

# Hampton Roads

## Congestion Management Process:

### The State of Transportation in Hampton Roads



T09-01

March 2009

## HAMPTON ROADS METROPOLITAN PLANNING ORGANIZATION

### **Chesapeake**

\* Dr. Alan P. Krasnoff

### **Gloucester County**

\* Brenda G. Garton

### **Hampton**

\* Randall A. Gilliland

### **Isle of Wight County**

\* Stan D. Clark

### **James City County**

\* Bruce C. Goodson

### **Hampton Roads Planning District Commission**

\* Dwight L. Farmer, Executive Director/Secretary

### **Transportation District Commission of Hampton Roads**

\* Michael S. Townes, President/Chief Executive Officer

### **Virginia Department of Transportation**

\* Dennis W. Heuer, District Administrator, Hampton Roads District

### **Williamsburg Area Transit Authority**

\* Mark D. Rickards, Executive Director

\*Voting Member

### **Newport News**

\* Joe S. Frank

### **Norfolk**

\* Paul D. Fraim

### **Poquoson**

\* Gordon C. Helsel, Jr.

### **Portsmouth**

\* Douglas L. Smith

### **Suffolk**

\* Selena Cuffee-Glenn

### **Virginia Beach**

\* William D. Sessoms, Jr.

### **Williamsburg**

\* Jeanne Zeidler

### **York County**

\* James O. McReynolds

### **Federal Highway Administration**

Roberto Fonseca-Martinez, Division Administrator, Virginia Division

### **Federal Transit Administration**

Letitia A. Thompson, Regional Administrator, Region 3

### **Federal Aviation Administration**

Terry Page, Manager, Washington Airports District Office

### **Virginia Department of Aviation**

Randall P. Burdette, Director

### **Virginia Department of Rail and Public Transport**

Daniel Rudge, Manager of Strategic Planning

### **Virginia Port Authority**

Jerry A. Bridges, Executive Director

## PROJECT STAFF

Dwight L. Farmer

Executive Director/Secretary

Camelia Ravanbakht

Deputy Executive Director

Robert B. Case

Principal Transportation Engineer

Keith M. Nichols

Senior Transportation Engineer

Marla K. Frye

Administrative Assistant

Robert C. Jacobs

General Services Manager

Michael R. Long

Assistant General Services Manager

Christopher W. Vaigneur

Reprographics Coordinator

Brian Long

Communications Designer

# **HAMPTON ROADS CONGESTION MANAGEMENT PROCESS:**

## ***THE STATE OF TRANSPORTATION IN HAMPTON ROADS***

**This report was included in the Work Program for  
Fiscal Year 2008 - 2009, which was approved by  
the Metropolitan Planning Organization at their  
meeting of March 19, 2008.**

**PREPARED BY:**



**MARCH 2009**

**T09-01**

## REPORT DOCUMENTATION

**TITLE:**

The State of Transportation in Hampton Roads

**AUTHOR:**

Keith M. Nichols

**PROJECT MANAGER:**

Camelia Ravanbakht, PhD

**REPORT DATE:**

March 2009

**GRANT/SPONSORING AGENCY:**

FHWA/VDOT/LOCAL FUNDS

**ORGANIZATION NAME, ADDRESS AND TELEPHONE:**

Hampton Roads Metropolitan Planning Organization

723 Woodlake Drive

Chesapeake, Virginia 23320

(757) 420-8300

<http://www.hrmopo.org>

**ABSTRACT:**

This report updates the state of transportation in Hampton Roads. Data on all facets of the region's transportation system, including air, rail, water, and highway, are included in this report. Many aspects of the highway system are highlighted, including roadway usage, commuting characteristics, safety, truck data, transit usage, bicycle and pedestrian facilities, highway funding, and operations.

This report is produced as part of the region's Congestion Management Process (CMP). The Congestion Management Process is an on-going process that identifies, develops, evaluates, and implements transportation strategies to enhance mobility regionwide.

**ACKNOWLEDGMENTS:**

This report was prepared by the Hampton Roads Metropolitan Planning Organization (HRMPO) in cooperation with the Federal Highway Administration (FHWA), and the Virginia Department of Transportation (VDOT). The contents of this report reflect the views of the Hampton Roads Area Metropolitan Planning Organization (MPO). The HRMPO staff is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, VDOT, or HRMPO. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

# TABLE OF CONTENTS

Introduction .....	4	Roadway Safety .....	22
Air Travel.....	6	Truck Data .....	25
Port Data .....	10	Public Transportation .....	27
Rail Travel .....	12	Bike/Pedestrian Facilities....	29
Roadway Usage.....	14	Transportation Financing ....	31
TTI Data .....	18	ITS and Operations .....	37
Commuting .....	20	Air Quality .....	40
		Additional Information.....	42



# INTRODUCTION

## **The State of Transportation in Hampton Roads is currently at a crossroads.**

Higher fuel prices have affected transportation on many levels. People are traveling less and using smaller and more fuel-efficient vehicles. The airline industry is cutting flights and raising fares and fees.

At the same time, transit use is increasing and the number of people using Amtrak is also rising.

Higher fuel prices, in conjunction with the state of the economy, have also led to a decrease in transportation funding levels. This means less money is available for an already aging and congested regional transportation system.

Meanwhile, roadway congestion remains prevalent throughout Hampton Roads, particularly at the region's infamous bridges and tunnels.

Many changes have occurred to the transportation infrastructure of Hampton Roads over the last couple years.

The APM Terminal, which is the first major privately developed container terminal in the country, opened in Portsmouth in 2007. The Half Moone Cruise and Celebration Center terminal also opened in Norfolk in 2007. And construction began on The Tide light rail line in Norfolk in 2008.

On the other end of the spectrum the Jordan Bridge, which was the original fixed crossing of the Elizabeth River, closed in 2008. This, combined with the closure of the Kings



Highway Bridge in 2005, eliminated two important water crossings from the regional roadway network.

This report details the current state of all facets of the transportation system in Hampton Roads, including air, rail, water, and highways. Many aspects of the highway system are highlighted, including roadway usage, costs of congestion, commuting characteristics, roadway safety, truck data, transit usage, bicycle and pedestrian facilities, highway funding, and operations.

This report is produced as part of the region's Congestion Management Process (CMP), which is an ongoing program that identifies, develops, evaluates, and implements transportation strategies to enhance mobility regionwide. The Congestion Management Process report, which is currently being updated, includes a comprehensive congestion analysis of the region's highway system, congestion management strategies with an analysis of their impacts, and identification of the most congested corridors and areas.

Copies of this report and all other CMP documents are available at the Hampton Roads Metropolitan Planning Organization's website at <http://www.hrmopo.org>.



# AIR TRAVEL

**2008 was a year of turmoil in the airline industry, and Hampton Roads airports were not spared.** Fuel price increases greatly affected the airline industry over the last year, and these increased costs led to higher airfares, increased fees, fewer flights, and fewer passengers in both Hampton Roads and the United States.



Photo Source: NIA.

Nearly 2.4 million passengers boarded flights at Hampton Roads two passenger airports, Norfolk International and Newport News/Williamsburg International, in 2007. The number of passengers at Hampton Roads airports increased 41% from 2001 to 2007, although the number of passengers has slightly decreased since 2005.

Preliminary figures through November 2008 at Norfolk

## MILEPOSTS

2,381,000

21

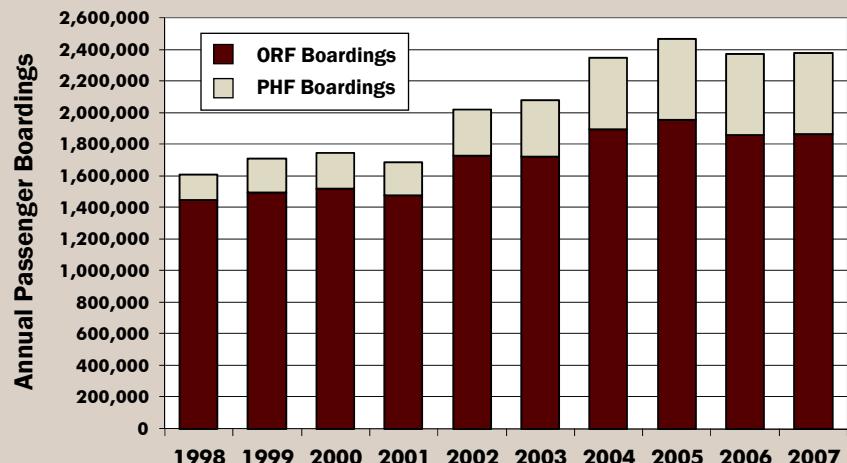
15 %

The number of passengers that boarded flights in Hampton Roads in 2007, down slightly from 2006.

Markets that are served with nonstop flights from Hampton Roads as of January 2009.

The increase in average airfares at Hampton Roads airports from 2005 to 2007. Average airfares in 2008 will likely be even higher than the airfares in 2007.

### Annual Passenger Boardings at Hampton Roads Airports, 1998 - 2007



Data source: Federal Aviation Administration. Boardings only represent passengers that board airplanes at each airport. ORF - Norfolk International Airport. PHF - Newport News/Williamsburg International Airport.

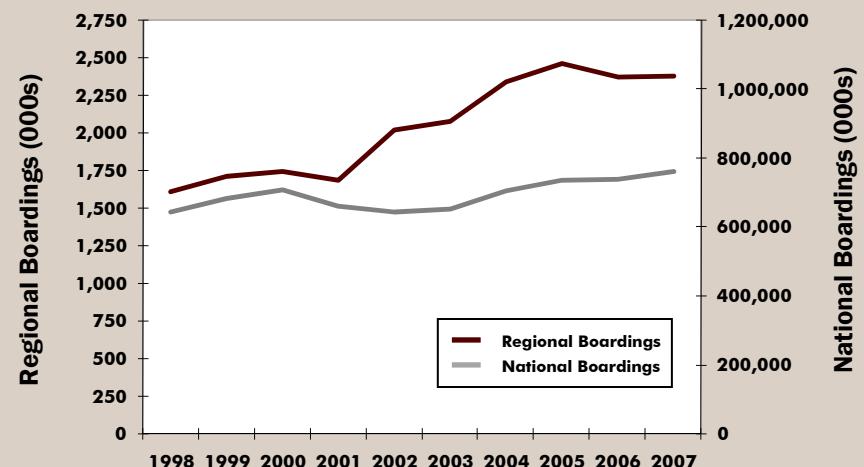
International Airport indicate about a 5% decrease in passengers over the same period in 2007.

Much of the growth earlier this decade at Hampton Roads airports was due to new and increased service from low-cost carriers such as Southwest Airlines and Airtran Airways. Back in 2001 the only low-cost carriers providing service to Hampton Roads were the now-defunct Midway Airlines and Airtran, which at the time only provided nonstop service to Atlanta. As of January 2009 there are 22 flights to 9 markets that are served nonstop from Hampton Roads on airlines defined as low-cost carriers.

This growth in travelers at Hampton Roads airports earlier this decade outpaced the growth experienced at airports nationwide. While the number of passengers increased 41% at Hampton Roads airports between 2001 and 2007, national passenger levels only increased 15%. Over the last few years, however, this trend has changed. The number of air travelers nationwide increased 4% between 2005 and 2007 while passenger counts at Hampton Roads airports decreased 4%.

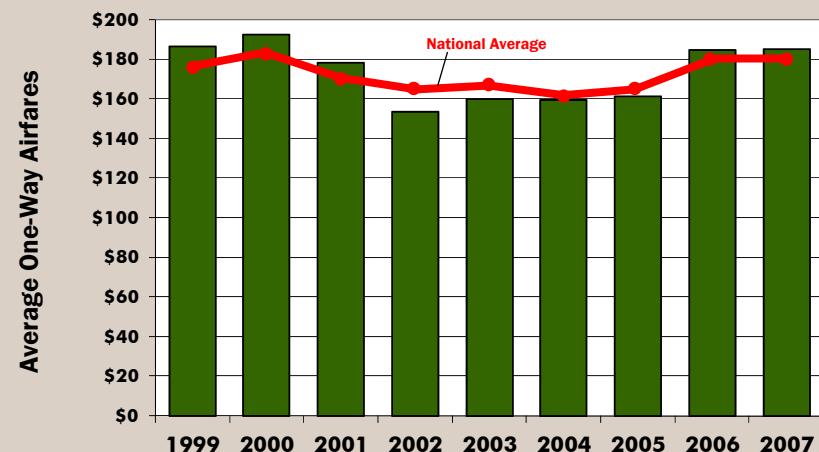
The growth in low-cost carrier service from Hampton Roads airports also contributed to a decrease in airfares earlier this decade. Between 2000 and 2002 the average airfare in Hampton Roads dropped 20%. However, after remaining unchanged during the middle of the decade, airfares in Hampton Roads have risen once again over the last couple years. In 2007 the average one-way airfare from Hampton Roads airports was \$185, which was

### Annual Passenger Boardings at Hampton Roads Airports versus National Boardings, 1998 - 2007

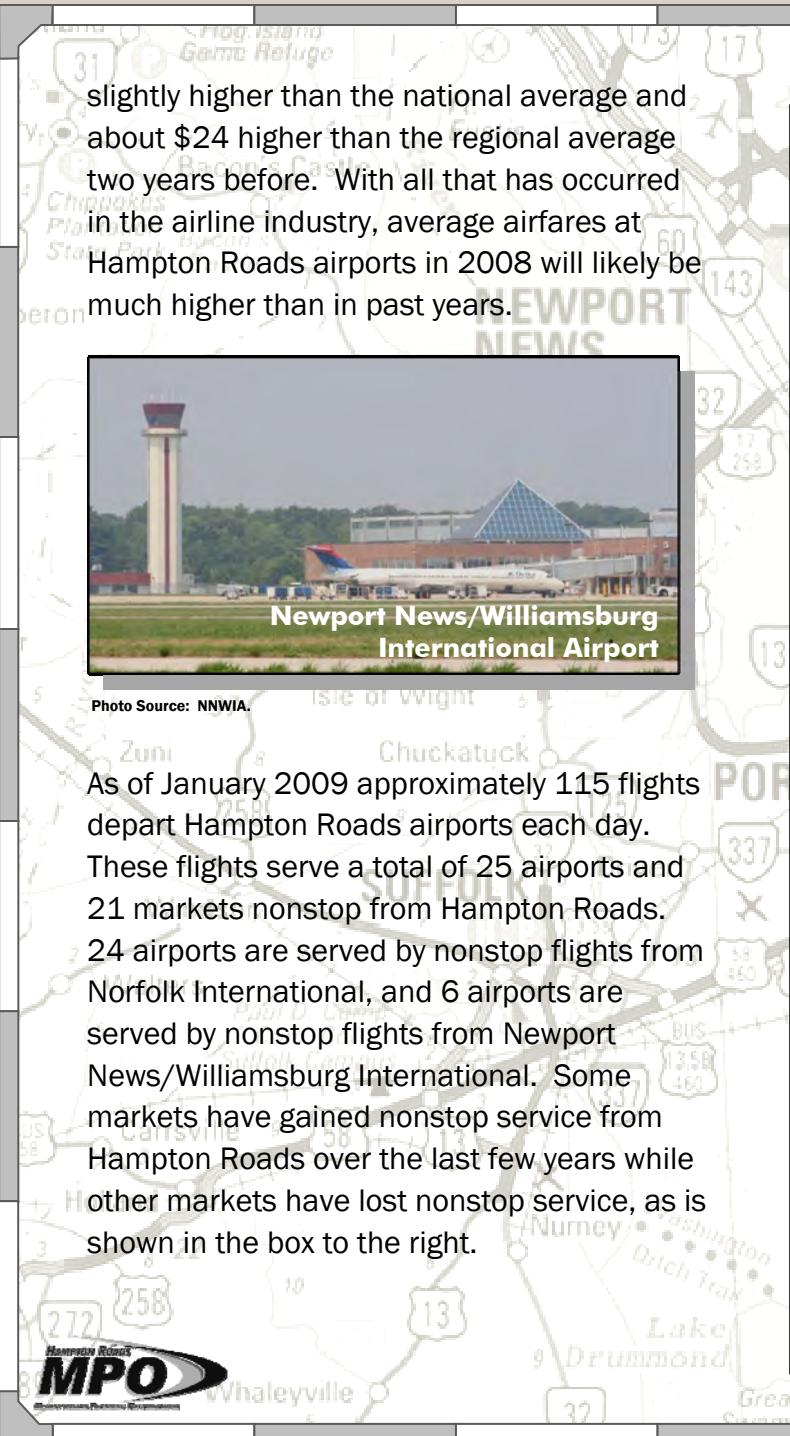


Data source: Federal Aviation Administration. Boardings only represent passengers that board airplanes at each airport.

### Average One-Way Airfares for Hampton Roads and National Airports, 1999 - 2007



Data source: Federal Aviation Administration. Average airfares reflect all routes that average at least 10 passengers per day, and all fare classes. Round trip fares are divided into two one-way fares.



slightly higher than the national average and about \$24 higher than the regional average two years before. With all that has occurred in the airline industry, average airfares at Hampton Roads airports in 2008 will likely be much higher than in past years.



**Newport News/Williamsburg International Airport**

Photo Source: NNWIA.

As of January 2009 approximately 115 flights depart Hampton Roads airports each day. These flights serve a total of 25 airports and 21 markets nonstop from Hampton Roads. 24 airports are served by nonstop flights from Norfolk International, and 6 airports are served by nonstop flights from Newport News/Williamsburg International. Some markets have gained nonstop service from Hampton Roads over the last few years while other markets have lost nonstop service, as is shown in the box to the right.

## TURMOIL IN THE AIRLINE INDUSTRY

**Increased fuel prices greatly affected the airline industry in 2008.** With airlines losing millions of dollars, average airfares rose in 2008 and many airlines instituted new and increased fees such as baggage charges, additional charges for premium seats, and ticket change fees. In spite of lower fuel costs in recent months, many of these fees are still in effect.

In addition to increased fares and fees, airlines cut their capacity nationwide. This reduction in the number of available seats was done by both reducing the number of flights as well as by using smaller planes on some routes. The total number of available seats on flights nationwide decreased 10.6% between November 2007 and November 2008 according to the Official Airline Guide (OAG).

Hampton Roads airports have also been affected, although less so than at some other airports across the country. The total number of available seats on flights at Norfolk International Airport decreased 10.8% between November 2007 and November 2008, and 8.2% at Newport News/Williamsburg International Airport according to OAG.

Some of this reduction has led to nonstop service being discontinued between Hampton Roads and other markets. Nonstop service was eliminated from Hampton Roads to Raleigh in 2007, Cleveland and Pittsburgh in 2008, and Fort Lauderdale at the start of 2009.

In spite of the capacity reductions, new nonstop markets have been added from Hampton Roads airports. New service was added to Tampa in 2007 and to Memphis and Nashville in 2008.

The most popular final destination for passengers using Hampton Roads airports is Atlanta, with 230,700 passengers traveling between Hampton Roads and Atlanta in 2007. The next most popular markets for passengers traveling to/from Hampton Roads were Orlando (207,600 passengers), Chicago (185,500 passengers to its two

airports), New York (164,800 passengers to its three major airports), and Boston (122,300 passengers). Of the top twelve markets for Hampton Roads air travelers, only Fort Lauderdale (#7), San Diego (#8) and Los Angeles (#12) are not currently served by nonstop service from Hampton Roads airports.



# PORT DATA

**Much of the economy of Hampton Roads is dependent on the Port of Virginia.** According to a recent study by the College of William and Mary, the Port of Virginia is responsible for 343,000 jobs across the state. This number not only includes those jobs at the ports but also other port-related industries throughout the state and the region, including those in the transportation, manufacturing, and warehousing sectors.



The Port of Virginia handled over 46 million tons of total cargo in 2007. Of that total, 28 million tons were coal, and the Port of Virginia remains the largest exporter of coal in the world. Most of the growth that has occurred at the Port of Virginia in recent years, however, is due to additional general cargo passing through the port, which is primarily cargo transported in containers. Nearly 18 million tons of general cargo was handled by the Port of Virginia in 2007, which is 59% higher than in 1998.

## MILEPOSTS

3

343,000

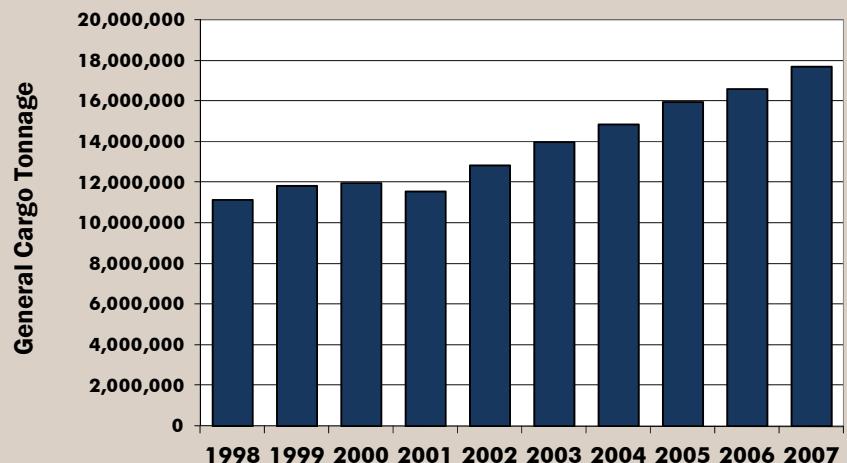
59%

The rank of the Port of Virginia in terms of volume handled by East Coast ports in 2007.

The number of jobs throughout the state of Virginia that are impacted by the Port of Hampton Roads.

The increase in general cargo handled by the Port of Virginia between 1998 and 2007.

### General Cargo Tonnage Handled by the Port of Virginia, 1998 - 2007

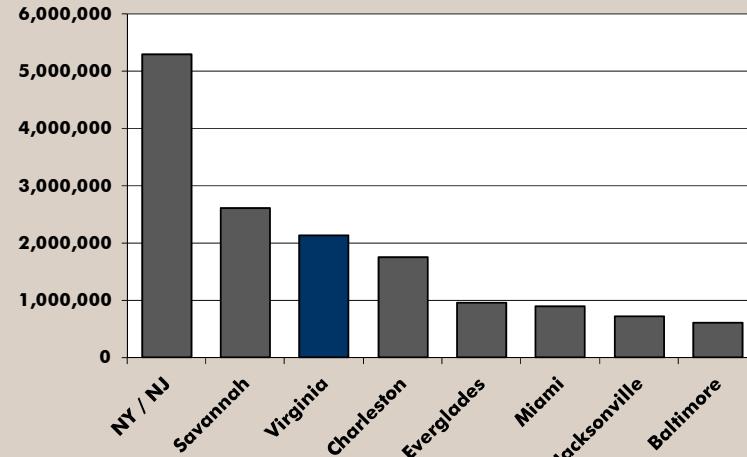


Data source: Virginia Port Authority. Data does not include Virginia Inland Port tonnage.

Another means of measuring containerized cargo is 20-foot container equivalent units, or TEUs. The Port of Virginia handled 2.1 million TEUs in 2007, up from 1.2 million TEUs in 1998. This volume of containerized cargo ranks the Port of Virginia third among East Coast ports and sixth among all ports in the United States. The growth of containerized cargo passing through the Port of Virginia is expected to accelerate, with over 5 million TEUs projected for the Port of Virginia in 2020.

In recent years the cruise industry has blossomed in Hampton Roads, with 78,000 passengers sailing from Norfolk in 2007. Although this is down from the middle of the decade, it is almost triple the number of passengers that cruised from Norfolk in 2001. In 2007 the Half Moone Cruise and Celebration Center also opened, providing passengers a much-improved disembarking point.

## Cargo Handled at Top East Coast Ports TEUs, 2007



Data source: American Association of Port Authorities.  
TEUs are twenty-foot container equivalent units, a common method of measuring freight.

## NEW DEVELOPMENTS

**APM Terminal.** The new APM Terminal, which is the first major privately developed container terminal in the country, opened in Portsmouth in September 2007. At its current 230 acres, the facility is capable of handling one million TEUs annually.



**NIT Improvements.** Norfolk International Terminals (NIT) is in the middle of a \$400 million renovation and expansion, including new cranes, roadways, container storage areas, and a central rail yard.



**Half Moone Terminal.** The new \$36 million Half Moone Cruise and Celebration Center opened in Downtown Norfolk in April 2007. The new terminal replaced a temporary facility located next to Nauticus on the downtown waterfront.

**James River Barge Service.** Regularly scheduled barge service between Hampton Roads and Richmond began in November 2008, with the hopes of reducing truck traffic on I-64.

# RAIL TRAVEL

**With fuel costs rising and highway congestion prevalent both in Hampton Roads and throughout the Eastern Seaboard, rail has become a more attractive transportation option.**

In fact, rail has been one of the primary methods of transporting goods, especially coal, to and from the Port of Virginia. In 2004 45% of all inbound freight to Hampton Roads by tonnage was transported by rail according to Global Insight, with only 7% of all outbound freight being transportation by rail. Most of this inbound freight is coal.



Amtrak train in Newport News

Passenger rail service is provided to the region by Amtrak stations in Newport News and Williamsburg. 167,000 passengers boarded or departed Amtrak trains in Hampton Roads in 2008, with 117,000 passengers at the Newport News station and 50,000 passengers at the Williamsburg station. This number of Amtrak passengers is up over 20% from 2007 and 30% from 2006.

## MILEPOSTS

45%

167,000

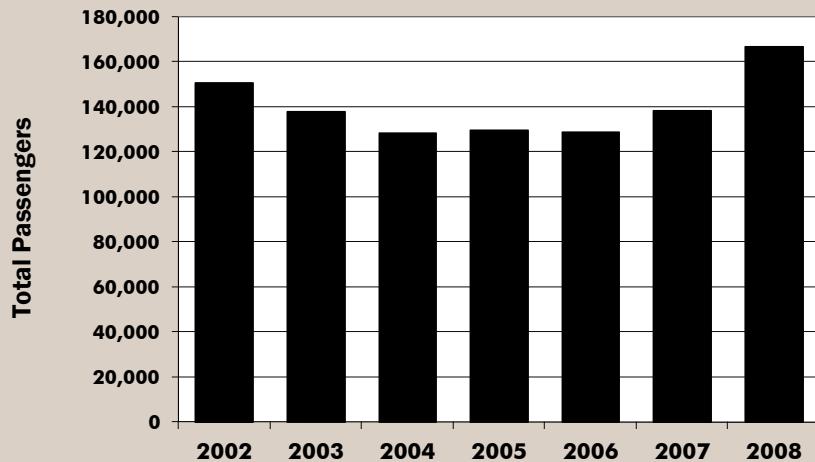
111

The percentage of all inbound freight to Hampton Roads transported by rail in 2004.

The number of passengers that boarded or departed Amtrak trains in Hampton Roads in 2008, up 20% from 2007.

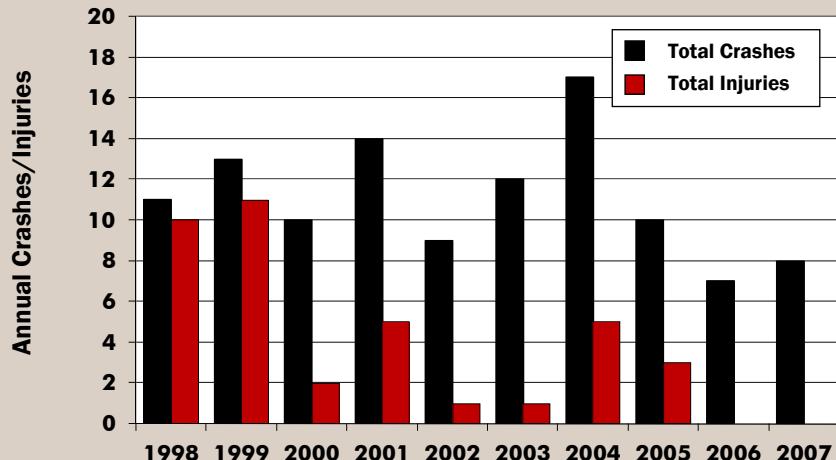
The number of train-vehicle crashes at crossings in Hampton Roads between 1998 and 2007. These crashes resulted in 1 fatality and 38 injuries.

## Total Passengers Boarding or Departing Amtrak Trains in Hampton Roads, FY 2002 - 2008



With the number of trains crossing the region each day, safety at highway-rail crossings is a concern. Between 1998 and 2007 there were 111 crashes at highway –rail crossings in Hampton Roads, or about 11 crashes each year. These 111 crashes resulted in 1 fatality and 38 injuries. The number of crashes at highway-rail crossings in Hampton Roads has decreased in recent years, with only eight crashes and no injuries in 2007. This is down from the late 1990s, when double digit injuries were common each year at highway-rail crossings in Hampton Roads.

### Total Crashes and Injuries at Highway-Rail Crossings in Hampton Roads, 1998 - 2007



Data source: Federal Railroad Administration.

## NEW DEVELOPMENTS

**Norfolk light rail.** Construction began on The Tide light rail line in Norfolk in 2008. When completed in 2010, this 7.4-mile starter line will connect the Medical Center Complex in Norfolk with Newtown Road at the Virginia Beach City Line.

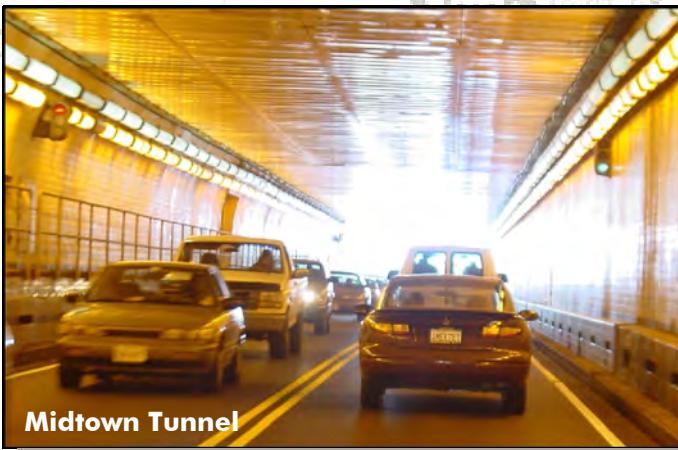
**Southeast high speed rail corridor.** Planning is currently underway for a network of high speed rail service between Washington D.C. and the Southeastern United States. As part of this project, Hampton Roads would be connected to the high speed rail network via a connection to Richmond. It is possible that passenger service could begin between 2015 and 2020.



Source: Hampton Roads Transit.

# ROADWAY USAGE

**The growth in roadway travel in Hampton Roads has been leveling off in recent years.** The amount of roadway travel is measured in terms of vehicle-miles of travel (VMT), which is the total number of miles every vehicle in the region travels over a period of time. There were just over 40 million vehicle-miles of travel on the average day in Hampton Roads in 2007. Over the entire year, this added up to 15 billion vehicle-miles of travel throughout Hampton Roads.



Between 1998 and 2007 the amount of daily vehicular travel in Hampton Roads increased 5 million miles, or a total of 16%. However, after growing at an average of about 2% each year prior to 2003, VMT in Hampton Roads only increased at an average of 0.3% annually between 2003 and 2007. Preliminary data from 2008

## MILEPOSTS

40

24

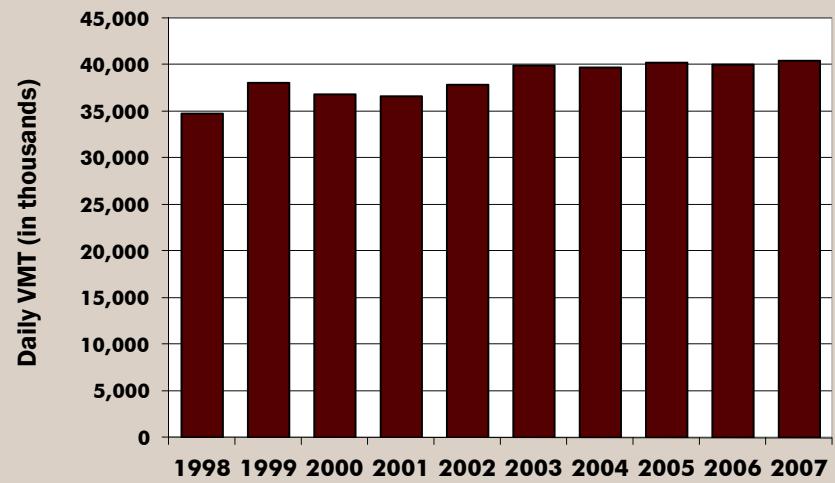
16 %

The amount (in millions) of total vehicular travel each day in Hampton Roads in 2007.

The number of daily vehicle-miles of travel for each person in Hampton Roads in 2007.

The growth in vehicular travel in Hampton Roads between 1998 and 2007. This far outpaced the growth in both regional population (6%) and regional roadway capacity (7%).

### Daily Vehicle-Miles of Travel in Hampton Roads, 1998 - 2007



Data source: VDOT.

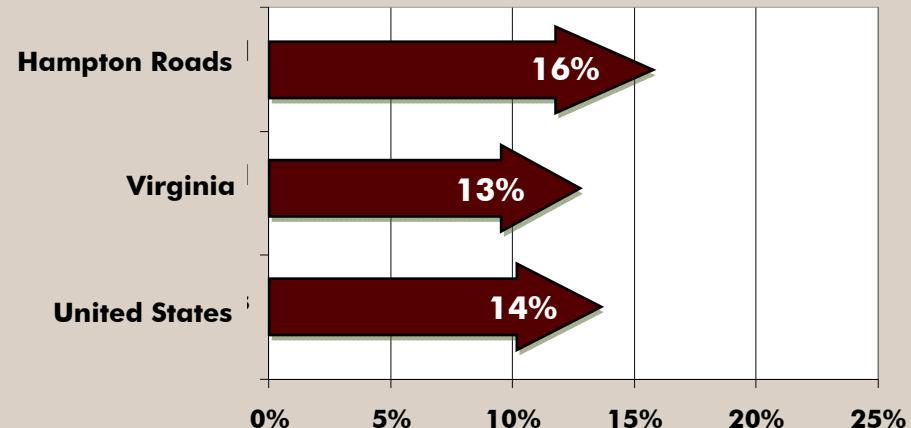
indicates that roadway travel in Hampton Roads decreased significantly from 2007, mostly due to the increased fuel costs earlier in the year and economic conditions.

At 16%, the growth in vehicular travel in Hampton Roads between 1998 and 2007 was slightly higher than the growth seen in Virginia (13%) and the United States (14%). However, since 2003 the growth in vehicular travel has been much higher in Virginia (7%) and the United States (4%) than in Hampton Roads (1%).

While the amount of travel increased in Hampton Roads over the last decade, the amount of vehicular travel per capita in the region also increased. In 2007, the amount of vehicular travel per capita in Hampton Roads was 24.0 vehicle-miles per person per day. This is up from 22.5 daily vehicle-miles per capita in 1998.

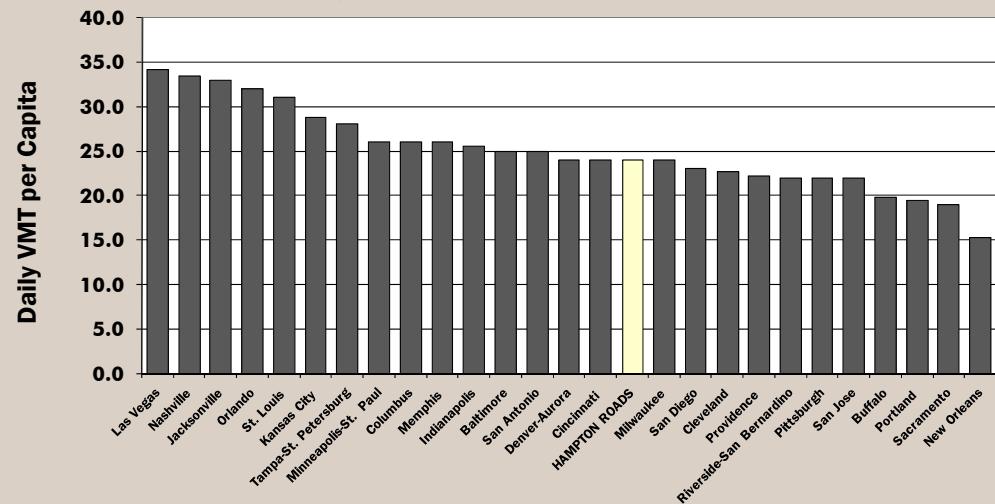
Among 27 large urbanized areas in the United States with populations between one and three million people, Hampton Roads ranked 16<sup>th</sup> in terms of vehicular travel per capita in 2007. The average among the large urbanized areas was 25.1 vehicle-miles of travel per capita per day, about one mile more than the average in Hampton Roads.

## Growth in Vehicle-Miles of Travel in Hampton Roads, Virginia, and the United States, 1998 to 2007



Data sources: VDOT, FHWA Highway Statistics.

## Daily Vehicle-Miles of Travel Per Capita in Large Urbanized Areas, 2007



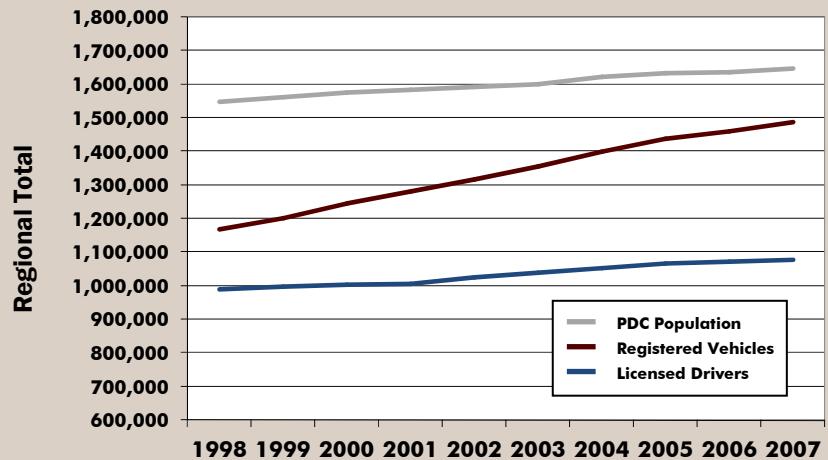
Data sources: FHWA Highway Statistics.

The growth in vehicle-miles traveled has far outpaced the growth in population in Hampton Roads. Hampton Roads had an estimated population of 1,648,000 residents in 2007, up 6% from 1998. During this time the amount of roadway travel in the region increased 16%, meaning that between 1998 and 2007 the growth of vehicle-miles of travel was 2.5 times higher than the growth in population.

Although the growth in vehicle-miles of travel has outpaced population growth in Hampton Roads, the growth in registered vehicles has outpaced both. There were 1,487,000 registered vehicles in Hampton Roads in 2007, or one vehicle for every 1.11 residents. The number of registered vehicles increased 27% between 1998 and 2007, far outpacing the 6% growth in the regional population and 16% growth in vehicle-miles of travel during this time.

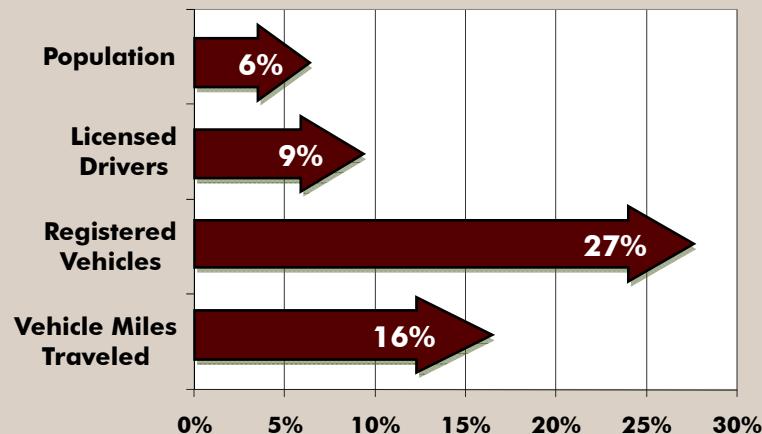
The growth in the number of licensed drivers in Hampton Roads has outpaced the growth in population but is well below the growth rate in registered vehicles. There were 1,078,000 licensed drivers in Hampton Roads in 2007, up 9% from 1998. There were 1.38 registered vehicles for every licensed driver in Hampton Roads in 2007, up from 1.16 registered vehicles per licensed driver in 1998.

## Population, Registered Vehicles, and Licensed Drivers in Hampton Roads, 1998 - 2007



Data sources: HRPDC Hampton Roads Databook, Virginia DMV.

## Growth in Population, Licensed Drivers, Registered Vehicles, and VMT in Hampton Roads, 1998 to 2007

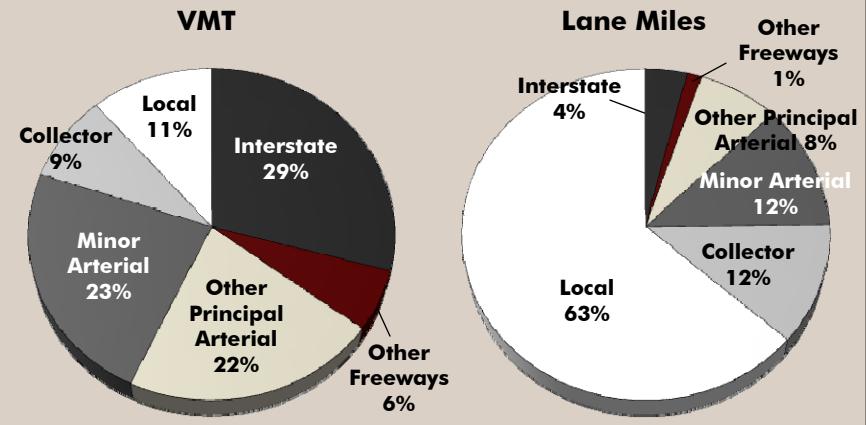


Data sources: HRPDC Hampton Roads Databook, Virginia DMV, VDOT, FHWA Highway Statistics Series.

Although Interstates and other freeways only constituted about 5% of the total roadway lane mileage (which is defined as the mileage of each roadway multiplied by the number of lanes) in Hampton Roads in 2007, they carried 35% of the daily traffic in the region. Conversely, local roadways made up a majority of the roadway capacity in Hampton Roads at 63% of the total lane miles, but only carried 11% of the total vehicle-miles of travel in 2007.

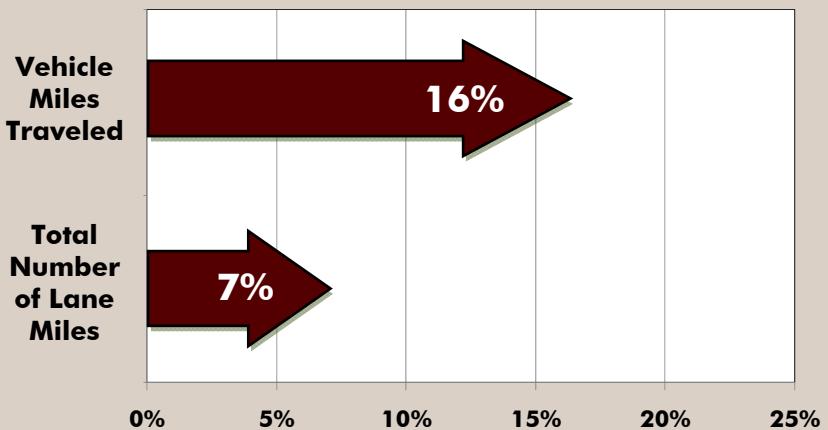
Over the last decade roadway capacity improvements have not kept pace with the growth in vehicular travel in Hampton Roads. The total growth in roadway capacity in Hampton Roads in terms of lane mileage was only 7% between 1998 and 2007. The number of vehicle-miles traveled increased nearly 2.5 times faster than the amount of roadway capacity during this time. With highway funding levels expected to decrease in future years, the growth in roadway capacity throughout the region will likely continue to decrease.

### VMT and Lane Miles by Roadway Functional Class in Hampton Roads, 2007



Data source: VDOT.

### Growth in VMT and Lane Miles in Hampton Roads, 1998 to 2007



Data source: VDOT.

## TTI DATA

**Congestion on Hampton Roads highways cost local drivers 26 million hours of delay and \$467 million in costs in 2005.** The Texas Transportation Institute (TTI) at Texas A&M University publishes the Urban Mobility Report, which is the only widely distributed analysis of the performance of urban highway systems. The most recent release of this report occurred in 2007 and includes data collected in 2005. In this study, TTI estimates the amount of time travelers in 85 urbanized areas spend in congestion, and the costs related to this congestion.

For comparison purposes TTI divides urbanized areas into four population groups: Very large, large, medium, and small.

Hampton Roads was grouped with 24 other areas defined by TTI as large urbanized areas, which are those areas with populations between one and three million people.

Peak period travelers in Hampton Roads lost an average of 30 hours stuck in traffic in 2005 according to TTI. This ranked Hampton Roads 16th among the 25 large urbanized areas. The annual amount of delay per peak period traveler increased 5 hours between 1996 and 1999 but had returned to 1996 levels by 2005.

## MILEPOSTS

30

26

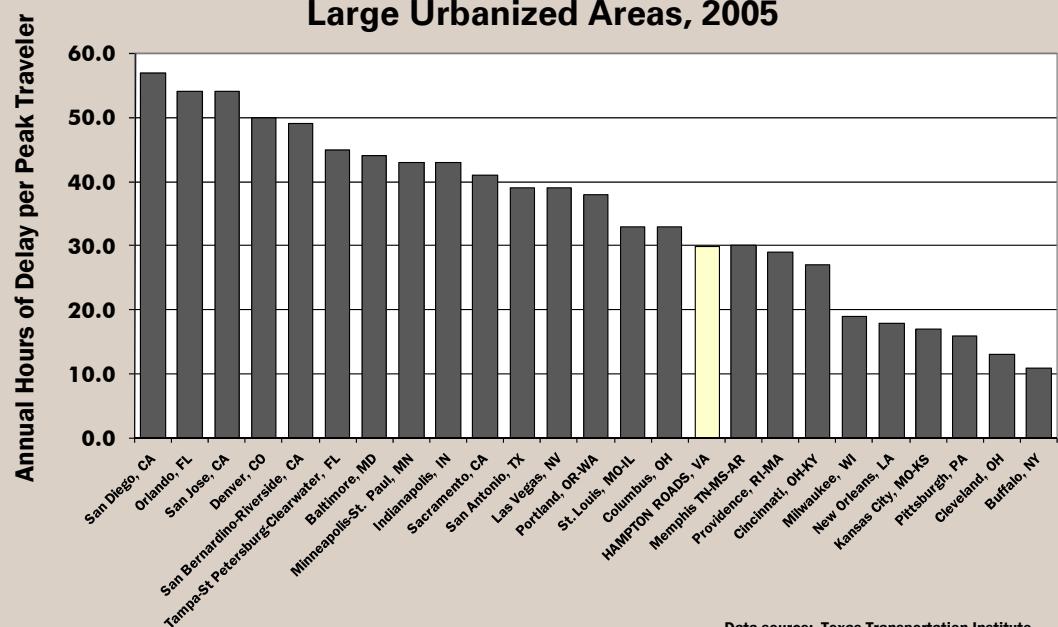
\$550

The number of hours peak period travelers in Hampton Roads spent stuck in traffic in 2007.

The total number of hours in millions that were lost to congestion in Hampton Roads in 2005.

The average congestion costs for each peak period traveler in Hampton Roads in 2005.

**Annual Hours of Delay per Peak Period Traveler  
Large Urbanized Areas, 2005**



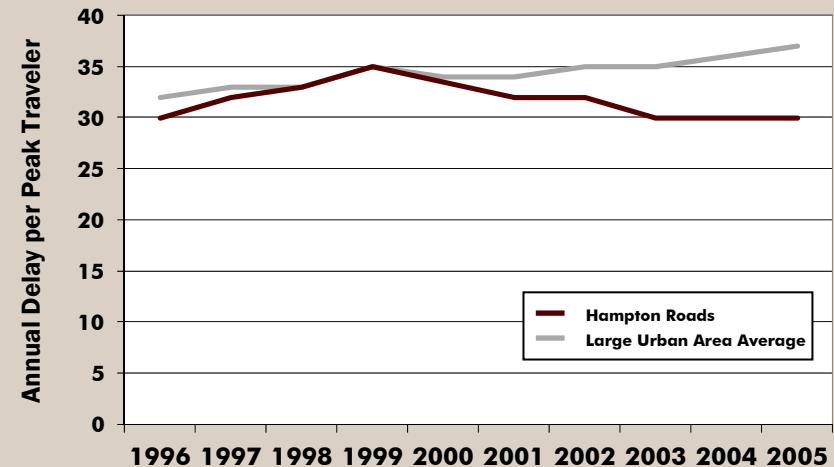
Data source: Texas Transportation Institute.

Although TTI estimates that Hampton Roads has a lower amount of delay than other large urbanized areas, the delay estimates are believed to be low for Hampton Roads. This is because TTI's delay estimation techniques do not account for facilities such as tunnels and drawbridges that have lower capacities than other roadways with a similar number of lanes. With the amount of delay that occurs at tunnels and drawbridges in Hampton Roads, this difference is quite significant.

TTI also estimates the direct and indirect costs of being stuck in congestion by calculating the value of a person's time, wasted fuel, and commercial vehicle operation costs. TTI estimates that being stuck in congestion cost each Hampton Roads peak period traveler an average of \$550 in 2005, which amounts to \$467 million for the entire region. This is the result of 26 million person-hours and 17 million gallons of fuel being lost due to congestion across the region. These costs are up from \$437 per peak period traveler in 1996, although congestion costs after 2005 are likely much higher due to the sharp increases in fuel costs.

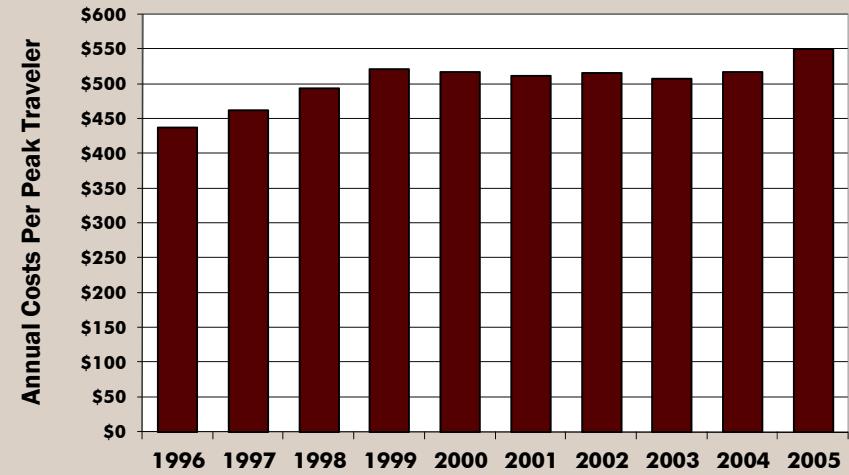
An updated version of the TTI Urban Mobility report will be released in early 2009. This report will be available on the TTI Urban Mobility report website <http://mobility.tamu.edu>.

### Annual Hours of Delay Per Peak Period Traveler Hampton Roads and Large Urban Areas, 1996 - 2005



Data source: Texas Transportation Institute.

### Annual Congestion Costs per Peak Period Traveler in Hampton Roads, 1996 - 2005



Data source: Texas Transportation Institute.

# COMMUTING

**Four in every five commuters in Hampton Roads drove to work alone in 2007, and one half of all**

**Hampton Roads commuters work in a different community than they live in.** This is according to the United States Census Bureau, which releases socioeconomic data annually through the American Community Survey (ACS). As part of the ACS, data is collected regarding the commuting characteristics of residents in each region, including travel time to work, jurisdictions where commuters work and live, and commuting modes.

According to the ACS, the mean travel time to work in Hampton Roads was 23.3 minutes in 2007. This number actually decreased slightly from 2000 when the mean travel time to work was 24.1 minutes. Among all 34 metropolitan statistical areas (MSAs) with a population between one and three million people, Hampton Roads ranked 24th in mean travel time to work, and was a little more than a minute below the average mean travel time to work of 24.7 minutes.

Many Hampton Roads residents had commutes that were much longer than the average. 31% of all commuters in Hampton Roads had commutes of 30 minutes or

## MILEPOSTS

**23.3**

**80%**

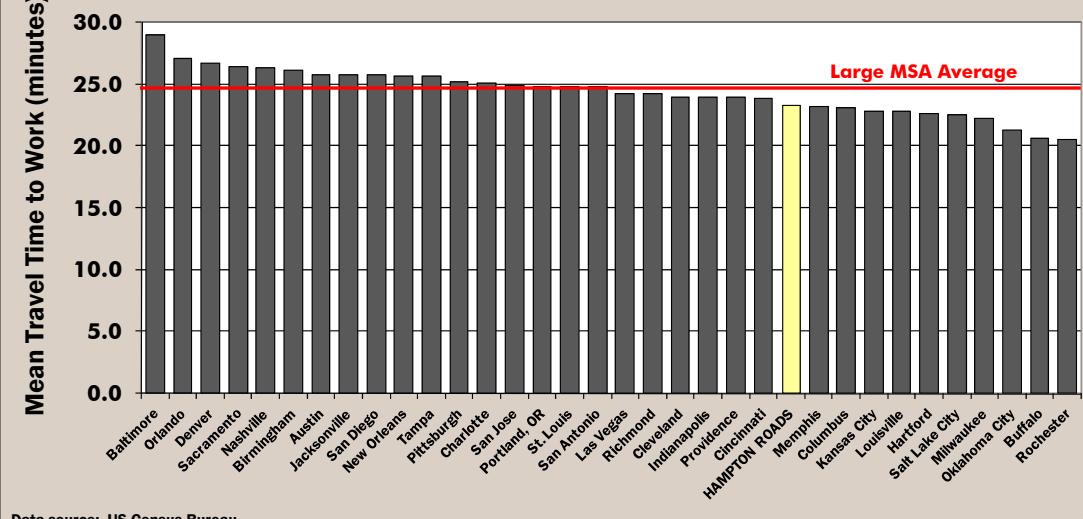
**50%**

The mean travel time to work in minutes in Hampton Roads in 2007.

The percentage of all commuters that drove to work alone in Hampton Roads in 2007, up from 73% in 1990 and 79% in 2000.

The percentage of workers in Hampton Roads in 2007 that worked in a different community than they resided in, up from 45% in 1990.

**Mean Travel Time to Work  
Large Metropolitan Statistical Areas, 2007**



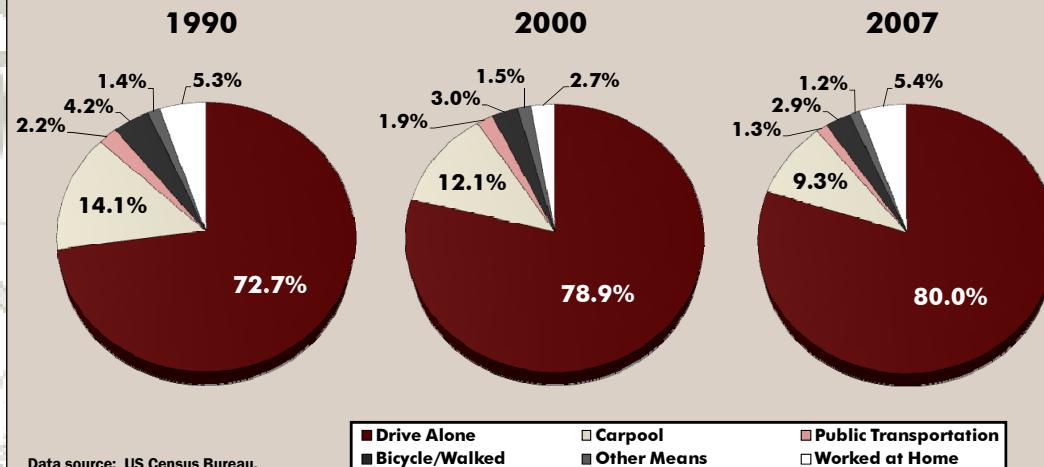
longer in 2007, and 5% had commutes of an hour or more.

As regionalization has taken hold in Hampton Roads, the percentage of Hampton Roads residents who work in a jurisdiction that is different from the one they reside in has increased. In 2007 50% of all workers in Hampton Roads worked in a jurisdiction that was different from the one they resided in, up from 45% in 1990 and 49% in 2000.

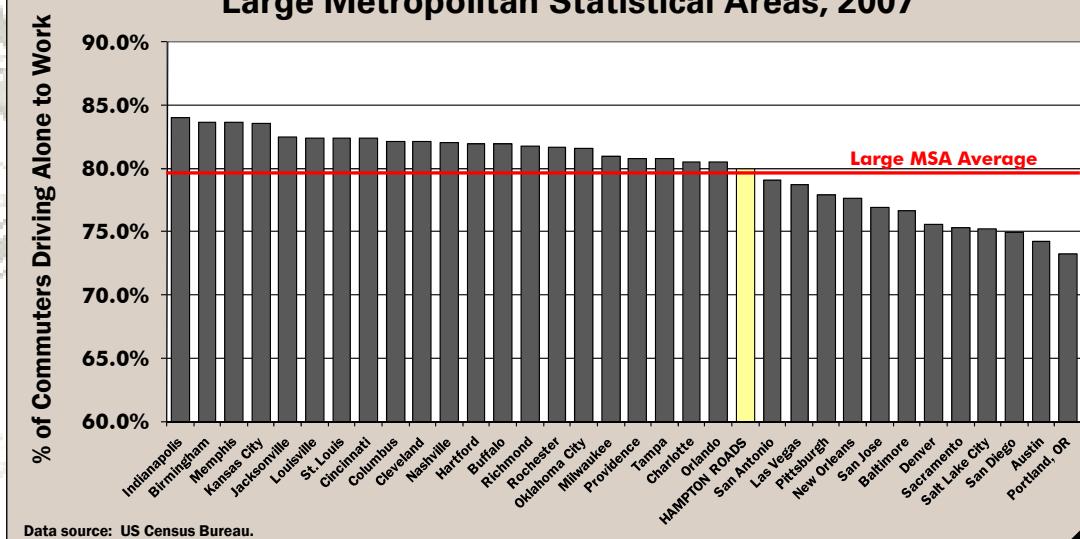
The proportion of commuters who drive alone to work has also increased in Hampton Roads through the years. In 2007 80% of commuters in Hampton Roads drove alone to work, up from 79% in 2000 and 73% in 1990. This increase came at the expense of all other commuting modes which except for working at home all decreased between 1990 and 2007. In spite of this high number, Hampton Roads only ranked 22nd among the 34 large metropolitan areas in terms of percentage of commuters who drove alone to work in 2007.

Programs are in place to provide commuters alternatives to driving to work alone. In Hampton Roads the Traffix program promotes ridesharing, telecommuting, van leasing, and guaranteed ride programs.

## Commuting Methods in Hampton Roads, 1990, 2000, and 2007



## Percentage of Commuters That Drove Alone To Work Large Metropolitan Statistical Areas, 2007



# ROADWAY SAFETY

**There were over 30,000 crashes in Hampton Roads in 2007, resulting in 14,500 injuries and 155 fatalities.**

Looking at these numbers another way, a crash occurred every 17 minutes throughout the region in 2007, with an injury occurring every 36 minutes, and a fatality occurring about every other day. Despite this frequency of crashes, the number of crashes in 2007 was actually the lowest in Hampton Roads since 2001, and was down 9% from a high of 33,000 crashes in 2004.

This decrease in crashes contributed to a decrease in the number of injuries suffered in traffic crashes. The 14,500 injuries that occurred in traffic crashes in Hampton Roads in 2007 were by far the lowest experienced in Hampton Roads during the last decade. The number of injuries resulting from traffic crashes decreased 25% between 1998 and 2007, even though the number of crashes increased.

In spite of the recent decrease in crashes and injuries, the number of fatalities in Hampton Roads has increased every year since 2003. The 155 fatalities in Hampton Roads in 2007 were the highest experienced in the region since 1998. 58 of these fatalities (37%) were due to crashes involving alcohol.

These trends in crashes, injuries, and fatalities were all better in Hampton Roads than the statewide trends.

## MILEPOSTS

**155**

**17**

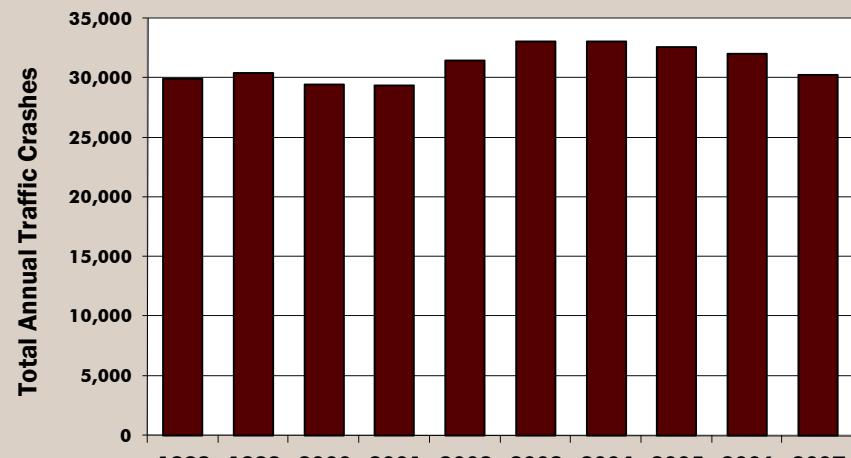
**21%**

The number of fatalities in Hampton Roads in 2007. This is up from 141 fatalities in 2006.

There was a crash throughout Hampton Roads on average every 17 minutes in 2007.

The crash fatality rate in Hampton Roads decreased 21% between 1998 and 2007, down to 1.05 fatalities per 100 million VMT.

## Crashes in Hampton Roads, 1998 - 2007



Data source: Virginia DMV.

Statewide crashes increased 7%, injuries decreased 15%, and fatalities increased 10% between 1998 and 2007.

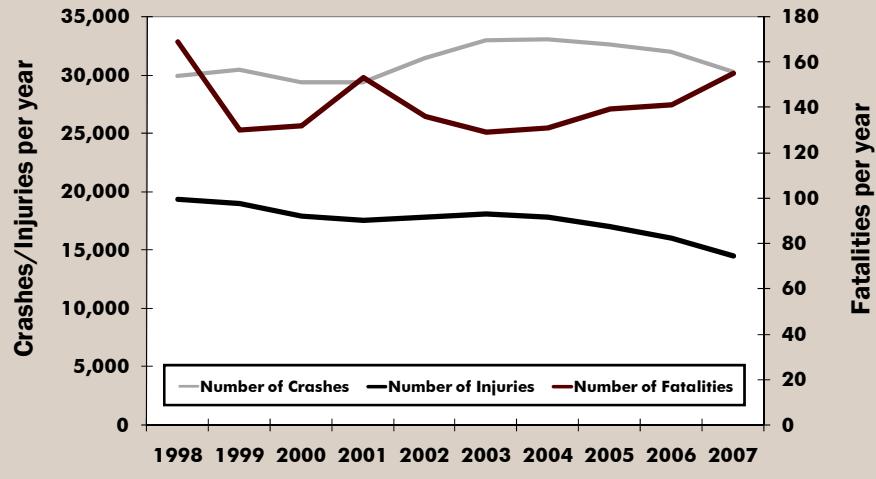
With the number of crashes decreasing in Hampton Roads, the crash rate relative to the amount of travel is also decreasing. The crash rate in Hampton Roads decreased from 2.36 crashes per million vehicle-miles of travel (VMT) in 1998 down to 2.05 crashes per million VMT in 2007. In spite of this decrease, the crash rate is still higher in Hampton Roads than it is nationally and throughout Virginia.



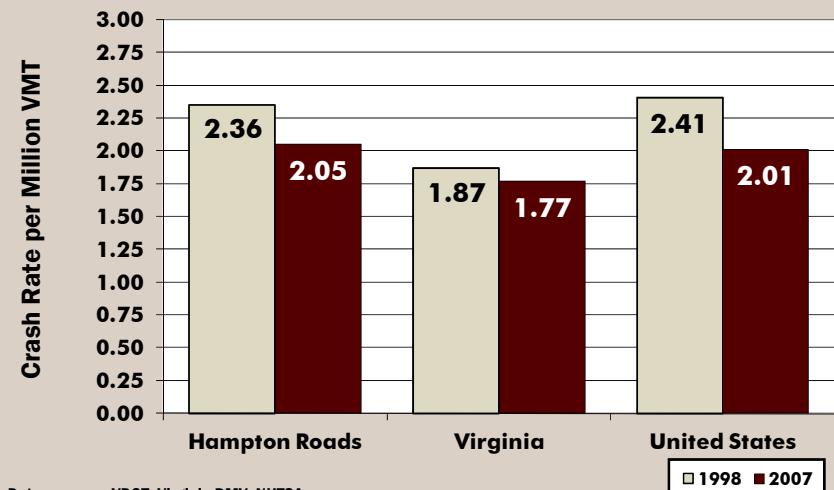
Photo Source: VDOT.

The fatality rate in Hampton Roads has also decreased over the last decade. The fatality rate was 1.05 fatalities per 100 million VMT in 2007, down from 1.33 fatalities per 100 million VMT in 1998. The fatality rate in Hampton Roads in 2007 was well below those rates seen throughout the state of Virginia and the United States.

## Crashes, Injuries, and Fatalities in Hampton Roads 1998 - 2007



## Traffic Crash Rates in Hampton Roads, Virginia, and the United States, 1998 and 2007



Although crashes are the most critical aspect of roadway safety, other events can also affect traveler safety. These events, also referred to as incidents, include disabled vehicles, abandoned vehicles, bad weather, and debris in the roadway.

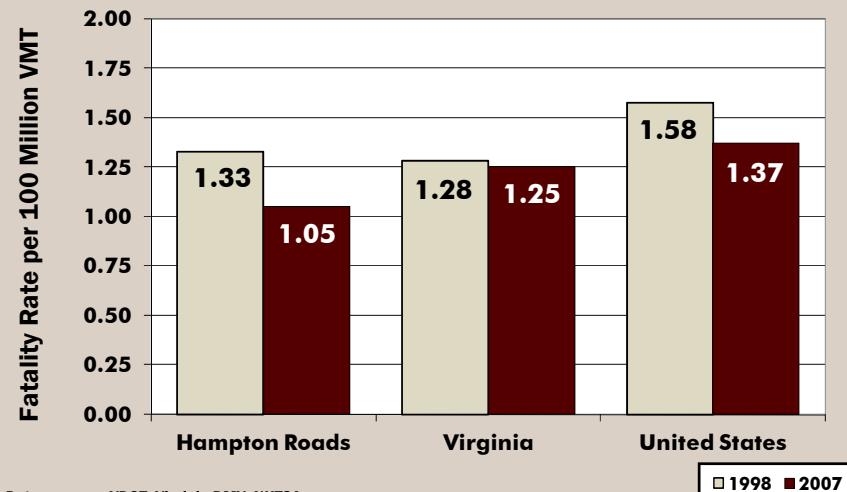
To respond to crashes and other incidents as quickly and as safely as possible, the VDOT Hampton Roads Transportation Operations Center manages the Safety Service Patrol. The Safety Service Patrol operates 24 hours a day, 7 days a week on 113 miles of freeway throughout the region. In addition, safety patrol vehicles are also stationed at the region's bridges and tunnels to quickly clear incidents at those locations.

The Safety Service Patrol responded to over 58,000 incidents in 2007 or about 160 incidents each and every day. Disabled vehicles made up the majority (75%) of these incidents, and 8% of these incidents were crashes.

The average amount of time it took the Safety Service Patrol to detect, respond to, and clear each incident in 2007 was 26.9 minutes. About 14% of all incidents took over half an hour to clear, and 4% of all incidents took over an hour to clear.

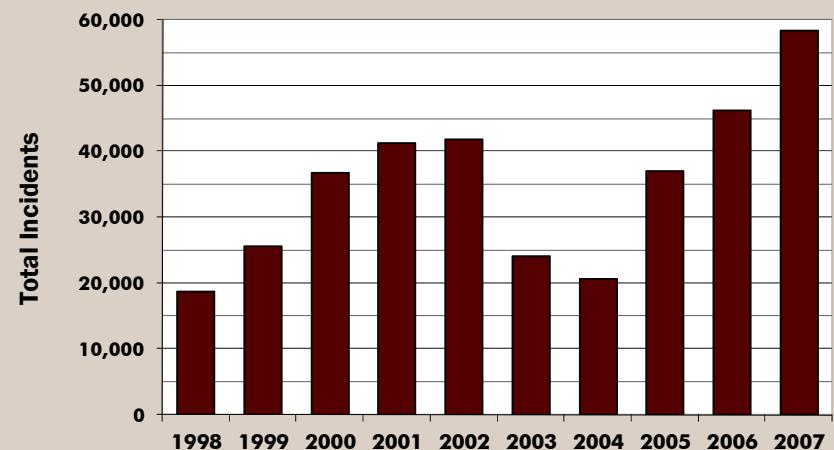
For additional roadway safety information, HRMPO releases the General Crash Data and Trends report. The most recent update of this report was released in 2007. This report is available at [http://www.hrmpo.org/MPO\\_Reports.asp](http://www.hrmpo.org/MPO_Reports.asp).

### Traffic Crash Fatality Rates in Hampton Roads, Virginia, and the United States, 1998 and 2007



Data sources: VDOT, Virginia DMV, NHTSA.

### Total Incidents Responded to by the VDOT Safety Service Patrol in Hampton Roads, 1998 - 2007



Data source: VDOT Hampton Roads Transportation Operations Center. Safety service patrol coverage was reduced in 2003 - 2005.

# TRUCK DATA

**As the home of the third busiest port on the east coast along with many industrial and warehousing facilities, truck traffic is a byproduct of the Hampton Roads economy.**

According to Global Insight data, 48% of all domestic freight entering Hampton Roads and 73% of all domestic freight leaving Hampton Roads was transported by truck in 2004. This amounts to an average of nearly 20,000 trucks entering and exiting Hampton Roads each weekday.



Truck near Norfolk International Terminals

The primary gateway for trucks entering and exiting Hampton Roads is I-64. An average of 7,400 trucks used I-64 to enter or exit the region each weekday in 2007, accounting for 38% of the trucks passing through the major gateways to Hampton Roads. The next most popular gateways for trucks entering or exiting Hampton Roads are Route 58 (22% of all trucks in 2007) and Route 460 (11%).

## MILEPOSTS

19,400

73%

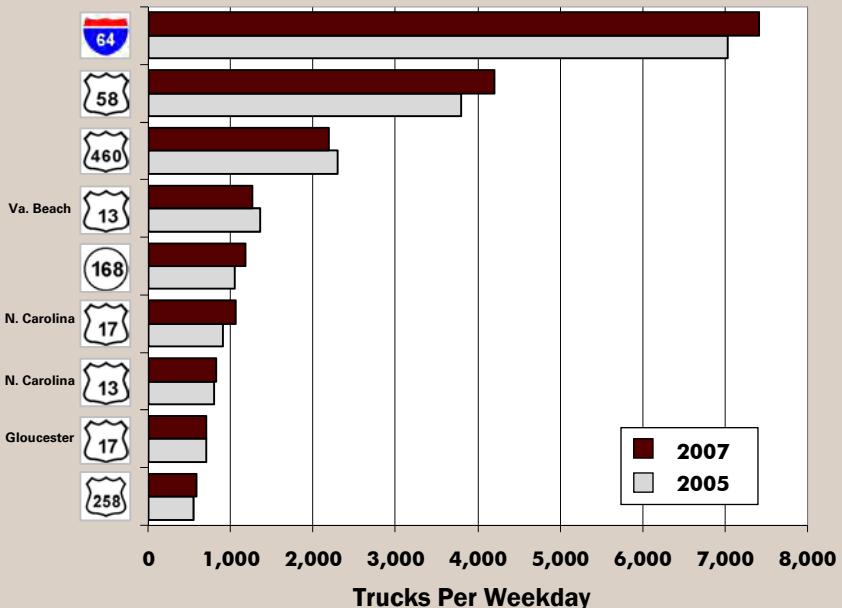
24,200

The number of trucks that entered or exited Hampton Roads each weekday in 2007, up 5% from two years earlier.

Domestic freight leaving Hampton Roads that was transported by truck in 2004.

The number of overheight trucks turned around at Hampton Roads tunnels in 2007. This amounts to about 66 trucks each day.

### Number of Trucks Passing Through the Top Regional Gateways Each Weekday, 2007



Within Hampton Roads, trucks accounted for 3.5% of all regional travel in 2007 according to VDOT, or about 1.4 million miles of travel each day. Only about one third of this truck travel occurs during the busy morning and afternoon peak travel periods.

Another concern regarding truck traffic in Hampton Roads is the number of overweight trucks at the region's tunnels. Overweight trucks can lead to traffic stoppages if they need to be turned around at the entrance of the tunnel. This problem is most prevalent at the westbound Hampton Roads Bridge-Tunnel, which has a lower vertical clearance than other tunnels. Of the 24,200 trucks stopped, measured, and turned around at regional tunnels in 2007, 14,900 occurred at the westbound Hampton Roads Bridge-Tunnel. Due to higher fines and additional advance signage and sensors, the 565 turnarounds that occurred at the tunnel entrance in 2007 were much lower than in past years.

HRMPO released an update to the Intermodal Management System study in 2007. This report includes a

summary of regional freight movement, including where trucks enter and leave the region, high truck locations throughout the region, and freight bottlenecks. This report is available at [http://hrmopo.org/MPO\\_Reports.asp](http://hrmopo.org/MPO_Reports.asp).

## NEW DEVELOPMENTS

### Trucks banned on Hampton Boulevard.

Beginning in November 2007, trucks were prohibited from using portions of Hampton Blvd. and some parallel roadways between 4:00 pm and 6:00 am. About 300 trucks used Hampton Blvd. each weekday during the prohibited hours before the ban.



**Decrease in overweight vehicles at the entrance to the Hampton Roads Bridge-Tunnel.** This is likely due to recent changes, including an increase of the fine for overweight trucks, adding additional advance signage, and adding overweight sensors to International Terminal Boulevard near Norfolk International Terminals.

### Overheight Vehicles Stopped, Measured, and Turned Around at Regional Tunnel Facilities, 2005 - 2007

Facility	2007	2006	2005			
				Eastbound	Westbound	Total
Hampton Roads Bridge-Tunnel	365	14,887	15,252	14,934	14,233	
Turnarounds on North or South Islands	2	563	565	807	1,024	
Downtown Tunnel	2,586	4,897	7,483	5,413	4,940	
Midtown Tunnel	1,011	486	1,497	740	724	
Monitor-Merrimac Memorial Bridge-Tunnel	0	0	0	0	0	

Data source: VDOT.



# PUBLIC TRANSPORTATION

## The use of public transportation in Hampton Roads has been rising throughout most of this decade.

Hampton Roads has a variety of public transportation options available throughout the region:



Conventional bus service is provided in most of Hampton Roads by Hampton Roads Transit (HRT), with service on the northern Peninsula being provided by Williamsburg Area Transport.



Express bus service is provided by Hampton Roads Transit between various locations on the Southside and the Peninsula.



Passenger ferry service is provided by HRT between Downtown Norfolk and Portsmouth, and vehicular ferry service is provided by VDOT across the James River between Surry County and Jamestown.



Various commuting and tourist-oriented services are provided, including VB WAVE buses at the Oceanfront, NET buses in Downtown Norfolk, Loop buses in Downtown Portsmouth, and service between tourist locations in and around Williamsburg.

## MILEPOSTS

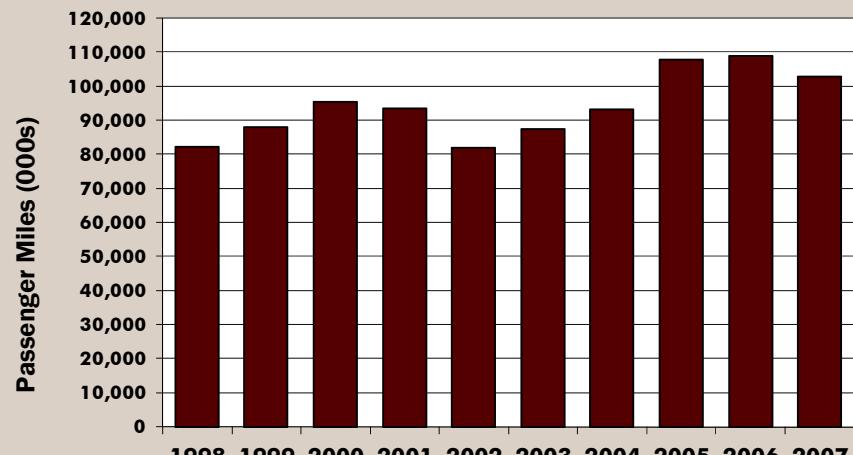
26 %

The increase in passenger miles taken on public transportation in Hampton Roads between 2002 and 2007.

21

Hampton Roads rank among 36 large metropolitan areas in terms of transit use per capita in 2007.

## Passenger Miles Taken on Transit in Hampton Roads, 1998 - 2007



Data source: National Transit Database.



In Hampton Roads commuting alternatives are promoted by Traffix, including ridesharing, van leasing, telecommuting, and guaranteed ride programs.

There were over 100 million passenger miles taken on public transportation in Hampton Roads in 2007. This number includes ridership on regular and express buses, tourist and commuter vehicles, vanpools, and the passenger ferry.

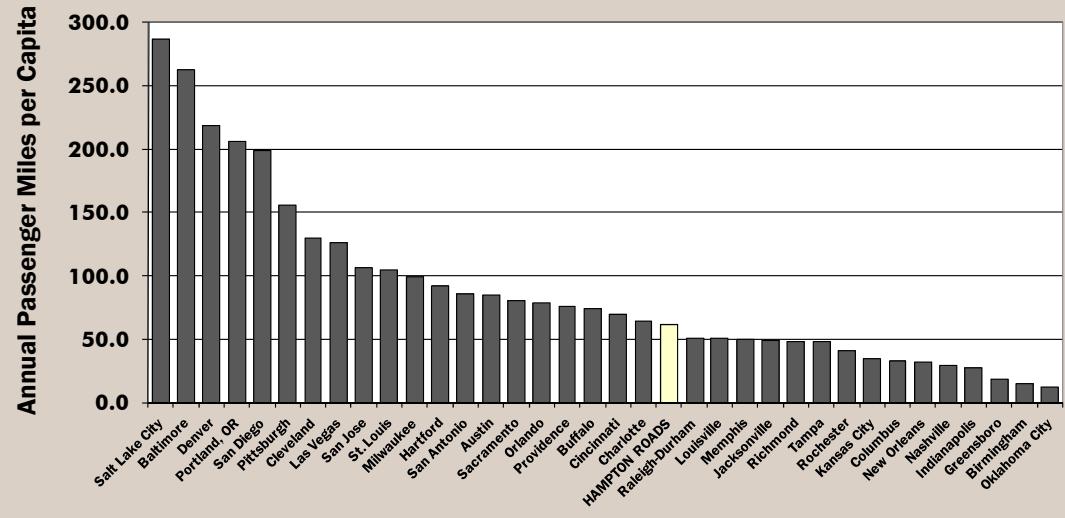
Although the number of passenger miles slightly decreased from 2006, it is much higher than the levels seen in the middle of the decade. Preliminary figures indicate that transit ridership numbers in 2008 will be higher in Hampton Roads than in 2007 due to the higher fuel costs that were prevalent throughout most of the year.

Despite the growth in public transportation usage, the amount of public transportation usage per capita in Hampton Roads lags behind levels in comparable metropolitan areas. At 62 transit passenger miles per capita in 2007, Hampton Roads ranked 21<sup>st</sup> among 36 large metropolitan statistical areas with populations between one and three million people. Among the 20 metropolitan areas with a higher number of passenger miles than Hampton Roads, 14 had a transit rail system in place in their region. The Tide, Hampton Roads light rail line, is expected to begin operation in 2010.



Hampton Roads Transit bus

### Transit Passenger Miles Per Capita Large Metropolitan Statistical Areas, 2007



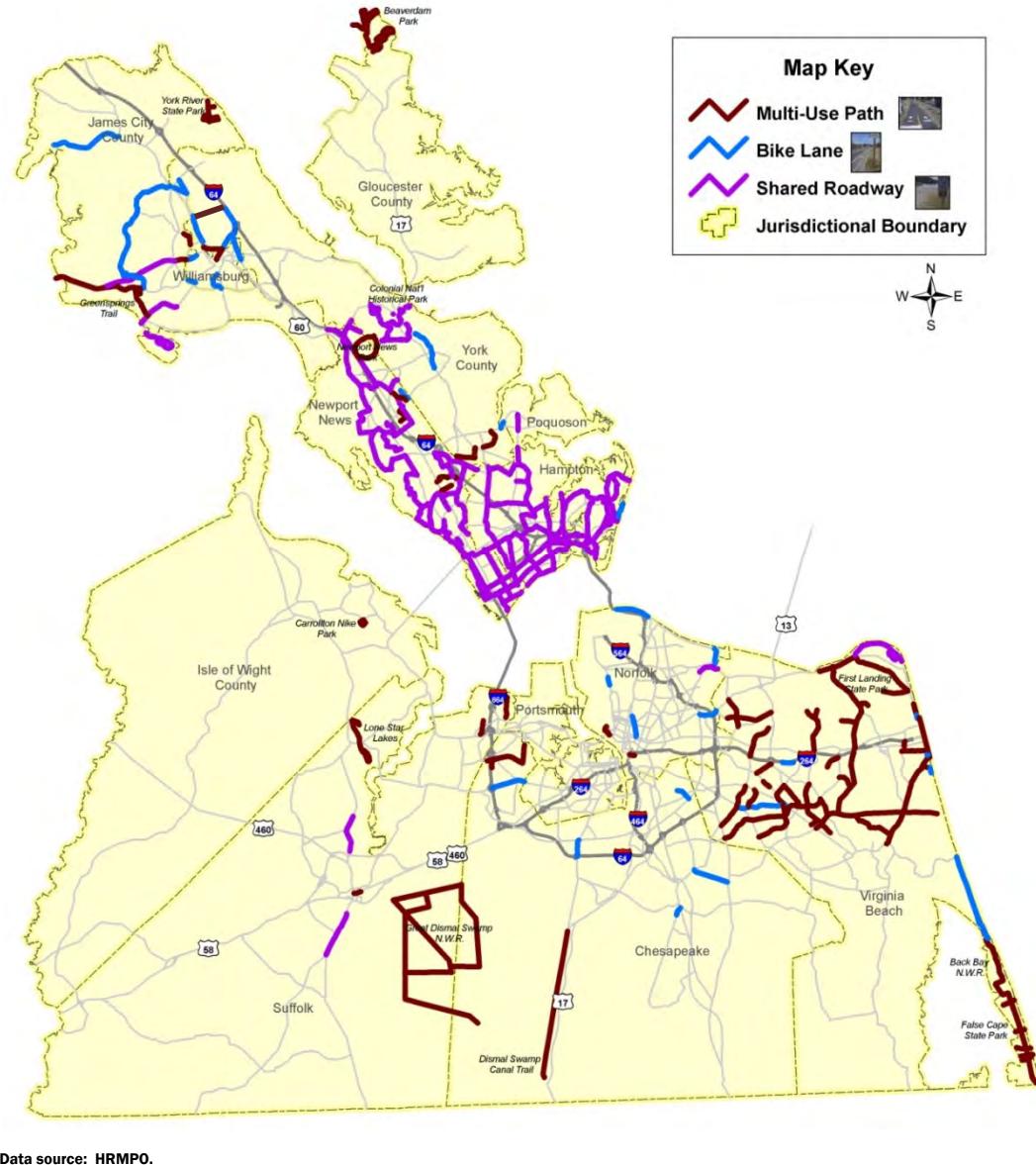
# BIKE AND PEDESTRIAN FACILITIES

**Bicycle and pedestrian facilities not only provide for an alternate means of transportation but also provide additional recreation opportunities to both residents and visitors of our region.**

In recent years, several bicycle and pedestrian facilities have been constructed in Hampton Roads, including high profile facilities such as the conversion of the old Route 17 in Chesapeake into the Great Dismal Swamp Trail, and portions of the Virginia Capital Trail in James City County.

There are currently 400 miles of bicycle facilities throughout Hampton Roads. These facilities range significantly in size and scope, from secluded paths in city and state parks to bicycle lanes along major thoroughfares. Of the 400 miles of bicycle facilities in the region, 177 miles are shared roadways, which are roadways that are signed as a bicycle route but do not have a portion of the roadway that is reserved exclusively for cyclists. 175 miles of bicycle facilities in Hampton Roads are multi-use paths, which are separate paths from the roadway that are

## Existing Bicycle Facilities in Hampton Roads



prohibited for use by vehicular traffic. The remaining 48 miles of bicycle facilities in Hampton Roads are bicycle lanes, which are roadways that have a portion of the pavement delineated for bicycle use only.



Virginia Capital Trail

There are currently plans for over 1,400 miles of bicycle facilities in VDOT's Hampton Roads District Bicycle Plan, which was created based on each locality's plans. However, at current funding levels it is expected that many of these facilities will not be able to be constructed in the near future.

## Existing Centerline Miles of Bicycle Facilities by Type in Hampton Roads

Shared  
Roadway  
177 miles  
44%

Multi-Use  
Path  
175 miles  
44%

Bike Lane  
48 miles 12%

Data source: HRMPO.



## NEW DEVELOPMENTS

**Virginia Capital Trail.** Work continues on the Virginia Capital Trail, which will connect Williamsburg and Downtown Richmond when completed. The original 2.8-mile section between Jamestown Settlement and Jamestown High School opened in November 2006, and the 4.5-mile section between Jamestown High School and the Chickahominy River was opened in May 2007. The entire trail is expected to be completed by 2014.

**Great Dismal Swamp Trail.** The 8.5-mile trail, which uses the former Route 17 roadway parallel to the Great Dismal Swamp Canal, was opened in April 2006.

# TRANSPORTATION FINANCING

## Funding for transportation is at a crossroads in

**Virginia.** Due to a variety of reasons including less fuel being purchased and tough economic conditions, the amount of revenue being collected for transportation is decreasing both in Virginia and the United States. VDOT currently projects that transportation revenues will decrease between \$2.1 and \$2.6 billion over the next six years.



The transportation budget for the State of Virginia was \$4.8 billion in Fiscal Year 2008. This budget pays for the construction and maintenance of Virginia's highway system, operations, debt payments, administration, and support for the ports, aviation, public transportation, and rail. Virginia's transportation budget has increased in recent years, mostly due to an increase in revenues from a transportation funding package approved by the General Assembly early in 2007.

## MILEPOSTS

18%

41

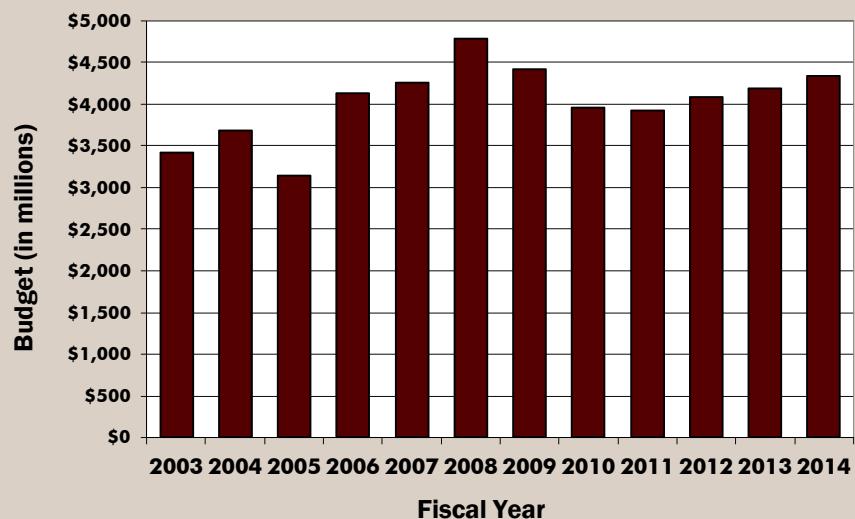
33

The projected decrease in the transportation budget in Virginia from FY 2008 to FY 2011.

Virginia's rank among the 50 states and D.C. in statewide average taxes and fees collected on each gallon of unleaded gasoline in 2008.

Virginia's rank among the 50 states and D.C. in total highway expenditures per capita in 2005.

## Historical and Projected Transportation Budget State of Virginia, Fiscal Years 2003 - 2014



Data source: VDOT. Projections as of November 2008.

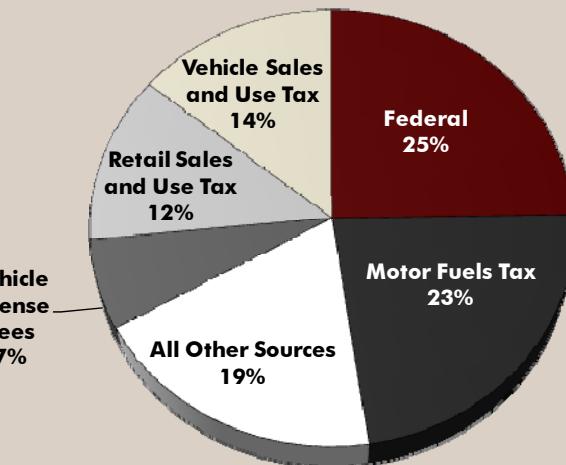
In future years, however, Virginia's transportation budget is projected to decrease. The budget for Fiscal Year 2009 is 8% lower than FY 2008 due to a sharp decrease in various revenue sources. By FY 2011, the transportation budget is projected to be 18% lower than FY 2008 budget levels, and the budget in FY 2014 is projected to be 10% lower than FY 2008 levels.

Virginia receives its transportation revenues from a variety of sources. The largest source in Virginia is the federal government, comprising a quarter of all transportation revenues. The second largest revenue source is the state motor fuels excise tax, which has remained unchanged at 17.5 cents per gallon since 1986. Other major sources of transportation revenues include the vehicle sales and use tax, retail sales and use tax, and vehicle license fees.

The largest component of Virginia's transportation budget is devoted to highway maintenance and operations. 36% of Virginia's transportation budget in Fiscal Year 2009 is allocated to maintaining and operating existing roadway infrastructure. Highway system construction comes in a distant second at 21% of all statewide transportation allocations.

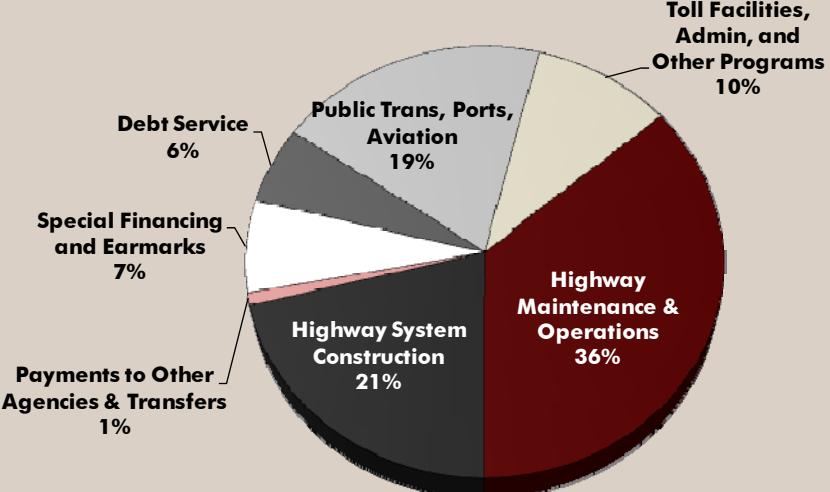
In future years, the amount of funding that must be devoted to maintaining and operating existing roadway infrastructure will increase. This is due to a variety of factors, including the aging of Virginia's roadways and bridges as well as increased costs in construction and

### Transportation Revenues in the State of Virginia by Source, Fiscal Year 2009



Data source: VDOT.

### Transportation Allocations in the State of Virginia, Fiscal Year 2009



Data source: VDOT.

labor. The amount of statewide funding needed for roadway maintenance and operations is expected to rise from about \$1.6 billion in FY 2008 to over \$2.0 billion by FY 2014.

With a shrinking transportation budget and additional money needed for roadway maintenance and operations, significantly less money will be available for roadway construction. The annual funding for roadway construction in Virginia is expected to decrease from \$1.6 billion in FY 2008 down to just under \$1.0 billion in FY 2014.

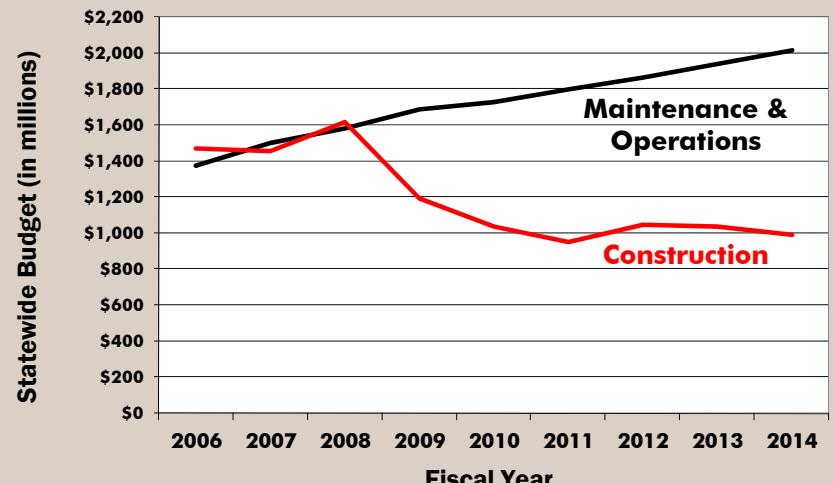
Even before the expected decrease in roadway funding in Virginia in future years, the amount of funding for roadways in Virginia ranked near the lower third compared to other states. Among the 50 states and the District of Columbia, Virginia ranked 33rd in highway expenditures per capita in 2005, the most current year available.

However, the amount of money spent in Virginia is comparable to neighboring states such as North Carolina, Maryland, and Kentucky.

A major reason why Virginia ranks in the lower half of highway expenditures per capita is due to the amount of money collected on gasoline taxes and fees. In Virginia roughly a quarter of all transportation revenues come from the statewide motor fuels tax.

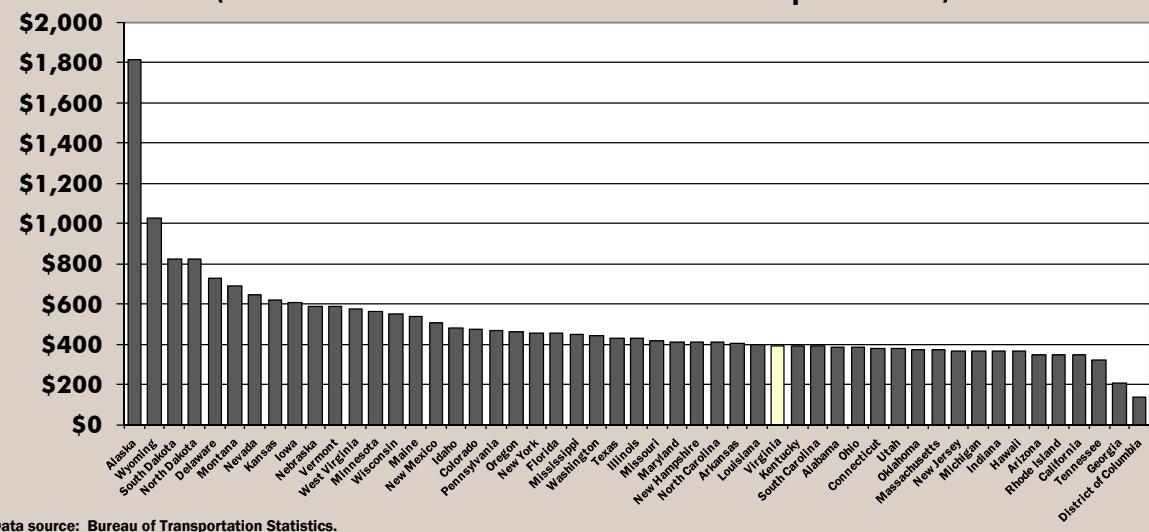
Currently the statewide excise tax on unleaded gasoline is 17.5 cents per

## Projected Statewide Highway Funding by Fiscal Year Maintenance vs. Construction, FY 2006 - 2014



Data source: VDOT. Projections as of November 2008. Construction includes Systems, Earmarks and Statewide project funding.

## Highway Expenditures per Capita by State, 2005 (Includes State and Local Government Expenditures)



Data source: Bureau of Transportation Statistics.

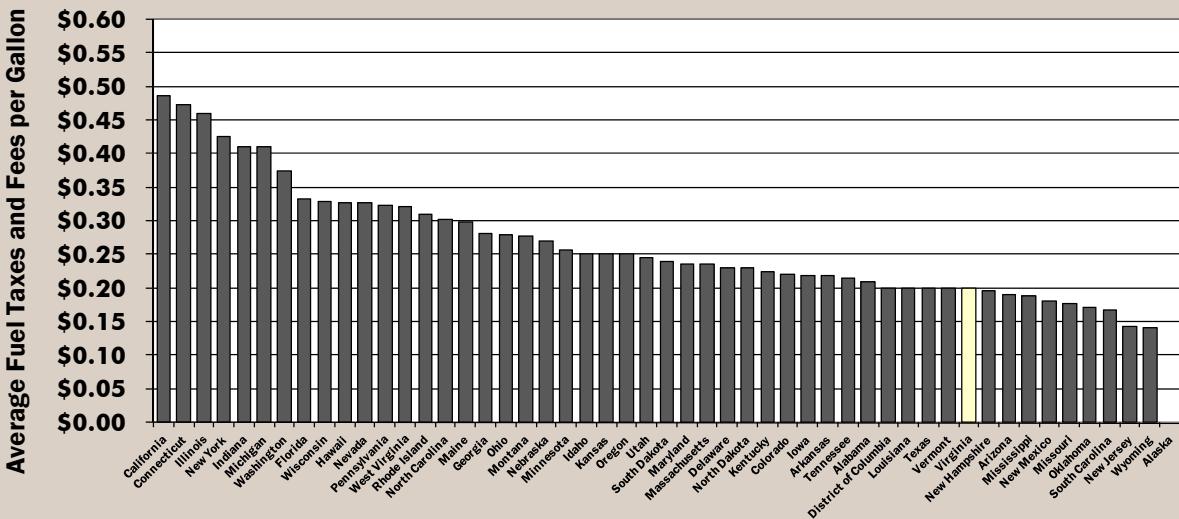
gallon. This amount has remained unchanged since 1986, and inflation has reduced the buying power of the excise tax nearly in half during this time.

In addition to the excise tax, 0.6 cents per gallon is collected statewide for the petroleum underground storage tank fund. In Northern Virginia, an additional 2% sales tax is collected on motor fuels for public transportation improvements. This 2% tax, however, is not collected in Hampton Roads.

Virginia ranks 41st among the 50 states and the District of Columbia in statewide average taxes and fees collected on each gallon of unleaded gasoline. All of the states neighboring Virginia have higher taxes and fees on gasoline, and in North Carolina the rate is more than 10 cents higher per gallon.

Largely due to Virginia's lower tax rates, Hampton Roads has lower fuel costs than other areas. As of December 1<sup>st</sup>, 2008, the average cost of a gallon of unleaded fuel in Hampton Roads was \$1.67. This is

### Statewide Average Gasoline Taxes and Fees (as of October 1, 2008)



Data source: American Petroleum Institute. Statewide average gasoline taxes include base tax rates as well as any additional statewide and local taxes and fees.

### Average Regular Unleaded Fuel Costs in Hampton Roads



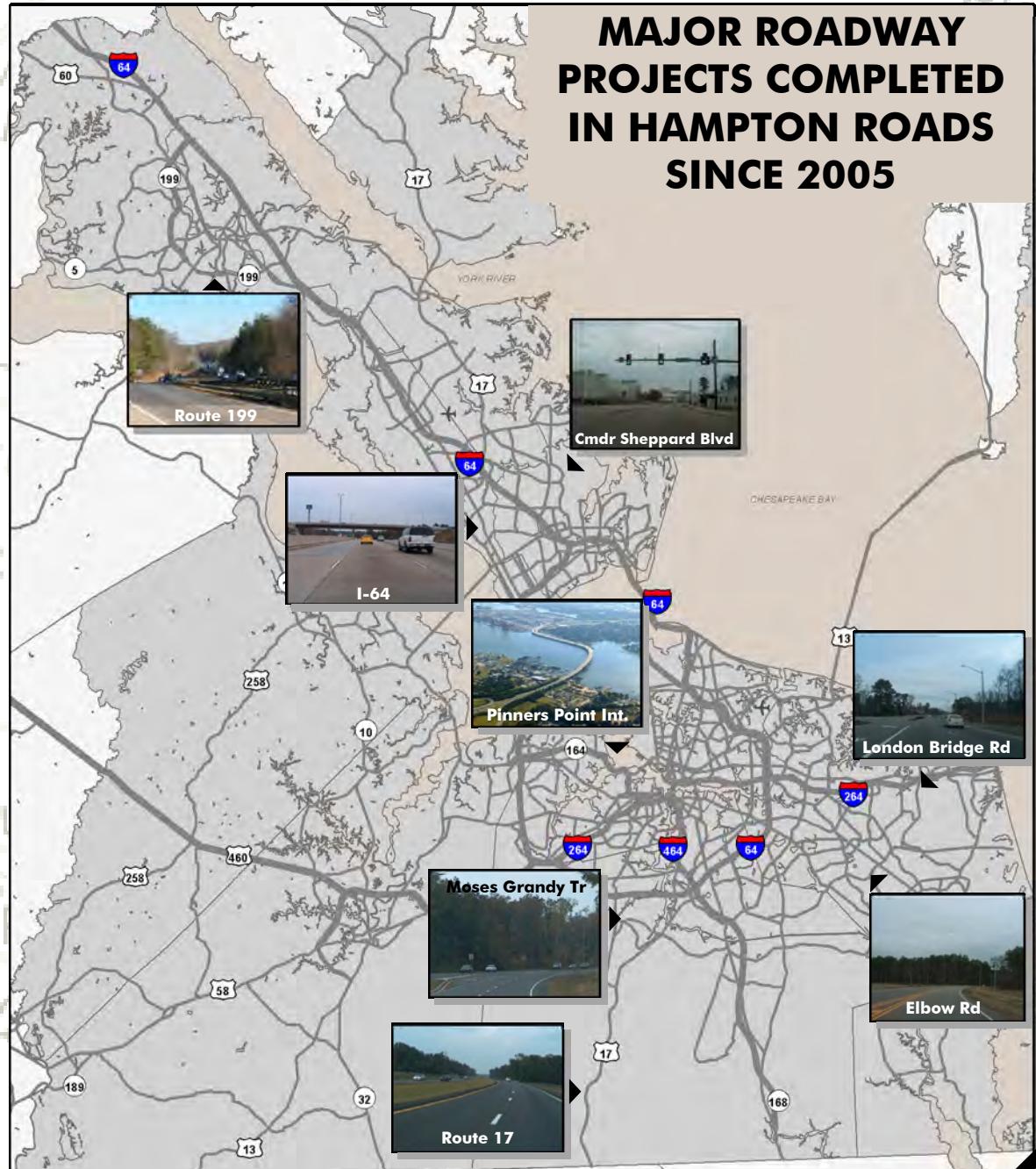
Data source: AAA Fuel Gauge Report.

more than \$2 lower than the \$3.99 per gallon average that occurred in Hampton Roads in the middle of July 2008. As of December 1<sup>st</sup>, 2008, Hampton Roads had the 7<sup>th</sup> lowest average fuel cost among all large metropolitan areas with populations between one and three million.

In spite of the recent decrease in highway funding devoted to construction, there were some major roadway projects that were completed in Hampton Roads over the last few years. Some of these projects include the widening of I-64 on the Peninsula, the Pinners Point Interchange in Portsmouth, and the new Route 17 in Southern Chesapeake.

A few roadway projects are currently under construction throughout Hampton Roads. Some of these projects include I-64 near the Battlefield Boulevard interchange, portions of Jefferson Avenue and Warwick Boulevard on the Peninsula, and Virginia Beach Boulevard and Lynnhaven Parkway on the Southside.

## MAJOR ROADWAY PROJECTS COMPLETED IN HAMPTON ROADS SINCE 2005



There are also a number of future roadway projects planned for the region in spite of the decrease in highway construction funding. These projects are included in the VDOT Six-Year Improvement Program. Some of the larger future projects include the widening of Laskin Road, Military Highway, Princess Anne Road, Route 17 on the Peninsula, and Witchduck Road. A number of intersection and interchange improvements are included in the Six-Year Improvement Program as well.

However, due to the decrease in transportation revenues, additional cuts are planned for the Six-Year Improvement Program in the near future. Many of the projects that are currently included in the Six-Year Improvement Program may be delayed or cut altogether.

## Major Roadway Projects in Hampton Roads Currently Under Construction

Roadway	From/To	Project	Expected Completion
Birdneck Road	General Booth Blvd to Norfolk Ave	Widen to 4 lanes	April 2011
I-64	Greenbrier Pkwy to I-464	Add new ramps and HOV lanes	July 2009
Jefferson Avenue	Buchanan Dr and Green Grove Ln	Widen to 6 lanes	March 2010
Lynnhaven Parkway	Holland Rd to S. Lynnhaven Rd	Widen to 6 lanes	May 2011
Route 5	Dresser Bridge	Replace bridge	July 2010
Virginia Beach Boulevard	Jett St to Briar Hill Rd	Widen to 6 lanes	April 2010
Warwick Boulevard	J Clyde Morris Blvd to Nettles Dr	Widen to 6 lanes	November 2009

Data source: VDOT. Data as of November 2008.

## Major Roadway Projects in Hampton Roads Included in Six-Year Improvement Program

Roadway	From/To	Project	Expected Construction Start Date
Commander Shepard Blvd	North Campus Pkwy to Big Bethel Rd	New 4 lane facility	FY 2010
Finney Avenue Extended	Finney Ave to East Washington St	New 2 lane facility	FY 2014
Fort Eustis Boulevard	East of Jefferson Ave to Route 17	Widen to 4 lanes	FY 2009
Gilmerton Bridge		Replacement	FY 2009
I-264	I-64 to Witchduck Rd	Add eastbound lane	FY 2013
Ironbound Road	Strawberry Plains Rd to Longhill Conn. Rd	Widen to 4 lanes	FY 2010
Laskin Road	First Colonial Rd to Birdneck Rd	Widen to 6 lanes	FY 2012
Military Highway	Lowery Rd to Northampton Blvd	Widen to 8 lanes	FY 2013
Mount Pleasant Road	Chesapeake Expressway to Centerville Tpke	Widen to 4 lanes	FY 2012
Nansemond Pkwy	Shoulders Hill Rd to Chesapeake CL	Widen to 4 lanes	FY 2010
Nimmo Pkwy	Princess Anne Rd to General Booth Blvd	New 4 lane facility	FY 2010
Princess Anne Road	Dam Neck Rd to Nimmo Pkwy	Widen to 4 lanes	FY 2010
Route 17	Wolftrap Rd to Hampton Hwy	Widen to 6 lanes	FY 2011
Wesleyan Drive	Northampton Blvd to Baker Rd	Widen to 4 lanes	FY 2011
Witchduck Rd	Princess Anne Rd to I-264	Widen to 6 lanes	FY 2012

Data source: VDOT. Data as of November 2008. Only includes those projects expected to begin construction before the end of FY 2014.

# ITS & OPERATIONS

**As roadway projects become more costly and more difficult to construct, using Intelligent Transportation Systems (ITS) technologies and systems operations as a cost-effective method of maximizing the capacity of the existing roadway network has become more important than ever.** The purpose of system operations is to maximize the safety, security, and mobility of roadway users by actively managing the regional transportation system. This is done through both trained and coordinated manpower and technological improvements. Some examples include incident management, signal coordination and optimization, automated toll collection, and providing traveler information via multiple forms of media such as highway advisory radio and 511 Virginia.



Photo Source: VDOT.



## MILEPOSTS

113

5,000,000

5

The number of miles of freeway soon to be covered by the Safety Service Patrol and ITS technologies in Hampton Roads.

The number of calls placed to the 511 Virginia traveler information service since 2005.

The number of cities in Hampton Roads (Chesapeake, Hampton, Newport News, Norfolk, and Virginia Beach) that maintain their own traffic management centers.

## NEW DEVELOPMENTS

**Transportation Operations Center Phase III.** The final phase of the Hampton Roads Transportation Operations Center is nearly complete. Although the infrastructure has been in place since Summer 2008, integration into the Transportation Operations Center will not be complete until Winter 2008/2009. When complete, nearly the entire Interstate system in Hampton Roads will be instrumented with ITS technologies.

### Regional Concept of Transportation Operations.

Hampton Roads recently developed a Regional Concept of Transportation Operations (RCTO) in order to improve incident management throughout the region. More details on this effort are included on page 39.

In Hampton Roads, regional system operations are led by the VDOT Hampton Roads Transportation Operations Center. The Transportation Operations Center maintains ITS infrastructure on the Interstate system, monitors traffic conditions throughout the region, responds to crashes and other incidents with the Safety Service Patrol, and distributes traveler information via changeable message signs and highway advisory radio.

The Hampton Roads Transportation Operations Center is currently in the process of completing the final phase of their system. Once complete, nearly the entire Hampton Roads freeway system (113 miles) will be instrumented with ITS technologies. The completed system will include nearly 300 closed-circuit cameras, over 2,300 vehicle detectors and sensors, and 240 changeable message signs.

Many local jurisdictions in Hampton Roads also operate their own transportation operations centers.

## ITS TECHNOLOGIES USED IN HAMPTON ROADS

Hampton Roads has been a leader in the use of Intelligent Transportation Systems. With the upcoming completion of Phase 3 of the Traffic Management System, nearly every mile of Interstate in the region is instrumented with ITS technologies. In addition, various cities throughout the region maintain varying amounts of ITS infrastructure as well. The following ITS technologies are in use throughout Hampton Roads.



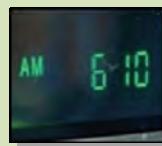
### CCTV Cameras

Provides roadway images to traffic management centers and the public.



### Changeable Message Signs

Provides up-to-date information to the traveling public.



### Highway Advisory Radio

Provides up-to-date traveler information through radio broadcasts on 610 AM.



### 511 Virginia

Provides up-to-date traveler information via telephone or the internet.



### Advanced Signal Systems

Improves the coordination and timing of traffic signals in a corridor or throughout an entire city, reducing the number of stops and delays.



### Electronic Toll Collection

Allows travelers to pass quickly through special lanes, avoiding backups and delays due to paying tolls.



### Vehicle Detection Devices

Records traffic volumes and speeds. Also notifies traffic management centers of congestion and incidents.



### Transit Automatic Vehicle Location (AVL)

Provides the location of transit vehicles, helping to keep them on schedule.



### Reversible Roadway Gates

Allows traffic on limited access roadways to be reversed based on commuting patterns, maximizing the use of the existing roadway.



### Emergency Vehicle Signal Preemption

Changes signal phase when an emergency vehicle approaches, improving safety and response time of emergency vehicles.

## REGIONAL CONCEPT OF TRANSPORTATION OPERATIONS

Norfolk opened their own Smart Traffic Center in 2000 and since then Chesapeake, Hampton, Newport News and Virginia Beach have opened centers as well. These local transportation operations centers either are or will be connected with the Hampton Roads Transportation Operations Center, which allows for data and video sharing and instant communication.

The state has also made improving systems operations a priority, and one method is through operating the 511 Virginia traveler information service. This service disseminates traveler information via cellular or land line phone, email, text message, and the recently improved website <http://www.511virginia.org>. The 511 Virginia service was launched statewide in February 2005 and has received over 5 million calls and 2 million website visits since then.

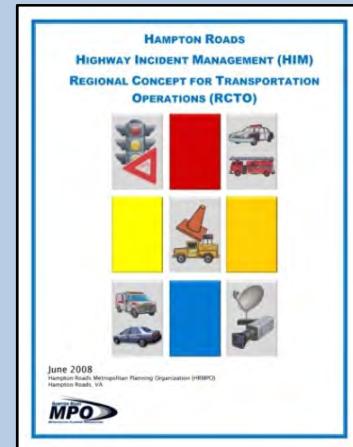
Regional operations planning and coordination is currently conducted through the Hampton Roads ITS and Operations Committee. This committee meets on a regular basis to discuss issues related to ITS technologies and operations, and is in charge of updating and maintaining the regional ITS Strategic Plan. The committee is comprised of a wide variety of stakeholders including traffic engineers, operations staff, transit operators, police, and first responders.

Due to high profile incidents on freeways throughout the region, the HRMPO made it a goal to improve incident management in Hampton Roads. This goal is being achieved by developing a Regional Concept of Transportation Operations (RCTO), and Hampton Roads is one of only four RCTO demonstration sites nationwide.

An RCTO is defined by FHWA as a management tool that assists in planning and implementing management and operations strategies in a collaborative and sustained manner. In Hampton Roads, the objectives of the RCTO include improving responder safety, decreasing incident clearance time, decreasing the number of secondary incidents (those incidents that occur as a result of a previous incident), improve interagency communication, and review incidents on a regular basis to determine where improvements could be made.

Over the last three years members of various agencies throughout Hampton Roads have been collaborating on the RCTO effort. These agencies include VDOT, HRMPO, city and state police, first responders, local operations engineers and many others.

The RCTO Executive Summary report is now available at [http://hrmpo.org/MPO\\_Reports.asp](http://hrmpo.org/MPO_Reports.asp).

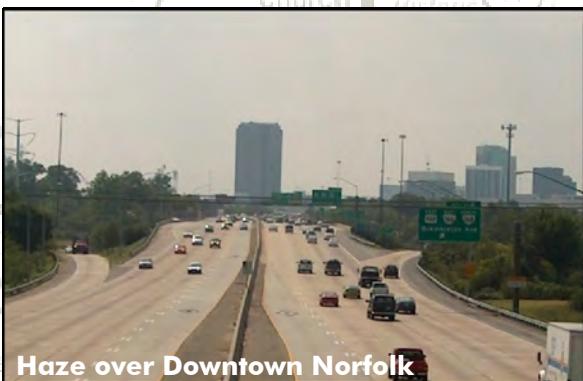


# AIR QUALITY

**With the effects that vehicle emissions have on air quality, planners must account for the impacts that transportation projects have on regional air quality.**

The Environmental Protection Agency (EPA) regulates the amount of airborne pollutants allowed in each region.

These airborne pollutants come from stationary sources such as factories and power plants, and mobile sources such as motorized vehicles and ships. According to the EPA, over half of all hazardous air pollutants come from mobile sources.



Because mobile sources contribute heavily to regional air quality, federal regulations require that the metropolitan transportation planning process meets mandates set forth by the Clean Air Act. This means that the regional Transportation Improvement Program and Long Range Transportation Plan must be analyzed to make sure they meet all air quality conformity standards.



## MILEPOSTS

75

1/2

The new eight-hour federal ozone standard, in parts per billion, as of 2008. This standard replaced the old standard of greater than 84 parts per billion.

According to the EPA, over half of all hazardous air pollutants come from mobile sources.

Ground-level ozone and other pollutants are measured in Hampton Roads by three ambient air quality stations maintained by the Virginia Department of Environmental Quality (DEQ). These stations are located in the Holland section of Southwestern Suffolk, the Tidewater Community College campus in Northern Suffolk, and in Downtown Hampton.

Based on the amount of ground-level ozone recorded at these monitoring stations, EPA designates each metropolitan area as being in attainment or non-attainment of federal ozone air quality standards.

Currently EPA makes these designations using an eight-hour standard. Under the eight-hour standard, EPA uses the fourth-highest daily maximum eight-hour average ozone concentration over the course of the year, averaged over a three-year period to determine if there is a violation.

Hampton Roads was originally designated as a marginal ozone nonattainment area in 1991 based on the one-hour ambient air quality standard that existed at the time. Through the years since then the region has been going back and forth between being designated as in attainment and nonattainment. As of 2007 the region was classified as an attainment area based on the eight-hour standard.

However, as of 2008 the ozone standard has been changed. Through 2007 a region was considered to be in nonattainment if the eight-hour ozone levels were greater than 84 parts per billion (ppb) at any of the regional monitoring stations. As of 2008 this federal standard has been lowered to 75 parts per billion or higher. In Hampton Roads, the current 2006 - 2008 three-year ozone averages are between 76 and 77 parts per billion, slightly above the new 75 parts per billion threshold.

In spite of this, air quality in Hampton Roads is generally better than the air quality in other large metropolitan areas. Hampton Roads had a total of 32 days with Air Quality Index values greater than 100 between 2005 and 2007 according to EPA, ranking 25th among 34 large metropolitan areas.

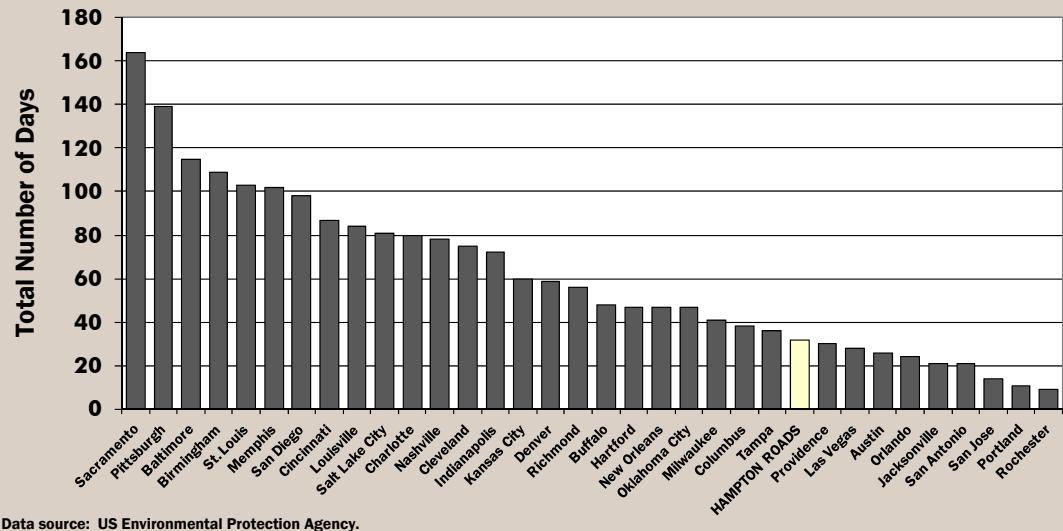
## Eight Hour Ozone Exceedences at Regional Air Quality Monitoring Stations, 2001 – 2008

Monitor Location	2001	2002	2003	2004	2005	2006	2007	2008*
Hampton	4	14	2	1	0	0	2	4
Suffolk - Holland	0	11	3	0	0	0	0	4
Suffolk - TCC Campus	4	13	3	1	1	2	2	6

Data source: Virginia DEQ. 2008 data is unofficial.

\* In 2008, the exceedence standard was reduced from greater than 84 parts per billion to greater than 75 parts per billion.

## Number of Days in Each Large Metropolitan Statistical Area with Air Quality Index Values Greater than 100, 2005 to 2007



Data source: US Environmental Protection Agency.

# ADDITIONAL INFORMATION

The information provided in this report was compiled from a variety of sources, most of which are easily accessible via the internet. Data from the following sources were included in this report and can be accessed for additional information:

**Air Travel** – The Federal Aviation Administration (FAA) updates air passenger data for both the nation and individual airports at <http://www.faa.gov>. Passenger data is also provided by each of the region's airports at <http://www.norfolkairport.com> and <http://www.nnwairporth.com>.



**Port Data** – The Virginia Port Authority maintains up-to-date statistics regarding the Port of Virginia on their website <http://www.vaports.com>. The Hampton Roads Maritime Association also releases the Port of Hampton Roads Annual Report, which contains extensive information regarding all aspects of the port. Their website is <http://www.portofhamptonroads.com>.



**Rail Travel** – The Federal Railroad Administration (FRA) Office of Safety Analysis maintains a rail safety database. This data is located on their website <http://safetydata.fra.dot.gov>. Amtrak maintains a list of passenger volumes by station at their website <http://www.amtrak.com>.



**Roadway Usage** – The Highway Statistics Series contains data on motor fuel, motor vehicles, driver licensing, highway finance, highway mileage, and federal aid for highways. The reports are released annually by the Federal Highway Administration and are located at <http://www.fhwa.dot.gov/policyinformation/index.cfm>.

**TTI Data** – The Texas Transportation Institute (TTI) at Texas A&M University releases the Urban Mobility Report, a nationally known study of mobility and traffic congestion on freeways and major streets in 85 urbanized areas. The report is located at <http://mobility.tamu.edu>.

**Commuting** – The Bureau of the Census annually collects and distributes socioeconomic data via the American Community Survey (ACS). The ACS includes commuting characteristics data for each city and region. Data from the American Community Survey is available at <http://www.census.gov/acs>.

**Roadway Safety** – The Virginia Department of Motor Vehicles annually releases the Virginia Traffic Crash Facts document, which is a comprehensive statistical overview of traffic crashes occurring throughout Virginia. The document is located at [http://www.dmv.state.va.us/webdoc/safety/crash\\_data/index.asp](http://www.dmv.state.va.us/webdoc/safety/crash_data/index.asp).

**Public Transportation** – The Federal Transit Administration collects and disseminates data on public transportation via the National Transit Database (NTD) program. The National Transit Database is located at <http://www.ntdprogram.gov>.



**Bike and Pedestrian Facilities** – A wide variety of information regarding bicycling and walking in Virginia is provided on VDOT's website at <http://www.virginiadot.org/programs/bk-default.asp>.



**Transportation Financing** – Information regarding transportation financing and projects in Virginia is available at <http://www.virginiadot.org>. A list of fuel taxes and fees by state is available on the American Petroleum Institute website <http://www.api.org>. National, statewide, and regional fuel prices are available via the AAA's Fuel Gauge report website <http://www.fuelgaugereport.com>.



**ITS & Operations** – VDOT maintains ITS infrastructure and manages traffic on the regional freeway system. More information is available at <http://www.virginiadot.org/travel/smart-traffic-center-hro.asp>. The Hampton Roads ITS Strategic Plan details the state of ITS and operations in the region as well as goals to be attained. This plan is located at [http://www.hrmopo.org/MPO\\_Reports.asp](http://www.hrmopo.org/MPO_Reports.asp).

**Air Quality** – Virginia's Department of Environmental Quality maintains information regarding national air quality standards and regional air quality data. Their website is <http://www.deq.state.va.us>.

For additional information regarding this report, previous Congestion Management studies, or other transportation questions or concerns, please contact the Hampton Roads Metropolitan Planning Organization (MPO):



**Hampton Roads Metropolitan Planning Organization**  
**723 Woodlake Drive**  
**Chesapeake, Virginia 23320**  
**757.420.8300**  
<http://www.hrmopo.org>