

DRAFT

National Capital Region Freight Plan Executive Summary

May 2016



National Capital Region
Transportation Planning Board

ABOUT THE TPB

The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 22 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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ACCOMMODATIONS

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This plan is dedicated to Karin C. Foster (1977-2013),
friend, colleague, freight planning expert, and consummate professional.

Note on the Executive Summary Version:

This Executive Summary provides excerpts of key information from the National Capital Region Freight Plan. For more information and further detail on these topics, please refer to the full report.

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INTRODUCTION

The National Capital Region's (hereafter referred to as "the Region") multimodal transportation system is vital to the economy of the Region and to the quality of life of its residents. It connects people and businesses to important regional activity centers and to major domestic and international markets. Each year hundreds of millions tons of freight valued in the billions of dollars move over the Region's roadways and railways and pass through its airports. The Region's service-based economy, with its growing employment, population, and wealth will continue to drive demand for freight in the foreseeable future. Economic growth along the eastern seaboard, throughout the nation, and across the world will also result in greater quantities of goods moving into, out of, and through the Region—especially along the I-95 corridor. Evolving logistics practices, changes in where

The Region's service-based economy, growing employment and population, and increasing wealth will continue to drive demand for freight.

goods are produced and how they are distributed, expansion of the Panama Canal, and increasing urbanization are but a few of the factors that will impact how freight will move across the Region in the future. The Transportation Planning Board (TPB) as the Metropolitan Planning Organization (MPO) for the National Capital Region has an important role to play in ensuring that the regional transportation system continues to be responsive to and supportive of the freight demands placed upon it by its residents, businesses, and visitors.

Freight Planning in the National Capital Region

TRANSPORTATION PLANNING BOARD VISION

The TPB Transportation Vision, adopted in 1998, provides a framework to guide the Region's transportation planning and investment decisions into the 21st century. It lays out eight broad goals with associated objectives and strategies. Two of the goals are closely tied to freight transportation (see below) and are supported by this Plan:

- Goal 2: The Washington metropolitan region will develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy throughout the region, including a healthy regional core and dynamic regional activity centers with a mix of jobs, housing, and services in a walkable environment.
- Goal 2, Objective 3. A web of multi-modal transportation connections which provide convenient access (including improved mobility with reduced reliance on the automobile) between the regional core and regional activity centers, reinforcing existing transportation connections and creating new connections where appropriate.
- Goal 8, Strategy 5: Develop a regional plan for freight movement.

REGIONAL FREIGHT PLANNING

The TPB included a dedicated freight planning task within its unified planning work program beginning in fiscal year 2007. While freight issues were addressed in overall transportation planning before that time, such involvement was mostly limited to participation in freight-related groups such



Karin Foster, COG

as the I-95 Corridor Coalition and the Baltimore Metropolitan Council's Freight Movement Task Force. Responding to recommendations described in a May 2007 consultant-led study entitled, *Enhancing Considerations of Freight in Regional Transportation Planning*, the TPB strengthened its freight planning capacity by hiring an additional staff person with responsibility to further the Region's freight program. This additional resource enabled the TPB to engage public- and private-sector stakeholders, gather and analyze freight data, and better integrate freight considerations into overall transportation planning activities. The increased focus on these activities led to the establishment of the TPB Freight

Subcommittee in April 2008, providing a venue in which both public- and private-sector representatives share information and provide input on the regional transportation planning process. The first National Capital Region Freight Plan was published in 2010. The 2016 edition of the National Capital Region Freight Plan builds upon the foundation provided by that initial effort.

Compliance with Federal Law – MAP-21 and FAST

The Moving Ahead for Progress in the 21st Century Act (MAP-21) requires MPOs to establish, monitor, and set targets for freight performance. These requirements were continued under the Fixing America's Surface Transportation (FAST) Act signed by the President of the United States on December 4, 2015.

TPB Activities to Address FAST Act Requirements

At the time of this Plan's release, the FHWA together with the FTA are in the process of translating the MAP-21 and FAST legislations into regulations that define what states, local governments, MPOs, and other entities must do to comply with the law. The TPB is monitoring the federal government's periodic releases of MAP-21/FAST Act notices of proposed and final rule makings, reviewing their contents, identifying the requirements within them that are relevant to MPOs, and developing preliminary plans and processes to address them. The recently released freight performance management proposed rule requires states and MPOs such as the TPB to develop and track freight performance measures and set freight performance targets. Complying with these requirements will

Federal legislation requires states and MPOs such as the TPB to develop and track freight performance measures and set freight performance targets.

require close coordination with DDOT, VDOT, and MDOT. Key freight performance management personnel within each of these organizations have been identified and preliminary meetings to discuss their various performance management approaches, including data sources and methodologies, have been scheduled. Further TPB actions related to the FAST Act will be developed as additional proposed rules, final rules, and guidance are released.

FREIGHT PLANNING IN MEMBER JURISDICTIONS

Among TPB member jurisdictions, the state-level agencies are the most engaged in freight planning activities. The District of Columbia, the State of Maryland, and the Commonwealth of Virginia have each developed studies and plans that include regionally significant freight-related provisions.

While many of the TPB's non-state member jurisdictions have not developed freight-specific plans, some of them address freight issues within their respective planning documents. One member jurisdiction, Frederick County Maryland, developed a freight-specific document. The Frederick County Freight and Land Use Plan (2011) provides transportation infrastructure recommendations and a set of land-use tools the county can use to improve the coordination between freight related land uses and the multimodal transportation system. TPB staff works closely with the states and local jurisdictions to ensure coordination among state, regional, and local freight plans.

THE MULTIMODAL FREIGHT SYSTEM

Freight Transportation System Overview

The region's multimodal freight transportation system consists of:

- More than 16,000 miles of roadways carrying more than 300 million tons of goods annually.
- Two Class I railroads – CSX Transportation and the Norfolk Southern Corporation – operating over 250 miles of mainline track and carrying more than 47 million tons of local freight annually.
- Two major cargo airports – Washington Dulles International Airport and Baltimore Washington International Thurgood Marshall Airport.
- An extensive pipeline network that carries more than nine million tons of freight per year.
- A number of key intermodal connectors – short roadway segments that tie rail terminal facilities, airports, and pipeline terminal facilities to the National Highway System (NHS).

Trucking and the Region's Roads

The region's highway system is organized into the following categories:

- Interstate – More than 230 miles of 4- to 10-lane highways that connect the region to the rest of the nation.
- Primary – More than 2,400 miles of 2- to 8-lane roads that connect communities within the Region to each other and to the interstates.
- Secondary – More than 2,100 miles of connector roads.
- Local – More than 12,000 miles of local streets.

THE REGIONAL FREIGHT-SIGNIFICANT NETWORK

Certain components of the region's highway system are particularly important for goods movement. Each of the Region's member states, Maryland, Virginia, and the District of Columbia have identified a designated truck network linking major freight shipping and receiving areas and accommodating

The regional freight significant network is a system of truck-allowed routes that are particularly important for goods movement.

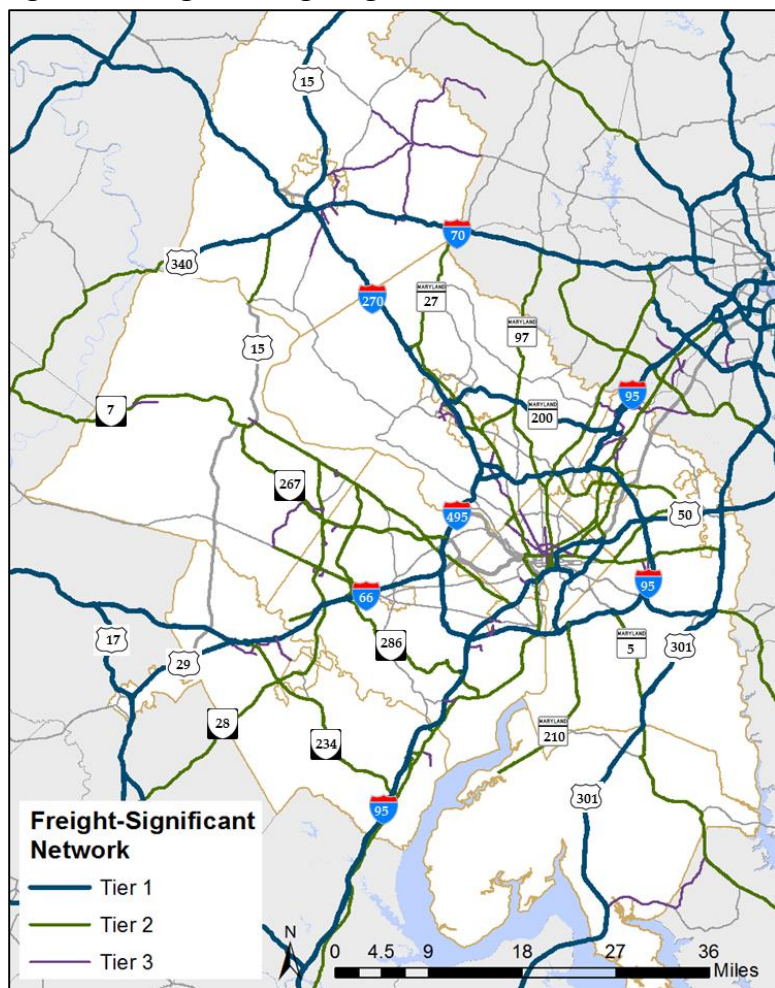
through state freight movement. Within the Region, most of these state designated truck routes are represented by interstate highways and major arterials. At the regional level, the importance of roadways other than state designated truck routes is also recognized. These regionally freight-significant roadways function as important connectors between retail establishments, warehouse and distribution centers, and state-designated truck routes.

TPB staff, in consultation with the TPB Freight Subcommittee, identified a network of these freight-important roadways using a combination of data analysis and collective expertise. The resulting regional freight significant network is organized into three tiers.

- Tier 1 - roadways in this tier include state-designated truck routes, interstates, and other high volume roadways. These roads are the means by which most freight enters and leaves the Region and are typically used by pass-through trucks.
- Tier 2 - roadways in this tier allow trucks to permeate the Region and provide access to important freight generators and attractors.
- Tier 3 - roadways in this tier provide last mile connectivity.

The regional freight significant network is a system of truck-allowed routes that are particularly important for goods movement. The freight significant network is intended for regional data analysis and is not promoted as truck routes in the same way that officially state-designated truck routes are. The primary purpose of developing the regional freight-significant network is to facilitate performance monitoring. For example, congestion can be measured on the freight significant network and compared to that of the overall region. Similar comparisons can be made for pavement condition, bridge condition, or safety. The regional freight-significant network is shown in Figure ES 1. Please see the full report for additional information on the components of the regional freight-significant network.

Figure ES 1: Regional Freight-Significant Network

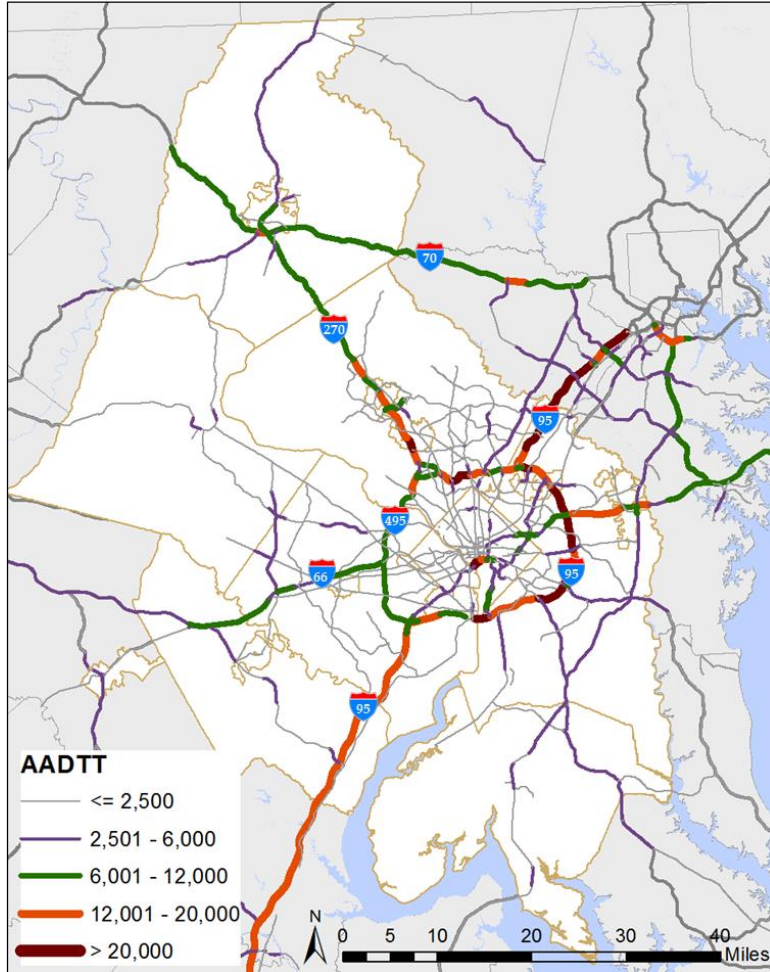


Source: Developed in consultation with the TPB Freight Subcommittee – route inclusion supported by truck volume and percentage analysis – for planning purposes only.

TRUCK UTILIZATION

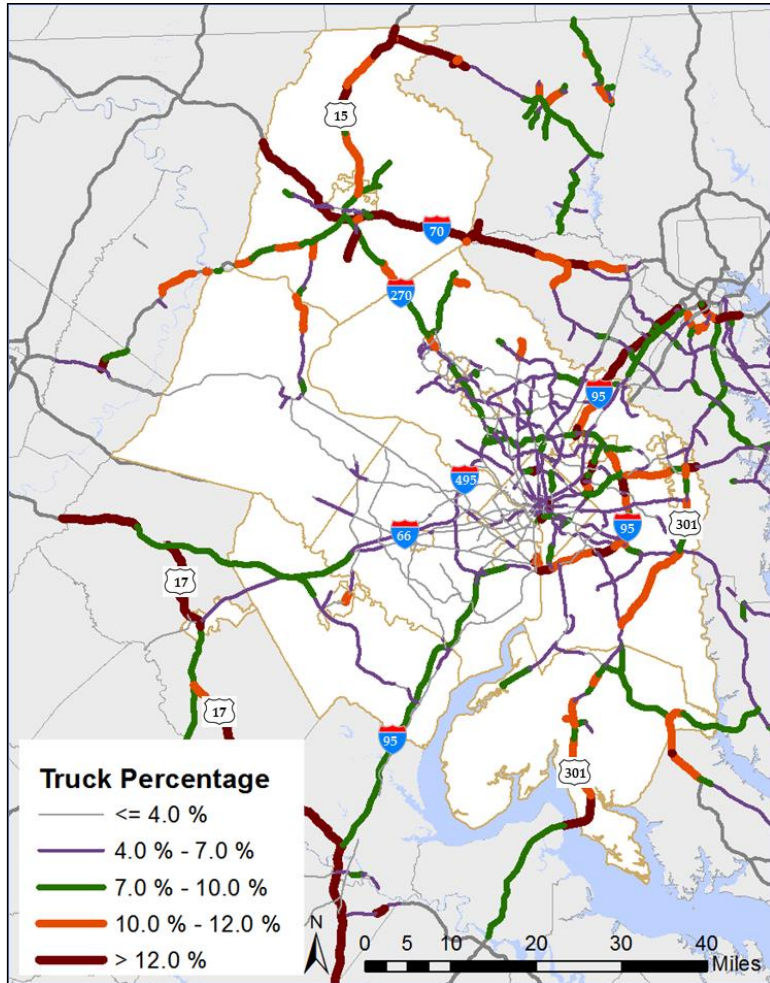
Analysis of Highway Performance Monitoring System (HPMS) data provides average annual daily truck traffic (AADTT) and truck percentage data by roadway segment. Viewing these data (See Figures ES 2 and ES 3) provide an understanding of which roadways have the most truck volume and which roadways have a high proportion of truck traffic.

Figure ES 2: Average Truck AADTT



Source: COG Analysis of 2013 Highway Performance Monitoring System Submittal - for planning purposes only.

Figure ES 3: Average Truck Percentage



Source: COG Analysis of 2013 Highway Performance Monitoring System Submittal – for planning purposes only.

Please refer to the full report for additional information about truck parking and truck safety.

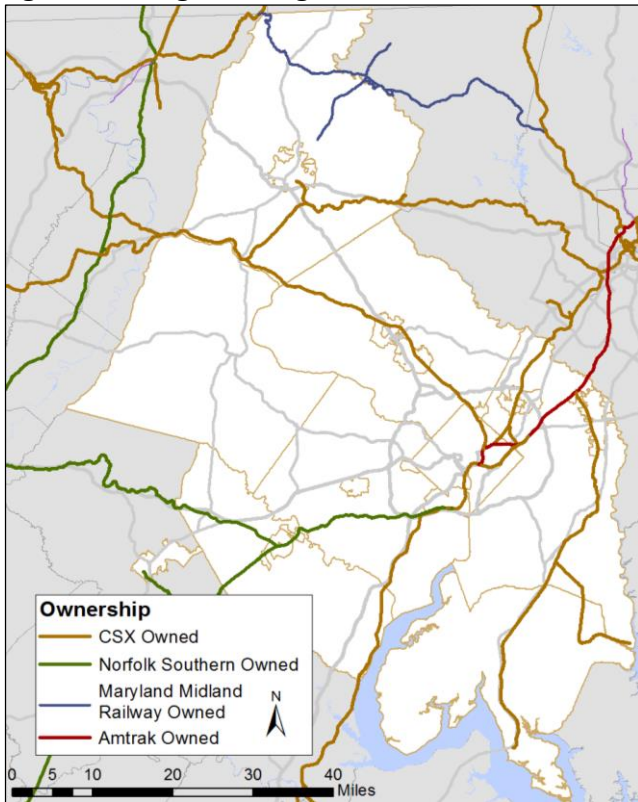
Railroads

The Region's rail system consists of more than 300 miles of mainline track, most of which are operated by two railroads – CSX (211 miles), and the Norfolk Southern Corporation (46 miles). Additionally, the Region is served by Maryland Midland Railway, a short line operating in Frederick County, Maryland. Three passenger systems – Amtrak, Virginia Railway Express, and MARC – also operate over the Region's freight rail system.

RAIL SYSTEM INVENTORY

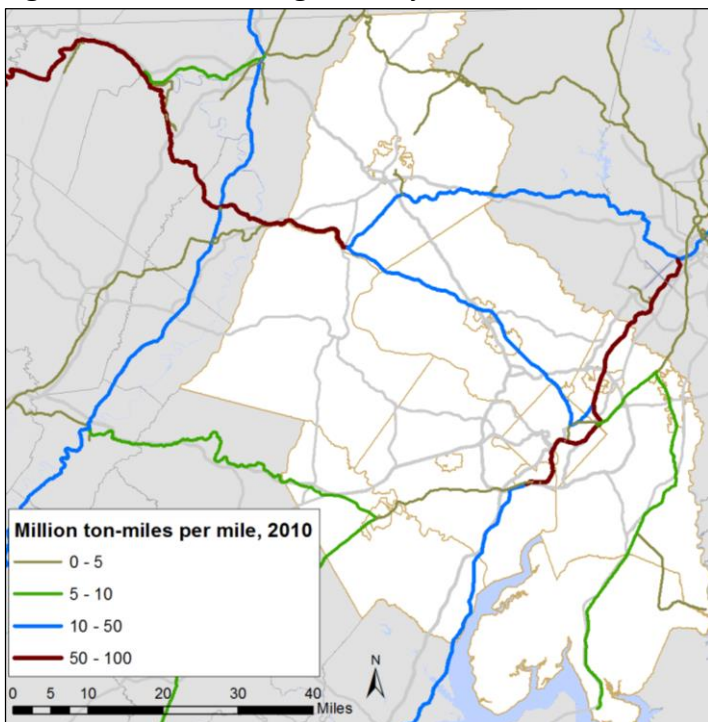
Figures ES 4 and ES 5 show the rail system by ownership and by rail density respectively.

Figure ES 4: Regional Freight Rail Network



Source: COG Analysis of 2013 National Transportation Atlas Database – for planning purposes only.

Figure ES 5: Railroad Freight Density



Source: COG Analysis of 2013 National Transportation Atlas Database – for planning purposes only.

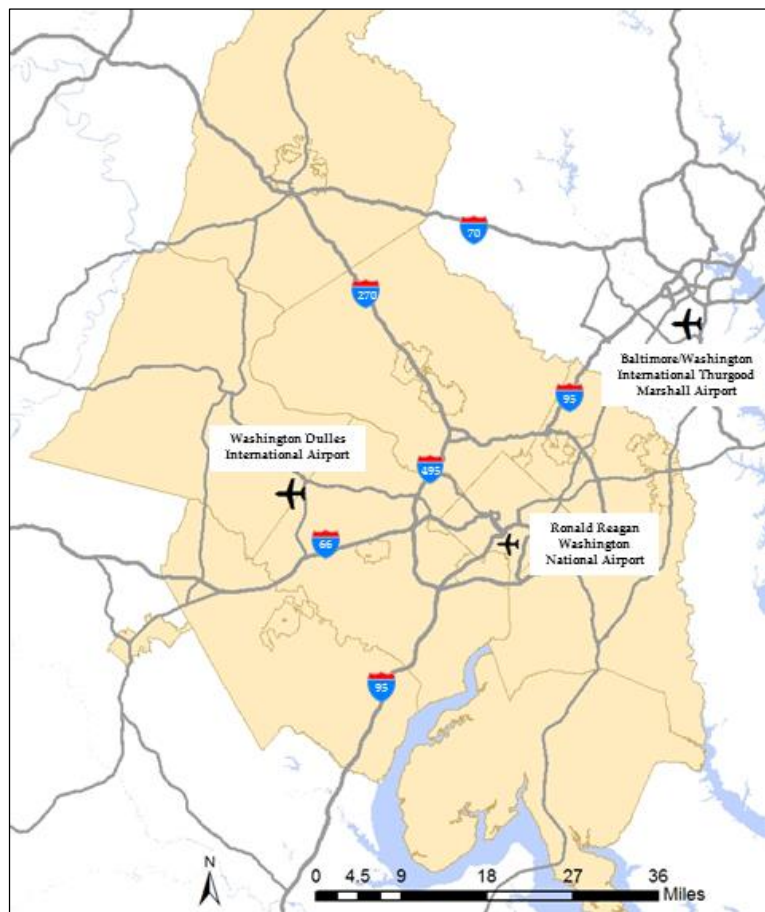
Please refer to the full document for additional information on types of freight rail service and the locations of major intermodal facilities served by rail.

Air Cargo

Of the 13 public use airports serving the National Capital Region, two of them, as shown in Figure ES 6, provide for nearly all of the reported air cargo tonnage. While small amounts of air cargo are handled out of Washington Reagan National Airport, the vast majority is handled at Washington Dulles International Airport (Dulles) and Baltimore/Washington Thurgood Marshall International Airport (BWI).

Dulles and BWI are ranked 23rd and 36th respectively according to Airports Council International (ACI) 2014 rankings of North American cargo airports. Dulles and BWI airports are important economic drivers of the National Capital Region's economy, yet they are dwarfed in size by the largest national air cargo hubs. For example, New York's JFK airport handled nearly five times as much cargo as Dulles and more than 12 times as much cargo as BWI in 2014.

Figure ES 6: Major Cargo Airports Serving the National Capital Region



Source: COG

Please refer to the full report for additional information about cargo activity at Dulles and BWI airports.

INTERMODAL CONNECTORS

NHS intermodal connectors are short roadway segments that tie airport, seaport, and rail terminal facilities to the National Highway System (NHS). They tend to carry lower volumes of traffic at slower speeds than a typical NHS route and are therefore typically designed to lower standards. However, large and heavy trucks use these critical roadway segments to carry the full range of commodities

Intermodal connectors tie airport seaport, and rail terminal facilities to the National Highway System.

essential to the nation's economy. The FHWA identifies one freight-related intermodal connector within the National Capital Region and two more that are located just outside of it:

- Alexandria Intermodal (Ethanol Transfer Station) – Norfolk Southern - Van Dorn Street (I-95 to Metro Road) and Metro Road (Van Dorn Street to facility entrance)
- Virginia Inland Port – Port of Virginia / Norfolk Southern – U.S. Route 340 (I-66 to facility entrance)
- Jessup TDSI Auto Terminal – CSX – MD 175 (I-95 to Dorsey Run Road), Dorsey Run Road (MD 175 to MD 32)

While not included on the FHWA list of official intermodal connectors, the following road serves as an important “intermodal connector” in the Region:

- Plantation Pipeline Terminal – Terminal Road (I-95 to facility entrance)

FREIGHT DEMAND

National Capital Region Commodities

By analyzing the commodities that are most critical to the Region's economy – those that are moving into, out of, and within (but not through) the Region, important links between economic activity and freight movement become apparent.¹

WEIGHT AND VALUE

The two primary measures of freight activity are weight and value. Value is an indicator of the economic activity associated with freight, while weight is an indicator of the demand that freight places on transportation infrastructure. In this report weight is measured in tons and value in 2007 dollars.

Inbound, outbound, and intraregional commodities totaling nearly 212 million tons and with an equivalent value of more than \$240 billion moved over the Region's multimodal transportation system in 2007. These figures include both domestic trade (within the Region or between the Region and other areas of the United States) as well as international trade (between the Region and other countries).

Weight

Four major commodity groups are responsible for more than 50 percent of the Region's tonnage – gravel and crushed stone, waste and scrap, nonmetallic mineral products, and petroleum products. Other important commodity groups by weight include natural sands, prepared foodstuffs, wood products, nonmetallic minerals, mixed freight, and coal among others. These data show that construction activities, electric power generation, and retail consumption generate much of the freight (by weight) moving across the Region's transportation network.

By weight, gravel and crushed stone is the top commodity type hauled in the Region.

By value, electronic and electrical equipment is the top commodity type hauled in the Region

Value

Four major commodity groups – electronic and electrical equipment, machinery, mixed freight, and pharmaceutical products – account for more than 40 percent of the total value of commodities moved in the Region. Other important commodity groups include textiles, leather and articles of textiles and leather; motorized vehicles and parts; miscellaneous manufactured products; prepared foodstuffs; articles of base metal; and precision instruments and apparatus among others. These data reflect the importance of the technology and life sciences sectors to the Region's economy as well as the demands for goods by the Region's businesses and consumers.

DIRECTION OF TRADE

The Region's freight moves in different directions, depending on the commodity:

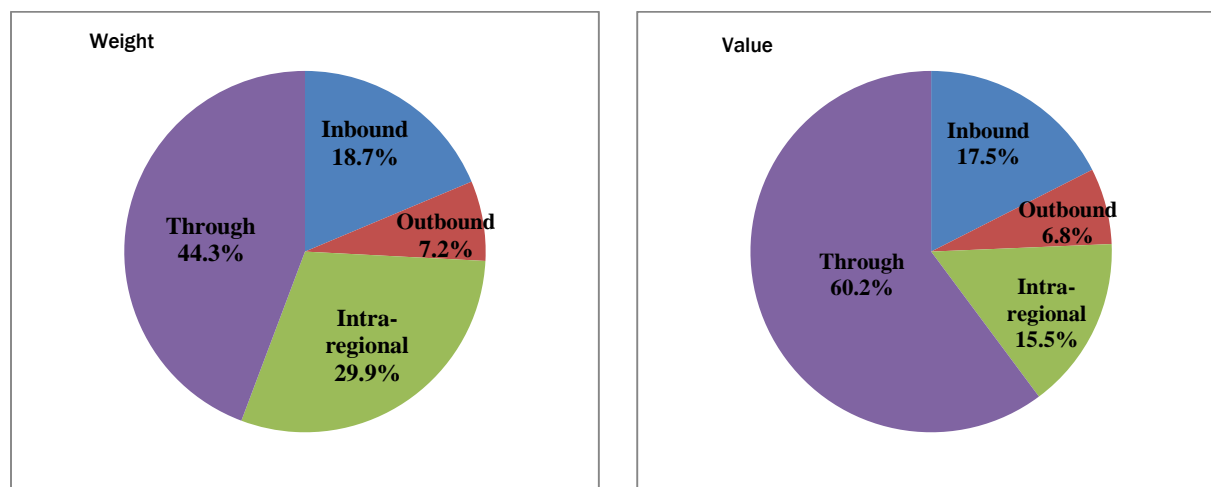
¹ The Federal Highway Administration's Freight Analysis Framework dataset is the primary source of the information presented in this section.

- Inbound freight is moved from other states, or other countries, to the Region.
- Outbound freight is moved from the Region to other areas of the United States, or to other countries.
- Intraregional freight is moved from one point in the Region to another point in the Region.
- Through freight is moved from a location outside of the Region to another location outside of the Region, via transportation infrastructure within the Region. Through freight does not contribute significantly to the region’s economy and is not included in the tabulation of commodities.

The Region receives over 2 ½ times more inbound freight than it produces outbound freight.

Figure ES 7 summarizes the direction of travel for the Region’s commodities based on weight and value.

Figure ES 7: Total Freight (Weight and Value) by Direction



Source: COG analysis of Federal Highway Administration Freight Analysis Framework data.

TRANSPORTATION MODES USED

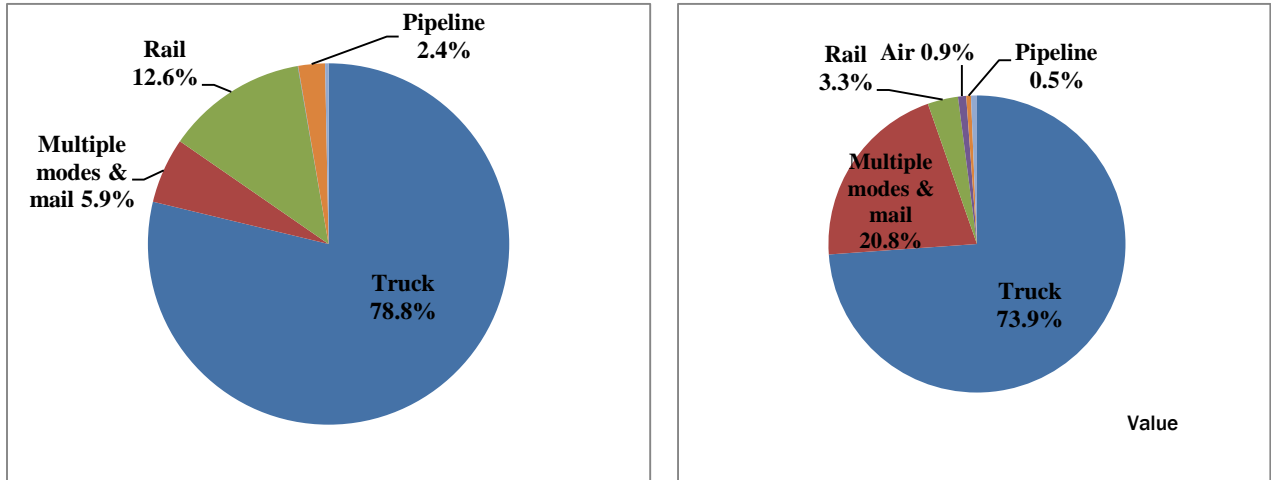
All freight moves utilize either a single mode or a combination of more than one mode of transportation. The Freight Analysis Framework² (FAF) categorizes each freight move as being one of the following (see the full report for more detailed information about the FAF modes):

- Truck;
- Rail;
- Multiple modes and mail;
- Water;
- Air (includes truck-air);
- Pipeline; and
- Other/unknown

² The Freight Analysis Framework (FAF) is a publicly available dataset developed and maintained by the Federal Highway Administration.

Figure ES 8 summarizes the modes used for the Region’s commodities, based on weight and value, while Figure ES 9 compares the mode share profile of the Region to that of the nation as a whole.

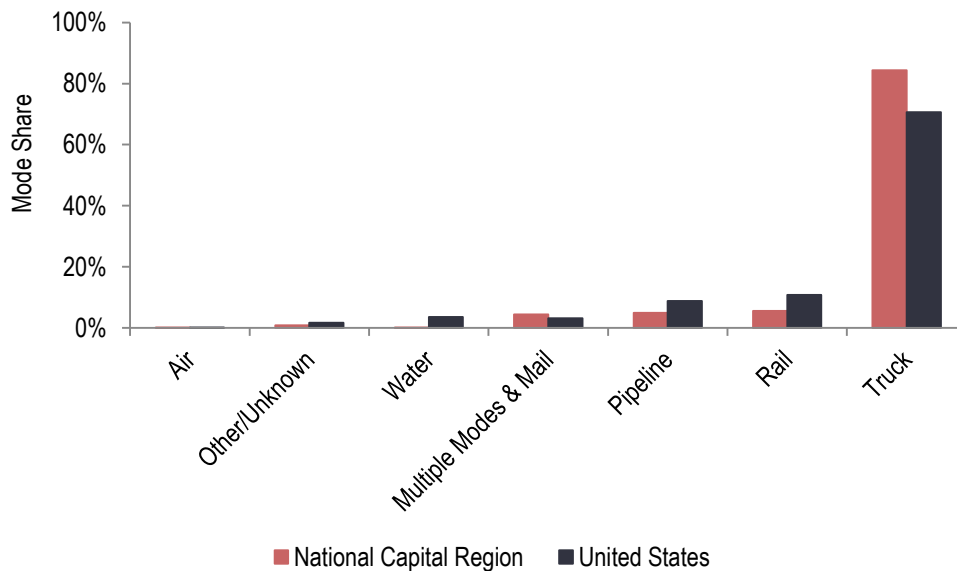
Figure ES 8: Total Freight (Weight and Value) by Mode



Source: COG analysis of Federal Highway Administration Freight Analysis Framework data.

Trucks haul a greater proportion of total freight (by weight) in the Region than in the nation overall. Relatively less freight is hauled by rail, water, or pipeline in the Region than in the broader nation (see Figure ES 9).

Figure ES 9: Transportation Modes Used (by Weight) – National Capital Region and United States



Source: COG analysis of Federal Highway Administration Freight Analysis Framework data.

Please refer to the full report for additional information including top commodities, regional trading partners, and mode-specific analyses.

FREIGHT TRENDS AND ISSUES

While the freight transportation system is currently performing at a level that supports the Region's economy and quality of life, recurring bottlenecks on some roadways and railways negatively affect the reliability of freight deliveries. The growth in freight volumes forecasted for the region is a result of an increasing demand for goods – demand driven by the Region's expanding economy, growing population, and increasing standard of living. To fully realize the benefits associated with the forecasted growth in freight traffic, the Region will need to address the challenges to the multimodal transportation system in light of that growth. These challenges include more trucks sharing the roadways with passenger vehicles, bicycles, and pedestrians; more commuter and intercity passenger trains sharing the railways with freight trains; and increased wear and tear on pavements,

Addressing the challenges associated with truck deliveries in dense and vibrant regional activity centers is a key planning issue.

bridges, and rail infrastructure. Because trucks are the primary means by which goods are delivered to stores, restaurants, businesses, and residences, the more dense and vibrant a neighborhood becomes, the more that trucks must share the streets in close proximity to pedestrians, bicyclists, and other vulnerable road users. Addressing the challenges associated with truck deliveries in dense and vibrant regional activity centers is a key planning issue.

Trends Impacting Freight in the Region

DEMOGRAPHIC AND ECONOMIC DRIVERS OF FREIGHT DEMAND

The physical movement of freight is of critical importance to any region's economy. Consumers rely on efficient and reliable freight transportation for shipments of consumer products to homes and retail establishments and for product returns and trash removal. Commercial enterprises rely on efficient and reliable freight transportation for inbound shipments of raw materials, intermediate goods, and other supplies required for the production of finished goods as well as outbound shipments of intermediate goods and finished products to regional, national, and global markets. Commercial enterprises in the service sector stimulate freight demand by providing income to their employees, who in turn use that income to purchase goods and services.

To understand freight movement, it is useful to examine the key economic and demographic drivers of freight demand.

All commercial enterprises depend on freight, but those that are directly involved in activities such as transporting goods, farming, mining, manufacturing, construction, and managing retail operations depend on it more strongly than others. These freight-dependent industries account for 19 percent of the Region's gross domestic product (GDP) and 18 percent of its total employment.

To understand freight movement in the Region, it is therefore useful to examine the key economic and demographic drivers of freight demand, including overall employment, GDP, economic structure, population, and wealth.

Recent Trends

POPULATION

As of 2013 the Washington-Arlington-Alexandria Metropolitan Statistical Area was home to 5.6 million people, making it the 7th most populous metropolitan statistical area in the nation. The Region is adding population at a faster pace than the nation as a whole. Expanding employment in the business and professional service- and government-sectors attracts highly educated people from throughout the United States and the world. The Region's population is expected to grow an additional 32 percent by the year 2040. Each new resident creates additional demand for consumer

The Region's population is expected to grow by 32 percent by 2040.

goods – residents with higher disposable income generate greater demand for material goods and correspondingly greater overall demand for freight transportation. The Region ranks second in the nation for median household income (\$90,149 in 2013), 73 percent above the national average. This means that the median regional household earns approximately \$38,000 more per year than the median American household. The combination of a growing population and rising consumer affluence generates high demand for consumer goods, which translates into high demand for freight transportation services.

EMPLOYMENT AND GROSS DOMESTIC PRODUCT

The Region's economy employed 2.8 million people in 2013, roughly 1.9 percent of all U.S. jobs. Between 2002 and 2013, total employment in the Region increased by 245,000 or 9.6 percent, compared to a U.S. growth rate of 5.5 percent.

In 2013, the Region's gross domestic product (or GDP) was \$464 billion. GDP is a measure of the total value added to goods and services due to economic activity in the Region. As with employment, the Region has been surpassing the United States as a whole in terms of GDP growth. In nominal

There is a direct relationship between the growth in economic activity and the demand for freight transportation.

terms, the Region's GDP grew by 61 percent between 2002 and 2013, compared to 53 percent for the United States overall. There is a direct relationship between the growth in economic activity, as measured by GDP, and the demand for freight transportation.³

³ The United States Bureau of Transportation Statistics (BTS) defines this relationship as the ratio of total ton-miles of freight to total GDP. In 2002 this freight transportation intensity ratio was 0.38 ton-miles per dollar, indicating that every marginal dollar of GDP would be expected to generate an additional 0.38 ton-miles of freight activity.

Forecasts

Population and employment forecasts for the Region indicate that demand for goods, along with the associated demand for freight transportation services, will continue to grow in the future.

The Region's population is forecast to increase by 32 percent through 2040. By 2040, the Region is expected to have over 6.6 million people, an increase of 1.6 million people. This population growth will have a direct impact on freight transportation demand. More people mean more freight trips generated, more services required, and more goods purchased. In addition, population and economic growth in the rest of the nation and around the world will result in increased freight shipments on the regions highways, railroads, and airports.

Due to forecasted growth in population and employment, demand for freight transportation in the Region will continue to grow.

Employment in the Region is forecasted to grow even faster than population. By 2040 the Region is expected to employ over 4.3 million people, an increase of 1.3 million or 43 percent. This expansion of jobs provides evidence that the Region's businesses, including those that are freight dependent, will generate increasing demand for freight transportation services in the future.

EVOLVING SUPPLY CHAINS AND LOGISTICS PATTERNS

New technology coupled with increasingly demanding customer expectations are pushing businesses to reduce costs and improve responsiveness. The various aspects of e-commerce are enabling some businesses to accomplish both of these imperatives while transforming the supply chain in the process. Consumers are spending less time in retail stores and more time shopping via the internet. They increasingly expect immediate gratification and successful businesses are working to satisfy those expectations. Businesses that do not keep up with these changing expectations are at increased risk of failure. The confluence of e-commerce and customer's high expectations are changing the retail landscape and introducing new transportation providers. These changes are being manifested in terms of the designs and locations of distribution centers and in the way products are distributed to the end customer.

Evolving Distribution Center Design and Locations

A typical distribution center is roughly rectangular in shape and features a large number of loading docks. Traditional distribution centers typically employ about 0.3 workers per thousand square feet whose primary work tasks involve shipping and receiving activities. The rise in e-commerce is resulting in a transformation of the typical distribution center into an e-commerce fulfillment center. An e-commerce fulfillment center typically employs about 1.0 workers per thousand square feet

Newer "fulfillment centers" employ more workers and benefit from transit accessibility.

whose primary work tasks include picking and packing in addition to shipping and receiving activities. These additional workers require places to park, so fulfillment centers have larger

employee parking lots. While traditional distribution centers are typically not located to maximize transit options, newer fulfillment centers are better able to attract the work force needed if they have robust transit options available.

The Changing Last Mile

In an effort to increase speed to market, traditional retailers are converting their brick and mortar stores into centrally located urban distribution centers. This enables same day fulfillment of a customer's online order from the urban department store. Online retailers such as Amazon are installing lockers in locations such as transit stations, Dunkin Donut shops, and convenience stores to enable secure delivery of packages while customers are away from home. As the emphasis of last mile logistics continues to shift towards personalized delivery services, the number of trucks on the Region's streets and roadways will grow. However, these additional trucks are likely to be smaller on average.

The potential impact of automated trucks, drone deliveries, and other disruptive technologies is difficult to plan for, however, regional planners and transportation officials at all levels would be wise to keep abreast of developments in these areas and be prepared to engage elected officials and the general public as needed.

TRENDS IN THE TRANSPORTATION INDUSTRY

The freight transportation industry is dynamic and continues to evolve with large firms making strategic investments in infrastructure and technology.

Trucking

Small trucking firms are likely to continue to contract to larger carriers and utilize load-matching services in an effort to maximize their return on capital. Trucking firms that effectively utilize information technology are likely to prosper relative to firms that are less technology-adept. This trend favors larger firms. Driver shortages will continue to be a problem for the industry, particularly for long haul routes, but as the economy continues to generate high value time sensitive goods, demand for trucking services will continue to be high.

As of early 2015, the profitability of trucking firms was at multi-year highs due to the combination of record tonnage, high shipping rates, and low fuel prices. Industry observers expect this environment to continue through 2015 and fleet owners are investing part of their profits in equipment upgrades and expansion. While the incentives for these investments are related to the need to expand capacity rather than the desire for greater fuel efficiency, fleet turnover is likely to result in a higher proportion of cleaner and more fuel-efficient trucks across the nation and in the Region.

Rail

Deregulation of the railroad industry in the 1980s enabled railroads to steadily increase productivity by restructuring the rail system, shedding unprofitable lines, creating new business opportunities through long-haul intermodal service, and by transporting coal from mines in Appalachia and Wyoming's Powder River Basin. Improvements in hydraulic fracturing techniques enable oil to be extracted more economically from shale deposits and have provided business opportunities for railroads to transport this oil to refineries primarily along the Gulf Coast and in the Northeast. However, due to the steep decline in crude oil prices from midyear 2014 to the publication of this Plan in midyear 2016, shale oil production has fallen substantially resulting in less demand for rail

transport. This illustrates the cyclical nature of rail transport demand for energy products such as coal and crude oil.

The two Class I railroads operating in the National Capital Region, Norfolk Southern and CSX Transportation, are also working to expand their intermodal business through major initiatives to add additional track, straighten curves, increase clearances, and add intermodal terminals on key rail corridors to clear the way for trains hauling double stack container cars moving between Mid-Atlantic ports and the Midwestern markets (CSX National Gateway) and between the Southeast and the Northeast (Norfolk Southern Crescent Corridor)

Air Cargo

In the air cargo industry, freight forwarder and air carrier networks route freight through operationally efficient, cost-effective airports that provide the highest level of customer service. To realize the benefits of these efficient and cost-effective airports, cargo is sometimes trucked many hundreds of miles before being loaded onto an aircraft.

Air cargo is, in most cases, fluid and has many airport options. The ultimate efficiency of airport cargo facilities depends largely on local and regional air cargo demand patterns, available aircraft cargo capacity, sufficient cargo infrastructure, ease of access to the interstate highway system, and the degree of connectivity among freight forwarders, cross-dock and warehouse facilities, and off airport properties. Access in and out of the airport is important to air cargo businesses, and truck transportation is the critical link to the end-user.

Ports and Shipping

To realize greater economies of scale, shipping lines have continued to acquire larger and larger ships. To accommodate them, a program to expand the Panama Canal is currently underway and expected to be completed in early 2016. Container terminals at the Port of Baltimore and at the Port of Virginia, along with at least three other East Coast ports, are currently able to accommodate these larger post-Panamax ships and are anticipating increased container traffic as a result. The advent of larger container ships may impact the size of nearby distribution centers. This is not only because greater volumes of containers are expected overall, but also because there are more containers per ship to offload. This creates demand for larger buildings to accommodate the “surge” volume. While it is difficult to predict all of the effects that the Panama Canal expansion will have on the National Capital Region, it will likely result in some increase in economic activity coupled with more rail and truck freight on the Region’s multimodal transportation system.

REGIONAL FREIGHT ISSUES, CHALLENGES, AND OPPORTUNITIES

Congestion

ROADWAYS

Congestion on the nation’s roadways is a significant cost to shippers and to the economy overall. The American Transportation Research Institute (ATRI) estimates that congestion added over \$9.2 billion in operational costs and resulted in 141 million hours in lost productivity to the trucking industry in 2013. This is the equivalent of over 51,000 truck drivers sitting idle for a working year. Freight congestion is concentrated in urban areas and is most apparent at bottlenecks on highways - especially those serving major international gateways, major domestic freight hubs, and in major urban areas where important national truck flows intersect congested urban areas. ATRI ranked

congestion in the Washington, DC metropolitan area as fifth in the nation in terms of its contribution to increased operating costs for the trucking industry.

RAIL

Congestion on the freight rail network increases costs to shippers and hampers the reliability and on-time performance of commuter and inter-city passenger rail operations. Railroad capacity is not only a function of track infrastructure; but also of rolling stock and railroad operating strategies related to train speed, train size, and scheduling. Typical infrastructure related capacity constraints include insufficient mainline tracks, lack of adequate sidings, low ceiling tunnels, antiquated bridges, outdated signal systems, missing connections, and inadequate terminal capacity.

The most significant freight rail capacity constraints in the National Capital Region are the Virginia Avenue Tunnel and the Long Bridge. The Virginia Avenue Tunnel is a roughly $\frac{3}{4}$ mile passage beneath Virginia Avenue in southeast Washington, DC housing a single track without enough vertical clearance to accommodate double stack container traffic. The Long Bridge is a two-track railroad

The most significant freight rail capacity constraints in the National Capital Region are the Virginia Avenue Tunnel and the Long Bridge.

bridge across the Potomac River between Virginia and the District of Columbia. These two constraints are both located on a critical, CSX-owned, rail line linking port terminals in the Hampton Roads area to markets in the Northeast and Midwest. A project to remove the capacity and clearance constraints of the Virginia Avenue Tunnel is currently underway. The Long Bridge project, which will double the rail capacity over the Potomac River to accommodate additional passenger and freight trains, is currently in the planning stages.

Freight Rail Safety and Security

The Transportation Planning Board (TPB) is particularly interested in and concerned about the safety and security of the Region's freight rail system. Rail incidents such as the May 1, 2016 CSX derailment in northeast Washington, DC, have highlighted the need for continual improvement of

Safety on the nation's railroads is regulated by the Federal Railroad Administration.

preventative safety and security measures on the freight rail system. Major concerns include the operational handling and tracking of railcars that carry Toxic Inhalation Hazard (TIH) materials, which can cause fatalities if released into the atmosphere. Safety on the nation's railroads is regulated by the Federal Railroad Administration (FRA). It enforces regulations for hazardous materials, highway-rail crossings, track conditions, rail motive power and equipment, operating practices, and train control and signaling. Federal rail safety regulations preempt state rail safety laws and the FRA maintains direct oversight of railroad practices relevant to safety. States can participate in railroad-related investigative and surveillance activities through the FRA's State Safety Participation Program. To participate in the Program, states must have an agreement with the FRA to enable the delegation of some federal investigative and surveillance authority to the State.

The FRA reserves exclusive authority to assess penalties, issue emergency orders, and undertake any other enforcement actions under federal railroad safety laws. Maryland's rail safety authority is

States can participate in railroad-related investigative and surveillance activities through the FRA's State Safety Participation Program.

under the jurisdiction of the Department of Labor, Licensing, and Regulation (DLLR). Virginia's rail safety authority is under the Virginia State Corporation Commission Division of Utility and Railroad Safety. Currently, the District of Columbia does not have an office of rail safety.

POSITIVE TRAIN CONTROL

As part of their safety oversight responsibilities and in response to a mandate within the Rail Safety Improvement Act of 2008, the FRA published a final rule on January 15, 2010 requiring mainlines that transport any poisonous-inhalation-hazardous (PIH) materials and where regularly scheduled intercity passenger or commuter rail services are provided to implement positive train control (PTC). PTC is a technological system designed to prevent train-to-train collisions, derailments, incursions into work zones, and movement through an improperly positioned switch. The implementation deadline, originally set for December 31, 2015 has been extended to December 31, 2018.

RAIL SECURITY

The U.S. Department of Homeland Security (DHS) is the primary federal agency responsible for security of the transportation sector. The DHS National Infrastructure Protection Plan (2013) includes the Transportation Systems Sector-Specific Plan, which is focused on developing strategies to reduce the risks to critical transportation infrastructure from terrorism threats. The leadership of the District of Columbia, the State of Maryland, the Commonwealth of Virginia, area local

COG coordinates and hosts many of the regional emergency support function (R-ESF) committees that are working together to advance preparedness in the region.

governments, and the Department of Homeland Security's Office for National Capital Region Coordination (NCR) are working in partnership with non-profit organizations and private sector interests to reduce the vulnerability of the National Capital Region (NCR) from terrorist attacks. The Metropolitan Washington Council of Governments (MWCOG) coordinates and hosts many of the regional emergency support function (R-ESF) committees that are working together to advance preparedness in the region. The RESF-1 Transportation Committee meets monthly to address role of transportation (including freight rail) in the NCR Homeland Security Program. The committee has representation at the local, state, regional, and federal levels from all NCR jurisdictions and provides a forum for regional transportation officials to exchange information and discuss emergency response, coordination, and recovery requirements.

Freight in Regional Activity Centers

The National Capital Region Transportation Planning Board (TPB) and the Metropolitan Washington Council of Governments (MWCOG) recognize that the Region is supported largely by the economic activity that occurs in major housing and jobs centers, known as activity centers. These mixed-use activity centers are places that are intended to accommodate much of the Region's future growth

and development. Concentrating future growth within activity centers enables the more effective and efficient use of existing facilities and fosters increased economic activity.

Because the initial impetus for rethinking how urban and suburban places should be developed came from planners and other stakeholders interested in improving livability, they most often focused on improving accommodations for pedestrians, cyclists, and transit users. Stakeholders

As more development is concentrated in activity centers, the needs of all users, including those that move goods, must be considered in the planning process.

involved in goods movement were included less often in the urban design conversation. Recently, however, cities and states around the country are beginning to include the consideration of truck movements in their land-use and transportation planning activities. In the National Capital Region, the District Department of Transportation (DDOT) is developing and implementing strategies to address goods movement issues in the urban core. The Region has an opportunity to apply the findings of recent and ongoing research as well as the lessons learned by cities and counties across the nation to ensure that as more development is concentrated in activity centers, the needs of all users, including those that move goods, are considered in the planning process.

REGIONAL FREIGHT POLICIES

The Regional freight policies are intended to provide a framework for transportation planning activities conducted by the Transportation Planning Board (TPB). TPB member jurisdictions are also encouraged to consider these freight policies as they conduct their respective transportation planning functions.

Freight Policy Background

These freight policy statements are the result of an extensive development process based upon TPB member input, a review of existing policy language within published Virginia, Maryland, and District of Columbia documents, regional stakeholder outreach, and multiple TPB freight subcommittee and TPB technical committee reviews. To ensure coverage of all the relevant topic areas, the set of freight policy statements has been correlated with both Regional Transportation Priority Plan goals and National Freight Goals.

TPB Freight Policies

The Transportation Planning Board...

1. supports the prioritized advancement of freight-related transportation projects that provide maximum value, efficiency, and safety with particular emphasis on those that improve freight access to activity centers.
2. supports investments that maintain a state of good repair for the Region's freight transportation system.
3. supports the use of best practices for safety, engineering, and maintenance, of freight-related transportation infrastructure.
4. supports the alleviation of roadway bottlenecks where feasible to improve travel times and reliability for trucks and passenger vehicles.
5. supports maximizing opportunities to expand transportation options, address roadway congestion, and reduce pollution by increasing the use of passenger and freight rail.
6. supports the consideration of potential social, economic, and environmental effects of freight-related programs, policies, and activities on minority populations, low-income populations, and people with disabilities.
7. recognizes freight's role in economic development and supports efforts to maximize the use of important economic drivers, including airports, ports, and intermodal facilities serving the Region's residents and businesses.
8. supports the safe and community-friendly accommodation of freight deliveries within the Region's activity centers.
9. supports improvements in truck safety using education, enforcement, and engineering strategies.
10. supports efforts to route hazardous materials away from the National Capital Region; for hazardous materials that must be transported to, from, within, and through the Region, the TPB supports the selection of the safest and most secure modes and routes.

11. encourages information sharing on explosive, toxic by inhalation, and radioactive materials being shipped to, from, within, and through the Region, including real-time notifications and long-term planning information.
12. supports robust first responder training and exercise activities regarding freight in general and hazardous materials transport in particular.
13. supports collaboration among agencies and with the private sector on freight planning and operations concerns to support mutual goals.
14. supports the proactive analysis of freight-related performance measures in the context of overall regional performance measurement to identify lessons learned and promote regional goals.
15. promotes sustainable methods of freight operations that are sensitive to environmental, cultural, and community resources.
16. encourages collaboration among transportation planners, land use planners, private railroads, elected officials, and other stakeholders to find creative ways to facilitate community-beneficial land use development (residential, commercial, or industrial as appropriate) while providing space for necessary future rail expansion along key rail corridors.
17. supports the review and study of new freight-related technologies, emerging business practices, and evolving commodity mixes and mode shares to advance regional goals.

RECOMMENDATIONS AND NEXT STEPS

The TPB vision is to develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy including a healthy regional core and dynamic regional activity centers. Realizing this vision requires a focus on the efficient transportation of both people and goods. The following recommended actions, which can be accomplished with resources that are already in place, will help the Region move towards its vision. These actions are organized into two categories; those related to maintaining and strengthening the existing regional freight planning process and longer-term, strategic actions.

Actions Related to Maintaining and Strengthening the Regional Freight Planning Process

- Continue to Support the TPB Freight Subcommittee
- Maintain and Strengthen Private-Sector Participation in the TPB Freight Subcommittee
- Create Opportunities to Hold Joint Meetings with Other TPB Subcommittees
- Develop “Freight Around the Region” Brochures in Coordination with Member Jurisdictions
- Organize Periodic Regional Freight Forums
- Collect and Analyze Freight Data and Make Available to Member Jurisdictions and the Public
- Continue Coordination with Federal, State, Local, and Private-Sector Freight Partners
- Coordinate TPB’s MAP-21/FAST Freight-Related Activities – Including Performance Measures
- Identify and Communicate Freight-Related Infrastructure Issues to Member Agencies to Address in their Planning and Programming Activities
- Strengthen Relationships with Local Jurisdiction Planners
- Highlight Economic Development Aspects of Freight with Local Jurisdiction Planners

Strategic Regional Freight Planning Activities

- Raise Freight Profile within Local and Regional Planning Processes
- Develop and Communicate Helpful Information about Accommodating Freight within Regional Activity Centers
- Continue Participation in FHWA Effort to Develop Innovative Strategies for Improving Freight Movement in Urban Areas
- Monitor Developments of Autonomous and Connected Freight Vehicles
- Monitor Key Economic and Industry Trends Impacting Goods Movement
- Monitor the Development of New and Emerging Freight-Relevant Data Sources and Incorporate them into Transportation Planning Activities as Appropriate
- Provide Information to the TPB and Freight Stakeholders on the Status or Progress on this Plan’s Identified Freight Policies When Such Information Becomes Available