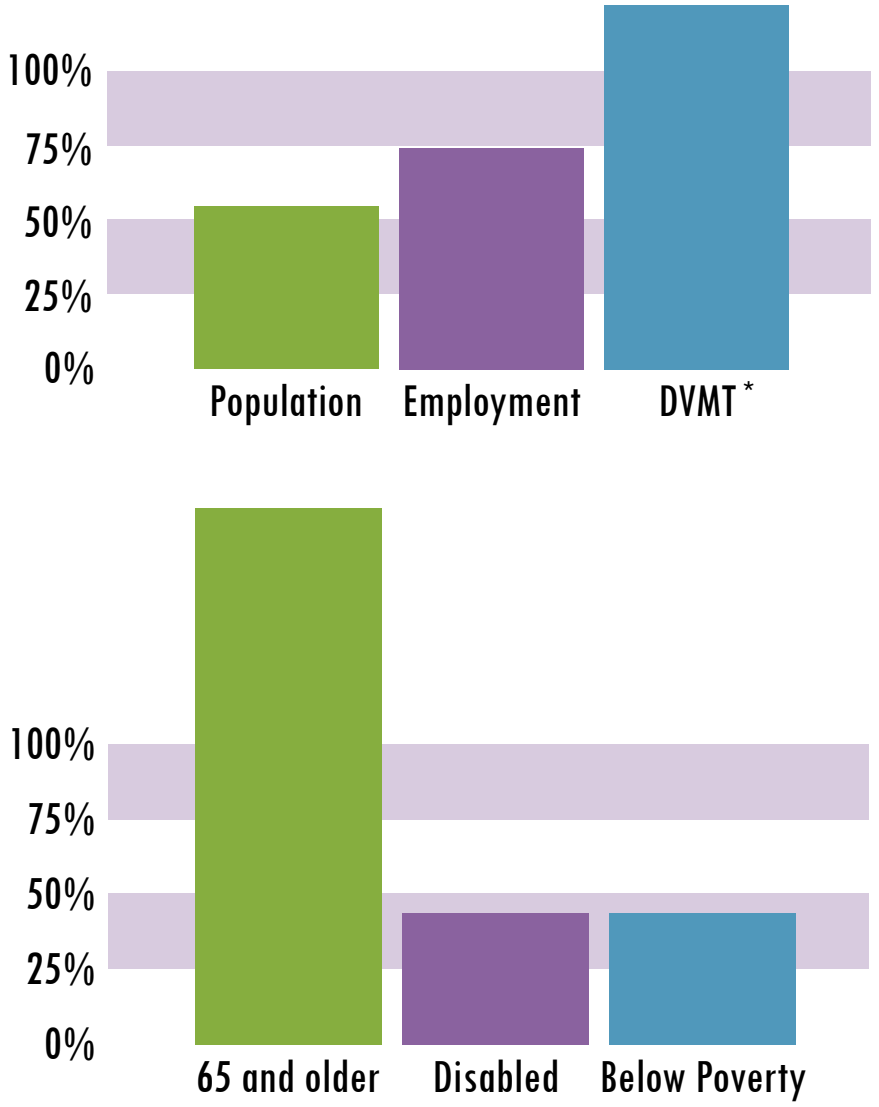
TRANSPORTATION FACILITIES AND SERVICES

The major highway facilities in the Northern Virginia Region include I-66, I-95, I-395, Route 1, and I-495. The major east-west route is I-66, which is a four-to-eight-lane interstate located in the northern part of the Virginia, traveling through urban, suburban and rural areas over the course of its approximately 75-mile length. The western limit of I-66 is located at I-81 near Strasburg, and the eastern limit is the border of the District of Columbia in Arlington. I-66 is primarily a commuting corridor used to connect residential areas to the west to employment centers to the east, especially through Prince William, Fairfax, and Arlington Counties.

The main north-south corridor is I-95, which is a multi-lane interstate that runs along the east coast of the United States, traveling from Maine to Florida and serving as the primary north-south connector on the east coast. In Virginia, it serves as the main through corridor for both passengers and freight, with almost 40% of the total interstate traffic using the corridor. It links the Washington, DC, metropolitan area with Richmond, and provides access to numerous military facilities including Fort Belvoir and Quantico Marine Base. I-95 offers the main access via I-495 and I-395 to government facilities and other employment uses in and around Washington D.C. and funnels DC traffic across the Woodrow Wilson Bridge via the Capital Beltway.

In addition to the current military installations, the Base Relocation and Closure program (BRAC) is expected to move a significant number of military and government personnel to Marine Corps Base Quantico and Fort Belvoir, including the Engineer Proving Ground (EPG) along I-95, and to the Washington Headquarters Service (WHS) located directly along I-395. This will result in an increased role of I-95 and parallel facilities as an important military corridor, adding a significant amount of traffic.

Figure 38: Northern Regional Characteristics Percent Change (2010 - 2035)



**DVMT: Daily Vehicle Miles Traveled (2006-2035)*

In addition to several major highways, the Northern Region has extensive public transportation services. There are two reversible HOV-2 and HOV-3 lanes on I-95 and I-395. Interstate 66 HOV restrictions change direction between the AM and PM peak periods. The WMATA Metrorail's Blue Line and Yellow Line follow the I-395, I-495, Route 1 and I-95 corridors. Metrorail's Orange Line parallels I-66. The VRE operates commuter rail on two lines, one that parallels the I-95 corridor and one that parallels the I-66 corridor. Express bus transit service in Northern Virginia is provided by the Potomac and Rappahannock Transportation Commission (PRTC). PRTC provides the OmniRide and Metro Direct service that travels between Dumfries and Washington, DC. WMATA also operates express service along the Route 1 corridor. The Richmond Highway Express (REX) is a limited-stop express bus route operating between Fort Belvoir in Fairfax County and the King Street Metro in Alexandria. Other transit services included the Fairfax Connector, CUE Bus System (City of Fairfax), Arlington County Bus System (ART), DASH Bus System (City of Alexandria), GEORGE Bus System (City of Falls Church), and Loudoun County commuter bus routes.

The Northern Region has eight Transportation Demand Management agencies that help to promote strategies like carpooling, vanpooling, work-from home initiatives and flexible work hours. To fill critical mobility gaps for Virginians who do not have access to a personal automobile and live outside of public transit service areas or need specialized transportation services, three human service agencies exist in the Northern region.

The Ronald Reagan Washington National Airport and Washington Dulles International Airport together serve over 40 million passengers every year, providing access to destinations around the world. These commercial airports and two other reliever air facilities are vital to the economic vitality of the region and the Commonwealth. These air facilities depend on a high-quality surface transportation system to provide a seamless connection between the airports and final destinations.

CHARACTERISTICS

The Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report completed by the VTRC identifies a number of trends that will impact transportation in the future. Anticipated Increases in population will impact the amount of traffic on the roadway and demand for transportation alternatives, impacting commuters and those traveling throughout the Northern Region. This trend will impact both passenger and freight traffic along the highway.

Table 21 details the population projections for 2010 and 2035 as well as the absolute change and percent change between 2010 and 2035. In addition, Figure 38 illustrates the percent change in population, employment and DVMT between 2010 and 2035 for the Northern Region.

Population: Population forecasts for the Northern Region show that the population is expected to account for 31% of the entire state population by the year 2035. This region is expected to experience a growth in population of approximately 54% between 2010 and 2035, compared to an estimated 36% change statewide. These increases will result in more people wanting to go more places, producing increased travel and congestion.

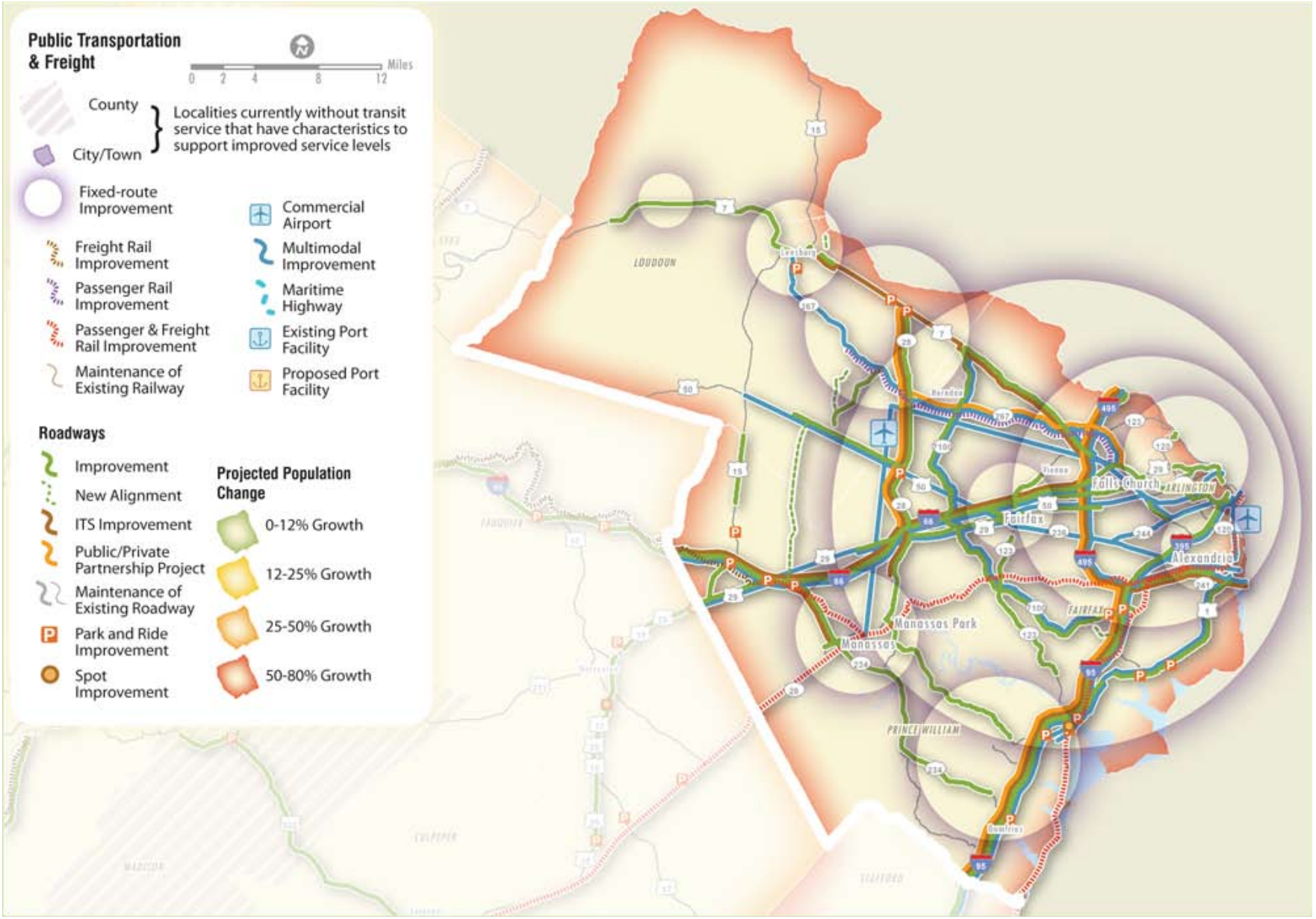
Employment: Similar to population, employment within the Northern Region is expected to increase dramatically by 74% between 2010 and 2035, compared to a 36% increase statewide for the same time period. It is estimated that the region will add slightly over one job for each individual added to the population during this time frame. Depending on where these new jobs locate, and where the new employees will be commuting from, this increase could result in a negative impact on air quality and congestion. Knowledge of this anticipated change provides an opportunity to be proactive in determining where these jobs may locate, and encouraging development patterns that foster increased demand for transit.

Daily Vehicle Miles Traveled: Currently, DVMT for the Northern Region accounts for 22% of the DVMT for the entire state. DVMT for the region is expected to increase by 123% between 2006 and 2035, resulting in the Northern Region accounting for close to 32% of statewide DVMT by 2035. The highway assets within this region are already highly congested. In order to counteract the estimated change in DVMT opportunities for encouraging greater transit use and other forms of TDM have been identified in the recommendations for this region.

Table 21: Northern Region Characteristics by PDC

Population	2010 Forecast	Midpoint 2035 Forecast	Absolute Change	Percent Change
Northern Virginia (8)	2,250,780	3,484,698	1,233,918	55%
State Total	**8,057,350**	**10,926,181**	**2,868,831**	**36%**
Employment (Jobs)	**2010 Forecast**	**Midpoint 2035 Forecast**	**Absolute Change**	**Percent Change**
Northern Virginia (8)	1,724,160	3,007,614	1,283,454	74%
State Total	**5,206,470**	**7,753,739**	**2,547,269**	**49%**
Daily Vehicle Miles Traveled (DVMT)	**Actual VMT in 2006**	**2035 DVMT Based on Population (in Millions)**	**Absolute Change**	**Percent Change**
Northern Virginia (8)	49,453,417	110.1	60,646,583	123%
State Total	**222,178,082**	**345.4**	**123,221,918**	**55%**

Figure 39: Northern Region Recommendations Map



PUBLIC TRANSPORTATION RECOMMENDATIONS

In the Northern Region, and across the entire state, Virginia's public transportation systems must maintain a state of good repair for fleet vehicles and maintenance equipment. DRPT recognizes and prioritizes state of good repair issues through its asset management database and funding requirements. State of good repair is discussed in detail in Chapter 3 and funding is discussed in-depth in Chapter 5.

The population growth rate in the Northern Region is the highest in the state. In fact, employment growth and future projections for DVMT in the Northern Region show that the demand for more transportation options is growing faster than in any other region. The high population growth in the Northern Region necessitates the following recommendations for the entire region:

- Major Capacity Investments
- Focused Expansion of Fixed Route Coverage
- Increased Transportation Demand Management

There are a number of points within the public transportation systems that service Northern Virginia where future capacity challenges may occur, including service at the Pentagon, crossing the 14th Street Bridge, and crossing the Roosevelt Bridge. The increasing popularity and demand of VRE service will also strain its system capacity in the future.

Major capacity investments are needed to increase mobility in this highly-congested urban area, provide more transportation choices, and support the projected growth for employment and economic development.

Focused expansion of fixed route coverage, like new express and feeder bus services in the Capital Beltway Corridor and expansion of commuter bus service to Loudoun County, will continue the reach of public transportation services in areas of high population growth.

Transportation demand management strategies for the Northern Region are identified according to geographic setting and are identified in Table 22.

Table 22: TDM Strategies for the Northern Region

Geographic Setting	Jurisdictions	TDM Strategies
Urban Core Areas	Alexandria City, Arlington County	Build on existing transit options and bike/walk options
		Develop suburban transit links for inbound / reverse commute
		Address short-trip lengths
		Strong focus on employment end outreach
		Target both commute trips and non-work travel of residents
		Integrate TDM into local planning, MTPs, LRTPs
		Increase parking management
		Promote alternative work hours and teleworking at employment
		Enhance cross-jurisdictional coordination for TDM
Suburban Feeder Areas	Fairfax County, Loudoun County, Prince William County	Expand non-SOV use for non-work trips in suburban centers
		Strong focus on employment outreach in suburban centers
		Promote feeder area ridesharing for long-distance commutes
		Promote teleworking to employers and residents
		Expand transit options; develop transit links to urban and suburban employment
		Integrate TDM into the land development process; encourage mixed-use
		Integrate TDM into local planning, MTPs, LRTPs
		Enhance cross-jurisdictional coordination for TDM

As identified in Table 23, the transit agencies in the Northern Region have the following ITS investment recommendations for the next six years, as identified in the DRPT Statewide ITS Strategic Plan.

Table 23: ITS Investments for the Northern Region

Transit Agency	ITS Investments in the Next 6 Years					
	Transit Operations	Customer Amenities	Service Planning	Fare Collection	Security	Maintenance/Management
Alexandria Transit Company (DASH)	x	x	x		x	
Arlington Transit (ART)		x	x		x	
Fairfax County DOT (Connector)	x	x	x		x	x
Fairfax CUE			x			
King Street Trolley						
Loudoun County Office of Trans. Services		x	x			
PRTC OmniRide	x				x	
PRTC OmniLink	x					
Virginia Railway Express		x			x	
Virginia Regional Transit	x	x	x		x	x
WMATA		x				

RAIL RECOMMENDATIONS

The rail recommendations for the Northern Region shown in Tables 24-1 and 24-2 represent those projects within identified transportation corridors that will increase the freight shipments to and from ports, improve commuter and intercity rail within regions of the Commonwealth and other freight improvement projects identified by Class and shortline railroads in Virginia.

All improvements address one or more of the following:

- Reducing passenger car and truck freight traffic to alleviate highway congestion, reduce energy demands and reduce pollutants
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry and improved capacity at Virginia's ports
- Improving passenger rail by enhancing system performance and adding capacity

Table 24-1: Rail Recommendations for the Northern Region

I-95/I-64 Intercity Passenger Rail Project	
Phase I - Capacity/ Station Improvements	One new daily round trip train from Richmond to Washington, DC as a demonstration project for three years beginning in FY2010, station improvements at Staples Mill Station and the rehabilitation of one train set.
	Design and construction of capacity improvements from Washington, DC to Richmond and Newport News, including third main track sections and enhancements to increase on-time performance.
Phase II - Regional Trains to Newport News	Complete capacity improvements from Phase I and extend three regional trains from Staples Mill Station to Newport News for a total of five daily trains to serve Newport News, Richmond and Washington, DC. Enhance passenger rail stations.
Phase III - Additional Trains/Rolling Stock	Four additional trains with half-hour service between Newport News, Richmond and Washington, DC for a total of nine daily trains.
Phase V - New Bridge/Track Capacity	Bridge capacity improvements between Newport News and Washington, DC, including a new Potomac River bridge.
	Connect third track sections in the I-95 corridor and second main line sections between Richmond and Newport News.

Table 24-2: Rail Recommendations for the Northern Region

Southeast High Speed Rail (SEHSR) Project	
Phases II and III - Construction and Improvements	Engineering, track construction and improvements from Washington, DC to the North Carolina state line for high speed rail service.
	The scale of improvements will be determined by segment, including: Washington, DC to Richmond, Richmond to Petersburg, and Petersburg to the North Carolina state line.
National Gateway Project	
Phase I - Capacity Improvements	Adds corridor double stack clearance capacity by removing or modifying five bridges that obstruct the vertical clearance needed for double stack rail operations on the I-95 Corridor between the North Carolina state line and Washington, DC. (Railroad Avenue Bridge, Woodbridge)
	Environmental studies and preliminary engineering for two new highway grade separated bridges.
	Engineering, design and construction of the new double stack Virginia Avenue Tunnel.
Phase II - Clearance Completion	Completes Virginia Avenue Tunnel double stack clearance and bridge clearance work.
I-81/Route 29 Intercity Passenger Rail Project	
Phase I (Lynchburg)	Add one daily train between Washington, DC and Lynchburg Kemper Street Station as a demonstration project for three years beginning in 2009.
	Increase commuter capacity in the VRE service area.
	Complete the capacity study for the entire project corridor from Washington, DC to Bristol and Lynchburg.
	Increase capacity for a second train to Lynchburg with construction of second main line track between Nokesville and Calverton.
Phase III (Bristol) and IV (Richmond)	Provide train service from Bristol to Richmond and from Bristol to Washington, DC.

HIGHWAY RECOMMENDATIONS

The Northern Region presents a unique challenge in that it contains the highest population densities in the state as well as the highest concentration of employment centers. Travel trends in the Northern Region continue to indicate a significant amount of "hub and spoke" commuter traffic heading from outlying suburban areas into downtown DC. However, within the last few decades significant exurban employment centers (Tysons Corner, Dulles Corridor, Fort Belvoir) have developed on the fringes of the region, creating a shift in commuting patterns. Highway recommendations for the Northern Region focus on additional capacity expansion that capitalizes on the region's significant high occupancy vehicle use, and the expansion of park and ride facilities.

Park and Ride Recommendations: The Northern Region currently has approximately 200 Park and Ride facilities, many of which are at capacity every day. It is recommended that 12 new facilities be constructed, with a majority of the facilities along I-66 and I-95, and expansion to the Woodbridge VRE lot is recommended as identified in Figure 39.

Other Recommendations: In addition to the Park and Ride recommendations, the multiple highway recommendations are shown in Figure 39 and listed in Tables 25 to 29. The Highway Recommendation Table Reference Guide (Figure 40) provides explanation of the multiple elements included in the highway recommendation tables.

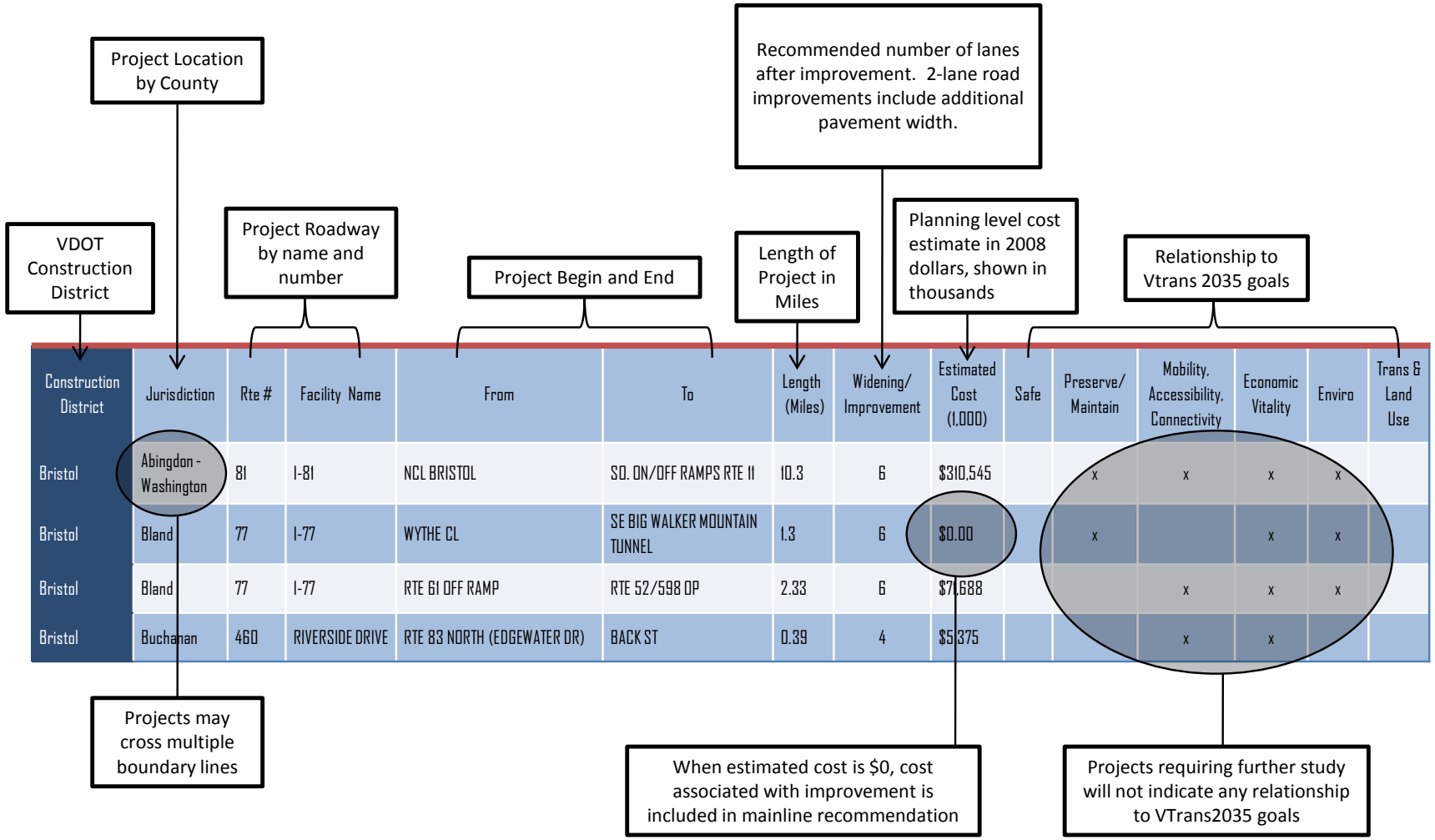
How the Recommendations are Organized: The highway recommendations presented in the 2035 Virginia Surface Transportation Plan address the performance measures presented in Chapter 4. These include: congestion; roadway capacity; safety; and maintenance. The highway recommendations support the goals established in VTrans2035: Safety and Security; System Maintenance and Preservation; Mobility, Accessibility and Connectivity; Economic Vitality; Environmental Stewardship; and Coordination of Transportation and Land Use.[26] The recommendations have been related to these goals in the tables that follow. The recommendations are presented in the following categories:

- Recommendations to Existing Facilities – These recommendations represent improvements to the current roadway network. It is assumed any structures or interchanges that fall within the limits of the recommendation will be improved along with the roadway. It should also be noted that any recommendations identified as an improvement to 2 lanes denotes additional lane width to an existing 2-lane roadway.
- Recommendations to New Locations – These recommendations represent new facilities that would be added to the roadway network.
- Recommendations for Further Study – These are recommendations where a need has been identified, but alternatives are still being analyzed.
- Other Recommendations – These are recommendations that do not fall into the above categories. Examples include interchange and intersection improvements, standalone bridge replacements, re-striping and access management.
- ITS Recommendations – Intelligent Transportation System recommendations (as described in Chapter 4).
- Park and Ride Recommendations – These are recommendations for new Park and Ride lots or expansion to existing Park and Ride lots. Specifics for Park and Rides are not provided as each location will need to be studied to identify an appropriate location and level of demand.

26 Not all VTrans2035 goals were tied to specific recommended improvements. For the VTrans2035 goals of Linking Land Use and Transportation, Program Delivery, Environmental Stewardship, VDOT addresses compliance at the program level as discussed in Chapter 4 of the VSTP.

Figure 40: Highway Recommendation Table Reference Guide

Highway Recommendation Table Reference Guide*



Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Abingdon - Washington	81	I-81	NCL BRISTOL	SO. ON/OFF RAMPS RTE 11	10.3	6	$310,545		x	x	x	x	
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$0.00		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		

*It is recognized that with any highway project there is a potential for community concerns that will need to be addressed prior to projects advancing.

Table 25-1: Northern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Alexandria - Arlington - Fairfax	395	I-395 HOV - I-395 REVERSIBLE HOV	RTE I-95	END OF 395 REVERSIBLE	8.46	3	$521,064		x				
Northern Virginia	Arlington	27	WASHINGTON BOULEVARD	RTE 50	RTE 244 SOUTH	0.82	6	$11,896			x		x	
Northern Virginia	Arlington	27	WASHINGTON BOULEVARD	RTE 244 SOUTH	I-395 NO./ARMY-NAVY DR.	0.35	6	$5,078	x		x		x	
Northern Virginia	Arlington	27	WASHINGTON BOULEVARD	I-395 NO./ARMY-NAVY DR.	OFF RMP TO RTE 244(N. INT.)	0.61	6	$17,951					x	
Northern Virginia	Arlington	27	WASHINGTON BOULEVARD	OFF RMP TO RTE 244(N.INT.)	RMP FROM PENTAGON	0.24	6	$5,620			x		x	
Northern Virginia	Arlington	29	LEE HIGHWAY	FALLS CHURCH CL	SYCAMORE STREET	0.48	4	$15,039	x		x		x	
Northern Virginia	Arlington	29	LEE HIGHWAY	RTE 309 NORTH	RTE 309 SOUTH	0.72	6	$21,925			x		x	
Northern Virginia	Arlington	29	LEE HIGHWAY	RTE 309 SOUTH	KENMORE STREET	0.36	6	$10,962			x		x	
Northern Virginia	Arlington	50	ARLINGTON BOULEVARD	RTE 120	RTE 27	0.93	6	$25,082			x		x	
Northern Virginia	Arlington	110	JEFFERSON DAVIS HIGHWAY	ROUTE 50	MEMORIAL DRIVE	0.56	6	$8,125			x			
Northern Virginia	Arlington	120	NORTH GLEBE ROAD	RTE 123	MILITARY ROAD	0.46	4	$13,267			x			
Northern Virginia	Arlington	120	NORTH GLEBE ROAD	HENDERSON ROAD	RTE 50	0.6	6	$27,469	x		x		x	
Northern Virginia	Arlington	120	SOUTH GLEBE ROAD	I-395	WEST GLEBE ROAD	0.19	6	$6,699	x				x	
Northern Virginia	Fairfax	1	RICHMOND HIGHWAY	RTE 235 NORTH	ALEXANDRIA CL	4.5	8	$157,293	x		x			

Table 25-2: Northern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Fairfax	7	LEESBURG PIKE	RTE 7100 (FAIRFAX PKWY)	DULLES TOLL ROAD	8.48	6	$251,576		x	x	x	x	
Northern Virginia	Fairfax	7	LEESBURG PIKE	DULLES TOLL ROAD	RTE I-495	2.28	8	$78,283		x	x	x	x	
Northern Virginia	Fairfax	7	LEESBURG PIKE	RTE 2327	RTE 244	1.51	6	$42,021			x		x	
Northern Virginia	Fairfax	29	LEE HIGHWAY	RTE 621	RTE I-66	2.17	6	$62,937		x	x			
Northern Virginia	Fairfax	29	LEE HIGHWAY	RTE 28	RTE 7100 (FAIRFAX PKWY)	2.9	6	$98,187		x	x			
Northern Virginia	Fairfax	29	LEE HIGHWAY	RTE 608	EATON PLACE	4.05	6	$115,537			x			
Northern Virginia	Fairfax	29	LEE HIGHWAY	ECL FAIRFAX	RTE 243	0.8	6	$24,665		x	x		x	
Northern Virginia	Fairfax	29	LEE HIGHWAY	0.7 MI EAST PRINCE WILLIAM CL	RTE 621	0.29	4	$6,608		x	x		x	
Northern Virginia	Fairfax	29	LEE HIGHWAY	RTE 243	WCL FALLS CHURCH	4.25	6	$134,251		x	x			
Northern Virginia	Fairfax	50	LEE JACKSON HIGHWAY	RTE I-66	RTE 29 SOUTH	1.39	6	$47,483		x	x	x	x	
Northern Virginia	Fairfax	50	ARLINGTON BOULEVARD	ECL FAIRFAX	RTE 7247	3.35	6	$102,008			x			
Northern Virginia	Fairfax	95	CAPITAL BELTWAY	RAMP TO RTE I-495	RTE 241	4.05	12	$239,031			x			
Northern Virginia	Fairfax	123	OX ROAD	DAVIS DR	SCL FAIRFAX	10.51	6	$383,639		x	x			
Northern Virginia	Fairfax	123	CHAIN BRIDGE ROAD	NCL FAIRFAX	SCL VIENNA	3.09	6	$102,111		x	x			

Table 25-3: Northern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Fairfax	495	I-495	RTE 193	MARYLAND SL	1.47	10	$107,919			x	x		
Northern Virginia	Fairfax	7100	FAIRFAX COUNTY PARKWAY HOV	FRANCON-SPRINGFLD BLVD	RTE 7(LEESBURG PIKE)	20.39	6	$445,821			x	x		
Northern Virginia	Fairfax	7100	FAIRFAX COUNTY PARKWAY HOV	RTE 636	RTE 645	4.98	6	$71,814			x			
Northern Virginia	Fairfax	7900	FRANCONIA SPRINGFIELD PARKWAY	RTES 636/638	RTE I-95	2.75	8	$51,150			x		x	
Northern Virginia	Leesburg	7	MARKET ST EAST	BATTLEFIELD PARKWAY	ECL LEESBURG	0.95	8	$24,584		x	x	x	x	
Northern Virginia	Leesburg	15	LEESBURG BYPASS	RTE 15 (KING STR.)	RTES 15/7 (MARKET ST. EAST)	1.6	6	$58,468		x	x	x		
Northern Virginia	Leesburg - Loudoun	7	HARRY BYRD HIGHWAY	RTE 9	RTE 15 (KING STR.)	4.36	6	$88,183		x	x	x		
Northern Virginia	Loudoun	7	HARRY BYRD HIGHWAY	ECL PURCELLVILLE	RTE 9	5.35	6	$79,606		x	x	x		
Northern Virginia	Loudoun	28	SULLY ROAD	RTE 625(WAXPOOL RD)	RTE 7(HARRY BYRD HWY)	3.16	8	$96,571		x		x		
Northern Virginia	Loudoun	606	LOUDOUN COUNTY PARKWAY	RTE 621	RTE 267	5.01	4	$70,357			X	x		
Northern Virginia	Loudoun - Fairfax	28	SULLY ROAD	RTE I-66	RTE 625(WAXPOOL RD)	11.23	8	$236,025		x	x	x		
Northern Virginia	Loudoun - Fairfax	50	JOHN S MOSBY - LEE JACKSON HIGHWAY	RTE 616	RTE 661	7.17	6	$159,933		x	x	x		
Northern Virginia	Manassas	28	NOKESVILLE ROAD	WCL MANASSAS	GOODWIN DRIVE	0.56	6	$36,551			x			

Table 25-4: Northern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Manassas	910	LIBERIA AVENUE	PRINCE WILLIAM PARKWAY	CENTREVILLE ROAD	1.77	6	$53,897			x			
Northern Virginia	Manassas - Prince William	234	PRINCE WILLIAM PARKWAY	RTE 234 BUS	E.B. RAMP TO RTE I-66	7.78	6	$129,662		x	x	x		
Northern Virginia	Prince William	15	JAMES MADISON HIGHWAY	RTE 29	ROUTE I-66	2.93	4	$42,556	x		x	x		
Northern Virginia	Prince William	15	JAMES MADISON HIGHWAY	RTE 234	LOUDOUN CL	4.25	4	$51,221			x			
Northern Virginia	Prince William	28	NOKESVILLE ROAD	RTE 660 WEST	WCL MANASSAS	0.62	6	$14,508	x		x	x		
Northern Virginia	Prince William	28	CENTREVILLE ROAD	LIBERIA AVENUE	NCL MANASSAS PARK	0.91	6	$29,797					x	
Northern Virginia	Prince William	29	LEE HIGHWAY	ROUTE 605	RTE 55	9.71	6	$134,557	x	x	x	x		
Northern Virginia	Prince William	66	I-66	RTE 15	RTE 29	2.85	8	$79,107		x	x		x	
Northern Virginia	Prince William	95	I-95	STAFFORD CL	RTE 123	12.48	8	$553,097		x	x	x		
Northern Virginia	Prince William	123	GORDON BOULEVARD	RTE 1(JEFF DAVIS HWY)	RTE I-95 OP	0.61	6	$20,706			x		x	
Northern Virginia	Prince William	234	DUMFRIES ROAD	RTE 1450	RTE 234 BUS	12.2	6	$339,927				x		
Northern Virginia	Prince William	3000	PRINCE WILLIAM PARKWAY	ECL MANASSAS	RTE 640(MINNIEVILLE ROAD)	10.37	6	$295,638	x		x			
Northern Virginia	Prince William - Fairfax	1	JEFFERSON DAVIS - RICHMOND HIGHWAY	RTE 123	RTE 235 NORTH	9.8	6	$350,568			x			

Table 25-5: Northern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Prince William - Fairfax	28	CENTREVILLE ROAD	NCL MANASSAS PARK	RTE 29	4.74	6	$141,998	x	x	x	x		
Northern Virginia	Prince William - Fairfax	66	I-66	RTE 29	RTE 29 EAST	8.84	10	$219,913			x	x		
Northern Virginia	Prince William - Fairfax	95	I-95 REVERSIBLE HOV	.25 MS RTE 234 OP	RTE I-495	17.97	3	$1,392,990		x	x			
Northern Virginia	Purcellville - Loudoun	7	HARRY BYRD HIGHWAY	RTE 7 BUS WEST	ECL PURCELLVILLE	4.08	6	$68,458		x	x			
Northern Virginia	Vienna - Fairfax	66	I-66	RTE 29 EAST	RTE I-495	12.59	10	$320,680		x	x			

Table 26: Northern Region Recommendations to Existing Facilities Identified for Further Study

Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	VTrans2035 Goals Addressed* Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Arlington	66	I-66	FAIRFAX CL	DC BOUNDARY	6.85	4	$45,344						
Northern Virginia	Arlington	66	I-66	RTE I-495	ARLINGTON CL	3.44	4	$105,545						
Northern Virginia	Prince William	66	I-66	FAUQUIER CL	ROUTE 15	3.61	TBD	TBD						

**Recommendations have not been related to VTrans2035 goals as projects require further study*

Table 27: Northern Region Recommendations to New Locations

Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	VTrans2035 Goals Addressed Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Leesburg	909	BATTLEFIELD PARKWAY	FORT EVANS ROAD	EDWARDS FERRY ROAD	0.72	4	$18,522			x			
Northern Virginia	Loudoun	411	LOUDOUN COUNTY PKWY	RTE 621	Route 772	4.49	4	$90,990			x	x		
Northern Virginia	Prince William	95	I-95 HOV	STAFFORD CL	0.6 MS RTE 234	4.41	3	$238,760	x		x			
Northern Virginia	Prince William-Loudoun	411	TRI-COUNTY PKWY	RTE 234 BYP	RTE 50	10.4	4	$474,756			x	x		

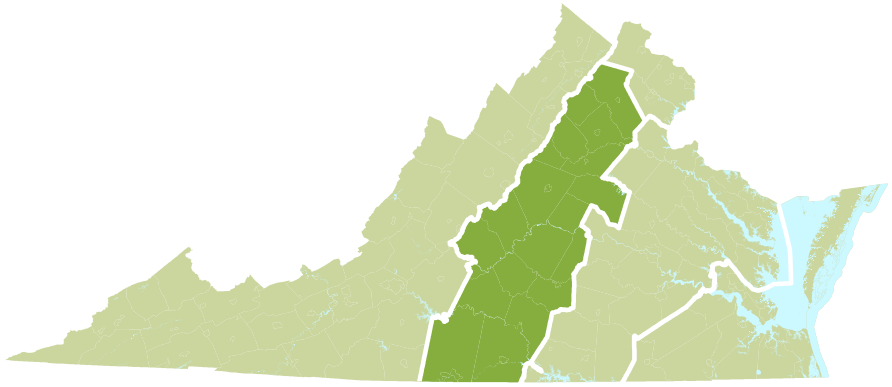
Table 28: Northern Region Other Recommendations

Construction District	Jurisdiction	Rte #	Facility Name	Improvement Description	Estimated Cost (1,000)	VTrans2035 Goals Addressed Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Northern Virginia	Prince William	1	JEFFERSON DAVIS HIGHWAY	Construct grade separated interchange at Route 123. Alternative improvement - provide Displaced Left-Turn (DLT) intersection.	$50,000	x		x			

Table 29: Northern Region ITS Recommendations (A description of ITS project types can be found on pp. 59-60)

						VTrans2035 Goals Addressed					
Route	**Limits**	**Short-Term (0-7 years)**	**Mid-Term (8-15 years)**	**Long-Term (16-25 years)**	**Other**	**Safe**	**Preserve/Maintain**	**Mobility, Accessibility, Connectivity**	**Economic Vitality**	**Enviro**	**Trans & Land Use**
I-95	Fredericksburg to Springfield	Core Infrastructure	ICM	SLCS		x		x		x	
I-95			ATM	Intellidrive		x		x		x	
I-66	495 to Rt. 15	Core Infrastructure	ATM	Tolling/Pricing (HOT)		x		x		x	
I-66		ICM	SLCS	Intellidrive		x		x		x	
I-495	Entire Length	Core Infrastructure	ICM	Intellidrive		x		x		x	
I-495			Tolling/Pricing (HOT)			x		x		x	
I-495			ATM			x		x		x	
Rt. 7	495 to Rt. 15	Core Infrastructure	Traveler Information			x		x		x	
Rt. 7			Signal Timing Optimization			x		x		x	
Rt. 7			Transit Signal Priority			x		x		x	
Rt. 28	Rt. 267 to Rt. 616	Core Infrastructure	Traveler Information			x		x		x	
Rt. 28			ATM			x		x		x	
Rt. 234	Rt. 66 to Rt. 28	Core Infrastructure	Traveler Information			x		x		x	
Rt. 234			Signal Timing Optimization			x		x		x	
Rt. 3	I-95 to Rt. 620	Signal Optimization	ICM			x		x		x	
Rt. 17	I-95 to Rt. 749	Signal Optimization	ICM			x		x		x	

REGION 3:
BLUE RIDGE



PDCs in the Blue Ridge Region

- Rappahannock-Rapidan Regional Commission
- Thomas Jefferson
- Virginia's Region 2000 Local Government Council
- West Piedmont
- Southside
- Virginia's Heartland Commonwealth Regional Commission

Strategies for the Blue Ridge Region

- Provide Safety Improvements
- Enhance Demand Response Transit
- ITS
- Expand Freight Rail Service
- Increase and Improve Bicycle and Pedestrian Facilities

In the heart of Virginia, where the Blue Ridge Mountains meet gently rolling hills, lies a region rich in natural beauty, American history, farmlands, and quaint cities and towns. The attractiveness of the region combined with its close proximity to major employment centers, has created a demand for a more suburban style of living.

Over the past 10 years, the northern portion of the Blue Ridge Region has experienced increasing growth pressures from the Washington, DC, metropolitan area. This growth pressure is expected to continue, requiring proactive transportation decision-making and strategies to manage congestion and ensure the availability of multimodal transportation options.

The size of this region presents a variety of public transportation challenges in the future. The northern portion of this region will need to focus on providing better transit service for commuting and daily trips to increase the mode share for transit, and promote strategies to reduce congestion, especially during peak hours. In the southern portion, as the population ages, it is likely that a growing number of the population may not have access to a personal vehicle, leading to a need for more demand response and human services transport.

Transportation in this region is largely characterized by US 29 and 15, providing connections between the Washington DC metropolitan area, central Virginia and North Carolina. The lack of a north-south interstate highway strains the existing highways in this region. To continue to provide mobility for central Virginia residents and for freight commodities, improvements are recommended for highways including US 29, US 15 and I-64. In addition, investments in demand-response and fixed-route transit service will ensure accessible transportation is available for those who do not rely on a personal vehicle. Passenger and freight rail improvements will also help to increase the capacity of central Virginia's transportation system.

TRANSPORTATION FACILITIES AND SERVICES

The transportation characteristics of this region are mostly defined by US 29, which is a highway running north-to-south in the eastern United States for over 1,000 miles. In Virginia, US 29 serves as the major north-south corridor through the central part of the state, as it lies west of I-95 and east of I-81. It provides the main connection between the Washington, DC metropolitan area and the cities of Charlottesville, Lynchburg and Danville, and provides local access to many of these areas as well as smaller communities. It is a freight alternative to the heavy freight corridor of I-81 to the west, and is one of two major corridors (along with US 460) serving the Lynchburg area. US 29 runs concurrently with other roadways throughout its course in Virginia, including US 15 for a long stretch near Warrenton, US 250 near Charlottesville, and US 460 near Lynchburg. Route 29 is also defined as a National Scenic Highway. I-64 travels through this region and serves as a major route for freight and tourism as the only east-west interstate that traverses the Commonwealth of Virginia. Other major east-west routes include US 460 and US 58.

MULTIMODAL FACILITIES AND SERVICES: BLUE RIDGE REGION

Fixed Route (FR) & Demand Response (DR) Transit (9):

- Blackstone Area Bus (FR)
- Charlottesville Area Transit (FR)
- Danville Transit System (FR)
- Farmville Area Bus (FR)
- Greater Lynchburg Transit (FR/DR)
- Greene County Transit (DR)
- Halifax Area Transit Service (DR)
- JAUNT (FR/DR)
- Virginia Regional Transit (FR/DR)

Transportation Demand Management (2):

- Rappahannock-Rapidan Commuter Services
- RIDESHARE

Short Line (3):

- Buckingham Branch Railroad
- Chesapeake Western Railroad
- Shenandoah Valley Railroad

Human Service Transportation (9):

- Central VA Area Agency on Aging
- Crossroads Community Services
- Danville City's Parks, Recreation and Tourism
- Danville-Pittsylvania Community Services
- Lake Area Bus
- Southside Community Services Board
- STEPS
- Stonewall Therapeutic Recreation Center
- The Arc Of Central Virginia

Freight Rail (1):

- Norfolk Southern Crescent Corridor

Passenger Rail (1):

- Amtrak Crescent Route

Highway

- Park and Ride

Airports (13):

- Brookneal
- Charlottesville-Albemarle
- Culpeper County
- Danville Regional
- Falwell
- Farmville Regional
- Gordonsville Municipal
- Lake Anna
- Louisa County
- Lynchburg Regional
- Orange County
- Warrenton-Fauquier
- William M Tuck

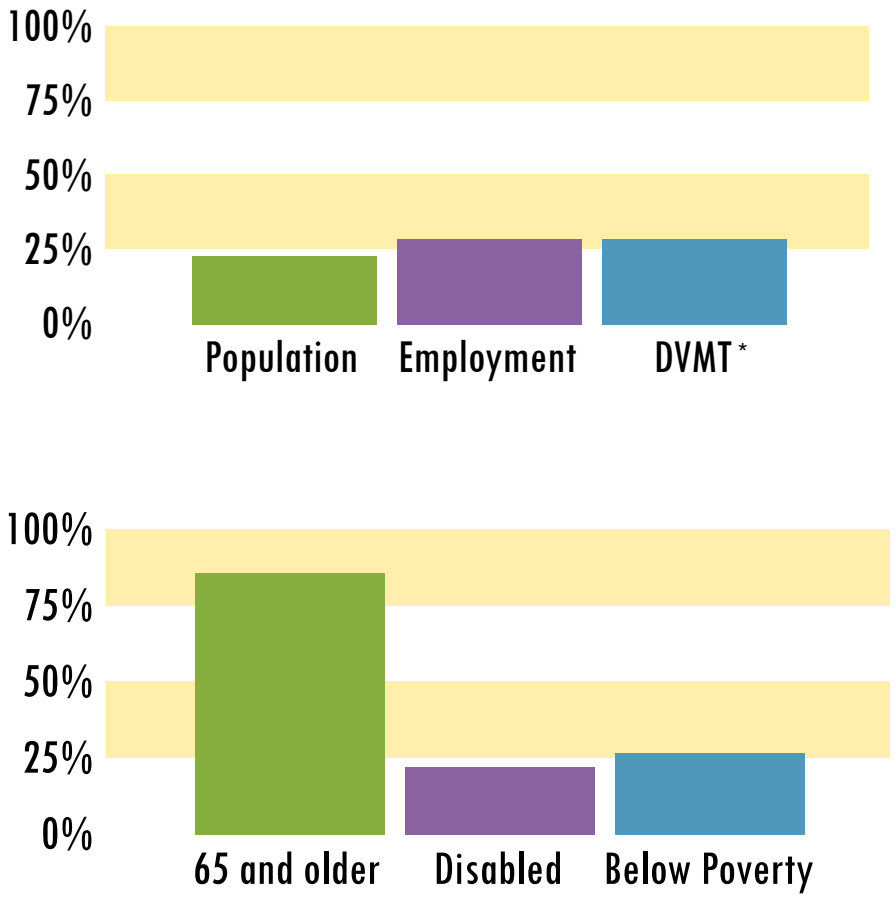
Nine transit services operate in cities, towns and counties throughout the Blue Ridge Region providing both demand response and fixed route service. JAUNT, a regional transportation system, provides express bus transit service to the City of Charlottesville, Albemarle, Fluvanna, Nelson and Buckingham Counties. Greyhound offers bus service within this region, with stations located in Danville, Lynchburg, Charlottesville, and Northern Virginia. Amtrak offers daily service with stops in Lynchburg, Charlottesville, Culpeper, Manassas, Burke Center (VRE riders only), Alexandria and Washington DC, with continuing service to Boston, MA. Park and Ride lots are also available in Fauquier County and Culpeper County along US 29, and there are numerous Park and Ride facilities located in and around the City of Charlottesville along US 29, including at least three lots south of the city in Nelson County.

The Blue Ridge Region has two Transportation Demand Management agencies that help to promote strategies like carpooling, vanpooling, work-from home initiatives and flexible work hours in the Rappahannock-Rapidan and Charlottesville areas (Rappahannock-Rapidan Commuter Services and RIDESHARE). To fill critical mobility gaps for Virginians who do not have access to a personal automobile and live outside of public transit service areas, eight human service agencies exist in the Valley and Ridge region, one in the Culpeper district, and seven in the Lynchburg district.

Norfolk Southern freight rail lines run along virtually the entire US 29 corridor in Virginia, offering a freight option to points south along, as well as north of, Washington DC and to the northeast. The eastern line of Norfolk's Crescent Route runs along Route 29, and connection along the I-66 corridor Norfolk Southern rail lines can be made to the Virginia Inland Port and the western line of Norfolk Southern's Crescent Corridor, which runs along the I-81 corridor. In Charlottesville, these Norfolk Southern lines junction with CSX's Coal Corridor, which provides a connection between the Port of Virginia and the Appalachian coalfields to the west.

The Lynchburg Regional Airport and Charlottesville-Albemarle Airport provide commercial service through a variety of major airlines. These commercial airports along with the 11 other general aviation facilities provide critical connections for passenger and freight transportation. These airports depend on access to a high-quality surface transportation system for their success.

Figure 41: Blue Ridge Regional Characteristics Percent Change (2010 - 2035)



**DVMT: Daily Vehicle Miles Traveled (2006-2035)*

CHARACTERISTICS

The Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report completed by the VTRC identifies a number of trends that will impact transportation in the future. Increases in population will impact the amount of traffic on the roadway and demand for transportation alternatives, impacting commuters and those traveling the roadways of the Blue Ridge region. This trend will impact both passenger and freight traffic along the highway.

Table 30 details the population projections for 2010 and 2035 as well as the absolute change and percent change between 2010 and 2035. In addition, Figure 41 illustrates the percent change in population, employment and DVMT between 2010 and 2035 for the Blue Ridge Region.

Population: All planning districts in the Blue Ridge Region are projected to experience positive population growth between 2010 and 2035. The projected growth varies throughout the region. The Rappahannock-Rapidan and Thomas Jefferson planning districts are expected to experience around 40% growth; Region 2000 and the Commonwealth planning district are expecting just below 20% growth; and the West Piedmont and Southside planning districts are expected to experience 5% and 10% population growth, well below the regional average of 22.5%. In total, the region accounts for approximately 13% of the statewide population in both 2010 and 2035.

Employment: Employment projections for the Blue Ridge Region follow a nearly identical pattern as population. The regional average is slightly higher than the population growth rate at 25.3%, mostly due to the Thomas Jefferson and Region 2000 Planning Districts, both of which are expected to experience higher employment growth than population growth. Despite the higher growth rate, the region's share of statewide totals is around 10%.

Daily Vehicle Miles Traveled: Projected DVMT figures show a different pattern of growth than both employment and population. Although the regional DVMT growth rate of 26% is similar to that of population and employment, the regions where growth is attributed varies. For example, the Rappahannock-Rapidan Planning District, with the highest population growth and second highest employment growth, is expecting a DVMT growth rate of 25%, below the regional average. Conversely, the West Piedmont planning district is expecting an equivalent growth rate to the Rappahannock-Rapidan planning district at 25%, but is expecting some of the lowest population and employment growth in the region. In addition, the Southside district is expecting a decline in DVMT despite a projected increase in both population and employment. This could be the result of the location of new job opportunities in closer proximity to housing.

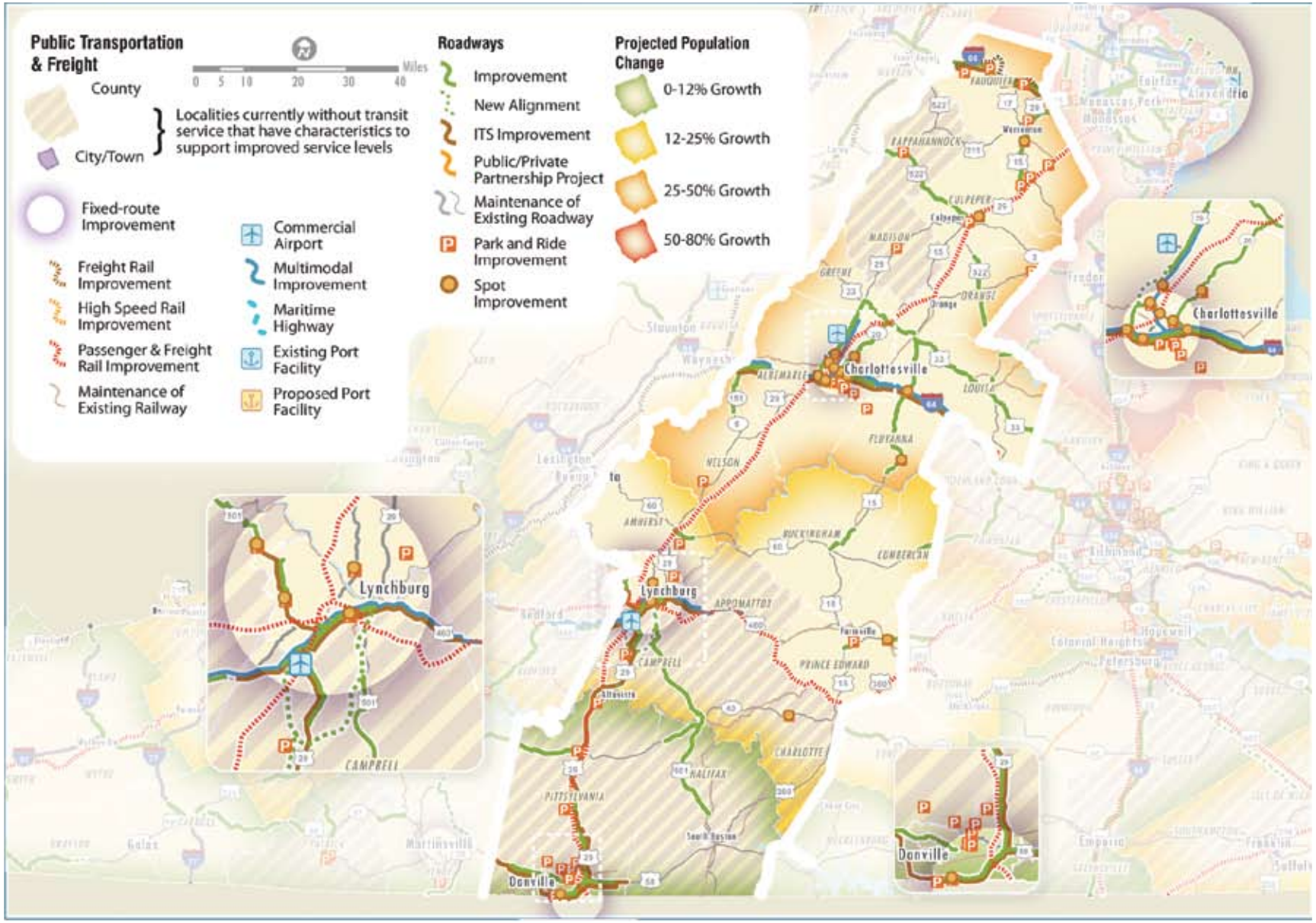
Table 30: Blue Ridge Region Characteristics by PDC

Population	2010 Forecasts	Midpoint 2035 Forecasts	Absolute Change	Percent Change
Rappahannock-Rapidan (9)	175,960	253,073	77,113	44%
Thomas Jefferson (10)	235,010	324,780	89,770	38%
Region 2000 (11)	245,130	288,340	43,210	18%
West Piedmont (12)	245,930	258,456	12,526	5%
Southside (13)	85,960	94,832	8,872	10%
Commonwealth (14)	101,630	121,866	20,236	20%
Regional Total	1,089,620	1,341,347	251,727	23%
State Total	**8,057,350**	**10,926,181**	**2,868,831**	**36%**

Employment	2010 Forecasts	Midpoint 2035 Forecasts	Absolute Change	Percent Change
Rappahannock-Rapidan (9)	83,200	118,637	35,437	43%
Thomas Jefferson (10)	156,020	229,192	73,172	47%
Region 2000 (11)	141,780	180,560	38,780	27%
West Piedmont (12)	118,890	128,640	9,750	8%
Southside (13)	41,360	44,780	3,420	8%
Commonwealth (14)	43,690	51,853	8,163	19%
Regional Total	584,940	753,662	168,722	29%
State Total	**5,206,470**	**7,753,739**	**2,547,269**	**49%**

Daily Vehicle Miles Traveled (DVMT)	Actual VMT in 2006	2035 DVMT Based on Population (in Millions)	Absolute Change	Percent Change
Rappahannock-Rapidan (9)	6,392,726	8.0	1,607,274	25%
Thomas Jefferson (10)	7,328,848	10.3	2,971,152	41%
Region 2000 (11)	6,627,796	9.1	2,472,204	37%
West Piedmont (12)	6,539,111	8.2	1,660,889	25%
Southside (13)	3,271,557	3.0	-271,557	-8%
Commonwealth (14)	2,842,778	3.9	1,057,222	37%
Regional Total	33,002,815	42.5	9,497,185	29%
State Total	**222,178,082**	**345.4**	**123,221,918**	**55%**

Figure 42: Blue Ridge Region Recommendations Map



PUBLIC TRANSPORTATION RECOMMENDATIONS

In the Blue Ridge Region, and across the entire state, Virginia's public transportation systems must maintain a state of good repair for fleet vehicles and maintenance equipment. DRPT recognizes and prioritizes state of good repair issues through its asset management database and funding requirements. State of good repair is discussed in detail in Chapter 3 and funding is discussed in-depth in Chapter 5.

The northern portions of this region, namely the Rappahannock-Rapidan and Thomas Jefferson Planning Districts are expected to see a relatively high growth in population. The transit service improvements in these areas are intended to provide better transit service for commuting and daily trips to increase the mode share for transit, and promote strategies to reduce congestion, especially during peak hours. Recommendations in these areas are:

- Focused Expansion of Fixed Route Coverage (e.g. improve and expand route service and implement express service in Charlottesville)
- Increased Transportation Demand Management

Similar to the Valley and Ridge Region, the population growth rate in the Blue Ridge region diminishes to the south. The Region 2000 and Virginia's Heartland Planning Districts will experience slightly lower population growth rates. The recommendations for public transportation in these areas balance the need for fixed route service for commuters and those living in more densely populated areas, with the needs of the rural population and those who depend on human services transportation. The recommendations for these areas include:

- Increased Demand Response Service
- Expanded Fixed Route Coverage (e.g. expanding bus and express bus service from Lynchburg to surrounding counties)
- Increase Transportation Demand Management

The southern jurisdictions of Pittsylvania County, the City of Danville and Halifax County are expected to have low population growth (based on projections at the PDC level). In these areas, the main focus of transit improvements is to address the mobility needs of older adults, persons with disabilities and persons with lower incomes. The recommendations in these areas include:

- Introduction of Demand Response Service
- Increased Human Services Transportation

In addition to the improvements listed above, the following jurisdictions do not currently have transit service and exhibit the population growth characteristics to support transit service:

- Rappahannock County
- Madison County
- Appomattox County
- Campbell County
- Charlotte County
- Pittsylvania County
- Halifax County

Transportation demand management strategies for the Blue Ridge Region are identified in Table 31.

Table 31: TDM Strategies for the Blue Ridge Region

Geographic Setting	Jurisdictions	TDM Strategies
Small Urban Areas	Danville MPO, Lynchburg MPO, Charlottesville MPO	Expand employer outreach, especially in suburban centers
		Primary focus on resident / commute travel
		Promote carpool and vanpool for long-distance commutes to areas outside region
		Promote telework to residents
		Develop transit links to urban and suburban employment
		Integrate TDM into the land development processes; encourage mixed-use
		Integrate TDM into local planning, MTPs, LRTPs
		Enhance cross-jurisdictional coordination for TDM
Non-Urban Areas	All other areas	Primarily residence-based programs for commuting within and outside the area
		Promote telework to residents
		Establish modest commute outreach in areas with no current program
		Support long-distance commute markets
		Coordinate with neighboring employment areas for outbound commuting
		Integrate TDM into local planning, MTPs, LRTPs

The transit agencies in the Blue Ridge Region have the following ITS investment recommendations for the next six years (Table 32), as identified in the DRPT Statewide ITS Strategic Plan.

Table 32: ITS Investments for the Blue Ridge Region

Transit Agency	ITS Investments in the Next 6 Years					
	Transit Operations	Customer Amenities	Service Planning	Fare Collection	Security	Maintenance/Management
Charlottesville Area Transit		x				x
Danville Transit						
Farmville Area Bus					x	
Greater Lynchburg Transit Company	x	x	x			x
Greene County Transit, Inc.	x	x		x		x
JAUNT Inc.		x		x	x	x
Lake County Area Agency on Aging						
Virginia Regional Transit	x	x	x		x	x

RAIL RECOMMENDATIONS

The rail recommendations for the Blue Ridge Region shown in Table 33 represent those projects within identified transportation corridors that will increase the freight shipments to and from ports, improve commuter and intercity rail within regions of the Commonwealth and other freight improvement projects identified by Class and shortline railroads in Virginia.

All improvements address one or more of the following:

- Reducing passenger car and truck freight traffic to alleviate highway congestion, reduce energy demands and reduce pollutants
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry and improved capacity at Virginia's ports
- Improving passenger rail by enhancing system performance and adding capacity

Table 33: Rail Recommendations for the Blue Ridge Region

I-81/Route 29 Intercity Passenger Rail Project	
Phase I (Lynchburg)	Add one daily train between Washington, DC and Lynchburg Kemper Street Station as a demonstration project for three years beginning in 2009.
	Increase commuter capacity in the VRE service area.
	Complete the capacity study for the entire project corridor from Washington, DC to Bristol and Lynchburg.
	Increase capacity for a second train to Lynchburg with construction of second main line track between Nokesville and Calverton.
Phase III (Bristol) and IV (Richmond)	Provide train service from Bristol to Richmond and from Bristol to Washington, DC.

HIGHWAY RECOMMENDATIONS

Route 29 serves as the primary north/ south corridor within the Blue Ridge Region, linking the metropolitan areas of Danville, Lynchburg and Charlottesville, as well as the towns of Culpeper and Warrenton. Facilities such as Routes 58, 460, 250 as well as Interstates 64 and 66 provide east/ west connections. The areas along the Route 29 corridor represent the highest concentrations of population and employment within the region, with surrounding areas having a predominantly rural character. Highway recommendations within this region seek to provide greater access to the Charlottesville, Danville and Lynchburg areas, as well as provide additional capacity in the south to improve the economic competitiveness of this area of the Commonwealth. To the north, operational improvements including grade separation, signalization and access management to improve traffic flows are recommended to aid the commuter traffic to the Washington, DC, metropolitan area.

Park and Ride Recommendations: The Blue Ridge Region has approximately 28 existing Park and Ride facilities. Thirteen new facilities are recommended serving the City of Danville, City of Charlottesville, and Amherst, Nelson, Campbell, Appomattox, Orange, Madison, Franklin, Henry and Pittsylvania Counties. Additionally, four facilities in Rappahannock County and one facility in Fauquier County have been identified as needing expansion. Park and Ride recommendations are identified in Figure 42.

Other Recommendations: In addition to the Park and Ride recommendations, the multiple highway recommendations are shown in Figure 42 and listed in Tables 34 to 38. The Highway Recommendation Table Reference Guide (Figure 43) provides explanation of the multiple elements included in the highway recommendation tables.

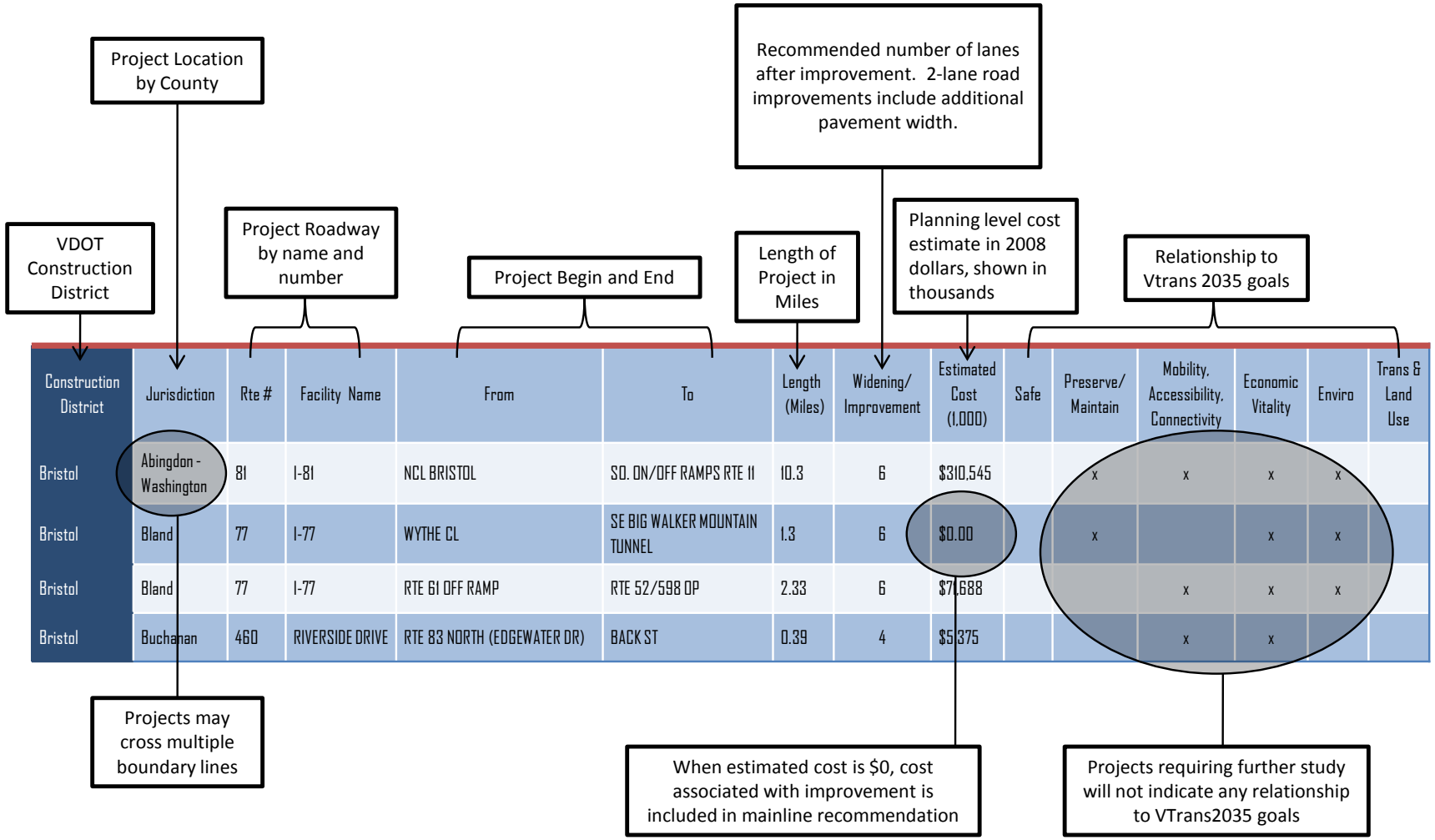
How the Recommendations are Organized: The highway recommendations presented in the 2035 Virginia Surface Transportation Plan address the performance measures presented in Chapter 4. These include: congestion; roadway capacity; safety; and maintenance. The highway recommendations support the goals established in VTrans2035: Safety and Security; System Maintenance and Preservation; Mobility, Accessibility and Connectivity; Economic Vitality; Environmental Stewardship; and Coordination of Transportation and Land Use.[27] The recommendations have been related to these goals in the tables that follow. The recommendations are presented in the following categories:

- Recommendations to Existing Facilities – These recommendations represent improvements to the current roadway network. It is assumed any structures or interchanges that fall within the limits of the recommendation will be improved along with the roadway. It should also be noted that any recommendations identified as an improvement to 2 lanes denotes additional lane width to an existing 2-lane roadway.
- Recommendations to New Locations – These recommendations represent new facilities that would be added to the roadway network.
- Recommendations for Further Study – These are recommendations where a need has been identified, but alternatives are still being analyzed.
- Other Recommendations – These are recommendations that do not fall into the above categories. Examples include interchange and intersection improvements, standalone bridge replacements, re-striping and access management.
- ITS Recommendations – Intelligent Transportation System recommendations (as described in Chapter 4).
- Park and Ride Recommendations – These are recommendations for new Park and Ride lots or expansion to existing Park and Ride lots. Specifics for Park and Rides are not provided as each location will need to be studied to identify an appropriate location and level of demand.

27 Not all VTrans2035 goals were tied to specific recommended improvements. For the VTrans2035 goals of Linking Land Use and Transportation, Program Delivery, Environmental Stewardship, VDOT addresses compliance at the program level as discussed in Chapter 4 of the VSTP.

Figure 43: Highway Recommendation Table Reference Guide

Highway Recommendation Table Reference Guide*



Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Abingdon - Washington	81	I-81	NCL BRISTOL	SO. ON/OFF RAMPS RTE 11	10.3	6	$310,545		x	x	x	x	
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$0.00		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		

*It is recognized that with any highway project there is a potential for community concerns that will need to be addressed prior to projects advancing.

Table 34-1: Blue Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Albermarle	20	STONY POINT ROAD	RTE 250	ELKS/FONTANA DR	0.45	4	$5,500	X		x			
Culpeper	Albemarle	20	STONY POINT ROAD	ELKS/FONTANA DR	RTE 649	4.44	2	$34,139	x		x			
Culpeper	Albemarle	29	MONACAN TRAIL	I-64	RTE 250 UNDERPASS	2.27	6	$26,830			x	x	x	
Culpeper	Albemarle	29	MONACAN TRAIL	RTE 250 UNDERPASS	WCL CHARLOTTESVILLE	1.86	6	$20,585			x	x	x	
Culpeper	Albemarle	29	SEMINOLE TRAIL	RTE 643	RTE 649	2.47	6+Access Management	$58,856			x	x		
Culpeper	Albemarle	250	RICHMOND ROAD	ECL CHARLOTTESVILLE	RTE I-64	1.84	6	$54,176	x		x	x		
Culpeper	Albemarle - Charlottesville	64	I-64	RTE 29	RTE 616	11.77	6	$307,036		x	x	x		
Culpeper	Albemarle - Greene	29	SEMINOLE TRAIL	RTE 649	RTE 33	7.9	6+Access Management	$119,864	x	x	x	x		
Culpeper	Culpeper	522	SPERRYVILLE PIKE	VIRGINIA AVE	WCL CULPEPER	1.03	3	$13,053	x				x	
Culpeper	Culpeper	522	SPERRYVILLE PIKE	CULPEPER WCL	RTE 634	5.05	2	$38,578			x		x	
Culpeper	Culpeper	522	SPERRYVILLE PIKE	RTE 634	RAPPAHANNOCK CL	3.22	2	$27,947			x		x	
Culpeper	Fauquier	15	JAMES MADISON HIGHWAY	RTES 15/29 BUS	RTE 17	4.3	6	$48,038	x	x		x	x	
Culpeper	Fauquier	15	JAMES MADISON HIGHWAY	RTE 17	RTES 15/17/29 BYPASS	4.71	6	$50,805	x		x	x		
Culpeper	Fauquier	29	EASTERN BYPASS	RTES 15/17/29 BUS	NCL WARRENTON @ 17 BYP /15 BUS	3.28	6	$53,010			x	x	x	
Culpeper	Fluvanna	15	JAMES MADISON HIGHWAY	RTE 695	RTE 652	2.02	2	$15,235			x	x	x	

Table 34-2: Blue Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Fluvanna	15	JAMES MADISON HIGHWAY	RTE 702	RTE 250	16.5	2	$132,556			x	x		
Culpeper	Louisa	15	JAMES MADISON HIGHWAY	RTE I-64	0.95 MI SOUTH OF RTE 617 (SOMMERFIELD DRIVE)	1.57	4	$34,353	x		x			
Culpeper	Louisa	15	JAMES MADISON HIGHWAY	0.5 MI SOUTH OF RTE 617	ORANGE CL	8.99	2	$69,928			x			
Culpeper	Louisa	33	LOUISA RD - SOUTH SPOTSWOOD TRAIL	RTE 15	WCL LOUISA	12.12	2	$92,324			x			
Culpeper	Louisa	33	WEST MAIN ST	WCL LOUISA	RTE T- 669	0.64	3	$8,110			x		x	
Culpeper	Louisa	33	WEST MAIN ST	RTES 22/33	ECL LOUISA	0.97	3	$9,603			x		x	
Culpeper	Louisa	33	JEFFERSON HIGHWAY	ECL LOUISA	RTE 655	15.54	2	$118,955	x					
Culpeper	Louisa	208	ZACHARY TAYLOR HIGHWAY	RTE 522	SPOTSYLVANIA CL	3.62	4	$27,575			x			
Culpeper	Louisa	522	SANDY HOOK RD	RTE 250	RTE I-64	0.52	4	$5,918	x		x		x	
Culpeper	Louisa	522	PENDELTON RD	SCL MINERAL	RTES 22/208	0.66	3	$7,841			x		x	
Culpeper	Orange	522	ZACHARY TAYLOR HIGHWAY	.47 MI NORTH SPOTSLVANIA CL	CULPEPER CL	15.24	2	$122,129	x					
Culpeper	Orange - Albemarle	20	STONY POINT ROAD	RTE 649	RTE 33 WEST	9.96	2	$76,327						
Culpeper	Orange - Greene	33	SPOTSWOOD TRAIL	ROUTE 29	RTE 15	12.57	2	$138,145		x	x			

Table 34-3: Blue Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Rappahannock	522	ZACHARY TAYLOR AVE - SPERRYVILLE PIKE	CULPEPER CL	RTE 1001	9.35	2	$74,844	x					
Lynchburg	Amherst	29	LYNCHBURG EXPRESSWAY	RTE 163 (AMHERST ST)	RTE 163 NORTH AT LYTTLETON (1040)	0.52	4	$12,000				x	x	
Lynchburg	Amherst	60	RICHMOND HIGHWAY	RTE 29 BYPASS	AMHERST ECL / RTE 606 WEST	0.93	2	$6,492			x	x	x	
Lynchburg	Amherst	60	RICHMOND HIGHWAY	AMHERST ECL / RTE 606 WEST	RTE 600	3.29	2	$49,837			x	x	x	
Lynchburg	Buckingham	15	JAMES MADISON HIGHWAY - OAK ST	RTE 60	RTE T-1010 EAST	2.11	4	$21,244	x		x	x	x	
Lynchburg	Buckingham	15	JAMES MADISON HIGHWAY	NCL DILLWYN	RTE 617 SOUTH	3.82	2	$27,559	x		x	x	x	
Lynchburg	Campbell	501	BROOKNEAL HIGHWAY - LUSARDI DR - LYNCHBURG AVE	HALIFAX CL	RTE 622	20.86	3	$201,696	x		x	x		
Lynchburg	Campbell	501	CAMPBELL HIGHWAY	RTE 24 EAST	RTE 680 NORTH	2.22	4	$32,492	x		x	X	x	
Lynchburg	Campbell – Lynchburg	460	LYNCHBURG HIGHWAY – RICHMOND HIGHWAY	WATERLICK RD	ROUTE 501 SOUTH	5.10	6	$58,563	x		x	x		
Lynchburg	Cumberland	60	JAMES ANDERSON HIGHWAY	RTE 600 EAST	RTE 13	1	4	$19,026	x		x	x		
Lynchburg	Danville	58	SOUTH BOSTON RD	RTE 29 NORTH	KENTUCK ROAD	0.9	6	$19,575				x	x	

Table 34-4: Blue Ridge Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Lynchburg	Halifax	40	STAGE COACH RD	RTE 670	RTE 501	7.94	2	$54,915				x		
Lynchburg	Halifax	40	L P BAILEY MEMORIAL HIGHWAY	RTE 501	CAMPBELL CL	0.97	3	$8,366	x		x	x		
Lynchburg	Halifax	501	L P BAILEY MEMORIAL HIGHWAY	RTE 360 ALT EAST	RTE 40	20.55	2	$148,365				x		
Lynchburg	Lynchburg	501	CANDLERS MOUNTAIN ROAD	RTE 460 SOUTH	LYNCHBURG EXPRESSWAY	0.99	6	$23,068			x	x	x	
Lynchburg	Lynchburg	501	LYNCHBURG EXPRESSWAY	LAKESIDE DRIVE	BOONSBORO ROAD	3.4	4	$36,157	x		x	x	x	
Lynchburg	Lynchburg	460	RICHMOND HIGHWAY	RTE 501 SOUTH	ECL LYNCHBURG	4.47	6	$56,399	X		X	X		
Lynchburg	Nelson	151	ROCKFISH VALLEY HIGHWAY	RTE 6 SOUTH	ALBEMARLE CL	7.63	2	$54,177	x		x		x	
Lynchburg	Pittsylvania	40	OLD FRANKLIN TURNPIKE	RTE 876E	RTE 29 BYPASS	23.17	2	$243,888				x		
Lynchburg	Prince Edward	15	FARMVILLE RD	RTE 133	RTE 628	2.65	4	$25,010	x		x	x	x	
Lynchburg - Culpeper - Staunton	Augusta - Albemarle - Nelson	64	I-64	ECL WAYNESBORO	RTE 250	9.95	6	$223,748			x			
Lynchburg - Richmond	Prince Edward – Nottoway - Amelia	307	HOLLY FARM RD	RTE 460	RTE 360	9.32	3	$83,942	x			x		

Table 35: Blue Ridge Region Recommendations to New Locations

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Lynchburg	Campbell	29	ROUTE 29 BYPASS SOUTH	US HWY 460	ROUTE 29	9.99	4	$120,505	x		x	x		
Lynchburg	Campbell	29	ROUTE 29 ALTERNATE	ROUTE 29 (SOUTH OF YELLOW BRANCH)	2 MI SOUTH OF ROUTE 460	5.00	4	$150,313	x		x	x		
Lynchburg	Campbell	29	ROUTE 29 ALTERNATE	2 MI SOUTH OF ROUTE 460	ROUTE 460	2.00	4	$54,125	x		x	x		
Lynchburg	Lynchburg	501	LYNCHBURG EXPRESSWAY	EXISTING ROUTE 501 SOUTH OF 221	NORTHWEST EXPRESSWAY	0.51	4	$37,383	x		x			

Table 36: Blue Ridge Region Recommendations to New Locations Identified for Further Study

									VTrans2035 Goals Addressed *					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Albemarle	29	RTE 29 BYPASS	RTE 29	RTE 29 0.5 MN N. RIVANNA RIVER	6.4	4	$234,600						
Culpeper	Fauquier	66	I-66	RTE 17/55 EAST	PRINCE WILLIAM CL	12.76	TBD	TBD						
Culpeper-Staunton	Warren - Fauquier	66	I-66	I-81 NB ON RAMP	RTE 17/55 EAST	23.83	TBD	TBD						
Lynchburg	Prince Edward	15		RTE 628	RTES 460/15 BUS EAST	Study as potential STARS project.	$0							

**Recommendations have not been related to VTrans2035 goals as projects require further study*

Table 37-1: Blue Ridge Region Other Recommendations

								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Albemarle	20	STONY POINT ROAD			Pedestrian accommodations; restriping / pavement markings; and other low cost operational / safety improvements at Rte 20 /250 intersection.	$57	x		x			
Culpeper	Albemarle	20	STONY POINT ROAD			Warning signs near Rte 610	$6	x					
Culpeper	Albemarle	29	SEMINOLE TRAIL			Construct grade separated interchange at Route 29 / 631 (Rio Rd.) intersections, include bicycle/ pedestrian accommodations.	$40,000	x		x			
Culpeper	Albemarle	64	I-64			Dual LTL from I-64 EB exit at Shadwell to WB Route 250 to improve operations	$3,141	x		x			
Culpeper	Albemarle	64	I-64	RTE 637	RTE 29	Interchange reconstruction/redesign to improve operations	$33,057	x		x			
Culpeper	Albemarle	64	I-64			Reconstruct 5th street exit to accommodate mainline widening and improved traffic flow.	$4,500	x		x			
Culpeper	City of Charlottesville	29	EMMET STREET	RTE 250 BYPASS	NCL CHARLOT TESVILLE	Add third southbound lane on Rte 29 and add an additional ramp lane at Best Buy	$4,700	x		x			
Culpeper	City of Charlottesville	29	EMMET STREET			RTE 250/RTE 29 Interchange improvement. Add third southbound lane on 29 and additional ramp lane to southbound Rte 29 bypass. Consolidate signal and access along Rte 29 at this location.	$30,000	x		x			
Culpeper	City of Charlottesville	250				Construct grade separated interchange at McIntire Rd per 2035 CLRP	$30,000	x		x			
Culpeper	Culpeper	15	JAMES MADISON HWY			Grade separated interchange to replace current at-grade interchange at Rte 666. Safety issue.	$36,000	x		x			
Culpeper	Fauquier	15	JAMES MADISON HIGHWAY			Provide grade separated interchange at intersection of 15/17/29 Bypass	$40,000	x		x			

Table 37-2: Blue Ridge Region Other Recommendations

								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Culpeper	Fauquier	29	LEE HIGHWAY			Construct grade separated interchange at Route 29/215 interchange	$35,000	x		x			
Culpeper	Fluvanna	15	JAMES MADISON HWY			Intersection improvement at intersection of Route 15 and 6. Reconstruct intersection as one lane roundabout.	$1,000	x					
Culpeper	Louisa	64	I-64			Improve interchange at Route 15. Ramp improvements needed to handle future traffic volumes expected for this high growth area.	$5,000	x		x	x		
Lynchburg	Amherst	29	LYNCHBURG EXP.			Construct interchange at Route 163 to allow all movements. Lynchburg Vision CLRP recommendation.	$12,000	x		x			
Lynchburg	Campbell	29	WARDS RD	ENGLISH TAVERN ROAD	LAWYERS ROAD	Add street names to mast arms, check clearance level for the traffic signal, move stop bar and install pork chop island at Wards Road / English Tavern Road.	$20	x		x		x	x
Lynchburg	Campbell	29	WARDS RD	LAWYERS ROAD	AIRPORT ENTRANCE	Close median openings in various locations on Wards Road near Russel Woods Drive	$50	x		x		x	x
Lynchburg	Charlotte	40	THOMAS JEFFERSON HWY			Provide additional turning radius for large trucks at Route 40 / 47 intersection. Recommendation from Commonwealth Regional Council.	$500	x					
Lynchburg	City of Danville	29	DANVILLE EXPRESSWAY			Construct bridge structure and ramps for interchange at Elizabeth St.	$4,820	x		x			
Lynchburg	City of Danville	29	DANVILLE EXPRESS.	RTE 58	NCL DANVILLE	Upgrade to interstate standards & number Interstate 785. Minor signage and spot improvement needed	$924	x		x			
Lynchburg	City of Danville	58	SOUTH BOSTON RD/RIVERSIDE DR	RTE 29 NORTH	PIEDMONT DR	Implement access management along corridor as recommended by Danville 2030 CLRP (Vision).	$9,000	x		x		x	x
Lynchburg	City of Lynchburg	460	RICHMOND HIGHWAY			Lengthen acceleration lane onto Rt 29 N. Route 460 from Route 501.	$5,000	x		x			

Table 37-3: Blue Ridge Region Other Recommendations

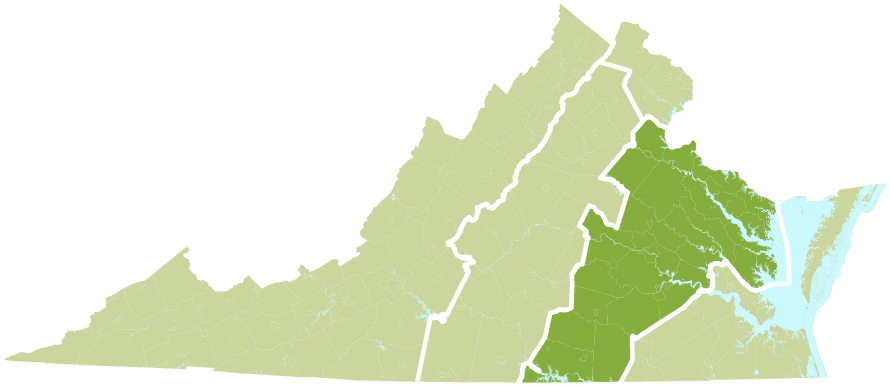
								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Lynchburg	City of Lynchburg	501	LYNCHBURG EXPRESSWAY			Construct interchange at Route 221 (Lakeside Dr.) as noted in Lynchburg 2030 CLRP	$42,000			x			
Lynchburg	Pittsylvania	29	DANVILLE EXPRESSWAY	NCL DANVILLE	ROUTE 863	Upgrade to interstate standards & number Interstate 785. Minor signage and spot improvements needed.	$1,168	x		x			
Lynchburg	Pittsylvania	29		RTE 703	RTE 29 SOUTH BUSINESS	Provide access management improvements in the vicinity of Tightsqueeze Rd are of Pittsylvania Co. Recommendations from Rt. 29 Access Management study.	$5,000	x		x			
Lynchburg	Pittsylvania	58		ROUTE 708 EAST	RTE 58 BUSINESS	Implement access management along corridor as recommended by Danville 2030 CLRP (Vision).	$2,000	x		x		x	x
Lynchburg	Pittsylvania	58	SOUTH BOSTON RD	ECL DANVILLE	RTE 62	Implement access management along corridor as recommended by Danville 2030 CLRP (Vision).	$5,000	x		x		x	x
Lynchburg	Pittsylvania	58	RIVERSIDE DR	RTE 58 BYPASS/WB RAMP	WCL DANVILLE	Implement access management along corridor as recommended by Danville 2030 CLRP (Vision).	$2,000	x		x			x
Lynchburg	Prince Edward	307	HOLLY FARM RD			At intersection of Rtes 307 and 460. Recommended for STARS study.	$0	x		x			

Table 38: Blue Ridge Region ITS Recommendations

(A description of ITS project types can be found on pp. 59-60)

						VTrans2035 Goals Addressed					
Route	**Limits**	**Short-Term (0-7 years)**	**Mid-Term (8-15 years)**	**Long-Term (16-25 years)**	**Other**	**Safe**	**Preserve/ Maintain**	**Mobility, Accessibility, Connectivity**	**Economic Vitality**	**Enviro**	**Trans & Land Use**
I-66	Rt.15 to I-81		Traffic Detection & Monitoring	Intellidrive		x		x		x	
I-64	MP 87 to MP 136		Traveler Information	Intellidrive	Climbing lanes from MP 97 to MP 104	x		x		x	
I-64			ATM			x		x		x	
I-64			CVO			x		x		x	
I-64	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-64			ATM	Intellidrive		x		x		x	
US 29	Pittsylvania	Emergency Operations and Traveler Information (Closed Circuit TV and Changeable Message Signs)				x		x		x	
US 29	Lynchburg - Campbell	Emergency Operations and Traveler Information (Closed Circuit TV and Changeable Message Signs)				x		x		x	
US 58	Pittsylvania	Emergency Operations and Traveler Information (Closed Circuit TV and Changeable Message Signs)				x		x		x	
US 460	Lynchburg - Campbell	Emergency Operations and Traveler Information (Closed Circuit TV and Changeable Message Signs)				x		x		x	
US 501	Lynchburg	Emergency Operations and Traveler Information (Closed Circuit TV and Changeable Message Signs)				x		x		x	

REGION 4: PIEDMONT



The Piedmont Region's economy is largely driven by the government-related and service industries associated with the state capital, along with tourism and industry in the Northern Neck. The Port of Richmond is a major hub and distribution gateway for truck, rail and barge freight. Other factors that have contributed to the economic stability of the region include manufacturing, financial headquarters, numerous health facilities, and the concentration of educational institutions in the area. The region's location also benefits from an excellent position along the state's transportation network at the junction of east-west I-64 and north-south I-95. Virginians continue to commute longer distances, especially in Northern Virginia along I-95, aiding the population growth in Fredericksburg.

Trends indicate that the region will continue to attract highly-sought employees and employers from around the nation to support a growth in service, finance and biotechnology jobs. It is likely the workforce will continue to be highly mobile and well-educated. Trends toward smaller households, more diverse populations and more compact, denser communities will likely continue. As a whole, the region will likely continue to reflect the basic spectrum of community types seen today, ranging from rural areas to suburban and urban centers.

PDCs in the Piedmont Region

- Southside
- Virginia's Heartland Commonwealth Regional Commission
- Richmond Regional
- George Washington Regional Commission
- Northern Neck
- Middle Peninsula
- Crater

Strategies for the Piedmont Region

- Increase Use of Congestion Pricing
- Increase Road, Transit and Freight Capacity
- Increase Use of ITS
- Expand TDM
- Ensure Multimodal Freight Movement
- Improve/Expand Access to Transit in Rural Areas
- Increase and Improve Bicycle and Pedestrian Facilities

There is a need to expand multimodal choices and capacity in the region, including extending and expanding the VRE; developing more inter-city passenger rail; expanding the use of streetcars and bus rapid transit particularly in more urban areas; and expanding rail capacity for interstate freight. Transportation demand management and ITS strategies should be employed to reduce congestion. In addition, improvement and expansion of major radial connectors will help maintain a high level of mobility in the region.

This need is recognized and efforts are already underway to study alternatives to addressing this challenge, most prominent is the ongoing study of potential rapid transit alternatives for the Broad Street Corridor of Richmond. In addition, high speed rail alternatives from Richmond to destinations in North Carolina are also being studied.

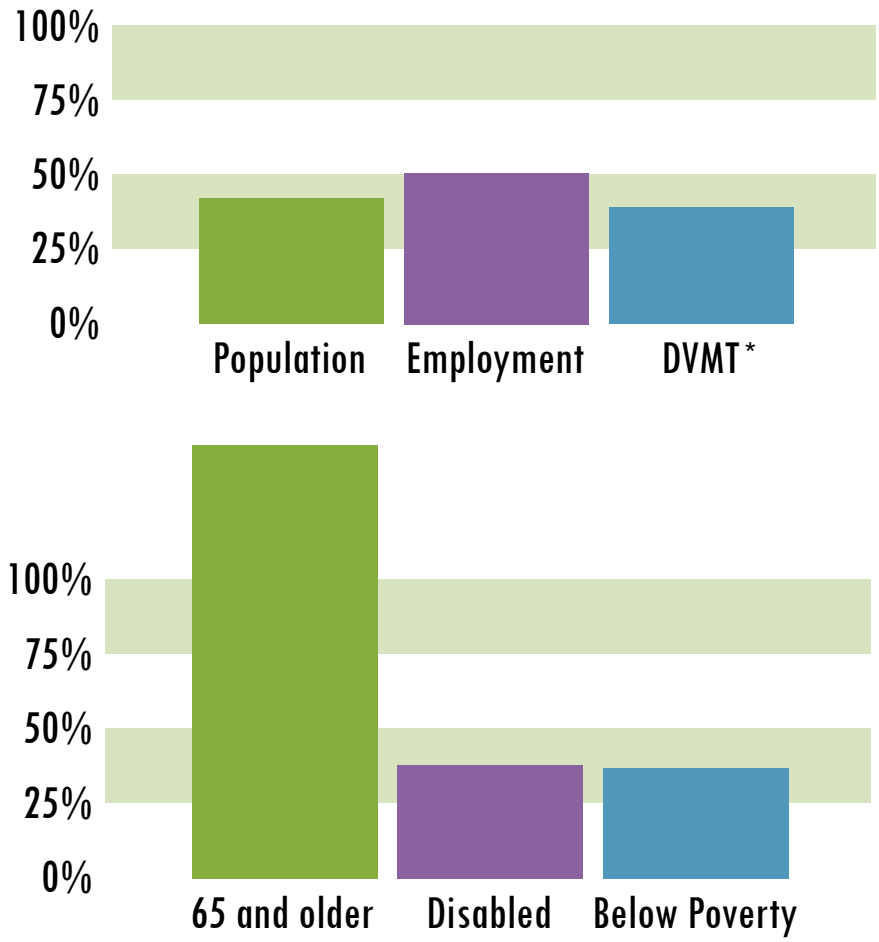
TRANSPORTATION FACILITIES AND SERVICES

The Piedmont Region is primarily defined by the I-95 corridor. This major north-south, multi-lane interstate runs along the east coast of the United States, from Maine to Florida and serves as the primary east coast corridor. In Virginia, it serves as the main through corridor in the state for both passengers and freight, with almost 40% of the total interstate traffic using the corridor. Within the state, I-95 links the Washington DC metropolitan area with Richmond. South of Richmond in Petersburg, I-95 offers access to I-85, which connects to major southern metropolitan areas such as Charlotte and Atlanta. From the northern terminus in Virginia to the City of Colonial Heights, US Highway 1 can be considered part of the Washington to North Carolina corridor and a parallel facility. Other major highway facilities include I-64, I-295, US 17 and US 301.

Numerous transit services exist along the I-95 corridor. The VRE operates commuter trains along the corridor connecting cities as far south as Fredericksburg with Northern Virginia and Washington, DC. Amtrak provides service between the City of Richmond and Newport News, with a stop in Williamsburg. Amtrak will also be adding one additional train to their service between Richmond (Staples Mill Station) and Washington, DC.

In the Richmond metro area, the Richmond-Fredericksburg Express is a commuter bus that connects Metro Richmond with VRE service in Fredericksburg. Express service is also provided from Richmond to Petersburg. Some of the major local services include Fredericksburg Regional Transit (FRED), the GRTC Transit System and Petersburg Area Transit (PAT). Several smaller transit entities also provide much needed demand response service to populations including services in Halifax County and the Northern Neck. There are approximately 10 Park and Ride facilities within the corridor in Stafford and Spotsylvania Counties. Other lots are also located in the Richmond region. Greyhound operates long distance bus service along the corridor, with stops in Emporia, Petersburg, Richmond and Fredericksburg. I-95 also provides access to the Port of Richmond and the James River Navigation Channels.

Figure 44: Piedmont Regional Characteristics Percent Change (2010 - 2035)



DVMT: Daily Vehicle Miles Traveled (2006-2035)

MULTIMODAL FACILITIES AND SERVICES: PIEDMONT REGION

Fixed Route (FR) & Demand Response (DR) Transit (9):

- Bay Aging's Bay Transit (DR)
- Blackstone Area Bus (FR)
- Fredericksburg Regional Transit (FR)
- GRTC Transit System (FR/DR)
- Lake Area Bus (DR)
- Petersburg Area Transit (FR/DR)
- Piedmont Regional Transit (FR/DR)
- Potomac & Rappahannock Transportation Commission (PRTC) (FR)
- Virginia Railway Express (VRE) (FR)

Transportation Demand Management (4):

- GW RideConnect
- Northern Neck Rideshare
- Middle Peninsula Rideshare
- RIDEFINDERS

Human Service Transportation (15):

- A Grace Place Adult Care Center
- American Red Cross
- Beth Sholom Home
- CAPUP
- Chesterfield Community Services Board
- Crater District Area Agency On Aging /FGP
- Daily Planet
- ElderHomes Corportation
- Goochland Free Clinic And Family Services
- Henrico Area Mh/Mr Services
- Rappahannock Area Community Services Board
- Rappahannock-Rapidan Commuter Services
- Richmond Community Action Program
- St. Joseph's Villa
- Weinstein Jewish Community Center

Freight Rail (1):

- CSX National Gateway Corridor

Short Line (1):

- Buckingham Branch Railroad

Passenger Rail (7):

- Amtrak Auto Train
- Amtrak Carolinian Line
- Amtrak Northeast Corridor
- Amtrak Palmetto Route
- Amtrak Silver Meteor Route
- Amtrak Silver Star Route
- Northeast Corridor Regional Route

Highway (1):

- Park and Ride

Port Facilities (1):

- Port of Richmond

Airports (17):

- Allen C Perkinson
- Chase City Municipal
- Chesterfield County
- Crewe Municipal
- Hanover County Municipal
- Hummel Field
- Lawrenceville/Brunswick
- Lunenburg County
- Marks Municipal
- Mecklenburg-Brunswick Regional
- Middle Peninsula Regional
- New Kent County
- Petersburg Municipal
- Richmond International
- Shannon
- Stafford Regional
- Tappahannock Municipal

The Piedmont Region has four TDM agencies that help to promote strategies like carpooling, vanpooling, work-from-home initiatives and flexible work hours in the Northern Neck, George Washington RC and Richmond areas (Middle Peninsula Rideshare, Northern Neck Rideshare, GWRideConnect, and RIDEFINDERS). To fill critical mobility gaps for Virginians who do not have access to a personal automobile and live outside of public transit service areas or need specialized transportation services, 15 human service agencies exist in the Piedmont Region, one in the Fredericksburg district, and 14 in the Richmond district.

There is significant freight rail between Washington and North Carolina as CSX rail lines run along the eastern seaboard. These lines cross numerous other major freight rail corridors including those that provide access to the Port of Virginia. Access is also provided to Norfolk Southern's Heartland Corridor rail lines, which run from the three ports in Hampton Roads through western Virginia and beyond. In addition, access to Norfolk Southern's Coal Corridor is available, and a small portion of the Buckingham Branch Short-Line Railroad, running between Clifton Forge and Richmond, operates along the Washington to North Carolina Corridor north of Richmond. Multiple freight and passenger air facilities exist in the Piedmont Region including Richmond International Airport, Stafford Regional Airport, Hanover County Airport, Chesterfield County Airport, Shannon Airport in Spotsylvania County, and Dinwiddie County (Petersburg Municipal) Airport. It is important to note that airports are dependent on being accessible by a high-quality surface transportation system for their success.

Amtrak operates its passenger service with numerous stops in the region, including Fredericksburg, Ashland, Petersburg, and two in Richmond.

CHARACTERISTICS

The Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report completed by the VTRC identifies a number of trends that will impact transportation in the future. Increases in population will impact the amount of traffic on the roadway, impacting commuters and those traveling through Virginia for other purposes and it will impact both passenger and freight traffic along the highway.

Table 39 details the population projections for 2010 and 2035 as well as the absolute change and percent change between 2010 and 2035. In addition, Figure 44 illustrates the percent change in population, employment and DVMT between 2010 and 2035 for the Piedmont Region.

Population: With 1.8 million persons in 2010 and, 2.5 million persons projected for 2035, the Piedmont Region accounts for almost one quarter of Virginia's population. The region is expecting an average 33% increase across all jurisdictions. However, this figure is skewed slightly by the fast growing George Washington planning district, where a nearly 80% increase in population is projected. All other jurisdictions in the region are projected to increase up to 41%. Despite the high growth rate of the George Washington planning district, the Richmond planning district accounts for over 50% of the region's total population in both 2010 and 2035.

Employment: Employment figures show a similar pattern in that the George Washington planning district is expecting to increase its number of jobs by approximately 90%, nearly twice the rate of any other district in the Piedmont Region. The Richmond Regional planning district has approximately 65% of the jobs, which is even higher than its share of the population in the region. In total the Piedmont Region contains about one-fifth of the jobs in Virginia.

Daily Vehicle Miles Traveled: In 2006 the Piedmont Region accounted for nearly 27% of the DVMT in Virginia. This figure declines about 3% by 2035, which is most likely due to the negative DVMT growth rates in the Southside and Crater planning districts. The George Washington planning district is projected to have the greatest percent growth of nearly 70%, followed by the Middle Peninsula planning district with about 50% growth.

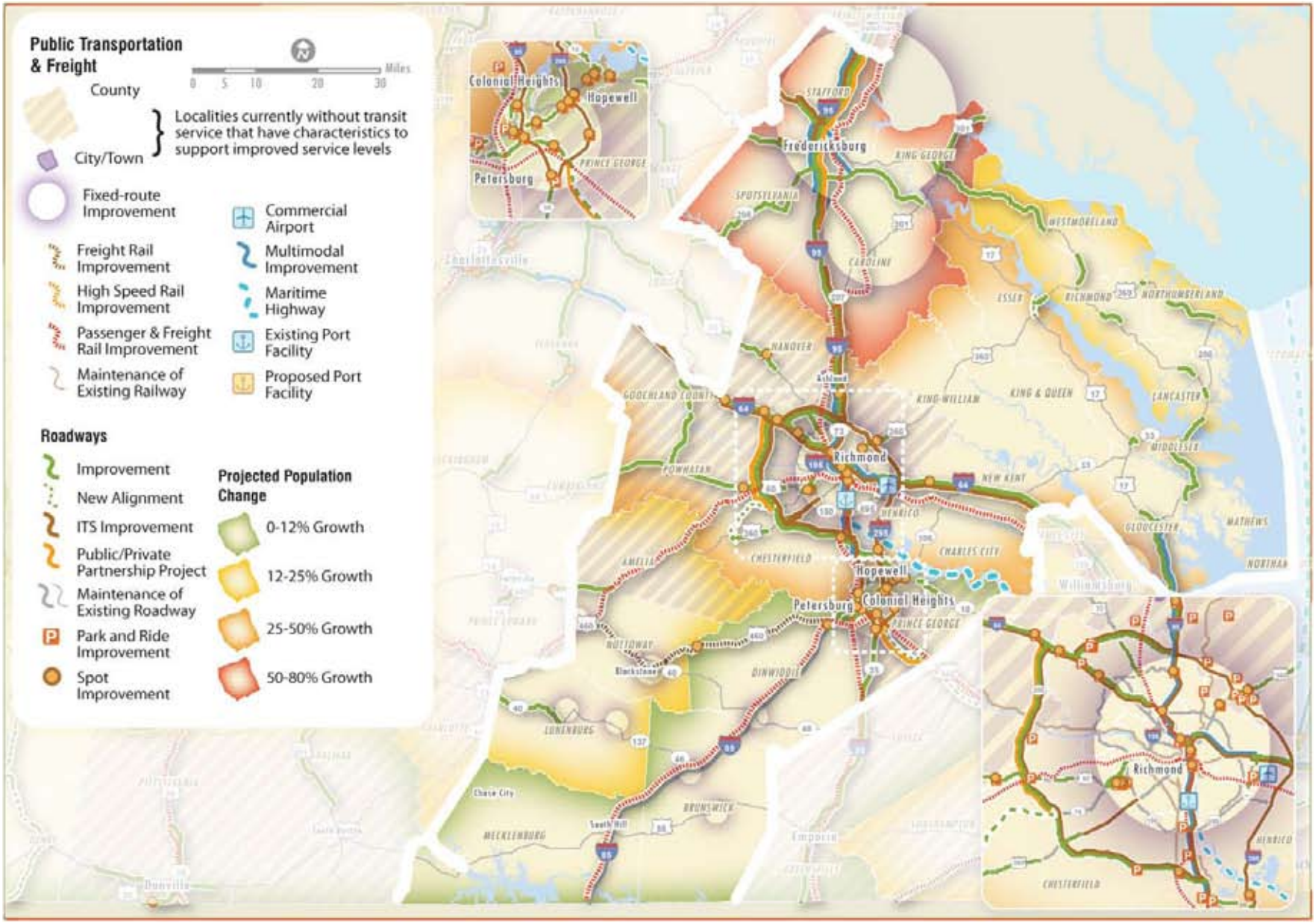
Table 39 : Piedmont Region Characteristics by PDC

Population	2010 Forecast	Midpoint 2035 Forecast	Absolute Change	Percent Change
Southside (13)	85,960	94,832	8,872	10%
Virginia's Heartland (14)	101,630	121,866	20,236	20%
Richmond Regional (15)	1,003,920	1,416,551	412,631	41%
George Washington (16)	355,520	638,298	282,778	80%
Northern Neck (17)	51,910	63,265	11,355	22%
Middle Peninsula (18)	96,350	130,942	34,592	36%
Crater (19)	170,420	190,100	19,680	12%
Regional Total	1,865,710	2,655,854	790,144	42%
State Total	**8,057,350**	**10,926,181**	**2,868,831**	**36%**

Employment	2010 Forecast	Midpoint 2035 Forecast	Absolute Change	Percent Change
Southside (13)	41,360	44,780	3,420	8%
Virginia's Heartland (14)	43,690	51,853	8,163	19%
Richmond Regional (15)	700,290	1,067,653	367,363	52%
George Washington (16)	166,590	315,979	149,389	90%
Northern Neck (17)	22,170	26,503	4,333	20%
Middle Peninsula (18)	40,300	57,503	17,203	43%
Crater (19)	89,950	101,577	11,627	13%
Regional Total	1,104,350	1,665,848	561,498	51%
State Total	**5,206,470**	**7,753,739**	**2,547,269**	**49%**

Daily Vehicle Miles Traveled (DVMT)	Actual VMT in 2006	2035 DVMT Based on Population (in Millions)	Absolute Change	Percent Change
Southside (13)	3,271,557	3.0	-271,557	-8%
Virginia's Heartland (14)	2,842,778	3.9	1,057,222	37%
Richmond Regional (15)	31,199,631	44.8	13,600,369	44%
George Washington (16)	12,003,782	20.2	8,196,218	68%
Northern Neck (17)	1,287,493	2.0	712,507	55%
Middle Peninsula (18)	2,746,037	4.1	1,353,963	49%
Crater (19)	7,035,973	6.0	-1,035,973	-15%
Regional Total	60,387,251	84.0	23,612,749	39%
State Total	**222,178,082**	**345.4**	**123,221,918**	**55%**

Figure 45: Piedmont Region Recommendations Map



PUBLIC TRANSPORTATION RECOMMENDATIONS

In the Piedmont Region, and across the entire state, Virginia's public transportation systems must maintain SGR for fleet vehicles and maintenance equipment. DRPT recognizes and prioritizes SGR issues through its asset management database and funding requirements. SGR specifics and funding is discussed in-depth in Chapter 5.

The area of highest population growth in this region is the George Washington Regional Commission, whose population growth is comparable to the growth in Northern Virginia. The Fredericksburg area and surrounding communities will experience an explosive rate of high population growth. Commuter traffic on I-95 will continue to grow. To keep up with the demand for transit, the recommendations for this area are:

- Major Capacity Investments (e.g. HOV/Bus/HOT lane projects for new services)
- Focused Expansion of Fixed Route Coverage (e.g. flex routes in Fredericksburg north of US 17)
- Expand Transportation Demand Management

The Richmond Regional and Middle Peninsula planning districts will see relatively high population growth. Transit recommendations in these areas are:

- Focused Expansion of Fixed Route Coverage (e.g. implement rapid transit along Broad Street and/or expanded bus service in Chesterfield County)
- Expanded Transportation Demand Management

The Northern Neck and Virginia's Heartland planning districts are expected to grow at a moderate pace. Recommendations for these areas are:

- Increase Demand Response Service
- Expand Fixed Route Coverage
- Expand Transportation Demand Management

The Crater and Southside planning districts have low projected population growth rates. These recommendations are mostly focused on providing transit service for the rural population who depend on human services transportation:

- Introduce Demand Response Transit
- Increase Human Services Transportation

In addition to the improvements listed above, the following jurisdictions do not currently have transit service and have the population growth characteristics to support introduced transit service:

- Town of Ashland
- Hanover County
- Goochland County
- Powhatan County
- Amelia County
- Prince George County

Transportation demand management strategies for the Piedmont Region are identified according to geographic setting as displayed in Table 40.

Table 40: TDM Strategies for the Piedmont Region

Geographic Setting	Jurisdictions	TDM Strategies
Suburban Feeder Areas	Fredericksburg region, Richmond region	Expand non-SOV use for non-work trips in suburban centers
		Strong focus on employment outreach in suburban centers
		Promote feeder area ridesharing for long-distance commutes
		Promote telework to employers and residents
		Expand transit options; develop transit links to urban and suburban employment
		Integrate TDM into the land development process; encourage mixed-use
		Integrate TDM into local planning, MTPs, LRTPs
		Enhance cross-jurisdictional coordination for TDM
Non-Urban Areas	All other areas	Primarily residence-based programs for commuting within and outside the area
		Promote telework to residents
		Establish modest commute outreach in areas with no current program
		Support long-distance commute markets
		Coordinate with neighboring employment areas for outbound commuting
		Integrate TDM into local planning, MTPs, LRTPs

The following transit agencies in the Piedmont Region have the following ITS investment recommendations for the next six years (Table 41), as identified in the DRPT Statewide ITS Strategic Plan.

Table 41: ITS Investments for the Piedmont Region

Transit Agency	ITS Investments in the Next 6 Years					
	Transit Operations	Customer Amenities	Service Planning	Fare Collection	Security	Maintenance/Management
Bay Aging's Bay Transit	x	x	x		x	x
Blackstone Area Bus		x			x	
Fredericksburg Regional Transit	x					
GRTC Transit System	x				x	x
Lake County Area Agency on Aging						
Petersburg Area Transit						
Potomac and Rappahannock Transportation Commission	x	x	x		x	
Virginia Railway Express		x				

RAIL RECOMMENDATIONS

The rail recommendations for the Piedmont Region shown in Table 42 represent those projects within identified transportation corridors that will increase the freight shipments to and from ports, improve commuter and intercity rail within regions of the Commonwealth and other freight improvement projects identified by Class and shortline railroads in Virginia.

All improvements address one or more of the following:

- Reducing passenger car and truck freight traffic to alleviate highway congestion, reduce energy demands and reduce pollutants
- Increasing freight capacity throughout the Commonwealth to support greater demand for freight rail shipping, growth in the coal industry and improved capacity at Virginia's ports
- Improving passenger rail by enhancing system performance and adding capacity

Table 42: Rail Recommendations for the Piedmont Region

Crescent Corridor Project (I-81, I-20, I-40, I-75 and I-85)	
Phase I - Priority Capacity Improvements	Completion of Manassas to Front Royal capacity improvements.
Phase II - Secondary Capacity Improvements	Additional capacity and reliability improvements on the Shenandoah, Piedmont, Manassas, Heartland and Bristol lines.
Phase III - Remaining Capacity Improvements	Remaining capacity, train reliability, and speed improvements on the Shenandoah, Piedmont, Manassas, Heartland and Bristol lines.

Southeast High Speed Rail (SEHSR) Project	
Phases II and III - Construction and Improvements	Engineering, track construction and improvements from Washington, DC to the North Carolina state line for high speed rail service.
	The scale of improvements will be determined by segment, including: Washington, DC to Richmond, Richmond to Petersburg, and Petersburg to the North Carolina state line.

HIGHWAY RECOMMENDATIONS

Population and employment centers for the Piedmont Region are concentrated in the City of Fredericksburg and City of Richmond. The northern portion of the region is impacted by the proximity of the DC metropolitan area's high concentration of employment centers. The I-95 corridor serves as the major artery of travel, carrying a heavy amount of commuter traffic between the Fredericksburg area and points north. Travel in the southern portion of the Piedmont Region has traditionally been between downtown Richmond and surrounding suburbs. Large retail centers and commercial corridors have continued to grow and expand, creating destinations on the fringes of the urbanized area. Highway recommendations within this region are focused on supporting and increasing the use of carpools, vanpools and transit through the use of HOV/HOT lane improvements to associated park and ride facilities. Recommendations also address the improvement of operations on key facilities to improve travel without significant additional infrastructure.

Park and Ride Recommendations: The Piedmont region has approximately 47 existing Park and Ride facilities. Approximately 22 new facilities and six expansions are recommended. The majority of these recommendations are along I-64 around Richmond and I-95 between Fredericksburg and Northern Virginia. Some of the Park and Ride facilities to be expanded include those at the Leeland and Brooke VRE stations. Park and Ride Recommendations are identified in Figure 45.

Other Recommendations: In addition to the Park and Ride recommendations, the multiple highway recommendations are shown in Figure 45 and listed in Tables 43 to 47. The Highway Recommendation Table Reference Guide (Figure 46) provides explanation of the multiple elements included in the highway recommendation tables.

How the Recommendations are Organized: The highway recommendations presented in the 2035 Virginia Surface Transportation Plan address the performance measures presented in Chapter 4. These include: congestion; roadway capacity; safety; and maintenance. The highway recommendations support the goals established in VTrans2035: Safety and Security; System Maintenance and Preservation; Mobility, Accessibility and Connectivity; Economic Vitality; Environmental Stewardship; and Coordination of Transportation and Land Use.[28] The recommendations have been related to these goals in the tables that follow. The recommendations are presented in the following categories:

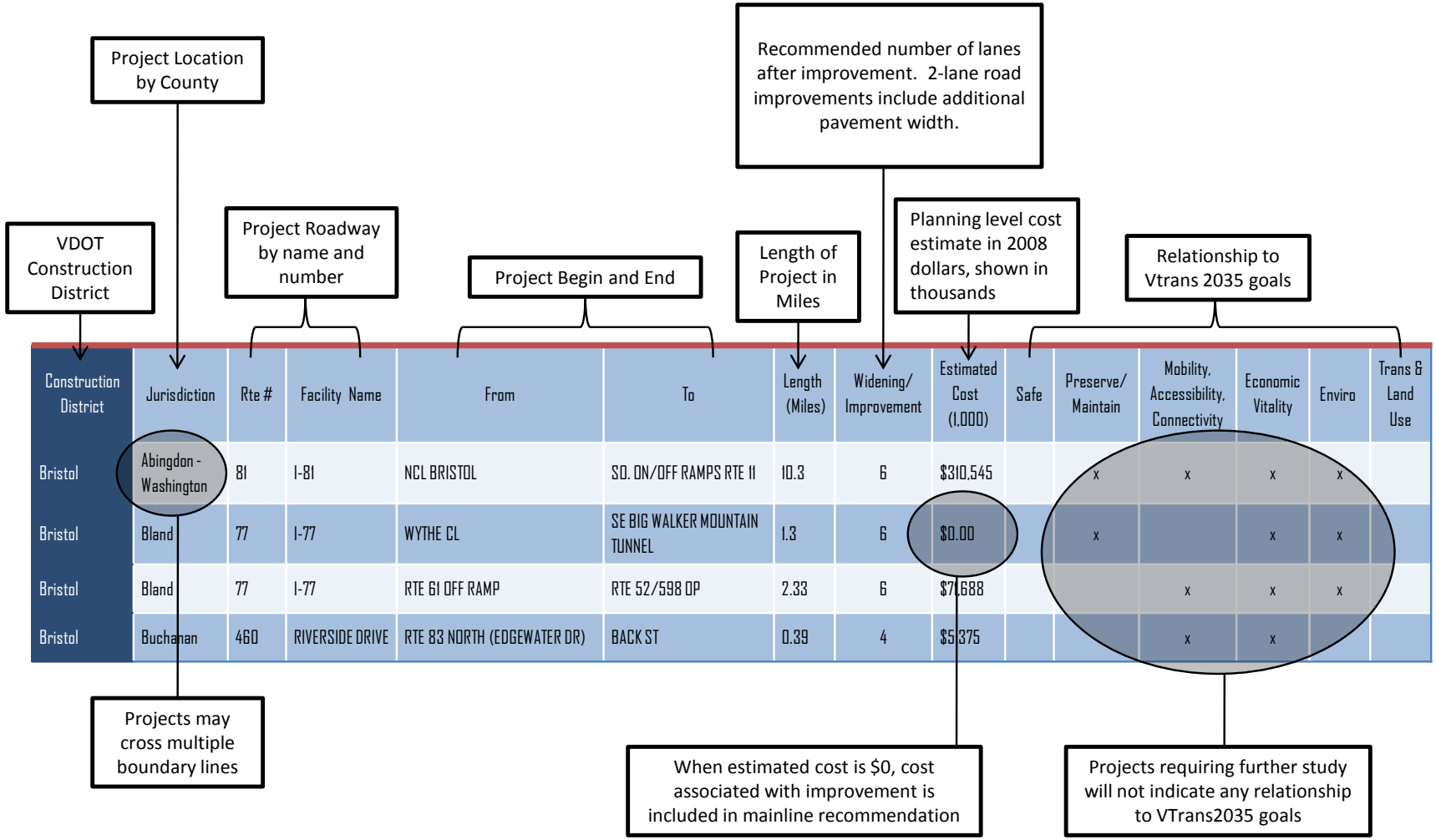
- Recommendations to Existing Facilities – these recommendations represent improvements to the current roadway network. It is assumed any structures or interchanges that fall within the limits of the recommendation will be improved along with the roadway. It should also be noted that any recommendations identified as an improvement to 2 lanes denotes additional lane width to an existing 2-lane roadway.
- Recommendations to New Locations – these recommendations represent new facilities that would be added to the roadway network.
- Recommendations for Further Study – recommendations where a need has been identified, but alternatives are still being analyzed.
- Other Recommendations – recommendations that do not fall into the above categories. Examples include interchange and intersection improvements, standalone bridge replacements, re-striping and access management.
- ITS Recommendations – Intelligent Transportation System recommendations (as described in Chapter 4).

Park and Ride Recommendations – recommendations for new Park and Ride lots or expansion to existing Park and Ride lots. Specifics for Park and Rides are not provided as each location will need to be studied to identify an appropriate location and level of demand.

28 Not all VTrans2035 goals were tied to specific recommended improvements. For the VTrans2035 goals of Linking Land Use and Transportation, Program Delivery, Environmental Stewardship, VDOT addresses compliance at the program level as discussed in Chapter 4 of the VSTP.

Figure 46: Highway Recommendation Table Reference Guide

Highway Recommendation Table Reference Guide*



Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Abingdon - Washington	81	I-81	NCL BRISTOL	SO. ON/OFF RAMPS RTE 11	10.3	6	$310,545		x	x	x	x	
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$0.00		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		

*It is recognized that with any highway project there is a potential for community concerns that will need to be addressed prior to projects advancing.

Table 43-1: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Fredericksburg	Essex - Richmond	360	RICHMOND ROAD - RICHMOND HIGHWAY	RTES 17/360	END DOWNING BRIDGE	1.4	4	$94,785	x		x	x		
Fredericksburg	Fredericksburg	3	WILLIAM STREET	OAKWOOD STREET	RTE 1(JEFF DAVIS HWY)	0.63	6	$5,040			x		x	
Fredericksburg	Fredericksburg - Spotsylvania	95	I-95	RTE 1	RTE 3	4.09	8	$105,139		x	x	x		
Fredericksburg	Fredericksburg - Stafford	95	I-95	RTE 3	RTE 17	3.03	8	$143,122		x	x	x		
Fredericksburg	Gloucester	17	MAIN STREET	G. WASHINGT ON MEM. HWY SO.	JOHN CLAYTON MEMORIAL HIGHWAY	1.2	6	$35,898	x					
Fredericksburg	Gloucester	17	GEORGE WASHINGTON MEM HIGHWAY	NORTH END COLEMAN BRIDGE	RTE 1204/TOLL PLAZA	0.36	6	$4,493			x			
Fredericksburg	Gloucester	17	GEORGE WASHINGTON MEM HIGHWAY	RTE 1208(ROPER RD)	MAIN STREET SOUTH	10.54	6	$261,128	x	x	x			
Fredericksburg	Gloucester	17	GEORGE WASHINGTON MEM HIGHWAY	MAIN STREET SOUTH	ARK ROAD	4.13	6	$74,856	x	x			x	
Fredericksburg	King George	3	KINGS HIGHWAY	RTE 610	RTE 676	0.61	4	$14,640	x		x		x	
Fredericksburg	King George	301	JAMES MADISON PARKWAY	RTE 3	.08 MI SOUTH RTE 652	11.79	6	$119,934	x	x		x		
Fredericksburg	King George	301	JAMES MADISON PARKWAY	.08 MI SOUTH RTE 652	MARYLAND SL	0.17	4	$2,360			x	x		
Fredericksburg	Lancaster	3	MARY BALL ROAD	RTE 604 WEST	RTE 614	2.8	4	$26,427			x			
Fredericksburg	Lancaster	3	MAIN STREET	RTE T-1026	SCL KILMARNOCK	1.19	4	$28,912	x		x		x	

Table 43-2: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Fredericksburg	Lancaster	3	RAPPAHANNOCK DRIVE	RTE 200 SOUTH	MIDDLESEX CL	1.55	4	$17,234	x	x	x			
Fredericksburg	Mathews - Middlesex	3	WINDSOR ROAD - GENERAL PULLER HIGHWAY - GREYS POINT ROAD - BUCKLEY HALL ROAD - TWIGGS FERRY ROAD	ROBERT OPIE NORRIS BRIDGE BEGIN	RTE 14	15.55	4	$115,934			x			
Fredericksburg	Middlesex	3	ROBERT OPIE NORRIS BRIDGE	LANCASTER CL / ROBERT OPIE NORRIS BRIDGE END	ROBERT OPIE NORRIS BRIDGE BEGIN	1.93	4	$156,411			x			
Fredericksburg	Middlesex	17	GLOUCESTER ROAD	RTE 17 SOUTH	RTES 33/618	0.8	3	$11,520	x				x	
Fredericksburg	Middlesex	33	GENERAL PULLER HIGHWAY	RTES 17/33/618	RTE 703	0.65	4	$9,954			x		x	
Fredericksburg	Northumberland	360	RICHMOND RD	RTE 202	RTE 750	0.39	4	$5,973	x				x	
Fredericksburg	Northumberland	360	NORTHUMBERLAND HIGHWAY	RTE 601 WEST	RTE 644 WEST	8.57	4	$54,098		x				
Fredericksburg	Richmond	3	HISTORY LAND HIGHWAY	RTE 203	NCL WARSAW	2.25	4	$21,235		x		x	x	
Fredericksburg	Richmond	3	HISTORY LAND HIGHWAY	RTE 619	RTE 642	0.75	4	$3,281			x	x	x	
Fredericksburg	Richmond	3	HISTORY LAND HIGHWAY	RTE 642	RTE 692 EAST	3.07	4	$23,971		x		x	x	
Fredericksburg	Spotsylvania	1	JEFFERSON DAVIS HIGHWAY	RTE 17 BYPASS	RTE I- 95	1.18	6	$27,144	x		x		x	
Fredericksburg	Spotsylvania	3	PLANK HIGHWAY	ORANGE CL	RTE 620 WEST	8.79	6	$84,963	x	x	x	x		
Fredericksburg	Spotsylvania	3	PLANK HIGHWAY	RTE 610 EAST	RTE 1112	0.79	6	$18,328			x	x	x	
Fredericksburg	Spotsylvania	3	PLANK HIGHWAY	RTE 1112	FREDERICKSBURG WCL	1.49	8	$59,646	x	x	x	x	x	
Fredericksburg	Spotsylvania	17	MILLS DRIVE	RTE 608 EAST	OLD RTE 17	4.1	4	$54,134		x	x	x		

Table 43-3: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Fredericksburg	Spotsylvania	208	COURTHOUSE ROAD	LOUISA CL	TA RIVER	10.47	4	$111,643		x	x			
Fredericksburg	Spotsylvania	208	COURTHOUSE ROAD	1.0 MI WEST NI RIVER	RTE 628	2.03	6	$38,156				x		
Fredericksburg	Spotsylvania	208	COURTHOUSE ROAD	RTE 628	RTE 1	3.74	6	$89,364			x	x		
Fredericksburg	Spotsylvania - Caroline	17	MILLS DRIVE - TIDEWATER TRAIL	RTE 301	RTE 608 EAST	15.77	4	$79,968			x			
Fredericksburg	Spotsylvania - Caroline	95	I-95	RTE 207	RTE 17 OP	21.66	8	$502,036		x	x	x		
Fredericksburg	Stafford	17	WARRENTON ROAD	RTE I-95	RTE 1491 / UAB	2.56	8	$33,750		x	x	x		
Fredericksburg	Stafford	17	WARRENTON ROAD	RTE 1491 / UAB	RTE 705 SOUTH	3.06	6	$33,772	x	x		x		
Fredericksburg	Stafford	95	I-95	RTE 17	RTE 630	7.26	8	$136,898		x	x	x	x	
Fredericksburg	Stafford	95	I-95	RTE 630	PRINCE WILLIAM CL	9.57	8	$266,016			x	x		
Fredericksburg	Westmoreland - King George	3	KINGS HIGHWAY	RTE 301	WCL MONTROSS	21.98	2	$153,053						
Fredericksburg	Westmoreland - Richmond	3	KINGS HIGHWAY	RTE 621	RTE 203	2.83	2	$19,598	x					
Fredericksburg - Richmond	Ashland - Hanover - Caroline	95	I-95	RTE 802	RTE 207	15.09	8	$314,782			x	x		
Richmond	Chesterfield	10	EAST HUNDRED ROAD	RTE I-95	RTE 898	3.44	6	$61,085		x		x		
Richmond	Chesterfield	10	EAST HUNDRED ROAD	RTE I-295 RAMP	HOPEWELL CL	3.17	6	$77,223				x		
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	POWHATAN CL	RTE 652	0.92	6	$9,419	x		x		x	
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	RTE 652	RTE 288	1.57	8	$20,606	x		x		x	

Table 43-4: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	RTE 288	RTE 714 (WINTERFIELD RD)	1.7	6	$40,997			x			
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	RTE 668 (N. WOOLDRIDGE RD)	RTE 147	1.63	6	$40,136	x		x		x	
Richmond	Chesterfield	76	POWHITE PARKWAY	RTE 60 RAMP	RTE 150 RAMP	3.03	6	$83,333		x	x			
Richmond	Chesterfield	288	RTE 288	RTE I-95	RTE 360	13.82	6	$409,503		x	x	x		
Richmond	Chesterfield	288	RTE 288	RTE 360	RTE 76	2.03	8	$60,624			x	x	x	
Richmond	Chesterfield	360	HULL STREET ROAD	RTE 603 EAST	RTE 667	3.26	6	$46,785				x	x	
Richmond	Chesterfield	360	HULL STREET ROAD	RTE 667	RTE 702	2.47	8	$49,539		x		x	x	
Richmond	Chesterfield	360	HULL STREET ROAD	RTE 288	RTE 604	1.85	6	$10,878		x	x	x	x	
Richmond	Colonial Heights	1	BOULEVARD	DUPUY AVENUE	LYNCHBURG AVENUE	0.17	5	$714	x				x	
Richmond	Colonial Heights	1	BOULEVARD	LYNCHBURG AVENUE	TEMPLE AVENUE	0.82	4	$16,875					x	
Richmond	Dinwiddie	1	WASHINGTON STREET - BOYDTON PLANK ROAD	RTE 1303	WCL PETERSBURG	1.32	4	$25,672		x	x	x		
Richmond	Goochland	6	RIVER ROAD WEST	RTE 522 EAST	VALLEY VIEW LANE	0.63	2	$6,343			x		x	
Richmond	Goochland	64	I-64	RTE 617	EB RTE 288 ON RAMP	7.75	6	$176,841			x	x		
Richmond	Goochland - Chesterfield - Powhatan	288	RTE 288	LUCKS LANE	EB RTE I-64 ON RAMP	15.2	6	$277,291			x	x		
Richmond	Hanover	33	MOUNTAIN RD	RTE 715	RTE 611	4.69	4	$58,442	x	x	x			
Richmond	Hanover	95	I-95	HENRICO CL	RTE 802	2.74	8	$88,463	x		x	x		

Table 43-5: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	Hanover	360	MECHANICSVILLE TURNPIKE	RTE I-295	RTE 615	3.86	8	$77,282	x	x	x			
Richmond	Hanover	360	MECHANICSVILLE TURNPIKE	RTE 615	RTE 627	2.08	6	$47,502	x	x	x			
Richmond	Henrico	33	STAPLES MILL ROAD	SPRINGFIELD RD	PARHAM ROAD	3.23	6	$39,682			x		x	
Richmond	Henrico	64	I-64	GASKINS ROAD	STAPLES MILL ROAD	5.45	8	$238,560		x	x			
Richmond	Henrico	64	I-64	AIRPORT DRIVE (RTE 156)	RTE I-295 CD OFF RAMP	1.64	6	$66,892		x			x	
Richmond	Henrico	64	I-64	RTE I-295 CD OFF RAMP	MEADOW ROAD UP	2.65	8	$29,870	x					
Richmond	Henrico	64	I-64	MEADOW ROAD UP	NEW KENT CL	1.79	8	$46,328	x		x	x	x	
Richmond	Henrico	156	AIRPORT DRIVE	RTE 60 WEST	RTE I-64	0.54	6	$13,475				x	x	
Richmond	Henrico	295	I-295	RTE I-64	BROOK ROAD (CD OFF RAMP)	8.54	8	$323,296		x	x			
Richmond	Henrico - Goochland	64	I-64	EB RTE 288 ON RAMP	GASKINS ROAD	4.94	8	$180,346		x	x			
Richmond	Hopewell	10	RANDOLPH ROAD	MAIN STREET	RTE 156 (WINSTN CHURCHIL DR)	0.74	4	$3,411				x		
Richmond	Louisa	522	SANDY HOOK RD	RTE 6 NORTH	RTE 250	8.33	2	$78,412	x		x		x	
Richmond	Louisa	33	MOUNTAIN RD	RTE 655	RTE 715	6.66	4	$67,277			x		x	
Richmond	Lunenburg	40	LUNENBURG HIGHWAY	RTES 15/360 BYPASS	RTE 49 WEST	13.55	2	$101,807				x	x	
Richmond	New Kent	64	I-64	HENRICO CL	JAMES CITY CL	20.07	6	$326,566			x	x		

Table 43-6: Piedmont Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	Petersburg	36	EAST WASHINGTON STREET	AMELIA STREET	ECL PETERSBURG	1.45	4	$29,840	x			x		
Richmond	Petersburg	85	I-85	SCL PETERSBRG	RTE I-95 NORTH	4.15	6	$145,561				x		
Richmond	Petersburg	460	COUNTY DRIVE	.41 ME I-95 (MAINT BREAK)	RTE 106 (WAGNER RD)	4.6	4	$58,346	x					
Richmond	Powhatan	60	JAMES ANDERSON HIGHWAY	RTE 13	.63 MI WEST RTE 522	16.39	2	$110,356	x	x	x			
Richmond	Powhatan	60	JAMES ANDERSON HIGHWAY	RTE 300	CHESTERFIELD CL	10.11	6	$126,229	x	x		x	x	
Richmond	Powhatan	522	MAIDENS RD	RTE 60	GOOCHLAND CL	8.82	2	$59,731	x		x			
Richmond	Prince George	10	JAMES RIVER DRIVE	RTE 156	RTE 609	4.78	4	$22,548				x	x	
Richmond	Prince George	36	OAKLAWN BOULEVARD	ECL PETERSBURG	JEFFERSON PARK ROAD	2.73	6	$54,726				x	x	
Richmond	Prince George	460	COUNTY DRIVE	RTE I-295	RTE 630	0.78	4	$3,993				x		
Richmond	Richmond	64	I-64	RTE I-95 SOUTH	RTE 360 COLLECTOR RD	1.67	8	$147,520	x	x	x	x	x	
Richmond - Hampton Roads	Prince George - Sussex	95	I-95	RTE 40	SCL PETERSBURG	16.57	6	$349,997		x	x	x		
Richmond - Lynchburg	Nottoway - Amelia - Prince Edward	307	HOLLY FARM RD	RTE 460	RTE 360	9.32	3	$83,942	x			x		

Table 44: Piedmont Region Recommendations to New Locations

Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	VTrans2035 Goals Addressed: Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Envir o	Trans & Land Use
Fredericksburg	Essex	17	PROPOSED TAPPAHANOCK BYPASS	RTE 360/RTE 715	RTE 17 N	3.08	4	$101,271	x	x				
Fredericksburg	Essex	360	PROPOSED 360 CONNECTOR	PROPOSED TAPPAHANOCK BYPASS	RTE 17/RTE 360	0.91	4	$40,289	x	x				
Fredericksburg	Fredericksburg	95	I-95 HOV	SCL FREDERICKSBURG	STAFFORD CL	3.18	2	$95,400	x	x				
Fredericksburg	Spotsylvania	208	PROPOSED RTE 208 BYPASS PHASE II	0.5 KM WEST TA RIVER	1.2 KM EAST PO RIVER	4.3	4	$51,869		x				
Fredericksburg	Stafford	95	I-95 HOV	RTE 610	PRINCE WILLIAM CL	4.35	3	$189,750	x	x				
Fredericksburg	Stafford-Spotsylvania	95	I-95 HOV	ROUTE 610	RTE 1	14.2	2	$528,600	x	x				
Richmond	Chesterfield	76	POWHITE PKWY EXT	RT 360	CHARTER COLONY PARKWAY	9.9	4	$257,276		x				
Richmond	Prince George	460	ROUTE 460 EXPRESSWAY	ROUTE 460	SUSSEX CL	10.14	4	$497,000	x	x	x			

Table 45: Piedmont Region Recommendations to New Locations Identified for Further Study

Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length	Thru Lanes	Estimated Cost (1,000)	VTrans2035 Goals Addressed* Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Fredericksburg	Spotsylvania-Fredericksburg	3	RAPPAHANOCK PKWY	ROUTE 3	FREDERICKSBURG ECL	3.15	4	$331,741						
Fredericksburg	Spotsylvania	3000	JACKSON GATEWAY	ROUTE 1	ROUTE 17	2.75	4	$155,720						

**Does not address any VTrans2035 goals because projects require further study*

Table 46-1: Piedmont Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Fredericksburg	Gloucester	17	GEORGE WASHINGTO N MEM HWY	YORK CL	NORTH END COLEMAN BRIDGE	Significant peak period congestion on approaches to Coleman Bridge. Bridge was constructed with wide shoulders that could accommodate traffic. Restripe existing shoulder across the Coleman Bridge as peak period lane.	$1,000	x		x			
Fredericksburg	Gloucester	17	MAIN STREET			Replace existing signalized intersection (Rte 17 and Rte 3) with a 2-lane roundabout to improve traffic flow and reduce delay	$2,000	x		x			
Fredericksburg	King George	3	KINGS HIGHWAY	RTE 205	RTE 301	Install mast arms, lane use diagrammatic regulatory signs, optimize signal timing, prohibiting turns, realign vertical alignment / regarding and extend shoulder	$1,100	x		x		x	
Fredericksburg	Stafford	95	PURPLE HEART TRAIL			Construct new I-95 interchange with Route 630 and relocate Route 630 from US-1 to Cedar Lane per FAMPO 2035 CLRP.	$118,250			x			
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	RTE 76	RTE 3258 WEST	Check signal timing, install new pavement markings and install new signs on Midlothian Turnpike (Route 60) at Gateway Center Parkway West and Wadsworth Drive	$310	x		x		x	
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE	RTE 3258 WEST	RTE 678	Install left-turn pavement markings, refresh pavement markings and install mast arms at Midlothian Turnpike (Route 60) and Providence Road (Route 678)	$250	x		x		x	
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE			Intersection relocation and improvements to Page Rd. / Route 60 per Richmond CLRP.	$1,800	x		x			
Richmond	Chesterfield	60	MIDLOTHIAN TURNPIKE			Improve pavement markings, mast arms, signage and lighting at Midlothian Turnpike (Rt. 60) and Boulders Parkway (Rt. 3430)	$280	x					
Richmond	Chesterfield	60	MIDLOTHIAN TNPK			Rte 60 at Rte 678 (Buford Rd) install left-turn pavement markings	$256	x		x			
Richmond	Chesterfield	60	MIDLOTHIAN TNPK			Midlothian Tpk & Turner Rd - Install left-turn pavement markings	$487	x		x			
Richmond	Chesterfield	60	MIDLOTHIAN TNPK			Midlothian Tpk at East Cloverleaf Mall - Install mast arms with large street name signs	$894	x		x			
Richmond	Chesterfield	288				Add Northwest loop to Route 145/288 Interchange	$3,000	x		x			

Table 46-2: Piedmont Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	Chesterfield	288		WOOLRIDGE RD	MIDLOTHIAN TNPK	Construct CD access lanes from Woolridge to 0.5 mile south of Midlothian Tpk	$7,500	x		x			
Richmond	Chesterfield	288		MIDLOTHIAN TNPK	POWHATAN CL	Construct CD access lanes from Midlothian Tnpk to 0.5 mile south of Powhatan Co Line	$12,500	x		x			
Richmond	Chesterfield	295	I-295			Interchange with Route 618. Included in Richmond 2031 CLRP. Provides access to development.	$31,000			x	x		
Richmond	City of Colonial Heights	95	I-95			Interchange improvement----realign the off ramp and on ramp at the I-95/Temple Ave. Interchange	$8,600	x		x	x		
Richmond	City of Hopewell	10	RANDOLPH ROAD			Signalization and Turn lane improvement at Hummel Ross Rd.	$540	x		x			
Richmond	City of Hopewell	36	OAKLAWN BOULEVARD	WCL HOPEWELL	JEFFERSON PARK ROAD	Signal Computer System – Jefferson Park Road to Temple Avenue ramp	$330	x				x	
Richmond	City of Hopewell	36	OAKLAWN BOULEVARD	WCL HOPEWELL	JEFFERSON PARK ROAD	Turn Lanes and Signal Modification	$94	x		x			
Richmond	City of Hopewell	36	OAKLAWN BLVD	RTE I-295	COLONIAL CORNER	Turn lanes	$537	x		x			
Richmond	City of Hopewell	156	WINSTON CHURCH RD	ARLINGTON RD	SOUTH 6TH AVE	Safety improvements at CSX Railroad	$80	x		x			
Richmond	City of Hopewell	156	WINSTON CHURCH RD	SOUTH 6TH AVE	RANDOLPH RD	Safety improvements at NS Railroad	$231	x		x			
Richmond	City of Petersburg	36	E WASHINGTON ST	AMELIA STREET	PUDDLEDUCK RD	Upgrade existing signal. Fort Lee expansion, cost from CLRP	$430	x		x			
Richmond	City of Petersburg	85	I-85	SQUIRREL LEVEL ROAD	RTE I-95 NORTH	Cost included with widening project. Upgrade I-85/460/95 interchange to improve traffic flow and safety issues.	$0	x		x			
Richmond	City of Petersburg	95	PURPLE HEART TRAIL	SCL PETERSBURG	RIVES ROAD	I-95 - Reconstruct and relocate interchange at Rives Rd. Cost from CLRP	$97,000	x		x			

Table 46-3: Piedmont Region Other Recommendations

								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	City of Petersburg	95	PURPLE HEART TRAIL	SOUTH CRATER RD	RTE I-85 NB ON RAMP	I-85/I-95/Rte 460 interchange Phase I and II. Cost from CLRP	$79,000	x		x			
Richmond	City of Petersburg	460	COUNTY DRIVE	.41 MEI-95 (MAINT BREAK)	RTE 109 HICKORY HILL RD	Provide New Signal - Fort Lee expansion, cost from CLRP	$650	x		x			
Richmond	City of Richmond	64	I-64	WCL RICHMOND	RTE I-95 NORTH	Improve bottleneck on I-64/95 overlap in the vicinity of Bryan Park. Recommendations include increasing capacity on ramps and using ITS.	$100,000	x		x			
Richmond	City of Richmond	95	I-95			Interchange modification at Maury St.	$12,000	x		x			
Richmond	City of Richmond	95	I-95			Interchange modification at Broad St.	$40,000	x		x			
Richmond	City of Richmond	95	I-95			Interchange modification at Belvidere St and Duval St.	$12,000	x		x			
Richmond	Dinwiddie	85	I-85			Improve I-85/ Route 460 Interchange per Tri-Cities 2031 CLRP	$1,100	x		x			
Richmond	Dinwiddie	460		NOTTO WAY CL	RTE 639	Realign intersection	$0	x		x			
Richmond	Goochland	64	I-64			Cost estimate included in the mainline widening recommendation. Upgrade Oilville interchange.	$0	x		x			
Richmond	Goochland	64	I-64			Cost estimate included in mainline widening recommendation. RTE 623 Upgrade existing interchange.	$0	x		x			
Richmond	Hanover	33	MOUNTAIN RD			CLRP recommendation to realign and improve intersection of Route 54 and 33.	$10,000	x		x			
Richmond	Hanover	95	I-95	RTE 802	SCL ASHLAND	Interchange improvements	$6,347	x		x			

Table 46-4: Piedmont Region Other Recommendations

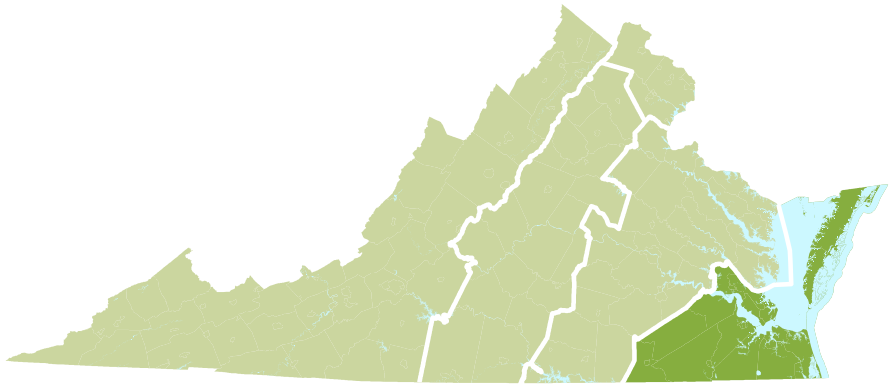
								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Richmond	Hanover	360	MECHANICSVILLE TURNPIKE	I-295	RTE 643	Intersection Improvements - 2031 CLRP	$13,494	x		x			
Richmond	Hanover	360	MECHANICSVILLE TURNPIKE	HENRICO CL	0.14 MI WEST RTE 360 BUS	Bridge Replacement- Chickahominy River	$5,652	x					
Richmond	Hanover	360	MECHANICSVILLE BYPASS	RTE 156 OFF RAMP	RTE I-295	Construct CD lane on Route 360 eastbound to separate 295 on/off traffic from 360 through traffic	$20,000	x		x			
Richmond	Henrico	73	PARHAM RD			Create eastbound dual left turn lanes at Route 1	$624	x		x			
Richmond	Henrico	64	I-64			North Gayton Road Interchange	$31,000			x			
Richmond	Henrico	64	I-64			Gaskins Interchange Modification	$10,000	x		x			
Richmond	New Kent	64	I-64			Interchange modification at 249/33.	$40,000	x		x			
Richmond	Prince George	36	OAKLAWN BOULEVARD			Fort Lee expansion - modify existing intersection of Temple Ave. and Oaklawn Blvd. Split intersection and modify existing signal.	$3,600	x		x	x		
Richmond	Prince George	295	I-295			Rt. 106 Relocation and new grade separated interchange with I-295. Project noted in 2031 Tri-Cities CLRP.	$60,000			x			

Table 47: Piedmont Region ITS Recommendations

(A description of ITS project types can be found on pp. 59-60)

						VTrans2035 Goals Addressed					
Route	**Limits**	**Short-Term (0-7 years)**	**Mid-Term (8-15 years)**	**Long-Term (16-25 years)**	**Other**	**Safe**	**Preserve/Maintain**	**Mobility, Accessibility, Connectivity**	**Economic Vitality**	**Enviro**	**Trans & Land Use**
I-95	Petersburg to Ladysmith	Core Infrastructure	ICM	SLCS		x		x		x	
I-95			ATM	Intellidrive		x		x		x	
I-295	Entire Length	Core Infrastructure	ICM	Intellidrive		x		x		x	
I-295			ATM			x		x		x	
Rt. 288	Entire Length	Core Infrastructure	ICM	Intellidrive		x		x		x	
Rt. 288			ATM			x		x		x	
Rt. 360	Rt. 150 to Rt. 288	Core Infrastructure	ICM			x		x		x	
Rt. 360		Signal Optimization	ATM			x		x		x	
Rt. 360		Transit Signal Priority				x		x		x	
I-64	New Kent-ECL to Goochland WCL	Core Infrastructure	ICM	SLCS		x		x		x	
I-64			ATM	Intellidrive		x		x		x	
I-64	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-64			ATM	Intellidrive		x		x		x	
I-95	Fredericksburg to Springfield	Core Infrastructure	ICM	SLCS		x		x		x	
I-95			ATM	Intellidrive		x		x		x	

REGION 5: EASTERN



The Eastern Region is defined largely by its water resources, which have played a significant role in boosting the region's prominence as a hub of waterborne freight commerce. The Port of Virginia, Naval Station Norfolk (the world's largest naval station), NASA Wallops Flight Facility (a rocket launch site for science and exploration missions), shipyards, coal piers and hundreds of miles of waterfront property and recreational beaches, all contribute to the diversity and stability of the region's economy. In addition to water-related economic generators, the Eastern Region is steeped in 400 years of American history. Hundreds of natural and historical features draw visitors from around the world each year.

It is predicted that the Eastern Region, especially the "Seven Cities" of Virginia Beach, Norfolk, Chesapeake, Newport News, Hampton, Portsmouth, and Suffolk, will grow faster than previously expected. Fueling this growth is the projected expansion of the Port of Virginia, and Craney Island terminals, as well as the continued presence of a large concentration of military bases, facilities and personnel. The more rural communities on the Eastern Shore and Middle Peninsula have become attractive locations for families and retirees alike.

PDCs in the Eastern Region

- Hampton Roads
- Accomack-Northampton
- Crater

Strategies for the Eastern Region

- Increase Use of Congestion Pricing
- Increase Road, Transit and Freight Capacity
- ITS
- Expand TDM
- Ensure Multimodal Freight Movement
- Improve/Expand Access to Transit in Rural Areas
- Increase and Improve Bicycle and Pedestrian Facilities

Future investments in transit in the Eastern Region will need to be balanced between expanding the current transit options for commuters and residents in the more densely populated areas, and establishing and enhancing the transit service for the rural population and for those who do not have access to a personal automobile. Transportation investments that continue to support the Port of Virginia's economic vitality will also continue to be an important focus in this region. Multimodal strategies such as rail enhancements and increased use of waterways could ease freight movement from Hampton Roads to the north along the Chesapeake Bay.

TRANSPORTATION FACILITIES AND SERVICES

The Eastern Region is defined by three major corridors US 13, US 17, and I-64. The Eastern Shore corridor is mostly defined by US 13, a highway running north-to-south for over 500 miles in the eastern United States, running through Delaware, Maryland, and Virginia from the northeast suburbs of Philadelphia, Pennsylvania to Fayetteville, North Carolina.

In Virginia, US 13 serves as a connector between the Hampton Roads area and Virginia's Eastern Shore, part of the Delmarva Peninsula, and provides the only direct connection to the Peninsula without leaving the state. US 13 crosses the Chesapeake Bay at its mouth via the Chesapeake Bay Bridge-Tunnel, a 20-mile long facility comprised of bridges and two approximately one-mile-long tunnels. US 13 passes through the Hampton Roads and Accomack-Northampton planning districts. It passes through four cities in the Hampton Roads area and through both Accomack and Northampton Counties along the Virginia Peninsula.

US 17 runs north-to-south in the eastern United States for close to 1,200 miles. It is known as the "Coastal Highway," as it is near to the Atlantic Coast for much of its length. In the Commonwealth of Virginia, US 17 travels through 11 counties in Virginia in addition to the Cities of Chesapeake, Portsmouth, and Newport News in Hampton Roads.

MULTIMODAL FACILITIES AND SERVICES: EASTERN REGION

Fixed Route (FR) & Demand Response (DR) Transit (4):

- Hampton Roads Transit (FR/DR)
- STAR Transit (FR)
- Town of Chincoteague Transit (FR)
- Williamsburg Area Transport Authority (FR/DR)

Human Service Transportation (12):

- Arc of the Virginia Peninsula
- Bon Secours Senior Health
- Chesapeake Service Systems
- Eastern Shore Community Services Board
- ESAAA/CAA
- Historic Triangle Senior Center
- Hope House Foundation
- Independence Center
- Peninsula Agency on Aging
- Senior Services
- Sussex-Greensville-Emporia Adult Activity Services
- Western Tidewater Community Service Board

Transportation Demand Management (1):

- TRAFFIX

Freight Rail (4):

- Bay Coast Railroad
- Chesapeake and Albemarle Railroad
- CSX
- Norfolk Southern

Passenger Rail (1):

- Amtrak

Highway (2):

- High Occupancy Vehicle (HOV) Lanes
- Park and Ride

Port Facilities (3):

- Newport News Marine Terminal
- Norfolk International Terminals
- Portsmouth Marine Terminal

Airports (11):

- Accomack County
- Chesapeake Municipal
- Emporia-Greensville Regional
- Franklin Municipal
- Hampton Roads
- Newport News/Williamsburg International
- Norfolk International
- Suffolk Municipal
- Tangier Island
- Wakefiled Municipal
- Williamsburg-Jamestown

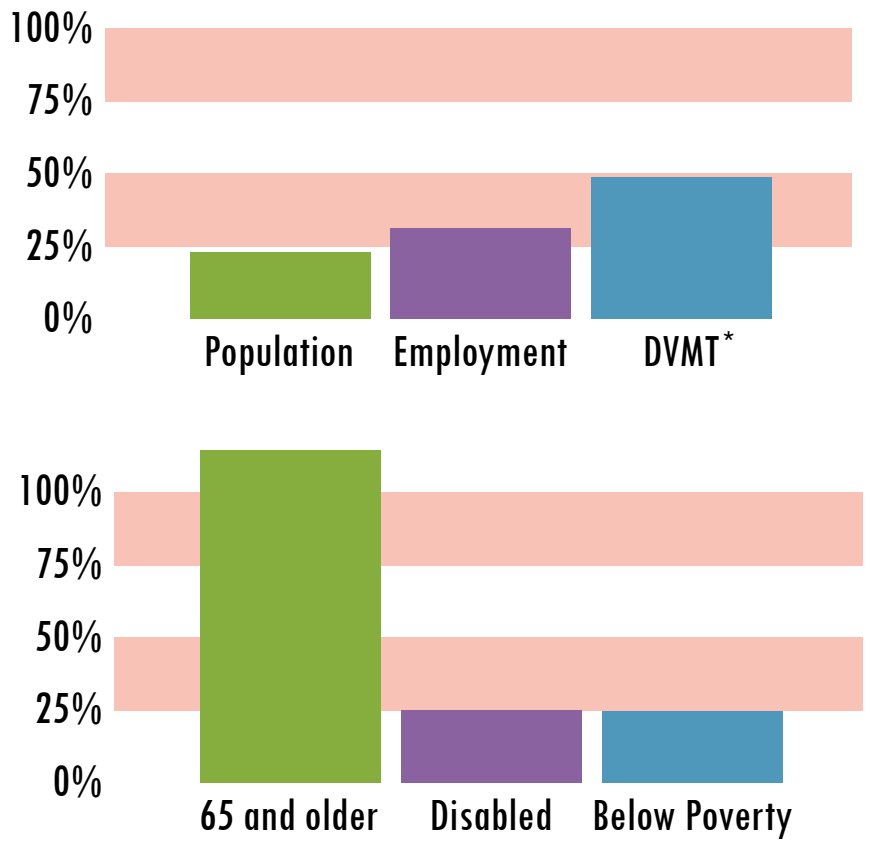
The major east-west corridor is primarily defined by I-64, a multi-lane interstate that runs from Virginia to Missouri. The eastern terminus is in the Hampton Roads region, where the corridor includes the Hampton Roads Beltway (I-64 and I-664) as well as the I-264 spur to Virginia Beach. I-64 is the major connector between the Richmond and Hampton Roads metropolitan areas. It also provides the only interstate access to the Port of Virginia. HOV facilities are present in the Hampton Roads area along portions of I-64 and its auxiliary routes.

The region is also served by four transit agencies. The Hampton Roads area is served by Hampton Roads Transit (HRT). The Town of Chincoteague Transit provides service to the Town's citizens. Williamsburg Area Transit Authority provides fixed route and demand response service. STAR Transit provides service to citizens and visitors on the Eastern Shore. Multiple Park and Ride lots are available in the Hampton Roads area as well, including at least three in Suffolk and at least five near where US 13 runs parallel to I-64 through Chesapeake and Virginia Beach. STAR Transit offers bus service along four lines on the Eastern Shore, though there is no connection to the Hampton Roads area. Amtrak also provides passenger rail service between the City of Richmond and Newport News, with a stop in Williamsburg.

The Eastern Region has one Transportation Demand Management agency that helps to promote strategies like carpooling, vanpooling, work-from home initiatives and flexible work hours. To fill critical mobility gaps for Virginians who do not have access to a personal automobile and live outside of public transit service areas or need specialized transportation services, 12 human service agencies exist in the Eastern Region.

HRT is the project sponsor currently overseeing the construction of the Norfolk light rail transit line ("The Tide"). This light rail route will extend 7.4 miles from the Eastern Virginia Medical Center through downtown Norfolk along the I-264 corridor to Newtown Road within the City of Norfolk. Eleven stations will be constructed along the alignment, four Park and Ride locations will provide access to the system in major areas such as Norfolk State University, Harbor Park, City Hall, MacArthur Center, Tidewater Community College (Norfolk Campus) and the Sentara Norfolk General Hospital. The system will use a combination of city streets and the existing rail corridor purchased from Norfolk Southern; it is projected to carry approximately 6,000 – 12,000 people per day by 2030 according to HRT. Future extension of this corridor to Virginia Beach is currently being studied by HRT.

Figure 47: Eastern Regional Characteristics Percent Change (2010 - 2035)



**DVMT: Daily Vehicle Miles Traveled (2006-2035)*

Greyhound offers service in the Hampton Roads region, and there are multiple stations in this area, including ones in Suffolk, Newport News, Hampton and Norfolk. In addition, Greyhound service is available along the Eastern Shore, as there are stations in Exmore and Oak Hall, near the Maryland border, providing a bus connection between Hampton Roads and the Eastern Shore.

In addition, Norfolk Southern operates freight rail lines from the Port of Virginia in Chesapeake and Suffolk and out of the Hampton Roads area. CSX operates rail lines that travel through Chesapeake and Suffolk and to the remainder of Virginia and North Carolina. The Bay Coast Railroad runs along the Eastern Shore from Maryland and crosses the Chesapeake Bay via rail ferry barge across 26 miles of water to access Norfolk. It is the most direct rail route from the Northeast to Norfolk, and can accommodate larger loads than most Virginia railways. It interchanges with Norfolk Southern rail lines in both Norfolk and in Maryland.

The Eastern Region is served by two commercial airports (Norfolk International Airport and Newport News/Williamsburg International Airport) along with nine other general aviation facilities. The surface transportation connections to these airports are critical to ensure the safe, efficient and seamless transportation of passengers and goods.

CHARACTERISTICS

The Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses report completed by the VTRC identifies a number of trends that will impact transportation in the future. Increases in population will impact the amount of both passenger and freight traffic on the roadway, impacting commuters and those traveling between Washington DC and western Virginia. Characteristics of the Eastern Region are illustrated in Figure 47 and listed in Table 48 by PDC.

Population: The Eastern Region accounts for over one-fifth of Virginia's population and is projected to experience an average of 23% growth between 2010 and 2035. Much of the growth is anticipated in the Hampton Roads planning district, which accounts for nearly 95% of the 431,750 additional persons projected by 2035. The remaining planning districts, Crater and Accomack-Northampton, are projected to experience 11.55% and 6.74% growth respectively.

Employment: Like population, the employment growth in the region is dominated by the Hampton Roads planning district which is projected to increase employment by 352,480 by 2035. This will account for over 95% of the projected employment growth in the Eastern Region. In addition, the Hampton Roads planning district is expected to experience employment growth at a faster rate than the Eastern Region. More specifically, Hampton Roads is projected to increase employment by 33%, compared to the Eastern Region which is projected to increase employment by 31%.

Daily Vehicle Miles Traveled: The disparity in economic and population growth may be a cause of the high DVMT growth projected for the Hampton Roads district. Unlike the Crater and Accomack-Northampton planning districts that are projected to experience -14.72% and 4.41% DVMT growth respectively. DVMT in Hampton Roads is projected to increase by 61.8% by 2035. The higher increase of jobs than population in Hampton Roads suggests that longer commute trips from outside the district may be the cause of the high DVMT growth.

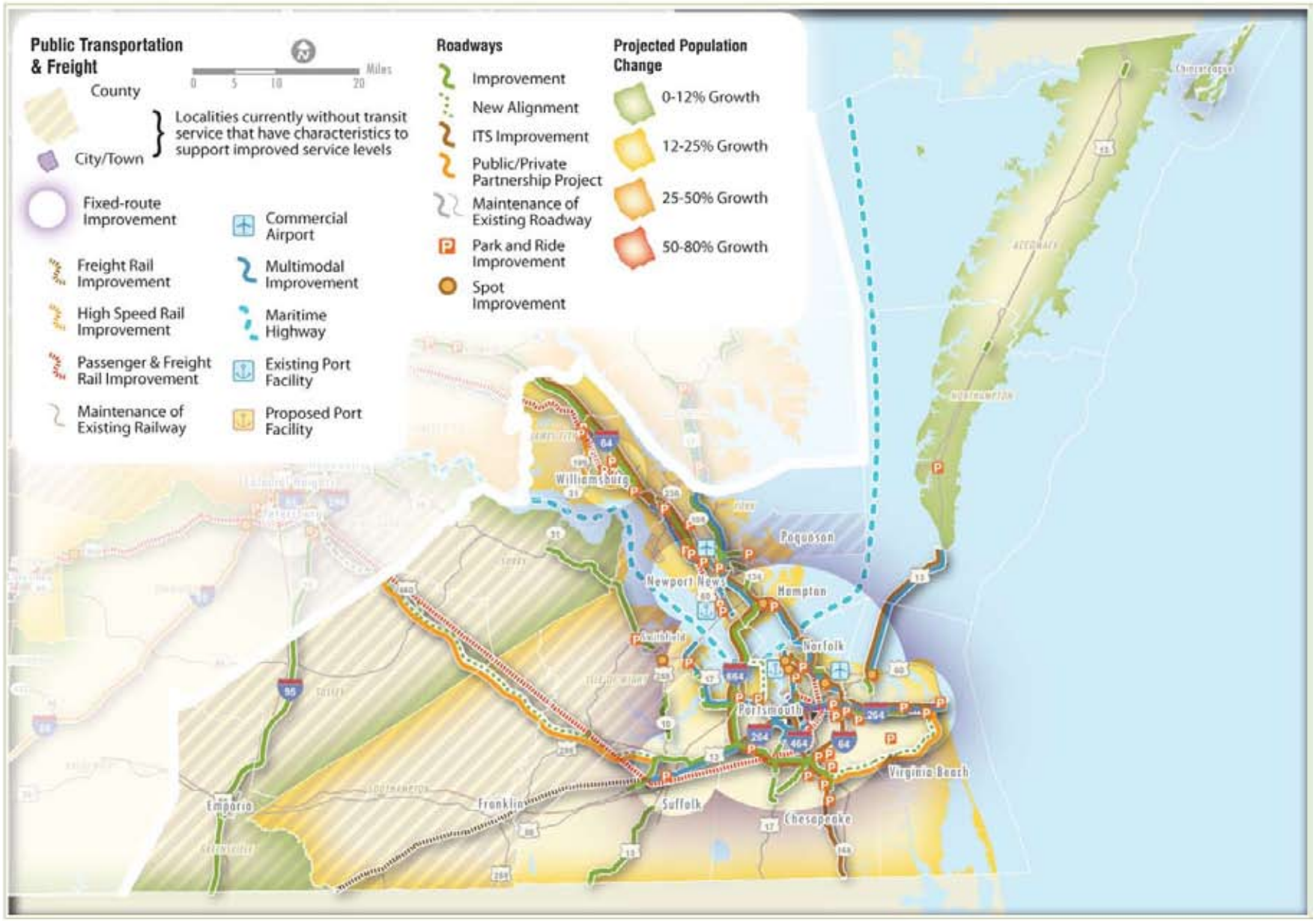
Table 48: Eastern Region Characteristics by PDC

Population	2010 Forecast	Midpoint 2035 Forecast	Absolute Change	Percent Change
Crater (19)	170,420	190,100	19,680	12%
Accomack-Northampton (22)	52,550	56,093	3,543	7%
Hampton Roads (23)	1,652,080	2,060,607	408,527	25%
Regional Total	1,875,050	2,306,800	431,750	23%
State Total	**8,057,350**	**10,926,181**	**2,868,831**	**36%**

Employment	2010 Forecast	Midpoint 2035 Forecast	Absolute Change	Percent Change
Crater (19)	89,950	101,577	11,627	13%
Accomack-Northampton (22)	25,510	29,249	3,739	15%
Hampton Roads (23)	1,066,790	1,419,270	352,480	33%
Regional Total	1,182,250	1,550,096	367,846	31%
State Total	**5,206,470**	**7,753,739**	**2,547,269**	**49%**

Daily Vehicle Miles Traveled (DVMT)	Actual VMT in 2006	2035 DVMT Based on Population (in Millions)	Absolute Change	Percent Change
Crater (19)	7,035,973	6.0	-1,035,973	-15%
Accomack-Northampton (22)	1,723,954	1.8	76,046	4%
Hampton Roads (23)	40,227,515	65.1	24,872,485	62%
Regional Total	48,987,442	72.9	23,912,558	49%
State Total	**222,178,082**	**345.4**	**123,221,918**	**55%**

Figure 48: Eastern Region Recommendations Map



PUBLIC TRANSPORTATION RECOMMENDATIONS

In the Eastern Region, and across the entire state, Virginia's public transportation systems must maintain state of good repair for fleet vehicles and maintenance equipment. DRPT recognizes and prioritizes state of good repair issues through its asset management database and funding requirements. State of good repair specifics were discussed in Chapter 3 and funding is discussed in-depth in Chapter 5.

Moderate population growth is expected in the Hampton Roads planning district. The transit improvements in this area are balanced between expanding the current transit options for commuters and residents in the more densely population areas, and establishing and enhancing the transit service for the rural population and for those who do not have access to a personal automobile:

- Increase Demand Response Service
- Expand Fixed Route Coverage (e.g. extend light rail transit to Virginia Beach, provide express bus service in the Western Freeway corridor connecting Portsmouth, Chesapeake, Suffolk, and Isle of Wight)
- Increased Transportation Demand Management

In the Accomack-Northampton and Crater planning districts, low population growth is expected. In these areas, transit recommendations are focused on providing services to the rural population, especially older adults, persons with disabilities, and persons with lower incomes. The transit recommendations for these areas are:

- Introduce Demand Response Service
- Increase Human Services Transportation

In addition to the improvements listed above, the following jurisdictions do not currently have transit service and have the population growth characteristics to support introduced transit service.

- Surry County
- Sussex County
- Isle of Wight County
- Greensville County
- City of Emporia
- Franklin City
- Southampton County
- City of Poquoson

Transportation demand management strategies for the Eastern Region are identified according to geographic setting as displayed in Table 49.

Table 49: TDM Strategies for the Eastern Region

Geographic Setting	Jurisdictions	TDM Strategies
Suburban Feeder Areas	Hampton Roads region	Expand non-SOV use for non-work trips in suburban centers
		Strong focus on employment outreach in suburban centers
		Promote feeder area ridesharing for long-distance commutes
		Promote telework to employers and residents
		Expand transit options; develop transit links to urban and suburban employment
		Integrate TDM into the land development process; encourage mixed-use
		Integrate TDM into local planning, MTPs, LRTPs
		Enhance cross-jurisdictional coordination for TDM
Non-Urban Areas	All other areas	Primarily residence-based programs for commuting within and outside the area
		Promote telework to residents
		Establish modest commute outreach in areas with no current program
		Support long-distance commute markets
		Coordinate with neighboring employment areas for outbound commuting
		Integrate TDM into local planning, MTPs, LRTPs

The following transit agencies in the Eastern Region have the following ITS investment recommendations for the next six years (Table 50), as identified in the DRPT Statewide ITS Strategic Plan.

Table 50: ITS Investments for the Eastern Region

Transit Agency	ITS Investments in the Next 6 Years					
	Transit Operations	Customer Amenities	Service Planning	Fare Collection	Security	Maintenance/Management
Hampton Roads	x	x			x	
STAR Transit						
Town of Chincoteague						
Williamsburg Area Transport	x	x	x		x	x

HIGHWAY RECOMMENDATIONS

Population within the Eastern Region is predominantly focused on the Hampton Roads Metropolitan Area and is distributed across 13 independent jurisdictions. Significant employment centers include the Port of Virginia, US Military installations (Norfolk Naval Base, Oceana Naval Air Station, Fort Eustis, Langley Air Force Base) as well as tourism and retail centers located in Williamsburg and Virginia Beach. Travel patterns are largely defined by the numerous water crossings, which act as funnels for traffic between the Peninsula and Southside. Highway recommendations focus on additional capacity expansion and access to meet the anticipated growth in port and freight activities. Recommendations also strive to address the daily commuting patterns and seasonal traffic growth surrounding tourism "hot spots" such as the Historic Triangle and Virginia Beach. The need for an additional water crossing will continue to be a top priority for the region in the foreseeable future, combined with increased use of HOV/HOT facilities and technology to provide instant information on traffic conditions for the traveling public.

Park and Ride Recommendations: The Eastern Region currently has 23 Park and Ride facilities. It is recommended to add over 30 new facilities and expand three existing facilities. Many of the new facilities are recommended along I-64 and in the northern portions of Virginia Beach, Suffolk and the city of Chesapeake. Park and Ride recommendations are identified in Figure 48.

Other Recommendations: In addition to the Park and Ride recommendations, the multiple highway recommendations are shown in Figure 48 and listed in Tables 51 to 54. The Highway Recommendation Table Reference Guide (Figure 49) provides explanation of the multiple elements included in the highway recommendation tables.

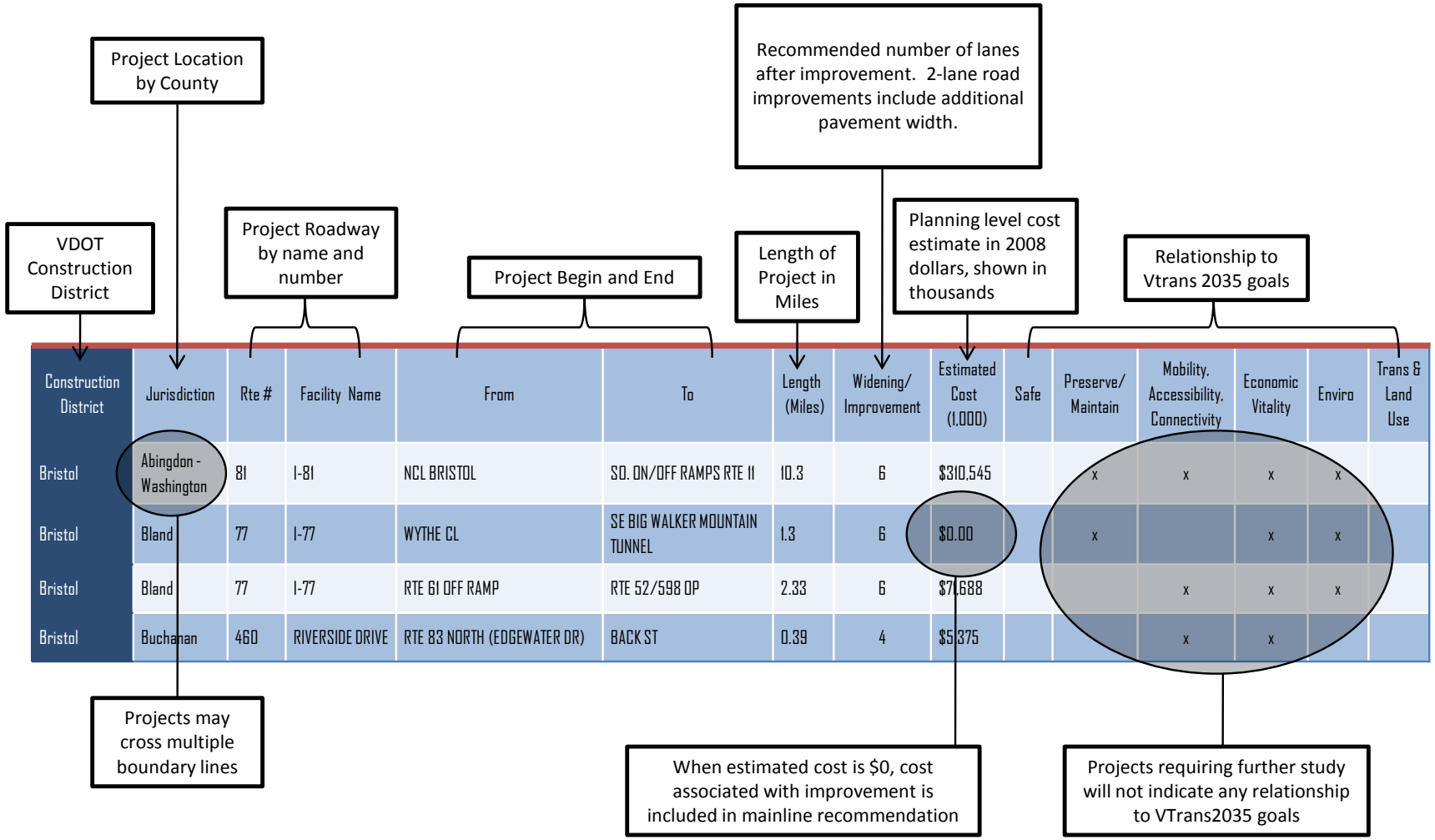
How the Recommendations are Organized: The highway recommendations presented in the 2035 Virginia Surface Transportation Plan address the performance measures presented in Chapter 4. These include: congestion; roadway capacity; safety; and maintenance. The highway recommendations support the goals established in VTrans2035: Safety and Security; System Maintenance and Preservation; Mobility, Accessibility and Connectivity; Economic Vitality; Environmental Stewardship; and Coordination of Transportation and Land Use.[29] The recommendations have been related to these goals in the tables that follow. The recommendations are presented in the following categories:

- Recommendations to Existing Facilities – these recommendations represent improvements to the current roadway network. It is assumed any structures or interchanges that fall within the limits of the recommendation will be improved along with the roadway. It should also be noted that any recommendations identified as an improvement to 2 lanes denotes additional lane width to an existing 2-lane roadway.
- Recommendations to New Locations – these recommendations represent new facilities that would be added to the roadway network.
- Recommendations for Further Study – recommendations where a need has been identified, but alternatives are still being analyzed.
- Other Recommendations – recommendations that do not fall into the above categories. Examples include interchange and intersection improvements, standalone bridge replacements, re-striping and access management.
- ITS Recommendations – Intelligent Transportation System recommendations (as described in Chapter 4).
- Park and Ride Recommendations – recommendations for new Park and Ride lots or expansion to existing Park and Ride lots. Specifics for Park and Rides are not provided as each location will need to be studied to identify an appropriate location and level of demand.

29 Not all VTrans2035 goals were tied to specific recommended improvements. For the VTrans2035 goals of Linking Land Use and Transportation, Program Delivery, Environmental Stewardship, VDOT addresses compliance at the program level as discussed in Chapter 4 of the VSTP.

Figure 49: Highway Recommendation Table Reference Guide

Highway Recommendation Table Reference Guide*



Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Bristol	Abingdon - Washington	81	I-81	NCL BRISTOL	SO. ON/OFF RAMPS RTE 11	10.3	6	$310,545		x	x	x	x	
Bristol	Bland	77	I-77	WYTHE CL	SE BIG WALKER MOUNTAIN TUNNEL	1.3	6	$0.00		x		x	x	
Bristol	Bland	77	I-77	RTE 61 OFF RAMP	RTE 52/598 OP	2.33	6	$71,688			x	x	x	
Bristol	Buchanan	460	RIVERSIDE DRIVE	RTE 83 NORTH (EDGEWATER DR)	BACK ST	0.39	4	$5,375			x	x		

*It is recognized that with any highway project there is a potential for community concerns that will need to be addressed prior to projects advancing.

Table 51-1: Eastern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	Chesapeake	17	GEORGE WASHINGTON MEM HIGHWAY	RT 17BUS(DOMINION BLVD)	SAWYERS ARCH ROAD	3.09	4	$61,511	x					
Hampton Roads	Chesapeake	17	GEORGE WASHINGTON MEM HIGHWAY	RTE 165(CEDAR RD)	WILLOWOOD DRIVE	0.9	4	$65,165	x		x			
Hampton Roads	Chesapeake	17	GEORGE WASHINGTON MEM HIGHWAY	RT 13/460(MILITARY HWY)	CANAL DRIVE	1	4	$26,798	x		x		x	
Hampton Roads	Chesapeake	17	DOMINION BOULEVARD	1.32 MI N RTE 17 BUS	GREAT BRIDGE BOULEVARD	5.08	4	$294,543			x		x	
Hampton Roads	Chesapeake	17	DOMINION BOULEVARD	GREAT BRIDGE BOULEVARD	RTE I-64(M.P. 291)	0.28	6	$97,331			x		x	
Hampton Roads	Chesapeake	64	I-64	RTE I-464	RTES I-264/664	8.08	6	$259,402		x	x	x		
Hampton Roads	Chesapeake	168	GREAT BRIDGE BYPASS - OAK GROVE CONNECTOR	MOUNT PLEASANT ROAD	DOMINION BLVD/RTE I-664	4.39	8	$59,540			x			
Hampton Roads	Chesapeake	464	I-464	RTE 17/168	RTE I-64	0.15	8	$8,584					x	
Hampton Roads	Chesapeake	664	I-664	RTE 58	RTES I-64/264	1.49	10	$58,735			x	x		
Hampton Roads	Hampton - Newport News	664	I-664 - MONITOR-MERRIMAC TUNNEL	RTE I-64	SUFFOLK CL	8.62	10	$693,016			x	x		
Hampton Roads	Isle of Wight	258	WALTERS ROAD - NORTH PRINCE BOULEVARD - SOUTH PRINCE BOULEVARD	BLACKWATER ROAD	WINDSOR ECL	0.52	4	$9,740	x				x	
Hampton Roads	Isle of Wight	10	OLD STAGE HIGHWAY	SURRY CL	RTE 677	3.67	2	$33,129	x		x		x	

Table 51-2: Eastern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	Isle of Wight - Smithfield	10	OLD STAGE HIGHWAY - ROUTE 10 BYPASS	RTE 677	CHURCH STREET	6.49	4	$105,772			x	x		
Hampton Roads	Newport News	143	JEFFERSON AVENUE	BUCHANAN DRIVE	INDUSTRIAL PARK DRIVE	2.65	6	$84,058			x	x	x	
Hampton Roads	Norfolk	165	LITTLE CREEK ROAD	MILITARY HIGHWAY	TIDEWATER DRIVE	0.81	6	$25,694			x		x	
Hampton Roads	Norfolk	337	HAMPTON BOULEVARD	REDGATE AVENUE	26TH STREET	0.87	6	$24,371			x		x	
Hampton Roads	Norfolk	337	HAMPTON BOULEVARD	26TH STREET	38TH STREET	0.31	6	$8,733			x		x	
Hampton Roads	Norfolk - Virginia Beach	264	I-264	RTE I-64	INDEPENDENCE BOULEVARD	3.47	14	$557,038	x	x	x			
Hampton Roads	Northampton	13	LANKFORD HIGHWAY	SCL NASSAWADOX	NCL NASSAWADOX	0.98	4	$19,508	x			x		
Hampton Roads	Portsmouth	58	MIDTOWN TUNNEL	WEST END ENTRANCE	EAST MIDTOWN TUNNEL	0.61	4	$1,000,000	x		x	x	x	
Hampton Roads	Suffolk	10	GODWIN BOULEVARD	ISLE OF WIGHT CL	1.36 MI NORTH KINGS FORK ROAD	5.7	4	$84,013	x		x			
Hampton Roads	Suffolk	13	WHALEYVILLE BOULEVARD	NORTH CAROLINA S.L.	RTE 677	6.65	2	$2,950	x				x	
Hampton Roads	Suffolk	13	WHALEYVILLE BLVD	RTE 677	CAROLINA ROAD	6.66	4	$81,711	x					
Hampton Roads	Suffolk	17	BRIDGE ROAD	HARBOUR VIEW DRIVE	BENNETS PASTURE ROAD	2.94	6	$106,997	x		x		x	
Hampton Roads	Suffolk	17	MILLS E. GODWIN BRIDGE	NORTH END NANSEMOND RIVER	SOUTH END NANSEMOND RIVER	0.93	4	$81,866			x			

Table 51-3: Eastern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	Suffolk	17	CARROLLTON BOULEVARD	END CHUCATUCK CREEK BRIDGE	ISLE OF WIGHT CL/BEGIN CHUCATUCK CREEK BRIDGE	0.48	4	$50,155			x		x	
Hampton Roads	Suffolk	58	HOLLAND ROAD	MANNING BRIDGE ROAD	SUFFOLK BYPASS	2.25	6	$92,536	x		x		x	
Hampton Roads	Suffolk	135	COLLEGE DRIVE	BRIDGE ROAD	RTE I-664	1.55	6	$50,843	x				x	
Hampton Roads	Suffolk - Chesapeake	664	I-664	NEWPORT NEWS CL	RTE 58	10.46	8	$932,252		x	x			
Hampton Roads	Surry	10	EAST COLONIAL TRAIL	RTE T-1001	ISLE OF WRIGHT CL	9.73	2	$6,000				x		
Hampton Roads	Sussex	95	I-95	RTE 301	RTE 40	13.62	6	$426,984				x	x	
Hampton Roads	Sussex - Greensville - Emporia	95	I-95	NORTH CAROLINA SL	RTE 301	17.3	6	$369,564				x		
Hampton Roads	Virginia Beach	225	INDEPENDENCE BOULEVARD	HAYGOOD ROAD	NORTHAMPTON BOULEVARD	1.81	6	$57,411			x		x	
Hampton Roads	Virginia Beach	264	I-264	INDEPENDENCE BOULEVARD	LYNNHAVEN PARKWAY	4	12	$177,472		x	x		x	
Hampton Roads	York	17	J CLYDE MORRIS BOULEVARD	RTE I-64	HAMPTON HIGHWAY	2.56	6	$70,702	x		x			
Hampton Roads	York	17	GEORGE WASHINGTON MEM HIGHWAY	HAMPTON HIGHWAY	GOODWIN NECK ROAD	3.57	6	$101,093	x	x	x			
Hampton Roads	York	17	GEORGE WASHINGTON MEM HIGHWAY	GOODWIN NECK ROAD	GOOSLEY ROAD	4.36	6	$129,111	x	x	x			

Table 51-4: Eastern Region Recommendations to Existing Facilities

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	York	134	MAGRUDER BOULEVARD	BIG BETHEL ROAD	HAMPTON ROADS CENTER PARKWAY	4.35	6	$126,265		x	x			
Hampton Roads	York	171	VICTORY BOULEVARD	GEORGE WASHINGTON MEMORIAL HWY	HAMPTON HIGHWAY	0.35	6	$8,247	x	x	x		x	
Hampton Roads	York	171	VICTORY BOULEVARD	HAMPTON HIGHWAY	WYTHE CREEK ROAD	3.29	4	$42,229	x	x	x			
Hampton Roads	York - James City	64	I-64	NEW KENT CL	RTE 199	17.72	6	$261,004			x	x		
Hampton Roads	York - James City - Newport News	64	I-64	RTE 199	JEFFERSON AVENUE	12.71	8	$246,240			x	x		

Table 52: Eastern Region Recommendations to New Locations

									VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Length (Miles)	Widening/ Improvement	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	Chesapeake -Virginia Beach	961	PROPOSED SE PARKWAY AND GREENBELT	BATTLEFIELD BLVD	I-264	18.29	8	$431,539	x		x			
Hampton Roads	Portsmouth	245	CRANEY ISLAND CONNECTOR	WESTERN FREEWAY	THIRD CROSSING	4	2	$294,301	x		x	x		
Hampton Roads	Portsmouth	958	MARTIN LUTHER KING EXTENSION	I-264	LONDON BLVD	0.78	4	$250,000			x			
Hampton Roads	Hampton-Newport News - Suffolk-Portsmouth-Norfolk	364	ADDITIONAL CROSSING (Options for consideration -3rd Crossing, Hampton Roads Bridge Tunnel expansion, Craney Island)	TBD	TBD	TBD	TBD	TBD	x		x	x		
Hampton Roads	Sussex	40	RTE 40 BYPASS	ROUTE 40 W WAVERLY	ROUTE 460	1.4	2	$87,604	x		x			
Hampton Roads	Sussex-Southampton-Isle of Wight-Suffolk	460	ROUTE 460 EXPRESSWAY	PRINCE GEORGE CL	ROUTE 58 BYPASS	42.06	4	$2,060,000	x		x	x		

Table 53-1: Eastern Region Other Recommendations

								VTrans2035 Goals Addressed					
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	Accomack	13	LANKFORD HWY	RTE 175	RTE 704 SOUTH	Extend northbound left and right turn lanes and install curb and gutter at Route 13 / Route 175	$81	x		x		x	
Hampton Roads	City of Chesapeake	13	WEST MILITARY HIGHWAY	SUFFOLK CL	I-664	Reverse flow evacuation route. Install gates, signage.	$2,000	x					
Hampton Roads	City of Norfolk	64	I-64			Norview Ave Interchange - Close the existing I-64 East to Norview Ave north loop ramp and replace with a ramp north of the existing Norview Ave south to I-64 East on-ramp, eliminating the existing weave movement	$7,800	x		x	x		
Hampton Roads	City of Norfolk	337	HAMPTON BOULEVARD			Grade separated rail crossing at Hampton Blvd adjacent Hampton Terminal Blvd	$25,000	x		x			
Hampton Roads	City of Norfolk	337	HAMPTON BOULEVARD			Grade separated rail crossing at Hampton Blvd adjacent Greenbrier Ave	$25,000	x		x			
Hampton Roads	City of Suffolk	13	WEST MILITARY HIGHWAY	SUFFOLK BYPASS	CHESAPEAKE CL	Reverse flow evacuation route. Install gates, signage.	$2,000	x					
Hampton Roads	City of Suffolk	58	SUFFOLK BYPASS	HOLLAND ROAD	MILITARY HIGHWAY	Reverse flow evacuation route. Install gates, signage.	$7,000	x					
Hampton Roads	City of Virginia Beach	13	NORTHAMPTON BLVD	INDEPENDENCE BLVD	SHORE DRIVE	Improve existing interchange	$33,000	x		x			
Hampton Roads	Isle of Wight	258	BENNS CHURCH BOULEVARD			Benns Church Intersection 258/32 - Heavy movement from Smithfield over to the James River Bridge. Significant development planned around intersection.	$2,000	x		x	x		

Table 53-2: Eastern Region Other Recommendations

								VTrans2035 Goals Addressed				
Construction District	Jurisdiction	Rte #	Facility Name	From	To	Improvement Description	Estimated Cost (1,000)	Safe	Preserve/ Maintain	Mobility, Accessibility, Connectivity	Economic Vitality	Enviro	Trans & Land Use
Hampton Roads	York	17	GEORGE WASHINGTON MEM HWY	VICTORY BOULEVARD	HAMPTON HIGHWAY	Install lane use pavement markings, street names on mast arms and extend northbound turn lane at US 17 / Route 613 (Darby Road) & US 17 at Victory Blvd	$135	x		x		x	
Hampton Roads	York	17	GEORGE WASHINGTON MEM HWY	WATER STREET	GLOUCESTER CL	Significant peak period congestion on approaches to Coleman Bridge. Bridge was constructed with wide shoulders that could accommodate traffic. Restripe existing shoulder across the Coleman Bridge as peak period lane.	$1,000	x		x			
Hampton Roads	York	134	HAMPTON HIGHWAY	GEORGE WASHINGTON MEMORIAL HWY	VICTORY BOULEVARD	Replace yield sign , install street names on mast arms on Hampton Boulevard / Yorktown Road vicinity	$40	x				x	

Table 54: Eastern Region Highway ITS Recommendations

(A description of ITS project types can be found on pp. 59-60)

						VTrans2035 Goals Addressed					
Route	**Limits**	**Short-Term (0-7 years)**	**Mid-Term (8-15 years)**	**Long-Term (16-25 years)**	**Other**	**Safe**	**Preserve/Maintain**	**Mobility, Accessibility, Connectivity**	**Economic Vitality**	**Enviro**	**Trans & Land Use**
I-64	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-64			ATM	Intellidrive		x		x		x	
I-264	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-264			ATM	Intellidrive		x		x		x	
I-464	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-464			ATM	Intellidrive		x		x		x	
I-564	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-564			ATM	Intellidrive		x		x		x	
I-664	Entire Length	Core Infrastructure	ICM	SLCS		x		x		x	
I-664			ATM	Intellidrive		x		x		x	