INTERMODAL MANAGEMENT SYSTEM
REGIONAL FREIGHT STUDY

HAMPTON ROADS, VIRGINIA

IMS

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

T07-02

APRIL 2007

HAMPTON ROADS PLANNING DISTRICT COMMISSION

CHESAPEAKE
REBECCA C.W. ADAMS
AMAR DWARKANATH
* CLIFTON E. HAYES, JR.
ANNE F. ODELL
ELLA P. WARD

FRANKLIN
JOSEPH J. SCISLOWICZ
* ROWLAND L. TAYLOR

GLOUCESTER COUNTY
JOHN J. ADAMS, SR.
* WILLIAM H. WHITLEY

HAMPTON
* RANDALL A. GILLILAND
ROSS A. KEARNEY, II
JESSE T. WALLACE, JR.

ISLE OF WIGHT COUNTY
W. DOUGLAS CASKEY
* STAN D. CLARK

JAMES CITY COUNTY
* BRUCE C. GOODSON
SANFORD B. WANNER
.

NEWPORT NEWS
CHARLES C. ALLEN
* JOE S. FRANK
RANDY W. HILDEBRANDT

NORFOLK
ANTHONY L. BURFOOT
* PAUL D. FRAIM
DR. THERESA W. WHIBLEY
REGINA V.K. WILLIAMS
BARCLAY C. WINN

POQUOSON
* CHARLES W. BURGESS, JR.
GORDON C. HELSEL, JR.

PORTSMOUTH
JAMES B. OLIVER, JR.
* DOUGLAS L. SMITH

SOUTHAMPTON COUNTY
ANITA T. FELTS
* MICHAEL W. JOHNSON

SUFFOLK
LINDA T. JOHNSON
* JAMES G. VACALIS

SURRY COUNTY
* TYRONE W. FRANKLIN
JUDY S. LYTTLE

VIRGINIA BEACH
HARRY E. DIEZEL
ROBERT M. DYER
BARBARA M. HENLEY
* LOUIS R. JONES
MEYERA E. OBERNDORF
JAMES K. SPORE
JOHN E. UHRIN

WILLIAMSBURG
* JACKSON C. TUTTLE, II
JEANNE ZEIDLER

YORK COUNTY
* JAMES O. McREYNOLDS
THOMAS G. SHEPPERD, JR.

*EXECUTIVE COMMITTEE MEMBER

PROJECT STAFF

ARTHUR L. COLLINS	EXECUTIVE DIRECTOR/SECRETARY
DWIGHT L. FARMER	DEPUTY EXECUTIVE DIRECTOR, TRANSPORTATION
CAMELIA RAVANBAKHT	PRINCIPAL TRANSPORTATION ENGINEER
SAMUEL S. BELFIELD	SENIOR TRANSPORTATION ENGINEER
KEITH M. NICHOLS	SENIOR TRANSPORTATION ENGINEER
ROBERT C. JACOBS	DIRECTOR OF GRAPHIC & PRINTING SERVICES
MICHAEL R. LONG	GRAPHIC ARTIST/ILLUSTRATOR TECHNICIAN II
BRIAN MILLER	GRAPHIC TECHNICIAN II
RACHAEL V. PATCHETT	REPROGRAPHIC SUPERVISOR

INTERMODAL MANAGEMENT SYSTEM

REGIONAL FREIGHT STUDY

This report was included in the Work Program for Fiscal Year 2006-2007, which was approved by the Commission and the Metropolitan Planning Organization at their meetings of March 15, 2006.

PREPARED BY:

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

APRIL 2007

T07-02

REPORT DOCUMENTATION

TITLE:
Intermodal Management System:
Regional Freight Study

REPORT DATE
April 2007
GRANT/SPONSORINGAGENCY
FHWA/VDOT/LOCAL FUNDS

AUTHORS:
Samuel S. Belfield
Keith M. Nichols
Camelia Ravanbakht, PhD

ORGANIZATION NAME, ADDRESS AND TELEPHONE
Hampton Roads Planning
District Commission
723 Woodlake Drive
Chesapeake, Virginia 23320
(757) 420-8300
http://www.hrpdc.org

ABSTRACT

This report is the fourth in a series of Intermodal Management System (IMS) reports for Hampton Roads, Virginia. Phase I of the Intermodal Management System for Hampton Roads, Virginia, which was released in July 1996, summarized the region's intermodal transportation system (intermodal facilities, major intermodal conflict points), identified the region's intermodal goals and objectives, and established performance measures for passenger and freight movements. Phase II, which was released in April 1998, summarized the movement of freight to, from, and within the region. International, national, and local level freight movements were also investigated for highway, rail, water, and air transportation modes. Phase III updated the previous reports and included a statewide freight movement analysis, a detailed regional truck analysis, and lists port-related improvements in Hampton Roads. This report updates all three previous phases. In addition, this reports provides a review of freight industry terminology, a list of public and private freight data sources, a military freight analysis, a commodity flow data analysis with existing (2004) and projected (2035) conditions and locations of freight bottlenecks within the region.

ACKNOWLEDGMENTS

This report was prepared by the Hampton Roads Planning District Commission (HRPDC) in cooperation with the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the Virginia Department of Transportation (VDOT), the Virginia Port Authority (VPA), and the member jurisdictions of the Hampton Roads region. The contents of this report reflect the views of the staff of the Hampton Roads Area Metropolitan Planning Organization (MPO). The MPO 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 HRPDC. 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

LIST OF MAPS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

The goal of a good multimodal transportation system is to create a transportation network for the movement of people and goods that is safe, strategic, efficient, and seamless. An important and often overlooked component of the transportation system is intermodal connectivity. Ideally, transportation networks should function as interconnected webs. All transportation modes impact one another and a single inadequate link in the transportation system can reduce the efficiency and productivity of the overall system. For this reason, it is important to identify current or emerging problems/issues for all modes of travel in Hampton Roads and develop strategies to improve ease of connections. This study will primarily focus on the freight component of the transportation system for Hampton Roads.

Since ISTEA, Congress has encouraged the consideration of freight movement and intermodal connectivity during statewide and metropolitan transportation planning processes. Resulting from this growing awareness and new emphasis, the Hampton Roads Planning District Commission (HRPDC) began developing an Intermodal Management System (IMS) for the region in the early 1990s, and released the region's first IMS report in 1996. Updates to the IMS were released in 1998 and 2001.

Hampton Roads MPO Study Area

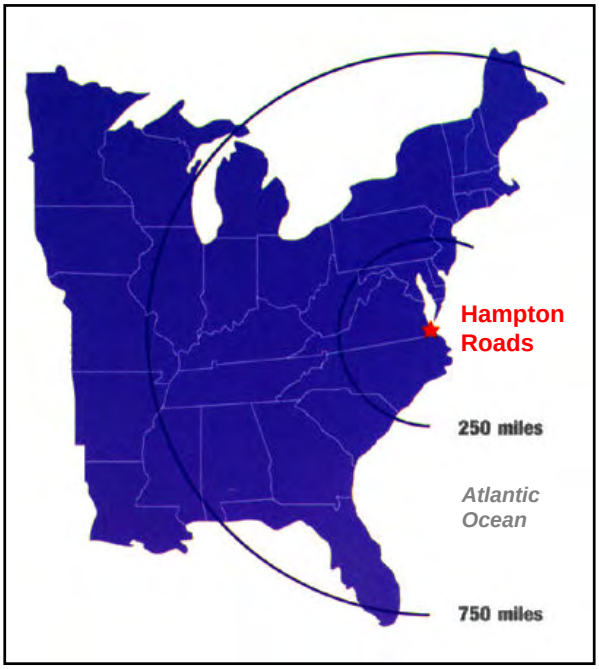
The Hampton Roads Metropolitan Planning Organization (MPO) is located in Southeastern Virginia, adjacent to the Atlantic Ocean and Chesapeake Bay. The Hampton Roads region includes sixteen localities with a total population of 1.6 million.

Hampton Roads MPO Boundary

Freight Transportation: Today's Challenge

Freight transportation influences every aspect of our daily lives and keeps our industries competitive in the global economy. Given the Internet Age we now live in, people are becoming more and more accustomed to buying and receiving goods in a convenient and timely fashion. This will require better connections and a more efficient transportation system in order to transport our goods and products. Additionally, the volume of freight has grown significantly over the last few decades and is expected to rise even more in the near future. By 2020, freight volumes in Virginia are projected to increase by 81% for trucks, 41% for rail, 300% for air, and 200% at the ports (*VTrans2025 and VPA*). Container growth through the Port of Hampton Roads is expected to grow by a staggering 433% by 2040 (VPA). In the United States, the value of goods moved is expected to increase from $9 trillion in 1998 to nearly $30 trillion (1998 dollars) in 2020 (*USDOT FHWA*).

All metropolitan areas experience the movement of freight to some degree; the Hampton Roads region, however, experiences it much more intensely than many regions. Hampton Roads' mid-Atlantic location makes it an ideal base from which to serve the large consumer and industrial markets located along the United States East Coast (See **Map 1**). The southeastern Virginia



MAP 1 – Hampton Roads is located within 750 miles of two-thirds of the United States marketplace.
Source: Hampton Roads Technology Council

region is multimodal, including ports, airports, rail, private trucking, shipping and warehouse distribution facilities, as well as a network of roadand rail corridors for the delivery of freight, goods, and services. The Port of Hampton Roads is one of the largest and most successful international seaports on the East Coast, attracting more than 80% of the world's major shipping lines and connecting the region with more than 100 nations and over 300 ports of call. Furthermore, four major rail routes that connect to the nation's east-west rail system begin and end in Hampton Roads (See **Map 2**). In order for Hampton Roads to remain competitive in attracting new business interests and continue to grow economically, its transportation network must facilitate the rapid and efficient movement of raw materials and finished products using trucks, trains, ships, and planes.

MAP 2 – Major Rail Routes to/from Hampton Roads.
Source: Virginia Port Authority

The Freight Dilemma

Cargo containers have reshaped global trade and transformed the world economy. According to industry leaders, about 15 million containers currently roam the globe. Chinese imports to the U.S. alone have increased from 1.5 million TEUs (20-foot container units) in 1997 to 7.4 million TEUs in 2005 and are expected to continue increasing at a fast pace for at least the next several decades. Asian ports, especially in China, are making huge investments and expanding their facilities at a fast pace with anticipation of exporting a majority of their cargo containers to the United States. The problem is that U.S. West Coast Ports are expanding at a much slower rate and are running out of space. With the continued rise in container imports, it's only a matter of time before more bottlenecks emerge, either at the ports themselves or on the railroads or highways that connect them to the rest of the country.

Today's containerships are bigger, faster, and equipped with more technology, which creates new viable shipping options and enables goods to be shipped from Asian markets to U.S. East Coast Ports through the Panama Canal. The challenge now is for U.S. East Coast Ports, like the Port of Hampton Roads, to continue to improve and expand their capacity and surrounding transportation facilities and corridors to support future growth. Some view the new influx of freight as a challenge, while others view it as an opportunity.

Private freight investments are already being made locally, such as the new APM Maersk terminal, at the Port of Hampton Roads. It is anticipated that the Port of Hampton Roads will have an expanded annual capacity from about 3.2 million 20-foot containers (TEUs) in 2005 to about 8.5 million by 2035, with the proposed Craney Island cargo terminal and the new APM Maersk cargo terminal in place (**Figure 1**). Public and private partnerships and investments, such as the Heartland Corridor project, will be critical to the success of future freight movement. The most important step now for Hampton Roads and its surrounding region is to focus on highway, railroad, and distribution center infrastructure improvements to accommodate this anticipated increase in cargo demand.

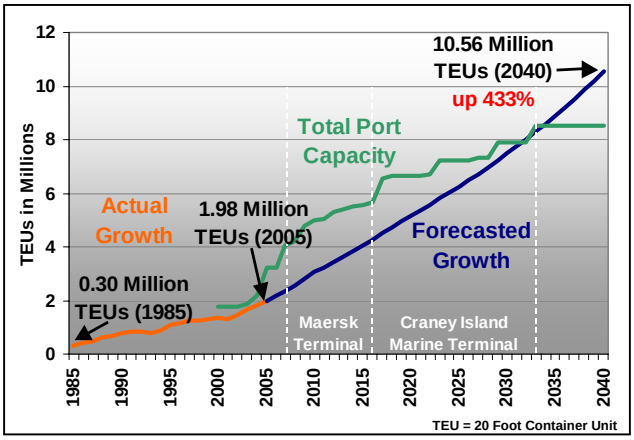


FIGURE 1 – Historical and Forecasted Growth in Containers Through the Port of Hampton Roads
Source: Virginia Port Authority (VPA)

IMS Goals and Objectives

The IMS program for Hampton Roads is an on-going process that identifies, develops, evaluates, and implements transportation strategies to improve the movement of goods and enhance connectivity among all modes of transportation. The Hampton Roads Planning District Commission (HRPDC) is currently working on its 2030 Long Range Transportation Plan. The agency plans to feed the strategies and conclusions from this IMS study as well as the latest Congestion Management Process (formerly known as Congestion Management System or CMS) study into the 2030 Long Range Plan. Some of the IMS tasks and objectives include:

- Define terms and concepts used in the freight industry
- Ensure that freight transportation needs are incorporated in the regional planning process.
- Collect freight data from public and private sources.
- Build partnerships and exchange information/ideas on freight planning issues and initiatives with the four major planning agencies (Virginia Department of Transportation, Department of Aviation, Virginia Port Authority, and Department of Rail and Public Transportation), local jurisdictions, private freight stakeholders, and the general public.
- Identify regional intermodal facilities and major intermodal conflict points.
- Determine trends in freight movement to, from, within and through the region by commodity, weight, and value for all modes including rail, truck, air, and water.
- Identify current problems and future challenges facing the movement of freight, goods and services.
- Analyze regional truck data to determine high truck locations and trends.
- Identify local/regional issues associated with high truck traffic and develop strategies to keep trucks moving.
- Incorporate short-term and long-term needs and recommend investments/ improvements to the transportation system infrastructure that will promote safe, secure, fast and efficient movement of raw materials and finished products.

Defining Freight Transportation

Freight transportation is simply the movement of products, goods, and materials from one location to another. In order to plan effectively for freight movement, it is important to understand basic freight concepts and terminology used in the freight community. Some general terms, intermodal terms, freight logistics and concepts, cargo terms, trucking terms, vessel types, and a discussion of containerization is included in **Appendix A** as background to the information provided in this document. As an additional resource, a freight glossary compiled from FHWA, is provided in **Appendix B**.

Maintaining and improving the transportation infrastructure is crucial in order to move people and goods safely and efficiently throughout Hampton Roads.

Report Organization

This report is organized into ten sections:

1. *Introduction*
2. *Integration of Freight Into the Transportation Planning Process* – describes the process for the Hampton Roads region and provides guidance to other metropolitan regions throughout Virginia and the US of the steps involved in freight planning. It also describes the various freight data sources and analytical tools that are available.
3. *Coordination with Statewide Freight Study* – describes the statewide coordination with freight officials and stakeholders in Virginia and provides the results of a freight survey conducted by the Virginia Department of Transportation.
4. *Freight Facilities in Hampton Roads* – provides a detailed description of the roadways, railroads, intermodal and port facilities, warehouse and distribution centers, drawbridges, and railroad crossings on the Southside and Peninsula in Hampton Roads.
5. *Freight Facts, Trends, and Forecasts* – provides a better understanding of the freight moving in and out of Hampton Roads and how it compares with other areas in the United States and around the world.
6. *Military Freight* – Describes why it is important to maintain a safe, secure, and efficient transportation system in Hampton Roads should an unexpected event occur that would require a rapid deployment of military cargo and personnel via air, land, or sea. This section also provides truck shipment data for military installations in Hampton Roads.
7. *Commodity Flow Data Analysis* – analyzes domestic freight movement into, out, and within Hampton Roads for all transportation modes for 2004 and 2035 using the Transearch Freight Database by Global Insight.
8. *Regional Truck Movement* – analyzes the movement of trucks both within Hampton Roads as well as through the gateways of the region. This section also identifies freight bottlenecks in Hampton Roads.
9. *Future Freight Needs* – identifies future freight needs and strategies to enhance freight movement to, from, and within Hampton Roads.
10. *Summary*

INTEGRATION OF FREIGHT INTO THE TRANSPORTATION PLANNING PROCESS

Freight transportation planning is a complicated task as the movement of goods from origin to destination oftentimes involves multiple transfers using various modes of transportation. In addition, there are many stakeholders who have different views and approaches to resolving freight dilemmas and issues. One of the most challenging aspects is how to incorporate the various freight transportation perspectives into the overall transportation planning process.

According to the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), "each State, in coordination with metropolitan planning organizations, shall ensure that intermodal freight transportation, trade facilitation, and economic development needs are adequately considered and fully integrated into the project development process, including transportation planning through final design and construction of freight-related transportation projects." Congress has also encouraged a freight transportation gateways program "to improve productivity, security, and safety of freight transportation gateways, while mitigating congestion and community impacts in the area of the gateways." Cooperation and coordination among state and local government agencies as well as other public and private freight stakeholders will be key to solving freight issues to, from within and through Hampton Roads.

The purpose of this section is to document the process for the Hampton Roads region and provide guidance to other metropolitan regions throughout Virginia and the US of the steps involved in freight planning and to describe the various freight data sources and analytical tools that are available.

The Hampton Roads Planning District Commission (HRPDC) is currently finalizing its 2030 Long Range Transportation Plan (LRTP). It is anticipated that the outcome of this study will be incorporated into the ongoing and future LRTPs. Most importantly, a list of freight needs and strategies will be described later in this document, which can be used a guide for the development of future freight-related projects.

Steps in the Process

The following list was developed using the FHWA[1] basic principles and then expanded to apply to the Hampton Roads region.

1. Understand the basic principles of freight transportation
2. Define goals and objectives
3. Take inventory of existing freight facilities and assets in your region
4. Collect freight data for all modes (Water, Rail, Air, Truck, and Pipeline)
5. Analyze current and projected commodity flows
6. Identify major freight gateways or corridors
7. Assemble and collect input from freight industry/stakeholders and the general public (surveys, previous studies, forums, etc.)
8. Identify current and future economic impacts/benefits of freight movement
9. Identify policies that may hinder the movement of freight
10. Identify needs and deficiencies (current and future)
11. Identify "small capital" projects that can be quickly and easily implemented
12. Identify and prioritize major or long-term freight-related projects and opportunities
13. Secure funding
14. Incorporate projects in the regional Transportation Improvement Program or Long Range Plan
15. Development and Implementation

Freight Data Sources

There are two primary types of commodity flow data: public and private. Most freight data available to the public often does not contain full detail due to confidentiality requirements. Privately maintained freight data has detail, however, can be expensive to purchase. Private data also requires extensive analysis and data manipulation in order to summarize freight movements within the database. For this study, the primary data sources were: Global Insight (Transearch Insight Database), Virginia Port Authority, T. Parker Host, Inc., Hampton Roads Maritime Association, Norfolk International Airport, Newport News/Williamsburg International Airport, and the Virginia Department of Transportation.

[1] Federal Highway Administration, "Integrating Freight in the Transportation Planning Process", National Highway Institute Course No. 139001, February 2004.

TABLE 1 – Freight Data Sources – Public Data

Data Source	Description	Website
Commodity Flow Survey (CFS)	A survey designed to provide data on the flow of goods and materials by mode of transport in the United States. It is undertaken through a partnership between the Bureau of the Census, U.S. Department of Commerce, and the Bureau of Transportation Statistics, U.S. Department of Transportation. The CFS captures data such as domestic destination or port of exit, commodity, value, weight, mode(s) of transportation, the date on which the shipment was made, and an indication of whether the shipment was an export, or hazardous material. The CFS was first developed in 1993 using a continuation of statistics collected in the Commodity Transportation Survey from 1963. The most recent CFS's were completed in 1997 and 2002 with future editions to be released every 5 years. The 2002 CFS consists of a sample of 50,000 from a total of nearly 760,000 establishments chosen based on geographic location and industry and contains estimates for tons, miles, ton-miles and value by mode of transportation (including intermodal combinations), shipment distance, commodity, and weight. Many experts in the freight industry question the sample size and statistical validity of the survey. Another limitation of the data is that shipments from one foreign location to another (i.e. Mexico to Canada) that pass through U.S. are not included. In addition, the mileage of shipments in and out of the U.S. from a foreign countries is not included.	**U.S. Census Bureau** http://www.census.gov/svsd/www/cfsdat/2002cfs.html
Carload Waybill Sample	The Carload Waybill Sample, collected annually by the Association of American Railroads (AAR) under contract with the Surface Transportation Board (STB), is a stratified sample of carload waybills for terminated shipments by railroad carriers. Railroads that annually terminate 4,500 or more carloads (or five percent of their carloads in any state) are required to report to the Board various shipment data, including total rail traffic, commodities, revenues, origin-destination flows, and routing information for U.S. railroad shipments drawn from a sampling of their traffic waybills. The Waybill Sample is used for a variety of purposes by the Board, by parties appearing before the agency, by federal and state agencies, and by the general public. There are some limitations to this data: 1) resulting from the minimum number of carloads collected, some Class II and III railroads are often not covered, which may lead to sampling errors, 2) all BEA regions of origins and destinations for commodity shipments are not reported, and 3) it often overestimates the revenues of railroads undertaking contract movements.	**Surface Transportation Board** http://www.stb.dot.gov/
Bureau of Transportation Statistics (BTS)	The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 established BTS for data collection, analysis, and reporting and to ensure the most cost-effective use of transportation-monitoring resources. Freight data summaries are available by state for all modes of travel. BTS also publishes an annual National Transportation Statistics (NTS) report, which is the transportation equivalent of the Census Bureau's Statistical Abstract of the United States. The NTS report contains numerous tables and summaries pertaining to the movement of freight in the U.S.	**U.S. Department of Transportation, Bureau of Transportation Statistics** http://www.bts.gov/
Norfolk International Airport	Monthly cargo summaries by tons/lbs are available upon request. Norfolk International Airport officials also have descriptions of future air cargo facility improvements in Airport Master Plan Updates.	**Norfolk International Airport** http://www.norfolkairport.com/airportservices/aircargo.htm
Virginia Port Authority (VPA)	VPA is the state's leading agency for international transportation and maritime commerce, charged with operating and marketing the marine terminal facilities through which the shipping trade takes place. The agency owns four general cargo terminals-Norfolk International Terminals, Portsmouth Marine Terminal, Newport News Marine Terminal, and the Virginia Inland Port in Front Royal-which are operated by its affiliate, Virginia International Terminals, Inc. The agency maintains general statistics at the port such as by month for historical general cargo tonnage, container and breakbulk cargo, historical TEU's (Twenty-foot Equivalent Units), container units, top general cargo imports and exports, and top trading partners. This information is constantly updated and available on its website. VPA also maintains a database that tracks the origins and destinations of all containers shipped through the Port of Hampton Roads. Summaries of this data are available to the public; however, detail shipment and carrier name information is available due to confidentiality reasons.	**Virginia Port Authority/Virginia International Terminals, Inc.** http://www.vaports.com/
American Association of Port Authorities (AAPA)	A trade association which represents more than 150 public port authorities in the United States, Canada, the Caribbean and Latin America as well as other firms and organizations with an interest in the seaports of the Western Hemisphere. AAPA works to educate the public, media, local, state and Federal legislators about the essential role ports play within the global transportation system. AAPA maintains port industry statistics, such as North American Container Traffic, World Port Rankings and U.S. Port Cargo Tonnage.	**American Association of Port Authorities** http://www.aapa-ports.org/
T. Parker Host, Inc.	A full-time, full-service ship agent, providing experienced, dedicated maritime management at the world's largest and busiest ports, including Hampton Roads. Maintains monthly reports for foreign and domestic coal loadings (short tons) in the Port of Hampton Roads.	**T. Parker Host, Inc.** http://www.tparkerhost.com/
Virginia Department of Transportation (VDOT)	There are currently over 300 short-term (48-hour) count locations in Hampton Roads on the Congestion Management System[2] network that are collected once every 3 years. Additionally, there are 44 permanent count locations, which continuously provide traffic data during the entire year. Combined, these stations yield the vehicle classification data used to determine truck counts and truck percentages found in this report.	**Virginia Department of Transportation** http://www.virginiadot.org/

[2] Hampton Roads Planning District Commission, "Congestion Management System – Part 1 and Part 2", December 2004 and April 2005.

TABLE 2 – Freight Data Sources – Private Data

Data Source	Description	Website
Transearch Insight Database	An integrated freight forecasting database that enables users to analyze current and future freight flows by origin, destination, commodity, and transport mode. Transearch Insight is currently the most widely recognized and used commercial freight data source in the U.S. The database is unique in that it is constructed from over 70 individual commercial, public and proprietary freight data sources which include: o Motor Carrier Data Exchange (proprietary shipment data) o Carload Waybill Survey o Rail Carrier Data Exchange (proprietary shipment data) o Corps of Engineers Waterborne Commerce Statistics o US DOT Airline & Airport Statistics o Import/Export Trade Statistics o Census/Annual Survey of Manufactures o Department of Energy Coal Movement Statistics o Association of American Railroads (AAR) Freight Commodity Statistics o Inter-industry trade patterns o Department of Agriculture Produce Movement Data o Commodity Flow Survey Created by the two leading freight-industry experts, Transearch Insight integrates Global Insight's internationally recognized economic analysis and forecasts with Reebie Associates' rich set of U.S. freight flow data. Reebie Associates, which has provided transportation professionals with freight data since 1968 was purchased by Global Insight in February 2005. The database provides detailed U.S. and cross-border origin-destination freight shipment data at the state, Business Economic Area (BEA), county, metropolitan area, and zip-code level detail by commodity type, weight, and value for rail, air, water, and truck. The first generation of the Transearch Insight Database was released in 1995. Since then, a 2nd generation (1998), 3rd generation (2001), and 4th generation (2004) have been released. As this database has evolved, new information and features have been added, such as 5 digit zip codes, MPO research, agriculture and minerals traffic, highway routings imputed from O/D data, empty truck traffic, and supply chain structures. The last IMS update included data from the 2nd generation (1998) dataset. The Virginia Department of Transportation has purchased this data for a statewide freight study and for regions, like Hampton Roads, within the state to use. The data and analysis used in this IMS report update will include 4th generation (2004) information. A limited number of motor carriers provide/exchange truck data with Transearch, thus bias for some regions and communities may exist. Transearch also does not provide the following information: international air shipments, international petroleum shipments, unprocessed agriculture shipments, mining shipments, and pipeline shipments.	**Global Insight, Inc.** http://www.globalinsight.com/
American Trucking Associations (ATA)	American Trucking Associations was established in 1933 by a national affiliation of state trucking organizations. Subscriptions for truck data can be purchased at member and non-member prices for various topics such as a monthly truck tonnage report, Standard Trucking and Transportation Statistics (STATS), Trucking Activity Report (TRAC), and Trucking Economic Review. Annual reports are also available for purchase such as American Trucking Trends and the U.S. Freight Transportation Forecast to 2016-Booklet. Martin Labbe Associates, in contract with ATA, maintains a Less than Truckload (LTL) Commodity and Market Flow database that is updated on a monthly basis. Typically, an LTL shipment ranges from 100 lbs to 20,000 lbs. The LTL shipment statistics are only available to the subscribing carriers that participate in the survey.	**American Trucking Associations** http://www.truckline.com/index
North American Trucking Survey (NATS)	NATS was first conducted in 1993 by the Association of American Railroads (AAR) to collect data for predominantly long-haul truckload shipments. The NATS data was collected by surveying a sample of trucks at specific truck stop locations based on shipment length-of-haul. Truck drivers were interviewed (roadside interview survey) to obtain information on the shipment, the operator, and the annual vehicles-miles of travel (VMT) by the drivers. Arthur D. Little, Inc., under contract with AAR, conducted the survey. The most recent database is for 1997 and is proprietary information, however, it is available to federal and state agencies upon request. A limitation of the NATS is that it does not include shipment routing information for long-haul trucks.	**Association of American Railroads** http://www.aar.org/
Port Import/Export Reporting Service (PIERS)	Developed by Commonwealth Business Media, Inc. and is one of the most comprehensive databases that includes information on the import-export activity at all major ports in the U.S. and Puerto Rico, through key Asian ports of entry, cross-border with Mexico and in Latin America's lead trading countries. The data is collected monthly for information such as commodity, origin-destination, routing, shipment weight and value, as well as other characteristics. No sampling is done and all shipment statistics are collected for each carrier and cargo type, such as containerized, break-bulk, dry bulk, and tankers. Data comes in a variety of formats and is available on a subscription basis.	**PIERS** http://www.piers.com/

Local Freight Related Projects Included In SAFETEA-LU

The new SAFETEA-LU legislation, which was signed into law on August 10, 2005, has placed more emphasis on freight than ever before. Three new earmarked categories for projects have been created to facilitate and promote freight mobility: (1) Projects of National & Regional Significance (i.e. Heartland Corridor Project), (2) National Corridor Infrastructure Improvement Program (i.e. I-81 improvements), and (3) High Priority Projects Program and Transportation Improvements (individual projects that may affect freight mobility).

The most notable earmark freight-related projects included in SAFETEA-LU for the state of Virginia were:

- Construction of dedicated truck lanes on additional capacity in I-81 ($100 Million)
- Manage freight movement and safety improvements to I-81 ($41.5 Million)
- Heartland Corridor Project including multiple intermodal facility improvements and improvements to facilitate the movement of intermodal freight from VA to OH ($90 Million)
- Double stack clearance of tunnels on the Norfolk and Western Mainline in Virginia located on the Heartland Corridor ($5 Million)

These statewide freight initiatives will play a large role in facilitating current and future freight movements in Virginia, especially to and from Hampton Roads. Other specific projects earmarked for funding in the Hampton Roads region as a part of SAFETEA-LU that will benefit freight movement include:

- Hampton Roads Third Crossing Segment-1 ($39.4 Million)
- Route 164/I-664 Rail Relocation[3] – the new rail lines will be placed in the median of Route 164 and I-664 and eliminate more than 12 railroad crossings deemed dangerous by the port authority and Churchland-area residents in Portsmouth and Chesapeake ($15 Million)
- Route 460 Improvements and Corridor Study ($9 Million)
- Maersk Terminal Interchange in Portsmouth ($1.6 Million)
- Eastern Seaboard Intermodal Transportation Application Center (ESITAC) in Hampton Roads at Hampton University ($1.2 Million)

Also included as a part of SAFETEA-LU, is a Freight Intermodal Distribution Pilot Grant Program. This program provides grants to States to facilitate and support intermodal freight transportation initiatives to reduce congestion into/out of ports and establish/expand intermodal facilities and inland freight distribution centers. One project in Hampton Roads that has excellent potential and fits these goals perfectly is the development of a new Intermodal Park[4]. Intermodal Parks serve as centralized locations for the processing and distribution of import cargo and are typically located near a cargo point-of-entry, such as a port. With the Port of Hampton Roads and a strong inland transportation network of highways and railroads, an excellent opportunity currently exists. This project is of significant importance given the expected growth in containerized cargo at the Port – over 1 million containers moved through the Port in 2004, which is projected to triple by 2030. An Intermodal Park would also create new jobs, increase local tax revenues, and expand economic activity in the region. The study recommends locating the new Intermodal Park about 25-35 miles from the marine terminals in Norfolk along Route 460 or Route 58.

[3] $40 Million approved by the VA General Assembly in 2007.

[4] Moffatt & Nichol, "An Economic Opportunity for Hampton Roads: An Intermodal Park", June 2005.

STATEWIDE FREIGHT COORDINATION

As indicated previously, SAFETEA-LU stresses the importance of freight movement in metropolitan areas throughout the country. Virginia's first initiative to address increased freight needs is included in the Virginia Statewide Long-Range Multi-modal Transportation Plan, VTrans2025. The VTrans2025 Final Report identified specific strategies to incorporate freight issues into transportation planning and project development that resulted in conducting a statewide freight study. The purpose of the study is to increase understanding of the magnitude and impact of freight movement in Virginia, establish a basis for project prioritization, and make recommendations on transportation issues and concerns related to freight movement. The goals for the freight study include safeguarding the existing freight network, identifying opportunities to improve the system through infrastructure and operational improvements, and ensuring that the statewide multimodal networks link with regional trade centers and support state and national goods movement.

HRPDC staff has been working closely with VDOT for the statewide freight study. Stakeholder involvement is a key component of the freight study. Initial efforts include a freight stakeholder forum and a questionnaire of large shippers and employers, both of which provided information on key issues related to freight mobility. Furthermore, a Freight Advisory Committee has also been established to provide input and feedback into the study, serve as a link to the larger freight community, help build partnerships between the public and private sectors, and help convert the study to action.
Major freight initiatives undertaken by VDOT are summarized below.

Additional detailed information on these initiatives may be found on VTrans2025 website at www.vtrans.org.

Virginia Freight Stakeholder Forum

On May 1, 2006, over fifty freight stakeholders from across the state gathered in Hampton Roads to discuss what they considered to be the challenges to efficiently moving goods and services throughout Virginia. This forum, which included representatives from the Office of the Secretary of Transportation, the Commonwealth's transportation modal agencies and USDOT focused on challenges and innovations in the freight industry. Findings and results from the Stakeholder Forum were summarized into seven categories including:

1) Operations
2) Pricing and Technologies
3) Statutory, Regulatory and Institutional Barriers
4) Emerging Transportation Needs
5) Safety and Security
6) Environmental, Health, Energy and Community Impacts
7) Funding

A summary of the freight stakeholder forum findings and recommendations have been provided in the "Freight Study" section on the VTrans website.

Freight Stakeholder Questionnaire

In 2006, VDOT mailed 2,120 questionnaires to large employers (more than 100 employees) and freight shippers (more than 20 employees) throughout Virginia. Of the total sample, 228 respondents or slightly over 10% returned questionnaires. In addition, questionnaires were also mailed to freight stakeholder forum invitees. Twenty-seven of those invitees returned questionnaires. The analysis of responses resulted in the following conclusions:

- Meeting on-time goals to satisfy customers was listed as the most important challenge.
- Freight transportation limitations and stakeholder concerns were especially evident in the Hampton Roads and Northern Virginia regions. 77% of the respondents in the Hampton Roads region indicated their ability to send and receive goods is directly impacted by transportation issues. Congestion and construction delays were cited as major factors.
- More than one third of stakeholders indicated that modes other than truck are important for a more balanced use of freight infrastructure.

Virginia Freight Advisory Committee

Following the Freight Stakeholder Forum of 2006, a Freight Advisory Committee (FAC) was

established to provide input and feedback into the statewide freight study, serve as a link to the larger freight community, help build partnerships between the public and private sectors, and help convert the study into action. Members are representatives from public and private sectors including Virginia's modal agencies, truckers, railroads, shippers and other freight industry stakeholders.

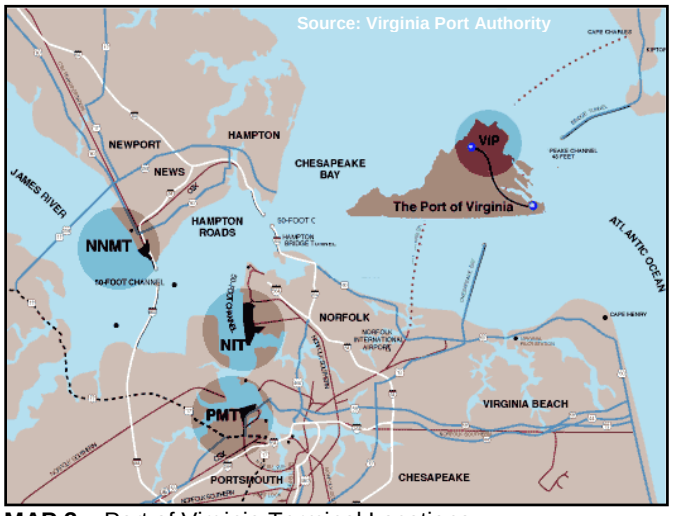
The Freight Advisory Committee is currently working on four topics including the commercial driver shortage, freight technologies, short-sea shipping, and on-dock rail. The Committee will develop actionable recommendations in late 2007.

Freight Stakeholder Interviews

VDOT in conjunction with MPO and PDC staffs across Virginia is currently in the process of conducting a series of telephone interviews with freight stakeholders. These interviews are intended to supplement the Transearch commodity flow data and the results of the freight Stakeholder Questionnaire conducted by VDOT in 2006. These interviews will also help establish relationships with these important transportation partners and address SAFETEA-LU requirements to specifically include freight stakeholders in the transportation planning process. Results of these interviews will be summarized in the Statewide Freight Study Report.

FREIGHT FACILITIES IN HAMPTON ROADS

It is essential that the Hampton Roads region maintain its existing transportation systems and continues to make investments in freight infrastructure on a local, statewide, and regional level in order to remain economically competitive and improve overall mobility. This section of the report will provide a brief overview of the existing freight facilities and assets in Hampton Roads. **Maps 4** and **5** on pages 12 and 13 provide detailed views of the roadways, railroads, intermodal and port facilities, drawbridges, and railroad crossings on the Southside and Peninsula in Hampton Roads. A list of these regional intermodal facilities and a location description is included in **Appendix C**.



MAP 3 – Port of Virginia Terminal Locations.

Port of Virginia

The Port of Virginia has built a solid reputation for efficient and uncongested intermodal service. The Port is strategically located along the mid-Atlantic and is well known among shippers from around the world. This Port's reputation has recently led to long-term contracts and new business with some of the world's largest container carriers.

In terms of total foreign waterborne commerce, the Port of Virginia ranks as one of the leading ports in the United States. The Port currently ranks 3rd among U.S. East Coast Ports in terms of general cargo (containerized and breakbulk cargo), behind the Port of New York/New Jersey and the Port of Savannah (See **Table 3**).

TABLE 3 – 2005 U.S. East Coast Ports Market Share: General Cargo (Short Tons)

Major U.S. East Coast Port	Rank	Short Tons (Thousands)	Market Share
New York/New Jersey	1	28,132.50	38%
Savannah	2	16,902.55	21%
Virginia	3	15,964.02	20%
Miami	4	9,116.19	11%
Baltimore	5	8,076.60	10%

SOURCE: AAPA and various Port Authorities

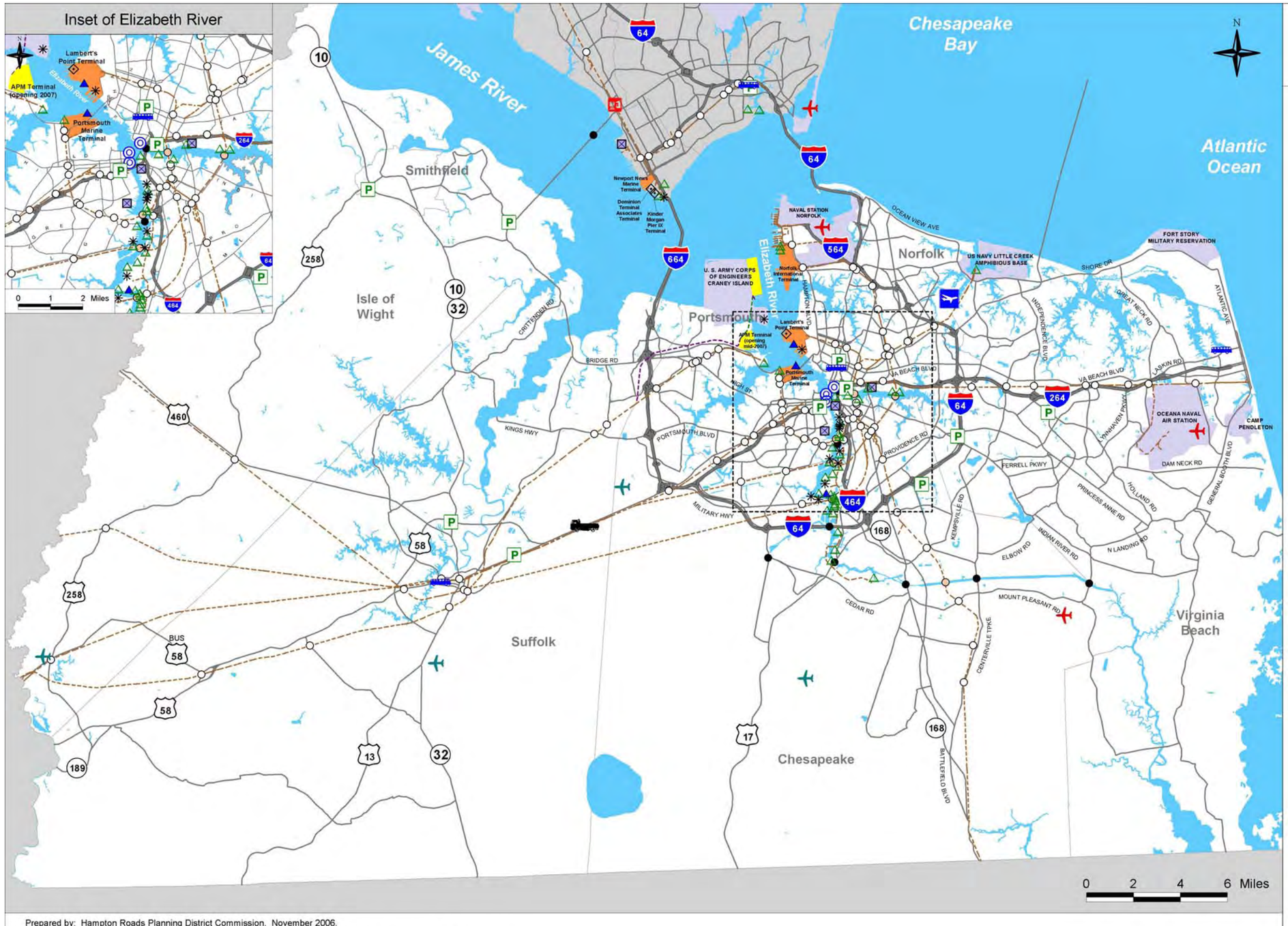
The Port of Virginia handles a variety of cargo, including bulk, or loose cargo; breakbulk cargo in packages such as bundles, crates, barrels, and pallets; liquid bulk cargo like petroleum; dry bulk such as grain; and general cargo in steel boxes called containers, which are measured in 20-foot equivalent units, or TEUs.

The Port handled approximately 2.05 million container units (20-foot) in 2006 and is forecasted to handle over 10 million container units per year by 2040. In terms of total cargo (container, breakbulk and bulk cargo), the Port handled over 36 million short tons in 2005.

The Port of Hampton Roads currently consists of three marine terminals:
[1] Norfolk International Terminal (NIT)
[2] Portsmouth Marine Terminal (PMT)
[3] Newport News Marine Terminal (NNMT)

Future marine terminals to be added:
[4] Maersk Terminal – Expected completion Summer-2007.
[5] Craney Island Marine Terminal (CIMT) – Expected completion: Phase I 2017 (220 acres), Full Build-Out 2033 (600 acres).

The Port of Hampton Roads boasts fifty-foot deep, unobstructed channels, which provide easy access and maneuvering room for the largest of today's container ships. Hampton Roads' ports are also located just 18 miles from the open sea on a year-round, ice-free harbor. In addition to Hampton Roads' three marine terminals is the Virginia Inland Port (VIP) located in Warren County, Virginia. The Virginia Inland Port operates in coordination with the Hampton Roads ports and serves as an intermodal container transfer facility. All four of these facilities, shown in **Map 3**, comprise the Port of Virginia.



Prepared by: Hampton Roads Planning District Commission, November 2006.
Base map source: Virginia Department of Transportation.
Data sources: Hampton Roads Maritime Association, US Army Corps of Engineers, Virginia Department of Transportation.

Map 4
Intermodal Management System
Southside Hampton Roads

LEGEND

Intermodal Facilities

- Commercial Service Airport
- General Aviation Airport
- Military Airport
- AMTRAK Train Station
- Intercity Bus Station
- Park and Ride Parking Areas
- Ferry Station
- Truck Weigh Station

Port Facilities

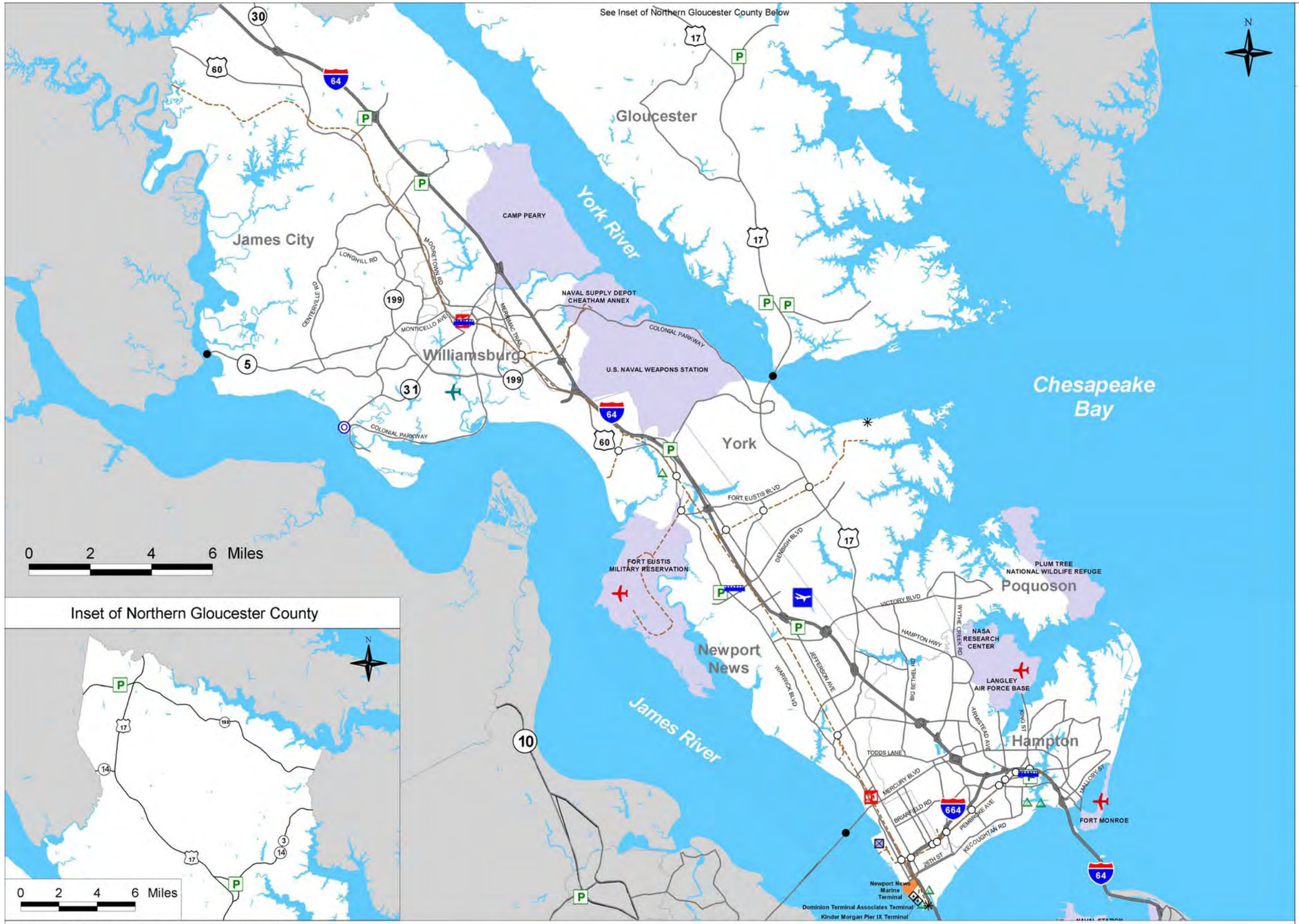
- Existing Marine Terminal
- Proposed Marine Terminal
- Merchandise Terminal
- Coal Terminal
- Oil Terminal
- Other Terminal Facility
- Major Repair/Construction Facility

Intermodal Conflict Points

- Roadway Drawbridges
- Railway Drawbridges
- At-Grade Railroad Crossings

Transportation System

- Regional Thoroughfare
- Interstate Highway
- Railroads
- Proposed Commonwealth Railway Reloation Project (CRMSRP)
- Proposed Craney Island Railway



Prepared by: Hampton Roads Planning District Commission, November 2006.
Base map source: Virginia Department of Transportation.
Data sources: Hampton Roads Maritime Association, US Army Corps of Engineers, Virginia Department of Transportation.

Map 5
Intermodal Management System
Hampton Roads Peninsula

LEGEND

Intermodal Facilities

- Commercial Service Airport
- General Aviation Airport
- Military Airport
- AMTRAK Train Station
- Intercity Bus Station
- Park and Ride Parking
- Ferry Station
- Truck Weigh Station

Port Facilities

- Existing Marine Terminal
- Proposed Marine Terminal
- Merchandise Terminal
- Coal Terminal
- Oil Terminal
- Other Terminal Facility
- Major Repair/Construction Facility

Intermodal Conflict Points

- Roadway Drawbridges
- Railway Drawbridges
- At-Grade Railroad Crossings

Transportation System

- Regional Thoroughfare
- Interstate Highway
- Railroads

Port of Hampton Roads Marine Terminals

Source: P&O Ports North America

Norfolk International Terminal (NIT)

Norfolk International Terminal (NIT) is the largest terminal for the Port of Hampton Roads and possesses some of the largest Suez-class container cranes in the world with the ability to reach 26 containers across. The recently completed NIT-North, a 300-acre expansion, has doubled its cargo handling capacity. NIT-South improvements are also underway. In 2005, 30 "straddle carriers" were added to the Norfolk International Terminals' South wharf. These new cranes can lift nearly 45 tons and can load containers directly onto highway-bound trucks from the ships.

Source: P&O Ports North America

Portsmouth Marine Terminal (PMT)

The Portsmouth Marine Terminal (PMT) is the second largest terminal in regards to containership berth space. Among PMT's many features is the fourth Kone supercrane with lift capacity of 40 LT. PMT is a versatile facility with the ability to handle containers, Roll-on/Roll-off (RoRo) and breakbulk cargo. Other features of this terminal include refrigerated hook-ups, specialized warehouse space, fumigation facilities and straddle-carrier container stacking.

Source: P&O Ports North America

Newport News Marine Terminal (NNMT)

Newport News Marine Terminal (NNMT) has gained a reputation as the premier steel and project cargo handling port on the U.S. East Coast. NNMT has the best truck access of any general cargo facility in Hampton Roads. A new entrance to the terminal is only blocks away from I-664 on/off ramps. NNMT features various heavy-lift crane capabilities, warehouse space, auto processing facilities and container cranes. More recently, NNMT has added a fully dedicated, on-terminal paper distribution facility, the Lydall Paper Distribution Center, a company that specializes is paper cargoes.

Hampton Roads Breakbulk Marine Terminal

Source: P&O Ports North America

Lambert's Point Docks (LPD)

Lambert's Point Docks (LPD) is located on the Elizabeth River in Norfolk, Virginia and the state's largest breakbulk marine terminal. LPD has been in operation for more than 50 years and has served East Coast shippers, manufacturers and brokers, handling their import and export needs. LPD is a subsidiary of Norfolk Southern Corporation (NS) and offers easy connections to the NS rail network. LPD has the capacity to move more than a half-million tons of general cargo annually, including plywood and other forest products, natural crude rubber, and heavy equipment. Three piers provide berthing space for as many as six ships simultaneously with a water depth of at least 32 feet at the berths. The docks cover 125 acres and offer more than 1.5 million sq. ft. of warehouse storage. Lambert's Point Docks has the highest breakbulk productivity of any mid-Atlantic marine terminal.

Hampton Roads Coal Terminals

The coal loading facilities in the Port of Hampton Roads are able to load in excess of 82 million tons annually, giving the port the largest, most efficient and modern coal loading facilities in the world. Descriptions of the three coal terminals in Hampton Roads are provided below:

Source: Norfolk & Western

Lambert's Point Coal Terminal

Lambert's Point Coal Terminal is currently the largest of three coal loading terminals in Hampton Roads. It opened in 1962 and is still one of the fastest coal loading terminals in the world and the fastest in the Northern Hemisphere. Norfolk Southern Railway Company operates this coal transloading facility on the Elizabeth River in Norfolk, Virginia to transfer coal from rail cars to ships. Annual through-put capacity is 48 million tons. Coal moving through Lamberts Point originates primarily in Virginia, West Virginia and Kentucky. Pier 6, has two shiploaders that permit the facility to load two vessels simultaneously. Twin tandem rotary dumpers feed the shiploaders for a combined dumping capacity of up to 8,000 tons per hour. Pier 6, a descendent of five earlier piers located at Lamberts Point, extends 1,850 feet into the Elizabeth River. At a depth of 50 feet, the channel is the deepest on the East Coast.

Source: Dominion Terminal Associates

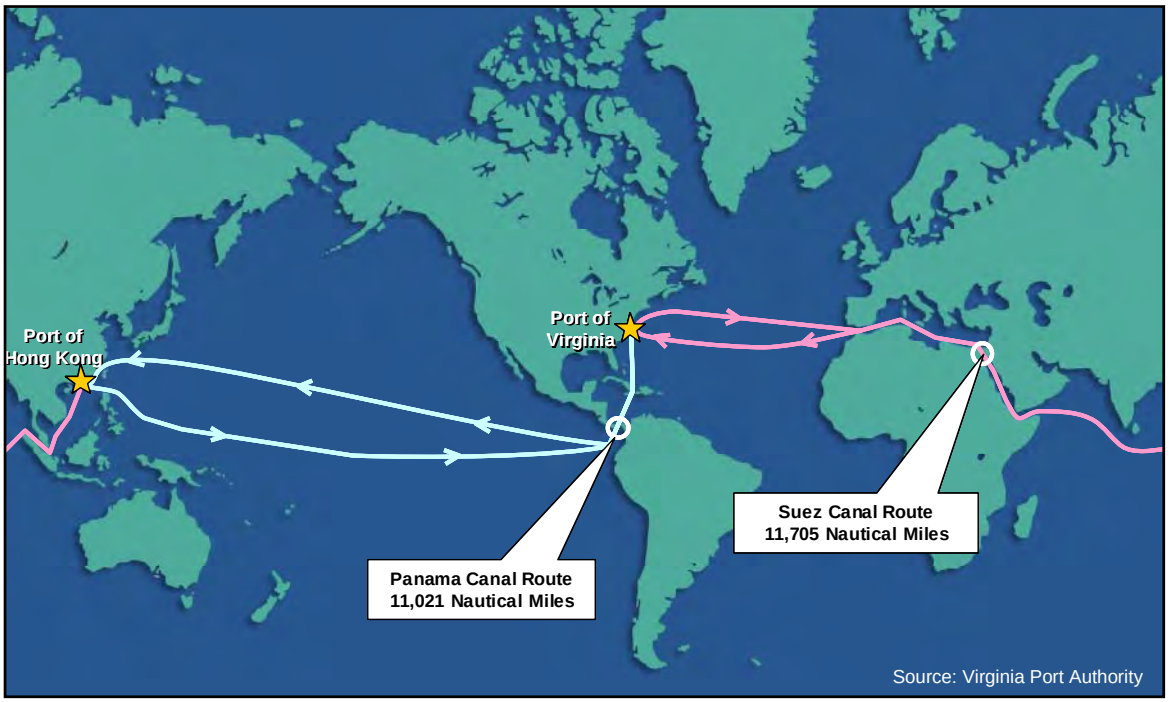
Dominion Terminal Associates Terminal (DTA)

Dominion Terminal Associates' world class coal shipping and ground storage facility is located on the east bank of the James River in Newport News, Virginia at the Port of Hampton Roads. It was built in 1982 and is one of three coal loading terminals in Hampton Roads. CSX Transportation unit trains serve the facility from eastern U.S. coal mines. Efficient transit times as well as a ground storage capacity of 1.7 million tons help minimize the time in port for vessels at this location. The DTA Terminal has an annual capacity of 22 million tons. The current pier length (Pier 11) is 1162 feet with berths for loading on either side. Both berths are dredged to a mean low water depth of 50 feet to match the harbor channel.

Source: Kinder Morgan Terminals

Kinder Morgan Bulk Terminals, Inc. – Pier IX

Pier IX is one of three coal loading terminals in Hampton Roads and is located adjacent to the Dominion Terminal Associates facility on the east bank of the James River in Newport News, Virginia at the Port of Hampton Roads. CSX Transportation is the servicing railroad for this location and it has a storage capacity of 1.36 million tons. The terminal has an annual capacity of 12 million tons and can load ships at a rate up to 8,000 tons per hour. Unique features include above ground storage, which allows custom blending of coal grades.



MAP 6 – Containerships are bigger, faster, and equipped with more technology today, which enables goods to now be shipped from Asian markets to U.S. East Coast rather than just the U.S. West Coast like before.

The evolution of container shipping has lowered the per-unit cost of transporting goods. U. S. containerized cargo is expected to increase by 156 percent, to 388 million tons, by 2020, according to estimates from the American Association of Port Authorities (AAPA). The Panama Canal Commission forecasts U.S. east coast cargo to triple by 2020. The container boom is largely the result of international trade growth and more shipping lines using East Coast ports for Asian imports, particularly with China.

The latest containerships are bigger, faster, and equipped with more technology today, which enables goods to now be shipped from Asian markets to U.S. East Coast through the Panama Canal a viable option and bypassing U.S. West Coast ports (**Map 6**). **Figure 2** shows the evolution of containerships over the years. Most Ports are able to handle the 4,000-5,000 TEU (20-foot container unit) container vessels, however, only a select few can accommodate the new 8,000-10,000 TEU vessels. The largest vessels are capable of carrying containers that are compatible with both rail and highway equipment, which are used for intermodal shipments. The Port of Virginia is currently the only U.S. East Coast port that can handle these large containerships, also known as mega-ships.

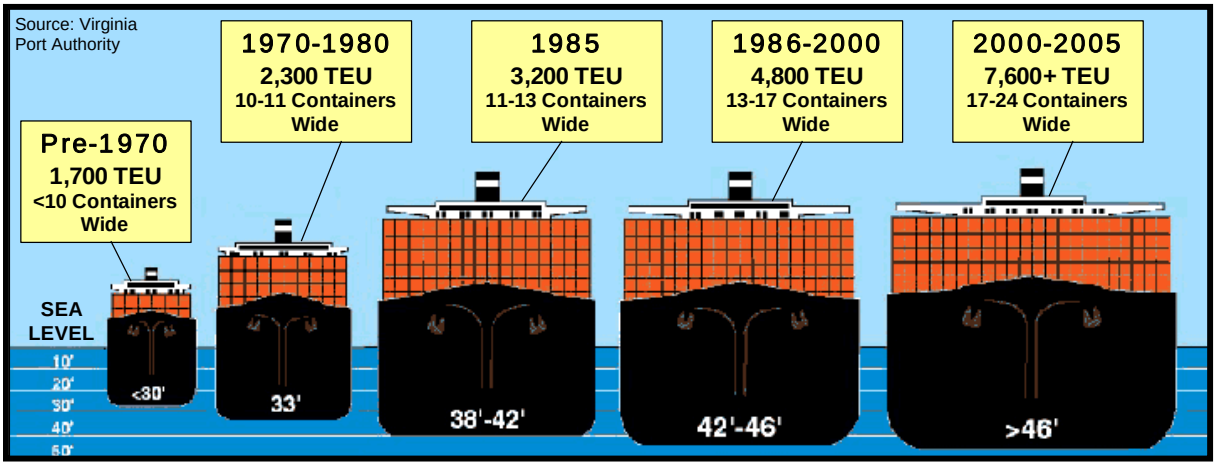
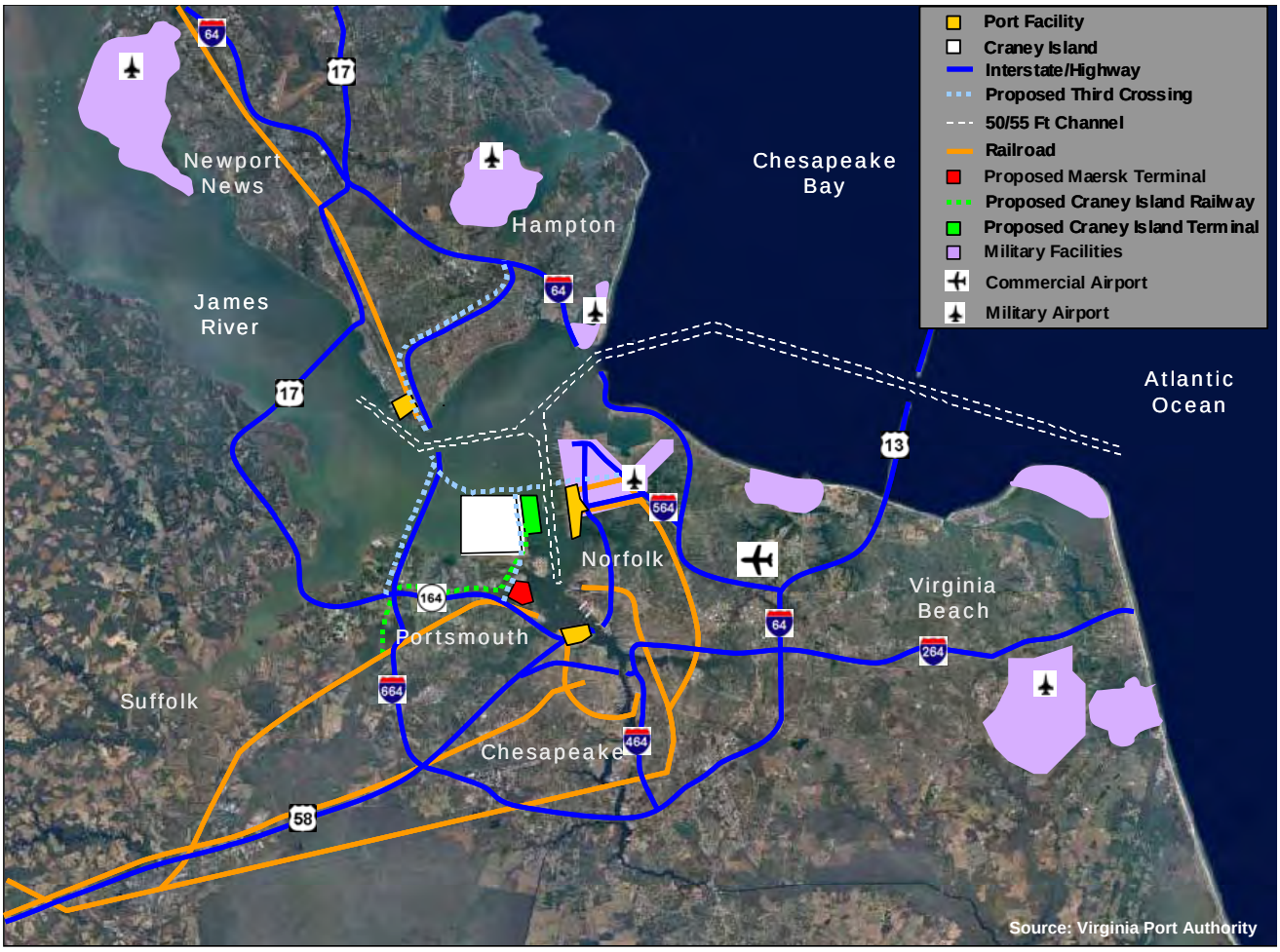


FIGURE 2 – The evolution of containerships. The Port of Virginia is the only East Coast Port that can handle any of these containerships.



MAP 7 – Hampton Roads Intermodal Network and Facilities.

What are the requirements for Port growth and success?

- Deep Water Access – 50-55 Feet Channels needed to accommodate large vessels. Large vessels are able to move cargo for the least cost.
- Good Port Infrastructure - Wharves, Cranes, and Container Yard necessary to handle and efficiently transfer cargo on/off large containerships.
- Good Access to Road & Rail Lines – Strong connections to facilitate and speed delivery of goods regionally and nationally.
- Room to Grow – Ability to expand facilities for new cargo terminals.
- Cargo Demand – A strong market must exist for additional products.

The Port of Hampton Roads is poised for growth as it contains most of the necessary components for success. The Port already boasts 50 feet channel depths, which are the deepest on the U.S. East Coast and is making plans to deepen to 55 feet (**Map 7**). Steps have also been made to improve container yard and crane operations to speed transfers. Furthermore, rail improvements along the Heartland Corridor to Midwest markets are underway and will create tremendous growth opportunities. The Port has also plans to expand, with the addition of the Maersk and Craney Island Terminals. Hampton Roads next challenge will be to improve landside intermodal connections and major roadway facilities to move cargo more efficiently.

All components of the transportation system surrounding the port must be balanced such that none are undersized or inefficient. One weak link in the network will create a freight "bottleneck". The Port of Hampton Roads serves as a centralized freight hub and must maintain regional connectivity among all modes and efficient waterside and landside access in order to facilitate future growth and success (**Figure 3**).

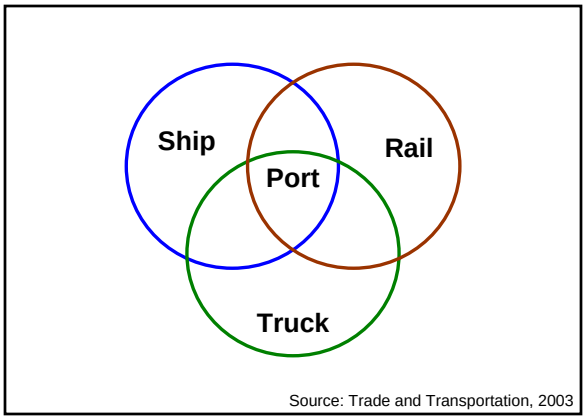


FIGURE 3 – Intermodal Connectivity.

The Port of Hampton Roads' biggest competitors on the East Coast are the ports of New York/New Jersey, Charleston, and Savannah. North Carolina has recently proposed a new cargo terminal in Southport, NC just south of Wilmington to grab part of the shipping market. Port of Hampton Roads officials believe that this new location will not affect the local cargo activity much as the demand is sky high for east coast markets. Some feel that a new location is a necessity because many ports are nearing capacity. As a result of this future demand, existing ports, like Hampton Roads, are looking to expand their facilities. The new terminal in NC and other terminals farther south mainly serve markets in the Southeast, while the Port of Hampton Roads primarily serves markets in the mid-Atlantic and Midwest regions.

In 1981, the Virginia General Assembly passed legislation to unify the port terminals in Virginia under a single management agency, the Virginia Port Authority (VPA) and one operating company, Virginia International Terminals, Inc. As a result of this unification, the Port of Virginia has become the fastest growing port complex in the U.S. According to the Port[5], some of the more notable accomplishments over the past decade are as follows:

- Improvements in speed and efficiency have been made to local coal facilities, enabling the Port to remain a world leader in coal exports.
- The Port continues to attract shippers to open distribution centers nearby by successfully demonstrating the logistical efficiencies and economic value of locating those operations close to the Port of Virginia and its distribution network.
- Breakbulk operations have been enhanced at both Norfolk Southern's Lambert's Point Docks and at VPA's Newport News Marine Terminal.
- New methods have been introduced to increase port productivity, such as a chassis stacking system, anti-sway systems for cranes, hand-held yard computers, live gates, and new software.
- The Port continues to purchase new container cranes to increase its current handling of cargo, improve efficiency and to be prepared to handle the new mega-ships that will soon dominate the world of container trade. In 2003 and 2004, new giant "Suez-Class" cranes (currently the largest cranes in the world) were delivered. More recently in August 2005, 30 "straddle carriers" were added to the Norfolk International Terminals' South wharf. These new cranes can lift nearly 45 tons and can load containers directly onto highway-bound trucks from the ships.
- In April 2004, APM Terminals Virginia, a subsidiary of Maersk, Inc. (the largest shipping line in the world), announced plans to develop a $450 million marine cargo terminal on a 575-acre tract on the Elizabeth River in Portsmouth. Upon completion in 2007, the new terminal is expected to handle an additional 500,000 containers per year.

Specialized "Straddle Carrier" Vehicles are used to transport containers quickly and efficiently.

[5] Hampton Roads Maritime Association, "Port of Hampton Roads Annual 2005", 2005.

Air

Cargo movement by air is one of fastest growing segments in the freight industry. Air cargo is vital to the Hampton Roads region as it provides area businesses access to domestic and international markets for a variety of goods and services. Most air cargo that is moved are high-value, light-weight, time-sensitive commodities such as important documents, perishables, equipment and instruments, and high-end consumer goods. Air cargo transport relies nearly exclusively on trucks for its trip end connections and in some cases trucks are used for a long segment of an "air cargo" trip.

Air cargo is usually handled by one of the following ways: (1) All-cargo airlines, (2) Integrated carriers that manage and coordinate both air and truck logistics (i.e. UPS, FedEx, US Postal Service), or (3) passenger carriers, who carry their own personal cargo in the aircraft.

There are two major airports in the Hampton Roads region: (1) Norfolk International Airport and (2) Newport News/Williamsburg International Airport.

Norfolk International Airport

Norfolk International Airport, operated by the Norfolk Airport Authority, serves as the primary hub of air cargo activity for the Hampton Roads region. The airport serves business and industry throughout the Hampton Roads area as far north as Williamsburg and down through northeastern North Carolina. The Cargo Terminal at Norfolk International Airport is the most modern and efficient facility of its kind in Virginia. Over 70 million pounds of cargo are handled each year at the airport. When Phase III and IV are completed, the complex will provide 120,000 square feet.

According to the Norfolk International Airport, here are some facts and figures regarding the Air Cargo complex:

- Two ultra-modern Air Cargo Terminals provide users with a total of 88,000 square feet of space. It is the most modern and efficient air cargo facility in the state of Virginia.
- Features an adjacent aircraft ramp that provides direct access from plane to warehouse.

Norfolk International Airport is the primary hub of air cargo activity for Hampton Roads.

- Seven major airlines, two all-cargo airlines, and five commuter airlines provide over 200 flights daily.
- The Port of Hampton Roads is just minutes away.
- Full-time U.S. Customs service is available.
- The Hampton Roads region is the 28th most populous metropolitan statistical area in the U.S.
- Air container services are offered by most carriers, and main-deck loading equipment is available.
- Ground level loading with 10-by-10 drive-in doors.
- A 48-inch-high truck dock with 8-by-10 overhead doors.
- Bays 2,000 feet or larger and bay depths of 85 to 100 feet.
- Airport Customs Brokers provide speedy clearance via the Automated Broker Interface (ABI) and the Automated Commercial System of U.S. Customs.

Below is a list of Air Cargo Carriers, Freight Forwarders & Ground Handling Services at Norfolk International Airport:

- Airborne Express
- Beamon & Lassiter
- Court One Corporation
- DHL
- Federal Express
- Hipage Company
- Majestic Terminal Services, Inc. (handles Continental and Southwest Airlines)

- Quantem Aviation Services (handles Delta, Northwest, and US Airways)
- Superior Air Freight
- United Airlines
- U.S. Customs Service
- U.S. Postal Service

Newport News/Williamsburg International Airport
The Newport News/Williamsburg International Airport is recognized as one of the fastest-growing and most-successful commercial airports in the nation. The airport is ideally located between Richmond and South Hampton Roads just off of I-64 and within one hour of I-95 and I-85. The facility is owned and operated by the Peninsula Airport Commission.

The Newport News/Williamsburg International Airport has recently built an AirCommerce Park on its site. It is a new 280-acre multi-modal logistics development (Phase I – 80 acres and Phase II – 200 acres) designed and built to meet the needs of companies seeking to create a competitive advantage through the use of speed, agility, and connectivity. The complex provides an ideal home for any aerospace-related firm, as well as companies in industries that demand a "just-in-time" supply of materials, or an immediate delivery of high-value finished goods as it is within minutes of the Port of Hampton Roads and major Interstate Roadways. Resident companies also receive free use of the large aircraft-parking apron capable of supporting most large aircraft. The AirCommerce Park is a welcome addition to the region and will aid the movement of freight well into the future.

Rail

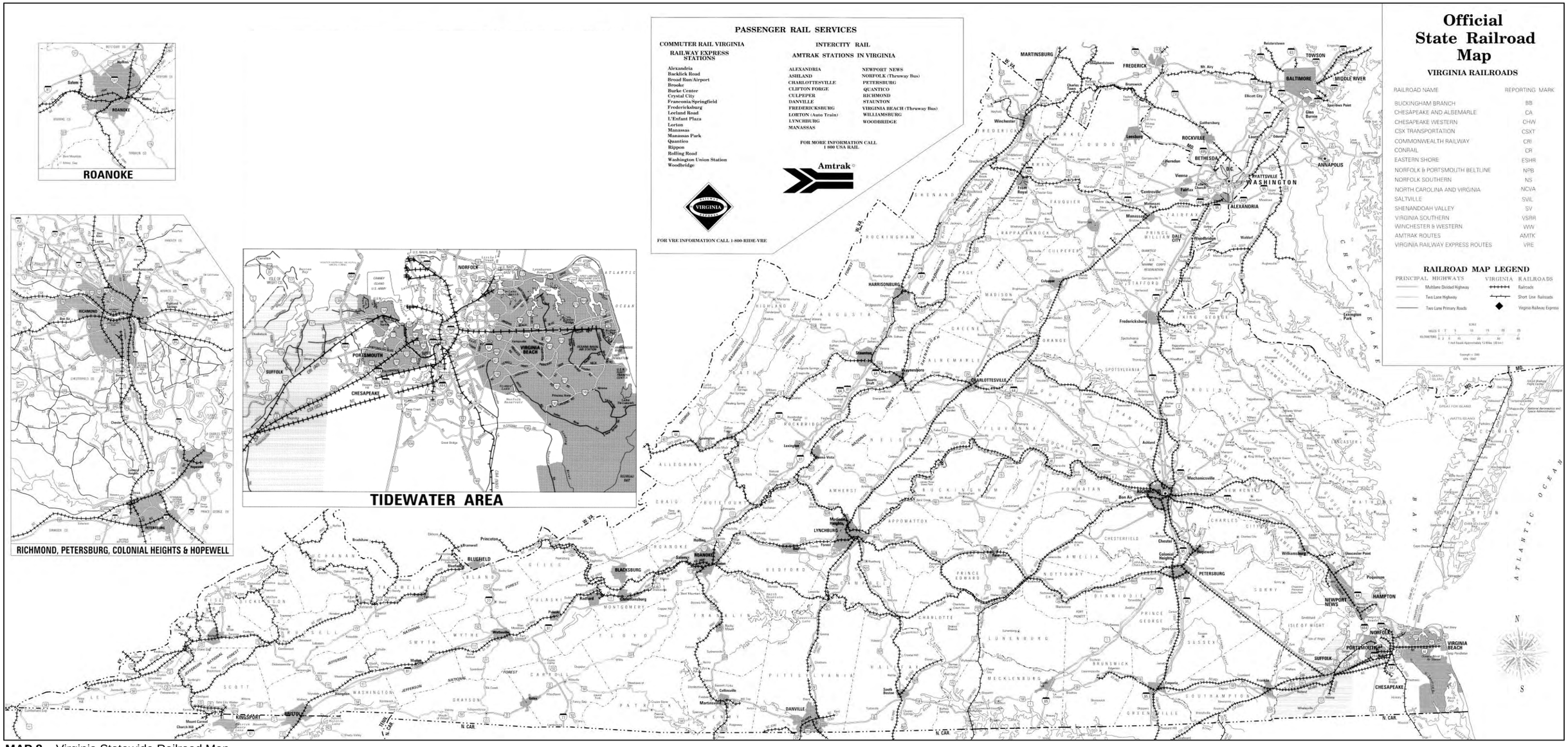
Although cargo movement by rail is limited to existing rail lines, it offers a lower per-unit cost for longer distance or lower value freight hauls. In Hampton Roads, railroads are a critical component for freight movement: they provide service to area businesses; they provide a safe means of transport; they provide service to the Virginia Port marine terminals; they are fuel efficient and environmentally friendly; and they provide an alternative to trucking, which reduces congestion on the region's highways.

There are four primary rail service providers that move freight within Hampton Roads and to/from other regions: (1) Norfolk Southern Corporation, (2) CSX Transportation, (3) Eastern Shore Railroad and (4) Norfolk and Portsmouth Belt Line Railroad.

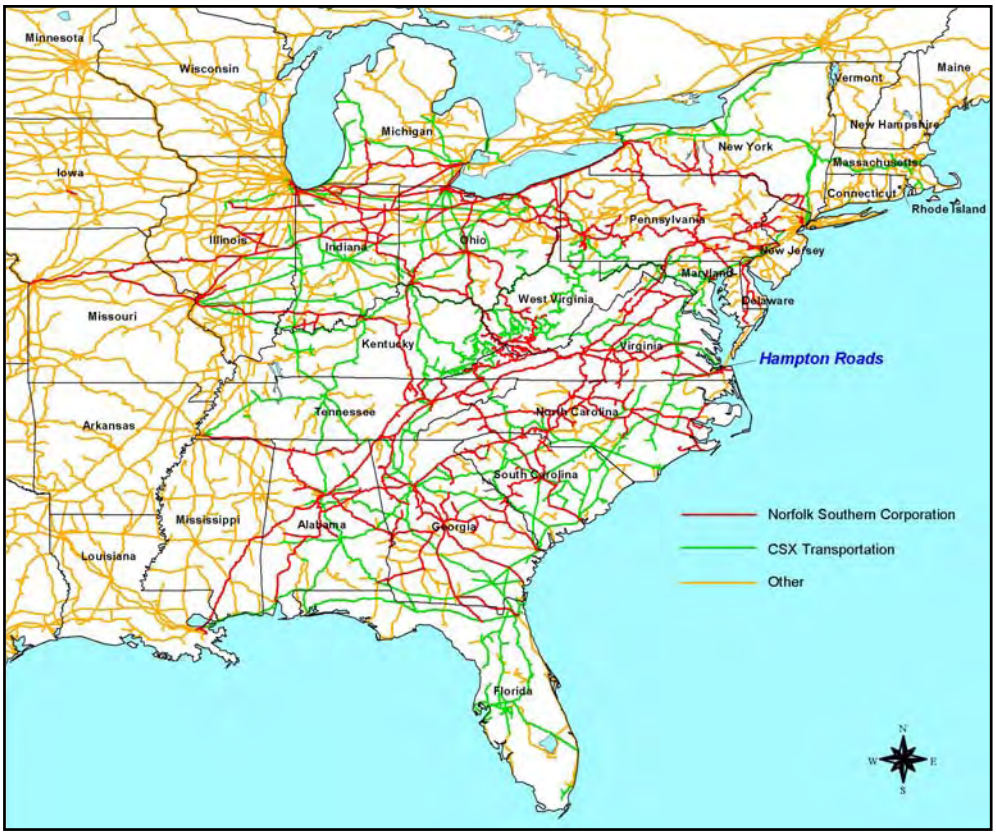
The secondary railroads in Hampton Roads are the Chesapeake & Albemarle Railroad (C & A) and the Commonwealth Railway.

Map 8 depicts the locations of various railroads in Hampton Roads and throughout the state of Virginia. **Map 9** shows the existing active rail lines along the U.S. East Coast.

Norfolk Southern Corporation and CSX Transportation are the two primary railroad service providers in the eastern U.S.



MAP 8 – Virginia Statewide Railroad Map
Source: Virginia Department of Rail and Public Transit



MAP 9 – Active Rail Lines in the Eastern U.S.
Source: Oak Ridge National Laboratory

Norfolk Southern Corporation

Norfolk Southern Corporation (NS) links Hampton Roads with 22 states in the East, Southeast and Midwest, plus the District of Columbia and the province of Ontario, Canada. Its rail network is over 21,600 miles. Norfolk Southern has direct connections with the Eastern Shore Railroad and the Norfolk & Portsmouth Belt Line Railroad, where shipments can be transferred to other rail systems.

Norfolk Southern is one of the major rail service providers for the Port of Hampton Roads

Norfolk Southern is a major service provider for the Port of Hampton Roads carrying a large volume of exports. This rail system provides double-stack service six days a week between Louisville, Chicago, Detroit, Cincinnati and Norfolk. The completion of improvements along the Heartland Corridor to increase the vertical clearances for double stack trains will allow intermodal freight traffic to move more efficiently from Norfolk, Va to Roanoke, VA and to Columbus, OH. In addition, active industrial development is underway along Norfolk Southern's rail lines, which has added to the cargo potential at the port.

CSX Transportation

CSX Transportation is one of the largest global transportation companies in the world. CSX has approximately 22,000 miles of railroad track in 23 states, the District of Columbia and two Canadian provinces. It also has access to 70 ports and the largest intermodal network in the U.S. CSX Transportation has a long history of providing rail service to Hampton Roads dating back to 1832. CSX Transportation's parent company, CSX

Corporation, is based in Jacksonville, FL and has over 32,000 employees. In 2004, CSX created 67 new jobs in Virginia and now employs over 1,300 residents throughout the state.

In 2005, CSX Transportation projected to spend 13% of the company's revenue on capital improvements, such as security enhancements, rail infrastructure, freight cars, locomotives and new technology. One of the company's most emerging tasks for the future is to explore public-private partnerships and tax policies that recognize the tremendous benefits of moving freight by rail. With congestion on the rise and limited funding available for new interstate highway construction, more customers will be turning to CSX and others in the rail industry to move their goods and raw materials.

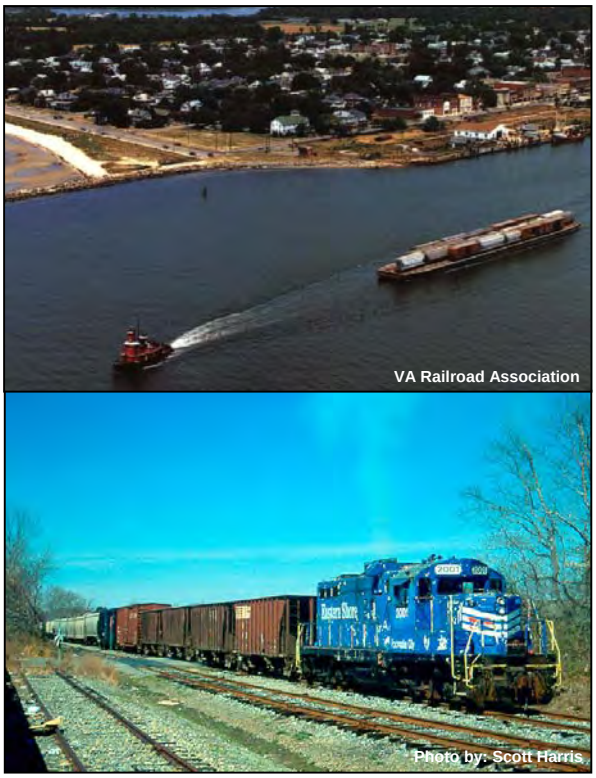
Eastern Shore Railroad

The Eastern Shore Railroad (ESHR) consists of 70 miles of mainline and a 26-mile car float operation between Norfolk and Pocomoke City, Maryland. In Pocomoke City, ESHR shipments are connected with Norfolk Southern and move to/from points in the Northeast and Canada. This north-south rail line is the most direct route between the Port of Hampton Roads and many Northeast regions. In Norfolk, rail cars are connected with the Norfolk & Portsmouth Belt Line for connections with CSX.

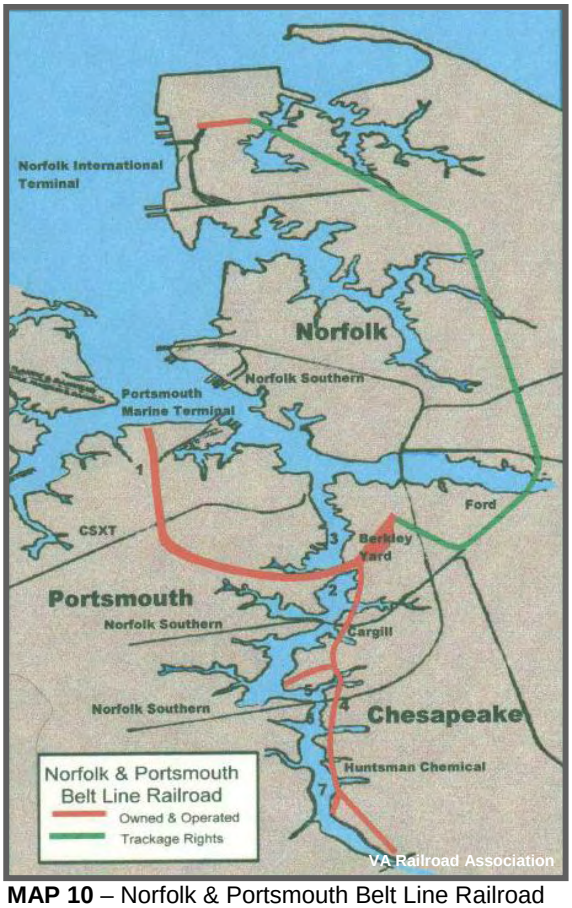
This railroad is unique because the freight cars are transported across the Chesapeake Bay using 2 car floats (barges) of 15 and 25 car capacity and are pulled by contracted tugboats for 26 miles between Norfolk and Cape Charles, Virginia. This float operation, which has been running since 1885, is only one of two remaining in the eastern U.S. and is the longest water route in the country.

Norfolk & Portsmouth Belt Line Railroad

The Norfolk & Portsmouth Belt Line Railroad performs most of the rail interchanges between Norfolk Southern, CSX, ESHR, and Chesapeake & Albemarle Railroads (**Map 10**). It consists of 36 miles of railroad track (plus 27 miles of trackage rights) and serves both port terminals and manufacturing industries, such as Virginia International Terminal, Portsmouth Marine Terminal, Norfolk Ford Assembly, Huntsman Chemical Company, and Cargill. Norfolk Southern Corporation owns 57% of the railroad company while CSX Corporation owns the remaining 43%.



Eastern Shore Railroad uses both mainline tracks as well as a 26-mile car float operation to transports goods

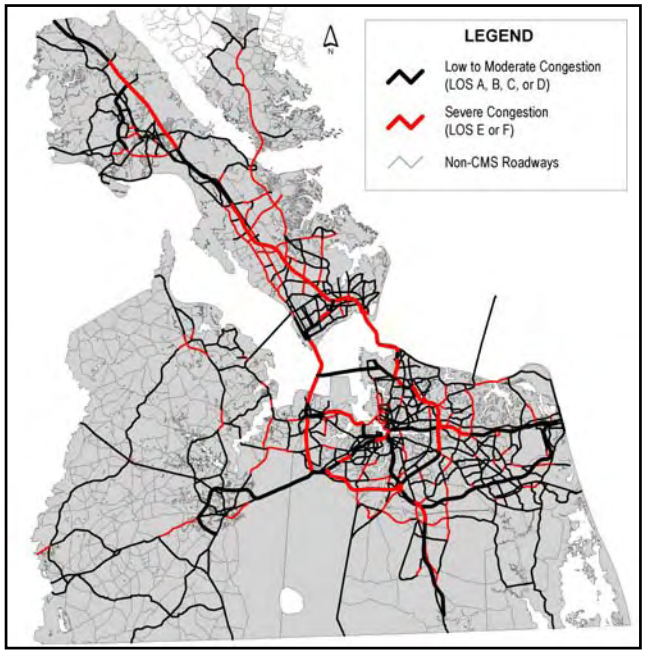


MAP 10 – Norfolk & Portsmouth Belt Line Railroad

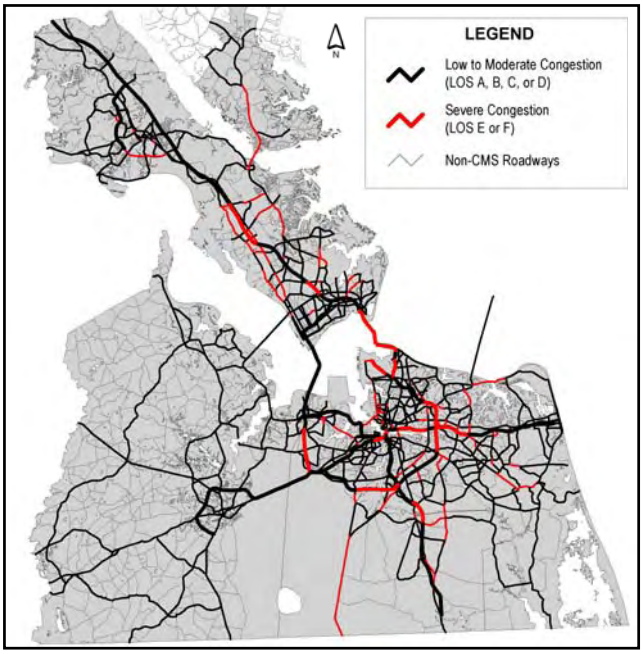
Highway

Efficient operations on regional roadways are critical to the successful delivery of goods and services. Trucks stuck in congestion incur additional costs, which are eventually passed on to the customers and users. Trucks move freight to and from: airports, seaports, rail terminals, warehouse/distribution facilities, and shippers/ receivers. Trucks provide door-to-door freight transportation for timely deliveries and help to ensure the effective operation of other freight modes and facilities.

The following maps (**Maps 11 and 12**) show the 2003 Existing and 2026 PM peak hour congestion levels of services for the major roadways in Hampton Roads. The results clearly indicate that roadway congestion levels will be rising substantially as we approach 2026 and therefore it is imperative to make improvements and implement mitigation strategies in order to keep passenger cars, trucks, and other vehicles moving. Please refer to the 2005 Congestion Management System Report[6] for a comprehensive evaluation of the region's roadway system.



MAP 12 – Hampton Roads 2026 PM Peak Hour Congestion
Source: HRPDC CMS Report, April 2005



MAP 11 – Hampton Roads 2003 Existing PM Peak Hour Congestion

Hampton Roads' location and topography is perfect for seaport activity, however it requires more bridges and tunnels for its roadway system, which involves higher than usual costs for construction and maintenance. This is one of the many challenges facing our region to improve roadway levels of service in future years.

Truckers typically use roadways during non-peak periods when possible to avoid sitting in traffic. Time is money. Problems arise when incidents and unexpected delays occur. Intelligent Transportation System (ITS) technologies, incident management, and congestion management strategies will be vital for keeping traffic moving at all times. Some of these issues related to trucking will be discussed further in the regional truck movement section of this report.

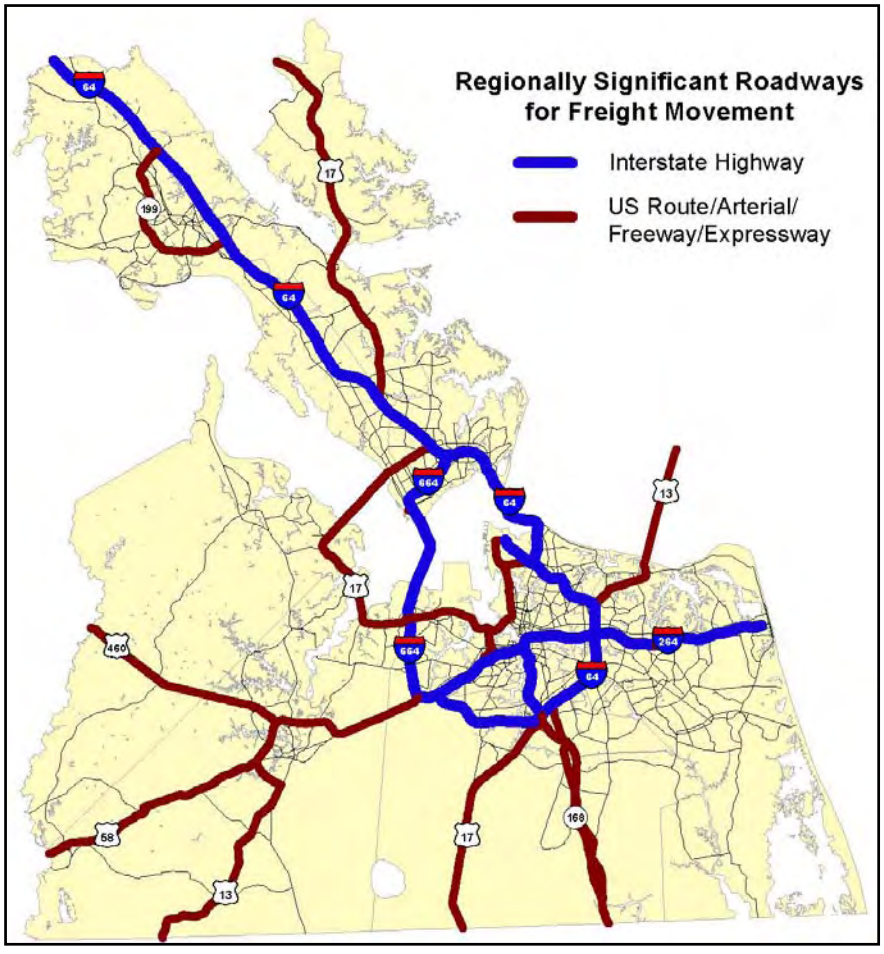
6 Hampton Roads Planning District Commission, "Congestion Management System – Part 1 and Part 2", December 2004 and April 2005.

Regionally Significant Roadways for Freight Movement

Listed below are regionally significant roadways in Hampton Roads that facilitate the movement of freight into and out of the region:

- Interstate 64
- Interstate 664
- Interstate 464
- Interstate 264
- Interstate 564
- Western Freeway
- Midtown Tunnel
- Downtown Tunnel
- Hampton Roads Bridge Tunnel
- Monitor Merrimac Memorial Bridge Tunnel
- James River Bridge
- Pinner's Point Interchange
- Martin Luther King Freeway
- US 13
- US 17/Dominion Boulevard (City of Chesapeake)
- US 17 (City of Newport News, York County, Gloucester County)
- US 460
- US 58
- US 199
- VA 168/Battlefield Boulevard
- International Terminal Boulevard (City of Norfolk)
- Hampton Boulevard (City of Norfolk)
- Harbor Street (City of Portsmouth)
- Turnpike Road (City of Portsmouth)
- Northampton Boulevard (City of Virginia Beach/Norfolk)

Improvements and maintenance of these roadway facilities will be critical for the region to accommodate future growth in freight movement, particularly for the Port of Hampton Roads. Priority must be given to these freight corridors (**Map 13**) as they serve as the gateways in and out of the region.



MAP 13 – Hampton Roads Freight Corridors

Warehouse and Distribution Facilities

Warehouses and distribution centers are a critical component to the successful distribution of goods, particularly in areas like Hampton Roads, where a major seaport exists. These locations are primarily used for the receipt, temporary storage, possible modification/ customization and distribution of goods that are enroute from production sites to where they are sold and consumed. These sites oftentimes are where value is added to the products, such as final assembly, customization of products, packaging, and preparing the products for sales.

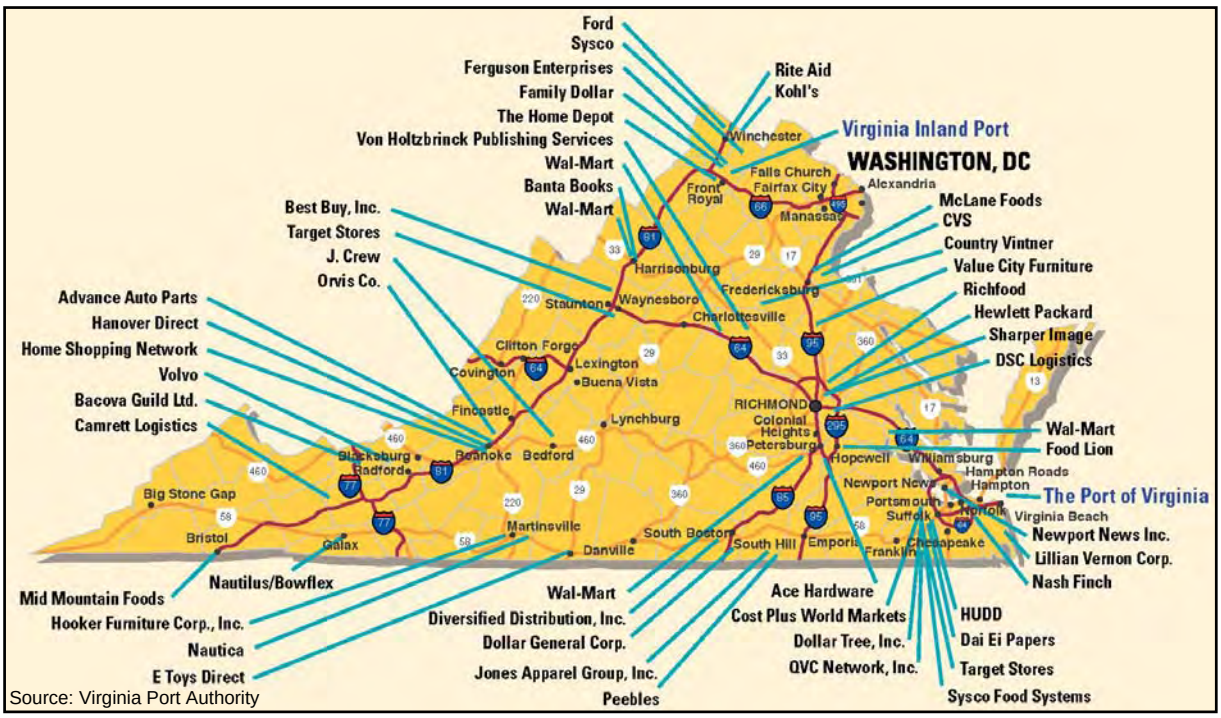
Warehouses and distribution centers vary in size and oftentimes are strategically located adjacent to airports, ports, rail lines, and major interstates. One of the most critical criteria for site selection is to be located along the primary path of product. Most warehouses and distribution centers utilize trucks to transport a majority of their freight to/from the facilities. **Maps 14 and 15** show the major warehouse and distribution centers & the shipper distribution centers and hubs in Virginia.

Lately, there has been a trend toward consolidating smaller distribution centers into larger distribution centers. In Hampton Roads, some distribution centers, like Wal-Mart, are expanding their facilities and generating higher truck volumes than originally anticipated. Local jurisdictions will need to monitor these locations to ensure that roadways are capable of handling additional traffic due to future expansion.

The state of Virginia currently has over 1,300 warehouses with nearly 100 million square feet of space. Hampton Roads currently has about 80 port-related distribution center locations and over 14.6 million square feet of warehouse space (See **Map 16**).

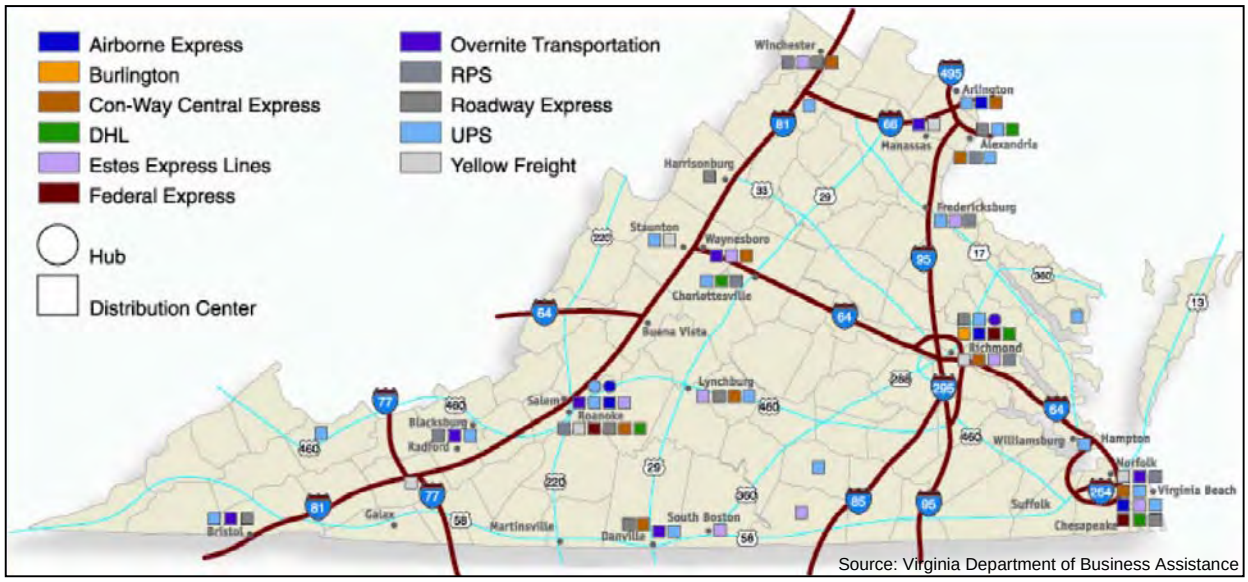
Erin Wolfgang with the VPA Business Analysis and Strategy department completed (December 2004) a statewide warehouse availability study using warehouse data from the Virginia Economic Development Partnership. This study looked at current locations of warehouses that are both occupied and available, which locations are best suited for international trade, and whether or not the state has the enough available distribution center space to handle the expected future growth in container trade.

The study concluded that Hampton Roads had the highest concentration of warehouses in Virginia as of 2004 and approximately 29% of available space remaining. It also identified several available buildings that were suited for international trade, which were mainly concentrated within 30 miles of the Port of Hampton Roads' marine terminals.



Source: Virginia Port Authority

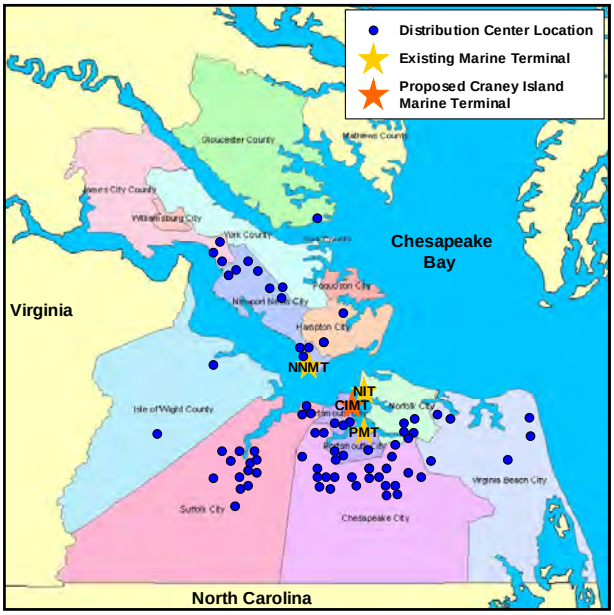
MAP 14 – Major Warehouse and Distribution Centers in Virginia. Businesses prefer sites located along the path of product.



MAP 15 – Shipper Distribution Centers and Hubs in Virginia

The study also revealed that Virginia's current and future industrial space has the capability to handle future projected growth through Virginia's Port. The results show that between expanded and new buildings, Virginia has the potential to increase square footage by almost 50 million square feet. This, in addition to the current amount of available industrial warehouse space, could support well over 1 million additional twenty-foot container units annually for the port.

Having adequate capacity in our warehousing and distribution centers is very important, however, it is essential that the region continue to make improvements to the transportation infrastructure to support future port growth.



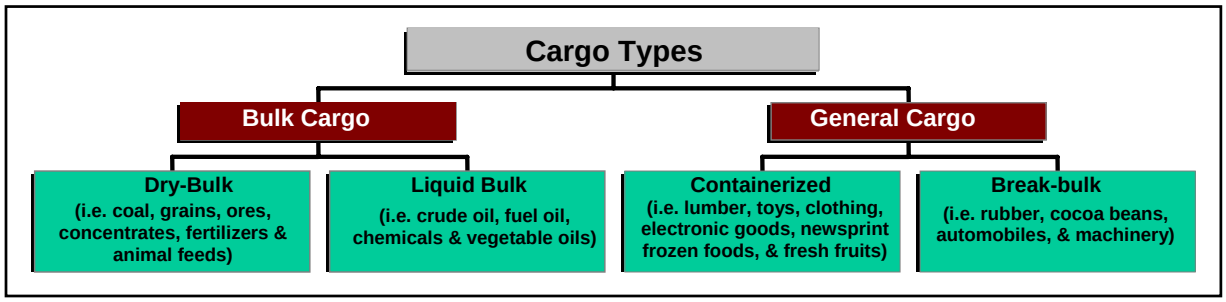
MAP 16 – Distribution Center Locations in Hampton Roads
Source: Virginia Port Authority

FREIGHT FACTS, TRENDS, AND FORECASTS




As a part of the Intermodal Management System for Hampton Roads, freight data for all modes of transportation in the region are collected and analyzed on a regular basis. This section of the report summarizes the most recent freight data, trends, and forecasts on a global, national, regional, and local level. Some of the variables used in this report to summarize freight movements include cargo tonnage, cargo value, commodity type, container units, and forecasted growth. Most of the local freight data and trend information is for the Port of Hampton Roads, however, some data is provided for local and regional airports and railroads. This information will help provide a better understanding of the freight moving in and out of Hampton Roads and how it compares with other areas in the United States and around the world. Freight movement by highway will be reviewed later in detail in a separate section of this report.

SUMMARY OF CARGO TYPES



As discussed in the Introduction section of this report, cargo that is handled and transported through the Port of Hampton Roads is classified as either bulk cargo or general cargo. Bulk cargo is subdivided into dry-bulk cargo and liquid bulk cargo. General cargo is subdivided into container cargo and break-bulk cargo. Please use this illustration as a reference when reviewing cargo trends on the following pages.

U.S. FREIGHT GATEWAYS – ALL MODES

TOP 50 U.S. FOREIGN TRADE FREIGHT GATEWAYS: 2005
(Ranked by Value of Shipments in Billions of Dollars)

Gateway[1]	Mode	Rank	Exports	Imports	Total
Port of Los Angeles, CA	Water	1	20.6	168.9	189.6
JFK International Airport, NY	Air	2	59.3	75.6	134.9
Port of Detroit, MI	Land	3	68.8	61.7	130.5
Port of New York, NY and NJ	Water	4	26.5	102.8	129.3
Port of Laredo, TX	Land	5	40.9	52.8	93.7
Port of Houston, TX	Water	6	34.5	51.2	85.7
Chicago, IL	Air	7	29.1	44.3	73.4
Los Angeles International Airport, CA	Air	8	36.5	36.4	72.9
Port of Long Beach, CA	Water	9	19.4	53.0	72.4
Port of Buffalo-Niagara Falls, NY	Land	10	32.5	38.0	70.5
Port of Huron, MI	Land	11	23.6	44.6	68.2
San Francisco International Airport, CA	Air	12	25.2	32.0	57.2
Port of Charleston, SC	Water	13	16.0	37.1	53.1
Port of El Paso, TX	Land	14	18.9	24.1	43.0
Port of Norfolk Harbor, VA	**Water**	**15**	**14.5**	**25.0**	**39.5**
Port of Seattle, WA	Water	16	8.2	30.8	39.0
Port of Baltimore, MD	Water	17	8.6	27.3	35.9
Dallas-Fort Worth, TX	Air	18	15.4	19.7	35.1
Anchorage, AK	Air	19	8.7	26.0	34.7
Port of Savannah, GA	Water	20	11.4	22.3	33.7
Port of Oakland, CA	Water	21	9.0	24.5	33.5
Port of Tacoma, WA	Water	22	4.7	26.9	31.6
Atlanta, GA	Air	23	11.6	18.3	29.9
New Orleans, LA	Air	24	11.8	17.9	29.7
Miami International Airport, FL	Air	25	17.8	9.7	27.4
Port of Philadelphia, PA	Water	26	1.9	24.4	26.2
Port of New Orleans, LA	Water	27	12.4	12.5	25.0
Port of Otay Mesa Station, CA	Land	28	9.3	15.1	24.4
Cleveland, OH	Air	29	15.1	8.6	23.6
Port of Morgan City, LA	Water	30	0.1	21.0	21.1
Port of Miami, FL	Water	31	9.0	11.6	20.6
Port of Champlain-Rouses Pt., NY	Land	32	6.7	11.6	18.3
Port of Hidalgo, TX	Land	33	7.6	10.7	18.3
Port of Jacksonville, FL	Water	34	6.4	10.1	16.6
Port of Blaine, WA	Land	35	7.3	8.4	15.6
Newark, NJ	Air	36	3.4	12.1	15.5
Port of Corpus Christi, TX	Water	37	2.2	13.2	15.4
Port of Arthur, TX	Water	38	0.9	14.2	15.2
Port of Port Everglades, FL	Water	39	5.6	9.3	14.8
Port of Nogales, AZ	Land	40	5.0	9.1	14.1
Boston Logan Airport, MA	Air	41	8.0	5.6	13.6
Port of Pembina, ND	Land	42	7.2	5.5	12.7
Port of Alexandria Bay, NY	Land	43	4.6	7.3	11.8
Port of Portland, OR	Water	44	2.2	9.3	11.5
Port of Brownsville-Cameron, TX	Land	45	6.3	5.1	11.4
Port of Calexico-East, CA	Land	46	4.7	6.0	10.8
San Juan International Airport, PR	Air	47	6.1	4.3	10.4
Port of Sweetgrass, MT	Land	48	5.0	5.1	10.1
Port of Portal, ND	Land	49	5.4	4.6	10.0
Philadelphia International Airport, PA	Air	50	4.9	5.1	9.9
Total top 50 gateways			700.1	1,151.5	1,851.5

[1]Gateway means any port, airport, or border crossing that provides access for the import or export of goods.

NOTES

All data: Trade levels reflect the mode of transportation as a shipment enters or exits at a border port. Flows through individual ports are based on reported data collected from U.S. trade documents. Trade does not include low-value shipments. (In general, these are imports valued at less than $1,250 and exports that are valued at less than $2,500).

Air: Data for all air gateways include a low level (generally less than 2%-3% of the total value) of small user-fee airports located in the same region. Air gateways not identified by airport name (e.g., Chicago, IL, and others) include major airport(s) in that geographic area in addition to small regional airports. In addition, due to Bureau of Census confidentiality regulations, data for courier operations are included in the airport totals for JFK International Airport, New Orleans, Los Angeles, Cleveland, Chicago, Miami, and Anchorage.

SOURCES

Air: U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division, special tabulation, September 2006.

Water: 2003: U.S. Department of Transportation, Maritime Administration, Office of Statistical and Economic Analysis, personal communication, Sep. 29, 2006.

Land: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data as of August 2006.

MARITIME CARGO

TOP 30 WORLD PORTS: 2004
(Ranked by Cargo Tonnage)

WORLD PORT RANKING - 2004				
TOTAL CARGO VOLUME, METRIC TONS (Thousands)				
RANK	PORT	COUNTRY	MEASURE	TONS
1	Singapore	Singapore	FT	393,418
2	Shanghai	China	MT	378,962
3	Rotterdam	Netherlands	MT	352,563
4	Ningbo	China	MT	225,850
5	Hong Kong	China	MT	220,879
6	Busan	South Korea	RT	219,760
7	Guangzhou	China	MT	215,190
8	Tianjin	China	MT	206,161
9	South Louisiana, LA	United States	MT	203,517
10	Houston, TX	United States	MT	183,419
11	Nagoya	Japan	FT	182,289
12	Chiba	Japan	FT	169,254
13	Kwangyang	South Korea	RT	165,875
14	Qingdao	China	MT	161,650
15	Ulsan	South Korea	RT	156,517
16	Kaohsiung	Taiwan	MT	152,468
17	Antwerp	Belgium	MT	152,327
18	Qinhuangdao	China	MT	150,320
19	Dalian	China	MT	145,162
20	New York/New Jersey	United States	MT	138,328
21	Shenzhen	China	MT	135,246
22	Yokohama	Japan	FT	126,960
23	Hamburg	Germany	MT	114,484
24	Inchon	South Korea	RT	113,073
25	Port Hedland	Australia	MT	108,500
26	Kitakyushu	Japan	FT	103,245
27	Port Kelang	Malaysia	FT	99,911
28	Marseilles	France	MT	94,093
29	Osaka	Japan	FT	93,147
30	Tokyo	Japan	FT	91,427

Abbreviations: MT=Metric Ton FT=Freight Ton RT = Revenue Ton

NOTE: ***The cargo rankings based on tonnage should be interpreted with caution since these measures are not directly comparable and cannot be converted to a single, standardized unit.***

Sources: Shipping Statistics Yearbook 2005; Containerisation International Yearbook 2006;U.S. Army Corps of Engineers, Waterborne Commerce of the United States CY 2004; AAPA Advisory, May 8, 2006; various port authority internet sites.

Definitions and Conversions:
1 Short Ton = 2000 lbs
1 Metric Ton = 2205 lbs
To convert Metric Tons into Short Tons multiply by 1.1025
To convert Short Tons into Metric Tons multiply by 0.9078

TOP 50 U.S. PORTS: 2003 - 2004
(Ranked by 2004 Total Cargo Tonnage – Foreign and Domestic)

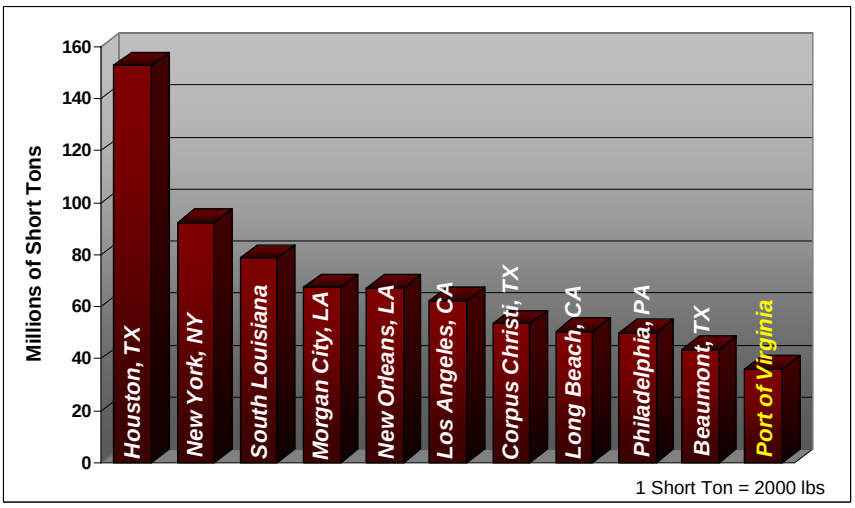
Port and State	2004		2003		Percent change 2003-2004
	Rank	Short Tons (Millions)	Rank	Short Tons (Millions)	
South Louisiana, LA	1	224.2	1	198.8	12.8%
Houston, TX	2	202.0	2	190.9	5.8%
New York, NY and NJ	3	152.4	3	145.9	4.4%
Beaumont, TX	4	91.7	4	87.5	4.7%
Long Beach, CA	5	79.7	8	69.2	15.2%
Corpus Christi, TX	6	78.9	7	77.2	2.2%
New Orleans, LA	7	78.1	5	83.8	-6.9%
Huntington, WV-KY-OH	8	77.3	6	77.6	-0.4%
Texas City, TX	9	68.3	9	61.3	11.3%
Baton Rouge, LA	10	57.1	10	61.3	-6.8%
Mobile, AL	11	56.2	14	50.2	11.9%
Lake Charles, LA	12	54.8	12	53.4	2.6%
Plaquemines, LA	13	54.4	11	55.9	-2.7%
Los Angeles, CA	14	51.4	13	51.3	0.1%
Tampa, FL	15	48.3	16	48.3	0.1%
Baltimore, MD	16	47.4	18	40.2	18.0%
Valdez, AK	17	46.8	15	49.9	-6.2%
Duluth-Superior, MN-WI	18	45.4	19	38.3	18.4%
Pittsburgh, PA	19	41.0	17	41.7	-1.5%
Philadelphia, PA	20	35.2	20	33.2	5.9%
Norfolk Harbor, VA	**21**	**34.2**	**23**	**31.2**	**9.5%**
Pascagoula, MS	22	34.1	22	31.3	9.0%
Freeport, TX	23	33.9	24	30.5	11.0%
St. Louis, MO-IL	24	33.4	21	32.4	2.9%
Paulsboro, NJ	25	30.5	26	27.3	11.7%
Portland, OR	26	30.0	28	26.8	11.9%
Portland, ME	27	29.7	25	29.2	1.9%
Savannah, GA	28	28.2	32	23.4	20.6%
Port Arthur, TX	29	27.6	27	27.2	1.5%
Tacoma, WA	30	26.3	35	23.0	14.4%
Boston, MA	31	25.8	31	24.8	3.9%
Port Everglades, FL	32	24.9	33	23.0	8.1%
Richmond, CA	33	24.7	34	23.0	7.6%
Charleston, SC	34	24.7	30	25.2	-1.8%
Chicago, IL	35	24.6	36	22.6	8.8%
Marcus Hook, PA	36	24.6	29	26.2	-6.1%
Seattle, WA	37	23.5	38	19.4	20.8%
Jacksonville, FL	38	21.5	37	21.7	-1.3%
Honolulu, HI	39	19.1	40	17.8	7.0%
Indiana Harbor, IN	40	18.2	44	14.1	29.0%
Memphis, TN	41	17.5	39	18.2	-3.7%
Detroit, MI	42	16.9	43	14.3	17.8%
Anacortes, WA	43	16.3	41	15.8	3.1%
Cleveland, OH	44	15.8	47	12.6	25.0%
Oakland, CA	45	15.5	46	12.6	23.1%
Newport News, VA	**46**	**14.3**	**52**	**10.3**	**39.2%**
San Juan, PR	47	14.2	42	14.6	-2.6%
Cincinnati, OH	48	13.9	48	11.8	17.5%
Two Harbors, MN	49	13.5	45	13.0	3.4%
Matagorda Ship Channel, TX	50	12.5	49	11.7	7.3%
Top 50, total		2,280.3		2,151.2	6.0%
United States, total		2,551.9		2,394.3	6.6%

SOURCE: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 5, National Summaries (New Orleans, LA: Annual issues), tables 1-1 and 5-2.

1 Short Ton = 2000 lbs

TOP U.S. PORTS
(FOREIGN TRADE IN TONNAGE)

2005 Top U.S. Ports: Total Cargo (Imports and Exports)
in Thousands of Short Tons



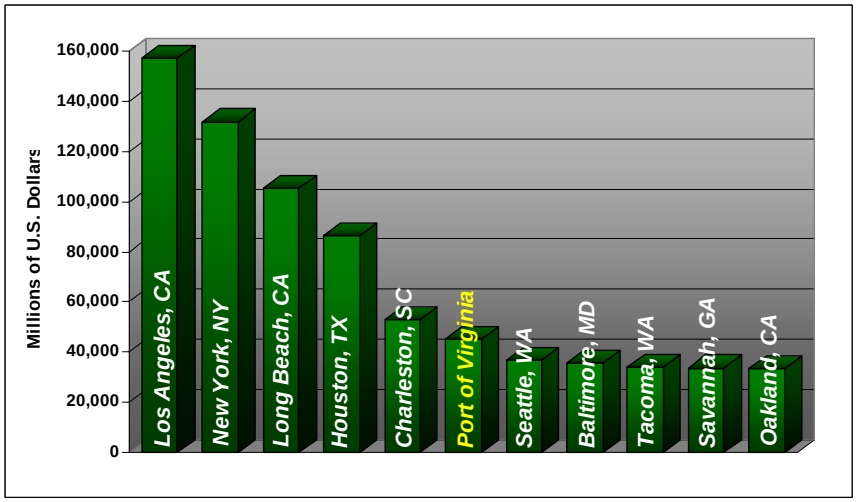
Data source: U.S. Maritime Administration, Hampton Roads Maritime Association and the Virginia Port Authority

Quick Facts: The Port of Houston ranks 1st in U.S. foreign trade tonnage with over 152 million moved in 2005. A majority of imports and exports for Houston are petroleum and petroleum products.

The Port of Virginia ranks 11th in U.S. foreign trade tonnage, carrying over 36 million short tons in 2005.

TOP U.S. PORTS
(FOREIGN TRADE BY DOLLAR VALUE)

2005 Top U.S. Ports: Total Cargo (Imports and Exports)
in Millions of U.S. Dollars



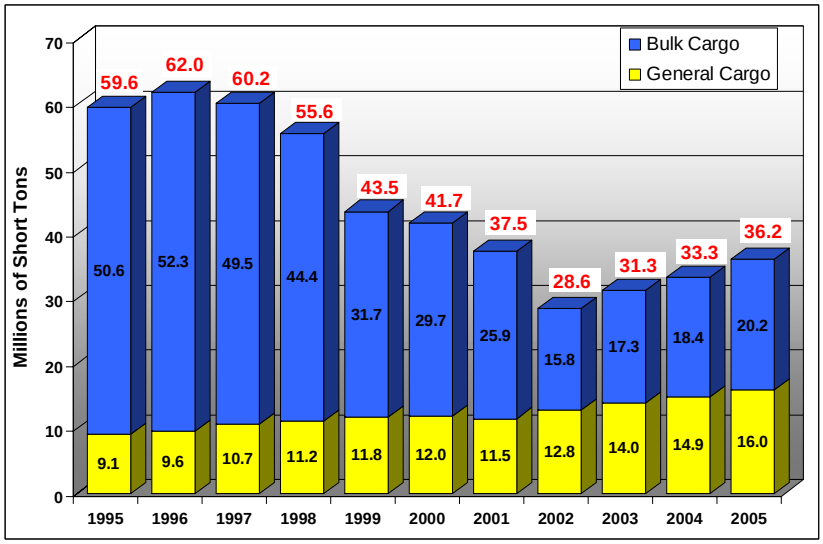
Data source: U.S. Maritime Administration, Hampton Roads Maritime Association and the Virginia Port Authority

Quick Facts: In comparison to all ports in the U.S., the Port of Virginia ranked 6th in foreign trade by dollar value with $44.9 billion dollars worth of cargo moved in 2005.

The Ports of Los Angeles, New York and Long Beach are the top 3 ports in the nation in U.S. foreign trade cargo value with $157.4 billion, $131.9 billion, and $105.4 billion dollars worth of goods moved in 2005, respectively.

TOTAL TRADE BY TONNAGE
(PORT OF HAMPTON ROADS)

Breakdown of Bulk and General Cargo, 1995-2005



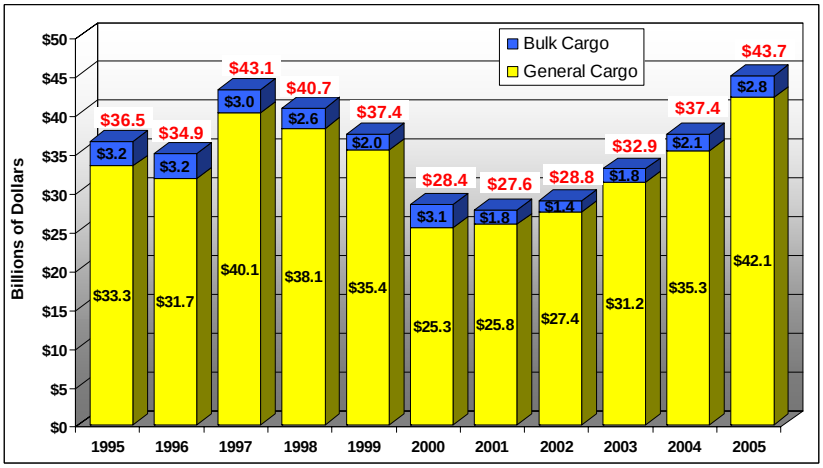
Data source: Virginia Port Authority

1 Short Ton = 2000 lbs

Quick Facts: Bulk cargo has fallen significantly since the mid 90's, while general cargo has increased each year. The decline in bulk cargo is directly associated to the recent decline in coal. General cargo is projected to increase in future years with the container trade boom that is taking place, particularly with Asia.

TOTAL TRADE BY DOLLAR VALUE
(PORT OF HAMPTON ROADS)

Breakdown of Bulk and General Cargo, 1995-2005

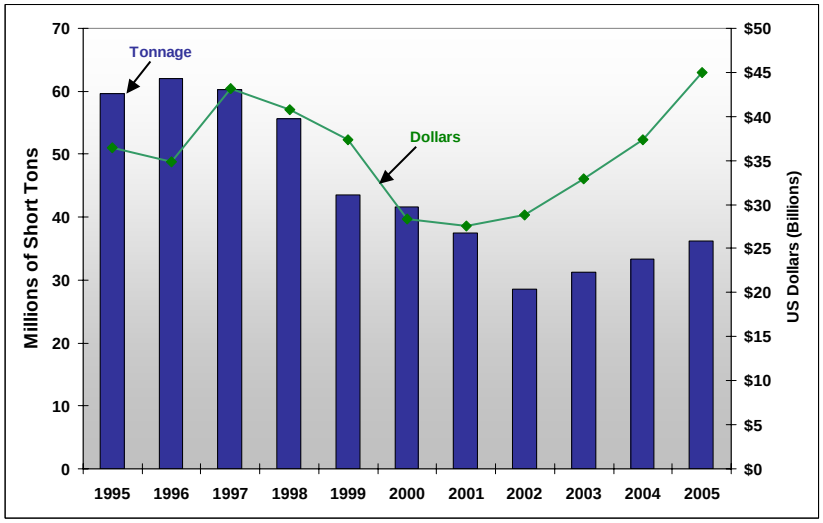


Data source: Virginia Port Authority

Quick Facts: Even though general cargo tons are lower than bulk cargo tons (see above), the value of these goods are much higher. Cargo values have increased in recent years as a result of the rise in general cargo.

TOTAL TRADE BY TONNAGE & DOLLAR VALUE
(PORT OF HAMPTON ROADS)

Summary of Total Cargo, 1995-2005

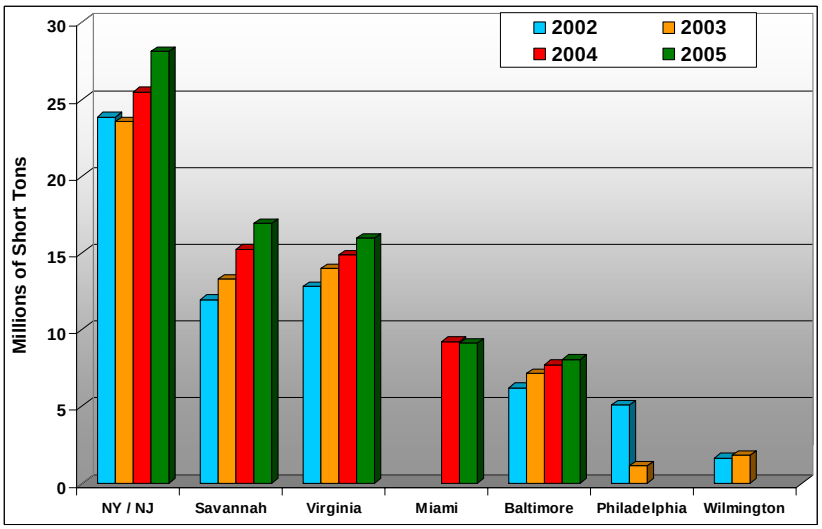


Data source: Virginia Port Authority 1 Short Ton = 2000 lbs

Quick Facts: Recent trends indicate that higher value commodities are being shipped through the Port of Hampton Roads, so that while the tonnage has decreased, the dollar value has increased. This trend is also occurring at other major ports across the United States and throughout the world.

COMPARISON OF U.S. EAST COAST PORTS
(GENERAL CARGO)

U.S. East Coast Ports Market Share for General Cargo, 2002-2005

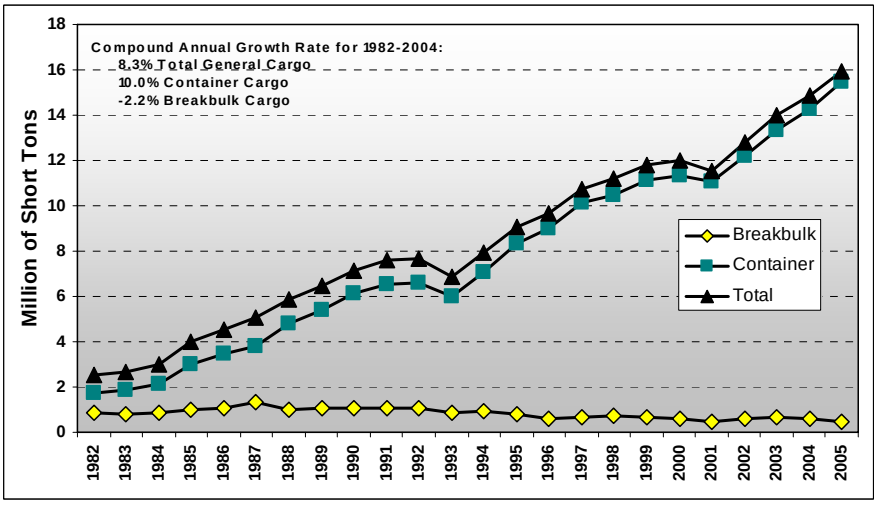


Data source: Virginia Port Authority 1 Short Ton = 2000 lbs
Note: General Cargo data at each port was not available for some years

Quick Facts: In comparison to ports on the U.S. East Coast, the Port of Virginia ranked 3rd for general cargo shipments with 15.9 million short tons in 2005. The Port of New York/New Jersey and the Port of Savannah were 1st and 2nd with 28.1 and 16.9 million short tons respectively.

GROWTH IN GENERAL CARGO
(PORT OF HAMPTON ROADS)

Breakdown of Container and Breakbulk Cargo, 1982-2005



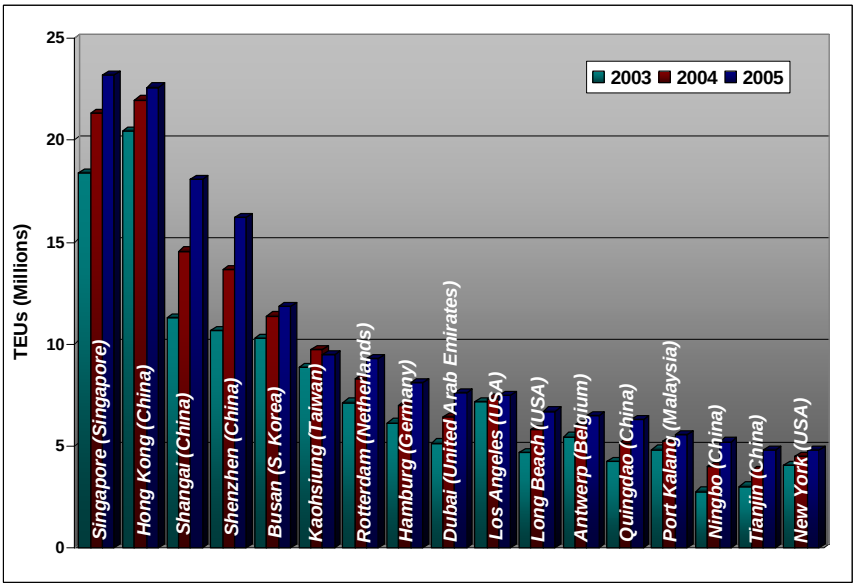
Data source: Hampton Roads Maritime Association

1 Short Ton = 2000 lbs

Quick Facts: Clearly, the growth in general cargo is attributed to the growth in containerized cargo. Breakbulk shipments have remained relatively unchanged, while container cargo has increased at a rate of approximately 10% per year. In 2005, the Port of Hampton Roads moved 15.9 million tons of general cargo.

TOP WORLD PORTS
(CONTAINER CARGO)

World Port Rankings by TEUs (20-foot container units), 2003-2005



Data source: www.geohive.com

Quick Facts: The 6 largest container ports in the world are located in Pacific Asia, primarily in China. This underlines the importance of this region as the manufacturing center of the global economy.

The Port of Los Angeles and the Port of Long Beach are the 10th and 11th largest container ports in the world. These port facilities are adjacent to one another in California and are considered by some to be one location. Combining 2005 TEUs totals for these two U.S. Ports yields about 14.2 million TEUs, which is still only 5th best among all world ports.

TOP U.S. PORTS
(CONTAINER CARGO)

2005 U.S. Port Rankings by TEUs (20-foot container units)

2005 Rank	Port (State/Province)	2005 TEUs	2004 TEUs	Percent Change	2005 U.S. Market Share	2005 Coastal Market Share[1]
1	Los Angeles (CA)	7,484,624	7,321,440	2.2%	17.8%	32.5%
2	Long Beach (CA)	6,709,818	5,779,852	16.1%	16.0%	29.2%
3	New York/New Jersey	4,792,922	4,478,480	7.0%	11.4%	28.5%
4	Oakland (CA)	2,272,525	2,043,122	11.2%	5.4%	9.9%
5	Seattle (WA)	2,087,929	1,775,858	17.6%	5.0%	9.1%
6	Tacoma (CA)	2,066,447	1,797,560	15.0%	4.9%	9.0%
7	Charleston (SC)	1,986,586	1,863,917	6.6%	4.7%	11.8%
8	Hampton Roads (VA)	1,981,955	1,808,933	9.6%	4.7%	11.8%
9	Savannah (GA)	1,901,520	1,662,021	14.4%	4.5%	11.3%
10	San Juan (PR) (fy)	1,727,389	1,625,704	6.3%	4.1%	10.3%
11	Houston (TX)	1,582,081	1,437,585	10.1%	3.8%	73.2%
12	Honolulu (HI) (fy)	1,077,468	1,041,455	3.5%	2.6%	4.7%
13	Miami (FL) (fy)	1,054,462	1,009,500	4.5%	2.5%	6.3%
14	Port Everglades (FL) (fy)	797,238	653,628	22.0%	1.9%	4.7%
15	Jacksonville (FL) (fy)	777,318	727,660	6.8%	1.9%	4.6%
16	Baltimore (MD) [2]	602,486	557,877	8.0%	1.4%	3.6%
17	Anchorage (AK)	516,367	543,831	-5.1%	1.2%	2.2%
18	Wilmington (DE)	250,507	253,925	-1.3%	0.6%	1.5%
19	Palm Beach (FL) (fy)	248,206	226,002	9.8%	0.6%	1.5%
20	New Orleans (LA)	200,766	258,468	-22.3%	0.5%	9.3%
	U.S. TOTAL	**41,963,742**	**38,654,658**	**8.6%**		

1 Coastal Market Share - Percentage of **Atlantic**, **Pacific**, or **Gulf Coast** container totals.
2 Baltimore data for Maryland Port Administration (MPA) facilities only.
fy - Fiscal Year
Data Source: AAPA and various Port Authorities

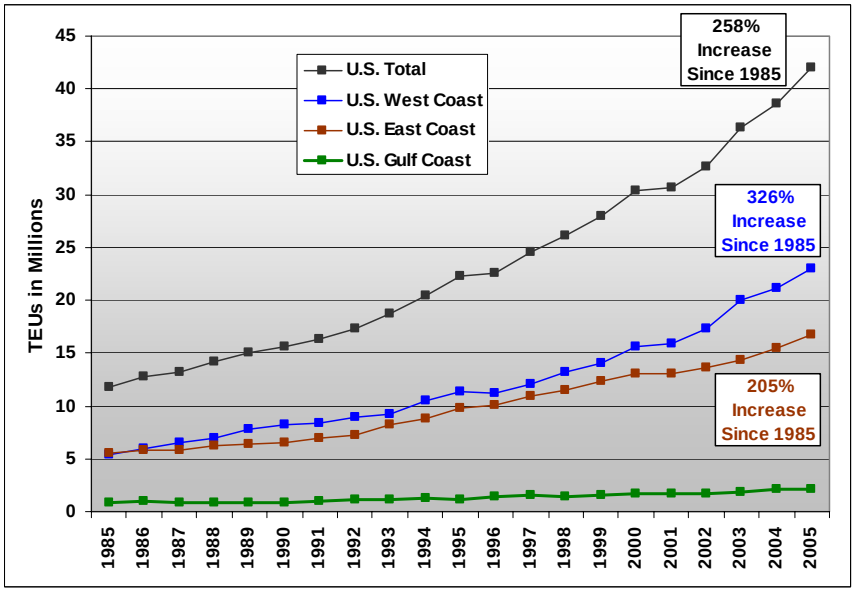
Quick Facts: The Port of Los Angeles and the Port of Long Beach, which are located adjacent to one another in southern California, account for nearly 34% of all U.S. containerized cargo (2005). Five of the top six U.S. container ports are located on the U.S. West Coast.

The Port of Hampton Roads is currently the 8th largest container port in the U.S.

Update: According to VPA (January '07), Hampton Roads moved 2.05 million TEUs in '06. Savannah, Ga moved 2.16 million TEUs and Charleston, SC moved 1.97 million TEUs in '06.. Source: Va Pilot January 2007.

CONTAINER GROWTH IN U.S. PORTS
(WEST COAST, EAST COAST & GULF COAST)

U.S. Container Growth for Atlantic, Pacific, and Gulf Coast Ports, 1985-2005



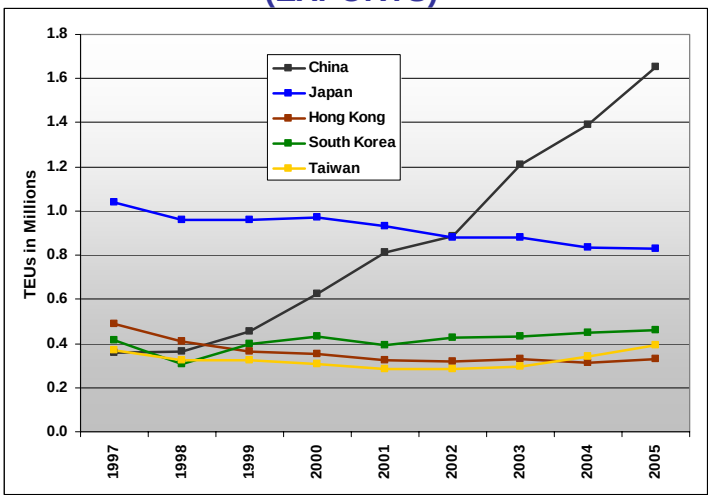
Data source: AAPA and various Port Authorities

TEU = 20 Foot Container Unit

Quick Facts: Containers have revolutionized the ability to trade cargo. U.S. West Coast Ports have experienced the most increases in containerized cargo since 1985 followed by U.S. East Coast Ports. With container imports increasing at a fast pace for U.S. West Coast Ports, it's only a matter of time before more bottlenecks emerge, either at the ports themselves or on the railroads or highways that connect them to the rest of the country. In order for continued U.S. container trade growth to occur, U.S. East Coast Ports, like Hampton Roads will be called upon to make capacity improvements and shoulder future growth.

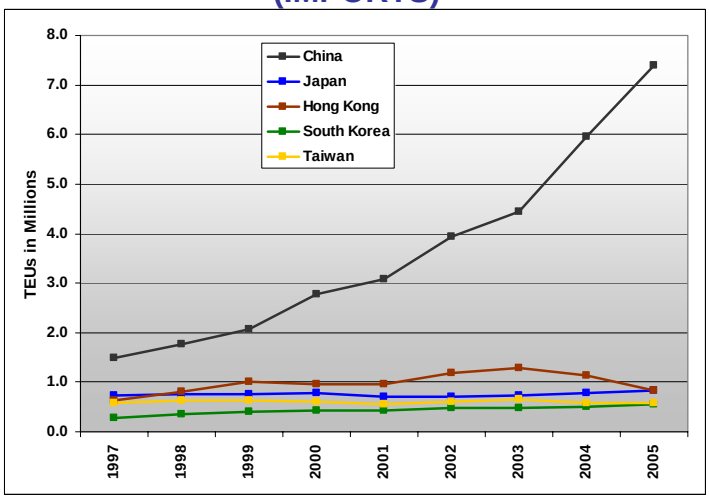
TOP 5 FOREIGN CONTAINER TRADING PARTNERS WITH THE U.S.

(EXPORTS)

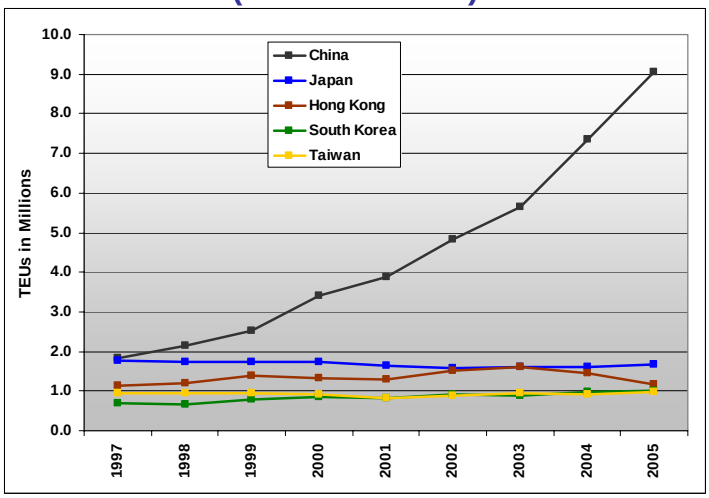


TEU = 20 Foot Container Unit

(IMPORTS)



(TOTAL TRADE)



Quick Facts: The top 5 foreign container trading partners with the U.S. are located in Pacific Asia (China, Japan, Hong Kong, South Korea, and Taiwan). Imports and Exports have remained relatively unchanged since 1997, except for China.

Total trade with China (including Hong Kong) has increased 245% from 1997 to 2005. The largest increase has been China imports going from 1.5 million TEUs (20-foot container units) in 1997 to 7.4 million TEUs in 2004.

All U.S. ports experienced a 12.2% increase in container trade with Asia from 2003 to 2004. U.S. East Coast ports experienced a 31.7% increase in container trade with Asia during the same time period from 2003 to 2004.

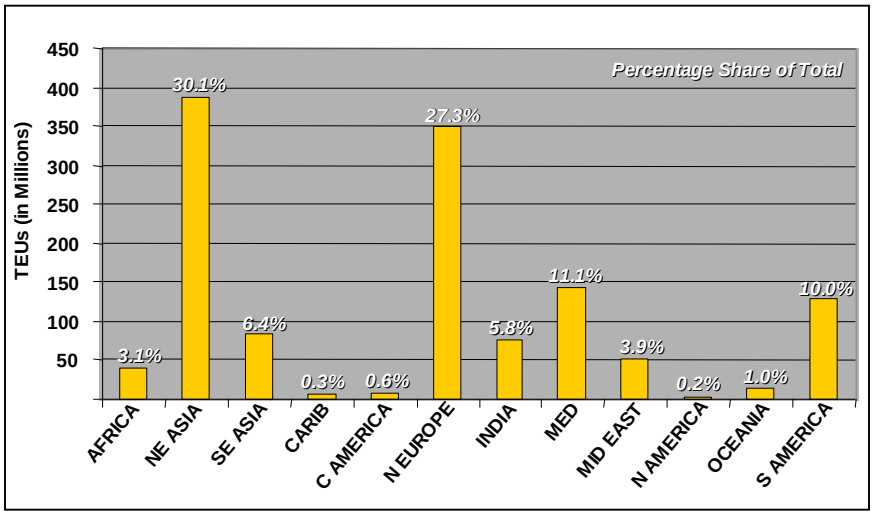
Asian trade will continue to rise for the U.S. East Coast ports at a faster pace due to continued congestion/capacity issues on the U.S. West Coast and the new shift toward delivering goods using bigger and faster containerships.

Hampton Roads has more favorable factors to accommodate future growth, such as the deepest water on the US East Coast, a new APM-Maersk Terminal, a planned Craney Island Terminal, and the Heartland Corridor Rail project.

Data source: Port Import Export Reporting Service (PIERS), collected from Vessel Manifests and Bills of Lading
http://www.marad.dot.gov/MARAD_statistics/index.html

DISTRIBUTION OF FOREIGN TRADE WITH THE PORT OF VIRGINIA
(CONTAINER CARGO)

Container World Trade Lanes with the Port of Virginia,
based on 20-foot container units (2004)



Data source: PIERS Trade Data, 2004

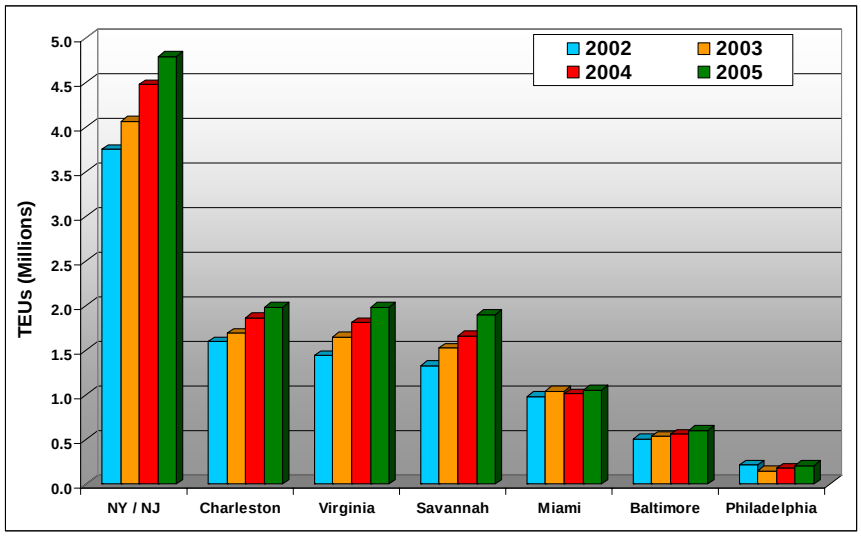
TEU = 20 Foot Container Unit

Quick Facts: In recent years, the manufacturing base has shifted to China and thus the Asian trade market share has increased with the Port of Virginia to 30.1% for NE Asia and 6.4% for SE Asia in 2004. North Europe continues to hold a large market share (27.3%) with the Port of Virginia, however, is not growing nearly as fast as the Asian markets.

In future years to come, growth is expected to continue with Asian markets, particularly with China, which will continue to lower the percentage share with other world markets.

COMPARISON OF U.S. EAST COAST PORTS
(CONTAINER CARGO)

Rankings of U.S. East Coast Ports by cargo container volume,
based on 20-foot container units (2002-2005)



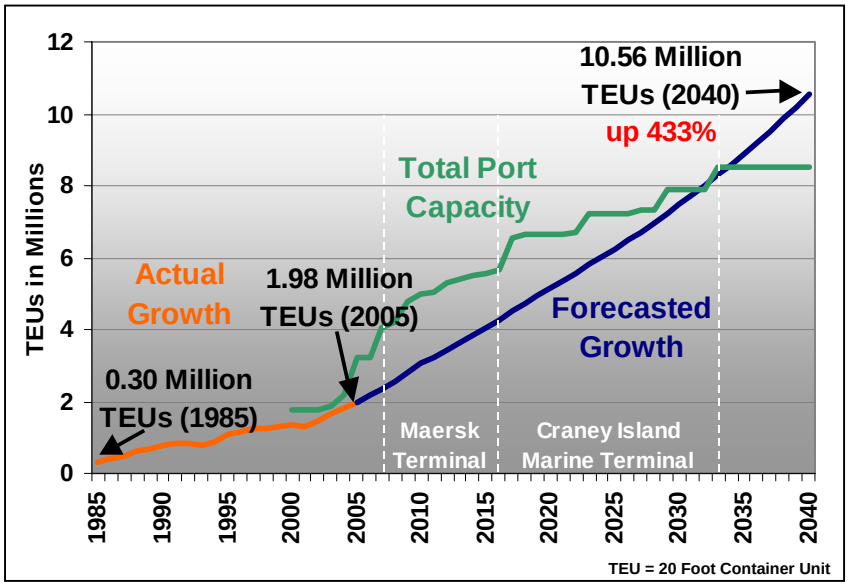
Data source: AAPA and various Port Authorities

Quick Facts: The evolution of container shipping has lowered the per-unit cost of transporting goods. It is more economical now to ship goods longer distances (i.e. China to U.S. East Coast Ports) since today's ships are bigger, faster, and equipped with more technology. As a result, cargo container volume has been increasing at a fast pace for most ports on the U.S. East Coast. The Port of New York/New Jersey currently handles the largest amount of containers on the U.S. East Coast followed by the Ports of Charleston, Virginia, and Savannah.

Update: According to VPA (January '07), Hampton Roads moved 2.05 million TEUs in '06. Savannah, Ga moved 2.16 million TEUs and Charleston, SC moved 1.97 million TEUs in '06.. Source: Va Pilot January 2007.

CONTAINER CARGO FORECAST
(PORT OF HAMPTON ROADS)

Historical and Forecasted Growth in Containers Through the Port of Hampton Roads (1985-2040)



Data source: Virginia Port Authority (VPA), 2005 Master Plan Update and Forecast

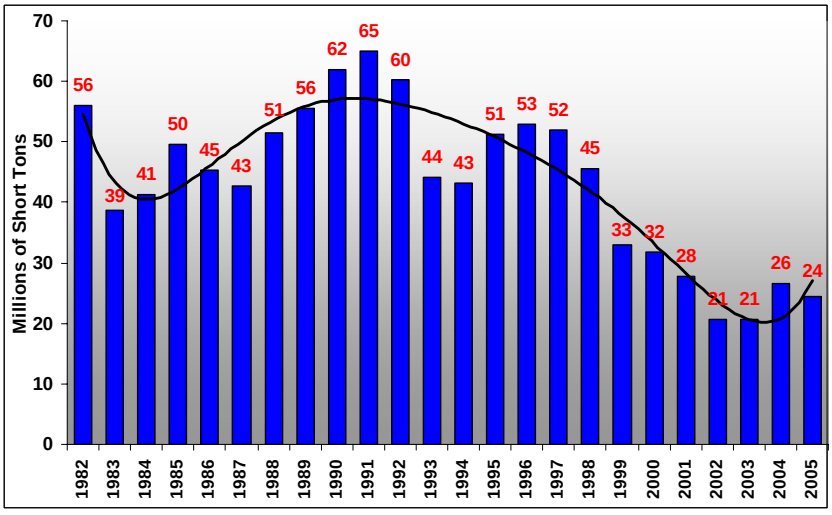
Quick Facts: Since 1985, containerized cargo at the Port of Hampton Roads has grown 562% from 0.3 million annual TEUs to 1.98 million TEUs in 2005.

As a result of the surge in world trade, particularly with Asian markets, containers are forecasted to double over the next 10 years from 2005 to 2015. By 2040, 10.56 million TEUs are expected to be transported through the Port of Hampton Roads, up a staggering 433% from 2005.

Even with the additions of the new Maersk and Craney Island Marine Terminals, container demand will exceed port capacity by the year 2033.

HISTORICAL COAL LOADINGS
(PORT OF HAMPTON ROADS)

Total Coal Loadings by Tonnage, 1982-2004



Data source: T. Parker Host, Inc.

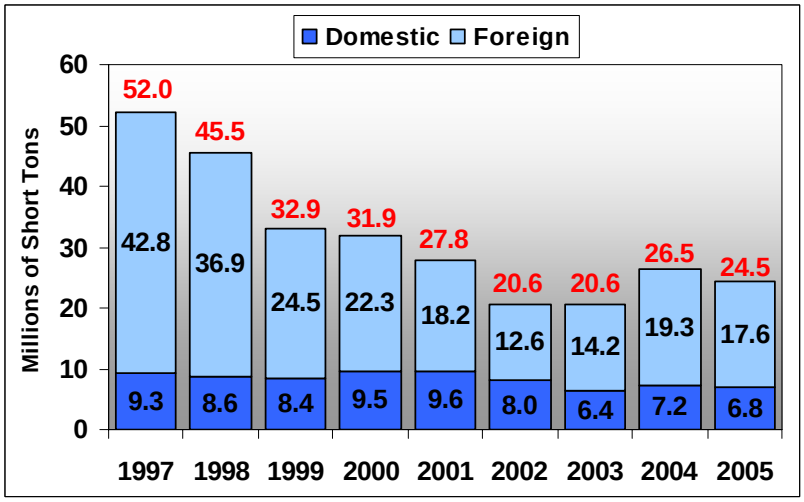
1 Short Ton = 2000 lbs

Quick Facts: The predominant bulk cargo at the Port of Hampton Roads is coal. In the early 90's, the coal terminals in Hampton Roads loaded more than 50 percent of America's coal exports. Since the early 90's, coal loadings have decreased substantially from about 65 million tons to about 24 million tons in 2005, which is primarily the result of a large reduction in foreign exports.

Coal still fuels about 50 percent of the nation's generated power and is expected to continue to do so through 2025, according to the Energy Information Administration, part of the U.S. Department of Energy. Almost all of that coal now comes from domestic mines.

FOREIGN AND DOMESTIC COAL LOADINGS
(PORT OF HAMPTON ROADS)

Foreign and Domestic Coal Loadings by Tonnage, 1997-2004



Data source: T. Parker Host, Inc.

1 Short Ton = 2000 lbs

Quick Facts: The reduction in coal loadings at the Port of Hampton Roads is attributed to the decrease in foreign coal trade. The movement of coal within the United States has remained around 7 to 9 million tons since 1997. Foreign coal loadings, however, decreased by more than half from about 43 million tons in 1997 to about 19 million tons in 2004.

The decline in coal can be attributed to a combination of factors including: (1) Foreign countries have recently been able to purchase coal at cheaper costs from other countries, such as Australia, China, and South Africa. (2) Coal mines in the U.S. have been able to sell coal domestically at a better price than internationally. (3) American dollar has been weak overseas.

COAL LOADINGS COMPARISON
(PORT OF HAMPTON ROADS AND BALTIMORE)

2005 Coal Loadings in Hampton Roads, VA (Short Tons)

Hampton Roads Coal Terminals	Coastwise (Domestic)	Export (Foreign)	Total	Hampton Roads Share
Lambert's Point Coal Terminal (Norfolk Southern)	1,150,103	10,925,647	12,075,750	49%
Kinder Morgan Pier IX Terminal	3,411,755	3,098,401	6,510,156	27%
Dominion Terminal Associates Terminal	2,285,529	3,580,058	5,865,587	24%
Totals	**6,847,387**	**17,604,106**	**24,451,493**	**100%**

Data source: T. Parker Host, Inc.

2005 Coal Loadings in Baltimore, MD (Short Tons)

Baltimore Coal Terminals	Coastwise (Domestic)	Export (Foreign)	Total	Baltimore Share
Chesapeake Bay Terminal	2,607,017	158,929	2,765,946	36%
Consol Terminal	51,034	4,861,140	4,912,174	64%
Totals	**2,658,051**	**5,020,069**	**7,678,120**	**100%**

Data source: T. Parker Host, Inc.

Quick Facts: The Lambert's Point Coal Terminal in Norfolk accounts for nearly half of all coal loadings in Hampton Roads.

Comparing coal terminal activity in Hampton Roads with nearby Baltimore, nearly 24.5 million short tons of coal were moved through the Port of Hampton Roads in 2005, more than triple the amount moved through the Port of Baltimore (7.7 million short tons).

AIR CARGO

TOP 25 WORLD CARGO AIRPORTS
(RANKED BY TOTAL AIR CARGO)

2005 Rank	City (Airport)	Country	Total Cargo[1] (Metric Tons)					% Change (2001-2005)
			2001	2002	2003	2004	2005[2]	
1	Memphis (MEM)	USA	2,631,631	3,390,800	3,390,515	3,554,575	3,598,500	36.7%
2	Hong Kong (HKG)	China	2,100,276	2,504,584	2,668,880	3,119,008	3,437,050	63.6%
3	Anchorage (ANC)	USA	1,873,750	1,771,595	2,102,025	2,252,911	2,609,498	39.3%
4	Tokyo (NRT)	Japan	1,680,937	2,001,822	2,154,691	2,373,133	2,290,346	36.3%
5	Seoul (ICN)	South Korea		1,705,880	1,843,055	2,133,444	2,149,937	
6	Frankfurt (FRA)	Germany	1,613,179	1,631,322	1,650,476	1,838,894	1,963,141	21.7%
7	Los Angeles (LAX)	USA	1,774,402	1,779,855	1,833,300	1,913,676	1,928,894	8.7%
8	Shanghai (PVG)	China		634,966	1,189,303	1,642,176	1,856,328	
9	Singapore (SIN)	Singapore	1,529,930	1,660,404	1,632,409	1,795,646	1,854,610	21.2%
10	Louisville (SDF)	USA	1,468,837	1,524,181	1,618,336	1,739,492	1,814,730	23.5%
11	Paris (CDG)	France	1,597,310	1,626,400	1,723,700	1,876,900	1,770,940	10.9%
12	Miami (MIA)	USA	1,639,760	1,624,242	1,637,278	1,778,902	1,761,926	7.5%
13	Taipei (TPE)	Taiwan	1,189,874	1,380,748	1,500,071	1,701,020	1,705,320	43.3%
14	New York (JFK)	USA	1,430,727	1,589,648	1,626,722	1,706,468	1,649,055	15.3%
15	Chicago (ORD)	USA	1,299,628	1,473,980	1,510,746	1,474,652	1,547,859	19.1%
16	Amsterdam (AMS)	Netherlands	1,234,161	1,288,626	1,353,760	1,467,204	1,495,918	21.2%
17	London (LHR)	UK	1,263,572	1,310,615	1,300,420	1,412,033	1,389,591	10.0%
18	Dubai (DXB)	UAE	632,224	784,997	956,795	1,169,286	1,314,904	108.0%
19	Bangkok (BKK)	Thailand	841,150	956,790	950,136	1,058,145	1,140,836	35.6%
20	Indianapolis (IND)	USA	1,115,272	901,917	889,163	932,449	1,082,339	-3.0%
21	New York (EWR)	USA	795,584	850,050	874,641	984,838	957,374	20.3%
22	Osaka (KIX)	Japan	871,161	805,430	793,478	887,819	869,202	-0.2%
23	Tokyo (HND)	Japan	725,124	707,301	722,736	774,113	799,062	10.2%
24	Beijing (PEK)	China	591,195	669,347	662,141	668,690	782,066	32.3%
25	Atlanta (ATL)	USA	739,927	734,083	798,501	862,230	764,717	3.4%

[1] Total cargo loaded and unloaded, freight and mail (in metric tons).

[2] 2005 totals are preliminary from ACI.

CONVERSION: To calculate U.S. Tons multiply metric tons by 1.102.

To calclulate pounds multiply metric tons by 2205.

Source: Airports Council International (ACI)

http://www.airports.org/cda/aci/display/main/aci_content.jsp?zn=aci&cp=1-5-54-190_9_2__

Quick Facts: Air freight has been one of the fastest growing segments in the cargo industry. In the past four years, there have been significant increases in cargo at nearly all of the major airports around the world. The top three world cargo airports are currently Memphis, Hong Kong, and Anchorage. Memphis, TN is strategically located in the center of the U.S. population and is the largest hub for FedEx. The Hong Kong airport takes advantage of large and growing China trade and it hosts modern airport facilities like an automated cargo handling system. Anchorage, AK has become a favorite of the express carriers, especially those doing business with China, which accounts for its dominance.

TOP U.S. CARGO AIRPORTS
(RANKED BY TOTAL AIR CARGO)

2005 Rank	Airport Code	City, State	2005 Total Cargo[1]		Airport % of US Total (2005)
			Metric Tons	lbs	
1	MEM	MEMPHIS, TN	3,598,500	7,934,693,162	12.0%
2	ANC	ANCHORAGE, AK	2,609,498	5,753,943,090	8.7%
3	LAX	LOS ANGELES, CA	1,928,894	4,253,211,270	6.4%
4	SDF	LOUISVILLE, KY	1,814,730	4,001,480,091	6.1%
5	MIA	MIAMI, FL	1,761,926	3,885,046,830	5.9%
6	JFK	NEW YORK, NY	1,649,055	3,636,166,496	5.5%
7	ORD	CHICAGO, IL	1,547,859	3,413,028,875	5.2%
8	IND	INDIANAPOLIS, IN	1,082,339	2,386,557,054	3.6%
9	EWR	NEWARK, NJ	957,374	2,111,008,610	3.2%
10	ATL	ATLANTA, GA	764,717	1,686,200,985	2.6%
11	DFW	DALLAS/FT WORTH, TX	720,623	1,588,973,274	2.4%
12	OAK	OAKLAND, CA	675,227	1,488,874,433	2.3%
13	SFO	SAN FRANCISCO, CA	584,926	1,289,760,728	2.0%
14	PHL	PHILADELPHIA, PA	558,071	1,230,546,555	1.9%
15	ONT	ONTARIO, CA	521,853	1,150,685,865	1.7%
16	IAH	HOUSTON, TX	384,451	847,715,337	1.3%
17	BOS	BOSTON, MA	356,121	785,245,923	1.2%
18	TOL	TOLEDO, OH	352,347	776,925,797	1.2%
19	SEA	SEATTLE/TACOMA, WA	341,567	753,155,235	1.1%
20	DAY	DAYTON, OH	338,869	747,205,484	1.1%
21	DEN	DENVER, CO	310,814	685,343,988	1.0%
22	PHX	PHOENIX, AZ	302,258	666,478,120	1.0%
23	IAD	WASHINGTON, DC	299,761	660,973,005	1.0%
24	MSP	MINNEAPOLIS/ST PAUL, MN	283,449	625,005,045	0.9%
25	PDX	PORTLAND, OR	263,599	581,235,795	0.9%
Other Virginia/Washington D.C. Area Airports					
26	BWI	BALTIMORE, MD	261,196	575,937,180	0.9%
64	RIC	RICHMOND, VA	50,723	111,845,097	0.2%
80	ORF	NORFOLK, VA	31,811	70,099,700	0.1%
97	ROA	ROANOKE, VA	14,333	31,604,045	0.0%
110	DCA	WASHINGTON, DC	3,970	8,753,850	0.0%
		United States, All Airports[2]	**29,918,710**	**65,970,754,474**	

[1] Total cargo loaded and unloaded, freight and mail. 2005 totals are preliminary from ACI.

[2] All U.S. airports with total air cargo greater than 15 metric tons.

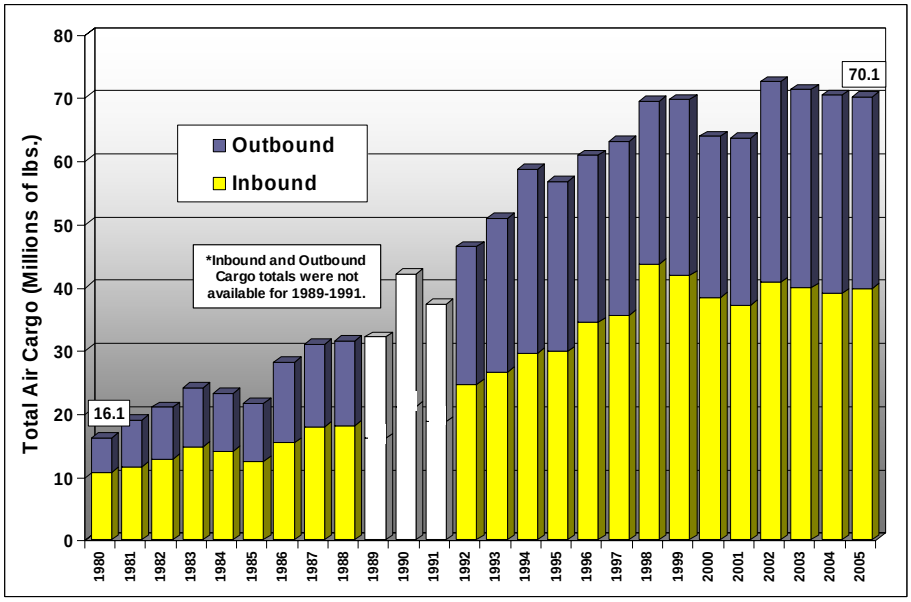
CONVERSION: To calculate U.S. Tons multiply metric tons by 1.102.
To calclulate pounds multiply metric tons by 2205.

Source: Airports Council International (ACI)
http://www.aci-na.org/asp/traffic.asp?art=216

Quick Facts: Despite the significant increases in air freight over the years, several factors are limiting the air cargo potential, particularly for small and midsize airports. High fuel prices and surcharges for enhanced security have started to have an effect. Some airlines are downsizing aircraft and consolidating shipments, reducing the overall freight capacity and cargo volume. Higher costs are driving shippers to cheaper alternatives on rail and trucks. The options shippers have today in multiple types of service (overnight, 1-day, or 2-day service) favor trucks over more expensive but quicker air travel.

GROWTH IN AIR CARGO
(NORFOLK INTERNATIONAL AIRPORT)

Norfolk International Airport Air Cargo Activity (1980-2005)



Data source: Norfolk Airport Authority

Quick Facts: Air cargo at Norfolk International Airport has increased over 331% from approximately 16 million pounds to nearly 70 million pounds from 1980 to the late 1990s. More recently, however, air cargo activity has remained relatively unchanged.

Despite Norfolk International Airport being the largest cargo airport in Hampton Roads, it ranks 80th in the U.S. in 2005 and comprises only about 0.1% of the total U.S. air cargo.

PASSENGER AND ALL-CARGO AIRLINES CARGO
(NORFOLK INTERNATIONAL AIRPORT)

Breakdown of Norfolk International Airport Air Cargo Activity (2005)

PASSENGER AIRLINES CARGO (LBS)

Air Freight		Air Mail		SUBTOTAL		2005 TOTAL		2004 TOTAL	% CHANGE
Outbound	Inbound	Outbound	Inbound	Outbound	Inbound				
1,333,374	2,691,533	165,738	984,029	1,499,112	3,675,562	5,174,674		6,099,582	-15.2%

Note: Air Express is included in Air Freight. Cargo shown above is cargo carried by airlines (American, Continental, Delta, Northwest, Southwest, US Airways)

ALL-CARGO AIRLINES CARGO (LBS)

Air Freight		Air Mail		SUBTOTAL		2005 TOTAL		2004 TOTAL	% CHANGE
Outbound	Inbound	Outbound	Inbound	Outbound	Inbound				
28,850,600	36,074,426	0	0	28,850,600	36,074,426	64,925,026		64,216,910	1.1%

GRAND TOTAL (LBS)

Air Freight		Air Mail		SUBTOTAL		2005 TOTAL		2004 TOTAL	% CHANGE
Outbound	Inbound	Outbound	Inbound	Outbound	Inbound				
30,183,974	38,765,959	165,738	984,029	30,349,712	39,749,988	70,099,700		70,316,492	-0.3%

Data source: Norfolk Airport Authority

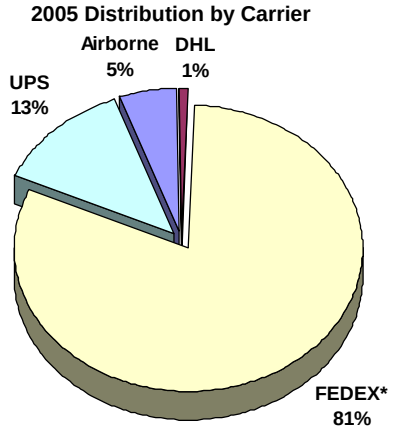
Quick Facts: Nearly 65 million of the 70 million pounds of total air cargo at Norfolk International Airport (ORF) is transported by All-Cargo Airlines. About 7% of all air cargo at ORF is carried by passenger airlines, which is often referred to as belly cargo. Belly cargo on passenger airlines dropped by nearly 1 million pounds from 2004 to 2005 at Norfolk International Airport.

ALL-CARGO AIRLINES CARGO
(NORFOLK INTERNATIONAL AIRPORT)

Breakdown of Norfolk International Airport All-Cargo Airlines Cargo by Carrier (2005)

ALL-CARGO AIRLINES CARGO

Carrier	Air Freight Outbound	Air Freight Inbound	2005 TOTAL	2004 TOTAL	% CHANGE
Airborne	1,140,386	2,253,213	3,393,599	2,824,275	20.2%
DHL	371,779	250,408	622,187	1191690	-47.8%
FEDEX*	23,450,093	29,115,108	52,565,201	52132732	0.8%
UPS	3,888,342	4,455,697	8,344,039	8068213	3.4%
TOTAL	28,850,600	36,074,426	64,925,026	64,216,910	1.1%



*FEDEX includes US Postal Service contract cargo in it's figures.

Data source: Norfolk Airport Authority

Quick Facts: FedEx, which includes U.S. Postal Service contract cargo, is the largest All-Cargo Airline at Norfolk International Airport carrying about 81% of the air freight. UPS is the second largest carrier comprising about 13% of the All-Cargo Airlines cargo.

PASSENGER AIRLINES CARGO
(NEWPORT NEWS/WILLIAMSBURG INTERNATIONAL AIRPORT)

Breakdown of Newport News/Williamsburg International Airport Passenger Airlines Cargo by Year

PASSENGER AIRLINES CARGO (LBS)

Year	Air Freight	Air Express	Air Mail	TOTAL
1996	102,448	1,078	2,566	106,092
1997	67,149	1,581	845	69,575
1998	60,472	806	4,586	65,864
1999	25,388	2,737	12,073	40,198
2000	133,071	429	4,308	137,808
2001	70,501	563	21,470	92,534
2002	80,612	55	2,538	83,205
2003	51,620	1,960	5,299	58,879
2004	13,729	3,652	8,991	26,372

Note: No current cargo related facilities at the airport. Cargo shown above is cargo carried by airlines (AirTran Airways, US Airways Express, and ASA/Delta Connection)

Data source: Newport News/Williamsburg International Airport, Marketing and Public Affairs

Quick Facts: Only passenger airlines cargo (belly cargo) is transported in and out of Newport News/Williamsburg International Airport. A small amount of passenger airline cargo is moved each year at the Newport News/ Williamsburg International Airport in comparison to the 5.2 million pounds moved (2005) at Norfolk International Airport.

WORLD AIR CARGO FORECAST

*An RTK or Revenue Ton Kilometer is one tonne of revenue cargo carried one kilometer

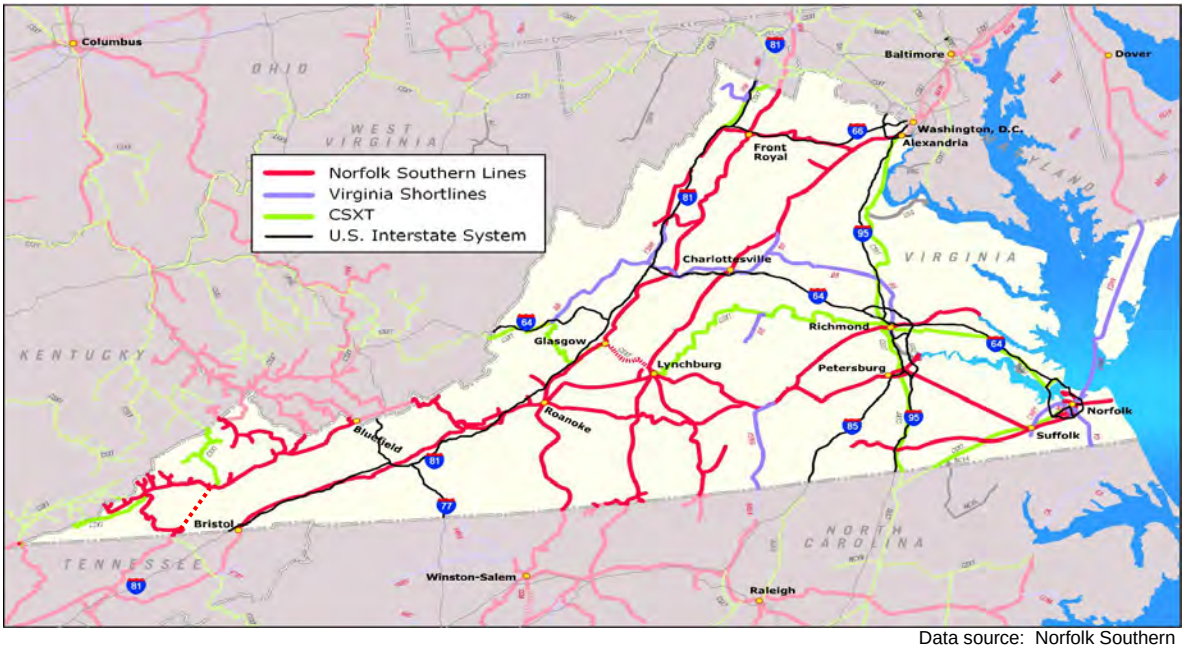
Data Source: 2004-2005 World Air Cargo Forecast Team, Boeing Commercial Airplanes

Quick Facts: According to the latest forecast from Boeing, world air cargo traffic will expand at an average annual rate of 6.2% for the next two decades, tripling over current traffic levels. Asian air cargo markets will continue to lead the world air cargo industry in average annual growth rates, with the domestic Chinese and intra-Asian markets expanding 10.6% and 8.5% per year, respectively. As in the past, more mature North American and European markets reflect slower and thus lower than average traffic growth rates, with the exception of those linked to Asia and Southwest Asia.

RAIL CARGO

VIRGINIA RAIL AND HIGHWAY NETWORK

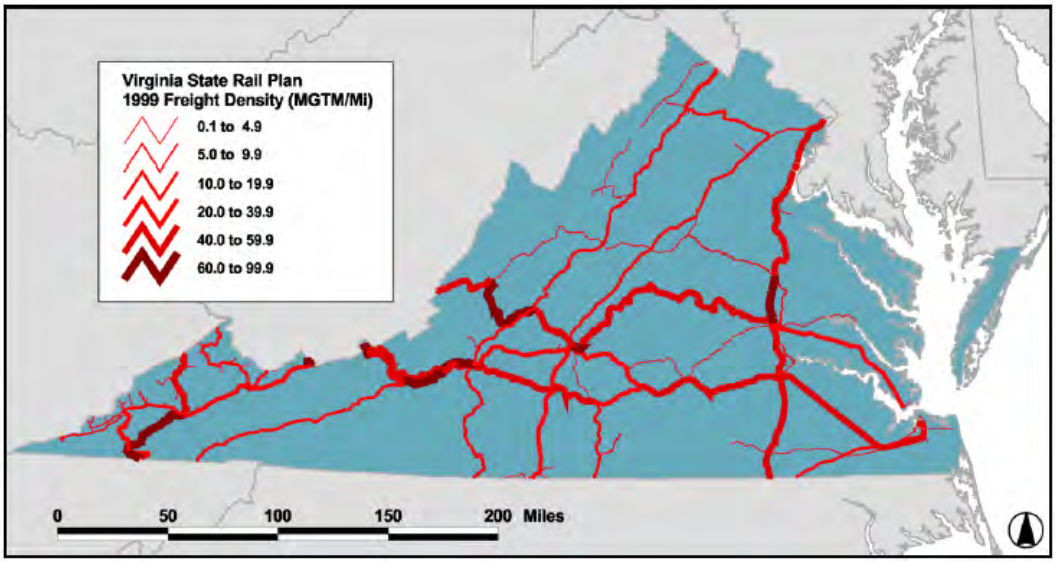
Strong Railways Require Strong Highway Infrastructure



Data source: Norfolk Southern

Quick Facts: Railroads rely heavily on good highways and urban intermodal connectors. Railroads can efficiently and economically move large quantities of goods between two points, however, trucks are needed for initial and final distribution.

FREIGHT DENSITY ON VIRGINIA RAIL LINES

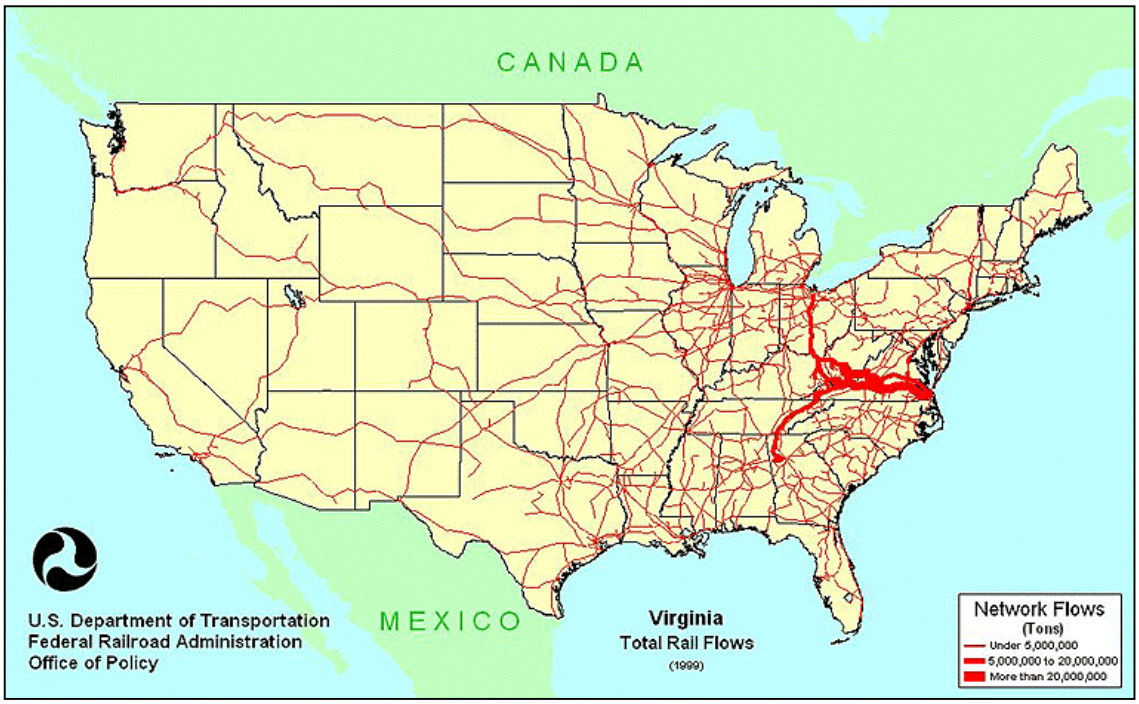


MGTM/Mi – Millions of Gross Ton Miles per Mile Annually

Data source: Federal Railroad Administration GIS files

Quick Facts: The heaviest rail densities are located along the Interstate 95 corridor, from the Port of Hampton Roads through Richmond, Lynchburg, and Roanoke, and many western portions of the state. Operating improvements and key structural investment, such as the Heartland Corridor, will be critical to the future success of rail cargo.

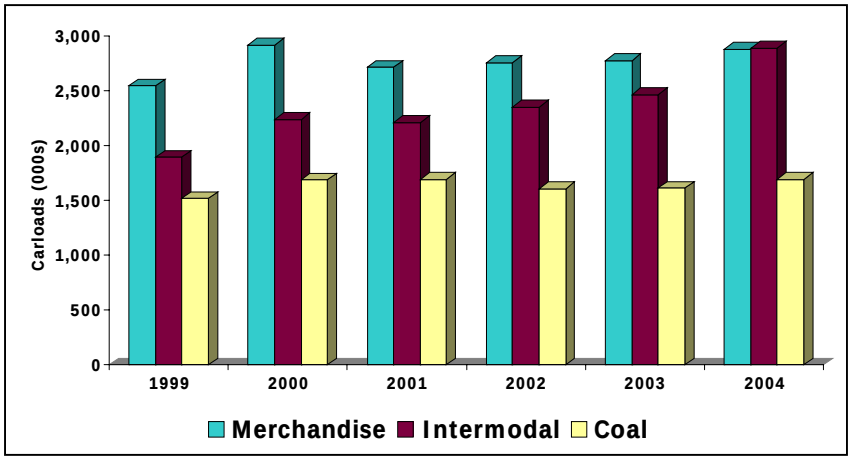
VIRGINIA TOTAL RAIL FLOWS



Quick Facts: Clearly, a majority of Virginia's rail cargo begins and ends at the Port of Hampton Roads. The highest amount of rail cargo tonnage is transported to/from Georgia and Ohio and travels through portions of West Virginia, Kentucky, and Tennessee.

NORFOLK SOUTHERN RAIL TRAFFIC GROWTH
(BY COMMODITY TYPE)

Breakdown of Rail Cargo for Norfolk Southern by Commodity Type (1999-2004)



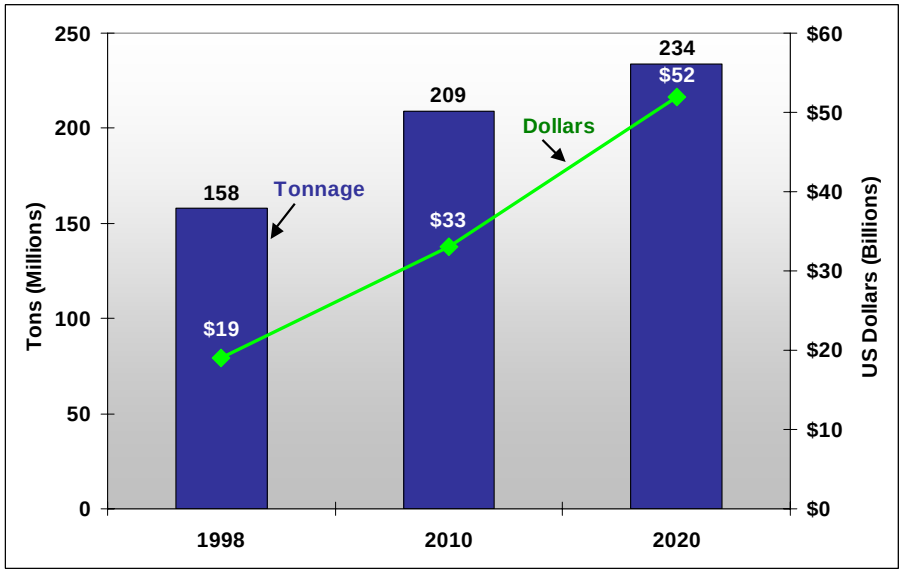
Data source: Norfolk Southern

Note: Merchandise primarily includes: chemicals, emerging markets, forest products, agriculture products, metals, phosphates and fertilizers, and food and consumer. Intermodal shipments consist primarily of imported and domestic finished consumer products sold at retailers and are moved in containers and trailers.

Quick Facts: Merchandise rail cargo increased slightly from 1999 to 2000, but has remained relatively unchanged ever since. Intermodal cargo has increased nearly every year and is expected to increase into the future as container growth at marine ports increase. Coal transport by rail has remained relatively stable since 1999.

RAIL CARGO FORECAST BY TONNAGE AND DOLLAR VALUE
(TO, FROM, AND WITHIN VIRGINIA)

Rail Freight Shipments To, From, and Within Virginia: 1998, 2010, and 2020



Quick Facts: Freight shipments to, from, and within Virginia via rail are expected to increase 48% from 158 million tons in 1998 to 234 million tons by 2020.

The commodity value of those goods transported by rail is expected to increase by 174% from $19 billion dollars in 1998 to $52 billion dollars by 2020.

Data source: US Department of Transportation, National Freight Analysis Framework

MILITARY FREIGHT

Hampton Roads is not only one of the largest commercial freight hubs along the U.S. East Coast, but it also home to many military facilities. This region contains approximately 110,000[7] active duty military, of which more than 80,000 are U.S. Navy. The total Department of Defense (DOD) population in Hampton Roads, including active duty, reserve component, retirees and family members totals approximately 300,000[6] in an area with a total population of 1.6 million. For this reason, it is imperative to maintain a safe, secure, and efficient transportation system in Hampton Roads should an unexpected event occur that would require a rapid deployment of military cargo and personnel via air, land, or sea. The regional transportation infrastructure must be able to handle both commercial shipments as well as military shipments.

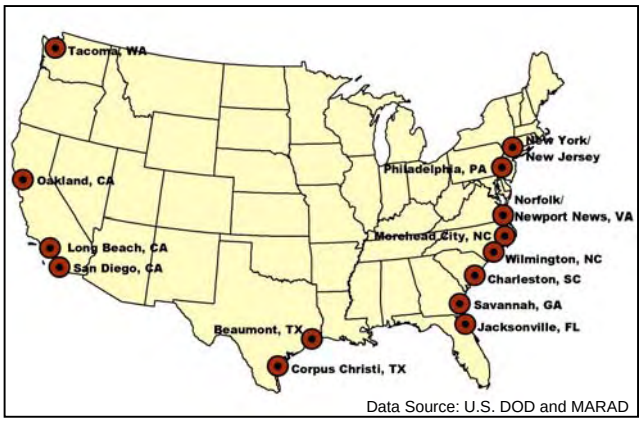
Strategic Commercial Ports

The Port of Hampton Roads is one of fourteen strategic commercial ports specifically designated by the Department of Defense (DOD) and Maritime Administration (MARAD) to support major force deployments and military force build-up under one or more of our national defense contingency plans. In peacetime, MARAD works closely with DOD and the fourteen strategic ports to ensure readiness of these ports and their intermodal infrastructure to accept and process military deployments.

14 U.S. Strategic Commercial Ports (**Map 17**):

- Norfolk/Newport News, VA
- Jacksonville, FL
- Beaumont, TX
- Corpus Christi, TX
- Charleston, SC
- Morehead City, NC
- Wilmington, NC
- Savannah, GA
- Tacoma, WA
- New York/New Jersey
- Philadelphia, PA
- San Diego, CA
- Long Beach, CA
- Oakland, CA

[7] Data source: United States Joint Forces Command



MAP 17 – The Fourteen U.S. Strategic Commercial Ports.

The national defense strategy involves the rapid deployment of massive combat power, while utilizing a combination of government owned and commercial sealift assets. At these strategic commercial ports, DOD uses a surge sealift fleet composed of Large Medium Speed Roll-on/Roll-off Ships (LMSRs), Fast Sealift Ships (FSSs), Maritime Prepositioning Ships (MPSs), and ships in MARAD's Ready Reserve Force (RRF), as well as commercial vessels for shipments and sustainment cargo. Many of these ships are newly constructed, however, some were converted from existing commercial container vessels. Most of these vessels are capable of carrying a combination of aircraft, wheeled and tracked vehicles, oversize equipment, and containers.

In the 2002 Journal of Commerce list of "Top 100 Containerized Exporters" the U.S. military ranked 30th. The military has become a major commercial user during peacetime at many strategic ports, including Hampton Roads, which enhances their ability to deploy cargo and equipment during a crisis much more efficiently with minimal delays.

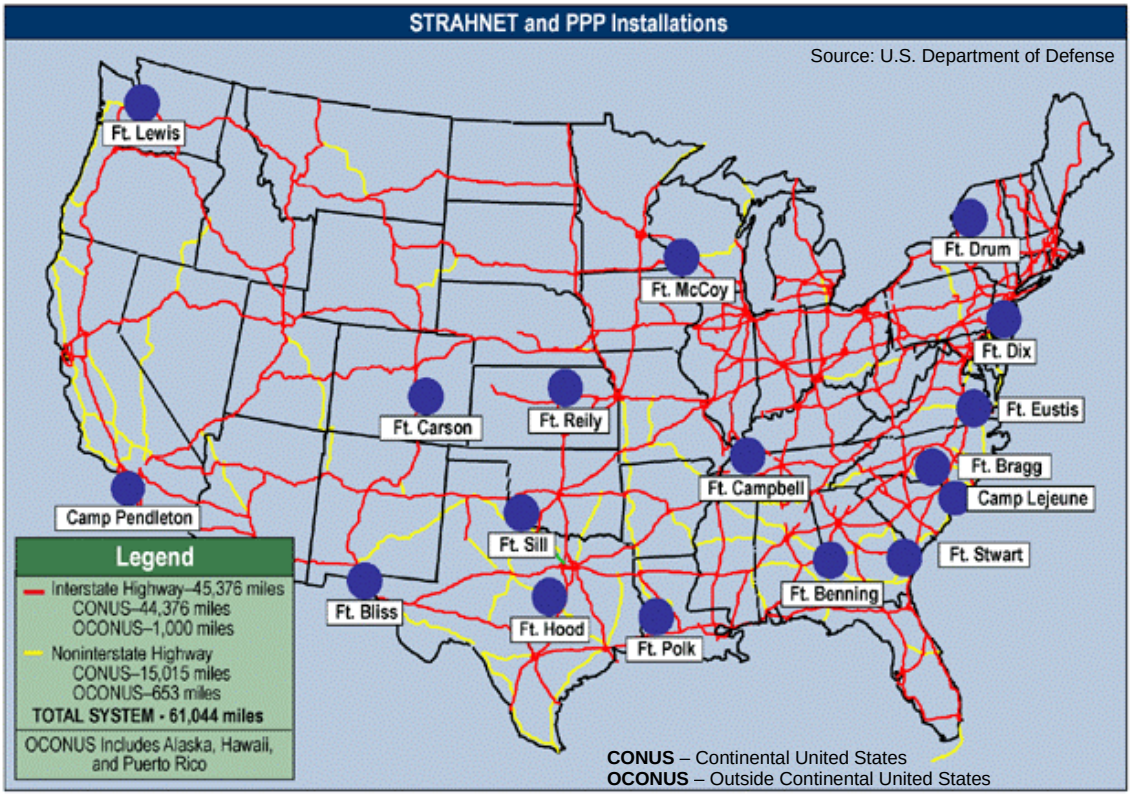
T-AKR 295 Shughart is a Large, Medium-speed, Roll-on/Roll-off Ship (LMSR) converted from the ex-Laura Maersk commercial vessel.

Strategic Highway Corridor Network – STRAHNET

The Strategic Highway Corridor Network (STRAHNET) is a system of public highways and connectors, designated by the Federal Highway Administration (FHWA) in partnership with the U.S. Department of Defense (DOD), that provides access, continuity, and emergency transportation of military personnel and equipment in times of peace and war. The ability to move troops and equipment via highways to/from air bases and seaports is essential to our national defense. STRAHNET is a 61,044-mile system, which comprises about 45,376 miles of Interstate and defense highways and 15,668 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.

STRAHNET Connectors (about 1,700 miles) are additional highway routes linking over 200 important military installations and ports to STRAHNET. These routes are typically used when moving personnel and equipment during a mobilization or deployment. Generally, these routes end at the port boundary or installation gate. However, if the installation gate that is used for mobilization or deployment is usually closed, then the STRAHNET Connector should be designated as the route between the primary peacetime gate and STRAHNET. While installations may have multiple access/egress routes, the STRAHNET Connector is generally the most direct and highest functional class roadway.

Map 18 shows the national Strategic Highway Corridor Network (STRAHNET) and Power Projection Platform (PPP) Army installations. A PPP is an Army installation that strategically deploys one or more high priority active component brigades or larger and/or mobilizes and deploys high priority Army reserve component units. There are 15 designated Army power projection platforms within the continental United States (CONUS), along with 2 Marine Corps installations that serve a similar function. As combat units prepare for departure from these installations, Army Reserve units such as deployment support brigades assist the combatant commanders in preparing equipment for shipment to a port of embarkation. At the port, other Army Reserve entities—transportation terminal brigades and battalions—are positioned to process and plan the loading of that equipment



MAP 18 – U.S. Strategic Highway Corridor Network (STRAHNET) and Power Projection Platform (PPP) Army installations.

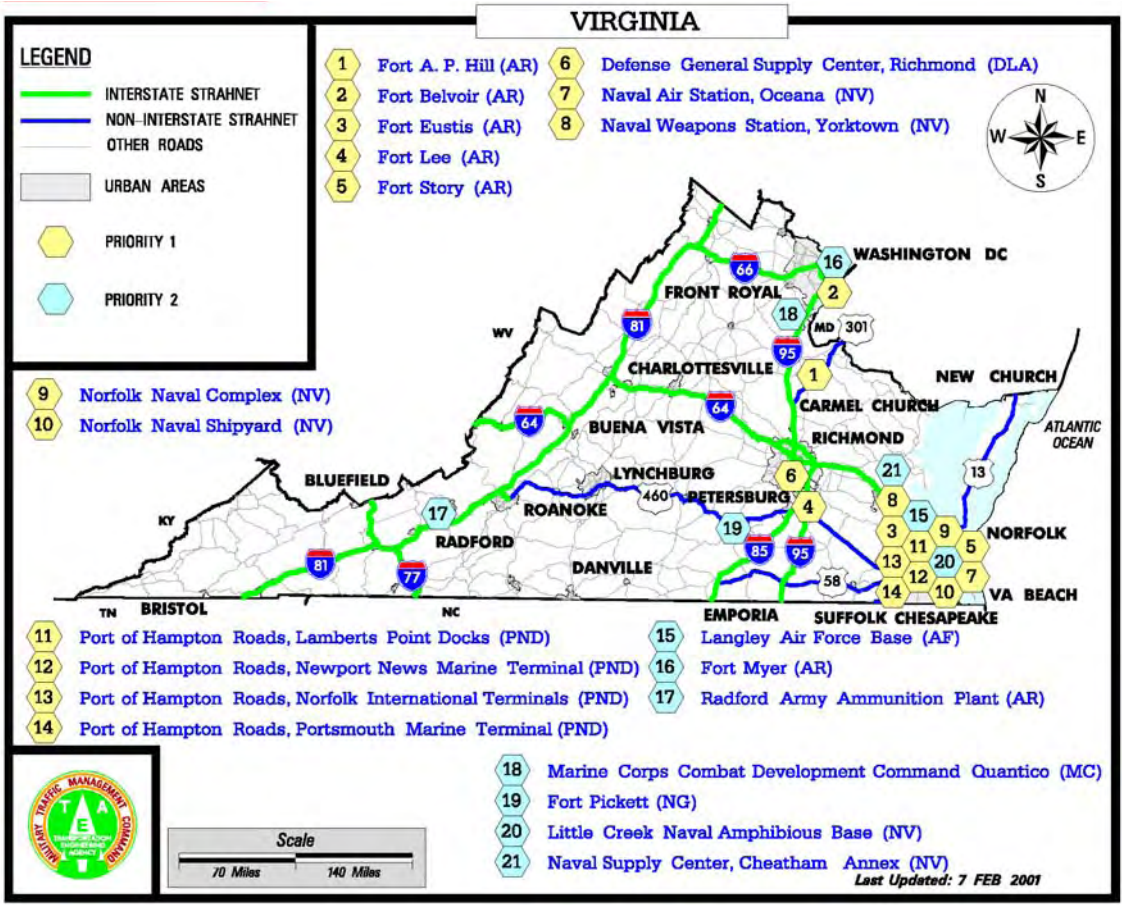
onto Military Sealift Command vessels for the second leg of deployment (port to port). Fort Eustis is the PPP located within Hampton Roads.

FHWA is committed to improving the nation's national defense mobility by improving the capacity and operation of the highway system. Therefore, roadways identified within STRAHNET should receive higher priority when considering roadway improvement alternatives.

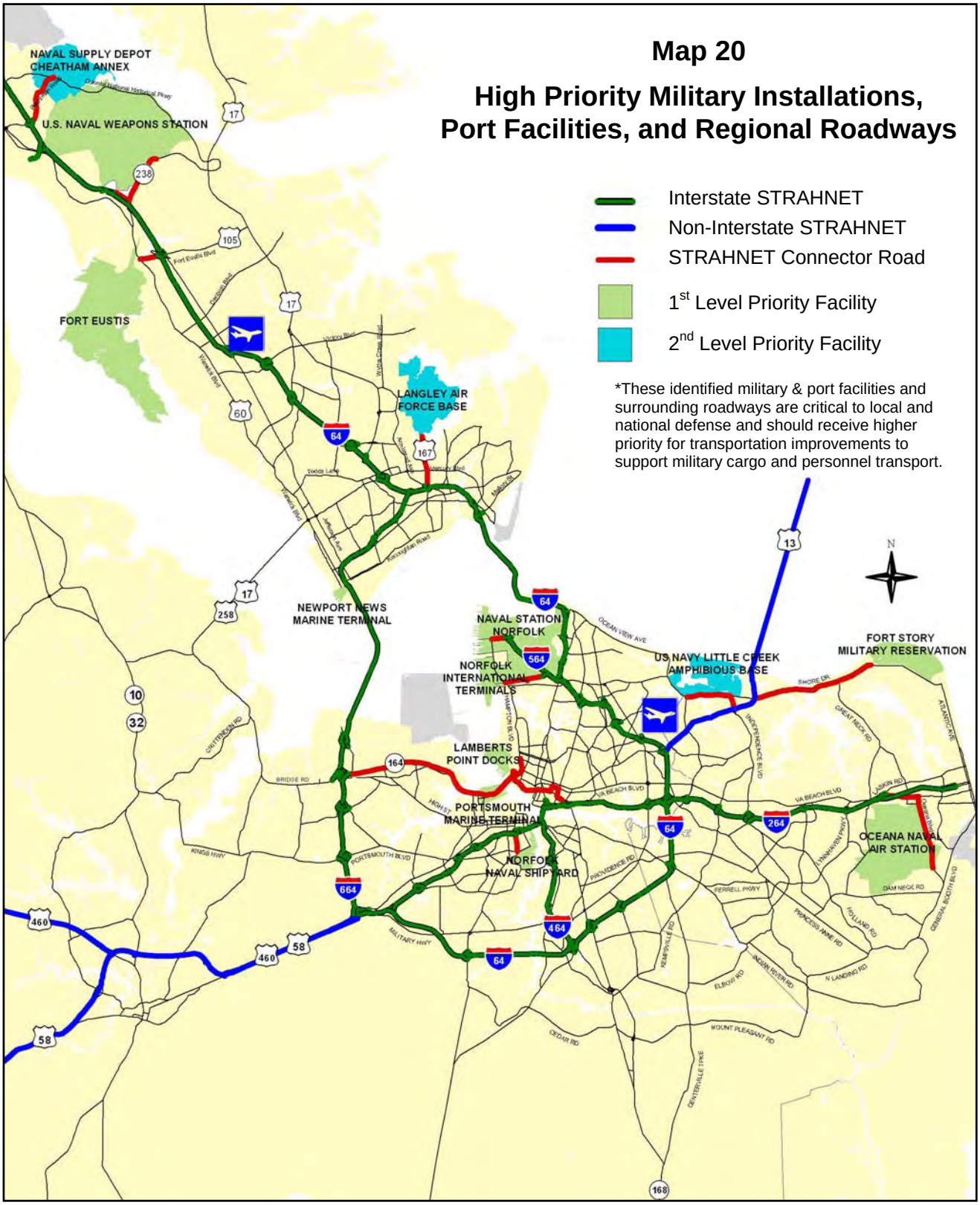
Military Installation and Port Priorities for Transportation Improvements

Priorities have been assigned to the various military installations and port facilities (**Map 19**) based on input from the respective military services and the overall Department of Defense (DOD) mission (i.e. Priority 1 is more important than Priority 2). Additionally, there are numerous DOD facilities (i.e. administrative sites, small training facilities, small reserve and guard sites) not shown on the map that are classified as Priority 3. When designation of the National Highway System (NHS) was negotiated, Military Traffic Management Command (MTMC) and FHWA agreed that the primary Connector routes for only Priority 1 and 2 installations and ports would be included in the NHS.

Regarding how the States and FHWA Divisions should address road improvements (i.e. bridge capability, pavement condition, safety upgrades and congestion) as it relates to the installation and port priorities, improvements should be given first to the PPP facilities (i.e. Fort Eustis), the Power Support Platform (PSP) facilities (which are DOD's important Priority 1 installations which support the PPPs), followed by the remaining Priority 1 facilities, and then the Priority 2 facilities. Thirteen of the twenty-one Virginia principal military installation and port facilities are located in Hampton Roads, which verifies the importance of maintaining a strong transportation system to support military personnel and freight movement. **Map 20** shows the high priority military installations, port facilities, and roadways in Hampton Roads that are considered to be most critical to local and national defense.



MAP 19 – High Priority Locations within the STRAHNET system.
Source: Military Traffic Management Command Transportation Engineering Agency (MTMCTEA)



Prepared By: Hampton Roads Planning District Commission, July 2006.
Data Source: Military Traffic Management Command Transportation Engineering Agency (MTMCTEA)

Strategic Rail Corridor Network – STRACNET

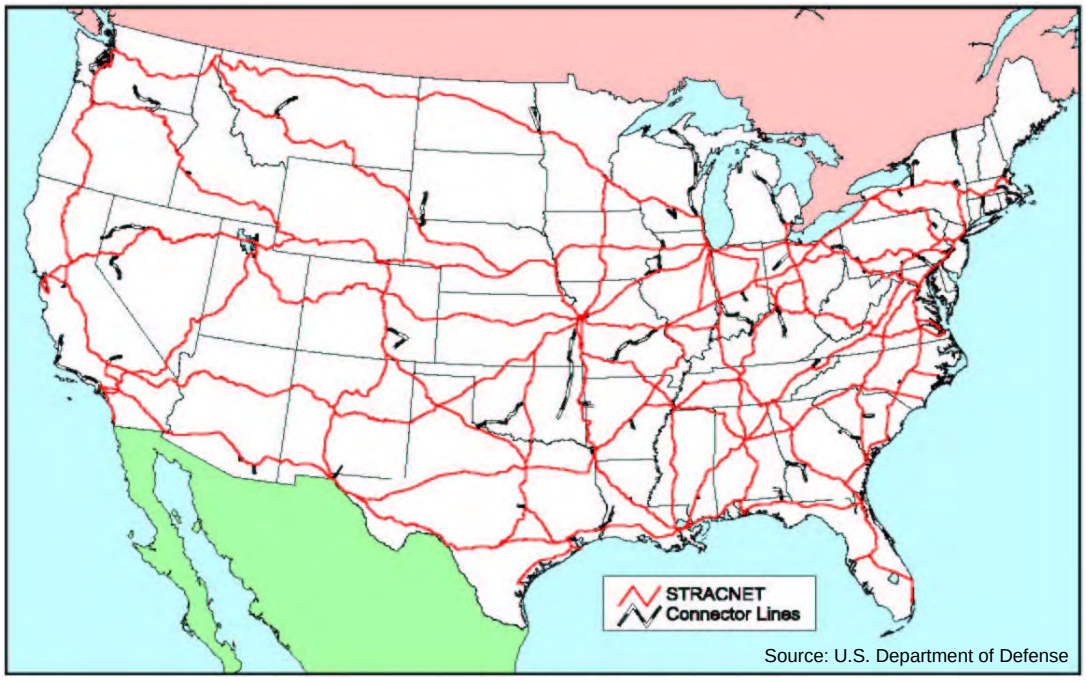
The Strategic Rail Corridor Network (STRACNET) consists of 32,500 miles of rail line critical for movement of essential military equipment to ports located around the country as well as another 5,000 miles of track essential to connect 193 defense installations (**Map 21**). STRACNET has been identified in a similar fashion to STRAHNET to ensure the capability of rail infrastructure to support defense emergencies. The Railroads for National Defense Program (RND) in conjunction with the US Federal Railroad Administration (FRA), established the STRACNET to ensure the National Defense's (DOD) minimum rail needs were identified and coordinated with appropriate transportation authorities.

The military places heavy and direct reliance on railroads to integrate bases and connect installations to predominantly maritime ports of embarkation. Mainlines, connectors, and clearance lines must all combine to support movement of heavy and/or oversized equipment. To ensure that military needs are factored into railroad industry decisions that may impact on national defense, the Department of Defense relies on the Military Traffic Management Command (MTMC). MTMC identifies facilities within the railroad infrastructure important to national defense, informs the commercial and civil sectors of Defense needs, and encourages the retention and upkeep of railroad assets vital to support military movements.

The Hampton Roads region contains Norfolk Southern and CSX rail lines within STRACNET. Since these rail lines are critical to both commercial freight transport as well as military freight transport to/from the Port of Hampton Roads terminal locations and local military installations, a high priority must be placed on these facilites.

Hampton Roads Military Installation Truck Shipments

The ability to quickly and efficiently move military equipment and other freight by truck to and from local military bases, shipyards, command centers, and seaports is critical to our local and national defense. **Table 4** summarizes the top military installation truck shipment locations in the Hampton Roads region. Truck shipments are provided for both outbound and inbound truck trips for 2004 and 2005. All local military installations are ranked by the sum of all truck trips containing shipments in and out of their respective military sites during the two-year period. Clearly, Naval Station Norfolk is the top trip generator in the region handling approximately 68% of all truck trips made to/from military facilities in Hampton Roads. The results also show that a majority of military truck trips



MAP 21 – U.S. Strategic Rail Corridor Network (STRACNET) and other Rail Connectors.

TABLE 4 – Inbound and Outbound Truck Shipments by Hampton Roads Military Installation (2004-2005)

	Hampton Roads Military Installation		2004 Outbound	2004 Inbound	2005 Outbound	2005 Inbound	2004 Total	2005 Total	Grand Total (2004-2005)	Regional Share
1	Naval Station Norfolk	Norfolk	24,215	3,800	18,755	3,780	28,015	22,535	50,550	68.0%
2	Langley Air Force Base	Hampton	2,014	116	1,838	45	2,130	1,883	4,013	5.4%
3	Naval Weapons Station Yorktown	Yorktown	1,769	258	1,625	159	2,027	1,784	3,811	5.1%
4	Norfolk Naval Shipyard - Portsmouth	Portsmouth	1,129	606	1,032	696	1,735	1,728	3,463	4.7%
5	Fort Eustis	Newport News	1,293	188	1,126	120	1,481	1,246	2,727	3.7%
6	Naval Supply Depot Cheatham Annex	Yorktown	1,048	86	534	75	1,134	609	1,743	2.3%
7	Naval Air Station Oceana	Virginia Beach	575	160	411	188	735	599	1,334	1.8%
8	Saint Julian Creek Naval Depot Annex	Chesapeake	535	145	506	122	680	628	1,308	1.8%
9	Coast Guard Integrated Support Command	Portsmouth	589	65	388	52	654	440	1,094	1.5%
10	Virginia Beach*	Virginia Beach	478	100	407	106	578	513	1,091	1.5%
11	Newport News Shipyard	Newport News	241	246	183	172	487	355	842	1.1%
12	Williamsburg*	Williamsburg	16	185	447	192	201	639	840	1.1%
13	Naval Amphibious Base Little Creek	Virginia Beach	68	63	64	250	131	314	445	0.6%
14	Craney Island	Portsmouth	0	147	76	191	147	267	414	0.6%
15	Fort Story	Virginia Beach	176	10	31	9	186	40	226	0.3%
16	Suffolk*	Suffollk	40	0	47	48	40	95	135	0.2%
17	Hampton*	Hampton	9	32	1	91	41	92	133	0.2%
18	Fort Monroe	Hampton	35	5	32	3	40	35	75	0.1%
19	Yorktown*	Yorktown	6	10	6	12	16	18	34	0.0%
20	Naval Shipyard Portsmouth	Portsmouth	5	1	11	11	6	22	28	0.0%
21	Norfolk Municipal Airport.	Norfolk	0	0	17	1	0	18	18	0.0%
22	Coast Guard Training Center	Yorktown	1	5	0	3	6	3	9	0.0%
23	Camp Pendleton	Virginia Beach	5	0	0	0	5	0	5	0.0%
24	Coast Guard Maintenance Logistics Command	Norfolk	3	0	2	0	3	2	5	0.0%
25	Army Corp of Engineers	Norfolk	0	1	0	2	1	2	3	0.0%
26	Poquoson*	Poquoson	0	0	0	1	0	1	1	0.0%
*Specific location within jurisdiction was unknown.		Regional Total	34,250	6,229	27,539	6,329	40,479	33,868	74,347	
		Percentage	85%	15%	81%	19%				

Note: The number of empty trucks entering and exiting these military locations was not available.
Outbound - Shipments from locations within Hampton Roads to U.S. locations outside of Hampton Roads.
Inbound - Shipments from U.S. locations outside of Hampton Roads to locations within Hampton Roads.

Data Source: Military Surface Deployment and Distribution Command Operations Center, Fort Eustis, Va.

(85% in 2004 and 81% in 2005) are outbound trips, meaning shipments originating in Hampton Roads military locations and ending at U.S. locations outside of the region.

The number of empty trucks entering and exiting these military locations was not available. As a result, the proportion of military truck counts to the total number of trucks in the vicinity of the military locations could not be accurately calculated. From the shipment data alone, it appears that only one military facility in Hampton Roads (Naval Station Norfolk) has a significant amount of truck shipments moving in and out. All other military installations are moving 2,000 or fewer shipments per year, which represent a very small proportion of the total traffic moved on local roadway facilities.

In terms of traffic volume, military freight is insignificant in comparison to the overall amount of freight being transported in Hampton Roads; however, it is critical to maintain a safe, secure, and efficient transportation system around these military locations in support of an unexpected defense deployment requiring rapid transport of military cargo and personnel.

COMMODITY FLOW DATA ANALYSIS

The commodity flow data analysis contained in this section looks at North American freight movement into, out of, and within Hampton Roads for all transportation modes. This analysis was compiled using the Transearch Insight Database by Global Insight. For a detailed description of this database, please refer to Table 2 on page 7 of this report. Transearch Insight is currently the most widely recognized and used commercial freight data source in the U.S. The database is unique in that it is constructed from over 70 individual commercial, public and proprietary freight data sources. The database provides detailed U.S. and cross-border origin-destination freight shipment data at the state, Business Economic Area (BEA), county, metropolitan area, and zip-code level detail by commodity type, weight, and value for rail, air, water, and truck.

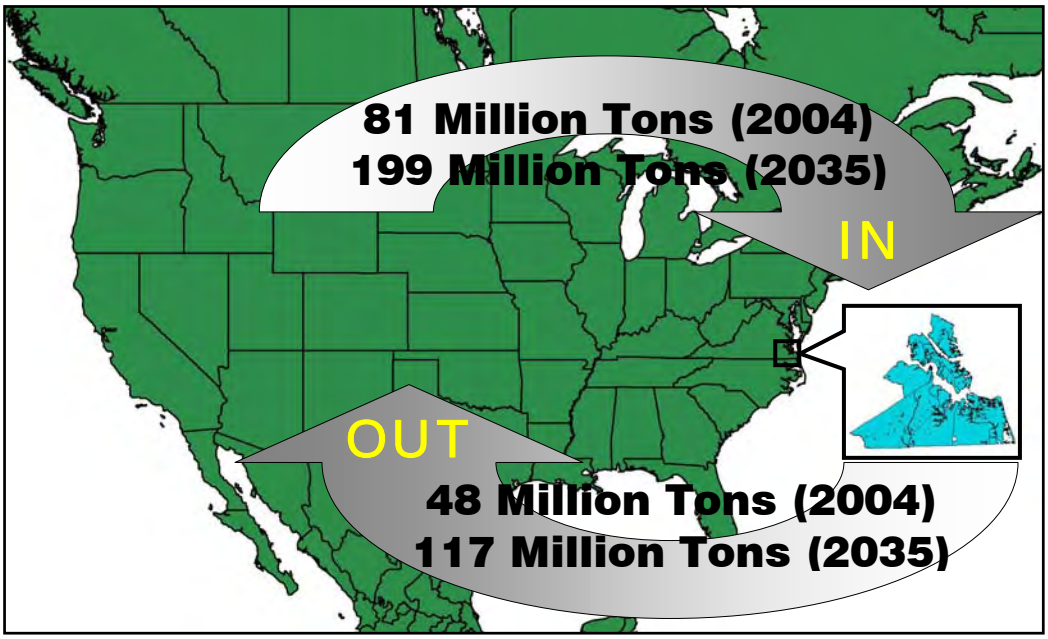
North American Trade with Hampton Roads

In 2004, over 81 million tons of North American freight (air, water, truck, and rail) was transported into Hampton Roads[8] from other U.S. origins and approximately 48 million tons of freight was outbound to U.S. destinations (**Map 22**). By 2035, Hampton Roads trade within North America is expected to increase by about 2 ½ times the amount it is today.

Hampton Roads Freight Summary

Table 5 on page 60 summarizes the North American (Canada, Mexico, and USA) freight movements into, out of, and within Hampton Roads for truck, rail, air, water, and other modes (shipments to and from Canada and Mexico where the mode could not be identified) for 2004 and 2035 by tonnage and dollar value. By tonnage, every mode is expected to be carrying about two to three times the amount they are carrying today. Total tonnage is expected to increase about 145% from 2004 to 2035. Commodity values are projected to increase at an even faster pace with total dollar values expected to rise over 310% over the next thirty years.

A summary of dollars per ton for each mode is provided in **Table 6** on page 60. Hampton Roads' most valuable commodities are moved by air and truck. **Figures 4-6** on page 61 provide graphical summaries of the data shown in Table 5.



MAP 22 – North American Freight Movement In and Out of Hampton Roads by All Transportation Modes (2004 & 2035). Data Source: Global Insight Transearch Database

[8] Jurisdictions included in Hampton Roads in the freight movement analysis were: Gloucester, Isle of Wight, James City, York, Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg.

TABLE 5 – Summary of North American Freight Movement To, From, and Within Hampton Roads

2004

	Inbound	Outbound	Within	Total	Percent
Tonnage					
Truck	38,762,686	35,086,441	12,801,797	**86,650,924**	**60%**
Rail	36,597,713	3,427,257	95,491	**40,120,461**	**28%**
Air	24,097	20,388	0.01	**44,486**	**0%**
Water	5,762,296	9,240,992	3,065,417	**18,068,706**	**12%**
Other	25	36,831	-	**36,856**	**0%**
TOTAL	81,146,818	47,811,909	15,962,705	**144,921,433**	**100%**
Dollar Value					
Truck	$ 79,008,139,636	$ 177,793,125,143	$ 46,391,982,403	**$ 303,193,247,182**	**92%**
Rail	$ 13,103,384,966	$ 11,687,222,760	$ 30,381,926	**$ 24,820,989,652**	**8%**
Air	$ 154,230,929	$ 310,626,105	$ 488	**$ 464,857,522**	**0%**
Water	$ 1,073,929,300	$ 903,975,172	$ 274,049,876	**$ 2,251,954,347**	**1%**
Other	$ 88,292	$ 18,189,585	$ -	**$ 18,277,876**	**0%**
TOTAL	$ 93,339,773,123	$ 190,713,138,763	$ 46,696,414,693	**$ 330,749,326,580**	**100%**

2035

	2035 Inbound	2035 Outbound	2035 Within	2035 Total	Percent
Tonnage					
Truck	90,940,383	92,412,878	34,249,914	**217,603,175**	**61%**
Rail	93,049,600	9,191,038	39,317	**102,279,955**	**29%**
Air	75,561	58,434	0.15	**133,996**	**0%**
Water	14,751,097	15,492,798	5,121,027	**35,364,923**	**10%**
Other	-	-	-	**-**	**0%**
TOTAL	198,816,641	117,155,148	39,410,258	**355,382,048**	**100%**
Dollar Value					
Truck	$ 320,830,843,957	$ 748,724,977,596	$ 177,307,253,381	**$ 1,246,863,074,934**	**91%**
Rail	$ 66,703,001,962	$ 44,246,058,938	$ 21,410,993	**$ 110,970,471,893**	**8%**
Air	$ 1,141,952,712	$ 1,759,410,273	$ 10,082	**$ 2,901,373,066**	**0%**
Water	$ 3,545,048,685	$ 1,699,034,380	$ 555,602,374	**$ 5,799,685,438**	**0%**
Other	$ -	$ -	$ -	**$ -**	**0%**
TOTAL	$ 392,220,847,316	$ 796,429,481,187	$ 177,884,276,829	**$ 1,366,534,605,331**	**100%**

*Other mode – Shipments to and from Canada and Mexico where the mode could not be identified.
Data Source: Global Insight Transearch Database

TABLE 6 – Dollars Per Ton for Hampton Roads Freight

	2004	2035
Dollars Per Ton		
Truck	$ 3,499	$ 5,730
Rail	$ 619	$ 1,085
Air	$ 10,450	$ 21,653
Water	$ 125	$ 164
TOTAL	$ 2,282	$ 3,845

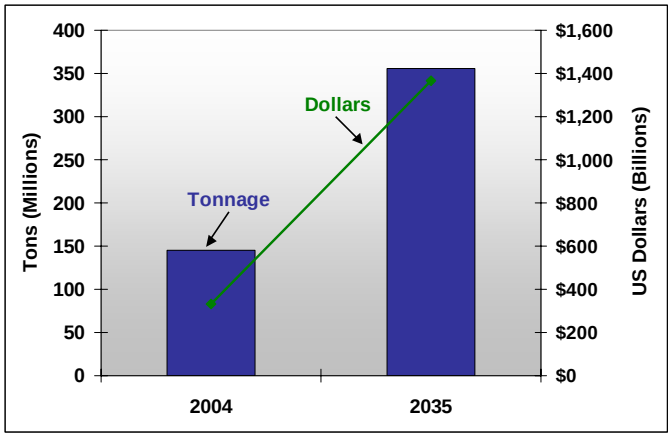


FIGURE 4 – Hampton Roads Change in Tonnage and Dollar Value for all Modes (2004 – 2035).
Source: Global Insight Transearch Database

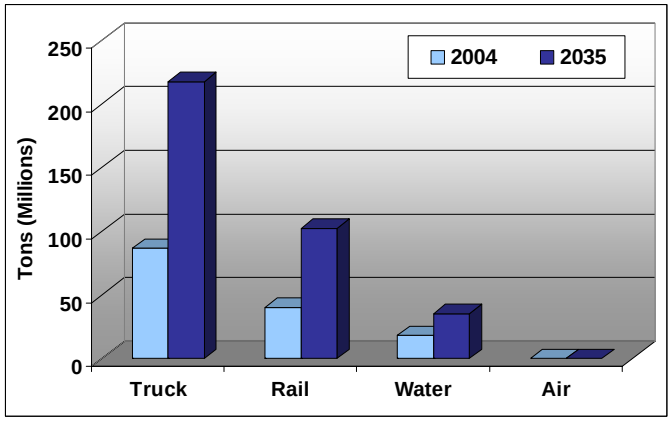


FIGURE 5 – Hampton Roads Change in Tonnage by Mode (2004 – 2035) Source: Global Insight Transearch Database

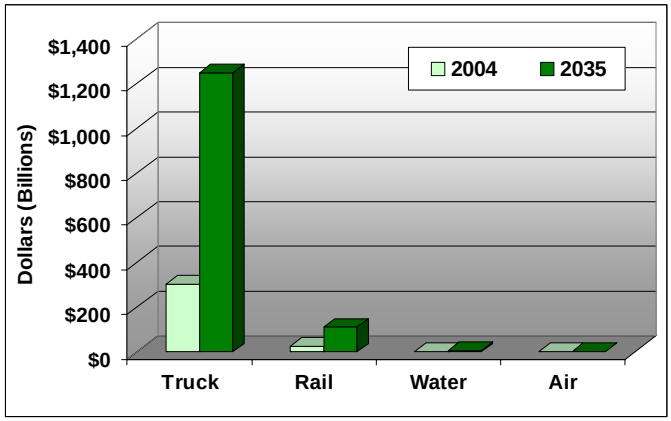


FIGURE 6 – Hampton Roads Change in Dollar Value by Mode (2004 – 2035) Source: Global Insight Transearch Database

2004 Top 10 Commodities by Tonnage

Table 7 lists the top ten commodities by tonnage transported to and from Hampton Roads (North American trade) in 2004. Approximately 37% of inbound freight from other regions was coal (nearly 30 million tons), which is a relatively cheap commodity. Nonmetallic minerals, petroleum or coal products, and warehouse & distribution center/drayage accounted for 19%, 10%, and 8% of all inbound freight to Hampton Roads, respectively.

The top outbound commodities in terms of tonnage were warehouse & distribution center/drayage, coal, food or kindred products, and petroleum or coal products. Warehouse & distribution center freight is primarily moved by truck and has a high dollar value per weight.

Overall, the top ten inbound and outbound commodities accounted for 93% and 85% of the total freight tonnage transported between Hampton Roads and other North American regions respectively.

TABLE 7 – 2004 Top Ten Commodities for Hampton Roads by Tonnage (North American Trade)

Inbound Freight

Commodity	Rail	Truck	Air	Water	Other	Total Tonnage	Percent of Total Inbound
Coal	28,623,105	1,160,349	0	0	0	**29,783,454**	**37%**
Nonmetallic Minerals	3,343,141	10,748,225	0	1,314,249	0	**15,405,615**	**19%**
Petroleum Or Coal Products	35,904	6,456,388	46	1,684,861	0	**8,177,198**	**10%**
Warehouse & Distribution Center/Drayage	0	6,847,377	0	0	0	**6,847,377**	**8%**
Food Or Kindred Products	458,212	2,413,280	6	4,017	0	**2,875,516**	**4%**
Lumber Or Wood Products	65,154	2,682,486	0	0	0	**2,747,640**	**3%**
Waste Or Scrap Materials	36,520	4,240	0	2,640,006	0	**2,680,766**	**3%**
Clay, Concrete, Glass Or Stone	243,714	2,197,794	49	9,556	0	**2,451,113**	**3%**
Misc Mixed Shipments	2,154,022	0	1,653	0	0	**2,155,675**	**3%**
Chemicals Or Allied Products	278,261	1,658,696	1,890	22,678	0	**1,961,525**	**2%**
					Subtotaled Tonnage for the Top 10 Commodities	**75,085,879**	
					Total Tonnage Transported	**81,146,818**	

Outbound Freight

Commodity	Rail	Truck	Air	Water	Other	Total Tonnage	Percent of Total Outbound
Warehouse & Distribution Center/Drayage	0	8,882,501	0	0	0	**8,882,501**	**19%**
Coal	0	0	0	5,625,709	23,051	**5,648,760**	**12%**
Food Or Kindred Products	260,760	5,073,504	0	17,577	0	**5,351,842**	**11%**
Petroleum Or Coal Products	57,862	3,359,499	5	1,519,766	4,722	**4,941,853**	**10%**
Clay, Concrete, Glass Or Stone	134,068	3,837,066	68	0	3,062	**3,974,265**	**8%**
Chemicals Or Allied Products	175,461	3,174,293	3,238	0	24	**3,353,016**	**7%**
Transportation Equipment	526,388	2,621,429	1,453	10	171	**3,149,451**	**7%**
Waste Or Scrap Materials	36,310	7,644	58	1,838,706	115	**1,882,834**	**4%**
Lumber Or Wood Products	15,623	1,834,921	32	0	710	**1,851,285**	**4%**
Misc Mixed Shipments	1,806,030	0	294	0	0	**1,806,324**	**4%**
					Subtotaled Tonnage for the Top 10 Commodities	**40,842,132**	
					Total Tonnage Transported	**47,814,796**	

Data Source: Global Insight Transearch Database
*Other mode – Shipments to and from Canada and Mexico where the mode could not be identified.

2004 Top 10 Commodities by Dollar Value

Table 8 lists the top ten commodities by dollar value transported to and from Hampton Roads (North American trade) in 2004. Approximately 48% of inbound freight from other regions was warehouse & distribution center/drayage (about $44.6 billion) and was delivered exclusively by truck. Transportation Equipment ($11.7 billion) comprised about 13% of all inbound freight to Hampton Roads.

The top outbound commodities in terms of dollar value were also transportation equipment ($63.7 billion) and warehouse & distribution center/drayage ($57.8 billion). In fact, these two commodities comprised over 62% of the total dollar value of all goods delivered to and from Hampton Roads in 2004.

Overall, the top ten inbound and outbound commodities accounted for 89% and 91% of the total freight dollars transported between Hampton Roads and other North American regions respectively.

TABLE 8 – 2004 Top Ten Commodities for Hampton Roads by Dollar Value (North American Trade)

Inbound Freight

Commodity	Rail	Truck	Air	Water	Other	Total Dollars	Percent of Total Inbound
Warehouse & Distribution Center/Drayage	0	44,598,024,969	0	0	0	**44,598,024,969**	**48%**
Transportation Equipment	2,710,789,427	8,984,345,954	38,969,949	532,924	88,292	**11,734,726,546**	**13%**
Misc Mixed Shipments	7,664,461,902	0	5,889,995	0	0	**7,670,351,897**	**8%**
Petroleum Or Coal Products	17,212,768	5,630,966,377	16,778	536,935,400	0	**6,185,131,323**	**7%**
Chemicals Or Allied Products	273,629,343	2,691,810,185	4,388,073	12,436,833	0	**2,982,264,434**	**3%**
Electrical Equipment	160,211,616	2,574,366,343	18,911,152	0	0	**2,753,489,111**	**3%**
Food Or Kindred Products	301,304,242	2,183,759,719	9,960	1,959,179	0	**2,487,033,101**	**3%**
Machinery	217,798,095	1,704,931,541	37,534,310	0	0	**1,960,263,946**	**2%**
Apparel Or Related Products	153,530,492	1,395,921,896	4,637,771	0	0	**1,554,090,160**	**2%**
Primary Metal Products	37,662,985	1,409,982,010	35,359	0	0	**1,447,680,354**	**2%**
					Subtotaled Dollars for the Top 10 Commodities	**83,373,055,842**	
					Total Dollars Transported	**93,339,773,123**	

Outbound Freight

Commodity	Rail	Truck	Air	Water	Other	Total Dollars	Percent of Total Outbound
Transportation Equipment	3,591,357,109	59,951,922,294	219,724,658	68,049	1,658,931	**63,764,731,041**	**33%**
Warehouse & Distribution Center/Drayage	0	57,796,359,468	0	0	0	**57,796,359,468**	**30%**
Machinery	176,527,054	12,861,564,044	50,880,691	288,118	2,696,894	**13,091,956,801**	**7%**
Tobacco Products	0	7,094,967,488	0	0	0	**7,094,967,488**	**4%**
Misc Mixed Shipments	6,434,884,884	0	1,049,282	0	0	**6,435,934,166**	**3%**
Electrical Equipment	23,022,997	6,061,417,931	0	0	0	**6,084,440,928**	**3%**
Chemicals Or Allied Products	377,860,420	5,316,712,670	8,783,412	0	23,387	**5,703,379,889**	**3%**
Food Or Kindred Products	360,197,276	4,982,006,741	0	9,819,285	0	**5,352,023,302**	**3%**
Leather Or Leather Products	0	3,888,519,274	0	0	0	**3,888,519,274**	**2%**
Fabricated Metal Products	62,980	3,447,094,015	0	388,736	0	**3,447,545,732**	**2%**
					Subtotaled Dollars for the Top 10 Commodities	**172,659,858,089**	
					Total Dollars Transported	**190,713,138,763**	

Data Source: Global Insight Transearch Database
*Other mode – Shipments to and from Canada and Mexico where the mode could not be identified.

Hampton Roads Freight Movement To and From Regional Economic Areas

The Transearch Database contains origin and destination freight data outside of Virginia by Bureau of Economic Analysis Economic Areas (BEA). BEAs define the relevant regional markets surrounding metropolitan or micropolitan statistical areas, as delineated by the U.S. Department of Commerce. They consist of one or more economic nodes that serve as regional centers of economic activity and the surrounding counties that are economically related to the nodes. To condense the size of the database, Global Insight has assigned all origin and destination data to BEAs.

For the purpose of this analysis, Regional Economic Areas (REA) were used to show regional freight movement by mode to and from Hampton Roads. REAs are an aggregation of BEAs, which were delineated by the Federal Communications Commission. A list of Economic Areas and Regional Economic Areas is found in **Appendix D.**

The predominant mode of transportation for all freight entering and exiting the region in 2004 by tonnage was truck. Truck transport accounted for 48% of inbound freight and more than 73% of outbound freight. Rail transport accounted for 45% of inbound freight and 7% of outbound freight; a majority of the inbound freight by rail was coal. Water transport accounted for 7% of inbound freight and over 19% of outbound freight. The least used mode for freight transport was air, which accounted for approximately 0.03% of inbound freight and 0.04% outbound freight. **Tables 9 and 10** on page 66 and **Maps 23 and 24** on pages 67-68 provide a detailed summary of Hampton Roads freight transport to and from regional economic areas for each transportation mode for 2004 and 2035.

Figures 7 – 10 show the modal distribution of North American trade with Hampton Roads by tonnage and dollar value for 2004 and 2035. Inbound and outbound freight tonnage is expected to more than double by the year 2035 for Hampton Roads; however, the modal splits are expected to remain about the same.

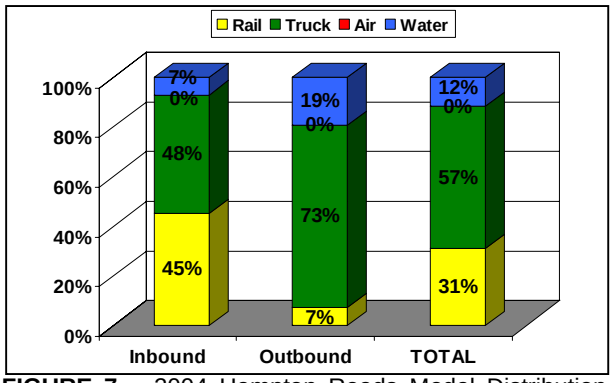


FIGURE 7 – 2004 Hampton Roads Modal Distribution by Tonnage Data Source: Global Insight Transearch Database

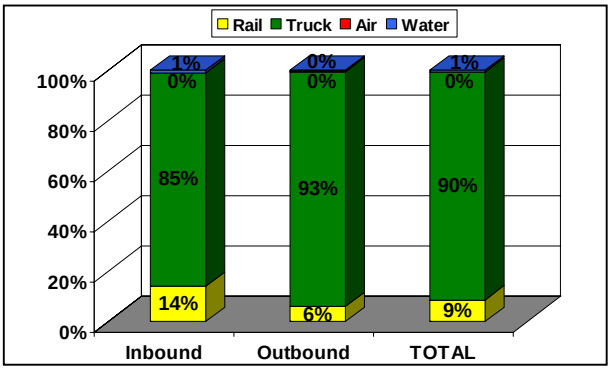


FIGURE 8 – 2004 Hampton Roads Modal Distribution by Dollar Value Data Source: Global Insight Transearch Database

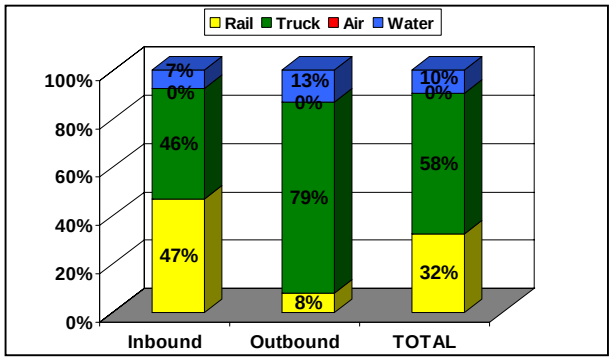


FIGURE 9 – 2035 Hampton Roads Modal Distribution by Tonnage Data Source: Global Insight Transearch Database

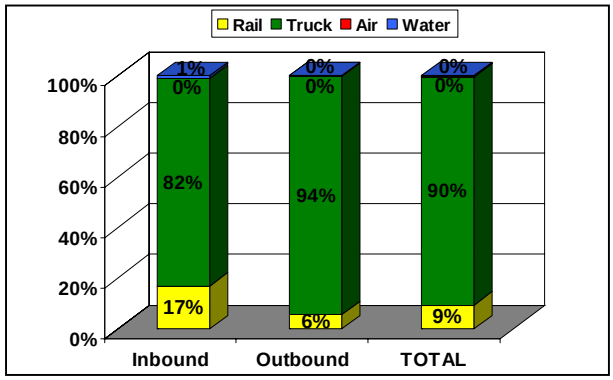


FIGURE 10 – 2035 Hampton Roads Modal Distribution by Dollar Value Data Source: Global Insight Transearch Database

Hampton Roads Freight Movement To and From Economic Areas by Truck and Rail

Maps 25-28 on pages 69-72 show the primary trading partners with Hampton Roads by truck and by rail for 2004 and 2035. In 2004 (Map 25), the top 5 primary trading partners in terms of total commodity truck tonnage were: 1) Washington DC-Baltimore, MD (47 million tons) 2) Richmond-Petersburg, VA (33 million tons) 3) New York-NJ-Long Island (14 million tons) 4) Roanoke, VA (12 million tons) 5) Raleigh-Durham-Chapel Hill, NC (5 million tons). By 2035 (Map 26), not only does trade tonnage by truck increase significantly, but so does the length of travel.

In 2004 (Map 27), most freight by rail originated from economic areas in Kentucky, West Virginia, and surrounding areas, most of which was coal. The top 5 primary trading partners by total rail tonnage in 2004 were: 1) Lexington, KY (16 million tons) 2) Charleston, WV (13 million tons) 3) Richmond-Petersburg, VA (4 million tons) 4) Chicago, IL (3 million tons) 5) Louisville, KY (0.7 million tons). By 2035 (Map 28), rail trade is expected to increase significantly particularly in the Midwest and Middle Atlantic economic areas.

TABLE 9 – 2004 Hampton Roads Freight Movement To and From Regional Economic Areas

Inbound Freight by Mode

Origination Regional Economic Area	Rail	Truck	Air	Water	Other	Total Tonnage (Short Tons)	Percent
Northeast	78,566	5,455,447	490	600,992	0	**6,135,495**	**7.6%**
Southeast	4,219,302	25,444,069	6,111	3,600,682	0	**33,270,165**	**41.0%**
Great Lakes	15,554,147	3,395,427	8,083	315,023	0	**19,272,680**	**23.8%**
Mississippi Valley	16,356,170	3,048,341	5,921	12,404	0	**19,422,836**	**23.9%**
Central	128,536	1,024,527	1,068	153,054	0	**1,307,185**	**1.6%**
West	16,908	147,513	690	0	0	**165,111**	**0.2%**
Canada	244,063	214,540	1,733	1,080,141	25	**1,540,502**	**1.9%**
Mexico	21	32,823	0	0	0	**32,844**	**0.0%**
Grand Total	**36,597,713**	**38,762,686**	**24,097**	**5,762,296**	**25**	**81,146,818**	
Modal Split Percent	**45.1%**	**47.8%**	**0.0%**	**7.1%**	**0.0%**		

Outbound Freight by Mode

Destination Regional Economic Area	Rail	Truck	Air	Water	Other	Total Tonnage (Short Tons)	Percent
Northeast	93,290	5,475,120	1,611	2,857,610	0	**8,427,632**	**17.6%**
Southeast	515,832	21,447,709	5,756	5,495,253	0	**27,464,549**	**57.4%**
Great Lakes	1,885,599	3,240,223	3,258	0	0	**5,129,079**	**10.7%**
Mississippi Valley	766,890	2,670,797	1,645	0	0	**3,439,331**	**7.2%**
Central	38,382	1,044,053	2,191	2,852	0	**1,087,479**	**2.3%**
West	38,648	197,074	587	0	0	**236,309**	**0.5%**
Canada	43,459	816,258	5,340	885,277	36,790	**1,787,124**	**3.7%**
Mexico	45,158	195,208	0	0	40	**240,406**	**0.5%**
Grand Total	**3,427,257**	**35,086,441**	**20,388**	**9,240,992**	**36,831**	**47,811,909**	
Modal Split Percent	**7.2%**	**73.4%**	**0.0%**	**19.3%**	**0.1%**		

Data Source: Global Insight Transearch Database
*Other mode – Shipments to and from Canada and Mexico where the mode could not be identified.

TABLE 10 – 2035 Hampton Roads Freight Movement To and From Regional Economic Areas

Inbound Freight by Mode

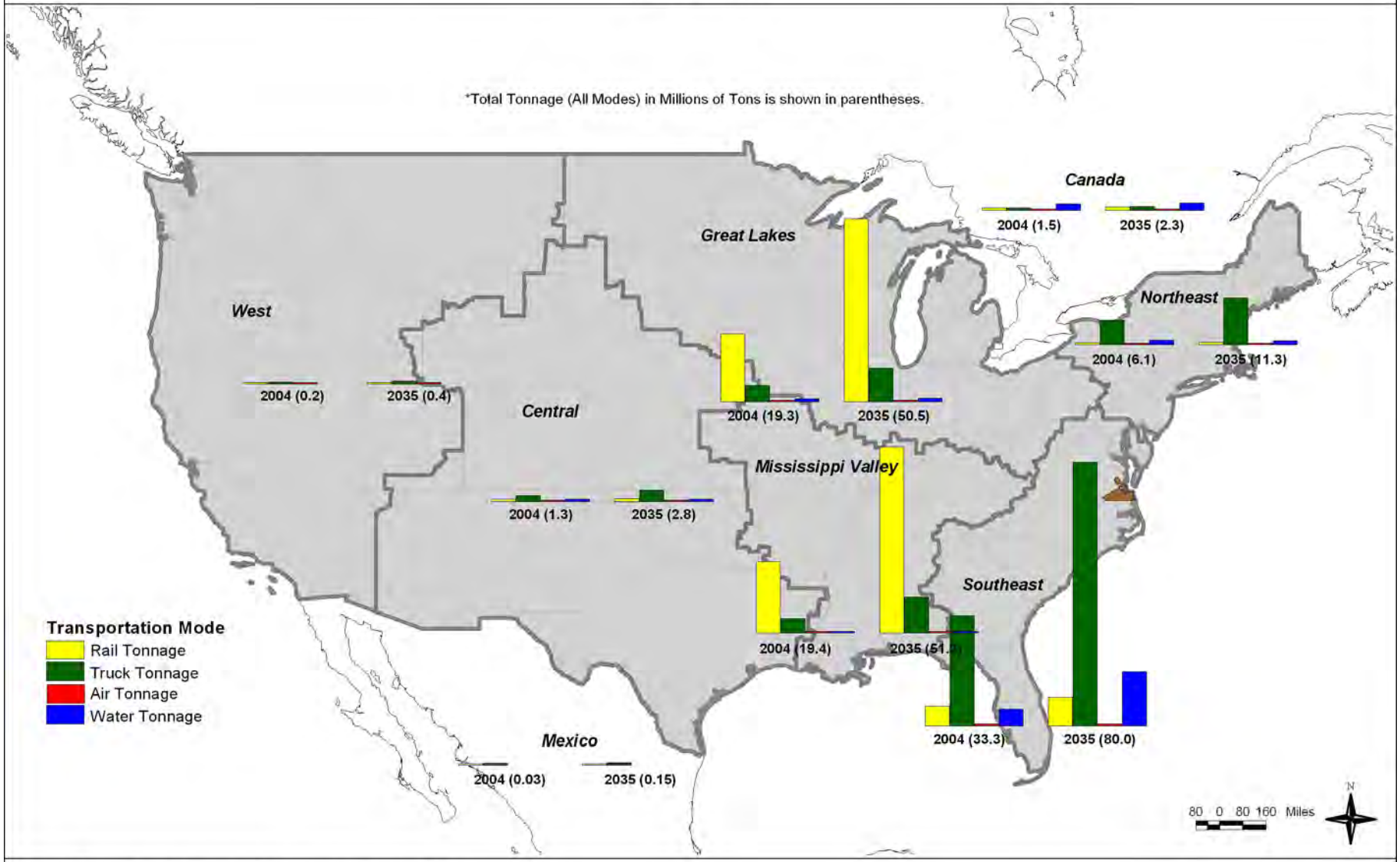
Origination Regional Economic Area	Rail	Truck	Air	Water	Other	Total Tonnage (Short Tons)	Percent
Northeast	139,261	10,622,977	1,372	549,839	0	**11,313,449**	**5.7%**
Southeast	6,334,923	61,420,662	30,083	12,225,776	0	**80,011,445**	**40.2%**
Great Lakes	42,614,752	7,498,919	12,420	408,790	0	**50,534,881**	**25.4%**
Mississippi Valley	43,218,365	8,002,966	22,184	44,555	0	**51,288,069**	**25.8%**
Central	251,727	2,311,066	2,055	210,456	0	**2,775,304**	**1.4%**
West	45,624	373,786	2,739	0	0	**422,149**	**0.2%**
Canada	444,917	559,772	4,708	1,311,681	0	**2,321,078**	**1.2%**
Mexico	32	150,235	0	0	0	**150,266**	**0.1%**
Grand Total	**93,049,600**	**90,940,383**	**75,561**	**14,751,097**	**0**	**198,816,641**	
Modal Split Percent	**46.8%**	**45.7%**	**0.0%**	**7.4%**	**0.0%**		

Outbound Freight by Mode

Destination Regional Economic Area	Rail	Truck	Air	Water	Other	Total Tonnage (Short Tons)	Percent
Northeast	127,280	10,427,824	1,557	4,430,587	0	**14,987,248**	**12.8%**
Southeast	1,551,170	62,178,234	23,396	10,062,839	0	**73,815,639**	**63.0%**
Great Lakes	4,949,064	7,922,020	10,085	0	0	**12,881,169**	**11.0%**
Mississippi Valley	2,199,806	6,154,780	4,429	0	0	**8,359,016**	**7.1%**
Central	48,394	2,242,863	6,442	8,058	0	**2,305,757**	**2.0%**
West	150,801	600,322	1,192	0	0	**752,316**	**0.6%**
Canada	92,794	2,041,408	11,333	991,314	0	**3,136,848**	**2.7%**
Mexico	71,730	845,426	0	0	0	**917,156**	**0.8%**
Grand Total	**9,191,038**	**92,412,878**	**58,434**	**15,492,798**	**0**	**117,155,148**	
Modal Split Percent	**7.8%**	**78.9%**	**0.0%**	**13.2%**	**0.0%**		

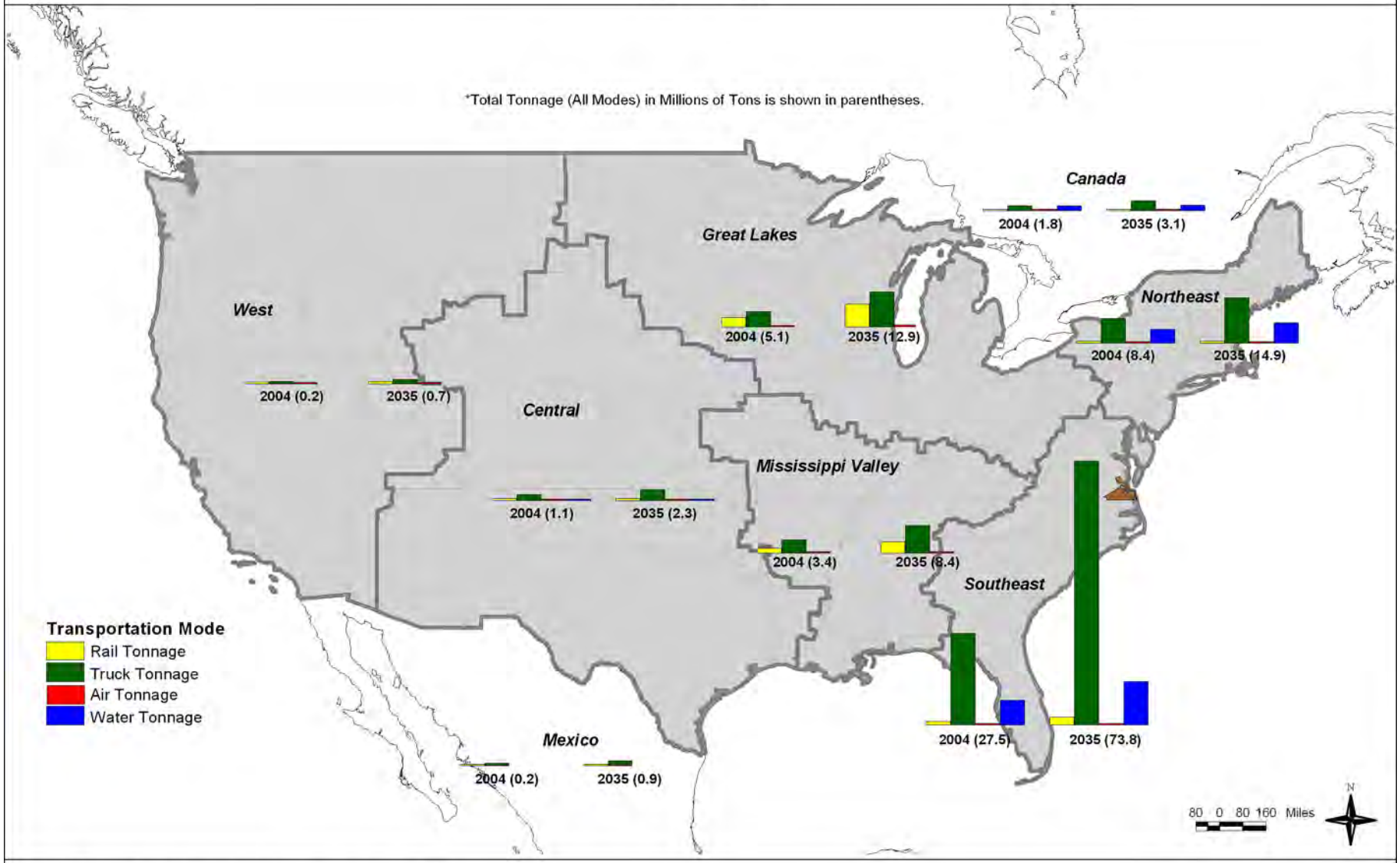
Data Source: Global Insight Transearch Database
*Other mode – Shipments to and from Canada and Mexico where the mode could not be identified.

Map 23
Summary of Inbound Freight from Regional Economic Areas to Hampton Roads by Mode
(2004 and 2035)



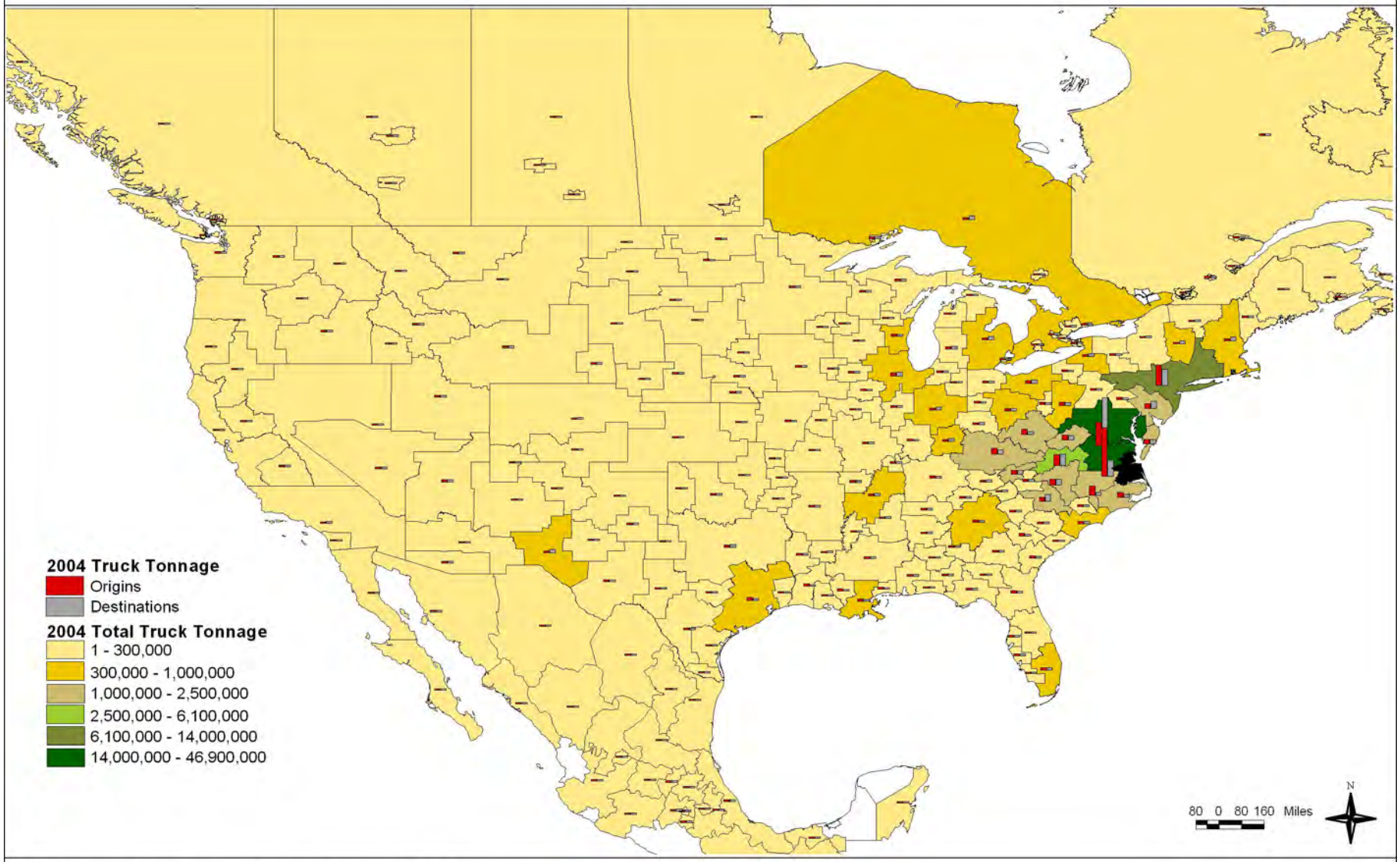
Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Map 24
Summary of Outbound Freight from Hampton Roads to Regional Economic Areas by Mode
(2004 and 2035)



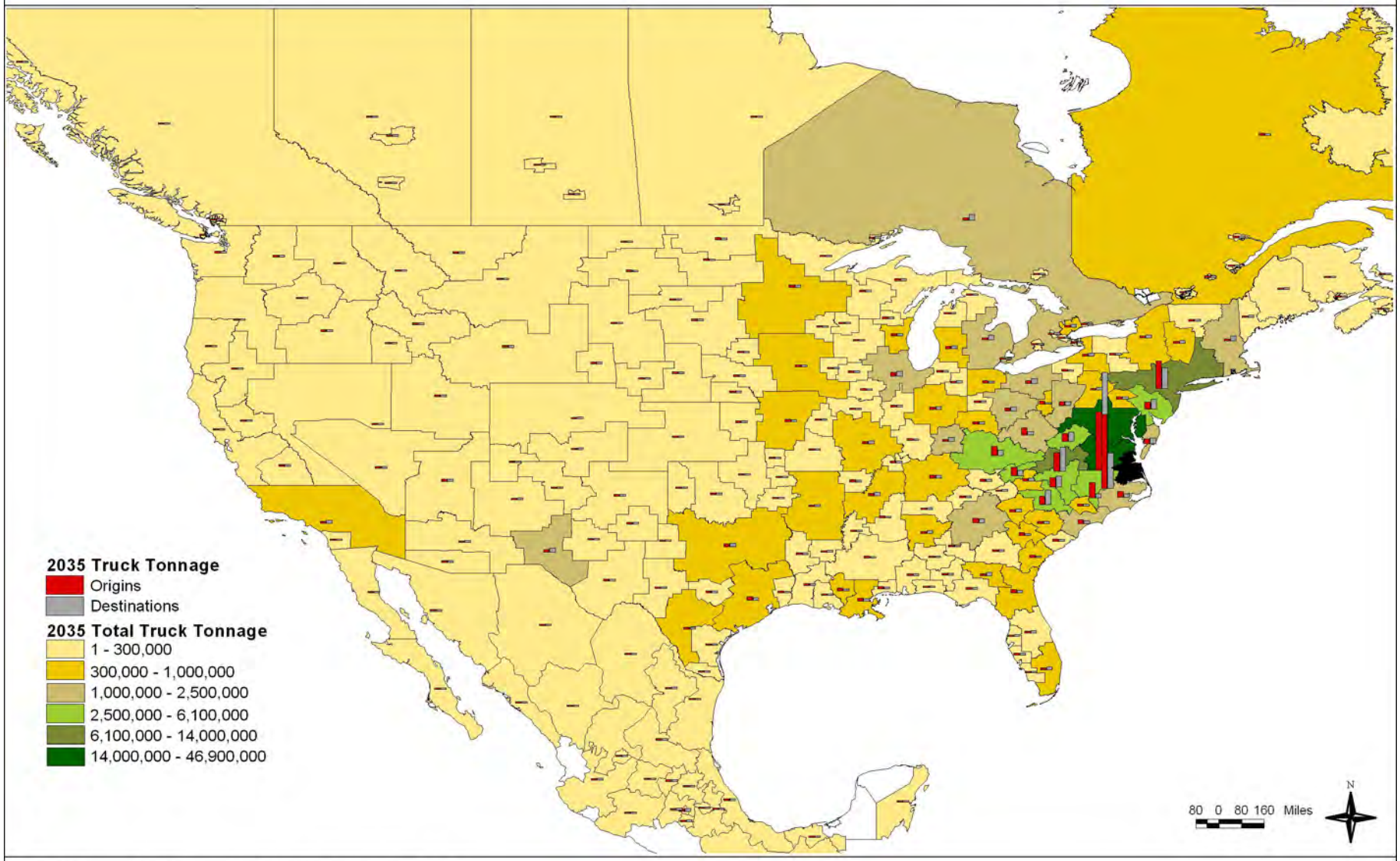
Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Map 25
2004 Hampton Roads Primary Trading Partners with other Economic Areas by Truck



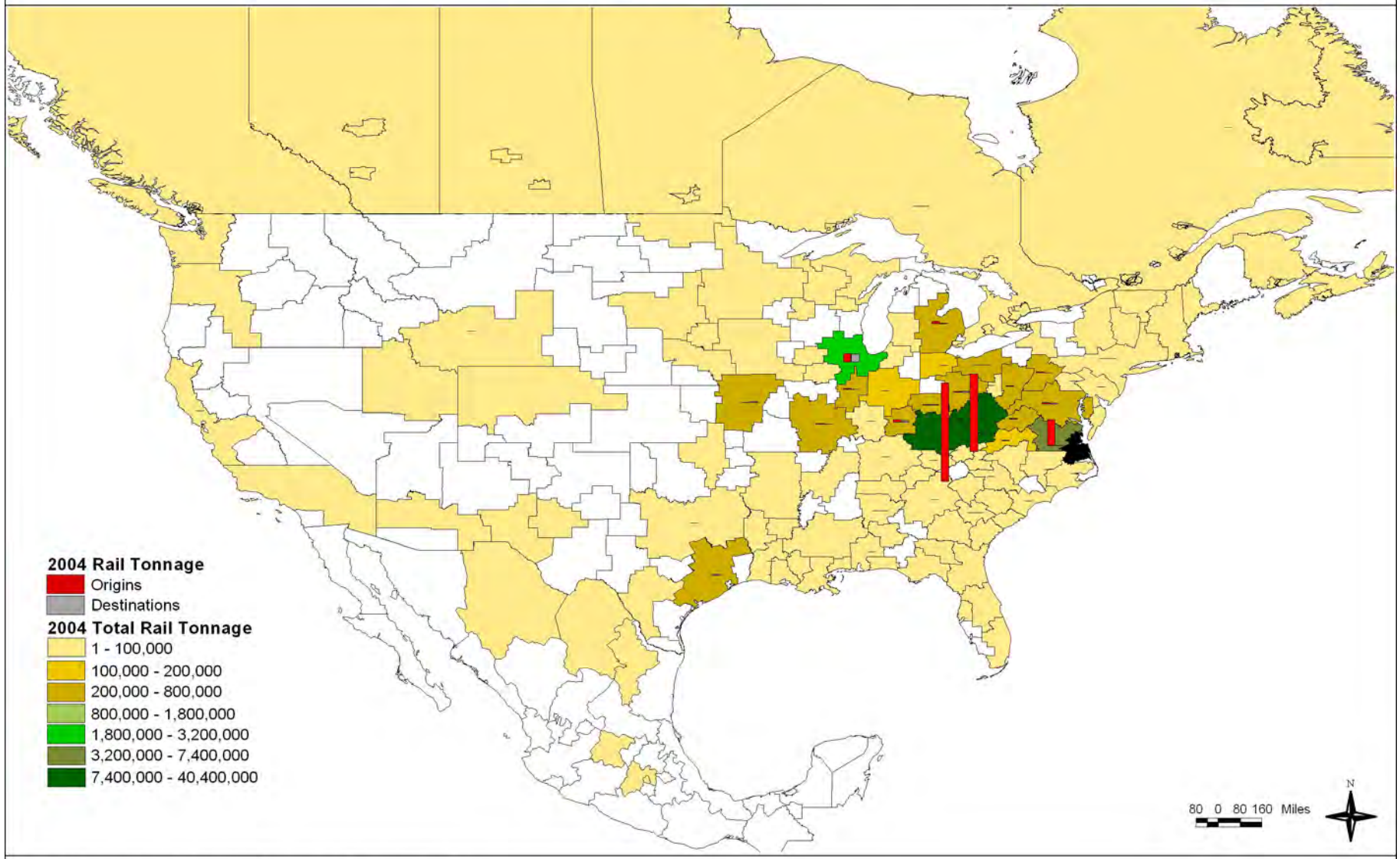
Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Map 26
2035 Hampton Roads Primary Trading Partners with other Economic Areas by Truck



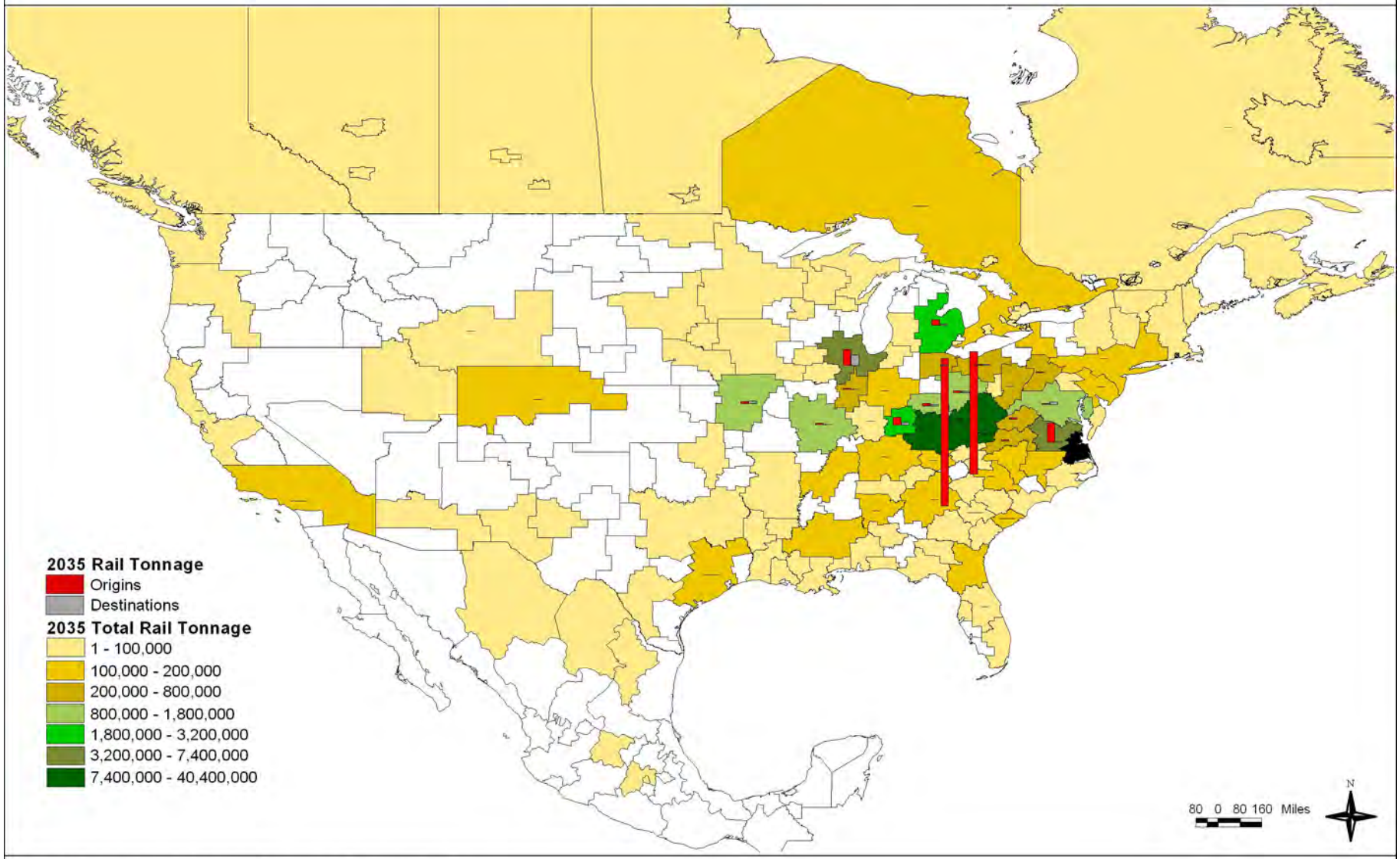
Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Map 27
2004 Hampton Roads Primary Trading Partners with other Economic Areas by Rail



Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Map 28
2035 Hampton Roads Primary Trading Partners with other Economic Areas by Rail



Prepared by: Hampton Roads Planning District Commission, November 2006.
Data source: Global Insight Transearch Database

Statewide Trade with Hampton Roads

In 2004, approximately 42% of all North American freight inbound to Hampton Roads was from Virginia origins and about 32% of all freight heading out of Hampton Roads was to Virginia destinations (**Figure 11**). By 2035, the Virginia portion of inbound freight to Hampton Roads will decrease slightly to 37% while the outbound portion to Virginia will increase to 50%.

For the purpose of this analysis, Virginia Planning Districts were used to show freight movement within the state by mode to and from Hampton Roads. A complete listing of cities and counties within each Virginia Planning District is provided in **Appendix E**.

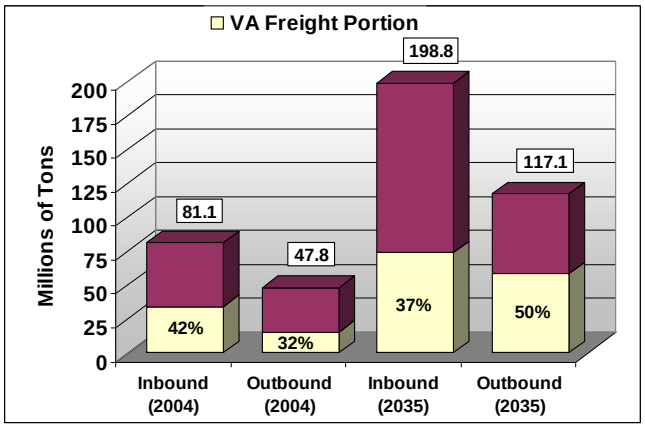


FIGURE 11 – Virginia Portion of Total North American Freight Movement In and Out of Hampton Roads in 2004 & 2035 (All Transportation Modes)

Data Source: Global Insight Transearch Database.

2004 Top 10 Commodities by Tonnage

Table 11 below shows the top ten freight commodities by tonnage for Hampton Roads to and from other Virginia Planning Districts in 2004. The top inbound commodities were nonmetallic minerals (41%), coal (29%), and warehouse & distribution center/drayage (11%). The top outbound commodities were warehouse & distribution center/drayage (41%), clay, concrete, glass or stone (15%), and food or kindred products (13%). Overall, the top ten inbound and outbound commodities accounted for 97% and 93% of the total freight tonnage transported between Hampton Roads and other Virginia Planning Districts respectively.

TABLE 11 – 2004 Top Ten Commodities for Hampton Roads by Tonnage (Statewide Trade)

Inbound Freight

Commodity	Rail	Truck	Air	Water	Total Tonnage	Percent of Total Inbound
Nonmetallic Minerals	3,498,175	9,177,058	0	1,193,883	**13,869,116**	**41%**
Coal	9,089,655	648,800	0	0	**9,738,455**	**29%**
Warehouse & Distribution Center/Drayage	0	3,705,766	0	0	**3,705,766**	**11%**
Lumber Or Wood Products	4,200	1,971,000	0	0	**1,975,200**	**6%**
Clay, Concrete, Glass Or Stone	140,322	1,281,953	0	0	**1,422,275**	**4%**
Food Or Kindred Products	0	660,899	0	4,017	**664,916**	**2%**
Pulp, Paper Or Allied Products	50,670	340,004	0	0	**390,674**	**1%**
Waste Or Scrap Materials	12,000	0	0	369,170	**381,170**	**1%**
Chemicals Or Allied Products	4,792	333,914	4	0	**338,710**	**1%**
Agricultural Production & Livestock	26,585	216,154	234	29,048	**272,021**	**1%**
				Subtotaled Tonnage for the Top 10 Commodities	**32,758,303**	
				Total Tonnage Transported	**33,794,021**	

Outbound Freight

Commodity	Rail	Truck	Air	Water	Total Tonnage	Percent of Total Outbound
Warehouse & Distribution Center/Drayage	0	6,207,077	0	0	**6,207,077**	**41%**
Clay, Concrete, Glass Or Stone	0	2,215,379	0	0	**2,215,379**	**15%**
Food Or Kindred Products	46,239	1,925,965	0	4,906	**1,977,110**	**13%**
Lumber Or Wood Products	0	957,051	0	0	**957,051**	**6%**
Transportation Equipment	0	877,197	466	0	**877,662**	**6%**
Chemicals Or Allied Products	16,964	783,601	466	0	**801,031**	**5%**
Machinery	0	279,355	466	0	**279,821**	**2%**
Fabricated Metal Products	0	269,787	0	0	**269,787**	**2%**
Primary Metal Products	0	215,984	0	0	**215,984**	**1%**
Pulp, Paper Or Allied Products	6,849	172,720	0	0	**179,569**	**1%**
				Subtotaled Tonnage for the Top 10 Commodities	**13,980,471**	
				Total Tonnage Transported	**15,086,602**	

Data Source: Global Insight Transearch Database

2004 Top 10 Commodities by Dollar Value

Table 12 shows the top ten freight commodities by dollar value for Hampton Roads to and from other Virginia Planning Districts in 2004. About 73% of all commodities delivered to Hampton Roads from other parts of Virginia was warehouse & distribution center/drayage ($24.1 billion). Warehouse & distribution center/drayage ($40.4 billion) was also the number one outbound commodity in statewide trade followed by transportation equipment ($26.4 billion). Overall, the top ten inbound and outbound commodities accounted for 93% and 95% of the total freight dollars transported between Hampton Roads and other Virginia Planning Districts respectively.

TABLE 12 – 2004 Top Ten Commodities for Hampton Roads by Dollar Value (Statewide Trade)

Inbound Freight

Commodity	Rail	Truck	Air	Water	Total Dollars	Percent of Total Inbound
Warehouse & Distribution Center/Drayage	0	24,148,728,036	0	0	**24,148,728,036**	**73%**
Transportation Equipment	0	2,820,589,791	388,365	0	**2,820,978,156**	**9%**
Chemicals Or Allied Products	4,433,985	860,157,663	11,906	0	**864,603,554**	**3%**
Pulp, Paper Or Allied Products	32,819,311	498,125,443	0	0	**530,944,754**	**2%**
Food Or Kindred Products	0	505,001,146	0	1,959,179	**506,960,325**	**2%**
Fabricated Metal Products	0	479,419,739	483,870	0	**479,903,609**	**1%**
Misc Mixed Shipments	430,837,954				**430,837,954**	**1%**
Rubber Or Misc Plastics	0	405,228,589	0	0	**405,228,589**	**1%**
Tobacco Products	0	314,293,792	0	0	**314,293,792**	**1%**
Primary Metal Products	0	310,952,711	0	0	**310,952,711**	**1%**
				Subtotaled Dollars for the Top 10 Commodities	**30,813,431,480**	
				Total Dollars Transported	**33,020,548,974**	

Outbound Freight

Commodity	Rail	Truck	Air	Water	Total Dollars	Percent of Total Outbound
Warehouse & Distribution Center/Drayage	0	40,382,031,579	0	0	**40,382,031,579**	**48%**
Transportation Equipment	0	26,344,918,359	70,497,816	0	**26,415,416,175**	**31%**
Machinery	0	3,673,545,493	12,666,116	0	**3,686,211,609**	**4%**
Food Or Kindred Products	53,353,653	1,785,160,608	0	2,535,326	**1,841,049,587**	**2%**
Electrical Equipment	0	1,752,522,911	0	0	**1,752,522,911**	**2%**
Chemicals Or Allied Products	23,158,100	1,323,100,545	1,243,993	0	**1,347,502,638**	**2%**
Tobacco Products	0	1,211,304,448	0	0	**1,211,304,448**	**1%**
Fabricated Metal Products	0	1,186,132,375	0	0	**1,186,132,375**	**1%**
Misc Manufacturing Products	0	824,573,600	0	0	**824,573,600**	**1%**
Rubber Or Misc Plastics	0	814,635,982	41,420	0	**814,677,402**	**1%**
				Subtotaled Dollars for the Top 10 Commodities	**79,461,422,324**	
				Total Dollars Transported	**84,000,731,652**	

Data Source: Global Insight Transearch Database

Hampton Roads Freight Movement To and From Virginia Planning Districts

In **Tables 13 and 14**, the analysis shows a breakdown of freight traffic between Hampton Roads and each Virginia Planning District by mode for 2004 and 2035. In 2004, freight transported into Hampton Roads was primarily from Richmond Regional (28.7% and mostly by truck) and Cumberland Plateau (19.1% and mostly by rail). By 2035, Richmond Regional (26.4% and mostly by truck) is expected to remain the largest source of freight into the

TABLE 13 – 2004 Summary of Trade Between Hampton Roads and each Virginia Planning District

Inbound Freight by Mode

VA PD Number	VA Planning District Name	Rail	Truck	Air	Water	Total Tonnage (Short Tons)	Percent
1	LENOWISCO	3,092,058	299,480	0	0	**3,391,538**	**10.0%**
2	Cumberland Plateau	5,980,128	489,397	0	0	**6,469,525**	**19.1%**
3	Mount Rogers	0	700,372	0	0	**700,372**	**2.1%**
4	New River Valley	7,918	179,346	0	0	**187,264**	**0.6%**
5	Roanoke Valley - Alleghany	144,404	704,403	35	0	**848,842**	**2.5%**
6	Central Shenandoah	20,469	715,507	0	0	**735,976**	**2.2%**
7	Northern Shenandoah Valley	168,002	295,287	0	0	**463,289**	**1.4%**
8	Northern Virginia	0	1,338,337	7	0	**1,338,344**	**4.0%**
9	Rappahannock - Rapidian	7,772	229,961	0	0	**237,733**	**0.7%**
10	Thomas Jefferson	0	770,449	0	0	**770,449**	**2.3%**
11	VA Region 2000	0	922,552	0	0	**922,552**	**2.7%**
12	West Piedmont	0	684,694	0	0	**684,694**	**2.0%**
13	Southside	1,070,835	318,499	0	0	**1,389,334**	**4.1%**
14	Commonwealth Regional Council	1,200	1,415,726	0	0	**1,416,926**	**4.2%**
15	Richmond Regional	1,765,053	7,144,311	3,766	779,646	**9,692,775**	**28.7%**
16	RADCO	0	1,365,309	0	0	**1,365,309**	**4.0%**
17	Northern Neck	0	80,899	0	482	**81,380**	**0.2%**
18	Middle Peninsula	26,090	514,452	0	2,245	**542,787**	**1.6%**
19	Crater	718,578	522,661	0	303,464	**1,544,702**	**4.6%**
20	Accomack - Northampton	0	413,964	0	596,264	**1,010,228**	**3.0%**
	Grand Total	**13,002,507**	**19,105,605**	**3,808**	**1,682,100**	**33,794,021**	
	Modal Split Percent	**38.5%**	**56.5%**	**0.0%**	**5.0%**		

Outbound Freight by Mode

VA PD Number	VA Planning District Name	Rail	Truck	Air	Water	Total Tonnage (Short Tons)	Percent
1	LENOWISCO	0	48,876	0	0	**48,876**	**0.3%**
2	Cumberland Plateau	0	551,309	0	0	**551,309**	**3.7%**
3	Mount Rogers	3,902	489,116	0	0	**493,018**	**3.3%**
4	New River Valley	0	548,227	0	0	**548,227**	**3.6%**
5	Roanoke Valley - Alleghany	0	636,115	11	0	**636,126**	**4.2%**
6	Central Shenandoah	9,014	574,785	0	0	**583,799**	**3.9%**
7	Northern Shenandoah Valley	150,672	665,519	0	0	**816,191**	**5.4%**
8	Northern Virginia	0	5,178,230	3	143,040	**5,321,273**	**35.3%**
9	Rappahannock - Rapidian	0	106,848	0	0	**106,848**	**0.7%**
10	Thomas Jefferson	0	170,929	0	0	**170,929**	**1.1%**
11	VA Region 2000	0	739,854	0	0	**739,854**	**4.9%**
12	West Piedmont	0	792,451	0	0	**792,451**	**5.3%**
13	Southside	0	235,671	0	0	**235,671**	**1.6%**
14	Commonwealth Regional Council	37,225	191,364	0	0	**228,590**	**1.5%**
15	Richmond Regional	34,357	2,084,743	2,328	57,389	**2,178,816**	**14.4%**
16	RADCO	0	226,960	0	0	**226,960**	**1.5%**
17	Northern Neck	0	98,423	0	0	**98,423**	**0.7%**
18	Middle Peninsula	0	194,379	0	0	**194,379**	**1.3%**
19	Crater	8,012	555,068	0	34,526	**597,606**	**4.0%**
20	Accomack - Northampton	0	516,344	0	914	**517,258**	**3.4%**
	Grand Total	**243,182**	**14,605,209**	**2,342**	**235,869**	**15,086,602**	
	Modal Split Percent	**1.6%**	**96.8%**	**0.0%**	**1.6%**		

Source: Transearch Database, Global Insight

region followed by LENOWISCO (17.2% and mostly by rail). In 2004, freight transported out of Hampton Roads was primarily to Northern Virginia (35.3% and mostly by truck) and Richmond Regional (14.4% and mostly by truck). By 2035, Northern Virginia will remain the largest destination (30.4% and mostly by truck) followed by the Northern Neck (19.9% and mostly by water). **Maps 29 and 30** on pages 77 and 78 offer a visual breakdown of the freight relationships with other VA Planning Districts by mode.

TABLE 14 – 2035 Summary of Trade Between Hampton Roads and each Virginia Planning District

Inbound Freight by Mode

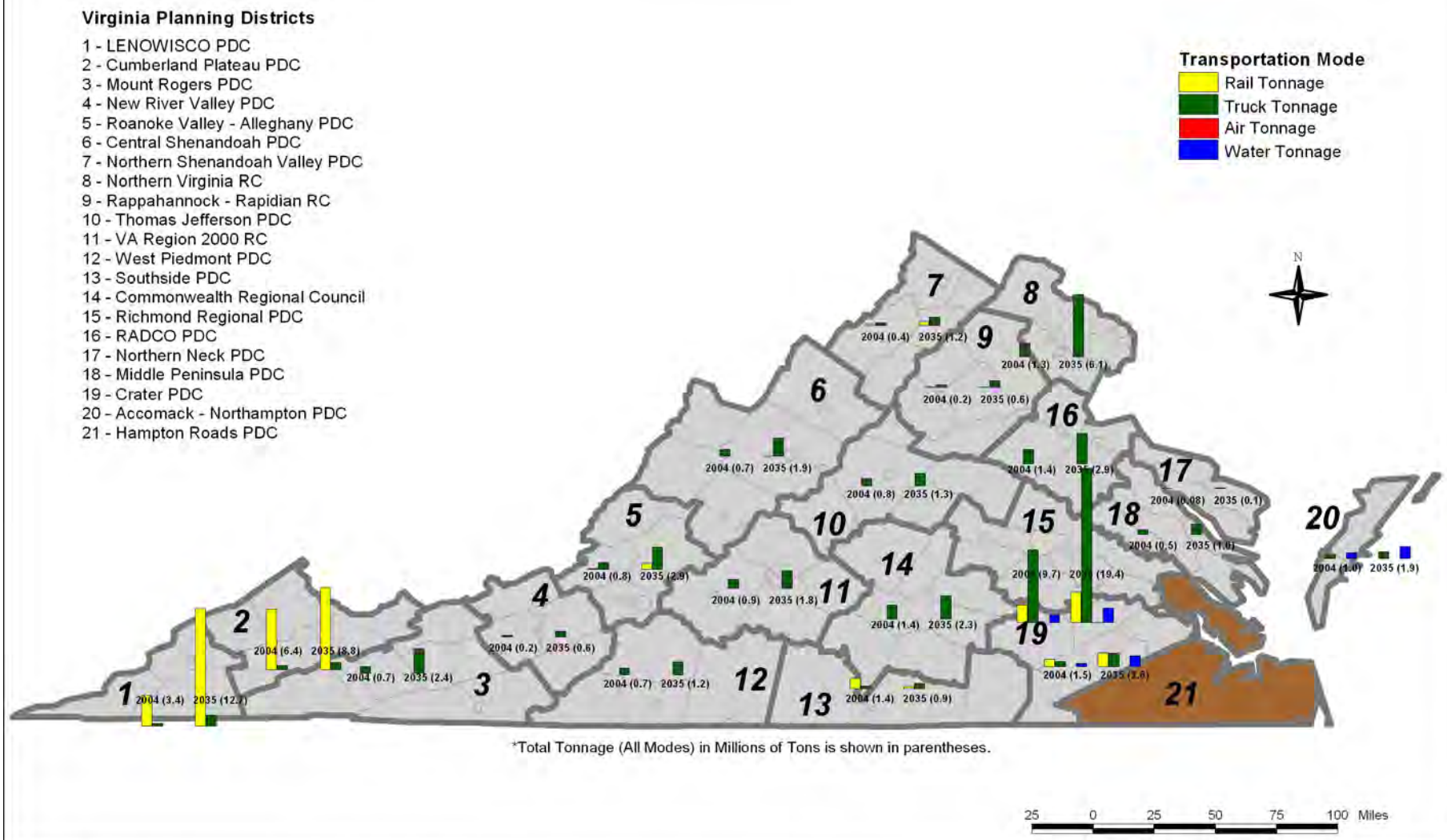
VA PD Number	VA Planning District Name	Rail	Truck	Air	Water	Total Tonnage (Short Tons)	Percent
1	LENOWISCO	11,563,428	1,139,765	0	0	**12,703,193**	**17.2%**
2	Cumberland Plateau	8,052,751	704,182	0	0	**8,756,932**	**11.9%**
3	Mount Rogers	0	2,405,748	0	0	**2,405,748**	**3.3%**
4	New River Valley	1,944	609,693	0	0	**611,637**	**0.8%**
5	Roanoke Valley - Alleghany	616,760	2,233,479	116	0	**2,850,354**	**3.9%**
6	Central Shenandoah	43,860	1,811,982	0	0	**1,855,843**	**2.5%**
7	Northern Shenandoah Valley	380,416	793,791	0	0	**1,174,207**	**1.6%**
8	Northern Virginia	0	6,075,082	56	0	**6,075,138**	**8.2%**
9	Rappahannock - Rapidian	8,483	615,437	0	0	**623,920**	**0.8%**
10	Thomas Jefferson	0	1,261,465	0	0	**1,261,465**	**1.7%**
11	VA Region 2000	0	1,798,449	0	0	**1,798,449**	**2.4%**
12	West Piedmont	0	1,227,714	0	0	**1,227,714**	**1.7%**
13	Southside	273,278	585,373	0	0	**858,652**	**1.2%**
14	Commonwealth Regional Council	1,338	2,304,877	0	0	**2,306,216**	**3.1%**
15	Richmond Regional	2,931,930	15,094,169	19,103	1,418,073	**19,463,276**	**26.4%**
16	RADCO	0	2,949,513	0	0	**2,949,513**	**4.0%**
17	Northern Neck	0	113,473	0	652	**114,125**	**0.2%**
18	Middle Peninsula	10,266	1,035,539	0	1,614	**1,047,419**	**1.4%**
19	Crater	1,367,399	1,343,530	0	1,097,207	**3,808,137**	**5.2%**
20	Accomack - Northampton	0	699,984	0	1,246,186	**1,946,171**	**2.6%**
	Grand Total	**25,251,854**	**44,803,246**	**19,274**	**3,763,732**	**73,838,107**	
	Modal Split Percent	**34.2%**	**60.7%**	**0.0%**	**5.1%**		

Outbound Freight by Mode

VA PD Number	VA Planning District Name	Rail	Truck	Air	Water	Total Tonnage (Short Tons)	Percent
1	LENOWISCO	0	96,069	1,557	0	**97,625**	**0.2%**
2	Cumberland Plateau	0	949,922	0	0	**949,922**	**1.6%**
3	Mount Rogers	0	1,418,365	0	0	**1,418,365**	**2.4%**
4	New River Valley	0	2,168,194	0	0	**2,168,194**	**3.7%**
5	Roanoke Valley - Alleghany	0	2,111,868	0	0	**2,111,868**	**3.6%**
6	Central Shenandoah	0	1,976,634	0	0	**1,976,634**	**3.4%**
7	Northern Shenandoah Valley	0	2,202,208	0	0	**2,202,208**	**3.8%**
8	Northern Virginia	0	17,722,657	0	0	**17,722,657**	**30.4%**
9	Rappahannock - Rapidian	0	335,648	0	0	**335,648**	**0.6%**
10	Thomas Jefferson	0	455,455	23,396	0	**478,851**	**0.8%**
11	VA Region 2000	0	2,055,072	10,085	0	**2,065,158**	**3.5%**
12	West Piedmont	0	2,096,159	4,429	0	**2,100,589**	**3.6%**
13	Southside	0	908,895	6,442	0	**915,337**	**1.6%**
14	Commonwealth Regional Council	0	656,238	1,192	0	**657,430**	**1.1%**
15	Richmond Regional	181,453	5,892,760	11,333	991,314	**7,076,860**	**12.2%**
16	RADCO	0	793,958	0	0	**793,958**	**1.4%**
17	Northern Neck	181,453	271,966	56,878	11,062,211	**11,572,508**	**19.9%**
18	Middle Peninsula	0	456,790	0	0	**456,790**	**0.8%**
19	Crater	0	2,123,311	0	0	**2,123,311**	**3.6%**
20	Accomack - Northampton	0	998,444	0	0	**998,444**	**1.7%**
	Grand Total	**362,906**	**45,690,612**	**115,312**	**12,053,525**	**58,222,355**	
	Modal Split Percent	**0.6%**	**78.5%**	**0.2%**	**20.7%**		

Source: Transearch Database, Global Insight

Map 29
Summary of Inbound Freight from Virginia Planning Districts to Hampton Roads by Mode
(2004 and 2035)

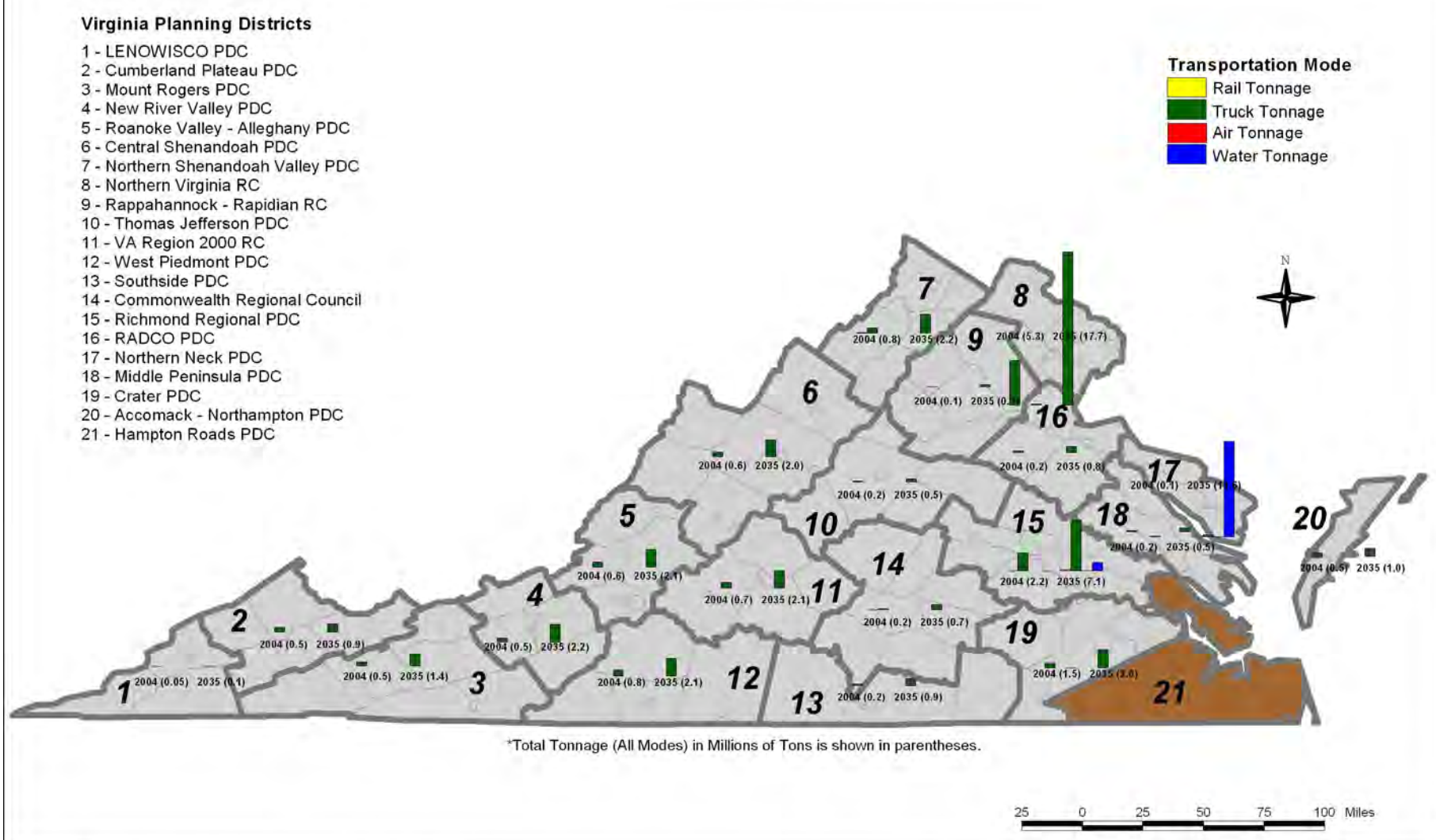


*Total Tonnage (All Modes) in Millions of Tons is shown in parentheses.

Prepared by: Hampton Roads Planning District Commission, December 2006.
Data source: Global Insight Transearch Database

Note: Chesterfield was assigned to PDC 15, Gloucester to PDC 18, and Surry to PDC 19

Map 30
Summary of Outbound Freight from Hampton Roads to Virginia Planning Districts by Mode
(2004 and 2035)



*Total Tonnage (All Modes) in Millions of Tons is shown in parentheses.

Prepared by: Hampton Roads Planning District Commission, December 2006.
Data source: Global Insight Transearch Database

Note: Chesterfield was assigned to PDC 15, Gloucester to PDC 18, and Surry to PDC 19

Virginia Primary Gateways for Truck Freight Movement To and From Hampton Roads

The following analysis studied Hampton Roads freight data to determine where outside freight is entering the State of Virginia en route to Hampton Roads, and also where outbound freight from Hampton Roads is leaving the Commonwealth. By determining the main routes for freight inbound to and outbound from Hampton Roads, a clearer picture is obtained of exactly which arteries are most important to facilitating Hampton Roads freight transportation.

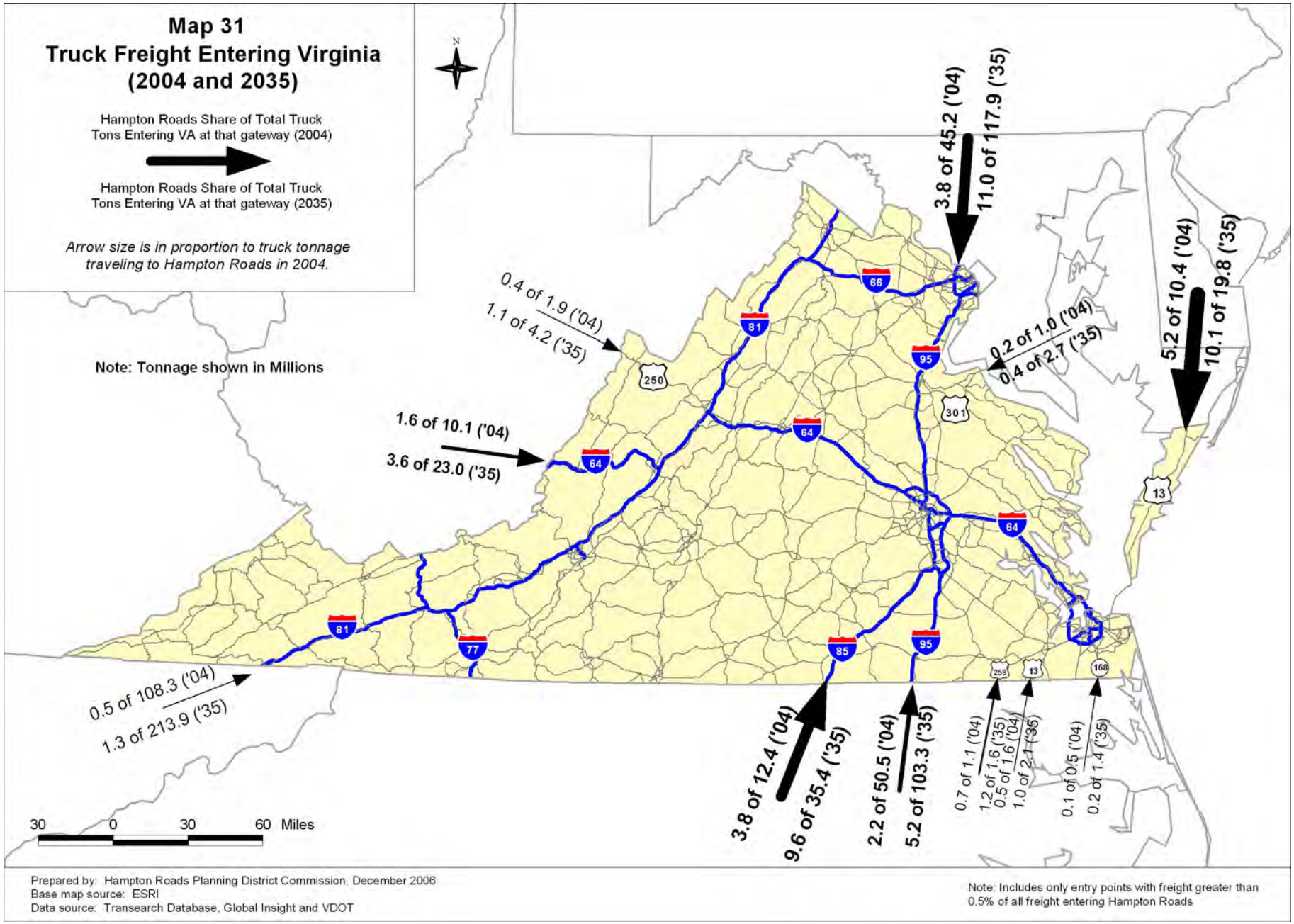
Map 31 on page 80 shows the entry points for out-of-state truck freight inbound to Hampton Roads for 2004 and 2035. This map clearly shows that the primary entry point in 2004 to Virginia for freight heading for the Hampton Roads area is US 13 from Maryland, which accounts for 27% (5.2 million tons) of truck freight heading to Hampton Roads from outside the state of Virginia. Other significant inbound arteries include I-495 Southbound in Northern Virginia (20% or 3.8 million tons), I-85 (20% or 3.8 million tons), and I-95 (11% or 2.2 million tons) for traffic entering Virginia traveling to Hampton Roads. By 2035, the primary entry points to Virginia for freight heading to Hampton Roads is expected to be I-495 Southbound in Northern Virginia (24% or 11 million tons), US 13 (22% or 10.1 million tons), I-85 (21% or 9.6 million tons), and I-95 (11% or 5.2 million tons).

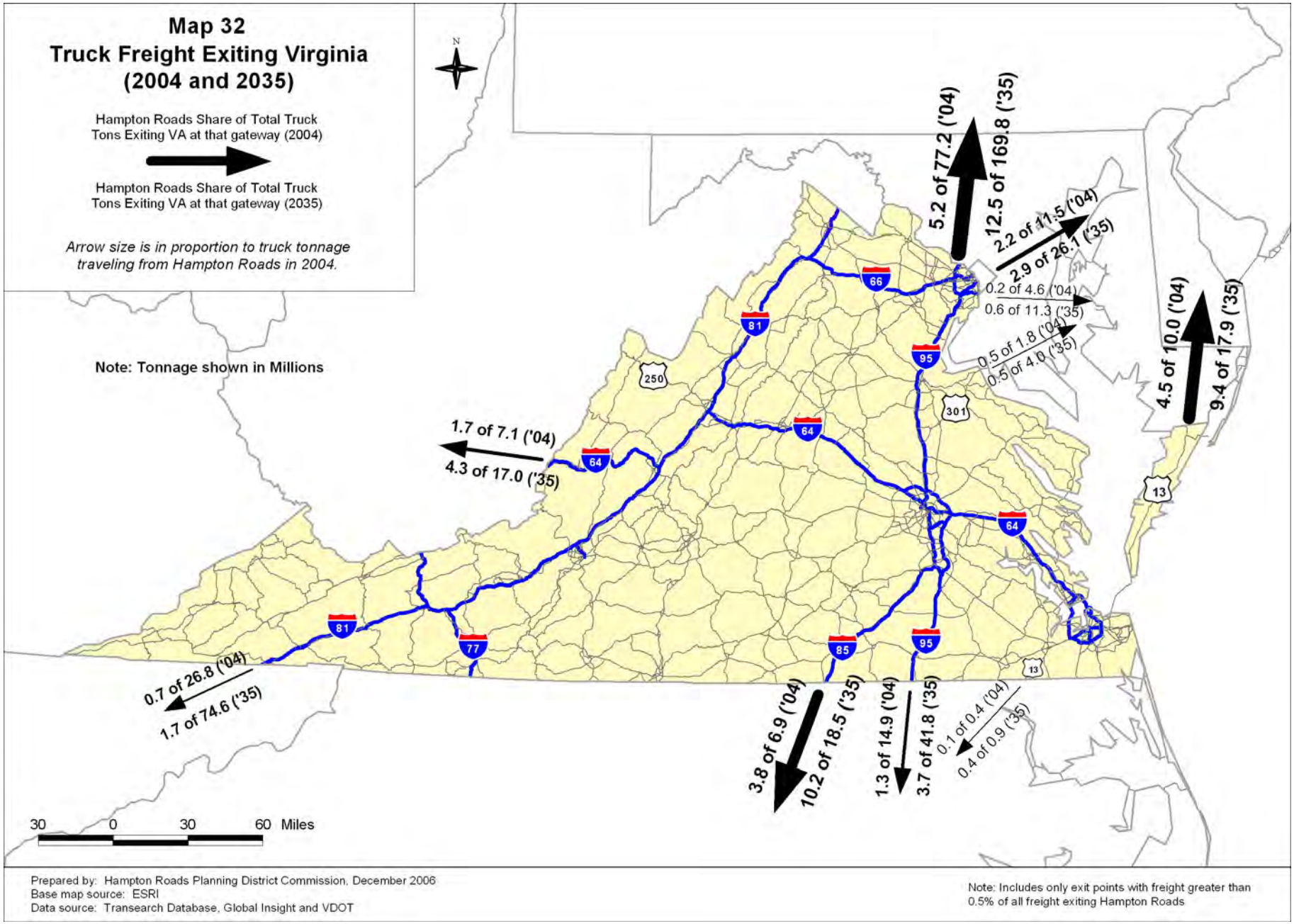
Map 32 on page 81 shows the exit points for truck freight outbound from Hampton Roads to a destination outside the state of Virginia for 2004 and 2035. 2004 results show that truck traffic is heaviest on I-495 Northbound in Northern Virginia (26% or 5.2 million tons), followed by US 13 (22% or 4.5 million tons) and I-85 (19% or 3.8 million tons). By 2035, the primary exit points for truck traffic originating in Hampton Roads is expected to be I-495 Northbound in Northern Virginia (27% or 12.5 million tons), I-85 (22% or 10.2 million tons), and US 13 (20% or 9.4 million tons). Maps 31 and 32 also include the total tonnage entering and exiting the state in 2004 and 2035 in order to compare Hampton Roads freight to statewide totals.

Maps 31 and 32 also include the total tonnage that enters and exits the Virginia boundary in order to compare the portion of Hampton Roads freight to the entire freight moving at that location. This information was obtained from the Virginia Department of Transportation as a part of the statewide freight study that is currently underway (See **Map 33** on page 82). Map 33 also shows commodity truck tonnage (2004) for the entire Virginia Statewide Mobility System.

Top Ten Trading Partners by Truck by Hampton Roads Jurisdiction

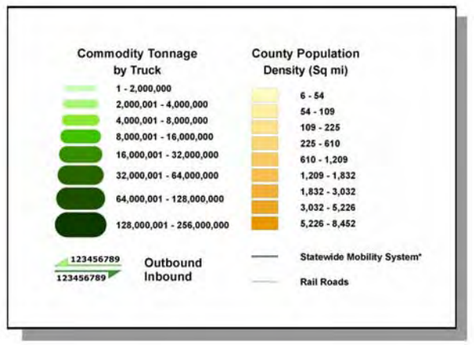
An additional analysis of the Transearch Freight Database was performed to determine the 2004 top ten trading origins and destinations for freight moved by truck for all fourteen jurisdictions within Hampton Roads. The 2004 top ten origins and destinations are Cities/Counties within Virginia or Economic Areas outside the state and are ranked by total tonnage moved. The results of this analysis are included in **Appendix F**. Truck Loads or the number of trucks and the dollar value of the goods moved are also provided.


Map 31
Truck Freight Entering Virginia
(2004 and 2035)
Hampton Roads Share of Total Truck
Tons Entering VA at that gateway (2004)
Hampton Roads Share of Total Truck
Tons Entering VA at that gateway (2035)
Arrow size is in proportion to truck tonnage
traveling to Hampton Roads in 2004.
Note: Tonnage shown in Millions
N
3.8 of 45.2 ('04)
11.0 of 117.9 ('35)
5.2 of 10.4 ('04)
10.1 of 19.8 ('35)
0.4 of 1.9 ('04)
1.1 of 4.2 ('35)
0.2 of 1.0 ('04)
0.4 of 2.7 ('35)
1.6 of 10.1 ('04)
3.6 of 23.0 ('35)
0.5 of 108.3 ('04)
1.3 of 213.9 ('35)
3.8 of 12.4 ('04)
9.6 of 35.4 ('35)
2.2 of 50.5 ('04)
5.2 of 103.3 ('35)
0.7 of 1.1 ('04)
1.2 of 1.6 ('35)
0.5 of 1.6 ('04)
1.0 of 2.1 ('35)
0.1 of 0.5 ('04)
0.2 of 1.4 ('35)
66
81
95
250
301
64
13
77
85
258
168
30 0 30 60 Miles
Prepared by: Hampton Roads Planning District Commission, December 2006
Base map source: ESRI
Data source: Transearch Database, Global Insight and VDOT
Note: Includes only entry points with freight greater than
0.5% of all freight entering Hampton Roads


Map 32
Truck Freight Exiting Virginia
(2004 and 2035)
Hampton Roads Share of Total Truck
Tons Exiting VA at that gateway (2004)
Hampton Roads Share of Total Truck
Tons Exiting VA at that gateway (2035)
Arrow size is in proportion to truck tonnage
traveling from Hampton Roads in 2004.
Note: Tonnage shown in Millions
N
5.2 of 77.2 ('04)
12.5 of 169.8 ('35)
2.2 of 11.5 ('04)
2.9 of 26.1 ('35)
0.2 of 4.6 ('04)
0.6 of 11.3 ('35)
0.5 of 1.8 ('04)
0.5 of 4.0 ('35)
4.5 of 10.0 ('04)
9.4 of 17.9 ('35)
1.7 of 7.1 ('04)
4.3 of 17.0 ('35)
0.7 of 26.8 ('04)
1.7 of 74.6 ('35)
3.8 of 6.9 ('04)
10.2 of 18.5 ('35)
1.3 of 14.9 ('04)
3.7 of 41.8 ('35)
0.1 of 0.4 ('04)
0.4 of 0.9 ('35)
66
81
95
250
301
64
13
77
85
30 0 30 60 Miles
Prepared by: Hampton Roads Planning District Commission, December 2006
Base map source: ESRI
Data source: Transearch Database, Global Insight and VDOT
Note: Includes only exit points with freight greater than
0.5% of all freight exiting Hampton Roads

Map 33

Commonwealth of Virginia
COMMODITY TONNAGE BY TRUCK
on State Mobility System
(2004 data)



Data Source: Global Insight Transearch Database
Map Source: VDOT, January 2007

* State Mobility System depicted when it matched with Reebie highway data (Reebie)
VDOT TMPD 04.06

REGIONAL TRUCK MOVEMENT

For the Port of Virginia and Hampton Roads to remain competitive with other ports and regions, goods must be able to be moved quickly and efficiently both into and throughout the region. With trucks being the primary mode for transporting freight both within as well as out of the region, congestion can significantly impact the movement of goods in Hampton Roads. Trucks stuck in congestion incur additional costs, and businesses relying on the movement of goods may look elsewhere for areas with cheaper operating costs.

This section analyzes the movement of trucks both within Hampton Roads as well as through the gateways of the region and includes the following:

- Truck Movements Through Regional Gateways
- Truck Movements Across the Hampton Roads Harbor
- Truck Movements by Time of Day
- Truck Movements by Location
- Freight Bottlenecks

Most of the regional truck movement data included in this section was collected by VDOT as part of their traffic monitoring program. VDOT collects data for a two-day period once every three years on most roadways throughout the region. Approximately one out of every three of these locations includes vehicle classification data. In Hampton Roads, there are about 375 locations on the Congestion Management Process network that contain vehicle classification data.

FHWA uses 15 classifications to define vehicle types, and VDOT uses these FHWA vehicle classification standards. **Figure 12** shows each of these 15 different vehicle classifications. Of these 15 vehicle classes, classes 5 through 13 are considered to be trucks. The most common type of trucks are Class 9, commonly known as an 18-wheeler. 68% of the trucks that enter or exit Hampton Roads are classified as a Class 9 truck.

Did you know? One Home Depot generates approximately 20 truck trips per day.

FIGURE 12 – FHWA Vehicle Classifications

	**Class 1** Motorcycles		**Class 8** Four or less axle single trailers
	**Class 2** Passenger Cars		**Class 9** Five axle single trailers
	**Class 3** Two axle, four tire single units		**Class 10** Six or more axle single trailers
	**Class 4** Buses		**Class 11** Five or less axle multi trailers
	**Class 5** Two axle, six tire single units		**Class 12** Six axle multi trailers
	**Class 6** Three axle single units		**Class 13** Seven or more axle multi trailers
	**Class 7** Four or more axle single units		**Class 14** - Unclassified **Class 15** - Other

Image source: New York State DOT

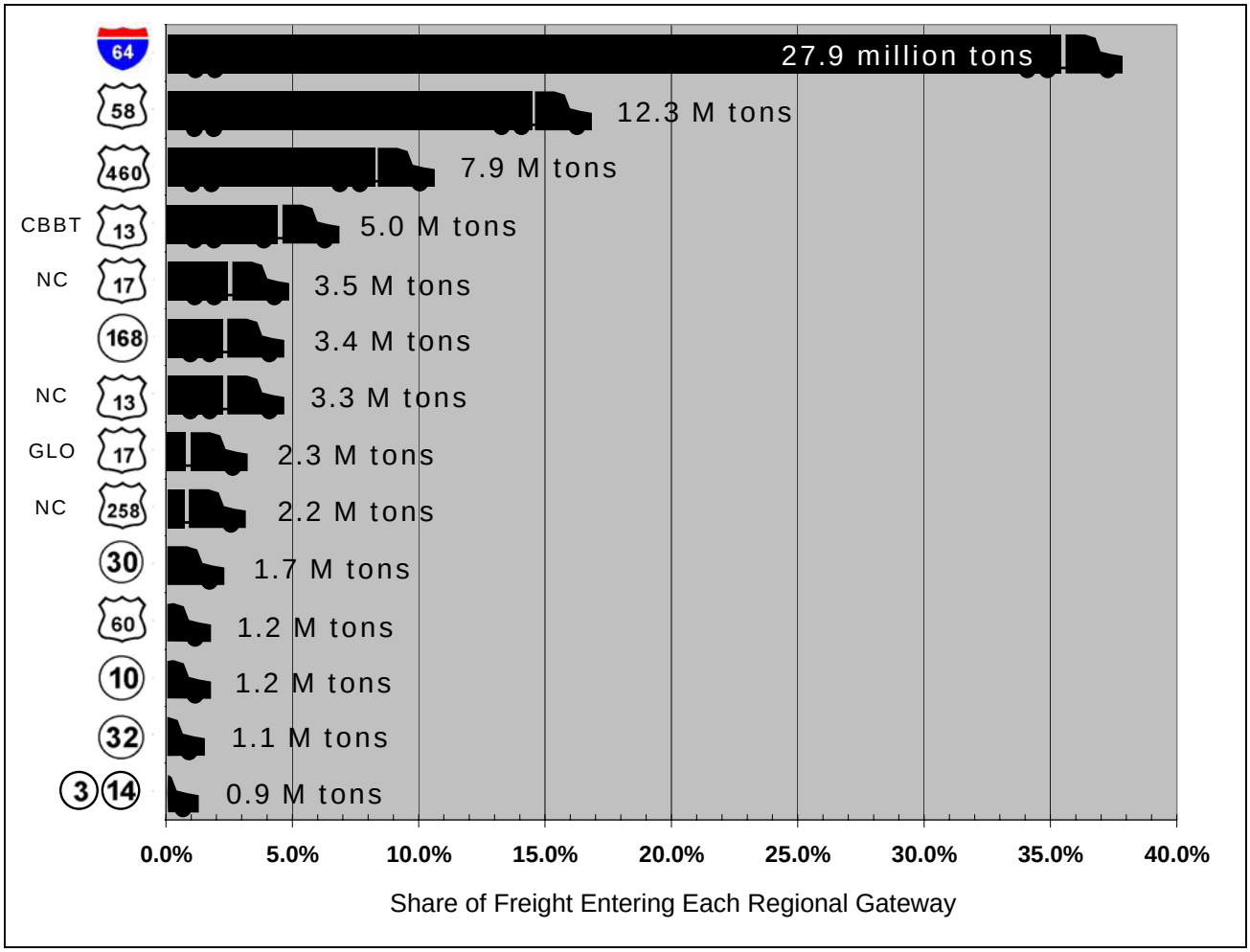
Truck Movements Through Regional Gateways

Each day tens of thousands of trucks enter and exit Hampton Roads to serve both the region's ports as well as businesses located throughout the region. Including coal, 48% of all domestic freight entering Hampton Roads and 73% of all freight leaving Hampton Roads was transported by truck in 2004. This amounts to over 20,000 trucks entering and exiting Hampton Roads each weekday through the gateways to the region. If laid end to end, these trucks would stretch over 200 miles in length, or the distance between Virginia Beach and Washington D.C.

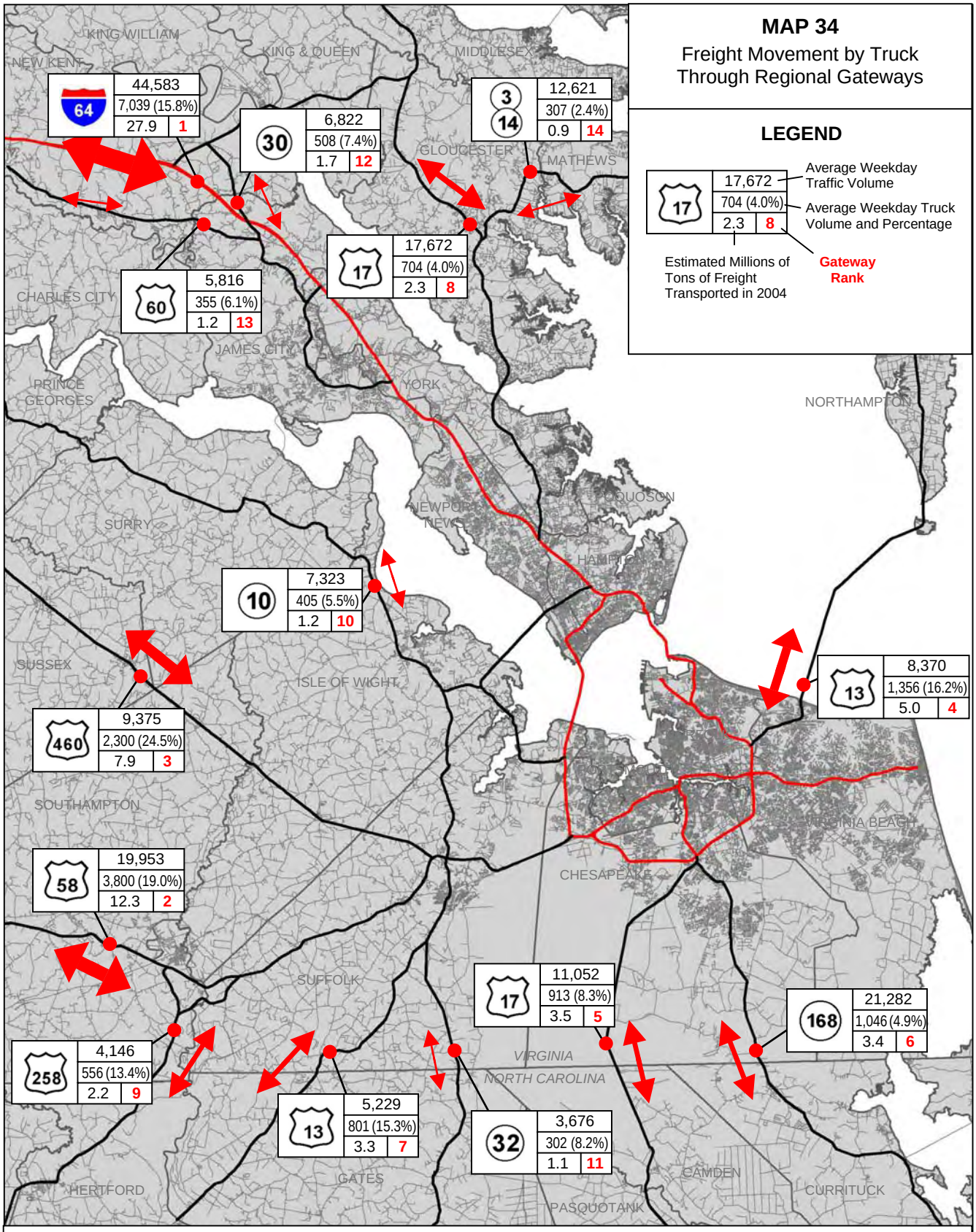
Due to the prevalence of many bodies of water surrounding the region, the number of roadways into and out of Hampton Roads is somewhat limited. Fourteen roadways were classified as gateways to the region. **Map 34** on page 85 shows these gateways as well as the total weekday vehicle volumes, total weekday truck volumes, and the weekday truck percentage at each of these fourteen gateways. Both Map 34 as well as **Figure 13** below shows the estimated amount of freight entering Hampton Roads through each of these gateways.

I-64, which is the only limited access route into the region, carries the most freight of all the gateways. Over 7,000 trucks enter or exit the region each weekday via I-64, annually carrying nearly 28 million tons of freight. I-64 accounts for nearly 38% of the entire amount of freight that enters or exits Hampton Roads.

FIGURE 13 – Freight Movement by Regional Gateway, 2005



Data sources: VDOT, CBBT, Global Insight.



Prepared by: HRPDC, March 2006.
Data sources: Global Insight, VDOT and CBBT.
Map data source: VDOT.

The second most used corridor for freight entering or exiting Hampton Roads was Route 58, which serves as the gateway for 17% of all freight entering or exiting the region. Route 460 was the third most used gateway for freight with 11% of all the freight entering or exiting the region.

Truck Movements Across the Hampton Roads Harbor

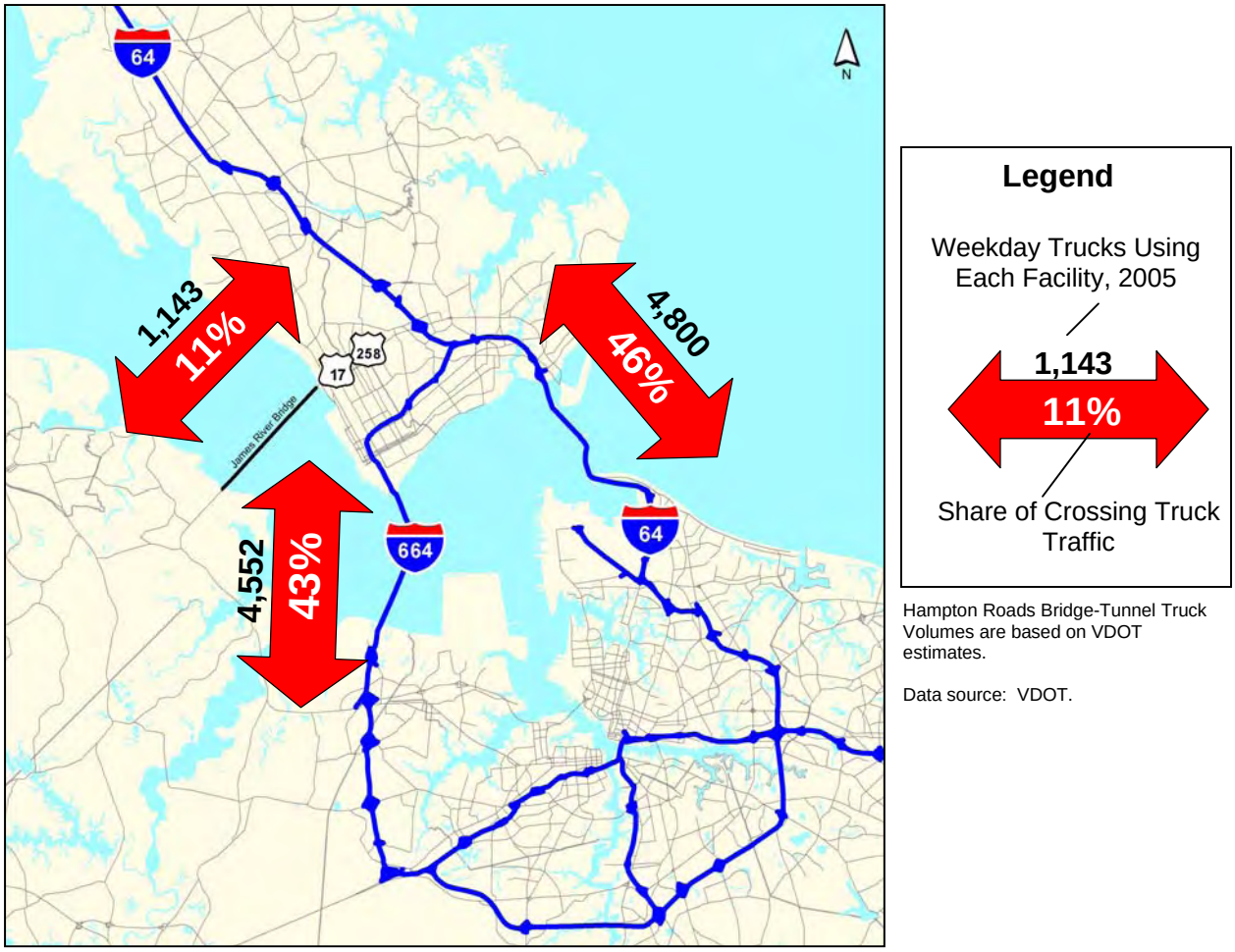
Although the size and depth of the Hampton Roads harbor is part of what makes this region competitive in worldwide trade, it also hinders surface transportation between the Peninsula and the Southside. Three facilities cross the Hampton Roads harbor:

- The Hampton Roads Bridge-Tunnel (I-64), a four-lane facility that carried 95,000 vehicles each weekday in 2005
- The Monitor-Merrimac Memorial Bridge-Tunnel (I-664), a four-lane facility that carried 56,000 vehicles each weekday in 2005
- The James River Bridge (Routes 17 and 258), a four-lane drawbridge facility that carried 30,000 vehicles each weekday in 2005

Traffic volumes and congestion have grown at these facilities in recent years. Before the Monitor-Merrimac Memorial Bridge-Tunnel opened in April 1992, 105,900 vehicles crossed the Hampton Roads harbor on the average weekday. By 2000, this number has increased to 167,000 vehicles per weekday. In 2005, an average of 181,000 vehicles crossed the harbor on the average weekday. As these traffic volumes rise, so does the amount of time these facilities are congested, which inhibits freight movement throughout the region.

As shown in **Figure 14**, the Hampton Roads Bridge-Tunnel was the facility used by the most

FIGURE 14 – Weekday Volume of Trucks Crossing the Hampton Roads Harbor, 2005



Hampton Roads Bridge-Tunnel Truck Volumes are based on VDOT estimates.

Data source: VDOT.

trucks to cross the Hampton Roads harbor in 2005. Approximately 4,800 trucks crossed the Hampton Roads Bridge-Tunnel each weekday in 2005, or 46% of the total amount of trucks that cross the Hampton Roads harbor. The Monitor-Merrimac Memorial Bridge-Tunnel only carried slightly fewer trucks than the Hampton Roads Bridge-Tunnel, with 4,552 trucks crossing the facility each weekday in 2005.

Overheight trucks are also a concern at the region's tunnel facilities. Trucks that are overheight can lead to congestion-inducing traffic stoppages in both directions if they need to be turned around at the entrance of the tunnel. This is particularly a problem for the westbound lanes at the Hampton Roads Bridge-Tunnel, which are older and have a lower vertical clearance than the eastbound lanes.

Table 15 shows the number of trucks that were stopped, measured, and turned around at each of the region's four tunnel facilities in 2005. There were almost 20,000 overheight vehicles stopped, measured, and turned around at the regional tunnels in 2005. This is almost an average of 55 vehicles per day. The westbound Hampton Roads Bridge-Tunnel had the most overheight vehicles, with 13,775 such trucks being turned around in 2005, almost 69% of the regional total. Of these, 1,332 were turned around at the South Island, leading to traffic stoppages in both directions.

Truck Movements by Time of Day

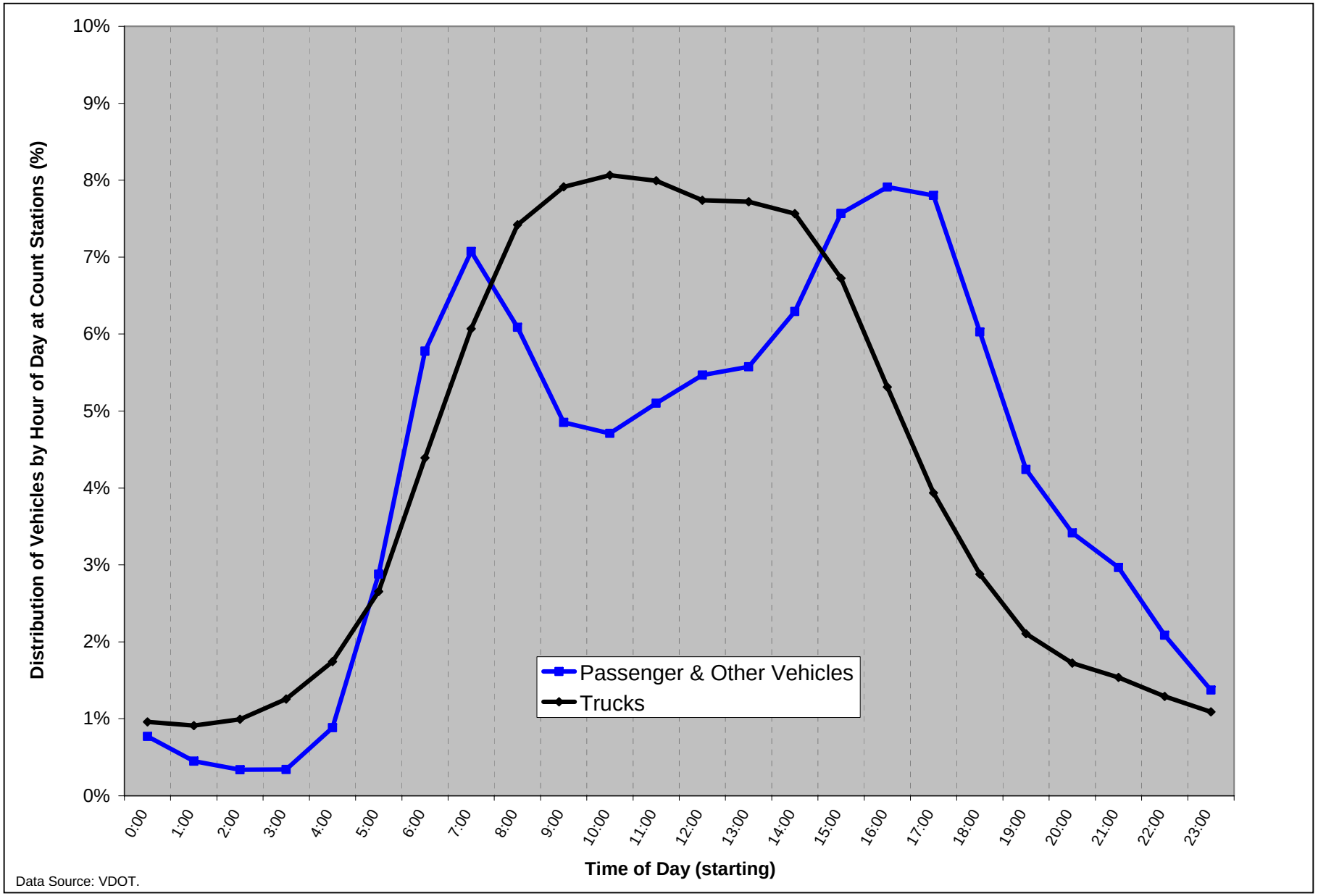
Figure 15 on page 88 shows the average distribution of vehicle flows per hour for trucks and all other vehicles at permanent count stations throughout Hampton Roads in 2005. While passenger and other vehicles have pronounced peaking characteristics between 6 am and 9 am in the morning and 3 pm and 6 pm in the afternoon, trucks use the roadways at different times. The peak travel time for trucks occurs as a plateau between 8 am and 3 pm, with 47% of all truck travel in the region occurring during this time period. This allows most trucks to avoid traveling during the most congested periods of the day. However, 34% of all truck travel in Hampton Roads occurred between 6 am and 9 am in the morning or 3 pm and 6 pm in the afternoon, further increasing congestion that is occurring during the peak travel periods.

TABLE 15 – Overheight Vehicles Stopped, Measured, and Turned Around at Hampton Roads Tunnels, 2005

Facility	Eastbound	Westbound
Hampton Roads Bridge-Tunnel	458 (including 22 at North Island)	13,775 (including 1,332 at South Island)
Downtown Tunnel	1107	3923
Midtown Tunnel	263	461
Monitor-Merrimac Memorial Bridge-Tunnel	0	0

Data source: VDOT.

FIGURE 15 – Weekday Regional Average Hourly Traffic Distribution at VDOT Continuous Count Stations, 2005



Data Source: VDOT.

Truck Movements by Location

To determine locations throughout Hampton Roads with high volumes or percentages of trucks, vehicle classification data from VDOT's traffic montioring program was used. Vehicle classification data was available at approximately 375 locations on the Hampton Roads Congestion Management Process roadway network. The most recent available data was used, which for all 375 locations was from between 2003 and 2005. Four factors were analyzed at each of these locations:

- Daily truck volumes
- Daily truck percentages
- Afternoon peak hour truck volumes
- Afternoon peak hour truck percentage

Appendix G contains truck volume and percentage data for each of the 375 locations throughout the region with vehicle classification data.

Daily Truck Volumes

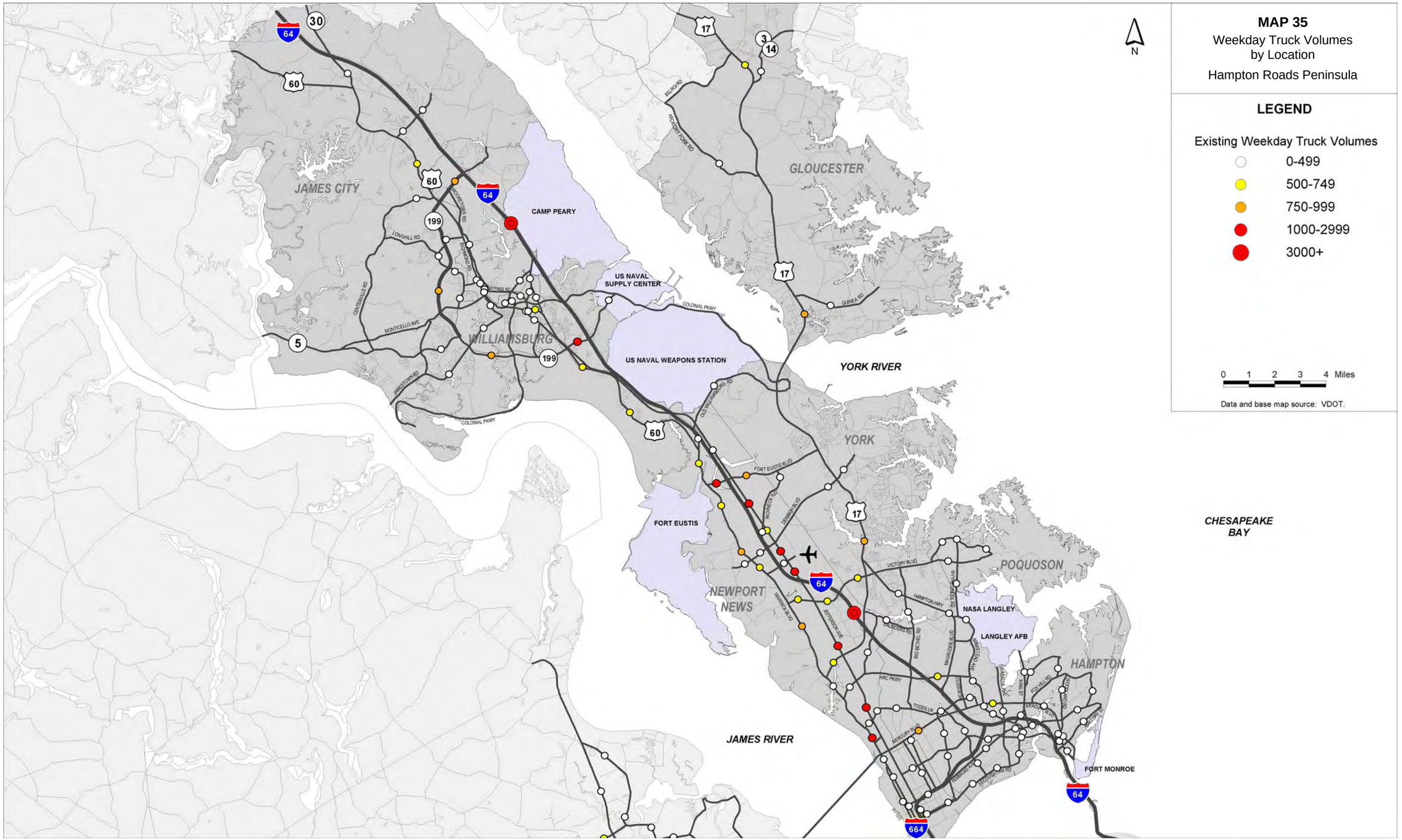
Maps 35 and 36 on pages 90 and 91 show the weekday truck volume at locations throughout the region with vehicle classification count data available.

Table 16 includes locations that had vehicle classification count data available with a high volume of trucks, which are defined as locations with at least 1,000 trucks each weekday. 44 locations throughout the region met this threshold. Not surprisingly, the locations with the highest volume of trucks were on the Interstate system, with I-64 between J Clyde Morris Boulevard and Oyster Point Road carrying the most trucks at over 7,700 trucks per weekday. It is likely that many more locations, particularly on the Interstate system, also meet this threshold but do not have vehicle classification count data available.

TABLE 16 – Locations with a High Volume of Trucks

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXSITING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %
NN	I-64	OYSTER POINT RD	J CLYDE MORRIS BLVD	7,735	6.1%
CHES	I-64	MILITARY HWY	I-264&664	7,494	9.6%
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	6,990	10.0%
YC	I-64	ROUTE 199/646	ROUTE 143	6,872	12.8%
NOR/VB	I-64	I-264	INDIAN RIVER RD	4,662	3.1%
SUF	I-664	WESTERN FWY	COLLEGE DR	4,552	8.1%
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	3,885	1.9%
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	3,804	2.8%
SH	ROUTE 58	BUS 58 EAST OF COURTLAND	BUS 58 WEST OF FRANKLIN	3,800	19.0%
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	3,614	5.4%
CHES	I-464	FREEMAN AVE	POINDEXTER ST	2,551	5.0%
SUS	ROUTE 460	WAKEFIELD CL	SOUTHAMPTON CL	2,300	24.5%
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	2,272	8.3%
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	1,979	6.7%
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	1,934	4.5%
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	1,927	4.7%
CHES	DOMINION BLVD	CEDAR RD	BAINBRIDGE BLVD	1,837	6.1%
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	1,829	18.2%
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	1,753	3.2%
IW/SUF	ROUTE 258	ROUTE 58	UNION CAMP DR (RTE 656)	1,716	43.2%
NOR	BRAMBLETON AVE	PARK AVE	I-264	1,714	3.6%
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	1,703	4.0%
PORT	WESTERN FWY	CEDAR LN	MLK FWY	1,702	5.6%
NN	JEFFERSON AVE	BLAND BLVD	I-64	1,686	1.9%
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	1,614	4.0%
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	1,557	5.3%
IW	BREWER'S NECK BLVD	RTE 10 & 32 (BENN'S CHURCH)	RTE 17	1,476	6.0%
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	1,432	12.3%
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	VIRGINIA BEACH CL	1,356	16.2%
NN	JEFFERSON AVE	FORT EUSTIS BLVD	ATKINSON BLVD	1,286	3.5%
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	1,144	1.7%
IW	CARROLLTON BLVD/JAMES RIVER BR	RTE 258	NEWPORT NEWS CL	1,143	3.8%
NN	WARWICK BLVD	MAIN ST	MERCURY BLVD	1,141	3.9%
CHES/SUF	PUGHSVILLE RD	TOWN POINT RD	I-664	1,130	12.8%
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	1,129	3.2%
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	1,107	3.9%
NOR	MILITARY HWY	VA BEACH BLVD	PRIN ANNE RD/NORTHAMPTON BLVD	1,098	2.0%
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	1,074	4.3%
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	1,057	9.8%
NN	JEFFERSON AVE	MIDDLE GROUND BLVD	J CLYDE MORRIS BLVD	1,051	1.8%
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	GALLBUSH RD	1,046	4.9%
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	1,042	1.7%
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	1,025	2.5%
NOR	MILITARY HWY	VA BEACH CL	I-264	1,000	1.9%

Table only includes locations with vehicle classification data collected by VDOT. Route 58 and Route 460 locations are outside of the Hampton Roads MPO boundary.
Data sources: VDOT, CBBT.


JAMES CITY
CAMP PEARY
US NAVAL SUPPLY CENTER
US NAVAL WEAPONS STATION
WILLIAMSBURG
GLOUCESTER
YORK
YORK RIVER
FORT EUSTIS
NEWPORT NEWS
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
FORT MONROE
JAMES RIVER
CHESAPEAKE BAY
30
64
60
199
5
17
3
14
664
N
MAP 35
Weekday Truck Volumes
by Location
Hampton Roads Peninsula
LEGEND
Existing Weekday Truck Volumes
0-499
500-749
750-999
1000-2999
3000+
0 1 2 3 4 Miles
Data and base map source: VDOT.

MAP 36

Weekday Truck Volumes
by Location

Southside Hampton Roads

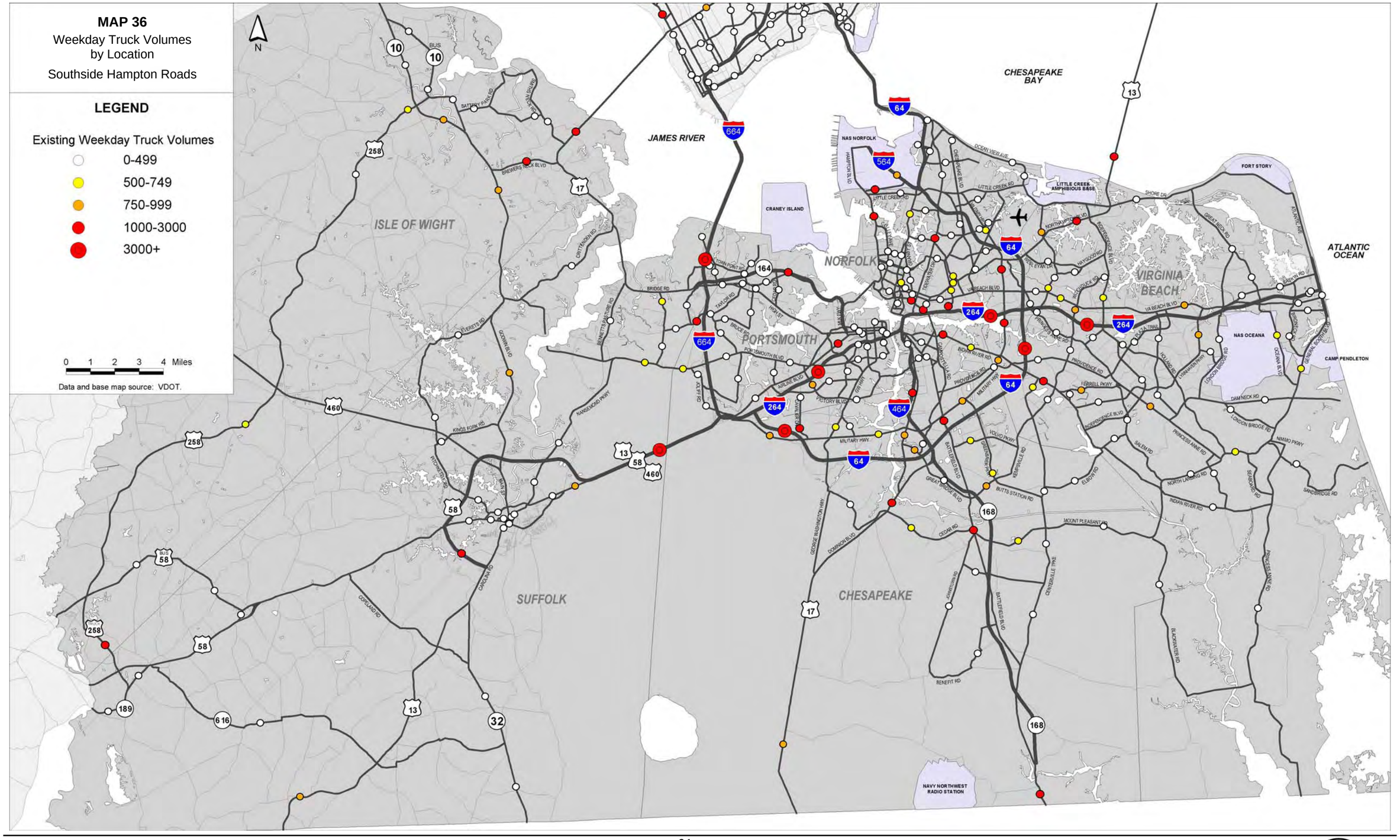
LEGEND

Existing Weekday Truck Volumes

- 0-499
- 500-749
- 750-999
- 1000-3000
- 3000+

0 1 2 3 4 Miles

Data and base map source: VDOT.



Daily Truck Percentages

Maps 37 and 38 on pages 93 and 94 show the weekday truck percentage at classification count locations throughout the region. Among the 375 regional locations, the median daily truck percentage was 1.8%.

Table 17 includes locations with a high daily percentage of trucks, which are defined as locations with at least 8% of all vehicles being trucks each weekday. 27 locations met this threshold, and not surprisingly most of the locations with the highest daily percentage of trucks were located in the rural portions of Hampton Roads. 15 of these 27 locations were either in Suffolk or Isle of Wight County. Route 258 south of the International Paper Plant in Isle of Wight County had by far the highest truck percentage in Hampton Roads with 43% trucks.

Thirteen locations with classification count data available met both the high daily truck volume and high daily truck percentage criteria. They are:

- Route 258 in Isle of Wight/Suffolk
- Route 460 in Sussex County
- Route 58 in Southampton County
- Southwest Suffolk Bypass
- Chesapeake Bay Bridge-Tunnel
- I-64 in York County between Route 199 and Route 143
- Pughsville Road in Chesapeake/Suffolk
- Cavalier Blvd in Chesapeake
- Route 13/58/460 west of Bower's Hill
- Turnpike Road southwest of County Street
- I-64 in Chesapeake between Military Hwy and I-264/I-664
- Ballentine Blvd between I-264 and Virginia Beach Blvd
- I-664 in Suffolk between Western Freeway and College Drive

It is likely other locations throughout the region also meets both these criteria but do not have classification count data available, particularly on rural portions of the Interstate system.

TABLE 17 – Locations with a High Percentage of Trucks

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXSITING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %
IW/SUF	ROUTE 258	ROUTE 58	UNION CAMP DR (RTE 656)	3,972	1,716	43.2%
SUS	ROUTE 460	WAKEFIELD CL	SOUTHAMPTON CL	9,375	2,300	24.5%
SH	ROUTE 58	BUS 58 EAST OF COURTLAND	BUS 58 WEST OF FRANKLIN	19,953	3,800	19.0%
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	10,031	1,829	18.2%
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	2,161	373	17.3%
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	VIRGINIA BEACH CL	8,370	1,356	16.2%
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	2,067	335	16.2%
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	5,229	801	15.3%
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	5,963	770	12.9%
YC	I-64	ROUTE 199/646	ROUTE 143	53,494	6,872	12.8%
CHES/SUF	PUGHSVILLE RD	TOWN POINT RD	I-664	8,832	1,130	12.8%
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	11,681	1,432	12.3%
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	5,333	589	11.0%
SUF	ROUTE 189 (IN HOLLAND)	BUS RTE 58 (RURITAN BLVD)	RTE 58 (SOUTH OF HOLLAND)	768	78	10.2%
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	69,801	6,990	10.0%
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	10,781	1,057	9.8%
CHES	I-64	MILITARY HWY	I-264&664	78,097	7,494	9.6%
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	9,528	898	9.4%
CHES	MILITARY HWY	AIRLINE BLVD	I-64	8,866	829	9.4%
SUF	CRITTENDEN RD	KINGS HWY	BRIDGE RD (RTE 17)	3,381	310	9.2%
CHES	BLACKWATER RD	VIRGINIA BEACH CL	FENTRESS AIRFIELD RD	3,045	255	8.4%
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	27,525	2,272	8.3%
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	11,052	913	8.3%
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	WCL SMITHFIELD	5,693	469	8.2%
SUF	CAROLINA RD	RTE 675	BABBTOWN RD (RTE 759)	4,257	350	8.2%
SUF	CAROLINA RD	NC STATE LINE	RTE 642	3,676	302	8.2%
SUF	I-664	WESTERN FWY	COLLEGE DR	55,876	4,552	8.1%

Table only includes locations with vehicle classification data collected by VDOT. Route 58 and Route 460 locations are outside of the Hampton Roads MPO boundary.
Data sources: VDOT, CBBT.

MAP 37
Weekday Truck Percentages
by Location
Hampton Roads Peninsula

LEGEND

Existing Weekday Truck Percentage

- 0 - 3.9%
- 4.0 - 5.9%
- 6.0 - 7.9%
- 8.0% - 14.9%
- 15.0% +

0 1 2 3 4 Miles

Data and base map source: VDOT.

N

JAMES CITY
CAMP PEARY
US NAVAL SUPPLY CENTER
US NAVAL WEAPONS STATION
WILLIAMSBURG
GLOUCESTER
YORK RIVER
YORK
FORT EUSTIS
NEWPORT NEWS
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
FORT MONROE
JAMES RIVER
CHESAPEAKE BAY

MAP 38

Weekday Truck Percentages
by Location

Southside Hampton Roads

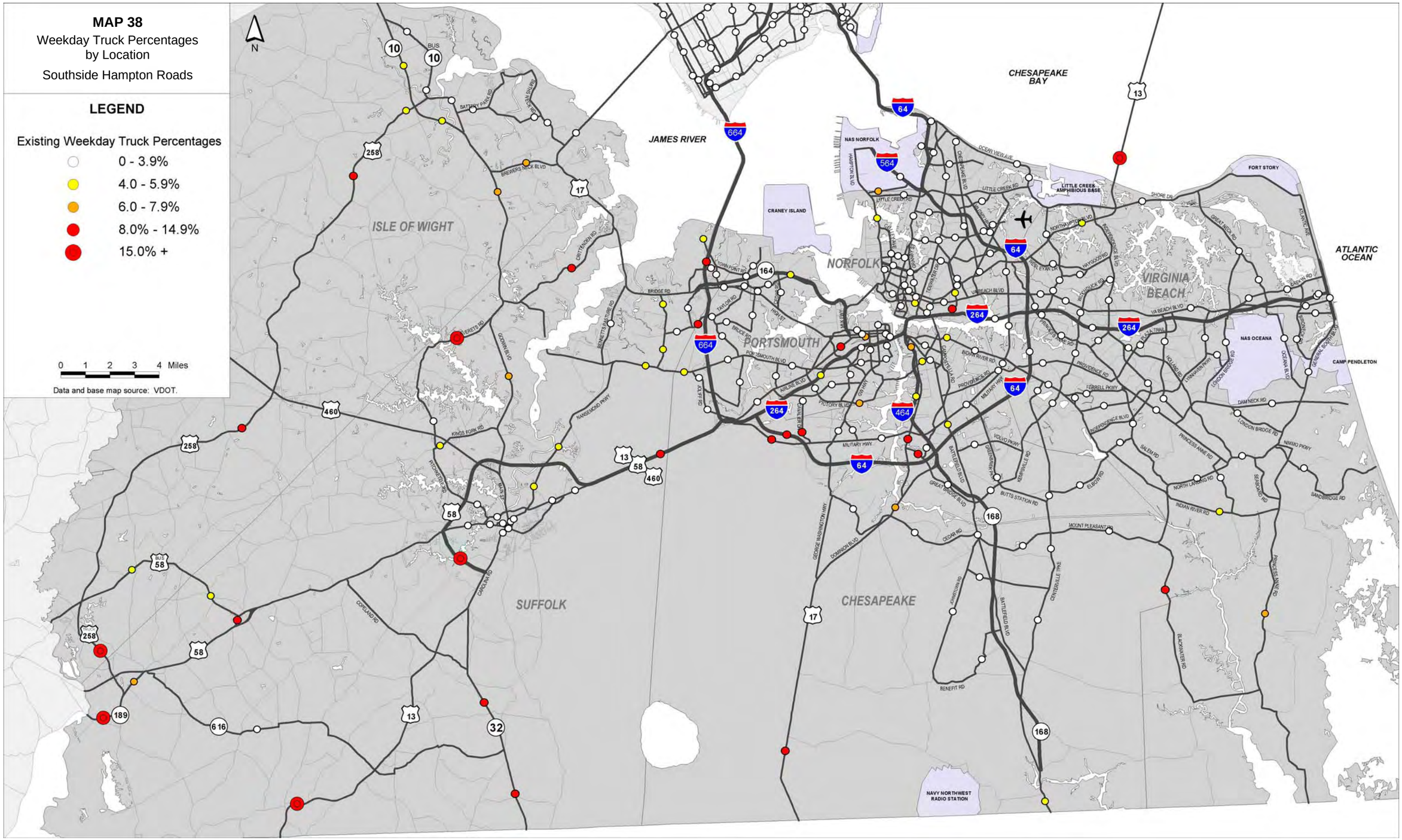
LEGEND

Existing Weekday Truck Percentages

- 0 - 3.9%
- 4.0 - 5.9%
- 6.0 - 7.9%
- 8.0% - 14.9%
- 15.0% +

0 1 2 3 4 Miles

Data and base map source: VDOT.



Afternoon Peak Hour Truck Volumes

Although most of the truck traffic in Hampton Roads occurs during the middle of the day or during the overnight hours, 34% of all truck traffic in Hampton Roads occurs during the morning and afternoon peak travel periods. About 16% of all truck travel in Hampton Roads occurs between 3 pm and 6 pm. Any of this truck traffic that occurs in the urban areas of the region likely occurs in congested conditions, which not only contributes to the congestion problems but also costs time and money to the businesses that depend on those trucks.

Hampton Boulevard near Norfolk International Terminals

Maps 39 and 40 on pages 96 and 97 show the truck volumes at classification count locations during the afternoon peak hour at each facility. Roadways that are congested during the afternoon peak hour are also shown on the maps.

Table 18 includes locations that had vehicle classification count data available with a high volume of trucks during the afternoon peak hour. This is defined as locations with at least 100 trucks during the afternoon peak hour. 20 locations throughout the region met this threshold. Not surprisingly, the locations with the highest volume of trucks were on the Interstate system, with I-64 near Bower's Hill carrying the most trucks with 389 trucks during the afternoon peak hour. It is likely that many more locations, particularly on the Interstate system, also meet this threshold but do not have vehicle classification count data available.

TABLE 18 – Locations with a High Volume of Trucks During the Afternoon Peak Hour

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %
CHES	I-64	MILITARY HWY	I-264&664	**389**	**5.7%**
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	**341**	**6.1%**
YC	I-64	ROUTE 199/646	ROUTE 143	**331**	**8.3%**
NN	I-64	OYSTER POINT RD	J CLYDE MORRIS BLVD	**296**	**3.0%**
SUF	I-664	WESTERN FWY	COLLEGE DR	**285**	**5.4%**
NOR/VB	I-64	I-264	INDIAN RIVER RD	**270**	**2.4%**
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	**208**	**1.3%**
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	**194**	**3.6%**
SH	ROUTE 58	BUS 58 EAST OF COURTLAND	BUS 58 WEST OF FRANKLIN	**177**	**11.8%**
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	**174**	**8.0%**
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	**168**	**5.3%**
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	**131**	**2.8%**
IW/SUF	ROUTE 258	ROUTE 58	UNION CAMP DR (RTE 656)	**130**	**40.9%**
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	**129**	**1.2%**
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	**128**	**5.3%**
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	**116**	**3.1%**
NOR	BRAMBLETON AVE	PARK AVE	I-264	**116**	**2.9%**
CHES	I-464	FREEMAN AVE	POINDEXTER ST	**105**	**2.5%**
SUS	ROUTE 460	WAKEFIELD CL	SOUTHAMPTON CL	**103**	**13.7%**
PORT	WESTERN FWY	CEDAR LN	MLK FWY	**100**	**3.8%**

Table only includes locations with vehicle classification data collected by VDOT. Route 58 and Route 460 locations are outside of the Hampton Roads MPO boundary.
Data sources: VDOT, CBBT.

MAP 39

PM Peak Hour Truck Volumes by Location

Hampton Roads Peninsula

N

LEGEND

Existing Weekday PM Peak Hour Truck Volumes

- 0-49
- 50-74
- 75-99
- 100-299
- 300+

Low to Moderate Congestion (LOS A - D) During the PM Peak Hour

Severely Congested Roadways (LOS E/F) During the PM Peak Hour

0 1 2 3 4 Miles

Truck data and base map source: VDOT.
Congestion data source: HRPDC Congestion Management System.
Congestion data reflects conditions as of the end of 2003.

JAMES CITY
CAMP PEARY
US NAVAL SUPPLY CENTER
US NAVAL WEAPONS STATION
WILLIAMSBURG
GLOUCESTER
YORK RIVER
YORK
FORT EUSTIS
NEWPORT NEWS
JAMES RIVER
CHESAPEAKE BAY
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
FORT MONROE

MAP 40

PM Peak Hour Truck Volumes by Location

Southside Hampton Roads

LEGEND

Existing Weekday PM Peak Hour Truck Volumes

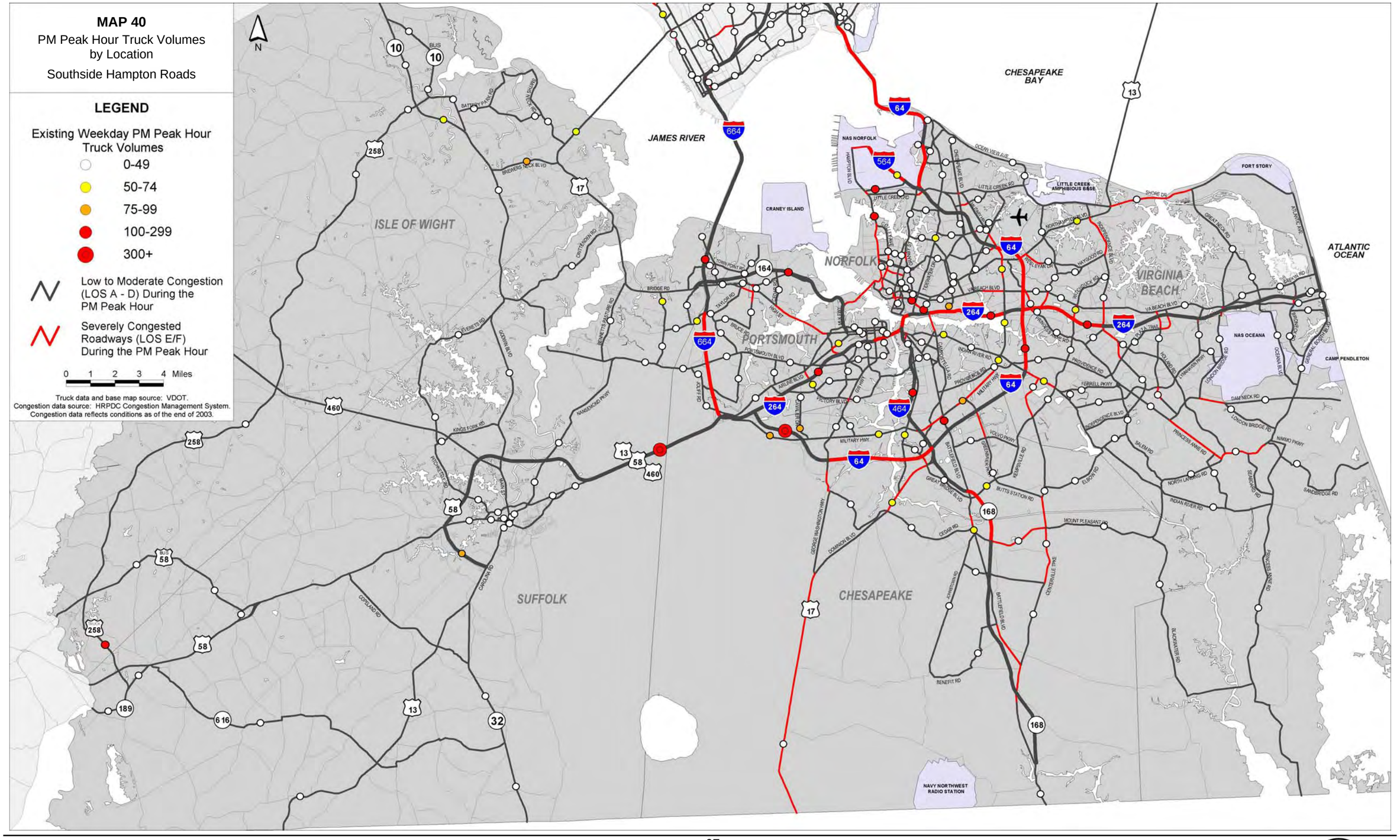
- 0-49
- 50-74
- 75-99
- 100-299
- 300+

Low to Moderate Congestion (LOS A - D) During the PM Peak Hour

Severely Congested Roadways (LOS E/F) During the PM Peak Hour

0 1 2 3 4 Miles

Truck data and base map source: VDOT.
Congestion data source: HRPDC Congestion Management System.
Congestion data reflects conditions as of the end of 2003.



Afternoon Peak Hour Truck Percentages

Maps 41 and 42 on pages 99 and 100 show the truck percentage during the afternoon peak hour at classification count locations throughout the region. Among the 375 regional locations, the median truck percentage during the afternoon peak hour was 1.2%.

Table 19 includes locations with a high percentage of trucks during the afternoon peak hour, which are defined as locations with at least 8% of all vehicles being trucks during that peak hour. 14 locations met this threshold, and not surprisingly most of the locations were located in the rural portions of Hampton Roads. Route 258 south of the International Paper Plant in Isle of Wight County, which had the highest daily percentage of trucks, also had by far the highest truck percentage during the afternoon peak hour in Hampton Roads with 41% trucks.

Five locations with classification count data available met both the high truck volume and high truck percentage criteria during the afternoon peak hour. They are:

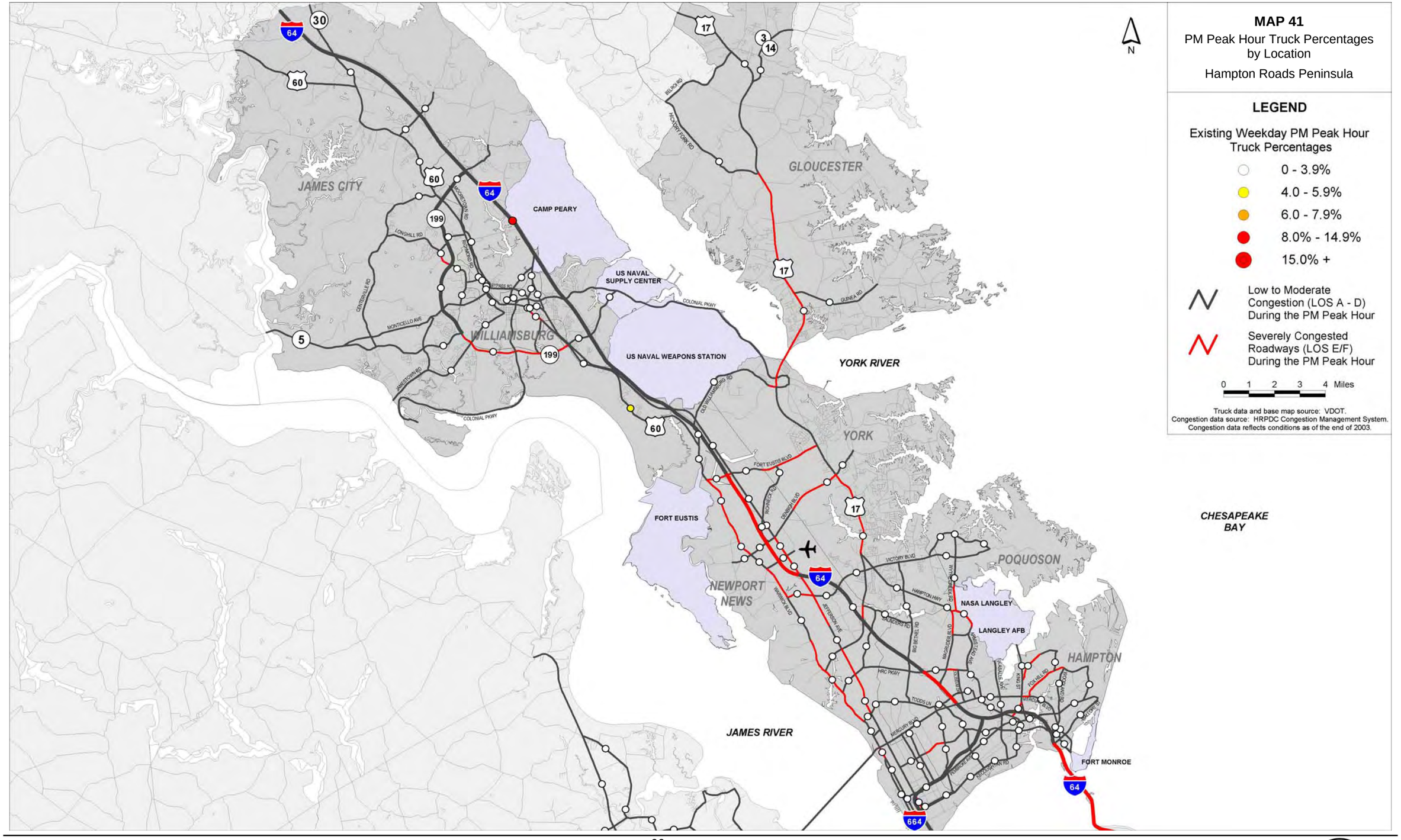
- Route 258 in Isle of Wight/Suffolk
- Route 460 in Sussex County
- Route 58 in Southampton County
- I-64 in York County between Route 199 and Route 143
- International Terminal Blvd

As with the daily truck percentages, it is also likely that other locations throughout the region meet both these criteria but do not have classification count data available, particularly on rural portions of the Interstate system.

TABLE 19 – Locations with a High Percentage of Trucks During the Afternoon Peak Hour

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %
IW/SUF	ROUTE 258	ROUTE 58	UNION CAMP DR (RTE 656)	130	40.9%
SUS	ROUTE 460	WAKEFIELD CL	SOUTHAMPTON CL	103	13.7%
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	21	11.9%
SH	ROUTE 58	BUS 58 EAST OF COURTLAND	BUS 58 WEST OF FRANKLIN	177	11.8%
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	96	11.5%
SUF	ROUTE 189 (IN HOLLAND)	BUS RTE 58 (RURITAN BLVD)	RTE 58 (SOUTH OF HOLLAND)	7	10.9%
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	19	9.3%
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	91	8.8%
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	36	8.7%
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	73	8.4%
CHES/SUF	PUGHSVILLE RD	TOWN POINT RD	I-664	63	8.4%
YC	I-64	ROUTE 199/646	ROUTE 143	331	8.3%
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	174	8.0%
SUF	CAROLINA RD	RTE 675	BABBTOWN RD (RTE 759)	31	8.0%

Table only includes locations with vehicle classification data collected by VDOT. Route 58 and Route 460 locations are outside of the Hampton Roads MPO boundary.
Data sources: VDOT, CBBT.


JAMES CITY
CAMP PEARY
US NAVAL SUPPLY CENTER
US NAVAL WEAPONS STATION
WILLIAMSBURG
GLOUCESTER
YORK RIVER
YORK
FORT EUSTIS
NEWPORT NEWS
JAMES RIVER
CHESAPEAKE BAY
POQUOSON
NASA LANGLEY
LANGLEY AFB
HAMPTON
FORT MONROE
30
64
60
199
5
17
3
14
N
MAP 41
PM Peak Hour Truck Percentages by Location
Hampton Roads Peninsula
LEGEND
Existing Weekday PM Peak Hour Truck Percentages
0 - 3.9%
4.0 - 5.9%
6.0 - 7.9%
8.0% - 14.9%
15.0% +
Low to Moderate Congestion (LOS A - D) During the PM Peak Hour
Severely Congested Roadways (LOS E/F) During the PM Peak Hour
0 1 2 3 4 Miles
Truck data and base map source: VDOT.
Congestion data source: HRPDC Congestion Management System.
Congestion data reflects conditions as of the end of 2003.

MAP 42

PM Peak Hour Truck Percentages by Location

Southside Hampton Roads

LEGEND

Existing Weekday PM Peak Hour Truck Percentages

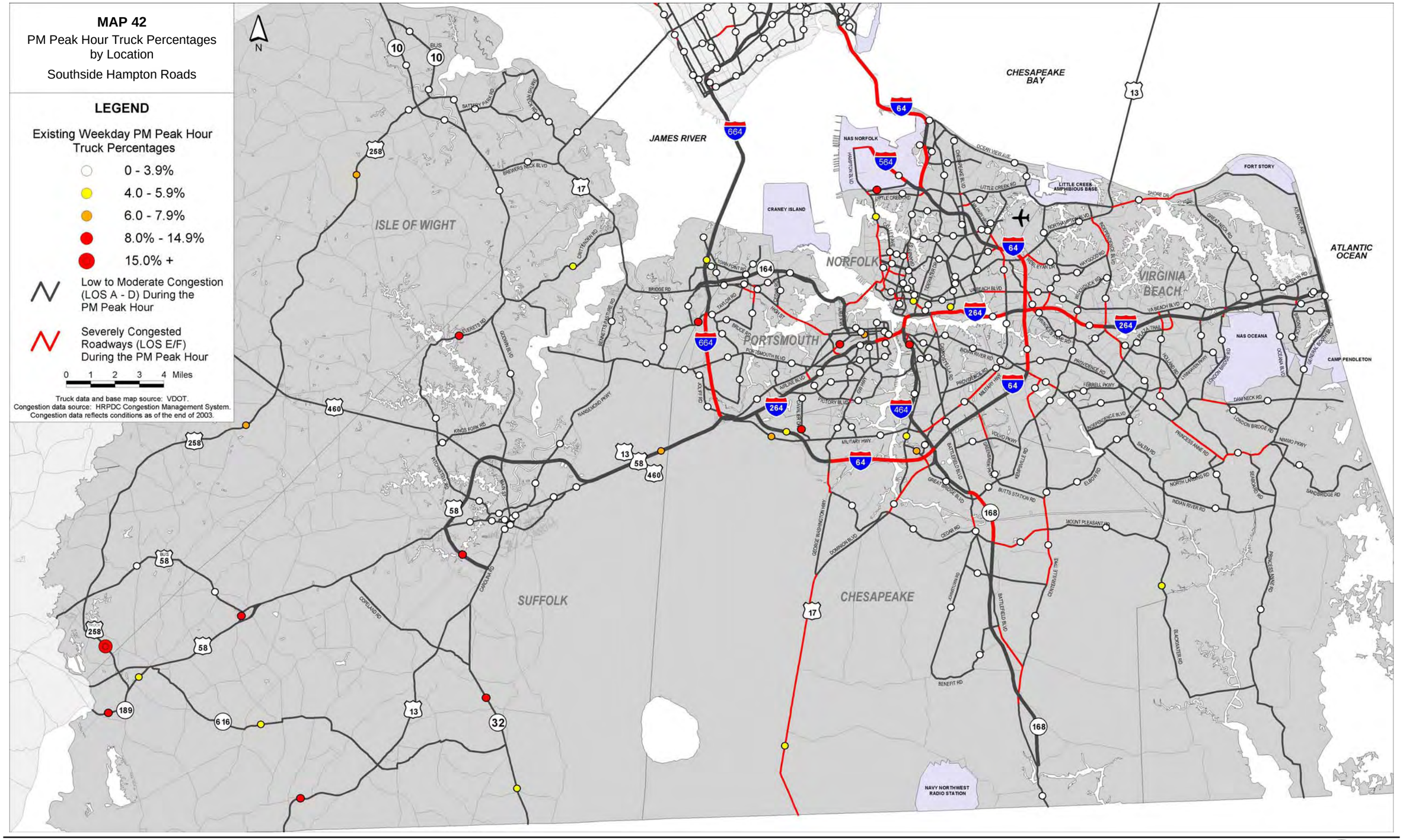
- 0 - 3.9%
- 4.0 - 5.9%
- 6.0 - 7.9%
- 8.0% - 14.9%
- 15.0% +

Low to Moderate Congestion (LOS A - D) During the PM Peak Hour

Severely Congested Roadways (LOS E/F) During the PM Peak Hour

0 1 2 3 4 Miles

Truck data and base map source: VDOT.
Congestion data source: HRPDC Congestion Management System.
Congestion data reflects conditions as of the end of 2003.



Freight Bottlenecks

According to FHWA, over 240 million hours of truck delay occurred nationwide in 2004 due to freight bottlenecks. These bottlenecks included interchanges, lane drops, steep grades, and signalized intersections.

In Hampton Roads, freight bottlenecks occur when the movement of freight is hindered by congested conditions during the peak travel periods. About 16% of all truck travel in the region occurs between 3 pm and 6 pm, and particularly in the urban areas this travel is likely occurring in congested conditions. For this analysis, a freight bottleneck was any location that:

1A) Had a high volume of trucks (>100) during the afternoon peak hour

OR

1B) Had a high percentage of trucks (>8%) during the afternoon peak hour

AND

2) Was congested during the afternoon peak hour according to the most recent Hampton Roads Congestion Management System report[9]. Congested locations are defined as those have a level-of-service of E or F during the afternoon peak hour.

In addition, locations without classification count data but that are congested and likely meet the high truck volume threshold are also included on the list of freight bottlenecks.

Map 43 on page 102 shows the locations of freight bottlenecks throughout Hampton Roads. These locations include:

- Hampton Boulevard/Midtown Tunnel
- Jefferson Avenue between Main St and Denbigh Blvd
- Brambleton Avenue in Downtown Norfolk
- Turnpike Rd between MLK Fwy and Frederick Rd
- I-64 at the High Rise Bridge
- I-64 between Fort Eustis Blvd and Jefferson Ave

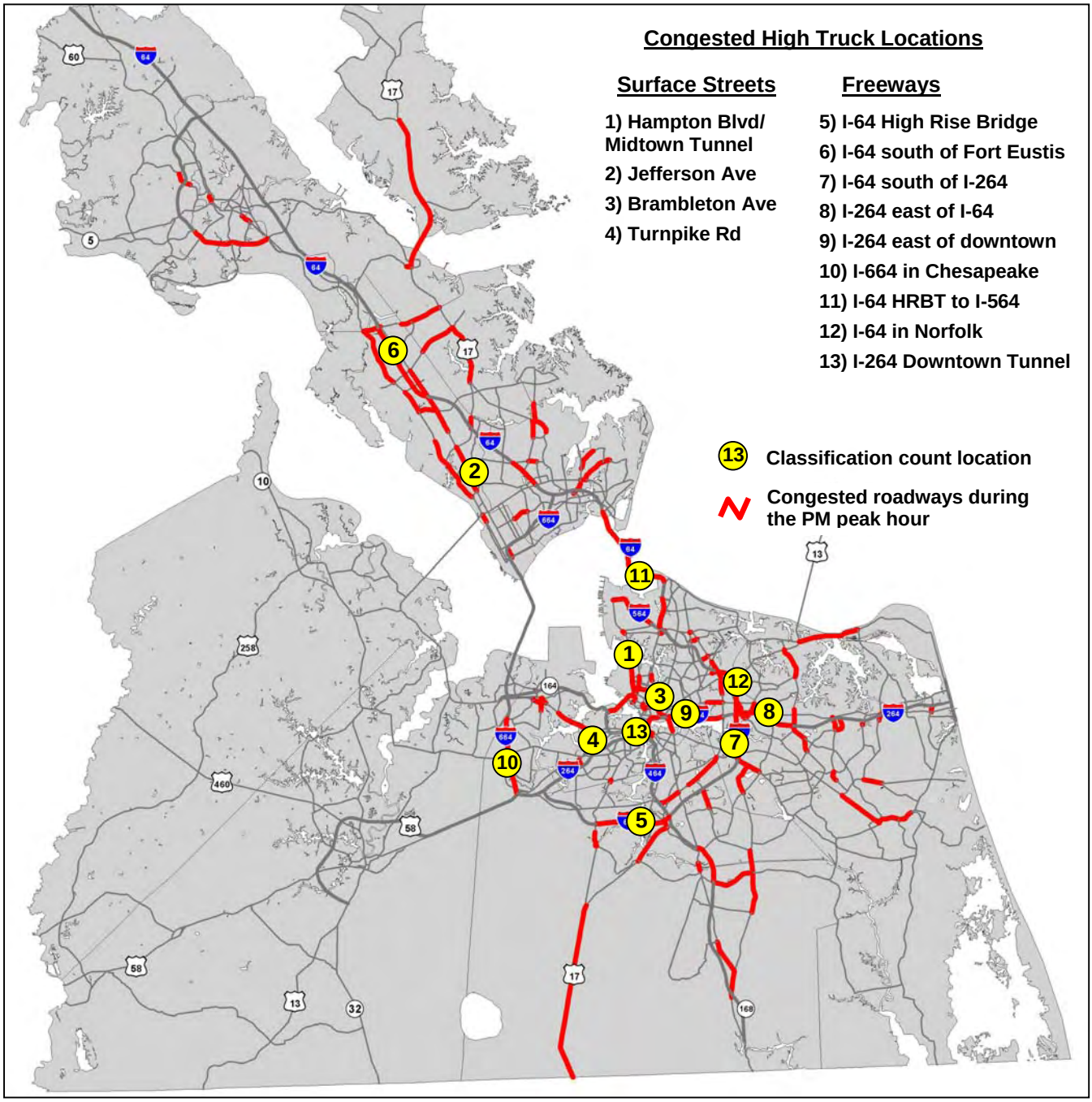
The Downtown Tunnel is a freight bottleneck during the peak travel periods.

- I-64 between I-264 and Indian River Rd
- I-264 between I-64 and Independence Blvd
- I-264 between Downtown Norfolk and Military Hwy
- I-664 between Bower's Hill and Pughsville Rd
- I-64 at the Hampton Roads Bridge-Tunnel and south to I-564
- I-64 between Military Hwy and I-264
- I-264 at the Downtown Tunnel

Most of the freight bottlenecks in the region are on the Interstate system. However, Hampton Boulevard south of Norfolk International Terminals was the freight bottleneck with the highest volumes of trucks among surface streets in the region.

[9] HRPDC, "Hampton Roads Congestion Management System", April 2005.

MAP 43 – Freight Bottlenecks During the Afternoon Peak Period



Note: Truck volumes at Congested Locations #10-13 are estimated.
Data sources: VDOT, HRPDC.

FUTURE FREIGHT NEEDS

It is essential that the Hampton Roads region maintain its existing transportation systems and continues to make investments in freight infrastructure on a local, statewide, and regional level in order to remain economically competitive and improve overall mobility. This section of the report will identify several future freight needs and strategies to enhance freight movement to, from, and within Hampton Roads.

Future Needs for the Port of Hampton Roads

The following list of projects[10] have been identified as the key to success and competitive future for the Port of Hampton Roads:

- Completion of the 50-foot inbound element and starting of the 55-foot outbound element of the congressionally authorized 55-foot channel project. This project will enhance the general cargo and coal loading facilities' ability to attract larger mega-sized vessels in the future.
- Development of a marine terminal on Craney Island to maximize the port-wide cargo handling capability.
- Completing the project to double the size of Norfolk International Terminals as well as improvements to other cargo terminals to accommodate future cargo demand.
- Continue to update and replace container cranes and deteriorating equipment in order to remain competitive and accommodate large vessels.
- Building a port-wide security infrastructure that will protect the Port and surrounding areas as well as the general public.
- Construction of major road[11] and rail projects to support the transportation infrastructure for freight in Hampton Roads such as: (1) Third Bridge Tunnel Crossing that connects to the Craney Island terminal, (2) Improvements to US Route 460 to handle increased freight and general travel, (3) Improve existing rail lines to add capacity, (4) better intermodal connections between NIT, Naval Station Norfolk, Norfolk Southern rail lines, and I-64.
- Development and completion of a new Intermodal Park about 25-35 miles from the marine terminals in Norfolk along Route 460 or Route 58 to accommodate the anticipated growth in container cargo and to move goods efficiently in and out of the region.

Future Needs for the Norfolk International Airport

The latest Master Plan Update for Norfolk International Airport was completed in 1995. At that time, it was stated that air cargo facilities were currently at capacity and needed to be expanded in order to keep pace with the strong growth projections. In the 1995 Plan, 4 Phases were identified with many cargo improvements:

Phase I (1995-2000)
Satisfy current requirements for terminal building expansion, add parking garage, rehabilitate/ upgrade Runway 5/23 and expand support facilities.

Phase II (2001-2005)
Develop parallel runway, construction of Concourse C and continue expansion of support facilities including air cargo.

Phase III (2006-2015)
Continue expansion of the parking garage facilities, expand cargo areas and develop a new general aviation area.

Phase IV (2016-2030)
Construct a remote long-term garage and continue expansion of cargo facilities.

A new 2005 Master Plan Update is currently being developed for Norfolk International Airport.

Future Needs for the Rail Services[12]

Heartland Corridor Project

As a part of the new SAFETEA-LU, the Heartland Corridor Project will receive approximately $140 million in federal assistance of the total estimated project cost of $322 million. The Heartland Corridor Project consists of a series of rail projects along Norfolk Southern's existing rail line, including raising clearances in 30 tunnels to handle double stack trains and modifications to 24 bridges and obstructions, from Hampton

[10] Hampton Roads Maritime Association, "Port of Hampton Roads Annual 2005", 2005.

[11] Third Bridge Tunnel Crossing and US Route 460 projects are not currently in the Draft 2030 Plan.

[12] Many of the following rail improvements are included as recommendations in the: "Rail Enhancement Fund", Virginia Department of Rail and Public Transportation, 2005.

Roads to Chicago. The project also includes the construction of intermodal facilities in Roanoke, VA and Columbus, OH. Completion of the project is expected to cut a day and a half and 235 miles off the trip to Chicago, which will put Hampton Roads in the same time frame as it currently takes rail boxes to travel from the Port of New York to Chicago.

SAFETEA-LU earmarked $95 million toward the Central Corridor double stack initiative portion of the Heartland Corridor project. Norfolk Southern is investing an additional $50 million for the Central Corridor initiative and Ohio is contributing approximately $800,000. Efforts are now being made to secure a Virginia grant for $22.35 million as well as funding for the intermodal facility in Prichard, WV to complete the Central Corridor portion of the project. Another component of the project is the Route 164/I-664 rail relocation. This component received $15 million in federal assistance and is planned to receive $45 million in Virginia grants and rail enhancement funds to complete this rail relocation project at an estimated total cost of $60 million. The diversion of containerized cargo from regional highways to the Heartland Corridor rail line will help reduce highway congestion, improve highway safety, provide shippers cost-effective freight movement solutions and strengthen the economic vitality of the region.

Commonwealth Railway Line Purchase
It has been recommended to purchase approximately 12.5 miles of existing rail line from Norfolk Southern railway between Chesapeake and Suffolk.

APM/Maersk Terminals Rail Yard Expansion
This project would allow the new APM/Maersk facility to be upgraded to 6 tracks at the rail yard, which would double the capacity. This project would benefit the Hampton Roads region – the additional capacity will provide an alternative to freight movement by truck and allow growth for the Port of Hampton Roads.

Suffolk Connection from CSX to Commonwealth Railway
This project consists of constructing a connecting track line from the CSXT Portsmouth Subdivision to the Commonwealth Railway in Suffolk. This new connection will allow CSXT shippers direct access to the APM/Maersk marine container facility that is under construction in Portsmouth.

Portsmouth Subdivision Height Clearances
This project would clear overhead impediments on the Virginia portion of the Portsmouth Subdivision (rail line that runs between Portsmouth and Weldon, NC) to provide double stack freight service over a 560-mile market, connection Hampton Roads with Atlanta and other Southeast markets. Additional improvements to clear height restrictions between the VA/NC line and Atlanta would be funded by CSXT.

Intermodal Improvements – Crewe to Suffolk
This project would improve the connection with the Commonwealth Railway in Suffolk for daily train load movements of up to 120,000 containers annually in 2010. It would establish a block swap yard in Crew, Va (Nottoway County) and add two tracks at the auto loading/unloading facility in Poe, Va (Petersburg). Finally, this project would include adding one track and carload switching facility in Broadway Yard in Petersburg. This project would greatly benefit the town of Crewe, Va and provide additional capacity to/from Hampton Roads along the Heartland Corridor.

Double Stack Clearance Improvements for CSX
Another project that could also aid future Port growth is to make double stack clearance improvements along the CSX rail corridor from Newport News Marine Terminal to locations in the Midwest. Increasing the vertical clearances for double stack trains would allow freight to move more efficiently. A study would need to be done to determine feasibility and costs.

Future Needs for Highway

Map 44 on page 106 shows roadway improvements that are included in the draft 2030 Regional Transportation Plan that would significantly improve regional freight movement. These projects include:

- Widening I-64 on the Peninsula.
- Replacing an at-grade rail crossing on Hampton Boulevard at Norfolk International Terminals with a grade-separated crossing.
- Adding an additional tunnel at the Midtown Tunnel, and extending the MLK Freeway to a new interchange at I-264.
- Widening I-64 between I-464 and Battlefield Boulevard in Chesapeake.
- Widening Dominion Boulevard in Chesapeake.

Many planned projects that would benefit regional freight movement were excluded from the draft 2030 Regional Transportation Plan due to a lack of funding. In fact, of the thirteen regional freight bottlenecks shown in Map 43 on page 102, only four have any improvements included in the draft 2030 Regional Transportation Plan.

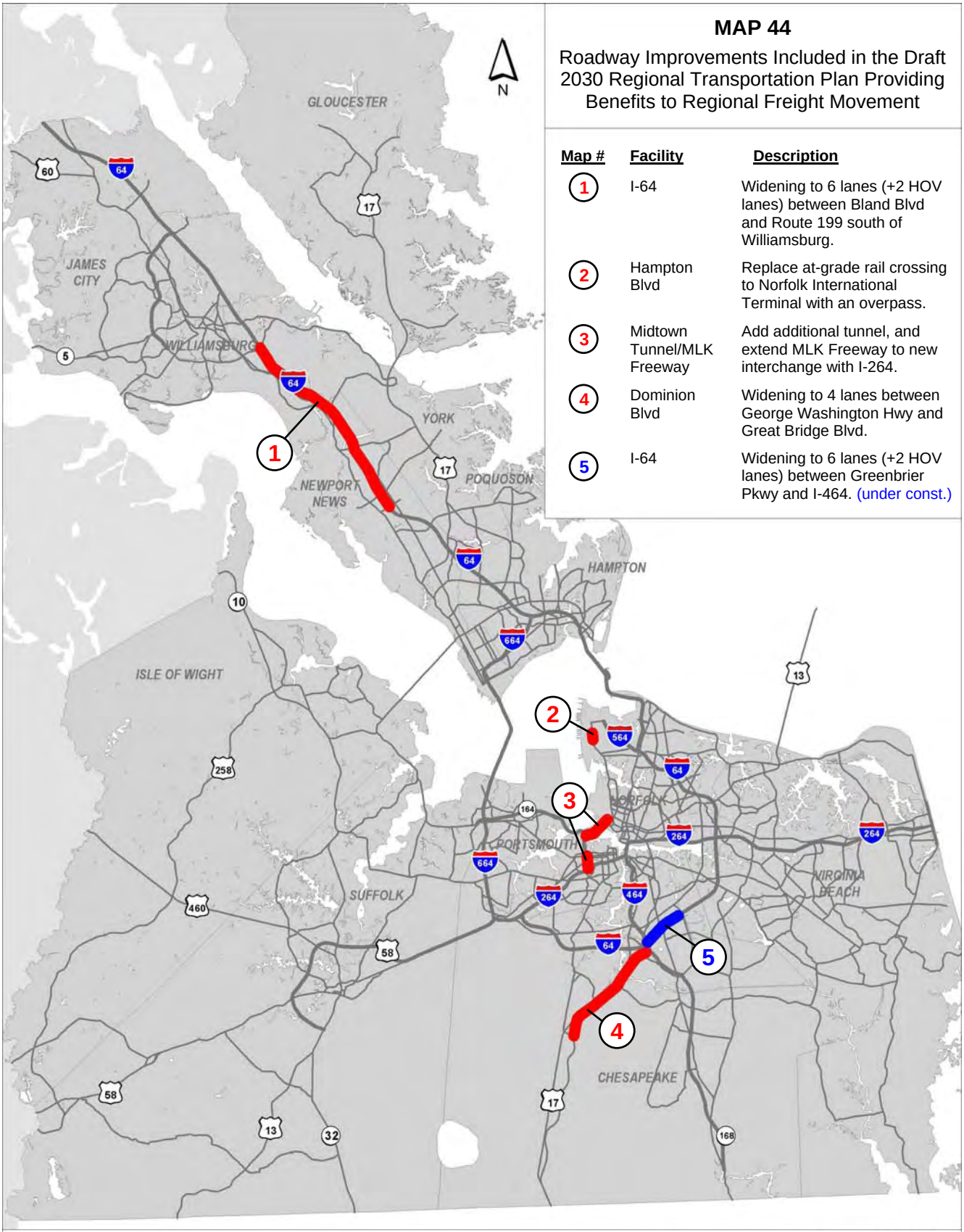
Foremost among these projects excluded from the draft 2030 Regional Transportation Plan is the Hampton Roads Third Crossing, which would provide better access to Norfolk International Terminals and the future terminal on Craney Island, as well as an alternative to the Hampton Roads Bridge-Tunnel (**Map 45**). Other similar projects excluded from the Regional Transportation Plan that would greatly enhance freight movement in Hampton Roads include upgrading Route 460 between Suffolk and Petersburg and widening I-64 in the vicinity of the High Rise Bridge.

MAP 45 – Existing and Future Transportation Facilities in the Craney Island Vicinity that are Critical to the Success of Future Freight Movement. Source: Virginia Port Authority

MAP 44

Roadway Improvements Included in the Draft 2030 Regional Transportation Plan Providing Benefits to Regional Freight Movement

Map #	Facility	Description
1	I-64	Widening to 6 lanes (+2 HOV lanes) between Bland Blvd and Route 199 south of Williamsburg.
2	Hampton Blvd	Replace at-grade rail crossing to Norfolk International Terminal with an overpass.
3	Midtown Tunnel/MLK Freeway	Add additional tunnel, and extend MLK Freeway to new interchange with I-264.
4	Dominion Blvd	Widening to 4 lanes between George Washington Hwy and Great Bridge Blvd.
5	I-64	Widening to 6 lanes (+2 HOV lanes) between Greenbrier Pkwy and I-464. (under const.)



Prepared by: Hampton Roads Planning District Commission, January 2007.
Base map source: VDOT.

SUMMARY

This document contains an extensive analysis of freight movement in and out of Hampton Roads. The next step in this study is to develop an action plan for implementing improvements that address freight issues in Hampton Roads. A summary of the key findings in this update of the Hampton Roads IMS Regional Freight Study is provided below:

Freight Facts, Trends, and Forecasts

- The evolution of container shipping has lowered the per-unit cost of transporting goods. It is more economical now to ship goods longer distances (i.e. China to U.S. East Coast Ports) since today's ships are bigger, faster, and equipped with more technology.
- Shipping goods worldwide via container costs only about 1% of retail prices. For example, a pair of shoes retailing for $45 cost about 34 cents to ship from China to U.S. A plasma TV retailing for $2,500 cost about $12.50 to ship from China to U.S.
- The Port of Virginia ranks 11th in U.S. foreign trade tonnage, carrying over 36 million short tons in 2005.
- In comparison to all ports in the U.S., the Port of Virginia ranked 6th in foreign trade by dollar value with $44.9 billion dollars worth of cargo moved in 2005.
- Bulk cargo at the Port of Hampton Roads has fallen significantly since the mid 90's, while general cargo has increased each year. The decline in bulk cargo is directly associated to the recent decline in coal. General cargo is projected to increase in future years with the container trade boom that is taking place, particularly with Asia.
- In comparison to ports on the U.S. East Coast, the Port of Virginia ranked 3rd for general cargo shipments with 15.9 million short tons in 2005.
- Clearly, the growth in general cargo is attributed to the growth in containerized cargo. Breakbulk shipments have remained relatively unchanged, while container cargo has increased at a rate of approximately 10% per year since 1982.
- The 6 largest container ports in the world are located in Pacific Asia, primarily in China. This underlines the importance of this region as the manufacturing center of the global economy.
- The Port of Los Angeles and the Port of Long Beach, which are located adjacent to one another in southern California, account for nearly 34% of all U.S. containerized cargo (2005). Five of the top six U.S. container ports are located on the U.S. West Coast. The Port of Hampton Roads is currently the 8th largest container port in the U.S. (2005).
- Containers have revolutionized the ability to trade cargo. U.S. West Coast Ports have experienced the most increases in containerized cargo since 1985 followed by U.S. East Coast Ports. With container imports increasing at a fast pace for U.S. West Coast Ports, it's only a matter of time before more bottlenecks emerge, either at the ports themselves or on the railroads or highways that connect them to the rest of the country. In order for continued U.S. container trade growth to occur, U.S. East Coast Ports, like Hampton Roads will be called upon to make capacity improvements and shoulder future growth.
- A majority of container imports to the U.S. are from Asian markets, particularly China. Since 1997, container imports from China rose from about 1.5 million TEUs to about 7.5 Million TEUs (2005).
- Since 1985, containerized cargo at the Port of Hampton Roads has grown 562% from 0.3 million annual TEUs to 1.98 million TEUs in 2005. As a result of the surge in world trade, particularly with Asian markets, containers are forecasted to double over the next 10 years from 2005 to 2015. By 2040, 10.56 million TEUs are expected to be transported through the Port of Hampton Roads, up a staggering 433% from 2005. Even with the additions of the new Maersk and Craney Island Marine Terminals, container demand will exceed port capacity by the year 2033.

- The predominant bulk cargo at the Port of Hampton Roads is coal. In the early 90's, the coal terminals in Hampton Roads loaded more than 50 percent of America's coal exports. Since the early 90's, coal loadings have decreased substantially from about 65 million tons to about 24 million tons in 2005, which is primarily the result of a large reduction in foreign exports.
- Air cargo at Norfolk International Airport has increased over 331% from approximately 16 million pounds to nearly 70 million pounds from 1980 to the late 1990s. More recently, however, air cargo activity has remained relatively unchanged. Despite Norfolk International Airport being the largest cargo airport in Hampton Roads, it ranks 80th in the U.S. in 2005 and comprises only about 0.1% of the total U.S. air cargo.
- Only passenger airlines cargo (belly cargo) is transported in and out of Newport News/Williamsburg International Airport. A small amount of passenger airline cargo is moved each year at the Newport News/ Williamsburg International Airport in comparison to the 5.2 million pounds moved (2005) at Norfolk International Airport.
- The heaviest rail densities are located along the Interstate 95 corridor, from the Port of Hampton Roads through Richmond, Lynchburg, and Roanoke, and many western portions of the state.
- Freight shipments to, from, and within Virginia via rail are expected to increase 48% from 158 million tons in 1998 to 234 million tons by 2020. The commodity value of those goods transported by rail is expected to increase by 174% from $19 billion dollars in 1998 to $52 billion dollars by 2020.

Military Freight

- The Port of Hampton Roads is one of fourteen strategic commercial ports specifically designated by the Department of Defense (DOD) and Maritime Administration (MARAD) to support major force deployments and military force build-up under one or more of our national defense contingency plans.
- Thirteen of the twenty-one Virginia principal military installation and port facilities are located in Hampton Roads, which verifies the importance of maintaining a strong transportation system to support military personnel and freight movement.
- Naval Station Norfolk is the top trip generator in the region handling approximately 68% of all truck trips made to/from military facilities in Hampton Roads.
- Truck travel comprises 3.3% of all vehicle-miles of travel in Hampton Roads. This amounts to over 1.3 million miles of truck travel each day throughout the region.

Commodity Flow Data

- North American trade with Hampton Roads is expected to increase nearly 150% for all modes (2004 to 2035).
- #1 Inbound Commodity by Tonnage – Coal (29.8 million tons)
- #1Outbound Commodity by Tonnage – Warehouse & Distribution Center/Drayage (8.9 million tons).
- #1 Inbound Commodity by Dollar Value – Warehouse & Distribution Center/Drayage ($44.6 billion)
- #1Outbound Commodity by Dollar Value –Transportation Equipment ($63.8 billion).
- The predominant mode of transportation for all freight entering and exiting the region in 2004 by tonnage was truck. Truck transport accounted for 48% of inbound freight and more than 73% of outbound freight. Rail transport accounted for 45% of inbound freight and 7% of outbound freight; a majority of the inbound freight by rail was coal. Water transport accounted for 7% of inbound freight and over 19% of outbound freight.
- Inbound and outbound freight tonnage is expected to more than double by the year 2035 for Hampton Roads; however, the modal splits are expected to remain about the same.

- Primary freight movement between Hampton Roads and major North American Regional Economic Areas is with the Southeast by truck.
- The 2004 top 5 primary trading partners with Hampton Roads in terms of total commodity truck tonnage were: 1) Washington DC-Baltimore, MD (47 million tons) 2) Richmond-Petersburg, VA (33 million tons) 3) New York-NJ-Long Island (14 million tons) 4) Roanoke, VA (12 million tons) 5) Raleigh-Durham-Chapel Hill, NC (5 million tons). By 2035, not only does trade tonnage by truck increase significantly, but so does the length of travel.
- The top 5 primary trading partners with Hampton Roads by total rail tonnage in 2004 were: 1) Lexington, KY (16 million tons) 2) Charleston, WV (13 million tons) 3) Richmond-Petersburg, VA (4 million tons) 4) Chicago, IL (3 million tons) 5) Louisville, KY (0.7 million tons). By 2035, rail trade is expected to increase significantly particularly in the Midwest and Middle Atlantic economic areas.
- In 2004, approximately 42% of all North American freight inbound to Hampton Roads was from Virginia origins and about 32% of all freight heading out of Hampton Roads was to Virginia destinations.
- In 2004, freight transported into Hampton Roads was primarily from Richmond Regional (28.7% and mostly by truck) and Cumberland Plateau (19.1% and mostly by rail). By 2035, Richmond Regional (26.4% and mostly by truck) is expected to remain the largest source of freight into the region followed by LENOWISCO (17.2% and mostly by rail).
- In 2004, freight transported out of Hampton Roads was primarily to Northern Virginia (35.3% and mostly by truck) and Richmond Regional (14.4% and mostly by truck). By 2035, Northern Virginia will remain the largest destination (30.4% and mostly by truck) followed by the Northern Neck (19.9% and mostly by water).
- Primary VA gateways for freight headed to and from Hampton Roads are US 13 (Eastern Shore) and Interstates 495 (Northern Virginia) & 85 (North Carolina).

Regional Truck Movement

- The primary "gateway" for trucks entering and exiting Hampton Roads is I-64, with 37% of all freight entering or exiting Hampton Roads by truck using this route. Route 58 is the second most used route, with 17% of all freight entering and exiting the region via trucks, and Route 460 is the third most used route with 11%.
- Truck travel comprises 3.3% of all vehicle-miles of travel in Hampton Roads. This amounts to over 1.3 million miles of truck travel each day throughout the region.
- The Hampton Roads Bridge-Tunnel is the primary crossing used to transport freight across the Hampton Roads harbor, with 46% of all truck traffic crossing the harbor using that facility. 43% of all truck traffic crossing the harbor uses the Monitor-Merrimac Memorial Bridge-Tunnel, and 11% uses the James River Bridge.
- Nearly 20,000 overheight trucks were stopped, measured, and turned around at the regional tunnels in 2005. Nearly 14,000 of these occurred at the Westbound Hampton Roads Bridge-Tunnel, including 1,300 that had to be turned around on the South Island at the tunnel entrance.
- Thirteen locations throughout Hampton Roads were defined as freight bottlenecks, which means those locations are both congested and have a high number or percentage of trucks during the afternoon peak travel period.

Future Freight Needs

- It is essential that the Hampton Roads region maintain its existing transportation systems and continues to make investments in freight infrastructure on a local, statewide, and regional level in order to remain economically competitive and improve overall mobility.

Appendix A: Defining Freight Transportation

Freight transportation is simply the movement of products, goods, and materials from one location to another. Some general definitions of terms and concepts used in the freight industry are provided below.

General Terms

- *Freight Modes* – Means by which freight is physically transported, such as waterways, highways, rail lines, and pipelines.
- *Freight Transportation Demand* – Consists of shippers (purchasers of freight transportation) and consumers (purchasers of goods and services).
- *Freight Transportation Supply* – Consists of: (1) freight transportation infrastructure that is owned and operated by federal, state, and local governments, public-private authorities, and the private sector and (2) freight transportation services, such as carriers (transportation service providers), freight forwarders (who consolidate small shipments into larger shipments), freight brokers (who assist shippers and carriers in assembling paperwork for international or complicated shipments), and Third-party logistics providers (3PLs - For-hire companies or individuals that are employed to assume freight/logistics tasks previously performed in-house).
- *Freight Volume* – The amount of freight is typically measured by weight (metric tons, long tons, short tons, or pounds), units (number of containers, automobiles, etc.), dollar value, vehicles moved (railcars, trucks, vessels, etc.), liquid bulk (1 barrel equals 42 gallons), vehicle-miles of travel (VMT), and ton-miles (tonnage times miles of travel). **All tonnage quoted in this report represents short tons (2,000 lbs).**

Intermodal Terms

- *Intermodal Freight* – Commodities that move from origin to destination using a combination of transportation modes (i.e. truck-air-truck, truck-rail-truck, seaport-rail). Most intermodal freight shipments are transported by a shipping container, which is easily transferred between modes. See **Figure A1** for a typical international intermodal freight shipment.
- *Interchange Points or Nodes* – Locations where freight is exchanged between transportation modes or undergoes processing or handling activity, such as airports, seaports, rail terminals, and warehouse/distribution centers.
- *Intermodal Conflict Points* – Locations in the transportation system where one mode crosses and impedes the flow of another mode (i.e. roadway drawbridges, railway drawbridges, and at-grade railroad crossings).

Freight Logistics and Concepts

- *Evolution from "Push" to "Pull" Logistics* – The old business freight logistics model was to "push" goods to retail distributors based on shippers schedules and then re-supplying stocks of inventory. Associated costs were high, as many unsold goods would sit on shelves or in warehouses. Today, more businesses are employing "pull" logistics, where goods are "pulled" to retail distributors based on real-time sales and information tracking technology and trends. Large inventories are no longer necessary as goods arrive, as they are needed. This movement toward "pull" logistics has created a greater demand on the transportation system; goods that are "pulled" need to be delivered quickly and efficiently in order for businesses to prosper.

- *Just-In-Time (JIT)* – refers to a manufacturing system, which depends on frequent, small deliveries of parts and supplies to keep on-site inventory to a minimum. This concept is the result of "pull" logistics.

- *Level of Service for Freight Shippers* – The transportation system's level of service

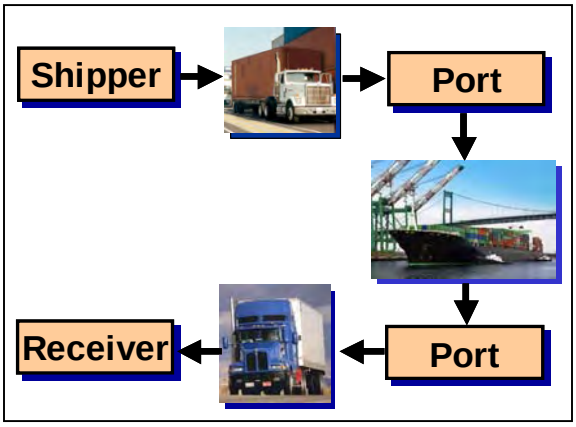


FIGURE A1 – Typical international intermodal freight shipment using various carriers.
Source: FHWA/NHI

serves as the foundation for freight movement (**Figure A2**). A poor, inefficient transportation network creates higher costs for shipper, which raises the price of consumer goods and lowers competitiveness. A stable, efficient network, however, allows freight shippers to focus on other areas, such as visibility, which improves the overall service and reduces costs for everyone.

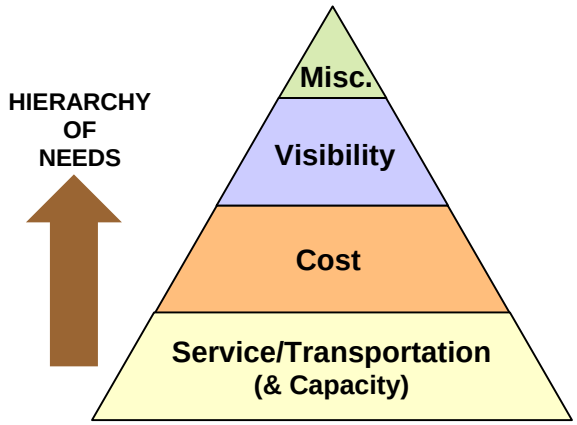
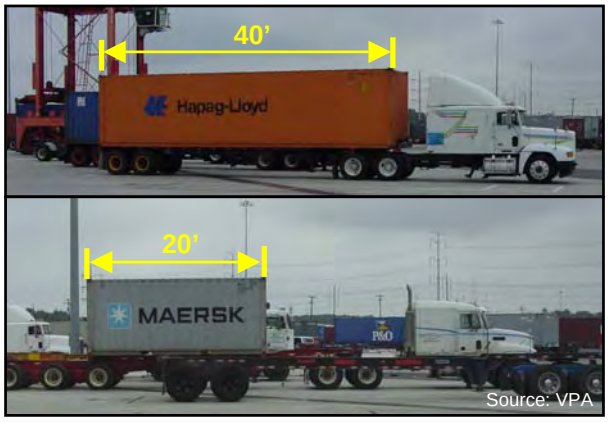


FIGURE A2 – What Freight Buyers Want - the transportation system's level of service is the foundation for freight movement.
Source: Global Insight, Inc.

Cargo Terms

- *Types of Cargo* – There are two basic types of cargo that moves to/from ports to other modes of transportation: **bulk cargo** (dry-bulk and liquid-bulk) and **general cargo** (containerized and break-bulk). See **Figure A3**.
- Dry-Bulk Cargo – Dry homogenous cargo that is stowed loose in the hold and is not enclosed in any container such as a box, bale, or bag. Examples include: coal, phosphates, iron and other ores, concentrates, cocoa, rice, corn, grains, fertilizers, animal feeds and scrap metal.
- *Liquid Bulk Cargo* – Homogenous cargo in liquid form that is stowed loose in the hold and is not enclosed in any container such as a box, bale, or bag. Examples include: crude oil, fuel oil, liquefied natural gas, chemicals and vegetable oils.
- *Break-B*ulk Cargo – Loose non-containerized items that are usually packed in small separable units such as factory components, palletized goods, drums, bales, cartons and roll-on/roll-off cargoes. Examples include: rubber, cocoa beans, automobiles and machinery.
- *Shipping Container* – Introduced in the 1950's, these large, rectangular-shaped steel boxes have revolutionized general cargo transport; these units can be easily loaded on multiple modes of transportation, such as container ships, railroad cars, and trucks. Containers come in three standard lengths, 20 ft (6.1 m), 40 ft (12.2 m) and 45 ft (13.7 m), with a pair of doors at one end and a wooden floor. The first containers introduced were 20 ft, so most port capacity and productivity was originally measured by TEUs (Twenty-foot equivalent unit equal to one standard 20 ft (length) × 8 ft (width) × 8.5 ft (height) container). A typical 20-foot container cost about $1,750. Most of the cargo that is moved today is transported in 40 ft containers or FEU (Forty-foot equivalent unit). **To convert TEUs to Containers: Number of TEUs ÷ 1.73 = Number of Containers.**



Original shipping containers were 20-feet long. Today, most cargo is shipped in 40-foot containers.

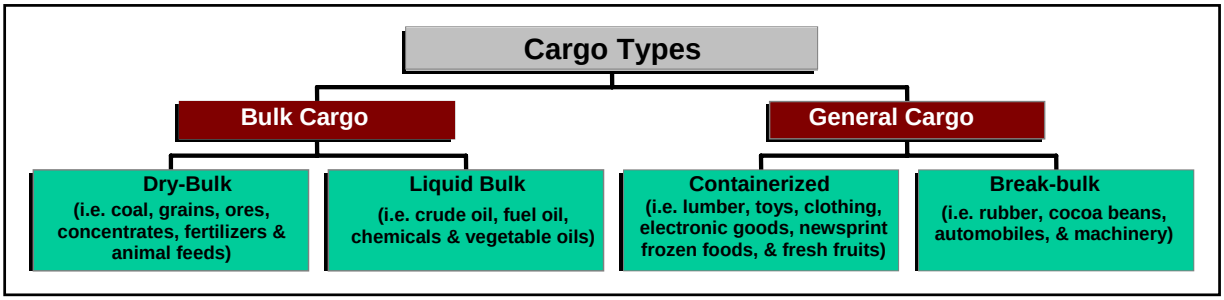


FIGURE A3 – Breakdown of International Trade Cargo Through the Port of Hampton Roads.

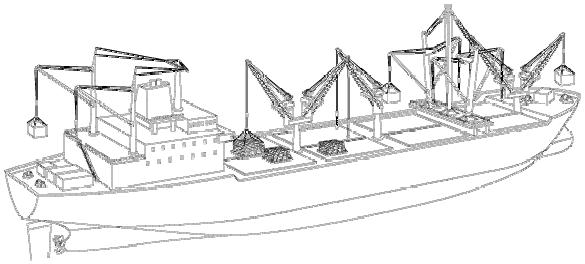
- *Containerized Cargo* – any goods shipped inside a container, such as toys, clothing, electronic goods, frozen foods, fresh fruits, and motorcycles.
- *Containerization* – Cargo containers have reshaped global trade and transformed the world economy. According to industry leaders, about 15 million containers currently roam the globe, which is expected to increase well into the future. Cargo containers dramatically increase the efficiency of and reduce the cost of cargo transportation. According to "The Box That Changed the World", the cost of shipping goods worldwide now accounts for 1 percent or less of retail prices. For example, it costs about 34 cents to ship a pair of shoes that sells for $45 in an American store from an Asian factory and about $12.50 to import a television that costs $2,500. The beauty of containers is that cargo can be packed once at the factory and unloaded once at the final destination after being transported by multiple modes of transportation (intermodal freight).

  The invention of the container did not create globalization by itself. Its adoption required huge sums of money from both private investors and the ports themselves, improvements in communications, trade agreements that reduced tariffs, and the end of fixed monetary exchange rates (*The Journal of Commerce*).

  Locally, containerization has transformed Hampton Roads. Investments were initiated in the 1960s to accommodate containers and are expected to continue well into the future. Prior to that time, ships could spend up to a week at a dock waiting for longshoremen to unload the goods by hand. According to "The Box", dockside labor accounted for at least half of the total shipping cost. Today, about 900 containers can be transferred to and from a ship in about 15 hours. In 2005, nearly 2 million containers were moved through the Port of Hampton Roads.

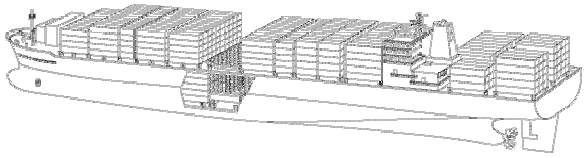
<u>Vessel Types</u>

- *Traditional Freighter* - Traditional freighters range in length from 250ft to 600ft and are used primarily to carry break-bulk cargo.



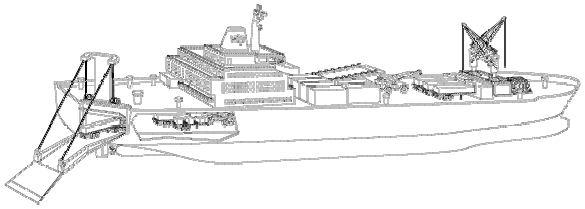
Source: World Trade Press, Inc.

- *Container Ship/Vessel* – A vessel designed specifically to carry uniform-sized containers. These vessels vary dramatically in size and capacity.



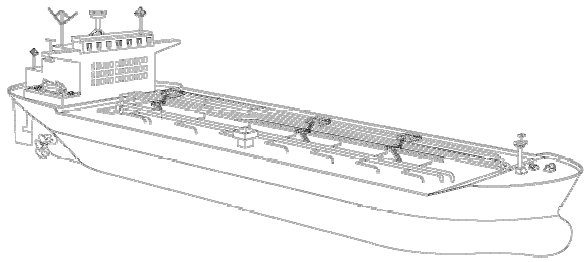
Source: World Trade Press, Inc.

- *Ro-Ro (Roll-on Roll-off) Vessel* – A vessel that is designed to transport motor vehicles or any other rolling stock.



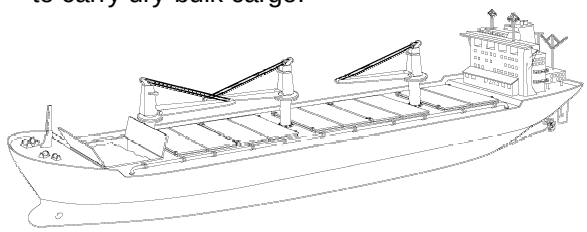
Source: World Trade Press, Inc.

- *Crude Oil Tanker* – A liquid bulk cargo vessel that is designed specifically to carry crude oil.



Source: World Trade Press, Inc.

- *Dry-Bulk Carrier* – A vessel that is designed to carry dry-bulk cargo.



Source: World Trade Press, Inc.

- *Post Panamax Ships/Vessels* – Vessel that is too large to fit through the Panama Canal. These are the "next generation" of vessels and are 32.2 meters or 13 containers wide or larger. Vessels continue to grow in size as one of the latest designs by Samsung is a 9,000-TEU prototype containership with a length of 330 meters, a draft of 14.5 meters, a width of 45.6 meters (18 containers wide) and a speed of 26 knots. These larger and wider vessels mean that ports will need to invest in larger cranes to load/unload the cargo as well as more transportation infrastructure to support the increase in freight these ships will supply.

Trucking Terms

- *Truckload Carriers (TL)* - Trucking companies that move full truckloads of freight directly from the point of origin to destination. Typically, shipments more than 20,000 lbs. are considered a TL.
- *Less-Than-Truckload (LTL) Carriers* - Trucking companies that consolidate and transport smaller (less than truckload) shipments of freight by utilizing a network of terminals and relay points. Typically, LTL shipments range from 100 lbs to 20,000 lbs.

Appendix B: Freight Glossary[13]

Average Annual Daily Truck Traffic (AADTT) - The total volume of truck traffic on a highway segment for one year, divided by the number of days in the year.

Backhaul - The process of a transportation vehicle (typically a truck) returning from the original destination point to the point of origin. A backhaul can be with a full or partially loaded trailer.

Barge - The cargo-carrying vehicle that inland water carriers primarily use. Basic barges have open tops, but there are covered barges for both dry and liquid cargoes.

Belly Cargo - Air freight carried in the belly of passenger aircraft.

Bill of Lading - A transportation document that is the contract of carriage containing the terms and condition between shipper and carrier.

Bottleneck - A section of a highway or rail network that experiences operational problems such as congestion. Bottlenecks may result from factors such as reduced roadway width or steep freeway grades that can slow trucks.

Boxcar - An enclosed railcar, typically 40 or more feet long, used for packaged freight and some bulk commodities.

Breakbulk Cargo - Cargo of non-uniform sizes, often transported on pallets, sacks, drums, or bags. These cargoes require labor-intensive loading and unloading processes. Examples of breakbulk cargo include coffee beans, logs, or pulp.

Broker - A person whose business it is to prepare shipping and customs documents for international shipments. Brokers often have offices at major freight gateways, including border crossings, seaports, and airports.

Bulk Cargo - Cargo that is unbound as loaded; it is without count in a loose unpackaged form. Examples of bulk cargo include coal, grain, and petroleum products.

Cabotage - A national law that requires costal and intercostal traffic to be carried in its own nationally registered, and sometimes built and crewed ships.

Capacity - The physical facilities, personnel and process available to meet the product of service needs of the customers. Capacity generally refers to the maximum output or producing ability of a machine, a person, a process, a factory, a product, or a service.

Cargo Ramp - A dedicated load/unload facility for cargo aircraft.

Carload - Quantity of freight (in tons) required to fill a railcar; amount normally required to qualify for a carload rate.

Carrier - A firm which transports goods or people via land, sea or air.

Centralized Dispatching - The organization of the dispatching function into one central location. This structure often involves the use of data collection devices for communication between the centralized dispatching function, which usually reports to the production control department and the shop manufacturing departments.

[13] Data Source: FHWA, http://ops.fhwa.dot.gov/freight/fpd/glossary/index.htm

Chassis - A trailer-type device with wheels constructed to accommodate containers, which are lifted on and off.

Claim - Charges made against a carrier for loss, damage, delay, or overcharge.

Class I Carrier - A classification of regulated carriers based upon annual operating revenues-motor carrier of property greater than or equal to $5 million; railroads: greater than or equal to $50 million: motor carriers of passengers; greater than or equal to $3 million.

Class II Carrier - A classification of regulated carriers based upon annual operating revenues-motor carrier of property $1- $5 million; railroads: $10-$50 million: motor carriers of passengers; less than or equal to $3 million.

Class III Carrier - A classification of regulated carriers based upon annual operating revenues-motor carrier of property less than or equal to $1 million; railroads: greater than or equal to $10 million.

Classification Yard - A railroad terminal area where railcars are grouped together to form train units.

Coastal Shipping - Also known as short-sea or coastwise shipping, describes marine shipping operations between ports along a single coast or involving a short sea crossing.

Contract Carrier - A carrier that does not serve the general public, but provides transportation for hire for one or a limited number of shippers under a specific contract.

Commodity - An Item that is traded in commerce. The term usually implies an undifferentiated product competing primarily on price and availability.

Common Carrier - Any carrier engaged in the interstate transportation of persons/property on a regular schedule at published rates, whose services are for hire to the general public.

Consignee - The receiver of a freight shipment, usually the buyer.

Consignor - The sender of a freight shipment, usually the seller.

Container - A "box"' typically ten to forty feet long, which is used primarily for ocean freight shipment. For travel to and from ports, containers are loaded onto truck chassis' or on railroad flatcars.

Container on Flatcar (COFC) - Containers resting on railway flatcars without a chassis underneath.
Containerization - A shipment method in which commodities are placed in containers, and after initial loading, the commodities per se are not re-handled in shipment until they are unloaded at destination.

Containerized Cargo - Cargo that is transported in containers that can be transferred easily from one transportation mode to another.

Contract Carrier - Carrier engaged in interstate transportation of persons/property by motor vehicle on a for-hire basis, but under continuing contract with one or a limited number of customers to meet specific needs.

Cubage - Cubic volume of space being used or available for shipping or storage.

Deadhead - The return of an empty transportation container back to a transportation facility. Commonly-used description of an empty backhaul.

Detention Fee - The carrier charges and fees applied when rail freight cars, ship and carriers are retained beyond a specified loading or unloading time.

Demurrage - The carrier charges and fees applied when rail freight cars and ships are retained beyond a specific loading or unloading time.

Direct to store - Process of shipping direct from a manufacturer's plant or distribution center to the customer's retail store, thus bypassing the customer's distribution center.

Dispatcher - An individual tasked to assign available transportation loads to available carriers.

Distribution Center (DC) - The warehouse facility which holds inventory from manufacturing pending distribution to the appropriate stores.

Dock - A space used or receiving merchandise at a freight terminal.

Double-stack - Railcar movement of containers stacked two high.

Drayage - Transporting of rail or ocean freight by truck to an intermediate or final destination; typically a charge for pickup/delivery of goods moving short distances (e.g., from marine terminal to warehouse).

Drop - A situation in which an equipment operator deposits a trailer or boxcar at a facility at which it is to be loaded or unloaded.

Durable Goods - Generally, any goods whose continuous serviceability is likely to exceed three years.

Exempt Carrier - A for-hire carrier that is free from economic regulation. Trucks hauling certain commodities are exempt from Interstate Commerce Commission economic regulation. By far the largest portion of exempt carrier transports agricultural commodities or seafood.

Flatbed - A trailer without sides used for hauling machinery or other bulky items.

For-hire Carrier - Carrier that provides transportation service to the public on a fee basis.

Freight All Kinds (FAK) - Goods classified FAK are usually charged higher rates than those marked with a specific classification and are frequently in a container that includes various classes of cargo.

Freight Forwarder - A person whose business is to act as an agent on behalf of a shipper. A freight forwarder frequently consolidates shipments from several shippers and coordinates booking reservations.

Free Trade Zone (FTZ) - An area or zone set aside at or near a port or airport, under the control of the U.S. Customs Service, for holding goods duty-free pending customs clearance.

Fuel-Taxed Waterway System - Eleven thousand miles of the U.S. waterway system designated by the Water Resources Development Act of 1986. Commercial users of this system pay a per gallon fuel tax which is deposited in the Inland Waterways Trust Fund and used to fund inland navigation projects each year.

Four P's - Set of marketing tools to direct the business offering to the customer. The four P's are product, price, place and promotion.

Gross Vehicle Weight (GVW) - The combined total weight of a vehicle and its freight.

Hazardous Material - A substance or material which the Department of Transportation has determined to be capable of posing a risk to health, safety, and property when stored or transported in commerce.

Hours of Service - Ruling that stipulates the amount of time a driver is allotted to work.

Hub - A common connection point for devices in a network. Referenced for a transportation network as in "hub and spoke" which is common in the airline and trucking industry.

In-bond Shipment - A shipment status in which goods are permitted to enter a country and temporarily stored for transport to a final destination where the duty will be paid.

Inbound Logistics - The movement of materials from shippers and vendors into production processes or storage facilities.

Interline Freight - Freight moving from point of origin to destination over the lines of two or more transportation lines.

Intermodal terminal - A location where links between different transportation modes and networks connect. Using more than one mode of transportation in moving persons and goods. For example, a shipment moved over 1000 miles could travel by truck for one portion of the trip, and then transfer to rail at a designated terminal.

Inventory - The number of units and/or value of the stock of good a company holds.

Just-in-Time (JIT) - Cargo or components that must be at a destination at the exact time needed. The container or vehicle is the movable warehouse.

Lead-time - The total time that elapses between an order's placement and it receipt. It includes the time required for order transmittal, order processing, order preparation, and transit.

Less-Than-Containerload/Less-Than-Truckload (LCL/LTL) - A container or trailer loaded with cargo from more than one shipper; loads that do not by themselves meet the container load or truckload requirements.

Level of Service (LOS) - A qualitative assessment of a road's operating conditions. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unit of demand for each public facility.

Lift-on/Lift-off (lo/lo) Cargo - Containerized cargo that must be lifted on and off vessels and other vehicles using handling equipment.

Line Haul - The movement of freight over the road/rail from origin terminal to destination terminal, usually over long distances.

Liquid Bulk Cargo - A type of bulk cargo that consists of liquid items, such as petroleum, water, or liquid natural gas.

Live Load - As situation in which the equipment operation stays with the trailer or boxcar while being loaded or unloaded.

Lock - A channel where the water rises and falls to allow boats to travel a dammed river.

Logbook - A daily record of the hours an interstate driver spends driving, off duty, sleeping in the berth, or on duty not driving.

Logistics - All activities involved in the management of product movement; delivering the right product from the right origin to the right destination, with the right quality and quantity, at the right schedule and price.

Lumpers - Individuals that assist a motor carrier owner operator in the unloading of property; quite commonly used in the food industry.

Neo-bulk Cargo - Shipments consisting entirely of units of a single commodity, such as cars, lumber, or scrap metal.

Node - A fixed point in a firm's logistics system where goods come to rest; includes plants, warehouses, supply sources, and markets.

OS&D - Over, short and damaged. Report is issued at warehouse when goods are damaged; claim is usually filed with the carrier.

On-dock Rail - Direct shipside rail service. Includes the ability to load and unload containers/breakbulk directly from rail car to vessel.

Outbound Logistics - The process related to the movement and storage of products from the end of the production line to the end user.

Operating Ratio - A measure of operation efficiency defined as: (Operating Expenses/Operation Revenues) x 100.

Owner-operator - Trucking operation in which the owner of the truck is also the driver.

Placard - A label that identifies a hazardous material shipment and the hazards present.

Piggyback - A rail/truck service. A shipper loads a highway trailer, and a carrier drives it to a rail terminal and loads it on a flatcar; the railroad moves the trailer-on-flatcar combination to the destination terminal, where the carrier offloads the trailer and delivers it to the consignee.

Pool/Drop Trailers - Trailer that are staged at a facilities for preloading purposes.

Point of Sale (POS) - The time and place at which a sale occurs, such as a cash register in a retail operation, or the order confirmation screen in an on-line session. Supply chain partners are interested in capturing data at the POS because it is a true record of the sale rather than being derived from other information such as inventory movement.

Port Authority - State or local government that owns, operates, or otherwise provides wharf, dock, and other terminal investments at ports.

Private Carrier - A carrier that provides transportation service to the firm that owns or leases the vehicles and does not charge a fee.

Private Warehouse - A company owned warehouse.

Prepaid - A freight term, which indicates that charges are to be paid by the shipper. Prepaid shipping charges may be added to the customer invoice, or the cost may be bundled into the pricing of the product.

Proof of Delivery - Information supplied by the carrier containing the name of the person who signed for the shipment, the time and date of delivery, and other shipment delivery related information.

Pull Logistics System - "Just in time" logistics system driven by customer demand and enabled by telecommunications and information systems rather than by manufacturing process and inventory stockpiling.

Purchase Order (PO) - The purchaser's authorization used to formalize a purchase transaction with a supplier. The physical form or electronic transaction a buyer uses when placing an order for merchandise.

Push Logistics System - Inventory-based logistics system characterized by regularly scheduled flows of products and high inventory levels.

Rail Siding - A very short branch off a main railway line with only one point leading onto it. Sidings are used to allow faster trains to pass slower ones or to conduct maintenance.

Reefer Trailer - A refrigerated trailer that is commonly used for perishable goods.

Regional Railroad - Railroad defined as line-haul railroad operating at least 350 miles of track and/or earns revenue between $40 million and $266.7 million.

Reliability - Refers to the degree of certainty and predictability in travel times on the transportation system. Reliable transportation systems offer some assurance of attaining a given destination within a reasonable range of an expected time. An unreliable transportation system is subject to unexpected delays, increasing costs for system users.

Reverse Logistics - A specialized segment of logistics focusing on the movement and management of products and resources after the sale and after delivery to the customer. Includes product returns and repair for credit.

Receiving - The function encompassing the physical receipt of material, the inspection of the shipment for conformance with the purchase order (quantity and damage), the identification and delivery to destination, and the preparation of receiving reports.

Return to Vendor (RTV) - Material that has been rejected by the customer or buyer's inspection department and is awaiting shipment back to supplier for repair or replacement.

Radio Frequency (RFID) - A form of wireless communication that lets users relay information via electronic energy waves from a terminal to a base station, which is linked in turn to a host computer. The terminals can be placed at a fixed station, mounted on a forklift truck, or carried in the worker's hand. The base station contains a transmitter and receiver for communication with the terminals. When combined with a bar-code system for identifying inventory items, a radio-frequency system can relay data instantly, thus updating inventory records in so-called "real time".

Roll-on/Roll-off (ro/ro) Cargo - Wheeled cargo, such as automobiles, or cargo carried on chassis that can be rolled on or off vehicles without using cargo handling equipment.

Seasonality - Repetitive pattern of demand from year to year (or other repeating time interval) with some periods considerably higher than others. Seasonality explains the fluctuation in demand for various recreational products, which are used during different seasons.

Shipper - Party that tenders goods for transportation.

Shipping Manifest - A document that lists the pieces in a shipment.

Short Line Railroad - Freight railroads which are not Class I or Regional Railroads, that operate less than 350 miles of track and earn less than $40 million.

Short-sea Shipping - Also known as coastal or coastwise shipping, describes marine shipping operations between ports along a single coast or involving a short sea crossing.

Sleeper Team - Two drivers who operated a truck equipped with a sleeper berth; while one driver sleeps in the berth to accumulate mandatory off-duty time, the other driver operates the vehicle.

Stock Keeping Unit (SKU) - A category of unit with unique combination of form, fit and function.
Stock Outs - Merchandise that is requested by a customer but is temporarily unavailable. Also referred to as (OOS).

Stop Off Charge - Charge associated with a load that has more than one drop off point. Typically, the first stop of a multistop load is free, and then the charge applies to the subsequent stops.

Strategic Highway Network (STRAHNET) - A network of highways which are important to the United States' strategic defense policy and which provide defense access, continuity, and emergency capabilities for defense purposes.

Strategic Rail Corridor Network (STRACNET) - An interconnected and continuous rail line network consisting of over 38,000 miles of track serving over 170 defense installations.

Switching and Terminal Railroad - Railroad that provides pick-up and delivery services to line-haul carriers.

Supply Chain - Starting with unprocessed raw materials and ending with final customer using the finished goods.

TEU - Twenty-foot equivalent unit, a standard size intermodal container

Third-party Logistics (3PL) Provider - A specialist in logistics who may provide a variety of transportation, warehousing, and logistics-related services to buyers or sellers. These tasks were previously performed in-house by the customer.

Throughput - Total amount of freight imported or exported through a seaport measured in tons or TEUs.

Ton-mile - A measure of output for freight transportation; reflects weight of shipment and the distance it is hauled; a multiplication of tons hauled by the distance traveled.

Trailer on Flatcar (TOFC) - Transport of trailers with their loads on specially designed rail cars.

Transit time - The total time that elapses between a shipment's delivery and pickup.

Transloading - Transferring bulk shipments from the vehicle/container of one mode to that of another at a terminal interchange point.

Truckload (TL) - Quantity of freight required to fill a truck, or at a minimum, the amount required to qualify for a truckload rate.

Twenty-foot Equivalent Unit (TEU) - The 8-foot by 8-foot by 20-foot intermodal container is used as a basic measure in many statistics and is the standard measure used for containerized cargo.

Unit Train - A train of a specified number of railcars handling a single commodity type which remain as a unit for a designated destination or until a change in routing is made.

Vehicle Miles of Travel (VMT) - A unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle.

Warehouse - Storage place for products. Principal warehouse activities include receipt of product, storage, shipment and order picking.

Appendix C: Inventory of Hampton Roads Intermodal System Facilities

At-Grade Rail Crossings on the CMP Network

Jurisdiction	Street Name	Description
Ches	Campostella Ave	Just N of Liberty St
Ches	Cavalier Blvd	Chesapeake/Portsmouth CL
Ches	Centerville Turnpike	2.0 mi N of Battlefield Blvd
Ches	Ethridge Manor Blvd	Just W of Centerville Tpke
Ches	George Washington Hwy	Chesapeake/Portsmouth CL
Ches	Kempsville Rd	0.1 mi W of Greenbrier Pkwy
Ches	Liberty St	0.1 mi E of Poindexter St
Ches	Liberty St	Just W of Campostella Rd
Ches	Liberty St	Just N of Seaboard Ave
Ches	Military Highway	Just W of Bainbridge Blvd
Ches	Military Highway	East of Willis St
Ches	Mount Pleasant Rd	0.9 mi W of Centerville Turnpike
Ches	Old Atlantic Ave	0.3 mi S of Liberty St
Ches	Poindexter St	Just W of I-464
Ches	Providence Rd	0.2 mi E of Campostella Rd
Ches	Taylor Rd	0.1 mi S of Pughsville Rd
Ches	Volvo Pkwy	0.4 mi E of Battlefield Blvd
Ches	W Military Hwy	Just S of Airline Blvd
Ham	Aberdeen Rd	Just N of Pembroke Ave
Ham	Armistead Ave	Just S of Rip Rap Rd
Ham	LaSalle Ave	Just N of Pembroke Ave
Ham	Powhatan Pkwy	Just N of Pembroke Ave
Ham	Queen St	Just W of Pembroke Ave
IW	Route 258	Just S of Route 460
IW	Route 258	Between Route 614 and Route 619
IW	Route 258	Just S of Bus Route 58
JCC	Merrimac Trail	Between Penniman Rd and Route 677
JCC	Pocahontas Trail	At BASF Dr
NN	39th St	Just E of Chestnut Ave
NN	Chestnut Ave	Just S of 39th St
NN	Harpersville Rd	0.5 mi W of Jefferson Ave
NN	Jefferson Ave	1.0 mi S of Fort Eustis Blvd
NN	Jefferson Ave	At I-664
NN	Warwick Blvd	At 40th St
NN	Warwick Blvd	At Fort Eustis Blvd
NN	Yorktown Rd	0.1 mi N of Warwick Blvd
Nor	Azalea Garden Rd	Just W of Sewells Point Rd
Nor	Bainbridge Blvd	Just N of Norfolk/Chesapeake CL
Nor	Ballentine Blvd	0.1 mi N of Princess Anne Rd
Nor	Ballentine Blvd	Just N of I-264
Nor	Berkley Ave	0.2 mi W of Indian River Rd
Nor	Berkley Ave Extended	0.2 mi W of Wilson Rd
Nor	Berkley Ave Extended	0.3 mi W of Wilson Rd
Nor	Brambleton Ave	Just N of I-264
Nor	Chesapeake Blvd	Just E of Cromwell Dr
Nor	Church St	0.2 mi S of 26th St
Nor	Cromwell Dr	0.1 mi N of Princess Anne Rd
Nor	Cromwell Dr	0.4 mi N of Princess Anne Rd
Nor	Granby St	0.1 mi N of Little Creek Rd
Nor	Hampton Blvd	Just S of International Terminal Blvd
Nor	Hampton Blvd	0.8 mi S of Taussig Blvd
Nor	Indian River Rd	0.2 mi W of Berkley Ave
Nor	Little Creek Rd	0.2 mi E of Granby St
Nor	Llewellyn Ave	Just S of 23rd St
Nor	Military Highway	0.1 mi N of Elizabeth Ave
Nor	Norview Ave	0.2 mi E of Tidewater Dr
Nor	Princess Anne Rd	0.2 mi E of Tidewater Dr
Nor	Princess Anne Rd	0.2 mi W of Ingleside Rd
Nor	Sewells Point Rd	Just S of Azalea Garden Rd
Nor	Thole St	Just W of Tidewater Dr
Port	Cedar Lane	0.1 mi N of West Norfolk Rd
Port	Churchland Blvd	Just E of Tyre Neck Rd
Port	Cleveland St	Just W of Lee Ave

At-Grade Rail Crossings (continued)

Jurisdiction	Street Name	Description
Port	Deep Creek Blvd	Just N of Frederick Blvd
Port	Effingham St	Just S of I-264
Port	Elm Ave	Just S of South St
Port	Elm Ave	0.3 mi W of Victory Blvd
Port	Elm Ave	Adjacent to Burtons Point Rd
Port	Frederick Blvd	0.2 mi S of Turnpike Rd
Port	George Washington Hwy	0.2 mi E of Frederick Blvd
Port	Greenwood Dr	0.3 mi S of Airline Blvd
Port	High St	0.3 mi E of Mt Vernon Ave
Port	High Street West	0.2 mi W of Tyre Neck Rd
Port	Portsmouth Blvd	0.1 mi E of Turnpike Rd
Port	Portsmouth Blvd	Just E of Frederick Blvd
Port	Turnpike Rd	0.7 mi E of Frederick Blvd
Port	Tyre Neck Rd	Just S of Churchland Blvd
Port	Victory Blvd	Just S of Airline Blvd
Port	Wesley St	Just W of Lee Ave
Port	West Norfolk Rd	0.2 mi E of Tyre Neck Rd
Suf	Carolina Road	0.4 mi N of Dill Rd
Suf	Constance Rd	Just S of Pitchkettle Rd
Suf	Copeland Rd	Just E of Lummis Rd
Suf	East Washington St	Just S of Portsmouth Blvd
Suf	Holland Road	Just East of Suffolk Bypass
Suf	Main Street	0.3 mi S of Constance Rd
Suf	Nansemond Pkwy	0.4 mi W of Shoulders Hill Rd
Suf	Shoulders hill Rd	0.5 mi N of Nansemond Pkwy
Suf	South Quay Rd	Just S of Ruritan Blvd
Suf	Washington St	Just E of Pinner St
Suf	Washington St	Just W of Factory St
VB	Great Neck Rd	0.2 mi S of Va Beach Blvd
VB	Independence Blvd	Just S of Columbus St
VB	Lynnhaven Pkwy	0.2 mi S of Va Beach Blvd
VB	Oceana Blvd	Just S of Oceana Blvd
VB	Princess Anne Rd	Just S of Southern Blvd
VB	Rosemont Rd	Just S of Va Beach Blvd
VB	South Plaza Trail	0.1 mi S of Va Beach Blvd
VB	Witchduck Rd	0.1 mi S of Cleveland St
Wmb	Henry St	Just N of Lafayette St
YC	George Washington Hwy	0.4 mi S of Fort Eustis Blvd
YC	Richneck Rd	0.5 mi S of Fort Eustis Blvd

Commercial Service Airports

Jurisdiction	Name	Location
Nor	Norfolk International Airport	End of Norview Avenue
NN	NN-Williamsburg International Airport	End of Bland Blvd

General Aviation Airports

Jurisdiction	Name	Location
Ches	Hampton Roads Executive Airport	Route 58 West of I-664
Ches	Chesapeake Municipal Airport	West Road South of Number Ten Lane
Suf	Suffolk Municipal Airport	Whaleyville Blvd
JCC	Williamsburg-Jamestown Airport	Lake Powell Rd South of Route 199
IW	Franklin Municipal Airport	Northwest of Bus. 58/Route 258 intersection

Ferry Service Terminals

Jurisdiction	Ferry Name	Description	Location
Nor	HRT Ferry	Ferry Service to Portsmouth	Waterside
Port	HRT Ferry	Ferry Service to Norfolk	High Street Landing
Port	HRT Ferry	Ferry Service to Norfolk	North Landing
JCC	VDOT Ferry	Jamestown-Scotland Ferry	Jamestown in James City Cour

Railroad Passenger Terminals

Jurisdiction	Description	Location
NN	Newport News Amtrak Station	Warwick Blvd between Mercury Blvd and Center Ave
Wmb	Williamsburg Amtrak Station	Boundary Street near Lafayette Street

Roadway Drawbridges

Jurisdiction	Street Name	Description	Bridge Name
Ches	Battlefield Blvd	Across Albemarle and Chesapeake Canal	
Ches	Cedar Rd/GW Highway	Across Great Dismal Swamp Canal	Deep Creek Canal Bridge
Ches	Centerville Turnpike	Across Albemarle and Chesapeake Canal	
Ches	Dominion Blvd	Across Southern Branch Elizabeth River	Steel Bridge
Ches	Elm Ave/Poindexter St	Across Southern Branch Elizabeth River	Jordan Bridge
Ches	I-64	Across Southern Branch Elizabeth River	Treakle Bridge
Ches	Military Highway	Across Southern Branch Elizabeth River	Gilmerton Bridge
JCC	Route 5	Across the Chickahominey River	
NN	Route 17	Across James River	James River Bridge
Nor	I-264	Across Eastern Branch Elizabeth River	Berkley Bridge
VB/Ches	Mt Pleasant Rd/N Landing Rd	Across Albemarle and Chesapeake Canal	
YC	Route 17	Across York River	Coleman Bridge

Railroad Drawbridges

Jurisdiction	River	Location
Ches	Southern Branch Elizabeth River	0.21 mi N of Jordan Bridge
Ches	Southern Branch Elizabeth River	0.81 mi S of Jordan Bridge
Ches	Southern Branch Elizabeth River	Just S of Gilmerton Bridge
Ches	Albemarle and Chesapeake Canal	Between Great Bridge Bypass and Centerville Turnpike
Nor	Eastern Branch Elizabeth River	Between Berkley Bridge and Campostella Bridge
Nor	Eastern Branch Elizabeth River	1.22 mi E of Campostella Bridge

Intercity Bus Terminals

Jurisdiction	Bus Service	Location
Ham	Greyhound Bus Station	2 W Pembroke Ave
NN	Greyhound Bus Station	Denbigh Blvd at Warwick Blvd
Nor	Greyhound Bus Station	701 Monticello Ave
Suf	Greyhound Bus Station	812 W Constance Rd
VB	Greyhound Bus Station	1017 Laskin Rd
Wmb	Greyhound Bus Station	468 N Boundary St

Park and Ride Facilities

Jurisdiction	Description	Location
Ches	Greenbrier Mall	Mall entrance and Greenbrier Pkwy
Glo	Guinea Rd	Rte 216 at Rte 17
Glo	Hayes Rescue Squad	Route 1216 (Hayes Road)
Glo	Edgehill	Route 3/14 at Route 17 Bus
Glo	Rappahannock Community College	Route 33 at Route 374
Ham	Hampton Transit Center	King St and Pembroke Ave
IW	Bartlett	Smith's Neck Road at Route 17
IW	Smithfield	Route 10 at Route 258
JCC	Croaker	Route 30 at Route 607
NN	Yorktown Rd	Yorktown Rd at Jefferson Ave
NN	Old Courthouse Rd	Warwick Blvd at Old Courthouse Rd
NN	Patrick Henry Mall	Mall entrance and Jefferson Ave
Nor	Cedar Grove	Monticello Ave at Princess Anne Rd
Nor	Harbor Park	Park Avenue at Harbor Park
Port	Court St	Court Street and Crawford Pkwy
Suf	Magnolia	Route 337 at Portsmouth Blvd
Suf	58 Bypass	Route 10 at Suffolk Bypass
VB	Silverleaf Station	Silverleaf Drive and S Independence Blvd
VB	Indian River	Indian River Rd at Reon Dr
YC	Lightfoot	East Rochambeau Dr at Rte 199/I-64

Appendix D: Economic Areas (BEA) and Regional Economic Areas (REA)

Economic Area (BEA)	BEA Name	Regional Economic Area (REA)	REA Name
1	Bangor, ME	1	Northeast
2	Portland, ME	1	Northeast
3	Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH-RI-VT	1	Northeast
4	Burlington, VT-NY	1	Northeast
5	Albany-Schenectady-Troy, NY	1	Northeast
6	Syracuse, NY-PA	1	Northeast
7	Rochester, NY-PA	1	Northeast
8	Buffalo-Niagara Falls, NY-PA	1	Northeast
9	State College, PA	3	Great Lakes
10	New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-VT	1	Northeast
11	Harrisburg-Lebanon-Carlisle, PA	1	Northeast
12	Philadelphia-Wilmington-Atl. City, PA-NJ-DE-MD	1	Northeast
13	Washington-Baltimore, DC-MD-VA-WV-PA	2	Southeast
14	Salisbury, MD-DE-VA	2	Southeast
15	Richmond-Petersburg, VA	2	Southeast
16	Staunton, VA-WV	2	Southeast
17	Roanoke, VA-NC-WV	2	Southeast
18	Greensboro-Winston-Salem-High Point, NC-VA	2	Southeast
19	Raleigh-Durham-Chapel Hill, NC	2	Southeast
20	Norfolk-Virginia Beach-Newport News, VA-NC	2	Southeast
21	Greenville, NC	2	Southeast
22	Fayetteville, NC	2	Southeast
23	Charlotte-Gastonia-Rock Hill, NC-SC	2	Southeast
24	Columbia, SC	2	Southeast
25	Wilmington, NC-SC	2	Southeast
26	Charleston-North Charleston, SC	2	Southeast
27	Augusta-Aiken, GA-SC	2	Southeast
28	Savannah, GA-SC	2	Southeast
29	Jacksonville, FL-GA	2	Southeast
30	Orlando, FL	2	Southeast
31	Miami-Fort Lauderdale, FL	2	Southeast
32	Fort Myers-Cape Coral, FL	2	Southeast
33	Sarasota-Bradenton, FL	2	Southeast
34	Tampa-St. Petersburg-Clearwater, FL	2	Southeast
35	Tallahassee, FL-GA	2	Southeast
36	Dothan, AL-FL-GA	4	Mississippi Valley
37	Albany, GA	2	Southeast
38	Macon, GA	2	Southeast
39	Columbus, GA-AL	2	Southeast
40	Atlanta, GA-AL-NC	2	Southeast
41	Greenville-Spartanburg-Anderson, SC-NC	2	Southeast
42	Asheville, NC	2	Southeast
43	Chattanooga, TN-GA	2	Southeast
44	Knoxville, TN	4	Mississippi Valley
45	Johnson City-Kingsport-Bristol, TN-VA	4	Mississippi Valley
46	Hickory-Morganton, NC-TN	2	Southeast
47	Lexington, KY-TN-VA-WV	4	Mississippi Valley
48	Charleston, WV-KY-OH	3	Great Lakes
49	Cincinnati-Hamilton, OH-KY-IN	3	Great Lakes
50	Dayton-Springfield, OH	3	Great Lakes
51	Columbus, OH	3	Great Lakes
52	Wheeling, WV-OH	3	Great Lakes
53	Pittsburgh, PA-WV	3	Great Lakes
54	Erie, PA	3	Great Lakes
55	Cleveland-Akron, OH-PA	3	Great Lakes
56	Toledo, OH	3	Great Lakes
57	Detroit-Ann Arbor-Flint, MI	3	Great Lakes
58	Northern Michigan, MI	3	Great Lakes
59	Green Bay, WI-MI	3	Great Lakes
60	Appleton-Oshkosh-Neenah, WI	3	Great Lakes

Economic Area (BEA)	BEA Name	Regional Economic Area (REA)	REA Name
61	Traverse City, MI	3	Great Lakes
62	Grand Rapids-Muskegon-Holland, MI	3	Great Lakes
63	Milwaukee-Racine, WI	3	Great Lakes
64	Chicago-Gary-Kenosha, IL-IN-WI	3	Great Lakes
65	Elkhart-Goshen, IN-MI	3	Great Lakes
66	Fort Wayne, IN	3	Great Lakes
67	Indianapolis, IN-IL	3	Great Lakes
68	Champaign-Urbana, IL	3	Great Lakes
69	Evansville-Henderson, IN-KY-IL	4	Mississippi Valley
70	Louisville, KY-IN	4	Mississippi Valley
71	Nashville, TN-KY	4	Mississippi Valley
72	Paducah, KY-IL	4	Mississippi Valley
73	Memphis, TN-AR-MS-KY	4	Mississippi Valley
74	Huntsville, AL-TN	4	Mississippi Valley
75	Tupelo, MS-AL-TN	4	Mississippi Valley
76	Greenville, MS	4	Mississippi Valley
77	Jackson, MS-AL-LA	4	Mississippi Valley
78	Birmingham, AL	4	Mississippi Valley
79	Montgomery, AL	4	Mississippi Valley
80	Mobile, AL	4	Mississippi Valley
81	Pensacola, FL	4	Mississippi Valley
82	Biloxi-Gulfport-Pascagoula, MS	4	Mississippi Valley
83	New Orleans, LA-MS	4	Mississippi Valley
84	Baton Rouge, LA-MS	4	Mississippi Valley
85	Lafayette, LA	4	Mississippi Valley
86	Lake Charles, LA	5	Central
87	Beaumont-Port Arthur, TX	5	Central
88	Shreveport-Bossier City, LA-AR	5	Central
89	Monroe, LA	5	Central
90	Little Rock-North Little Rock, AR	4	Mississippi Valley
91	Fort Smith, AR-OK	4	Mississippi Valley
92	Fayetteville-Springdale-Rogers, AR-MO-OK	4	Mississippi Valley
93	Joplin, MO-KS-OK	4	Mississippi Valley
94	Springfield, MO	4	Mississippi Valley
95	Jonesboro, AR-MO	4	Mississippi Valley
96	St. Louis, MO-IL	4	Mississippi Valley
97	Springfield, IL-MO	3	Great Lakes
98	Columbia, MO	4	Mississippi Valley
99	Kansas City, MO-KS	4	Mississippi Valley
100	Des Moines, IA-IL-MO	3	Great Lakes
101	Peoria-Pekin, IL	3	Great Lakes
102	Davenport-Moline-Rock Island, IA-IL	3	Great Lakes
103	Cedar Rapids, IA	3	Great Lakes
104	Madison, WI-IL-IA	3	Great Lakes
105	La Crosse, WI-MN	3	Great Lakes
106	Rochester, MN-IA-WI	3	Great Lakes
107	Minneapolis-St. Paul, MN-WI-IA	3	Great Lakes
108	Wausau, WI	3	Great Lakes
109	Duluth-Superior, MN-WI	3	Great Lakes
110	Grand Forks, ND-MN	3	Great Lakes
111	Minot, ND	3	Great Lakes
112	Bismarck, ND-MT-SD	3	Great Lakes
113	Fargo-Moorhead, ND-MN	3	Great Lakes
114	Aberdeen, SD	3	Great Lakes
115	Rapid City, SD-MT-NE-ND	5	Central
116	Sioux Falls, SD-IA-MN-NE	3	Great Lakes
117	Sioux City, IA-NE-SD	3	Great Lakes
118	Omaha, NE-IA-MO	5	Central
119	Lincoln, NE	5	Central
120	Grand Island, NE	5	Central

Economic Area (BEA)	BEA Name	Regional Economic Area (REA)	REA Name
121	North Platte, NE-CO	5	Central
122	Wichita, KS-OK	5	Central
123	Topeka, KS	4	Mississippi Valley
124	Tulsa, OK-KS	5	Central
125	Oklahoma City, OK	5	Central
126	Western Oklahoma, OK	5	Central
127	Dallas-Fort Worth, TX-AR-OK	5	Central
128	Abilene, TX	5	Central
129	San Angelo, TX	5	Central
130	Austin-San Marcos, TX	5	Central
131	Houston-Galveston-Brazoria, TX	5	Central
132	Corpus Christi, TX	5	Central
133	McAllen-Edinburg-Mission, TX	5	Central
134	San Antonio, TX	5	Central
135	Odessa-Midland, TX	5	Central
136	Hobbs, NM-TX	5	Central
137	Lubbock, TX	5	Central
138	Amarillo, TX-NM	5	Central
139	Santa Fe, NM	5	Central
140	Pueblo, CO-NM	5	Central
141	Denver-Boulder-Greeley, CO-KS-NE	5	Central
142	Scottsbluff, NE-WY	5	Central
143	Casper, WY-ID-UT	5	Central
144	Billings, MT-WY	6	West
145	Great Falls, MT	6	West
146	Missoula, MT	6	West
147	Spokane, WA-ID	6	West
148	Idaho Falls, ID-WY	6	West
149	Twin Falls, ID	6	West
150	Boise City, ID-OR	6	West
151	Reno, NV-CA	6	West
152	Salt Lake City-Ogden, UT-ID	6	West
153	Las Vegas, NV-AZ-UT	6	West
154	Flagstaff, AZ-UT	5	Central
155	Farmington, NM-CO	5	Central
156	Albuquerque, NM-AZ	5	Central
157	El Paso, TX-NM	5	Central
158	Phoenix-Mesa, AZ-NM	5	Central
159	Tucson, AZ	5	Central
160	Los Angeles-Riverside-Orange County, CA-AZ	6	West
161	San Diego, CA	6	West
162	Fresno, CA	6	West
163	San Francisco-Oakland-San Jose, CA	6	West
164	Sacramento-Yolo, CA	6	West
165	Redding, CA-OR	6	West
166	Eugene-Springfield, OR-CA	6	West
167	Portland-Salem, OR-WA	6	West
168	Pendleton, OR-WA	6	West
169	Richland-Kennewick-Pasco, WA	6	West
170	Seattle-Tacoma-Bremerton, WA	6	West
171	Anchorage, AK	7	Alaska
172	Honolulu, HI	8	Hawaii

Appendix E: Jurisdictions within each Virginia Planning District

1: LENOWISCO	***2: Cumberland Plateau***	***3: Mount Rogers***	***4: New River Valley***
Lee	Buchanan	Bland	Floyd
Norton	Dickenson	Bristol	Giles
Scott	Russell	Carroll	Montgomery
Wise	Tazewell	Galax	Pulaski
		Grayson	Radford
		Smyth	
		Washington	
		Wythe	
5: Roanoke Valley - Alleghany	***6: Central Shenandoah***	***7: Northern Shenandoah Valley***	***8: Northern Virginia***
Alleghany	Augusta	Clarke	Alexandria
Botetourt	Bath	Frederick	Arlington
Clifton Forge	Buena Vista	Page	Fairfax
Covington	Harrisonburg	Shenandoah	Fairfax
Craig	Highland	Warren	Falls Church
Roanoke	Lexington	Winchester	Loudon
Roanoke	Rockbridge		Manassas Park
Salem	Rockingham		Manassas
	Staunton		Prince William
	Waynesboro		
9: Rappahannock - Rapidan	***10: Thomas Jefferson***	***11: VA Region 2000***	***12: West Piedmont***
Culpeper	Albermarle	Amherst	Danville
Fauquier	Charlottesville	Appomattox	Franklin
Madison	Fluvanna	Bedford	Henry
Orange	Greene	Bedford City	Martinsville
Rappahanock	Louisa	Campbell	Patrick
	Nelson	Lynchburg	Pittsylvania
13: Southside	***14: Commonwealth Regional Council***	***15: Richmond Regional***	***16: RADCO***
Brunswick	Amelia	Charles City	Caroline
Halifax	Buckingham	Chesterfield*	Fredericksburg
Mecklenburg	Charlotte	Goochland	King George
South Boston	Cumberland	Hanover	Spotsylvania
	Lunenburg	Henrico	Stafford
	Nottoway	New Kent	
	Prince Edward	Powhatan	
		Richmond	
17: Northern Neck	***18: Middle Peninsula***	***19: Crater***	***20: Accomack - Northampton***
Lancaster	Essex	Colonial Heights	Accomack
Northumberland	Gloucester*	Dinwiddy	Northampton
Richmond	King and Queen	Emporia	
Westmoreland	King William	Greensville	
	Mathews	Hopewell	
	Middlesex	Petersburg	
		Prince George	
		Surry*	
		Sussex	
21: Hampton Roads			
Chesapeake			
Franklin			
Hampton			
Isle of Wight			
James City			
Newport News			
Norfolk			
Poquoson			
Portsmouth			
Southampton			
Suffolk			
Virginia Beach			
Williamsburg			
York			

* Locality was split between two PDCs but was assigned to the one in which it is listed.
Split localities include Gloucester(Hampton Roads, Middle Peninsula), Surry (Hampton Roads, Crater), and Chesterfield (Richmond Regional, Crater)

Appendix F: 2004 Top Trading Partners by Truck by Hampton Roads Jurisdiction

City of Chesapeake

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Nottoway County, VA	848,595	40,502	$ 5,189,339	Virginia Beach city, VA	502,040	61,455	$ 380,701,014
2	Charles City County, VA	463,017	22,113	$ 2,788,249	Fairfax County, VA	334,124	19,531	$ 2,183,157,060
3	Norfolk city, VA	353,952	65,810	$ 1,437,674,708	Norfolk city, VA	333,762	64,975	$ 1,876,132,247
4	Virginia Beach city, VA	281,818	69,647	$ 75,941,542	Newport News city, VA	202,655	18,209	$ 628,482,475
5	Greenville, NC	254,535	23,941	$ 36,461,886	Portsmouth city, VA	124,788	10,901	$ 380,217,412
6	Chesterfield County, VA	153,333	13,959	$ 169,577,494	New York, NY	102,789	9,068	$ 529,215,599
7	Raleigh, NC	152,397	14,096	$ 315,741,256	Columbus, OH	98,193	5,765	$ 4,782,438,967
8	Isle of Wight County, VA	132,129	8,005	$ 37,265,913	Chesterfield County, VA	93,452	9,965	$ 514,142,647
9	Buchanan County, VA	125,375	5,076	$ 3,368,192	Charlotte, NC	91,464	6,598	$ 697,328,135
10	Pittsburgh, PA	122,127	5,293	$ 58,145,184	Hampton city, VA	88,475	8,037	$ 237,917,108

City of Franklin

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Norfolk city, VA	62,505	4,426	$ 414,578,079	Fairfax County, VA	77,914	3,990	$ 165,667,506
2	Rest of Norfolk, VA	60,184	3,337	$ 13,507,885	Dallas, TX	67,896	2,810	$ 129,475,235
3	Chesapeake city, VA	42,614	2,517	$ 223,672,805	New York, NY	57,615	3,225	$ 62,477,875
4	Chesterfield County, VA	41,205	3,141	$ 265,974,661	Non-CMA ON	45,129	1,860	$ 82,471,055
5	Southampton County, VA	41,130	2,092	$ 4,404,188	Memphis, TN	36,388	1,532	$ 72,880,544
6	Suffolk city, VA	40,912	2,445	$ 132,302,801	Virginia Beach city, VA	26,056	2,352	$ 2,469,874
7	Fairfax County, VA	39,757	2,467	$ 254,188,361	Newport News city, VA	24,621	2,064	$ 14,708,211
8	Isle of Wight County, VA	39,536	2,114	$ 61,081,860	Boston, MA	23,302	1,042	$ 24,107,260
9	Prince William County, VA	35,345	1,767	$ 229,002,522	Chicago, IL	22,819	1,123	$ 93,668,254
10	Henrico County, VA	33,889	2,111	$ 216,725,635	Philadelphia, PA	21,222	3,106	$ 16,145,455

Gloucester County

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Spotsylvania County, VA	123,875	5,911	$ 1,830,860	Hampton city, VA	45,818	2,516	$ 284,743
2	Charles City County, VA	90,749	4,314	$ 637,993	Virginia Beach city, VA	41,336	3,114	$ 946,695
3	Norfolk city, VA	62,957	4,758	$ 166,907,801	Norfolk city, VA	36,334	4,886	$ 84,054,059
4	Louisa County, VA	19,260	932	$ 43,035,225	Fairfax County, VA	23,474	1,422	$ 55,860,331
5	Virginia Beach city, VA	14,865	1,557	$ 2,635,745	Chesapeake city, VA	20,165	1,785	$ 145,192
6	Raleigh, NC	11,046	665	$ 47,586,617	Portsmouth city, VA	8,282	451	$ 1,049,522
7	Chesapeake city, VA	11,022	1,103	$ 8,023,081	Henrico County, VA	8,108	959	$ 1,423,683
8	Newport News city, VA	9,059	1,667	$ 29,683,958	Newport News city, VA	4,214	1,312	$ 8,361,672
9	Nottoway County, VA	5,910	284	$ 41,145	Northumberland County, VA	3,087	180	$ 389,947
10	King William County, VA	5,049	297	$ 253,170	Chesterfield County, VA	1,983	683	$ 2,213,781

City of Hampton

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Louisa County, VA	344,122	16,485	$ 26,527,626	Fairfax County, VA	215,196	11,690	$ 1,387,257,494
2	Norfolk city, VA	265,488	41,134	$ 999,816,963	Norfolk city, VA	191,835	42,152	$ 571,638,743
3	Isle of Wight County, VA	121,091	6,338	$ 51,529,286	Virginia Beach city, VA	103,030	13,409	$ 135,507,679
4	Virginia Beach city, VA	111,283	11,902	$ 169,138,359	Chesterfield County, VA	74,786	5,893	$ 361,198,246
5	Charles City County, VA	102,952	4,920	$ 618,398	Newport News city, VA	65,610	12,724	$ 291,768,817
6	Chesapeake city, VA	88,475	8,037	$ 237,917,108	Buchanan County, VA	58,650	2,855	$ 380,920,512
7	Chesterfield County, VA	71,332	6,757	$ 240,635,607	New York, NY	52,886	4,684	$ 245,181,982
8	Newport News city, VA	68,677	15,365	$ 243,823,015	Lynchburg city, VA	51,692	2,638	$ 277,107,858
9	Raleigh, NC	66,170	5,842	$ 190,482,396	Henrico County, VA	47,491	4,999	$ 301,334,748
10	Henrico County, VA	49,084	3,947	$ 222,670,861	Winchester city, VA	46,056	2,338	$ 283,638,294

Isle of Wight County

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Appomattox County, VA	97,069	4,692	$ 554,844	Virginia Beach city, VA	140,193	8,670	$ 44,362,590
2	Norfolk city, VA	66,559	9,560	$ 205,538,234	Chesapeake city, VA	132,129	8,005	$ 37,265,913
3	Prince George County, VA	44,451	2,681	$ 13,104,088	Hampton city, VA	121,091	6,338	$ 51,529,286
4	Virginia Beach city, VA	31,899	5,290	$ 18,917,289	Fairfax County, VA	113,041	5,099	$ 150,012,680
5	Chesapeake city, VA	28,005	4,961	$ 53,377,166	Suffolk city, VA	110,530	6,837	$ 36,222,048
6	Newport News city, VA	23,149	5,010	$ 59,241,701	Norfolk city, VA	109,872	10,025	$ 134,539,604
7	Baltimore city, MD	20,628	1,164	$ 38,644,655	Greenville, NC	74,570	5,023	$ 27,370,651
8	Suffolk city, VA	19,744	4,212	$ 38,197,621	Louisville, KY	61,972	2,652	$ 66,067,090
9	Charlotte, NC	19,272	1,908	$ 32,877,364	Charlotte, NC	51,409	2,766	$ 82,693,810
10	Baltimore County, MD	19,063	988	$ 33,573,495	District of Columbia, DC	49,932	2,241	$ 102,536,593

Data Source: Global Insight Transearch Database

Appendix F: 2004 Top Trading Partners by Truck by Hampton Roads Jurisdiction

James City County

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Appomattox County, VA	258,300	12,278	$ 1,895,829	Newport News city, VA	57,532	5,193	$ 15,355,156
2	Charles City County, VA	143,030	6,806	$ 1,073,872	Virginia Beach city, VA	56,216	5,428	$ 2,888,257
3	Lake Charles, LA	127,008	5,203	$ 24,430,860	Norfolk city, VA	48,650	7,169	$ 42,926,202
4	Norfolk city, VA	80,895	8,270	$ 159,268,675	Fairfax County, VA	44,802	2,955	$ 55,894,586
5	Virginia Beach city, VA	24,682	5,188	$ 8,128,391	New York, NY	35,606	3,118	$ 67,272,369
6	Buckingham County, VA	23,268	1,127	$ 175,795	Boston, MA	34,731	1,837	$ 31,755,304
7	Chesapeake city, VA	19,825	2,789	$ 29,172,493	Chesapeake city, VA	23,974	2,799	$ 1,197,643
8	King and Queen County, VA	17,657	895	$ 143,796	Hampton city, VA	20,900	1,698	$ 1,041,735
9	Newport News city, VA	15,570	4,876	$ 51,519,055	Portsmouth city, VA	14,482	1,014	$ 806,888
10	Orange County, VA	14,789	760	$ 95,585,260	Portland, ME	13,891	844	$ 4,704,804

City of Newport News

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Norfolk city, VA	863,429	79,461	$ 3,366,163,556	Fairfax County, VA	559,283	34,362	$ 19,007,458,072
2	Spotsylvania County, VA	512,485	24,692	$ 23,679,883	Norfolk city, VA	369,816	81,598	$ 1,953,893,745
3	Charles City County, VA	395,754	18,880	$ 2,795,352	Virginia Beach city, VA	175,515	28,763	$ 567,649,233
4	Virginia Beach city, VA	314,008	29,477	$ 526,577,543	Charlotte, NC	166,245	11,681	$ 756,764,664
5	Chesapeake city, VA	202,655	18,209	$ 628,482,475	New York, NY	157,557	13,855	$ 960,751,180
6	Philadelphia, PA	194,653	15,409	$ 339,450,043	Philadelphia, PA	140,863	22,017	$ 477,015,841
7	Augusta, GA	115,466	5,762	$ 85,452,569	Chesterfield County, VA	112,291	12,669	$ 502,215,482
8	Raleigh, NC	98,789	11,326	$ 214,151,323	Chesapeake city, VA	79,378	19,326	$ 271,595,278
9	New York, NY	95,367	7,412	$ 310,296,798	Henrico County, VA	77,309	10,983	$ 416,564,808
10	Suffolk city, VA	90,318	7,392	$ 134,161,365	Richmond city, VA	73,105	7,913	$ 549,257,113

City of Norfolk

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	New York, NY	3,881,314	181,986	$ 5,789,302,526	New York, NY	1,834,477	118,484	$ 5,191,598,425
2	Norfolk city, VA	1,408,333	227,313	$ 9,039,688,543	Fairfax County, VA	1,605,765	92,121	$ 5,976,767,081
3	Virginia Beach city, VA	629,329	139,177	$ 2,082,072,021	Norfolk city, VA	1,408,333	227,313	$ 9,039,688,543
4	Baltimore County, MD	534,236	24,608	$ 400,722,949	Newport News city, VA	863,429	79,461	$ 3,366,163,556
5	Raleigh, NC	478,480	46,379	$ 297,020,289	Virginia Beach city, VA	826,720	119,384	$ 3,260,998,834
6	Charles City County, VA	406,862	19,787	$ 3,431,384	Philadelphia, PA	569,819	97,083	$ 1,927,662,726
7	Chesterfield County, VA	390,827	37,285	$ 1,905,951,458	Charlotte, NC	562,114	39,075	$ 4,504,844,514
8	Newport News city, VA	369,816	81,598	$ 1,953,893,745	Portsmouth city, VA	378,051	33,867	$ 1,955,515,111
9	Portsmouth city, VA	347,524	44,539	$ 2,188,548,932	El Paso, TX	361,336	23,221	$ 2,132,903,417
10	Chesapeake city, VA	333,762	64,975	$ 1,876,132,247	Chesapeake city, VA	353,952	65,810	$ 1,437,674,708

City of Poquoson

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Charleston, WV	243,518	10,007	$ 77,433,966	Fairfax County, VA	1,632	163	$ 563,358
2	Raleigh, NC	33,062	1,614	$ 9,073,373	Norfolk city, VA	1,561	2,722	$ 10,303,586
3	Charles County, MD	23,560	968	$ 9,513,443	Newport News city, VA	405	1,033	$ 304,439
4	Spotsylvania County, VA	22,068	1,048	$ 125,403	Accomack County, VA	226	124	$ 74,114
5	Hopewell city, VA	21,377	879	$ 6,625,849	Franklin County, VA	175	11	$ 4,462
6	Anne Arundel County, MD	17,327	710	$ 6,363,432	Montgomery County, MD	160	54	$ 54,148
7	Charles City County, VA	16,420	780	$ 98,627	Cumberland County, VA	134	6	$ 205,541
8	Williamsburg city, VA	13,556	562	$ 25,537,149	Charlotte, NC	128	184	$ 13,612
9	Roanoke County, VA	11,818	841	$ 73,258,032	Rappahannock County, VA	102	4	$ 157,588
10	Brunswick County, VA	7,596	372	$ 1,246,719	Lexington city, VA	102	4	$ 156,834

City of Portsmouth

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Norfolk city, VA	378,051	33,867	$ 1,955,515,111	Norfolk city, VA	347,524	44,539	$ 2,188,548,932
2	Nottoway County, VA	168,233	8,027	$ 4,335,077	Fairfax County, VA	149,554	8,086	$ 422,036,710
3	Chesapeake city, VA	124,788	10,901	$ 380,217,412	District of Columbia, DC	136,555	6,027	$ 155,749,761
4	Charles City County, VA	99,667	4,766	$ 931,078	Newport News city, VA	61,186	7,657	$ 617,216,269
5	Virginia Beach city, VA	87,958	8,861	$ 34,330,671	New York, NY	56,972	4,464	$ 126,285,656
6	Greenville, NC	70,195	6,367	$ 23,051,936	Philadelphia, PA	49,342	7,338	$ 73,840,688
7	Newport News city, VA	56,375	5,823	$ 212,556,655	Henrico County, VA	30,101	3,391	$ 154,640,089
8	Raleigh, NC	52,337	4,309	$ 55,150,237	Charlotte, NC	29,602	2,181	$ 121,495,996
9	Chesterfield County, VA	47,235	4,096	$ 117,050,955	Virginia Beach city, VA	27,400	10,167	$ 47,986,516
10	Suffolk city, VA	45,959	3,370	$ 143,609,086	Lynchburg city, VA	21,169	1,204	$ 84,276,993

Data Source: Global Insight Transearch Database

Appendix F: 2004 Top Trading Partners by Truck by Hampton Roads Jurisdiction

City of Suffolk

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Raleigh, NC	241,701	17,201	$ 255,260,109	Fairfax County, VA	272,019	13,571	$ 707,929,895
2	Norfolk city, VA	204,515	23,130	$ 948,802,263	Norfolk city, VA	183,166	20,824	$ 741,577,371
3	Isle of Wight County, VA	110,530	6,837	$ 36,222,048	Virginia Beach city, VA	101,434	9,433	$ 92,452,153
4	Mecklenburg County, VA	65,895	3,511	$ 691,809	Newport News city, VA	90,318	7,392	$ 134,161,365
5	Chesapeake city, VA	61,907	8,693	$ 147,523,591	New York, NY	89,344	5,454	$ 266,548,729
6	Virginia Beach city, VA	52,655	8,572	$ 34,568,311	District of Columbia, DC	88,100	3,952	$ 235,839,292
7	Newport News city, VA	40,384	7,492	$ 138,862,774	Chicago, IL	88,033	3,790	$ 212,924,769
8	Houston, TX	39,698	1,817	$ 125,503,417	Charlotte, NC	73,161	4,664	$ 203,594,426
9	Rest of Salisbury, MD	34,781	2,808	$ 8,924,259	Chesterfield County, VA	67,777	6,045	$ 248,864,070
10	Greenville, SC	32,411	1,804	$ 55,323,014	Boston, MA	60,877	2,811	$ 76,916,187

City of Virginia Beach

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Norfolk city, VA	826,720	119,384	$ 3,260,998,834	District of Columbia, DC	763,038	32,416	$ 293,918,456
2	Charles City County, VA	791,393	37,703	$ 4,782,630	Norfolk city, VA	629,329	139,177	$ 2,082,072,021
3	Chesterfield County, VA	682,921	37,810	$ 184,719,296	Fairfax County, VA	442,330	25,981	$ 2,184,652,633
4	Raleigh, NC	562,640	33,024	$ 362,942,852	Newport News city, VA	314,008	29,477	$ 526,577,543
5	Chesapeake city, VA	502,040	61,455	$ 380,701,014	Chesapeake city, VA	281,818	69,647	$ 75,941,542
6	Goochland County, VA	486,846	23,260	$ 2,857,986	Baltimore city, MD	136,359	8,258	$ 123,166,646
7	Hanover County, VA	272,996	13,983	$ 69,602,845	New York, NY	124,505	13,034	$ 342,264,200
8	Newport News city, VA	175,515	28,763	$ 567,649,233	Wilmington, NC	121,049	6,840	$ 57,858,030
9	Isle of Wight County, VA	140,193	8,670	$ 44,362,590	Non-CMA ON	120,336	6,404	$ 315,648,999
10	Augusta County, VA	139,831	7,548	$ 252,622,923	Chesterfield County, VA	118,220	12,166	$ 238,649,772

City of Williamsburg

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Norfolk city, VA	253,541	23,822	$ 1,583,978,928	Fairfax County, VA	327,653	15,085	$ 450,959,087
2	Appomattox County, VA	100,132	4,844	$ 8,963,455	Norfolk city, VA	204,847	18,727	$ 1,083,597,522
3	Charles City County, VA	55,112	2,672	$ 331,039	Rest of Lexington, KY	77,442	3,399	$ 64,790,971
4	Chesapeake city, VA	36,142	2,879	$ 170,530,156	Charlotte, NC	74,200	3,727	$ 99,864,645
5	New York, NY	33,696	2,318	$ 174,793,743	District of Columbia, DC	70,519	3,128	$ 69,501,392
6	Chesterfield County, VA	33,480	3,433	$ 206,411,549	New York, NY	59,047	3,584	$ 100,128,757
7	Newport News city, VA	31,572	4,792	$ 168,400,900	Charleston, WV	55,972	2,760	$ 118,105,860
8	Philadelphia, PA	30,677	2,875	$ 110,964,947	Accomack County, VA	45,993	2,298	$ 54,462,212
9	Fairfax County, VA	30,421	4,335	$ 183,472,271	Knoxville, TN	40,664	1,908	$ 64,056,440
10	Henrico County, VA	27,992	2,819	$ 158,339,431	Wilmington, NC	39,162	2,718	$ 101,075,399

York County

Rank by Tons	Origin Name	Truck Tons In	Truck Loads In	Value In	Destination Name	Truck Tons Out	Truck Loads Out	Value Out
1	Spotsylvania County, VA	294,368	14,091	$ 28,040,176	District of Columbia, DC	694,399	29,043	$ 324,912,777
2	Charles City County, VA	225,741	10,775	$ 1,355,954	New York, NY	274,430	13,622	$ 124,343,811
3	Norfolk city, VA	192,928	21,503	$ 968,385,191	Albany, NY	167,423	7,009	$ 52,623,619
4	Buchanan County, VA	128,525	5,192	$ 3,452,812	Norfolk city, VA	133,096	19,481	$ 704,870,098
5	Pittsburgh, PA	121,200	5,434	$ 47,738,416	Philadelphia, PA	101,763	9,732	$ 71,205,654
6	Wise County, VA	109,093	4,401	$ 2,954,210	Fairfax County, VA	62,822	3,549	$ 115,110,590
7	Baton Rouge, LA	84,600	3,481	$ 18,233,558	Buchanan County, VA	34,215	1,672	$ 222,222,204
8	Raleigh, NC	64,601	5,725	$ 176,707,965	Rest of Johnson City, TN	33,832	1,462	$ 9,692,203
9	Philadelphia, PA	51,797	7,993	$ 96,092,702	Chesterfield County, VA	27,805	3,945	$ 167,909,257
10	Charlotte, NC	51,681	3,083	$ 65,267,006	Henrico County, VA	26,791	3,856	$ 165,999,377

Data Source: Global Insight Transearch Database

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
CHES	AIRLINE BLVD	JOLLIFF RD	PORTSMOUTH CL	9,018	2005	273	3.0%	27	3.8%	17	2.1%	2005
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	9,528	2005	898	9.4%	70	8.4%	50	5.5%	2005
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	9,289	2005	339	3.6%	33	5.4%	17	2.2%	2005
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	GALLBUSH RD	21,282	2005	1,046	4.9%	76	5.2%	42	2.3%	2005
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	35,491	2005	1,129	3.2%	98	4.4%	62	2.2%	2005
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	42,981	2005	1,934	4.5%	139	5.0%	116	3.1%	2005
CHES	BLACKWATER RD	VIRGINIA BEACH CL	FENTRESS AIRFIELD RD	3,045	2005	255	8.4%	20	6.7%	16	5.9%	2005
CHES	BRIDGE RD	COLLEGE DR	CHURCHLAND BLVD	24,272	2005	315	1.3%	24	1.8%	13	0.6%	2005
CHES	BRUCE RD	TAYLOR RD	TYRE NECK RD	15,985	2005	153	1.0%	23	1.8%	5	0.4%	2005
CHES	CAMPOSTELLA RD	GREAT BRIDGE BLVD	MILITARY HWY	6,893	2005	130	1.9%	15	3.1%	8	1.2%	2005
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	15,104	2005	318	2.1%	30	2.3%	35	2.3%	2005
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	11,681	2005	1,432	12.3%	95	9.7%	91	8.8%	2005
CHES	CEDAR RD	GEORGE WASHINGTON HWY	WEST RD	13,226	2005	353	2.7%	46	6.0%	26	2.0%	2005
CHES	CEDAR RD	DOMINION BLVD	BRIARFIELD DR	27,023	2005	732	2.7%	74	4.0%	33	1.5%	2005
CHES	CENTERVILLE TNPK	BATTLEFIELD BLVD	ETHRIDGE MANOR BLVD	6,946	2005	208	3.0%	26	3.3%	20	2.9%	2005
CHES	CENTERVILLE TNPK	ETHRIDGE MANOR BLVD	MT PLEASANT RD	9,648	2005	336	3.5%	33	4.0%	10	1.1%	2005
CHES	CENTERVILLE TNPK	BUTTS STATION RD	ELBOW RD	9,062	2005	257	2.8%	30	3.4%	13	1.6%	2005
CHES	CHURCHLAND BLVD	WESTERN BRANCH BLVD	TOWN POINT RD	6,210	2005	44	0.7%	3	1.0%	3	0.5%	2005
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	7,393	2005	71	1.0%	7	1.4%	6	0.8%	2005
CHES	DOMINION BLVD	CEDAR RD	BAINBRIDGE BLVD	29,984	2005	1,837	6.1%	120	5.5%	66	2.9%	2005
CHES	ELBOW RD	CENTERVILLE TNPK	VA BEACH CL	6,151	2005	48	0.8%	7	0.9%	4	0.5%	2005
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	11,052	2005	913	8.3%	34	3.8%	43	4.6%	2005
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	15,778	2005	523	3.3%	31	3.8%	43	3.3%	2005
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	5,963	2005	770	12.9%	57	10.6%	37	6.3%	2005
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	BATTLEFIELD BLVD	14,027	2005	377	2.7%	57	4.5%	38	2.7%	2005
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	29,389	2005	583	2.0%	61	2.9%	34	1.3%	2005
CHES	HANBURY RD	JOHNSTOWN RD	BATTLEFIELD BLVD	8,204	2005	83	1.0%	8	1.3%	5	0.7%	2005
CHES	I-64	MILITARY HWY	I-264&664	78,097	2005	7,494	9.6%	448	6.9%	389	5.7%	2005
CHES	I-464	FREEMAN AVE	POINDEXTER ST	51,277	2005	2,551	5.0%	182	3.9%	105	2.5%	2005
CHES	INDIAN RIVER RD	TATEMSTOWN RD	VA BEACH CL	36,234	2005	549	1.7%	39	2.0%	29	1.1%	2005
CHES	JOHNSTOWN RD	BENEFIT RD	STONEGATE PKWY	4,089	2005	156	3.8%	14	4.2%	13	3.6%	2005
CHES	JOLLIFF RD	AIRLINE BLVD	DOCK LANDING RD	3,219	2005	99	3.1%	15	5.4%	8	1.6%	2005
CHES	JOLLIFF RD	DOCK LANDING RD	PORTSMOUTH BLVD	3,165	2005	48	1.5%	6	3.0%	3	0.8%	2005
CHES	KEMPSVILLE RD	BATTLEFIELD BLVD	GREENBRIER PKWY	29,512	2005	827	2.8%	81	3.1%	56	2.0%	2005
CHES	LIBERTY ST	22ND ST	OLD ATLANTIC AVE	9,914	2005	339	3.4%	24	4.9%	25	3.0%	2005
CHES	MILITARY HWY	AIRLINE BLVD	I-64	8,866	2005	829	9.4%	49	5.5%	90	7.5%	2005
CHES	MILITARY HWY	CANAL DR	BAINBRIDGE BLVD	34,841	2005	717	2.1%	62	2.0%	57	1.6%	2005
CHES	MILITARY HWY	ALLISON DR	GREENBRIER PKWY	34,408	2005	809	2.4%	69	3.0%	79	2.2%	2005
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	19,411	2005	639	3.3%	66	4.2%	36	1.9%	2005
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	11,044	2005	422	3.8%	39	3.6%	32	2.8%	2005
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	10,004	2005	441	4.4%	28	4.1%	29	3.2%	2005
CHES	PORTSMOUTH BLVD	SHOULDERS HILL RD	JOLLIFF RD	14,058	2005	687	4.9%	37	3.9%	24	2.0%	2005
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	27,875	2005	449	1.6%	33	2.8%	17	0.7%	2005
CHES	PUGHSVILLE RD	TOWN POINT RD	I-664	8,832	2005	1,130	12.8%	57	10.0%	63	8.4%	2005
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	20,466	2005	326	1.6%	26	1.6%	18	1.0%	2005
CHES	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	69,801	2005	6,990	10.0%	361	6.9%	341	6.1%	2005
CHES	SIGN PINE RD	EDINBURGH PKWY	BENEFIT RD	2,088	2005	67	3.2%	8	4.0%	4	1.7%	2005
CHES	TAYLOR RD	PORTSMOUTH BLVD	BRUCE RD	23,900	2005	156	0.7%	12	1.2%	7	0.3%	2005
CHES	TYRE NECK RD	BRUCE RD	SILVERWOOD BLVD	13,170	2005	61	0.5%	4	0.4%	2	0.2%	2005
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	28,173	2005	569	2.0%	54	3.2%	26	1.1%	2005
GLO	GUINEA RD	ROUTE 17	MARYUS RD	9,275	2003	149	1.6%	9	1.9%	7	0.8%	2003
GLO	HICKORY FORK RD	ROUTE 17	BELROI RD	5,734	2003	57	1.0%	3	0.9%	1	0.1%	2003
GLO	MAIN ST (BUS RTE 17)	RTE 17 (SOUTH INTERSECTION)	RTE 3/14E	21,754	2003	401	1.8%	36	2.9%	20	1.1%	2003
GLO	RTE 17	RTE 17 BUS S (MAIN ST)	RTE 606 (ARK RD)	17,672	2003	704	4.0%	48	4.9%	26	1.8%	2003
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	35,073	2005	917	2.6%	54	2.1%	42	1.3%	2005
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	18,186	2004	306	1.7%	30	2.5%	25	1.6%	2004
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	20,844	2004	342	1.6%	28	2.1%	29	1.7%	2004
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	25,638	2004	442	1.7%	30	1.9%	22	1.0%	2004
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	23,396	2004	350	1.5%	25	1.6%	19	0.9%	2004
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	15,918	2004	240	1.5%	16	1.4%	22	1.6%	2004

Legend:

Existing Weekday Truck Volumes	Existing AM and PM Peak Hour Truck Volumes	Existing Weekday, AM, and PM Truck %
500 – 749	50 – 74	4.0 – 5.9%
750 – 999	75 – 99	6.0 – 7.9%
1000 +	100 +	8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	36,512	2005	428	1.2%	33	1.1%	20	0.6%	2005
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	9,160	2004	54	0.9%	5	1.7%	2	0.4%	2004
HAM	COMMANDER SHEPPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	15,181	2003	228	1.5%	12	1.0%	20	1.6%	2004
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	4,456	2004	49	1.1%	4	1.0%	2	0.5%	2004
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	17,008	2004	75	0.4%	10	0.9%	4	0.3%	2004
HAM	HARRIS CREEK RD	FOX HILL RD	LITTLE BACK RIVER RD	3,384	2004	30	0.9%	2	0.4%	2	0.7%	2004
HAM	HRC PARKWAY	I-64	MAGRUDER BLVD	50,960	2005	554	1.1%	42	1.1%	18	0.4%	2005
HAM	KECOUGHTAN RD	LA SALLE AVE	VICTORIA BLVD	9,726	2004	156	1.6%	13	1.9%	6	0.7%	2004
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	7,708	2003	88	1.3%	6	1.4%	8	1.3%	2004
HAM	KECOUGHTAN RD	POWHATAN PKWY	LA SALLE AVE	7,944	2004	89	1.1%	5	1.1%	4	0.5%	2004
HAM	KING ST	LITTLE BACK RIVER RD	LANGLEY AFB	7,979	2003	79	0.8%	28	3.8%	3	0.3%	2004
HAM	LA SALLE AVE	ARMISTEAD AVE	MERCURY BLVD	15,800	2004	454	2.9%	28	2.3%	32	2.5%	2004
HAM	LITTLE BACK RIVER RD	KING ST	ROCKWELL RD	13,820	2004	124	0.9%	13	1.1%	4	0.3%	2004
HAM	MAGRUDER BLVD	YORK CL	SEMPLE FARM RD	28,865	2003	333	1.3%	26	1.2%	15	0.7%	2004
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	7,894	2004	68	0.9%	7	1.2%	3	0.5%	2004
HAM	MELLEN ST	MERCURY BLVD	MALLORY ST	5,173	2004	63	1.2%	3	0.5%	3	0.4%	2004
HAM	MERCURY BLVD	PEMBROKE AVE	MALLORY ST	12,081	2004	145	1.2%	13	1.2%	11	0.9%	2004
HAM	MERCURY BLVD	JEFFERSON AVE	BIG BETHEL RD	50,334	2005	775	1.5%	54	2.0%	46	1.1%	2005
HAM	MERCURY BLVD	ARMISTEAD AVE	LA SALLE AVE	63,415	2004	530	0.8%	38	0.8%	27	0.5%	2004
HAM	MERCURY BLVD	KING ST	ANDREWS BLVD	42,078	2005	230	0.8%	16	0.6%	15	0.6%	2004
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	6,712	2004	55	0.8%	6	0.9%	2	0.3%	2004
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	12,086	2004	307	2.5%	32	3.8%	27	2.1%	2004
HAM	PEMBROKE AVE	LA SALLE AVE	ARMISTEAD AVE	10,396	2004	221	2.1%	17	2.0%	15	1.6%	2004
HAM	PEMBROKE AVE	ARMISTEAD AVE	MERCURY BLVD	15,702	2004	132	1.3%	12	1.4%	7	0.7%	2004
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	16,073	2004	128	0.8%	11	1.1%	7	0.6%	2004
HAM	POWER PLANT PKWY	BRIARFIELD RD	PINE CHAPEL RD	26,712	2004	364	1.4%	35	2.0%	25	1.0%	2004
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	8,702	2003	80	0.8%	7	1.0%	2	0.3%	2004
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	15,661	2004	147	0.9%	14	1.2%	11	0.7%	2004
HAM	RIP RAP RD	ARMISTEAD AVE	KING ST	8,408	2005	129	1.2%	7	1.0%	11	1.1%	2004
HAM	SETTLERS LANDING RD	LA SALLE AVE	ARMISTEAD AVE	10,508	2005	452	2.2%	33	2.1%	28	1.5%	2004
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	27,961	2004	228	0.8%	19	0.9%	16	0.7%	2004
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	24,289	2004	152	0.6%	17	1.0%	6	0.3%	2004
HAM	WOODLAND RD	COUNTY ST	MERCURY BLVD	23,659	2003	185	1.0%	21	1.3%	11	0.8%	2004
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	10,494	2004	63	0.6%	5	0.4%	4	0.5%	2004
IW	BATTERY PARK RD	S CHURCH ST	NIKE PARK RD	10,116	2005	210	2.1%	18	2.4%	5	0.5%	2005
IW	BENNS CHURCH BLVD	SUFFOLK CL	RTE 10 & 32 (BREWERS NECK RD)	11,677	2005	804	6.9%	60	7.7%	35	3.3%	2005
IW	BREWER'S NECK BLVD	RTE 10 & 32 (BENN'S CHURCH)	RTE 17	24,460	2005	1,476	6.0%	118	6.2%	81	3.6%	2005
IW	BUS RTE 10	JENKINS LANE	RT 10 BYPASS	1,920	2005	24	1.3%	0	0.0%	2	1.0%	2005
IW	BUS RTE 58	RTE 258	SUFFOLK CL	3,407	2005	152	4.5%	12	5.0%	6	2.1%	2005
IW	CARROLLTON BLVD/JAMES RIVER BR	RTE 258	NEWPORT NEWS CL	29,803	2005	1,143	3.8%	68	2.8%	68	2.4%	2005
IW	CHURCH ST S	BATTERY PARK RD	CYPRESS CREEK BRIDGE	14,348	2005	80	0.6%	5	0.6%	4	0.3%	2005
IW	CHURCH ST N	MAIN ST	SMITHFIELD CL	9,731	2005	51	0.5%	1	0.1%	9	0.8%	2005
IW	ROUTE 10 BYPASS	CHURCH ST S	MAIN ST	17,269	2005	848	4.9%	52	4.3%	56	3.5%	2005
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	7,890	2005	381	4.8%	16	2.4%	17	2.0%	2005
IW	ROUTE 258	ROUTE 58	UNION CAMP DR (RTE 656)	3,972	2005	1,716	43.2%	75	19.8%	130	40.9%	2005
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	5,333	2005	589	11.0%	31	7.2%	31	6.5%	2005
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	WCL SMITHFIELD	5,693	2005	469	8.2%	35	7.1%	36	7.0%	2005
IW	ROUTE 258/MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	13,835	2005	562	4.1%	27	2.9%	21	1.7%	2005
IW	SMITH'S NECK RD	REYNOLDS DR	TITUS CREEK DR	8,586	2005	56	0.6%	2	0.3%	3	0.3%	2005
IW	TITUS CREEK DR	SMITH'S NECK RD	NIKE PARK RD	6,457	2005	65	1.0%	4	0.6%	6	0.9%	2005
JCC	BARHAMSVILLE RD	I-64	RTE 60	6,215	2004	403	6.5%	27	5.9%	20	3.7%	2004
JCC	CENTERVILLE RD	LONGHILL RD	RICHMOND RD	10,364	2005	321	4.0%	32	5.1%	13	1.7%	2004
JCC	CROAKER RD	I-64	FENTON MILL RD	6,108	2004	264	4.3%	18	3.8%	14	2.8%	2004
JCC	CROAKER RD	RTE 60	RTE 760 (MAXTON LN)	8,652	2005	229	3.0%	19	3.8%	8	1.1%	2004
JCC	IRONBOUND RD	MONTICELLO AVE	LONGHILL CONNECTOR RD	10,764	2005	193	1.6%	22	3.0%	10	1.1%	2005
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	WILLIAMSBURG CL	9,297	2005	104	1.1%	10	1.3%	1	0.1%	2004
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	RTE 712 (STANLEY DR)	11,529	2005	318	2.8%	26	2.9%	9	0.9%	2004
JCC	LONGHILL CONNECTOR RD	LONGHILL RD (RTE 612)	IRONBOUND RD	6,294	2005	98	1.2%	8	1.4%	2	0.2%	2004
JCC	LONGHILL RD	OLDE TOWNE RD (RTE 658)	RTE 199	20,916	2005	229	1.5%	22	1.6%	11	0.8%	2004
JCC	OLDE TOWNE RD	LONGHILL RD	RICHMOND RD	9,671	2005	144	1.7%	17	2.9%	10	1.2%	2004

Legend:

Existing Weekday Truck Volumes	Existing AM and PM Peak Hour Truck Volumes	Existing Weekday, AM, and PM Truck %
500 – 749	50 – 74	4.0 – 5.9%
750 – 999	75 – 99	6.0 – 7.9%
1000 +	100 +	8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
JCC	POCAHONTAS TRL	GROVE INTERCHANGE	BASF RD/ROUTE 60 RELOCATION	10,806	2005	503	5.6%	32	4.9%	34	4.3%	2004
JCC	RTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	24,063	2004	762	3.2%	61	3.5%	25	1.2%	2004
JCC	RTE 199	ECL WLMBG	HENRY ST/COLONIAL PKWY	29,003	2004	841	2.9%	80	3.4%	27	1.1%	2004
JCC	RTE 60	CROAKER RD (RTE 607)	RTE 199	18,770	2005	503	2.8%	51	4.3%	19	1.2%	2004
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	3,663	2004	73	2.4%	6	3.3%	4	2.0%	2004
NN	26TH ST	25TH ST	ROANOKE AVE	1,399	2004	22	1.4%	2	2.6%	0	0.0%	2004
NN	BLAND BLVD	WARWICK BLVD	JEFFERSON AVE	31,230	2004	313	1.0%	22	1.3%	13	0.4%	2004
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	10,842	2004	212	2.0%	16	2.7%	12	1.2%	2004
NN	DENBIGH BLVD	LUCAS CREEK RD	WARWICK BLVD	21,380	2004	309	1.5%	53	3.3%	9	0.5%	2004
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	35,320	2004	440	1.2%	30	1.8%	30	1.1%	2004
NN	FORT EUSTIS BLVD	JEFFERSON AVE	YORK CL	16,806	2005	831	4.9%	61	4.0%	35	2.4%	2005
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	38,480	2004	1,703	4.0%	116	3.0%	76	2.0%	2004
NN	HARPERSVILLE RD	JEFFERSON AVE	WARWICK BLVD	15,219	2004	181	1.4%	17	1.9%	11	0.9%	2004
NN	HARPERSVILLE RD	SAUNDERS RD	HRC PARKWAY	14,439	2004	160	1.3%	13	1.3%	8	0.6%	2004
NN	HUNTINGTON AVE	71ST ST	39TH ST	13,692	2004	212	1.6%	17	0.8%	11	0.9%	2004
NN	I-64	OYSTER POINT RD	J CLYDE MORRIS BLVD	127,600	2005	7,735	6.1%	431	4.7%	296	3.0%	2005
NN	J CLYDE MORRIS BLVD	WARWICK BLVD	JEFFERSON AVE	38,290	2004	503	1.3%	33	1.3%	21	0.7%	2004
NN	JEFFERSON AVE	FORT EUSTIS BLVD	ATKINSON BLVD	22,951	2004	1,286	3.5%	111	4.9%	74	2.4%	2004
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	9,654	2004	310	3.0%	30	4.5%	11	1.0%	2004
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	54,489	2005	1,753	3.2%	140	3.7%	131	2.8%	2005
NN	JEFFERSON AVE	ATKINSON BLVD	DENBIGH BLVD	36,290	2005	708	2.0%	68	3.2%	28	0.9%	2005
NN	JEFFERSON AVE	BLAND BLVD	I-64	68,478	2004	1,686	1.9%	129	2.8%	93	1.3%	2004
NN	JEFFERSON AVE	MIDDLE GROUND BLVD	J CLYDE MORRIS BLVD	59,524	2004	1,051	1.8%	83	2.3%	69	1.5%	2004
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	61,622	2004	1,042	1.7%	68	2.1%	37	0.7%	2004
NN	JEFFERSON AVE	35TH ST	25TH ST	14,440	2004	251	1.7%	16	2.2%	14	1.3%	2004
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	14,320	2004	155	1.1%	11	1.4%	9	0.8%	2004
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	19,266	2004	122	1.1%	7	1.0%	9	0.9%	2004
NN	OYSTER POINT RD	WARWICK BLVD	JEFFERSON AVE	49,774	2004	679	1.4%	75	2.7%	25	0.6%	2004
NN	OYSTER POINT RD	JEFFERSON AVE	I-64	48,238	2004	634	1.3%	49	1.7%	27	0.7%	2004
NN	PEMBROKE AVE	HUNTINGTON AVE	ABERDEEN RD	9,815	2005	225	2.5%	12	1.9%	22	2.2%	2004
NN	RICHNECK RD	DENBIGH BLVD	JEFFERSON AVE	3,667	2004	61	1.7%	9	4.1%	1	0.3%	2004
NN	ROANOKE AVE	I-664	BRIARFIELD RD	3,595	2004	39	1.4%	5	2.7%	6	1.8%	2004
NN	SAUNDERS RD	HARPERSVILLE RD	HAMPTON CL	11,896	2004	106	0.9%	14	1.7%	7	0.5%	2004
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	16,758	2004	659	4.0%	46	3.9%	33	2.5%	2004
NN	WARWICK BLVD	MAIN ST	MERCURY BLVD	32,968	2004	1,141	3.9%	59	2.7%	74	2.6%	2004
NN	WARWICK BLVD	OYSTER POINT RD	DEEP CREEK RD	41,642	2004	766	2.2%	74	3.5%	23	0.8%	2004
NN	WARWICK BLVD	SNIDOW BLVD	DENBIGH BLVD	44,764	2004	900	2.0%	87	3.2%	37	1.0%	2004
NN	WARWICK BLVD	23RD ST	39TH ST	4,785	2004	109	2.0%	6	1.9%	12	1.0%	2004
NN	WARWICK BLVD	FORT EUSTIS BLVD	SNIDOW BLVD	34,458	2004	728	1.9%	75	3.0%	38	1.2%	2004
NN	WARWICK BLVD	DENBIGH BLVD	BLAND BLVD	39,743	2004	593	1.5%	42	1.9%	25	0.8%	2004
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	28,647	2004	411	1.4%	11	0.4%	38	1.1%	2004
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	34,552	2004	468	1.3%	29	1.1%	27	0.8%	2004
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	14,456	2004	204	1.3%	5	0.7%	26	0.8%	2004
NN	YORKTOWN RD	WARWICK BLVD	I-64	5,815	2004	280	4.8%	12	3.0%	8	1.6%	2004
NOR	21ST ST	HAMPTON BLVD	COLLEY AVE	8,467	2003	92	1.1%	7	1.6%	1	0.1%	2003
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	9,799	2003	227	2.3%	13	2.7%	18	1.8%	2003
NOR	27TH ST	HAMPTON BLVD	LLEWELLYN AVE	8,340	2003	258	3.1%	25	3.2%	12	2.2%	2003
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	8,149	2003	49	0.6%	4	0.8%	5	0.7%	2003
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	13,906	2003	185	1.3%	9	0.8%	15	1.3%	2003
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	27,525	2003	2,272	8.3%	185	9.1%	91	4.1%	2003
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	14,383	2003	623	4.3%	67	6.8%	42	3.7%	2003
NOR	BAY AVE	FIRST VIEW ST	I-64	17,199	2003	170	1.0%	8	0.6%	8	0.5%	2003
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	12,939	2003	75	0.6%	4	0.5%	1	0.1%	2003
NOR	BERKLEY AVE EXT	BERKLEY AVE/FAUQUIER ST	WILSON RD	3,274	2003	95	2.9%	9	5.1%	6	2.2%	2003
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	29,252	2003	1,557	5.3%	106	5.6%	128	5.3%	2003
NOR	BRAMBLETON AVE	PARK AVE	I-264	47,524	2003	1,714	3.6%	135	4.4%	116	2.9%	2003
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	6,864	2003	70	1.0%	7	2.4%	1	0.2%	2003
NOR	CHURCH ST	PRINCESS ANNE RD	26TH ST	19,936	2003	458	2.3%	35	3.1%	29	1.9%	2003
NOR	COLLEY AVE	27TH ST	53RD ST	14,476	2003	183	1.3%	17	1.8%	9	0.8%	2003
NOR	GRANBY ST	WILLOW WOOD DRIVE	THOLE ST	39,655	2003	515	1.3%	40	1.3%	38	1.1%	2003

Legend:

Existing Weekday Truck Volumes	Existing AM and PM Peak Hour Truck Volumes	Existing Weekday, AM, and PM Truck %
500 – 749	50 – 74	4.0 – 5.9%
750 – 999	75 – 99	6.0 – 7.9%
1000 +	100 +	8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
NOR	GRANBY ST	BAYVIEW BLVD	TIDEWATER DR	15,767	2003	171	1.1%	8	1.2%	12	0.7%	2003
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	41,403	2004	1,927	4.7%	112	4.2%	168	5.3%	2004
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	137,077	2005	3,804	2.8%	277	2.7%	129	1.2%	2005
NOR	I-564	ADMIRAL TAUSSIG BLVD	INTERNATIONAL TERMINAL BLVD	49,368	2005	864	1.8%	96	2.1%	54	1.1%	2005
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	24,852	2003	1,074	4.3%	54	3.1%	71	2.6%	2003
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	16,219	2003	618	3.8%	56	5.4%	39	3.0%	2003
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	29,760	2005	1,979	6.7%	133	7.4%	174	8.0%	2005
NOR	JOHNSTONS RD/HALPRIN LN	MILITARY HWY	LITTLE CREEK RD	8,155	2003	56	0.7%	4	0.6%	5	0.6%	2003
NOR	KEMPSVILLE RD	NEWTOWN RD	VA BEACH BLVD	23,257	2003	170	0.7%	13	0.7%	12	0.6%	2003
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	22,169	2003	437	2.0%	35	2.4%	23	1.3%	2003
NOR	LITTLE CREEK RD	HAMPTON BLVD	GRANBY ST	23,930	2003	274	1.1%	17	1.1%	13	0.6%	2003
NOR	LLEWELLYN AVE	27TH ST	38TH ST	8,203	2003	42	0.5%	8	1.5%	4	0.5%	2003
NOR	MILITARY HWY	VA BEACH BLVD	PRIN ANNE RD/NORTHAMPTON BLVD	54,028	2003	1,098	2.0%	76	2.7%	65	1.6%	2003
NOR	MILITARY HWY	VA BEACH CL	I-264	50,359	2004	1,000	1.9%	86	2.0%	73	1.5%	2003
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	30,362	2003	518	1.7%	31	2.0%	38	1.4%	2003
NOR	MONTICELLO AVE	VA BEACH BLVD	21ST ST	24,948	2003	722	2.9%	63	3.8%	40	2.1%	2003
NOR	MONTICELLO AVE	CITY HALL AVE	BRAMBLETON AVE	6,592	2003	140	2.1%	9	2.2%	11	1.6%	2003
NOR	NEWTOWN RD	VA BEACH BLVD	VA BEACH CL	38,699	2003	614	1.4%	47	1.8%	47	1.6%	2003
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	32,264	2003	455	1.4%	31	1.3%	39	1.5%	2003
NOR	NORVIEW AVE	I-64	MILITARY HWY	30,018	2003	400	1.3%	38	2.6%	19	0.8%	2003
NOR	NORVIEW AVE	MILITARY HWY	AZALEA GARDEN RD	16,551	2003	125	0.8%	8	1.0%	10	0.8%	2003
NOR	NORVIEW AVE	TIDEWATER DR	CHESAPEAKE BLVD	5,793	2003	38	0.7%	4	1.1%	2	0.4%	2003
NOR	OCEAN VIEW AVE	CHESAPEAKE BLVD	21ST BAY ST	18,765	2003	315	1.4%	17	1.3%	23	1.3%	2003
NOR	OLNEY RD	COLLEY AVE	DUKE ST/VA BEACH BLVD	10,851	2003	96	0.9%	7	0.8%	6	0.6%	2003
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	17,343	2003	272	1.6%	23	1.9%	18	1.2%	2003
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	AZALEA GARDEN RD	23,669	2005	718	3.0%	64	3.9%	35	1.8%	2005
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	9,292	2003	165	1.8%	12	1.9%	11	1.5%	2003
NOR	ROBIN HOOD RD	AZALEA GARDEN RD	ELLSMERE AVE	9,911	2003	220	2.2%	13	1.7%	25	2.9%	2003
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	LITTLE CREEK RD	9,978	2003	170	1.7%	16	3.5%	15	1.6%	2003
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	CHESAPEAKE BLVD	13,773	2003	226	1.6%	15	2.1%	14	1.2%	2003
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	24,064	2003	267	1.1%	23	1.5%	14	0.7%	2003
NOR	THOLE ST	GRANBY ST	TIDEWATER DR	11,824	2003	75	0.6%	6	0.5%	8	0.7%	2003
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	40,530	2005	1,025	2.5%	69	2.5%	53	1.7%	2005
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	15,461	2003	125	0.8%	8	0.9%	4	0.3%	2003
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	16,465	2003	487	3.0%	47	4.6%	29	2.0%	2003
NOR	VA BEACH BLVD	MONTICELLO AVE	TIDEWATER DR	14,724	2003	390	2.6%	38	3.9%	25	1.9%	2003
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	36,304	2003	448	1.2%	26	1.4%	49	1.6%	2003
NOR	WILLOW WOOD DR	GRANBY ST	TIDEWATER DR	12,077	2003	70	0.6%	12	1.5%	4	0.4%	2003
POQ	EAST YORKTOWN RD	HUNT'S NECK RD	POQUOSON AVE	8,220	2004	103	1.3%	11	1.7%	3	0.3%	2004
POQ	EAST YORKTOWN RD	YORK CL	HUNT'S NECK RD	4,028	2004	48	1.2%	3	1.0%	3	0.8%	2004
POQ	POQUOSON AVE	WYTHE CREEK RD	LITTLE FLORIDA RD	3,570	2004	55	1.5%	9	2.3%	2	0.4%	2004
POQ	VICTORY BLVD	CARYS CHAPEL RD (RTE 782)	WYTHE CREEK RD	14,073	2004	205	1.5%	14	1.4%	7	0.5%	2004
POQ	WYTHE CREEK RD	HAMPTON CL	ALPHUS ST	13,457	2004	264	2.0%	29	2.6%	10	0.7%	2004
PORT	CAVALIER BLVD	CHESAPEAKE CL	GREENWOOD DR	11,684	2003	229	2.0%	14	1.6%	14	1.2%	2003
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	13,439	2003	128	1.0%	8	3.6%	9	0.8%	2003
PORT	CHURCHLAND BLVD	TYRE NECK RD	HIGH ST	13,834	2003	180	1.3%	4	0.6%	14	1.2%	2003
PORT	COUNTY ST	PENINSULA AVE	ELM AVE	5,214	2003	390	7.5%	15	3.5%	30	6.3%	2003
PORT	COURT ST	COUNTY ST	HIGH ST	6,827	2003	211	3.1%	8	1.5%	12	2.1%	2003
PORT	CRAWFORD ST	COUNTY ST	COURT ST	8,699	2003	157	1.8%	15	2.1%	14	1.8%	2003
PORT	DEEP CREEK BLVD	GREENWOOD DR	PORTSMOUTH BLVD	8,790	2003	172	2.0%	13	2.3%	9	1.1%	2003
PORT	DES MOINES AVE	DEEP CREEK BLVD	I-264	8,809	2003	60	0.7%	4	0.7%	2	0.2%	2003
PORT	EFFINGHAM ST	NORTH ST	CRAWFORD PKWY	16,878	2003	125	0.7%	11	0.9%	8	0.6%	2003
PORT	ELM AVE	I-264	PORTSMOUTH BLVD	9,086	2003	124	1.4%	8	1.2%	15	1.7%	2003
PORT	ELMHURST LN	AIRLINE BLVD	PORTSMOUTH BLVD	7,459	2003	104	1.4%	10	1.6%	6	0.8%	2003
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	4,428	2003	61	1.4%	6	2.0%	5	1.2%	2003
PORT	HIGH ST	M L K FWY	ELM AVE	17,589	2003	311	1.8%	28	2.5%	29	2.1%	2003
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	66,865	2005	3,614	5.4%	209	4.0%	194	3.6%	2005
PORT	LONDON BLVD	M L K FWY	ELM AVE	27,192	2003	374	1.4%	18	0.1%	28	1.2%	2003
PORT	PORTCENTRE PKWY	PORTSMOUTH BLVD	CRAWFORD ST	9,599	2003	120	1.3%	14	1.3%	9	0.9%	2003
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	7,835	2003	192	2.4%	14	1.9%	14	1.7%	2003

Legend:

Existing Weekday Truck Volumes		Existing AM and PM Peak Hour Truck Volumes		Existing Weekday, AM, and PM Truck %	
	500 – 749		50 – 74		4.0 – 5.9%
	750 – 999		75 – 99		6.0 – 7.9%
	1000 +		100 +		8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	30,228	2003	326	1.1%	18	1.0%	22	0.8%	2003
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	5,260	2003	49	0.9%	6	0.9%	4	0.6%	2003
PORT	TOWN POINT RD	TWIN PINES RD	WESTERN FREEWAY	30,426	2003	376	1.2%	24	1.3%	24	0.9%	2003
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	10,781	2003	1,057	9.8%	62	8.5%	73	8.4%	2003
PORT	TWIN PINES RD	TOWN POINT RD	HEDGEROW LN	10,957	2003	57	0.5%	9	1.3%	3	0.3%	2003
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	7,446	2003	485	6.5%	25	2.4%	27	2.3%	2003
PORT	VICTORY BLVD	I-264	GREENWOOD DR	26,304	2003	905	3.4%	57	4.0%	56	2.5%	2003
PORT	W NORFOLK RD	TYRE NECK RD	CEDAR LN	6,685	2003	30	0.4%	3	0.8%	0	0.0%	2003
PORT	WESTERN FWY	CEDAR LN	MLK FWY	30,631	2005	1,702	5.6%	55	3.0%	100	3.8%	2005
SUF	BENNETTS PASTURE RD	KINGS HWY	BRIDGE RD	9,327	2005	253	2.7%	28	3.2%	13	1.4%	2005
SUF	CAROLINA RD	NC STATE LINE	RTE 642	3,676	2005	302	8.2%	17	5.9%	18	5.4%	2005
SUF	CAROLINA RD	RTE 675	BABBTOWN RD (RTE 759)	4,257	2005	350	8.2%	22	6.9%	31	8.0%	2005
SUF	COLLEGE DR	WESTERN FREEWAY	TOWN POINT RD	17,422	2005	240	1.4%	16	1.4%	15	0.9%	2005
SUF	COLLEGE DR	I-664	HARBOR VIEW BLVD	10,482	2005	444	4.2%	27	2.9%	19	2.4%	2005
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	11,114	2005	223	2.0%	18	2.8%	11	1.2%	2005
SUF	CRITTENDEN RD	KINGS HWY	BRIDGE RD (RTE 17)	3,381	2005	310	9.2%	28	10.1%	18	5.6%	2005
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	2,161	2005	373	17.3%	27	15.7%	19	9.3%	2005
SUF	FINNEY AVE	N MAIN ST	PINNER ST	8,287	2005	84	1.0%	13	2.6%	7	0.9%	2005
SUF	GODWIN BLVD	KINGS FORK ROAD	EVERETS RD	12,513	2005	775	6.2%	54	5.7%	31	2.8%	2005
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	10,711	2005	300	2.8%	23	3.3%	17	1.7%	2005
SUF	I-664	WESTERN FWY	COLLEGE DR	55,876	2004	4,552	8.1%	227	5.0%	285	5.4%	2004
SUF	KINGS FORK RD	PITCHKETTLE RD	PRUDEN BLVD	2,495	2005	104	4.1%	7	2.6%	2	0.6%	2005
SUF	LAKE PRINCE DR (RTE 604)	RTE 460 (PRUDEN BLVD)	RTE 603 (EVERETS RD)	1,831	2005	34	1.8%	1	0.3%	0	0.0%	2005
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	11,799	2005	120	1.0%	5	0.7%	6	0.6%	2005
SUF	MARKET ST	WASHINGTON ST	MAIN ST	5,218	2005	78	1.5%	6	1.3%	4	0.9%	2005
SUF	NANSEMOND PKWY	KINGS HWY	SHOULDERS HILL RD	13,119	2005	743	5.7%	51	5.0%	18	1.5%	2005
SUF	PINNER ST	WASHINGTON ST	CONSTANCE RD	8,873	2005	78	0.9%	9	1.4%	5	0.6%	2005
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	3,682	2005	55	1.5%	3	0.9%	4	1.0%	2005
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	17,617	2005	492	2.8%	33	2.9%	15	1.0%	2005
SUF	PORTSMOUTH BLVD	WASHINGTON ST	SUFFOLK BYPASS	23,854	2005	813	3.4%	55	3.0%	38	1.8%	2005
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	4,202	2005	82	2.0%	5	1.7%	3	0.7%	2005
SUF	ROUTE 189 (IN HOLLAND)	BUS RTE 58 (RURITAN BLVD)	RTE 58 (SOUTH OF HOLLAND)	768	2005	78	10.2%	9	16.7%	7	10.9%	2005
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	2,067	2005	335	16.2%	19	12.3%	21	11.9%	2005
SUF	ROUTE 272	ROUTE 189	ROUTE 58	1,541	2005	118	7.7%	3	3.0%	9	5.3%	2005
SUF	ROUTE 616	ROUTE 58	WHALEYVILLE BLVD	232	2005	7	3.2%	0	0.0%	1	5.1%	2005
SUF	RURITAN BLVD (BUS RTE 58)	ISLE OF WIGHT CL	RTE 189 (HOLLAND RD BUS)	2,912	2005	129	4.4%	8	4.0%	7	2.7%	2005
SUF	SHOULDERS HILL RD	NANSEMOND PKWY	PUGHSVILLE RD	6,787	2005	292	4.3%	24	4.7%	15	2.3%	2005
SUF	SHOULDERS HILL RD	PUGHSVILLE RD	BRIDGE RD	7,810	2005	468	6.0%	38	7.0%	22	3.1%	2005
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	10,031	2005	1,829	18.2%	98	12.5%	96	11.5%	2005
SUF	TOWN POINT RD	PUGHSVILLE RD	BRIDGE RD	1,128	2005	27	2.4%	3	4.5%	3	2.8%	2005
SUF	TOWN POINT RD	HARBOUR VIEW BLVD	COLLEGE DR	7,851	2005	99	1.3%	10	1.8%	3	0.5%	2005
SUF	WASHINGTON ST	W CONSTANCE RD	MAIN ST	9,087	2005	113	1.2%	10	1.5%	9	1.1%	2005
SUF	WASHINGTON ST	MAIN ST	PINNER ST	7,147	2005	88	1.2%	12	3.0%	3	0.5%	2005
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	5,229	2005	801	15.3%	40	14.4%	36	8.7%	2005
SUF	WILROY RD	CONSTANCE RD	SUFFOLK BYPASS	8,326	2005	396	4.8%	26	4.3%	22	2.8%	2005
SUF	WILROY RD	SUFFOLK BYPASS	NANSEMOND PKWY	8,972	2005	382	4.3%	33	4.2%	17	1.9%	2005
VB	21ST ST	PARKS AVE	PACIFIC AVE	13,030	2005	270	1.5%	18	2.5%	17	1.1%	2003
VB	22ND ST	PARKS AVE	PACIFIC AVE	10,421	2005	187	1.4%	7	0.8%	17	1.6%	2003
VB	ATLANTIC AVE	21ST ST	VA BEACH BLVD	9,384	2005	295	3.3%	21	7.1%	17	2.3%	2003
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	24,418	2004	251	1.0%	25	1.5%	8	0.3%	2003
VB	BIRDNECK RD	GENERAL BOOTH BLVD	VA BEACH BLVD	15,444	2005	304	1.5%	15	1.1%	18	1.0%	2003
VB	CENTERVILLE TNPK	JAKE SEARS RD	INDIAN RIVER RD	18,741	2005	571	2.9%	40	3.1%	21	1.3%	2003
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	VIRGINIA BEACH CL	8,370	2005	1,356	16.2%					2005
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	26,396	2005	233	0.9%	24	1.3%	9	0.4%	2003
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	29,026	2004	863	3.0%	53	2.4%	48	2.0%	2003
VB	ELBOW RD	INDIAN RIVER RD	SALEM RD	6,478	2005	59	1.3%	7	1.9%	3	0.7%	2003
VB	FERRELL PKWY	INDIAN LAKES BLVD	PLEASANT VALLEY RD	45,696	2005	875	2.1%	50	1.7%	34	1.0%	2003
VB	FIRST COLONIAL RD	LASKIN RD	GREAT NECK RD	41,498	2005	321	1.0%	26	1.3%	16	0.7%	2003
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	29,891	2005	656	1.8%	30	1.5%	32	1.1%	2003
VB	GREAT NECK RD	FIRST COLONIAL RD	SHOREHAVEN RD	41,898	2005	454	1.0%	40	1.4%	14	0.4%	2003

Legend:

Existing Weekday Truck Volumes	Existing AM and PM Peak Hour Truck Volumes	Existing Weekday, AM, and PM Truck %
500 – 749	50 – 74	4.0 – 5.9%
750 – 999	75 – 99	6.0 – 7.9%
1000 +	100 +	8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
VB	HOLLAND RD	INDEPENDENCE BLVD	SOUTH PLAZA TRAIL	42,871	2005	467	1.1%	29	1.2%	23	0.7%	2003
VB	I-64	I-264	INDIAN RIVER RD	148,643	2005	4,662	3.1%	254	2.2%	270	2.4%	2005
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	209,269	2005	3,885	1.9%	273	1.7%	208	1.3%	2005
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	36,718	2002	391	1.4%	27	1.4%	13	0.5%	2003
VB	INDEPENDENCE BLVD	VA BEACH BLVD	PEMBROKE BLVD	54,643	2004	710	1.3%	117	3.3%	18	0.4%	2004
VB	INDIAN LAKES BLVD	FERRELL PKWY	INDIAN RIVER RD	13,572	2005	181	1.1%	9	0.7%	11	0.8%	2003
VB	INDIAN RIVER RD	NORTH LANDING RD	PRINCESS ANNE RD	6,021	2004	304	4.7%	28	5.3%	21	3.5%	2003
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	67,533	2003	1,144	1.7%	76	1.7%	72	1.5%	2003
VB	INTERNATIONAL PKWY	LYNNHAVEN PKWY	LONDON BRIDGE RD	13,377	2005	491	3.1%	29	2.4%	33	2.2%	2003
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	34,165	2005	384	1.0%	22	0.8%	11	0.4%	2003
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	33,552	2005	345	1.0%	27	1.2%	16	0.6%	2003
VB	LASKIN RD	FIRST COLONIAL RD	BIRDNECK RD	30,063	2005	333	1.0%	21	1.3%	20	0.7%	2003
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	30,991	2005	252	0.8%	20	1.2%	11	0.4%	2005
VB	LONDON BRIDGE RD	INTERNATIONAL PKWY	POTTERS RD/GREAT NECK RD	20,542	2005	314	1.9%	28	2.3%	18	1.1%	2003
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	24,001	2005	314	1.4%	23	1.4%	11	0.5%	2003
VB	LYNNHAVEN PKWY	INTERNATIONAL PKWY	POTTERS RD	50,455	2005	782	1.6%	43	1.6%	40	1.1%	2003
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	21,765	2004	210	0.9%	20	1.4%	7	0.3%	2003
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	33,539	2004	850	2.4%	63	2.9%	66	2.0%	2003
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	27,035	2003	266	1.0%	19	1.1%	9	0.4%	2003
VB	NEWTOWN RD	DIAMOND SPRINGS RD	HAYGOOD RD	7,537	2005	159	1.9%	15	2.2%	1	0.1%	2005
VB	NORFOLK AVE	BIRDNECK RD	PACIFIC AVE	10,711	2005	119	1.6%	9	2.3%	10	1.7%	2003
VB	NORTH LANDING RD	INDIAN RIVER RD	PRINCESS ANNE RD	8,309	2005	272	2.2%	24	2.6%	25	2.2%	2003
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	40,202	2005	1,614	4.0%	89	3.0%	68	2.1%	2005
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	36,207	2005	509	1.4%	38	1.4%	27	1.0%	2005
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	11,452	2005	102	0.8%	11	1.4%	5	0.5%	2003
VB	PLAZA TRAIL	HOLLAND RD	ROSEMONT RD	11,419	2005	246	2.2%	18	3.0%	27	2.4%	2003
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	9,191	2005	435	6.5%	21	4.7%	17	3.0%	2003
VB	PRINCESS ANNE RD	HOLLAND RD	GENERAL BOOTH BLVD	24,055	2004	646	2.6%	48	2.9%	40	2.2%	2003
VB	PRINCESS ANNE RD	FERRELL PKWY	DAM NECK RD	55,115	2003	874	1.6%	82	1.9%	42	0.9%	2003
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	28,895	2004	303	1.1%	25	1.4%	14	0.6%	2003
VB	PROVIDENCE RD	INDIAN RIVER RD	KEMPSVILLE RD	26,698	2005	243	1.0%	31	1.4%	13	0.5%	2003
VB	PROVIDENCE RD	CHESAPEAKE CL	MILITARY HWY	13,580	2003	174	1.0%	10	1.0%	10	0.6%	2002
VB	ROSEMONT RD	FACULTY DRIVE	LYNNHAVEN PKWY	18,721	2004	293	1.7%	16	1.5%	6	0.4%	2003
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	33,911	2005	360	1.0%	23	1.0%	14	0.5%	2003
VB	SALEM RD	ELBOW RD	LYNNHAVEN PKWY	11,347	2005	198	1.2%	9	0.9%	5	0.4%	2003
VB	SANDBRIDGE RD	PRINCESS ANNE RD	LOTUS DR	10,319	2005	300	2.1%	17	2.5%	11	0.9%	2003
VB	SHORE DRIVE	NORTHAMPTON BLVD	N GREAT NECK RD	41,350	2005	475	1.1%	40	1.3%	18	0.5%	2005
VB	VA BEACH BLVD	S. PLAZA TRAIL/LITTLE NECK RD	LYNNHAVEN PKWY	46,331	2005	772	1.9%	55	2.3%	48	1.3%	2003
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	12,154	2005	263	1.8%	21	3.5%	7	0.7%	2003
VB	VA BEACH BLVD	NEWTOWN RD/NORFOLK CL	WITCHDUCK RD	43,012	2005	511	1.1%	34	1.4%	24	0.6%	2003
VB	WESLEYAN DR	BAKER RD	DIAMOND SPRINGS RD	15,841	2005	82	0.6%	8	0.9%	6	0.4%	2003
VB	WEST NECK RD	NORTH LANDING RD	INDIAN RIVER RD	3,114	2005	175	3.4%	15	3.6%	9	2.2%	2003
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	43,865	2005	807	2.3%	55	2.4%	61	2.2%	2003
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	13,304	2004	224	1.7%	15	1.7%	12	1.0%	2004
WMB	BYPASS RD	RICHMOND RD	ROUTE 132/WILLIAMSBURG CL	21,871	2004	283	1.3%	36	3.0%	14	0.8%	2004
WMB	CAPITOL LANDING RD	BYPASS RD	MERRIMAC TRAIL	6,859	2004	112	1.6%	7	1.6%	3	0.5%	2004
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	7,463	2004	89	1.2%	5	0.9%	2	0.2%	2004
WMB	IRONBOUND RD	LONGHILL CONNECTOR RD	RICHMOND RD	12,430	2004	261	2.1%	14	1.5%	17	1.7%	2004
WMB	JAMESTOWN RD	JOHN TYLER LN	BOUNDARY ST	13,548	2004	115	0.8%	9	0.9%	2	0.2%	2004
WMB	LAFAYETTE ST	CAPITOL LANDING RD	PAGE ST	9,006	2004	118	1.3%	10	1.9%	9	0.1%	2004
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	9,141	2004	207	2.3%	13	2.1%	18	1.8%	2004
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	7,285	2004	158	2.2%	8	2.0%	13	1.7%	2004
WMB	PAGE ST	SECOND ST	YORK ST	14,714	2004	222	1.5%	19	1.9%	16	1.3%	2004
WMB	RICHMOND RD	BYPASS RD	MONTICELLO AVE	21,401	2004	404	1.9%	26	2.5%	20	1.1%	2004
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	26,495	2004	417	1.6%	20	1.5%	22	1.0%	2004
WMB	RICHMOND RD	MONTICELLO AVE	BOUNDARY ST	13,668	2004	180	1.3%	12	1.9%	7	0.6%	2004
WMB	ROUTE 132Y	COLONIAL PKWY	ROUTE 132	5,267	2004	29	0.6%	5	1.4%	0	0.0%	2004
WMB	SECOND ST	PAGE ST	MERRIMAC TRAIL	21,869	2004	619	2.8%	55	4.2%	39	2.0%	2004
WMB	YORK ST	PAGE ST	JAMES CITY CL	12,483	2004	214	1.7%	16	2.0%	14	1.3%	2004
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	14,165	2004	178	1.3%	16	1.2%	11	0.8%	2004

Legend:

Existing Weekday Truck Volumes	Existing AM and PM Peak Hour Truck Volumes	Existing Weekday, AM, and PM Truck %
500 – 749	50 – 74	4.0 – 5.9%
750 – 999	75 – 99	6.0 – 7.9%
1000 +	100 +	8.0% +

Data Sources: VDOT, CBBT.

Appendix G: Truck Data

JURIS NAME	FACILITY NAME	SEGMENT FROM	SEGMENT TO	EXISTING WEEKDAY ADT	EXISTING ADT YEAR	EXISTING WEEKDAY TRUCKS	EXISTING WEEKDAY TRUCK %	EXISTING WEEKDAY AM PEAK HOUR TRUCKS	EXISTING WEEKDAY AM PEAK HOUR TRUCK %	EXISTING WEEKDAY PM PEAK HOUR TRUCKS	EXISTING WEEKDAY PM PEAK HOUR TRUCK %	TRUCK DATA YEAR
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	16,209	2005	283	1.7%	20	1.9%	11	0.8%	2005
YC	GEORGE WASHINGTON HWY	HAMPTON HWY (RTE 134)	DENBIGH BLVD (RTE 173)	56,866	2005	997	1.7%	76	1.9%	37	0.8%	2005
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	9,319	2004	343	3.7%	20	3.0%	11	1.4%	2004
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	33,615	2004	349	1.0%	27	1.2%	20	0.7%	2004
YC	I-64	ROUTE 199/646	ROUTE 143	53,494	2005	6,872	12.8%	418	12.0%	331	8.3%	2005
YC	MOORETOWN RD	OLD MOORETOWN RD	WALLER MILL RD	4,622	2004	139	3.0%	16	5.5%	9	2.2%	2004
YC	OLD WILLIAMSBURG RD	CRAWFORD RD	GOOSLEY RD	10,112	2005	294	2.9%	18	2.1%	19	2.0%	2005
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	4,645	2005	90	1.9%	3	0.6%	4	0.9%	2005
YC	POCAHONTAS TRAIL	KINGSMILL RD	GROVE INTERCHANGE	11,980	2004	510	4.3%	29	3.2%	27	2.7%	2004
YC	RICHNECK RD	NEWPORT NEWS CL	FORT EUSTIS BLVD	1,425	2004	10	0.7%	1	0.8%	0	0.0%	2004
YC	ROUTE 132	ROUTE 60	ROUTE 143	9,373	2004	221	2.4%	15	2.2%	11	1.5%	2004
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	28,081	2005	1,107	3.9%	81	3.3%	43	1.9%	2005
YC	RTE 199	MOORETOWN RD	I-64	20,584	2004	793	3.9%	62	4.0%	29	1.7%	2004
YC	VICTORY BLVD	NEWPORT NEWS CL	ROUTE 17	52,743	2004	723	1.4%	57	1.7%	61	1.3%	2004

Legend:

Existing Weekday Truck Volumes		Existing AM and PM Peak Hour Truck Volumes		Existing Weekday, AM, and PM Truck %	
	500 – 749		50 – 74		4.0 – 5.9%
	750 – 999		75 – 99		6.0 – 7.9%
	1000 +		100 +		8.0% +

Data Sources: VDOT, CBBT.