Virginia's Long-Range Multimodal Transportation Plan 2007-2035

Final Report

TRANSPORTATION IN VIRGINIA

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ABBREVIATIONS AND ACRONYMS

CCI	Critical Condition Index
CTB	Commonwealth Transportation Board
DMV	Department of Motor Vehicles
DOAV	Department of Aviation
DOT	Department of Transportation
DRPT	Department of Rail and Public Transportation
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FO	Functionally Obsolete
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
HRT	Hampton Roads Transit
NBI	National Bridge Inventory
NEC	Northeast Corridor
NIT	Norfolk International Terminals
NNMT	Newport News Marine Terminal
NS	Norfolk Southern
OIPI	Office of Intermodal Planning and Investment
PCI	Pavement Condition Inventory
PMT	Portsmouth Marine Terminal
RAB	Rail Advisory Board
SD	Structurally Deficient
SRTS	Safe Routes to School
STRAHNET	Strategic Highway Network
TEU	Twenty-foot Equivalent Unit
USDOT	United States Department of Transportation
VAB	Virginia Aviation Board
VDOT	Virginia Department of Transportation
VIP	Virginia Inland Port
VIT	Virginia International Terminals
VMT	Vehicle Miles of Travel
VPA	Virginia Port Authority
VRE	Virginia Railway Express
VRT	Virginia Regional Transit
WMATA	Washington Metropolitan Area Transit Authority

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CHAPTER 1
OVERVIEW OF TRANSPORTATION IN VIRGINIA REPORT

REPORT CONTEXT

The general public tends to view transportation from the user's perspective of the end result of supply and demand. It is the interaction of supply (transportation assets) and demand (user's travel needs) that results in transportation conditions that range from high quality service to undesirable conditions.

Virginia has a vast transportation system. A significant portion of the system is overseen by four Commonwealth transportation agencies – Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transportation (DRPT), Virginia Department of Aviation (DOAV), and Virginia Port Authority (VPA). A fifth agency, the Department of Motor Vehicles (DMV), promotes security and safety through the administration of motor vehicle and tax-related laws. This *Transportation in Virginia Report* focuses on Virginia's physical transportation assets that are under the oversight of these agencies.

Virginia's transportation agencies are stewards of a vast array of transportation assets. This stewardship is becoming increasingly challenging as financial and staff resources are shrinking.

The Commonwealth's transportation agencies are stewards of the transportation system. These agencies, as well as both public and private local and regional transportation providers, are being asked not only to keep these assets in good condition, but also in some cases to expand the supply. Stewardship of Virginia's transportation system is becoming increasingly challenging as both financial and staff resources are shrinking. The *Transportation in Virginia Report* inventories the assets that the modal agencies oversee in order to better understand their challenging roles as stewards of these transportation resources.

DATA SOURCES

Information on the transportation system is a moving target, especially in light of the recent economic downturn. This report started with a general baseline of 2007 conditions. If more recent information was available, it has been reported. Changes in assets due to the recent economic downturn (for example, the closure of some rest stops) have been noted.

SYSTEM PERFORMANCE

This report identifies the assets and in some cases reports on performance, such as number of structurally deficient bridges. A detailed accounting of transportation system performance is contained in the Transportation Performance Report – 2007, available on the VTrans website www.vtrans.org.

CORE THEMES FOR THE FUTURE

Although this report focuses on documenting existing transportation resources, it is possible to draw some implications for the future. Core themes include:

- Preserving the investment in the highway system with adequate pavement and bridge conditions;
- Continuing to work in partnership with freight railroads to provide both improved rail passenger and rail freight service;
- Providing more transit to address mobility of an aging population and reduce energy consumption; and
- Providing sufficient Port access capacity to accommodate expanded Port capacity.

CHAPTER 2
TRANSPORTATION AT A GLANCE

SUMMARY OF MAJOR ASSETS

Virginia has an extensive multimodal transportation system. It includes the third largest state-maintained highway system in the nation, two Class I railroads for freight service as well as Amtrak and Virginia Railway Express (VRE) passenger service, numerous transit service providers, including two major regional systems (Washington Metropolitan Area Transit Authority (WMATA) and Hampton Roads Transit (HRT)). The Port of Virginia is the third largest and most successful port on the East Coast, and Virginia's air transportation system is one of the most sophisticated in the country. Highlights of Virginia's system are included in Table 2-1.

Table 2-1. Virginia Transportation at a Glance

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
	42 rest areas but only 23 remain open after closures due to budget cuts
	2 US Bicycle Routes
	3,250 miles of Scenic Byways
	137 miles of High Occupancy Vehicle (HOV) lanes
	330 Park and Ride facilities, 114 operated by VDOT
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 transportation systems
Airports	66 public-use airports 9 commercial airports 8 reliever airports 19 regional airports 16 community airports 14 local service airports
Ports	4 state-operated port terminals

TRANSPORTATION AGENCIES

The Secretariat of Transportation has responsibility of developing and implementing Virginia's transportation program, including policy and financial oversight of seven agencies:

- Department of Motor Vehicles (DMV);
- Motor Vehicle Dealer Board;
- Virginia Board of Towing and Recovery Operators;
- Virginia Department of Transportation (VDOT);

- Department of Rail and Public Transportation (DRPT);
- Department of Aviation (DOAV); and
- Virginia Port Authority (VPA).

DMV administers motor vehicle and related laws, promotes transportation safety, and collects transportation revenues. Although DMV does not have oversight of any of Virginia's transportation infrastructure, the agency's program is fundamental to safe operations on Virginia's highways. The Motor Vehicle Dealer Board and the Virginia Board of Towing and Recovery Operators, while important for customer satisfaction relative to their particular missions, do not play a significant role in the provision of the Commonwealth's transportation resources. The four remaining agencies that do play a major role are VDOT, DRPT, DOAV, and VPA.

The 17-member Commonwealth Transportation Board (CTB) establishes the administrative policies for Virginia's surface transportation system. The CTB allocates highway funding to specific projects, locates routes and provided funding for airports, seaports, and public transportation. The CTB's policy goals, particularly relevant to the Six-Year Improvement Program are:

- Promote the safety of our citizens;
- Maintain the existing infrastructure;
- Use official revenue projections;
- Use best available project cost estimates;
- Minimize the use of debt;
- Pay off deficits on completed projects and do not create new deficits;
- Fully fund construction projects by the time they are complete;
- Bring phased projects or programs to a reasonable stage of completions;
- Require that new projects added to the program be eligible for federal funds;
- Focus funding and project development on deficient and insufficient bridges;
- Focus funding on congestion relief;
- Recognize alternative modes, including transit, rail, bicycle and pedestrian pathways, as viable transportation alternatives; and
- Seek opportunities to leverage state funds through agreements with other public entities and the private sector.

Both VDOT and DRPT have representation on the CTB. Both DOAV and VPA have their own policy boards.

Virginia Department of Transportation

The Virginia Department of Transportation (VDOT) is responsible for building, maintaining and operating the state's roads, bridges and tunnels. Virginia has the third-largest state-maintained highway system in the country, behind Texas and North Carolina.

The agency has nine construction districts. The districts are divided into 42 residencies and two district satellite offices, responsible for one to four counties each. Each of Virginia's counties has at least one area maintenance headquarters strategically located in it. The VDOT Central Office in Richmond is headquarters for approximately 30 operational and administrative units.

As of December 1, 2007, VDOT employed about 8,450 people full time, compared to 10,380 at the close of Fiscal Year 2001. At the end of 2008 the number of full-time employees had been decreased to 8,150 and further cuts by 2010 will reduce the number of full-time VDOT employees to 7,500 by July 2010.

Department of Rail and Public Transportation

Each of DRPT's three primary areas of activity (rail, public transportation, and commuter services) focuses on the movement of people and goods throughout Virginia. With approximately 40 employees in four offices, DRPT works with over 100 public and private partners to provide project management services, planning support, technical expertise, financial support, and program advocacy. The CTB is DRPT's policy board. DRPT also has a Rail Advisory Board (RAB) consisting of nine members appointed by the Governor. One of the primary duties of the RAB is to make recommendations to the CTB regarding allocations of funds from the Rail Enhancement Fund.

Department of Aviation

The Virginia Department of Aviation's (DOAV's) mission is to cultivate an advanced aviation system that is safe, secure, and provides for economic development; promotes aviation awareness and education; and provides executive flight services for the Commonwealth leadership. The Virginia Aviation Board (VAB), appointed by the Governor, has seven regional board members and a chairperson. Functions of VAB include publicizing and monitoring policies and programs of DOAV, identifying regulations necessary to promote and develop safe aviation practices, and allocating funds to localities for aviation development.

Virginia Port Authority

The Virginia Port Authority (VPA) is managed by a 12-member Board of Commissioners - the State Treasurer and 11 citizens appointed by the Governor. VPA owns and is responsible for the operations and security of three marine terminals: Norfolk International Terminals (NIT), Portsmouth Marine Terminal (PMT), and Newport News Marine Terminal (NNMT), and an inland intermodal facility, the Virginia Inland Port (VIP) located in Front Royal, Virginia. These facilities primarily handle import and export containerized and break-bulk cargoes. The facilities are operated by VPA's affiliate, Virginia International Terminals, Inc. (VIT).

CHAPTER 3
SURFACE TRANSPORTATION ASSETS

Virginia is truly a multimodal state with surface, air and water transportation. Surface transportation includes highway, rail and transit components, as well as other assets such as rest areas and welcome centers, bicycle facilities, scenic byways and Park and Ride lots. This chapter of the report provides snapshots of these assets.

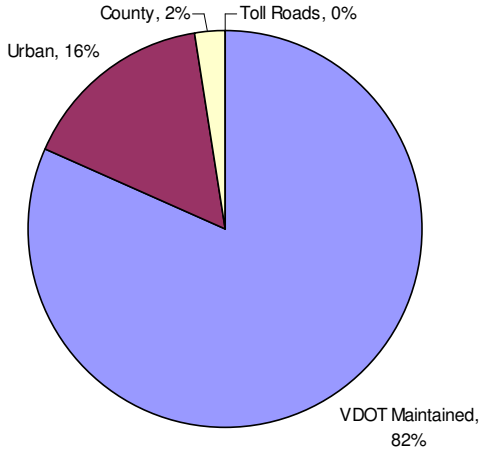
HIGHWAYS

Highway Infrastructure

VDOT maintained 57,729 miles of roadway in 2007, the third largest system in the country (behind only North Carolina and Texas):

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

Figure 3-1. Virginia State Highway System Mileage



There are 70,784 miles of roads in the Virginia state highway system, as detailed in Table 3-1. In addition to the state-maintained system, there are approximately 11,350 miles of urban streets, maintained by cities and towns with the help of state funds. Virginia's cities are independent of its counties. Henrico County and Arlington County maintain their own roads with VDOT funds. An additional 39 miles of toll roads are maintained by others. Figure 3-1 shows the proportions of centerline miles by system.

Table 3-1. 2007 Virginia State Highway System

State Highway System - Centerline Miles									
	VDOT Maintained Centerline Miles					Other Centerline Miles			Total
	Interstate	Primary	Secondary	Frontage Roads	Subotal	Urban	County	Toll[(1)] Roads	
Urban	453	1,277	8,122	88	**9,940**	870	29	15	**10,854**
Rural	666	6,722	40,159	242	**47,789**	10,475	1,642	24	**59,930**
Total	1,119	7,999	48,281	330	**57,729**	11,345	1,671	39	**70,784**

(1) Toll roads not included as part of other highway system

Source: Virginia Department of Transportation , http://mileagetables.virginiadot.org/

Roadway Functional Classification

Freeways - fully access-controlled highways designed for high-speed travel with the sole purpose of facilitating non-stop traffic flow without obstruction from cross traffic.

Expressways - partially access-controlled highways designed for high-speed travel for the sole purpose of facilitating traffic flow with minimal obstruction from adequately spaced cross traffic.

Principal arterials - streets or highways designed and given preference to carry traffic, but also provide access to abutting property. Cross traffic is accommodated at at-grade, signalized intersections for streets with high traffic levels and at at-grade intersections without signals for streets with moderate or low traffic levels.

Minor arterials - streets or highways designed both to carry traffic and provide access to abutting property. The primary purpose of the minor arterial is to serve moderate-length neighborhood trips and to channel traffic from collectors and local streets to principal arterials or expressways.

Collectors - streets or highways designed to carry traffic and provide access to abutting property. The primary purpose of the collector is to serve short-length neighborhood trips and to channel traffic from local streets and abutting properties to minor arterials and principal arterials.

Local streets -streets or rural roads designed to provide access to abutting property and only incidentally channel traffic short distances to collectors or minor arterials.

Public roads are categorized as rural or urban. Rural facilities are further classified as interstate, principal arterial, minor arterial, major collector, minor collect, or local. Urban facilities are further classified as interstate, freeway/ expressway, principal arterial, minor arterial, collector, or local. Roadway functional classifications define a road's purpose within the overall system. Table 3-2 shows the mileage for rural and urban roads maintained by VDOT by functional class.

Table 3-2. Miles of VDOT Maintained Roads by Functional Classification in 2007

Rural Roads						
Interstate	**Principal Arterial**	**Minor Arterial**	**Major Collector**	**Minor Collector**	**Local**	**Total[(1)]**
666	1,352	3,059	9,176	2,362	30,932	47,547
Urban Roads						
Interstate	**Freeways and Expressways**	**Principal Arterial**	**Minor Arterial**	**Collector**	**Local**	**Total[(1)]**
453	180	659	920	1,205	6,435	9,852
					Total of Rural and Urban Roads	57,399

Note: (1) Excludes 330 miles of Frontage Roads.

Source: Virginia Department of Transportation , http://mileagetables.virginiadot.org/

Lane-miles, however, are often a better measure of the amount of infrastructure on the ground. For example, although there are only 1,119 miles of interstates in Virginia, there are 5,402 lane-miles because interstates have multiple lanes. Table 3-3 shows lane-miles by highway system. Primary routes include those designated as US, Virginia State Route, and frontage roads, as well as named federal parkways.

Table 3-3. Lane-Miles of VDOT Maintained Roads by Highway System in 2007

VDOT Maintained Roads	Interstate	Primary	Secondary	Frontage Roads	Total
Miles	1,119	7,999	48,281	330	57,729
Lane-miles	5,402	21,674	97,629	661	125,366

Source: Virginia Department of Transportation,: http://mileagetables.virginiadot.org/

The Strategic Highway Network (STRAHNET) system of public highways provides access, continuity, and emergency transportation of personnel and equipment in times of peace and war. The 61,000-mile nationwide system, designated by the Federal Highway Administration (FHWA) in partnership with the U.S. Department of Defense, comprises about 45,400 miles of interstate and defense highways and 15,600 miles of other public highways.

STRAHNET is complemented by about 1,700 miles of connectors—additional highway routes linking more than 200 military installations and ports to the network. Table 3-4 provides details on the STRAHNET system in Virginia.

Table 3-4. Strategic Highway Network Miles in Virginia

	Interstate	Non-Interstate	Total
Rural	666	406	1,072
Urban	453	127	580
Total	1,119	533	1,652

Source: U.S. Department of Transportation, Highway Statistics, 2007, Table HM-49

Highway Usage

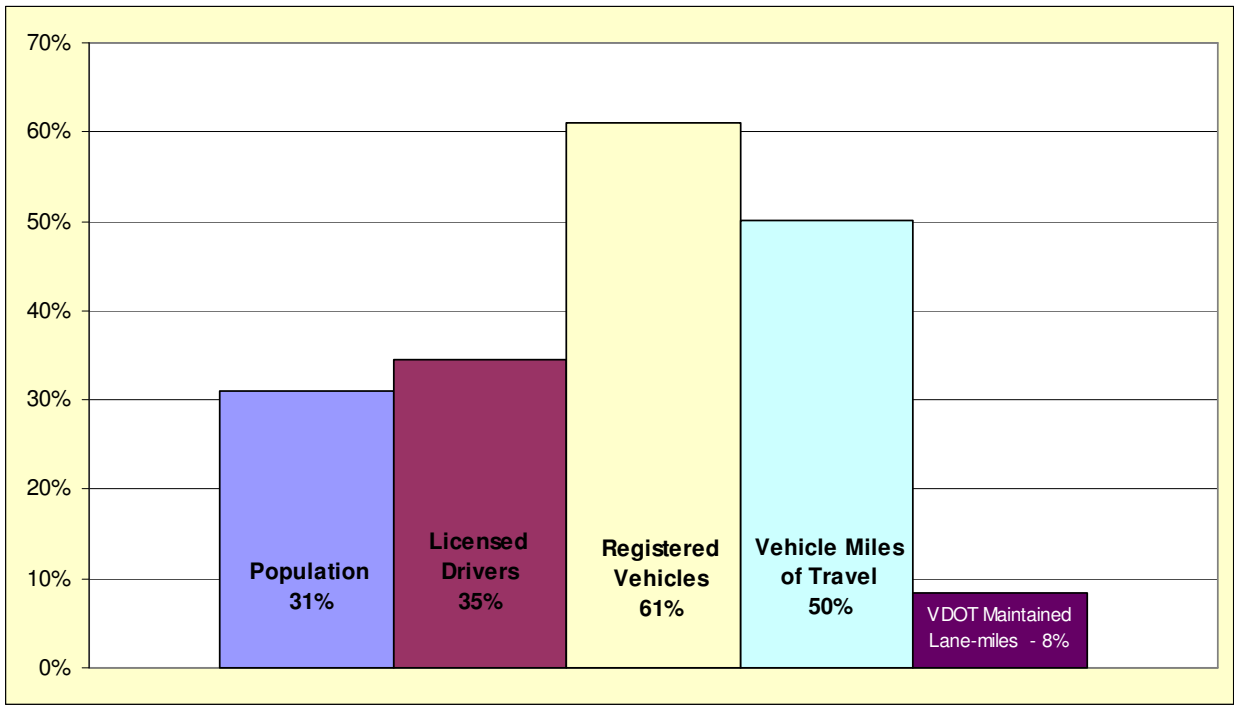
In 2007, Virginians traveled over 82 billion miles. Since 2002, when vehicle miles of travel (VMT) were estimated to be 75,263 million miles, VMT in Virginia has grown at an average rate of 1. 5% per year through 2008. Table 3-5 and Figure 3-2 show data on population, number of licensed drivers, number of registered vehicles, VMT, and number of VDOT maintained lane-miles in Virginia from 1977 to 2008. The graph clearly shows the trends toward increased miles driven as VMT has outpaced population increases and lane-mile increases.

Table 3-5. Motor Vehicle Statistics

Year	Population	Licensed Drivers	Registered Vehicles	VMT (millions)	VDOT Maintained Lane-miles
1987	5,932,300	4,070,041	4,660,657	54,834	115,938
1992	6,394,000	4,771,656	5,124,916	63,447	118,767
1997	6,737,500	5,021,813	5,724,096	74,142	121,198
2002	7,293,500	5,182,497	6,659,560	75,263	123,658
2007	7,712,091	5,436,825	7,500,308	82,077	125,365
2008	7,769,089	5,475,069	7,503,924	82,279	125,756

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

Figure 3-2. Percent Increase in Population, Licensed Drivers, Registered Vehicles, VMT, and Lane-Miles, 1987 to 2008



The breakdown of VMT on VDOT maintained roads by highway system is provided in Table 3-6. This shows that travel on interstates and primary system roads account for three-quarters of VMT (38% each).

Table 3-6. 2008 Vehicles Miles Traveled on VDOT Maintained Roads by Highway System

	Daily Vehicle Miles Traveled			
	Interstate	**Primary**	**Secondary**	**Total**
VDOT maintained roads	65,065,183	65,065,183	41,828,956	171,959,322
Percent of Total	38%	38%	24%	100%

Source: VDOT 2008 VMT Report (2100D):
http://www.virginiadot.org/info/2008_traffic_data_daily_vehicle_miles_traveled.asp

Pavement Condition

The Code of Virginia and Appropriation Act require the Commonwealth Transportation Board to make maintenance of existing transportation assets to ensure the safety of the traveling public be the first allocation priority. This applies to both pavement and bridge conditions.

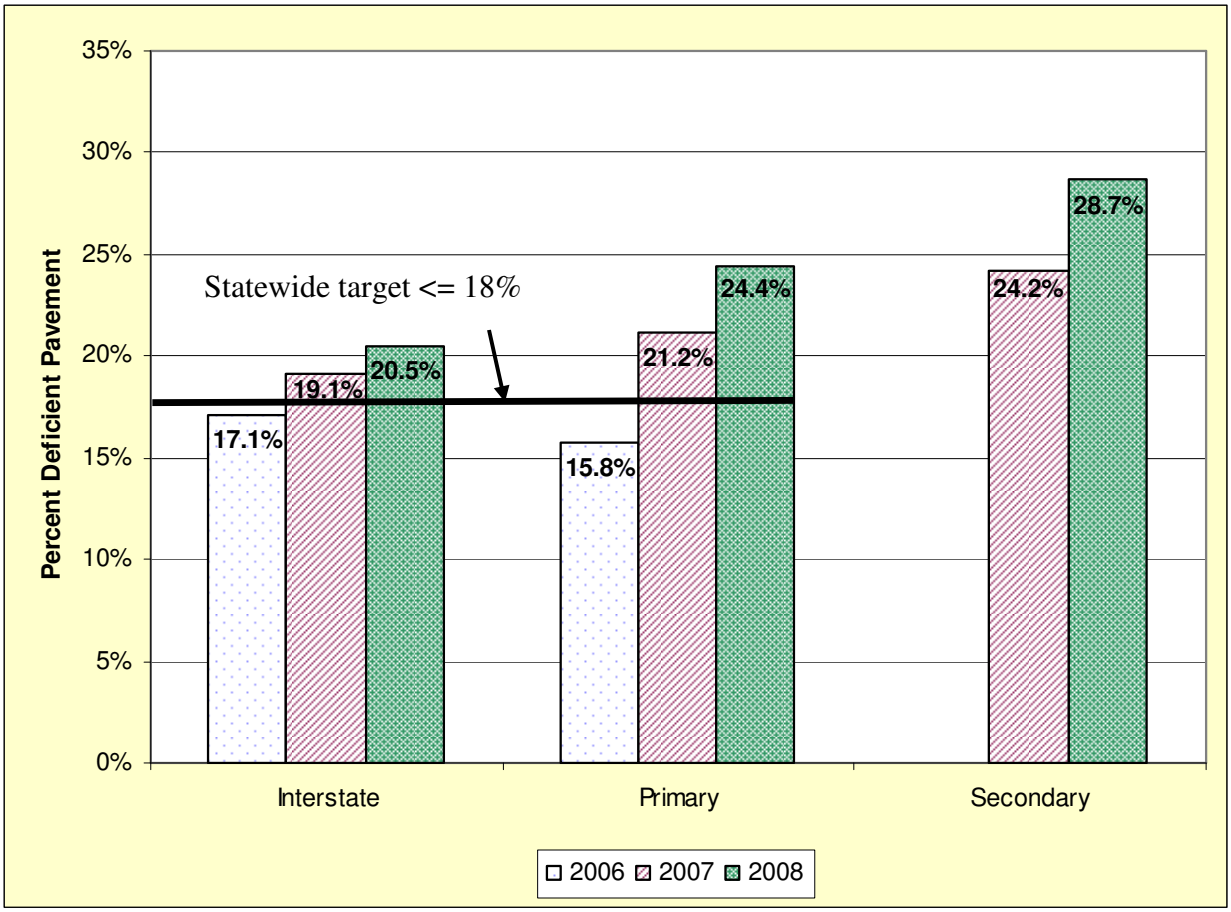
The condition of pavement is based on a Critical Condition Index (CCI) value[1]. The percentage of pavements in deficient condition is shown in Figure 3-3. It is noted that information for the secondary pavements reflects just a sample, and there was no information collected for 2006.

The recent trend is that each year a greater percentage of the relative pavements is considered deficient and that current conditions exceed the statewide target of equal to or less than 18% (there is no target for secondary pavements).

Issues for the Future – Preservation of Highways
Preserving one of the largest state-maintained systems is VDOT's first priority and is becoming increasingly challenging. Wear and tear continues to worsen as vehicle miles of travel increase. Keeping up with maintenance needs to protect the investment that has been made in the highway system will continue to be an on-going challenge.

[1] *State of the Pavement – 2008*, prepared by the Virginia Department of Transportation Maintenance Division, January 2009.

Figure 3-3. Trends in Pavement Condition



Source: *State of the Pavement – 2008*, prepared by the Virginia Department of Transportation Maintenance Division, January 2009

STRUCTURES

VDOT is currently responsible for the inventory, inspection, maintenance, and improvement to 20,920 structures (bridges and culverts). FHWA maintains the National Bridge Inventory (NBI). NBI structures include bridges and culverts that are more than 20 feet long. Non-NBI structures include bridges that are equal to or less than 20 feet long and culverts that have an opening equal to or greater than 36 square feet. Virginia's 20,920 structures are comprised of 13,228 (63%) NBI structures and 7,692 (37%) non-NBI structures.

Table 3-7 also indicates the location and the condition of the structures. Figure 3-4 shows that over half of the structures are on the Secondary Highway System.

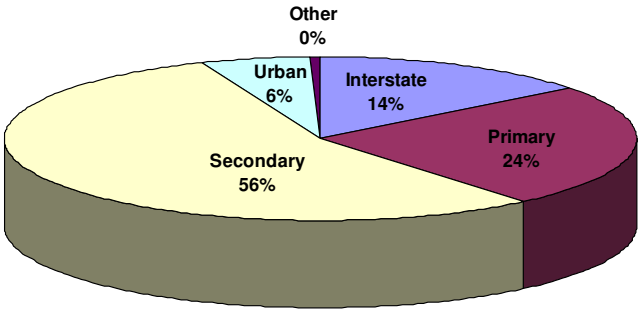
Table 3-7. Number and Condition of Structures in 2009

Number and Condition of Structures -2009				
		Percent of Total		
Location	Total	Structurally Deficient	Functionally Obsolete	Total Deficient
Interstate	3,016	3.1%	12.7%	15.7%
Primary	5,093	5.6%	13.2%	18.8%
Secondary	11,549	11.4%	15.5%	26.9%
Urban	1,169	8.8%	21.8%	30.6%
Other[(1)]	93	1.1%	4.3%	5.4%
Total	20,920	8.6%	14.8%	23.5%

[(1)] Structures owned by private or other government agencies

Source: VDOT Status of the Commonwealth's Structure Presentation, July 2009

Figure 3-4. System Location of Structures



Structures are classified by condition. Two critical categories are Structurally Deficient (SD) and Functionally Obsolete (FO). A SD structure has deficient elements that require the structure to be monitored and/or repaired and has either been restricted to light weight vehicles or has been closed to traffic. A FO designation means that the structure was built to standards (deck geometry, load carrying capacity, clearances, or approach roadway alignment) that are less conservative than those used today. FHWA deems any structure rated either SD or FO as deficient. Figure 3-5 reflects the percent of structures by system location by rating for 2009.

VDOT's target is to have no more than 8.0% SD structures statewide. The current performance is that 8.6% of statewide structures are structurally deficient. This is slightly worse than in 2007 and 2008 when only 8.4% of structures were structurally deficient, as indicated in Table 3-8.

The anticipated design service life of a bridge has been 50 years. A challenge for the future will be that an increasing number of structures will be approaching the anticipated service design life. Currently, 35% of the inventory is 50 years or older. In the next 10 years this percentage will increase to 55%, suggesting the need for a greater investment in bridges to maintain the desired performance target. Figure 3-6 depicts the current age distribution of structures.

Figure 3.5. Condition of Structures by System Location in 2009

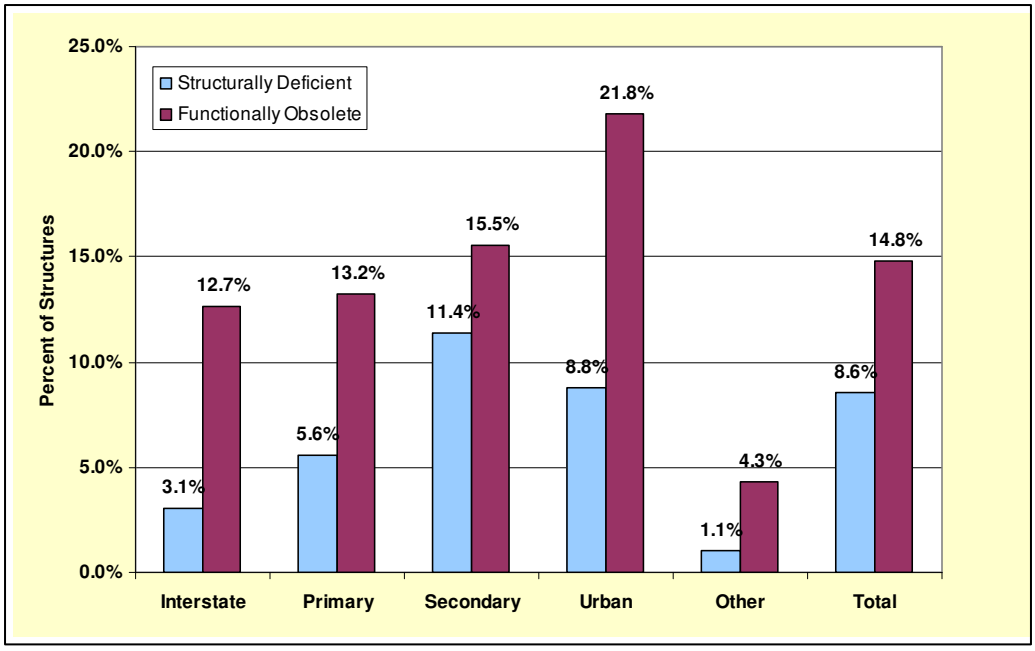
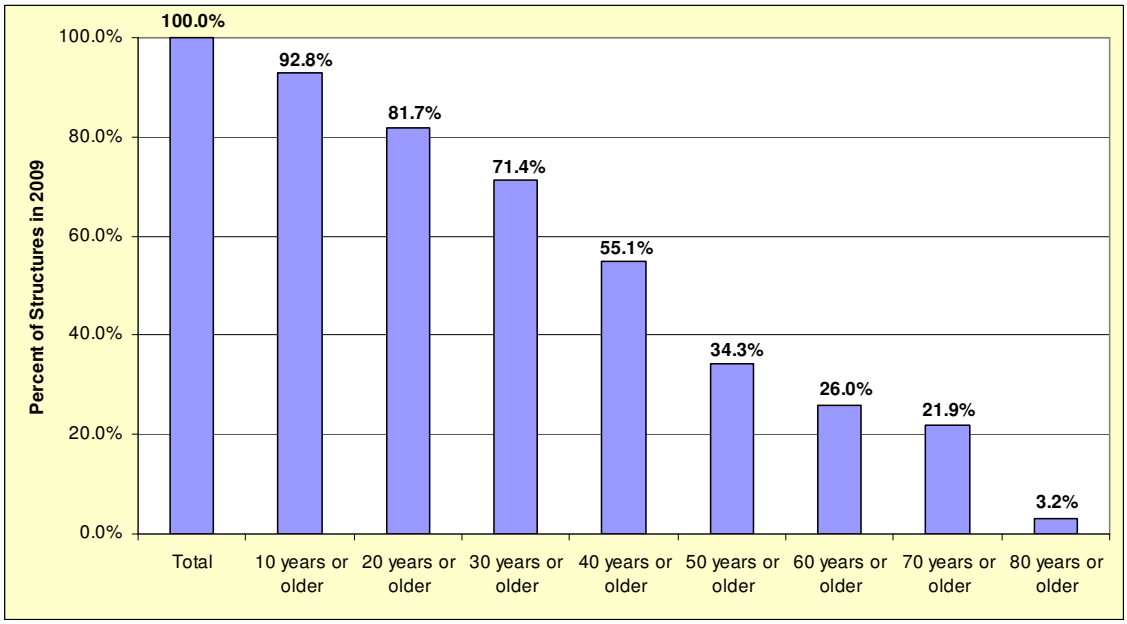


Table 3.8. Recent Trends in Structure Condition

Type	Structurally Deficient			Functionally Obsolete			Total Deficient		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
NBI	9%	9%	9%	17%	17%	17%	26%	26%	26%
Non-NBI	7%	7%	7%	12%	12%	12%	19%	19%	19%
Total	8.4%	8.4%	8.6%	14.9%	14.8%	14.8%	23.3%	23.2%	23.4%

Source: VDOT Status of the Commonwealth's Structure Presentation, July 2009

Figure 3.6. Cumulative Age Distribution of Structures as of 2009



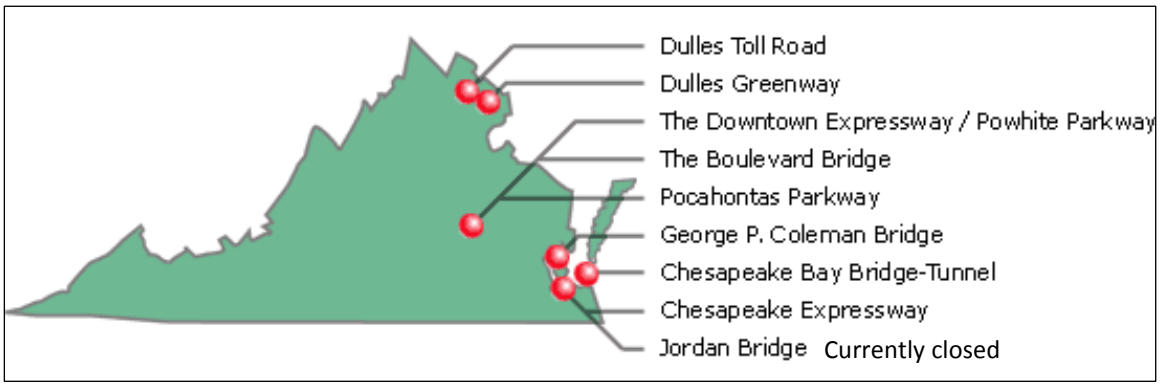
Source: VDOT Status of the Commonwealth's Structure Presentation, July 2009

Issues for the Future – Bridge Conditions
Approximately one-third of Virginia's structures are currently 50 years or older. That percentage will increase in the next 10 years to over one-half. This aging infrastructure will likely require additional investment to ensure that important links in the overall transportation system are in good condition to keep both passenger and freight traffic moving safely throughout the Commonwealth.

TOLL FACILITIES

Prior to November 2008, Virginia had nine toll facilities, located in Northern Virginia, Central Virginia and Hampton Roads, as illustrated in Figure 3-7. On November 8, 2008 the Jordan Bridge closed. VDOT operates only two of the remaining facilities. All the current toll facilities make use of E-ZPass, an automated toll collection system that allows motorists to pay without stopping at the toll booths, thereby improving the operating efficiency of the toll systems.

Figure 3-7. Virginia Toll Roads



- **Dulles Toll Road (Route 267), Northern Virginia/Fairfax County**. The 16-mile highway stretches from the Capital Beltway west to the Dulles Greenway. On March 27, 2006, the Metropolitan Washington Airports Authority took over the operation of the Dulles Toll Road, including the outstanding debt and the obligation to construct a rapid mass transit line in the median strip of the toll road.
- **Dulles Greenway, Northern Virginia/Loudoun County**. The Dulles Greenway is a privately owned 14-mile toll road that connects Washington Dulles International Airport with Leesburg, Virginia. The Greenway is the first private toll road in Virginia since 1816. The Dulles Greenway is owned by Toll Road Investors Partnership II, L.P.
- **Downtown Expressway, Powhite Parkway and Extension (Routes 195 and 76)**. The 16-mile highway network extends from I-95 and I-195 in Richmond into central Chesterfield County. The Downtown Expressway and Powhite Parkway are operated

by the Richmond Metropolitan Authority. The Powhite Parkway Extension is operated by VDOT.

- **Boulevard Bridge, Richmond**. The Boulevard Bridge spans the James River and connects the Westover Hills community to Maymont Park in the city on Route 161. The bridge is operated by the Richmond Metropolitan Authority.
- **Pocahontas Parkway (Route 895)**. This 8.8-mile roadway, commonly called Pocahontas 895, includes a high-level bridge over the James River, and connects I-95 at the Chippenham Parkway in Chesterfield County to I-295 near Richmond International Airport in Henrico County. Transurban assumed management of Pocahontas 895 in June 2006 from VDOT.
- **George P. Coleman Bridge (Route 17).** This one-mile bridge carries Route 17 traffic over the York River between Yorktown and Gloucester County and is operated by VDOT.
- **Chesapeake Bay Bridge-Tunnel (Route 13).** The 23-mile bridge and tunnel structure stretches across the bay to connect Virginia's Eastern Shore to Virginia Beach and is operated by the Chesapeake Bay Bridge and Tunnel District.
- **Chesapeake Expressway (Route 168)**. The 16-mile Chesapeake Expressway is a four-lane divided highway that links I-64 in Chesapeake to North Carolina and the Outer Banks. It is operated by the City of Chesapeake.
- **Jordan Bridge, City of Chesapeake**. Prior to its closure, the Jordan Bridge was a two-lane, vertical lift span bridge that crossed the Southern Branch of the Elizabeth River. It was operated by the City of Chesapeake. In January 2009 the City of Chesapeake approved plans for a new Jordan Bridge.

REST AREA AND WELCOME CENTERS

VDOT's safety rest areas and welcome centers form an integral component of Virginia's highway system. When all were open, there were 42 rest areas in the Commonwealth of Virginia, of which 12 also included state welcome centers. These rest areas provided a total of approximately 3,243 parking spaces (2,240 for passenger cars, 147 handicap-accessible, 84 for vans/buses/trailers, 35 for state police, and 737 for trucks). Due to economic conditions, 19 of these rest areas have temporarily closed. The remaining 23 rest areas provide a total of 2,025 parking spaces (1,318 for passenger cars, 88 handicap-accessible, 66 for vans/buses/trailers, 18 for state police, and 535 for trucks). These closures are not intended to be permanent, and it is expected that once the economic conditions have strengthened, all 42 rest areas will once again become active and open to the public.

The locations of the 19 closed facilities and 22 that remain open are shown in Figure 3-8. As may be seen, most are along interstates. These facilities provide various amenities, including telephones, restrooms, vending machines, picnic areas, and pet rest areas. The welcome centers also provide information on local and state attractions, including weather and traffic information. The one rest area not shown in Figure 3-8 is located along eastbound Interstate 64 in Caroline County. This rest area is a lot only for trucks, and has remained open.

Figure 3-8. Rest Areas and Welcome Centers

BICYCLING

VDOT Bicycle and Pedestrian Program

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

- Planning assistance to state, regional and local transportation planners for:
  - Planning studies
  - Planning and design standards
  - Healthy communities
  - Education and training
  - Encouragement of biking opportunities (i.e. shared-use)
- Bicycle and Pedestrian policy implementation
- Activity coordination for various bicycle committees
- Bicycle and pedestrian education and safety programs

Adopted in March 2004, VDOT's Policy for Integrating Bicycle and Pedestrian Accommodations requires all highway construction and maintenance projects to be initiated with the presumption that the projects shall accommodate bicycling and walking. Exceptions to this policy requirement may occur if a project meets one of six criteria (i.e. safety would be compromised). Since adoption, VDOT has conducted two internal audits of bicycle and pedestrian programs to determine how the new policy statement has been interpreted and implemented. The State Bicycle Plan, currently under development, may provide further information as to what bicycle and pedestrian accommodations have been built as a result.

Safe Routes to School

The Virginia Safe Routes to School (SRTS) program funded 17 projects in 2007 and 14 in 2008 to increase the number of children in kindergarten through eighth grade walking and biking safely to school. Nineteen (19) projects, programs, and activities have received 2009 funding awards through the SRTS program. Notable projects include bicycle education, improvements to crossings, bike parking and facilities, and pedestrian signals, construction of multi-use paths, and SRTS plan development. Since the Virginia program began in 2006 Virginia's apportionment has totaled $13.3 million over five years and $5.7 million has already been awarded.

Bicycling Facilities for Recreation and Tourism

The Commonwealth of Virginia offers a variety of scenic and historic areas, miles of rural roads, and a wide variety of off-road trails ranging from local loops designed for children and families to challenging mountain routes that attract experienced riders and racers. VDOT has developed a free statewide bicycle route map designed primarily for recreational cyclists and tourists. Examples of some major recreational bicycle routes include:

- **United States Bicycle Routes –** Both United States numbered Bicycle Routes run through Virginia resulting in a total of 838 miles of US Bicycle Routes 1 and 76. Virginia has more mileage of these routes than any other state.

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

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

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

- **Rivers and Bays –** The eastern portion of the state features many rivers and bays. The James River can be crossed by taking a one-half-hour ferry ride between Jamestown and Scotland. In addition, bicyclists can cross the Chesapeake Bay on seasonal tour boats operating between Reedville and Onancock, with stops on Tangier and Smith Islands. The Chesapeake Bay Bridge-Tunnel offers a call-ahead shuttle van for cyclists that costs the same as a passenger car toll.

  Several major river crossings are **prohibited** to bicyclists, including:

  – James River Bridge at Newport News (Route 17/32).
  – Chesapeake Bay Bridge-Tunnel (Route 13).
  – Hampton Roads Bridge-Tunnel (I-64).
  – Nice Bridge leading to Maryland (Route 301).
  – Monitor-Merrimac Memorial Bridge Tunnel across Hampton Roads (I-664).

Issues for the Future – Bicycle Accessibility
One of the biggest opportunities for bicycle travel in the coming future is the integration with rail and transit. Installing bicycle racks on buses, allowing bicycles on trains during peak hours, and providing safe bicycle storage and shower facilities will ensure that bicycling can become a legitimate alternative mode for commuters.

SCENIC BYWAYS

Scenic byways are an important transportation asset for Virginia. Residents and tourists use these scenic routes as an alternative for recreational trips. Scenic byways help to stimulate local economies through tourism, attracting visitors to lesser-known destinations. By following the highlighted byways on the state transportation map and the scenic roads map, visitors are directed to places where they can tour wineries, explore Civil War battle sites and historical attractions, view beautiful scenery, and enjoy recreational resources. Once designated, a byway becomes part of the coordinated promotional strategy for Virginia tourism.

The Virginia Byway Program identifies road corridors containing aesthetic or cultural value near areas of historical, natural or recreational significance. Currently, there are approximately 3,250 miles of roads designated as Virginia Byways. One recent addition to the state byway system is the Natural Coal Heritage Trail through Dickenson. By designating certain roads as Virginia Byways and widely distributing "A Map of Scenic Roads in Virginia," the program encourages travel to interesting destinations and away from high-traffic corridors.

As specified in the Code of Virginia, "Virginia Byway" means those highways designated as such by the Commonwealth Transportation Board (CTB). The Virginia Outdoors Plan, from the Department of Conservation and Recreation, identifies roads that have been considered as "consensus" Virginia Byways for many years. In addition, other roads meet the

criteria for designation. To be considered, a segment of road must substantially meet the following criteria:

- The route provides important scenic values and experiences.
- There is a diversity of experiences, as in transition from one landscape scene to another.
- The route links or provides access to scenic, historic, recreational, cultural, natural, and archeological elements.
- The route bypasses major roads or provides opportunity to leave high-speed routes for variety and leisure in motoring. Landscape control or management along the route is feasible.
- The route allows for additional features that will enhance the motorist's experience and improve safety.
- Local government(s) has/have initiated zoning or other land-use controls, so as to reasonably protect the aesthetic and cultural value of the highway.

Similar to the Virginia Byway Program, FHWA has its own national program for designating scenic routes as "byways." The National Scenic Byway Program is a collaborative effort established to help recognize, preserve and enhance selected roads throughout the United States. Four of Virginia's byways have national designation: the Blue Ridge Parkway, the Colonial Parkway, the George Washington Memorial Parkway, and Skyline Drive. The Journey through Hallowed Ground, connecting Gettysburg to Monticello, is in the process of consideration for national designation. The most scenic of the roads in the national program are designated All-American Roads. The designation means they have features that do not exist elsewhere in the United States and are scenic enough to be tourist destinations unto themselves. Of Virginia's four national scenic byways, only Skyline Drive is not considered an All-American Road.

HIGH OCCUPANCY VEHICLE LANES

VDOT is responsible for approximately 137 miles of High-Occupancy Vehicle (HOV) lanes in two VDOT districts. The facilities in Northern Virginia and Hampton Roads are detailed in Table 3-9.

Two of Virginia's Megaprojects relate to High Occupancy Toll (HOT) lanes. The I-495 HOT Lanes project includes 14 miles of new HOT lanes on I-495 between Springfield Interchange and just north of the Dulles Toll Road. These will be HOV-3 connections with I-95/395. The I-95/395 HOT Lanes project is a 56-mile project that would add a third lane to the existing 28 miles of HOV lanes between Arlington and Dumfries, and would build two new HOV lanes for an additional 28 miles south from Dumfries to Spotsylvania.

Table 3-9. HOV Lanes in Virginia - 2008

Area	Route	Type	From	To
Northern Virginia	I-66	HOV-2	Route 234	I-495
	I-66	HOV-2	I-495	Theodore Roosevelt Bridge
	I-95	HOV-3	Route 234, Prince William Co.	I-395
	I-395	HOV-3	I-95	14th Street Bridge
	Route 267, Dulles Toll Rd	HOV-2	Route 28	I-66, east of I-495
Hampton Roads	I-64	HOV-2	I-564/Granby St.	I-264
	I-64	HOV-2	I-264	Battlefield Blvd.
	I-64	HOV-2	Hampton Roads Center Parkway (WB)	Jefferson Ave.(WB)
			Bland Blvd. (EB)	Cunningham Dr. (EB)
	I-264	HOV-2	Old Toll Plaza east of Independence Blvd.	Newton Rd.
	I-264	HOV-2	Military Highway	Brambleton Ave.
	I-564	HOV-2	1.2 miles west of Terminal Blvd	I-64

Source: VDOT web site, mileage estimates from Google Maps

The level of congestion in Northern Virginia makes the use of the I-95 HOV lanes very attractive. Usage has steadily increased over the years. In 2007, one lane of the I-95 HOV facility carried double the passengers that a conventional I-95 lane carried. One I-95 HOV lane carried 10,750 people in 2,840 vehicles while one conventional I-95 lane carried 5,420 people in 5,000 vehicles.

HOV lane usage in the Hampton Roads area has not seen the same increase in activity as the Northern Virginia HOV lanes. This may be due in part to the fragmented system in Hampton Roads.

PARK AND RIDE LOTS

Park and Ride lots are instrumental in reducing congestion and increasing network connectivity between various modes of transportation. According to the 2007 Performance Report, Virginia has approximately 330 Park and Ride facilities available to commuters, including 114 owned and operated by VDOT, 26 owned by jurisdictions, transit companies and local colleges, and 189 "unofficial lots," meaning that they have not been officially approved or designated as Park and Ride lots. In all, there were nearly 59,000 spaces in 2007. As of 2008, there were nearly 63,500 spaces. Transit serves 139 of the lots that have approximately 46,500 spaces.

VDOT is performing an inventory and an updated needs study for Park and Ride lots will be performed and documented. Travel Demand Management strategies are growing in popularity as a focus item for all transportation agencies in Virginia. As the demand for

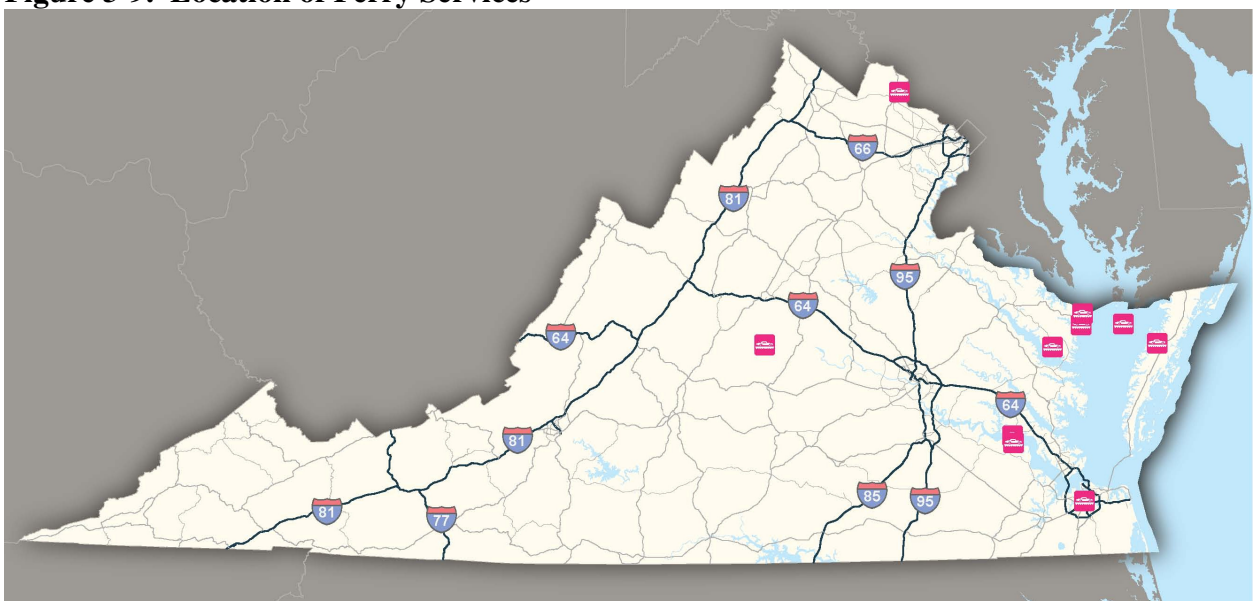
transportation choices and alternative commuting modes grows in Virginia, this update in assessing the needs for Park and Ride facilities becomes critical.

FERRY SERVICES

Currently, seven ferry services operate in Virginia. Three are operated by VDOT and are free of charge to users. Due to recent economic conditions, many ferry services have to reduce operations.

Figure 3-9 shows the locations of each ferry.

Figure 3-9. Location of Ferry Services



- The **Jamestown-Scotland Ferry** is the only 24-hour state-run ferry operation in Virginia. The service provides the only vehicle crossing of the river between the James River Bridge downstream at Newport News and the Benjamin Harrison Memorial Bridge upriver near Hopewell. It is an important transportation service in Surry County linking to a major employment center in Williamsburg.

- The **Sunnybank Ferry** crosses the Little Wicomico River on Route 644 from Sunnybank to Kayan in Northumberland County. This free ferry is operated by VDOT, and provides year-round service.

- The **Merry Point Ferry** is located in Lancaster County on Route 604, where it crosses the western end of the Corrotoman River. This free VDOT-operated ferry carries vehicles across the river between the towns of Ottoman and Merry Point, Monday through Saturday, year-round. The ferry likely has many patrons in the Towles Point area that travel to the towns of Kilmarnock, White Stone, and Irvington.

- The **Hatton Ferry,** located on Route 625 west of Scottsville, crosses the James River. This ferry is the last poled ferry in the United States. The ferry is typically open on weekends from April to October. Because of the recent economic conditions, state highway officials have decided to cut the $21,000 annual budget for the Hatton Ferry. On July 1, 2009, the Albemarle County Board of Supervisors voted to fund the ferry for the last quarter of operation this season. The Albemarle Charlottesville Historical Society is working to set up a new arrangement for funding and running the ferry.

There are three other privately operated ferries in Virginia.

- The **Paddlewheel Ferry** (also known as the Elizabeth River Ferry) travels between North Landing and High Street in Portsmouth and downtown Norfolk at The Waterside. Hampton Roads Transit operates this pedestrian-only ferry, which provides day and night service year-round.

- The **Tangier Island Ferry** is a passenger-only ferry service that operates a once-daily round trip service to Tangier Island from Onancock and Chincoteague. This privately owned and operated ferry system is available for tourists seasonally from mid-May to mid-October. A mail boat runs all year Monday through Friday for island residents and freight services.

- **White's Ferry** provides year-round service across the Potomac River from Leesburg, Virginia, to Poolesville, Maryland. Cost for the ferry is $4 one-way and $6 round-trip.

RAIL SERVICES

Summary of Current Infrastructure

Rail systems in Virginia consist of passenger and freight service as shown in Figure 3-10. Two major freight systems are privately owned and operated by Norfolk Southern (NS) and CSX. The passenger railroads in Virginia are currently operated by Amtrak and VRE. These systems operate on private rights-of-way throughout Virginia.

There are 12 freight railroad companies / providers that operate in Virginia and 2 passenger railroads. Two of the freight systems are considered Class I national railroads (defined as line-haul freight railroads exceeding $319.3 million in annual operating revenue). Of the remaining 10 freight railroads, 9 are Class III (shortline) railroads (defined as line-haul carriers with annual revenues less than $25 million). The Deepwater Terminal Railroad is not classified by the Federal Railroad Administration (FRA). There are no Class II railroads in Virginia.

Figure 3-10. Railroad Map of Virginia

Source: reprinted from Virginia Statewide Rail Plan

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

Passenger Rail

The two passenger systems are VRE and Amtrak. Collectively, these two passenger railroads, carried nearly 3.9 million passengers during 2007. Table 3-10 and Figure 3-11 describe and locate the services, respectively.

Table 3-10. Passenger Rail in Virginia

Railroad	Ridership	Service
VRE	3,435,561(FY2007) 3,628,563 (FY2008)	Passenger/ Commuter
Amtrak - NEC	224,760 (2007) in Virginia	Passenger
Amtrak - other	240,037 (2007) in Virginia	Passenger/Autotrain
Amtrak - subtotal	464,797 (2007) in Virginia	

Source: Virginia Statewide Rail Plan

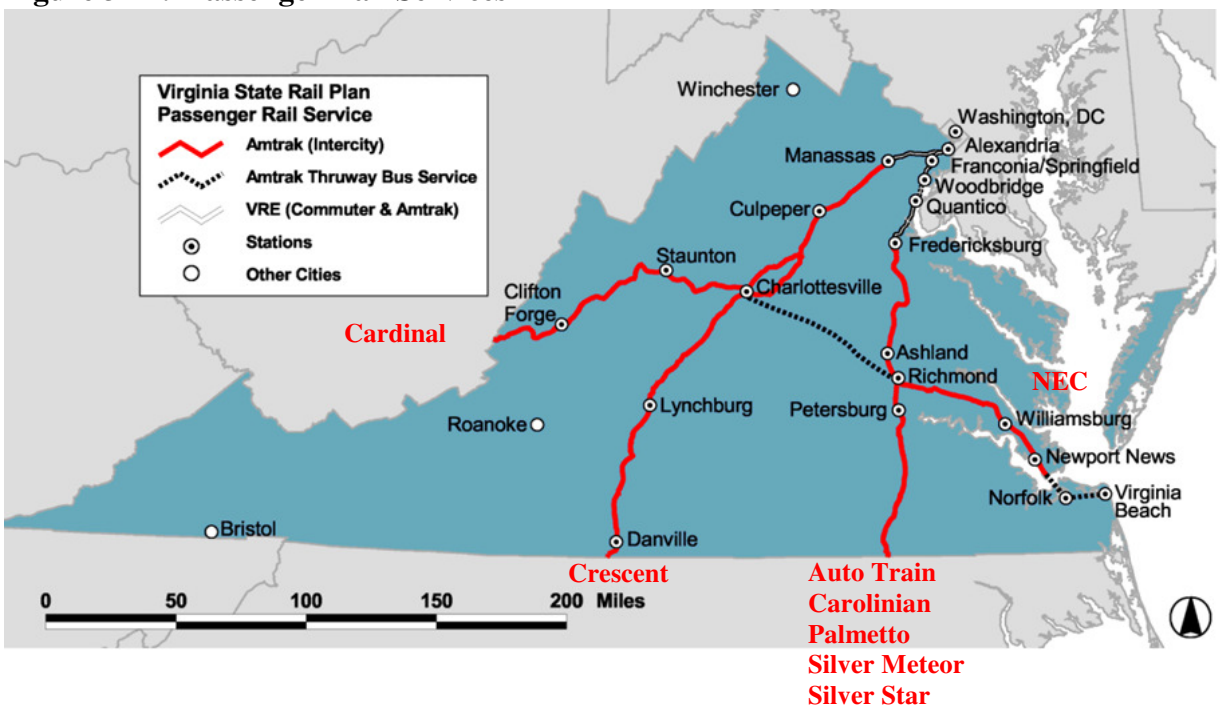
VRE operates passenger trains on a 90-mile system connecting Washington, D.C., with Fredericksburg and Manassas, Virginia. From Union Station in the District of Columbia, the Fredericksburg and Manassas lines share the same right-of-way for approximately 9.6 miles, to a point just south of Alexandria, Virginia, where they diverge. In Virginia, VRE is a tenant over the NS (to Broad Run) and CSX (to Fredericksburg) systems, and contracts with Amtrak to operate the trains. VRE is operated with a fleet consisting of 29 revenue trains and carried over 3.4 million annual passengers in FY2007 and 3.6 million in FY 2008.

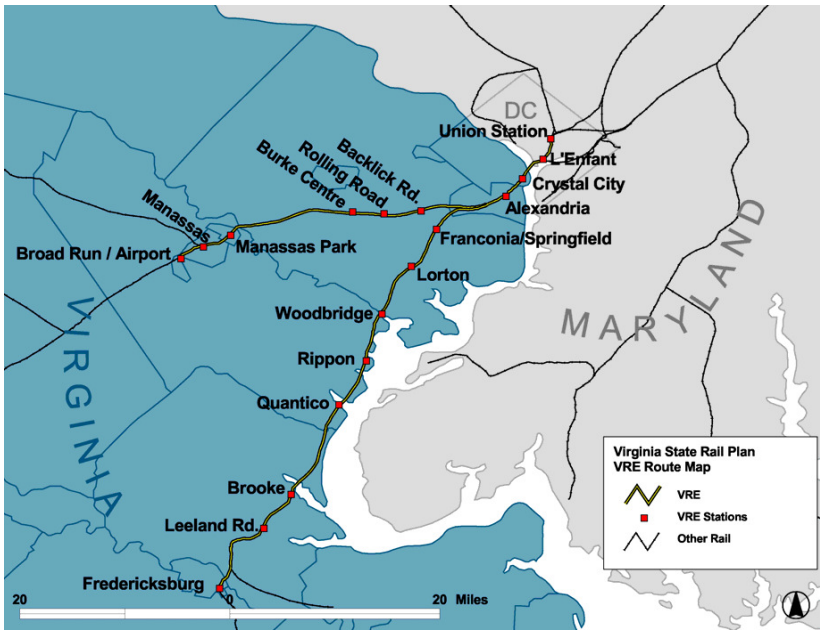
There are eight Amtrak services that operated through Virginia in 2007. They include:

- The **Northeast Corridor Regional (NEC**) – Amtrak's NEC regional service runs between Boston to Richmond-Newport News in both the southbound and northbound directions. Within Virginia, the NEC service extends 184 miles, and includes eight stops between, but not including, Washington and Newport News. A total of 27 train trips each week are made in the southbound direction, while a total of 28 trips per week are made in the northbound direction. Starting October 1, 2009 there will be daily service between Lynchburg and Washington, DC.

- **Lorton-Sanford (Auto Train service)** – The Auto Train is a direct, non-stop service from Lorton, Virginia, to Sanford, Florida. The Auto Train only allows passengers with automobiles (including vans) or motorcycles, and operates one southbound and one northbound train daily. This Amtrak route included 159 miles in Virginia and had

Figure 3-11. Passenger Rail Services





Source: Virginia Statewide Rail Plan

annual 2007 ridership of 108,911 passengers from Virginia.

- **New York-Washington-Charlotte-Atlanta-New Orleans (Crescent service)** – The Crescent service has 228 miles and six stops in Virginia. One southbound and one northbound train operate daily and in 2007 had a total of 33,550 passengers from Virginia.

- **New York-Washington-Raleigh-Charlotte (Carolinian service)** – The Carolinian has 175 miles and five stops in Virginia. One train trip is made daily in the northbound and southbound directions. In 2007 this service had annual ridership of 33,221 passengers from Virginia.

- **New York-Washington-Raleigh-Jacksonville (Silver Meteor/Silver Star/Palmetto service)** – There are five stops on the 175 miles in Virginia of these three Amtrak routes. The Palmetto serves Savannah, the Silver Star serves Miami via Columbia, SC and the Silver Meteor serves Miami via Charleston, SC. One train operates daily in each direction on each route, resulting in 21 weekly northbound and southbound trips. In 2007 the number of annual riders from Virginia was 18,997 on the Palmetto, 17,754 on the Silver Star, and 10,602 on the Silver Meteor.

- **Chicago-Indianapolis-Louisville-Cincinnati-Washington (Cardinal service)** – There are six stops on the 228 miles in Virginia of the Cardinal route that operates from Washington, D.C. to Chicago. Westbound and eastbound trains operate three times a week and in 2007 had 17,004 passengers from Virginia.

Freight Rail

Source: DRPT State Rail Plan Presentation

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

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

Class III - Shortlines act as the originating and terminating railroads for approximately one-third of all rail shipments, often providing the first or last link in business-to-business delivery by providing the intensive switching operations that are not profitable for the Class I railroads. Shortline tracks must handle 286,000 pound capacity railcars and container shipments in order to interface effectively with the Class I railroads. The shortlines consist of nine railroads (plus rail operations to the Port of Richmond).

Table 3-11 lists the 11 FRA classified railroads and the one unclassified (Deepwater Terminal Railroad).

Table 3-11. Freight Railroad Classification and Mileage

Railroad	Class I	Class III	Terminal/ Switching
Bay Coast Railway		●	
Buckingham Branch Railroad		●	
Chesapeake and Albemarle		●	
Chesapeake Western Railroad		●	
Commonwealth Railway		●	
CSX	●		
Norfolk and Portsmouth Belt Line		●	
Norfolk Southern	●		
North Carolina and Virginia Railroad		●	
Shenandoah Valley Railroad		●	
Winchester and Western Railroad Company		●	
Deepwater Terminal Railroad			●

Source: Virginia Statewide Rail Plan

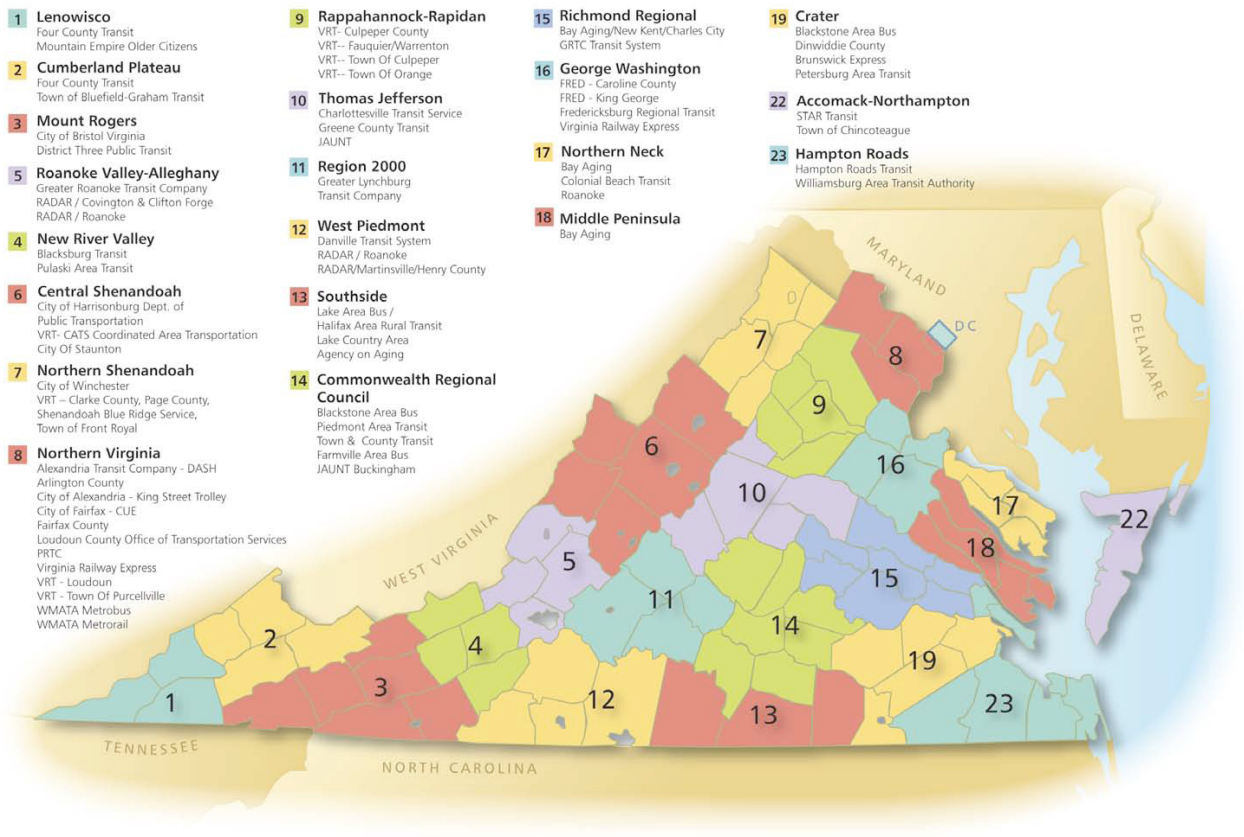
Issues for the Future – Rail
As demands for passenger service increase, including demands for high-speed rail, coordination with freight railroads who own and use the track, and are faced with increasing rail freight volumes as well, will be even more of a challenge. An investment in track improvements will be essential for rail to continue to serve Virginia's passenger and freight needs.

PUBLIC TRANSPORTATION

Transit Systems

The latest count of transit systems showed 59 public transit systems in Virginia. These systems provide bus, rail, and ferry services to 26 of 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%). Figure 3-12 provides an overview of transit providers by Planning District Commission.

Figure 3-12. Virginia's Transit Providers



Source: reprinted from DRPT's Statewide Public Transportation Plan – Commonwealth of Virginia

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.

Transit Asset Conditions

According to the 2007 Virginia Performance Report, the average age of vehicles in use by public transportation service providers in the Commonwealth is 7.4 years. This is below the national average of 9.4 and the industry standard for replacement as Federal Transit Administration (FTA) guidelines suggest that the lifespan of vehicles used for public transportation service should be 12 years for vehicles and 25 for locomotives. DRPT has developed a vehicle rehabilitation program to extend the useful life of vehicles beyond the suggested FTA lifespan.

Issues for the Future – Transit Service
Recent increases in fuel prices resulted in increased transit demand. Transit has a role to play in addressing climate change, energy consumption, mobility, congestion, and regional accessibility. Maintaining existing services to meet current demands while adding new services to unserved areas will require a substantial investment from federal, state and local sources.

CHAPTER 4
AIRPORT ASSETS

AIRPORTS

The Virginia Department of Aviation (DOAV) is the state agency responsible for overseeing the aviation system within the Commonwealth of Virginia. As of 2007, the Commonwealth of Virginia has 66 public use airports, nine of which are Commercial Service Airports. Airports are classified as either:

- **Commercial Service Airports** – defined by the FAA as those that receive scheduled passenger air service and have at least 2,500 passenger boardings per calendar year – 9 in Virginia providing a total of 26.6 million enplanements in 2007 (Table 4-1).
- **Reliever Airports** – publicly or privately-owned airports, designated by the FAA to relieve congestion at the Commercial Service Airports – 8 in Virginia that based a total of 1,397 aircrafts (Table 4-2).
- **Regional Airports** – typically serve a broad market area, due to geographic isolation and scarcity of surrounding airport services and facilities. Regional airports are typically multi-jurisdictional, as jurisdictions will combine resources in order to provide better services that could not by provided by a single jurisdiction – 19 in Virginia with a total base 929 aircrafts (Table 4-3).
- **Community Airports** – typically serve a limited market area in more remote areas of the Commonwealth. –16 in Virginia with a total of 430 based aircrafts (Table 4-4).
- **Local Service Airports** – provide limited facilities and services to surrounding communities and are typically located in the most remote areas of the Commonwealth –14 in Virginia and, in total, house 316 based aircrafts (Table 4-5).

As the largest commercial service airport in the Commonwealth, Dulles International Airport serves as a gateway to the rest of the world and plays a vital role in the Virginia transportation system and economy. Situated on 10,000 acres in Loudoun and Fairfax Counties in Northern Virginia, Dulles provides non-stop service to 83 domestic and 43 international locations.

The following tables provide information regarding the runway length, instrument approach, number of based aircraft and operations for the general aviation airports, as well as the number of enplanements for commercial service airports. The instrument approach for each airport is categorized as either precision (vertical and horizontal guidance to the runway) or non-precision (horizontal guidance only). The mission statement for DOAV states that the agency will cultivate an advanced aviation system that is safe, secure and enhances economic development.

Table 4-1. Commercial Service Airports (2007)

Airport	Associated City	Enplanements	Instrument Approach	Runway Length (ft.)
Washington Dulles (IAD)	Chantilly	11,789,441	Precision	11,501
Washington Reagan National (DCA)	Arlington	9,038,174	Precision	6,869
Norfolk International (ORF)	Norfolk	1,867,307	Precision	9,001
Richmond International (RIC)	Richmond	1,805,992	Precision	9,003
Newport News-Williamsburg International (PHF)	Newport News	513,381	Precision	8,003
Roanoke Regional (ROA)	Roanoke	348,634	Precision	6,800
Charlottesville-Albemarle (CHO)	Charlottesville	187,078	Precision	6,001
Lynchburg Regional (LYH)	Lynchburg	55,785	Precision	7,100
Shenandoah Valley Regional (SHD)	Staunton	4,907	Precision	6,002

Sources: Enplanements obtained from FAA Planning & Capacity; Instrument Approach obtain from April 9, 2009 FAA Terminal Procedures Publication; Runway length obtained from March 12, 2009 FAA Airport Facility Directory

Table 4-2. Reliever Airports (2007)

Airport	Associated City	Operations	Based Aircraft	Instrument Approach	Runway Length (ft.)
Manassas Regional	Manassas	141,623	404	Precision	5,700
Leesburg Executive	Arlington	99,404	269	Non	5,500
Chesterfield County	Chesterfield	56,348	130	Precision	5,500
Hampton Roads Executive	Portsmouth	61,008	178	Non	4,056
Hanover County	Ashland	30,519	125	Non	5,402
Chesapeake Regional	Chesapeake	32,057	131	Precision	5,500
Warrenton-Fauquier	Warrenton	42,814	140	Non	5,000
Stafford Regional	Stafford	19,463	20	Precision	5,000

Sources: Operations obtained from 2007 VATSP Operations Forecast; Based Aircraft obtained from Virginia DOAV; Instrument Approach obtained from FAA Terminal Procedures Publication; Runway length obtained from March 12, 2009 FAA Airport Facility Directory

Table 4-3. Regional Airports (2007)

Airport	Associated City	Operations	Based Aircraft	Instrument Approach	Runway Length (ft.)
Accomack County	Melfa	12,983	26	Non	5,000
Blue Ridge	Martinsville	23,066	59	Non	5,002
Culpeper County	Culpeper	55,767	125	Non	5,000
Danville Regional	Danville	18,237	44	Precision	6,500
Dinwiddie County	Petersburg	40,554	82	Non	5,002
Emporia-Greensville Regional	Emporia	1,150	6	Non	5,044
Farmville Regional	Farmville	11,112	28	Non	4,400
Ingalls Field	Hot Springs	9,941	4	Precision	5,600
Lonesome Pine	Wise	9,205	27	Non	5,280
Mecklenburg-Brunswick Regional	South Hill	8,695	22	Non	5,002
Middle Peninsula Regional	West Point	15,891	36	Non	5,000
New River Valley	Dublin	10,132	36	Precision	6,201
Shannon	Fredericksburg	29,566	133	Non	2,999
Suffolk Executive	Suffolk	37,370	85	Non	5,007
Tappahannock-Essex	Tappahannock	8,285	22	Non	4,300
Tazewell County	Richlands	5,036	10	Non	4,300
Virginia Highlands	Abingdon	24,679	65	Non	4,471
William M. Tuck	South Boston	7,313	24	Non	4,003
Winchester Regional	Winchester	36,574	117	Precision	5,500

Sources: Operations obtained from 2007 VATSP Operations Forecast; Based Aircraft obtained from Virginia DOAV; Instrument Approach obtain from FAA Terminal Procedures Publication; Runway length obtained from March 12, 2009 FAA Airport Facility Directory

Table 4-4. Community Airports (2007)

Airport	Associated City	Operations	Based Aircraft	Instrument Approach	Runway Length (ft.)
Blackstone Municipal	Blackstone	3,556	12	Non	4,632
Brookneal-Campbell County	Brookneal	770	0	Non	3,798
Franklin Municipal	Franklin	5,012	25	Non	4,977
Front Royal-Warren County	Front Royal	12,583	44	Non	3,007
Lee County	Jonesville	3,449	9	Non	5,000
Louisa County	Louisa	19,956	55	Non	4,301
Luray Cavens	Luray	3,464	15	Non	3,125
Marks Municipal	Clarksville	4,561	4	Non	4,488
Mountain Empire	Marion	10,275	26	Non	5,252
New Kent County	Quinton	15,179	43	Non	3,600
Orange County	Orange	8,462	34	Non	3,200
Tangier Island	Tangier	1,000	0	Non	2,950
Twin County	Galax	8,096	14	Non	4,204
Virginia Tech	Blacksburg	16,691	44	Non	4,539
Wakefield Municipal	Wakefield	14,975	24	Non	4,337
Williamsburg-Jamestown	Williamsburg	25,540	67	Non	3,204

Sources: Operations obtained from 2007 VATSP Operations Forecast; Based Aircraft obtained from Virginia DOAV; Instrument Approach obtain from FAA Terminal Procedures Publication; Runway length obtained from March 12, 2009 FAA Airport Facility Directory

Table 4-5. Local Airports (2007)

Airport	Associated City	Operations	Based Aircraft	Runway Length (ft.)
Bridgewater Air Park	Bridgewater	11,717	59	2,745
Chase City Municipal	Chase City	2,334	5	3,400
Crewe Municipal	Crewe	4,117	12	3,300
Falwell	Lynchburg	7,589	17	2,932
Gordonsville Municipal	Gordonsville	8,089	13	2,300
Grundy Municipal	Grundy	4,111	14	2,256
Hummel Field	Saluda	12,273	36	2,270
Lake Anna	Bumpass	385	3	2,560
Lawrenceville-Brunswick	Lawrenceville	2,471	4	3,020
Lunenburg County	Kenbridge	385	2	3,000
New London	Forest	28,478	58	3,164
New Market	New Market	14,830	27	2,920
Smith Mountain Lake	Moneta	4,983	12	3,058
Waynesboro Eagles Nest	Waynesboro	12,383	54	2,009

Sources: Operations obtained from 2007 VATSP Operations Forecast; Based Aircraft obtained from Virginia DOAV; Instrument Approach obtain from FAA Terminal Procedures Publication; Runway length obtained from March 12, 2009 FAA Airport Facility Directory

AVIATION PAVEMENT CONDITION

Under the Aviation Pavement Management Program, DOAV conducts inspections of the pavement conditions at airports within the Commonwealth of Virginia. The Pavement Condition Inventory (PCI) survey, which is the basis for the Pavement Management Program, provides a detailed evaluation of pavement conditions and a quantifiable account of the deficiencies of the pavement conditions at public-use airport. This program is used to determine if pavement needs rehabilitation and to prioritize maintenance and repair projects.

According to the 2008 pavement condition survey, pavement conditions for all paved surfaces are in very good condition with a PCI of 75 (Table 4-6). Overall, runways are in very good condition, with primary runways being in very good condition and secondary runways considered to be in fair condition.

Table 4-6. 2008 Airport Pavement Condition Survey Results

Use	Rank	Area-Weighted PCI	Area (sf)	Number of Sections
All	All	75	84,526,993	1,537
	Primary	76	78,357,579	1,420
	Secondary	65	4,378,803	103
	Tertiary	89	1,790,611	14
Apron, Helipad, Overrun	All	74	26,309,081	430
	Primary	73	23,665,466	403
	Secondary	74	1,396,544	20
	Tertiary	89	1,247,071	7
Runway	All	73	33,856,106	249
	Primary	74	32,317,239	225
	Secondary	54	1,538,867	24
	Tertiary	---	---	---
Taxiway	All	80	24,361,805	858
	Primary	81	22,374,873	792
	Secondary	67	1,443,392	59
	Tertiary	89	543,540	7
Excellent 100-86; Very Good 85-71; Good 70-56; Fair 55-41; Poor 40-26; Very Poor 25-11; Fail 10-0				

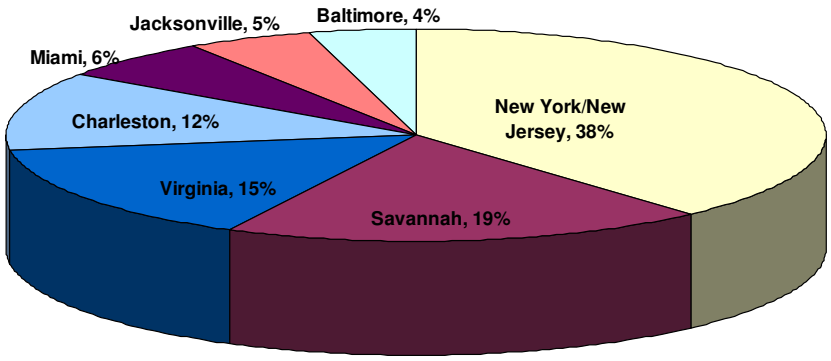
CHAPTER 5
PORT ASSETS

EXISTING PORT FACILITIES

A study published by College of William & Mary's Mason School of Business in 2008 estimated that the total Virginia economic activity of the Virginia Port Authority port operations was $41 billion in revenues, supporting 342,000 jobs. The Virginia Port operations, along with Dulles Airport, are Virginia's key economic engines.

The Port of Virginia is the third largest port on the East Coast of the United States. It has direct service to more than 80 foreign ports. Virginia's market share of container traffic as measured in twenty-foot equivalent units (TEUs) of East Coast markets is 15%, as shown in Figure 5-1.

Figure 5-1. Market Share of U.S. East Coast Ports - 2008



Source: Virginia Port Authority, 2008 Performance Indicators

VPA owns four general cargo terminals, all operated by its affiliate VIT. The four terminals are Norfolk International terminals (NIT), Portsmouth Marine terminal (PMT), Newport News Marine terminal (NNMT) and Virginia Inland Port. In addition to these state-owned assets, there is the private APM Maersk Terminal in Portsmouth, several private coal terminals in Hampton Roads, government port-related facilities in the Hampton Roads areas, the Port of Richmond owned by the City of Richmond, and small private business facilities with commercial water access.

Norfolk International Terminal

NIT is the largest of the VPA marine terminals with 690 acres and has the highest capacity for containerized cargo and currently accounts for over 60% of total container throughput. VPA is continuing in its program to reconfigure and rebuild NIT South. Future projects at NIT include completion of the backlands area, a new truck gate at the North terminal and the completion of on-dock rail services (the Central Rail Yard).

Portsmouth Marine Terminal

PMT is the second largest facility with 223 acres and accommodates approximately one-third of VPA's containerized cargo. PMT was constructed in stages over three decades dating back to the late 1960s. PMT has very little room for additional expansion. Most of the investment required at PMT over the next 40 years will be for the renovation and replacement of aged facilities and equipment.

Newport News Marine Terminal

NNMT is a 143-acre marine terminal located on the James River in downtown Newport News. NNMT is primarily a break bulk cargo and Ro/Ro (roll on/roll off vehicles) facility. Most of the investment at NNMT over the next 40 years will support replacement of heavy equipment and construction of additional warehouses.

Virginia Inland Port

VIP is a 163-acre container and cargo-handling terminal located in Front Royal near the intersection of I-66 and I-81. VIP was opened in 1989. Future projects at VIP will expand the container yard, provide warehouse space for break-bulk cargo and improve rail capability.

Table 5-1 details some of the characteristics of VPA's terminals.

Table 5-1. VPA Terminal Characteristics

Port Feature	NIT	PMT	NNMT	VIP
Total Land Area (acres)	690	223	143	163
Containerized Cargo Area (acres)		142	43	
Piers (each)	2		2	
Pier Berths Total Length (linear feet)	7,300		3,480	
100-Foot Gauge Container Cranes – Suez Class (each)	14			
50-Foot Gauge Container Cranes (each)		6	4	
Straddle Carriers (each)		35		4
Reach Stackers (each)			3	

Source: VPA 2040 Master Plan

PLANNED EXPANSIONS

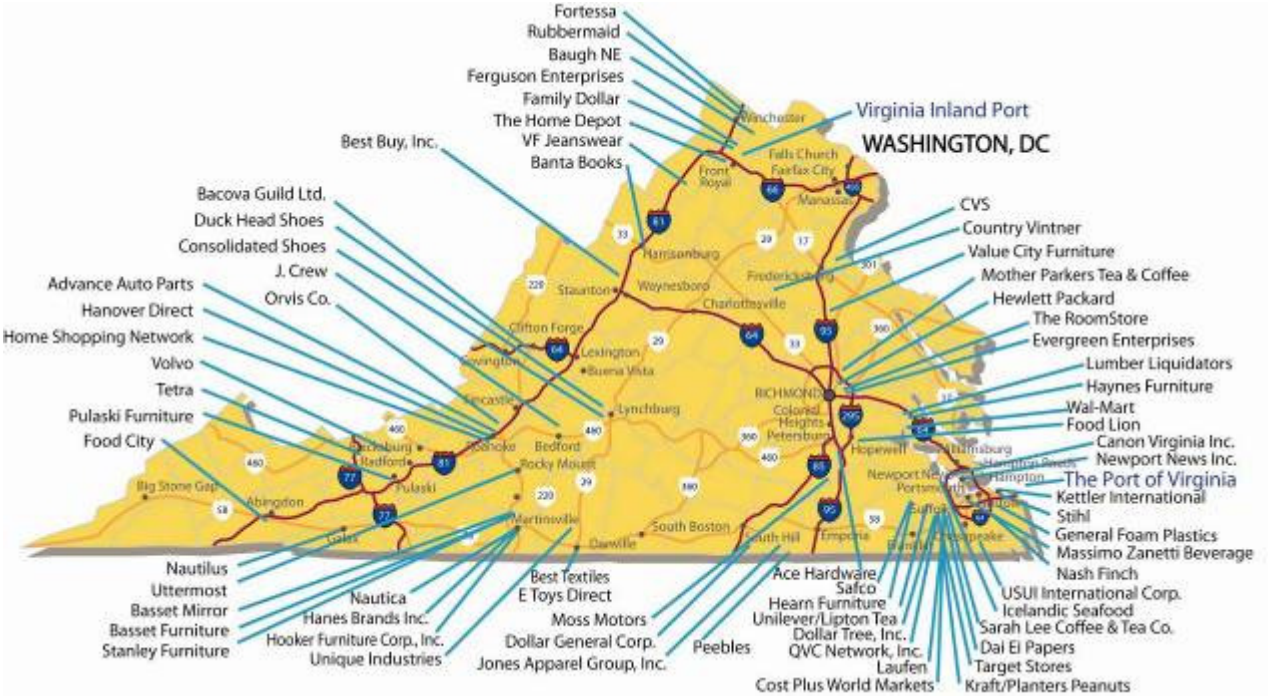
In addition to improvements at many of the terminals, VPA is also building another terminal, Craney Island Marine Terminal. It is a proposed 660 acre marine terminal located on the Elizabeth River directly across from NIT. It is being constructed in phases and is scheduled to be under construction until 2032, but with the terminal first opened in 2017.

Upgrades to landside access to the Port are vital so as not to constrain freight flows. One of the major investments will be the Norfolk Southern Heartland Corridor project. It is a "project of national significance" and is being constructed by Norfolk Southern with support from FHWA, Eastern federal Lands Highway Division, the Commonwealth of Virginia and the states of West Virginia and Ohio. Improvements will double freight rail capacity along the line that parallels Route 460 through Virginia, improving freight shipping times to markets in the Midwest. Other projects in various stages of development include Route 164 widening, Commonwealth Railway Safety Mainline relocation, and a proposed third crossing.

ASSOCIATED DEVELOPMENTS

The overall importance and success of Port operations is attested to by the interest expressed by the private sector in privatizing port operations. In addition, Virginia ports have long maintained a reputation for efficient and uncongested intermodal service. Virginia's strategic mid-Atlantic location and unparalleled transportation infrastructure offer steamship lines and shippers unbeatable access to two-thirds of the U.S. population with more than 75 international shipping lines and one of the most frequent direct sailing schedules of any port. VIP serves as the intermodal collection point for containers from West Virginia, Ohio, Pennsylvania, Northern Virginia, and elsewhere. As a result, Virginia has become home to many major distribution centers as illustrated in Figure 5-2.

Figure 5-2. Major Distribution Centers in Virginia



Source: Virginia Multimodal Freight Study, 2008

Issues for the Future – Port Capacity and Access
The Port is one of Virginia's major economic engines. Public and private investments are expanding port capacity to ensure the Port continues to live up to its potential. As Port capacity increases, connections to the Port by all modes – highway, rail and barge- must be increased to serve the additional demands.