Hampton Roads Regional Freight Study

2017 Update

the heartbeat of
HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

July 2017

T17-08

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HAMPTON ROADS
REGIONAL FREIGHT STUDY

2017 UPDATE

PREPARED BY:

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

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Hampton Roads Regional Freight Study – 2017 Update

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ABSTRACT

Over the last couple of decades, the Hampton Roads Transportation Planning Organization (HRTPO) has engaged in numerous important freight planning activities. This includes the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. The overall purpose of this study is to understand the impact of freight movement on regional and statewide employment, income, and economic growth in order to guide policy and investment decisions—particularly for prioritizing transportation projects—that will improve connectivity, efficiency, reliability, and safety of the Hampton Roads freight multimodal transportation system. This report details the movement of goods across all freight facilities—highways, ports, railways, and airports. Special emphasis is placed on freight moving by trucks across highways as they serve as the predominant mover of freight.

This report is organized into the following sections:

1) Introduction
2) Integration of Freight into the Transportation Planning Process
3) Freight Facilities, Trends, and Forecasts
4) Hampton Roads Commodity Flows
5) Regional Truck Movement
6) National Freight Planning Efforts and Funding Sources
7) Summary, Conclusions and Next Steps

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Prepared in cooperation with the Virginia Port Authority and the Freight Technical Advisory Committee (FTAC). Additional collaboration was with the made with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transportation (DRPT), and the local jurisdictions and transit agencies within the Hampton Roads metropolitan planning area. The contents of this report reflect the views of the Hampton Roads Transportation Planning Organization (HRTPO). The HRTPO 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 Hampton Roads Planning District Commission. 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.

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EXECUTIVE SUMMARY

Freight transportation influences every aspect of our daily lives and keeps our businesses and industries competitive in the local and global economy. While Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system that facilitates the efficient, reliable, and safe movement of freight, **our challenge will be to maintain and expand the system to meet the needs of tomorrow.**

Over the last couple of decades, the Hampton Roads Transportation Planning Organization (HRTPO) has engaged in numerous important freight planning activities. This includes the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. This 2017 update builds on previous efforts and is intended to inform freight policy, program, and investment decisions in the Hampton Roads region, which will impact the greater Commonwealth of Virginia. This report details the movement of goods across all freight facilities—highways, ports, railways, and airports. Special emphasis is placed on freight moving by trucks across highways as they serve as the predominant mover of freight.

The overall purpose of this study is to understand the impact of freight movement on regional and statewide employment, income, and economic growth in order to guide policy and investment decisions—particularly for prioritizing transportation projects—that will improve connectivity, efficiency, reliability, and safety of the Hampton Roads freight multimodal transportation system.

All metropolitan areas are impacted by 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. According to the Hampton Roads Economic Development Alliance, Hampton Roads is located within 40% of the U.S. population and has access to approximately 128 million consumers within one day's drive.

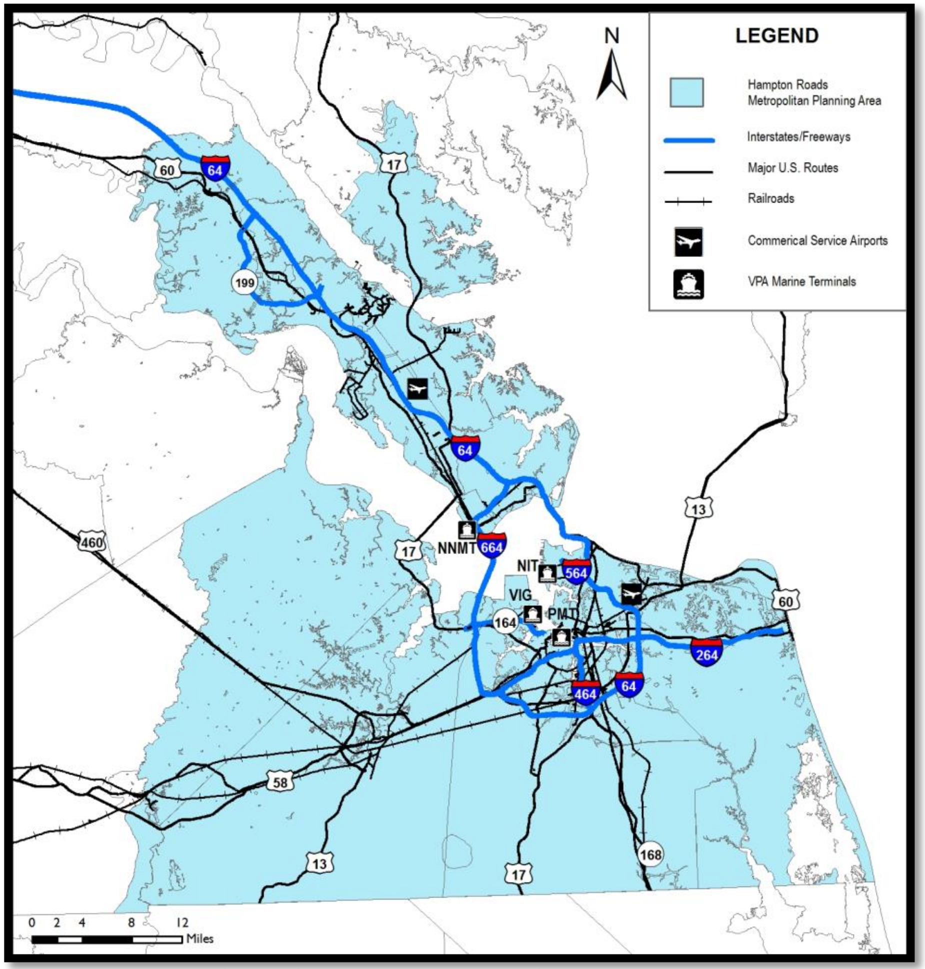


Figure ES-1 – Freight Facilities in Hampton Roads.

Source: HRTPO.

Hampton Roads is a multimodal region that includes ports, airports, rail, private trucking, shipping and warehouse distribution facilities, as well as a network of road and rail corridors for the delivery of freight, goods, and services (**Figure ES-1**). Hampton Roads is home to the Port of Virginia's deep water marine terminals—Norfolk International Terminals (NIT), Newport News Marine Terminal (NNMT), Portsmouth Marine Terminal (PMT), and Virginia International Gateway (VIG)—which had a total economic impact of $60 Billion in total revenue (FY 2015) to the Commonwealth of Virginia. Due to its location and infrastructure, the Hampton Roads region is expected to experience large growth in freight movement in future years. In order for Hampton Roads to remain competitive in attracting new business interests, retaining existing businesses 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.**

This report contains an extensive analysis of freight movement to, from, and within Hampton Roads. A summary of key findings in this update of the Hampton Roads Regional Freight Study is provided below.

FREIGHT FACILITIES, TRENDS, AND FORECASTS

Port

- Hampton Roads is home to the Port of Virginia's four deep water marine terminals with a total economic impact of $60 Billion in total revenue (FY 2015) to the Commonwealth of Virginia.
- The Port of Virginia is the 13th highest U.S. foreign trade freight gateway, moving $75.8 billion in shipments in 2014.
- The Port of Hampton Roads is currently the 6th largest container port in the U.S., and third largest on the U.S. East Coast. (2015)
- Cargo tonnage handled by the Port of Virginia has increased 40% since 2009, and will likely continue to increase (**Figure ES-2)**.

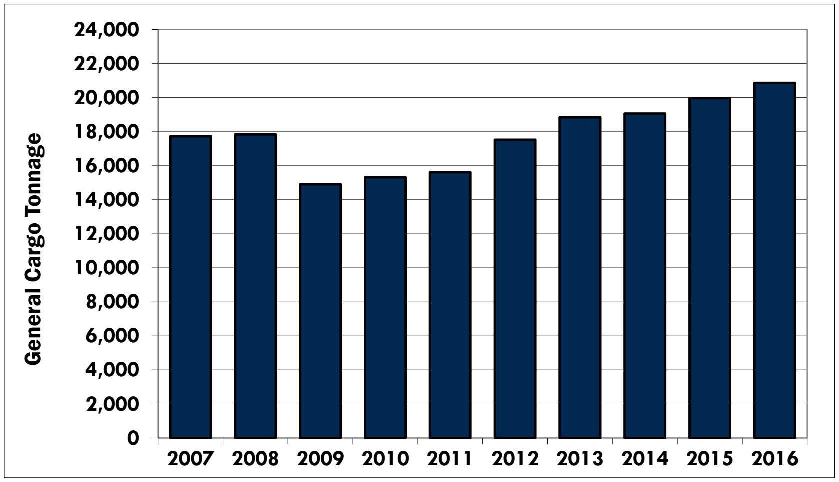


Figure ES-2 – General Cargo Tonnage Handled by the Port of Virginia, 2007-2016 Source: HRTPO Staff compilation of VPA data

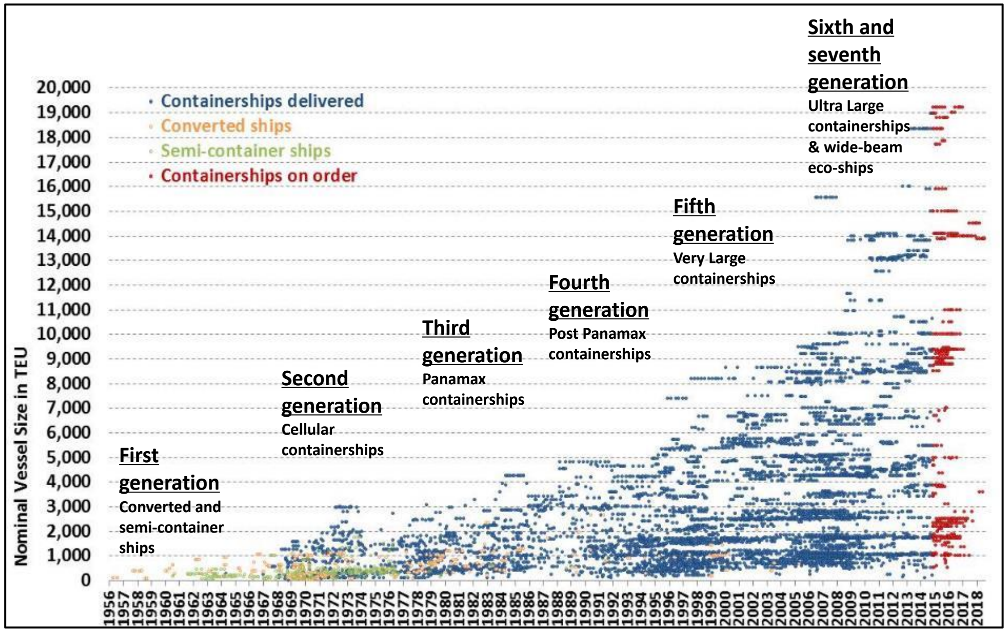


Figure ES-3 – The Evolution of Containerships
Source: Virginia Port Authority.

- Coal loadings handled in Hampton Roads have decreased significantly over the last three years, from 51 million short tons in 2013 to 22 million short tons in 2016. However, Virginia remains the largest coal export port in North America.
- The Port of Virginia's channels are among the deepest on the East Coast, and the only port authorized to be deepened to 55 feet. Virginia's deep channels have historically attracted first-in/last out services that require deeper sailing drafts when fully loaded.
- The newest generation of containerships are larger and more efficient than previous ships (see **Figure ES-3**). In 2016, the ship lines formed into three major carrier alliances that control nearly 90% of the Asia-North America trade. The alliances have vessel-sharing agreements that allow slot-sharing on these large mega-ships which helps avoid financial losses accrued by operating less-than-full ships.
- Larger containerships will lead to new challenges for port facilities and the surrounding areas. Large influxes of containers will create more peaks and valleys that will need to be managed to ease road/rail congestion, workload operations, and driver needs.

- In May 2017 the first 13,000 TEU vessel (COSCO Development) will call the Port of Virginia – Virginia International Gateway, representing the beginning of a new era for Virginia and the East Coast. With the completion of the Panama Canal expansion in 2016 and other U.S. East Coast projects to raise navigational clearances in 2017, additional larger vessels will call Virginia's ports. The net effect is fewer vessel calls, but with larger amounts of containers that are discharged and loaded with each ship call resulting in surges that must be rapidly transferred from the ship/marine terminal and transported over road/rail connections.

Air

- Since 2000, air cargo at Norfolk International Airport has largely remained stable, peaking in 2004.

Rail

- The share of containerized cargo handled by the Port of Virginia has shifted towards rail. In 2006, 24% of all containers handled by the Port of Virginia were transported by rail. By 2016 this percentage had increased to 37% (over 551,000 rail containers) as shown in **Figure ES-4**. Port officials expect the amount of freight handled by rail to continue to increase. According to the Master Rail Plan, the Port of Virginia projects that it will transport nearly 1,000,000 containers by rail by the year 2040 (45% share), more than double what was handled by the Port in 2015.

Highway

- The region's bridges and tunnels are a significant source of traffic congestion for the movement of freight and people. Limited capacity at the major water crossings contribute to poor regional connectivity causing severe congestion and poor travel reliability. The existing water crossing highway network is fragile, such that minor incidents can cause major traffic delays due to limited alternatives. Decreasing performance combined with increasing volume of people and goods indicates the need for increased capacity and improved reliability across the harbor.
- Accordingly, there are a number of major roadway projects both underway and planned throughout the region to reduce roadway congestion and improve the movement of freight (see **Figure ES-5** on page 9).

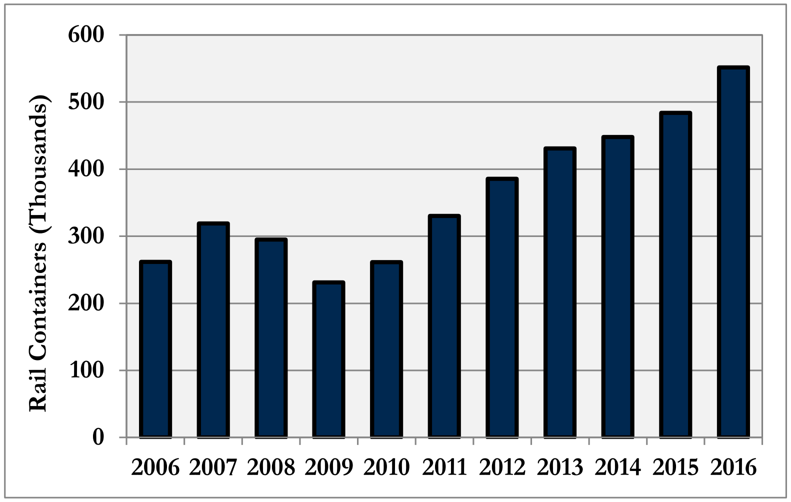


Figure ES-4 – Rail Containers Handled by the Port of Virginia

Source: Virginia Port Authority

These major projects include:

- I-64 Widening on the Peninsula (various segments opening in 2018-2022)
- I-564 Intermodal Connector (2018)
- I-64/I-264 Interchange in Norfolk/Virginia Beach (phases opening in 2019-2021)
- I-64 Southside/High-Rise Bridge Widening Phase I (2020)
- Hampton Roads Bridge-Tunnel Widening (2024)

Intermodal Conflict Points

- There are over 400 highway-rail crossings on public roadways in Hampton Roads. These highway-rail crossings, particularly at the 296 locations where they occur at the same level or grade, can cause extensive delays for roadway travelers. They also result in fatalities and serious injuries when trains collide with roadway users. Over 1.4 million vehicles cross these 296 at-grade crossings each day.
- With the prevalence of navigable waterways in the region, there are currently nine movable roadway drawbridges, which carry nearly 400,000 vehicles each weekday. There are six railroad drawbridges located on the Southside of Hampton Roads, spanning the Eastern and Southern Branches of the Elizabeth River and the Intracoastal Waterway.

HAMPTON ROADS REGIONAL PRIORITY PROJECTS

I-64 PENINSULA WIDENING
Widen to six lanes from Jefferson Ave. (Exit 255) to Route 199 West of Williamsburg (Exit 234), including improvements to the Fort Eustis Blvd. Interchange (Exit 250)

VISION PLAN
Remaining segments of Hampton Roads Crossing Study Supplemental Environmental Impact Statement (HRCS SEIS) to be included in the 2040 Regional Transportation Vision Plan:
- I-664 from Hampton Coliseum to Bowers Hill, including Monitor-Merrimac Memorial Bridge-Tunnel
- I-664 Connector/I-564 Connector
- VA 164 Connector
- VA 164 widening to six lanes from VA 164 Connector to I-664

I-64 WIDENING INCLUDING HAMPTON ROADS BRIDGE-TUNNEL
Widen to six lanes from I-664 (Hampton Coliseum) to I-564, including the Hampton Roads Bridge-Tunnel

I-64/I-264 INTERCHANGE
- Improvements from I-64 Westbound ramp to I-264 Eastbound through Witchduck Rd.
- Improvements to Newtown Rd. and Witchduck Rd. interchanges
- New system of collector-distributor roads
- Study the remaining movements of the I-64/I-264 Interchange

US ROUTE 460/58/13 CONNECTOR
Improve section to interstate standards from Bowers Hill to eastern end of Suffolk Bypass; includes new interchanges at the Regional Landfill and Hampton Roads Executive Airport

BOWERS HILL INTERCHANGE
Improvements to interchange

I-64 SOUTHSIDE WIDENING INCLUDING HIGH RISE BRIDGE
Improvements from I-464 to I-664
- Phase I - Widen to 6 lanes
- Phase II - Widen to 8 lanes

January 2017

Figure ES-5 – Hampton Roads Regional Priority Projects

Source: HRTPO and HRTAC, January 2017.

HAMPTON ROADS COMMODITY FLOWS

This analysis focuses on Hampton Roads' freight movement patterns and modal usage with the purpose of answering important questions about where, what type, how much, and which modes are used to transport goods throughout North America, now and in the future through the year 2040. Data for this effort was primarily drawn from IHS Transearch, a commercial freight demand and commodity flows database. Due to the complexity and difficulty of capturing all freight movements across various modes from points of origin to their final destination, commodity flows in this section are more valuable on a macro-level scale than a micro-level. By understanding how goods move—including the major goods-producing industries and travel patterns—Hampton Roads can identify and improve current freight bottlenecks and anticipate future needs and opportunities.

IHS Transearch was purchased by the Virginia Department of Transportation (VDOT) and distributed to metropolitan planning organizations and planning district commissions within the Commonwealth of Virginia. The Virginia dataset includes all commodity flows that travel through the state of Virginia or have origins or destinations of cities/counties in Virginia.

Summary of North American Freight Movement

- In 2012, 146 million tons (valued at $168 billion) of North American (USA, Canada, and Mexico) freight was transported to, from, within, and through Hampton Roads (see **Figure ES-6**). By 2040, this is expected to increase by 53% in tonnage to 223 million tons and by 137% in value to $399 billion (constant $2012).
- The total tonnage moved by truck in Hampton Roads is expected to double from 75 to 148 million tons between 2012 and 2040. Similarly, the modal share for trucks is expected to increase from 51% to 66%. For this reason, **it is imperative for the region to improve the highways most used by the trucking industry in future years.**

Top Freight Generating Virginia Localities

- In 2012, the top 5 freight generating localities in Virginia were Norfolk (1st), Newport News (2nd), Fairfax County (3rd), Chesterfield County (4th), and Loudoun County (5th). By 2040, the top 5 are expected to be Norfolk (1st), Fairfax County (2nd), Chesapeake (3rd), Chesterfield County (4th), and Newport News (5th).

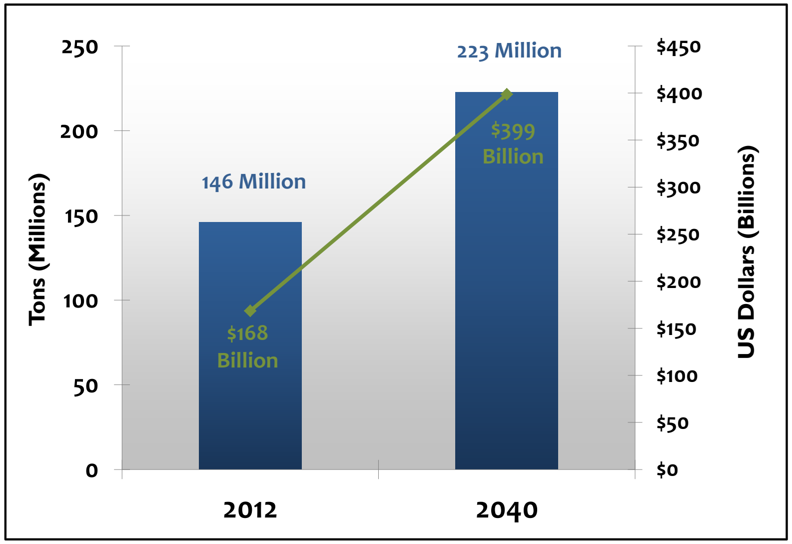


Figure ES-6 – Summary of North American Freight Movement – Hampton Roads (All Modes), 2012 and 2040

Source: HRTPO and VDOT analysis of IHS Transearch Data. Includes to, from, within, and through freight.
Note: 2040 forecast is in 2012 dollars.

Hampton Roads Top Commodities – All Modes

- The top five commodities transported in 2012 include coal, nonmetallic minerals, secondary traffic, petroleum or coal products, and food or kindred products. By 2040, coal and petroleum or coal products are both expected to decrease by 18% and 29% respectively.

Net Annual Tonnage Carried by Truck

- In 2012, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor and Route 58. By 2040, the top corridors for moving freight tonnage are expected to be I-64, Route 58, Route 13/CBBT, and I-264 in Norfolk and Portsmouth. By 2040, the top two primary gateways for freight by annual tonnage are expected to be I-64 and Route 58 (see **Figure ES-7**). The IHS Transearch data analysis only includes existing roadways so the potential I-87 Interstate corridor may also be a top freight gateway in the future.

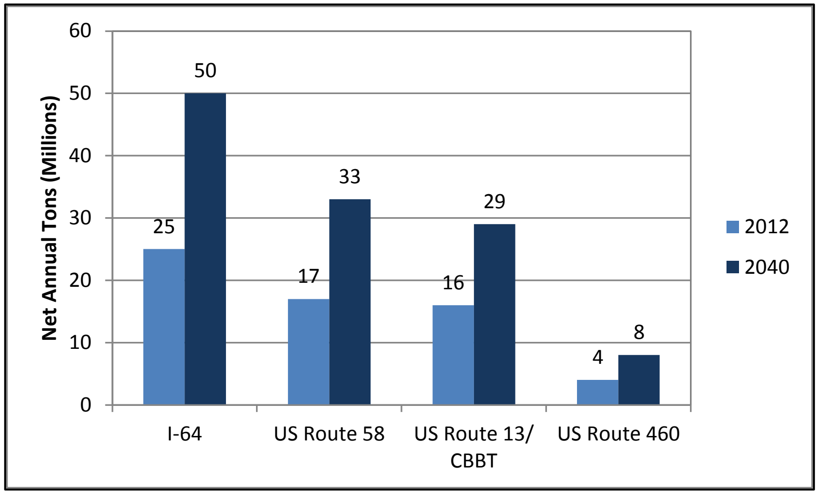


Figure ES-7 – Net Annual Tonnage Carried by Truck at Regional Gateways, 2012 and 2040
Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

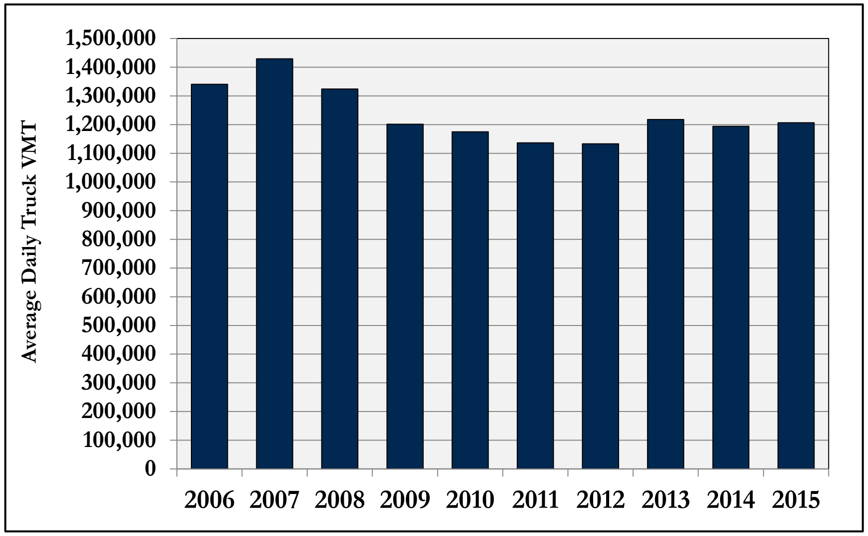


Figure ES-8 – Daily Truck-Miles of Travel in Hampton Roads, 2006-2015
Source: HRTPO analysis of VDOT data.

REGIONAL TRUCK MOVEMENT

Truck Travel in Hampton Roads

- In 2007 – prior to the economic downturn – there were 1.43 million truck-miles of travel in Hampton Roads each day. Truck travel then decreased each year, reaching a low of 1.13 million truck-miles of travel each day in 2012 (see **Figure ES-8**). As the economy has improved, truck volumes have increased slightly, but as of 2015, truck travel is still 16% below the pre-economic downturn levels of 2007.

Truck Movements through Regional Gateways

- The primary gateway for trucks entering or exiting Hampton Roads is I-64 (6,100 trucks each weekday in 2015). The next most traveled corridors for trucks entering and exiting the region are Route 58 (4,100 trucks) and Route 460 (2,100 trucks) (see **Figure ES-13** on page 14).
- **Combined, I-64, Route 58, and Route 460 accounted for 70% of all trucks passing through the region's major gateways in 2015.** However, the share of trucks using these three gateways has shifted over the last decade from I-64 towards Routes 58 and 460 as shown in **Figure ES-9**.

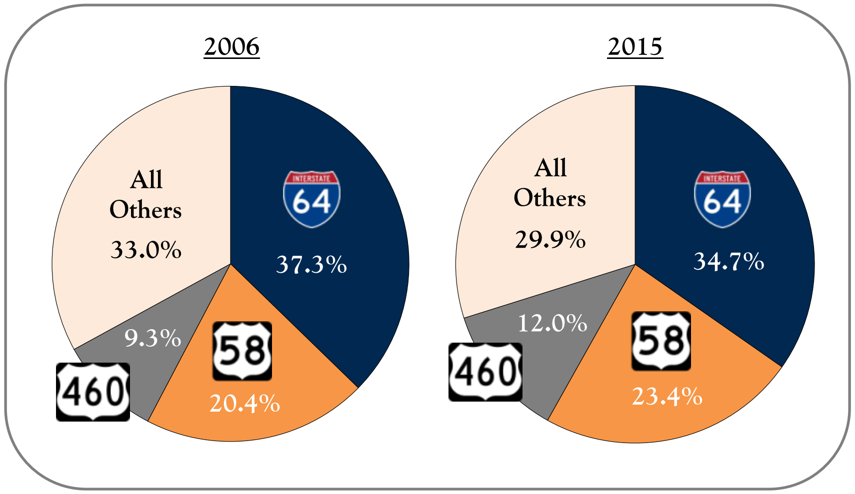


Figure ES-9 – Share of Trucks Passing through Regional Gateways Each Weekday, 2006 and 2015
Source: HRTPO analysis of VDOT and CBBT data.

Truck Movements across Regional Water Crossings

- The Monitor-Merrimac Memorial Bridge-Tunnel (4,408 trucks/weekday) was the most used facility by trucks crossing the Hampton Roads Harbor in 2015, followed by the Hampton Roads Bridge-Tunnel (3,140 trucks/weekday) and James River Bridge (891 trucks/weekday) (see **Figure ES-10**).

- A total of 16,200 trucks crossed the Elizabeth River each weekday in 2015. The High Rise Bridge—at 7,900 trucks each weekday—carried nearly half of the truck volume using the Elizabeth River crossings (see **Figure ES-11**). The Downtown Tunnel carried the next highest number of trucks (3,265), although this is down from higher levels—4,400 trucks per weekday in 2011—prior to tolls being implemented. In spite of tolls also being implemented at the Midtown Tunnel, the volume of trucks carried by the facility in 2015 (2,009 trucks per weekday) is higher than in 2011 (1,771 trucks).

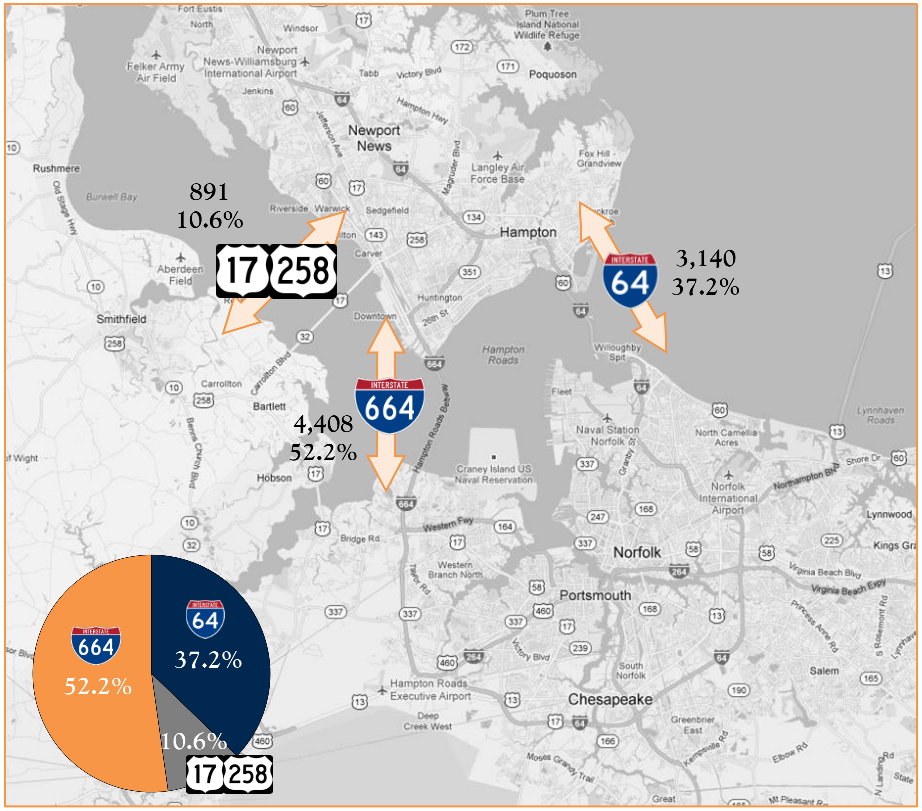


Figure ES-10 – Average Number of Trucks Crossing Between the Peninsula and Southside Each Weekday, 2015

Source: HRTPO analysis of VDOT data. Background map source: Google.

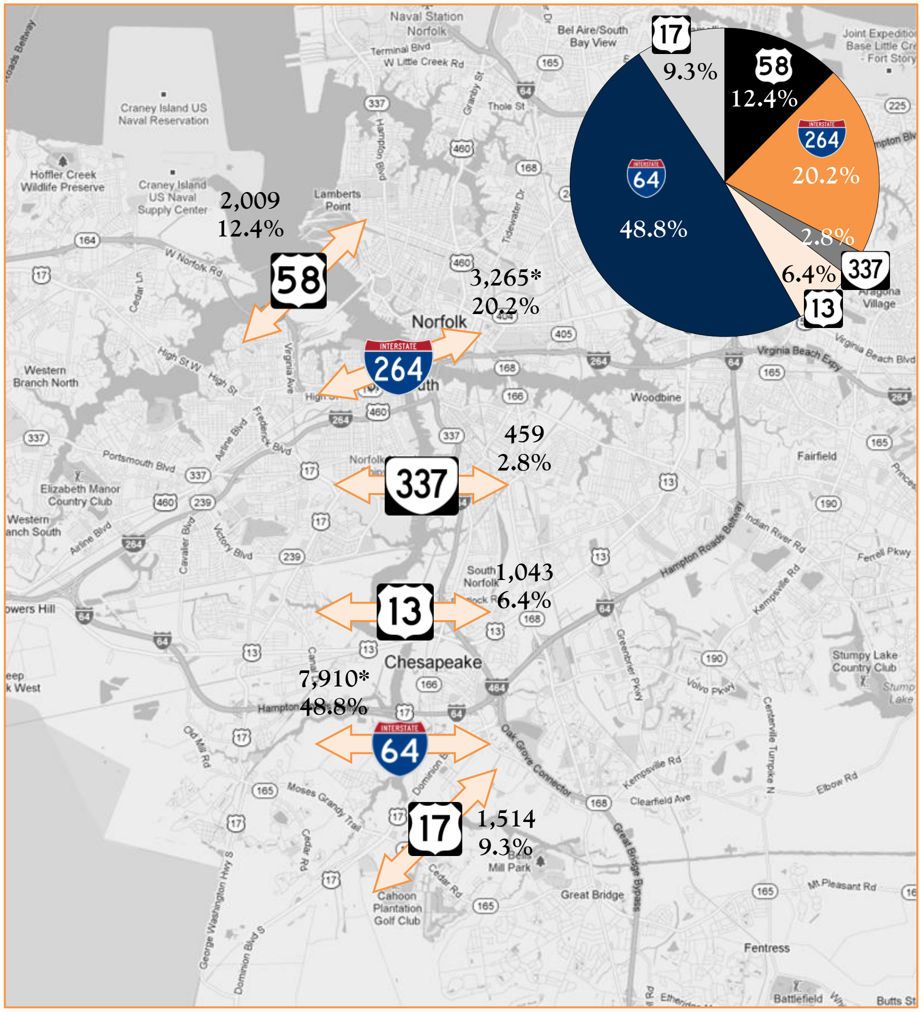


Figure ES-11 – Average Number of Trucks Crossing the Elizabeth River Each Weekday, 2015

Source: HRTPO analysis of VDOT and SNJB data. Background map source: Google.
* Truck volumes at the Downtown Tunnel (I-264) and the High Rise Bridge (I-64) are VDOT estimates.

Freight Bottlenecks

Average delay per truck

- The roadway segments with the highest average delay per truck during the AM Peak Period are on **I-64 approaching the Hampton Roads Bridge-Tunnel in the eastbound direction**. Average delays range between 2.5-3.3 minutes per mile. Additional roadway segments with the highest average delays in the AM Peak Period include westbound Indian River Road, the eastbound approaches to the Downtown Tunnel and Berkley Bridge, and I-564 approaching the Naval Station.
- For the PM Peak Period, the roadway segment with the highest average delay per truck is **I-664 Southbound approaching the Monitor-Merrimac Memorial Bridge-Tunnel**, with average delays of up to 4.1 minutes per mile. Both approaches to the Hampton Roads Bridge-Tunnel have the next highest average delays, with average delays on the eastbound approach ranging between 2.9 and 3.6 minutes per mile, and delays on the westbound approach between 2.3 and 2.7 minutes per mile.

Total truck delay

- As with average delays, most of the roadway segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. The segments with the highest total truck delays during the AM Peak Period are on **the approach to the eastbound Hampton Roads Bridge-Tunnel**. Total delay range between 6.9 and 7.3 truck-hours of delay per mile each weekday during the AM Peak Period. The segments with the next highest total truck delays include I-64 Westbound approaching the High Rise Bridge followed by approaches to the northbound Midtown Tunnel and Eastbound I-264 approaching the Downtown Tunnel.
- During the PM Peak Period, the roadway segment with the highest total truck delay in the region is **eastbound Indian River Road between I-64 and Kempsville Road**, with a total of 7.5-9.8 truck-hours of delay per mile each weekday. Other segments with the highest truck delay during the PM Peak Period include Southbound I-664 approaching the Monitor-Merrimac Memorial Bridge-Tunnel, and I-64 approaching the Hampton Roads Bridge-Tunnel in both directions.

Corridor	AM Peak Period Truck Delay (hours)	PM Peak Period Truck Delay (hours)	Weekday Peak Period Truck Delay (hours)	Annual Peak Period Truck Delay (hours)	Annual Congestion Cost Incurred by Trucking Industry ($ millions)
Hampton Roads Bridge-Tunnel	24.18	56.59	80.76	20,191	$1.37
I-64 Chesapeake	21.06	42.24	63.30	15,824	$1.08
Downtown Tunnel	17.12	13.02	30.14	7,535	$0.51
I-64/I-564 Norfolk	13.09	16.49	29.58	7,396	$0.50
I-64/I-264 Interchange Area	12.45	16.67	29.12	7,280	$0.50
Midtown Tunnel	17.91	7.13	25.04	6,260	$0.43
Monitor-Merrimac Mem. Bridge-Tunnel	1.55	22.09	23.64	5,909	$0.40
I-64 Peninsula	5.77	13.79	19.56	4,890	$0.33
Holland Rd - Suffolk	6.23	10.42	16.65	4,163	$0.28
Route 17 - Newport News/York	3.68	4.28	7.95	1,989	$0.14
Military Hwy - Gilmerton	2.78	4.83	7.61	1,902	$0.13

Figure ES-12 – Truck Delay in High Profile Regional Corridors, 2014

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

Truck delay in High Profile Regional Corridors

- The corridor that has the highest weekday peak period truck delay in the region is **the Hampton Roads Bridge-Tunnel (HRBT)** (**Figure ES-12**). Each weekday, there are over 80 truck-hours of delay in the HRBT corridor. This peak period truck delay at the HRBT amounts to over 20,000 hours annually, which equates to nearly $1.4 million in congestion costs for the trucking industry.
- The I-64/High Rise Bridge corridor in Chesapeake has the second highest weekday peak period truck delay, at an average of 63 hours each weekday. This adds up to nearly 16,000 hours of delay and $1.1 million in congestion costs incurred by the trucking industry annually.
- The high profile locations with the next highest truck delays and congestion costs are the Downtown Tunnel, I-64/I-564 corridor in Norfolk, the I-64/I-264 interchange area in Norfolk, and the Midtown Tunnel.

Truck Parking Challenges

- One of the largest challenges facing the freight movement industry is the availability of parking for trucks when drivers are tired or reach their mandatory rest periods. In the Hampton Roads area, there is currently a deficit of 848 truck parking spaces according to the VDOT *Virginia Truck Parking Study* (July 2015).

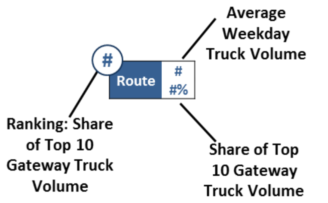
- Due to the impact of port terminals, there is a significant need for terminal truck staging and port-specific truck parking in the Hampton Roads region. Additional local needs include parking near the port terminals and parking for long-haul truck trips and regional truck trips.

Freight Gateways, Hubs, and Bottlenecks

In 2015, Virginia Port Authority (VPA) and HRTPO staff worked with members of the Freight Transportation Advisory Committee (FTAC) to develop a freight mapping tool to assist regional and statewide leaders on transportation decisions related to regional priority projects. The map included the top freight employers in Hampton Roads, top freight gateways, and the most congested truck bottlenecks. **Figure ES-13** is an updated version of the original map and includes the most recent data and results from this Hampton Roads Regional Freight Study.

FREIGHT GATEWAY

Number and Share of Trucks Passing Through the Top 10 Regional Gateways each Weekday



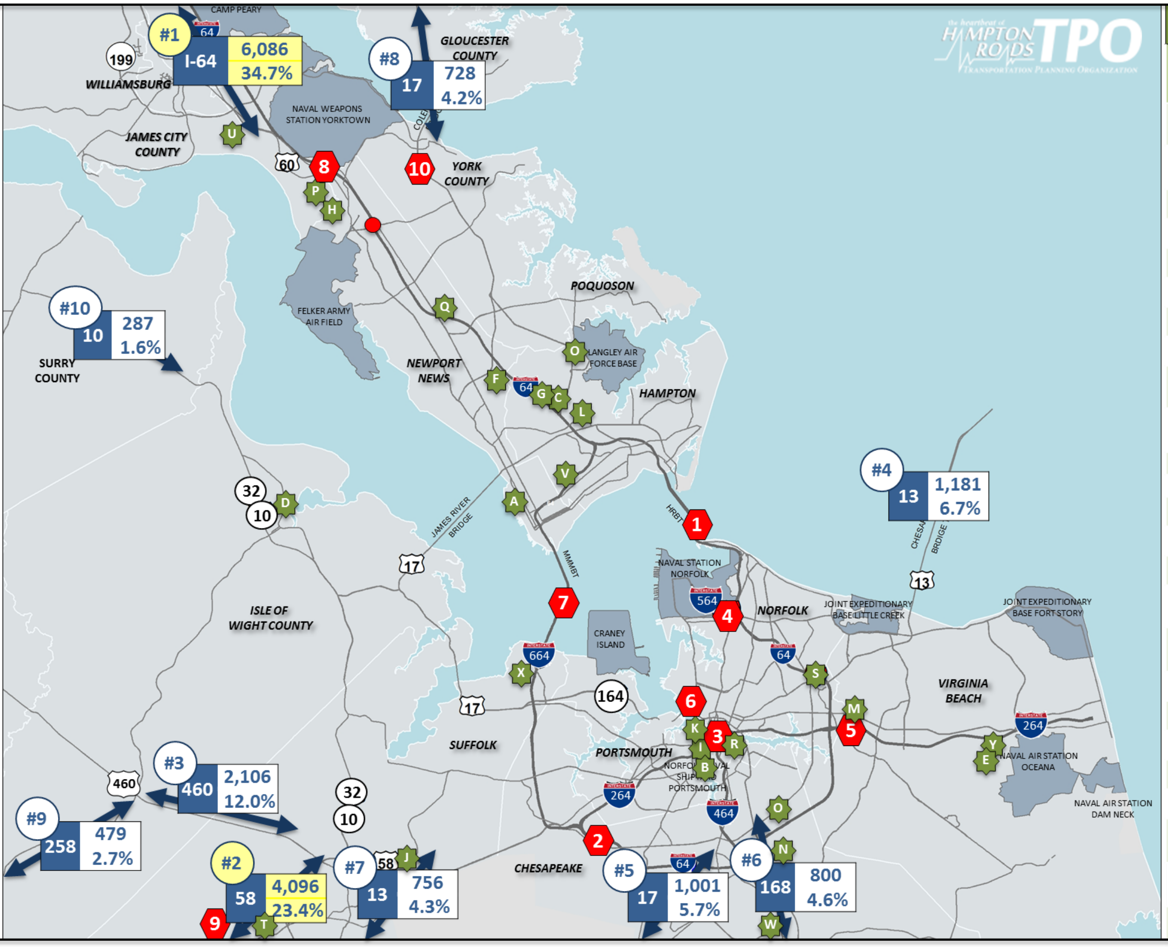
Source: HRTPO.

TRUCK BOTTLENECKS

Top 10 Existing Weekday Truck Delay Locations	Weekday Peak Period Truck Delay (hours)
Hampton Roads Bridge-Tunnel	80.8
I-64 (Chesapeake)	63.3
Downtown Tunnel	30.1
I-64/I-564 (Norfolk)	29.6
I-64/I-264 Interchange area	29.1
Midtown Tunnel	25.0
MMMBT	23.6
I-64 Peninsula	19.6
Holland Rd (Suffolk)	16.7
Route 17 (Newport News/York)	7.9

— Ranking: Total Weekday Truck Delay (Hours)

Source: HRTPO.



Map ID	Employer	# of Employees
A	Huntington Ingalls Industries (Newport News Shipbuilding)	24,000
B	Norfolk Naval Shipyard	8,500
C	TE Connectivity, Ltd.	2,200
D	Smithfield Packing Co.	2,100
E	STIHL, Inc.	2,067
F	Canon Virginia, Inc.	1,500
G	Lumber Liquidators	1,500
H	AAFES Dan Daniel Dist. Ctr.	1,100
I	BAE Systems Norfolk Ship Repair, Inc. (Norshipco)	1,080
J	QVC Suffolk, Inc.	1,000
K	General Dynamics-NASSCO	880
L	Specialty Foods Group	850
M	AMSEC Corporation	700
N	Dollar Tree Stores, Inc.	660
O	Givens + Audiovox	625
P	Walmart Import Distribution Center	604
Q	Continental Automotive Group (Siemens)	600
R	Colonna's Shipyard, Inc.	565
S	CMA-CGM America, Inc.	530
T	Target Import Warehouse	521
U	Anheuser-Busch InBev	508
V	Liebherr Mining Equipment	500
W	Raytheon Technical Services Co. (NSA NW Annex)	500
X	SYSCO Food Services of Hampton Roads	500
Y	The Penrod Company	500

Source: HREDA, March 2016, Hampton Roads Major Employers (Manufacturing, Distribution, Transportation, and Logistics)

In 2015, 17,500 trucks entered or exited Hampton Roads through major gateways each weekday, serving not only the third busiest port on the East Coast but also serving the commerce of the entire region.

Combined, I-64 and U.S. 58 accounted for 58% of all trucks passing through the region's major gateways in 2015.

Figure ES-13 – Hampton Roads Freight Gateways, Hubs, and Bottlenecks

CONCLUSIONS AND NEXT STEPS

Many of the corridors identified as freight bottlenecks in this study have projects that are currently underway or programmed in the next few years. In 2016, a new tube opened at the Midtown Tunnel and widening of a section of Route 17 in York County was completed. Construction has also started on phases of I-64 on the Peninsula and the I-64/I-264 Interchange. By 2025, widenings of the Hampton Roads Bridge-Tunnel, I-64 on the Peninsula, I-64 in Chesapeake, and Holland Road in Suffolk should be completed.

Despite these projects that will address freight deficiencies, no funds have been identified for two highway corridors that serve as key Hampton Roads gateways: 1) I-64 for 29 miles between Hampton Roads and Richmond and 2) a limited-access route connecting Hampton Roads and I-95 along Route 58 or the potential I-87 Interstate corridor.

I-64 widening projects near Richmond and in Hampton Roads are underway and fully funded. Construction will commence soon to widen a six-mile stretch of I-64 from 4 to 6 lanes between the I-295 interchange east of Richmond (Exit 200) and the Bottoms Bridge/Quinton interchange (Exit 205), with an estimated completion date of Fall 2019. Construction is also underway to widen 21 miles of I-64 from 4 to 6 lanes in three phases from Bland Boulevard (near Exit 255) to approximately one mile west of Route 199/Newman Road (Exit 234), with an estimated completion date of Winter 2021. No funding, however, has been identified to widen the 29-mile gap between mileposts 205 and 234, 10 miles of which are located outside of the Richmond and Hampton Roads Metropolitan Planning Areas (see **Figure ES-14**).

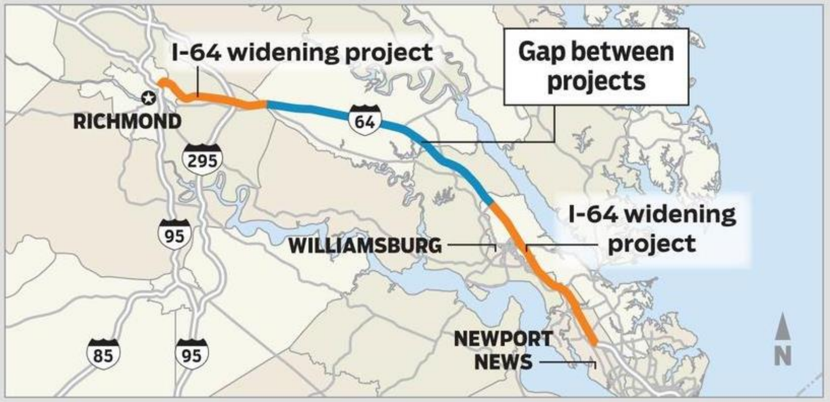


Figure ES-14 – 29-Mile Gap between I-64 Widening Projects

Source: Daily Press.

Port officials and other freight stakeholders in the region have expressed the desire for a limited-access connection between Hampton Roads and I-95 either along the existing Route 58 corridor (to Emporia) or along the potential I-87 corridor (to Rocky Mount, NC), both shown in **Figure ES-15**). **The Route 58 corridor is the second-heaviest freight gateway to and from the region (4,100 trucks per weekday).** Congestion, safety, and access management are some of the concerns along the existing Route 58 corridor. Speed limits range from 35 mph to 60 mph, and there are a number of traffic signals. Funding is in place to widen a 3.1-mile section of Route 58/Holland Road in Suffolk from 4 to 6 lanes and provide intersection upgrades. While this project will improve freight movement, a long-term, corridor-wide solution is still necessary. Over the next two years, a Route 58 Corridor Feasibility Study will be prepared that will review further needs and develop recommendations. **Federal and state officials have authorized an "Interstate 87" designation for the US 64/17 corridor from Raleigh to Hampton Roads via Rocky Mount**, Williamston, and Elizabeth City in northeastern North Carolina. Despite the tremendous value of providing a limited-access connection between Hampton Roads and I-95 via either the Route 58 or proposed I-87 corridors, no funding has been identified for the construction of either improvement.

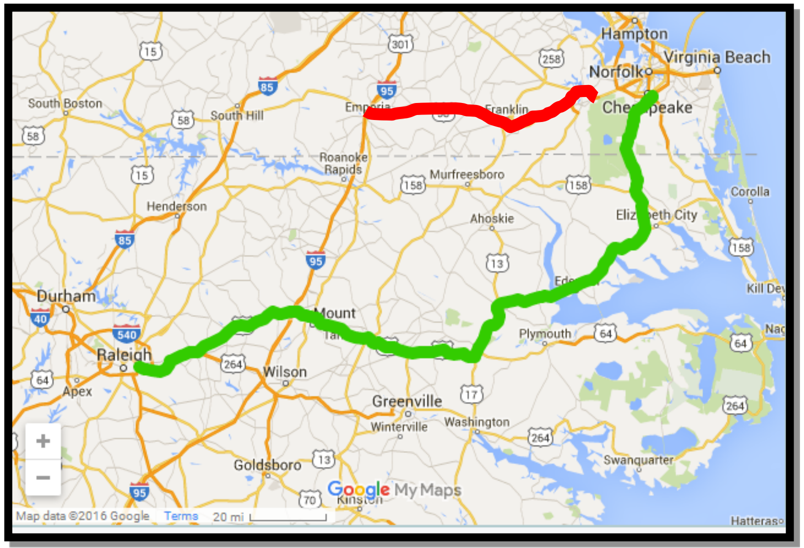


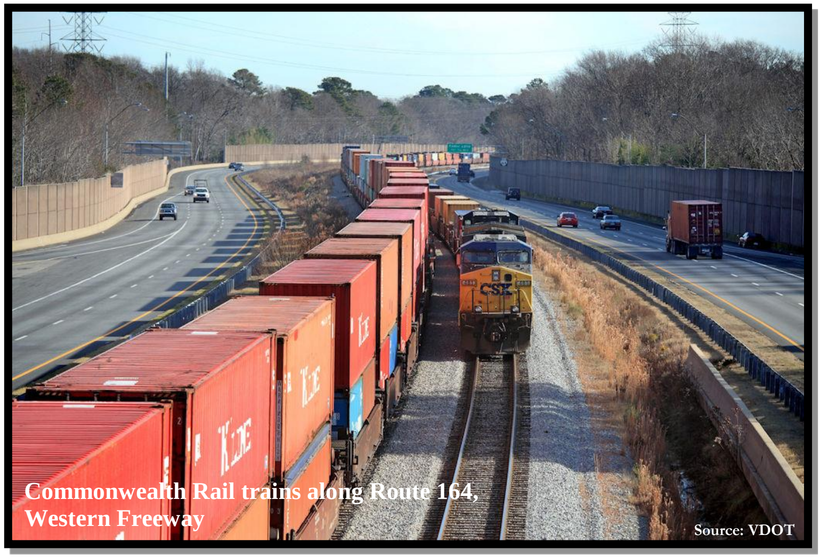
Figure ES-15 – Route 58 and Potential I-87 Interstate Corridors

Source: Regional Transportation Alliance and HRTPO.

In 2009, 231,000 containers handled by the Port of Virginia were moved by rail. By 2016, this level had more than doubled to over 550,000 rail containers. **Port officials expect the share and amount of containers transported by rail to continue to increase as demand rises, up to nearly 1 million containers by rail by the year 2040.** In order to keep Virginia competitive and ensure the ability to handle anticipated rail volumes, the Port of Virginia, rail stakeholders, and state/local officials must work together to secure grant dollars, such as the Rail Enhancement Fund and federal grants, for rail improvement projects. Examples of rail improvement projects include on-dock improvements as part of the NIT South project and the National Gateway project, which includes improvements to the Virginia Avenue and Howard Street tunnels to allow for double-stacked trains. Funding improvements for highway-rail crossings – such as the crossing at the Hampton Boulevard/International Terminal Boulevard intersection that has been supported by the Navy and Port of Virginia officials – will also be critical with the increased number of trains impacting congestion levels and safety at major crossings.

Since 2009, HRTPO staff has worked with regional freight stakeholders through the Freight Transportation Advisory Committee (FTAC), which advises the HRTPO Board on freight issues. Key freight business and community leaders participate on FTAC and have provided vital freight input for several HRTPO Board decisions. Staff remains committed to working with FTAC to help raise awareness of the importance of freight transportation to the region and to collect input from various stakeholders—including the public—on these matters.

The Freight Transportation Advisory Committee (FTAC) has stated that implementing system-wide projects that keep cargo moving along the entire length of corridors is important. Both widening the 29-mile gap along I-64 and providing a limited-access east-west connection to I-95 would provide system-wide benefits. HRTPO staff and other regional freight stakeholders will need to monitor the impact of regional transportation projects on truck travel patterns in order to address deficiencies in the transportation system.


Commonwealth Rail trains along Route 164, Western Freeway

Source: VDOT

HRTPO will continue to integrate freight into the Hampton Roads Long-Range Transportation Plan (LRTP), the blueprint for the region's multimodal transportation development. HRTPO freight studies feed directly into the LRTP process and provide freight-related inputs for the Project Prioritization Tool, which is used to score transportation projects in order to assist decision makers with project selection. HRTPO staff will incorporate the latest freight data and performance measures into the tool as they become available.

HRTPO staff has established and maintained a close working relationship with the Virginia Department of Transportation's (VDOT) Transportation and Mobility Planning Division and the Hampton Roads District for all statewide freight planning initiatives. HRTPO staff will continue to work with the state on statewide freight initiatives, such as VTrans, the Virginia Multimodal Freight Plan, and freight committees. Additionally, the HRTPO plans to work with the state and peer MPOs to establish a network of Critical Urban Freight Corridors (CUFCs) in Virginia. These roadways should provide connections between the Interstate System and other important ports, public transportation facilities, or other intermodal freight facilities.

One of the largest challenges facing the freight industry within the Commonwealth of Virginia is the availability of parking for trucks. This is not only a statewide problem, as Hampton Roads also has a parking deficit, according to VDOT. Due to these parking deficits, regional leaders should continue to work with VDOT and other freight stakeholders to improve these deficiencies.

There are federal grant programs that provide funding for freight and highway projects, including the new Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program. The FAST Act authorizes $4.5 billion in funds for FASTLANE grants over five years (Federal Fiscal Years 2016-2020). Although three Hampton Roads projects were submitted for the first round of FASTLANE grants in 2016 (the Hampton Roads Western Freight Gateway, US Route 58 Hampton Roads Intermodal Connector, and the Freeman Avenue/Norfolk-Portsmouth Belt Line Railroad Overpass), none of these projects were chosen to receive funding. For the second round of FASTLANE grants, Hampton Roads submitted a proposal for the I-64 Southside/High Rise Bridge widening project for $100 million of the total $600 million project cost. **The region must continue planning for projects that will benefit the movement of freight in order to have a better opportunity to submit** successful FASTLANE grants or other federal funding opportunities such as the Transportation Investment Generating Economic Recovery (TIGER) grants.

Port of Virginia

Source: HRTPO

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INTRODUCTION

Freight transportation influences every aspect of our daily lives and keeps our businesses and industries competitive in the local and global economy. While Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system that facilitates the efficient, reliable, and safe movement of freight, our challenge will be to maintain and expand the system to meet the needs of tomorrow.

Over the last couple of decades, the Hampton Roads Transportation Planning Organization (HRTPO) has engaged in numerous important freight planning activities. This includes the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. This 2017 update builds on previous efforts and is intended to inform freight policy, program, and investment decisions in the Hampton Roads region, which will impact the greater Commonwealth of Virginia. This report details the movement of goods across all freight facilities—highways, ports, railways, and airports. Special emphasis is placed on freight moving by trucks across highways as they serve as the predominant mover of freight.

STUDY PURPOSE

The overall purpose of this study is to understand the impact of freight movement on regional and statewide employment, income, and economic growth in order to guide policy and investment decisions—particularly for prioritizing transportation projects—that will improve connectivity, efficiency, reliability, and safety of the Hampton Roads freight multimodal transportation system.

STUDY AREA

The Hampton Roads Transportation Planning Organization serves as the intergovernmental transportation planning body or Metropolitan Planning Organization (MPO) for the Hampton Roads Metropolitan Planning Area (MPA) (**Figure 1**). The Hampton Roads MPA, which is located in Southeastern Virginia, adjacent to the Atlantic Ocean and the Chesapeake Bay, is divided by the James River and the Hampton Roads Harbor into two subregions: the Peninsula and the Southside. The Peninsula is the northern subregion, comprised of the cities of Hampton, Newport News, Poquoson, and Williamsburg, and the counties of James City and York, as well as a portion of Gloucester County. The Southside includes the cities of Chesapeake, Norfolk, Portsmouth, Suffolk, Virginia Beach, Isle of Wight County, and the towns of Windsor and Smithfield. Portions of Southampton County and the City of Franklin were added to the MPA in 2016.

Figure 1 – Hampton Roads Metropolitan Planning Area

FREIGHT TRANSPORTATION: CHALLENGES OF TODAY AND TOMORROW

Throughout the world, online shopping has grown exponentially and is expected to continue to grow. This growth in electronic commerce is attributed to competitive pricing, faster delivery, easier return policies, improved transaction security, free shipping, and an increase in the type of goods available. According to statista.com, retail e-commerce sales including digital services amounted to $343 billion US dollars in 2015 and are projected to grow to $684 billion US dollars in 2021. People are becoming more and more accustomed to buying and receiving goods in a convenient and timely fashion. This increase will require better connections and a more efficient transportation system in order to transport our goods and products.

The volume and delivery of freight has grown significantly over the last few decades and is expected to rise even more in the near future. According to U.S. DOT's draft National Freight Strategic Plan (NFSP)[1], the U.S. economy is expected to double in size over the next 30 years. By 2045, the nation's population is projected to increase to 389 million people, compared to 321 million in 2015. To support this economic and population growth, freight movements across all modes are expected to grow by approximately 40% by 2045[2]. Container traffic at ports will increase steadily as the volume of imports and exports transported by our freight system more than doubles over this period. Air freight is expected to triple in response to demand for quick transport of high-value merchandise, while multimodal shipments are predicted to more than double.

All metropolitan areas are impacted by 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 (**Figure 2**). According to the Hampton Roads Economic Development Alliance, Hampton Roads is located within 40% of the U.S. population and has access to approximately 128 million consumers within one day's drive[3].

Hampton Roads is a multimodal region that includes ports, airports, rail, private trucking, shipping and warehouse distribution facilities, as well as a network of road and rail corridors for the delivery of freight, goods, and services. Hampton Roads is home to the Port of Virginia's deep water marine terminals, which had a total economic impact of $60 Billion in total revenue (FY 2015) to the Commonwealth of Virginia[4]. Due to this location and infrastructure, the Hampton Roads region is expected to experience large growth in freight movement in the near future. 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.

Source: Hampton Roads Technology Council

Figure 2 – Hampton Roads is located within 750 miles of two-thirds of the United States marketplace.

Local Challenges

As part of this study, HRTPO staff met with a Freight Working Group, consisting of local freight industry leaders in Hampton Roads (more details on the Freight Working Group are provided in the next section of this report under HRTPO Freight Planning Efforts). The group identified four primary challenges in the region:

1) *Larger containerships* – The largest containerships in the world have grown in size from 3,000 TEUs in the 1970s to approximately 19,000 TEUs in recent years. As ship sizes continue to grow, the challenge at the Port of Virginia will be adapting to the exaggerated peaks and valleys in volume. For example, instead of unloading/loading 2,500 containers 3 days per week, it may be 6,000 containers 1 day per week. These larger ships will have major impacts on port and landside operations and capacity such as truck gate throughput, rail car loading, and roadway usage.

---

[1] *Draft National Freight Strategic Plan for Public Comment, U.S. Department of Transportation, Federal Highway Administration, version 1, October 15, 2015.*

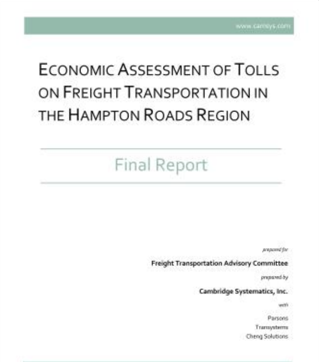
[2] *Freight Analysis Framework,* U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, version 4.1, 2016.

[3] *http://www.hreda.com/map-center/?map=majorcities, April 2016.*

[4] *Annual Report 2015: Stewards of Tomorrow,* Port of Virginia, 2016.

2) *Tolls* – Local freight industry leaders were concerned about the potential impacts of future tolls on the economic competiveness of the Port of Virginia and surrounding freight businesses in Hampton Roads. As a result, the Freight Transportation Advisory Committee (FTAC), with support from the Virginia Department of Transportation (VDOT) and the HRTPO, commissioned a study to examine the economic implications of proposed highway improvements and the use of tolls to fund those improvements.

3) *Truck restrictions and Parking Shortages* – There are various restrictions placed on trucks such as hours of operation, vertical clearances, lane usage, and weight limits/over-sized loads. For example, the City of Norfolk prohibits large trucks on Hampton Boulevard between Terminal Blvd. and Redgate Ave. between the hours of 4 pm and 6 am. Other roadways in Norfolk with truck restrictions include Church St, Colley Ave, Granby St, Jamestown Crescent, and Surrey Crescent. Based on estimated demand, there is a shortage of truck parking spaces along many major corridors and near marine terminals, as described further later in this report.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ECONOMIC ASSESSMENT OF TOLLS
ON FREIGHT TRANSPORTATION IN
THE HAMPTON ROADS REGION

Final Report

prepared for
Freight Transportation Advisory Committee
prepared by
Cambridge Systematics, Inc.
with
Parsons
Transystems
Cheng Solutions

October, 2015

Click here to view the report

4) *Mandatory electronic logging devices (ELD)* – The Federal Motor Carrier Safety Administration announced on December 10, 2015, a federal rule to require commercial truck operators who currently use paper log books to maintain hours-of-service to adopt ELDs by December 16, 2017. This new rule is primarily a safety precaution aimed at preventing driver fatigue and crashes but is also expected to save the industry about $1 billion a year in time and paperwork. Even though this requirement could provide overall benefits for the trucking industry, it may place additional costs and strain on smaller trucking companies during the conversion.

ECONOMIC IMPACT OF VIRGINIA'S MARITIME INDUSTRY

The Virginia Maritime Association and the College of William & Mary conducted a study[5] to assess the economic and fiscal impacts of Virginia's commercial ports and maritime industry. This was an independent report that documents the impacts of both domestic and international commerce through Virginia's ports and related activities in Fiscal Year 2013.

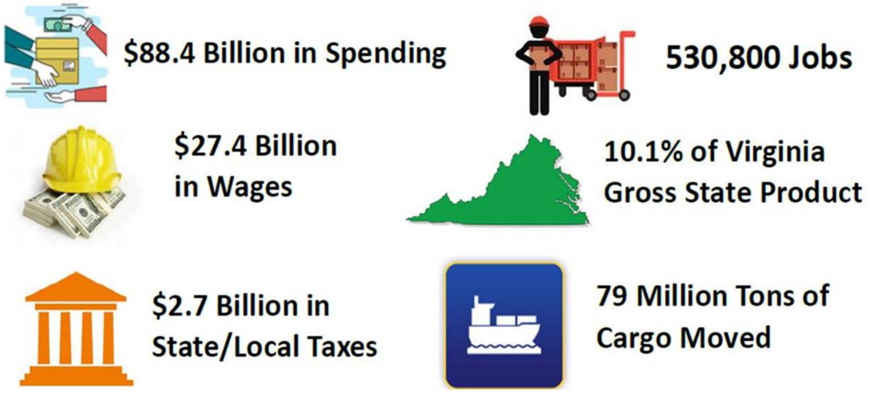
In FY2013, the Virginia maritime industry directly added to the Commonwealth's economy in four ways:

- Handling and transportation of domestic and foreign waterborne commerce
- Production of waterborne exports throughout the state
- Virginia use and consumption of imports
- Virginia private shipbuilding and repair, and specialized maritime services

Economic Impacts of Virginia's Maritime Industry

Click here to view the report

In Virginia, the maritime industry contributed to the direct employment of 296,100 and $56 billion in spending for goods and services. The following graphic shows the positive impacts of maritime activity in Virginia in terms of spending, wages, taxes collected, jobs supported, amount of cargo moved, and contributions to Virginia's gross state product.


$88.4 Billion in Spending

530,800 Jobs

$27.4 Billion in Wages

10.1% of Virginia Gross State Product

$2.7 Billion in State/Local Taxes

79 Million Tons of Cargo Moved

---

[5] *Economic Impacts of Virginia's Maritime Industry*, Virginia Maritime Association, Prepared by Raymond A. Mason School of Business, William & Mary, February 2016.

According to the study, the backbone of Virginia's maritime industry centers on innovation, specialized services, integration, and adaptation to a changing environment while creating high paying jobs and supporting the Commonwealth's commerce regionally and worldwide.

REPORT CONTENTS

This report is organized into the following sections:

1) Introduction
2) Freight Facilities, Trends, and Forecasts
3) Hampton Roads Commodity Flows
4) Regional Truck Movement
5) Integration of Freight into the Transportation Planning Process
6) National Freight Planning Efforts and Funding Sources
7) Summary, Conclusions and Next Steps

Photo source: VDOT

Trucks provide "first and last mile" connections to and from the Port of Virginia.

FREIGHT FACILITIES, TRENDS, AND FORECASTS

INTRODUCTION

It is essential that Hampton Roads maintains its existing transportation systems and continues to make investments in freight infrastructure in order to remain economically competitive and improve overall mobility. This section provides a brief overview on freight facilities and assets in Hampton Roads. **Figure 3** shows the locations of the major roadways, railroads, commercial service airports, and marine terminals in Hampton Roads.

This section also summarizes the most recent freight data, trends, and forecasts for Hampton Roads. 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.

PORT OF VIRGINIA

The Virginia Port Authority (VPA) is an autonomous government agency of the Commonwealth of Virginia that owns the Port of Virginia (POV). POV is a hub port that consists of a group of facilities centered primarily on the Hampton Roads harbor. Nearly 30 international shipping lines offer direct, dedicated service to and from Virginia, with connections to 200+ countries around the world.


Source: HRTPO

Port of Virginia Challenges

The newest generation of containerships are larger and more efficient than previous ships (see **Figure 4**). In 2016, the ship lines formed into three major carrier alliances that control nearly 90% of the Asia-North America trade. The alliances have vessel-sharing agreements that allow slot-sharing on these large mega-ships which helps avoid financial losses accrued by operating less-than-full ships.

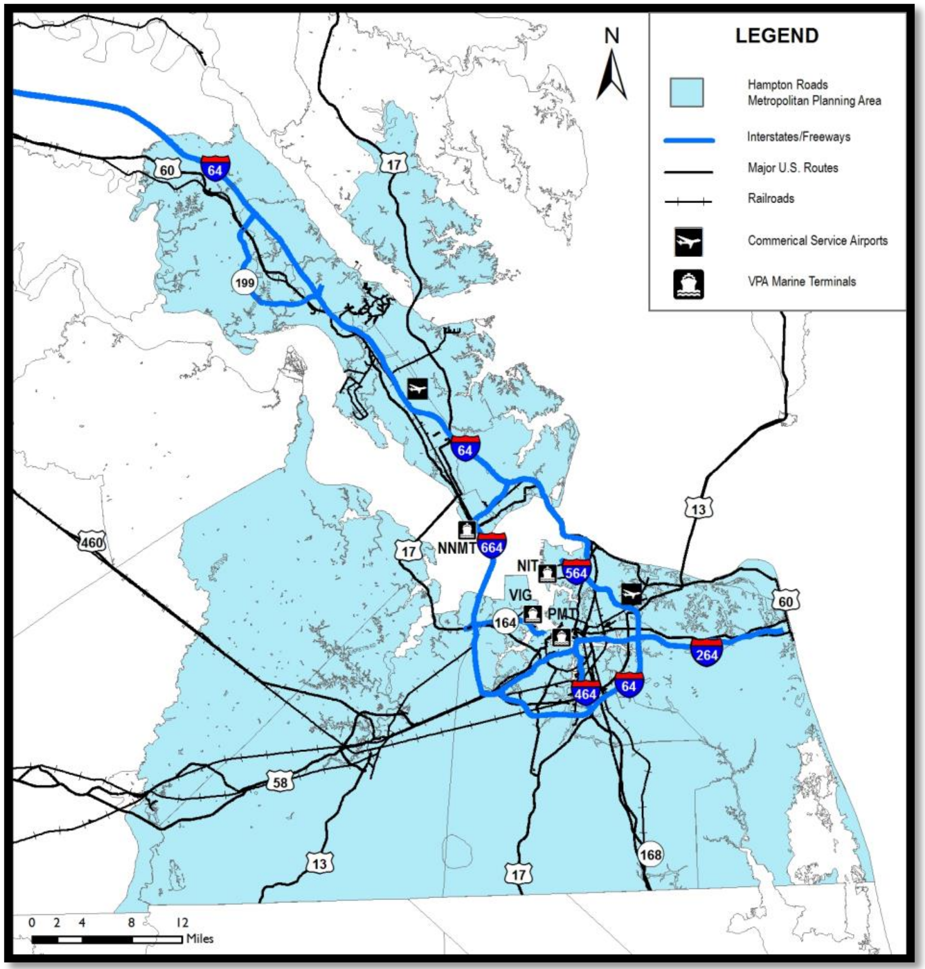


Figure 3 – Freight Facilities in Hampton Roads.
Source: HRTPO.

Larger containerships will lead to new challenges for port facilities and the surrounding areas. Large influxes of containers will create more peaks and valleys that will need to be managed to ease road/rail congestion, workload operations, and driver needs.

In May 2017, the first 13,000 TEU vessel (see COSCO Development photo) will call the Port of Virginia – Virginia International Gateway, representing the beginning of a new era for Virginia and the U.S. East Coast. With the completion of the Panama Canal expansion in 2016 and other East Coast projects to raise navigational clearances in 2017, additional larger vessels will call Virginia's ports. The net effect is fewer vessel calls, but with larger amounts of containers that are discharged and loaded with each ship call resulting in surges that must be rapidly transferred from the ship/marine terminal and transported over road/rail connections. In the past, ships that have called Hampton Roads have unloaded or loaded between 1,000 and 1,500 containers. With these larger vessels, approximately 4,000 containers will be transferred during their stay at the Port.

The Port of Virginia's channels (50 feet) are among the deepest on the East Coast, and the only port authorized to be deepened to 55 feet. Virginia's deep channels have historically attracted first-in/last out services that require deeper sailing drafts when fully loaded. In addition, the Port of Virginia is the only US east coast port that is not air draft constrained due to its use of tunnels – instead of bridges across the navigable channels. This is a strength, but also a source of road congestion, that creates bottlenecks at tunnel approaches.

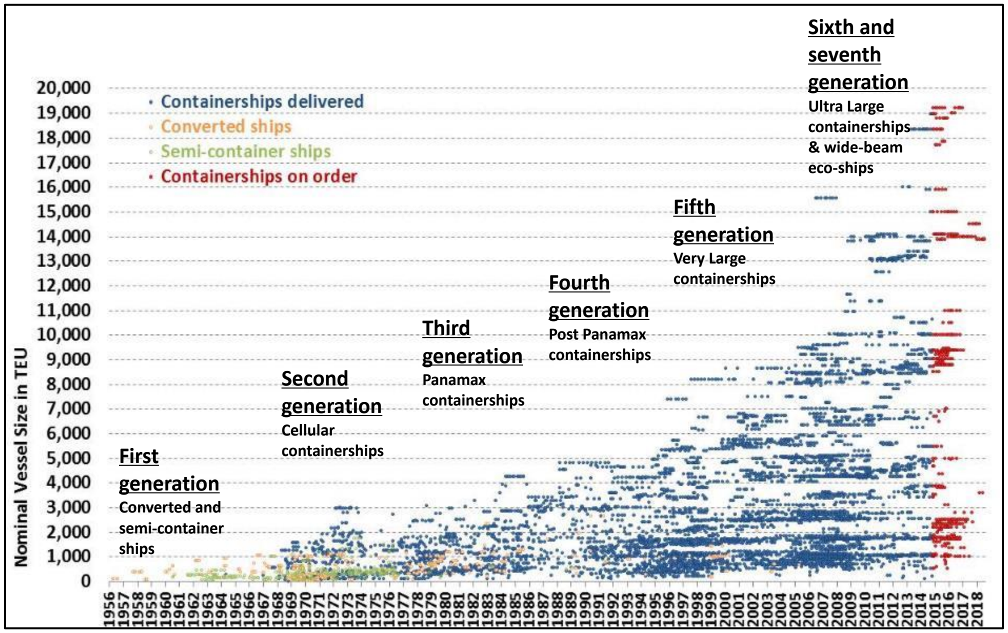


Figure 4 – The Evolution of Containerships

Source: Virginia Port Authority.

COSCO Development (13,000 TEU vessel)

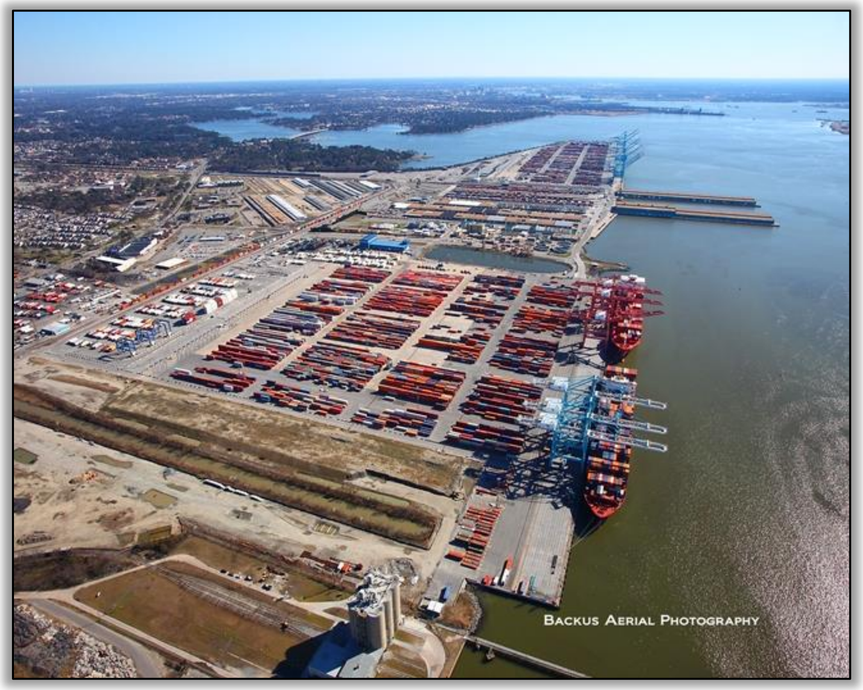
Port of Virginia Facilities

The four main POV marine terminals are:

- Norfolk International Terminals (NIT) in Norfolk, Virginia
- Newport News Marine Terminal (NNMT) in Newport News, Virginia
- Portsmouth Marine Terminal (PMT) in Portsmouth, Virginia
- Virginia International Gateway (VIG) in Portsmouth, Virginia

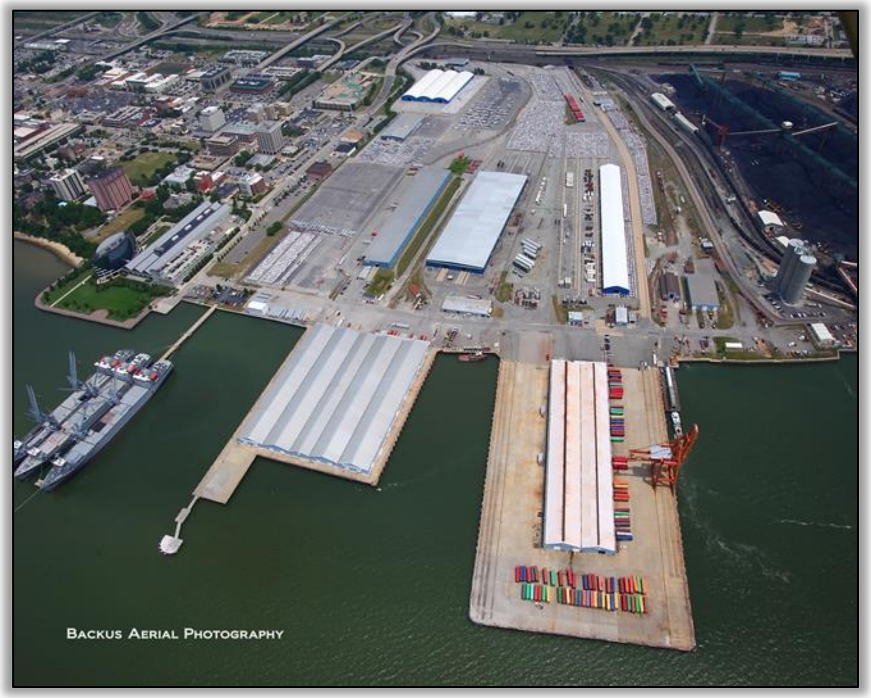
Norfolk International Terminals (NIT)

Located on 567 acres along the Elizabeth and Lafayette Rivers, NIT is the Virginia Port Authority's largest terminal, with a total of 6,630 linear feet of berthing dredged to 50' depth and the capability of handling 12,000-14,000 twenty-foot equivalent (TEU) vessels served by 14 Super Post-Panamax Class quay cranes. The facility has a total capacity of 33,000 TEU's or 19,000 containers. Thousands of daily truck moves are processed through 17 lanes and two on-terminal transfer zones.



Newport News Marine Terminal (NNMT)

NNMT is the Virginia Port Authority's main break-bulk and roll-on/roll-off facility. Break-bulk cargo or general cargo are goods that must be loaded individually or on pallets (e.g. bagged cement, automobiles, machinery, drummed liquids). Roll-on/roll-off (ro-ro) service involves movers driving or rolling items (e.g. cars, trucks, trailers, railroad cars) on and off the shipping vessel on their on wheels or using a platform vehicle. NNMT has been the Port Authority's vehicle ro-ro hub for many years—vehicle imports have surged in recent years outpacing all other port segments, including rail and truck volumes. The facility offers 60 acres of outside storage and one million square feet of covered storage space. Vessels have access to two piers with four vessel berths, containing 3,480 feet of berth space, with draft depth as deep as 40 feet, accommodating vessels 850 feet in length. NNMT provides direct, on-dock rail service with CSX, with the ability to transfer with Norfolk Southern in Richmond. In 2009, the Port consolidated various cargo handling operations at NNMT and began focusing entirely on break-bulk and roll-on/roll-off operations. In October 2011, a 100,000 square foot warehouse was constructed to handle additional break-bulk storage.



Portsmouth Marine Terminal (PMT)

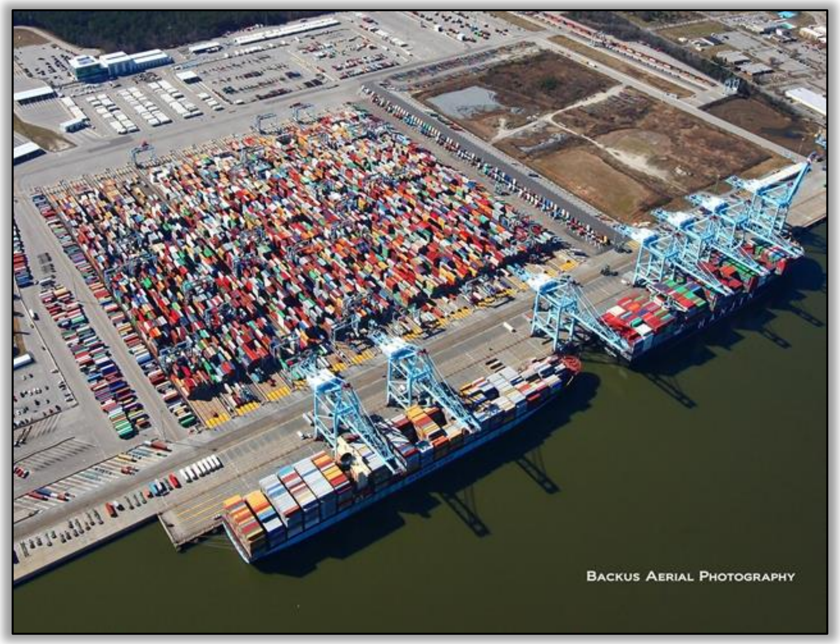
PMT occupies 287 acres of land on the west bank of the Elizabeth River. The terminal has 3,540 feet of wharf, three berths, and is able to handle containerized, break-bulk, and roll-on/roll-off cargo. The facility is served by CSX directly and Norfolk Southern via the Norfolk-Portsmouth Beltline Railroad. Currently, 45 acres in the northeast corner of the facility are occupied by a joint venture arrangement headed by Skanska Infrastructure Development for construction of a second Midtown Tunnel, scheduled to be complete in 2017. The 44-acre Empty Container Yard is in service and the warehouse adjacent to the VIT operations building is currently being leased.[6]

Virginia International Gateway (VIG)

VIG is a 576-acre, privately owned marine terminal located along the Elizabeth River in Portsmouth. VIG—the largest privately-owned container terminal in the nation—was originally commissioned in July 2007 under the name APM Terminals Virginia. In July 2010, the VPA and APM Terminals entered into a 20-year lease agreement under which Virginia International Terminals—VPA's operating arm—would operate the facility. The state-of-the-art facility and lease was purchased by Alinda Capital Partners and Universities Superannuation Scheme Ltd (USS) in 2014 and renamed Virginia International Gateway (VIG). In September 2016, VPA signed a new long-term lease agreement with VIG that gives VPA oversight and operating rights at the terminal until 2065.

Phase I of VIG's development, at 231 acres, can process 1.1 million TEUs (650,000 containers) annually. Phase II, which will be completed in 2019, will add approximately 60 acres in additional space and another one million-plus TEUs in capacity. The terminal is designed to serve super post-Panamax class vessels, and is accessible by a 50-feet navigation channel, direct interchange to the interstate highway system, and double-stack intermodal service for CSX and Norfolk Southern via the Commonwealth Railway.

The terminal is constructed as a semi-automated operation, with a mix of manual and automated container handling equipment. Its design is unique in that many of the terminal's operations are performed remotely from a centralized terminal operations center. The container wharf currently provides 3,205 feet of effective berth capacity, which will be expanded by 800 feet in Phase II.



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[6] http://www.portofvirginia.com/facilities, February 2017

The terminal is equipped with a fleet of eight super post-Panamax cranes, capable of handling the largest container vessels. The container yard consists of approximately 65-acres of semi-automated rail mounted gantry (RMG) stacked acres of dedicated storage space for full and empty containers, wheeled refrigerated containers, and wheeled oversized loads.

Craney Island Marine Terminal (CIMT)

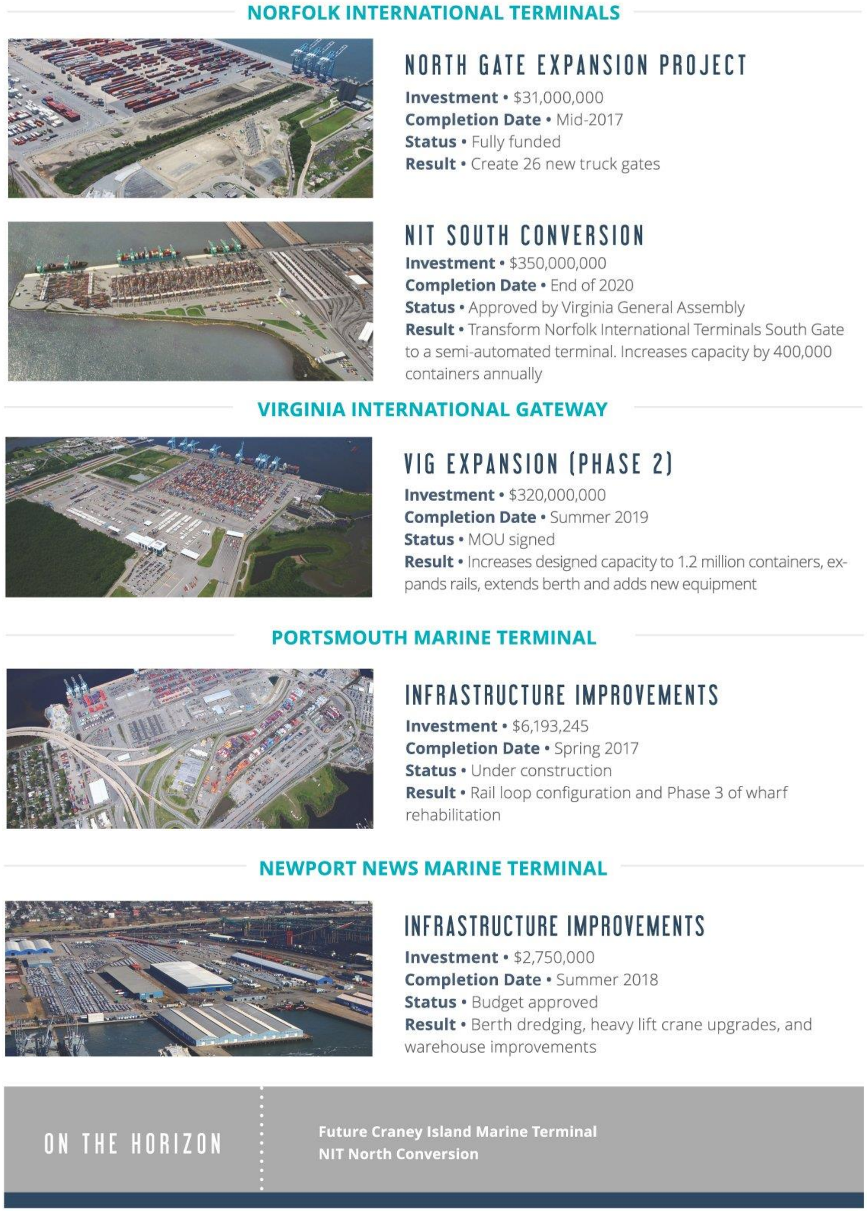
Craney Island Marine Terminal (CIMT) is the largest fully-permitted port expansion project in the U.S. and will involve land reclamation at the Craney Island Dredged Material Management Area in Portsmouth. The project serves a dual purpose by extending the life of Craney as a dredge disposal area and creating land that will expand the Port of Virginia's capacity to handle containers. The Craney Island eastward expansion has been in the planning, design, and construction phase for more than a decade.

The terminal will be a state-of-the-art automated container terminal with the capability to handle up to 50% of its total containerized volume by rail. The existing Commonwealth Railway will be extended to Craney Island, which will create dual rail access on-dock with Norfolk Southern and CSX. The terminal will be designed to serve super post-Panamax class vessels via a 50-feet navigation channel, direct interchange to the interstate highway system, and double-stack intermodal rail service.

Source: Rendering from the Virginia Port Authority & US Army Corps of Engineers

Port of Virginia Infrastructure Investments

Opportunities are plentiful for the Port of Virginia (POV) to stimulate commerce, facilitate growth, and accrue economic benefits to Virginia by expanding its presence as one of the premier US gateways to international trade[7]. The Port of Virginia is making investments—both short-term and long-term—in anticipation of increased freight demand. **Figure 5** provides details of programmed terminal expansion projects in the Hampton Roads region.



NORFOLK INTERNATIONAL TERMINALS

NORTH GATE EXPANSION PROJECT

Investment • $31,000,000
Completion Date • Mid-2017
Status • Fully funded
Result • Create 26 new truck gates

NIT SOUTH CONVERSION

Investment • $350,000,000
Completion Date • End of 2020
Status • Approved by Virginia General Assembly
Result • Transform Norfolk International Terminals South Gate to a semi-automated terminal. Increases capacity by 400,000 containers annually

VIRGINIA INTERNATIONAL GATEWAY

VIG EXPANSION (PHASE 2)

Investment • $320,000,000
Completion Date • Summer 2019
Status • MOU signed
Result • Increases designed capacity to 1.2 million containers, expands rails, extends berth and adds new equipment

PORTSMOUTH MARINE TERMINAL

INFRASTRUCTURE IMPROVEMENTS

Investment • $6,193,245
Completion Date • Spring 2017
Status • Under construction
Result • Rail loop configuration and Phase 3 of wharf rehabilitation

NEWPORT NEWS MARINE TERMINAL

INFRASTRUCTURE IMPROVEMENTS

Investment • $2,750,000
Completion Date • Summer 2018
Status • Budget approved
Result • Berth dredging, heavy lift crane upgrades, and warehouse improvements

ON THE HORIZON

Future Craney Island Marine Terminal
NIT North Conversion

Figure 5 – Port of Virginia Programmed Infrastructure Investments

Source: Virginia Port Authority, September 2016.

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[7] http://www.portofvirginia.com/about/master-plan/

Port of Virginia Master Plan

In anticipation of future freight growth, the Port of Virginia (POV) has developed a 2065 Master Plan. This plan integrates these growth opportunities into updated demand forecasts and aligns the port's capital improvement project schedules to enable the port to handle it.

Improvement projects and efforts include:

- Upgrading container handling equipment that will increase capacity (e.g. advanced equipment at NIT)
- Expanding and optimizing VIG
- Promoting the Port of Virginia's inland access points
- Reinforcing near-term operations to alleviate construction activities and congestion
- Continuing the expansion of the Craney Island Marine Terminal
- Investment at Richmond Marine Terminal to upgrade the equipment and facilities
- Reinvesting in PMT and NNMT for non-containerized cargo services
- Deepening of navigation channels to support ultra large container vessels (ULCVs)
- Encouraging critical rail and highway improvements that will improve access to Port of Virginia terminals.

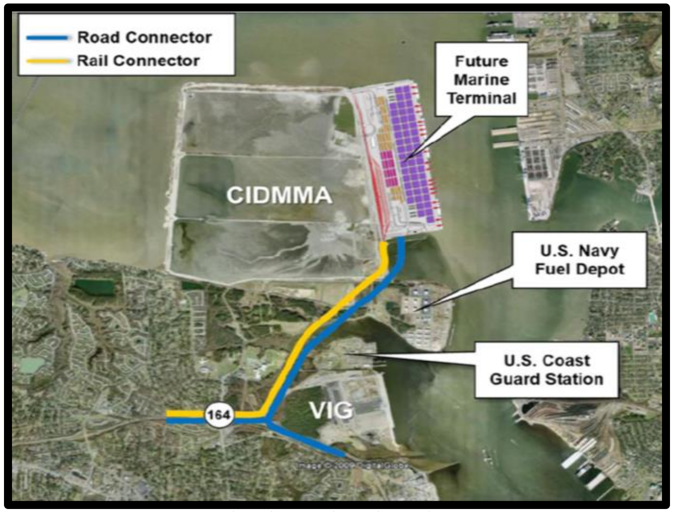


Figure 6 – Craney Island Road and Rail Connector Concept

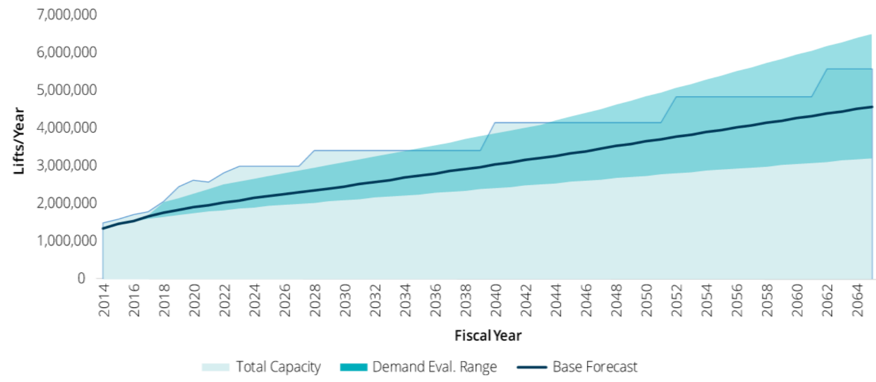
Source: Master Rail Plan for the Port of Virginia, OIPI, 2015.

Quick Facts: The Port of Virginia's channels are among the deepest on the East Coast, and the only port authorized to be deepened to 55 feet. Virginia's deep channels have historically attracted first-in/last out services that require deeper sailing drafts when fully loaded.

The plan further provides a near and long-term strategy for the port that ensures the delivery of needed infrastructure that is fiscally responsible and sustainable, recognizes the value of regional transportation investments, and supports operational excellence through innovation. Successful execution of the 2065 Master Plan will stimulate commerce, facilitate growth and accrue economic benefits to the Commonwealth and the nation.

Capacity of POV Maritime Facilities

Figure 7 below shows the number of lifts at the Port of Virginia facilities forecasted through 2065. Demand at port facilities could outpace capacity if demand is at the higher end of the projected range. To address the growing need for additional capacity, the light blue line shows significant capacity improvements occurring in 2028, 2040, 2052, and 2062. These are based on the anticipated construction of Craney Island Marine Terminal Phases 1-4.



*A lift is a paid movement of a container onto or off a vessel.

Figure 7 – Lifts* per Year at POV Facilities by Fiscal Year

Source: Port of Virginia 2065 Master Plan.

NIT currently handles the most freight shipments of all port facilities. By 2065, Craney Island will handle the majority of shipments for the port, as shown in the following chart.

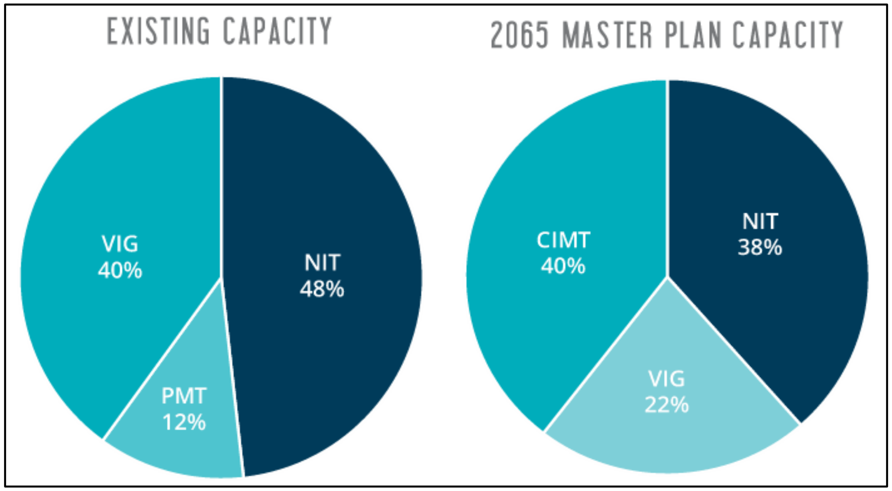


Figure 8 – Existing and Future Freight Distribution at POV Facilities
Source: Port of Virginia 2065 Master Plan.

Capital Investment Plan (CIP)

The Port's Capital Investment Plan (CIP) will enable the port to construct new facilities while also enhancing current facilities. Significant, ongoing capital investment is also needed to ensure that the current fleet of container handling equipment keeps up with demand and technological advancements.

One of the largest funding sources for the port is the Commonwealth Port Fund (CPF). The state provides funding annually for port-related infrastructure through the CPF. The CPF receives 4.2% of the Commonwealth's Transportation Trust Fund revenues. In FY2017 this amounted to $43 million.

According to the POV 2065 Master Plan, state and region funds may be available for specific port-related projects such as the first phase of redevelopment at NIT and road and rail projects that connect to Craney Island. Federal funds are authorized to fund 50% of the Craney Island Eastward Expansion dike and mitigation construction on an ongoing basis.

A combination of state and federal funding will be available for dredging the Norfolk Harbor and Channels to 55-feet.

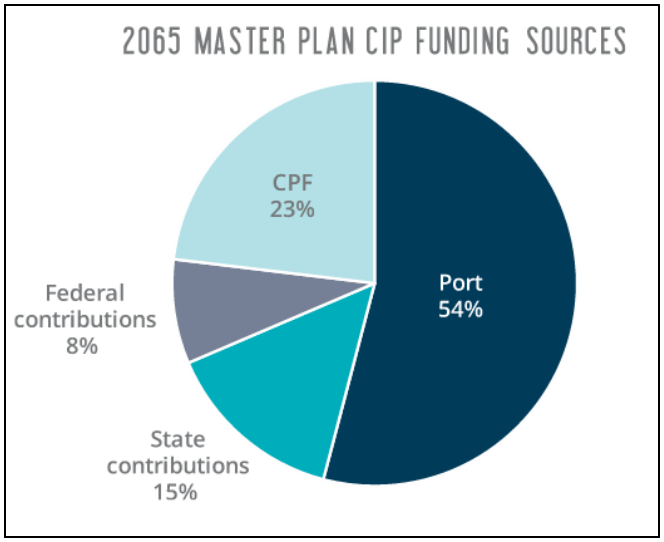


Figure 9 – Capital Investment Plan Funding Sources
Source: Port of Virginia 2065 Master Plan.

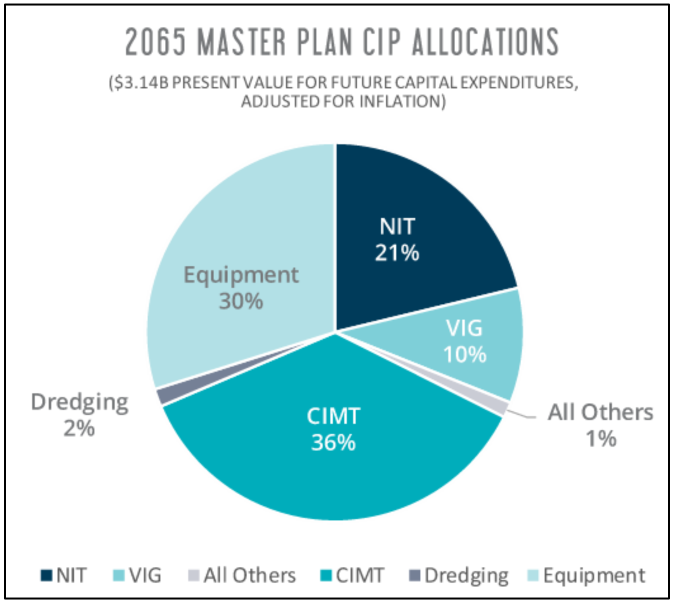
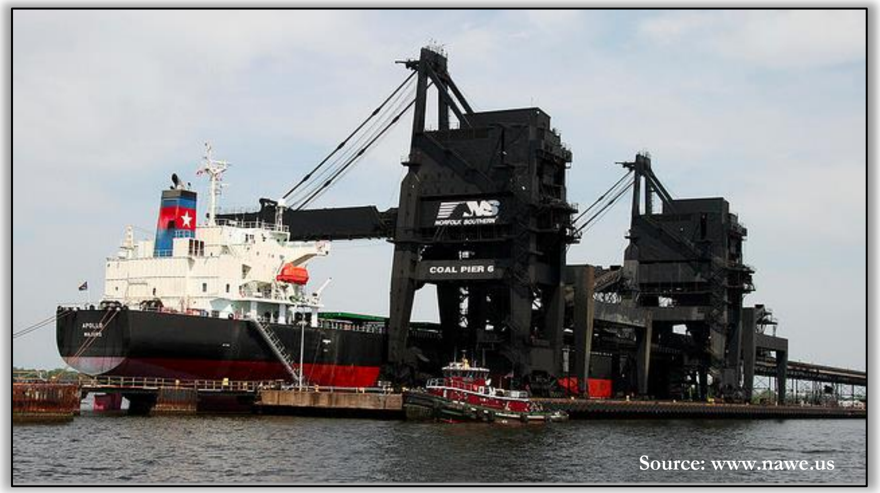


Figure 10 – Capital Investment Plan Allocations
Source: Port of Virginia 2065 Master Plan.

OTHER SHIPPING FACILITIES & SERVICES

Lambert's Point Docks (LPD)

Lambert's Point Docks (LPD) is a 117-acre break-bulk marine terminal in Norfolk. It is among Virginia's largest breakbulk marine terminals, with 1.2 million square feet of covered warehouse storage and outdoor acreage, the capacity to move more than 500,000 tons of forest products annually, and a channel depth of 45 ft. As a subsidiary of Norfolk Southern Corporation, LPD features direct rail access to the Norfolk Southern Railway system.[8] Coal Pier Six, operated by Norfolk Southern and one of the largest coal transshipment terminals in the world, can handle 8,000 tons of coal per hour and processes approximately 48 million tons annually.



Source: www.nawe.us

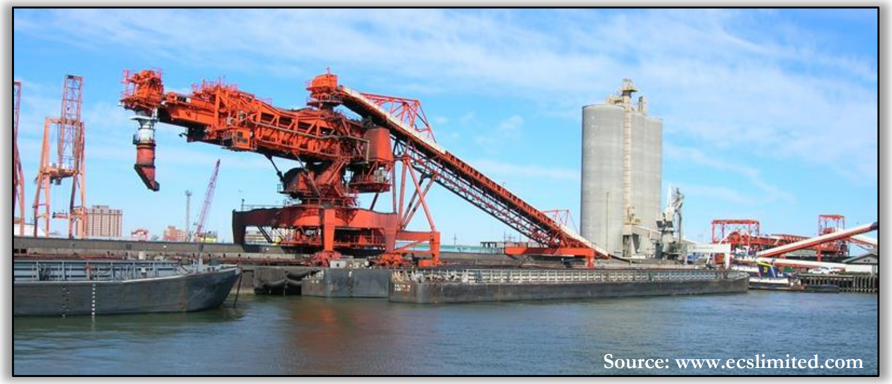
Dominion Terminal Associates (DTA)

Dominion Terminal Associates LLP coal shipping and ground storage facility is located in Newport News. DTA handles sampling, blending, and compatible bulk products, such as pet coke. The pier length is 1,162 feet with berths for loading on either side. Both berths are dredged to a depth of 50 feet to match the harbor channel, and will support future dredging to 55 feet on both sides. The ground storage capacity at DTA is 1.7 million net tons.[9]


Source: www.alphanr.com

Kinder Morgan

Kinder Morgan operates three major coal handling, dry bulk and liquid terminals in Hampton Roads: Moneypoint (Chesapeake), Pier IX (Newport News), and Norfolk. Hampton Roads is included in KM Terminals' Mid-Atlantic region, which is based in Newport News.[10]


Source: www.ecslimited.com

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[8] http://www.nscorp.com/content/dam/nscorp/get-to-know-ns/LPD_brochure.pdf

[9] http://www.dominionterminal.com/Facility%20Description.htm

[10] http://www.kindermorgan.com/pages/business/terminals/midAtlantic.aspx

Richmond Express

A new barge—the Richmond Express—began operating on February 2, 2017 between the Port of Virginia and the Richmond Marine Terminal with carrying capacity of 125 40-foot containers. The new barge replaced the previous barge, the 64 Express, which has been in operation along the James River since 2008. Although the new barge has the same carrying capacity, it is wider and longer which allows more space between containers and allows easier moves. Additionally, the new barge is capable of transporting refrigerated containers, which is important to owners of cold cargo. The 64 Express hauled cargo between Hampton Roads and Richmond for an array of customers, while the new Richmond Express usage is dedicated solely to the Port of Virginia. In 2016, the 64 Express moved 19,602 containers between Richmond and Hampton Roads—a 33 percent increase when compared to the number of containers moved in 2015. This equates to 39,204 fewer round-trip, truck trips on regional roads, particularly I-64.

Source: www.globaltradmag.com

PORT FREIGHT TRENDS

This section provides port-related freight trends for the Port of Virginia. It also shows national and regional trends to understand how the Port of Virginia stacks up against other peer ports. Furthermore, it shows how containers have revolutionized cargo trade.

Gateway	Type	2014			
		Rank	Exports	Imports	Total
Los Angeles, CA	Water	1	40.5	174.5	215.0
New York, NY	Water	2	51.6	154.9	206.5
Laredo, TX	Land	3	90.8	101.2	192.1
JFK International Airport, NY	Air	4	94.8	97.0	191.8
Long Beach, CA	Water	5	36.2	140.7	176.8
Houston, TX	Water	6	90.4	74.3	164.8
Chicago, IL	Air	7	42.9	91.2	134.0
Detroit, MI	Land	8	73.2	59.8	133.0
Los Angeles International Airport, CA	Air	9	45.7	46.7	92.4
Port Huron, MI	Land	10	41.7	44.4	86.1
Buffalo-Niagara Falls, NY	Land	11	45.3	38.9	84.2
Savannah, GA	Water	12	28.1	52.4	80.5
Norfolk, VA	**Water**	**13**	**34.6**	**41.2**	**75.8**
Charleston, SC	Water	14	26.7	44.8	71.5
New Orleans, LA	Air	15	30.2	40.9	71.1
El Paso, TX	Land	16	30.8	34.4	65.2
Miami International Airport, FL	Air	17	37.6	24.0	61.6
Tacoma, WA	Water	18	10.8	42.8	53.6
Dallas-Fort Worth, TX	Air	19	19.5	34.1	53.5
San Francisco International Airport, CA	Air	20	27.4	25.7	53.1
Baltimore, MD	Water	21	18.6	33.9	52.5
Oakland, CA	Water	22	20.7	29.0	49.7
Anchorage, AK	Air	23	12.1	37.2	49.3
Cleveland, OH	Air	24	25.3	21.1	46.4
New Orleans, LA	Water	25	22.9	17.2	40.1

Figure 11 – Top 25 U.S. International Trade Freight Gateways by Value: 2014 (Current $ Billions)

Sources: Air: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, USA Trade Online, October 2015; Water: U.S. Army Corps of Engineers, Navigation Data Center, special tabulation, October 2015; Land: U.S. Department of Transportation, Bureau of Transportation Statistics, North American TransBorder Freight Data, available at www.bts.gov/programs/international/transborder/ as of October 2015

Quick Facts: The Port of Virginia is the 13th highest U.S. foreign trade freight gateway, moving $75.8 billion in shipments in 2014.

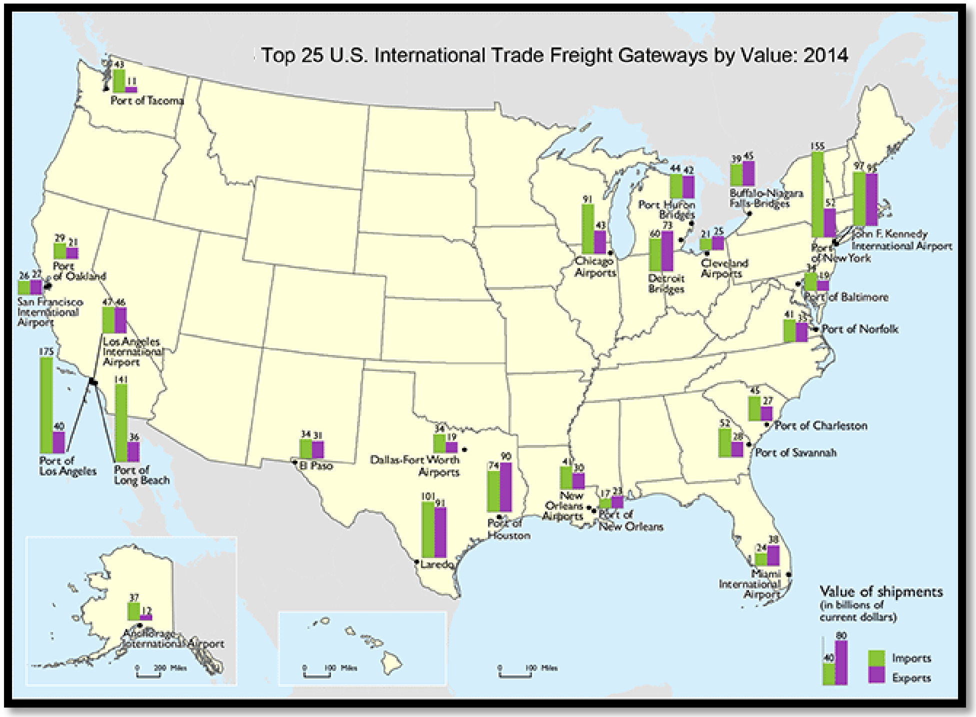


Figure 12 – Top 25 U.S. International Trade Freight Gateways by Value: 2014 (Current $ Billions)

Sources: Air: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, USA Trade Online, October 2015; Water: U.S. Army Corps of Engineers, Navigation Data Center, special tabulation, October 2015; Land: U.S. Department of Transportation, Bureau of Transportation Statistics, North American TransBorder Freight Data, available at www.bts.gov/programs/international/transborder/ as of October 2015

Quick Facts: Imports at the Port of Norfolk (Port of Virginia) exceeded exports, $41 billion to $35 billion, in 2014.

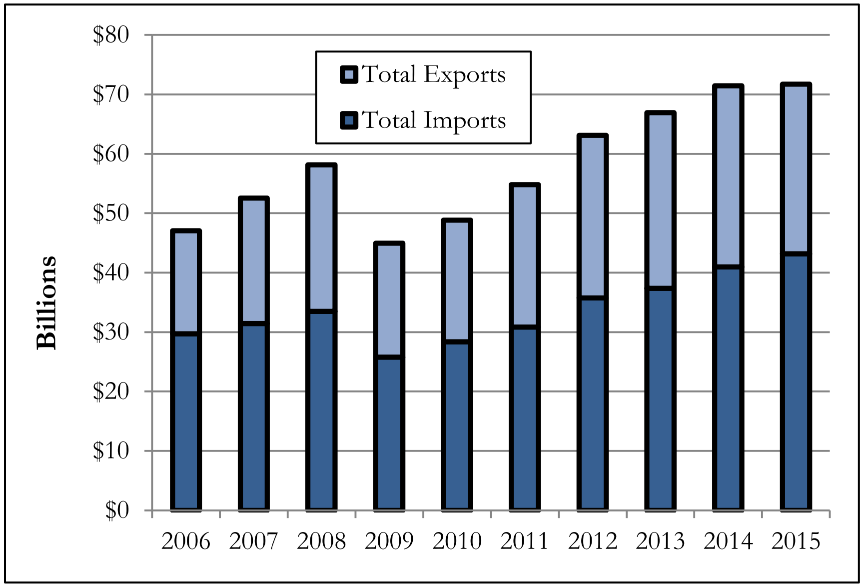


Figure 13 – Port of Virginia – Total Trade by Dollar Value

Source: Virginia Port Authority.

Quick Facts: The value of trade at the Port of Virginia has increased steadily overall since 2009.

2015 Rank	Port (State/Territory)	2015 TEUs	2014 TEUs	% change
1	Los Angeles (CA)	8,160,458	8,340,066	-2%
2	Long Beach (CA)	7,192,066	6,820,808	5%
3	New York/New Jersey	6,371,720	5,772,303	10%
4	Savannah (GA)	3,737,402	3,346,024	12%
5	Seattle/Tacoma Alliance (WA)	3,529,446	3,393,522	4%
6	Hampton Roads (VA)	2,549,271	2,393,040	7%
7	Houston (TX)	2,130,544	1,951,088	9%
8	Oakland (CA)	2,092,201	2,394,069	-13%
9	Charleston (SC)	1,973,204	1,791,977	10%
10	Honolulu (HI)	1,213,129	1,127,794	8%
11	San Juan (PR)	1,210,503	1,319,961	-8%
12	Port Everglades (FL)	1,060,506	1,013,344	5%
13	Miami (FL) (FY)	1,007,782	876,677	15%
14	Jacksonville (FY)	915,292	936,973	-2%
15	Baltimore (MD)	840,314	770,139	9%
16	New Orleans (LA)	524,875	584,318	7%
17	Anchorage (AK)	485,523	490,514	-17%
18	Philadelphia (PA)	427,630	449,122	-5%
19	Wilmington(DE)	337,032	333,944	1%
20	Wilmington(NC)	291,843	278,962	5%

Figure 14 – Top U.S. Ports (Containerized Cargo)

Source: HRTPO Staff compilation of AAPA data.

Quick Facts: The Port of Hampton Roads is currently the 6th largest container port in the U.S., and third largest on the East Coast.

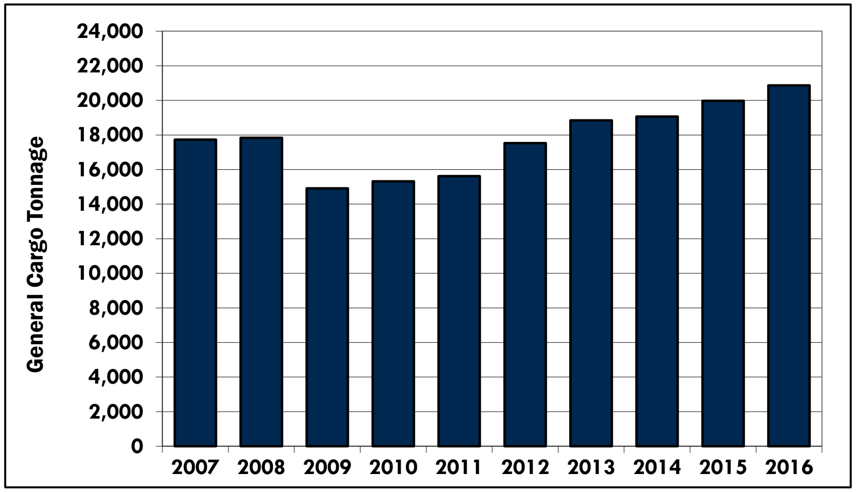


Figure 15 – General Cargo Tonnage Handled by the Port of Virginia, 2007-2016

Source: HRTPO Staff compilation of VPA data

Quick Facts: Cargo tonnage handled by the port has increased 40% since 2009, and will likely continue to increase.

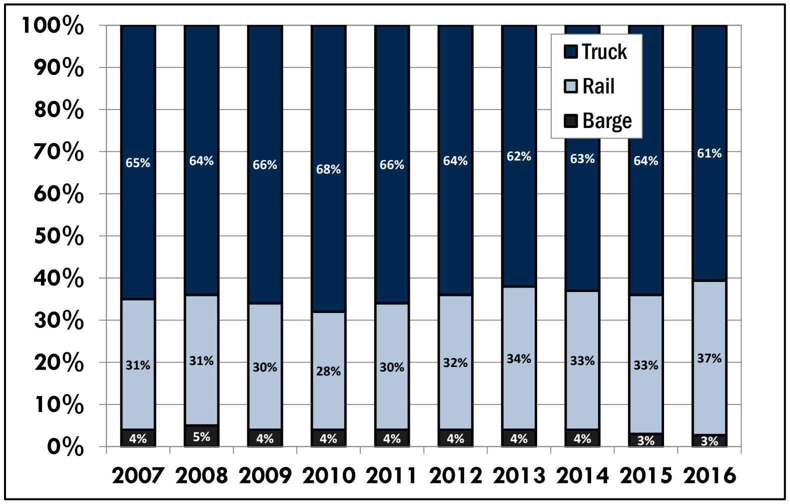


Figure 16 – Mode Split of General Cargo handled by the Port of Virginia

Source: HRTPO Staff compilation of VPA data

Quick Facts: The majority of freight handled by the Port of Virginia is moved by truck, followed by rail and barge. In fact, the Port of Virginia ships a higher percentage and higher volume of containers by rail than any other U.S. East Coast Port.

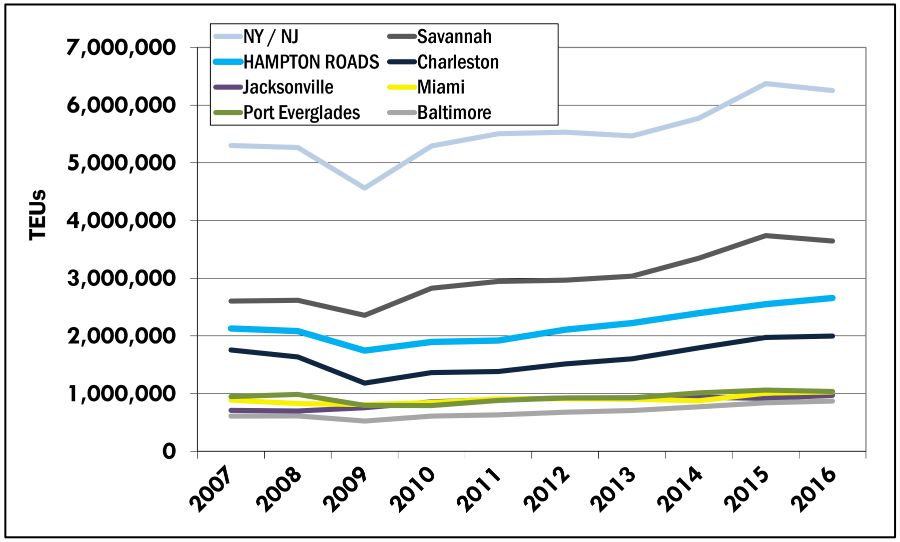


Figure 17 – General Cargo (in TEUs) Handled at Top East Coast Ports, 2007-2016

Source: AAPA.

Quick Facts: Hampton Roads has consistently ranked in the top three of East Coast ports for general cargo (in twenty-foot equivalent units, or TEUs) since 2007. The steady increase in general cargo at the Port of Virginia since 2009 has also been experienced at other top East Coast ports.

Containerized Growth in U.S. Ports

Containers have revolutionized the ability to trade cargo. With the expanded Panama Canal that opened in 2016, the volume of containers that must be moved at each port call due to larger vessels will increase. In order for continued U.S. containerized trade growth to occur, U.S. East Coast Ports including Hampton Roads will need to make capacity improvements (e.g. channel deepening to 55 feet) and shoulder future growth.

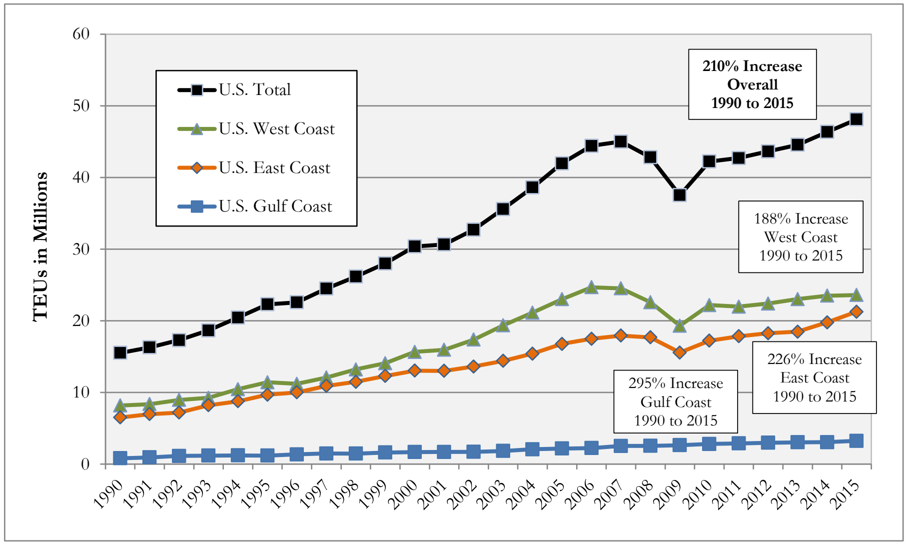
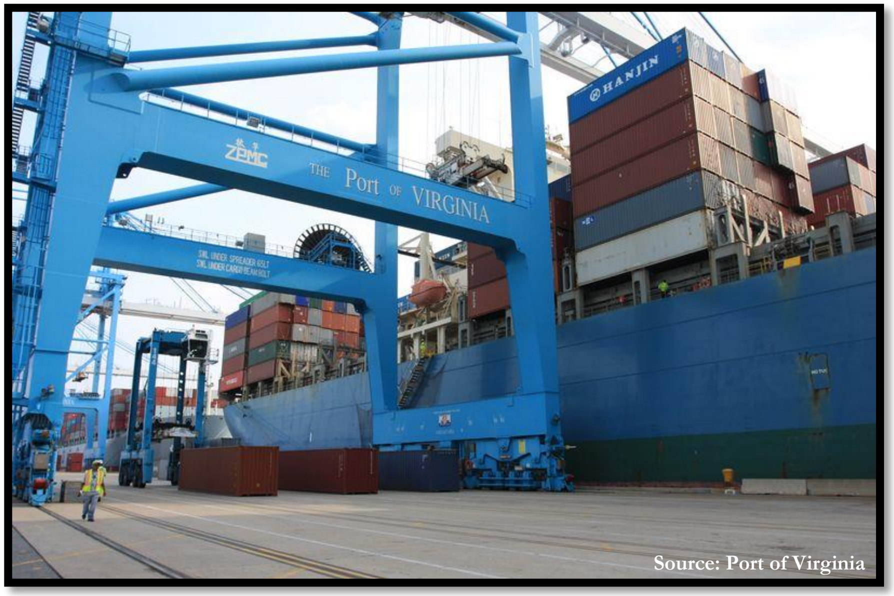


Figure 18 – U.S. Containerized Cargo Growth by Coast, 1990-2015

Source: HRTPO Staff analysis of AAPA data



Source: Port of Virginia

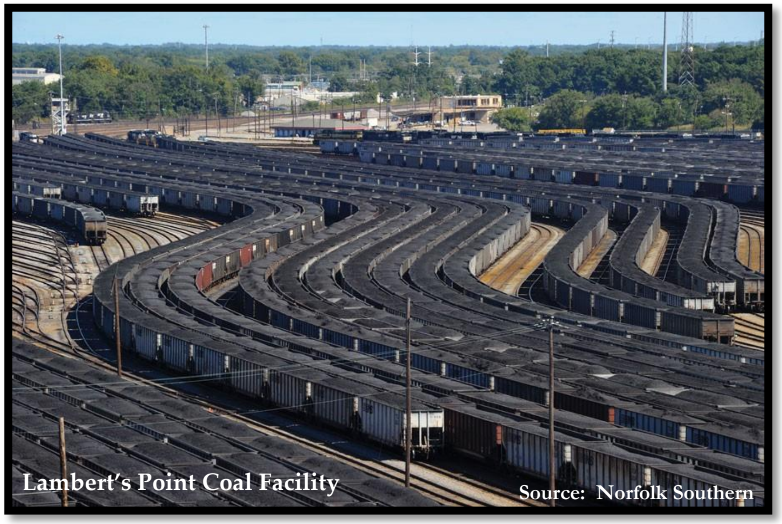
Quick Facts: Since 1990, containerized shipments at East Coast ports increased 226%. For all U.S. ports, this growth occurred at a rate of 188%.

Coal

The predominant bulk cargo at the Port of Hampton Roads is coal, and the Port of Hampton Roads is the largest coal port in the United States. Over 40% of U.S. coal exports pass through Hampton Roads according to the Virginia Maritime Association.

However, the amount of coal exported from Hampton Roads and other U.S. ports has decreased. In the early 1990s, the coal terminals in Hampton Roads loaded about 65 million tons, which was more than 50 percent of America's coal exports. By 2006 this decreased to about 21 million tons, before rebounding to a peak of 51 million tons in 2013. However, as shown in **Figure 19**, coal loadings in Hampton Roads have fallen back down to 22 million tons in 2016.

Fluctuations in the amount of coal passing through Hampton Roads are caused by many factors. These factors include the condition of the national and global economy, foreign competition, currency valuations, weather, environmental regulations, and prices of competing energy sources such as oil and natural gas.



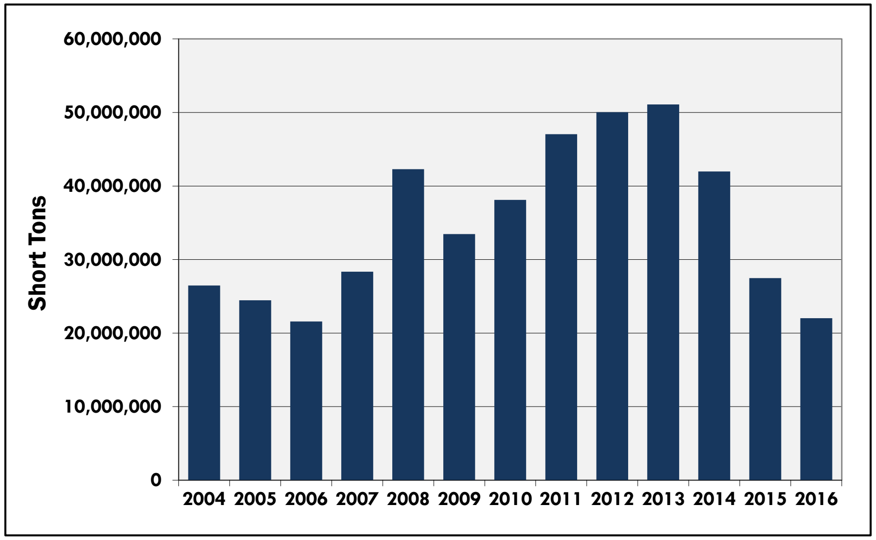


Figure 19 – Coal Loadings in Hampton Roads, 2004-2016

Data Source: Hampton Roads Maritime Association.

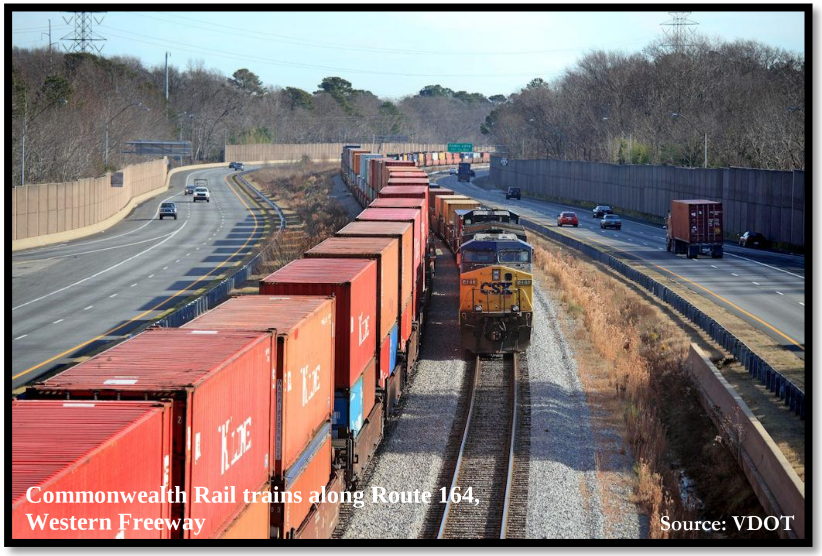
Quick Facts: Virginia is the largest coal export port in the U.S.. While coal loadings handled in Virginia have decreased over the last three years, from 51 million short tons in 2013 to 22 million short tons in 2016, there is still strong demand for met coal shipped from Virginia to manufacture steel.

RAIL

Rail can be an efficient means of transporting freight, depending on the origin and destination of the payload. For example, the time needed to transport freight from the Port of Virginia to Chicago by rail is reasonable when compared to highway travel, which can often be unreliable. Rail is not only efficient, but sometimes rail is the only option for certain types of freight (e.g. coal). **The Port of Virginia is a leader for transporting freight by rail; a higher percentage of freight is transported by rail at the Port of Virginia than at any other East Coast port** (**Figure 20**).

SEAPORT	NEW YORK	BALTIMORE	VIRGINIA	CHARLESTON	SAVANNAH	MIAMI
2013 % Rail Cargo	~14%	10% goal	~34%	10% goal	~22%	10% goal

Figure 20 – Share of Cargo Moved by Rail, East Coast Ports, 2013
Source: Master Rail Plan for the Port of Virginia.



Commonwealth Rail trains along Route 164, Western Freeway

Source: VDOT

Figure 21 shows the statewide rail network, and **Figure 22** on page 39 shows the primary rail corridors that are used by Port of Virginia cargo. Two Class I carriers – CSX Transportation and Norfolk Southern – provide rail service to and from destinations outside of the region.

On-dock intermodal container transfer service at the Southside port facilities is served by both Class I carriers and two short-line partners, Commonwealth Railway (CWRY) and the Norfolk & Portsmouth Belt Line Railroad (NPBL).

BY TRAIN IT TAKES JUST
47 HOURS TO REACH CHICAGO

Source: Annual Report 2015, Port of Virginia

Figure 21 – Virginia Railroad Network
Source: VDRPT 2013 Virginia Statewide Rail Plan.

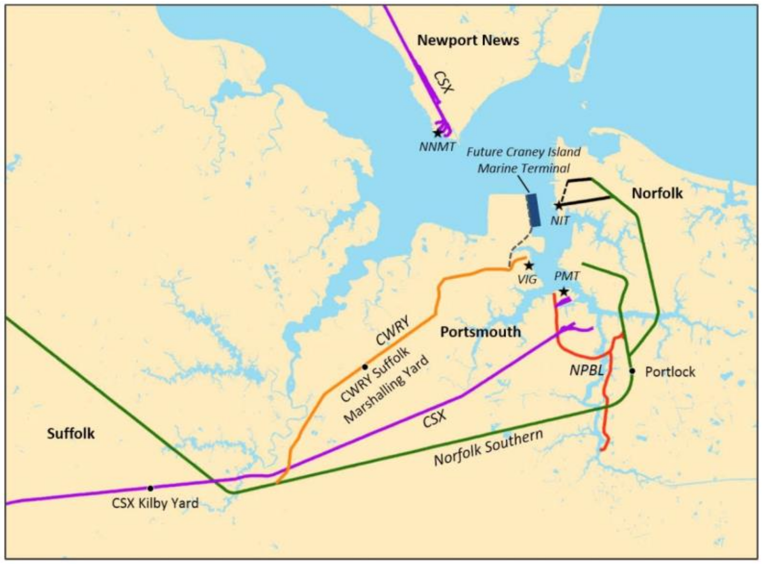


Figure 22 – Primary Hampton Roads Rail Corridors Used by Port of Virginia Cargo
Source: Master Rail Plan for the Port of Virginia, OIPI, 2015

On the Peninsula, the Newport News Marine Terminal is served by CSX.

Recent improvements have greatly improved rail transportation between the Port of Virginia and inland origins and destinations. The Heartland Corridor project – completed in 2010 – increased clearances in tunnels on Norfolk Southern's rail line, allowing double-stack trains to travel between Hampton Roads and the Midwest. This reduced travel times from the Port to Chicago from four to three days, and reduced the distance traveled by 250 miles. The National Gateway project is designed to improve CSX rail connections between Mid-Atlantic ports and the Midwest by upgrading bridges and tunnels to allow double-stack trains. Portions of this project have been completed or are under construction (such as the expansion of the Virginia Avenue Tunnel in Washington, D.C.), while others still need to be funded.

Figure 23 shows the number of rail containers handled annually at the Port of Virginia. In 2009—at the height of the economic downturn—231,000 containers handled at the Port were transported by rail. By 2016, this level had more than doubled, up to 551,496 rail containers.

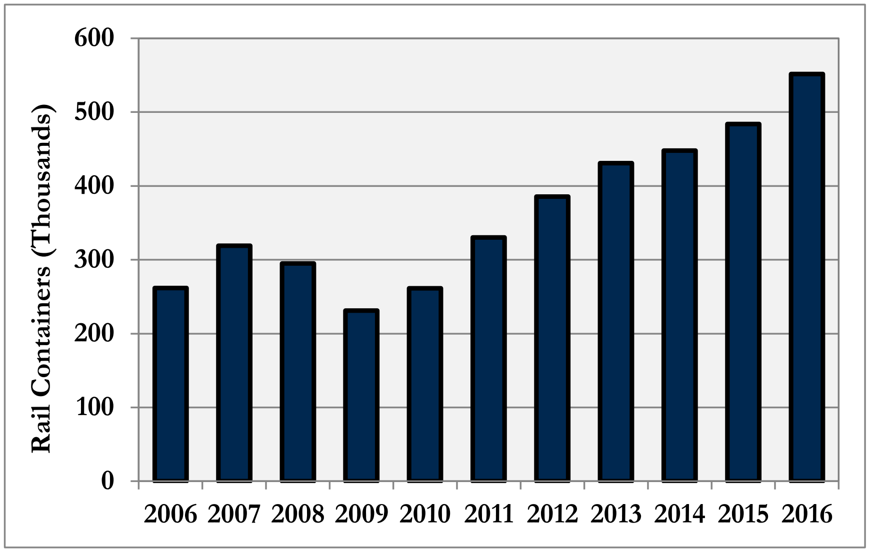


Figure 23 – Rail Containers Handled by the Port of Virginia
Source: Virginia Port Authority

The share of containerized cargo handled by the Port of Virginia has also shifted towards rail. In 2006, 24% of all containers handled by the Port of Virginia were transported by rail. By 2016 this percentage increased to 37%.

Port officials expect the amount of freight handled by rail to continue to increase. According to the Master Rail Plan[11], the Port of Virginia projects that it will transport nearly 1,000,000 containers by rail by the year 2040, double what was handled by the Port in 2016. Port officials have also stated that they expect to have the capacity to transport up to 45% of containers by rail in a 20-year horizon if improvements continue to be made to the rail network.

Quick Facts: A higher percentage of freight is transported by rail at the Port of Virginia than at any other east coast port (37% share in 2016).

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[11] *Master Rail Plan for the Port of Virginia*, Presented to Office of Intermodal Planning and Investment,Moffatt & Nichol, R.L. Banks & Associates, Inc., page 11, April 16, 2015.

HIGHWAY

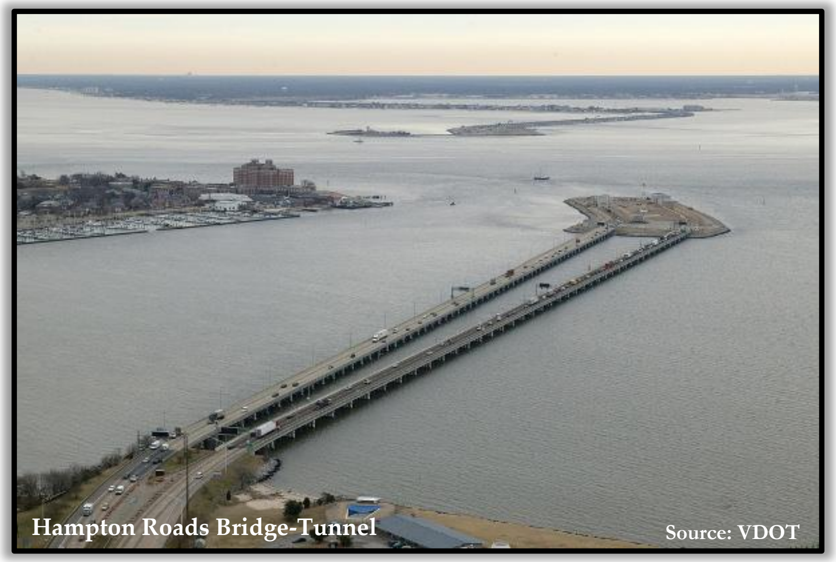
Hampton Roads is served by an extensive network of roadways, bridges, and tunnels. I-64 – which is currently the only 2-digit Interstate in Hampton Roads – provides the only limited-access roadway into and out of the region. Other limited-access facilities throughout the region include I-264, I-464, I-564, I-664, Route 164, Route 199, the Suffolk Bypass, and the Chesapeake Expressway. In addition, there are a number of U.S. Routes providing access to, from, and within the region including Route 13, Route 17, Route 58, Route 60, Route 258, and Route 460.

Unfortunately, roadway congestion is prevalent throughout the region, particularly at the region's bridges and tunnels. This congestion adversely impacts the economic competitiveness of the region, and is a primary concern facing those carrying freight to, from, or within Hampton Roads.

Peak truck travel varies from peak commuter travel in Hampton Roads. Commuter travel has two distinct peak travel periods in both the morning (6:30 am – 8:30 am) and afternoon (3:00 pm – 6:30 pm). A majority of truck travel occurs in the middle of the day. In fact, half of all truck travel in Hampton Roads occurs between 8:30 am – 3:00 pm. More information on truck travel is included in the Regional Truck Movement section in this report.

As part of the regional Congestion Management Process, HRTPO staff annually analyzes existing congestion levels on regional roadways. **Figure 24** on page 41 shows the existing congestion levels during the PM Peak Period for the Peninsula, and **Figure 25** on page 42 shows the existing congestion levels during the PM Peak Period for the Southside.

Currently, 16% of the major roadway lane-miles[12] in Hampton Roads are severely congested during the PM Peak Period, and another 19% experience moderate congestion levels. High profile locations that are severely congested include the Hampton Roads Bridge-Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, Downtown Tunnel, Midtown Tunnel, High Rise Bridge, and I-64 near Fort Eustis.



Hampton Roads Bridge-Tunnel Source: VDOT

There are a number of major roadway projects both underway and planned throughout the region to reduce roadway congestion and improve the movement of freight. These major projects include:

- I-64 Widening on the Peninsula (various segments opening in 2018-2022)
- I-564 Intermodal Connector (2018)
- I-64/I-264 Interchange in Norfolk/Virginia Beach (phases opening in 2019-2021)
- I-64 Southside/High-Rise Bridge Widening Phase I (2020)
- Hampton Roads Bridge-Tunnel Widening (2024)

In addition to these major projects, there are over 100 roadway projects included in the fiscally-constrained Hampton Roads 2040 Long-Range Transportation Plan (LRTP). All of the projects included in the 2040 LRTP are shown in **Figure 26** on page 43.

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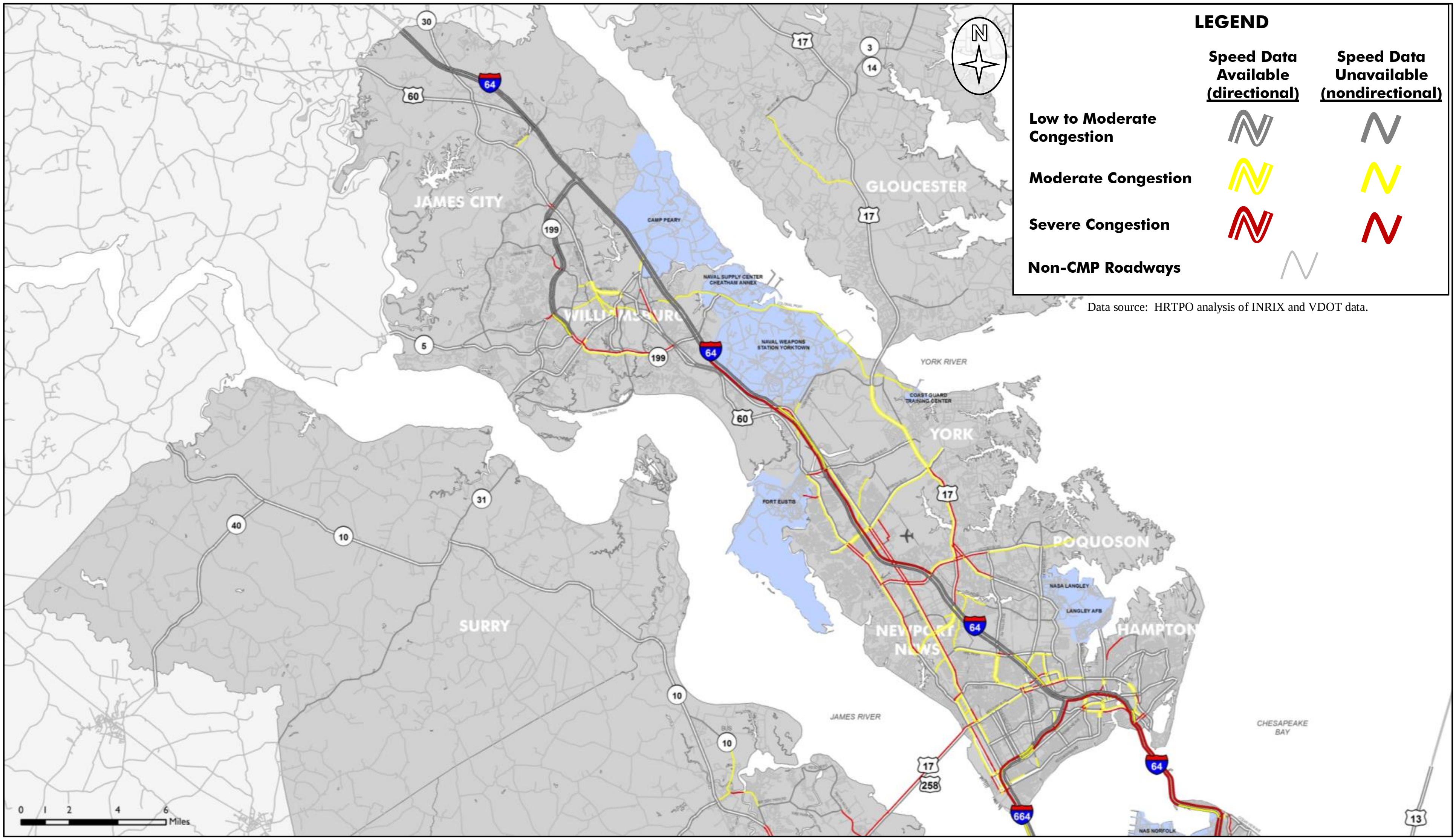
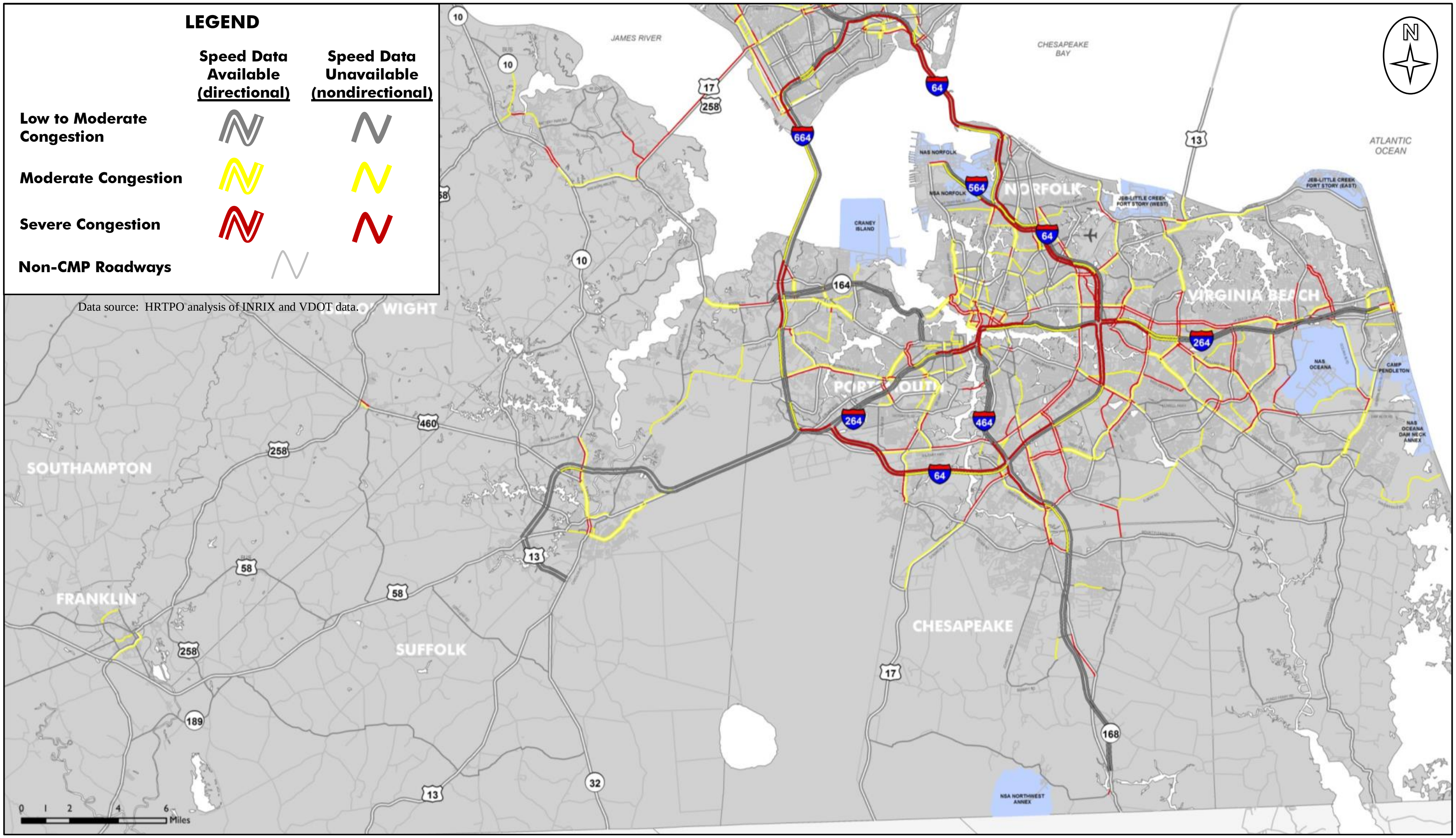
[12] A lane-mile is defined as the length of a roadway times the number of lanes and is commonly used to describe the amount of roadway capacity. A one mile section of a roadway that is 6 lanes wide comprises 6 lane-miles.



Data source: HRTPO analysis of INRIX and VDOT data.

Figure 24 – 2015 Existing Congestion Levels – PM Peak, Peninsula

Source: HRTPO.



Data source: HRTPO analysis of INRIX and VDOT data.

Figure 25 – 2015 Existing Congestion Levels – PM Peak, Southside

Source: HRTPO.

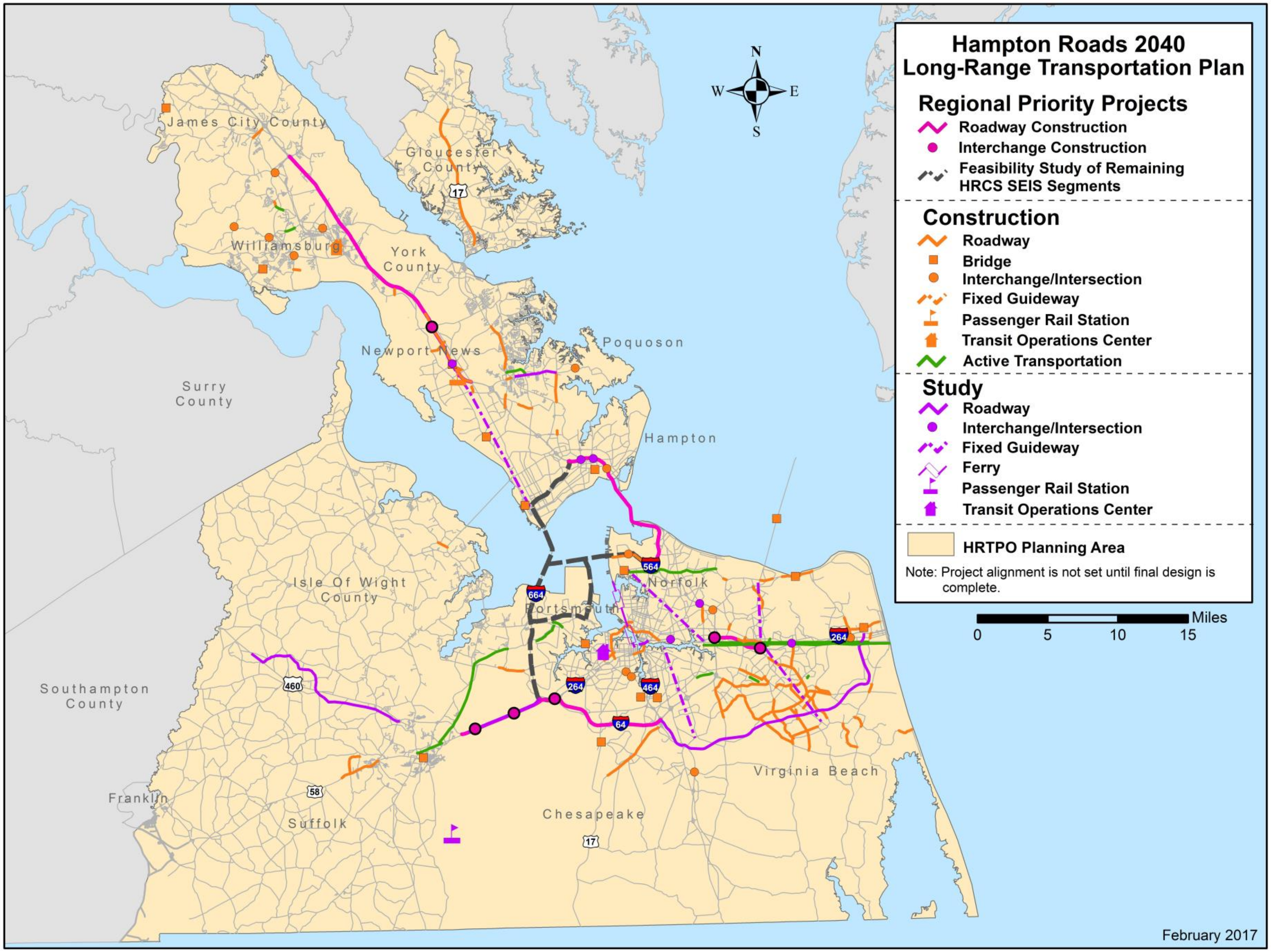


Figure 26 – Fiscally-Constrained Hampton Roads 2040 Long-Range Transportation Plan

Source: HRTPO, Approved by HRTPO Board July 2016.

INTERMODAL CONFLICT POINTS

This section details intermodal conflict points, which are locations in the transportation system where one mode crosses – and impedes – the flow of another mode. This includes roadway drawbridges, railway drawbridges, and highway-rail crossings.

Roadway Drawbridges

With the prevalence of navigable waterways in Hampton Roads, there are a number of movable bridges in the region. There are nine movable roadway bridges that are currently in operation throughout Hampton Roads, as shown in **Figure 27**.

Nearly 400,000 vehicles cross movable roadway bridges in Hampton Roads each weekday. Many of these drawbridges have restrictions in terms of when they can be opened for maritime traffic, particularly during peak travel periods. These restrictions, along with other characteristics of the nine movable roadway bridges, are shown in **Figure 28** on page 45.

A number of movable roadway drawbridges in Hampton Roads have been replaced with fixed-span bridges in recent years. These include the South Norfolk Jordan Bridge spanning the Southern Branch of the Elizabeth River between Chesapeake and Portsmouth, the Dresser Bridge spanning the Chickahominy River between James City County and Charles City County, and most recently the Veterans Bridge (formerly Steel Bridge) spanning the Intracoastal Waterway in Chesapeake. The Gilmerton Bridge was replaced with another movable bridge; however, the new span has a vertical clearance that is 28 feet higher in the closed position than the previous span.

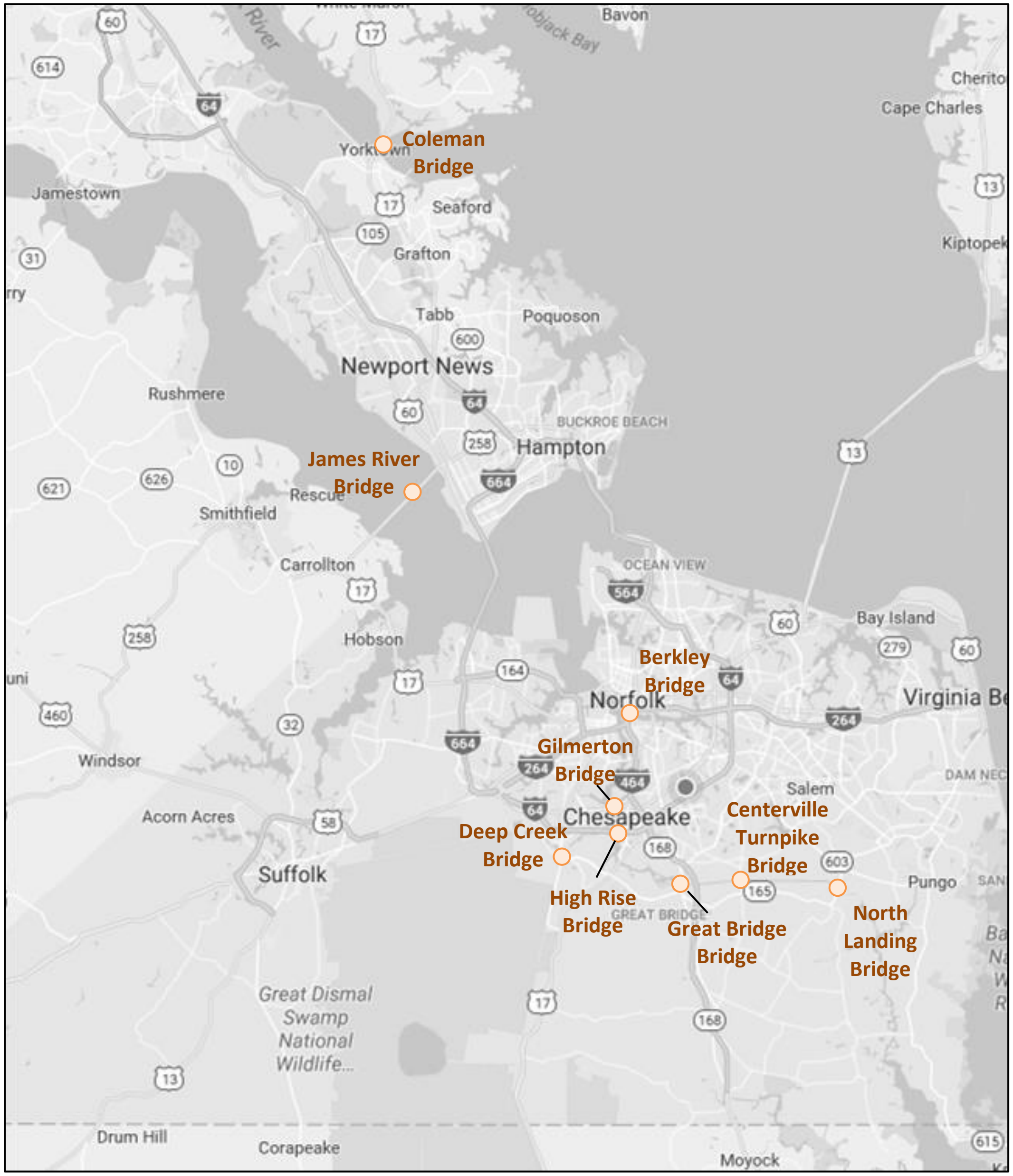


Figure 27 – Movable Roadway Bridges in Hampton Roads
Background Map Source: Google.

Facility Name	Existing Weekday Volume	Height in Closed Position (Mean High Tide)	Restrictions
Coleman Bridge (US 17)	34,285	60'	Monday - Friday: 5:00 - 8:00 am & 3:00 - 7:00 pm. The Coleman Bridge opens on demand and for vessels in an emergency.
James River Bridge (US 17/258)	31,246	60'	Opens on demand. The James River Bridge does not have any periods where openings are restricted.
Berkley Bridge (I-264)	111,344	48'	Monday - Friday 5:00 - 9:00 am & 3:00 - 7:00 pm. Will open for maritime traffic Monday - Friday at 9 am, 11 am, 1 pm, and 2:30 pm. The bridge can open upon request during the restricted hours for a vessel with a draft of 18+ feet if at least six hours notification is given.
Gilmerton Bridge (US 13)	33,383	35'	Monday - Friday: 6:30 - 8:30 am & 3:30 - 5:30 pm. The bridge will open for commercial vessels with two-hour advance notice. Opens on demand outside of restricted periods.
High Rise Bridge (I-64)	93,600	65'	Monday - Friday: 6:00 - 9:00 am & 3:00 - 6:00 pm. Bridge opens on demand with 24-hour notice except during restricted periods when it opens with a 3-day advance reservation.
Deep Creek Bridge (Bus Rte 17)	27,677	4'	Opens at 8:30 am, 11:00 am, 1:30 pm, 3:30 pm in conjunction with Deep Creek Locks.
Great Bridge Bridge (Bus Rte 168)	37,528	6'	Opens on demand, except from 6 a.m. - 7 p.m. when it is opened on the hour.
Centerville Turnpike Bridge	16,605	3'	Monday-Friday 6:30 - 8:30 am and 4 - 6 pm. Opens on the hour and half-hour from 8:30 am to 4 pm Monday-Friday. Opens on demand at other times.
North Landing Bridge (Rte 165)	10,470	3'	Opens on the hour and half-hour from 6 am to 7 pm on all days. Opens on demand from 7 pm to 6 am on all days.

Figure 28 – Characteristics of Movable Roadway Bridges in Hampton Roads

Data Sources: VDOT, City of Chesapeake.

Railroad Drawbridges

Although not as prominet as the conflicts between movable roadway bridges and navigable waterways, there are also conflicts where active railroads cross navigable waterways. There are six movable railway bridges in the region, which are shown in **Figure 29**. Each of these six bridges is located on the Southside of Hampton Roads, spanning the Eastern and Southern Branches of the Elizabeth River and the Intracoastal Waterway. These spans provide access to many heavy users including Norfolk International Terminals, Lambert's Point Docks, Kinder Morgan's terminal in Cheseapeke, and Norfolk Southern's Portlock Intermodal Yard.


Source: Google Maps 2016

Railroad Drawbridge adjacent to the Gilmerton Bridge in Chesapeake

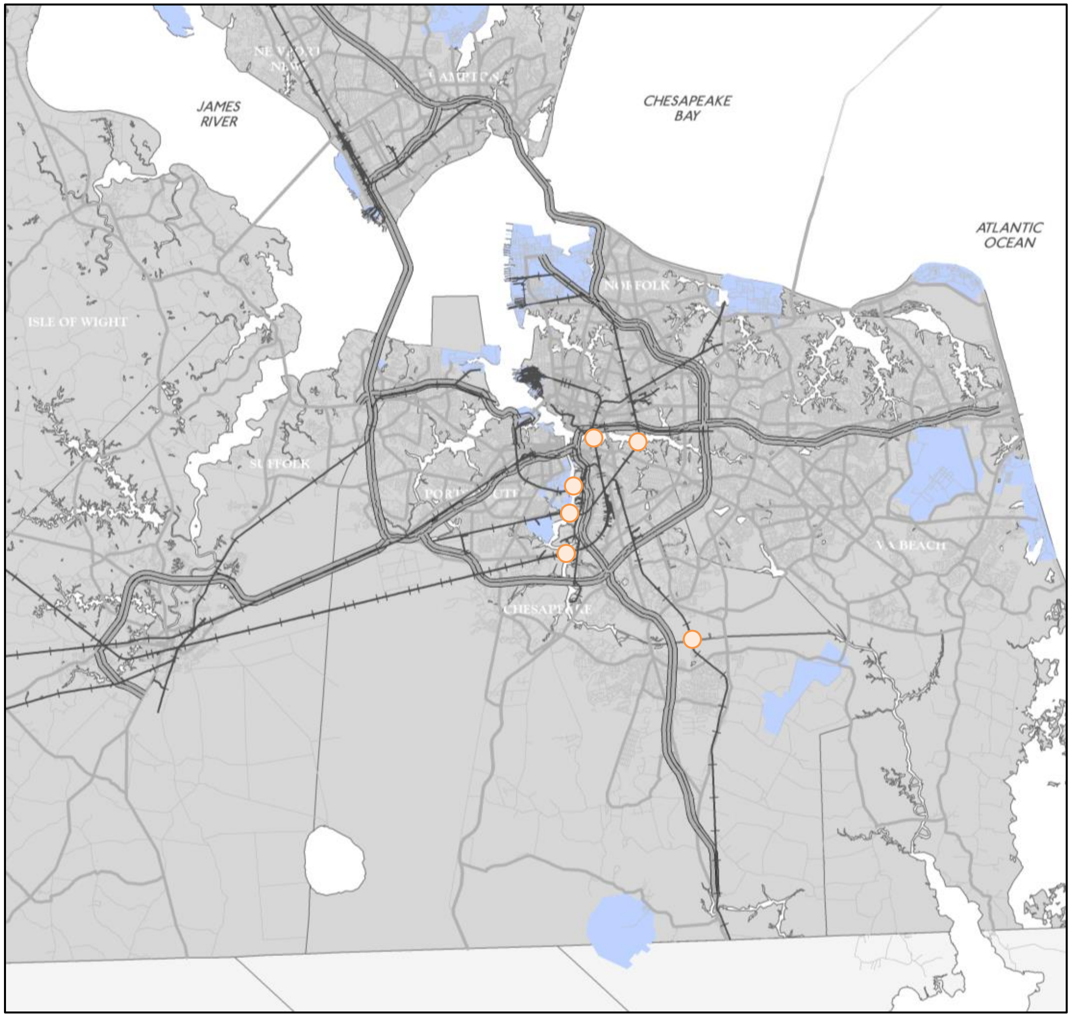
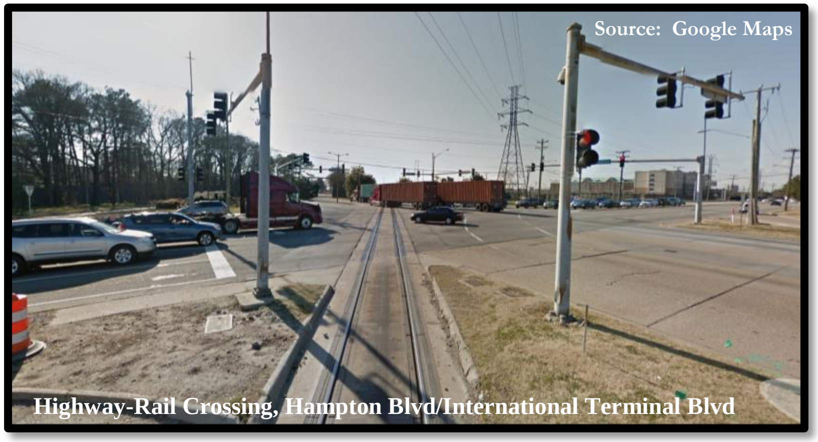


Figure 29 – Movable Railroad Bridges in Hampton Roads

Highway-Rail Crossings

The most common intermodal conflict point is where roadways and railroads intersect. These highway-rail crossings—where they occur at the same level or grade—can cause extensive delays for roadway travelers.

There are 406 highway-rail crossings on public roadways in Hampton Roads. Of these, 110 crossings are grade-separated, meaning the roadway traverses over or under the railroad without any conflict. The remaining 296 crossings are at-grade, resulting in conflicts between users of the roadways and railroad. Over 1.4 million vehicles cross these 296 at-grade crossings each day.


Source: Google Maps

Highway-Rail Crossing, Hampton Blvd/International Terminal Blvd

Figure 30 shows the at-grade highway-rail crossings throughout Hampton Roads where at least 10,000 vehicles and at least four trains cross each day. Of these at-grade crossings, **the crossing of Frederick Boulevard and the CSX Railroad** in Portsmouth has the highest roadway volume with 37,000 vehicles per day. **The crossing of the Hampton Boulevard/ International Terminal Boulevard intersection with the railroad entering and exiting Norfolk International Terminals (NIT)** has the second highest roadway volume with 36,000 vehicles entering the intersection per day.

Although the at-grade crossings in Figure 30 carry the most vehicles, the amount of rail traffic – and the amount of time roadway traffic is stopped – varies greatly for these crossings. For example, **the rail crossing at the Hampton Boulevard/International Terminal Boulevard intersection adjacent to NIT had a total of 450 preemptions each month** in 2015, or an average of 15 preemptions each day. In addition, **trains entering NIT are travelling at a much slower speed than at other crossings**, further increasing the amount of delay at this crossing.

With the number of freight and passenger trains crossing the region each day, safety at highway-rail at-grade crossings is a concern. However, **the number**

Juris.	Facility Name	Location	Railroad Owner	Existing Daily Volume
PORT	FREDERICK BLVD	BETWEEN TURNPIKE RD & I-264	CSX	37,000
NOR	HAMPTON BLVD	INTERNATIONAL TERMINAL BOULEVARD	VPA	36,000
CHES	MILITARY HWY	BETWEEN GILMERTON BRIDGE & BAINBRIDGE BLVD	N&P BL	31,000
CHES	GEORGE WASHINGTON HWY	BETWEEN CANAL DR & VICTORY BLVD	N/S	29,000
CHES	VOLVO PKWY	BETWEEN BATTLEFIELD BLVD & CROSSWAYS BLVD	C & A	25,000
NOR	GRANBY ST	BETWEEN LITTLE CREEK RD & I-564	N/S	24,000
NOR	LITTLE CREEK RD	BETWEEN GRANBY ST & I-64	N/S	24,000
PORT	EFFINGHAM ST	JUST SOUTH OF I-264	CSX	23,000
CHES	MT PLEASANT RD	BETWEEN FENTRESS RD & CENTERVILLE TPKE	C & A	20,000
NOR	CHURCH ST	BETWEEN 20TH ST & 26TH ST	N/S	20,000
PORT	VICTORY BLVD	BETWEEN I-264 & AIRLINE BLVD	CSX	19,000
SUF	MAIN ST	BETWEEN PRENTIS ST & FINNEY AVE	CSX	19,000
NOR	PRINCESS ANNE RD	BETWEEN BALLENTINE BLVD & INGLESIDE RD	N/S	18,000
NOR	CHESAPEAKE BLVD	JUST EAST OF CROMWELL DR	N/S	17,000
PORT	GEORGE WASHINGTON HWY	BETWEEN FREDERICK BLVD & ELM AVE	N&P BL	17,000
NOR	PARK AV	JUST EAST OF HARBOR PARK	N/S	16,000
PORT	GREENWOOD DR	BETWEEN GARWOOD AVE & I-264	CSX	16,000
NOR	PRINCESS ANNE RD	JUST EAST OF TIDEWATER DR	N/S	15,000
NOR	INGLESIDE DR	BETWEEN TAIT TERRACE & PRINCESS ANNE RD	N/S	14,000
NN	WARWICK BLVD	JUST NORTH OF 39TH ST	NNS	12,000
SUF	NANSEMOND PKWY	JUST WEST OF SHOULDERS HILL RD	CWRY	12,000
PORT	HIGH ST	BETWEEN VIRGINIA AVE & MLK FWY	CSX	11,000
PORT	PORTSMOUTH BLVD	BETWEEN TURNPIKE RD & I-264	CSX	11,000
SUF	CAROLINA RD	BETWEEN DILL RD & KILBY AVE	N/S	11,000
SUF	E WASHINGTON ST	BETWEEN LIBERTY ST & FACTORY ST	N/S	11,000
CHES	CAVALIER BLVD	JUST SOUTH OF TAFT DR	N/S	10,000
NN	JEFFERSON AVE	JUST SOUTH OF 39TH ST	CSX	10,000
SUF	E WASHINGTON ST	JUST SOUTH OF PORTSMOUTH BLVD	CSX	10,000
WMB	LIGHTFOOT RD	JUST EAST OF RICHMOND RD	CSX	10,000

Figure 30 – At-Grade Highway-Rail Crossings in Hampton Roads with the Highest Daily Roadway Volumes with Four or More Trains per Day

Source: HRTPO analysis of FRA and VDOT data. C&A = Chesapeake and Albemarle Railroad. CWRY = Commonwealth Railway. NNS = Newport News Shipbuilding. N&P BL = Norfolk & Portsmouth Belt Line. N/S = Norfolk Southern. VPA = Virginia Port Authority.

of collisions between trains and roadway users has greatly decreased in recent years. As shown in **Figure 31**, there were six crashes between trains and vehicles at highway-rail crossings in Hampton Roads in 2016, resulting in four injuries and no fatalities. Between 2007 and 2016, there were 61 crashes at highway-rail crossings in the region, resulting in 6 fatalities and 25 injuries. This is a significant improvement from the 1990s, when there were three times as many crashes (184) that resulted in 9 fatalities and more than four times as many injuries (106).

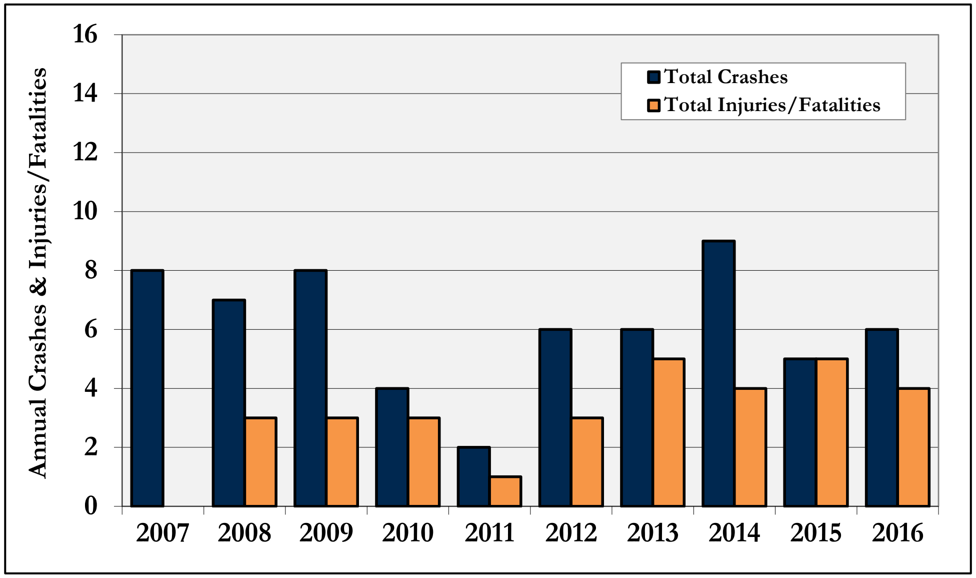


Figure 31 – Total Crashes and Injuries/Fatalities at Highway-Rail Crossings in Hampton Roads, 2007-2016

Source: HRTPO analysis of FRA data.

There have been improvements to at-grade crossings throughout the region in recent years. In 2010, the Commonwealth Railway Mainline Safety Relocation project was completed, which relocated approximately 4.5 miles of existing shortline rail tracks to the medians of the Western Freeway (Route 164) and I-664 and eliminated 14 at-grade crossings. The northern rail entrance into NIT was upgraded to a grade-separated crossing of Hampton Boulevard in 2015. An additional grade-separated crossing of the CSX Railroad on the Peninsula at City Center Boulevard was also constructed in 2015.

A number of additional grade-separation projects have been proposed throughout the region. Examples include an overpass at the Hampton Boulevard/International Terminal Boulevard intersection (which has been supported by the Navy and Port of Virginia officials), the separation of Nansemond Parkway and the Commonwealth Railway near Wilroy Road as part of the Hampton Roads Western Freight Gateway project (which is described in the Freight Funding Programs section of this report), and at-grade crossings on Freeman Avenue and Portlock Road in Chesapeake. While each of these projects except for the Nansemond Parkway overpass is included in the 2040 Hampton Roads Long-Range Transportation Plan, none of these projects has been fully funded for construction at this point.

Source: Virginian-Pilot

Grade Separation of Railroad into NIT at Hampton Blvd

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 is 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 methods: (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 (i.e. American, Delta), who carry cargo in the aircraft as part of their scheduled service.

Norfolk International Airport (ORF) serves as the primary hub for air cargo activity in Hampton Roads. The airport serves business and industry throughout the region as far north as Williamsburg and down through northeastern North Carolina.


Norfolk International Airport

Source: Gresham Smith

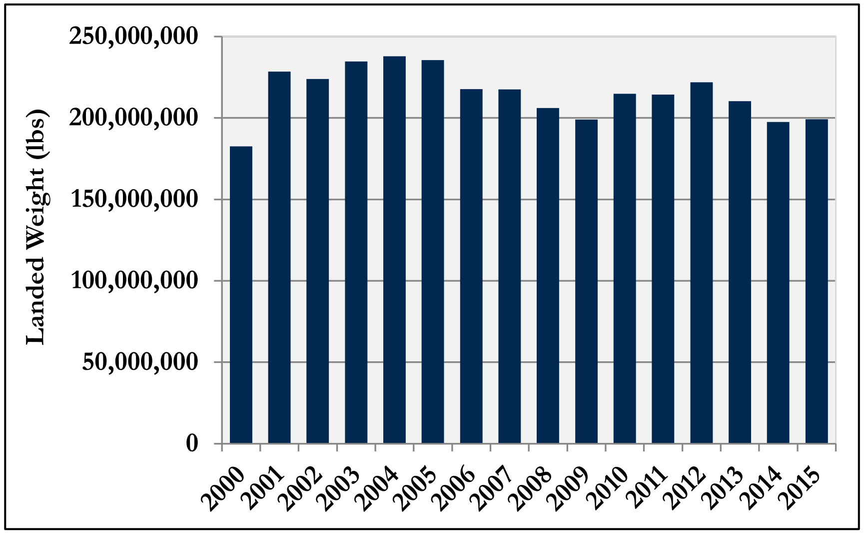


Figure 32 – Air Cargo Handled at Norfolk International Airport, 2000-2015

Data Source: FAA.

Approximately 200 million pounds of air cargo were shipped in and out of the Norfolk International Airport in 2015 (**Figure 32**). All-cargo airlines serving ORF include FedEx, Mountain Air and United Parcel Service. They are supported by a large network of forwarders and customs brokers specializing in air freight. Two modern air cargo terminals with 88,000 square feet of space can handle all air freight from the largest shipment of massive industrial machinery to the smallest shipment of delicate perfume and fresh seafood. An adjacent aircraft ramp provides direct access from plane to warehouse.

Air cargo volumes at Newport News/Williamsburg International Airport are extremely low and are not analyzed in this report.

Quick Facts: Since 2000, air cargo at Norfolk International Airport has largely remained stable, peaking in 2004.

FOREIGN-TRADE ZONES

Foreign-Trade Zones (FTZ) are locations where foreign and domestic merchandise is considered to be in international commerce (not in U.S. Commerce territory). This means that foreign merchandise may be admitted into the Foreign-Trade Zone without payment of Customs duties or government excise taxes, which allows businesses to reduce the costs associated with production, transaction and logistics. While FTZs remain under the direct supervision of U.S. Customs and Border Protection, businesses don't pay duties on imported goods that are later re-exported. Additionally, businesses can benefit from the delayed payment of duties on goods that enter the U.S. market.

Additional benefits of Foreign-Trade Zones include:

- Facilitates and expedites international trade.
- Merchandise isn't subject to state, local or inventory taxes.
- Penalties and fines can be avoided for materials with incorrect origin markings.
- Merchandise can be transferred from one FTZ to another, to a subzone or, for certain activities, temporarily removed from the FTZ.
- Helps create employment opportunities.
- Assists state/local economic development efforts.

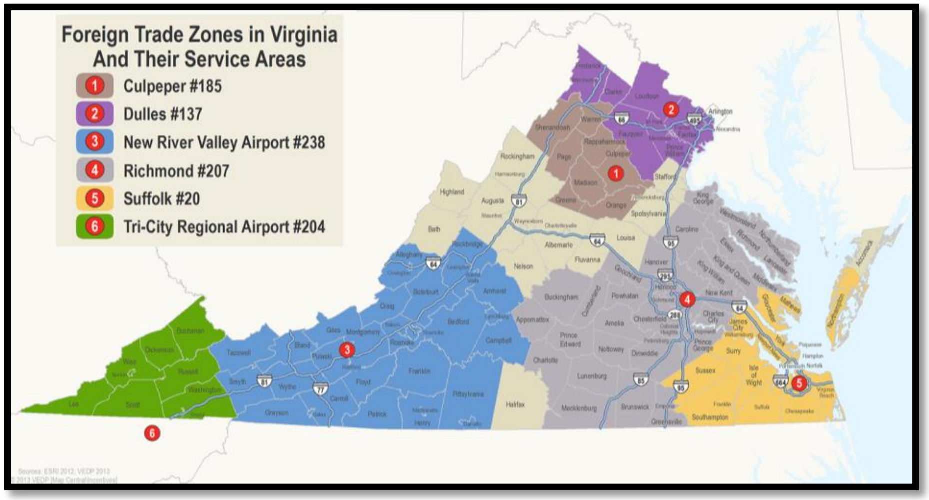


Figure 33 – Foreign-Trade Zones in Virginia
Source: Port of Virginia.

There are 264 Foreign-Trade Zones in the United States as of 2016, and five FTZs (six FTZ service areas) in Virginia (**Figure 33**). Jurisdictions within Hampton Roads have been designated to FTZ 20 (**Figure 34**). To receive the benefits of the FTZ 20, companies must be located within 60 minutes or 90 miles of the Customs Port of Entry in Norfolk, Virginia. According to the Port, FTZ 20 is the most active zone in Virginia, hosting 17 warehouse/distribution and production locations with 71 firms utilizing the general purpose sites.

In November 2016, the Port of Virginia obtained approval from the U.S. Department of Commerce to expand FTZ 20 into northeast North Carolina, which would include Elizabeth City and seven counties. The North Carolina counties, which were previously not in any FTZ service area, requested inclusion in FTZ 20 because no FTZ in North Carolina was close enough to sponsor their inclusion.

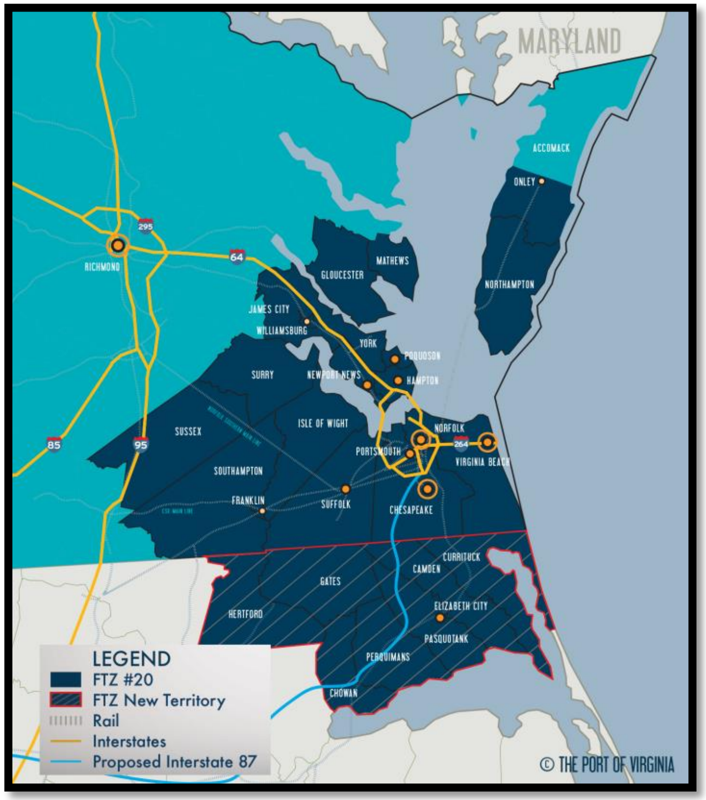


Figure 34 – Foreign-Trade Zone 20
Source: Port of Virginia.

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 in route 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.

Figure 35 shows the locations of major warehouse and distribution centers throughout the state.

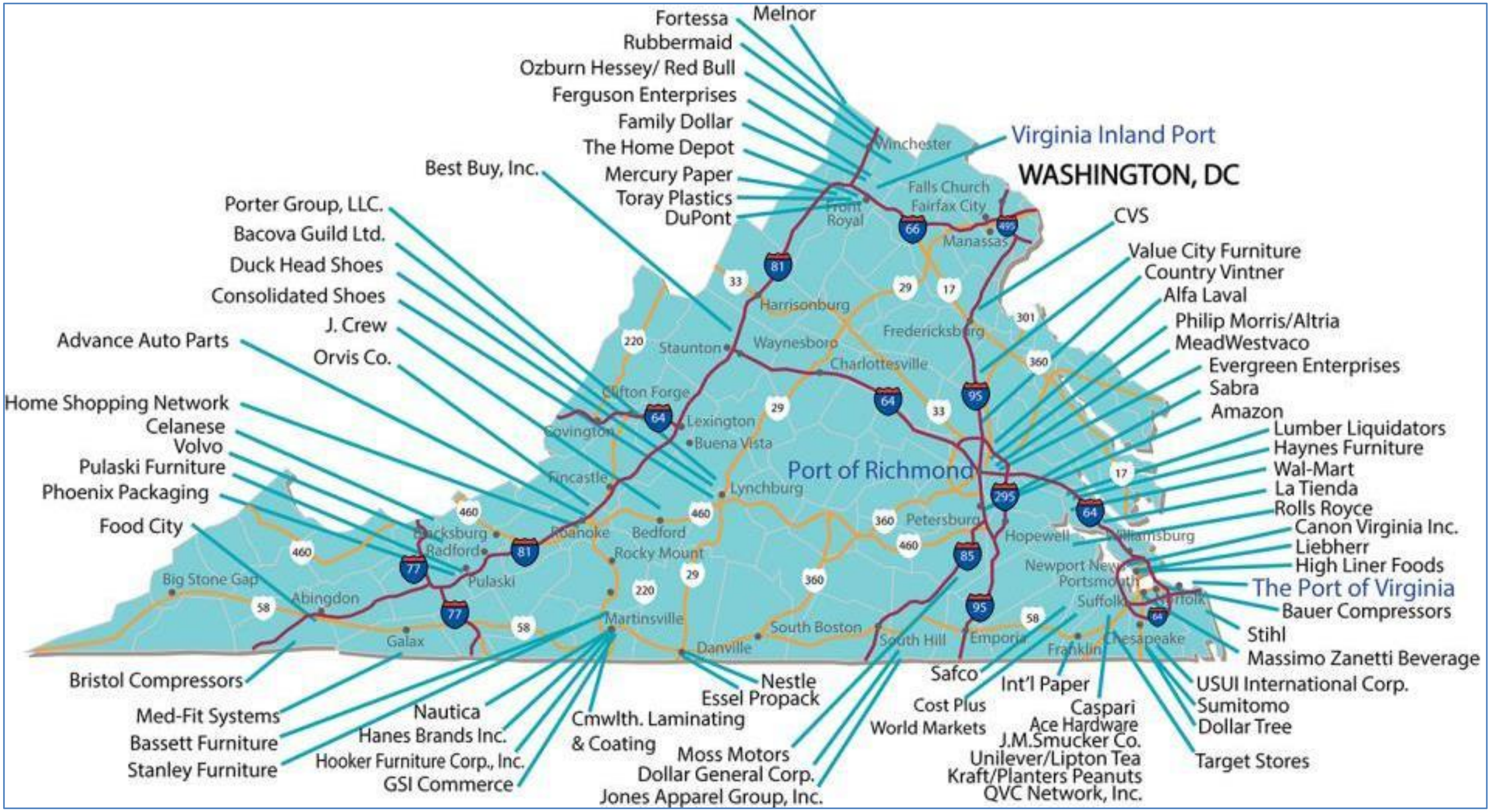
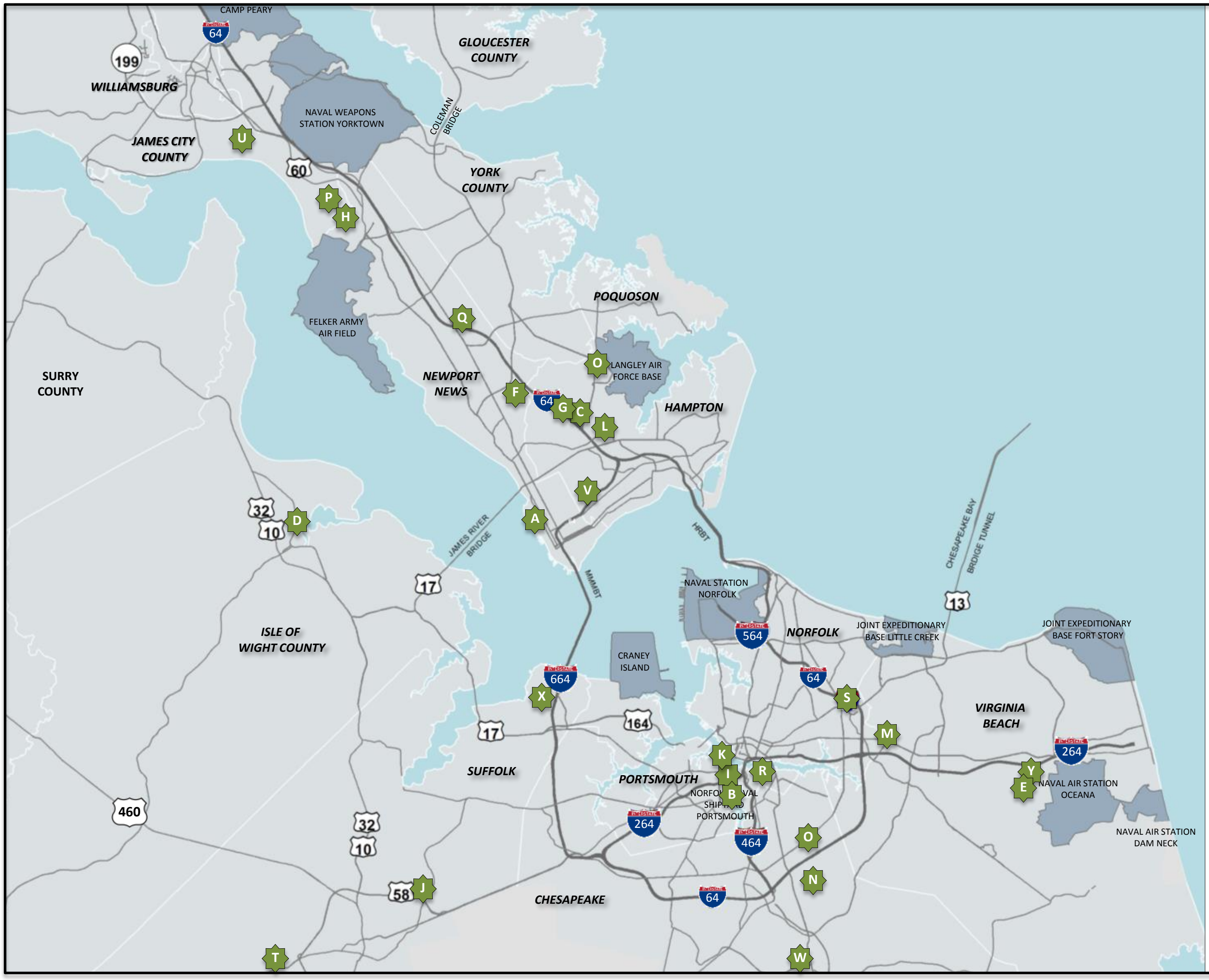


Figure 35 – Major Warehouse and Distribution Centers in Virginia

Source: Port of Virginia Update to TTAC, June 3, 2015.

TOP FREIGHT EMPLOYERS IN HAMPTON ROADS



Map ID	Employer	# of Employees
A	Huntington Ingalls Industries (Newport News Shipbuilding)	24,000
B	Norfolk Naval Shipyard	8,500
C	TE Connectivity, Ltd.	2,200
D	Smithfield Packing Co.	2,100
E	STIHL, Inc.	2,067
F	Canon Virginia, Inc.	1,500
G	Lumber Liquidators	1,500
H	AAFES Dan Daniel Dist. Ctr.	1,100
I	BAE Systems Norfolk Ship Repair, Inc. (Norshipco)	1,080
J	QVC Suffolk, Inc.	1,000
K	General Dynamics-NASSCO	880
L	Specialty Foods Group	850
M	AMSEC Corporation	700
N	Dollar Tree Stores, Inc.	660
O	Givens + Audiovox	625
P	Walmart Import Distribution Center	604
Q	Continental Automotive Group (Siemens)	600
R	Colonna's Shipyard, Inc.	565
S	CMA-CGM America, Inc.	530
T	Target Import Warehouse	521
U	Anheuser-Busch InBev	508
V	Liebherr Mining Equipment	500
W	Raytheon Technical Services Co. (NSA NW Annex)	500
X	SYSCO Food Services of Hampton Roads	500
Y	The Penrod Company	500

Source: HREDA, March 2016, Hampton Roads Major Employers (Manufacturing, Distribution, Transportation, and Logistics)

Figure 36 – Top Freight Employers in Hampton Roads
Prepared by HRTPO staff, August 2016

Note: Canon Virginia Group (2 sites in Newport News and 1 in Gloucester) has 1,700 employees per Rick Morris' FTAC presentation on 9/1/16.

HAMPTON ROADS COMMODITY FLOWS

This section focuses on Hampton Roads' freight movement patterns and modal usage with the purpose of answering important questions about where, what type, how much, and which modes are used to transport goods throughout North America, now and in the future through the year 2040. Data for this effort was primarily drawn from IHS Transearch, a commercial freight demand and commodity flows database. Due to the complexity and difficulty of capturing all freight movements across various modes from points of origin to their final destination, commodity flows in this section are more valuable on a macro-level scale than a micro-level. By understanding how goods move—including the major goods-producing industries and travel patterns—Hampton Roads can identify and improve current freight bottlenecks and anticipate future needs and opportunities.

IHS TRANSEARCH

IHS Transearch is a unique planning tool that helps transportation planners, transportation providers, and government agencies analyze current and future freight flows by origin, destination, commodity, and transport mode[14]. IHS Transearch is the most widely recognized and used commercial freight data source in the United States and has been used extensively over the last three decades to power freight decision-making. When compared to other sources, IHS Transearch is notable for its finer granularity of geography and more detailed characterization of commodities, which are useful to examine logistics and modal trends.

IHS Transearch was purchased by the Virginia Department of Transportation (VDOT) and distributed to metropolitan planning organizations and planning district commissions within the Commonwealth of Virginia. The Virginia dataset includes all commodity flows that travel through the state of Virginia or have origins or destinations of cities/counties in Virginia. The HRTPO obtained the 2012 IHS Transearch data in January 2016.

Data Sources

IHS Transearch utilizes a broad mix of public and private data sources, including:

- Bureau of Transportation Statistics Commodity Flow Survey;
- U.S. Army Corps of Engineers' Waterborne Commerce Database;
- Federal Aviation Authority (FAA) Airport Activity Statistics;
- Surface Transportation Board's Carload Waybill Sample (when approval has been obtained[15])
- Bureau of Census Foreign Trade Statistics;
- Association of American Railroads Freight Commodity Statistics; and
- Inter-industry trade patterns

Proprietary shipment data is obtained from motor carriers and some of the Class I railroads through a data exchange program. IHS Transearch is built using an annual sample of approximately 75 million individual truck shipments reported by nationwide and regional motor carriers each year.

Transportation Modes

IHS Transearch included commodity flow data for four primary modes of transportation:

- Truck (for-hire truckload, for-hire less-than-truckload, and private truck)
- Rail[16] (conventional rail carload and rail/highway intermodal)
- Water
- Air
- Other (shipments where the mode could not be identified, including to/from other countries such as Canada and Mexico)

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[14] *Transearch 2012 Modeling Methodology Documentation: Prepared for Virginia DOT,* IHS Inc., May 2014.

[15] Proprietary rail data was only provided to VDOT and was excluded from regional datasets. However, general rail data summaries were provided to HRTPO staff by VDOT in May 2016 for the purposes of this report.

[16] Ibid.

Measurements

Within IHS Transearch, volume is the primary measurement of the commodity flows, which is represented by annual short tons. Annual short tons can be converted to other measures, such as:

- Dollar Value*
- Units (number of trucks)
- Vehicle-miles traveled
- Ton-miles

*2040 forecast is in 2012 dollars.

Development of Domestic Flows of International Movements

IHS Transearch flow volumes capture the movement of all import and export traffic moving through seaports, and all cross-border activity with Mexico and Canada[17]. Overseas trade movements will show the U.S. port as the origin point for import shipments, and the destination for exports. For North American Free Trade Agreement (NAFTA) trade, provincial and metropolitan markets in Canada are identified, and states are shown in Mexico. Volumes are also assigned at the gateways into Canada and Mexico.

Inland trade activity is the portion of international shipments traveling within the U.S., and to and from U.S. seaports. Substantial volumes move by rail, truck or the inland waterway system, and this tonnage is contained within IHS Transearch. Truck movements of import volume are handled in IHS Transearch as outbound flows from the seaport, based on foreign trade data.

Commodity Types

IHS Transearch includes market-to-market flow data for more than 450 individual commodities and are categorized using Standard Transportation Commodity Codes (STCC). Commodities can be grouped by generalized categories (2-digit STCC) or by detailed categories (4-digit STCC). A table of 2-digit STCC commodity categories is provided on this page (**Figure 37**). The 2-digit STCC general category 37 for Transportation Equipment can be summarized in greater detail using the 4-digit STCCs, such as Auto Parts (code 3714) and New Motor Vehicles (code 3711). **Appendix A** contains descriptions of all 4-digit STCCs within each 2-digit STCC category.

Figure 37 – 2-Digit Standard Transportation Commodity Codes (STCC)

Source: IHS Inc.

STCC	Commodity Description	STCC	Commodity Description
01	Farm Products	32	Clay,concrete,glass or Stone
08	Forest Products	33	Primary Metal Products
09	Fresh Fish or Marine Products	34	Fabricated Metal Products
10	Metallic Ores	35	Machinery
11	Coal	36	Electrical Equipment
13	Crude Petrol. or Natural Gas	37	Transportation Equipment
14	Nonmetallic Minerals	38	Instrum, Photo Equipment, Optical Eq
19	Ordnance or Accessories	39	Misc Manufacturing Products
20	Food or Kindred Products	40	Waste or Scrap Materials
21	Tobacco Products	41	Misc Freight Shipments
22	Textile Mill Products	42	Shipping Containers
23	Apparel or Related Products	43	Mail or Contract Traffic
24	Lumber or Wood Products	44	Freight Forwarder Traffic
25	Furniture or Fixtures	45	Shipper Association Traffic
26	Pulp,paper or Allied Products	46	Misc Mixed Shipments
27	Printed Matter	47	Small Packaged Freight Shipments
28	Chemicals or Allied Products	48	Waste Hazardous Materials
29	Petroleum or Coal Products	49	Hazardous Materials
30	Rubber or Misc Plastics	50	Secondary Traffic
31	Leather or Leather Products	60	Unclassified

IHS also maintains translation tables, which allow the data to be presented by other commodity coding systems, such as Standard Classification of Transported Goods (SCTG) or the North American Industry Classification System (NAICS).

Data Limitations

IHS Transearch data are generally accepted as the best available commodity flow data and are commonly used by states, metropolitan planning organizations (MPO) and Federal Highway Administration (FHWA) in

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[17] *Transearch 2012 Modeling Methodology Documentation: Prepared for Virginia DOT,* IHS Inc., May 2014.

conducing freight planning activities. However, it should be noted that there are some limitations to how this data should be used and interpreted:

- Mode Limitations – The Rail Waybill data used in IHS Transearch is based on data collected by Class I railroads. The waybill data contains some information for regional and short-line railroads, but only in regards to interline service associated with a Class I railroad. The rail tonnage movements provided by the IHS Transearch database, therefore, are conservative estimates.

- Use of Multiple Data Sources – IHS Transearch consists of a national database built from company-specific data and other available databases. To customize the dataset for a given region and project, local and regional data sources are often incorporated. This incorporation requires the development of assumptions that sometimes compromise the accuracy of the resulting database.

- Data Collection and Reporting – The level of detail provided from some specific companies when reporting their freight shipment activities limits the accuracy of IHS Transearch. If a shipper moves a shipment intermodally, for example, one mode must be identified as the primary method of movement. Suppose three companies make shipments from the Midwest U.S. to Europe using rail to Hampton Roads then water to Europe. One company may report the shipment as simply a rail move from the Midwest to Hampton Roads; another may report it as a water move from Hampton Roads to Europe; the third may report the shipment as an intermodal move from the Midwest to Europe with rail as the primary mode. The various ways in which companies report their freight shipments can limit the accuracy of IHS Transearch.

- Limitations of International Movements – IHS Transearch does not report international air shipments through the regional gateways. Additionally, specific origin and destination information is not available for overseas waterborne traffic through marine ports. Overseas ports are not identified and IHS Transearch estimates the domestic distribution of maritime imports and exports. As a result, air and water volumes will be lower in the data summaries. IHS Transearch data also does not completely report international petroleum and oil imports through marine ports.

Although IHS Transearch includes most freight movements, the following types of movements are not captured:

- Drayage for inland waterways, pipelines, international air, and rail carload transfers
- Non-manufactured goods – primary (raw) products from fisheries and logging camps, and waste
- Small package and mail shipments moved entirely over-the-road
- Military and other government trucks, owned and operated by the military (shipments via commercial for-hire carrier services are captured)
- Household goods and local service trucks (such as utility repair vehicles)
- Domestic pipeline flows (although some cross-border pipeline flows are included).

Secondary shipments (STCC 50 – Secondary Traffic), as opposed to primary shipments, are movements in the distribution chain that originate from warehouse, distribution centers, or other facilities where they were not actually produced[18]:

- In the IHS Transearch database, primary moves may be thought of as shipments originating at locations where goods are produced or assembled and receive their Industrial Classification (NAICS) number. The terminations of these shipments are where the product or commodity comes to rest, either to be consumed or subjected to further processing.
- If the product moves instead to a staging point, such as a shipping dock, where it is mixed with other products and then reshipped or stored for future distribution, the move qualifies as a secondary movement from a data source perspective. Typically this is relatively short-haul truck activity, but there are some longer-haul secondary movements.

IHS Transearch will show the destination of a secondary movement as the ultimate destination for the shipment, such as a manufacturing plant for raw materials, or a supermarket or department store for consumer goods. In some instances, however, these secondary movements may actually move through a series of regional distribution centers or warehouses, and IHS

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[18] *Transearch 2012 Modeling Methodology Documentation: Prepared for Virginia DOT,* IHS Inc., May 2014.

Transearch does not show each segment of the journey as a separate movement. Sufficient source data are not available to accurately distinguish the individual legs of this type of journey.

Empty truck activity is reported in IHS Transearch under STCC 4221 (Semi-trailers returned empty) and STCC 4231 (Empty equipment, reverse route), with volumes displayed in number of trucks with no associated tonnage (STCC 42 – Shipping Containers). Even though motor carriers strive to minimize the distance that empty trucks travel between the termination of one payload and the origination of the next, these movements represent a significant portion of local activity. It is important to note that no tonnage is represented by this empty truck activity in the IHS Transearch data summaries below, even though they travel on the roadway network.

STCC 46 – Misc. Mixed Shipments are comprised of STCC 4611 (FAK Shipments) and STCC 4621 Mixed Shipments, Multi-STCC. Traffic that is classified as the mode "Intermodal" represents the rail portion of a truck-rail shipment. The commodities carried on rail are identified by a STCC code; while the STCC normally corresponds to a specific product, much of the intermodal traffic is identified only by the general classification FAK (Freight All Kinds) in the primary source data (the STB Waybill Sample). In container shipping, goods classified as "FAK" are a great way to ship multiple items without having to ship only one specific commodity[19]. While shipping FAK may seem like a catch all type of commodity listing, it is not used as frequently as one might think. It is reserved for the special circumstances where shippers consolidate all kinds of freight together in one shipping container. Usually the freight rates for FAK might be a little higher since it is accommodating all types of freight, but freight forwarders take this into consideration before quoting their international shipping rates. FAK shipments are considerably lower than the alternative, which is less than container load (LCL).

Comparison of IHS Transearch and Freight Analysis Framework (FAF)

The Freight Analysis Framework (FAF), produced through a partnership between the Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA), integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. Starting with data from the Commodity Flow Survey (CFS) and international trade data from the Census Bureau, FAF incorporates data from agriculture, extraction, utility, construction, service, and other sectors.

Both IHS Transearch and FAF provide a quantification of freight movements, however, due to differences in methodology and presentation format of the results, comparing the two data sets is difficult. Below are some of the differences[20]:

- IHS Transearch is built from the ground up each and every year, using new production, consumption and flow data information. FAF is updated each year based only on production drivers. A new FAF is created only every five years, based on the new Commodity Flow Survey. The CFS was conducted in 1993, 1997, 2002, 2007 and most recently in 2012. This difference is particularly significant during periods, as have recently been experienced, of significant economic contraction or substantial economic growth. IHS Transearch forecasts are also fully-updated each year with the latest production, consumption and foreign trade projections. FAF forecasts are not updated annually, which is quite significant in turbulent economic times.
- IHS Transearch provides county-level geographic market identification. FAF provides information on states and selected metropolitan areas.
- IHS Transearch does not include full coverage of logs, crude petroleum, live animals/fish, or waste/scrap, due to the lack of a uniform, geographically-detailed, nationwide set of source information. FAF makes estimations of these volumes, generally by taking a national production value, and allocating to specific market areas based on employment levels. According to IHS, Transearch captures approximately 48% of the FAF tonnage for these categories.
- The foundation for FAF is the CFS. Due to the CFS methodology, there is a notable difference in how IHS Transearch and FAF address shipments that originate in warehouses and distribution centers. Since the CFS is based on a survey of

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[19] globalforwarding.com/blog/freight-all-kinds, August 2016.

[20] *Transearch 2012 Modeling Methodology Documentation: Prepared for Virginia DOT,* IHS Inc., May 2014.

shipping establishments, an item that moves through multiple facilities as it passes through the supply chain may be captured as individual shipments from each of the intermediate points. For example, if a manufacturer moves a product from the factory assembly line into a warehouse, and from the warehouse the item is shipped to the buyers warehouse, and from the buyers warehouse the shipment moves through a regional distribution center before finally being shipped into a store, IHS Transearch would capture this activity as two movements, while CFS/FAF would show four distinct movements:

  - Both capture a movement from the factory to the initial warehouse location, by product-specific code.
  - IHS Transearch would then show one move, coded as secondary traffic, from the warehouse to the store.
  - CFS/FAF would show three commodity-specific moves:
    - From the first warehouse to the second warehouse
    - From the second warehouse to the regional distribution center
    - From the regional distribution center to the store

The discrepancy between these two comparisons can be explained because for many industry segments, the FAF identifies multiple movements of the same item, essentially "double counting" the tons.

- IHS Transearch distinguishes truckload (TL) and less-than-truckload (LTL) for-hire freight movements, which is significant due to the different operational characteristics of each of these industry sectors. FAF only provides the for-hire categorization without distinguishing between TL and LTL.
- IHS Transearch distinguishes traffic originating at primary manufacturing points from traffic moving out of warehouses and distribution centers. FAF does not explicitly identify shipments from warehouses and distribution centers.
- IHS Transearch distinguishes each modal leg of rail highway intermodal activity, and the truck drayage of air freight. FAF data does not differentiate these segments.

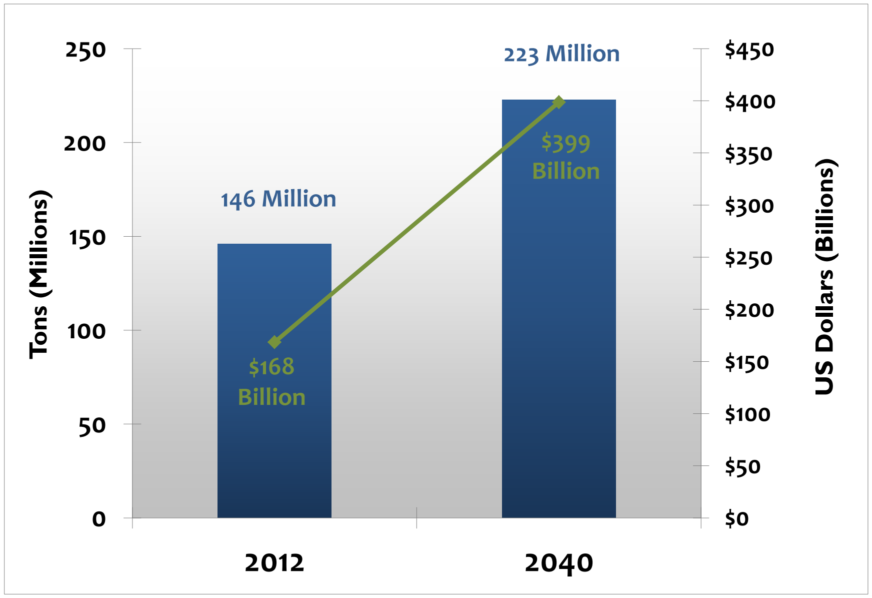
Summary of North American Freight Movement - Hampton Roads

In 2012, 146 million tons (valued at $168 billion) of North American (USA, Canada, and Mexico) freight was transported by all modes to, from, within, and through Hampton Roads[21] (see **Figure 38 and 39**). By 2040, this is expected to increase by 53% in tonnage to 223 million tons and by 137% in value to $399 billion (constant $2012). Major contributors to the faster increase in value versus weight is decreasing coal transport and the value of goods being transported is expected to rise significantly. Some commodities like Metallic Ores (e.g. iron, copper, lead, zinc, gold, and silver) are expected to increase by 35% in tonnage and 1,000% in dollar value by 2040.

Figure 40 and **Figure 41** on the following page summarize the North American freight movements to, from, within, and through Hampton Roads for each individual mode (truck, rail, water, air, and other) by weight (tons) and value (dollars) for 2012 and 2040. **Figures 42-45** on page 60 provide graphical summaries of the data shown in Figures 40-41.

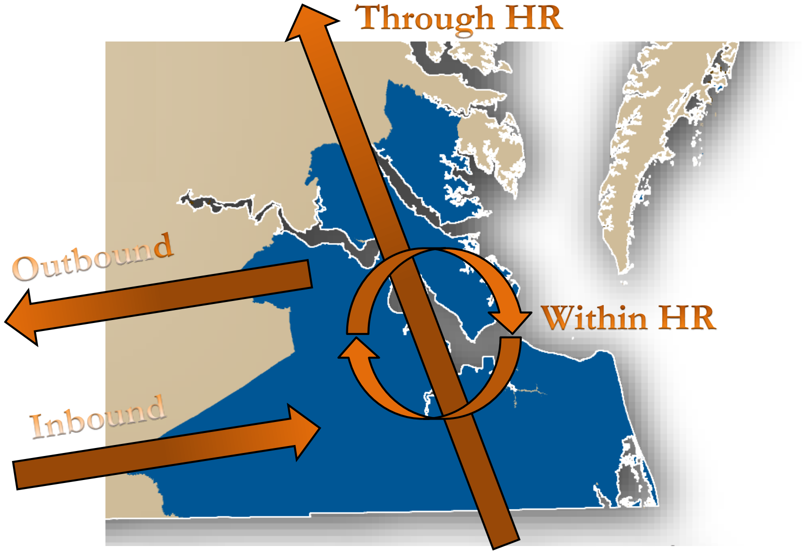
The most significant finding is that the total tonnage moved by truck is expected to double from 75 to 148 million tons between 2012 and 2040. Similarly, the modal share for trucks is expected to increase from 51% to 66%. For this reason, it is imperative for the region to improve the highways most used by the trucking industry over the next 20 to 30 years.

Figure 38 – Summary of North American Freight Movement – Hampton Roads (All Modes), 2012 and 2040



Source: HRTPO and VDOT analysis of IHS Transearch Data. Includes to, from, within, and through freight.
Note: 2040 forecast is in 2012 dollars.

Figure 39 – Illustration of North American Freight Movement – Inbound, Outbound, Within Hampton Roads, and Through Hampton Roads



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

Figure 40 – Summary of North American Freight Movement – Hampton Roads, 2012

	Inbound	Outbound	Within HR	Through HR	Total	Share
Tonnage						
Truck	34,846,991	25,594,635	7,401,948	7,175,800	75,019,374	51%
Rail	58,693,106	2,525,443	13,800	649,108	61,881,457	42%
Water	3,443,046	4,299,468	1,213,811		8,956,325	6%
Air	17,415	14,288			31,703	0%
Other	13	83			95	0%
TOTAL	97,000,571	32,433,916	8,629,559	7,824,908	145,888,954	100%
Dollar Value						
Truck	$ 51,619,327,713	$ 53,726,158,132	$ 18,614,361,590	$ 6,051,337,165	$130,011,184,600	77%
Rail	$ 17,195,885,563	$ 9,918,557,022	$ 4,789,378	$ 393,738,359	$ 27,512,970,322	16%
Water	$ 3,409,302,834	$ 4,074,976,841	$ 956,484,776		$ 8,440,764,450	5%
Air	$ 1,456,620,386	$ 1,041,101,728			$ 2,497,722,114	1%
Other	$ 36,831	$ 325,121			$ 361,952	0%
TOTAL	$ 73,681,173,326	$ 68,761,118,844	$ 19,575,635,744	$ 6,445,075,524	$168,463,003,438	100%

Source: HRTPO and VDOT analysis of IHS Transearch Data

Figure 41 – Summary of North American Freight Movement – Hampton Roads, 2040

	Inbound	Outbound	Within HR	Through HR	Total	Share
Tonnage						
Truck	67,764,006	53,312,716	13,028,703	13,807,819	147,913,244	66%
Rail	57,779,996	4,046,990	18,752	1,167,805	63,013,543	28%
Water	6,767,619	3,794,126	1,140,855		11,702,599	5%
Air	22,885	33,037			55,922	0%
Other	65	316			381	0%
TOTAL	132,334,571	61,187,185	14,188,310	14,975,624	222,685,689	100%
Dollar Value						
Truck	$ 168,788,475,855	$ 126,700,671,255	$ 30,815,728,147	$ 11,459,624,205	$337,764,499,462	85%
Rail	$ 25,226,299,568	$ 16,378,268,799	$ 6,598,329	$ 699,242,997	$ 42,310,409,693	11%
Water	$ 6,638,314,004	$ 5,518,948,186	$ 845,072,642		$ 13,002,334,831	3%
Air	$ 2,232,493,321	$ 3,292,197,259			$ 5,524,690,580	1%
Other	$ 136,262	$ 1,325,784			$ 1,462,046	0%
TOTAL	$ 202,885,719,010	$ 151,891,411,282	$ 31,667,399,118	$ 12,158,867,202	$398,603,396,612	100%

Source: HRTPO and VDOT analysis of IHS Transearch Data
Note: 2040 forecast is in 2012 dollars.

Other – shipments where the mode could not be identified, including to/from other countries such as Canada and Mexico.

Figure 42 – Hampton Roads Tonnage Mode Split, 2012 and 2040

Source: HRTPO and VDOT analysis of IHS Transearch Data

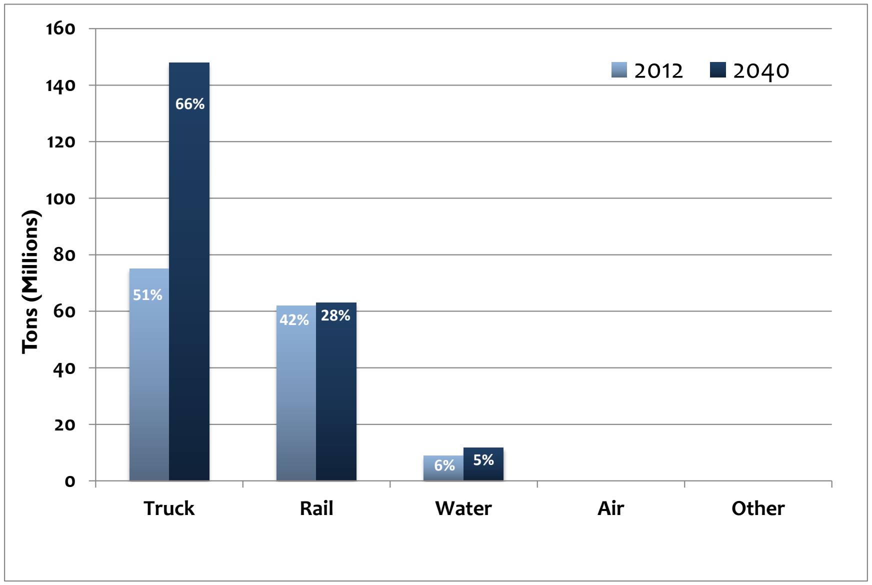


Figure 43 – Hampton Roads Dollar Value Mode Split, 2012 and 2040

Source: HRTPO and VDOT analysis of IHS Transearch Data
Note: 2040 forecast is in 2012 dollars.

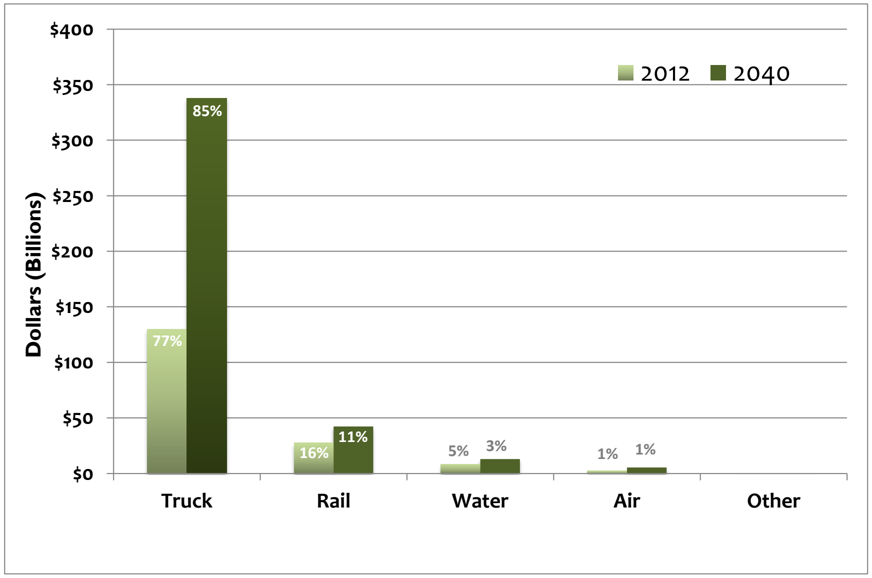


Figure 44 – Hampton Roads Tonnage Growth by Mode, 2012-2040

Source: HRTPO and VDOT analysis of IHS Transearch Data

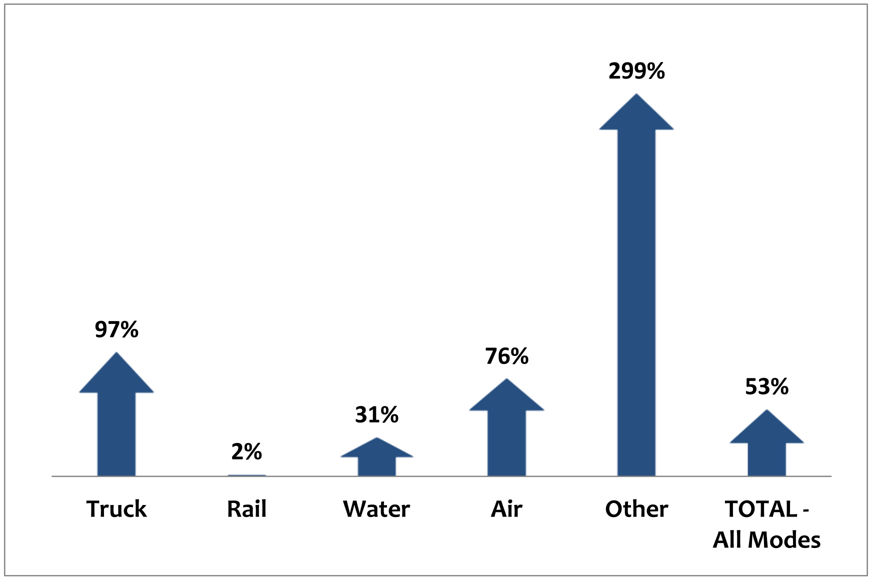
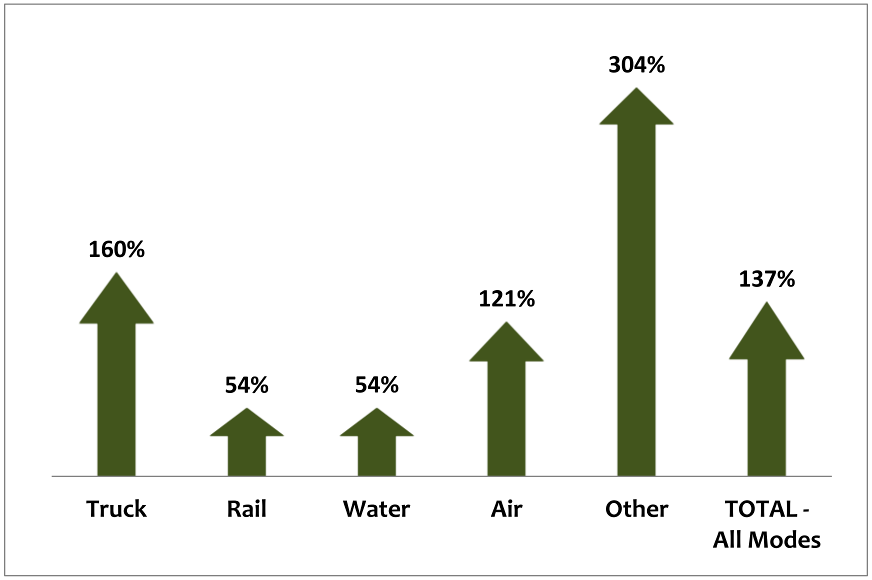


Figure 45 – Hampton Roads Dollar Value Growth by Mode, 2012-2040

Source: HRTPO and VDOT analysis of IHS Transearch Data
Note: 2040 forecast is in 2012 dollars.



Other – shipments where the mode could not be identified, including to/from other countries such as Canada and Mexico.

Top Freight Generating Virginia Localities

Figure 46 shows the total tonnage of goods originating and terminating by locality in Virginia in 2012 and 2040. **Figure 47** provides a ranking of top freight cities and counties in the state. These eleven localities account for 54 percent of the total tonnage originating and/or terminating in Virginia in both 2012 and 2040. In 2012, top cities from Hampton Roads were Norfolk (1st), Newport News (2nd), Chesapeake (6th), and Portsmouth (7th). By 2040, Norfolk is expected to remain the largest freight generator in the state, followed by Fairfax County (2nd), Chesapeake (3rd), Chesterfield County (4th), and Newport News (5th).

Figure 46 – Tonnage in Virginia Localities, 2012 and 2040

Source: IHS Transearch data, VTrans2040

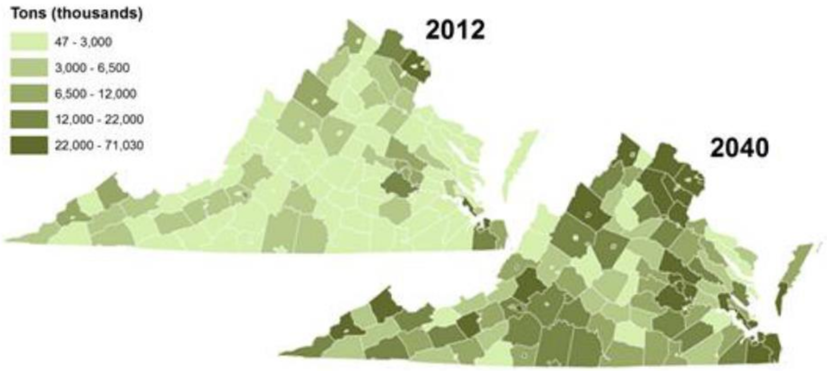
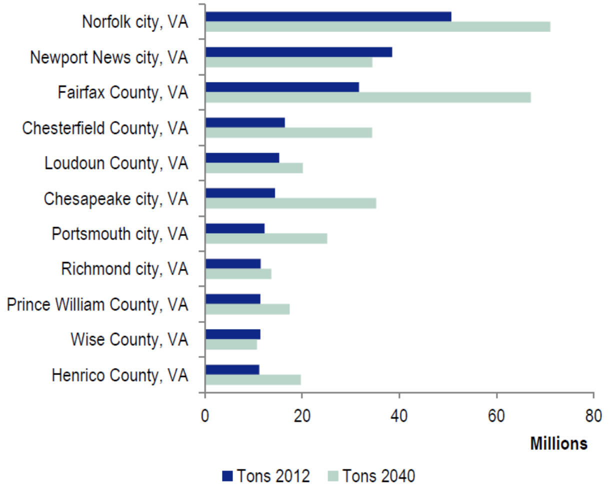


Figure 47 – Virginia's Top Freight Generating Localities, 2012 and 2040

Source: IHS Transearch data, VTrans2040



Hampton Roads Top Commodities – All Modes

Figure 48 shows the Top 20 commodities by weight that are transported to, from, within, and through Hampton Roads in 2012 and 2040. The top five commodities transported in 2012 include coal, nonmetallic minerals, secondary traffic (see page 55 for description), petroleum or coal products, and food or kindred products. By 2040, coal and petroleum or coal products are both expected to decrease by 18% and 29% respectively due to stiffer competition overseas. Coal is expected to remain the top commodity by weight in 2040, however, the share will decrease from 36% to 19%.

Figure 49 shows the Top 20 commodities by dollar value that are transported to, from, within, and through Hampton Roads in 2012 and 2040.

Appendix B and **Appendix C** include the full list of commodities, and summarize the North American freight movements to, from, within, and through Hampton Roads for each commodity type by individual mode (truck, rail, water, air, and other) by weight (tons) and value (dollars) for 2012 and 2040.

Hampton Roads Top Commodities – Truck

Figure 50 shows the Top 20 commodities by weight that are transported by truck to, from, within, and through Hampton Roads in 2012 and 2040. **Figure 51** shows the Top 20 commodities by value.

Figure 48 – Hampton Roads Top 20 Commodities by Weight (All Modes)

Source: HRTPO and VDOT analysis of IHS Transearch Data
For a commodity description of Secondary Traffic and Misc. Mixed Shipments, refer to pages 55-56.

	2012		2040		Growth
Commodity Description	**Tons**	**Share**	**Tons**	**Share**	**(2012-2040)**
TOTAL, ALL COMMODITIES	**145,888,954**		**222,685,689**		**53%**
COAL	52,457,804	36%	43,071,593	19%	-18%
NONMETALLIC MINERALS	18,309,320	13%	41,573,275	19%	127%
SECONDARY TRAFFIC	13,595,315	9%	23,066,079	10%	70%
PETROLEUM OR COAL PRODUCTS	12,420,349	9%	8,796,562	4%	-29%
FOOD OR KINDRED PRODUCTS	7,413,543	5%	13,724,472	6%	85%
CLAY,CONCRETE,GLASS OR STONE	6,685,113	5%	19,976,941	9%	199%
FARM PRODUCTS	5,981,146	4%	14,874,763	7%	149%
CHEMICALS OR ALLIED PRODUCTS	5,025,787	3%	11,685,844	5%	133%
MISC MIXED SHIPMENTS	4,826,080	3%	7,707,927	3%	60%
WASTE OR SCRAP MATERIALS	4,337,331	3%	9,392,237	4%	117%
LUMBER OR WOOD PRODUCTS	2,739,014	2%	4,793,763	2%	75%
PULP,PAPER OR ALLIED PRODUCTS	2,364,397	2%	4,401,559	2%	86%
MACHINERY	1,709,311	1%	4,043,051	2%	137%
PRIMARY METAL PRODUCTS	1,701,625	1%	2,430,521	1%	43%
TRANSPORTATION EQUIPMENT	1,546,176	1%	2,009,827	1%	30%
FABRICATED METAL PRODUCTS	884,938	1%	1,204,881	1%	36%
RUBBER OR MISC PLASTICS	771,133	1%	1,947,423	1%	153%
ELECTRICAL EQUIPMENT	675,082	0%	2,129,796	1%	215%
FURNITURE OR FIXTURES	526,600	0%	1,572,336	1%	199%
MISC MANUFACTURING PRODUCTS	292,717	0%	1,391,051	1%	375%

Figure 49 – Hampton Roads Top 20 Commodities by Value (All Modes)

Source: HRTPO and VDOT analysis of IHS Transearch Data
Note: 2040 forecast is in 2012 dollars. For a commodity description of Secondary Traffic and Misc. Mixed Shipments, refer to pages 55-56.

	2012		2040		Growth
Commodity Description	**Dollar Value**	**Share**	**Dollar Value**	**Share**	**(2012-2040)**
TOTAL, ALL COMMODITIES	**$ 168,463,003,438**		**$ 398,603,396,612**		**137%**
SECONDARY TRAFFIC	$ 27,560,887,712	16%	$ 45,112,726,439	11%	64%
MISC MIXED SHIPMENTS	$ 25,882,373,936	15%	$ 41,413,060,393	10%	60%
MACHINERY	$ 17,819,738,868	11%	$ 45,925,859,578	12%	158%
TRANSPORTATION EQUIPMENT	$ 13,312,549,258	8%	$ 17,287,938,141	4%	30%
CHEMICALS OR ALLIED PRODUCTS	$ 11,490,906,899	7%	$ 33,755,340,941	8%	194%
FOOD OR KINDRED PRODUCTS	$ 10,970,313,062	7%	$ 22,212,745,617	6%	102%
PETROLEUM OR COAL PRODUCTS	$ 8,305,887,310	5%	$ 5,924,927,668	1%	-29%
ELECTRICAL EQUIPMENT	$ 8,201,601,785	5%	$ 33,440,653,531	8%	308%
METALLIC ORES	$ 6,249,244,025	4%	$ 68,769,066,879	17%	1000%
FABRICATED METAL PRODUCTS	$ 3,604,123,255	2%	$ 5,720,704,140	1%	59%
PRIMARY METAL PRODUCTS	$ 3,515,929,287	2%	$ 4,687,759,694	1%	33%
RUBBER OR MISC PLASTICS	$ 3,456,756,097	2%	$ 8,860,900,221	2%	156%
FARM PRODUCTS	$ 2,795,808,538	2%	$ 6,429,248,786	2%	130%
TOBACCO PRODUCTS	$ 2,561,174,166	2%	$ 1,316,770,085	0%	-49%
FURNITURE OR FIXTURES	$ 2,329,536,545	1%	$ 7,025,754,389	2%	202%
MISC MANUFACTURING PRODUCTS	$ 2,313,235,939	1%	$ 11,203,981,420	3%	384%
APPAREL OR RELATED PRODUCTS	$ 2,308,277,214	1%	$ 4,432,836,183	1%	92%
PULP,PAPER OR ALLIED PRODUCTS	$ 2,245,506,157	1%	$ 4,147,929,645	1%	85%
COAL	$ 2,050,177,931	1%	$ 1,683,342,094	0%	-18%
FRESH FISH OR MARINE PRODUCTS	$ 1,910,883,953	1%	$ 2,239,209,208	1%	17%

Figure 50 – Hampton Roads Top 20 Commodities by Weight (Truck)

Source: HRTPO and VDOT analysis of IHS Transearch Data
For a commodity description of Secondary Traffic, refer to page 55.

	2012		2040		Growth
Commodity Description	**Tons**	**Share**	**Tons**	**Share**	**(2012-2040)**
TOTAL, ALL COMMODITIES	**75,019,374**		**147,913,244**		**97%**
NONMETALLIC MINERALS	14,613,497	19%	34,672,140	23%	137%
SECONDARY TRAFFIC	13,595,315	18%	23,066,079	16%	70%
PETROLEUM OR COAL PRODUCTS	9,451,864	13%	6,849,382	5%	-28%
FOOD OR KINDRED PRODUCTS	6,660,732	9%	12,426,670	8%	87%
CLAY,CONCRETE,GLASS OR STONE	6,107,950	8%	18,618,939	13%	205%
WASTE OR SCRAP MATERIALS	4,084,812	5%	8,852,454	6%	117%
FARM PRODUCTS	3,717,782	5%	8,048,055	5%	116%
CHEMICALS OR ALLIED PRODUCTS	3,444,532	5%	8,795,853	6%	155%
LUMBER OR WOOD PRODUCTS	2,670,278	4%	4,674,604	3%	75%
PULP,PAPER OR ALLIED PRODUCTS	1,923,876	3%	3,761,175	3%	95%
MACHINERY	1,682,354	2%	3,986,758	3%	137%
TRANSPORTATION EQUIPMENT	1,468,280	2%	1,850,001	1%	26%
PRIMARY METAL PRODUCTS	1,094,010	1%	1,546,539	1%	41%
FABRICATED METAL PRODUCTS	858,677	1%	1,187,119	1%	38%
RUBBER OR MISC PLASTICS	749,692	1%	1,890,928	1%	152%
ELECTRICAL EQUIPMENT	646,981	1%	2,038,453	1%	215%
FURNITURE OR FIXTURES	524,837	1%	1,570,297	1%	199%
MISC MANUFACTURING PRODUCTS	287,397	0%	1,366,869	1%	376%
FRESH FISH OR MARINE PRODUCTS	271,550	0%	321,120	0%	18%
APPAREL OR RELATED PRODUCTS	243,302	0%	530,305	0%	118%

Figure 51 – Hampton Roads Top 20 Commodities by Value (Truck)

Source: HRTPO and VDOT analysis of IHS Transearch Data.
Note: 2040 forecast is in 2012 dollars. For a commodity description of Secondary Traffic, refer to page 55.

	2012		2040		Growth
Commodity Description	**Dollar Value**	**Share**	**Dollar Value**	**Share**	**(2012-2040)**
TOTAL, ALL COMMODITIES	**$ 130,011,184,600**		**$ 337,764,499,462**		**160%**
SECONDARY TRAFFIC	$ 27,560,887,712	21%	$ 45,112,726,439	13%	64%
MACHINERY	$ 17,448,400,378	13%	$ 45,193,883,196	13%	159%
TRANSPORTATION EQUIPMENT	$ 13,026,322,785	10%	$ 16,567,282,243	5%	27%
FOOD OR KINDRED PRODUCTS	$ 10,489,814,211	8%	$ 21,316,656,797	6%	103%
CHEMICALS OR ALLIED PRODUCTS	$ 9,769,899,733	8%	$ 29,660,234,808	9%	204%
ELECTRICAL EQUIPMENT	$ 7,392,186,065	6%	$ 31,396,100,646	9%	325%
METALLIC ORES	$ 6,169,886,671	5%	$ 68,713,636,861	20%	1014%
PETROLEUM OR COAL PRODUCTS	$ 5,912,351,183	5%	$ 4,808,604,783	1%	-19%
FABRICATED METAL PRODUCTS	$ 3,506,020,661	3%	$ 5,629,776,538	2%	61%
RUBBER OR MISC PLASTICS	$ 3,329,983,495	3%	$ 8,528,912,993	3%	156%
PRIMARY METAL PRODUCTS	$ 2,521,621,851	2%	$ 3,294,066,260	1%	31%
FURNITURE OR FIXTURES	$ 2,319,973,758	2%	$ 7,011,979,803	2%	202%
APPAREL OR RELATED PRODUCTS	$ 2,186,568,362	2%	$ 4,343,685,868	1%	99%
MISC MANUFACTURING PRODUCTS	$ 1,967,010,594	2%	$ 9,743,643,507	3%	395%
PULP,PAPER OR ALLIED PRODUCTS	$ 1,905,375,482	1%	$ 3,639,316,085	1%	91%
FRESH FISH OR MARINE PRODUCTS	$ 1,886,557,522	1%	$ 2,203,969,844	1%	17%
FARM PRODUCTS	$ 1,860,171,022	1%	$ 3,566,669,043	1%	92%
TOBACCO PRODUCTS	$ 1,733,814,134	1%	$ 1,133,659,191	0%	-35%
INSTRUMENTS, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	$ 1,534,823,128	1%	$ 8,585,352,467	3%	459%
CLAY,CONCRETE,GLASS OR STONE	$ 1,448,263,813	1%	$ 4,236,159,175	1%	192%

Net Annual Tonnage and Dollars Carried by Truck

Using IHS Transearch, HRTPO summarized all truck freight transported in the Commonwealth of Virginia for 2012 and 2040. This analysis includes all freight moved by truck in Virginia, which includes inbound, outbound, through Virginia, and within Virginia. **Figure 53** and **Figure 54** show the net annual tonnage carried by truck in 2012 and 2040 respectively. In 2012, the highest freight flows in Virginia in terms of weight are along Interstates I-95, I-81, I-77, and I-64. By 2040, the same interstates are projected to carry a large portion of Virginia freight.

Figure 52 shows the net annual tonnage carried by truck at the four major regional gateways in 2012 and 2040.

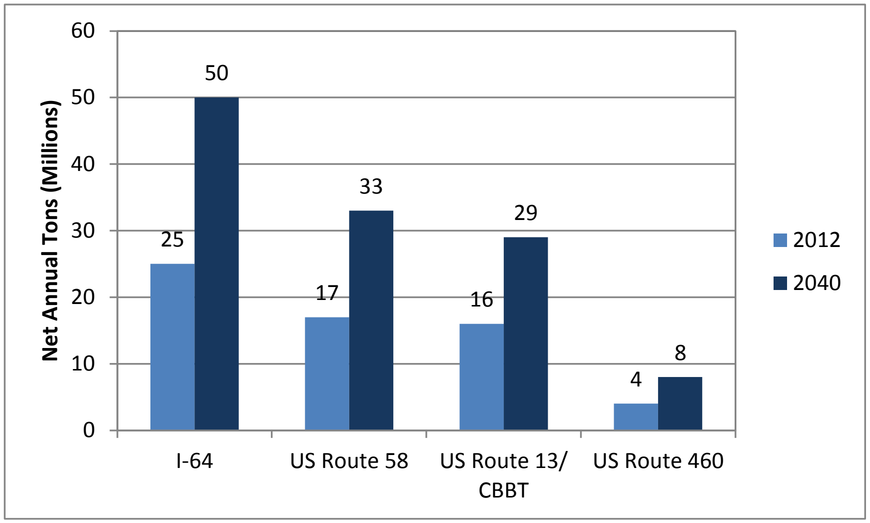


Figure 52 – Net Annual Tonnage Carried by Truck at Regional Gateways, 2012 and 2040

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

In 2012, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor and US Route 58 between I-664 and the Suffolk Bypass. By 2040, the top corridors for moving freight tonnage will be I-64, US Route 58, US Route 13/CBBT, and I-264 in Norfolk and Portsmouth. By 2040, the top two primary gateways for freight by annual tonnage are expected to be I-64 and US Route 58. The IHS Transearch data analysis only includes existing roadways so the potential I-87 Interstate corridor may also be a top freight gateway in the future.

Figure 55 and **Figure 56** show the net annual dollars carried by truck in 2012 and 2040 respectively. In 2012, the highest freight flows in Virginia in terms of dollar value are along Interstates I-95, I-81, I-77, and I-64. By 2040, freight values across the state are expected to increase significantly. In 2040, the highest freight flows in Virginia are expected to remain along Interstates I-95, I-81, I-77, and I-64. Other secondary corridors that are expected to carry significant amounts of freight in dollars are I-85, I-66, Route 58, Route 13, I-264, and I-664.

In 2012, the highest freight flows in Hampton Roads in terms of dollar value are along I-64 on the Peninsula. By 2040, the highest freight flows by dollar value are expected to be along I-64, US Route 58, HRBT, MMMBT, I-264 in Norfolk/Portsmouth, and US Route 13/CBBT.

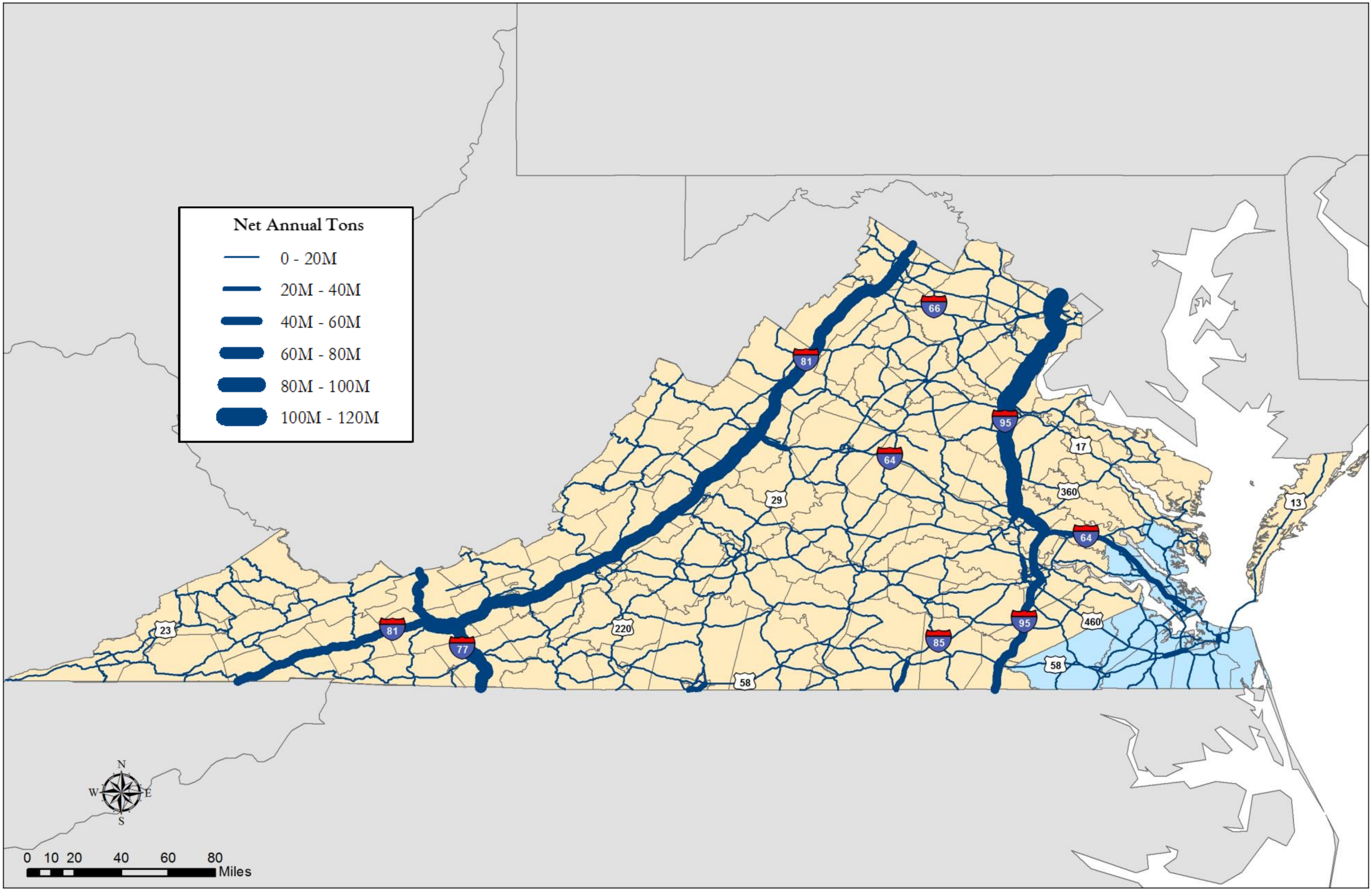


Figure 53 – Net Annual Tonnage Carried by Truck, 2012

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

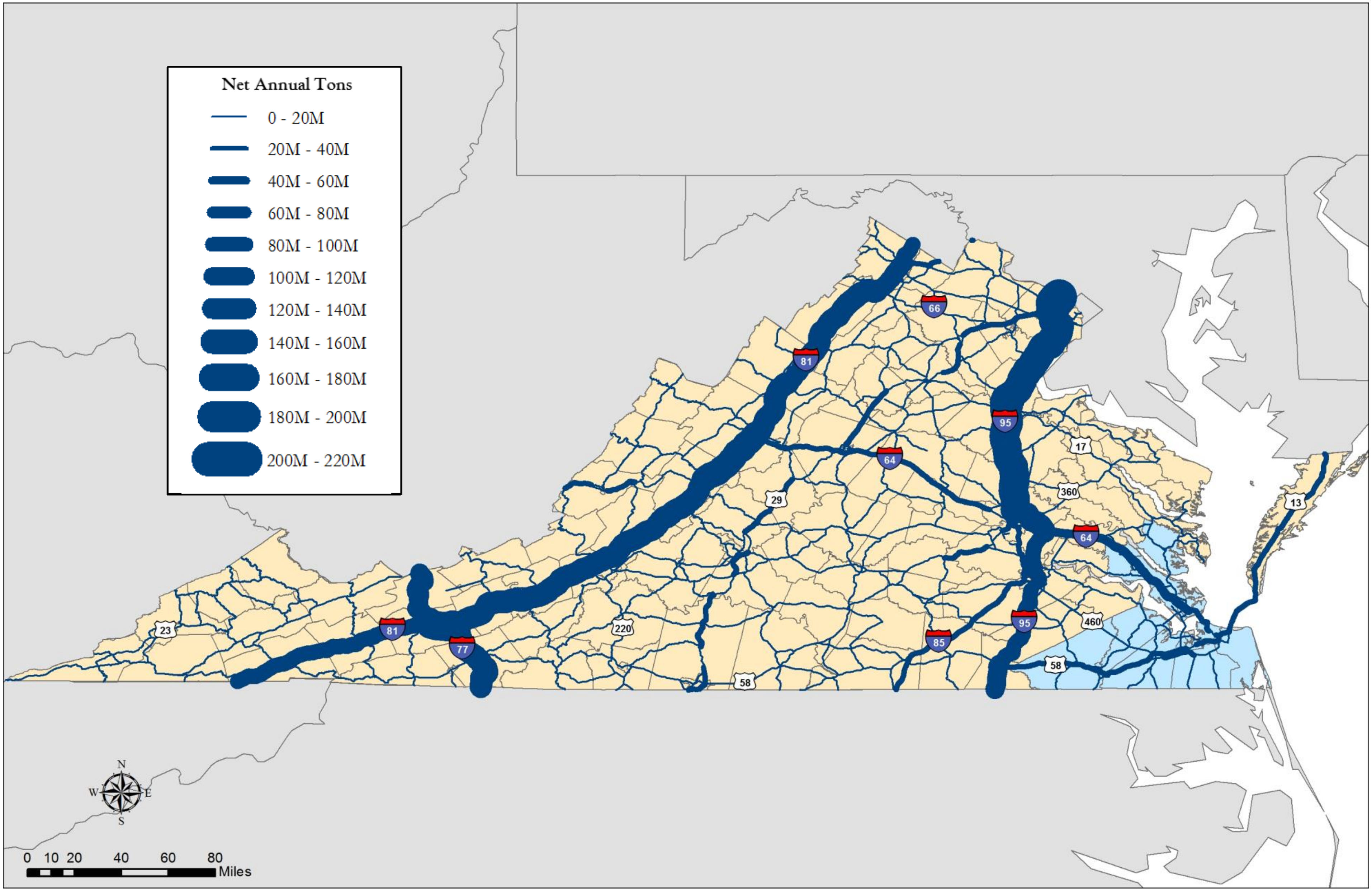


Figure 54 – Net Annual Tonnage Carried by Truck, 2040

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

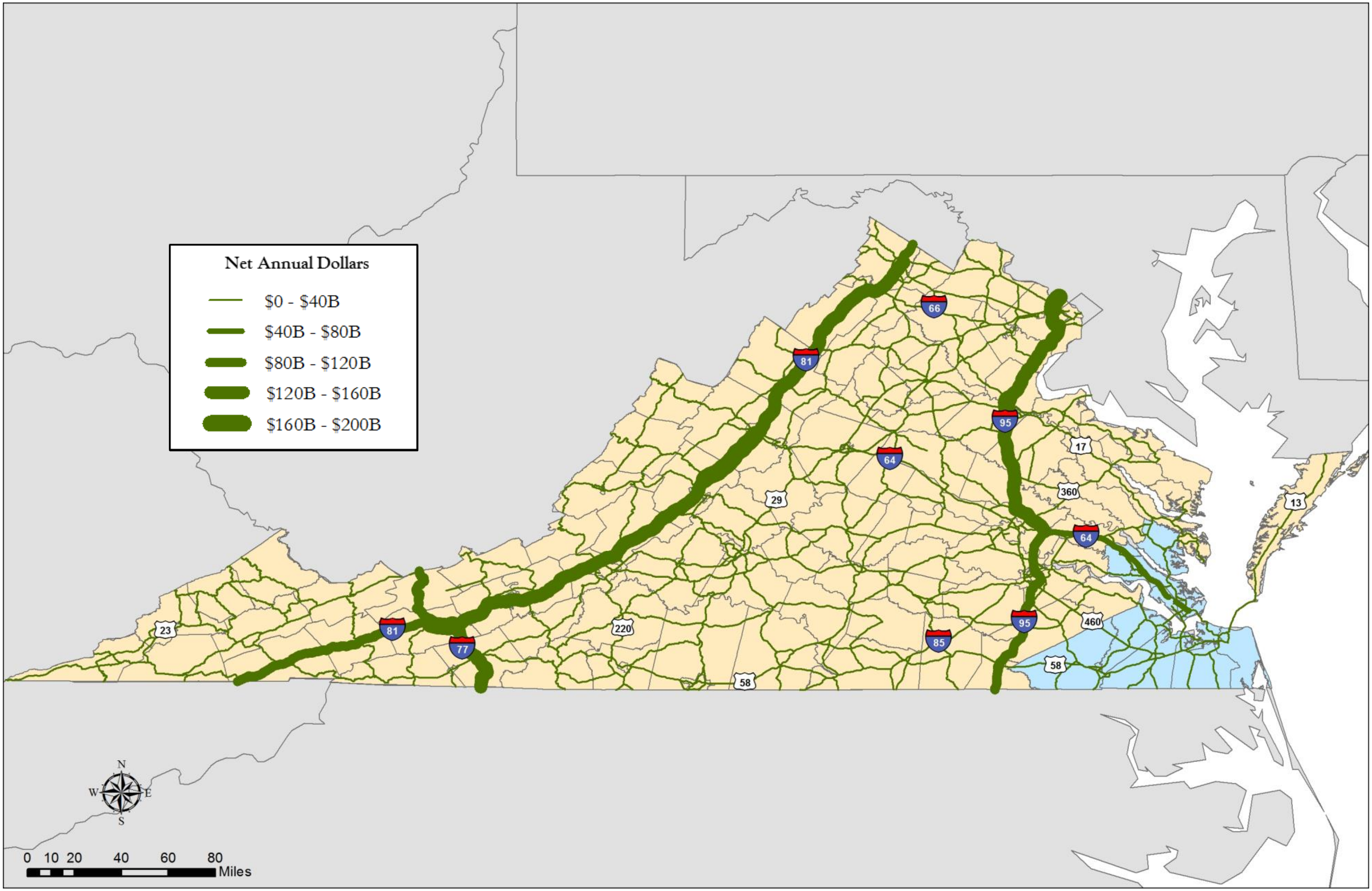


Figure 55 – Net Annual Dollars Carried by Truck, 2012

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

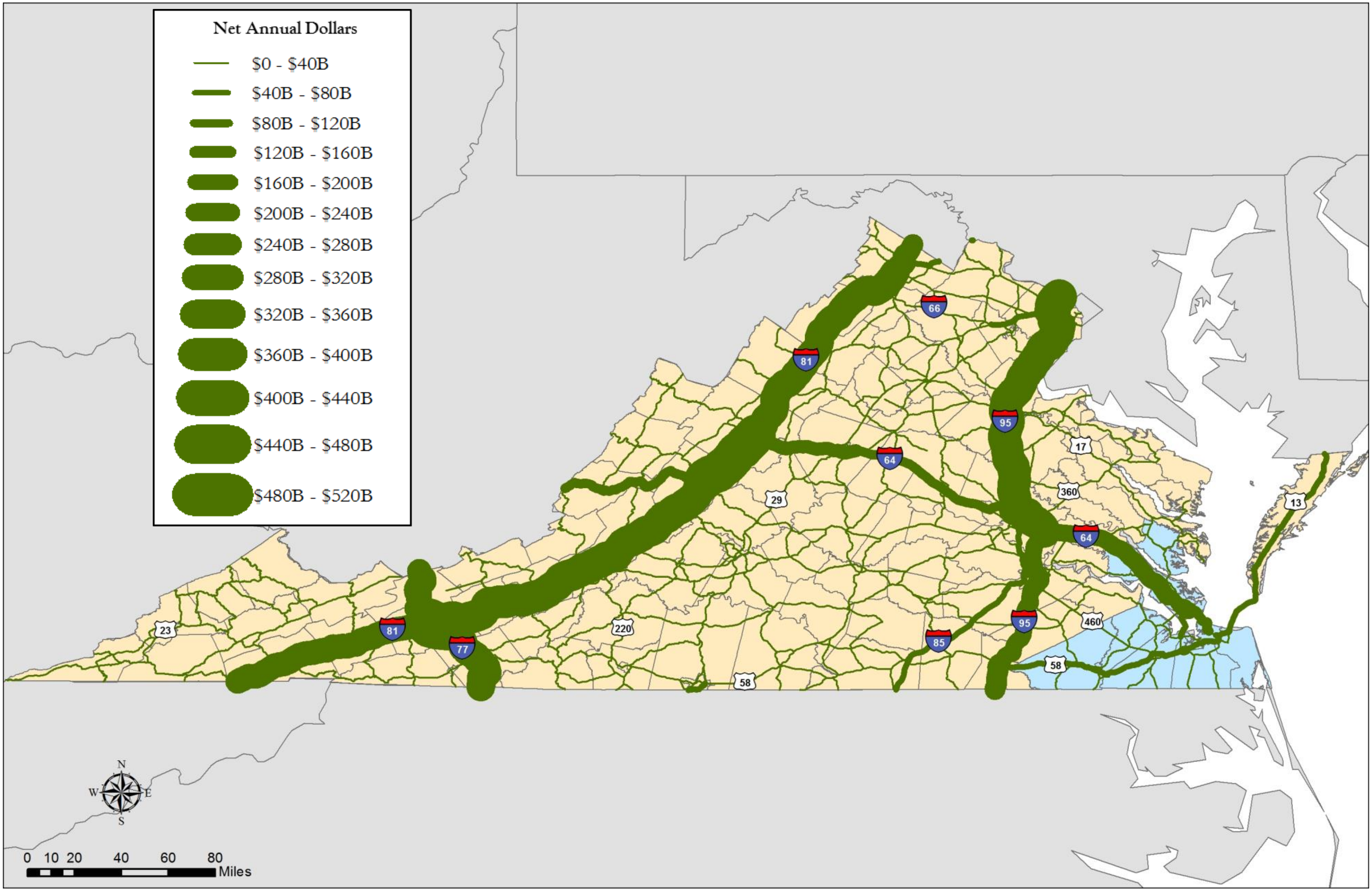


Figure 56 – Net Annual Dollars Carried by Truck, 2040

Source: HRTPO analysis of IHS Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within. 2040 forecast is in 2012 dollars

REGIONAL TRUCK MOVEMENT

Trucks are the primary method of transporting domestic freight into, out of, within, and through Hampton Roads. The efficient movement of trucks is important to the region since roadway congestion can saddle trucking companies and shippers with additional operating costs, delays, and uncertainty. The economic competitiveness of the Port of Virginia, Hampton Roads, and the state is greatly impacted by the effiecient movement of freight.

This section examines the movement of trucks throughout Hampton Roads. Topics that are covered in this section include:

- Truck Travel in Hampton Roads
- Truck Movements through Regional Gateways
- Truck Movements across Regional Water Crossings
- Daily Truck Movements by Location
- Truck Congestion Costs
- Freight Bottlenecks
- Truck Parking Challenges
- Potential Future Highway Connections

Most of the data analyzed in this section was collected by the Virginia Department of Transportation (VDOT) through their traffic monitoring program. VDOT collects traffic volume data on most roadways throughout the state for a two-day period once every three years. At approximately one out of every three of these locations, VDOT collects additional information on the types of vehicles, also known as vehicle classification data. In addition, VDOT also has a number of locations – including about 60 in Hampton Roads – where vehicle counts are collected continuously throughout the year.

VDOT uses the Federal Highway Administration's (FHWA) process for classifying vehicles, which categorizes each vehicle into one of 15 different vehicle classes. **Figure 57** shows these vehicle classifications, of which Classes 5 through 13 are considered to be trucks.

VDOT uses this vehicle classification data to determine truck volumes at specific locations, estimate truck volumes at locations without classification data, and estimate daily truck travel levels in jurisdictions throughout the state. This study uses both raw count data and the estimated jurisdictional truck travel data.

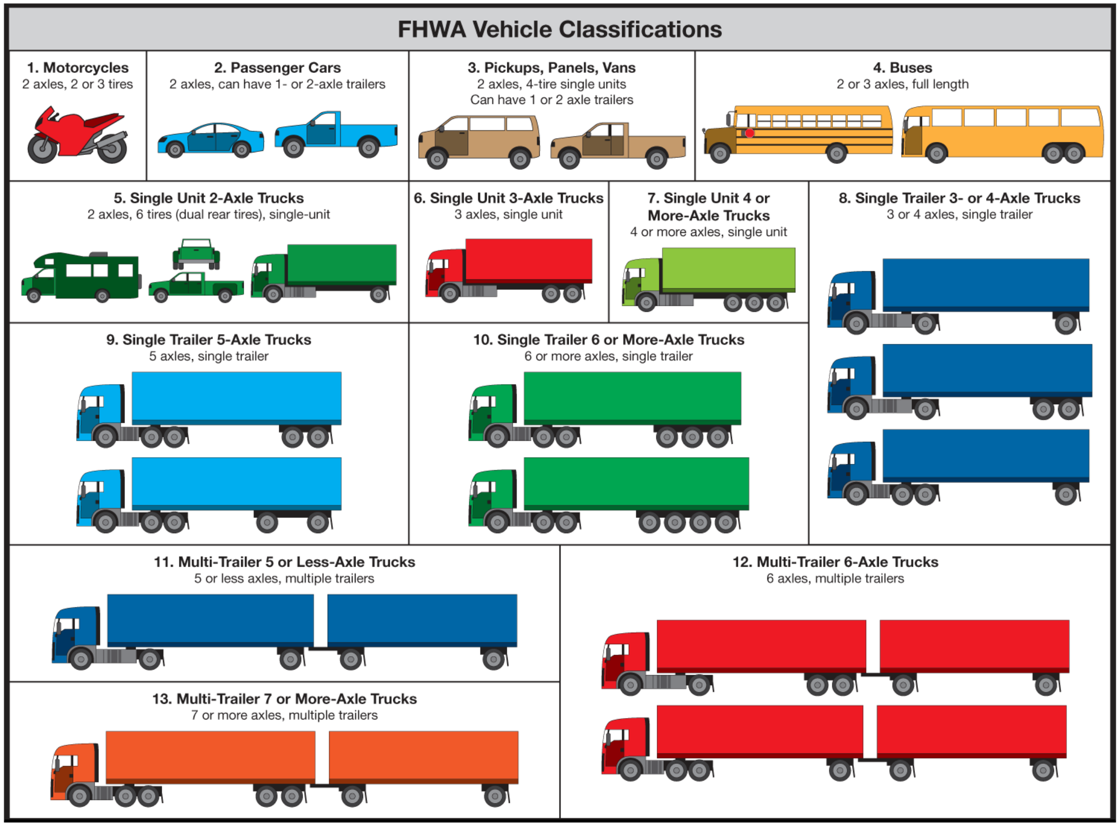


Figure 57 – FHWA Vehicle Classifications

Source: FHWA. Image source: Texas DOT.

TRUCK TRAVEL IN HAMPTON ROADS

There were a total of 1.21 million truck-miles of travel each day in Hampton Roads in 2015 according to VDOT data. This amount of truck travel comprises 3.0% of the nearly 40 million vehicle-miles of travel that occurred in the region each day.

The amount of truck travel in Hampton Roads decreased greatly during the economic downturn, and has not returned to pre-recession levels, as shown in **Figure 58**. In 2007 – prior to the economic downturn – there were 1.43 million truck-miles of travel in Hampton Roads each day. Truck travel then decreased each year, reaching a low of 1.13 million truck-miles of travel each day in 2012. As the economy has improved, truck volumes have increased slightly, but as of 2015, truck travel is still 16% below the pre-economic downturn levels of 2007.

The percentage of truck travel in Hampton Roads has also decreased. In 2007, 3.5% of all vehicular travel in Hampton Roads was truck travel, compared to 3.0% in 2015.

Figure 59 shows the distribution of truck volumes in Hampton Roads on the typical weekday in 2015. The distribution of truck volumes differs from the distribution of passenger cars, which includes pronounced peak travel periods in both the morning and afternoon. These passenger car peak travel periods largely occur between 6:30 am and 8:30 am in the morning, and 3:00 pm and 6:30 pm in the afternoon. The distribution of truck travel does not experience these peak travel periods but rather plateaus throughout the middle of the day, outside of the morning and afternoon peak travel periods. Half of all truck travel in Hampton Roads occurs during this plateau, between 8:30 am and 3:00 pm.

Although truck travel is not as prevalent during the peak travel periods as it is in the middle of the day, 28% of all truck travel in Hampton Roads occurred during congested morning and afternoon peak travel periods in 2015.

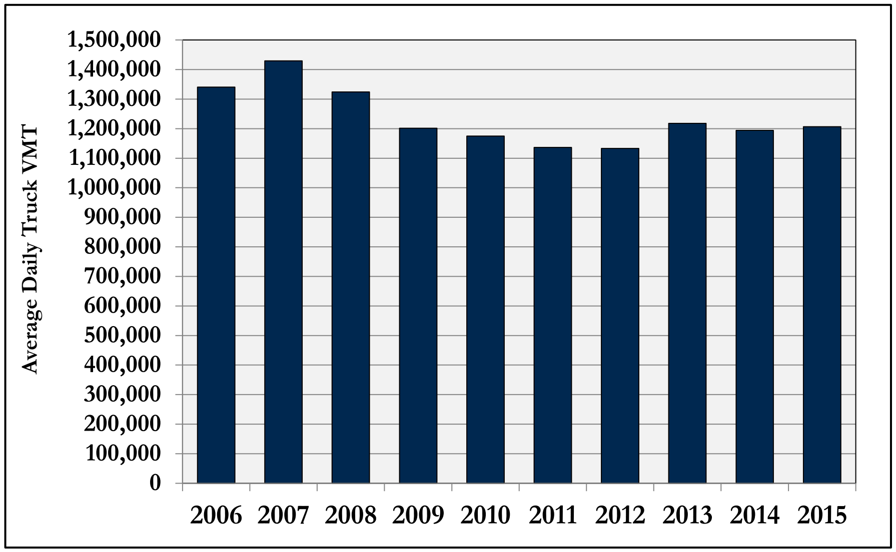


Figure 58 – Daily Truck-Miles of Travel in Hampton Roads, 2006-2015

Source: HRTPO analysis of VDOT data.

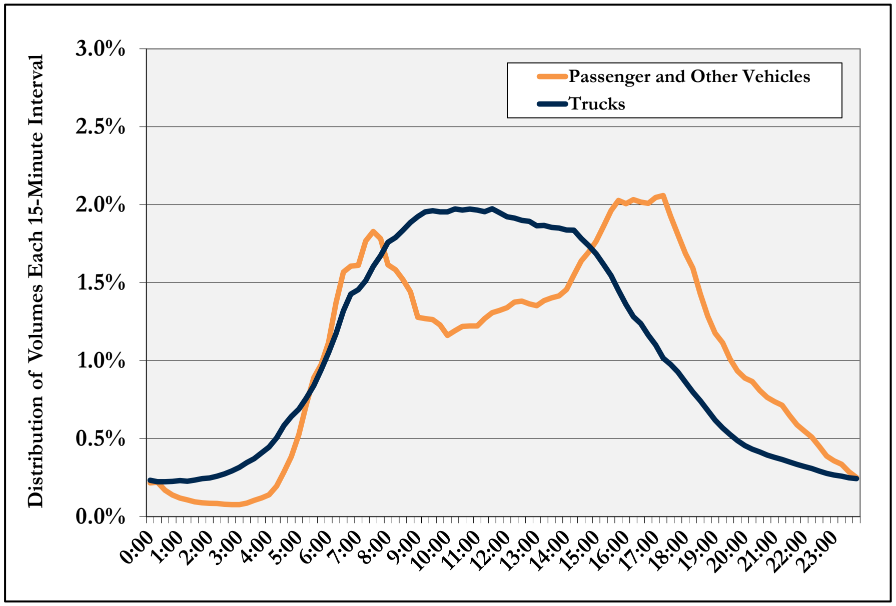


Figure 59 – Distribution of Weekday Volumes in Hampton Roads by Vehicle Type and Time of Day, 2015

Source: HRTPO analysis of VDOT data.

The most prominent type of truck is Class 9, which is commonly referred to as "18-wheeler". A majority of all truck travel in Hampton Roads (56%) is Class 9 trucks (**Figure 60**). The next most common type of truck traveling Hampton Roads roadways are Class 5 trucks (18%), which are small 2-axle trucks that often handle local deliveries such as UPS or FedEx trucks, or U-Haul type vehicles. This is followed by Class 6 trucks (14%), which are small 3-axle trucks that typically includes vehicles such as larger local delivery trucks, dump trucks, or garbage trucks.


FHWA Class 9 Truck

FHWA

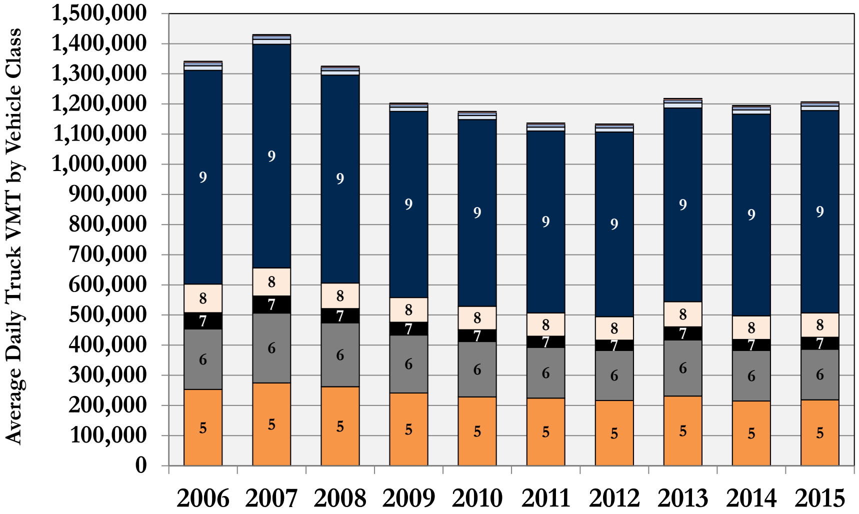


Figure 60 – Daily Truck-Miles of Travel in Hampton Roads by Vehicle Class, 2006-2015

Source: HRTPO analysis of VDOT data.

As shown on the previous page, the amount of truck travel in Hampton Roads has decreased by 9% over the last decade, and 16% from the highs seen prior to the recession in 2007. However, the decreases are much higher in the smaller truck classes than the larger ones (**Figure 61**). The amount of travel in Hampton Roads by smaller, Class 5 and 6 trucks decreased by 14%-16% between 2006 and 2015. Class 9 trucks, however, only experienced a 5% decrease during this time period, and the largest, multi-trailer Class 12 and 13 trucks experienced an increase in travel.

Vehicle Class	Change in VMT between 2006 and 2015	
5	-34,592	-14%
6	-32,450	-16%
7	-14,239	-26%
8	-14,430	-15%
9	-37,701	-5%
10	-346	-2%
11	-781	-7%
12	250	7%
13	143	191%

Figure 61 – Change in Daily Truck-Miles of Travel in Hampton Roads by Vehicle Class, 2006 to 2015

Source: HRTPO analysis of VDOT data.

TRUCK MOVEMENTS THROUGH REGIONAL GATEWAYS

Many of the trucks that travel in Hampton Roads have origins or destinations located outside of the region. A total of 17,500 trucks passed through the Top 10 gateways to Hampton Roads each weekday in 2015 (**Figure 62**). The number of trucks has increased steadily in recent years, with 1,100 more trucks passing through regional gateways each weekday in 2015 than at the peak of the economic downturn. However, truck travel levels have still not returned to the peak seen in 2007.

The primary gateway for trucks entering or exiting Hampton Roads is I-64. As shown in **Figure 64** on page 73, an average of 6,100 trucks used I-64 to enter or exit the region each weekday in 2015, which accounted for 35% of the trucks passing through the region's major gateways. The number of trucks using I-64, however, has decreased nearly every year since 2007, when 7,400 trucks used the I-64 gateway each weekday.

The next most traveled corridors for trucks entering and exiting the region are Route 58 and Route 460. Nearly 4,100 trucks used the Route 58 gateway in 2015, up from 3,930 trucks in 2006 and 3,210 trucks in 2012. Route 460 has also seen an increase in truck volumes. Over 2,100 trucks used the Route 460 gateway in 2015, up from 1,800 trucks in 2006 and 1,930 trucks in 2012.

Combined, I-64, Route 58, and Route 460 accounted for 70% of all trucks passing through the region's major gateways in 2015. This is up from 67% in 2006 (**Figure 63**). However, the share of trucks using these three gateways has been shifting over the last decade from I-64 towards Routes 58 and 460. **More trucks now use the combination of Routes 58/460 to enter or exit the region than use I-64.**

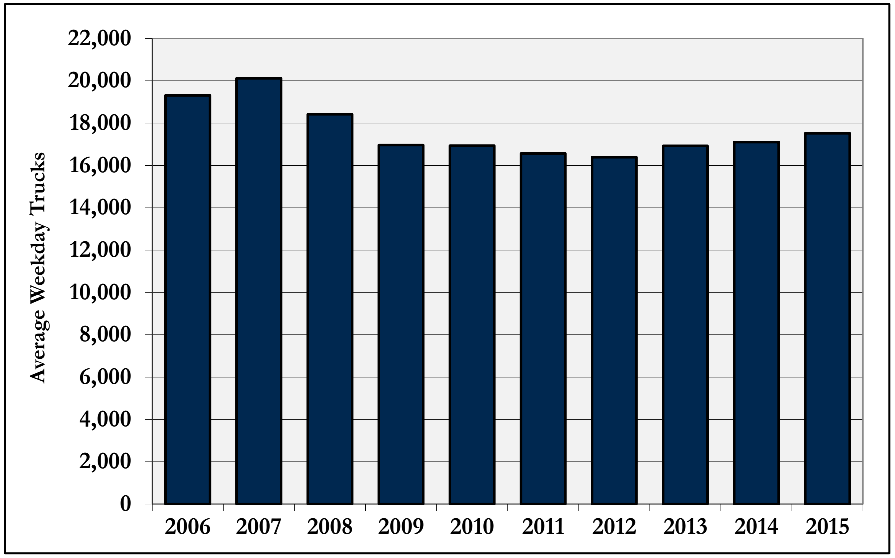


Figure 62 – Average Number of Trucks Passing through the Top 10 Regional Gateways Each Weekday, 2006-2015

Source: HRTPO analysis of VDOT and CBBT data.

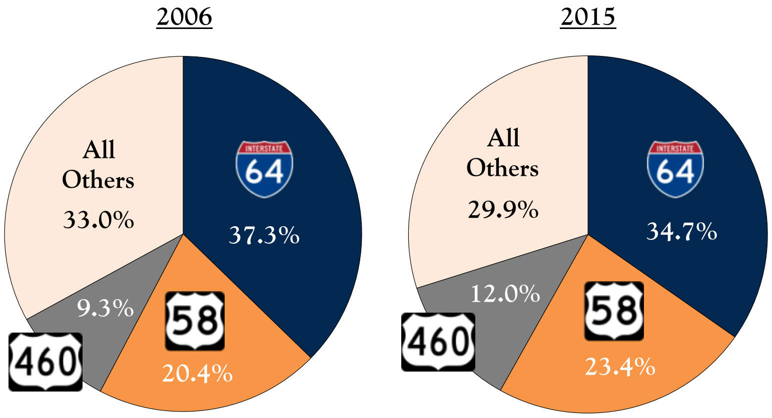


Figure 63 – Share of Trucks Passing through Regional Gateways Each Weekday, 2006 and 2015

Source: HRTPO analysis of VDOT and CBBT data.

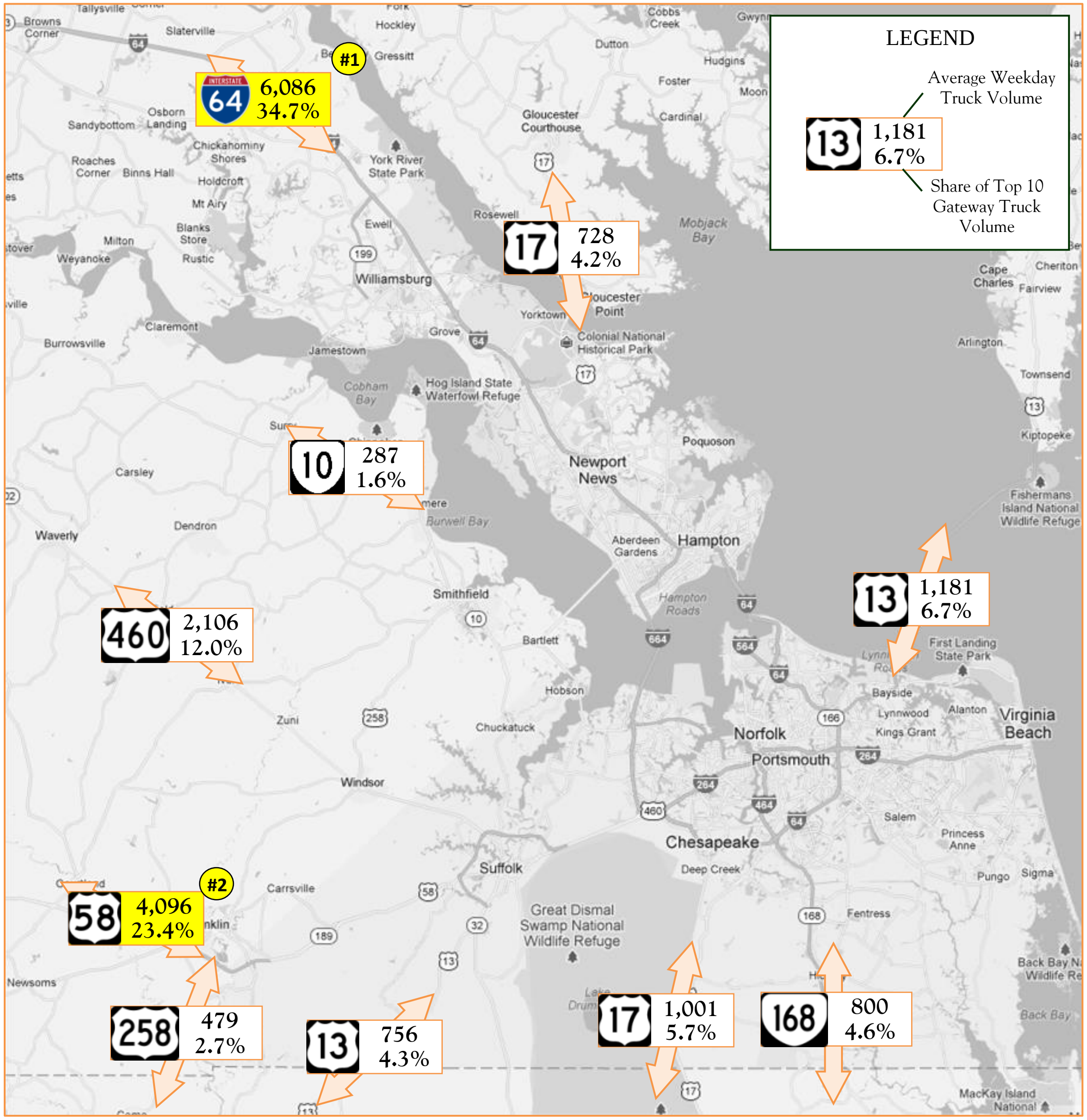


Figure 64 – Number and Share of Trucks Passing Through the Top 10 Regional Gateways Each Weekday, 2015

Source: HRTPO analysis of VDOT and CBBT data. Background map source: Google.

TRUCK MOVEMENTS ACROSS REGIONAL WATER CROSSINGS

Many of the worst bottlenecks in Hampton Roads occur at the region's water crossings. The congestion at these crossings not only limits automotive travel but also freight movement. This section addresses truck movements across the Hampton Roads Harbor and the Elizabeth River.

Hampton Roads Harbor Crossings

Three facilities span the Hampton Roads Harbor, connecting the Peninsula and Southside regions of Hampton Roads – the Hampton Roads Bridge-Tunnel (I-64), the Monitor-Merrimac Memorial Bridge-Tunnel (I-664), and the James River Bridge (US Routes 17 and 258). Combined, an average of 8,439 trucks crossed the harbor on these three facilities each weekday in 2015.

The Hampton Roads Bridge-Tunnel carries higher traffic volumes (an average of 83,861 vehicles per weekday in 2015) than the Monitor-Merrimac Memorial Bridge-Tunnel (66,964 vehicles) and the James River Bridge (31,246 vehicles). However, **the Monitor-Merrimac Memorial Bridge-Tunnel was the most used facility by trucks crossing the harbor in 2015**. Over 4,400 trucks used the Monitor-Merrimac Memorial Bridge-Tunnel each weekday in 2015, or 52% of the trucks crossing the harbor (**Figure 65**). The Hampton Roads Bridge-Tunnel carried an average of 3,140 trucks each weekday, or 37% of the trucks crossing the harbor, and the James River Bridge carried 891 trucks each weekday (11%).

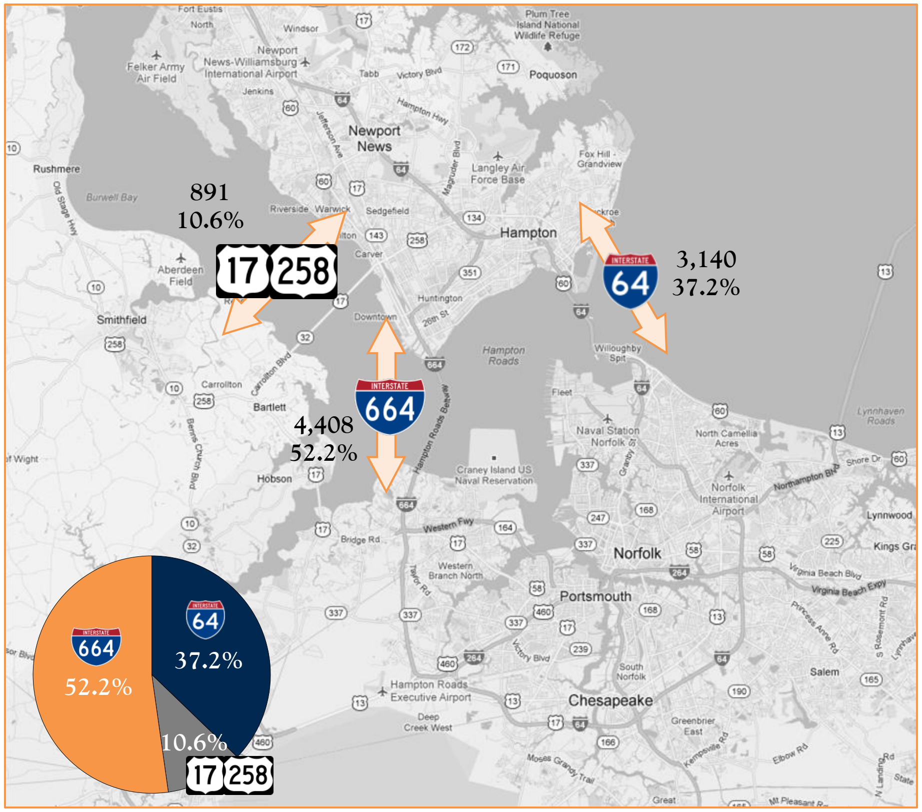


Figure 65 – Average Number of Trucks Crossing Between the Peninsula and Southside Each Weekday, 2015

Source: HRTPO analysis of VDOT data. Background map source: Google.

Elizabeth River Crossings

There are six major routes across the Elizabeth River and its Southern Branch. These crossings, from north to south, are the Midtown Tunnel (US Route 58), the Downtown Tunnel (I-264), the South Norfolk Jordan Bridge (State Route 337), the Gilmerton Bridge (US Route 13), the High Rise Bridge (I-64), and the Veterans (formerly Steel) Bridge (US Route 17). Tolls were instituted at the Midtown and Downtown Tunnels on February 1, 2014, while the South Norfolk Jordan Bridge has been tolled since reopening in 2012. Tolling began on the Dominion Boulevard Veterans Bridge (US Route 17) in February 2017.

A total of 16,200 trucks crossed the Elizabeth River each weekday in 2015. As shown in **Figure 66**, the High Rise Bridge carried an estimated 7,910 trucks each weekday in 2015, which is nearly half of the truck volume using the Elizabeth River crossings. **In fact, the High Rise Bridge carried more trucks than the Hampton Roads Bridge-Tunnel and Monitor-Merrimac Memorial Bridge-Tunnel combined.** The Downtown Tunnel carried the next highest number of trucks (3,265 trucks) each weekday in 2015, although this is down from higher levels – 4,400 trucks per weekday in 2011 – prior to tolls being implemented. In spite of tolls also being implemented at the Midtown Tunnel, the volume of trucks carried by the facility in 2015 (2,009 trucks per weekday) is higher than in 2011 (1,771 trucks).

More information on the impact of tolls on truck movement across the Elizabeth River is included in HRTPO's *Analyzing and Mitigating the Impact of Tolls at the Midtown and Downtown Tunnels*[22] 2015 study.

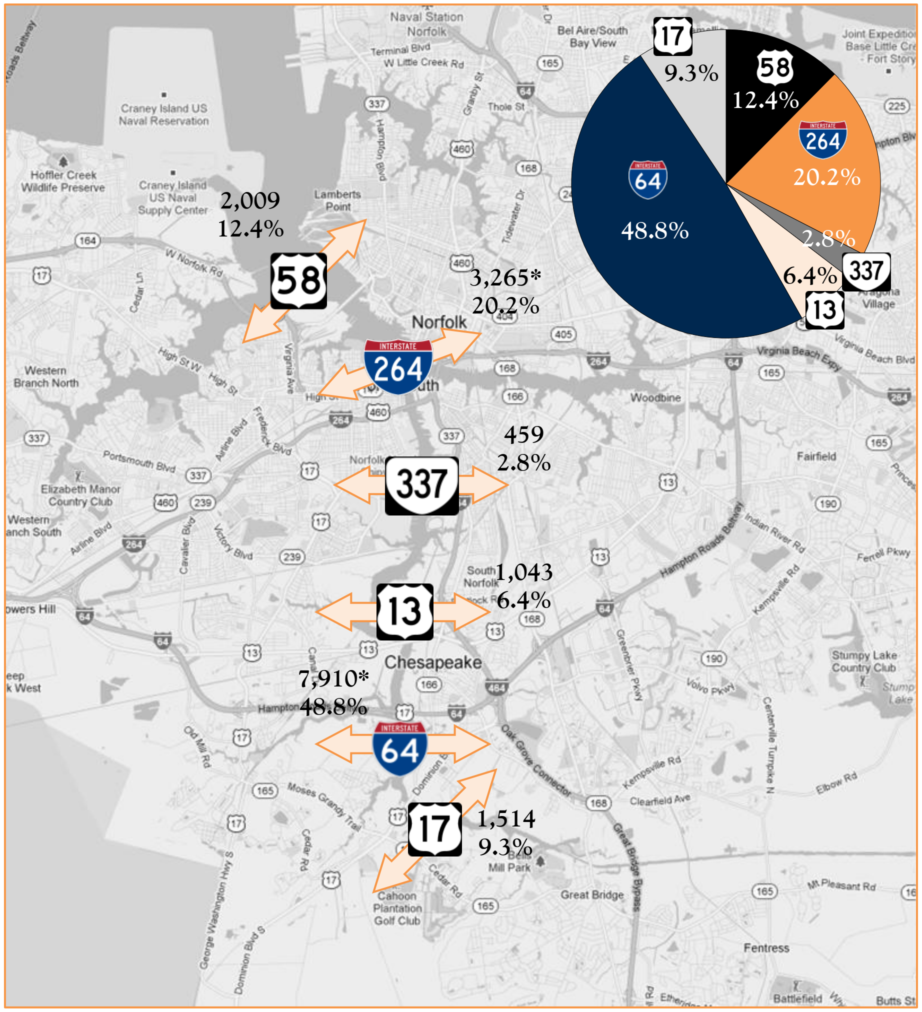


Figure 66 – Average Number of Trucks Crossing the Elizabeth River Each Weekday, 2015

Source: HRTPO analysis of VDOT and SNJB data. Background map source: Google.
* Truck volumes at the Downtown Tunnel (I-264) and the High Rise Bridge (I-64) are VDOT estimates.

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[22] Hampton Roads Transportation Planning Organization, Analyzing and Mitigating the Impact of Tolls at the Midtown and Downtown Tunnels, June 2015.

DAILY TRUCK MOVEMENTS BY LOCATION

This section examines the existing weekday truck volumes on roadways throughout Hampton Roads. As mentioned previously, the vehicle classification data used in this report was collected by VDOT, with the Chesapeake Bay Bridge-Tunnel and South Norfolk Jordan Bridge also providing vehicle classification data at those facilities. HRTPO staff only analyzed truck data that was collected on the regional Congestion Management Process (CMP) roadway network, which is comprised of all roadways in Hampton Roads classified as minor arterials and above and selected collectors. Vehicle classification data was available for 437 locations on the CMP roadway network. The most recent available data – which was generally collected during 2013, 2014, and 2015 – was used in this analysis, and these recent counts are called the "existing" weekday truck volumes in this report.

Figures 69 and 70 on pages 77 and 78 show the existing number of trucks each weekday at every location on the Hampton Roads CMP roadway network where vehicle classification data is collected. **Appendix D** (Truck Volumes by Location) includes not only these weekday truck volumes but also includes existing weekday truck percentages, morning (AM) peak period truck volumes and percentages, and afternoon (PM) peak period truck volumes and percentages.

Figure 67 shows the existing weekday truck volumes at each location on the regional freeway system where vehicle classification data is collected. **I-64 in Chesapeake, between Bowers Hill and the High Rise Bridge, carries the highest volume of trucks in the region at just over 7,400 trucks each weekday.** Route 13/58/460, near the Chesapeake/Suffolk City Line, is only slightly lower at 7,332 trucks per weekday. The next highest segments are on I-64 on the Peninsula, with 6,000 – 6,500 trucks each weekday.

Juris.	Facility Name	Segment From	Segment To	Existing Weekday Trucks
CHES	I-64	MILITARY HWY	I-264 & I-664	7,402
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	7,332
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	6,507
YC	I-64	ROUTE 199/646	ROUTE 143	6,086
NOR/VB	I-64	I-264	INDIAN RIVER RD	4,905
SUF	I-664	WESTERN FWY	COLLEGE DR	4,408
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	4,343
PORT	WESTERN FWY	COLLEGE DR	TOWN POINT RD	3,591
HAM/NOR	I-64/HRBT	MALLORY ST	15TH VIEW ST	3,140
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	2,728
CHES	I-464	FREEMAN AVE	POINDEXTER ST	2,716
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	2,282
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	1,275
NOR	I-564	ADMIRAL TAUSSIG BLVD	INTERNATIONAL TERMINAL BLVD	786
YC	ROUTE 199	MOORETOWN RD	I-64	595
JCC	ROUTE 199	LONGHILL RD	MONTICELLO AVE	412

Figure 67 – Existing Weekday Truck Volumes on the Freeway System

Source: HRTPO analysis of VDOT data. Existing volumes generally represent data from the years 2013-2015. Table only includes locations where vehicle classification data was collected.

Juris.	Facility Name	Segment From	Segment To	Existing Weekday Trucks
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	4,096
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	3,570
SH	ROUTE 460	SUSSEX CL	ROUTE 616 (IVOR RD)	2,106
NOR/PORT	MIDTOWN TUNNEL	MLK FWY/WESTERN FREEWAY	BRAMBLETON AVE	2,009
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	1,855
NOR	BRAMBLETON AVE	PARK AVE	I-264	1,678
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	1,652
CHES	DOMINION BLVD/VETERANS BR.	CEDAR RD	BAINBRIDGE BLVD	1,514
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	1,511
NN	JEFFERSON AVE	BLAND BLVD	I-64	1,475
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	1,451
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	1,362
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	1,318
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	1,278
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	NCL VA BEACH	1,181
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	1,171
SUF	ROUTE 258	RTE 58	ISLE OF WIGHT CL	1,146
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	1,101
SH	ROUTE 671	DELAWARE RD (RTE 687)	ROUTE 58	1,046
CHES	MILITARY HWY/GILMERTON BR.	CANAL DR	BAINBRIDGE BLVD	1,043
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	1,026
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	1,001

Figure 68 – Highest Existing Weekday Truck Volumes at Non-Freeway Locations

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Existing volumes generally represent data from the years 2013-2015. Table only includes locations where vehicle classification data was collected.

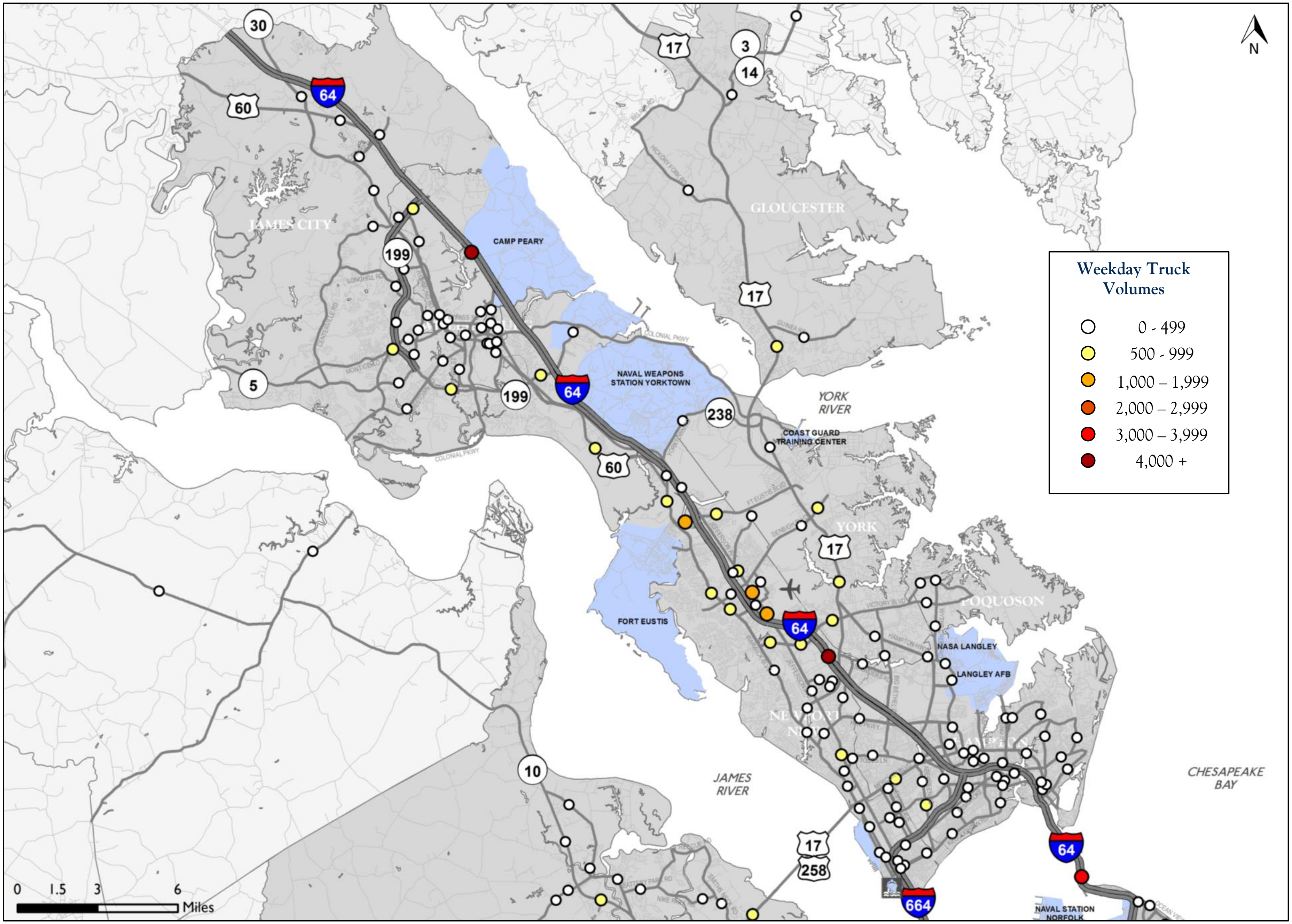


Figure 69 – Existing Weekday Truck Volumes, Peninsula (2013-2015)

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Existing volumes generally represent data from the years 2013-2015.

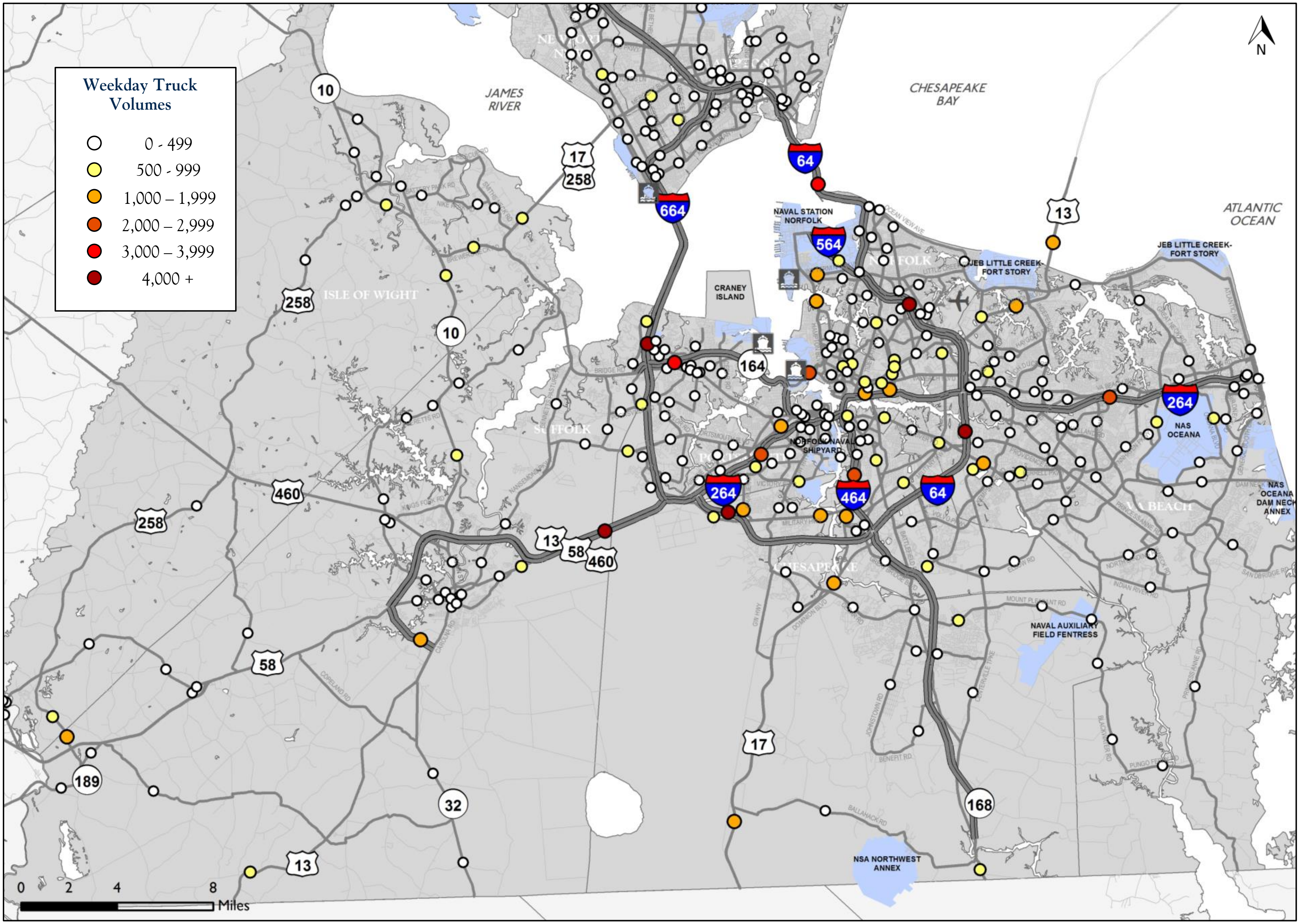


Figure 70 – Existing Weekday Truck Volumes, Southside (2013-2015)

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Existing volumes generally represent data from the years 2013-2015.

Figure 68 on page 76 shows those roadway segments that are not part of the freeway system with the highest existing weekday truck volumes. A total of 22 locations where vehicle classification data is collected have volumes greater than 1,000 trucks per weekday. **Route 58 carries the highest number of trucks of any non-freeway location in the region, with over 4,000 trucks per weekday** using Route 58 between Courtland and Franklin. The non-freeway locations with the next highest number of trucks are Route 460, in Southampton County to the east of Wakefield, and the Midtown Tunnel.

Figure 71 and **Figure 72** on pages 79-80 show the recent trend in truck volumes at 21 prominent locations throughout Hampton Roads where vehicle classification data is collected on a continuous basis. At most locations, truck volumes were lower in 2015 than the levels seen in 2006, prior to the start of the economic downturn. However, all but three of the selected locations saw an increase in truck volumes between 2014 and 2015, indicating that the trend in decreasing truck travel is reversing.

The implementation of tolls at the Midtown and Downtown Tunnels had a notable impact on truck travel. Volumes on I-264 to the west of the Downtown Tunnel decreased by 41% from 2006 to 2015, and decreased by 29% from 2013, prior to the implementation of tolls, to 2015. **The Gilmerton Bridge, a toll-free alternate route to the Downtown Tunnel, saw one of the largest increases in truck volumes over the last decade (49%), and truck volumes nearly doubled between 2013 and 2015**. Notably, however, truck volumes continue to rise at the Midtown Tunnel, in spite of the implementation of tolls, indicating the lack of viable alternate routes for the trucking industry.

Facility	Location	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Change, 2006-2015
CHESAPEAKE BAY BRIDGE-TUNNEL		1,321	1,263	1,199	1,159	1,149	1,112	1,139	1,164	1,163	1,181	-11%
COLEMAN BRIDGE		956	996	823	771	869	844	752	735	707	728	-24%
HAMPTON BOULEVARD		1,998	-	1,791	1,498	1,435	1,530	1,648	1,591	1,430	1,451	-27%
HAMPTON ROADS BRIDGE-TUNNEL		-	-	3,777	3,414	3,312	3,276	3,327	3,220	3,110	3,140	-17%
I-64 (PENINSULA)	EAST OF ROUTE 199/646	7,202	7,413	6,918	6,463	6,402	6,338	6,227	6,100	5,993	6,086	-15%
I-64 (PENINSULA)	WEST OF J CLYDE MORRIS BLVD	7,893	8,013	7,419	6,599	6,936	7,037	6,960	6,807	6,803	6,507	-18%
I-64 (SOUTHSIDE)	NORFOLK/VA BEACH CL	5,476	5,548	-	-	4,764	4,955	-	-	-	4,905	-10%
I-64 (SOUTHSIDE)	EAST OF I-264/I-664	8,171	8,656	7,878	7,216	7,254	6,989	6,775	7,049	7,212	7,402	-9%
I-264	EAST OF VICTORY BLVD	3,866	3,962	3,314	2,877	2,988	2,876	-	3,213	2,399	2,282	-41%
I-464	SOUTH OF POINDEXTER ST	2,568	2,662	2,666	2,354	2,478	2,410	2,458	2,528	2,657	2,716	6%
I-664	SOUTH OF COLLEGE DR	4,206	4,770	4,203	4,178	4,383	4,318	-	4,283	4,247	4,408	5%
INTERNATIONAL TERMINAL BLVD		2,384	2,640	2,537	1,947	2,164	2,056	1,894	1,855	-	-	-22%
JAMES RIVER BRIDGE		1,000	1,012	878	751	819	900	762	903	834	891	-11%
MIDTOWN TUNNEL		-	-	-	1,759	1,803	1,771	1,931	1,949	1,814	2,009	14%
MILITARY HWY	GILMERTON BRIDGE	702	785	741	-	629	588	489	531	834	1,043	49%
ROUTE 13	NC STATE LINE	791	822	695	637	672	611	699	721	721	756	-4%
ROUTE 13/58/460	CHESAPEAKE/SUFFOLK CL	7,383	7,623	6,547	5,487	5,370	-	6,535	6,804	6,958	7,332	-1%
ROUTE 17	NC STATE LINE	1,128	1,059	928	929	917	936	942	1,059	1,101	1,001	-11%
ROUTE 58	BETWEEN COURTLAND AND FRANKLIN	3,934	4,201	3,929	3,447	3,412	3,228	3,209	3,606	3,861	4,096	4%
ROUTE 460	EAST OF WAKEFIELD	1,801	2,188	2,144	1,890	1,936	1,955	1,927	2,020	2,010	2,106	17%
WESTERN FREEWAY	EAST OF COLLEGE DRIVE	1,956	2,309	2,563	2,386	2,533	2,491	2,695	2,915	3,231	3,591	84%

Figure 71 – Weekday Truck Volumes by Year at Selected Locations, 2006-2015

Source: HRTPO analysis of VDOT and CBBT data. Table only includes locations with vehicle classification data collected on a continuous basis. – indicates that data is not available in that particular year.

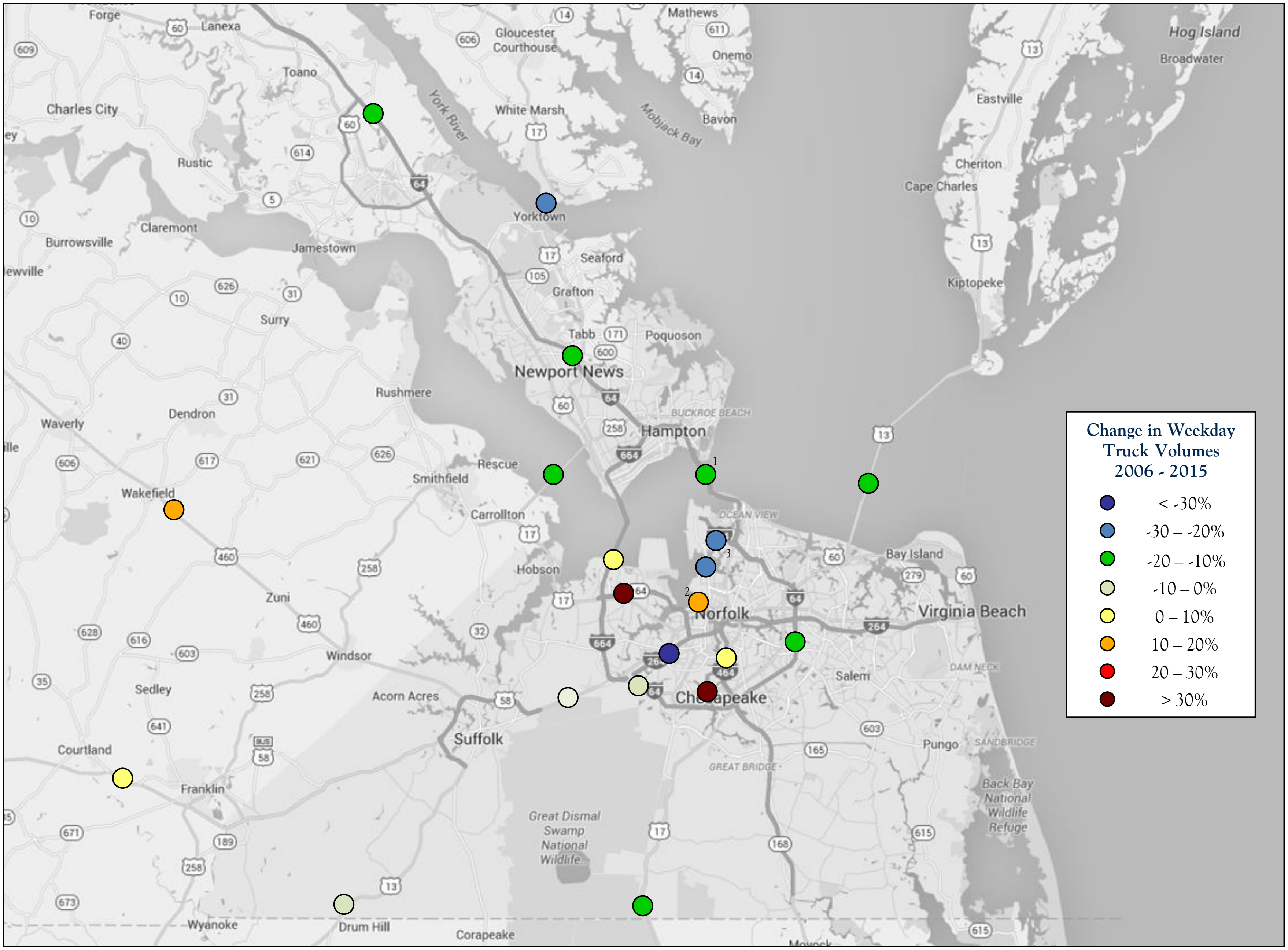
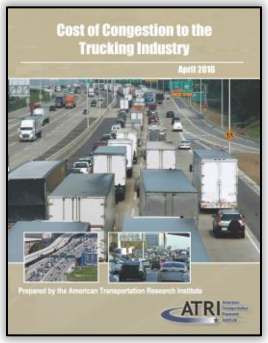


Figure 72 – Change in Weekday Truck Volumes, 2006 to 2015

Source: HRTPO analysis of VDOT and CBBT data. Base map source: Google. 1 – Change from 2008-2015. 2 – Change from 2009-2015. 3 – Change from 2006 – 2013.

TRUCK CONGESTION COSTS

According to the *Cost of Congestion to the Trucking Industry Report* that was prepared by the American Transportation Research Institute (ATRI)[27], traffic congestion on the National Highway System (NHS) added over $49.6 billion in operational costs to the trucking industry in 2014.



The ATRI report contains an analysis of three measures related to the costs of congestion to the trucking industry:

- Hours of Delay – ATRI uses commercial truck travel times and volumes from federal sources to calculate the total number of hours of delay that are incurred by the trucking industry.
- Congestion Costs – ATRI annually produces a national average operating cost figure for commercial vehicles. ATRI applied this national per-hour cost of operation to the hours of delay to determine the total cost of congestion incurred on the trucking industry.
- Congestion Costs per NHS Mile – ATRI also produced congestion costs that are normalized on a cost-per-mile basis, based on the NHS mileage.

For this study, ATRI analyzed delays and congestion costs incurred by the trucking industry on national, state, regional, and county levels. HRTPO staff obtained county-level data from ATRI in order to analyze delays and costs of congestion in comparable metropolitan areas as well as those areas with competing East Coast ports.

In Hampton Roads, ATRI determined that there were 2.7 million hours of delay incurred on the trucking industry due to congestion in 2014. Using ATRI's national average commercial vehicle operational cost of $68.09 per hour, the total congestion cost incurred by the trucking industry in Hampton Roads was $187 million in 2014. On a per-mile basis, this annual congestion cost was $146,000 per NHS mile.

The delays and costs incurred by the trucking industry in Hampton Roads are lower than in many other similar metropolitan areas. Among the 36 Metropolitan Statistical Areas in the United States with populations between one and three million people, Hampton Roads had the 26th highest number of hours of delay incurred by the trucking industry in 2014 (**Figure 73**). Tampa, Orlando, and St. Louis had delay levels more than four times higher than the delays experienced in Hampton Roads.

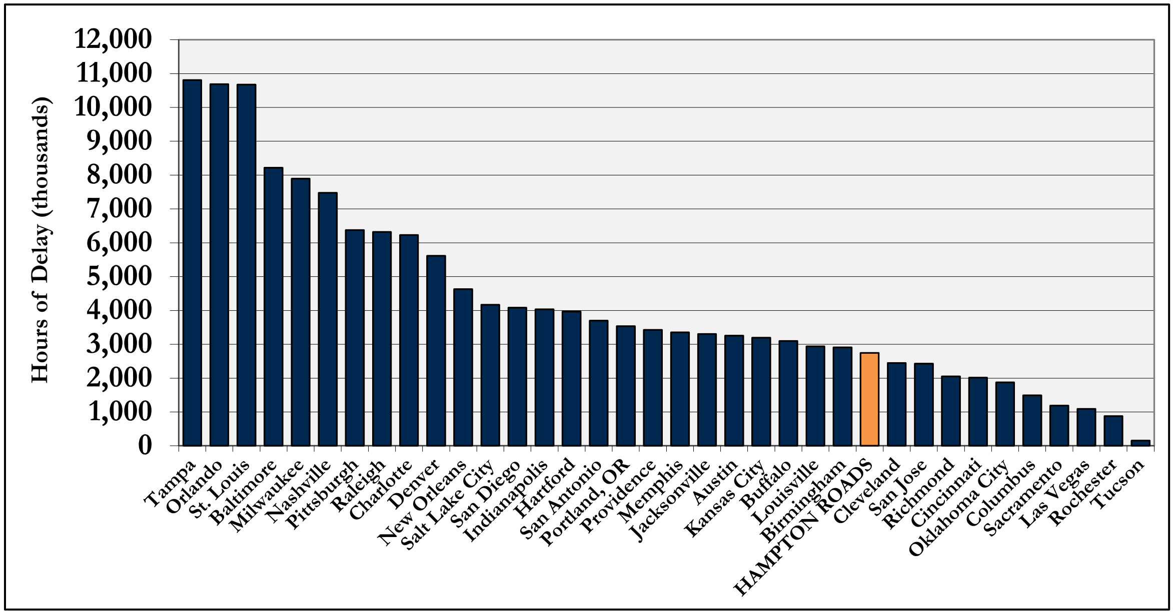


Figure 73 – Hours of Delay Incurred by the Trucking Industry in Each Metropolitan Area with Populations between One and Three Million People, 2014

Source: ATRI.

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[27] ATRI, *Cost of Congestion to the Trucking Industry Report*, April 2016.

Hampton Roads also ranked 26th highest in terms of congestion costs incurred by the trucking industry in 2014 (**Figure 74**). In areas such as Tampa, Orlando, and St. Louis, total congestion costs incurred by the trucking industry exceeded $700 million in 2014.

When trucking industry congestion costs are normalized on a per-mile basis, Hampton Roads ranked slightly higher – 25th highest – among the 36 comparable metropolitan areas (**Figure 75**). Orlando ranked highest in congestion at $500,000 per NHS mile, more than three times the $146,000 cost per mile in Hampton Roads.

Looking only at the metropolitan areas that host the ten largest East Coast ports (in terms of TEUs), **Hampton Roads had the second lowest total hours of delay incurred by the trucking industry** in 2014 (**Figure 76**). Only the Savannah metropolitan area had a lower amount of delay. The New York City metropolitan area, which hosts the largest port on the East Coast, had delay levels incurred by the trucking industry more than 20 times the delays experienced in Hampton Roads.

The congestion costs incurred by the trucking industry are also much lower in Hampton Roads than in all other metropolitan areas that host the ten largest East Coast ports other than Savannah (**Figure 77**). Congestion costs incurred by the trucking industry in New York City, for example, were more than $4 billion in 2014, as compared to $187 million in Hampton Roads.

On a per mile basis, Hampton Roads had lower congestion costs incurred by the trucking industry than all other metropolitan areas that host the ten largest East Coast ports, including Savannah (**Figure 78**). Congestion costs incurred by the trucking industry in the biggest East Coast ports were $204,000 per NHS mile in Savannah, $275,000

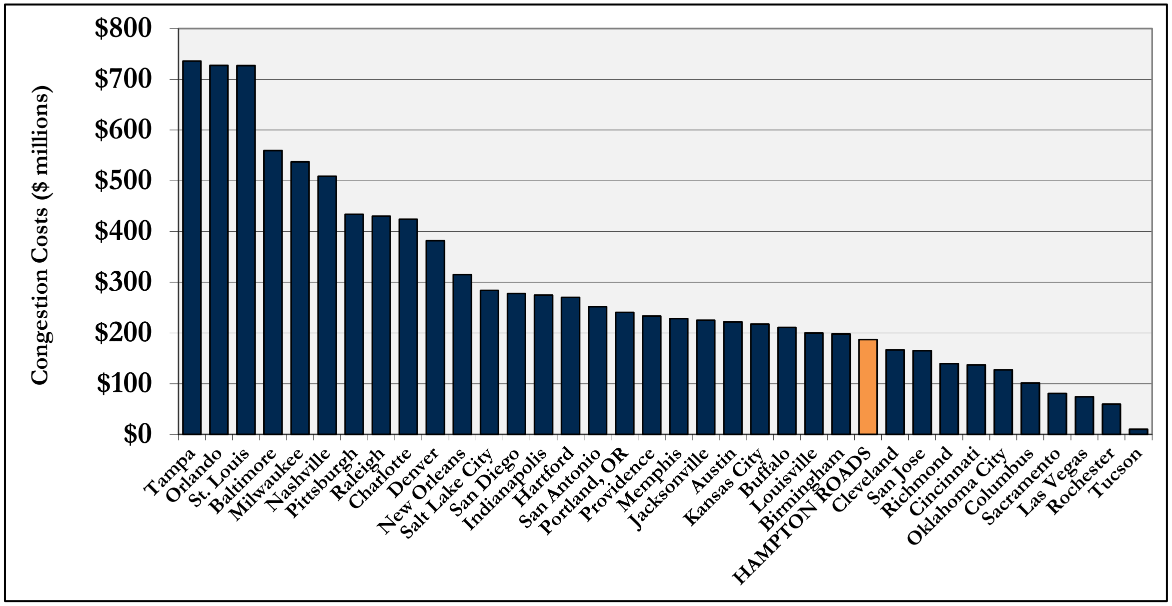


Figure 74 – Total Congestion Costs Incurred by the Trucking Industry in Each Metropolitan Area with Populations between One and Three Million People, 2014

Source: ATRI.

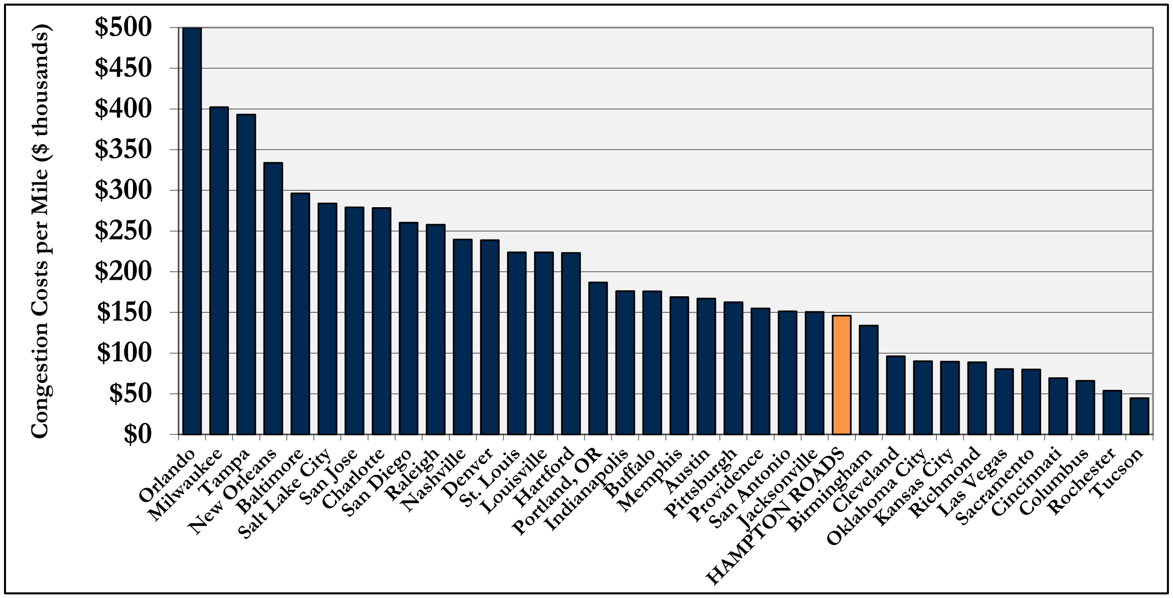


Figure 75 – Congestion Costs Incurred by the Trucking Industry per Mile in Each Metropolitan Area with Populations between One and Three Million People, 2014

Source: ATRI.

per mile in Charleston, and $602,000 per mile in New York in 2014, as compared to $146,000 per NHS mile in Hampton Roads.

Although roadway congestion clearly impacts the trucking industry in Hampton Roads and the economic competitiveness of the port, the analysis included in the ATRI *Cost of Congestion to the Trucking Industry* report indicates that **Hampton Roads has an advantage over many comparable metropolitan areas and competing East Coast ports** in terms of roadway delay and congestion costs incurred on the trucking industry.

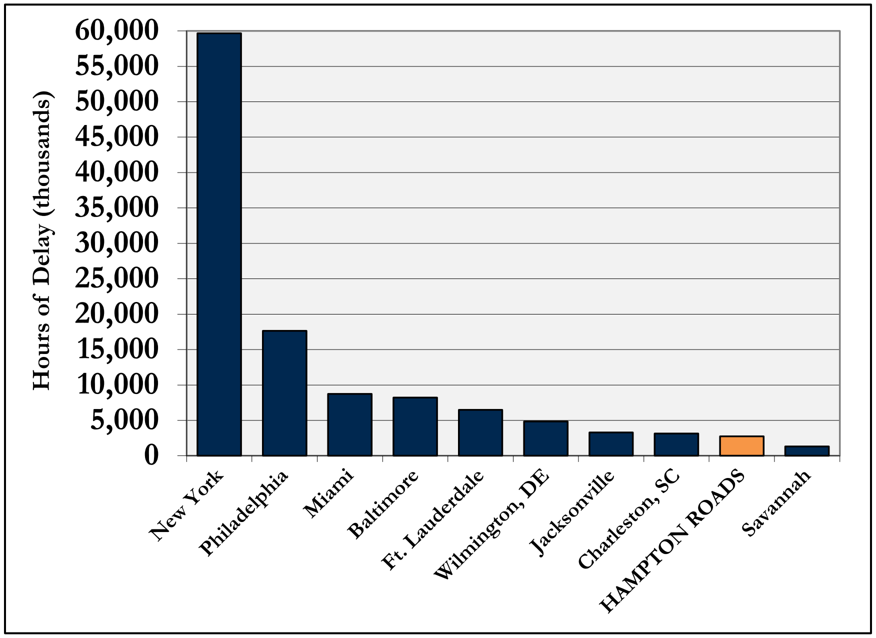


Figure 76 – Hours of Delay Incurred by the Trucking Industry in Metropolitan Areas with the Top Ten East Coast Ports, 2014

Source: ATRI.

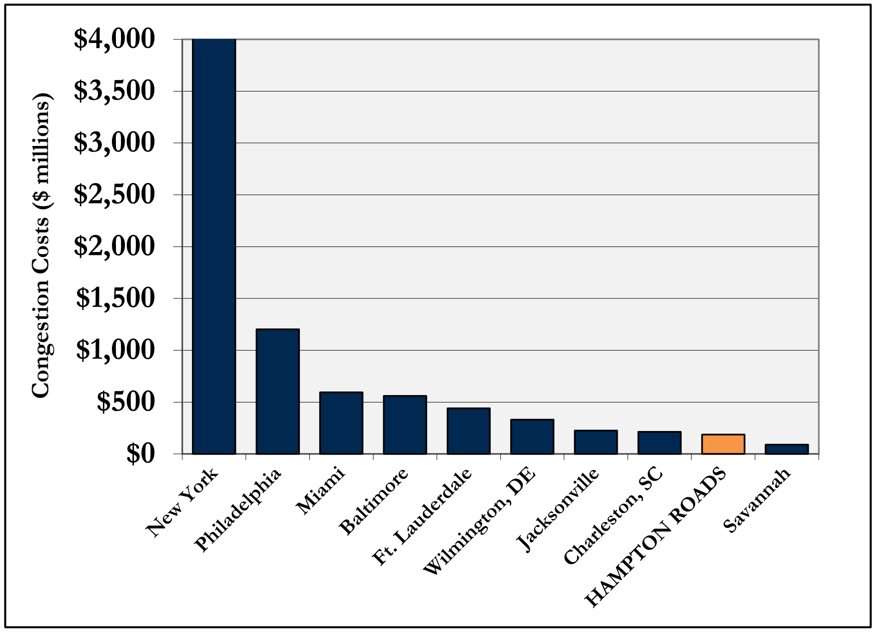


Figure 77 – Total Congestion Costs Incurred by the Trucking Industry in Metropolitan Areas with the Top Ten East Coast Ports, 2014

Source: ATRI.

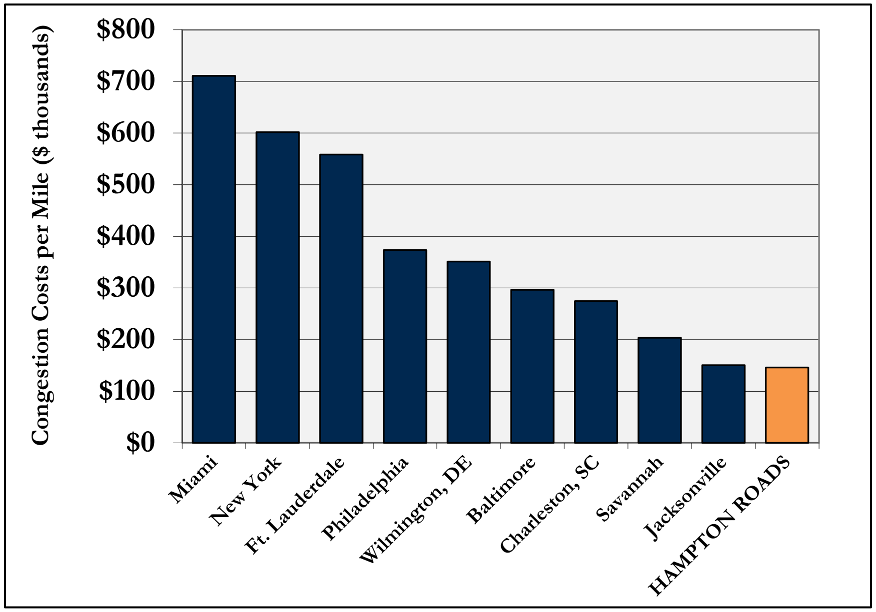


Figure 78 – Congestion Costs Incurred by the Trucking Industry per Mile in Metropolitan Areas with the Top Ten East Coast Ports, 2014

Source: ATRI.

Freight Bottlenecks

As highlighted in ATRI's report, regional roadway congestion costs truck operators time and money. In Hampton Roads, roadway congestion impacts the competitiveness of the Port of Virginia, which is one of the major tenets of the Hampton Roads economy.

HRTPO staff regularly analyzes congestion levels on the Hampton Roads roadway system. To perform these analyses, HRTPO staff uses a variety of data sources. One of the newest sources of data for vehicle travel times and speeds is collected by a company called INRIX. INRIX collects travel time and speed data on a continuous basis, using millions of GPS-enabled fleet vehicles (such as trucks, taxis, airport shuttles, and service vehicles), mobile devices, traditional road sensors, and other sources.

VDOT has purchased real-time and archived travel time and speed data from INRIX, which HRTPO staff can access through the Regional Integrated Transportation Information System (RITIS). RITIS is maintained by the University of Maryland's Center for Advanced Transportation Technology Laboratory. INRIX data is available for 1,100 miles of roadway in Hampton Roads, including all freeways and most principal and minor arterials. HRTPO refers to this roadway network with INRIX travel time and speed data as the regional Travel Time Network.

Additional information on how HRTPO collects and analyzes INRIX travel time and speed data is available starting on page 26 of HRTPO's Hampton Roads Congestion Management Process: System Performance and Mitigation report. For this study, HRTPO staff analyzed INRIX data for the entire year of 2014, since it was the midpoint of the existing truck volume data from the years 2013-2015 that was used in this study.

For this analysis, HRTPO staff needed to determine what metrics should be used to measure bottlenecks throughout the region. Based on discussions with the Freight Transportation Advisory Committee (FTAC) and the Freight Working Group, bottlenecks were measured using two metrics:

- Average delay per truck
- Total truck delay

Each of these measures are described below.

Average Delay

Average delay is the extra amount of time it takes for each vehicle (or specifically in this case, trucks) to travel a certain distance, regardless of the number of vehicles. Average delay is important because it represents the extra time experienced by each truck, and therefore reflects the impact of congestion on individual operating costs and competitiveness.

For this analysis, HRTPO staff used the INRIX travel time and speed data to determine the average delay on each roadway segment where travel time data was available. For each roadway segment, average delays were calculated for the 15-minute interval during both the AM peak travel period (5:00 am to 9:00 am) and the PM peak travel period (3:00 to 7:00 pm) when average travel times were the highest. These delays were calculated using the following formula:

$$\text{Average Peak Period Truck Delay} = \frac{\text{Average Segment Travel Time (slowest 15-minute period)}}{\text{Segment Free Flow Travel Time}}$$

These average peak period delays were then normalized on a per-mile basis to ensure that longer segments weren't given preference over shorter segments.

Figures 79 and 80 on pages 85 and 86 show the average truck delays per mile during the AM Peak Period on the regional Travel Time Network, and **Figures 81 and 82** on pages 87 and 88 show the average truck delays during the PM Peak Period. **Appendix E** also includes information on the average truck delays during both peak periods.

Figure 83 on page 89 shows the locations on the regional Travel Time Network with the highest average delay during the AM Peak Period. Not surprisingly, many of the segments with the highest average delays are on the approaches to the region's bridges and tunnels. **The segments with the highest average delays during the AM Peak Period are on I-64 approaching the Hampton Roads Bridge-Tunnel in the eastbound direction**. Delays between Rip Rap Road and Settlers Landing Road are the highest in the region, with an average delay of 3.3 minutes per mile during the AM Peak Period. Between Settlers Landing Road and Mallory Street, average delays are 2.5 minutes per mile. Additional roadway segments with the highest average delays in the AM Peak Period include

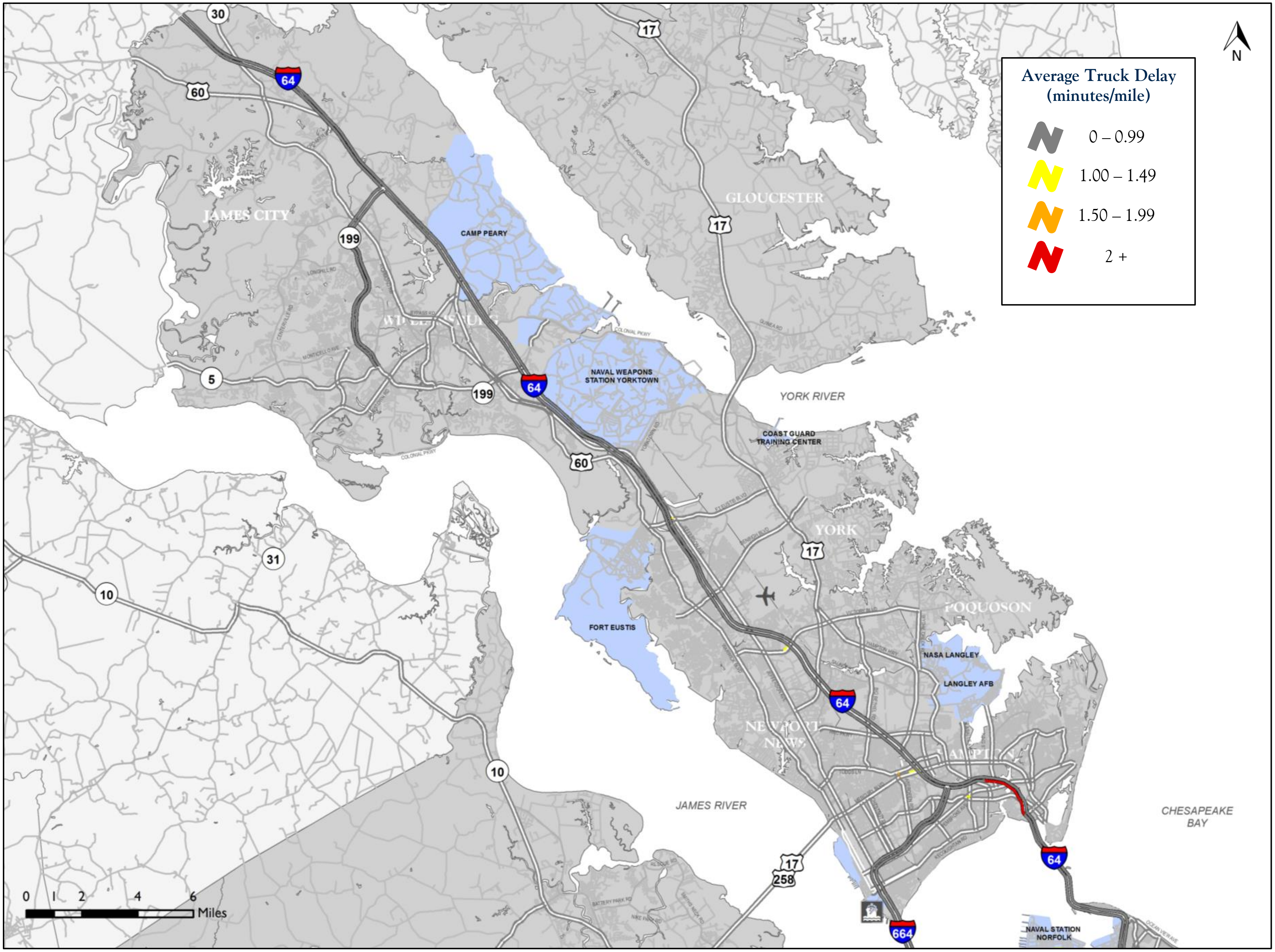


Figure 79 – Average Truck Delay, Weekday AM Peak Period, 2014 - Peninsula

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 5 am and 9 am.

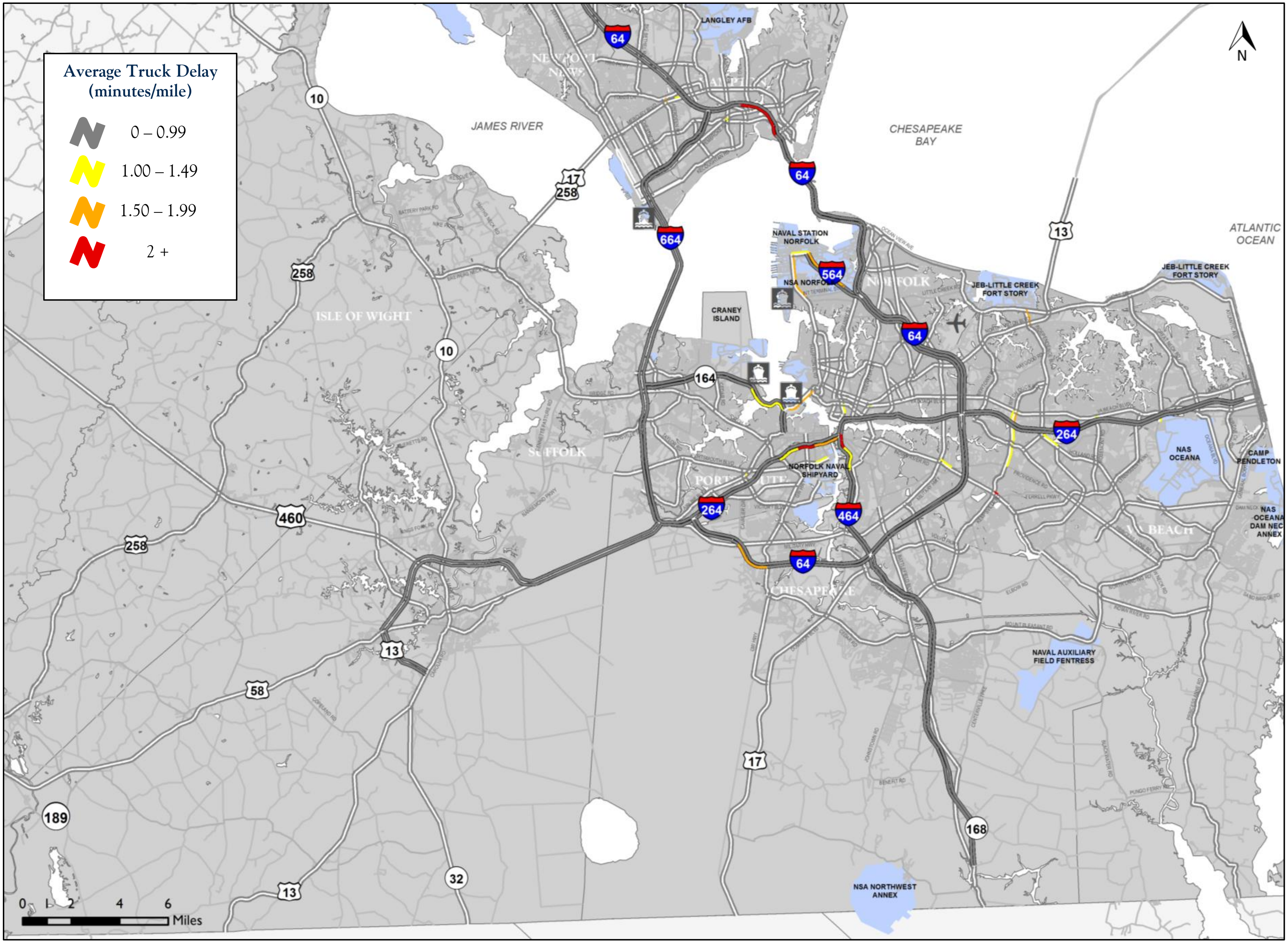


Figure 80 – Average Truck Delay, Weekday AM Peak Period, 2014 - Southside

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 5 am and 9 am.

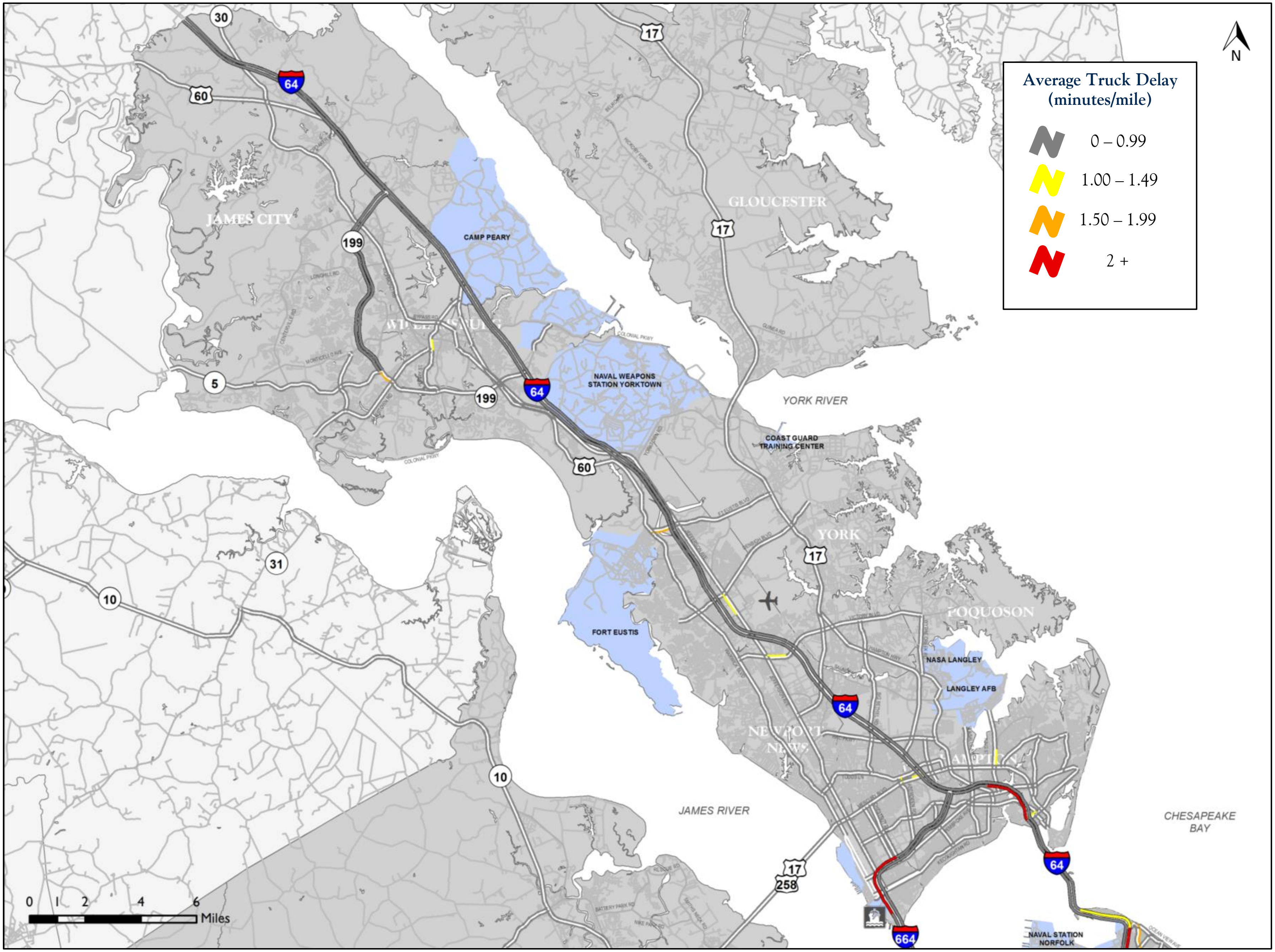


Figure 81 – Average Truck Delay, Weekday PM Peak Period, 2014 - Peninsula

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 3 pm and 7 pm.

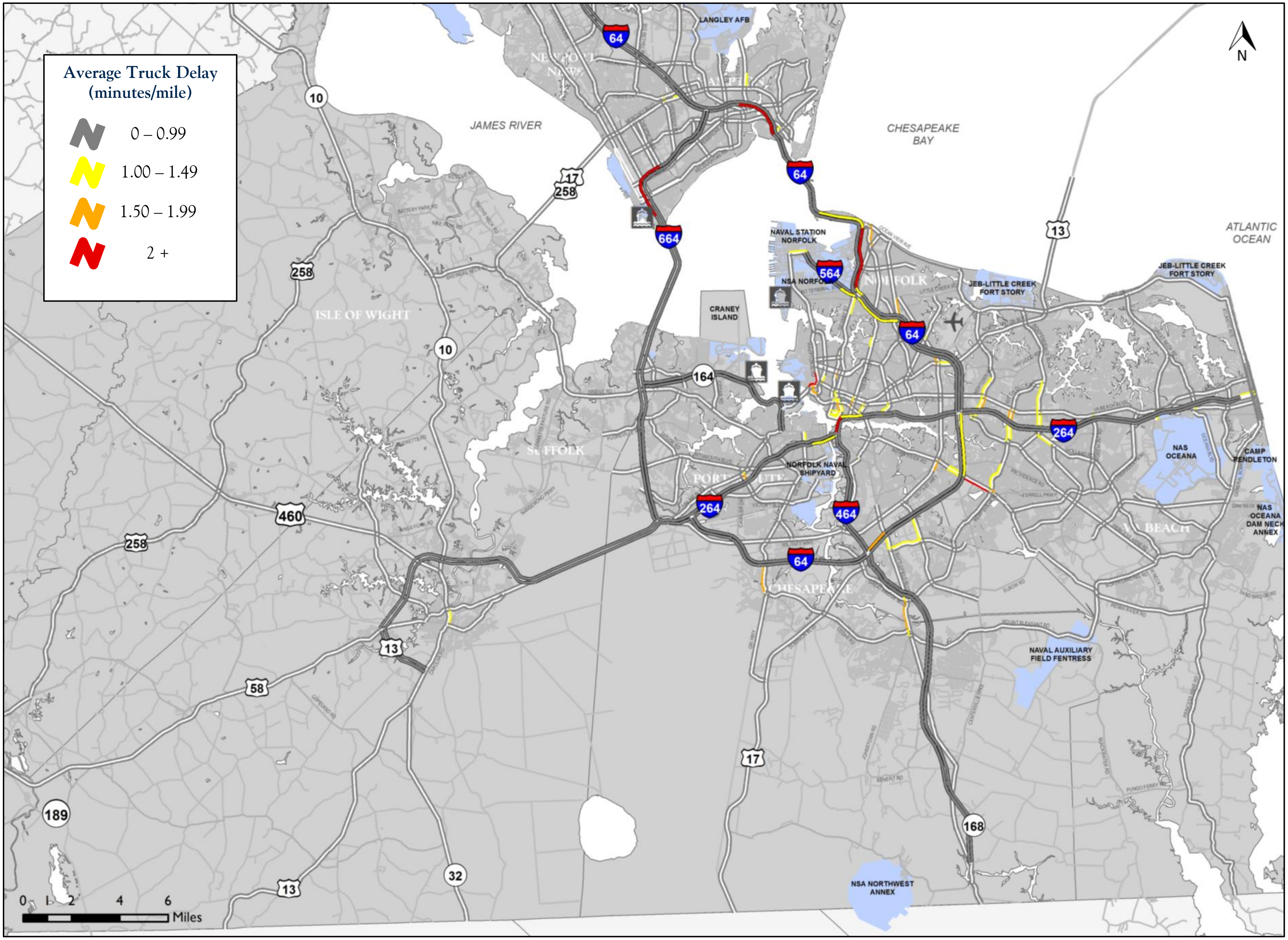


Figure 82 – Average Truck Delay, Weekday PM Peak Period, 2014 - Southside

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 3 pm and 7 pm.

westbound Indian River Road, the eastbound approaches to the Downtown Tunnel and Berkley Bridge, I-564 approaching Naval Station Norfolk, and a section of Aberdeen Road.

Figure 84 shows the locations on the regional Travel Time Network with the highest average delays during the PM Peak Period. Similar to the morning peak period, the segments with the highest average delays during the PM Peak Period are mostly approaches to bridges and tunnels. **The segment with the highest average delay during the PM Peak Period is I-664 Southbound approaching the Monitor-Merrimac Memorial Bridge-Tunnel**, with average delays of 4.1 minutes per mile between 23rd Street and Terminal Avenue. The segment between Chestnut Avenue and 23rd Street also has a high average delay at 2.6 minutes per mile.

Both approaches to the Hampton Roads Bridge-Tunnel have the next highest average delays, with average delays on the eastbound approach between Rip Rap Road and Mallory Street ranging between 2.9 and 3.6 minutes per mile, and delays on the westbound approach between Granby Street and Fourth View Avenue ranging between 2.3 and 2.7 minutes per mile.

The arterial segments with the highest average delays during the PM Peak Period are Hampton Boulevard and Brambleton Avenue approaching the westbound Midtown Tunnel, with average delays between 2.0 and 2.7 minutes per mile. Eastbound Indian River Road in Virginia Beach also has high delays, averaging between 2.2 and 2.4 minutes per mile between I-64 and Kempsville Road.

Juris.	Facility Name	Direction	Segment From	Segment To	Average Delay (Minutes/ mile)
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	3.28
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	2.48
VB	INDIAN RIVER RD	WB	FERRELL PKWY	KEMPSVILLE RD	2.17
PORT	I-264	EB	DES MOINES AVE	EFFINGHAM ST	2.12
NOR	I-464	NB	SOUTH MAIN ST	I-264	2.06
NOR	I-564	NB	INTERNATIONAL TERMINAL BLVD	ADMIRAL TAUSSIG BLVD	1.93
HAM	ABERDEEN RD	NB	MERCURY BLVD	TODDS LA	1.88
NOR/PORT	MIDTOWN TUNNEL	NB	MLK FWY/WESTERN FREEWAY	BRAMBLETON AVE	1.85
NOR/PORT	I-264/DOWNTOWN TUNNEL	EB	EFFINGHAM ST	I-464	1.66
CHES	I-64	WB	MILITARY HWY	GEORGE WASHINGTON HWY	1.65
VB	INDEPENDENCE BLVD	NB	NORTHAMPTON BLVD	SHORE DR	1.60
VB	WITCHDUCK RD	NB	I-264	VA BEACH BLVD	1.57
NOR	HAMPTON BLVD	NB	INTERNATIONAL TERMINAL BLVD	ADM TAUSSIG BLVD	1.50
PORT	I-264	EB	FREDERICK BLVD	DES MOINES AVE	1.49
VB	WITCHDUCK RD	NB	PRINCESS ANNE RD	I-264	1.45
NN	FORT EUSTIS BLVD	WB	JEFFERSON AVE	I-64	1.44
CHES/NOR	I-464	NB	POINDEXTER ST	SOUTH MAIN ST	1.42
NOR	PARK AVE	EB	VA BEACH BLVD	PRINCESS ANNE RD	1.29
PORT	WESTERN FWY	EB	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	1.27
NOR	ST PAULS BLVD	NB	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	1.26

Figure 83 – Roadway Segments with the Highest Average Delay per Truck, Weekday AM Peak Period, 2014

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 5 am and 9 am.

Juris.	Facility Name	Direction	Segment From	Segment To	Average Delay (Minutes/ mile)
NN	I-664	SB	23RD ST	TERMINAL AVE	4.14
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	3.56
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	2.93
NOR	I-64	WB	BAY AVE	4TH VIEW AVE	2.71
NOR	HAMPTON BLVD	SB	21ST ST	BRAMBLETON AVE	2.67
NN	I-664	SB	CHESTNUT AVE	23RD ST	2.63
VB	INDIAN RIVER RD	EB	I-64	CENTERVILLE TNPK	2.42
NOR	I-64	WB	GRANBY ST	BAY AVE	2.33
VB	INDIAN RIVER RD	EB	CENTERVILLE TNPK	KEMPSVILLE RD	2.21
NOR	I-264/BERKLEY BRIDGE	WB	WATERSIDE/CITY HALL/TIDEWATER	I-464	2.19
NOR	BRAMBLETON AVE	WB	COLLEY AVE	HAMPTON BLVD	1.99
CHES	BATTLEFIELD BLVD	SB	GREAT BRIDGE BLVD/KEMPSVILLE R	CEDAR RD	1.97
NOR	4TH VIEW ST	WB	OCEAN VIEW AVE	I-64	1.96
JCC/WMB	ROUTE 199	EB	JOHN TYLER HWY (RTE 5)	JAMESTOWN RD	1.90
VB	WITCHDUCK RD	NB	I-264	VA BEACH BLVD	1.89
NOR	ST PAULS BLVD	SB	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	1.86
NOR	NEWTOWN RD	NB	I-264	VA BEACH BLVD	1.85
VB	WITCHDUCK RD	SB	I-264	VA BEACH BLVD	1.78
NN	FORT EUSTIS BLVD	EB	WARWICK BLVD	I-64	1.77
VB	INDIAN RIVER RD	WB	KEMPSVILLE RD	FERRELL PKWY	1.72

Figure 84 – Roadway Segments with the Highest Average Delay per Truck, Weekday PM Peak Period, 2014

Source: HRTPO analysis of INRIX data. Value represents the delay during the 15-minute period when average travel times are the highest between 3 pm and 7 pm.

Total Delay

Total delay is the summation of all of the delay experienced by vehicles (or in this case, trucks) on a particular roadway or network. Total delay measures the overall performance of a roadway segment or network, rather than the impact on each individual traveler. Total delay can be an indicator of roadways where improvements would provide the biggest "bang for the buck", particularly for the trucking industry as a whole.

In order to determine total delays experienced by trucks on roadways throughout Hampton Roads, HRTPO staff combined INRIX travel time and speed data with the existing truck volume data shown previously in this report. Because vehicle classification data is not available for every location on the regional Travel Time Network, estimates of truck volumes and daily truck volume distributions were needed for the remaining roadway segments in the regional Travel Time Network without vehicle classification data.

For those locations where vehicle classification count data is not collected, HRTPO staff used VDOT estimates of daily truck percentages. VDOT produces these estimates by using adjacent or nearby roadway segments on the same route where vehicle classification data is collected. HRTPO staff combined these estimated daily truck percentages with traffic volume count data to determine an estimate of daily truck volumes for each remaining roadway segment, and then applied time of day truck distributions from the adjacent or nearby linked locations.

For each roadway segment where travel time data was available, total truck delays were calculated for each 15-minute interval during the AM peak travel period (5:00 am to 9:00 am) and PM peak travel period (3:00 to 7:00 pm). These delays were calculated using the following formula:

$$\text{Total Truck Delay} = \frac{\text{Truck Volume x Segment Length}}{\text{Segment Actual Travel Speed}} - \frac{\text{Truck Volume x Segment Length}}{\text{Segment Free Flow Travel Speed}}$$

These 15-minute delays were then summed up for each roadway segment to determine total AM and PM Peak Period truck delay values each weekday, and then normalized on a per-mile basis to ensure that longer segments weren't preferred over shorter segments.

Figures 85 and 86 on pages 91 and 92 show the total truck delays per mile during the AM Peak Period on the Regional Travel Time Network, and **Figures 87 and 88** on pages 93 and 94 show the same information during the PM Peak Period. **Appendix F** also includes information on the total truck delays for each roadway segment.

High Rise Bridge Backup

VDOT

Figure 89 on page 95 shows the locations on the regional Travel Time Network with the highest total truck delays per mile during the AM Peak Period. As with average delays, most of the segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. **The segments with the highest total truck delays during the AM Peak Period are on the approach to the eastbound Hampton Roads Bridge-Tunnel.** The segment between Rip Rap Road and Settlers Landing Road experiences a total of 7.3 truck-hours of delay per mile each weekday during the AM Peak Period, and the segment between Settlers Landing Road and Mallory Street experiences 6.9 truck-hours of delay per mile.

The roadway segments with the next highest total truck delays include I-64 Westbound approaching the High Rise Bridge between Military Highway and George Washington Highway (with 6.0 truck-hours of delay per mile each weekday during the AM Peak Period), followed by two approaches to the northbound Midtown Tunnel (4.3 – 4.9 truck-hours of delay per mile) and two segments of Eastbound I-264 approaching the Downtown Tunnel (4.0 – 4.2 truck-hours of delay per mile).

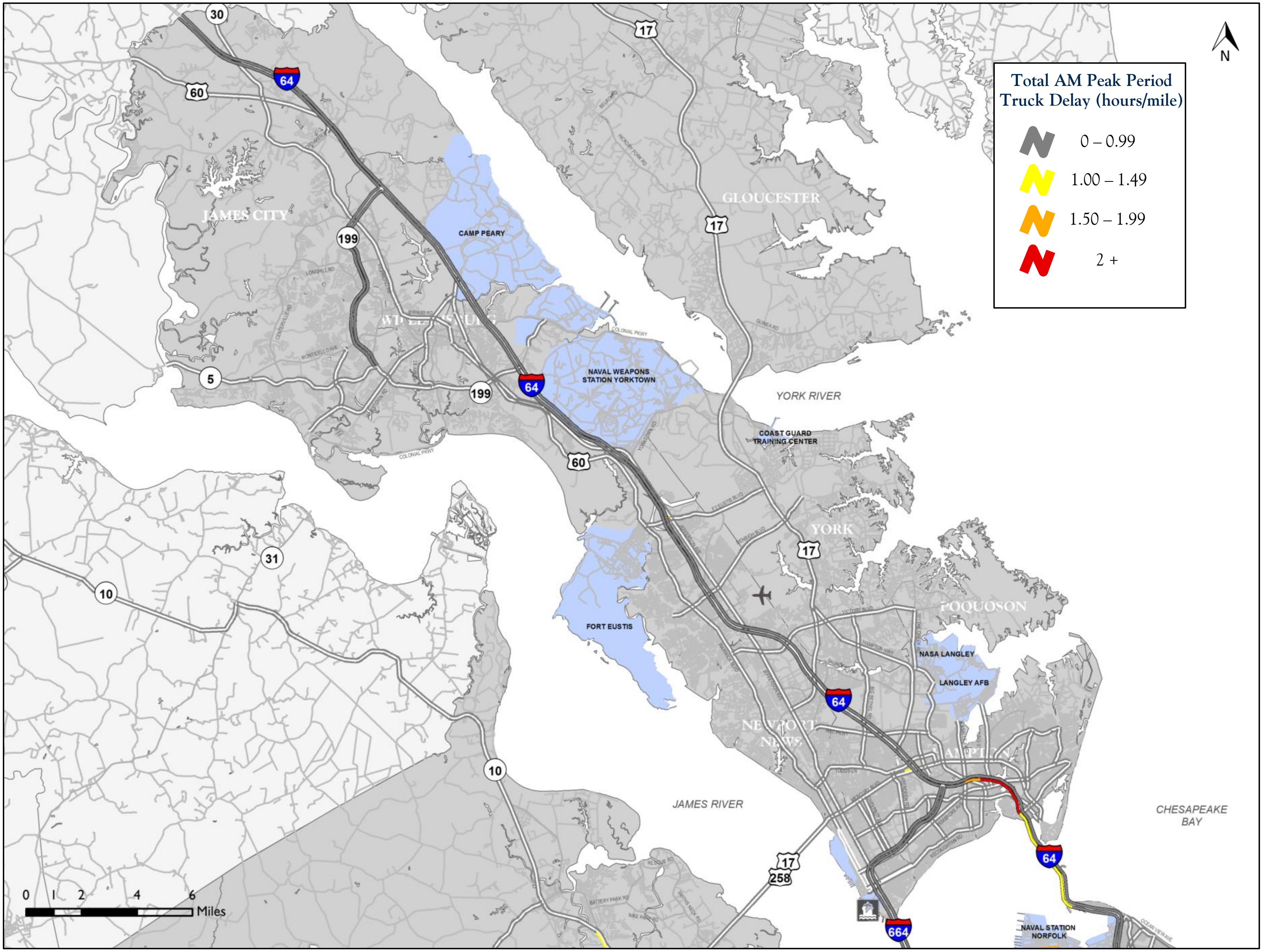


Figure 85 – Total Truck Delay, Weekday AM Peak Period, 2014 - Peninsula

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

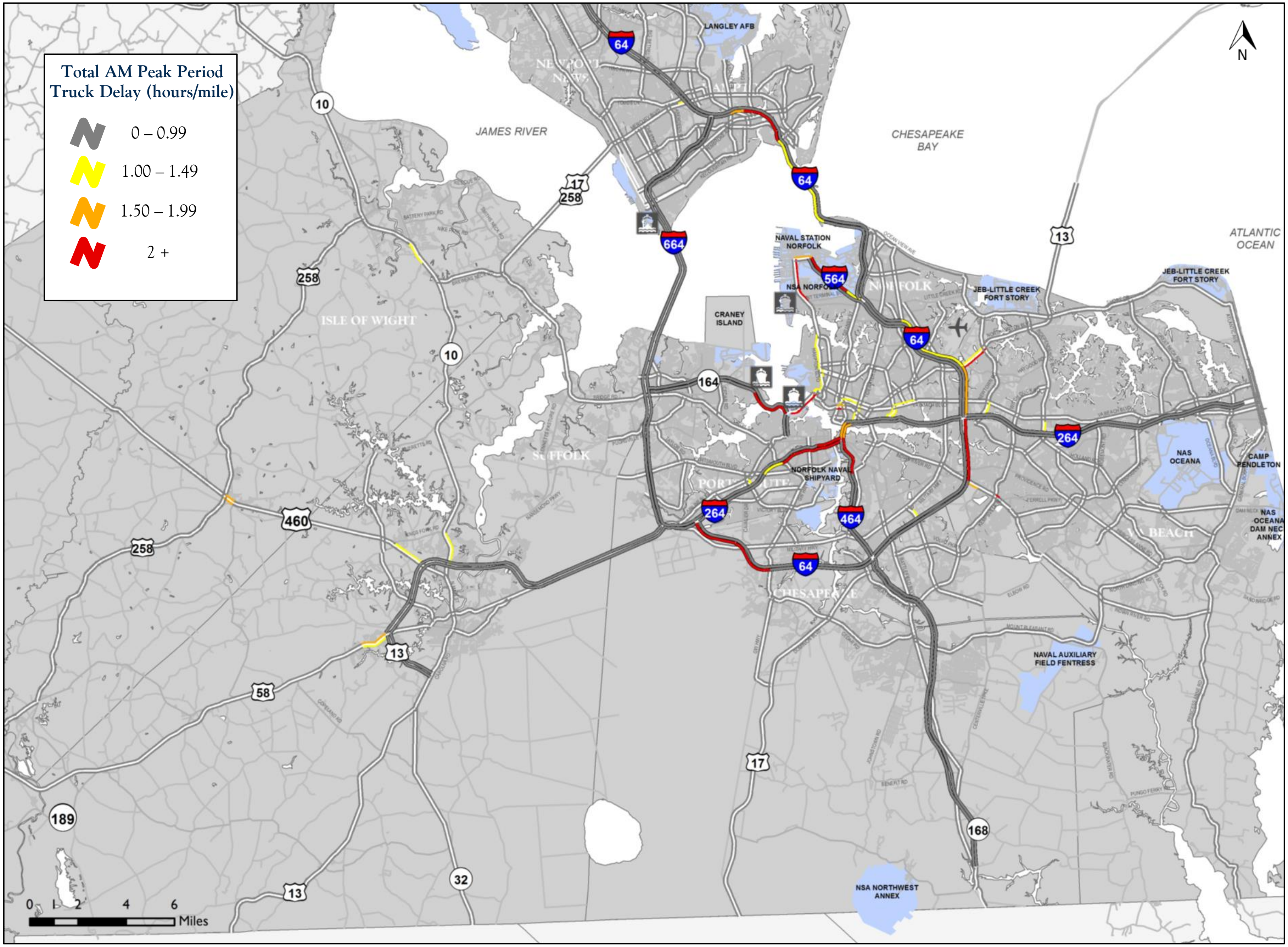


Figure 86 – Total Truck Delay, Weekday AM Peak Period, 2014 - Southside

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

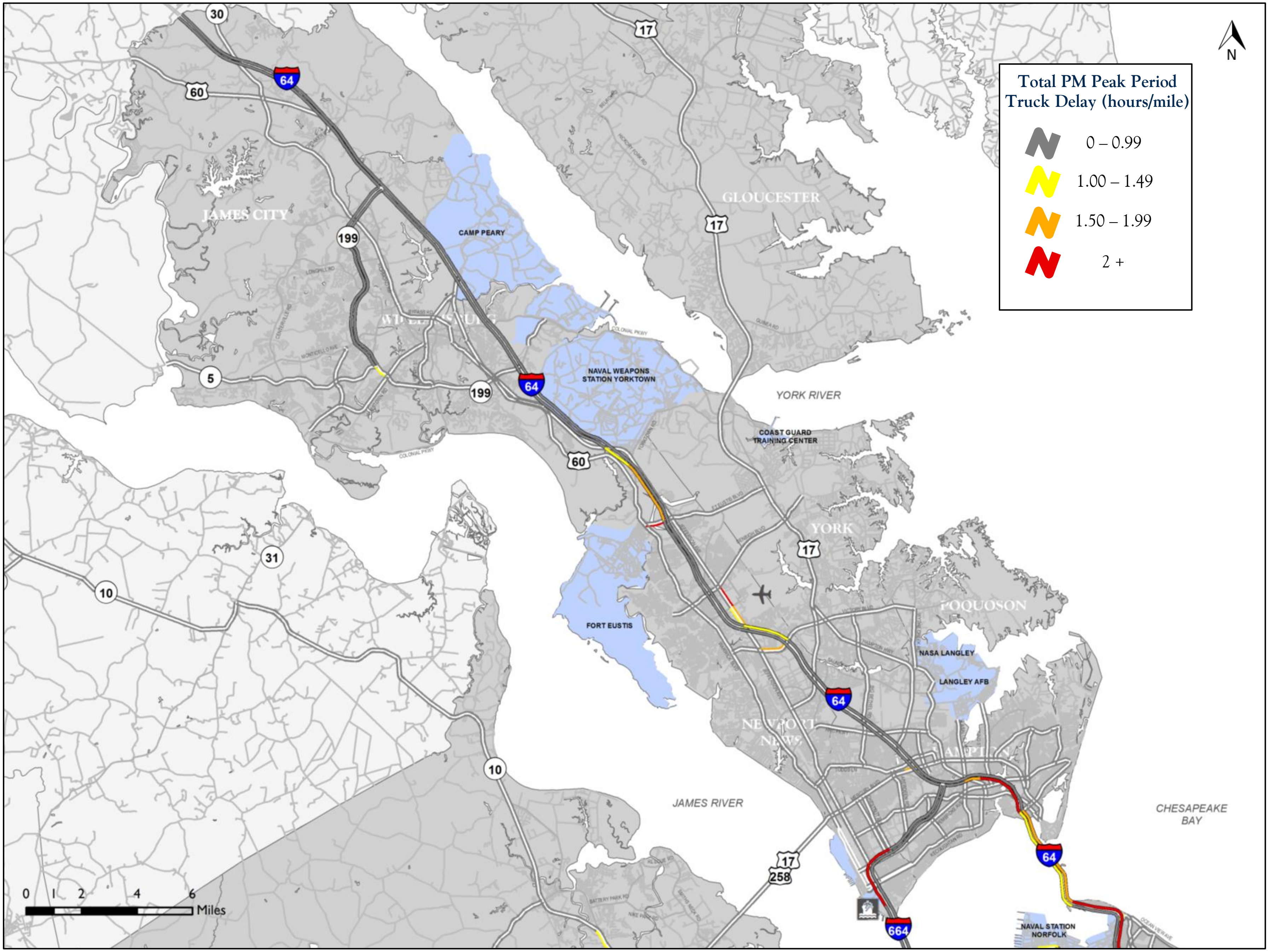


Figure 87 – Total Truck Delay, Weekday PM Peak Period, 2014 - Peninsula

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

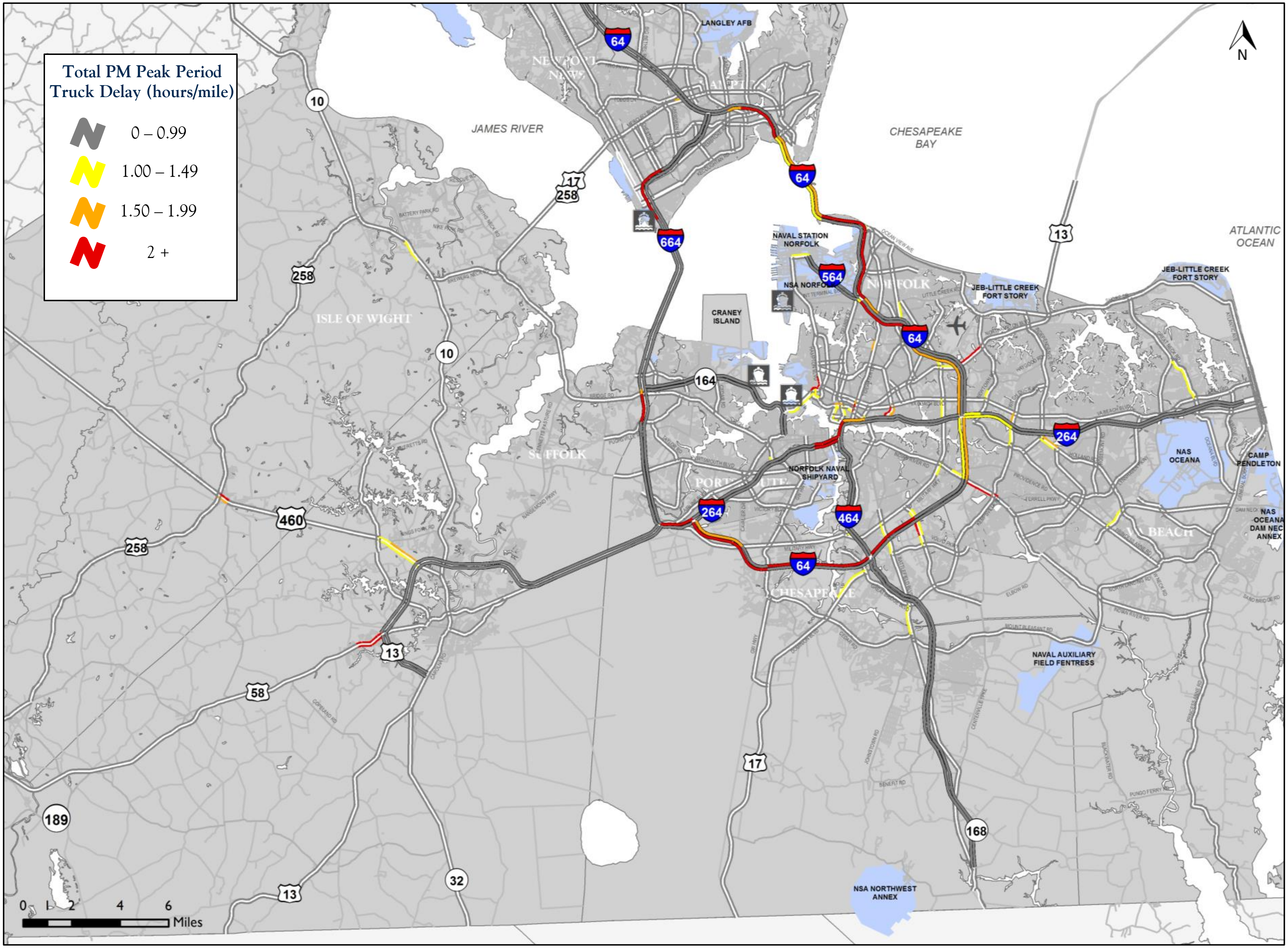


Figure 88 – Total Truck Delay, Weekday PM Peak Period, 2014 - Southside

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

Figure 90 shows the locations on the regional Travel Time Network with the highest total truck delays per mile during the PM Peak Period. While most of the segments with the highest total truck delays are on the approaches to bridges and tunnels, **the roadway segment with the highest total truck delay in the region is eastbound Indian River Road between I-64 and Centerville Turnpike**, with a total of 9.8 truck-hours of delay per mile each weekday during the PM Peak Period. The adjacent segment of eastbound Indian River Road between Centerville Turnpike and Kempsville Road has the fourth highest delay, with 7.5 truck-hours of delay per mile each weekday during the PM Peak Period.

Other segments with the highest truck delay during the PM Peak Period include Southbound I-664 approaching the Monitor-Merrimac Memorial Bridge-Tunnel (6.4 - 7.8 truck-hours of delay per mile each weekday during the PM Peak Period), I-64 approaching the Hampton Roads Bridge-Tunnel in both directions (7.5 truck hours per mile eastbound, 3.2 truck hours per mile westbound), and other sections of I-64 in Norfolk and in Chesapeake (approaching the High Rise Bridge).

Juris.	Facility Name	Direction	Segment From	Segment To	Total Truck Delay (Hours/mile)
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	7.28
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	6.91
CHES	I-64	WB	MILITARY HWY	GEORGE WASHINGTON HWY	5.98
NOR/PORT	MIDTOWN TUNNEL	NB	MLK FWY/WESTERN FREEWAY	BRAMBLETON AVE	4.93
PORT	WESTERN FWY	EB	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	4.31
PORT	I-264	EB	DES MOINES AVE	EFFINGHAM ST	4.22
NOR/PORT	I-264/DOWNTOWN TUNNEL	EB	EFFINGHAM ST	I-464	4.01
NOR	I-464	NB	SOUTH MAIN ST	I-264	3.71
VB	INDIAN RIVER RD	WB	FERRELL PKWY	KEMPSVILLE RD	3.27
PORT	I-264	EB	FREDERICK BLVD	DES MOINES AVE	3.17
NOR	NORTHAMPTON BLVD	EB	I-64	WESLEYAN DR/VA BEACH CL	3.00
NOR/VB	I-64	WB	INDIAN RIVER RD	I-264	2.67
NOR	I-564	NB	INTERNATIONAL TERMINAL BLVD	ADM TAUSSIG BLVD	2.67
NOR	HAMPTON BLVD	NB	INTERNATIONAL TERMINAL BLVD	ADM TAUSSIG BLVD	2.61
NOR	BRAMBLETON AVE	EB	BOUSH ST	ST PAULS BLVD	2.55
VB	NORTHAMPTON BLVD	EB	WESLEYAN DR/NORFOLK CL	DIAMOND SPRINGS RD	2.37
CHES/NOR	I-464	NB	POINDEXTER ST	SOUTH MAIN ST	2.32
CHES	I-64	WB	I-264&664	MILITARY HWY	2.11
NOR/PORT	I-264/DOWNTOWN TUNNEL	WB	I-464	EFFINGHAM ST	2.03
NOR	ADMIRAL TAUSSIG BLVD	WB	I-564	HAMPTON BLVD	1.85

Figure 89 – Roadway Segments with the Highest Total Truck Delay, Weekday AM Peak Period, 2014

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

Juris.	Facility Name	Direction	Segment From	Segment To	Total Truck Delay (Hours/mile)
VB	INDIAN RIVER RD	EB	I-64	CENTERVILLE TNPK	9.81
NN	I-664	SB	23RD ST	TERMINAL AVE	7.77
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	7.54
VB	INDIAN RIVER RD	EB	CENTERVILLE TNPK	KEMPSVILLE RD	7.53
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	7.05
NOR	I-64	WB	BAY AVE	4TH VIEW AVE	6.66
NN	I-664	SB	CHESTNUT AVE	23RD ST	6.44
NOR	I-64	WB	GRANBY ST	BAY AVE	5.66
CHES	I-64	EB	BATTLEFIELD BLVD	I-464	5.46
NOR	I-64	WB	4TH VIEW AVE	OCEAN VIEW AVE	4.20
NOR	I-64	EB	I-564/LITTLE CREEK RD	TIDEWATER DR	3.72
CHES	I-664	WB	I-64 & I-264	ROUTES 13/58/460	3.62
CHES	I-64	WB	MILITARY HWY	GEORGE WASHINGTON HWY	3.37
NOR	I-264/BERKLEY BRIDGE	WB	WATERSIDE/CITY HALL/TIDEWATER	I-464	3.32
NOR	I-64	WB	I-564/LITTLE CREEK RD	GRANBY ST	3.24
NOR/PORT	I-264/DOWNTOWN TUNNEL	WB	I-464	EFFINGHAM ST	3.19
NN	FORT EUSTIS BLVD	EB	WARWICK BLVD	I-64	3.06
NOR	HAMPTON BLVD	SB	21ST ST	BRAMBLETON AVE	3.01
VB	INDIAN RIVER RD	WB	FERRELL PKWY	KEMPSVILLE RD	2.99
NOR	I-64	EB	CHESAPEAKE BLVD	NORVIEW AVE	2.99

Figure 90 – Roadway Segments with the Highest Total Truck Delay, Weekday PM Peak Period, 2014

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

In addition to looking at individual roadway segments, HRTPO staff determined total peak period delays for the trucking industry at eleven high profile corridors throughout the region. These high profile locations – which are shown in **Figure 91** – are traffic bottlenecks such as the region's bridges and tunnels.

The corridor that has the highest weekday peak period truck delay in the region is the Hampton Roads Bridge-Tunnel (HRBT). Each weekday, there are over 80 truck-hours of delay in the HRBT corridor, with 24 hours of delay occurring during the AM Peak Period and 56 hours occurring during the PM Peak Period (**Figure 92**). Over the course of a year, this peak period truck delay amounts to over 20,000 hours at the HRBT. Using ATRI's $68.09 national average commercial vehicle operating cost per hour, **the peak period congestion costs for the HRBT corridor equates to nearly $1.4 million annually for the trucking industry**.

The I-64/High Rise Bridge corridor in Chesapeake has the second highest weekday peak period truck delay, at an average of 63 hours each weekday. This adds up to nearly 16,000 hours of delay and $1.1 million in congestion costs incurred by the trucking industry annually.

The high profile locations with the next highest truck delays and congestion costs are the Downtown Tunnel, I-64/I-564 corridor in Norfolk, the I-64/I-264 interchange area in Norfolk, and the Midtown Tunnel. It should be noted, however, that the Monitor-Merrimac Memorial Bridge-Tunnel has the third highest truck delays during the PM Peak Period.

Many of these corridors have projects currently underway or programmed in the next few years. In 2016, a new tube opened at the Midtown Tunnel and widening of a section of Route 17 in York County was completed. Construction has also started on phases of I-64 on the Peninsula and the I-64/I-264 Interchange. By 2025, widenings of the Hampton Roads Bridge-Tunnel, I-64 on the Peninsula, I-64 in Chesapeake, and Holland Road in Suffolk should be completed. **Figure 93** shows the location and description of the Hampton Roads Regional Priority Projects.

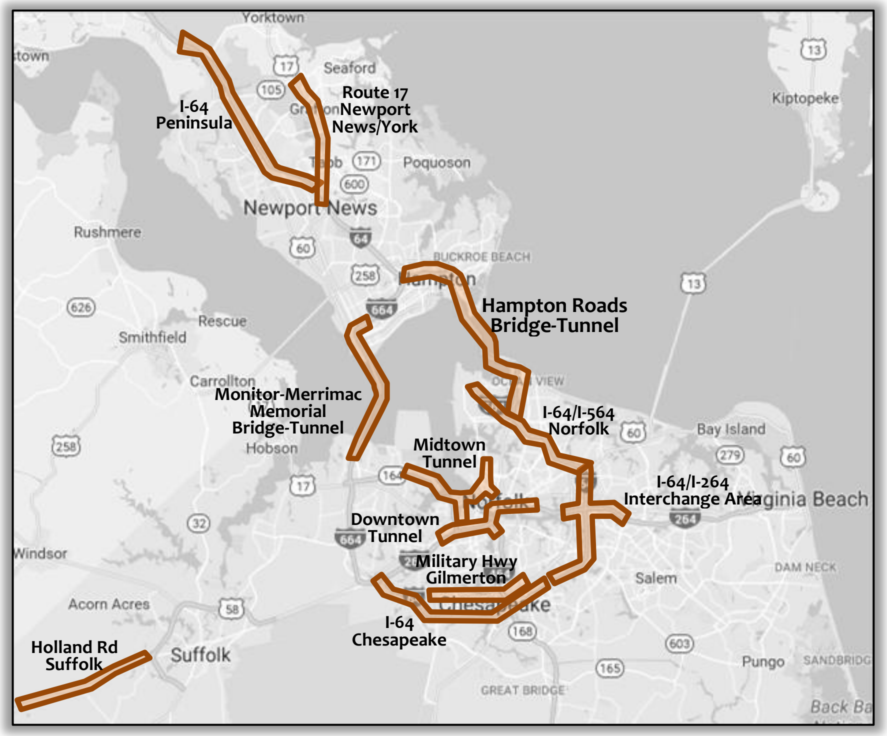


Figure 91 – High Profile Regional Corridors

Base Map Source: Google.

Corridor	AM Peak Period Truck Delay (hours)	PM Peak Period Truck Delay (hours)	Weekday Peak Period Truck Delay (hours)	Annual Peak Period Truck Delay (hours)	Annual Congestion Cost Incurred by Trucking Industry ($ millions)
Hampton Roads Bridge-Tunnel	24.18	56.59	80.76	20,191	$1.37
I-64 Chesapeake	21.06	42.24	63.30	15,824	$1.08
Downtown Tunnel	17.12	13.02	30.14	7,535	$0.51
I-64/I-564 Norfolk	13.09	16.49	29.58	7,396	$0.50
I-64/I-264 Interchange Area	12.45	16.67	29.12	7,280	$0.50
Midtown Tunnel	17.91	7.13	25.04	6,260	$0.43
Monitor-Merrimac Mem. Bridge-Tunnel	1.55	22.09	23.64	5,909	$0.40
I-64 Peninsula	5.77	13.79	19.56	4,890	$0.33
Holland Rd - Suffolk	6.23	10.42	16.65	4,163	$0.28
Route 17 - Newport News/York	3.68	4.28	7.95	1,989	$0.14
Military Hwy - Gilmerton	2.78	4.83	7.61	1,902	$0.13

Figure 92 – Truck Delay in High Profile Regional Corridors, 2014

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data.

HAMPTON ROADS REGIONAL PRIORITY PROJECTS

I-64 PENINSULA WIDENING
Widen to six lanes from Jefferson Ave. (Exit 255) to Route 199 West of Williamsburg (Exit 234), including improvements to the Fort Eustis Blvd. Interchange (Exit 250)

VISION PLAN
Remaining segments of Hampton Roads Crossing Study Supplemental Environmental Impact Statement (HRCS SEIS) to be included in the 2040 Regional Transportation Vision Plan:

- I-664 from Hampton Coliseum to Bowers Hill, including Monitor-Merrimac Memorial Bridge-Tunnel
- I-664 Connector/I-564 Connector
- VA 164 Connector
- VA 164 widening to six lanes from VA 164 Connector to I-664

I-64 WIDENING INCLUDING HAMPTON ROADS BRIDGE-TUNNEL
Widen to six lanes from I-664 (Hampton Coliseum) to I-564, including the Hampton Roads Bridge-Tunnel

I-64/I-264 INTERCHANGE

- Improvements from I-64 Westbound ramp to I-264 Eastbound through Witchduck Rd.
- Improvements to Newtown Rd. and Witchduck Rd. interchanges
- New system of collector-distributor roads
- Study the remaining movements of the I-64/I-264 Interchange

US ROUTE 460/58/13 CONNECTOR
Improve section to interstate standards from Bowers Hill to eastern end of Suffolk Bypass; includes new interchanges at the Regional Landfill and Hampton Roads Executive Airport

BOWERS HILL INTERCHANGE
Improvements to interchange

I-64 SOUTHSIDE WIDENING INCLUDING HIGH RISE BRIDGE
Improvements from I-464 to I-664

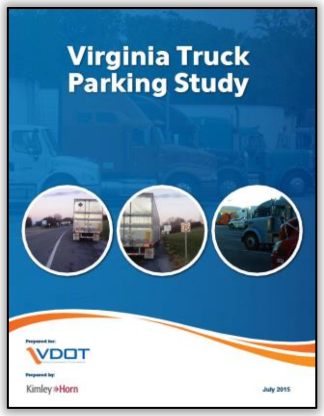
- Phase I - Widen to 6 lanes
- Phase II - Widen to 8 lanes

Figure 93 – Hampton Roads Regional Priority Projects

Source: HRTPO and HRTAC, January 2017.

TRUCK PARKING CHALLENGES

One of the largest challenges facing the freight movement industry is the availability of parking for trucks when drivers are tired or reach their mandatory rest periods. Drivers cannot always find parking spaces at rest areas or commercial truck stops, and often park on shoulders of roadway mainlines and ramps or other undesignated locations, increasing the risk of crashes and accelerating the deterioration of the pavement on shoulders.


Virginia Truck Parking Study

VDOT

Kimley-Horn

July 2015

[Click here to view the report](#)

In July 2015, VDOT completed a statewide *Virginia Truck Parking Study*[28]. According to the FY 2015 VDOT Business Plan, the purpose was to "identify areas where commercial truck parking is needed along 14 Corridors of Statewide Significance (CoSS) to provide safe places for truckers to rest so they do not impede traffic by parking on entrance and exit ramps." VDOT has indicated that this is a top priority for the statewide freight community.

The following challenges related to truck parking were included in the study:

- Trucks that park on the mainline and ramp shoulders pose a significant safety risk to the traveling public.
- Trucks parking in undesignated areas cause significant maintenance challenges for VDOT and commercial truck stop owners. Many truck parking facilities are not designed to meet the current size requirements for trucks. Examples of damages include light poles, shoulders, sidewalks, curbs, and landscaped areas.
- According to stakeholder surveys, there is a shortage of truck parking supply in Virginia, with the most significant shortages in Northern Virginia, Hampton Roads, and Southwest Virginia areas. In addition, there are shortages near state borders.
- Contributing reasons for trucks parking in undesignated areas include truckers do not know where truck parking spaces are available, many facilities are over capacity, and many shippers and receivers have scheduled delivery and pick-up times that are not flexible and do not allow on-site truck parking, which increases the demand for staging areas.
- Over 70% of surveyed truckers are concerned about personal safety during overnight parking.
- Truckers stated that recent Hours of Service (HOS) regulation changes require an increase in the frequency of their rest stops, which makes it difficult to plan routes and stops, especially through congested corridors, due to travel time unreliability.
- Due to the impact of port terminals, there is a significant need for terminal truck staging and port-specific truck parking in the Hampton Roads region. Additional local needs include parking near the port terminals and parking for long-haul truck trips and regional truck trips.

As part of the study, VDOT prepared a statewide inventory of truck parking spaces (**Figure 95** on page 99) and truck parking demand (**Figure 96** on page 100). Many corridors throughout the state have a deficit between the demand for parking and the number of available spaces. Among the 14 Corridors of Statewide Significance, there is a deficit of nearly 5,000 truck parking spaces according to VDOT's analysis.

In the Hampton Roads area, there is currently a deficit of 848 truck parking spaces (**Figure 94**). Most of this deficit is due to I-64, which has a demand of 562 more truck parking spaces than are available. Due to these parking deficits that exist for many corridors in Hampton Roads, regional stakeholders will need to continue working with VDOT to improve these deficiencies.

Figure 94 – Summary of Truck Parking Net Demand – Hampton Roads

Data Source: VDOT – Virginia Truck Parking Study, Pg. 57, July 2015.

Major Corridors	Truck Parking Spaces (+) Surplus / (-) Deficit		
	NB/EB	SB/WB	Total
I-64 (East of I-95)	-259	-303	-562
I-664	-55	-57	-112
I-264	-55	-55	-110
I-464	-8	-8	-16
US 460 (East of I-95)	-23	-23	-46
US 58 (East of I-85)	-26	+57	+31
US 17 (NC line to I-95)	-47	-47	-94
US 13 (NC line to Eastern Shore)	+55	+55	+110
US 60	-25	-24	-49
	Net Demand =		-848

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[28] Virginia Department of Transportation, Virginia Truck Parking Study, Prepared by Kimley Horn, July 2015.

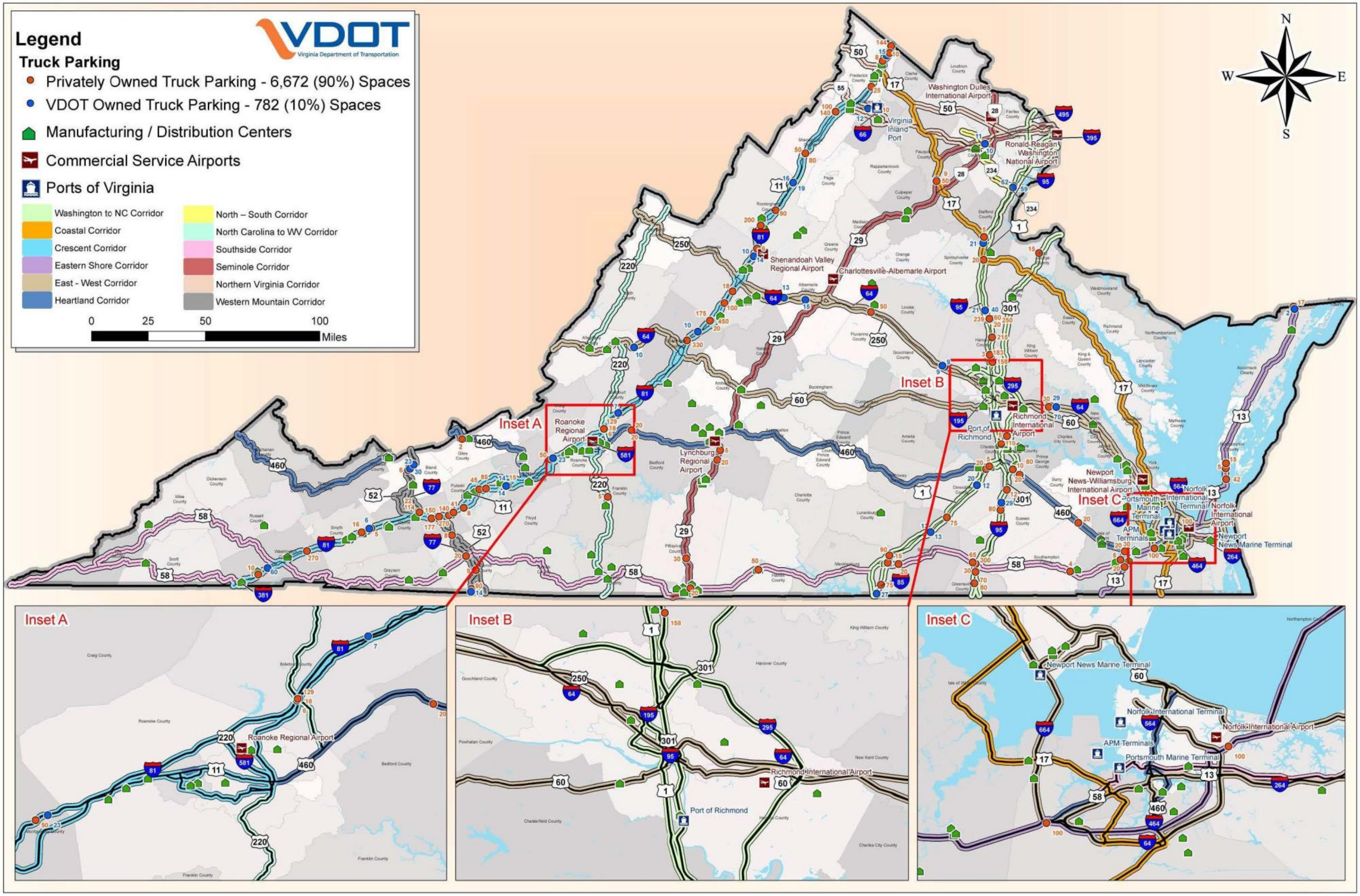
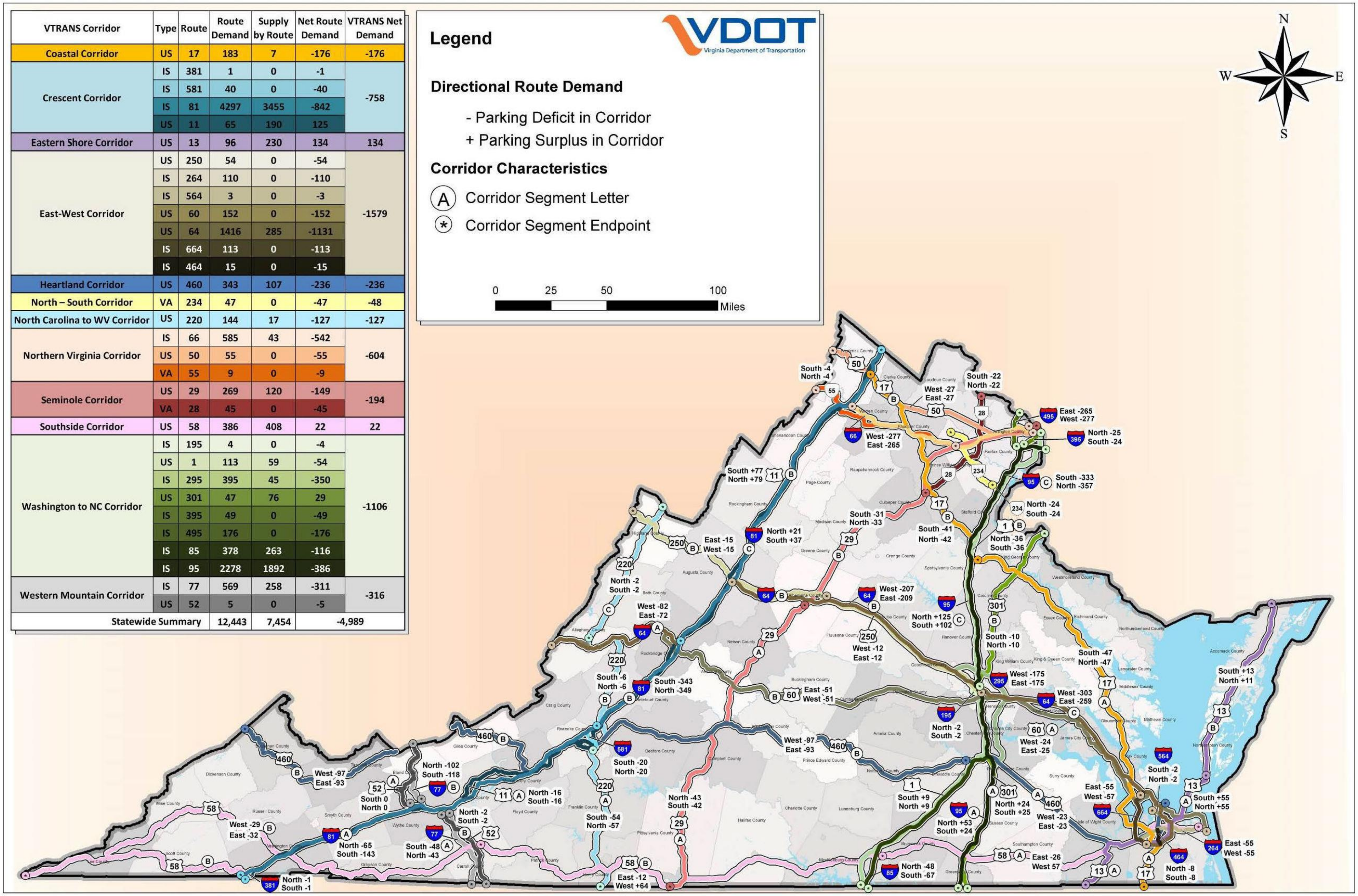


Figure 95 – Truck Parking Inventory with Distribution Centers

Source: VDOT, Virginia Truck Parking Study, July 2015.



VTRANS Corridor	Type	Route	Route Demand	Supply by Route	Net Route Demand	VTRANS Net Demand
Coastal Corridor	US	17	183	7	-176	-176
Crescent Corridor	IS	381	1	0	-1	-758
	IS	581	40	0	-40	
	IS	81	4297	3455	-842	
	US	11	65	190	125	
Eastern Shore Corridor	US	13	96	230	134	134
East-West Corridor	US	250	54	0	-54	-1579
	IS	264	110	0	-110	
	IS	564	3	0	-3	
	US	60	152	0	-152	
	US	64	1416	285	-1131	
	IS	664	113	0	-113	
	IS	464	15	0	-15	
Heartland Corridor	US	460	343	107	-236	-236
North – South Corridor	VA	234	47	0	-47	-48
North Carolina to WV Corridor	US	220	144	17	-127	-127
Northern Virginia Corridor	IS	66	585	43	-542	-604
	US	50	55	0	-55	
	VA	55	9	0	-9	
Seminole Corridor	US	29	269	120	-149	-194
	VA	28	45	0	-45	
Southside Corridor	US	58	386	408	22	22
Washington to NC Corridor	IS	195	4	0	-4	-1106
	US	1	113	59	-54	
	IS	295	395	45	-350	
	US	301	47	76	29	
	IS	395	49	0	-49	
	IS	495	176	0	-176	
	IS	85	378	263	-116	
	IS	95	2278	1892	-386	
Western Mountain Corridor	IS	77	569	258	-311	-316
	US	52	5	0	-5	
Statewide Summary			12,443	7,454	-4,989	

Figure 96 – Truck Parking Net Demand on Study Corridors in Virginia

Source: VDOT, Virginia Truck Parking Study, July 2015.

POTENTIAL FUTURE HIGHWAY CONNECTIONS

Interstate 87

The FAST Act federal transportation legislation authorizes a future Interstate designation for the corridor between Raleigh and Hampton Roads via northeastern North Carolina. Subsequently on May 25, 2016, the American Association of State Highway and Transportation Officials (AASHTO) approved the "Interstate 87" designation for the US 64/17 corridor from Raleigh to Hampton Roads via Rocky Mount, Williamston, and Elizabeth City in northeastern North Carolina (**Figure 97**). Presently, both US Route 64 and US Route 17 are at least four lanes throughout the entire corridor, but there are a number of signals and businesses along the roadway, particularly in the Hertford, Windsor, and Williamston areas.

The Regional Transportation Alliance (RTA) – which is a coalition of businesses in the Raleigh-Durham area advocating for transportation initiatives and policy – is promoting installation of "Interstate 87" signage from its southern terminus at I-40 (exit 301) in southeast Raleigh to I-540 along the US 64/264 (currently I-495) corridor east of Raleigh. The RTA has also promoted installation of "Future I-87" signage along the remaining portions of the corridor to the east of I-540. **I-87 would provide a more direct limited-access connection for people and freight from Hampton Roads to Southbound I-95 and the Raleigh-Durham area.**

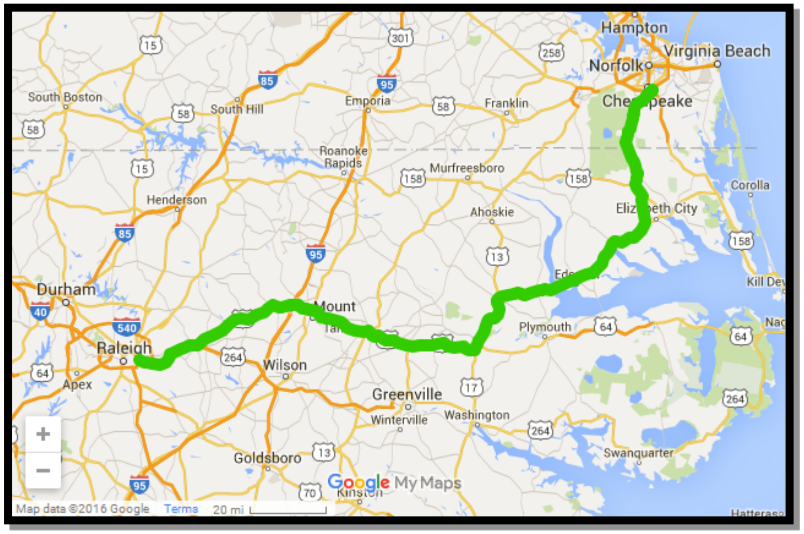


Figure 97 – Potential I-87 Interstate Corridor

Source: Regional Transportation Alliance.

The Port of Virginia and freight stakeholders in the region have stated that they find tremendous value in this potential future connection.

According to RTA, the I-87/I-495 initiative has already achieved significant success: former North Carolina Governor Pat McCrory announced in December 2013 that the portion of US Route 64 between I-440 and I-95 had received an Interstate/Future Interstate 495 designation. This created Raleigh's first direct Interstate highway corridor to the northern and mid-Atlantic states and jumpstarted progress for the full corridor.

More information on the I-87 effort is available on RTA's website at http://letsgetmoving.org/priorities/freeways/interstate-87.

Future I-87 Sign in NC

Route 58

Route 58 is one of the primary gateways used by freight to enter and exit Hampton Roads. The corridor – which at 4,100 trucks per weekday is the second heaviest freight gateway to the region – provides access to I-95 at Emporia (68 miles from Bowers Hill) and I-85 at South Hill (104 miles from Bowers Hill). Few sections of Route 58, however, provide limited access. The limited access segments include bypasses around Suffolk, Holland, Franklin, Courtland, Emporia, and Lawrenceville. Other sections of Route 58, including the section of Holland Road to the west of the Suffolk Bypass, are congested with many signals and access points.

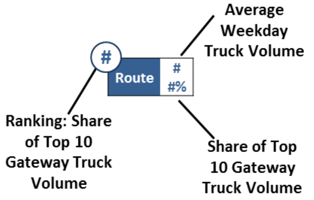
Because of the importance of Route 58 to the Hampton Roads region – particularly to those communities in the western part of the region along the corridor – VDOT will be preparing a Route 58 Corridor Preservation Study. The study – which will be conducted over the next couple of years – will be a corridor preservation study that analyzes traffic characteristics along the corridor including safety, access management, capacity, hurricane evacuation and freight movement. It is expected that the study will develop a set of recommendations to address deficiencies along with planning level cost estimates. A future phase that would look at the opportunity of converting Route 58 to a limited-access facility has also been funded.

FREIGHT GATEWAYS, HUBS, AND BOTTLENECKS

In 2015, Virginia Port Authority (VPA) and HRTPO staff worked with members of the Freight Transportation Advisory Committee (FTAC) to develop a freight mapping tool to assist regional and statewide leaders on transportation decisions related to regional priority projects. The map included the top freight employers in Hampton Roads, top freight gateways, and the most congested truck bottlenecks. **Figure 98** is an updated version of the original map and includes the most recent data and results from this Hampton Roads Regional Freight Study.

FREIGHT GATEWAY

Number and Share of Trucks Passing Through the Top 10 Regional Gateways each Weekday



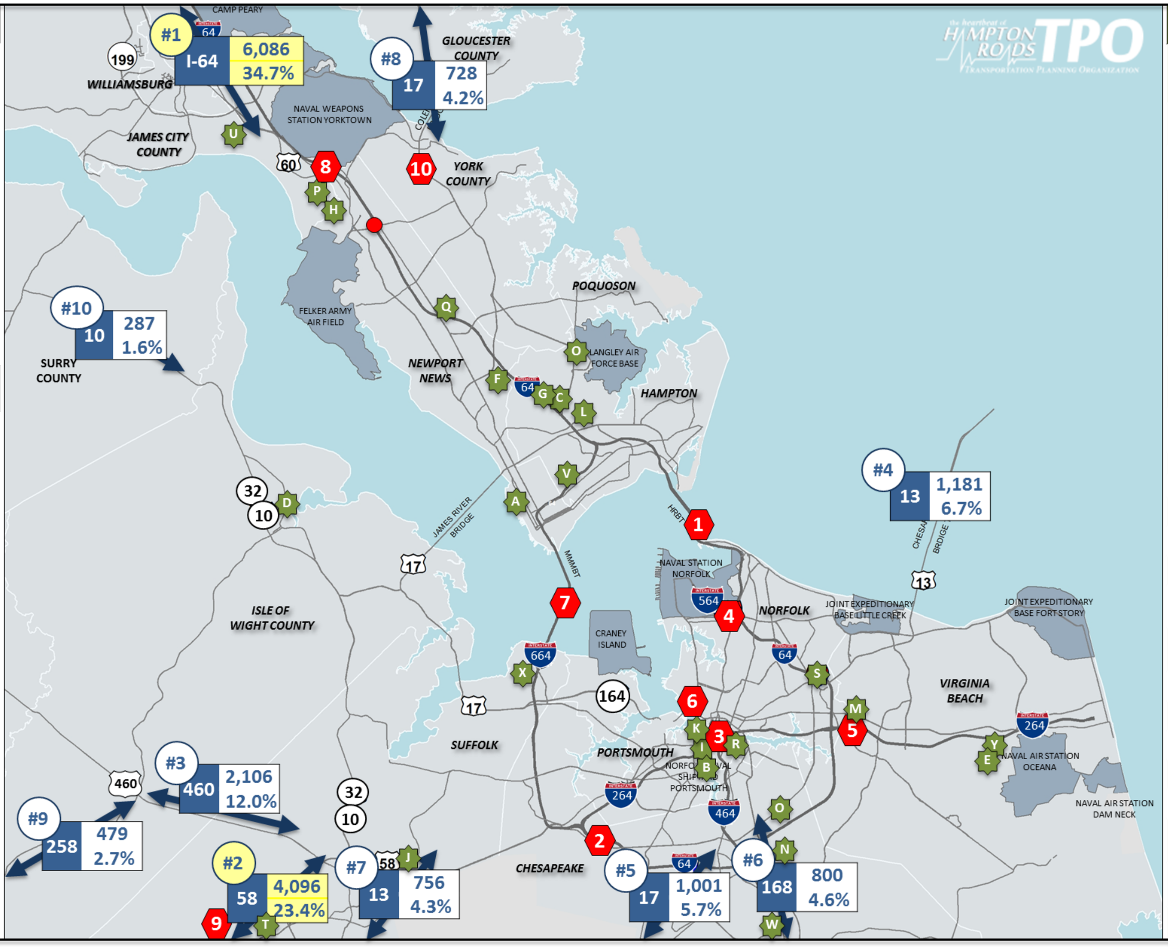
Source: HRTPO.

TRUCK BOTTLENECKS

Top 10 Existing Weekday Truck Delay Locations	Weekday Peak Period Truck Delay (hours)
Hampton Roads Bridge-Tunnel	80.8
I-64 (Chesapeake)	63.3
Downtown Tunnel	30.1
I-64/I-564 (Norfolk)	29.6
I-64/I-264 Interchange area	29.1
Midtown Tunnel	25.0
MMMBT	23.6
I-64 Peninsula	19.6
Holland Rd (Suffolk)	16.7
Route 17 (Newport News/York)	7.9

— Ranking: Total Weekday Truck Delay (Hours)

Source: HRTPO.



In 2015, 17,500 trucks entered or exited Hampton Roads through major gateways each weekday, serving not only the third busiest port on the East Coast but also serving the commerce of the entire region.

Combined, I-64 and U.S. 58 accounted for 58% of all trucks passing through the region's major gateways in 2015.

TOP FREIGHT EMPLOYERS

Map ID	Employer	# of Employees
A	Huntington Ingalls Industries (Newport News Shipbuilding)	24,000
B	Norfolk Naval Shipyard	8,500
C	TE Connectivity, Ltd.	2,200
D	Smithfield Packing Co.	2,100
E	STIHL, Inc.	2,067
F	Canon Virginia, Inc.	1,500
G	Lumber Liquidators	1,500
H	AAFES Dan Daniel Dist. Ctr.	1,100
I	BAE Systems Norfolk Ship Repair, Inc. (Norshipco)	1,080
J	QVC Suffolk, Inc.	1,000
K	General Dynamics-NASSCO	880
L	Specialty Foods Group	850
M	AMSEC Corporation	700
N	Dollar Tree Stores, Inc.	660
O	Givens + Audiovox	625
P	Walmart Import Distribution Center	604
Q	Continental Automotive Group (Siemens)	600
R	Colonna's Shipyard, Inc.	565
S	CMA-CGM America, Inc.	530
T	Target Import Warehouse	521
U	Anheuser-Busch InBev	508
V	Liebherr Mining Equipment	500
W	Raytheon Technical Services Co. (NSA NW Annex)	500
X	SYSCO Food Services of Hampton Roads	500
Y	The Penrod Company	500

Source: HREDA, March 2016, Hampton Roads Major Employers (Manufacturing, Distribution, Transportation, and Logistics)

Figure 98 – Hampton Roads Freight Gateways, Hubs, and Bottlenecks

INTEGRATION OF FREIGHT INTO THE TRANSPORTATION PLANNING PROCESS

Since 1991, federal transportation agencies have placed a stronger emphasis on freight planning activities for metropolitan planning organizations (MPOs), state departments of transportation (DOTs), business and industry leaders, and other key stakeholders. This enhanced focus has been on integrating freight issues within existing statewide and metropolitan transportation planning processes. This section discusses how the HRTPO integrates freight into the metropolitan transportation planning process and the importance of coordinating with state and federal agencies as well as other freight stakeholders.

FEDERAL SURFACE TRANSPORTATION LEGISLATION

In the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, freight was added as a factor for states and MPOs to consider in the transportation planning process. The importance of incorporating freight issues within metropolitan and statewide planning efforts was further emphasized in the Transportation Equity Act for the 21st Century (TEA-21) in 1998 by encouraging states and MPOs to include shippers and freight service providers. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) proposed a greater enhancement of the freight planning emphasis of ISTEA and TEA-21.

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation planning and investment. This five-year federal legislation created dedicated funding sources for freight projects through two new programs: the formula-based National Highway Freight Program (NHFP) and the discretionary Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE). More information on these funding programs is included later in this report.

Federal emphasis on freight has never been stronger and it comes at a time when global shipping lines are consolidating and deploying ultra large container vessels (ULCVs). The HRTPO realizes the urgency of planning for freight more than ever before by coordinating with statewide and local freight stakeholders and conducting freight-related studies.

STATEWIDE FREIGHT COORDINATION

HRTPO staff has established and maintained a close working relationship with the Virginia Department of Transportation's (VDOT) Transportation and Mobility Planning Division and the Hampton Roads District for all statewide freight planning initiatives. HRTPO staff coordinates and receives input and review from VDOT on all HRTPO freight-related studies. Likewise, HRTPO staff reviews and provides input to VDOT for statewide freight planning efforts, such as the 2014 Virginia Multimodal Freight Plan[29], and participates in the Multimodal Advisory Committee (MAC) and Virginia Freight Transportation Technical Committee (VFTTC). Over the past two decades, VDOT has purchased and provided commodity flow data (e.g. IHS Transearch) for MPOs within the state to perform freight flow analyses for existing and projected freight growth for their respective regions.

VDOT freight planning efforts are conducted through the Virginia Office of Intermodal Planning and Investment (OIPI). The latest statewide freight plan—2014 Virginia Multimodal Freight Plan[30]—is part of the Commonwealth's long-range transportation planning process known as VTrans2040. OIPI—located within the Virginia Office of the Secretary of Transportation—was created to encourage the coordination of multimodal and intermodal planning across the various transportation modes within the state.

Below is a description of major statewide freight efforts:

VTrans

VTrans is the long-range, statewide multimodal policy plan that lays out overarching Vision and Goals for transportation in the Commonwealth of Virginia. It identifies transportation Investment Priorities and provides

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[29] *Virginia Multimodal Freight Plan,* Virginia Office of Intermodal Planning and Investment, Prepared by Cambridge Systematics, Final Report, September 2014.

[30] *Ibid.*

direction to transportation agencies on strategies and programs to be incorporated into their plans and programs. VTrans2025—the first plan—was completed in 2004. VTrans2035 was completed in 2009 and VTrans2040 was completed in 2015.

Two committees were formed to assist with the development of VTrans: 1) Multimodal Working Group (MMWG) Freight Subcommittee and 2) Multimodal Advisory Committee (MAC).

The MMWG brings together representatives from all of the Virginia transportation agencies to coordinate the development of VTrans. The Virginia Multimodal Freight Plan not only serves as a key input to VTrans2040, but also fulfills FAST Act requirements that states identify major freight needs within statewide freight plans in order to qualify for enhanced funding for freight projects.

A MAC was appointed by the Deputy Secretary of Transportation. It includes representatives of agencies that will be closely involved in implementing VTrans2040. Members include representatives from MPOs, Rural Transportation Planning Organizations (RTPOs), local governments, transit providers, and state agencies. Complementing the MMWG's technical oversight, the MAC plays a supportive role on all aspects of the project, with a strong focus on policy and engagement. The purpose of the MAC is two-fold:

1) Provide practical feedback and guidance from various agency perspectives, and
2) Foster buy-in and consensus among partner agencies and organizations that play an active role in implementing VTrans2040 policies and recommendations.

Additional information on VTrans is found here: http://www.vtrans.org

Virginia Multimodal Freight Plan

The Virginia Multimodal Freight Plan[31] is the Commonwealth's strategy to improve goods movement on its highway, rail, waterborne, and aviation system. The efficient movement of freight is critically important to the Commonwealth's economy—to support industries located in Virginia, and to sustain national commerce that moves over its transportation system. The purpose of the Freight Plan is to establish the vision, goals, and priority actions to facilitate goods movement statewide. The Plan accomplishes the following:


Virginia Multimodal Freight Plan
Final Report, 2014

Report

prepared for
Virginia Office of Intermodal Planning and Investment

prepared by
Cambridge Systematics, Inc.

Office of INTERMODAL Planning and Investment

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1. Develops policy standpoints and recommendations for freight which reflect freight stakeholder input from the Virginia Freight Transportation Technical Committee (VFTTC) and Virginia Freight Transportation Advisory Committee (VFTAC) and the VTrans performance based planning process;
2. Organizes and supplements information from the Multimodal Freight Study to meet Federal standards for state freight plans introduced in the latest surface transportation bill— Moving Ahead for Progress in the 21st Century Act (MAP-21);
3. Provides recommendations for strategies and projects types to achieve the goals of MAP-21; and
4. Identifies policy initiatives that can be translated into project recommendations at the agency level.

VFTTC serves as the technical committee for the development of the Virginia Multimodal Freight Plan. VFTTC is comprised of members from the Commonwealth's transportation agencies, private sector freight users, and other invited freight stakeholders. This committee is responsible for freight planning, technical review and prioritization of projects that meet the plan and recommendations on priorities and policies that facilitate supporting the movement of freight in the Commonwealth.

OIPI is currently updating the VMFP to ensure it is consistent with federal priorities related to the FAST Act.

Virginia Freight Transportation Advisory Committee (VFTAC)

VFTAC is responsible for development of policy recommendations and is comprised of a small group of senior executives from private entities whose business relies on freight. This committee meets annually and provides a perspective to the Commonwealth that can be considered in shaping freight policy and investment priorities. Comprised of some of the largest

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[31] *Ibid.*

employers in Virginia, the committee receives briefings on freight-related activities such as the Statewide Multimodal Freight Plan, and provides comments and viewpoints as part of the process to finalize priorities and policies.

FREIGHT TRANSPORTATION ADVISORY COMMITTEE
OF THE HAMPTON ROADS TPO

HRTPO FREIGHT PLANNING EFFORTS

With the rising importance of freight at the national, state, and regional levels, the HRTPO has engaged in many freight planning efforts, particularly since the ISTEA legislation of 1991. During this time, the HRTPO has established a Freight Transportation Advisory Committee (FTAC), integrated freight into the Long-Range Transportation Plan's Project Prioritization Tool, and produced several regional and local freight studies.

Freight Transportation Advisory Committee (FTAC)

In 2009, the HRTPO Board created the Freight Transportation Advisory Committee (FTAC) to provide an opportunity for the freight industry to participate in and contribute to the regional transportation planning process. The FTAC mission is to advocate on behalf of the systematic needs for the transport and movement of freight in the region. According to HRTPO bylaws, "The FTAC will conduct public outreach activities that help TPO efforts to explain and help raise awareness of the importance of freight transportation to the region and to collect region-wide public input on these matters." Key freight business and community leaders in Hampton Roads have recognized that efficient freight transportation is a key factor in statewide and metropolitan economic competitiveness and have willingly served on FTAC since its establishment in 2009.

The FTAC consists of nine members, eight from private industry plus one HRTPO board member who serves as one of two FTAC Co-Chairs. The HRTPO Chair appoints one of the eight private sector FTAC members as the other FTAC Co-Chair, who also serves as a non-voting member of the HRTPO Board. The Virginia Port Authority (VPA) staff primarily handles the administration of FTAC (agendas, minutes, etc.), with HRTPO staff providing technical assistance and research as necessary.

FTAC has completed the following activities since 2011:

- FTAC produced a video presenting the importance of freight, "A Region United" (2011).
- FTAC co-sponsored the Virginia Freight Transportation Summit (2011).
- Provided input and technical guidance to HRTPO staff for planning efforts such as the Regional Freight Study and other freight-related studies. (2011-2015)
- FTAC passed a resolution that "endorses the freight provisions of MAP-21" (2012).
- FTAC submitted comments on "Interim Guidance on State Freight Plans and Advisory Committees" to FHWA (2012).
- FTAC co-hosted (with Virginia Port Authority [VPA] and the Virginia Office of Intermodal Planning and Investment [OIPI]) a Virginia Freight Roundtable Breakfast and a Freight Panel at the 2012 Governors Transportation Conference in Tysons Corner. (2012).
- FTAC added comments to HRTPO staff's comments on FHWA's Primary Freight Network (PFN) (2014).
- FTAC passed a resolution supporting a future Interstate designation for the Hampton Roads to Raleigh Highway Corridor (2014).
- FTAC provided LRTP assistance:
    - FTAC staff identified 21 freight projects among the 2040 LRTP candidate projects (2014).
    - FTAC provided comments to the HRTPO staff concerning the FTAC-identified freight projects. HRTPO staff response to these comments resulted in the Hampton Blvd/Terminal Blvd project's Prioritization Tool score rising from the third highest to the highest in the list of five 2040 LRTP Intermodal Transportation Candidate Projects (2015).
    - Art Moye, FTAC Co-Chair, sent HRTPO staff a letter on February 2, 2015, identifying "top six projects to be considered for inclusion in the 2040 LRTP" (2015)
- Requested and assisted with the study – "Economic Assessment of Tolls on Freight Transportation in the Hampton Roads Region" (2015).
- FTAC prepared a resolution to the HRTPO Board for the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) (2016).

More information on FTAC is available at:
http://www.hrtpo.org/page/freight-transportation-advisory-committee-(ftac)/

Freight Working Group

In May 2016, HRTPO staff coordinated with Virginia Port Authority (VPA) staff to create a subgroup of FTAC to gather input for the 2017 Hampton Roads Regional Freight Study. The main purpose of this Freight Working Group was to facilitate an informational exchange of current freight industry issues and challenges so they could be incorporated into the study. Meetings and conference calls were conducted at periodic stages of this study, where data and findings were presented and input was received. Members of the Freight Working Group consisted of HRTPO staff, VPA staff, and a small group of executives from entities whose business relies on freight movement.

Members:

- Givens Transportation Inc.
- Canon Virginia, Inc.
- XPO Logistics
- Virginia Maritime Association
- VPA staff
- HRTPO staff

Freight Planning Factors

In 2004, Federal Highway Administration (FHWA) outlined six major factors of successful freight planning as part of a new freight course on Integrating Freight in the Transportation Planning Process[32]. HRTPO has undertaken the following work under each of these factors through ongoing studies, networking, coordination, and planning.

1. **Development of data and tools** – Successful freight planning begins with good freight data from both public and private sources that is summarized using freight analytical tools.
    - The HRTPO uses public and private freight data (e.g. IHS Transearch, Freight Analysis Framework, VDOT vehicle classification counts) and produces summaries using a variety of analytical tools (e.g. Access databases, Geographic Information Systems) within each freight study.
2. **Networking with stakeholders** – Understand who the stakeholders are; work to build trust, define policy, develop plans, and implement projects.
    - The HRTPO established a Freight Transportation Advisory Committee (FTAC) in 2009 to work with freight industry leaders to gain input, develop plans, and make recommendations for key freight projects within the Long-Range Transportation Plan (LRTP).
    - FTAC Co-chair is a non-voting member of the HRTPO Board and sits at the table with regional transportation decision makers.
3. **Education and outreach** – Decision-makers and the general public may not realize the importance of freight and of integrating freight movements into the transportation planning process.
    - The HRTPO continues to raise awareness of the freight issues with decision-makers and the general public through numerous freight studies and presentations.
    - FTAC created a video in 2011 entitled “A Region United” to highlight the importance of freight movement and efficient transportation systems to regional, state, and national economies.


Source:YouTube

A Region United video has over 1,800 views on YouTube

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[32] *Integrating Freight in the Transportation Planning Process*, Federal Highway Administration, U.S. Department of Transportation, National Highway Institute Course No. 139001, 2004.

4. **Intra- and inter-agency coordination** – Most freight projects involve several agencies—both within and outside of transportation.
    - The HRTPO engages various stakeholders and agencies (e.g. Virginia Port Authority (VPA), FTAC, VDOT, and Military) to plan, develop, and implement freight projects within Hampton Roads. For example, VPA is an active participant on the HRTPO Board, Transportation Technical Advisory Committee (TTAC), and various subcommittees and working groups.
5. **Linking freight to existing statewide/metropolitan long-range planning processes** – Treating freight with the same level of emphasis as passenger movements facilitates long-term commitment to freight planning.
    - HRTPO staff coordinates with regional freight stakeholders to ensure that freight planning activities coincide with VTrans, the Commonwealth of Virginia's long-range transportation planning process. The HRTPO also integrates freight directly into the LRTP by incorporating freight performance measures into the Project Prioritization Tool. This tool is also used by HRTPO for RSTP projects.
6. **Project definition, prioritization, and delivery** – Project delivery legitimizes freight planning programs and helps maintain momentum.
    - The HRTPO continues to work with regional freight stakeholders to identify, prioritize, and build freight-significant projects in the region (e.g. I-564 Intermodal Connector, I-64 Peninsula widening, I-64 Southside Widening/High-Rise Bridge, HRBT widening).

Integration of Freight into the LRTP

The Hampton Roads Long-Range Transportation Plan (LRTP) is the blueprint for the region's multimodal transportation development. It identifies regionally significant, fiscally-constrained transportation projects with a minimum planning horizon of 20 years. The LRTP is updated every five years to capture changes in the region.

Two of the thirteen goals with the Hampton Roads LRTP specifically pertain to freight: 1) Increase the accessibility and mobility of people and goods, and 2) Support the economic vitality of the metropolitan area, enabling global competitiveness, productivity, and efficiency. To meet these goals, the HRTPO conducts freight-related studies and works with stakeholders to develop, prioritize, and implement transportation projects that will have a positive impact on freight movement and enable both regional and global competitiveness. The HRTPO has also incorporated several freight-specific criteria within the Project Prioritization Tool.

Project Prioritization Tool

In 2010, the HRTPO created a Project Prioritization Tool to score candidate transportation projects to assist decision makers in selecting projects to be included in the LRTP. The prioritization methodology evaluates various project types based on three components: Project Utility, Project Viability, and Economic Vitality. The maximum score that a candidate project can receive is 300 points (100 points per component).

Within the Project Prioritization Tool there are various criteria and sub-criteria that impact the score for a candidate transportation project. Below is a summary of criteria within the tool that are freight-specific:

<u>Highway Projects/Interchange Projects</u>

Project Utility (100 points maximum)
- Improves Vehicular Access (to freight distribution facilities, ports, major industrial clients, or employment and population centers) – 2 points

Economic Vitality (100 points maximum)
- Increases Access for Port/Freight Facilities (Truck Delay) – 10 points

<u>Bridge & Tunnel Projects</u>

Project Utility (100 points maximum)
- Improves Vehicular Access (to freight distribution facilities, ports, major industrial clients, or employment and population centers) – 2 points
- Provides Continuous Maritime Crossing – 1.5 points

Economic Vitality (100 points maximum)
- Increases Access for Port/Freight Facilities (Truck Delay) – 10 points

<u>Intermodal Projects</u>

Project Utility (100 points maximum)
- Better Accommodates Intermodal Movements – 30 points

- Improves Rail/Vehicular Access (to freight distribution facilities, airports/seaports, major industrial clients, employment and population centers, or rail stations/terminals) – 30 points
- Enhances Other Categories (Number of other transportation modes the project provides access to) – 15 points

Economic Vitality (100 points maximum)

- Impact on Truck Movement (Truck Delay) – 15 points
- Increases Access for Port/Freight Facilities – 5 points
- Improves Flow of Freight Rail – 5 points
- Increases Access to Airports – 5 points

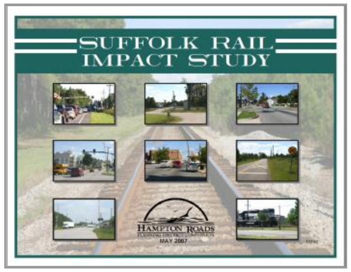
Hampton Roads Regional Freight Studies

Starting with the ISTEA legislation, Congress has encouraged the consideration of freight movement and intermodal connectivity in statewide and metropolitan transportation planning processes. As a result of this emphasis, the HRTPO began a series of regional freight studies in the early 1990s, and released the region's first report in 1996. Updates to the Hampton Roads Regional Freight Study were released in 1998, 2001, 2007, and 2012. Through these regional freight studies, HRTPO identifies, develops, evaluates, and implements transportation strategies to improve the movement of goods and enhance connectivity among all modes of transportation.

Other HRTPO Freight-Related Studies

Suffolk Rail Impact Study (May 2007)

This study analyzes the impacts to 31 at-grade highway-rail crossings in Suffolk, Virginia that were expected to see increased rail traffic due to new port facilities in Hampton Roads. Performance measures were used to evaluate the effects of this traffic on mobility and safety. Based on the analysis using these performance measures, the crossings were ranked and improvements were prioritized.



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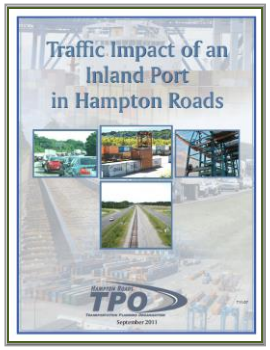
Traffic Impact of an Inland Port in Hampton Roads (September 2011)

This purpose of this study was to examine the expected impact that an inland port facility located in the western area of Hampton Roads would have on regional roadway travel and congestion. This analysis showed that an inland port may do little to lower regional travel levels. For existing conditions, weekday truck volumes would only be expected to decrease between 1.0% and 2.1% under the various scenarios, with total regional volumes only decreasing between 0.04% and 0.08%. These changes would be even lower during the busiest travel hour in the afternoon, and there would also be no changes in regional congestion levels with the inland port, regardless of scenario.



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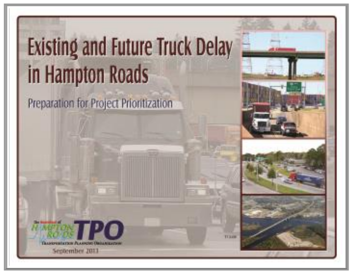
In 2030, the facility would be expected to have a larger impact, but still do little to lower regional travel levels. Weekday truck volumes would be expected to decrease between 2.2% and 4.4%, with total regional travel only decreasing between 0.10% and 0.19% under the various scenarios. There would therefore be very little change in regional congestion levels, and in some scenarios would even lead to additional congestion around the inland port site in Isle of Wight County.

Existing and Future Truck Delay (September 2013)

This study builds on the analysis of existing truck volumes and delays contained within the 2012 Hampton Roads Regional Freight study to include future truck volumes and delays by location in Hampton Roads. It uses the new truck component and time-of-day capability of the regional travel demand model to forecast truck volumes and congestion to be faced by trucks in the next 20 years. This is the first time that HRTPO staff has forecasted future truck traffic or truck delays. The results of this analysis include future roadway segments with the highest total weekday truck delays.



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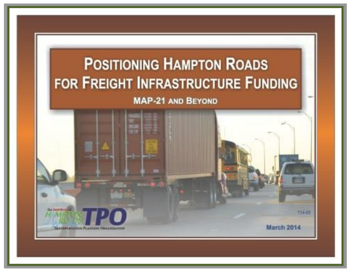
Based on the results of this study, the HRTPO refined the Project Prioritization Tool for the LRTP. For example, previous versions of the Tool awarded points to projects using generalized measures of "high", "medium", and "low" impact on truck movement and reduction of travel time to ports. The Tool has been updated to award points based on reduction of truck delay (weekday hours/mile) from this study, which is a more refined, quantitative measure.

Positioning Hampton Roads for Freight Infrastructure Funding (March 2014)

MAP-21, the previous federal surface transportation authorization program, emphasized roles for states, MPOs, and other stakeholders in freight planning. States and MPOs that are organized, with data and analyses, will be in a better position to benefit from the next authorization. At the time this study was conducted, final designation of the National Freight Network had not been established.



POSITIONING HAMPTON ROADS FOR FREIGHT INFRASTRUCTURE FUNDING

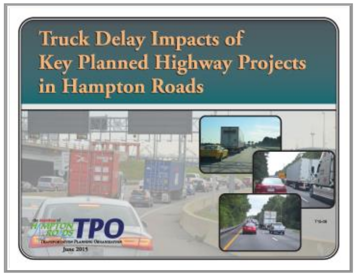
MAP-21 AND BEYOND

March 2014

Click here to view the report

In order to assist the Commonwealth of Virginia and the United States in preparation of this effort, this study identified a base network of highways within Hampton Roads that were anticipated to be part of the National Freight Network. It also evaluated the condition and performance of those same highways and determined freight bottlenecks and major trade gateways in order to strategically position the state and the Hampton Roads region for future freight infrastructure funding initiatives.

Truck Delay of Key Planned Highway Projects in Hampton Roads (June 2015)



Truck Delay Impacts of Key Planned Highway Projects in Hampton Roads

June 2015

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This study builds on the work contained within the 2013 Existing and Future Truck Delay in Hampton Roads study, measuring future truck delay impacts in the next 20 years for six key planned highway projects. It estimates total weekday truck delay for the region and by corridor in the next 20 years for seven scenarios—a base future roadway network scenario and six additional scenarios containing the base future roadway network and one of the following key highway projects:

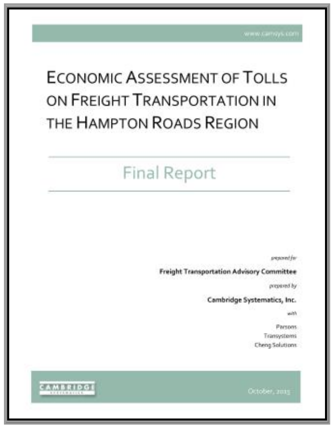
- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island Connector, and I-664 Widening/Bowers Hill Interchange)
- US 460/58/13 Connector (including SPSA and Hampton Roads Executive Airport Interchanges)

The purpose was to test and measure the impact of each highway project on truck delay for the total roadway network and along major corridors in the vicinity of each project location.

Economic Assessment of Tolls on Freight Transportation in the Hampton Roads Region (October 2015)

In response to freight industry concerns regarding tolling as a funding mechanism from improving and expanding existing infrastructure, FTAC, with the support from VDOT and the HRTPO, commissioned a study to examine the economic implications of proposed highway improvements and the use of tolls to fund those improvements.

Major finding from the study include:



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ECONOMIC ASSESSMENT OF TOLLS ON FREIGHT TRANSPORTATION IN THE HAMPTON ROADS REGION

Final Report

prepared for

Freight Transportation Advisory Committee

prepared by

Cambridge Systematics, Inc.

with

Parsons

Transystems

Cheng Solutions

October, 2015

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- Freight rates in region are generally competitive with peer ports.
- Without the proposed major regional capacity projects there will be an additional 11,060 hours of truck delay daily, translating into more than 4 million additional hours of truck delay in 2040. This increase in truck delay gives rise to significant increases in trucking costs.
- The cost of doing nothing is significant. It is estimated that

business as usual (BAU) will lead to nearly $1 billion increase in trucking costs in 2040. This includes driver and non-driver based costs as well as the cost of reduced number of turns for local drayage operators.

- 57% of the increased cost ($552.2 million) under the BAU scenario will be borne by local truck trips.
- Based on current trends in tolling rates, the freight industry will be better off building new capacity on key truck routes with tolls than not making the investment. The net benefit to the freight industry of making the proposed infrastructure investments and using tolls (at the current rate plus inflation) to fund them is about $174 million in 2040.
- Both tolls and congestion costs impact local trips more that trips originating or terminating outside the region. It is estimated that local truck trips will incur about 57% of the total congestion costs under the BAU and they will pay about 66% of the tolls under the Build with Tolls scenario. It should be noted that FTAC members have indicated that there should be equity between intra-regional trips and trips that have origins or destinations outside of the region.
- If tolls rise above $22 per trip in 2040 for local trucks, the costs of tolls start to exceed the congestion relief benefits. That equates to about $7.30 in current dollars.

More information on these HRTPO freight studies is available at http://www.hrtpo.org/page/freight.

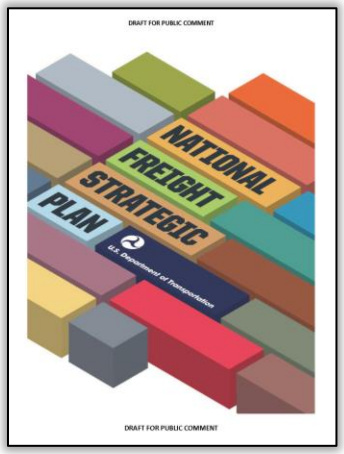
NATIONAL FREIGHT PLANNING EFFORTS AND FUNDING SOURCES

A number of changes have occurred recently regarding national freight planning and funding. This section examines these national freight planning efforts and funding sources, including:

- National Freight Strategic Plan
- National Multimodal Freight Network
- Freight Funding Programs
- Performance Measures

NATIONAL FREIGHT STRATEGIC PLAN

The United States Department of Transportation (USDOT) recently released the draft version of the National Freight Strategic Plan (NFSP). The NFSP is a first-of-its-kind document that takes a comprehensive look at national freight needs and challenges and offers a roadmap for improvements. The NFSP describes the freight transportation system and future demands on it; identifies major corridors and gateways; assesses physical, institutional, and financial barriers to improvement; and highlights strategies for enhancing the system. The NFSP also identifies many successful programs already in place to improve freight planning and investment, and proposes new programs and ideas that could make more progress possible.



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The NFSP details six major trends and challenges that are impacting freight transportation. These challenges include:

- **Expected Growth in Freight Tonnage** - To support projected population and economic growth, freight movements across all modes are expected to grow 42 percent by the year 2040.
- **Underinvestment in the Freight System** - More and better directed investment in freight infrastructure is needed, since freight projects can be costly to undertake and many do not compete well with non-freight projects because of the manner in which public investments are evaluated. Freight projects can involve multiple transportation modes, jurisdictions, and stakeholders, each of which may have different objectives or investment timeframes. The future workforce, such as truck drivers and railroad engineers, may be insufficient unless additional investment is made in education, recruitment, and training.
- **Difficulty in Planning and Implementing Freight Projects** - Most of the publically-owned freight system is planned and operated by state governments, local governments, and MPOs. These agencies must work not only with each other but also with a broad array of federal partners and private sector entities, including railroads and trucking companies. This presents a number of challenges such as fragmented decision-making.
- **Continued Need to Address Safety, Security, and Resilience** – Although recent trends show improvements in freight safety, there were 3,964 people killed in crashes involving large trucks and 543 people killed in incidents associated with freight rail, vessel, and pipeline operations in 2013. Vulnerabilities associated with physical and cyber infrastructures must continuously be addressed.
- **Increased Global Economic Competition** - The economy is reliant on international trade, and ships carrying imports and exports continue to grow in size. Ports must address congestion, dimensional, and equipment-shortage challenges generated by bigger, new-generation bulk and container ships. A growing amount of freight also moves by truck and rail through congested land border crossings. Ensuring that products can efficiently reach both domestic and international markets is critical.
- **Application and Deployment of New Technologies** - The freight industry is experiencing a technological revolution on a

number of fronts, including improved information and communications technologies that optimize global supply chains, advanced automation that increases productivity in the freight industry, further automated and expedited inspection processes, and upcoming autonomous vehicle technologies that will transform freight transportation.

The NFSP includes several solutions and strategies to address not only these six trends and challenges but also the infrastructure, institutional, and financial bottlenecks that hinder the safe and efficient movement of goods. These strategies include:

- **Reduce congestion to improve performance of the freight transportation system -** Efforts include project grants, such as the TIGER and FASTLANE programs, as well as the development of congestion mitigation methods such as the use of GPS probe data.
- **Improve the safety, security, and resilience of the freight transportation system** – Ensuring the safety, security, and resilience of freight transportation is essential. USDOT implements and enforces safety regulations to address driver fatigue, vehicle stability systems, and transportation of hazardous material, and is considering new regulations to improve freight vehicle operating safety rules. USDOT will work with the Department of Homeland Security to assure the security of the transportation system, including cybersecurity as systems become more automated. USDOT is also pursuing strategies to include infrastructure vulnerability and resilience assessments as part of long-range planning efforts.
- **Facilitate intermodal connectivity** – Intermodal connectivity is critical to ensure the safe, resilient, and efficient flow of freight movement across the overall freight transportation system. USDOT assesses, categorizes, and collects data on intermodal links, and encourages use of existing funding resources to support intermodal connectivity solutions.
- **Identify major trade gateways and multimodal national freight networks/corridors** – To support a national freight strategy, USDOT proposed a Multimodal Freight Network (MFN). This network indicates where major freight flows occur and where attention to freight issues may be most warranted. The MFN also combines the most critical modal components and shows the connections between them.
- **Mitigate impacts of freight projects/movements on communities** - Safe, secure, and environmentally friendly freight movement is vital to the well-being of communities and helps ensure the efficient movement of goods that support our economy. Unless properly mitigated, freight movements may impose adverse impacts such as air, water, and noise pollution, and diminished access for people living in communities adjacent to these movements. USDOT works closely with numerous partners to reduce adverse impacts of freight activities. Efforts include providing funds to reduce air pollution and traffic congestion caused by freight vehicles, supporting research on less impactful freight technologies, and efforts to facilitate freight project planning and implementation.
- **Support research and promote adoption of new technologies and best practices** – Identifying and applying technologies is important in ensuring the safe and efficient movement of goods. This is especially true with further use of automation in the freight industry and upcoming autonomous vehicle technologies coming online.
- **Streamline project planning, review, permitting, and approvals** – USDOT has funded research on tools and best practices for streamlining project selection and design, contracting, and construction to expedite transportation project delivery. This has included efforts to reduce project delivery timelines, implement environmental and permitting reforms with the Army Corps of Engineers, and improve outcomes for communities and the environment.
- **Facilitate multijurisdictional, multimodal collaboration and solutions** - It is critical for state, local, and other agencies to participate in multijurisdictional collaboration when creating policies and projects that impact freight movement. USDOT will

continue to support interagency collaboration by developing improved freight transportation models and data, sharing best practices for freight planning, supporting advisory committees and public forums with stakeholders, and encouraging effective use of funding available at the national level.

- **Improve coordination between public and private sectors** – It is essential to facilitate public and private sector partnerships to achieve the best planning process outcomes, and USDOT encourages coordination among all participants in data sharing and state freight planning efforts.
- **Ensure availability of better data and models** – Improvements in data collection, information sharing, freight modeling tools, and analytic methods can help the public and private sectors better understand freight trends and make more informed decisions that may affect the freight system. USDOT – which currently maintains advanced freight data with GPS-based truck location information (probe data) and the Freight Analysis Framework – will continue to develop and deploy newer and more advanced freight data resources to the planning community and advance the measurement and analysis of transit times for different commodities from a multimodal, origin-to-destination perspective.
- **Develop the next generation freight transportation workforce** – Efforts include developing freight skills for State DOT and MPO staff through guidance and resources on freight planning, and pushing for greater authority to develop workforce plans.
- **Ensure dedicated freight funding** – The NFSP emphasizes the importance of a dedicated freight program, and the FAST Act created two new freight funding programs, one discretionary and one formula. These are described further in the next section.
- **Use existing grant programs to support freight** - Although not dedicated to freight, national competitive grant programs can support multimodal freight projects. USDOT's TIGER program has provided funding for freight planning and infrastructure projects, including the North Gate expansion project underway at Norfolk International Terminals. Assistance provided from TIGER and other grant programs leverages additional capital from non-Federal governmental and private sources.

TIGER Discretionary Grant Program

TIGER

The draft version of the National Freight Strategic Plan was released in October 2015, and the deadline to submit comments was April 25, 2016. As of January 2017, a final version of the National Freight Strategic Plan has not been released. The Fixing America's Surface Transportation (FAST) Act requires the development of the National Freight Strategic Plan and mandates that updates to the plan will be prepared every five years.

The National Freight Strategic Plan is available on USDOT's website at https://www.transportation.gov/freight/NFSP.

NATIONAL MULTIMODAL FREIGHT NETWORK

In addition to the National Freight Strategic Plan, the Fixing America's Surface Transportation (FAST) Act also requires the establishment of a National Multimodal Freight Network (NMFN). This network, according to the FAST Act, should:

- Assist states in strategically directing resources toward improved system performance for the efficient movement of freight
- Inform freight transportation planning
- Assist in the prioritization of Federal investment
- Assess and support Federal investments to achieve national multimodal freight policy and national highway freight program goals described in the FAST Act

Based on the requirements included in the FAST Act, FHWA released an interim National Multimodal Freight Network in June 2016. In order for a facility to be a part of the interim NMFN, one of the following criteria had to be met:

- **Roadways in the Primary Highway Freight System –** The Primary Highway Freight System (PHFS) is a network of highways identified as the most critical highway portions of the U.S. freight transportation system. The PHFS consists of 41,000 miles of roadway, including 37,000 miles of Interstate. Non-Interstate roadways include Intermodal Connectors.

  The FHWA Administrator is required to re-designate the PHFS every 5 years to reflect changes in freight flows. Each re-designation is limited to a maximum 3 percent increase in the total mileage of the system.
- **Interstate mileage not included in the PHFS** – The PHFS does not comprise the entire Interstate system. The NMFN, however, includes the remaining 9,500 miles of Interstate not included in the PHFS, and will include any mileage added or removed from the Interstate Highway System.
- **Critical Rural and Urban Freight Corridors –** The FAST Act dictates that each state, in coordination with MPOs where applicable, establish a network of Critical Rural Freight Corridors (CRFCs) and Critical Urban Freight Corridors (CUFCs). These roadways – which are not included in the PHFS – should provide connections between these roadways and other important ports, public transportation facilities, or other intermodal freight facilities.

  State designation of CRFCs is limited to the greater of 150 miles of highway or 20 percent of the PHFS mileage in the State, while State and MPO designation of CUFCs is limited to the greater of 75 miles of highway or 10 percent of the State's PHFS mileage. In Virginia, up to 166 miles can be designated as CRFCs and 83 miles can be designated as CUFCs. As of the publication of this report, Virginia has not classified any roadways as Critical Rural or Urban Freight Corridors.
- **Rail –** The NMFN includes all railroads that are classified as Class I (which includes CSX and Norfolk Southern railroads in Hampton Roads), and smaller Class II and Class III railroads designated by USDOT as critical to interstate commerce. The interim NMFN includes just over 100,000 miles of rail nationwide and 2,800 miles in the state of Virginia. The Commonwealth Railway, which connects CSX and Norfolk Southern with the Virginia International Gateway marine terminal, is not included in the interim NMFN.
- **Ports –** The interim NMFN includes all public ports in the United States that have a total annual foreign and domestic trade of at least 2 million short tons. The Port of Virginia facilities in Norfolk, Portsmouth, and Newport News are included in the interim NMFN.
- **Marine Highways –** Marine Highways is the term used to describe 26,000 miles of inland, intracoastal, coastal, and open-ocean waterways used to transport freight. In Hampton Roads, the Atlantic Ocean, Chesapeake Bay, Hampton Roads Harbor, James River, Elizabeth River, Great Dismal Swamp Canal, and Albemarle and Chesapeake Canal are included in the interim NMFN.
- **Airports –** The interim NMFN includes the Top 50 airports in the United States with the highest annual landed weight. Neither

Norfolk International Airport nor Newport News-Williamsburg International Airport is included in the interim NMFN.

The roadways included in the National Multimodal Freight Network are also referred to as the National Highway Freight Network (NHFN). Roadways that are included in the NHFN are eligible for Federal freight funding sources as described in the next section.

The interim Hampton Roads NMFN is shown in **Figure 99**. Comments on the interim network were collected by USDOT between June and September 2016, and HRTPO and VPA staff provided comments during this period. By statutory requirement, the final NMFN must be designated within one year of the enactment of the FAST Act. This date was December 4, 2016. However, as of June 2017, the final NMFN had not been released.

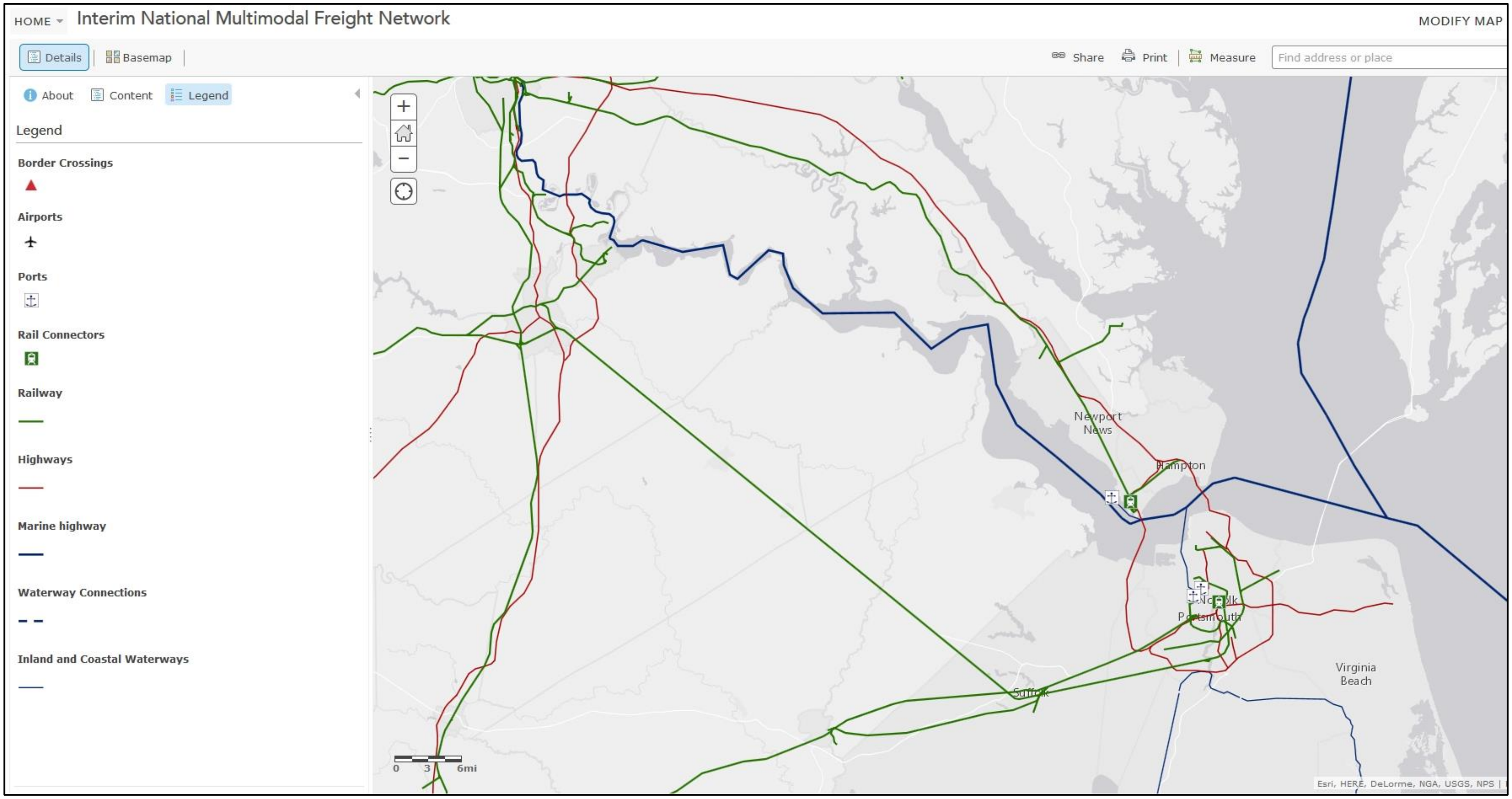


Figure 99 – Interim (Draft) National Multimodal Freight Network in Southeastern Virginia

Source: USDOT

FREIGHT FUNDING PROGRAMS

Historically, there has not been a dedicated Federal funding source tied specifically to projects that improve the movement of freight. This changed with the FAST Act, which created dedicated funding sources for freight projects through two new programs: the formula-based National Highway Freight Program (NHFP) and the discretionary Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program.

National Highway Freight Program

The FAST Act created the National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN). This network was described in detail in the previous section.

FHWA lists seven goals of the National Highway Freight Program. These goals are:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity.
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas.
- Improving the state of good repair of the NHFN.
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability.
- Improving the efficiency and productivity of the NHFN.
- Improving state flexibility to support multi-state corridor planning and address highway freight connectivity.
- Reducing the environmental impacts of freight movement on the NHFN.

The National Highway Freight Program also requires each state to have a statewide freight plan. In Virginia, this statewide freight plan is being prepared as part of the VTrans multimodal long-range planning effort. More information on the Virginia Multimodal Freight Plan and statewide freight planning is included in the Integration of Freight into the Transportation Planning Process section of this report.

Funding for the National Highway Freight Program is formula-based. The FAST Act authorizes $6.3 billion in funds over five years (Federal Fiscal Years 2016-2020) that is apportioned to the states. Virginia's estimated annual apportionment ranges between $28 and $39 million over this period (**Figure 100**), for a total of $162 million over the five-year period. Each state may transfer up to 50% of NHFP funds to other programs, including the National Highway Performance Program, Surface Transportation Block Grant Program, Transportation Alternatives Program, Highway Safety Improvement Program, and Congestion Mitigation and Air Quality Improvement Program.

Generally, NHFP funds must be allocated to projects that are on the National Highway Freight Network and included in the state's freight plan. Each state, however, may use up to 10 percent of NHFP funds for marine

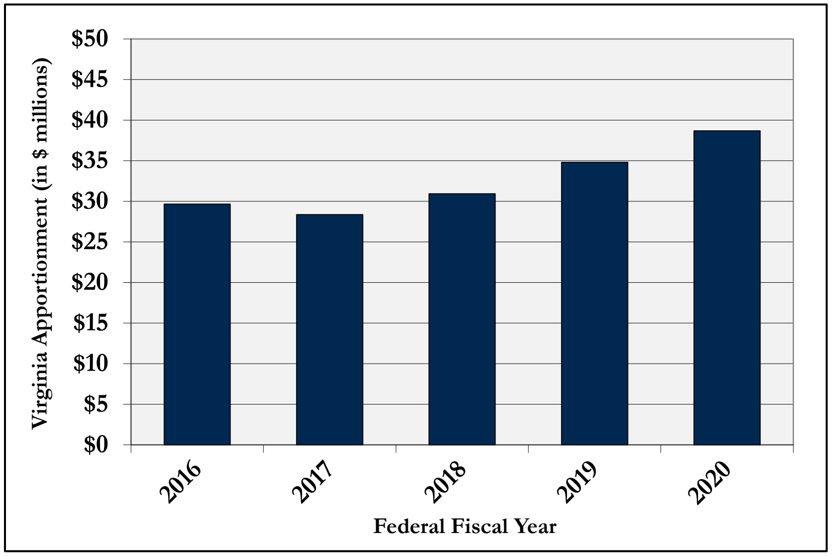


Figure 100 – Virginia NFHP Apportionments

Source: FHWA

terminal, freight intermodal, or freight rail projects. Examples of eligible projects and activities for NHFP funds include:

- Additional road capacity to address highway freight bottlenecks.
- A highway or bridge project to improve the flow of freight on the NHFN.
- A transportation project to improve the flow of freight into and out of an eligible intermodal freight facility.
- Intelligent transportation systems and other technology to improve the flow of freight.
- Railway-highway grade separations.
- Truck-only lanes.
- Truck parking facilities.
- Efforts to reduce the environmental impacts of freight movement.

Additional guidance on the National Highway Freight Program will be released in the future. More information on the NHFP, including the full list of eligible activities that can be funded by the program, is available at http://www.fhwa.dot.gov/fastact/factsheets/nhfpfs.cfm.

FASTLANE

In addition to the National Highway Freight Program, the FAST Act also created the Nationally Significant Freight and Highway Projects (NSFHP) program. The purpose of the program is to provide financial assistance to nationally and regionally significant freight and highway projects. These discretionary freight-focused grants are referred to as Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies, or FASTLANE grants.

FHWA lists seven goals for the FASTLANE grant program. These goals are:

- Improve the safety, efficiency, and reliability of the movement of freight and people.
- Generate national or regional economic benefits and an increase in global economic competitiveness of the United States.
- Reduce highway congestion and bottlenecks.
- Improve connectivity between modes of freight transportation.
- Enhance the resiliency of critical highway infrastructure and help protect the environment.
- Improve roadways vital to national energy security.
- Address the impact of population growth on the movement of people and freight.

Projects that are eligible to receive funding from the FASTLANE grant program include:

- Highway freight projects on the National Highway Freight Network (NHFN).
- Highway or bridge projects on the National Highway System (NHS).
- Railway-highway grade crossings or grade separation projects.
- Freight intermodal or freight rail projects.
- Projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility that facilitates direct intermodal interchange, transfer, or access into or out of the facility.

The FAST Act authorizes $4.5 billion in funds over five years (Federal Fiscal Years 2016-2020), with the annual amount ranging between $800 million and $1 billion. Of this $4.5 billion, at least 25% must be allocated to projects in rural areas, and at least 10% must be allocated to "small" projects as described below. Not more than $500 million of FASTLANE grants can be allocated to non-highway projects (such as freight rail, ports, or intermodal projects) over the five-year period.

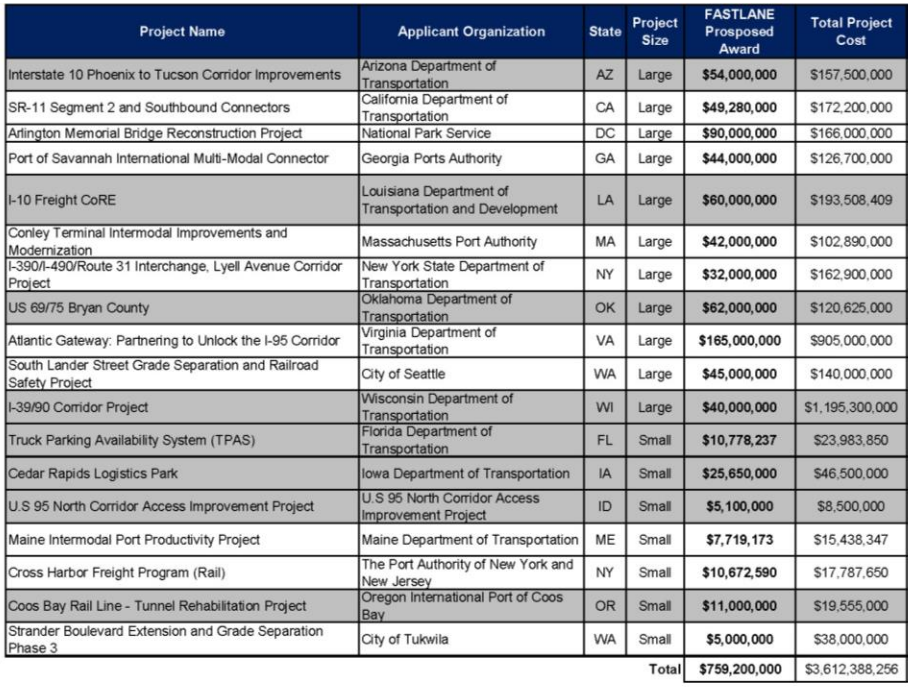
The minimum FASTLANE grants are $25 million for large projects and $5 million for small projects. In Virginia, projects that cost greater than $100 million are considered to be large projects, while those costing under $100 million are classified as small projects. FASTLANE grants can cover up to 60% of the total cost of each project, and an additional 20% of the project cost can be covered by other federal funding sources.

The application process for FASTLANE grants will be opened each year during the five-year period. A total of 212 applications totaling nearly $10 billion were submitted for the first round of FASTLANE grants in early 2016. Three projects were submitted in Hampton Roads in the first round:

- **The Hampton Roads Western Freight Gateway** – This project would improve safety and increase capacity for truck and rail traffic by widening the Western Freeway to six lanes and providing a grade-separated highway-rail crossing on Nansemond Parkway near Wilroy Road.
- **US Route 58 Hampton Roads Intermodal Corridor** – This project would widen Holland Road/Route 58 in Suffolk from four to six lanes from 0.7 miles to the west of Manning Bridge Road to the Suffolk Bypass.
- **Freeman Avenue/Norfolk-Portsmouth Belt Line Railroad Overpass** – This project would replace the current at-grade railroad crossing on Freeman Avenue in Chesapeake with a grade-separated crossing, greatly reducing delays in the corridor.

Of these 212 projects submitted for FASTLANE grants during the first round, 18 received FASTLANE funding. These projects are shown in **Figure 101**. Although no Hampton Roads projects were chosen, Virginia will receive $165 million in funding for the Atlantic Gateway project in Northern Virginia. This project, which received more FASTLANE funding than any other recipient, will enhance passenger and freight rail, extend the I-95 Express Lanes, and increase bus service along the corridor.

On October 28th, 2016, USDOT announced the application process for the second round of FASTLANE grants was open. The total funding available for the second round of FASTLANE grants is $850 million, and proposed projects were due by December 15th, 2016. One new project was submitted in the second round of funding for Hampton Roads – the I-64 Southside/High Rise Bridge widening project. The FASTLANE grant proposal was for $100 million of the total $600 million project cost. As of the publication of this report, FASTLANE grant recipients for the second round of funding had not been announced.



Project Name	Applicant Organization	State	Project Size	FASTLANE Prospsed Award	Total Project Cost
Interstate 10 Phoenix to Tucson Corridor Improvements	Arizona Department of Transportation	AZ	Large	**$54,000,000**	$157,500,000
SR-11 Segment 2 and Southbound Connectors	California Department of Transportation	CA	Large	**$49,280,000**	$172,200,000
Arlington Memorial Bridge Reconstruction Project	National Park Service	DC	Large	**$90,000,000**	$166,000,000
Port of Savannah International Multi-Modal Connector	Georgia Ports Authority	GA	Large	**$44,000,000**	$126,700,000
I-10 Freight CoRE	Louisiana Department of Transportation and Development	LA	Large	**$60,000,000**	$193,508,409
Conley Terminal Intermodal Improvements and Modernization	Massachusetts Port Authority	MA	Large	**$42,000,000**	$102,890,000
I-390/I-490/Route 31 Interchange, Lyell Avenue Corridor Project	New York State Department of Transportation	NY	Large	**$32,000,000**	$162,900,000
US 69/75 Bryan County	Oklahoma Department of Transportation	OK	Large	**$62,000,000**	$120,625,000
Atlantic Gateway: Partnering to Unlock the I-95 Corridor	Virginia Department of Transportation	VA	Large	**$165,000,000**	$905,000,000
South Lander Street Grade Separation and Railroad Safety Project	City of Seattle	WA	Large	**$45,000,000**	$140,000,000
I-39/90 Corridor Project	Wisconsin Department of Transportation	WI	Large	**$40,000,000**	$1,195,300,000
Truck Parking Availability System (TPAS)	Florida Department of Transportation	FL	Small	**$10,778,237**	$23,983,850
Cedar Rapids Logistics Park	Iowa Department of Transportation	IA	Small	**$25,650,000**	$46,500,000
U.S 95 North Corridor Access Improvement Project	U.S 95 North Corridor Access Improvement Project	ID	Small	**$5,100,000**	$8,500,000
Maine Intermodal Port Productivity Project	Maine Department of Transportation	ME	Small	**$7,719,173**	$15,438,347
Cross Harbor Freight Program (Rail)	The Port Authority of New York and New Jersey	NY	Small	**$10,672,590**	$17,787,650
Coos Bay Rail Line - Tunnel Rehabilitation Project	Oregon International Port of Coos Bay	OR	Small	**$11,000,000**	$19,555,000
Strander Boulevard Extension and Grade Separation Phase 3	City of Tukwila	WA	Small	**$5,000,000**	$38,000,000
			Total	**$759,200,000**	$3,612,388,256

Figure 101 – 2016 FASTLANE Grant Recipients
Source: USDOT.

More information on the FASTLANE grant program, including details on each of the 18 projects that received grants in 2016 and projects submitted for the second round of FASTLANE grants, is available at https://www.transportation.gov/buildamerica/FASTLANEgrants.

PERFORMANCE MEASURES

The Moving Ahead for Progress in the 21st Century (MAP-21) Act – the surface transportation authorization program prior to the FAST Act – established new requirements for performance management to ensure the most efficient investment of federal transportation funds. As part of the MAP-21 legislation (and continued under the FAST Act), states and MPOs are required to monitor the performance and establish targets in various areas, including roadway safety, pavement and bridge condition, congestion, air quality, and freight movement.

FHWA released the final rule for most performance measures on May 20, 2017. In the final rule, there is only one performance measure related to freight movement – Truck Travel Time Reliability (TTTR) – that states and MPOs would be required to report and establish targets for.

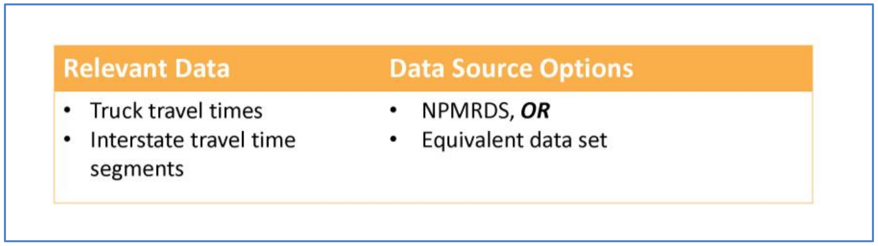
The Truck Travel Time Reliability measure is defined by FHWA as the percent of the Interstate System mileage providing for reliable truck travel times. The process to calculate this measure is as follows:

1) **Assemble truck travel times** – Truck travel times need to be obtained for each Interstate segment by direction for each 15-minute interval throughout the entire calendar year. This data can be obtained from various sources including the National Performance Management Research Data Set (NPMRDS) that is provided to states and MPOs by FHWA. For those intervals where freight travel times are not available or are clearly inaccurate, measured travel times for all vehicles should be substituted.

   All of these 15-minute truck travel times from each interval should be assigned to five time periods:

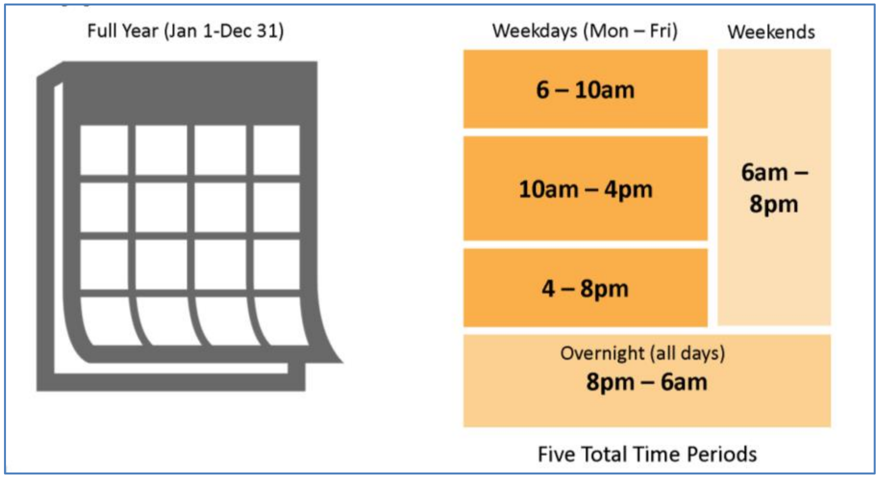
   - Weekday AM Peak (6 am – 10 am)
   - Weekday Midday (10 am – 4 pm)
   - Weekday PM Peak (4 pm – 8 pm)
   - Weekend Day (6 am – 8 pm on Saturdays and Sundays)
   - Overnight (8 pm – 6 am, all days)

2) **Identify median and 95th percentile travel times** – Using the travel time data assembled in Step 1, the truck travel times should be analyzed for each of these five time periods to determine the median (50th percentile) and 95th percentile travel times for each Interstate segment.



Relevant Data	Data Source Options
• Truck travel times • Interstate travel time segments	• NPMRDS, ***OR*** • Equivalent data set

Data Requirements for Freight Reliability Measure Source: FHWA



Data Requirements: Applicable Time Periods Source: FHWA

3) **Calculate the Truck Travel Time Reliability Ratio** – The next step is to calculate the Truck Travel Time Reliability Ratio (TTTR) for each Interstate segment for each of the five time periods. This ratio is defined as the 95th percentile travel times for trucks divided by the median (50th percentile) truck travel time. The largest of these five TTTR ratios is then defined as the Maximum TTTR for that Interstate segment.

4) **Calculate the overall Truck Travel Time Reliability Index** – Using the information from the previous step, multiply the

Maximum TTTR for each Interstate segment by the total length of the segment. These length-weighted TTTRs for all of the segments that make up the Interstate system should then be summed together and divided by the total length of the Interstate system segments to determine a single Truck Travel Time Reliability Index.

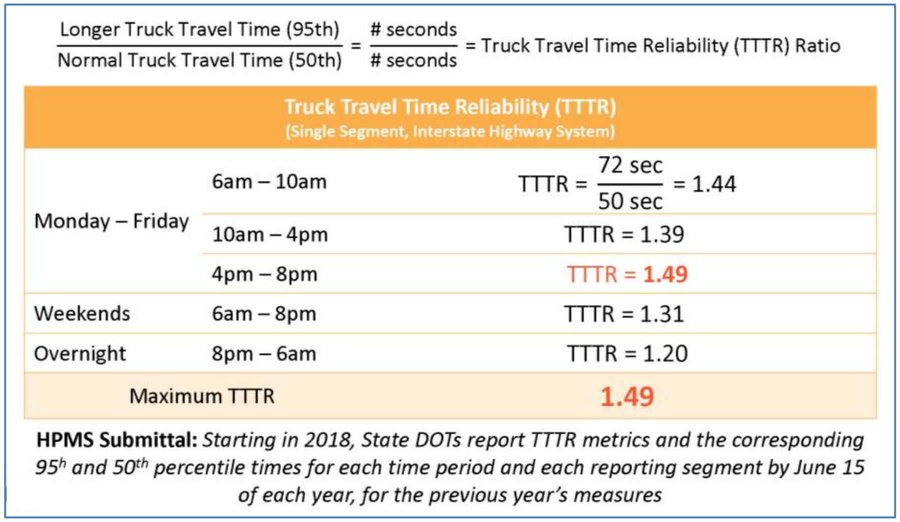
5) **Compare to target** – The Truck Travel Time Reliability Index that was calculated in the previous step is then compared to the target that was established by the state or MPO to determine whether the Truck Travel Time Reliability performance measure target is met.

States and MPOs will have to establish targets for the Truck Travel Time Reliability measure. According to the final rule, the first state target will be required to be set by May 20, 2018 and reported to FHWA by October 1, 2018. These state targets must be established for 2-year and 4-year horizons, but the 4-year target can be adjusted at the midpoint.

For MPOs, the first TTTR targets will be due within 180 days after the state targets are established. However, MPOs will only be responsible for 4-year performance targets. MPOs can choose to support statewide targets or can establish their own unique targets. MPOs will report performance measures and targets to the state, and will report baseline level and progress toward targets in the Long-Range Transportation Plan.

If FHWA determines that a state has not met (or made significant progress toward meeting) its performance targets related to freight movement two years after the targets are established, the state must submit documentation to FHWA that describes the actions it will take to meet these targets. However, there are no specific implications for MPOs not meeting their performance targets, although it could be addressed as part of FHWA's regular certification review of the MPO.

HRTPO will work with VDOT, the Freight Transportation Advisory Committee (FTAC) and the Transportation Technical Advisory Committee (TTAC) to determine freight performance measure targets for the region. These targets will then be approved by the HRTPO Policy Board.



$$\frac{\text{Longer Truck Travel Time (95th)}}{\text{Normal Truck Travel Time (50th)}} = \frac{\text{\# seconds}}{\text{\# seconds}} = \text{Truck Travel Time Reliability (TTTR) Ratio}$$

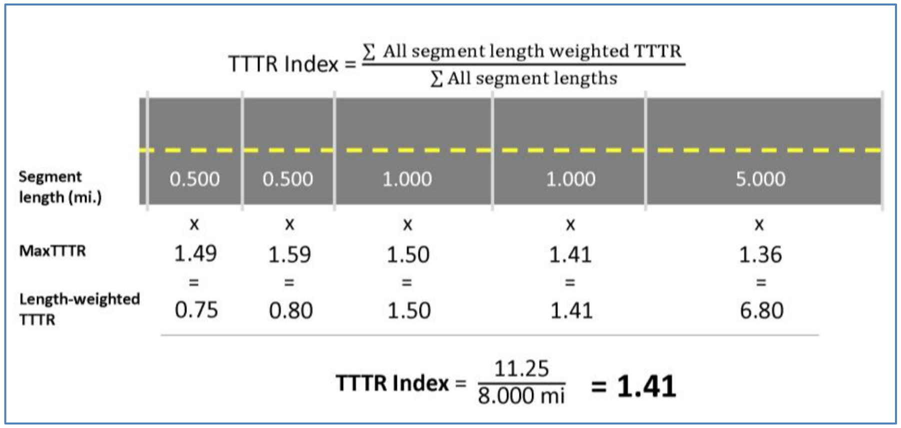
Truck Travel Time Reliability (TTTR)
(Single Segment, Interstate Highway System)

Monday – Friday	6am – 10am	TTTR = $\frac{72 \text{ sec}}{50 \text{ sec}}$ = 1.44
	10am – 4pm	TTTR = 1.39
	4pm – 8pm	TTTR = **1.49**
Weekends	6am – 8pm	TTTR = 1.31
Overnight	8pm – 6am	TTTR = 1.20
Maximum TTTR		**1.49**

HPMS Submittal: *Starting in 2018, State DOTs report TTTR metrics and the corresponding 95th and 50th percentile times for each time period and each reporting segment by June 15 of each year, for the previous year's measures*

Freight Reliability Metric

Source: FHWA



$$\text{TTTR Index} = \frac{\sum \text{All segment length weighted TTTR}}{\sum \text{All segment lengths}}$$

Segment length (mi.)	0.500	0.500	1.000	1.000	5.000
	x	x	x	x	x
MaxTTTR	1.49	1.59	1.50	1.41	1.36
	=	=	=	=	=
Length-weighted TTTR	0.75	0.80	1.50	1.41	6.80

$$\text{TTTR Index} = \frac{11.25}{8.000 \text{ mi}} = \mathbf{1.41}$$

Truck Travel Time Reliability Index

Source: FHWA

SUMMARY, CONCLUSIONS AND NEXT STEPS

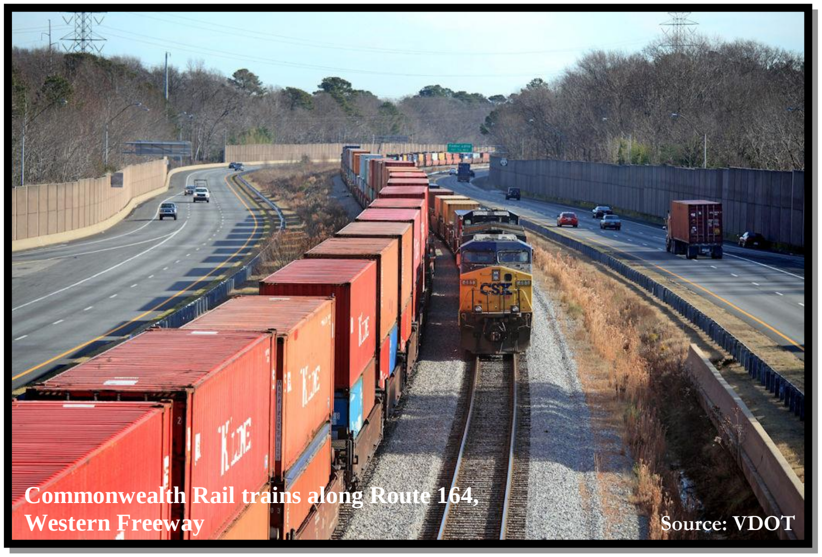
SUMMARY

This report contains an extensive analysis of freight movement to, from, and within Hampton Roads. A summary of key findings in this update of the Hampton Roads Regional Freight Study is provided below. Furthermore, this section includes some possible next steps to continue freight planning in the region.

FREIGHT FACILITIES, TRENDS, AND FORECASTS

Port

- Hampton Roads is home to the Port of Virginia's four deep water marine terminals with a total economic impact of $60 Billion in total revenue (FY 2015) to the Commonwealth of Virginia.
- The Port of Virginia is the 13th highest U.S. foreign trade freight gateway, moving $75.8 billion in shipments in 2014.
- The Port of Hampton Roads is currently the 6th largest container port in the U.S., and third largest on the East Coast. (2015)
- Cargo tonnage handled by the Port of Virginia has increased 40% since 2009, and will likely continue to increase.
- Coal loadings handled in Hampton Roads have decreased significantly over the last three years, from 51 million short tons in 2013 to 22 million short tons in 2016. However, Virginia remains the largest coal export port in North America.
- The Port of Virginia's channels (50 feet) are among the deepest on the East Coast, and the only port authorized to be deepened to 55 feet. Virginia's deep channels have historically attracted first-in/last out services that require deeper sailing drafts when fully loaded.
- The newest generation of containerships are larger and more efficient than previous ships. In 2016, the ship lines formed into three major carrier alliances that control nearly 90% of the Asia-North America trade. The alliances have vessel-sharing agreements that allow slot-sharing on these large mega ships which helps avoid financial losses accrued by operating less-than-full ships.


Commonwealth Rail trains along Route 164, Western Freeway

Source: VDOT

- Larger containerships will lead to new challenges for port facilities and the surrounding areas. Large influxes of containers will create more peaks and valleys that will need to be managed to ease road/rail congestion, workload operations, and driver needs.
- In May 2017, the first 13,000 TEU vessel (COSCO Development) will call the Port of Virginia – Virginia International Gateway, representing the beginning of a new era for Virginia and the East Coast. With the completion of the Panama Canal expansion in 2016 and other East Coast projects to raise navigational clearances in 2017, additional larger vessels will call Virginia's ports. The net effect is fewer vessel calls, but with larger amounts of containers that are discharged and loaded with each ship call resulting in surges that must be rapidly transferred from the ship/marine terminal and transported over road/rail connections.

Air

- Since 2000, air cargo at Norfolk International Airport has largely remained stable, peaking in 2004.

Rail

- The share of containerized cargo handled by the Port of Virginia has shifted towards rail. In 2006, 24% of all containers handled by the Port of Virginia were transported by rail. By 2016 this percentage had increased to 37% (over 551,000 rail containers). Port officials expect the amount of freight handled by rail to continue to increase. According to the Master Rail Plan, the Port of Virginia projects that it will transport nearly 1,000,000 containers by rail by the year 2040 (45% share), more than double what was handled by the Port in 2015.

Highway

- The region's bridges and tunnels are a significant source of traffic congestion for the movement of freight and people. Limited capacity at the major water crossings contribute to poor regional connectivity causing severe congestion and poor travel reliability. The existing water crossing highway network is fragile, such that minor incidents can cause major traffic delays due to limited alternatives. Decreasing performance combined with increasing volume of people and goods indicates the need for increased capacity and improved reliability across the harbor.
- Accordingly, there are a number of major roadway projects both underway and planned throughout the region to reduce roadway congestion and improve the movement of freight. These major projects include:
    - I-64 Widening on the Peninsula (various segments opening in 2018-2022)
    - I-564 Intermodal Connector (2018)
    - I-64/I-264 Interchange in Norfolk/Virginia Beach (phases opening in 2019-2021)
    - I-64 Southside/High-Rise Bridge Widening Phase I (2020)
    - Hampton Roads Bridge-Tunnel Widening (2024)

Intermodal Conflict Points

- There are over 400 highway-rail crossings on public roadways in Hampton Roads. These highway-rail crossings, particularly at the 296 locations where they occur at the same level or grade, can cause extensive delays for roadway travelers. They also result in fatalities and serious injuries when trains collide with roadway users. Over 1.4 million vehicles cross these 296 at-grade crossings each day.
- With the prevalence of navigable waterways in the region, there are currently nine movable roadway drawbridges, which carry nearly 400,000 vehicles each weekday. There are six railroad drawbridges located on the Southside of Hampton Roads, spanning the Eastern and Southern Branches of the Elizabeth River and the Intracoastal Waterway.

HAMPTON ROADS COMMODITY FLOWS

Summary of North American Freight Movement

- In 2012, 146 million tons (valued at $168 billion) of North American (USA, Canada, and Mexico) freight was transported to, from, within, and through Hampton Roads. By 2040, this is expected to increase by 53% in tonnage to 223 million tons and by 137% in value to $399 billion (constant $2012).
- The total tonnage moved by truck in Hampton Roads is expected to double from 75 to 148 million tons between 2012 and 2040. Similarly, the modal share for trucks is expected to increase from 51% to 66%. For this reason, **it is imperative for the region to improve the highways most used by the trucking industry in future years.**

Top Freight Generating Virginia Localities

- In 2012, the top 5 freight generating localities in Virginia were Norfolk (1st), Newport News (2nd), Fairfax County (3rd), Chesterfield County (4th), and Loudoun County (5th). By 2040, the top 5 are expected to be Norfolk (1st), Fairfax County (2nd), Chesapeake (3rd), Chesterfield County (4th), and Newport News (5th).

Hampton Roads Top Commodities – All Modes

- The top five commodities transported in 2012 include coal, nonmetallic minerals, secondary traffic, petroleum or coal products, and food or kindred products. By 2040, coal and petroleum or coal products are both expected to decrease by 18% and 29% respectively.

Net Annual Tonnage and Dollars Carried by Truck

- In 2012, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor and Route 58 between I-664 and the Suffolk Bypass. By 2040, the top corridors for moving freight tonnage are expected to be I-64, Route 58, Route 13/CBBT, and I-264 in Norfolk and Portsmouth. By 2040, the top two primary gateways for freight by annual tonnage are expected to be I-64 and Route 58. The IHS Transearch data analysis only includes existing roadways so the potential I-87 Interstate corridor may also be a top freight gateway in the future.

- In 2012, the highest freight flows in Hampton Roads in terms of dollar value are along I-64 on the Peninsula. By 2040, the highest freight flows by dollar value are expected to be along I-64, Route 58, HRBT, MMMBT, I-264 in Norfolk/Portsmouth, and Route 13/CBBT.

REGIONAL TRUCK MOVEMENT

Truck Travel in Hampton Roads

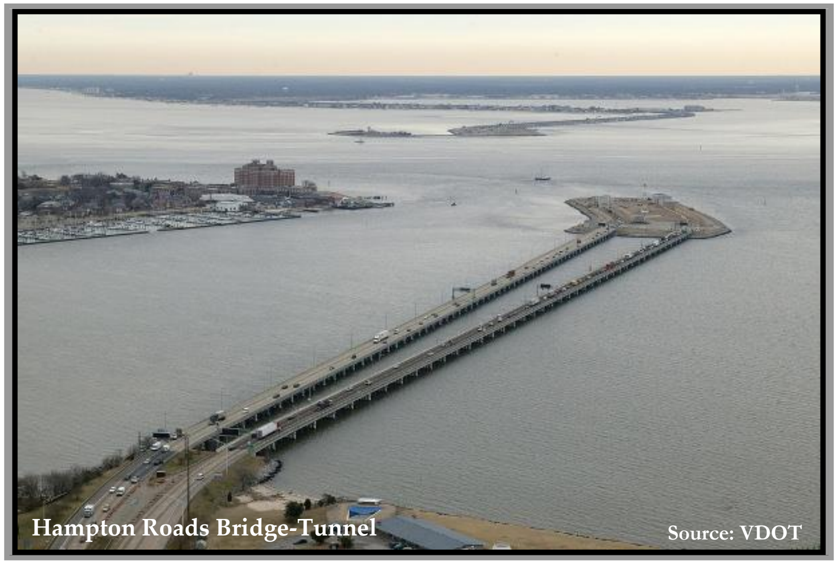
- In 2007 – prior to the economic downturn – there were 1.43 million truck-miles of travel in Hampton Roads each day. Truck travel then decreased each year, reaching a low of 1.13 million truck-miles of travel each day in 2012. As the economy has improved, truck volumes have increased slightly, but as of 2015, truck travel is still 16% below the pre-economic downturn levels of 2007.

Truck Movements through Regional Gateways

- The primary gateway for trucks entering or exiting Hampton Roads is I-64 (6,100 trucks each weekday in 2015). The next most traveled corridors for trucks entering and exiting the region are Route 58 (4,100 trucks) and Route 460 (2,100 trucks).
- **Combined, I-64, Route 58, and Route 460 accounted for 70% of all trucks passing through the region's major gateways in 2015.** However, the share of trucks using these three gateways has shifted over the last decade from I-64 towards Routes 58 and 460.

Truck Movements across Regional Water Crossings

- The Monitor-Merrimac Memorial Bridge-Tunnel (4,408 trucks/weekday) was the most used facility by trucks crossing the Hampton Roads Harbor in 2015, followed by the Hampton Roads Bridge-Tunnel (3,140 trucks/weekday) and James River Bridge (891 trucks/weekday).



Hampton Roads Bridge-Tunnel Source: VDOT

- A total of 16,200 trucks crossed the Elizabeth River each weekday in 2015. The High Rise Bridge at 7,900 trucks each weekday carried nearly half of the truck volume using the Elizabeth River crossings. The Downtown Tunnel carried the next highest number of trucks (3,265), although this is down from higher levels – 4,400 trucks per weekday in 2011 – prior to tolls being implemented. In spite of tolls also being implemented at the Midtown Tunnel, the volume of trucks carried by the facility in 2015 (2,009 trucks per weekday) is higher than in 2011 (1,771 trucks).

Freight Bottlenecks

Average delay per truck

- The roadway segments with the highest average delay per truck during the AM Peak Period are on I-64 approaching the Hampton Roads Bridge-Tunnel in the eastbound direction. Average delays range between 2.5-3.3 minutes per mile. Additional roadway segments with the highest average delays in the AM Peak Period include westbound Indian River Road, the eastbound approaches to the Downtown Tunnel and Berkley Bridge, and I-564 approaching Naval Station Norfolk.

- For the PM Peak Period, the roadway segment with the highest average delay per truck is I-664 Southbound approaching the Monitor-Merrimac Memorial Bridge-Tunnel, with average delays of up to 4.1 minutes per mile. Both approaches to the Hampton Roads Bridge-Tunnel have the next highest average delays, with average delays on the eastbound approach ranging between 2.9 and 3.6 minutes per mile, and delays on the westbound approach ranging between 2.3 and 2.7 minutes per mile.

Total truck delay

- As with average delays, most of the roadway segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. The segments with the highest total truck delays during the AM Peak Period are on the approach to the eastbound Hampton Roads Bridge-Tunnel. Total delay range between 6.9 and 7.3 truck-hours of delay per mile each weekday during the AM Peak Period. The segments with the next highest total truck delays include I-64 Westbound approaching the High Rise Bridge followed by approaches to the northbound Midtown Tunnel and Eastbound I-264 approaching the Downtown Tunnel.
- During the PM Peak Period, the roadway segment with the highest total truck delay in the region is eastbound Indian River Road between I-64 and Kempsville Road, with a total of 7.5-9.8 truck-hours of delay per mile each weekday. Other segments with the highest truck delay during the PM Peak Period include Southbound I-664 approaching the Monitor-Merrimac Memorial Bridge-Tunnel, and I-64 approaching the Hampton Roads Bridge-Tunnel in both directions.

Truck delay in High Profile Regional Corridors

- The corridor that has the highest weekday peak period truck delay in the region is the Hampton Roads Bridge-Tunnel (HRBT). Each weekday, there are over 80 truck-hours of delay in the HRBT corridor. This peak period truck delay at the HRBT amounts to over 20,000 hours annually, which equates to nearly $1.4 million in congestion costs for the trucking industry.
- The I-64/High Rise Bridge corridor in Chesapeake has the second highest weekday peak period truck delay, at an average of 63 hours each weekday. This adds up to nearly 16,000 hours of delay and $1.1 million in congestion costs incurred by the trucking industry annually.
- The high profile locations with the next highest truck delays and congestion costs are the Downtown Tunnel, I-64/I-564 corridor in Norfolk, the I-64/I-264 interchange area in Norfolk, and the Midtown Tunnel.

Truck Parking Challenges

- One of the largest challenges facing the freight movement industry is the availability of parking for trucks when drivers are tired or reach their mandatory rest periods. In the Hampton Roads area, there is currently a deficit of 848 truck parking spaces according to the VDOT *Virginia Truck Parking Study* (July 2015).
- Due to the impact of port terminals, there is a significant need for terminal truck staging and port-specific truck parking in the Hampton Roads region. Additional local needs include parking near the port terminals and parking for long-haul truck trips and regional truck trips.

CONCLUSIONS AND NEXT STEPS

Freight transportation influences every aspect of our daily lives and keeps our businesses and industries competitive in the local and global economy. While Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system that facilitates the efficient, reliable, and safe movement of freight, **our challenge will be to maintain and expand the system to meet the needs of tomorrow.**

Since the ISTEA legislation in 1991, Congress has encouraged the consideration of freight movement and intermodal connectivity in statewide and metropolitan transportation planning processes. As a result of this emphasis, the HRTPO has completed six Regional Freight Studies—including this update—since 1996. More recently, the HRTPO has conducted several other freight-related studies on a variety of topics, such as rail impacts, truck delays, and tolling. The HRTPO will continue to prepare these studies in order to improve the movement of goods and enhance connectivity among all modes of transportation in Hampton Roads. This is especially important since data from this study indicates that Hampton Roads freight tonnage is expected to increase 53% by 2040.

The overall purpose of this study is to understand the impact of freight movement on the region in order to guide policy and investment decisions—particularly for prioritizing transportation projects—that will improve connectivity, efficiency, reliability, and safety of the Hampton Roads multimodal transportation system. This report provides a description of existing and future freight facilities, trends, and forecasts for the Hampton Roads region. Furthermore, it shows existing and future commodity flows and identifies existing truck bottlenecks.

Many of the corridors identified as freight bottlenecks in this study have projects that are currently underway or programmed in the next few years. In 2016, a new tube opened at the Midtown Tunnel and widening of a section of Route 17 in York County was completed. Construction has also started on phases of I-64 on the Peninsula and the I-64/I-264 Interchange. By 2025, widenings of the Hampton Roads Bridge-Tunnel, I-64 on the Peninsula, I-64 in Chesapeake, and Holland Road in Suffolk should be completed.

Despite these projects that will address freight deficiencies, no funds have been identified for two highway corridors that serve as key Hampton Roads gateways: 1) I-64 for 29 miles between Hampton Roads and Richmond and 2) a limited-access route connecting Hampton Roads and I-95 along Route 58 or the potential I-87 Interstate corridor.

I-64 widening projects near Richmond and in Hampton Roads are underway and fully funded. Construction will commence soon to widen a six-mile stretch of I-64 from 4 to 6 lanes between the I-295 interchange east of Richmond (Exit 200) and the Bottoms Bridge/Quinton interchange (Exit 205), with an estimated completion date of Fall 2019. Construction is also underway to widen 21 miles of I-64 from 4 to 6 lanes in three phases from Bland Boulevard (near Exit 255) to approximately one mile west of Route 199/Newman Road (Exit 234), with an estimated completion date of Winter 2021. No funding, however, has been identified to widen the 29-mile gap between mileposts 205 and 234, 10 miles of which are located outside of the Richmond and Hampton Roads Metropolitan Planning Areas (See **Figure 102**).

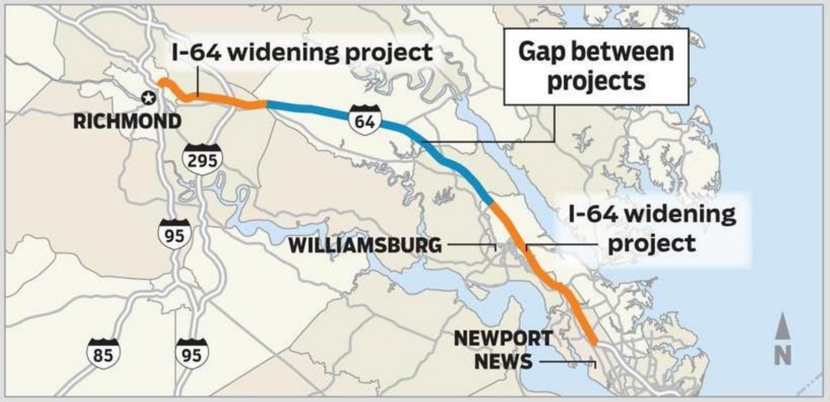


Figure 102 – 29-Mile Gap between I-64 Widening Projects
Source: Daily Press.

Port officials and other freight stakeholders in the region have expressed the desire for a limited-access connection between Hampton Roads and I-95 either along the existing Route 58 corridor (to Emporia) or along the potential I-87 corridor (to Rocky Mount, NC), both shown in **Figure 103**. **The Route 58 corridor is the second-heaviest freight gateway to and from the region (4,100 trucks per weekday).** Congestion, safety, and access management are some of the concerns along the existing Route 58

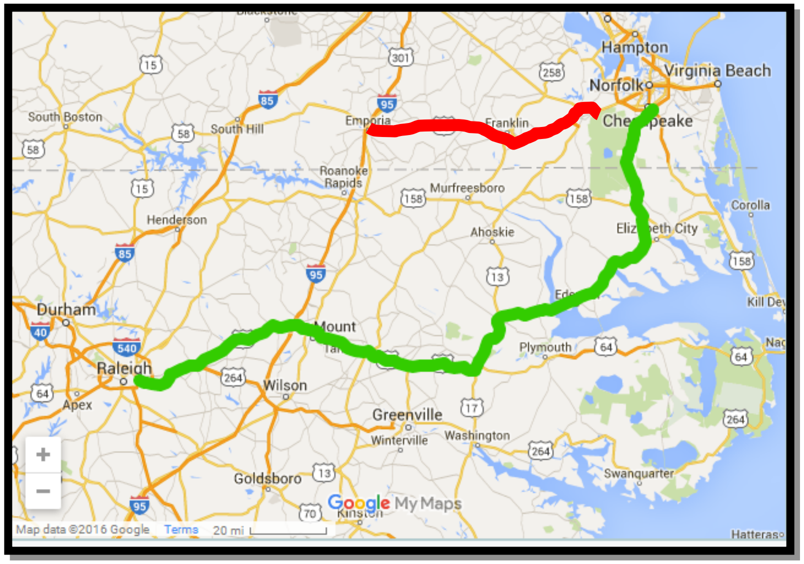
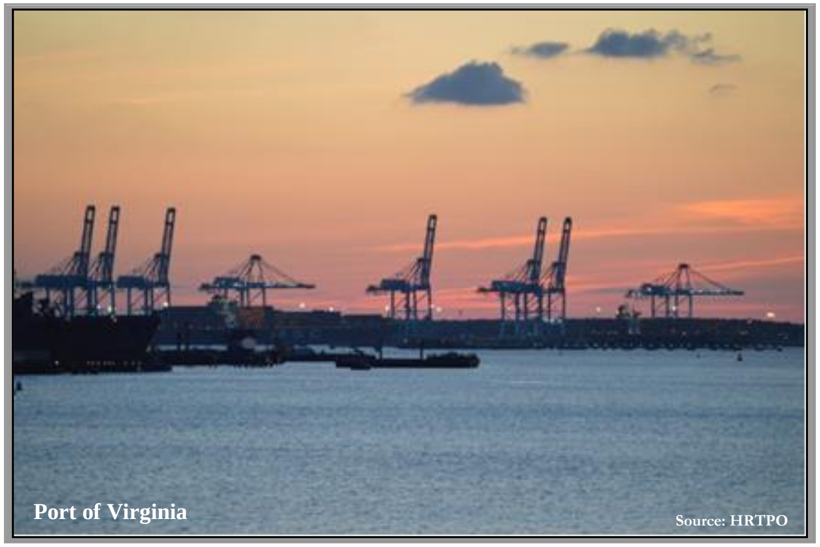


Figure 103 – Route 58 and Potential I-87 Interstate Corridors
Source: Regional Transportation Alliance and HRTPO.

corridor. Speed limits range from 35 mph to 60 mph, and there are a number of traffic signals. Funding is in place to widen a 3.1-mile section of Route 58/Holland Road in Suffolk from 4 to 6 lanes and provide intersection upgrades. While this project will improve freight movement, a long-term, corridor-wide solution is still necessary. Over the next two years, a Route 58 Corridor Feasibility Study will be prepared that will review further needs and develop recommendations. **Federal and state officials have authorized an "Interstate 87" designation for the US 64/17 corridor from Raleigh to Hampton Roads via Rocky Mount**, Williamston, and Elizabeth City in northeastern North Carolina. Despite the tremendous value of providing a limited-access connection between Hampton Roads and I-95 via either the Route 58 or proposed I-87 corridors, no funding has been identified for the construction of either improvement.

In 2009, 231,000 containers handled by the Port of Virginia were moved by rail. By 2016, this level had more than doubled to over 550,000 rail containers. **Port officials expect the share and amount of containers transported by rail to continue to increase as demand rises, up to nearly 1 million containers by rail by the year 2040.** In order to keep Virginia competitive and ensure the ability to handle anticipated rail volumes, the Port of Virginia, rail stakeholders, and state/local officials must work together to secure grant dollars, such as the Rail Enhancement Fund and federal grants, for rail improvement projects. Examples of rail improvement projects include on-dock improvements as part of the NIT South project and the National Gateway project, which includes improvements to the Virginia Avenue and Howard Street tunnels to allow for double-stacked trains. Funding improvements for highway-rail crossings will also be critical with the increased number of trains impacting congestion levels and safety at major crossings.

Since 2009, HRTPO staff has worked with regional freight stakeholders through the Freight Transportation Advisory Committee (FTAC), which advises the HRTPO Board on freight issues. Key freight business and community leaders participate on FTAC and have provided vital freight input for several HRTPO Board decisions. Staff remains committed to working with FTAC to help raise awareness of the importance of freight transportation to the region and to collect input from various stakeholders—including the public—on these matters.



Port of Virginia

Source: HRTPO

The Freight Transportation Advisory Committee (FTAC) has stated that implementing system-wide projects that keep cargo moving along the entire length of corridors is important. Both widening the 29-mile gap along I-64 and providing a limited access east-west connection to I-95 would provide system-wide benefits. HRTPO staff and other regional freight stakeholders will need to monitor the impact of regional transportation projects on truck travel patterns in order to address deficiencies in the transportation system.

HRTPO will continue to integrate freight into the Hampton Roads Long-Range Transportation Plan (LRTP), the blueprint for the region's multimodal transportation development. HRTPO freight studies feed directly into the LRTP process and provide freight-related inputs for the Project Prioritization Tool, which is used to score transportation projects in order to assist decision makers with project selection. HRTPO staff will incorporate the latest freight data and performance measures into the tool as they become available.

HRTPO staff has established and maintained a close working relationship with the Virginia Department of Transportation's (VDOT) Transportation and Mobility Planning Division and the Hampton Roads District for all statewide freight planning initiatives. HRTPO staff will continue to work with the state on statewide freight initiatives, such as VTrans, the Virginia

Multimodal Freight Plan, and freight committees. Additionally, the HRTPO plans to work with the state and peer MPOs to establish a network of Critical Urban Freight Corridors (CUFCs) in Virginia. These roadways should provide connections between the Interstate System and other important ports, public transportation facilities, or other intermodal freight facilities.

As discussed in this study, one of the largest challenges facing the freight industry within the Commonwealth of Virginia is the availability of parking for trucks. Many corridors throughout the state have a deficit between the demand for parking and the number of available spaces. Among the 14 Corridors of Statewide Significance, there is a deficit of nearly 5,000 truck parking spaces according to a recent VDOT study. This is not only a statewide problem, as Hampton Roads also has a parking deficit, according to VDOT. Due to these parking deficits, regional leaders should continue to work with VDOT and other freight stakeholders to improve these deficiencies.

There are federal grant programs that provide funding for freight and highway projects, including the new Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program. The FAST Act authorizes $4.5 billion in funds for FASTLANE grants over five years (Federal Fiscal Years 2016-2020). Although three Hampton Roads projects were submitted for the first round of FASTLANE grants in 2016 (the Hampton Roads Western Freight Gateway, US Route 58 Hampton Roads Intermodal Connector, and the Freeman Avenue/Norfolk-Portsmouth Belt Line Railroad Overpass), none of these projects were chosen to receive funding. For the second round of FASTLANE grants, Hampton Roads submitted a proposal for the I-64 Southside/High Rise Bridge widening project for $100 million of the total $600 million project cost. **The region must continue planning for projects that will benefit the movement of freight in order to have a better opportunity to submit** successful FASTLANE grants or other federal funding opportunities such as the Transportation Investment Generating Economic Recovery (TIGER) grants.

PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization's (HRTPO) efforts to provide opportunities for the public to review and comment on this draft report prior to the final product being published, a public review period was conducted from May 8, 2017 through June 16, 2017. No public comments were received. Comments were received from Virginia Department of Transportation (VDOT) staff, Virginia Port Authority (VPA) staff, and the Freight Transportation Advisory Committee (FTAC) on the draft report and have been addressed in the final report.

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Appendix A: Standard Transportation Commodity Codes (STCC)

1	**Farm Products**
01 12	Cotton, raw
01 13	Grain
01 14	Oil Kernels, Nuts Or Seeds
01 15	Field Seeds
01 19	Misc. Field Crops
01 21	Citrus Fruits
01 22	Deciduous Fruits
01 23	Tropical Fruits
01 29	Misc. Fresh Fruits Or Tree Nuts
01 31	Bulbs, roots Or Tubers
01 33	Leafy Fresh Vegetables
01 34	Dry Ripe Vegetable Seeds
01 39	Misc. Fresh Vegetables
01 41	Livestock
01 42	Dairy Farm Products
01 43	Animal Fibers
01 51	Live Poultry
01 52	Poultry Eggs
01 91	Horticultural Specialties
01 92	Animal Specialties
01 99	Farm Prod, NEC
8	**Forest Products**
08 42	Barks Or Gums, crude
08 61	Misc. Forest Products
9	**Fresh Fish Or Marine Products**
09 12	Fresh Fish Or Whale Products
09 13	Marine Products
09 89	Fish Hatcheries
10	**Metallic Ores**
10 11	Iron Ores
10 21	Copper Ores
10 31	Lead Ores
10 32	Zinc Ores
10 33	Lead And Zinc Ores Combined
10 41	Gold Ore
10 42	Silver Ore
10 51	Bauxite Or Other Alum Ores
10 61	Manganese Ores
10 71	Tungsten Ores
10 81	Chromium Ores
10 92	Misc. Metal Ores
11	**Coal**
11 11	Anthracite
11 21	Bituminous Coal
11 22	Lignite
13	**Crude Petrol. Or Natural Gas**
13 11	Crude Petroleum
13 12	Natural Gas
13 21	Natural Gasoline
14	**Nonmetallic Minerals**
14 11	Dimension Stone, quarry
14 21	Broken Stone Or Riprap
14 41	Gravel Or Sand
14 51	Clay Ceramic Or Refracted Minerals
14 71	Chem. Or Fertilizer Mineral Crude
14 91	Misc. Nonmetallic Minerals, NEC
14 92	Water
19	**Ordnance Or Accessories**
19 11	Guns, howitzers, mortars, Etc.
19 25	Guided Missiles Or Space Vehicle
19 29	Ammo Or Related Parts, NEC
19 31	Tracked Combat Vehicle Or Parts
19 41	Military Fire Control Equip
19 51	Small Arms, 30mm Or Less
19 61	Small Arms Ammo, 30mm Or Less
19 91	Misc. Ordnance Or Accessories
20	**Food Or Kindred Products**
20 11	Meat, Fresh Or Chilled
20 12	Meat, Fresh Frozen
20 13	Meat Products
20 14	Animal By-prod, inedible
20 15	Dressed Poultry, Fresh
20 16	Dressed Poultry, Frozen
20 17	Processed Poultry Or Eggs
20 21	Creamery Butter
20 23	Condensed, Evaporated Or Dry Milk
20 24	Ice Cream Or Rel Frozen Desserts
20 25	Cheese Or Special Dairy Products
20 26	Processed Milk
20 31	Canned Or Cured Sea Foods
20 32	Canned Specialties
20 33	Canned Fruits, vegetables, Etc.
20 34	Dehyd. Or Dried Fruit Or Vegetables
20 35	Pickled Fruits Or Vegetables
20 36	Processed Fish Products
20 37	Frozen Fruit, Vegetables Or Juice
20 38	Frozen Specialties
20 39	Canned Or Pres Food, Mixed
20 41	Flour Or Other Grain Mill Products
20 42	Prepared Or Canned Feed
20 43	Cereal Preparations
20 44	Milled Rice, Flour Or Meal
20 45	Blended Or Prepared Flour
20 46	Wet Corn Milling Or Milo
20 47	Dog, cat Or Other Pet Food, NEC
20 51	Bread Or Other Bakery Prod
20 52	Biscuits, Crackers Or Pretzels
20 61	Sugar Mill Prod Or By-prod
20 62	Sugar, Refined, Cane Or Beet
20 71	Candy Or Other Confectionery
20 82	Malt Liquors
20 83	Malt
20 84	Wine, brandy Or Brandy Spirit
20 85	Distilled Or Blended Liquors
20 86	Soft Drinks Or Mineral Water
20 87	Misc. Flavoring Extracts
20 91	Cottonseed Oil Or By-prod
20 92	Soybean Oil Or By-products
20 93	Nut Or Vegetables Oils Or By-products
20 94	Marine Fats Or Oils
20 95	Roasted Or Instant Coffee
20 96	Margarine, shortening, Etc.
20 97	Ice, Natural Or Manufactured
20 98	Macaroni, spaghetti, Etc.
20 99	Misc. Food Preparations, NEC
21	**Tobacco Products**
21 11	Cigarettes
21 21	Cigars
21 31	Chewing Or Smoking Tobacco
21 41	Stemmed Or Re-dried Tobacco
22	**Textile Mill Products**
22 11	Cotton Broad-woven Fabrics
22 17	Cotton Broad-woven Fabrics
22 21	Man-made Or Glass Woven Fiber
22 22	Silk-woven Fabrics
22 31	Wool Broad-woven Fabrics
22 41	Narrow Fabrics
22 51	Knit Fabrics
22 71	Woven Carpets, mats Or Rugs
22 72	Tufted Carpets, rugs Or Mats
22 79	Carpets, mats Or Rugs, NEC
22 81	Yarn
22 84	Thread
22 91	Felt Goods
22 92	Lace Goods
22 93	Padding, upholstery Fill, etc
22 94	Textile Waste, Processed
22 95	Coated Or Imprinted Fabric
22 96	Cord Or Fabrics, industrial
22 97	Wool Or Mohair
22 98	Cordage Or Twine
22 99	Textile Goods, NEC
23	**Apparel Or Related Products**
23 11	Men's Or Boys Clothing

Source: IHS Transearch Data Reference Guide, Prepared for VDOT, IHS Inc., 2014

Appendix A: Standard Transportation Commodity Codes (STCC) *continued*

23 31	Women's Or Children's Clothing
23 51	Millinery
23 52	Caps Or Hats Or Hat Bodies
23 71	Fur Goods
23 81	Gloves, mittens Or Linings
23 84	Robes Or Dressing Gowns
23 85	Raincoats Or Other Rain Wear
23 86	Leather Clothing
23 87	Apparel Belts
23 89	Apparel, NEC
23 91	Curtains Or Draperies
23 92	Textile House furnishings
23 93	Textile Bags
23 94	Canvas Products
23 95	Textile Prod, pleated, Etc.
23 96	Apparel Findings
23 99	Misc. Fabricated Textile Products
24	**Lumber Or Wood Products**
24 11	Primary Forest Materials
24 21	Lumber Or Dimension Stock
24 29	Misc. Sawmill Or Planing Mill
24 31	Millwork Or Cabinetwork
24 32	Plywood Or Veneer
24 33	Prefab Wood Buildings
24 34	Kitchen Cabinets, wood
24 39	Structural Wood Prod, NEC
24 41	Wood Cont. Or Box Shooks
24 91	Treated Wood Products
24 92	Rattan Or Bamboo Ware
24 93	Lasts Or Related Products
24 94	Cork Products
24 95	Hand Tool Handles
24 96	Scaffolding Equip Or Ladders
24 97	Wooden Ware Or Flatware
24 98	Wood Prod, NEC
24 99	Misc. Wood Products
25	**Furniture Or Fixtures**
25 11	Benches, chairs, Stools
25 12	Tables Or Desks
25 13	Sofas, Couches, Etc.
25 14	Buffets, China Closets, Etc.
25 15	Bedsprings Or Mattresses
25 16	Beds, dressers, chests, Etc.
25 17	Cabinets Or Cases
25 18	Children's Furniture
25 19	Household Or Office Furniture, NEC
25 31	Public Building Or Related Furniture
25 41	Wood Lockers, partitions, Etc.
25 42	Metal Lockers, partitions, Etc.
25 91	Venetian Blinds, shades, Etc.
25 99	Furniture Or Fixtures, NEC
26	**Pulp, paper Or Allied Products**
26 11	Pulp Or Pulp Mill Products
26 21	Paper
26 31	Fiber, Paper Or Pulp board
26 42	Envelopes
26 43	Paper Bags
26 44	Wallpaper
26 45	Die-cut Paper Or Pulp board Products
26 46	Pressed Or Molded Pulp Goods
26 47	Sanitary Paper Products
26 49	Misc. Converted Paper Products
26 51	Containers Or Boxes, paper
26 54	Sanitary Food Containers
26 55	Fiber Cans, Drums Or Tubes
26 61	Paper Or Building Board
27	**Printed Matter**
27 11	Newspapers
27 21	Periodicals
27 31	Books
27 41	Misc. Printed Matter
27 61	Manifold Business Forms
27 71	Greeting Cards, Seals, Etc.
27 81	Blank book, Loose Leaf Binder
27 91	Svc Indus For Print Trades
28	**Chemicals Or Allied Products**
28 11	Industrial, Inorganic, Or Org Chemicals
28 12	Potassium Or Sodium Compound
28 13	Industrial Gases
28 14	Crude Prod Of Coal, gas, petroleum
28 15	Cyclic Intermediates Or Dyes
28 16	Inorganic Pigments
28 18	Misc. Industrial Organic Chemicals
28 19	Misc. Indus Inorganic Chemicals
28 21	Plastic Mater Or Synthetic Fibers
28 31	Drugs
28 41	Soap Or Other Detergents
28 42	Specialty Cleaning Preparations
28 43	Surface Active Agents
28 44	Cosmetics, perfumes, Etc.
28 51	Paints, Lacquers, Etc.
28 61	Gum Or Wood Chemicals
28 71	Fertilizers
28 79	Misc. Agricultural Chemicals
28 91	Adhesives
28 92	Explosives
28 93	Printing Ink
28 99	Chemical Preparations, NEC
29	**Petroleum Or Coal Products**
29 11	Petroleum Refining Products
29 12	Liquefied Gases, coal Or Petroleum
29 51	Asphalt Paving Blocks Or Mix
29 52	Asphalt Coatings Or Felt
29 91	Misc. Coal Or Petroleum Products
30	**Rubber Or Misc. Plastics**
30 11	Tires Or Inner Tubes
30 21	Rubber Or Plastic Footwear
30 31	Reclaimed Rubber
30 41	Rub Or Plastic Hose Or Belting
30 61	Misc. Fabricated Products
30 71	Misc. Plastic Products
30 72	Misc. Plastic Products
31	**Leather Or Leather Products**
31 11	Leather, finished Or Tanned
31 21	Industrial Leather Belting
31 31	Boot Or Shoe Cut Stock
31 41	Leather Footwear
31 42	Leather House Slippers
31 51	Leather Gloves Or Mittens
31 61	Leather Luggage Or Handbags
31 99	Leather Goods, NEC
32	**Clay, concrete, glass Or Stone**
32 11	Flat Glass
32 13	Laminated Safety Glass
32 21	Glass Containers
32 29	Misc. Glassware, blown Or Pressed
32 41	Portland Cement
32 51	Clay Brick Or Tile
32 53	Ceramic Floor Or Wall Tile
32 55	Refractories
32 59	Misc. Structural Clay Products
32 61	Vitreous China Plumbing Fixtures
32 62	Vitreous China Kitchen Articles
32 64	Porcelain Electric Supplies
32 69	Misc. Pottery Products
32 71	Concrete Products
32 73	Ready-mix Concrete, Wet
32 74	Lime Or Lime Plaster
32 75	Gypsum Products
32 81	Cut Stone Or Stone Products
32 91	Abrasive Products
32 92	Asbestos Products
32 93	Gaskets Or Packing
32 95	Nonmetal Minerals, Processed
32 96	Mineral Wool
32 99	Misc. Nonmetallic Minerals

Source: IHS Transearch Data Reference Guide, Prepared for VDOT, IHS Inc., 2014

Appendix A: Standard Transportation Commodity Codes (STCC) *continued*

33	**Primary Metal Products**
33 11	Blast Furnace Or Coke
33 12	Primary Iron Or Steel Products
33 13	Electrometallurgical Products
33 15	Steel Wire, Nails Or Spikes
33 16	Cold Finishing Of Steel Shapes
33 21	Iron Or Steel Castings
33 31	Primary Copper Smelter Products
33 32	Primary Lead Smelter Products
33 33	Primary Zinc Smelter Products
33 34	Primary Aluminum Smelter Products
33 39	Misc. Prim Nonferrous Smelter Products
33 51	Copper Or Alloy Basic Shapes
33 52	Aluminum Or Alloy Basic Shapes
33 56	Misc. Nonferrous Basic Shapes
33 57	Nonferrous Wire
33 61	Aluminum Or Alloy Castings
33 62	Copper Or Alloy Castings
33 69	Misc. Nonferrous Castings
33 91	Iron Or Steel Forgings
33 92	Nonferrous Metal Forgings
33 99	Primary Metal Products, NEC
34	**Fabricated Metal Products**
34 11	Metal Cans
34 21	Cutlery, not Electrical
34 23	Edge Or Hand Tools
34 25	Hand Saws Or Saw Blades
34 28	Builders Or Cabinet Hardware
34 29	Misc. Hardware
34 31	Metal Sanitary Ware
34 32	Plumbing Fixtures
34 33	Heating Equip, not Electrical
34 41	Fabricated Structural Metal Products
34 42	Metal Doors, Sash, Etc.
34 43	Fabricated Plate Products
34 44	Sheet Metal Products
34 46	Architectural Metal Work
34 49	Misc. Metal Work
34 52	Bolts, Nuts, Screws, Etc.
34 61	Metal Stampings
34 81	Misc. Fabricated Wire Products
34 91	Metal Shipping Containers
34 92	Metal Safes Or Vaults
34 93	Steel Springs
34 94	Valves Or Pipe Fittings
34 99	Fabricated Metal Products, NEC
35	**Machinery**
35 11	Steam Engines, Turbines, Etc.
35 19	Misc. Internal Combustion Engines
35 22	Farm Machinery Or Equipment
35 23	Farm Machinery Or Equipment
35 24	Lawn Or Garden Equipment
35 31	Construction Machinery Or Equipment
35 32	Mining Machinery Or Parts
35 33	Oil Field Machinery Or Equipment
35 34	Elevators Or Escalators
35 35	Conveyors Or Parts
35 36	Hoists, Industry Cranes, Etc.
35 37	Industrial Trucks, Etc.
35 41	Machine Tools, Metal Cutting
35 42	Machine Tools, Metal Forming
35 44	Special Dies, tools, jigs, etc.
35 45	Machine Tool Accessories
35 48	Metalworking Machinery
35 51	Food Prod Machinery
35 52	Textile Machinery Or Parts
35 53	Woodworking Machinery
35 54	Paper Industries Machinery
35 55	Printing Trades Machinery
35 59	Misc. Special Industry Mach
35 61	Industrial Pumps
35 62	Ball Or Roller Bearings
35 64	Ventilating Equipment
35 66	Mech. Power Transmission Equipment
35 67	Industrial Process Furnaces
35 69	Misc. General Industrial
35 72	Typewriters Or Parts
35 73	Electronic Data Proc Equipment
35 74	Accounting Or Calculating Equipment
35 76	Scales Or Balances
35 79	Misc. Office Machines
35 81	Automatic Merchandising Machines
35 82	Commercial Laundry Equipment
35 85	Refrigeration Machinery
35 89	Misc. Service Industry Machinery
35 92	Carburetors, Pistons, Etc.
35 99	Misc. Machinery Or Parts
36	**Electrical Equipment**
36 11	Electric Measuring Instruments
36 12	Electrical Transformers
36 13	Switchgear Or Switchboards
36 21	Motors Or Generators
36 22	Industrial Controls Or Parts
36 23	Welding Apparatus
36 24	Carbon Prod For Electric Uses
36 29	Misc. Electrical Industrial Equipment
36 31	Household Cooking Equipment
36 32	Household Refrigerators
36 33	Household Laundry Equipment
36 34	Electric House wares Or Fans
36 35	Household Vacuum Cleaners
36 36	Sewing Machines Or Parts
36 39	Misc. Household Appliances
36 41	Electric Lamps
36 42	Lighting Fixtures
36 43	Current Carrying Wiring Equipment
36 44	Non-current Wiring Devices
36 51	Radio Or TV Receiving Sets
36 52	Phonograph Records
36 61	Telephone Or Telegraph Equipment
36 62	Radio Or TV Transmitting Equipment
36 71	Electronic Tubes
36 74	Solid State Semi conducts
36 79	Misc. Electronic Components
36 91	Storage Batteries Or Plates
36 92	Primary Batteries
36 93	X-ray Equipment
36 94	Electric Equip For Intern Comb Engine
36 99	Electrical Equipment, NEC
37	**Transportation Equipment**
37 11	Motor Vehicles
37 12	Passenger Motor Car Bodies
37 13	Motor Bus Or Truck Bodies
37 14	Motor Vehicle Parts Or Accessories
37 15	Truck Trailers
37 21	Aircraft
37 22	Aircraft Or Missile Engines
37 23	Aircraft Propellers Or Parts
37 29	Misc. Aircraft Parts
37 32	Ships Or Boats
37 41	Locomotives Or Parts
37 42	Railroad Cars
37 51	Motorcycles, Bicycles Or Parts
37 69	Missile Or Space Vehicle Parts
37 91	Trailer Coaches
37 99	Transportation Equipment, NEC
38	**Instruments, Photo Equipment, Optical Equip**
38 11	Engrg, Lab Or Scientific Equipment
38 21	Mechanical Measuring Or Control Equipment
38 22	Automatic Temperature Controls
38 31	Optical Instruments Or Lenses
38 41	Surgical Or Medical Instruments
38 42	Orthopedic Or Prosthetic Supplies
38 43	Dental Equipment Or Supplies
38 51	Ophthalmic Or Opticians Goods
38 61	Photographic Equip Or Supplies
38 71	Watches, Clocks, Etc.
39	**Misc. Manufacturing Products**
39 11	Jewelry, Precious Metal, Etc.

Source: IHS Transearch Data Reference Guide, Prepared for VDOT, IHS Inc., 2014

Appendix A: Standard Transportation Commodity Codes (STCC) *continued*

39 14	Silverware Or Plated Ware
39 31	Musical Instruments Or Parts
39 41	Games Or Toys
39 42	Dolls Or Stuffed Toys
39 43	Children's Vehicle Or Parts, NEC
39 49	Sporting Or Athletic Goods
39 51	Pens Or Parts
39 52	Pencils, crayons, or Artists Materials
39 53	Marking Devices
39 55	Carbon Paper Or Inked Ribbons
39 61	Costume Jewelry Or Novelties
39 62	Feathers, Plumes, Etc.
39 63	Buttons
39 64	Apparel Fasteners
39 91	Brooms, Brushes, Etc.
39 92	Linoleum Or Other Coverings
39 93	Signs Or Advertising Displays
39 94	Morticians Goods
39 96	Matches
39 97	Furs, dressed Or Dyed
39 99	Manufactured Prod, NEC
40	**Waste Or Scrap Materials**
40 11	Ashes
40 21	Metal Scrap Or Tailings
40 22	Textile Scrap Or Sweepings
40 23	Wood Scrap Or Waste
40 24	Paper Waste Or Scrap
40 25	Chemical Or Petroleum Waste
40 26	Rubber Or Plastic Scrap
40 27	Stone, Clay Or Glass Scrap
40 28	Leather Waste Or Scrap
40 29	Misc. Waste Or Scrap
41	**Misc. Freight Shipments**
41 11	Misc. Freight Shipments
41 21	Special Commodities
41 92	Special Commodities
42	**Shipping Containers**
42 11	Shipping Containers
42 21	Semi-trailers Returned Empty
42 31	Empty Equipment, Reverse Route
43	**Mail Or Contract Traffic**
43 11	Mail And Express Traffic
43 21	Other Contract Traffic
44	**Freight Forwarder Traffic**
44 11	Freight Forwarder Traffic
45	**Shipper Association Traffic**
45 11	Shipper Association Traffic
46	**Misc. Mixed Shipments**
46 11	Fak Shipments
46 21	Mixed Shipments, Multi-STCC
47	**Small Packaged Freight Shipments**
47 11	Small Packaged Freight Shipments
48 04	Waste Nonflammable Compressed Gases
48 05	Waste Flammable Compressed Gases
48 07	Waste Flammable Liquids
48 08	Waste Flammable Liquids
48 09	Waste Flammable Liquids
48 12	Flammable Liquids
48 13	Waste Combustible Liquids
48 14	Combustible Liquids
48 15	Waste Combustible Liquids
48 16	Waste Flammable Solids
48 17	Waste Flammable Solids
48 18	Waste Oxidizing Materials
48 21	Waste Poison B, Organic
48 23	Waste Poisonous Materials
48 25	Waste Etiologic Agents
48 29	Waste Radioactive Materials
48 31	Waste Corrosive Materials
48 32	Waste Corrosive Materials
48 35	Waste Corrosive Materials
48 36	Waste Corrosive Materials
48 45	Waste Other Regulated Materials, Group C
48 61	Waste Miscellaneous Hazardous Materials
48 62	Waste Misc. Hazardous Materials
48 63	Waste Miscellaneous Hazardous Materials
48 66	Waste Miscellaneous Hazardous Materials
48 75	Waste Stream Other Regulated
49	**Hazardous Materials**
49 01	Ammunition & Class A Explosives
49 02	Class B Explosives
49 03	Class C Explosives
49 04	Non Flammable Compressed Gases
49 05	Flammable Compressed Gases
49 06	Flammable Liquids
49 07	Flammable Liquids
49 08	Flammable Liquids
49 09	Flammable Liquids
49 12	Combustible Liquids
49 13	Combust bale Liquids
49 14	Combustible Liquids
49 15	Combust bale Liquids
49 16	Combustible Solids
49 17	Flammable Solids
49 18	Oxidizing Materials
49 19	Organic Peroxides
49 21	Poisons B, organic
49 23	Poisons B, inorganic
49 25	Irritating Materials - Etiologic Agents
49 26	Radioactive Materials
49 27	Radioactive Materials, Fissile Cl Iii
49 28	Radioactive Materials, Fissile Cl Ii
49 29	Radioactive Materials, Fissile Cl I
49 31	Corrosive Materials
49 32	Corrosive Materials
49 33	Corrosive Materials
49 34	Corrosive Materials
49 35	Corrosive Materials
49 36	Corrosive Materials
49 41	Other Regulated Materials Group A
49 44	Other Regulated Materials Group B
49 45	Other Regulated Material
49 60	Division 9 Environmentally Hazardous
49 61	Other Regulated Materials Group E
49 62	Other Regulated Materials Group E
49 63	Other Regulated Materials Group E
49 66	Other Regulated Materials Group E
50	**Secondary Traffic**
50 21	Rail Intermodal Drayage to Ramp
50 22	Rail Intermodal Drayage from Ramp
50 31	Air Freight Drayage to Airport
50 32	Air Freight Drayage from Airport
60	**Unclassified**

Source: IHS Transearch Data Reference Guide, Prepared for VDOT, IHS Inc., 2014

Appendix B: Detailed Summary of North American Freight Movement by Weight (Tons) – Hampton Roads, 2012

	Inbound					Outbound					Within HR			Through HR		
Commodity Description	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Truck**	**Rail**	**TOTAL**
TOTAL, ALL COMMODITIES	**34,846,991**	**58,693,106**	**3,443,046**	**17,415**	**13**	**25,594,635**	**2,525,443**	**4,299,468**	**14,288**	**83**	**7,401,948**	**13,800**	**1,213,811**	**7,175,800**	**649,108**	**145,888,954**
COAL	0	50,890,445	0	0	0	0	0	1,557,804	0	0	0	0	9,555	0	0	52,457,804
NONMETALLIC MINERALS	10,786,111	1,915,696	1,246,031	0	0	2,201,761	69,400	74,023	0	0	355,490	0	93,428	1,270,135	297,244	18,309,319
SECONDARY TRAFFIC	4,549,103	0	0	0	0	4,856,152	0	0	0	0	3,764,833	0	0	425,227	0	13,595,315
PETROLEUM OR COAL PRODUCTS	3,190,890	158,120	302,780	0	0	4,580,729	400	1,708,737	0	0	1,102,582	0	798,448	577,663	0	12,420,349
FOOD OR KINDRED PRODUCTS	3,358,073	681,004	7,911	3		2,267,592	44,640	10,000	0	4	158,489	0	9,249	876,578	0	7,413,543
CLAY,CONCRETE,GLASS OR STONE	1,670,971	383,124	114,015	0	0	2,618,041	36,460	10,379	0	5	1,401,419	0	10,519	417,519	22,660	6,685,113
FARM PRODUCTS	1,653,722	1,096,764	845,405	0	0	682,578	22,536	240,665	0	0	65,777	0	54,791	1,315,705	3,204	5,981,146
CHEMICALS OR ALLIED PRODUCTS	1,785,696	638,053	317,142	362	0	1,234,718	229,880	196,783	0	53	24,760	7,840	187,182	399,358	3,960	5,025,787
MISC MIXED SHIPMENTS	3,351	2,370,360	433,756	5,076	11		1,644,760	332,483	4,779	0	0	0	30,921	584	0	4,826,080
WASTE OR SCRAP MATERIALS	2,154,626	101,240	11,669	0	0	1,512,862	14,840	116,171	0	0	221,808	0	8,599	195,516	0	4,337,331
LUMBER OR WOOD PRODUCTS	1,205,694	32,120	183	0	0	561,156	7,760	113	0		24,488	0	0	878,940	28,560	2,739,014
PULP,PAPER OR ALLIED PRODUCTS	1,047,332	271,000	142,314	57	0	425,387	18,600	2,591	0	0	8,468	5,960	0	442,689	0	2,364,397
MACHINERY	580,590	16,280	1,010	437	0	965,158	6,480	1,693	1,046	10	118,817	0	0	17,789	0	1,709,311
PRIMARY METAL PRODUCTS	712,141	11,880	4,598	136	0	291,747	337,760	1,003	0	1	12,918	0	478	77,204	251,760	1,701,625
TRANSPORTATION EQUIPMENT	500,855	38,100	76	275	0	900,100	39,407	31	0	7	36,368	0	0	30,957	0	1,546,176
FABRICATED METAL PRODUCTS	381,570	4,400	4,362	129	2	411,141	400	6,923	166	0	31,876	0	9,878	34,090	0	884,938
RUBBER OR MISC PLASTICS	384,174	5,080	191	104	0	312,654	11,720	3,581	0	0	8,181	0	764	44,683	0	771,133
ELECTRICAL EQUIPMENT	295,887	6,520	87	1,322	0	309,660	18,880		1,291	1	10,945	0	0	30,489	0	675,082
FURNITURE OR FIXTURES	84,473	800	2	31	0	416,257	800	129	0	0	13,138	0	0	10,969	0	526,600
MISC MANUFACTURING PRODUCTS	67,144	2,640	5	438	0	202,780	2,080	8	150	0	9,553	0	0	7,920	0	292,717
FRESH FISH OR MARINE PRODUCTS	27,325	2,000	3,757	37	0	173,666	0	0	0	0	9,684	0	0	60,875	0	277,344
APPAREL OR RELATED PRODUCTS	40,415	22,360	4	0	0	192,933	3,440	0	0	0	6,983	0	0	2,971	0	269,106
FOREST PRODUCTS	10,532	0	0	0	0	192,500	6,720	0	0	0	815	0	0	36,351	0	246,918
PRINTED MATTER	111,315	1,240	175	148	0	94,612	0	0	26	0	3,779	0	0	8,181	0	219,477
TEXTILE MILL PRODUCTS	77,913	0	0	42	0	117,733	400	20	1	0	3,932	0	0	5,862	0	205,903
TOBACCO PRODUCTS	83,681	0	7,567	0	0	7,578	800	36,322	0	0	1,327	0	0	3,195	0	140,471
INSTRUMENTS, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	45,738	0	4	455	0	26,777	0	10	0	0	1,771	0	0	3,401	0	78,155
METALLIC ORES	6,690	33,680	0	0	0	5,103	0	0	0	0	1,607	0	0	599	0	47,679
LEATHER OR LEATHER PRODUCTS	15,580	0	0	0	0	25,400	0	0	0	0	1,622	0	0	208	0	42,810
WASTE NONFLAMMABLE COMPRESSED GASES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,720	41,720
ORDNANCE OR ACCESSORIES	15,340	0	0	0	0	7,783	1,200	0	0	0	518	0	0	142	0	24,983
SMALL PACKAGED FREIGHT SHIPMENTS	0	0	0	8,259	0	0	0	0	6,828	0	0	0	0	0	0	15,087
MISC FREIGHT SHIPMENTS	27	7,280	2	0	0	77	5,680	0	0	0	0	0	0	0	0	13,066
INSTRUM, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	0	2,920	0	0	0	0	400	0	0	0	0	0	0	0	0	3,320
MAIL OR CONTRACT TRAFFIC	0	0	0	106	0	0	0	0	0	0	0	0	0	0	0	106
CRUDE PETROL. OR NATURAL GAS	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
SHIPPING CONTAINERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: HRTPO and VDOT analysis of IHS Transearch Data
For a commodity description of Secondary Traffic, Misc. Mixed Shipments, and Shipping Containers refer to pages 55-56.

Appendix B: Detailed Summary of North American Freight Movement by Weight (Tons) – Hampton Roads, 2040

	Inbound					Outbound					Within HR			Through HR		
Commodity Description	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Truck**	**Rail**	**TOTAL**
TOTAL, ALL COMMODITIES	**67,764,006**	**57,779,996**	**6,767,619**	**22,885**	**65**	**53,312,716**	**4,046,990**	**3,794,126**	**33,037**	**316**	**13,028,703**	**18,752**	**1,140,855**	**13,807,819**	**1,167,805**	**222,685,689**
COAL	0	42,498,367	0	0	0	0	0	567,856	0	0	0	0	5,370	0	0	43,071,593
NONMETALLIC MINERALS	23,291,564	3,546,814	2,471,582	0	0	7,339,716	118,438	97,159	0	0	1,249,793	0	116,004	2,791,067	551,137	41,573,275
SECONDARY TRAFFIC	6,689,857	0	0	0	0	9,605,151	0	0	0	0	5,702,305	0	0	1,068,766	0	23,066,079
CLAY,CONCRETE,GLASS OR STONE	2,775,140	838,607	313,052	0	0	10,546,504	69,498	47,212	0	20	3,470,628	0	32,071	1,826,667	57,543	19,976,941
FARM PRODUCTS	3,323,080	4,015,086	1,948,791	0	0	2,160,258	41,041	558,004	0	0	159,337	0	258,564	2,405,380	5,221	14,874,763
FOOD OR KINDRED PRODUCTS	6,791,859	1,155,503	17,103	4	0	3,697,509	97,591	16,895	0	15	364,311	0	10,691	1,572,991	0	13,724,472
CHEMICALS OR ALLIED PRODUCTS	4,335,243	1,371,185	475,212	875	0	3,904,108	423,293	289,746	0	202	74,816	8,511	316,057	481,686	4,909	11,685,844
WASTE OR SCRAP MATERIALS	5,373,795	286,421	14,485	0	0	2,277,055	21,930	207,297	0	0	795,551	0	9,651	406,053	0	9,392,237
PETROLEUM OR COAL PRODUCTS	3,579,866	192,016	338,239	0	0	2,187,359	369	1,103,965	0	0	444,817	0	312,591	637,340	0	8,796,562
MISC MIXED SHIPMENTS	18,447	3,232,665	925,380	6,323	58	0	2,556,682	881,682	10,345	0	0	0	73,130	3,215	0	7,707,927
LUMBER OR WOOD PRODUCTS	2,288,422	59,022	362	0	0	1,026,540	14,705	331	0	0	54,754	0	0	1,304,888	44,739	4,793,763
PULP,PAPER OR ALLIED PRODUCTS	2,505,354	342,700	251,894	115	0	628,340	28,600	6,834	0	0	17,135	10,241	0	610,346	0	4,401,559
MACHINERY	1,674,757	35,530	1,138	668	0	1,931,949	15,276	1,814	1,827	40	322,147	0	0	57,905	0	4,043,051
PRIMARY METAL PRODUCTS	1,040,240	7,321	278	4	0	341,202	425,653	957	0	5	9,409	0	511	155,688	449,254	2,430,521
ELECTRICAL EQUIPMENT	789,272	18,593	515	1,098	0	1,134,645	66,529	0	4,605	3	50,143	0	0	64,393	0	2,129,796
TRANSPORTATION EQUIPMENT	682,840	68,751	133	627	0	1,052,345	90,182	106	0	27	38,820	0	0	75,996	0	2,009,827
RUBBER OR MISC PLASTICS	865,852	14,255	589	155	0	893,837	35,317	4,650	0	0	25,514	0	1,529	105,725	0	1,947,423
FURNITURE OR FIXTURES	190,233	622	13	60	0	1,289,662	622	721	0	1	71,463	0	0	18,939	0	1,572,336
MISC MANUFACTURING PRODUCTS	199,580	10,041	15	824	0	1,095,884	11,665	35	1,602	0	51,848	0	0	19,557	0	1,391,051
FABRICATED METAL PRODUCTS	504,005	9,191	834	149	6	556,822	836	2,000	59	1	54,947	0	4,686	71,345	0	1,204,881
APPAREL OR RELATED PRODUCTS	37,119	9,291	15	0	0	469,135	9,566	0	0	1	19,362	0	0	4,689	0	549,179
TEXTILE MILL PRODUCTS	251,372	0	0	19	0	283,075	412	92	3	0	9,680	0	0	3,658	0	548,311
INSTRUMENTS, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	203,272	0	19	1,460	0	205,404	0	44	0	0	13,092	0	0	11,997	0	435,288
PRINTED MATTER	132,992	2,863	281	140	0	191,545	0	0	5	0	7,251	0	0	13,074	0	348,151
FRESH FISH OR MARINE PRODUCTS	43,996	3,030	5,226	16	0	207,332	0	0	0	0	14,422	0	0	55,370	0	329,393
FOREST PRODUCTS	13,392	0	0	0	0	187,243	6,878	0	0	0	749	0	0	39,109	0	247,371
ORDNANCE OR ACCESSORIES	61,841	0	0	0	0	41,306	2,200	0	0	0	1,858	0	0	434	0	107,639
TOBACCO PRODUCTS	63,340	0	2,462	0	0	6,979	329	6,723	0	0	1,094	0	0	897	0	81,824
LEATHER OR LEATHER PRODUCTS	12,743	0	0	0	0	50,638	0	0	0	0	3,154	0	0	324	0	66,859
METALLIC ORES	24,443	38,359	0	0	0	1,021	0	0	0	0	303	0	0	320	0	64,446
WASTE NONFLAMMABLE COMPRESSED GASES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55,002	55,002
SMALL PACKAGED FREIGHT SHIPMENTS	0	0	0	10,271	0	0	0	0	14,592	0	0	0	0	0	0	24,862
MISC FREIGHT SHIPMENTS	54	10,631	3	0	0	152	7,930	0	0	0	0	0	0	0	0	18,770
INSTRUM, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	0	13,132	0	0	0	0	1,448	0	0	0	0	0	0	0	0	14,580
MAIL OR CONTRACT TRAFFIC	0	0	0	78	0	0	0	0	0	0	0	0	0	0	0	78
CRUDE PETROL. OR NATURAL GAS	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
SHIPPING CONTAINERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: HRTPO and VDOT analysis of IHS Transearch Data
For a commodity description of Secondary Traffic, Misc. Mixed Shipments, and Shipping Containers refer to pages 55-56.

Appendix C: Detailed Summary of North American Freight Movement by Value (Dollars) – Hampton Roads, 2012

	Inbound					Outbound					Within HR			Through HR		
Commodity Description	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Truck**	**Rail**	**TOTAL**
TOTAL, ALL COMMODITIES	**$51,619,327,713**	**$17,195,885,563**	**$3,409,302,834**	**$1,456,620,386**	**$36,831**	**$53,726,158,132**	**$9,918,557,022**	**$4,074,976,841**	**$1,041,101,728**	**$325,121**	**$18,614,361,590**	**$4,789,378**	**$956,484,776**	**$6,051,337,165**	**$393,738,359**	**$168,463,003,438**
SECONDARY TRAFFIC	$5,969,321,606	$0	$0	$0	$0	$6,335,620,647	$0	$0	$0	$0	$14,732,915,422	$0	$0	$523,030,037	$0	$27,560,887,712
MISC MIXED SHIPMENTS	$11,325,747	$12,185,847,206	$2,229,864,345	$581,635,056	$11,625	$0	$8,455,590,671	$1,709,269,419	$547,420,647	$0	$0	$0	$158,960,699	$2,448,520	$0	$25,882,373,936
MACHINERY	$5,732,666,226	$135,280,162	$8,867,901	$46,633,349	$1,544	$10,304,082,618	$53,231,988	$16,076,481	$111,153,363	$93,703	$1,228,434,381	$0	$0	$183,217,153	$0	$17,819,738,868
TRANSPORTATION EQUIPMENT	$3,621,414,812	$119,427,415	$1,164,477	$67,087,282	$0	$8,736,914,762	$98,243,591	$227,789	$1,583	$74,336	$329,785,096	$0	$0	$338,208,115	$0	$13,312,549,258
CHEMICALS OR ALLIED PRODUCTS	$6,067,703,558	$842,378,495	$311,014,232	$100,323,608	$0	$3,234,985,173	$282,235,457	$98,678,553	$0	$118,659	$90,714,885	$2,577,864	$82,378,214	$376,496,117	$1,302,084	$11,490,906,899
FOOD OR KINDRED PRODUCTS	$4,851,386,893	$420,520,936	$3,505,685	$21,629	$0	$3,649,147,373	$51,849,536	$2,416,253	$0	$3,310	$236,919,583	$0	$2,181,503	$1,752,360,362	$0	$10,970,313,062
PETROLEUM OR COAL PRODUCTS	$2,896,044,617	$164,353,688	$154,833,304	$0	$0	$1,698,527,000	$497,265	$1,410,840,911	$0	$0	$974,035,782	$0	$663,010,959	$343,743,784	$0	$8,305,887,310
ELECTRICAL EQUIPMENT	$3,218,780,507	$35,092,205	$1,994,598	$304,028,182	$0	$3,761,806,111	$171,000,382	$0	$297,292,242	$8,111	$134,798,497	$0	$0	$276,800,950	$0	$8,201,601,785
METALLIC ORES	$6,168,747,595	$79,357,354	$0	$0	$0	$769,964	$0	$0	$0	$0	$39,367	$0	$0	$329,745	$0	$6,249,244,025
FABRICATED METAL PRODUCTS	$1,402,150,780	$27,579,526	$11,584,679	$3,629,055	$23,662	$1,840,165,253	$2,507,230	$19,240,055	$5,011,566	$2,244	$139,281,357	$0	$28,524,578	$124,423,271	$0	$3,604,123,255
PRIMARY METAL PRODUCTS	$1,321,695,687	$17,419,038	$7,464,072	$12,458,367	$0	$1,031,985,412	$585,267,879	$1,852,474	$0	$2,280	$29,454,077	$0	$700,471	$138,486,675	$369,142,855	$3,515,929,287
RUBBER OR MISC PLASTICS	$1,629,548,882	$26,739,219	$712,825	$3,006,739	$0	$1,492,530,203	$79,836,144	$13,631,662	$0	$258	$39,606,508	$0	$2,845,754	$168,297,902	$0	$3,456,756,097
FARM PRODUCTS	$976,801,735	$512,587,161	$340,419,638	$0	$0	$357,194,874	$5,681,783	$63,750,704	$0	$0	$41,806,529	$0	$12,407,898	$484,367,884	$790,331	$2,795,808,538
TOBACCO PRODUCTS	$1,542,651,809	$0	$167,193,823	$0	$0	$120,575,169	$18,400,760	$641,765,449	$0	$0	$23,879,902	$0	$0	$46,707,254	$0	$2,561,174,166
FURNITURE OR FIXTURES	$365,661,096	$3,099,006	$29,989	$2,676,353	$0	$1,852,056,650	$3,099,006	$657,283	$0	$1,150	$54,186,650	$0	$0	$48,069,362	$0	$2,329,536,545
MISC MANUFACTURING PRODUCTS	$396,617,664	$19,854,504	$47,590	$232,527,611	$0	$1,455,695,824	$14,139,884	$81,693	$79,573,944	$118	$68,147,509	$0	$0	$46,549,597	$0	$2,313,235,939
APPAREL OR RELATED PRODUCTS	$466,987,273	$105,432,246	$50,777	$0	$0	$1,617,178,315	$16,220,346	$3,442	$0	$2,040	$69,896,524	$0	$0	$32,506,250	$0	$2,308,277,214
PULP,PAPER OR ALLIED PRODUCTS	$985,507,785	$185,716,291	$126,983,725	$447,525	$0	$669,436,672	$22,840,352	$1,931,268	$0	$0	$16,378,591	$2,211,514	$0	$234,052,434	$0	$2,245,506,157
COAL	$0	$1,988,921,761	$0	$0	$0	$0	$0	$60,882,753	$0	$0	$0	$0	$373,417	$0	$0	$2,050,177,931
FRESH FISH OR MARINE PRODUCTS	$202,772,444	$13,822,424	$10,201,473	$302,534	$0	$1,196,696,587	$0	$0	$0	$0	$66,269,774	$0	$0	$420,818,717	$0	$1,910,883,953
CLAY,CONCRETE,GLASS OR STONE	$324,736,345	$210,953,539	$19,031,569	$0	$0	$920,916,570	$3,879,104	$840,930	$0	$16,197	$145,309,490	$0	$2,436,137	$57,301,408	$2,405,335	$1,687,826,624
INSTRUMENTS, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	$797,706,427	$0	$146,183	$97,281,825	$0	$649,228,550	$0	$84,592	$0	$1,096	$45,551,273	$0	$0	$42,336,878	$0	$1,632,336,824
WASTE OR SCRAP MATERIALS	$551,170,838	$26,448,336	$3,352,167	$0	$0	$398,557,897	$5,553,874	$32,014,924	$0	$0	$53,100,004	$0	$2,026,161	$52,723,020	$0	$1,124,947,222
TEXTILE MILL PRODUCTS	$416,926,609	$0	$0	$749,013	$0	$638,041,630	$2,543,255	$30,000	$18,059	$1,516	$19,335,761	$0	$0	$34,331,164	$0	$1,111,977,008
LUMBER OR WOOD PRODUCTS	$531,777,208	$5,582,515	$568,333	$0	$0	$319,238,665	$917,442	$155,117	$0	$0	$15,547,605	$0	$0	$199,734,857	$17,461,200	$1,090,982,942
PRINTED MATTER	$385,743,629	$7,406,694	$1,254,897	$3,524,616	$0	$408,503,004	$0	$0	$630,324	$0	$16,088,122	$0	$0	$25,157,771	$0	$848,309,057
LEATHER OR LEATHER PRODUCTS	$288,848,957	$0	$0	$0	$0	$370,937,403	$0	$0	$0	$0	$23,337,794	$0	$0	$3,451,674	$0	$686,575,828
ORDNANCE OR ACCESSORIES	$370,620,066	$0	$0	$0	$0	$217,248,290	$0	$0	$0	$0	$14,046,409	$0	$0	$3,657,732	$0	$605,572,497
FOREST PRODUCTS	$17,957,027	$0	$0	$0	$0	$411,854,048	$14,209,911	$0	$0	$0	$1,723,093	$0	$0	$76,360,984	$0	$522,105,063
NONMETALLIC MINERALS	$105,928,741	$16,982,415	$9,006,555	$0	$0	$36,010,674	$6,401,447	$545,087	$0	$104	$3,771,605	$0	$638,985	$15,366,947	$2,636,554	$197,289,114
MISC FREIGHT SHIPMENTS	$94,931	$25,143,940	$9,995	$0	$0	$252,794	$19,617,799	$0	$0	$0	$0	$0	$0	$601	$0	$45,120,060
INSTRUM, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	$0	$19,939,487	$0	$0	$0	$0	$4,791,916	$0	$0	$0	$0	$0	$0	$0	$0	$24,731,403
MAIL OR CONTRACT TRAFFIC	$0	$0	$0	$287,641	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$287,641
CRUDE PETROL. OR NATURAL GAS	$30,219	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,219
SHIPPING CONTAINERS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMALL PACKAGED FREIGHT SHIPMENTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
WASTE NONFLAMMABLE COMPRESSED GASES	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Source: HRTPO and VDOT analysis of IHS Transearch Data
For a commodity description of Secondary Traffic, Misc. Mixed Shipments, and Shipping Containers refer pages 55-56.

Appendix C: Detailed Summary of North American Freight Movement by Value (Dollars) – Hampton Roads, 2040

	Inbound					Outbound					Within HR			Through HR		
Commodity Description	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Air**	**Other**	**Truck**	**Rail**	**Water**	**Truck**	**Rail**	**TOTAL**
TOTAL, ALL COMMODITIES	**$168,788,475,855**	**$25,226,299,568**	**$6,638,314,004**	**$2,232,493,321**	**$136,262**	**$126,700,671,255**	**$16,378,268,799**	**$5,518,948,186**	**$3,292,197,259**	**$1,325,784**	**$30,815,728,147**	**$6,598,329**	**$845,072,642**	**$11,459,624,205**	**$699,242,997**	**$398,603,396,612**
METALLIC ORES	$68,713,373,624	$55,430,018	$0	$0	$0	$50,423	$0	$0	$0	$0	$3,723	$0	$0	$209,091	$0	$68,769,066,879
MACHINERY	$16,946,859,483	$298,032,741	$12,780,965	$71,258,411	$9,078	$24,261,250,804	$140,508,339	$15,568,905	$193,433,990	$383,954	$3,361,174,694	$0	$0	$624,598,215	$0	$45,925,859,578
SECONDARY TRAFFIC	$8,789,187,798	$0	$0	$0	$0	$12,455,603,810	$0	$0	$0	$0	$22,553,277,329	$0	$0	$1,314,657,502	$0	$45,112,726,439
MISC MIXED SHIPMENTS	$62,338,237	$16,618,894,249	$4,757,070,237	$724,545,610	$64,221	$0	$13,143,712,683	$4,532,660,708	$1,184,340,971	$0	$0	$0	$375,953,671	$13,479,806	$0	$41,413,060,393
CHEMICALS OR ALLIED PRODUCTS	$16,976,835,241	$2,285,220,894	$455,668,927	$262,121,668	$0	$11,691,862,955	$797,884,315	$150,244,989	$0	$456,752	$317,170,557	$2,798,331	$139,096,088	$674,366,055	$1,614,168	$33,755,340,941
ELECTRICAL EQUIPMENT	$11,789,369,241	$99,439,720	$12,413,161	$252,684,771	$0	$18,306,087,180	$619,597,554	$0	$1,060,357,483	$60,196	$659,951,293	$0	$0	$640,692,932	$0	$33,440,653,531
FOOD OR KINDRED PRODUCTS	$10,739,132,359	$765,718,726	$7,940,403	$33,947	$0	$6,690,609,030	$115,717,009	$4,144,895	$0	$12,193	$633,104,033	$0	$2,521,647	$3,253,811,375	$0	$22,212,745,617
TRANSPORTATION EQUIPMENT	$6,017,646,110	$242,252,142	$2,026,430	$152,862,170	$0	$9,509,509,504	$322,458,272	$748,327	$3,672	$304,886	$301,367,074	$0	$0	$738,759,555	$0	$17,287,938,141
MISC MANUFACTURING PRODUCTS	$1,245,329,919	$75,010,672	$150,802	$437,706,381	$0	$8,025,368,397	$96,215,599	$385,998	$850,867,904	$557	$368,731,789	$0	$0	$104,213,402	$0	$11,203,981,420
INSTRUMENTS, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	$3,357,721,882	$0	$752,639	$312,209,927	$0	$4,781,682,182	$0	$370,046	$0	$9,456	$315,625,770	$0	$0	$130,322,633	$0	$8,898,694,535
RUBBER OR MISC PLASTICS	$3,794,656,207	$72,911,228	$2,191,484	$4,490,575	$0	$4,216,005,919	$228,372,997	$18,285,473	$0	$760	$117,825,431	$0	$5,734,712	$400,425,436	$0	$8,860,900,221
FURNITURE OR FIXTURES	$821,857,719	$2,409,942	$152,243	$5,128,834	$0	$5,818,489,612	$2,409,942	$3,667,210	$0	$6,415	$293,724,433	$0	$0	$77,908,039	$0	$7,025,754,389
FARM PRODUCTS	$1,859,461,660	$1,893,329,863	$743,141,397	$0	$0	$759,988,093	$10,514,895	$155,833,184	$0	$0	$83,203,752	$0	$58,472,592	$864,015,538	$1,287,813	$6,429,248,786
PETROLEUM OR COAL PRODUCTS	$3,085,721,814	$194,543,104	$261,207,115	$0	$0	$911,811,678	$458,476	$421,221,255	$0	$0	$389,998,105	$0	$238,892,935	$421,073,186	$0	$5,924,927,668
FABRICATED METAL PRODUCTS	$2,059,217,527	$57,612,087	$2,153,810	$4,186,521	$62,964	$3,036,520,405	$5,237,463	$5,694,403	$3,025,867	$6,312	$292,211,708	$0	$12,948,175	$241,826,898	$0	$5,720,704,140
PRIMARY METAL PRODUCTS	$1,800,259,899	$10,734,450	$468,138	$328,188	$0	$1,193,680,247	$720,914,708	$1,772,164	$0	$8,456	$22,081,030	$0	$748,565	$278,045,084	$658,718,765	$4,687,759,694
CLAY,CONCRETE,GLASS OR STONE	$621,409,530	$335,419,635	$54,986,284	$0	$0	$2,985,981,758	$7,539,714	$2,988,300	$0	$59,419	$376,854,951	$0	$7,427,493	$251,912,936	$6,798,506	$4,651,378,527
APPAREL OR RELATED PRODUCTS	$368,107,603	$43,807,511	$205,001	$0	$0	$3,743,030,589	$45,103,497	$21,070	$0	$13,236	$181,931,212	$0	$0	$50,616,464	$0	$4,432,836,183
PULP,PAPER OR ALLIED PRODUCTS	$2,269,856,001	$237,913,624	$229,790,838	$903,926	$0	$995,854,824	$32,010,258	$4,194,916	$0	$0	$32,889,590	$3,799,998	$0	$340,715,670	$0	$4,147,929,645
TEXTILE MILL PRODUCTS	$1,391,911,111	$0	$0	$337,472	$0	$1,531,179,056	$2,620,894	$138,155	$46,228	$3,010	$46,970,996	$0	$0	$19,978,301	$0	$2,993,185,223
ORDNANCE OR ACCESSORIES	$1,549,657,604	$0	$0	$0	$0	$1,126,626,017	$0	$0	$0	$0	$52,597,626	$0	$0	$9,794,445	$0	$2,738,675,692
WASTE OR SCRAP MATERIALS	$1,341,486,624	$73,535,569	$5,389,414	$0	$0	$604,312,648	$7,356,330	$57,113,527	$0	$0	$180,193,754	$0	$2,244,036	$107,717,481	$0	$2,379,349,382
FRESH FISH OR MARINE PRODUCTS	$293,603,313	$20,937,950	$14,165,915	$135,499	$0	$1,428,118,365	$0	$0	$0	$0	$99,333,941	$0	$0	$382,914,225	$0	$2,239,209,208
COAL	$0	$1,660,939,023	$0	$0	$0	$0	$0	$22,193,201	$0	$0	$0	$0	$209,870	$0	$0	$1,683,342,094
LUMBER OR WOOD PRODUCTS	$857,044,159	$9,360,333	$1,122,488	$0	$0	$418,944,844	$1,734,282	$489,917	$0	$0	$22,501,242	$0	$0	$339,888,743	$25,935,157	$1,677,021,165
PRINTED MATTER	$543,365,792	$17,098,264	$2,008,386	$3,346,137	$0	$884,195,699	$0	$0	$121,145	$0	$33,010,606	$0	$0	$46,221,961	$0	$1,529,367,990
TOBACCO PRODUCTS	$1,006,719,668	$0	$55,081,679	$0	$0	$93,337,453	$7,565,750	$120,463,465	$0	$0	$19,709,226	$0	$0	$13,892,844	$0	$1,316,770,085
LEATHER OR LEATHER PRODUCTS	$233,595,265	$0	$0	$0	$0	$693,411,927	$0	$0	$0	$0	$43,981,648	$0	$0	$4,995,282	$0	$975,984,122
FOREST PRODUCTS	$21,654,262	$0	$0	$0	$0	$405,167,703	$14,544,890	$0	$0	$0	$1,583,405	$0	$0	$82,883,796	$0	$525,834,056
NONMETALLIC MINERALS	$230,873,571	$31,448,382	$17,426,658	$0	$0	$131,493,132	$11,051,623	$748,077	$0	$183	$14,719,229	$0	$822,856	$29,686,112	$4,888,588	$473,158,412
INSTRUM, PHOTO EQUIPMENT, OPTICAL EQUIPMENT	$0	$87,581,869	$0	$0	$0	$0	$17,351,354	$0	$0	$0	$0	$0	$0	$0	$0	$104,933,223
MISC FREIGHT SHIPMENTS	$188,114	$36,717,572	$19,589	$0	$0	$497,001	$27,387,955	$0	$0	$0	$0	$0	$0	$1,198	$0	$64,811,429
MAIL OR CONTRACT TRAFFIC	$0	$0	$0	$213,284	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$213,284
CRUDE PETROL. OR NATURAL GAS	$34,518	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$34,518
SHIPPING CONTAINERS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SMALL PACKAGED FREIGHT SHIPMENTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
WASTE NONFLAMMABLE COMPRESSED GASES	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Source: HRTPO and VDOT analysis of IHS Transearch Data
Note: 2040 forecast is in 2012 dollars. For a commodity description of Secondary Traffic, Misc. Mixed Shipments, and Shipping Containers refer to pages 55-56.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
CHES	AIRLINE BLVD	JOLLIFF RD	PORTSMOUTH CL	7,276	2014	128	1.8%	9	1.6%	3	0.5%	2014
CHES	ATLANTIC AVE	PROVIDENCE RD	OLD ATLANTIC AVE	17,812	2015	726	4.1%	75	6.3%	47	2.7%	2015
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	10,203	2014	1,026	10.1%	84	9.0%	42	4.2%	2014
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	9,076	2014	305	3.4%	31	5.0%	15	1.9%	2014
CHES	BALLAHACK RD	GEORGE WASHINGTON HWY	OLD BATTLEFIELD BLVD	988	2014	26	2.6%	1	0.5%	4	3.8%	2014
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	GALLBUSH RD	22,842	2015	800	3.5%	58	3.5%	28	1.4%	2015
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	31,709	2014	376	1.2%	36	2.2%	15	0.6%	2014
CHES	BLACKWATER RD	VIRGINIA BEACH CL	FENTRESS AIRFIELD RD	2,714	2014	169	6.2%	21	10.1%	6	2.5%	2014
CHES/SUF	BRIDGE RD	COLLEGE DR	CHURCHLAND BLVD	23,589	2015	284	1.2%	22	1.6%	13	0.6%	2015
CHES	BRUCE RD	TAYLOR RD	TYRE NECK RD	11,279	2014	62	0.5%	5	0.8%	3	0.3%	2014
CHES	CAMPOSTELLA RD	GREAT BRIDGE BLVD	MILITARY HWY	6,181	2014	105	1.7%	9	2.7%	5	0.7%	2014
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	15,953	2014	291	1.8%	26	2.0%	20	1.2%	2014
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	11,165	2014	1,101	9.9%	76	8.3%	60	5.4%	2014
CHES	CEDAR RD	SHIPYARD RD/MOSES GRANDY TR	SCENIC PKWY	6,791	2011	50	0.7%	6	1.5%	2	0.3%	2011
CHES	CEDAR RD	DOMINION BLVD	BELLS MILL RD (WEST)	26,598	2011	325	1.2%	33	1.9%	9	0.4%	2011
CHES	CENTERVILLE TNPK	BATTLEFIELD BLVD	ETHRIDGE MANOR BLVD	5,650	2014	96	1.7%	6	1.4%	9	1.6%	2014
CHES	CENTERVILLE TNPK	BUTTS STATION RD	ELBOW RD	10,326	2014	189	1.8%	15	1.8%	4	0.3%	2014
CHES	CHURCHLAND BLVD	WESTERN BRANCH BLVD	TOWNE POINT RD	6,339	2014	47	0.7%	4	1.2%	2	0.3%	2014
CHES	DOCK LANDING RD	I-664	EAGLE HILL DR	5,922	2014	42	0.7%	4	0.9%	0	0.0%	2014
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	5,933	2014	57	1.0%	6	1.2%	3	0.4%	2014
CHES	DOMINION BLVD/VETERANS BRIDGE	CEDAR RD	BAINBRIDGE BLVD	27,356	2013	1,514	5.5%	107	5.6%	49	2.5%	2013
CHES	ELBOW RD	CENTERVILLE TNPK	VA BEACH CL	8,798	2014	18	0.2%	2	0.2%	1	0.1%	2014
CHES	FENTRESS AIRFIELD RD	BLACKWATER RD	MOUNT PLEASANT RD	4,628	2014	217	4.7%	27	6.6%	10	2.0%	2014
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	12,698	2015	1,001	7.9%	57	5.8%	46	4.3%	2015
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	15,826	2014	469	3.0%	24	2.7%	30	2.5%	2014
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	4,009	2014	263	6.5%	23	8.1%	12	3.2%	2014
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	BATTLEFIELD BLVD	12,380	2014	190	1.5%	25	3.4%	5	0.4%	2014
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	28,062	2014	408	1.5%	40	2.1%	39	1.5%	2014
CHES	HANBURY RD	JOHNSTOWN RD	BATTLEFIELD BLVD	9,339	2014	67	0.7%	5	0.8%	2	0.2%	2014
CHES	HANBURY RD	CHESAPEAKE EXPRESSWAY	HILLWELL RD	16,792	2014	79	0.5%	5	0.4%	3	0.2%	2014
CHES	I-64	MILITARY HWY	I-264&664	87,656	2015	7,402	8.4%	399	5.8%	428	6.2%	2015
CHES	I-464	FREEMAN AVE	POINDEXTER ST	54,948	2015	2,716	4.9%	190	3.9%	118	2.3%	2015
CHES	INDIAN RIVER RD	KEMP LANE	VA BEACH CL	26,747	2014	377	1.4%	21	1.3%	19	0.8%	2014
CHES	JOHNSTOWN RD	BENEFIT RD	STONEGATE PKWY	3,465	2014	58	1.7%	5	1.9%	5	1.4%	2014
CHES	JOLLIFF RD	AIRLINE BLVD	DOCK LANDING RD	3,019	2014	53	1.7%	7	3.8%	3	0.7%	2014
CHES	JOLLIFF RD	DOCK LANDING RD	PORTSMOUTH BLVD	3,735	2014	33	0.9%	2	0.7%	2	0.3%	2014
CHES	KEMPSVILLE RD	CHESAPEAKE EXPRESSWAY	GREENBRIER PKWY	29,838	2014	860	2.9%	90	4.2%	17	0.6%	2014
CHES	LIBERTY ST	22ND ST	OLD ATLANTIC AVE	7,246	2014	166	2.3%	15	4.7%	12	1.9%	2014
CHES	MILITARY HWY	AIRLINE BLVD	I-64	8,536	2014	726	8.5%	55	5.6%	63	5.4%	2014
CHES	MILITARY HWY/GILMERTON BRIDGE	CANAL DR	BAINBRIDGE BLVD	33,383	2015	1,043	3.1%	95	3.4%	74	2.2%	2015
CHES	MILITARY HWY	ALLISON DR	GREENBRIER PKWY	28,616	2014	631	2.2%	46	2.3%	47	1.7%	2014
CHES	MOSES GRANDY TRAIL	GW HWY @ HINTON AVE	CEDAR RD	14,107	2014	172	1.2%	20	1.9%	8	0.7%	2014
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	20,236	2014	551	2.7%	43	2.9%	36	1.8%	2014
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	11,002	2014	277	2.5%	18	1.8%	16	1.2%	2014
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	7,373	2014	84	1.1%	6	1.3%	6	0.8%	2014
CHES	POPLAR HILL RD	WESTERN BRANCH BLVD	CHURCHLAND BLVD	11,620	2014	62	0.5%	1	0.3%	1	0.1%	2014
CHES/SUF	PORTSMOUTH BLVD/NANSEMOND PI	SHOULDERS HILL RD	JOLLIFF RD	12,948	2014	505	3.9%	26	3.2%	18	1.4%	2014
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	24,144	2014	274	1.1%	19	1.5%	8	0.4%	2014
CHES/SUF	PUGHSVILLE RD	TOWN POINT RD	I-664	10,271	2014	765	7.4%	69	10.5%	31	3.4%	2014
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	23,967	2014	340	1.4%	28	1.5%	28	1.3%	2014

Appendix D – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	74,043	2015	7,332	9.9%	455	8.2%	375	6.3%	2015
CHES	SIGN PINE RD	EDINBURGH PKWY	BENEFIT RD	3,321	2014	44	1.3%	3	1.1%	4	1.4%	2014
CHES/PORT	S NORFOLK JORDAN BRIDGE	VICTORY BLVD	I-464	10,452	2015	459	5.2%	61	5.5%	83	6.0%	2014
CHES	TAYLOR RD	PORTSMOUTH BLVD	BRUCE RD	21,317	2014	114	0.5%	8	0.9%	6	0.3%	2014
CHES	TYRE NECK RD	BRUCE RD	SILVERWOOD BLVD	9,283	2014	35	0.4%	4	0.8%	4	0.5%	2014
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	25,710	2014	492	1.9%	52	3.2%	25	1.1%	2014
FR	ARMORY DR	COLLEGE DR	GARDNER ST	5,575	2015	46	0.8%	3	0.9%	3	0.6%	2015
FR	ARMORY DR/SECOND AVE	GARDNER ST	HIGH ST	5,630	2015	47	0.8%	3	1.0%	3	0.6%	2015
FR/SH	BUS RTE 58/CLAY ST	ROUTE 58	COLLEGE DR	3,204	2015	45	1.4%	3	1.0%	2	0.7%	2015
FR	FAIRVIEW DR	CRESENT DR	HIGH ST	3,022	2015	41	1.3%	4	1.9%	1	0.2%	2015
FR	HIGH ST	HOMESTEAD RD	FAIRVIEW DR	2,907	2015	36	1.2%	3	1.5%	6	2.1%	2015
FR	MAIN ST	SOUTH ST	SECOND AVE	2,565	2015	68	2.7%	6	3.9%	7	3.0%	2015
FR	PRETLOW ST	MORTON ST	SOUTH ST	2,746	2015	91	3.3%	9	5.0%	8	3.4%	2015
FR	SECOND AVE	HIGH ST	MAIN ST	4,649	2015	38	0.8%	2	0.6%	3	0.8%	2015
FR	SOUTH ST	ROUTE 58	COLLEGE DR	5,047	2015	79	1.6%	10	3.2%	3	0.7%	2015
GLO	GUINEA RD	ROUTE 17	MARYUS RD	7,795	2015	105	1.3%	8	1.8%	4	0.6%	2015
GLO	HICKORY FORK RD	ROUTE 17	BELROI RD	5,772	2015	48	0.8%	2	0.4%	4	0.7%	2015
GLO	RTE 3/14	COW CREEK	MATHEWS CL	13,393	2015	282	2.1%	16	1.6%	18	1.5%	2015
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	34,285	2015	728	2.2%	39	1.5%	35	1.1%	2015
GLO	RTE 198	RTE 606 (HARCUM RD)	MATHEWS CL	2,262	2015	126	5.6%	7	3.9%	6	2.8%	2015
GLO	MAIN ST (BUS RTE 17)	RTE 17 (SOUTH INTERSECTION)	RTE 3/14E	22,360	2015	326	1.5%	20	1.5%	16	0.8%	2015
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	20,175	2013	742	3.7%	51	4.4%	61	3.7%	2013
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	15,179	2013	228	1.5%	22	3.0%	14	1.1%	2013
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	24,359	2015	268	1.1%	23	1.1%	13	0.6%	2015
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	18,999	2013	202	1.1%	19	1.5%	11	0.6%	2013
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	20,788	2013	237	1.1%	17	1.5%	11	0.5%	2013
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	11,605	2013	102	0.9%	11	1.3%	6	0.5%	2013
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	4,913	2013	42	0.9%	2	1.0%	4	0.8%	2013
HAM	COMMANDER SHEPPARD BLVD	ARMISTEAD AVE	NASA MAIN GATE	17,615	2013	179	1.0%	14	0.9%	5	0.3%	2013
HAM	COMMANDER SHEPPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	16,629	2013	133	0.8%	9	0.6%	5	0.3%	2013
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	4,026	2014	89	1.8%	10	2.8%	6	1.1%	2010
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	11,213	2013	37	0.3%	5	0.6%	2	0.2%	2013
HAM	HARRIS CREEK RD	FOX HILL RD	LITTLE BACK RIVER RD	2,950	2014	39	1.1%	3	0.9%	4	1.3%	2013
HAM/NN	HRC PARKWAY	HARPERSVILLE RD	BIG BETHEL RD	23,303	2015	173	0.7%	12	0.7%	6	0.3%	2015
HAM/NOR	I-64/HRBT	MALLORY ST	15TH VIEW ST	83,861	2015	3,140	3.7%	177	2.9%	132	2.3%	2015
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	4,929	2013	52	1.0%	6	2.3%	3	0.6%	2013
HAM	KECOUGHTAN RD	LASALLE AVE	VICTORIA BLVD	6,775	2013	100	1.2%	15	2.7%	8	0.9%	2013
HAM	KING ST	LITTLE BACK RIVER RD	LANGLEY AFB	6,775	2015	20	0.3%	1	0.1%	2	0.2%	2013
HAM	LASALLE AVE	ARMISTEAD AVE	MERCURY BLVD	12,317	2013	131	1.1%	7	0.7%	6	0.6%	2013
HAM	LITTLE BACK RIVER RD	KING ST	ROCKWELL RD	11,945	2015	60	0.6%	3	0.3%	2	0.2%	2013
HAM	MAGRUDER BLVD	YORK CL	SEMPLE FARM RD	23,739	2013	182	0.8%	15	0.7%	9	0.3%	2013
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	6,103	2013	74	1.2%	8	1.6%	8	1.5%	2013
HAM	MERCURY BLVD	NEWPORT NEWS CL	BIG BETHEL RD	50,203	2015	807	1.6%	54	1.9%	40	0.9%	2015
HAM	MERCURY BLVD	ARMISTEAD AVE	LASALLE AVE	51,254	2013	373	0.7%	34	0.9%	13	0.3%	2013
HAM	MERCURY BLVD	KING ST	ANDREWS BLVD	28,517	2013	174	0.6%	14	0.6%	8	0.3%	2013
HAM	MERCURY BLVD	PEMBROKE AVE	MALLORY ST	10,280	2013	118	1.1%	12	1.4%	3	0.3%	2013
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	5,909	2013	38	0.6%	5	1.1%	2	0.4%	2013
HAM/NN	PEMBROKE AVE/39TH ST	MADISON AVE	ABERDEEN RD	8,173	2013	206	2.5%	20	3.2%	17	1.7%	2013
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	12,771	2013	347	3.1%	31	4.8%	13	1.2%	2013
HAM	PEMBROKE AVE	LASALLE AVE	ARMISTEAD AVE	9,155	2013	222	2.4%	16	2.5%	19	2.1%	2013

Appendix D (continued) – Truck Volumes by Location

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Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
HAM	PEMBROKE AVE	ARMISTEAD AVE	MERCURY BLVD	9,917	2013	183	1.8%	16	2.4%	13	1.4%	2013
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	13,484	2013	158	1.2%	9	1.2%	4	0.4%	2013
HAM	POWER PLANT PKWY	BRIARFIELD RD	PINE CHAPEL RD	21,804	2013	253	1.2%	22	1.6%	13	0.6%	2013
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	10,191	2013	104	1.0%	11	1.5%	5	0.6%	2013
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	10,835	2013	148	1.4%	16	1.9%	9	0.9%	2013
HAM	RIP RAP RD	I-64	KING ST	13,327	2013	186	1.4%	17	1.9%	17	1.3%	2013
HAM	SETTLERS LANDING RD	KECOUGHTAN RD	ARMISTEAD AVE	14,215	2013	278	2.0%	34	3.1%	14	1.0%	2013
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	20,466	2013	137	0.7%	16	1.1%	8	0.4%	2013
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	23,367	2013	139	0.6%	19	1.2%	13	0.6%	2013
HAM	WOODLAND RD	COUNTY ST	MERCURY BLVD	19,756	2013	207	1.0%	18	1.2%	13	0.9%	2013
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	9,227	2013	48	0.5%	7	0.7%	8	1.0%	2013
IW	BATTERY PARK RD	S CHURCH ST	NIKE PARK RD	10,983	2014	97	0.9%	5	0.6%	5	0.5%	2014
IW	BENNS CHURCH BLVD	SUFFOLK CL	ROUTE 10 & 32 (BREWERS NECK BLVD	11,096	2014	535	4.8%	41	5.1%	26	2.5%	2014
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	ROUTE 17	25,202	2014	921	3.7%	64	3.4%	43	1.9%	2014
IW	BUS RTE 10	JENKINS LANE	RT 10 BYPASS	1,455	2014	29	2.0%	1	1.0%	2	1.4%	2014
IW	BUS RTE 58	ROUTE 258	SUFFOLK CL	2,751	2014	95	3.5%	11	5.6%	4	1.3%	2014
IW/NN	CARROLLTON BLVD/JAMES RIVER BR	ROUTE 258	WARWICK BLVD	31,246	2015	891	2.9%	49	1.9%	41	1.4%	2015
IW	CHURCH ST S	BATTERY PARK RD	CYPRESS CREEK BRIDGE	12,547	2014	70	0.6%	5	0.7%	5	0.4%	2014
IW	CHURCH ST N	MAIN ST	SMITHFIELD CL	6,224	2014	28	0.4%	0	0.0%	4	0.5%	2014
IW	ROUTE 10 BYPASS	CHURCH ST S	MAIN ST	18,841	2014	709	3.8%	29	2.5%	34	2.0%	2014
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	7,211	2014	258	3.6%	9	1.5%	14	1.8%	2014
IW	ROUTE 258	SUFFOLK CL	UNION CAMP DR (RTE 656)	2,245	2014	858	38.2%	73	45.2%	62	33.2%	2014
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	4,822	2014	367	7.6%	20	4.8%	23	4.8%	2014
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	SCOTTS FACTORY RD (RTE 620)	4,540	2014	216	4.8%	14	3.4%	11	2.6%	2014
IW	ROUTE 258	SCOTTS FACTORY RD (RTE 620)	WCL SMITHFIELD	8,785	2014	391	4.4%	30	4.5%	17	2.1%	2014
IW	ROUTE 258/N MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	11,790	2014	410	3.5%	39	3.7%	18	1.7%	2014
IW	SMITH'S NECK RD	REYNOLDS DR	TITUS CREEK DR	8,644	2014	65	0.7%	5	0.7%	2	0.2%	2014
IW	TITUS CREEK DR	SMITH'S NECK RD	NIKE PARK RD	7,118	2014	42	0.6%	5	0.8%	0	0.0%	2014
JCC	BARHAMSVILLE RD	I-64	ROUTE 60	9,537	2013	431	4.5%	29	3.7%	18	2.1%	2013
JCC	CENTERVILLE RD	LONGHILL RD	RICHMOND RD	9,990	2013	252	2.5%	24	3.0%	6	0.7%	2013
JCC	CROAKER RD	ROUTE 60	MAXTON LN (RTE 760)	9,150	2013	213	2.3%	18	3.0%	10	1.2%	2013
JCC	CROAKER RD	I-64	FENTON MILL RD	6,090	2013	202	3.3%	14	3.5%	7	1.4%	2013
JCC/WMB	IRONBOUND RD	MONTICELLO AVE	DEPUE DR	10,534	2013	142	1.3%	12	1.9%	7	0.8%	2013
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	WILLIAMSBURG CL	8,643	2013	81	0.9%	11	1.5%	1	0.1%	2013
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	STANLEY DR (RTE 712)	9,816	2013	217	2.2%	20	2.7%	4	0.5%	2013
JCC	LONGHILL RD	OLDE TOWNE RD (RTE 658)	ROUTE 199	16,518	2013	172	1.0%	20	1.7%	6	0.4%	2013
JCC	MONTICELLO AVE	NEWS RD	ROUTE 199	39,564	2013	548	1.4%	52	2.3%	28	0.8%	2013
JCC	MONTICELLO AVE	ROUTE 199	IRONBOUND RD (RTE 615)	22,769	2013	177	0.8%	15	1.2%	8	0.4%	2013
JCC	OLDE TOWNE RD	LONGHILL RD	RICHMOND RD	8,113	2013	95	1.2%	5	1.1%	2	0.2%	2013
JCC	POCAHONTAS TRL	YORK CL	BASF RD/ROUTE 60 RELOCATION	8,841	2013	555	6.3%	35	5.4%	26	3.2%	2013
JCC	ROCHAMBEAU DR	ROUTE 60	CROAKER RD (RTE 607)	8,092	2013	156	1.9%	17	2.0%	7	0.8%	2013
JCC	ROUTE 199	LONGHILL RD (ROUTE 612)	MONTICELLO AVE (ROUTE 321)	30,752	2013	412	1.3%	39	1.8%	19	0.7%	2013
JCC	ROUTE 199	WILLIAMSBURG CL	HENRY ST/COLONIAL PKWY	33,843	2013	648	1.9%	58	2.0%	20	0.6%	2013
JCC	ROUTE 60	CROAKER RD (RTE 607)	CENTERVILLE RD (RTE 614)	19,841	2013	313	1.6%	29	2.5%	10	0.6%	2013
JCC	STRAWBERRY PLAINS RD	JOHN TYLER HWY/ROUTE 199	IRONBOUND RD	8,593	2013	93	1.1%	8	1.3%	8	1.0%	2013
NN	23RD/25TH CONNECTOR	HUNTINGTON AVE	JEFFERSON AVE	2,503	2013	72	2.9%	6	4.7%	5	1.2%	2013
NN	26TH ST	25TH ST	ROANOKE AVE	2,491	2013	26	2.0%	0	0.0%	2	1.4%	2010
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	3,417	2013	34	2.0%	4	4.3%	2	1.2%	2013
NN	BLAND BLVD	WARWICK BLVD	JEFFERSON AVE	27,482	2013	257	0.8%	19	1.1%	15	0.5%	2013
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	7,717	2013	159	2.1%	12	2.9%	7	1.0%	2013

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
NN	CHESTNUT AVE	BRIARFIELD RD	HAMPTON CL	8,141	2013	58	0.9%	3	1.0%	3	0.5%	2013
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	31,650	2013	372	1.2%	34	1.8%	24	0.9%	2013
NN	DILIGENCE DR	THIMBLE SHOALS BLVD	J CLYDE MORRIS BLVD	24,051	2013	134	1.1%	11	1.2%	6	0.6%	2013
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	34,394	2013	1,511	3.6%	90	2.6%	74	2.0%	2010
NN	FORT EUSTIS BLVD	JEFFERSON AVE	YORK CL	17,459	2015	651	3.7%	44	3.4%	28	1.7%	2015
NN	HARPERSVILLE RD	SAUNDERS RD	HRC PARKWAY	11,225	2013	94	1.0%	12	1.9%	4	0.4%	2013
NN	HARPERSVILLE RD	JEFFERSON AVE	WARWICK BLVD	13,946	2013	148	1.4%	15	2.1%	6	0.6%	2013
NN	HUNTINGTON AVE	71ST ST	39TH ST	11,633	2013	162	1.3%	8	0.4%	37	2.7%	2013
NN	I-64	OYSTER POINT RD	J CLYDE MORRIS BLVD	135,503	2015	6,507	4.8%	398	3.9%	277	2.5%	2015
NN	J CLYDE MORRIS BLVD	WARWICK BLVD	JEFFERSON AVE	38,476	2013	495	1.3%	34	1.3%	16	0.5%	2013
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	11,949	2013	210	1.8%	24	2.9%	11	0.7%	2013
NN	JEFFERSON AVE	FUTURE ATKINSON BLVD	DENBIGH BLVD	35,361	2015	552	1.6%	53	2.4%	23	0.7%	2015
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	45,990	2012	1,171	2.0%	109	3.1%	83	1.7%	2010
NN	JEFFERSON AVE	BLAND BLVD	I-64	81,507	2013	1,475	1.7%	113	2.2%	79	1.1%	2010
NN	JEFFERSON AVE	CITY CENTER BLVD	J CLYDE MORRIS BLVD	53,407	2012	464	1.3%	47	2.2%	24	0.8%	2013
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	49,016	2012	857	2.0%	72	2.8%	55	1.5%	2013
NN	JEFFERSON AVE	35TH ST	25TH ST	7,893	2013	378	3.4%	49	8.0%	32	3.7%	2010
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	13,247	2013	161	1.2%	18	2.1%	12	1.0%	2013
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	15,299	2013	105	1.1%	10	1.8%	4	0.4%	2013
NN	MCMANUS BLVD/SIEMENS WAY	DENBIGH BLVD	BLAND BLVD	13,189	2013	104	1.0%	9	1.3%	4	0.4%	2013
NN	OYSTER POINT RD	WARWICK BLVD	JEFFERSON AVE	35,694	2013	603	1.3%	55	2.1%	33	0.8%	2013
NN	OYSTER POINT RD	JEFFERSON AVE	CANON BLVD	44,098	2013	740	1.6%	56	2.1%	76	2.0%	2013
NN	RICHNECK RD	DENBIGH BLVD	JEFFERSON AVE	3,901	2013	45	1.2%	7	2.5%	2	0.6%	2013
NN	RICHNECK RD	OLD YORK CL	FORT EUSTIS BLVD	1,104	2013	11	1.0%	1	0.7%	1	0.5%	2013
NN	ROANOKE AVE	I-664	BRIARFIELD RD	3,181	2013	23	1.0%	4	2.6%	2	0.8%	2013
NN	SAUNDERS RD	HARPERSVILLE RD	HAMPTON CL	8,948	2013	78	0.9%	5	0.9%	5	0.6%	2013
NN	THIMBLE SHOALS BLVD	JEFFERSON AVE	DILIGENCE DR	15,469	2013	100	0.7%	4	0.4%	4	0.3%	2013
NN	THIMBLE SHOALS BLVD	DILIGENCE DR	J CLYDE MORRIS BLVD	12,222	2013	110	1.3%	7	1.2%	12	1.5%	2013
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	15,800	2013	961	5.8%	54	4.3%	37	2.2%	2013
NN	WARWICK BLVD	SNIDOW BLVD	DENBIGH BLVD	32,269	2013	672	1.5%	61	2.2%	42	1.1%	2013
NN	WARWICK BLVD	DENBIGH BLVD	BLAND BLVD	31,789	2013	559	1.4%	53	2.3%	25	0.7%	2013
NN	WARWICK BLVD	OYSTER POINT RD	DEEP CREEK RD	29,018	2013	399	1.1%	40	1.6%	27	0.8%	2013
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	25,102	2013	258	0.9%	18	0.9%	17	0.6%	2013
NN	WARWICK BLVD	MAIN ST	MERCURY BLVD	24,259	2013	322	1.3%	18	1.0%	30	1.1%	2013
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	32,632	2013	327	1.2%	31	1.0%	42	1.2%	2013
NN	WARWICK BLVD	23RD ST	39TH ST	3,476	2013	45	1.1%	4	1.0%	3	0.3%	2013
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	12,330	2013	230	1.7%	11	1.4%	37	1.4%	2013
NN	YORKTOWN RD	WARWICK BLVD	I-64	5,249	2013	390	6.0%	40	7.0%	16	1.8%	2013
NN/YC	YORKTOWN RD	CRAWFORD RD	BAPTIST RD/MAIN RD	9,839	2015	236	2.4%	14	1.5%	14	1.7%	2015
NOR	21ST ST	HAMPTON BLVD	COLLEY AVE	7,211	2015	51	0.7%	7	1.7%	3	0.5%	2015
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	11,245	2015	236	2.1%	15	2.7%	15	1.3%	2015
NOR	27TH ST	HAMPTON BLVD	LLEWELLYN AVE	10,481	2015	211	2.0%	24	2.5%	13	1.6%	2015
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	10,798	2015	89	0.8%	9	1.5%	10	1.0%	2015
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	13,316	2015	214	1.6%	12	1.1%	20	1.7%	2015
NOR	BAINBRIDGE BLVD	CHESAPEAKE CL	S MAIN ST	1,597	2015	95	5.9%	13	9.8%	8	6.0%	2015
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	23,927	2015	1,652	6.9%	129	7.6%	78	3.9%	2015
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	13,241	2015	731	5.5%	69	8.1%	23	2.2%	2015
NOR	BAY AVE	FIRST VIEW ST	I-64	14,023	2015	113	0.8%	13	1.0%	9	0.6%	2015
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	12,280	2015	99	0.8%	14	1.7%	3	0.3%	2015
NOR	BERKLEY AVE	STATE ST	MAIN ST	12,934	2015	514	4.4%	30	3.4%	32	3.1%	2015

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
NOR	BERKLEY AVE EXT	BERKLEY AVE/FAUQUIER ST	WILSON RD	3,878	2015	121	3.1%	14	6.3%	16	4.6%	2015
NOR	BRAMBLETON AVE	PARK AVE	I-264	48,658	2015	1,678	3.4%	133	4.4%	107	2.7%	2015
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	7,119	2015	130	1.8%	9	2.7%	9	1.4%	2015
NOR	CHURCH ST	PRINCESS ANNE RD	26TH ST	22,193	2015	548	2.5%	49	3.6%	32	1.8%	2015
NOR	COLLEY AVE	27TH ST	53RD ST	15,264	2015	124	0.8%	11	1.1%	12	0.9%	2015
NOR	GRANBY ST	WILLOW WOOD DRIVE	THOLE ST	36,654	2012	381	1.0%	28	1.0%	17	0.5%	2012
NOR	GRANBY ST	I-564	I-64	25,542	2015	327	1.3%	41	2.1%	21	0.9%	2015
NOR	GRANBY ST	BAYVIEW BLVD	TIDEWATER DR	12,995	2015	190	1.5%	18	2.3%	16	1.1%	2015
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	35,762	2015	1,451	4.1%	121	4.9%	73	2.7%	2015
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	156,339	2015	4,343	2.8%	242	2.1%	189	1.7%	2015
NOR/VB	I-64	I-264	INDIAN RIVER RD	150,989	2015	4,905	3.2%	272	2.4%	251	2.1%	2015
NOR	I-564	ADMIRAL TAUSSIG BLVD	INT TERMINAL BLVD	44,146	2014	786	1.8%	70	1.9%	54	1.1%	2014
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	19,483	2015	636	3.3%	40	3.0%	41	2.3%	2015
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	15,828	2015	535	3.4%	50	4.5%	26	1.8%	2015
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	22,523	2014	1,855	6.8%	115	7.0%	150	7.3%	2013
NOR	JOHNSTONS RD	SEWELLS POINT RD	CHESAPEAKE BLVD	6,831	2015	153	2.2%	9	1.9%	15	2.6%	2015
NOR	JOHNSTONS RD/HALPRIN LN	MILITARY HWY	LITTLE CREEK RD	7,573	2015	76	1.0%	4	0.8%	4	0.6%	2015
NOR	KEMPSVILLE RD	NEWTOWN RD	VA BEACH BLVD	20,972	2015	170	0.8%	16	1.0%	9	0.5%	2015
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	17,668	2012	355	2.0%	23	1.9%	19	1.3%	2012
NOR	LITTLE CREEK RD	HAMPTON BLVD	GRANBY ST	17,825	2013	179	1.0%	17	1.4%	15	1.0%	2013
NOR	LLEWELLYN AVE	27TH ST	38TH ST	6,592	2015	53	0.8%	2	0.3%	4	0.7%	2015
NOR/PORT	MIDTOWN TUNNEL	MLK FWY/WESTERN FWY	BRAMBLETON AVE	35,311	2015	2,009	5.7%	140	5.5%	60	2.2%	2015
NOR	MILITARY HWY	VA BEACH BLVD	PRIN ANNE RD/NORTHAMPTON BLVD	44,847	2012	903	2.0%	65	2.6%	50	1.4%	2012
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	24,306	2015	368	1.5%	28	1.8%	29	1.4%	2015
NOR	MONTICELLO AVE	CITY HALL AVE	BRAMBLETON AVE	2,967	2015	32	1.1%	2	1.4%	3	1.0%	2015
NOR	MONTICELLO AVE	VA BEACH BLVD	21ST ST	22,771	2015	517	2.3%	50	3.4%	19	1.1%	2015
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	29,837	2015	423	1.4%	57	2.5%	28	1.2%	2015
NOR/VB	NEWTOWN RD	VA BEACH BLVD	BAKER RD	39,580	2015	538	1.3%	47	1.6%	48	1.4%	2012
NOR	NORVIEW AVE	TIDEWATER DR	CHESAPEAKE BLVD	5,866	2015	79	1.3%	10	2.6%	6	0.9%	2015
NOR	NORVIEW AVE	I-64	MILITARY HWY	25,033	2015	388	1.5%	29	2.1%	14	0.8%	2015
NOR	NORVIEW AVE	MILITARY HWY	AZALEA GARDEN RD	13,931	2015	77	0.5%	8	1.0%	3	0.3%	2015
NOR	OCEAN VIEW AVE	4TH VIEW ST	GRANBY ST	15,587	2015	187	1.2%	13	1.5%	15	0.9%	2015
NOR	OLNEY RD	COLLEY AVE	DUKE ST/VA BEACH BLVD	10,347	2015	132	1.3%	9	1.0%	8	0.8%	2015
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	15,850	2015	413	2.6%	42	4.5%	20	1.4%	2015
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	8,616	2015	144	1.7%	19	3.4%	6	0.8%	2015
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	AZALEA GARDEN RD	22,992	2015	657	2.9%	65	4.2%	31	1.6%	2015
NOR	ROBIN HOOD RD	AZALEA GARDEN RD	ELLSMERE AVE	9,641	2015	194	2.0%	13	1.9%	11	1.1%	2015
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	CHESAPEAKE BLVD	13,001	2015	296	2.3%	39	4.7%	15	1.2%	2015
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	LITTLE CREEK RD	8,196	2015	160	1.9%	21	3.7%	5	0.7%	2015
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	26,614	2015	271	1.0%	27	1.6%	16	0.7%	2015
NOR	THOLE ST	GRANBY ST	TIDEWATER DR	8,731	2015	83	1.0%	10	1.3%	0	0.0%	2015
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	41,624	2015	980	2.4%	69	2.5%	74	2.3%	2015
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	16,906	2015	161	1.0%	11	1.0%	8	0.4%	2015
NOR	VA BEACH BLVD	TIDEWATER DR	PARK AVE	15,801	2015	615	3.9%	54	5.3%	35	2.4%	2015
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	17,792	2015	689	3.9%	55	5.2%	29	1.9%	2015
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	28,584	2015	279	1.0%	25	1.4%	14	0.6%	2015
NOR	WILLOW WOOD DR	GRANBY ST	TIDEWATER DR	10,453	2015	85	0.8%	9	1.2%	2	0.2%	2015
POQ	EAST YORKTOWN RD	YORK CL	HUNT'S NECK RD	3,976	2013	29	0.7%	1	0.4%	2	0.6%	2013
POQ	EAST YORKTOWN RD	HUNT'S NECK RD	POQUOSON AVE	7,714	2013	57	0.7%	3	0.6%	3	0.4%	2013
POQ/YC	VICTORY BLVD	CARYS CHAPEL RD (RTE 782)	WYTHE CREEK RD	12,962	2013	164	1.3%	19	2.3%	4	0.3%	2013

Appendix D (continued) – Truck Volumes by Location

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Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
POQ	WYTHE CREEK RD	HAMPTON CL	ALPHUS ST	13,218	2013	210	1.6%	13	1.2%	1	0.1%	2013
PORT	CAVALIER BLVD	CHESAPEAKE CL	GREENWOOD DR	10,773	2013	110	1.0%	8	0.9%	8	0.7%	2013
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	11,799	2013	145	1.2%	10	1.0%	3	0.3%	2013
PORT	CHURCHLAND BLVD	TYRE NECK RD	HIGH ST	9,851	2013	121	1.2%	12	2.6%	8	0.8%	2013
PORT	COUNTY ST	PENINSULA AVE	ELM AVE	5,722	2013	189	3.3%	17	4.0%	9	1.9%	2013
PORT	COURT ST	COUNTY ST	HIGH ST	8,322	2010	158	1.8%	4	0.6%	14	1.6%	2010
PORT	CRAWFORD ST/BART ST	COUNTY ST	COURT ST	5,696	2013	70	1.2%	3	0.6%	6	1.1%	2013
PORT	DEEP CREEK BLVD	GREENWOOD DR	PORTSMOUTH BLVD	8,835	2013	115	1.3%	15	2.7%	7	0.9%	2013
PORT	DES MOINES AVE	DEEP CREEK BLVD	I-264	7,193	2013	78	1.1%	11	2.6%	7	1.0%	2013
PORT	EFFINGHAM ST	NORTH ST	CRAWFORD PKWY	16,250	2013	117	0.7%	11	0.9%	9	0.6%	2013
PORT	ELM AVE	SOUTH ST	PORTSMOUTH BLVD	8,011	2013	97	1.2%	7	1.1%	14	1.5%	2013
PORT	ELMHURST LN	AIRLINE BLVD	PORTSMOUTH BLVD	7,254	2013	60	0.8%	7	1.1%	3	0.4%	2013
PORT	GARWOOD AVE	GREENWOOD DR	ELMHURST LN	3,164	2013	265	8.4%	21	7.4%	16	5.7%	2013
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	4,181	2013	47	1.1%	7	2.9%	4	1.0%	2013
PORT	HIGH ST	M L K FWY	ELM AVE	16,239	2013	169	1.0%	11	1.1%	10	0.6%	2013
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	52,102	2015	2,282	4.4%	155	3.7%	127	2.7%	2015
PORT	LONDON BLVD	HIGH ST	M L K FWY	20,259	2013	475	2.3%	39	2.9%	36	2.2%	2013
PORT	LONDON BLVD	M L K FWY	ELM AVE	28,023	2013	438	1.6%	20	0.9%	25	1.0%	2013
PORT	PORTCENTRE PKWY	PORTSMOUTH BLVD	CRAWFORD ST	9,483	2010	144	1.5%	10	0.8%	15	1.4%	2010
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	21,695	2010	201	0.9%	11	0.9%	9	0.5%	2010
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	9,017	2013	216	2.4%	10	1.6%	15	1.4%	2013
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	4,462	2013	58	1.3%	3	0.8%	5	0.8%	2013
PORT	TOWNE POINT RD	WESTERN FREEWAY	CHESAPEAKE CL	23,099	2013	275	1.2%	15	1.3%	19	0.9%	2013
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	9,647	2013	1,362	14.1%	102	15.6%	108	14.1%	2013
PORT	TWIN PINES RD	TOWNE POINT RD	HEDGEROW LN	9,751	2013	24	0.2%	3	0.5%	1	0.1%	2013
PORT	TYRE NECK RD	HIGH ST	CHURCHLAND BLVD	5,655	2013	32	0.6%	4	1.3%	2	0.3%	2013
PORT	VICTORY BLVD	I-264	GREENWOOD DR	22,534	2010	531	2.4%	54	4.8%	35	1.9%	2010
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	10,324	2013	698	6.8%	35	2.9%	49	4.4%	2013
PORT	W NORFOLK RD	TYRE NECK RD	CEDAR LN	6,568	2013	32	0.5%	2	0.4%	1	0.1%	2013
PORT	WESTERN FWY	COLLEGE DR	TOWN POINT RD	54,573	2015	3,591	6.6%	261	6.6%	164	3.5%	2015
SH	BUS ROUTE 58	ROUTE 35	ECL COURTLAND	6,870	2015	609	8.9%	44	9.2%	29	4.6%	2015
SH	BUS ROUTE 58	ECL COURTLAND	ROUTE 58	6,870	2015	609	8.9%	44	9.2%	29	4.6%	2015
SH	ROUTE 35	ROUTE 186	ROUTE 671	3,416	2015	378	11.1%	22	9.0%	16	4.9%	2015
SH	ROUTE 35	ROUTE 671	GRAYS SHOP RD (RTE 673)	1,294	2015	191	14.7%	15	10.6%	13	11.9%	2015
SH	ROUTE 35	IVOR RD (RTE 616)	CARYS BRIDGE RD (RTE 653)	2,313	2015	536	23.2%	37	19.8%	30	14.5%	2015
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	12,884	2015	3,570	27.7%	194	26.4%	193	20.5%	2015
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	20,442	2015	4,096	20.0%	227	17.9%	205	13.2%	2015
SH	ROUTE 186	NC STATE LINE	JOYNER RD (RTE 701)	878	2015	209	23.7%	12	17.6%	16	23.2%	2015
SH	ROUTE 258	ROUTE 189	DOGWOOD BEND RD (RTE 684)	3,409	2015	451	13.2%	28	14.5%	26	8.7%	2015
SH	ROUTE 460	SUSSEX CL	ROUTE 616 (IVOR RD)	9,416	2015	2,106	22.4%	134	24.1%	109	13.6%	2015
SH	ROUTE 616	SAINT LUKES RD (RTE 633)	SEACOCK RD (RTE 614)	1,157	2015	119	10.3%	14	10.4%	12	10.6%	2015
SH	ROUTE 616	MILLFIELD RD (RTE 605)	SCL IVOR	1,302	2015	119	9.1%	7	6.1%	7	5.9%	2015
SH	ROUTE 671	CROSS KEYS RD (RTE 665)	WCL NEWSOMS	2,119	2015	233	11.0%	18	10.4%	13	7.4%	2015
SH	ROUTE 671	DELAWARE RD (RTE 687)	ROUTE 58	6,561	2015	1,046	15.9%	75	18.9%	64	12.1%	2015
SUF	BENNETTS PASTURE RD	KINGS HWY	BRIDGE RD	9,733	2014	141	1.4%	18	2.1%	4	0.4%	2014
SUF	BUCKHORN DR	ROUTE 58	INDIAN TRAIL	480	2014	21	5.2%	2	4.2%	0	0.6%	2014
SUF	CAROLINA RD	NC STATE LINE	ADAMS SWAMP RD (RTE 642)	3,670	2014	312	8.5%	17	6.2%	20	5.4%	2014
SUF	CAROLINA RD	CYPRESS CHAPEL RD (RTE 675)	BABBTOWN RD (RTE 759)	4,512	2014	431	9.6%	29	8.6%	26	6.2%	2014
SUF	COLLEGE DR	WESTERN FREEWAY	HAMPTON ROADS PKWY	18,661	2011	181	1.0%	17	1.5%	6	0.4%	2011
SUF	COLLEGE DR	HAMPTON ROADS PKWY	I-664	22,153	2014	313	1.4%	28	2.0%	19	1.0%	2014

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
SUF	COLLEGE DR	I-664	HARBOUR VIEW BLVD	8,591	2014	524	6.1%	35	4.4%	17	2.2%	2014
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	10,302	2014	156	1.5%	14	2.6%	5	0.6%	2014
SUF	CRITTENDEN RD	KINGS HWY	BRIDGE RD (RTE 17)	2,957	2014	109	3.7%	12	4.5%	10	3.4%	2014
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	1,994	2014	29	1.4%	2	1.2%	5	2.1%	2014
SUF	EVERETTS RD	MOORE FARM LN	GODWIN BLVD	1,857	2014	30	1.6%	3	1.6%	5	2.5%	2014
SUF	FINNEY AVE	N MAIN ST	PINNER ST	7,608	2014	51	0.7%	5	1.1%	4	0.6%	2014
SUF	GODWIN BLVD	KINGS FORK ROAD	EVERETS RD	12,022	2014	543	4.5%	43	4.8%	26	2.3%	2014
SUF	HAMPTON ROADS PKWY	HARBOUR VIEW BLVD	COLLEGE DR	11,505	2014	154	1.3%	14	1.9%	6	0.6%	2014
SUF	HAMPTON ROADS PKWY	COLLEGE DR	PORTSMOUTH CL	9,707	2014	44	0.4%	1	0.2%	2	0.2%	2014
SUF	HARBOUR VIEW BLVD	BRIDGE RD	HAMPTON ROADS PKWY	19,726	2014	242	1.2%	15	1.1%	8	0.5%	2014
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	10,095	2014	247	2.8%	17	2.9%	9	1.0%	2014
SUF	HOLLAND RD (BUS RTE 58)	RURITAN BLVD	HOLLAND RD (RTE 58)	3,359	2014	110	3.3%	8	3.2%	4	1.3%	2014
SUF	I-664	WESTERN FREEWAY	COLLEGE DR	68,690	2015	4,408	6.4%	259	4.6%	219	3.5%	2015
SUF	KINGS FORK RD	PITCHKETTLE RD	PRUDEN BLVD	2,471	2014	39	1.6%	6	2.3%	3	1.1%	2014
SUF	KINGS HWY	GODWIN BLVD	CRITTENDEN RD	3,310	2014	108	3.2%	17	5.5%	8	2.6%	2014
SUF	LAKE PRINCE DR (RTE 604)	ROUTE 460 (PRUDEN BLVD)	ROUTE 603 (EVERETTS RD)	2,272	2014	44	1.9%	2	1.0%	2	0.9%	2014
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	9,979	2014	101	1.0%	8	1.3%	4	0.4%	2014
SUF	MAIN ST	CONSTANCE RD	PRUDEN BLVD/GODWIN BLVD	26,630	2015	302	1.1%	26	2.0%	12	0.6%	2015
SUF	MARKET ST	WASHINGTON ST	MAIN ST	2,879	2014	66	2.3%	6	3.2%	4	1.4%	2014
SUF	NANSEMOND PKWY	KINGS HWY	SHOULDERS HILL RD	12,496	2014	395	3.2%	33	3.0%	16	1.3%	2014
SUF	PINNER ST	WASHINGTON ST	FINNEY AVE	5,532	2014	78	1.4%	7	1.8%	6	1.0%	2014
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	4,329	2014	75	1.8%	7	1.8%	1	0.2%	2014
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	17,146	2014	480	2.8%	36	3.4%	25	1.8%	2014
SUF	PORTSMOUTH BLVD	WASHINGTON ST	SUFFOLK BYPASS	24,506	2014	771	3.2%	39	2.2%	54	2.8%	2014
SUF	PROVIDENCE RD (RTE 604)	KINGS FORK RD	ROUTE 460 (PRUDEN BLVD)	1,541	2014	34	2.2%	3	1.7%	3	1.6%	2014
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	6,384	2014	79	1.2%	12	2.1%	5	0.8%	2014
SUF	ROUTE 189 (IN HOLLAND)	RTE 58 (SOUTH OF HOLLAND)	BUS RTE 58 (RURITAN BLVD)	700	2014	60	8.5%	2	5.3%	4	5.6%	2014
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	1,755	2014	28	1.6%	4	3.1%	3	1.5%	2014
SUF	ROUTE 258	RTE 58	ISLE OF WIGHT CL	2,607	2014	1,146	43.9%	106	55.6%	66	32.1%	2014
SUF	ROUTE 272	ROUTE 189	ROUTE 58	1,486	2014	64	4.3%	10	11.2%	2	1.3%	2014
SUF	ROUTE 616	ROUTE 58	WHALEYVILLE BLVD	227	2014	14	6.1%	2	14.8%	2	6.8%	2014
SUF	RURITAN BLVD (BUS RTE 58)	ISLE OF WIGHT CL	RTE 189 (HOLLAND RD BUS)	2,270	2014	80	3.5%	8	4.6%	4	1.6%	2014
SUF	SHOULDERS HILL RD	NANSEMOND PKWY	PUGHSVILLE RD	8,319	2014	151	1.8%	16	2.4%	12	1.2%	2014
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	9,823	2011	1,275	13.0%	90	12.0%	62	6.9%	2011
SUF	TOWN POINT RD	PUGHSVILLE RD	BRIDGE RD	1,297	2014	52	4.0%	3	3.1%	2	1.2%	2014
SUF	WASHINGTON ST	W CONSTANCE RD	MAIN ST	8,218	2014	148	2.1%	17	3.6%	5	0.8%	2014
SUF	WASHINGTON ST	MAIN ST	PINNER ST	8,876	2014	138	1.9%	14	3.4%	8	1.5%	2014
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	4,865	2015	756	15.5%	46	16.5%	35	8.6%	2015
SUF	WILROY RD	CONSTANCE RD	SUFFOLK BYPASS	5,386	2014	191	3.5%	14	3.9%	14	2.5%	2014
SUF	WILROY RD	SUFFOLK BYPASS	NANSEMOND PKWY	8,502	2014	367	4.3%	24	2.8%	20	2.2%	2014
SUR	ROUTE 10	ROUTE 40	ROUTE 31 (SOUTH)	2,463	2015	212	8.6%	10	6.0%	8	3.7%	2015
SUR	ROUTE 31	ROUTE 10 (NORTH)	JAMESTOWN-SCOTLAND FERRY	1,868	2012	34	1.8%	2	1.5%	3	1.6%	2012
SUR	ROUTE 40	SUSSEX CL	ROUTE 615	993	2015	126	12.7%	11	15.2%	6	6.9%	2015
VB	21ST ST	PARKS AVE	PACIFIC AVE	10,522	2015	121	0.8%	13	1.6%	3	0.2%	2015
VB	22ND ST	PARKS AVE	PACIFIC AVE	9,583	2015	210	1.3%	12	1.2%	13	1.1%	2015
VB	ATLANTIC AVE	PACIFIC AVE	LASKIN RD	4,836	2015	64	1.4%	6	3.3%	1	0.3%	2015
VB	ATLANTIC AVE	21ST ST	VA BEACH BLVD	7,213	2015	85	1.3%	9	4.0%	3	0.6%	2012
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	29,365	2015	178	0.7%	16	0.9%	16	0.7%	2015
VB	BIRDNECK RD	GENERAL BOOTH BLVD	VA BEACH BLVD	16,483	2015	186	1.2%	16	1.5%	7	0.5%	2015
VB	BLACKWATER RD	PUNGO FERRY RD	CHESAPEAKE CL	2,651	2015	134	5.0%	12	5.6%	3	1.2%	2015

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
VB	BONNEY RD	INDEPENDENCE BLVD	ROSEMONT RD	15,317	2015	151	1.0%	8	1.0%	5	0.4%	2015
VB	CENTERVILLE TNPK	JAKE SEARS RD	INDIAN RIVER RD	18,330	2014	823	4.1%	64	4.7%	9	0.5%	2015
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	NCL VA BEACH	8,500	2015	1,181	13.9%	-	-	-	-	2015
VB	COLUMBUS ST	INDEPENDENCE BLVD	CONSTITUTION DR	12,522	2015	153	1.2%	7	0.9%	16	1.3%	2015
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	22,102	2015	322	1.2%	31	1.4%	15	0.6%	2015
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	28,138	2015	819	2.8%	42	2.0%	37	1.5%	2015
VB	ELBOW RD	INDIAN RIVER RD (EAST)	SALEM RD	12,239	2015	50	0.4%	3	0.3%	2	0.2%	2015
VB	FERRELL PKWY	INDIAN LAKES BLVD	PLEASANT VALLEY RD	44,520	2015	830	1.9%	68	2.1%	26	0.8%	2012
VB	FIRST COLONIAL RD	LASKIN RD	GREAT NECK RD	40,852	2015	396	1.0%	40	1.3%	32	1.0%	2015
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	28,637	2015	321	1.1%	32	1.8%	13	0.5%	2015
VB	GENERAL BOOTH BLVD	BIRDNECK RD	HARBOUR POINT	20,169	2015	276	1.6%	22	2.0%	13	0.9%	2010
VB	GREAT NECK RD	SHOREHAVEN RD	SHORE DR	35,673	2015	343	0.9%	32	1.2%	11	0.3%	2012
VB	HARPERS RD	DAM NECK RD	OCEANA BLVD	7,917	2015	80	1.0%	7	1.9%	3	0.3%	2015
VB	HOLLAND RD	INDEPENDENCE BLVD	SOUTH PLAZA TRAIL	41,673	2015	470	1.2%	26	1.1%	36	1.1%	2012
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	149,782	2015	2,728	1.8%	197	1.7%	112	0.9%	2015
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	31,972	2015	332	1.2%	28	1.4%	12	0.5%	2015
VB	INDEPENDENCE BLVD	VA BEACH BLVD	PEMBROKE BLVD	52,593	2015	499	0.9%	55	1.5%	20	0.5%	2015
VB	INDIAN LAKES BLVD	FERRELL PKWY	INDIAN RIVER RD	12,149	2015	207	1.4%	27	2.3%	7	0.5%	2015
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	63,369	2015	1,278	2.0%	84	1.8%	99	2.2%	2012
VB	INDIAN RIVER RD	NORTH LANDING RD	PRINCESS ANNE RD	6,062	2015	215	3.5%	24	5.6%	12	2.2%	2015
VB	INTERNATIONAL PKWY	LYNNHAVEN PKWY	LONDON BRIDGE RD	10,296	2015	262	2.5%	14	1.9%	20	1.7%	2015
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	34,366	2014	382	1.0%	43	1.7%	11	0.3%	2015
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	31,259	2015	388	1.2%	31	1.3%	19	0.7%	2015
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	29,816	2015	253	0.8%	23	1.5%	9	0.4%	2015
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	23,360	2015	308	1.3%	25	1.6%	11	0.5%	2015
VB	LONDON BRIDGE RD	INTERNATIONAL PKWY	POTTERS RD	34,714	2015	717	2.3%	55	2.0%	35	1.2%	2015
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	16,972	2015	170	0.8%	13	1.0%	5	0.2%	2015
VB	LYNNHAVEN PKWY	HOLLAND RD	S LYNNHAVEN RD	35,755	2015	276	0.8%	21	0.8%	15	0.4%	2015
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	30,361	2015	590	1.9%	37	1.7%	31	1.0%	2015
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	24,569	2014	323	1.1%	28	1.4%	15	0.6%	2015
VB	NEWTOWN RD	DIAMOND SPRINGS RD	HAYGOOD RD	10,018	2015	43	0.6%	7	1.4%	1	0.1%	2015
VB	NORFOLK AVE	BIRDNECK RD	PACIFIC AVE	9,435	2015	67	0.8%	5	1.1%	1	0.2%	2015
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	37,009	2015	1,318	3.6%	75	2.8%	53	1.7%	2015
VB	NORTH LANDING RD	INDIAN RIVER RD	PRINCESS ANNE RD	8,501	2015	97	0.7%	10	0.9%	3	0.2%	2015
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	35,994	2015	511	1.4%	35	1.3%	31	1.1%	2015
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	9,641	2015	93	0.9%	9	1.3%	4	0.4%	2015
VB	PLAZA TRAIL, S.	HOLLAND RD	ROSEMONT RD	10,011	2015	42	0.4%	3	0.6%	4	0.4%	2015
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	21,930	2015	210	0.9%	16	0.9%	11	0.5%	2015
VB	PRINCESS ANNE RD	BAXTER RD	PROVIDENCE RD	29,900	2015	267	0.9%	32	1.6%	15	0.6%	2015
VB	PRINCESS ANNE RD	PROVIDENCE RD	FERRELL PKWY	39,788	2015	266	0.7%	19	0.8%	14	0.4%	2012
VB	PRINCESS ANNE RD	HOLLAND RD	GENERAL BOOTH BLVD	13,596	2015	225	1.6%	18	2.0%	9	0.8%	2015
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	7,239	2015	444	6.1%	39	7.7%	5	0.8%	2015
VB	PROVIDENCE RD	INDIAN RIVER RD	KEMPSVILLE RD	23,438	2015	221	1.0%	23	1.4%	26	1.0%	2015
VB	PUNGO FERRY RD	BLACKWATER RD	PRINCESS ANNE RD	3,650	2015	198	5.4%	19	6.9%	7	2.1%	2015
VB	ROSEMONT RD	BUCKNER BLVD	LYNNHAVEN PKWY	16,539	2015	283	1.5%	34	2.6%	15	0.9%	2015
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	30,840	2015	233	0.8%	20	1.0%	9	0.3%	2015
VB	SALEM RD	ELBOW RD	LYNNHAVEN PKWY	12,092	2015	140	0.9%	15	1.3%	6	0.4%	2015
VB	SANDBRIDGE RD	PRINCESS ANNE RD	ATWOODTOWN RD	12,511	2015	145	1.0%	12	1.5%	7	0.6%	2015
VB	SHORE DRIVE	NORTHAMPTON BLVD	GREAT NECK RD	37,534	2015	395	1.1%	30	1.1%	17	0.5%	2015
VB	VA BEACH BLVD	NEWTOWN RD/NORFOLK CL	WITCHDUCK RD	37,852	2015	450	1.2%	33	1.2%	19	0.5%	2012

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Most Recent Weekday Volume	Count Year	Existing Weekday Truck Volume	Existing Weekday Truck %	Existing AM Peak Hour	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
VB	VA BEACH BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	36,880	2015	480	1.3%	29	1.4%	30	0.9%	2013
VB	VA BEACH BLVD	S. PLAZA TRAIL/LITTLE NECK RD	LYNNHAVEN PKWY	39,136	2015	396	1.1%	35	1.7%	8	0.2%	2012
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	11,516	2015	200	1.7%	23	4.1%	9	1.0%	2015
VB	WESLEYAN DR	BAKER RD	DIAMOND SPRINGS RD	15,984	2015	152	1.0%	12	1.2%	5	0.4%	2015
VB	WEST NECK RD	NORTH LANDING RD	INDIAN RIVER RD	4,483	2015	168	2.2%	21	4.3%	8	1.2%	2015
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	43,604	2015	487	1.5%	33	1.6%	43	1.7%	2015
WMB/YC	BYPASS RD	RICHMOND RD	ROUTE 132	24,178	2013	192	0.8%	19	1.7%	4	0.2%	2013
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	15,105	2013	173	1.1%	9	1.2%	9	0.7%	2013
WMB	CAPITOL LANDING RD	BYPASS RD	MERRIMAC TRAIL	6,980	2013	89	1.3%	8	2.1%	3	0.5%	2013
WMB	HENRY ST S.	ROUTE 199	FRANCIS ST	3,145	2013	24	0.8%	2	0.9%	0	0.0%	2013
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	5,882	2013	129	2.2%	9	2.5%	6	1.1%	2013
WMB	IRONBOUND RD	DEPUE DR	LONGHILL RD	9,806	2013	67	0.7%	8	1.6%	0	0.0%	2013
WMB	JAMESTOWN RD	JOHN TYLER LN	BOUNDARY ST	10,161	2013	88	0.9%	7	0.8%	4	0.4%	2013
WMB	LAFAYETTE ST	CAPITOL LANDING RD	PAGE ST	8,160	2013	129	1.6%	13	2.7%	4	0.6%	2013
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	7,273	2013	119	1.6%	11	2.9%	6	0.9%	2013
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	9,341	2013	107	1.1%	9	1.7%	7	0.8%	2013
WMB	PAGE ST	SECOND ST	YORK ST	14,062	2013	134	1.0%	18	2.3%	5	0.4%	2013
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	27,656	2013	251	0.9%	23	1.8%	9	0.4%	2013
WMB	RICHMOND RD	BYPASS RD	MONTICELLO AVE	20,187	2013	204	1.0%	16	1.8%	10	0.6%	2013
WMB	RICHMOND RD	MONTICELLO AVE	BOUNDARY ST	10,623	2013	186	1.8%	14	2.4%	9	1.2%	2013
WMB	SECOND ST	PAGE ST	YORK CL	14,031	2013	151	1.1%	22	2.7%	5	0.4%	2013
WMB	YORK ST	PAGE ST	JAMES CITY CL	12,201	2013	201	1.6%	15	2.4%	8	0.8%	2013
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	11,852	2013	143	1.2%	20	2.5%	4	0.3%	2013
YC	COOK RD	GEORGE WASHINGTON HWY	GOOSLEY RD	6,256	2013	89	1.4%	9	1.9%	7	1.2%	2013
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	16,216	2015	232	1.4%	19	1.8%	10	0.7%	2015
YC	GEORGE WASHINGTON HWY	HAMPTON HWY (RTE 134)	DARE RD	52,869	2011	757	1.4%	55	1.4%	24	0.6%	2010
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	9,576	2013	671	7.0%	56	9.2%	56	7.5%	2013
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	25,607	2013	280	1.1%	31	1.6%	9	0.4%	2013
YC	I-64	ROUTE 199/646	ROUTE 143	58,396	2015	6,086	10.4%	360	9.2%	262	5.9%	2015
YC	LIGHTFOOT RD	ROUTE 60	MOORETOWN RD	10,249	2013	132	1.3%	13	2.6%	11	1.2%	2013
YC	MOORETOWN RD	AIRPORT RD	OLD MOORETOWN RD	9,024	2013	121	1.3%	8	1.5%	8	1.0%	2013
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	6,092	2015	81	1.3%	3	0.4%	4	0.6%	2015
YC	ROUTE 132	BYPASS RD/WILLIAMSBURG CL	ROUTE 143	10,165	2013	132	1.3%	13	2.2%	8	1.0%	2013
YC	ROUTE 199	MOORETOWN RD	I-64	29,687	2013	595	2.0%	49	2.4%	31	1.2%	2013
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	30,760	2015	842	2.7%	63	2.5%	38	1.5%	2015
YC	VICTORY BLVD	NEWPORT NEWS CL	ROUTE 17	48,289	2013	586	1.2%	44	1.5%	43	1.0%	2013
YC	WALLER MILL RD	ROUTE 60	MOORETOWN RD	4,310	2013	53	1.2%	3	1.4%	4	1.0%	2013

Appendix D (continued) – Truck Volumes by Location

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Peak Hour represents the hour (in four consecutive 15-minute intervals) with the highest vehicular volume on each particular roadway segment. The AM Peak Hour occurs between 5 am and 9 am, and the PM Peak Hour occurs between 3 pm and 7 pm.

Juris					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	22ND ST	LIBERTY ST	BERKLEY AVE/NORFOLK CL	EW	0.3	0.1	0.2	0.2	0.8	0.3	0.5	0.4
CHES	AIRLINE BLVD	I-664	JOLLIFF RD	EW	0.4	0.6	0.5	0.4	0.1	0.2	0.1	0.1
CHES	AIRLINE BLVD	JOLLIFF RD	PORTSMOUTH CL	EW	0.4	0.6	0.5	0.4	0.1	0.2	0.1	0.1
CHES	BAINBRIDGE BLVD	MILITARY HWY	FREEMAN AVE	NS	0.2	0.2	0.2	0.1	0.4	0.2	0.3	0.1
CHES	BAINBRIDGE BLVD	FREEMAN AVE	SWAIN AVE	NS	0.4	0.5	0.9	0.4	0.2	0.3	0.4	0.2
CHES	BAINBRIDGE BLVD	SWAIN AVE	CHESAPEAKE DR	NS	0.4	0.5	0.9	0.4	0.2	0.3	0.4	0.2
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	NS	0.4	0.5	0.9	0.4	0.2	0.3	0.4	0.2
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	BALLAHACK RD	NS	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
CHES	BATTLEFIELD BLVD	BALLAHACK RD	GALLBUSH RD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CHES	BATTLEFIELD BLVD	GALLBUSH RD	INDIAN CREEK RD	NS	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
CHES	BATTLEFIELD BLVD	INDIAN CREEK RD	CENTERVILLE TNPK	NS	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CHES	BATTLEFIELD BLVD	CENTERVILLE TNPK	HILLCREST PKWY	NS	0.8	0.3	0.5	0.5	0.4	0.2	0.3	0.2
CHES	BATTLEFIELD BLVD	HILLCREST PKWY	PEACEFUL RD/HILLWELL RD	NS	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.1
CHES	BATTLEFIELD BLVD	PEACEFUL RD/HILLWELL RD	HANBURY RD	NS	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.1
CHES	BATTLEFIELD BLVD	HANBURY RD	JOHNSTOWN RD	NS	0.7	0.2	0.9	0.4	0.4	0.1	0.5	0.3
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	NS	0.0	0.1	0.0	0.3	0.0	0.5	0.0	1.1
CHES	BATTLEFIELD BLVD	CEDAR RD	GREAT BRIDGE BLVD/KEMPSVILLE RD	NS	1.1	0.5	0.9	2.4	0.9	0.4	0.7	2.0
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BLVD/KEMPSVILLE RD	GREAT BRIDGE BYPASS	NS	0.1	0.0	0.1	0.1	0.3	0.4	0.2	1.1
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BYPASS	VOLVO PKWY	NS	0.7	0.6	0.9	1.9	0.4	0.2	0.5	0.8
CHES	BATTLEFIELD BLVD	VOLVO PKWY	I-64	NS	0.3	0.3	0.3	0.5	0.3	0.7	0.3	1.3
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	NS	0.1	0.2	0.1	0.4	0.2	0.2	0.3	0.4
CHES	BATTLEFIELD BLVD	MILITARY HWY	CAMPOSTELLA RD	NS	0.0	0.2	0.3	0.2	0.1	0.3	0.4	0.3
CHES	BRIDGE RD	SUFFOLK CL	CHURCHLAND BLVD	EW	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3
CHES	BUTTS STATION RD	KEMPSVILLE RD	ELBOW RD	EW	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2
CHES	BUTTS STATION RD	ELBOW RD	CENTERVILLE TNPK	EW	0.1	0.1	0.5	0.1	0.2	0.1	0.6	0.1
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	NS	0.6	0.4	0.4	0.3	0.7	0.4	0.4	0.4
CHES	CEDAR RD	DOMINION BLVD	BELLS MILL RD (WEST)	EW	1.6	1.4	1.4	1.2	0.4	0.3	0.4	0.3
CHES	CEDAR RD	BELLS MILL RD (WEST)	BELLS MILL RD (EAST)	EW	1.6	1.4	1.4	1.2	0.4	0.3	0.4	0.3
CHES	CEDAR RD	BELLS MILL RD (EAST)	BRIARFIELD DR	EW	1.6	1.4	1.4	1.2	0.4	0.3	0.4	0.3
CHES	CEDAR RD	BRIARFIELD DR	BATTLEFIELD BLVD	EW	1.6	1.4	1.4	1.2	0.4	0.3	0.4	0.3
CHES	CHESAPEAKE EXPWY	GALLBUSH RD	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	NS	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	HILLCREST PKWY	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	HILLCREST PKWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	NS	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	HANBURY RD	NS	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	HANBURY RD	MT PLEASANT RD	NS	0.6	0.0	0.0	0.0	0.5	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	MT PLEASANT RD	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	NS	0.5	0.1	0.1	0.4	0.2	0.0	0.0	0.2
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	DOMINION BLVD	NS	0.2	0.0	0.0	1.1	0.1	0.0	0.0	0.5
CHES	CHESAPEAKE EXPWY	DOMINION BLVD	I-64	NS	0.2	0.0	0.0	0.4	0.3	0.0	0.0	0.6
CHES	DOCK LANDING RD	JOLLIFF RD	I-664	EW	0.1	-	0.2	-	0.2	-	0.2	-
CHES	DOCK LANDING RD	I-664	EAGLE HILL DR	EW	0.6	0.8	0.6	0.7	0.2	0.2	0.2	0.2
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	NS	0.6	0.8	0.6	0.7	0.2	0.2	0.2	0.2
CHES	DOMINION BLVD	GEORGE WASHINGTON HWY	CEDAR RD	NS	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.1
CHES	DOMINION BLVD/STEEL BRIDGE	CEDAR RD	BAINBRIDGE BLVD	NS	0.3	0.3	0.1	0.6	0.3	0.4	0.1	0.6
CHES	DOMINION BLVD	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	NS	0.6	0.6	0.1	1.0	0.3	0.4	0.1	0.6
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	NS	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0
CHES	GEORGE WASHINGTON HWY	DOMINION BLVD	GW HWY RELOCATED	NS	1.1	0.7	0.9	0.4	0.3	0.2	0.3	0.1
CHES	GEORGE WASHINGTON HWY	GW HWY RELOCATED	MOSES GRANDY TR @ HINTON AVE	NS	1.1	0.7	0.9	0.4	0.3	0.2	0.3	0.1
CHES	GW HWY (DEEP CREEK BRIDGE)	MOSES GRANDY TR @ HINTON AVE	MILL CREEK PKWY	NS	1.0	0.6	0.5	1.7	0.7	0.5	0.3	1.5
CHES	GEORGE WASHINGTON HWY	MILL CREEK PKWY	WILLOWOOD DR	NS	1.0	0.6	0.5	1.7	0.7	0.5	0.3	1.5
CHES	GEORGE WASHINGTON HWY	WILLOWOOD DR	I-64	NS	1.0	0.6	0.5	1.7	0.7	0.5	0.3	1.5

Appendix E – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	GEORGE WASHINGTON HWY	I-64	MILITARY HWY	NS	0.2	0.2	0.4	0.2	0.2	0.1	0.4	0.2
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	NS	0.3	0.5	0.4	0.9	0.4	0.4	0.5	0.8
CHES	GEORGE WASHINGTON HWY	CANAL DR	PORTSMOUTH CL	NS	0.3	0.3	0.7	0.3	0.3	0.4	0.9	0.4
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	EW	0.7	0.4	0.3	0.3	0.6	0.4	0.3	0.3
CHES	GREAT BRIDGE BLVD	CAMPOSTELLA RD	I-64	EW	0.7	0.4	0.3	0.3	0.6	0.4	0.3	0.3
CHES	GREAT BRIDGE BLVD	I-64	DOMINION BLVD	EW	0.3	0.2	0.2	0.2	0.7	0.7	0.5	0.5
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	RIVERWALK PKWY WEST	EW	1.1	1.0	1.2	0.8	0.5	0.4	0.5	0.3
CHES	GREAT BRIDGE BLVD	RIVERWALK PKWY WEST	BATTLEFIELD BLVD	EW	1.1	1.0	1.2	0.8	0.5	0.4	0.5	0.3
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	NS	0.7	0.7	0.8	1.4	0.4	0.4	0.4	0.8
CHES	GREENBRIER PKWY	VOLVO PKWY	EDEN WAY	NS	0.5	0.4	0.9	1.0	0.4	0.4	0.6	1.2
CHES	GREENBRIER PKWY	EDEN WAY	I-64	NS	0.5	0.4	0.9	1.0	0.4	0.4	0.6	1.2
CHES	GREENBRIER PKWY	I-64	WOODLAKE DR	NS	0.3	0.4	0.4	1.0	0.8	0.4	1.0	0.9
CHES	GREENBRIER PKWY	WOODLAKE DR	MILITARY HWY	NS	0.3	0.4	0.4	1.0	0.8	0.4	1.0	0.9
CHES	I-64	CITY LINE RD/VA BEACH CL	GREENBRIER PKWY	EW	0.0	1.0	0.3	0.3	0.0	0.4	0.1	0.1
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EW	0.1	0.2	0.9	0.2	0.1	0.1	1.0	0.1
CHES	I-64	BATTLEFIELD BLVD	I-464	EW	0.1	0.0	1.9	0.0	0.1	0.0	1.7	0.0
CHES	I-64	I-464	GEORGE WASHINGTON HWY	EW	0.3	0.7	1.8	0.8	0.1	0.1	0.4	0.2
CHES	I-64	GEORGE WASHINGTON HWY	MILITARY HWY	EW	0.1	2.5	0.4	1.1	0.1	1.6	0.3	0.7
CHES	I-64	MILITARY HWY	I-264&664	EW	0.1	1.9	0.9	1.6	0.1	0.7	0.4	0.6
CHES	I-264	I-64&664	WCL PORTSMOUTH	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
CHES	I-464	I-64	MILITARY HWY	NS	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.2
CHES	I-464	MILITARY HWY	FREEMAN AVE	NS	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
CHES	I-464	FREEMAN AVE	POINDEXTER ST	NS	0.6	0.1	0.1	0.0	0.3	0.1	0.0	0.0
CHES	I-464	POINDEXTER ST	NORFOLK CL	NS	1.0	0.1	0.0	0.0	1.4	0.1	0.1	0.0
CHES	I-664	I-64 & I-264	ROUTES 13/58/460	EW	0.0	0.2	0.1	1.1	0.1	0.1	0.1	0.8
CHES	I-664	ROUTES 13/58/460	DOCK LANDING RD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
CHES	I-664	DOCK LANDING RD	PORTSMOUTH BLVD	EW	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
CHES	I-664	PORTSMOUTH BLVD	PUGHSVILLE RD	EW	0.2	0.3	0.4	0.1	0.1	0.2	0.2	0.0
CHES	I-664	PUGHSVILLE RD	SUFFOLK CL	EW	0.1	0.2	0.7	0.0	0.1	0.2	0.6	0.0
CHES	INDIAN RIVER RD	NORFOLK CL	KEMP LANE	EW	0.3	0.3	0.2	0.4	0.3	0.3	0.2	0.3
CHES	INDIAN RIVER RD	KEMP LANE	VA BEACH CL	EW	0.6	0.2	0.6	0.5	0.4	0.1	0.3	0.3
CHES	KEMPSVILLE RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.4	0.7	0.2	0.8	0.3	0.6	0.2	0.6
CHES	KEMPSVILLE RD	CHESAPEAKE EXPRESSWAY	GREENBRIER PKWY	EW	0.4	0.7	0.2	0.8	0.3	0.6	0.2	0.6
CHES	KEMPSVILLE RD	GREENBRIER PKWY	VOLVO PKWY	EW	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.1
CHES	KEMPSVILLE RD	VOLVO PKWY	VA BEACH CL	EW	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.2
CHES	LIBERTY ST	22ND ST	POINDEXTER RD	EW	0.0	0.0	0.1	0.0	0.7	0.5	1.1	0.8
CHES	MILITARY HWY	AIRLINE BLVD	I-64	EW	0.6	0.7	0.5	0.6	0.2	0.2	0.2	0.2
CHES	MILITARY HWY	I-64	CAVALIER BLVD	EW	0.4	0.4	0.3	0.2	0.7	0.7	0.6	0.3
CHES	MILITARY HWY	CAVALIER BLVD	GEORGE WASHINGTON HWY	EW	0.8	0.3	0.7	0.4	0.8	0.3	0.7	0.5
CHES	MILITARY HWY	GEORGE WASHINGTON HWY	CANAL DR	EW	0.3	0.3	0.3	0.6	0.3	0.3	0.3	0.5
CHES	MILITARY HWY/GILMERTON BRIDGE	CANAL DR	BAINBRIDGE BLVD	EW	0.5	0.5	0.8	0.9	0.2	0.2	0.3	0.5
CHES	MILITARY HWY	BAINBRIDGE BLVD	I-464	EW	0.3	0.1	0.2	0.4	0.5	0.2	0.4	0.8
CHES	MILITARY HWY	I-464	CAMPOSTELLA RD	EW	0.4	0.5	0.3	0.6	0.9	0.6	0.6	0.7
CHES	MILITARY HWY	CAMPOSTELLA RD	BATTLEFIELD BLVD	EW	0.1	0.3	0.0	0.4	0.1	0.6	0.1	0.8
CHES	MILITARY HWY	BATTLEFIELD BLVD	ALLISON DR	EW	0.5	0.3	0.5	0.7	0.4	0.3	0.4	0.5
CHES	MILITARY HWY	ALLISON DR	GREENBRIER PKWY	EW	0.5	0.3	0.5	0.7	0.4	0.3	0.4	0.5
CHES	MILITARY HWY	GREENBRIER PKWY	VA BEACH CL	EW	0.7	0.8	1.0	1.3	0.4	0.4	0.6	0.7
CHES	MOSES GRANDY TRAIL	GW HWY @ HINTON AVE	SHIPYARD/CEDAR RD/GW HWY RELOC	EW	1.1	1.7	0.5	0.5	0.4	0.6	0.2	0.2
CHES	MOSES GRANDY TRAIL	SHIPYARD RD/CEDAR RD	CEDAR RD	EW	1.1	1.7	0.5	0.5	0.4	0.6	0.2	0.2
CHES	MOUNT PLEASANT RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.4	0.2	0.2	0.4	0.5	0.3	0.2	0.6

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	EW	0.9	1.5	0.8	0.6	0.4	0.6	0.3	0.2
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	EW	0.5	0.5	0.2	0.4	0.1	0.1	0.0	0.1
CHES	MOUNT PLEASANT RD	FENTRESS AIRFIELD RD	VA BEACH CL	EW	0.5	0.2	0.3	0.2	0.3	0.1	0.1	0.1
CHES	OLD BATTLEFIELD BLVD	BALLAHACK RD	BATTLEFIELD BLVD	NS	0.1	0.1	0.1	0.0	0.3	0.4	0.4	0.3
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	EW	0.3	0.2	0.4	0.2	0.5	0.4	0.8	0.5
CHES	PORTSMOUTH BLVD	SUFFOLK CL	JOLLIFF RD	EW	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2
CHES	PORTSMOUTH BLVD	JOLLIFF RD	I-664	EW	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	EW	0.5	0.7	0.9	1.3	0.4	0.2	0.7	0.4
CHES	PORTSMOUTH BLVD	TAYLOR RD	DOCK LANDING RD	EW	0.5	0.7	0.9	1.3	0.4	0.2	0.7	0.4
CHES	PORTSMOUTH BLVD	DOCK LANDING RD	PORTSMOUTH CL	EW	0.3	0.7	0.6	1.3	0.2	0.2	0.4	0.4
CHES	PUGHSVILLE RD	SUFFOLK CL	I-664	EW	0.6	0.2	0.9	0.3	0.3	0.1	0.4	0.2
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	EW	0.0	0.2	0.1	0.2	0.4	0.3	0.7	0.3
CHES	ROUTE 13/58/460	SUFFOLK CL	I-664	EW	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0
CHES	TAYLOR RD	PORTSMOUTH BLVD	ELIZABETH HARBOR RD	NS	0.3	0.2	0.7	0.6	0.2	0.1	0.4	0.4
CHES	TAYLOR RD	ELIZABETH HARBOR RD	BRUCE RD	NS	0.3	0.2	0.7	0.6	0.2	0.1	0.4	0.4
CHES	TAYLOR RD	BRUCE RD	PUGHSVILLE RD	NS	0.1	0.1	0.2	0.1	0.3	0.3	0.6	0.4
CHES	TAYLOR RD	PUGHSVILLE RD	WESTERN BRANCH BLVD	NS	0.5	0.3	0.3	0.4	0.3	0.2	0.2	0.2
CHES	TOWN POINT RD	PORTSMOUTH CL	CHURCHLAND BLVD	EW	0.0	0.0	0.1	0.1	0.2	0.0	0.3	0.2
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	EW	0.7	0.7	1.3	1.5	0.5	0.5	1.0	1.1
CHES	VOLVO PKWY	GREENBRIER PKWY	EDEN WAY	EW	0.5	0.8	0.7	0.7	0.3	0.6	0.5	0.5
CHES	VOLVO PKWY	EDEN WAY	KEMPSVILLE RD	EW	0.5	0.8	0.7	0.7	0.3	0.6	0.5	0.5
CHES	VOLVO PKWY	KEMPSVILLE RD	VA BEACH CL	EW	0.1	0.2	0.1	0.3	0.3	0.4	0.3	0.6
CHES	WESTERN BRANCH BLVD	CHURCHLAND BLVD	TAYLOR RD	EW	0.4	0.5	0.6	0.6	0.2	0.2	0.3	0.3
CHES	WESTERN BRANCH BLVD	TAYLOR RD	PORTSMOUTH CL	EW	0.4	0.5	0.6	0.6	0.2	0.2	0.3	0.3
FR	MAIN ST	SOUTH ST	SECOND AVE	NS	0.6	0.4	0.8	0.7	0.3	0.2	0.4	0.4
FR	SECOND AVE	MAIN ST	MECHANIC ST	EW	0.3	0.4	0.3	0.5	0.2	0.2	0.2	0.3
FR	SECOND AVE	MECHANIC ST	ISLE OF WIGHT CL	EW	0.3	0.4	0.3	0.5	0.2	0.2	0.2	0.3
FR	SOUTH ST	ROUTE 58	COLLEGE DR	EW	0.6	0.4	0.8	0.7	0.3	0.2	0.4	0.4
FR	SOUTH ST	COLLEGE DR	PRETLOW ST	EW	0.6	0.4	0.8	0.7	0.3	0.2	0.4	0.4
FR	SOUTH ST	PRETLOW ST	HIGH ST	EW	0.6	0.4	0.8	0.7	0.3	0.2	0.4	0.4
FR	SOUTH ST	HIGH ST	MAIN ST	EW	0.6	0.4	0.8	0.7	0.3	0.2	0.4	0.4
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	NS	1.0	1.1	1.8	1.6	0.1	0.1	0.2	0.2
GLO	RTE 17	RTE 216 (GUINEA RD)	RTE 614 (HICKORY FORK RD)	NS	1.0	1.1	1.8	1.6	0.1	0.1	0.2	0.2
GLO	RTE 17	RTE 614 (HICKORY FORK RD)	RTE 17 BUS S (MAIN ST)	NS	0.7	0.6	0.9	0.8	0.2	0.2	0.2	0.2
GLO	RTE 17	RTE 17 BUS S (MAIN ST)	RTE 17 BUS N (MAIN ST)	NS	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
GLO	RTE 17	RTE 17 BUS N (MAIN ST)	RTE 606 (ARK RD)	NS	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1
GLO	RTE 17	RTE 606 (ARK RD)	ROUTE 14	NS	0.3	0.3	0.1	0.3	0.1	0.1	0.0	0.1
GLO	RTE 17	ROUTE 14	ROUTES 33/198	NS	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.0
GLO	RTE 17	ROUTES 33/198	MIDDLESEX CL	NS	0.1	0.3	0.1	0.2	0.1	0.1	0.0	0.1
GLO	RTE 33	KING AND QUEEN CL	ROUTE 17	EW	0.4	0.2	0.1	0.0	0.1	0.0	0.0	0.0
HAM	ABERDEEN RD	PEMBROKE AVE	I-664	NS	0.2	0.1	0.1	0.1	0.6	1.0	0.6	0.7
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	NS	0.7	0.6	0.4	0.4	0.7	0.5	0.5	0.4
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	NS	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.2
HAM	ABERDEEN RD	MERCURY BLVD	TODDS LA	NS	0.4	0.1	0.2	0.1	1.9	0.7	1.2	0.8
HAM	ARMISTEAD AVE	COMMANDER SHEPPARD BLVD	HRC PARKWAY	NS	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	NS	0.4	0.5	0.4	0.5	0.3	0.4	0.3	0.4
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	NS	0.4	0.5	0.3	0.4	0.4	0.4	0.3	0.4
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	NS	0.4	0.5	0.3	0.4	0.4	0.4	0.3	0.4
HAM	ARMISTEAD AVE	LA SALLE AVE	RIP RAP RD	NS	0.4	0.2	0.2	0.1	0.9	0.5	0.5	0.3
HAM	ARMISTEAD AVE	RIP RAP RD	PEMBROKE AVE	NS	0.1	0.2	0.2	0.2	0.3	0.6	0.6	0.7

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	NS	0.2	0.2	0.3	0.2	0.4	0.6	0.9	0.5
HAM	BIG BETHEL RD	TODDS LANE	HRC PKWY	NS	0.8	0.6	0.7	0.5	0.6	0.5	0.6	0.4
HAM	BIG BETHEL RD	HRC PKWY	THOMAS NELSON DR	NS	0.5	0.3	0.5	0.4	0.7	0.4	0.7	0.7
HAM	BIG BETHEL RD	THOMAS NELSON DR	SAUNDERS RD	NS	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2
HAM	BIG BETHEL RD	SAUNDERS RD	SEMPLE FARM RD	NS	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3
HAM	BIG BETHEL RD	SEMPLE FARM RD	YORK CL	NS	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3
HAM	BRIARFIELD RD	NEWPORT NEWS CL	ABERDEEN RD	EW	0.6	0.5	0.5	0.5	0.3	0.2	0.2	0.3
HAM	BRIARFIELD RD	ABERDEEN RD	POWER PLANT PKWY	EW	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.4
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
HAM	COMMANDER SHEPPARD BLVD	ARMISTEAD AVE	NASA MAIN GATE	NS	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2
HAM	COMMANDER SHEPPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	NS	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2
HAM	COLISEUM DR	PINE CHAPEL RD	MERCURY BLVD	NS	0.2	0.1	0.2	0.1	0.6	0.3	0.6	0.5
HAM	COLISEUM DR	MERCURY BLVD	MARCELLA DR	NS	0.7	0.5	0.9	0.7	0.6	0.3	0.7	0.6
HAM	COLISEUM DR	MARCELLA DR	HRC PARKWAY	NS	0.7	0.5	0.9	0.7	0.6	0.3	0.7	0.6
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	EW	0.1	0.2	0.3	0.3	0.3	0.5	0.6	0.7
HAM	CUNNINGHAM DR	TODDS LA	COLISEUM DR	EW	0.5	0.4	0.5	0.6	0.6	0.5	0.5	0.7
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	EW	0.6	0.3	0.6	0.8	0.7	0.4	0.8	1.0
HAM	FOX HILL RD	OLD BUCKROE RD	WOODLAND RD	EW	1.0	0.9	1.1	0.9	0.3	0.3	0.4	0.3
HAM	FOX HILL RD	WOODLAND RD	MERCURY BLVD	EW	1.0	0.9	1.1	0.9	0.3	0.3	0.4	0.3
HAM	HRC PARKWAY	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.5	0.1	0.6	0.2	0.3	0.1	0.3	0.1
HAM	HRC PARKWAY	BIG BETHEL RD	I-64	EW	0.1	0.2	0.1	0.2	0.1	0.8	0.1	0.8
HAM	HRC PARKWAY	I-64	MAGRUDER BLVD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	HRC PARKWAY	MAGRUDER BLVD	COLISEUM DR	EW	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2
HAM	HRC PARKWAY	COLISEUM DR	ARMISTEAD AVE	EW	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2
HAM	I-64	NEWPORT NEWS CL	HRC PARKWAY	EW	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0
HAM	I-64	HRC PARKWAY	MAGRUDER BLVD	EW	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
HAM	I-64	MAGRUDER BLVD	MERCURY BLVD	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
HAM	I-64	MERCURY BLVD	I-664	EW	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1
HAM	I-64	I-664	ARMISTEAD AVE	EW	0.1	0.0	0.2	0.0	0.2	0.0	0.3	0.0
HAM	I-64	ARMISTEAD AVE	RIP RAP RD	EW	0.3	0.0	0.3	0.0	0.7	0.0	0.8	0.0
HAM	I-64	RIP RAP RD	SETTLERS LANDING RD	EW	5.9	0.1	6.4	0.0	3.3	0.0	3.6	0.0
HAM	I-64	SETTLERS LANDING RD	MALLORY ST	EW	1.4	0.0	1.6	0.0	2.5	0.1	2.9	0.1
HAM	I-64/HRBT	MALLORY ST	NORFOLK CL	EW	1.3	0.5	1.7	2.4	0.4	0.1	0.4	0.6
HAM	I-664	NEWPORT NEWS CL	ABERDEEN RD	EW	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
HAM	I-664	ABERDEEN RD	POWER PLANT PKWY	EW	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.2
HAM	I-664	POWER PLANT PKWY	I-64	EW	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	EW	0.5	0.4	0.4	0.4	0.3	0.2	0.3	0.2
HAM	KECOUGHTAN RD	POWHATAN PKWY	LA SALLE AVE	EW	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
HAM	KECOUGHTAN RD	LA SALLE AVE	VICTORIA BLVD	NS	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3
HAM	KECOUGHTAN RD	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.1	0.1	0.1	0.1	0.4	0.3	0.4	0.4
HAM	KING ST	PEMBROKE AVE	I-64 OVERPASS	NS	0.3	0.3	0.4	0.3	0.4	0.4	0.6	0.4
HAM	KING ST	I-64 OVERPASS	RIP RAP RD	NS	0.3	0.3	0.4	0.3	0.4	0.4	0.6	0.4
HAM	KING ST	RIP RAP RD	MERCURY BLVD	NS	0.1	0.1	0.2	0.1	0.4	0.5	0.6	0.5
HAM	KING ST	MERCURY BLVD	OLD FOX HILL RD	NS	0.6	0.3	0.6	0.2	0.9	0.5	1.0	0.4
HAM	KING ST	OLD FOX HILL RD	LITTLE BACK RIVER RD	NS	0.6	0.3	0.6	0.2	0.9	0.5	1.0	0.4
HAM	KING ST	LITTLE BACK RIVER RD	LAMINGTON RD	NS	0.4	0.7	0.9	0.3	0.3	0.5	0.6	0.2
HAM	KING ST	LAMINGTON RD	OLD BUCKINGHAM RD	NS	0.4	0.7	0.9	0.3	0.3	0.5	0.6	0.2
HAM	KING ST	OLD BUCKINGHAM RD	LANGLEY AFB	NS	0.4	0.7	0.9	0.3	0.3	0.5	0.6	0.2
HAM	LA SALLE AVE	KECOUGHTAN RD	VICTORIA BLVD	NS	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.4
HAM	LA SALLE AVE	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	LA SALLE AVE	SETTLERS LANDING RD	PEMBROKE AVE	NS	0.7	0.4	0.4	0.4	1.0	0.5	0.7	0.6
HAM	LA SALLE AVE	PEMBROKE AVE	ARMISTEAD AVE	NS	0.7	0.4	0.4	0.4	1.0	0.5	0.7	0.6
HAM	LA SALLE AVE	ARMISTEAD AVE	MERCURY BLVD	NS	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.2
HAM	LA SALLE AVE	MERCURY BLVD	LANGLEY GATE	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	MAGRUDER BLVD	YORK CL	SEMPLE FARM RD	NS	0.4	0.7	0.6	0.4	0.2	0.4	0.3	0.2
HAM	MAGRUDER BLVD	SEMPLE FARM RD	COMM SHEPPARD BLVD (SOUTH)	NS	0.3	0.1	0.2	0.1	0.4	0.1	0.2	0.1
HAM	MAGRUDER BLVD	COMM SHEPPARD BLVD (SOUTH)	HRC PARKWAY	NS	0.0	0.2	0.1	0.3	0.0	0.1	0.0	0.2
HAM	MAGRUDER BLVD	HRC PARKWAY	I-64	NS	0.4	0.1	0.4	0.1	0.4	0.1	0.4	0.1
HAM	MALLORY ST	I-64	COUNTY ST	EW	0.1	0.2	0.2	0.4	0.4	0.6	0.6	1.2
HAM	MALLORY ST	COUNTY ST	MERCURY BLVD	EW	0.2	0.1	0.2	0.2	0.6	0.5	0.7	0.8
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	EW	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2
HAM	MELLEN ST	MERCURY BLVD	MALLORY ST	NS	0.0	0.3	0.5	0.4	0.0	0.4	0.8	0.5
HAM	MERCURY BLVD	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.1	0.3	0.4	0.7	0.0	0.2	0.3	0.4
HAM	MERCURY BLVD	BIG BETHEL RD	ABERDEEN RD	EW	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.1
HAM	MERCURY BLVD	ABERDEEN RD	POWER PLANT PKWY	EW	0.3	0.1	0.3	0.2	0.6	0.3	0.8	0.4
HAM	MERCURY BLVD	POWER PLANT PKWY	I-64	EW	0.1	0.1	0.2	0.2	0.2	1.1	0.3	1.5
HAM	MERCURY BLVD	I-64	COLISEUM DR	EW	0.4	0.2	0.5	0.6	0.5	0.2	0.7	0.4
HAM	MERCURY BLVD	COLISEUM DR	CUNNINGHAM DR	EW	0.4	0.2	0.5	0.6	0.5	0.2	0.7	0.4
HAM	MERCURY BLVD	CUNNINGHAM DR	ARMISTEAD AVE	EW	0.4	0.2	0.5	0.6	0.5	0.2	0.7	0.4
HAM	MERCURY BLVD	ARMISTEAD AVE	LA SALLE AVE	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.4
HAM	MERCURY BLVD	LA SALLE AVE	KING ST	EW	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
HAM	MERCURY BLVD	KING ST	FOX HILL RD	EW	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3
HAM	MERCURY BLVD	FOX HILL RD	ANDREWS BLVD	EW	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3
HAM	MERCURY BLVD	ANDREWS BLVD	PEMBROKE AVE	EW	0.1	0.0	0.1	0.3	0.3	0.1	0.3	0.5
HAM	MERCURY BLVD	PEMBROKE AVE	WOODLAND RD	EW	0.2	0.3	0.1	0.2	0.4	0.6	0.3	0.5
HAM	MERCURY BLVD	WOODLAND RD	MALLORY ST	EW	0.3	0.6	0.2	0.4	0.3	0.5	0.1	0.3
HAM	MERCURY BLVD	MALLORY ST	MELLEN ST/INGALLS RD	EW	0.3	0.6	0.2	0.4	0.3	0.5	0.1	0.3
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	NS	0.6	0.3	0.3	0.3	0.4	0.2	0.2	0.2
HAM	PEMBROKE AVE	NEWPORT NEWS CL	ABERDEEN RD	EW	0.4	0.5	0.6	0.5	0.2	0.2	0.3	0.2
HAM	PEMBROKE AVE	ABERDEEN RD	POWHATAN PKWY	EW	0.4	0.4	0.4	0.5	0.3	0.3	0.3	0.4
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	EW	0.4	0.4	0.3	0.5	0.3	0.3	0.2	0.3
HAM	PEMBROKE AVE	SETTLERS LANDING RD	LA SALLE AVE	EW	0.2	0.1	0.1	0.1	1.3	0.5	0.8	0.6
HAM	PEMBROKE AVE	LA SALLE AVE	ARMISTEAD AVE	EW	0.3	0.2	0.5	0.4	0.4	0.3	0.7	0.6
HAM	PEMBROKE AVE	ARMISTEAD AVE	KING ST	EW	0.3	0.3	0.2	0.3	0.6	0.7	0.5	0.7
HAM	PEMBROKE AVE	KING ST	EATON ST	EW	0.3	0.3	0.2	0.3	0.6	0.7	0.5	0.7
HAM	PEMBROKE AVE	EATON ST	BARRON ST	EW	0.6	0.3	0.7	0.3	0.6	0.3	0.7	0.3
HAM	PEMBROKE AVE	BARRON ST	MERCURY BLVD	EW	0.6	0.3	0.7	0.3	0.6	0.3	0.7	0.3
HAM	PEMBROKE AVE	MERCURY BLVD	WOODLAND RD	EW	1.0	0.5	0.7	0.8	0.5	0.3	0.4	0.4
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	EW	1.0	0.5	0.7	0.8	0.5	0.3	0.4	0.4
HAM	PEMBROKE AVE	OLD BUCKROE RD	MALLORY ST	EW	1.0	0.5	0.7	0.8	0.5	0.3	0.4	0.4
HAM	POWER PLANT PKWY	I-664	BRIARFIELD RD	NS	0.3	0.2	0.2	0.2	0.4	0.2	0.3	0.3
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	NS	0.4	0.3	0.5	0.4	0.5	0.4	0.6	0.5
HAM	POWHATAN PKWY	PEMBROKE AVE	I-664	NS	0.2	0.1	0.1	0.1	0.6	0.9	0.5	0.7
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	EW	0.6	0.6	0.4	0.5	0.5	0.4	0.3	0.4
HAM	QUEEN ST	MICHIGAN DR	PEMBROKE AVE	EW	0.6	0.6	0.4	0.5	0.5	0.4	0.3	0.4
HAM	ROANOKE AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.2	0.3	0.4	0.3	0.2	0.2	0.3	0.3
HAM	SETTLERS LANDING RD	PEMBROKE AVE	LA SALLE AVE	EW	0.1	0.2	0.1	0.1	0.6	1.2	0.6	0.9
HAM	SETTLERS LANDING RD	LA SALLE AVE	KECOUGHTAN RD	EW	0.3	0.3	0.5	0.4	0.5	0.4	0.7	0.7
HAM	SETTLERS LANDING RD	KECOUGHTAN RD	ARMISTEAD AVE	EW	0.1	0.0	0.1	0.0	0.4	0.0	0.4	0.0
HAM	SETTLERS LANDING RD	ARMISTEAD AVE	EATON ST	EW	0.3	0.2	0.3	0.3	0.4	0.2	0.3	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	SETTLERS LANDING RD	EATON ST	TYLER ST	EW	0.4	0.0	0.5	0.0	0.6	0.0	0.7	0.0
HAM	SETTLERS LANDING RD	TYLER ST	I-64	EW	0.4	0.0	0.5	0.0	0.6	0.0	0.7	0.0
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.3
HAM	TODDS LA	BIG BETHEL RD	ABERDEEN RD	EW	0.3	0.4	0.2	0.4	0.3	0.4	0.2	0.3
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	EW	0.2	0.2	0.2	0.1	0.6	0.5	0.4	0.4
HAM	WOODLAND RD	I-64	COUNTY ST	NS	-	0.0	-	0.0	-	0.0	-	0.0
HAM	WOODLAND RD	MERCURY BLVD	PEMBROKE AVE	NS	0.3	0.2	0.3	0.2	0.7	0.4	0.6	0.4
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	NS	1.2	0.7	0.9	0.8	0.6	0.4	0.5	0.4
HAM	WYTHE CREEK RD	COMMANDER SHEPPARD BLVD	POQUOSON CL	NS	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2
IW	BENNS CHURCH BLVD	SUFFOLK CL	RIDDICK RD	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
IW	BENNS CHURCH BLVD	RIDDICK RD	ROUTE 10 & 32 (BREWERS NECK RD)	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
IW	BENNS CHURCH BLVD	ROUTE 10 & 32 (BREWERS NECK RD)	ECL SMITHFIELD (RTE 644)	NS	0.1	0.3	0.2	0.4	0.2	0.3	0.2	0.4
IW	BENNS CHURCH BLVD	ECL SMITHFIELD (RTE 644)	CHURCH ST S	NS	0.3	0.5	0.5	0.7	0.3	0.6	0.6	0.7
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	RTE 670	EW	0.5	0.3	0.3	0.6	0.2	0.1	0.1	0.2
IW	BREWERS NECK BLVD	RTE 670	ROUTE 17	EW	0.5	0.3	0.3	0.6	0.2	0.1	0.1	0.2
IW	BUS RTE 58/BUS RTE 258	FRANKLIN CL	JAMESTOWN LN (RTE 691)	EW	0.3	0.4	0.3	0.5	0.2	0.2	0.2	0.3
IW	BUS RTE 58/BUS RTE 258	JAMESTOWN LN (RTE 691)	ROUTE 258	EW	0.3	0.4	0.3	0.5	0.2	0.2	0.2	0.3
IW	CARROLLTON BLVD	SUFFOLK CL	WEST END CHUCKATUCK BRIDGE	NS	0.5	0.4	0.4	0.5	0.1	0.1	0.1	0.1
IW	CARROLLTON BLVD	WEST END CHUCKATUCK BRIDGE	ROUTE 258	NS	0.5	0.4	0.4	0.5	0.1	0.1	0.1	0.1
IW	CARROLLTON BLVD	ROUTE 258	SMITH'S NECK RD	NS	1.7	1.3	1.7	3.9	0.1	0.1	0.2	0.4
IW	CARROLLTON BLVD/JAMES RIVER BR	SMITH'S NECK RD	NEWPORT NEWS CL	NS	1.7	1.3	1.7	3.9	0.1	0.1	0.2	0.4
IW	ROUTE 10 (OLD STAGE HWY)	BUS RTE 10	IW/SURRY CL	NS	0.6	1.1	0.7	2.6	0.0	0.1	0.1	0.2
IW	ROUTE 10 BYPASS	CHURCH ST S	FAIRWAY DR	NS	0.2	0.3	0.6	0.7	0.1	0.1	0.1	0.2
IW	ROUTE 10 BYPASS	FAIRWAY DR	MAIN ST	NS	0.2	0.3	0.6	0.7	0.1	0.1	0.1	0.2
IW	ROUTE 10 BYPASS	MAIN ST	NCL SMITHFIELD	NS	0.4	1.1	0.9	0.9	0.1	0.3	0.2	0.2
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	NS	0.4	1.1	0.9	0.9	0.1	0.3	0.2	0.2
IW	ROUTE 258	CARRSVILLE HWY (BUS RTE 58)	BURDETTE RD (W RTE 619)	EW	2.1	2.4	2.6	1.3	0.2	0.2	0.2	0.1
IW	ROUTE 258	BURDETTE RD (W RTE 619)	RIVER RUN TRAIL (W RTE 614)	EW	2.1	2.4	2.6	1.3	0.2	0.2	0.2	0.1
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	EW	2.1	2.4	2.6	1.3	0.2	0.2	0.2	0.1
IW	ROUTE 258	BLACKWATER RD (RTE 603)	WCL WINDSOR	EW	2.1	2.4	2.6	1.3	0.2	0.2	0.2	0.1
IW	ROUTE 258	WCL WINDSOR	ROUTE 460	EW	2.1	2.4	2.6	1.3	0.2	0.2	0.2	0.1
IW	ROUTE 258	ROUTE 460	ECL WINDSOR	EW	0.8	1.1	0.6	0.6	0.1	0.2	0.1	0.1
IW	ROUTE 258	ECL WINDSOR	COURT ST NORTH (RTE 610)	EW	0.8	1.1	0.6	0.6	0.1	0.2	0.1	0.1
IW	ROUTE 258	COURT ST NORTH (RTE 610)	IRON MINE SPRINGS RD (RTE 605)	EW	0.8	1.1	0.6	0.6	0.1	0.2	0.1	0.1
IW	ROUTE 258	IRON MINE SPRINGS RD (RTE 605)	CENTRAL HILL RD (W RTE 637)	EW	0.8	1.1	0.6	0.6	0.1	0.2	0.1	0.1
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	SCOTTS FACTORY RD (RTE 620)	EW	0.8	0.6	0.7	0.5	0.1	0.1	0.1	0.1
IW	ROUTE 258	SCOTTS FACTORY RD (RTE 620)	WCL SMITHFIELD	EW	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1
IW	ROUTE 258/N MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	EW	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1
IW	ROUTE 460	SOUTHAMPTON CL	FIRETOWER RD (RTE 644)	EW	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
IW	ROUTE 460	FIRETOWER RD (RTE 644)	WCL WINDSOR	EW	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
IW	ROUTE 460	WCL WINDSOR	ROUTE 258	EW	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
IW	ROUTE 460	ROUTE 258	COURT ST (RTE 610)	EW	0.2	0.3	0.2	0.2	0.5	0.6	0.5	0.5
IW	ROUTE 460	COURT ST (RTE 610)	ECL WINDSOR	EW	0.3	0.1	0.3	0.2	0.0	0.0	0.1	0.0
IW	ROUTE 460	ECL WINDSOR	SUFFOLK CL	EW	0.3	0.1	0.3	0.2	0.0	0.0	0.1	0.0
JCC	BARHAMSVILLE RD	I-64	ROUTE 60	NS	0.1	0.3	0.1	0.3	0.1	0.1	0.1	0.1
JCC	I-64	NEW KENT CL	RTE 30	EW	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
JCC	I-64	RTE 30	CROAKER RD (RTE 607)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	I-64	CROAKER RD (RTE 607)	YORK CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	I-64	YORK CL	NEWPORT NEWS CL	EW	0.1	0.0	0.3	0.1	0.0	0.0	0.1	0.0
JCC	IRONBOUND RD/NEWS RD	JOHN TYLER HWY	MONTICELLO AVE	NS	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Dir	Average Truck Delay (minutes) AM Peak Period NB/EB	Average Truck Delay (minutes) AM Peak Period SB/WB	Average Truck Delay (minutes) PM Peak Period NB/EB	Average Truck Delay (minutes) PM Peak Period SB/WB	Average Truck Delay per mile (min/mi) AM Peak Period NB/EB	Average Truck Delay per mile (min/mi) AM Peak Period SB/WB	Average Truck Delay per mile (min/mi) PM Peak Period NB/EB	Average Truck Delay per mile (min/mi) PM Peak Period SB/WB
JCC	IRONBOUND RD/SANDY BAY RD	JAMESTOWN RD	JOHN TYLER HWY	NS	0.5	0.2	0.4	0.3	0.4	0.2	0.3	0.2
JCC	JAMESTOWN RD	COLONIAL PARKWAY (RTE 359)	SANDY BAY RD (RTE 681)	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	NECK-O-LAND RD	EW	0.3	0.5	0.3	0.3	0.1	0.2	0.1	0.1
JCC	JAMESTOWN RD	NECK-O-LAND RD	WILLIAMSBURG CL	EW	0.3	0.5	0.3	0.3	0.1	0.2	0.1	0.1
JCC	JOHN TYLER HWY	CHARLES CITY CL	MONTICELLO AVE	EW	0.3	0.5	0.5	0.2	0.1	0.1	0.1	0.1
JCC	JOHN TYLER HWY	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	EW	0.3	0.5	0.5	0.2	0.1	0.1	0.1	0.1
JCC	JOHN TYLER HWY	CENTERVILLE RD (RTE 614)	IRONBOUND RD (RTE 615)	EW	0.5	0.5	0.3	0.4	0.2	0.3	0.2	0.2
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	STANLEY DR (RTE 712)	EW	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2
JCC	JOHN TYLER HWY	STANLEY DR (RTE 712)	ROUTE 199	EW	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2
JCC	MERRIMAC TRL	NEWPORT NEWS CL @ I-64	YORK CL (SOUTH OF GROVE INT)	EW	0.2	0.4	0.0	0.5	0.1	0.1	0.0	0.2
JCC	MERRIMAC TRL	YORK CL @ ROUTE 199	PENNIMAN RD (YORK CL)	EW	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2
JCC	OLD STAGE RD	NEW KENT CL	BARNES RD (RTE 601 S)	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
JCC	OLD STAGE RD	BARNES RD (RTE 601 S)	I-64	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	POCAHONTAS TRL	WILLIAMSBURG CL	YORK CL @ 199	EW	0.3	0.3	0.4	0.3	0.1	0.1	0.2	0.1
JCC	POCAHONTAS TRL	YORK CL	BASF RD/ROUTE 60 RELOCATION	EW	0.8	1.1	1.0	0.8	0.2	0.2	0.2	0.1
JCC	POCAHONTAS TRL	BASF RD/ROUTE 60 RELOCATION	NEWPORT NEWS CL	EW	0.8	1.1	1.0	0.8	0.2	0.2	0.2	0.1
JCC	RICHMOND RD	ROUTE 199	OLDE TOWNE RD (RTE 658)	EW	0.3	0.2	0.6	0.5	0.2	0.1	0.4	0.3
JCC	RICHMOND RD	OLDE TOWNE RD (RTE 658)	WILLIAMSBURG CL	EW	0.2	0.2	0.3	0.4	0.1	0.1	0.2	0.3
JCC	ROCHAMBEAU DR	ROUTE 60	0.7 MI EAST OF ASHINGTON WAY	EW	0.5	0.5	0.5	0.4	0.2	0.2	0.2	0.1
JCC	ROCHAMBEAU DR	0.7 MI EAST OF ASHINGTON WAY	CROAKER RD (RTE 607)	EW	0.5	0.5	0.5	0.4	0.2	0.2	0.2	0.1
JCC	ROUTE 199	YORK CL	RICHMOND RD (RTE 60)	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
JCC	ROUTE 199	RICHMOND RD (RTE 60)	LONGHILL RD (RTE 612)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	MONTICELLO AVE (RTE 321)	JOHN TYLER HWY (RTE 5)	EW	0.1	0.0	0.3	0.0	0.1	0.0	0.2	0.0
JCC	ROUTE 199	JOHN TYLER HWY (RTE 5)	WILLIAMSBURG CL	EW	0.3	0.2	1.1	0.4	0.6	0.4	1.9	0.7
JCC	ROUTE 199	WILLIAMSBURG CL	HENRY ST/COLONIAL PKWY	EW	0.5	0.7	0.8	1.1	0.2	0.2	0.3	0.4
JCC	ROUTE 199	HENRY ST/COLONIAL PKWY	MOUNTS BAY RD/QUARTERPATH RD	EW	0.5	0.7	0.8	1.1	0.2	0.2	0.3	0.4
JCC	ROUTE 199	MOUNTS BAY RD/QUARTERPATH RD	RTE 60/RTE 143/YORK CL	EW	0.0	0.1	0.0	0.5	0.0	0.1	0.0	0.4
JCC	ROUTE 60	NEW KENT CL	ROUTE 30	EW	0.4	1.1	1.1	0.4	0.1	0.2	0.2	0.1
JCC	ROUTE 60	ROUTE 30	CROAKER RD (RTE 607)	EW	0.3	0.5	0.4	0.4	0.1	0.1	0.1	0.1
JCC	ROUTE 60	CROAKER RD (RTE 607)	LIGHTFOOT RD (RTE 646)	EW	0.3	0.7	0.7	0.7	0.1	0.2	0.2	0.2
JCC	ROUTE 60	LIGHTFOOT RD (RTE 646)	CENTERVILLE RD (RTE 614)	EW	0.3	0.7	0.7	0.7	0.1	0.2	0.2	0.2
JCC	ROUTE 60	CENTERVILLE RD (RTE 614)	ROUTE 199	EW	0.2	0.1	0.2	0.1	0.7	0.8	0.8	0.9
NN	23RD/25TH CONNECTOR	HUNTINGTON AVE	JEFFERSON AVE	EW	0.3	-	0.4	-	0.5	-	0.7	-
NN	25TH ST	JEFFERSON AVE	26TH ST	EW	0.5	-	0.4	-	0.4	-	0.3	-
NN	25TH ST	26TH ST	HAMPTON CL	EW	0.5	0.4	0.4	0.4	0.3	0.2	0.3	0.2
NN	26TH ST	25TH ST	ROANOKE AVE	EW	-	0.3	-	0.4	-	0.5	-	0.6
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	EW	-	0.3	-	0.3	-	0.4	-	0.4
NN	26TH ST	JEFFERSON AVE	WARWICK BLVD	EW	-	0.2	-	0.2	-	0.5	-	0.4
NN	26TH ST	WARWICK BLVD	HUNTINGTON AVE	EW	-	0.2	-	0.2	-	0.5	-	0.4
NN	39TH ST	HUNTINGTON AVE	MADISON AVE	EW	0.4	0.5	0.6	0.5	0.2	0.2	0.3	0.2
NN	39TH ST	MADISON AVE	HAMPTON CL	EW	0.4	0.5	0.6	0.5	0.2	0.2	0.3	0.2
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	EW	0.6	0.5	0.5	0.5	0.3	0.2	0.2	0.3
NN	CHESTNUT AVE	39TH ST	44TH ST	NS	0.5	0.6	0.4	0.4	0.4	0.5	0.3	0.3
NN	CHESTNUT AVE	44TH ST	BRIARFIELD RD	NS	0.5	0.6	0.4	0.4	0.4	0.5	0.3	0.3
NN	CHESTNUT AVE	BRIARFIELD RD	HAMPTON CL	NS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NN	DENBIGH BLVD	LUCAS CREEK RD	WARWICK BLVD	EW	0.2	0.1	0.4	0.1	0.4	0.2	0.8	0.3
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	EW	0.3	0.2	0.5	0.9	0.2	0.2	0.4	0.8
NN	DENBIGH BLVD	JEFFERSON AVE	YORK CL	EW	0.8	0.6	1.0	0.5	0.2	0.2	0.3	0.1
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	EW	0.2	0.1	0.8	0.0	0.5	0.3	1.8	0.1

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	FORT EUSTIS BLVD	I-64	JEFFERSON AVE	EW	0.2	0.7	0.3	0.2	0.4	1.4	0.6	0.4
NN	FORT EUSTIS BLVD	JEFFERSON AVE	.54 MILES EAST OF RTE 143	EW	0.2	0.9	0.3	0.4	0.0	0.3	0.1	0.1
NN	FORT EUSTIS BLVD	.54 MILES EAST OF RTE 143	YORK CL	EW	0.2	0.9	0.3	0.4	0.0	0.3	0.1	0.1
NN	HRC PARKWAY	HARPERSVILLE RD	HAMPTON CL	EW	0.5	0.1	0.6	0.2	0.3	0.1	0.3	0.1
NN	HUNTINGTON AVE	71ST ST	39TH ST	NS	-	0.0	-	0.0	-	0.0	-	0.0
NN	HUNTINGTON AVE	39TH ST	26TH ST	NS	-	0.0	-	0.0	-	0.0	-	0.0
NN	I-64	JAMES CITY CL	RTE 143 (NORTH)	EW	0.1	0.0	0.3	0.1	0.0	0.0	0.1	0.0
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	EW	0.2	0.1	0.6	0.1	0.1	0.1	0.4	0.1
NN	I-64	YORKTOWN RD	FORT EUSTIS BLVD	EW	0.5	0.1	1.6	0.1	0.2	0.1	0.6	0.0
NN	I-64	FORT EUSTIS BLVD	JEFFERSON AVE	EW	0.1	1.1	0.6	1.1	0.0	0.3	0.1	0.2
NN	I-64	JEFFERSON AVE	OYSTER POINT RD	EW	0.0	0.4	0.0	0.8	0.0	0.1	0.0	0.3
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	EW	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	I-64	J C MORRIS BLVD	HAMPTON CL	EW	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0
NN	I-664/MMMBT	SUFFOLK CL	TERMINAL AVE	EW	0.0	0.4	1.2	0.4	0.0	0.1	0.2	0.1
NN	I-664	TERMINAL AVE	23RD ST	EW	0.0	0.0	3.5	0.0	0.0	0.0	4.1	0.0
NN	I-664	23RD ST	CHESTNUT AVE	EW	0.1	0.0	8.2	0.1	0.0	0.0	2.6	0.0
NN	I-664	CHESTNUT AVE	HAMPTON CL	EW	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
NN	J CLYDE MORRIS BLVD	JEFFERSON AVE	THIMBLE SHOALS BLVD	NS	0.6	0.7	0.8	0.8	0.3	0.5	0.5	0.6
NN	J CLYDE MORRIS BLVD	THIMBLE SHOALS BLVD	I-64	NS	0.6	0.7	0.8	0.8	0.3	0.5	0.5	0.6
NN	J CLYDE MORRIS BLVD	I-64	HARPERSVILLE RD	NS	0.2	0.4	0.4	0.2	0.5	0.4	0.9	0.2
NN	J CLYDE MORRIS BLVD	HARPERSVILLE RD	YORK CL	NS	0.5	0.5	0.9	0.4	0.3	0.4	0.6	0.3
NN	JEFFERSON AVE	JAMES CITY CL	YORKTOWN RD	NS	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.5
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.3	0.4	0.2	0.4	0.1	0.2	0.1	0.1
NN	JEFFERSON AVE	FORT EUSTIS BLVD	FUTURE ATKINSON BLVD	NS	0.8	0.7	1.2	1.1	0.3	0.3	0.4	0.4
NN	JEFFERSON AVE	FUTURE ATKINSON BLVD	DENBIGH BLVD	NS	0.8	0.7	1.2	1.1	0.3	0.3	0.4	0.4
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	NS	0.3	0.2	0.8	1.0	0.3	0.2	0.9	1.2
NN	JEFFERSON AVE	BLAND BLVD	I-64	NS	0.4	0.5	1.2	1.6	0.2	0.3	0.6	0.9
NN	JEFFERSON AVE	I-64	OYSTER POINT RD	NS	0.4	0.5	1.2	1.6	0.2	0.3	0.6	0.9
NN	JEFFERSON AVE	OYSTER POINT RD	MUELLER LA	NS	0.5	0.8	1.8	1.1	0.2	0.3	0.8	0.4
NN	JEFFERSON AVE	MUELLER LA	MIDDLE GROUND BLVD	NS	0.5	0.8	1.8	1.1	0.2	0.3	0.8	0.4
NN	JEFFERSON AVE	MIDDLE GROUND BLVD	J CLYDE MORRIS BLVD	NS	0.5	0.8	1.8	1.1	0.2	0.3	0.8	0.4
NN	JEFFERSON AVE	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.2	0.2	0.4	0.3	0.2	0.2	0.4	0.2
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	NS	0.3	0.3	0.7	0.4	0.2	0.2	0.4	0.3
NN	JEFFERSON AVE	MAIN ST	CENTER AVE	NS	0.1	0.1	0.2	0.3	0.1	0.1	0.2	0.4
NN	JEFFERSON AVE	CENTER AVE	MERCURY BLVD	NS	0.2	0.2	0.4	0.3	0.3	0.4	0.6	0.5
NN	JEFFERSON AVE	MERCURY BLVD	BRIARFIELD RD	NS	0.3	0.2	0.6	0.2	0.3	0.1	0.5	0.2
NN	JEFFERSON AVE	BRIARFIELD RD	41ST ST	NS	0.3	0.1	0.1	0.1	0.3	0.1	0.1	0.1
NN	JEFFERSON AVE	41ST ST	35TH ST	NS	0.0	0.1	0.0	0.1	0.1	0.4	0.2	0.7
NN	JEFFERSON AVE	35TH ST	25TH ST	NS	0.3	0.1	0.3	0.1	0.5	0.4	0.5	0.6
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	EW	0.2	0.2	0.3	0.3	0.5	0.5	0.8	0.7
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	EW	0.6	0.5	0.5	0.5	0.3	0.3	0.3	0.3
NN	MERCURY BLVD/JAMES RIVER BR	ISLE OF WIGHT CL	RIVER RD	EW	1.7	1.3	1.7	3.9	0.1	0.1	0.2	0.4
NN	MERCURY BLVD	RIVER RD	WARWICK BLVD	EW	1.7	1.3	1.7	3.9	0.1	0.1	0.2	0.4
NN	MERCURY BLVD	WARWICK BLVD	JEFFERSON AVE	EW	1.7	1.3	1.7	3.9	0.1	0.1	0.2	0.4
NN	MERCURY BLVD	JEFFERSON AVE	HAMPTON CL	EW	0.1	0.3	0.4	0.7	0.0	0.2	0.3	0.4
NN	OYSTER POINT RD	WARWICK BLVD	JEFFERSON AVE	EW	0.6	0.4	0.5	1.0	0.6	0.4	0.5	1.0
NN	OYSTER POINT RD	JEFFERSON AVE	CANON BLVD	EW	0.3	0.3	0.2	0.9	0.5	0.4	0.3	1.2
NN	OYSTER POINT RD	CANON BLVD	I-64	EW	0.1	0.1	0.1	0.1	0.1	1.1	0.1	0.7
NN	ROANOKE AVE	I-664	43RD ST	NS	0.7	0.5	0.5	0.4	0.6	0.4	0.4	0.4
NN	ROANOKE AVE	43RD ST	BRIARFIELD RD	NS	0.7	0.5	0.5	0.4	0.6	0.4	0.4	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	ROANOKE AVE	BRIARFIELD RD	HAMPTON CL	NS	0.2	0.3	0.4	0.3	0.2	0.2	0.3	0.3
NN	VICTORY BLVD	I-64	YORK CL	EW	0.4	0.4	0.9	0.5	0.3	0.2	0.9	0.3
NN	WARWICK BLVD	JAMES CITY CL	YORKTOWN RD	NS	1.1	0.8	0.8	1.0	0.2	0.2	0.1	0.2
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.5	0.3	0.6	0.4	0.4	0.2	0.4	0.2
NN	WARWICK BLVD	FORT EUSTIS BLVD	SNIDOW BLVD	NS	0.8	0.6	1.3	1.9	0.2	0.2	0.4	0.6
NN	WARWICK BLVD	SNIDOW BLVD	DENBIGH BLVD	NS	0.8	0.6	1.3	1.9	0.2	0.2	0.4	0.6
NN	WARWICK BLVD	DENBIGH BLVD	BLAND BLVD	NS	0.2	0.2	0.6	0.7	0.3	0.2	0.7	0.8
NN	WARWICK BLVD	BLAND BLVD	OYSTER POINT RD	NS	0.3	0.3	0.6	1.0	0.2	0.2	0.4	0.8
NN	WARWICK BLVD	OYSTER POINT RD	MAXWELL LN	NS	1.0	0.8	1.2	1.1	0.3	0.3	0.4	0.3
NN	WARWICK BLVD	MAXWELL LN	DEEP CREEK RD	NS	1.0	0.8	1.2	1.1	0.3	0.3	0.4	0.3
NN	WARWICK BLVD	DEEP CREEK RD	J CLYDE MORRIS BLVD	NS	1.0	0.8	1.2	1.1	0.3	0.3	0.4	0.3
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1
NN	WARWICK BLVD	HARPERSVILLE RD	MAIN ST	NS	0.4	0.4	0.4	0.5	0.3	0.3	0.3	0.3
NN	WARWICK BLVD	MAIN ST	CENTER AVE	NS	0.3	0.3	0.5	0.2	0.3	0.2	0.5	0.2
NN	WARWICK BLVD	CENTER AVE	MERCURY BLVD	NS	0.3	0.3	0.5	0.2	0.3	0.2	0.5	0.2
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	NS	0.6	0.5	1.3	1.0	0.3	0.2	0.5	0.5
NN	WARWICK BLVD	23RD ST	39TH ST	NS	0.0	-	0.0	-	0.0	-	0.0	-
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	NS	0.0	-	0.0	-	0.0	-	0.0	-
NOR	26TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.3	-	0.2	-	0.7	-	0.6	-
NOR	26TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.3	-	0.4	-	0.5	-	0.6	-
NOR	26TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	0.3	-	0.4	-	0.5	-	0.6	-
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	EW	0.1	-	0.1	-	0.7	-	0.4	-
NOR	26TH ST	CHURCH ST	27TH ST	EW	0.3	-	0.5	-	0.2	-	0.4	-
NOR	27TH ST	HAMPTON BLVD	COLLEY AVE	EW	-	0.2	-	0.2	-	0.6	-	0.5
NOR	27TH ST	COLLEY AVE	LLEWELLYN AVE	EW	-	0.3	-	0.4	-	0.3	-	0.5
NOR	27TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	-	0.3	-	0.4	-	0.3	-	0.5
NOR	27TH ST	MONTICELLO AVE	CHURCH ST	EW	-	0.1	-	0.1	-	0.7	-	0.7
NOR	27TH ST	CHURCH ST	26TH ST	EW	-	0.3	-	0.2	-	0.3	-	0.2
NOR	38TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.5
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.3	0.4	0.4	0.2	0.4	0.6	0.5	0.3
NOR	38TH ST	LLEWELLYN AVE	GRANBY ST	EW	0.3	0.4	0.4	0.2	0.4	0.6	0.5	0.3
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	EW	0.1	0.3	0.2	0.6	0.5	0.9	0.9	2.0
NOR	ADMIRAL TAUSSIG BLVD	HAMPTON BLVD	I-564	EW	0.2	0.5	0.1	0.4	0.5	1.2	0.4	1.1
NOR	AZALEA GARDEN RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.6	0.4	0.5	0.4	0.7	0.6	0.6	0.5
NOR	AZALEA GARDEN RD	PRINCESS ANNE RD	SEWELLS POINT RD	NS	0.2	0.4	0.2	0.3	0.2	0.4	0.2	0.3
NOR	AZALEA GARDEN RD	SEWELLS POINT RD	ROBIN HOOD RD	NS	0.2	0.4	0.2	0.3	0.2	0.4	0.2	0.3
NOR	AZALEA GARDEN RD	ROBIN HOOD RD	I-64	NS	0.3	0.4	0.3	0.3	0.3	0.5	0.3	0.3
NOR	AZALEA GARDEN RD	I-64	MILITARY HWY	NS	0.3	0.4	0.3	0.3	0.3	0.5	0.3	0.3
NOR	AZALEA GARDEN RD	MILITARY HWY	NORVIEW AVE	NS	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.3
NOR	AZALEA GARDEN RD	NORVIEW AVE	LITTLE CREEK RD	NS	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	NS	0.5	0.3	0.6	0.8	0.7	0.5	0.8	1.3
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.3	0.2	0.3	0.3	0.7	0.3	0.7	0.6
NOR	BALLENTINE BLVD	PRINCESS ANNE RD	CHESAPEAKE BLVD	NS	0.6	0.4	0.5	0.7	0.6	0.4	0.5	0.7
NOR	BAYVIEW BLVD	GRANBY ST	TIDEWATER DR	EW	0.1	0.3	0.2	0.2	0.2	0.5	0.3	0.3
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.4
NOR	BAYVIEW BLVD	CHESAPEAKE BLVD	CAPE VIEW AVE	EW	0.4	0.3	0.3	0.5	0.4	0.3	0.3	0.5
NOR	BOUSH ST/WATERSIDE DR	ST PAULS BLVD	CITY HALL AVE	NS	0.2	0.1	0.6	0.3	0.4	0.3	1.1	0.5
NOR	BOUSH ST	CITY HALL AVE	BUTE STREET	NS	0.2	0.2	0.4	0.2	0.4	0.3	0.9	0.4
NOR	BOUSH ST	BUTE STREET	BRAMBLETON AVE	NS	0.2	0.2	0.4	0.2	0.4	0.3	0.9	0.4
NOR	BRAMBLETON AVE	HAMPTON BLVD	COLLEY AVE	EW	0.2	0.0	0.3	0.5	0.5	0.2	0.9	2.0

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	BRAMBLETON AVE	COLLEY AVE	BOUSH ST	EW	0.3	0.4	0.6	0.5	0.3	0.5	0.7	0.6
NOR	BRAMBLETON AVE	BOUSH ST	MONTICELLO AVE	EW	0.6	0.5	0.6	0.8	1.0	0.8	1.0	1.4
NOR	BRAMBLETON AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.6	0.5	0.6	0.8	1.0	0.8	1.0	1.4
NOR	BRAMBLETON AVE	ST PAULS BLVD	CHURCH ST	EW	0.2	0.4	0.5	0.2	0.3	0.7	0.8	0.3
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	EW	0.2	0.4	0.5	0.2	0.3	0.7	0.8	0.3
NOR	BRAMBLETON AVE	TIDEWATER DR	PARK AVE	EW	0.2	0.3	0.3	0.2	0.3	0.6	0.4	0.4
NOR	BRAMBLETON AVE	PARK AVE	I-264	EW	0.2	0.3	0.3	0.2	0.3	0.6	0.4	0.4
NOR	CAMPOSTELLA RD	WILSON RD	S. END CAMPOSTELLA BRIDGE	NS	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.3
NOR	CAMPOSTELLA RD	S. END CAMPOSTELLA BRIDGE	KIMBALL TERR	NS	0.2	0.1	0.1	0.0	0.3	0.1	0.1	0.1
NOR	CAMPOSTELLA RD	KIMBALL TERR	I-264	NS	0.2	0.1	0.1	0.0	0.3	0.1	0.1	0.1
NOR	CHESAPEAKE BLVD	LAFAYETTE BLVD	CROMWELL DR	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	CHESAPEAKE BLVD	CROMWELL DR	ROBIN HOOD RD	NS	0.4	0.3	0.5	0.4	0.3	0.2	0.4	0.3
NOR	CHESAPEAKE BLVD	ROBIN HOOD RD	HYDE CIR	NS	0.4	0.3	0.5	0.4	0.3	0.2	0.4	0.3
NOR	CHESAPEAKE BLVD	HYDE CIR	NORVIEW AVE	NS	0.4	0.3	0.5	0.4	0.3	0.2	0.4	0.3
NOR	CHESAPEAKE BLVD	NORVIEW AVE	I-64	NS	0.3	0.5	0.3	0.4	0.3	0.6	0.3	0.5
NOR	CHESAPEAKE BLVD	I-64	JOHNSTONS RD	NS	0.4	0.2	1.0	0.3	0.6	0.3	1.6	0.3
NOR	CHESAPEAKE BLVD	JOHNSTONS RD	LITTLE CREEK RD	NS	0.4	0.2	1.0	0.3	0.6	0.3	1.6	0.3
NOR	CHESAPEAKE BLVD	LITTLE CREEK RD	SHEPPARD AVE	NS	0.6	0.7	1.1	0.9	0.3	0.3	0.5	0.4
NOR	CHESAPEAKE BLVD	SHEPPARD AVE	BAYVIEW BLVD	NS	0.6	0.7	1.1	0.9	0.3	0.3	0.5	0.4
NOR	CHESAPEAKE BLVD	BAYVIEW BLVD	CHESAPEAKE ST	NS	0.6	0.7	1.1	0.9	0.3	0.3	0.5	0.4
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	NS	0.6	0.7	1.1	0.9	0.3	0.3	0.5	0.4
NOR	CHURCH ST	MONTICELLO AVE	GRANBY ST	NS	0.2	0.2	0.4	0.3	0.4	0.4	0.7	0.6
NOR	CITY HALL AVE	BOUSH ST	GRANBY ST	EW	0.2	0.3	0.6	0.4	0.4	0.6	1.4	1.0
NOR	CITY HALL AVE	GRANBY ST	MONTICELLO AVE	EW	0.2	0.3	0.6	0.4	0.4	0.6	1.4	1.0
NOR	CITY HALL AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.2	0.3	0.6	0.4	0.4	0.6	1.4	1.0
NOR	COLLEY AVE	BRAMBLETON AVE	OLNEY RD	NS	0.3	0.2	0.3	0.5	0.5	0.3	0.4	0.8
NOR	COLLEY AVE	OLNEY RD	PRINCESS ANNE RD	NS	0.3	0.2	0.3	0.5	0.5	0.3	0.4	0.8
NOR	COLLEY AVE	PRINCESS ANNE RD	21ST ST	NS	0.3	0.2	0.4	0.4	0.7	0.4	1.0	1.0
NOR	COLLEY AVE	21ST ST	26TH ST	NS	0.1	0.1	0.2	0.2	0.5	0.6	0.6	0.7
NOR	COLLEY AVE	26TH ST	27TH ST	NS	0.0	0.0	0.0	0.0	0.8	0.5	0.7	0.8
NOR	COLLEY AVE	27TH ST	38TH ST	NS	0.7	0.6	0.9	0.7	0.4	0.3	0.5	0.4
NOR	COLLEY AVE	38TH ST	53RD ST	NS	0.7	0.6	0.9	0.7	0.4	0.3	0.5	0.4
NOR	GRANBY ST	CHURCH ST	38TH ST	NS	0.2	0.2	0.4	0.3	0.4	0.4	0.7	0.6
NOR	GRANBY ST	38TH ST	LLEWELLYN AVE	NS	0.2	0.2	0.4	0.3	0.3	0.3	0.6	0.4
NOR	GRANBY ST	LLEWELLYN AVE	WILLOW WOOD DRIVE	NS	0.2	0.2	0.4	0.3	0.3	0.3	0.6	0.4
NOR	GRANBY ST	WILLOW WOOD DRIVE	THOLE ST	NS	0.3	0.3	0.5	0.4	0.3	0.3	0.4	0.4
NOR	GRANBY ST	THOLE ST	LITTLE CREEK RD	NS	0.7	0.5	1.1	0.7	0.8	0.6	1.3	0.8
NOR	GRANBY ST	LITTLE CREEK RD	I-564	NS	0.7	0.5	1.1	0.7	0.8	0.6	1.3	0.8
NOR	GRANBY ST	I-564	I-64	NS	0.1	0.1	0.2	0.1	0.4	0.4	0.5	0.3
NOR	GRANBY ST	I-64	BAYVIEW BLVD	NS	0.3	0.3	0.3	0.1	0.4	0.3	0.3	0.1
NOR	GRANBY ST	BAYVIEW BLVD	BAY AVE	NS	0.6	0.5	0.3	0.3	0.6	0.5	0.3	0.3
NOR	GRANBY ST	BAY AVE	TIDEWATER DR	NS	0.6	0.5	0.3	0.3	0.6	0.5	0.3	0.3
NOR	GRANBY ST	TIDEWATER DR	OCEAN VIEW AVE	NS	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2
NOR	HAMPTON BLVD	BRAMBLETON AVE	PRINCESS ANNE RD	NS	0.3	0.4	0.6	2.6	0.4	0.5	0.7	2.7
NOR	HAMPTON BLVD	PRINCESS ANNE RD	21ST ST	NS	0.3	0.4	0.6	2.6	0.4	0.5	0.7	2.7
NOR	HAMPTON BLVD	21ST ST	26TH ST	NS	0.2	0.1	0.2	0.2	0.6	0.2	0.7	0.9
NOR	HAMPTON BLVD	26TH ST	27TH ST	NS	0.2	0.1	0.2	0.2	0.6	0.2	0.7	0.9
NOR	HAMPTON BLVD	27TH ST	38TH ST	NS	0.8	1.0	1.1	0.8	0.5	0.7	0.8	0.6
NOR	HAMPTON BLVD	38TH ST	JAMESTOWN CRESCENT	NS	0.8	1.0	1.1	0.8	0.5	0.7	0.8	0.6
NOR	HAMPTON BLVD	JAMESTOWN CRESCENT	LITTLE CREEK RD	NS	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.2

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	HAMPTON BLVD	LITTLE CREEK RD	INTERNATIONAL TERMINAL BLVD	NS	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.2
NOR	HAMPTON BLVD	INTERNATIONAL TERMINAL BLVD	INTERMODAL CONNECTOR	NS	3.0	1.1	1.7	0.8	1.5	0.5	0.8	0.4
NOR	HAMPTON BLVD	INTERMODAL CONNECTOR	ADM TAUSSIG BLVD	NS	3.0	1.1	1.7	0.8	1.5	0.5	0.8	0.4
NOR	I-64/HRBT	HAMPTON CL	OCEAN VIEW AVE	EW	1.3	0.5	1.7	2.4	0.4	0.1	0.4	0.6
NOR	I-64	OCEAN VIEW AVE	4TH VIEW AVE	EW	0.1	0.3	0.6	2.3	0.1	0.2	0.3	1.4
NOR	I-64	4TH VIEW AVE	BAY AVE	EW	0.0	0.2	0.7	3.4	0.1	0.1	0.8	2.7
NOR	I-64	BAY AVE	GRANBY ST	EW	0.1	0.1	0.3	3.3	0.1	0.1	0.3	2.3
NOR	I-64	GRANBY ST	I-564/LITTLE CREEK RD	EW	0.0	0.1	0.8	0.7	0.1	0.1	1.0	1.3
NOR	I-64 REV	I-564/LITTLE CREEK RD	TIDEWATER DR	REV	0.1	0.3	0.2	0.8	0.1	0.2	0.2	0.5
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	EW	0.1	0.2	1.4	0.4	0.1	0.2	1.4	0.7
NOR	I-64 REV	TIDEWATER DR	CHESAPEAKE BLVD	REV	0.2	0.2	0.4	0.2	0.2	0.2	0.4	0.2
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.1	0.6	0.8	0.2	0.2	0.4	1.2	0.2
NOR	I-64 REV	CHESAPEAKE BLVD	NORVIEW AVE	REV	0.1	0.1	0.3	0.1	0.1	0.1	0.3	0.1
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	EW	0.3	0.4	1.1	0.0	0.3	0.5	1.0	0.1
NOR	I-64 REV	NORVIEW AVE	MILITARY HWY	REV	0.2	0.1	0.3	0.1	0.2	0.1	0.2	0.1
NOR	I-64	NORVIEW AVE	MILITARY HWY	EW	0.2	0.6	0.5	0.0	0.1	0.4	0.5	0.0
NOR	I-64 REV	MILITARY HWY	NORTHAMPTON BLVD	REV	0.1	0.1	0.3	0.2	0.0	0.1	0.3	0.2
NOR	I-64	MILITARY HWY	NORTHAMPTON BLVD	EW	0.1	0.4	0.7	0.0	0.1	0.5	0.6	0.0
NOR	I-64 REV	NORTHAMPTON BLVD	I-264	REV	0.3	0.5	0.7	1.3	0.1	0.2	0.2	0.4
NOR	I-64	NORTHAMPTON BLVD	I-264	EW	0.2	0.8	0.9	0.1	0.1	0.7	0.5	0.1
NOR	I-64	I-264	VA BEACH CL	EW	0.1	2.1	1.2	2.9	0.0	0.8	0.5	1.1
NOR	I-264/DOWNTOWN TUNNEL	PORTSMOUTH CL	I-464	EW	2.6	1.1	1.7	1.2	1.7	0.8	1.1	0.8
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	EW	0.4	0.9	0.3	2.2	0.5	0.9	0.4	2.2
NOR	I-264	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	EW	0.0	0.2	0.3	1.3	0.0	0.2	0.2	1.4
NOR	I-264	BRAMBLETON AVE	BALLENTINE BLVD	EW	0.0	0.1	0.1	0.2	0.0	0.1	0.2	0.3
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	EW	0.0	0.2	0.5	0.1	0.0	0.1	0.2	0.0
NOR	I-264	MILITARY HWY	I-64	EW	0.0	0.0	0.8	0.0	0.0	0.0	0.6	0.0
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	EW	0.0	0.1	0.2	0.3	0.0	0.1	0.7	0.4
NOR	I-464	CHESAPEAKE CL	SOUTH MAIN ST	NS	1.0	0.1	0.0	0.0	1.4	0.1	0.1	0.0
NOR	I-464	SOUTH MAIN ST	I-264	NS	1.8	0.1	0.2	0.1	2.1	0.1	0.3	0.1
NOR	I-564	ADMIRAL TAUSSIG BLVD	FUTURE INTERMODAL CONNECTOR	NS	4.3	0.1	0.0	0.3	1.9	0.0	0.0	0.1
NOR	I-564	FUTURE INTERMODAL CONNECTOR	INTERNATIONAL TERMINAL BLVD	NS	4.3	0.1	0.0	0.3	1.9	0.0	0.0	0.1
NOR	I-564	INTERNATIONAL TERMINAL BLVD	I-64	NS	0.8	0.0	0.0	0.5	0.7	0.0	0.0	1.0
NOR	INDIAN RIVER RD	MARSH ST	WILSON RD	EW	0.1	0.1	0.2	0.1	0.4	0.3	0.4	0.2
NOR	INDIAN RIVER RD	WILSON RD	CAMPOSTELLA RD	EW	0.1	0.1	0.1	0.1	0.5	0.7	0.4	0.5
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	EW	0.3	0.3	0.2	0.4	0.3	0.3	0.2	0.3
NOR	INGLESIDE RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.3	0.4	0.4	0.2	0.5	0.6	0.6	0.4
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	NS	0.1	0.2	0.2	0.1	0.2	0.4	0.4	0.3
NOR	JAMESTOWN CRESCENT	53RD ST	HAMPTON BLVD	NS	0.7	0.6	0.9	0.7	0.4	0.3	0.5	0.4
NOR	LAFAYETTE BLVD	27TH ST	TIDEWATER DR	EW	0.3	0.3	0.5	0.2	0.2	0.3	0.4	0.2
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.4	0.3	0.3	0.3	0.5	0.5	0.4	0.4
NOR	LLEWELLYN AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.6
NOR	LLEWELLYN AVE	PRINCESS ANNE RD	21ST ST	NS	0.2	0.2	0.3	0.1	0.5	0.3	0.6	0.2
NOR	LLEWELLYN AVE	21ST ST	26TH ST	NS	0.2	0.1	0.4	0.1	0.6	0.4	1.5	0.5
NOR	LLEWELLYN AVE	26TH ST	27TH ST	NS	0.0	0.0	0.0	0.0	0.5	0.4	0.4	0.3
NOR	LLEWELLYN AVE	27TH ST	35TH ST	NS	0.4	0.3	0.2	0.2	0.7	0.6	0.4	0.3
NOR	LLEWELLYN AVE	35TH ST	38TH ST	NS	0.4	0.3	0.2	0.2	0.7	0.6	0.4	0.3
NOR	LLEWELLYN AVE	38TH ST	DELAWARE AVE	NS	0.1	0.1	0.2	0.2	0.6	0.2	1.2	0.3
NOR	LLEWELLYN AVE	DELAWARE AVE	GRANBY ST	NS	-	0.1	-	0.2	-	0.2	-	0.3
NOR	MIDTOWN TUNNEL	PORTSMOUTH CL	BRAMBLETON AVE	NS	3.9	0.1	1.5	0.6	1.8	0.1	0.7	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	MILITARY HWY	VA BEACH CL	I-264	NS	0.4	0.6	0.5	0.9	0.2	0.4	0.3	0.5
NOR	MILITARY HWY	I-264	VA BEACH BLVD	NS	0.2	0.2	0.4	0.5	0.2	0.3	0.5	0.6
NOR	MILITARY HWY	VA BEACH BLVD	LOWERY RD	NS	0.7	0.4	1.1	0.8	0.6	0.3	0.9	0.6
NOR	MILITARY HWY	LOWERY RD	PRIN ANNE RD/NORTHAMPTON BLVD	NS	0.7	0.4	1.1	0.8	0.6	0.3	0.9	0.6
NOR	MILITARY HWY	PRIN ANNE RD/NORTHAMPTON BLVD	I-64	NS	0.2	0.4	0.2	0.7	0.4	0.8	0.4	1.6
NOR	MILITARY HWY	I-64	AZALEA GARDEN RD	NS	0.3	0.6	0.5	0.8	0.5	0.7	0.7	0.9
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	NS	0.1	0.1	0.4	0.2	0.4	0.3	1.2	0.6
NOR	MILITARY HWY	NORVIEW AVE	JOHNSTONS RD	NS	0.2	0.3	0.4	0.6	0.1	0.3	0.3	0.5
NOR	MILITARY HWY	JOHNSTONS RD	LITTLE CREEK RD	NS	0.2	0.1	0.2	0.2	0.5	0.4	0.4	0.4
NOR	MONTICELLO AVE	ST PAULS BLVD	VA BEACH BLVD	NS	0.4	0.3	0.4	0.7	0.8	0.6	0.9	1.4
NOR	MONTICELLO AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.4	0.3	0.4	0.7	0.8	0.6	0.9	1.4
NOR	MONTICELLO AVE	PRINCESS ANNE RD	21ST ST	NS	0.3	0.3	0.4	0.4	0.6	0.6	0.8	0.7
NOR	MONTICELLO AVE	21ST ST	26TH ST	NS	0.2	0.0	0.2	0.1	0.4	0.0	0.5	0.2
NOR	MONTICELLO AVE	26TH ST	27TH ST	NS	0.2	0.0	0.2	0.1	0.4	0.0	0.5	0.2
NOR	MONTICELLO AVE	27TH ST	CHURCH ST	NS	0.2	0.0	0.2	0.1	0.4	0.0	0.5	0.2
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	NS	0.4	0.2	0.6	0.3	0.7	0.9	1.0	1.4
NOR	NEWTOWN RD	I-264	VA BEACH BLVD	NS	0.4	0.7	0.8	1.0	1.0	0.8	1.9	1.2
NOR	NEWTOWN RD	VA BEACH BLVD	VA BEACH CL	NS	0.3	0.8	0.5	1.0	0.4	0.9	0.6	1.1
NOR	NORTHAMPTON BLVD	MILITARY HWY	KEMPSVILLE RD	EW	0.3	0.5	0.5	0.8	0.4	0.6	0.5	1.1
NOR	NORTHAMPTON BLVD	KEMPSVILLE RD	I-64	EW	0.3	0.5	0.5	0.8	0.4	0.6	0.5	1.1
NOR	NORTHAMPTON BLVD	I-64	WESLEYAN DR/VA BEACH CL	EW	1.0	0.9	0.3	1.0	0.9	0.7	0.3	0.9
NOR	NORVIEW AVE	CHESAPEAKE BLVD	I-64	EW	0.2	0.4	0.2	0.5	0.5	0.7	0.4	0.8
NOR	OCEAN VIEW AVE	4TH VIEW ST	TIDEWATER DR	EW	0.4	0.2	0.4	0.5	0.5	0.2	0.4	0.5
NOR	OCEAN VIEW AVE	TIDEWATER DR	GRANBY ST	EW	0.4	0.2	0.4	0.5	0.5	0.2	0.4	0.5
NOR	OCEAN VIEW AVE	GRANBY ST	CHESAPEAKE BLVD	EW	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.2
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	EW	0.1	0.3	0.4	0.5	0.2	0.8	0.9	1.1
NOR	PARK AVE	VA BEACH BLVD	PRINCESS ANNE RD	EW	0.3	0.1	0.2	0.2	1.3	0.6	0.7	0.9
NOR	PRINCESS ANNE RD	HAMPTON BLVD	COLLEY AVE	EW	0.1	0.2	0.2	0.1	0.2	0.5	0.4	0.4
NOR	PRINCESS ANNE RD	COLLEY AVE	LLEWELLYN AVE	EW	0.1	0.6	0.2	0.3	0.2	1.0	0.4	0.6
NOR	PRINCESS ANNE RD	LLEWELLYN AVE	MONTICELLO AVE	EW	0.1	0.2	0.1	0.1	0.4	0.9	0.7	0.7
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	EW	0.2	0.4	0.2	0.3	0.2	0.5	0.3	0.4
NOR	PRINCESS ANNE RD	CHURCH ST	TIDEWATER DR	EW	0.2	0.4	0.2	0.3	0.2	0.5	0.3	0.4
NOR	PRINCESS ANNE RD	TIDEWATER DR	MAY AVE	EW	0.1	0.2	0.2	0.2	0.2	0.5	0.3	0.4
NOR	PRINCESS ANNE RD	MAY AVE	PARK AVE	EW	0.1	0.2	0.2	0.2	0.2	0.5	0.3	0.4
NOR	PRINCESS ANNE RD	PARK AVE	BALLENTINE BLVD	EW	0.1	0.2	0.3	0.2	0.1	0.2	0.4	0.2
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	INGLESIDE RD	EW	0.2	0.2	0.2	0.2	0.5	0.5	0.6	0.5
NOR	PRINCESS ANNE RD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.5	0.5	1.1	0.6	0.3	0.2	0.5	0.3
NOR	PRINCESS ANNE RD	AZALEA GARDEN RD	SEWELLS POINT RD	EW	0.5	0.5	1.1	0.6	0.3	0.2	0.5	0.3
NOR	PRINCESS ANNE RD	SEWELLS POINT RD	MILITARY HWY	EW	0.5	0.5	1.1	0.6	0.3	0.2	0.5	0.3
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	AZALEA GARDEN RD	NS	0.4	0.4	0.5	0.3	0.5	0.5	0.7	0.4
NOR	SEWELLS POINT RD	AZALEA GARDEN RD	ROBIN HOOD RD	NS	0.4	0.4	0.5	0.3	0.5	0.5	0.7	0.4
NOR	SEWELLS POINT RD	ROBIN HOOD RD	CHESAPEAKE BLVD	NS	0.4	0.1	0.5	0.1	0.4	0.2	0.5	0.1
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	PARTRIDGE ST	NS	0.4	0.6	0.5	0.6	0.6	0.8	0.8	0.9
NOR	SEWELLS POINT RD	PARTRIDGE ST	PHILPOTTS RD	NS	0.4	0.6	0.5	0.6	0.6	0.8	0.8	0.9
NOR	SEWELLS POINT RD	PHILPOTTS RD	I-64	NS	0.6	0.7	0.9	0.4	0.4	0.5	0.7	0.3
NOR	SEWELLS POINT RD	I-64	LITTLE CREEK RD	NS	0.6	0.7	0.9	0.4	0.4	0.5	0.7	0.3
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	EW	0.4	0.3	0.7	0.4	0.4	0.3	0.7	0.4
NOR	SHORE DRIVE	LITTLE CREEK RD	VA BEACH CL	EW	0.2	0.2	0.6	0.3	0.2	0.2	0.5	0.2
NOR	ST PAULS BLVD	WATERSIDE DR	CITY HALL AVE	NS	0.1	0.2	0.4	0.2	0.6	1.0	1.5	1.0
NOR	ST PAULS BLVD	CITY HALL AVE	I-264 RAMP/MACARTHUR MALL	NS	0.1	0.1	0.1	0.2	0.7	1.2	0.9	1.5

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	ST PAULS BLVD	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	NS	0.5	0.3	0.5	0.7	1.3	0.8	1.3	1.9
NOR	ST PAULS BLVD	BRAMBLETON AVE	MONTICELLO AVE	NS	0.4	0.3	0.4	0.7	0.8	0.6	0.9	1.4
NOR	TIDEWATER DR	CITY HALL AVE	BRAMBLETON AVE	NS	0.2	0.2	0.3	0.3	0.4	0.6	0.7	0.7
NOR	TIDEWATER DR	BRAMBLETON AVE	VA BEACH BLVD	NS	0.4	0.1	0.3	0.5	1.0	0.4	0.7	1.5
NOR	TIDEWATER DR	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.1	0.1	0.1	0.2	0.8	0.3	0.6	1.2
NOR	TIDEWATER DR	PRINCESS ANNE RD	LAFAYETTE BLVD	NS	0.3	0.1	0.5	0.6	0.2	0.1	0.3	0.4
NOR	TIDEWATER DR	LAFAYETTE BLVD	CROMWELL DR	NS	0.2	0.1	0.3	0.2	0.4	0.2	0.5	0.3
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	NS	0.1	0.1	0.1	0.5	0.3	0.3	0.2	1.2
NOR	TIDEWATER DR	NORVIEW AVE	THOLE ST	NS	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3
NOR	TIDEWATER DR	THOLE ST	I-64	NS	0.1	0.2	0.3	0.2	0.3	0.4	0.7	0.5
NOR	TIDEWATER DR	I-64	LITTLE CREEK RD	NS	0.3	0.2	0.4	0.2	0.4	0.5	0.6	0.5
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	NS	0.4	0.3	0.2	0.2	0.4	0.2	0.2	0.2
NOR	TIDEWATER DR	BAYVIEW BLVD	GRANBY ST	NS	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.2
NOR	TIDEWATER DR	GRANBY ST	OCEAN VIEW AVE	NS	0.3	0.3	1.3	0.2	0.4	0.3	1.6	0.2
NOR	VA BEACH BLVD	MONTICELLO AVE	CHURCH ST	EW	0.3	0.7	0.4	0.4	0.4	0.9	0.6	0.6
NOR	VA BEACH BLVD	CHURCH ST	TIDEWATER DR	EW	0.3	0.7	0.4	0.4	0.4	0.9	0.6	0.6
NOR	VA BEACH BLVD	TIDEWATER DR	PARK AVE	EW	0.2	0.3	0.2	0.4	0.3	0.5	0.5	0.7
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	EW	0.2	0.2	0.4	0.2	0.2	0.2	0.4	0.2
NOR	VA BEACH BLVD	BALLENTINE BLVD	INGLESIDE RD	EW	0.2	0.2	0.2	0.2	0.5	0.6	0.4	0.5
NOR	VA BEACH BLVD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.2	0.2	0.1	0.2	0.6	0.5	0.3	0.5
NOR	VA BEACH BLVD	AZALEA GARDEN RD	JETT ST	EW	0.4	0.3	0.3	0.4	0.3	0.3	0.2	0.4
NOR	VA BEACH BLVD	JETT ST	MILITARY HWY	EW	0.4	0.3	0.3	0.4	0.3	0.3	0.2	0.4
NOR	VA BEACH BLVD	MILITARY HWY	GLENROCK RD	EW	0.5	0.6	1.5	1.1	0.3	0.3	0.9	0.6
NOR	VA BEACH BLVD	GLENROCK RD	KEMPSVILLE RD	EW	0.5	0.6	1.5	1.1	0.3	0.3	0.9	0.6
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	EW	0.5	0.6	1.5	1.1	0.3	0.3	0.9	0.6
NOR	WILSON RD	BERKLEY AVE/CHESAPEAKE CL	INDIAN RIVER RD	EW	0.4	0.2	0.3	0.3	0.6	0.3	0.4	0.5
NOR	WILSON RD	INDIAN RIVER RD	CAMPOSTELLA RD	EW	0.4	0.2	0.3	0.3	0.6	0.3	0.4	0.5
POQ	VICTORY BLVD	YORK CL	WYTHE CREEK RD	EW	0.5	1.1	1.1	0.9	0.2	0.5	0.5	0.4
POQ	WYTHE CREEK RD	HAMPTON CL	ALPHUS ST	NS	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.1
POQ	WYTHE CREEK RD	ALPHUS ST	LITTLE FLORIDA RD	NS	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.1
PORT	AIRLINE BLVD	CHESAPEAKE CL	GREENWOOD DR	EW	0.4	0.6	0.5	0.4	0.1	0.2	0.1	0.1
PORT	AIRLINE BLVD	GREENWOOD DR	ELMHURST LN	EW	0.7	0.4	0.8	0.6	0.4	0.2	0.5	0.3
PORT	AIRLINE BLVD	ELMHURST LN	.55 MI E ELMHURST LN	EW	0.7	0.4	0.8	0.6	0.4	0.2	0.5	0.3
PORT	AIRLINE BLVD	.55 MI E ELMHURST LN	VICTORY BLVD	EW	0.7	0.4	0.8	0.6	0.4	0.2	0.5	0.3
PORT	AIRLINE BLVD	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.7	0.4	0.8	0.6	0.4	0.2	0.5	0.3
PORT	AIRLINE BLVD	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.3	0.3	0.6	0.7	0.3	0.2	0.4	0.5
PORT	AIRLINE BLVD	FREDERICK BLVD	HIGH ST	EW	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.4
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	NS	0.4	0.5	0.3	0.5	0.2	0.3	0.2	0.3
PORT	CEDAR LN	W NORFOLK RD	WESTERN FREEWAY	NS	0.4	0.5	0.3	0.5	0.2	0.3	0.2	0.3
PORT	ELM AVE	LONDON BLVD	HIGH ST	NS	0.2	0.2	0.4	0.1	0.6	0.4	1.0	0.2
PORT	ELM AVE	HIGH ST	COUNTY ST	NS	0.2	0.2	0.4	0.1	0.6	0.4	1.0	0.2
PORT	ELM AVE	COUNTY ST	SOUTH ST	NS	0.2	0.2	0.4	0.1	0.6	0.4	1.0	0.2
PORT	ELM AVE	SOUTH ST	I-264	NS	0.0	0.2	0.2	0.2	0.0	0.2	0.2	0.3
PORT	ELM AVE	I-264	PORTSMOUTH BLVD	NS	0.0	0.2	0.2	0.2	0.0	0.2	0.2	0.3
PORT	ELM AVE	PORTSMOUTH BLVD	EFFINGHAM ST	NS	0.0	0.0	0.2	0.0	0.1	0.0	0.6	0.0
PORT	FREDERICK BLVD	GEORGE WASHINGTON HWY	PORTSMOUTH BLVD	NS	0.2	0.2	0.3	0.2	0.3	0.2	0.4	0.3
PORT	FREDERICK BLVD	PORTSMOUTH BLVD	DEEP CREEK BLVD	NS	0.2	0.1	0.3	0.1	0.3	0.3	0.4	0.3
PORT	FREDERICK BLVD	DEEP CREEK BLVD	I-264	NS	0.2	0.1	0.3	0.1	0.3	0.3	0.4	0.3
PORT	FREDERICK BLVD	I-264	TURNPIKE RD	NS	0.2	0.4	0.5	0.6	0.3	0.4	0.6	0.6
PORT	FREDERICK BLVD	TURNPIKE RD	AIRLINE BLVD	NS	0.2	0.4	0.5	0.6	0.3	0.4	0.6	0.6

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Dir	Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	FREDERICK BLVD	AIRLINE BLVD	HIGH ST	NS	0.2	0.5	0.2	0.5	0.2	0.4	0.2	0.4
PORT	GEORGE WASHINGTON HWY	CHESAPEAKE CL	VICTORY BLVD	NS	0.3	0.3	0.7	0.3	0.3	0.4	0.9	0.4
PORT	GEORGE WASHINGTON HWY	VICTORY BLVD	DAVIS ST	NS	0.3	0.3	0.8	0.6	0.2	0.3	0.6	0.5
PORT	GEORGE WASHINGTON HWY	DAVIS ST	GREENWOOD DR	NS	0.3	0.3	0.8	0.6	0.2	0.3	0.6	0.5
PORT	GEORGE WASHINGTON HWY	GREENWOOD DR	FREDERICK BLVD	NS	0.3	0.3	0.8	0.6	0.2	0.3	0.6	0.5
PORT	GREENWOOD DR	AIRLINE BLVD	I-264	EW	0.2	0.3	0.2	0.2	0.4	0.7	0.3	0.6
PORT	GREENWOOD DR	I-264	CAVALIER BLVD	EW	0.3	0.2	0.3	0.1	0.3	0.2	0.4	0.1
PORT	GREENWOOD DR	CAVALIER BLVD	VICTORY BLVD	EW	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.4
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	EW	1.0	0.6	0.8	0.8	0.5	0.3	0.4	0.4
PORT	GREENWOOD DR	INDEPENDENCE ST	DEEP CREEK BLVD	EW	1.0	0.6	0.8	0.8	0.5	0.3	0.4	0.4
PORT	GREENWOOD DR	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	1.0	0.6	0.8	0.8	0.5	0.3	0.4	0.4
PORT	HIGH ST	TYRE NECK RD	CHURCHLAND BLVD	EW	0.4	0.5	0.6	0.6	0.2	0.2	0.3	0.3
PORT	HIGH ST	CHURCHLAND BLVD	CEDAR LA	EW	0.4	0.5	0.6	0.6	0.2	0.2	0.3	0.3
PORT	HIGH ST	CEDAR LA	FREDERICK BLVD	EW	0.5	0.2	0.5	0.2	0.4	0.2	0.4	0.2
PORT	I-264	WCL PORTSMOUTH	GREENWOOD DR	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
PORT	I-264	GREENWOOD DR	VICTORY BLVD	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
PORT	I-264	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.8	0.0	0.0	0.0	0.9	0.0	0.0	0.0
PORT	I-264	FREDERICK BLVD	FUTURE MLK FWY	EW	1.1	0.0	0.1	0.0	1.5	0.0	0.1	0.0
PORT	I-264	FUTURE MLK FWY	DES MOINES AVE	EW	1.1	0.0	0.1	0.0	1.5	0.0	0.1	0.0
PORT	I-264	DES MOINES AVE	EFFINGHAM ST	EW	1.1	0.0	0.2	0.1	2.1	0.0	0.4	0.1
PORT	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	NORFOLK CL	EW	2.6	1.1	1.7	1.2	1.7	0.8	1.1	0.8
PORT	LONDON BLVD	HIGH ST	MT VERNON AVE	EW	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.4
PORT	LONDON BLVD	MT VERNON AVE	M L K FWY	EW	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.5
PORT	MIDTOWN TUNNEL	MLK FWY/WESTERN FREEWAY	NORFOLK CL	NS	3.9	0.1	1.5	0.6	1.8	0.1	0.7	0.4
PORT	M L K FREEWAY	LONDON BLVD	WESTERN FREEWAY/MIDTOWN TUNNEL	NS	0.1	0.3	0.0	0.2	0.2	0.3	0.1	0.1
PORT	PORTSMOUTH BLVD	CHESAPEAKE CL	ELMHURST LN	EW	0.8	0.7	1.5	1.3	0.3	0.2	0.6	0.4
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	EW	0.3	0.2	0.6	0.6	0.2	0.2	0.5	0.5
PORT	PORTSMOUTH BLVD	VICTORY BLVD	AIRLINE BLVD	EW	0.1	0.0	0.2	0.1	0.5	0.2	0.8	0.4
PORT	PORTSMOUTH BLVD	AIRLINE BLVD	TURNPIKE RD	EW	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.6
PORT	PORTSMOUTH BLVD	TURNPIKE RD	I-264	EW	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.6
PORT	PORTSMOUTH BLVD	I-264	DEEP CREEK BLVD	EW	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
PORT	PORTSMOUTH BLVD	DEEP CREEK BLVD	FREDERICK BLVD	EW	0.1	0.1	0.1	0.1	0.7	0.5	0.6	0.5
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	EW	0.1	0.3	0.2	0.3	0.2	0.3	0.2	0.4
PORT	PORTSMOUTH BLVD	ELM AVE	EFFINGHAM ST	EW	0.1	0.1	0.1	0.1	0.3	0.4	0.2	0.4
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	EW	0.1	0.6	0.0	0.4	0.3	1.0	0.0	0.7
PORT	TOWN POINT RD	SUFFOLK CL	TWIN PINES RD	EW	0.4	0.5	0.4	0.4	0.3	0.4	0.3	0.3
PORT	TOWN POINT RD	TWIN PINES RD	WESTERN FREEWAY	EW	0.0	0.0	0.1	0.1	0.0	0.5	0.2	0.6
PORT	TOWN POINT RD	WESTERN FREEWAY	CHESAPEAKE CL	EW	0.0	0.0	0.1	0.1	0.2	0.0	0.3	0.2
PORT	VICTORY BLVD	PORTSMOUTH BLVD	AIRLINE BLVD	EW	0.1	0.2	0.1	0.3	0.3	1.1	0.3	1.3
PORT	VICTORY BLVD	AIRLINE BLVD	I-264	EW	0.2	0.3	0.2	0.6	0.5	0.9	0.4	1.6
PORT	VICTORY BLVD	I-264	GREENWOOD DR	EW	0.2	0.3	0.3	0.4	0.4	0.4	0.6	0.6
PORT	VICTORY BLVD	GREENWOOD DR	DEEP CREEK BLVD	EW	0.5	0.4	0.5	0.7	0.3	0.3	0.3	0.5
PORT	VICTORY BLVD	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	0.5	0.4	0.5	0.7	0.3	0.3	0.3	0.5
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	EW	0.6	0.4	0.3	0.4	0.3	0.2	0.2	0.2
PORT	VICTORY BLVD	AFTON PKWY	ELM AVE	EW	0.6	0.4	0.3	0.4	0.3	0.2	0.2	0.2
PORT	WESTERN BRANCH BLVD	CHESAPEAKE CL	TYRE NECK RD	EW	0.4	0.5	0.6	0.6	0.2	0.2	0.3	0.3
PORT	WESTERN FWY	SUFFOLK CL	TOWN POINT RD	EW	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
PORT	WESTERN FWY	TOWN POINT RD	CEDAR LN	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
PORT	WESTERN FWY	CEDAR LN	APM BLVD	EW	0.3	0.0	0.0	0.1	0.2	0.0	0.0	0.0

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	WESTERN FWY	APM BLVD	WEST NORFOLK RD	EW	0.3	0.0	0.0	0.1	0.2	0.0	0.0	0.0
PORT	WESTERN FWY	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	EW	2.3	0.1	0.1	0.2	1.3	0.0	0.1	0.1
SH	BUS ROUTE 58	ROUTE 35	ECL COURTLAND	EW	0.3	0.4	0.2	0.2	0.1	0.2	0.1	0.1
SH	BUS ROUTE 58	ECL COURTLAND	ROUTE 58	EW	0.3	0.4	0.2	0.2	0.1	0.2	0.1	0.1
SH	ROUTE 35	NC STATE LINE	SCL BOYKINS	NS	0.4	0.1	0.9	0.2	0.1	0.0	0.3	0.1
SH	ROUTE 35	SCL BOYKINS	ROUTE 1324	NS	0.4	0.1	0.9	0.2	0.1	0.0	0.3	0.1
SH	ROUTE 35	ROUTE 1324	ROUTE 186	NS	0.4	0.1	0.9	0.2	0.1	0.0	0.3	0.1
SH	ROUTE 35	ROUTE 186	NCL BOYKINS	NS	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
SH	ROUTE 35	NCL BOYKINS	ROUTE 671	NS	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
SH	ROUTE 35	ROUTE 671	GRAYS SHOP RD (RTE 673)	NS	0.7	0.2	1.4	0.8	0.1	0.0	0.2	0.1
SH	ROUTE 35	GRAYS SHOP RD (RTE 673)	ROUTE 58	NS	1.1	1.0	0.9	1.1	0.3	0.2	0.2	0.3
SH	ROUTE 35/BUS ROUTE 58	ROUTE 58	WCL COURTLAND	EW	0.6	0.6	0.7	0.4	0.1	0.1	0.2	0.1
SH	ROUTE 35/BUS ROUTE 58	WCL COURTLAND	BUS RTE 58	EW	0.6	0.6	0.7	0.4	0.1	0.1	0.2	0.1
SH	ROUTE 35	BUS RTE 58	NCL COURTLAND	NS	0.5	0.4	0.5	0.4	0.1	0.1	0.1	0.1
SH	ROUTE 35	NCL COURTLAND	IVOR RD (RTE 616)	NS	0.5	0.4	0.5	0.4	0.1	0.1	0.1	0.1
SH	ROUTE 35	IVOR RD (RTE 616)	CARYS BRIDGE RD (RTE 653)	NS	0.5	0.4	0.5	0.4	0.1	0.1	0.1	0.1
SH	ROUTE 35	CARYS BRIDGE RD (RTE 653)	SUSSEX CL	NS	0.5	0.8	0.6	0.8	0.1	0.1	0.1	0.1
SH	ROUTE 58	GREENSVILLE CL	ADAMS GROVE RD (RTE 615)	EW	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 58	ADAMS GROVE RD (RTE 615)	DREWRY RD (RTE 659)	EW	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 58	DREWRY RD (RTE 659)	PINOPOLIS RD (ROUTE 653)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	EW	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 58	ROUTE 35	BUS RTE 58 W	EW	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	EW	0.3	0.3	0.3	0.5	0.1	0.1	0.1	0.2
SH	ROUTE 58	CAMP PKWY (BUS RTE 58 E)	ARMORY DR (RTE 671)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	ARMORY DR (RTE 671)	ROUTE 258	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	ROUTE 258	PRETLOW RD (RTE 714)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	PRETLOW RD (RTE 714)	SUFFOLK CL	EW	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 258	NC STATE LINE	ROUTE 189	EW	0.4	0.3	0.4	0.4	0.1	0.1	0.1	0.1
SH	ROUTE 258	ROUTE 189	DOGWOOD BEND RD (RTE 684)	EW	0.4	0.6	0.6	0.5	0.1	0.2	0.2	0.1
SH	ROUTE 258	DOGWOOD BEND RD (RTE 684)	ROUTE 58	EW	0.4	0.6	0.6	0.5	0.1	0.2	0.2	0.1
SH	ROUTE 460	SUSSEX CL	WCL IVOR	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 460	WCL IVOR	ROUTE 616 (IVOR RD)	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 460	ROUTE 616 (IVOR RD)	ECL IVOR	EW	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
SH	ROUTE 460	ECL IVOR	ISLE OF WIGHT CL	EW	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
SUF	BRIDGE RD	ISLE OF WIGHT CL	E. END CHUCKATUCK BRIDGE	EW	0.4	0.5	0.5	0.4	0.1	0.1	0.1	0.1
SUF	BRIDGE RD	E. END CHUCKATUCK BRIDGE	CRITTENDEN RD	EW	0.4	0.5	0.5	0.4	0.1	0.1	0.1	0.1
SUF	BRIDGE RD	CRITTENDEN RD	N. END NANSEMOND RIVER	EW	0.3	0.1	0.2	0.1	0.3	0.1	0.2	0.1
SUF	BRIDGE RD	N. END NANSEMOND RIVER	S. END NANSEMOND RIVER	EW	0.3	0.1	0.2	0.1	0.3	0.1	0.2	0.1
SUF	BRIDGE RD	S. END NANSEMOND RIVER	BENNETTS PASTURE RD	EW	0.3	0.1	0.2	0.1	0.3	0.1	0.2	0.1
SUF	BRIDGE RD	BENNETTS PASTURE RD	SHOULDERS HILL RD	EW	0.5	0.3	0.5	0.5	0.3	0.2	0.4	0.3
SUF	BRIDGE RD	SHOULDERS HILL RD	HARBOUR VIEW BLVD	EW	0.3	0.6	0.4	0.9	0.2	0.3	0.2	0.5
SUF	BRIDGE RD	HARBOUR VIEW BLVD	WESTERN FWY	EW	0.3	0.6	0.4	0.9	0.2	0.3	0.2	0.5
SUF	BRIDGE RD	WESTERN FWY	I-664	EW	0.3	0.1	0.4	0.1	0.2	0.4	0.2	0.4
SUF	BRIDGE RD	I-664	COLLEGE DR	EW	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3
SUF	BRIDGE RD	COLLEGE DR	CHESAPEAKE CL	EW	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3
SUF	CAROLINA RD	NC STATE LINE	RTE 642	NS	0.2	0.0	0.6	0.0	0.0	0.0	0.1	0.0
SUF	CAROLINA RD	RTE 642	RTE 675	NS	0.2	0.0	0.6	0.0	0.0	0.0	0.1	0.0
SUF	CAROLINA RD	RTE 675	BABBTOWN RD (RTE 759)	NS	0.2	0.0	0.6	0.0	0.0	0.0	0.1	0.0
SUF	CAROLINA RD	BABBTOWN RD (RTE 759)	WHALEYVILLE BLVD	NS	0.2	0.0	0.6	0.0	0.0	0.0	0.1	0.0
SUF	CAROLINA RD	WHALEYVILLE BLVD	TURLINGTON RD	NS	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	CAROLINA RD	TURLINGTON RD	SW SUFFOLK BYPASS	NS	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
SUF	CAROLINA RD	SW SUFFOLK BYPASS	FAYETTE ST	NS	0.3	0.5	0.4	0.4	0.1	0.2	0.2	0.2
SUF	COLLEGE DR	BRIDGE RD	WESTERN FREEWAY	NS	0.1	0.1	0.2	0.1	0.4	0.6	0.6	0.9
SUF	COLLEGE DR	WESTERN FREEWAY	HAMPTON ROADS PKWY	NS	0.3	0.2	0.3	0.3	0.5	0.3	0.6	0.4
SUF	COLLEGE DR	HAMPTON ROADS PKWY	I-664	NS	0.4	0.4	0.5	0.6	0.4	0.4	0.4	0.6
SUF	CONSTANCE RD	HOLLAND RD	PITCHKETTLE RD	EW	0.5	0.5	0.3	0.5	0.3	0.2	0.1	0.2
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	EW	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.4
SUF	CONSTANCE RD	MAIN ST	WILROY RD	EW	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.4
SUF	GODWIN BLVD	PRUDEN BLVD	SUFFOLK BYPASS	NS	0.2	0.2	0.2	0.2	0.4	0.5	0.4	0.5
SUF	GODWIN BLVD	SUFFOLK BYPASS	KINGS FORK RD	NS	0.7	0.2	0.5	0.8	0.5	0.2	0.4	0.5
SUF	GODWIN BLVD	KINGS FORK ROAD	1.36 MI N OF KINGS FORK RD	NS	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
SUF	GODWIN BLVD	1.36 MILES N OF KINGS FORK RD	EVERETS RD	NS	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
SUF	GODWIN BLVD	EVERETS RD	KINGS HWY	NS	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2
SUF	GODWIN BLVD	KINGS HWY	ISLE OF WIGHT CL	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
SUF	HAMPTON ROADS PKWY	HARBOUR VIEW BLVD	COLLEGE DR	EW	0.2	0.5	0.2	0.3	0.2	0.6	0.3	0.4
SUF	HAMPTON ROADS PKWY	COLLEGE DR	PORTSMOUTH CL	EW	0.4	0.5	0.4	0.4	0.3	0.4	0.3	0.3
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	EW	0.5	0.5	0.3	0.5	0.3	0.2	0.1	0.2
SUF	I-664	CHESAPEAKE CL	BRIDGE RD	EW	0.1	0.2	0.7	0.0	0.1	0.2	0.6	0.0
SUF	I-664	BRIDGE RD	WESTERN FWY	EW	0.0	0.2	0.3	0.1	0.1	0.2	0.7	0.1
SUF	I-664	WESTERN FWY	COLLEGE DR	EW	0.0	0.3	0.3	0.2	0.0	0.2	0.3	0.1
SUF	I-664/MMMBT	COLLEGE DR	NEWPORT NEWS CL	EW	0.0	0.4	1.2	0.4	0.0	0.1	0.2	0.1
SUF	LAKE PRINCE DR (RTE 604)	ROUTE 460 (PRUDEN BLVD)	ROUTE 603 (EVERETTS RD)	NS	0.5	0.9	0.7	1.0	0.1	0.2	0.2	0.3
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	NS	0.3	0.5	0.4	0.4	0.1	0.2	0.2	0.2
SUF	MAIN ST	WASHINGTON ST	MARKET ST	NS	0.5	0.3	0.9	0.4	0.7	0.4	1.3	0.6
SUF	MAIN ST	MARKET ST	CONSTANCE RD	NS	0.5	0.3	0.9	0.4	0.7	0.4	1.3	0.6
SUF	MAIN ST	CONSTANCE RD	PRUDEN BLVD/GODWIN BLVD	NS	0.7	0.4	1.2	0.9	0.4	0.3	0.7	0.6
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	NS	0.3	0.4	0.4	0.4	0.2	0.3	0.3	0.3
SUF	PITCHKETTLE RD	SUFFOLK BYPASS	KINGS FORK RD	NS	0.4	0.7	0.6	0.7	0.1	0.3	0.2	0.3
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	EW	0.4	0.2	0.5	0.4	0.2	0.1	0.3	0.3
SUF	PORTSMOUTH BLVD	WASHINGTON ST	SUFFOLK BYPASS	EW	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2
SUF	PROVIDENCE RD (RTE 604)	KINGS FORK RD	ROUTE 460 (PRUDEN BLVD)	NS	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.3
SUF	PRUDEN BLVD	ISLE OF WIGHT CL	LAKE PRINCE DR	EW	0.3	0.1	0.3	0.2	0.0	0.0	0.1	0.0
SUF	PRUDEN BLVD	LAKE PRINCE DR	KINGS FORK RD	EW	0.2	0.1	0.1	0.1	0.3	0.3	0.3	0.3
SUF	PRUDEN BLVD	KINGS FORK RD	SUFFOLK BYPASS	EW	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.3
SUF	PRUDEN BLVD	SUFFOLK BYPASS	GODWIN BLVD	EW	0.1	0.3	0.2	0.3	0.1	0.2	0.2	0.3
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	EW	0.6	0.2	0.9	0.3	0.3	0.1	0.4	0.2
SUF	PUGHSVILLE RD	TOWN POINT RD	CHESAPEAKE CL	EW	0.6	0.2	0.9	0.3	0.3	0.1	0.4	0.2
SUF	ROUTE 13/58/460	SUFFOLK BYPASS	CHESAPEAKE CL	EW	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58	SOUTHAMPTON CL	RTE 189/258	EW	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58	RTE 189/258	RTE 272 (S. QUAY RD)	EW	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58	RTE 272	S. QUAY RD (ROUTE 189)	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58 (HOLLAND BYPASS)	S. QUAY RD (ROUTE 189)	BUS RTE 58 (HOLLAND RD)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58 (HOLLAND RD)	BUS RTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	EW	0.3	0.2	0.3	0.3	0.1	0.0	0.0	0.1
SUF	ROUTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	RTE 643 (MANNING BRIDGE RD)	EW	0.3	0.2	0.3	0.3	0.1	0.0	0.0	0.1
SUF	ROUTE 58 (HOLLAND RD)	RTE. 643 (MANNING BRIDGE RD)	COVE POINT DR	EW	0.3	0.2	0.3	0.3	0.1	0.0	0.0	0.1
SUF	ROUTE 58 (HOLLAND RD)	COVE POINT DR	SUFFOLK BYPASS	EW	0.5	0.3	0.5	0.5	0.3	0.2	0.3	0.3
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	NS	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUF	SUFFOLK BYPASS	HOLLAND RD	PITCHKETTLE RD	EW	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1
SUF	SUFFOLK BYPASS	PITCHKETTLE RD	PRUDEN BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	SUFFOLK BYPASS	PRUDEN BLVD	GODWIN BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	SUFFOLK BYPASS	GODWIN BLVD	WILROY RD	EW	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1
SUF	SUFFOLK BYPASS	WILROY RD	ROUTES 13/58/460	EW	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0
SUF	WASHINGTON ST	MAIN ST	PINNER ST	EW	0.9	0.5	1.7	1.2	0.3	0.2	0.5	0.4
SUF	WASHINGTON ST	PINNER ST	PORTSMOUTH BLVD	EW	0.9	0.5	1.7	1.2	0.3	0.2	0.5	0.4
SUF	WESTERN FWY	I-664	COLLEGE DR	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
SUF	WESTERN FWY	COLLEGE DR	PORTSMOUTH CL	EW	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	NS	0.7	0.8	0.9	0.6	0.1	0.1	0.1	0.0
SUF	WHALEYVILLE BLVD	RTE 616 (MINERAL SPRING RD)	RTE 677 (GREAT FORK RD)	NS	0.7	0.8	0.9	0.6	0.1	0.1	0.1	0.0
SUF	WHALEYVILLE BLVD	RTE 677 (GREAT FORK RD)	RTE 675 (CYPRESS CHAPEL RD)	NS	0.7	0.8	0.9	0.6	0.1	0.1	0.1	0.0
SUF	WHALEYVILLE BLVD	RTE 675 (CYPRESS CHAPEL RD)	RTE 759 (BABBTOWN RD)	NS	0.7	0.8	0.9	0.6	0.1	0.1	0.1	0.0
SUF	WHALEYVILLE BLVD	RTE 759 (BABBTOWN RD)	RTE 32 (CAROLINA RD)	NS	0.7	0.8	0.9	0.6	0.1	0.1	0.1	0.0
SUR	ROUTE 10	PRINCE GEORGE CL	ROUTE 40	EW	0.5	0.5	0.8	0.5	0.1	0.1	0.2	0.1
SUR	ROUTE 10	ROUTE 40	ROUTE 31 (SOUTH)	EW	0.9	1.2	1.3	0.9	0.1	0.2	0.2	0.1
SUR	ROUTES 10/31	ROUTE 31 (SOUTH)	ROUTE 31 (NORTH)	NS	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
SUR	ROUTE 10	ROUTE 31 (NORTH)	ROUTE 617	EW	1.1	0.6	2.6	0.7	0.1	0.0	0.2	0.1
SUR	ROUTE 10	ROUTE 617	ISLE OF WIGHT CL	EW	1.1	0.6	2.6	0.7	0.1	0.0	0.2	0.1
SUR	ROUTE 40	SUSSEX CL	ROUTE 615	NS	1.5	0.1	1.0	0.9	0.2	0.0	0.1	0.1
SUR	ROUTE 40	ROUTE 615	ROUTE 10	NS	0.5	0.1	0.5	0.8	0.1	0.0	0.1	0.2
VB	21ST ST	PARKS AVE	PACIFIC AVE	EW	0.3	-	0.3	-	0.4	-	0.5	-
VB	21ST ST	PACIFIC AVE	ATLANTIC AVE	EW	0.3	-	0.3	-	0.4	-	0.5	-
VB	22ND ST	PARKS AVE	PACIFIC AVE	EW	-	0.5	-	0.7	-	0.9	-	1.1
VB	22ND ST	PACIFIC AVE	ATLANTIC AVE	EW	-	0.5	-	0.7	-	0.9	-	1.1
VB	ATLANTIC AVE	83RD ST	PACIFIC AVE	NS	0.3	0.3	0.6	0.2	0.1	0.1	0.2	0.1
VB	ATLANTIC AVE	PACIFIC AVE	LASKIN RD	NS	0.1	0.5	0.2	0.3	0.2	0.7	0.2	0.4
VB	ATLANTIC AVE	LASKIN RD	22ND ST	NS	0.0	0.2	0.1	0.3	0.0	0.3	0.1	0.5
VB	ATLANTIC AVE	22ND ST	21ST ST	NS	0.0	0.0	0.0	0.1	0.0	0.3	0.6	0.8
VB	ATLANTIC AVE	21ST ST	VA BEACH BLVD	NS	0.0	0.1	0.2	0.2	0.1	0.2	0.6	0.7
VB	ATLANTIC AVE	VA BEACH BLVD	5TH ST	NS	0.5	0.2	0.5	0.3	0.5	0.2	0.5	0.3
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	NS	0.3	0.5	0.5	0.5	0.3	0.5	0.5	0.5
VB	BIRDNECK RD	GENERAL BOOTH BLVD	NORFOLK AVE	NS	0.5	0.7	0.5	0.4	0.2	0.3	0.2	0.2
VB	BIRDNECK RD	NORFOLK AVE	VA BEACH BLVD	NS	0.5	0.7	0.5	0.4	0.2	0.3	0.2	0.2
VB	BIRDNECK RD	VA BEACH BLVD	I-264	NS	0.1	0.1	0.1	0.1	0.2	0.4	0.3	0.4
VB	BIRDNECK RD	I-264	LASKIN RD	NS	0.3	0.2	0.3	0.2	0.5	0.3	0.6	0.3
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	TOLL PLAZA	NS	0.2	0.0	0.2	0.0	0.4	0.0	0.4	0.0
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	TOLL PLAZA	NCL VA BEACH	NS	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0
VB	DAM NECK RD	VA BEACH AMPHITHEATER	PRINCESS ANNE RD	EW	0.3	0.1	0.1	0.1	0.7	0.3	0.2	0.2
VB	DAM NECK RD	PRINCESS ANNE RD	ROSEMONT RD	EW	0.6	0.3	0.5	0.7	0.6	0.3	0.5	0.7
VB	DAM NECK RD	ROSEMONT RD	HOLLAND RD	EW	0.6	0.3	0.5	0.7	0.6	0.3	0.5	0.7
VB	DAM NECK RD	HOLLAND RD	DRAKESMILE RD	EW	0.5	0.3	0.5	1.3	0.3	0.2	0.3	0.7
VB	DAM NECK RD	DRAKESMILE RD	LONDON BRIDGE RD	EW	0.5	0.3	0.5	1.3	0.3	0.2	0.3	0.7
VB	DAM NECK RD	LONDON BRIDGE RD	HARPERS RD	EW	0.4	0.5	0.3	0.5	0.1	0.2	0.1	0.2
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	EW	0.4	0.5	0.3	0.5	0.1	0.2	0.1	0.2
VB	DIAMOND SPRINGS RD	NEWTOWN RD	WESLEYAN RD	NS	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2
VB	DIAMOND SPRINGS RD	WESLEYAN RD	NORTHAMPTON BLVD	NS	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.1
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	NS	0.4	0.5	0.3	0.5	0.3	0.4	0.3	0.4
VB	FIRST COLONIAL RD	VA BEACH BLVD	I-264	NS	0.1	0.1	0.3	0.1	0.5	1.2	1.2	0.9
VB	FIRST COLONIAL RD	I-264	LASKIN RD	NS	1.3	1.7	1.9	2.3	0.6	0.7	0.8	0.9
VB	FIRST COLONIAL RD	LASKIN RD	OLD DONATION PKWY	NS	1.3	1.7	1.9	2.3	0.6	0.7	0.8	0.9
VB	FIRST COLONIAL RD	OLD DONATION PKWY	GREAT NECK RD	NS	1.3	1.7	1.9	2.3	0.6	0.7	0.8	0.9
VB	GENERAL BOOTH BLVD	PRINCESS ANNE RD	NIMMO PKWY	NS	0.6	0.5	0.9	0.8	0.3	0.2	0.4	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	GENERAL BOOTH BLVD	NIMMO PKWY	LONDON BRIDGE RD	NS	0.6	0.5	0.9	0.8	0.3	0.2	0.4	0.4
VB	GENERAL BOOTH BLVD	LONDON BRIDGE RD	DAM NECK RD	NS	0.6	0.5	0.9	0.8	0.3	0.2	0.4	0.4
VB	GENERAL BOOTH BLVD	DAM NECK RD	OCEANA BLVD/PROSPERITY RD	NS	0.2	0.3	0.2	0.4	0.3	0.5	0.3	0.7
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	NS	0.2	0.3	0.1	0.4	0.1	0.3	0.1	0.4
VB	GENERAL BOOTH BLVD	BIRDNECK RD	HARBOUR POINT	NS	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1
VB	GREAT NECK RD	VA BEACH BLVD	OLD DONATION PKWY	NS	0.1	0.5	0.4	1.0	0.1	0.3	0.3	0.6
VB	GREAT NECK RD	OLD DONATION PKWY	FIRST COLONIAL RD	NS	0.2	0.1	0.3	0.2	0.2	0.1	0.3	0.2
VB	GREAT NECK RD	FIRST COLONIAL RD	SHOREHAVEN RD	NS	1.1	1.1	0.9	0.8	0.4	0.4	0.3	0.2
VB	GREAT NECK RD	SHOREHAVEN RD	SHORE DR	NS	1.1	1.1	0.9	0.8	0.4	0.4	0.3	0.2
VB	HOLLAND RD	INDEPENDENCE BLVD	SOUTH PLAZA TRAIL	NS	0.7	0.7	0.9	1.6	0.4	0.3	0.5	0.8
VB	HOLLAND RD	SOUTH PLAZA TRAIL	ROSEMONT RD	NS	0.7	0.7	0.9	1.6	0.4	0.3	0.5	0.8
VB	HOLLAND RD	ROSEMONT RD	LYNNHAVEN PKWY	NS	0.3	0.3	0.8	0.6	0.3	0.3	0.7	0.6
VB	HOLLAND RD	LYNNHAVEN PKWY	DAM NECK RD	NS	0.3	0.7	0.5	0.8	0.3	0.7	0.5	0.8
VB	HOLLAND RD	DAM NECK RD	NIMMO PKWY	NS	1.1	0.9	1.1	0.8	0.4	0.3	0.4	0.3
VB	HOLLAND RD	NIMMO PKWY	PRINCESS ANNE RD	NS	1.1	0.9	1.1	0.8	0.4	0.3	0.4	0.3
VB	I-64	NORFOLK CL	INDIAN RIVER RD	EW	0.1	2.1	1.2	2.9	0.0	0.8	0.5	1.1
VB	I-64	INDIAN RIVER RD	CITY LINE RD/CHESEAPEAKE CL	EW	0.0	1.0	0.3	0.3	0.0	0.4	0.1	0.1
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	EW	0.1	0.1	1.0	0.3	0.0	0.1	0.7	0.2
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.2
VB	I-264	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.1	0.3	0.1	0.1	0.0	0.1	0.0	0.0
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	EW	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0
VB	I-264	LYNNHAVEN PKWY	LONDON BRIDGE RD	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
VB	I-264	LONDON BRIDGE RD	LASKIN RD	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
VB	I-264	LASKIN RD	FIRST COLONIAL RD	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VB	I-264	FIRST COLONIAL RD	S.E. PARKWAY CORRIDOR	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VB	I-264	S.E. PARKWAY CORRIDOR	BIRDNECK RD	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VB	I-264	BIRDNECK RD	PARKS AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
VB	INDEPENDENCE BLVD	INDIAN RIVER RD	SALEM RD	NS	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1
VB	INDEPENDENCE BLVD	SALEM RD	PRINCESS ANNE RD	NS	0.2	0.1	0.3	0.1	0.2	0.1	0.3	0.1
VB	INDEPENDENCE BLVD	PRINCESS ANNE RD	LYNNHAVEN PKWY	NS	0.1	0.2	0.3	0.3	0.3	0.4	0.6	0.6
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	NS	0.2	0.2	0.5	0.3	0.1	0.1	0.3	0.2
VB	INDEPENDENCE BLVD	PLAZA TRAIL	HOLLAND RD	NS	0.4	0.1	0.4	0.1	0.5	0.1	0.5	0.1
VB	INDEPENDENCE BLVD	HOLLAND RD	BAXTER RD	NS	0.8	0.2	0.6	0.7	1.1	0.3	0.8	1.0
VB	INDEPENDENCE BLVD	BAXTER RD	I-264	NS	0.2	0.0	0.3	0.0	0.6	0.3	0.7	0.4
VB	INDEPENDENCE BLVD	I-264	BONNEY RD	NS	0.4	0.5	0.5	1.2	0.9	0.5	1.1	1.1
VB	INDEPENDENCE BLVD	BONNEY RD	COLUMBUS ST	NS	0.4	0.5	0.5	1.2	0.9	0.5	1.1	1.1
VB	INDEPENDENCE BLVD	COLUMBUS ST	VA BEACH BLVD	NS	0.4	0.5	0.5	1.2	0.9	0.5	1.1	1.1
VB	INDEPENDENCE BLVD	VA BEACH BLVD	JEANNE ST	NS	0.2	0.4	0.6	1.6	0.2	0.3	0.4	1.2
VB	INDEPENDENCE BLVD	JEANNE ST	PEMBROKE BLVD	NS	0.2	0.4	0.6	1.6	0.2	0.3	0.4	1.2
VB	INDEPENDENCE BLVD	PEMBROKE BLVD	HAYGOOD RD	NS	0.2	0.2	0.5	0.4	0.2	0.3	0.6	0.4
VB	INDEPENDENCE BLVD	HAYGOOD RD	NORTHAMPTON BLVD	NS	0.4	0.5	0.5	0.9	0.2	0.3	0.3	0.5
VB	INDEPENDENCE BLVD	NORTHAMPTON BLVD	SHORE DR	NS	0.7	0.1	0.3	0.2	1.6	0.1	0.7	0.2
VB	INDIAN RIVER RD	CHESAPEAKE CL	MILITARY HWY	EW	0.6	0.2	0.6	0.5	0.4	0.1	0.3	0.3
VB	INDIAN RIVER RD	MILITARY HWY	PROVIDENCE RD	EW	0.2	0.6	0.2	0.4	0.4	1.1	0.3	0.7
VB	INDIAN RIVER RD	PROVIDENCE RD	I-64	EW	0.3	0.4	1.1	0.7	0.3	0.8	1.3	1.5
VB	INDIAN RIVER RD	I-64	CENTERVILLE TNPK	EW	0.3	0.2	0.9	0.4	0.9	0.3	2.4	0.5
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	EW	0.4	0.6	1.7	0.4	0.5	0.8	2.2	0.5
VB	INDIAN RIVER RD	KEMPSVILLE RD	FERRELL PKWY	EW	0.0	0.8	0.0	0.7	0.1	2.2	0.2	1.7
VB	INDIAN RIVER RD	FERRELL PKWY	INDIAN LAKES BLVD	EW	0.1	0.2	0.1	0.3	0.2	0.5	0.1	0.5
VB	INDIAN RIVER RD	INDIAN LAKES BLVD	LYNNHAVEN PKWY	EW	0.1	0.1	0.1	0.1	0.4	0.2	0.3	0.2

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Dir	Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	INDIAN RIVER RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	0.2	0.3	0.1	0.3	0.1	0.2	0.0	0.1
VB	INDIAN RIVER RD	INDEPENDENCE BLVD	ELBOW RD	EW	0.2	0.3	0.1	0.3	0.1	0.2	0.0	0.1
VB	INDIAN RIVER RD	ELBOW RD	S.E. PARKWAY	EW	0.4	0.6	0.3	0.5	0.1	0.2	0.1	0.1
VB	INDIAN RIVER RD	S.E. PARKWAY	NORTH LANDING RD	EW	0.4	0.6	0.3	0.5	0.1	0.2	0.1	0.1
VB	INDIAN RIVER RD	NORTH LANDING RD	WEST NECK RD	EW	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
VB	INDIAN RIVER RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
VB	KEMPSVILLE RD	CHESAPEAKE CL	CENTERVILLE TNPK	EW	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.2
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	EW	1.0	0.9	0.9	0.5	0.7	0.6	0.6	0.3
VB	KEMPSVILLE RD	INDIAN RIVER RD	PROVIDENCE RD	EW	0.4	0.3	0.6	1.3	0.3	0.2	0.5	1.0
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	EW	1.0	0.7	0.8	0.8	1.0	0.8	0.8	0.8
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	EW	0.3	0.2	0.7	0.6	0.3	0.1	0.6	0.4
VB	LASKIN RD	FIRST COLONIAL RD	WINWOOD DR	EW	0.3	0.3	0.3	0.6	0.2	0.2	0.2	0.4
VB	LASKIN RD	WINWOOD DR	BIRDNECK RD	EW	0.3	0.3	0.3	0.6	0.2	0.2	0.2	0.4
VB	LASKIN RD	BIRDNECK RD	30TH ST	EW	0.2	0.3	0.3	0.4	0.2	0.3	0.4	0.4
VB	LASKIN RD	30TH ST	PACIFIC AVE	EW	0.2	0.3	0.3	0.4	0.2	0.3	0.4	0.4
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	NS	0.6	0.6	1.0	0.9	0.2	0.2	0.3	0.2
VB	LONDON BRIDGE RD	DAM NECK RD	DRAKESMILE RD	NS	0.6	0.6	1.0	0.9	0.2	0.2	0.3	0.2
VB	LONDON BRIDGE RD	POTTERS RD	I-264	NS	0.4	0.3	0.5	0.2	1.1	0.8	1.5	0.7
VB	LONDON BRIDGE RD	I-264	VA BEACH BLVD	NS	0.4	0.3	0.5	0.2	1.1	0.8	1.5	0.7
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	EW	0.7	0.4	0.4	0.5	0.3	0.2	0.2	0.2
VB	LYNNHAVEN PKWY	SALEM RD	PRINCESS ANNE RD	EW	0.2	0.3	0.2	0.2	0.5	0.7	0.4	0.5
VB	LYNNHAVEN PKWY	PRINCESS ANNE RD	INDEPENDENCE BLVD	EW	0.6	0.5	0.6	1.2	0.3	0.3	0.3	0.6
VB	LYNNHAVEN PKWY	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.6	0.5	0.6	1.2	0.3	0.3	0.3	0.6
VB	LYNNHAVEN PKWY	ROSEMONT RD	HOLLAND RD	EW	0.6	0.5	0.6	1.2	0.3	0.3	0.3	0.6
VB	LYNNHAVEN PKWY	HOLLAND RD	S LYNNHAVEN RD	EW	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.4
VB	LYNNHAVEN PKWY	S LYNNHAVEN RD	INTERNATIONAL PKWY	NS	0.5	0.5	1.3	0.9	0.3	0.3	0.7	0.4
VB	LYNNHAVEN PKWY	INTERNATIONAL PKWY	POTTERS RD	NS	0.5	0.5	1.3	0.9	0.3	0.3	0.7	0.4
VB	LYNNHAVEN PKWY	POTTERS RD	I-264	NS	0.5	0.5	1.3	0.9	0.3	0.3	0.7	0.4
VB	LYNNHAVEN PKWY	I-264	VA BEACH BLVD	NS	0.2	0.2	0.2	0.1	0.6	0.6	0.6	0.4
VB	MILITARY HWY	CHESAPEAKE CL	PROVIDENCE RD	NS	0.7	0.8	1.0	1.3	0.4	0.4	0.6	0.7
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	NS	0.4	0.2	0.8	0.2	0.9	0.5	1.5	0.5
VB	MILITARY HWY	INDIAN RIVER RD	NORFOLK CL	NS	0.4	0.6	0.5	0.9	0.2	0.4	0.3	0.5
VB	NEWTOWN RD	NORFOLK CL	BAKER RD	NS	0.3	0.8	0.5	1.0	0.4	0.9	0.6	1.1
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	NS	0.3	0.8	0.5	1.0	0.4	0.9	0.6	1.1
VB	NORTHAMPTON BLVD	WESLEYAN DR/NORFOLK CL	DIAMOND SPRINGS RD	EW	1.0	0.9	0.3	1.0	0.9	0.7	0.3	0.9
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	0.0	0.4	0.0	0.3	0.0	0.2	0.0	0.2
VB	NORTHAMPTON BLVD	INDEPENDENCE BLVD	SHORE DR	EW	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3
VB	NORTH LANDING RD	CHESAPEAKE CL	INDIAN RIVER RD	EW	0.5	0.2	0.3	0.2	0.3	0.1	0.1	0.1
VB	NORTH LANDING RD	INDIAN RIVER RD	SALEM RD	EW	0.8	0.6	0.5	0.6	0.3	0.2	0.2	0.2
VB	NORTH LANDING RD	SALEM RD	WEST NECK RD	EW	0.8	0.6	0.5	0.6	0.3	0.2	0.2	0.2
VB	NORTH LANDING RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.8	0.6	0.5	0.6	0.3	0.2	0.2	0.2
VB	OCEANA BLVD	GENERAL BOOTH BLVD	HARPERS RD/S.E. PARKWAY	NS	0.2	0.2	0.2	0.6	0.2	0.3	0.3	0.9
VB	OCEANA BLVD	HARPERS RD/S.E. PARKWAY	TOMCAT BLVD (NAS MAIN ENT)	NS	0.3	0.2	1.0	0.2	0.1	0.1	0.3	0.1
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	NS	0.3	0.2	1.0	0.2	0.1	0.1	0.3	0.1
VB	PACIFIC AVE	ATLANTIC AVE	LASKIN RD	NS	0.2	0.1	0.3	0.2	0.2	0.2	0.4	0.2
VB	PACIFIC AVE	LASKIN RD	22ND ST	NS	0.2	0.1	0.3	0.3	0.2	0.2	0.5	0.4
VB	PACIFIC AVE	22ND ST	21ST ST	NS	0.0	0.0	0.1	0.0	0.5	0.3	1.0	0.7
VB	PACIFIC AVE	21ST ST	VA BEACH BLVD	NS	0.2	0.1	0.2	0.1	0.7	0.4	0.7	0.5
VB	PACIFIC AVE	VA BEACH BLVD	NORFOLK AVE	NS	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3
VB	PACIFIC AVE	NORFOLK AVE	HARBOUR POINT	NS	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.2	0.1	0.2	0.1	0.6	0.4	0.6	0.4
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	EW	0.4	0.8	1.5	0.9	0.2	0.4	0.7	0.5
VB	PRINCESS ANNE RD	KEMPSVILLE RD	BAXTER RD	EW	0.2	0.4	0.2	0.5	0.4	0.6	0.4	0.8
VB	PRINCESS ANNE RD	BAXTER RD	PROVIDENCE RD	EW	0.7	0.6	0.8	0.9	0.4	0.3	0.5	0.6
VB	PRINCESS ANNE RD	PROVIDENCE RD	FERRELL PKWY	EW	0.3	0.4	0.4	0.4	0.3	0.4	0.3	0.4
VB	PRINCESS ANNE RD	FERRELL PKWY	LYNNHAVEN PKWY	EW	0.3	0.4	0.4	0.4	0.3	0.4	0.3	0.4
VB	PRINCESS ANNE RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	1.3	1.0	0.6	0.7	0.7	0.5	0.3	0.4
VB	PRINCESS ANNE RD	INDEPENDENCE BLVD	DAM NECK RD	EW	1.3	1.0	0.6	0.7	0.7	0.5	0.3	0.4
VB	PRINCESS ANNE RD	DAM NECK RD	S.E. PARKWAY	EW	0.8	0.7	0.9	0.9	0.3	0.3	0.3	0.3
VB	PRINCESS ANNE RD	S.E. PARKWAY	NIMMO PKWY	EW	0.8	0.7	0.9	0.9	0.3	0.3	0.3	0.3
VB	PRINCESS ANNE RD	NIMMO PKWY	NORTH LANDING RD	EW	0.8	0.7	0.9	0.9	0.3	0.3	0.3	0.3
VB	PRINCESS ANNE RD	NORTH LANDING RD	HOLLAND RD	EW	0.6	0.9	1.9	1.4	0.3	0.4	0.9	0.6
VB	PRINCESS ANNE RD	HOLLAND RD	SEABOARD RD	EW	0.6	0.9	1.9	1.4	0.3	0.4	0.9	0.6
VB	PRINCESS ANNE RD	SEABOARD RD	GENERAL BOOTH BLVD	EW	0.6	0.9	1.9	1.4	0.3	0.4	0.9	0.6
VB	PRINCESS ANNE RD	GENERAL BOOTH BLVD	SANDBRIDGE RD/UPTON DR	NS	0.3	0.3	0.3	0.2	0.4	0.3	0.4	0.3
VB	PRINCESS ANNE RD	SANDBRIDGE RD/UPTON DR	SEABOARD RD	NS	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1
VB	PRINCESS ANNE RD	SEABOARD RD	INDIAN RIVER RD	NS	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	NS	3.4	2.5	4.3	1.2	0.3	0.2	0.3	0.1
VB	PRINCESS ANNE RD	PUNGO FERRY RD	NORTH CAROLINA STATE LINE	NS	3.4	2.5	4.3	1.2	0.3	0.2	0.3	0.1
VB	ROSEMONT RD	LYNNHAVEN PKWY	HOLLAND RD	NS	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	NS	1.0	0.3	1.1	0.9	0.6	0.2	0.6	0.6
VB	ROSEMONT RD	PLAZA TRAIL	I-264	NS	1.0	0.3	1.1	0.9	0.6	0.2	0.6	0.6
VB	ROSEMONT RD	I-264	VA BEACH BLVD	NS	0.1	0.1	0.1	0.2	1.1	0.4	1.0	0.8
VB	SHORE DRIVE	NORFOLK CL	DIAMOND SPRINGS RD	EW	0.2	0.2	0.6	0.3	0.2	0.2	0.5	0.2
VB	SHORE DRIVE	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	1.2	0.6	0.5	0.5	0.7	0.3	0.3	0.3
VB	SHORE DRIVE	INDEPENDENCE BLVD	PLEASURE HOUSE RD	EW	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3
VB	SHORE DRIVE	PLEASURE HOUSE RD	NORTHAMPTON BLVD	EW	0.2	0.2	0.2	0.2	0.5	0.6	0.5	0.6
VB	SHORE DRIVE	NORTHAMPTON BLVD	GREAT NECK RD	EW	0.9	0.7	1.3	0.6	0.3	0.2	0.4	0.2
VB	SHORE DRIVE	GREAT NECK RD	ATLANTIC AVE	EW	0.5	1.2	0.3	0.8	0.1	0.3	0.1	0.2
VB	VA BEACH BLVD	NEWTOWN RD/NORFOLK CL	WITCHDUCK RD	EW	0.3	0.7	0.5	0.4	0.3	0.5	0.4	0.3
VB	VA BEACH BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.4	0.2	1.0	0.5	0.4	0.2	0.9	0.4
VB	VA BEACH BLVD	INDEPENDENCE BLVD	CONSTITUTION DR	EW	0.7	0.6	1.4	1.5	0.3	0.3	0.6	0.7
VB	VA BEACH BLVD	CONSTITUTION DR	ROSEMONT RD	EW	0.7	0.6	1.4	1.5	0.3	0.3	0.6	0.7
VB	VA BEACH BLVD	ROSEMONT RD	S. PLAZA TRAIL/LITTLE NECK RD	EW	0.6	0.6	0.9	1.2	0.3	0.3	0.5	0.6
VB	VA BEACH BLVD	S. PLAZA TRAIL/LITTLE NECK RD	LYNNHAVEN PKWY	EW	0.6	0.6	0.9	1.2	0.3	0.3	0.5	0.6
VB	VA BEACH BLVD	LYNNHAVEN PKWY	GREAT NECK RD	EW	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.7
VB	VA BEACH BLVD	GREAT NECK RD	LASKIN RD	EW	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.7
VB	VA BEACH BLVD	LASKIN RD	FIRST COLONIAL RD	EW	0.3	0.0	0.5	0.3	0.3	0.0	0.6	0.2
VB	VA BEACH BLVD	FIRST COLONIAL RD	N OCEANA BLVD	EW	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.4
VB	VA BEACH BLVD	N OCEANA BLVD	BIRDNECK RD	EW	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.4
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	EW	0.7	0.4	0.7	0.8	0.6	0.3	0.6	0.6
VB	WITCHDUCK RD	PRINCESS ANNE RD	I-264	NS	1.2	0.5	1.2	1.1	1.4	0.6	1.4	1.3
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	NS	0.8	0.5	0.9	0.9	1.6	1.0	1.9	1.8
VB	WITCHDUCK RD	VA BEACH BLVD	PEMBROKE BLVD	NS	0.6	0.4	0.7	0.6	0.4	0.3	0.4	0.3
WMB	BYPASS RD	RICHMOND RD	YORK CL	EW	0.1	0.5	0.3	0.9	0.1	0.3	0.2	0.6
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
WMB	FRANCIS ST	BOUNDARY ST	HENRY ST	EW	0.2	0.3	0.2	0.4	0.3	0.5	0.5	0.7
WMB	HENRY ST S.	ROUTE 199	FRANCIS ST	NS	0.3	0.7	0.6	0.7	0.2	0.4	0.3	0.4
WMB	HENRY ST	FRANCIS ST	LAFAYETTE ST	NS	0.2	0.1	0.5	0.3	0.6	0.4	1.2	0.7
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	NS	0.2	0.1	0.2	0.2	0.3	0.2	0.4	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
WMB	JAMESTOWN RD	JAMES CITY CL	RTE 199	EW	0.3	0.5	0.3	0.3	0.1	0.2	0.1	0.1
WMB	JAMESTOWN RD	RTE 199	JOHN TYLER LN	EW	0.1	0.2	0.1	0.2	0.4	0.7	0.5	0.8
WMB	JAMESTOWN RD	JOHN TYLER LN	COLLEGE CREEK	EW	0.4	0.3	0.4	0.4	0.3	0.2	0.3	0.3
WMB	JAMESTOWN RD	COLLEGE CREEK	BOUNDARY ST	EW	0.4	0.3	0.4	0.4	0.3	0.2	0.3	0.3
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	NS	0.2	0.2	0.3	0.3	0.2	0.5	0.3	0.6
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	NS	0.1	0.4	0.1	0.6	0.1	0.3	0.1	0.4
WMB	PAGE ST	BYPASS RD	SECOND ST	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
WMB	PAGE ST	SECOND ST	YORK ST	NS	0.3	0.3	0.3	0.4	0.1	0.1	0.1	0.2
WMB	RICHMOND RD	JAMES CITY CL	IRONBOUND RD	NS	0.2	0.2	0.4	0.3	0.1	0.1	0.3	0.2
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	NS	0.5	0.1	0.9	0.3	0.3	0.1	0.6	0.2
WMB	ROUTE 132	ROUTE 132Y	BYPASS RD/YORK CL	NS	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3
WMB	ROUTE 199	JAMES CITY CL (WEST)	JAMESTOWN RD	EW	0.3	0.2	1.1	0.4	0.6	0.4	1.9	0.7
WMB	ROUTE 199	JAMESTOWN RD	JAMES CITY CL (EAST)	EW	0.5	0.7	0.8	1.1	0.2	0.2	0.3	0.4
WMB	YORK ST	PAGE ST	JAMES CITY CL	EW	0.3	0.3	0.4	0.3	0.1	0.1	0.2	0.1
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	NS	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3
YC	BIG BETHEL RD	HAMPTON HWY (RTE 134)	VICTORY BLVD (RTE 171)	NS	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.4
YC	BYPASS RD	WILLIAMSBURG CL	WALLER MILL RD	EW	0.1	0.5	0.3	0.9	0.1	0.3	0.2	0.6
YC	BYPASS RD	WALLER MILL RD	ROUTE 132/WILLIAMSBURG CL	EW	0.1	0.5	0.3	0.9	0.1	0.3	0.2	0.6
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.8	0.6	1.0	0.5	0.2	0.2	0.3	0.1
YC	FORT EUSTIS BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.2	0.9	0.3	0.4	0.0	0.3	0.1	0.1
YC	GEORGE WASHINGTON HWY	NEWPORT NEWS CL	VICTORY BLVD (RTE 171)	NS	0.5	0.5	0.9	0.4	0.3	0.4	0.6	0.3
YC	GEORGE WASHINGTON HWY	VICTORY BLVD (RTE 171)	HAMPTON HWY (RTE 134)	NS	0.1	0.4	0.4	0.5	0.2	0.5	0.8	0.7
YC	GEORGE WASHINGTON HWY	HAMPTON HWY (RTE 134)	DARE RD	NS	1.5	1.6	2.8	1.4	0.4	0.4	0.8	0.4
YC	GEORGE WASHINGTON HWY	DARE RD	DENBIGH BLVD (RTE 173)	NS	1.5	1.6	2.8	1.4	0.4	0.4	0.8	0.4
YC	GEORGE WASHINGTON HWY	DENBIGH BLVD (RTE 173)	FORT EUSTIS BLVD (RTE 105)	NS	1.0	1.4	1.6	1.4	0.2	0.3	0.4	0.3
YC	GEORGE WASHINGTON HWY	FORT EUSTIS BLVD (RTE 105)	COOK RD	NS	1.0	1.4	1.6	1.4	0.2	0.3	0.4	0.3
YC	GEORGE WASHINGTON HWY	COOK RD	GOOSLEY RD (RTE 238)	NS	1.0	1.4	1.6	1.4	0.2	0.3	0.4	0.3
YC	GEORGE WASHINGTON HWY	GOOSLEY RD (RTE 238)	GLOUCESTER CL (COLEMAN BRIDGE)	NS	1.0	1.1	1.8	1.6	0.1	0.1	0.2	0.2
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	EW	0.3	0.5	0.3	0.5	0.3	0.4	0.3	0.4
YC	HAMPTON HWY	ROUTE 17	VICTORY BLVD (RTE 171)	NS	0.1	0.3	0.4	0.3	0.2	0.5	0.7	0.6
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	NS	0.3	0.7	0.4	0.7	0.2	0.4	0.3	0.4
YC	HAMPTON HWY	BIG BETHEL RD (RTE 600)	NCL HAMPTON	NS	0.4	0.7	0.6	0.4	0.2	0.4	0.3	0.2
YC	I-64	JAMES CITY CL	RTE 199/646	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	I-64	RTE 199/646	RTE 143	EW	0.0	0.0	0.1	0.4	0.0	0.0	0.0	0.1
YC	I-64	RTE 143	RTE 199 (EAST OF WILLIAMSBURG)	EW	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
YC	I-64	RTE 199 (EAST OF WILLIAMSBURG)	GROVE CONNECTOR	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
YC	I-64	GROVE CONNECTOR	JAMES CITY CL	EW	0.1	0.0	0.3	0.1	0.0	0.0	0.1	0.0
YC	MERRIMAC TRAIL	JAMES CITY CL	BUSCH GARDENS INTERCHANGE	NS	0.4	0.2	0.5	0.0	0.1	0.1	0.2	0.0
YC	MERRIMAC TRAIL	BUSCH GARDENS INTERCHANGE	ROUTE 199/JAMES CITY CL	NS	0.1	0.0	0.2	0.0	0.1	0.0	0.1	0.0
YC	MERRIMAC TRAIL	PENNIMAN RD/JAMES CITY CL	SECOND ST	NS	0.1	0.1	0.3	0.2	0.3	0.3	0.5	0.5
YC	MERRIMAC TRAIL	SECOND ST	SCL WILLIAMSBURG	NS	0.2	0.2	0.3	0.3	0.2	0.5	0.3	0.6
YC	MERRIMAC TRAIL	NCL WILLIAMSBURG	ROUTE 132	NS	0.1	0.4	0.1	0.6	0.1	0.3	0.1	0.4
YC	ROUTE 143	ROUTE 132	I-64	NS	0.5	0.4	0.6	0.4	0.3	0.3	0.4	0.4
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	EW	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1
YC	POCAHONTAS TRAIL	JCC LINE @ RTE 199	KINGSMILL RD	EW	0.5	0.3	0.6	0.5	0.3	0.2	0.3	0.2
YC	POCAHONTAS TRAIL	KINGSMILL RD	BUSCH GARDENS INTERCHANGE	EW	0.5	0.3	0.6	0.5	0.3	0.2	0.3	0.2
YC	POCAHONTAS TRAIL	BUSCH GARDENS INTERCHANGE	JAMES CITY CL	EW	0.8	1.1	1.0	0.8	0.2	0.2	0.2	0.1
YC	ROUTE 132	BYPASS RD/WILLIAMSBURG CL	ROUTE 143	NS	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1
YC	ROUTE 199	JCC LINE (WESTSIDE)	MOORETOWN RD	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
YC	ROUTE 199	MOORETOWN RD	I-64	EW	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Average Truck Delay (minutes)				Average Truck Delay per mile (min/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1
YC	VICTORY BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.4	0.4	0.9	0.5	0.3	0.2	0.9	0.3
YC	VICTORY BLVD	ROUTE 17	HAMPTON HWY (RTE 134)	EW	0.1	0.1	0.3	0.3	0.4	0.3	0.8	0.7
YC	VICTORY BLVD	HAMPTON HWY (RTE 134)	BIG BETHEL RD (RTE 600)	EW	0.1	0.3	0.9	0.3	0.1	0.3	0.9	0.3
YC	VICTORY BLVD	BIG BETHEL RD (RTE 600)	CARYS CHAPEL RD (RTE 782)	EW	0.5	1.1	1.1	0.9	0.2	0.5	0.5	0.4
YC	VICTORY BLVD	CARYS CHAPEL RD (RTE 782)	POQUOSON CL	EW	0.5	1.1	1.1	0.9	0.2	0.5	0.5	0.4

Appendix E (continued) – Average Truck Delays by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	22ND ST	LIBERTY ST	BERKLEY AVE/NORFOLK CL	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
CHES	AIRLINE BLVD	I-664	JOLLIFF RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
CHES	AIRLINE BLVD	JOLLIFF RD	PORTSMOUTH CL	EW	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
CHES	BAINBRIDGE BLVD	MILITARY HWY	FREEMAN AVE	NS	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
CHES	BAINBRIDGE BLVD	FREEMAN AVE	SWAIN AVE	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CHES	BAINBRIDGE BLVD	SWAIN AVE	CHESAPEAKE DR	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	BALLAHACK RD	NS	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0
CHES	BATTLEFIELD BLVD	BALLAHACK RD	GALLBUSH RD	NS	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1
CHES	BATTLEFIELD BLVD	GALLBUSH RD	INDIAN CREEK RD	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
CHES	BATTLEFIELD BLVD	INDIAN CREEK RD	CENTERVILLE TNPK	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CHES	BATTLEFIELD BLVD	CENTERVILLE TNPK	HILLCREST PKWY	NS	0.6	0.4	0.4	0.3	0.3	0.2	0.2	0.2
CHES	BATTLEFIELD BLVD	HILLCREST PKWY	PEACEFUL RD/HILLWELL RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	BATTLEFIELD BLVD	PEACEFUL RD/HILLWELL RD	HANBURY RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	BATTLEFIELD BLVD	HANBURY RD	JOHNSTOWN RD	NS	0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.1
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	NS	0.0	0.1	0.0	0.2	0.0	0.3	0.0	0.5
CHES	BATTLEFIELD BLVD	CEDAR RD	GREAT BRIDGE BLVD/KEMPSVILLE RD	NS	0.5	0.2	0.5	1.2	0.4	0.2	0.4	1.0
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BLVD/KEMPSVILLE RD	GREAT BRIDGE BYPASS	NS	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.5
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BYPASS	VOLVO PKWY	NS	0.5	0.5	0.7	1.2	0.2	0.2	0.3	0.6
CHES	BATTLEFIELD BLVD	VOLVO PKWY	I-64	NS	0.2	0.5	0.2	0.9	0.3	0.7	0.2	1.4
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	NS	0.3	0.4	0.4	0.8	0.4	0.5	0.6	1.0
CHES	BATTLEFIELD BLVD	MILITARY HWY	CAMPOSTELLA RD	NS	0.0	0.2	0.2	0.4	0.0	0.4	0.4	0.6
CHES	BRIDGE RD	SUFFOLK CL	CHURCHLAND BLVD	EW	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
CHES	BUTTS STATION RD	KEMPSVILLE RD	ELBOW RD	EW	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1
CHES	BUTTS STATION RD	ELBOW RD	CENTERVILLE TNPK	EW	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.1
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	NS	0.3	0.2	0.2	0.1	0.3	0.2	0.2	0.1
CHES	CEDAR RD	DOMINION BLVD	BELLS MILL RD (WEST)	EW	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1
CHES	CEDAR RD	BELLS MILL RD (WEST)	BELLS MILL RD (EAST)	EW	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1
CHES	CEDAR RD	BELLS MILL RD (EAST)	BRIARFIELD DR	EW	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
CHES	CEDAR RD	BRIARFIELD DR	BATTLEFIELD BLVD	EW	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
CHES	CHESAPEAKE EXPWY	GALLBUSH RD	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (NEAR INDIAN CREEK)	HILLCREST PKWY	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	HILLCREST PKWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	NS	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (S OF GREAT BRIDGE)	HANBURY RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	HANBURY RD	MT PLEASANT RD	NS	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0
CHES	CHESAPEAKE EXPWY	MT PLEASANT RD	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	NS	0.4	0.1	0.1	0.2	0.2	0.0	0.0	0.1
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (N OF GREAT BRIDGE)	DOMINION BLVD	NS	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.1
CHES	CHESAPEAKE EXPWY	DOMINION BLVD	I-64	NS	0.5	0.0	0.0	0.4	0.8	0.0	0.0	0.7
CHES	DOCK LANDING RD	JOLLIFF RD	I-664	EW	0.0	-	0.0	-	0.0	-	0.0	-
CHES	DOCK LANDING RD	I-664	EAGLE HILL DR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	DOMINION BLVD	GEORGE WASHINGTON HWY	CEDAR RD	NS	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
CHES	DOMINION BLVD/STEEL BRIDGE	CEDAR RD	BAINBRIDGE BLVD	NS	0.4	0.6	0.1	0.9	0.4	0.7	0.1	1.0
CHES	DOMINION BLVD	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	NS	0.7	1.1	0.2	1.6	0.4	0.7	0.2	1.0
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	NS	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
CHES	GEORGE WASHINGTON HWY	DOMINION BLVD	GW HWY RELOCATED	NS	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
CHES	GEORGE WASHINGTON HWY	GW HWY RELOCATED	MOSES GRANDY TR @ HINTON AVE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	GW HWY (DEEP CREEK BRIDGE)	MOSES GRANDY TR @ HINTON AVE	MILL CREEK PKWY	NS	0.0	0.0	0.0	0.1	0.2	0.4	0.1	1.0
CHES	GEORGE WASHINGTON HWY	MILL CREEK PKWY	WILLOWOOD DR	NS	0.2	0.3	0.0	0.7	0.2	0.4	0.1	0.8
CHES	GEORGE WASHINGTON HWY	WILLOWOOD DR	I-64	NS	0.1	0.1	0.0	0.3	0.2	0.4	0.1	0.8

Appendix F – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	GEORGE WASHINGTON HWY	I-64	MILITARY HWY	NS	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	NS	0.3	0.2	0.2	0.6	0.3	0.2	0.2	0.6
CHES	GEORGE WASHINGTON HWY	CANAL DR	PORTSMOUTH CL	NS	0.3	0.3	0.4	0.3	0.5	0.5	0.6	0.6
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.2
CHES	GREAT BRIDGE BLVD	CAMPOSTELLA RD	I-64	EW	0.1	0.1	0.0	0.1	0.3	0.3	0.1	0.3
CHES	GREAT BRIDGE BLVD	I-64	DOMINION BLVD	EW	0.2	0.2	0.1	0.2	0.7	0.9	0.2	0.8
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	RIVERWALK PKWY WEST	EW	0.1	0.1	0.0	0.0	0.2	0.2	0.1	0.1
CHES	GREAT BRIDGE BLVD	RIVERWALK PKWY WEST	BATTLEFIELD BLVD	EW	0.3	0.3	0.1	0.2	0.2	0.2	0.1	0.1
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	NS	0.5	0.2	0.5	0.7	0.3	0.1	0.3	0.4
CHES	GREENBRIER PKWY	VOLVO PKWY	EDEN WAY	NS	0.2	0.1	0.3	0.5	0.5	0.2	0.7	1.3
CHES	GREENBRIER PKWY	EDEN WAY	I-64	NS	0.6	0.2	0.9	1.7	0.9	0.3	1.3	2.4
CHES	GREENBRIER PKWY	I-64	WOODLAKE DR	NS	0.7	0.1	0.7	0.6	1.4	0.2	1.4	1.2
CHES	GREENBRIER PKWY	WOODLAKE DR	MILITARY HWY	NS	0.2	0.0	0.2	0.2	0.8	0.1	0.8	0.6
CHES	I-64	CITY LINE RD/VA BEACH CL	GREENBRIER PKWY	EW	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EW	0.2	0.3	3.8	0.1	0.1	0.2	2.6	0.1
CHES	I-64	BATTLEFIELD BLVD	I-464	EW	0.4	0.0	5.9	0.0	0.4	0.0	5.5	0.0
CHES	I-64	I-464	GEORGE WASHINGTON HWY	EW	1.8	3.1	11.3	4.2	0.4	0.7	2.6	1.0
CHES	I-64	GEORGE WASHINGTON HWY	MILITARY HWY	EW	0.5	9.2	1.5	5.2	0.3	6.0	1.0	3.4
CHES	I-64	MILITARY HWY	I-264&664	EW	0.7	4.9	3.5	6.8	0.3	2.1	1.5	2.9
CHES	I-264	I-64&664	WCL PORTSMOUTH	EW	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1
CHES	I-464	I-64	MILITARY HWY	NS	0.1	0.2	0.1	0.3	0.1	0.2	0.1	0.3
CHES	I-464	MILITARY HWY	FREEMAN AVE	NS	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
CHES	I-464	FREEMAN AVE	POINDEXTER ST	NS	0.8	0.2	0.1	0.0	0.4	0.1	0.0	0.0
CHES	I-464	POINDEXTER ST	NORFOLK CL	NS	1.7	0.1	0.1	0.0	2.3	0.1	0.1	0.0
CHES	I-664	I-64 & I-264	ROUTES 13/58/460	EW	0.3	1.1	0.8	6.2	0.2	0.7	0.5	3.6
CHES	I-664	ROUTES 13/58/460	DOCK LANDING RD	EW	0.3	0.4	0.4	0.9	0.2	0.3	0.3	0.7
CHES	I-664	DOCK LANDING RD	PORTSMOUTH BLVD	EW	0.3	0.5	0.4	0.1	0.2	0.4	0.3	0.1
CHES	I-664	PORTSMOUTH BLVD	PUGHSVILLE RD	EW	0.5	1.1	1.7	0.1	0.2	0.6	0.8	0.1
CHES	I-664	PUGHSVILLE RD	SUFFOLK CL	EW	0.2	0.6	1.9	0.1	0.2	0.7	2.2	0.1
CHES	INDIAN RIVER RD	NORFOLK CL	KEMP LANE	EW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
CHES	INDIAN RIVER RD	KEMP LANE	VA BEACH CL	EW	0.2	0.0	0.2	0.2	0.1	0.0	0.2	0.2
CHES	KEMPSVILLE RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.1	0.1	0.0	0.1	0.3	0.6	0.2	0.4
CHES	KEMPSVILLE RD	CHESAPEAKE EXPRESSWAY	GREENBRIER PKWY	EW	0.3	0.6	0.2	0.4	0.3	0.6	0.2	0.4
CHES	KEMPSVILLE RD	GREENBRIER PKWY	VOLVO PKWY	EW	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0
CHES	KEMPSVILLE RD	VOLVO PKWY	VA BEACH CL	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
CHES	LIBERTY ST	22ND ST	POINDEXTER RD	EW	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1
CHES	MILITARY HWY	AIRLINE BLVD	I-64	EW	0.6	0.5	0.6	0.7	0.2	0.1	0.2	0.2
CHES	MILITARY HWY	I-64	CAVALIER BLVD	EW	0.2	0.1	0.1	0.1	0.7	0.5	0.5	0.3
CHES	MILITARY HWY	CAVALIER BLVD	GEORGE WASHINGTON HWY	EW	0.7	0.2	0.4	0.4	0.7	0.2	0.4	0.5
CHES	MILITARY HWY	GEORGE WASHINGTON HWY	CANAL DR	EW	0.3	0.2	0.2	0.5	0.3	0.2	0.2	0.5
CHES	MILITARY HWY/GILMERTON BRIDGE	CANAL DR	BAINBRIDGE BLVD	EW	0.5	0.3	0.9	1.6	0.2	0.2	0.4	0.7
CHES	MILITARY HWY	BAINBRIDGE BLVD	I-464	EW	0.4	0.1	0.3	0.5	0.9	0.2	0.6	1.1
CHES	MILITARY HWY	I-464	CAMPOSTELLA RD	EW	0.5	0.3	0.3	0.6	0.8	0.5	0.5	0.9
CHES	MILITARY HWY	CAMPOSTELLA RD	BATTLEFIELD BLVD	EW	0.0	0.2	0.0	0.5	0.1	0.4	0.0	0.8
CHES	MILITARY HWY	BATTLEFIELD BLVD	ALLISON DR	EW	0.2	0.1	0.2	0.3	0.3	0.2	0.4	0.5
CHES	MILITARY HWY	ALLISON DR	GREENBRIER PKWY	EW	0.1	0.1	0.2	0.3	0.3	0.2	0.4	0.5
CHES	MILITARY HWY	GREENBRIER PKWY	VA BEACH CL	EW	0.6	0.4	0.8	1.2	0.3	0.3	0.5	0.7
CHES	MOSES GRANDY TRAIL	GW HWY @ HINTON AVE	SHIPYARD/CEDAR RD/GW HWY RELOC	EW	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.1
CHES	MOSES GRANDY TRAIL	SHIPYARD RD/CEDAR RD	CEDAR RD	EW	0.2	0.5	0.0	0.1	0.1	0.2	0.0	0.1
CHES	MOUNT PLEASANT RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.2	0.1	0.2	0.3	0.3	0.2	0.2	0.4

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	EW	0.5	1.0	0.9	0.4	0.2	0.4	0.4	0.2
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	EW	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0
CHES	MOUNT PLEASANT RD	FENTRESS AIRFIELD RD	VA BEACH CL	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0
CHES	OLD BATTLEFIELD BLVD	BALLAHACK RD	BATTLEFIELD BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
CHES	PORTSMOUTH BLVD	SUFFOLK CL	JOLLIFF RD	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
CHES	PORTSMOUTH BLVD	JOLLIFF RD	I-664	EW	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	EW	0.2	0.1	0.3	0.2	0.2	0.1	0.2	0.1
CHES	PORTSMOUTH BLVD	TAYLOR RD	DOCK LANDING RD	EW	0.0	0.0	0.1	0.0	0.2	0.1	0.2	0.2
CHES	PORTSMOUTH BLVD	DOCK LANDING RD	PORTSMOUTH CL	EW	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
CHES	PUGHSVILLE RD	SUFFOLK CL	I-664	EW	0.3	0.1	0.2	0.1	0.5	0.2	0.3	0.2
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	EW	0.1	0.1	0.2	0.0	0.2	0.1	0.6	0.1
CHES	ROUTE 13/58/460	SUFFOLK CL	I-664	EW	0.4	0.2	0.2	0.0	0.1	0.1	0.1	0.0
CHES	TAYLOR RD	PORTSMOUTH BLVD	ELIZABETH HARBOR RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
CHES	TAYLOR RD	ELIZABETH HARBOR RD	BRUCE RD	NS	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
CHES	TAYLOR RD	BRUCE RD	PUGHSVILLE RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
CHES	TAYLOR RD	PUGHSVILLE RD	WESTERN BRANCH BLVD	NS	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
CHES	TOWN POINT RD	PORTSMOUTH CL	CHURCHLAND BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	EW	0.4	0.8	1.0	0.8	0.3	0.5	0.7	0.6
CHES	VOLVO PKWY	GREENBRIER PKWY	EDEN WAY	EW	0.1	0.2	0.2	0.1	0.1	0.5	0.3	0.3
CHES	VOLVO PKWY	EDEN WAY	KEMPSVILLE RD	EW	0.1	0.5	0.4	0.3	0.1	0.5	0.4	0.3
CHES	VOLVO PKWY	KEMPSVILLE RD	VA BEACH CL	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
CHES	WESTERN BRANCH BLVD	CHURCHLAND BLVD	TAYLOR RD	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
CHES	WESTERN BRANCH BLVD	TAYLOR RD	PORTSMOUTH CL	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
FR	MAIN ST	SOUTH ST	SECOND AVE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FR	SECOND AVE	MAIN ST	MECHANIC ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FR	SECOND AVE	MECHANIC ST	ISLE OF WIGHT CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FR	SOUTH ST	ROUTE 58	COLLEGE DR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FR	SOUTH ST	COLLEGE DR	PRETLOW ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
FR	SOUTH ST	PRETLOW ST	HIGH ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FR	SOUTH ST	HIGH ST	MAIN ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	NS	0.3	0.4	0.4	0.5	0.1	0.1	0.1	0.2
GLO	RTE 17	RTE 216 (GUINEA RD)	RTE 614 (HICKORY FORK RD)	NS	0.4	0.6	0.7	0.8	0.1	0.1	0.2	0.2
GLO	RTE 17	RTE 614 (HICKORY FORK RD)	RTE 17 BUS S (MAIN ST)	NS	0.4	0.7	1.0	0.8	0.1	0.1	0.2	0.2
GLO	RTE 17	RTE 17 BUS S (MAIN ST)	RTE 17 BUS N (MAIN ST)	NS	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0
GLO	RTE 17	RTE 17 BUS N (MAIN ST)	RTE 606 (ARK RD)	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
GLO	RTE 17	RTE 606 (ARK RD)	ROUTE 14	NS	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
GLO	RTE 17	ROUTE 14	ROUTES 33/198	NS	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
GLO	RTE 17	ROUTES 33/198	MIDDLESEX CL	NS	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
GLO	RTE 33	KING AND QUEEN CL	ROUTE 17	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	ABERDEEN RD	PEMBROKE AVE	I-664	NS	0.0	0.1	0.1	0.1	0.3	0.5	0.4	0.4
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	NS	0.6	0.5	0.5	0.4	0.6	0.5	0.5	0.4
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	ABERDEEN RD	MERCURY BLVD	TODDS LA	NS	0.1	0.0	0.1	0.0	0.3	0.1	0.3	0.1
HAM	ARMISTEAD AVE	COMMANDER SHEPPARD BLVD	HRC PARKWAY	NS	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	NS	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	ARMISTEAD AVE	LA SALLE AVE	RIP RAP RD	NS	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	ARMISTEAD AVE	RIP RAP RD	PEMBROKE AVE	NS	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	BIG BETHEL RD	TODDS LANE	HRC PKWY	NS	0.2	0.1	0.3	0.1	0.2	0.1	0.3	0.1
HAM	BIG BETHEL RD	HRC PKWY	THOMAS NELSON DR	NS	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.2
HAM	BIG BETHEL RD	THOMAS NELSON DR	SAUNDERS RD	NS	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
HAM	BIG BETHEL RD	SAUNDERS RD	SEMPLE FARM RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
HAM	BIG BETHEL RD	SEMPLE FARM RD	YORK CL	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
HAM	BRIARFIELD RD	NEWPORT NEWS CL	ABERDEEN RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	BRIARFIELD RD	ABERDEEN RD	POWER PLANT PKWY	EW	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	COMMANDER SHEPPARD BLVD	ARMISTEAD AVE	NASA MAIN GATE	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
HAM	COMMANDER SHEPPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	COLISEUM DR	PINE CHAPEL RD	MERCURY BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	COLISEUM DR	MERCURY BLVD	MARCELLA DR	NS	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
HAM	COLISEUM DR	MARCELLA DR	HRC PARKWAY	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
HAM	CUNNINGHAM DR	TODDS LA	COLISEUM DR	EW	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
HAM	FOX HILL RD	OLD BUCKROE RD	WOODLAND RD	EW	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	FOX HILL RD	WOODLAND RD	MERCURY BLVD	EW	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
HAM	HRC PARKWAY	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
HAM	HRC PARKWAY	BIG BETHEL RD	I-64	EW	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.2
HAM	HRC PARKWAY	I-64	MAGRUDER BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	HRC PARKWAY	MAGRUDER BLVD	COLISEUM DR	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
HAM	HRC PARKWAY	COLISEUM DR	ARMISTEAD AVE	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
HAM	I-64	NEWPORT NEWS CL	HRC PARKWAY	EW	0.2	0.4	0.1	0.4	0.1	0.2	0.0	0.2
HAM	I-64	HRC PARKWAY	MAGRUDER BLVD	EW	0.0	0.0	0.5	0.2	0.0	0.0	0.6	0.2
HAM	I-64	MAGRUDER BLVD	MERCURY BLVD	EW	0.0	0.1	0.3	0.2	0.0	0.0	0.3	0.2
HAM	I-64	MERCURY BLVD	I-664	EW	0.2	0.1	0.4	0.1	0.2	0.1	0.4	0.1
HAM	I-64	I-664	ARMISTEAD AVE	EW	0.5	0.0	0.7	0.0	0.6	0.0	0.8	0.0
HAM	I-64	ARMISTEAD AVE	RIP RAP RD	EW	0.8	0.0	0.8	0.0	1.8	0.0	1.7	0.0
HAM	I-64	RIP RAP RD	SETTLERS LANDING RD	EW	11.3	0.1	11.7	0.1	7.3	0.1	7.5	0.1
HAM	I-64	SETTLERS LANDING RD	MALLORY ST	EW	3.7	0.0	3.8	0.0	6.9	0.0	7.0	0.1
HAM	I-64/HRBT	MALLORY ST	NORFOLK CL	EW	4.4	1.2	5.0	6.8	1.2	0.3	1.4	1.9
HAM	I-664	NEWPORT NEWS CL	ABERDEEN RD	EW	0.0	0.0	0.2	0.1	0.1	0.0	0.4	0.1
HAM	I-664	ABERDEEN RD	POWER PLANT PKWY	EW	0.0	0.0	0.5	0.4	0.0	0.0	0.4	0.3
HAM	I-664	POWER PLANT PKWY	I-64	EW	0.0	0.0	0.4	0.7	0.0	0.0	0.3	0.5
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	KECOUGHTAN RD	POWHATAN PKWY	LA SALLE AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	KECOUGHTAN RD	LA SALLE AVE	VICTORIA BLVD	NS	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
HAM	KECOUGHTAN RD	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
HAM	KING ST	PEMBROKE AVE	I-64 OVERPASS	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
HAM	KING ST	I-64 OVERPASS	RIP RAP RD	NS	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
HAM	KING ST	RIP RAP RD	MERCURY BLVD	NS	0.0	0.0	0.1	0.0	0.2	0.1	0.3	0.2
HAM	KING ST	MERCURY BLVD	OLD FOX HILL RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
HAM	KING ST	OLD FOX HILL RD	LITTLE BACK RIVER RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
HAM	KING ST	LITTLE BACK RIVER RD	LAMINGTON RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	KING ST	LAMINGTON RD	OLD BUCKINGHAM RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	KING ST	OLD BUCKINGHAM RD	LANGLEY AFB	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	LA SALLE AVE	KECOUGHTAN RD	VICTORIA BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	LA SALLE AVE	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	LA SALLE AVE	SETTLERS LANDING RD	PEMBROKE AVE	NS	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0
HAM	LA SALLE AVE	PEMBROKE AVE	ARMISTEAD AVE	NS	0.0	0.1	0.1	0.0	0.0	0.2	0.2	0.1
HAM	LA SALLE AVE	ARMISTEAD AVE	MERCURY BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	LA SALLE AVE	MERCURY BLVD	LANGLEY GATE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	MAGRUDER BLVD	YORK CL	SEMPLE FARM RD	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
HAM	MAGRUDER BLVD	SEMPLE FARM RD	COMM SHEPPARD BLVD (SOUTH)	NS	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
HAM	MAGRUDER BLVD	COMM SHEPPARD BLVD (SOUTH)	HRC PARKWAY	NS	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
HAM	MAGRUDER BLVD	HRC PARKWAY	I-64	NS	0.2	0.1	0.2	0.0	0.3	0.1	0.3	0.1
HAM	MALLORY ST	I-64	COUNTY ST	EW	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2
HAM	MALLORY ST	COUNTY ST	MERCURY BLVD	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	EW	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
HAM	MELLEN ST	MERCURY BLVD	MALLORY ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	MERCURY BLVD	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.0	0.2	0.3	0.5	0.0	0.2	0.3	0.4
HAM	MERCURY BLVD	BIG BETHEL RD	ABERDEEN RD	EW	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1
HAM	MERCURY BLVD	ABERDEEN RD	POWER PLANT PKWY	EW	0.2	0.1	0.3	0.1	0.5	0.3	0.6	0.3
HAM	MERCURY BLVD	POWER PLANT PKWY	I-64	EW	0.1	0.5	0.1	0.6	0.2	1.4	0.3	1.7
HAM	MERCURY BLVD	I-64	COLISEUM DR	EW	0.2	0.0	0.3	0.2	0.6	0.1	0.8	0.5
HAM	MERCURY BLVD	COLISEUM DR	CUNNINGHAM DR	EW	0.2	0.0	0.2	0.2	0.5	0.1	0.6	0.4
HAM	MERCURY BLVD	CUNNINGHAM DR	ARMISTEAD AVE	EW	0.1	0.0	0.2	0.1	0.5	0.1	0.7	0.4
HAM	MERCURY BLVD	ARMISTEAD AVE	LA SALLE AVE	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
HAM	MERCURY BLVD	LA SALLE AVE	KING ST	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	MERCURY BLVD	KING ST	FOX HILL RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	MERCURY BLVD	FOX HILL RD	ANDREWS BLVD	EW	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	MERCURY BLVD	ANDREWS BLVD	PEMBROKE AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	MERCURY BLVD	PEMBROKE AVE	WOODLAND RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
HAM	MERCURY BLVD	WOODLAND RD	MALLORY ST	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
HAM	MERCURY BLVD	MALLORY ST	MELLEN ST/INGALLS RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	PEMBROKE AVE	NEWPORT NEWS CL	ABERDEEN RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	PEMBROKE AVE	ABERDEEN RD	POWHATAN PKWY	EW	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	EW	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2
HAM	PEMBROKE AVE	SETTLERS LANDING RD	LA SALLE AVE	EW	0.2	0.0	0.1	0.1	0.9	0.2	0.4	0.3
HAM	PEMBROKE AVE	LA SALLE AVE	ARMISTEAD AVE	EW	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2
HAM	PEMBROKE AVE	ARMISTEAD AVE	KING ST	EW	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.2
HAM	PEMBROKE AVE	KING ST	EATON ST	EW	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2
HAM	PEMBROKE AVE	EATON ST	BARRON ST	EW	0.1	0.0	0.1	0.0	0.2	0.1	0.2	0.1
HAM	PEMBROKE AVE	BARRON ST	MERCURY BLVD	EW	0.1	0.0	0.1	0.0	0.2	0.1	0.2	0.1
HAM	PEMBROKE AVE	MERCURY BLVD	WOODLAND RD	EW	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.2
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	EW	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
HAM	PEMBROKE AVE	OLD BUCKROE RD	MALLORY ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	POWER PLANT PKWY	I-664	BRIARFIELD RD	NS	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	NS	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
HAM	POWHATAN PKWY	PEMBROKE AVE	I-664	NS	0.0	0.1	0.0	0.0	0.2	0.3	0.2	0.2
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	QUEEN ST	MICHIGAN DR	PEMBROKE AVE	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	ROANOKE AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAM	SETTLERS LANDING RD	PEMBROKE AVE	LA SALLE AVE	EW	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.1
HAM	SETTLERS LANDING RD	LA SALLE AVE	KECOUGHTAN RD	EW	0.2	0.0	0.1	0.1	0.3	0.1	0.2	0.1
HAM	SETTLERS LANDING RD	KECOUGHTAN RD	ARMISTEAD AVE	EW	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0
HAM	SETTLERS LANDING RD	ARMISTEAD AVE	EATON ST	EW	0.1	0.0	0.1	0.0	0.2	0.1	0.1	0.1

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	SETTLERS LANDING RD	EATON ST	TYLER ST	EW	0.3	0.0	0.1	0.0	0.4	0.0	0.2	0.0
HAM	SETTLERS LANDING RD	TYLER ST	I-64	EW	0.1	0.0	0.0	0.0	0.5	0.0	0.2	0.0
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HAM	TODDS LA	BIG BETHEL RD	ABERDEEN RD	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
HAM	WOODLAND RD	I-64	COUNTY ST	NS	-	0.0	-	0.0	-	0.0	-	0.0
HAM	WOODLAND RD	MERCURY BLVD	PEMBROKE AVE	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	NS	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0
HAM	WYTHE CREEK RD	COMMANDER SHEPPARD BLVD	POQUOSON CL	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	BENNS CHURCH BLVD	SUFFOLK CL	RIDDICK RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	BENNS CHURCH BLVD	RIDDICK RD	ROUTE 10 & 32 (BREWERS NECK RD)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	BENNS CHURCH BLVD	ROUTE 10 & 32 (BREWERS NECK RD)	ECL SMITHFIELD (RTE 644)	NS	0.2	0.6	0.2	0.5	0.2	0.6	0.2	0.5
IW	BENNS CHURCH BLVD	ECL SMITHFIELD (RTE 644)	CHURCH ST S	NS	0.5	1.0	0.8	1.1	0.5	1.0	0.8	1.1
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	RTE 670	EW	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.1
IW	BREWERS NECK BLVD	RTE 670	ROUTE 17	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
IW	BUS RTE 58/BUS RTE 258	FRANKLIN CL	JAMESTOWN LN (RTE 691)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	BUS RTE 58/BUS RTE 258	JAMESTOWN LN (RTE 691)	ROUTE 258	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	CARROLLTON BLVD	SUFFOLK CL	WEST END CHUCKATUCK BRIDGE	NS	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
IW	CARROLLTON BLVD	WEST END CHUCKATUCK BRIDGE	ROUTE 258	NS	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
IW	CARROLLTON BLVD	ROUTE 258	SMITH'S NECK RD	NS	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.3
IW	CARROLLTON BLVD/JAMES RIVER BR	SMITH'S NECK RD	NEWPORT NEWS CL	NS	1.2	0.6	0.9	1.6	0.2	0.1	0.1	0.3
IW	ROUTE 10 (OLD STAGE HWY)	BUS RTE 10	IW/SURRY CL	NS	0.1	0.2	0.1	0.4	0.0	0.0	0.0	0.1
IW	ROUTE 10 BYPASS	CHURCH ST S	FAIRWAY DR	NS	0.1	0.1	0.1	0.2	0.0	0.0	0.1	0.1
IW	ROUTE 10 BYPASS	FAIRWAY DR	MAIN ST	NS	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
IW	ROUTE 10 BYPASS	MAIN ST	NCL SMITHFIELD	NS	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	NS	0.1	0.3	0.2	0.2	0.0	0.1	0.1	0.1
IW	ROUTE 258	CARRSVILLE HWY (BUS RTE 58)	BURDETTE RD (W RTE 619)	EW	0.3	0.3	0.3	0.2	0.1	0.0	0.1	0.0
IW	ROUTE 258	BURDETTE RD (W RTE 619)	RIVER RUN TRAIL (W RTE 614)	EW	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	EW	0.5	0.4	0.5	0.4	0.1	0.1	0.1	0.1
IW	ROUTE 258	BLACKWATER RD (RTE 603)	WCL WINDSOR	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
IW	ROUTE 258	WCL WINDSOR	ROUTE 460	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
IW	ROUTE 258	ROUTE 460	ECL WINDSOR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	ROUTE 258	ECL WINDSOR	COURT ST NORTH (RTE 610)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IW	ROUTE 258	COURT ST NORTH (RTE 610)	IRON MINE SPRINGS RD (RTE 605)	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
IW	ROUTE 258	IRON MINE SPRINGS RD (RTE 605)	CENTRAL HILL RD (W RTE 637)	EW	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	SCOTTS FACTORY RD (RTE 620)	EW	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0
IW	ROUTE 258	SCOTTS FACTORY RD (RTE 620)	WCL SMITHFIELD	EW	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
IW	ROUTE 258/N MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	EW	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
IW	ROUTE 460	SOUTHAMPTON CL	FIRETOWER RD (RTE 644)	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
IW	ROUTE 460	FIRETOWER RD (RTE 644)	WCL WINDSOR	EW	0.4	0.1	0.2	0.3	0.1	0.0	0.0	0.0
IW	ROUTE 460	WCL WINDSOR	ROUTE 258	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
IW	ROUTE 460	ROUTE 258	COURT ST (RTE 610)	EW	0.8	0.8	0.9	1.1	1.7	1.8	1.9	2.5
IW	ROUTE 460	COURT ST (RTE 610)	ECL WINDSOR	EW	0.1	0.0	0.2	0.1	0.1	0.0	0.2	0.1
IW	ROUTE 460	ECL WINDSOR	SUFFOLK CL	EW	0.3	0.1	0.5	0.2	0.1	0.0	0.2	0.1
JCC	BARHAMSVILLE RD	I-64	ROUTE 60	NS	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1
JCC	I-64	NEW KENT CL	RTE 30	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
JCC	I-64	RTE 30	CROAKER RD (RTE 607)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	I-64	CROAKER RD (RTE 607)	YORK CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	I-64	YORK CL	NEWPORT NEWS CL	EW	0.1	0.0	0.5	0.0	0.0	0.0	0.2	0.0
JCC	IRONBOUND RD/NEWS RD	JOHN TYLER HWY	MONTICELLO AVE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
JCC	IRONBOUND RD/SANDY BAY RD	JAMESTOWN RD	JOHN TYLER HWY	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JAMESTOWN RD	COLONIAL PARKWAY (RTE 359)	SANDY BAY RD (RTE 681)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	NECK-O-LAND RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JAMESTOWN RD	NECK-O-LAND RD	WILLIAMSBURG CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JOHN TYLER HWY	CHARLES CITY CL	MONTICELLO AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JOHN TYLER HWY	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	JOHN TYLER HWY	CENTERVILLE RD (RTE 614)	IRONBOUND RD (RTE 615)	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	STANLEY DR (RTE 712)	EW	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
JCC	JOHN TYLER HWY	STANLEY DR (RTE 712)	ROUTE 199	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
JCC	MERRIMAC TRL	NEWPORT NEWS CL @ I-64	YORK CL (SOUTH OF GROVE INT)	EW	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1
JCC	MERRIMAC TRL	YORK CL @ ROUTE 199	PENNIMAN RD (YORK CL)	EW	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.1
JCC	OLD STAGE RD	NEW KENT CL	BARNES RD (RTE 601 S)	EW	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1
JCC	OLD STAGE RD	BARNES RD (RTE 601 S)	I-64	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	POCAHONTAS TRL	WILLIAMSBURG CL	YORK CL @ 199	EW	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
JCC	POCAHONTAS TRL	YORK CL	BASF RD/ROUTE 60 RELOCATION	EW	0.3	0.4	0.4	0.3	0.1	0.1	0.1	0.1
JCC	POCAHONTAS TRL	BASF RD/ROUTE 60 RELOCATION	NEWPORT NEWS CL	EW	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1
JCC	RICHMOND RD	ROUTE 199	OLDE TOWNE RD (RTE 658)	EW	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.1
JCC	RICHMOND RD	OLDE TOWNE RD (RTE 658)	WILLIAMSBURG CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
JCC	ROCHAMBEAU DR	ROUTE 60	0.7 MI EAST OF ASHINGTON WAY	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
JCC	ROCHAMBEAU DR	0.7 MI EAST OF ASHINGTON WAY	CROAKER RD (RTE 607)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	YORK CL	RICHMOND RD (RTE 60)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	RICHMOND RD (RTE 60)	LONGHILL RD (RTE 612)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 199	MONTICELLO AVE (RTE 321)	JOHN TYLER HWY (RTE 5)	EW	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
JCC	ROUTE 199	JOHN TYLER HWY (RTE 5)	WILLIAMSBURG CL	EW	0.1	0.1	0.3	0.1	0.5	0.4	1.4	0.3
JCC	ROUTE 199	WILLIAMSBURG CL	HENRY ST/COLONIAL PKWY	EW	0.2	0.3	0.4	0.2	0.1	0.2	0.2	0.1
JCC	ROUTE 199	HENRY ST/COLONIAL PKWY	MOUNTS BAY RD/QUARTERPATH RD	EW	0.1	0.3	0.2	0.6	0.1	0.3	0.2	0.5
JCC	ROUTE 199	MOUNTS BAY RD/QUARTERPATH RD	RTE 60/RTE 143/YORK CL	EW	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2
JCC	ROUTE 60	NEW KENT CL	ROUTE 30	EW	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
JCC	ROUTE 60	ROUTE 30	CROAKER RD (RTE 607)	EW	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.0
JCC	ROUTE 60	CROAKER RD (RTE 607)	LIGHTFOOT RD (RTE 646)	EW	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.1
JCC	ROUTE 60	LIGHTFOOT RD (RTE 646)	CENTERVILLE RD (RTE 614)	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
JCC	ROUTE 60	CENTERVILLE RD (RTE 614)	ROUTE 199	EW	0.1	0.1	0.1	0.1	0.4	0.4	0.3	0.4
NN	23RD/25TH CONNECTOR	HUNTINGTON AVE	JEFFERSON AVE	EW	0.0	-	0.0	-	0.1	-	0.1	-
NN	25TH ST	JEFFERSON AVE	26TH ST	EW	0.1	-	0.1	-	0.1	-	0.1	-
NN	25TH ST	26TH ST	HAMPTON CL	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
NN	26TH ST	25TH ST	ROANOKE AVE	EW	-	0.0	-	0.0	-	0.0	-	0.1
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	EW	-	0.0	-	0.0	-	0.0	-	0.0
NN	26TH ST	JEFFERSON AVE	WARWICK BLVD	EW	-	0.1	-	0.1	-	0.2	-	0.2
NN	26TH ST	WARWICK BLVD	HUNTINGTON AVE	EW	-	0.0	-	0.0	-	0.2	-	0.2
NN	39TH ST	HUNTINGTON AVE	MADISON AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
NN	39TH ST	MADISON AVE	HAMPTON CL	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	EW	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1
NN	CHESTNUT AVE	39TH ST	44TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	CHESTNUT AVE	44TH ST	BRIARFIELD RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	CHESTNUT AVE	BRIARFIELD RD	HAMPTON CL	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	DENBIGH BLVD	LUCAS CREEK RD	WARWICK BLVD	EW	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.2
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	EW	0.1	0.2	0.3	0.4	0.1	0.1	0.2	0.4
NN	DENBIGH BLVD	JEFFERSON AVE	YORK CL	EW	0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.0
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	EW	0.5	0.6	2.5	0.1	0.6	0.8	3.1	0.2

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	FORT EUSTIS BLVD	I-64	JEFFERSON AVE	EW	0.1	0.3	0.1	0.1	0.5	1.8	0.8	0.4
NN	FORT EUSTIS BLVD	JEFFERSON AVE	.54 MILES EAST OF RTE 143	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1
NN	FORT EUSTIS BLVD	.54 MILES EAST OF RTE 143	YORK CL	EW	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1
NN	HRC PARKWAY	HARPERSVILLE RD	HAMPTON CL	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
NN	HUNTINGTON AVE	71ST ST	39TH ST	NS	-		-		-		-	
NN	HUNTINGTON AVE	39TH ST	26TH ST	NS	-		-		-		-	
NN	I-64	JAMES CITY CL	RTE 143 (NORTH)	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	EW	0.3	0.1	1.1	0.0	0.3	0.1	1.3	0.1
NN	I-64	YORKTOWN RD	FORT EUSTIS BLVD	EW	0.9	0.2	4.5	0.2	0.4	0.1	1.8	0.1
NN	I-64	FORT EUSTIS BLVD	JEFFERSON AVE	EW	0.1	3.3	1.4	4.2	0.0	0.7	0.3	0.9
NN	I-64	JEFFERSON AVE	OYSTER POINT RD	EW	0.1	0.8	0.1	2.3	0.0	0.5	0.1	1.4
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	EW	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.1
NN	I-64	J C MORRIS BLVD	HAMPTON CL	EW	0.1	0.1	0.0	0.2	0.1	0.2	0.0	0.2
NN	I-664/MMMBT	SUFFOLK CL	TERMINAL AVE	EW	0.0	0.6	1.5	0.4	0.0	0.2	0.5	0.1
NN	I-664	TERMINAL AVE	23RD ST	EW	0.0	0.0	7.1	0.0	0.1	0.1	7.8	0.0
NN	I-664	23RD ST	CHESTNUT AVE	EW	0.1	0.0	10.9	0.0	0.1	0.0	6.4	0.0
NN	I-664	CHESTNUT AVE	HAMPTON CL	EW	0.0	0.0	0.1	0.0	0.1	0.0	0.4	0.1
NN	J CLYDE MORRIS BLVD	JEFFERSON AVE	THIMBLE SHOALS BLVD	NS	0.2	0.3	0.3	0.4	0.3	0.5	0.5	0.5
NN	J CLYDE MORRIS BLVD	THIMBLE SHOALS BLVD	I-64	NS	0.3	0.4	0.4	0.5	0.3	0.5	0.5	0.5
NN	J CLYDE MORRIS BLVD	I-64	HARPERSVILLE RD	NS	0.2	0.2	0.3	0.1	0.3	0.3	0.5	0.2
NN	J CLYDE MORRIS BLVD	HARPERSVILLE RD	YORK CL	NS	0.0	0.0	0.1	0.0	0.2	0.2	0.3	0.2
NN	JEFFERSON AVE	JAMES CITY CL	YORKTOWN RD	NS	0.2	0.1	0.0	0.3	0.2	0.1	0.0	0.3
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1
NN	JEFFERSON AVE	FORT EUSTIS BLVD	FUTURE ATKINSON BLVD	NS	0.3	0.4	0.4	0.4	0.2	0.3	0.3	0.3
NN	JEFFERSON AVE	FUTURE ATKINSON BLVD	DENBIGH BLVD	NS	0.4	0.5	0.5	0.5	0.2	0.3	0.3	0.3
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	NS	0.4	0.3	2.0	0.8	0.5	0.3	2.3	0.9
NN	JEFFERSON AVE	BLAND BLVD	I-64	NS	0.4	0.6	1.4	1.3	0.4	0.6	1.5	1.4
NN	JEFFERSON AVE	I-64	OYSTER POINT RD	NS	0.2	0.4	0.6	0.7	0.2	0.4	0.6	0.7
NN	JEFFERSON AVE	OYSTER POINT RD	MUELLER LA	NS	0.2	0.4	0.6	0.3	0.2	0.5	0.7	0.4
NN	JEFFERSON AVE	MUELLER LA	MIDDLE GROUND BLVD	NS	0.1	0.2	0.3	0.2	0.2	0.5	0.7	0.4
NN	JEFFERSON AVE	MIDDLE GROUND BLVD	J CLYDE MORRIS BLVD	NS	0.1	0.3	0.5	0.3	0.1	0.3	0.4	0.3
NN	JEFFERSON AVE	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.3	0.1	0.5	0.3	0.2	0.1	0.5	0.3
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	NS	0.3	0.2	0.5	0.4	0.2	0.1	0.3	0.2
NN	JEFFERSON AVE	MAIN ST	CENTER AVE	NS	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3
NN	JEFFERSON AVE	CENTER AVE	MERCURY BLVD	NS	0.2	0.2	0.5	0.3	0.3	0.3	0.7	0.4
NN	JEFFERSON AVE	MERCURY BLVD	BRIARFIELD RD	NS	0.3	0.1	0.4	0.2	0.2	0.1	0.4	0.2
NN	JEFFERSON AVE	BRIARFIELD RD	41ST ST	NS	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
NN	JEFFERSON AVE	41ST ST	35TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
NN	JEFFERSON AVE	35TH ST	25TH ST	NS	0.1	0.1	0.2	0.1	0.3	0.2	0.3	0.2
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	MERCURY BLVD/JAMES RIVER BR	ISLE OF WIGHT CL	RIVER RD	EW	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.3
NN	MERCURY BLVD	RIVER RD	WARWICK BLVD	EW	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.3
NN	MERCURY BLVD	WARWICK BLVD	JEFFERSON AVE	EW	0.1	0.0	0.1	0.1	0.3	0.1	0.2	0.4
NN	MERCURY BLVD	JEFFERSON AVE	HAMPTON CL	EW	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.3
NN	OYSTER POINT RD	WARWICK BLVD	JEFFERSON AVE	EW	0.3	0.3	0.5	0.5	0.3	0.3	0.5	0.5
NN	OYSTER POINT RD	JEFFERSON AVE	CANON BLVD	EW	0.2	0.2	0.2	1.4	0.2	0.3	0.2	1.9
NN	OYSTER POINT RD	CANON BLVD	I-64	EW	0.0	0.3	0.0	0.7	0.1	0.7	0.1	1.7
NN	ROANOKE AVE	I-664	43RD ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	ROANOKE AVE	43RD ST	BRIARFIELD RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	ROANOKE AVE	BRIARFIELD RD	HAMPTON CL	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NN	VICTORY BLVD	I-64	YORK CL	EW	0.1	0.1	0.4	0.1	0.3	0.2	0.7	0.3
NN	WARWICK BLVD	JAMES CITY CL	YORKTOWN RD	NS	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.7	0.3	0.6	0.5	0.5	0.2	0.4	0.3
NN	WARWICK BLVD	FORT EUSTIS BLVD	SNIDOW BLVD	NS	0.4	0.3	0.7	0.7	0.2	0.1	0.4	0.4
NN	WARWICK BLVD	SNIDOW BLVD	DENBIGH BLVD	NS	0.4	0.3	0.8	0.7	0.2	0.2	0.5	0.4
NN	WARWICK BLVD	DENBIGH BLVD	BLAND BLVD	NS	0.1	0.1	0.6	0.4	0.1	0.1	0.7	0.5
NN	WARWICK BLVD	BLAND BLVD	OYSTER POINT RD	NS	0.2	0.1	0.4	0.5	0.1	0.1	0.3	0.3
NN	WARWICK BLVD	OYSTER POINT RD	MAXWELL LN	NS	0.3	0.1	0.2	0.3	0.2	0.1	0.2	0.2
NN	WARWICK BLVD	MAXWELL LN	DEEP CREEK RD	NS	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
NN	WARWICK BLVD	DEEP CREEK RD	J CLYDE MORRIS BLVD	NS	0.3	0.1	0.2	0.2	0.2	0.1	0.1	0.2
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
NN	WARWICK BLVD	HARPERSVILLE RD	MAIN ST	NS	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
NN	WARWICK BLVD	MAIN ST	CENTER AVE	NS	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1
NN	WARWICK BLVD	CENTER AVE	MERCURY BLVD	NS	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.1
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	NS	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
NN	WARWICK BLVD	23RD ST	39TH ST	NS		-		-		-		-
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	NS		-		-		-		-
NOR	26TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.0	-	0.1	-	0.1	-	0.2	-
NOR	26TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.2	-	0.4	-	0.2	-	0.5	-
NOR	26TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	0.1	-	0.1	-	0.2	-	0.5	-
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	EW	0.0	-	0.0	-	0.3	-	0.3	-
NOR	26TH ST	CHURCH ST	27TH ST	EW	0.0	-	0.1	-	0.1	-	0.3	-
NOR	27TH ST	HAMPTON BLVD	COLLEY AVE	EW	-	0.2	-	0.1	-	0.4	-	0.2
NOR	27TH ST	COLLEY AVE	LLEWELLYN AVE	EW	-	0.1	-	0.1	-	0.2	-	0.3
NOR	27TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	-	0.1	-	0.1	-	0.3	-	0.3
NOR	27TH ST	MONTICELLO AVE	CHURCH ST	EW	-	0.1	-	0.0	-	0.5	-	0.4
NOR	27TH ST	CHURCH ST	26TH ST	EW	-	0.1	-	0.0	-	0.2	-	0.1
NOR	38TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
NOR	38TH ST	LLEWELLYN AVE	GRANBY ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	EW	0.0	0.1	0.0	0.3	0.1	0.3	0.2	1.1
NOR	ADMIRAL TAUSSIG BLVD	HAMPTON BLVD	I-564	EW	0.7	1.4	0.2	0.9	0.9	1.9	0.3	1.2
NOR	AZALEA GARDEN RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.4
NOR	AZALEA GARDEN RD	PRINCESS ANNE RD	SEWELLS POINT RD	NS	0.0	0.1	0.0	0.1	0.1	0.3	0.1	0.4
NOR	AZALEA GARDEN RD	SEWELLS POINT RD	ROBIN HOOD RD	NS	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.2
NOR	AZALEA GARDEN RD	ROBIN HOOD RD	I-64	NS	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.2
NOR	AZALEA GARDEN RD	I-64	MILITARY HWY	NS	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.2
NOR	AZALEA GARDEN RD	MILITARY HWY	NORVIEW AVE	NS	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
NOR	AZALEA GARDEN RD	NORVIEW AVE	LITTLE CREEK RD	NS	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	NS	1.0	0.9	1.4	1.6	1.5	1.3	2.0	2.3
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.4	0.2	0.2	0.3	0.7	0.4	0.5	0.6
NOR	BALLENTINE BLVD	PRINCESS ANNE RD	CHESAPEAKE BLVD	NS	0.4	0.3	0.3	0.5	0.4	0.3	0.3	0.5
NOR	BAYVIEW BLVD	GRANBY ST	TIDEWATER DR	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
NOR	BAYVIEW BLVD	CHESAPEAKE BLVD	CAPE VIEW AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	BOUSH ST/WATERSIDE DR	ST PAULS BLVD	CITY HALL AVE	NS	0.0	0.0	0.8	0.2	0.1	0.1	1.5	0.3
NOR	BOUSH ST	CITY HALL AVE	BUTE STREET	NS	0.0	0.0	0.4	0.1	0.0	0.1	1.0	0.3
NOR	BOUSH ST	BUTE STREET	BRAMBLETON AVE	NS	0.0	0.0	0.1	0.0	0.0	0.1	1.0	0.3
NOR	BRAMBLETON AVE	HAMPTON BLVD	COLLEY AVE	EW	0.4	0.1	0.4	0.6	0.7	0.2	0.9	1.2

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	BRAMBLETON AVE	COLLEY AVE	BOUSH ST	EW	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8
NOR	BRAMBLETON AVE	BOUSH ST	MONTICELLO AVE	EW	0.5	0.3	0.2	0.3	2.6	1.8	1.0	1.7
NOR	BRAMBLETON AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.3	0.2	0.1	0.2	2.6	1.8	1.0	1.7
NOR	BRAMBLETON AVE	ST PAULS BLVD	CHURCH ST	EW	0.1	0.2	0.3	0.1	0.4	0.5	0.9	0.3
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	EW	0.2	0.2	0.4	0.2	0.7	0.8	1.4	0.5
NOR	BRAMBLETON AVE	TIDEWATER DR	PARK AVE	EW	0.3	0.3	0.4	0.4	0.7	0.6	0.9	0.8
NOR	BRAMBLETON AVE	PARK AVE	I-264	EW	0.2	0.2	0.2	0.2	0.9	0.8	1.2	1.1
NOR	CAMPOSTELLA RD	WILSON RD	S. END CAMPOSTELLA BRIDGE	NS	0.0	0.1	0.0	0.2	0.0	0.4	0.1	0.6
NOR	CAMPOSTELLA RD	S. END CAMPOSTELLA BRIDGE	KIMBALL TERR	NS	0.3	0.1	0.1	0.0	0.6	0.2	0.3	0.0
NOR	CAMPOSTELLA RD	KIMBALL TERR	I-264	NS	0.1	0.0	0.0	0.0	0.6	0.2	0.3	0.0
NOR	CHESAPEAKE BLVD	LAFAYETTE BLVD	CROMWELL DR	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	CHESAPEAKE BLVD	CROMWELL DR	ROBIN HOOD RD	NS	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.2
NOR	CHESAPEAKE BLVD	ROBIN HOOD RD	HYDE CIR	NS	0.1	0.1	0.3	0.1	0.1	0.1	0.3	0.2
NOR	CHESAPEAKE BLVD	HYDE CIR	NORVIEW AVE	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.2
NOR	CHESAPEAKE BLVD	NORVIEW AVE	I-64	NS	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2
NOR	CHESAPEAKE BLVD	I-64	JOHNSTONS RD	NS	0.2	0.0	0.4	0.1	0.7	0.1	1.2	0.2
NOR	CHESAPEAKE BLVD	JOHNSTONS RD	LITTLE CREEK RD	NS	0.3	0.1	0.6	0.1	0.7	0.1	1.2	0.2
NOR	CHESAPEAKE BLVD	LITTLE CREEK RD	SHEPPARD AVE	NS	0.2	0.1	0.3	0.2	0.2	0.2	0.4	0.3
NOR	CHESAPEAKE BLVD	SHEPPARD AVE	BAYVIEW BLVD	NS	0.1	0.1	0.2	0.1	0.2	0.2	0.4	0.3
NOR	CHESAPEAKE BLVD	BAYVIEW BLVD	CHESAPEAKE ST	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	NS	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
NOR	CHURCH ST	MONTICELLO AVE	GRANBY ST	NS	0.1	0.1	0.1	0.1	0.5	0.4	0.8	0.6
NOR	CITY HALL AVE	BOUSH ST	GRANBY ST	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.3
NOR	CITY HALL AVE	GRANBY ST	MONTICELLO AVE	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.3
NOR	CITY HALL AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.0	0.0	0.2	0.1	0.0	0.1	0.6	0.4
NOR	COLLEY AVE	BRAMBLETON AVE	OLNEY RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
NOR	COLLEY AVE	OLNEY RD	PRINCESS ANNE RD	NS	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2
NOR	COLLEY AVE	PRINCESS ANNE RD	21ST ST	NS	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.2
NOR	COLLEY AVE	21ST ST	26TH ST	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2
NOR	COLLEY AVE	26TH ST	27TH ST	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2
NOR	COLLEY AVE	27TH ST	38TH ST	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
NOR	COLLEY AVE	38TH ST	53RD ST	NS	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1
NOR	GRANBY ST	CHURCH ST	38TH ST	NS	0.1	0.0	0.1	0.1	0.2	0.1	0.3	0.2
NOR	GRANBY ST	38TH ST	LLEWELLYN AVE	NS	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
NOR	GRANBY ST	LLEWELLYN AVE	WILLOW WOOD DRIVE	NS	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
NOR	GRANBY ST	WILLOW WOOD DRIVE	THOLE ST	NS	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2
NOR	GRANBY ST	THOLE ST	LITTLE CREEK RD	NS	0.2	0.1	0.3	0.2	0.4	0.2	0.5	0.4
NOR	GRANBY ST	LITTLE CREEK RD	I-564	NS	0.1	0.0	0.1	0.1	0.4	0.2	0.5	0.4
NOR	GRANBY ST	I-564	I-64	NS	0.1	0.0	0.0	0.0	0.4	0.1	0.2	0.1
NOR	GRANBY ST	I-64	BAYVIEW BLVD	NS	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
NOR	GRANBY ST	BAYVIEW BLVD	BAY AVE	NS	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1
NOR	GRANBY ST	BAY AVE	TIDEWATER DR	NS	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1
NOR	GRANBY ST	TIDEWATER DR	OCEAN VIEW AVE	NS	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
NOR	HAMPTON BLVD	BRAMBLETON AVE	PRINCESS ANNE RD	NS	0.3	0.4	0.3	1.2	0.8	1.1	0.7	3.0
NOR	HAMPTON BLVD	PRINCESS ANNE RD	21ST ST	NS	0.4	0.5	0.4	1.4	0.8	1.1	0.7	3.0
NOR	HAMPTON BLVD	21ST ST	26TH ST	NS	0.2	0.1	0.2	0.2	1.2	0.3	0.9	0.9
NOR	HAMPTON BLVD	26TH ST	27TH ST	NS	0.1	0.0	0.0	0.0	1.0	0.3	0.8	0.7
NOR	HAMPTON BLVD	27TH ST	38TH ST	NS	0.1	0.2	0.2	0.1	0.8	1.1	0.9	0.8
NOR	HAMPTON BLVD	38TH ST	JAMESTOWN CRESCENT	NS	1.2	1.6	1.2	1.1	0.9	1.2	0.9	0.8
NOR	HAMPTON BLVD	JAMESTOWN CRESCENT	LITTLE CREEK RD	NS	0.8	0.4	0.4	0.3	0.6	0.3	0.3	0.2

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	HAMPTON BLVD	LITTLE CREEK RD	INTERNATIONAL TERMINAL BLVD	NS	0.1	0.1	0.1	0.0	0.6	0.3	0.3	0.2
NOR	HAMPTON BLVD	INTERNATIONAL TERMINAL BLVD	INTERMODAL CONNECTOR	NS	2.6	1.0	0.8	0.5	2.6	1.0	0.8	0.5
NOR	HAMPTON BLVD	INTERMODAL CONNECTOR	ADM TAUSSIG BLVD	NS	2.4	0.9	0.7	0.4	2.6	1.0	0.8	0.5
NOR	I-64/HRBT	HAMPTON CL	OCEAN VIEW AVE	EW	0.2	0.1	0.3	0.4	1.2	0.3	1.4	1.9
NOR	I-64	OCEAN VIEW AVE	4TH VIEW AVE	EW	0.2	0.7	0.7	7.6	0.1	0.4	0.4	4.2
NOR	I-64	4TH VIEW AVE	BAY AVE	EW	0.1	0.2	1.0	6.7	0.1	0.2	1.0	6.7
NOR	I-64	BAY AVE	GRANBY ST	EW	0.2	0.2	0.9	9.1	0.1	0.1	0.6	5.7
NOR	I-64	GRANBY ST	I-564/LITTLE CREEK RD	EW	0.0	0.1	0.2	0.7	0.1	0.3	1.1	3.2
NOR	I-64 REV	I-564/LITTLE CREEK RD	TIDEWATER DR	REV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	EW	0.3	0.7	4.4	2.2	0.3	0.6	3.7	1.9
NOR	I-64 REV	TIDEWATER DR	CHESAPEAKE BLVD	REV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.5	0.3	2.7	0.1	0.5	0.3	2.6	0.1
NOR	I-64 REV	CHESAPEAKE BLVD	NORVIEW AVE	REV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	EW	0.6	1.4	2.9	0.1	0.7	1.4	3.0	0.1
NOR	I-64 REV	NORVIEW AVE	MILITARY HWY	REV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	I-64	NORVIEW AVE	MILITARY HWY	EW	0.4	1.6	1.9	0.0	0.3	1.3	1.6	0.0
NOR	I-64 REV	MILITARY HWY	NORTHAMPTON BLVD	REV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	I-64	MILITARY HWY	NORTHAMPTON BLVD	EW	0.1	1.1	1.6	0.0	0.1	1.1	1.5	0.0
NOR	I-64 REV	NORTHAMPTON BLVD	I-264	REV	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
NOR	I-64	NORTHAMPTON BLVD	I-264	EW	0.7	3.9	3.7	0.4	0.3	1.8	1.7	0.2
NOR	I-64	I-264	VA BEACH CL	EW	0.1	2.5	1.2	1.6	0.1	2.7	1.3	1.7
NOR	I-264/DOWNTOWN TUNNEL	PORTSMOUTH CL	I-464	EW	1.6	0.8	1.0	1.3	4.0	2.0	2.5	3.2
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	EW	1.1	1.2	0.5	2.4	1.6	1.7	0.7	3.3
NOR	I-264	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	EW	0.0	0.5	0.3	1.4	0.0	0.5	0.3	1.6
NOR	I-264	BRAMBLETON AVE	BALLENTINE BLVD	EW	0.0	0.2	0.2	0.3	0.0	0.3	0.3	0.3
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	EW	0.0	0.3	0.6	0.1	0.0	0.1	0.2	0.0
NOR	I-264	MILITARY HWY	I-64	EW	0.0	0.0	0.6	0.0	0.0	0.1	0.8	0.0
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	EW	0.1	0.2	0.9	0.8	0.1	0.3	1.2	1.1
NOR	I-464	CHESAPEAKE CL	SOUTH MAIN ST	NS	1.0	0.0	0.1	0.0	2.3	0.1	0.1	0.0
NOR	I-464	SOUTH MAIN ST	I-264	NS	2.3	0.1	0.3	0.1	3.7	0.2	0.4	0.2
NOR	I-564	ADMIRAL TAUSSIG BLVD	FUTURE INTERMODAL CONNECTOR	NS	1.3	0.0	0.0	0.0	2.7	0.0	0.0	0.0
NOR	I-564	FUTURE INTERMODAL CONNECTOR	INTERNATIONAL TERMINAL BLVD	NS	3.7	0.0	0.0	0.1	2.7	0.0	0.0	0.0
NOR	I-564	INTERNATIONAL TERMINAL BLVD	I-64	NS	1.1	0.0	0.0	0.5	1.2	0.0	0.0	0.5
NOR	INDIAN RIVER RD	MARSH ST	WILSON RD	EW	0.1	0.1	0.0	0.0	0.2	0.2	0.1	0.1
NOR	INDIAN RIVER RD	WILSON RD	CAMPOSTELLA RD	EW	0.0	0.1	0.0	0.0	0.2	0.4	0.1	0.2
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	EW	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
NOR	INGLESIDE RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.3	0.3	0.2	0.2	0.5	0.4	0.3	0.4
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	NS	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3
NOR	JAMESTOWN CRESCENT	53RD ST	HAMPTON BLVD	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
NOR	LAFAYETTE BLVD	27TH ST	TIDEWATER DR	EW	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.1
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.2
NOR	LLEWELLYN AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
NOR	LLEWELLYN AVE	PRINCESS ANNE RD	21ST ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	LLEWELLYN AVE	21ST ST	26TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
NOR	LLEWELLYN AVE	26TH ST	27TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	LLEWELLYN AVE	27TH ST	35TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	LLEWELLYN AVE	35TH ST	38TH ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	LLEWELLYN AVE	38TH ST	DELAWARE AVE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
NOR	LLEWELLYN AVE	DELAWARE AVE	GRANBY ST	NS	-	0.0	-	0.0	-	0.0	-	0.0
NOR	MIDTOWN TUNNEL	PORTSMOUTH CL	BRAMBLETON AVE	NS	2.9	0.1	0.8	0.4	4.9	0.2	1.4	0.7

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	MILITARY HWY	VA BEACH CL	I-264	NS	0.2	0.3	0.2	0.4	0.3	0.3	0.3	0.6
NOR	MILITARY HWY	I-264	VA BEACH BLVD	NS	0.5	0.4	0.5	1.0	0.6	0.5	0.6	1.2
NOR	MILITARY HWY	VA BEACH BLVD	LOWERY RD	NS	0.4	0.2	0.4	0.4	0.8	0.4	0.8	0.8
NOR	MILITARY HWY	LOWERY RD	PRIN ANNE RD/NORTHAMPTON BLVD	NS	0.7	0.3	0.7	0.6	0.8	0.4	0.8	0.8
NOR	MILITARY HWY	PRIN ANNE RD/NORTHAMPTON BLVD	I-64	NS	0.2	0.2	0.2	0.7	0.4	0.4	0.5	1.4
NOR	MILITARY HWY	I-64	AZALEA GARDEN RD	NS	0.2	0.2	0.3	0.4	0.3	0.2	0.5	0.7
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	NS	0.1	0.0	0.3	0.2	0.2	0.1	0.7	0.4
NOR	MILITARY HWY	NORVIEW AVE	JOHNSTONS RD	NS	0.1	0.1	0.2	0.4	0.1	0.1	0.2	0.3
NOR	MILITARY HWY	JOHNSTONS RD	LITTLE CREEK RD	NS	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.3
NOR	MONTICELLO AVE	ST PAULS BLVD	VA BEACH BLVD	NS	0.1	0.1	0.1	0.1	0.9	1.0	0.7	0.9
NOR	MONTICELLO AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.1	0.2	0.1	0.1	0.8	0.9	0.6	0.7
NOR	MONTICELLO AVE	PRINCESS ANNE RD	21ST ST	NS	0.3	0.3	0.3	0.2	0.6	0.6	0.5	0.5
NOR	MONTICELLO AVE	21ST ST	26TH ST	NS	0.1	0.0	0.1	0.0	0.3	0.0	0.2	0.1
NOR	MONTICELLO AVE	26TH ST	27TH ST	NS	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.1
NOR	MONTICELLO AVE	27TH ST	CHURCH ST	NS	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.1
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	NS	0.3	0.2	0.2	0.4	0.7	0.6	0.4	0.9
NOR	NEWTOWN RD	I-264	VA BEACH BLVD	NS	0.7	0.3	0.7	0.6	1.1	0.5	1.0	0.9
NOR	NEWTOWN RD	VA BEACH BLVD	VA BEACH CL	NS	0.0	0.1	0.1	0.2	0.3	0.8	0.4	1.5
NOR	NORTHAMPTON BLVD	MILITARY HWY	KEMPSVILLE RD	EW	0.1	0.1	0.1	0.3	0.5	0.6	0.6	1.2
NOR	NORTHAMPTON BLVD	KEMPSVILLE RD	I-64	EW	0.3	0.3	0.3	0.7	0.6	0.7	0.6	1.3
NOR	NORTHAMPTON BLVD	I-64	WESLEYAN DR/VA BEACH CL	EW	1.0	0.5	0.3	1.0	3.0	1.3	0.8	2.9
NOR	NORVIEW AVE	CHESAPEAKE BLVD	I-64	EW	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.5
NOR	OCEAN VIEW AVE	4TH VIEW ST	TIDEWATER DR	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
NOR	OCEAN VIEW AVE	TIDEWATER DR	GRANBY ST	EW	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2
NOR	OCEAN VIEW AVE	GRANBY ST	CHESAPEAKE BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	EW	0.0	0.2	0.1	0.3	0.1	0.5	0.2	0.7
NOR	PARK AVE	VA BEACH BLVD	PRINCESS ANNE RD	EW	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.5
NOR	PRINCESS ANNE RD	HAMPTON BLVD	COLLEY AVE	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
NOR	PRINCESS ANNE RD	COLLEY AVE	LLEWELLYN AVE	EW	0.0	0.2	0.0	0.1	0.0	0.3	0.1	0.1
NOR	PRINCESS ANNE RD	LLEWELLYN AVE	MONTICELLO AVE	EW	0.0	0.1	0.0	0.0	0.1	0.3	0.1	0.2
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	EW	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1
NOR	PRINCESS ANNE RD	CHURCH ST	TIDEWATER DR	EW	0.0	0.1	0.0	0.0	0.1	0.3	0.1	0.1
NOR	PRINCESS ANNE RD	TIDEWATER DR	MAY AVE	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
NOR	PRINCESS ANNE RD	MAY AVE	PARK AVE	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
NOR	PRINCESS ANNE RD	PARK AVE	BALLENTINE BLVD	EW	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	INGLESIDE RD	EW	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
NOR	PRINCESS ANNE RD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.2	0.1	0.2	0.1	0.3	0.3	0.4	0.2
NOR	PRINCESS ANNE RD	AZALEA GARDEN RD	SEWELLS POINT RD	EW	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.2
NOR	PRINCESS ANNE RD	SEWELLS POINT RD	MILITARY HWY	EW	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.2
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	AZALEA GARDEN RD	NS	0.1	0.0	0.1	0.0	0.5	0.1	0.4	0.1
NOR	SEWELLS POINT RD	AZALEA GARDEN RD	ROBIN HOOD RD	NS	0.2	0.0	0.2	0.1	0.5	0.1	0.4	0.1
NOR	SEWELLS POINT RD	ROBIN HOOD RD	CHESAPEAKE BLVD	NS	0.3	0.0	0.2	0.0	0.4	0.0	0.3	0.0
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	PARTRIDGE ST	NS	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.3
NOR	SEWELLS POINT RD	PARTRIDGE ST	PHILPOTTS RD	NS	0.0	0.1	0.0	0.1	0.2	0.2	0.1	0.3
NOR	SEWELLS POINT RD	PHILPOTTS RD	I-64	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
NOR	SEWELLS POINT RD	I-64	LITTLE CREEK RD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	EW	0.1	0.1	0.3	0.1	0.1	0.1	0.3	0.2
NOR	SHORE DRIVE	LITTLE CREEK RD	VA BEACH CL	EW	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1
NOR	ST PAULS BLVD	WATERSIDE DR	CITY HALL AVE	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1
NOR	ST PAULS BLVD	CITY HALL AVE	I-264 RAMP/MACARTHUR MALL	NS	0.0	0.1	0.1	0.0	0.2	0.7	0.5	0.4

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	ST PAULS BLVD	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	NS	0.2	0.2	0.4	0.2	0.6	0.5	1.0	0.5
NOR	ST PAULS BLVD	BRAMBLETON AVE	MONTICELLO AVE	NS	0.2	0.2	0.2	0.2	0.8	0.9	0.6	0.8
NOR	TIDEWATER DR	CITY HALL AVE	BRAMBLETON AVE	NS	0.2	0.4	0.2	0.2	0.7	1.0	0.5	0.5
NOR	TIDEWATER DR	BRAMBLETON AVE	VA BEACH BLVD	NS	0.4	0.2	0.2	0.7	1.3	0.5	0.7	2.2
NOR	TIDEWATER DR	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.1	0.1	0.1	0.3	1.0	0.4	0.5	1.8
NOR	TIDEWATER DR	PRINCESS ANNE RD	LAFAYETTE BLVD	NS	0.3	0.1	0.4	1.1	0.2	0.0	0.3	0.7
NOR	TIDEWATER DR	LAFAYETTE BLVD	CROMWELL DR	NS	0.2	0.1	0.3	0.2	0.3	0.1	0.4	0.4
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	NS	0.2	0.1	0.1	0.8	0.4	0.2	0.2	1.9
NOR	TIDEWATER DR	NORVIEW AVE	THOLE ST	NS	0.1	0.1	0.3	0.3	0.1	0.1	0.3	0.4
NOR	TIDEWATER DR	THOLE ST	I-64	NS	0.1	0.1	0.1	0.1	0.6	0.5	0.9	1.0
NOR	TIDEWATER DR	I-64	LITTLE CREEK RD	NS	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
NOR	TIDEWATER DR	BAYVIEW BLVD	GRANBY ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	TIDEWATER DR	GRANBY ST	OCEAN VIEW AVE	NS	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
NOR	VA BEACH BLVD	MONTICELLO AVE	CHURCH ST	EW	0.1	0.6	0.3	0.1	0.3	1.2	0.8	0.3
NOR	VA BEACH BLVD	CHURCH ST	TIDEWATER DR	EW	0.1	0.4	0.2	0.1	0.3	1.2	0.8	0.3
NOR	VA BEACH BLVD	TIDEWATER DR	PARK AVE	EW	0.1	0.4	0.3	0.2	0.2	0.7	0.6	0.4
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	EW	0.2	0.2	0.6	0.1	0.2	0.2	0.6	0.1
NOR	VA BEACH BLVD	BALLENTINE BLVD	INGLESIDE RD	EW	0.3	0.6	0.4	0.3	0.7	1.2	0.9	0.5
NOR	VA BEACH BLVD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.4	0.5	0.3	0.3	0.9	1.2	0.6	0.6
NOR	VA BEACH BLVD	AZALEA GARDEN RD	JETT ST	EW	0.2	0.2	0.1	0.2	0.4	0.5	0.4	0.4
NOR	VA BEACH BLVD	JETT ST	MILITARY HWY	EW	0.4	0.5	0.3	0.4	0.4	0.5	0.4	0.4
NOR	VA BEACH BLVD	MILITARY HWY	GLENROCK RD	EW	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
NOR	VA BEACH BLVD	GLENROCK RD	KEMPSVILLE RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	EW	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
NOR	WILSON RD	BERKLEY AVE/CHESAPEAKE CL	INDIAN RIVER RD	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
NOR	WILSON RD	INDIAN RIVER RD	CAMPOSTELLA RD	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
POQ	VICTORY BLVD	YORK CL	WYTHE CREEK RD	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
POQ	WYTHE CREEK RD	HAMPTON CL	ALPHUS ST	NS	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
POQ	WYTHE CREEK RD	ALPHUS ST	LITTLE FLORIDA RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
PORT	AIRLINE BLVD	CHESAPEAKE CL	GREENWOOD DR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
PORT	AIRLINE BLVD	GREENWOOD DR	ELMHURST LN	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1
PORT	AIRLINE BLVD	ELMHURST LN	.55 MI E ELMHURST LN	EW	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.1
PORT	AIRLINE BLVD	.55 MI E ELMHURST LN	VICTORY BLVD	EW	0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.1
PORT	AIRLINE BLVD	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1
PORT	AIRLINE BLVD	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.1	0.1	0.3	0.3	0.1	0.1	0.2	0.2
PORT	AIRLINE BLVD	FREDERICK BLVD	HIGH ST	EW	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.2
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
PORT	CEDAR LN	W NORFOLK RD	WESTERN FREEWAY	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
PORT	ELM AVE	LONDON BLVD	HIGH ST	NS	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
PORT	ELM AVE	HIGH ST	COUNTY ST	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0
PORT	ELM AVE	COUNTY ST	SOUTH ST	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0
PORT	ELM AVE	SOUTH ST	I-264	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	ELM AVE	I-264	PORTSMOUTH BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	ELM AVE	PORTSMOUTH BLVD	EFFINGHAM ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
PORT	FREDERICK BLVD	GEORGE WASHINGTON HWY	PORTSMOUTH BLVD	NS	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
PORT	FREDERICK BLVD	PORTSMOUTH BLVD	DEEP CREEK BLVD	NS	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2
PORT	FREDERICK BLVD	DEEP CREEK BLVD	I-264	NS	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3
PORT	FREDERICK BLVD	I-264	TURNPIKE RD	NS	0.2	0.2	0.3	0.4	0.6	0.6	0.7	1.2
PORT	FREDERICK BLVD	TURNPIKE RD	AIRLINE BLVD	NS	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

Juris Name	Facility Name	Segment From	Segment To	Dir	Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	FREDERICK BLVD	AIRLINE BLVD	HIGH ST	NS	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
PORT	GEORGE WASHINGTON HWY	CHESAPEAKE CL	VICTORY BLVD	NS	0.1	0.1	0.1	0.1	0.4	0.4	0.5	0.4
PORT	GEORGE WASHINGTON HWY	VICTORY BLVD	DAVIS ST	NS	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4
PORT	GEORGE WASHINGTON HWY	DAVIS ST	GREENWOOD DR	NS	0.1	0.1	0.2	0.2	0.3	0.2	0.4	0.5
PORT	GEORGE WASHINGTON HWY	GREENWOOD DR	FREDERICK BLVD	NS	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.6
PORT	GREENWOOD DR	AIRLINE BLVD	I-264	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
PORT	GREENWOOD DR	I-264	CAVALIER BLVD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PORT	GREENWOOD DR	CAVALIER BLVD	VICTORY BLVD	EW	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	GREENWOOD DR	INDEPENDENCE ST	DEEP CREEK BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	GREENWOOD DR	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	HIGH ST	TYRE NECK RD	CHURCHLAND BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
PORT	HIGH ST	CHURCHLAND BLVD	CEDAR LA	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PORT	HIGH ST	CEDAR LA	FREDERICK BLVD	EW	0.4	0.2	0.4	0.2	0.2	0.1	0.2	0.1
PORT	I-264	WCL PORTSMOUTH	GREENWOOD DR	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
PORT	I-264	GREENWOOD DR	VICTORY BLVD	EW	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0
PORT	I-264	PORTSMOUTH BLVD	FREDERICK BLVD	EW	1.0	0.1	0.0	0.0	1.1	0.1	0.0	0.0
PORT	I-264	FREDERICK BLVD	FUTURE MLK FWY	EW	1.4	0.0	0.2	0.0	3.2	0.0	0.5	0.0
PORT	I-264	FUTURE MLK FWY	DES MOINES AVE	EW	1.6	0.0	0.2	0.0	3.2	0.0	0.5	0.0
PORT	I-264	DES MOINES AVE	EFFINGHAM ST	EW	3.0	0.1	0.7	0.3	4.2	0.1	1.0	0.3
PORT	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	NORFOLK CL	EW	2.9	1.5	1.8	2.3	4.0	2.0	2.5	3.2
PORT	LONDON BLVD	HIGH ST	MT VERNON AVE	EW	0.0	0.1	0.0	0.1	0.1	0.3	0.1	0.5
PORT	LONDON BLVD	MT VERNON AVE	M L K FWY	EW	0.0	0.2	0.0	0.2	0.1	0.4	0.1	0.5
PORT	MIDTOWN TUNNEL	MLK FWY/WESTERN FREEWAY	NORFOLK CL	NS	4.7	0.2	1.3	0.7	4.9	0.2	1.4	0.7
PORT	M L K FREEWAY	LONDON BLVD	WESTERN FREEWAY/MIDTOWN TUNNEL	NS	0.3	0.3	0.1	0.1	0.3	0.4	0.1	0.1
PORT	PORTSMOUTH BLVD	CHESAPEAKE CL	ELMHURST LN	EW	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	EW	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.2
PORT	PORTSMOUTH BLVD	VICTORY BLVD	AIRLINE BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
PORT	PORTSMOUTH BLVD	AIRLINE BLVD	TURNPIKE RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
PORT	PORTSMOUTH BLVD	TURNPIKE RD	I-264	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
PORT	PORTSMOUTH BLVD	I-264	DEEP CREEK BLVD	EW	0.0	0.1	0.2	0.1	0.0	0.1	0.2	0.1
PORT	PORTSMOUTH BLVD	DEEP CREEK BLVD	FREDERICK BLVD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	EW	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
PORT	PORTSMOUTH BLVD	ELM AVE	EFFINGHAM ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	TOWN POINT RD	SUFFOLK CL	TWIN PINES RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PORT	TOWN POINT RD	TWIN PINES RD	WESTERN FREEWAY	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
PORT	TOWN POINT RD	WESTERN FREEWAY	CHESAPEAKE CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
PORT	VICTORY BLVD	PORTSMOUTH BLVD	AIRLINE BLVD	EW	0.0	0.1	0.0	0.0	0.0	0.5	0.1	0.2
PORT	VICTORY BLVD	AIRLINE BLVD	I-264	EW	0.0	0.4	0.1	0.3	0.1	1.1	0.4	0.7
PORT	VICTORY BLVD	I-264	GREENWOOD DR	EW	0.1	0.3	0.4	0.2	0.2	0.5	0.7	0.3
PORT	VICTORY BLVD	GREENWOOD DR	DEEP CREEK BLVD	EW	0.2	0.3	0.3	0.2	0.1	0.3	0.3	0.2
PORT	VICTORY BLVD	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	0.3	0.2	0.2	0.4	0.6	0.5	0.4	0.8
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	EW	0.2	0.3	0.1	0.3	0.2	0.2	0.1	0.2
PORT	VICTORY BLVD	AFTON PKWY	ELM AVE	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
PORT	WESTERN BRANCH BLVD	CHESAPEAKE CL	TYRE NECK RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
PORT	WESTERN FWY	SUFFOLK CL	TOWN POINT RD	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1
PORT	WESTERN FWY	TOWN POINT RD	CEDAR LN	EW	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1
PORT	WESTERN FWY	CEDAR LN	APM BLVD	EW	0.5	0.1	0.0	0.1	0.5	0.1	0.0	0.1

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
Juris					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	WESTERN FWY	APM BLVD	WEST NORFOLK RD	EW	0.3	0.0	0.0	0.0	0.5	0.1	0.0	0.1
PORT	WESTERN FWY	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	EW	7.7	0.4	0.3	0.5	4.3	0.2	0.2	0.3
SH	BUS ROUTE 58	ROUTE 35	ECL COURTLAND	EW	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
SH	BUS ROUTE 58	ECL COURTLAND	ROUTE 58	EW	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
SH	ROUTE 35	NC STATE LINE	SCL BOYKINS	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	SCL BOYKINS	ROUTE 1324	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	ROUTE 1324	ROUTE 186	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	ROUTE 186	NCL BOYKINS	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
SH	ROUTE 35	NCL BOYKINS	ROUTE 671	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
SH	ROUTE 35	ROUTE 671	GRAYS SHOP RD (RTE 673)	NS	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 35	GRAYS SHOP RD (RTE 673)	ROUTE 58	NS	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0
SH	ROUTE 35/BUS ROUTE 58	ROUTE 58	WCL COURTLAND	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 35/BUS ROUTE 58	WCL COURTLAND	BUS RTE 58	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	BUS RTE 58	NCL COURTLAND	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	NCL COURTLAND	IVOR RD (RTE 616)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 35	IVOR RD (RTE 616)	CARYS BRIDGE RD (RTE 653)	NS	0.3	0.2	0.4	0.3	0.0	0.0	0.1	0.0
SH	ROUTE 35	CARYS BRIDGE RD (RTE 653)	SUSSEX CL	NS	0.2	0.3	0.3	0.3	0.0	0.1	0.1	0.1
SH	ROUTE 58	GREENSVILLE CL	ADAMS GROVE RD (RTE 615)	EW	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 58	ADAMS GROVE RD (RTE 615)	DREWRY RD (RTE 659)	EW	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0
SH	ROUTE 58	DREWRY RD (RTE 659)	PINOPOLIS RD (ROUTE 653)	EW	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	EW	0.7	0.7	0.4	0.3	0.1	0.1	0.1	0.1
SH	ROUTE 58	ROUTE 35	BUS RTE 58 W	EW	0.5	0.0	0.5	0.0	0.1	0.0	0.1	0.0
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	EW	1.2	1.5	1.8	3.2	0.5	0.6	0.7	1.3
SH	ROUTE 58	CAMP PKWY (BUS RTE 58 E)	ARMORY DR (RTE 671)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	ARMORY DR (RTE 671)	ROUTE 258	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SH	ROUTE 58	ROUTE 258	PRETLOW RD (RTE 714)	EW	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1
SH	ROUTE 58	PRETLOW RD (RTE 714)	SUFFOLK CL	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
SH	ROUTE 258	NC STATE LINE	ROUTE 189	EW	0.3	0.3	0.4	0.4	0.1	0.1	0.1	0.1
SH	ROUTE 258	ROUTE 189	DOGWOOD BEND RD (RTE 684)	EW	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.1
SH	ROUTE 258	DOGWOOD BEND RD (RTE 684)	ROUTE 58	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
SH	ROUTE 460	SUSSEX CL	WCL IVOR	EW	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.1
SH	ROUTE 460	WCL IVOR	ROUTE 616 (IVOR RD)	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
SH	ROUTE 460	ROUTE 616 (IVOR RD)	ECL IVOR	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
SH	ROUTE 460	ECL IVOR	ISLE OF WIGHT CL	EW	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.0
SUF	BRIDGE RD	ISLE OF WIGHT CL	E. END CHUCKATUCK BRIDGE	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
SUF	BRIDGE RD	E. END CHUCKATUCK BRIDGE	CRITTENDEN RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
SUF	BRIDGE RD	CRITTENDEN RD	N. END NANSEMOND RIVER	EW	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.1
SUF	BRIDGE RD	N. END NANSEMOND RIVER	S. END NANSEMOND RIVER	EW	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.1
SUF	BRIDGE RD	S. END NANSEMOND RIVER	BENNETTS PASTURE RD	EW	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
SUF	BRIDGE RD	BENNETTS PASTURE RD	SHOULDERS HILL RD	EW	0.5	0.2	0.5	0.4	0.4	0.2	0.3	0.3
SUF	BRIDGE RD	SHOULDERS HILL RD	HARBOUR VIEW BLVD	EW	0.3	0.5	0.3	0.7	0.2	0.4	0.2	0.6
SUF	BRIDGE RD	HARBOUR VIEW BLVD	WESTERN FWY	EW	0.0	0.1	0.0	0.1	0.3	0.4	0.3	0.6
SUF	BRIDGE RD	WESTERN FWY	I-664	EW	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
SUF	BRIDGE RD	I-664	COLLEGE DR	EW	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1
SUF	BRIDGE RD	COLLEGE DR	CHESAPEAKE CL	EW	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1
SUF	CAROLINA RD	NC STATE LINE	RTE 642	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUF	CAROLINA RD	RTE 642	RTE 675	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUF	CAROLINA RD	RTE 675	BABBTOWN RD (RTE 759)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	CAROLINA RD	BABBTOWN RD (RTE 759)	WHALEYVILLE BLVD	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUF	CAROLINA RD	WHALEYVILLE BLVD	TURLINGTON RD	NS	0.4	0.6	0.4	0.5	0.4	0.7	0.4	0.5

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	CAROLINA RD	TURLINGTON RD	SW SUFFOLK BYPASS	NS	0.4	0.3	0.3	0.3	0.6	0.5	0.5	0.5
SUF	CAROLINA RD	SW SUFFOLK BYPASS	FAYETTE ST	NS	0.1	1.1	0.5	0.4	0.1	0.6	0.3	0.2
SUF	COLLEGE DR	BRIDGE RD	WESTERN FREEWAY	NS	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1
SUF	COLLEGE DR	WESTERN FREEWAY	HAMPTON ROADS PKWY	NS	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
SUF	COLLEGE DR	HAMPTON ROADS PKWY	I-664	NS	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3
SUF	CONSTANCE RD	HOLLAND RD	PITCHKETTLE RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	EW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
SUF	CONSTANCE RD	MAIN ST	WILROY RD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3
SUF	GODWIN BLVD	PRUDEN BLVD	SUFFOLK BYPASS	NS	0.3	0.3	0.3	0.2	0.5	0.6	0.5	0.4
SUF	GODWIN BLVD	SUFFOLK BYPASS	KINGS FORK RD	NS	0.7	0.1	0.5	0.4	1.2	0.2	0.9	0.7
SUF	GODWIN BLVD	KINGS FORK ROAD	1.36 MI N OF KINGS FORK RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	GODWIN BLVD	1.36 MILES N OF KINGS FORK RD	EVERETS RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	GODWIN BLVD	EVERETS RD	KINGS HWY	NS	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1
SUF	GODWIN BLVD	KINGS HWY	ISLE OF WIGHT CL	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	HAMPTON ROADS PKWY	HARBOUR VIEW BLVD	COLLEGE DR	EW	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1
SUF	HAMPTON ROADS PKWY	COLLEGE DR	PORTSMOUTH CL	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1
SUF	I-664	CHESAPEAKE CL	BRIDGE RD	EW	0.1	0.5	1.7	0.0	0.2	0.7	2.2	0.1
SUF	I-664	BRIDGE RD	WESTERN FWY	EW	0.0	0.1	0.2	0.0	0.1	0.6	1.6	0.1
SUF	I-664	WESTERN FWY	COLLEGE DR	EW	0.0	1.3	1.1	0.5	0.0	0.9	0.8	0.3
SUF	I-664/MMMBT	COLLEGE DR	NEWPORT NEWS CL	EW	0.0	0.7	1.7	0.4	0.0	0.2	0.5	0.1
SUF	LAKE PRINCE DR (RTE 604)	ROUTE 460 (PRUDEN BLVD)	ROUTE 603 (EVERETTS RD)	NS	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	MAIN ST	WASHINGTON ST	MARKET ST	NS	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1
SUF	MAIN ST	MARKET ST	CONSTANCE RD	NS	0.1	0.0	0.3	0.1	0.3	0.1	0.5	0.1
SUF	MAIN ST	CONSTANCE RD	PRUDEN BLVD/GODWIN BLVD	NS	0.3	0.2	0.4	0.3	0.2	0.1	0.3	0.2
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	NS	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
SUF	PITCHKETTLE RD	SUFFOLK BYPASS	KINGS FORK RD	NS	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	EW	0.2	0.1	0.3	0.3	0.2	0.1	0.2	0.2
SUF	PORTSMOUTH BLVD	WASHINGTON ST	SUFFOLK BYPASS	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
SUF	PROVIDENCE RD (RTE 604)	KINGS FORK RD	ROUTE 460 (PRUDEN BLVD)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	PRUDEN BLVD	ISLE OF WIGHT CL	LAKE PRINCE DR	EW	0.4	0.1	0.7	0.2	0.1	0.0	0.2	0.1
SUF	PRUDEN BLVD	LAKE PRINCE DR	KINGS FORK RD	EW	0.5	0.5	0.7	0.8	0.9	0.9	1.2	1.4
SUF	PRUDEN BLVD	KINGS FORK RD	SUFFOLK BYPASS	EW	1.4	1.7	1.7	2.8	0.9	1.2	1.2	1.9
SUF	PRUDEN BLVD	SUFFOLK BYPASS	GODWIN BLVD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
SUF	PUGHSVILLE RD	TOWN POINT RD	CHESAPEAKE CL	EW	0.0	0.0	0.0	0.0	0.5	0.2	0.3	0.2
SUF	ROUTE 13/58/460	SUFFOLK BYPASS	CHESAPEAKE CL	EW	0.5	0.2	0.3	0.1	0.1	0.1	0.1	0.0
SUF	ROUTE 58	SOUTHAMPTON CL	RTE 189/258	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
SUF	ROUTE 58	RTE 189/258	RTE 272 (S. QUAY RD)	EW	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUF	ROUTE 58	RTE 272	S. QUAY RD (ROUTE 189)	EW	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
SUF	ROUTE 58 (HOLLAND BYPASS)	S. QUAY RD (ROUTE 189)	BUS RTE 58 (HOLLAND RD)	EW	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
SUF	ROUTE 58 (HOLLAND RD)	BUS RTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	EW	0.8	0.7	1.1	1.2	0.2	0.2	0.3	0.3
SUF	ROUTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	RTE 643 (MANNING BRIDGE RD)	EW	0.4	0.4	0.6	0.7	0.2	0.2	0.3	0.3
SUF	ROUTE 58 (HOLLAND RD)	RTE. 643 (MANNING BRIDGE RD)	COVE POINT DR	EW	0.3	0.2	0.4	0.4	0.2	0.2	0.4	0.4
SUF	ROUTE 58 (HOLLAND RD)	COVE POINT DR	SUFFOLK BYPASS	EW	1.7	1.8	2.8	3.3	1.4	1.5	2.3	2.7
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	NS	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SUF	SUFFOLK BYPASS	HOLLAND RD	PITCHKETTLE RD	EW	0.1	0.2	0.0	0.9	0.0	0.1	0.0	0.5
SUF	SUFFOLK BYPASS	PITCHKETTLE RD	PRUDEN BLVD	EW	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUF	SUFFOLK BYPASS	PRUDEN BLVD	GODWIN BLVD	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	SUFFOLK BYPASS	GODWIN BLVD	WILROY RD	EW	0.3	0.0	0.0	0.3	0.2	0.0	0.0	0.2
SUF	SUFFOLK BYPASS	WILROY RD	ROUTES 13/58/460	EW	0.5	0.2	0.0	0.0	0.2	0.1	0.0	0.0
SUF	WASHINGTON ST	MAIN ST	PINNER ST	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
SUF	WASHINGTON ST	PINNER ST	PORTSMOUTH BLVD	EW	0.3	0.1	0.4	0.3	0.1	0.0	0.1	0.1
SUF	WESTERN FWY	I-664	COLLEGE DR	EW	0.3	0.1	0.1	0.1	0.5	0.1	0.1	0.2
SUF	WESTERN FWY	COLLEGE DR	PORTSMOUTH CL	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	NS	0.2	0.3	0.3	0.2	0.0	0.1	0.1	0.0
SUF	WHALEYVILLE BLVD	RTE 616 (MINERAL SPRING RD)	RTE 677 (GREAT FORK RD)	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
SUF	WHALEYVILLE BLVD	RTE 677 (GREAT FORK RD)	RTE 675 (CYPRESS CHAPEL RD)	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
SUF	WHALEYVILLE BLVD	RTE 675 (CYPRESS CHAPEL RD)	RTE 759 (BABBTOWN RD)	NS	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
SUF	WHALEYVILLE BLVD	RTE 759 (BABBTOWN RD)	RTE 32 (CAROLINA RD)	NS	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1
SUR	ROUTE 10	PRINCE GEORGE CL	ROUTE 40	EW	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0
SUR	ROUTE 10	ROUTE 40	ROUTE 31 (SOUTH)	EW	0.3	0.3	0.3	0.2	0.0	0.0	0.0	0.0
SUR	ROUTES 10/31	ROUTE 31 (SOUTH)	ROUTE 31 (NORTH)	NS	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
SUR	ROUTE 10	ROUTE 31 (NORTH)	ROUTE 617	EW	0.2	0.1	0.4	0.1	0.0	0.0	0.1	0.0
SUR	ROUTE 10	ROUTE 617	ISLE OF WIGHT CL	EW	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
SUR	ROUTE 40	SUSSEX CL	ROUTE 615	NS	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUR	ROUTE 40	ROUTE 615	ROUTE 10	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	21ST ST	PARKS AVE	PACIFIC AVE	EW	0.1	-	0.0	-	0.2	-	0.1	-
VB	21ST ST	PACIFIC AVE	ATLANTIC AVE	EW	0.0	-	0.0	-	0.0	-	0.0	-
VB	22ND ST	PARKS AVE	PACIFIC AVE	EW	-	0.2	-	0.4	-	0.3	-	0.7
VB	22ND ST	PACIFIC AVE	ATLANTIC AVE	EW	-	0.0	-	0.0	-	0.1	-	0.2
VB	ATLANTIC AVE	83RD ST	PACIFIC AVE	NS	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
VB	ATLANTIC AVE	PACIFIC AVE	LASKIN RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	ATLANTIC AVE	LASKIN RD	22ND ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	ATLANTIC AVE	22ND ST	21ST ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
VB	ATLANTIC AVE	21ST ST	VA BEACH BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	ATLANTIC AVE	VA BEACH BLVD	5TH ST	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	NS	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	BIRDNECK RD	GENERAL BOOTH BLVD	NORFOLK AVE	NS	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.0
VB	BIRDNECK RD	NORFOLK AVE	VA BEACH BLVD	NS	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
VB	BIRDNECK RD	VA BEACH BLVD	I-264	NS	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.2
VB	BIRDNECK RD	I-264	LASKIN RD	NS	0.1	0.1	0.1	0.0	0.2	0.1	0.2	0.1
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	TOLL PLAZA	NS	0.6	0.0	0.5	0.1	0.7	0.0	0.5	0.1
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	TOLL PLAZA	NCL VA BEACH	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	DAM NECK RD	VA BEACH AMPHITHEATER	PRINCESS ANNE RD	EW	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	DAM NECK RD	PRINCESS ANNE RD	ROSEMONT RD	EW	0.3	0.0	0.1	0.5	0.7	0.1	0.2	1.1
VB	DAM NECK RD	ROSEMONT RD	HOLLAND RD	EW	0.4	0.0	0.1	0.6	0.7	0.1	0.2	1.1
VB	DAM NECK RD	HOLLAND RD	DRAKESMILE RD	EW	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.4
VB	DAM NECK RD	DRAKESMILE RD	LONDON BRIDGE RD	EW	0.2	0.1	0.1	0.4	0.2	0.2	0.1	0.5
VB	DAM NECK RD	LONDON BRIDGE RD	HARPERS RD	EW	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1
VB	DIAMOND SPRINGS RD	NEWTOWN RD	WESLEYAN RD	NS	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
VB	DIAMOND SPRINGS RD	WESLEYAN RD	NORTHAMPTON BLVD	NS	0.2	0.1	0.0	0.1	0.2	0.1	0.0	0.1
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	NS	0.5	0.5	0.3	0.5	0.4	0.4	0.2	0.4
VB	FIRST COLONIAL RD	VA BEACH BLVD	I-264	NS	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.8
VB	FIRST COLONIAL RD	I-264	LASKIN RD	NS	0.1	0.1	0.1	0.3	0.3	0.3	0.4	1.0
VB	FIRST COLONIAL RD	LASKIN RD	OLD DONATION PKWY	NS	0.4	0.4	0.4	1.1	0.3	0.4	0.4	1.0
VB	FIRST COLONIAL RD	OLD DONATION PKWY	GREAT NECK RD	NS	0.3	0.3	0.3	0.9	0.3	0.4	0.4	1.0
VB	GENERAL BOOTH BLVD	PRINCESS ANNE RD	NIMMO PKWY	NS	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.3

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	GENERAL BOOTH BLVD	NIMMO PKWY	LONDON BRIDGE RD	NS	0.2	0.1	0.1	0.2	0.3	0.2	0.3	0.3
VB	GENERAL BOOTH BLVD	LONDON BRIDGE RD	DAM NECK RD	NS	0.4	0.3	0.3	0.4	0.2	0.2	0.2	0.3
VB	GENERAL BOOTH BLVD	DAM NECK RD	OCEANA BLVD/PROSPERITY RD	NS	0.2	0.2	0.1	0.2	0.3	0.4	0.2	0.4
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	NS	0.1	0.2	0.0	0.1	0.1	0.1	0.0	0.1
VB	GENERAL BOOTH BLVD	BIRDNECK RD	HARBOUR POINT	NS	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0
VB	GREAT NECK RD	VA BEACH BLVD	OLD DONATION PKWY	NS	0.1	0.3	0.1	0.4	0.1	0.2	0.1	0.2
VB	GREAT NECK RD	OLD DONATION PKWY	FIRST COLONIAL RD	NS	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1
VB	GREAT NECK RD	FIRST COLONIAL RD	SHOREHAVEN RD	NS	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
VB	GREAT NECK RD	SHOREHAVEN RD	SHORE DR	NS	0.4	0.4	0.1	0.2	0.2	0.2	0.1	0.1
VB	HOLLAND RD	INDEPENDENCE BLVD	SOUTH PLAZA TRAIL	NS	0.0	0.0	0.2	0.2	0.1	0.1	0.6	0.5
VB	HOLLAND RD	SOUTH PLAZA TRAIL	ROSEMONT RD	NS	0.2	0.1	0.7	0.7	0.1	0.1	0.6	0.5
VB	HOLLAND RD	ROSEMONT RD	LYNNHAVEN PKWY	NS	0.0	0.1	0.6	0.3	0.0	0.1	0.5	0.3
VB	HOLLAND RD	LYNNHAVEN PKWY	DAM NECK RD	NS	0.2	0.5	0.3	0.4	0.2	0.5	0.3	0.3
VB	HOLLAND RD	DAM NECK RD	NIMMO PKWY	NS	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1
VB	HOLLAND RD	NIMMO PKWY	PRINCESS ANNE RD	NS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VB	I-64	NORFOLK CL	INDIAN RIVER RD	EW	0.1	4.2	2.0	2.7	0.1	2.7	1.3	1.7
VB	I-64	INDIAN RIVER RD	CITY LINE RD/CHESEAPEAKE CL	EW	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	EW	0.2	0.3	2.1	0.7	0.1	0.2	1.4	0.5
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.1	0.4	0.4	0.4	0.1	0.3	0.3	0.3
VB	I-264	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.0	0.6	0.0	0.1	0.0	0.3	0.0	0.0
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	EW	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
VB	I-264	LYNNHAVEN PKWY	LONDON BRIDGE RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	I-264	LONDON BRIDGE RD	LASKIN RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	I-264	LASKIN RD	FIRST COLONIAL RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	I-264	FIRST COLONIAL RD	S.E. PARKWAY CORRIDOR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	I-264	S.E. PARKWAY CORRIDOR	BIRDNECK RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	I-264	BIRDNECK RD	PARKS AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	INDEPENDENCE BLVD	INDIAN RIVER RD	SALEM RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	INDEPENDENCE BLVD	SALEM RD	PRINCESS ANNE RD	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
VB	INDEPENDENCE BLVD	PRINCESS ANNE RD	LYNNHAVEN PKWY	NS	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	NS	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0
VB	INDEPENDENCE BLVD	PLAZA TRAIL	HOLLAND RD	NS	0.2	0.0	0.2	0.0	0.3	0.0	0.2	0.0
VB	INDEPENDENCE BLVD	HOLLAND RD	BAXTER RD	NS	0.8	0.2	1.3	0.8	0.9	0.2	1.6	1.0
VB	INDEPENDENCE BLVD	BAXTER RD	I-264	NS	0.1	0.0	0.3	0.1	0.5	0.2	1.5	0.4
VB	INDEPENDENCE BLVD	I-264	BONNEY RD	NS	0.2	0.1	0.2	0.2	1.0	0.4	0.8	0.7
VB	INDEPENDENCE BLVD	BONNEY RD	COLUMBUS ST	NS	0.3	0.1	0.2	0.2	1.1	0.4	0.8	0.8
VB	INDEPENDENCE BLVD	COLUMBUS ST	VA BEACH BLVD	NS	0.2	0.1	0.1	0.1	0.8	0.3	0.6	0.6
VB	INDEPENDENCE BLVD	VA BEACH BLVD	JEANNE ST	NS	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.5
VB	INDEPENDENCE BLVD	JEANNE ST	PEMBROKE BLVD	NS	0.1	0.2	0.2	0.5	0.1	0.2	0.2	0.5
VB	INDEPENDENCE BLVD	PEMBROKE BLVD	HAYGOOD RD	NS	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.2
VB	INDEPENDENCE BLVD	HAYGOOD RD	NORTHAMPTON BLVD	NS	0.2	0.3	0.2	0.4	0.1	0.2	0.1	0.2
VB	INDEPENDENCE BLVD	NORTHAMPTON BLVD	SHORE DR	NS	0.3	0.0	0.1	0.0	0.5	0.0	0.2	0.1
VB	INDIAN RIVER RD	CHESAPEAKE CL	MILITARY HWY	EW	0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.2
VB	INDIAN RIVER RD	MILITARY HWY	PROVIDENCE RD	EW	0.1	0.1	0.1	0.3	0.2	0.3	0.1	0.5
VB	INDIAN RIVER RD	PROVIDENCE RD	I-64	EW	0.1	0.2	0.4	0.8	0.2	0.4	0.6	1.3
VB	INDIAN RIVER RD	I-64	CENTERVILLE TNPK	EW	1.0	0.2	5.6	0.4	1.8	0.4	9.8	0.8
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	EW	0.6	0.7	5.4	0.5	0.8	1.0	7.5	0.8
VB	INDIAN RIVER RD	KEMPSVILLE RD	FERRELL PKWY	EW	0.0	0.8	0.1	0.7	0.1	3.3	0.4	3.0
VB	INDIAN RIVER RD	FERRELL PKWY	INDIAN LAKES BLVD	EW	0.0	0.3	0.0	0.2	0.1	0.4	0.1	0.4
VB	INDIAN RIVER RD	INDIAN LAKES BLVD	LYNNHAVEN PKWY	EW	0.2	0.1	0.1	0.1	0.5	0.4	0.3	0.2

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	INDIAN RIVER RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	0.1	0.2	0.0	0.1	0.0	0.1	0.0	0.1
VB	INDIAN RIVER RD	INDEPENDENCE BLVD	ELBOW RD	EW	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
VB	INDIAN RIVER RD	ELBOW RD	S.E. PARKWAY CORRIDOR	EW	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0
VB	INDIAN RIVER RD	S.E. PARKWAY CORRIDOR	NORTH LANDING RD	EW	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0
VB	INDIAN RIVER RD	NORTH LANDING RD	WEST NECK RD	EW	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
VB	INDIAN RIVER RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	KEMPSVILLE RD	CHESAPEAKE CL	CENTERVILLE TNPK	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	EW	0.6	0.4	0.3	0.2	0.4	0.3	0.2	0.1
VB	KEMPSVILLE RD	INDIAN RIVER RD	PROVIDENCE RD	EW	0.1	0.1	0.2	0.8	0.1	0.1	0.1	0.6
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	EW	0.6	0.4	0.3	0.6	0.6	0.4	0.3	0.6
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	EW	0.2	0.1	0.2	0.2	0.1	0.0	0.1	0.2
VB	LASKIN RD	FIRST COLONIAL RD	WINWOOD DR	EW	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
VB	LASKIN RD	WINWOOD DR	BIRDNECK RD	EW	0.0	0.1	0.1	0.2	0.0	0.1	0.1	0.2
VB	LASKIN RD	BIRDNECK RD	30TH ST	EW	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1
VB	LASKIN RD	30TH ST	PACIFIC AVE	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	NS	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
VB	LONDON BRIDGE RD	DAM NECK RD	DRAKESMILE RD	NS	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0
VB	LONDON BRIDGE RD	POTTERS RD	I-264	NS	0.1	0.0	0.1	0.0	0.5	0.2	0.5	0.3
VB	LONDON BRIDGE RD	I-264	VA BEACH BLVD	NS	0.1	0.0	0.1	0.1	0.5	0.2	0.5	0.3
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	EW	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0
VB	LYNNHAVEN PKWY	SALEM RD	PRINCESS ANNE RD	EW	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.1
VB	LYNNHAVEN PKWY	PRINCESS ANNE RD	INDEPENDENCE BLVD	EW	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1
VB	LYNNHAVEN PKWY	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
VB	LYNNHAVEN PKWY	ROSEMONT RD	HOLLAND RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
VB	LYNNHAVEN PKWY	HOLLAND RD	S LYNNHAVEN RD	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
VB	LYNNHAVEN PKWY	S LYNNHAVEN RD	INTERNATIONAL PKWY	NS	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.2
VB	LYNNHAVEN PKWY	INTERNATIONAL PKWY	POTTERS RD	NS	0.2	0.1	0.4	0.3	0.2	0.1	0.4	0.2
VB	LYNNHAVEN PKWY	POTTERS RD	I-264	NS	0.0	0.0	0.1	0.0	0.1	0.1	0.4	0.2
VB	LYNNHAVEN PKWY	I-264	VA BEACH BLVD	NS	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.1
VB	MILITARY HWY	CHESAPEAKE CL	PROVIDENCE RD	NS	0.1	0.0	0.1	0.1	0.3	0.3	0.5	0.7
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	NS	0.3	0.1	0.5	0.2	0.7	0.3	1.0	0.4
VB	MILITARY HWY	INDIAN RIVER RD	NORFOLK CL	NS	0.3	0.3	0.3	0.6	0.3	0.3	0.3	0.6
VB	NEWTOWN RD	NORFOLK CL	BAKER RD	NS	0.1	0.2	0.1	0.4	0.3	0.8	0.4	1.5
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	NS	0.1	0.2	0.2	0.1	0.2	0.4	0.3	0.3
VB	NORTHAMPTON BLVD	WESLEYAN DR/NORFOLK CL	DIAMOND SPRINGS RD	EW	2.3	1.0	0.7	2.2	2.4	1.1	0.7	2.3
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	0.0	0.4	0.0	0.7	0.0	0.2	0.0	0.3
VB	NORTHAMPTON BLVD	INDEPENDENCE BLVD	SHORE DR	EW	0.2	0.2	0.3	0.5	0.2	0.2	0.3	0.5
VB	NORTH LANDING RD	CHESAPEAKE CL	INDIAN RIVER RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	NORTH LANDING RD	INDIAN RIVER RD	SALEM RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	NORTH LANDING RD	SALEM RD	WEST NECK RD	EW	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
VB	NORTH LANDING RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	OCEANA BLVD	GENERAL BOOTH BLVD	HARPERS RD/S.E. PARKWAY	NS	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.3
VB	OCEANA BLVD	HARPERS RD/S.E. PARKWAY	TOMCAT BLVD (NAS MAIN ENT)	NS	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	NS	0.1	0.1	0.5	0.1	0.0	0.0	0.2	0.0
VB	PACIFIC AVE	ATLANTIC AVE	LASKIN RD	NS	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
VB	PACIFIC AVE	LASKIN RD	22ND ST	NS	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1
VB	PACIFIC AVE	22ND ST	21ST ST	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2
VB	PACIFIC AVE	21ST ST	VA BEACH BLVD	NS	0.1	0.0	0.0	0.0	0.2	0.1	0.2	0.2
VB	PACIFIC AVE	VA BEACH BLVD	NORFOLK AVE	NS	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
VB	PACIFIC AVE	NORFOLK AVE	HARBOUR POINT	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	EW	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1
VB	PRINCESS ANNE RD	KEMPSVILLE RD	BAXTER RD	EW	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.3
VB	PRINCESS ANNE RD	BAXTER RD	PROVIDENCE RD	EW	0.4	0.1	0.5	0.2	0.2	0.1	0.3	0.1
VB	PRINCESS ANNE RD	PROVIDENCE RD	FERRELL PKWY	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	FERRELL PKWY	LYNNHAVEN PKWY	EW	0.2	0.3	0.3	0.2	0.3	0.7	0.5	0.5
VB	PRINCESS ANNE RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	0.3	0.2	0.2	0.1	0.6	0.6	0.3	0.3
VB	PRINCESS ANNE RD	INDEPENDENCE BLVD	DAM NECK RD	EW	0.8	0.8	0.5	0.4	0.6	0.5	0.3	0.3
VB	PRINCESS ANNE RD	DAM NECK RD	S.E. PARKWAY	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	S.E. PARKWAY	NIMMO PKWY	EW	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	NIMMO PKWY	NORTH LANDING RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VB	PRINCESS ANNE RD	NORTH LANDING RD	HOLLAND RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	HOLLAND RD	SEABOARD RD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	SEABOARD RD	GENERAL BOOTH BLVD	EW	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
VB	PRINCESS ANNE RD	GENERAL BOOTH BLVD	SANDBRIDGE RD/UPTON DR	NS	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
VB	PRINCESS ANNE RD	SANDBRIDGE RD/UPTON DR	SEABOARD RD	NS	0.3	0.1	0.1	0.2	0.2	0.1	0.1	0.1
VB	PRINCESS ANNE RD	SEABOARD RD	INDIAN RIVER RD	NS	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	NS	1.3	0.9	0.7	0.4	0.2	0.1	0.1	0.0
VB	PRINCESS ANNE RD	PUNGO FERRY RD	NORTH CAROLINA STATE LINE	NS	0.5	0.3	0.3	0.1	0.1	0.1	0.0	0.0
VB	ROSEMONT RD	LYNNHAVEN PKWY	HOLLAND RD	NS	0.3	0.1	0.1	0.3	0.3	0.1	0.1	0.2
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	NS	0.2	0.0	0.1	0.1	0.2	0.0	0.1	0.1
VB	ROSEMONT RD	PLAZA TRAIL	I-264	NS	0.1	0.0	0.1	0.1	0.2	0.0	0.1	0.1
VB	ROSEMONT RD	I-264	VA BEACH BLVD	NS	0.1	0.0	0.0	0.0	0.4	0.1	0.3	0.2
VB	SHORE DRIVE	NORFOLK CL	DIAMOND SPRINGS RD	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1
VB	SHORE DRIVE	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	0.5	0.2	0.2	0.3	0.3	0.1	0.1	0.1
VB	SHORE DRIVE	INDEPENDENCE BLVD	PLEASURE HOUSE RD	EW	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1
VB	SHORE DRIVE	PLEASURE HOUSE RD	NORTHAMPTON BLVD	EW	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.2
VB	SHORE DRIVE	NORTHAMPTON BLVD	GREAT NECK RD	EW	0.6	0.3	0.6	0.4	0.2	0.1	0.2	0.1
VB	SHORE DRIVE	GREAT NECK RD	ATLANTIC AVE	EW	0.1	0.2	0.1	0.2	0.0	0.1	0.0	0.0
VB	VA BEACH BLVD	NEWTOWN RD/NORFOLK CL	WITCHDUCK RD	EW	0.2	0.1	0.3	0.2	0.1	0.1	0.2	0.1
VB	VA BEACH BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.3	0.1	1.0	0.3	0.3	0.1	0.9	0.3
VB	VA BEACH BLVD	INDEPENDENCE BLVD	CONSTITUTION DR	EW	0.1	0.1	0.1	0.2	0.3	0.3	0.5	0.5
VB	VA BEACH BLVD	CONSTITUTION DR	ROSEMONT RD	EW	0.5	0.5	0.9	1.0	0.3	0.3	0.5	0.5
VB	VA BEACH BLVD	ROSEMONT RD	S. PLAZA TRAIL/LITTLE NECK RD	EW	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.3
VB	VA BEACH BLVD	S. PLAZA TRAIL/LITTLE NECK RD	LYNNHAVEN PKWY	EW	0.3	0.2	0.4	0.3	0.2	0.2	0.2	0.2
VB	VA BEACH BLVD	LYNNHAVEN PKWY	GREAT NECK RD	EW	0.2	0.2	0.1	0.3	0.3	0.2	0.2	0.4
VB	VA BEACH BLVD	GREAT NECK RD	LASKIN RD	EW	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.3
VB	VA BEACH BLVD	LASKIN RD	FIRST COLONIAL RD	EW	0.3	0.0	0.2	0.2	0.3	0.0	0.2	0.2
VB	VA BEACH BLVD	FIRST COLONIAL RD	N OCEANA BLVD	EW	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2
VB	VA BEACH BLVD	N OCEANA BLVD	BIRDNECK RD	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	EW	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.2
VB	WITCHDUCK RD	PRINCESS ANNE RD	I-264	NS	0.5	0.3	0.4	1.0	0.6	0.4	0.5	1.3
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	NS	0.4	0.3	0.4	0.8	0.8	0.6	0.8	1.6
VB	WITCHDUCK RD	VA BEACH BLVD	PEMBROKE BLVD	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
WMB	BYPASS RD	RICHMOND RD	YORK CL	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	FRANCIS ST	BOUNDARY ST	HENRY ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
WMB	HENRY ST S.	ROUTE 199	FRANCIS ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	HENRY ST	FRANCIS ST	LAFAYETTE ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
WMB	JAMESTOWN RD	JAMES CITY CL	RTE 199	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	JAMESTOWN RD	RTE 199	JOHN TYLER LN	EW	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
WMB	JAMESTOWN RD	JOHN TYLER LN	COLLEGE CREEK	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	JAMESTOWN RD	COLLEGE CREEK	BOUNDARY ST	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	NS	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
WMB	PAGE ST	BYPASS RD	SECOND ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	PAGE ST	SECOND ST	YORK ST	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WMB	RICHMOND RD	JAMES CITY CL	IRONBOUND RD	NS	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	NS	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.1
WMB	ROUTE 132	ROUTE 132Y	BYPASS RD/YORK CL	NS	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
WMB	ROUTE 199	JAMES CITY CL (WEST)	JAMESTOWN RD	EW	0.1	0.1	0.3	0.1	0.5	0.4	1.4	0.3
WMB	ROUTE 199	JAMESTOWN RD	JAMES CITY CL (EAST)	EW	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1
WMB	YORK ST	PAGE ST	JAMES CITY CL	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
YC	BIG BETHEL RD	HAMPTON HWY (RTE 134)	VICTORY BLVD (RTE 171)	NS	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
YC	BYPASS RD	WILLIAMSBURG CL	WALLER MILL RD	EW	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
YC	BYPASS RD	WALLER MILL RD	ROUTE 132/WILLIAMSBURG CL	EW	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.0
YC	FORT EUSTIS BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.1	0.4	0.1	0.2	0.0	0.2	0.1	0.1
YC	GEORGE WASHINGTON HWY	NEWPORT NEWS CL	VICTORY BLVD (RTE 171)	NS	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2
YC	GEORGE WASHINGTON HWY	VICTORY BLVD (RTE 171)	HAMPTON HWY (RTE 134)	NS	0.1	0.3	0.2	0.3	0.1	0.4	0.3	0.5
YC	GEORGE WASHINGTON HWY	HAMPTON HWY (RTE 134)	DARE RD	NS	1.0	0.9	1.2	0.8	0.4	0.4	0.5	0.3
YC	GEORGE WASHINGTON HWY	DARE RD	DENBIGH BLVD (RTE 173)	NS	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.2
YC	GEORGE WASHINGTON HWY	DENBIGH BLVD (RTE 173)	FORT EUSTIS BLVD (RTE 105)	NS	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
YC	GEORGE WASHINGTON HWY	FORT EUSTIS BLVD (RTE 105)	COOK RD	NS	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.3
YC	GEORGE WASHINGTON HWY	COOK RD	GOOSLEY RD (RTE 238)	NS	0.5	0.9	0.9	0.8	0.2	0.4	0.4	0.3
YC	GEORGE WASHINGTON HWY	GOOSLEY RD (RTE 238)	GLOUCESTER CL (COLEMAN BRIDGE)	NS	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	EW	0.3	0.4	0.2	0.3	0.3	0.4	0.2	0.3
YC	HAMPTON HWY	ROUTE 17	VICTORY BLVD (RTE 171)	NS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	NS	0.1	0.3	0.1	0.3	0.1	0.2	0.1	0.2
YC	HAMPTON HWY	BIG BETHEL RD (RTE 600)	NCL HAMPTON	NS	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
YC	I-64	JAMES CITY CL	RTE 199/646	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	I-64	RTE 199/646	RTE 143	EW	0.0	0.0	0.1	1.5	0.0	0.0	0.0	0.4
YC	I-64	RTE 143	RTE 199 (EAST OF WILLIAMSBURG)	EW	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.3
YC	I-64	RTE 199 (EAST OF WILLIAMSBURG)	GROVE CONNECTOR	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	I-64	GROVE CONNECTOR	JAMES CITY CL	EW	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
YC	MERRIMAC TRAIL	JAMES CITY CL	BUSCH GARDENS INTERCHANGE	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	MERRIMAC TRAIL	BUSCH GARDENS INTERCHANGE	ROUTE 199/JAMES CITY CL	NS	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
YC	MERRIMAC TRAIL	PENNIMAN RD/JAMES CITY CL	SECOND ST	NS	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2
YC	MERRIMAC TRAIL	SECOND ST	SCL WILLIAMSBURG	NS	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
YC	MERRIMAC TRAIL	NCL WILLIAMSBURG	ROUTE 132	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
YC	ROUTE 143	ROUTE 132	I-64	NS	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	POCAHONTAS TRAIL	JCC LINE @ RTE 199	KINGSMILL RD	EW	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2
YC	POCAHONTAS TRAIL	KINGSMILL RD	BUSCH GARDENS INTERCHANGE	EW	0.3	0.2	0.4	0.3	0.2	0.1	0.3	0.3
YC	POCAHONTAS TRAIL	BUSCH GARDENS INTERCHANGE	JAMES CITY CL	EW	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
YC	ROUTE 132	BYPASS RD/WILLIAMSBURG CL	ROUTE 143	NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	ROUTE 199	JCC LINE (WESTSIDE)	MOORETOWN RD	EW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YC	ROUTE 199	MOORETOWN RD	I-64	EW	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.

					Total Weekday Truck Delay (hours)				Total Wkdy Truck Delay per mile (hrs/mi)			
					AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
Juris Name	Facility Name	Segment From	Segment To	Dir	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	EW	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
YC	VICTORY BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.2	0.2	0.6	0.2	0.3	0.2	0.7	0.3
YC	VICTORY BLVD	ROUTE 17	HAMPTON HWY (RTE 134)	EW	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3
YC	VICTORY BLVD	HAMPTON HWY (RTE 134)	BIG BETHEL RD (RTE 600)	EW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
YC	VICTORY BLVD	BIG BETHEL RD (RTE 600)	CARYS CHAPEL RD (RTE 782)	EW	0.2	0.3	0.1	0.2	0.1	0.2	0.1	0.1
YC	VICTORY BLVD	CARYS CHAPEL RD (RTE 782)	POQUOSON CL	EW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

Appendix F (continued) – Total Weekday Truck Hours of Delay by Location

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. The AM Peak Period occurs between 5 am and 9 am, and the PM Peak Period occurs between 3 pm and 7 pm.