

## U.S. 13 Multimodal Corridor

*Traversing the eastern edge of Virginia from North Carolina to the Eastern Shore of Maryland, the U.S. 13 Multimodal Corridor connects to the national freight transportation system via several highway, rail, seaport, and airport facilities, including I-64, U.S. 17, U.S. 58, and U.S. 460; Norfolk Southern and CSX rail lines; many marine terminals in the Hampton Roads area; and Norfolk International Airport. The U.S. 13 Corridor's defining economic characteristic is the relative size of its tourism (leisure and hospitality), construction, and retail industries. Major coastal destinations, including Virginia Beach and the Delmarva Peninsula, contribute to the strength of the tourism industry in the Corridor. Just nine percent of tonnage moving within the U.S. 13 Corridor is pass-through freight.*

*Recommendations to improve the flow of freight through the U.S. 13 Corridor include, among others, constructing the U.S. 460 Expressway, constructing the Hampton Roads Third Crossing, building the I-564 Intermodal Connector, and widening U.S. 13 between I-664 and the Suffolk Bypass.*

### ■ Geographic Definition

**Functional Classification: U.S. Route**



U.S. 13 (U.S. 13) is a north-south highway that runs from Morristown, Pennsylvania to Fayetteville, North Carolina. Along the way, it passes through the eastern shore of Virginia and crosses over the Chesapeake Bay Bridge Tunnel into Hampton Roads. It leaves Virginia through Suffolk, and heads to Greenville, North Carolina. The U.S. 13 Corridor is comprised of the following jurisdictions (see Figure 1):

#### *Cities*

- Chesapeake
- Franklin
- Norfolk
- Portsmouth
- Suffolk
- Virginia Beach

#### *Counties*

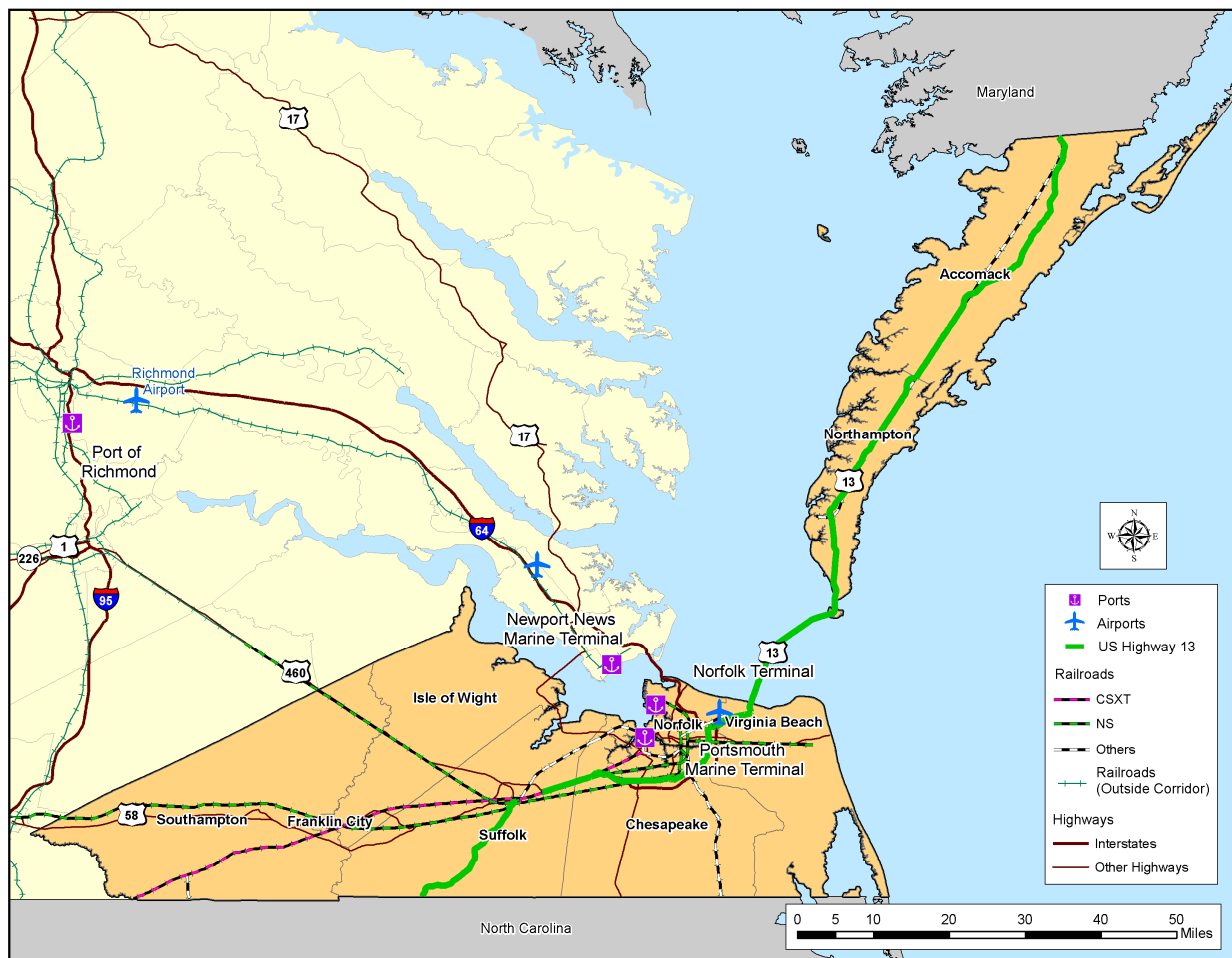
- Accomack
- Isle of Wight
- Northampton
- Southampton

**Significant rail facilities** within the Corridor include portions of the CSX (National Gateway) and Norfolk Southern (Heartland Corridor) east-west main lines as well as the Commonwealth Railway that serves the APM Terminal and Craney Island. Other railroads in the U.S. 13 Corridor include the Bay Coast Railroad, the Chesapeake and Albemarle Railroad, and the Norfolk and Portsmouth Beltline.

Many marine facilities are located in the U.S. 13 Corridor in and around Hampton Roads. Over 5,000 commercial vessel sailings occur annually destined for Hampton Roads. More than 10,000 sailings occur annually when military vessels and commercial vessels destined for Baltimore are included. The recently inaugurated “64 Express” barge service (a Marine Highway Initiative) now operates between Hampton Roads and Richmond.

Air cargo facilities at Norfolk International Airport are located within the U.S. 13 Corridor.

Figure 1. The U.S. 13 Multimodal Corridor



## ■ Economic Profile

The growth of freight volumes in Virginia and the U.S. 13 Corridor will be influenced by the interplay of a variety of factors that will have a bearing on transportation demand. These factors include population growth, changes in national and global logistics patterns, and the evolution of the Corridor’s industry structure. Industries, ranging from manu-

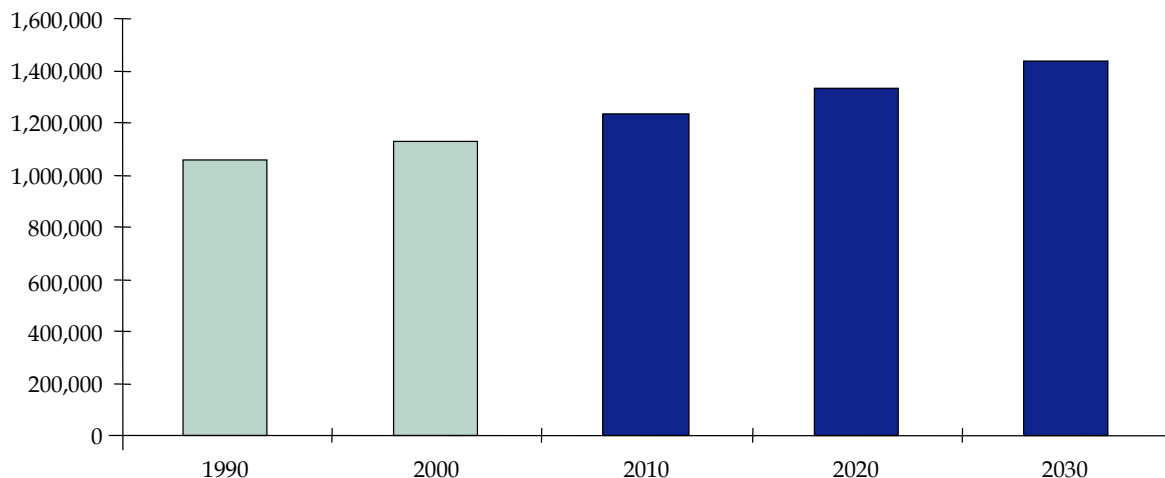
facturing to construction have specific freight transportation needs, and their growth will affect freight transportation demand on the U.S. 13 Corridor. U.S. 13 is influenced by diverse economic factors, including the port, distribution, and warehousing activities in Hampton Roads, and Delmarva Peninsula tourist attractions. U.S. 13 also serves as a bypass for East Coast freight traffic wishing to avoid urban congestion in the Northern Virginia, Washington, D.C., and Baltimore areas. U.S. 13 represents an important component of Virginia's transportation system and its ability to carry freight efficiently will affect, positively or negatively, the overall competitiveness of the State's economy. It also is a crucial north-south corridor, serving Maryland's Eastern Shore and Delaware. The population growth and industry trends that will influence the freight transportation demands placed on the U.S. 13 Corridor are reviewed in this section.

## Population Growth

Population growth has a direct impact on freight transportation demand. More people take more trips, require more services, and need more goods to sustain themselves. The U.S. 13 Corridor is experiencing moderate population growth, 5.0 percent from 2000 to 2007, a shade slower than the nation's (+7.2 percent). As of 2007, the U.S. 13 Corridor was home to 1,186,424 residents and accounted for 15.4 percent of Virginia's population. According to state population projections, the U.S. 13 Corridor is expected to add some 246,366 people during the next 23 years (see Figure 2) and will reach a population of 1,432,790 by 2030 (this growth is the equivalent to adding the present-day population of the City of Norfolk to the Corridor). The rate of projected population growth in the U.S. 13 Corridor through 2030 is higher than the nation's but lower than Virginia's.

The U.S. 13 Corridor's population growth will put additional pressure on the facility. In particular, the Corridor must accommodate the mobility, consumer, and logistics needs of an increasing number of residents, workers, and businesses, and do so reliably, safely, and efficiently within several heavily settled suburban and outer-suburban environments. For these reasons, the decision-making process regarding the future of freight transportation-related infrastructure and services on U.S. 13 needs to incorporate and respond to these growth conditions.

**Figure 2. Historic and Forecast Population Growth  
1990-2030**

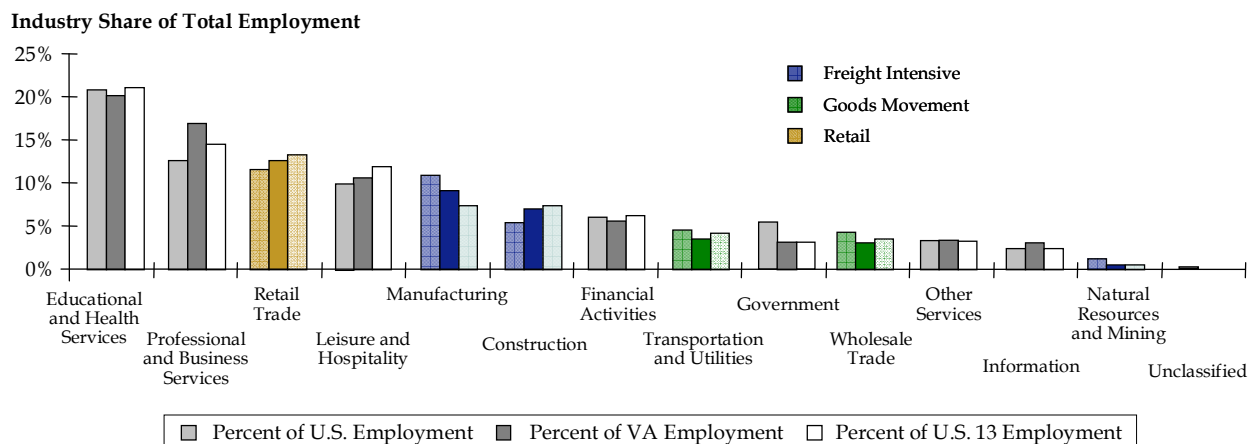


Source: Virginia Employment Commission.

### Economic Structure

The U.S. 13 Corridor’s defining economic characteristic compared to the nation and Virginia is the relative size of its tourism (leisure and hospitality), construction, and retail industries. Major coastal destinations, including Virginia Beach and the Delmarva Peninsula, contribute to the strength of the tourism industry in the Corridor. In 2005, leisure and hospitality accounted for 12 percent of the Corridor’s jobs compared to 10 percent and 11 percent, respectively, for the nation and Virginia. Figure 3 illustrates the contribution of each major sector to total jobs in the U.S. 13 Corridor and the relatively large size of the Corridor’s leisure and hospitality sector easily can be seen. The Corridor’s steady population growth, combined with a substantial tourism industry, stimulate freight movements related to construction materials and consumer goods (to support retail operations). Both retail- and tourism-related businesses, such as hotels and restaurants, require a regular flow of deliveries to keep them supplied with the materials and merchandise they need to operate. Trucking, in particular, is crucial to these industries.

**Figure 3. Economic Structure**  
*Shares of Employment by Major Industry Sector,  
 United States, Virginia, and U.S. 13 Corridor*



Source: Virginia Employment Commission and U.S. Department of Labor.

With services-related industries (tourism, retail, and education and health care commanding a large part of its jobs), the U.S. 13 Corridor's economy is generally less dependent than the U.S. and Virginia economies on manufacturing. However, food production and transportation-related manufacturing in the Hampton Roads area, as well as poultry processing on the Delmarva Peninsula make manufacturing an important overall contributor to the Corridor's economy. Manufacturing is more dependent on transportation than most other industry sectors and counts on the reliability and connectivity provided by the road, air, and rail networks to produce and deliver products. Manufacturers keep inventories low to reduce costs and this requires a dependable, multimodal supply chain. The use of U.S. 13 as a reliable and time-efficient connector to airports, markets, and the Interstate system is crucial to the success and competitiveness of the U.S. 13 Corridor's manufacturers.

## Concentration of Goods Movement and Freight-Intensive Industries

The relationship between freight transportation activity and the U.S. 13 Corridor's economy is strong and multifaceted. For example, "freight-intensive" industries, including manufacturing, construction, and agriculture rely heavily on the efficient movement of goods, both for the outbound shipments of their products to reach worldwide markets, as well as for inbound shipments of intermediate goods required for production. These freight-intensive industries contributed some 64,000 jobs to the Corridor in 2005, accounting for about 16 percent of the Virginia total (see Figure 4). In addition to freight transportation's importance to these freight-intensive industries, efficient multimodal freight transportation systems can help to minimize the cost of consumer goods, benefiting consumers and the retail industry (also one of the Corridor's largest employers). In 2005, the U.S. 13 Corridor also included some 64,000 retail jobs. Transportation infrastructure improvements that reduce costs by either: 1) lowering travel times; or by 2) increasing the reliability of on-time shipments translate directly into benefits for the U.S. 13 and Virginia economies. Finally, the "goods movement" industry (e.g., trucking, distribution, ports, airports, etc.) also provides a significant number of jobs and income to U.S. 13 Corridor residents working for the businesses that process, ship, and deliver goods bound for destinations within Virginia, as well as to other locations within the United States and throughout the world. The goods movement industry employed nearly 26,000 people in the U.S. 13 Corridor in 2005. The U.S. 13 Corridor's three major distribution facilities capitalizing on proximity to the Hampton Roads' port facilities. As such, U.S. 13 also provides a crucial link for port-related cargo shipments to the major population centers in the Northeast, bypassing the congested Northern Virginia-Washington, D.C. area. Combined, the freight-intensive, retail, and goods movement industries account for 32 percent of total U.S. 13 employment, slightly higher than the 31 percent average for Virginia, overall (see Figures 5 and 6).

### Freight-Related Clusters

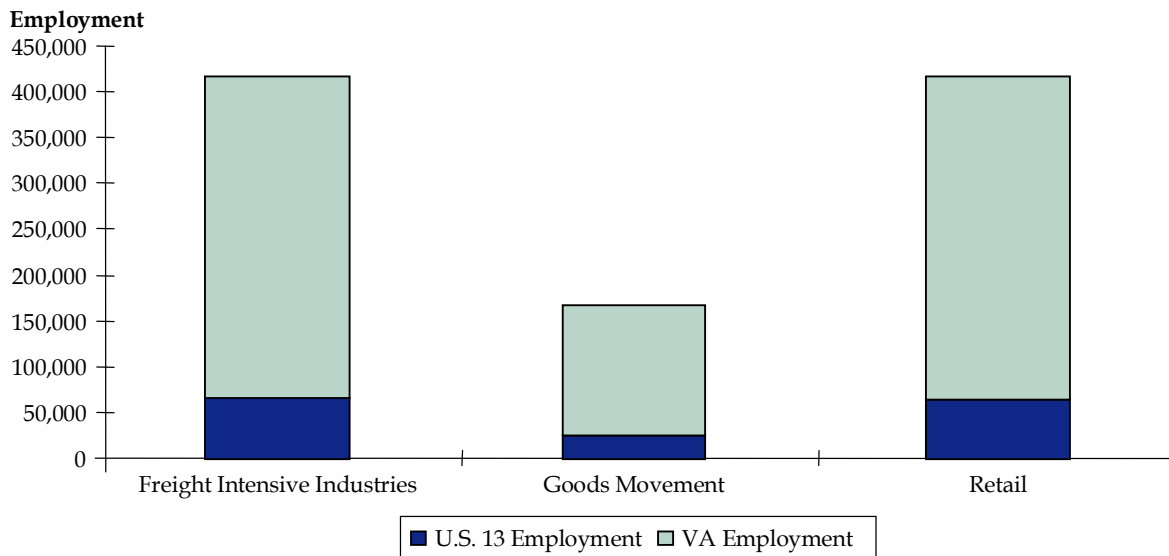
While an efficient multimodal transportation system is important to every sector of the economy, certain sectors are particularly dependent on the transportation system for freight movement. These sectors are grouped into three clusters as defined below:

**Freight-Intensive Industries** includes most subsectors within natural resources and mining, all construction, and manufacturing.

**Goods Movement** includes the wholesale trade sector and some subsectors within transportation and utilities.

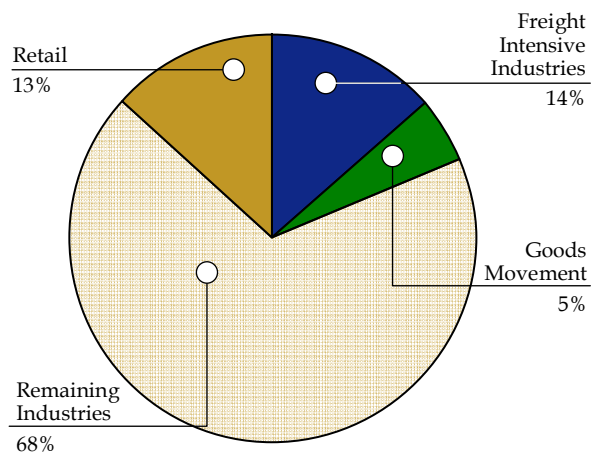
**Retail Trade** includes all subsectors within the retail trade sector.

**Figure 4. Employment by Freight-Related Cluster in U.S. 13 Corridor and Virginia**



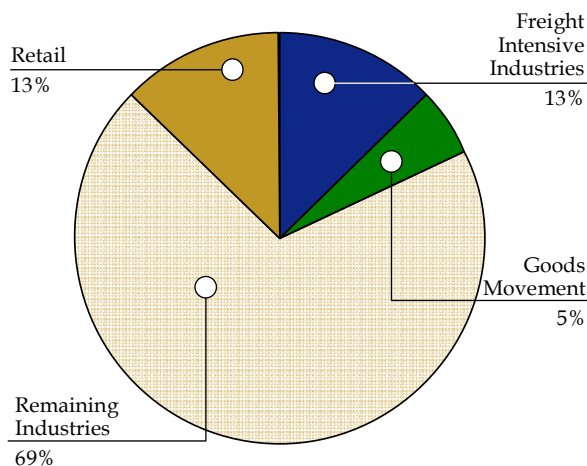
Source: Virginia Employment Commission.

**Figure 5. Share of Employment by Cluster U.S. 13 Corridor**



Source: Virginia Employment Commission.

**Figure 6. Share of Employment by Cluster Virginia**



## ■ Commodity Profile

The two primary measures of freight transportation activity are tonnage and value. Value is a good indicator of economic activity associated with freight transportation, while ton-

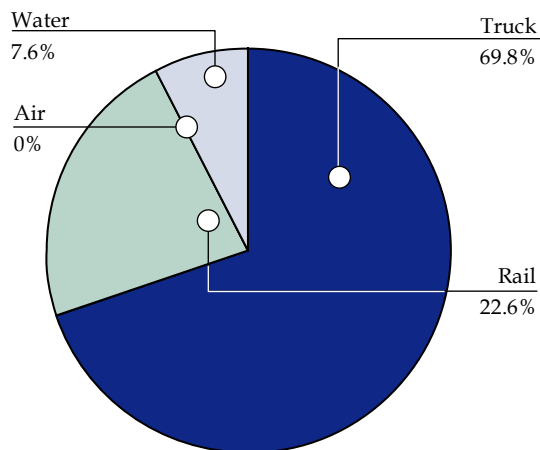
nage is a good indicator of the demand that freight movement places on transportation infrastructure.

Freight also moves in different directions:

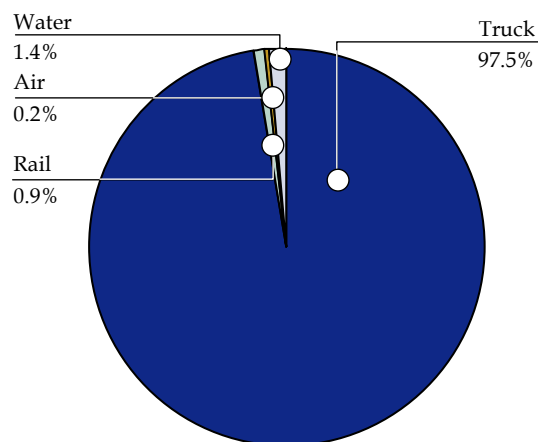
- Inbound freight is moved from somewhere outside of the U.S. 13 Corridor to a destination within the U.S. 13 Corridor.
- Outbound freight is moved from somewhere within the U.S. 13 Corridor to a destination outside of the U.S. 13 Corridor.
- Internal freight is moved from one point within the U.S. 13 Corridor to another point within the U.S. 13 Corridor.
- Pass-through freight is moving from an origin outside of the U.S. 13 Corridor to a destination outside the U.S. 13 Corridor while at some point passing through the Corridor.

Figures 7 and 8 below describe show that about 70 percent of the total tonnage moving into, out of, within, or through the U.S. 13 Corridor is hauled by trucks with most of the remaining hauled by rail. A large majority of the value (98 percent) is hauled by trucks.

**Figure 7. Mode Share of Total Corridor Freight Tonnage 2004**

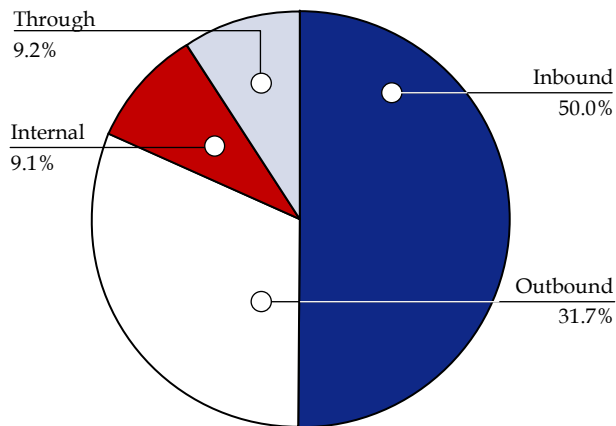


**Figure 8. Mode Share of Total Corridor Freight Value 2004**

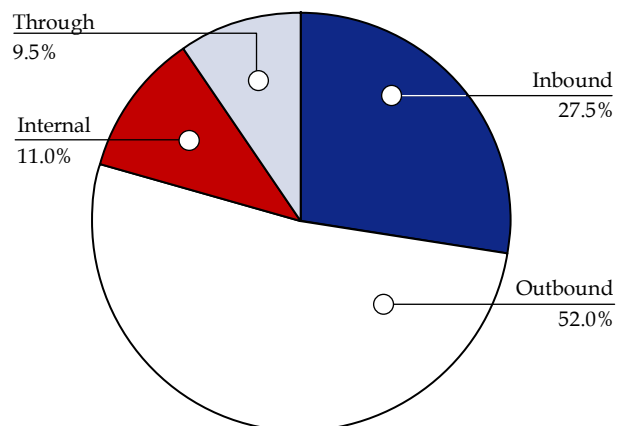


Figures 9 and 10 describe the direction of travel for Virginia's domestic commodities along the U.S. 13 Corridor, based on tonnage and on value.

**Figure 9. Directional Proportion of Total Corridor Freight Tonnage 2004**



**Figure 10. Directional Proportion of Total Corridor Freight Value 2004**



By tonnage, the leading commodities moving domestically are petroleum and coal products followed by secondary traffic (U.S. warehouse and distribution); nonmetallic minerals; coal; and food and kindred products. By value, secondary traffic is by far the leading commodity followed by transportation equipment.

**Table 1. Critical Commodities Inbound, Outbound, and Internal on U.S. 13 Corridor by Tons 2004**

Commodity	Tons	Percent Share
Petroleum/Coal	19,068,376	14%
Secondary Moves	17,080,190	13%
Nonmetallic Minerals	16,535,788	12%
Coal	15,819,357	12%
Food/Kindred	10,486,523	8%
All Others	54,439,652	41%
<b>Total</b>	<b>133,429,886</b>	<b>100%</b>

**Table 2. Critical Commodities Inbound, Outbound, and Internal on U.S. 13 Corridor by Value**  
2004

Commodity	Dollars	Percent Share
Secondary Moves	\$111,244,814,892	38%
Transportation Equipment	\$59,269,976,398	20%
Tobacco	\$22,744,690,470	8%
Machinery Excluding Electrical	\$18,279,601,648	6%
Petroleum/Coal	\$9,502,657,134	3%
All Others	\$68,925,376,987	24%
<b>Total</b>	<b>\$289,967,117,529</b>	<b>100%</b>

For trade in Virginia's critical commodities - that is, inbound and outbound tonnage, excluding pass-through traffic - the leading trading partner regions are mainly within the Commonwealth followed by the southern east coast states and the Illinois/Indiana/Ohio/Michigan region.

**Table 3. Trading Partners by Tonnage for the U.S. 13 Corridor**  
**Domestic Inbound and Outbound**  
2004

Partner Region	Tons	Percent
Rest of Virginia	43,405,178	37%
South Atlantic	16,624,103	14%
East North Central	11,078,088	9%
Europe	10,735,111	9%
New England	8,128,791	7%
East South Central	7,447,072	6%
Asia	5,723,980	5%
Middle Atlantic	4,976,504	4%
South America	2,884,002	2%
Canada/Mexico	2,060,802	2%
All Others	5,342,160	5%
<b>Grand Total</b>	<b>118,495,791</b>	<b>100%</b>

**Table 4. Trading Partners by Value for the U.S. 13 Corridor**  
**Domestic Inbound and Outbound**  
 2004

<b>Partner Region</b>	<b>Dollars</b>	<b>Percent</b>
Rest of Virginia	\$89,571,578,746	34%
South Atlantic	\$33,469,157,434	13%
East North Central	\$31,670,728,337	12%
Europe	\$20,835,295,586	8%
New England	\$18,371,464,496	7%
East South Central	\$16,626,802,392	6%
Asia	\$14,607,374,497	6%
Middle Atlantic	\$11,737,728,988	4%
South America	\$7,954,110,035	3%
Canada/Mexico	\$4,358,331,857	2%
All Others	\$12,096,858,587	5%
<b>Grand Total</b>	<b>\$261,299,430,956</b>	<b>100%</b>

## ■ Transportation System Facilities and Performance

The U.S. 13 Corridor includes a highway and freight rail network with a center of activity in the Hampton Roads area. Major freight transportation connections along U.S. 13 include I-64 and U.S. Route 460 (in Hampton Roads).

**Table 5. U.S. 13 Intermodal Connections**

Significant Roadway Connections	Significant Airport Connections	Significant Port Connections
<ul style="list-style-type: none"> <li>• I-664</li> <li>• I-64</li> <li>• I-464</li> <li>• I-264</li> <li>• U.S. 460</li> <li>• U.S. 17</li> <li>• U.S. 58</li> <li>• U.S. 60</li> </ul>	<ul style="list-style-type: none"> <li>• Norfolk International Airport</li> <li>• Hampton Roads Executive Airport</li> <li>• Accomack County Airport</li> </ul>	<ul style="list-style-type: none"> <li>• Norfolk International Terminals</li> <li>• Portsmouth Marine Terminals</li> <li>• Newport News Marine Terminal</li> <li>• APM Maersk Terminal</li> <li>• Craney Island Marine Terminal</li> </ul>

### Highway

U.S. 13 is an undivided two-lane highway near the North Carolina border, an alternating four-, six-, and eight-lane highway through the Hampton Roads area, a divided four-lane highway over the bridge portions of the Chesapeake Bay Bridge Tunnel (undivided two-lane highway through the tunnel portions) and a divided four-lane highway through Accomack County to the Maryland border. The number of lanes, along with roadway geometry, intersection spacing, etc., determines how much traffic a roadway segment can accommodate in a given period of time and provides a sense of the capacity of the roadway. A summary of the lane widths of U.S. 13 is shown in Table 6.

**Table 6. U.S. 13 Summary of Lane Widths**

<b>Section</b>	<b>Length (Miles)</b>	<b>Width (Total Lanes)</b>
North Carolina Border to VA 32	13.3	2
VA 32 to Washington Street	3.7	4
Washington Street	4.2	3
Washington Street to I-664	5.8	6
I-664 to Battlefield Boulevard	10.1	4
Battlefield Boulevard to Indian River Road	3.5	6
Indian River Road to Lowery Road	3.2	8
Lowery Road to Northampton	0.8	5
Military Highway to I-64	0.7	6
I-64 to Diamond Springs Road	1.3	8
Diamond Springs Road to Shore Drive	3.2	6
Shore Drive to 1 <sup>st</sup> Tunnel	4.2	4
1 <sup>st</sup> Tunnel	1.6	2
1 <sup>st</sup> Tunnel to 2 <sup>nd</sup> Tunnel	14.0	4
2 <sup>nd</sup> Tunnel	1.5	2
2 <sup>nd</sup> Tunnel to Maryland Border	76.8	4

Virginia maintains a statewide vehicle count program on its major highways, including collection and/or estimation of truck counts and percentages. Figure 11 below shows the average Virginia AADT (all vehicle types) for segments of U.S. 13 as columns, and the corresponding average truck percentages as points.

U.S. 13 AADT varied from just under 11,000 in Northampton County to over 46,000 in the City of Norfolk in 2007. Truck volume is moderately heavy on U.S. 13 with the majority of truck traffic occurring within the Hampton Roads area.

**Figure 11. Average AADT and Truck Percentages**

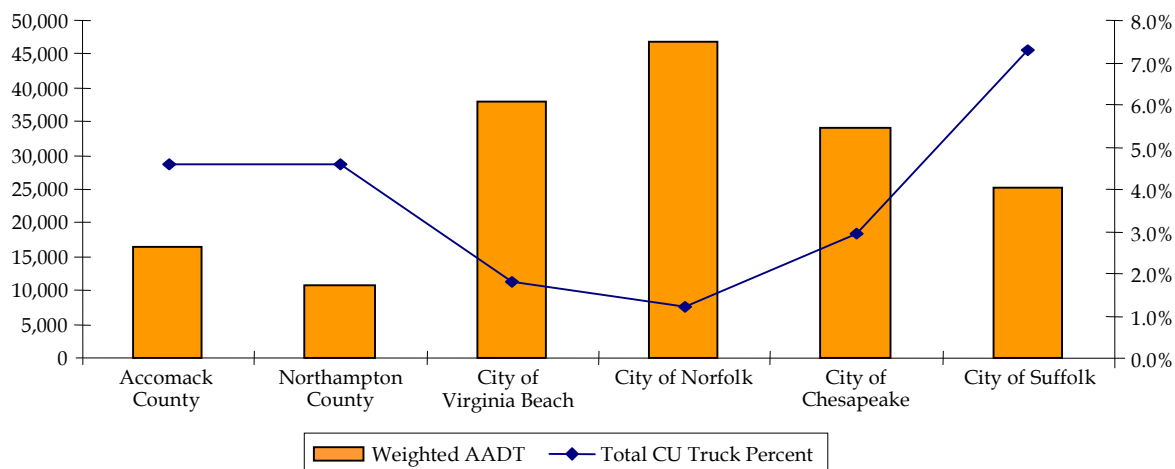


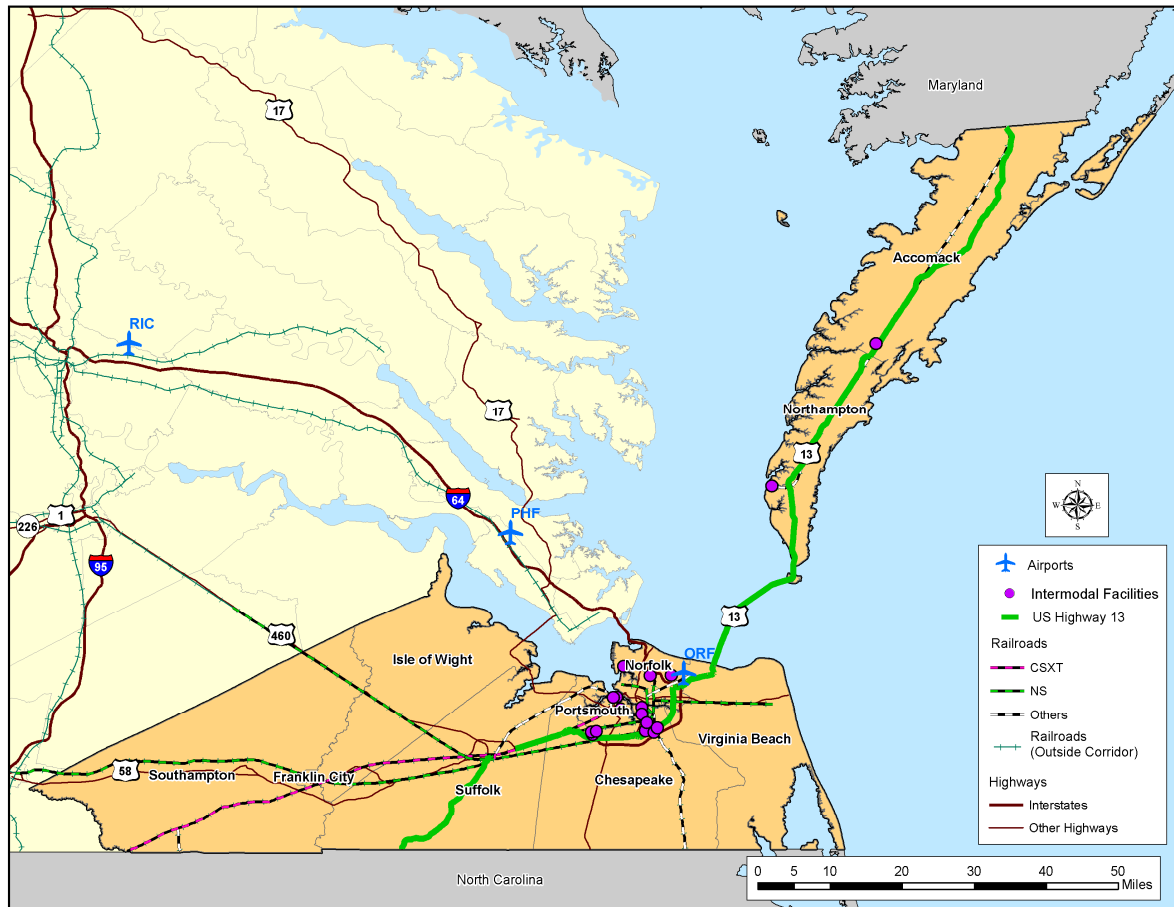
Table 7 below describes average bridge and pavement condition and performance across all U.S. 13 highway segments. The reference “IRI” stands for the International Roughness Index. IRI measures the cumulative deviation from a smooth surface in inches per mile – in other words, the sum of all the up-and-down road imperfections, from potholes to barely noticeable bumps or road roughness, which a vehicle will encounter over one mile. The ranges of values correspond to the pavement condition as follows (IRI in inches per mile): very good (0 to 85); good (86 to 110); fair (111 to 140); poor (141 to 175); very poor (more than 175). There also are road condition measures that apply to bridges; as presented in the National Bridge Inventory, “red” is the lowest of the three levels of “General Condition Ratings” that can be assigned to a bridge. Overall U.S. 13’s pavement quality ranks in the very poor category. Its average rating is 265.

**Table 7. U.S. 13 Road Condition by County**

Physical Jurisdiction	2003 Weighted IRI	Percent of Bridges in “Red” Condition
<b>Overall</b>	<b>265</b>	<b>10.0%</b>
Accomack County	185	0%
City of Chesapeake	426	50%
City of Norfolk	297	0%
City of Suffolk	178	0%
City of Virginia Beach	225	0%
Northampton County	200	0%

Another important aspect of a freight transportation system is its intermodal terminal network. These facilities provide the interface between freight rail and other transportation modes, including highway and water, and permit the transfer of goods from one mode to another. Figure 12 displays the rail-highway intermodal terminals along U.S. 13, as well as additional system facilities.

**Figure 12. U.S. 13 Intermodal Facilities**



## Rail

The Commonwealth of Virginia's rail system is operated by 12 freight railroads and two passenger operators. Of the 12 freight railroads, two are Class I national railroads and the remaining ten are Class III or terminal/switching railroads (see Table 8).

**Table 8. Virginia’s Freight Railroads**

Freight Railroad Name	Class I	Class III	Terminal/ Switching	Miles Operated in Virginia
Norfolk Southern Corporation	√			2,100
CSX Transportation	√			1,051
Buckingham Branch Railroad		√		278
Bay Coast Railroad		√		68
Chesapeake and Albemarle Railroad		√		29
Winchester and Western Railroad		√		26
Commonwealth Railway, Inc.		√		17
North Carolina and Virginia Railroad			√	4
Norfolk and Portsmouth Belt Line			√	4

The majority of Virginia’s freight rail track infrastructure is in the possession of the two Class I railroads, Norfolk Southern (approximately 60 percent) and CSX (approximately 30 percent). The U.S. 13 Corridor includes portions of the CSX (National Gateway) and Norfolk Southern (Heartland Corridor) east-west main lines. The Commonwealth Railway serves the APM Terminal and Craney Island. Other railroads providing service in the U.S. 13 Corridor include the Bay Coast Railroad, the Chesapeake and Albemarle Railroad, and the Norfolk and Portsmouth Beltline.

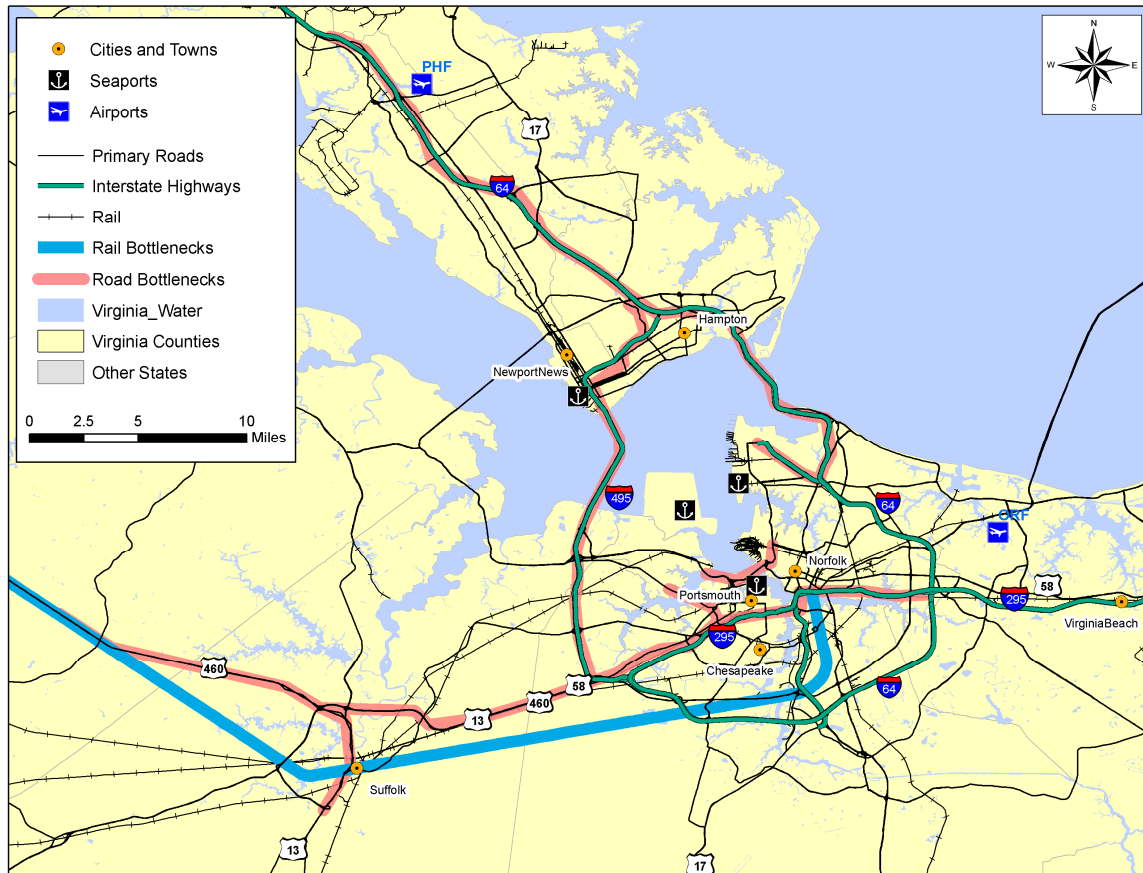
### **Bottlenecks**

Virginia’s freight transportation system contains segments that are stressed or over capacity to the point that they are defined as bottlenecks. Bottlenecks – whether existing or emerging – prohibit the efficient flow of freight through the system and across the Commonwealth. Currently, Virginia’s primary freight transportation bottlenecks generally correspond to:

- Major urbanized regions with high levels of congestion;
- Intersections of major highway arteries; and
- Rail system points where infrastructure provides inadequate freight transportation capacity or dimension, especially where growing freight and passenger needs must be accommodated over shared infrastructure.

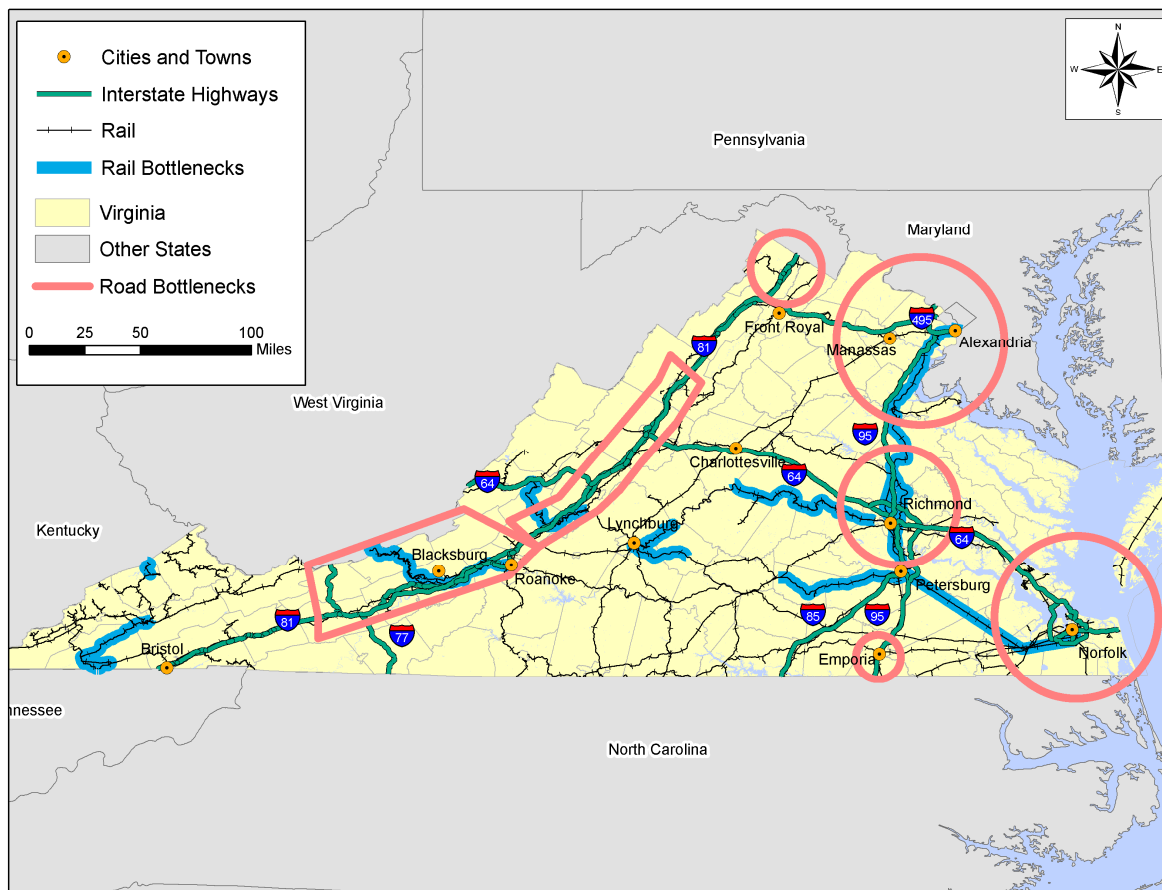
No major highway bottlenecks exist along U.S. 13 with the exception of the section between Suffolk and I-664 in Chesapeake. This is where U.S. 58 and U.S. 460 run concurrent with U.S. 13. This section is a major highway connection between Suffolk and the Cities of Chesapeake, Portsmouth, Norfolk, and Virginia Beach and is area is shown in red ink Figure 13.

**Figure 13. Hampton Roads Freight Transportation Bottlenecks**



Other bottlenecks occur on the highways and railroad lines within and beyond the U.S. 13 Corridor as shown in red and blue in Figure 14.

**Figure 14. Virginia Freight Transportation Bottlenecks**

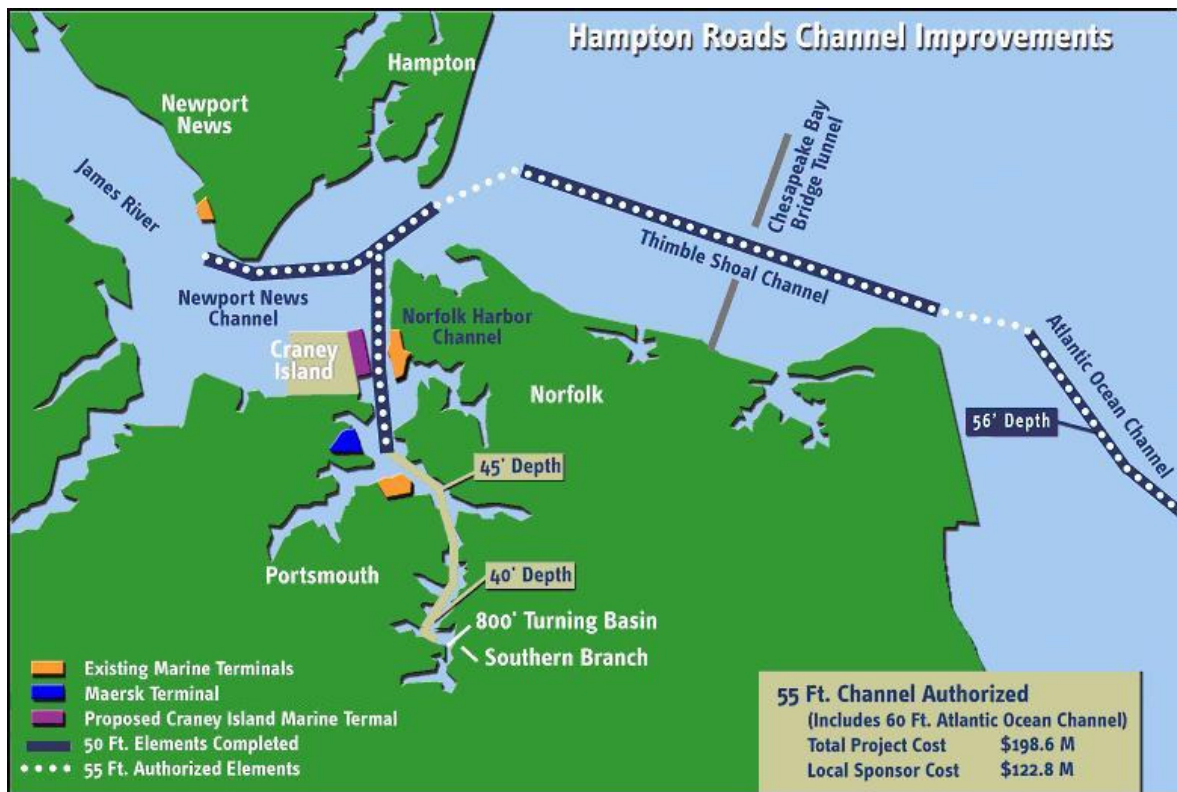


## Waterways and Ports

Virginia boasts the single best water transportation asset on the East Coast of the United States: the Chesapeake Bay and its tributaries. Cargo terminals are located predominately along the natural deepwater harbors formed by the confluence of the rivers Elizabeth, James, and Nansemond. The marine terminals at Hampton Roads are the only U.S. facilities on the Atlantic coast capable of handling next-generation “mega containerships,” which require drafts of 50 feet or more.

Benefits from this natural harbor extend past the Hampton Roads area. Waterborne freight entering Hampton Roads continues on to the Port of Richmond up the James River and north to Baltimore and other major destinations. The “64 Express” service, for example, makes use of the navigable James River to move containers by barge between Richmond and Hampton Roads. There are over 350 miles of navigable channels with drafts exceeding 22 feet. Over 5,000 commercial vessel sailings occur annually destined for Hampton Roads. More than 10,000 sailings occur annually when military vessels and commercial vessels destined for Baltimore are included.

**Figure 15. Hampton Roads Navigation Channels With Locations of Virginia Port Authority and Maersk Terminals**



The U.S. 13 Corridor accesses the terminal facilities of Hampton Roads from the north and south. It provides a route for trucks to and from the Hampton Roads area and Eastern Shore of Virginia and Maryland and points north.

## Distribution Centers

Virginia has experienced marked growth in large-scale warehousing development often associated with high-volume, or “big box” importers. These importers’ supply chains are highly dependent upon the uninterrupted flow of cargo – primarily containerized – through Virginia’s ports, and subsequently through its highways and rail connections. Three major distribution centers are located along the U.S. 13 Corridor in the Hampton Roads area. QVC has the largest distribution center along the route at 1,200,000 square feet, with Sysco Food Systems and Dollar Tree providing 285,000 and 514,000 square feet, respectively.

**Table 9. U.S. 13 Warehouse and Distribution Facilities**

Company	Location	Area (Square Feet)
QVC Network	Suffolk	1,200,000
Sysco Food Systems	Suffolk	285,000
Dollar Tree Inc.	Chesapeake	514,000

## Air Cargo

The Norfolk International is the third largest cargo airport in the State handling over 15 million pounds of freight in 2006 as shown in Table 10.

**Table 10. Cargo Airport Performance**

Airports	2006 Freight Pounds	Percent Change versus 2005
Norfolk International (ORF)	15,759,155	+0.57%

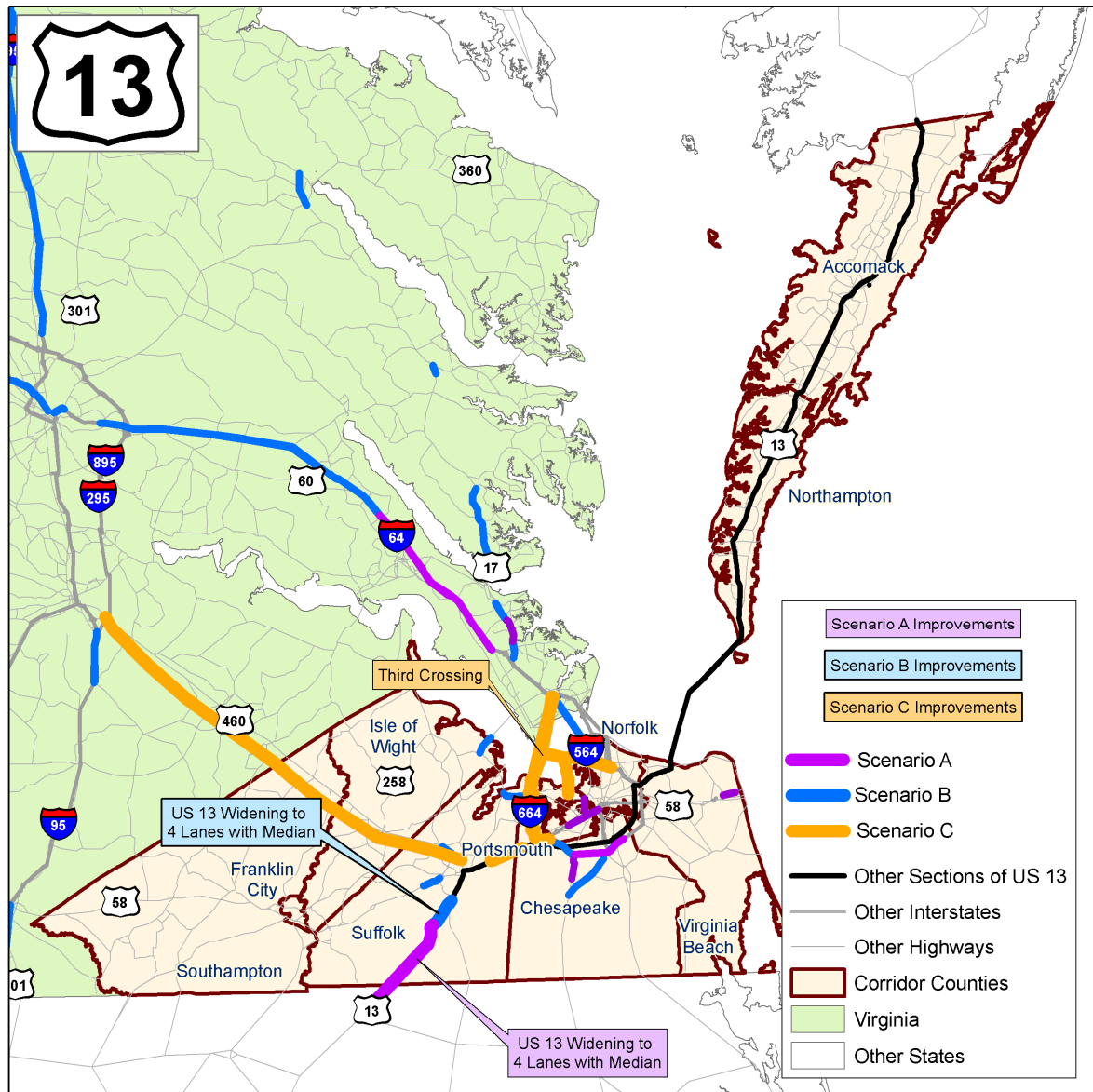
## ■ Alternative Scenarios

The Virginia Statewide Model (VSM) was run several times to estimate future freight transportation activities through Virginia. Each run used the same algorithm to process a different set of input parameters. These runs included a “base case” which estimated freight transportation activity in 2035 assuming no improvements in the highway or rail network. The output from this run provides a baseline to which the results of the remaining runs are compared. The final three runs, Scenarios A, B, and C, each represent different sets of roadway, rail, and marine improvements as well as travel pattern adjustments. Scenario A generally reflects the situation in the year 2035 given that only certain projects identified in the six-year improvement program are implemented. Scenario B includes everything from Scenario A plus key improvements from the Virginia 2025 State Highway Plan and a draft version of the 2035 State Highway Plan. Scenario C included everything from Scenario B plus implementation of other important freight transportation-related projects and policies. Public-Private Transportation Act (PPTA) projects are included in the scenarios as well. A description of the types of improvements included in each scenario is provided below.

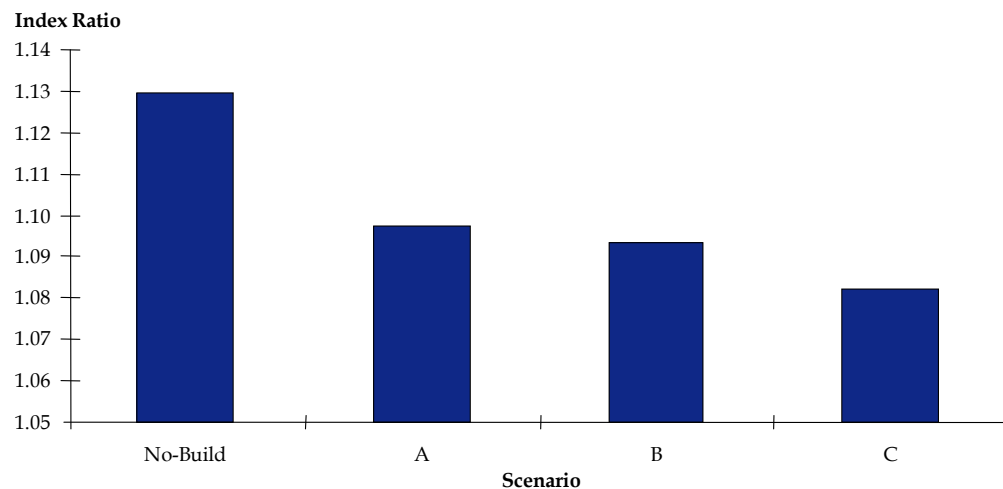
Scenario A	Scenario B	Scenario C
<ul style="list-style-type: none"> <li>• <b>Highway</b> – Improvements identified in the Virginia Six-Year Plan dated February 2009 that:               <ol style="list-style-type: none"> <li>(1) <i>Add significant capacity (generally those that add at least one-lane mile to the facility); and</i></li> <li>(2) <i>Are located on any of the 11 freight corridors. No distinction was made between projects funded for preliminary engineering, right-of-way, or construction.</i></li> </ol> </li> <li>• <b>Rail</b> – Improvements to:               <ol style="list-style-type: none"> <li>(1) <i>Completion of Heartland Corridor project.</i></li> <li>(2) <i>Relocate Commonwealth Railway mainline tracks to the medians of I-664 and the Western Freeway (Route 164); and</i></li> <li>(3) <i>Other Virginia Port Authority CIP projects.</i></li> </ol> </li> <li>• <b>Port</b> – Miscellaneous improvements by the Virginia Port Authority to support anticipated growth.</li> <li>• <b>Airport</b> – None.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Highway</b> – All highway improvements in Scenario A plus selected improvements from the VDOT 2025 State Highway Plan and from a preliminary draft version of the VDOT 2035 State Highway Plan that:               <ol style="list-style-type: none"> <li>(1) <i>Add significant capacity (generally those that add at least one-lane mile to the facility); and</i></li> <li>(2) <i>Are located on any of the 11 freight corridors.</i></li> </ol> </li> <li>• <b>Rail</b> – All rail improvements from Scenario A.</li> <li>• <b>Port</b> – All port improvements from Scenario A.</li> <li>• <b>Airport</b> – None.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Highway</b> – All highway improvements in Scenarios A and B plus the following:               <ol style="list-style-type: none"> <li>(1) <i>Hampton Roads Third Crossing;</i></li> <li>(2) <i>U.S. 460 Expressway between U.S. 58 Bypass and I-295;</i></li> <li>(3) <i>Capacity improvements on U.S. 17 and U.S. 29 near Warrenton;</i></li> <li>(4) <i>U.S. 58 “Hillsville Bypass”;</i> and</li> <li>(5) <i>Tolling/pricing actions to shift time-of-day and/or mode choice decisions (also impacts rail mode).</i></li> </ol> </li> <li>• <b>Rail</b> – All rail improvements in Scenarios A and B plus the following:               <ol style="list-style-type: none"> <li>(1) <i>Crescent Corridor and National Gateway projects;</i></li> <li>(2) <i>Short-haul rail projects to relieve Hampton Roads congestion;</i></li> <li>(3) <i>Highway tolling/pricing actions to shift mode choice decisions; and</i></li> <li>(4) <i>Craney Island on-dock rail and connection projects (also impacts port mode).</i></li> </ol> </li> <li>• <b>Port</b> – All port improvements in Scenarios A and B plus the following:               <ol style="list-style-type: none"> <li>(1) <i>Short-haul barge projects to relieve Hampton Roads congestion; and</i></li> <li>(2) <i>Craney Island on-dock rail and connection projects (also impacts rail mode).</i></li> </ol> </li> <li>• <b>Airport</b> – Full build-out of the airports’ master plans and implementation of the Virginia Air Transportation System Plan recommendations.</li> </ul>

The projects included in Scenarios A, B, and C are highlighted in Figure 16.

Figure 16. Future Improvements to the U.S. 13 Corridor



The relative effectiveness of these scenarios in meeting the U.S. 13 Corridor’s freight transportation needs is summarized in the figure below. The Freight Congestion Index (FCI) is a measure of available capacity and use by trucks. It is a function of truck volume, link length, and number of lanes (U.S. capacity). A value of 1.00 represents the average state for the no-build scenario across all 11 corridors.

**Figure 17. Freight Congestion Index for the U.S. 13 Corridor**

## ■ Key Project Recommendations

Key recommendations for projects located within the U.S. 13 Corridor include:

- High-Priority Projects:
  - **Construct the U.S. 460 Expressway between Suffolk and I-295 near Petersburg.** U.S. 460 between the Suffolk bypass and I-295 has very heavy truck volumes and is a key freight route between the Port areas of Hampton Roads and the Richmond Subregion. It also is a key freight route to I-95 and points north. This new limited access expressway will improve freight transportation efficiency into and out of the Hampton Roads area and between Hampton Roads and Richmond.
  - **Widen U.S. 13/U.S. 58/U.S. 460 between I-664 and the Suffolk Bypass.** Adding capacity to this link will alleviate congestion and improve freight flows into and out of the terminal facilities in Hampton Roads via the U.S. 460 Corridor. This improvement will be especially helpful in conjunction with the U.S. 460 Expressway project.
  - **Construct the Hampton Roads Third Crossing.** This project will improve total mobility across the Hampton Roads Subregion, provide new access to Norfolk International Terminals and Naval Base, improve access to the Newport News Marine Terminal and Newport News Shipbuilding and Dry-Dock Company, improve access to the Portsmouth Marine Terminal and Portsmouth Naval facilities, and connect to existing expressways on the Peninsula and on the Southside.

- **Construct the I-564 Intermodal Connector.** This project will extend I-564 and freight rail lines to the Norfolk International Terminals. It will provide a safe, high-speed, highway and rail connection from existing I-564 to the Norfolk International Terminals and the Norfolk Naval Station improving access to these facilities while reducing vehicle and truck traffic on the adjacent local roadways.
- **Complete Port-Related Rail Improvement Projects.** These projects consist of capacity improvements for the Norfolk International Terminals on-dock rail yard and the Norfolk and Portsmouth Belt Line rail yard, the Route 164 median rail connector, and for the Craney Island Connector.
- **Pursue barge service between Hampton Roads and the Port of Richmond.** This project has the potential to divert some freight traffic away from I-64, U.S. 460, and the rail lines between Hampton Roads and Richmond.
- **Implement the National Gateway project.** The National Gateway is a coordinated program of multistate improvements to CSX rail lines aimed at improving double-stack rail connections between Mid-Atlantic and Midwestern markets.
- **Implement the Heartland Corridor project, the various Hampton Roads container terminal on-dock rail access projects, and the new Maersk Terminal interchange.** These projects will improve the economic competitiveness of the U.S. 13 Corridor and of the Commonwealth as a whole.

A more detailed description of the freight transportation projects identified for the Hampton Roads Subregion is provided in Table 11.

**Table 11. U.S. 13 Corridor Project List**

Route	Project Description	From	To	Distance (Miles)	Impact on Freight Transportation Activity <sup>a</sup>	Scenario	Included in Freight Plan?
U.S. 13	Rural 4 Lane with Median	North Carolina State Line	Carolina Road	13.310	Low	A	
U.S. 13 U.S. 58 U.S. 460	Capacity Improvements	I-664	Suffolk Bypass	5.270	High	C	Yes
U.S. 17	Widen to 4 Lanes	2.6 Mile South Cedar Road	South Cedar Road Interchange	2.600	Low	A	
U.S. 17	Rural 4 Lane with Median	George Washington Memorial Highway	Cedar Road	4.000	Low	B	
U.S. 17	Urban 6 Lane with Median	Cedar Road	Great Bridge Boulevard	2.550	Low	B	
U.S. 17	Urban 6 Lane with Median	College Drive	Chesapeake CL	0.070	Low	B	
U.S. 17	Urban 6 Lane with Median	Bennets Pasture Road	Harbour View Drive	2.740	Low	B	
U.S. 17	Urban 6 Lane with Median	Brewers Neck Boulevard	South End James River Bridge	2.400	Low	B	
U.S. 58	Urban 6 Lane with Median	Manning Bridge Road	Suffolk Bypass	2.230	High	B	Yes
U.S. 58	Martin Luther King Jr. Freeway Extension Project	Martin Luther King Jr. Extension	I-264 - London Boulevard	1.040	Low	A	
U.S. 460	Urban 4 Lane with Median	Kings Fork Road	Suffolk Bypass	1.470	High	B	Yes

Route	Project Description	From	To	Distance (Miles)	Impact on Freight Transportation Activity <sup>a</sup>	Scenario	Included in Freight Plan?
U.S. 460 <sup>b</sup>	Route 460 Expressway	I-295	Suffolk CL	52.900	High	C	Yes
I-64	Widen to 6 Lanes + HOV Lanes	1.17 Mile East Battlefield Boulevard	0.87 Mile West Southbound I-464	3.120	Low	A	
I-64	Widen to 6 Lanes + HOV L and CD Road	Battlefield Boulevard	I-464	1.080	Low	B	
I-64	Widen 6 Lanes + 2 HOV Lanes	I-464	I-264/I-664	8.22	High	B	Yes
I-564	Intermodal Connector	I-564	Norfolk Naval Base/ N.I.T.	1.600	High	A	
VA 164	Construct Maersk Terminal Interchange	At Maersk Terminal			High	A	
I-564	Intermodal Connector	I-564	Norfolk Naval Base/ N.I.T.	1.600	High	A	
	Hampton Roads Third Crossing				High	C	
	National Gateway				High	C	Yes
	Heartland Corridor				High	A	Yes
	Port-Related Rail Improvement Projects - Including Craney Island Connector				High	C	Yes
	Norfolk International Terminal Projects				High	C	Yes
	Portsmouth Marine Terminal Projects				High	C	Yes
	Craney Island Marine Terminal				High	C	Yes

Route	Project Description	From	To	Distance (Miles)	Impact on Freight Transportation Activity <sup>a</sup>	Scenario	Included in Freight Plan?
	Short-Haul "Sprint Trains"				High	C	Yes
	Marine Highway Service Expansion				High	C	Yes

a: The impact on freight transportation activity column indicates the relative impact a given project has on freight mobility as compared to the relative impact it has on mobility in general. It consists of three categories:

**High** - these projects provide a greater relative impact to the important activity of moving freight than other projects considered.

**Medium** - these projects benefit both freight and non-freight transportation activity to an important degree.

**Low** - while valuable to both freight and non-freight transportation activity, these projects have a lower relative impact on freight transportation activity than those in the medium- or high-level categories.

b: A portion of the relocated U.S. 460 Expressway located within the U.S. 13 Corridor - the planned expressway continues to I-295 near Petersburg.

## ■ Conclusions

The primary conclusions of the U.S. 13 Corridor freight transportation profile are:

- The highest priority freight transportation infrastructure recommendations for the Corridor are the construction of the U.S. 460 Expressway, the Hampton Roads Third Crossing, the I-564 Intermodal Connector, the widening of the U.S. 13/U.S. 58/U.S. 460 section between I-664 and the Suffolk Bypass, the completion of the port-related rail improvement projects, and the completion of the Heartland Corridor (see recommendations section for details).
- U.S. 13 is a freight transportation bottleneck between I-664 in Chesapeake and VA 32 in Suffolk.
- The Norfolk Southern Virginia east-west mainline is a bottleneck throughout the U.S. 13 Corridor.
- Combined, the freight-intensive, retail, and goods movement industries account for 32 percent of total U.S. 13 Corridor employment, slightly higher than the 31 percent average for Virginia as a whole.
- Nearly 70 percent of the total freight tonnage (inbound, outbound, internal, and through) moving within the U.S. 13 Corridor is hauled by truck with 22 percent hauled by rail and eight percent by water. About 50 percent of freight moving within the Corridor is inbound traffic with 32 percent outbound and just nine percent through.
- The overall pavement condition of U.S. 13 in Virginia is very poor.
- Norfolk International is the third largest cargo airport in the Commonwealth handling over 15 million pounds of freight in 2006.