



Virginia's Long-Range Multimodal Transportation Plan

VTrans2035 Report to the Governor and General Assembly

**Prepared for:
Commonwealth Transportation Board**

**Prepared by:
Office of Intermodal Planning and Investment
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PREFACE

Section 33.1-23.03 of the *Code of Virginia* directs the Commonwealth Transportation Board, with the assistance of the Office of Intermodal Planning and Investment, to develop a Statewide Transportation Plan (hereafter, VTrans2035) setting forth an assessment of capacity needs for all corridors of statewide significance, regional networks, and improvements to promote urban development areas (Appendix A). Secretary of Transportation Pierce R. Homer created an Executive Oversight Committee, consisting of the Office of the Secretary of Transportation and the heads of the Department of Aviation, Department of Transportation, Department of Rail and Public Transportation, Department of Motor Vehicles and the Virginia Port Authority to help guide the development of VTrans2035.

Secretary Homer also created a Multimodal Advisory Committee consisting of technical experts and policy makers to provide the technical expertise required to develop VTrans2035. The following agencies and organizations were represented on this committee:

- Federal Highway Administration
- Office of Intermodal Planning and Investment
- Virginia Association of Planning District Commissions
- Hampton Roads Transportation Planning Organization
- Richmond Regional Planning District Commission
- Northern Virginia Transportation Authority
- Department of Aviation
- Department of Transportation
- Department of Rail and Public Transportation
- Department of Motor Vehicles
- Virginia Port Authority

VTrans2035 was also developed with the assistance of numerous private firms specializing in the development of long-range plans:

- Cambridge Systematics
- Economic Development Research Group
- Howard/Stein-Hudson Associates, Inc.
- Jack Faucett Associates
- KFH Group
- Michael Baker, Jr. Inc.
- Renaissance Planning Group
- Vanasse Hangen Brustlin, Inc.
- Wilbur Smith Associates

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ACRONYMS AND ABBREVIATIONS

CFX	Coalfields Expressway
CoSS	Corridors of Statewide Significance
CTB	Commonwealth Transportation Board
DOAV	Department of Aviation
DMV	Department of Motor Vehicles
DRPT	Department of Rail and Public Transportation
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FY	Fiscal Year
GHG	Greenhouse gas
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
HRBT	Hampton Roads Bridge-Tunnel
HRT	Hampton Roads Transit
ITS	Intelligent Transportation Systems
MIN	Multimodal Investment Network
MLK	Martin Luther King Freeway
MPO	Metropolitan Planning Organization
NIT	Norfolk International Terminal
NoVA	Northern Virginia
OIPI	Office of Intermodal Planning and Investment
PDC	Planning District Commission
PPTA	Public Private Transportation Act
PTF	Priority Transportation Fund
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act - Legacy for Users
SHSP	Strategic Highway Safety Plan
TDM	Travel Demand Management
TRB	Transportation Research Board
UDA	Urban Development Area
VDOT	Virginia Department of Transportation
VMT	Vehicle miles of travel
VPA	Virginia Port Authority
VRE	Virginia Railway Express
VTRC	Virginia Transportation Research Council
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary

The Context

A quality, well-connected transportation system is critical to the Commonwealth's long-term economic competitiveness, environment, safety, and security and to improving mobility and the overall quality of life for its citizens. Every five years, the Commonwealth Transportation Board (CTB) develops a strategic long-range transportation plan known as VTrans. This strategic planning document sets forth the transportation vision, needs, priorities, and strategies for the next 25 years.

“Virginians are grappling with increased congestion on the roads, under-funded transit systems, missed opportunities for rail, and inadequate resources to meet infrastructure needs.” That is the opening line of the VTrans2025 report published in November 2004. Five years later, things have changed - some for the better, but some for the worse. VTrans2025 recommended:

- More investment in transit and rail. As a result, a dedicated rail capital fund was established and new funds were dedicated to rail and transit spending.
- Strengthened planning processes, especially integration of transportation and land use. As a result, new access management standards, secondary street acceptance requirements, and traffic impact analysis regulations were adopted. In addition, local governments were authorized to impose road impact fees and required to designate urban development areas as well as regional transportation and land use performance measures.
- A substantial increase in the Commonwealth's investment in transportation. No action has been taken on this recommendation.

Despite declining revenues, Virginia has continued to make strategic investments in transportation. The Commonwealth has been ranked as the “Best State for Business” for the last four years. However, without continuing strategic investments, this ranking could be in jeopardy.

The impact of years of underinvesting in transportation, made more acute by current economic conditions, is now becoming painfully clear. As problems and needs grow, the cost of addressing them will not stay static, but will increase. Taking no action on the transportation funding crisis does not maintain the status quo; it moves Virginia backwards and results in a more expensive backlog of needs in the future.

Transportation is a good long-term investment that promotes economic growth. Virginia receives \$4 in return for every \$1 it invests in transportation. A quality transportation system means not only that the economy thrives, but also that parents are not late in picking up children, seniors have travel choices, and young drivers travel on safe roads.

Virginia must take action immediately to address the funding crisis. VTrans2035 has identified priority investment actions that Virginia must take to have a robust, quality transportation system. For Virginia's vision for the future to become reality it must have adequate funding.

The Vision

Today's current economic conditions have to be recognized, but they should not constrain the future. It is even more important in difficult and challenging times to have a clear picture of desired future outcomes so that every investment decision can be considered against the ultimate goals.

An effective strategic planning exercise must start with a vision for the future. The outlook for the future has changed since the last strategic plan known as VTrans2025 was completed. The world is dealing with a major economic crisis, climate change has become a nationally recognized issue, and fuel prices are on their way upward again after topping \$4 a gallon last year. Virginia is not immune to these developments.

Fundamentally, Virginia's transportation system must be safe, reliable, and seamless. It will use state-of-the-art technology to communicate information in a variety of ways, increasing the safety and effectiveness of all transportation modes.

Major Issues

Congestion ranks as a major issue for Virginians who live and work in the Commonwealth's metropolitan areas. At the same time, long-term trends in fuel consumption are adversely affecting traditional **funding** mechanisms for transportation investment that not only deprive metropolitan areas of needed investment, but also jeopardize needed access and mobility in the more rural regions of Virginia. VTrans2035 must recognize these changes and provide both fundamental improvements and new innovations to address Virginia's transportation challenges.

Over the next 25 years, Virginia's **pattern of growth** could go in one of two directions. If past patterns continue without change, Virginia will have dispersed, sprawling, low-density development across a great deal of its land area, with major corridors overwhelmed by transportation demand generated from scattered residential, commercial, and industrial development. Alternatively, Virginia can organize its growth around relatively compact activity centers, each with a balanced and healthy mix of development, connected by free-flowing rail, transit, and highway corridors providing access and mobility using the most advanced, efficient, and competitive technologies.

There are seven VTrans2035 goals, all important to a quality transportation system. These include safety and security; system maintenance and preservation; mobility, connectivity, and accessibility; environmental stewardship; economic vitality; coordination of transportation and land use; and program delivery. For quality of life and economic vitality to occur, a change

in past practices is necessary to create compact activity centers that reduce trip lengths and support other modes of transportation.

VTrans2035 Investment Priorities

There are four priority investment groups that reflect Virginia’s most pressing needs. These include:

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.

- **Make Strategic Investment in Infrastructure for the Future.** There are many important transportation needs throughout Virginia, but looking forward, some will enhance significantly the Commonwealth's future. There are several examples of these crucial game-changing infrastructure investments, and four are offered as examples because of their potential impacts on both a regional and statewide basis. These are: 1) investment in high speed rail and more rail service in the dense portions of the I-95 corridor; 2) investment in freight rail in the I-81 corridor; 3) tunnel and bridge improvements in Hampton Roads; and 4) smart system technology leadership.
- **Address Environmental, Safety, and Maintenance Needs.** Infrastructure must be safe and reliable. The core safety and maintenance responsibilities of the transportation agencies must be satisfied in order for all other goals to be met. Pavements, bridges, and transit fleets must be in good condition and repair, ready to serve Virginia's travelers. There will be zero tolerance for further degradation of Virginia's environment.
- **Enhance Economic Competitiveness.** Being economically competitive is about attracting jobs and businesses. Infrastructure is essential to supporting economic productivity. Virginia has two major transportation assets that are also global economic engines – Dulles International Airport and the Port of Virginia – that require vastly improved surface transportation access. Being economically competitive is also about enhancing rural connectivity through improved multimodal connections and broadband access as well as moving people and goods through major activity centers.
- **Minimize Congestion.** Congestion has a chokehold on some of Virginia's major urban centers and is adding pressure to suburban and rural corridors. Virginia can minimize congestion in several ways by: encouraging sustainable development patterns; using pricing, advanced technology, and transportation demand management to reduce and manage traffic demands; and increasing transit and rail service that is supported by transit-oriented development patterns.

The priorities require a sustained, dedicated investment in transportation. As funds are sought, advancement can be made in improved processes and decisions.

- **Enhanced Planning Processes.** Although what the next round of federal transportation authorization will contain is uncertain, expectations are that future legislation will call for more local and regional decision-making. Therefore, there is the need for continued multi-agency involvement for effective transportation planning and a dynamic partnership with regional planning organizations and local jurisdictions that control development patterns.

Implementation of coordination of land use and transportation requires several enhancements to the planning process including:

- Development of regional transportation and land use performance measures and goals for urban regions and prioritization of transportation funds for improvements to help meet established goals;
 - Consideration of regional transportation and land use performance measures in the allocation of primary formula and discretionary funds;
 - Establishment of an Integrated Transportation/Land Use Grant Program to:
 - Provide funding for transportation improvements to local governments with land use plans that encourage compact developments;
 - Provide funding to regional organizations to complete detailed land use scenario plans; and
 - Assist local governments with implementation of transfer of development rights programs and designation of urban development areas.
 - Establishment of a Transit Enhancement Fund, similar to the existing Rail Enhancement Fund, to provide funding for the expansion of transit service where local governments provide supportive local development commitments.
- **Improved Tools.** The current economic crisis has crystallized the importance of investments that support economic growth and reduce congestion. VTrans2035 recommends that the assessment of economic impacts of transportation investments be incorporated more rigorously into analyses and multimodal decision-making.

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 (S 1398) enacted by the General Assembly in 2009 and signed by Governor Kaine requires the corridors to be designated by the CTB and for local governments to note the corridors on transportation maps and in comprehensive plans.

The form, location, and design of improvements to a corridor play a critical role in determining whether or not the corridor will function appropriately in the future. For example, when a new highway is built or an existing highway improved, measures such as access management and parallel roadways for local traffic can be used to ensure that the highway will serve long-distance travel. Conversely, improperly developed corridors can spur local growth, turning it into a "Main Street," reducing the benefit of the Commonwealth's investment and perpetuating development patterns that degrade the highway's original function.

There are 11 existing CoSS throughout Virginia. In the future, some may be added or deleted. The purpose of the CoSS 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



Corridors of Statewide Significance

benefit of the entire Commonwealth, as called for in HB 2019 by the General Assembly in 2009. The extent to which a locality's land use plan protects the functionality of the corridor will be considered as part of the funding process.

From Vision to Strategies to Priorities to Reality

For VTrans2035 to become a reality, work must continue, and that requires not only financial resources, but also staff resources. The Office of Intermodal Planning and Investment (OIP), responsible for overseeing the development of the statewide transportation plan, should continue and the number of staff increased to monitor progress on a VTrans2035 Action Plan that must be developed. The VTrans Multimodal Advisory Committee should continue and Committee members must actively assist with multi-agency coordination. The policy guidance provided by VTrans2035 will also be translated into more specific plans through the preparation of Virginia's Surface Transportation Plan (integration of highway, transit, rail, pedestrian, and bicycle plans) as well as the modal plans of the Virginia Port Authority and Department of Aviation.

Over the next 25 years, Virginia will face significant transportation pressures. These pressures include continuing challenges of adequate revenues, identifying innovative solutions to accommodate future growth, maintaining an aging transportation system, and higher energy prices. Other states and countries will continue to innovate and invest in their transportation systems to improve their standing. The Commonwealth must be aggressive to maintain its existing infrastructure and make strategic investments to continue to enhance Virginia's quality of life and economic competitiveness.

The *VTrans2035 Report* reflects the findings of a series of technical reports as well as discussions with stakeholders on Virginia's critical transportation issues, input from agency reviews, and input from the Commonwealth Transportation Board. The technical reports referenced in the body of the report are available on the web (www.vtrans.org).

Chapter 1 VTrans2035 Process

What Will Virginia Be Like in 2035?

Can you think 25 years into the future? Maybe thinking back 25 years will help. Many factors will influence what Virginia looks like in 2035, as reflected in Exhibit 1, and what its transportation priorities should be.

- Twenty-five years ago, having a personal computer and a cell phone set you apart. Today, not having one has that effect. These changes have impacted our daily lives. Similar innovations over the next 25 years will influence our daily activity.

- The availability of low fuel prices played a role in keeping fuel efficiency fairly constant in the last 25 years. New standards, increased gas prices, new alternative fuel technologies, and an awareness of climate change are likely to yield very different results in fuel efficiency in the next 25 years.

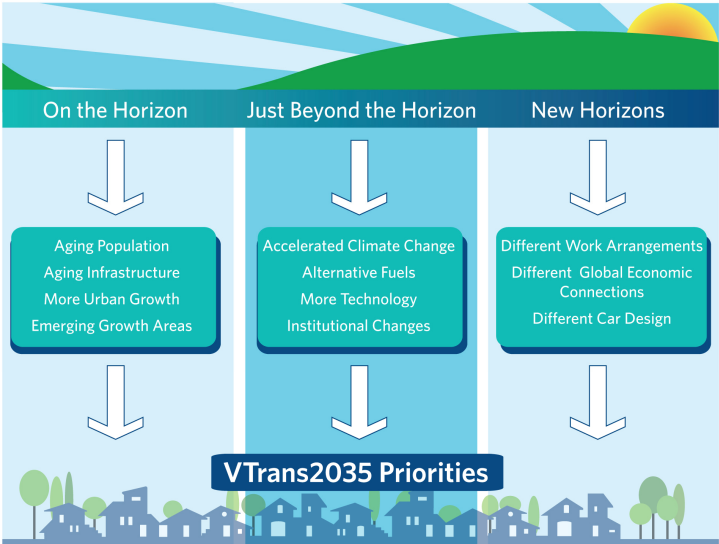


Exhibit 1. VTrans2035 Long-Range Outlook

- Twenty-five years ago, the retail price of regular gasoline was about \$1.00 per gallon. Between then and now we have seen it go over \$4.00 per gallon and as of November 2009 it is \$2.70. It is unlikely that we will return to the era of cheap gas, and even the role of gasoline prices in shaping transportation demand may change with increased emphasis on alternative fuels.

- Virginia’s population is increasing and growing older. Senior citizens accounted for 10% of the Commonwealth’s population 25 years ago. Today, they account for 12%, and by 2035 their share will increase to 19%. While the Baby Boomers are entering their retirement years, the largest generation, known as the Millennials (over 80 million Americans of ages 15 to 30), is just entering the workforce.

- In the past, there was little focus on coordination between transportation and land use. Urban areas spread out and daily vehicle miles of travel increased at a rate greater than population growth. In the future, there will be increased focus on the coordination between transportation and land use that will likely influence development patterns.

The past two years (2008/2009) presented considerable economic challenges to almost every country, and certainly every American. Gas prices soared and then dropped. Banks failed. Jobs were cut. Tax revenues declined. The transportation sector, like many others, has been trying to do more with less.

Transportation demands are still growing, but the resources to meet these needs have been declining and are likely to continue declining, at least for the immediate future. There are fewer transportation dollars and fewer transportation resources. These conditions call for a plan to guide both near-term and long-term transportation investments.

What Is VTrans2035 and Why Is It Important?

Virginia law (§ 33.1-23.03 of the *Code of Virginia* (included in Appendix A)) requires the CTB to develop a multimodal long-range transportation plan that assesses transportation needs and assigns priorities on a statewide basis. VTrans2035, Virginia's long-range transportation plan, provides a strategic, conceptual framework for moving into the future. It is also a policy document that frames the vision for the future and 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 that involved Virginia's five statewide transportation agencies – Department of Aviation (DOAV), Department of Motor Vehicles (DMV), Department of Rail and Public Transportation (DRPT), Virginia Port Authority (VPA), and Department of Transportation (VDOT) – as well as representative regional transportation planning agencies in Virginia.

VTrans2035 is an update of its predecessor, VTrans2025, completed in 2004. VTrans2025 was the foundation for both Governor Warner's and Governor Kaine's transportation initiatives. The policy recommendations included investing more in transit and rail, strengthening the planning processes with better integration of transportation and land use, and encouraging consideration of multimodal improvements at all levels of transportation planning. These policy recommendations resulted in a dedicated rail fund, increased transit and rail funding, new laws related to traffic impact analysis of development, designation of Urban Development Areas (UDAs), road impact fees, changes to secondary street acceptance standards, access management standards, regional performance measures, and transfer of development rights. A Transportation Performance Report is now produced annually with objective, multimodal goals and performance measures.

VTrans2035 builds on the strengths of these recent initiatives to address the changing nature of transportation policy. Now more than ever is the time for a clear understanding of the

implications of transportation investments and the identification of the most critical improvements and policies to move Virginia forward.

What Are the Vision and Goals Guiding VTrans2035?

Ultimately guiding VTrans2035 are a vision and goals (Exhibit 2). VTrans2025 was the foundation for these, and some changes have been made (such as a separate coordination of transportation and land use goal) to reflect current trends.

VTrans2035 Vision

Virginians envision a multimodal transportation system that is safe, strategic, and seamless

Travel for people and goods will be safe and uninterrupted. Transportation improvements will consider the environment and the quality of life in Virginia's communities while enhancing economic opportunity. Transportation improvements will respect and reflect the varied needs of Virginia's diverse communities and regions.

Investments in transportation will be adequate to meet current and future needs. Transportation decisions will be guided by sustained, informed involvement of Virginia's community leaders and citizens. Full accountability and enduring trust will be the hallmarks of transportation planning and investment decisions throughout the Commonwealth.

VTrans2035 Goals

- **Safety and Security** – to provide a safe and secure transportation system
- **System Maintenance and Preservation** – to preserve and maintain the condition of the existing transportation system
- **Mobility, Connectivity, and Accessibility** – to facilitate the easy movement of people and goods, improve interconnectivity of regions and activity centers, and provide access to different modes of transportation
- **Environmental Stewardship** – to protect the environment and improve the quality of life for Virginians
- **Economic Vitality** – to provide a transportation system that supports economic prosperity
- **Coordination of Transportation and Land Use** – to promote livable communities and reduce transportation costs by facilitating the coordination of transportation and land use
- **Program Delivery** – to achieve excellence in the execution of programs and delivery of service

Exhibit 2. VTrans2035 Vision and Goals

How Was the Plan Developed?

This *VTrans2035 Report to the Governor and General Assembly* is a synopsis of the major findings of a series of technical reports produced for VTrans2035 (Appendix B). These reports addressed demographic changes, policy issues, and economic and funding impacts, as well as other transportation-related topics. The relationship of land use and transportation decisions played a critical part in many of the policy assessments. The VTrans2035 process included public and stakeholder involvement documented in a Public Involvement report.

The main components of the public participation process were:

- A Stakeholder Listening Session that included special interest groups;
- A Regional Planning Forum where all Metropolitan Planning Organizations (MPOs), Planning District Commissions (PDCs), state transportation agencies, and representative transportation providers (e.g., major transit agencies, railroads, etc.) were invited to discuss issues and critical corridor needs;
- Public open house meetings in Northern Virginia, Hampton Roads, Richmond, and Roanoke to discuss modal needs (i.e., highway, transit, rail, pedestrian/bicycle, port, and airport), corridor needs, and regional accessibility;
- A virtual open house on the web that contained the same information and same opportunities to comment as the public open house meetings;
- E-notes sent to major organizations (Virginia Association of Planning District Commissions, Virginia Municipal League, Virginia Association of Counties) as well as to other stakeholders to inform them of new information on the web and upcoming meetings;
- A final VTrans2035 Forum with invitees from the previous Stakeholder Listening Session and Regional Planning Forum to review findings; and
- The draft Final Report and supporting documents on the web for review and comment.

The hallmark of VTrans2035 is a list of major investment priorities to keep Virginia moving and thriving. These are previewed in the Executive Summary and presented in detail in Chapter 5. Other sections include:

- *Chapter 2: Virginia's Transportation System – Now and in the Future* – This chapter presents an overview of the wide-angle perspective used when looking at how critical changes and factors may influence transportation in Virginia in the future.

- *Chapter 3: Virginia’s Corridors of Statewide Significance* – VTrans2035 advanced VTrans2025 corridor efforts through Corridors of Statewide Significance (CoSS). This chapter identifies the corridors, their functions, and recommended strategies.
- *Chapter 4: Transportation Funding: Paying for Performance* – This chapter highlights the economic benefits of transportation investments and the issues transportation decision-makers in Virginia are facing with regards to future funding.
- *Chapter 5: VTrans2035 Investment Priorities* – The investment priorities are described in detail in this concluding chapter that also indicates the steps necessary to make VTrans2035 a reality.

Chapter 2 Virginia's Transportation System – Now and in the Future

People and businesses are highly mobile. They migrate to where they can find the best opportunities and quality of life. Virginia, with its moderate climate, quality education system, abundant natural resources, and global connections, is a natural magnet for cutting-edge businesses, families, retirees, and visitors. A quality transportation system is necessary to complete this package.

VTrans2035's charge is to identify the components of a quality transportation system for the future. To do so requires:

- Evaluation of the performance of Virginia's existing transportation system;
- Identification of key factors influencing performance in the future; and
- Development of strategies shaping how Virginia should move forward.

How Is Virginia Doing?

How Virginia is doing in terms of transportation can be identified by reviewing current assets, noted in the VTrans2035 *Transportation in Virginia Report*, and performance, identified in the *Transportation Performance Report – 2007*. Both reports, as well as the recently released *Transportation Performance Report – 2008*, are available on the OIPI's website (www.vtrans.org).

Stewardship of Assets

Virginia's transportation agencies are stewards of a vast array of transportation assets. This responsibility is becoming increasingly challenging as financial and staff resources are shrinking. Virginia's extensive multimodal system includes the third largest state-maintained highway system in the nation, two Class I railroads, 9 Class III railroads, two intercity rail passenger services, 59 public transit systems (bus, rail, and ferry) including two major regional transit systems, 56 human service transportation systems, 18 transportation demand management agencies, the third largest port on the East Coast, 66 public-use airports, and 7 ferry services. Exhibit 3 provides a look at Virginia's transportation system at a glance.

Highways

Exhibit 4 shows the growth in the last 21 years (1987 to 2008) of several transportation-related factors. Population and the number of licensed drivers increased by about one-third. The number of registered vehicles and vehicle miles of travel (VMT) increased by half or more, outpacing population growth and increases in number of drivers. The number of VDOT state-maintained lane miles, however, increased only 8%, resulting in an imbalance between supply and demand that cannot be reconciled by supply-side solutions alone.

Mode	Statistic
Highways	Approximately 70,800 miles of roadways, approximately 57,730 state-maintained
	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
	23 safety rest areas
	3,250 miles of scenic byways
	2 U.S. bicycle routes
Ferries	7 ferry services, 3 operated by VDOT
Rail and Public Transit	Approximately 3,200 miles of track
	2 Class I railroads, 9 Class III railroads and 1 non-FRA classified railroad
	2 passenger railroads
	59 public transit systems (bus, rail, and ferry)
	56 human service transportation systems
Airports	18 travel demand management agencies
	66 public-use airports
	9 commercial service airports
	8 reliever airports
	19 regional airports
	16 community airports
14 local service airports	
Ports	4 state-operated port terminals

Exhibit 3. Virginia Transportation at a Glance

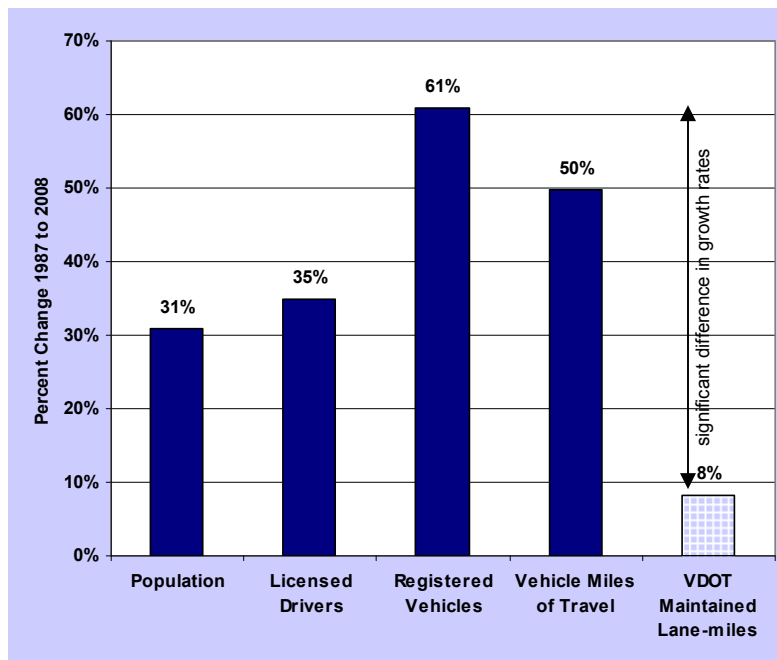


Exhibit 4. Changes in Transportation-Related Factors

In 2007, Virginia had 70,784 miles of state highway system, 82% of which is maintained by VDOT. This is the third largest state-maintained system in the country, behind only North Carolina and Texas. VDOT is also responsible for the inventory, inspection, maintenance, and improvement of 20,879 structures (bridges and culverts).

Pavements – VDOT has a target that the percent of deficient pavements should not exceed 18% on the Interstate or Primary Systems and a standard of no more than 31% of pavements being deficient on the Secondary System.

A deficient pavement needs more maintenance and rehabilitation. The performance trend has not been positive in recent years, requiring additional funds to stabilize and improve conditions (Exhibit 5).

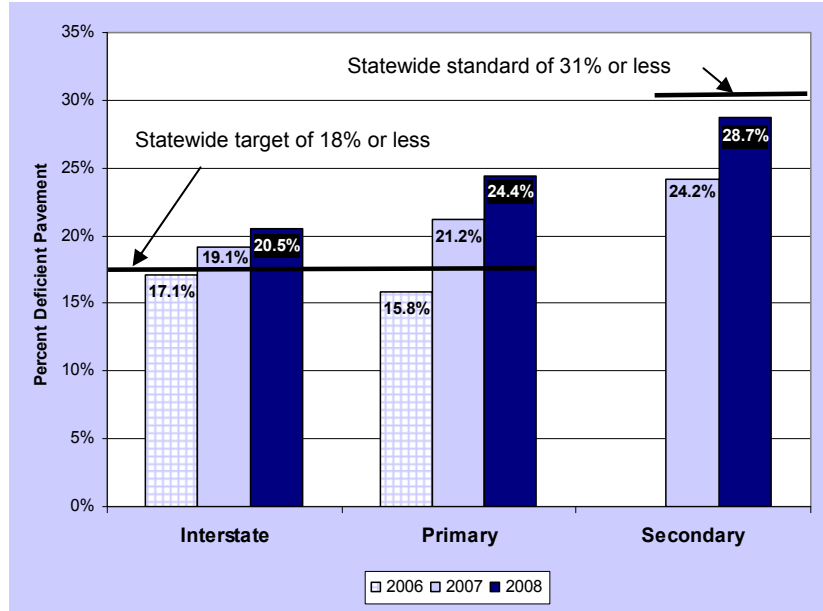


Exhibit 5. Pavement Conditions

Structures – VDOT’s target is 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 structure condition performance just missed the standard as 8.4% of structures were structurally deficient in both years. A consequence of not maintaining structures up to standards has been the closure in recent years of the Kings Highway Bridge in Suffolk and the Jordan Bridge in Chesapeake.

The anticipated design life of a bridge is approximately 50 years.

While cost-effective technology may increase this lifespan, in the next 20 years the percentage of structures 50 years or older will double from 34% to 71% (Exhibit 6), suggesting the need for a greater investment in the maintenance of structures to meet the desired performance target.

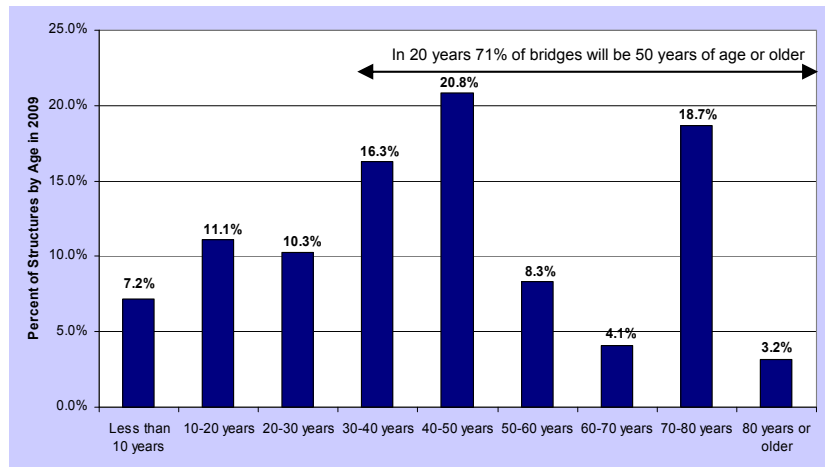


Exhibit 6. Age Distribution of Structures

Toll Roads and High Occupancy Vehicle (HOV) Lanes – Virginia has eight toll facilities, all of which use E-Z Pass technology. These include the Dulles Toll Road (Northern Virginia), the Dulles Greenway (Northern Virginia), the Downtown Expressway/Powhite Parkway (Richmond area), the Boulevard Bridge (Richmond), Pocahontas Parkway (Richmond area), George P. Coleman Bridge (Yorktown and Gloucester County), Chesapeake Bay Bridge-Tunnel (Virginia Beach-Eastern Shore), and Chesapeake Expressway (Chesapeake). VDOT operates only the Powhite Parkway Extension and the George P. Coleman Bridge. The Pocahontas Parkway and Dulles Toll Road are operated under a long-term lease agreement by other entities.

VDOT maintains 137 miles of HOV lanes in Northern Virginia and Hampton Roads. Two of Virginia's Public-Private Partnership projects relate to High Occupancy Toll (HOT) lanes: I-495 (under construction) and the I-95/395 HOT lane projects.

Park and Ride Facilities – Virginia has 330 Park and Ride facilities available to commuters. Of these, 114 are owned and operated by VDOT with the remainder owned by jurisdictions, transit companies, and local officials, or are unofficial lots.

Safety Rest Areas and Welcome Centers – There are 23 safety rest areas in Virginia. Recently, 19 were closed as part of VDOT's Blueprint as required by the Appropriation Act.

Scenic Byways and Bicycle Routes – Virginia has 3,250 miles of scenic byways as well as two U.S. bicycle routes (U.S. Bicycle Routes 1 and 76) that provide a pleasant journey through Virginia's scenic and historic landscapes. Virginia has more mileage of U.S. bicycle routes than any other state. Investment also is being made in the 55-mile Virginia Capital Trail extending from Richmond to Williamsburg, estimated to be complete by 2013.

Ferry Services

There are seven ferry services in Virginia, three of which are operated by VDOT including the Jamestown-Scotland Ferry, the Sunnybank Ferry, and Merry Point Ferry. These ferries operate free of charge, but the recent economic downturn resulted in some reduction in service hours. A fourth ferry previously operated by VDOT and recently discontinued was the Hatton Ferry. Three privately operated ferries include Paddlewheel Ferry, Tangier Island Ferry, and White's Ferry.

Rail Services

Virginia has both freight and passenger rail service. Norfolk Southern and CSX are Class I freight railroads that are privately owned and operated. In addition, there are 9 Class III shortline railroads, and one non-Federal Railroad Administration (FRA) classified railroad (Deepwater Terminal Railroad at the Port of Richmond).

The two passenger rail systems operating in Virginia are Virginia Railway Express (VRE commuter rail service in Northern Virginia (NoVA)) and Amtrak. In 2007, there were eight Amtrak services operating in Virginia. Since then, a daily service between Lynchburg and

Washington, D.C. has been added, and service frequencies between Richmond and Washington, D.C. have been increased. Amtrak's annual Virginia ridership has increased from just over 400,000 in 2004 to over 500,000 in 2008. VRE ridership in 2008 was 3.6 million, similar to 2004 levels.

Transit Services

The latest count of transit systems showed 59 public transit systems in Virginia. These systems provide bus, rail, and ferry service to 26 of the 95 counties in Virginia and 8 of the 40 cities. There are also 56 human service transportation systems. Together, transit and human service transportation systems serve approximately 17 million passengers per month. Northern Virginia systems carry over 70% of public transportation trips while the Staunton District has the highest number of human service transportation trips statewide (23%).

There is a very wide range in terms of the size and services provided by the systems. For example, Washington Metropolitan Area Transit Authority (WMATA) operates a 106-mile regional rail system that is the second largest in the country and a regional bus system that is the sixth largest. The first phase of a 23.1-mile extension to the WMATA rail system is currently under construction and will open in 2013. The second phase is planned for 2015.

Hampton Roads Transit (HRT) provides express bus, local bus, shuttle bus, paratransit (bus service for the disabled), and ferry service. HRT is currently constructing Norfolk's light rail line called The Tide, scheduled to open in 2010. At the same time, there are many transit systems in rural areas that operate with limited schedules and small fleets. Regardless of fleet size, the demand for services is strong across the Commonwealth – in urban, small urban, and rural portions of Virginia. In the last three years alone, DRPT has worked with a dozen localities to start new transit systems or significantly expand existing ones.

Airports

There are 66 public use airports in Virginia: 9 commercial service airports; 8 reliever airports; 19 regional airports; 16 community airports; and 14 local service airports. As the largest commercial service airport in the Commonwealth, Dulles International Airport serves as the gateway to the rest of the world and plays a vital role in the Virginia transportation system and economy.

Ports

The Port of Virginia is the third largest port on the East Coast of the United States. It has service to more than 80 foreign ports. A 2008 study attributed 190,000 direct and indirect jobs to VPA operations with \$13.5 billion in wages.

VPA owns four general cargo terminals – Norfolk International Terminal, Portsmouth Marine Terminal, Newport News Marine Terminal, and Virginia Inland Port. APM Terminal is a fifth terminal that is privately owned and operated.

Upgrades to surface transportation improvements include the Heartland Corridor rail project that will double freight rail capacity along the line that parallels Route 460 through Virginia, improving freight shipping times to markets in the Midwest. Other access improvements include Route 164 widening, Commonwealth Railway Mainline relocation, and a proposed third harbor crossing in Hampton Roads.

Transportation Performance

Virginia’s transportation performance is documented in the *Transportation Performance Report - 2007* available on the web at www.vtrans.org. Virginia’s transportation system received an overall self-assessed performance rating of B in 2007, indicating that most trends (changes from 2006) moved in the desired direction but that there is room for improvement (Exhibit 7).

Goal	Grade
Safety and Security	C
System Maintenance and Preservation	C
Mobility, Connectivity and Accessibility	B
Environmental Stewardship	C
Economic Vitality	B
Coordination of Transportation and Land Use	B
Program Delivery	B
Overall Performance	B

Exhibit 7. Virginia’s Transportation Performance in 2007

- *Safety and Security* – Statewide highway fatalities increased by 7% in 2007 despite a decreasing trend in the number of highway crashes and crash rate. In addition, the number of transit crashes increased by 22%, and the number of aviation crashes increased by 13%.
- *System Maintenance and Preservation* – The percentage of interstate and primary roads in fair or better condition decreased from 84% to 79% and the percentage of bridges in fair or better condition held fairly constant. The percentage of transit vehicles in need of replacement decreased.
- *Mobility, Connectivity and Accessibility* – Public transportation trips per capita, transit revenue miles, Park and Ride spaces, bicycle and pedestrian travel, and intercity rail service all showed some increases in 2007. Hours of delay in Northern Virginia, Richmond, and Hampton Roads areas stayed fairly constant. These trends somewhat mask the actual conditions of increasing congestion, especially in Northern Virginia, the second most congested area in the nation.
- *Environmental Stewardship* – Greenhouse gas emissions increased in 2007 from 54.0 to 55.9 million metric tons; fuel usage also increased (from 52.0 to 53.0 gallons per capita). Mobile source emissions and acres of wetlands replaced were consistent with desired downward trends.

- *Economic Vitality* – Virginia’s past investment in an extensive network of highways, airports, ports, bus, and rail facilities resulted in increased economic prosperity in 2007 as measured by volume of freight shipped through the Port of Virginia (which increased from 2.05 to 2.13 million twenty-foot equivalent units) and number of enplanements at Virginia’s commercial service airports (which increased from 24.6 to 25.6 million).
- *Coordination of Transportation and Land Use* – In 2007, there were only insignificant increases in density in Virginia’s major metropolitan areas. VMT per capita stabilized, except for Hampton Roads where it increased. The stabilization in VMT was likely influenced by increasing gas prices more than changes in land uses.
- *Program Delivery* – The efficiency and effectiveness of the transportation programs generally trended in the desired direction with increases in cost efficiencies, effective scheduling, and customer satisfaction.

What Changes Are Coming?

Change is inevitable. What is uncertain is what will change as well as when and how it will happen. VTrans2035 identified several factors that will influence the Commonwealth’s transportation system. The major changes can be categorized as:

- Virginia’s future growth patterns;
- Environmental quality;
- Technology;
- Global connections; and
- Institutional decision-making.

Virginia’s Future Growth Patterns

Demographic Projections

The Virginia Transportation Research Council (VTRC) prepared a background report entitled *2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses* (available at www.vtrans.org) as part of the VTrans2035 process. The forecasts in this report were used to guide the analysis of Corridors of Statewide Significance and the assessment of policy issues. Of particular interest are the following anticipated changes:

- Between 2010 and 2035, Virginia’s population will grow by about one third from slightly more than 8 million to between 10.3 million and 10.9 million, depending on the projections used.

- The proportion of persons age 65 and over will increase from about 12% to 19%, such that Virginia will have about 2 million individuals age 65 or older in 2035 compared to about 1 million in 2010.
- Total employment is anticipated to increase by 2.5 million jobs, from 5.2 million in 2010 to 7.8 million in 2035. This is a 48% increase.
- Six of 10 Virginians live in Northern Virginia, Fredericksburg, Richmond, or Hampton Roads metropolitan areas. These areas will account for 76% of the population growth between now and 2035.

Another significant trend occurring nationally is a decrease in household size. An American Housing Survey analysis showed that between 2000 and 2025 the number of households is expected to increase 26%, but family households without children and non-family households are expected to increase 37% and 31%, respectively. Coupled with population increases, this will likely translate into increased demand for housing developments, and potentially more compact developments as the demand for homes with large yards for children decreases.

Associated with these growth projections is an increase in VMT in the range of 36% to 45% under a business as usual scenario. VTRC studied the impact of fuel costs and increased density on travel demands. The general findings are that:

- As fuel costs increase, demand for transit increases and single occupancy vehicle travel decreases. This was in evidence in 2008 when the price of gasoline was over \$4 per gallon.
- The influence of density on travel is not quite as clear. More concentrated, denser developments can improve air quality by reducing miles of travel if the right mix of uses is incorporated into the development and alternative modes, especially transit, are available and convenient.

Growth Patterns

Virginia's current major urban areas will continue to grow and expand outwards (Exhibits 8 and 9). 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 (Exhibit 8). Both jobs and population will increase in the range of 50%-85% from 2010 to 2035 in the Fredericksburg area, while residential growth is expected to outpace job growth southwest of Washington, D.C. in Fauquier County.

Other areas will continue to emerge, but at not quite such a fast pace as the growth north of Richmond. Exhibit 9 shows emerging areas with either a 25% to 50% increase in population or job forecasts between now and 2035. This growth can be generally described as in the I-64, Route 29, and I-81 corridors.

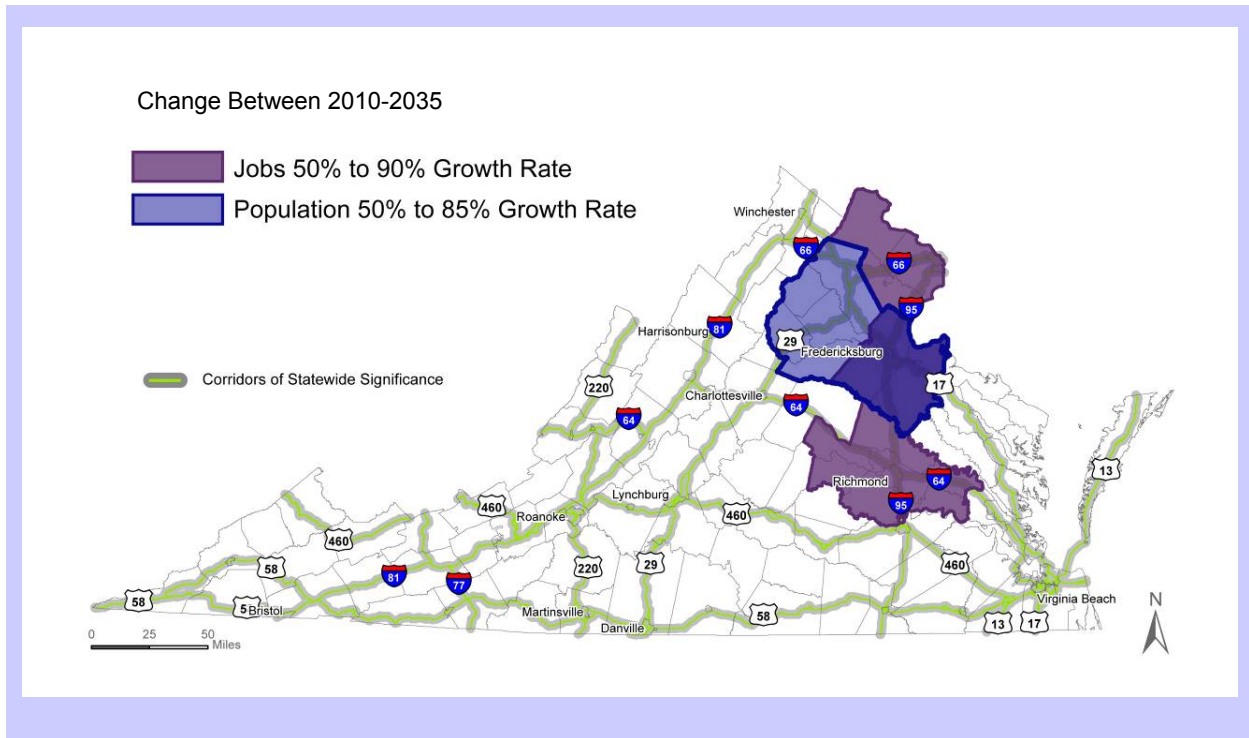


Exhibit 8. Fast Growing Areas

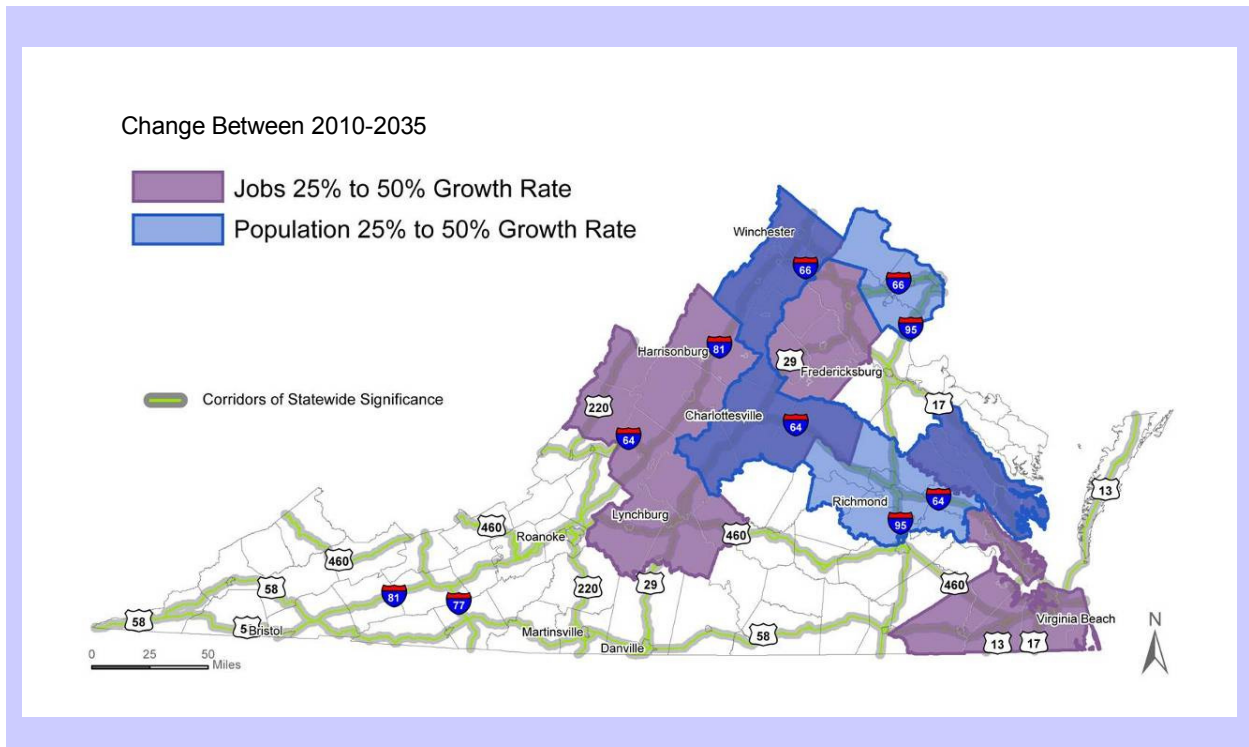


Exhibit 9. Emerging Growth Areas

The needs of the fast growing areas are likely to be the supply of multimodal transportation and ways to encourage more density, diversity, and improved job-to-housing balances. The emerging areas will face challenges such as how to preserve roadway capacity and expand transit, as well as how to focus growth in relatively compact activity centers.

Future demand for transportation capacity can be reduced by properly coordinating transportation and land use development in future emerging growth areas. The emerging growth areas are identified as those with a 12% to 25% increase in jobs or population between 2010 and 2035. As illustrated in Exhibit 10, these are centered along the eastern and western sides of the state and are connected by the Route 460 corridor. In the future emerging areas, decision-makers and planners must consider how to preserve future roadway capacity, expand multimodal options, and bring jobs and households closer together.

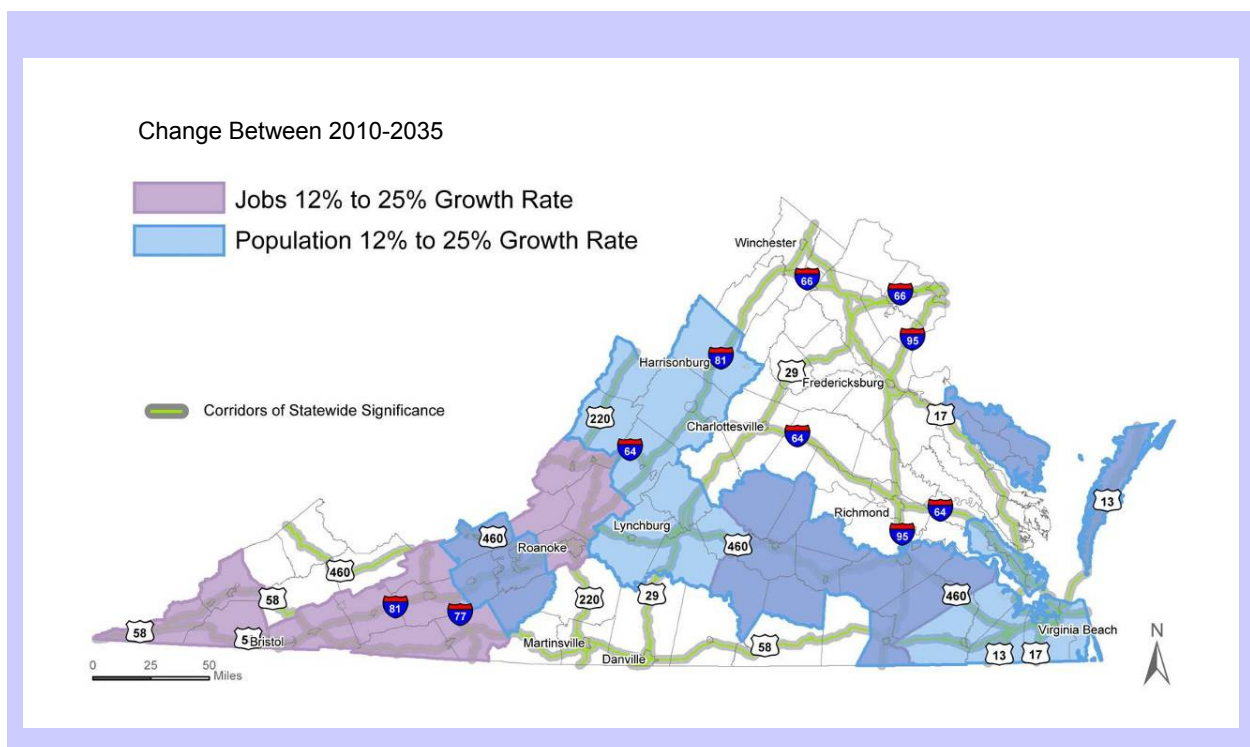


Exhibit 10. Future Emerging Growth Areas

Regional Accessibility

VTrans2035 not only addresses how Virginians and visitors can travel between cities and towns, but it also initiates what will be a continuing dialogue on different approaches to regional accessibility. Regional accessibility is the ability to move from point A to point B within a defined region – for example metropolitan areas such as Northern Virginia or Hampton Roads as well as less populated areas such as Lynchburg.

A highly accessible community provides:

- A variety of activities within close proximity, shortening trip lengths and making alternative transportation modes (such as walking and transit) more attractive. Conversely, activities that are far apart increase the vulnerability of travelers to delay and bottlenecks from congestion and incidents;
- A variety of transportation choices, including choices of modes as well as routes; and
- Multimodal connectivity - local streets strategically connect to regional roadways, local transit service, rail stations, and airports. Bicycle routes and sidewalks are continuous.

An area with good regional accessibility will have a transportation system that relies on both proximity and mobility (Exhibit 11). The benefits of good regional accessibility are identical to those of managed congestion: strengthened economic competitiveness since workers can reach jobs and goods can reach markets; time and money savings for residents and businesses due to the reliability of the transportation system; and improved quality of life. Making proximity (that is development patterns) part of the equation reduces overall transportation demand by reducing vehicle trip lengths and by making more environmentally-friendly modes such as walking, bicycling, and transit more feasible.

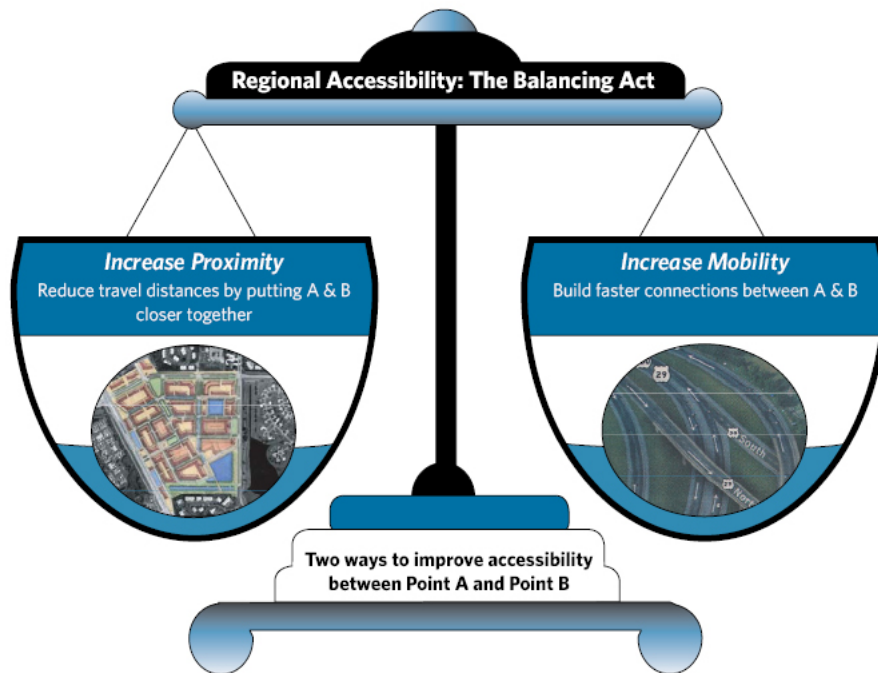


Exhibit 11. Regional Accessibility – The Balancing Act

What determines whether development patterns are sustainable are “the Five Ds” – density, diversity, design, destination accessibility, and distance to transit. Consideration of these factors when preparing comprehensive plans or reviewing development plans can result in the integration of regional land uses and transportation capacity. One of the key determinants of achieving regional accessibility is striking an acceptable jobs-to-housing ratio. When this ratio is out of balance, heavy peak-hour directional traffic over long distances occurs, clogging critical transportation arteries.

Recently, VDOT completed an analysis of the impact of future growth patterns on demand for transportation capacity in the Fredericksburg region. This analysis showed that moderate changes in the projected development patterns can have a significant impact on future transportation capacity needs. State transportation officials need to continue the dialogue with local and regional planners. Incentives need to be developed to encourage development patterns that better match current transportation capacity or future capacity that is within anticipated funding means.

Aging Population

We are an aging society. Advances in health care have increased life expectancy. The number of senior citizens (age 65 or older) in Virginia will double between now and 2035. Older Virginians live mostly in urban areas, but the areas with the highest proportion of older citizens are often rural.

In the future, older Virginians are likely to live more active lives. For those older citizens continuing to drive, more technology can help in alerting drivers to changes in road conditions. For those who choose not to drive, more public transportation between cities and within communities will be needed in order for them to make medical appointments, run errands, and have a good quality of life. The same increases in travel choices offered by more public transportation also provide disabled population groups with increased mobility.

Key Needs Posed By Anticipated Growth Patterns:

- Continued dialogue between state, regional, and local partners to collaborate on future land use decisions and transportation investments
- Better integrated transportation/land use decisions to reduce demand and preserve roadway capacity
- Increased transit to address mobility needs of older citizens as well as disabled population groups and to reduce daily vehicle miles of travel associated with growth

Environmental Quality

Both federal and state transportation planning provisions recognize environmental protection as a priority. The *Code of Virginia* §33.1-23.03 requires that the statewide transportation plan promote environmental quality. Today, 42% of the energy consumed in Virginia is used for transportation; five years ago it was approximately one-third. This massive consumption can negatively affect air, noise, and water pollution levels. The resulting impact on

climate change has emerged as a global concern. While Virginia works to preserve and enhance its transportation system, it must do so using sustainable and environmentally sensitive methods that preserve and protect the environment. The future must be about zero tolerance for further degradation of the environment. To do so requires that the key elements influencing environmental quality as well as the potential solutions be clearly understood.

Climate Change

Climate change poses a serious and growing threat to Virginia's roads, railways, ports, utility systems, and other critical infrastructure. Higher temperatures, rising sea levels, increased potential of flooding, more buckled pavements due to heat, and lower employee productivity due to increased illness are some of the potential implications of climate change. Elevated atmospheric temperatures will lead to rising sea levels that will cause storm surges, coastal flooding, and erosion more severe than occurs today. Temperature rise and the threat of more frequent and intense heat waves can also seriously impair critical infrastructure such as roads and bridges as they will be more prone to failure due to extreme heat expansion and contraction.

Energy consumption is the largest manmade contributor to greenhouse gas (GHG) emissions. The transportation sector accounts for 31% of manmade GHG emissions in Virginia. Increased vehicle fuel efficiency, improved technology, and alternative fuel vehicles will significantly reduce transportation sector GHG emissions in the future.

As elevated atmospheric temperatures lead to rising sea levels, Virginia's transportation infrastructure will be threatened. This is a major concern in the highly populated Hampton Roads region, as storm surges, coastal flooding, and erosion will become more severe. Sea levels in the Hampton Roads area are projected to rise 2.3 to 5.2 feet by 2100.

In September 2007, Governor Timothy M. Kaine released the Virginia Energy Plan that included a recommendation that a commission be created to address climate change and its possible impacts on Virginia. The Governor's Commission on Climate Change was comprised of more than 40 citizens including scientists, economists, environmental advocates, and representatives from the energy, transportation, building, and manufacturing sectors. The Commission finalized the Climate Change Action Plan on December 15, 2008, which included the following recommendations specifically related to the transportation sector:

- Virginia will advocate for federal actions that will reduce net GHG emissions;
- Virginia will reduce GHG emissions related to vehicle miles traveled through expanded commuter choice, improved transportation system efficiency, and improved community designs;
- Virginia will reduce GHG emissions from automobiles and trucks by increasing efficiency of the government's transportation fleet and use of alternative fuels; and
- Virginia state agencies and local governments will prepare for and adapt to the impacts of climate change that cannot be prevented.

These recommendations point toward a focus on rail and transit investments as well as improved coordination of transportation and land use decisions. These two actions must be an integral part of VTrans2035 for environmental quality to be achieved.

Air Quality

The air quality impacts of transportation plans, programs, and individual projects are analyzed for their environmental impact prior to implementation as mandated by the National Environmental Policy Act and the Clean Air Act transportation conformity rule. The air is noticeably cleaner today, and total criteria pollutant emissions from motor vehicles are significantly less than in 1970 despite a near tripling of vehicle miles of travel nationally. In 1997, and again in 2006 and 2008, the U.S. Environmental Protection Agency (EPA) strengthened air quality standards for fine particulate matter and ozone.

While Virginia has made great progress in reducing air pollution, there are still areas of Virginia that have had trouble attaining these new more stringent standards. Northern Virginia is currently designated as an ozone and fine particulate matter nonattainment area. There are several maintenance areas (areas previously in nonattainment but have since come back into compliance) including Richmond, Tri-Cities, Hampton Roads, and Fredericksburg regions. In March 2008, EPA lowered air quality standards for ozone and it appears likely that many regions will be designated as nonattainment with this new standard in March 2010.

Examples of some successes in how air quality has been addressed in the recent past include actions at the Port of Virginia. From 1999 to 2005, air emissions from cargo handled at the Port decreased by 30% despite a 55% increase in cargo volume due to a policy that all suppliers use new cargo handling equipment that contains the lowest emission engine available on the market. In October 2007, the Port launched a pilot program in partnership with EPA to encourage the voluntary purchase of new or retrofitted low-emission trucks by local drayage truckers. It was the first voluntary diesel retrofit program at a U.S. port.

Addressing air quality will require the same type of actions identified in the discussion on climate change. Investment in rail and transit along with policies and programs that promote compact developments will result in a reduction in VMT and an improvement in air quality.

Water Quality

Transportation operations impact water quality, whether from dredging in ports or construction across wetlands. Virginia has a tremendous asset in the Chesapeake Bay and there must be specific actions to ensure water quality for this feature, as well as for other water resources.

To assist in efforts to improve water quality in the Chesapeake Bay, VPA has implemented several innovative improvements to treat stormwater runoff. In addition, VPA has restored tidal wetlands, created non-tidal wetlands, constructed manmade reefs, and planted forested riparian buffers.

More pavement, whether in the form of roads or parking facilities, prevents the natural absorption of water into the ground, resulting in a negative impact on stormwater runoff. There is the potential for stormwater runoff to become polluted and impact the streams, bays, and other bodies of water into which it flows. This potential can be reduced with increased transit, passenger and freight rail options, and compact developments that require less hard surface per capita. In addition, new technologies such as porous pavements and bioswales should be considered in the future.

Noise

In 1989, VDOT formally established a policy to lessen the impact of highway traffic noise in neighborhoods and other noise-sensitive areas through appropriate noise abatement measures. The State Noise Abatement Policy was updated in 1997 and is currently under-going revisions to reflect technological advances and national practices. Currently, VDOT has constructed 126 miles of noise barriers.

Other Environmental Quality Issues

There are other aspects of environmental quality such as preservation of habitats as well as cultural and historic resources that need to be considered. Development, maintenance, and enhancement of a safe, efficient, and comprehensive transportation system are the best ways to protect and promote Virginia's heritage. Early identification of potential impacts through a strengthened context-sensitive design approach would also support environmental quality.

Key Needs Posed By Changes in Environmental Quality:

- Increased commuter choices, including transit, passenger rail, carpooling/vanpooling, etc.
- Focused growth in relatively compact activity centers through strengthened land use and transportation connections, including more coordination with MPOs and localities
- Improved system efficiency with enhanced operations, context sensitive design, access management, etc.

Technology

We know changes in technology are coming; we just cannot always predict what they will be. No one would have imagined the dominance of the cell phone and personal digital assistants 25 years ago. What will be the technology that shapes the next 25 years?

Information and Communications

It can be expected that we will receive more information faster and more directly. WMATA is exploring real-time parking information systems now that will allow Park and Ride passengers to learn of the availability of station parking via their cell phones as they are approaching stations. Similar technologies provide information on when the next bus is arriving

at a particular stop, removing the uncertainty of transit schedules. Navigational aids that tell pilots about weather are just another use of technology to aid travel decisions. All these will become commonplace and routine in the next 25 years.

Telecommuting was talked about for a long time before it finally took hold. Better computer network connections, cheaper computers, and more acceptance of flexible working arrangements provided the means to make this a reality. The combination of today's economic conditions and technological advancements is resulting in more virtual offices and working arrangements. The continuation of this trend could significantly impact regional transportation needs, shifting the focus from commuting needs to providing better connections for personal and recreational trips. It is estimated that each full-time teleworker saves the taxpayer \$2,800 per year in road maintenance and expansion costs.

Smarter Vehicles

Although our vehicles have not changed significantly in the past 25 years, the next 25 years are likely to bring substantial change, prompted by recent technological advancements. Cars will be smarter and safer. Safety alerts will increase driver awareness. Vehicles equipped with on-board technology that can provide safety benefits may also provide data to transportation managers. These data can tell transportation managers about traffic flow conditions and where preventative weather treatment or debris removal may be needed. As the future unfolds, the impact of smarter new car features on roadway design and safety regulations needs to be considered.

Alternative Fuels

Rising fuel prices have significantly impacted travel patterns in the past and remain a potential threat in the future. Actions are needed not only in terms of having more fuel-efficient travel choices such as public transportation, but also in terms of development of alternative fuels.

There are promising forms of alternative fuels that could cause a significant change in GHG emissions and our dependence on foreign oil. In September 2009, Governor Kaine announced a partnership with Dominion Virginia Power to install electric vehicle charging stations at certain state rest areas. In September, Virginia's first electric vehicle charging stations, which can charge up to four vehicles at a time, were installed at the westbound New Kent Safety Rest Area on I-64. As this power source takes hold, there will be increased demands for charging centers and the location of these may impact traffic patterns.

Many of the implications of increased use of alternative fuels are positive, but the increased use will have a negative impact on fuel tax revenues. The effectiveness of a flat tax per gallon will decrease when vehicles travel more miles per gallon due to improved fuel efficiency or use of alternative fuels.

Key Needs Posed By Changes in Technology:

- Increased use of information systems to improve efficiency and safety
- Facilities such as charging centers to support use of alternative fuels
- Updated roadway design standards as vehicle designs change
- Alternative to gasoline-based state fuel tax

Global Connections

Improved communications have shrunk the world, making global connections stronger. What will be the impact of continued globalization of the marketplace? The answers may not be apparent, but the fact that our international gateways (Port of Virginia and Dulles International Airport) will play a strategic role is clear.

Whether more or fewer goods come from overseas, the need to move goods into, out of, within, and through Virginia remains crucial. The movement of freight – raw materials, intermediate products, and finished goods – supports over \$350 billion (or 28%) of Virginia’s Gross State Product annually. Freight-related employments accounts for 34% of total employment. Thus, the movement of freight and passengers is closely aligned with economic prosperity and competitiveness.

Key Needs Posed By Changes in Global Connections:

- Enhanced access to Virginia’s two major global gateways – Dulles Airport and Port of Virginia
- Enhanced freight mobility, including freight rail improvements

Institutional Decision-Making

Exactly what the governance structure may be in a few years is uncertain, but the trend is for increased sharing of decision authority and responsibilities being transferred from higher to lower levels of government. This suggests that the role for state agencies, such as VDOT, may be quite different in the future from what it is today. Possible future courses of action could be a move toward:

- More tiered planning (e.g., planning conducted at multiple administrative levels of government);
- Some funding decisions being made by non-state actors (more local involvement); and
- Continued devolution of authority (e.g., more decentralization).

If these conditions occur, implementing regional projects where there are many entities to coordinate could prove challenging. Providing incentives for cooperation may be necessary to enhance planning in this new environment.

Key Needs Posed By Changes in Institutional Decision-Making:

- Stronger ties to regional and local agencies
- Incentives for cooperation (i.e., land use plans that support transportation decisions and investments)

What Are Other Key Issues?

Looking to the future to see how it will be different from today is one step in determining desired strategic actions. Common across many of the changes are implications on safety and security, maintenance, and congestion.

Safety and Security

Safety and security are primary concerns for the traveling public. Virginia’s Strategic Highway Safety Plan (SHSP) identifies safety issues and potential strategies. These include:

- Integrate the SHSP goals and objectives into individual agency actions plans;
- Promote more focus on safety at the regional and local levels;
- Strengthen the link between asset management and safety by incorporating the management of roadway elements into current asset management systems;
- Implement additional improvements to the statewide crash database;
- Link socio-economic, crash, highway inventory, and traffic information to improve understanding of the causes of non-motorized crashes; and
- Develop practices and techniques to better integrate land use and transportation planning.

Virginia has been moving forward on transportation security measures. Recent efforts include real ID, Transportation Identification Credential, National Incident Management System/Incident Command System, Commonwealth of Virginia Emergency Operations, and First Responder Authentication Credential. Additional strategies include:

- Subsequent phases of current measures noted above;
- Continued evacuation exercises on the highway system, including lane reversals of I-64;
- Use of information technology to inform the public and share information across governmental boundaries;
- Investing in transit security enhancement on service vehicles and at facilities;
- Providing training and forums for transit operator communications and coordination with neighboring operators and first responders; and
- Focus on passenger rail and freight rail security.

Safety and security issues extend across all modes and require collaboration across all transportation agencies to provide safe operations and respond to incidents. In addition to collaboration, continued safety education of transportation providers and use of state-of-the-art technology for communication are necessary.

Maintenance and Preservation

The current state of pavements and structures was addressed earlier in this chapter. In recent years two bridges were closed due to poor conditions – Kings Highway Bridge in Suffolk and the Jordan Bridge in Chesapeake. The construction boom of the 1960s is causing a significant portion of Virginia’s structures to be approaching the end of their useful lives, suggesting a significant increase in structural maintenance costs in the future. Also, an increased role for transit in the future will place more needs on the transit fleet, suggesting increased funding to keep existing and expanded systems in good condition.

Congestion

The need to address congestion is also fundamental to a quality transportation system. Congestion results in delays, time wasted in traffic, missed appointments, reduced productivity, and increased vehicle emissions. But more important than the severity or quantity of congestion is the reliability of a transportation network. Reliability is particularly critical to the freight community, where the value of time under just-in-time delivery circumstances may exceed \$5 per minute. Contributors to traffic congestion, beyond the fundamental one of too many vehicles competing for too little space, include bottlenecks, traffic incidents, bad weather, and work zones.

Virginia has several options to manage congestion and keep it from crippling commerce and imposing unreasonable burdens on its citizens. These options fall into the categories of mobility strategies, demand management strategies, and proximity strategies.

- **Mobility Strategies** – On the supply side, improvements can be made to roads and transit facilities that will make the system operate better and carry more people. Examples of “megaprojects” to be completed over the next decade or so are the Dulles Metrorail extension and construction of HOT lanes on the Capital Beltway. These projects, as well as other HOV/HOT and variable pricing projects, will bring congestion relief by expanding capacity in critical congested corridors.

More typical of efforts to increase capacity will be investments in Intelligent Transportation Systems (ITS) and system management and operations measures that will squeeze more capacity out of the existing network, including managed lanes; improved traveler information using dynamic message signs, 511 Virginia Systems, VA Traffic, and pre-trip planning; improved incident management, using vehicle detection technology, closed circuit television, safety service patrols and ramp metering; and improved transit technology, including signal priority, automated vehicle location, and collision prevention technology.

- **Travel Demand Management (TDM) Strategies** – As noted previously, DRPT has led efforts to coordinate, plan and implement TDM programs (carpooling, vanpooling, teleworking) in the Commonwealth, along with local and regional partners. TDM measures can be very cost-effective in managing travel demand by moving more people in fewer vehicles, moving trips out of the peak period, and/or eliminating trips altogether. They also have a positive impact on the environment with the reduction in vehicle emissions. TDM measures should play an increasing role in addressing congestion.
- **Proximity Strategies** – One policy approach to address congestion is to encourage reasonably compact development patterns and transit-oriented development. Higher population density can reduce vehicle trip lengths and facilitate the use of transit, walking, and biking. This class of actions, which recognizes the strong link between transportation and land use, can be referred to as “proximity strategies,” since the clustering of origins and destinations reduces the demand for transportation capacity. Striving for jobs-housing balance is another way to limit the impacts of inter-regional work travel and congestion. In California, similar policies and legislation (SB 375) have resulted in the Sustainable Communities Strategy. Communities complying with this strategy are eligible for state and federal grants, for development of sustainable regional transportation systems.

Chapter 3 Virginia's Corridors of Statewide Significance

Virginia's transportation corridors are the multimodal connections to the Commonwealth's major activity centers. The corridors help people and goods move between regions in Virginia 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.

New and improved corridors can provide mobility benefits for citizens and businesses but also can create negative consequences. The form, location, and design of corridor improvements to a corridor play a critical role in determining whether or not the corridor will function appropriately in the future. For example, when a new highway is built or an existing highway is improved, it must be designed and located so that it will serve long-distance travel. Conversely, improperly developed and designed corridors can spur local growth along the corridor turning it into a "Main Street" – reducing the benefit of the Commonwealth's investment and perpetuating development patterns that increase demand for transportation capacity.

The Corridors of Statewide Significance (CoSS) concept is the mechanism for reviewing corridors and identifying potential multimodal transportation strategies to guide local land use planning and transportation investments.

What Is a Significant Corridor?

VTrans2035 Corridors of Statewide Significance

The CoSS concept was first introduced in VTrans2025 as the Multimodal Investment Network (MIN). The purpose of the MINs was to focus on multimodal solutions to move people and goods within and through Virginia. The criteria for being designated a MIN included:

- The corridor must have multiple modes or be an extended freight corridor;
- The corridor connects regions, states, and/or major activity centers;
- The corridor provides for a high volume of travel; and
- The corridor provides a unique statewide function and/or addresses statewide goals.

Technical advisors representing rail, transit, highway, aviation, port, MPO, and PDC interests developed and applied the criteria that yielded 11 MINs. Although their names have changed, these remain the Commonwealth's significant corridors, as represented in Exhibit 12. The corridors are truly multimodal, but the highway anchor of the corridor is given in parenthesis for reference.

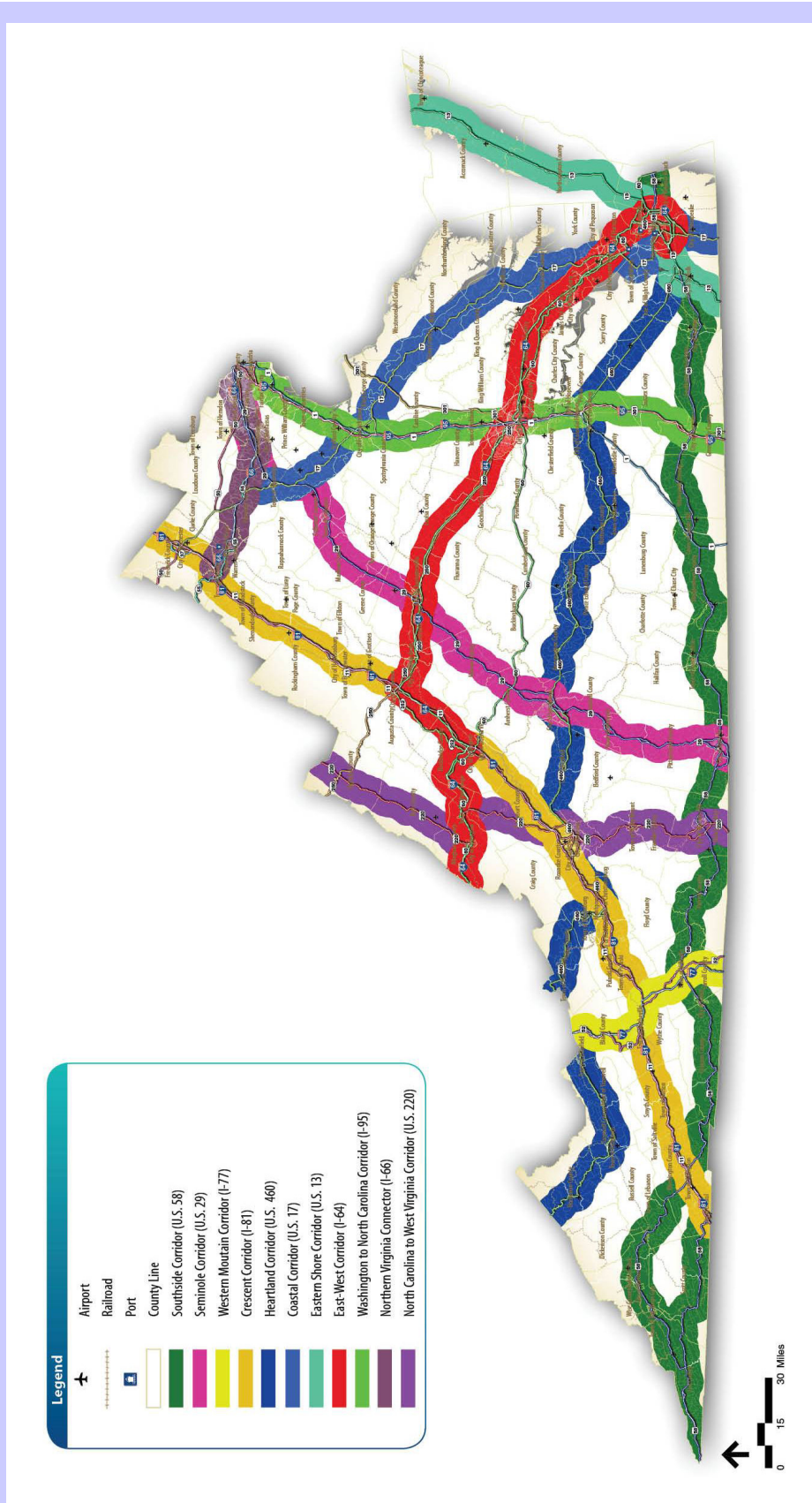


Exhibit 12. Corridors of Statewide Significance

Legislation (S 1398) enacted by the General Assembly in 2009 and signed by the Governor codified the CoSS concept. The law requires: 1) the corridors to be designated by the CTB; 2) local governments through which one or more of the corridors traverses to note the corridor(s) on the transportation map included in updates to their comprehensive plans; and 3) the CTB to develop criteria for prioritizing and conducting environmental studies of the corridors. A copy of the law is included in Appendix A.

Corridors of Statewide Significance
<ul style="list-style-type: none"> ● Coastal Corridor (Route 17) ● Crescent Corridor (I-81) ● East-West Corridor (I-64) ● Eastern Shore Corridor (Route 13) ● Heartland Corridor (Route 460) ● North Carolina to West Virginia Corridor (Route 220) ● Northern Virginia Connector (I-66) ● Seminole Corridor (Route 29) ● Southside Corridor (Route 58) ● Washington to North Carolina Corridor (I-95) ● Western Mountain Corridor (I-77)

The corridors are a subset of the overall transportation system. The *Corridors of Statewide Significance* Report, available on the web (www.vtrans.org), contains a full description of the corridors, components, functions, and recommended strategies for each, depending on the functions.

CoSS Purpose

VTrans2025 identified the need for strategic multimodal corridor examination and developed the initial list of corridors. VTrans2035 has taken the next steps by:

- Determining their key roles or functions (e.g., freight corridor, commuter corridor, military access, etc.);
- Inventorying all the modal facilities, including parallel routes;
- Analyzing performance in terms of level of service and achieving corridor functions;
- Reviewing future land use and transportation plans; and
- Formulating initial corridor strategies.

The purpose of the CoSS is to provide a multimodal vision for the corridors to guide localities in their land use and transportation plans. Without guidance, local decisions could degrade a corridor’s ability to move people and goods, causing bottlenecks and problems that are costly to fix, and undermine economic and quality of life goals. As Virginia continues to grow, it must take steps now to ensure the right balance of development, transportation capacity, and natural resources. The real value of the CoSS is the identification of strategies within each corridor as the first step in ensuring these corridors are invested in and protected for the future benefit of the entire Commonwealth.

Planning for these corridors is an evolving process. The VTrans2035 efforts included not only technical analysis (assessment of trends, system performance, proposed projects, MPO Plans, PDC plans, etc.), but also discussions about the corridor functions and strategies with regional planners as well as the general public. Not all corridors serve the same functions. In the future the Commonwealth will need to develop master plans for each corridor – examining investment needs and policies to protect the corridor so that each can fulfill its unique role. These plans will contain a variety of multimodal options as well as land use strategies.

This initial analysis establishes a multimodal vision that can guide future, more detailed planning efforts. The individual corridor reports essentially serve as a vision statement. The next step in the CoSS process is the development of corridor master plans that turn the strategies into specific improvements. Because Virginia’s landscape is constantly changing, new corridors may emerge that might meet the CoSS criteria. Therefore, the CTB should review the CoSS periodically and consider the need to add or delete corridors based on the established criteria.

Next Steps in CoSS Process
<ul style="list-style-type: none"> • Develop corridor master plans • Review CoSS periodically and consider adding or deleting corridors • Consider CoSS in funding decisions

The CoSS information can be one consideration (but not the only consideration) for making funding decisions. The extent to which a locality’s land use plan protects the functionality of the corridor will be considered as part of the funding process.

What Does the CoSS Analysis Tell Us?

Exhibit 13 is a summary of common potential strategies across the corridors. They relate to transit and rail improvements and improving the efficiency of the existing system with ITS, access management, improved land use patterns, and TDM measures. As such, the corridor strategies promote mobility, environmental quality, and sustainable transportation. They will improve accessibility, reduce greenhouse gases and other emissions, improve quality of life with more transportation choices, and support the major population and commercial centers throughout the Commonwealth.

Common Potential Corridor Strategies
Increase rail capacity (including passenger rail)
Increase transit options and transit capacity
Improve rural transit (human services-related)
Increase Transportation Demand Management
Multimodal coordination at the Port of Virginia
Improve safety at high crash rate areas
Implement and/or improve ITS
Improve access management
Encourage clustered development instead of strip development
Improve ground access to airports

Exhibit 13. Common Potential CoSS Strategies

A brief snapshot of each corridor, detailing major components, key functions, and proposed potential strategies, is provided in Exhibits 14 through 24.

Coastal Corridor (Route 17)

Major Components: Route 17, Local Transit Services, Port of Virginia, Port of Richmond, Rappahannock River, Norfolk Southern Heartland Corridor, Norfolk Southern Coal Corridor, CSX National Gateway Corridor, CSX Coal Corridor, Amtrak, Norfolk International Airport, Newport News Williamsburg Airport

- Key Functions:**
- Major I-95 Alternative to Shore Destinations and Through Traffic (Alternative Route from Hampton Roads to Northern Virginia)
 - Connection for Trucks Between Hampton Roads and I-95
 - Tourism (Access to Northern Neck and Middle Peninsula)

Coastal Corridor (Route 17) Potential Strategies
Improve capacity by widening, intersection improvements, and/or construction of interchanges at strategic locations
Increase freight rail capacity from Port of Virginia and ensure multimodal freight movement coordination with the proposed Craney Island expansion
Support expanded freight capacity by expanding intermodal facilities
Improve transit in rural areas by expanding existing fixed-route services and offering increased demand response services for the elderly and disabled
Improve capacity through high-density areas through traffic management, access management, development of parallel routes and grid streets to separate local and through traffic, and possible use of ITS technologies
Improve ground access to airport facilities

Exhibit 14. Coastal Corridor (Route 17) Snapshot

Crescent Corridor (I-81)

Major Components: I-81, Route 11, I-381, I-581, Local Transit Services, Virginia Inland Port, Norfolk Southern Crescent Corridor, Short Line Railroads, Shenandoah Regional Airport, Roanoke Regional Airport

Key Functions:

- Freight Corridor (Trucks, Norfolk Southern Rail Lines)
- Passenger Link between Urban Centers (Winchester, Harrisonburg, Staunton, Roanoke, Blacksburg, Bristol)
- Through Travel (Link Between Tennessee, Pennsylvania, New York, I-40, I-80, I-90, etc.)
- Education (Virginia Tech, James Madison University, Radford University, and 20 Other Colleges and Universities)
- Tourism (State Parks, Recreational Areas, National Forests, Many Other Sites such as Civil War Battlefields)

Crescent Corridor (I-81) Potential Strategies

Increase capacity for both passengers and freight by expanding freight rail service and adding capacity to allow for passenger rail service
Support expanded freight capacity by expanding intermodal facilities
Increase the highway capacity of I-81 in strategic locations by improving interchanges, construction of new interchanges at strategic locations, and/or by roadway widening
Improve safety by addressing high crash rate areas and making necessary improvements
Improve safety and increase capacity along I-81 by adding truck-climbing lanes in strategic locations
Increase Park and Ride capacity by expanding existing lots and adding new facilities at strategic locations
Improve transit in rural areas by expanding fixed-route services and offering increased demand response services and services for the elderly and disabled
Improve air passenger service by increasing commercial service where market forces allow at existing airports and improving ground access to air facilities
Implement ITS to increase system efficiency and safety

Exhibit 15. Crescent Corridor (I-81) Snapshot

East-West Corridor (I-64)

Major Components: I-64, Routes 250, 60, and 11, I-664, I-564, I-264, I-464, Local Transit Services, Port of Virginia, Port of Richmond, James River, York River, CSX Coal Corridor, Norfolk Southern Heartland Corridor, Norfolk Southern Coal Corridor, Amtrak, Norfolk International Airport, Newport News Williamsburg Airport, Richmond International Airport, Charlottesville-Albemarle Airport

- Key Functions:**
- Freight Corridor (East-West to Coalfields, CSX Rail Lines, Hampton Roads Port Facilities, etc.)
 - Link between Major Urban Areas (Hampton Roads, Richmond, Charlottesville, Staunton)/also for Evacuation/Security
 - Access across Mountains to Points West, I-81, and to West Virginia
 - Military Access (Hampton Roads Facilities, Yorktown Naval Weapons Station, etc.)
 - Education (University of Virginia, University of Richmond, Virginia Commonwealth University, Tidewater Community College, Virginia Union University, and 19 Other Colleges and Universities)
 - Tourism (National Parks, State Forests, Historic Sites Such As Williamsburg, Jamestown. etc.)

East-West Corridor (I- 64) Potential Strategies
Increase capacity for both passengers and freight by expanding freight rail service and adding capacity to allow for passenger rail service, including a higher-speed connection
Ensure multimodal freight movement coordination with the proposed Craney Island expansion, and consider moving more freight via barge from the Port of Virginia to locations within the Commonwealth
Support expanded freight capacity by expanding intermodal facilities
Improve transit, especially in rural areas, by expanding existing fixed-route services and offering increased demand response services and services for the elderly and disabled; implement rapid transit in Hampton Roads and Richmond; and extension of The Tide in Virginia Beach
Increase Park and Ride capacity by expanding existing lots and adding new facilities at strategic locations
Increase highway capacity of I-64 between Richmond and Hampton Roads
Expand capacity across the Hampton Roads body of water
Improve ground access to airport facilities
Implement ITS

Exhibit 16. East-West Corridor (I-64) Snapshot

Eastern Shore Corridor (Route 13)

Major Components: Route 13, Local Transit Services, Port of Virginia, Bay Coast Railroad and Barge, Norfolk Southern, CSX, Amtrak, Norfolk International Airport, Newport News Williamsburg Airport

Key Functions:

- Link between Hampton Roads and Eastern Shore for both Passengers and Freight (Bay Coast Railroad with Ferry Barge, Chesapeake Bay Bridge-Tunnel)
- Main Street through Eastern Shore
- Access to Beaches, Chincoteague, Assateague, NASA Wallops Island

Eastern Shore Corridor (Route 13) Potential Strategies

Improve safety and mobility along Route 13 throughout the Eastern Shore through better access management

Improve safety and mobility along Route 13 through land use planning by discouraging development directly along the corridor, especially strip development

Ensure continued freight movement across the Chesapeake Bay along the corridor through investment in the Bay Coast Railroad and Barge and encouraging other barge transport of freight

Exhibit 17. Eastern Shore Corridor (Route 13) Snapshot

Heartland Corridor (Route 460)

Major Components: Route 460, Coalfields Expressway, Local Transit Services, Port of Virginia, James River, Norfolk Southern Heartland Corridor, Elliston Intermodal, Norfolk International Airport, Newport News Williamsburg Airport, Richmond International Airport, Lynchburg Regional Airport, Roanoke Regional Airport

Key Functions:

- Freight Corridor (East-West from Coalfields to Hampton Roads, Norfolk Southern Rail Lines, etc.)
- Link between Hampton Roads, Petersburg, Lynchburg, Link to Route 29 and I-81 (Also for Evacuation)
- Military (Hampton Roads Facilities, Fort Lee, Pickett, etc.)
- Education (Liberty University, Virginia Tech, Virginia State University, Longwood University, Tidewater Community College, and 24 Other Colleges and Universities)
- Historic/Tourism (National Forests, State Parks, etc.)

Heartland Corridor (Route 460) Potential Strategies

Increase capacity for both passengers and freight by expanding freight rail service and adding capacity to allow for higher speed rail between Richmond and Hampton Roads

Ensure multimodal freight movement coordination with the proposed Craney Island expansion and divert more freight to rail

Support expanded freight capacity by expanding intermodal facilities

Improve transit in the Hampton Roads, Lynchburg, and Blacksburg areas and in rural areas by offering increased demand response services and services for the elderly and disabled

Complete construction of the Route 460 realignment west of Suffolk and increase the highway capacity of Route 460 in strategic locations

Improve safety by addressing high crash rate areas and making necessary improvements

Improve access management

Encourage commercial and industrial development, encourage concentrated development centers to avoid strip development, and coordinate land use and transportation decisions

Exhibit 18. Heartland Corridor (Route 460) Snapshot

North Carolina to West Virginia Corridor (Route 220)

Major Components: Route 220, Local Transit Services, Norfolk Southern, Roanoke Regional Airport

Key Functions:

- Link between Route 58, I-81, and I-64 and Connection to West Virginia
- Scenic Route/Tourism (National Forests, State Parks, etc.)
- Logging Route

North Carolina to West Virginia Corridor (Route 220) Potential Strategies

Complete construction of I-73 between I-581 in Roanoke and the North Carolina border, separating through traffic from local traffic
Increase safety by addressing high crash areas and making necessary improvements
Improve transit in rural areas by offering increased demand response services and services for the elderly and disabled
Improve access management
Implement ITS

Exhibit 19. North Carolina to West Virginia Corridor (Route 220) Snapshot

Northern Virginia Connector (I-66)

Major Components: I-66, Routes 50 and 55, WMATA Orange Line, VRE, Amtrak, Local Transit Services, Virginia Inland Port, Norfolk Southern Crescent Corridor, Dulles International Airport, Ronald Reagan Washington National Airport

Key Functions:

- Commuter Corridor for Northern Virginia/Washington, D.C.
- Freight (Inland Port) Accessibility, Trucks
- Link between I-81/Western Virginia and D.C. Metro Area (Also for Evacuation/Security)
- Multimodal Corridor (Metrorail, VRE, Express Bus, HOV)
- Dulles Airport Access
- Technology Corridor

Northern Virginia Connector (I-66) Potential Strategies

Extend Metrorail service
Expand highway and HOV capacity
Increase transit options and transit capacity in Northern Virginia
Encourage increased TDM including consideration of congestion pricing
Improve express bus service to Washington, D.C. and Dulles Airport and extend VRE lines
Improve ground access to Dulles International Airport from the west and from the Virginia Inland Port and improve ground access to other airport facilities
Improve capacity of parallel roadway facilities to relieve pressure on I-66
Improve ITS, including along parallel roadways
Improve freight movement via increased rail capacity and intermodal facilities

Exhibit 20. Northern Virginia Connector (I-66) Snapshot

Seminole Corridor (Route 29)

Major Components: Routes 29, 50, and 28, WMATA Orange Line, VRE, Local Transit Services, Norfolk Southern Crescent Corridor, Amtrak, Dulles International Airport, Charlottesville Albemarle Airport, Lynchburg Regional Airport

- Key Functions:**
- Connections between Northern Virginia, Charlottesville, Lynchburg, Danville
 - Commuter Route Feeding Northern Virginia and Other Urban Areas
 - Alternative to I-81/I-95 (Major Rail Corridor)
 - Cultural Resources/Tourism (Scenic Highway, National Forest, National Park, etc.)

Seminole Corridor (Route 29) Potential Strategies
Improve capacity through traffic management, access management, development of parallel routes and grid streets to separate local and through traffic, and possible use of ITS technologies
Increase capacity through intersection movements, construction of interchanges, and signal coordination at strategic locations
Increase freight rail capacity and continue to allow for passenger rail service
Improve safety by addressing high crash rate areas and making necessary improvements
Improve transit, especially in rural areas, by expanding existing fixed-route services and offering increased demand response services and services for the elderly and disabled
Increase park and ride capacity by expanding existing lots and adding new facilities at strategic locations
Increase transit options and transit capacity in the Northern Virginia region
Improve ground access to airport facilities

Exhibit 21. Seminole Corridor (Route 29) Snapshot

Southside Corridor (Route 58)

Major Components: Route 58, Local Transit Services, Port of Virginia, CSX National Gateway, Norfolk International Airport, Newport News Williamsburg Airport

- Key Functions:**
- Local Access for Southern Virginia Cities, including Oceanfront Access in Virginia Beach
 - Link to Hampton Roads for Freight and Passengers for Southern Virginia
 - Economic Development
 - Manufacturing/Goods-to-Market/Warehousing/Distribution
 - Connection to I-77

Southside Corridor (Route 58) Potential Strategies
Improve capacity through traffic management, access management, development of parallel routes and grid streets to separate local and through traffic, and possible use of ITS technologies
Encourage concentrated commercial and industrial developments including distribution centers
Continue Southside Corridor Development Program to ensure that all sections of Route 58 are at least four lanes to improve safety, capacity, and freight movement and to encourage economic development
Increase freight rail capacity from Port of Virginia and ensure multimodal freight movement coordination with the proposed Craney Island expansion
Increase safety by addressing high crash areas and making necessary improvements
Improve transit, especially in rural areas, by offering increased demand response services and services for the elderly and disabled
Improve ground access to airport facilities
Increase evacuation capacity

Exhibit 22. Southside Corridor (Route 58) Snapshot

Washington to North Carolina Corridor (I-95)

Major Components: I-95, I-395, I-495, I-85, I-195, I-295, Routes 1 and 301, WMATA Blue and Yellow Lines, Local Transit Services, VRE, Ports of Alexandria and Richmond, James River, CSX National Gateway Corridor, Amtrak, Ronald Regan Washington National Airport, Richmond International Airport

Key Functions:

- Commuter Corridor in Northern Virginia and Richmond Areas
- Through Traffic (“Main Street” of East Coast)
- Freight Corridor (trucks, CSX Rail Lines)
- Military Access (Pentagon, Quantico, Ft. Belvoir, Ft. AP Hill, Ft. Lee, etc.)
- Multimodal Corridor (Metrorail, VRE, Amtrak, Express Bus, HOV/HOT Lanes)
- Link to Maryland, Washington, D.C., and Capital Beltway from Points South

Washington to North Carolina Corridor (I-95) Potential Strategies

Explore value pricing to increase capacity and/or reduce single-occupancy vehicles along the corridor
Increase interstate capacity around the Washington, D.C. Metropolitan area and increase capacity for through traffic
Increase transit options and transit capacity in Northern Virginia
Encourage increased TDM
Increase highway capacity through interchange improvements and modifications, interchange construction, and widening in strategic locations
Improve ITS, including along parallel roadways
Improve freight rail capacity and allow for greater passenger rail capacity, including the East Coast high speed rail corridor
Improve ground access to airport facilities

Exhibit 23. Washington to North Carolina Corridor (I-95) Snapshot

Western Mountain Corridor (I-77)

Major Components: I-77, Routes 52 and 11

Key Functions:

- Multi-state Connection (Ohio to North Carolina, Through Traffic)
- Connection through Tunnels (Big Walker Mountain, East River Mountain)
- Freight Connection to I-81
- Connection to Route 58

Western Mountain Corridor (I-77) Potential Strategies

Increase roadway capacity of I-77/81 overlap near Wytheville

Increase north-south capacity using technology, especially around the Big Walker Mountain Tunnel and the East River Mountain Tunnel

Implement ITS

Exhibit 24. Western Mountain Corridor (I-77) Snapshot

Chapter 4

Transportation Funding: Paying for Performance

What Is the Return on Transportation Investment?

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. There is virtually no element of the Virginia economy that does not rely 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. Transportation funding has been the focus of many past General Assemblies, but the way forward to meet these 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.

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. A synopsis of the report titled *Economic Impacts of Transportation Infrastructure Improvements* can be found at www.vtrans.org. According to the report, by the end of the six-year period 2009-2014, Virginia will have invested over \$32.9 billion to maintain and enhance safe, convenient, and reliable travel for all of Virginia’s residents, businesses, and visitors. This estimate reflects the state highway, transit, rail, aviation, and port transportation programs. Exhibit 25 summarizes the main findings of the economic analysis of the six-year program. All impacts are on the Virginia economy specifically. Additional impacts outside the Commonwealth could occur as well.

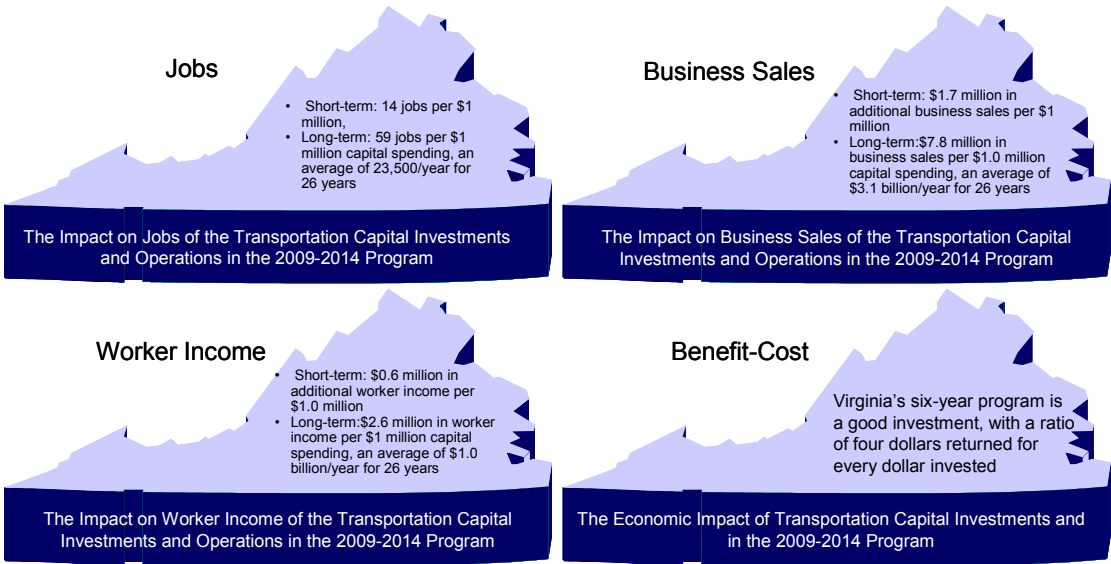


Exhibit 25. Economic Impact of Virginia’s Transportation Investments

Total Economic Impact

The total impact of the \$32.9 billion in the 2009-2014 Six-Year Improvement Program is expected to generate in Virginia in the short-term (six-year period) \$56 billion of business sales, an average of 78,100 jobs per year of spending, and \$20 billion of worker wages. In the long-term (up to 2035) there would be impacts of \$82 billion of business sales and 612,000 jobs over the 26-year period (23,500 jobs per year), of which 96% are in the private sector.

To assess whether these expenditures are a good investment for Virginians, these returns can be translated into a benefit-cost ratio. The study compared the long-term benefits as the total increase in business sales and the total capital costs, with adjustments to account for the different time periods over which the costs and benefits occur. Virginia's six-year program is indeed a good investment, with a ratio of four dollars returned for every dollar invested.

Short-Term Economic Benefits

Operations, maintenance, and capital investment activities are an important economic stimulus to all of Virginia's communities and local economies. Over the short-term, they create construction jobs and generate demand for materials and services (referred to as business sales). They also create jobs within the transportation sector itself; the public agencies that support transportation in Virginia are significant employers, as well as purchasers, of locally-produced goods and services.

Virginia's six-year expenditure of \$32.9 billion for transportation maintenance, operations, and expansion (capital improvements and operations) is expected to generate additional jobs, business sales, and income:

- Each million dollars in transportation investment generates 14 jobs. On an average annual basis, the investment will generate over 78,100 jobs per year over the six-year period.
- Each million dollars spent returns \$1.7 million in additional business sales, or \$56.2 billion in additional business sales over the six-year period.
- Each million dollars spent generates \$0.6 million in additional worker income, or an additional \$20.3 billion in income flowing to Virginia workers over the six-year period.

Long-Term Economic Benefits

Over the longer term, transportation capital investments can produce more than the expected transportation benefits of improved safety and reduced travel times and costs. Businesses, workers, and others whose daily travel needs can be met in less time realize a benefit to their travel budget and, for businesses, their bottom line. Businesses also have greater access to labor and customer markets, and for those that depend heavily on transportation, greater access to ports, warehouses, distribution centers, and intermodal facilities. A region that invests

to increase its transportation access, reliability, and mobility is more attractive as a place to live, visit, and do business. These impacts translate into more economic activity.

Virginia’s \$32.9 billion transportation investment includes \$10.4 billion of capital investment. It is expected to yield substantial long-term economic benefits to residents and businesses and increase the Commonwealth’s economic competitiveness. These investments will grow the Virginia economy over the next 26 years accordingly:

- Each million dollars in capital investments generates 59 jobs, or an average of 23,500 jobs per year (612,000 “job-years”) over the 26-year period. The vast majority of these jobs (96%) will be produced in the private sector.
- Each million dollars spent on capital investment will produce \$7.8 million in business sales, or an average of \$3.1 billion annually for a total of \$81.6 billion over the 26 years.
- These capital investments also grow the economy by putting more dollars in to the pockets of Virginia’s workforce. Over the 26-year period, Virginia’s investment in transportation capital improvements is expected to generate \$2.6 million per million spent, or over \$26.6 billion in additional worker income for the 26 years.

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 Virginia history. 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 provide a more cost-effective transportation system and leverage private investments. It is also important to recognize that reduced spending now will affect Virginia’s infrastructure long into the future. The report that discusses funding issues in detail, *Transportation Funding: Paying for Performance*, is available on the web (www.vtrans.org).

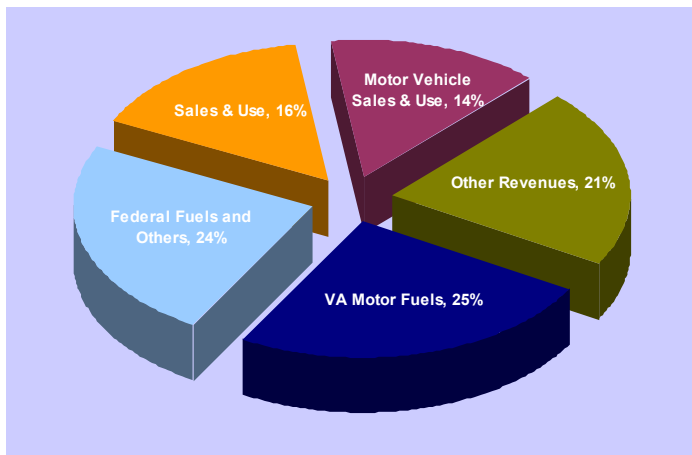


Exhibit 26. Virginia’s Transportation Revenue Sources

While Virginia draws from a number of revenue sources to fund its transportation program, revenues linked to transportation use 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 (Exhibit 26).

The current economic crisis has had a profoundly negative effect on transportation revenues in Virginia. For example, the August 2009 forecast of Fiscal Year (FY) 2010 revenues from state sources is 22.7% less than the original official estimate.

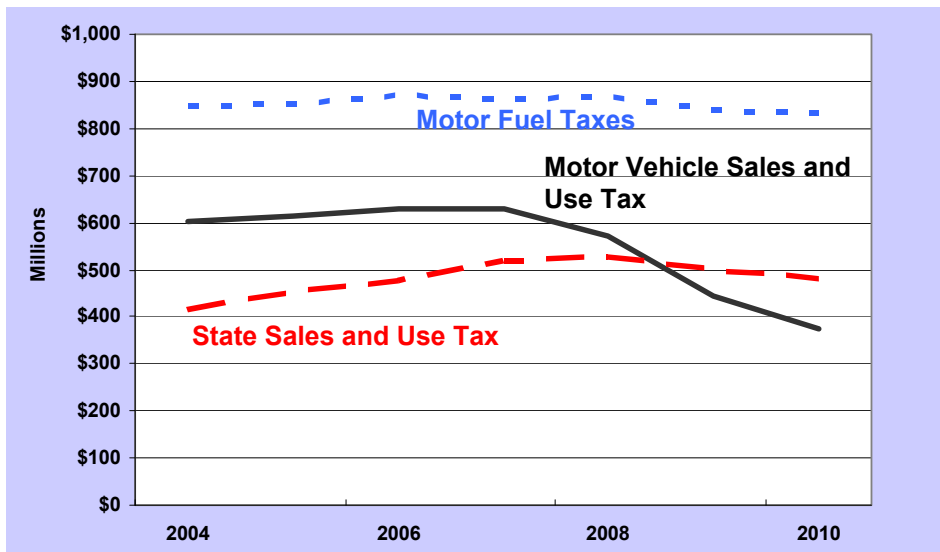


Exhibit 27. Historical Comparison of Selected Virginia Transportation Fund Sources

While all of the Commonwealth’s revenue sources are in decline, those generated from the vehicle sales and use tax have suffered the steepest decline (Exhibit 27). 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.

Although they have not shown a significant historical decline, fuel taxes, and the state fuel taxes in particular, have become increasingly unreliable as a stable revenue source and are likely to remain so even after the current recession comes to an end. This is because 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 over half of its purchasing power and is now worth 8 cents, compared to its value in 1987. To maintain its original purchasing power, the tax would need to be about 36 cents (Exhibit 28).

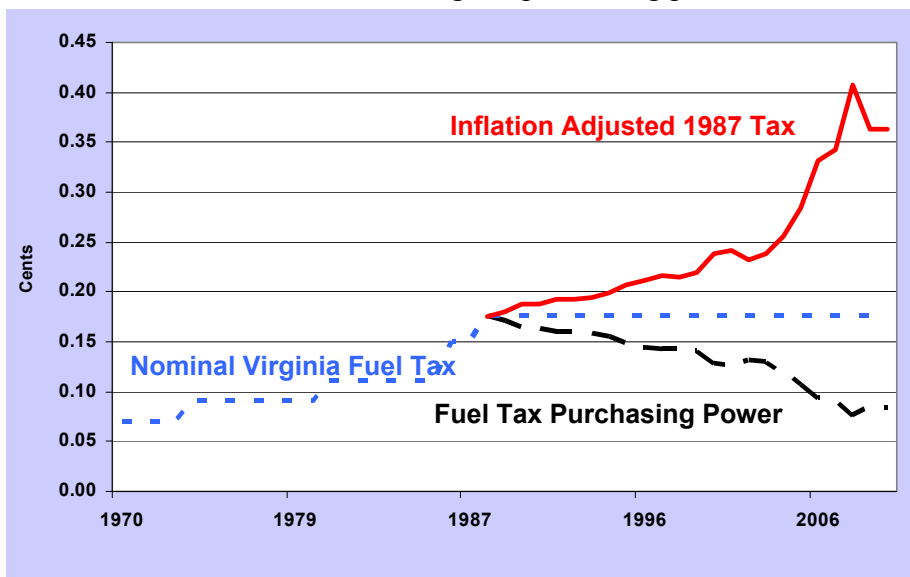


Exhibit 28. Historical Effectiveness of Virginia State Fuel Tax

This decline in value 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. By contrast, from a buying power perspective, revenues from both the federal

gas tax and the state sales tax have kept pace with inflation, although they too are declining in absolute terms due to the recession.

Factors such as increasingly fuel-efficient engine technologies and alternative fuels will further reduce the value of the fuel tax. However, the state fuel tax remains a key revenue source and it must be reevaluated and increased to be one part of the transportation funding solution.

What Are Some Immediate Issues?

Transportation funding remains a focal point of the General Assembly and it was a major issue during the Kaine administration as well as during the recent gubernatorial campaigns. Virginia has responded to its financial challenges by reducing highway construction, VDOT staff, and VDOT services. VDOT, which receives 78% of Virginia's annual transportation budget, has re-structured its organization to deliver its services to residents and businesses differently. This has been accomplished despite a 23% cut in agency staff since 2002. Other transportation agencies have responded to the financial challenges by reducing operating, maintenance, and administrative expenses.

In addition to restructuring its departments, Virginia has also shifted its expenditures to address ever-growing infrastructure maintenance needs. Since 2002, the amount of state Transportation Trust Funds and federal funds that have been subsequently redirected to meet critical maintenance needs grew from \$3.6 million to \$712.6 million.

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; federal funds can only be used for a limited number of maintenance activities. In FY2010, the CTB transferred \$524 million – 80% of construction funds to the highway maintenance fund. In addition, if Virginia is unable to sell Capital Revenue Bonds due to state debt capacity limitations or reduced revenues, it would be unable to fully match federal funds today. The Commonwealth may have to choose between having to forgo a substantial amount of federal funds for roadway expansion in order to pay for routine maintenance or use its resources to expand and in some cases reconstruct its existing infrastructure, while deferring maintenance on other system components.

Transit maintenance needs are growing as well. The current capital investment backlog is approximately \$290 million, and this is expected to increase to \$3.7 billion by 2035.

What Are Future Funding Issues?

Impact on Performance

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 an average of \$1.3-\$1.4 billion per year through 2035 to maintain current conditions.

Future Funding Approaches

One common theme in the discussion throughout the country on the best way to approach the transportation funding crisis is that there is no single solution. It will take a concerted effort involving many different mechanisms to make progress on this issue.

Virginia has been an early leader among states in recognizing the depth of this financial crisis and seeking innovative solutions. Virginia's modal agencies use most of the innovative financial tools made available in recent legislation and has made Virginia a model for other states to learn from and follow. Continued use of these sources will be an important part of the way forward. These alternative sources include:

- **Increase Traditional Transportation Taxes and Fees Now** – Traditional revenue sources for financing transportation in Virginia include the motor fuel tax, the motor vehicle sales and use tax, and vehicle registration fees. The motor fuel tax has not been increased since 1987.
- **Index the Motor Fuel Tax** – The current state motor fuel tax is a flat tax on gallons consumed. Revenues from this user fee do not increase with the cost of constructing and maintaining transportation facilities. The Commonwealth can index motor fuel tax rates with an appropriate measure of inflation. The index would ensure that the user fee paid by system users would not be reduced over time as price levels change. A potential method for indexing the fuel tax is to use the growth in travel.
- **Investigate the Use of Vehicle Miles Traveled Fees** – The Safe, Accountable, Flexible, Efficient Transportation Equity Act-Legacy for Users (SAFETEA-LU)

Revenue Commission established by Congress made a strong recommendation that the current user fee structure should be changed or modified to include a charge for VMT. Such a fee combined with modern information technology can include components that charge users by time-of-day, facility type, vehicle type, emissions, fuel efficiency, etc. A VMT fee would ensure that the transportation system provided the service that users were willing to pay for. However, current systems of charging based on VMT may be costly to implement and operate, imposing a financial and administrative burden on the taxpayers and government. A study by the National Cooperative Research Program of the Transportation Research Board (TRB) (Web Report 143) evaluated the opportunity for a rapid national transition to VMT or similar fee structures. In addition, another TRB panel on transportation and climate change (Special Report 299) includes a paper on the process and technology for implementing a National Mileage-Based Charging System based on the experience gained in the successful Oregon mileage fee demonstration program.

- **Give Localities Authority to Levy Taxes and Fees for Transportation** – Because Virginia is a Dillon’s Rule state, the General Assembly must grant express permission for localities to raise taxes and fees.
- **Expand Use of Tolls and Congestion Pricing** – Tolls are an important tool to finance new transportation infrastructure in Virginia and around the country, as well as internationally. The emergence of technology for electronic toll collection and automated toll roads combined with the user-pay benefit of tolls suggest that strategic use of tolls should be included in the mix of transportation investment options under consideration. However, tolling can only be considered for a state highway system facility for new construction or when additional traffic capacity has been added.
- **Continue the Use of Public Private Transportation Act (PPTA)** – The Commonwealth has already used PPTA proposal opportunities to meet infrastructure requirements that could not have been met at this time through traditional means. Most PPTAs involve the use of public funds and/or tolls to leverage private equity and bonding capacity. New federal legislation is expected to continue to encourage the use of Public/Private/Partnerships to meet future transportation needs.
- **Increase Use of Special Tax Districts** – Through legislation enacted in 1987, the General Assembly enabled localities to create special tax districts to fund transportation projects. Many localities have taken advantage of this opportunity to support local development.
- **Create Strategic Infrastructure Investment Fund** – There are some game-changing megaprojects that deliver extraordinary benefits but are too big to be completed through year to year allocation of existing funding sources. A Strategic Infrastructure Investment Fund, funded with new revenue sources, would facilitate implementation of these strategic investments.

- **Expand Use the Priority Transportation Fund (PTF)** – The PTF is an existing component of the Virginia transportation finance system, with current funds committed until 2035. Virginia should investigate opportunities for increasing this fund to support new transportation capital investments.

The Virginia economy and its citizens have benefited greatly from the investments made to expand and maintain the Virginia multimodal transportation system. To protect this investment and to expand it as demand grows, Virginia needs a financing structure that is flexible, user sensitive, and well funded. Virginia must continue to take advantage of all available federal funding and the financial flexibility provided in recent legislation.

It is clear that Virginia needs additional funding to meet its capacity and system preservation needs and to help grow its economy. However the Commonwealth decides to raise the funds it needs, its decision-making process must continue to ensure that expenditures provide a high return on investment and that they support the quality of life of all Virginians.

Chapter 5 VTrans2035 Investment Priorities

Virginians look for different things from their transportation system, but what is consistent is the need for a quality system that enhances the Commonwealth's long-term economic competitiveness and improves the quality of life for its citizens. Previous chapters included discussions on how Virginia will change in the future and what must be done to address those changes. Common themes that point the way to what should be at the top of Virginia's list of investments include:

- 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 would support Virginia's key economic engines (Dulles Airport and Port of Virginia) and at the same time 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 is a backlog of maintenance needs now, and as the transportation system grows, the costs to maintain the system will increase; and
- As needs continue to grow, long-term trends in fuel consumption as well as inflation are adversely affecting traditional funding mechanisms for transportation investment.

What Are Virginia's Transportation Priorities?

The immediate economic and financial challenges cannot be dismissed, but they also cannot be allowed to dictate or constrain the future. Maintenance keeps Virginia's transportation system functioning, but investment in it moves the Commonwealth forward. Needs are across the Commonwealth and across all modes. Preceding chapters illustrated that Virginia's transportation needs will continue to emerge quickly as Virginia continues to grow, both in population and employment.

There will always be a sizable gap between available revenues and transportation needs. Instead of following the VTrans2025 methodology of identifying the gap, VTrans2035 takes a more strategic and focused approach to needs by identifying key transportation investment

priorities Virginia must address to prosper and thrive in a fast-changing environment. The VTrans2035 investment priorities are listed in Exhibit 29.

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.

Exhibit 29. VTrans2035 Investment Priorities

There are four broad categories of investment priorities to guide Virginia over the next 25 years. They include:

- Strategic, game-changing megaprojects that are crucial for Virginia to realize its future potential as a quality place to live and do business;
- Environmental, safety, and maintenance needs to protect Virginia’s environment and its citizens as well as past investments in infrastructure;
- Investments to enhance Virginia’s economic competitiveness; and
- Reforms and actions to minimize congestion.

While the investment priorities are grouped into these categories, there is overlap. Actions that minimize congestion help to enhance economic competitiveness by improving the reliability of the transportation system. A safe and well-maintained transportation system also supports economic competitiveness and helps to minimize congestion by reducing the potential for incidents that disrupt the flow of people and goods.

These investment priorities paint a picture of a different transportation system than exists today. There are more transportation choices; more high-speed connections for people, goods, and information; and better land use and transportation integration to reduce demand for transportation capacity. Making these investment priorities a reality will yield a sustainable transportation system that does not degrade the environment and enhances quality of life.

The investment priorities speak to Virginians of every age and almost every transportation concern. Better integration of land use and highway capacity encourages compact developments that can reduce vehicle trip lengths and are conducive to walking, bicycling, and transit. More transit increases the mobility options for all citizens and helps reduce congestion. These investment priorities are not only about addressing the transportation issues of today’s urbanized areas, but are also for guiding transportation investments and decisions in the rural and emerging growth areas that face their own mobility and congestion problems.

A snapshot description of each investment priority category and the individual priorities within them follows. The investment priorities and their unfunded needs are presented in a menu format in Exhibit 29. This permits the reader to focus on an individual investment priority or group of priorities. The unfunded needs are a range of order-of-magnitude preliminary planning estimates in 2009 dollars. These planning estimates provide a general sense of the level of additional investment that would be required to implement the investment priorities and are subject to revision as additional information becomes available. In most cases the Commonwealth is likely to be the primary funding source, but in some cases the cost of the priorities may be borne by other funding partners (i.e., federal, local, and private partners). At this preliminary planning stage, a detailed breakdown is not available, but costs would be revised as priorities advance through the project development process.

There is overlap in the investment priorities. For example, the Tunnels and Bridges in Hampton Roads priority includes projects that are also in the Expand the Port priority. The unfunded cost appears in every relevant priority. As such, summing the priorities to obtain a total would include repetitive improvements.

I. Make Strategic Investment in Infrastructure for the Future

There are certain “game-changing investments” that can position Virginia’s global competitiveness, quality of life, and mobility of its citizens over the next quarter-century. They will be megaprojects, rising above other projects in their overall benefits to the Commonwealth. A game-changing investment will be one that makes Virginia stand out in its response to transportation needs. These projects will move both people and goods through Virginia, improve mobility, and enhance economic competitiveness.

There are several examples of these crucial game-changing infrastructure investments. Those included in this priority group are offered as examples because of their potential impacts on both a regional and statewide basis. For example, the combination of major investments in high or higher speed passenger rail, diversion of freight from trucks to rail along I-81, an expanded and improved network of tunnels and bridges in Hampton Roads, and smart system technology leadership can provide benefits for all Virginians by enhancing statewide economic opportunities, improving congestion in critical corridors, and creating cost-effective capacity through technology.

Make Strategic Investment in Infrastructure for the Future Priorities

For Example:

- 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
- Freight Rail Along I-81
- Tunnels and Bridges in Hampton Roads
- Smart System Technology Leadership

Recommendation:

- Establish Strategic Infrastructure Investment Fund with Dedicated Funding Source

These projects deliver extraordinary statewide benefits but are too big to be completed through year to year allocation of existing funding sources. Planning and design for these improvements should be funded through current sources and new resources should be sought to continue and accelerate implementation. A VTrans2035 recommendation is for the establishment of a Strategic Infrastructure Investment Fund. This would be funded with new revenue sources that must be found to move Virginia toward its vision.

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

High speed rail will dramatically change lives much like the completion of the interstate highway system did. It is a clean, energy-efficient mode that would reduce traffic volumes, decrease greenhouse gas emissions, improve safety through reduced traffic volumes, create jobs, support the economy, and promote sustainable communities. It requires the same focus and dedication to become a reality that the construction of the interstate system received.

Investment in rail service throughout the Commonwealth would result in the generation of jobs and revitalization and enhancement of communities. Studies show that when passenger rail service is introduced into a community, retail establishments flourish, commercial and residential property values increase, and people enjoy the transportation choices they are able to make in their daily lives. On a regional level, passenger trains can provide cost-effective and convenient multimodal connections between communities and other modal choices – such as bus, trolley, light rail, bicycle, airport, and Park and Ride facilities – and expand economic development opportunities.

High speed or intercity rail is one component in a network of passenger rail and transit improvements that will connect Virginia’s communities. High speed or intercity rail along the I-95, I-64, and/or Route 460 corridors would serve as the backbone or spine of a system connecting to regional rail (WMATA) in Northern Virginia and in the future to The Tide light rail system in Norfolk and planned extensions to Virginia Beach. Connecting transit service would be another component of the system, such as Richmond’s bus rapid transit concept that will serve Main Street Station and extend west down the Broad Street corridor into western Henrico County.

Virginia has worked to advance high speed rail in the I-95 corridor for many years. The Southeast High Speed Rail Corridor will extend service from Washington, D.C. to Richmond, and on to Raleigh, N.C. and Charlotte, N.C. It will also expand east from Richmond to Hampton Roads.

The anticipated unfunded need for high speed rail is \$2.0 to \$3.5 billion. Recently, Virginia submitted two high speed rail applications for America Recovery and Reinvestment Act

Make Strategic Investment in Infrastructure for the Future – For Example
Priority: 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
Unfunded Need: \$3.4 - \$5.5 Billion
Background: <ul style="list-style-type: none"> • High speed rail service can strengthen the economy, decrease congestion, and sustain the environment by reducing greenhouse gas emissions and pollutants • Virginia has submitted two high speed rail applications for funding from the American Reinvestment and Recovery Act • Further investment in rail extensions and frequencies of service in the high-density portion of the I-95 corridor are needed to address congestion and anticipated population and employment growth

funds totaling over \$1.8 billion and has identified approximately \$330 - \$844 million of capital needs for high speed rail between Richmond and Hampton Roads, pending route selection. Once the preferred alternative is selected, the route would be eligible for federal high speed rail funding.

The infrastructure improvements being proposed would allow for trains to travel up to 90 mph, with opportunity for improvement to 110 mph – a speed that would reduce the travel time and increase train reliability compared to what it is today. Many of the improvements could also benefit freight rail movements in the corridor and commuter travel on the VRE.

The northern portion of the I-95 corridor is expected to have the highest percentage growth in population and jobs in Virginia over the next 25 years. Improved frequencies, capacity, and expansion of Metrorail and/or commuter rail in the high-density regions south of Washington, D.C. are crucial investments that could dramatically affect settlement patterns for the better, as well as reduce vehicular traffic on I-95 during the critical morning and evening peaks by shifting a significant percentage of the commuters off the highway onto rail. The I-95 corridor is of strategic military importance because of the many military bases it serves and protecting the capacity of it with expanded Metrorail and/or commuter rail benefits all. The anticipated cost is \$1.4 to \$2.0 billion.

Freight Rail Along I-81

Today, freight can move by both truck and rail in the I-81 corridor. I-81 has the highest share of truck traffic and carries the second-highest number of trucks of any major route in Virginia. I-95 carries more trucks than I-81 but it has more travel lanes and more automobile traffic. Approximately 3.5 million trucks use I-81 annually, and this number is expected to more than double by 2035. The I-81 corridor is critical to Virginia’s overall freight movement and economic vitality.

Improvements are needed to facilitate the projected increase in freight traffic.

Make Strategic Investment in Infrastructure for the Future – For Example
Priority: Freight Rail Along I-81
Unfunded Need: \$0.8 - \$1.2 Billion
Background: <ul style="list-style-type: none"> • I-81 is a major freight corridor handling nearly 3.4 million trucks in 2008 • Truck traffic is expected to more than double by 2035 to 7.1 million trucks • Crescent Corridor rail improvements can address freight mobility needs, reduce truck traffic on I-81, and have safety benefits

Improvements in the I-81 corridor have been studied for many years. A 2006 resolution by the CTB called for a study to be conducted of short-term rail improvements and long-term potential for diversion of truck traffic to rail. It is recognized that additional capacity is needed but that no single corridor-wide solution meets the future needs. The majority of the trucks (62%) in the I-81 corridor have no origin or destination in Virginia making this an appealing market for diversion to rail. If rail can offer improved cost, reliability, and speed relative to trucking, then some share of trucks could be expected to divert to rail.

The *Feasibility Plan for Maximum Truck to Rail Diversion in Virginia’s I-81 Corridor Draft Report*, completed in 2009, determined that shifting truck to rail can be accomplished through improvements to conventional technology, shifting to open technology, and enhancing Virginia terminals. These improvements are anticipated to cost \$0.8 to \$1.2 billion. The improvements include:

- Crescent Corridor Phases II and III – improve capacity on the Piedmont, Shenandoah, Manassas, Bristol, and Heartland lines;
- Crescent Corridor Enhancements for Open Technology Service – open technology transfers entire truck bodies onto and off of railcars; and
- Crescent Corridor Enhancements for Virginia Terminals – improving the existing Front Royal and the planned Elliston facilities and integrating them into the Crescent Corridor service network.

Tunnels and Bridges in Hampton Roads

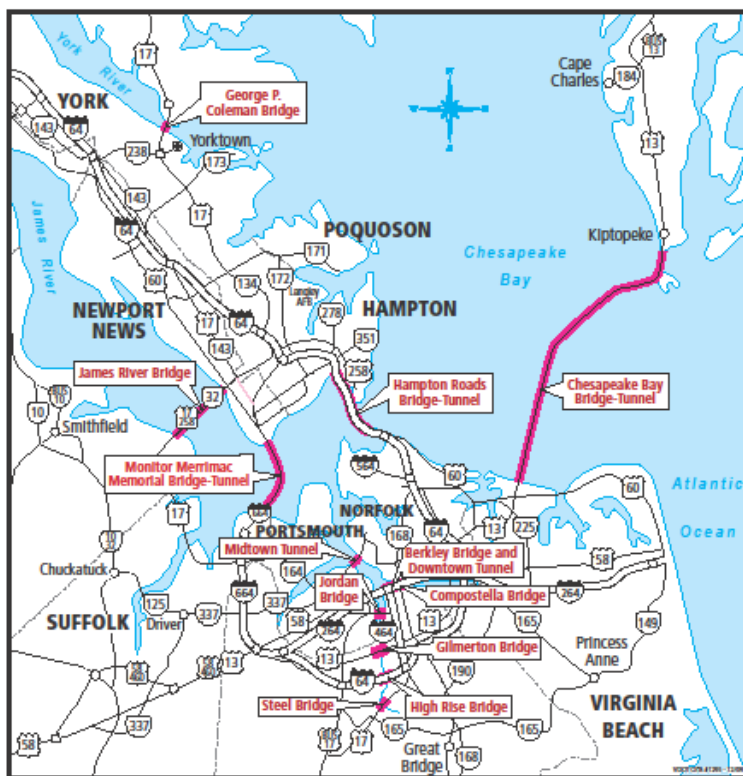
Following the Washington, D.C./Northern Virginia metropolitan area, the Hampton Roads area is the second most congested in Virginia. According to the Texas Transportation Institute 2009 *Urban Mobility Report*, in 2007 a typical traveler in the Hampton Roads area spent 29 hours per year sitting in traffic, typically at tunnels and bridges. Employment and population growth projections coupled with growth in cargo through the Port of Virginia will decrease mobility further over the next 25 years.

There are a number of bridges and tunnels in Hampton Roads. Several of the facilities have been reconstructed/rebuilt (George P. Coleman Memorial Bridge, Berkley Bridge), replaced (James River Bridge), or are currently under construction (Gilmerton Bridge). The Jordan Bridge was maintained by VDOT but was recently closed and a privately funded replacement is being provided.

Improvements are needed to other facilities to enhance economic competitiveness for the region and the Commonwealth, improve safety for motorists, and enhance emergency evacuation capacity. Improvements to these other facilities are captured in three planning initiatives: Hampton Roads Third Crossing, Hampton Roads Bridge-Tunnel (HRBT) Expansion, and Downtown/Midtown and Martin Luther King Freeway (MLK) Extension.

Hampton Roads Third Crossing – The Hampton Roads Third Crossing Study was initiated in late 1993 to

Make Strategic Investment in Infrastructure for the Future – For Example
Priority: Tunnels and Bridges in Hampton Roads
Unfunded Need: \$7.8 - \$11.3 Billion
<p>Background:</p> <ul style="list-style-type: none"> • Viability of the Hampton Roads area is important to the entire well-being of the Commonwealth • Tunnels and bridges are critical to safety, mobility, and economic competitiveness of the region • Improvements needed are: <ul style="list-style-type: none"> – Hampton Roads Third Crossing – Hampton Roads Bridge-Tunnel Expansion – Downtown/Midtown Tunnel and MLK Extension



investigate methods of improving mobility across Hampton Roads and relieving congestion at the I-64 Hampton Roads Bridge-Tunnel. Several alternatives were considered in selecting a crossing design and location. Both the Hampton Roads MPO and the CTB reviewed the alternatives and selected Corridor 9 as the locally preferred corridor. Corridor 9 involves the following:

- Widening I-664 in Newport News to eight lanes;
- Constructing two new tubes parallel to the Monitor Merrimac Memorial Bridge Tunnel, adding four more lanes for travel;
- Constructing an additional new multimodal tube to add transit/rail lines from the Monitor Merrimac Memorial Bridge Tunnel to near the Norfolk Naval Station;
- Adding a new four-lane highway connector from the new bridge tunnel to the Western Freeway in Portsmouth; and
- Widening I-664 to six lanes from the Monitor Merrimac Memorial Bridge Tunnel to the Bowers Hill interchange.

Benefits from this project include but are not limited to: reduced congestion in the Hampton Roads Bridge-Tunnel; improved total mobility across Hampton Roads; new access to Norfolk International Terminals and Naval Base; improved access to the Newport News Marine Terminal and Newport News Shipbuilding and Drydock Company; improved access to the Portsmouth Marine Terminal and Portsmouth Naval facilities; and connections to existing expressways on the Peninsula and Southside.

In 2004, VDOT received unsolicited competing conceptual proposals for creating the Hampton Roads Crossing. The estimated cost for completing the project is \$4.3 to \$6.0 billion.

Hampton Roads Bridge-Tunnel Expansion – HRBT connects Hampton and Newport News to Norfolk and Virginia Beach. The first two-lane tunnel opened in 1957 and the second opened in 1976. Nearly three million vehicles use HRBT each month. In 2008, VDOT contracted with a team of engineering consultants to study and assess each of the six alternatives to mitigate the recurring congestion at HRBT. The study area is generally described as the portion of I-64 stretching from I-64/I-664 Interchange in the City of Hampton on the Peninsula to the I-64/I-564 Interchange in the City of Norfolk on the Southside. The six study alternatives were defined as follows:

- Alternative 1: Add two additional lanes of bridge-tunnel capacity to provide a contiguous, six-lane facility;
- Alternative 2: Add two additional lanes of reversible bridge-tunnel capacity to provide greater peak period and evacuation capacity;

- Alternative 3: Add four additional lanes of bridge-tunnel capacity; approximate corridor limits are from I-64/I-664 Interchange to I-64/I-564 Interchange;
- Alternative 4: Add four additional lanes of bridge-tunnel capacity, including two multimodal lanes;
- Alternative 5: Add two additional lanes of bridge capacity to provide a contiguous, six-lane facility; and
- Alternative 6: Add four additional lanes of bridge capacity.

The *Hampton Roads Bridge-Tunnel, Expansion Feasibility Study* was completed in December 2008. The construction cost estimates for the alternatives ranged from \$2.2 billion to \$3.2 billion (2009 dollars). The higher estimate has been used for this plan and the contingency factor applied to it, yielding an estimate of \$3.2 to \$4.7 billion.

Downtown/Midtown Tunnel and MLK Extension – The Downtown Tunnel on I-264 links Norfolk and Portsmouth and is the older of two state-maintained tunnels crossing the Elizabeth River. The first of two two-lane tunnels opened in 1952 and the second in 1987. The Downtown Tunnel carries more than three million vehicles a month.

The Midtown Tunnel opened in 1962 as the second tunnel connecting Norfolk and Portsmouth and carries two lanes of two-way traffic on Route 58 between the cities. More than a million vehicles per month use the Midtown Tunnel.

The Downtown Tunnel/Midtown Tunnel/MLK Extension is located in the cities of Norfolk and Portsmouth. The project is comprised of: a new two-lane tunnel under the Elizabeth River parallel to the existing Midtown Tunnel; maintenance and safety improvements to the existing Midtown Tunnel; minor modifications to the interchange at Brambleton Avenue/Hampton Boulevard in Norfolk; maintenance and safety improvements to the existing Downtown Tunnel; and extending the MLK from London Boulevard to I-264, with an interchange at High Street. Completion of this project will increase capacity, reduce congestion, and facilitate emergency evacuation.

As this document is being finalized, VDOT is negotiating the terms of an Interim PPTA Agreement with a private partner. Estimated public funds required to complete this project range from \$300 million to \$600 million dollars (2009 dollars) to provide an acceptable toll rate and account for risk contingencies that may be retained by VDOT.

Smart System Technology Leadership

As computers, the internet, and cell phone technology changed our lives in the last 25 years, so will continued advancements in technology in the next 25 years. Technology can deliver transportation capacity improvements and services rather than surfaces (i.e., roadway widening, new roadways, etc.). Smart technology can provide capacity, improve safety, be cost-effective, and support the environment. Virginia needs to be at the forefront of investments in smart technology.

The Commonwealth has developed a framework for the deployment of technology solutions to address incidents and improve communication with the public. These technology developments range from major communication systems such as *511 Virginia*, where individuals can telephone or check on the internet for incidents, work zone, or weather-related problems on specific routes, to technologies to provide information on fog/inclement weather. These localized weather conditions can result in reduced visibility and hazardous driving and flying conditions.

Congestion can be reduced through the effective use of advanced technology. Virginia’s five regional Transportation Operations Centers monitor traffic and road conditions 24/7 and post messages on overhead signs (changeable message signs) and on highway advisory radio. Future technologies hold much promise for making our roads safer and using capacity as effectively as possible. IntelliDriveSM has the potential to eventually transform surface transportation management and system performance by providing real time data that are far more robust and ubiquitous than currently available information.

In the future one expects technology to play an even bigger role in transit and roadway operations than it does today. In the near term there will be real-time information at transit stops identifying the bus schedule and route. Information at Park and Ride lots will inform the driver of empty spaces. There will be real-time bus routing to enhance the performance characteristics of transit and make it more like a car. Messages would be routed to the Global Positioning System in the individual car. Alternative routes will be identified based on real-time information on traffic flow. Ultimately, environmental sensors will not merely measure temperatures but will administer the chemicals to prevent freezing.

Virginia has industries well-suited for continued development of these technologies. The Commonwealth should become a testing ground for development and application of smart transportation technology and look to technology solutions whenever and wherever feasible.

Make Strategic Investment in Infrastructure for the Future – For Example
Priority: Smart System Technology Leadership
Unfunded Need: \$2.2 - \$3.1 Billion
Background: <ul style="list-style-type: none"> • Technology will improve transportation efficiency and effectiveness and at the same time be cost-effective and environmentally friendly • Virginia needs to be a leader in development and application of smart technology • Cost to implement full deployment of ITS along interstates and primary routes, install next generation of traveler information systems, have multimodal technology solutions, and upgrade and expand signals is included in the unfunded need estimate

II. Address Environmental, Safety, and Maintenance Needs

Virginia must continue to protect its environment, its citizens, and its past investments in transportation. The safety and security of the traveling public are a fundamental responsibility of transportation agencies. Under current law, maintenance of existing transportation assets to ensure the safety of the public is the first priority in allocation of transportation resources. The cost of maintaining this system is increasing faster than available revenues.

If infrastructure is not in good condition or is allowed to deteriorate, the results could be potholes that create safety hazards, use restrictions on bridges (either weight limitations or closure) that impact accessibility and economic competitiveness, buses that break down and cause mobility and congestion problems, and frequent crashes that cause delays and congestion. A safe and well-maintained system can support economic competitiveness and minimize congestion by reducing traffic incidents.

The Commonwealth is also a major funding partner for local transit operators throughout Virginia. Significant funding will be necessary to ensure a state of good repair for Virginia's transit operators. Expanded transit service is expected to play a major role in the future in reducing congestion, improving mobility, and addressing climate change issues. There is already a current backlog of transit maintenance needs, and as systems expand and buses run more frequently, the costs to keep the transit systems in a state of good repair will increase.

Virginia must not only use technology to minimize environmental impacts, but must also strengthen its planning practices and agency coordination to promote environmental quality through all stages of transportation investments.

Address Environmental, Safety, and Maintenance Needs Priorities

- Use Sustainable and Environmentally Sensitive Methods
- Provide Safe Operations and Services
- Repair Deficient Pavements
- Rehabilitate Structurally Deficient Bridges
- Ensure State of Good Repair in Transit

Use Sustainable and Environmentally Sensitive Methods

While Virginia works to preserve and enhance its transportation system, it must do so using sustainable and environmentally sensitive methods that preserve and protect the environment. There will be zero tolerance for further degradation of the environment as Virginia moves forward.

Many of the VTrans2035 investment priorities embrace sustainable development patterns that address climate change and other environmental issues. Increased transit, passenger rail, and freight rail reduce traffic that would otherwise be on the road, requiring expanded facilities and adding to GHG emissions. The use of technology and the integration of transportation and land use decisions also reduce the need for more surface expansion of facilities that impact stormwater runoff as well as other environmental factors.

The importance of Virginia’s natural resources and environment warrants a more specific declaration to ensure that what capacity expansions are needed promote environmental quality. Environmental impacts, especially sustainable development patterns, must continue to be a key consideration in assessing alternatives. Further, the environmental footprint of projects should be minimized through context sensitive design considerations.

Some of Virginia’s considerable assets are its historic properties and scenic vistas. Environmentally sensitive methods must be used to minimize impacts on these resources, including the use of context sensitive solutions on rural rustic roads.

Virginia must continue to consider environmental impacts early in project planning. Incorporating additional specific environmental performance measures, such as greenhouse emissions, into local, regional, and corridor planning processes, will provide a clearer indication of potential environmental consequences. The planning processes should also continue to involve a range of transportation alternatives, including more compact development patterns.

There should be increased involvement of resource agencies, and planning agencies should proactively seek opportunities for transportation solutions that promote environmental quality. Part of the continuing quest for environmental quality must also involve public education and awareness of environmental issues.

Address Environmental, Safety, and Maintenance Needs
Priority: Use Sustainable and Environmentally Sensitive Methods
Unfunded Need: Varies Depending on Project and Criteria
Background: <ul style="list-style-type: none"> • Sustainable and environmentally sensitive methods must be an integral part of all transportation projects • Future emphasis on transit, passenger rail, freight rail, technology, and better coordination of transportation and land use decisions support sustainable development • Environmental footprint of projects should be minimized with context sensitive design and other principles

Provide Safe Operations and Services

Safety is a concern for all modes, but improvement in highway safety can have the most profound impact on the lives of Virginians. Traffic crashes adversely affect the operation of the transportation system causing congestion and travel delays that impact the movement of goods and people. These costs are difficult to estimate but have major economic implications. The 2008 American Automobile Association study, *Crashes vs. Congestion: What's the Cost to Society?*, concludes that the cost of

traffic crashes in the urban areas studied is nearly two and a half times the cost of congestion, and that 40% to 50% of all non-recurring congestion is associated with traffic incidents.

Address Environmental, Safety, and Maintenance Needs
Priority: Provide Safe Operations and Services
Unfunded Need: \$184 - \$258 Million Annually
<p>Background:</p> <ul style="list-style-type: none"> • Half of non-recurring congestion is associated with traffic incidents • Enhanced safe operations and services using technology can address safety and capacity concerns in a cost-effective and environmentally friendly manner • VDOT should invest in and implement lane reversal plans for the Route 58, I-664 and I-64 area

Safety associated with the infrastructure of the transportation network involves the design and construction of the system, its maintenance, and the use of technology to improve its operation. Emergency response is one of the most important responsibilities of the state and includes the communication with the public and media to guarantee they are informed about the impacts incidents have on transportation safety. Safe operations includes not only emergency response, but also traffic detection and surveillance, traffic incident management, traveler information services, freeway and arterial management, work zone management, roadway weather management, commercial vehicle operations, and freight management.

Currently, Virginia uses 42 sites and five mobile units to collect road weather information. Most sites collect an array of atmospheric observations as well as pavement temperatures and conditions and convey the data through a secure mechanism. This information allows VDOT to de-ice the roads before the temperatures have reached freezing. Similar technology is being implemented at the airports around Virginia to ensure that pilots are aware of the weather conditions at airports.

Safety is enhanced with safety service patrols where drivers of vehicles that have broken-down on the highways are given assistance (this service was cut significantly as part of recent budget reductions). Enactment of quick clearance laws has also enhanced the ability of the police to move vehicles involved in crashes to the side of the roadway to facilitate traffic flow.

Mobile video data units provide ITS platforms in emergency/hurricane evacuation efforts. Lane reversals of major highways out of Hampton Roads require coordination of VDOT, Virginia Department of Emergency Management, Virginia State Police, and the Virginia National Guard. Annual exercises test the Commonwealth's lane-reversal plan and will allow the agencies to evaluate the effectiveness of communications tools, inter-agency procedures and the incident-command structure.

VDOT has created an emergency evacuation plan for Hampton Roads that includes a reversal of the eastbound lanes of I-64 to allow for rapid evacuation in the event of a natural or man-made catastrophic event. Recent simulations show that clearance times for those at risk in the Hampton Roads area have increased significantly, particularly at the chokepoint of Route 58, I-664, and I-64. VDOT should invest in and implement lane reversal plans for this chokepoint.

The existing technology must be maintained and the breadth of the technology expanded. Unfunded costs to maintain a safe roadway system is estimated to be \$184 to \$258 million annually. The costs for expanding the existing technology, consistent with being a smart system technology leader, are reflected in the investment priority for smart system technology leadership.

Repair Deficient Pavements

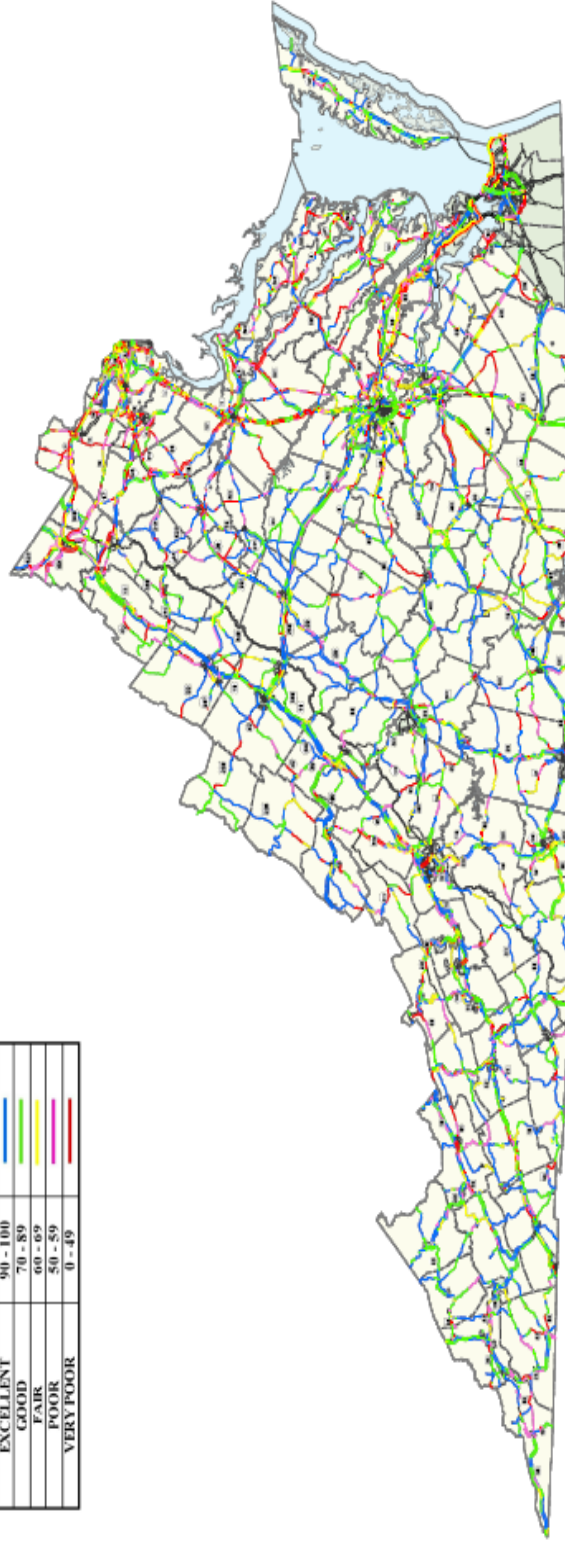
VDOT maintains the third largest state-maintained system in the country. The established performance target for Interstate and Primary system pavements is no more than 18% deficient; for secondary roads the standard is 31% or less. Current performance on Interstate and Primary systems does not meet the target, and trends have shown no improvement.

The implications of poor pavement conditions go beyond just a rough ride. Safety and economic competitiveness are at risk if a reliable transportation system is not in place. A new American Association of State Highway and Transportation Officials report, *Rough Roads Ahead*, addresses the costs of poor highways and reports that “rough roads add an average of \$335 to the annual cost of owning a car – in some cities an additional \$740 more – due to damaged tires, suspensions and reduced fuel efficiency.” It also reports that “every \$1 spent in keeping a good road good precludes spending \$6-\$14 to rebuild one that has deteriorated.” The ability to maintain acceptable pavement condition will be under increased pressure as costs continue to rise and the backlog of unmet needs continues to build. The cost of deferred maintenance is much greater than the cost of current maintenance. The anticipated cost to repair deficient pavements is estimated to be \$278 to \$389 million annually.

Address Environmental, Safety, and Maintenance Needs
Priority: Repair Deficient Pavements
Unfunded Need: \$278 - \$389 Million Annually
<p>Background:</p> <ul style="list-style-type: none"> • VDOT target is 18% or less deficient on interstate and primary roads; VDOT standard on secondary roads is 31% or less deficient • % Deficient on Interstates <ul style="list-style-type: none"> – 2007 – 19.1% – 2008 – 20.5% • % Deficient on Primary Roads <ul style="list-style-type: none"> – 2007 – 21.2% – 2008 – 24.4% • % Deficient on Secondary Roads <ul style="list-style-type: none"> – 2007 – 24.2% – 2008 – 28.7%

INTERSTATE AND PRIMARY PAVEMENT CONDITION - 2008

PAVEMENT CONDITION	CCRATING	COLOR SCHEME
EXCELLENT	90 - 100	Blue
GOOD	70 - 89	Green
FAIR	60 - 69	Yellow
POOR	50 - 59	Pink
VERY POOR	0 - 49	Red



1) Denotes pavement sections 1) not maintained by VDOT
 2) overlaps with other sections 3) not rated
 Note: Data was collected between December 2007 and March 2008



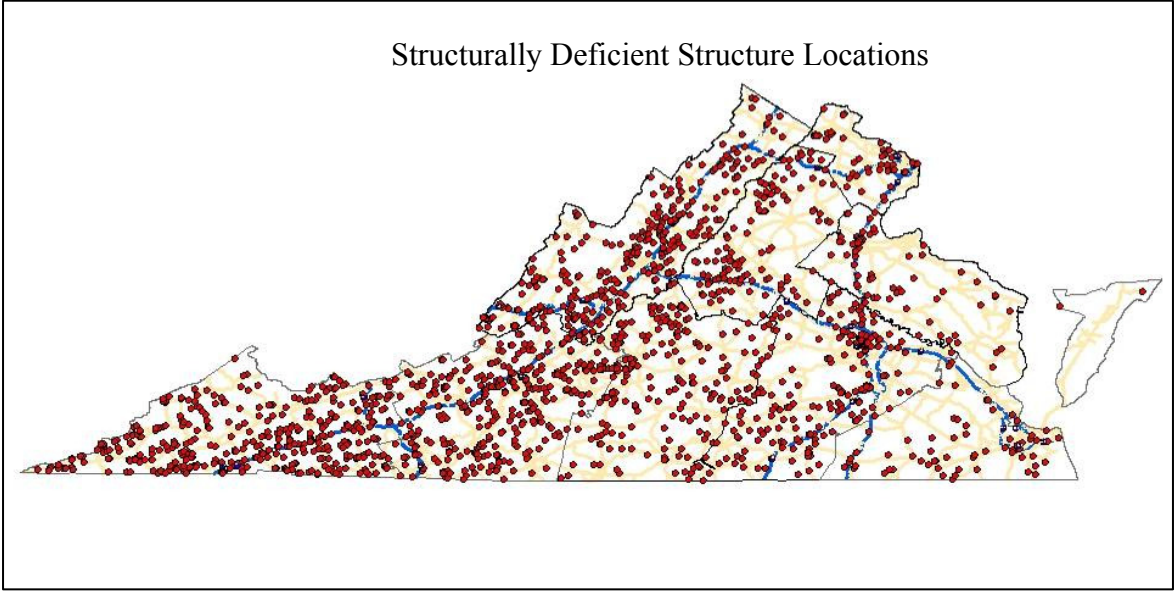
Rehabilitate Structurally Deficient Bridges

Virginia is not meeting its target of 8% or less of deficient structures, and the trend is that the number of deficient structures is increasing. Structurally deficient means there are elements of the bridge or culvert that need to be monitored and/or repaired. The fact that a bridge is "structurally deficient" *does not* imply that it is likely to collapse or that it is unsafe. It means the bridge must be monitored, inspected, and maintained.

Evidence of not maintaining bridge conditions is apparent in Hampton Roads. The Jordan Bridge, an 80-year-old structure linking South Norfolk with Portsmouth, was closed in November 2008 for safety reasons, but construction on a privately funded replacement will begin as soon as federal permitting is complete. The Kings Highway Bridge in Chesapeake was deemed unsafe and closed in 2005.

In the coming years, the construction boom of the 1960s and 1970s will be felt as infrastructure ages. In the next 10 years an additional 20% of current structures (those built in the 1960s) will reach the average design life of 50 years. Another 16% (those built in the 1970s) will approach average design life in 20 years. This is a doubling of the number of structures that will be 50 years of age or older in the next 20 years. Therefore, bridge maintenance needs will likely intensify between now and 2035. Annual costs to rehabilitate structurally deficient bridges are estimated to be \$150 to \$210 million.

Address Environmental, Safety, and Maintenance Needs
Priority: Rehabilitate Structurally Deficient Bridges
Unfunded Need: \$150 - \$210 Million Annually
Background: <ul style="list-style-type: none"> VDOT target – 8% or less structurally deficient 2007 – 8.4% structurally deficient 2008 – 8.4% structurally deficient In next 20 years the number of structures 50 years of age (average design life) or older will double from 35% to 71%



Ensure State of Good Repair in Transit

Addressing deferred maintenance and replacement of transit vehicles, facilities, and infrastructure that are reaching the end of their useful lives are increasing priorities of transit agencies throughout Virginia. Achieving a state of good repair for Virginia’s transit systems is critical in achieving many of Virginia’s transportation goals.

Virginia needs capital investment of \$8.7 billion simply to achieve a state of good repair at current levels of service between 2010 and 2035. Of the statewide total need, approximately 54% is for Virginia’s share of WMATA’s state of good repair needs. Current levels of funding towards state of good repair needs are only expected to fill \$5.0 billion of the \$8.7 billion of needs, across all sources of funding (federal, state and local). WMATA’s needs are assumed to be funded through the \$5.0 billion in current levels of funding.

Under the highest level of current funding expected, a \$3.7 billion gap will occur due to continuing growth in the current capital investment backlog (approximately \$290 million in current year dollars) through 2035. In order to address the funding gap, an additional state share of \$100 million annually (current year dollars) will be required to maintain the state of good repair of Virginia’s transit assets. A range of \$100 to \$140 million is provided to account for contingencies.

If the Commonwealth is to continue its historic level of state funding for operating costs, additional funding will also be needed to address increasing operating costs for existing service as well as the addition of two major rapid transit capital projects under construction: The Tide (Norfolk light rail) and the Dulles Corridor Metrorail Extension – Phase 1. The necessary level of funding to maintain historic levels is an additional \$48 million annually (current year dollars). A range of \$48 to \$67 million is presented to allow for contingencies.

If the state of good repair is not properly funded, this growing backlog of deferred maintenance and aging capital assets will affect rail and bus systems across the Commonwealth, lead to significant increases in operating costs and decreases in state operating assistance, and impact customer service significantly. A failure to address these needs will result in the limited amount of expansion in transit that is occurring today to cease and all funds to be allocated to maintenance, in a time when the transportation system is increasingly congested as well as aging.

Addressing these needs will demand additional investment but will ensure safer operations, reduce expenses, and improve the customer experience and overall service.

Address Environmental, Safety, and Maintenance Needs
Priority: Ensure State of Good Repair in Transit
Unfunded Need: \$148 - \$207 Million Annually
Background: <ul style="list-style-type: none"> State of good repair in transit is critical for transit to be a safe, reliable mode choice There is a current backlog of transit maintenance needs of \$290 million \$100 to \$140 million annually is required to maintain state of good repair \$48 to \$67 million annually is required to maintain historic 20% state match for operating assistance

III. Enhance Economic Competitiveness

Investing in transportation not only benefits the traveling public, but also stimulates jobs and income. Every dollar of the current Six-Year 2009-2014 Improvement Program yields a benefit of \$4 for Virginia.

Virginia is known for its attention to business. For the last four years, Virginia has been ranked as the “Best State for Business” by Forbes.com. Even in the midst of current economic conditions, *US News and World Report* recognized Virginia as one of the top five states to start a business. These awards are supported by the development that is coming to Virginia. Rolls-Royce in Prince George County and Canon in Hampton Roads are two examples of how focusing on transportation can facilitate economic development. For businesses to continue to come to Virginia there must be continued investment in transportation.

Enhance Economic Competitiveness Priorities

- Expand the Port and Related Intermodal Facilities and Services
- Support Dulles International Airport and Growth of Dulles Corridor
- Connect High Speed and Intercity Rail with Regional Transit Systems
- Improve Freight Mobility
- Improve Rural Connectivity
- Complete Unfinished PPTAs and Review and Refine PPTA Process to Effectively Leverage Private Dollars for Publicly Beneficial Projects
- Develop Master Plans for Needs of Corridors of Statewide Significance

Virginia has strong ties to the rest of the world through two major global gateways – the Port of Virginia and Dulles International Airport. These economic engines allow Virginia to be a major player in the global economy. Access to world markets through Dulles for passengers and air freight and through Hampton Roads for freight provides opportunity for economic development near and along major corridors.

First-class connections for passengers and goods within Virginia and to other states keep Virginia competitive by reducing travel time and increasing mobility options. Investment in rail for both passenger and freight mobility will make these first-class connections a reality.

Improved connectivity in the rural areas, both through transportation investments as well as communications (e.g., broadband access), enhances these areas for potential new development. The improvements to passenger and freight rail throughout Virginia improve accessibility of rural as well as urban areas.

Virginia has made great use of PPTAs to finance projects. Pending PPTAs should be completed and new ones considered when publicly beneficial to the Commonwealth.

VTrans2035 begins the journey of establishing visions for CoSS by identifying potential strategies to address their key functions. The CoSS are transportation facilities that must be protected to ensure appropriate levels of mobility to allow for long-distance travel. The next step in the planning process will be to develop detailed corridor master plans to turn the vision and strategies into specific improvements.

Expand the Port and Related Intermodal Facilities and Services

One of Virginia’s greatest assets is the Port of Virginia. It is the third largest port on the East Coast of the United States, with direct service to more than 80 foreign ports. A 2008 study estimated that the Port’s total contribution to Virginia’s economy was 190,000 direct and indirect jobs with wages of \$13.5 billion.

Preparing for the expansion of the Panama Canal and increasing port market share require efficient marine terminals that can take advantage of the natural attributes only Virginia offers to global commerce. The planned new terminal, Craney Island, will provide a state-of-the-art facility that will be more efficient, highly automated, and already desired by global shippers.

Economic growth from port operations requires supporting inland facilities that manufacture our exports and handle the distribution of our imports. More than 200,000 jobs in Virginia result from these facilities located in industrial areas and intermodal parks across the state. Continued development of these opportunities relies on a healthy port and equally, good road and rail access.

Prioritizing upgrades needed in the Commonwealth, to highlight those with road and rail access to and from the Port, are vital so as not to constrain the freight flows that support our economy. One of the major investments near completion will be the Norfolk Southern Heartland Corridor project, being constructed by Norfolk Southern with support from Federal Highway Administration (FHWA), and other state partners. Improvements will double freight rail capacity along the line that parallels Route 460 through Virginia, improving freight shipping times to markets in the Midwest. An important component of the Heartland Corridor Project, currently underway, is the Western Freeway Rail Relocation (Route 164), which will eliminate grade crossings in urban Portsmouth and Chesapeake. The proposed Craney Island Road and Rail Connector will provide direct interstate access to and from the Craney Island Marine Terminal. Proposed Norfolk International Terminal (NIT) yard improvements will double on-

Enhance Economic Competitiveness
Priority: Expand the Port and Related Intermodal Facilities and Services
Unfunded Need: \$7.7 - \$11.0 Billion
<p>Background:</p> <ul style="list-style-type: none"> • Port of Virginia is third largest port on the East Coast • Millions of square feet of industrial facilities focused on logistics have been developed because of freight through the Port • Norfolk Southern’s Heartland Corridor project doubles freight rail capacity • CSX’s National Gateway project will improve routes and transit time from the Port to additional destinations such as Charlotte and Pittsburgh • NIT yard improvements will double on-dock capacity • The Port of Virginia supports and actively develops modal alternatives that reduce highway congestion including the use of barge services and increased rail transportation • Major unfunded access improvements include: <ul style="list-style-type: none"> – Hampton Roads Third Harbor Crossing – HRBT Expansion – NIT Improvements – Heartland Corridor Phase II – National Gateway Project – Hampton-Terminal Grade Separation

dock rail capacity, enhance highway grade crossing safety, and reduce highway delays at grade crossings.

Another project is CSX's National Gateway Project. This project extends from North Carolina to Ohio and parallels I-95 through Virginia, with a connection to the Port. The project focuses on improving clearances to enable double stack intermodal train operations and will improve routes and transit time from the Port.

In late 2008 the Port of Virginia supported the launching of the 64 Express barge service. This service moves containers by barge on the James River between the marine terminals in Hampton Roads and the Port of Richmond. Every container moved by barge eliminates truck trips from the state's highways. Movement by barge generates about one third the air emissions per ton of freight compared to that same movement by truck.

Several road projects identified to address regional transportation issues that improve the regions capacity to serve local and inland destinations with international cargo include:

the Hampton Roads Third Harbor Crossing, I-564 Connector, Hampton-Greenbrier Grade Separation, Hampton-Terminal Grade Separation, and Craney Island Road and Rail Connector. The location of these projects is shown on the map. Several of these projects are under construction or have been funded: the Hampton-Greenbrier Grade Separation project is under construction; funding for the I-564



Connectors has been identified; and the Craney Island Road and Rail Connector will be funded by VPA. Anticipated costs for unfunded projects include \$4.3 to \$6.0 billion for the Third Crossing and \$100 to \$140 million for the Hampton-Terminal Grade Separation.

A number of other projects that have the additional distinction of being associated with supporting the expansion of the Port are not yet funded: the HRBT expansion (\$3.2 to \$4.7 billion), National Gateway Project (\$52 to \$73 million), Heartland Corridor Phase II (\$10 to \$13 million), and NIT yard improvements (\$62 to \$87 million).

Support Dulles International Airport and Growth in the Dulles Corridor

The Washington Dulles International Airport is the other economic engine in the Commonwealth providing access to world markets for Virginia’s commerce and making Virginia a bridge state between world markets and other states. Dulles Airport serves the nation’s fourth largest economic market and is the eighth largest port of international air commerce in the United States. Planners for the airport are anticipating an operating capacity of more than 55 million passengers per year, double its current level of operation.

Enhance Economic Competitiveness
Priority: Support Dulles International Airport and Growth in the Dulles Corridor
Unfunded Need: \$1.7 - \$2.5 Billion
Background: <ul style="list-style-type: none"> • Each new nonstop air service to a major international market yields \$300 million in commercial development in Virginia • Additional access capacity needed to support future Dulles expansion • Dulles Loop Road, Route 659 improvements, the Tri-County Parkway and an additional Potomac River crossing are critical access improvements • Continued support for the extension of Metrorail must remain a priority

The airport generates \$224 million in state and local taxes and \$383 million in airport-specific taxes to the federal government. The airport also generates direct business revenue of \$11.7 billion (value of sales earned by airlines and other airport businesses) annually. Passenger and air freight activity at the airport supports 230,000 residents of Virginia, Maryland, West Virginia, and the District of Columbia, including both directly generated jobs and the area's visitor industry.

A direct correlation exists between investment from overseas countries and the availability of air service between Virginia and the countries from which the investment came. Each new nonstop air service to a major international market typically is the equivalent of a \$300 million commercial investment in Virginia, due to its ability to stimulate good paying new jobs and economic growth.

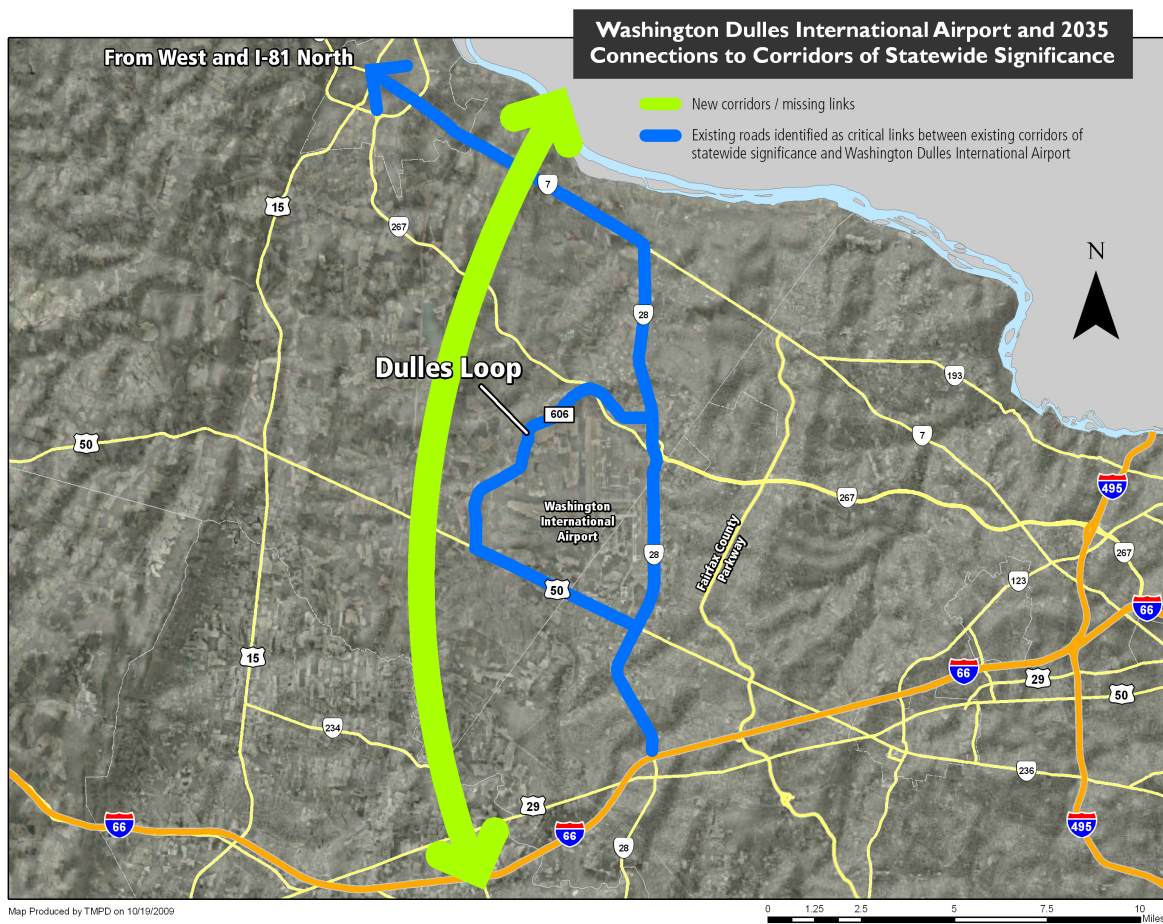
An effective multimodal ground transportation system, including the Dulles Loop, Metrorail Extension, and other access improvements, is required if Dulles International Airport and the Dulles Corridor are to remain a key economic generator for the Commonwealth.

Improvements to the 18-mile **Dulles Loop** (Routes 50, 28, and 606 surrounding the airport) are needed for local traffic as well as airport access. Approximately 80% of the traffic on the Loop is local – the rest is airport related. Improvements to the Loop can produce a payoff in terms of improved local traffic flow, as well as airport access from the southern and western portions of Virginia. Interim improvements to Route 28 and Route 50 portions of the Loop are funded and under way. Improvements to the Route 606 portion of the Loop – from a two-lane to a four-lane at-grade divided facility – will provide an interim solution. Anticipated unfunded need is \$40 to \$57 million.

Greater north-south access is needed including the CTB approved but unfunded Tri-County Parkway and Route 659 improvements between Dulles Greenway and Route 7. The

unfunded need for these two projects is \$226 to \$316 million and \$90 to \$126 million, respectively. Consideration should also be given for an additional crossing of the Potomac River. Additionally, at present, the I-95, Route 29, and I-66, and I-81 corridors do not have good connections with Dulles, nor are there effective surface links between the Dulles international gateway and neighboring areas in West Virginia, Maryland, and southeastern Pennsylvania. A range of \$1.4 to \$2.0 billion is estimated for an additional crossing.

The continued funding of, and support for, the extension of Metrorail from East Falls Church to Dulles International Airport and Loudoun County must remain a key priority.



Connect High Speed and Intercity Rail with Regional Transit Systems

The earlier priority on high speed rail focused on improvements in the critical corridors connecting Northern Virginia and Hampton Roads. To be successful, this critical rail spine must be connected with other areas of Virginia, and those areas must have good regional transit systems that serve the metropolitan areas. This requires additional investment in intercity and regional transit systems.

Enhance Economic Competitiveness
Priority: Connect High Speed and Intercity Rail with Regional Transit Systems
Unfunded Need: \$2.8 - \$4.0 Billion
Background: <ul style="list-style-type: none"> • Expansion of VRE in the I-66 corridor improves transit options in Northern Virginia • Intercity rail service in the I-81/Route 29 corridor expands rail service to other areas in Virginia • Additional transit improvements in Northern Virginia, Hampton Roads and Richmond connect the backbone rail system to other transit services

In December 2008, DRPT released the *2008 Statewide Rail Resource Allocation Plan*. In addition to high speed rail improvements, two passenger rail projects were included:

- Commuter Rail Improvement Project – expansion of VRE service between Manassas and Gainesville/Haymarket; and
- I-81/Route 29 Intercity Passenger Rail Project – new passenger rail service to Lynchburg (implemented), Roanoke, and Bristol with connections to Richmond and Washington, D.C., including new stations and new passing tracks.

Virginia recently funded passenger rail service from Lynchburg to Washington, which began service in October 2009. The new service is part of a three-year pilot program to determine the viability of enhanced rail service in Virginia. This \$17.2 million pilot project is funded for three years. A sustainable source of operating funds must be identified to continue operations.

For passenger rail to become a reality, the Commonwealth must foster partnerships to balance the competing demands for rail line use, since most rail lines in Virginia are owned and operated by private rail companies.

There must also be good regional rail or transit service to further connect the rail system to local transit networks. Projects such as the Metrorail extension from Vienna to Centerville, the Virginia Beach light rail system, and the Richmond bus rapid transit are examples of the types of local transit improvements needed to support the rail system. Other communities served by high speed or intercity rail must provide improved local service to complete the transit system.

The anticipated unfunded need for these rail and transit improvements totals \$2.8 to \$4.0 billion.

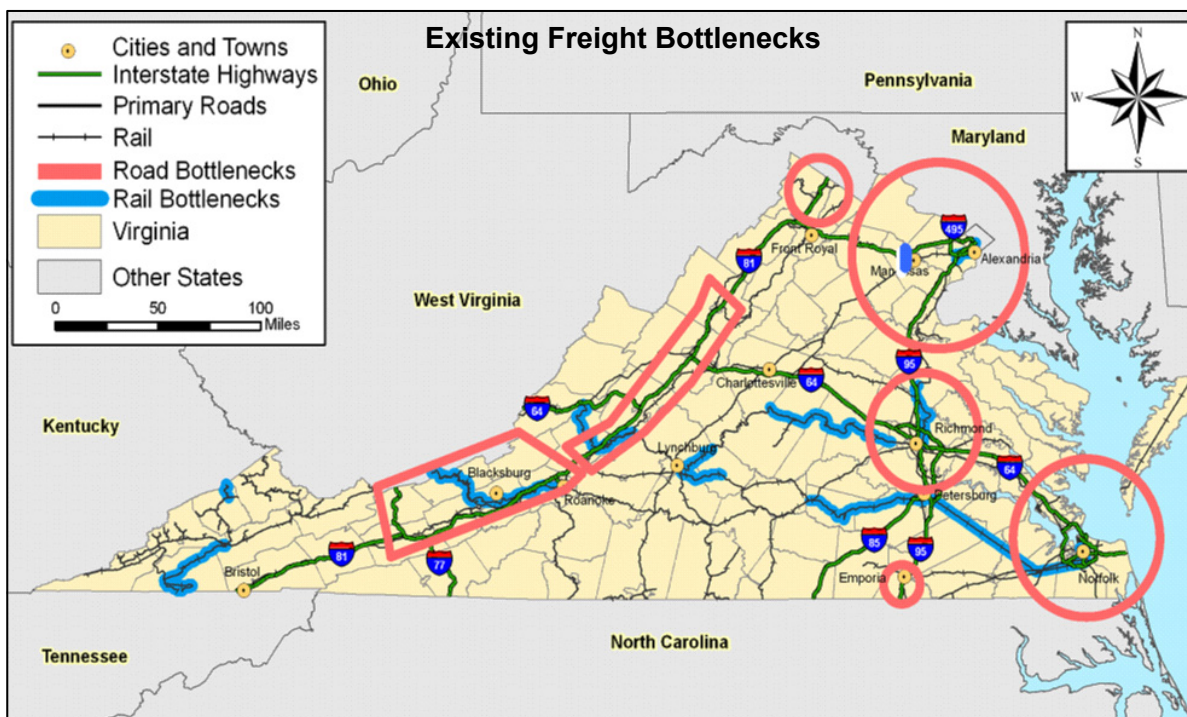
Improve Freight Mobility

The movement of freight is critical to Virginia’s overall economy. With freight tonnage expected to double in the future, capacity improvements will be needed.

Bottlenecks, whether existing or emerging, prohibit the efficient flow of freight through the system and across the Commonwealth. Bottlenecks are created by a combination of demand to utilize a transportation asset, the capacity of the asset, and fluctuations in demand at different points in time. Virginia’s primary bottlenecks generally correspond to:

- major urbanized regions with high levels of congestion (Northern Virginia, Hampton Roads, Richmond);
- major national 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 (tunnels);
- rail system points where infrastructure provides inadequate freight capacity; and
- access into and out of heavily used marine terminal facilities.

Enhance Economic Competitiveness
Priority: Improve Freight Mobility
Unfunded Need: \$14.1 - \$20.5 Billion
Background: <ul style="list-style-type: none"> • Freight-related industry accounts for 50% of Virginia’s output, 28% of gross state product, and 34% of employment • Freight tonnage is expected to double by 2035 • Rail, road, and ITS improvements will benefit freight as well as passenger movements



A range of initiatives can address freight bottlenecks. While some are freight oriented, others benefit both freight and passengers. Those included in this priority are:

- Hampton Roads Third Crossing (\$4.3 to \$6.0 billion);
- HRBT expansion (\$3.4 to \$4.7 billion);
- Downtown and Midtown Tunnel projects (\$300 to \$600 million);
- Route 460 highway improvements (\$0.5 to \$1.0 billion);
- Crescent Rail (I-81) rail corridor improvements (\$0.8 to \$1.2 billion);
- CSX Gateway (I-95) Phases II and III (\$52 to \$73 million);
- Heartland Corridor (Route 460) Phase II (\$10 to \$14 million);
- I-81, I-95, I-64, and I-66 widening projects (\$3.9 to \$5.5 billion);
- I-77 and I-64 Afton Mountain climbing lanes (\$168 to \$235 million);
- Route 58 improvements (\$400 to \$600 million);
- Routes 17 and 29 widening (\$138 to \$178 million);
- NIT improvements (\$62 to \$87 million); and
- Miscellaneous rail and train upgrades (\$282 to \$451 million).

The anticipated unfunded need of all these improvements totals \$14.1 to \$20.5 billion.

ITS technologies benefiting trucks include: Low Bridge Clearance Warning Systems for trucks; Weigh-In-Motion scales to detect truck axle weight and vehicle weight; and IntelliDrive technology to warn truck drivers about dangerous driving conditions and provide location-specific traveler information. Other opportunities and innovative strategies may include: time-shifting strategies to encourage off-peak highway use for both freight and passengers; truck parking improvements; advanced truck information systems; and truck-to-rail modal diversion opportunities, to the extent feasible.

Improve Rural Connectivity

In less populated areas, the transportation issue is about connectivity rather than congestion. For transit-dependent persons, access to transit or coordinated human services transportation can make a difference in finding a job.

Connections to other parts of the state that can enhance business and recreational opportunities can be improved through services such as continuation of expanded intercity bus and rail services, as previously discussed, and Virginia Air Taxi. Virginia Air Taxi is a private enterprise that offers direct, on-demand air service at business airline prices. It is serving those intermediate markets without direct air service.

As important as these improvements are, connecting rural areas to the rest of Virginia, to the rest of the U.S., and to the rest of the world can be as simple as improved broadband internet access, something taken almost as a given in urban areas. Internet connectivity has the potential for reducing traffic demands by providing opportunities for telecommuting, taking educational classes on-line, shopping on-line, and other routine tasks that otherwise have to be accomplished by traveling from place to place. Provision of broadband access requires coordination of right-of-way usage with VDOT. The Klobuchar/Warner Bill introduced in the U.S. Senate in June 2009 would require the integration of underground fiber optic conduit into the construction and reconstruction of transportation infrastructure by requiring the installation of broadband conduit as part of any federally-funded transportation project.

Enhance Economic Competitiveness
Priority: Improve Rural Connectivity
Unfunded Need: Varies Depending on Project
Background: <ul style="list-style-type: none"> • Improved rural connectivity can be achieved through transportation improvements such as transit or coordinated human services transportation and Air Taxi service • More broadband internet service can also improve rural connectivity by providing on-line access to school, shopping, and other activities

Recommendation:
VDOT to coordinate right-of-way usage for provision of underground fiber optic conduit for broadband access

Complete Unfinished PPTAs and Review and Refine PPTA Process to Effectively Leverage Private Dollars for Publicly Beneficial Projects

The Public Private Transportation Act (PPTA) of 1995 as amended provides a legislative framework enabling transportation agencies to enter into agreements authorizing private entities to develop and/or operate transportation facilities. It is the intent of the law, among other policy objectives, to encourage investment in the Commonwealth by private entities that facilitate the timely development and/or operation of transportation facilities.

VDOT has completed four projects (Routes 288, 895, 199, and 58 - Phase 1) via the PPTA for a combined contract value of \$929 million.

Considerable public and private investment has been made in several active PPTA projects or proposals that have been put on hold or are under review because of the current credit situation and/or lack of public funding.

Some of the most complex and important partnership projects in the country are being developed under the Virginia PPTA process:

- \$200 million for Route 28 improvements in Northern Virginia;
- \$1.9 billion for I-495 Capital Beltway HOT Lanes;
- \$5.25 billion for Dulles Rail Phase 1 extension from West Falls Church to Wiehle Avenue; and
- \$2.6 billion for Coalfields Expressway.

Virginia should utilize the pending PPTAs and consider new ones when the projects are publicly beneficial to the Commonwealth. Discussion of the active PPTAs or active PPTA proposals follows.

Downtown/Midtown Tunnel and MLK Extension Proposal – The Downtown Tunnel/Midtown Tunnel/MLK Extension is located in the cities of Norfolk and Portsmouth. The project is comprised of: a new two-lane tunnel under the Elizabeth River parallel to the existing Midtown Tunnel; maintenance and safety improvements to the existing Midtown Tunnel; maintenance and safety improvements to the existing Downtown Tunnel; and extending the

Maintain Economic Competitiveness
Priority: Complete Unfinished PPTAs and Review and Refine PPTA Process to Effectively Leverage Private Dollars for Publicly Beneficial Projects
Unfunded Need: \$3.8 - \$5.8 Billion
Background: <ul style="list-style-type: none"> • There are five active PPTAs <ul style="list-style-type: none"> – Downtown/Midtown Tunnel and MLK Extension in Hampton Roads area – I-95/I-395 HOT Lanes in Northern Virginia – Route 460 – Route 58 – Coalfields Expressway • The PPTA process should be reviewed and refined to ensure that the process is supporting publicly beneficial projects

MLK from London Boulevard to I-264. Completion of this project will increase capacity, reduce congestion, and facilitate emergency evacuation.

The estimated public funds required to complete this project range from \$300 million to \$600 million to provide an acceptable toll rate and account for risk contingencies that may be retained by VDOT. The terms of an Interim Agreement are currently being negotiated with a private partner.

I-95/I-395 HOT Lanes Proposal – This project would be made possible through a public-private partnership that VDOT is currently developing under an Interim Agreement with Fluor-Transurban. DRPT is also playing an active role in the multimodal project, which would provide opportunities for expanded public transportation and HOV capacity in the corridor. Completion of the project would result in a free-flowing travel facility that is a part of a regional network of managed lanes, congestion management through variable pricing, expansion of HOV and transit choices in the corridor, improved access to major employment sites in the corridor, additional Park and Ride spaces, and direct access to military installations in the corridor.

The I-95/I-395 HOT Lanes project would extend 56 miles, add a third lane, and convert the existing 28 miles of HOV lanes between Arlington and Dumfries to HOT lanes; it also would include building two new HOT lanes for an additional 28 miles south to Spotsylvania County.

The HOT lanes for this project would allow buses, carpools, vanpools, and motorcycles to ride in the new lanes for free – just as they do now. Vehicles carrying one or two people could either travel in the regular free lanes or pay a toll to ride in the HOT lanes when they need a faster trip.

On August 17, 2009, VDOT announced that the project would not reach the originally scheduled commercial close (execution of Comprehensive Agreement) by the end of August 2009 due to local government and community concerns, as well as challenging financial market conditions. The project is currently under review while VDOT, DRPT, Fluor, and Transurban consider options to address public concerns and financial viability.

Route 460 Competing Proposals – The Route 460 project entails the new construction of approximately 55 miles of four-lane divided limited access highway between Petersburg and Suffolk. The project will extend from the existing Route 460 near its interchange with I-295 in Prince George County to the Route 58 bypass just south of the existing Route 460 in Suffolk. The CTB approved corridor alignment for this project runs south of the existing Route 460 for its entirety.

The Final Environmental Impact Study and Record of Decision have been approved by FHWA. It is anticipated that the project will be a tolled facility with these funds being collected by the Concessionaire and used to pay for project costs. Completion of the project will result in improved travel safety along the corridor, a new westbound emergency evacuation route for Hampton Roads, and improved freight movement for the corridor.

The improvements will be developed as a PPTA project and a private developer will sign a long-term concession agreement with VDOT to finance, design, construct, operate and maintain the project. The project is currently under review due to the current financial market conditions and the apparent gap between project costs and available funding sources needed to make this a viable project. There are currently no public funds allocated for the construction of this project. It is estimated that between \$500 million and \$1.0 billion in public funds will be needed to offset the projected shortfall of toll revenue.

Route 58 Phases 3 through 5 – Route 58 is Virginia’s longest roadway, stretching from the Atlantic Ocean to the southwest tip of Virginia. In December 2003, VDOT signed a public-private partnership agreement with Branch Highways Inc. to develop and widen 36 miles of the Route 58 Corridor from Hillsville to Stuart, the last section remaining to complete Route 58 from Virginia Beach to I-77. When completed, this project will enhance the economic development potential across this rural portion of the state and provide another freight route from the Port of Virginia.

The first three-mile phase of this project was completed at the Meadows of Dan in 2006. Construction is currently underway on the Phase 2 Hillsville Bypass, a 5.2-mile segment around Hillsville expected to be completed in 2011. Once the Hillsville Bypass is completed, an estimated 28 miles of improvements will remain to complete this PPTA.

Although this is a PPTA project, the agreement with Branch Highways, Inc. is limited to designing and constructing the facility. State funds have been utilized to fund the first two phases. The estimated public funds required to complete this project range from \$400 million to \$600 million.

Coalfields Expressway – The planned Coalfields Expressway (CFX) is a 51-mile-long corridor, generally along Route 83, from Pound in Wise County, through Dickenson and Buchanan counties, and will link with the West Virginia Coalfields Expressway near Paynesville, West Virginia. Designated as part of the national highway system, the new road will link I-64 and I-77 in West Virginia with Route 23 in Virginia, which links to interstates in Kentucky and Tennessee. When completed, the CFX will provide a modern facility through the coalfields region of southwestern Virginia and enhance the economic development potential for a region of the state experiencing high unemployment and a declining population.

In September 2008, VDOT executed an agreement with Alpha Natural Resources LLC (Alpha) and Pioneer Group Inc. (coal companies) to develop the Hawks Nest Section of the CFX, which is under construction. The agreement also provided for the good faith negotiation and execution of a second agreement with Pioneer for the Rockhouse Section of the CFX. The financial plan for the Rockhouse Section is under review by FHWA prior to commencement of negotiations. These sections have a combined length of seven miles and will utilize the coal mining-highway construction synergy concept (coal synergy) to provide rough grade roadbed and reduce VDOT costs.

A total of \$20 million in Transportation Partnership Opportunity Fund grants has been awarded to VDOT to finance the CFX project associated with the Hawks Nest and Rockhouse

Sections. The estimated public funds required to complete this project is \$2.6 billion. However, completed segments will result from current investments.

Review and Refine Process – PPTAs can leverage private sector funding and thus bring new sources of capital for financing projects. However, few large projects can be completed without some state financial aid. When any public money is put into a project, it should be scrutinized to the same degree as others.

A key component is the assignment of risks and in an appropriate partnership the private entity shares the risk and cost. There can be innovations in project delivery and the infrastructure can usually be delivered sooner. However, there is a cost to negotiate balanced contractual agreements, lengthy negotiations, and long-term agreements with high termination costs; and, the PPTA process is not appropriate for every project.

The PPTA process should be reviewed and refined to ensure that appropriate transportation planning and environmental reviews are followed. The end result should always be that the project is publicly beneficial, regardless of the amount of public investment involved.

Develop Master Plans for Needs of Corridors of Statewide Significance

The strategies identified for the CoSS begin to bring into focus how the corridors should be developed. The background information from the CoSS need to be considered in the development of an overall corridor master plan as well as development of regional transportation and local land use plans. The process should fully engage the MPOs and PDCs along the corridor as well as the decision-makers in all localities. A major focus of the master plans needs to be the coordination of land use plans with proposed transportation investments.

Enhance Economic Competitiveness
Priority: Develop Master Plans for Needs of Corridors of Statewide Significance
Unfunded Need: Utilize Existing Intermodal Funds
Background: <ul style="list-style-type: none"> • CoSS strategies need to be considered in the development of regional transportation and local land use plans • Detailed corridor master plans need to be prepared to protect the functionality of the corridors

The recently completed Route 29 Corridor Study frames an approach, scope, and potential outcomes of the master plans. The process to develop corridor-wide consensus should include public meetings, regional workshops, studio sessions open to the public, weekly electronic bulletins, and technical advisory meetings. Local governing bodies must be part of the study process if meaningful, robust decisions are to be reached. While initial analyses and discussions can determine areas of common agreement and identify win-win recommendations, a major part of the process needs to be getting decision-makers to the table and working on areas of controversy, such as bypasses and possible improvements. It must be recognized that there will be differences in goals between state and local officials on parts of the corridor and opposing interests need to be pushed to resolution for there to be useful study recommendations.

The functions and strategies contained in the CoSS will serve as background to the first round of discussions with local and regional officials. These discussions and additional analyses should yield the menu of more detailed alternatives in the various sections of the corridor. Once the menu is accepted, more detailed work can begin on an implementation program that takes the improvement concepts to more specific project recommendations and outlines in more detail the land use component of the corridor.

IV. Minimize Congestion

Increased congestion has negative impacts for all Virginians. It reduces quality of life as citizens sit in traffic instead of spending time in community activities and with their families. Employee productivity is reduced due to the lack of reliable travel times making it difficult to plan daily activities.

Congestion increases the cost for Virginia businesses and consumers by increasing the cost to transport goods. Slower speeds resulting in traffic congestion cause higher GHG emissions. The cost to move goods and the quality of life of an area are two major factors businesses consider when deciding where to locate. These economic and social costs require that the Commonwealth find innovative solutions to its congestion problems.

Over the next 25 years, the urban and suburban areas of Virginia are expected to experience significant job and population growth. The Commonwealth is at a critical juncture with regard to its transportation infrastructure and land use patterns. The separation of authority that exists between state and local governments can be healthy if policies are put in place to overcome the disconnect between local governments' land use authority and the Commonwealth's responsibility for transportation.

Since 1960, total vehicle miles traveled in the United States have increased over 300%, while total highway miles increased only 12%. There is an astounding disparity between the demand for transportation and the actual supply. Clearly, we cannot address this issue with supply-side solutions alone.

Decisions about capacity improvements and new developments cannot be made independent of each other. This requires better coordination of transportation and land use policies. Another key factor influencing how congestion is managed now and in the future is climate change. The need to reduce greenhouse gas emissions and at the same time provide for mobility and accessibility point the way to better integration of transportation and land use strategies to manage demand. Technology has been previously discussed as a way to reduce congestion. Other strategies include value pricing, travel demand management, and increased transit usage.

Virginia has made much progress in recent years planning for congestion using strategies such as access management, traffic impact regulations, and designation of UDAs as well as others. VTrans2035 places continued emphasis on these strategies through use of grants and other funding mechanisms to reward good land use planning and to penalize bad land use decisions relative to the need for transportation investments.

The Commonwealth must continue to improve the coordination between transportation and land use. It is essential for Virginia's long-term economic competitiveness and the efficient use of taxpayer funds.

Minimize Congestion Priorities

- Integrate Regional Land Uses and Highway Capacity
- Implement Pricing, Advanced Technology, and Demand Management
- Increase Transit Usage and Supporting Land Uses

Integrate Regional Land Uses and Highway Capacity

Section 2.2-229 of the *Code of Virginia* requires the Office of Intermodal Planning and Investment to establish standards for the coordination of transportation investments and land use planning to promote commuter choice and transportation system efficiency. In Virginia, land use is the prerogative of local governments, while transportation planning and funding decisions are generally made at the state level. Additional highway capacity and/or improvements are necessary to balance economic development at local and regional levels and solve many local problems (e.g., turn lanes, etc.), as well as to coordinate with transit, HOV, and demand management improvements.

However, there are not enough funds to improve the efficiency of the transportation system with new highway capacity alone. Improving the coordination between transportation and land use planning is essential for ensuring sustainable mobility throughout the Commonwealth.

The disconnect between land use decision-making authority and planning for transportation presents a fundamental challenge to Virginia. The lack of well-planned transportation improvements often results in poor land use decisions and increases in per capita vehicle miles traveled resulting in increased congestion. A robust transportation network can serve as a means to focus and consolidate growth as well as protect open space. For example, lack of transportation capacity and network connectivity often results in local land use decisions that spread out growth and population along two-lane secondary highways. Dispersed growth results in higher per capita vehicle miles traveled, which in turn requires a greater number of new lane miles or results in increased levels of congestion. As per capita vehicle miles traveled increases, the level of necessary transportation investments to provide citizens with adequate mobility also increases.

Land development affects the state and deserves close examination with respect to the costs that land development poses to transportation infrastructure. The type, the size, and the timing-phasing features of proposed land developments are continuing to grow in importance because of their transportation implications. Virginia now is implementing new secondary street acceptance requirements that require connectivity between developments to ensure streets accepted for perpetual public maintenance provide public benefit, new access management standards to help manage curb cuts to preserve public investment in existing highways, and traffic impact statements that must be prepared when major land use proposals are considered.

Minimize Congestion
Priority: Integrate Regional Land Uses and Highway Capacity
Unfunded Need: Requires a Dedicated Funding Source
Background: <ul style="list-style-type: none"> • Recent legislation, such as secondary street acceptance requirements, access management standards, traffic impact regulations, designation of UDAs, etc., has resulted in increased integration of transportation and land use decisions • Work needs to continue, primarily through strengthened ties with local agencies • Use funding programs and grants to reward localities that guarantee through land use planning the long-term functionality of the improvement

The *Code of Virginia* now is challenging high-growth jurisdictions with a requirement to designate UDAs in comprehensive plans that will be sufficient to accommodate projected residential and commercial growth in reasonably compact development patterns. By 2012, 71 localities must designate UDAs. To the extent possible, state and local transportation, housing, and economic development funds are to be directed to these UDAs.

Recent legislation has provided the Office of Intermodal Planning and Investment with the authority to develop regional transportation and land use performance measures and goals for urban areas and to establish standards for the coordination of transportation investments with land use planning. These measures include but are not limited to the following: job-to-housing balances within the region, job and housing access to transit and HOV facilities, and density around transit stations. Poor job-to-housing ratios can increase transportation costs and reduce Virginia's economic competitiveness.

The future allocation of primary formula funds and discretionary funds within each VDOT district should be for projects that help meet goals for the regional transportation and land use performance measures. For example, prior to considering whether or not to fund a capacity expansion in a locality the CTB would receive an analysis stating whether or not the improvement will allow growth that helps improve the job-to-housing balance that exists in the locality. In the Northern Virginia district a project in Arlington County would need to have land use commitments to provide additional residential growth, while in Prince William County a project would need to demonstrate that it would accommodate increased commercial development to help improve the regional imbalance between jobs and housing.

The Commonwealth must take steps to use its transportation funds to leverage local land uses that reduce the demand for transportation capacity through partnerships with local governments. This can be accomplished through two methods – a carrot and a stick.

- Under the carrot approach, the Commonwealth would create a competitive grant program in each of the nine districts. Grants would be awarded annually to projects with local land use commitments for development patterns that reduce the demand for transportation capacity. Each grant would be for the full cost of the transportation improvement.
- Another option (the stick) would be to modify the criteria for the award of secondary and urban formula funds. Localities would only be eligible to receive their formula funds if they developed a comprehensive plan that promoted development patterns that reduced the demand for transportation capacity and approved zoning proposals to allow such patterns to be built. Through the Traffic Impact Analysis process, VDOT would review the comprehensive plan to determine whether or not it promoted such development patterns. If local governments choose to not approve zoning proposals that allow the planned development patterns to be built, they would be required to reimburse the Commonwealth for transportation improvements constructed.

There are several potential strategies that the Commonwealth should consider to improve the coordination between transportation and land use. **These strategies can help manage**

future demand for transportation capacity and provide a more efficient transportation system. Recommendations include:

- Develop regional transportation and land use performance measures and goals for urban regions in the Commonwealth and prioritize funding for transportation improvements to help meet established goals. Measures would include job-to-housing ratios and job and housing access to transit and HOV facilities.
- Establish a competitive grant program to “leverage” compact development patterns from local governments. The program would create partnerships between local governments and the state to move transportation improvements forward in harmony with development. Studies have shown that compact development patterns help reduce vehicle miles traveled.
- Provide funding to regional organizations to complete detailed land use scenario plans. The urban regions of the Commonwealth encompass multiple jurisdictions, and land use decisions in one jurisdiction influence the growth patterns in others. Similarly, transportation networks do not stop at jurisdictional boundaries and must be planned on a regional, state and national basis.
- Provide grants to assist local governments with implementation of transfer of development rights programs and designation of urban development areas. Grants like these would help put in place local plans to concentrate growth which would reduce per capita vehicle miles traveled and reduce congestion.

Recommendations:

- Develop regional transportation and land use performance measures and goals for urban regions in the Commonwealth and prioritize funding for transportation improvements to help meet established goals
- Use funding programs and grants to reward localities that guarantee through land use planning the long-term functionality of the improvement
 - Future allocation of primary formula funds and discretionary funds within each VDOT district should be for projects that help meet goals for the regional transportation and land use performance measures
 - Establish and fund an Integrated Transportation/Land Use grant program that would:
 - Provide funding for transportation improvements to local governments with land use plans that encourage compact developments
 - Provide funding to regional organizations to complete detailed land use scenario plans
 - Provide assistance to local governments with implementation of transfer of development rights programs and designation of UDAs

Implement Pricing, Advanced Technology, and Demand Management

As population and economic activity increase throughout the state, Virginia faces a future of increasing traffic congestion. Capacity-increasing projects alone cannot meet the demand. Aggressive and innovative steps are needed to manage the forecasted surge in traffic volumes. In addition to technology that was discussed previously, these areas show promise for Virginia – pricing and demand management.

Pricing – Pricing works by managing highway capacity – shifting a percentage of peak hour highway travel to other transportation modes, to off-peak periods, or to less congested routes. Four main types of pricing strategies are: variable tolls on separated lanes within a highway; variable tolls on entire roadways during peak periods; cordon charges – either variable or fixed charges to drive within or into a congested area within a city; and area-wide charges – per-mile charges on all roads within an area that may vary by level of congestion.

Virginia has begun construction of its first HOT lanes on the I-495 Capital Beltway in Northern Virginia. HOT lanes price travel based on the level of congestion, thereby efficiently allocating road capacity based on market demand. As HOT lanes become congested, the toll increases. When completed in 2013, the project will provide two HOT lanes in each direction stretching 14 miles from the Springfield Interchange to just north of the Dulles Toll Road. As lessons are learned with this strategy and more success is realized, more pricing projects are anticipated in Northern Virginia and possibly the Hampton Roads area.

Advanced Technology – The use of technology was previously discussed as a game-changing investment that addresses safety issues, improves efficiency of operations, and reduces congestion. Technology’s role in reducing congestion is primarily through improved communications about incidents. A more robust traveler information system can help motorists avoid congested areas through alternative routes or by deciding on alternative modes.

Future technologies hold much promise for making roads safer and using capacity as effectively as possible. IntelliDriveSM has the potential to eventually transform surface transportation management and system performance by providing real time data that are far more robust and ubiquitous than currently available information.

Demand Management – Through DRPT, the Commonwealth partners with local commuter assistance programs, MPOs, various Transportation Management Associations, and others to provide TDM programs throughout the Commonwealth. TDM programs help manage travel demand to make our systems more efficient by moving more people in fewer vehicles,

Minimize Congestion
Priority: Implement Pricing, Advanced Technology, and Demand Management
Unfunded Need: Requires a Dedicated Funding Source
Background: <ul style="list-style-type: none"> • Develop HOT lane network for NoVA; study potential for congestion pricing on major corridors in Hampton Roads • Conduct ITS and Operations Utility Study to investigate new initiatives and implement pilot projects as needed • Continue to support DRPT in its TDM programs (Park and Ride study, parking info/ITS)

moving trips out of the peak period, or eliminating trips altogether. TDM measures include HOV lanes, carpooling and vanpooling, teleworking, and Park and Ride lots.

Each full-time teleworker saves the taxpayer \$2,800 per year in road maintenance and expansion costs. According to a study conducted by DRPT in 2007, 12% of Virginia's workers teleworked on average at least once a week, up from 3.2 % in 2000. In addition, 21% of Northern Virginia workers (up from 13% in 2004), 13% of Richmond's workers, and 7% of those in Hampton Roads teleworked.

Increase Transit Usage and Supporting Land Uses

Over the next 25 years as the Commonwealth continues to grow and energy prices increase there will be increased demand for transit service. The current state transit funding programs are typically used for capital maintenance such as bus replacement and operations, and expansion of rapid transit requires successful completion of the time intensive and nationally competitive federal New Starts program.

In many areas of the Commonwealth, transit services are an essential part of the transportation infrastructure. Transit increases access and mobility for Virginia residents by enabling more efficient use of the transportation network, thus saving time, conserving energy, and providing economic benefits to the customers and communities served. An expanded transit network would extend the spine network established by high speed and intercity rail into the major activity centers in the metropolitan areas served.

The Commonwealth needs a Transit Enhancement Fund for major rapid transit construction improvements to expand transit capacity and leverage local and federal dollars. The program would require that local governments make commitments to provide supportive land-use development patterns along corridors where major rapid transit investment occurs. This will encourage compact development and supporting infrastructure to advance in harmony – increasing the efficiency of state investments and enhancing quality of life for citizens. These improvements would also encourage private investment in new development in areas served by the new rapid transit service. Transit supportive land uses improve the home-to-work trip by supporting increased transit usage, reduce roadway congestion by encouraging walking and reducing vehicle trip lengths, and have economic development benefits. The fund would be for capital improvements, requiring a competitive process and the development of criteria for selection of recipients. It also requires the identification of a dedicated funding source.

Minimize Congestion
Priority: Increase Transit Usage and Supporting Land Uses
Unfunded Need: \$128 to \$143 Million Annually
Background: <ul style="list-style-type: none"> • Major rapid transit capital projects (Metrorail, light rail, bus rapid transit) will be necessary to reduce congestion and address mobility needs in urban areas • Transit service expansion will be necessary statewide to accommodate increased demand due to Virginia’s growing population and higher energy prices • Efficient and convenient transit service is vital to supporting compact development patterns that reduce the pressure on the congested highway network • Strengthen policies and continue initiatives that support transit-oriented development • \$35 to \$50 million annually to establish Transit Enhancement Fund, similar to Rail Enhancement Fund • \$50 annually for transit service expansion • \$43 million annually is required to maintain historic 20% state match for operating assistance of major transit capital and service expansions

<p>Recommendation:</p> <p>Establish Transit Enhancement Fund</p>

This Transit Enhancement Fund will provide several transportation benefits. The increased transit service can help accommodate home-to-work trips and trips for recreational activities, while the increased proximity from supportive development patterns will reduce the length of vehicle trips for shopping and other activities and make walking attractive and comfortable. The net effect of the program would be to allow transit to serve as an attractive option for certain classes of trips and to reduce the highway congestion for other trips due to the shorter distances.

In addition to a Transit Enhancement Fund, the Commonwealth will need to increase investment in traditional transit service (local and express bus) expansion through DRPT's Capital Assistance Program to meet the growing demand for transportation choice and continue to serve a growing population and economy. This increased demand for transit service will require local transit providers to expand service coverage and increase the capacity of their systems. This increased level of transit service will enhance the efficiency of the overall transportation network by accommodating a larger volume of users on the existing public right-of-way. Even assuming that the share of total trips provided by public transportation remains constant, a large investment in transit capacity will be needed to maintain levels of service.

How Do These Investment Priorities Become a Reality?

The investment priorities take time and money to become reality. There are three categories of actions needed to ensure that these investment priorities move from ideas and thoughts on paper to a quality Virginia multimodal transportation system. They include:

- **Funding/Investment**
 - **Invest More in Transportation.** The General Assembly must substantially raise investment in transportation to keep Virginia moving. The benefits of such investment, as well as the consequences of underfunding, have been discussed throughout this VTrans2035 Report.
 - **Establish Strategic Infrastructure Investment Fund.** This fund would allow for the implementation of game-changing megaprojects such as the four examples provided. The projects initially would be funded through current sources, and 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 land use commitments and non-state funds. Local governments would be required to make commitments to provide supportive development patterns along corridors where transit expansion occurs.
 - **Consider Regional Transportation and Land Use Performance Measures in Allocation of Primary Formula and Discretionary Funds.** Revising existing policies would encourage transportation and land use coordination.
 - **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.
 - **Consider CoSS in Funding Decisions.** The CoSS needs should be one 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.

- **Planning Process**

- **Develop VTrans2035 Action Plan.** This document establishes a framework of Investment Priorities and strategies. An administrative action plan needs to be prepared to implement these recommendations.
- **Develop Regional Transportation and Land Use Performance Measures and Goals for Urban Regions.** These should be developed and transportation funding prioritized based on meeting the goals.
- **VDOT to Coordinate Right-of-Way Usage for Provision of Fiber Optic Connections.** This improves rural connectivity by enabling broadband access.
- **Prepare CoSS Master Plans.** Detailed master plans incorporating both transportation improvements and land use recommendations are required to keep the CoSS process moving and to protect the functionality of the corridors.
- **Review CoSS Periodically.** The CTB should review the CoSS periodically and consider additions or deletions according to the criteria.
- **Continue Surface Transportation Plan and Other Modal Plans.** VTrans2035 establishes the overall policy direction and the next level of plans identify more specific actions and projects. The Surface Transportation Plan is the first integrated highway, transit, and rail plan ever produced for Virginia. It will identify specific projects that reflect the surface transportation needs (i.e., highway, transit, and rail) reflected in VTrans2035. The modal updates for the Department of Aviation and the Virginia Port Authority should also reflect the VTrans2035 recommendations.
- **Support Use of Economic Planning Tools.** Economic impact analysis should be incorporated more rigorously into analyses and multimodal decision-making.
- **Support Dynamic Dialogue with State, Regional, and Local Partners.** There is the need for continued multi-agency involvement at all levels of government to promote partnership and share lessons learned as Virginia takes great strides to better integrate transportation and land use decisions.
- **Align Subsequent VTrans Updates with Administration Cycles.** The statewide transportation plan needs to be updated at least every five years. The recently elected Administration will serve from January 2010 to January 2014 and the completion of the plan update may not be in this Administration's timeframe. Subsequent updates should be aligned so that every Administration has a Plan produced during its timeframe to guide transportation policy and investment decisions.

- **Staff Resources**

- **Maintain and Enhance OIPI.** There must be staff whose primary responsibility is following the progress of VTrans2035 across all the implementing agencies. Staffing and funding levels of OIPI should be

continued, including oversight and leadership at the deputy secretary level. The OIPI should have an increased level of dedicated staff and provide reports on VTrans2035's implementation as well as on other topics to the CTB.

- **Continue the VTrans Multimodal Advisory Committee (MAC).** The MAC is appointed by the Secretary of Transportation and consists of key planning staff from OIPI, DOAV, DMV, DRPT, VDOT, VPA, FHWA, Hampton Roads PDC, Richmond Regional PDC, Northern Virginia Transportation Authority, and the Virginia Association of Planning District Commissions. The MAC assisted in the development of VTrans2035 preparing and/or reviewing policy papers as well as providing agency coordination.

Appendix A
2009 Legislative Changes
Pertaining to Statewide Transportation Plan

CHAPTER 690

An Act to amend and reenact §§ [2.2-229](#), [15.2-2232](#), [33.1-12](#), and [33.1-23.03](#) of the Code of Virginia, relating to the Statewide Transportation Plan; transportation corridors.

[S 1398]

Approved March 30, 2009

Be it enacted by the General Assembly of Virginia:

1. That §§ [2.2-229](#), [15.2-2232](#), [33.1-12](#), and [33.1-23.03](#) of the Code of Virginia are amended and reenacted as follows:

§ 2.2-229. Office of Intermodal Planning and Investment of the Secretary of Transportation.

There is hereby established the Office of Intermodal Planning and Investment of the Secretary of Transportation, consisting of a director, appointed by the Secretary of Transportation, and such additional transportation professionals as the Secretary of Transportation shall determine. The goals of the Office are to provide solutions that link existing systems; promote the coordination of transportation investments and land use planning; reduce congestion; improve safety, mobility, and accessibility; and provide for greater travel options. It shall be the duty of the director of the office to advise the Secretary, the Virginia Aviation Board, the Virginia Port Authority Board, and the Commonwealth Transportation Board on intermodal issues, generally.

The responsibilities of the Office shall be:

1. To identify transportation solutions to promote economic development and all transportation modes, intermodal connectivity, environmental quality, accessibility for people and freight, and transportation safety;
2. To assist the Commonwealth Transportation Board in the development of the Statewide Transportation Plan pursuant to § [33.1-23.03](#);
3. To coordinate and oversee studies of potential highway, transit, rail, and other improvements or strategies, to help address mobility and accessibility within corridors of statewide significance and regional networks, and promote commuter choice inclusion in the six-year improvement program;
4. To work with and coordinate action of the Virginia Department of Transportation, the Virginia Department of Rail and Public Transportation, the Virginia Port Authority, and the Virginia

Department of Aviation to promote intermodal and multimodal solutions in each agency's strategic and long-range plans;

5. To work with and review plans of regional transportation agencies and authorities to promote intermodal and multimodal solutions;

6. To work with and coordinate actions of the agencies of the transportation Secretariat to assess freight movements and promote intermodal and multimodal solutions to address freight needs, including assessment of intermodal facilities;

7. To assess and coordinate transportation safety needs related to passenger and freight movements by all transportation modes;

8. To coordinate the adequate accommodation of pedestrian, bicycle, and other forms of nonmotorized transportation in the six-year improvement program and other state and regional transportation plans;

9. To work with and coordinate actions of the agencies of the transportation Secretariat to implement a comprehensive, multimodal transportation policy;

10. To develop quantifiable and achievable goals pursuant to § [33.1-23.03](#) and transportation and land use performance measures and prepare an annual performance report on state and regional efforts. The Office of Intermodal Planning and Investment shall work with applicable regional organizations to develop such goals;

11. To identify and facilitate public and private partnerships to achieve the goals of state and regional plans;

12. To provide technical assistance to local governments and regional entities to establish and promote urban development areas pursuant to § [15.2-2223.1](#); and

13. To establish standards for the coordination of transportation investments and land use planning to promote commuter choice and transportation system efficiency.

§ 15.2-2232. Legal status of plan.

A. Whenever a local planning commission recommends a comprehensive plan or part thereof for the locality and such plan has been approved and adopted by the governing body, it shall control the general or approximate location, character and extent of each feature shown on the plan. Thereafter, unless a feature is already shown on the adopted master plan or part thereof or is deemed so under subsection D, no street or connection to an existing street, park or other public area, public building or public structure, public utility facility or public service corporation facility other than a railroad facility or an underground natural gas or underground electric distribution facility of a public utility as defined in subdivision (b) of § [56-265.1](#) within its certificated service territory, whether publicly or privately owned, shall be constructed, established or authorized, unless and until the general location or approximate location,

character, and extent thereof has been submitted to and approved by the commission as being substantially in accord with the adopted comprehensive plan or part thereof. In connection with any such determination, the commission may, and at the direction of the governing body shall, hold a public hearing, after notice as required by § [15.2-2204](#). Following the adoption of the Statewide Transportation Plan by the Commonwealth Transportation Board pursuant to § [33.1-23.03](#) and written notification to the affected local governments, each local government through which one or more of the designated corridors of statewide significance traverses, shall, at a minimum, note such corridor or corridors on the transportation plan map included in its comprehensive plan for information purposes at the next regular update of the transportation plan map. Prior to the next regular update of the transportation plan map, the local government shall acknowledge the existence of corridors of statewide significance within its boundaries.

B. The commission shall communicate its findings to the governing body, indicating its approval or disapproval with written reasons therefor. The governing body may overrule the action of the commission by a vote of a majority of its membership. Failure of the commission to act within sixty days of a submission, unless the time is extended by the governing body, shall be deemed approval. The owner or owners or their agents may appeal the decision of the commission to the governing body within ten days after the decision of the commission. The appeal shall be by written petition to the governing body setting forth the reasons for the appeal. The appeal shall be heard and determined within sixty days from its filing. A majority vote of the governing body shall overrule the commission.

C. Widening, narrowing, extension, enlargement, vacation or change of use of streets or public areas shall likewise be submitted for approval, but paving, repair, reconstruction, improvement, drainage or similar work and normal service extensions of public utilities or public service corporations shall not require approval unless such work involves a change in location or extent of a street or public area.

D. Any public area, facility or use as set forth in subsection A which is identified within, but not the entire subject of, a submission under either § [15.2-2258](#) for subdivision or subdivision A 8 of § [15.2-2286](#) for development or both may be deemed a feature already shown on the adopted master plan, and, therefore, excepted from the requirement for submittal to and approval by the commission or the governing body; provided, that the governing body has by ordinance or resolution defined standards governing the construction, establishment or authorization of such public area, facility or use or has approved it through acceptance of a proffer made pursuant to § [15.2-2303](#).

E. Approval and funding of a public telecommunications facility by the Virginia Public Broadcasting Board pursuant to Article 12 (§ [2.2-2426](#) et seq.) of Chapter 24 of Title 2.2 shall be deemed to satisfy the requirements of this section and local zoning ordinances with respect to such facility with the exception of television and radio towers and structures not necessary to house electronic apparatus. The exemption provided for in this subsection shall not apply to facilities existing or approved by the Virginia Public Telecommunications Board prior to July 1, 1990. The Virginia Public Broadcasting Board shall notify the governing body of the locality in advance of any meeting where approval of any such facility shall be acted upon.

F. On any application for a telecommunications facility, the commission's decision shall comply with the requirements of the Federal Telecommunications Act of 1996. Failure of the commission to act on any such application for a telecommunications facility under subsection A submitted on or after July 1, 1998, within ninety days of such submission shall be deemed approval of the application by the commission unless the governing body has authorized an extension of time for consideration or the applicant has agreed to an extension of time. The governing body may extend the time required for action by the local commission by no more than sixty additional days. If the commission has not acted on the application by the end of the extension, or by the end of such longer period as may be agreed to by the applicant, the application is deemed approved by the commission.

§ 33.1-12. General powers and duties of Board, etc.; definitions.

The Commonwealth Transportation Board shall be vested with the following powers and shall have the following duties:

(1) Location of routes. To locate and establish the routes to be followed by the roads comprising systems of state highways between the points designated in the establishment of such systems. Such routes shall include corridors of statewide significance pursuant to § [33.1-23.03](#).

(2) Construction and maintenance contracts and activities related to passenger and freight rail and public transportation.

(a) To let all contracts to be administered by the Virginia Department of Transportation or the Department of Rail and Public Transportation for the construction, maintenance, and improvement of the roads comprising systems of state highways and for all activities related to passenger and freight rail and public transportation in excess of \$2 million. The Commonwealth Transportation Commissioner shall have authority to let all Virginia Department of Transportation-administered contracts for highway construction, maintenance, and improvements up to \$2 million in value. The Director of the Department of Rail and Public Transportation shall have the authority to let contracts for passenger and freight rail and public transportation improvements up to \$2 million in value. The Commonwealth Transportation Commissioner is authorized to enter into agreements with localities, authorities, and transportation districts to administer projects and to allow those localities, authorities, and transportation districts to let contracts for highway construction, maintenance, and improvements within their jurisdictions. The Director of the Department of Rail and Public Transportation is authorized to enter into agreements with localities, authorities, and transportation districts to administer projects and to allow those localities, authorities, and transportation districts to let contracts for passenger and freight rail and public transportation activities within their jurisdictions. The Commonwealth Transportation Commissioner and the Director of the Department of Rail and Public Transportation shall report on their respective transportation contracting activities at least quarterly to the Board.

(b) The Commonwealth Transportation Board may award contracts for the construction of transportation projects on a design-build basis. These contracts may be awarded after a written determination is made by the Commonwealth Transportation Commissioner or the Director of

the Department of Rail and Public Transportation, pursuant to objective criteria previously adopted by the Board regarding the use of design-build, that delivery of the projects must be expedited and that it is not in the public interest to comply with the design and construction contracting procedures normally followed. Such objective criteria will include requirements for prequalification of contractors and competitive bidding processes. These contracts shall be of such size and scope to encourage maximum competition and participation by agency prequalified and otherwise qualified contractors. Such determination shall be retained for public inspection in the official records of the Department of Transportation or the Department of Rail and Public Transportation, as the case may be, and shall include a description of the nature and scope of the project and the reasons for the Commissioner's or Director's determination that awarding a design-build contract will best serve the public interest. The provisions of this section shall supersede contrary provisions of subsection D of § [2.2-4303](#) and § [2.2-4306](#).

(c) For transportation construction projects valued in excess of \$100 million, the Commonwealth Transportation Board shall require that a financial plan be prepared. This plan shall include, but not be limited to, the following: (i) a complete cost estimate for all major project elements; (ii) an implementation plan with the project schedule and cost-to-complete information presented for each year; (iii) identified revenues by funding source available each year to meet project costs; (iv) a detailed cash-flow analysis for each year of the proposed project; and (v) efforts to be made to ensure maximum involvement of private enterprise and private capital.

(d) The Commonwealth Transportation Board may award contracts for the provision of equipment, materials, and supplies to be used in construction of transportation projects on a fixed-price basis. Any such contract may provide that the price to be paid for the provision of equipment, materials, and supplies to be furnished in connection with the projects shall not be increased but shall remain fixed until completion of the projects specified in the contracts. Material components of any such contract for annual and multi-year programs, including but not limited to maintenance, may be fixed at the outset of the projects and until completion based on best achievable prices.

(3) Traffic regulations. To make rules and regulations, from time to time, not in conflict with the laws of the Commonwealth, for the protection of and covering traffic on and the use of systems of state highways and to add to, amend or repeal the same.

(4) Naming highways, bridges, and interchanges. To give suitable names to state highways, bridges, and interchanges and change the names of any highways, bridges, or interchanges forming a part of the systems of state highways, except such highways, bridges, or interchanges as have been or may hereafter be named by the General Assembly; provided that the name of living persons shall not be used for such purposes. The Department of Transportation shall place and maintain appropriate signs indicating the names of highways, bridges, and interchanges named by the Board or by the General Assembly. The costs of producing, placing, and maintaining these signs shall be paid by the counties, cities, and towns in which they are located. No name shall be given to any state highway, bridge or interchange by the Commonwealth Transportation Board unless and until the Commonwealth Transportation Board shall have received from the local governing body of the locality within which a portion of the facility to be named is located a resolution of that governing body requesting such naming.

(5) Compliance with federal acts. To comply fully with the provisions of the present or future federal aid acts. The Board may enter into all contracts or agreements with the United States government and may do all other things necessary to carry out fully the cooperation contemplated and provided for by present or future acts of Congress in the area of transportation.

(6) Information and statistics. To gather and tabulate information and statistics relating to transportation and disseminate the same throughout the Commonwealth. In addition, the Commissioner shall provide a report to the Governor, the General Assembly, the Commonwealth Transportation Board, and the public concerning the current status of all highway construction projects in the Commonwealth. This report shall be posted at least four times each fiscal year, but may be updated more often as circumstances allow. The report shall contain, at a minimum, the following information for every project in the Six-Year Improvement Program: (i) project description; (ii) total cost estimate; (iii) funds expended to date; (iv) project timeline and completion date; (v) statement of whether project is ahead of, on, or behind schedule; (vi) the name of the prime contractor; (vii) total expenditures of federal transportation funds in each county and city; (viii) total expenditures of state transportation funds in each county and city; (ix) statewide totals for federal, state, and local funds expended for highways; (x) statewide totals for federal, state, and local funds expended for transit; (xi) total funds expended on intercity passenger and freight rail line and trains; and (xii) total funds expended in each federal and state programmatic category. Use of one or more Internet websites may be used to satisfy this requirement. Project specific information posted on the Internet shall be updated daily as information is available.

(7) Policies and operation of Departments. To review and approve policies and transportation objectives of the Department of Transportation and the Department of Rail and Public Transportation, to assist in establishing such policies and objectives, to oversee the execution thereof, and to report thereon to the Commonwealth Transportation Commissioner and the Director of the Department of Rail and Public Transportation, respectively.

(8) Cooperation with other agencies and local governments.

(a) To cooperate with the federal government, the American Association of State Highway and Transportation Officials and any other organization in the numbering, signing and marking of highways, in the taking of measures for the promotion of highway safety, in research activities, in the preparation of standard specifications, in the testing of highway materials and otherwise with respect to transportation projects.

(b) To offer technical assistance and coordinate state resources to work with local governments, upon their request, in developing sound transportation components for their local comprehensive plans.

(9) Transportation.

(a) To monitor and, where necessary, approve actions taken by the Department of Rail and Public Transportation pursuant to Chapter 10.1 (§ [33.1-391.1](#) et seq.) of this title in order to ensure the efficient and economical development of public transportation, the enhancement of

rail transportation, and the coordination of such rail and public transportation plans with highway programs.

(b) To coordinate the planning for financing of transportation needs, including needs for highways, railways, seaports, airports, and public transportation and to set aside funds as provided in § [33.1-23.03:1](#). To allocate funds for these needs pursuant to §§ [33.1-23.1](#) and [58.1-638](#), the Board shall adopt a Six-Year Improvement Program of anticipated projects and programs by July 1 of each year. This program shall be based on the most recent official Transportation Trust Fund revenue forecast and shall be consistent with a debt management policy adopted by the Board in consultation with the Debt Capacity Advisory Committee and the Department of the Treasury.

(c) To recommend to the General Assembly for their consideration at the next session of the General Assembly, objective criteria to be used by the Board in selecting those transportation projects to be advanced from the feasibility to the construction stage. If such criteria are enacted into law, such objectives shall apply to the interstate, primary, and urban systems of highways.

(d) To enter into contracts with local districts, commissions, agencies, or other entities created for transportation purposes.

(e) To promote increasing private investment in Virginia's transportation infrastructure, including but not limited to acquisition of causeways, bridges, tunnels, highways, and other transportation facilities.

(10) Contracts with other states. To enter into all contracts with other states necessary for the proper coordination of the location, construction, maintenance, improvement, and operation of transportation systems, including the systems of state highways with the highways of such other states and, where necessary, to seek the approval of such contracts by the Congress of the United States.

(11) Use of funds. To administer, distribute, and allocate funds in the Transportation Trust Fund as provided by law. The Commonwealth Transportation Board shall ensure that the total funds allocated to any highway construction project are equal to total expenditures within 12 months following completion of the project. However, this requirement shall not apply to debt service apportionments pursuant to § [33.1-23.3](#) or [33.1-23.4](#).

(12) Financial and investment advisors. With the advice of the Secretary of Finance and the State Treasurer, to engage a financial advisor and investment advisor who may be anyone within or without the government of the Commonwealth, to assist in planning and making decisions concerning the investment of funds and the use of bonds for transportation purposes. The work of these advisors shall be coordinated with the Secretary of Finance and the State Treasurer.

(13) The powers of the Virginia Aviation Board set out in Chapter 1 (§ [5.1-1](#) et seq.) of Title 5.1 and the Virginia Port Authority set out in Chapter 10 (§ [62.1-128](#) et seq.) of Title 62.1 are in no way diminished by the provisions of this title.

(14) To enter into payment agreements with the Treasury Board related to payments on bonds issued by the Commonwealth Transportation Board.

(15) Outdoor theaters. By regulation:

(a) To prevent the erection of moving picture screens of outdoor theaters in such a manner as to be ordinarily visible from any highway;

(b) To require that a sufficient space is left between any highway and the entrance to any outdoor theater to prevent congestion on the highway; and

(c) To require that outdoor theater entrances and exits are adequately lighted and marked.

(16) Establishment of highway user fees for the systems of state highways. When the traffic-carrying capacity of any system of state highways or a portion thereof is increased by construction or improvement, the Commonwealth Transportation Board may enter into agreements with localities, authorities, and transportation districts to establish highway user fees for such system of state highways or portion thereof that the localities, authorities, and transportation districts maintain.

(17) Subject to compliance with applicable federal regulations, the Commonwealth Transportation Board shall establish a plan for identification and acquisition of rights-of-way that may be needed within the corridors designated on the Statewide Transportation Plan.

The term "public transportation" or "mass transit" as used in this title means passenger transportation by rubber-tired, rail, or other surface conveyance which provides shared ride services open to the general public on a regular and continuing basis. The term does not include school buses; charter or sight-seeing service; vehicular ferry service that serves as a link in the highway network; or human service agency or other client-restricted transportation.

§ 33.1-23.03. Board to develop and update Statewide Transportation Plan.

A. The Commonwealth Transportation Board shall, with the assistance of the Office of Intermodal Planning and Investment, conduct a comprehensive review of statewide transportation needs in a Statewide Transportation Plan setting forth assessment of capacity needs for all corridors of statewide significance, regional networks, and improvements to promote urban development areas established pursuant to § [15.2-2223.1](#). The assessment shall consider all modes of transportation. Such corridors shall be planned to include multimodal transportation improvements, and the plan shall consider corridor location in planning for any major transportation infrastructure, including environmental impacts and the comprehensive land use plan of the locality in which the corridor is planned. In the designation of such corridors, the Commonwealth Transportation Board shall not be constrained by local, district, regional, or modal plans.

This Statewide Transportation Plan shall be updated as needed, but no less than once every five years. The plan shall promote economic development and all transportation modes, intermodal

connectivity, environmental quality, accessibility for people and freight, and transportation safety.

B. The Statewide Transportation Plan shall establish goals, objectives, and priorities that cover at least a 20-year planning horizon, in accordance with federal transportation planning requirements. The plan shall include quantifiable measures and achievable goals relating to, but not limited to, congestion reduction and safety, transit and high-occupancy vehicle facility use, job-to-housing ratios, job and housing access to transit and pedestrian facilities, air quality, movement of freight by rail, and per capita vehicle miles traveled. The Board shall consider such goals in evaluating and selecting transportation improvement projects for inclusion in the Six-Year Improvement Program pursuant to § [33.1-12](#).

C. The plan shall incorporate the approved long-range plans' measures and goals developed by the applicable regional organizations. Each such plan shall be summarized in a public document and made available to the general public upon presentation to the Governor and General Assembly.

D. It is the intent of the General Assembly that this plan assess transportation needs and assign priorities to projects on a statewide basis, avoiding the production of a plan which is an aggregation of local, district, regional, or modal plans.

2. That the Commonwealth Transportation Board, with the assistance of the Office of Intermodal Planning and Investment, may require that appropriate regional organizations develop as part of a long-range plan quantifiable measures and achievable goals for the urban region relating to, but not limited to, congestion reduction and safety, transit and high-occupancy vehicle (HOV) usage, job-to-housing ratios, job and housing access to transit and pedestrian facilities, air quality, movement of freight by rail, and per capita vehicle miles traveled.

3. That the designation of the transportation corridors under this act shall be in sufficient detail so that the local jurisdictions can place them on their comprehensive plans.

4. That the Commonwealth Transportation Board shall conduct public hearings as it deems appropriate in order to prepare the Statewide Transportation Plan.

5. Subject to compliance with federal and state law and regulations and the allocation of funds, that once the corridors are established, the Commonwealth shall begin the appropriate environmental studies, and such information may be used in a program to invite possible construction and improvement to the corridor through a public-private partnership. The development of environmental studies shall be prioritized by corridor based on criteria established by the Commonwealth Transportation Board.

Appendix B VTrans2035 Documents

Document	Basic Content
2035 Socioeconomic and Travel Demand Forecasts for Virginia and Potential Policy Responses	Socioeconomic and demographic projections for Virginia; assessment of potential impacts on travel related to increased fuel costs, changes in density and other issues
Directions in Regional Planning	Review of MPO plans for basic planning directions
Vision, Goals, and Performance Measures	Recommendations on changes to VTrans goals and performance measures
Examining the Long-Term Viability of the Motor Fuels Tax and Possible Alternatives	Summary of literature review related to the overall effectiveness of the gasoline tax
Specific Policy Papers	The policy papers generally address the importance of the topic, current conditions, recent trends, relevant lessons learned from elsewhere, and opportunities and/or strategies that Virginia should consider.
Congestion	
Mobility, Accessibility, and Connectivity	
Natural and Human Environment	
Regional and Local Decision Making	
European Lessons Learned	
System Preservation and Maintenance	
Freight	
Safety	
Land Use	
Economic Development	
Security	
Regional Accessibility	
Institutional Changes in Transportation Decision Making	
Transportation in Virginia	Summary of Virginia's current transportation assets
Corridors of Statewide Significance	Description of the 11 Corridors of Statewide Significance including functions, current and future conditions, and proposed strategies
Economic Impact of Transportation Investment	An analysis of the economic impact of Virginia's 2009-2014 Transportation Program
Transportation Funding: Paying for Performance	Overview of general revenue outlook and options for consideration
All documents are available at (www.vtrans.org) or can be made available on request from the Office of Intermodal Planning and Investment.	

