HAMPTON ROADS REGIONAL FREIGHT STUDY

2025 Update

HAMPTON ROADS TPO

T25-05 | February 2026

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HAMPTON ROADS REGIONAL FREIGHT STUDY

2025 UPDATE

PREPARED BY:

HAMPTON ROADS TPO

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REPORT DOCUMENTATION

TITLE:
Hampton Roads Regional Freight Study – 2025 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) 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

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Prepared in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Virginia Department of Transportation (VDOT). Additional collaboration was made with the Virginia Port Authority and the Freight Technical Advisory Committee (FTAC). 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, **the 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. The primary activity is the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. This 2025 update builds on previous efforts and is intended to inform freight policy, program, and investment decisions in the Hampton Roads region. 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.

All metropolitan areas are impacted by the movement of freight to some degree; the Hampton Roads region, however, experiences it 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 and the Midwest.

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 $88 Billion in total revenue (FY 2022) to the Commonwealth of Virginia. Due to this location and infrastructure, the Hampton Roads region is expected to experience large growth in freight movement. 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.

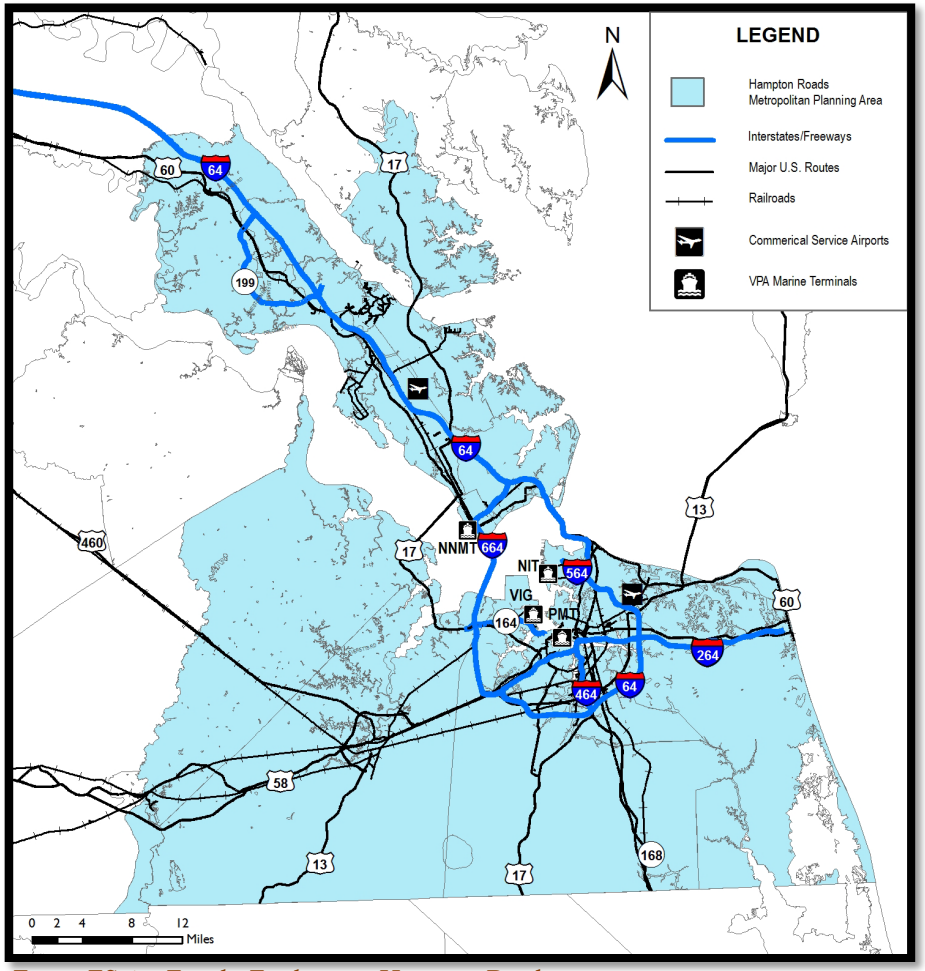


Figure ES-1 – Freight Facilities in Hampton Roads.
Source: HRTPO.

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

- In 2023, the Port of Virginia handled 1.8 million containers. By 2065, this demand is projected to increase to approximately 4.4 million containers. However, the range of container volumes projected for the year 2065 in the Master Plan varies from a low end of 3.6 million containers to a high end of 7.0 million containers.
- The Port of Virginia is the 12th highest U.S. foreign trade freight gateway, moving $106.5 billion in shipments in 2022.
- The Port of Virginia is the 9th largest Port in the U.S. in total tonnage as of 2022.
- Cargo tonnage handled by the Port of Virginia increased 30% from 2014 to 2023, and will likely continue to increase.
- The majority of freight (56%) handled by the Port of Virginia is moved by truck, followed by rail (40%) and barge (4%).
- Hampton Roads has consistently ranked in the top three of East Coast ports for general cargo (in twenty-foot equivalent units, or TEUs) (**Figure ES-2**). The steady increase in general cargo at the Port of Virginia since 2014 has also been experienced at other top East Coast ports.
- Virginia is the largest coal export port in the United States. While coal loadings handled in Virginia decreased during the COVID-19 pandemic in 2020, coal loadings have increased each year since, with 35.5 million tons in 2023.
- The Virginia maritime industry added $87.8 Billion (14%) to the Commonwealth of Virginia's total estimated Gross State Product of $649.4 Billion in 2022.

Rail

- The Port of Virginia has a higher amount of freight transported by rail than other East Coast marine terminals, with most of this freight being transported to and from Midwestern markets. In 2023, 40% of the general cargo handled by the Port of Virginia – was transported by rail (**Figure ES-3**). The share of freight moved by rail through the Port of Virginia has increased, up from typical levels of 32% - 34% over the last decade.

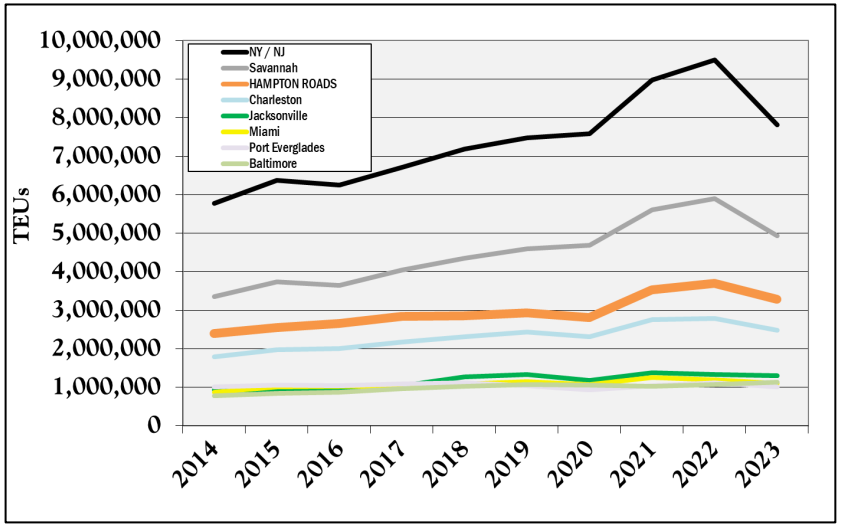


Figure ES-2– General Cargo (in TEUs) Handled at Top East Coast Ports, 2014-2023
Source: AAPA.

- This does not include the large amount of coal transported via rail from the mountains of West Virginia and western Virginia to terminals in Hampton Roads. Hampton Roads continues to be the largest exporter of coal in the United States, with over 35 million tons of coal being shipped through the region in 2023.

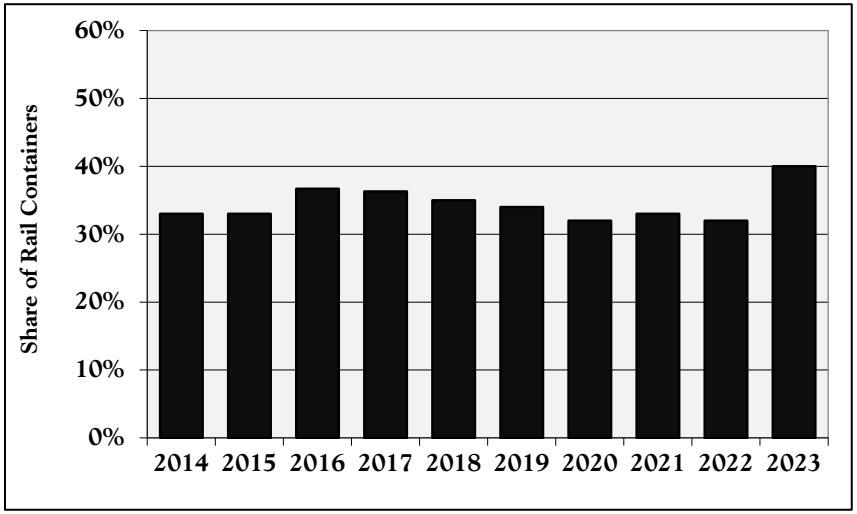


Figure ES-3 – Share of Rail Containers Handled by the Port of Virginia, 2014-2023
Source: Virginia Port Authority

Highway

- Currently, 9% of the major roadway lane-miles in Hampton Roads are severely congested during the PM Peak Period. High-profile, severely congested locations include the Hampton Roads Bridge-Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, and Downtown Tunnel.
- 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:
    - Hampton Roads Bridge-Tunnel widening (underway)
    - Hampton Roads Express Lanes Network (underway)
    - I-64 Widening on the Southside including the High Rise Bridge (complete)
    - I-64 Widening on the Peninsula between Route 199 – Exist 234 and Jefferson Avenue – Exit 255 (complete)
    - I-64/I-264 Interchange Improvements (complete)
    - I-64 widening on the Peninsula between New Kent/James City County Line and Exit 234 (underway)
    - I-64/I-464 Interchange improvements from I-64 Eastbound to Route 168 Southbound (underway)
    - I-664 Widening from Bowers Hill to College Drive (planned)
    - Virginia Route 164 Widening from West Norfolk Road to I-664 (planned)
    - I-264 Widening from Witchduck Road to Independence Boulevard (planned)

Truck Parking Challenges

- 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.

VDOT DISTRICT	SPACES NEEDED AT PUBLIC JUNCTIONS		SPACES NEEDED AT PRIVATE JUNCTIONS		TOTAL SPACES NEEDED	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
BRISTOL	26	94	500	1,329	526	1,423
CULPEPER	12	24	40	102	52	126
FREDERICKSBURG	45	93	295	798	340	891
HAMPTON ROADS	0	1	337	1,056	337	1,057
LYNCHBURG	0	0	62	142	62	142
NORTH VIRGINIA	56	189	0	0	56	189
RICHMOND	56	162	813	1,843	869	2,005
SALEM	78	132	271	720	349	852
STAUNTON	109	190	544	1,699	653	1,889
GRAND TOTAL	382	885	2,862	7,689	3,244	8,574

Figure ES-4 – Summary of Additional Truck Parking Spaces Needed in Virginia by District
Data Source: VDOT – Virginia Truck Parking Study, April 2022.

- 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 truckers surveyed 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 unreliable travel times.
- 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.

- 142 parking facilities provide 8,071 designated truck parking spaces in Virginia. 3,244 additional parking spaces are needed statewide today, and 8,574 additional spaces will be needed by 2045 during peak demand periods. In Hampton Roads, 337 additional spaces are needed today and 1,057 additional spaces will be needed by 2045 (**Figure ES-4**).

Intermodal Conflict Points

- With navigable waterways in Hampton Roads such as the James River, York River, Elizabeth River, and Intracoastal Waterway, there are a number of movable bridges in the region. A total of 367,000 vehicles cross 9 movable roadway bridges in Hampton Roads each weekday. Most of these drawbridges have restrictions in terms of when they can be opened for maritime traffic, particularly during peak travel periods.
- A number of movable roadway drawbridges in Hampton Roads have been replaced with fixed-span bridges in recent years, including the South Norfolk Jordan Bridge, Dresser Bridge, Veterans Bridge, and westbound High Rise Bridge.
- Although not as prominent to the public 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. 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.
- There are 607 highway-rail crossings in Hampton Roads. Of these, 146 crossings are grade-separated, meaning the roadway traverses over or under the railroad without any conflict. The remaining 473 crossings are at-grade, resulting in conflicts between roadway users and the railroad. Among these 473 at-grade crossings, 307 are publicly owned and maintained, while the remainder are privately owned and primarily serve businesses or residences. Over 1.6 million vehicles cross these 307 public, at-grade crossings each day.
- The number of collisions between trains and roadway users has greatly decreased in recent years. As shown in **Figure ES-5**, there were three crashes between trains and vehicles at highway-rail crossings in Hampton Roads in 2023, resulting in no injuries and no fatalities. Between 2014 and 2023, there were 68 crashes at highway-rail crossings in Hampton Roads, resulting in 5 fatalities and 26 injuries. This is down from 184 crashes in the 1990s and 102 crashes in the 2000s.

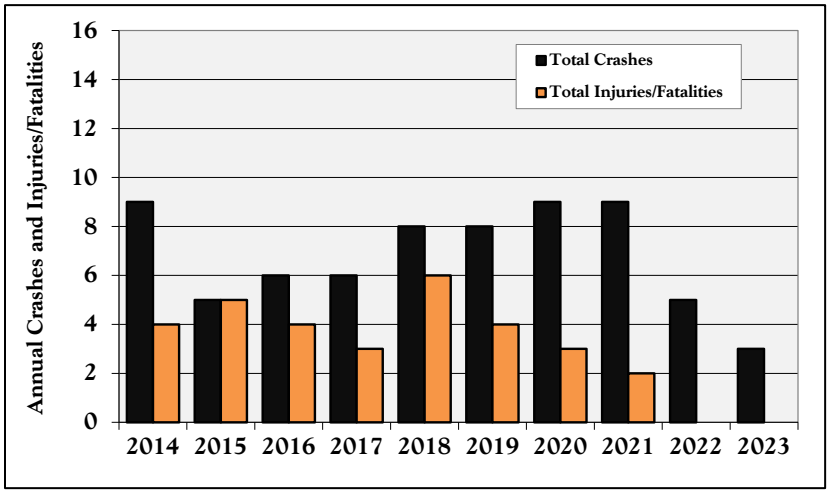


Figure ES-5 – Total Crashes and Injuries/Fatalities at Highway-Rail Crossings in Hampton Roads, 2014-2023
Source: HRTPO analysis of FRA data.

- There have been improvements to a number of 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. Additional grade-separated crossings of the CSX Railroad were constructed on the Peninsula at City Center Boulevard in 2015, at Atkinson Boulevard in 2020, and at Green Mount Parkway in 2022. In addition, a grade-separation of Nansemond Parkway and the Commonwealth Railway near Wilroy Road opened in Suffolk in 2025.

Air Cargo

- Approximately 45 million pounds of air cargo were shipped in and out of Norfolk International Airport (ORF) in 2024.
- In 2023, total air cargo moved at ORF was ranked 346th highest in the world and 97th highest in North America. In 2023, air cargo moved at Richmond International Airport (RIC) was ranked 176th highest in the world and 49th highest in North America. In 2023 and 2024, air cargo at ORF decreased but increased at RIC. From 2022 to 2023, air cargo decreased by 12.2% at ORF but increased by 26.9% at RIC. From 2023 to 2024, air cargo decreased by 19.2% at ORF but increased by 7.8% at RIC.

Foreign-Trade Zones

- Foreign-Trade Zones (FTZ) are locations where foreign and domestic merchandise is considered in international commerce (not U.S. Commerce territory). There are 298 foreign trade zones in the United States and 6 within Virginia. The Virginia Port Authority administers Foreign-Trade Zone Suffolk (FTZ #20). FTZ #20 has a service area that includes Accomack (partial), Gloucester, Isle of Wight, James City, Mathews, Northampton, Southampton, Sussex, Surry, and York counties, and the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg.

Warehouse and Distribution Facilities/Manufacturing Facilities/Business and Industrial Parks

- Within Hampton Roads, many warehouse and distribution facilities are located along gateway roadways that lead in and out of the region, such as US Route 58, US Route 460, and I-64.
- The Port 460 Logistics Center (**Figure ES-6**) broke ground in September 2024. This multi-phase project in Suffolk, Virginia will deliver 2.4 million square feet of industrial space for the first phase. A second phase totaling 2.6 million square feet will follow after the completion of Phase One. Once completed, Port 460 will offer direct access to the Port of Virginia and 75 percent of the U.S. population.

Figure ES-6 – The Port 460 Logistics Center along Pruden Boulevard in Suffolk covers 545 acres and will include about 5 million square feet of warehouse space.

- Hampton Roads is the home of numerous manufacturing facilities, many of which are related to the marine transportation and defense industries. Major global companies such as Canon and STIHL also operate manufacturing facilities in the region.

Hampton Roads Freight Facilities Interactive Map

- HRTPO staff has created a web-based, interactive mapping inventory of freight facilities in Hampton Roads in order to improve access to information on freight facilities and their role in economic development and transportation across the region. The Hampton Roads Freight Facilities Interactive Map serves as a hub of datasets for other planners, economic developers, public officials, decision-makers and the general public.

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 2045. Data for this effort was primarily drawn from S&P Global 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 or have origins or destinations of cities/counties in Virginia.

Summary of North American Freight Movement

- In 2017, 71 million tons (valued at $164 billion) of North American (USA, Canada, and Mexico) freight was transported by all modes to, from, within, and through Hampton Roads (**Figure ES-7**). By 2045, this is expected to increase by 153% in tonnage to 180 million tons and by 217% in value to $521 billion (constant $2017).
- The total tonnage moved by truck is expected to increase 160% from 65 to 169 million tons between 2017 and 2045. Likewise, units (number of trucks) are expected to increase 162% from 5.6 million to 14.7 million between 2017 and 2045. 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.**
- The value of commodities moved by truck is expected to increase 211% between 2017 ($109 billion) and 2045 ($341 billion). The value of commodities moved by rail is expected to increase 250% between 2017 ($47 billion) and 2045 ($166 billion).

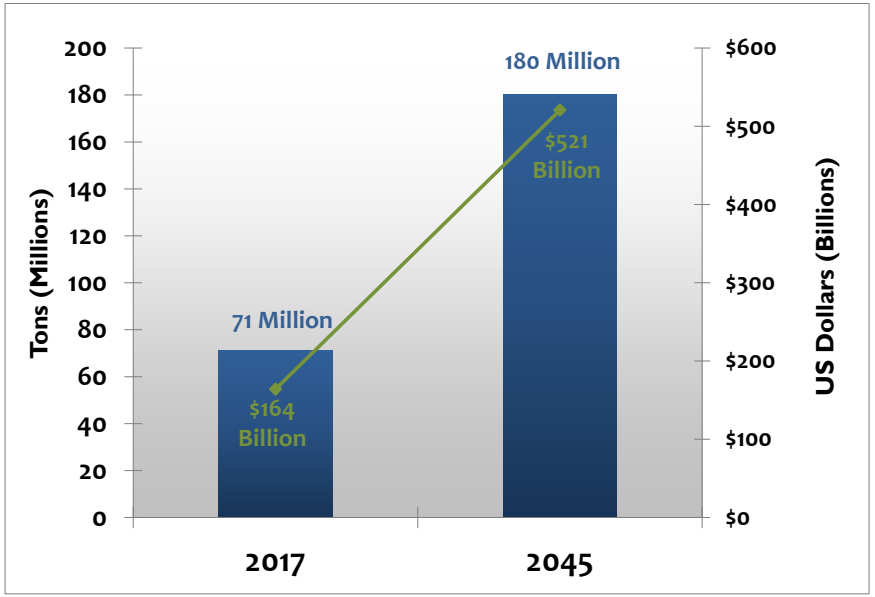


Figure ES-7 – Summary of North American Freight Movement – Hampton Roads (All Modes, excluding Rail tonnage), 2017 and 2045

Source: HRTPO and VDOT analysis of Transearch Data. Includes to, from, within, and through freight.
Note: 2045 forecast is in 2017 dollars.

Hampton Roads Top Commodities – All Modes

- The top five commodities transported in 2017 include petroleum or coal products, secondary traffic[i], food or kindred products, nonmetallic minerals, and farm products. By 2045, petroleum or coal products are expected to increase by 224% and remain the top commodity by weight with the share increasing from 26% to 33%.

[i] Secondary Traffic - movements in the distribution chain that originate from warehouse, distribution centers, or other facilities where they were not actually produced.

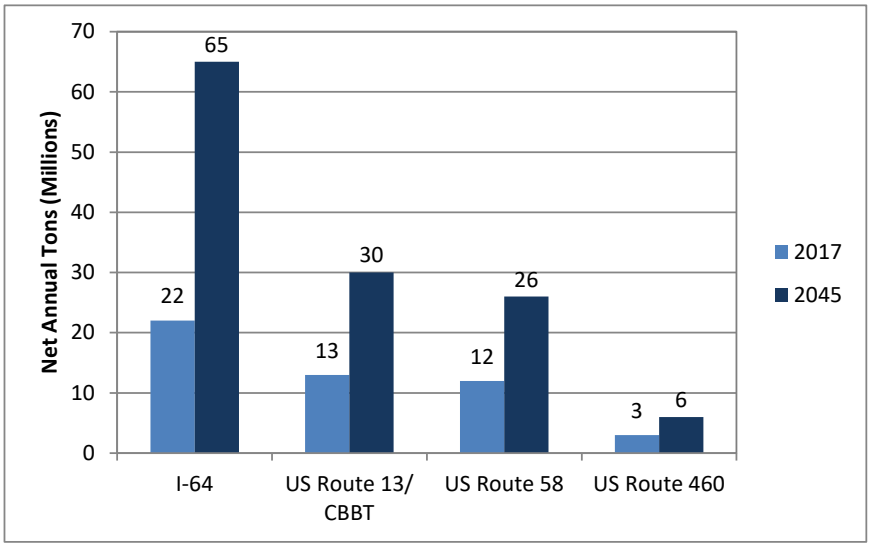


Figure ES-8 – Net Annual Tonnage Carried by Truck at Regional Gateways, 2017 and 2045

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and

Net Annual Tonnage, Units and Dollars Carried by Truck

- In 2017, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor. By 2045, the top corridors for moving freight tonnage are expected to be I-64, US Route 13/Chesapeake Bay Bridge-Tunnel (CBBT), US Route 58, I-664 across the MMMBT and I-264 in Norfolk and Portsmouth. By 2045, the top three primary gateways for freight by annual tonnage are expected to be I-64, US Route 13/CBBT and US Route 58 (**Figure ES-8**).
- By 2045, US Route 58 is expected to have a similar number of trucks to US Route 13/CBBT even though the tonnage is less.
- In 2017, the highest freight flows in Virginia in terms of number of trucks are along Interstates I-95, I-81, I-77, I-495, I-66, I-295, Route 13/58/460, and I-64. By 2045, the estimated number of trucks across the state are expected to increase significantly, especially along Interstates I-95, I-81, I-77, I-495, and I-64.

Regional Truck Movement

Truck Travel in Hampton Roads

- There were a total of 1.6 million truck-miles of travel each day in Hampton Roads in 2023 according to VDOT data (**Figure ES-9**). This amount of truck travel comprises 3.7% of the 43 million vehicle-miles of travel that occurred in the region each day.
- Regional truck travel levels in 2023 were 33% higher than the levels seen in Hampton Roads in 2014.
- The percentage of truck travel in Hampton Roads has also increased. In 2014, 3.1% of all vehicular travel in Hampton Roads was truck travel, compared to 3.7% in 2023.

Truck Movements through Regional Gateways

- The primary gateway for trucks entering or exiting Hampton Roads is I-64. An average of 7,300 trucks used I-64 to enter or exit the region each weekday in 2023, which accounted for 36% of the trucks passing through the region's major gateways (**Figure ES-11**). The number of trucks using I-64 has increased over the last decade, up from 6,000 trucks each weekday in 2014.

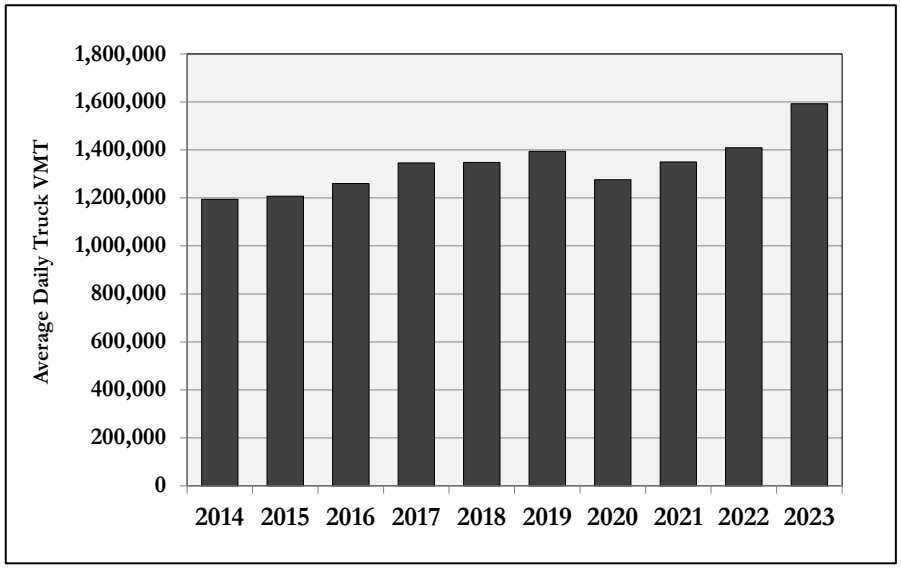


Figure ES-9 – Daily Truck-Miles of Travel in Hampton Roads, 2014-2023

Source: HRTPO analysis of VDOT data.

- The next most traveled corridors for trucks entering and exiting the region are US Route 58 and US Route 460. Over 4,600 trucks used the US Route 58 gateway in 2023, up from 3,900 trucks in 2014. US Route 460 has also seen an increase in truck volumes. Nearly 2,500 trucks used the US Route 460 gateway each weekday in 2023, up from 2,000 trucks in 2014.
- Combined, I-64, US Route 58, and US Route 460 accounted for 71% of all trucks passing through the region's major gateways in 2023 (**Figure ES-10**). This is up slightly from 69% at these gateways in 2014.

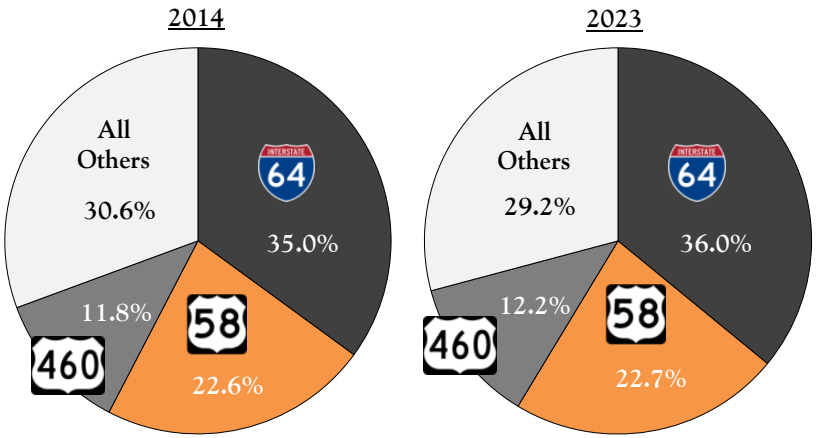


Figure ES-10 – Share of Trucks Passing through Regional Gateways Each Weekday, 2014 and 2023
Source: HRTPO analysis of VDOT and CBBT data.

Truck Movements across Regional Water Crossings

- The Monitor-Merrimac Memorial Bridge-Tunnel was the most used facility by trucks crossing the Hampton Roads Harbor in 2023. Over 5,800 trucks used the Monitor-Merrimac Memorial Bridge-Tunnel each weekday in 2023, or 59% of the trucks crossing the harbor. The Hampton Roads Bridge-Tunnel carried an average of 3,100 trucks each weekday, or 31% of the trucks crossing the harbor, and the James River Bridge carried just over 1,000 trucks each weekday (10%).

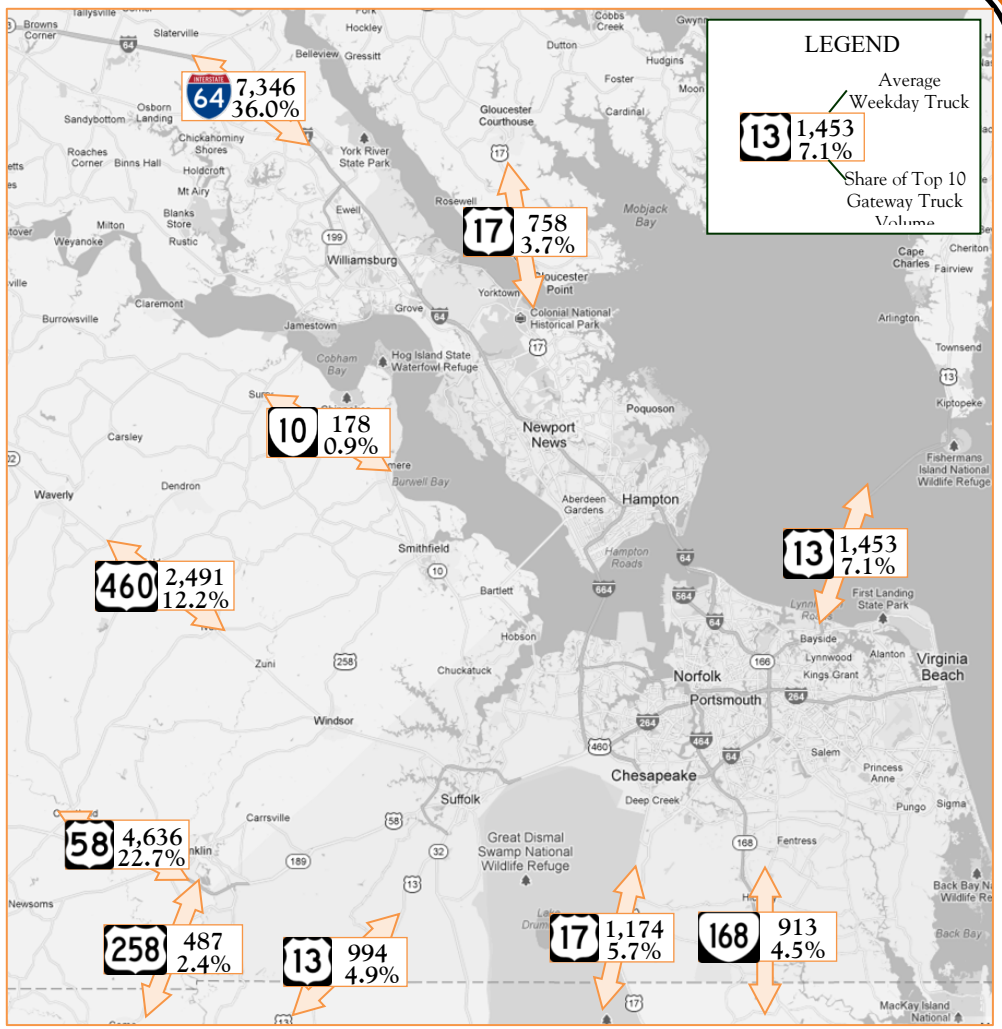


Figure ES-11 – Number and Share of Trucks Passing Through the Top 10 Regional Gateways Each Weekday, 2023
Source: HRTPO analysis of VDOT and CBBT data. Background map source: Google.

- A total of 16,700 trucks crossed the Elizabeth River each weekday in 2023. The High Rise Bridge carried an estimated 7,600 trucks each weekday in 2023, which is nearly half of the truck volume using the Elizabeth River crossings. The Downtown Tunnel carried the next highest number of trucks at an estimated 3,000 each weekday in 2023.

Freight Bottlenecks

Average Delay per Truck

- 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 6.0 minutes per mile during the AM Peak Period. Between Settlers Landing Road and Mallory Street, average delays are 4.3 minutes per mile.
- Non-freeway locations with the highest average truck delay during the AM Peak Period include many very short segments. However, Settlers Landing Road approaching I-64 near the HRBT and roadways adjacent to the Norfolk Naval Shipyard also rank high on the list, as do multiple segments of Hampton Boulevard.

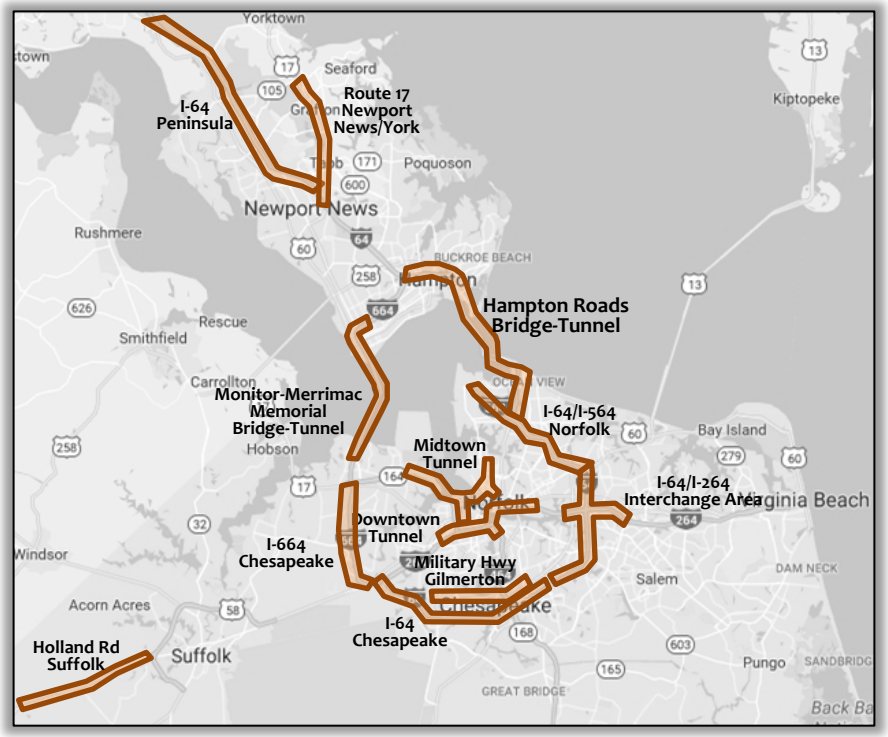


Figure ES-12 – High Profile Regional Corridors
Base Map Source: Google.

- 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 6.6 minutes per mile between 23rd Street and Terminal Avenue.
- Non-freeway locations in Hampton Roads with the highest average truck delay during the PM Peak Period also include some very short roadway segments. However, arterial approaches to the HRBT, including Fourth View Street, Woodland Road, and Settlers Landing Road, rank high on the list. Segments approaching other tunnels in the region are also high on the list, including Effingham Street and Saint Pauls Boulevard approaching I-264 and the Downtown Tunnel, and Jefferson Avenue approaching the Monitor-Merrimac Memorial Bridge-Tunnel.

Total Truck Delay

- As with average delays, most of the freeway segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. The segment with the highest total truck delay is the approach to the eastbound Hampton Roads Bridge-Tunnel. The eastbound segment between Rip Rap Road and Settlers Landing Road experiences a total of 43.2 truck-hours of delay per mile each weekday.
- Other freeway segments with the highest weekday total truck delays per mile include segments approaching the Downtown Tunnel (eastbound between Des Moines Avenue and Effingham Street, eastbound between Effingham Street and I-464, and westbound between I-464 and Effingham Street), a segment approaching the Monitor-Merrimac Memorial Bridge-Tunnel (southbound between 23rd Street and Terminal Avenue), and a segment approaching the High Rise Bridge (westbound between Military Highway and George Washington Highway).
- The two non-freeway segments with the highest total truck delays were Route 58/Holland Road between Cove Point Drive and the Suffolk Bypass in Suffolk. Total truck delays were 20.5 hours per mile in the westbound direction and 14.9 hours per mile in the

eastbound direction. The next highest total truck delays on non-freeway segments were on Route 460 in Windsor, Northampton Boulevard approaching I-64 in the southbound direction, and many sections of Hampton Boulevard. Seven of the Top 20 non-freeway segments with the highest total truck delay were sections of Hampton Boulevard in the City of Norfolk.

Corridor	AM Peak Period Truck Delay (hours)	Midday Truck Delay (hours)	PM Peak Period Truck Delay (hours)	Weekday Total Truck Delay (hours)	Annual Weekday Total Truck Delay (hours)	Annual Weekday Congestion Cost Incurred by Trucking Industry
HAMPTON ROADS BRIDGE-TUNNEL	83.4	101.2	109.7	294.2	73,550	$6,712,909
I-64 CHESAPEAKE	73.1	38.7	91.3	203.1	50,775	$4,634,234
HOLLAND RD - SUFFOLK	28.9	96.0	37.5	162.5	40,625	$3,707,844
DOWNTOWN TUNNEL	60.4	40.7	50.0	151.1	37,775	$3,447,724
MONITOR MERRIMAC MEM. BR.-TUNNEL	19.9	22.9	66.3	109.1	27,275	$2,489,389
MIDTOWN TUNNEL	29.5	21.6	7.4	58.6	14,650	$1,337,106
I-664 CHESAPEAKE	13.6	1.8	14.7	30.2	7,550	$689,089
ROUTE 17 - NEWPORT NEWS/YORK	2.9	12.9	7.1	23.0	5,750	$524,803
I-64/I-564 NORFOLK	7.0	2.7	8.8	18.6	4,650	$424,406
MILITARY HWY - GILMERTON	4.4	6.1	6.1	16.7	4,175	$381,052
I-64/I-264 INTERCHANGE AREA	4.9	1.7	8.3	15.0	3,750	$342,263
I-64 PENINSULA	2.4	2.1	0.8	5.4	1,350	$123,215

Figure ES-13 – Truck Delay in High Profile Regional Corridors, 2023
Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Data represents weekdays between 5 am – 7 pm.

Truck Delay in High Profile Regional Corridors
(**Figure ES-12**)

- 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 nearly 300 truck-hours of delay in the HRBT corridor (**Figure ES-13**). Over the course of a year, this peak period truck delay amounts to over 70,000 hours at the HRBT. The peak period congestion costs for the HRBT corridor equates to $6.7 million annually for the trucking industry.
- The I-64/High Rise Bridge corridor in Chesapeake had the second highest weekday peak period truck delay in 2023, at over 50,000 hours of delay and $4.6 million in congestion costs incurred by the trucking industry annually. Widening of this section of I-64 was completed in early 2024, so truck delays in this corridor have decreased significantly from the data shown in this report.
- The high profile locations with the next highest truck delays and congestion costs are Route 58/Holland Road in Suffolk, the Downtown Tunnel, the Monitor-Merrimac Memorial Bridge-Tunnel, and the Midtown Tunnel. Each of these facilities cost the trucking industry more than $1 million in congestion costs in 2023.

Freight Gateways, Hubs, and Bottlenecks

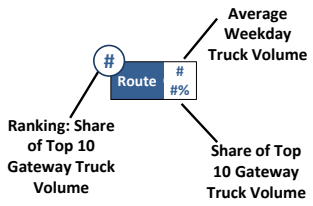
In previous years, Port of Virginia and HRTPO staff have worked with members of the Freight Transportation Advisory Committee (FTAC) to develop a freight mapping tool to assist regional and statewide leaders on transportation decisions related to regional priority projects. The map includes the top freight employers in Hampton Roads, major freight development sites, top freight gateways, and the most congested truck bottlenecks. **Figure ES-14** is an updated version of the previous maps and includes the most recent data and results from this version of the Hampton Roads Regional Freight Study.

Issues Related to Truck Movement

- While the lack of truck drivers is not a new phenomenon in the United States, the shortage of truck drivers worsened in recent years. According to the American Trucking Associations (ATA), the United States was short of roughly 60,000 truck drivers in 2023. Multiple factors can lead to driver shortage, such as an aging workforce, demands of the profession, infrastructure issues, inability to meet driver requirements, and lack of appeal.
- Transporting cargo is a time-sensitive activity typically with many moving parts involved and heavily relies on having good quality freight status information. Limited access to real time freight data can potentially lead to unwanted events occurring at higher frequencies (e.g., cargo delays, unclear order status, and stolen goods).

Freight Gateway

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



Source: HRTPO.

Truck Bottlenecks

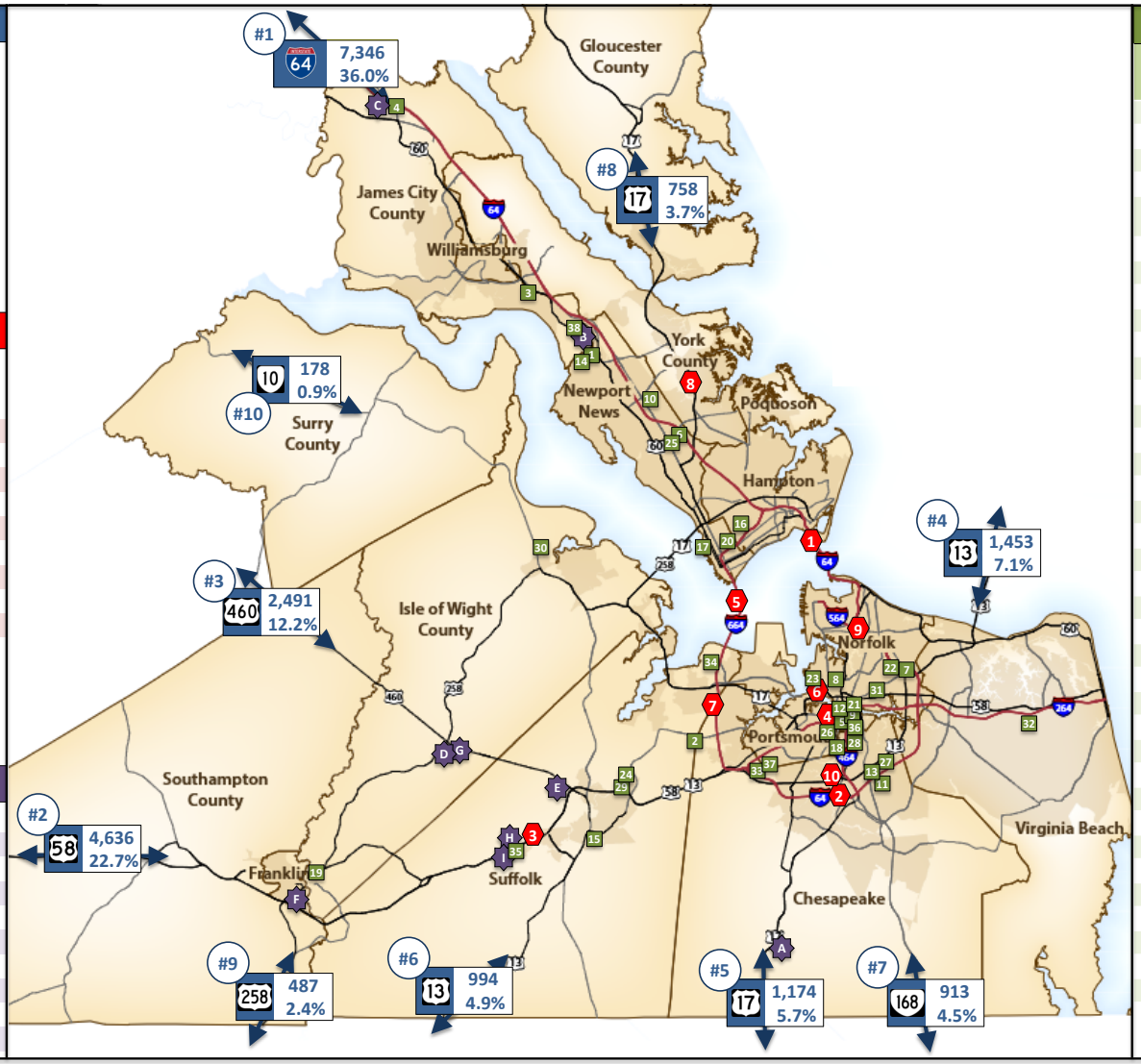
Top 10 Existing Weekday Truck Delay Locations	2023 Weekday Total Truck Delay (hours)
Hampton Roads Bridge-Tunnel	294.2
I-64 (Chesapeake)	203.1*
Holland Rd (Suffolk)	162.5
Downtown Tunnel	151.1
MMMBT	109.1
Midtown Tunnel	58.6
I-664 Chesapeake	30.2
Route 17 (Newport News/York)	23.0
I-64/I-564 (Norfolk)	18.6
Military Hwy/Gilmerton Bridge	16.7

Ranking: Total Weekday Truck Delay (Hours)

Source: HRTPO.

Major Freight Development Sites

Map ID	Site Name
A	Coastal VA Commerce Park (Williams Tract)
B	Green Mount Logistics Center
C	Lovett 64 Commerce Center
D	Norfolk Southern Site
E	Port 460 Logistics Center
F	Pretlow Industrial Park
G	Shirley T. Holland Intermodal Park
H	Virginia Port Logistics Park
I	Westport Commerce Park



Top Freight Employers

Map ID	Employer	# of Employees
1	AAFES Dan Daniel Dist. Cent.	1000+
2	Amazon	1000+
3	Anheuser-Busch Inbev Inc.	250-499
4	Avid Medical	250-499
5	BAE Systems Norfolk Ship Repair, Inc. (Norshipco)	1000+
6	Canon Virginia, Inc.	500-999
7	CMA-CGM America, Inc	500-999
8	Coca Cola Bottling Company	250-499
9	Colonnas Shipyard, Inc.	500-999
10	Continental Powertrain LLC	500-999
11	Dollar Tree/Greenbrier Dist.	250-499
12	General Dynamics NASSCO	500-999
13	Givens Logistics	251-500
14	High Liner Foods	250-499
15	Hormel Foods – Planters	250-499
16	Howmet Aerospace	500-999
17	Huntington Ingalls Industries	1000+
18	IMIA	250-499
19	International Paper Co.	250-499
20	Liebherr Mining Equipment	500-999
21	Lyon Shipyard	250-499
22	Maersk Line Limited	500-999
23	Marine Hydraulics Intl.	250-499
24	Massimo Zanetti Beverage	250-499
25	Newport News Industrial Corp	250-499
26	Norfolk Naval Shipyard	1000+
27	Oceaneering International	250-499
28	Plasser American Corp	250-499
29	QVC Suffolk, Inc.	500-999
30	Smithfield Packing Co.	1000+
31	SpartanNash	250-499
32	STIHL	1000+
33	Sumitomo Machine Corp	250-499
34	Sysco Food Services	250-499
35	Target Import Warehouse	1000+
36	Tecnico Corporation	250-499
37	USUI International Corp	250-499
38	Walmart Import Warehouse	1000+

Source: Hampton Roads Alliance. Hampton Roads Major Employers (Manufacturing, Distribution, Transportation, and Logistics)

Figure ES-14 – Hampton Roads Freight Gateways, Hubs, and Bottlenecks

- Typically, truck drivers pay more than passenger vehicles to use a tolled facility. These toll costs add to the overall transportation costs to move goods that companies and ultimately customers will pay for.
- As part of federal legislation, truck drivers must use electronic logging devices (instead of paper logs) to maintain records of duty status (RODS). While the intent of this rule is to help create a safer work environment for drivers, opinions of it are mixed.

Advancing Technology in Freight Transportation

- Vehicle automation technologies, such as adaptive cruise control and automatic emergency braking systems, are common in new truck models today. More advanced automation capabilities, such as truck platooning, are being piloted. Truck platooning uses wireless connectivity and automation technology to allow a lead vehicle to communicate its acceleration or deceleration to a vehicle following it, which can synchronize speeds automatically and reduce their following distance.
- Logistics companies are leveraging Internet of Things (IoT) technologies to digitize and ultimately improve supply chain operations. IoT refers to interconnection of physical devices that are embedded with sensors, software, and network connectivity, allowing for the collection and exchanging of data. In terms of the freight industry, IoT enables real-time tracking of shipments, providing up-to-the-minute location data.
- Over the years there has been a push to move towards truck electrification in the freight industry. With zero tailpipe emissions, mass electrification of trucks can help reduce the release of pollutants into the atmosphere. Additionally, truck electrification may provide lower operating costs given that electricity is domestically generated from various energy sources, including those that are clean and renewable, and electricity prices are cheaper and more stable than their fossil fuel counterparts. However, there are many challenges associated with adopting heavy-duty electric trucks. Currently, heavy-duty electric trucks are more expensive than their diesel-powered counterparts. There are also concerns regarding the potential shortfalls in the transporting capabilities of heavy-duty electric trucks, specifically on their hauling distances before a charge is needed and hauling capacity, due to limitations associated with cargo load volumes after factoring in the weight of the battery needed to power the trucks.
- The Port of Virginia is making strides towards reaching its goal of eliminating all greenhouse gas emissions by 2040 through the purchasing and installation of electric equipment and infrastructure to support its operations.
- Freight companies are exploring a variety of innovative approaches to meet last-mile challenges, such as alternative delivery methods, hyperloop concepts, and 3D printing technology.

Integration of Freight into the Transportation Planning Process

- In 2015, the Fixing America's Surface Transportation (FAST) Act 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). The current Bipartisan Infrastructure Law (BIL)/Infrastructure Investment and Jobs Act (IIJA) reauthorized funding sources including the NHFP.
- Statewide freight planning efforts are conducted by VDOT and the Virginia Office of Intermodal Planning and Investment (OIPI). These efforts include a statewide Freight Advisory Committee (FAC) and the Freight Element to VTrans, the long-range, statewide multimodal policy plan.
- HRTPO engages in many regional freight planning efforts, including the Freight Transportation Advisory Committee (FTAC), incorporation of freight into the Long-Range Transportation Planning process, and a number of freight-related special studies including this Regional Freight Study.

National Freight Planning Efforts and Funding Sources

- The United States Department of Transportation (USDOT) released the newest version of the National Freight Strategic Plan

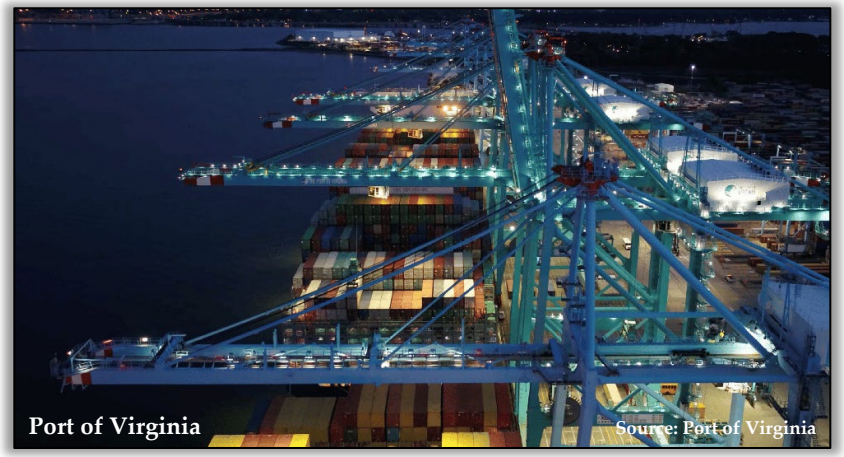
(NFSP) in September 2020, which defines the USDOT's vision and goals for the Nation's multimodal freight system and defines strategies to achieve those goals.

- USDOT released the "Draft National Multimodal Freight Network (NMFN)" in January 2025. The Draft NMFN includes numerous roadways, railroads, ports, and marine highways in the Hampton Roads area. Roadways in Hampton Roads on the Draft NMFN include all Interstates, US Route 13, US Route 58, and US Route 460, and important roadways serving military facilities and intermodal transfer centers.
- Under the Bipartisan Infrastructure Law (BIL)/Infrastructure Investment and Jobs Act (IIJA), federal programs like the National Highway Freight Program, the Better Utilizing Investments to Leverage Development Program, and the Infrastructure for Rebuilding America Grant Program continue to provide funding to help address freight transportation needs in the United States.

Conclusions and Next Steps

The economy of Hampton Roads is highly dependent on the freight industry. Not only does the movement of freight influence every aspect of our daily lives but it also keeps regional businesses and industries competitive in the local and global economy. Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system in order to facilitate the efficient, reliable, and safe movement of freight. However, the challenge will be to continue maintaining and expanding the system to meet the freight movement needs of tomorrow.

The overall purpose of this Regional Freight 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 builds on this by providing a description of existing and future freight facilities, trends, and forecasts for the Hampton Roads region. It also highlights existing and future commodity flows, and details local, statewide, and national efforts to improve freight movement.


Port of Virginia

Source: Port of Virginia

In addition, this study identifies existing freight bottlenecks based on average and total truck delays incurred on roadways throughout the region. These bottlenecks impact the competitiveness of the Hampton Roads freight industry by delaying freight, reducing travel reliability, and increasing congestion costs. Fortunately, many of these bottlenecks have been improved in recent years, most of them through the additional funding provided by the Hampton Roads Transportation Fund administered by the Hampton Roads Transportation Accountability Commission (HRTAC). Some of these improvements include widening the Midtown Tunnel, extending the MLK Freeway, widening 21 miles of I-64 on the Peninsula, improving the I-64/I-264 Interchange in Norfolk and Virginia Beach, and widening the I-64/High Rise Bridge corridor in Chesapeake.

In addition to these completed projects, many of the corridors identified as freight bottlenecks in this study have projects that are either currently underway or programmed for improvement in the next few years. Construction is underway on widening the Hampton Roads Bridge-Tunnel, with completion expected by early 2027. Construction is also nearly complete on widening a section of US Route 58 near many warehouses and distribution centers in Suffolk. Construction is also underway on widening the remaining 29 miles of I-64 between Richmond and Hampton Roads, with completion expected by 2028.

However, many additional freight bottlenecks still exist. Some examples include the Downtown Tunnel, Monitor-Merrimac Memorial Bridge-

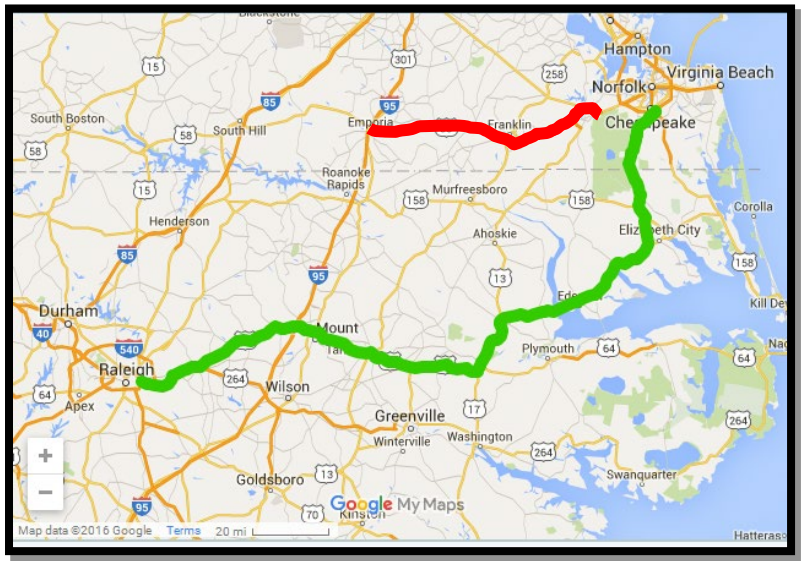


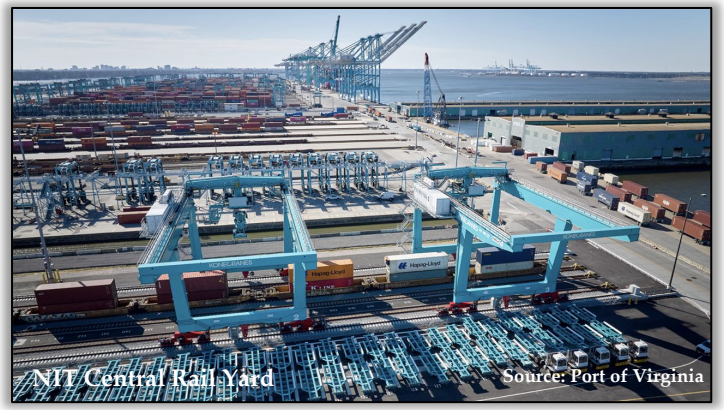
Figure ES-15 – Route 58 and Potential I-87 Interstate Corridors
Source: Regional Transportation Alliance and HRTPO.

Tunnel, the Western Freeway approaching the Midtown Tunnel, Hampton Boulevard, Northampton Boulevard approaching I-64, and US Route 460 between Suffolk and the Windsor area. Additional funding will need to be obtained from federal, state, and regional sources to continue to alleviate these freight bottlenecks.

While the widening of I-64 on the Peninsula will improve mobility on the only limited-access connection to the region, improving access to I-95 to the south and west of Hampton Roads remains a priority for freight stakeholders. Discussions on these potential future highway connections mostly include either upgrading the US Route 17/US Route 64 corridor to interstate standards or improving US Route 58 (**Figure ES-15**). Federal transportation legislation authorized a future Interstate designation (I-87) for the US Route 17/US Route 64 corridor from Raleigh to Hampton Roads via Rocky Mount, Williamston, and Elizabeth City in northeastern North Carolina. While nearly two-thirds of this corridor is currently built to limited-access freeway standards, billions of dollars of additional funding still need to be allocated to completely upgrade the corridor to Interstate standards. No funding for the Virginia portion of this corridor has been allocated.

Even though much of the US Route 58 corridor between I-95 and Suffolk is not limited-access, it provides a faster connection to the Raleigh area and other areas of the Southeast, even if the I-87 corridor were completed. US Route 58 is currently the second-heaviest freight gateway to and from the region with 4,600 trucks per weekday. This corridor, however, has many traffic signals and varying speed limits that slow down the movement of freight. As a result of issues related to congestion, safety, and access management in this corridor, VDOT prepared an Arterial Preservation Plan in 2019. This plan included a number of recommendations for localized projects along the corridor such as crossover and intersection improvements. In addition, the study also looked at alternatives to improve US Route 58 to a limited-access freeway facility, with projected costs of $720 million to $1.1 billion for an Improved Limited Access alternative, and between $2.3 billion and $3.5 billion for an Interstate Facility alternative. No funding is currently available for these limited-access improvements.

In addition to bottlenecks and gateways, another challenge facing the freight industry within Hampton Roads and the Commonwealth of Virginia is the availability of parking for trucks. Many corridors throughout the state and in Hampton Roads have a deficit between the demand for parking and the number of available spaces. According to an analysis done by VDOT, 142 parking facilities provide 8,071 designated truck parking spaces in Virginia. However, 3,244 additional truck parking spaces are needed statewide today, and 8,574 additional spaces will be needed by 2045 during peak demand periods. In the Hampton Roads District, 337 additional spaces are needed today and 1,057 additional


NIT Central Rail Yard
Source: Port of Virginia

spaces will be needed by 2045. Additionally, there is a significant need for terminal truck staging and port-specific truck parking in the Hampton Roads region due to the impacts of the port terminals. Due to these parking deficits and additional local needs for parking near the port terminals, regional leaders should continue to work with VDOT and other freight stakeholders to improve these deficiencies.

While trucks are still the predominant mover of freight at the Port of Virginia, the Port has a higher amount of freight transported by rail than other East Coast marine terminals and the amount of freight transported by rail is increasing. In 2023, 40% of the general cargo handled by the Port of Virginia – or 735,000 containers – was transported by rail. This is up significantly from 33% of general cargo and 448,000 containers in 2014. This does not include the large amount of coal transported via rail. Hampton Roads continues to be the largest exporter of coal in the United States, with over 35 million tons of coal being shipped through the region in 2023. Port officials expect the share and amount of containers transported by rail to continue to increase as demand rises, which will lead to both a higher number and longer length of trains and additional delays at at-grade rail crossings. To ensure the ability to handle these anticipated rail volumes, rail stakeholders including the Port of Virginia, railroad companies, and state/local officials must continue to work together to secure additional federal and state funding for both rail improvement projects and for improvements at at-grade rail crossings.

Since federal transportation legislation was passed in 1991, Congress has encouraged the consideration of freight movement and intermodal connectivity in statewide and metropolitan transportation planning processes. HRTPO incorporates freight planning into the regional transportation planning process in many ways, including through the Freight Transportation Advisory Committee (FTAC), the Long-Range Transportation Planning Process, coordination with various freight stakeholders, and various special studies.

Since 2009, HRTPO staff has worked with regional freight stakeholders through the Freight Transportation Advisory Committee, which advises the HRTPO Board on freight issues. Key freight business and community leaders participate on the FTAC and have provided vital freight input for several HRTPO planning efforts and HRTPO Board decisions. Staff will continue to support the FTAC and work with FTAC members to help raise awareness of the importance of freight transportation to the region and to collect input from various stakeholders on these matters.

HRTPO will continue to integrate freight into the Hampton Roads Long-Range Transportation Plan (LRTP), which is the blueprint for the region's multimodal transportation improvements. Freight studies and data collected by HRTPO staff 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 continue to incorporate the latest freight data and performance measures into the tool as they become available.

HRTPO staff has a close working relationship with the VDOT's Transportation and Mobility Planning Division, the VDOT Hampton Roads District, and the Virginia Office of Intermodal Planning and Investment (OIPI) for all statewide freight planning initiatives. HRTPO staff will continue to work with these agencies on statewide freight initiatives such as VTrans, the VTrans Freight Element, and freight committees. HRTPO staff will also continue to work with the state on upcoming freight planning efforts such as the National Multimodal Freight Network and truck parking improvements.

In addition to regular updates to the Hampton Roads Regional Freight Study, HRTPO has completed a number of freight-related studies related to topics such as rail impacts, truck delays, truck travel patterns, and the impacts of tolling. HRTPO will continue to prepare these studies as requested by regional freight stakeholders in order to assist with improving freight transportation in Hampton Roads. HRTPO staff will also continue to monitor how freight moves throughout the regional transportation network, particularly as major projects such as the Hampton Roads Bridge-Tunnel and the widening of I-64 between Hampton Roads and Richmond are completed.

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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, the 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. The primary activity is the development of the Hampton Roads Regional Freight Study, which serves as a comprehensive resource document on the Hampton Roads multimodal transportation system. This 2025 update builds on previous efforts and is intended to inform freight policy, program, and investment decisions in the Hampton Roads region. 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 are also included in the MPA.

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, e-commerce revenue amounted to $375 billion US dollars in 2019, grew to $669 billion US dollars in 2023 and is projected to grow to $1.14 trillion US dollars by 2029.

The COVID-19 pandemic forced big changes in the shipping industry. E-commerce exploded with many consumers ordering online for the first time. Many consumers became reliant upon online shopping which placed a tremendous strain on businesses, warehouses, and distribution networks to create additional capacity in a short period of time. Some companies that were reliant upon international supply chains for products got caught during the pandemic without any other options. Many of those companies are making changes to preposition their product within regional networks in the United States to diversify their product location and to minimize future risks.

Post-pandemic, e-commerce continues to remain strong. People are still traveling less to stores and have grown accustomed to having items delivered directly to their homes, which has increased overall truck movements, particularly last-mile delivery in residential areas. They are expecting their packages to be delivered with speed, visibility, and reliability. This increase will require a more efficient transportation system in order to transport our goods and products. As more retailers are trying to get their products to consumers as quickly as possible, same-day deliveries are becoming more common. The pressures of shorter delivery times have placed an even greater importance on the reliability and timeliness of transportation, particularly by truck.

There are additional challenges and concerns that are being experienced by the trucking industry. One of these concerns is driver shortages. Many truck drivers are 55 years old or older and are faced with challenges such as long stretches away from home and compensation levels. The pandemic accelerated the retirement of many veteran truck drivers. The industry is struggling to attract younger drivers and is exploring ways to improve work conditions. Some efforts include offering better pay and benefits, improving driver safety, and adopting new technologies to make the job more attractive. Autonomous vehicles offer a potential solution, although it remains to be seen how quickly this technology will be adopted. Other top concerns in the trucking industry are truck parking shortages, laws and regulations, insurance cost and availability, driver retention, and hours-of-service restrictions.

Photo source: goodreader.com / Amazon

Package deliveries to residential areas has increased after the Covid-19 pandemic.

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 National Freight Strategic Plan (NFSP)

[1], the U.S. population is estimated to grow by 0.6 percent annually over the next 30 years, and it is projected that real Gross Domestic Product (GDP) will increase 1.9 percent annually over the same period. To support this economic and population growth, freight movements across all modes are expected to grow by approximately 50% by 2050, increasing from about 19 billion tons in 2020 to 28.7 billion tons in 2050[2]. Trucks are the predominant freight mover today carrying about 65% of U.S. freight tonnage and are expected to remain so in the future. 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.

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

All metropolitan areas are impacted by the movement of freight to some degree; the Hampton Roads region, however, experiences it 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 and the Midwest (**Figure 2**). It's ideal location has an extensive 24-hour reach served by both rail and interstate.

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 $88 Billion in total revenue (FY 2022) to the Commonwealth of Virginia. Due to this location and infrastructure, the Hampton Roads region is expected to experience large growth in freight movement. 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.

[1] *National Freight Strategic Plan, U.S. Department of Transportation, Federal Highway Administration, September 4, 2020.*

[2] *U.S. Department of Transportation,* Bureau of Transportation Statistic, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 5.1, November 2021.

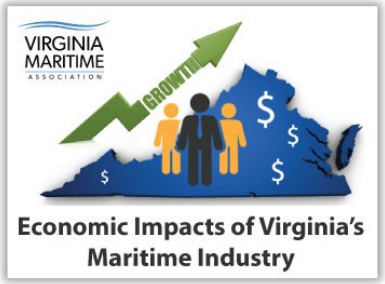
Local Challenges

Some of the freight transportation challenges in the Hampton Roads region, many of which have been identified by members of the Freight Transportation Advisory Committee (FTAC), a committee of the Hampton Roads Transportation Planning Organization (HRTPO) Board, are as follows:

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. Larger ships will have a major impact on port and landside operation and demand such as gate throughput, rail car loading and roadway usage.
2) *Tolls* – Local freight industry leaders are concerned about the potential impacts of future tolls on the economic competitiveness of the Port of Virginia and surrounding freight businesses in Hampton Roads.
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 Boulevard and Redgate Avenue between the hours of 4 pm and 6 am. Other roadways in Norfolk with truck restrictions include Church Street, Colley Avenue, Granby Street, 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.
4) *Mandatory electronic logging devices (ELD)* – The Federal Motor Carrier Safety Administration required commercial truck operators to adopt ELDs by December 2017. This rule is primarily a safety precaution aimed at preventing driver fatigue and crashes but was also expected to save the industry about $1 billion a year in time and paperwork. Even though this requirement was intended to provide overall benefits for the trucking industry, it placed additional costs and strain on smaller trucking companies during the conversion. However, in recent years many of these issues have largely been resolved.

Economic Impact of Virginia's Maritime Industry

The Virginia Maritime Association and the College of William & Mary regularly conduct a study[3] to assess the economic and fiscal impacts of Virginia's commercial ports and maritime industry. This is an independent report that documents the impacts of both domestic and international commerce through Virginia's ports and related activities. The most recent study reflects Fiscal Year 2022.



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VIRGINIA MARITIME ECONOMIC IMPACT

65.6M TONS OF CARGO VALUED AT **$103.5B**	**729.6K** JOBS IN VIRGINIA **20%** OF VA EMPLOYMENT	**$87.8B** IN VA VALUE-ADDED **14%** OF VA GSP
$56.9B IN LABOR INCOME	**$178.1B** IN TOTAL SALES	**$8.1B** IN STATE & LOCAL TAXES

Total of direct, indirect, and induced impacts.
Source: The Fiscal Year 2022 Economic Impacts of The Virginia Maritime Industry, Raymond A. Mason School of Business, William & Mary

In Fiscal Year 2022, the Virginia maritime industry directly added to the Commonwealth's economy in the following ways:

- Handling waterborne commerce: 65.6 million tons valued at $103.5 billion.
- The labor income created was $56.9 billion, involving 729,600 Virginia employees.

[3] *Fiscal Year 2022 Economic Impacts of Virginia's Maritime Industry,* Prepared for The Virginia Port Authority and The Virginia Maritime Association, Prepared by Raymond A. Mason School of Business, William & Mary, September 29, 2023.

- The Virginia maritime industry added $87.8 Billion (14%) to the Commonwealth of Virginia's total estimated Gross State Product (GSP) of $649.4 Billion in 2022.
- The Virginia production of 12.8 million tons of waterborne exports ($14.9 billion value) throughout the state.
- Virginia use and consumption of 7.4 million tons in imports.
- Virginia private shipbuilding and repair, and specialized maritime services.

These impacts generated $8.1 billion of multiple types of tax and fee revenues – local property taxes, personal and corporate income taxes, and sales taxes. Every dollar of maritime-related impact on Virginia GSP created an average 9.2 cents of state and local government revenue.

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

Freight Facilities, Trends, and Forecasts

Introduction

Given that the movement of cargo relies heavily on the transportation network, it is essential that Hampton Roads maintains its existing transportation systems to help the region remain economically competitive and improve overall mobility. This section provides an overview of 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. The purpose of this study is to help provide a better understanding of the freight moving in, out and within Hampton Roads and how it compares with other areas in the United States and around the world.

Port of Virginia


Source: HRTPO

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 20 international shipping lines offer direct, dedicated service to and from Virginia, with connections to 200+ countries around the world.

Port of Virginia Facilities

The four main existing Port of Virginia marine terminals are:

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

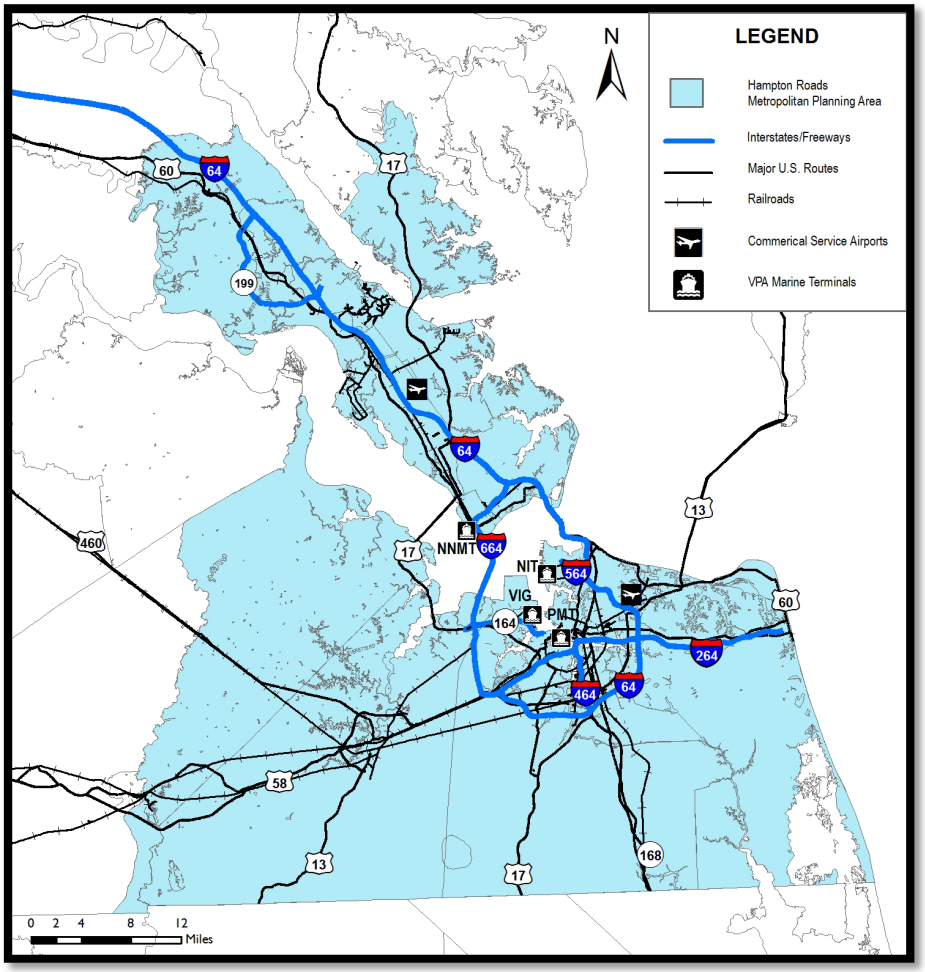


Figure 3 – Freight Facilities in Hampton Roads.
Source: HRTPO.

In addition, POV has plans for an additional marine terminal on Craney Island. Each of these marine terminals are described below.

Norfolk International Terminals (NIT)

Providing direct highway access to I-64 and the interstate system through I-564 and Intermodal Connector, Norfolk International Terminals (NIT) is one of the Port of Virginia's largest terminals. Located on 567 acres, NIT is separated into three different sections: the North Terminal, the South Terminal, and the Central Rail Yard (CRY). While the North Terminal relies primarily on straddle carriers in the stacking and moving of shipping containers, the South Terminal uses semi-automated rail-mounted stacking cranes. Completed in 2024, the expansion of CRY can accommodate an additional 455,000 rail Twenty-foot Equivalent Units (TEUs) annually, increasing the terminal's rail capacity to 1.1 million TEUs.

NIT currently has the following terminal specifications:

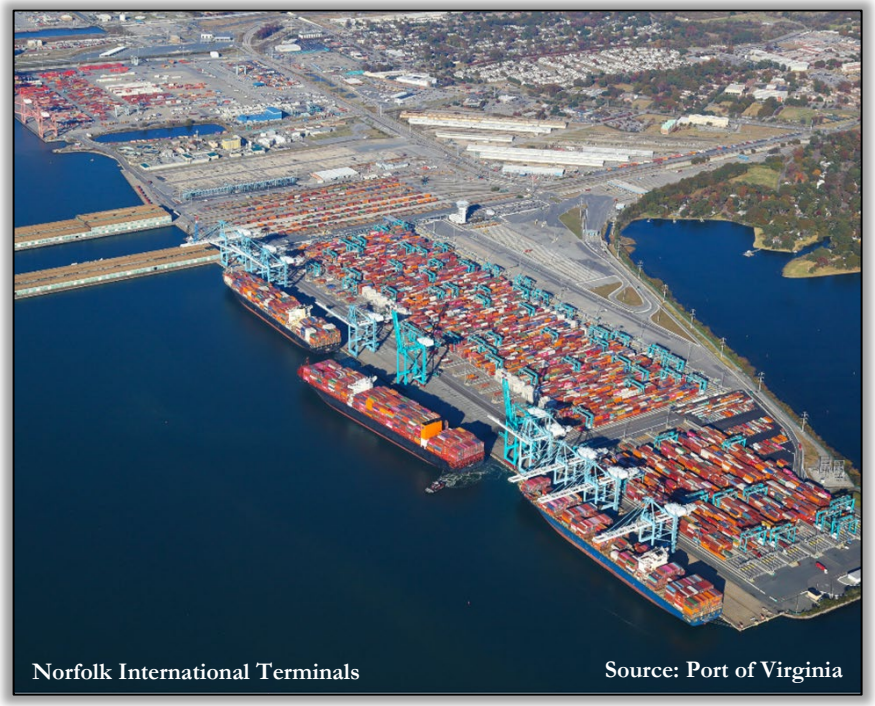
- An annual throughput capacity of 3.6 million TEUs (a 63.6% increase from 2.2 million TEUs)
- 6,630 feet wharf
- 55 feet of water depth
- 19 Super Post Panamax ship-to-shore cranes
- 96 semi-automated stack cranes
- 800+ reefer plugs
- 27,416 linear feet of on-dock rail track served by CSX and Norfolk Southern.

Newport News Marine Terminal (NNMT)

Located off I-664 in Downtown Newport News, the Newport News Marine Terminal (NNMT) is the port's main breakbulk and roll-on/roll-off facility. Break-bulk cargo or general cargo are goods that typically require lifting and securing with cranes for loading and unloading either individually or on pallets (e.g., bagged cement, automobiles, machinery, drummed liquids). Roll-on/roll-off (ro-ro) cargo are wheeled goods that can be driven directly onto and off a shipping vessel either on their own wheels or using a platform vehicle (e.g., cars, trucks, trailers, railroad cars).

Terminal specifications of NNMT include:

- 165 acres



Norfolk International Terminals Source: Port of Virginia

Newport News Marine Terminal Source: Port of Virginia

- Over 1 million square feet of covered storage and more than 60 acres of outside storage
- 41 feet of water depth
- Four active berths totaling 3,480 feet of berth space
- 18,990 feet on-dock rail track with direct service to CSX, with the ability to transfer to Norfolk Southern in Richmond.
- Up to 65,000 pounds forklift capacity

Portsmouth Marine Terminal (PMT)

As part of the $1.4 Billion Gateway Investment Program, the Port of Virginia is transforming the Portsmouth Marine Terminal (PMT) into an Offshore Wind (OSW) Energy hub. Given Norfolk Harbor's deep-water shipping channel, the unlimited air draft, and skilled maritime workforce, PMT is an ideal site to help support Dominion Energy's Coastal Virginia Offshore Wind (CVOW) Project. Completed in 2025, PMT's project specifications include the following:

- $220 million investment
- 270-acre terminal
- 43 feet of water depth
- 900 direct and indirect Virginia jobs through OSW construction
- Projected $353 Million in economic output through OSW construction, operations, and maintenance
- Projected $8 Million in Virginia state tax revenues

More information on the Offshore Wind industry is included in the Other Shipping Facilities and Services section of this report.

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


Portsmouth Marine Terminal Source: Port of Virginia


Virginia International Gateway Source: Port of Virginia

new long-term lease agreement that gives VPA oversight and operating rights at VIG until 2065.

VIG, a semi-automated container terminal, had improvements completed in 2019. As part of the $312 million project, VIG's container and rail capacity doubled to 1.2 million units and 480,000 lifts respectively. VIG can accommodate three ultra large container vessels (ULCVs) simultaneously with 4,000 feet of effective berth capacity.

Terminal specifications of VIG include:

- Annual throughput capacity of 2.2 million TEUs
- 4,000 feet of wharf
- 14 Super Post Panamax ship-to-shore cranes
- 56 semi-automated stacking cranes
- Container yard can process more than 3,500 truck transactions per day
- 1,200+ reefer plugs
- 19,644 linear feet of on-dock rail track served by CSX and Norfolk Southern
- 55 feet of water depth

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 is projected to 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 55-feet navigation channel, direct interchange to the freeway system, and double-stack intermodal rail service.

Source: Port of Virginia & US Army Corps of Engineers Rendering

The Craney Island Marine Terminal is expected to open in phases, with the first phase being completed in the 2040s.

Port of Virginia Challenges

Like other technologic advancements, ships have pushed the envelope regarding size and ultimately container capacity. According to Statista, the deadweight tonnage of container ships grew from approximately 11 million metric tons to 293 million metric tons between 1980 and 2022 – more than a 2,500% increase in growth[5]. Because larger ships can transport more containers in one trip compared to smaller ships, they lead to higher cost savings and efficiencies. While these higher cost savings are desirable, ports may find themselves in need of infrastructure investments if existing conditions provide inadequate accommodation for larger ships. More on the Port of Virginia's infrastructure investments are included later in this section.

Higher volumes at the Port of Virginia could potentially add strain to the surrounding roadway network. An example is Hampton Boulevard, a principal arterial that runs directly adjacent to Norfolk International Terminals (NIT) and currently carries high levels of truck traffic at certain times of the day. Sections of Hampton Boulevard that are already

[5] https://www.statista.com/topics/1367/container-shipping/

experiencing moderate to severe congestion levels today will likely worsen if roadway network improvements are not implemented.

Port of Virginia Infrastructure Investments

The Port of Virginia is in the process of expanding operations and future business opportunities through multiple infrastructure projects throughout the region and the state. The infrastructure projects include deepening and widening the shipping channels, expanding inland ports, increasing rail capacity, transforming port facilities into a hub for Offshore Wind, and optimizing the NIT North Terminal.

These projects, with expected completion dates, are shown in **Figure 4**.

Figure 4 – Port of Virginia Programmed Infrastructure Investments
Source: Virginia Port Authority

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 with these forecasts.

Click here to view the report

Future volumes at the Port of Virginia are expected to be significantly higher than the volumes that are currently handled. **Figure 5** shows the number of containers forecasted at the Port of Virginia facilities annually through 2065. In 2023, the Port of Virginia handled 1.8 million containers. By 2065, this demand is projected to increase to approximately 4.4 million containers. However, the range of container volumes projected for the year 2065 in the Master Plan varies from a low end of 3.6 million containers to a high end of 7.0 million containers. Even with additional capacity added to Port facilities, demand could outpace capacity if the number of containers is at the high end of the range.

The Port of Virginia Master Plan contains a number of near-term and long-term strategies and details a Capital Investment Plan to address the growing need for additional capacity to handle the projected demand. Near-term strategies described in the Master Plan include:

- Continue expanding Norfolk International Terminals (NIT) to include adding semi-automated stacks to the North Yard to expand capacity, and optimize rail operations through implementing Cantilever Rail-Mounted Gantry technology.
- Bolster interim operations to mitigate terminal construction activities and anticipated terminal congestion.
- Continue to promote the use of Virginia Inland Port and Richmond Marine Terminal inland access points to the port.
- Continue positioning Portsmouth Marine Terminal as the East Coast's offshore-wind logistics hub.
- Partner with the U.S. Army Corps of Engineers on completing the deepening and widening Hampton Roads' navigation channels for larger vessels (this project will be completed in 2025).
- Advocate for critical rail and highway improvements necessary to ensure efficient access to all port terminals.

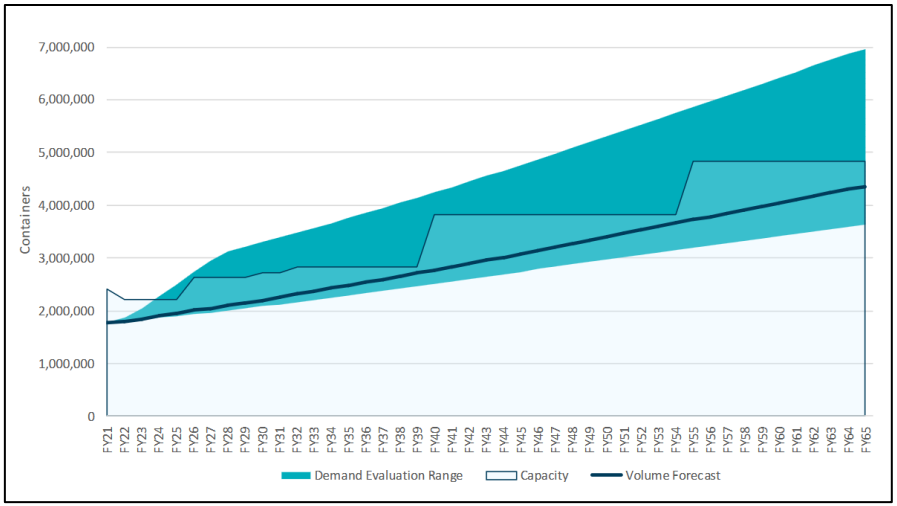


Figure 5 – Projected Containers per Year at POV Facilities
Source: Port of Virginia 2065 Master Plan.

Long-term strategies described in the Master Plan include:

- Continue development of the Craney Island Eastward Expansion so that the expansion cell will be completed by the time a new marine terminal is needed to handle increased cargo capacity.
- Focus on diversifying its portfolio of cargo by attracting and retaining high-value noncontainerized cargo and services by reinvesting in Portsmouth Marine Terminal to facilitate its transformation into the East Coast's premier hub for the off shore wind industry.
- Continue to work closely with other state and local agencies and private stakeholders, such as the railroads, to plan improvements and ensure connectivity to markets.
- The port's economic development and commercial teams should leverage improved access to promote greater industrial development and market share gain for the benefit of the Commonwealth.

It is expected that these long-term strategies, particularly the development of the Craney Island Marine Terminal, will lead to a shift in how the Port of Virginia handles freight. By 2065, the Master Plan indicates that more than

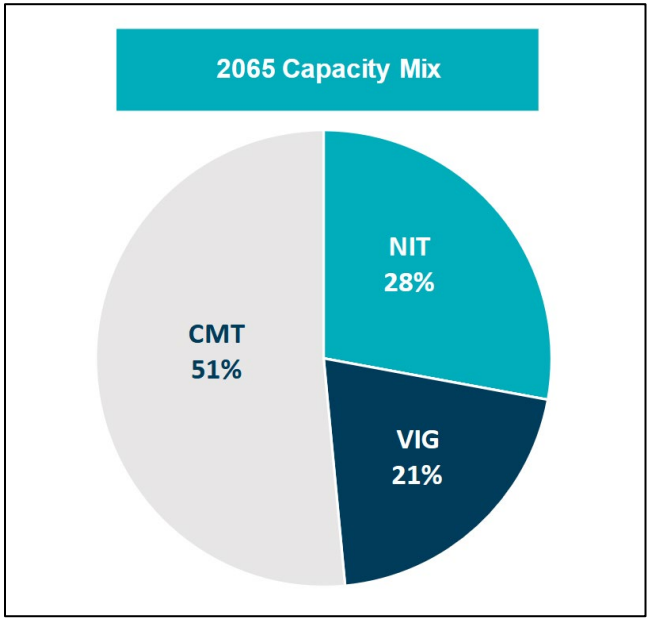


Figure 6 – 2065 Capacity Mix at Port of Virginia Terminals
Source: Port of Virginia 2065 Master Plan.

half (51%) of the freight handled by the Port of Virginia will pass through the Craney Island Marine Terminal (**Figure 6**). NIT is projected to comprise 28% of the freight handled by the Port of Virginia, with the remaining 21% being handled at the Virginia International Gateway (VIG) terminal.

The Port of Virginia's Capital Investment Plan included in the Master Plan will enable the port to not only construct new facilities to meet expected future demand but also maintain, rehabilitate, and enhance current facilities. This ongoing capital investment should ensure that the current fleet of container handling equipment keeps up with demand and technological advancements.

The largest portion of the funding allocated in the Port's Capital Investment Plan (38%) is costs related to constructing the Craney Island Marine Terminal (**Figure 7**). The next highest allocation categories are purchases to replace aging terminal equipment and infrastructure (28%) and costs related to capital improvements at NIT (21%). The remaining 13% of funding allocated in the CIP is dedicated to other costs including those related to dredging.

Funding in the Capital Investment Plan is expected to come from a variety of sources. The largest source (45%) is projected to come from Port revenues, which are funds that are generated from charges for handling cargo, storage charges for non-containerized cargo, and fees associated with managing empty containers and the chassis pool. The next largest sources of funds are expected to be the Commonwealth Port Fund (26%), which is dedicated state funds allocated to the Virginia Port Authority for investment in port-related infrastructure, and other state and regional funds (22%), which may be available for specific port-related projects, particularly for the infrastructure needed for Craney Island. Federal funds are also projected to provide 8% of the CIP funding, through projects such as the Craney Island dike and mitigation construction as well as dredging projects.

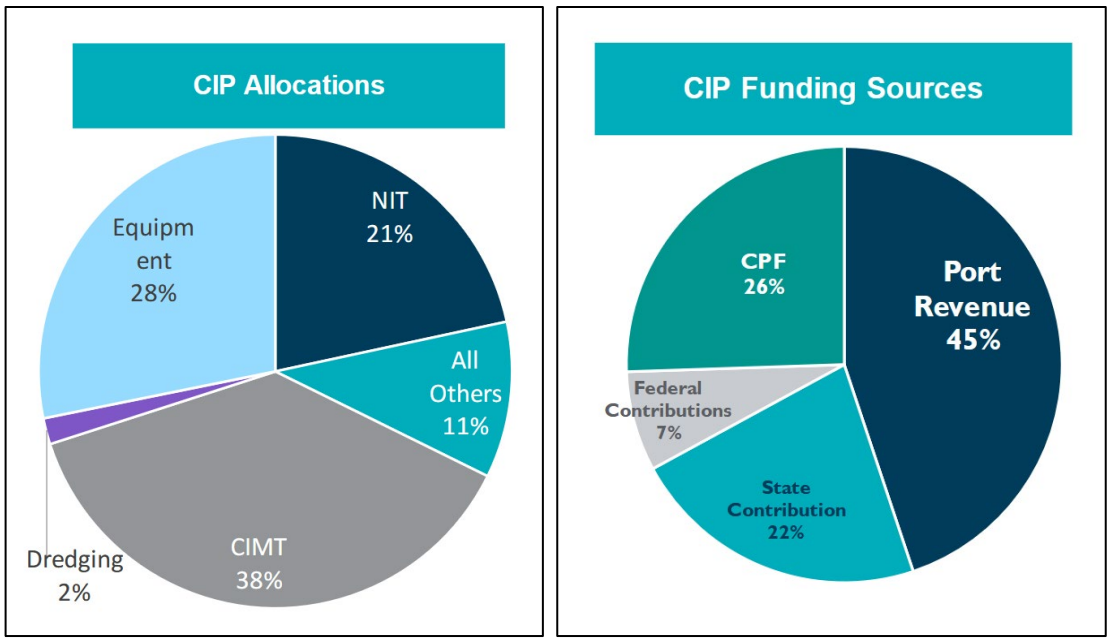
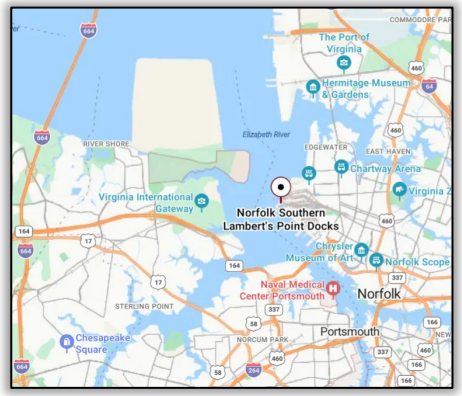


Figure 7 – Capital Investment Plan Allocations and Funding Sources
Source: Port of Virginia 2065 Master Plan.

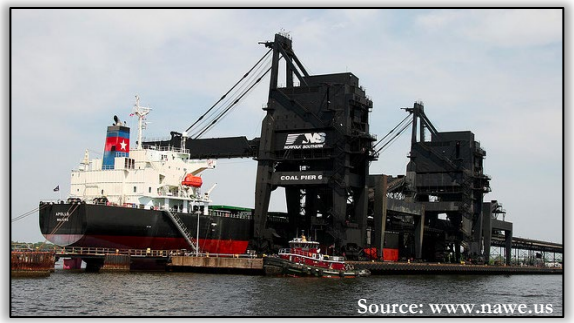
Other Shipping Facilities & Services

In addition to the Port of Virginia's marine terminals, Hampton Roads is also the home to many additional terminal facilities and services. Some of the largest of these are highlighted below.

Lambert's Point Docks

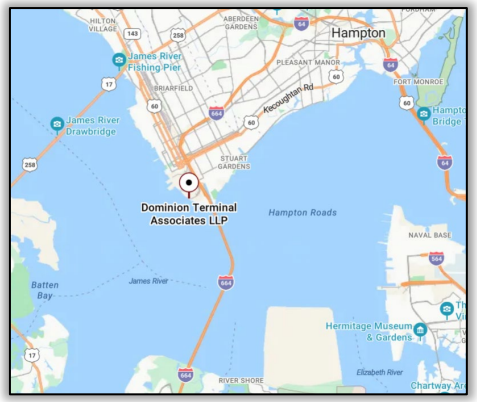


Lambert's Point Docks is a 117-acre break-bulk marine terminal located on the Elizabeth River in the City of Norfolk. A subsidiary of Norfolk Southern Corporation, Lambert's Point Docks is among Virginia's largest breakbulk marine terminals, with 1.2 million square feet of covered warehouse storage and outdoor acreage. Coal Pier Six, operated by Norfolk Southern and one of the largest and fastest coal transshipment terminals in the world, can handle 8,000 tons of coal per hour. In 2023, over 13 million tons of coal passed through Lambert's Point Docks.



Source: www.nawe.us

Dominion Terminal Associates

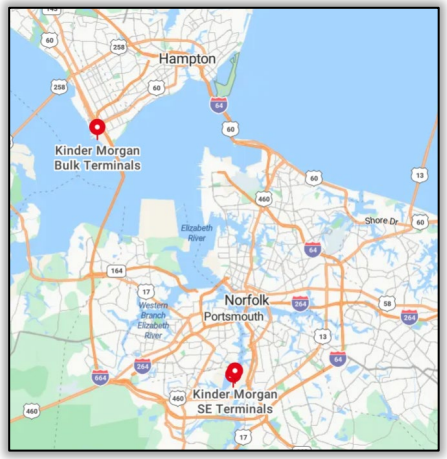


Dominion Terminal Associates (DTA) operates a coal shipping and ground storage facility in Newport News adjacent to the Monitor-Merrimac Memorial Bridge-Tunnel. DTA also handles sampling and blending of comparable bulk products. The ground storage capacity at Dominion Terminal Associates facility is 1.7 million net tons. In 2023, the terminal transported over 14 million tons of coal, more than any other Hampton Roads facility.


Source: www.alphanr.com

Kinder Morgan

Kinder Morgan operates three major coal handling, dry bulk and liquid terminals in Hampton Roads: Elizabeth River Terminal (Chesapeake), Pier IX & X (Newport News), and the Norfolk Terminal. Hampton Roads is included in Kinder Morgan's Mid-Atlantic region, which is based in Newport News.

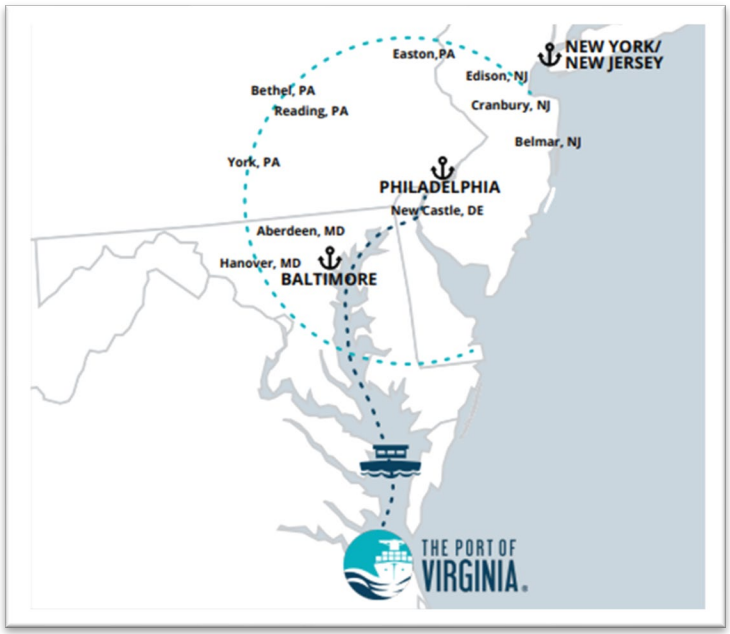


Richmond Express

The Richmond Express is a barge service that operates between the Port of Virginia terminals in Hampton Roads and the Richmond Marine Terminal, which is also operated by the Port of Virginia. The Richmond Express started service in 2017, after replacing the 64 Express, which had been operating along the James River since 2008. The Richmond Express includes three barges in rotation with a combined capacity of 500 40-foot containers and with the potential for up to six days a week service. The barge also has the ability to carry refrigerated containers.

Columbia Coastal Barge Service

Columbia Coastal Transport's Chesapeake Service is a container-on-barge transportation service that is provided weekly between the Port of Virginia and marine terminals in Baltimore and Philadelphia. The barge is capable of carrying up to 900 TEUs. The service is also reefer capable, with no restrictions on weight, and can also carry hazardous cargo. Combined with the Richmond Express, over 71,000 containers were carried by these barge services in the region in 2023.



Columbia Coastal Barge Service
Source: Port of Virginia

Offshore Wind Industry

The Hampton Roads Region is at the forefront of the developing Offshore Wind Industry, due both to its strategic geographic location and to the proximity of two offshore projects – Dominion Energy's Coastal Virginia Offshore Wind project and Avangrid Renewables/Dominion Energy's Kitty Hawk Offshore Wind project. Dominion Energy's Coastal Virginia site sits 27 miles off the Virginia Beach coast, and will generate enough electricity to power up to 660,000 homes using 176 wind turbines. Construction on the Coastal Virginia site is expected to be complete in late 2026. The Kitty Hawk site sits more than 27 miles off the Outer Banks coast, and is expected to generate electricity for up to one million homes. Construction on the northern portion of the Kitty Hawk site, owned by Dominion Energy, and the southern portion of the site, owned by Avangrid Renewables, has not started as of late 2024.

In order to assist the offshore wind industry, the Port of Virginia has recently transformed Portsmouth Marine Terminal (PMT) into an offshore wind support hub. Dominion Energy leased 72 acres at PMT (**Figure 8**) in order to assist with staging and assembling components being used at the Coastal Virginia site. Construction on $220 million of improvements needed to support the offshore wind industry began at PMT in 2022 and was completed in early 2025. These improvements should position the Port and the region as a strategic asset not only to support the Dominion Energy Coastal Virginia Offshore Wind project but also many of the other projects that might be built along the entire US East Coast.

Figure 8 – PMT Offshore Wind Site Development Plan
Source: VMA's Virginia Ports Annual 2024

Port Freight Trends

This section provides a summary of port-related freight trends for the Port of Virginia. It also shows national and regional trends to highlight how the Port of Virginia compares to other peer ports.

Gateway	Type	2022			
		Rank	Exports	Imports	Total
Los Angeles, CA	Water	1	28.5	282.2	310.7
Laredo, TX	Land	2	114.7	175.1	289.8
Chicago, IL	Air	3	68.7	213.3	281.9
John F. Kennedy International Airport, NY	Air	4	117.5	138.2	255.7
Houston, TX	Water	5	133.0	108.3	241.4
Newark, NJ	Water	6	11.0	209.5	220.5
Los Angeles International Airport, CA	Air	7	60.5	91.5	152.0
Savannah, GA	Water	8	33.4	113.2	146.6
Detroit, MI	Land	9	81.4	61.8	143.1
Long Beach, CA	Water	10	29.7	91.3	121.1
Port Huron, MI	Land	11	51.7	59.9	111.6
Norfolk, VA	**Water**	**12**	**35.4**	**71.1**	**106.5**
Charleston, SC	Water	13	26.8	70.4	97.3
Corpus Christi, TX	Water	14	87.0	8.1	95.1
Cleveland, OH	Air	15	48.7	42.5	91.1
New Orleans, LA	Air	16	49.3	35.7	85.0
Buffalo-Niagara Falls, NY	Land	17	41.3	41.2	82.5
New Orleans, LA	Water	18	44.6	32.4	77.0
Baltimore, MD	Water	19	19.3	55.2	74.5
Ysleta Port of Entry	Land	20	25.4	47.8	73.2
San Francisco International Airport, CA	Air	21	35.5	36.4	72.0
Miami International Airport, FL	Air	22	42.6	29.3	71.8
Anchorage, AK	Air	23	20.1	50.4	70.5
Dallas-Fort Worth, TX	Air	24	27.5	36.6	64.1
Otay Mesa, CA	Land	25	21.6	37.7	59.3

Figure 9 – Top 25 U.S. International Trade Freight Gateways by Value: 2022 (Current $ Billions)

Sources: Air: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, USA Trade Online, available at https://usatrade.census.gov as of December 2023. Land: U.S. Department of Transportation, Bureau of Transportation Statistics, North American Transborder Freight Data, available at https://data.bts.gov/stories/s/myhq-rm6q as of December 2023. Water: U.S. Army Corps of Engineers, Navigation Data Center, personal communication, special tabulation, Dec. 9, 2019, Nov. 12, 2020, Nov. 2, 2021, and December 2023.

Quick Facts: The Port of Virginia is the 12th highest U.S. foreign trade freight gateway, moving $106.5 billion in shipments in 2022.

Port	Short Tons, 2022				
	Rank	Exports	Imports	Domestic	Total
Houston Port Authority, TX	1	140,889,435	68,759,081	84,185,014	293,833,530
Port of South Louisiana, LA	2	79,159,640	31,240,406	115,788,096	226,188,142
Corpus Christi, TX	3	131,402,769	17,214,855	25,709,786	174,327,410
New York, NY & NJ	4	15,226,104	85,522,255	40,542,064	141,290,423
Port of Long Beach, CA	5	21,801,575	57,922,904	13,234,447	92,958,926
New Orleans, LA	6	22,608,446	16,889,287	43,756,369	83,254,102
Beaumont, TX	7	39,293,359	13,748,369	21,301,018	74,342,746
Port of Greater Baton Rouge, LA	8	21,684,170	5,855,390	45,832,017	73,371,577
Port of Virginia, VA,	**9**	**47,543,319**	**16,991,280**	**4,899,025**	**69,433,624**
Lake Charles Harbor District, LA	10	31,883,211	2,886,211	29,337,734	64,107,156
Port of Los Angeles, CA	11	14,847,066	41,627,560	3,344,755	59,819,381
Plaquemines Port District, LA	12	19,525,522	5,804,724	30,040,363	55,370,609
Port of Savannah, GA	13	19,756,836	32,375,750	1,560,012	53,692,598
Mobile, AL	14	15,145,769	18,702,721	16,671,808	50,520,298
Port Arthur, TX	15	21,246,851	9,996,105	16,263,497	47,506,453
Baltimore, MD	16	20,915,048	15,512,382	4,174,818	40,602,248
Texas City, TX	17	15,212,505	4,517,718	13,124,999	32,855,222
Philadelphia Regional Port, PA	18	7,281,677	11,569,804	12,939,462	31,790,943
Port Freeport, TX	19	20,037,619	5,263,251	6,249,289	31,550,159
Duluth-Superior, MN and WI	20	5,877,932	886,389	22,867,844	29,632,165
Tampa Port Authority, FL	21	2,267,475	8,116,064	17,596,368	27,979,907
Southern Indiana District, IN	22	-	-	27,718,360	27,718,360
Port of Charleston, SC	23	7,032,044	19,092,127	1,590,366	27,714,537
Port Everglades, FL	24	2,960,321	8,501,765	14,096,573	25,558,659
Northern Indiana District, IN	25	70,879	289,293	25,087,258	25,447,430

Figure 10 – Top 25 U.S. Ports by Total Tonnage, 2022

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, based upon 2022 data, U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, https://data.bts.gov/dataset/Top-25-Ports-by-Tonnage/usuf-55kz/data_preview

Domestic – Freight tonnage shipped within the same country (United States).

Quick Facts: The Port of Virginia is currently the 9th largest Port in the U.S. in total tonnage.

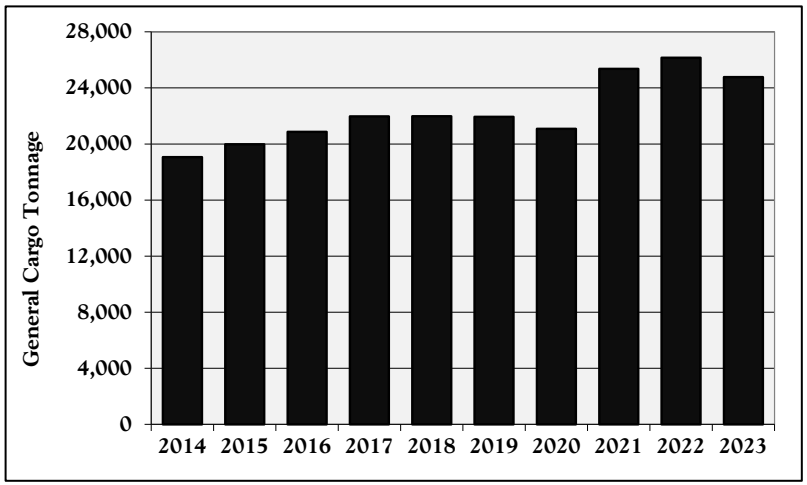


Figure 11 – General Cargo Tonnage Handled by the Port of Virginia, 2014-2023
Source: HRTPO Staff compilation of VPA data

Quick Facts: Cargo tonnage handled by the port has increased 30% since 2014 and will likely continue to increase.

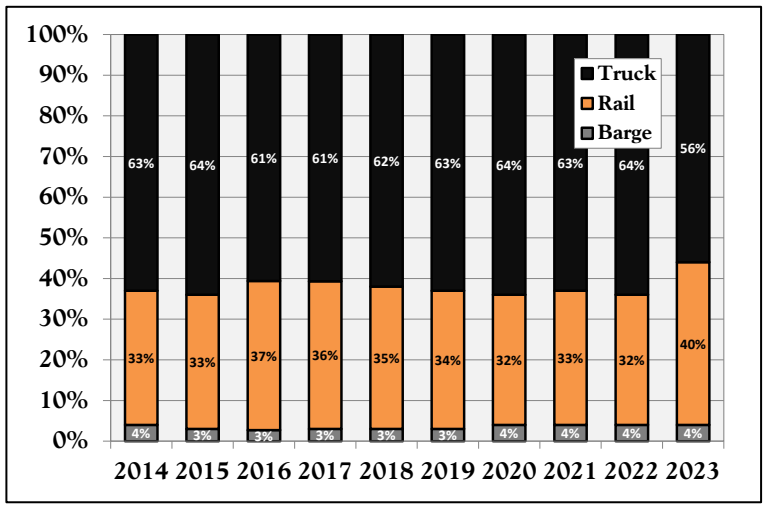


Figure 12 – Mode Split of General Cargo handled by the Port of Virginia
Source: HRTPO Staff compilation of VPA data

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.

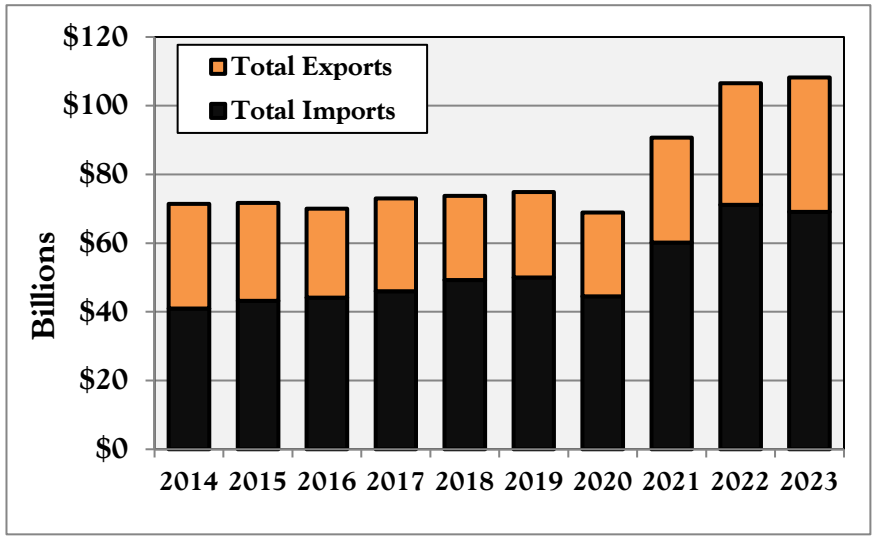


Figure 13 – Port of Virginia – Total Trade by Dollar Value
Source: Virginia Port Authority.

Quick Facts: The value of trade at the Port of Virginia has increased significantly since 2020.

Containerized Shipments

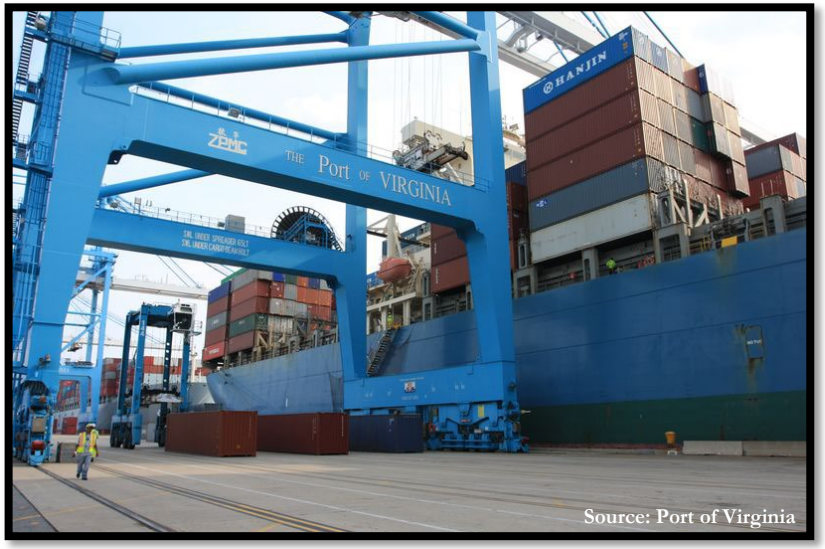
Containers have revolutionized the ability to move cargo and streamline global trade.

Port	TEUs, 2022	
	Rank	Total
Port Authority of New York and New Jersey, NY & NJ	1	6,660,317
Port of Los Angeles, CA	2	6,424,341
Port of Long Beach, CA	3	6,091,978
Port of Savannah, GA	4	4,329,915
Port of Houston Authority of Harris County, TX	5	3,252,557
Port of Virginia, VA	**6**	**2,861,864**
Port of Charleston, SC	7	2,126,271
Port of Oakland, CA	8	1,791,175
Tacoma, WA	9	1,519,192
Port of Seattle, WA	10	1,085,151
Jacksonville, FL	11	902,551
Port of Miami, FL	12	888,963
San Juan, PR	13	832,030
Honolulu, O'ahu, HI	14	828,764
Baltimore, MD	15	790,862
Port Everglades, FL	16	758,491
Philadelphia Regional Port Authority, PA	17	728,499
Mobile, AL	18	440,426
Port of Alaska, AK	19	419,753
Port of New Orleans, LA	20	352,738
Wilmington, NC	21	237,183
Wilmington, DE	22	204,391
Oxnard Harbor District, CA	23	197,828
South Jersey Port Corporation, NJ	24	163,094
Port of Gulfport, MS	25	152,040

Figure 14 – Top 25 U.S. Ports by Containerized Cargo, 2022

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, based upon 2022 data, U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, https://data.bts.gov/dataset/Top-25-Container-Ports-by-TEU/sn74-xpkp/data_preview

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%.



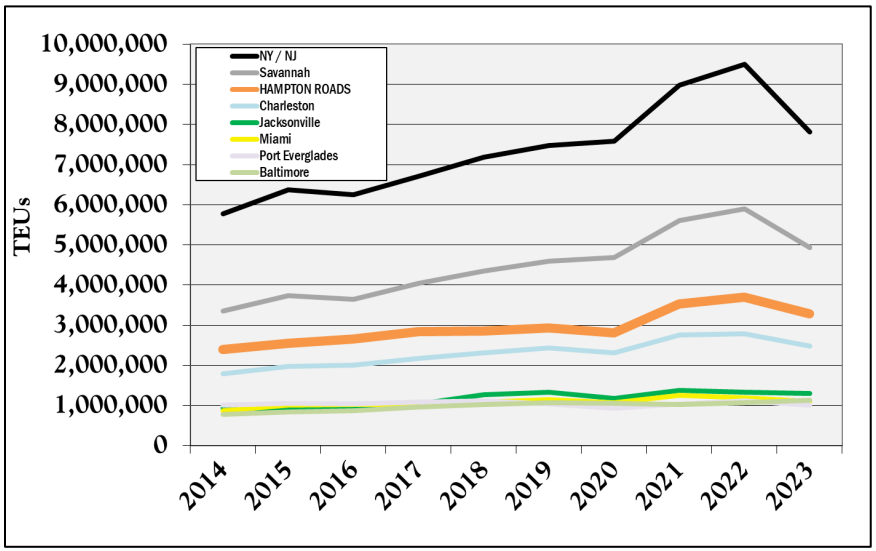


Figure 15– General Cargo (in TEUs) Handled at Top East Coast Ports, 2014-2023

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 2014. The steady increase in general cargo at the Port of Virginia since 2014 has also been experienced at other top East Coast ports.

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. The top five destination countries for coal exports are India, Japan, The Netherlands, Brazil, and China.

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 (**Figure 16**). Coal loadings in Hampton Roads fell to 22 million tons in 2016, increased again to nearly 43 million tons in 2018. During the Covid-19 pandemic in 2020, coal loadings were 26 million tons but have increased every year through 2023.

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.

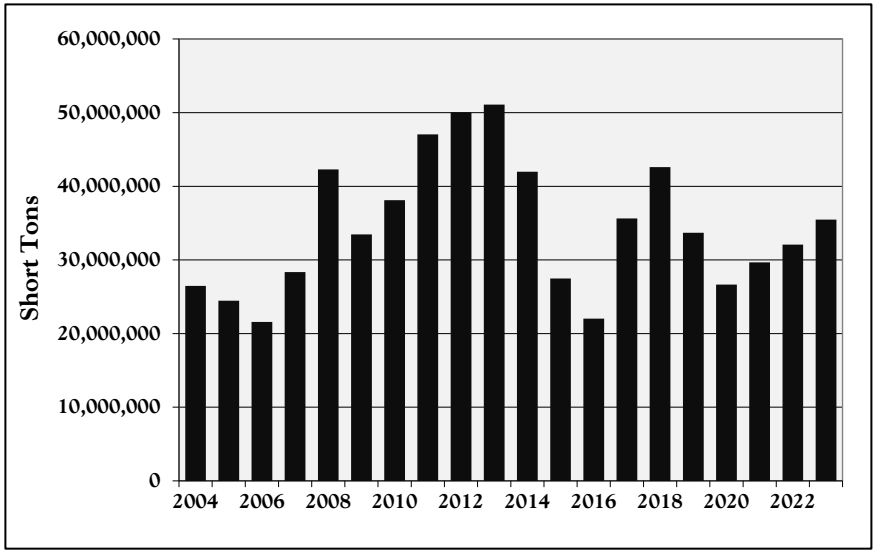


Figure 16 – Coal Loadings in Hampton Roads, 2004-2023
Data Source: Hampton Roads Maritime Association.

Quick Facts: Virginia is the largest coal export port in the United States. While coal loadings handled in Virginia decreased during the Covid-19 pandemic in 2020, coal loadings have increased each year since, with 35.5 million tons in 2023.

Rail

Rail is one of the most efficient means of transporting freight, particularly for heavy loads and freight that is being transported over longer distances. Transporting freight by rail can also reduce the number of trucks traveling the nation's roadways, potentially reducing roadway wear and tear and congestion. Rail is also the only option for certain types of freight, such as coal.

Figure 17 shows the statewide rail network, and **Figure 18** on page 21 shows the rail network in Hampton Roads. Railroads are classified into three tiers based on the revenue collected by the railroad. The largest railroads are referred to as Class I, and there are seven Class I railroads that currently operate in the United States. There are two Class I carriers that serve both the state of Virginia and Hampton Roads – CSX Transportation and Norfolk Southern.

CSX Transportation currently operates about 21,000 route miles of track, primarily in the Eastern United States. In Hampton Roads, CSX provides service to both the Southside and Peninsula, and is the only railroad to serve the Newport News Marine Terminal. CSX also has an intermodal transfer center in Portsmouth, adjacent to Portsmouth Marine Terminal.

Norfolk Southern Railway currently operates approximately 19,000 miles of track in 22 eastern states and the District of Columbia. In Hampton Roads, Norfolk Southern provides access to the Southside via a route parallel to the US Route 460 corridor. Norfolk International Terminals and Lambert's Point Docks are directly served by Norfolk Southern tracks. Norfolk Southern also has an intermodal transfer center on the Southside, in the Portlock area of Chesapeake.

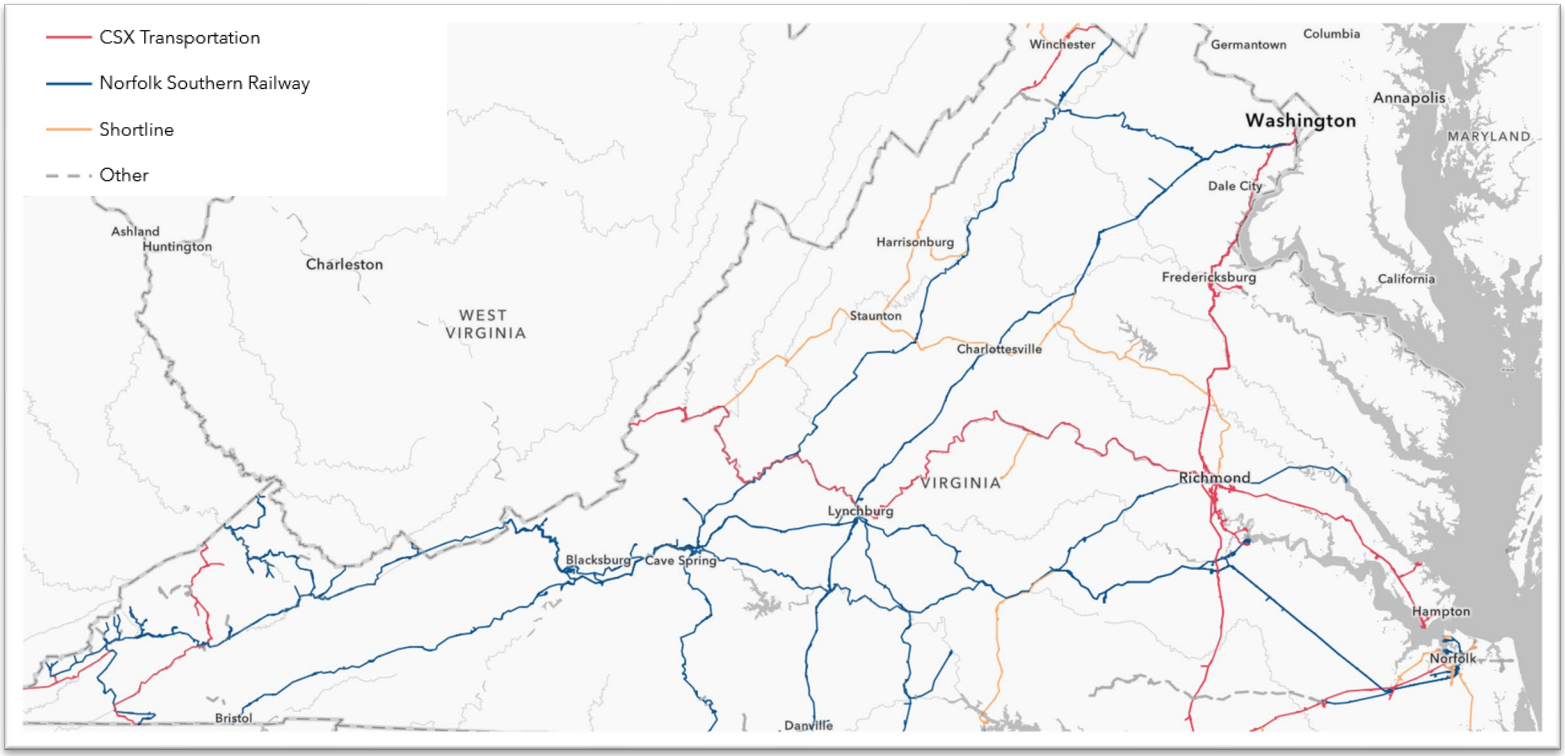


Figure 17 – Virginia Railroad Network
Source: DRPT.

In addition to the two Class I carriers, a number of smaller railroads operate in Hampton Roads. These railroads are referred to as Class III, or shortline railroads. Each of these shortline railroads are described below:

- **Buckingham Branch Railroad** – Operates over 275 miles of track throughout Virginia. In Hampton Roads, Buckingham Branch leases the former Bay Coast Railroad track between Norfolk and Little Creek in Virginia Beach.
- **Chesapeake and Albemarle Railroad** – Provides service on 68 miles of track between Chesapeake and Edenton, North Carolina. The railroad, which is owned by Genesee & Wyoming, has interchanges with Norfolk Southern, CSX, and the Norfolk and Portsmouth Belt Line.
- **Commonwealth Railway** – Operates 27 miles of track between Downtown Suffolk and the Virginia International Gateway marine terminal in Portsmouth. The railroad is also owned by Genesee & Wyoming and has interchanges with both Norfolk Southern and CSX.
- **Norfolk and Portsmouth Belt Line Railroad** – Provides service on 26 miles of track in the Cities of Norfolk, Portsmouth and Chesapeake. The Norfolk and Portsmouth Belt Line is owned by Norfolk Southern (57%) and CSX (43%) and has interchanges with those two railroads and the Chesapeake and Albemarle Railroad.
- **North Carolina and Virginia Railroad** – Operates 56 miles of track between the Town of Boykins in Southampton County and Cofield, North Carolina. It is a subsidiary of Genesee & Wyoming.

The Port of Virginia has a significant amount of freight transported by rail, with most of the rail movements being destined to and from Midwestern markets. In 2023, 40% of the general cargo handled by the Port of Virginia was transported by rail (**Figure 19**), compared to 56% by truck and 4% by barge. The share of freight moved by rail through the Port of Virginia has increased, up from typical levels of 32% - 34% over the last decade.

This rail movement does not include the large amount of coal transported via rail from the mountains of West Virgina and western Virginia to dock facilities in Hampton Roads. Hampton Roads continues to be the largest exporter of coal in the United States, with over 35 million tons of coal being shipped through the region in 2023.

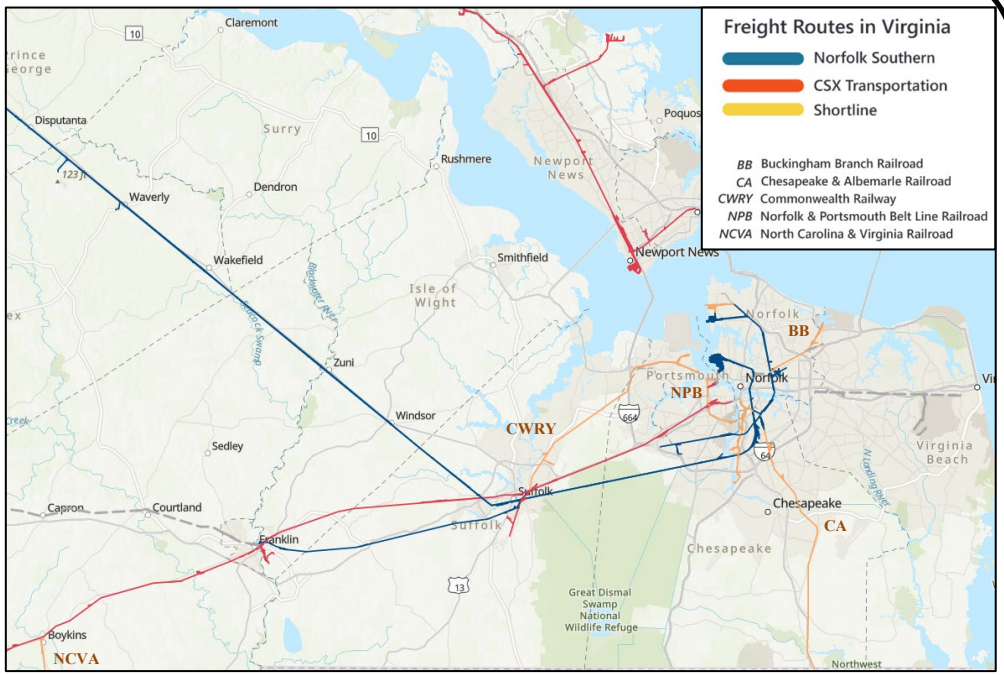


Figure 18 – Railroad Network in Hampton Roads
Source: Virginia State Rail Plan.

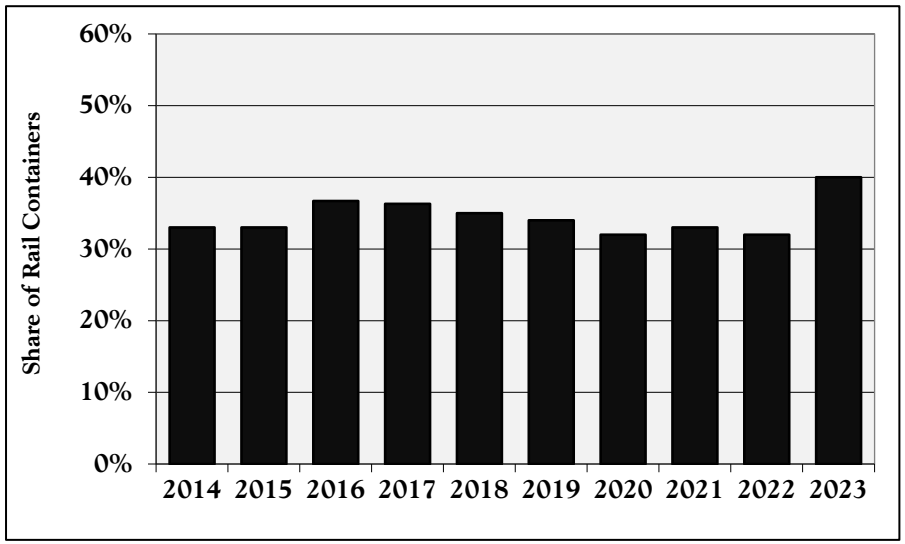


Figure 19 – Share of Containers Handled by the Port of Virginia Transported by Rail, 2014-2023
Source: Virginia Port Authority

HIGHWAY

An extensive network of roadways, bridges, and tunnels serves Hampton Roads. I-64 – 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, several U.S. Routes provide access to, from, and within the region, including Route 13, Route 17, Route 58, Route 60, Route 258, and Route 460.

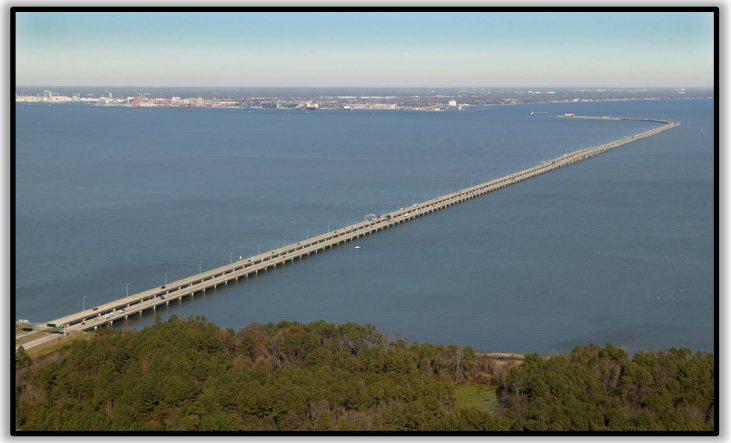
HRTPO staff annually analyzes existing congestion levels on regional roadways as part of the regional Congestion Management Process. **Figure 21** on page 24 shows the existing congestion levels during the PM Peak Period for the Peninsula, and **Figure 22** on page 25 shows the existing congestion levels during the PM Peak Period for the Southside.

Currently, 9% of the major roadway lane-miles[6] in Hampton Roads are severely congested during the PM Peak Period, and another 10% experience moderate congestion. High-profile, severely congested locations include the Hampton Roads Bridge-Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, Downtown Tunnel, and High Rise Bridge.

Peak truck travel varies from peak commuter travel in Hampton Roads. Commuter travel has two distinct peak periods: morning (6:30 am – 8:30 am) and afternoon (3:00 pm – 6:30 pm). Nearly half of truck travel occurs in the middle of the day, with 47% of all truck travel in Hampton Roads occurring between 8:30 am – 3:00 pm. This report includes more information on truck travel in the Regional Truck Movement section.

Ensuring the efficient movement of freight is necessary since so many companies rely on just-in-time delivery of goods for their supply chains. Three measures are used in this report to measure the impact of congestion on freight movement:

- Weekday Number of Trucks – A simple measure of the impact of trucks on a particular roadway is the number of trucks that use the roadway daily. As part of its Traffic Monitoring Program, VDOT collects vehicle classification data at about one-third of the count locations statewide. For the remaining locations, VDOT provides an estimate of the percentage of vehicles that are trucks, and the percentage can be applied to the roadway's weekday traffic volume to estimate the number of trucks.
- Truck Delay – Truck delay can be measured on an average delay or total delay basis. Average delay represents the additional time experienced by each truck and reflects the impact of congestion on individual operating costs, while measuring the total delay on each roadway segment takes into account the overall congestion level and the volume of users (or vehicles) each roadway carries.
- Truck Travel Time Reliability (TTTR) – A measure of the reliability of the roadway network defined as the ratio of the 95th percentile travel time for trucks to the mean (50th percentile) travel time for trucks, based on the travel time information collected in 15-minute intervals throughout the year on each segment.



More information on these three measures, including an analysis of roadways throughout Hampton Roads, is included in the Regional Truck Movement section of this report.

[6] 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.

As the federally designated Metropolitan Planning Organization for Hampton Roads, the Hampton Roads Transportation Planning Organization (HRTPO) is required to develop and maintain a long-range regional transportation blueprint, or Long-Range Transportation Plan (LRTP), to help guide multimodal transportation investments that promote system efficiency and connectivity while maximizing the use of scare transportation funds. The current Hampton Roads 2045 LRTP, adopted by the HRTPO in June 2021, was developed over five years and is based on a collaborative process involving many regional stakeholders and the public to identify, prioritize, and fiscally constrain needed transportation investments. Regional highway projects include:

- Hampton Roads Bridge-Tunnel widening (underway)
- Hampton Roads Express Lanes Network (underway)
- I-64 Widening on the Southside including the High Rise Bridge (complete)
- I-64 Widening on the Peninsula between Route 199 – Exist 234 and Jefferson Avenue – Exit 255 (complete)
- I-64/I-264 Interchange Improvements (Phases I and II complete)
- I-664 widening on the Peninsula between New Kent/James City County Line and Exit 234 (underway)
- I-64/I-464 Interchange improvements from I-64 Eastbound to Route 168 Southbound (underway)
- I-664 Widening from Bowers Hill to College Drive
- Virginia Route 164 Widening from West Norfolk Road to I-664
- I-264 Widening from Witchduck Road to Independence Boulevard

Among the three projects listed above that are not currently under construction, widening projects on all three – I-664 on the Southside, the Western Freeway (Virginia Route 164), and a portion of I-264 in Virginia Beach – were highlighted by the HRTPO Freight Transportation Advisory Committee (FTAC) as priority projects that would provide the most benefits for freight stakeholders for the 2045 LRTP. Additional freight-related projects included in the 2045 LRTP are shown in **Figure 20**.

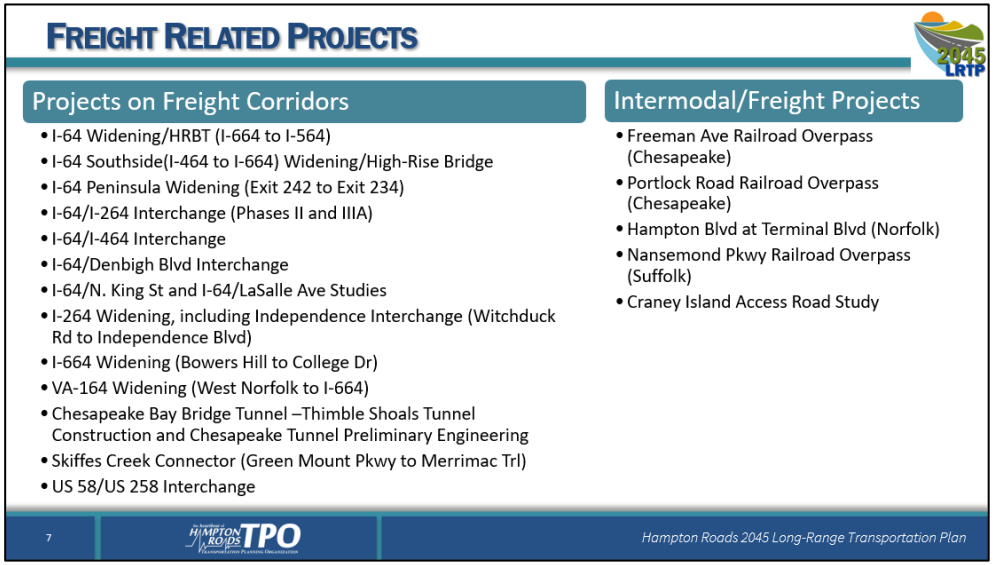


Figure 20 – Freight Related Projects in the Hampton Roads 2045 Long-Range Transportation Plan
Source: HRTPO

In addition to these major projects, over 100 roadway projects are included in the fiscally-constrained Hampton Roads 2045 Long-Range Transportation Plan (LRTP). All of the projects included in the 2045 LRTP are shown in **Figure 23** on page 26. More information on the Hampton Roads LRTP is also included in the Integration of Freight into the Transportation Planning Process section of this report.

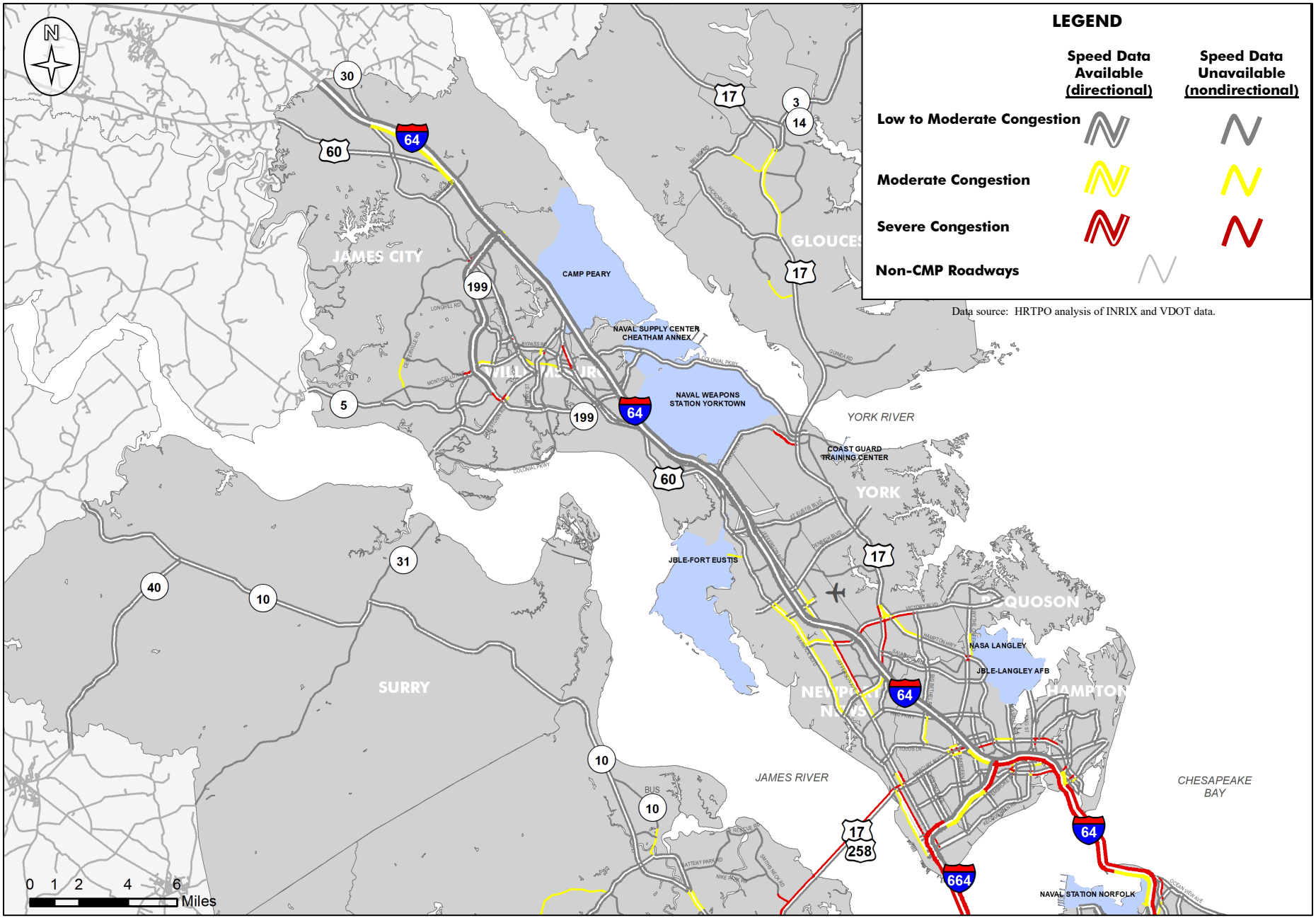


Figure 21 – 2023 Existing Congestion Levels – PM Peak, Peninsula
Source: HRTPO

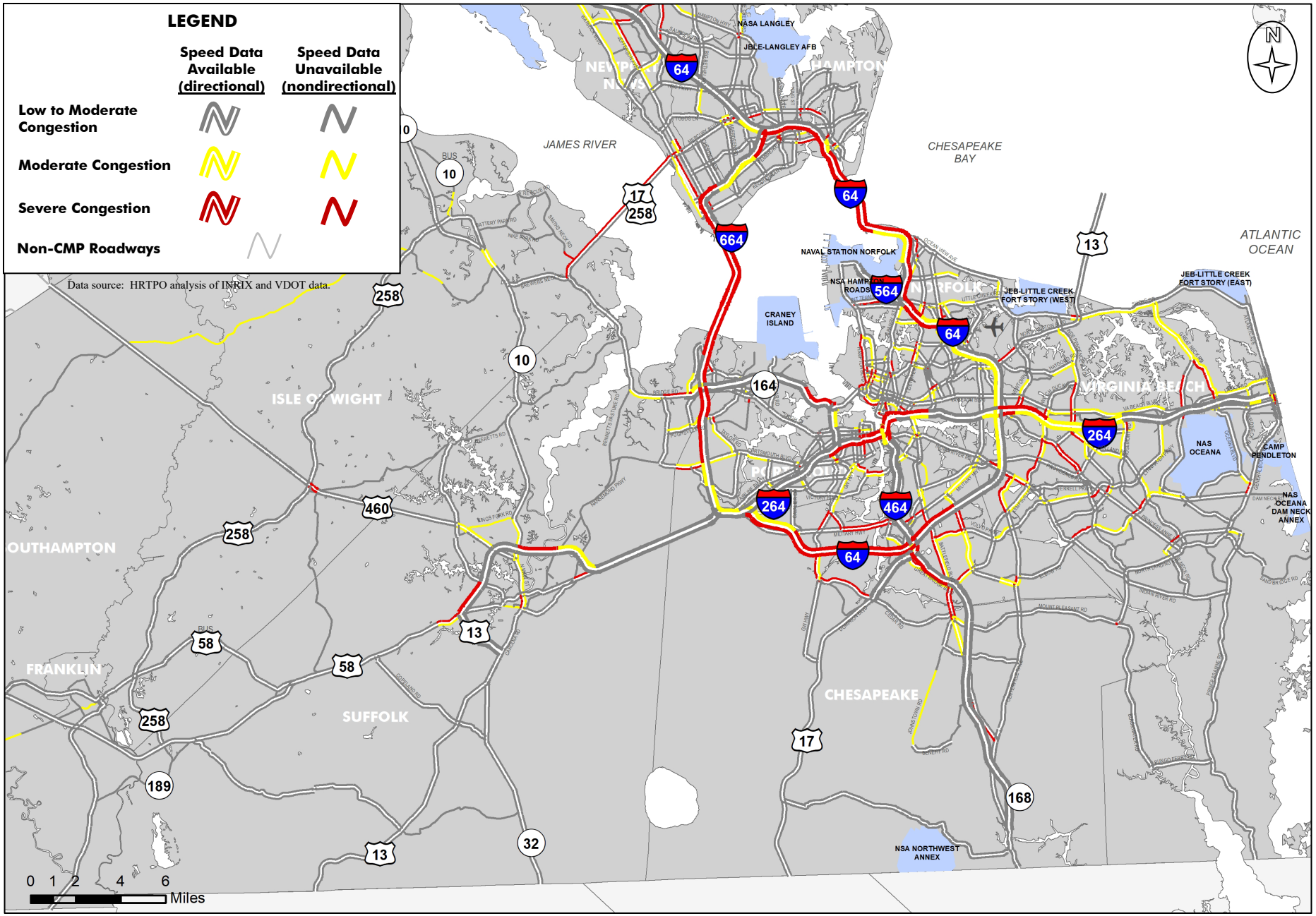


Figure 22 – 2023 Existing Congestion Levels – PM Peak, Southside
Source: HRTPO

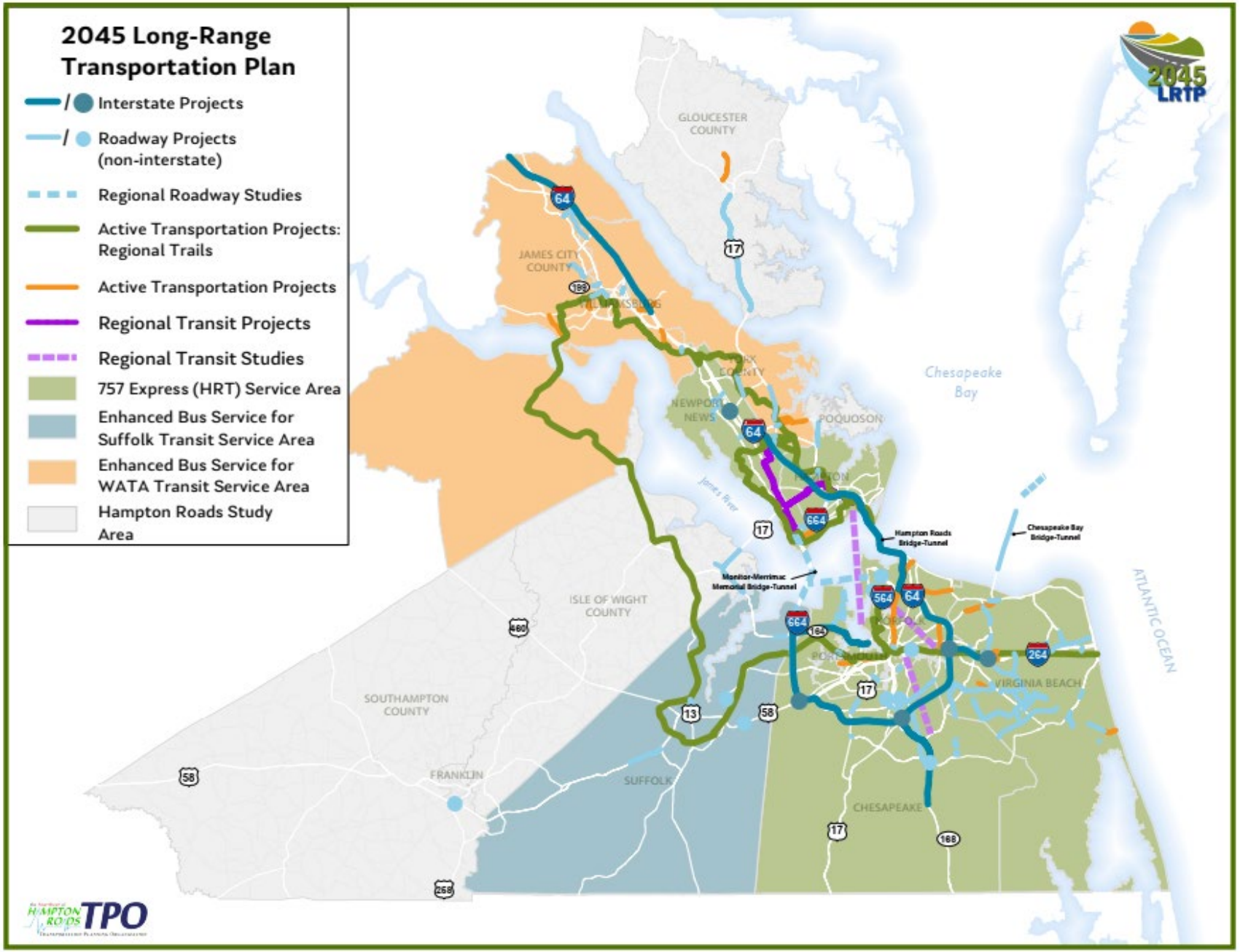


Figure 23 – Fiscally-Constrained Hampton Roads 2045 Long-Range Transportation Plan
Source: HRTPO

Truck Parking Challenges

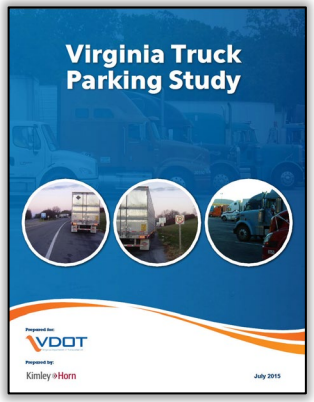
Truck parking shortages have become a local, statewide, and national safety concern. It is important that truck drivers have access to safe, secure, and accessible truck parking. With the projected growth in e-commerce and truck traffic, the demand for truck parking will continue to outpace the supply of public and private parking facilities.

Three key truck parking challenges for Hampton Roads/Virginia are as follows:

1. There is a shortage of parking supply. 3,244 additional parking spaces are needed in Virginia today, and 8,574 additional spaces will be needed by 2045 during peak demand periods. In the Hampton Roads District, 337 additional spaces are needed today and 1,057 additional spaces will be needed by 2045.
2. 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.
3. Trucks that park on the mainline and ramp shoulders pose a significant safety risk to themselves and the traveling public. One of the challenges 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.

The remaining part of this section provides a summary of findings from two Virginia Truck Parking Study updates as well as a federal Truck Parking Development Handbook. The most significant findings pertaining to Hampton Roads have been highlighted.

2015 Virginia Truck Parking Study



[Click here to view the report]

In July 2015, the Virginia Department of Transportation (VDOT) completed a statewide *Virginia Truck Parking Study*[7]. 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 had indicated that this is a top priority for the statewide freight community. This study was guided by stakeholder surveys conducted by Virginia State Troopers, VDOT Residency Staff, VDOT Rest Area Staff, and truckers who travel Virginia's roadways.

Major recommendations from the study were the following:

- Partner with private industry and local governments to increase capacity and related improvements.
- Provide accurate and real-time information about truck parking supply and availability in Virginia.
- Improve the safety, effectiveness, and supply of truck parking spaces at State-owned facilities.

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 themselves and 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

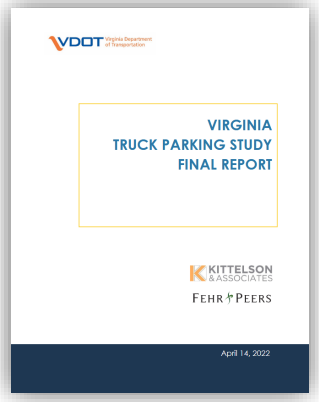
[7] Virginia Department of Transportation, Virginia Truck Parking Study, Prepared by Kimley Horn, July 2015.

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 truckers surveyed 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 unreliable travel times.
- **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.**

2022 Virginia Truck Parking Study Update

VDOT conducted this truck parking study to build on the 2015 study. The goal of the 2022 *Virginia Truck Parking Study*[8] was to assess the current supply and demand for truck parking in Virginia and to develop solutions to address existing and future parking needs. This update quantifies the truck parking needs using truck global positioning system (GPS) data from the American Trucking Research Institute (ATRI). The ATRI data included a sample of truck parking locations in Virginia along the Corridors of Statewide Significance and the National Highway System (NHS).



Click here to view the report

Key findings from the 2022 study include the following:

- More truck parking is needed across the state of Virginia, especially along I-81 and I-95.
- 142 parking facilities provide 8,071 designated truck parking spaces in Virginia.
- 617 truck parking spaces were added along Corridors of Statewide Significance in Virginia between 2015 and 2021.
- **3,244 additional parking spaces are needed statewide today, and 8,574 additional spaces will be needed by 2045 during peak demand periods** (**Figure 24**). **In the Hampton Roads District, 337 additional spaces are needed today and 1,057 additional spaces will be needed by 2045.**
- 119 truck parking junctions were analyzed, including 37 VDOT public parking junctions (rest areas) and 82 private parking junctions. Junctions were defined as interchanges or public rest areas. At some junctions, there were multiple truck parking facilities or unauthorized parking events, such as ramp or shoulder parking near the junction.
- Only three junctions were not over capacity at some point during the eight-week period of peak truck parking demands. All junctions are estimated to be over capacity by 2045 if no additional spaces are added to them.

VDOT DISTRICT	SPACES NEEDED AT PUBLIC JUNCTIONS		SPACES NEEDED AT PRIVATE JUNCTIONS		TOTAL SPACES NEEDED	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
BRISTOL	26	94	500	1,329	526	1,423
CULPEPER	12	24	40	102	52	126
FREDERICKSBURG	45	93	295	798	340	891
HAMPTON ROADS	0	1	337	1,056	337	1,057
LYNCHBURG	0	0	62	142	62	142
NORTH VIRGINIA	56	189	0	0	56	189
RICHMOND	56	162	813	1,843	869	2,005
SALEM	78	132	271	720	349	852
STAUNTON	109	190	544	1,699	653	1,889
GRAND TOTAL	382	885	2,862	7,689	3,244	8,574

Figure 24 – Summary of Additional Truck Parking Spaces Needed in Virginia by District
Data Source: VDOT – Virginia Truck Parking Study, April 2022.

[8] Virginia Department of Transportation, Virginia Truck Parking Study Final Report, Prepared by Kittelson & Associates, Inc., April 14, 2022.

- Top 20 Hot Spots are the junctions with the largest unmet truck parking demand, which will require more development to add the spaces needed. The Top 20 Hot Spots represent 64 percent of statewide additional truck parking supply needs. Additional spaces needed ranged from 45 to 259. Staunton, Richmond, and Bristol are home to 13 of the Top 20 Hot Spots. Junctions along I-81 or I-95 are home to 17 of the Top 20 Hot Spots.
- Bottom 20 Hot Spots are the junctions with the least unmet truck parking demand, which might be "low-hanging fruit" locations that require less development to meet the demand. Additional spaces needed ranged from 11 to 18. The Bottom 20 Hot Spots represent less than 6 percent of the additional spaces needed across the state.
- All but three junctions with parking on the Corridors of Statewide Significance or National Highway System (NHS) had overflow or unauthorized parking observed at some point during the data collection period. However, the truck parking problem may not occur year-round at all locations.

Truck Parking in New Kent County Source: Google

2022 Truck Parking Development Handbook

The Federal Highway Administration issued a Truck Parking Development Handbook in 2022 to give state and local planning groups and private industry detailed procedures for assessing demand for truck parking and boosting parking capacity. It was developed from information provided to and generated by the National Coalition of Truck Parking, a group of public and private sector officials coordinated by the Federal Highway Safety Administration. It presents resources for development of truck parking, including factors that influence parking need, quantitative approaches for estimating truck parking demand, design of truck parking facilities, truck parking safety and security, and facility siting to protect community quality of life. The Handbook serves as a resource for planners, engineers, local officials, State departments of transportation, metropolitan planning organizations, economic development organizations, and other entities involved in freight and land use planning.

Click here to view the report

Intermodal Conflict Points

This section describes 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 navigable waterways in Hampton Roads such as the James River, York River, Elizabeth River, and Intracoastal Waterway, 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 25**.

A total of 367,000 vehicles cross movable roadway bridges in Hampton Roads each weekday. Most of these drawbridges have restrictions in terms of when they can be opened for maritime traffic, particularly during peak travel periods. These restrictions and other characteristics of the nine movable roadway bridges, are shown in **Figure 26** on page 31.

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 (2012)
- The Dresser Bridge spanning the Chickahominy River between James City and Charles City Counties (2009)
- The Veterans Bridge (formerly Steel Bridge) spanning the Intracoastal Waterway in Chesapeake (2014/2016)
- The westbound lanes at the High Rise Bridge (these lanes were moved to a new fixed-span structure in 2022, the eastbound lanes continue to use the older, movable roadway bridge

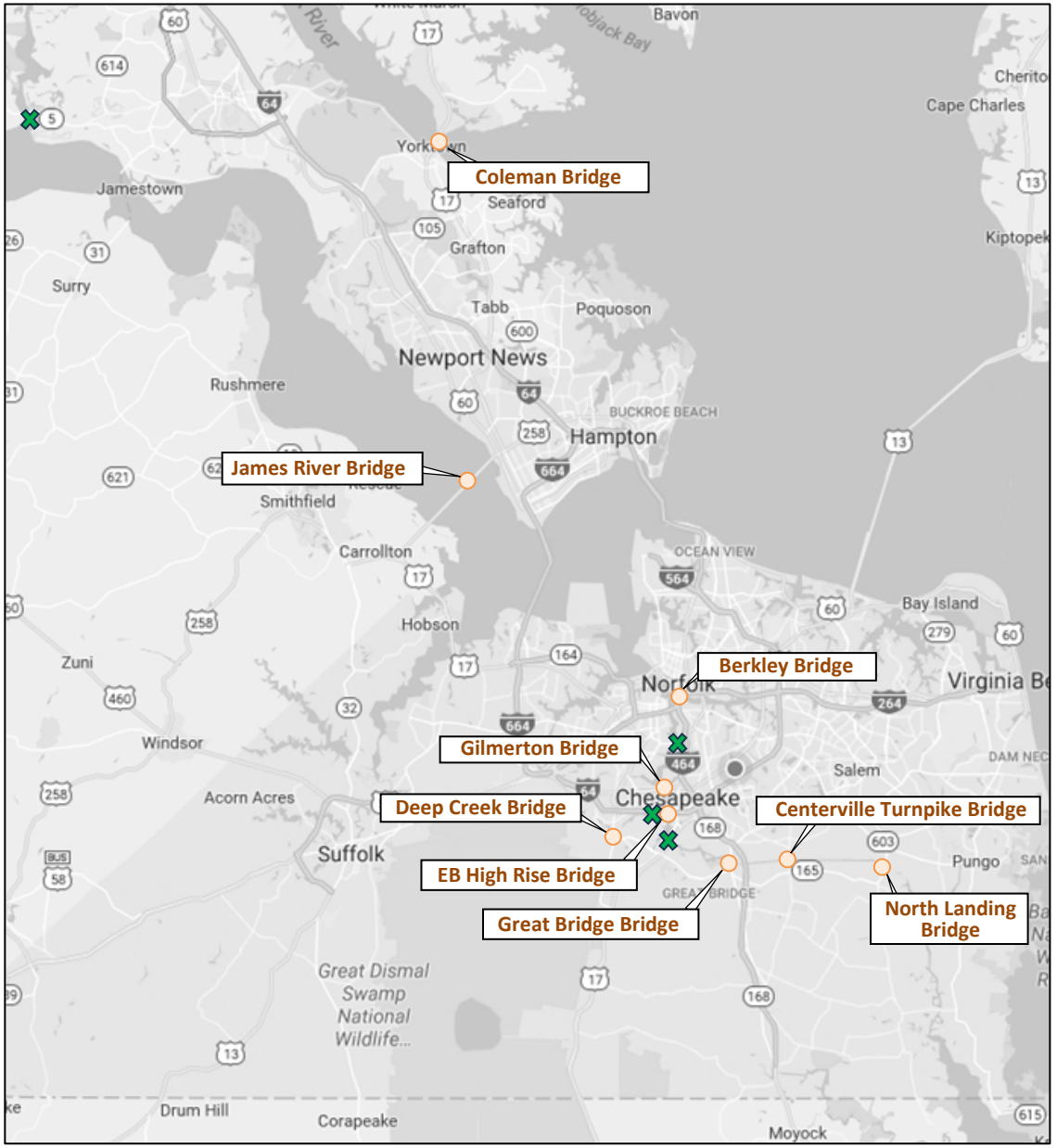


Figure 25– Movable Roadway Bridges in Hampton Roads
Background Map Source: Google. Movable drawbridges that were replaced by fixed spans are shown with green Xs.

- The Gilmerton Bridge was replaced with another movable bridge in 2013; however, the new span has a vertical clearance that is 28 feet higher in the closed position than the previous span.

Facility Name	Existing Weekday Volume	Height in Closed Position (Mean High Tide)	Opening Restrictions
COLEMAN BRIDGE (US 17)	33,000	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)	32,000	60'	The James River Bridge opens upon vessel demand, according to federal regulations. It does not have any periods where openings are restricted.
BERKLEY BRIDGE (I-264)	122,000	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)	39,000	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) - EASTBOUND LANES	48,000	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)	31,000	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)	36,000	6'	Opens on demand, except from 6 am - 7 pm when it is opened on the hour.
CENTERVILLE TURNPIKE BRIDGE	15,000	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)	11,000	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 26 – Characteristics of Movable Roadway Bridges in Hampton Roads
Data Sources: VDOT, City of Chesapeake.

Railroad Drawbridges

Although not as prominent to the public 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 27**. 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.

A conflict occurs when trains are slowed or stopped adjacent to these drawbridges. When trains approach the waterway, sensors on those sections of track indicate that the drawbridge needs to be lowered, which is often done remotely. When each drawbridge is lowered, the waterway is effectively closed to larger marine traffic. Drawbridges can be in the lowered position for long periods not only while trains cross the waterway but also in cases where trains are slowed or stopped adjacent to the drawbridge. This conflict is expected to become more prevalent as Port of Virginia volumes increase and trains become longer and more numerous.


Railroad Drawbridge Over the Southern Branch of the Elizabeth River

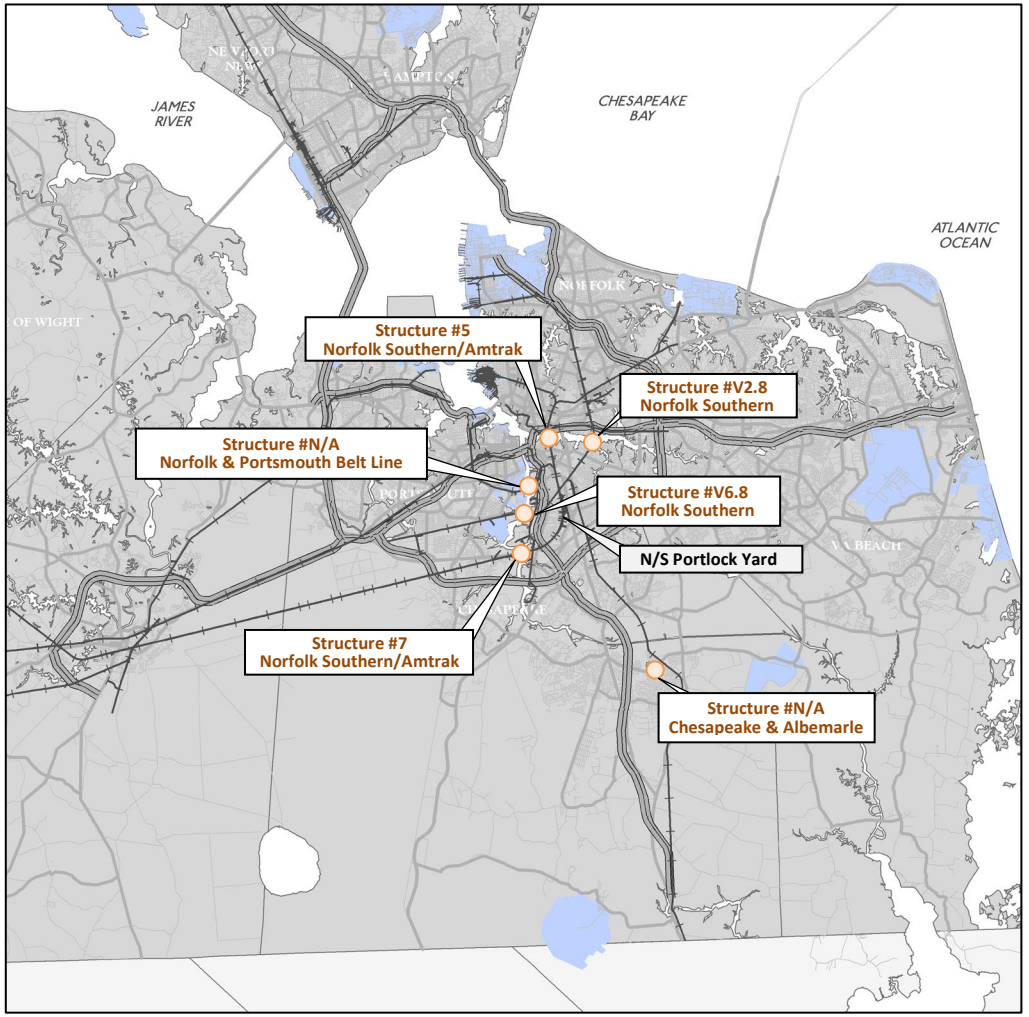


Figure 27 – Movable Railroad Bridges in Hampton Roads

The issue of conflicts between railroads and the maritime industry at these drawbridges is particularly a concern on the Norfolk Southern line that serves both Norfolk International Terminals and Lamberts Point. The line crosses both the Southern Branch of the Elizabeth River and the Eastern Branch of the Elizabeth River. An intermodal transfer facility – the Norfolk Southern Portlock Yard – is located between these two rivers. Structure #7, which crosses the Southern Branch of the Elizabeth River, is 1.5 miles to the southwest of the Norfolk Southern Portlock Yard. Structure #5, which crosses the Eastern Branch of the Elizabeth River, is located 2.1 miles to the north of the Norfolk Southern Portlock Yard.

Highway-Rail Crossings

The most common intermodal conflict point is where roadways and railroads intersect. These highway-rail crossings occur at the same level or grade which can cause extensive delays for roadway travelers. Collisions between trains and vehicles can also occur at these crossings.

There are 607 highway-rail crossings in Hampton Roads. Of these, 146 crossings are grade-separated, meaning the roadway traverses over or under the railroad without any conflict. The remaining 473 crossings are at-grade, resulting in conflicts between roadway users and the railroad. Among these 473 at-grade crossings, 307 are publicly owned and maintained, while the remainder are privately owned and primarily serve businesses or residences.

Over 1.6 million vehicles cross these 307 public, at-grade crossings each day. **Figure 28** shows the at-grade highway-rail crossings throughout Hampton Roads where at least 10,000 vehicles and at least three trains cross each day. Among these at-grade crossings, the crossing in Norfolk between the Hampton Boulevard/International Terminal Boulevard intersection and the railroad entering and exiting Norfolk International Terminals (NIT) has the highest roadway volume at 52,000 vehicles per day. The crossing with the second highest roadway volume is Kempsville Road near Greenbrier Parkway in Chesapeake with 32,000 vehicles at the crossing each day.

Although the at-grade crossings in Figure 27 carry the most vehicles, the amount of rail traffic – and the amount of time roadway traffic is stopped – varies greatly for these crossings. The number and speeds of trains are much more significant in certain areas of the region, particularly near port and other intermodal terminals and in areas where trains switch lines. For example, the crossing at Hampton Boulevard and Terminal Boulevard experiences some of the highest delays in the region, due to both a high number of trains and slow speeds entering and exiting NIT.

Highway-Rail Crossing on Granby Street

Jurisdiction	Facility Name	Location	Railroad Owner	Existing Daily Volume
NOR	HAMPTON BLVD	TERMINAL BOULEVARD	VPA	52,000
CHES	KEMPSVILLE RD	BETWEEN GREEN TREE RD & GREENBRIER PKWY	C & A	32,000
NOR	LITTLE CREEK RD	BETWEEN GRANBY ST & I-64	N/S	25,000
CHES	VOLVO PKWY	BETWEEN BATTLEFIELD BLVD & CROSSWAYS BLVD	C & A	24,000
NOR	GRANBY ST	BETWEEN LITTLE CREEK RD & I-564	N/S	24,000
NOR	CHURCH ST	BETWEEN 20TH ST & 26TH ST	N/S	23,000
NOR	BALLENTINE BLVD	JUST NORTH OF I-264	HRT	22,000
CHES	MOUNT PLEASANT RD	BETWEEN FENTRESS RD & CENTERVILLE TPKE	C & A	19,000
PORT	GEORGE WASHINGTON HWY	BETWEEN FREDERICK BLVD & ELM AVE	N&P BL	19,000
PORT	VICTORY BLVD	BETWEEN I-264 & AIRLINE BLVD	CSX	19,000
SUF	MAIN ST	BETWEEN PRENTIS ST & FINNEY AVE	CSX	19,000
NOR	CHESAPEAKE BLVD	JUST EAST OF CROMWELL DR	N/S	18,000
NOR	INGLESIDE DR	BETWEEN TAIT TERRACE & PRINCESS ANNE RD	N/S	16,000
NOR	PRINCESS ANNE RD	JUST EAST OF TIDEWATER DR	N/S	16,000
NOR	BOUSH ST	AT BUTE ST	HRT	15,000
CHES	CLEARFIELD RD	BETWEEN KEMPSVILLE RD & BUTTS STATION RD	C & A	14,000
CHES	ETHERIDGE MANOR BLVD	JUST WEST OF CENTERVILLE TPKE	C & A	14,000
PORT	HIGH ST	BETWEEN VIRGINIA AVE & MLK FWY	CSX	12,000
PORT	PORTSMOUTH BLVD	BETWEEN TURNPIKE RD & I-264	CSX	12,000
SUF	CAROLINA RD	BETWEEN DILL RD & KILBY AVE	N/S	12,000
SUF	E WASHINGTON ST	JUST SOUTH OF PORTSMOUTH BLVD	CSX	12,000
SUF	E WASHINGTON ST	BETWEEN LIBERTY ST & FACTORY ST	N/S	12,000
SUF	E WASHINGTON ST	JUST EAST OF PINNER ST	N/S	12,000
NOR	ST PAULS BLVD	AT PLUME ST	HRT	10,000
YC	LIGHTFOOT RD	JUST EAST OF RICHMOND RD	CSX	10,000

Figure 28 – At-Grade Highway-Rail Crossings in Hampton Roads with the Highest Daily Roadway Volumes with Three or More Trains per Day

Source: HRTPO analysis of FRA and VDOT data. C&A = Chesapeake and Albemarle Railroad. CSX = CSX Transportation. HRT = Hampton Roads Transit Light Rail. N&P BL = Norfolk & Portsmouth Belt Line. N/S = Norfolk Southern. VPA = Virginia Port Authority.

With the number of freight and passenger trains crossing the region each day, ensuring the safety of highway-rail crossings is a necessity. However, the number of collisions between trains and roadway users has greatly decreased in recent years. As shown in **Figure 29**, there were three crashes between trains and vehicles at highway-rail crossings in Hampton Roads in 2023, resulting in no injuries and no fatalities. Between 2014 and 2023, there were 68 crashes at highway-rail crossings in Hampton Roads, resulting in 5 fatalities and 26 injuries.

There have been improvements to a number of 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. Additional grade-separated crossings of the CSX Railroad were constructed on the Peninsula at City Center Boulevard in 2015, Atkinson Boulevard in 2020, and Green Mount Parkway in 2022. In addition, a grade-separation of Nansemond Parkway and the Commonwealth Railway opened in Suffolk in 2025.

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 adjacent to NIT and at-grade crossings on Freeman Avenue and Portlock Road in Chesapeake. These projects are included in the 2045 Hampton Roads Long-Range Transportation Plan.

In addition, two locations in Hampton Roads have also recently received grant funding from the Railroad Crossing Elimination Program for preliminary work on projects to replace at-grade crossings:

- **Portlock Road (Chesapeake)** – This project will include activities to support planning for a grade-separated crossing of Portlock Road at the Norfolk Southern rail line. The rail line, which includes eight tracks, also carries Amtrak service between Norfolk and the Northeast Corridor, and is located just to the south of Norfolk Southern's Portlock Yard facility. The project will include conducting a feasibility study, preliminary engineering, and environmental work. The project is expected to enhance safety, provide reliable vehicular access, and improve freight and passenger rail efficiency. Up to $1.0 million will be provided by the grant, with the City and DRPT contributing the 20% match.
- **Suffolk Downtown Grade Crossing Study** – This project will study and design a grade-separation project of Washington Street at the Norfolk Southern rail line and explore closures or improvements at an additional six at-grade crossings in Downtown Suffolk. The project is expected to enhance safety and mobility and increase the reliability of travel for vehicular traffic and emergency responders. Up to $2.8 million will be provided by the grant, with the City and DRPT contributing the 20% match.

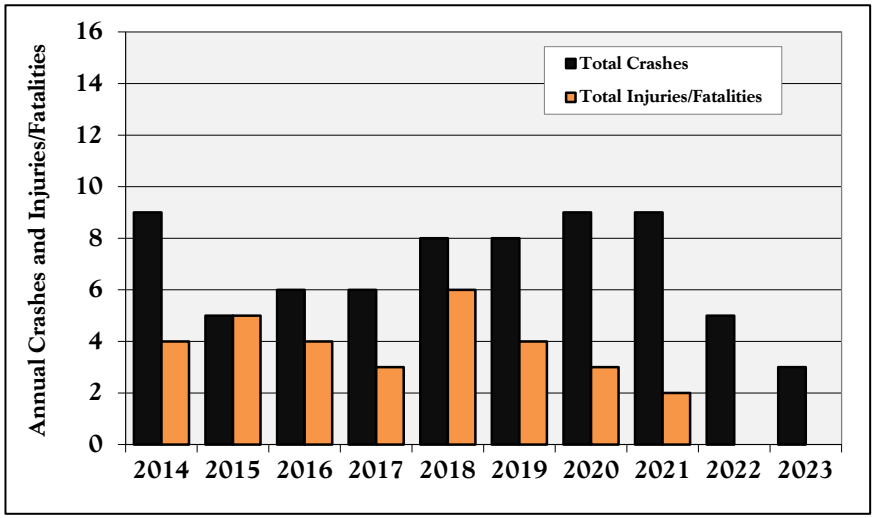


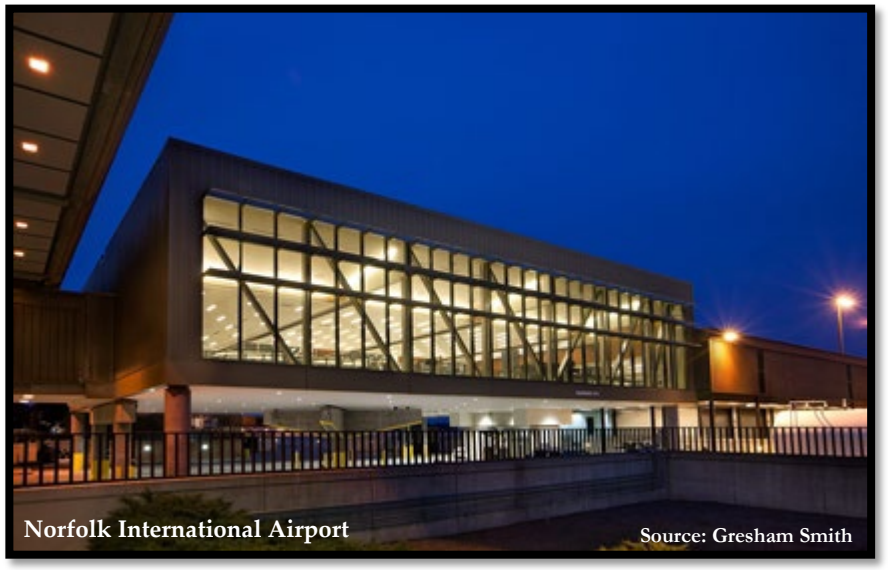
Figure 29 – Total Crashes and Injuries/Fatalities at Highway-Rail Crossings in Hampton Roads, 2014-2023
Source: HRTPO analysis of FRA data.

Because of the importance of freight movement to the Hampton Roads economy, the impacts of blocked crossings on the Hampton Roads community, and new federal funding opportunities, HRTPO staff are preparing a regional Rail Crossing Study. The study will include an inventory of all rail crossings in the region, regional summaries related to crossings, identifying areas isolated by rail crossings, rail crossing projects, prioritization of at-grade crossings, recommended improvements for prioritized locations, along with information required for federal funding programs. The study is expected to be completed by HRTPO staff in 2026.

Air Cargo

Air cargo, the transporting of goods via air carriers, is vital to the Hampton Roads freight footprint. Although air cargo may be more costly to use compared to other shipping methods, it provides businesses access to domestic and international markets quickly and reliably – making it a suitable option to move high-value, light-weight, time-sensitive commodities such as important documents, perishables, equipment and instruments, and higher-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. The air cargo data included in this section was obtained from the Norfolk Airport Authority. [9]

Air cargo is usually handled by one of the following methods: (1) Major Air Express & Cargo Carriers (i.e. FedEx, UPS), (2) Freight Services (i.e. Crossfire Logistics, Pilot), or (3) Commercial Airline Cargo Services (i.e. Southwest Cargo, Delta Cargo), who carry cargo in the aircraft as part of their scheduled service.



Norfolk International Airport

Source: Gresham Smith

The two primary regional air cargo airports in the southeast Virginia area are Norfolk International Airport (ORF) and Richmond International Airport (RIC) (**Figure 30**). Norfolk International Airport 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. Even though Richmond International Airport is located outside of Hampton Roads, air cargo at this location is oftentimes moved through the Hampton Roads region before it is shipped or after it arrives.

Norfolk International Airport (ORF) Air Cargo

Norfolk International Airport (ORF) has kept up with the brisk pace of the air cargo industry by housing one of the most efficient air cargo facilities in the state of Virginia. Approximately 45 million pounds of air cargo were shipped in and out of Norfolk International Airport in 2024 (**Figure 31**). ORF leases property to Realterm (formerly Aeroterm) to operate and maintain the air cargo facility. Aero Norfolk, LLC are the property managers since it was established in the 1980's.

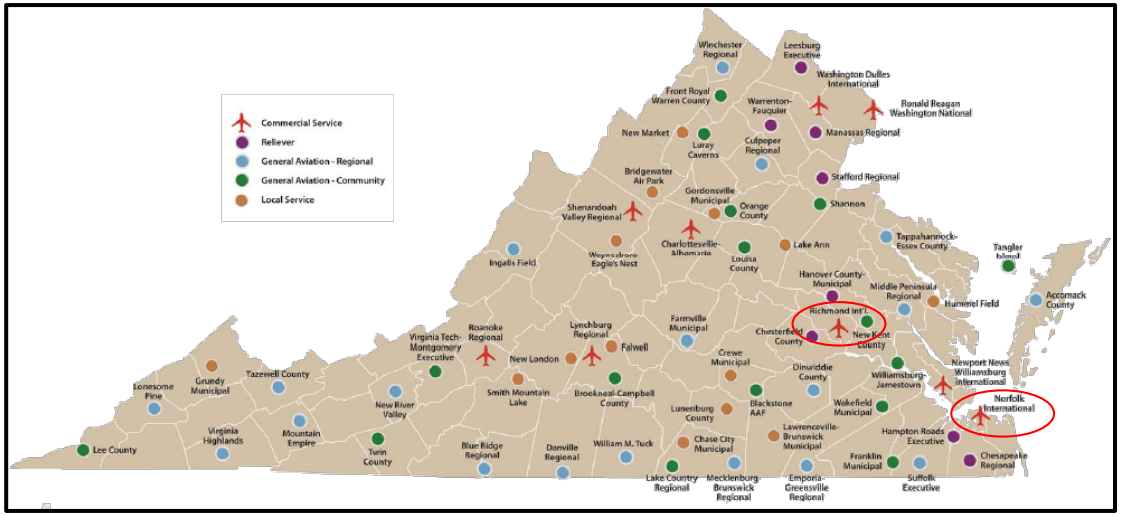


Figure 30 – Primary Regional Air Cargo Airports in Southeast Virginia – Norfolk International Airport (ORF) and Richmond International Airport (RIC).

Data Source: Norfolk Airport Authority

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 warehouses.

[9] Norfolk Airport Authority, Air Cargo Transportation presentation to FTAC by Steve Djunaedi, June 5, 2025.

Military cargo is relatively infrequent at ORF and mainly goes to/from Naval Station Norfolk Chambers Field and Naval Air Station Oceana in Virginia Beach.

ORF Air Cargo and Freight Services

Major Air Express & Cargo Carriers

- FedEx Express
- United Parcel Service (UPS)

Freight Services

- Crossfire Logistics
- Pilot – A Maersk Company

Commercial Airline Cargo Services

- Wright Bros. Aero
- Quantem Aviation Services
- Southwest Cargo
- Delta Cargo
- United Cargo
- American Airlines Cargo

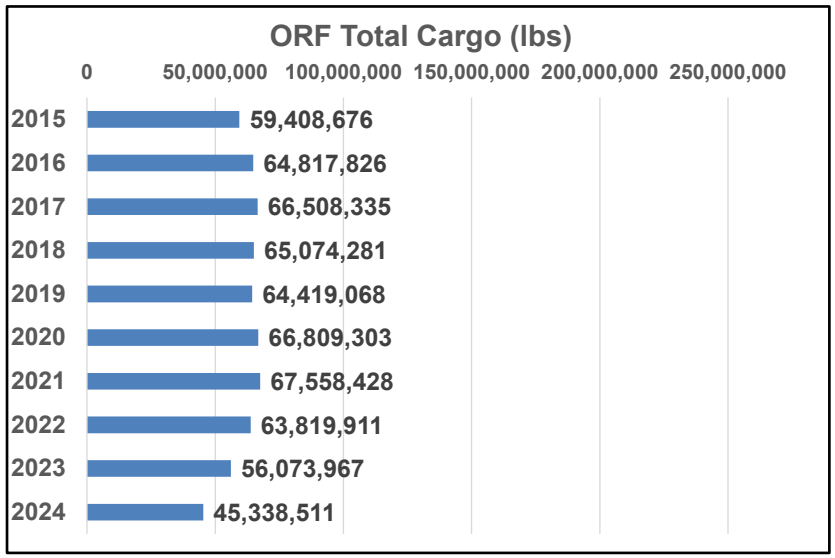


Figure 31 – Norfolk Internation Airport Historical Total Cargo (Mail + Domestic Freight) (lbs)
Data Source: www.flyorf.com.

Richmond International Airport (RIC) Air Cargo

Richmond International Airport is one of the busiest air cargo facilities in the nation. Air cargo at RIC has increased substantially in recent years with over 222 million pounds handled in 2024 (**Figure 32**). RIC's cargo facilities currently offer 750,000 square feet of cargo apron and 142,000 square feet of air cargo warehouse space with direct apron access. Because of its central Mid-Atlantic location, cargo transit via RIC is a viable option for many shippers. Goods shipped out of the metropolitan Richmond area can reach about half of the U.S. population within one day. This translates into more efficient manufacturing, lower costs and improved expansion capabilities for area companies.

RIC Air Cargo and Freight Services

Major Air Express & Cargo Carriers

- FedEx Express
- United Parcel Service (UPS)
- DHL Worldwide Express
- Amazon Prime Air

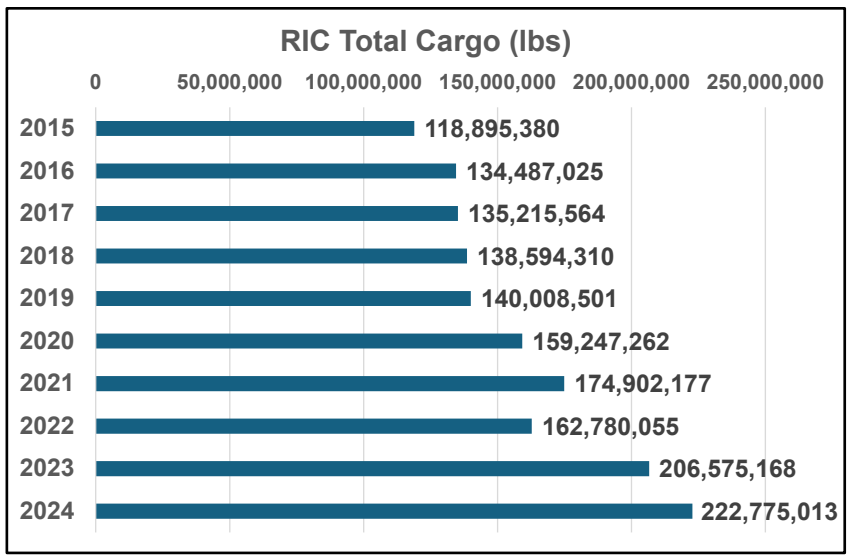


Figure 32 – Richmond Internation Airport Historical Total Cargo (Mail + Domestic Freight) (lbs)
Data Source: www.flyrichmond.com.

Freight Services

- Pilot – A Maersk Company

Commercial Airline Cargo Services

- Southwest Cargo
- Delta Cargo
- United Cargo
- American Airlines Cargo

Regional Air Cargo Comparison - ORF vs RIC

In 2023, total air cargo moved at ORF was ranked 346th highest in the world and 97th highest in North America. In 2023, air cargo moved at RIC was ranked 176th highest in the world and 49th highest in North America. In 2023 and 2024, air cargo at ORF decreased but increased at RIC. From 2022 to 2023, air cargo decreased by 12.2% at ORF but increased by 26.9% at RIC. From 2023 to 2024, air cargo decreased by 19.2% at ORF but increased by 7.8% at RIC.

Air Cargo at Other Virginia Airports

Washington Dulles International Airport is a leading air cargo gateway in Virginia, centrally located in the Mid-Atlantic Region and serves a large catchment area along the East Coast. Washington Dulles handles nearly 500 million pounds of cargo annually and is serviced by 41 airlines providing connections to 57 international and 86 domestic destinations. In 2023, total air cargo moved at Washington Dulles International Airport (IAD) was ranked 102nd highest in the world and 29th highest in North America.

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

Air Cargo at Norfolk International Airport Source: Norfolk Airport Authority

Foreign-Trade Zones

Foreign-Trade Zones (FTZ) are locations where foreign and domestic merchandise is considered in international commerce (not 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.

According to the Department of Commerce, there are 298 foreign trade zones in the United States. Virginia offers six foreign trade zones as shown in **Figure 33**:

- Suffolk (FTZ #20)
- Washington Dulles (FTZ #137)
- Culpeper (FTZ #185)
- Tri-Cities TN/VA (FTZ #204)
- Richmond (FTZ #207)
- New River Valley Airport (FTZ #238)

Suffolk (FTZ #20)

The Virginia Port Authority administers Virginia's first foreign trade zone. FTZ #20 has a service area that includes Accomack (partial), Gloucester, Isle of Wight, James City, Mathews, Northampton, Southampton, Sussex, Surry, and York counties, and the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg.

To receive the benefits of being included in 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, including Elizabeth City and seven counties (Camden, Chowan, Currituck, Gates, Hertford, Pasquotank, and Perquimans). 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.

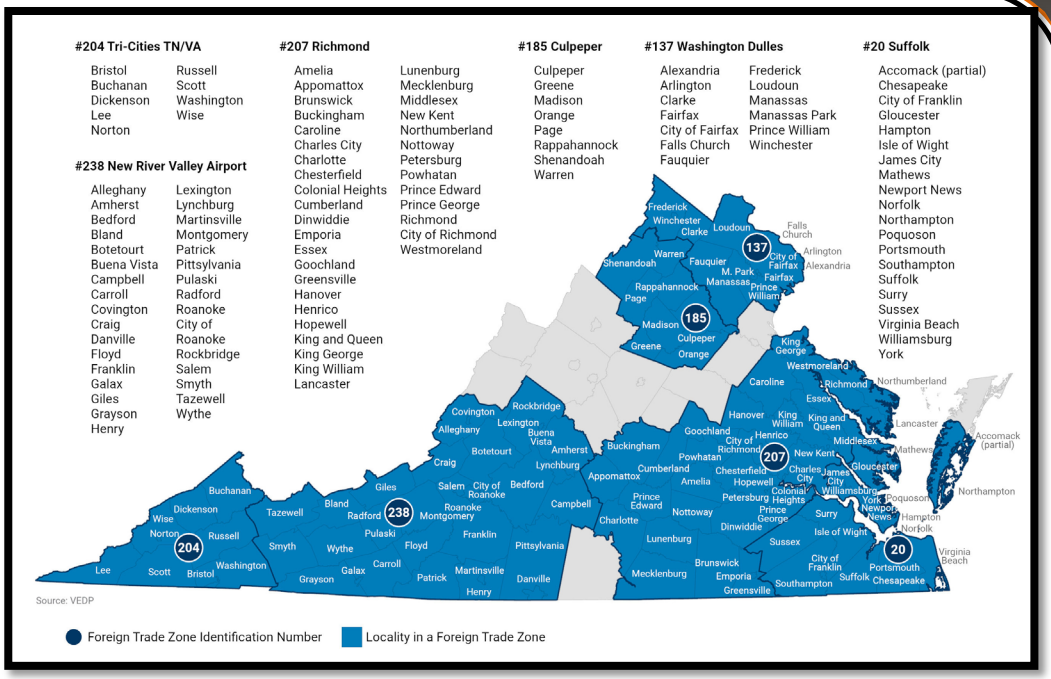


Figure 33 – Foreign-Trade Zones in Virginia
Source: Virginia Economic Development Partnership (VEDP)

Warehouse and Distribution Facilities

E-commerce trends are impacting land use and development patterns. To meet the demand for faster and cheaper shipping to consumers, retailers are moving inventory facilities near population centers to be closer to consumers. Many businesses are aggressively investing in advanced warehouses and distribution centers along major roadways adjacent to metropolitan areas. The anticipated growth and expansion of warehouse and distribution centers will exponentially increase the number of local truck moves. Within Hampton Roads, many warehouse and distribution facilities are located along gateway roadways that lead in and out of the region, such as US Route 58, US Route 460, and I-64.

Warehouses and distribution centers are critical components 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 en route from production sites to where they are sold and consumed. These sites often are where value is added to the products, such as final assembly, customization of products, packaging, and preparing the products for sale. **Figure 34** on page 40 shows the locations of major warehouses and distribution centers in Hampton Roads.

Port 460 Logistics Center

The Port 460 Logistics Center broke ground in September 2024. This multi-phase project will deliver 2.4-million-square-feet of industrial space for the first phase at the 2925 Pruden Blvd location in Suffolk, Virginia. A second phase totaling 2.6 million square feet will follow after the completion of Phase One. Once completed, Port 460 will offer direct access to the Port of Virginia and 75 percent of the U.S. population. Port 460 will use approximately 545 acres that had to be rezoned from light commercial and agricultural to heavy commercial. Developers of the $660 million complex are promising more than 2,500 construction jobs and more than 9,000 permanent jobs once the project is completed in about 10 years. Port 460 is aiming to attract logistics and shipping companies by leveraging its proximity to the Port of Virginia, approximately 20 miles away. Logistics centers, like Port 460, will be critical to the success of continued freight growth in the Hampton Roads region.

The Port 460 Logistics Center along Pruden Boulevard in Suffolk covers 545 acres and will include about 5 million square feet of warehouse space.

Manufacturing Facilities

Although manufacturing accounts for only 12 percent of the U.S. economy, it has an exponential and widespread impact across the economy. Economies reap numerous benefits as a result of manufacturing, including:

- Economic growth is dependent upon manufacturing facilities
- Trade relies heavily on manufacturing facilities
- Manufacturing jobs create more jobs (The U.S. Economic Policy Institute reports that every manufacturing job creates three other jobs because wages are spent in other parts of the economy).

Hampton Roads is the home of numerous manufacturing facilities, many of which are related to the marine transportation and defense industries. Major global companies such as Canon and Stihl also operate manufacturing facilities in the region. **Figure 35** on page 41 shows the location of manufacturing facilities in the Hampton Roads region.

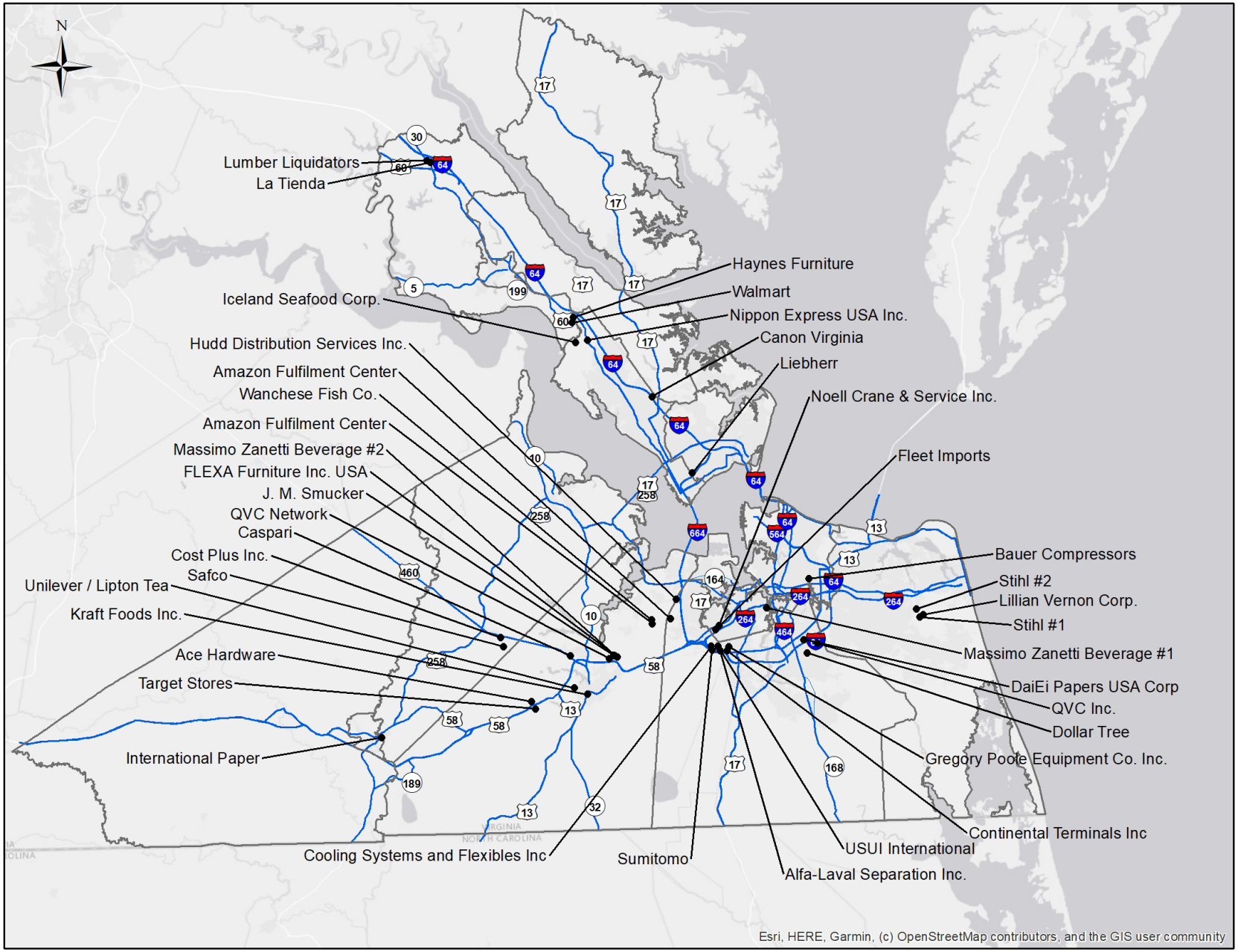


Figure 34 – Warehouses and Distribution Centers in Hampton Roads
Source: HRTPO analysis of Port of Virginia data

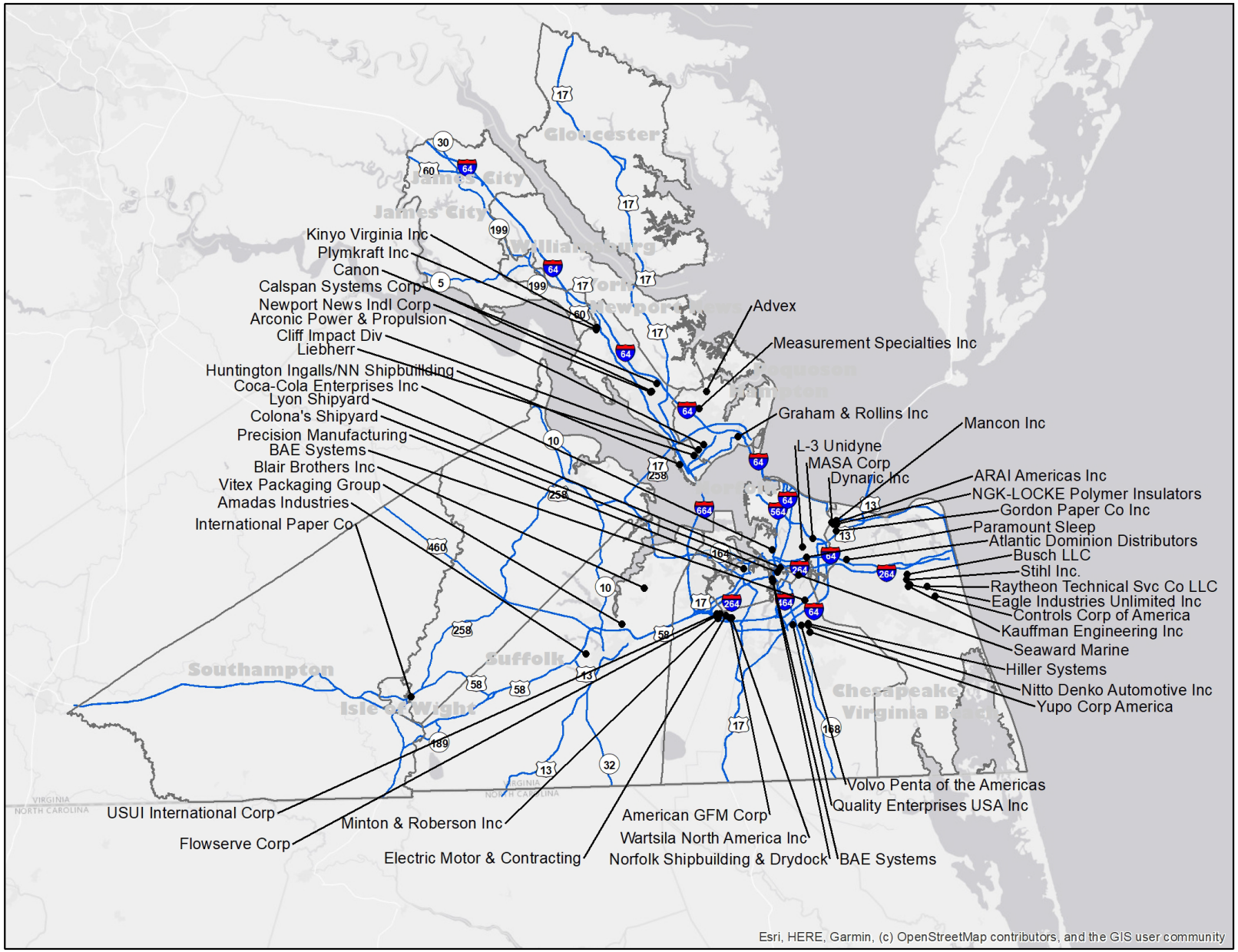


Figure 35 – Manufacturing Facilities in Hampton Roads
Source: HRTPO analysis of Port of Virginia data

Business and Industrial Parks

A business park or office park is an area of land in which many office buildings are grouped together. Business parks are often developed in suburban locations where land and building costs are cheaper.

An industrial park is an area zoned and planned for the purpose of industrial development. It can be thought of as a more "heavyweight" version of the business park. They are usually located on the edges of the main residential area of a city, and are normally situated based on transportation access, including highways, railroads, airports, and ports.

Figures 36-40 show the location of industrial and business parks in Hampton Roads.

Locality	Number	Name
Gloucester County	10	Gloucester Business Park
Hampton	19	Copeland Industrial Park
Hampton	11	Hampton Commerce Center
Hampton	12	Hampton Roads Center North
Hampton	13	Hampton Roads Center South
Hampton	93	West Park
Hampton	14	Wythe Creek Commerce Park
James City County	39	Hankins Industrial Park
James City County	40	Jacob Industrial Park
James City County	16	Williamsburg Corporate Campus
Newport News	17	Camp Morrison Industrial Park
Newport News	18	City Center at Oyster Point (block 5)
Newport News	20	Deer Run Commerce Center
Newport News	21	DeForest Industrial Park
Newport News	69	Endview Office Park
Newport News	73	Jefferson Center for Research & Technology
Newport News	74	Lee Hall Industrial Park
Newport News	76	Newport News Industrial Park
Newport News	77	Newport News Seafood Industrial Park
Newport News	79	Oyster Point of Newport News
Newport News	80	Oyster Point West
Newport News	81	Patrick Henry Commerce Center
Newport News	82	Peninsula Industrial Park
Newport News	84	Seafood Industrial Park
Poquoson	27	Big Woods Business Park
Williamsburg	53	Busch Commerce Park
Williamsburg	54	Busch Corporate Center
Williamsburg	55	Discovery Business Park
Williamsburg	56	International Business Center
Williamsburg	57	James River Commerce Center
York County	58	Ashe Industrial Park
York County	59	Bethel Industrial Park
York County	60	Busch Industrial Park
York County	61	Egger Tract
York County	62	Ewell Industrial Park
York County	63	Greene Industrial Park
York County	64	Keener-Cupp-Berrane Coxton Center
York County	65	King's Creek Commerce Center
York County	66	Victory Industrial Park
York County	67	York River Commerce Park
York County	68	Yorktown Commerce Center

Figure 36 – List of Business and Industrial Parks on the Peninsula
Source: HRTPO analysis of Port of Virginia data

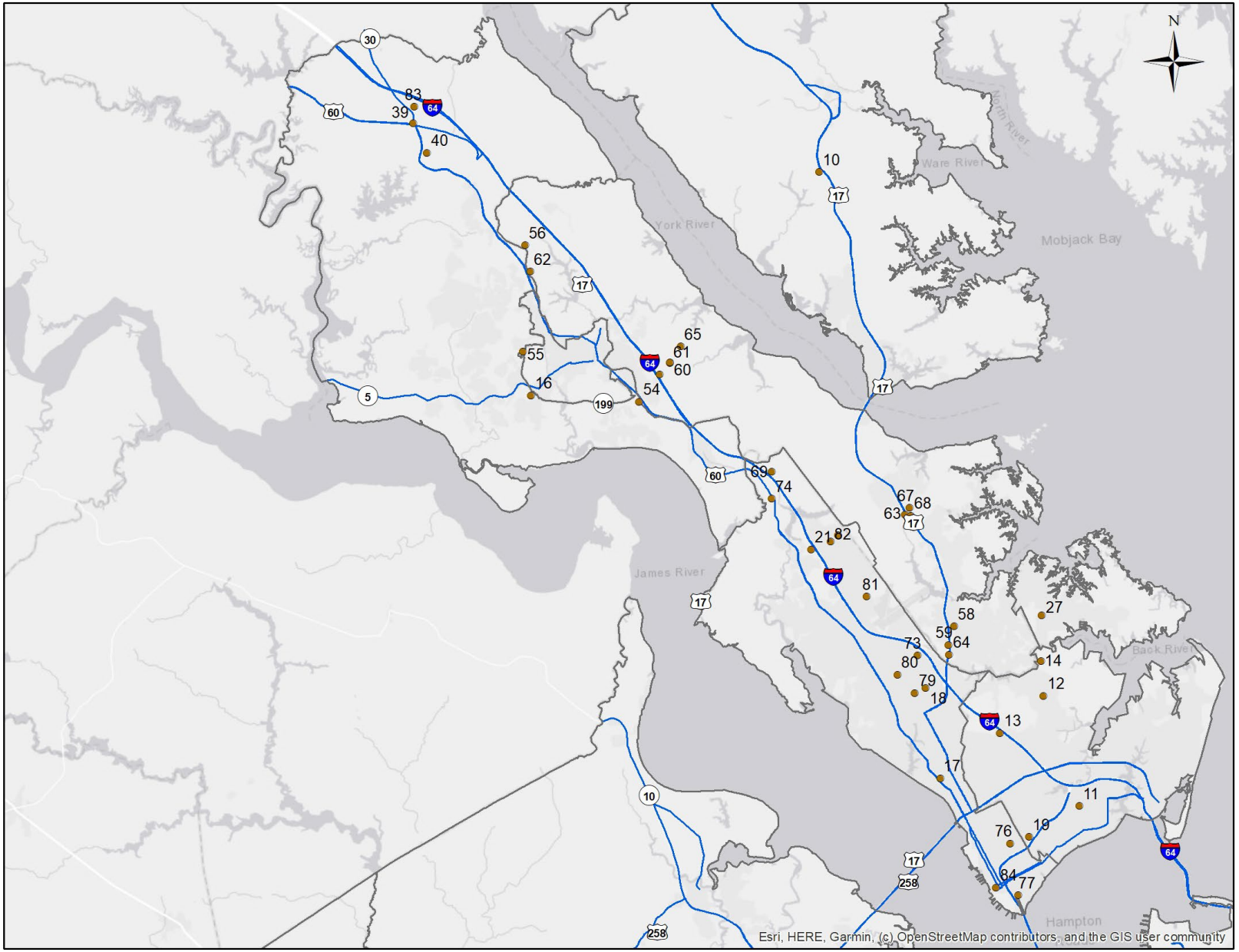


Figure 37 – Business and Industrial Parks on the Peninsula
Source: HRTPO analysis of Port of Virginia data

Locality	Number	Name
Chesapeake	1	Battlefield Corporate Center
Chesapeake	2	Cavalier Industrial Park
Chesapeake	3	Crossway Commerce Center
Chesapeake	4	Dominion Commerce Park
Chesapeake	5	Gilmerton Industrial Park
Chesapeake	70	Great Bridge Commerce Center
Chesapeake	71	Greenbrier Business Park
Chesapeake	72	Greenbrier Commerce Center
Chesapeake	75	Liberty Executive Park
Chesapeake	78	Oakbrooke Business & Technology Center
Chesapeake	94	Yadkin Industrial Park
Franklin	6	Franklin Industrial Air Park
Franklin	7	Franklin Southampton Commerce Park
Franklin	8	Pretlow Industrial Park
Franklin	9	Southampton Business Park
Isle of Wight County	15	Isle of Wight Industrial Park
Isle of Wight County	85	Shirley T. Holland Intermodal Park
Norfolk	22	Central Business Park
Norfolk	23	Interstate Corporate Center
Norfolk	24	Lake Wright Executive Center
Norfolk	25	Norfolk Industrial Park
Norfolk	26	Riverside Corporate Center
Portsmouth	28	Airline Business Park
Portsmouth	29	Beechdale Commerce Park
Portsmouth	30	PortCentre Commerce Park
Portsmouth	31	Victory Village
Southampton	83	Stonehouse Commercial/Office Park
Suffolk	32	Bridgewater Commerce Park
Suffolk	33	Godwin Commerce Park
Suffolk	34	Hampton Roads Technology Park
Suffolk	35	Harbour View Commerce Park
Suffolk	36	Hillpoint Business Park
Suffolk	37	Lake View Industrial Park
Suffolk	38	Lake View Industrial Park
Suffolk	86	Suburban Commerce Park
Suffolk	87	Suffolk Airport Industrial Park
Suffolk	88	Suffolk Industrial Park
Suffolk	89	Virginia Commerce Center
Suffolk	90	Virginia Port Logistics Park
Suffolk	91	Virginia Regional Commerce Park
Suffolk	92	Waverton Commerce Park
Virginia Beach	41	Airport Industrial Park
Virginia Beach	42	Cleveland Street Office Park
Virginia Beach	43	Corporate Landing Business Park
Virginia Beach	44	Oceana East Industrial Park
Virginia Beach	45	Oceana South Industrial Park
Virginia Beach	46	Oceana West Corporate Park
Virginia Beach	47	Pembroke Office Park
Virginia Beach	48	Princess Anne Commons
Virginia Beach	49	Reflections Office Park
Virginia Beach	50	Rosemont Interstate Center
Virginia Beach	51	Town Center
Virginia Beach	52	Virginia Beach Innovation Park

Figure 38 – Business and Industrial Parks on the Southside
Source: HRTPO analysis of Port of Virginia data

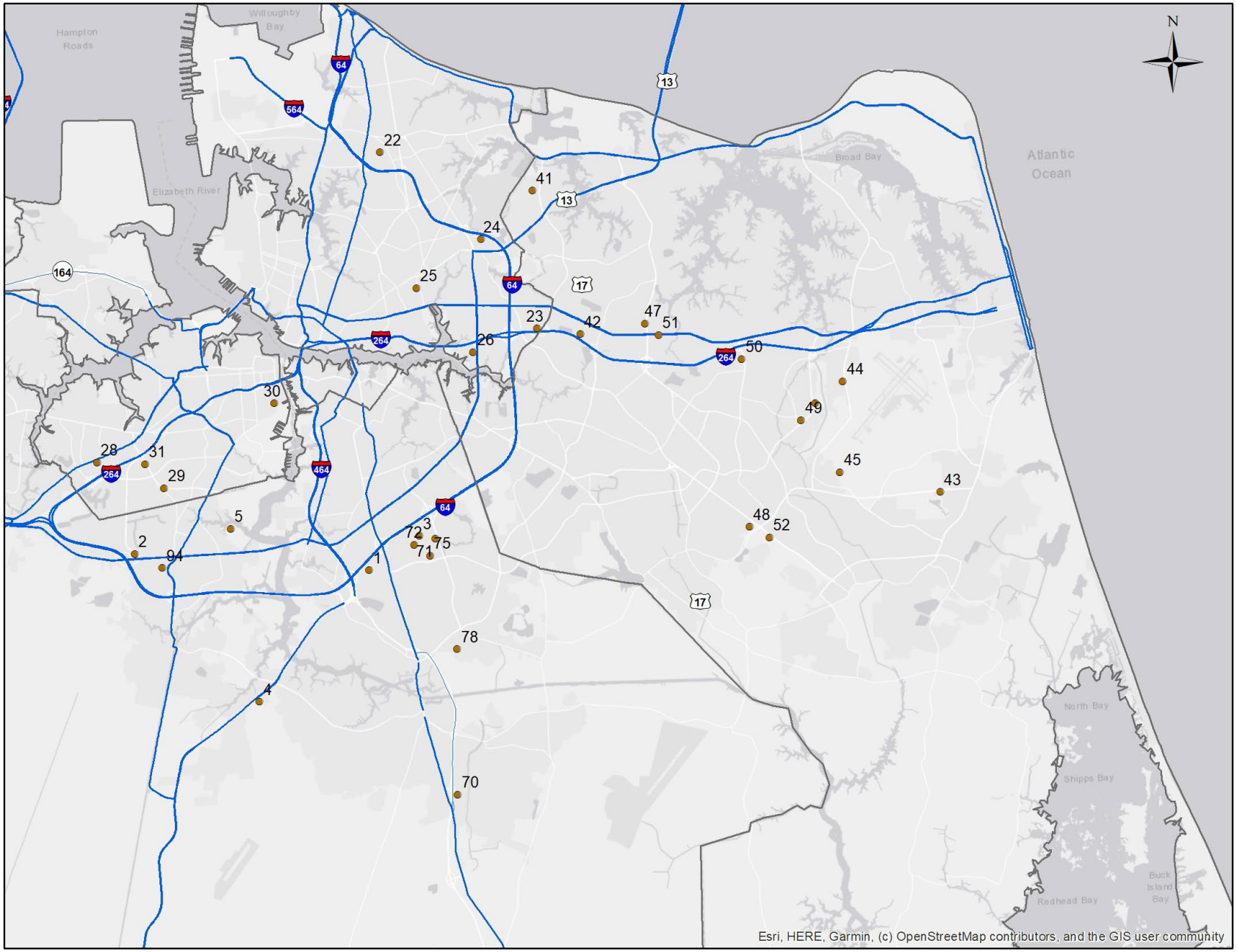


Figure 39 – Business and Industrial Parks on the Southside (Norfolk, Virginia Beach, Chesapeake, Portsmouth)
Source: HRTPO analysis of Port of Virginia data

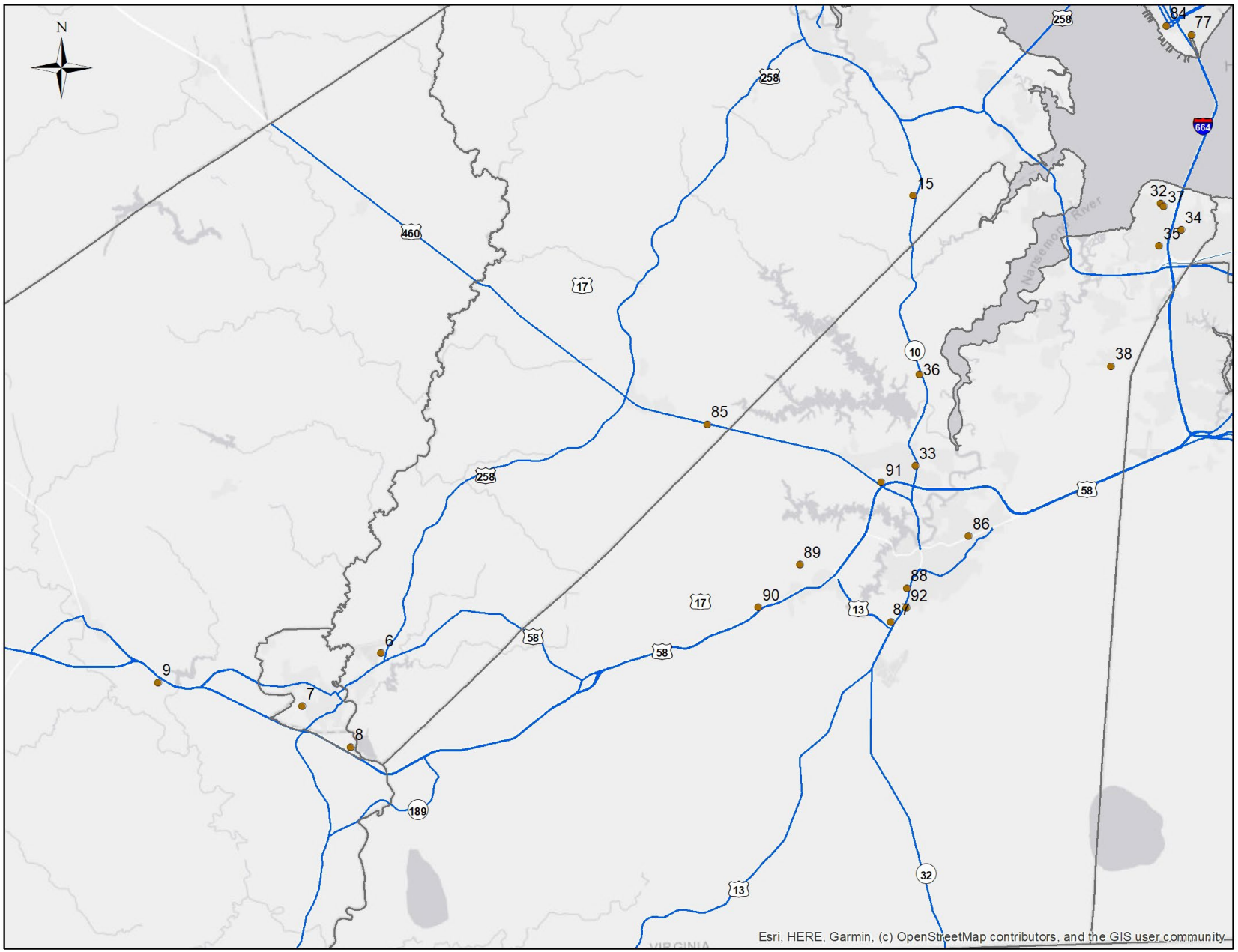


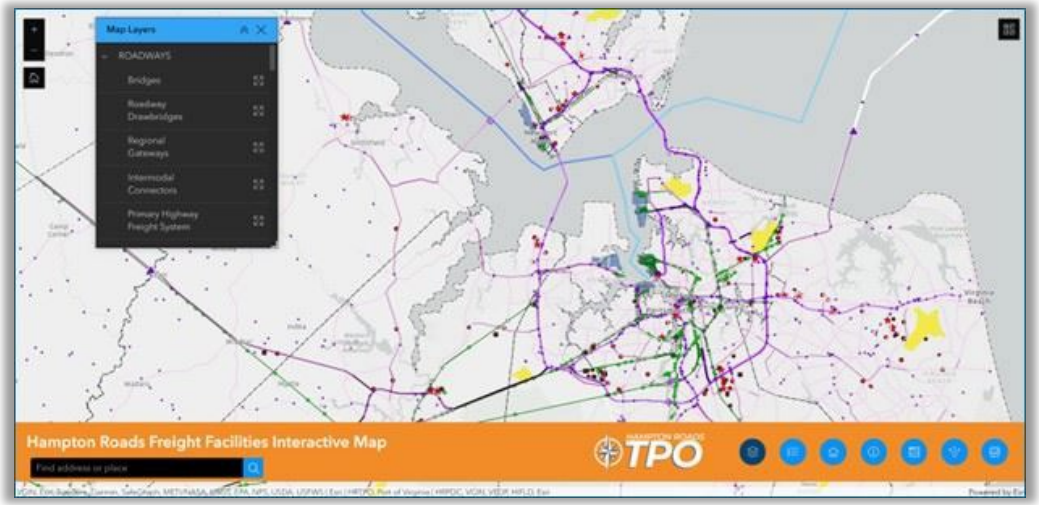
Figure 40 – Business and Industrial Parks on the Southside (Franklin, Isle of Wight County, Suffolk, Southampton)
Source: HRTPO analysis of Port of Virginia data

Hampton Roads Freight Facilities Interactive Map

As detailed throughout this section, the Hampton Roads region is home not only to the third largest port on the East Coast but also to a number of other freight generators such as private marine terminals, airports, distribution centers, manufacturing facilities, and military bases. These freight generators are connected by an extensive network of waterways, railroads, and highways.

HRTPO staff has created a web-based, interactive mapping inventory of freight facilities in Hampton Roads in order to improve access to information on freight facilities and their role in economic development and transportation across the region. The Hampton Roads Freight Facilities Interactive Map serves as a hub of datasets for planners, economic developers, public officials, decision-makers and the general public. The site currently contains the following datasets:

- Roadways
  - Bridges
  - Drawbridges
  - Regional Gateways
  - Intermodal Connectors
  - Primary Highway Freight System
  - Congestion Levels
  - Truck Volumes
  - Truck Percentages
  - Truck Bottlenecks
  - Toll Facilities
- Railroads
  - Railroad Corridors
  - Rail Drawbridges
  - Highway/Rail Crossings
- Ports/Waterways
  - Port Facilities
  - Barge Services
  - Marine Highways
- Airports



- Military Facilities
  - Military Sites
  - Strategic Highway Network (STRAHNET)
  - Power Projection Platform Routes
  - Power Projection Platform Installations
- Freight Centers
  - Top Freight Employers
  - Business and Industrial Parks
  - Manufacturing Facilities
  - Warehouse and Distribution Centers
  - Foreign Trade Zones
  - Truck Parking Sites

HRTPO staff maintains the Hampton Roads Freight Facilities Interactive Map and updates the site with new data on a regular basis.

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 2045. Data for this effort was primarily drawn from S&P Global Transearch, a commercial freight demand and commodity flows database. Due to the complexity and difficulty of capturing 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.

S&P Global Transearch

S&P Global (formerly 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[9]. 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, Transearch is notable for its finer granularity of geography and more detailed characterization of commodities, which are useful to examine logistics and modal trends.

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. HRTPO staff obtained the 2017 Transearch data in 2021.

A detailed description of the S&P Global Transearch database, including data sources, transportation modes, measurements, commodity types, and data limitations is included in **Appendix A**.

[9] *Transearch 2017 Modelling Methodology Documentation,* IHS Markit, November 30, 2018.

Summary of North American Freight Movement - Hampton Roads

In 2017, 71 million tons[10] (valued at $164 billion) of North American (USA, Canada, and Mexico) freight was transported by all modes to, from, within, and through Hampton Roads[11] (**Figures 41 and 42**). By 2045, this is expected to increase by 153% in tonnage to 180 million tons and by 217% in value to $521 billion (constant $2017).

Figure 43 and **Figure 44** 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), units (number of trucks) and value (dollars) for 2017 and 2045. Within Transearch, annual short tons are converted to units, which are the estimated number of trucks. **Figures 45-48** on page 51 provide graphical summaries of the data shown in Figures 43-44.

One significant finding is that the total tonnage moved by truck is expected to increase 160% from 65 to 169 million tons between 2017 and 2045. Likewise, units (number of trucks) are expected to increase 162% from 5.6 million to 14.7 million between 2017 and 2045. 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.

It is important to note that no tonnage is represented by empty truck activity in the Transearch data summaries. 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.

The value of commodities moved by truck is expected to increase 211% between 2017 ($109 billion) and 2045 ($341 billion). The value of commodities moved by rail is expected to increase 250% between 2017 ($47 billion) and 2045 ($166 billion).

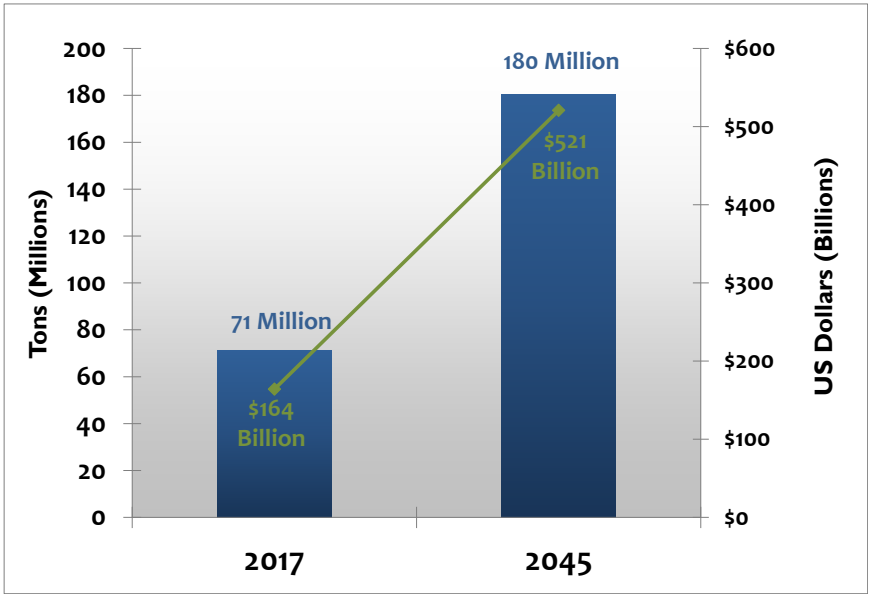


Figure 41 – Summary of North American Freight Movement – Hampton Roads (All Modes, excluding Rail tonnage), 2017 and 2045

Source: HRTPO and VDOT analysis of Transearch Data. Includes to, from, within, and through freight.
Note: 2045 forecast is in 2017 dollars.

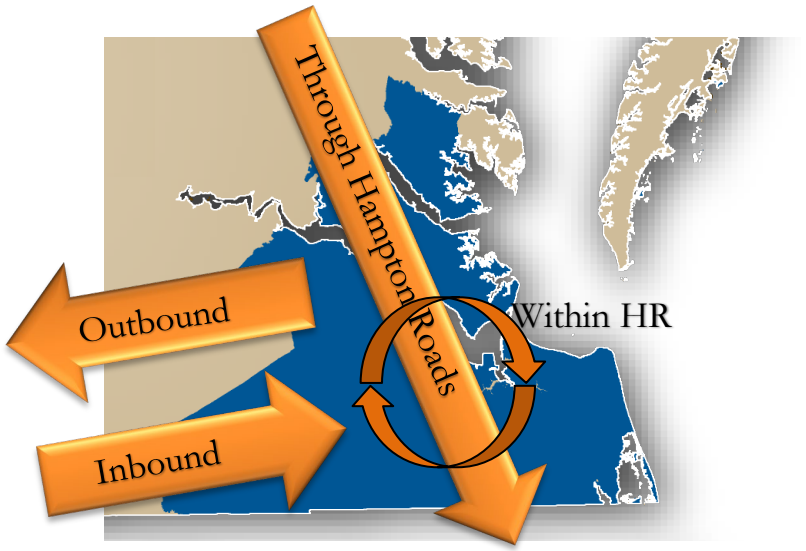


Figure 42 – Illustration of North American Freight Movement – Inbound, Outbound, Within Hampton Roads, and Through Hampton Roads

[10] *Rail data is only available in dollar value. Rail tonnage data was undisclosed and not included in this report.*

[11] 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 43 – Summary of North American Freight Movement – Hampton Roads, 2017

	Inbound	Outbound	Within HR	Through HR	Total	Share
Tonnage						
Truck	22,098,457	25,531,457	9,641,397	7,701,475	64,972,786	NA
Rail	NA	NA	NA	NA	NA	NA
Water	3,332,862	2,194,531	664,569		6,191,962	NA
Air	17,661	11,016			28,677	NA
TOTAL	25,448,980	27,737,004	10,305,966	7,701,475	71,193,425	
Units (Number of Trucks)						
Truck	1,859,836	1,884,506	1,373,170	500,765	5,618,276	0%
Dollar Value						
Truck	$ 34,216,654,089	$ 46,942,634,402	$ 21,186,170,535	$ 7,509,389,930	$ 109,854,848,956	67%
Rail	$ 21,323,535,015	$ 26,126,224,753	$ 1,464,821	$ 118,357,742	$ 47,569,582,331	29%
Water	$ 1,423,799,364	$ 2,168,851,237	$ 349,487,571		$ 3,942,138,172	2%
Air	$ 1,871,932,726	$ 836,595,757			$ 2,708,528,483	2%
TOTAL	$ 58,835,921,194	$ 76,074,306,149	$ 21,537,122,927	$ 7,627,747,672	$ 164,075,097,942	100%

NA – Rail Tonnage data was undisclosed and not available. Within Transearch, annual short tons are converted to Units (estimated number of trucks).
Source: HRTPO and VDOT analysis of S&P Global Transearch Data

Figure 44 – Summary of North American Freight Movement – Hampton Roads, 2045

	Inbound	Outbound	Within HR	Through HR	Total	Share
Tonnage						
Truck	48,555,533	80,497,160	27,563,187	12,170,431	168,786,311	NA
Rail	NA	NA	NA	NA	NA	NA
Water	5,449,856	4,804,042	1,296,532		11,550,429	NA
Air	28,828	18,437			47,265	NA
TOTAL	54,034,216	85,319,638	28,859,719	12,170,431	180,384,005	
Units (Number of Trucks)						
Truck	4,861,090	5,307,955	3,681,206	867,650	14,717,901	0%
Dollar Value						
Truck	$ 91,515,295,737	$ 182,692,839,317	$ 54,005,450,911	$ 13,381,788,117	$ 341,595,374,082	66%
Rail	$ 52,174,919,656	$ 114,133,665,392	$ 4,089,420	$ 261,022,596	$ 166,573,697,064	32%
Water	$ 1,792,927,823	$ 4,192,628,362	$ 641,010,058		$ 6,626,566,242	1%
Air	$ 3,775,196,713	$ 2,204,255,455			$ 5,979,452,168	1%
TOTAL	$ 149,258,339,929	$ 303,223,388,526	$ 54,650,550,389	$ 13,642,810,713	$ 520,775,089,557	100%

NA – Rail Tonnage data was undisclosed and not available. Within Transearch, annual short tons are converted to Units (estimated number of trucks). Note: 2045 forecast is in 2017 dollars.
Source: HRTPO and VDOT analysis of S&P Global Transearch Data.

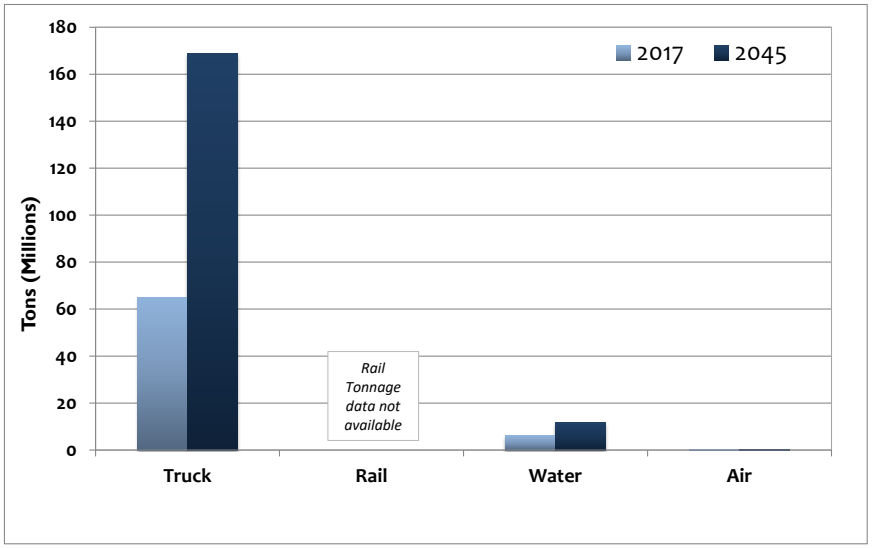


Figure 45 – Hampton Roads Tonnage Mode Split, 2017 and 2045
Source: HRTPO and VDOT analysis of S&P Global Transearch Data

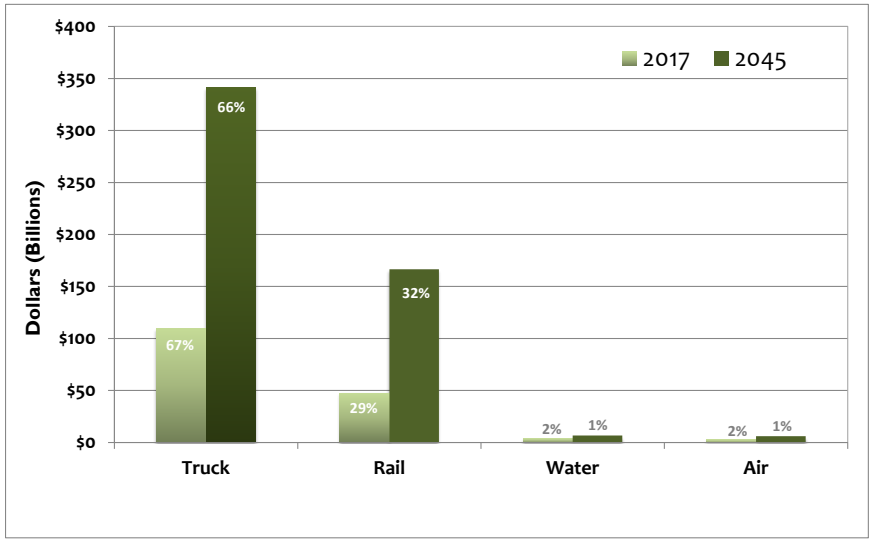


Figure 47 – Hampton Roads Dollar Value Mode Split, 2017 and 2045
Source: HRTPO and VDOT analysis of S&P Global Transearch Data
Note: 2045 forecast is in 2017 dollars.

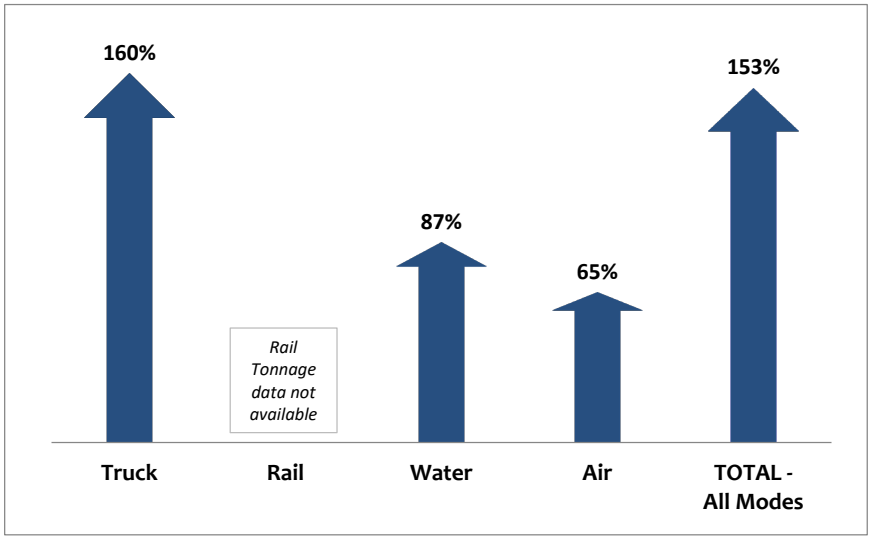


Figure 46 – Hampton Roads Tonnage Growth by Mode, 2017-2045
Source: HRTPO and VDOT analysis of S&P Global Transearch Data

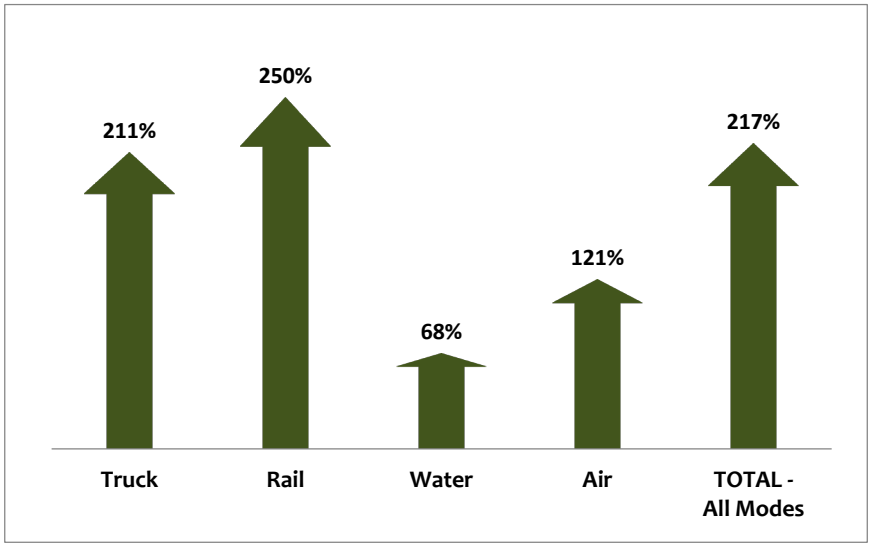


Figure 48 – Hampton Roads Dollar Value Growth by Mode, 2017-2045
Source: HRTPO and VDOT analysis of S&P Global Transearch Data
Note: 2045 forecast is in 2017 dollars.

Hampton Roads Top Commodities – All Modes

Figure 49 shows the Top 20 commodities by weight that are transported to, from, within, and through Hampton Roads in 2017 and 2045. The top five commodities transported in 2017 include petroleum or coal products, secondary traffic[i] (see page A3 in the Appendix A for full description), food or kindred products, nonmetallic minerals, and farm products. By 2045, petroleum or coal products are expected increase by 224% and remain the top commodity by weight with the share increasing from 26% to 33%.

Figure 50 shows the Top 20 commodities by dollar value that are transported to, from, within, and through Hampton Roads in 2017 and 2045. Miscellaneous mixed shipments is the top commodity by value in both 2017 and 2045 with a 19% share. "Miscellaneous mixed shipments" consist of freight moving in trailers and containers, which are also known as intermodal freight.

[i] Secondary Traffic - movements in the distribution chain that originate from warehouse, distribution centers, or other facilities where they were not actually produced.

Commodity Description	2017 Tons	2017 Share	2045 Tons	2045 Share	Growth (2017-2045)
TOTAL, ALL COMMODITIES	**71,193,425**		**180,384,005**		**153%**
Petroleum or Coal Products	18,381,064	26%	59,551,536	33%	224%
Secondary Traffic	9,519,625	13%	16,581,537	9%	74%
Food or Kindred Products	6,964,323	10%	18,379,798	10%	164%
Nonmetallic Minerals	7,418,265	10%	13,035,371	7%	76%
Farm Products	5,535,661	8%	10,867,659	6%	96%
Waste or Scrap Materials	4,132,112	6%	10,298,285	6%	149%
Chemicals or Allied Products	2,921,275	4%	10,371,661	6%	255%
Clay, concrete, glass or Stone	3,878,125	5%	8,186,569	5%	111%
Lumber or Wood Products	3,540,002	5%	6,112,593	3%	73%
Machinery	1,077,870	2%	4,433,659	2%	311%
Furniture or Fixtures	535,158	1%	3,740,737	2%	599%
Pulp,paper or Allied Products	1,538,175	2%	2,661,032	1%	73%
Primary Metal Products	830,023	1%	3,177,831	2%	283%
Transportation Equipment	975,991	1%	2,394,095	1%	145%
Electrical Equipment	665,460	1%	2,261,756	1%	240%
Fabricated Metal Products	871,588	1%	1,972,321	1%	126%
Rubber or Misc Plastics	702,655	1%	2,027,934	1%	189%
Apparel or Related Products	167,688	0%	1,008,581	1%	501%
Misc Mixed Shipments	460,722	1%	651,872	0%	41%
Misc Manufacturing Products	231,198	0%	740,480	0%	220%

Figure 49 – Hampton Roads Top 20 Commodities by Weight (All Modes, except Rail) Source: HRTPO and VDOT analysis of S&P Global Transearch Data
For a commodity description of Secondary Traffic and Misc. Mixed Shipments, refer to pages 55-56.

Commodity Description	2017 Dollar Value	2017 Share	2045 Dollar Value	2045 Share	Growth (2017-2045)
TOTAL, ALL COMMODITIES	**$ 164,075,097,942**		**$ 520,775,089,557**		**217%**
Misc Mixed Shipments	$ 31,774,908,877	19%	$ 100,115,485,776	19%	215%
Farm Products	$ 18,715,893,793	11%	$ 69,584,433,632	13%	272%
Machinery	$ 12,622,913,009	8%	$ 52,483,355,929	10%	316%
Secondary Traffic	$ 22,019,282,615	13%	$ 38,071,206,784	7%	73%
Electrical Equipment	$ 9,663,606,741	6%	$ 42,205,653,276	8%	337%
Chemicals or Allied Products	$ 8,665,273,454	5%	$ 38,406,842,021	7%	343%
Petroleum or Coal Products	$ 9,969,859,842	6%	$ 33,405,254,973	6%	235%
Food or Kindred Products	$ 11,033,445,942	7%	$ 24,847,654,547	5%	125%
Transportation Equipment	$ 9,305,331,554	6%	$ 23,931,398,691	5%	157%
Furniture or Fixtures	$ 2,398,126,820	1%	$ 17,983,630,983	3%	650%
Instrum, Photo Equipment, Optical Eq	$ 2,127,735,625	1%	$ 11,972,038,264	2%	463%
Fabricated Metal Products	$ 3,754,422,499	2%	$ 9,125,682,761	2%	143%
Rubber or Misc Plastics	$ 3,183,391,775	2%	$ 9,443,417,774	2%	197%
Apparel or Related Products	$ 1,979,123,910	1%	$ 10,251,969,884	2%	418%
Primary Metal Products	$ 2,402,366,275	1%	$ 7,946,238,574	2%	231%
Misc Manufacturing Products	$ 2,170,116,302	1%	$ 6,844,360,203	1%	215%
Waste or Scrap Materials	$ 1,448,728,478	1%	$ 3,855,999,327	1%	166%
Tobacco Products	$ 1,411,890,875	1%	$ 3,000,741,735	1%	113%
Fresh Fish or Marine Products	$ 1,645,778,129	1%	$ 2,717,249,106	1%	65%
Pulp,paper or Allied Products	$ 1,571,188,899	1%	$ 2,728,131,020	1%	74%

Figure 50 – Hampton Roads Top 20 Commodities by Value (All Modes)
Source: HRTPO and VDOT analysis of S&P Global 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.

Hampton Roads Top Commodities – Truck

Figure 51 shows the Top 20 commodities by weight that are transported by truck to, from, within, and through Hampton Roads in 2017 and 2045. **Figure 52** shows the Top 20 commodities by units (number of trucks). **Figure 53** shows the Top 20 commodities by value.

Commodity Description	2017 Tons	2017 Share	2045 Tons	2045 Share	Growth (2017-2045)
TOTAL, ALL COMMODITIES	**64,972,786**		**168,786,311**		**160%**
Petroleum or Coal Products	16,428,258	25%	55,602,878	33%	238%
Secondary Traffic	9,519,625	15%	16,581,537	10%	74%
Food or Kindred Products	6,948,981	11%	18,350,969	11%	164%
Nonmetallic Minerals	5,960,998	9%	10,750,138	6%	80%
Farm Products	4,778,364	7%	9,190,663	5%	92%
Waste or Scrap Materials	3,236,393	5%	9,007,802	5%	178%
Clay, concrete, glass or Stone	3,710,266	6%	7,946,231	5%	114%
Chemicals or Allied Products	2,505,354	4%	8,963,822	5%	258%
Lumber or Wood Products	3,539,998	5%	6,112,588	4%	73%
Machinery	1,075,551	2%	4,429,135	3%	312%
Furniture or Fixtures	535,143	1%	3,740,716	2%	599%
Pulp,paper or Allied Products	1,538,162	2%	2,661,016	2%	73%
Primary Metal Products	826,325	1%	3,172,162	2%	284%
Transportation Equipment	975,574	2%	2,393,214	1%	145%
Electrical Equipment	662,865	1%	2,256,803	1%	240%
Fabricated Metal Products	857,142	1%	1,954,309	1%	128%
Rubber or Misc Plastics	702,471	1%	2,027,606	1%	189%
Apparel or Related Products	167,662	0%	1,008,562	1%	502%
Misc Manufacturing Products	230,849	0%	739,915	0%	221%
Tobacco Products	176,626	0%	513,839	0%	191%

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

Source: HRTPO and VDOT analysis of S&P Global Transearch Data

For a commodity description of Secondary Traffic, refer to page 55.

Commodity Description	2017 Units	2017 Share	2045 Units	2045 Share	Growth (2017-2045)
TOTAL, ALL COMMODITIES	**5,618,276**		**14,717,901**		**162%**
Shipping Containers	2,388,006	43%	6,406,890	44%	168%
Petroleum or Coal Products	675,514	12%	2,280,549	15%	238%
Secondary Traffic	587,917	10%	1,024,036	7%	74%
Food or Kindred Products	305,175	5%	802,957	5%	163%
Farm Products	294,700	5%	570,086	4%	93%
Clay, concrete, glass or Stone	231,533	4%	492,529	3%	113%
Nonmetallic Minerals	245,214	4%	442,213	3%	80%
Waste or Scrap Materials	139,294	2%	418,394	3%	200%
Chemicals or Allied Products	121,299	2%	433,083	3%	257%
Machinery	79,999	1%	330,044	2%	313%
Lumber or Wood Products	139,165	2%	240,829	2%	73%
Furniture or Fixtures	35,441	1%	247,882	2%	599%
Transportation Equipment	70,226	1%	171,462	1%	144%
Rubber or Misc Plastics	59,268	1%	170,804	1%	188%
Electrical Equipment	39,898	1%	136,253	1%	242%
Pulp,paper or Allied Products	63,735	1%	110,194	1%	73%
Primary Metal Products	33,053	1%	128,817	1%	290%
Fabricated Metal Products	47,643	1%	108,435	1%	128%
Apparel or Related Products	10,238	0%	61,772	0%	503%
Misc Manufacturing Products	11,924	0%	38,185	0%	220%

Figure 52 – Hampton Roads Top 20 Commodities by Units (Number of Trucks)

Source: HRTPO and VDOT analysis of S&P Global Transearch Data

For a commodity description of Secondary Traffic, refer to page 55.

Commodity Description	2017 Dollar Value	2017 Share	2045 Dollar Value	2045 Share	Growth (2017-2045)
TOTAL, ALL COMMODITIES	**$ 109,854,848,956**		**$ 341,595,374,082**		**211%**
Machinery	$ 12,333,646,541	11%	$ 51,682,727,606	15%	319%
Secondary Traffic	$ 22,019,282,615	20%	$ 38,071,206,784	11%	73%
Electrical Equipment	$ 8,781,965,855	8%	$ 40,258,056,803	12%	358%
Chemicals or Allied Products	$ 7,458,341,241	7%	$ 33,654,534,787	10%	351%
Petroleum or Coal Products	$ 8,820,135,753	8%	$ 31,154,356,260	9%	253%
Food or Kindred Products	$ 10,615,504,360	10%	$ 24,007,179,089	7%	126%
Transportation Equipment	$ 8,926,404,900	8%	$ 22,823,373,679	7%	156%
Furniture or Fixtures	$ 2,370,684,356	2%	$ 17,894,258,238	5%	655%
Farm Products	$ 4,140,501,572	4%	$ 9,085,228,003	3%	119%
Fabricated Metal Products	$ 3,643,819,622	3%	$ 8,928,568,216	3%	145%
Rubber or Misc Plastics	$ 3,051,938,487	3%	$ 9,052,055,817	3%	197%
Apparel or Related Products	$ 1,767,434,879	2%	$ 9,977,198,888	3%	465%
Instrum, Photo Equipment, Optical Eq	$ 1,390,353,732	1%	$ 9,493,591,902	3%	583%
Primary Metal Products	$ 2,335,514,855	2%	$ 7,886,806,365	2%	238%
Misc Manufacturing Products	$ 1,879,619,112	2%	$ 6,282,536,496	2%	234%
Waste or Scrap Materials	$ 1,210,284,473	1%	$ 3,498,530,945	1%	189%
Fresh Fish or Marine Products	$ 1,644,864,728	1%	$ 2,715,140,396	1%	65%
Tobacco Products	$ 1,374,438,466	1%	$ 2,971,656,208	1%	116%
Clay, concrete, glass or Stone	$ 1,207,799,841	1%	$ 2,587,102,621	1%	114%
Lumber or Wood Products	$ 1,464,926,808	1%	$ 2,318,045,505	1%	58%

Figure 53 – Hampton Roads Top 20 Commodities by Value (Truck)

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

Net Annual Tonnage, Units, and Dollars Carried by Truck

Using Transearch, HRTPO staff summarized all truck freight transported in the Commonwealth of Virginia for 2017 and 2045. This analysis includes all freight moved by truck in Virginia, which includes inbound, outbound, through Virginia, and within Virginia. **Figure 56** and **Figure 57** on pages 56-57 show the net annual tonnage carried by truck in 2017 and 2045 respectively. In 2017, the highest freight flows in Virginia in terms of weight were along Interstates I-95, I-81, I-77, I-495, I-66, and I-64. By 2045, the same interstates are projected to carry a large portion of Virginia freight.

Figure 54 shows the net annual tonnage carried by truck at four major regional gateways in 2017 and 2045. In 2017, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64. By 2045, the top corridors for moving freight tonnage will be I-64, US Route 13/CBBT, US Route 58, I-664 across the MMMBT and I-264 in Norfolk and Portsmouth. By 2045, the top three primary gateways for freight by annual tonnage are expected to be I-64, US Route 13/CBBT and US Route 58.

Figure 55 shows the net annual units carried by truck at four major regional gateways in 2017 and 2045. Within Transearch, annual short tons are converted into units to estimate the number of trucks used to move the freight cargo. The trends for units are similar to tonnage with I-64 being the primary gateway. By 2045, US Route 58 is expected to have a similar number of trucks to US Route 13/CBBT even though the tonnage is less.

Figures 58 and 59 show the net annual units or the estimated number of trucks in 2017 and 2045. In 2017, the highest freight flows in Virginia in terms of number of trucks are along Interstates I-95, I-81, I-77, I-495, I-66, I-295, Route 13/58/460, and I-64. By 2045, the estimated number of trucks across the state are expected to increase significantly, especially along Interstates I-95, I-81, I-77, I-495, and I-64.

Figures 60 and 61 show the net annual dollars carried by truck in 2017 and 2045 respectively. In 2017, the highest freight flows in Virginia in terms of dollar value are along Interstates I-95, I-81, I-77, I-495, and I-64. By 2045, freight values across the state are expected to increase significantly. In 2045, the highest freight flows in Virginia are expected to remain along Interstates I-95, I-81, I-77, I-495, and I-64.

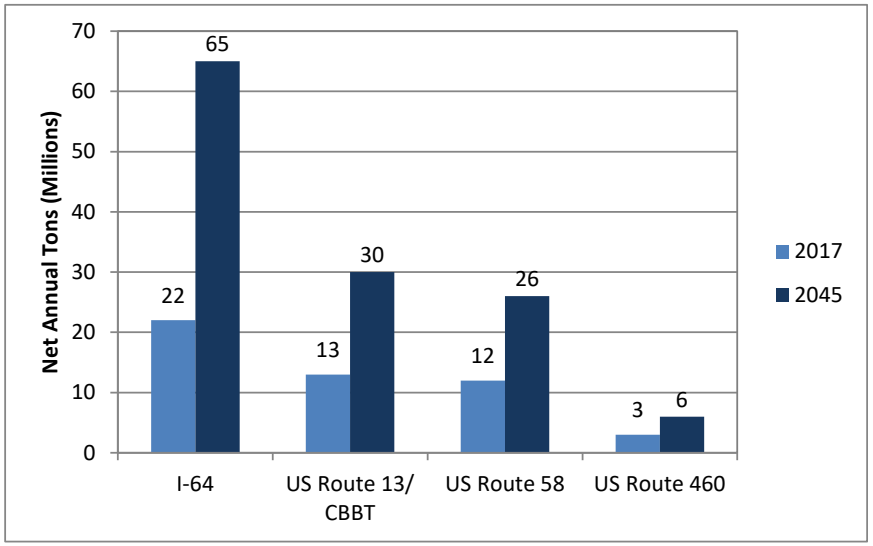


Figure 54 – Net Annual Tonnage Carried by Truck at Regional Gateways, 2017 and 2045

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and

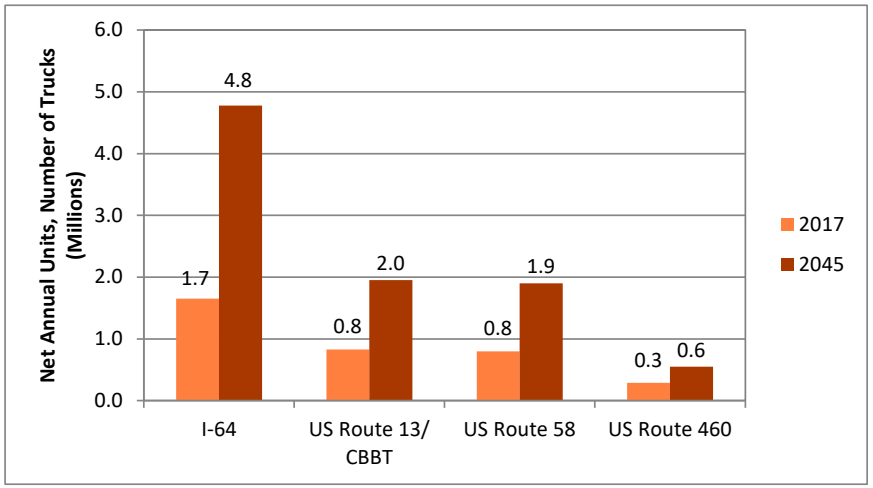


Figure 55 – Net Annual Units* (Number of Trucks) at Regional Gateways, 2017 and 2045

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within * **Within** S&P Global Transearch**, annual short tons are converted to Units (estimated number of trucks).**

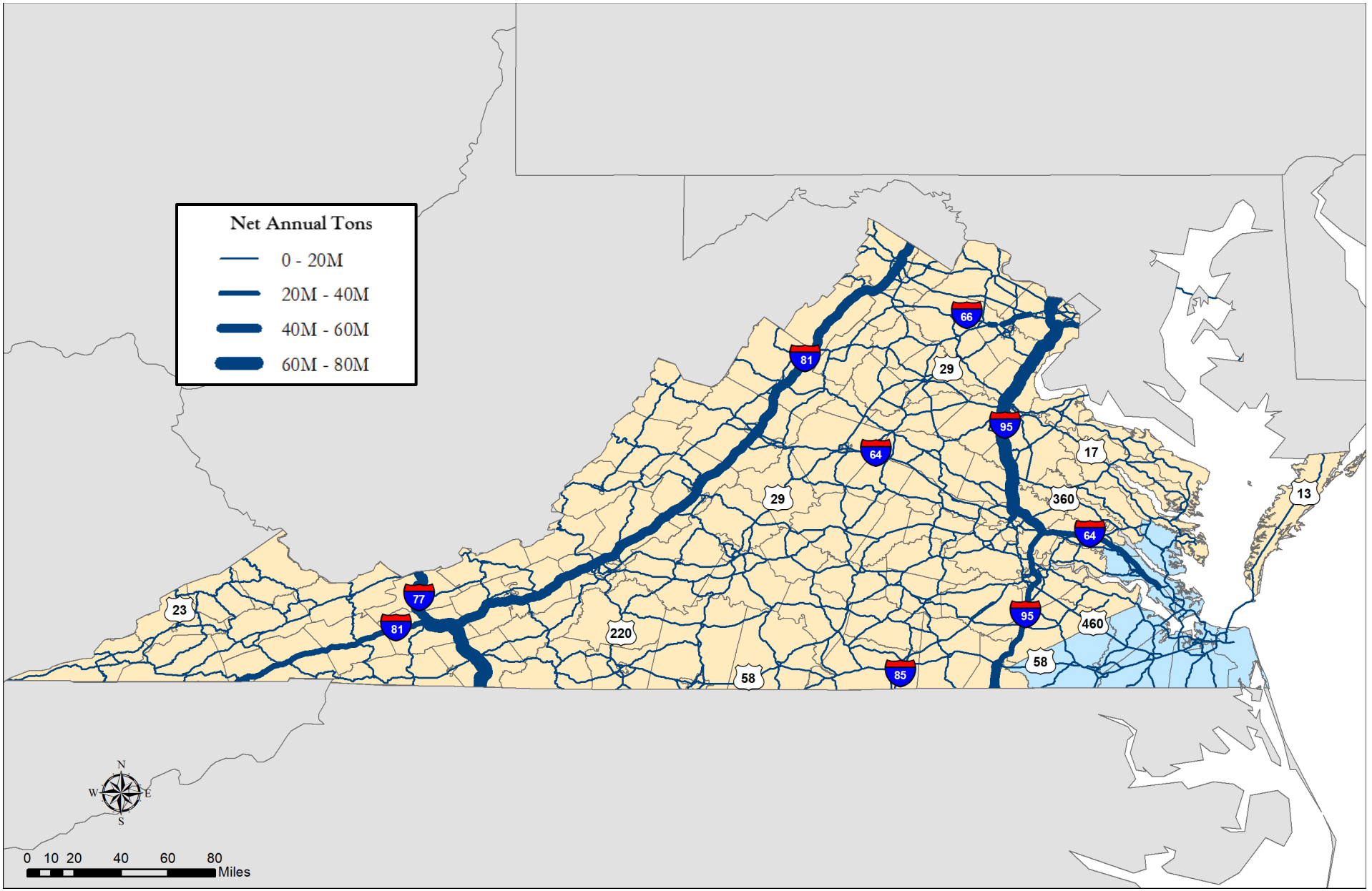


Figure 56 – Net Annual Tonnage Carried by Truck, 2017

Source: HRTPO analysis of S&P Global Transearch. Includes all freight in Virginia – Inbound, Outbound, Through, and Within.

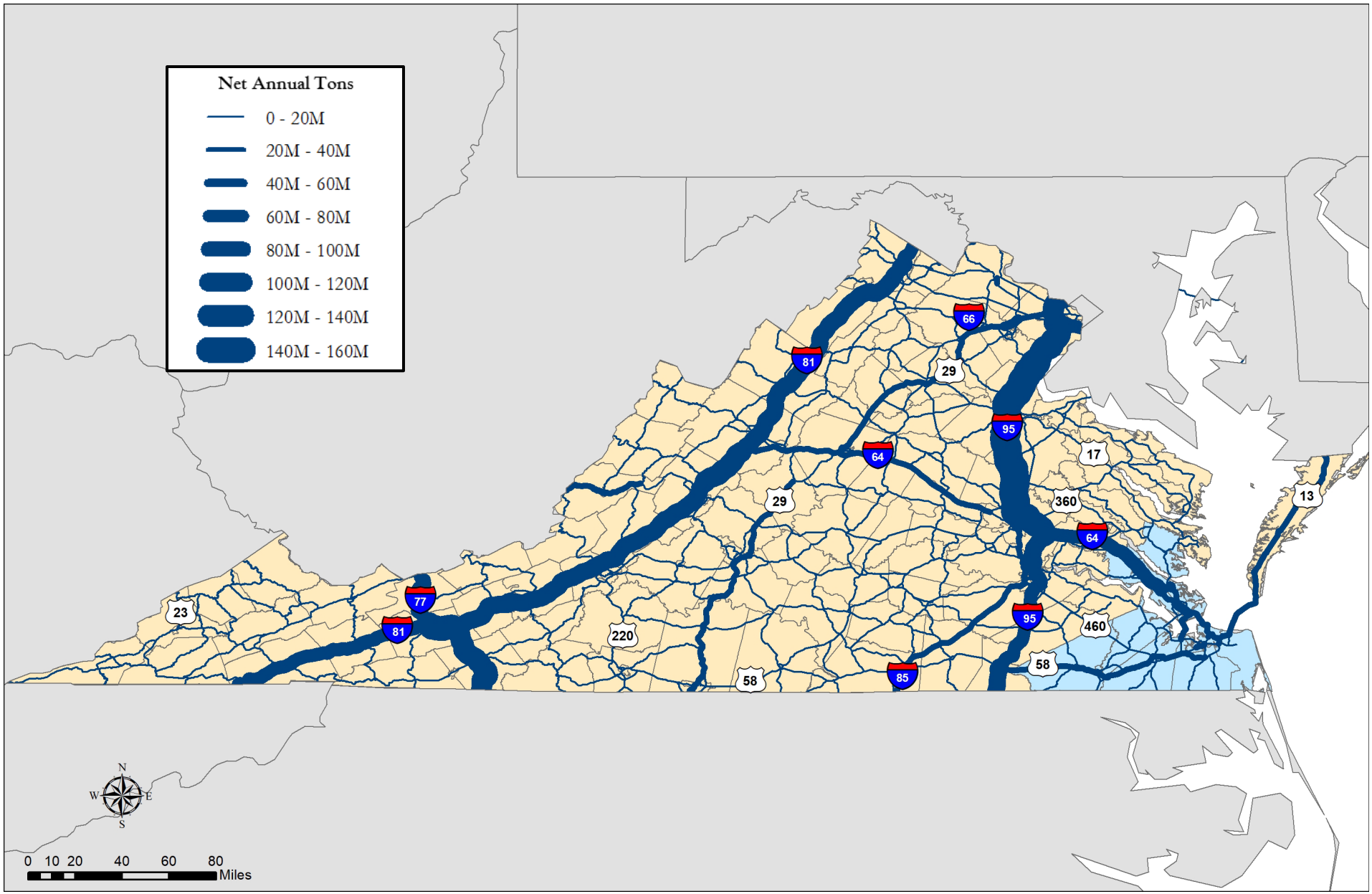


Figure 57 – Net Annual Tonnage Carried by Truck, 2045

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

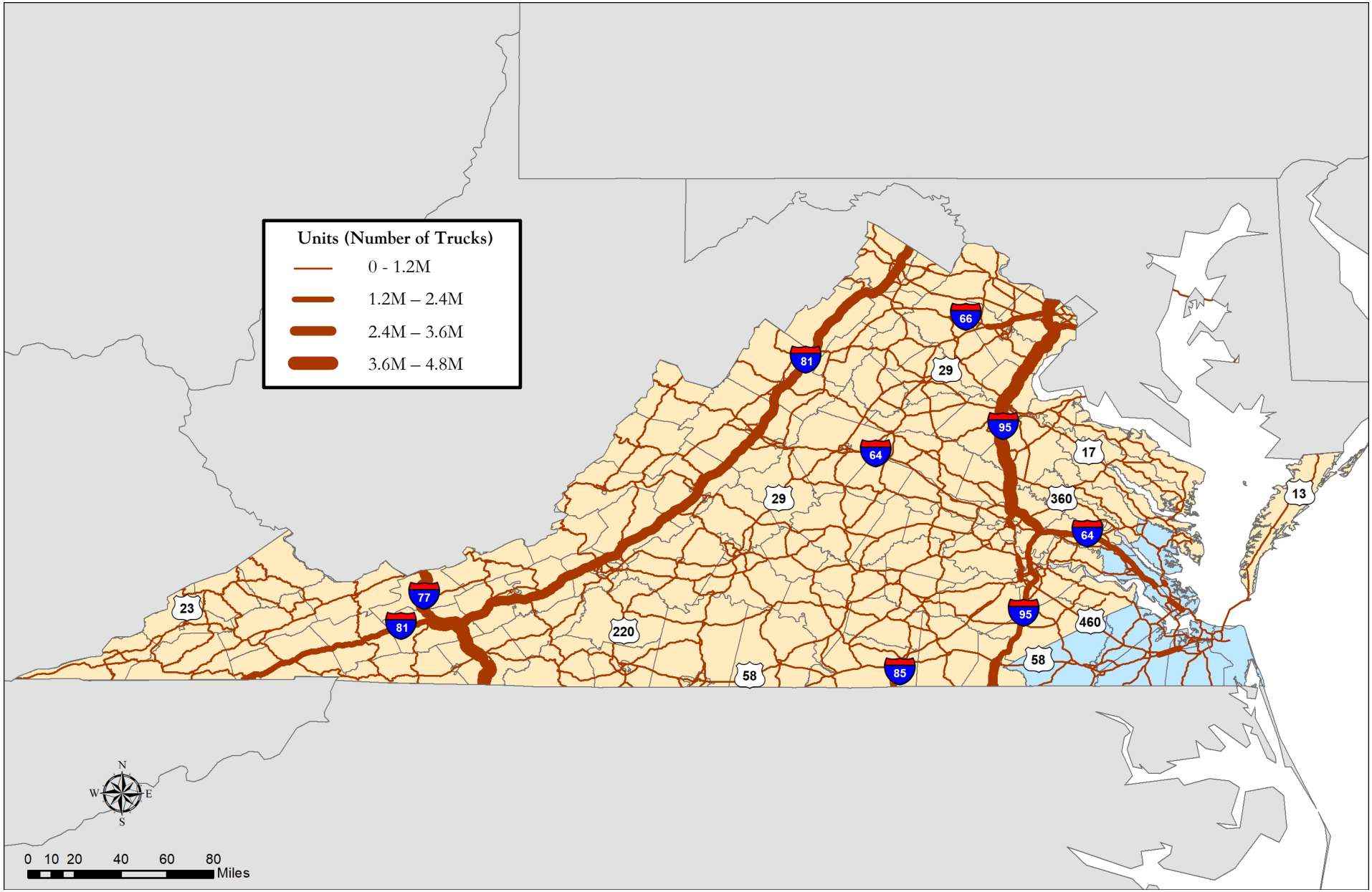


Figure 58 – Net Annual Units* (Number of Trucks), 2017

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within. *Within Transearch, annual short tons are converted to Units (estimated number of trucks).

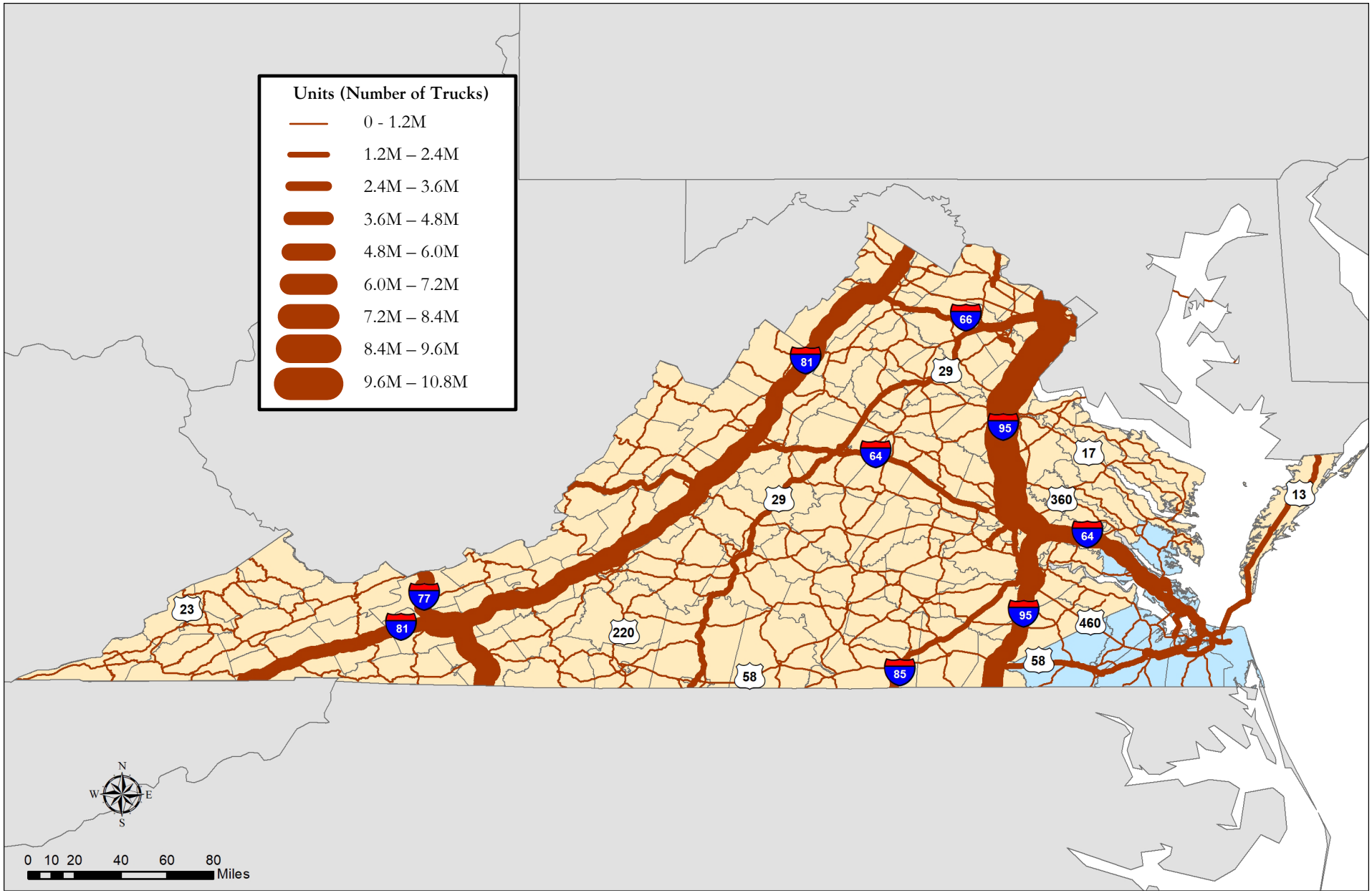


Figure 59 – Net Annual Units* (Number of Trucks), 2045

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within. *Within Transearch, annual short tons are converted to Units (estimated number of trucks).

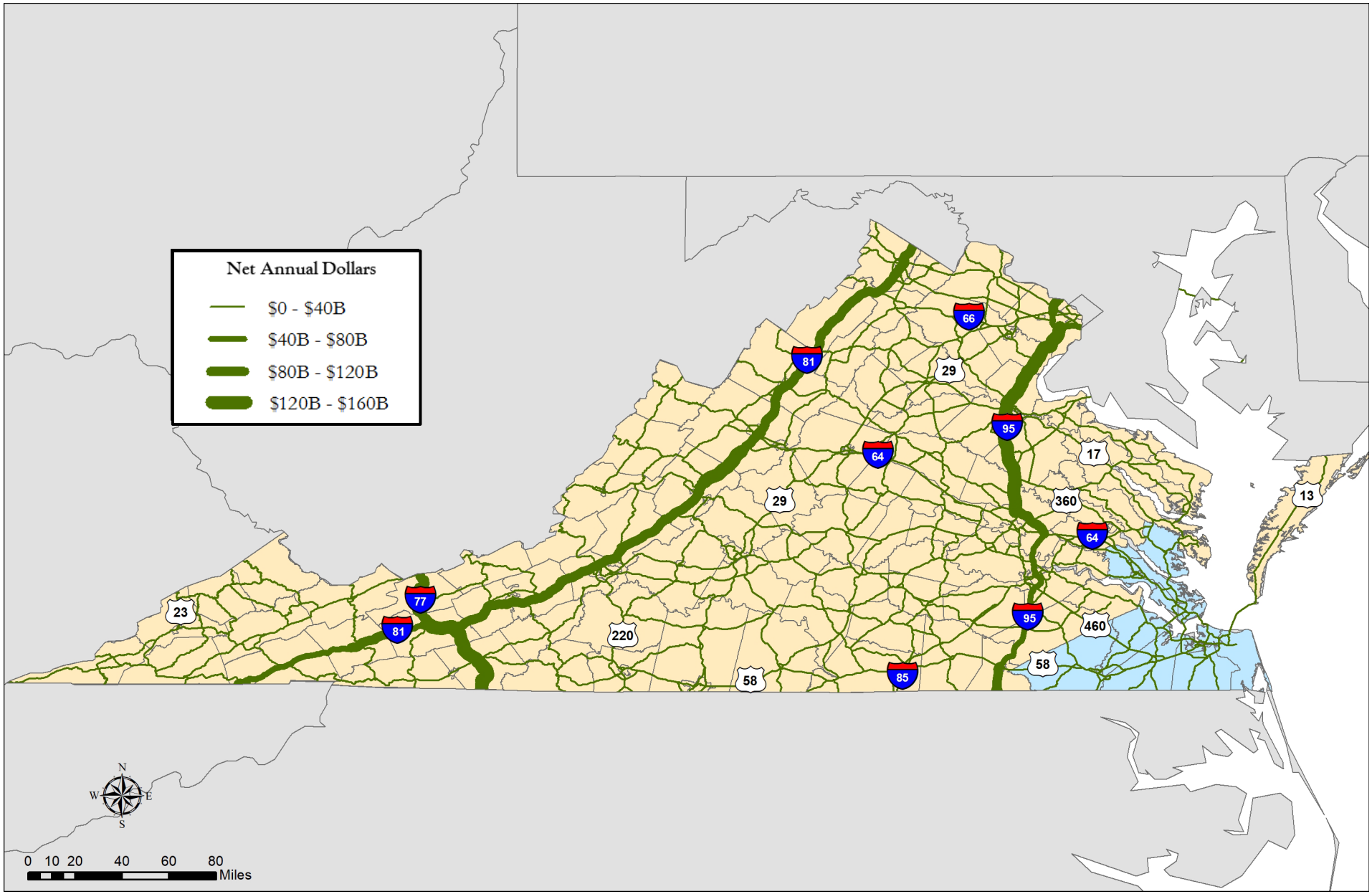


Figure 60 – Net Annual Dollars Carried by Truck, 2017

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

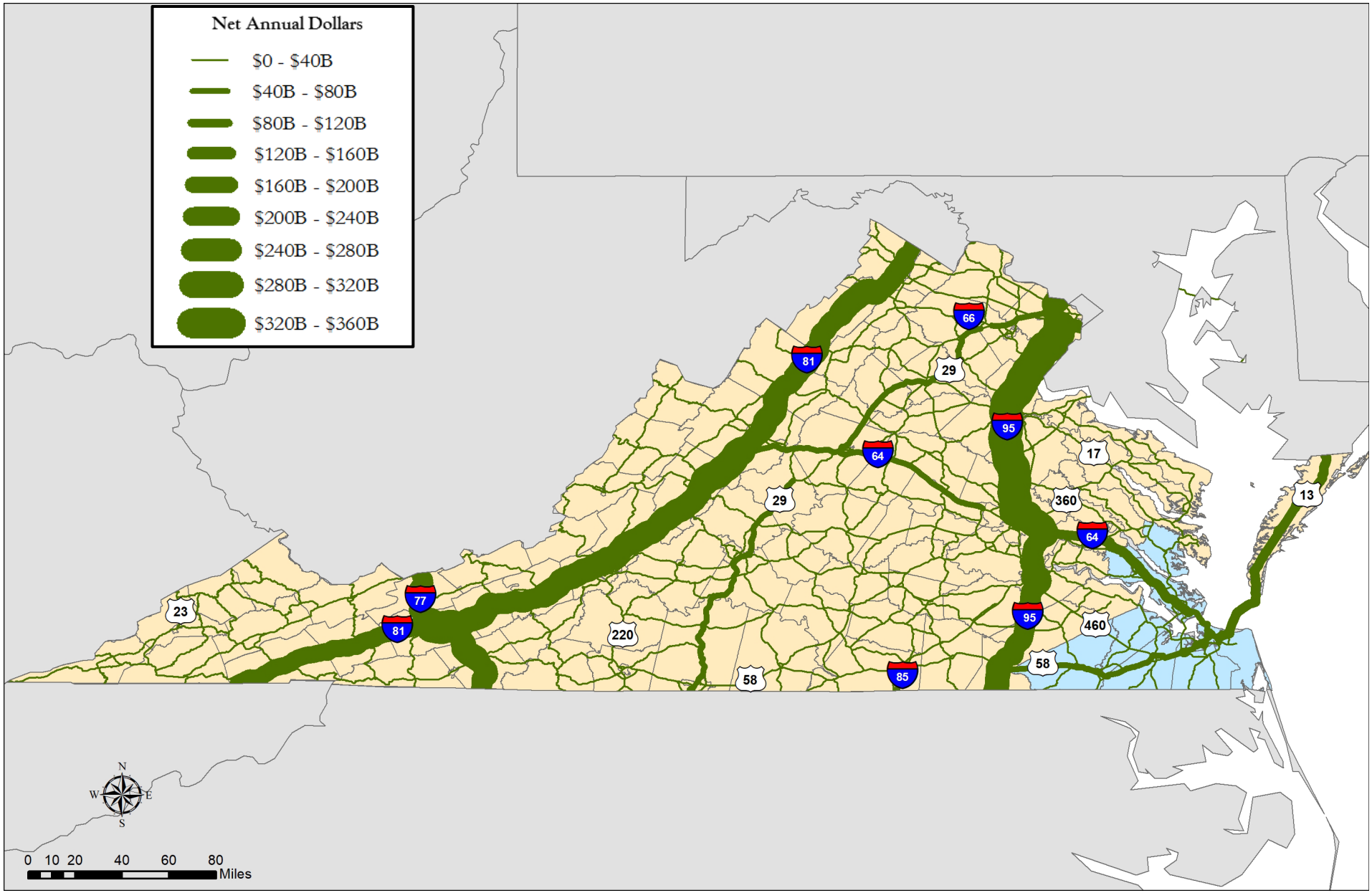


Figure 61 – Net Annual Dollars Carried by Truck, 2045

Source: HRTPO analysis of S&P Global Transearch Data. Includes all freight in Virginia – Inbound, Outbound, Through, and Within. 2040 forecast is in 2017 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 negatively impact trucking companies and shippers due to additional operating costs, delays, and uncertainty. The economic competitiveness of the Port of Virginia, Hampton Roads, and the state necessitates the effiecient movement of freight into, out of, and through the region.

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
- Potential Future Highway Improvements
- Summary of Freight Gateways, Hubs, and Bottlenecks

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. VDOT also has a number of locations – including about 80 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 13 different vehicle classes. **Figure 62** shows these vehicle classifications, of which Classes 5 through 13 are considered to be trucks.

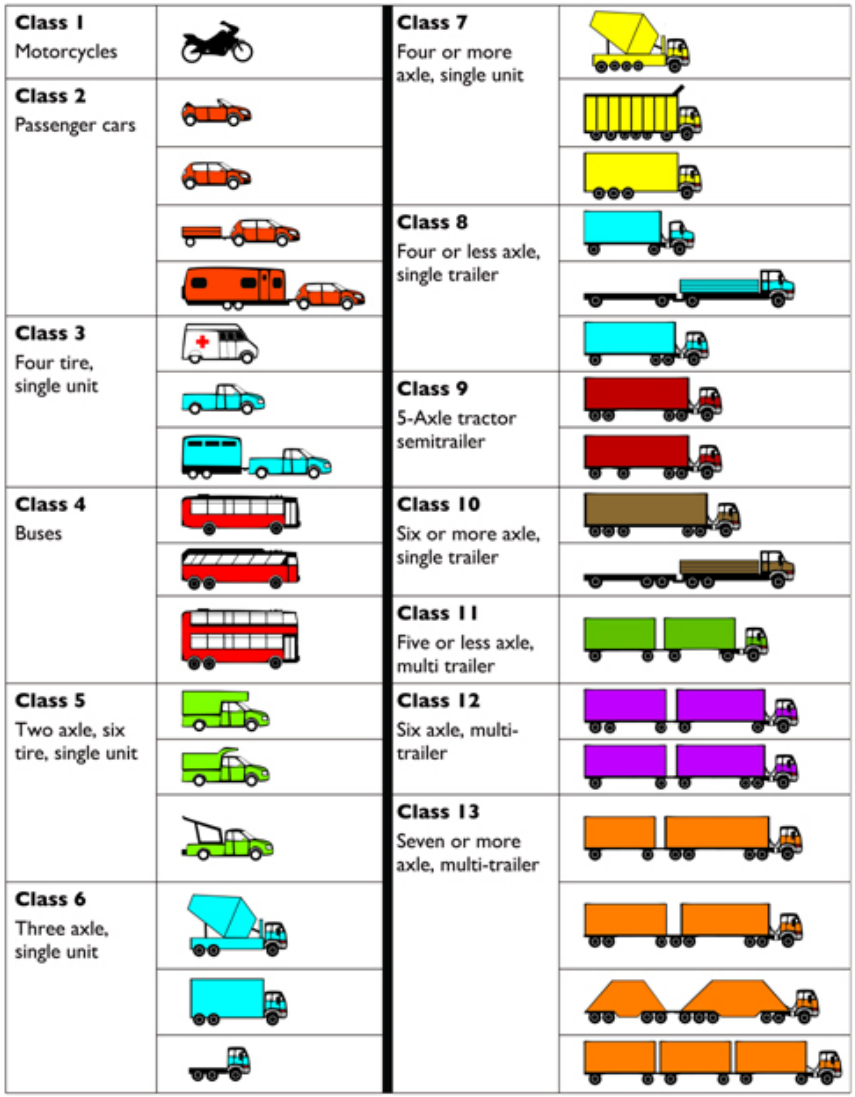


Figure 62 – FHWA Vehicle Classifications
Source: FHWA.

Truck Travel in Hampton Roads

There were a total of 1.6 million truck-miles of travel each day in Hampton Roads in 2023 according to VDOT data. This amount of truck travel comprises 3.7% of the 43 million vehicle-miles of travel that occurred in the region each day.

The amount of truck travel in Hampton Roads largely increased over the last decade, as shown in **Figure 63**. Regional truck travel increased most years until the pandemic in 2020, but by 2022 truck travel levels surpassed the levels seen prior to the pandemic in 2019. Regional truck travel levels in 2023 were 33% higher than the levels seen in Hampton Roads in 2014. By comparison, total roadway travel in Hampton Roads only increased by 11% during this time period (**Figure 64**).

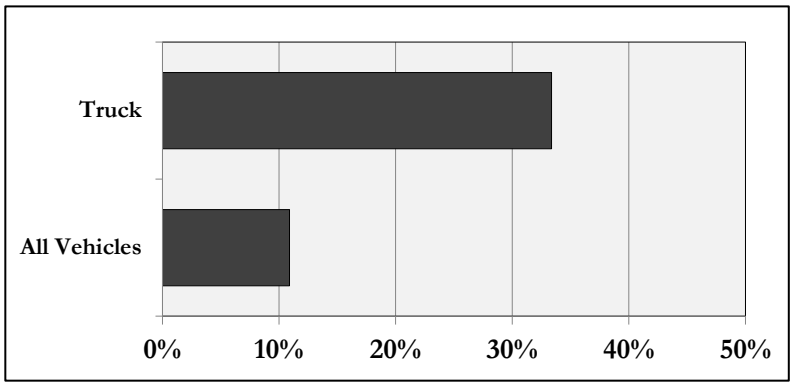


Figure 64 – Growth in Travel by Vehicle Type in Hampton Roads, 2014-2023
Source: HRTPO analysis of VDOT data.

The percentage of truck travel in Hampton Roads has also increased. In 2014, 3.1% of all vehicular travel in Hampton Roads was truck travel, compared to 3.7% in 2023.

Figure 65 shows the distribution of truck volumes in Hampton Roads on the typical weekday in 2023, based on approximately 80 continuous count stations located throughout the region. 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 9:00 am in the morning, and 3:00 pm and 6:30 pm in the afternoon. The distribution of

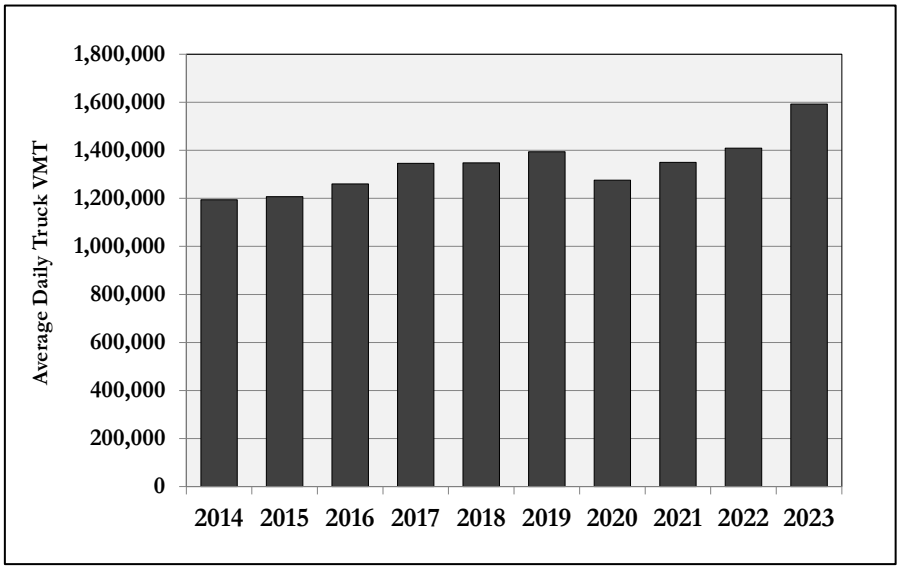


Figure 63 – Daily Truck-Miles of Travel in Hampton Roads, 2014-2023
Source: HRTPO analysis of VDOT data.

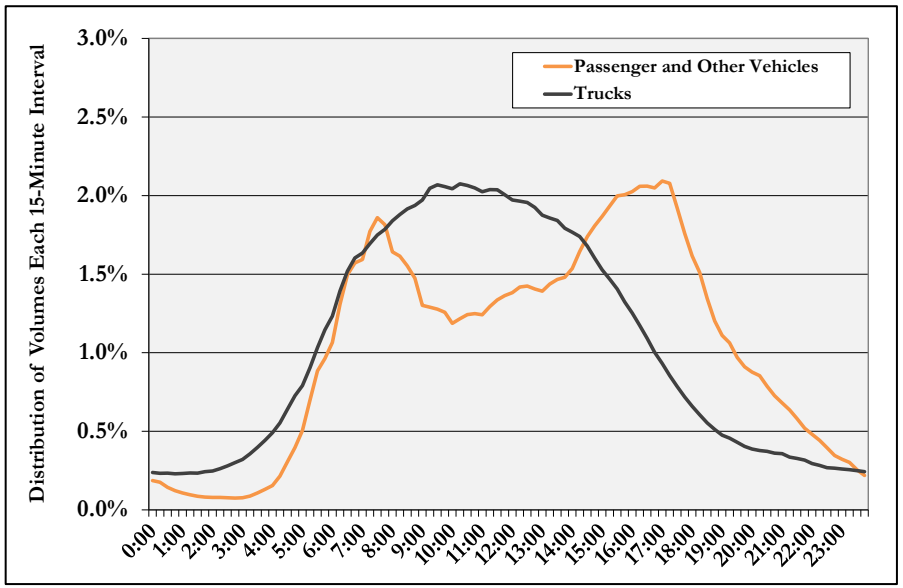


Figure 65 – Distribution of Weekday Volumes in Hampton Roads by Vehicle Type and Time of Day, 2023
Source: HRTPO analysis of VDOT data.

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. Nearly half (47%) of all truck travel in Hampton Roads occurs during this plateau, between 9:00 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, 32% of all truck travel in Hampton Roads occurred during the morning and afternoon peak travel periods in 2023.

The most prominent type of truck is Class 9, which is commonly referred to as "18-wheeler". Nearly half of all truck travel in Hampton Roads (47% in 2023) is Class 9 trucks (**Figure 66**). The next most common type of truck traveling Hampton Roads roadways are Class 5 trucks (24%), which are small 2-axle trucks that often handle local deliveries for companies such as UPS, FedEx or Amazon. This is followed by Class 6 trucks (16%), which are small 3-axle trucks that typically includes vehicles such as larger local delivery trucks, dump trucks, or garbage trucks.

As shown on the previous page, the amount of truck travel in Hampton Roads has increased by 33% over the last decade. However, the increases are much higher in the smaller truck classes (**Figure 67**). The amount of travel in Hampton Roads by smaller Class 5 home delivery-type trucks increased by 78% between 2014 and 2023, more than any other truck vehicle class. Growth in this class of truck was also 47% between 2019 and 2023. This indicates strong growth in home delivery of goods in the region, particularly since the pandemic. By comparison, Class 9 trucks only experienced a 11% increase over the last decade.

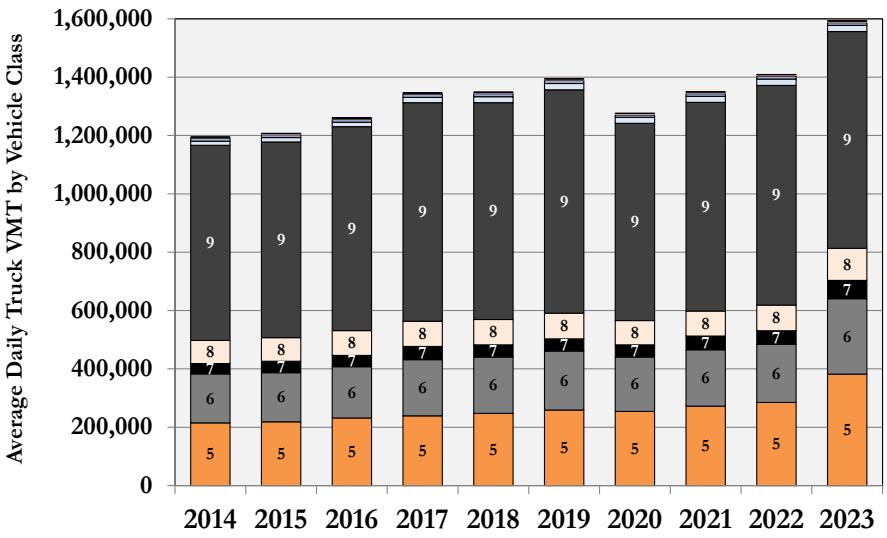


Figure 66 – Daily Truck-Miles of Travel in Hampton Roads by Vehicle Class, 2014-2023
Source: HRTPO analysis of VDOT data.

Vehicle Class	Change in VMT between 2014 and 2023	Change in VMT between 2019 and 2023
5	78%	47%
6	54%	28%
7	76%	52%
8	39%	24%
9	11%	-3%
10	47%	-6%
11	-9%	-11%
12	63%	13%
13	-10%	-63%

Figure 67 – Change in Daily Truck-Miles of Travel in Hampton Roads by Vehicle Class, 2014 to 2023 and 2019 to 2023
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 just over 20,400 trucks passed through the Top 10 gateways to Hampton Roads each weekday in 2023 (**Figure 68**). The number of trucks has increased over the last decade, with more than 3,300 more trucks passing through regional gateways each weekday in 2023 than did a decade earlier. Truck volumes passing through regional gateways increased by 19% from 2014 to 2023. This is despite a decrease in truck volumes from 2022 to 2023, largely due to the amount of freight transported by truck that was handled by the Port of Virginia.

The primary gateway for trucks entering or exiting Hampton Roads is I-64. As shown in **Figure 70** on page 66, an average of 7,300 trucks used I-64 to enter or exit the region each weekday in 2023, which accounted for 36% of the trucks passing through the region's major gateways. The number of trucks using I-64 has increased over the last decade, up from 6,000 trucks each weekday in 2014.

The next most traveled corridors for trucks entering and exiting the region are US Route 58 and US Route 460. Over 4,600 trucks used the US Route 58 gateway in 2023, up from 3,900 trucks in 2014. US Route 460 has also seen an increase in truck volumes. Nearly 2,500 trucks used the US Route 460 gateway each weekday in 2023, up from 2,000 trucks in 2014.

Combined, I-64, US Route 58, and US Route 460 accounted for 71% of all trucks passing through the region's major gateways in 2023. This is up slightly from 69% in 2014 (**Figure 69**). The share of trucks using these three gateways had been shifting over the last decade from I-64 towards US Routes 58 and 460. By 2015 more trucks used the combination of US Routes 58/460 to enter or exit the region than used I-64, and this trend continued through 2022. However, this trend reversed in 2023, with I-64 carrying more trucks than US Routes 58/460. This is likely at least partially due to the completion of the widening of I-64 on the Peninsula between Williamsburg and Newport News in late 2021.

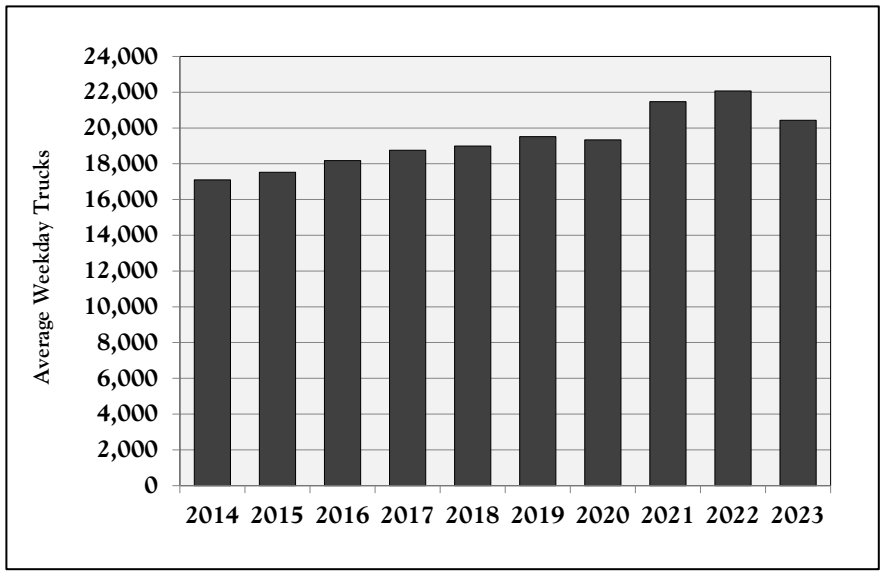


Figure 68 – Average Number of Trucks Passing through the Top 10 Regional Gateways Each Weekday, 2014-2023
Source: HRTPO analysis of VDOT and CBBT data.

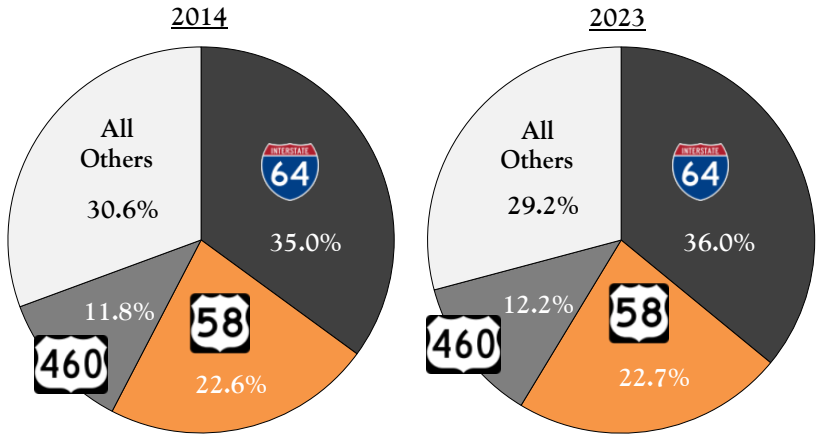


Figure 69 – Share of Trucks Passing through Regional Gateways Each Weekday, 2014 and 2023
Source: HRTPO analysis of VDOT and CBBT data.

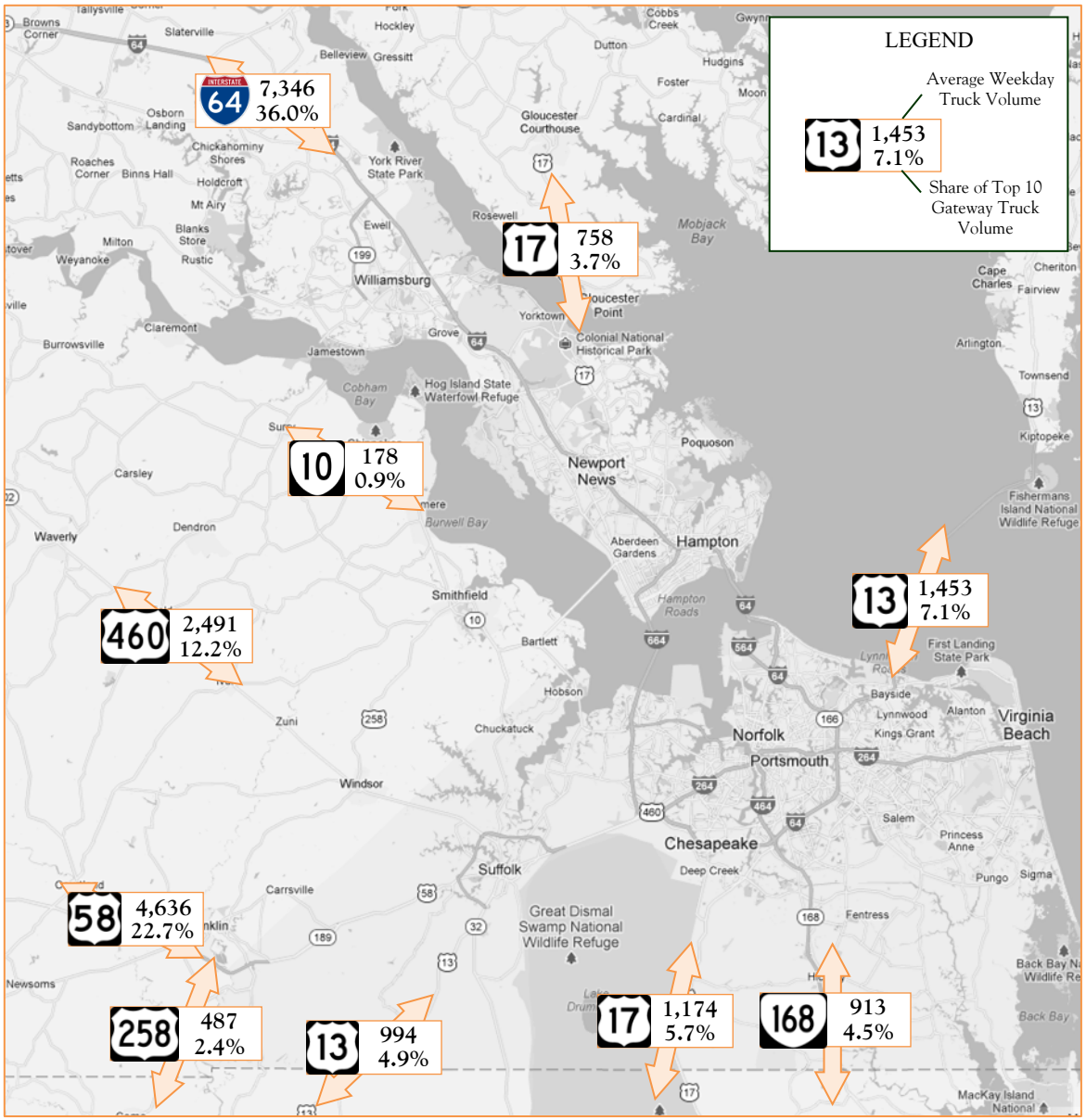


Figure 70 – Number and Share of Trucks Passing Through the Top 10 Regional Gateways Each Weekday, 2023

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 9,874 trucks crossed the harbor on these three facilities each weekday in 2023. This is 21% higher than the 8,190 trucks that crossed the harbor each weekday in 2014.

By far, the Monitor-Merrimac Memorial Bridge-Tunnel was the most heavily used facility by trucks crossing the harbor in 2023. Over 5,800 trucks used the Monitor-Merrimac Memorial Bridge-Tunnel each weekday in 2023, or nearly 60% of the trucks crossing the harbor (**Figure 71**). This is in spite of the Hampton Roads Bridge-Tunnel carrying higher overall traffic volumes (an average of 83,065 vehicles per weekday in 2023) than the Monitor-Merrimac Memorial Bridge-Tunnel (75,062 vehicles). The Hampton Roads Bridge-Tunnel carried an average of 3,054 trucks each weekday, or 31% of the trucks crossing the harbor in 2023, and the James River Bridge carried just over 1,000 trucks each weekday (10%).

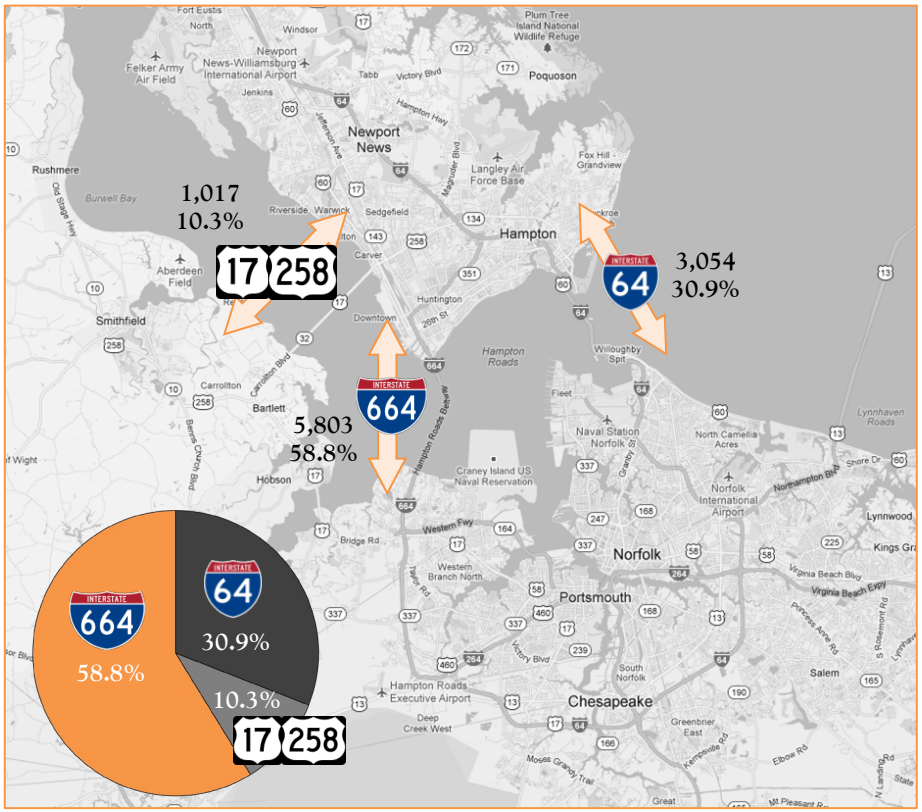


Figure 71 – Average Number of Trucks Crossing Between the Peninsula and Southside Each Weekday, 2023

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 Bridge (Dominion Boulevard/US Route 17).

Tolls are in place on most of these crossings. 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 Veterans Bridge in February 2017. In addition, Express Lanes opened at the I-64 High Rise Bridge in March 2024, although trucks are not permitted to use the Express Lanes Network.

A total of 16,700 trucks crossed the Elizabeth River each weekday in 2023. As shown in **Figure 72**, the High Rise Bridge carried an estimated 7,600 trucks each weekday in 2023, which is nearly half of the truck volume using the Elizabeth River crossings. The Downtown Tunnel carried the next highest number of trucks at an estimated 3,000 each weekday in 2023, although this is down from higher levels around 4,400 trucks per weekday prior to tolls being implemented in 2014. In spite of tolls also being implemented at the Midtown Tunnel, the volume of trucks carried by the facility in 2023 (approximately 2,300 trucks per weekday) is higher than the level seen prior to tolling of nearly 1,800 trucks.

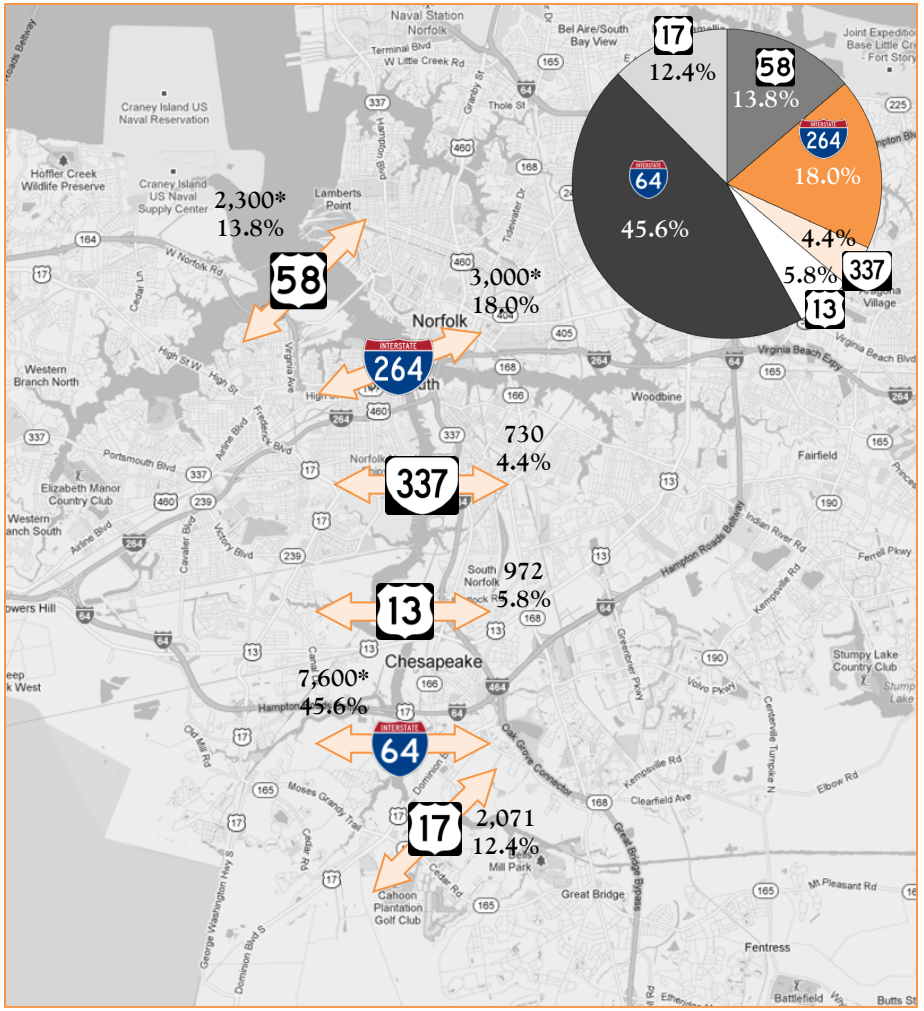


Figure 72 – Average Number of Trucks Crossing the Elizabeth River Each Weekday, 2023

Source: HRTPO analysis of VDOT data. Background map source: Google.
* Truck volumes at the Midtown Tunnel (US 58), Downtown Tunnel (I-264) and the High Rise Bridge (I-64) are VDOT or StreetLight estimates.

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 primarily collected by VDOT as part of their traffic monitoring program. 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 nearly 500 locations on the CMP roadway network. The most recent available data – which was generally collected during 2021, 2022, and 2023 – was used in this analysis, and these recent counts are called the "existing" weekday truck volumes in this report.

Figures 75 and 76 on pages 70 and 71 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 B** (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 73 shows the existing weekday truck volumes at each location on the regional freeway system where vehicle classification data is collected. US Route 13/58/460, near the Chesapeake/Suffolk City Line, carries the highest volume of trucks in the region at nearly 9,000 trucks per weekday. I-64 in Chesapeake, between Bowers Hill and the High Rise Bridge, carries the next highest volume of trucks in the region at just over 8,000 trucks each weekday. The next highest volume segments are on I-64 in York County and Newport News on the Peninsula, with 6,300 – 7,300 trucks each weekday.

Juris.	Facility Name	Segment From	Segment To	Existing Weekday Trucks
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	8,988
CHES	I-64	MILITARY HWY	I-264&664	8,051
YC	I-64	RTE 199/646	RTE 143	7,347
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	6,338
SUF	I-664	WESTERN FWY	COLLEGE DR	5,803
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	5,205
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	5,166
NOR/VB	I-64	I-264	INDIAN RIVER RD	4,162
PORT/SUF	WESTERN FWY	COLLEGE DR	TOWNE POINT RD	3,517
CHES	I-464	FREEMAN AVE	POINDEXTER ST	3,159
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	3,139
HAM/NOR	I-64/HRBT	MALLORY ST	OCEAN VIEW AVE	3,129
CHES	DOMINION BLVD/VETERANS BRIDGE	CEDAR RD/MOSES GRANDY TR	DOMINION LAKES BLVD	2,071
JCC	RTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	413

Figure 73 – Existing Weekday Truck Volumes on the Freeway System

Source: HRTPO analysis of VDOT data. Existing volumes generally represent data from the years 2021-2023. Table only includes those 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)	4,636
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	4,039
SH	ROUTE 460	SUSSEX CL	ROUTE 616 (IVOR RD)	2,491
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	2,084
NOR	MIDTOWN TUNNEL	PORTSMOUTH CL	BRAMBLETON AVE	1,998
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	1,853
CHES	MILITARY HWY	I-64	GEORGE WASHINGTON HWY	1,707
NOR	BRAMBLETON AVE	PARK AVE	I-264	1,678
CHES	PORTSMOUTH BLVD	SUFFOLK CL	JOLLIFF RD	1,628
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	1,470
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	VA BEACH CL	1,453
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	1,261
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	1,174
SUF	COLLEGE DR	I-664	HARBOUR VIEW BLVD	1,140
CHES	MILITARY HWY	AIRLINE BLVD	I-64	1,116
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	ROUTE 17	1,098
SH	ROUTE 671	DELAWARE RD (RTE 687)	ROUTE 58	1,061
SUF	BRIDGE RD	CRITTENDEN RD	BENNETTS PASTURE RD	1,040
IW	CARROLLTON BLVD	ROUTE 258	NEWPORT NEWS CL	1,017
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	1,005

Figure 74 – 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 2021-2023. Table only includes those locations where vehicle classification data was collected.

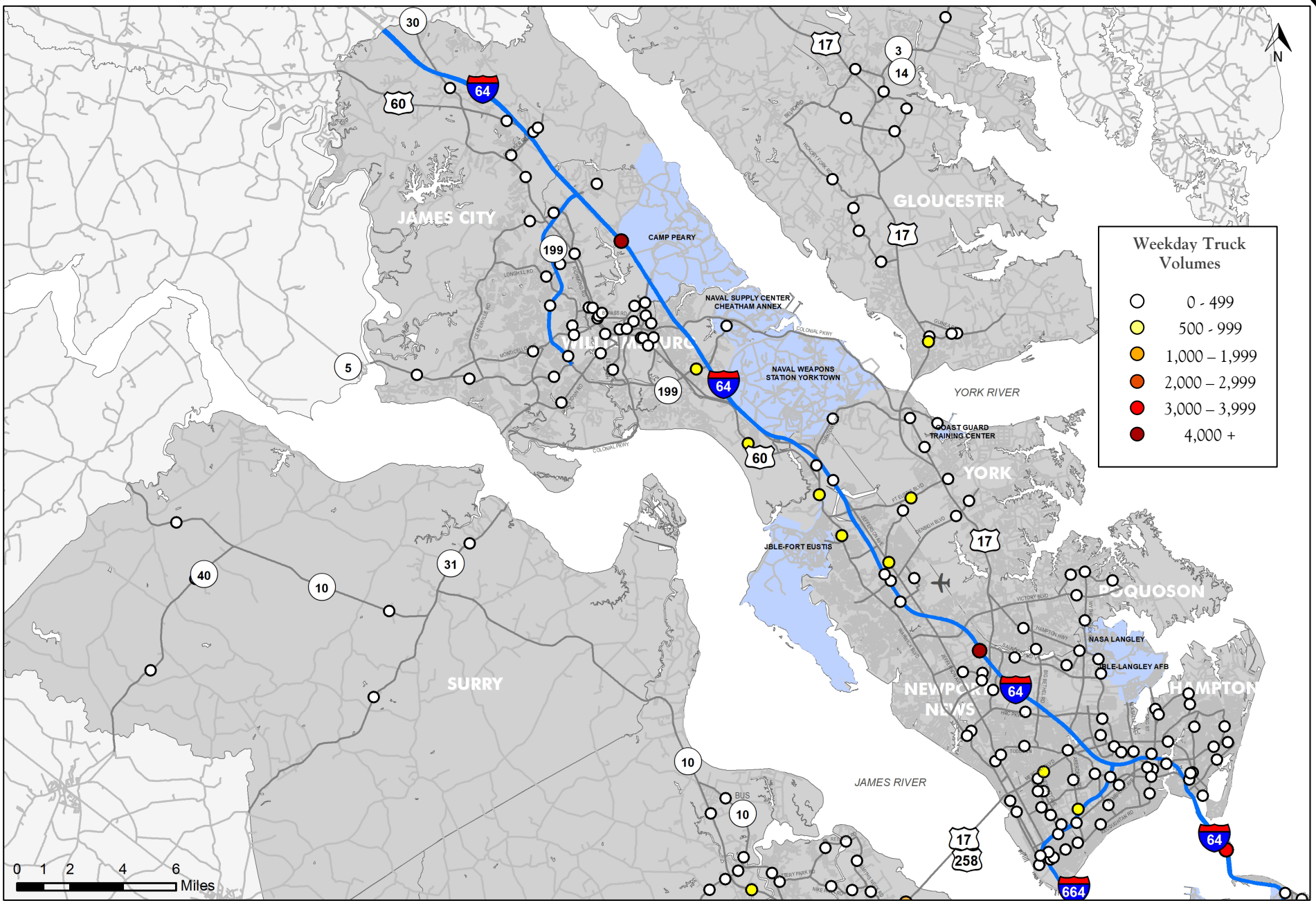


Figure 75 – Existing Weekday Truck Volumes, Peninsula

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Existing volumes generally represent data from the years 2021-2023.

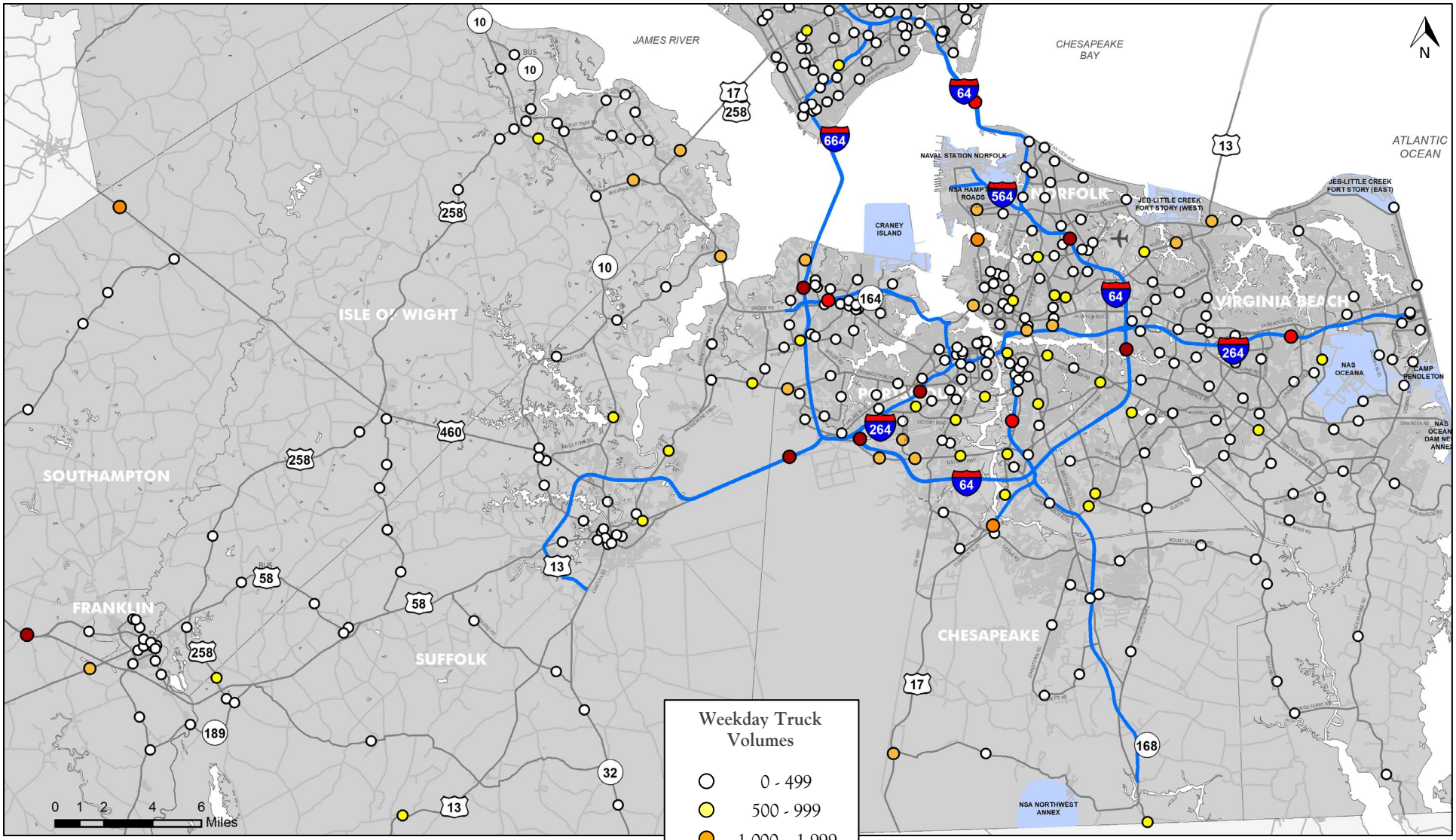


Figure 76 – Existing Weekday Truck Volumes, Southside

Source: HRTPO analysis of VDOT, CBBT and SNJB data. Existing volumes generally represent data from the years 2021-2023.

Figure 74 on page 69 shows those roadway segments that are not part of the freeway system with the highest existing weekday truck volumes. A total of 20 locations in the region where vehicle classification data is collected have volumes greater than 1,000 trucks per weekday. US Route 58 carries the highest number of trucks of any non-freeway location in the region, with over 4,600 trucks per weekday using US Route 58 between Courtland and Franklin, and just over 4,000 trucks per weekday near Capron. The non-freeway locations with the next highest number of trucks are US Route 460 in Southampton County and Hampton Boulevard to the north of Old Dominion University.

Figure 77 and **Figure 78** on page 73 show the recent trend in truck volumes at 21 prominent locations throughout Hampton Roads where vehicle classification data is collected on a continuous basis. Truck volumes increased at 17 of the 20 locations where classification data is available in both 2014 (or 2015 if 2014 data is not available) and 2023. The location with the largest increase in truck volumes is I-264 in Portsmouth near Victory Boulevard, which saw a 115% increase in truck volumes between 2014 and 2023. A cause for this increase was the implementation of tolls at the Downtown Tunnel in 2014, which at the time resulted in many trucks diverting to the High Rise Bridge to avoid the newly implemented tolls. Over the last decade, volumes have been moving back towards the Downtown Tunnel, as truckers have decided diverting to the High Rise isn't worth the additional cost.

The locations with the next highest increase in truck volumes are Hampton Boulevard north of Old Dominion University (+46%), US Route 13 at the North Carolina State Line in Suffolk (+38%), and I-664 to the south of the Monitor-Merrimac Memorial Bridge-Tunnel near College Drive (+37%).

Locations that experienced a decrease in truck volumes over the last decade include I-64 near J Clyde Morris Boulevard in Newport News, I-64 near the Norfolk/Virginia Beach City Line, and Terminal Boulevard near NIT. The decreases on Terminal Boulevard are due to the opening in late 2017 of the Intermodal Connector, which provides a new limited-access connection to NIT.

Facility	Location	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Change, 2014-2023*
CHESAPEAKE BAY BRIDGE-TUNNEL		1,163	1,181	1,265	1,254	1,292	1,284	1,198	1,356	1,450	1,453	25%
COLEMAN BRIDGE		707	728	747	769	831	825	749	952	929	758	7%
HAMPTON BOULEVARD		1,430	1,451	1,593	1,886	1,568	1,833	1,946	-	2,095	2,084	46%
HAMPTON ROADS BRIDGE-TUNNEL		3,110	3,140	3,361	3,177	3,019	3,129	-	-	-	-	N/A
I-64 (PENINSULA)	EAST OF ROUTE 199/646	5,993	6,086	6,219	6,342	6,565	6,879	-	-	-	7,346	23%
I-64 (PENINSULA)	WEST OF J CLYDE MORRIS BLVD	6,803	6,507	7,021	6,976	-	7,156	7,258	6,126	-	6,338	-7%
I-64 (SOUTHSIDE)	WEST OF NORVIEW AVE	-	4,343	4,465	4,525	4,241	4,554	4,742	3,733	-	5,205	20% *
I-64 (SOUTHSIDE)	NORFOLK/VA BEACH CL	-	4,905	4,946	4,974	4,790	4,813	4,790	3,789	-	4,162	-15% *
I-264	EAST OF VICTORY BLVD	2,399	2,283	2,517	4,040	4,477	4,715	4,686	4,986	5,275	5,166	115%
I-264	EAST OF ROSEMONT RD	-	2,728	2,739	2,889	2,903	3,004	2,982	-	-	3,139	15% *
I-464	SOUTH OF POINDEXTER ST	2,657	2,716	2,783	2,892	3,079	3,093	2,846	2,001	-	3,159	19%
I-664	SOUTH OF COLLEGE DR	4,247	4,408	4,625	4,940	-	-	5,019	4,103	5,340	5,803	37%
INTERNATIONAL TERMINAL BLVD		1,855	-	1,937	1,650	883	855	772	806	923	1,005	-46%
JAMES RIVER BRIDGE		834	891	922	907	896	939	848	-	838	1,017	22%
MILITARY HWY	GILMERTON BRIDGE	834	1,043	1,182	1,064	1,105	1,231	1,139	-	-	972	16%
ROUTE 13	NC STATE LINE	721	756	761	800	809	764	770	846	1,040	994	38%
ROUTE 13/58/460	CHESAPEAKE/SUFFOLK CL	6,958	7,332	7,574	7,888	7,968	8,164	8,133	-	7,794	8,988	29%
ROUTE 17	NC STATE LINE	1,101	1,001	975	965	1,018	1,024	1,098	1,204	1,278	1,174	7%
ROUTE 58	BETWEEN COURTLAND AND FRANKLIN	3,861	4,096	4,269	4,351	4,345	4,550	4,560	5,238	5,369	4,636	20%
ROUTE 460	EAST OF WAKEFIELD	2,010	2,106	2,385	2,513	2,472	2,499	2,351	2,469	2,590	2,491	24%
WESTERN FREEWAY	EAST OF COLLEGE DRIVE	3,231	3,591	3,661	3,079	2,494	-	-	-	3,564	3,517	9%

Figure 77 – Weekday Truck Volumes by Year at Selected Locations, 2014-2023

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. * - Indicates change reflects the years 2015-2023 due to data availability.

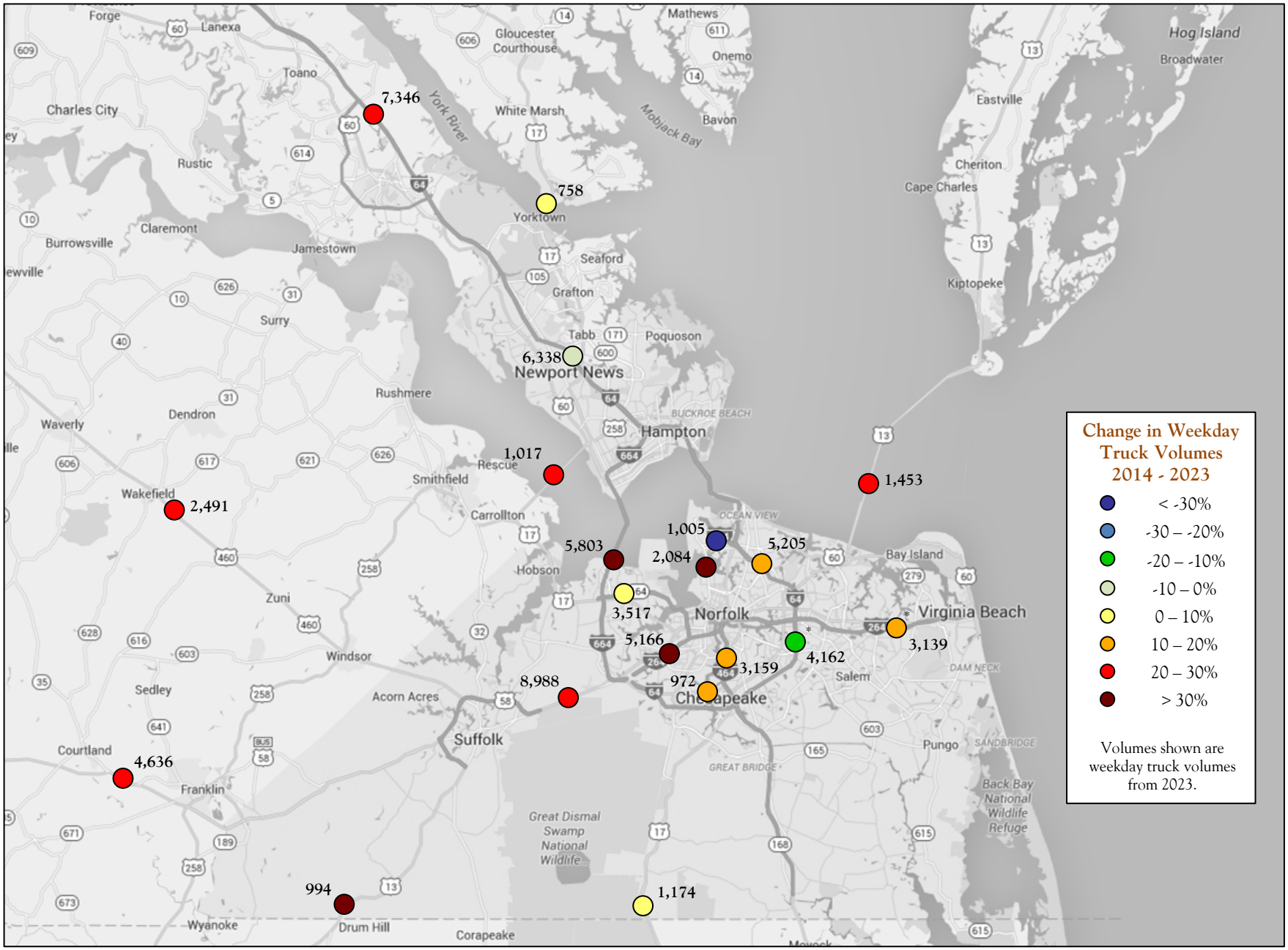


Figure 78 – Change in Weekday Truck Volumes, 2014 to 2023

Source: HRTPO analysis of VDOT and CBBT data. Base map source: Google. * – Change from 2015-2023.

Truck Congestion Costs

Trucks moved approximately 12.6 billion tons of cargo in the United States in 2022, accounting for approximately 64% of cargo by weight[16]. Unfortunately, the trucking industry endures a financial toll as part of transporting cargo along roadways due to traffic congestion. The total national cost of congestion for trucks peaked at $94.6 billion in 2021, a 27% increase from pre-COVID pandemic conditions in 2019[17].

Impacts of congestion on the trucking industry were analyzed for Hampton Roads and compared to other metropolitan areas with populations between one and four million people across the following metrics:

- Annual Person-Hours of Delay – The yearly sum of delay experienced by persons in the trucking industry
- Congestion Costs – The value of travel delay and excess fuel consumption estimated using state average cost per gallon
- Congestion Costs per Mile – The congestion costs experienced by persons in the trucking industry on a per mile basis.

In Hampton Roads, just over 1 million person-hours of delay was incurred by the trucking industry in 2022 (**Figure 79**). Among the 41 metropolitan areas with populations between one and four million people, Hampton Roads ranked 35th highest in person-hours of delay experienced by the trucking industry.

Similarly, Hampton Roads ranked 35th highest in congestion costs incurred by the trucking industry among the metropolitan areas with populations between one and four million people. The total congestion costs incurred by the trucking industry in Hampton Roads was $68 Million in 2022 (**Figure 80**). Transporting cargo in areas like New Orleans

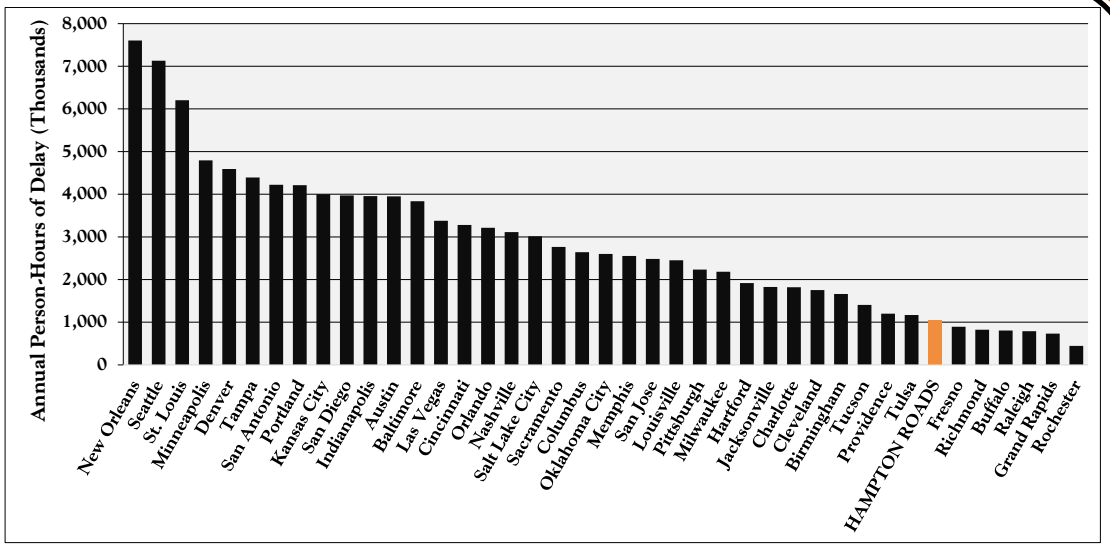


Figure 79 - Annual Person-Hours of Delay Experienced by the Trucking Industry in Each Metropolitan Area with Populations between One and Four Million People, 2022
Source: Texas A&M Transportation Institute

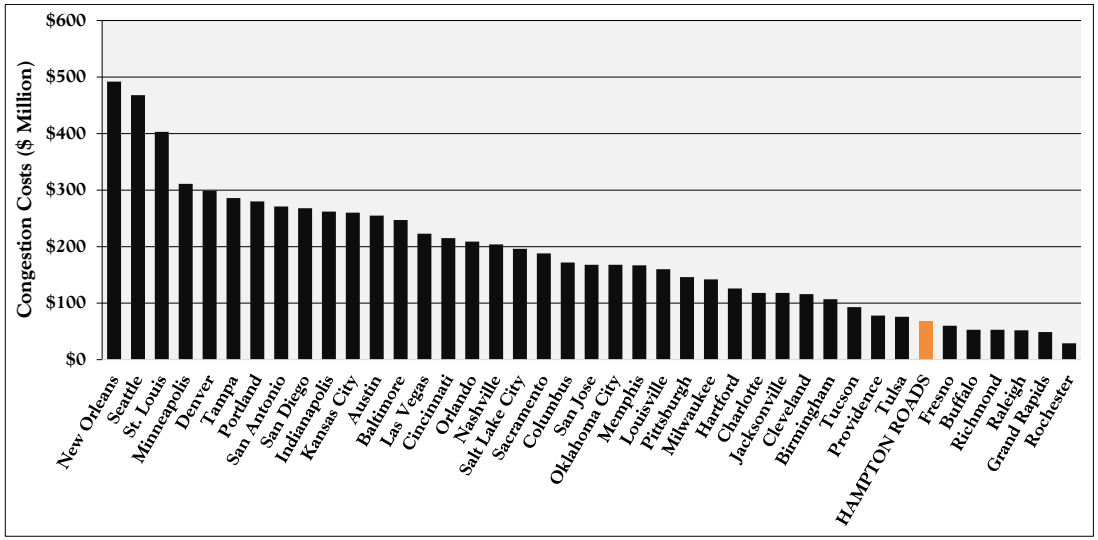


Figure 80 - Congestion Costs Experienced by the Trucking Industry in Each Metropolitan Area with Populations between One and Four Million People, 2022
Source: Texas A&M Transportation Institute

[16] TRIP (2023). *America's Rolling Warehouses: Opportunities and Challenges with the Nation's Freight Delivery System.*

[17] American Transportation Research Institute (2023). *Cost of Congestion to the Trucking Industry: 2023 Update.*

and Seattle, the trucking industry incurred congestion costs that were seven times as high as Hampton Roads in 2022.

Impacts of congestion were also analyzed on a cost per mile basis. Hampton Roads ranked 37th highest in truck congestion costs per mile among the large metropolitan areas with populations between one and four million people (**Figure 81**). Transporting cargo in congested conditions in Hampton Roads cost the trucking industry an average of an additional $0.06 per mile in 2022.

Of the metropolitan areas that hosted the Top 10 East Coast ports (based on TEUs), Hampton Roads saw fewer person-hours of delay than most in 2022 (**Figure 82**). The only areas that experienced fewer person-hours of delay than Hampton Roads in 2022 were Charleston, SC, Savannah, GA, and Wilmington, NC.

Congestion impacts were not as prevalent in Hampton Roads as seen in the other metropolitan areas that hosted the Top 10 East Coast ports. The trucking industry experienced congestion costs of $68 Million in Hampton Roads in 2022 (**Figure 83** on page 76). Only Charleston, SC, Savannah, GA, and Wilmington, NC experienced congestion costs lower than Hampton Roads.

Congestion costs on a per mile basis were also analyzed across the metropolitan areas that hosted the 10 largest East Coast ports. Of these 10 metropolitan areas, Hampton Roads ranked 3rd lowest in congestion costs per mile at $0.06 per mile in 2022.

Although Hampton Roads has its share of delays and congestion, the trucking industry experienced heavier traffic conditions and additional costs in most other metropolitan areas.

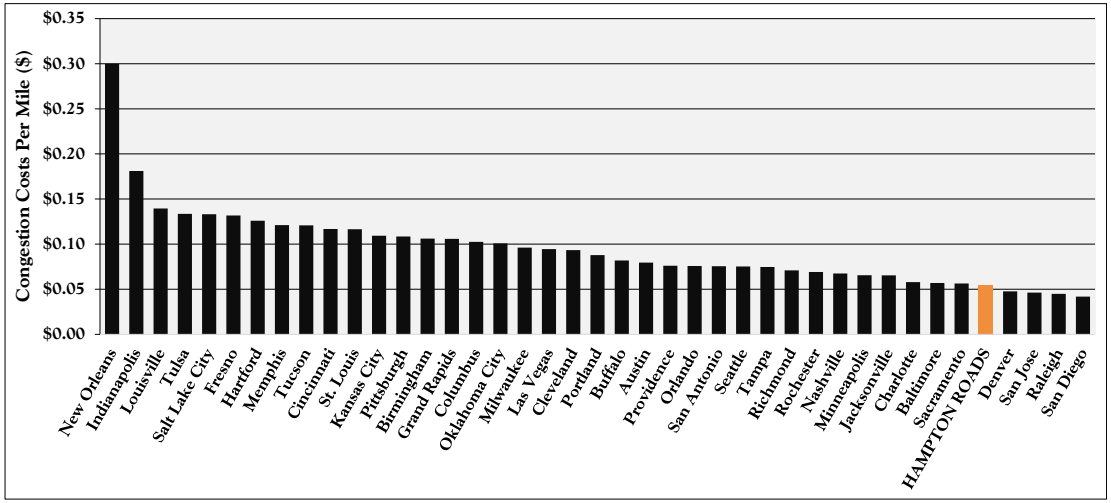


Figure 81 - Congestion Costs Experienced by the Trucking Industry Per Mile in Each Metropolitan Area with Populations between One and Four Million People, 2022

Source: Texas A&M Transportation Institute

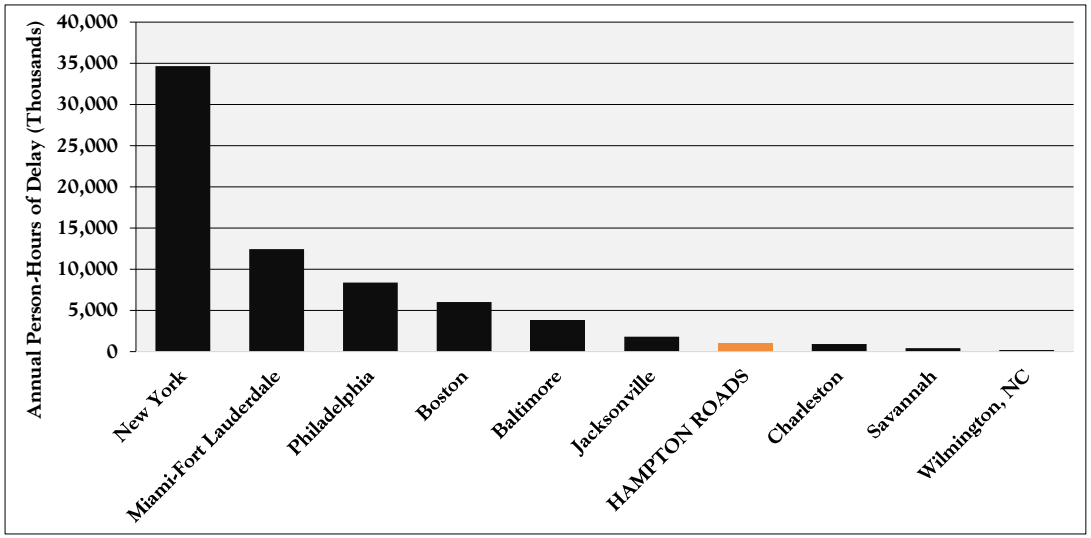


Figure 82 - Annual Person-Hours of Delay Experienced by the Trucking Industry in Each Metropolitan Area That Hosted Top 10 East Coast Ports, 2022

Source: Texas A&M Transportation Institute

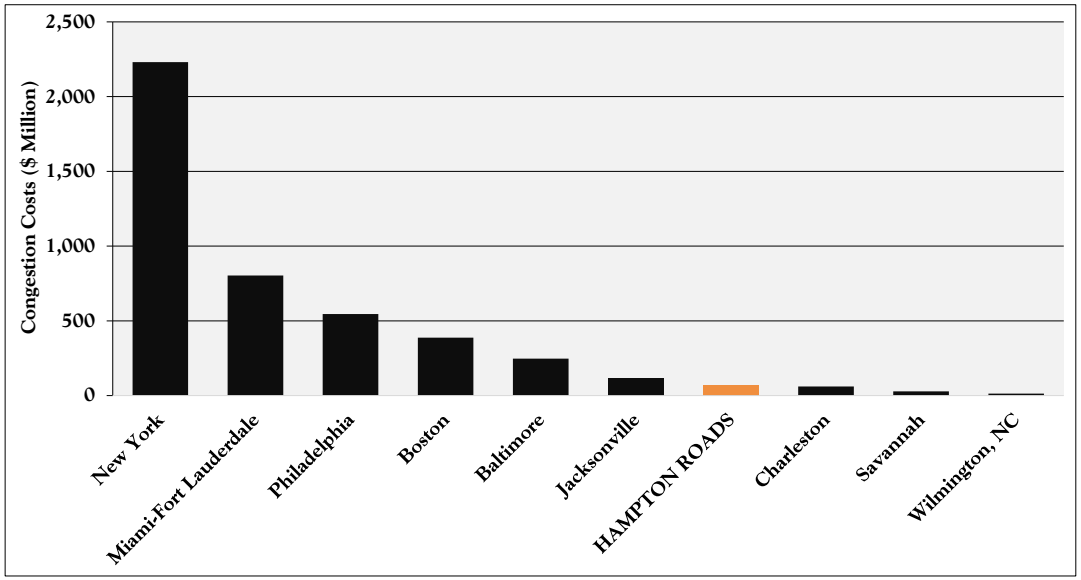


Figure 83 - Congestion Costs Experienced by the Trucking Industry in Each Metropolitan Area That Hosted the Top 10 East Coast Ports, 2022

Source: Texas A&M Transportation Institute

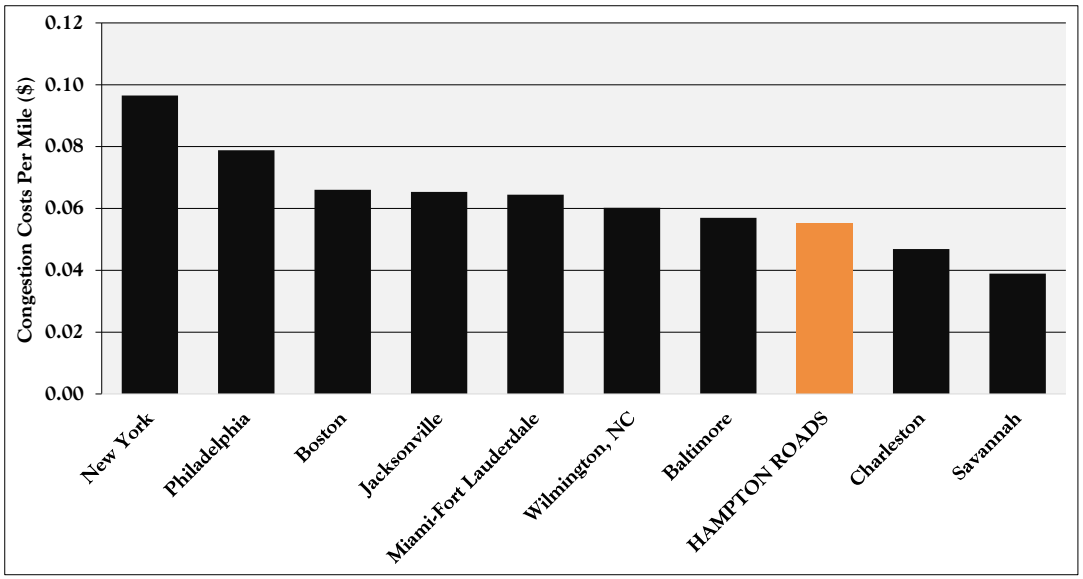


Figure 84 - Congestion Costs Experienced by the Trucking Industry Per Mile in Each Metropolitan Area That Hosted the Top 10 East Coast Ports, 2022

Source: Texas A&M Transportation Institute

FREIGHT BOTTLENECKS

As highlighted in the previous section, 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 largest drivers of the Hampton Roads and Virginia economies.

As part of its Performance Management program, 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 source 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 over 1,500 miles of roadway in Hampton Roads, including all freeways and nearly all principal and minor arterials. HRTPO refers to this roadway network with INRIX travel time and speed data available as the regional Travel Time Network.

Information on how HRTPO staff collects and analyzes INRIX travel time and speed data is available in 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 2023, which is the most recent data available at the time of the analysis.

HRTPO staff used two metrics in this analysis to measure bottlenecks throughout the region – average delay per truck and 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), Midday travel period (9:00 am to 3:00 pm) 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:

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

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 85 and 86 on pages 78 and 79 show the average truck delays per mile during the AM Peak Period on the Congestion Management Process Network, and **Figures 87 and 88** on pages 80 and 81 show the average truck delays during the PM Peak Period. **Appendix C** also includes information on the average truck delays during both peak periods.

Figure 89 on page 82 shows the locations on the regional freeway network with the highest average truck delay during the AM Peak Period. Most 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 6.0 minutes per mile during the AM Peak Period. Between Settlers Landing Road and Mallory Street, average delays are 4.3 minutes per mile. The freeway segments with the next highest average delays in the AM Peak Period are segments on I-264 Eastbound approaching the Downtown

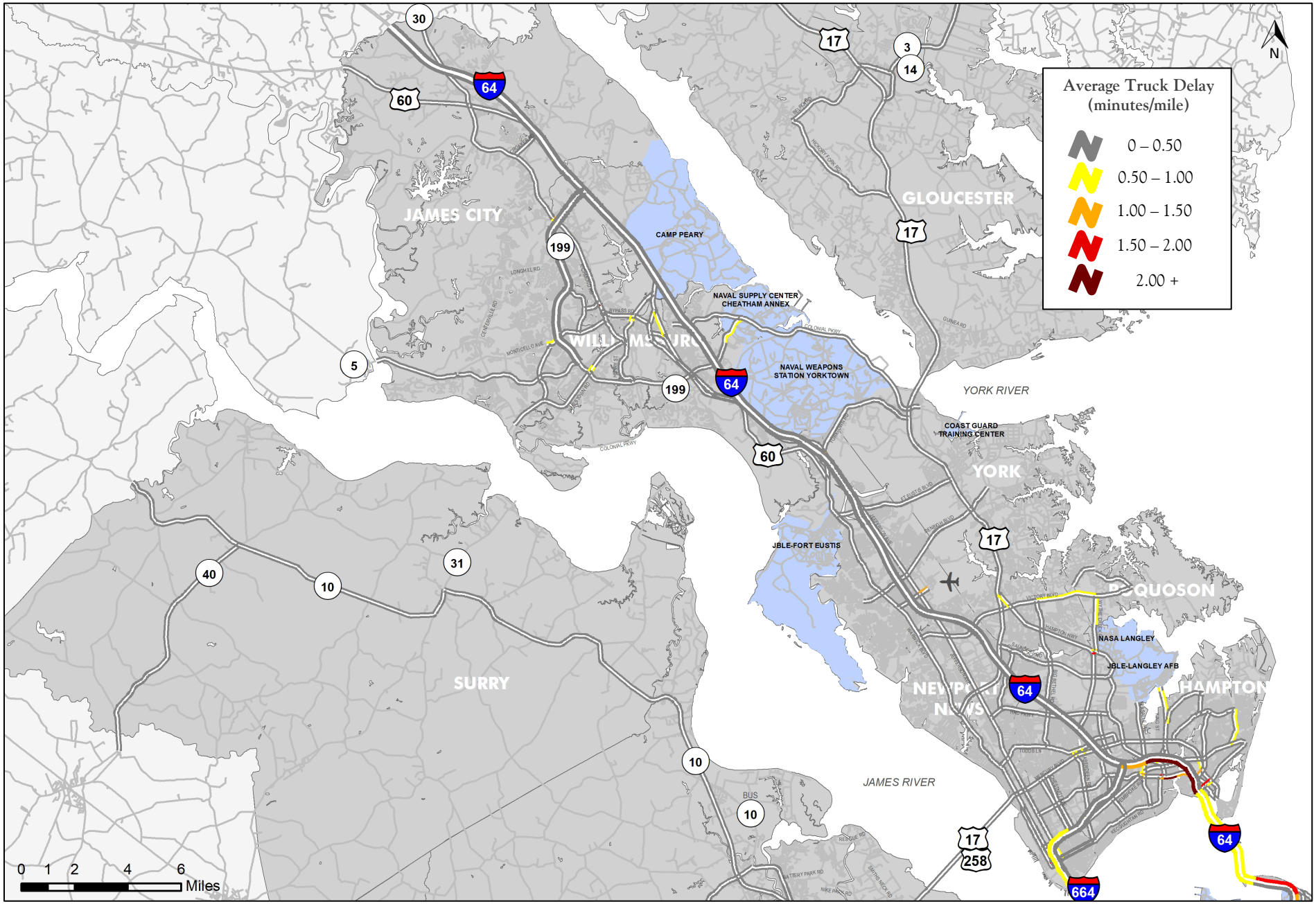


Figure 85 – Average Truck Delay, Weekday AM Peak Period, 2023 - Peninsula

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.

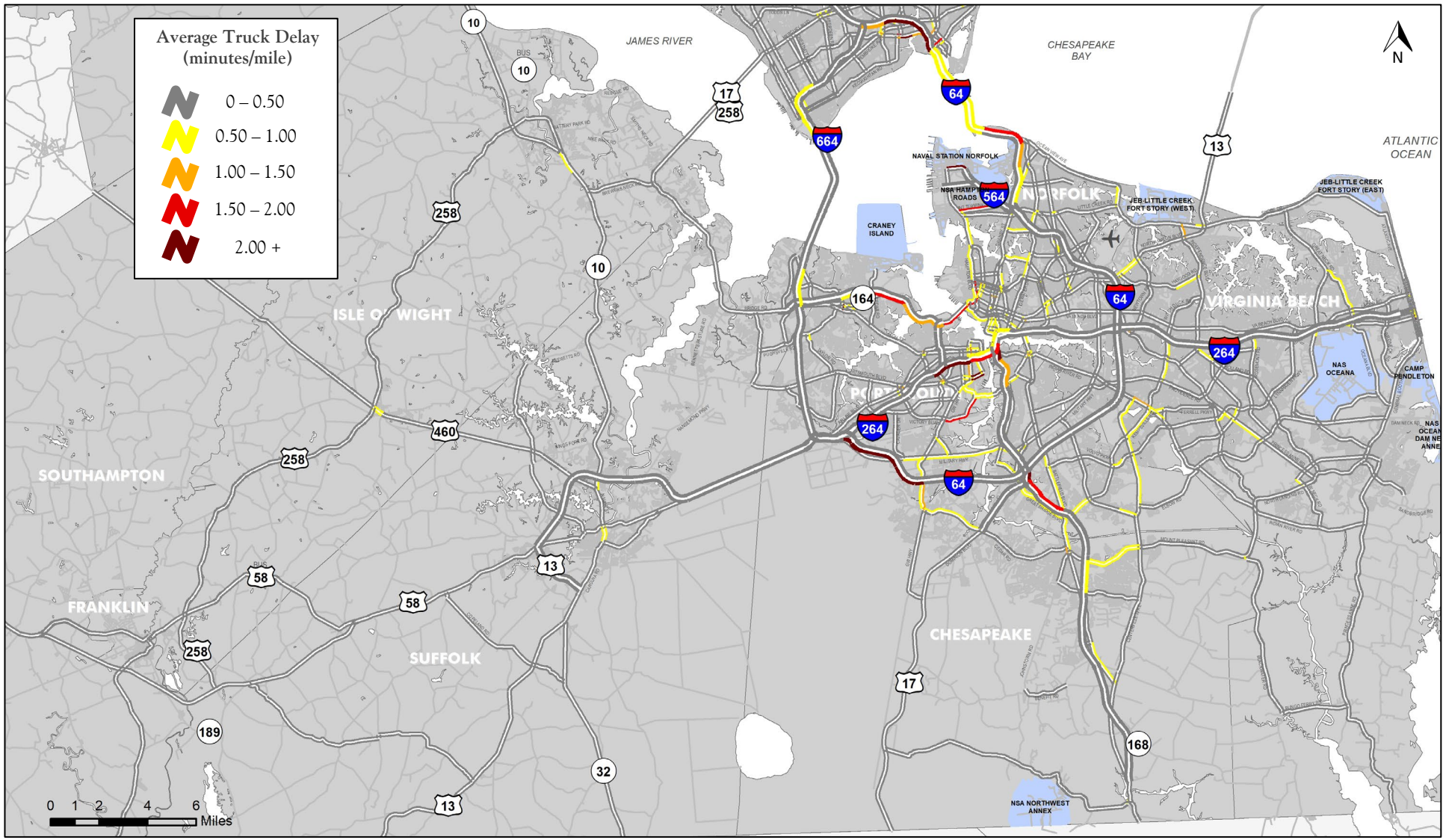


Figure 86 – Average Truck Delay, Weekday AM Peak Period, 2023 - Southside

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.

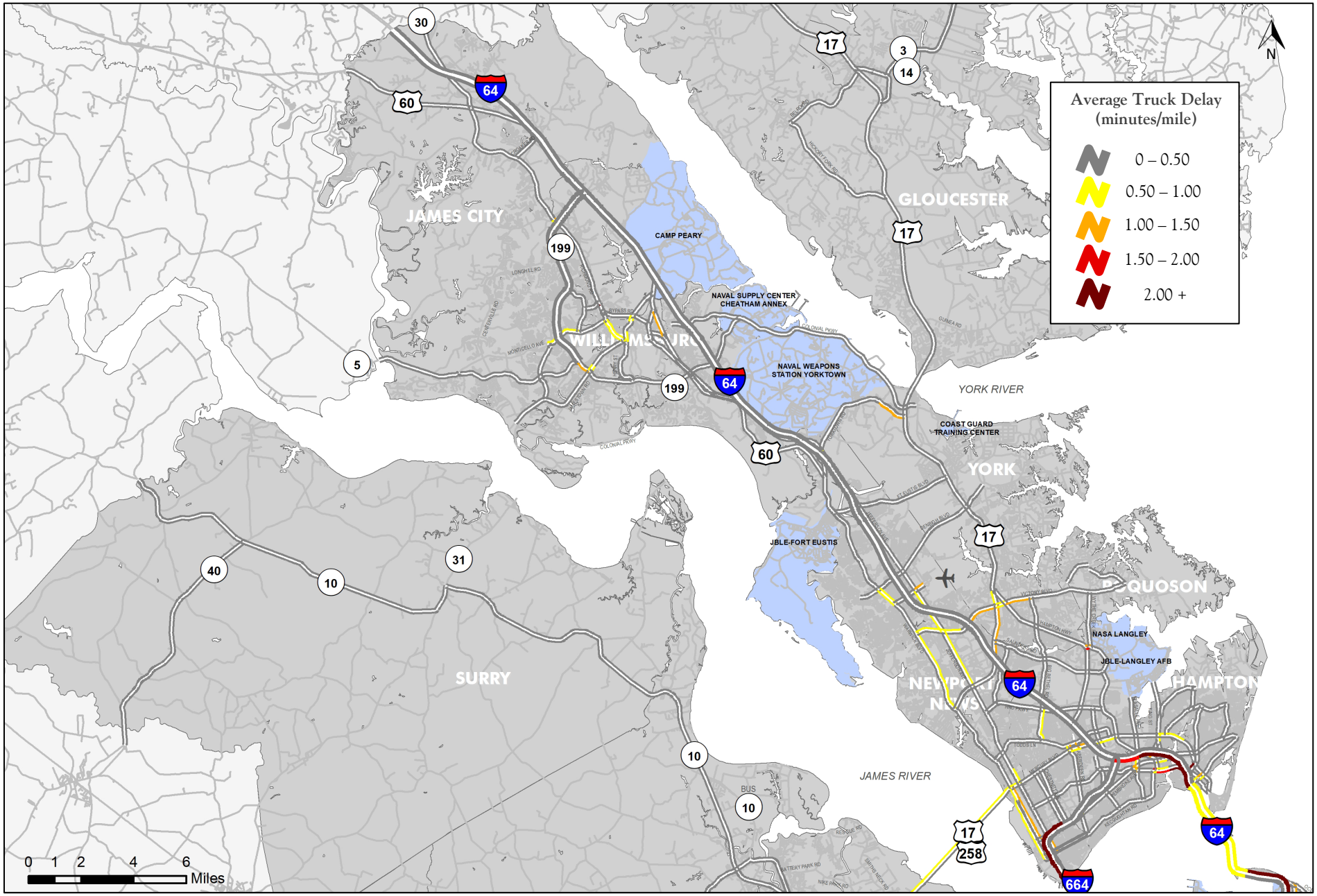


Figure 87 – Average Truck Delay, Weekday PM Peak Period, 2023 - Peninsula

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.

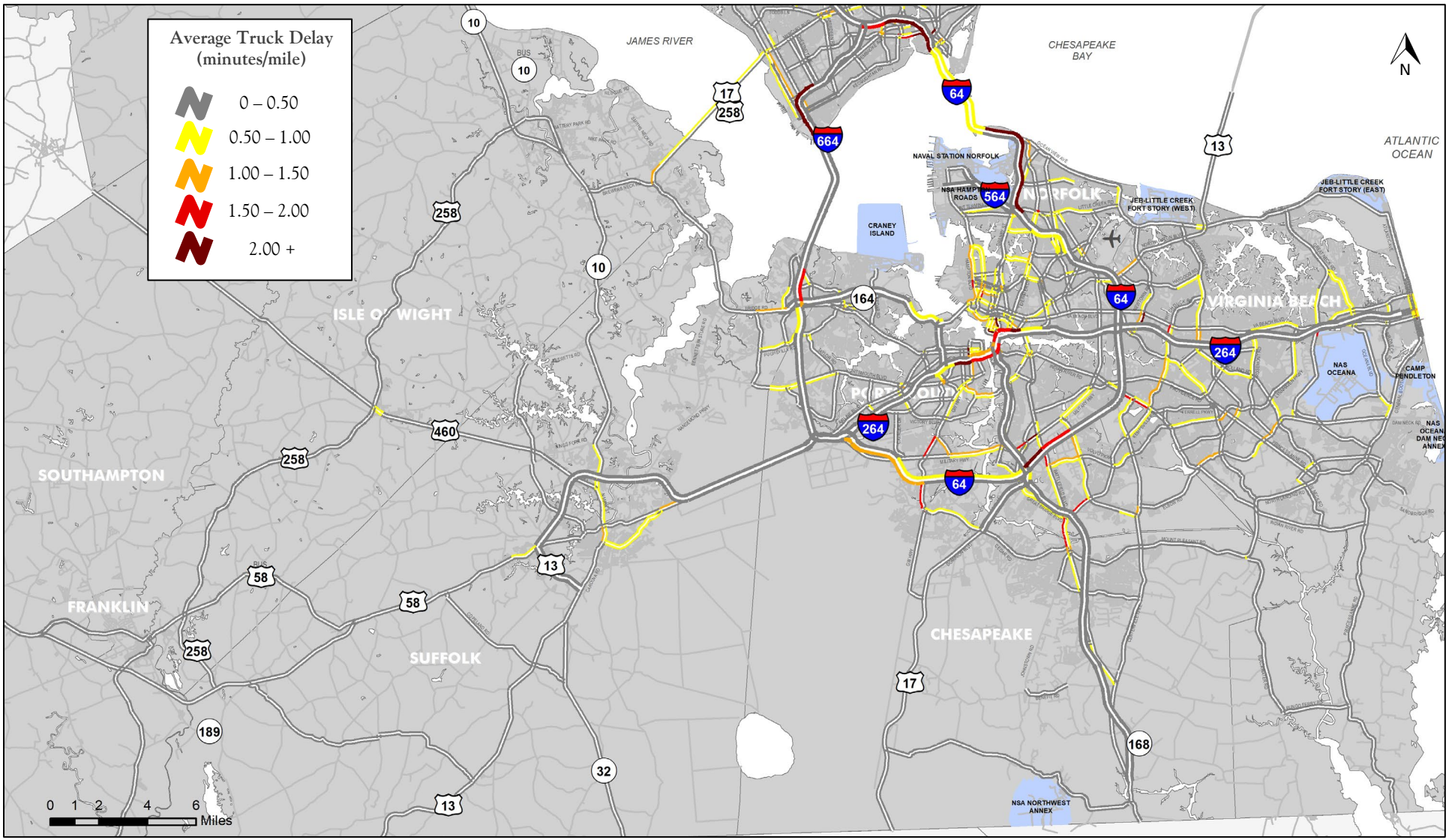


Figure 88 – Average Truck Delay, Weekday PM Peak Period, 2023 - Southside

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.

Tunnel. Average truck delays between Frederick Boulevard and Des Moines Avenue in 2023 were an average of 4.2 minutes per mile during the AM Peak Period, and were 3.9 minutes per mile between Des Moines Avenue and Effingham Street.

Figure 90 shows the non-freeway locations in Hampton Roads with the highest average truck delay during the AM Peak Period. Most of the highest delays per mile are on very short segments such as Virginia Beach Boulevard and Laskin Road at the Oceanfront, Ironbound Road in Williamsburg, and Poplar Hill Road in Chesapeake. However, Settlers Landing Road approaching I-64 near the HRBT and roadways adjacent to the Norfolk Naval Shipyard also rank high on the list, as do multiple segments of Hampton Boulevard.

Figure 91 on page 83 shows the locations on the regional freeway network with the highest average truck delay 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 6.6 minutes per mile between 23rd Street and Terminal Avenue. The segment between Chestnut Avenue and 23rd Street also has a high average delay at 2.8 minutes per mile.

Both approaches to the Hampton Roads Bridge-Tunnel have the next highest average delays, with average truck delays on the eastbound approach between Armistead Avenue and Mallory Street ranging between 3.6 and 6.2 minutes per mile, and delays on the westbound approach between I-564 and Ocean View Avenue ranging between 2.4 and 4.7 minutes per mile.

Juris.	Facility Name	Direction	Segment From	Segment To	Average Truck Delay (minutes per mile)
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	6.02
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	4.34
PORT	I-264	EB	FREDERICK BLVD	DES MOINES AVE	4.21
PORT	I-264	EB	DES MOINES AVE	EFFINGHAM ST	3.89
CHES	I-64	WB	GEORGE WASHINGTON HWY	MILITARY HWY	3.74
CHES	CHESAPEAKE EXPWY	NB	DOMINION BLVD	I-64	3.26
HAM	I-64	EB	ARMISTEAD AVE	RIP RAP RD	2.40
NOR	I-464	NB	SOUTH MAIN ST	I-264	2.08
CHES	I-64	WB	MILITARY HWY	I-264&664	2.08
NOR	I-64	WB	OCEAN VIEW AVE	4TH VIEW AVE	1.91
NOR/PORT	I-264/DOWNTOWN TUNNEL	EB	EFFINGHAM ST	I-464	1.80
PORT	WESTERN FWY	EB	CEDAR LN	WEST NORFOLK RD	1.77
CHES	CHESAPEAKE EXPWY	NB	BATTLEFIELD BLVD (N OF GREAT BR.	DOMINION BLVD	1.64
CHES/NOR	I-464	NB	POINDEXTER ST	SOUTH MAIN ST	1.39
PORT	WESTERN FWY	EB	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	1.34
NOR	I-64	WB	4TH VIEW AVE	BAY AVE	1.34
HAM	I-64	EB	I-664	ARMISTEAD AVE	1.17
SUF	I-664	NB	WESTERN FWY	COLLEGE DR	0.91
NN	I-664	SB	TERMINAL AVE	23RD ST	0.87
SUF	I-664	NB	BRIDGE RD	WESTERN FWY	0.86

Figure 89 – Roadway Segments on the Freeway System with the Highest Average Delay per Truck, Weekday AM Peak Period, 2023

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 Truck Delay (minutes per mile)
VB	VA BEACH BLVD	EB	PACIFIC AVE	ATLANTIC AVE	4.47
PORT	PORTSMOUTH BLVD	EB	EFFINGHAM ST	PORTCENTRE PKWY	3.82
WMB	IRONBOUND RD	EB	LONGHILL RD	RICHMOND RD	2.68
NOR	ADMIRAL TAUSSIG BLVD	WB	HAMPTON BLVD	I-564	2.58
PORT	PORTSMOUTH BLVD	WB	EFFINGHAM ST	PORTCENTRE PKWY	2.53
HAM	SETTLERS LANDING RD	EB	ARMISTEAD AVE	EATON ST	2.42
VB	LASKIN RD/31ST ST	EB	PACIFIC AVE	ATLANTIC AVE	2.36
VB	VA BEACH BLVD	WB	PACIFIC AVE	ATLANTIC AVE	2.25
HAM	WOODLAND RD	SB	I-64	COUNTY ST	2.06
CHES	POPLAR HILL RD	NB	WESTERN BRANCH BLVD	CHURCHLAND BLVD	2.04
NN	25TH ST	WB	HUNTINGTON AVE	WARWICK BLVD	1.99
NOR	HAMPTON BLVD	NB	21ST ST	27TH ST	1.98
HAM	SETTLERS LANDING RD	WB	KECOUGHTAN RD	ARMISTEAD AVE	1.96
NOR	INTERNATIONAL TERMINAL BLVD	WB	HAMPTON BLVD	I-564	1.80
NOR	HAMPTON BLVD	NB	BRAMBLETON AVE	21ST ST	1.79
HAM	MALLORY ST	WB	COUNTY ST	MERCURY BLVD	1.78
PORT	EFFINGHAM ST	NB	HIGH ST	LONDON BLVD	1.77
HAM	MALLORY ST	WB	I-64	COUNTY ST	1.77
HAM	COMMANDER SHEPARD BLVD	WB	WYTHE CREEK RD	ARMSTRONG PKWY	1.76
NOR	MIDTOWN TUNNEL	EB	MLK FWY/WESTERN FREEWAY	BRAMBLETON AVE	1.60

Figure 90 – Non-Freeway Roadway Segments with the Highest Average Delay per Truck, Weekday AM Peak Period, 2023

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 92 shows the non-freeway locations in Hampton Roads with the highest average truck delay during the PM Peak Period. Similar to the AM Peak Period, most of the highest delays per mile are on very short roadway segments. However, arterial approaches to the HRBT, including Fourth View Street, Woodland Road, and Settlers Landing Road, rank high on the list. Segments approaching other tunnels in the region are also high on the list, including Effingham Street and Saint Pauls Boulevard approaching I-264 and the Downtown Tunnel, and Jefferson Avenue approaching the Monitor-Merrimac Memorial Bridge-Tunnel.

Juris.	Facility Name	Direction	Segment From	Segment To	Average Truck Delay (minutes per mile)
NN	I-664	SB	TERMINAL AVE	23RD ST	6.57
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	6.16
NOR	I-64	WB	4TH VIEW AVE	BAY AVE	4.70
NOR	I-64	WB	BAY AVE	GRANBY ST	4.44
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	4.31
NOR	I-264	WB	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	3.63
HAM	I-64	EB	ARMISTEAD AVE	RIP RAP RD	3.60
CHES	I-64	EB	BATTLEFIELD BLVD	I-464	2.91
NN	I-664	SB	23RD ST	CHESTNUT AVE	2.80
NOR	I-64	WB	OCEAN VIEW AVE	4TH VIEW AVE	2.48
NOR	I-64	WB	GRANBY ST	I-564/LITTLE CREEK RD	2.44
PORT	I-264	EB	DES MOINES AVE	EFFINGHAM ST	2.25
NOR	I-264/BERKLEY BRIDGE	WB	I-464	WATERSIDE/CITY HALL/TIDEWATER	1.97
NOR	I-264/DOWNTOWN TUNNEL	EB	EFFINGHAM ST	I-464	1.84
SUF	I-664	NB	WESTERN FWY	COLLEGE DR	1.77
HAM	I-64	EB	I-664	ARMISTEAD AVE	1.70
CHES	I-64	EB	GREENBRIER PKWY	BATTLEFIELD BLVD	1.64
NOR	I-264/DOWNTOWN TUNNEL	WB	EFFINGHAM ST	I-464	1.41
CHES	I-64	WB	GEORGE WASHINGTON HWY	MILITARY HWY	1.29
SUF	I-664	NB	BRIDGE RD	WESTERN FWY	1.16

Figure 91 – Roadway Segments on the Freeway System with the Highest Average Delay per Truck, Weekday PM Peak Period, 2023

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.

Juris.	Facility Name	Direction	Segment From	Segment To	Average Truck Delay (minutes per mile)
VB	VA BEACH BLVD	EB	PACIFIC AVE	ATLANTIC AVE	4.56
VB	VA BEACH BLVD	WB	PACIFIC AVE	ATLANTIC AVE	4.00
NOR	4TH VIEW ST	SB	I-64	OCEAN VIEW AVE	3.74
WMB	IRONBOUND RD	EB	LONGHILL RD	RICHMOND RD	3.53
HAM	WOODLAND RD	SB	I-64	COUNTY ST	2.92
HAM	WOODLAND RD	SB	COUNTY ST	MERCURY BLVD	2.67
NOR	NEWTOWN RD	NB	I-264	VA BEACH BLVD	2.51
PORT	EFFINGHAM ST	SB	HIGH ST	LONDON BLVD	2.45
NOR	BOUSH ST/WATERSIDE DR	EB	ST PAULS BLVD	CITY HALL AVE	2.38
VB	LASKIN RD/31ST ST	EB	PACIFIC AVE	ATLANTIC AVE	2.36
CHES	MILITARY HWY	WB	CAMPOSTELLA RD	BATTLEFIELD BLVD	2.27
NOR	ST PAULS BLVD	SB	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	2.23
PORT	EFFINGHAM ST	SB	I-264	HIGH ST	2.21
NN	JEFFERSON AVE	SB	35TH ST	25TH ST	2.09
HAM	SETTLERS LANDING RD	EB	EATON ST	I-64	2.00
VB	INDIAN RIVER RD	EB	CENTERVILLE TNPK	KEMPSVILLE RD	1.96
HAM	COMMANDER SHEPARD BLVD	WB	WYTHE CREEK RD	ARMSTRONG PKWY	1.92
HAM	SETTLERS LANDING RD	EB	ARMISTEAD AVE	EATON ST	1.91
VB	LONDON BRIDGE RD	NB	POTTERS RD	VA BEACH BLVD	1.84
CHES	BATTLEFIELD BLVD	SB	VOLVO PKWY	I-64	1.81

Figure 92 – Non-Freeway Roadway Segments with the Highest Average Delay per Truck, Weekday PM Peak Period, 2023

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.

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), Midday period (9:00 am to 3:00 pm) and PM peak travel period (3:00 to 7:00 pm). These delays were calculated using the following formula:

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

These 15-minute delays were then summed up for each roadway segment to determine total truck delay values each weekday (inclusive of the hours 5 am to 7 pm), and then normalized on a per-mile basis to ensure that longer segments weren't preferred over shorter segments.

Figures 93 and 94 on pages 85 and 86 show the total weekday truck delays per mile on the Congestion Management Process Network. **Appendix C** also includes information on the total truck delays for each roadway segment.

Figure 95 on page 87 shows the freeway segments in Hampton Roads with the highest weekday total truck delays per mile in 2023. As with average delays, most of the freeway segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. The segment with the highest total truck delay is an approach to the eastbound Hampton Roads Bridge-Tunnel. The eastbound segment between Rip Rap Road and Settlers Landing Road experiences a total of 43.2 truck-hours of delay per mile each weekday. Additional segments approaching the Hampton Roads Bridge-Tunnel ranked third highest (eastbound between Settlers Landing Road and Mallory Street), seventh highest (westbound between Bay Avenue and Fourth View Avenue), eighth highest (westbound between Fourth View Avenue and Ocean View Avenue), and tenth highest (eastbound between Armistead Avenue and Rip Rap Road).

Other freeway segments with the Top Ten highest weekday total truck delays per mile include three segments approaching the Downtown Tunnel (eastbound between Des Moines Avenue and Effingham Street, eastbound between Effingham Street and I-464, and westbound between I-464 and Effingham Street), a segment approaching the Monitor-Merrimac Memorial Bridge-Tunnel (southbound between 23rd Street and Terminal Avenue), and a segment approaching the High Rise Bridge (westbound between Military Highway and George Washington Highway).

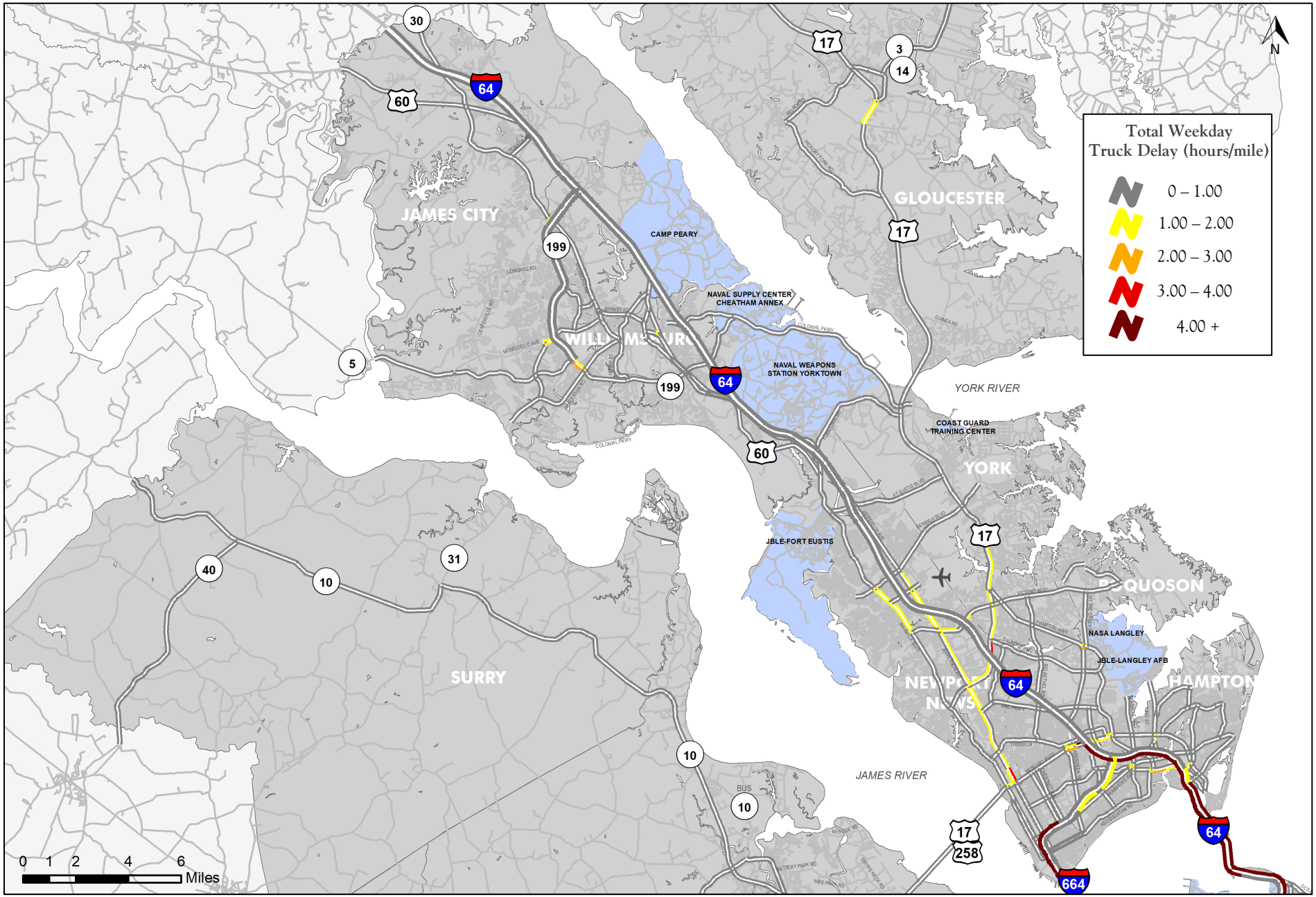


Figure 93 – Total Truck Delay, Weekdays, 2023 - Peninsula

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Includes delays between 5 am and 7 pm.

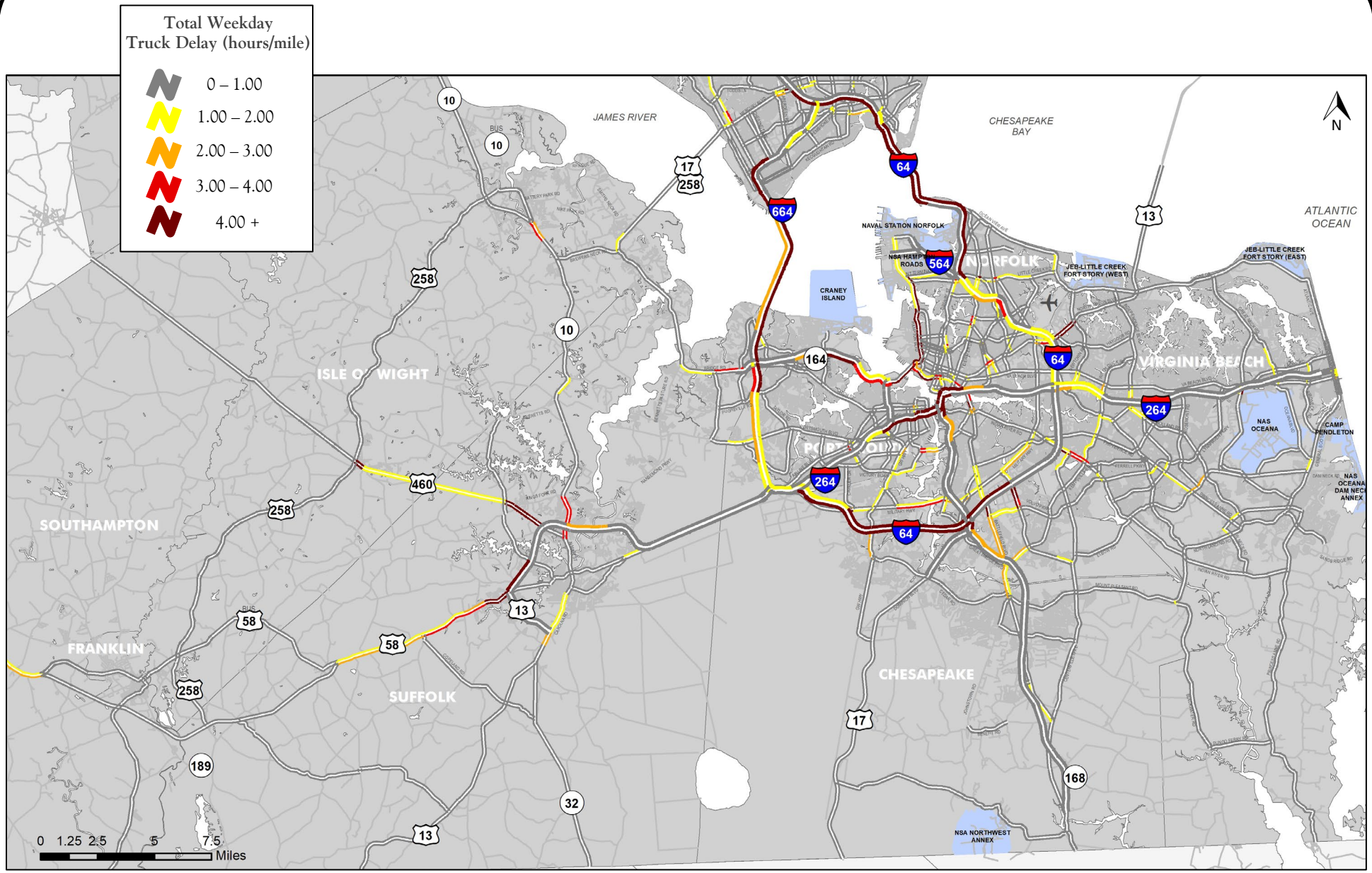


Figure 94 – Total Truck Delay, Weekdays, 2023 - Southside

Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Includes delays between 5 am and 7 pm.

Figure 96 shows the non-freeway segments in Hampton Roads with the highest weekday total truck delays per mile in 2023. The two non-freeway segments with the highest total truck delays were Route 58/Holland Road between Cove Point Drive and the Suffolk Bypass in Suffolk. Total truck delays were 20.5 hours per mile in the westbound direction and 14.9 hours per mile in the eastbound direction. The next highest total truck delays on non-freeway segments were on Route 460 in Windsor (third highest in the westbound direction and seventh highest in the eastbound direction), Northampton Boulevard approaching I-64 in the southbound direction (sixth highest and eleventh highest), and many sections of Hampton Boulevard. Seven of the Top 20 non-freeway segments with the highest total truck delay were sections of Hampton Boulevard in the City of Norfolk.

In addition to looking at individual roadway segments, HRTPO staff determined total peak period delays for the trucking industry at twelve high profile corridors throughout the region. These high profile locations – which are shown in **Figure 97** on page 88 – are traffic bottlenecks such as the region's bridges and tunnels.

Juris.	Facility Name	Direction	Segment From	Segment To	Total Truck Delay (hours per mile)
HAM	I-64	EB	RIP RAP RD	SETTLERS LANDING RD	43.22
PORT	I-264	EB	DES MOINES AVE	EFFINGHAM ST	41.31
HAM	I-64	EB	SETTLERS LANDING RD	MALLORY ST	40.96
NOR/PORT	I-264/DOWNTOWN TUNNEL	EB	EFFINGHAM ST	I-464	35.63
NN	I-664	SB	TERMINAL AVE	23RD ST	32.39
CHES	I-64	WB	GEORGE WASHINGTON HWY	MILITARY HWY	31.59
NOR	I-64	WB	4TH VIEW AVE	BAY AVE	26.28
NOR	I-64	WB	OCEAN VIEW AVE	4TH VIEW AVE	25.90
NOR/PORT	I-264/DOWNTOWN TUNNEL	WB	I-464	EFFINGHAM ST	24.08
HAM	I-64	EB	ARMISTEAD AVE	RIP RAP RD	23.02
CHES	I-64	WB	MILITARY HWY	I-264&664	19.51
SUF	I-664	NB	WESTERN FWY	COLLEGE DR	18.81
NOR	I-64	WB	BAY AVE	GRANBY ST	18.73
NN	I-664	SB	23RD ST	CHESTNUT AVE	17.53
PORT	I-264	EB	FREDERICK BLVD	DES MOINES AVE	17.50
CHES	I-64	EB	BATTLEFIELD BLVD	I-464	17.25
CHES	CHESAPEAKE EXPWY	NB	DOMINION BLVD	I-64	15.62
NOR	I-264	WB	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	15.35
HAM	I-64	EB	I-664	ARMISTEAD AVE	11.96
SUF	I-664	NB	BRIDGE RD	WESTERN FWY	9.67

Figure 95 – Roadway Segments on the Freeway System with the Highest Total Truck Delay, Weekdays, 2023
Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Data represents weekdays between 5 am – 7 pm.

Juris.	Facility Name	Direction	Segment From	Segment To	Total Truck Delay (hours per mile)
SUF	ROUTE 58 (HOLLAND RD)	WB	COVE POINT DR	SUFFOLK BYPASS	20.49
SUF	ROUTE 58 (HOLLAND RD)	EB	COVE POINT DR	SUFFOLK BYPASS	14.89
IW	ROUTE 460	WB	ROUTE 258	COURT ST (RTE 610)	14.06
NOR	HAMPTON BLVD	NB	BRAMBLETON AVE	21ST ST	13.46
NOR	HAMPTON BLVD	NB	21ST ST	26TH ST	13.37
NOR	NORTHAMPTON BLVD	SB	I-64	WESLEYAN DR/VA BEACH CL	12.41
IW	ROUTE 460	EB	ROUTE 258	COURT ST (RTE 610)	10.96
NOR	HAMPTON BLVD	SB	38TH ST	JAMESTOWN CRESCENT	10.63
NOR	HAMPTON BLVD	NB	26TH ST	27TH ST	10.19
NOR	HAMPTON BLVD	SB	27TH ST	38TH ST	9.21
VB	NORTHAMPTON BLVD	SB	WESLEYAN DR/NORFOLK CL	DIAMOND SPRINGS RD	8.67
NOR	HAMPTON BLVD	SB	BRAMBLETON AVE	21ST ST	8.61
SUF	PRUDEN BLVD	EB	LAKE PRINCE DR	KINGS FORK RD	8.28
SUF	PRUDEN BLVD	WB	LAKE PRINCE DR	KINGS FORK RD	8.16
NOR	NORTHAMPTON BLVD	NB	I-64	WESLEYAN DR/VA BEACH CL	7.90
CHES	GREENBRIER PKWY	SB	EDEN WAY	I-64	7.85
SUF	PRUDEN BLVD	WB	KINGS FORK RD	SUFFOLK BYPASS	7.01
NOR	HAMPTON BLVD	SB	21ST ST	26TH ST	6.41
VB	LONDON BRIDGE RD	NB	POTTERS RD	VA BEACH BLVD	6.04
CHES	GREENBRIER PKWY	NB	EDEN WAY	I-64	5.95

Figure 96 – Non-Freeway Roadway Segments with the Highest Total Truck Delay, Weekdays, 2023
Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Data represents weekdays between 5 am – 7 pm.

The corridor that has the highest weekday peak period truck delay in the region is the Hampton Roads Bridge-Tunnel (HRBT). Each weekday in 2023, there were nearly 300 truck-hours of delay in the HRBT corridor, with high delays occurring throughout the AM Peak Period, Midday Period, and PM Peak Period (**Figure 98**). Over the course of a year, this peak period truck delay amounts to over 70,000 hours at the HRBT. Using the American Transportation Research Institute's (ATRI) $91.27 national average commercial vehicle operating cost per hour, the peak period congestion costs for the HRBT corridor equates to $6.7 million annually for the trucking industry.

The I-64/High Rise Bridge corridor in Chesapeake had the second highest weekday peak period truck delay in 2023, at an average of 203 hours each weekday. This adds up to over 50,000 hours of delay and $4.6 million in congestion costs incurred by the trucking industry annually. Widening of this section of I-64 was completed in early 2024, so truck delays in this corridor have decreased significantly from the data shown in this report.

The high profile locations with the next highest truck delays and congestion costs are US Route 58/Holland Road in Suffolk, the Downtown Tunnel, the Monitor-Merrimac Memorial Bridge-Tunnel, and the Midtown Tunnel. Each of these facilities cost the trucking industry more than $1 million in congestion costs in 2023.

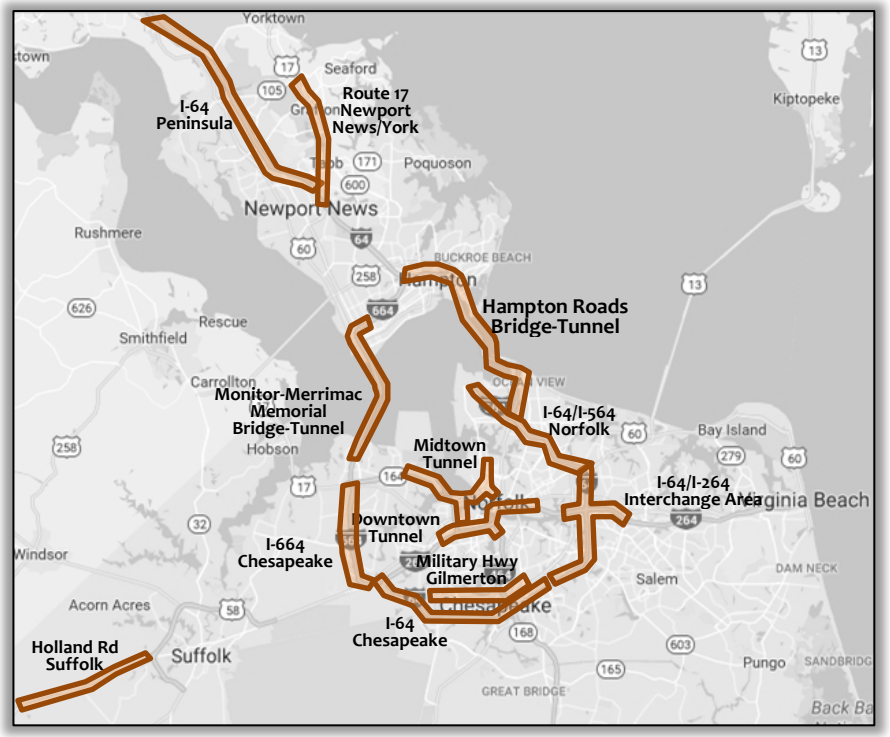


Figure 97 – High Profile Regional Corridors
Base Map Source: Google.

Some of these corridors have had improvements completed in recent years. In addition to I-64 in Chesapeake described above, projects have been completed over the last decade at the Midtown Tunnel, on Route 17 in York County, at the I-64/I-264 Interchange Area, and on I-64 on the Peninsula. In the previous Regional Freight Study, the I-64/I-264 Interchange area ranked 5th highest and the I-64 Peninsula corridor ranked 8th highest among these 12 High Profile Regional Corridors.

Corridor	AM Peak Period Truck Delay (hours)	Midday Truck Delay (hours)	PM Peak Period Truck Delay (hours)	Weekday Total Truck Delay (hours)	Annual Weekday Total Truck Delay (hours)	Annual Weekday Congestion Cost Incurred by Trucking Industry
HAMPTON ROADS BRIDGE-TUNNEL	83.4	101.2	109.7	294.2	73,550	$6,712,909
I-64 CHESAPEAKE	73.1	38.7	91.3	203.1	50,775	$4,634,234
HOLLAND RD - SUFFOLK	28.9	96.0	37.5	162.5	40,625	$3,707,844
DOWNTOWN TUNNEL	60.4	40.7	50.0	151.1	37,775	$3,447,724
MONITOR MERRIMAC MEM. BR.-TUNNEL	19.9	22.9	66.3	109.1	27,275	$2,489,389
MIDTOWN TUNNEL	29.5	21.6	7.4	58.6	14,650	$1,337,106
I-664 CHESAPEAKE	13.6	1.8	14.7	30.2	7,550	$689,089
ROUTE 17 - NEWPORT NEWS/YORK	2.9	12.9	7.1	23.0	5,750	$524,803
I-64/I-564 NORFOLK	7.0	2.7	8.8	18.6	4,650	$424,406
MILITARY HWY - GILMERTON	4.4	6.1	6.1	16.7	4,175	$381,052
I-64/I-264 INTERCHANGE AREA	4.9	1.7	8.3	15.0	3,750	$342,263
I-64 PENINSULA	2.4	2.1	0.8	5.4	1,350	$123,215

Figure 98 – Truck Delay in High Profile Regional Corridors, 2023
Source: HRTPO analysis of INRIX, VDOT, CBBT and SNJB data. Data represents weekdays between 5 am – 7 pm.

In addition, many of these corridors have projects currently underway or programmed in the next few years. Construction is underway at and approaching the Hampton Roads Bridge-Tunnel, with completion of the $4 billion project expected in 2027. A three mile section of Holland Road in Suffolk is also being widened to six lanes, with completion of the project in 2025.

Many of these ongoing and upcoming projects are funded through regional fees and taxes through the Hampton Roads Transportation Fund that is administered by the Hampton Roads Transportation Accountability Commission (HRTAC). These projects, which are referred to as the Highway Regional Priority Projects, are shown and described in **Figure 99**.

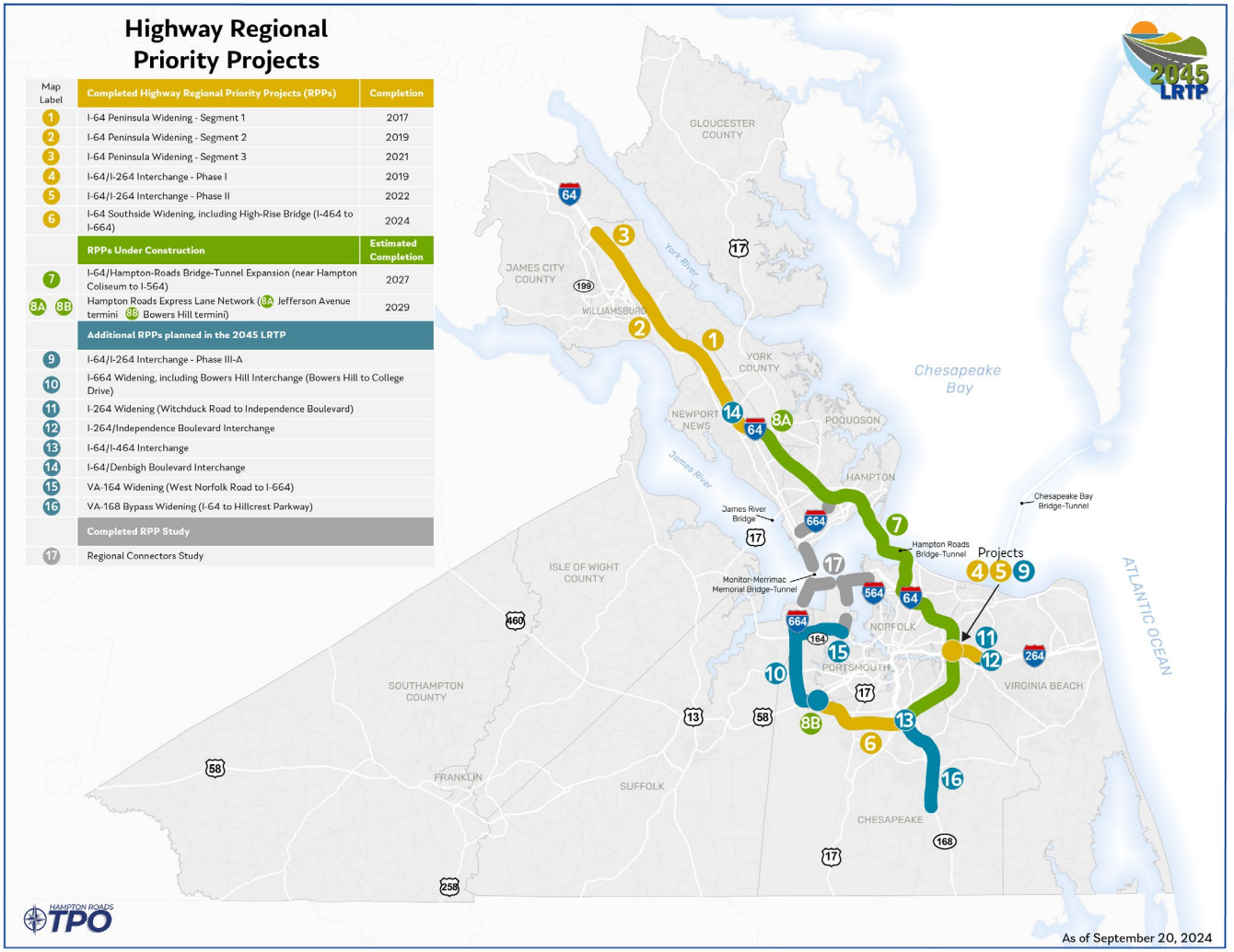


Figure 99 – Hampton Roads Regional Priority Projects
Source: HRTPO and HRTAC, as of September 2024.

Potential Future Highway Connections and Improvements

While I-64 provides the only limited-access gateway to Hampton Roads, there have been discussions regarding potential future highway connections. This section describes potential future highway connections to Hampton Roads and upcoming improvements to existing connections.

Interstate 64

Spanning from Richmond to the Peninsula and South Hampton Roads, I-64 has provided a limited-access gateway to the Hampton Roads region since the 1970s. Portions of I-64 have been widened on the Peninsula in recent years, largely using regional funds via the Hampton Roads Transportation Fund administered by the Hampton Roads Transportation Accountability Commission (HRTAC). Most recently, a total of 21 miles between Lightfoot (west of Exit 234) and Newport News near Jefferson Avenue (west of Exit 255) have been widened from 4 to 6 lanes, with construction on the last segment being completed in 2021.

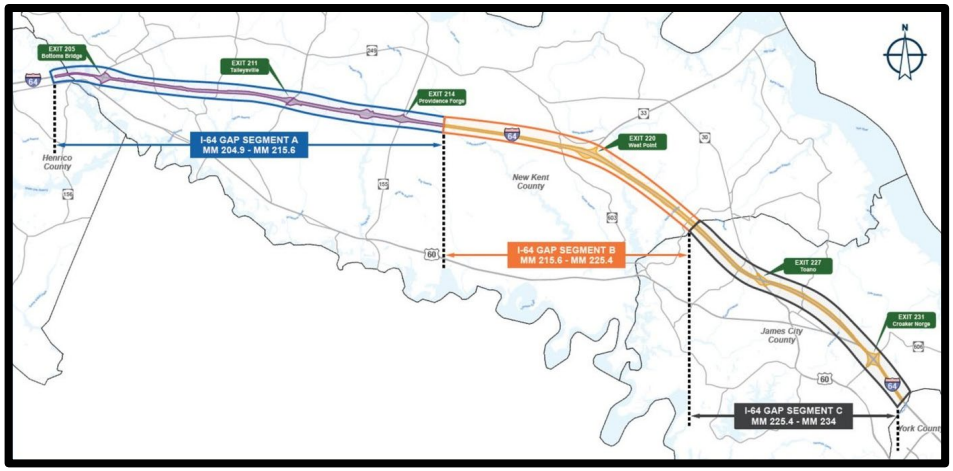


Figure 100 – I-64 Gap Widening Project
Source: VDOT.

After this 21-mile segment was completed, approximately 29 miles between Bottoms Bridge (Exit 205) and Lightfoot remain at 4 lanes. However, full funding has been obtained to widen this final section of the I-64 corridor from 4 to 6 lanes (**Figure 100**). Segment A – from Bottoms Bridge/Exit 205 to Providence Forge/Exit 214 – began construction in November 2023, and Segment C – New Kent/James City Line at Mile Marker 225 to Lightfoot/Exit 234 – began construction in November 2024. The final segment – Providence Forge/Exit 214 to the New Kent/James City Line at Mile Marker 225 (Segment B) – is expected to begin construction in 2025. Construction on this project is expected to be complete by Spring 2028.

Interstate 87

The FAST Act federal transportation legislation authorized a future Interstate designation for the corridor between Raleigh and Hampton Roads. In 2016, the American Association of State Highway and Transportation Officials (AASHTO) approved the Interstate 87 designation for the US Route 64/17 corridor from Raleigh to Hampton Roads via Rocky Mount, Williamston, and Elizabeth City in northeastern North Carolina (**Figure 101**).

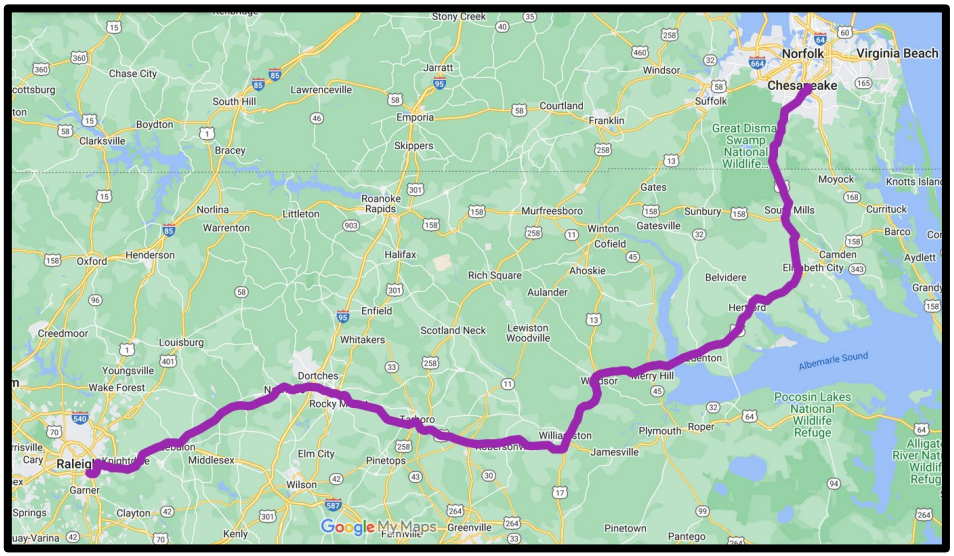


Figure 101 – Potential I-87 Interstate Corridor
Source: Transport Topics.

Presently, both US Route 64 and US Route 17 are at least four lanes throughout the entire corridor, but many sections of the corridor are not limited access and contain a number of signals and businesses along the roadway. As of 2025, the current status of the proposed I-87 corridor is shown in **Figure 102** and is described as follows:

- **Existing Interstate Segments** – A total of 13 miles (7% of the total corridor), between the western terminus at I-40 and Wendell, are currently signed as I-87.
- **Existing Freeway Standard Segments** – Five segments, comprising a total of 116 miles (59%), have been upgraded to freeway standards. Although most of this mileage is in North Carolina, one of these segments – Dominion Boulevard between Cedar Road and I-64 – is located in Virginia. While these segments are limited-access, improvements would need to be made to upgrade most of these segments to Interstate standards.
- **Non-Freeway Segments** - Four segments, comprising a total of 67 miles (34%), have uncontrolled access. These segments include portions of the corridor between Williamston and Windsor, Windsor and Edenton, and Edenton and Elizabeth City. The 27-mile section between the Elizabeth City Bypass and Cedar Road in Chesapeake also has uncontrolled access.

Funding has been allocated for upgrades to portions of the I-87 corridor, although additional funding in the billions of dollars still need to be allocated to completely upgrade the corridor to Interstate standards. The status of funding improvements to the I-87 corridor as of 2024 are as follows:

- **Completed Segments** – In addition to the 13 miles that are currently signed as I-87, another 20 miles of the corridor to the west of Williamston are built to full Interstate standards.
- **Fully Funded Segments** – Improvements to the Edenton Bypass (9 miles) are fully funded for construction. These improvements are primarily comprised of bridge and shoulder improvements.

Future I-87 Sign in NC

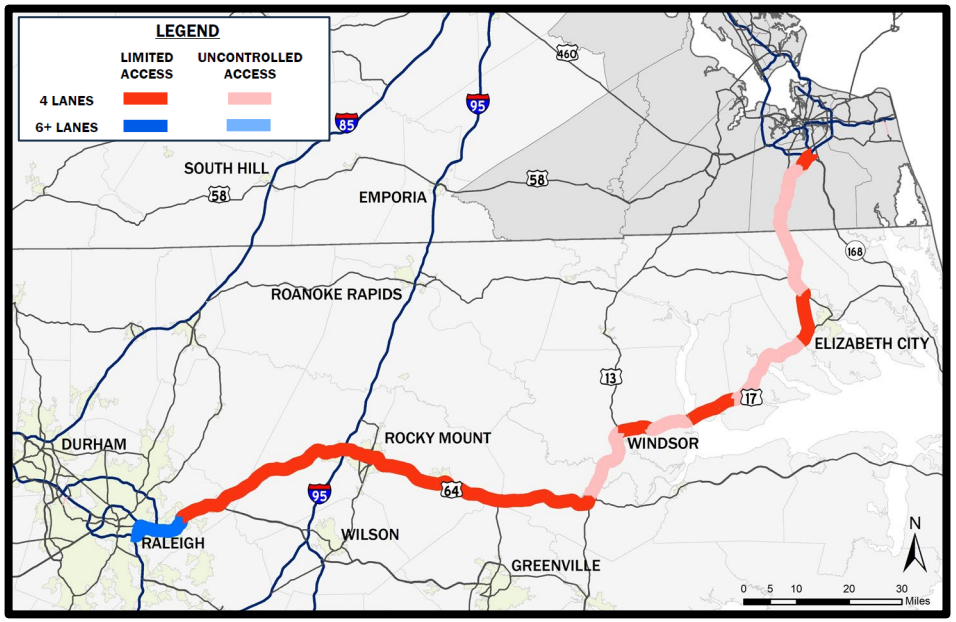


Figure 102 – Status of Potential I-87 Interstate Corridor
Source: HRTPO analysis of various sources.

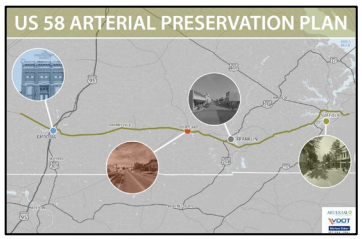
- **Partially Funded Segments** – A total of 80 miles of the corridor have partial funding in place to make improvements, although not to full Interstate standards. These segments include US Route 64 to the east and west of Rocky Mount and the uncontrolled access areas between Edenton and Elizabeth City and between Elizabeth City and the Virginia/North Carolina State Line. Most of this funding is allocated to making shoulder improvements.
- **Unfunded Segments** – A total of 74 miles of the corridor have no funding currently allocated for improvements. The entire portion of the corridor in Virginia currently has no funding in place for improvements.

While no funding is currently allocated to the Virginia portion of the proposed I-87 corridor, the project has been identified as a regional need and is be evaluated alongside other candidate projects during the development of the Hampton Roads 2050 LRTP.

US Route 58

US Route 58 is the second most heavily-used freight gateway to Hampton Roads. The corridor, which carried 4,600 trucks per weekday in 2023, provides access from Hampton Roads to I-95 at Emporia (68 miles from Bowers Hill) and I-85 at South Hill (104 miles from Bowers Hill). There are only a few sections of the corridor, however, that provide limited access. These limited access segments include bypasses around Suffolk (8 miles), Holland (1 mile), Franklin (9 miles), Courtland (4 miles), Emporia (2 miles), and Lawrenceville (4 miles). Other sections of Route 58, particularly in Suffolk, contain many access points and traffic signals.

There is currently no funding allocated to construct any additional limited-access portions to the US Route 58 corridor, nor are there any similar projects included in the Hampton Roads Long-Range Transportation Plan. A project was completed in 2025 to widen a three-mile portion of Route 58 in Suffolk from 4 to 6 lanes from west of Manning Bridge Road to the Suffolk Bypass. Additional funding has been allocated for smaller improvements at three intersections along US Route 58 in Southampton County.



Because of the importance of the Route 58 gateway to Hampton Roads, VDOT prepared an Arterial Preservation Plan for the Route 58 corridor from 2017-2019. The study – conducted as part of VDOT's Arterial Preservation Program – was developed to identify ways to ensure the safety and preserve the capacity of the US Route 58 Corridor, generally without wide-scale roadway widening or installation of additional traffic signals. The study area spans over 70 miles in length between the Greensville/Brunswick County Line and the Suffolk Bypass.

The study examined existing conditions including land use, infrastructure, access points, safety, traffic volumes, and a congestion analysis. The study also analyzed future socioeconomic data and travel patterns in order to project future traffic volumes and congestion levels in the corridor for the year 2040. Based on these existing and future conditions, a number of alternatives and recommendations were produced for locations throughout the corridor. These include removing and upgrading existing crossovers,


US Route 58 near Courtland

converting existing crossovers to a directional median to prohibit certain movements, improving shoulder widths, and replacing traditional intersections with alternative intersections and access management techniques.

As part of the study, a high-level analysis was also conducted on an alternative to relocate US Route 58 to a limited-access freeway facility. The analysis looked at two alternatives – "Improved Limited Access" which involves constructing a limited-access freeway on the existing alignment between Emporia and Suffolk, and "Interstate Facility", which involves constructing a new facility built to Interstate standards. According to the study, the costs would range between $720 million - $1.1 billion for the Improved Limited Access alternative, and between $2.3 billion - $3.5 billion for the Interstate Facility alternative. The Improved Limited Access alternative would be expected to result in an average travel time savings of 6 minutes to travel the corridor, while the Interstate Facility alternative would result in an average travel time savings of 13 minutes.

US Route 13

US Route 13 is another corridor that provides access between Hampton Roads and Northeast North Carolina. Although not currently a heavily-traveled corridor with only 6,000 vehicles per day at the Virginia/North Carolina State Line, this corridor – when also combined with NC State Route 11 – provides a shorter connection between Hampton Roads and I-95 at Rocky Mount than the proposed I-87 corridor, as shown in **Figure 103**.

The US Route 13/NC State Route 11 corridor is generally only one lane in each direction between US Route 64 near Bethel, North Carolina, and the Southwest Suffolk Bypass. A 7-mile section, between US Route 158 at Winton and US Route 158 at Tarheel, was widened to a divided 4-lane facility in 2015. However, no sections of this corridor between US Route 64 and the Southwest Suffolk Bypass are currently limited-access.

There currently is no funding allocated to improve sections of this corridor to a limited-access facility in either Virginia or North Carolina.

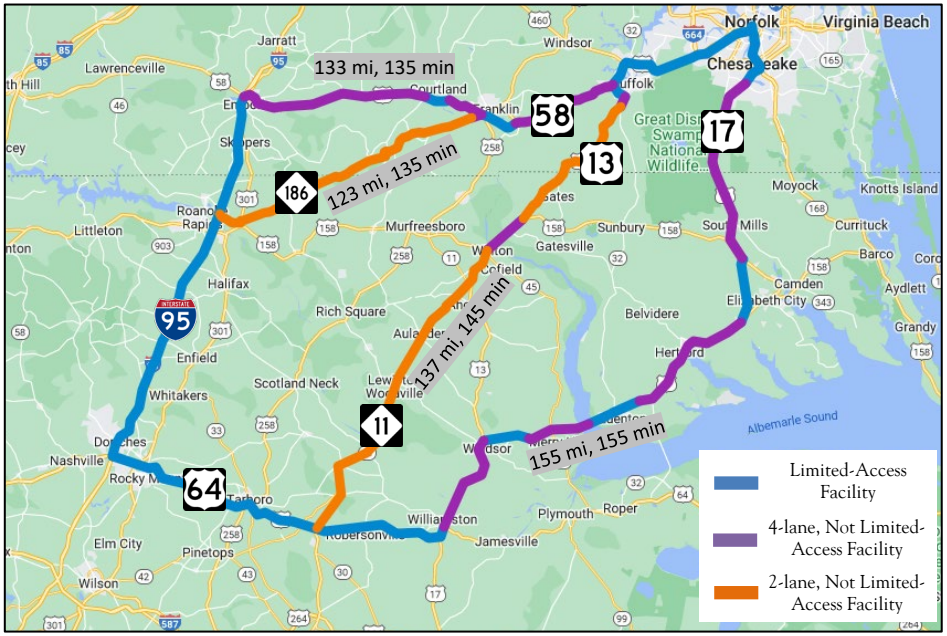


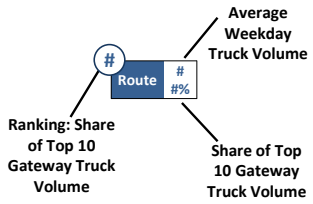
Figure 103 – Highway Types, Distances, and Average Travel Times Between Norfolk and Rocky Mount
Source: HRTPO.

Freight Gateways, Hubs, and Bottlenecks

In previous years, Port of Virginia and HRTPO staff have 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 includes the top freight employers in Hampton Roads, major freight development sites, top freight gateways, and the most congested truck bottlenecks. **Figure 104** is an updated version of the previous maps and includes the most recent data and results from this version of the Hampton Roads Regional Freight Study.

Freight Gateway

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



Source: HRTPO.

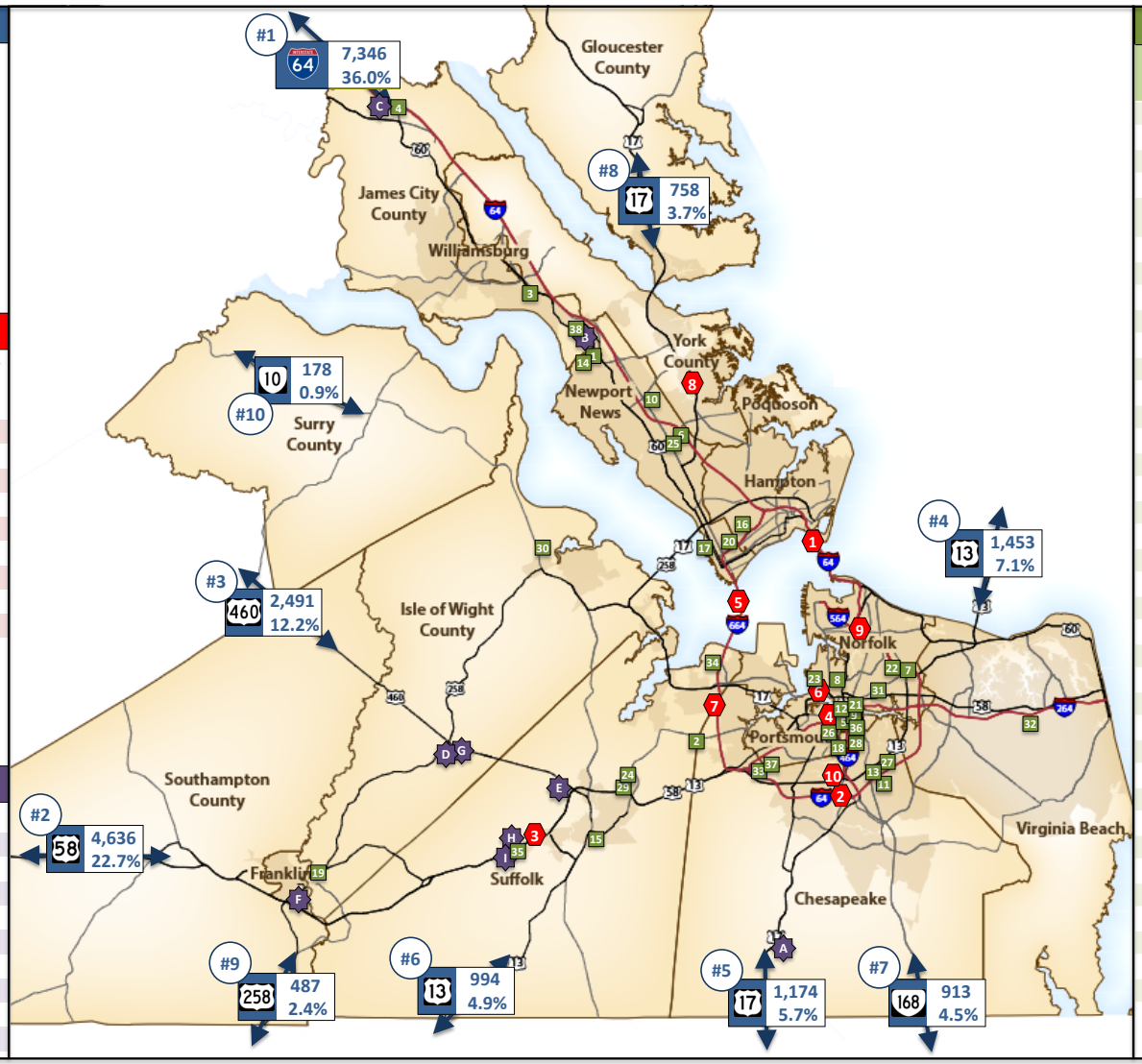
Truck Bottlenecks

Top 10 Existing Weekday Truck Delay Locations	2023 Weekday Total Truck Delay (hours)
Hampton Roads Bridge-Tunnel	294.2
I-64 (Chesapeake)	203.1*
Holland Rd (Suffolk)	162.5
Downtown Tunnel	151.1
MMMBT	109.1
Midtown Tunnel	58.6
I-664 Chesapeake	30.2
Route 17 (Newport News/York)	23.0
I-64/I-564 (Norfolk)	18.6
Military Hwy/Gilmerton Bridge	16.7

Source: HRTPO.

Major Freight Development Sites

Map ID	Site Name
A	Coastal VA Commerce Park (Williams Tract)
B	Green Mount Logistics Center
C	Lovett 64 Commerce Center
D	Norfolk Southern Site
E	Port 460 Logistics Center
F	Pretlow Industrial Park
G	Shirley T. Holland Intermodal Park
H	Virginia Port Logistics Park
I	Westport Commerce Park



Top Freight Employers

Map ID	Employer	# of Employees
1	AAFES Dan Daniel Dist. Cent.	1000+
2	Amazon	1000+
3	Anheuser-Busch Inbev Inc.	250-499
4	Avid Medical	250-499
5	BAE Systems Norfolk Ship Repair, Inc. (Norshipco)	1000+
6	Canon Virginia, Inc.	500-999
7	CMA-CGM America, Inc	500-999
8	Coca Cola Bottling Company	250-499
9	Colonnas Shipyard, Inc.	500-999
10	Continental Powertrain LLC	500-999
11	Dollar Tree/Greenbrier Dist.	250-499
12	General Dynamics NASSCO	500-999
13	Givens Logistics	251-500
14	High Liner Foods	250-499
15	Hormel Foods – Planters	250-499
16	Howmet Aerospace	500-999
17	Huntington Ingalls Industries	1000+
18	IMIA	250-499
19	International Paper Co.	250-499
20	Liebherr Mining Equipment	500-999
21	Lyon Shipyard	250-499
22	Maersk Line Limited	500-999
23	Marine Hydraulics Intl.	250-499
24	Massimo Zanetti Beverage	250-499
25	Newport News Industrial Corp	250-499
26	Norfolk Naval Shipyard	1000+
27	Oceaneering International	250-499
28	Plasser American Corp	250-499
29	QVC Suffolk, Inc.	500-999
30	Smithfield Packing Co.	1000+
31	SpartanNash	250-499
32	STIHL	1000+
33	Sumitomo Machine Corp	250-499
34	Sysco Food Services	250-499
35	Target Import Warehouse	1000+
36	Tecnico Corporation	250-499
37	USUI International Corp	250-499
38	Walmart Import Warehouse	1000+

Source: Hampton Roads Alliance. Hampton Roads Major Employers (Manufacturing, Distribution, Transportation, and Logistics)

Figure 104 – Hampton Roads Freight Gateways, Hubs, and Bottlenecks

Issues Related To Truck Movement

Moving cargo via trucks is not conducted without challenges potentially impacting the process. This section discusses the issues that are associated with freight truck movements.

Driver Shortage

While the lack of truck drivers is not a new phenomenon in the United States, the shortage of truck drivers has worsened in recent years. According to the American Trucking Associations (ATA), the United States was short of roughly 60,000 truck drivers in 2023 – a slight improvement from its two highest levels of truck driver shortages on record at 81,000 in 2021 and 78,000 drivers in 2022.

Why truck driver shortages occur is not based on one single, unique cause. Multiple factors can lead to any particular driver shortage including the following:

- **Aging workforce** – According to ATA, the average age of a truck driver is 46 years old, which is higher than the median age of men in the U.S. labor force of 41.7 years. The higher average age of current, qualified drivers results in a larger number of retiring drivers.
- **Demands of the profession** – Being a truck driver is a demanding profession, especially for those who are long-haul drivers. Long hours on the road and time spent away from home can lead truck drivers seeking other employment opportunities.
- **Infrastructure issues** - Faced with the lack of truck parking spots, truck drivers may feel obligated to stop driving earlier in the day in order to obtain a parking spot for the night.
- **Inability to meet driver requirements** – Factors such as meeting the minimum driving age, driving history, criminal background history, and passing a drug test may make individuals ineligible to be truck drivers.
- **Lack of appeal** – According to the US Bureau of Labor Statistics, women represented approximately 55% of the workforce in the United States in 2023; however, women only made up approximately 7% of all truck drivers that year.

Despite observing improvements in the truck driver shortage, ATA estimates that an additional 1.2 million truck drivers are needed over the next decade to combat the aging workforce and turnover rate of current drivers.

Lack of Digitized Operations

Transporting cargo is a time-sensitive activity typically with many moving parts involved. Although digitized tools are available to help with the logistics of transporting cargo, some freight forwarders choose to do so without digitizing operations. Transporting cargo heavily relies on having good quality freight status information. For freight forwarders, who are third party companies that help organize and coordinate the shipment of goods from one place to another, transporting cargo without digitized tools may have limited access to the real time freight data – potentially leading to unwanted events occurring at higher frequencies (e.g., cargo delays, unclear order status, and stolen goods). Customers also want to know the status of their shipments. As such, customers may favor going with a freight forwarder who can provide real time data to them. When freight operations lack efficiency, they yield higher cost margins.

Electronic Logging Devices (ELD)

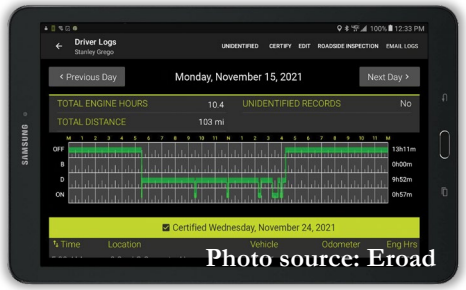


Photo source: Eroad

As part of federal legislation, truck drivers must adhere to the Electronic Logging Device (ELD) rule as of 2019, which requires the use of electronic logging devices (instead of paper logs) to maintain records of duty status (RODS). While the intent of this rule is to help create a safer work environment for drivers, opinions of the rule are mixed. Defenders of the rule think that it provides clear guidelines regarding the Hours of Service (HOS) or the maximum time drivers can be on the roads driving – ultimately creating opportunity to build a healthy balance between work and rest. It also eliminates the need to manually account for the RODS, thereby saving time and removing human error in the process. For critics, the rule is too strict as drivers may easily run over their legal driving limit and deemed to be in violation of the rule regardless of whether conditions were out of their control, such as driving in heavy congestion or waiting in long lines at ports.

Advancing Technology in Freight Transportation

Advances in a wide range of technologies are leading to rapid changes in logistics and freight transportation. These advances potentially can transform the freight transportation industry by increasing safety and efficiency, altering supply chains, and creating disruptive business models. The technological advancements can be divided into the following groups:

1. **Automation and Connectivity –** Automation is the application in making a process or a task operate with minimal human intervention. Regarding vehicle operation, automation varies based on the level of driver assistance needed (**Figure 105**). With the use of different technologies including sensors, cameras, wireless infrastructure, mapping systems, and artificial intelligence, transporting goods through autonomous means is becoming more of a reality for the freight industry.

Figure 105 – SAE International Levels of Driving Automation

Vehicle automation technologies, such as adaptive cruise control and automatic emergency braking systems, are common in new truck models today. More advanced automation capabilities, such as truck platooning, are being piloted. Truck platooning uses wireless connectivity and automation technology to allow a lead vehicle to communicate its acceleration or deceleration to a following vehicle, which can synchronize speeds automatically and reduce their following distance. Platooning can lead to improved safety, lower operating costs and better fuel efficiency.

Currently, there are significant technological and institutional barriers to the widespread adoption of highly automated trucks. However, companies are making significant investment in research and development in this area. USDOT is facilitating the new era of transportation innovation and safety by acting as a convener and facilitator, partnering with a broad coalition of industry, academic, state and local, safety advocacy, and transportation stakeholders to support the safe development, testing, and integration of automated vehicle technologies. USDOT has developed a number of plans to support this effort, including the *Automated Vehicles Comprehensive Plan* in 2021.


Photo Source: Handler, Henning & Rosenberg LLC

2. **Advancing Information and Communication Technologies –** Logistics companies are leveraging Internet of Things (IoT) technologies to digitize and ultimately improve supply chain operations. IoT refers to interconnection of physical devices that are embedded with sensors, software, and network connectivity, allowing for the collection and exchanging of data. In terms of the freight industry, IoT enables real-time tracking of shipments, providing up-to-the-minute location data. Additionally, companies using IoT devices such as Radio Frequency Identification (RFID) tags and sensors can automate inventory tracking and management, resulting in a more accurate assessment of inventory stock levels and intermodal facility capacity. By integrating IoT into their operations, companies can receive data on vehicle performance regarding location, speed, route efficiency, and vehicle maintenance needs.

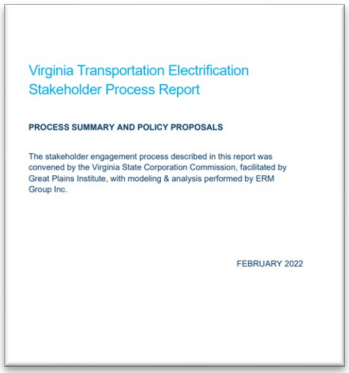
3. **Electric and Alternative Fuel Vehicles –** Over the years there has been a push to move towards truck electrification in the freight industry. Between 2020 and 2023, nearly 13,000 medium-duty and

heavy-duty electric trucks were put into service across the United States according to the Environmental Defense Fund. With zero tailpipe emissions, mass electrification of trucks can help reduce the release of air pollutants into the atmosphere. According to the Environmental and Energy Study Institute, integrating zero-emission trucking could prevent 66,800 premature deaths, 1.75 million asthma attacks, and 8.5 million lost workdays between 2020 and 2050. Additionally, truck electrification may provide lower operating costs given that electricity prices are cheaper and more stable than their fossil fuel counterparts.

It should be noted that there are many challenges associated with adopting heavy-duty electric trucks. Currently, heavy-duty electric trucks are more expensive than their diesel-powered counterparts – costing more than twice as much in upfront vehicle costs. Additionally, there are concerns regarding the potential shortfalls in the transporting capabilities of heavy-duty electric trucks, specifically on their hauling distances before a charge is needed and hauling capacity, due to limitations associated with cargo load volumes as companies would need to factor in the weight of the battery needed to power the trucks. There are also concerns regarding whether the electric grid and its infrastructure could handle the charging demand.

A newer alternative from conventionally powered trucks is hydrogen-fueled trucks. Instead of igniting gasoline or diesel, the engines in hydrogen-fueled trucks combust hydrogen gas, resulting in zero tailpipe emissions and water being the only byproduct. An advantage of hydrogen-fueled trucks is that their refueling speed is similar to traditional diesel refueling times. According to the US Department of Energy, hydrogen gas is very lightweight and has nearly three times the energy content of gasoline. As such, using hydrogen fuel cells can be a well-suited fuel alternative for long-haul truck trips.

Challenges do exist with the mass adoption of hydrogen-fueled trucks. Similar to heavy-duty electric trucks, hydrogen-fueled trucks have higher upfront investment costs compared to conventional diesel-powered trucks. Additionally, the limited refueling infrastructure is a major hurdle to overcome in the mass adoption of hydrogen-fueled trucks as this infrastructure is not as widespread as electric vehicle charging infrastructure.



Efforts to support truck electrification and other alternative fuel vehicles (AFV) have been seen at the nationwide, state, and regional levels. On the state level, The Virginia Transportation Electrification Stakeholder Process Report, facilitated by Great Plains Institute, with modeling and analysis performed by ERM Group Inc., summarizes the result of a stakeholder engagement process that was convened to develop policy proposals for accelerating transportation electrification in the Commonwealth of Virginia. The report outlines possible policy proposals that could govern public electric utility programs to accelerate widespread transportation electrification in Virginia. The report states that investments are needed to support port, airport, and truck stop electrification infrastructure.

The Port of Virginia is making strides towards reaching its goal of eliminating all greenhouse gas emissions by 2040 through the purchasing and installation of electric equipment and infrastructure to support its operations – thereby making it the US East Coast's first net-zero port. Using funding received from the US Environmental Protection Agency's Clean Ports grant program, the Port of Virginia is retiring more than 150 pieces of legacy equipment that are powered by gasoline or diesel fuel. Among the equipment and infrastructure improvements, the Port will further develop its battery charging infrastructure and energy storage for expanding zero-emissions operations.

4. **Alternative Delivery Methods and Emerging Freight Technologies –** Freight companies are exploring a variety of innovative approaches to meet last-mile challenges, including alternative delivery methods such as bikes, delivery robots, drones, and hyperloops.

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.

In December 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).

On November 15, 2021, President Biden signed into law the Bipartisan Infrastructure Law (BIL), also referred to as the Infrastructure Investment and Jobs Act (IIJA). The largest long-term investment in the infrastructure and economy of the United States, this legislation provides $350 Billion over the five-year period Fiscal Years 2022 through 2026. The BIL reauthorizes funding sources including the NHFP that help address freight transportation needs. More information on the NHFP is provided later in this report.

Given the economic contributions that freight activities provide to the Hampton Roads region and beyond, the HRTPO understands the importance and need for freight planning and coordination with statewide and local freight stakeholders and the need to continue highlighting freight planning efforts through 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 VTrans Freight Element, the Commonwealth's state freight plan within the 2022 VTrans Virginia Transportation Plan[20]. Over the past two decades, VDOT has purchased and provided commodity flow data (e.g. 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 in coordination with the Virginia Office of Intermodal Planning and Investment (OIPI). 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.

In an effort to ensure that freight is considered continuously and comprehensively, the Virginia Secretary of Transportation established a

[20] *VTrans: Virginia's Transportation Plan,* Prepared by Office of Intermodal Planning and Investment for the Commonwealth Transportation Board, July 2022.

statewide Freight Advisory Committee (FAC) in 2020. The FAC provides a forum to communicate and engage with public and private partners to understand needs, inform policy, and advocate for freight to achieve a dynamic transportation system that creates economic opportunity for Virginia and the nation. An FAC member provides regular updates at HRTPO Freight Transportation Advisory Committee (FTAC) meetings.

Below is a description of major statewide freight planning 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 direction to transportation agencies on strategies and programs to be incorporated into their plans and programs. VTrans2025—the first plan—was completed in 2004. The 2022 VTrans Virginia Transportation Plan[21] is the latest statewide transportation plan.

The Commonwealth Transportation Board identifies needs for the following two planning horizons:

- **Mid-term Planning Horizon:** VTrans' analysis for the mid-term planning horizon identifies some of the most pressing transportation issues that need to be addressed over the next 10 years. These needs are referred to as VTrans Mid-term Needs. The needs are identified so that they can inform or guide transportation policies, strategies, and infrastructure improvements developed and implemented by the Virginia Department of Transportation (VDOT) and the Department of Rail and Public Transportation (DRPT), as well as local and regional entities.
- **Long-term Planning Horizon:** VTrans' analysis for long-term planning identifies risks and opportunities for a 20-plus-year planning horizon that may require gradual and systematic shifts in policy

Additional information on VTrans is found here: https://vtrans.virginia.gov/.

[21] *VTrans: Virginia's Transportation Plan,* Prepared by Office of Intermodal Planning and Investment for the Commonwealth Transportation Board, July 2022.

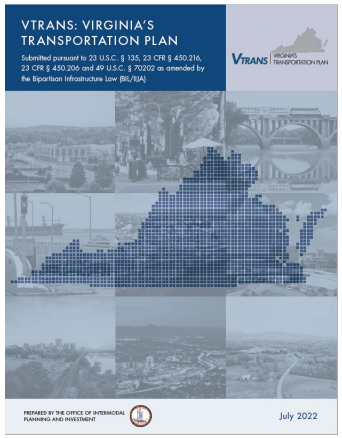
VTrans Freight Element

The VTrans Freight Element is the Commonwealth's state freight plan and is included as Chapter 4.4 within the 2022 VTrans Virginia Transportation Plan. The Freight Element provides a cohesive planning approach, which relies on the VTrans Mid-term Needs as a common base from which to identify freight-specific issues. VTrans, as the State Transportation Plan, includes a Freight Element which reflects how freight considerations are already included in decision making through established Board policies.

The VTrans Freight Element serves a wide range of planning purposes:

- Informing decision-making and substantive change by potentially integrating greater consideration of freight into future updates of the Policy for the Identification and Prioritization of VTrans Mid-Term Needs.
- Increasing education and awareness of freight movement, and the opportunities and challenges that may directly or indirectly impact the flow of freight within and through the Commonwealth.
- Providing capacity-building opportunities for local and regional partners by providing data, tools and knowledge in an accessible manner.

The Commonwealth of Virginia and all Virginians benefit from improvements in freight flows through greater efficiency and reduced congestion on major highways and streets. More efficient freight movement means lower transportation costs for industries and businesses that depend on freight transportation, helping them (and Virginia's economy) to grow and prosper, which makes Virginia a more attractive place to live and do business.



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.

The FTAC consists of nine members, largely from private industry, and the Chair of the FTAC serves as a non-voting member of the HRTPO Board. HRTPO staff primarily handles the administration of FTAC, and staff from the Virginia Port Authority works in partnership with the HRTPO to advise and support the administration of the Committee.

FTAC has completed many important activities and achievements. A sample of recent activities and achievements include:

- Produced a video presenting the importance of freight, "A Region United".
- Passed a resolution supporting a future Interstate designation for the Hampton Roads to Raleigh Highway Corridor.
- Requested and assisted with the study – "Economic Assessment of Tolls on Freight Transportation in the Hampton Roads Region".
- Provided assistance with updates to the Hampton Roads Long-Range Transportation Plan (LRTP). This includes assisting with defining truck zones, providing input on scenario narratives, providing ideas for candidate projects, assisting with project prioritization methodology, reviewing draft prioritization scores, identifying those projects that would have the most benefits for freight movement, and endorsing the finalized list of fiscally-constrained projects.
- Provided input and technical guidance to HRTPO staff for various planning efforts such as the Regional Freight Study and other freight-related studies.
- Requested and assisted with the Hampton Roads Rail Crossing Study.
- Conducted a session on multi-modal opportunities for freight at the 2024 Virginia Governor's Transportation Conference.

More information on the FTAC is available at:
https://www.hrtpo.org/483/Freight-Transportation-Advisory-Committee

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 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. Many measures, such as reduced congestion, improved regional travel times, and improved access, provide general benefits to freight movement. However, a number of criteria are specific to freight movement. These freight-specific criteria are:

Highway/Interchange Projects and Bridge/Tunnel Projects

Project Utility
- Truck Travel Time Reliability – 5 points
- Unimpeded Commercial Maritime/Rail Traffic (Bridge/Tunnel projects only) – 1 point

Economic Vitality
- Project Significantly Reduces Travel Times for Trips to Ports (Truck Delay) – 5 points
- Project Improves Access to Truck Zones – 5 points

Project Viability
- Project Reduces Traffic Delay at Congested Locations with a High Percentage of Truck Traffic – 2 points

Intermodal Projects

Project Utility
- Better Accommodates Intermodal Movements – 30 points
- Improves Rail/Vehicular Access – 30 points
- Travel Time Reliability, including Truck Travel Time Reliability – 15 points
- System Continuity and Connectivity – 15 points
- Modal Enhancements – 10 points

Economic Vitality
- Reduction in Regional Travel Time and Delay – 30 points
- Labor Market Access, including Impacts on Truck Movements – 20 points
- Improves Interaction Between Modes of Travel for Basic Sector Industries – 20 points
- Increased Opportunity – 30 points

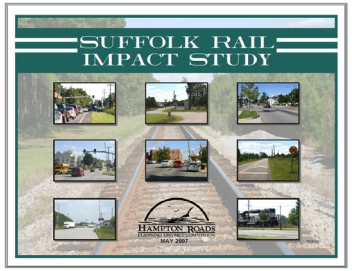
Project Viability
- Readiness, land use compatibility, environmental considerations, cost effectiveness – 100 points

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 Intermodal Management System/Regional Freight Study report in 1996. Updates to the Hampton Roads Regional Freight Study were released in 1998, 2001, 2007, 2012, and 2017. 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

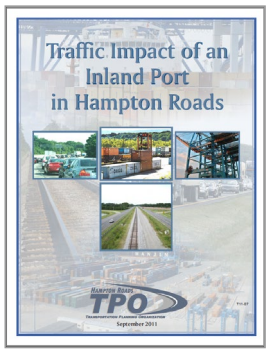
Suffolk Rail Impact Study (2007)



This study analyzes the impacts to 31 at-grade highway-rail crossings in Suffolk 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.

Click here to view the report

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



The 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. There would 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%, and there would be very little change in regional congestion levels.

Although volumes and congestion levels would not be expected to significantly change, the goal of inland ports are generally to better serve the freight needs of the population and to create additional economic growth in the area.

Existing and Future Truck Delay (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 (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.

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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 (2015)

[Click here to view the report]

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:

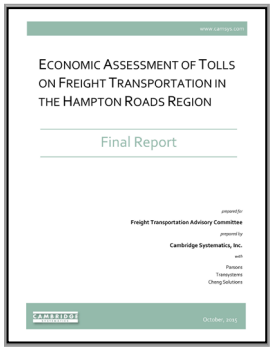
- I-64 Peninsula Widening (including Segments 1-3 and Fort Eustis Blvd Interchange)
- I-64 Southside Widening (including replacement of High Rise Bridge)
- I-64/I-264 Interchange (including Witchduck Rd Interchange)
- Route 58 (Holland Rd)
- Third Crossing (including Patriots Crossing, Craney Island 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)

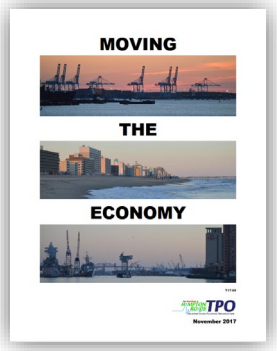
In response to freight industry concerns regarding tolling as a funding mechanism from improving and expanding existing infrastructure, FTAC, with the support from VDOT and the HRTPO, commissioned a study to examine the economic implications of proposed highway improvements and the use of tolls to fund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

Major findings from the study include:



[Click here to view the report]

- 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 to fund them is about $174 million in 2040.
- Both tolls and congestion costs impact local trips more than 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.
- 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.



Moving The Economy (2017)

HRTPO staff prepared this study to examine how well the Hampton Roads transportation system serves all three of the region's key economic sectors: port, military, and

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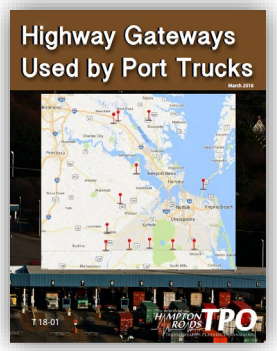
hospitality. To do so, HRTPO staff compared how local transportation serves a given economic facility/area in Hampton Roads (e.g. NIT) to how local transportation serves other similar facilities/areas on the east coast.

Examples of the study's key takeways include:

- Highways and land-use provide the ports in Hampton Roads with 2 and 4 hour service areas greater than those of the ports of Charleston and Savannah, but significantly less than that of the port of New York.
- When considering ports and their companion inland ports (where applicable), the Port of Virginia serves more population within 8 highway hours than any other east coast port.
- Applying HRTF funding to the widening of I-64 on the Peninsula and the HRBT will greatly reduce the congestion experienced by port trucks using the primary truck gateway in Hampton Roads.
- The Commonwealth Railway serving VIG has fifteen (15) at-grade roadway crossings.
- The 35,000 vehicles of Hampton Blvd crossing the railroad tracks serving NIT near its gate creates a considerable conflict of modes.
- The Port of Virginia—like the Port of Charleston and the Port of Savannah—has on-dock rail and double-stack capability for two railroads, whereas the Port of New York & New Jersey's capabilities differ by individual port facility.

Highway Gateways Used by Port Trucks (2018)



HRTPO staff prepared this study to inform the HRTPO Board which highway routes port-related trucks primarily use to enter and exit Hampton Roads. The HRTPO can use this information as input to its decisions when planning and funding highway improvements with an eye to helping port operations. HRTPO staff plans to use the study results to inform the scoring of candidate projects under the HRPTO Project Prioritization Tool, and to provide the study results as input for major regional studies currently being conducted by HRTPO and VDOT.

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Hampton Roads Rail Crossing Study (Ongoing)

The Port of Virginia (POV) is one of the most important drivers of the Hampton Roads economy. However, the waterways and railroads that support the Port of Virginia also create a number of intermodal conflict points, which are locations in the transportation system where one mode crosses – and impedes – the flow of another mode.

The most common intermodal conflict point is where roadways and railroads intersect. These highway-rail crossings can cause not only extensive delays for roadway travelers but can also contribute to collisions between trains and vehicles each year. There are over 600 crossings throughout Hampton Roads, nearly 500 of which are at-grade.

Based on new federal funding opportunities and the importance of freight movement to the Hampton Roads economy, HRTPO staff are working on a regional Rail Crossing Study to prepare and better position the region for future funding opportunities. The study will include an inventory of all rail crossings in the region, regional summaries related to crossings, identifying areas isolated by rail crossings, rail crossing projects, prioritization of at-grade crossings, recommended improvements for prioritized locations, and information required for federal funding programs.

HRTPO staff, in coordination with the FTAC and other committees, recently developed an at-grade rail crossing prioritization methodology based on various factors including traffic volumes, safety, roadway characteristics, train volumes, estimated delay, and area factors. HRTPO staff used this methodology to develop a prioritized list of the 307 public, at-grade crossings in the region.

The Hampton Roads Rail Crossing Study will be completed by the HRTPO in 2026.

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

National Freight Planning Efforts and Funding Sources

This section examines various 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) released the newest version of the National Freight Strategic Plan (NFSP) in September 2020, which defines the USDOT's vision and goals for the Nation's multimodal freight system and defines strategies to achieve those goals. The NFSP was developed through a multi-agency effort involving extensive consultation with freight stakeholders in both the public and private sectors. The NFSP will be used to:

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- Inform infrastructure planning, coordinate investments, and support future freight efficiencies.
- Provide a framework for increased cross-sector, multijurisdictional, and multimodal coordination and partnership.
- Identify freight data needs to support improved decision-making.

The vision of the NFSP is as follows:

The freight transportation system of the United States will strengthen our economic competitiveness with safe and reliable supply chains that efficiently and seamlessly connect producers, shippers, and consumers in domestic and foreign market.

The NFSP supports the mission, strategic goals, and priorities of the USDOT. The strategic goals of the USDOT's National Freight Policy are as follows:

1. **Safety** – Improve the safety, security, and resilience of the national freight system. To meet this goal, the DOT will pursue activities in support of the following strategic objectives:
    a. Support the development and adoption of automation, connectivity, and other freight safety technologies
    b. Modernize safety oversight and security procedures
    c. Minimize the effects of fatigue and human error on freight safety
    d. Reduce conflicts between passenger and freight traffic
    e. Protect the freight system from natural and human-caused disasters and improve system resilience and recovery speed

2. **Infrastructure** – Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life. To meet this goal, the DOT will pursue activities in support of the following strategic objectives:
    a. Fund targeted investments in freight capacity
    b. Improve considerations of freight in transportation planning
    c. Prioritize projects that improve freight intermodal connectivity, and enhance freight flows on first- and last-mile connectors and at major trade gateways
    d. Advance freight system management and operation practices
    e. Improve job growth and economic competitiveness in rural and urban communities
    f. Mitigate the impacts of freight movement on communities

3. **Innovation** – Prepare for the future by supporting the development of data, technologies, and workforce capabilities that improve freight system performance. To meet this goal, the DOT will pursue activities in support of the following strategic objectives:

a. Support the development and adoption of automation and connectivity, including Vehicle-to-Everything (V2X) technologies
b. Support the safe deployment of unmanned aircraft systems (UAS) technology
c. Streamline regulations to improve governance, efficiency, and economic competitiveness
d. Improve freight data, modelling, and analysis tools and resources
e. Strengthen workforce professional capacity
f. Invest in freight research
g. Support regulatory frameworks that foster freight innovation

More information on the National Freight Strategic Plan is available at https://www.transportation.gov/freight/NFSP.

National Multimodal Freight Network

In addition to the National Freight Strategic Plan, federal legislation also requires the establishment of a National Multimodal Freight Network (NMFN). This network, according to federal legislation, 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

FHWA released the "Interim National Multimodal Freight Network" in 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. By law, the PHFS consists of 41,800 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.
- **Critical Rural and Urban Freight Corridors –** Federal legislation 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 should provide connections between the PHFS 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, 154 miles are designated as CRFCs and 83 miles are designated as CUFCs.
- **Rail –** The NMFN includes all railroads that are classified as Class I and smaller Class II and Class III railroads designated by USDOT as critical to interstate commerce. CSX and Norfolk Southern are Class I railroads that provide service in Hampton Roads. The Interim NMFN includes just over 100,000 miles of rail nationwide and 2,800 miles in the state of Virginia.
- **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 29,000 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.

In spite of being referred to as "interim", the Interim NMFN was in place from 2016 through 2024. In April 2024, USDOT published a Request for Information regarding Designating the National Multimodal Freight Network. Comments were due in June 2024, and HRTPO – in consultation with the FTAC – provided comments to USDOT.

Based on comments gathered during the Request for Information, USDOT released the "Draft National Multimodal Freight Network" in January 2025. The Draft NMFN for the Hampton Roads area is shown in **Figure 106**. As of March 2025, the national Draft NMFN consists of:

- 78,274 miles of highway
- 80,309 miles of rail
- 21,329 miles of marine highways
- 140 port facilities
- 65 airports

There are a few notable differences in Hampton Roads between the previous Interim NMFN and the new Draft NMFN. Additional roadways were added to the network, including US Routes 13, 58, and 460 approaching and throughout Hampton Roads. The Commonwealth Railway was also added, connecting the Class I railroads with the Virginia International Gateway marine terminal.

Once the review period for the Draft NMFN is complete and an updated Draft NMFN is released, states will have the opportunity to submit additional designations to the network through consultation with MPOs, state Freight Advisory Committees, and owners and operators of freight infrastructure. States will be able to recommend up to an additional 30% of mileage within each mode be added to the network.

The Final National Multimodal Freight Network is expected to be released in 2026. Moving forward, the USDOT will be required to redesignate the NMFN every 5 years.

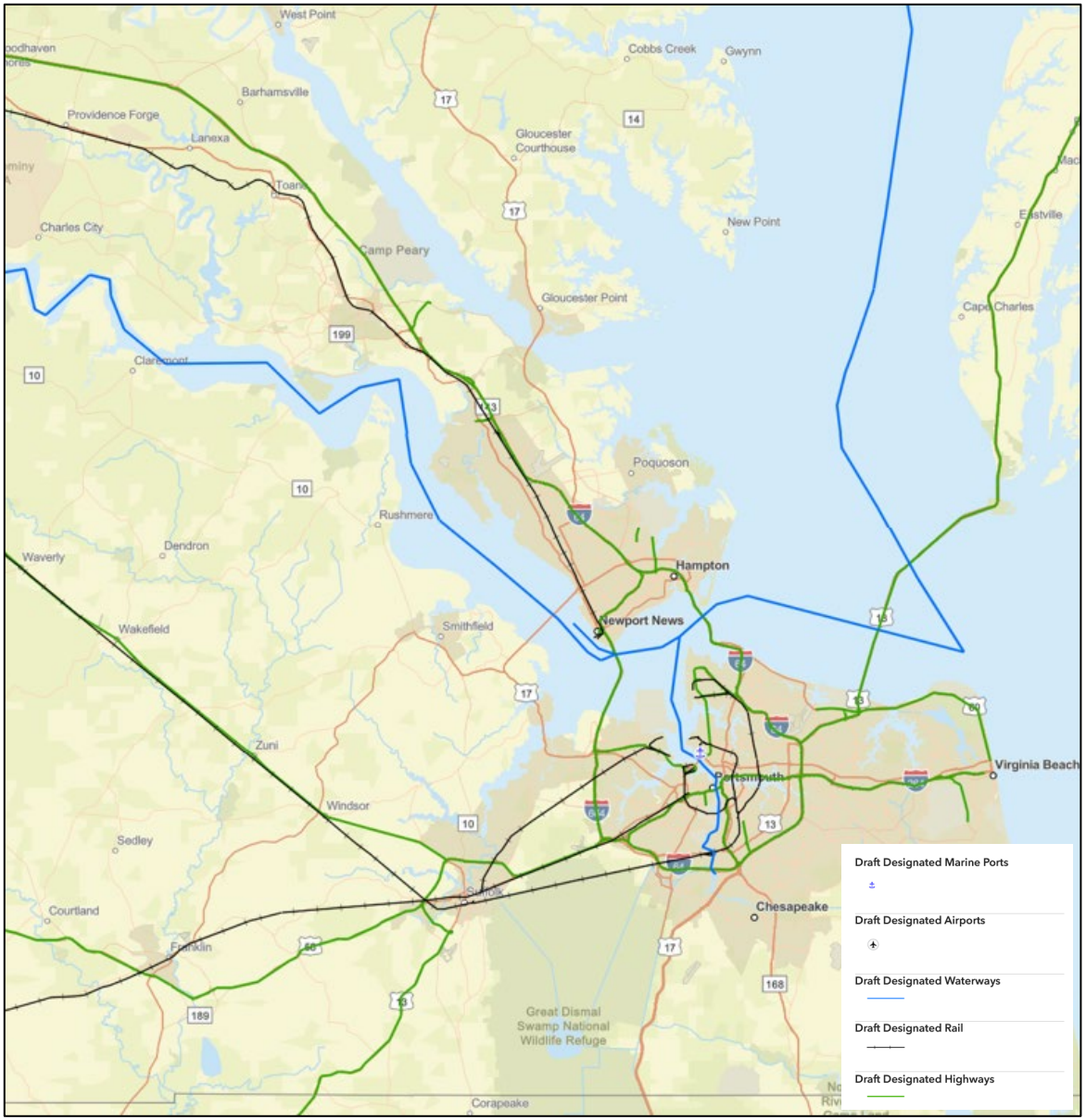


Figure 106 – Draft National Multimodal Freight Network (as of March 2025)
Source: USDOT

Freight Funding Programs

Under the Bipartisan Infrastructure Law, which is also referred to as the Infrastructure Investment and Jobs Act (IIJA), federal programs like the National Highway Freight Program, the Better Utilizing Investments to Leverage Development Program, and the Infrastructure for Rebuilding America Grant Program continue to provide funding to help address freight transportation needs in the United States.

National Highway Freight Program

While created by the FAST Act, The Bipartisan Infrastructure Law (BIL) continues the National Highway Freight Program (NHFP) to focus improvements on the condition and performance of the National Freight Highway Network. Additional information on the National Freight Highway Network is included previously in this section.

Goals of the NHFP include the following:

- To invest in infrastructure improvements and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity
- To improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas
- To improve the state of good repair of National Highway Freight Network
- To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network
- To improve the efficiency and productivity of the National Highway Freight Network
- To improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address highway freight connectivity; and
- To reduce the environmental impacts of freight movement on the National Highway Freight Network

The NHFP requires states to have a statewide freight plan. Virginia's statewide freight plan, VTrans Freight Element, is prepared as part of VTrans - the Commonwealth's transportation plan. More information on VTrans Freight Element and Virginia's statewide freight planning efforts are 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 BIL authorizes an estimated $6.4 Billion to states under this program over a five-year period (Fiscal Years 2022 – 2026). Virginia's NHFP apportionments range from roughly $35 Million to $38 Million per year – totaling to $183.7 Million for Fiscal Years 2022 - 2026 (**Figure 107**). States may transfer up to 50% of NHFP funds for each fiscal year to other apportionments including the National Highway Performance Program (NHPP), Surface Transportation Block Grant (STBG) Program, Highway Safety Improvement Program (HSIP), Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Carbon Reduction Program (CRP), and the Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Formula Program.

NHFP funds must be allocated to projects that contribute to the efficient movement of freight on the National Highway Freight Network and included in the state's freight plan. It should be noted that each state can use up to 30% of NHFP funds on freight intermodal or freight rail projects.

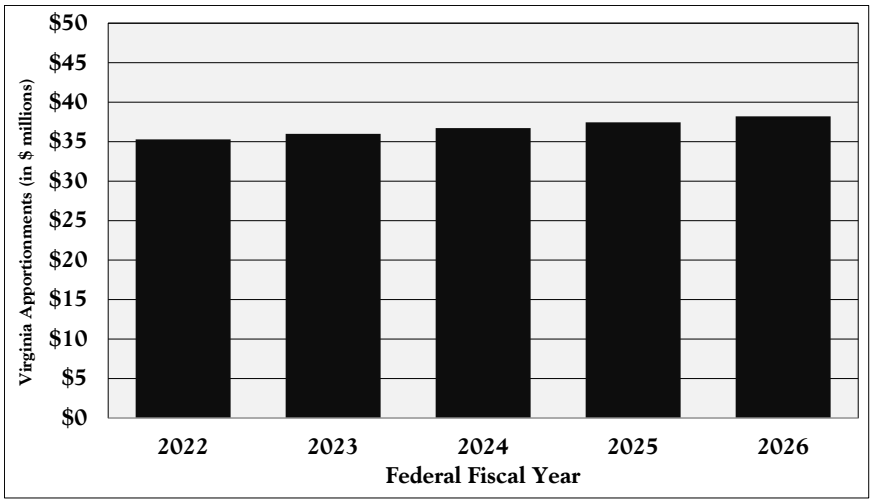


Figure 107 – Virginia NHFP Apportionments
Source: FHWA

Examples of eligible NHFP projects include:

- Additional road capacity to address freight bottlenecks
- Railway-highway grade separation
- Efforts to reduce the environmental impacts of freight movement
- Enhancement of the resiliency of critical highway infrastructure, including highway infrastructure that supports national energy security, to improve the flow of freight
- Traffic signal optimization, including synchronized and adaptive signals
- Truck-only lanes
- Electronic cargo and border security technologies that improve truck freight movement
- Diesel retrofit or alternative fuel projects under the Congestion Mitigation and Air Quality Improvement (CMAQ) program for Class 8 vehicles
- Adding or widening of shoulders
- Climbing and runaway truck lanes
- Highway ramp metering
- Physical separation of passenger vehicles from commercial motor freight
- Truck parking facilities eligible for funding under Jason's Law

More information on the NHFP is available at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nhfp.cfm.

Infrastructure for Rebuilding America Grant Program

Funding opportunities for freight improvement projects are available through the Infrastructure for Rebuilding America (INFRA) Grant Program. The INFRA Grant program awards competitive grants for multimodal freight and highway projects of national and regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas. Eligible applicants include a State or group of States, a metropolitan planning organization, a unit of local government or group of local governments, a political subdivision of a State or local government, a special purpose district or public authority with a transportation function including a port authority, a Federal land management agency that applies jointly with a State or group of States, a multistate corridor organization, a tribal government or consortium of tribal governments, or a multistate or multijurisdictional group of eligible entities listed above.

Examples of eligible projects include:

- A highway freight project on the National Highway Freight Network
- A highway or bridge project on the National Highway System
- A highway-railway grade crossing or grade separation project
- A freight intermodal, freight rail, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility and that is a surface transportation infrastructure project necessary to facilitate direct intermodal interchange, transfer, or access into or out of the facility
- A highway, bridge, or freight project on the National Multimodal Freight Network

More information on the INFRA Grant Program as well as a full list of eligible projects can be found at https://www.transportation.gov/grants/infra-grant-program.

Rebuilding American Infrastructure with Sustainability and Equity/ Better Utilizing Investments to Leverage Development Grant Program

While not specifically targeted for freight improvement projects, the Better Utilizing Investments to Leverage Development (BUILD) Grant Program provides funding opportunities that can help address freight transportation needs. Recently known as the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program and also previously referred to as Transportation Investment Generating Economic Recovery (TIGER) discretionary grants, the BUILD grant program provides funding for surface transportation infrastructure projects with significant local or regional impact. Established under the American Recovery and Reinvestment Act of 2009 and operated under annual appropriations acts, the RAISE/BUILD program was authorized by the Bipartisan Infrastructure Law (BIL) in November 2021.

Eligible applicants include:

- States and the District of Columbia
- Any territory or possession of the United States
- A unit of local government
- A public agency or publicly chartered established by one or more States
- A special purpose district or public authority with a transportation function, including a port authority
- A Federally recognized Indian Tribe or a consortium of such Indian Tribes
- A transit agency
- Projects that are necessary for reconstruction of the Alaska Highway
- Multiple States or jurisdictions may submit a joint application and must identify a lead applicant as the primary point of contact and identify the primary recipient of the award. Joint applications must include a description of the roles and responsibilities of each applicant.

Examples of eligible projects for BUILD grants include capital projects including but not limited to:

- Highway, bridge or other road projects eligible under Title 23, United States Code
- Public transportation projects eligible under Chapter 53 of Title 49, United States Code
- Passenger and freight rail transportation projects
- Port infrastructure investments (including inland port infrastructure and land ports of entry)
- The surface transportation components of an airport project eligible for assistance under Part B of Subtitle VII
- Intermodal projects

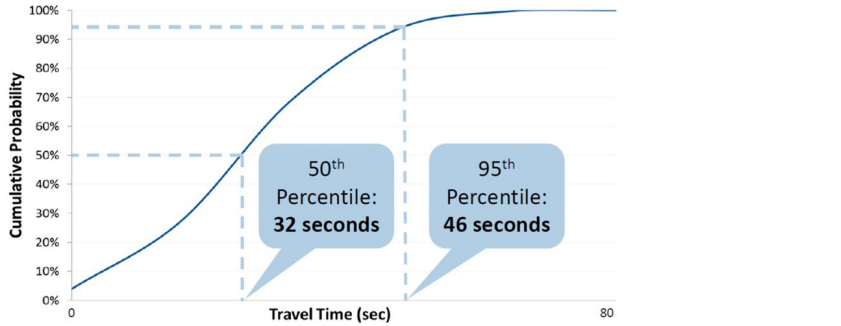
As of June 2024, more than $15 Billion has been awarded through the RAISE/BUILD program. More information on the program and the full list of eligible projects is available at https://www.transportation.gov/BUILDgrants.

Performance Measures

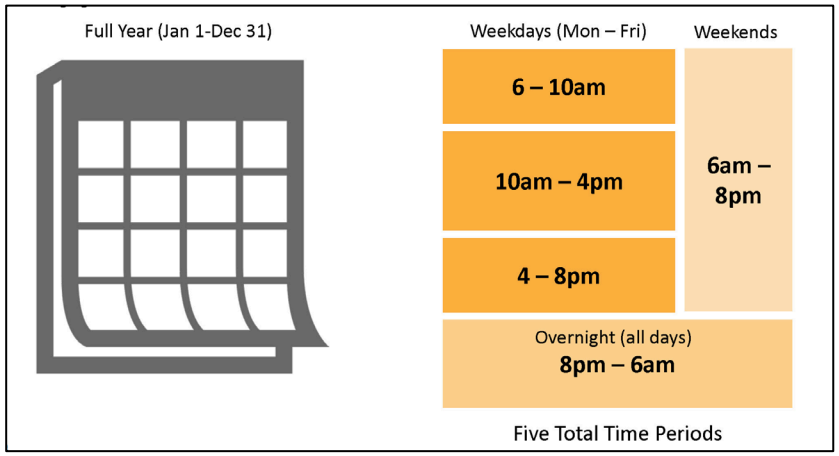
The Moving Ahead for Progress in the 21st Century (MAP-21) Act established new requirements for performance management to ensure the most efficient investment of federal transportation funds. As part this and current federal transportation legislation, states and MPOs are required to monitor the performance and establish targets in various areas, including freight movement.

There is one performance measure related to freight movement that states and MPOs are required to report and establish targets for – Truck Travel Time Reliability (TTTR) for the Interstate system. The Truck Travel Time Reliability measure is defined by FHWA as the ratio of the 95th percentile travel time for trucks to the mean (50th percentile) travel time for trucks. This travel time information – which is provided through the National Performance Management Research Data Set (NPMRDS) – is collected throughout the year on each segment of the Interstate system in 15-minute intervals. An example of calculating this ratio is shown below:

$$\textit{Truck Travel Time Reliability} = \frac{95\textit{th percentile truck travel time}}{50\textit{th percentile truck travel time (}\textit{"normal} \text{ truck } \textit{travel time"})}$$



Truck travel times throughout the year are divided into five reporting periods: Weekday morning peak, weekday midday, weekday afternoon peak, weekends, and overnight. The time of day that each period represents is shown to the right:



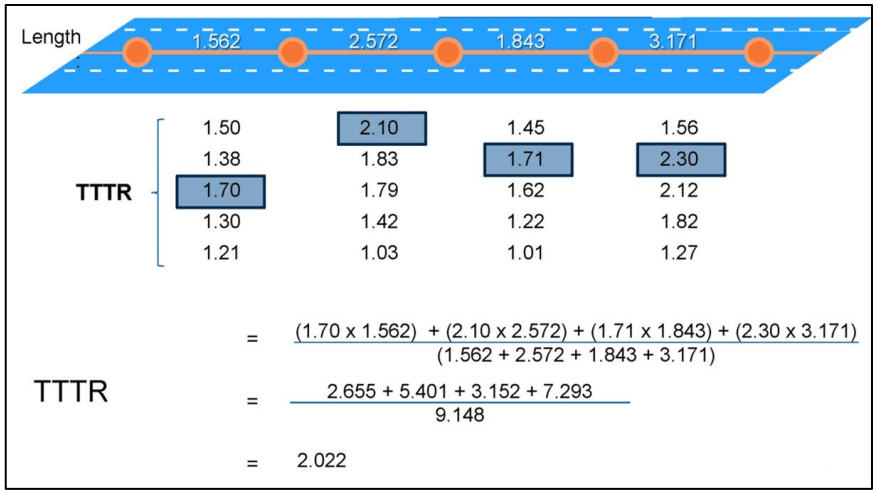
A TTTR ratio is calculated for each Interstate segment by direction for each of these time periods over the course of an entire year. This produces a total of five TTTR ratios for each Interstate segment. For each segment, the maximum of these five TTTR ratios is determined and used to calculate the regional index. This calculation is highlighted below:

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

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**

These individual Interstate segment Maximum TTTR ratios are then multiplied by the length of that particular segment. These products are added together for the entire region and divided by the total directional length of the regional Interstate system to produce the regional Truck Travel Time Reliability Index. An example of this calculation is shown on the next page:



HRTPO established a four-year target for the Truck Travel Time Reliability Index on the Interstate system of less than 1.99. This percentage matches model projections that VDOT staff produced for the TTTR in Hampton Roads in 2025. At 1.80 as of 2023, the regional TTTR is surpassing (below) the level that would be necessary to be on pace to meet the 2025 freight movement target.

More information on HRTPO's performance measures and targets planning efforts is available on HRTPO's website at **https://www.hrtpo.org/554/Regional-Performance-Measures-Targets**.

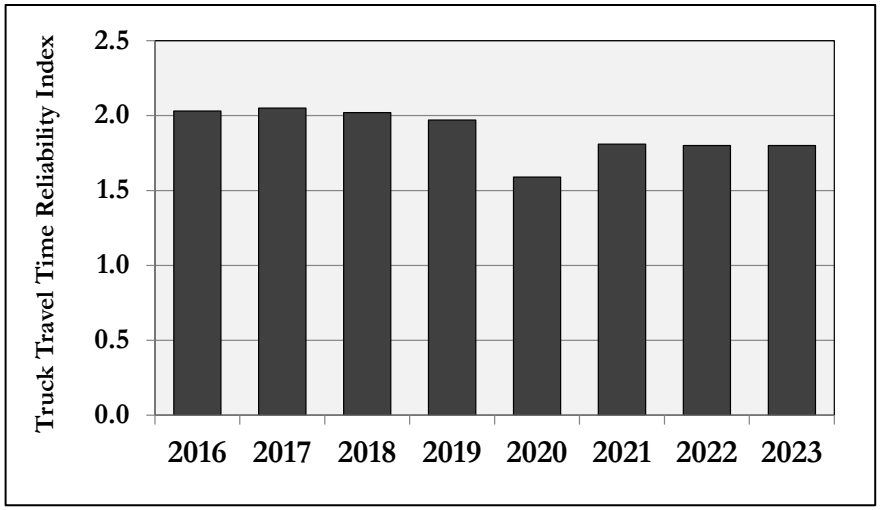


Figure 108 – Interstate Truck Travel Time Reliability (TTTR) Index in Hampton Roads, 2016-2023
Source: HRTPO analysis of VDOT data.

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

- In 2023, the Port of Virginia handled 1.8 million containers. By 2065, this demand is projected to increase to approximately 4.4 million containers. However, the range of container volumes projected for the year 2065 in the Master Plan varies from a low end of 3.6 million containers to a high end of 7.0 million containers.
- The Port of Virginia is the 12th highest U.S. foreign trade freight gateway, moving $106.5 billion in shipments in 2022.
- The Port of Virginia is the 9th largest Port in the U.S. in total tonnage as of 2022.
- Cargo tonnage handled by the Port of Virginia increased 30% from 2014 to 2023, and will likely continue to increase.
- The majority of freight (56%) handled by the Port of Virginia is moved by truck, followed by rail (40%) and barge (4%).
- Hampton Roads has consistently ranked in the top three of East Coast ports for general cargo (in twenty-foot equivalent units, or TEUs). The steady increase in general cargo at the Port of Virginia since 2014 has also been experienced at other top East Coast ports.
- Virginia is the largest coal export port in the United States. While coal loadings handled in Virginia decreased during the COVID-19 pandemic in 2020, coal loadings have increased each year since, with 35.5 million tons in 2023.
- The Virginia maritime industry added $87.8 Billion (14%) to the Commonwealth of Virginia's total estimated Gross State Product of $649.4 Billion in 2022.

Commonwealth Rail trains along Route 164, Western Freeway

Source: VDOT

Rail

- The Port of Virginia has a higher amount of freight transported by rail than other East Coast marine terminals, with most of this freight being transported to and from Midwestern markets. In 2023, 40% of the general cargo handled by the Port of Virginia was transported by rail. The share of freight moved by rail through the Port of Virginia has increased, up from typical levels of 32% - 34% over the last decade.
- This does not include the large amount of coal transported via rail from the mountains of West Virgina and western Virginia to terminals in Hampton Roads. Hampton Roads continues to be the largest exporter of coal in the United States, with over 35 million tons of coal being shipped through the region in 2023.

Highway

- Currently, 9% of the major roadway lane-miles in Hampton Roads are severely congested during the PM Peak Period. High-profile, severely congested locations include the Hampton Roads Bridge-

Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, and Downtown Tunnel.

- 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:
    - Hampton Roads Bridge-Tunnel widening (underway)
    - Hampton Roads Express Lanes Network (underway)
    - I-64 Widening on the Southside including the High Rise Bridge (complete)
    - I-64 Widening on the Peninsula between Route 199 – Exist 234 and Jefferson Avenue – Exit 255 (complete)
    - I-64/I-264 Interchange Improvements (complete)
    - I-664 widening on the Peninsula between New Kent/James City County Line and Exit 234 (underway)
    - I-64/I-464 Interchange improvements from I-64 Eastbound to Route 168 Southbound (underway)
    - I-664 Widening from Bowers Hill to College Drive
    - Virginia Route 164 Widening from West Norfolk Road to I-664
    - I-264 Widening from Witchduck Road to Independence Boulevard

Truck Parking Challenges

- 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 truckers surveyed 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 unreliable travel times.
- 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.
- 142 parking facilities provide 8,071 designated truck parking spaces in Virginia. 3,244 additional parking spaces are needed statewide today, and 8,574 additional spaces will be needed by 2045 during peak demand periods. In the Hampton Roads District, 337 additional spaces are needed today and 1,057 additional spaces will be needed by 2045.

Intermodal Conflict Points

- With navigable waterways in Hampton Roads such as the James River, York River, Elizabeth River, and Intracoastal Waterway, there are a number of movable bridges in the region. A total of 367,000 vehicles cross 9 movable roadway bridges in Hampton Roads each weekday. Most of these drawbridges have restrictions in terms of when they can be opened for maritime traffic, particularly during peak travel periods.
- A number of movable roadway drawbridges in Hampton Roads have been replaced with fixed-span bridges in recent years, including the South Norfolk Jordan Bridge, Dresser Bridge, Veterans Bridge, and westbound High Rise Bridge.
- Although not as prominent to the public 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. 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.

- There are 607 highway-rail crossings in Hampton Roads. Of these, 146 crossings are grade-separated, meaning the roadway traverses over or under the railroad without any conflict. The remaining 473 crossings are at-grade, resulting in conflicts between roadway users and the railroad. Among these 473 at-grade crossings, 307 are publicly owned and maintained, while the remainder are privately owned and primarily serve businesses or residences. Over 1.6 million vehicles cross these 307 public, at-grade crossings each day.
- The number of collisions between trains and roadway users has greatly decreased in recent years. Between 2014 and 2023, there were 68 crashes at highway-rail crossings in Hampton Roads, resulting in 5 fatalities and 26 injuries. This is down from 184 crashes in the 1990s and 102 crashes in the 2000s.
- There have been improvements to a number of 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. Additional grade-separated crossings of the CSX Railroad were constructed on the Peninsula at City Center Boulevard in 2015, at Atkinson Boulevard in 2020, and at Green Mount Parkway in 2022. In addition, a grade-separation of Nansemond Parkway and the Commonwealth Railway near Wilroy Road opened in Suffolk in 2025.

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Air Cargo

- Approximately 45 million pounds of air cargo were shipped in and out of Norfolk International Airport (ORF) in 2024.
- In 2023, total air cargo moved at ORF was ranked 346th highest in the world and 97th highest in North America. In 2023, air cargo moved at Richmond International Airport (RIC) was ranked 176th highest in the world and 49th highest in North America. In 2023 and 2024, air cargo at ORF decreased but increased at RIC. From 2022 to 2023, air cargo decreased by 12.2% at ORF but increased by 26.9% at RIC. From 2023 to 2024, air cargo decreased by 19.2% at ORF but increased by 7.8% at RIC.

Foreign-Trade Zones

- Foreign-Trade Zones (FTZ) are locations where foreign and domestic merchandise is considered in international commerce (not U.S. Commerce territory). There are 298 foreign trade zones in the United States and 6 within Virginia. The Virginia Port Authority administers Foreign-Trade Zone Suffolk (FTZ #20). FTZ #20 has a service area that includes Accomack (partial), Gloucester, Isle of Wight, James City, Mathews, Northampton, Southampton, Sussex, Surry, and York counties, and the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg.

Warehouse and Distribution Facilities/Manufacturing Facilities/Business and Industrial Parks

- Within Hampton Roads, many warehouse and distribution facilities are located along gateway roadways that lead in and out of the region, such as US Route 58, US Route 460, and I-64.
- The Port 460 Logistics Center broke ground in September 2024. This multi-phase project in Suffolk, Virginia will deliver 2.4 million square feet of industrial space for the first phase. A second phase totaling 2.6 million square feet will follow after the completion of Phase One. Once completed, Port 460 will offer direct access to the Port of Virginia and 75 percent of the U.S. population.
- Hampton Roads is the home of numerous manufacturing facilities, many of which are related to the marine transportation and defense industries. Major global companies such as Canon and Sthil also operate manufacturing facilities in the region.

Hampton Roads Freight Facilities Interactive Map

- HRTPO staff has created a web-based, interactive mapping inventory of freight facilities in Hampton Roads in order to improve access to information on freight facilities and their role in economic development and transportation across the region. The Hampton Roads Freight Facilities Interactive Map serves as a hub of datasets for other planners, economic developers, public officials, decision-makers and the general public.

Hampton Roads Commodity Flows

Summary of North American Freight Movement

- In 2017, 71 million tons (valued at $164 billion) of North American (USA, Canada, and Mexico) freight was transported by all modes to, from, within, and through Hampton Roads. By 2045, this is expected to increase by 153% in tonnage to 180 million tons and by 217% in value to $521 billion (constant $2017).
- The total tonnage moved by truck is expected to increase 160% from 65 to 169 million tons between 2017 and 2045. Likewise, units (number of trucks) are expected to increase 162% from 5.6 million to 14.7 million between 2017 and 2045. 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.
- The value of commodities moved by truck is expected to increase 211% between 2017 ($109 billion) and 2045 ($341 billion). The value of commodities moved by rail is expected to increase 250% between 2017 ($47 billion) and 2045 ($166 billion).

Hampton Roads Top Commodities – All Modes

- The top five commodities transported in 2017 include petroleum or coal products, secondary traffic, food or kindred products, nonmetallic minerals, and farm products. By 2045, petroleum or coal products are expected to increase by 224% and remain the top commodity by weight with the share increasing from 26% to 33%.

Net Annual Tonnage, Units and Dollars Carried by Truck

- In 2017, the highest amount of freight that was moved in Hampton Roads in terms of weight (annual tonnage) was along the I-64 corridor. By 2045, the top corridors for moving freight tonnage are expected to be I-64, US Route 13/CBBT, US Route 58, I-664 across the MMMBT and I-264 in Norfolk and Portsmouth. By 2045, the top three primary gateways for freight by annual tonnage are expected to be I-64, US Route 13/CBBT and US Route 58.
- By 2045, US Route 58 is expected to have a similar number of trucks to US Route 13/CBBT even though the tonnage is less.
- In 2017, the highest freight flows in Virginia in terms of number of trucks are along Interstates I-95, I-81, I-77, I-495, I-66, I-295, Route 58/13/460, and I-64. By 2045, the estimated number of trucks across the state are expected to increase significantly, especially along Interstates I-95, I-81, I-77, I-495, and I-64.

Regional Truck Movement

Truck Travel in Hampton Roads

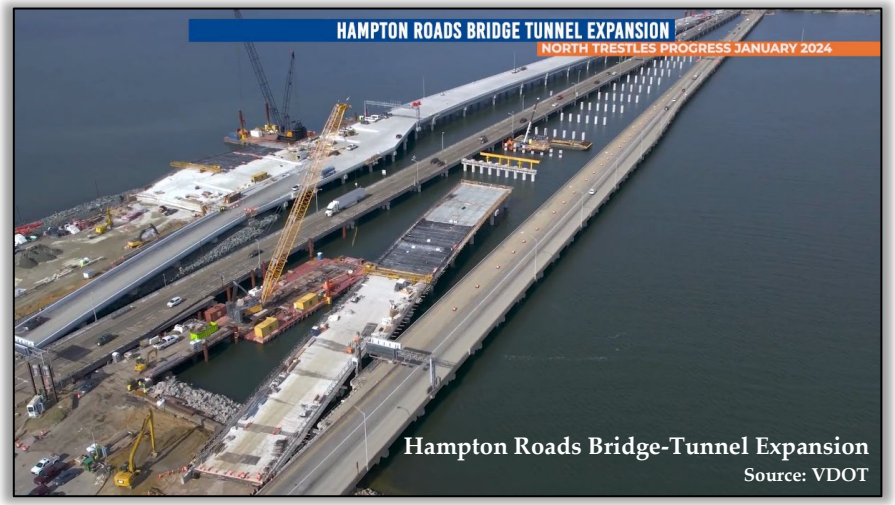
- There were a total of 1.6 million truck-miles of travel each day in Hampton Roads in 2023 according to VDOT data. This amount of truck travel comprises 3.7% of the 43 million vehicle-miles of travel that occurred in the region each day.
- Regional truck travel levels in 2023 were 33% higher than the levels seen in Hampton Roads in 2014.
- The percentage of truck travel in Hampton Roads has also increased. In 2014, 3.1% of all vehicular travel in Hampton Roads was truck travel, compared to 3.7% in 2023.

Truck Movements through Regional Gateways

- The primary gateway for trucks entering or exiting Hampton Roads is I-64. An average of 7,300 trucks used I-64 to enter or exit the region each weekday in 2023, which accounted for 36% of the trucks passing through the region's major gateways. The number of trucks using I-64 has increased over the last decade, up from 6,000 trucks each weekday in 2014.
- The next most traveled corridors for trucks entering and exiting the region are US Route 58 and US Route 460. Over 4,600 trucks used the US Route 58 gateway in 2023, up from 3,900 trucks in 2014. US Route 460 has also seen an increase in truck volumes. Nearly 2,500 trucks used the US Route 460 gateway each weekday in 2023, up from 2,000 trucks in 2014.
- Combined, I-64, US Route 58, and US Route 460 accounted for 71% of all trucks passing through the region's major gateways in 2023. This is up slightly from 69% at these gateways in 2014.

Truck Movements across Regional Water Crossings

- The Monitor-Merrimac Memorial Bridge-Tunnel was the most used facility by trucks crossing the Hampton Roads Harbor in 2023. Over 5,800 trucks used the Monitor-Merrimac Memorial Bridge-Tunnel each weekday in 2023, or 59% of the trucks crossing the harbor. The Hampton Roads Bridge-Tunnel carried an average of 3,100 trucks each weekday, or 31% of the trucks crossing the harbor, and the James River Bridge carried just over 1,000 trucks each weekday (10%).
- A total of 16,700 trucks crossed the Elizabeth River each weekday in 2023. The High Rise Bridge carried an estimated 7,600 trucks each weekday in 2023, which is nearly half of the truck volume using the Elizabeth River crossings. The Downtown Tunnel carried the next highest number of trucks at an estimated 3,000 each weekday in 2023.



Hampton Roads Bridge-Tunnel Expansion
Source: VDOT

Freight Bottlenecks

Average Delay per Truck

- 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 6.0 minutes per mile during the AM Peak Period. Between Settlers Landing Road and Mallory Street, average delays are 4.3 minutes per mile.
- Non-freeway locations with the highest average truck delay during the AM Peak Period include many very short segments. However, Settlers Landing Road approaching I-64 near the HRBT and roadways adjacent to the Norfolk Naval Shipyard also rank high on the list, as do multiple segments of Hampton Boulevard.
- 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 6.6 minutes per mile between 23rd Street and Terminal Avenue.
- Non-freeway locations in Hampton Roads with the highest average truck delay during the PM Peak Period also include some very short roadway segments. However, arterial approaches to the HRBT, including Fourth View Street, Woodland Road, and Settlers Landing Road, rank high on the list. Segments approaching other tunnels in the region are also high on the list, including Effingham Street and Saint Pauls Boulevard approaching I-264 and the Downtown Tunnel, and Jefferson Avenue approaching the Monitor-Merrimac Memorial Bridge-Tunnel.

Total Truck Delay

- As with average delays, most of the freeway segments with the highest total truck delays are on the approaches to the region's bridges and tunnels. The segment with the highest total truck delay is the approach to the eastbound Hampton Roads Bridge-Tunnel. The eastbound segment between Rip Rap Road and Settlers Landing Road experiences a total of 43.2 truck-hours of delay per mile each weekday.
- Other freeway segments with the highest weekday total truck delays per mile include segments approaching the Downtown Tunnel (eastbound between Des Moines Avenue and Effingham Street, eastbound between Effingham Street and I-464, and westbound between I-464 and Effingham Street), a segment approaching the Monitor-Merrimac Memorial Bridge-Tunnel (southbound between 23rd Street and Terminal Avenue), and a

segment approaching the High Rise Bridge (westbound between Military Highway and George Washington Highway).

- The two non-freeway segments with the highest total truck delays were Route 58/Holland Road between Cove Point Drive and the Suffolk Bypass in Suffolk. Total truck delays were 20.5 hours per mile in the westbound direction and 14.9 hours per mile in the eastbound direction. The next highest total truck delays on non-freeway segments were on Route 460 in Windsor, Northampton Boulevard approaching I-64 in the southbound direction, and many sections of Hampton Boulevard. Seven of the Top 20 non-freeway segments with the highest total truck delay were sections of Hampton Boulevard in the City of Norfolk.

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 nearly 300 truck-hours of delay in the HRBT corridor. Over the course of a year, this peak period truck delay amounts to over 70,000 hours at the HRBT. The peak period congestion costs for the HRBT corridor equates to $6.7 million annually for the trucking industry.
- The I-64/High Rise Bridge corridor in Chesapeake had the second highest weekday peak period truck delay in 2023, at over 50,000 hours of delay and $4.6 million in congestion costs incurred by the trucking industry annually. Widening of this section of I-64 was completed in early 2024, so truck delays in this corridor have decreased significantly from the data shown in this report.
- The high profile locations with the next highest truck delays and congestion costs are Route 58/Holland Road in Suffolk, the Downtown Tunnel, the Monitor-Merrimac Memorial Bridge-Tunnel, and the Midtown Tunnel. Each of these facilities cost the trucking industry more than $1 million in congestion costs in 2023.

Issues Related to Truck Movement

- While the lack of truck drivers is not a new phenomenon in the United States, the shortage of truck drivers worsened in recent years. According to the American Trucking Associations (ATA), the United States was short of roughly 60,000 truck drivers in 2023. Multiple factors can lead to driver shortage, such as an aging workforce, demands of the profession, infrastructure issues, inability to meet driver requirements, and lack of appeal.
- Transporting cargo is a time-sensitive activity typically with many moving parts involved and heavily relies on having good quality freight status information. Limited access to real time freight data can potentially lead to unwanted events occurring at higher frequencies (e.g., cargo delays, unclear order status, and stolen goods).
- Typically, truck drivers pay more than passenger vehicles to use a tolled facility. These toll costs add to the overall transportation costs to move goods that companies and ultimately customers will pay for.
- As part of federal legislation, truck drivers must use electronic logging devices (instead of paper logs) to maintain records of duty status (RODS). While the intent of this rule is to help create a safer work environment for drivers, opinions of it are mixed.

Advancing Technology in Freight Transportation

- Vehicle automation technologies, such as adaptive cruise control and automatic emergency braking systems, are common in new truck models today. More advanced automation capabilities, such as truck platooning, are being piloted. Truck platooning uses wireless connectivity and automation technology to allow a lead vehicle to communicate its acceleration or deceleration to a vehicle following it, which can synchronize speeds automatically and reduce their following distance.
- Logistics companies are leveraging Internet of Things (IoT) technologies to digitize and ultimately improve supply chain operations. IoT refers to interconnection of physical devices that are embedded with sensors, software, and network connectivity, allowing for the collection and exchanging of data. In terms of the freight industry, IoT enables real-time tracking of shipments, providing up-to-the-minute location data.
- Over the years there has been a push to move towards truck electrification in the freight industry. With zero tailpipe emissions, mass electrification of trucks can help reduce the release of pollutants into the atmosphere. Additionally, truck electrification may provide lower operating costs given that electricity is domestically generated from various energy sources, including

those that are clean and renewable, and electricity prices are cheaper and more stable than their fossil fuel counterparts. However, there are many challenges associated with adopting heavy-duty electric trucks. Currently, heavy-duty electric trucks are more expensive than their diesel-powered counterparts. There are also concerns regarding the potential shortfalls in the transporting capabilities of heavy-duty electric trucks, specifically on their hauling distances before a charge is needed and hauling capacity, due to limitations associated with cargo load volumes after factoring in the weight of the battery needed to power the trucks.

- The Port of Virginia is making strides towards reaching its goal of eliminating all greenhouse gas emissions by 2040 through the purchasing and installation of electric equipment and infrastructure to support its operations.
- Freight companies are exploring a variety of innovative approaches to meet last-mile challenges, such as alternative delivery methods, hyperloop concepts, and 3D printing technology.

Integration of Freight into the Transportation Planning Process

- In 2015, the Fixing America's Surface Transportation (FAST) Act 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). The current Bipartisan Infrastructure Law (BIL)/Infrastructure Investment and Jobs Act (IIJA) reauthorized funding sources including the NHFP.
- Statewide freight planning efforts are conducted by VDOT and the Virginia Office of Intermodal Planning and Investment (OIPI). These efforts include a statewide Freight Advisory Committee (FAC) and the Freight Element to VTrans, the long-range, statewide multimodal policy plan.
- HRTPO engages in many regional freight planning efforts, including the Freight Transportation Advisory Committee (FTAC), incorporation of freight into the Long-Range Transportation Planning process, and a number of freight-related special studies including this Regional Freight Study.

National Freight Planning Efforts and Funding Sources

- The United States Department of Transportation (USDOT) released the newest version of the National Freight Strategic Plan (NFSP) in September 2020, which defines the USDOT's vision and goals for the Nation's multimodal freight system and defines strategies to achieve those goals.
- USDOT released the "Draft National Multimodal Freight Network (NMFN)" in January 2025. The Draft NMFN includes numerous roadways, railroads, ports, and marine highways in the Hampton Roads area. Roadways in Hampton Roads on the Draft NMFN include all Interstates, US Route 13, US Route 58, and US Route 460, and important roadways serving military facilities and intermodal transfer centers.
- Under the Bipartisan Infrastructure Law (BIL)/Infrastructure Investment and Jobs Act (IIJA), federal programs like the National Highway Freight Program, the Better Utilizing Investments to Leverage Development Program, and the Infrastructure for Rebuilding America Grant Program continue to provide funding to help address freight transportation needs in the United States.

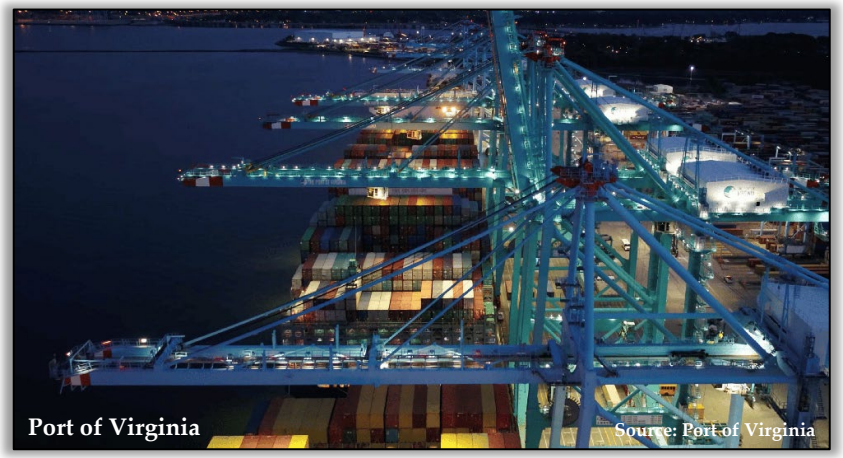
Conclusions and Next Steps

The economy of Hampton Roads is highly dependent on the freight industry. Not only does the movement of freight influence every aspect of our daily lives but it also keeps regional businesses and industries competitive in the local and global economy. Hampton Roads and the Commonwealth of Virginia have established an integrated multimodal freight system in order to facilitate the efficient, reliable, and safe movement of freight. However, the challenge will be to continue maintaining and expanding the system to meet the freight movement needs of tomorrow. Addressing this challenge must be a priority for freight planners in order to continue enhancing the local and statewide economies.

The overall purpose of this Regional Freight 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 builds on this by providing a description of existing and future freight facilities, trends, and forecasts for the Hampton Roads region. It also highlights existing and future commodity flows, and details local, statewide, and national efforts to improve freight movement.

In addition, this study identifies existing freight bottlenecks based on average and total truck delays incurred on roadways throughout the region. These bottlenecks impact the competitiveness of the Hampton Roads freight industry by delaying freight, reducing travel reliability, and increasing congestion costs. Fortunately, many of these bottlenecks have been improved in recent years, most of them through the additional funding provided by the Hampton Roads Transportation Fund administered by the Hampton Roads Transportation Accountability Commission (HRTAC). Some of these improvements include widening the Midtown Tunnel, extending the MLK Freeway, widening 21 miles of I-64 on the Peninsula, improving the I-64/I-264 Interchange in Norfolk and Virginia Beach, and widening the I-64/High Rise Bridge corridor in Chesapeake.

In addition to these completed projects, many of the corridors identified as freight bottlenecks in this study have projects that are either currently underway or programmed for improvement in the next few years. Construction is underway on widening the Hampton Roads Bridge-Tunnel, with completion expected by early 2027. Construction is also nearly complete on widening a section of US Route 58 near many warehouses and distribution centers in Suffolk. Construction is also underway on widening the remaining 29 miles of I-64 between Richmond and Hampton Roads, with completion expected by 2028.


Port of Virginia

Source: Port of Virginia

However, many additional freight bottlenecks still exist. Some examples include the Downtown Tunnel, Monitor-Merrimac Memorial Bridge-Tunnel, the Western Freeway approaching the Midtown Tunnel, Hampton Boulevard, Northampton Boulevard approaching I-64, and US Route 460 between Suffolk and the Windsor area. Additional funding will need to be obtained from federal, state, and regional sources to continue to alleviate these freight bottlenecks.

While the widening of I-64 on the Peninsula will improve mobility on the only limited-access connection to the region, improving access to I-95 to the south and west of Hampton Roads remains a priority for freight stakeholders. Discussions on these potential future highway connections mostly include either upgrading the US Route 17/US Route 64 corridor to interstate standards or improving US Route 58 (**Figure 109** on page 122). Federal transportation legislation authorized a future Interstate designation (I-87) for the US Route 17/US Route 64 corridor from Raleigh to Hampton Roads via Rocky Mount, Williamston, and Elizabeth City in northeastern North Carolina. While nearly two-thirds of this corridor is currently built to limited-access freeway standards, billions of dollars of additional funding still need to be allocated to completely upgrade the

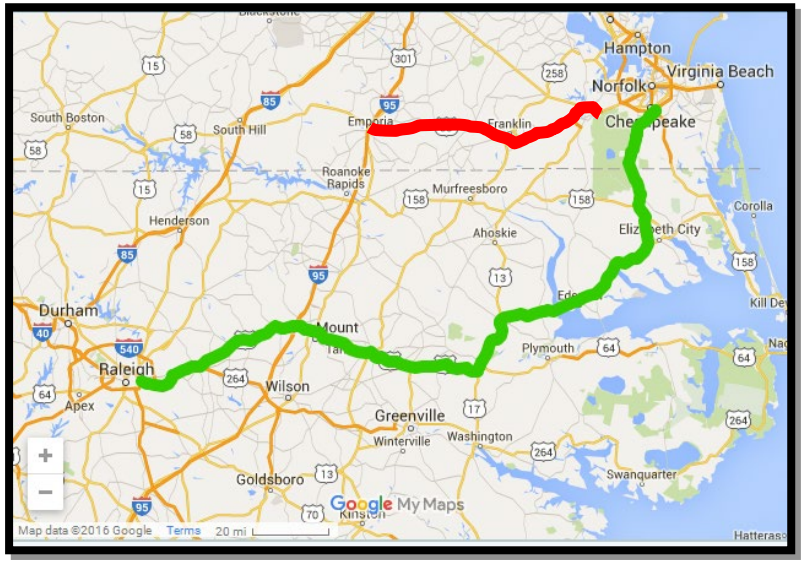


Figure 109 – Route 58 and Potential I-87 Interstate Corridors
Source: Regional Transportation Alliance and HRTPO.

corridor to Interstate standards. No funding for the Virginia portion of this corridor has been allocated.

Even though much of the US Route 58 corridor between I-95 and Suffolk is not limited-access, it provides a faster connection to the Raleigh area and other areas of the Southeast, even if the I-87 corridor were completed. US Route 58 is currently the second-heaviest freight gateway to and from the region with 4,600 trucks per weekday. This corridor, however, has many traffic signals and varying speed limits that slow down the movement of freight. As a result of issues related to congestion, safety, and access management in this corridor, VDOT prepared an Arterial Preservation Plan in 2019. This plan included a number of recommendations for localized projects along the corridor such as crossover and intersection improvements. In addition, the study also looked at alternatives to improve US Route 58 to a limited-access freeway facility, with projected costs of $720 million to $1.1 billion for an Improved Limited Access alternative, and between $2.3 billion and $3.5 billion for an Interstate Facility alternative. No funding is currently available for these limited-access improvements.

In addition to bottlenecks and gateways, another challenge facing the freight industry within Hampton Roads and the Commonwealth of Virginia is the availability of parking for trucks. Many corridors throughout the state and in Hampton Roads have a deficit between the demand for parking and the number of available spaces. According to an analysis done by VDOT, 142 parking facilities provide 8,071 designated truck parking spaces in Virginia. However, 3,244 additional truck parking spaces are needed statewide today, and 8,574 additional spaces will be needed by 2045 during peak demand periods. In the Hampton Roads District, 337 additional spaces are needed today and 1,057 additional spaces will be needed by 2045. Additionally, there is a significant need for terminal truck staging and port-specific truck parking in the Hampton Roads region due to the impacts of the port terminals. Due to these parking deficits and additional local needs for parking near the port terminals, regional leaders should continue to work with VDOT and other freight stakeholders to improve these deficiencies.

While trucks are still the predominant mover of freight at the Port of Virginia, the Port has a higher amount of freight transported by rail than other East Coast marine terminals and the amount of freight transported by rail is increasing. In 2023, 40% of the general cargo handled by the Port of Virginia – or 735,000 containers – was transported by rail. This is up significantly from 33% of general cargo and 448,000 containers in 2014. This does not include the large amount of coal transported via rail. Hampton Roads continues to be the largest exporter of coal in the United States, with over 35 million tons of coal being shipped through the region in 2023. Port officials expect the share and amount of containers transported by rail to continue to increase as demand rises, which will lead to both a higher number and longer length of trains and additional delays at

at-grade rail crossings. To ensure the ability to handle these anticipated rail volumes, rail stakeholders including the Port of Virginia, railroad companies, and state/local officials must continue to work together to secure additional federal and state funding for both rail improvement projects and for improvements at at-grade rail crossings.

Since federal transportation legislation was passed in 1991, Congress has encouraged the consideration of freight movement and intermodal connectivity in statewide and metropolitan transportation planning processes. HRTPO incorporates freight planning into the regional transportation planning process in many ways, including through the Freight Transportation Advisory Committee (FTAC), the Long-Range Transportation Planning Process, coordination with various freight stakeholders, and various special studies.

Since 2009, HRTPO staff has worked with regional freight stakeholders through the Freight Transportation Advisory Committee, which advises the HRTPO Board on freight issues. Key freight business and community leaders participate on the FTAC and have provided vital freight input for several HRTPO planning efforts and HRTPO Board decisions. Staff will continue to support the FTAC and work with FTAC members to help raise awareness of the importance of freight transportation to the region and to collect input from various stakeholders on these matters.

HRTPO will continue to integrate freight into the Hampton Roads Long-Range Transportation Plan (LRTP), which is the blueprint for the region's multimodal transportation improvements. Freight studies and data collected by HRTPO staff 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 continue to incorporate the latest freight data and performance measures into the tool as they become available.

HRTPO staff has a close working relationship with the VDOT's Transportation and Mobility Planning Division, the VDOT Hampton Roads District, and the Virginia Office of Intermodal Planning and Investment (OIPI) for all statewide freight planning initiatives. HRTPO staff will continue to work with these agencies on statewide freight initiatives such as VTrans, the VTrans Freight Element, and freight committees. HRTPO staff will also continue to work with the state as well as local stakeholders on upcoming freight planning efforts such as the National Multimodal Freight Network and truck parking improvements in order to improve the local freight network.

In addition to regular updates to the Hampton Roads Regional Freight Study, HRTPO has completed a number of freight-related studies related to topics such as rail impacts, truck delays, truck travel patterns, and the impacts of tolling. HRTPO will continue to prepare these studies as requested by regional freight stakeholders in order to assist with improving the safety and mobility of freight transportation in Hampton Roads. HRTPO staff will also continue to monitor how freight moves throughout the regional transportation network, particularly as major projects such as the Hampton Roads Bridge-Tunnel and the widening of I-64 between Hampton Roads and Richmond are completed.

Public Review and Comments

To be completed once the public review and comment period is complete.

APPENDICES

S&P Global Transearch

S&P Global (formerly 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[1]. 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, Transearch is notable for its finer granularity of geography and more detailed characterization of commodities, which are useful to examine logistics and modal trends.

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. HRTPO staff obtained the 2017 Transearch data in 2021.

Data Sources

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)
- 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. 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

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

- Truck (for-hire truckload, for-hire less-than-truckload, and private truck)
- Rail (conventional rail carload and rail/highway intermodal)[2]
- Water
- Air
- Other (shipments where the mode could not be identified, including to/from other countries such as Canada and Mexico)

Measurements

Within 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 (estimated number of trucks)
- Vehicle-miles traveled
- Ton-miles

*2045 forecast is in 2017 dollars.

Development of Domestic Flows of International Movements

Transearch flow volumes capture the movement of all import and export traffic moving through seaports, and all cross-border activity with Mexico and Canada[3]. 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)/United States-Mexico-Canada Agreement (USMCA) 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.

[1] *Transearch 2017 Modelling Methodology Documentation*, IHS Markit, November 30, 2018.

[2] *Rail data is only available in dollar value. Rail tonnage data was undisclosed and not included in this report.*

[3] *Transearch 2017 Modelling Methodology Documentation*, IHS Markit, November 30, 2018.

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 Transearch. Truck movements of import volume are handled in Transearch as outbound flows from the seaport, based on foreign trade data.

Commodity Types

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 (**Table A1**). 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). **Table A2 (on page A-6 to A-9)** contains descriptions of all 4-digit STCCs within each 2-digit STCC category.

S&P Global 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

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

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

Table A1 – 2-Digit Standard Transportation Commodity Codes (STCC)
Source: S&P Global Transearch.

- Use of Multiple Data Sources – 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 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 Transearch.

- Limitations of International Movements – 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 Transearch estimates the domestic distribution of maritime imports and exports. As a result, air and water volumes will be lower in the data summaries. Transearch data also does not completely report international petroleum and oil imports through marine ports.

Although 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:

- In the 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.

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 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 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 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. "Miscellaneous mixed shipments" consist of freight moving in trailers and containers, which are also known as "Intermodal" freight. 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[4]. While shipping FAK may seem like a catch all type of commodity listing, it is not used as

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

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 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 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[5]:

- 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 approximately every five years, based on the new Commodity Flow Survey. The CFS was conducted in 1993, 1997, 2002, 2007, 2012 and most recently in 2017. 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.
- Transearch provides county-level geographic market identification. FAF provides information on states and selected metropolitan areas.
- 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 S&P Global, 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 Transearch and FAF address shipments that originate in warehouses and distribution centers. Since the CFS is based on a survey of 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, 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.
    - 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.

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

- 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.
- 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.
- Transearch distinguishes each modal leg of rail highway intermodal activity, and the truck drayage of air freight. FAF data does not differentiate these segments.

Table A2: 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

Table A2: 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

Table A2: 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

Table A2: 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

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 Trucks	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	7,860	2023	172	2.2%	15	2.3%	6	0.8%	2023
CHES	ATLANTIC AVE	PROVIDENCE RD	OLD ATLANTIC AVE	18,439	2023	695	3.8%	46	4.2%	31	1.8%	2023
CHES	BAINBRIDGE BLVD	DOMINION BLVD	GREAT BRIDGE BLVD	1,317	2023	521	39.6%	30	28.4%	39	42.1%	2023
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	7,436	2023	878	11.8%	79	12.1%	33	5.0%	2023
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	8,258	2023	314	3.8%	21	4.6%	17	2.4%	2023
CHES	BAINBRIDGE BLVD	POINDEXTER ST	NORFOLK CL	1,673	2023	144	8.6%	13	10.3%	10	7.2%	2023
CHES	BALLAHACK RD	GEORGE WASHINGTON HWY	OLD BATTLEFIELD BLVD	955	2020	19	1.9%	1	0.4%	3	2.7%	2017
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	GALLBUSH RD	28,193	2023	913	3.2%	61	3.1%	40	1.7%	2023
CHES	BATTLEFIELD BLVD	PEACEFUL RD/HILLWELL RD	HANBURY RD	12,010	2023	120	1.0%	13	1.6%	4	0.3%	2023
CHES	BENEFIT RD	JOHNSTOWN RD	SIGN PINE RD	3,258	2023	52	1.6%	3	1.0%	1	0.3%	2023
CHES	BLACKWATER RD	VIRGINIA BEACH CL	FENTRESS AIRFIELD RD	2,754	2023	207	7.5%	20	8.1%	8	2.7%	2023
CHES	BRIDGE RD	SUFFOLK CL	CHURCHLAND BLVD	22,866	2023	301	1.3%	27	1.9%	12	0.7%	2023
CHES	BRUCE RD	TAYLOR RD	TYRE NECK RD	12,218	2023	129	1.1%	16	1.9%	0	0.0%	2023
CHES	CAMPOSTELLA RD	GREAT BRIDGE BLVD	MILITARY HWY	7,046	2023	58	0.8%	6	1.0%	6	0.8%	2023
CHES	CAMPOSTELLA RD	MILITARY HWY	BATTLEFIELD BLVD	15,114	2023	455	3.0%	30	3.3%	21	1.5%	2023
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	18,811	2023	267	1.4%	19	1.4%	12	0.8%	2023
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	12,247	2023	1,261	10.3%	96	10.0%	65	6.1%	2023
CHES	CEDAR RD	SHIPYARD RD/MOSES GRANDY TR	SCENIC PKWY	8,603	2023	40	0.5%	5	0.9%	4	0.5%	2023
CHES	CEDAR RD	DOMINION BLVD	BELLS MILL RD (WEST)	25,741	2023	378	1.3%	25	1.1%	17	0.7%	2017
CHES	CENTERVILLE TNPK	BATTLEFIELD BLVD	ETHRIDGE MANOR BLVD	7,796	2023	95	1.2%	7	0.8%	4	0.4%	2023
CHES	CENTERVILLE TNPK	BUTTS STATION RD	ELBOW RD	9,820	2023	148	1.5%	17	2.2%	5	0.4%	2023
CHES	CHURCHLAND BLVD	WESTERN BRANCH BLVD	TOWNE POINT RD	6,323	2023	46	0.7%	4	1.2%	3	0.6%	2023
CHES	DOCK LANDING RD	I-664	EAGLE HILL DR	6,946	2023	58	0.8%	5	0.9%	2	0.3%	2023
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	6,672	2023	52	0.8%	3	0.6%	4	0.6%	2023
CHES	DOMINION BLVD/VETERANS BRIDGE	CEDAR RD/MOSES GRANDY TR	DOMINION LAKES BLVD	32,591	2023	2,071	6.4%	159	-	85	-	2023
CHES	ELBOW RD	CENTERVILLE TNPK	VA BEACH CL	8,219	2023	57	0.7%	5	0.6%	5	0.6%	2023
CHES	FENTRESS AIRFIELD RD	BLACKWATER RD	MOUNT PLEASANT RD	5,586	2023	220	3.9%	19	4.3%	9	1.7%	2023
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	DOMINION BLVD	16,451	2023	1,174	7.1%	72	5.3%	55	3.8%	2023
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	12,275	2023	368	3.0%	21	3.2%	26	2.7%	2023
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	3,885	2023	174	4.5%	15	3.4%	12	3.4%	2023
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	BATTLEFIELD BLVD	13,756	2023	170	1.2%	21	1.7%	9	0.6%	2023
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	19,035	2023	580	2.0%	68	3.0%	36	1.4%	2017
CHES	HANBURY RD	JOHNSTOWN RD	BATTLEFIELD BLVD	10,434	2023	48	0.5%	3	0.3%	4	0.3%	2023
CHES	HANBURY RD	CHESAPEAKE EXPRESSWAY	HILLWELL RD	17,771	2023	114	0.6%	12	0.9%	6	0.3%	2023
CHES	I-64	MILITARY HWY	I-264&664	90,246	2021	8,051	8.7%	485	-	452	-	2018
CHES	I-464	FREEMAN AVE	POINDEXTER ST	57,686	2023	3,159	5.5%	246	-	145	-	2023
CHES	INDIAN RIVER RD	KEMP LANE	VA BEACH CL	22,395	2023	478	1.7%	38	2.1%	17	0.7%	2017
CHES	JOHNSTOWN RD	BENEFIT RD	BATTLEFIELD BLVD	3,186	2023	53	1.6%	1	0.4%	4	1.1%	2023
CHES	JOLLIFF RD	AIRLINE BLVD	DOCK LANDING RD	4,057	2023	64	1.6%	7	2.0%	8	1.6%	2023
CHES	JOLLIFF RD	DOCK LANDING RD	PORTSMOUTH BLVD	5,319	2023	79	1.5%	8	2.5%	2	0.3%	2023
CHES	KEMPSVILLE RD	CHESAPEAKE EXPRESSWAY	GREENBRIER PKWY	30,920	2023	577	1.7%	45	1.7%	24	0.8%	2017
CHES	LIBERTY ST	SCL NORFOLK	22ND ST	4,489	2023	205	4.6%	15	6.4%	10	2.5%	2023
CHES	LIBERTY ST	22ND ST	OLD ATLANTIC AVE	8,273	2023	178	2.1%	15	3.1%	18	2.4%	2023
CHES	MILITARY HWY	AIRLINE BLVD	I-64	13,384	2023	1,116	8.3%	82	6.3%	80	5.8%	2023
CHES	MILITARY HWY	I-64	GEORGE WASHINGTON HWY	21,375	2023	1,707	8.0%	150	7.9%	108	5.7%	2023
CHES	MILITARY HWY/GILMERTON BRIDGE	CANAL DR	BAINBRIDGE BLVD	39,628	2023	972	2.8%	66	2.6%	55	2.1%	2023
CHES	MOSES GRANDY TRAIL	GW HWY @ HINTON AVE	DOMINION BLVD	15,314	2023	217	1.4%	21	1.6%	15	1.3%	2023
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	17,518	2023	475	2.7%	56	4.3%	17	1.0%	2023
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	9,125	2023	323	3.5%	41	5.2%	14	1.3%	2023
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	10,322	2023	181	1.7%	15	2.2%	15	1.6%	2023

Appendix B – 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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
CHES	POPLAR HILL RD	WESTERN BRANCH BLVD	CHURCHLAND BLVD	11,415	2023	60	0.5%	5	0.8%	3	0.2%	2023
CHES	PORTSMOUTH BLVD	SUFFOLK CL	JOLLIFF RD	25,106	2023	1,628	6.5%	110	5.8%	48	1.9%	2023
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	24,965	2023	306	1.3%	25	2.4%	15	0.8%	2017
CHES	PUGHSVILLE RD	SUFFOLK CL	I-664	12,439	2023	771	6.2%	74	9.4%	32	2.9%	2023
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	23,625	2023	327	1.4%	25	1.8%	6	0.3%	2023
CHES/SUF	ROUTE 13/58/460	SUFFOLK BYPASS	I-664	85,684	2023	8,988	10.5%	605	-	410	-	2023
CHES	SIGN PINE RD	EDINBURGH PKWY	BENEFIT RD	4,242	2023	65	1.5%	4	1.1%	4	0.8%	2023
CHES	TAYLOR RD	PORTSMOUTH BLVD	BRUCE RD	20,832	2023	140	0.7%	10	0.8%	6	0.3%	2023
CHES	TYRE NECK RD	BRUCE RD	SILVERWOOD BLVD	8,073	2023	66	0.8%	8	1.6%	6	0.8%	2023
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	23,024	2023	468	2.0%	36	2.4%	21	1.1%	2023
FR	ARMORY DR	COLLEGE DR	GARDNER ST	6,371	2018	37	0.6%	2	0.7%	1	0.2%	2018
FR	ARMORY DR/SECOND AVE	GARDNER ST	HIGH ST	6,503	2018	47	0.8%	3	1.0%	3	0.6%	2015
FR	CLAY ST/FOURTH AVE	LEE ST	HIGH ST	1,346	2018	28	2.1%	1	0.4%	1	0.5%	2018
FR	FAIRVIEW DR	CRESENT DR	HIGH ST	2,698	2018	36	1.3%	0	0.0%	6	2.2%	2018
FR	HIGH ST	SOUTH ST	SECOND AVE	3,043	2018	47	1.5%	5	2.6%	7	2.3%	2018
FR	HIGH ST	FOURTH AVE	HOMESTEAD RD	3,302	2018	50	1.5%	2	0.9%	6	2.0%	2018
FR	HIGH ST	HOMESTEAD RD	FAIRVIEW DR	2,546	2018	41	1.6%	2	1.2%	3	1.3%	2018
FR	MAIN ST	SOUTH ST	SECOND AVE	2,534	2018	87	3.4%	4	2.6%	3	1.4%	2018
FR	PRETLOW ST	ROUTE 58	MORTON ST	1,962	2018	47	2.4%	4	3.2%	2	1.1%	2018
FR	PRETLOW ST	MORTON ST	SOUTH ST	2,662	2021	72	2.7%	5	2.6%	2	0.6%	2021
FR	SECOND AVE	HIGH ST	MAIN ST	5,276	2018	44	0.8%	3	1.0%	1	0.2%	2018
FR	SOUTH ST	ROUTE 58	COLLEGE DR	6,560	2018	91	1.4%	8	2.1%	6	1.1%	2018
FR	SOUTH ST	HIGH ST	MAIN ST	2,808	2018	114	4.1%	5	2.8%	10	4.7%	2018
GLO	BURLEIGH RD	RTE 616 (BELROI RD)	ROUTE 17	2,575	2021	23	0.9%	4	2.2%	3	1.0%	2021
GLO	CEDAR BUSH RD	RTE 636 (PROVIDENCE RD)	RTE 614 (HICKORY FORK RD)	1,236	2021	30	2.4%	3	3.4%	1	0.9%	2021
GLO	GUINEA RD	ROUTE 17	MARYUS RD	8,350	2021	138	1.7%	10	1.9%	17	2.4%	2021
GLO	HICKORY FORK RD	ROUTE 17	BELROI RD	5,456	2021	71	1.3%	7	1.7%	4	0.8%	2021
GLO	MAIN ST (BUS RTE 17)	RTE 17 (SOUTH INTERSECTION)	RTE 3/14E	23,958	2018	360	1.5%	29	2.0%	26	1.3%	2018
GLO	MAIN ST (BUS RTE 17/RTE 14)	CARY AVE	ROUTE 17	5,918	2021	96	1.6%	7	1.6%	6	1.1%	2021
GLO	PROVIDENCE RD	ROUTE 17	RTE 635 (BORDEN RD)	2,577	2021	42	1.6%	4	2.4%	3	1.0%	2021
GLO	PROVIDENCE RD	RTE 635 (BORDEN RD)	RTE 633 (CEDAR BUSH RD)	1,240	2021	26	2.1%	3	3.0%	2	1.6%	2021
GLO	RTE 3/14	COW CREEK	MATHEWS CL	14,852	2021	257	1.8%	16	1.6%	20	1.6%	2018
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	33,214	2023	758	2.3%	47	1.9%	33	1.1%	2023
GLO	RTE 198	ROUTE 17	RTE 601 (PAMPA RD)	2,691	2021	182	6.8%	11	5.7%	11	4.0%	2021
GLO	RTE 198	RTE 601 (PAMPA RD)	RTE 606 (HARCUM RD)	2,871	2021	147	5.1%	12	5.8%	11	4.3%	2021
GLO	RTE 198	RTE 606 (HARCUM RD)	MATHEWS CL	2,806	2021	149	5.3%	9	4.5%	9	3.6%	2021
GLO	SHORT LN	RTE 1410 (LAMBERTH LN)	RTE 629 (T C WALKER RD)	1,708	2021	49	2.8%	6	4.2%	2	1.3%	2021
GLO	TC WALKER RD	RTE 615 (SHORT LN)	BUS ROUTE 17	3,005	2021	77	2.6%	8	3.2%	4	1.3%	2021
GLO	TIDEMILL RD	ROUTE 17	RTE 1254 (TILLAGE LN)	4,910	2021	71	1.4%	3	0.8%	3	0.7%	2021
GLO	TIDEMILL RD	RTE 1254 (TILLAGE LN)	RTE 216 (GUINEA RD)	3,690	2021	66	1.8%	5	1.9%	5	1.5%	2021
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	19,581	2022	985	5.0%	79	6.4%	68	3.8%	2022
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	16,258	2022	331	2.0%	24	2.6%	26	1.8%	2022
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	24,158	2023	305	1.3%	24	1.2%	15	0.6%	2023
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	17,680	2022	229	1.3%	12	1.1%	13	0.8%	2022
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	20,103	2019	270	1.3%	18	1.6%	8	0.4%	2019
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	9,157	2022	138	1.5%	14	2.0%	7	0.7%	2022
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	5,687	2022	31	0.5%	1	0.3%	3	0.5%	2022
HAM	COMMANDER SHEPARD BLVD	ARMISTEAD AVE	NASA MAIN GATE	12,554	2022	206	1.6%	11	0.9%	12	0.9%	2022
HAM	COMMANDER SHEPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	11,269	2022	140	1.2%	9	0.9%	10	0.8%	2022
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	4,325	2020	67	1.4%	8	1.8%	5	0.9%	2019

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	9,485	2022	28	0.3%	4	0.6%	3	0.3%	2022
HAM	HARRIS CREEK RD	FOX HILL RD	LITTLE BACK RIVER RD	3,305	2022	46	1.4%	3	0.8%	5	1.5%	2022
HAM	HRC PARKWAY	NEWPORT NEWS CL	BIG BETHEL RD	22,278	2023	224	1.0%	18	1.2%	8	0.4%	2023
HAM/NOR	I-64/HRBT	MALLORY ST	OCEAN VIEW AVE	83,065	2023	3,129	3.3%	183	-	120	-	2019
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	3,807	2022	64	1.7%	6	3.1%	3	0.7%	2022
HAM	KECOUGHTAN RD	LASALLE AVE	VICTORIA BLVD	6,602	2022	108	1.6%	8	2.0%	9	1.4%	2022
HAM	KING ST	LITTLE BACK RIVER RD	LANGLEY AFB	5,113	2022	13	0.2%	0	0.0%	2	0.3%	2022
HAM	LASALLE AVE	ARMISTEAD AVE	MERCURY BLVD	12,732	2022	126	1.0%	7	0.6%	8	0.7%	2022
HAM	LITTLE BACK RIVER RD	KING ST	ROCKWELL RD	10,918	2022	94	1.1%	7	1.1%	7	0.8%	2022
HAM	LITTLE BACK RIVER RD	ROCKWELL RD	HARRIS CREEK RD	3,786	2022	64	1.7%	5	1.7%	6	1.2%	2022
HAM	MAGRUDER BLVD/NEIL ARMSTRONG P	YORK CL	SEMPLE FARM RD	18,958	2022	164	0.7%	9	0.5%	8	0.3%	2016
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	5,199	2022	74	1.4%	9	2.7%	1	0.1%	2022
HAM	MELLEN ST	MERCURY BLVD	MALLORY ST	2,625	2019	30	1.1%	4	2.4%	1	0.2%	2019
HAM	MERCURY BLVD	NEWPORT NEWS CL	BIG BETHEL RD	48,670	2023	825	1.7%	66	2.4%	46	1.1%	2023
HAM	MERCURY BLVD	KING ST	ANDREWS BLVD	31,000	2022	214	0.7%	24	1.0%	7	0.3%	2016
HAM	MERCURY BLVD	PEMBROKE AVE	MALLORY ST	12,472	2022	174	1.4%	25	1.9%	11	0.9%	2022
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	5,478	2022	42	0.8%	6	1.4%	3	0.5%	2022
HAM	PEMBROKE AVE	NEWPORT NEWS CL	ABERDEEN RD	8,240	2022	226	2.4%	17	1.9%	17	1.6%	2016
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	10,046	2022	216	2.1%	22	3.5%	13	1.1%	2022
HAM	PEMBROKE AVE	LASALLE AVE	ARMISTEAD AVE	7,370	2022	128	1.7%	18	3.2%	12	1.4%	2022
HAM	PEMBROKE AVE	ARMISTEAD AVE	MERCURY BLVD	10,634	2022	169	1.6%	17	2.4%	15	1.1%	2022
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	7,472	2022	150	2.0%	16	3.3%	10	1.6%	2022
HAM	PEMBROKE AVE	OLD BUCKROE RD	MALLORY ST	2,728	2022	47	1.7%	8	4.3%	1	0.4%	2022
HAM	POWER PLANT PKWY	BRIARFIELD RD	PINE CHAPEL RD	20,411	2022	177	0.9%	15	1.2%	11	0.6%	2022
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	10,958	2022	99	0.9%	7	1.0%	4	0.4%	2022
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	9,607	2022	75	0.8%	6	0.7%	10	1.0%	2022
HAM	RIP RAP RD	I-64	KING ST	13,513	2022	230	1.7%	27	2.9%	15	1.1%	2022
HAM	SEMPLE FARM RD	BIG BETHEL RD	MAGRUDER BLVD/NEIL ARMSTRONG P	1,475	2022	11	0.7%	1	0.9%	1	0.3%	2022
HAM	SETTLERS LANDING RD	KECOUGHTAN RD	ARMISTEAD AVE	13,396	2022	247	1.8%	34	3.1%	26	1.9%	2022
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	16,011	2022	202	1.3%	13	1.3%	14	1.0%	2022
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	18,514	2022	149	0.8%	9	0.8%	8	0.6%	2022
HAM	WOODLAND RD	COUNTY ST	MERCURY BLVD	19,172	2022	242	1.3%	27	1.7%	13	0.9%	2022
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	8,554	2022	46	0.5%	2	0.2%	3	0.3%	2022
IW/SMT	BATTERY PARK RD	S CHURCH ST	NIKE PARK RD	9,628	2023	79	0.8%	5	0.7%	8	0.7%	2023
IW	BENNS CHURCH BLVD	SUFFOLK CL	ROUTE 10 & 32 (BREWERS NECK BLVD)	8,001	2023	284	3.5%	18	2.6%	12	1.6%	2023
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	ROUTE 17	28,060	2023	1,098	4.3%	70	3.4%	33	1.3%	2017
IW	BUCKHORN DR	SUFFOLK CL	SUNSET DR (RTE 609)	501	2023	18	3.6%	1	2.4%	3	4.0%	2023
IW	BUCKHORN DR	SUNSET DR (RTE 609)	SCL WINDSOR	546	2023	29	5.3%	3	6.5%	2	3.5%	2023
IW	BUS RTE 10	JENKINS LANE	RTE 10 BYPASS	1,119	2023	29	2.5%	2	2.8%	3	1.8%	2023
IW	BUS RTE 58	ROUTE 258	SUFFOLK CL	2,639	2023	151	5.7%	11	6.4%	13	5.0%	2023
IW	CARROLLTON BLVD	ROUTE 258	NEWPORT NEWS CL	32,536	2023	1,017	3.1%	68	2.7%	58	1.9%	2023
IW/SMT	CHURCH ST S	BATTERY PARK RD	CYPRESS CREEK BRIDGE	11,958	2023	83	0.7%	7	0.9%	5	0.4%	2023
IW/SMT	CHURCH ST N	MAIN ST	SMITHFIELD CL	5,081	2023	31	0.6%	1	0.3%	5	0.6%	2023
IW/WIND	COURT ST	SCL WINDSOR/BUCKHORN DR	ROUTE 460	731	2023	57	7.8%	6	8.5%	4	5.3%	2023
IW/SMT	MAIN ST	ROUTE 10 BYPASS	CHURCH ST	3,751	2023	46	1.2%	4	1.3%	6	1.5%	2023
IW	NIKE PARK RD	BATTERY PARK RD	TITUS CREEK DR	8,864	2023	54	0.6%	2	0.2%	8	0.8%	2023
IW	RESCUE RD	NEWPORT ST (RTE 1002)	SMITH'S NECK RD	767	2023	9	1.1%	0	0.0%	0	0.0%	2023
IW/SMT	ROUTE 10 BYPASS	CHURCH ST S	MAIN ST	17,589	2023	551	3.1%	37	3.2%	24	1.4%	2023
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	6,877	2023	149	2.2%	7	1.3%	8	1.1%	2023
IW	ROUTE 258	SUFFOLK CL	UNION CAMP DR (RTE 656)	2,333	2023	970	41.6%	78	42.3%	58	29.7%	2023

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
IW	ROUTE 258	UNION CAMP DR (RTE 656)	CARRSVILLE HWY (BUS RTE 58)	816	2023	381	46.7%	41	53.6%	26	38.1%	2023
IW	ROUTE 258	CARRSVILLE HWY (BUS RTE 58)	RIVER RUN TRAIL (W RTE 614)	3,161	2023	375	11.8%	34	15.1%	21	6.9%	2023
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	5,435	2023	379	7.0%	30	6.1%	17	3.0%	2023
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	SCOTTS FACTORY RD (RTE 620)	4,850	2023	278	5.7%	27	5.2%	15	3.1%	2023
IW	ROUTE 258	SCOTTS FACTORY RD (RTE 620)	WCL SMITHFIELD	9,942	2023	448	4.5%	39	5.0%	22	2.3%	2023
IW/SMT	ROUTE 258/N MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	12,782	2023	485	3.8%	45	4.0%	31	2.6%	2023
IW	SMITH'S NECK RD	REYNOLDS DR	TITUS CREEK DR	8,294	2023	55	0.7%	5	0.7%	7	0.7%	2023
IW	SMITH'S NECK RD	TITUS CREEK DR	RESCUE RD	1,571	2023	23	1.5%	2	1.3%	1	0.6%	2023
IW	TITUS CREEK DR	SMITH'S NECK RD	NIKE PARK RD	6,361	2023	38	0.6%	2	0.3%	4	0.6%	2023
IW	TODD AVE/WARWICK ST	COUNTRY WAY	NEWPORT ST (RTE 1002)	877	2023	11	1.2%	0	0.0%	1	0.5%	2023
JCC	BARHAMSVILLE RD	I-64	ROUTE 60	9,485	2022	411	4.3%	32	4.6%	25	2.6%	2022
JCC	CENTERVILLE RD	LONGHILL RD	RICHMOND RD	11,205	2022	219	2.0%	18	2.1%	12	1.2%	2022
JCC	CROAKER RD	ROUTE 60	MAXTON LN (RTE 760)	9,006	2022	250	2.8%	22	3.6%	8	0.9%	2022
JCC	CROAKER RD	I-64	FENTON MILL RD	4,997	2022	195	3.9%	10	3.1%	7	1.7%	2022
JCC	CROAKER RD	FENTON MILL RD	RIVERVIEW RD	2,842	2022	79	2.8%	8	3.8%	3	1.3%	2022
JCC	IRONBOUND RD	MONTICELLO AVE	WILLIAMSBURG CL	11,364	2022	140	1.2%	11	1.5%	6	0.5%	2022
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	WILLIAMSBURG CL	8,024	2022	98	1.2%	12	1.8%	5	0.6%	2022
JCC	JOHN TYLER HWY	CHARLES CITY CL	MONTICELLO AVE	3,340	2022	206	6.2%	21	9.3%	10	2.9%	2022
JCC	JOHN TYLER HWY	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	2,858	2022	76	2.7%	5	2.4%	6	2.4%	2022
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	STANLEY DR (RTE 712)	10,204	2022	166	1.6%	14	1.9%	15	1.6%	2022
JCC	LONGHILL RD	OLDE TOWNE RD (RTE 658)	ROUTE 199	15,887	2022	208	1.3%	18	1.7%	7	0.5%	2022
JCC	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	NEWS RD	13,000	2022	158	1.3%	15	1.8%	2	0.2%	2016
JCC	OLDE TOWNE RD	LONGHILL RD	RICHMOND RD	6,428	2022	87	1.3%	6	1.4%	4	0.6%	2022
JCC	POCAHONTAS TRL	YORK CL	BASF RD/ROUTE 60 RELOCATION	9,510	2022	879	9.2%	68	10.1%	37	4.2%	2022
JCC	ROCHAMBEAU DR	ROUTE 60	CROAKER RD (RTE 607)	8,038	2022	177	2.2%	16	2.4%	7	0.9%	2022
JCC	ROUTE 60	CROAKER RD (RTE 607)	CENTERVILLE RD (RTE 614)	21,623	2019	354	1.6%	34	2.4%	17	0.9%	2019
JCC	ROUTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	27,770	2022	413	1.4%	39	-	19	-	2013
JCC	STRAWBERRY PLAINS RD	JOHN TYLER HWY/ROUTE 199	IRONBOUND RD	9,822	2022	67	0.7%	6	0.9%	4	0.4%	2022
NN	23RD/25TH CONNECTOR	HUNTINGTON AVE	JEFFERSON AVE	2,590	2022	108	4.2%	8	6.1%	10	2.2%	2022
NN	25TH ST	HUNTINGTON AVE	WARWICK BLVD	1,782	2022	97	5.4%	11	7.6%	4	2.0%	2022
NN	25TH ST	JEFFERSON AVE	26TH ST	2,426	2022	25	1.1%	6	3.6%	2	0.7%	2016
NN	26TH ST	25TH ST	ROANOKE AVE	918	2022	25	2.7%	1	1.9%	0	0.0%	2022
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	1,011	2022	33	3.2%	2	2.9%	4	4.3%	2022
NN	39TH ST	MADISON AVE	HAMPTON CL	9,660	2022	232	2.4%	4	0.6%	15	1.3%	2022
NN	BLAND BLVD	WARWICK BLVD	JEFFERSON AVE	20,517	2020	285	0.8%	27	1.4%	17	0.6%	2016
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	8,317	2022	177	2.1%	14	2.8%	11	1.4%	2022
NN	CHESTNUT AVE	44TH ST	BRIARFIELD RD	19,427	2022	490	4.9%	38	5.8%	24	3.0%	2019
NN	CHESTNUT AVE	BRIARFIELD RD	HAMPTON CL	7,093	2022	71	1.0%	4	1.1%	3	0.4%	2022
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	25,943	2023	326	1.3%	33	2.3%	16	0.7%	2023
NN	DILIGENCE DR	THIMBLE SHOALS BLVD	J CLYDE MORRIS BLVD	12,277	2022	102	0.8%	15	1.6%	9	0.8%	2022
NN	FORT EUSTIS BLVD	JEFFERSON AVE	YORK CL	18,616	2023	583	3.1%	43	3.0%	28	1.6%	2023
NN	HARPERSVILLE RD	SAUNDERS RD	HRC PARKWAY	8,724	2022	44	0.5%	4	0.6%	3	0.3%	2022
NN	HARPERSVILLE RD	JEFFERSON AVE	WARWICK BLVD	7,664	2022	76	1.0%	4	0.8%	1	0.1%	2022
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	141,571	2023	6,338	4.5%	428	-	228	-	2023
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	7,123	2022	222	3.1%	20	4.0%	15	2.1%	2022
NN	JEFFERSON AVE	ATKINSON BLVD	DENBIGH BLVD	35,279	2023	510	1.4%	41	2.0%	20	0.7%	2023
NN	JEFFERSON AVE	35TH ST	25TH ST	9,114	2022	141	1.5%	12	2.3%	8	1.0%	2022
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	10,915	2022	171	1.6%	12	1.9%	7	0.7%	2022
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	9,680	2022	141	1.5%	15	2.7%	7	0.8%	2022
NN	MCMANUS BLVD/SIEMENS WAY	DENBIGH BLVD	BLAND BLVD	7,330	2022	41	0.6%	2	0.3%	4	0.5%	2022

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
NN	RICHNECK RD	DENBIGH BLVD	JEFFERSON AVE	2,963	2020	40	1.0%	6	1.7%	2	0.5%	2016
NN	RICHNECK RD	OLD YORK CL	FORT EUSTIS BLVD	1,592	2019	37	2.3%	4	3.1%	2	0.9%	2019
NN	ROANOKE AVE	I-664	BRIARFIELD RD	2,880	2022	30	1.0%	1	0.7%	3	1.1%	2022
NN	ROANOKE AVE	BRIARFIELD RD	HAMPTON CL	2,919	2022	41	1.4%	1	0.4%	6	1.9%	2022
NN	SAUNDERS RD	HARPERSVILLE RD	HAMPTON CL	9,120	2022	88	1.0%	10	1.7%	7	0.8%	2022
NN	THIMBLE SHOALS BLVD	JEFFERSON AVE	DILIGENCE DR	13,970	2022	82	0.6%	5	0.6%	7	0.5%	2022
NN	THIMBLE SHOALS BLVD	DILIGENCE DR	J CLYDE MORRIS BLVD	7,302	2022	77	1.0%	5	1.1%	7	1.0%	2022
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	12,529	2022	758	6.0%	51	6.5%	33	2.8%	2022
NN	WARWICK BLVD	FORT EUSTIS BLVD	SNIDOW BLVD	26,928	2020	515	1.6%	37	1.7%	53	2.0%	2016
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	33,971	2020	284	0.9%	30	1.3%	24	0.8%	2016
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	23,644	2020	265	1.0%	18	0.7%	35	1.0%	2016
NN	WARWICK BLVD	23RD ST	39TH ST	2,556	2020	67	1.5%	7	2.6%	10	1.0%	2019
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	13,075	2022	176	1.3%	10	1.2%	31	1.4%	2022
NN	YORKTOWN RD	WARWICK BLVD	I-64	6,544	2022	420	6.4%	23	4.1%	22	3.0%	2022
NOR	21ST ST	HAMPTON BLVD	COLLEY AVE	6,600	2022	51	0.7%	7	1.7%	3	0.5%	2015
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	13,076	2021	229	1.8%	18	2.9%	12	1.0%	2021
NOR	27TH ST	HAMPTON BLVD	LLEWELLYN AVE	13,010	2021	190	1.5%	21	2.0%	6	0.6%	2021
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	8,203	2021	70	0.8%	4	0.6%	3	0.5%	2021
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	13,257	2018	214	1.6%	13	1.2%	11	1.1%	2018
NOR	BAINBRIDGE BLVD	CHESAPEAKE CL	S MAIN ST	1,812	2018	114	6.3%	23	7.5%	8	5.6%	2018
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	24,398	2018	1,470	6.0%	128	7.2%	75	3.8%	2018
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	11,690	2021	489	4.2%	31	4.5%	26	2.8%	2021
NOR	BAY AVE	FIRST VIEW ST	I-64	13,511	2018	127	0.9%	7	0.5%	8	0.5%	2018
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	9,342	2021	195	2.1%	9	1.7%	14	1.7%	2021
NOR	BERKLEY AVE	STATE ST	MAIN ST	13,000	2022	514	4.4%	30	3.4%	32	3.1%	2015
NOR	BERKLEY AVE EXT	BERKLEY AVE/FAUQUIER ST	WILSON RD	3,900	2022	121	3.1%	14	6.3%	16	4.6%	2015
NOR	BRAMBLETON AVE	PARK AVE	I-264	66,000	2022	1,678	3.4%	133	4.4%	107	2.7%	2015
NOR	CAPE VIEW AVE	BAYVIEW BLVD	OCEAN VIEW AVE	4,482	2018	60	1.3%	5	1.8%	8	1.8%	2018
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	6,085	2018	113	1.9%	12	3.9%	3	0.6%	2018
NOR	CHURCH ST	PRINCESS ANNE RD	26TH ST	23,000	2022	576	2.3%	51	3.3%	33	1.6%	2018
NOR	COLLEY AVE	27TH ST	53RD ST	12,139	2021	96	0.8%	9	1.2%	3	0.3%	2021
NOR	GRANBY ST	I-564	I-64	25,968	2018	266	1.0%	26	1.5%	21	0.9%	2018
NOR	GRANBY ST	BAYVIEW BLVD	TIDEWATER DR	14,358	2018	171	1.2%	8	0.9%	11	0.7%	2018
NOR	HAMPTON BLVD	38TH ST	LITTLE CREEK RD	34,916	2023	2,084	6.0%	188	7.1%	130	4.8%	2023
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	157,857	2023	5,205	3.7%	368	-	213	-	2023
NOR/VB	I-64	I-264	INDIAN RIVER RD	159,412	2023	4,162	2.8%	250	-	196	-	2023
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	17,301	2018	799	4.6%	59	4.4%	38	2.2%	2018
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	17,000	2022	580	3.2%	68	5.5%	28	1.9%	2018
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	23,295	2023	1,005	4.3%	67	4.3%	45	2.5%	2023
NOR	JOHNSTONS RD	SEWELLS POINT RD	CHESAPEAKE BLVD	6,290	2018	103	1.6%	8	1.9%	9	1.7%	2018
NOR	JOHNSTONS RD/HALPRIN LN	MILITARY HWY	LITTLE CREEK RD	8,156	2018	86	1.0%	7	1.3%	4	0.5%	2018
NOR	KEMPSVILLE RD	NEWTOWN RD	VA BEACH BLVD	18,867	2021	152	0.8%	11	0.7%	7	0.4%	2021
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	17,753	2018	336	1.9%	35	3.3%	9	0.6%	2018
NOR	LITTLE CREEK RD	HAMPTON BLVD	GRANBY ST	15,192	2021	215	1.0%	24	1.3%	10	0.6%	2016
NOR	LLEWELLYN AVE	27TH ST	38TH ST	6,593	2021	62	0.9%	5	1.1%	4	0.7%	2021
NOR	MIDTOWN TUNNEL	PORTSMOUTH CL	BRAMBLETON AVE	42,728	2023	1,998	5.9%	142	5.5%	54	2.0%	2016
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	19,476	2021	239	1.2%	16	1.6%	14	0.7%	2021
NOR	MONTICELLO AVE	CITY HALL AVE	BRAMBLETON AVE	1,438	2021	19	1.3%	2	4.9%	1	0.3%	2021
NOR	MONTICELLO AVE	VA BEACH BLVD	21ST ST	19,302	2021	398	2.1%	32	2.9%	13	0.9%	2021
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	27,000	2022	423	1.4%	57	2.5%	28	1.2%	2015

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
NOR	NORVIEW AVE	TIDEWATER DR	CHESAPEAKE BLVD	4,116	2021	36	0.9%	1	0.4%	2	0.5%	2021
NOR	NORVIEW AVE	I-64	MILITARY HWY	27,403	2018	320	1.2%	26	1.7%	16	0.7%	2018
NOR	NORVIEW AVE	MILITARY HWY	AZALEA GARDEN RD	9,060	2021	77	0.8%	7	1.4%	3	0.4%	2021
NOR	OCEAN VIEW AVE	4TH VIEW ST	GRANBY ST	14,650	2018	147	1.0%	11	1.2%	5	0.4%	2018
NOR	OLNEY RD	COLLEY AVE	DUKE ST/VA BEACH BLVD	8,571	2021	98	1.1%	9	1.1%	6	0.7%	2021
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	11,436	2021	190	1.7%	20	3.6%	5	0.5%	2021
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	6,619	2022	100	1.5%	8	2.0%	4	0.6%	2022
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	AZALEA GARDEN RD	22,241	2023	600	2.7%	58	4.0%	23	1.2%	2023
NOR	ROBIN HOOD RD	AZALEA GARDEN RD	ELLSMERE AVE	6,013	2021	133	2.2%	13	3.2%	8	1.4%	2021
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	CHESAPEAKE BLVD	15,329	2018	421	2.7%	42	4.3%	16	1.2%	2018
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	LITTLE CREEK RD	8,202	2018	168	2.0%	14	2.8%	17	2.5%	2018
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	26,614	2018	310	1.2%	26	1.4%	11	0.4%	2018
NOR	THOLE ST	GRANBY ST	TIDEWATER DR	10,396	2018	110	1.1%	6	0.6%	12	1.2%	2018
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	40,689	2023	913	2.2%	65	2.2%	53	1.7%	2023
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	20,022	2018	193	1.0%	18	1.4%	9	0.5%	2018
NOR	VA BEACH BLVD	TIDEWATER DR	PARK AVE	12,795	2021	268	2.1%	35	5.2%	11	0.9%	2021
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	14,831	2021	395	2.7%	35	4.5%	21	1.5%	2021
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	29,000	2022	279	1.0%	25	1.4%	14	0.6%	2015
NOR	WILLOW WOOD DR	GRANBY ST	TIDEWATER DR	7,025	2021	55	0.8%	6	1.1%	1	0.1%	2021
POQ	EAST YORKTOWN RD	YORK CL	HUNT'S NECK RD	3,804	2022	29	0.8%	3	1.0%	3	0.8%	2022
POQ	EAST YORKTOWN RD	HUNT'S NECK RD	POQUOSON AVE	6,990	2022	80	1.1%	4	0.7%	3	0.4%	2022
POQ	POQUOSON AVE	WYTHE CREEK RD	LITTLE FLORIDA RD	2,564	2022	41	1.6%	4	1.5%	3	1.3%	2022
POQ	VICTORY BLVD	YORK CL	WYTHE CREEK RD	12,481	2022	175	1.4%	16	2.0%	8	0.7%	2022
POQ	WYTHE CREEK RD	HAMPTON CL	LITTLE FLORIDA RD	11,018	2022	159	1.4%	13	1.5%	11	1.0%	2022
PORT	CAVALIER BLVD	CHESAPEAKE CL	GREENWOOD DR	12,208	2022	283	2.3%	32	3.2%	13	1.2%	2022
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	11,137	2022	243	2.2%	28	2.5%	6	0.6%	2022
PORT	CHURCHLAND BLVD	TYRE NECK RD	HIGH ST	8,256	2022	99	1.2%	12	3.0%	2	0.3%	2022
PORT	COAST GUARD BLVD	CEDAR LN	COAST GUARD BASE GATE	2,903	2022	177	6.1%	12	2.7%	14	3.9%	2022
PORT	COUNTY ST	CONSTITUTION AVE	PENINSULA AVE	4,145	2022	94	2.3%	11	4.3%	8	2.0%	2022
PORT	COUNTY ST	PENINSULA AVE	ELM AVE	4,290	2022	96	2.2%	12	4.4%	7	1.8%	2022
PORT	COURT ST	COUNTY ST	HIGH ST	4,371	2022	73	1.7%	3	1.0%	6	1.7%	2022
PORT	CRAWFORD PKWY	EFFINGHAM ST	CRAWFORD ST	2,304	2022	27	1.2%	2	1.4%	2	0.8%	2022
PORT	CRAWFORD ST	CRAWFORD PKWY	LONDON ST	2,264	2022	28	1.2%	2	1.1%	3	1.2%	2022
PORT	CRAWFORD ST/BART ST	COUNTY ST	COURT ST	4,748	2022	64	1.3%	5	1.2%	6	1.2%	2022
PORT	DEEP CREEK BLVD	GREENWOOD DR	PORTSMOUTH BLVD	8,197	2022	91	1.1%	8	1.8%	4	0.6%	2022
PORT	DES MOINES AVE	DEEP CREEK BLVD	I-264	4,730	2022	76	1.6%	5	2.0%	5	1.1%	2022
PORT	EFFINGHAM ST	NORTH ST	CRAWFORD PKWY	14,876	2022	106	0.7%	12	1.0%	5	0.4%	2022
PORT	ELM AVE	SOUTH ST	PORTSMOUTH BLVD	6,418	2022	109	1.7%	12	2.9%	19	3.1%	2022
PORT	ELM AVE (S NORFOLK JORDAN BRIDGE	BURTONS POINT RD	CHESAPEAKE CL	8,408	2020	730	6.9%	39	4.9%	68	4.7%	2022
PORT	ELMHURST LN	AIRLINE BLVD	PORTSMOUTH BLVD	7,808	2022	164	2.1%	22	3.0%	10	1.4%	2022
PORT	GARWOOD AVE	GREENWOOD DR	ELMHURST LN	3,374	2022	262	7.8%	18	8.2%	14	4.7%	2022
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	4,570	2022	31	0.7%	2	1.0%	4	0.8%	2022
PORT	GREENWOOD DR	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	2,811	2022	31	1.1%	3	2.6%	2	0.7%	2022
PORT	HIGH ST	M L K FWY	ELM AVE	10,330	2022	157	1.5%	13	1.9%	11	1.2%	2022
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	64,675	2023	5,166	7.9%	381	-	260	-	2023
PORT	LONDON BLVD	HIGH ST	M L K FWY	14,000	2022	392	2.1%	34	2.8%	25	1.5%	2017
PORT	LONDON BLVD	M L K FWY	ELM AVE	19,710	2022	255	1.3%	24	1.7%	23	1.3%	2022
PORT	PORTCENTRE PKWY	PORTSMOUTH BLVD	CRAWFORD ST	8,431	2022	118	1.4%	1	0.1%	7	0.8%	2022
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	21,325	2022	208	1.0%	20	1.8%	9	0.5%	2022
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	7,991	2022	153	1.9%	7	1.9%	14	1.9%	2022

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	3,303	2022	38	1.2%	2	0.5%	3	0.6%	2022
PORT	TOWNE POINT RD	WESTERN FREEWAY	CHESAPEAKE CL	23,454	2022	339	1.4%	36	2.2%	29	1.4%	2022
PORT	TURNPIKE RD	PORTSMOUTH BLVD	FREDERICK BLVD	4,345	2022	75	1.7%	4	2.3%	3	0.8%	2022
PORT	TURNPIKE RD	HOWARD ST	COUNTY ST	5,034	2022	129	2.6%	11	3.3%	2	0.4%	2022
PORT	TWIN PINES RD	TOWNE POINT RD	HEDGEROW LN	9,825	2022	100	1.0%	15	2.3%	3	0.3%	2022
PORT	TYRE NECK RD	HIGH ST	CHURCHLAND BLVD	5,270	2022	48	0.9%	2	0.7%	3	0.5%	2022
PORT	TYRE NECK RD	CHURCHLAND BLVD	WEST NORFOLK RD	3,404	2022	59	1.7%	1	0.3%	9	2.6%	2022
PORT	VICTORY BLVD	I-264	GREENWOOD DR	23,440	2022	897	3.8%	70	5.4%	40	2.1%	2022
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	10,257	2022	565	5.5%	18	2.0%	44	4.3%	2022
PORT	W NORFOLK RD	CHURCHLAND BLVD	TYRE NECK RD	3,188	2022	43	1.3%	3	1.6%	2	0.7%	2022
PORT	W NORFOLK RD	TYRE NECK RD	CEDAR LN	5,991	2022	47	0.8%	4	1.2%	3	0.4%	2022
PORT/SUF	WESTERN FWY	COLLEGE DR	TOWNE POINT RD	65,645	2023	3,517	5.4%	297	-	129	-	2023
SH/CO	BUS ROUTE 58	ROUTE 35	ROUTE 58	6,715	2018	568	8.5%	45	9.7%	31	5.3%	2018
SH	BUSINESS ROUTE 58 (CAMP PKWY)	ROUTE 58	FRANKLIN CL	3,212	2023	47	1.5%	4	1.2%	2	0.7%	2023
SH	ROUTE 35	NC STATE LINE	ROUTE 186	1,406	2018	238	16.9%	24	17.3%	8	6.4%	2018
SH/BO	ROUTE 35	ROUTE 186	ROUTE 671	3,652	2018	490	13.4%	37	14.0%	18	5.3%	2018
SH	ROUTE 35	ROUTE 671	GRAYS SHOP RD (RTE 673)	1,478	2022	229	15.5%	17	11.3%	6	5.2%	2022
SH	ROUTE 35	GRAYS SHOP RD (RTE 673)	ROUTE 58	1,651	2022	188	12.6%	15	8.5%	7	4.4%	2018
SH	ROUTE 35/BUS ROUTE 58	ROUTE 58	BUS RTE 58	3,314	2018	247	7.5%	25	5.9%	16	4.4%	2018
SH	ROUTE 35	IVOR RD (RTE 616)	CARYS BRIDGE RD (RTE 653)	2,468	2018	581	23.5%	35	17.6%	28	13.0%	2018
SH	ROUTE 35	CARYS BRIDGE RD (RTE 653)	SUSSEX CL	2,365	2018	575	24.3%	33	17.5%	27	13.1%	2018
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	13,947	2023	4,039	29.0%	253	30.4%	196	20.2%	2023
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	20,818	2023	4,636	22.3%	285	22.0%	246	16.1%	2023
SH	ROUTE 186	NC STATE LINE	JOYNER RD (RTE 701)	907	2018	250	27.6%	10	17.2%	9	12.0%	2018
SH/BR	ROUTE 186	JOYNER RD (RTE 701)	WCL BOYKINS	1,382	2018	285	20.6%	21	22.1%	11	8.4%	2018
SH/BO	ROUTE 186	WCL BOYKINS	ROUTE 35	1,920	2018	294	15.3%	23	18.6%	10	5.6%	2018
SH	ROUTE 189	ROUTE 258	PRETLOW RD (RTE 714)	1,797	2018	31	1.7%	4	3.5%	1	0.3%	2018
SH	ROUTE 189	PRETLOW RD (RTE 714)	SUFFOLK CL	2,390	2018	41	1.7%	4	2.4%	4	1.7%	2018
SH	ROUTE 258	ROUTE 189	DOGWOOD BEND RD (RTE 684)	3,779	2018	487	12.9%	27	13.1%	28	8.5%	2018
SH	ROUTE 460	SUSSEX CL	ROUTE 616 (IVOR RD)	10,432	2023	2,491	23.9%	152	23.4%	123	14.4%	2023
SH	ROUTE 616	ROUTE 35	SAINT LUKES RD (RTE 633)	1,048	2021	54	5.2%	7	6.1%	5	4.2%	2021
SH	ROUTE 616	SAINT LUKES RD (RTE 633)	SEACOCK RD (RTE 614)	1,018	2021	88	8.6%	8	7.6%	6	5.5%	2021
SH	ROUTE 616	SEACOCK RD (RTE 614)	MILLFIELD RD (RTE 605)	1,299	2021	90	6.9%	7	6.2%	7	4.9%	2021
SH	ROUTE 616	MILLFIELD RD (RTE 605)	SCL IVOR	1,285	2021	120	9.3%	12	12.8%	10	7.0%	2021
SH	ROUTE 616	SCL IVOR	ROUTE 460	2,223	2019	148	6.7%	10	6.7%	8	3.8%	2019
SH	ROUTE 671	ROUTE 35	CROSS KEYS RD (RTE 665)	1,869	2022	290	15.5%	25	17.8%	8	4.5%	2022
SH	ROUTE 671	CROSS KEYS RD (RTE 665)	WCL NEWSOMS	2,136	2022	282	13.2%	23	15.3%	9	4.3%	2022
SH	ROUTE 671	WCL NEWSOMS	GRAYS SHOP RD (RTE 673)	2,053	2022	289	14.1%	26	17.6%	10	5.2%	2022
SH	ROUTE 671	GRAYS SHOP RD (RTE 673)	ECL NEWSOMS	2,278	2022	287	12.6%	23	13.1%	12	6.1%	2022
SH	ROUTE 671	ECL NEWSOMS	SUNBEAM RD (RTE 680)	2,927	2022	329	10.1%	26	10.2%	14	4.6%	2018
SH	ROUTE 671	DELAWARE RD (RTE 687)	ROUTE 58	5,704	2022	1,061	18.6%	81	24.0%	83	18.0%	2022
SUF	BENNETTS PASTURE RD	KINGS HWY	BRIDGE RD	8,915	2020	204	2.0%	18	2.0%	4	0.4%	2017
SUF	BRIDGE RD	CRITTENDEN RD	BENNETTS PASTURE RD	24,145	2023	1,040	4.6%	120	6.6%	34	1.6%	2017
SUF	BUCKHORN DR	ROUTE 58	INDIAN TRAIL	757	2023	41	5.4%	3	5.4%	3	3.8%	2023
SUF	BUCKHORN DR	INDIAN TRAIL	ISLE OF WIGHT CL	387	2023	4	1.0%	1	1.7%	1	2.9%	2023
SUF	CAROLINA RD	NC STATE LINE	ADAMS SWAMP RD (RTE 642)	3,704	2023	244	6.6%	15	5.3%	17	4.9%	2023
SUF	CAROLINA RD	CYPRESS CHAPEL RD (RTE 675)	BABBTOWN RD (RTE 759)	4,327	2023	244	5.6%	15	4.4%	17	4.2%	2023
SUF	COLLEGE DR	WESTERN FREEWAY	HAMPTON ROADS PKWY	22,905	2023	419	1.8%	44	3.0%	19	0.9%	2023
SUF	COLLEGE DR	HAMPTON ROADS PKWY	I-664	24,425	2023	402	1.6%	28	1.8%	19	0.9%	2023
SUF	COLLEGE DR	I-664	HARBOUR VIEW BLVD	13,928	2023	1,140	8.2%	85	7.6%	34	2.9%	2023

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	11,455	2023	349	3.0%	26	4.8%	16	1.5%	2023
SUF	COPELAND RD	ROUTE 58	WHALEYVILLE BLVD	788	2023	100	12.7%	6	7.6%	4	7.0%	2023
SUF	COPELAND RD	WHALEYVILLE BLVD	CAROLINA RD	486	2023	31	6.3%	4	11.9%	4	3.2%	2023
SUF	CRITTENDEN RD	KINGS HWY	BRIDGE RD (RTE 17)	3,631	2023	138	3.8%	9	3.3%	4	1.1%	2023
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	2,418	2023	52	2.1%	6	2.9%	3	1.0%	2023
SUF	EVERETTS RD	MOORE FARM LN	GODWIN BLVD	2,838	2023	47	1.6%	3	1.2%	3	0.8%	2023
SUF	FINNEY AVE	N MAIN ST	PINNER ST	8,344	2023	119	1.4%	12	2.2%	10	1.3%	2023
SUF	GODWIN BLVD	KINGS FORK ROAD	EVERETS RD	13,770	2023	663	4.8%	45	4.5%	36	2.8%	2023
SUF	HAMPTON ROADS PKWY	HARBOUR VIEW BLVD	COLLEGE DR	12,776	2020	163	1.2%	16	2.2%	9	0.8%	2017
SUF	HAMPTON ROADS PKWY	COLLEGE DR	PORTSMOUTH CL	11,686	2023	58	0.5%	4	0.6%	4	0.3%	2023
SUF	HARBOUR VIEW BLVD	BRIDGE RD	HAMPTON ROADS PKWY	21,215	2023	260	1.2%	26	1.6%	11	0.6%	2023
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	9,385	2023	284	3.0%	24	4.1%	9	1.1%	2023
SUF	HOLLAND RD (BUS RTE 58)	RURITAN BLVD	HOLLAND RD (RTE 58)	2,574	2023	147	5.7%	13	7.6%	3	0.9%	2023
SUF	I-664	WESTERN FWY	COLLEGE DR	79,117	2023	5,803	7.4%	382	-	259	-	2023
SUF	KINGS FORK RD	PITCHKETTLE RD	PRUDEN BLVD	3,199	2023	103	3.2%	9	3.2%	7	1.9%	2023
SUF	KINGS HWY	GODWIN BLVD	CRITTENDEN RD	3,978	2023	208	5.2%	19	5.4%	8	2.0%	2023
SUF	KINGS HWY	BENNETTS PASTURE RD	NANSEMOND PKWY	3,670	2023	142	3.9%	8	2.7%	11	3.2%	2023
SUF	LAKE PRINCE DR (RTE 604)	ROUTE 460 (PRUDEN BLVD)	ROUTE 603 (EVERETTS RD)	2,916	2023	40	1.4%	7	2.7%	3	1.1%	2023
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	12,510	2023	104	0.8%	7	0.9%	5	0.5%	2023
SUF	MAIN ST	CONSTANCE RD	PRUDEN BLVD/GODWIN BLVD	27,792	2023	310	1.1%	24	1.7%	12	0.5%	2023
SUF	MARKET ST	WASHINGTON ST	MAIN ST	3,476	2023	55	1.6%	5	2.0%	4	1.2%	2023
SUF	NANSEMOND PKWY	KINGS HWY	SHOULDERS HILL RD	16,405	2023	640	3.9%	48	3.6%	25	1.5%	2023
SUF	PINNER ST	WASHINGTON ST	FINNEY AVE	8,916	2023	111	1.2%	7	1.2%	10	1.3%	2023
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	5,274	2023	163	3.1%	8	2.0%	7	1.2%	2023
SUF	PITCHKETTLE RD	SUFFOLK BYPASS	KINGS FORK RD	3,636	2023	89	2.4%	6	1.5%	5	1.1%	2023
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	20,228	2023	950	4.7%	48	3.9%	47	2.8%	2023
SUF	PROVIDENCE RD (RTE 604)	KINGS FORK RD	ROUTE 460 (PRUDEN BLVD)	1,877	2023	36	1.9%	2	0.8%	4	1.6%	2023
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	8,108	2023	101	1.2%	17	2.2%	4	0.4%	2023
SUF	ROUTE 189 (IN HOLLAND)	RTE 58 (SOUTH OF HOLLAND)	BUS RTE 58 (RURITAN BLVD)	721	2023	50	6.9%	5	10.0%	2	2.5%	2023
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	1,786	2023	133	7.4%	6	5.0%	13	7.1%	2023
SUF	ROUTE 189	RTE 272	RTE 58	2,006	2023	446	22.2%	20	13.7%	26	15.3%	2023
SUF	ROUTE 258	RTE 58	ISLE OF WIGHT CL	2,445	2023	921	37.6%	50	25.7%	69	33.4%	2023
SUF	ROUTE 272	ROUTE 189	ROUTE 58	1,521	2023	101	6.6%	3	3.3%	3	1.8%	2023
SUF	ROUTE 616	ROUTE 58	WHALEYVILLE BLVD	331	2023	11	3.3%	1	4.4%	1	1.5%	2023
SUF	RURITAN BLVD (BUS RTE 58)	ISLE OF WIGHT CL	RTE 189 (HOLLAND RD BUS)	1,969	2023	113	5.7%	12	8.7%	6	2.7%	2023
SUF	SHOULDERS HILL RD	NANSEMOND PKWY	PUGHSVILLE RD	11,301	2023	200	1.8%	26	2.1%	7	0.6%	2023
SUF	TOWN POINT RD	PUGHSVILLE RD	BRIDGE RD	1,460	2023	16	1.1%	3	2.8%	4	2.6%	2023
SUF	WASHINGTON ST	W CONSTANCE RD	MAIN ST	6,789	2023	92	1.3%	4	0.9%	7	1.1%	2023
SUF	WASHINGTON ST	MAIN ST	PINNER ST	7,009	2023	88	1.2%	7	1.7%	2	0.3%	2023
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	6,005	2022	994	16.6%	63	17.8%	42	8.4%	2022
SUF	WILROY RD	CONSTANCE RD	SUFFOLK BYPASS	6,584	2023	214	3.3%	17	4.0%	11	1.8%	2023
SUF	WILROY RD	SUFFOLK BYPASS	NANSEMOND PKWY	11,107	2023	623	5.6%	70	7.7%	15	1.4%	2023
SUR	ROUTE 10	PRINCE GEORGE CL	ROUTE 40	1,684	2018	172	10.2%	13	9.5%	9	5.2%	2018
SUR	ROUTE 10	ROUTE 40	ROUTE 31 (SOUTH)	2,649	2023	227	8.6%	12	7.2%	10	4.2%	2023
SUR	ROUTE 31	ROUTE 630	ROUTE 10 (SOUTH)	1,460	2018	55	3.7%	7	5.0%	6	3.2%	2018
SUR	ROUTE 31	ROUTE 10 (NORTH)	JAMESTOWN-SCOTLAND FERRY	1,899	2018	36	1.9%	5	3.3%	2	0.8%	2018
SUR	ROUTE 40	SUSSEX CL	ROUTE 615	856	2021	88	10.3%	8	12.4%	4	4.2%	2021
SUR	ROUTE 40	ROUTE 615	ROUTE 10	812	2021	61	7.5%	5	8.8%	3	3.7%	2021
VB	21ST ST	PARKS AVE	PACIFIC AVE	12,614	2023	190	1.1%	24	2.5%	6	0.4%	2021
VB	22ND ST	PARKS AVE	PACIFIC AVE	10,895	2023	159	1.4%	10	1.3%	13	1.5%	2021

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
VB	ATLANTIC AVE	FORT STORY	83RD ST	2,952	2023	70	2.2%	8	3.1%	7	2.9%	2021
VB	ATLANTIC AVE	PACIFIC AVE	LASKIN RD	5,958	2023	202	5.1%	12	6.6%	10	3.2%	2021
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	20,260	2023	209	0.9%	16	1.0%	12	0.6%	2021
VB	BIRDNECK RD	GENERAL BOOTH BLVD	VA BEACH BLVD	12,474	2023	291	1.9%	30	3.1%	11	0.8%	2021
VB	BLACKWATER RD	PUNGO FERRY RD	CHESAPEAKE CL	2,409	2023	246	8.4%	20	8.7%	13	5.3%	2021
VB	BONNEY RD	INDEPENDENCE BLVD	ROSEMONT RD	13,459	2023	133	1.0%	13	1.9%	5	0.4%	2021
VB	CENTERVILLE TNPK	JAKE SEARS RD	INDIAN RIVER RD	19,078	2023	646	3.2%	50	3.7%	7	0.4%	2021
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	NCL VA BEACH	10,337	2023	1,453	14.1%	-	-	-	-	2023
VB	COLUMBUS ST	INDEPENDENCE BLVD	CONSTITUTION DR	12,140	2023	107	0.7%	8	1.0%	11	0.8%	2021
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	19,406	2021	407	1.6%	37	1.7%	15	0.7%	2018
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	27,748	2023	733	2.5%	53	2.5%	41	1.7%	2018
VB	ELBOW RD	INDIAN RIVER RD (EAST)	SALEM RD	11,296	2023	114	0.9%	6	0.6%	9	0.7%	2021
VB	FIRST COLONIAL RD	LASKIN RD	OLD DONATION PKWY	28,889	2023	396	1.0%	40	1.3%	32	1.0%	2015
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	27,119	2023	343	1.4%	23	1.5%	14	0.7%	2018
VB	GENERAL BOOTH BLVD	BIRDNECK RD	HARBOUR POINT	18,366	2023	216	1.5%	18	2.1%	9	0.8%	2021
VB	GREAT NECK RD	SHOREHAVEN RD	SHORE DR	37,527	2023	280	1.0%	24	1.2%	11	0.4%	2018
VB	HARPERS RD	DAM NECK RD	OCEANA BLVD	7,019	2023	102	1.4%	8	1.9%	3	0.4%	2021
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	147,097	2023	3,139	2.1%	253	-	130	-	2023
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	26,844	2023	341	1.3%	28	1.4%	7	0.3%	2018
VB	INDEPENDENCE BLVD	VA BEACH BLVD	PEMBROKE BLVD	50,768	2023	389	0.8%	37	1.0%	16	0.4%	2023
VB	INDIAN LAKES BLVD	FERRELL PKWY	INDIAN RIVER RD	10,964	2023	205	1.5%	16	1.5%	12	0.9%	2021
VB	INDIAN RIVER RD	NORTH LANDING RD	WEST NECK RD	6,277	2023	178	2.7%	20	4.7%	9	1.6%	2021
VB	INTERNATIONAL PKWY	LYNNHAVEN PKWY	LONDON BRIDGE RD	10,825	2023	367	4.0%	21	3.3%	18	1.9%	2021
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	27,522	2022	382	1.0%	43	1.7%	11	0.3%	2015
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	35,247	2023	414	1.2%	27	1.0%	34	1.1%	2018
VB	LANDSTOWN RD	SALEM RD	DAM NECK RD	2,402	2023	43	1.6%	3	1.2%	3	1.0%	2021
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	25,096	2023	242	1.0%	17	1.3%	17	0.8%	2023
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	17,292	2023	395	2.0%	40	3.0%	13	0.8%	2021
VB	LONDON BRIDGE RD	INTERNATIONAL PKWY	POTTERS RD	33,781	2023	900	3.0%	86	3.3%	47	1.7%	2018
VB	LYNNHAVEN PKWY	CENTERVILLE TNPK	INDIAN RIVER RD	19,117	2023	155	0.9%	15	1.1%	4	0.2%	2018
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	19,391	2022	298	1.1%	22	1.2%	19	0.8%	2021
VB	LYNNHAVEN PKWY	HOLLAND RD	S LYNNHAVEN RD	34,234	2023	276	0.8%	21	0.8%	15	0.4%	2015
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	25,711	2022	590	1.9%	37	1.7%	31	1.0%	2015
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	24,985	2023	393	1.5%	36	1.9%	17	0.8%	2021
VB	NEWTOWN RD	DIAMOND SPRINGS RD	HAYGOOD RD	4,686	2023	159	2.3%	21	3.9%	15	2.3%	2021
VB	NORFOLK AVE	BIRDNECK RD	PACIFIC AVE	12,090	2023	98	1.3%	13	3.1%	0	0.0%	2021
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	37,521	2023	1,853	4.9%	117	4.2%	76	2.4%	2023
VB	NORTH LANDING RD	INDIAN RIVER RD	PRINCESS ANNE RD	9,832	2023	132	1.0%	7	0.7%	6	0.4%	2021
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	34,154	2022	322	0.9%	18	0.7%	18	0.7%	2021
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	9,487	2023	151	1.5%	14	2.1%	8	0.9%	2021
VB	PLAZA TRAIL, S.	HOLLAND RD	ROSEMONT RD	9,655	2022	45	0.5%	3	0.7%	1	0.1%	2021
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	21,920	2023	292	1.1%	30	1.3%	20	0.7%	2018
VB	PRINCESS ANNE RD	BAXTER RD	PROVIDENCE RD	28,295	2023	471	1.6%	42	2.0%	18	0.6%	2018
VB	PRINCESS ANNE RD	INDEPENDENCE BLVD	DAM NECK RD	55,438	2023	980	1.8%	88	2.2%	34	0.7%	2019
VB	PRINCESS ANNE RD	HOLLAND RD	GENERAL BOOTH BLVD	13,568	2023	236	1.7%	28	2.9%	9	0.7%	2021
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	9,883	2023	396	5.4%	36	7.1%	16	2.6%	2021
VB	PRINCESS ANNE RD	PUNGO FERRY RD	NORTH CAROLINA STATE LINE	4,024	2023	445	12.8%	42	16.1%	14	5.2%	2021
VB	PROVIDENCE RD	INDIAN RIVER RD	KEMPSVILLE RD	18,216	2023	178	0.9%	17	1.5%	5	0.2%	2021
VB	PUNGO FERRY RD	BLACKWATER RD	PRINCESS ANNE RD	4,672	2023	375	9.5%	30	10.0%	18	5.2%	2021
VB	ROSEMONT RD	BUCKNER BLVD	LYNNHAVEN PKWY	14,128	2023	256	1.8%	29	2.9%	4	0.3%	2021

Appendix B (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 Trucks	Existing AM Peak Hour Truck %	Existing PM Peak Hour Trucks	Existing PM Peak Hour Truck %	Existing Truck Data Year
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	29,069	2023	320	1.1%	23	1.2%	14	0.6%	2021
VB	SALEM RD	ELBOW RD	LYNNHAVEN PKWY	11,721	2023	212	1.3%	26	2.4%	9	0.6%	2021
VB	SANDBRIDGE RD	PRINCESS ANNE RD	ATWOODTOWN RD	13,098	2023	183	1.2%	20	2.5%	13	1.1%	2021
VB	SHORE DRIVE	NORTHAMPTON BLVD	GREAT NECK RD	36,662	2023	433	1.2%	35	1.3%	20	0.6%	2023
VB	VA BEACH BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	35,868	2023	263	0.7%	21	1.2%	16	0.5%	2021
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	7,765	2023	160	1.4%	19	3.2%	6	0.7%	2021
VB	WESLEYAN DR	BAKER RD	DIAMOND SPRINGS RD	15,248	2023	142	1.0%	7	0.7%	8	0.6%	2021
VB	WEST NECK RD	NORTH LANDING RD	INDIAN RIVER RD	4,246	2023	235	3.1%	26	4.8%	13	2.1%	2021
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	38,972	2023	487	1.5%	33	1.6%	43	1.7%	2015
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	11,997	2022	164	1.4%	16	2.4%	7	0.7%	2022
WMB	CAPITOL LANDING RD	BYPASS RD	MERRIMAC TRAIL	6,580	2022	120	1.8%	7	1.6%	7	1.2%	2022
WMB	HENRY ST S.	ROUTE 199	FRANCIS ST	2,561	2022	39	1.5%	3	1.7%	4	1.7%	2022
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	4,880	2022	124	2.5%	9	3.0%	6	1.2%	2022
WMB	IRONBOUND RD	DEPUE DR	LONGHILL RD	9,301	2022	83	0.9%	8	1.6%	3	0.4%	2022
WMB	JAMESTOWN RD	JOHN TYLER LN	BOUNDARY ST	8,109	2022	130	1.6%	15	2.4%	6	0.8%	2022
WMB	LAFAYETTE ST	CAPITOL LANDING RD	PAGE ST	7,942	2022	109	1.4%	8	1.8%	4	0.6%	2022
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	5,716	2022	123	2.2%	9	2.6%	8	1.6%	2022
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	8,370	2022	160	1.9%	14	2.4%	8	1.0%	2022
WMB	MONTICELLO AVE	IRONBOUND RD	TREYBURN DR	16,274	2022	113	0.7%	12	1.4%	3	0.2%	2022
WMB	PAGE ST	SECOND ST	YORK ST	12,333	2022	176	1.4%	11	1.5%	11	1.1%	2022
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	20,000	2022	234	0.9%	14	1.2%	8	0.4%	2016
WMB	RICHMOND RD	BYPASS RD	MONTICELLO AVE	18,928	2022	178	0.9%	15	1.7%	10	0.7%	2022
WMB	RICHMOND RD	MONTICELLO AVE	BOUNDARY ST	8,564	2022	142	1.7%	12	2.6%	11	1.6%	2022
WMB	ROUTE 132Y	ROUTE 132	COLONIAL PKWY	4,487	2022	79	1.7%	7	2.9%	5	1.2%	2022
WMB	SECOND ST	PAGE ST	YORK CL	11,445	2022	211	1.8%	16	2.4%	9	0.9%	2022
WMB	YORK ST	PAGE ST	JAMES CITY CL	11,188	2022	176	1.6%	17	2.5%	7	0.7%	2022
YC	BALLARD ST	COOK RD	COAST GUARD TRAINING CENTER	2,071	2022	32	1.5%	1	0.4%	0	0.0%	2022
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	8,489	2022	62	0.7%	6	1.0%	3	0.3%	2022
YC	BYPASS RD	WILLIAMSBURG CL	ROUTE 132/WILLIAMSBURG CL	20,000	2022	233	0.9%	16	1.3%	10	0.5%	2016
YC	COOK RD	GEORGE WASHINGTON HWY	GOOSLEY RD	5,430	2022	61	1.1%	4	1.3%	2	0.3%	2022
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	13,407	2023	162	1.2%	14	1.7%	6	0.5%	2023
YC	FORT EUSTIS BLVD EXT	ROUTE 17	OLD YORK - HAMPTON HWY	3,613	2022	223	6.2%	27	10.0%	10	2.7%	2022
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	6,831	2023	262	3.8%	27	5.7%	13	1.9%	2023
YC	GOOSLEY RD	ROUTE 17	COOK RD	1,322	2022	21	1.6%	2	2.2%	1	0.4%	2022
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	21,000	2022	183	0.7%	17	0.9%	5	0.2%	2016
YC	I-64	RTE 199/646	RTE 143	67,219	2023	7,347	10.7%	422	-	275	-	2023
YC	LIGHTFOOT RD	ROUTE 60	MOORETOWN RD	10,732	2022	132	1.2%	9	1.6%	7	0.8%	2022
YC	MOORETOWN RD	AIRPORT RD	OLD MOORETOWN RD	9,062	2022	166	1.8%	14	2.5%	7	0.9%	2022
YC	NEWMAN RD	I-64	FENTON MILL RD	3,023	2022	78	2.6%	8	3.9%	5	2.0%	2022
YC	OLD WILLIAMSBURG RD	NEWPORT NEWS CL	BAPTIST RD/MAIN RD	10,962	2023	218	2.0%	13	1.4%	15	1.5%	2023
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	5,345	2023	78	1.5%	4	0.7%	6	1.0%	2023
YC	ROUTE 132	BYPASS RD/WILLIAMSBURG CL	ROUTE 143	9,250	2022	167	1.8%	19	3.4%	4	0.5%	2022
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	34,153	2023	861	2.5%	64	2.3%	37	1.2%	2023
YC	WALLER MILL RD	ROUTE 60	MOORETOWN RD	4,045	2022	52	1.3%	4	1.6%	1	0.3%	2022

Appendix B (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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	22ND ST	LIBERTY ST	BERKLEY AVE/NORFOLK CL	EW	0.26	0.03	0.25	0.28	0.10	0.09
CHES	AIRLINE BLVD	I-664	JOLLIFF RD	EW	0.17	0.21	0.11	0.12	0.17	0.14
CHES	AIRLINE BLVD	JOLLIFF RD	PORTSMOUTH CL	EW	0.17	0.21	0.11	0.12	0.12	0.11
CHES	ATLANTIC AVE	CAMPOSTELLA RD	PROVIDENCE RD	NS	0.19	0.33	0.31	0.44	0.98	1.75
CHES	ATLANTIC AVE	PROVIDENCE RD	OLD ATLANTIC AVE	NS	0.05	0.00	0.04	0.00	0.15	0.00
CHES	ATLANTIC AVE	OLD ATLANTIC AVE	CAMPOSTELLA RD	NS	0.05	0.00	0.04	0.00	0.09	0.00
CHES	BAINBRIDGE BLVD	DOMINION BLVD	GREAT BRIDGE BLVD	NS	-	-	-	-	-	-
CHES	BAINBRIDGE BLVD	GREAT BRIDGE BLVD	MILITARY HWY	NS	0.22	0.19	0.20	0.18	1.17	0.90
CHES	BAINBRIDGE BLVD	MILITARY HWY	FREEMAN AVE	NS	0.25	0.09	0.18	0.04	0.56	0.14
CHES	BAINBRIDGE BLVD	FREEMAN AVE	SWAIN AVE	NS	0.16	0.28	0.16	0.19	0.42	0.60
CHES	BAINBRIDGE BLVD	SWAIN AVE	CHESAPEAKE DR	NS	0.16	0.28	0.16	0.19	0.42	0.60
CHES	BAINBRIDGE BLVD	CHESAPEAKE DR	POINDEXTER ST	NS	0.16	0.28	0.16	0.19	0.32	0.45
CHES	BAINBRIDGE BLVD	POINDEXTER ST	NORFOLK CL	NS	-	-	-	-	-	-
CHES	BALLAHACK RD	GEORGE WASHINGTON HWY	OLD BATTLEFIELD BLVD	EW	0.05	0.07	0.08	0.05	0.01	0.01
CHES	BATTLEFIELD BLVD	NORTH CAROLINA STATE LINE	BALLAHACK RD	NS	0.01	0.07	0.04	0.07	0.14	0.31
CHES	BATTLEFIELD BLVD	BALLAHACK RD	GALLBUSH RD	NS	0.04	0.09	0.06	0.13	0.23	0.24
CHES	BATTLEFIELD BLVD	GALLBUSH RD	INDIAN CREEK RD	NS	0.10	0.06	0.10	0.08	0.26	0.23
CHES	BATTLEFIELD BLVD	INDIAN CREEK RD	CENTERVILLE TNPK	NS	0.35	0.16	0.17	0.12	0.78	0.41
CHES	BATTLEFIELD BLVD	CENTERVILLE TNPK	HILLCREST PKWY	NS	0.61	0.39	0.24	0.70	0.87	1.24
CHES	BATTLEFIELD BLVD	HILLCREST PKWY	PEACEFUL RD/HILLWELL RD	NS	0.17	0.14	0.21	0.07	0.19	0.09
CHES	BATTLEFIELD BLVD	PEACEFUL RD/HILLWELL RD	HANBURY RD	NS	0.17	0.14	0.21	0.07	0.10	0.08
CHES	BATTLEFIELD BLVD	HANBURY RD	JOHNSTOWN RD	NS	0.43	0.40	0.46	0.54	0.30	0.36
CHES	BATTLEFIELD BLVD	JOHNSTOWN RD	CEDAR RD	NS	0.83	1.08	1.09	1.34	1.65	2.14
CHES	BATTLEFIELD BLVD	CEDAR RD	GREAT BRIDGE BLVD/KEMPSVILLE RD	NS	0.65	0.43	0.72	1.69	1.18	2.95
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BLVD/KEMPSVILLE RD	GREAT BRIDGE BYPASS	NS	0.02	0.23	0.04	1.31	0.03	1.69
CHES	BATTLEFIELD BLVD	GREAT BRIDGE BYPASS	VOLVO PKWY	NS	0.79	0.13	0.49	0.94	2.08	2.03
CHES	BATTLEFIELD BLVD	VOLVO PKWY	I-64	NS	0.03	0.96	0.40	1.81	0.51	5.22
CHES	BATTLEFIELD BLVD	I-64	MILITARY HWY	NS	0.11	0.13	0.40	0.71	1.53	1.67
CHES	BATTLEFIELD BLVD	MILITARY HWY	CAMPOSTELLA RD	NS	0.14	0.18	0.57	0.21	1.60	1.18
CHES	BENEFIT RD	JOHNSTOWN RD	SIGN PINE RD	EW	0.04	0.07	0.05	0.03	0.02	0.02
CHES	BLACKWATER RD	VIRGINIA BEACH CL	FENTRESS AIRFIELD RD	NS	0.05	0.11	0.08	0.04	0.11	0.11
CHES	BRIDGE RD	SUFFOLK CL	CHURCHLAND BLVD	EW	0.08	0.06	0.25	0.27	0.19	0.21
CHES	BRUCE RD	TAYLOR RD	TYRE NECK RD	EW	-	-	-	-	-	-
CHES	BUTTS STATION RD	KEMPSVILLE RD	ELBOW RD	EW	0.10	0.34	0.21	0.18	0.18	0.49
CHES	BUTTS STATION RD	ELBOW RD	CENTERVILLE TNPK	EW	0.20	0.99	0.52	0.38	0.78	1.04
CHES	CAMPOSTELLA RD	GREAT BRIDGE BLVD	MILITARY HWY	NS	0.20	0.00	0.22	0.14	0.07	0.01
CHES	CAMPOSTELLA RD	MILITARY HWY	BATTLEFIELD BLVD	NS	0.00	0.15	0.02	0.45	0.00	0.56
CHES	CAMPOSTELLA RD	BATTLEFIELD BLVD	PROVIDENCE RD	NS	-	-	-	-	-	-
CHES	CAMPOSTELLA RD	PROVIDENCE RD	ATLANTIC AVE	NS	-	-	-	-	-	-
CHES	CAMPOSTELLA RD	ATLANTIC AVE	NORFOLK CL/BERKELY AVE EXT	NS	0.20	0.28	0.17	0.22	0.08	0.14
CHES	CANAL DR	MILITARY HWY	GEORGE WASHINGTON HWY	NS	0.37	0.68	0.29	1.22	0.26	0.72
CHES	CAVALIER BLVD	MILITARY HWY	PORTSMOUTH CL	NS	0.14	0.20	0.07	0.24	0.53	0.77
CHES	CEDAR RD	SHIPYARD RD/MOSES GRANDY TR	SCENIC PKWY	EW	-	-	-	-	-	-
CHES	CEDAR RD	SCENIC PKWY	MOSES GRANDY TRAIL	EW	-	-	-	-	-	-

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
CHES	CEDAR RD	DOMINION BLVD	BELLS MILL RD (WEST)	EW	0.28	0.17	0.31	0.29	0.43	0.43
CHES	CEDAR RD	BELLS MILL RD (WEST)	BELLS MILL RD (EAST)	EW	0.28	0.17	0.31	0.29	0.55	0.56
CHES	CEDAR RD	BELLS MILL RD (EAST)	BRIARFIELD DR	EW	0.28	0.17	0.31	0.29	0.41	0.41
CHES	CEDAR RD	BRIARFIELD DR	BATTLEFIELD BLVD	EW	0.28	0.17	0.31	0.29	0.41	0.41
CHES	CENTERVILLE TNPK	BATTLEFIELD BLVD	ETHRIDGE MANOR BLVD	NS	0.08	0.15	0.08	0.13	0.05	0.07
CHES	CENTERVILLE TNPK	ETHRIDGE MANOR BLVD	MT PLEASANT RD	NS	0.22	0.11	0.12	0.17	0.08	0.08
CHES	CENTERVILLE TNPK	MT PLEASANT RD	BUTTS STATION RD	NS	0.36	0.31	0.24	0.32	0.32	0.42
CHES	CENTERVILLE TNPK	BUTTS STATION RD	ELBOW RD	NS	0.39	0.43	0.41	1.23	0.35	0.58
CHES	CENTERVILLE TNPK	ELBOW RD	S.E. PARKWAY CORRIDOR	NS	0.66	0.40	0.34	0.32	0.14	0.09
CHES	CENTERVILLE TNPK	S.E. PARKWAY CORRIDOR	VA BEACH CL	NS	0.66	0.40	0.34	0.32	0.14	0.09
CHES	CHESAPEAKE EXPWY	GALLBUSH RD	BATTLEFIELD BLVD (NEAR INDIAN CRE	NS	0.00	0.14	0.00	0.01	0.00	0.08
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (NEAR INDIAN CRE	HILLCREST PKWY	NS	0.00	0.09	0.00	0.00	0.00	0.02
CHES	CHESAPEAKE EXPWY	HILLCREST PKWY	BATTLEFIELD BLVD (S OF GREAT BRIDC	NS	0.03	0.05	0.01	0.00	0.02	0.01
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (S OF GREAT BRIDC	HANBURY RD	NS	0.30	0.06	0.01	0.00	0.13	0.01
CHES	CHESAPEAKE EXPWY	HANBURY RD	MT PLEASANT RD	NS	0.78	0.04	0.00	0.00	0.53	0.01
CHES	CHESAPEAKE EXPWY	MT PLEASANT RD	BATTLEFIELD BLVD (N OF GREAT BRIDC	NS	0.27	0.03	0.00	0.11	0.31	0.20
CHES	CHESAPEAKE EXPWY	BATTLEFIELD BLVD (N OF GREAT BRIDC	DOMINION BLVD	NS	1.64	0.02	0.04	0.34	2.76	0.82
CHES	CHESAPEAKE EXPWY	DOMINION BLVD	I-64	NS	3.26	0.05	0.82	0.15	15.62	0.22
CHES	CHURCHLAND BLVD	WESTERN BRANCH BLVD	TOWNE POINT RD	EW	0.00	0.00	0.00	0.00	0.00	0.00
CHES	CHURCHLAND BLVD	TOWNE POINT RD	PORTSMOUTH CL	EW	0.20	0.51	0.21	0.70	0.07	0.52
CHES	DOCK LANDING RD	JOLLIFF RD	I-664	EW	0.11	0.24	0.19	0.24	0.03	0.03
CHES	DOCK LANDING RD	I-664	EAGLE HILL DR	EW	0.22	0.20	0.12	0.14	0.07	0.04
CHES	DOCK LANDING RD	EAGLE HILL DR	PORTSMOUTH BLVD	NS	0.22	0.20	0.12	0.14	0.06	0.05
CHES	DOMINION BLVD	GEORGE WASHINGTON HWY	CEDAR RD	NS	0.06	0.04	0.07	0.00	0.17	0.03
CHES	DOMINION BLVD/VETERANS BRIDGE	CEDAR RD	DOMINION LAKES BLVD	NS	0.00	0.05	0.00	0.00	0.00	0.05
CHES	DOMINION BLVD	DOMINION LAKES BLVD	GREAT BRIDGE BLVD	NS	0.03	0.07	0.00	0.00	0.01	0.03
CHES	DOMINION BLVD	GREAT BRIDGE BLVD	CHESAPEAKE EXPRESSWAY	NS	0.19	0.07	0.03	0.00	0.57	0.09
CHES	EDINBURGH PKWY/ST BRIDES RD	SIGN PINE RD	HILLCREST PKWY	NS	-	-	-	-	-	-
CHES	ELBOW RD	BUTTS STATION RD	CENTERVILLE TNPK	EW	-	-	-	-	-	-
CHES	ELBOW RD	CENTERVILLE TNPK	VA BEACH CL	EW	0.13	0.22	0.17	0.14	0.03	0.03
CHES	ETHERIDGE MANOR RD	HILLWELL RD	RIVER GATE RD	EW	0.11	0.09	0.19	0.10	0.04	0.04
CHES	ETHERIDGE MANOR RD	RIVER GATE RD	CENTERVILLE TPKE	EW	0.11	0.09	0.19	0.10	0.04	0.04
CHES	FENTRESS AIRFIELD RD	BLACKWATER RD	MOUNT PLEASANT RD	NS	1.29	0.63	1.17	0.68	1.69	1.19
CHES	FREEMAN AVE	I-464	BAINBRIDGE BLVD	EW	0.99	0.49	0.66	0.54	1.58	1.24
CHES	GEORGE WASHINGTON HWY	NORTH CAROLINA STATE LINE	BALLAHACK RD	NS	0.00	0.04	0.02	0.00	0.03	0.02
CHES	GEORGE WASHINGTON HWY	BALLAHACK RD	DOMINION BLVD	NS	0.00	0.04	0.02	0.00	0.03	0.02
CHES	GEORGE WASHINGTON HWY	DOMINION BLVD	SAWYERS ARCH	NS	0.14	0.07	0.16	0.05	0.06	0.04
CHES	GEORGE WASHINGTON HWY	SAWYERS ARCH	MOSES GRANDY TR @ HINTON AVE	NS	0.14	0.07	0.16	0.05	0.06	0.04
CHES	GW HWY (DEEP CREEK BRIDGE)	MOSES GRANDY TR @ HINTON AVE	MILL CREEK PKWY	NS	1.41	0.89	0.48	1.68	0.90	2.23
CHES	GEORGE WASHINGTON HWY	MILL CREEK PKWY	WILLOWOOD DR	NS	1.41	0.89	0.48	1.68	0.90	2.23
CHES	GEORGE WASHINGTON HWY	WILLOWOOD DR	I-64	NS	1.41	0.89	0.48	1.68	0.90	2.23
CHES	GEORGE WASHINGTON HWY	I-64	MILITARY HWY	NS	0.11	0.73	0.31	0.30	0.19	0.99
CHES	GEORGE WASHINGTON HWY	MILITARY HWY	CANAL DR	NS	0.15	0.32	0.29	1.51	0.36	1.29
CHES	GEORGE WASHINGTON HWY	CANAL DR	PORTSMOUTH CL	NS	0.32	0.03	0.47	0.22	1.68	0.22

Appendix C – Average and Total Weekday Truck Delays by Location

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Juris.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
CHES	GREAT BRIDGE BLVD	BAINBRIDGE BLVD	CAMPOSTELLA RD	EW	0.47	0.55	0.60	0.41	0.16	0.48
CHES	GREAT BRIDGE BLVD	CAMPOSTELLA RD	I-64	EW	0.47	0.55	0.60	0.41	0.35	1.07
CHES	GREAT BRIDGE BLVD	I-64	DOMINION BLVD	EW	0.79	0.78	0.83	0.52	0.40	0.45
CHES	GREAT BRIDGE BLVD	DOMINION BLVD	RIVERWALK PKWY WEST	EW	0.51	0.54	0.60	0.89	0.27	0.55
CHES	GREAT BRIDGE BLVD	RIVERWALK PKWY WEST	BATTLEFIELD BLVD	EW	0.51	0.54	0.60	0.89	0.27	0.55
CHES	GREENBRIER PKWY	KEMPSVILLE RD	VOLVO PKWY	NS	0.33	0.37	0.42	0.60	0.39	0.46
CHES	GREENBRIER PKWY	VOLVO PKWY	EDEN WAY	NS	0.39	0.15	0.75	1.11	3.08	4.07
CHES	GREENBRIER PKWY	EDEN WAY	I-64	NS	0.39	0.15	0.75	1.11	5.95	7.85
CHES	GREENBRIER PKWY	I-64	WOODLAKE DR	NS	0.21	0.04	0.35	0.60	1.99	0.90
CHES	GREENBRIER PKWY	WOODLAKE DR	MILITARY HWY	NS	0.21	0.04	0.35	0.60	1.24	0.56
CHES	HANBURY RD	JOHNSTOWN RD	BATTLEFIELD BLVD	EW	0.41	0.31	0.35	0.27	0.02	0.01
CHES	HANBURY RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.07	0.56	0.25	0.80	0.04	0.23
CHES	HANBURY RD	CHESAPEAKE EXPRESSWAY	HILLWELL RD	EW	0.30	0.07	0.46	0.00	0.21	0.01
CHES	HILLCREST PKWY	EDINBURGH PKWY	CHESAPEAKE EXPRESSWAY	EW	-	-	-	-	-	-
CHES	HILLCREST PKWY	CHESAPEAKE EXPRESSWAY	BATTLEFIELD BLVD	EW	0.45	0.46	0.43	0.25	0.68	0.58
CHES	I-64	VA BEACH CL	GREENBRIER PKWY	EW	0.00	0.18	0.07	0.03	0.09	0.46
CHES	I-64	GREENBRIER PKWY	BATTLEFIELD BLVD	EW	0.00	0.04	1.64	0.03	7.97	0.07
CHES	I-64	BATTLEFIELD BLVD	I-464	EW	0.29	0.00	2.91	0.00	17.25	0.00
CHES	I-64	I-464	GEORGE WASHINGTON HWY	EW	0.20	0.27	0.55	0.32	8.72	5.81
CHES	I-64	GEORGE WASHINGTON HWY	MILITARY HWY	EW	0.38	3.74	0.67	1.29	5.40	31.59
CHES	I-64	MILITARY HWY	I-264&664	EW	0.15	2.08	0.21	1.11	1.83	19.51
CHES	I-264	I-64&664	WCL PORTSMOUTH	EW	0.00	0.00	0.00	0.04	0.00	0.08
CHES	I-464	I-64	MILITARY HWY	NS	0.00	0.07	0.01	0.01	0.00	0.16
CHES	I-464	MILITARY HWY	FREEMAN AVE	NS	0.00	0.09	0.00	0.00	0.00	0.01
CHES	I-464	FREEMAN AVE	POINDEXTER ST	NS	0.10	0.04	0.00	0.00	0.12	0.01
CHES	I-464	POINDEXTER ST	NORFOLK CL	NS	1.39	0.03	0.02	0.08	2.97	0.06
CHES	I-664	I-64 & I-264	ROUTES 13/58/460	NS	0.12	0.13	0.17	0.08	1.40	0.59
CHES	I-664	ROUTES 13/58/460	DOCK LANDING RD	NS	0.14	0.18	0.26	0.07	1.48	1.13
CHES	I-664	DOCK LANDING RD	PORTSMOUTH BLVD	NS	0.10	0.29	0.12	0.25	1.53	2.52
CHES	I-664	PORTSMOUTH BLVD	PUGHSVILLE RD	NS	0.17	0.27	0.13	0.32	1.38	2.62
CHES	I-664	PUGHSVILLE RD	SUFFOLK CL	NS	0.31	0.20	0.36	0.53	4.16	3.13
CHES	INDIAN RIVER RD	NORFOLK CL	KEMP LANE	EW	0.11	0.00	0.00	0.01	0.11	0.01
CHES	INDIAN RIVER RD	KEMP LANE	VA BEACH CL	EW	0.16	0.01	0.24	0.12	0.54	0.26
CHES	JOHNSTOWN RD	BENEFIT RD	STONEGATE PKWY	NS	-	-	-	-	-	-
CHES	JOHNSTOWN RD	STONEGATE PKWY	HANBURY RD	NS	-	-	-	-	-	-
CHES	JOHNSTOWN RD	HANBURY RD	PARKER RD	NS	0.06	0.17	0.08	0.12	0.00	0.03
CHES	JOHNSTOWN RD	PARKER RD	BATTLEFIELD BLVD	NS	0.06	0.17	0.08	0.12	0.00	0.03
CHES	JOLLIFF RD	AIRLINE BLVD	DOCK LANDING RD	NS	-	-	-	-	-	-
CHES	JOLLIFF RD	DOCK LANDING RD	PORTSMOUTH BLVD	NS	0.00	0.00	0.00	0.00	0.00	0.00
CHES	KEMPSVILLE RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.65	0.82	0.50	1.61	1.05	2.34
CHES	KEMPSVILLE RD	CHESAPEAKE EXPRESSWAY	GREENBRIER PKWY	EW	0.65	0.82	0.50	1.61	1.07	2.39
CHES	KEMPSVILLE RD	GREENBRIER PKWY	VOLVO PKWY	EW	0.00	0.00	0.00	0.02	0.00	0.00
CHES	KEMPSVILLE RD	VOLVO PKWY	VA BEACH CL	EW	0.33	0.24	0.36	0.27	0.15	0.09
CHES	LIBERTY ST	SCL NORFOLK	22ND ST	EW	-	-	-	-	-	-

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CHES	LIBERTY ST	22ND ST	POINDEXTER RD	EW	0.00	0.04	0.00	0.12	0.02	0.09
CHES	LIBERTY ST	POINDEXTER RD	OLD ATLANTIC AVE	EW	0.00	0.04	0.00	0.12	0.02	0.09
CHES	LIBERTY ST	OLD ATLANTIC AVE	CAMPOSTELLA RD	EW	0.00	0.04	0.00	0.12	0.01	0.05
CHES	MILITARY HWY	AIRLINE BLVD	I-64	EW	0.07	0.07	0.03	0.02	0.32	0.14
CHES	MILITARY HWY	I-64	CAVALIER BLVD	EW	0.49	0.34	0.39	0.20	4.55	2.31
CHES	MILITARY HWY	CAVALIER BLVD	GEORGE WASHINGTON HWY	EW	0.77	0.13	0.24	0.25	1.73	0.85
CHES	MILITARY HWY	GEORGE WASHINGTON HWY	CANAL DR	EW	0.56	0.16	0.36	0.25	0.81	0.27
CHES	MILITARY HWY/GILMERTON BRIDGE	CANAL DR	BAINBRIDGE BLVD	EW	0.96	0.29	0.70	1.13	3.34	1.74
CHES	MILITARY HWY	BAINBRIDGE BLVD	I-464	EW	0.50	0.31	0.34	1.29	2.07	2.15
CHES	MILITARY HWY	I-464	CAMPOSTELLA RD	EW	0.75	0.29	0.58	1.60	2.70	1.70
CHES	MILITARY HWY	CAMPOSTELLA RD	BATTLEFIELD BLVD	EW	0.00	0.10	0.00	2.27	0.00	1.10
CHES	MILITARY HWY	BATTLEFIELD BLVD	ALLISON DR	EW	0.19	0.13	0.25	0.35	0.95	0.51
CHES	MILITARY HWY	ALLISON DR	GREENBRIER PKWY	EW	0.19	0.13	0.25	0.35	0.94	0.51
CHES	MILITARY HWY	GREENBRIER PKWY	VA BEACH CL	EW	0.34	0.35	0.52	0.56	2.04	1.35
CHES	MOSES GRANDY TRAIL	GW HWY @ HINTON AVE	SHIPYARD/CEDAR RD/GW HWY RELOC	EW	0.26	0.67	0.12	0.76	0.11	0.39
CHES	MOSES GRANDY TRAIL	SHIPYARD RD/CEDAR RD	CEDAR RD	EW	0.26	0.67	0.12	0.76	0.11	0.39
CHES	MOSES GRANDY TRAIL	CEDAR RD	DOMINION BLVD	EW	0.26	0.67	0.12	0.76	0.11	0.39
CHES	MOUNT PLEASANT RD	BATTLEFIELD BLVD	CHESAPEAKE EXPRESSWAY	EW	0.13	0.38	0.06	0.44	0.06	0.83
CHES	MOUNT PLEASANT RD	CHESAPEAKE EXPRESSWAY	CENTERVILLE TNPK	EW	0.59	0.61	0.22	0.20	0.66	0.65
CHES	MOUNT PLEASANT RD	CENTERVILLE TNPK	FENTRESS AIRFIELD RD	EW	0.20	0.21	0.15	0.19	0.18	0.29
CHES	MOUNT PLEASANT RD	FENTRESS AIRFIELD RD	VA BEACH CL	EW	0.31	0.14	0.13	0.30	0.43	0.54
CHES	OLD ATLANTIC AVE	ATLANTIC AVE	LIBERTY ST	NS	-	-	-	-	-	-
CHES	OLD BATTLEFIELD BLVD	BALLAHACK RD	BATTLEFIELD BLVD	NS	0.71	0.34	0.20	0.29	0.02	0.03
CHES	POINDEXTER ST/S. NOR. JORDAN BR.	PORTSMOUTH CL	I-464	EW	0.21	0.15	0.17	0.38	0.97	0.82
CHES	POINDEXTER ST	I-464	BAINBRIDGE BLVD	EW	0.67	0.39	0.46	0.34	0.70	0.76
CHES	POINDEXTER ST	BAINBRIDGE BLVD	LIBERTY ST	EW	0.52	0.26	0.71	0.76	0.40	0.62
CHES	POPLAR HILL RD	WESTERN BRANCH BLVD	CHURCHLAND BLVD	NS	2.04	0.18	1.48	0.35	0.31	0.09
CHES	PORTSMOUTH BLVD	SUFFOLK CL	JOLLIFF RD	EW	0.11	0.22	0.77	0.59	0.86	1.09
CHES	PORTSMOUTH BLVD	JOLLIFF RD	I-664	EW	0.11	0.22	0.77	0.59	0.82	1.05
CHES	PORTSMOUTH BLVD	I-664	TAYLOR RD	EW	0.22	0.14	0.69	0.32	0.87	0.37
CHES	PORTSMOUTH BLVD	TAYLOR RD	DOCK LANDING RD	EW	0.22	0.14	0.69	0.32	1.00	0.43
CHES	PORTSMOUTH BLVD	DOCK LANDING RD	PORTSMOUTH CL	EW	0.07	0.14	0.24	0.32	0.27	0.44
CHES	PROVIDENCE RD	ATLANTIC AVE	CAMPOSTELLA RD	EW	0.17	0.11	0.10	0.15	0.02	0.02
CHES	PROVIDENCE RD	CAMPOSTELLA RD	VA BEACH CL	EW	0.17	0.11	0.10	0.15	0.04	0.04
CHES	PUGHSVILLE RD	SUFFOLK CL	I-664	EW	0.07	0.23	0.18	0.64	0.36	0.94
CHES	PUGHSVILLE RD	I-664	TAYLOR RD	EW	0.40	0.04	0.75	0.24	0.64	0.23
CHES	ROUTE 13/58/460	SUFFOLK CL	I-664	EW	0.03	0.00	0.06	0.11	0.56	0.57
CHES	SIGN PINE RD	EDINBURGH PKWY	BENEFIT RD	NS	-	-	-	-	-	-
CHES	TAYLOR RD	PORTSMOUTH BLVD	ELIZABETH HARBOR RD	NS	0.13	0.16	0.34	0.45	0.21	0.30
CHES	TAYLOR RD	ELIZABETH HARBOR RD	BRUCE RD	NS	0.13	0.16	0.34	0.45	0.21	0.30
CHES	TAYLOR RD	BRUCE RD	PUGHSVILLE RD	NS	0.56	0.24	0.86	0.49	0.68	0.31
CHES	TAYLOR RD	PUGHSVILLE RD	WESTERN BRANCH BLVD	NS	0.08	0.02	0.08	0.03	0.04	0.00
CHES	TOWNE POINT RD	PORTSMOUTH CL	CHURCHLAND BLVD	EW	0.22	0.21	0.38	0.63	0.47	0.59
CHES	TYRE NECK RD	BRUCE RD	SILVERWOOD BLVD	NS	-	-	-	-	-	-

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
CHES	TYRE NECK RD	SILVERWOOD BLVD	PORTSMOUTH CL	NS	-	-	-	-	-	-
CHES	VOLVO PKWY	BATTLEFIELD BLVD	GREENBRIER PKWY	EW	0.38	0.11	0.54	1.03	1.30	1.36
CHES	VOLVO PKWY	GREENBRIER PKWY	EDEN WAY	EW	0.13	0.28	0.34	0.33	0.42	0.35
CHES	VOLVO PKWY	EDEN WAY	KEMPSVILLE RD	EW	0.13	0.28	0.34	0.33	0.46	0.38
CHES	VOLVO PKWY	KEMPSVILLE RD	VA BEACH CL	EW	0.00	0.63	0.00	0.60	0.00	0.59
CHES	WESTERN BRANCH BLVD	CHURCHLAND BLVD	TAYLOR RD	EW	0.09	0.06	0.23	0.17	0.16	0.11
CHES	WESTERN BRANCH BLVD	TAYLOR RD	PORTSMOUTH CL	EW	0.09	0.06	0.23	0.17	0.17	0.12
FR	ARMORY DR	ROUTE 58	BAILEY DR	EW	-	-	-	-	-	-
FR	ARMORY DR	BAILEY DR	COLLEGE DR	EW	-	-	-	-	-	-
FR	ARMORY DR	COLLEGE DR	GARDNER ST	EW	-	-	-	-	-	-
FR	ARMORY DR/SECOND AVE	GARDNER ST	HIGH ST	EW	-	-	-	-	-	-
FR	CLAY ST	SOUTHAMPTON CL	COLLEGE DR	EW	0.06	0.05	0.07	0.04	0.01	0.01
FR	CLAY ST	COLLEGE DR	HOMESTEAD RD	EW	0.06	0.20	0.09	0.23	0.01	0.08
FR	CLAY ST	HOMESTEAD RD	LEE ST	EW	0.06	0.20	0.09	0.23	0.01	0.07
FR	CLAY ST/FOURTH AVE	LEE ST	HIGH ST	EW	0.06	0.20	0.09	0.23	0.01	0.00
FR	COLLEGE DR	SOUTH ST	ARMORY DR	NS	-	-	-	-	-	-
FR	COLLEGE DR	ARMORY DR	CLAY ST	NS	-	-	-	-	-	-
FR	FAIRVIEW DR	HUNTERDALE RD	CRESENT DR	EW	-	-	-	-	-	-
FR	FAIRVIEW DR	CRESENT DR	HIGH ST	EW	-	-	-	-	-	-
FR	FOURTH AVE/MECHANIC ST	HIGH ST	SECOND AVE	EW	0.00	0.38	0.00	0.28	0.00	0.02
FR	HIGH ST	SOUTH ST	SECOND AVE	NS	-	-	-	-	-	-
FR	HIGH ST	SECOND AVE	FOURTH AVE	NS	-	-	-	-	-	-
FR	HIGH ST	FOURTH AVE	HOMESTEAD RD	NS	-	-	-	-	-	-
FR	HIGH ST	HOMESTEAD RD	FAIRVIEW DR	NS	-	-	-	-	-	-
FR	HUNTERDALE RD	CLAY ST	FAIRVIEW DR	NS	-	-	-	-	-	-
FR	MAIN ST	SOUTH ST	SECOND AVE	NS	0.20	0.36	0.23	0.19	0.12	0.11
FR	PRETLOW ST	ROUTE 58	MORTON ST	NS	-	-	-	-	-	-
FR	PRETLOW ST	MORTON ST	LAUREL ST	NS	-	-	-	-	-	-
FR	PRETLOW ST	LAUREL ST	SOUTH ST	NS	-	-	-	-	-	-
FR	SECOND AVE	HIGH ST	MAIN ST	EW	-	-	-	-	-	-
FR	SECOND AVE	MAIN ST	MECHANIC ST	EW	0.12	0.11	0.13	0.12	0.14	0.15
FR	SECOND AVE	MECHANIC ST	ISLE OF WIGHT CL	EW	0.12	0.11	0.13	0.12	0.10	0.11
FR	SOUTH ST	ROUTE 58	COLLEGE DR	EW	0.20	0.36	0.23	0.19	0.11	0.12
FR	SOUTH ST	COLLEGE DR	PRETLOW ST	EW	0.20	0.36	0.23	0.19	0.13	0.15
FR	SOUTH ST	PRETLOW ST	HIGH ST	EW	0.20	0.36	0.23	0.19	0.09	0.10
FR	SOUTH ST	HIGH ST	MAIN ST	EW	0.20	0.36	0.23	0.19	0.17	0.15
GLO	BELROI RD	HICKORY FORK RD	ROUTE 17	EW	0.06	0.00	0.02	0.00	0.00	0.00
GLO	BURLEIGH RD	RTE 616 (BELROI RD)	ROUTE 17	EW	-	-	-	-	-	-
GLO	CEDAR BUSH RD	RTE 636 (PROVIDENCE RD)	RTE 614 (HICKORY FORK RD)	NS	-	-	-	-	-	-
GLO	GUINEA RD	ROUTE 17	MARYUS RD	EW	-	-	-	-	-	-
GLO	HICKORY FORK RD	ROUTE 17	BELROI RD	NS	0.10	0.05	0.06	0.13	0.03	0.03
GLO	RTE 17 (COLEMAN BRIDGE)	YORK CL	RTE 216 (GUINEA RD)	NS	0.07	0.01	0.13	0.07	0.41	0.27
GLO	RTE 17	RTE 216 (GUINEA RD)	RTE 614 (HICKORY FORK RD)	NS	0.07	0.01	0.13	0.07	0.46	0.31
GLO	RTE 17	RTE 614 (HICKORY FORK RD)	RTE 615 (BURLEIGH RD/SHORT LN)	NS	0.07	0.05	0.30	0.07	0.44	0.17

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
GLO	RTE 17	RTE 615 (BURLEIGH RD/SHORT LN)	RTE 17 BUS S (MAIN ST)	NS	0.21	0.32	0.43	0.39	1.25	1.58
GLO	RTE 17	RTE 17 BUS S (MAIN ST)	RTE 17 BUS N (MAIN ST)	NS	0.08	0.00	0.16	0.02	0.33	0.02
GLO	RTE 17	RTE 17 BUS N (MAIN ST)	RTE 606 (ARK RD)	NS	0.06	0.05	0.08	0.11	0.13	0.20
GLO	MAIN ST (BUS RTE 17)	RTE 17 (SOUTH INTERSECTION)	RTE 3/14E	NS	0.03	0.09	0.03	0.08	0.02	0.12
GLO	MAIN ST (BUS RTE 17/RTE 14)	RTE 3/14E	CARY AVE	NS	0.26	0.20	0.49	0.36	0.22	0.26
GLO	MAIN ST (BUS RTE 17/RTE 14)	CARY AVE	ROUTE 17	NS	0.26	0.20	0.49	0.36	0.17	0.19
GLO	PROVIDENCE RD	ROUTE 17	RTE 635 (BORDEN RD)	NS	-	-	-	-	-	-
GLO	PROVIDENCE RD	RTE 635 (BORDEN RD)	RTE 633 (CEDAR BUSH RD)	NS	-	-	-	-	-	-
GLO	RTE 3/14	RTE 17 BUS	COW CREEK	EW	0.06	0.06	0.02	0.07	0.04	0.10
GLO	RTE 3/14	COW CREEK	MATHEWS CL	EW	0.06	0.06	0.02	0.07	0.03	0.08
GLO	RTE 14	KING AND QUEEN CL	ROUTE 17	EW	-	-	-	-	-	-
GLO	RTE 17	RTE 606 (ARK RD)	ROUTE 14	NS	0.05	0.04	0.03	0.03	0.03	0.04
GLO	RTE 17	ROUTE 14	ROUTES 33/198	NS	0.08	0.04	0.06	0.02	0.06	0.03
GLO	RTE 17	ROUTES 33/198	MIDDLESEX CL	NS	0.07	0.02	0.00	0.01	0.01	0.01
GLO	RTE 33	KING AND QUEEN CL	ROUTE 17	EW	0.08	0.04	0.00	0.02	0.02	0.01
GLO	RTE 198	ROUTE 17	RTE 601 (PAMPA RD)	EW	0.11	0.07	0.07	0.09	0.09	0.09
GLO	RTE 198	RTE 601 (PAMPA RD)	RTE 606 (HARCUM RD)	EW	0.06	0.04	0.05	0.07	0.05	0.04
GLO	RTE 198	RTE 606 (HARCUM RD)	MATHEWS CL	EW	0.09	0.05	0.06	0.07	0.06	0.06
GLO	SHORT LN	ROUTE 17	RTE 1410 (LAMBERTH LN)	EW	-	-	-	-	-	-
GLO	SHORT LN	RTE 1410 (LAMBERTH LN)	RTE 629 (T C WALKER RD)	EW	-	-	-	-	-	-
GLO	TC WALKER RD	ROUTE 17	RTE 629 (PAIGE RD)	NS	-	-	-	-	-	-
GLO	TC WALKER RD	RTE 629 (PAIGE RD)	RTE 615 (SHORT LN)	NS	-	-	-	-	-	-
GLO	TC WALKER RD	RTE 615 (SHORT LN)	BUS ROUTE 17	NS	-	-	-	-	-	-
GLO	TIDEMILL RD	ROUTE 17	RTE 1254 (TILLAGE LN)	EW	-	-	-	-	-	-
GLO	TIDEMILL RD	RTE 1254 (TILLAGE LN)	RTE 216 (GUINEA RD)	EW	-	-	-	-	-	-
HAM	ABERDEEN RD	NEWPORT NEWS CL	PEMBROKE AVE	NS	0.13	0.00	0.03	0.10	0.01	0.04
HAM	ABERDEEN RD	PEMBROKE AVE	I-664	NS	1.21	0.69	0.62	0.00	2.51	0.16
HAM	ABERDEEN RD	I-664	BRIARFIELD RD	NS	0.20	0.11	0.18	0.10	0.72	0.25
HAM	ABERDEEN RD	BRIARFIELD RD	MERCURY BLVD	NS	0.00	0.06	0.00	0.05	0.00	0.06
HAM	ABERDEEN RD	MERCURY BLVD	TODDS LA	NS	0.96	0.58	1.24	0.88	1.33	0.93
HAM	ARMISTEAD AVE	COMMANDER SHEPARD BLVD	HRC PARKWAY	NS	0.36	0.28	0.04	0.14	0.15	0.11
HAM	ARMISTEAD AVE	HRC PARKWAY	MERCURY BLVD	NS	0.08	0.09	0.07	0.19	0.05	0.15
HAM	ARMISTEAD AVE	MERCURY BLVD	PINE CHAPEL RD	NS	0.00	0.10	0.06	0.17	0.01	0.12
HAM	ARMISTEAD AVE	PINE CHAPEL RD	LASALLE AVE	NS	0.00	0.10	0.06	0.17	0.01	0.17
HAM	ARMISTEAD AVE	LASALLE AVE	RIP RAP RD	NS	0.41	0.32	0.57	0.19	0.36	0.27
HAM	ARMISTEAD AVE	RIP RAP RD	PEMBROKE AVE	NS	0.00	0.07	0.00	0.00	0.00	0.00
HAM	ARMISTEAD AVE	PEMBROKE AVE	SETTLERS LANDING RD	NS	0.33	0.42	0.39	0.34	0.31	0.20
HAM	BIG BETHEL RD	TODDS LANE	HRC PKWY	NS	0.36	0.35	0.51	0.40	0.20	0.07
HAM	BIG BETHEL RD	HRC PKWY	THOMAS NELSON DR	NS	0.10	0.27	0.06	0.33	0.08	0.23
HAM	BIG BETHEL RD	THOMAS NELSON DR	SAUNDERS RD	NS	0.04	0.00	0.00	0.00	0.00	0.00
HAM	BIG BETHEL RD	SAUNDERS RD	SEMPLE FARM RD	NS	0.24	0.12	0.31	0.08	0.19	0.03
HAM	BIG BETHEL RD	SEMPLE FARM RD	YORK CL	NS	0.24	0.12	0.31	0.08	0.15	0.02
HAM	BRIARFIELD RD	NEWPORT NEWS CL	ABERDEEN RD	EW	0.12	0.20	0.23	0.22	0.20	0.15
HAM	BRIARFIELD RD	ABERDEEN RD	POWER PLANT PKWY	EW	0.36	0.11	0.21	0.05	0.17	0.01

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
HAM	CHESTNUT AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.07	0.08	0.00	0.10	0.00	0.02
HAM	COMMANDER SHEPARD BLVD	BIG BETHEL RD	NORTH CAMPUS PKWY	EW	0.02	0.08	0.07	0.06	0.02	0.03
HAM	COMMANDER SHEPARD BLVD	NORTH CAMPUS PKWY	MAGRUDER BLVD/ARMSTRONG PKWY	EW	0.02	0.08	0.07	0.06	0.02	0.03
HAM	COMMANDER SHEPARD BLVD	MAGRUDER BLVD/ARMSTRONG PKWY	ARMISTEAD AVE	EW	0.32	0.06	0.18	0.06	0.14	0.03
HAM	COMMANDER SHEPARD BLVD	ARMISTEAD AVE	NASA MAIN GATE	NS	0.14	0.00	0.17	0.05	0.18	0.02
HAM	COMMANDER SHEPARD BLVD	NASA MAIN GATE	WYTHE CREEK RD	NS	0.14	0.00	0.17	0.05	0.13	0.01
HAM	COMMANDER SHEPARD BLVD	WYTHE CREEK RD	MAGRUDER BLVD/ARMSTRONG PKWY	EW	0.74	1.76	1.09	1.92	1.47	2.73
HAM	COLISEUM DR	CONVENTION CENTER BLVD	PINE CHAPEL RD	NS	-	-	-	-	-	-
HAM	COLISEUM DR	PINE CHAPEL RD	MERCURY BLVD	NS	0.18	0.08	0.44	0.07	0.02	0.00
HAM	COLISEUM DR	MERCURY BLVD	MARCELLA DR	NS	0.15	0.05	0.07	0.35	0.00	0.04
HAM	COLISEUM DR	MARCELLA DR	HRC PARKWAY	NS	0.15	0.05	0.07	0.35	0.00	0.04
HAM	COLISEUM DR	HRC PARKWAY	BUTLER FARM RD	NS	-	-	-	-	-	-
HAM	CONVENTION CENTER BLVD	COLISEUM DR	ARMISTEAD AVE	NS	-	-	-	-	-	-
HAM	COUNTY ST	WOODLAND RD	MALLORY ST	EW	0.03	0.36	0.00	0.30	0.00	0.17
HAM	CUNNINGHAM DR	TODDS LA	COLISEUM DR	EW	0.00	0.00	0.10	0.19	0.02	0.01
HAM	CUNNINGHAM DR	COLISEUM DR	MERCURY BLVD	EW	0.00	0.02	0.34	0.38	0.01	0.00
HAM	FOX HILL RD	OLD BUCKROE RD	WOODLAND RD	EW	0.22	0.34	0.18	0.30	0.08	0.12
HAM	FOX HILL RD	WOODLAND RD	MERCURY BLVD	EW	0.22	0.34	0.18	0.30	0.15	0.22
HAM	HARRIS CREEK RD	FOX HILL RD	LITTLE BACK RIVER RD	NS	0.14	0.15	0.10	0.16	0.01	0.05
HAM	HRC PARKWAY	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.07	0.03	0.08	0.02	0.06	0.00
HAM	HRC PARKWAY	BIG BETHEL RD	I-64	EW	0.05	0.25	0.02	0.29	0.04	0.64
HAM	HRC PARKWAY	I-64	MAGRUDER BLVD/ARMSTRONG PKWY	EW	0.10	0.05	0.09	0.05	0.21	0.15
HAM	HRC PARKWAY	MAGRUDER BLVD/ARMSTRONG PKWY	COLISEUM DR	EW	0.36	0.12	0.34	0.21	0.38	0.26
HAM	HRC PARKWAY	COLISEUM DR	ARMISTEAD AVE	EW	0.36	0.12	0.34	0.21	0.33	0.23
HAM	I-64	NEWPORT NEWS CL	HRC PARKWAY	EW	0.04	0.03	0.02	0.06	0.31	0.98
HAM	I-64	HRC PARKWAY	MAGRUDER BLVD/ARMSTRONG PKWY	EW	0.01	0.00	0.00	0.06	0.04	0.90
HAM	I-64	MAGRUDER BLVD/ARMSTRONG PKWY	MERCURY BLVD	EW	0.07	0.00	0.00	0.06	0.42	0.36
HAM	I-64	MERCURY BLVD	I-664	EW	0.38	0.00	0.23	0.00	4.37	0.12
HAM	I-64	I-664	ARMISTEAD AVE	EW	1.17	0.00	1.70	0.01	11.96	0.04
HAM	I-64	ARMISTEAD AVE	RIP RAP RD	EW	2.40	0.00	3.60	0.06	23.02	0.10
HAM	I-64	RIP RAP RD	SETTLERS LANDING RD	EW	6.02	0.08	6.16	0.13	43.22	0.85
HAM	I-64	SETTLERS LANDING RD	MALLORY ST	EW	4.34	0.14	4.31	0.25	40.96	1.31
HAM	I-64/HRBT	MALLORY ST	NORFOLK CL	EW	0.77	0.56	0.86	0.92	8.24	8.43
HAM	I-664	NEWPORT NEWS CL	ABERDEEN RD	NS	0.00	0.21	0.21	0.08	0.66	0.81
HAM	I-664	ABERDEEN RD	POWER PLANT PKWY	NS	0.03	0.07	0.25	0.00	1.08	0.12
HAM	I-664	POWER PLANT PKWY	I-64	NS	0.00	0.01	0.35	0.00	1.27	0.01
HAM	KECOUGHTAN RD	NEWPORT NEWS CL	POWHATAN PKWY	EW	0.13	0.15	0.03	0.10	0.02	0.05
HAM	KECOUGHTAN RD	POWHATAN PKWY	LASALLE AVE	EW	0.16	0.18	0.13	0.18	0.03	0.03
HAM	KECOUGHTAN RD	LASALLE AVE	VICTORIA BLVD	NS	0.11	0.10	0.21	0.20	0.10	0.10
HAM	KECOUGHTAN RD	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.34	0.32	0.40	0.34	0.34	0.34
HAM	KING ST	PEMBROKE AVE	I-64 OVERPASS	NS	0.22	0.46	0.14	0.07	0.06	0.02
HAM	KING ST	I-64 OVERPASS	RIP RAP RD	NS	0.22	0.46	0.14	0.07	0.06	0.02
HAM	KING ST	RIP RAP RD	MERCURY BLVD	NS	0.39	0.07	0.82	0.43	1.13	0.22
HAM	KING ST	MERCURY BLVD	OLD FOX HILL RD	NS	0.08	0.08	0.14	0.21	0.01	0.05

Appendix C – Average and Total Weekday Truck Delays by Location

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Juris.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	KING ST	OLD FOX HILL RD	LITTLE BACK RIVER RD	NS	0.08	0.08	0.14	0.21	0.01	0.04
HAM	KING ST	LITTLE BACK RIVER RD	LAMINGTON RD	NS	0.51	0.14	0.09	0.21	0.00	0.01
HAM	KING ST	LAMINGTON RD	OLD BUCKINGHAM RD	NS	0.51	0.14	0.09	0.21	0.00	0.01
HAM	KING ST	OLD BUCKINGHAM RD	LANGLEY AFB	NS	0.51	0.14	0.09	0.21	0.00	0.01
HAM	LASALLE AVE	KECOUGHTAN RD	VICTORIA BLVD	NS	0.00	0.29	0.00	0.00	0.00	0.00
HAM	LASALLE AVE	VICTORIA BLVD	SETTLERS LANDING RD	NS	0.00	0.03	0.00	0.00	0.00	0.00
HAM	LASALLE AVE	SETTLERS LANDING RD	PEMBROKE AVE	NS	0.32	0.51	0.42	0.63	0.23	0.30
HAM	LASALLE AVE	PEMBROKE AVE	ARMISTEAD AVE	NS	0.32	0.51	0.42	0.63	0.26	0.34
HAM	LASALLE AVE	ARMISTEAD AVE	MERCURY BLVD	NS	0.00	0.00	0.00	0.12	0.00	0.01
HAM	LASALLE AVE	MERCURY BLVD	LANGLEY GATE	NS	0.11	0.01	0.00	0.05	0.00	0.01
HAM	LITTLE BACK RIVER RD	KING ST	ROCKWELL RD	EW	0.21	0.27	0.11	0.13	0.12	0.13
HAM	LITTLE BACK RIVER RD	ROCKWELL RD	HARRIS CREEK RD	EW	0.21	0.27	0.11	0.13	0.04	0.04
HAM	MALLORY ST	I-64	COUNTY ST	EW	0.00	1.77	0.00	0.84	0.00	0.21
HAM	MALLORY ST	COUNTY ST	MERCURY BLVD	EW	0.62	1.78	0.76	1.15	0.37	0.53
HAM	MALLORY ST	MERCURY BLVD	PEMBROKE AVE	EW	0.16	0.04	0.03	0.05	0.02	0.01
HAM	MELLEN ST	MERCURY BLVD	MALLORY ST	NS	0.11	0.00	0.08	0.18	0.00	0.01
HAM	MERCURY BLVD	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.14	0.17	0.21	0.31	0.58	0.43
HAM	MERCURY BLVD	BIG BETHEL RD	ABERDEEN RD	EW	0.09	0.00	0.22	0.01	0.57	0.01
HAM	MERCURY BLVD	ABERDEEN RD	POWER PLANT PKWY	EW	0.20	0.12	0.56	0.25	2.10	1.01
HAM	MERCURY BLVD	POWER PLANT PKWY	I-64	EW	0.11	0.38	0.25	1.02	0.73	4.84
HAM	MERCURY BLVD	I-64	COLISEUM DR	EW	0.03	0.06	0.82	0.28	1.78	1.27
HAM	MERCURY BLVD	COLISEUM DR	CUNNINGHAM DR	EW	0.03	0.06	0.82	0.28	1.33	0.94
HAM	MERCURY BLVD	CUNNINGHAM DR	ARMISTEAD AVE	EW	0.03	0.06	0.82	0.28	1.48	1.05
HAM	MERCURY BLVD	ARMISTEAD AVE	LASALLE AVE	EW	0.03	0.15	0.09	0.39	0.05	0.44
HAM	MERCURY BLVD	LASALLE AVE	KING ST	EW	0.05	0.10	0.26	0.09	0.19	0.25
HAM	MERCURY BLVD	KING ST	FOX HILL RD	EW	0.11	0.28	0.27	0.82	0.15	0.17
HAM	MERCURY BLVD	FOX HILL RD	ANDREWS BLVD	EW	0.11	0.28	0.27	0.82	0.15	0.17
HAM	MERCURY BLVD	ANDREWS BLVD	PEMBROKE AVE	EW	0.35	0.06	0.29	0.00	0.06	0.00
HAM	MERCURY BLVD	PEMBROKE AVE	WOODLAND RD	EW	0.65	0.04	0.44	0.19	0.36	0.03
HAM	MERCURY BLVD	WOODLAND RD	MALLORY ST	EW	0.10	0.20	0.09	0.11	0.04	0.12
HAM	MERCURY BLVD	MALLORY ST	MELLEN ST/INGALLS RD	EW	0.10	0.20	0.09	0.11	0.01	0.03
HAM	NEIL ARMSTRONG PKWY	YORK CL	SEMPLE FARM RD	NS	0.15	0.13	0.22	0.04	0.09	0.05
HAM	NEIL ARMSTRONG PKWY	SEMPLE FARM RD	COMM SHEPARD BLVD (SOUTH)	NS	0.08	0.15	0.20	0.10	0.03	0.12
HAM	NEIL ARMSTRONG PKWY	COMM SHEPARD BLVD (SOUTH)	HRC PARKWAY	NS	0.03	0.04	0.00	0.10	0.00	0.11
HAM	NEIL ARMSTRONG PKWY	HRC PARKWAY	I-64	NS	0.17	0.00	0.24	0.04	0.37	0.06
HAM	OLD BUCKROE RD	PEMBROKE AVE	FOX HILL RD	NS	0.59	0.39	0.44	0.43	0.18	0.07
HAM	PEMBROKE AVE	NEWPORT NEWS CL	ABERDEEN RD	EW	0.06	0.12	0.02	0.07	0.03	0.04
HAM	PEMBROKE AVE	ABERDEEN RD	POWHATAN PKWY	EW	0.33	0.00	0.00	0.00	0.09	0.00
HAM	PEMBROKE AVE	POWHATAN PKWY	SETTLERS LANDING RD	EW	0.05	0.02	0.00	0.03	0.00	0.00
HAM	PEMBROKE AVE	SETTLERS LANDING RD	LASALLE AVE	EW	0.97	1.00	1.28	1.03	1.68	1.40
HAM	PEMBROKE AVE	LASALLE AVE	ARMISTEAD AVE	EW	0.13	0.00	0.13	0.00	0.03	0.00
HAM	PEMBROKE AVE	ARMISTEAD AVE	KING ST	EW	0.35	0.32	0.55	0.30	0.34	0.32
HAM	PEMBROKE AVE	KING ST	EATON ST	EW	0.35	0.32	0.55	0.30	0.34	0.32
HAM	PEMBROKE AVE	EATON ST	BARRON ST	EW	0.35	0.16	0.50	0.17	0.29	0.15

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
HAM	PEMBROKE AVE	BARRON ST	MERCURY BLVD	EW	0.35	0.16	0.50	0.17	0.29	0.15
HAM	PEMBROKE AVE	MERCURY BLVD	WOODLAND RD	EW	0.21	0.00	0.17	0.19	0.16	0.08
HAM	PEMBROKE AVE	WOODLAND RD	OLD BUCKROE RD	EW	0.21	0.00	0.17	0.19	0.18	0.06
HAM	PEMBROKE AVE	OLD BUCKROE RD	MALLORY ST	EW	0.21	0.00	0.17	0.19	0.04	0.02
HAM	POWER PLANT PKWY	I-664	BRIARFIELD RD	NS	0.00	0.01	0.00	0.22	0.00	0.02
HAM	POWER PLANT PKWY	BRIARFIELD RD	PINE CHAPEL RD	NS	0.07	0.10	0.12	0.13	0.08	0.08
HAM	POWER PLANT PKWY	PINE CHAPEL RD	MERCURY BLVD	NS	-	-	-	-	-	-
HAM	POWHATAN PKWY	KECOUGHTAN RD	PEMBROKE AVE	NS	0.14	0.17	0.25	0.19	0.05	0.05
HAM	POWHATAN PKWY	PEMBROKE AVE	I-664	NS	0.00	0.53	0.04	1.42	0.00	0.77
HAM	QUEEN ST	BRIARFIELD RD	MICHIGAN DR	EW	0.16	0.14	0.14	0.11	0.04	0.03
HAM	QUEEN ST	MICHIGAN DR	PEMBROKE AVE	EW	0.16	0.14	0.14	0.11	0.03	0.03
HAM	RIP RAP RD	ARMISTEAD AVE	I-64	NS	0.73	0.74	1.43	1.33	0.88	0.45
HAM	RIP RAP RD	I-64	KING ST	NS	0.13	0.00	0.36	0.04	0.27	0.00
HAM	ROANOKE AVE	NEWPORT NEWS CL	MERCURY BLVD	NS	0.14	0.12	0.09	0.16	0.01	0.00
HAM	SAUNDERS RD	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.11	0.07	0.15	0.15	0.04	0.07
HAM	SEMPLE FARM RD	BIG BETHEL RD	BELLGRADE DR	EW	-	-	-	-	-	-
HAM	SEMPLE FARM RD	BELLGRADE DR	MAGRUDER BLVD/ARMSTRONG PKWY	EW	-	-	-	-	-	-
HAM	SETTLERS LANDING RD	PEMBROKE AVE	LASALLE AVE	EW	1.13	1.37	1.09	1.30	1.44	1.22
HAM	SETTLERS LANDING RD	LASALLE AVE	KECOUGHTAN RD	EW	0.05	0.05	0.00	0.00	0.01	0.00
HAM	SETTLERS LANDING RD	KECOUGHTAN RD	ARMISTEAD AVE	EW	1.13	1.96	0.88	1.52	1.39	1.16
HAM	SETTLERS LANDING RD	ARMISTEAD AVE	EATON ST	EW	2.42	0.42	1.91	0.56	2.30	0.61
HAM	SETTLERS LANDING RD	EATON ST	TYLER ST	EW	1.46	0.13	2.00	0.19	1.77	0.08
HAM	SETTLERS LANDING RD	TYLER ST	I-64	EW	1.46	0.13	2.00	0.19	1.79	0.08
HAM	TODDS LA	NEWPORT NEWS CL	BIG BETHEL RD	EW	0.11	0.13	0.16	0.23	0.06	0.16
HAM	TODDS LA	BIG BETHEL RD	ABERDEEN RD	EW	0.26	0.29	0.26	0.30	0.12	0.24
HAM	TODDS LA	ABERDEEN RD	CUNNINGHAM DR	EW	0.16	0.23	0.43	0.46	0.22	0.30
HAM	TODDS LA	CUNNINGHAM DR	MERCURY BLVD	NS	0.00	0.78	0.26	1.07	0.02	0.75
HAM	WOODLAND RD	I-64	COUNTY ST	NS	0.52	2.06	1.56	2.92	1.12	2.99
HAM	WOODLAND RD	COUNTY ST	MERCURY BLVD	NS	0.37	1.48	0.35	2.67	0.32	1.21
HAM	WOODLAND RD	MERCURY BLVD	PEMBROKE AVE	NS	0.45	0.50	0.38	0.35	0.06	0.11
HAM	WOODLAND RD	PEMBROKE AVE	FOX HILL RD	NS	0.43	0.40	0.28	0.25	0.04	0.05
HAM	WYTHE CREEK RD	COMMANDER SHEPARD BLVD	POQUOSON CL	NS	0.28	0.15	0.44	0.28	0.36	0.23
IW	BATTERY PARK RD	S CHURCH ST	NIKE PARK RD	EW	-	-	-	-	-	-
IW	BATTERY PARK RD	NIKE PARK RD	COUNTRY WAY	EW	-	-	-	-	-	-
IW	BENNS CHURCH BLVD	SUFFOLK CL	RIDDICK RD	NS	0.02	0.03	0.05	0.03	0.08	0.05
IW	BENNS CHURCH BLVD	RIDDICK RD	ROUTE 10 & 32 (BREWERS NECK BLVD)	NS	0.02	0.03	0.05	0.03	0.08	0.05
IW	BENNS CHURCH BLVD	ROUTE 10 & 32 (BREWERS NECK BLVD)	ECL SMITHFIELD (RTE 644)	NS	0.08	0.11	0.11	0.10	0.22	0.40
IW	BENNS CHURCH BLVD	ECL SMITHFIELD (RTE 644)	CHURCH ST S	NS	0.27	0.57	0.40	0.39	2.35	3.07
IW	BREWERS NECK BLVD	ROUTE 10 & 32 (BENN'S CHURCH)	RTE 670	EW	0.15	0.12	0.10	0.18	0.41	0.43
IW	BREWERS NECK BLVD	RTE 670	ROUTE 17	EW	0.15	0.12	0.10	0.18	0.41	0.43
IW	BUCKHORN DR	SUFFOLK CL	SUNSET DR (RTE 609)	NS	-	-	-	-	-	-
IW	BUCKHORN DR	SUNSET DR (RTE 609)	SCL WINDSOR	NS	-	-	-	-	-	-
IW	BUS RTE 10	NCL SMITHFIELD	JENKINS LANE	NS	-	-	-	-	-	-
IW	BUS RTE 10	JENKINS LANE	RT 10 BYPASS	NS	-	-	-	-	-	-

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
IW	BUS RTE 58/BUS RTE 258	FRANKLIN CL	JAMESTOWN LN (RTE 691)	EW	0.12	0.11	0.13	0.12	0.08	0.08
IW	BUS RTE 58/BUS RTE 258	JAMESTOWN LN (RTE 691)	ROUTE 258	EW	0.12	0.11	0.13	0.12	0.08	0.08
IW	BUS RTE 58	ROUTE 258	SUFFOLK CL	EW	0.09	0.11	0.11	0.12	0.09	0.08
IW	CARROLLTON BLVD	SUFFOLK CL	WEST END CHUCKATUCK BRIDGE	NS	0.17	0.09	0.12	0.13	0.40	0.38
IW	CARROLLTON BLVD	WEST END CHUCKATUCK BRIDGE	ROUTE 258	NS	0.17	0.09	0.12	0.13	0.40	0.38
IW	CARROLLTON BLVD	ROUTE 258	SMITH'S NECK RD	NS	0.19	0.08	0.04	1.08	0.25	1.54
IW	CARROLLTON BLVD	SMITH'S NECK RD	W END JAMES RIVER BRIDGE	NS	0.10	0.01	0.10	0.64	0.25	0.79
IW	CARROLLTON BLVD/JAMES RIVER BR	W END JAMES RIVER BRIDGE	NEWPORT NEWS CL	NS	0.10	0.01	0.10	0.64	0.25	0.79
IW	CHURCH ST S	RTE 10 BYPASS	BATTERY PARK RD	NS	0.08	0.00	0.17	0.09	0.07	0.00
IW	CHURCH ST S	BATTERY PARK RD	CYPRESS CREEK BRIDGE	NS	0.21	0.14	0.37	0.33	0.14	0.08
IW	CHURCH ST S	CYPRESS CREEK BRIDGE	MAIN ST	NS	0.21	0.14	0.37	0.33	0.14	0.08
IW	CHURCH ST N	MAIN ST	SMITHFIELD CL	NS	-	-	-	-	-	-
IW	COURT ST	SCL WINDSOR/BUCKHORN DR	ROUTE 460	NS	-	-	-	-	-	-
IW	MAIN ST	ROUTE 10 BYPASS	CHURCH ST	EW	0.05	0.00	0.37	0.25	0.07	0.07
IW	NIKE PARK RD	BATTERY PARK RD	TITUS CREEK DR	EW	-	-	-	-	-	-
IW	RESCUE RD	NEWPORT ST (RTE 1002)	SMITH'S NECK RD	EW	-	-	-	-	-	-
IW	ROUTE 10 (OLD STAGE HWY)	BUS RTE 10	IW/SURRY CL	NS	0.06	0.03	0.05	0.04	0.20	0.14
IW	ROUTE 10 BYPASS	CHURCH ST S	FAIRWAY DR	NS	0.05	0.00	0.12	0.02	0.12	0.05
IW	ROUTE 10 BYPASS	FAIRWAY DR	MAIN ST	NS	0.05	0.00	0.12	0.02	0.12	0.05
IW	ROUTE 10 BYPASS	MAIN ST	NCL SMITHFIELD	NS	0.04	0.03	0.03	0.10	0.04	0.05
IW	ROUTE 10 BYPASS	NCL SMITHFIELD	BUS RTE 10	NS	0.04	0.03	0.03	0.10	0.03	0.04
IW	ROUTE 258	SUFFOLK CL	UNION CAMP DR (RTE 656)	NS	0.05	0.05	0.04	0.03	0.23	0.16
IW	ROUTE 258	UNION CAMP DR (RTE 656)	CARRSVILLE HWY (BUS RTE 58)	NS	0.05	0.05	0.04	0.03	0.08	0.07
IW	ROUTE 258	CARRSVILLE HWY (BUS RTE 58)	BURDETTE RD (W RTE 619)	EW	0.05	0.06	0.06	0.06	0.12	0.14
IW	ROUTE 258	BURDETTE RD (W RTE 619)	RIVER RUN TRAIL (W RTE 614)	EW	0.05	0.06	0.06	0.06	0.12	0.14
IW	ROUTE 258	RIVER RUN TRAIL (W RTE 614)	BLACKWATER RD (RTE 603)	EW	0.05	0.06	0.06	0.06	0.12	0.15
IW	ROUTE 258	BLACKWATER RD (RTE 603)	WCL WINDSOR	EW	0.05	0.06	0.06	0.06	0.11	0.14
IW	ROUTE 258	WCL WINDSOR	ROUTE 460	EW	0.05	0.06	0.06	0.06	0.11	0.14
IW	ROUTE 258	ROUTE 460	ECL WINDSOR	EW	0.03	0.04	0.03	0.06	0.05	0.09
IW	ROUTE 258	ECL WINDSOR	COURT ST NORTH (RTE 610)	EW	0.03	0.04	0.03	0.06	0.05	0.09
IW	ROUTE 258	COURT ST NORTH (RTE 610)	IRON MINE SPRINGS RD (RTE 605)	EW	0.03	0.04	0.03	0.06	0.05	0.08
IW	ROUTE 258	IRON MINE SPRINGS RD (RTE 605)	CENTRAL HILL RD (W RTE 637)	EW	0.03	0.04	0.03	0.06	0.05	0.08
IW	ROUTE 258	CENTRAL HILL RD (W RTE 637)	SCOTTS FACTORY RD (RTE 620)	EW	0.05	0.06	0.07	0.07	0.08	0.10
IW	ROUTE 258	SCOTTS FACTORY RD (RTE 620)	WCL SMITHFIELD	EW	0.34	0.26	0.28	0.28	0.45	0.39
IW	ROUTE 258/N MAIN ST	WCL SMITHFIELD	RTE 10 BYPASS	EW	0.34	0.26	0.28	0.28	0.46	0.41
IW	ROUTE 460	SOUTHAMPTON CL	FIRETOWER RD (RTE 644)	EW	0.02	0.00	0.00	0.00	0.00	0.00
IW	ROUTE 460	FIRETOWER RD (RTE 644)	WCL WINDSOR	EW	0.02	0.00	0.00	0.00	0.00	0.00
IW	ROUTE 460	WCL WINDSOR	ROUTE 258	EW	0.02	0.00	0.00	0.00	0.00	0.00
IW	ROUTE 460	ROUTE 258	COURT ST (RTE 610)	EW	0.65	0.92	0.69	0.77	10.96	14.06
IW	ROUTE 460	COURT ST (RTE 610)	ECL WINDSOR	EW	0.08	0.06	0.09	0.08	1.61	1.38
IW	ROUTE 460	ECL WINDSOR	SUFFOLK CL	EW	0.08	0.06	0.09	0.08	1.61	1.38
IW	SMITH'S NECK RD	CARROLLTON BLVD	REYNOLDS DR	NS	-	-	-	-	-	-
IW	SMITH'S NECK RD	REYNOLDS DR	TITUS CREEK DR	NS	-	-	-	-	-	-
IW	SMITH'S NECK RD	TITUS CREEK DR	RESCUE RD	NS	-	-	-	-	-	-

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
IW	TITUS CREEK DR	SMITH'S NECK RD	NIKE PARK RD	EW	-	-	-	-	-	-
IW	TODD AVE/WARWICK ST	COUNTRY WAY	NEWPORT ST (RTE 1002)	NS	-	-	-	-	-	-
JCC	BARHAMSVILLE RD	I-64	ROUTE 60	NS	0.08	0.02	0.02	0.11	0.09	0.13
JCC	CENTERVILLE RD	JOHN TYLER HWY	MONTICELLO AVE	NS	-	-	-	-	-	-
JCC	CENTERVILLE RD	MONTICELLO AVE	NEWS RD	NS	-	-	-	-	-	-
JCC	CENTERVILLE RD	NEWS RD	LONGHILL RD	NS	-	-	-	-	-	-
JCC	CENTERVILLE RD	LONGHILL RD	RICHMOND RD	NS	-	-	-	-	-	-
JCC	COLONIAL NATL HIST PKWY	JAMESTOWN/RTE 359	WILLIAMSBURG CL/RTE 199	EW	-	-	-	-	-	-
JCC	CROAKER RD	ROUTE 60	MAXTON LN (RTE 760)	NS	0.00	0.00	0.00	0.04	0.00	0.00
JCC	CROAKER RD	MAXTON LN (RTE 760)	I-64	NS	0.00	0.00	0.00	0.04	0.00	0.00
JCC	CROAKER RD	I-64	FENTON MILL RD	NS	-	-	-	-	-	-
JCC	CROAKER RD	FENTON MILL RD	RIVERVIEW RD	NS	-	-	-	-	-	-
JCC	DEPUE DR	LONGHILL RD (RTE 612)	IRONBOUND RD	EW	0.10	0.02	0.11	0.04	0.07	0.00
JCC	I-64	NEW KENT CL	RTE 30	EW	0.04	0.00	0.01	0.00	0.34	0.00
JCC	I-64	RTE 30	CROAKER RD (RTE 607)	EW	0.01	0.00	0.14	0.02	0.31	0.05
JCC	I-64	CROAKER RD (RTE 607)	YORK CL	EW	0.00	0.00	0.06	0.01	0.09	0.04
JCC	I-64	YORK CL	NEWPORT NEWS CL	EW	0.02	0.02	0.00	0.01	0.02	0.04
JCC	IRONBOUND RD	STRAWBERRY PLAINS RD	MONTICELLO AVE	NS	-	-	-	-	-	-
JCC	IRONBOUND RD	MONTICELLO AVE	WILLIAMSBURG CL	NS	0.03	0.00	0.14	0.17	0.09	0.05
JCC	IRONBOUND RD/NEWS RD	JOHN TYLER HWY	MONTICELLO AVE	NS	0.00	0.00	0.00	0.00	0.00	0.00
JCC	IRONBOUND RD/SANDY BAY RD	JAMESTOWN RD	JOHN TYLER HWY	NS	0.00	0.07	0.07	0.17	0.02	0.03
JCC	JAMESTOWN RD	JAMES RIVER/FERRY	COLONIAL PARKWAY (RTE 359)	EW	-	-	-	-	-	-
JCC	JAMESTOWN RD	COLONIAL PARKWAY (RTE 359)	SANDY BAY RD (RTE 681)	EW	0.05	0.07	0.10	0.02	0.04	0.02
JCC	JAMESTOWN RD	SANDY BAY RD (RTE 681)	NECK-O-LAND RD	EW	0.15	0.11	0.23	0.16	0.09	0.09
JCC	JAMESTOWN RD	NECK-O-LAND RD	WILLIAMSBURG CL	EW	0.15	0.11	0.23	0.16	0.09	0.09
JCC	JOHN TYLER HWY	CHARLES CITY CL	MONTICELLO AVE	EW	0.05	0.05	0.07	0.05	0.08	0.07
JCC	JOHN TYLER HWY	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	EW	0.05	0.05	0.07	0.05	0.03	0.03
JCC	JOHN TYLER HWY	CENTERVILLE RD (RTE 614)	IRONBOUND RD (RTE 615)	EW	0.18	0.16	0.17	0.14	0.12	0.10
JCC	JOHN TYLER HWY	IRONBOUND RD (RTE 615)	STANLEY DR (RTE 712)	EW	0.22	0.15	0.28	0.19	0.27	0.18
JCC	JOHN TYLER HWY	STANLEY DR (RTE 712)	ROUTE 199	EW	0.22	0.15	0.28	0.19	0.47	0.31
JCC	LONGHILL RD	CENTERVILLE RD (RTE 614)	WARHILL TRAIL	EW	-	-	-	-	-	-
JCC	LONGHILL RD	WARHILL TRAIL	OLDE TOWNE RD (RTE 658)	EW	-	-	-	-	-	-
JCC	LONGHILL RD	OLDE TOWNE RD (RTE 658)	ROUTE 199	EW	-	-	-	-	-	-
JCC	LONGHILL RD	ROUTE 199	DEPUE DR	EW	0.28	0.08	0.35	0.21	0.46	0.03
JCC	MERRIMAC TRL	NEWPORT NEWS CL @ I-64	YORK CL (SOUTH OF GROVE INT)	EW	0.06	0.08	0.04	0.01	0.07	0.04
JCC	MERRIMAC TRL	YORK CL @ ROUTE 199	PENNIMAN RD (YORK CL)	EW	0.07	0.08	0.08	0.05	0.17	0.09
JCC	MONTICELLO AVE	JOHN TYLER HWY	CENTERVILLE RD (RTE 614)	EW	-	-	-	-	-	-
JCC	MONTICELLO AVE	CENTERVILLE RD (RTE 614)	NEWS RD	EW	-	-	-	-	-	-
JCC	MONTICELLO AVE	NEWS RD	ROUTE 199	EW	0.16	0.52	0.50	0.77	1.01	1.98
JCC	MONTICELLO AVE	ROUTE 199	IRONBOUND RD (RTE 615)	EW	0.22	0.28	0.44	0.58	0.53	0.58
JCC	OLD STAGE RD	NEW KENT CL	BARNES RD (RTE 601 S)	EW	0.05	0.10	0.07	0.09	0.41	0.67
JCC	OLD STAGE RD	BARNES RD (RTE 601 S)	I-64	EW	0.00	0.07	0.01	0.07	0.02	0.50
JCC	OLDE TOWNE RD	LONGHILL RD	RICHMOND RD	EW	-	-	-	-	-	-
JCC	POCAHONTAS TRL	WILLIAMSBURG CL	YORK CL @ 199	EW	0.08	0.14	0.09	0.10	0.08	0.09

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
JCC	POCAHONTAS TRL	YORK CL	BASF RD/ROUTE 60 RELOCATION	EW	0.12	0.17	0.19	0.14	0.63	0.53
JCC	POCAHONTAS TRL	BASF RD/ROUTE 60 RELOCATION	NEWPORT NEWS CL	EW	0.12	0.17	0.19	0.14	0.59	0.50
JCC	RICHMOND RD	ROUTE 199	OLDE TOWNE RD (RTE 658)	EW	0.00	0.03	0.02	0.07	0.01	0.05
JCC	RICHMOND RD	OLDE TOWNE RD (RTE 658)	WILLIAMSBURG CL	EW	0.09	0.11	0.10	0.22	0.08	0.15
JCC	ROCHAMBEAU DR	ROUTE 60	0.7 MI EAST OF ASHINGTON WAY	EW	0.11	0.11	0.12	0.08	0.05	0.08
JCC	ROCHAMBEAU DR	0.7 MI EAST OF ASHINGTON WAY	CROAKER RD (RTE 607)	EW	0.11	0.11	0.12	0.08	0.05	0.08
JCC	ROUTE 199	YORK CL	RICHMOND RD (RTE 60)	EW	0.06	0.05	0.00	0.00	0.01	0.02
JCC	ROUTE 199	RICHMOND RD (RTE 60)	LONGHILL RD (RTE 612)	EW	0.05	0.05	0.00	0.00	0.00	0.01
JCC	ROUTE 199	LONGHILL RD (RTE 612)	MONTICELLO AVE (RTE 321)	EW	0.04	0.05	0.01	0.00	0.02	0.01
JCC	ROUTE 199	MONTICELLO AVE (RTE 321)	JOHN TYLER HWY (RTE 5)	EW	0.09	0.03	0.14	0.02	0.38	0.04
JCC	ROUTE 199	JOHN TYLER HWY (RTE 5)	WILLIAMSBURG CL	EW	0.31	0.22	1.16	0.29	2.17	1.51
JCC	ROUTE 199	WILLIAMSBURG CL	HENRY ST/COLONIAL PKWY	EW	0.05	0.16	0.13	0.23	0.35	0.83
JCC	ROUTE 199	HENRY ST/COLONIAL PKWY	MOUNTS BAY RD/QUARTERPATH RD	EW	0.05	0.16	0.13	0.23	0.36	0.85
JCC	ROUTE 199	MOUNTS BAY RD/QUARTERPATH RD	RTE 60/RTE 143/YORK CL	EW	0.02	0.08	0.05	0.21	0.14	0.37
JCC	ROUTE 60	NEW KENT CL	ROUTE 30	EW	0.06	0.10	0.05	0.02	0.03	0.03
JCC	ROUTE 60	ROUTE 30	CROAKER RD (RTE 607)	EW	0.08	0.12	0.12	0.12	0.11	0.16
JCC	ROUTE 60	CROAKER RD (RTE 607)	LIGHTFOOT RD (RTE 646)	EW	0.07	0.06	0.19	0.16	0.29	0.27
JCC	ROUTE 60	LIGHTFOOT RD (RTE 646)	CENTERVILLE RD (RTE 614)	EW	0.07	0.06	0.19	0.16	0.29	0.27
JCC	ROUTE 60	CENTERVILLE RD (RTE 614)	ROUTE 199	EW	0.83	1.24	0.61	1.18	1.50	2.62
JCC	SKIFFES CREEK CONNECTOR	POCAHONTAS TRL	MERRIMAC TRL	NS	-	-	-	-	-	-
JCC	STRAWBERRY PLAINS RD	JOHN TYLER HWY/ROUTE 199	IRONBOUND RD	NS	-	-	-	-	-	-
NN	23RD/25TH CONNECTOR	HUNTINGTON AVE	JEFFERSON AVE	EW	0.17	-	0.27	-	0.19	-
NN	25TH ST	HUNTINGTON AVE	WARWICK BLVD	EW	0.00	1.99	0.00	1.19	0.01	0.98
NN	25TH ST	JEFFERSON AVE	26TH ST	EW	0.14	-	0.00	-	0.02	-
NN	25TH ST	26TH ST	HAMPTON CL	EW	0.13	0.15	0.03	0.10	0.01	0.01
NN	26TH ST	25TH ST	ROANOKE AVE	EW	-	0.00	-	0.33	-	0.05
NN	26TH ST	ROANOKE AVE	JEFFERSON AVE	EW	-	0.12	-	0.21	-	0.05
NN	26TH ST	JEFFERSON AVE	WARWICK BLVD	EW	-	0.03	-	0.12	-	0.03
NN	26TH ST	WARWICK BLVD	HUNTINGTON AVE	EW	-	0.00	-	0.22	-	0.02
NN	39TH ST	HUNTINGTON AVE	MADISON AVE	EW	0.06	0.12	0.02	0.07	0.02	0.02
NN	39TH ST	MADISON AVE	HAMPTON CL	EW	0.06	0.12	0.02	0.07	0.04	0.05
NN	ATKINSON BLVD	WARWICK BLVD	JEFFERSON AVE	EW	-	-	-	-	-	-
NN	BLAND BLVD	WARWICK BLVD	I-64	EW	0.12	0.00	0.21	0.19	0.25	0.08
NN	BLAND BLVD	I-64	JEFFERSON AVE	EW	0.12	0.00	0.21	0.19	0.25	0.08
NN	BLAND BLVD	JEFFERSON AVE	McMANUS BLVD	EW	0.00	1.04	0.00	1.08	0.00	0.80
NN	BRIARFIELD RD	JEFFERSON AVE	HAMPTON CL	EW	0.12	0.20	0.23	0.22	0.22	0.16
NN	BUXTON AVE	HAMPTON CL	25TH ST	NS	0.13	0.00	0.03	0.10	0.01	0.03
NN	CENTER AVE	WARWICK BLVD	JEFFERSON AVE	EW	-	-	-	-	-	-
NN	CHESTNUT AVE	39TH ST	44TH ST	NS	0.16	0.00	0.00	0.04	0.01	0.00
NN	CHESTNUT AVE	44TH ST	BRIARFIELD RD	NS	0.16	0.00	0.00	0.04	0.04	0.00
NN	CHESTNUT AVE	BRIARFIELD RD	HAMPTON CL	NS	0.07	0.08	0.00	0.10	0.00	0.06
NN	CITY CENTER BLVD	WARWICK BLVD	JEFFERSON AVE	EW	-	-	-	-	-	-
NN	DENBIGH BLVD	LUCAS CREEK RD	WARWICK BLVD	EW	0.33	0.00	0.46	0.02	0.45	0.00
NN	DENBIGH BLVD	WARWICK BLVD	JEFFERSON AVE	EW	0.04	0.04	0.18	0.24	0.12	0.21

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
NN	DENBIGH BLVD	JEFFERSON AVE	YORK CL	EW	0.12	0.03	0.21	0.07	0.43	0.07
NN	DILIGENCE DR	THIMBLE SHOALS BLVD	J CLYDE MORRIS BLVD	EW	-	-	-	-	-	-
NN	FORT EUSTIS BLVD	WARWICK BLVD	I-64	EW	0.00	0.07	0.10	0.04	0.07	0.33
NN	FORT EUSTIS BLVD	I-64	JEFFERSON AVE	EW	0.38	0.11	0.48	0.05	2.46	0.19
NN	FORT EUSTIS BLVD	JEFFERSON AVE	.54 MILES EAST OF RTE 143	EW	0.00	0.00	0.00	0.00	0.00	0.00
NN	FORT EUSTIS BLVD	.54 MILES EAST OF RTE 143	YORK CL	EW	0.00	0.00	0.00	0.00	0.00	0.00
NN	HRC PARKWAY	HARPERSVILLE RD	HAMPTON CL	EW	0.07	0.03	0.08	0.02	0.06	0.00
NN	HARPERSVILLE RD	J CLYDE MORRIS BLVD	SAUNDERS RD	NS	0.16	0.00	0.39	0.00	0.09	0.00
NN	HARPERSVILLE RD	SAUNDERS RD	HRC PARKWAY	NS	0.15	0.10	0.17	0.21	0.04	0.03
NN	HARPERSVILLE RD	HRC PARKWAY	JEFFERSON AVE	NS	0.00	0.00	0.04	0.40	0.00	0.10
NN	HARPERSVILLE RD	JEFFERSON AVE	WARWICK BLVD	NS	-	-	-	-	-	-
NN	HUNTINGTON AVE	71ST ST	39TH ST	NS	-	0.31	-	0.59	-	0.00
NN	HUNTINGTON AVE	39TH ST	26TH ST	NS	-	0.44	-	0.60	-	0.00
NN	HUNTINGTON AVE	26TH ST	23RD ST	NS	-	0.44	-	0.60	-	0.00
NN	I-64	JAMES CITY CL	RTE 143 (NORTH)	EW	0.02	0.02	0.00	0.01	0.02	0.04
NN	I-64	RTE 143 (NORTH)	YORKTOWN RD	EW	0.09	0.00	0.00	0.03	0.30	0.06
NN	I-64	YORKTOWN RD	FORT EUSTIS BLVD	EW	0.12	0.00	0.04	0.01	0.56	0.01
NN	I-64	FORT EUSTIS BLVD	JEFFERSON AVE	EW	0.07	0.02	0.03	0.04	0.44	0.16
NN	I-64	JEFFERSON AVE	OYSTER POINT RD	EW	0.00	0.00	0.00	0.04	0.00	0.08
NN	I-64	OYSTER POINT RD	J C MORRIS BLVD	EW	0.03	0.02	0.03	0.04	0.16	0.07
NN	I-64	J C MORRIS BLVD	HAMPTON CL	EW	0.04	0.03	0.02	0.06	0.31	0.98
NN	I-664/MMMBT	SUFFOLK CL	TERMINAL AVE	NS	0.31	0.07	0.42	0.34	5.12	2.75
NN	I-664	TERMINAL AVE	23RD ST	NS	0.01	0.87	0.04	6.57	0.06	32.39
NN	I-664	23RD ST	CHESTNUT AVE	NS	0.00	0.64	0.04	2.80	0.10	17.53
NN	I-664	CHESTNUT AVE	HAMPTON CL	NS	0.00	0.21	0.21	0.08	0.66	0.81
NN	J CLYDE MORRIS BLVD	WARWICK BLVD	JEFFERSON AVE	NS	0.09	0.02	0.30	0.13	0.42	0.13
NN	J CLYDE MORRIS BLVD	JEFFERSON AVE	THIMBLE SHOALS BLVD	NS	0.08	0.24	0.46	0.38	0.71	1.12
NN	J CLYDE MORRIS BLVD	THIMBLE SHOALS BLVD	I-64	NS	0.08	0.24	0.46	0.38	0.71	1.12
NN	J CLYDE MORRIS BLVD	I-64	HARPERSVILLE RD	NS	0.31	0.32	1.31	0.12	3.05	0.51
NN	J CLYDE MORRIS BLVD	HARPERSVILLE RD	YORK CL	NS	0.18	0.14	1.35	0.28	1.60	0.73
NN	JEFFERSON AVE	JAMES CITY CL	YORKTOWN RD	NS	0.04	0.17	0.05	0.19	0.07	0.39
NN	JEFFERSON AVE	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.10	0.09	0.01	0.05	0.01	0.07
NN	JEFFERSON AVE	FORT EUSTIS BLVD	FUTURE ATKINSON BLVD	NS	0.14	0.06	0.27	0.30	0.33	0.26
NN	JEFFERSON AVE	FUTURE ATKINSON BLVD	DENBIGH BLVD	NS	0.14	0.06	0.27	0.30	0.48	0.38
NN	JEFFERSON AVE	DENBIGH BLVD	BLAND BLVD	NS	0.12	0.00	0.46	0.40	1.39	0.99
NN	JEFFERSON AVE	BLAND BLVD	I-64	NS	0.13	0.11	0.38	0.56	1.84	1.92
NN	JEFFERSON AVE	I-64	OYSTER POINT RD	NS	0.13	0.11	0.38	0.56	1.27	1.32
NN	JEFFERSON AVE	OYSTER POINT RD	MUELLER LA	NS	0.14	0.11	0.80	0.40	1.11	0.68
NN	JEFFERSON AVE	MUELLER LA	CITY CENTER BLVD	NS	0.14	0.11	0.80	0.40	1.11	0.68
NN	JEFFERSON AVE	CITY CENTER BLVD	J CLYDE MORRIS BLVD	NS	0.14	0.11	0.80	0.40	1.12	0.68
NN	JEFFERSON AVE	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.19	0.13	0.40	0.24	1.97	1.87
NN	JEFFERSON AVE	HARPERSVILLE RD	MAIN ST	NS	0.20	0.11	0.33	0.22	0.92	1.08
NN	JEFFERSON AVE	MAIN ST	CENTER AVE	NS	0.11	0.00	0.21	0.33	1.19	0.53
NN	JEFFERSON AVE	CENTER AVE	MERCURY BLVD	NS	0.35	0.16	0.79	0.49	3.02	1.37

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	JEFFERSON AVE	MERCURY BLVD	BRIARFIELD RD	NS	0.14	0.09	0.39	0.15	0.35	0.25
NN	JEFFERSON AVE	BRIARFIELD RD	41ST ST	NS	0.00	0.08	0.00	0.13	0.00	0.21
NN	JEFFERSON AVE	41ST ST	35TH ST	NS	0.36	0.22	0.43	0.32	0.29	0.11
NN	JEFFERSON AVE	35TH ST	25TH ST	NS	0.69	0.73	1.13	2.09	0.72	0.95
NN	MAIN ST	WARWICK BLVD	JEFFERSON AVE	EW	0.00	0.12	0.13	0.10	0.00	0.04
NN	MAIN ST	JEFFERSON AVE	HAMPTON CL	EW	0.13	0.11	0.23	0.16	0.08	0.05
NN	MCMANUS BLVD/SIEMENS WAY	DENBIGH BLVD	BLAND BLVD	NS	-	-	-	-	-	-
NN	MERCURY BLVD/JAMES RIVER BR	ISLE OF WIGHT CL	RIVER RD	EW	0.11	0.02	0.08	0.70	0.25	0.90
NN	MERCURY BLVD	RIVER RD	WARWICK BLVD	EW	0.11	0.02	0.08	0.70	0.24	0.87
NN	MERCURY BLVD	WARWICK BLVD	JEFFERSON AVE	EW	0.11	0.02	0.08	0.70	0.29	1.06
NN	MERCURY BLVD	JEFFERSON AVE	HAMPTON CL	EW	0.14	0.17	0.21	0.31	0.49	0.36
NN	OYSTER POINT RD	WARWICK BLVD	JEFFERSON AVE	EW	0.14	0.27	0.19	0.65	0.24	0.51
NN	OYSTER POINT RD	JEFFERSON AVE	CANON BLVD	EW	0.05	0.17	0.22	0.93	0.15	1.07
NN	OYSTER POINT RD	CANON BLVD	I-64	EW	0.04	0.29	0.06	0.13	0.02	0.13
NN	RICHNECK RD	DENBIGH BLVD	JEFFERSON AVE	NS	-	-	-	-	-	-
NN	RICHNECK RD	JEFFERSON AVE	OLD YORK CL	NS	-	-	-	-	-	-
NN	RICHNECK RD	OLD YORK CL	FORT EUSTIS BLVD	NS	-	-	-	-	-	-
NN	ROANOKE AVE	I-664	43RD ST	NS	0.09	0.01	0.04	0.01	0.01	0.00
NN	ROANOKE AVE	43RD ST	BRIARFIELD RD	NS	0.09	0.01	0.04	0.01	0.01	0.00
NN	ROANOKE AVE	BRIARFIELD RD	HAMPTON CL	NS	0.14	0.12	0.09	0.16	0.01	0.02
NN	SAUNDERS RD	HARPERSVILLE RD	HAMPTON CL	EW	0.11	0.07	0.15	0.15	0.08	0.06
NN	SHELLABARGER DR	FORT EUSTIS	WARWICK BLVD	EW	-	-	-	-	-	-
NN	THIMBLE SHOALS BLVD	JEFFERSON AVE	DILIGENCE DR	EW	-	-	-	-	-	-
NN	THIMBLE SHOALS BLVD	DILIGENCE DR	J CLYDE MORRIS BLVD	EW	-	-	-	-	-	-
NN	VICTORY BLVD	I-64	YORK CL	EW	0.10	0.01	1.34	0.11	1.21	0.24
NN	WARWICK BLVD	JAMES CITY CL	YORKTOWN RD	NS	0.17	0.12	0.14	0.19	0.49	0.59
NN	WARWICK BLVD	YORKTOWN RD	FORT EUSTIS BLVD	NS	0.17	0.11	0.32	0.24	0.68	0.58
NN	WARWICK BLVD	FORT EUSTIS BLVD	SNIDOW BLVD	NS	0.08	0.14	0.25	0.41	0.46	0.66
NN	WARWICK BLVD	SNIDOW BLVD	DENBIGH BLVD	NS	0.08	0.14	0.25	0.41	0.51	0.74
NN	WARWICK BLVD	DENBIGH BLVD	BLAND BLVD	NS	0.22	0.09	0.53	0.52	1.69	1.19
NN	WARWICK BLVD	BLAND BLVD	OYSTER POINT RD	NS	0.14	0.22	0.45	0.45	1.29	1.09
NN	WARWICK BLVD	OYSTER POINT RD	MAXWELL LN	NS	0.18	0.23	0.53	0.30	0.32	0.43
NN	WARWICK BLVD	MAXWELL LN	DEEP CREEK RD	NS	0.18	0.23	0.53	0.30	0.32	0.43
NN	WARWICK BLVD	DEEP CREEK RD	J CLYDE MORRIS BLVD	NS	0.18	0.23	0.53	0.30	0.34	0.46
NN	WARWICK BLVD	J CLYDE MORRIS BLVD	HARPERSVILLE RD	NS	0.03	0.06	0.10	0.08	0.08	0.04
NN	WARWICK BLVD	HARPERSVILLE RD	MAIN ST	NS	0.14	0.19	0.27	0.34	0.26	0.42
NN	WARWICK BLVD	MAIN ST	CENTER AVE	NS	0.17	0.15	0.38	0.26	0.27	0.28
NN	WARWICK BLVD	CENTER AVE	MERCURY BLVD	NS	0.17	0.15	0.38	0.26	0.27	0.28
NN	WARWICK BLVD	MERCURY BLVD	HUNTINGTON AVE	NS	0.33	0.31	1.09	0.59	0.44	0.43
NN	WARWICK BLVD	23RD ST	39TH ST	NS	0.32	-	0.31	-	0.00	-
NN	WARWICK BLVD	39TH ST	HUNTINGTON AVE	NS	0.33	-	1.09	-	0.00	-
NN	YORKTOWN RD	WARWICK BLVD	I-64	EW	0.11	0.10	0.07	0.00	0.20	0.01
NN	YORKTOWN RD	I-64	JEFFERSON AVE	EW	1.23	0.14	0.98	0.13	1.39	0.05
NN	YORKTOWN RD	JEFFERSON AVE	CRAWFORD RD	EW	0.05	0.13	0.04	0.14	0.05	0.19

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NN	YORKTOWN RD	CRAWFORD RD	YORK CL	EW	0.05	0.13	0.04	0.14	0.06	0.19
NOR	21ST ST	HAMPTON BLVD	COLLEY AVE	EW	0.00	0.00	0.53	0.26	0.10	0.02
NOR	21ST ST	COLLEY AVE	LLEWELLYN ST	EW	0.06	0.00	1.07	0.91	0.33	0.20
NOR	21ST ST	LLEWELLYN ST	MONTICELLO AVE	EW	1.02	0.00	1.10	0.75	0.16	0.12
NOR	26TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.15	-	0.10	-	0.11	-
NOR	26TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.36	-	0.27	-	0.68	-
NOR	26TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	0.36	-	0.27	-	0.70	-
NOR	26TH ST	MONTICELLO AVE	CHURCH ST	EW	0.64	-	0.67	-	1.94	-
NOR	26TH ST	CHURCH ST	27TH ST	EW	0.06	-	0.15	-	0.18	-
NOR	27TH ST	HAMPTON BLVD	COLLEY AVE	EW	-	0.00	-	0.00	-	0.00
NOR	27TH ST	COLLEY AVE	LLEWELLYN AVE	EW	-	0.15	-	0.10	-	0.17
NOR	27TH ST	LLEWELLYN AVE	MONTICELLO AVE	EW	-	0.15	-	0.10	-	0.14
NOR	27TH ST	MONTICELLO AVE	CHURCH ST	EW	-	0.77	-	0.73	-	1.28
NOR	27TH ST	CHURCH ST	26TH ST	EW	-	0.16	-	0.10	-	0.17
NOR	38TH ST	HAMPTON BLVD	COLLEY AVE	EW	0.13	0.00	0.48	0.09	0.04	0.00
NOR	38TH ST	COLLEY AVE	LLEWELLYN AVE	EW	0.14	0.13	0.18	0.15	0.02	0.02
NOR	38TH ST	LLEWELLYN AVE	GRANBY ST	EW	0.14	0.13	0.18	0.15	0.01	0.01
NOR	4TH VIEW ST	I-64	OCEAN VIEW AVE	EW	0.33	0.41	0.42	3.74	0.31	3.39
NOR	ADMIRAL TAUSSIG BLVD	HAMPTON BLVD	I-564	EW	0.21	2.58	0.24	0.22	0.16	0.36
NOR	AZALEA GARDEN RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.20	0.11	0.14	0.00	0.24	0.06
NOR	AZALEA GARDEN RD	PRINCESS ANNE RD	SEWELLS POINT RD	NS	0.21	0.21	0.23	0.17	0.41	0.52
NOR	AZALEA GARDEN RD	SEWELLS POINT RD	ROBIN HOOD RD	NS	0.21	0.21	0.23	0.17	0.20	0.26
NOR	AZALEA GARDEN RD	ROBIN HOOD RD	I-64	NS	0.00	0.00	0.04	0.00	0.00	0.00
NOR	AZALEA GARDEN RD	I-64	MILITARY HWY	NS	0.00	0.00	0.04	0.00	0.00	0.00
NOR	AZALEA GARDEN RD	MILITARY HWY	NORVIEW AVE	NS	0.13	0.34	0.23	0.40	0.34	0.76
NOR	AZALEA GARDEN RD	NORVIEW AVE	LITTLE CREEK RD	NS	0.09	0.13	0.15	0.13	0.05	0.07
NOR	BAINBRIDGE BLVD	CHESAPEAKE CL	S MAIN ST	NS	-	-	-	-	-	-
NOR	BALLENTINE BLVD	I-264	VA BEACH BLVD	NS	0.00	0.10	0.00	0.23	0.00	0.00
NOR	BALLENTINE BLVD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.63	0.15	0.96	0.49	1.71	0.48
NOR	BALLENTINE BLVD	PRINCESS ANNE RD	CHESAPEAKE BLVD	NS	0.00	0.18	0.07	0.32	0.01	0.65
NOR	BAY AVE	FIRST VIEW ST	I-64	EW	-	-	-	-	-	-
NOR	BAY AVE/OCEAN AVE	I-64	GRANBY ST	EW	-	-	-	-	-	-
NOR	BAYVIEW BLVD	GRANBY ST	TIDEWATER DR	EW	0.14	0.04	0.07	0.12	0.06	0.06
NOR	BAYVIEW BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.09	0.25	0.21	0.31	0.11	0.26
NOR	BAYVIEW BLVD	CHESAPEAKE BLVD	CAPE VIEW AVE	EW	0.35	0.34	0.39	0.61	0.12	0.18
NOR	BERKLEY AVE	I-464	STATE ST	EW	0.00	0.26	0.40	1.23	0.12	1.03
NOR	BERKLEY AVE	STATE ST	MAIN ST	EW	0.00	0.26	0.40	1.23	0.11	0.95
NOR	BERKLEY AVE	MAIN ST	BERKLEY AVE EXT	EW	0.12	0.15	0.05	0.34	0.10	0.52
NOR	BERKLEY AVE	BERKLEY AVE EXT	INDIAN RIVER RD	EW	0.12	0.15	0.05	0.34	0.09	0.46
NOR	BERKLEY AVE EXT	BERKLEY AVE/FAUQUIER ST	WILSON RD	EW	-	-	-	-	-	-
NOR	BERKLEY AVE EXT	WILSON RD	CAMPOSTELLA RD	EW	-	-	-	-	-	-
NOR	BOUSH ST/WATERSIDE DR	ST PAULS BLVD	CITY HALL AVE	NS	0.58	0.00	2.38	0.34	1.18	0.53
NOR	BOUSH ST	CITY HALL AVE	BUTE STREET	NS	0.00	0.18	1.18	0.64	0.36	0.34
NOR	BOUSH ST	BUTE STREET	BRAMBLETON AVE	NS	0.00	0.18	1.18	0.64	0.36	0.34

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
NOR	BOUSH ST	BRAMBLETON AVE	OLNEY RD	NS	0.38	0.00	0.32	0.09	0.12	0.00
NOR	BOUSH ST	OLNEY RD	VA BEACH BLVD	NS	0.38	0.00	0.32	0.09	0.12	0.00
NOR	BRAMBLETON AVE	HAMPTON BLVD	COLLEY AVE	EW	0.82	0.13	0.53	0.45	3.94	2.27
NOR	BRAMBLETON AVE	COLLEY AVE	BOUSH ST	EW	0.59	0.24	1.07	0.55	5.15	1.83
NOR	BRAMBLETON AVE	BOUSH ST	MONTICELLO AVE	EW	0.44	0.46	0.28	0.49	3.26	3.21
NOR	BRAMBLETON AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.44	0.46	0.28	0.49	3.26	3.21
NOR	BRAMBLETON AVE	ST PAULS BLVD	CHURCH ST	EW	0.32	0.26	0.73	0.24	1.08	0.44
NOR	BRAMBLETON AVE	CHURCH ST	TIDEWATER DR	EW	0.32	0.26	0.73	0.24	1.67	0.68
NOR	BRAMBLETON AVE	TIDEWATER DR	PARK AVE	EW	0.01	0.78	0.44	1.13	0.87	3.23
NOR	BRAMBLETON AVE	PARK AVE	I-264	EW	0.01	0.78	0.44	1.13	1.11	4.12
NOR	CAMPOSTELLA RD	SCL NORFOLK/BERKLEY AVE EXT	INDIAN RIVER RD	NS	0.20	0.28	0.17	0.22	0.09	0.16
NOR	CAMPOSTELLA RD	INDIAN RIVER RD	WILSON RD	NS	0.02	0.66	0.13	0.59	0.09	2.84
NOR	CAMPOSTELLA RD	WILSON RD	S. END CAMPOSTELLA BRIDGE	NS	0.11	0.45	0.08	0.60	0.21	5.33
NOR	CAMPOSTELLA RD	S. END CAMPOSTELLA BRIDGE	KIMBALL TERR	NS	0.68	0.08	0.67	0.20	3.24	0.81
NOR	CAMPOSTELLA RD	KIMBALL TERR	I-264	NS	0.68	0.08	0.67	0.20	3.24	0.81
NOR	CAPE VIEW AVE	BAYVIEW BLVD	OCEAN VIEW AVE	EW	-	-	-	-	-	-
NOR	CHESAPEAKE BLVD	LAFAYETTE BLVD	CROMWELL DR	NS	0.94	0.30	1.13	0.74	2.61	1.20
NOR	CHESAPEAKE BLVD	CROMWELL DR	ROBIN HOOD RD	NS	0.00	0.09	0.00	0.18	0.00	0.17
NOR	CHESAPEAKE BLVD	ROBIN HOOD RD	HYDE CIR	NS	0.00	0.09	0.00	0.18	0.00	0.17
NOR	CHESAPEAKE BLVD	HYDE CIR	NORVIEW AVE	NS	0.00	0.09	0.00	0.18	0.00	0.17
NOR	CHESAPEAKE BLVD	NORVIEW AVE	I-64	NS	0.33	0.46	0.24	0.53	0.33	1.00
NOR	CHESAPEAKE BLVD	I-64	JOHNSTONS RD	NS	0.27	0.03	0.87	0.00	0.96	0.01
NOR	CHESAPEAKE BLVD	JOHNSTONS RD	LITTLE CREEK RD	NS	0.27	0.03	0.87	0.00	0.96	0.01
NOR	CHESAPEAKE BLVD	LITTLE CREEK RD	SHEPPARD AVE	NS	0.12	0.16	0.19	0.27	0.21	0.52
NOR	CHESAPEAKE BLVD	SHEPPARD AVE	BAYVIEW BLVD	NS	0.12	0.16	0.19	0.27	0.21	0.52
NOR	CHESAPEAKE BLVD	BAYVIEW BLVD	CHESAPEAKE ST	NS	0.12	0.16	0.19	0.27	0.11	0.29
NOR	CHESAPEAKE BLVD	CHESAPEAKE ST	OCEAN VIEW AVE	NS	0.12	0.16	0.19	0.27	0.05	0.13
NOR	CHURCH ST	BRAMBLETON AVE	VA BEACH BLVD	NS	0.56	0.38	0.68	0.79	1.34	0.96
NOR	CHURCH ST	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.00	0.00	0.05	0.13	0.06	0.08
NOR	CHURCH ST	PRINCESS ANNE RD	26TH ST	NS	0.00	0.00	0.05	0.13	0.07	0.10
NOR	CHURCH ST	26TH ST	27TH ST	NS	0.66	0.55	0.73	0.90	2.11	1.60
NOR	CHURCH ST	27TH ST	MONTICELLO AVE	NS	0.41	0.52	0.47	1.04	1.08	1.34
NOR	CHURCH ST	MONTICELLO AVE	GRANBY ST	NS	0.51	0.00	0.99	0.32	3.13	1.00
NOR	CITY HALL AVE	BOUSH ST	GRANBY ST	EW	0.14	0.43	0.85	0.68	0.38	0.09
NOR	CITY HALL AVE	GRANBY ST	MONTICELLO AVE	EW	0.14	0.43	0.85	0.68	0.38	0.09
NOR	CITY HALL AVE	MONTICELLO AVE	ST PAULS BLVD	EW	0.14	0.43	0.85	0.68	0.44	0.11
NOR	COLLEY AVE	BRAMBLETON AVE	OLNEY RD	NS	0.08	0.00	0.00	0.24	0.00	0.02
NOR	COLLEY AVE	OLNEY RD	PRINCESS ANNE RD	NS	0.08	0.00	0.00	0.24	0.00	0.01
NOR	COLLEY AVE	PRINCESS ANNE RD	21ST ST	NS	0.66	0.76	1.73	1.31	0.45	0.45
NOR	COLLEY AVE	21ST ST	26TH ST	NS	0.57	0.97	1.17	1.14	0.41	0.44
NOR	COLLEY AVE	26TH ST	27TH ST	NS	0.55	1.22	0.91	1.45	0.38	0.67
NOR	COLLEY AVE	27TH ST	38TH ST	NS	0.31	0.26	0.50	0.69	0.25	0.17
NOR	COLLEY AVE	38TH ST	53RD ST	NS	0.31	0.26	0.50	0.69	0.25	0.17
NOR	CROMWELL DR	TAIT TERRACE DR	CHESAPEAKE BLVD	NS	0.00	0.10	0.00	0.15	0.00	0.49

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
NOR	CROMWELL DR	CHESAPEAKE BLVD	TIDEWATER DR	NS	0.12	0.05	0.23	0.19	0.20	0.24
NOR	DUKE ST	OLNEY RD	BRAMBLETON AVE	NS	0.00	0.08	0.47	0.17	0.15	0.00
NOR	GRANBY ST	CHURCH ST	38TH ST	NS	0.51	0.00	0.99	0.32	1.75	0.16
NOR	GRANBY ST	38TH ST	LLEWELLYN AVE	NS	0.06	0.11	0.36	0.29	0.53	0.14
NOR	GRANBY ST	LLEWELLYN AVE	WILLOW WOOD DRIVE	NS	0.06	0.11	0.36	0.29	0.74	0.19
NOR	GRANBY ST	WILLOW WOOD DRIVE	THOLE ST	NS	0.14	0.16	0.27	0.22	0.47	0.14
NOR	GRANBY ST	THOLE ST	LITTLE CREEK RD	NS	0.46	0.35	0.85	0.37	1.15	0.15
NOR	GRANBY ST	LITTLE CREEK RD	I-564	NS	0.46	0.35	0.85	0.37	1.32	0.17
NOR	GRANBY ST	I-564	I-64	NS	0.00	0.15	0.21	0.46	0.06	0.20
NOR	GRANBY ST	I-64	BAYVIEW BLVD	NS	0.31	0.01	0.35	0.00	0.32	0.00
NOR	GRANBY ST	BAYVIEW BLVD	BAY AVE	NS	0.50	0.43	0.52	0.43	0.43	0.28
NOR	GRANBY ST	BAY AVE	TIDEWATER DR	NS	0.50	0.43	0.52	0.43	0.43	0.28
NOR	GRANBY ST	TIDEWATER DR	OCEAN VIEW AVE	NS	0.15	0.06	0.23	0.12	0.17	0.08
NOR	HAMPTON BLVD	BRAMBLETON AVE	PRINCESS ANNE RD	NS	1.79	0.52	0.68	1.45	13.46	8.61
NOR	HAMPTON BLVD	PRINCESS ANNE RD	21ST ST	NS	1.79	0.52	0.68	1.45	13.46	8.61
NOR	HAMPTON BLVD	21ST ST	26TH ST	NS	1.98	0.30	0.82	1.57	13.37	6.41
NOR	HAMPTON BLVD	26TH ST	27TH ST	NS	1.98	0.30	0.82	1.57	10.19	4.88
NOR	HAMPTON BLVD	27TH ST	38TH ST	NS	0.48	0.73	0.53	1.22	4.76	9.21
NOR	HAMPTON BLVD	38TH ST	JAMESTOWN CRESCENT	NS	0.48	0.73	0.53	1.22	5.50	10.63
NOR	HAMPTON BLVD	JAMESTOWN CRESCENT	LITTLE CREEK RD	NS	0.57	0.17	0.36	0.23	4.73	1.64
NOR	HAMPTON BLVD	LITTLE CREEK RD	INTERNATIONAL TERMINAL BLVD	NS	0.57	0.17	0.36	0.23	4.58	1.59
NOR	HAMPTON BLVD	INTERNATIONAL TERMINAL BLVD	INTERMODAL CONNECTOR	NS	0.32	0.17	0.20	0.19	1.58	1.35
NOR	HAMPTON BLVD	INTERMODAL CONNECTOR	ADM TAUSSIG BLVD	NS	0.32	0.17	0.20	0.19	1.58	1.35
NOR	I-64/HRBT	HAMPTON CL	OCEAN VIEW AVE	EW	0.77	0.56	0.86	0.92	8.24	8.43
NOR	I-64	OCEAN VIEW AVE	4TH VIEW AVE	EW	0.08	1.91	0.18	2.48	0.92	25.90
NOR	I-64	4TH VIEW AVE	BAY AVE	EW	0.07	1.34	0.18	4.70	0.56	26.28
NOR	I-64	BAY AVE	GRANBY ST	EW	0.01	0.68	0.13	4.44	0.27	18.73
NOR	I-64	GRANBY ST	I-564/LITTLE CREEK RD	EW	0.04	0.44	0.09	2.44	0.32	8.40
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	REV	0.00	0.08	0.02	0.00	0.00	0.01
NOR	I-64	I-564/LITTLE CREEK RD	TIDEWATER DR	EW	0.04	0.17	0.42	0.35	1.56	1.14
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	REV	0.00	0.08	0.02	0.00	0.00	0.01
NOR	I-64	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.24	0.12	0.63	0.23	2.63	1.09
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	REV	0.00	0.03	0.02	0.00	0.00	0.00
NOR	I-64	CHESAPEAKE BLVD	NORVIEW AVE	EW	0.46	0.08	0.55	0.09	3.61	0.54
NOR	I-64	NORVIEW AVE	MILITARY HWY	REV	0.00	0.00	0.01	0.00	0.00	0.00
NOR	I-64	NORVIEW AVE	MILITARY HWY	EW	0.24	0.15	0.25	0.05	1.85	0.97
NOR	I-64	MILITARY HWY	NORTHAMPTON BLVD	REV	0.00	0.01	0.02	0.00	0.00	0.00
NOR	I-64	MILITARY HWY	NORTHAMPTON BLVD	EW	0.14	0.22	0.20	0.08	1.59	1.44
NOR	I-64	NORTHAMPTON BLVD	I-264	REV	0.00	0.00	0.05	0.00	0.01	0.00
NOR	I-64	NORTHAMPTON BLVD	I-264	EW	0.08	0.15	0.16	0.08	1.30	0.62
NOR	I-64	I-264	VA BEACH CL	EW	0.00	0.26	0.21	0.06	0.71	0.87
NOR	I-264/DOWNTOWN TUNNEL	PORTSMOUTH CL	I-464	EW	1.80	0.75	1.84	1.41	35.63	24.08
NOR	I-264/BERKLEY BRIDGE	I-464	WATERSIDE/CITY HALL/TIDEWATER	EW	0.31	0.76	0.37	1.97	4.25	8.31
NOR	I-264	WATERSIDE/CITY HALL/TIDEWATER	BRAMBLETON AVE	EW	0.00	0.46	0.13	3.63	0.11	15.35

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	I-264	BRAMBLETON AVE	BALLENTINE BLVD	EW	0.00	0.08	0.14	0.76	0.23	2.56
NOR	I-264	BALLENTINE BLVD	MILITARY HWY	EW	0.00	0.00	0.05	0.12	0.04	0.16
NOR	I-264	MILITARY HWY	I-64	EW	0.03	0.01	0.14	0.02	0.46	0.14
NOR	I-264	I-64	NEWTOWN RD/WCL VA. BEACH	EW	0.10	0.08	0.33	0.39	2.08	1.92
NOR	I-464	CHESAPEAKE CL	SOUTH MAIN ST	NS	1.39	0.03	0.02	0.08	2.97	0.06
NOR	I-464	SOUTH MAIN ST	I-264	NS	2.08	0.01	0.48	0.17	8.29	0.23
NOR	I-564	ADMIRAL TAUSSIG BLVD	INTERMODAL CONNECTOR	NS	0.48	0.08	0.02	0.02	0.52	0.08
NOR	I-564	INTERMODAL CONNECTOR	INTERNATIONAL TERMINAL BLVD	NS	0.48	0.08	0.02	0.02	0.52	0.08
NOR	I-564	INTERNATIONAL TERMINAL BLVD	I-64	NS	0.00	0.12	0.00	0.14	0.00	0.52
NOR	INDIAN RIVER RD	MARSH ST	WILSON RD	EW	0.00	0.24	0.00	0.33	0.00	0.51
NOR	INDIAN RIVER RD	WILSON RD	CAMPOSTELLA RD	EW	0.68	1.11	0.54	1.04	1.20	2.42
NOR	INDIAN RIVER RD	CAMPOSTELLA RD	CHESAPEAKE CL	EW	0.11	0.00	0.00	0.01	0.22	0.01
NOR	INGLESIDE RD	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.02	0.30	0.00	0.25	0.02	1.17
NOR	INGLESIDE RD	PRINCESS ANNE RD	TAIT TERRACE DR	NS	0.07	0.25	0.10	0.27	0.10	1.05
NOR	INTERMODAL CONNECTOR	NIT/NAVAL STATION NORFOLK	I-564	EW	-	-	-	-	-	-
NOR	INTERNATIONAL TERMINAL BLVD	HAMPTON BLVD	I-564	EW	0.03	1.80	0.85	0.03	1.36	0.89
NOR	JAMESTOWN CRESCENT	53RD ST	HAMPTON BLVD	NS	0.31	0.26	0.50	0.69	0.17	0.12
NOR	JOHNSTONS RD	SEWELLS POINT RD	CHESAPEAKE BLVD	EW	-	-	-	-	-	-
NOR	JOHNSTONS RD	CHESAPEAKE BLVD	MILITARY HWY	EW	-	-	-	-	-	-
NOR	JOHNSTONS RD/HALPRIN LN	MILITARY HWY	LITTLE CREEK RD	EW	-	-	-	-	-	-
NOR	KEMPSVILLE RD	NEWTOWN RD	VA BEACH BLVD	NS	0.12	0.09	0.40	0.29	0.21	0.19
NOR	KEMPSVILLE RD	VA BEACH BLVD	NORTHAMPTON BLVD	NS	0.33	0.42	0.39	0.43	0.13	0.16
NOR	LAFAYETTE BLVD	27TH ST	TIDEWATER DR	EW	0.06	0.16	0.15	0.10	0.14	0.19
NOR	LAFAYETTE BLVD	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.39	0.36	0.59	0.54	0.99	0.74
NOR	LIBERTY ST	STATE ST	SOUTH MAIN ST	EW	-	-	-	-	-	-
NOR	LIBERTY ST	SOUTH MAIN ST	CHESAPEAKE CL	EW	-	-	-	-	-	-
NOR	LITTLE CREEK RD	HAMPTON BLVD	GRANBY ST	EW	0.13	0.11	0.11	0.19	0.06	0.08
NOR	LITTLE CREEK RD	GRANBY ST	I-64	EW	0.39	0.78	0.79	1.32	2.45	3.54
NOR	LITTLE CREEK RD	I-64	TIDEWATER DR	EW	0.00	0.00	0.15	0.17	0.07	0.07
NOR	LITTLE CREEK RD	TIDEWATER DR	SEWELLS POINT RD	EW	0.50	0.82	0.62	1.52	2.80	4.67
NOR	LITTLE CREEK RD	SEWELLS POINT RD	CHESAPEAKE BLVD	EW	0.23	0.00	0.67	0.26	1.26	0.48
NOR	LITTLE CREEK RD	CHESAPEAKE BLVD	MILITARY HWY	EW	0.15	0.57	0.55	0.84	2.09	3.66
NOR	LITTLE CREEK RD	MILITARY HWY	AZALEA GARDEN RD	EW	0.14	0.06	0.26	0.56	0.64	1.02
NOR	LITTLE CREEK RD	AZALEA GARDEN RD	SHORE DR	EW	0.27	0.10	0.31	0.24	0.21	0.11
NOR	LLEWELLYN AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.08	0.00	0.23	0.00	0.01	0.00
NOR	LLEWELLYN AVE	PRINCESS ANNE RD	21ST ST	NS	0.00	0.00	0.04	0.00	0.00	0.00
NOR	LLEWELLYN AVE	21ST ST	26TH ST	NS	0.46	0.22	0.75	0.69	0.09	0.24
NOR	LLEWELLYN AVE	26TH ST	27TH ST	NS	0.46	0.18	0.73	0.39	0.08	0.19
NOR	LLEWELLYN AVE	27TH ST	35TH ST	NS	0.04	0.29	0.21	0.51	0.03	0.22
NOR	LLEWELLYN AVE	35TH ST	38TH ST	NS	0.04	0.29	0.21	0.51	0.03	0.22
NOR	LLEWELLYN AVE	38TH ST	DELAWARE AVE	NS	0.06	0.47	0.13	0.60	0.01	0.64
NOR	LLEWELLYN AVE	DELAWARE AVE	GRANBY ST	NS	-	0.11	-	0.22	-	0.03
NOR	MIDTOWN TUNNEL	PORTSMOUTH CL	BRAMBLETON AVE	NS	1.60	0.02	0.12	0.10	4.36	0.59
NOR	MILITARY HWY	VA BEACH CL	I-264	NS	0.03	0.12	0.07	0.35	0.03	0.72

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Juris.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
NOR	MILITARY HWY	I-264	VA BEACH BLVD	NS	0.03	0.06	0.09	0.27	0.22	0.50
NOR	MILITARY HWY	VA BEACH BLVD	LOWERY RD	NS	0.00	0.22	0.17	0.44	0.37	0.97
NOR	MILITARY HWY	LOWERY RD	PRIN ANNE RD/NORTHAMPTON BLVD	NS	0.00	0.22	0.17	0.44	0.37	0.97
NOR	MILITARY HWY	PRIN ANNE RD/NORTHAMPTON BLVD	I-64	NS	0.10	0.01	0.24	0.18	0.32	0.20
NOR	MILITARY HWY	I-64	AZALEA GARDEN RD	NS	0.11	0.09	0.27	0.20	0.19	0.18
NOR	MILITARY HWY	AZALEA GARDEN RD	NORVIEW AVE	NS	0.33	0.22	1.20	0.69	0.84	0.59
NOR	MILITARY HWY	NORVIEW AVE	JOHNSTONS RD	NS	0.10	0.15	0.27	0.34	0.28	0.33
NOR	MILITARY HWY	JOHNSTONS RD	LITTLE CREEK RD	NS	0.34	0.22	0.58	0.33	0.69	0.41
NOR	MONTICELLO AVE	CITY HALL AVE	BRAMBLETON AVE	NS	0.86	0.96	1.07	0.91	0.07	0.17
NOR	MONTICELLO AVE	BRAMBLETON AVE	ST PAULS BLVD	NS	0.00	0.50	0.05	0.00	0.00	0.12
NOR	MONTICELLO AVE	ST PAULS BLVD	VA BEACH BLVD	NS	0.22	0.00	0.15	0.14	0.38	0.04
NOR	MONTICELLO AVE	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.22	0.00	0.15	0.14	0.29	0.03
NOR	MONTICELLO AVE	PRINCESS ANNE RD	21ST ST	NS	0.00	0.00	0.17	0.40	0.23	0.49
NOR	MONTICELLO AVE	21ST ST	26TH ST	NS	0.29	0.00	0.38	0.34	0.29	0.30
NOR	MONTICELLO AVE	26TH ST	27TH ST	NS	0.29	0.00	0.38	0.34	0.29	0.30
NOR	MONTICELLO AVE	27TH ST	CHURCH ST	NS	0.29	0.00	0.38	0.34	0.29	0.30
NOR	NEWTOWN RD	KEMPSVILLE RD	I-264	NS	0.29	1.11	0.58	1.14	0.51	2.21
NOR	NEWTOWN RD	I-264	VA BEACH BLVD	NS	0.28	0.45	2.51	1.16	1.47	1.47
NOR	NEWTOWN RD	VA BEACH BLVD	VA BEACH CL	NS	0.00	0.23	0.30	0.53	0.40	0.52
NOR	NORTHAMPTON BLVD	MILITARY HWY	KEMPSVILLE RD	EW	0.33	0.12	0.68	0.43	2.74	1.50
NOR	NORTHAMPTON BLVD	KEMPSVILLE RD	I-64	EW	0.33	0.12	0.68	0.43	3.01	1.64
NOR	NORTHAMPTON BLVD	I-64	WESLEYAN DR/VA BEACH CL	EW	0.50	0.83	0.41	1.07	7.90	12.41
NOR	NORVIEW AVE	TIDEWATER DR	CHESAPEAKE BLVD	EW	0.14	0.10	0.19	0.09	0.04	0.01
NOR	NORVIEW AVE	CHESAPEAKE BLVD	I-64	EW	0.07	0.06	0.12	0.36	0.10	0.23
NOR	NORVIEW AVE	I-64	MILITARY HWY	EW	0.25	0.00	0.06	0.22	0.10	0.20
NOR	NORVIEW AVE	MILITARY HWY	AZALEA GARDEN RD	EW	0.05	0.00	0.00	0.26	0.00	0.13
NOR	NORVIEW AVE	AZALEA GARDEN RD	NORFOLK INT AIRPORT	EW	-	-	-	-	-	-
NOR	OCEAN VIEW AVE	4TH VIEW ST	TIDEWATER DR	EW	0.11	0.15	0.27	0.36	0.18	0.21
NOR	OCEAN VIEW AVE	TIDEWATER DR	GRANBY ST	EW	0.11	0.15	0.27	0.36	0.18	0.21
NOR	OCEAN VIEW AVE	GRANBY ST	CHESAPEAKE BLVD	EW	0.16	0.14	0.27	0.21	0.25	0.22
NOR	OCEAN VIEW AVE	CHESAPEAKE BLVD	CAPE VIEW AVE	EW	0.05	0.08	0.12	0.22	0.07	0.13
NOR	OCEAN VIEW AVE	CAPE VIEW AVE	21ST BAY ST	EW	0.05	0.08	0.12	0.22	0.07	0.13
NOR	OLNEY RD	COLLEY AVE	DUKE ST/VA BEACH BLVD	EW	0.01	0.31	0.16	0.00	0.01	0.00
NOR	PARK AVE	BRAMBLETON AVE	VA BEACH BLVD	EW	0.04	0.00	0.43	0.28	0.26	0.01
NOR	PARK AVE	VA BEACH BLVD	PRINCESS ANNE RD	EW	1.14	0.85	1.39	0.37	1.53	1.02
NOR	PRINCESS ANNE RD	HAMPTON BLVD	COLLEY AVE	EW	1.57	0.85	1.47	0.64	0.79	0.34
NOR	PRINCESS ANNE RD	COLLEY AVE	LLEWELLYN AVE	EW	0.00	0.40	0.50	0.55	0.08	0.27
NOR	PRINCESS ANNE RD	LLEWELLYN AVE	MONTICELLO AVE	EW	0.99	0.38	1.29	0.57	0.85	0.32
NOR	PRINCESS ANNE RD	MONTICELLO AVE	CHURCH ST	EW	0.02	0.16	0.00	0.00	0.00	0.00
NOR	PRINCESS ANNE RD	CHURCH ST	TIDEWATER DR	EW	0.02	0.16	0.00	0.00	0.00	0.01
NOR	PRINCESS ANNE RD	TIDEWATER DR	MAY AVE	EW	0.03	0.09	0.06	0.02	0.01	0.01
NOR	PRINCESS ANNE RD	MAY AVE	PARK AVE	EW	0.03	0.09	0.06	0.02	0.01	0.01
NOR	PRINCESS ANNE RD	PARK AVE	BALLENTINE BLVD	EW	0.18	0.12	0.54	0.41	0.60	0.29
NOR	PRINCESS ANNE RD	BALLENTINE BLVD	INGLESIDE RD	EW	0.65	0.76	0.80	0.93	2.86	3.01

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	PRINCESS ANNE RD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.08	0.06	0.11	0.13	0.22	0.19
NOR	PRINCESS ANNE RD	AZALEA GARDEN RD	SEWELLS POINT RD	EW	0.08	0.06	0.11	0.13	0.20	0.16
NOR	PRINCESS ANNE RD	SEWELLS POINT RD	MILITARY HWY	EW	0.08	0.06	0.11	0.13	0.20	0.16
NOR	ROBIN HOOD RD	CHESAPEAKE BLVD	SEWELLS POINT RD	EW	0.15	0.18	0.44	0.32	0.13	0.15
NOR	ROBIN HOOD RD	SEWELLS POINT RD	AZALEA GARDEN RD	EW	0.18	0.31	0.24	0.52	0.10	0.19
NOR	ROBIN HOOD RD	AZALEA GARDEN RD	ELLSMERE AVE	EW	0.07	0.00	0.06	0.00	0.01	0.00
NOR	ROBIN HOOD RD	ELLSMERE AVE	MILITARY HWY	EW	0.07	0.00	0.06	0.00	0.03	0.00
NOR	SEWELLS POINT RD	PRINCESS ANNE RD	AZALEA GARDEN RD	NS	0.58	0.20	0.40	0.23	1.31	0.68
NOR	SEWELLS POINT RD	AZALEA GARDEN RD	ROBIN HOOD RD	NS	0.58	0.20	0.40	0.23	1.31	0.68
NOR	SEWELLS POINT RD	ROBIN HOOD RD	CHESAPEAKE BLVD	NS	0.14	0.06	0.18	0.00	0.21	0.00
NOR	SEWELLS POINT RD	CHESAPEAKE BLVD	PARTRIDGE ST	NS	0.65	0.48	0.70	0.97	0.00	0.00
NOR	SEWELLS POINT RD	PARTRIDGE ST	PHILPOTTS RD	NS	0.65	0.48	0.70	0.97	0.00	0.00
NOR	SEWELLS POINT RD	PHILPOTTS RD	I-64	NS	0.30	0.12	0.26	0.14	0.00	0.00
NOR	SEWELLS POINT RD	I-64	LITTLE CREEK RD	NS	0.30	0.12	0.26	0.14	0.00	0.00
NOR	SHORE DRIVE	21ST BAY ST	LITTLE CREEK RD	EW	0.86	0.16	0.59	0.33	1.28	0.36
NOR	SHORE DRIVE	LITTLE CREEK RD	VA BEACH CL	EW	0.00	0.11	0.11	0.25	0.02	0.21
NOR	SOUTH MAIN ST	I-464	BAINBRIDGE BLVD	NS	0.40	0.45	0.33	0.45	0.43	0.53
NOR	SOUTH MAIN ST	BAINBRIDGE BLVD	LIBERTY ST	NS	0.40	0.45	0.33	0.45	0.43	0.53
NOR	SOUTH MAIN ST	LIBERTY ST	BERKLEY AVE	NS	0.40	0.45	0.33	0.45	0.43	0.53
NOR	ST PAULS BLVD	WATERSIDE DR	CITY HALL AVE	NS	0.41	0.89	1.55	0.00	0.12	0.09
NOR	ST PAULS BLVD	CITY HALL AVE	I-264 RAMP/MACARTHUR MALL	NS	0.68	0.67	0.14	0.67	0.31	0.67
NOR	ST PAULS BLVD	I-264 RAMP/MACARTHUR MALL	BRAMBLETON AVE	NS	0.11	0.83	0.00	2.23	0.01	1.62
NOR	ST PAULS BLVD	BRAMBLETON AVE	MONTICELLO AVE	NS	0.22	0.00	0.15	0.14	0.34	0.04
NOR	STATE ST	LIBERTY ST	BERKLEY AVE	NS	-	-	-	-	-	-
NOR	STATE ST	BERKLEY AVE	I-464 RAMP	NS	0.49	0.88	0.70	0.00	1.35	1.23
NOR	THOLE ST	GRANBY ST	TIDEWATER DR	EW	0.43	0.56	0.61	0.53	0.25	0.28
NOR	TIDEWATER DR	CITY HALL AVE	BRAMBLETON AVE	NS	0.46	0.40	0.55	0.54	0.30	0.55
NOR	TIDEWATER DR	BRAMBLETON AVE	VA BEACH BLVD	NS	0.06	0.32	0.51	0.58	0.41	1.31
NOR	TIDEWATER DR	VA BEACH BLVD	PRINCESS ANNE RD	NS	0.21	0.00	0.73	0.34	0.87	0.26
NOR	TIDEWATER DR	PRINCESS ANNE RD	LAFAYETTE BLVD	NS	0.00	0.14	0.15	0.33	0.07	0.71
NOR	TIDEWATER DR	LAFAYETTE BLVD	CROMWELL DR	NS	0.40	0.64	0.66	0.76	0.68	1.50
NOR	TIDEWATER DR	CROMWELL DR	NORVIEW AVE	NS	0.38	0.80	0.46	1.32	1.42	3.87
NOR	TIDEWATER DR	NORVIEW AVE	THOLE ST	NS	0.12	0.12	0.16	0.33	0.66	0.98
NOR	TIDEWATER DR	THOLE ST	I-64	NS	0.35	0.32	0.50	0.58	1.49	3.27
NOR	TIDEWATER DR	I-64	LITTLE CREEK RD	NS	0.45	0.70	0.88	0.56	1.39	1.06
NOR	TIDEWATER DR	LITTLE CREEK RD	BAYVIEW BLVD	NS	0.09	0.13	0.18	0.21	0.13	0.20
NOR	TIDEWATER DR	BAYVIEW BLVD	GRANBY ST	NS	0.00	0.12	0.01	0.08	0.00	0.01
NOR	TIDEWATER DR	GRANBY ST	OCEAN VIEW AVE	NS	0.08	0.08	1.24	0.04	0.25	0.02
NOR	VA BEACH BLVD	OLNEY RD	GRANBY ST	EW	0.01	0.06	0.12	0.25	0.02	0.03
NOR	VA BEACH BLVD	GRANBY ST	MONTICELLO AVE	EW	0.01	0.06	0.12	0.25	0.03	0.03
NOR	VA BEACH BLVD	MONTICELLO AVE	CHURCH ST	EW	0.00	0.03	0.03	0.23	0.02	0.09
NOR	VA BEACH BLVD	CHURCH ST	TIDEWATER DR	EW	0.00	0.03	0.03	0.23	0.02	0.09
NOR	VA BEACH BLVD	TIDEWATER DR	PARK AVE	EW	0.15	0.43	0.24	0.09	0.44	0.46
NOR	VA BEACH BLVD	PARK AVE	BALLENTINE BLVD	EW	0.18	0.11	0.23	0.16	0.65	0.19

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
NOR	VA BEACH BLVD	BALLENTINE BLVD	INGLESIDE RD	EW	0.03	0.20	0.00	0.16	0.09	0.38
NOR	VA BEACH BLVD	INGLESIDE RD	AZALEA GARDEN RD	EW	0.00	0.15	0.00	0.09	0.00	0.13
NOR	VA BEACH BLVD	AZALEA GARDEN RD	JETT ST	EW	0.04	0.08	0.09	0.20	0.27	0.26
NOR	VA BEACH BLVD	JETT ST	MILITARY HWY	EW	0.04	0.08	0.09	0.20	0.27	0.26
NOR	VA BEACH BLVD	MILITARY HWY	GLENROCK RD	EW	0.00	0.00	0.26	0.12	0.12	0.07
NOR	VA BEACH BLVD	GLENROCK RD	KEMPSVILLE RD	EW	0.00	0.00	0.26	0.12	0.12	0.07
NOR	VA BEACH BLVD	KEMPSVILLE RD	NEWTOWN RD	EW	0.00	0.00	0.26	0.12	0.12	0.07
NOR	WESLEYAN DR	NORTHAMPTON BLVD	NCL VA BEACH	EW	0.47	0.00	0.39	0.05	0.63	0.00
NOR	WILLOW WOOD DR	GRANBY ST	TIDEWATER DR	EW	0.43	0.66	0.67	0.58	0.20	0.18
NOR	WILSON RD	BERKLEY AVE/CHESAPEAKE CL	INDIAN RIVER RD	EW	0.15	0.03	0.12	0.75	0.05	0.21
NOR	WILSON RD	INDIAN RIVER RD	CAMPOSTELLA RD	EW	0.15	0.03	0.12	0.75	0.05	0.21
POQ	EAST YORKTOWN RD	YORK CL	HUNT'S NECK RD	EW	0.23	0.12	0.15	0.13	0.02	0.02
POQ	EAST YORKTOWN RD	HUNT'S NECK RD	POQUOSON AVE	NS	-	-	-	-	-	-
POQ	LITTLE FLORIDA RD	WYTHE CREEK RD	POQUOSON AVE	EW	0.23	0.28	0.20	0.27	0.19	0.27
POQ	POQUOSON AVE	WYTHE CREEK RD	LITTLE FLORIDA RD	EW	0.07	0.05	0.00	0.04	0.00	0.00
POQ	VICTORY BLVD	YORK CL	WYTHE CREEK RD	EW	0.10	0.51	0.26	0.19	0.14	0.21
POQ	WYTHE CREEK RD	HAMPTON CL	ALPHUS ST	NS	0.55	0.47	0.36	0.37	0.68	0.26
POQ	WYTHE CREEK RD	ALPHUS ST	LITTLE FLORIDA RD	NS	0.55	0.47	0.36	0.37	0.68	0.26
POQ	WYTHE CREEK RD	LITTLE FLORIDA RD	HUDGINS RD	NS	-	-	-	-	-	-
POQ	WYTHE CREEK RD	HUDGINS RD	POQUOSON AVE	NS	-	-	-	-	-	-
PORT	AIRLINE BLVD	CHESAPEAKE CL	GREENWOOD DR	EW	0.17	0.21	0.11	0.12	0.18	0.15
PORT	AIRLINE BLVD	GREENWOOD DR	ELMHURST LN	EW	0.04	0.09	0.11	0.07	0.11	0.05
PORT	AIRLINE BLVD	ELMHURST LN	.55 MI E ELMHURST LN	EW	0.04	0.09	0.11	0.07	0.08	0.03
PORT	AIRLINE BLVD	.55 MI E ELMHURST LN	VICTORY BLVD	EW	0.04	0.09	0.11	0.07	0.08	0.03
PORT	AIRLINE BLVD	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.04	0.09	0.11	0.07	0.09	0.04
PORT	AIRLINE BLVD	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.00	0.00	0.00	0.00	0.00	0.00
PORT	AIRLINE BLVD	FREDERICK BLVD	HIGH ST	EW	0.30	0.30	0.16	0.32	0.26	0.55
PORT	CAVALIER BLVD	CHESAPEAKE CL	GREENWOOD DR	NS	0.14	0.20	0.07	0.24	0.10	0.22
PORT	CEDAR LN	HIGH ST	W NORFOLK RD	NS	0.20	0.26	0.27	0.27	0.26	0.31
PORT	CEDAR LN	W NORFOLK RD	WESTERN FREEWAY	NS	0.20	0.26	0.27	0.27	0.34	0.40
PORT	CEDAR LN	WESTERN FREEWAY	S PERIMETER RD	NS	0.00	0.22	0.00	0.29	0.00	0.20
PORT	CHURCHLAND BLVD	CHESAPEAKE CL	W NORFOLK RD	EW	0.20	0.51	0.21	0.70	0.07	0.52
PORT	CHURCHLAND BLVD	W NORFOLK RD	TYRE NECK RD	EW	0.72	0.38	0.61	0.44	0.35	0.28
PORT	CHURCHLAND BLVD	TYRE NECK RD	HIGH ST	EW	0.72	0.38	0.61	0.44	0.34	0.27
PORT	COAST GUARD BLVD	CEDAR LN	COAST GUARD BASE GATE	EW	-	-	-	-	-	-
PORT	COUNTY ST	CONSTITUTION AVE	PENINSULA AVE	EW	-	-	-	-	-	-
PORT	COUNTY ST	PENINSULA AVE	ELM AVE	EW	-	-	-	-	-	-
PORT	COUNTY ST	ELM AVE	EFFINGHAM ST	EW	-	-	-	-	-	-
PORT	COURT ST	PAVILION DR	COUNTY ST	NS	0.51	0.14	1.03	0.63	0.27	0.09
PORT	COURT ST	COUNTY ST	HIGH ST	NS	0.51	0.14	1.03	0.63	0.28	0.09
PORT	COURT ST	HIGH ST	LONDON BLVD	NS	-	-	-	-	-	-
PORT	COURT ST	LONDON BLVD	CRAWFORD PKWY	NS	-	-	-	-	-	-
PORT	CRAWFORD PKWY	EFFINGHAM ST	CRAWFORD ST	EW	0.20	0.10	0.02	0.33	0.00	0.04
PORT	CRAWFORD ST	CRAWFORD PKWY	LONDON BLVD	NS	0.00	0.18	0.00	0.18	0.00	0.02

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
PORT	CRAWFORD ST	LONDON BLVD	HIGH ST	NS	0.00	0.18	0.00	0.18	0.00	0.03
PORT	CRAWFORD ST	HIGH ST	COUNTY ST	NS	0.00	0.00	0.15	0.01	0.02	0.01
PORT	CRAWFORD ST/BART ST	COUNTY ST	COURT ST	NS	0.00	0.00	0.15	0.01	0.02	0.01
PORT	DEEP CREEK BLVD	VICTORY BLVD	GREENWOOD DR	NS	0.04	0.00	0.19	0.08	0.03	0.02
PORT	DEEP CREEK BLVD	GREENWOOD DR	PORTSMOUTH BLVD	NS	0.04	0.00	0.09	0.03	0.01	0.00
PORT	DEEP CREEK BLVD	PORTSMOUTH BLVD	FREDERICK BLVD	NS	0.97	0.89	1.15	1.03	0.63	0.67
PORT	DEEP CREEK BLVD	FREDERICK BLVD	DES MOINES AVE	NS	0.00	0.20	0.15	0.18	0.01	0.07
PORT	DES MOINES AVE	DEEP CREEK BLVD	I-264	NS	0.00	0.20	0.15	0.18	0.01	0.08
PORT	EFFINGHAM ST	PORTSMOUTH BLVD	I-264	NS	0.07	1.06	1.00	0.23	0.32	0.55
PORT	EFFINGHAM ST	I-264	SOUTH ST	NS	1.06	0.51	0.63	2.21	0.94	1.30
PORT	EFFINGHAM ST	SOUTH ST	HIGH ST	NS	1.06	0.51	0.63	2.21	0.75	1.17
PORT	EFFINGHAM ST	HIGH ST	LONDON BLVD	NS	1.77	1.00	0.76	2.45	1.14	2.40
PORT	EFFINGHAM ST	LONDON BLVD	NORTH ST	NS	0.81	0.00	0.00	0.00	0.27	0.00
PORT	EFFINGHAM ST	NORTH ST	CRAWFORD PKWY	NS	0.81	0.00	0.00	0.00	0.26	0.00
PORT	EFFINGHAM ST	CRAWFORD PKWY	NAVAL MEDICAL CENTER	NS	-	-	-	-	-	-
PORT	ELM AVE	LONDON BLVD	HIGH ST	NS	0.36	0.26	0.34	0.22	0.23	0.15
PORT	ELM AVE	HIGH ST	COUNTY ST	NS	0.36	0.26	0.34	0.22	0.28	0.18
PORT	ELM AVE	COUNTY ST	SOUTH ST	NS	0.36	0.26	0.34	0.22	0.27	0.18
PORT	ELM AVE	SOUTH ST	I-264	NS	0.07	0.03	0.22	0.20	0.06	0.05
PORT	ELM AVE	I-264	PORTSMOUTH BLVD	NS	0.07	0.03	0.22	0.20	0.06	0.05
PORT	ELM AVE	PORTSMOUTH BLVD	GEORGE WASHINGTON HWY	NS	0.11	0.38	0.11	0.46	0.06	0.20
PORT	ELM AVE	GEORGE WASHINGTON HWY	VICTORY BLVD	EW	0.79	0.68	0.59	1.01	0.43	0.28
PORT	ELM AVE	VICTORY BLVD	BURTONS POINT RD	EW	0.79	0.68	0.59	1.01	3.78	3.59
PORT	ELM AVE (S NORFOLK JORDAN BRIDGE	BURTONS POINT RD	CHESAPEAKE CL	EW	0.79	0.68	0.59	1.01	2.02	1.91
PORT	ELMHURST LN	GARWOOD AVE	AIRLINE BLVD	NS	-	-	-	-	-	-
PORT	ELMHURST LN	AIRLINE BLVD	PORTSMOUTH BLVD	NS	0.16	0.12	0.16	0.04	0.10	0.07
PORT	FREDERICK BLVD	GEORGE WASHINGTON HWY	PORTSMOUTH BLVD	NS	0.01	0.00	0.02	0.18	0.00	0.08
PORT	FREDERICK BLVD	PORTSMOUTH BLVD	DEEP CREEK BLVD	NS	0.26	0.37	0.25	0.58	0.65	1.25
PORT	FREDERICK BLVD	DEEP CREEK BLVD	I-264	NS	0.26	0.37	0.25	0.58	0.81	1.55
PORT	FREDERICK BLVD	I-264	TURNPIKE RD	NS	0.00	0.07	0.00	0.22	0.00	0.39
PORT	FREDERICK BLVD	TURNPIKE RD	AIRLINE BLVD	NS	0.00	0.07	0.00	0.22	0.00	0.40
PORT	FREDERICK BLVD	AIRLINE BLVD	HIGH ST	NS	0.19	0.29	0.16	0.39	0.13	0.37
PORT	GARWOOD AVE	GREENWOOD DR	ELMHURST LN	EW	-	-	-	-	-	-
PORT	GEORGE WASHINGTON HWY	CHESAPEAKE CL	VICTORY BLVD	NS	0.32	0.03	0.47	0.22	1.79	0.23
PORT	GEORGE WASHINGTON HWY	VICTORY BLVD	DAVIS ST	NS	0.45	0.08	0.69	0.26	1.76	0.45
PORT	GEORGE WASHINGTON HWY	DAVIS ST	GREENWOOD DR	NS	0.45	0.08	0.69	0.26	1.82	0.47
PORT	GEORGE WASHINGTON HWY	GREENWOOD DR	FREDERICK BLVD	NS	0.45	0.08	0.69	0.26	2.03	0.52
PORT	GEORGE WASHINGTON HWY	FREDERICK BLVD	ELM AVE	NS	0.56	0.13	0.56	0.75	0.92	0.55
PORT	GEORGE WASHINGTON HWY	ELM AVE	PORTSMOUTH BLVD	NS	0.50	0.25	0.18	0.53	0.30	0.21
PORT	GREENWOOD DR	AIRLINE BLVD	I-264	EW	0.26	0.48	0.27	0.73	0.16	0.37
PORT	GREENWOOD DR	I-264	CAVALIER BLVD	EW	0.22	0.02	0.43	0.10	0.19	0.00
PORT	GREENWOOD DR	CAVALIER BLVD	VICTORY BLVD	EW	0.13	0.29	0.23	0.26	0.09	0.09
PORT	GREENWOOD DR	VICTORY BLVD	INDEPENDENCE ST	EW	0.12	0.20	0.28	0.23	0.05	0.02
PORT	GREENWOOD DR	INDEPENDENCE ST	DEEP CREEK BLVD	EW	0.12	0.20	0.28	0.23	0.04	0.02

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	GREENWOOD DR	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	0.12	0.20	0.28	0.23	0.04	0.03
PORT	HIGH ST	TYRE NECK RD	CHURCHLAND BLVD	EW	0.09	0.06	0.23	0.17	0.13	0.09
PORT	HIGH ST	CHURCHLAND BLVD	CEDAR LA	EW	0.09	0.06	0.23	0.17	0.17	0.12
PORT	HIGH ST	CEDAR LA	RODMAN AVE	EW	0.29	0.19	0.39	0.16	0.47	0.29
PORT	HIGH ST	RODMAN AVE	FREDERICK BLVD	EW	0.29	0.19	0.39	0.16	0.35	0.22
PORT	HIGH ST	FREDERICK BLVD	AIRLINE BLVD	EW	1.03	0.70	0.97	0.12	0.96	0.06
PORT	HIGH ST	AIRLINE BLVD	MT VERNON AVE	EW	0.45	0.28	0.39	0.40	0.33	0.29
PORT	HIGH ST	MT VERNON AVE	M L K FWY	EW	0.01	0.09	0.00	0.08	0.00	0.08
PORT	HIGH ST	M L K FWY	ELM AVE	EW	0.03	0.14	0.00	0.00	0.00	0.03
PORT	HIGH ST	ELM AVE	EFFINGHAM ST	EW	0.05	0.10	0.00	0.00	0.00	0.00
PORT	HIGH ST	EFFINGHAM ST	CRAWFORD ST	EW	0.51	0.24	0.95	0.78	0.35	0.25
PORT	I-264	WCL PORTSMOUTH	GREENWOOD DR	EW	0.00	0.00	0.00	0.04	0.00	0.09
PORT	I-264	GREENWOOD DR	VICTORY BLVD	EW	0.00	0.00	0.00	0.10	0.00	0.29
PORT	I-264	VICTORY BLVD	PORTSMOUTH BLVD	EW	0.00	0.00	0.00	0.12	0.00	0.33
PORT	I-264	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.37	0.01	0.00	0.02	1.03	0.02
PORT	I-264	FREDERICK BLVD	MLK FWY	EW	4.21	0.00	0.59	0.00	17.50	0.00
PORT	I-264	MLK FWY	DES MOINES AVE	EW	4.21	0.00	0.59	0.00	17.50	0.00
PORT	I-264	DES MOINES AVE	EFFINGHAM ST	EW	3.89	0.00	2.25	0.06	41.31	0.12
PORT	I-264/DOWNTOWN TUNNEL	EFFINGHAM ST	NORFOLK CL	EW	1.80	0.75	1.84	1.41	35.63	24.08
PORT	LONDON BLVD	HIGH ST	MT VERNON AVE	EW	0.30	0.30	0.16	0.32	0.42	0.89
PORT	LONDON BLVD	MT VERNON AVE	MLK FWY	EW	0.01	0.05	0.00	0.20	0.01	0.30
PORT	LONDON BLVD	MLK FWY	ELM AVE	EW	0.22	0.10	0.33	0.31	0.40	0.12
PORT	LONDON BLVD	ELM AVE	EFFINGHAM ST	EW	0.23	0.36	0.28	0.46	0.29	0.50
PORT	LONDON ST	EFFINGHAM ST	CRAWFORD ST	EW	-	-	-	-	-	-
PORT	MIDTOWN TUNNEL	MLK FWY/WESTERN FREEWAY	NORFOLK CL	NS	1.60	0.02	0.12	0.10	4.36	0.59
PORT	M L K FREEWAY	I-264	HIGH ST	NS	0.11	0.39	0.09	0.00	0.18	0.28
PORT	M L K FREEWAY	HIGH ST	LONDON BLVD	NS	0.08	0.18	0.17	0.00	0.07	0.07
PORT	M L K FREEWAY	LONDON BLVD	WESTERN FREEWAY/MIDTOWN TUNNE	NS	0.15	0.03	0.25	0.00	0.18	0.11
PORT	PORTCENTRE PKWY	PORTSMOUTH BLVD	CRAWFORD ST	NS	0.06	0.60	0.09	0.00	0.00	0.02
PORT	PORTSMOUTH BLVD	CHESAPEAKE CL	ELMHURST LN	EW	0.14	0.14	0.45	0.32	0.56	0.32
PORT	PORTSMOUTH BLVD	ELMHURST LN	VICTORY BLVD	EW	0.00	0.05	0.18	0.18	0.05	0.01
PORT	PORTSMOUTH BLVD	VICTORY BLVD	AIRLINE BLVD	EW	1.14	0.42	1.28	0.78	1.30	0.42
PORT	PORTSMOUTH BLVD	AIRLINE BLVD	TURNPIKE RD	EW	0.10	0.09	0.00	0.24	0.02	0.09
PORT	PORTSMOUTH BLVD	TURNPIKE RD	I-264	EW	0.10	0.09	0.00	0.24	0.02	0.08
PORT	PORTSMOUTH BLVD	I-264	DEEP CREEK BLVD	EW	0.02	0.00	0.06	0.00	0.02	0.00
PORT	PORTSMOUTH BLVD	DEEP CREEK BLVD	FREDERICK BLVD	EW	0.96	1.16	1.02	1.37	0.90	0.65
PORT	PORTSMOUTH BLVD	FREDERICK BLVD	ELM AVE	EW	0.00	0.21	0.11	0.00	0.06	0.02
PORT	PORTSMOUTH BLVD	ELM AVE	EFFINGHAM ST	EW	0.71	0.70	0.31	0.11	0.08	0.05
PORT	PORTSMOUTH BLVD	EFFINGHAM ST	PORTCENTRE PKWY	EW	3.82	2.53	0.09	0.06	0.02	0.08
PORT	TOWNE POINT RD	SUFFOLK CL	TWIN PINES RD	EW	0.10	0.26	0.37	0.35	0.17	0.31
PORT	TOWNE POINT RD	TWIN PINES RD	WESTERN FREEWAY	EW	0.29	0.00	0.80	0.60	0.86	0.26
PORT	TOWNE POINT RD	WESTERN FREEWAY	CHESAPEAKE CL	EW	0.22	0.21	0.38	0.63	0.47	0.61
PORT	TURNPIKE RD	PORTSMOUTH BLVD	FREDERICK BLVD	EW	0.17	0.11	0.10	0.02	0.01	0.01
PORT	TURNPIKE RD	FREDERICK BLVD	HOWARD ST	EW	0.47	0.16	0.31	0.20	0.41	0.20

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
PORT	TURNPIKE RD	HOWARD ST	HARBOR DR	EW	0.47	0.16	0.31	0.20	0.28	0.14
PORT	TURNPIKE RD	HARBOR DR	COUNTY ST	EW	0.47	0.16	0.31	0.20	0.28	0.14
PORT	TWIN PINES RD	TOWNE POINT RD	HEDGEROW LN	NS	-	-	-	-	-	-
PORT	TYRE NECK RD	CHESAPEAKE CL	HIGH ST	NS	-	-	-	-	-	-
PORT	TYRE NECK RD	HIGH ST	CHURCHLAND BLVD	NS	-	-	-	-	-	-
PORT	TYRE NECK RD	CHURCHLAND BLVD	WEST NORFOLK RD	NS	-	-	-	-	-	-
PORT	VICTORY BLVD	PORTSMOUTH BLVD	AIRLINE BLVD	EW	0.05	0.19	0.04	0.00	0.19	0.01
PORT	VICTORY BLVD	AIRLINE BLVD	I-264	EW	0.63	0.12	0.69	0.30	3.07	0.37
PORT	VICTORY BLVD	I-264	GREENWOOD DR	EW	0.36	0.00	0.67	0.23	1.92	0.16
PORT	VICTORY BLVD	GREENWOOD DR	DEEP CREEK BLVD	EW	0.00	0.11	0.12	0.09	0.10	0.22
PORT	VICTORY BLVD	DEEP CREEK BLVD	GEORGE WASHINGTON HWY	EW	0.00	0.11	0.12	0.09	0.15	0.35
PORT	VICTORY BLVD	GEORGE WASHINGTON HWY	AFTON PKWY	EW	1.60	0.09	0.26	0.06	1.31	0.15
PORT	VICTORY BLVD	AFTON PKWY	ELM AVE	EW	1.60	0.09	0.26	0.06	0.92	0.11
PORT	W NORFOLK RD	CHURCHLAND BLVD	TYRE NECK RD	EW	0.25	0.05	0.08	0.15	0.01	0.02
PORT	W NORFOLK RD	TYRE NECK RD	CEDAR LN	EW	0.25	0.05	0.08	0.15	0.02	0.02
PORT	W NORFOLK RD	CEDAR LN	WESTERN FWY	EW	0.00	0.15	0.00	0.00	0.00	0.00
PORT	WESTERN BRANCH BLVD	CHESAPEAKE CL	TYRE NECK RD	EW	0.09	0.06	0.23	0.17	0.15	0.10
PORT	WESTERN FWY	SUFFOLK CL	TOWNE POINT RD	EW	0.40	0.00	0.04	0.07	0.97	0.12
PORT	WESTERN FWY	TOWNE POINT RD	CEDAR LN	EW	0.81	0.00	0.00	0.08	2.17	0.18
PORT	WESTERN FWY	CEDAR LN	VIG BLVD	EW	1.77	0.00	0.03	0.08	4.43	0.15
PORT	WESTERN FWY	VIG BLVD	WEST NORFOLK RD	EW	1.77	0.00	0.03	0.08	4.43	0.15
PORT	WESTERN FWY	WEST NORFOLK RD	MLK FREEWAY/MIDTOWN TUNNEL	EW	1.34	0.05	0.05	0.50	3.96	1.25
SH	BUS ROUTE 58	ROUTE 35	ECL COURTLAND	EW	0.13	0.14	0.16	0.15	0.51	0.49
SH	BUS ROUTE 58	ECL COURTLAND	ROUTE 58	EW	0.13	0.14	0.16	0.15	0.51	0.49
SH	BUSINESS ROUTE 58 (CAMP PKWY)	ROUTE 58	DELAWARE RD (RTE 687)	EW	0.06	0.05	0.07	0.04	0.01	0.01
SH	BUSINESS ROUTE 58 (CAMP PKWY)	DELAWARE RD (RTE 687)	FRANKLIN CL	EW	0.06	0.05	0.07	0.04	0.01	0.01
SH	ROUTE 35	NC STATE LINE	SCL BOYKINS	NS	0.07	0.05	0.03	0.07	0.06	0.07
SH	ROUTE 35	SCL BOYKINS	ROUTE 1324	NS	0.07	0.05	0.03	0.07	0.06	0.07
SH	ROUTE 35	ROUTE 1324	ROUTE 186	NS	0.07	0.05	0.03	0.07	0.06	0.07
SH	ROUTE 35	ROUTE 186	NCL BOYKINS	NS	0.25	0.29	0.32	0.32	0.88	0.79
SH	ROUTE 35	NCL BOYKINS	ROUTE 671	NS	0.25	0.29	0.32	0.32	0.88	0.79
SH	ROUTE 35	ROUTE 671	GRAYS SHOP RD (RTE 673)	NS	0.02	0.05	0.03	0.04	0.02	0.04
SH	ROUTE 35	GRAYS SHOP RD (RTE 673)	ROUTE 58	NS	0.05	0.09	0.06	0.07	0.05	0.06
SH	ROUTE 35/BUS ROUTE 58	ROUTE 58	WCL COURTLAND	EW	0.05	0.07	0.09	0.07	0.10	0.12
SH	ROUTE 35/BUS ROUTE 58	WCL COURTLAND	BUS RTE 58	EW	0.05	0.07	0.09	0.07	0.10	0.12
SH	ROUTE 35	BUS RTE 58	NCL COURTLAND	NS	0.05	0.07	0.08	0.07	0.50	0.52
SH	ROUTE 35	NCL COURTLAND	IVOR RD (RTE 616)	NS	0.05	0.07	0.08	0.07	0.50	0.52
SH	ROUTE 35	IVOR RD (RTE 616)	CARYS BRIDGE RD (RTE 653)	NS	0.05	0.07	0.08	0.07	0.24	0.25
SH	ROUTE 35	CARYS BRIDGE RD (RTE 653)	SUSSEX CL	NS	0.04	0.07	0.05	0.03	0.16	0.13
SH	ROUTE 58	GREENSVILLE CL	ADAMS GROVE RD (RTE 615)	EW	0.00	0.02	0.00	0.00	0.00	0.01
SH	ROUTE 58	ADAMS GROVE RD (RTE 615)	DREWRY RD (RTE 659)	EW	0.00	0.02	0.00	0.00	0.00	0.01
SH	ROUTE 58	DREWRY RD (RTE 659)	PINOPOLIS RD (ROUTE 653)	EW	0.00	0.02	0.00	0.00	0.00	0.01
SH	ROUTE 58	PINOPOLIS RD (ROUTE 653)	ROUTE 35	EW	0.02	0.02	0.02	0.02	0.03	0.04
SH	ROUTE 58	ROUTE 35	BUS RTE 58 W	EW	0.00	0.01	0.01	0.00	0.03	0.00

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SH	ROUTE 58	BUS RTE 58 W	CAMP PKWY (BUS RTE 58 E)	EW	0.09	0.03	0.10	0.08	2.09	1.19
SH	ROUTE 58	CAMP PKWY (BUS RTE 58 E)	ARMORY DR (RTE 671)	EW	0.00	0.00	0.00	0.00	0.00	0.00
SH	ROUTE 58	ARMORY DR (RTE 671)	ROUTE 258	EW	0.00	0.03	0.00	0.01	0.00	0.04
SH	ROUTE 58	ROUTE 258	PRETLOW RD (RTE 714)	EW	0.00	0.02	0.00	0.00	0.00	0.02
SH	ROUTE 58	PRETLOW RD (RTE 714)	SUFFOLK CL	EW	0.00	0.00	0.00	0.00	0.00	0.00
SH	ROUTE 186	NC STATE LINE	WCL BRANCHVILLE	EW	-	-	-	-	-	-
SH	ROUTE 186	WCL BRANCHVILLE	JOYNER RD (RTE 701)	EW	-	-	-	-	-	-
SH	ROUTE 186	JOYNER RD (RTE 701)	ECL BRANCHVILLE	EW	-	-	-	-	-	-
SH	ROUTE 186	ECL BRANCHVILLE	WCL BOYKINS	EW	-	-	-	-	-	-
SH	ROUTE 186	WCL BOYKINS	ROUTE 35	EW	-	-	-	-	-	-
SH	ROUTE 189	ROUTE 258	PRETLOW RD (RTE 714)	EW	-	-	-	-	-	-
SH	ROUTE 189	PRETLOW RD (RTE 714)	SUFFOLK CL	EW	-	-	-	-	-	-
SH	ROUTE 258	NC STATE LINE	ROUTE 189	EW	0.02	0.05	0.05	0.04	0.16	0.17
SH	ROUTE 258	ROUTE 189	DOGWOOD BEND RD (RTE 684)	EW	0.00	0.05	0.02	0.00	0.02	0.00
SH	ROUTE 258	DOGWOOD BEND RD (RTE 684)	ROUTE 58	EW	0.00	0.05	0.02	0.00	0.03	0.01
SH	ROUTE 460	SUSSEX CL	WCL IVOR	EW	0.01	0.03	0.01	0.02	0.01	0.08
SH	ROUTE 460	WCL IVOR	ROUTE 616 (IVOR RD)	EW	0.01	0.03	0.01	0.02	0.01	0.08
SH	ROUTE 460	ROUTE 616 (IVOR RD)	ECL IVOR	EW	0.02	0.00	0.00	0.00	0.00	0.00
SH	ROUTE 460	ECL IVOR	ISLE OF WIGHT CL	EW	0.02	0.00	0.00	0.00	0.00	0.00
SH	ROUTE 616	ROUTE 35	SAINT LUKES RD (RTE 633)	NS	-	-	-	-	-	-
SH	ROUTE 616	SAINT LUKES RD (RTE 633)	SEACOCK RD (RTE 614)	NS	-	-	-	-	-	-
SH	ROUTE 616	SEACOCK RD (RTE 614)	MILLFIELD RD (RTE 605)	NS	-	-	-	-	-	-
SH	ROUTE 616	MILLFIELD RD (RTE 605)	SCL IVOR	NS	-	-	-	-	-	-
SH	ROUTE 616	SCL IVOR	ROUTE 460	NS	-	-	-	-	-	-
SH	ROUTE 671	ROUTE 35	CROSS KEYS RD (RTE 665)	EW	-	-	-	-	-	-
SH	ROUTE 671	CROSS KEYS RD (RTE 665)	WCL NEWSOMS	EW	-	-	-	-	-	-
SH	ROUTE 671	WCL NEWSOMS	GRAYS SHOP RD (RTE 673)	EW	-	-	-	-	-	-
SH	ROUTE 671	GRAYS SHOP RD (RTE 673)	ECL NEWSOMS	EW	-	-	-	-	-	-
SH	ROUTE 671	ECL NEWSOMS	SUNBEAM RD (RTE 680)	EW	-	-	-	-	-	-
SH	ROUTE 671	SUNBEAM RD (RTE 680)	DELAWARE RD (RTE 687)	EW	-	-	-	-	-	-
SH	ROUTE 671	DELAWARE RD (RTE 687)	ROUTE 58	EW	-	-	-	-	-	-
SUF	BENNETTS PASTURE RD	NANSEMOND PKWY	KINGS HWY	NS	-	-	-	-	-	-
SUF	BENNETTS PASTURE RD	KINGS HWY	BRIDGE RD	NS	-	-	-	-	-	-
SUF	BRIDGE RD	ISLE OF WIGHT CL	E. END CHUCKATUCK BRIDGE	EW	0.09	0.17	0.13	0.12	0.27	0.39
SUF	BRIDGE RD	E. END CHUCKATUCK BRIDGE	CRITTENDEN RD	EW	0.09	0.17	0.13	0.12	0.27	0.39
SUF	BRIDGE RD	CRITTENDEN RD	N. END NANSEMOND RIVER	EW	0.00	0.07	0.00	0.03	0.08	0.29
SUF	BRIDGE RD	N. END NANSEMOND RIVER	S. END NANSEMOND RIVER	EW	0.00	0.07	0.00	0.03	0.08	0.29
SUF	BRIDGE RD	S. END NANSEMOND RIVER	BENNETTS PASTURE RD	EW	0.00	0.07	0.00	0.03	0.08	0.29
SUF	BRIDGE RD	BENNETTS PASTURE RD	SHOULDERS HILL RD	EW	0.20	0.06	0.49	0.25	1.40	0.45
SUF	BRIDGE RD	SHOULDERS HILL RD	HARBOUR VIEW BLVD	EW	0.02	0.34	0.10	1.22	0.28	3.31
SUF	BRIDGE RD	HARBOUR VIEW BLVD	WESTERN FWY	EW	0.02	0.34	0.10	1.22	0.27	3.20
SUF	BRIDGE RD	WESTERN FWY	I-664	EW	0.02	0.10	0.10	0.47	0.18	0.50
SUF	BRIDGE RD	I-664	COLLEGE DR	EW	0.08	0.06	0.25	0.27	0.21	0.23
SUF	BRIDGE RD	COLLEGE DR	CHESAPEAKE CL	EW	0.08	0.06	0.25	0.27	0.19	0.21

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
SUF	BUCKHORN DR	ROUTE 58	INDIAN TRAIL	NS	-	-	-	-	-	-
SUF	BUCKHORN DR	INDIAN TRAIL	ISLE OF WIGHT CL	NS	-	-	-	-	-	-
SUF	CAROLINA RD	NC STATE LINE	ADAMS SWAMP RD (RTE 642)	NS	0.04	0.13	0.08	0.03	0.08	0.12
SUF	CAROLINA RD	ADAMS SWAMP RD (RTE 642)	CYPRESS CHAPEL RD (RTE 675)	NS	0.04	0.13	0.08	0.03	0.09	0.13
SUF	CAROLINA RD	CYPRESS CHAPEL RD (RTE 675)	BABBTOWN RD (RTE 759)	NS	0.04	0.13	0.08	0.03	0.08	0.12
SUF	CAROLINA RD	BABBTOWN RD (RTE 759)	WHALEYVILLE BLVD	NS	0.04	0.13	0.08	0.03	0.08	0.12
SUF	CAROLINA RD	WHALEYVILLE BLVD	TURLINGTON RD	NS	0.01	0.08	0.03	0.04	0.09	0.76
SUF	CAROLINA RD	TURLINGTON RD	SW SUFFOLK BYPASS	NS	0.16	0.19	0.18	0.17	2.18	2.71
SUF	CAROLINA RD	SW SUFFOLK BYPASS	FAYETTE ST	NS	0.13	0.13	0.21	0.09	1.61	1.28
SUF	COLLEGE DR	BRIDGE RD	WESTERN FREEWAY	NS	0.00	0.65	0.31	0.94	0.16	1.81
SUF	COLLEGE DR	WESTERN FREEWAY	HAMPTON ROADS PKWY	NS	0.11	0.06	0.40	0.22	0.32	0.17
SUF	COLLEGE DR	HAMPTON ROADS PKWY	I-664	NS	0.15	0.40	0.21	0.96	0.38	1.41
SUF	COLLEGE DR	I-664	HARBOUR VIEW BLVD	NS	0.09	0.20	0.10	0.04	0.66	0.23
SUF	CONSTANCE RD	HOLLAND RD	PITCHKETTLE RD	EW	0.16	0.20	0.20	0.24	0.32	0.49
SUF	CONSTANCE RD	PITCHKETTLE RD	MAIN ST	EW	0.20	0.08	0.27	0.27	0.48	0.46
SUF	CONSTANCE RD	MAIN ST	WILROY RD	EW	0.15	0.07	0.19	0.36	0.92	0.87
SUF	COPELAND RD	ROUTE 58	WHALEYVILLE BLVD	EW	0.06	0.03	0.04	0.05	0.03	0.03
SUF	COPELAND RD	WHALEYVILLE BLVD	CAROLINA RD	EW	0.07	0.06	0.08	0.18	0.01	0.03
SUF	CRITTENDEN RD	KINGS HWY	BRIDGE RD (RTE 17)	EW	-	-	-	-	-	-
SUF	EVERETTS RD	LAKE PRINCE DR (RTE 604)	MOORE FARM LN	EW	-	-	-	-	-	-
SUF	EVERETTS RD	MOORE FARM LN	GODWIN BLVD	EW	-	-	-	-	-	-
SUF	FINNEY AVE	N MAIN ST	PINNER ST	EW	-	-	-	-	-	-
SUF	GODWIN BLVD	PRUDEN BLVD	SUFFOLK BYPASS	NS	0.58	0.33	0.58	0.68	3.43	3.34
SUF	GODWIN BLVD	SUFFOLK BYPASS	KENSINGTON BLVD	NS	0.25	0.33	0.31	0.60	3.16	3.59
SUF	GODWIN BLVD	KENSINGTON BLVD	KINGS FORK RD	NS	0.25	0.33	0.31	0.60	3.16	3.59
SUF	GODWIN BLVD	KINGS FORK ROAD	1.36 MI N OF KINGS FORK RD	NS	0.02	0.02	0.08	0.07	0.14	0.08
SUF	GODWIN BLVD	1.36 MILES N OF KINGS FORK RD	EVERETS RD	NS	0.02	0.02	0.08	0.07	0.14	0.08
SUF	GODWIN BLVD	EVERETS RD	KINGS HWY	NS	0.27	0.21	0.35	0.32	1.39	0.99
SUF	GODWIN BLVD	KINGS HWY	ISLE OF WIGHT CL	NS	0.02	0.03	0.05	0.03	0.15	0.11
SUF	HAMPTON ROADS PKWY	HARBOUR VIEW BLVD	COLLEGE DR	EW	0.02	0.19	0.13	0.00	0.06	0.00
SUF	HAMPTON ROADS PKWY	COLLEGE DR	PORTSMOUTH CL	EW	0.10	0.26	0.37	0.35	0.05	0.08
SUF	HARBOUR VIEW BLVD	BRIDGE RD	HAMPTON ROADS PKWY	NS	0.33	0.34	0.39	0.64	0.56	0.53
SUF	HARBOUR VIEW BLVD	HAMPTON ROADS PKWY	COLLEGE DR	NS	0.17	0.19	0.02	0.16	0.00	0.02
SUF	HOLLAND RD (BUS RTE 58)	SUFFOLK BYPASS	CONSTANCE RD	EW	0.16	0.20	0.20	0.24	0.37	0.39
SUF	HOLLAND RD (BUS RTE 58)	RURITAN BLVD	HOLLAND RD (RTE 58)	EW	0.12	0.17	0.20	0.14	0.17	0.12
SUF	I-664	CHESAPEAKE CL	BRIDGE RD	NS	0.31	0.20	0.36	0.53	4.16	3.13
SUF	I-664	BRIDGE RD	WESTERN FWY	NS	0.86	0.13	1.16	0.33	9.67	1.19
SUF	I-664	WESTERN FWY	COLLEGE DR	NS	0.91	0.07	1.77	0.06	18.81	0.32
SUF	I-664/MMMBT	COLLEGE DR	NEWPORT NEWS CL	NS	0.31	0.07	0.42	0.34	5.12	2.75
SUF	KINGS FORK RD	PITCHKETTLE RD	PRUDEN BLVD	EW	-	-	-	-	-	-
SUF	KINGS FORK RD	PRUDEN BLVD	GODWIN BLVD	EW	-	-	-	-	-	-
SUF	KINGS HWY	GODWIN BLVD	CRITTENDEN RD	EW	-	-	-	-	-	-
SUF	KINGS HWY	BENNETTS PASTURE RD	NANSEMOND PKWY	EW	-	-	-	-	-	-
SUF	LAKE PRINCE DR (RTE 604)	ROUTE 460 (PRUDEN BLVD)	ROUTE 603 (EVERETTS RD)	NS	0.02	0.07	0.06	0.04	0.01	0.00

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	MAIN ST	FAYETTE ST	WASHINGTON ST	NS	0.13	0.13	0.21	0.09	0.10	0.07
SUF	MAIN ST	WASHINGTON ST	MARKET ST	NS	0.61	0.51	0.98	1.12	0.69	0.65
SUF	MAIN ST	MARKET ST	CONSTANCE RD	NS	0.61	0.51	0.98	1.12	0.69	0.65
SUF	MAIN ST	CONSTANCE RD	PRUDEN BLVD/GODWIN BLVD	NS	0.20	0.13	0.50	0.44	0.75	0.64
SUF	MARKET ST	WASHINGTON ST	MAIN ST	EW	-	-	-	-	-	-
SUF	NANSEMOND PKWY	WILROY RD	BENNETTS PASTURE RD	NS	-	-	-	-	-	-
SUF	NANSEMOND PKWY	BENNETTS PASTURE RD	KINGS HWY	NS	-	-	-	-	-	-
SUF	NANSEMOND PKWY	KINGS HWY	SHOULDERS HILL RD	EW	-	-	-	-	-	-
SUF	NANSEMOND PKWY	SHOULDERS HILL RD	CHESAPEAKE CL	EW	0.06	0.23	0.10	0.24	0.54	1.00
SUF	PINNER ST	WASHINGTON ST	BANK ST	EW	-	-	-	-	-	-
SUF	PINNER ST	BANK ST	FINNEY AVE	EW	-	-	-	-	-	-
SUF	PINNER ST	FINNEY AVE	CONSTANCE RD	EW	-	-	-	-	-	-
SUF	PITCHKETTLE RD	CONSTANCE RD	SUFFOLK BYPASS	NS	0.05	0.01	0.07	0.05	0.05	0.02
SUF	PITCHKETTLE RD	SUFFOLK BYPASS	KINGS FORK RD	NS	0.05	0.06	0.05	0.08	0.03	0.03
SUF	PORTSMOUTH BLVD	WILROY RD	WASHINGTON ST	EW	0.10	0.08	0.23	0.28	0.87	0.80
SUF	PORTSMOUTH BLVD	WASHINGTON ST	SUFFOLK BYPASS	EW	0.07	0.14	0.11	1.09	0.39	1.95
SUF	PROVIDENCE RD (RTE 604)	KINGS FORK RD	ROUTE 460 (PRUDEN BLVD)	NS	0.46	0.30	0.31	0.30	0.08	0.07
SUF	PRUDEN BLVD	ISLE OF WIGHT CL	LAKE PRINCE DR	EW	0.08	0.06	0.09	0.08	1.71	1.47
SUF	PRUDEN BLVD	LAKE PRINCE DR	KINGS FORK RD	EW	0.41	0.35	0.40	0.38	8.28	8.16
SUF	PRUDEN BLVD	KINGS FORK RD	SUFFOLK BYPASS	EW	0.32	0.37	0.28	0.40	4.91	7.01
SUF	PRUDEN BLVD	SUFFOLK BYPASS	GODWIN BLVD	EW	0.16	0.17	0.20	0.17	0.11	0.09
SUF	PUGHSVILLE RD	SHOULDERS HILL RD	TOWN POINT RD	EW	0.07	0.23	0.18	0.64	0.06	0.15
SUF	PUGHSVILLE RD	TOWN POINT RD	CHESAPEAKE CL	EW	0.07	0.23	0.18	0.64	0.36	0.94
SUF	ROUTE 13/58/460	SUFFOLK BYPASS	CHESAPEAKE CL	EW	0.03	0.00	0.06	0.11	0.56	0.57
SUF	ROUTE 58	SOUTHAMPTON CL	RTE 189/258	EW	0.00	0.00	0.00	0.00	0.00	0.00
SUF	ROUTE 58	RTE 189/258	RTE 272 (S. QUAY RD)	EW	0.00	0.02	0.00	0.00	0.00	0.02
SUF	ROUTE 58	RTE 272	S. QUAY RD (ROUTE 189)	EW	0.00	0.01	0.00	0.00	0.00	0.01
SUF	ROUTE 58 (HOLLAND BYPASS)	S. QUAY RD (ROUTE 189)	BUS RTE 58 (HOLLAND RD)	EW	0.00	0.01	0.00	0.00	0.00	0.01
SUF	ROUTE 58 (HOLLAND RD)	BUS RTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	EW	0.09	0.05	0.13	0.08	2.81	1.77
SUF	ROUTE 58 (HOLLAND RD)	RTE 649 (LUMMIS RD)	RTE 643 (MANNING BRIDGE RD)	EW	0.09	0.05	0.13	0.08	3.18	2.00
SUF	ROUTE 58 (HOLLAND RD)	RTE. 643 (MANNING BRIDGE RD)	COVE POINT DR	EW	0.09	0.05	0.13	0.08	3.45	2.17
SUF	ROUTE 58 (HOLLAND RD)	COVE POINT DR	SUFFOLK BYPASS	EW	0.34	0.46	0.46	0.86	14.89	20.49
SUF	ROUTE 189 (IN HOLLAND)	RTE 58 (SOUTH OF HOLLAND)	BUS RTE 58 (RURITAN BLVD)	EW	-	-	-	-	-	-
SUF	ROUTE 189	SOUTHAMPTON CL	RTE 272	EW	-	-	-	-	-	-
SUF	ROUTE 189	RTE 272	RTE 58	EW	-	-	-	-	-	-
SUF	ROUTE 258	RTE 58	ISLE OF WIGHT CL	NS	0.05	0.05	0.04	0.03	0.22	0.15
SUF	ROUTE 272	ROUTE 189	ROUTE 58	EW	-	-	-	-	-	-
SUF	ROUTE 616	ROUTE 58	WHALEYVILLE BLVD	EW	0.10	0.06	0.11	0.10	0.01	0.01
SUF	ROUTE 616	WHALEYVILLE BLVD	CAROLINA RD	EW	-	-	-	-	-	-
SUF	RURITAN BLVD (BUS RTE 58)	ISLE OF WIGHT CL	RTE 189 (HOLLAND RD BUS)	EW	0.04	0.11	0.10	0.09	0.06	0.08
SUF	SHOULDERS HILL RD	NANSEMOND PKWY	PUGHSVILLE RD	NS	0.16	0.12	0.25	0.13	0.19	0.20
SUF	SHOULDERS HILL RD	PUGHSVILLE RD	BRIDGE RD	NS	0.19	0.00	0.17	0.07	0.14	0.01
SUF	SOUTHWEST SUFFOLK BYPASS	HOLLAND RD	CAROLINA RD	NS	0.00	0.06	0.00	0.00	0.00	0.03
SUF	SUFFOLK BYPASS	HOLLAND RD	PITCHKETTLE RD	EW	0.00	0.22	0.00	0.36	0.00	6.22

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SUF	SUFFOLK BYPASS	PITCHKETTLE RD	PRUDEN BLVD	EW	0.00	0.00	0.00	0.04	0.00	0.14
SUF	SUFFOLK BYPASS	PRUDEN BLVD	GODWIN BLVD	EW	0.05	0.00	0.03	0.00	0.30	0.00
SUF	SUFFOLK BYPASS	GODWIN BLVD	WILROY RD	EW	0.04	0.00	0.04	0.46	0.52	2.77
SUF	SUFFOLK BYPASS	WILROY RD	ROUTES 13/58/460	EW	0.03	0.04	0.05	0.17	0.18	0.86
SUF	TOWN POINT RD	PUGHSVILLE RD	BRIDGE RD	NS	0.15	0.28	0.21	0.09	0.01	0.02
SUF	WASHINGTON ST	W CONSTANCE RD	SARATOGA ST	EW	-	-	-	-	-	-
SUF	WASHINGTON ST	SARATOGA ST	MAIN ST	EW	-	-	-	-	-	-
SUF	WASHINGTON ST	MAIN ST	PINNER ST	EW	0.21	0.23	0.51	0.50	0.21	0.13
SUF	WASHINGTON ST	PINNER ST	PORTSMOUTH BLVD	EW	0.21	0.23	0.51	0.50	0.36	0.21
SUF	WESTERN FWY	BRIDGE RD	I-664	EW	0.00	0.03	0.02	0.31	0.07	0.44
SUF	WESTERN FWY	I-664	COLLEGE DR	EW	0.05	0.02	0.00	0.04	0.11	0.04
SUF	WESTERN FWY	COLLEGE DR	PORTSMOUTH CL	EW	0.40	0.00	0.04	0.07	0.97	0.12
SUF	WHALEYVILLE BLVD	NC STATE LINE	RTE 616 (MINERAL SPRING RD)	NS	0.04	0.06	0.06	0.04	0.22	0.30
SUF	WHALEYVILLE BLVD	RTE 616 (MINERAL SPRING RD)	RTE 677 (GREAT FORK RD)	NS	0.04	0.06	0.06	0.04	0.28	0.38
SUF	WHALEYVILLE BLVD	RTE 677 (GREAT FORK RD)	RTE 675 (CYPRESS CHAPEL RD)	NS	0.04	0.06	0.06	0.04	0.32	0.43
SUF	WHALEYVILLE BLVD	RTE 675 (CYPRESS CHAPEL RD)	RTE 759 (BABBTOWN RD)	NS	0.04	0.06	0.06	0.04	0.37	0.50
SUF	WHALEYVILLE BLVD	RTE 759 (BABBTOWN RD)	RTE 32 (CAROLINA RD)	NS	0.04	0.06	0.06	0.04	0.39	0.53
SUF	WILROY RD	CONSTANCE RD	SUFFOLK BYPASS	NS	-	-	-	-	-	-
SUF	WILROY RD	SUFFOLK BYPASS	NANSEMOND PKWY	NS	-	-	-	-	-	-
SUR	ROUTE 10	PRINCE GEORGE CL	ROUTE 40	EW	0.04	0.04	0.02	0.02	0.03	0.02
SUR	ROUTE 10	ROUTE 40	ROUTE 31 (SOUTH)	EW	0.02	0.05	0.03	0.02	0.05	0.06
SUR	ROUTES 10/31	ROUTE 31 (SOUTH)	ROUTE 31 (NORTH)	NS	0.09	0.09	0.16	0.10	0.35	0.26
SUR	ROUTE 10	ROUTE 31 (NORTH)	ROUTE 617	EW	0.03	0.06	0.04	0.05	0.10	0.17
SUR	ROUTE 10	ROUTE 617	ISLE OF WIGHT CL	EW	0.03	0.06	0.04	0.05	0.08	0.13
SUR	ROUTE 31	SUSSEX CL	ROUTE 630	NS	-	-	-	-	-	-
SUR	ROUTE 31	ROUTE 630	ROUTE 10 (SOUTH)	NS	-	-	-	-	-	-
SUR	ROUTE 31	ROUTE 10 (NORTH)	JAMESTOWN-SCOTLAND FERRY	NS	-	-	-	-	-	-
SUR	ROUTE 40	SUSSEX CL	ROUTE 615	NS	0.03	0.07	0.02	0.09	0.01	0.05
SUR	ROUTE 40	ROUTE 615	ROUTE 10	NS	0.07	0.08	0.07	0.06	0.02	0.03
VB	21ST ST	PARKS AVE	PACIFIC AVE	EW	0.04	-	0.19	-	0.08	-
VB	21ST ST	PACIFIC AVE	ATLANTIC AVE	EW	0.04	-	0.19	-	0.02	-
VB	22ND ST	PARKS AVE	PACIFIC AVE	EW	-	0.00	-	0.00	-	0.00
VB	22ND ST	PACIFIC AVE	ATLANTIC AVE	EW	-	0.00	-	0.00	-	0.00
VB	30TH ST	LASKIN RD	PACIFIC AVE	EW	-	-	-	-	-	-
VB	30TH ST	PACIFIC AVE	ATLANTIC AVE	EW	-	-	-	-	-	-
VB	ATLANTIC AVE	FORT STORY	83RD ST	NS	-	-	-	-	-	-
VB	ATLANTIC AVE	83RD ST	PACIFIC AVE	NS	0.16	0.09	0.20	0.21	0.30	0.23
VB	ATLANTIC AVE	PACIFIC AVE	LASKIN RD	NS	0.00	0.34	0.05	0.14	0.04	0.08
VB	ATLANTIC AVE	LASKIN RD	22ND ST	NS	0.02	0.00	0.65	0.49	0.94	0.14
VB	ATLANTIC AVE	22ND ST	21ST ST	NS	0.00	0.00	1.08	1.26	1.95	0.45
VB	ATLANTIC AVE	21ST ST	VA BEACH BLVD	NS	0.00	0.00	0.63	0.92	1.07	0.41
VB	ATLANTIC AVE	VA BEACH BLVD	5TH ST	NS	0.16	0.03	0.42	0.38	0.92	0.20
VB	BAXTER RD	PRINCESS ANNE RD	INDEPENDENCE BLVD	NS	0.19	0.16	0.37	0.36	0.19	0.13
VB	BIRDNECK RD	GENERAL BOOTH BLVD	NORFOLK AVE	NS	0.15	0.16	0.13	0.13	0.08	0.11

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	BIRDNECK RD	NORFOLK AVE	VA BEACH BLVD	NS	0.15	0.16	0.13	0.13	0.08	0.11
VB	BIRDNECK RD	VA BEACH BLVD	I-264	NS	0.02	0.41	0.30	0.60	0.37	1.62
VB	BIRDNECK RD	I-264	LASKIN RD	NS	0.36	0.24	0.45	0.57	0.82	1.01
VB	BLACKWATER RD	PUNGO FERRY RD	CHESAPEAKE CL	NS	0.05	0.11	0.08	0.04	0.13	0.15
VB	BONNEY RD	INDEPENDENCE BLVD	ROSEMONT RD	EW	-	-	-	-	-	-
VB	CENTERVILLE TNPK	CHESAPEAKE CL	LYNNHAVEN PKWY	NS	0.66	0.40	0.34	0.32	0.41	0.30
VB	CENTERVILLE TNPK	LYNNHAVEN PKWY	KEMPSVILLE RD	NS	0.66	0.40	0.34	0.32	0.51	0.38
VB	CENTERVILLE TNPK	KEMPSVILLE RD	JAKE SEARS RD	NS	0.52	0.17	0.45	0.67	0.58	0.97
VB	CENTERVILLE TNPK	JAKE SEARS RD	INDIAN RIVER RD	NS	0.52	0.17	0.45	0.67	0.60	1.02
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	SHORE DR	TOLL PLAZA	NS	0.25	0.01	0.12	0.03	0.81	0.08
VB	CHESAPEAKE BAY BRIDGE-TUNNEL	TOLL PLAZA	NCL VA BEACH	NS	0.07	0.07	0.02	0.01	0.05	0.12
VB	CLEARFIELD AVE	CLEVELAND ST	VIRGINIA BEACH BLVD	NS	-	-	-	-	-	-
VB	CLEVELAND ST	GREENWICH RD	CLEARFIELD AVE	EW	-	-	-	-	-	-
VB	CLEVELAND ST	CLEARFIELD AVE	WITCHDUCK RD	EW	-	-	-	-	-	-
VB	CLEVELAND ST	WITCHDUCK RD	KELLAM RD	EW	-	-	-	-	-	-
VB	COLUMBUS ST	KELLAM RD	INDEPENDENCE BLVD	EW	-	-	-	-	-	-
VB	COLUMBUS ST	INDEPENDENCE BLVD	CONSTITUTION DR	EW	-	-	-	-	-	-
VB	CONSTITUTION DR	BONNEY RD	COLUMBUS ST	NS	-	-	-	-	-	-
VB	CONSTITUTION DR	COLUMBUS ST	VIRGINIA BEACH BLVD	NS	-	-	-	-	-	-
VB	DAM NECK RD	SALEM RD	VA BEACH AMPHITHEATER	EW	0.35	0.19	0.17	0.41	0.03	0.06
VB	DAM NECK RD	VA BEACH AMPHITHEATER	PRINCESS ANNE RD	EW	0.48	0.15	0.60	0.00	0.73	0.00
VB	DAM NECK RD	PRINCESS ANNE RD	ROSEMONT RD	EW	0.05	0.44	0.21	1.35	0.06	2.89
VB	DAM NECK RD	ROSEMONT RD	HOLLAND RD	EW	0.05	0.44	0.21	1.35	0.06	2.89
VB	DAM NECK RD	HOLLAND RD	DRAKESMILE RD	EW	0.16	0.28	0.14	0.50	0.26	0.76
VB	DAM NECK RD	DRAKESMILE RD	LONDON BRIDGE RD	EW	0.16	0.28	0.14	0.50	0.27	0.79
VB	DAM NECK RD	LONDON BRIDGE RD	HARPERS RD	EW	0.04	0.04	0.04	0.04	0.06	0.03
VB	DAM NECK RD	HARPERS RD	GENERAL BOOTH BLVD	EW	0.04	0.04	0.04	0.04	0.06	0.03
VB	DAM NECK RD	GENERAL BOOTH BLVD	UPTON DR	EW	-	-	-	-	-	-
VB	DAM NECK RD	UPTON DR	USN TRAINING CENTER	EW	-	-	-	-	-	-
VB	DIAMOND SPRINGS RD	NEWTOWN RD	WESLEYAN RD	NS	0.14	0.00	0.29	0.06	0.38	0.01
VB	DIAMOND SPRINGS RD	WESLEYAN RD	NORTHAMPTON BLVD	NS	0.07	0.10	0.03	0.09	0.06	0.13
VB	DIAMOND SPRINGS RD	NORTHAMPTON BLVD	SHORE DR	NS	0.08	0.00	0.08	0.00	0.03	0.00
VB	DRAKESMILE RD	DAM NECK RD	SHIPPS CORNER RD	NS	0.20	0.34	0.09	0.60	0.27	0.97
VB	ELBOW RD	CHESAPEAKE CL	INDIAN RIVER RD (WEST)	EW	0.13	0.22	0.17	0.14	0.03	0.03
VB	ELBOW RD/INDIAN RIVER RD	INDIAN RIVER RD (WEST)	INDIAN RIVER RD (EAST)	EW	0.13	0.22	0.17	0.14	0.17	0.23
VB	ELBOW RD	INDIAN RIVER RD (EAST)	SALEM RD	EW	0.26	0.31	0.21	1.02	0.17	0.18
VB	FERRELL PKWY	INDIAN RIVER RD	INDIAN LAKES BLVD	EW	0.18	0.50	0.32	0.35	0.70	0.95
VB	FERRELL PKWY	INDIAN LAKES BLVD	PLEASANT VALLEY RD	EW	0.05	0.09	0.00	0.26	0.04	0.30
VB	FERRELL PKWY	PLEASANT VALLEY RD	PRINCESS ANNE RD	EW	0.05	0.09	0.00	0.26	0.04	0.31
VB	FIRST COLONIAL RD	VA BEACH BLVD	I-264	NS	0.45	0.66	0.82	0.88	1.09	0.58
VB	FIRST COLONIAL RD	I-264	LASKIN RD	NS	0.53	0.34	0.54	0.96	0.70	1.34
VB	FIRST COLONIAL RD	LASKIN RD	OLD DONATION PKWY	NS	0.53	0.34	0.54	0.96	0.60	1.16
VB	FIRST COLONIAL RD	OLD DONATION PKWY	GREAT NECK RD	NS	0.53	0.34	0.54	0.96	0.37	0.72
VB	GENERAL BOOTH BLVD	PRINCESS ANNE RD	NIMMO PKWY	NS	0.09	0.08	0.21	0.35	0.29	0.36

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					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	GENERAL BOOTH BLVD	NIMMO PKWY	LONDON BRIDGE RD	NS	0.09	0.08	0.21	0.35	0.42	0.52
VB	GENERAL BOOTH BLVD	LONDON BRIDGE RD	DAM NECK RD	NS	0.09	0.08	0.21	0.35	0.42	0.51
VB	GENERAL BOOTH BLVD	DAM NECK RD	OCEANA BLVD/PROSPERITY RD	NS	0.08	0.28	0.17	0.97	0.34	1.14
VB	GENERAL BOOTH BLVD	OCEANA BLVD/PROSPERITY RD	BIRDNECK RD	NS	0.05	0.06	0.10	0.16	0.12	0.13
VB	GENERAL BOOTH BLVD	BIRDNECK RD	HARBOUR POINT	NS	0.00	0.07	0.00	0.12	0.00	0.12
VB	GREAT NECK RD	VA BEACH BLVD	OLD DONATION PKWY	NS	0.12	0.36	0.11	0.68	0.14	0.79
VB	GREAT NECK RD	OLD DONATION PKWY	FIRST COLONIAL RD	NS	0.10	0.09	0.11	0.29	0.37	0.28
VB	GREAT NECK RD	FIRST COLONIAL RD	SHOREHAVEN RD	NS	0.34	0.43	0.39	0.40	0.52	0.49
VB	GREAT NECK RD	SHOREHAVEN RD	SHORE DR	NS	0.34	0.43	0.39	0.40	0.44	0.41
VB	GREENWICH RD	NEWTOWN RD	CLEVELAND ST	EW	-	-	-	-	-	-
VB	HARPERS RD	DAM NECK RD	OCEANA BLVD	EW	0.11	0.04	0.07	0.06	0.03	0.03
VB	HAYGOOD RD	NEWTOWN RD	WESLEYAN DR	EW	-	-	-	-	-	-
VB	HAYGOOD RD	WESLEYAN DR	INDEPENDENCE BLVD	EW	0.52	0.46	0.58	0.40	0.31	0.13
VB	HOLLAND RD	INDEPENDENCE BLVD	SOUTH PLAZA TRAIL	NS	0.11	0.20	0.34	0.60	0.53	0.59
VB	HOLLAND RD	SOUTH PLAZA TRAIL	ROSEMONT RD	NS	0.11	0.20	0.34	0.60	0.55	0.61
VB	HOLLAND RD	ROSEMONT RD	LYNNHAVEN PKWY	NS	0.30	0.27	0.20	0.32	0.19	0.28
VB	HOLLAND RD	LYNNHAVEN PKWY	DAM NECK RD	NS	0.13	0.22	0.74	0.12	0.76	0.27
VB	HOLLAND RD	DAM NECK RD	NIMMO PKWY	NS	0.11	0.09	0.14	0.07	0.11	0.06
VB	HOLLAND RD	NIMMO PKWY	PRINCESS ANNE RD	NS	0.11	0.09	0.14	0.07	0.04	0.02
VB	I-64	NORFOLK CL	INDIAN RIVER RD	EW	0.00	0.11	0.21	0.07	0.71	0.41
VB	I-64	INDIAN RIVER RD	CHESEAPEAKE CL	EW	0.00	0.18	0.07	0.03	0.09	0.46
VB	I-264	NEWTOWN RD/ECL NORFOLK	WITCHDUCK RD	EW	0.10	0.14	0.27	0.41	1.20	1.24
VB	I-264	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.05	0.07	0.22	0.24	0.81	0.58
VB	I-264	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.00	0.05	0.16	0.20	0.13	0.40
VB	I-264	ROSEMONT RD	LYNNHAVEN PKWY	EW	0.05	0.06	0.04	0.13	0.14	0.53
VB	I-264	LYNNHAVEN PKWY	LONDON BRIDGE RD	EW	0.00	0.05	0.02	0.08	0.01	0.13
VB	I-264	LONDON BRIDGE RD	LASKIN RD	EW	0.00	0.05	0.02	0.08	0.01	0.10
VB	I-264	LASKIN RD	FIRST COLONIAL RD	EW	0.05	0.00	0.00	0.00	0.01	0.00
VB	I-264	FIRST COLONIAL RD	BIRDNECK RD	EW	0.02	0.00	0.00	0.00	0.00	0.00
VB	I-264	BIRDNECK RD	PARKS AVE	EW	0.23	0.01	0.27	0.00	0.95	0.00
VB	INDEPENDENCE BLVD	INDIAN RIVER RD	SALEM RD	NS	0.03	0.07	0.04	0.18	0.01	0.03
VB	INDEPENDENCE BLVD	SALEM RD	PRINCESS ANNE RD	NS	0.00	0.00	0.09	0.00	0.01	0.00
VB	INDEPENDENCE BLVD	PRINCESS ANNE RD	LYNNHAVEN PKWY	NS	0.23	0.59	0.66	1.06	0.51	1.22
VB	INDEPENDENCE BLVD	LYNNHAVEN PKWY	PLAZA TRAIL	NS	0.20	0.17	0.33	0.03	0.13	0.02
VB	INDEPENDENCE BLVD	PLAZA TRAIL	HOLLAND RD	NS	0.21	0.11	0.29	0.40	0.15	0.30
VB	INDEPENDENCE BLVD	HOLLAND RD	BAXTER RD	NS	0.64	0.19	0.47	0.70	1.69	1.53
VB	INDEPENDENCE BLVD	BAXTER RD	I-264	NS	0.23	0.32	0.28	0.98	0.52	2.04
VB	INDEPENDENCE BLVD	I-264	BONNEY RD	NS	0.41	0.08	1.02	1.21	2.47	1.45
VB	INDEPENDENCE BLVD	BONNEY RD	COLUMBUS ST	NS	0.41	0.08	1.02	1.21	1.84	1.08
VB	INDEPENDENCE BLVD	COLUMBUS ST	VA BEACH BLVD	NS	0.41	0.08	1.02	1.21	1.52	0.89
VB	INDEPENDENCE BLVD	VA BEACH BLVD	JEANNE ST	NS	0.00	0.01	0.02	0.65	0.00	0.54
VB	INDEPENDENCE BLVD	JEANNE ST	PEMBROKE BLVD	NS	0.00	0.01	0.02	0.65	0.00	0.54
VB	INDEPENDENCE BLVD	PEMBROKE BLVD	HAYGOOD RD	NS	0.25	0.33	0.28	0.56	0.49	0.70
VB	INDEPENDENCE BLVD	HAYGOOD RD	NORTHAMPTON BLVD	NS	0.18	0.17	0.23	0.50	0.21	0.30

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
VB	INDEPENDENCE BLVD	NORTHAMPTON BLVD	SHORE DR	NS	1.36	0.10	0.08	0.13	0.33	0.05
VB	INDIAN LAKES BLVD	FERRELL PKWY	INDIAN RIVER RD	NS	0.47	0.05	0.37	0.00	0.49	0.00
VB	INDIAN RIVER RD	CHESAPEAKE CL	MILITARY HWY	EW	0.16	0.01	0.24	0.12	0.71	0.34
VB	INDIAN RIVER RD	MILITARY HWY	PROVIDENCE RD	EW	0.00	0.06	0.10	0.15	0.01	0.17
VB	INDIAN RIVER RD	PROVIDENCE RD	I-64	EW	0.00	0.37	0.34	0.78	0.10	1.83
VB	INDIAN RIVER RD	I-64	CENTERVILLE TNPK	EW	0.41	0.16	1.77	0.25	5.51	1.04
VB	INDIAN RIVER RD	CENTERVILLE TNPK	KEMPSVILLE RD	EW	0.15	1.01	1.96	0.62	3.68	3.66
VB	INDIAN RIVER RD	KEMPSVILLE RD	FERRELL PKWY	EW	0.08	0.85	0.11	0.43	0.34	3.28
VB	INDIAN RIVER RD	FERRELL PKWY	INDIAN LAKES BLVD	EW	0.15	0.51	0.11	0.37	0.34	0.69
VB	INDIAN RIVER RD	INDIAN LAKES BLVD	LYNNHAVEN PKWY	EW	0.40	0.04	0.43	0.10	1.98	0.14
VB	INDIAN RIVER RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	0.18	0.12	0.21	0.16	0.36	0.21
VB	INDIAN RIVER RD	INDEPENDENCE BLVD	ELBOW RD (WEST)	EW	0.18	0.12	0.21	0.16	0.24	0.14
VB	INDIAN RIVER RD	ELBOW RD (EAST)	S.E. PARKWAY CORRIDOR	EW	0.10	0.10	0.08	0.12	0.09	0.11
VB	INDIAN RIVER RD	S.E. PARKWAY CORRIDOR	NORTH LANDING RD	EW	0.10	0.10	0.08	0.12	0.09	0.11
VB	INDIAN RIVER RD	NORTH LANDING RD	WEST NECK RD	EW	0.14	0.05	0.09	0.08	0.14	0.04
VB	INDIAN RIVER RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.14	0.05	0.09	0.08	0.14	0.04
VB	INTERNATIONAL PKWY	LYNNHAVEN PKWY	LONDON BRIDGE RD	EW	-	-	-	-	-	-
VB	KEMPSVILLE RD	CHESAPEAKE CL	CENTERVILLE TNPK	EW	0.33	0.24	0.36	0.27	0.21	0.12
VB	KEMPSVILLE RD	CENTERVILLE TNPK	INDIAN RIVER RD	EW	0.59	0.38	0.62	0.35	0.52	0.64
VB	KEMPSVILLE RD	INDIAN RIVER RD	PROVIDENCE RD	EW	0.03	0.07	0.13	1.10	0.06	1.00
VB	KEMPSVILLE RD	PROVIDENCE RD	PRINCESS ANNE RD	EW	0.68	0.42	0.55	1.23	0.80	1.66
VB	LANDSTOWN RD	SALEM RD	0.6 MI S. LANDSTOWN CENTRE WAY	NS	-	-	-	-	-	-
VB	LANDSTOWN RD	0.6 MI S. LANDSTOWN CENTRE WAY	DAM NECK RD	NS	-	-	-	-	-	-
VB	LASKIN RD	VA BEACH BLVD	FIRST COLONIAL RD	EW	0.16	0.00	0.39	0.50	0.30	0.42
VB	LASKIN RD	FIRST COLONIAL RD	WINWOOD DR	EW	0.14	0.12	0.07	0.49	0.01	0.45
VB	LASKIN RD	WINWOOD DR	BIRDNECK RD	EW	0.14	0.12	0.07	0.49	0.02	0.64
VB	LASKIN RD	BIRDNECK RD	30TH ST/32ND ST	EW	0.00	0.12	0.11	0.49	0.07	0.49
VB	LASKIN RD	30TH ST/32ND ST	PACIFIC AVE	EW	0.00	0.12	0.11	0.49	0.02	0.16
VB	LASKIN RD/31ST ST	PACIFIC AVE	ATLANTIC AVE	EW	2.36	1.00	2.36	1.04	0.93	0.00
VB	LONDON BRIDGE RD	GENERAL BOOTH BLVD	DAM NECK RD	NS	0.13	0.04	0.12	0.12	0.21	0.07
VB	LONDON BRIDGE RD	DAM NECK RD	DRAKESMILE RD	NS	0.13	0.04	0.12	0.12	0.12	0.04
VB	LONDON BRIDGE RD	SHIPPS CORNER RD/DRAKESMILE RD	INTERNATIONAL PKWY	NS	0.10	0.02	0.24	0.10	0.36	0.18
VB	LONDON BRIDGE RD	INTERNATIONAL PKWY	POTTERS RD	NS	0.10	0.02	0.24	0.10	0.37	0.18
VB	LONDON BRIDGE RD	POTTERS RD	I-264 RAMP	NS	0.73	0.26	1.84	0.24	6.03	1.65
VB	LONDON BRIDGE RD	I-264 RAMP	VA BEACH BLVD	NS	0.73	0.26	1.84	0.24	6.04	1.65
VB	LYNNHAVEN PKWY	CHESAPEAKE CL	CENTERVILLE TNPK	EW	0.45	0.15	0.52	0.16	0.31	0.07
VB	LYNNHAVEN PKWY	CENTERVILLE TNPK	INDIAN RIVER RD	EW	0.18	0.30	0.31	0.30	0.20	0.36
VB	LYNNHAVEN PKWY	INDIAN RIVER RD	SALEM RD	EW	0.27	0.36	0.28	0.51	0.24	0.40
VB	LYNNHAVEN PKWY	SALEM RD	PRINCESS ANNE RD	EW	0.75	0.25	1.10	0.37	1.70	0.30
VB	LYNNHAVEN PKWY	PRINCESS ANNE RD	INDEPENDENCE BLVD	EW	0.16	0.05	0.23	0.36	0.09	0.07
VB	LYNNHAVEN PKWY	INDEPENDENCE BLVD	ROSEMONT RD	EW	0.16	0.05	0.23	0.36	0.13	0.09
VB	LYNNHAVEN PKWY	ROSEMONT RD	HOLLAND RD	EW	0.16	0.05	0.23	0.36	0.11	0.08
VB	LYNNHAVEN PKWY	HOLLAND RD	S LYNNHAVEN RD	EW	0.00	0.01	0.11	0.40	0.08	0.11
VB	LYNNHAVEN PKWY	S LYNNHAVEN RD	INTERNATIONAL PKWY	NS	0.12	0.16	0.60	0.36	0.32	0.32

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	LYNNHAVEN PKWY	INTERNATIONAL PKWY	POTTERS RD	NS	0.12	0.16	0.60	0.36	0.52	0.53
VB	LYNNHAVEN PKWY	POTTERS RD	I-264	NS	0.12	0.16	0.60	0.36	0.57	0.58
VB	LYNNHAVEN PKWY	I-264	VA BEACH BLVD	NS	0.45	0.24	0.46	0.26	0.23	0.13
VB	MILITARY HWY	CHESAPEAKE CL	PROVIDENCE RD	NS	0.34	0.35	0.52	0.56	1.46	1.64
VB	MILITARY HWY	PROVIDENCE RD	INDIAN RIVER RD	NS	0.49	0.07	0.45	0.29	1.35	0.55
VB	MILITARY HWY	INDIAN RIVER RD	NORFOLK CL	NS	0.03	0.12	0.07	0.35	0.03	0.72
VB	NEWTOWN RD	NORFOLK CL	BAKER RD	NS	0.00	0.23	0.30	0.53	0.41	0.53
VB	NEWTOWN RD	BAKER RD	DIAMOND SPRINGS RD	NS	0.00	0.23	0.30	0.53	0.25	0.33
VB	NEWTOWN RD	DIAMOND SPRINGS RD	HAYGOOD RD	EW	-	-	-	-	-	-
VB	NIMMO PKWY	WEST NECK RD	PRINCESS ANNE RD	EW	0.36	0.18	0.50	0.09	0.84	0.07
VB	NIMMO PKWY	PRINCESS ANNE RD	HOLLAND RD	EW	0.00	0.48	0.00	0.65	0.00	1.39
VB	NIMMO PKWY	HOLLAND RD	GENERAL BOOTH BLVD	EW	0.02	0.00	0.05	0.03	0.05	0.01
VB	NIMMO PKWY	GENERAL BOOTH BLVD	UPTON DR	EW	0.32	0.00	0.50	0.20	0.69	0.21
VB	NORFOLK AVE	BIRDNECK RD	PACIFIC AVE	EW	-	-	-	-	-	-
VB	NORFOLK AVE	PACIFIC AVE	ATLANTIC AVE	EW	-	-	-	-	-	-
VB	NORTHAMPTON BLVD	WESLEYAN DR/NORFOLK CL	DIAMOND SPRINGS RD	EW	0.50	0.83	0.41	1.07	5.52	8.67
VB	NORTHAMPTON BLVD	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	0.01	0.02	0.01	0.04	0.18	0.16
VB	NORTHAMPTON BLVD	INDEPENDENCE BLVD	SHORE DR	EW	0.03	0.08	0.13	0.13	0.26	0.53
VB	NORTH LANDING RD	CHESAPEAKE CL	INDIAN RIVER RD	EW	0.31	0.14	0.13	0.30	0.11	0.14
VB	NORTH LANDING RD	INDIAN RIVER RD	SALEM RD	EW	0.26	0.21	0.18	0.32	0.13	0.20
VB	NORTH LANDING RD	SALEM RD	WEST NECK RD	EW	0.26	0.21	0.18	0.32	0.13	0.20
VB	NORTH LANDING RD	WEST NECK RD	PRINCESS ANNE RD	EW	0.26	0.21	0.18	0.32	0.13	0.20
VB	NORTH LYNNHAVEN RD	LYNNHAVEN PKWY	VA BEACH BLVD	EW	-	-	-	-	-	-
VB	OCEANA BLVD	GENERAL BOOTH BLVD	HARPERS RD	NS	0.13	0.49	0.16	0.73	0.33	0.34
VB	OCEANA BLVD	HARPERS RD	TOMCAT BLVD (NAS MAIN ENT)	NS	0.10	0.01	0.29	0.04	0.26	0.02
VB	OCEANA BLVD/FIRST COLONIAL RD	TOMCAT BLVD (NAS MAIN ENT)	VA BEACH BLVD	NS	0.10	0.01	0.29	0.04	0.31	0.02
VB	PACIFIC AVE	ATLANTIC AVE	LASKIN RD	NS	0.00	0.04	0.06	0.30	0.10	0.37
VB	PACIFIC AVE	LASKIN RD	22ND ST	NS	0.23	0.17	0.38	0.62	0.28	0.45
VB	PACIFIC AVE	22ND ST	21ST ST	NS	0.54	0.82	1.41	1.33	1.61	1.71
VB	PACIFIC AVE	21ST ST	VA BEACH BLVD	NS	0.57	0.28	1.26	0.56	1.16	0.49
VB	PACIFIC AVE	VA BEACH BLVD	NORFOLK AVE	NS	0.06	0.00	0.19	0.09	0.19	0.04
VB	PACIFIC AVE	NORFOLK AVE	HARBOUR POINT	NS	0.06	0.00	0.19	0.09	0.12	0.03
VB	PEMBROKE BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.35	0.31	0.19	0.46	0.18	0.26
VB	PLAZA TRAIL, S.	PRINCESS ANNE RD	INDEPENDENCE BLVD	NS	0.02	0.00	0.00	0.04	0.00	0.00
VB	PLAZA TRAIL, S.	INDEPENDENCE BLVD	HOLLAND RD	NS	0.10	0.49	0.31	0.00	0.03	0.00
VB	PLAZA TRAIL, S.	HOLLAND RD	MARINA LAKE RD	NS	0.12	0.16	0.25	0.28	0.02	0.06
VB	PLAZA TRAIL, S.	MARINA LAKE RD	ROSEMONT RD	NS	0.12	0.16	0.25	0.28	0.02	0.06
VB	PLAZA TRAIL, S.	ROSEMONT RD	CONTINENTAL ST	NS	-	-	-	-	-	-
VB	PLAZA TRAIL, S.	CONTINENTAL ST	VA BEACH BLVD	NS	-	-	-	-	-	-
VB	PRINCESS ANNE RD	NEWTOWN RD/NORFOLK CL	KEMPSVILLE RD	EW	0.12	0.22	0.37	0.24	0.29	0.33
VB	PRINCESS ANNE RD	KEMPSVILLE RD	BAXTER RD	EW	0.28	0.34	0.82	0.39	1.05	0.79
VB	PRINCESS ANNE RD	BAXTER RD	PROVIDENCE RD	EW	0.38	0.38	0.74	0.67	0.95	0.43
VB	PRINCESS ANNE RD	PROVIDENCE RD	FERRELL PKWY	EW	0.01	0.28	0.16	0.14	0.37	0.43
VB	PRINCESS ANNE RD	FERRELL PKWY	LYNNHAVEN PKWY	EW	0.01	0.28	0.16	0.14	0.56	0.65

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
VB	PRINCESS ANNE RD	LYNNHAVEN PKWY	INDEPENDENCE BLVD	EW	0.59	0.45	0.12	0.31	0.73	0.51
VB	PRINCESS ANNE RD	INDEPENDENCE BLVD	DAM NECK RD	EW	0.59	0.45	0.12	0.31	1.00	0.92
VB	PRINCESS ANNE RD	DAM NECK RD	S.E. PARKWAY CORRIDOR	EW	0.11	0.04	0.08	0.15	0.33	0.27
VB	PRINCESS ANNE RD	S.E. PARKWAY CORRIDOR	NIMMO PKWY	EW	0.11	0.04	0.08	0.15	0.33	0.27
VB	PRINCESS ANNE RD	NIMMO PKWY	NORTH LANDING RD	EW	0.11	0.04	0.08	0.15	0.07	0.05
VB	PRINCESS ANNE RD	NORTH LANDING RD	HOLLAND RD	EW	0.26	0.15	0.23	0.24	0.32	0.24
VB	PRINCESS ANNE RD	HOLLAND RD	SEABOARD RD	EW	0.26	0.15	0.23	0.24	0.34	0.25
VB	PRINCESS ANNE RD	SEABOARD RD	GENERAL BOOTH BLVD	EW	0.26	0.15	0.23	0.24	0.34	0.25
VB	PRINCESS ANNE RD	GENERAL BOOTH BLVD	SANDBRIDGE RD/UPTON DR	NS	0.02	0.09	0.17	0.09	0.25	0.24
VB	PRINCESS ANNE RD	SANDBRIDGE RD/UPTON DR	SEABOARD RD	NS	0.02	0.09	0.05	0.20	0.14	0.51
VB	PRINCESS ANNE RD	SEABOARD RD	INDIAN RIVER RD	NS	0.02	0.09	0.05	0.20	0.12	0.46
VB	PRINCESS ANNE RD	INDIAN RIVER RD	PUNGO FERRY RD	NS	0.11	0.15	0.12	0.10	0.31	0.32
VB	PRINCESS ANNE RD	PUNGO FERRY RD	NORTH CAROLINA STATE LINE	NS	0.11	0.15	0.12	0.10	0.33	0.39
VB	PROVIDENCE RD	CHESAPEAKE CL	MILITARY HWY	EW	0.17	0.11	0.10	0.15	0.03	0.03
VB	PROVIDENCE RD	MILITARY HWY	INDIAN RIVER RD	EW	0.02	0.16	0.00	0.00	0.00	0.01
VB	PROVIDENCE RD	INDIAN RIVER RD	KEMPSVILLE RD	EW	0.20	0.21	0.23	0.29	0.09	0.19
VB	PROVIDENCE RD	KEMPSVILLE RD	PRINCESS ANNE RD	EW	0.21	0.28	0.44	0.37	0.31	0.26
VB	PUNGO FERRY RD	BLACKWATER RD	PRINCESS ANNE RD	EW	0.07	0.08	0.07	0.04	0.18	0.19
VB	ROSEMONT RD	DAM NECK RD	BUCKNER BLVD	NS	0.29	0.32	0.41	0.41	0.26	0.37
VB	ROSEMONT RD	BUCKNER BLVD	LYNNHAVEN PKWY	NS	0.29	0.32	0.41	0.41	0.40	0.58
VB	ROSEMONT RD	LYNNHAVEN PKWY	HOLLAND RD	NS	0.20	0.29	0.23	0.30	0.10	0.16
VB	ROSEMONT RD	HOLLAND RD	PLAZA TRAIL	NS	0.11	0.08	0.29	0.65	0.17	0.40
VB	ROSEMONT RD	PLAZA TRAIL	I-264	NS	0.54	0.08	0.96	0.65	0.88	0.39
VB	ROSEMONT RD	I-264	VA BEACH BLVD	NS	0.11	0.38	0.29	0.73	0.54	1.09
VB	SALEM RD	NORTH LANDING RD	ELBOW RD	NS	0.13	0.15	0.07	0.13	0.03	0.03
VB	SALEM RD	ELBOW RD	INDEPENDENCE BLVD	NS	0.12	0.20	0.15	0.32	0.12	0.25
VB	SALEM RD	INDEPENDENCE BLVD	LYNNHAVEN PKWY	NS	0.00	0.12	0.00	0.19	0.00	0.09
VB	SALEM RD	LYNNHAVEN PKWY	PRINCESS ANNE RD	NS	0.13	0.16	0.02	0.00	0.03	0.00
VB	SANDBRIDGE RD	PRINCESS ANNE RD	ATWOODTOWN RD	EW	0.22	0.23	0.24	0.28	0.18	0.16
VB	SANDBRIDGE RD	ATWOODTOWN RD	SANDPIPER DR	EW	-	-	-	-	-	-
VB	SEABOARD RD	PRINCESS ANNE RD (AT PUNGO FIELD)	PRINCESS ANNE RD (AT P.A. ELEMENTA	NS	-	-	-	-	-	-
VB	SEABOARD RD	PRINCESS ANNE RD (AT P.A. ELEMENTA	NIMMO PKWY	NS	-	-	-	-	-	-
VB	SHORE DRIVE	NORFOLK CL	DIAMOND SPRINGS RD	EW	0.00	0.11	0.11	0.25	0.02	0.20
VB	SHORE DRIVE	DIAMOND SPRINGS RD	INDEPENDENCE BLVD	EW	0.23	0.14	0.15	0.11	0.14	0.12
VB	SHORE DRIVE	INDEPENDENCE BLVD	PLEASURE HOUSE RD	EW	0.04	0.00	0.25	0.00	0.09	0.00
VB	SHORE DRIVE	PLEASURE HOUSE RD	NORTHAMPTON BLVD	EW	0.26	0.50	0.56	0.75	0.43	0.89
VB	SHORE DRIVE	NORTHAMPTON BLVD	GREAT NECK RD	EW	0.27	0.22	0.47	0.33	0.84	0.57
VB	SHORE DRIVE	GREAT NECK RD	ATLANTIC AVE	EW	0.00	0.00	0.02	0.03	0.01	0.02
VB	UPTON DR	NIMMO PKWY	PRINCESS ANNE RD	NS	0.07	0.07	0.28	0.29	0.33	0.34
VB	VA BEACH BLVD	NEWTOWN RD/NORFOLK CL	WITCHDUCK RD	EW	0.18	0.15	0.37	0.15	0.34	0.11
VB	VA BEACH BLVD	WITCHDUCK RD	INDEPENDENCE BLVD	EW	0.18	0.21	0.50	0.30	0.52	0.46
VB	VA BEACH BLVD	INDEPENDENCE BLVD	CONSTITUTION DR	EW	0.18	0.19	0.34	0.46	0.33	0.95
VB	VA BEACH BLVD	CONSTITUTION DR	ROSEMONT RD	EW	0.18	0.19	0.34	0.46	0.35	1.00
VB	VA BEACH BLVD	ROSEMONT RD	S. PLAZA TRAIL/LITTLE NECK RD	EW	0.19	0.17	0.27	0.51	0.36	0.94

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile) AM Peak Period NB/EB	AM Peak Period SB/WB	PM Peak Period NB/EB	PM Peak Period SB/WB	Total Truck Delay (hours per mile) - 5 am to 7 pm NB/EB	Total Truck Delay (hours per mile) - 5 am to 7 pm SB/WB
VB	VA BEACH BLVD	S. PLAZA TRAIL/LITTLE NECK RD	LYNNHAVEN PKWY	EW	0.19	0.17	0.27	0.51	0.20	0.53
VB	VA BEACH BLVD	LYNNHAVEN PKWY	GREAT NECK RD	EW	0.16	0.04	0.32	0.17	0.12	0.19
VB	VA BEACH BLVD	GREAT NECK RD	LASKIN RD	EW	0.16	0.04	0.32	0.17	0.12	0.18
VB	VA BEACH BLVD	LASKIN RD	FIRST COLONIAL RD	EW	0.89	0.01	0.60	0.07	0.69	0.03
VB	VA BEACH BLVD	FIRST COLONIAL RD	N OCEANA BLVD	EW	0.19	0.09	0.19	0.15	0.20	0.05
VB	VA BEACH BLVD	N OCEANA BLVD	BIRDNECK RD	EW	0.19	0.09	0.19	0.15	0.14	0.03
VB	VA BEACH BLVD	BIRDNECK RD	PACIFIC AVE	EW	0.08	0.05	0.09	0.16	0.05	0.08
VB	VA BEACH BLVD	PACIFIC AVE	ATLANTIC AVE	EW	4.47	2.25	4.56	4.00	4.85	2.57
VB	WESLEYAN DR	NORFOLK CL	BAKER RD	EW	0.47	0.00	0.39	0.05	0.31	0.00
VB	WESLEYAN DR	BAKER RD	DIAMOND SPRINGS RD	EW	0.47	0.00	0.39	0.05	0.25	0.00
VB	WESLEYAN DR	DIAMOND SPRINGS RD	HAYGOOD DR	EW	0.15	0.19	0.00	0.22	0.03	0.16
VB	WEST NECK RD	NIMMO PKWY	NORTH LANDING RD	NS	0.22	1.00	0.26	0.63	0.48	1.73
VB	WEST NECK RD	NORTH LANDING RD	INDIAN RIVER RD	NS	0.30	0.28	0.04	0.00	0.07	0.06
VB	WITCHDUCK RD	PRINCESS ANNE RD	I-264	NS	0.59	0.29	0.23	0.55	0.19	0.62
VB	WITCHDUCK RD	I-264	VA BEACH BLVD	NS	0.38	0.44	0.72	1.77	0.91	2.22
VB	WITCHDUCK RD	VA BEACH BLVD	PEMBROKE BLVD	NS	0.00	0.08	0.00	0.16	0.00	0.05
WMB	BOUNDARY ST	JAMESTOWN RD	FRANCIS ST	NS	0.00	0.00	0.34	0.08	0.03	0.02
WMB	BYPASS RD	RICHMOND RD	YORK CL	EW	0.13	0.12	0.28	0.38	0.23	0.34
WMB	BYPASS RD	ROUTE 132/YORK CL	PAGE ST	EW	0.21	0.12	0.26	0.08	0.25	0.08
WMB	CAPITOL LANDING RD	BYPASS RD	MERRIMAC TRAIL	NS	0.25	0.21	0.16	0.15	0.14	0.12
WMB	COLONIAL NATL HIST PKWY	JAMES CITY CL/RTE 199	YORK CL	EW	-	-	-	-	-	-
WMB	FRANCIS ST	BOUNDARY ST	HENRY ST	EW	0.12	0.25	0.43	0.51	0.24	0.27
WMB	HENRY ST S.	ROUTE 199	FRANCIS ST	NS	0.12	0.11	0.09	0.09	0.02	0.02
WMB	HENRY ST	FRANCIS ST	LAFAYETTE ST	NS	0.00	0.00	0.71	0.28	0.13	0.05
WMB	HENRY ST N.	LAFAYETTE ST	RTE 132Y	NS	0.26	0.26	0.09	0.13	0.08	0.10
WMB	IRONBOUND RD	JAMES CITY CL	DEPUE DR	EW	0.03	0.00	0.14	0.17	0.09	0.05
WMB	IRONBOUND RD	DEPUE DR	LONGHILL RD	EW	0.00	0.23	0.26	0.31	0.05	0.12
WMB	IRONBOUND RD	LONGHILL RD	RICHMOND RD	EW	2.68	0.19	3.53	0.06	2.81	0.02
WMB	JAMESTOWN RD	JAMES CITY CL	RTE 199	EW	0.15	0.11	0.23	0.16	0.19	0.19
WMB	JAMESTOWN RD	RTE 199	JOHN TYLER LN	EW	0.57	0.59	0.55	0.90	0.43	0.53
WMB	JAMESTOWN RD	JOHN TYLER LN	COLLEGE CREEK	EW	0.19	0.05	0.31	0.09	0.26	0.05
WMB	JAMESTOWN RD	COLLEGE CREEK	BOUNDARY ST	EW	0.19	0.05	0.31	0.09	0.26	0.05
WMB	LAFAYETTE ST	RICHMOND RD	HENRY ST	EW	-	-	-	-	-	-
WMB	LAFAYETTE ST	HENRY ST	CAPITOL LANDING RD	EW	-	-	-	-	-	-
WMB	LAFAYETTE ST	CAPITOL LANDING RD	PAGE ST	EW	-	-	-	-	-	-
WMB	MERRIMAC TRAIL	YORK CL (SOUTH)	CAPITOL LANDING RD	NS	0.17	0.55	0.14	1.31	0.08	0.47
WMB	MERRIMAC TRAIL	CAPITOL LANDING RD	YORK CL (NORTH)	NS	0.05	0.14	0.05	0.06	0.04	0.07
WMB	MONTICELLO AVE	IRONBOUND RD	TREYBURN DR	EW	0.10	0.06	0.47	0.41	0.19	0.13
WMB	MONTICELLO AVE	TREYBURN DR	RICHMOND RD	EW	0.10	0.06	0.47	0.41	0.19	0.13
WMB	PAGE ST	BYPASS RD	SECOND ST	NS	0.12	0.21	0.08	0.26	0.08	0.31
WMB	PAGE ST	SECOND ST	YORK ST	NS	0.14	0.08	0.10	0.09	0.08	0.11
WMB	QUARTERPATH RD	ROUTE 199	YORK ST	NS	-	-	-	-	-	-
WMB	RICHMOND RD	JAMES CITY CL	IRONBOUND RD	NS	0.11	0.09	0.22	0.10	0.15	0.08
WMB	RICHMOND RD	IRONBOUND RD	BYPASS RD	NS	0.12	0.13	0.38	0.28	0.33	0.30

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
WMB	RICHMOND RD	BYPASS RD	MONTICELLO AVE	NS	0.08	0.13	0.42	0.38	0.22	0.31
WMB	RICHMOND RD	MONTICELLO AVE	BROOKS ST	NS	0.18	0.19	0.58	0.58	0.32	0.36
WMB	RICHMOND RD	BROOKS ST	BOUNDARY ST	NS	0.18	0.19	0.58	0.58	0.32	0.36
WMB	ROUTE 132	ROUTE 132Y	BYPASS RD/YORK CL	NS	0.59	0.60	0.70	0.55	0.94	0.55
WMB	ROUTE 132Y	ROUTE 132	COLONIAL PKWY	EW	-	-	-	-	-	-
WMB	ROUTE 199	JAMES CITY CL (WEST)	JAMESTOWN RD	EW	0.31	0.22	1.16	0.29	2.17	1.51
WMB	ROUTE 199	JAMESTOWN RD	JAMES CITY CL (EAST)	EW	0.05	0.16	0.13	0.23	0.38	0.90
WMB	SECOND ST	PAGE ST	YORK CL	EW	0.12	0.17	0.17	0.26	0.22	0.27
WMB	TREYBURN DR	MONTICELLO AVE	IRONBOUND RD	NS	-	-	-	-	-	-
WMB	YORK ST	PAGE ST	JAMES CITY CL	EW	0.08	0.14	0.09	0.10	0.09	0.11
YC	BALLARD ST	COLONIAL PKWY	COOK RD	EW	-	-	-	-	-	-
YC	BALLARD ST	COOK RD	COAST GUARD TRAINING CENTER	EW	-	-	-	-	-	-
YC	BIG BETHEL RD	HAMPTON CL	HAMPTON HWY (RTE 134)	NS	0.24	0.12	0.31	0.08	0.09	0.02
YC	BIG BETHEL RD	HAMPTON HWY (RTE 134)	VICTORY BLVD (RTE 171)	NS	0.06	0.23	0.07	0.26	0.00	0.01
YC	BYPASS RD	WILLIAMSBURG CL	WALLER MILL RD	EW	0.13	0.12	0.28	0.38	0.23	0.34
YC	BYPASS RD	WALLER MILL RD	ROUTE 132/WILLIAMSBURG CL	EW	0.13	0.12	0.28	0.38	0.23	0.34
YC	COLONIAL NATL HIST PKWY	WILLIAMSBURG CL	BALLARD ST	EW	0.04	0.02	0.08	0.07	0.02	0.02
YC	COOK RD	GEORGE WASHINGTON HWY	GOOSLEY RD	NS	-	-	-	-	-	-
YC	COOK RD	GOOSLEY RD	BALLARD ST	NS	-	-	-	-	-	-
YC	DENBIGH BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.12	0.03	0.21	0.07	0.21	0.04
YC	EAST YORKTOWN RD	VICTORY BLVD	POQUOSON CL	EW	-	-	-	-	-	-
YC	FORT EUSTIS BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.00	0.00	0.00	0.00	0.00	0.00
YC	FORT EUSTIS BLVD EXT	ROUTE 17	OLD YORK - HAMPTON HWY	EW	-	-	-	-	-	-
YC	GEORGE WASHINGTON HWY	NEWPORT NEWS CL	VICTORY BLVD (RTE 171)	NS	0.18	0.14	1.35	0.28	1.43	0.65
YC	GEORGE WASHINGTON HWY	VICTORY BLVD (RTE 171)	HAMPTON HWY (RTE 134)	NS	0.16	0.50	0.44	0.72	0.81	1.58
YC	GEORGE WASHINGTON HWY	HAMPTON HWY (RTE 134)	DARE RD	NS	0.15	0.13	0.31	0.19	1.13	0.73
YC	GEORGE WASHINGTON HWY	DARE RD	DENBIGH BLVD (RTE 173)	NS	0.15	0.13	0.31	0.19	0.76	0.49
YC	GEORGE WASHINGTON HWY	DENBIGH BLVD (RTE 173)	FORT EUSTIS BLVD (RTE 105)	NS	0.04	0.20	0.26	0.18	0.20	0.47
YC	GEORGE WASHINGTON HWY	FORT EUSTIS BLVD (RTE 105)	COOK RD	NS	0.04	0.20	0.26	0.18	0.19	0.45
YC	GEORGE WASHINGTON HWY	COOK RD	GOOSLEY RD (RTE 238)	NS	0.04	0.20	0.26	0.18	0.15	0.36
YC	GEORGE WASHINGTON HWY	GOOSLEY RD (RTE 238)	GLOUCESTER CL (COLEMAN BRIDGE)	NS	0.03	0.20	0.03	0.17	0.01	0.36
YC	GOODWIN NECK RD	ROUTE 17	WOLF TRAP RD	EW	0.24	0.21	0.18	0.31	0.40	0.33
YC	GOOSLEY RD	OLD WILLIAMSBURG RD	CRAWFORD RD	EW	0.29	0.17	1.24	0.08	0.25	0.04
YC	GOOSLEY RD	CRAWFORD RD	ROUTE 17	EW	0.29	0.17	1.24	0.08	0.25	0.04
YC	GOOSLEY RD	ROUTE 17	COOK RD	EW	-	-	-	-	-	-
YC	HAMPTON HWY	ROUTE 17	VICTORY BLVD (RTE 171)	NS	0.15	0.58	0.25	0.49	0.05	0.36
YC	HAMPTON HWY	VICTORY BLVD (RTE 171)	BIG BETHEL RD (RTE 600)	NS	0.28	0.05	0.42	0.11	0.24	0.06
YC	HAMPTON HWY	BIG BETHEL RD (RTE 600)	NCL HAMPTON	NS	0.15	0.13	0.22	0.04	0.08	0.04
YC	I-64	JAMES CITY CL	RTE 199/646	EW	0.00	0.00	0.06	0.01	0.09	0.04
YC	I-64	RTE 199/646	RTE 143	EW	0.01	0.00	0.00	0.00	0.02	0.00
YC	I-64	RTE 143	RTE 199 (EAST OF WILLIAMSBURG)	EW	0.00	0.04	0.00	0.00	0.00	0.08
YC	I-64	RTE 199 (EAST OF WILLIAMSBURG)	GROVE CONNECTOR	EW	0.00	0.04	0.00	0.00	0.00	0.11
YC	I-64	GROVE CONNECTOR	JAMES CITY CL	EW	0.02	0.02	0.00	0.01	0.02	0.04
YC	LIGHTFOOT RD	ROUTE 60	MOORETOWN RD	EW	-	-	-	-	-	-

Appendix C – Average and Total Weekday 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.	Facility Name	Segment From	Segment To	Dir.	Average Truck Delay (minutes per mile)				Total Truck Delay (hours per mile) - 5 am to 7 pm	
					AM Peak Period		PM Peak Period			
					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
YC	MERRIMAC TRAIL	JAMES CITY CL	BUSCH GARDENS INTERCHANGE	NS	0.08	0.06	0.01	0.04	0.05	0.06
YC	MERRIMAC TRAIL	BUSCH GARDENS INTERCHANGE	ROUTE 199/JAMES CITY CL	NS	0.07	0.02	0.08	0.00	0.14	0.00
YC	MERRIMAC TRAIL	PENNIMAN RD/JAMES CITY CL	SECOND ST	NS	0.05	0.00	0.10	0.14	0.22	0.26
YC	MERRIMAC TRAIL	SECOND ST	WILLIAMSBURG CL	NS	0.17	0.55	0.14	1.31	0.11	1.04
YC	MERRIMAC TRAIL	WILLIAMSBURG CL	ROUTE 132	NS	0.05	0.14	0.05	0.06	0.04	0.07
YC	MOORETOWN RD	WALLER MILL RD	AIRPORT RD	NS	-	-	-	-	-	-
YC	MOORETOWN RD	AIRPORT RD	OLD MOORETOWN RD	NS	-	-	-	-	-	-
YC	MOORETOWN RD	OLD MOORETOWN RD	ROUTE 199	NS	-	-	-	-	-	-
YC	MOORETOWN RD	ROUTE 199	LIGHTFOOT RD	NS	-	-	-	-	-	-
YC	NEWMAN RD	I-64	FENTON MILL RD	EW	-	-	-	-	-	-
YC	OLD WILLIAMSBURG RD	NEWPORT NEWS CL	BAPTIST RD/MAIN RD	EW	0.05	0.13	0.04	0.14	0.06	0.19
YC	OLD WILLIAMSBURG RD	BAPTIST RD/MAIN RD	GOOSLEY RD	EW	0.05	0.13	0.04	0.14	0.05	0.17
YC	PENNIMAN RD (RTE 641)	ROUTE 199	COLONIAL PKWY	EW	0.63	0.05	0.05	0.07	0.06	0.03
YC	POCAHONTAS TRAIL	JCC LINE @ RTE 199	KINGSMILL RD	EW	0.00	0.02	0.03	0.10	0.02	0.00
YC	POCAHONTAS TRAIL	KINGSMILL RD	BUSCH GARDENS INTERCHANGE	EW	0.00	0.02	0.03	0.10	0.02	0.25
YC	POCAHONTAS TRAIL	BUSCH GARDENS INTERCHANGE	JAMES CITY CL	EW	0.12	0.17	0.19	0.14	0.72	0.61
YC	ROUTE 132	BYPASS RD/WILLIAMSBURG CL	ROUTE 143	NS	0.00	0.00	0.02	0.00	0.00	0.00
YC	ROUTE 143	ROUTE 132	I-64	NS	0.04	0.12	0.00	0.10	0.03	0.10
YC	ROUTE 199	JCC LINE (WESTSIDE)	MOORETOWN RD	EW	0.06	0.05	0.00	0.00	0.01	0.02
YC	ROUTE 199	MOORETOWN RD	I-64	EW	0.03	0.01	0.00	0.00	0.00	0.00
YC	ROUTE 199	RTE 60/RTE 143/JCC LINE	I-64	EW	0.02	0.11	0.01	0.00	0.05	0.02
YC	ROUTE 199	I-64	MARQUIS PKWY	EW	0.04	0.04	0.13	0.03	0.21	0.09
YC	ROUTE 199	MARQUIS PKWY	RTE 641 (PENNIMAN RD)	EW	0.04	0.04	0.13	0.03	0.11	0.04
YC	SECOND ST	WILLIAMSBURG CL	MERRIMAC TRAIL	EW	0.12	0.17	0.17	0.26	0.22	0.27
YC	VICTORY BLVD	NEWPORT NEWS CL	ROUTE 17	EW	0.10	0.01	1.34	0.11	0.94	0.18
YC	VICTORY BLVD	ROUTE 17	HAMPTON HWY (RTE 134)	EW	0.18	0.00	0.86	0.66	0.68	0.27
YC	VICTORY BLVD	HAMPTON HWY (RTE 134)	BIG BETHEL RD (RTE 600)	EW	0.00	0.00	1.17	0.03	0.12	0.00
YC	VICTORY BLVD	BIG BETHEL RD (RTE 600)	CARYS CHAPEL RD (RTE 782)	EW	0.10	0.51	0.26	0.19	0.22	0.32
YC	VICTORY BLVD	CARYS CHAPEL RD (RTE 782)	POQUOSON CL	EW	0.10	0.51	0.26	0.19	0.14	0.21
YC	WALLER MILL RD	ROUTE 60	MOORETOWN RD	NS	-	-	-	-	-	-

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