DELMARVA FREIGHT PLAN

Draft Plan Excerpts & Highlights

Delaware Department of Transportation

Maryland Department of Transportation

WILMAPCO

Dover/Kent County MPO

VDOT

VANTAGEPOINT

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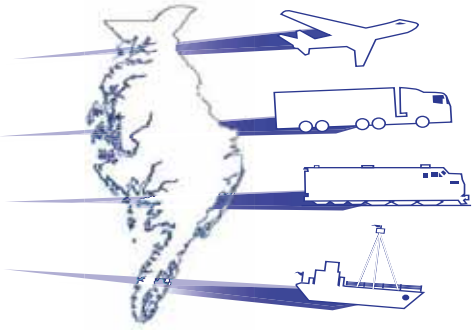
Introduction

The *Delmarva Freight Plan* summarizes current and future freight planning and transportation needs to enhance freight and goods movement and related economic opportunities on the Delmarva Peninsula. Undertaken by the Delaware Department of Transportation (DelDOT) in collaboration with the Maryland Department of Transportation (MDOT) and the Virginia Department of Transportation (VDOT), the plan supports a regional perspective of freight flows to, from, through, and within the project area. In further coordination with the Wilmington Area Planning Council (WILMAPCO), the Dover/Kent County Metropolitan Planning Organization (Dover/Kent MPO), the Salisbury/Wicomico MPO (S/WMPO), and coupled with extensive stakeholder outreach, the plan also supports consistency with other area planning efforts while targeting specific freight-related issues relevant to the local and regional economies.



Purpose

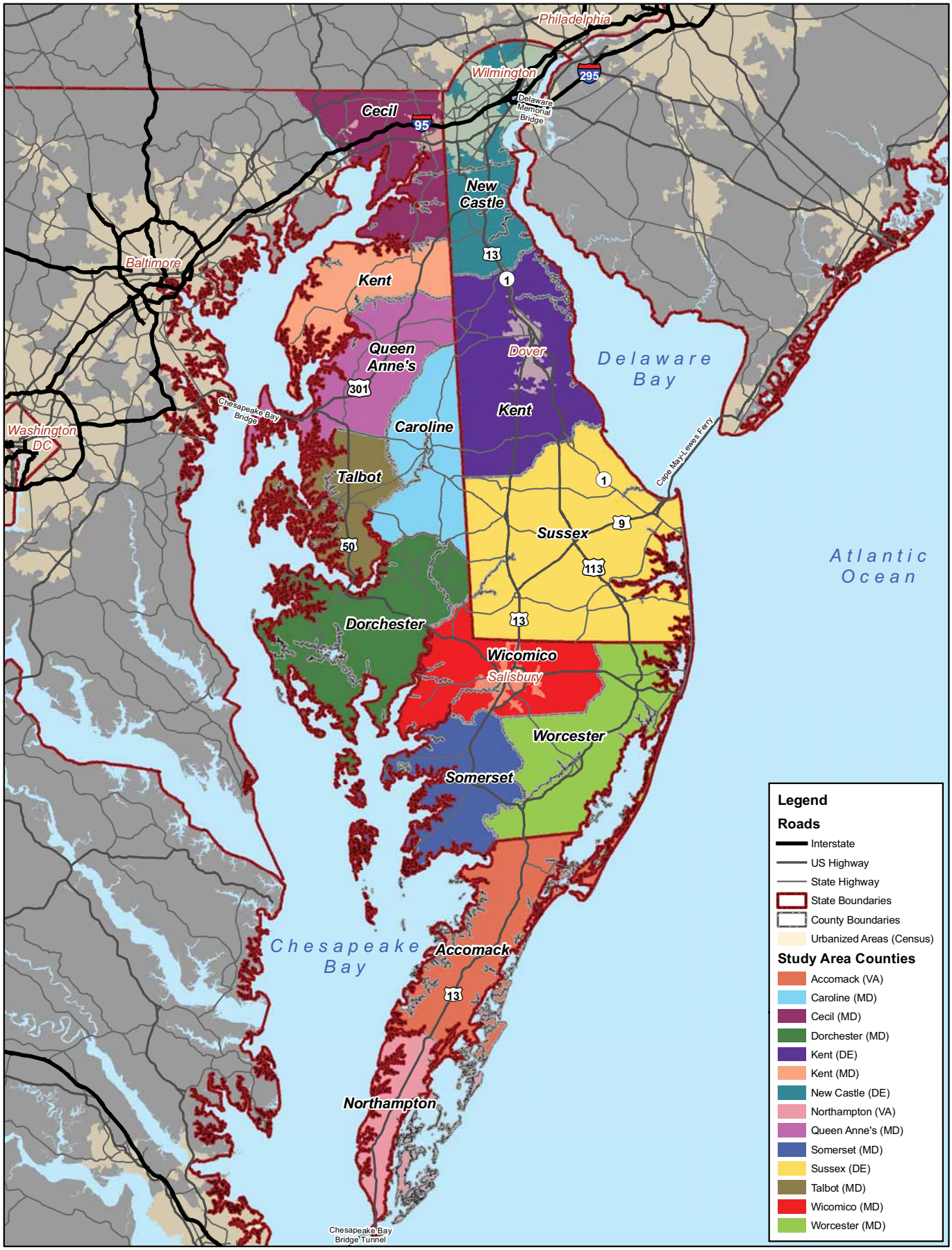
The overall purpose of the *Delmarva Freight Plan* is to provide relevant information that will assist the state DOTs, area MPOs, and other stakeholders in making well-informed decisions on freight infrastructure investments and freight-related policies. To accomplish this task, the study aimed to:

- Better understand existing and anticipated freight flows, issues, and concerns within the project area and to/from the surrounding areas
- Comprehensively evaluate the multimodal/intermodal freight transportation system while encompassing commodity flows via truck, rail, water, air, and pipeline
- Explore and analyze future freight-planning scenarios through year 2040 with an emphasis on a performance-driven approach
- Identify relevant infrastructure, policies and regulation changes or other investments that seek to enhance the safety, performance, and efficiency of freight travel in the region, as well as related environmental impacts and economic opportunities

Project Area

The *Delmarva Freight Plan* fulfills statewide freight plan requirements for the state of Delaware, while also spanning boundaries to provide additional support for existing freight plans in Maryland and Virginia. The plan's primary geographic focus is the entirety of the Delmarva Peninsula, referred to as "the peninsula", bound by the Chesapeake Bay, Delaware Bay, and Atlantic Ocean (*Exhibit 1.1*). This area encompasses all three counties in the state of Delaware (New Castle, Kent, and Sussex); nine counties on Maryland's Eastern Shore (Cecil, Kent, Queen Anne's, Caroline, Talbot, Dorchester, Wicomico, Somerset, and Worcester); and two counties in Virginia at the peninsula's southern tip (Accomack and Northampton).

Exhibit 1.1 – Delmarva Freight Study Project Area



Multi-Jurisdictional Plan Perspective

It is crucial to recognize that the Delmarva Freight Plan embraces a multistate/multi-jurisdictional and multimodal freight planning perspective that stretches beyond the identified project area. Supply chains and freight flows vary by commodity, industry, supply and demand, and origins and destinations and are rarely limited to a single jurisdiction. Transportation freight plans are best approached by a multi-faceted perspective of trade lanes, key commodities, or key industries in the U.S. and neighboring trade partners (i.e. Latin America and Canada), rather than simply from within a state's geography.

DelDOT, MDOT, VDOT, and their MPO planning partners, for example, are critical components of the freight movement system in the I-95 Corridor. As international markets continue to emerge for imports and exports, and with expansions of the Panama and Suez Canals, the port-airport-rail-highway system in the I-95 Corridor will remain one of the most critical components of the United States' freight network.

The broader I-95 Corridor encompasses a region of 16 States (from Maine to Florida) generating 41% of the Nation's Gross Domestic Product and representing 40% of the Nation's population. Within this essential region are:

- 41 Ports, and Coastal Shipping Lanes in the Atlantic, and the Intercoastal and Inland Waterways
- 106+ Airports
- 907,000 miles of Highway
- 30,495 miles of Freight Railroad Track, with 1,111 heavy-rail directional route miles (70% of the national total)

Comprehensive freight planning must address the systems within individual political jurisdictions or state boundaries while recognizing the multi-state economic corridor that comprises the trip of a particular mode. Assistance for addressing the growing needs of the industry will come from the USDOT national freight strategic plan guidance, with its national freight framework built upon multistate corridors.

States understand that economic corridor planning is comprehensive, not simply mode specific. Ensuring robust connectivity to state and regional airports, rail, and seaports is key to a competitive regional economy and comprehensive State Freight Plan. Through implementation and utilization of more efficient economic corridors, managed lanes, and strategic improvements, states can optimize the network for more reliable freight flows as well as better commute times for its end users.

This combined individual and multi-jurisdictional perspective allows better identification of vital freight improvement projects, sustaining an economically robust freight system for supply chains moving within Delaware, Maryland, Virginia, and beyond. In the development of this freight plan, the planning agencies recognize and support the need for collaboration in freight planning within regional jurisdictions and across economic corridors, enhancing mobility at the local, state, multi-state, and national level.

Plan Highlights

Critical background information or unique components that have been woven throughout this plan include:

Federal Freight Planning Compliance: The Moving Ahead for Progress in the 21st Century act (MAP-21) was signed into law by the President on July 6, 2012. MAP-21 sections 1115 through 1118 outline new details for a National Freight Policy, the prioritization of projects to improve freight movements, the establishment of state freight advisory committees, and related requirements for state freight plans. The Delmarva Freight Plan fulfills these requirements while also incorporating related interim guidance from the U.S. Department of Transportation (USDOT), as well as established freight planning practices from the Federal Highway Administration (FHWA).

MAP-21 Section 1118 requires that a State Freight Plan developed pursuant to Section 1118 include, at a minimum, the following elements:

- An identification of significant freight system trends, needs, and issues with respect to the state;
- A description of the freight policies, strategies, and performance measures that will guide the freight-related transportation investment decisions of the state;
- A description of how the plan will improve the ability of the state to meet the national freight goals established under section 167 of title 23, United States Code;
- Evidence of consideration of innovative technologies and operational strategies, including intelligent transportation systems, that improve the safety and efficiency of freight movement;
- A description of improvements that may be required to reduce or impede roadway deterioration in the case of routes on which travel by heavy vehicles (including mining, agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate the condition of roadways; and
- An inventory of facilities with freight mobility issues, such as truck bottlenecks, within the state, and a description of the strategies the state is employing to address those freight mobility issues.

Extensive Document Review: To ensure consistency with existing plans and the current state-of-the-practice, the Delmarva Freight Plan commenced with an extensive document review effort (*Appendix A*). In addition to building upon or supporting previous freight-plans in Delaware, Maryland, and Virginia, such research helps this plan to reflect intra-regional, inter-regional, and national trends in freight movement and planning.

Robust Stakeholder Outreach: One of the best ways to determine existing conditions, bottlenecks, needs, and forecasted growth is through an active stakeholder outreach program. To accomplish this, the study team conducted a series of outreach activities to explore the unique, but overlapping, perspectives of various stakeholder agencies, shippers and carriers, businesses, and industries (*Appendix B*). Outreach mechanisms included project advisory meetings, stakeholder interviews, and an online survey. In addition, plan development coincided with and benefitted from ongoing efforts being spearheaded by WILMAPCO, DelDOT, and MDOT to create and launch a regularly-scheduled freight forum focusing on the needs and interests of the Delmarva Peninsula. The initial freight summit (June 2012) was modeled on past successes of the Delmarva Rail Summit, but with an expansion to address all modes of freight and goods movement. Subsequent refinements (June 2013 and beyond) hope to embrace newer MAP-21 guidance for State Freight Advisory Committees.

MAP-21 Section 1117 and related interim guidance specify that State Freight Advisory Committees should be charged with:

- Advising the state on freight-related priorities, issues, projects, and funding needs;
- Serving as a forum for discussion of state decisions affecting freight transportation;
- Communicating and coordinating regional priorities with other organizations;
- Promoting the sharing of information between the private and public sectors on freight issues; and
- Participating in the development of the state's freight plan.

Detailed Commodity Flow Investigations: To better understand the types, volumes, origins, destinations, and related details of freight within the project area, a number of commodity flow sources were referenced. FHWA's Federal Analysis Framework Version 3 (FAF3) data provided a general overview; the Surface Transportation Board's (STB) rail waybill samples supported a review of rail commodities; and IHS Global Insight's Transearch data provided more extensive detail for project-specific investigation. Combined, such details helped to paint a more accurate picture of specific commodity flows and related needs, while also supporting model development tasks and performance-based emphases throughout the study.

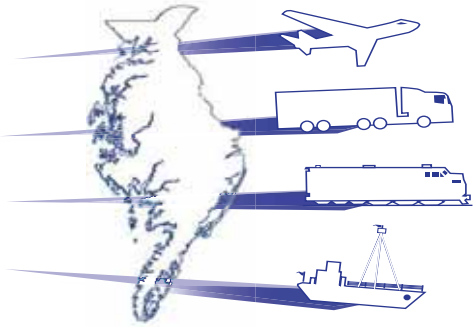
Commodity Flow Model Development: A major component of this project was the development and customization of a Commodity Flow model using the Cube Voyager software platform (*Appendix C*), coupled with the expansion and refinement of DelDOT's existing statewide travel demand model (i.e. the Peninsula Model). This model is a powerful software tool with the capability to forecast current and future freight movements on the peninsula by commodity group and mode of travel; to accurately capture intermodal transfer of goods and freight system performance; and to test the impacts of decisions such as infrastructure investments, changes in regulations, and modal enhancements. Use of the model was not only key to investigating freight scenarios for this project, but also establishes the software tool as an efficient means for DelDOT to help support ongoing or future freight planning efforts.

Performance-Based Scenario Planning: Incorporating each of the highlighted components above, this plan culminates in the development and evaluation of future freight planning scenarios. Each scenario represents an alternate future based on some combination of various assumptions (e.g. loss of barges and rails, significant increase in water freight, status quo). Scenario planning combines stakeholder guidance with general study insights, commodity details, and the Commodity Flow model to conduct a transparent qualitative/quantitative review of how the freight transportation system might perform under each scenario. The performance outcomes help describe a future to which the DOTs, MPOs, and other stakeholders can better prepare to react, ultimately fostering more informed decision-making and the development of effective infrastructure plans and policy guidance.

Existing Economic Context

The Delmarva Peninsula is a growing region with well-established industries and developed infrastructure. To fully understand the freight services that are the impetus of this plan it's important to understand the economic drivers and markets of the region. To that end, this chapter provides an overview of the following:

- Population growth, employment patterns, and what these trends indicate about the region.
- Key industries, supply chain characteristics, and goods/cargo movement perspectives.
- The region's numerous economic development strategies that include business enterprise zones, tax credits, and other policies designed to promote industry and business opportunities.
- A macro perspective as to how the Delmarva region fits into the global market.



Population and Employment

Overview

The population on the Delmarva Peninsula is very urban in and around the Northeast Corridor and rural in the central and southern parts of the peninsula. Population concentrations help to drive commodity flows on the peninsula as much of the reoccurring freight is what is known as secondary traffic (i.e. consumer goods or other freight that is trucked between warehouses, distribution centers, retail stores, or other final points of delivery, often with more localized origins and destinations). Estimated household growth on the peninsula will continue to have an influence on commodity flow trends. Continued growth in population may also be a catalyst for strong employment growth in the coming years, particularly for the peninsula's largest industry groups. Trade, transportation, and utilities industries comprise the largest of these groups, while manufacturing is the second largest industry on the peninsula in terms of employees, employing 10% of the peninsula's working population.

Employment hubs stationed around the peninsula have enabled household income to increase as the majority of households earn $50,000 to $99,999 per year. Increased household income will help to increase the demand for consumer goods, which will continue to fuel the cycle of commodity flows from suppliers to consumers. The relationship between consumer demands and commodity flows on the peninsula are expected to influence freight trends and drive growth in truck transportation establishments in each county to accommodate the expected growth.

Key Industries and Supply Chains

Overview

The Delmarva Peninsula's economy features a diverse group of industries that includes agriculture, chemical processing, and logistics. A robust profile was created of the industries, supply chains, and their relationships to markets in and around the peninsula. This section identifies the unique economic needs of freight dependent industries that are crucial to the Delmarva economy. Additional economic insights, concerns, or ideas are also highlighted based upon corporate, local government, and other stakeholder perspectives on the current and anticipated freight networks.

Secondary freight movements and commodity flows on the Delmarva Peninsula are a function of population concentrations. Demographic trends such as population, households, and income are major factors in the way freight is moved because consumer-driven freight movement creates important markets where distribution hubs are centered, especially in growing and established places such as New Castle, Cecil, Kent, Sussex, and Wicomico counties. Freight movements and consumer demand on the peninsula have a strong economic correlation which affects overall freight trends.

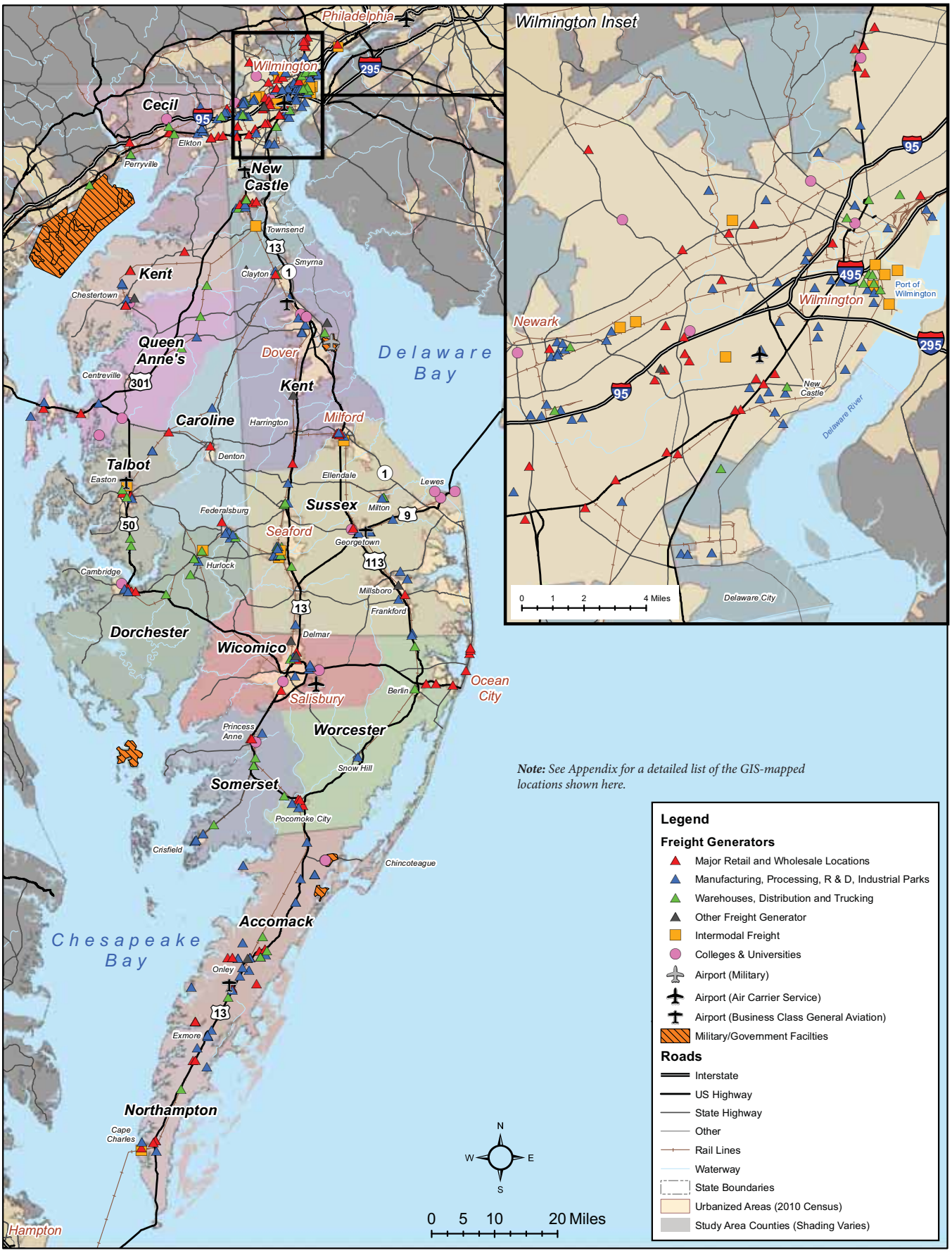
Key industries and supply chains on the peninsula, including freight dependent industries such as manufacturing and agriculture, have industry-specific requirements and strategic logistical approaches to commodity flows. The region's proximity to major transportation infrastructure and access to consumer markets is not overlooked by business interests. The I-95 corridor and other regionally linked roads are desirable business locations because of their intermodal linkages to truck, rail, water, and air transportation assets.

Key Industries

The study area encompasses a diverse group of economic drivers that includes businesses and firms from the chemical, agricultural, military, and other industry sectors. Key Industries range in size from smaller local firms catering to regional markets, to larger global players such as DuPont Chemical. Many of these industries have located on the peninsula based on a variety of historical, natural, and infrastructure considerations. Among those considerations is access to the peninsula's transportation assets as well as its resources. The result is that many of the major freight generating establishments can be found along key motor freight corridors such as I-95 or US 13; near major rail-served areas such as the Northeast Corridor or Delmarva Secondary; clustered around smaller freight hubs with shortline rail and state highway access such as Federalsburg or Hurlock; and in key locations such as Wilmington, Delaware City, Seaford, or Salisbury where multimodal transportation assets converge (*Exhibit 2.8*).

In such areas, major freight dependent industries in Delaware such as DuPont and Astra Zeneca in New Castle County, or Energizer-Playtex and Kraft Foods in Kent County, are located largely due to their proximity or connectivity to I-95. Maryland-based industries such as GORE-Tex, IKEA, Perdue Farms, or Labinal Salisbury; or Virginia-based manufacturing, agricultural, and seafood industries are similarly located to take advantage of the peninsula's available resources and assets. Key industries by county are summarized below (see also *Appendix D* for a corresponding list of the GIS-mapped locations appearing on *Exhibit 2.8*).

Exhibit 2.8 – Major Freight Generating Industries on the Delmarva Peninsula



Economic Development Strategies

A review of current economic development strategies on the peninsula included an inventory of area-specific enterprise zones, incentives, and business programs. As an effort to bolster local economies, counties and cities offer incentives for companies to spur development, employment, and innovation. Businesses located in specific areas deemed by local governments to be Enterprise Zones or Historically Underutilized Business (HUB) Zones may be eligible for income tax credits, real property tax credits, or personal property tax credits for job creation. Details by state and county are summarized below.

Delaware Strategies by County

Delaware's economic development is supported by state plans, growth policies, incentives, and programs that aid to create or strengthen jobs, businesses, and business investments. These efforts include support for small businesses, which total 72,132 in the state of Delaware (based on 2011 U.S. Small Business Administration (SBA) figures). They also include support for agriculture as a vital part of Delaware's economy. Specific enterprise zones and business programs in Delaware include:

New Castle County: New Castle County, located on the I-95/Northeast Corridor, allows easy access to Baltimore, Washington, D.C., and Philadelphia. The county participates in the 'Growing Seeds, Growing Jobs' economic development program to support businesses of all sizes. Businesses that invest at least $50,000 in new construction of commercial and manufacturing facilities in unincorporated areas are eligible for three-year property tax abatement. The county also takes part in the Community Economic Development Grants Program, Expanded Buy from your Neighbor Program, Targeted Community Economic Development Program, Investment in Infrastructure, Small Business in Advocate, and Partial Property Tax Exemption Ordinance.

Kent County: Located in the heart of Delaware, Kent County participates in the Delaware Small Business Limited Investment for Financial Traction (LIFT) Program, Delaware Access Program, Delaware Business Finder's Fee Tax Credit, Renewable Energy Facilities Revolving Loan Fund, Delaware Rural Irrigation Program, State Small Business Credit Initiative (SSBCI), and Brownfield's Assistance Program.

Sussex County: Historically, farming has been the dominant force in Sussex County's economy. However, the county is also diversifying with four industrial parks, including the Sussex County Industrial Airpark. Sussex County participates in the state economic development entity programs and offers a $250,000 maximum economic development loan. The county also wishes to promote its agricultural economy by preserving farmland through a zoning overlay district and transfer of development rights program.

Maryland Strategies by County

The Maryland Department of Business and Economic Development identifies 30 enterprise zones throughout the State of Maryland. Businesses in enterprise zones may be eligible for income tax credits, real property tax credits, or personal property tax credits in return for job creations. Specific enterprise zones, incentives, and business programs on the peninsula in Maryland include:

Cecil, Caroline, and Queen Anne's Counties: Each of these counties has incentives and business programs such as real property tax credits and income tax credits for businesses. In addition to tax credit programs, Queen Anne's County participates in the county's revolving loan fund program for qualifying businesses. Caroline County also participates in the One Maryland Program.

Dorchester County: Dorchester County is one of Maryland's largest counties with close proximity to Baltimore and Washington, D.C., which attracts large and small businesses. The County's enterprise zones include 247 acres in Hurlock Industrial Park and 1,329 acres in the City of Cambridge. Additionally, it is a federally designated HUB Zone.

Kent County: Kent County, the study region's second smallest jurisdiction, includes a workforce that specializes in education and health services. The county features four industrial parks with convenient access to intermodal infrastructure facilities. The largest of these parks – Kent County Business Park at Worton – is owned by the jurisdiction itself. The county also has access to SCORE, a non-profit association that provides Eastern Shore entrepreneurs with no-cost, confidential face-to-face and email counseling.

Somerset County: Somerset County is Maryland's southernmost county and a major seafood processor and poultry producer. The county features a 499-acre enterprise zone in Crisfield and a 1,297-acre enterprise zone in Princess Anne. Somerset County also participates in the One Maryland Program, which offers significant tax credits for capital investments to create jobs.

Talbot County: Talbot County's economic development programs and consulting services include the Eastern Shore Entrepreneurship Center (ESEC), the Talbot County Chamber of Commerce, and other state and federal resources. Additionally, Talbot County recently commissioned a study that analyzed economic development potential in the jurisdiction. The study made recommendations for business-friendly initiatives, pursuing target industries by creating new resources for economic development in addition to other strategies.

Wicomico County: Located at the crossing of major highway transportation routes, Wicomico County is a leading agricultural producing county and ranks highest in the state in broiler chicken production. The county features state enterprise zones in Salisbury and Fruitland; major tax credits are available for businesses in these zones. Salisbury-Wicomico Economic Development (SWED) is the leading agency for promotion of economic development activities within the county. SWED is a private membership organization that receives support from local governments. In addition, the county participates in business retention, expansion, and attraction programs to attract new jobs and strengthen existing businesses.

Worcester County: Worcester County, Maryland's only seaside county, features three enterprise zones located in Berlin, Snow Hill, and Pocomoke City. In addition, the entire county is a U.S. SBA designated HUB Zone. Incentives to create jobs include state income and real property tax credits for businesses in the enterprise zones.

Virginia Strategies by County

The Virginia Enterprise Zone (VEZ) Program is a partnership between state and local governments that encourages economic growth, job creation, private investments, and revitalization by supporting existing and new businesses. VEZ coverage would extend to the two counties included in Virginia's portion of the Delmarva Peninsula – Accomack County and Northampton County. Portions of each county are included in enterprise zones. Real Property Investment Grants (RPIG) and Job Creation Grants (JCG) are the two substantial financial incentives to support businesses and expansions through the VEZ.

Global Economic Perspectives

Overview

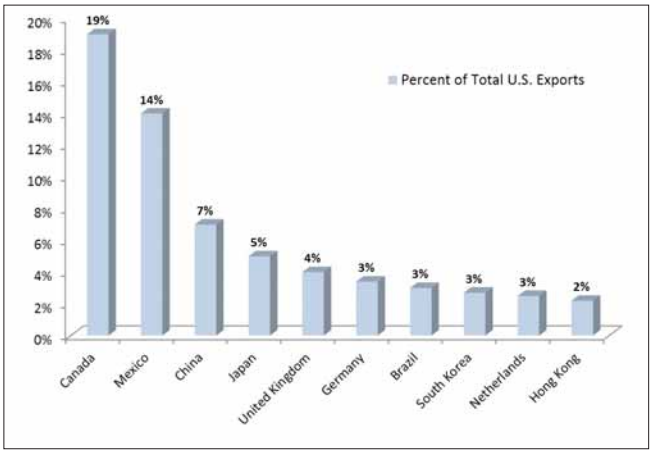
The Delmarva Peninsula functions as one of the key economic components within the country's Mid-Atlantic Region generally comprised of Delaware, Maryland, Virginia, West Virginia, Pennsylvania, New York, and New Jersey. Infrastructure conditions, intermodal access, and cost efficiencies are critical to fulfilling that role from a freight and goods movement perspective. However, the U.S. spends only 1.7% of its GDP on transportation infrastructure; by comparison, Canada spends 4% and China spends 9%. The country's aging infrastructure coupled with funding constraints introduces deficiencies that decrease productivity per worker and cause losses in critical job opportunities in highly-skilled non-transportation sectors throughout the economy. Due to deficient infrastructure, it is estimated that the U.S. economy in 2020 could export $28 billion less in goods potential. For the peninsula to counter such trends or capitalize on future growth opportunities, an efficient multimodal freight network and access to major ports in Wilmington, Baltimore, Philadelphia, and Hampton Roads is crucial. Adding other freight concerns on the peninsula – such as congestion issues, residential encroachments, peak seasonal population spikes, secondary truck traffic increases, freight/passenger traffic conflicts, or motor freight cost increases – further emphasizes the need to address and improve multimodal infrastructure deficiencies. Such strategies will help to enhance the peninsula's economic stability and quality of life, while also better positioning the area to capitalize on future economic opportunities.

Global/National Freight Movements

The American Trucking Association (ATA) indicates that freight tonnage transported in the U.S. dropped by 14.7% in 2009 but rose to 5.4% by 2010 and, post-recession, is anticipated to grow 2.5% per year from 2012 through 2017. The Mid-Atlantic Region in 2010 accounted for 10.7% of total inbound freight, 12.0% of manufactured goods, and 9.0% of other commodities. Inbound and outbound freight were composed of roughly 62% manufactured goods and 37% other commodities. In terms of outbound freight, the region generated 10.5% of the total, 11.8% of manufactured goods, and 8.8% of other commodities. In 2010, inbound freight tonnage for the Mid-Atlantic States surpassed outbound tonnage by 2%.

A 2010 report released by the Research and Innovative Technology Administration (RITA) reveals that U.S. imports in 2008 captured about 13% of world freight exports, of which 55% was ocean borne cargo, 20% was air cargo, and about 25% was carried by land modes of transportation. U.S. exports likewise represent a significant amount of the trading portfolios of the primary trade partners of the United States (*Exhibit 2.9*).

Exhibit 2.9 – Top 10 U.S. Export Destinations



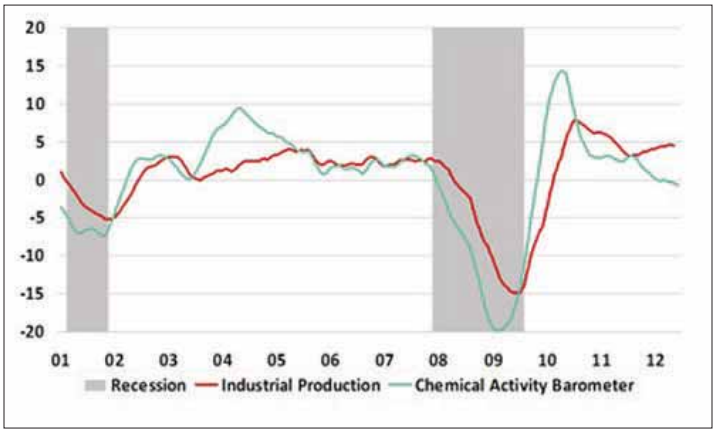
Source: Data compiled from 2012 U.S. Census FT-900

International trade has grown from 5% of Gross Domestic Product (GDP) in 1950, to 20% of GDP in 2000, and is estimated to grow to 50% through 2050. To support the growing population and GDP over time, freight and passenger transportation demands are projected to increase by two and half times by 2050. With the growth of international trade, ports in Wilmington, Baltimore, Philadelphia, and Hampton Roads will be even more critical as multimodal hubs and major assets for the ongoing economic and trade potential of the region.

Focus Area: Chemical Industry

The U.S. chemical industry represents more than 15% of global chemical output. With more than 170 major chemical companies in the country, the chemical industry constitutes 12% of national exports, 25% of national GDP, and shipped more than 759 million tons of products in 2011. The American Chemistry Council (ACC) noted that chemical production in 2012 rose across the Gulf Coast and Ohio Valley Areas, while all other regions saw declines (*Exhibit 2.10*). National chemical output is expected to slow from 3.8% in 2011 to 0.5% in 2012 and then see a hike of 2.3% in 2013. The decline in production can be partly explained by the lower demand that DuPont experienced related to Titanium Dioxide and Photovoltaic markets.

Exhibit 2.10 – Chemical Activity Barometer vs. Industrial Production Index



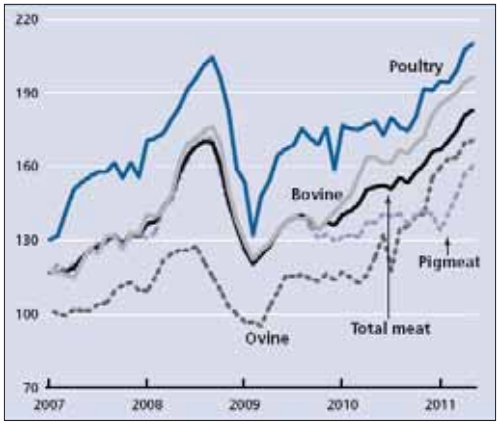
Source: Chem.Info, 2012

Based on a ongoing 2013 WILMAPCO study (conducted by IHS analysts) of chemical manufacturing supply chains on the Delmarva Peninsula, additional chemical production is anticipated to be based on shale-influenced natural gas and oil. Ethylene production and products such as methanol, ammonia, and fertilizers will expand. The increase in fertilizer production could be significant for a region where agriculture is a major economic driver. Domestic producers will also be increasingly export-focused on products such as Ethylene, thus making access to the ports and major infrastructure facilities of the Mid-Atlantic Region a critical need for chemical producers. Transportation systems in this region must be efficient and well-maintained to accommodate the anticipated increase in chemical production and exports. Not investing in transportation could result in a missed opportunity for the Delmarva region's chemical industry, and possibly reduced transportation network effectiveness.

Focus Area: Food Manufacturing

The food manufacturing industry accounts for more than 10% of all manufacturing shipments. A report by the Food and Agriculture Organization of the United Nations (FAO) indicates that maize stocks in 2011-2012 dropped dramatically while the sugar industry increased 5.8% over the 2009-2010 seasons. Resulting high feed prices and decreased animal inventories restricted the expansion of global meat production to only 1% in 2011. The increase was driven by gains in the poultry and pig meat sectors. The trading volume of poultry meat grew 2.3% from 2010-2011, and international meat prices have also managed steady increases since January 2011.

Exhibit 2.11 – FAO International Meat Price Indices



Source: FAO Food Outlook, Global Market Analysis, 2011; Note that 2002-2004 = Index of 100

Based on these trends and a growing worldwide demand for soybeans, poultry products, and corn – particularly in emerging markets such as China, who is now the world's largest importer of soybeans – the Delmarva region is positioned to benefit from these burgeoning markets. Therefore it is essential to maintain and build infrastructure that will enhance and streamline access to facilities that will allow the promulgation of Delmarva agriculture and food products.

Focus Area: Transportation Support Activities

The 2002 North American Industry Classification System (NAICS) identifies establishments that provide transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation as components of the transportation industry. The Bureau of Labor Statistics (BLS) suggests that the warehousing and storage sector has the highest job growth rate, expanding almost 25% from 556,000 to 694,000 jobs between 2004 and 2014 (*Exhibit 2.12*). Transit and Ground Transportation is also projected to grow almost 24% from 385,000 to 476,000 jobs. Moderate growth is projected for sectors in trucking, couriers and messengers, sightseeing transportation and support activities for the transportation. Given that the transportation sector is included in an industry category that comprises 16.7% of all working individuals on the peninsula (the highest single proportion per the previous *Exhibit 2.12*), this strong base should indicate growth and stability for the peninsula's transportation labor market.

Exhibit 2.12 – Employment and Output of Transportation Major Sectors (2004-2014)

Industry	Employment				Output			
	Thousands of Jobs		2004-2014 Change		Billions of Constant 2000 Dollars		2004-2014 Change	
	2004	2014	#	%	2004	2014	#	%
Transportation and Warehousing	4,250	4,756	506	11.9%	619	889	270	43.6%
Warehousing and Storage	556	694	138	24.8%	359	565	206	57.4%
Transit and Ground Passenger Transportation	385	476	91	23.6%	309	406	97	31.4%
Scenic and Sightseeing Transportation and Support	112	123	11	9.8%	107	152	45	42.1%
Trucking Transportation, Couriers, Messengers	135	148	13	9.6%	224	317	93	41.5%
Air Transportation	515	560	45	8.7%	130	213	83	63.8%
Water Transportation	57	58	1	1.8%	224	269	45	20.1%
Rail Transportation	224	215	-9	-4.0%	432	599	167	38.7%

Source: Transportation Industry, Department of Labor, 2007

Focus Area: Truck Transportation

ATA projections indicate that the proportion of total freight tonnage transported by truck will rise from 67.0% in 2011, to 68.9% in 2017, to 69.6% by 2023. Truckload (TL) volumes will expand 3.3% per year from 2012-2017, and 1.1% per year from 2018-2023. Less-than-truckload (LTL) volumes are estimated to have an average annual growth of 3.5% from 2012-2017 and 2.3% in 2018-2023. Corresponding percentage growths will be even higher (*Exhibit 2.13*). In short, trucks are and will remain the primary mode of freight transportation across the U.S. and in the Delmarva region.

Exhibit 2.13 – Truck Revenue Forecasts (2011-2023)

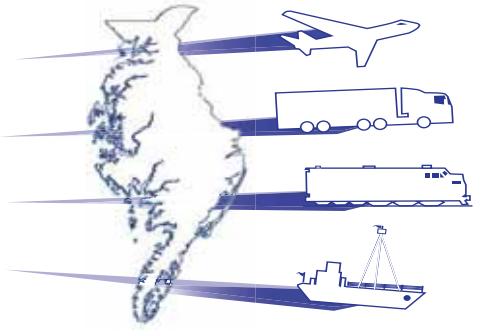
Category	Billions of Dollars			Average Annual Growth Rate		
	2011	2017	2023	2012-2017	2018-2023	2012-2023
Truckload	280.2	382.9	464.4	6.1%	3.5%	4.8%
LTL	46.9	68.2	90.7	7.6%	5.5%	6.5%
Private	276.8	355.6	414.0	4.8%	2.7%	3.7%
Total	603.9	806.7	969.0	5.6%	3.4%	4.5%

Source: U.S. Freight Transportation Forecast to 2023, ATA, 2012

As consumer demand increases on the peninsula, truck transportation will grow in response to the markets. Coupled with anticipated growth in the peninsula's tourism industry and related peak seasonal congestion, these increases will exacerbate any existing concerns or conflicts between passenger vehicles and freight trucks sharing road space. Additionally, trucking costs can rise rapidly due to increases in fuel, labor and capital costs. Companies such as FedEx Freight, Con-Way Freight, ABF Freight, and UPS have announced recent price increases of 5.9-6.9% due to a surge in operating costs. These increasing costs will have a major impact on the study area given the dominance of motor freight transport and a reliance on the peninsula's warehousing and transportation related industries. It is vital, then, to consider improvements that will enhance operational and cost efficiencies for motor freight transportation throughout the Delmarva Peninsula while also recognizing potential relationships or conflicts with other unique facets of the peninsula, such as peak seasonal tourism demands.

Existing Commodity Flows

Understanding existing commodity flows on and around the Delmarva Peninsula including, for example, what types of freight are moving, by what mode, and to/from where, is an important step toward identifying freight and goods movement patterns, trends, or needs specific to the region. This chapter summarizes the available commodity flow data[1] and establishes a baseline from which to begin developing (in subsequent chapters) a project-specific freight demand model and future freight projections. This summary also highlights potential supply chain perspectives and unique issues related to energy, agriculture, or other productive activity centers that may warrant special attention within the freight planning process.



Delmarva Freight

Overall Tonnage and Value

Commodity flows on the Delmarva Peninsula[2] in 2011 amounted to approximately 157 million tons valued at over $327 billion (*Exhibit 3.1-Exhibit 3.2*). Of this total, roughly 44% of the tonnage (70 million tons) or 23% of the value ($75 billion) was specific to the project area in terms of inbound freight destined to the peninsula, outbound freight originating from the peninsula, or intercounty freight moving locally/regionally between two locations on the peninsula. The variation in Delmarva's share of tonnage versus value (42% versus 22%) is at least partly attributable to several of the area's leading commodity groups consisting of relatively higher weight but lower value products (e.g., gravel or sand as opposed to computers or cellphones). Pass-thru freight, which travels through the project area without a local origin or destination, makes up the remainder of the freight total. The region's high proportion of pass-thru freight is to be expected given the influence of large volumes of interstate highway and rail traffic through Cecil and New Castle Counties along local segments of the I-95 corridor and the Northeast Corridor.

[1] Commodity flow data presented in this chapter reflect a compilation of 2011 IHS Transearch® data (including a focus on truck and water modes, commodity type details, and origin-destination details); Delaware rail waybill data from the Surface Transportation Board (including a focus on rail flows); 2011 FAF3-based projections (including a focus on air and pipeline modes, and international imports/exports), and select intercounty flow adjustments relative to project-specific freight demand modeling needs.

[2] For purposes of this chapter, the commodity flows generally reflect the Delmarva Peninsula's 12-county area in Delaware and Maryland only. Accomack and Northampton Counties, Virginia, are not included as they were not detailed in the available Transearch® database. Future chapters and development/application of the project-specific freight demand model will aim to fill-in any potential gaps relative to scenario planning and performance measurements Peninsula-wide.

Exhibit 3.1 – Freight Flow Summary

2011 Freight Flow	By Weight		By Value	
	Tons	Share	Value (Millions)	Share
Inbound	28,884,521	18%	$33,161	10%
Outbound	27,954,253	18%	$31,480	10%
Intercounty	12,798,795	8%	$9,973	3%
Pass-Thru	87,202,316	56%	$252,700	77%
Delmarva Freight (Inbound + Outbound + Intercounty)	69,637,568	44%	$74,613	23%
Total Freight (Delmarva Freight + Pass-Thru)	156,839,884	100%	$327,314	100%

Domestic Trading Partners

The origins and destinations of freight to/from the Delmarva Peninsula span the country and the North American continent (*Exhibit 3.3-Exhibit 3.4*). The most prominent freight flows, however, are concentrated along the U.S. eastern seaboard and throughout major metropolitan areas in the Mid-Atlantic region, particularly in the surrounding states of Maryland, New Jersey, Pennsylvania, and New York. To a lesser extent, prominent flows also stretch throughout the South Atlantic, East North Central, and New England regions, particularly for inbound freight shipped to the peninsula. Roughly 95% of Delmarva's domestic freight activity occurs east of the Mississippi River, including 25% of intercounty freight on the peninsula and 70% freight to and from the surrounding regions, excluding pass-thru freight.

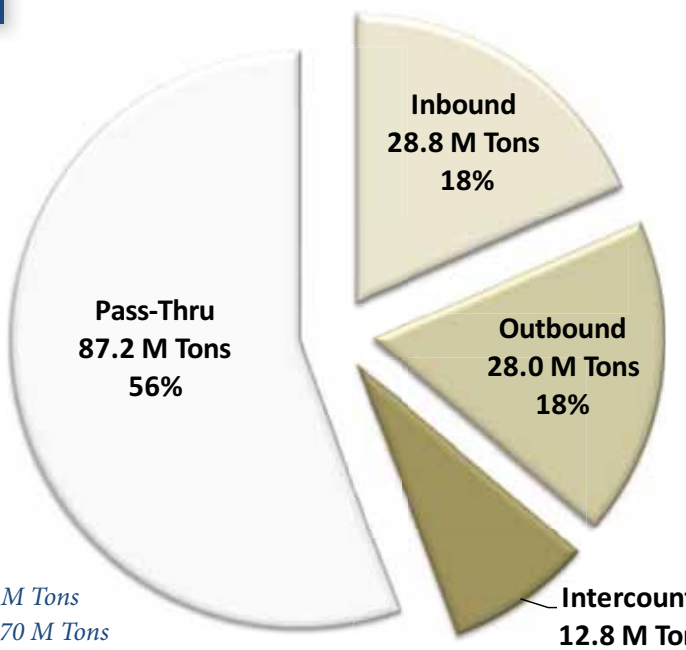
Global Trading Partners

Internationally, the Delmarva Peninsula in 2012 imported roughly 12 million tons ($8.2 billion) of freight and exported almost 2 million tons ($4.9 billion).[3] Leading international trading partners (*Exhibit 3.5-Exhibit 3.6*) generally include Canada, Europe, and Central or South America (i.e., the FAF-based "Rest of the Americas" zone). Additional partners include Southwest and Central Asia, though mostly as foreign origins for Delmarva imports; and to a lesser extent Mexico and Eastern Asia, though mostly as foreign destinations for Delmarva exports. Delmarva's leading imports (*Exhibit 3.7*) include crude petroleum, fuel oils, and – most notably from the Rest of Americas zone – agricultural products; several higher value import groups also include pharmaceuticals, motorized vehicles, and machinery. Delmarva's leading exports (*Exhibit 3.7*) predominately include basic chemicals and plastics/rubber, as well as several higher value commodities such as motorized vehicles and – most notably to the European market – precision instruments, electronics, and machinery.

[3] Based on 2012 import/export data from FHWA's Federal Analysis Framework (FAF3) using FAF zones for Delaware and Remainder of Maryland as the domestic origin/destination.

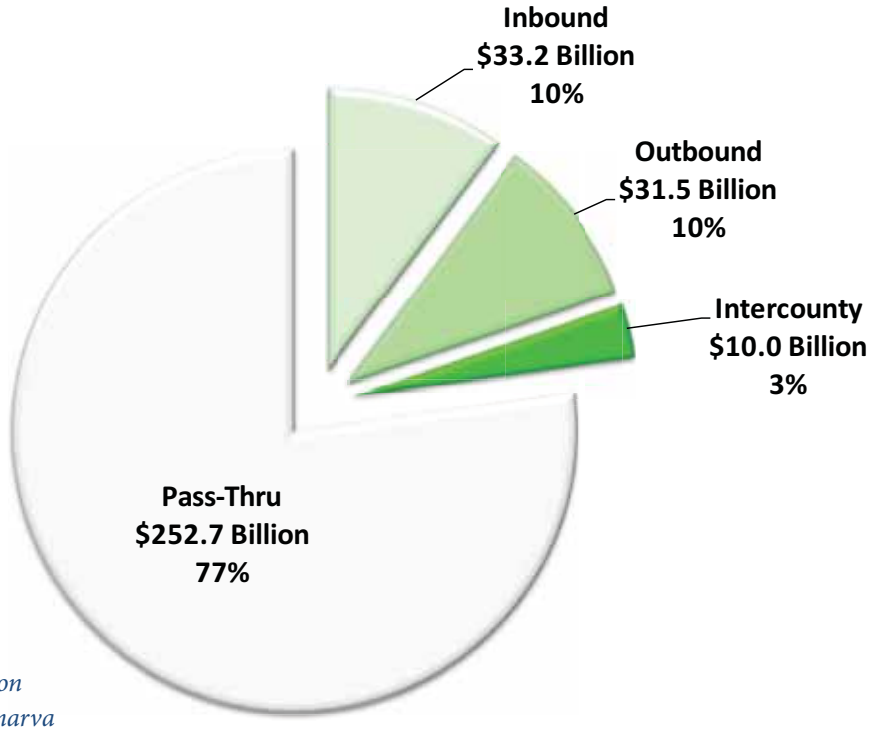
Exhibit 3.2 – Freight Direction

(by Weight)



Total Freight ≈ 157 M Tons
...including just under 70 M Tons
(44%) to, from, or internal to Delmarva

(by Value)



Total Freight ≈ $327 Billion
...including just under $75 Billion
(23%) to, from, or internal to Delmarva

Exhibit 3.3 – Domestic Trading Partners (Freight Origin)

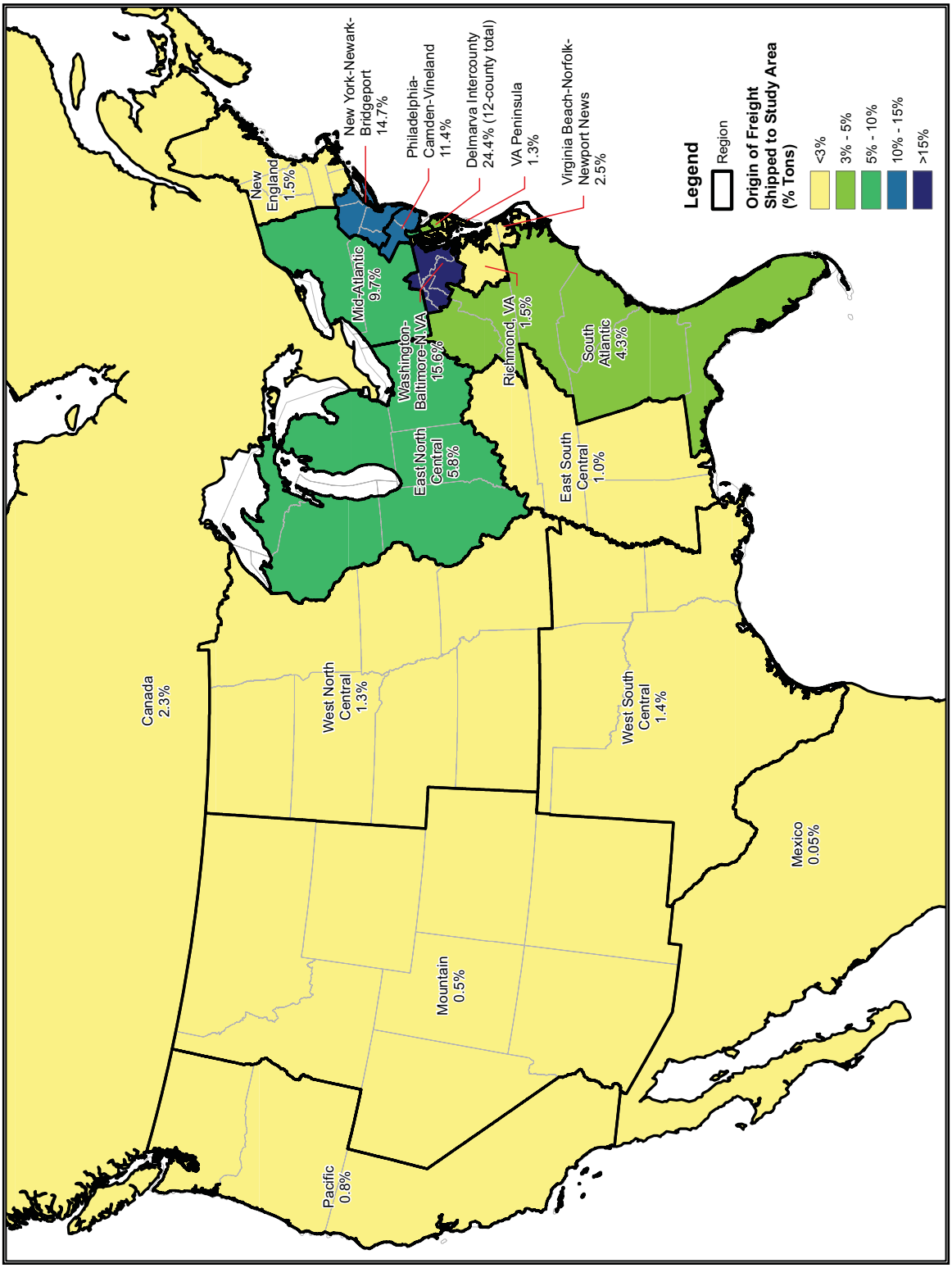


Exhibit 3.4 – Domestic Trading Partners (Freight Destination)

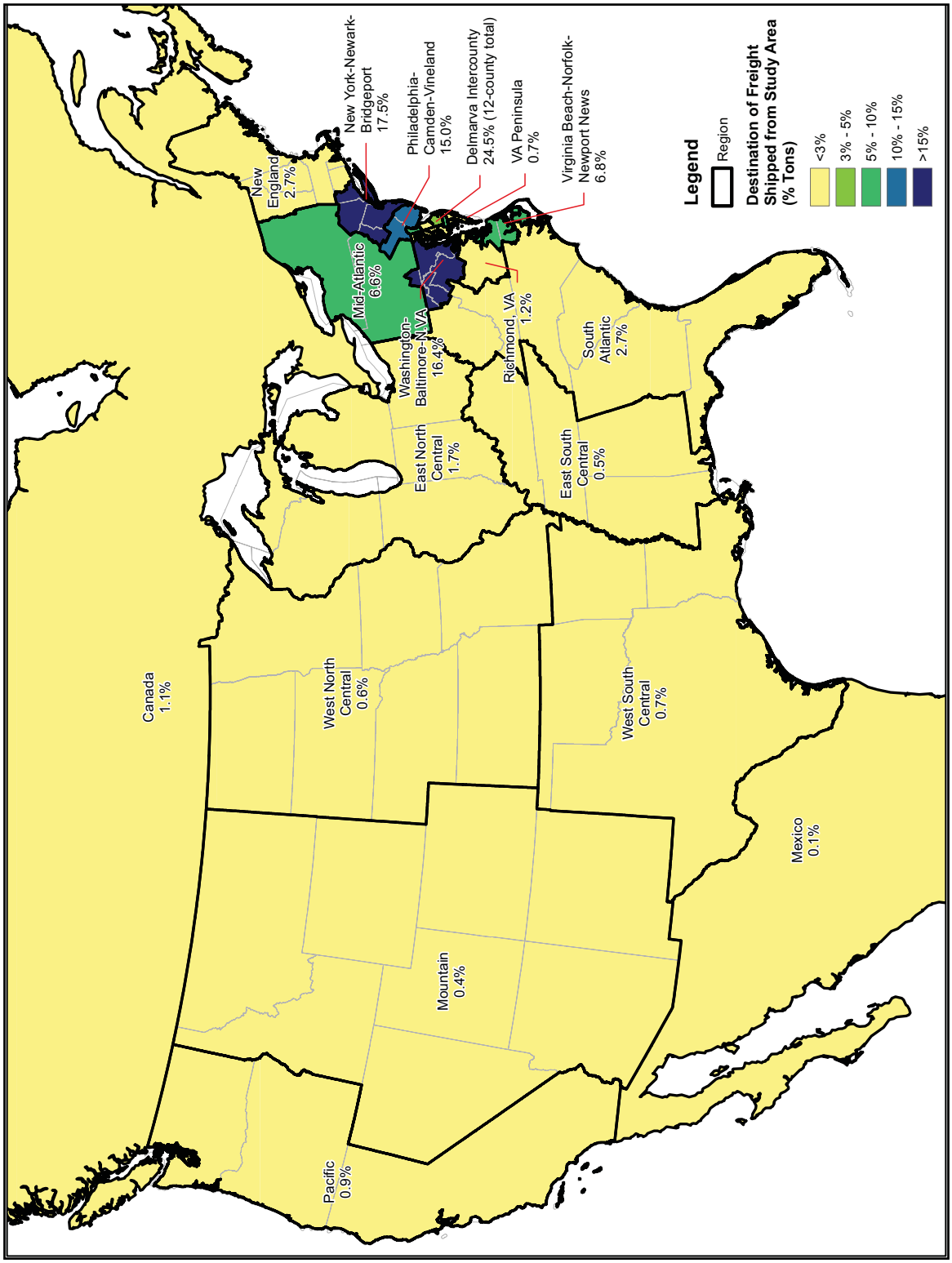
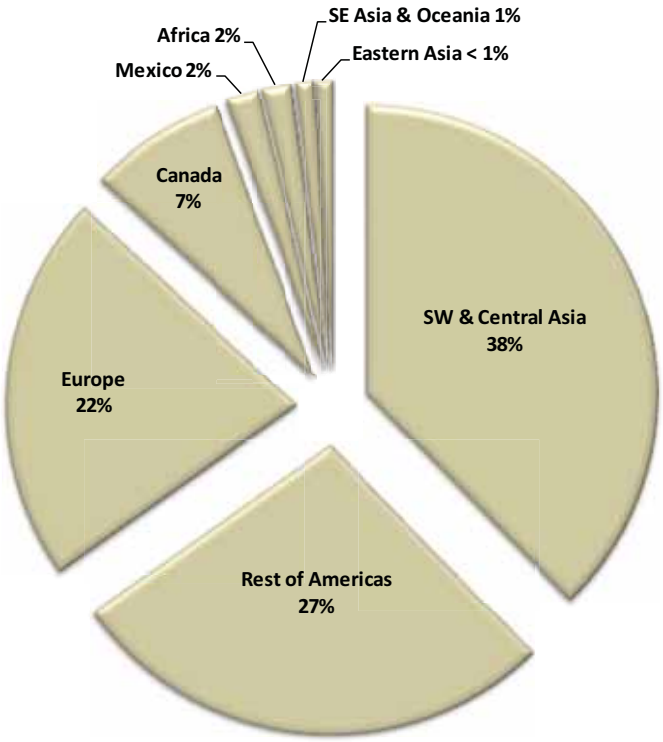


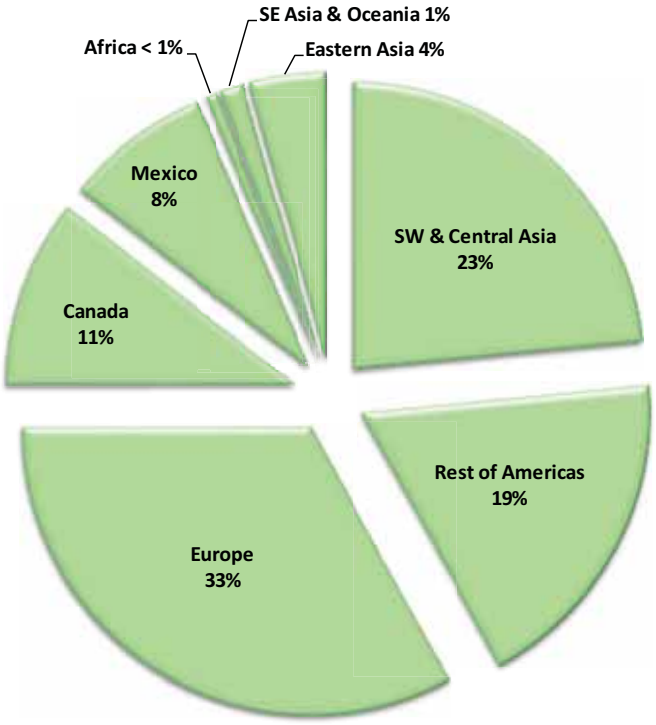
Exhibit 3.5 – International Trading Partners (Foreign Origin of Imports)

(by Weight)



Import Total ≈ 12M Tons

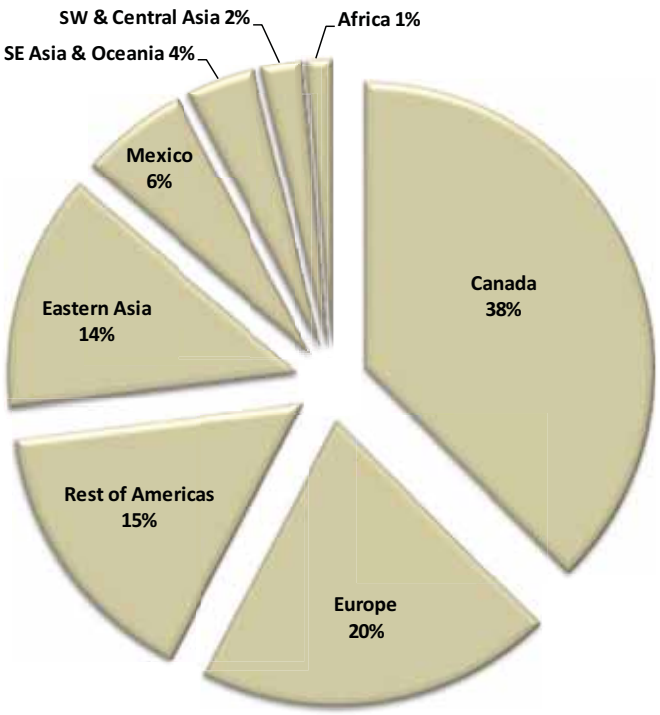
(by Value)



Import Total ≈ $8.2 Billion

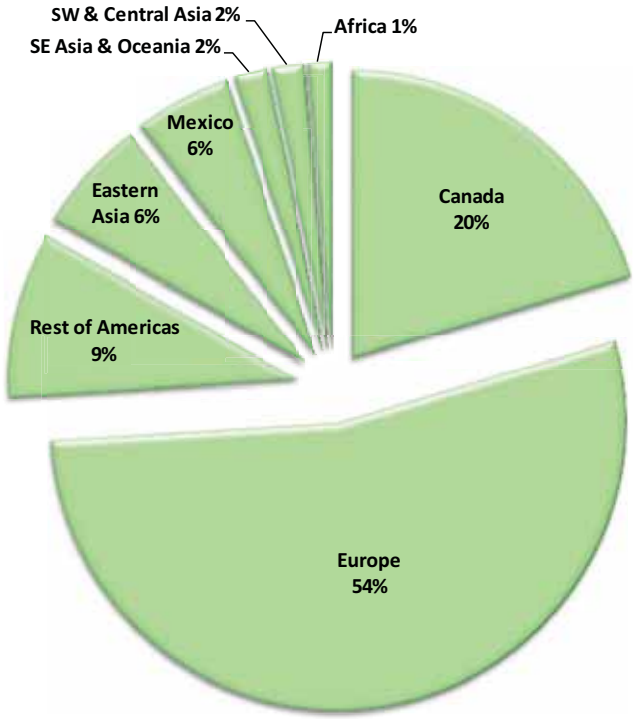
Exhibit 3.6 – International Trading Partners (Foreign Destination of Exports)

(by Weight)



Export Total ≈ 1.8M Tons

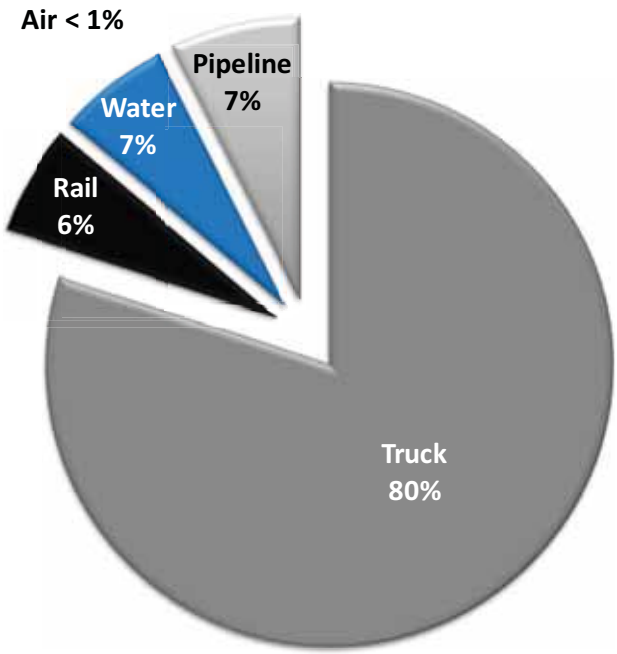
(by Value)



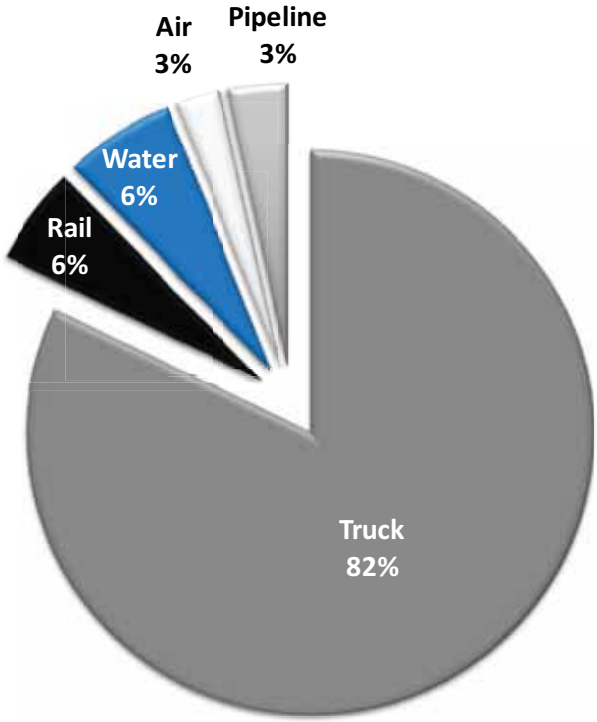
Export Total ≈ $4.9 Billion

Exhibit 3.8 – Freight Mode

(by Weight)



(by Value)



The overall proportion and directionality of freight flows within any given mode varies (*Exhibit 3.9*). Each mode fills unique roles that are critical to the overall freight transportation system, and it is important to consider those roles in broad qualitative terms in addition to simply tonnage or value-based comparisons. Such details, including additional insights for air, pipeline, or international shipping interests, are expanded elsewhere in this plan (*Chapter 4*), while unique directional traits are summarized below:

- **Truck:** As the dominant mode, the directional split for trucks is similar to that for the overall peninsula, including relatively even inbound/outbound traffic and roughly a third as much as intercounty flow.
- **Rail:** Rail movements are two to four times higher in the inbound (versus outbound) direction, and intercounty rail flows are minimal. Freight flows between the NS Delmarva Secondary and the peninsula's various shortline railroads would generally be included in the overall inbound/outbound data and would not be tracked separately as intercounty flows.
- **Water:** Waterborne freight (specifically via river systems on the Peninsula) is generally evenly split inbound/outbound with negligible intercounty or pass-thru statistics, excluding in this case roughly 10 million tons of waterborne commerce that traverse the Chesapeake and Delaware Canal.
- **Air:** Air freight is also generally evenly split inbound/outbound. However, the limited amount of air freight noted here likely does not reflect the true influence of unknown quantities of military cargo that may pass through Dover Air Force Base – a location noted as providing 25% of the nation's strategic airlift capability and the largest/busiest air freight terminal in the Department of Defense. [4]
- **Pipeline:** Unique in comparison to other modes on the peninsula, pipelines carry a relatively limited selection of commodities, and FAF-based domestic pipeline flows are predominately intercounty. This trend likely reflects a localized network of transfer, storage, or distribution systems that support the peninsula's regional refinery operations, fuel supply sites, or similar distribution networks.

Exhibit 3.9 – Freight Mode (by Direction)

Mode	≈ Delmarva Freight in 2011		Directional Proportion by Weight (by Value)			
	Tons	Value	Pass-Thru	Inbound	Outbound	Intercounty
Truck	56 million	$63 billion	57% (78%)	17% (10%)	19% (10%)	7% (2%)
Rail	4-5 million	$4-5 billion	73% (86%)	22% (10%)	5% (4%)	< 1% (< 1%)
Water*	4-5 million	$4-5 billion	-	46% (35%)	53% (64%)	1% (1%)
Air	20,000-25,000	$2-3 billion	-	55% (38%)	45% (62%)	-
Pipeline	5-6 million	$2-3 billion	-	22% (16%)	7% (5%)	71% (79%)

**does not include international shipping or C & D Canal; see Exhibits 4.17 & 4.18.*

[4] http://www.dover.af.mil/units/index.asp

Exhibit 3.10 – Delmarva Top Commodity Groups

Delmarva Top Commodity Groups by Weight

STCC2	Commodity Group	By Weight	
		Tons	Share
29	Petroleum or Coal Products	12,387,836	17.8%
14	Non-Metallic Minerals	11,465,825	16.5%
50	Secondary Traffic	10,815,985	15.5%
01	Farm Products	7,873,138	11.3%
20	Food or Kindred Products	7,355,805	10.6%
28	Chemicals or Allied Products	5,752,320	8.3%
32	Clay, Concrete, Glass, or Stone	4,186,362	6.0%
40	Waste or Scrap Materials	1,869,810	2.7%
24	Lumber or Wood Products	1,539,405	2.2%
26	Pulp, Paper, or Allied Products	787,450	1.1%
-	Other	5,603,633	8.0%
	TOTAL	69,637,568	100.0%

Delmarva Top Commodity Groups by Value

STCC2	Commodity Group	By Value	
		Value (Millions)	Share
50	Secondary Traffic	$11,855	15.9%
28	Chemicals or Allied Products	$10,624	14.2%
20	Food or Kindred Products	$9,809	13.1%
01	Farm Products	$7,635	10.2%
29	Petroleum or Coal Products	$7,319	9.8%
37	Transportation Equipment	$6,961	9.3%
39	Misc Manufacturing Products	$2,453	3.3%
36	Electrical Equipment	$2,207	3.0%
35	Machinery	$2,051	2.7%
30	Rubber or Misc Plastics	$1,778	2.4%
-	Other	$11,919	16.1%
	TOTAL	$74,613	100.0%

- High Tonnage / High Value Group

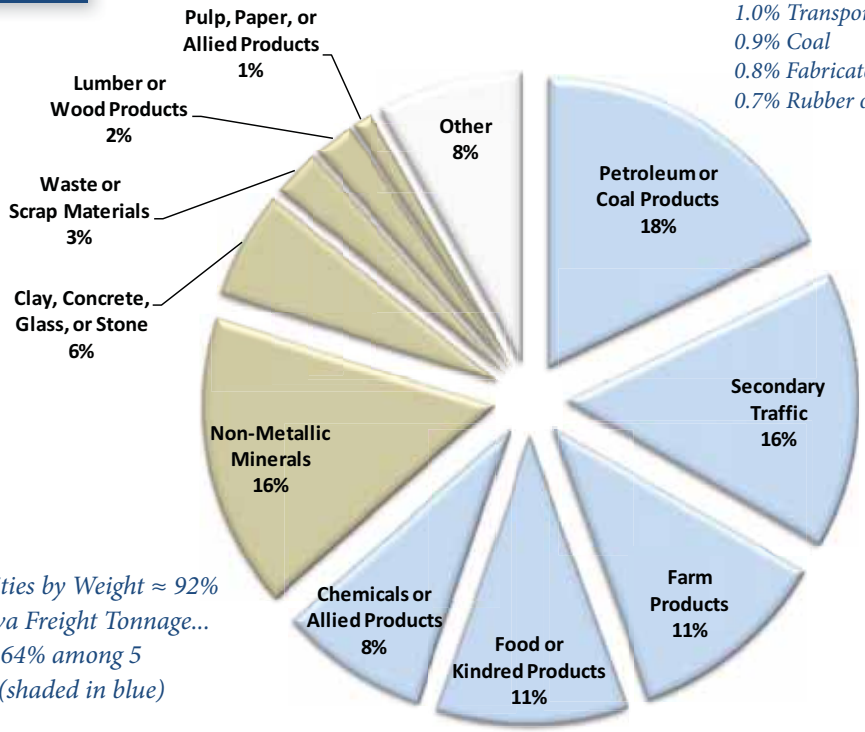
- High Tonnage / Low Value Group

- Low Tonnage / High Value Group

Exhibit 3.11 – Delmarva Top Commodity Groups (with Core Groupings)

(by Weight)

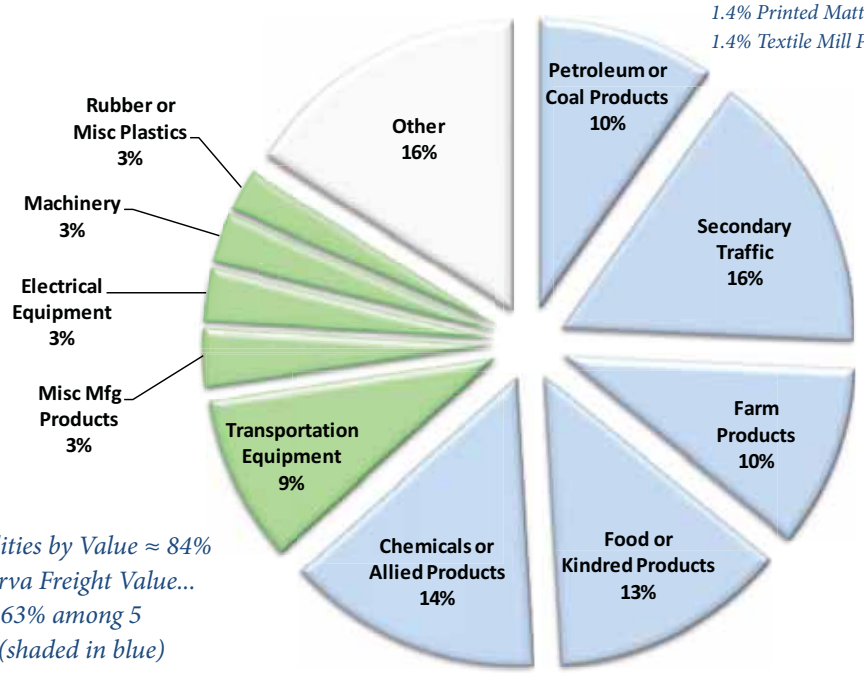
"Other" 8% includes:
1.1% Primary Metal Prod
1.0% Transportation Equipment
0.9% Coal
0.8% Fabricated Metal Prod
0.7% Rubber or Misc Plastics



Top 10 Commodities by Weight ≈ 92% of Total Delmarva Freight Tonnage... including 64% among 5 core groups (shaded in blue)

(by Value)

"Other" 16% includes:
2.2% Fabricated Metal Prod
1.9% Instrument, Photo Eq, Optical Eq
1.5% Primary Metal Prod
1.4% Printed Matter
1.4% Textile Mill Prod



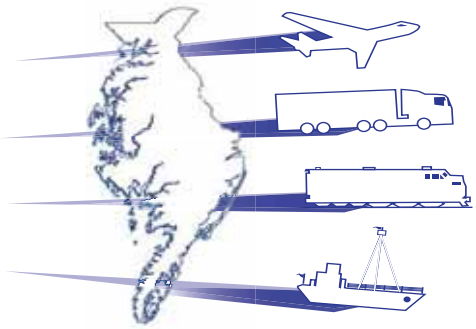
Top 10 Commodities by Value ≈ 84% of Total Delmarva Freight Value... including 63% among 5 core groups (shaded in blue)

Exhibit 3.12 – Delmarva Top Commodity Group/Type Details

HIGH TONNAGE / HIGH VALUE	HIGH TONNAGE / LOW VALUE	LOW TONNAGE / HIGH VALUE
50 Secondary Traffic	**14 Non-Metallic Minerals**	**37 Transportation Equipment**
Warehouse and Distribution Center	Gravel or Sand	Motor Vehicle Pats & Accessories
Rail Intermodal Drayage	Broken Stone or Riprap	Missile or Space Vehicle Parts
	Chemical or Fertilizer Mineral Crude	Motor Vehicles
01 Farm Products		Aircraft Propellers or Parts
Grain	**32 Clay, Concrete, Glass, or Stone**	
Live Poultry	Ready-Mix Concrete, Wet	**39 Misc Manufacturing Products**
Tropical Fruits	Concrete Products	Manufactured Products, NEC
Oil Kernels, Nuts, or Seeds	Portland Cement	Signs or Advertising Displays
Misc Field Crops	Misc Glassware, Blown or Pressed	Musical Instruments or Parts
Dairy Farm Products	Cut Stone or Stone Products	Games or Toys
		Sporting or Athletic Goods
29 Petroleum or Coal Products	**40 Waste or Scrap Materials**	
Petroleum Refining Products	Textile Scrap or Sweepings	**36 Electrical Equipment**
Asphalt Paving Blocks or Mix	Paper Waste or Scrap	Misc Electrical Industrial Equipment
Liquefied Gases, Coal, or Petroleum	Metal Scrap or Tailings	Misc Electrical Components
Asphalt Coatings or Felt		Storage Batteries or Plates
	24 Lumber or Wood Products	Telephone or Telegraph Equipment
20 Food or Kindred Products	Primary Forest Materials	Radio or TV Transmitting Equipment
Prepared or Canned Feed	Lumber or Dimension Stock	
Processed Poultry or Eggs	Misc Sawmill or Planing Mill	**35 Machinery**
Soft Drinks or Mineral Water	Wood Products, NEC	Electronic Data Processing Equipment
Dressed Poultry (Fresh or Frozen)	Millwork or Cabinet Work	Refrigeration Machinery
Canned Fruits, Vegetables, etc.		Ventilating Equipment
Processed Fish Products	**26 Pulp, Paper, or Allied Products**	Misc Internal Combustion Engines
Bread or Other Bakery Products	Paper	Farm Machinery or Equipment
	Sanitary Food Containers	Construction Machinery or Equipment
28 Chemicals or Allied Products	Containers or Boxes, Paper	
Misc Industrial Organic Chemicals	Fiber, Paper or Pulpboard	**30 Rubber or Misc Plastics**
Fertilizers		Misc Plastic Products
Plastic Material or Synthetic Fiber		Misc Fabricated Products
Drugs		Tires or Inner Tubes
Specialty Cleaning Agents		Reclaimed Rubber

Existing Freight Transportation System

The existing multimodal freight transportation system on the Delmarva Peninsula is comprised of various highway, rail, port/waterway, air, and pipeline assets across each of the 3 states and 14 counties in the project area. Relatively up-to-date inventories or descriptions of this infrastructure have been detailed as part of numerous recent planning efforts (see "References" for complete listings) including but not limited to:



- 2009 Maryland Statewide Freight Plan
- 2010 Regional Freight Transportation Study for the Delmarva Peninsula
- 2010 Virginia Statewide Multimodal Freight Study, Phase II
- 2011 Delaware State Rail Plan

This section draws from such references to summarize the available freight transportation system and assets by mode while also beginning to identify freight mobility issues, emphasis areas, or related insights for investigation later in the plan.

Modal Assets

Motor Freight

Motor freight truck movements are clearly the dominant means of freight transportation on, off, and throughout the peninsula. Based on project-specific commodity flow data, trucks carry approximately 80% of the peninsula's overall goods movement tonnage and 82% of the overall value. Truck movements are handled by the peninsula's interstate, U.S. highway, state, and secondary route networks, as well as first/last mile connections along county, municipal, or other local roadways (*Exhibit 4.1 and Exhibit 4.2*).

Exhibit 4.7 – Delmarva Peninsula Truck Volume Summary (2012 ADTT)

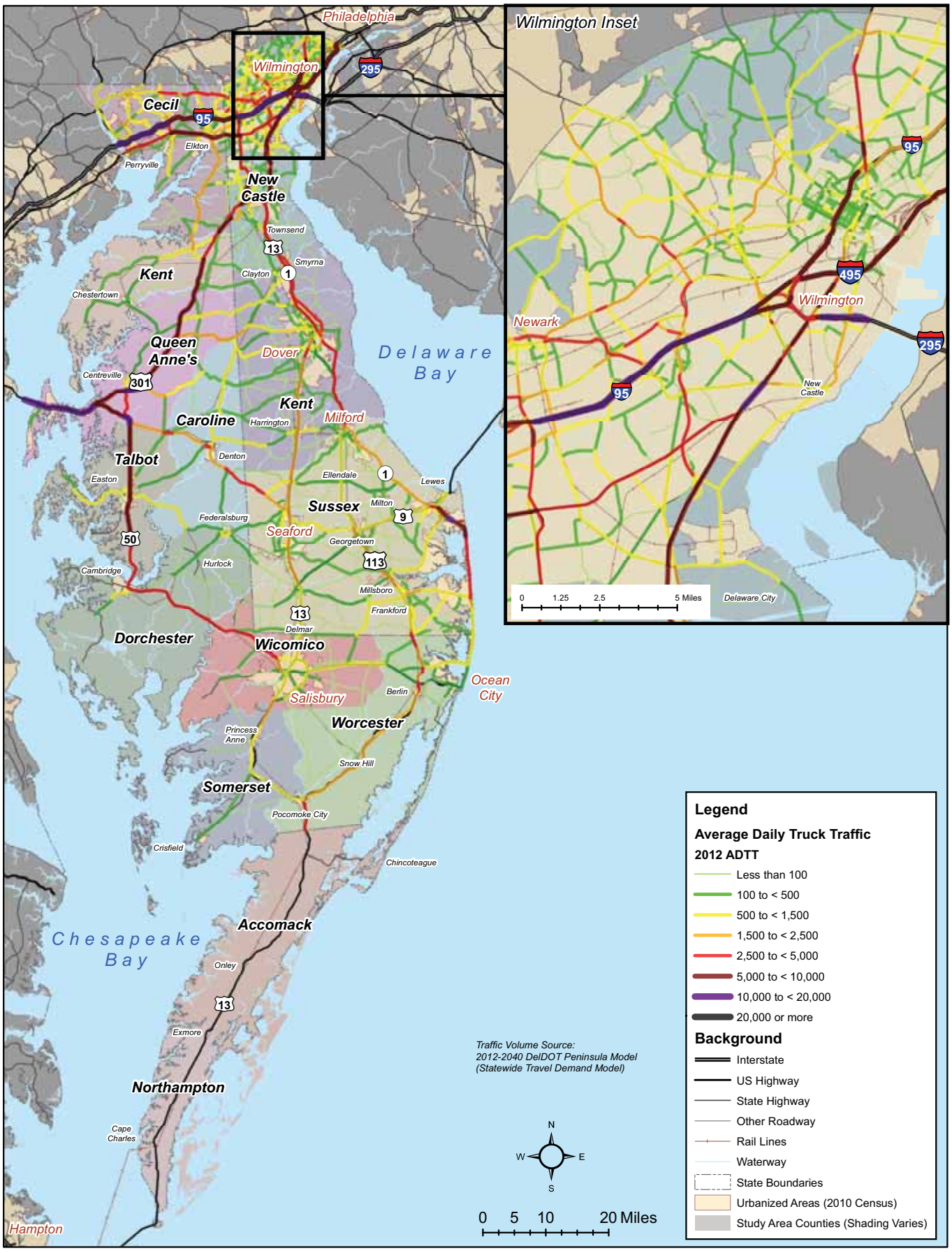
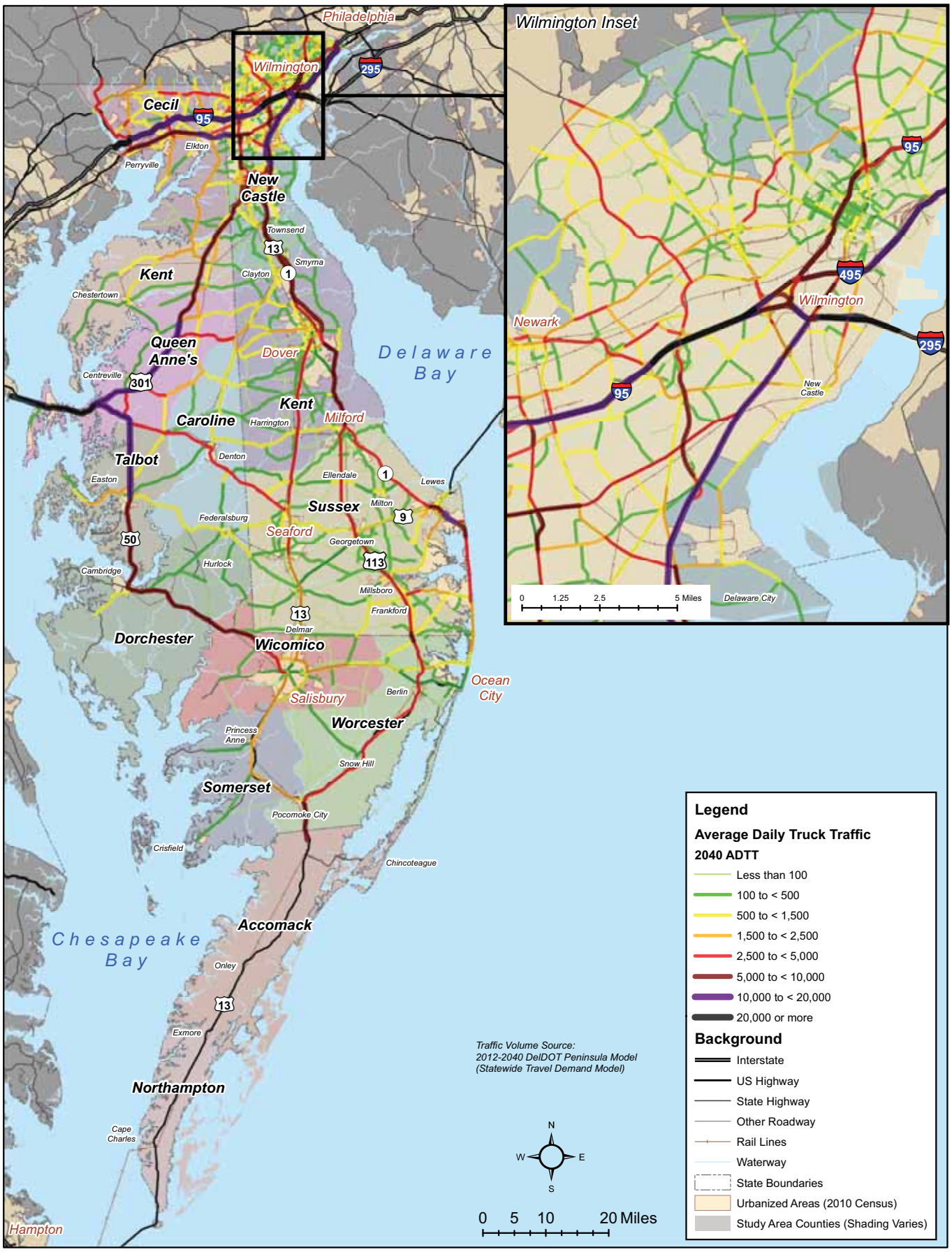


Exhibit 4.8 – Delmarva Peninsula Truck Volume Summary (2040 ADTT)



System Summary

Combining the inventory of modal assets and infrastructure across the Delmarva Peninsula with previous reviews of major industry/business locations and related economic development patterns helps to identify how the peninsula's overall freight transportation system fits within local, regional, and national goods movement perspectives.

Freight Corridors

While the overall multimodal freight transportation system is extensive, varied, and complex, it can also be grouped more simplistically as functioning in terms of key freight corridors. This perspective encompasses five key freight corridors that capture the majority of freight flows that enter, exit, pass-through, or travel within the peninsula while also connecting most of the urbanized areas throughout the peninsula (*Exhibit 4.26* through *Exhibit 4.32*). These corridors include:

North/South Corridors

- North/South: I-95 "Metro" Freight Corridor
- North/South: US 301 "Bay" Freight Corridor
- North/South: DE 1/US 13/US 113 "Coastal" Freight Corridor

East/West Corridors

- East/West: US 202 / DE 41 "Piedmont" Freight Corridor
- East/West: US 50 "Ocean City" Freight Corridor
- East/West: Route 404 "Lewes" Freight Corridor

Local Freight Zones

The peninsula may also be viewed as having six local freight zones that essentially fill-in the gaps around or in between the key freight corridors listed above (*Exhibit 4.26*). These zones capture secondary highway or rail connections that link the key freight corridors, provide access to smaller hubs of freight activity, or otherwise accommodate intra-county goods movement on the peninsula. Local freight zones generally include geographic areas and transportation connections linking:

- Chestertown
- Sudlersville-Smyrna-Dover
- Denton-Dover-Milford
- Federalsburg-Hurlock
- Crisfield
- Chincoteague

Exhibit 4.26 – Major Freight Corridors, Zones, and Gateways on the Delmarva Peninsula

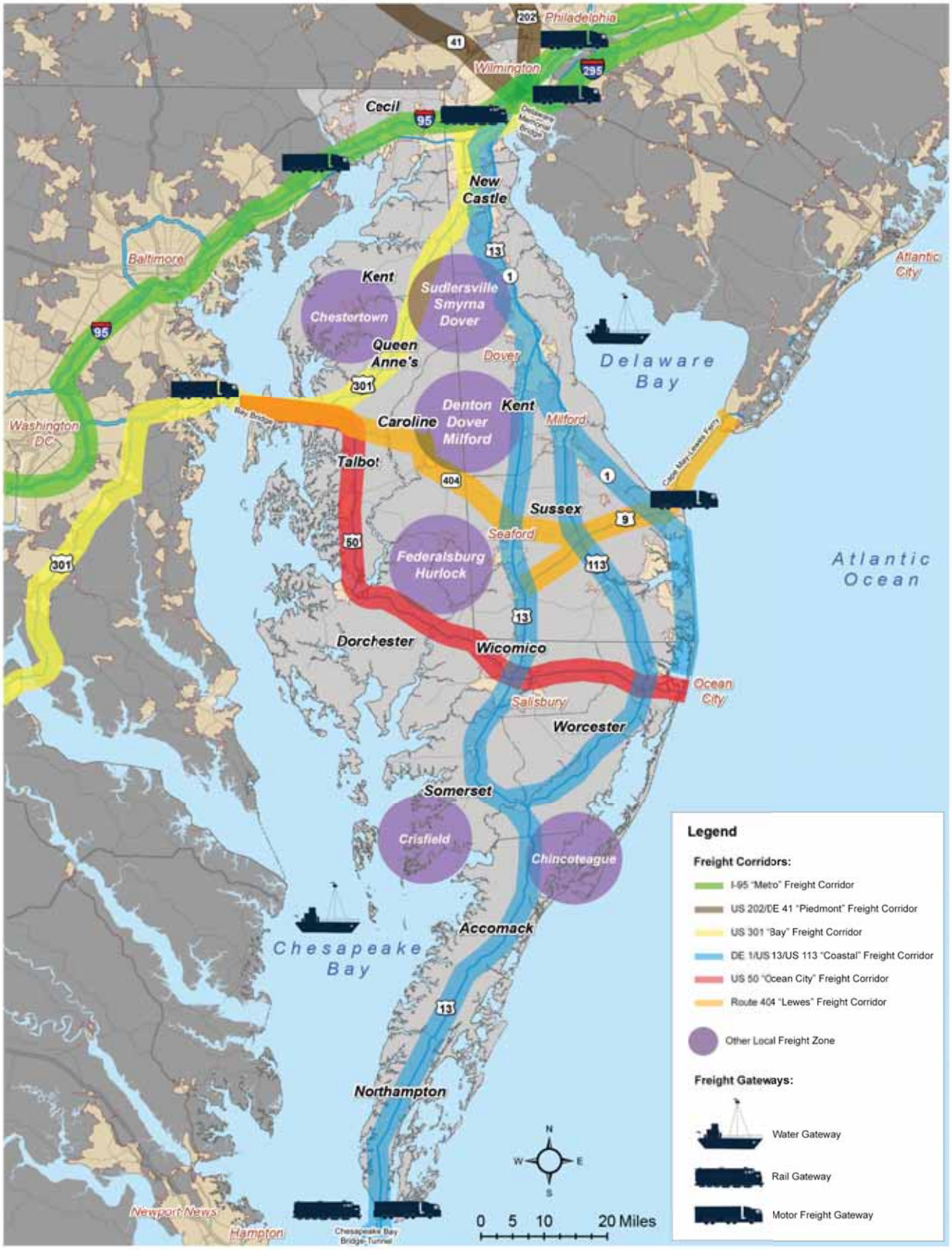


Exhibit 4.27 – Summary of I-95 "Metro" Freight Corridor

I-95 "Metro" Freight Corridor	
Primary Roadways:	- I-95 - I-295 - I-495 - US 40
Regional Freight Hubs	- Northern Delmarva Peninsula - Baltimore/Washington metro - Philadelphia metro - U.S. Eastern Seaboard (Maine to Florida)
Project Area Freight Hubs	- Elkton, Cecil County, MD; - Newark-Wilmington-Edgemoor-Claymont-New Castle-Delaware City, DE - Deepwater, NJ (DuPont)
Key Roadway Junctions	- ***Other Freight Corridors:*** US 301; US 202/DE 41; DE 1/US 13/US 113; also access to New Jersey Turnpike (via I-295) - ***Local Connections:*** US 202 (to Pennsylvania); MD 222 (Perryville); MD 279 (Elkton); DE 2, DE 896 (Newark); DE 141 (Newport-New Castle); Port access via Terminal Avenue and 12th Street/Edgemoor Rd - ***Special Facilities:*** Millard E. Tydings Memorial Bridge (I-95); Thomas J. Hatem Memorial Bridge (US 40); Delaware Memorial Bridge (I-295/US 40); I-95 and US 40 Toll Facilities; I-95 and US 40 TWIS (Perryville)
Rail Access	- ***Class I Service:*** Parallel NS, CSX, and Amtrak operations via the Northeast Corridor - ***Major Rail Yards:*** NS Newark, Del Pro, West, and Edgemoor Yards; CSX Wilsmere Yard; Amtrak Bear Maintenance Facility, Operations Center, and Wilmington Shops; Thurlow Yard (Marcus Hook) - ***Shortline Service:*** ESPN (Elsmere Junction); WWRC (Landenberg Junction)
Port Access	- ***Major Ports:*** Port of Wilmington and Port of Marcus Hook; also Port of Philadelphia and Port of Baltimore - ***River Systems:*** Delaware River/Bay; Christina River (Wilmington); Susquehanna River (Perryville/Havre de Grace)
Airport Access	- ***Project Area:*** Wilmington-Philadelphia Regional - ***Extended Area:*** Philadelphia Int'l; Baltimore/Washington Int'l; Washington/Dulles Int'l; Atlantic City Int'l

Exhibit 4.28 – Summary of US 301 "Bay" Freight Corridor

US 301 "Bay" Freight Corridor	
Primary Roadways:	- US 301 - US 50
Regional Freight Hubs	- Northern/Northwestern Delmarva Peninsula - Baltimore/Washington metro - Richmond metro - U.S. south Atlantic states
Project Area Freight Hubs	- Wilmington-New Castle-Newark-Middletown, DE - Massey-Millington-Sudlersville-Centreville-Chestertown, MD
Key Roadway Junctions	- ***Other Freight Corridors:*** US 50; MD/DE 404; DE 1/US 13/US 113; I-95; US 202/DE 41 - ***Local Connections:*** US 40 (New Castle); DE 896 (Newark); DE 299 (Middletown); MD 313 (Massey); MD 291, DE 6 (Millington-Smyrna); MD 300, DE 300 (Sudlersville-Smyrna); MD 213 (Centreville) - ***Special Facilities:*** William Preston Lane, Jr. Memorial Bay Bridge (US 50/301); US 301 TWIS (Middletown and Cecilton/Warwick); Existing VWS (US 50 WB/Bay Bridge; MD 213/Georgetown-Galena); Planned VWS (US 50 EB/Bay Bridge; DE6, DE 299, DE 300, MD 213 in Kent, New Castle, or Cecil Counties)
Rail Access	- ***Class I Service:*** Indirect access by way of connection to the I-95 Freight Corridor - ***Major Rail Yards:*** Indirect access to NS Del Pro Yard and facilities near Delaware City - ***Shortline Service:*** MDDE Centreville Line; MDDE Chestertown Line
Port Access	- ***Major Ports:*** Indirect access to Port of Wilmington, Delaware City, and Port of Baltimore - ***Other Water Access:*** Chesapeake Bay area (Anne Arundel and Queen Anne's Counties, MD)
Airport Access	- ***Project Area:*** Wilmington-Philadelphia Regional; Easton Municipal/Newnam Field - ***Extended Area:*** Baltimore/Washington Int'l; Washington/Dulles Int'l

Exhibit 4.29 – Summary of DE 1/US 13/US 113 "Coastal" Freight Corridor

DE 1/US 13/US 113 "Coastal" Freight Corridor	
Primary Roadways:	- DE 1 - US 13 - US 113 - MD 528
Regional Freight Hubs	- Eastern/Coastal/Southern Delmarva Peninsula - Philadelphia metro; - Hampton Roads metro; - Extended areas via linkage w/ the I-95 Corridor
Project Area Freight Hubs	- Wilmington-New Castle-Delaware City-Townsend-Smyrna-Clayton-Dover, DE - ***Continued via US 13:*** Harrington-Seaford-Delmar, DE; Salisbury-Princess Anne-Pocomoke City, MD; Accomack-Northampton Counties, VA - ***Continued via US 113:*** Milford-Ellendale-Georgetown-Millsboro-Dagsboro-Frankford-Selbyville, DE; Berlin-Snow Hill-Pocomoke City, MD - ***Continued via DE 1/MD 528:*** Milford-Lewes Beach-Rehoboth Beach-Dewey Beach-Bethany Beach-Fenwick Island, DE; Ocean City, MD
Key Roadway Junctions	- ***Other Freight Corridors:*** I-95; US 202/DE 41; US 301; MD/DE 404; US 50 - ***Local Connections:*** DE 18 (Bridgeville-Lewes); DE 24 (Millsboro-Rehoboth Beach); MD 12 (Salisbury-Snow Hill); MD 413 (to Crisfield); VA 175 (to Chincoteague); - ***Special Facilities:*** Chesapeake Bay Bridge-Tunnel; DE 1 Toll Facilities; US 13 TWIS (Smyrna, Delmar, New Church); Planned VWS (US 13/Smyrna-Delmar-Pocomoke City; DE 1/Smyrna)
Rail Access	- ***Class I Service:*** Parallel NS lines via the Delmarva Secondary, Harrington South Branch, and Indian River Secondary - ***Major Rail Yards:*** NS Del Pro, Jello, Harrington, and Seaford Yards - ***Shortline Service (MDDE):*** Snow Hill Line; Junction w/ Chestertown and Centreville Lines; Junction w/Seaford Line - ***Shortline Service (DCLR):*** Junction w/ Milton Line; Junction w/ Lewes Line - ***Shortline Service (BCRR):*** Pocomoke City to Cape Charles, including carfloat operations to/from Little Creek, VA
Port Access	- ***Major Ports:*** Port of Wilmington; also Port of Virginia (Hampton Roads) - ***River Systems:*** Nanticoke River (Seaford); Wicomico River (Salisbury); Pocomoke River (Pocomoke City) - ***Other Water Access:*** Cape May-Lewes Ferry; Indian River Inlet; DE-MD coastal/resort areas
Airport Access	- ***Project Area:*** Wilmington-Philadelphia Regional; Dover AFB/CAT; Sussex Co.; Salisbury-Ocean City-Wicomico Regional; Accomack Co. - ***Extended Area:*** Philadelphia Int'l; Norfolk Int'l

Exhibit 4.30 – Summary of US 50 "Ocean City" Freight Corridor

US 50 "Ocean City" Freight Corridor	
Primary Roadways:	- US 50 - MD 90
Regional Freight Hubs	- Central/South Central Delmarva Peninsula - Baltimore/Washington metro
Project Area Freight Hubs	- Chestertown-Easton-Cambridge-Salisbury-Berlin-Ocean City, MD
Key Roadway Junctions	- ***Other Freight Corridors:*** US 301; MD/DE 404; DE1/US 13/US 113 - ***Local Connections:*** MD 328 (Easton-Denton); MD 16/392/307 (Hurlock-Federalsburg); MD 12 (Salisbury-Pocomoke City) - ***Special Facilities:*** William Preston Lane, Jr. Memorial Bay Bridge (US 50/301); US 50 TWIS (Vienna); Existing VWS (US 50 WB/Bay Bridge); Planned VWS (US 50 EB/Bay Bridge)
Rail Access	- ***Class I Service:*** Local (Salisbury) junction w/ NS Delmarva Secondary, Harrington South Branch - ***Shortline Service:*** Local junctions w/ MDDE Seaford Line (in Cambridge) and MDDE Snow Hill Line (in Berlin)
Port Access	- ***Major Ports:*** Indirect access to Port of Baltimore - ***River Systems:*** Choptank River (Cambridge); Nanticoke River (Vienna); Wicomico River (Salisbury) - ***Other Water Access:*** Chesapeake Bay area (Anne Arundel and Queen Anne's Counties, MD)
Airport Access	- ***Project Area:*** Easton Municipal/Newnam Field; Salisbury-Ocean City-Wicomico Regional - ***Extended Area:*** Baltimore/Washington Int'l; Washington/Dulles Int'l

Exhibit 4.31 – Summary of Route 404 "Lewes" Freight Corridor

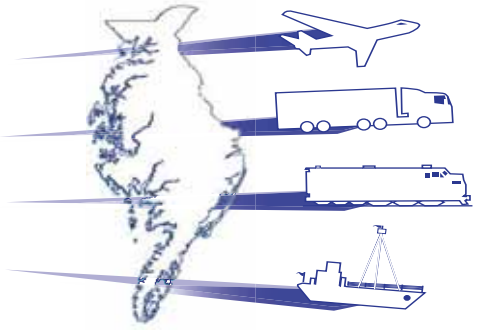
MD/DE 404 "Lewes" Freight Corridor	
Primary Roadways:	- MD 404 - DE 404 - US 9
Regional Freight Hubs	- Central Delmarva Peninsula - Baltimore/Washington metro (via connection to US 50/301) - Atlantic City/Jersey Shore area (via connection to ferry service)
Project Area Freight Hubs	- Wye Mills-Queen Anne-Denton, MD - Bridgeville-Laurel-Georgetown-Lewes, DE
Key Roadway Junctions	- ***Other Freight Corridors:*** US 301; US 50; DE 1/US 13/US 113 - ***Local Connections:*** MD 328, MD 313 (Denton); DE 18 (Bridgeville) - ***Special Facilities:*** William Preston Lane, Jr. Memorial Bay Bridge (US 50/301); Cape May-Lewes Ferry (US 9)
Rail Access	- ***Class I Service:*** Local (Bridgeville) junction w/ NS Delmarva Secondary, Harrington South Branch; Local (Georgetown) junction w/ NS Indian River Secondary - ***Major Rail Yards:*** Nearby access to Seaford facilities, including NS Seaford Yard - ***Shortline Service (MDDE):*** Nearby access to MDDE Seaford Line - ***Shortline Service (DCLR):*** DCLR Milton Line; DCLR Lewes Line
Port Access	- ***Major Ports:*** Indirect access to Port of Baltimore - ***River Systems:*** Choptank River (Denton); Nanticoke River (Seaford) - ***Other Water Access:*** Cape May-Lewes Ferry; DE-NJ coastal/resort areas
Airport Access	- ***Project Area:*** Sussex County - ***Extended Area:*** Baltimore/Washington Int'l; Washington/Dulles Int'l; Cape May County; Atlantic City Int'l

Exhibit 4.32 – Summary of US 202/DE 41 "Piedmont" Freight Corridor

US 202/DE 41 "Piedmont" Freight Corridor	
Primary Roadways:	- US 202 - DE/PA 41 - Pennsylvania linkages to I-76, US 30, and US 322
Regional Freight Hubs	- Northern Delmarva Peninsula - Lancaster/York/Harrisburg area (via I-76, US 30, US 322) - Pittsburgh metro (via I-76, US 30) - U.S. Midwest markets (via linkage to I-70, I-80)
Project Area Freight Hubs	- Hockessin-Elsmere-Newport-Stanton-Talleyville, DE - Newark-Wilmington, DE and extended areas via connection to other freight corridors
Key Roadway Junctions	- ***Other Freight Corridors:*** I-95; US 301; DE 1/US 13/US 113 - ***Local Connections:*** DE 2, 7, 48, and 62 (between Newark and Wilmington); DE 92 and 141 (north of Wilmington); PA 100 (linking US 202 to US 30 and I-76 through Exton, PA) - ***Special Facilities:*** Pennsylvania Turnpike (I-76)
Rail Access	- ***Class I Service:*** Junction with I-95 Freight Corridor; also NS access into Pennsylvania (Perryville to Harrisburg) - ***Major Rail Yards:*** Access to most NS, CSX, and AMTRAK rail yards/facilities in Wilmington/Newark metro; also access to major facilities in Harrisburg, PA, area including NS Enola Yard, Harrisburg Intermodal Terminal, Rutherford Intermodal Terminal, and Triple Crown Services - ***Shortline Services:*** WWRC access from CSX lines to Hockessin, DE; ESPN access from NS lines into Pennsylvania
Port Access	- ***Major Ports:*** Port of Wilmington - ***River Systems:*** Susquehanna River (Perryville/Havre de Grace to Harrisburg)
Airport Access	- ***Project Area:*** Wilmington-Philadelphia Regional - ***Extended Area:*** Harrisburg International / Olmsted Field

Existing Freight Planning Resources

Several existing freight programs and planning/coordination efforts involving federal, state, county, and local agencies and the private sector operate across the Delmarva Peninsula. Such efforts help to support, enhance, and expand freight and goods movement opportunities locally, regionally, and beyond. Targeted programs such as CVISN (see *Chapter 4*) or rail/port/airport planning efforts focus almost exclusively on freight infrastructure and operations, while broader programs such as trade zone designations or each state's transportation improvement program yield indirect opportunities and benefits. While not intended to be all-inclusive, this chapter highlights key programs, coordination efforts, and other resources relevant to the overall context of this freight plan.



Freight Institutions

Effective planning, management, and operation of the peninsula's multimodal freight system require cooperative efforts and partnerships between freight-related institutions, agencies, infrastructure owners, and regulatory authorities. At the federal level, lead public agencies are generally housed within the U.S. Department of Transportation (*Exhibit 5.1*) or the U.S. Army Corps of Engineers.

Exhibit 5.1 – USDOT Operating Administrations

USDOT Operating Administrations		
OST	Office of the Secretary	*http://www.dot.gov/administrations*
OIG	Office of the Inspector General	*https://www.oig.dot.gov/*
FAA	Federal Aviation Administration	*http://www.faa.gov/*
FHWA	Federal Highway Administration	*http://www.fhwa.dot.gov/w*
FMCSA	Federal Motor Carrier Safety Administration	*http://www.fmcsa.dot.gov/*
FRA	Federal Railroad Administration	*http://www.fra.dot.gov/*
FTA	Federal Transit Administration	*http://www.fta.dot.gov/*
MARAD	Maritime Administration	*http://www.marad.dot.gov/*
NHTSA	National Highway Traffic Safety Administration	*http://www.nhtsa.gov/*
PHMSA	Pipeline and Hazardous Materials Safety Administration	*http://www.phmsa.dot.gov/*
RITA	Research and Innovative Technology Administration	*http://www.rita.dot.gov/*
SLSDC	Saint Lawrence Seaway Development Corporation	*http://www.seaway.dot.gov/*
STB	Surface Transportation Board	*http://www.stb.dot.gov/*

Planned Projects and Developments

Building from the available plans and activities noted above, it was important for this Delmarva Freight Plan to clearly establish a list of committed transportation improvements that are or will be programmed for future implementation regardless of the outcome of this freight plan. Future project commitment assumptions (for the purposes of this study) were limited to larger-scale efforts that could impact the capacity, connectivity, operations, or other substantial elements of the overall freight transportation system, particularly with respect to the anticipated scenario planning analyses that will be detailed in subsequent chapters. Identified projects will be assumed in the future baseline or "no-build" transportation system and establish the starting point from which other longer-term project or policy recommendations may be investigated. Committed projects were identified through a review of numerous existing planning documents and vetted through the freight plan's advisory team. Assumed projects for the future baseline conditions are summarized below (*Exhibit 5.3* and *Exhibit 5.4*).

In addition to future project commitments specific to the Delmarva Peninsula, future analyses and scenario planning efforts may consider projects of national/regional significance as applicable in the development or assessment of what-if scenarios and yet-to-be-determined improvements. As noted previously, federal appropriations to the PNRS program ended in 2013, and future allocations or commitments are uncertain. However, a brief review of previous allocations revealed six PNRS projects[8] of interest in terms of their potential to influence freight activities around the Delmarva Peninsula, including:

- Liberty Corridor (8-County Region in New Jersey)
- Cross Harbor Freight Movement Project (New York, New York)
- US 422 Widening and Interchange Improvements (Montgomery County, Pennsylvania)
- I-80 Interchange Improvements (Monroe County, Pennsylvania)
- Rail Relocation to Route 164 / I-64 Rail Corridor (Portsmouth and Chesapeake, Virginia)
- Heartland Corridor Intermodal Freight Facility Improvements (Virginia, West Virginia, Ohio)

Additional long-term projects or developments that are not currently assumed to be programmed with committed funding may be re-visited during the scenario planning analyses and development of recommendations that will be detailed in subsequent chapters of this plan. Potential projects may be drawn from longer-term commitments, lists of aspirations, or possible TIGER proposals that may be identified by the various state and local/regional planning agencies and long-range transportation plans.

[8] http://ops.fhwa.dot.gov/freight/policy/rpt_congress/pnrs12rptcong/index.htm.

Exhibit 5.3 – Future Project Commitment Assumptions on the Delmarva Peninsula (Map)

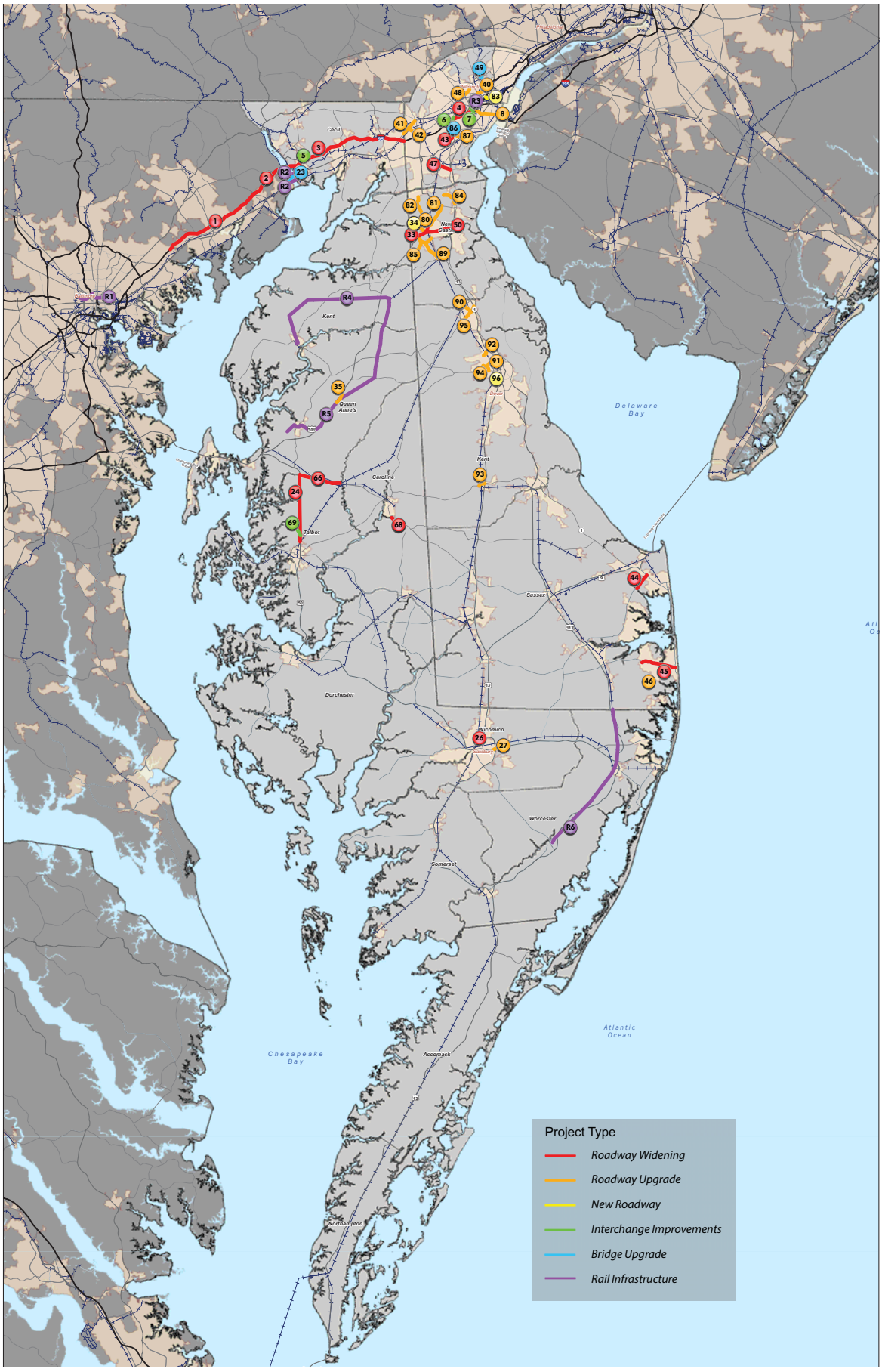


Exhibit 6.1 – Summary Freight-Related Areas of Concern

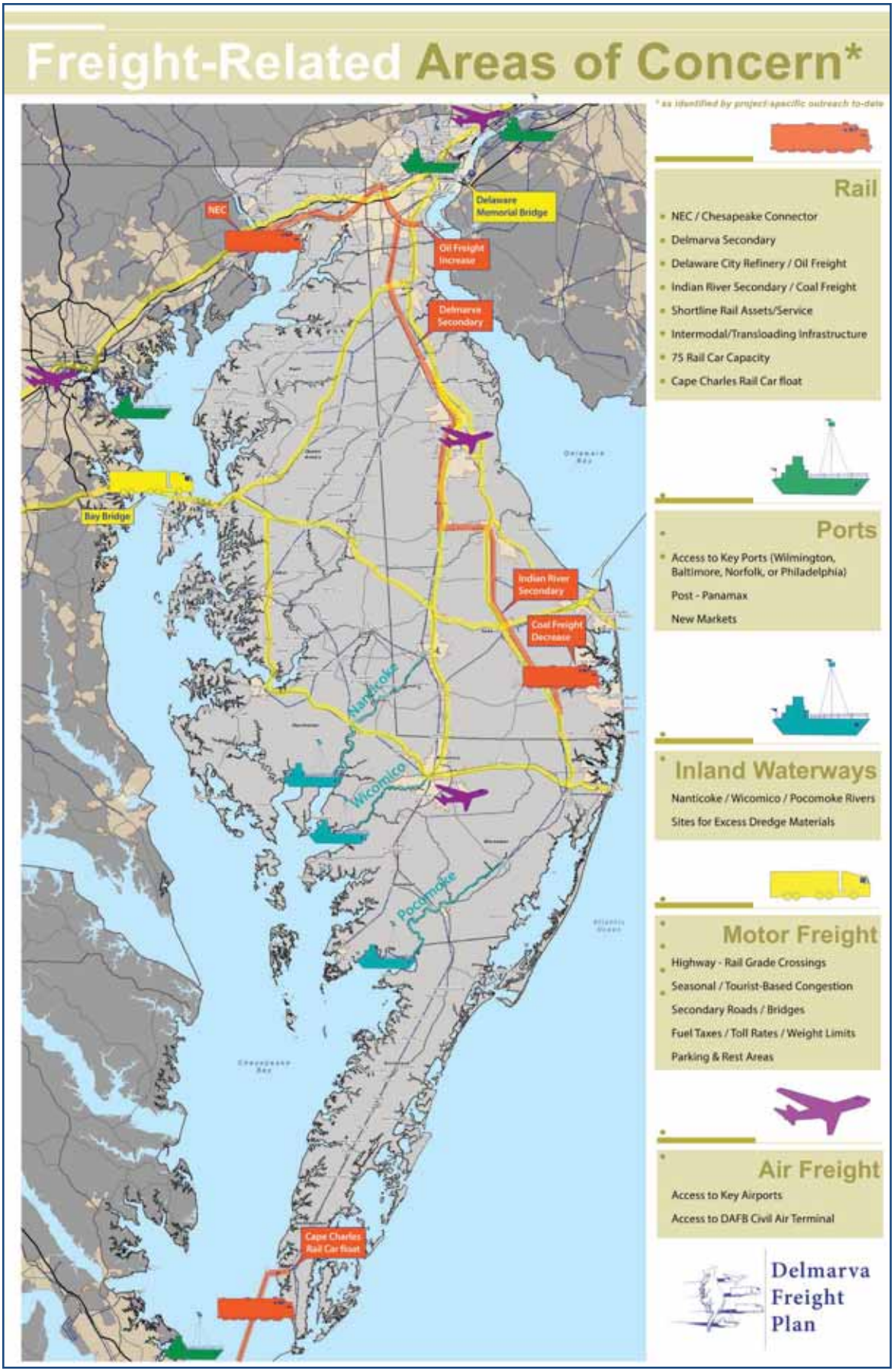
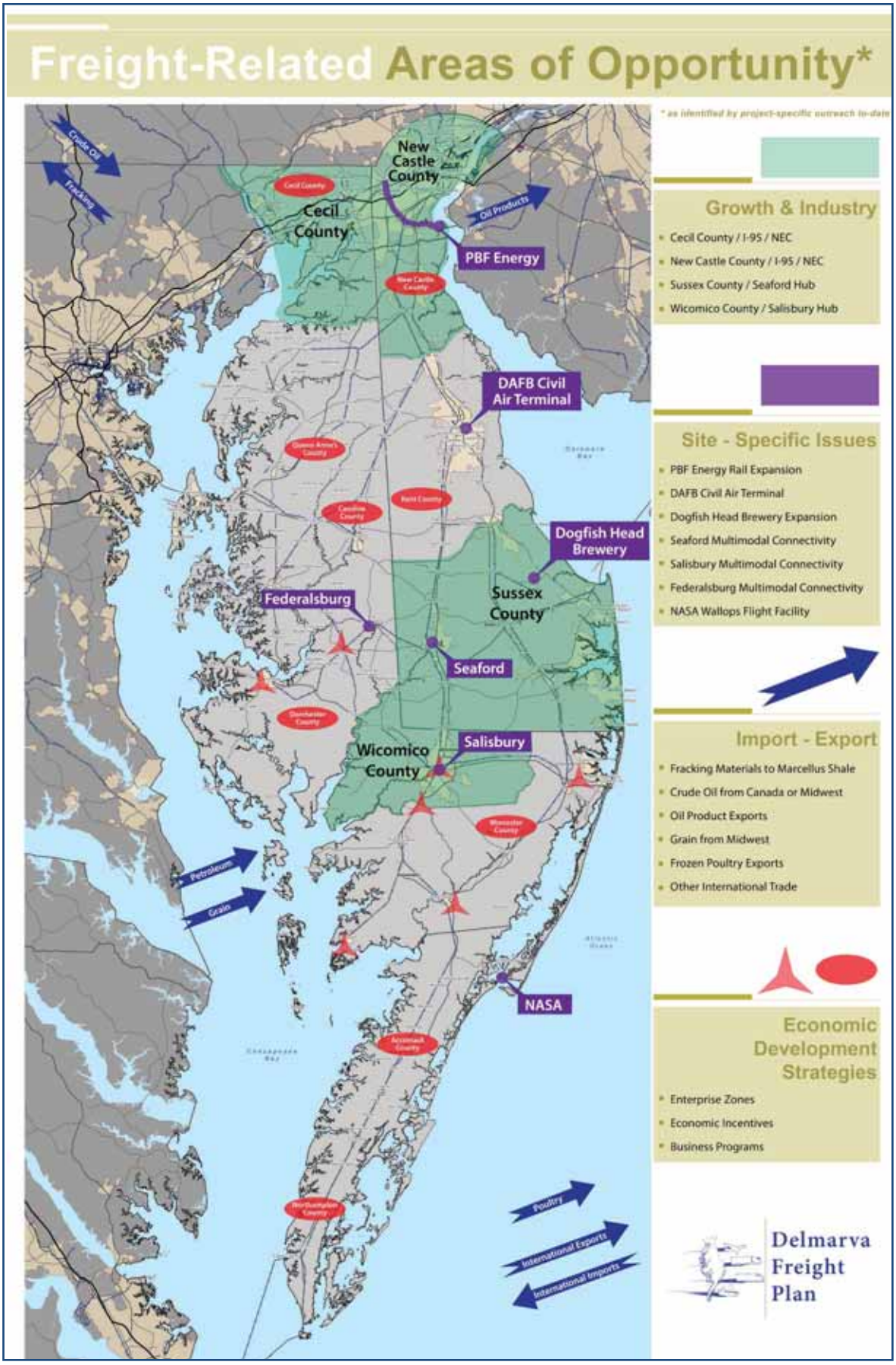


Exhibit 6.2 – Summary Freight-Related Areas of Opportunity



Freight Connectivity, Mobility and Accessibility

Delmarva's Freight Connectivity, Mobility, and Accessibility goal overlaps national freight policy guidance to reduce congestion on the freight transportation system. Focus areas on the peninsula include efforts to recognize broader mobility improvements in light of the region's unique seasonal or tourist-based congestion patterns; enhance connectivity to/from the peninsula as a region with limited geographical points of access; and support strategic multimodal improvements to broaden freight system accessibility and efficiency.

Network Connectivity

Primary Freight Network (PFN): The draft initial designation of MAP-21's PFN includes very limited coverage on the Delmarva Peninsula, capturing only the interstate system through Cecil and New Castle Counties, and US 50/301 entering via the Chesapeake Bay Bridge (see details per *Exhibit 4.3)*. As such, it is vital that each state, in cooperation with area stakeholders and planning partners, diligently self-define the critical components within the region's multimodal freight system.

Peninsula-Specific Freight Network: Separate from federal PFN designations, effective planning must focus on a more complete version of the overall peninsula-specific freight network. This Delmarva Freight Plan lays the groundwork for such a network by broadly defining major north/south and east/west corridors, local freight zones, and freight gateways (see *Chapter 4* and *Exhibit 4.26-Exhibit 4.32*).

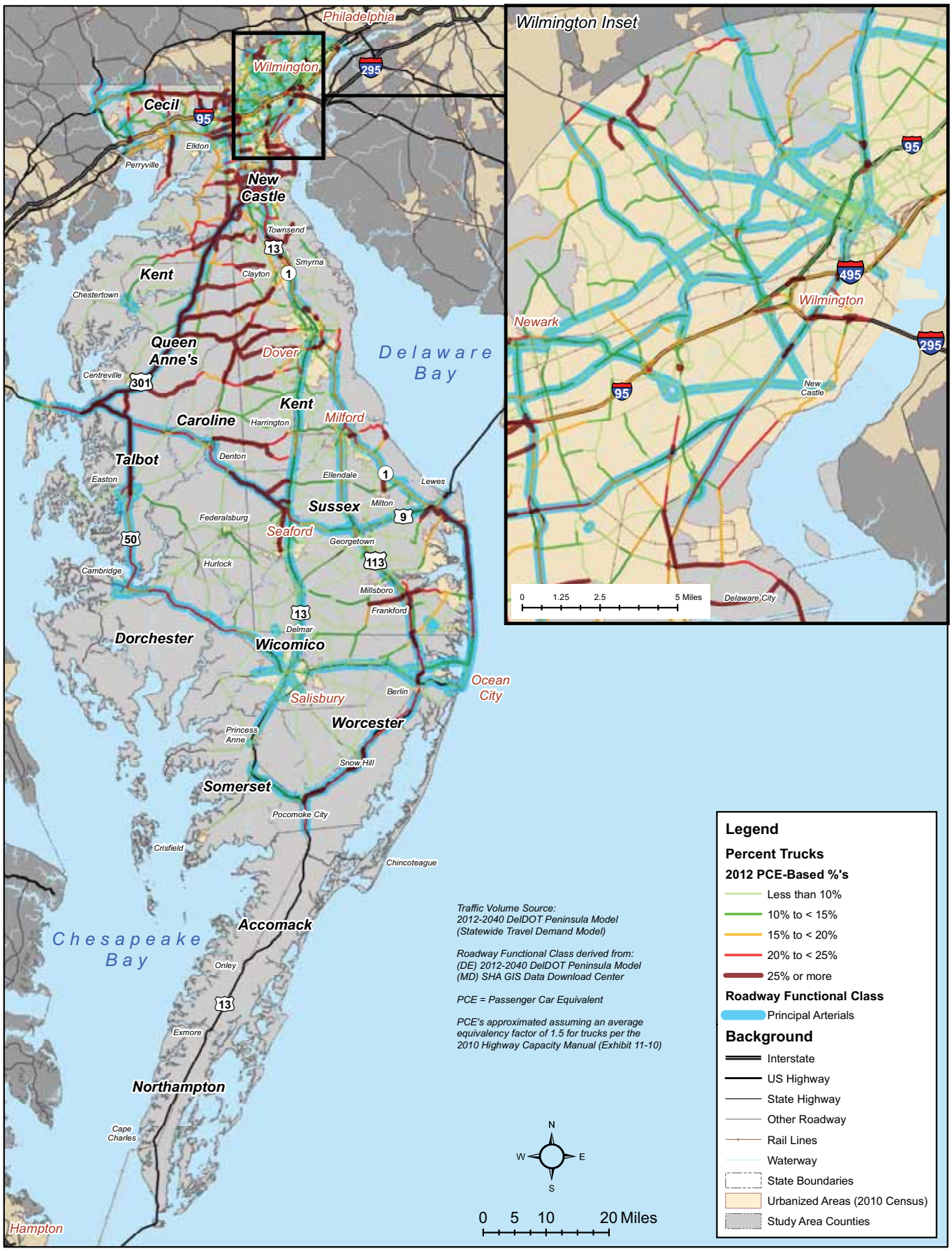
Critical Rural Freight Corridors (CRFC): States may designate CRFC routes based on criteria specified under Section 1115 of MAP-21 (see details per *Chapter 4*). These criteria consider truck percentages along rural principal arterials, access to energy areas, and other connectivity issues relative to substantial freight generating facilities. A cursory review of estimated truck percentages (*Exhibit 6.3*) indicates that some rural segments along the following principal arterials may meet the 25% truck criteria required for CRFC designation:

- US 50 (between the Bay Bridge and Salisbury)
- US 301 (between the Bay Bridge and Middletown)
- MD/DE 404 (between the Bay Bridge and Seaford)
- US 113 (between Frankford and Pocomoke City)

Other Rural Truck Routes: Stakeholder feedback generally noted that truck traffic appears to overload the area's rural roads. Such concerns likely stem from trucks serving the peninsula's expansive agriculture, poultry, and food products industries, coupled with several east/west rural connections (e.g., between US 301 and US 13/DE 1), service to and from local freight zones (see previous *Exhibit 4.26*), or first/last mile travel to specific freight generating sites. Such routes include a mix of minor arterials, collector roads, and local roads that, barring the presence of major local freight generators or very specific connectivity issues, would not typically qualify for CRFC designation. Rural routes that carry a higher proportion of trucks (*Exhibit 6.3*) include:

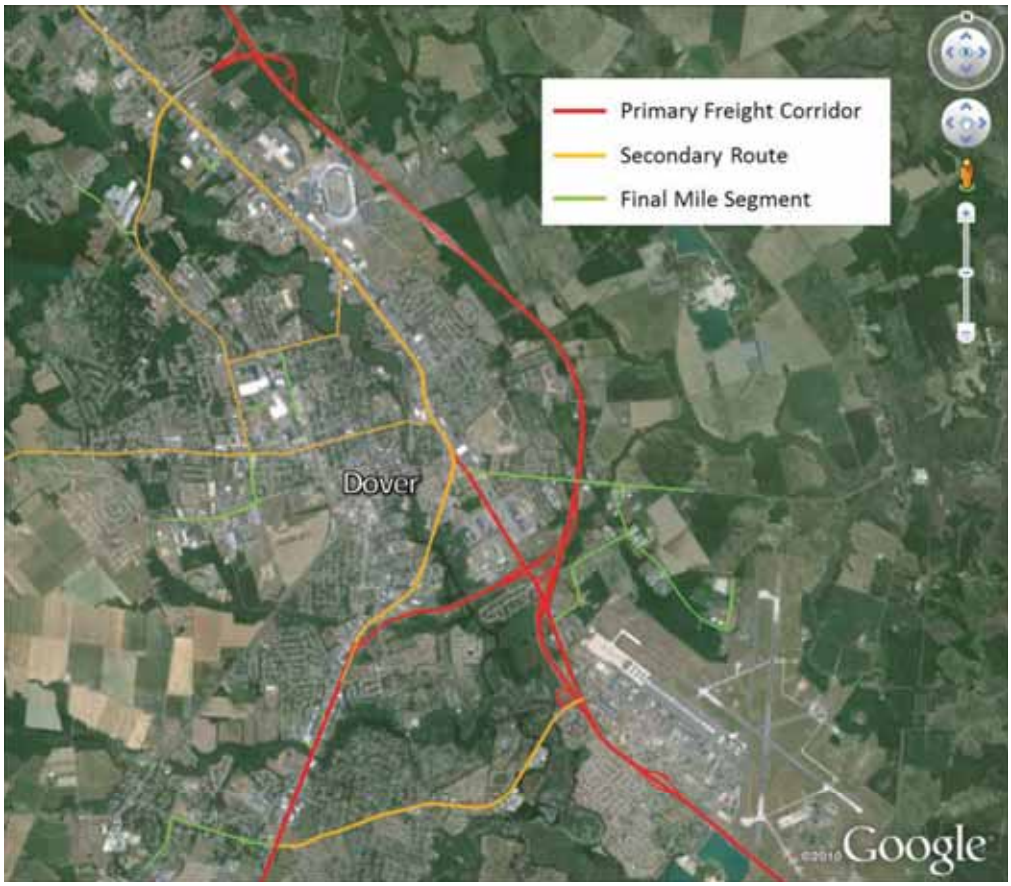
- MD 213/290 and Sassafras Caldwell Rd/Caldwell Corner Rd (between Galena and Townsend)
- MD 291 and DE 6 (from US 301 toward Clayton and Smyrna)
- MD 300 and DE 300 (from US 301 toward Smyrna)
- MD 302 and DE 8/11/44 (from US 301 toward Smyrna/Dover)
- MD 304/311 and DE 10 (from US 301 toward Dover)
- MD 317 and DE 14 (from MD 404 toward Harrington)
- DE 36 (from DE 404 toward Greenwood)
- DE 26 (from DE 30 toward Dagsboro)

Exhibit 6.3 – Estimated 2012 Truck Percentages (in Passenger Car Equivalents)



First/Last Mile Facilities: At a more detailed-level and in a manner that will supplement the corridor-based perspectives referenced above, WILMAPCO has recently undertaken a focused effort toward inventorying critical first/last mile facilities (also referred to as "final mile" segments) throughout Delaware (*Exhibit 6.4*). These facilities often include lesser routes (i.e., collectors or local roads versus interstates or arterials) on which freight/passenger vehicle conflicts and negative public perception of truck traffic may be much greater while regular maintenance activities, geometric design standards, or the potential for roadway or safety improvements may be much lower. Each connection, however, is necessary for local businesses and industries to survive. WILMAPCO's inventories will help to further an understanding of the locations, roles, needs, and importance of the area's first/last mile facilities.

Exhibit 6.4 – Sample WILMAPCO First/Last Mile Inventory (Dover Area)



Source: WILMAPCO Statewide Freight Priority Network (DRAFT);
http://www.wilmapco.org/delmarva/

Multimodal/Intermodal Connections: While the peninsula offers a broad selection of modal options, some stakeholder feedback indicated that the existing infrastructure is not entirely accommodating in terms of switching between modes or fostering competition between different modes. For example:

- Local drayage services and linkages for rail or airborne cargo may be needed.
- Multimodal truck/rail/water transfer options may be limited.
- Required economies-of-scale may constrain rail access or cost-effectiveness for smaller industries.
- Rail schedules and delays may not be conducive to time-sensitive or perishable product deliveries.

Traffic Congestion

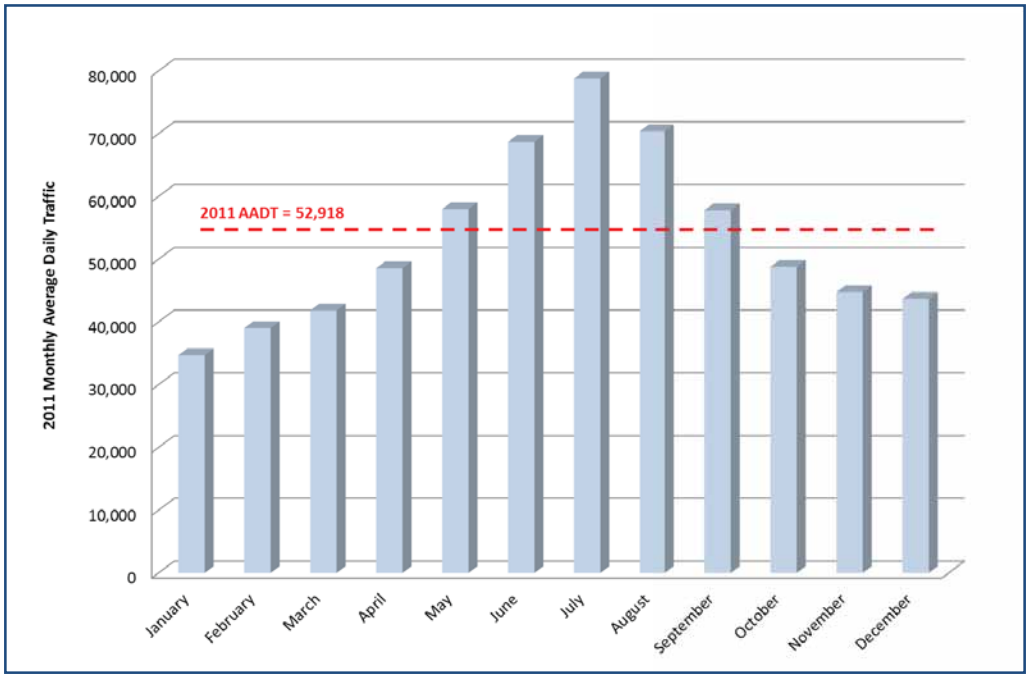
General Traffic Congestion: Though DelDOT, MDOT, VDOT, and many other agencies work tirelessly toward addressing the region's worst congestion issues, the flow of goods movement is inevitably affected by recurring congestion (i.e., peak period commuter or peak seasonal tourist traffic) as well as non-recurring congestion (i.e., related to construction, traffic incidents, or special events). While not exclusive to urban areas, urban area congestion is often worse due to higher traffic volumes, more prevalent commuter peaks, bottlenecks near city/town centers, or frequent first/last mile traffic.

Regional Metropolitan Area Congestion: Motor freight entry/exit points for the Delmarva Peninsula are, on a broader basis, associated with travel through or around Philadelphia, Baltimore, Washington, D.C., and Norfolk. These major metropolitan areas each experience their own substantial levels of traffic congestion, construction impacts, crash incidents, major special events, or other factors that influence travel delays or the reliability/predictability of trip planning. Such factors through these major metropolitan areas can, therefore, substantially impact regional freight movements on and off the peninsula, further emphasizing the importance of a broad regional perspective in freight planning.

Urban Area Congestion: Previous exhibits (*Exhibit 4.9-Exhibit 4.12*) demonstrated that pockets of congestion during peak travel periods are, not surprisingly, found in many of the peninsula's urban areas or city/town centers. Notable pockets today include areas feeding the I-95 corridor, the Chesapeake Bay Bridge, and throughout Wilmington-Newark, Dover, and Salisbury. Future congestion is expected to increase in virtually all locations and will additionally impact Townsend, Seaford, and Georgetown, among others. While both recurring and non-recurring congestion will delay first/last mile freight movements and local deliveries, frequent delays may also contribute to undesirable truck diversions to secondary or local routes as drivers attempt to avoid congestion along main roads. Incident-related congestion that results in closures or detours may also have significant implications on freight routing, again diverting trucks to less than ideal corridors and potentially increasing conflicts with other business or residential areas.

Peak Seasonal Conflicts: Tourism is a major industry on the peninsula, and peak season traffic can more than double in some locations versus off-season flows (*Exhibit 6.5*). Impacts are especially prevalent for major access points at the Chesapeake Bay Bridge or along I-95, and along primary routes to coastal resort areas from Lewes, Delaware to Ocean City, Maryland. Increased traffic volumes and congestion directly obstruct freight movements, while increased consumer demands and a higher seasonal population require more goods to be delivered. Such issues affect both pass-thru and peninsula-bound freight along regional and local corridors; likely influence broader logistics, warehousing, or inventory tactics; and affect first/last mile deliveries in the resort areas (e.g., food, beverage, or propane deliveries delayed in beach traffic).

Exhibit 6.5 – Sample Peak Season Traffic Variation (along DE 1)



Source: DelDOT Traffic Summary 2011; ATR Station 8076 (DE 1 North of Ocean Outlets); www.deldot.gov

Time Sensitive Commodity Impacts: Considering the peninsula's expansive agriculture, poultry, and food products industries, excessive congestion is an exceptional concern when it affects freight delivery of time-sensitive or perishable commodities. For example, poultry trucks stuck in summer traffic have contributed to high poultry mortality rates en route to processing.

Passenger Linkages and Conflicts

Northeast Corridor Freight Access Constraints: The freight window for moving Norfolk Southern (NS) freight trains down the Port Road Branch and onto/across the NEC/Amtrak passenger lines is normally restricted to hours between 10:00 PM and 6:00 AM. Additional speed restrictions and unscheduled Amtrak maintenance periodically shrink the freight window even further, causing an interruption of NS freight shipments. Delaware and Maryland have been studying a Chesapeake Connector project that would allow for NS trains to cross over Amtrak's lines without interfering with passenger rail movements.

At-Grade Rail Crossing Delays: With the additional rail traffic serving expanded operations at PBF Energy's Delaware City Refinery, periodic train blockages of at-grade rail/highway crossings have increased, including crossings of major travel routes such as US 40/Pulaski Highway. Crossing delays and secondary impacts to traffic access, diversions, or emergency response planning are some of the issues that could occur when 100-car trains are staged in the Newark area. Lengthy delays can also be problematic in light of a Delaware law that allows trains to block crossings for no more than 10 minutes at a time, with some exceptions for emergencies.

Air Cargo Ramp Constraints: Civilian aircraft operations via the Air Cargo Ramp at Dover AFB are constrained by the primacy of the base's heavy-lift military air transport mission. Limited civilian operations can be accommodated via special-use agreements and pre-approvals. However, recent planning concepts have included a potential goal of obtaining full joint-use access for public/civilian air cargo operations in conjunction with an adjacent Kent County AeroPark development.

Safety and Security

Delmarva's Safety and Security goal overlaps national freight policy guidance to improve related aspects and resilience of the freight transportation system. Focus areas on the peninsula include efforts that recognize the regional/national significance of I-95 and the Northeast Corridor; enhance system redundancy with respect to the peninsula's geographic point of access limitations; and support the unique needs of the regions governmental, military, or international shipping communities.

Safety Planning

Crash Prevention/Mitigation: As noted in Chapter 4 and without substantial post-processing or compilation efforts, differences in how crash data may be reported, tracked, or handled by each state on the peninsula introduce difficulties when attempting to apply the data with respect to freight interests across a multi-state area. However, Delaware, Maryland, and Virginia each maintain a state-specific Highway Safety Improvement Program (HSIP). The HSIP programs focus on identifying and prioritizing safety improvements that will reduce highway fatalities and severe injuries, and include related efforts for highway-rail grade crossing improvements. Though not a dedicated freight program, HSIP efforts benefit all roadway users including long-haul, short-haul, and first/last mile trucks.

Freight Operations and Technology: Comprehensive coverage of freight-related technology applications such as the Oversize/Overweight (OS/OW) Permit System or CVISN programs help to support safe freight operations and consistent restrictions. Within this realm, stakeholders have expressed a need to enhance and expand the deployment of high-speed weigh-in-motion technology as an alternative means of freight enforcement.

Emergency Planning

Agency Coordination: Stakeholders noted that emergency planning and response span jurisdictional boundaries; and ongoing communications, coordination, data-sharing, or related efforts are essential. Larger-scale incidents such as security threats or cargo aircraft crashes, for example, involve incident response at the state and federal levels including the Delaware TMC or Delaware Emergency Management Agency (DEMA), the Maryland Coordinated Highways Action Response Team (CHART) or Maryland Emergency Management Agency, the FBI, Dover AFB, or Homeland Security.

Evacuation Planning: Local and broader-scale state or regional evacuation plans are important for select locations or scenarios, as are freight impacts or influences including post-incident supply or recovery operations. Examples include hurricane evacuation planning for coastal areas, or nuclear plant evacuation planning such as for nearby Salem, New Jersey.

First-Responder Capabilities: Maintaining and enhancing incident first-responder capabilities are ongoing exercises that must also consider the changing nature of commodity types or patterns throughout the region. Key commodities and anticipated growth areas include a variety of petroleum products, chemical products, or related hazardous materials. Additional freight traffic, such as railcars to the Delaware City Refinery, may also increase incident-related risks or conflicts if not properly addressed.

Land Use Considerations: From a land use perspective, an increase in freight traffic or freight-related conflicts and delays may affect normal travel times within a community as well as emergency response times or routes and, therefore, may require community-specific mitigations. Flooding, storms, or other natural disasters may also trigger freight detours or contingency plans that in turn influence the local land use environment. Emergency response plans for hazardous material incidents or potential man-made disasters (e.g., terrorist attacks) may also require customization based on the local land use environment.

Hazardous Materials

Site-Specific Hazardous Material Issues: Where freight activities involve hazardous materials, planning efforts should continue to monitor and enhance emergency response efforts. Such issues may focus on cargo routing for Dover AFB, the barging of oil and other refined products out of Delaware City, or the monitoring of at-grade rail crossing delays versus petroleum rail traffic in New Castle County.

Hazardous Materials Tracking: A partnership with security authorities for tracking of hazardous materials needs to be established considering social and environmental exposure, natural and man-made disasters, anticipated disruptions of traffic and business, and related economic impacts.

Security Screening: Exploration of public-private partnership opportunities may help to identify trade-offs, cost benefits, or other interests relative to increasing route or mode options and security screening for the transportation of hazardous materials.

Homeland Security

Agency Coordination: With the potential scope of homeland security, it is important that freight planning, implementation, or management/operations efforts be cognizant of (and coordinated with) broader security interests where applicable. Coordination may involve state enforcement and protection agencies or federal agencies such as the Department of Homeland Security (DHS), the Nuclear Regulatory Commission, or Dover AFB. Broader requirements or restrictions may impact routing, tracking, licensing, monitoring, or enforcement of transporters of certain types of materials.

Cargo Security and Inspection: With an international port and air presence, cargo security and screening in relationship with the DHS's U.S. Customs and Border Protection (CBP) or Immigration and Customs Enforcement (ICE) agencies are essential. Issues range from basic cargo theft prevention or agricultural screening to broader security interests (e.g., combatting terrorist threats) or humanitarian issues (e.g., human smuggling/trafficking or pandemic threats). From a freight planning and infrastructure perspective, industry-wide research includes a focus on transportation operations, ITS technologies, or other cost-effective mechanisms that state DOTs may be able to use to support security-related efforts.[1]

Asset Protection: An improved understanding of freight movements, key transportation infrastructure, pinch points, or critical systems will help to inform regional asset protection and risk assessments, thus benefitting emergency or security planning efforts by local, state, and federal agencies.

System Management, Operations and Maintenance

Delmarva's System Management, Operations, and Maintenance goal overlaps national freight policy guidance to use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system while also improving its state of good repair. Focus areas on the peninsula include efforts to enhance policies affecting truck parking and rest areas, weight limits, taxes, tolls, or other motor freight issues; address physical improvements on secondary roads and bridges critical to first/last mile connections; and support dredging operations and the preservation of suitable sites for excess dredge materials.

[1] Transportation Research Board (TRB) Subcommittee ABE40-2 – Risk and Resilience Assessment and Planning; TRB Research Needs Statement: The Role of Transportation Operations and ITS Technologies in Supporting Homeland Security and Humanitarian Affairs, December 2013, http://rns.trb.org/dproject.asp?n=35885.

Jurisdictional Relationships

Land Use in Operations Planning: Land use and freight traffic relationships are important in terms of advanced planning for everyday system operations as well as unexpected circumstances. For example, rail crossing delays, truck loading and deliveries, or first/last mile traffic can be influenced by, or can influence, local land use and business activities, potentially affecting the economic potential of an area if conflicts frequently exist. The local land use environment must also be considered in the development of emergency response or contingency planning for unusual events such as floods or storms, hazardous material incidents, or man-made disasters. Ongoing coordination and communication between planning partners and stakeholders, and across jurisdictional boundaries, is crucial to maintaining positive relationships and mutual benefits between freight and land use.

Infrastructure Ownership: As certain critical components of the overall freight transportation system are privately-owned – bridges owned by railroads, for example – or span different agency jurisdictions, broad cooperative planning efforts and potential public/private partnership solutions are needed.

Management Needs: To keep pace with anticipated freight growth and the rapid integration of operations and planning in regards to the use of ITS, there is a perceived need at the management level for a more integrated and strategic alignment of statewide activities and other public/private partners to improve and expand freight-related efforts.

ITS Integration: While current state freight-related programs focus on weight enforcement (e.g. CVSIN, Pre-Pass, Virtual Weigh-in-Motion), the ITS component is not fully integrated with operations. The lack of integration creates difficulties in funding freight-related initiatives. Interests include a comprehensive approach in terms of reflecting a better inclusion of performance metrics and policies for rural areas, or for truly capitalizing on freight's potential to enhance the economic vitality of the state and the region.

Proprietary Issues: Technological solutions including ITS and enforcement-related systems are provided by a limited number of companies. The exclusive or proprietary nature of these systems limits the level of open competition that may otherwise help states to negotiate costs or maintenance services.

Truck Policies

Hours-of-Service Impacts: Recent changes in Hours-of-Service (HOS) regulations for truck drivers generally increase constraints on restart limitations, rest breaks, on-duty time, or penalties for motor freight drivers (*Exhibit 6.6*). These changes elevate the importance of providing adequate truck parking, staging, and related access needs in key locations.

Truck Parking Areas: Possible truck parking issues or needs, including additional capacity for overnight truck parking and smaller time frame staging areas, were noted for the following locations:

- In Delaware along the I-95 corridor and any of the east/west routes that connect to I-95
- In Kent County, Delaware
- On Maryland's Eastern Shore near the Chesapeake Bay Bridge
- Along US 301 near the Maryland/Delaware line
- Around Salisbury, Maryland
- In and around the Port of Wilmington[2]

[2] WILMAPCO, Port of Wilmington Truck Parking Study, July 2013, http://www.wilmapco.org/truckparking/Port_Final_July14.pdf

Exhibit 6.6 – Summary of Hours-of-Service (HOS) Regulations (as of July 1, 2013)

PROPERTY-CARRYING DRIVERS
11-Hour Driving Limit May drive a maximum of 11 hours after 10 consecutive hours off duty.
14-Hour Limit May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.
Rest Breaks May drive only if 8 hours or less have passed since end of driver's last off-duty or sleeper berth period of at least 30 minutes. [49 CFR 397.5 mandatory "in attendance" time may be included in break if no other duties performed]
60/70-Hour On-Duty Limit May not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty. Must include two periods from 1 a.m. to 5 a.m. home terminal time, and may only be used once per week, or 168 hours, measured from the beginning of the previous restart.
Sleeper Berth Provision Drivers using the sleeper berth provision must take at least 8 consecutive hours in the sleeper berth, plus a separate 2 consecutive hours either in the sleeper berth, off duty, or any combination of the two.

Source: USDOT Federal Motor Carrier Safety Administration; http://www.fmcsa.dot.gov

Local Delivery Restrictions: Truck parking or loading zone access, delivery route or hour restrictions, anti-idling restrictions, or related issues are relevant to discussions in any urban area. Stakeholders have noted specifically that Main Street delivery restrictions in Newark, Delaware, are an issue.

Agricultural Freight: Stakeholders have raised concerns regarding rural agricultural trucks, including questions on how to best balance or manage heavy load freight usage versus roadway/pavement conditions, route planning, tracking needs, regulations, or permitting. It was also noted that a unified permitting process for agricultural trucks does not currently exist between Delaware, Maryland, and Virginia.

Pavement Management

Pavement Management Program: Consideration of heavy vehicle traffic is typically accounted for in pavement management decision-making. In Delaware, for example, the pavement management program reviews all state-maintained non-suburban roads and associated conditions. Known heavy vehicle traffic on roadways being considered for rehabilitation will affect priority rankings on the rehabilitation list, as well as the selection of treatments or materials to help minimize deterioration.

Resilience and System Impacts: Roadway and pavement deterioration versus investments of new construction or maintenance may not be fully analyzed or understood in terms of the resilience of specific structures or the impact on the overall freight transportation system (e.g., in terms of added congestion, detour time, or risk of failure). Such perspectives may help to reduce accelerated deterioration of new or existing pavements and to better manage issues related to permitting, rural truck traffic, heavier trucks, weight limits, or route restrictions.

Recycled Materials: When practical, cost effective, and not detrimental to long-term pavement performance, DelDOT allows specified recycled materials in its roadway construction projects. Locations in need of some structural rehabilitation may also be considered for full-depth reclamation or cold-in-place recycling which utilizes in-place materials to rebuild the roadway structure.

ITS Monitoring for Freight Activity: Transportation operations must begin to include freight ITS systems on a broader corridor or regional perspective for effective monitoring, control, information gathering, and integration with planning and the private sector. Proper monitoring will help to reduce or respond to potential impacts of freight traffic increases including, for example, daily travel delays, detour route issues, or incident/emergency planning approaches.

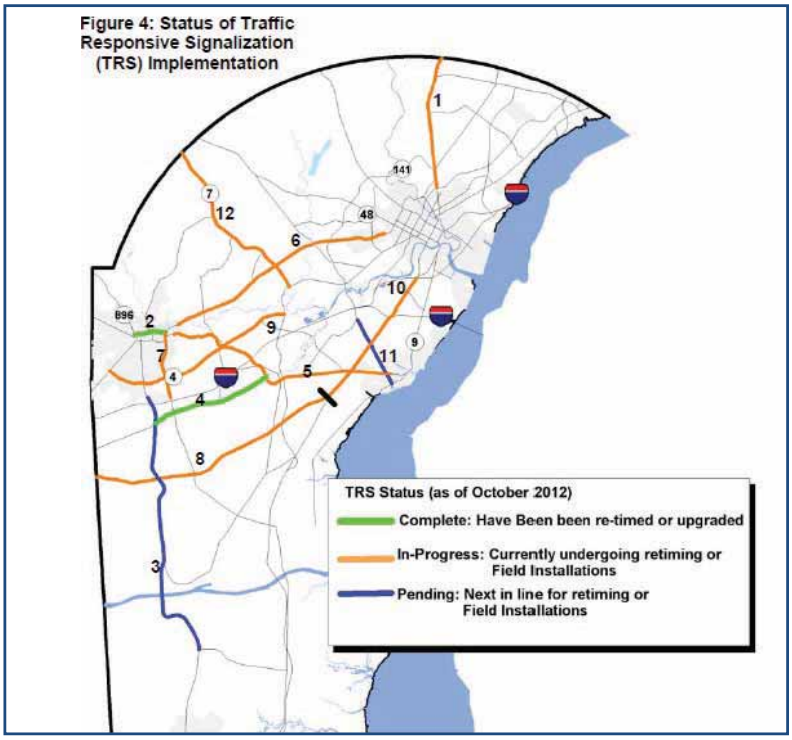
ITS Monitoring for Safety/Security: As previously detailed under Safety/Security discussions, ITS and related technologies support efforts including overweight permitting, security screening, and cargo inspection.

Weight and Safety Enforcement: Stakeholders have noted that continued research and "high speed" technologies are needed for enforcement programs. Specifically in the realm of weight and safety enforcement, DelDOT will be constructing additional Virtual Weigh Stations (VWS) initially located across southern New Castle County, while MDOT has installed VWS technology at several locations along freight routes on the Eastern Shore, including on the Bay Bridge (see previous *Exhibit 4.25*). The added VWS systems will greatly enhance commercial weight and safety enforcement, and programs may expand in the future, potentially capturing, for example, the I-95/495 corridors or portions of Sussex County.

All Electronic Tolling (AET): Freight implications and benefits will also be included in locations under consideration for AET systems. Maryland, for example, is implementing AET on toll facilities owned by MdTA. The US 40 Thomas J. Hatem Memorial Bridge's toll plaza will be the first to have its cash tolls eliminated and replaced with electronic tolling sometime in 2014.

Traffic Responsive Signalization (TRS): TRS is a method of traffic signal management that uses advanced technology (including special signal controllers, traffic sensors, and computer algorithms) to adjust traffic signal timings based on current demands and directional traffic volumes. This method can react to fluctuating traffic volumes in order to reduce signal-related congestion and delays for all vehicles along a corridor, including trucks and related freight or delivery activities. Ongoing efforts through DelDOT, DelDOT's TMC, and WILMAPCO have focused on planning or implementing the latest TRS technologies along several key corridors including, for example, various routes in New Castle County (*Exhibit 6.7*). Future expansions are likely in other areas throughout the state.

Exhibit 6.7 – WILMAPCO Traffic Responsive Signalization Corridors



Source: WILMAPCO Congestion Management System updates; http://www.wilmapco.org/cms/

Waterway Dredging

Federally-Allocated Funding for Dredging: Funding constraints relative to dredging operations has the potential to dramatically change supply chains and related business, industry, or economic factors. Constraints are particularly challenging for waterways that transport less than one-million tons annually (e.g., the Pocomoke River). Below that threshold, a river falls onto a shortlist of locations competing for scarce leftover (versus designated) federal funds. There is concern that the tonnage-based formula for allocating federal funds can be problematic in that tonnage alone may not truly reflect other major economic drivers such as fishing, tourism, or light-weight special transports (e.g., wind turbine components). Delayed dredging may contribute to a further decline in barge traffic, which further reduces tonnage and subsequently accelerates a downward spiral of additional funding and travel constraints. The Pocomoke River, for example, is thought to be at a critical point for dredging to maintain barge travel that carries a large supply of aggregate materials for state road construction. If such barges were restricted, impacts would include a direct increase in industry costs and truck deliveries, as well as a possible increase in the material costs for future roadway projects.

Excess Dredge Material Sites: Identification of sites to store or dispose of excess dredge materials is crucial to dredging operations along the region's inland waterway systems. Though dredging is a federally-mandated maintenance activity, county agencies are typically responsible for procuring property that will be ready, open, and suitable per USACE requirements to handle the excess dredge materials. Locating suitable sites can be a complicated and time-intensive process. Difficulties include finding sites in close proximity to the planned dredging area, avoiding off-limits wetland areas, and encountering delays or public resistance often related to inflated property values, costly leasing agreements, or environmental concerns based on false or incomplete assumptions. While procurement of a former golf course property has recently provided a longer-term solution for the Nanticoke River, the Wicomico and Pocomoke Rivers and C&D Canal have not been as fortunate. Most recently, agencies have struggled to identify a new site specifically for the lower section of the Wicomico River in time for the 2015 dredging cycle. Technical and programmatic assistance from DelDOT, MDOT, or focused organizations such as DWTC are essential to continuing the excess dredge material site location process.

Sustainability and Environmental Stewardship

Delmarva's Sustainability and Environmental Stewardship goal overlaps national freight policy guidance to reduce adverse environmental and community impacts of the freight transportation system. Focus areas on the peninsula include efforts to support improvements that balance consumer demands and freight flows with seasonal or tourist-based variability and quality of life; and enhance the flexibility and resiliency of the freight transportation system to meet changing global energy demands or sources.

Air Quality Issues

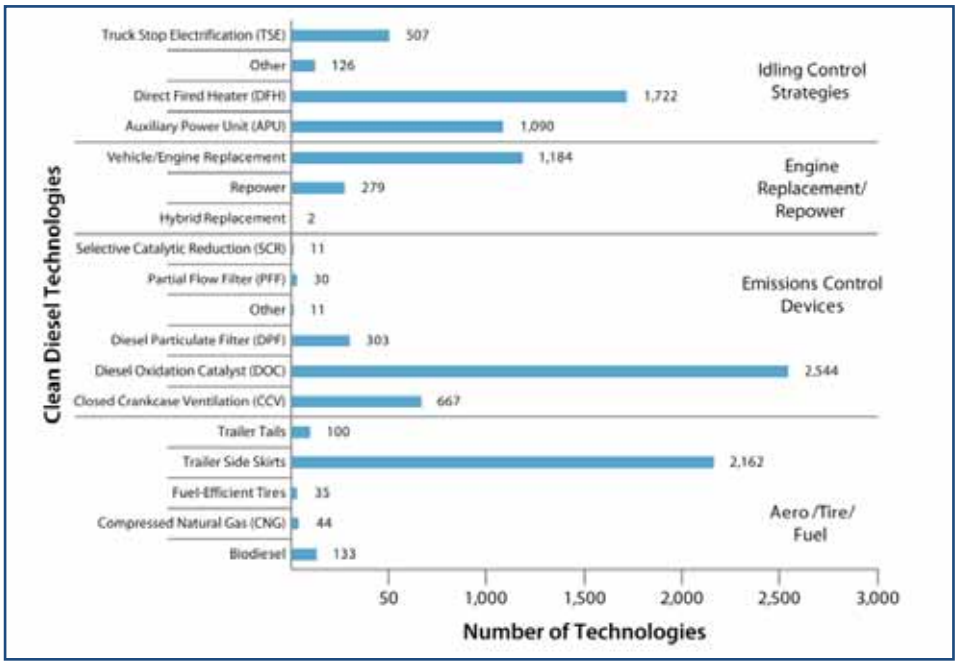
Emissions Control and Monitoring: Stakeholders noted that the Air Quality Control Program and police truck enforcement activities are not fully integrated or equipped in specific locations or facilities to help maximize a reduction of emissions for climate change plans. Additional testing, filters, rest area improvements, or similar may be needed to enhance or expand emissions control and monitoring.

Truck Idling Regulations: Anti-idling efforts aim to reduce truck emissions to the benefit of improving air quality and protecting public health. Each state on the peninsula places different limits on the amount of time a heavy duty motor vehicle may operate when not in motion. Barring special exemptions, idling restrictions range from 3 minutes in Delaware, to 5 minutes in Maryland, to 10 minutes for diesel vehicles (3 minutes for all other vehicles) in commercial or residential urban areas in Virginia.[3]

Truck Stop Electrification (TSE): Stakeholders have supported interest in TSE sites in which drivers utilize fee-based parking/rest area equipment to provide heat, air conditioning, electricity, or other connections for in-cab operations without having to idle the truck engines. TSE facilities are currently in operation along I-95 at the Pilot Flying J Travel Plaza in Elkton, MD; along I-95 at the Delaware Welcome and Travel Center in Christiana, DE; and along US 13 at the Smyrna Rest Area.

Truck Efficiencies: Advancements in truck and fuel technologies are important when considering any environmental or air quality issues as modern truck fleets are continually becoming cleaner. Emission rates for trucks have fallen based on the use of ultra-low sulfur fuels, engine and emissions control technologies, and fleet turnover and modernization efforts. Various clean diesel technologies have also been a recent focus of grant programs administered by the U.S. Environmental Protection Agency (EPA) as part of the Diesel Emissions Reduction Act (DERA) (*Exhibit 6.8*). The U.S. Department of Energy Clean Cities Program has provided grant funding to the Maryland Energy Administration for over 100 idle reduction and energy efficient engine retrofits.

Exhibit 6.8 – Technologies Used in the FY 2009/2010 DERA Grant Program



Source: EPA; Second Report to Congress: Highlights of the Diesel Emissions Reduction Program, December 2012.

[3]American Transportation Research Institute (ATRI); Compendium of Idling Regulations; November 2013; http://www.atri-online.org/research/idling/ATRI_Idling_Compendium

Water Resource Issues

Dredging-Related Issues: While dredging operations and the need to identify suitable sites for excess dredge materials have been noted previously as topical concerns, the placement of excess dredge materials may also encounter water, wetlands, or other environmental issues that are an inherent part of the overall dredge management process.

Spills Control: Spills control on the peninsula is exceptionally critical given the importance of the area's water environments (e.g., the Chesapeake Bay) versus common commodities (e.g., petroleum, petroleum products, chemical products). Specific areas of concern may focus on barge lightering operations in the Delaware River, or on increasing Delaware City refinery traffic.

Sea-Level Rise (SLR): SLR Adaptation Planning on the peninsula has been a focus of several agencies including, for example, the Delaware Department of Natural Resources and Environmental Control (DNREC), the Maryland Commission on Climate Change, or WILMAPCO by way of a July 2011 transportation vulnerability assessment. Planning efforts recognize a need to conduct and track vulnerability assessments of key infrastructure that may be impacted by flooding, inundation, or storm impacts as a result of future sea-level rise. From a multimodal freight perspective, potential infrastructure impacts include critical freight-carrying roadway segments, bridges, low-lying rail lines, tunnels, port facilities, or navigable channels.

Community Issues

Land Use Conflicts: As previously noted under discussions for Land Use Issues, appropriate policies, planning, oversight, and decision-making are important to ensuring land use compatibility between freight and non-freight uses, including existing or future community development activities. Intentionally minimizing potential conflicts and balancing freight, economic, and community needs with a myriad of quality of life issues is not, however, an easy task with a clearly defined path forward.

First/Last Mile Conflicts: As previously noted under discussions for Network Connectivity, first/last mile facilities are necessary for local businesses and industries to survive, but often include collectors and local roads on which freight/passenger vehicle conflicts and negative public perception of truck traffic may be much greater. Likewise, truck access to local communities requires a balancing act of serving main street, school or residential needs while simultaneously accommodating local business/industry access and deliveries that are crucial for community and regional livelihoods.

Port Conflicts: As hubs of freight activity, ports and surrounding communities are often affected by increased levels of truck traffic, truck noise, or pollution. The EPA, in fact, has recently focused on port activities as part of their Ports Initiative, including efforts intended to build a more sustainable ports system, create healthy air quality for communities, and reduce climate risk.[4] Specifically on the peninsula, the Southbridge Community near the Port of Wilmington has experienced truck traffic conflicts that have been the subject of recent traffic study and planning efforts with WILMAPCO, the South Wilmington Planning Network, and other planning partners and stakeholders.

Other Environmental Planning

From a planning perspective there is interest on preserving the peninsula's rail and barge networks and increasing rail/barge dependent customers to help justify and enhance the local viability of those modes. From an environmental perspective and in terms of truck traffic or congestion impacts there are clearly benefits to moving large tonnages of freight by more energy-efficient rail or barge options versus the dramatically higher number of trucks that would be needed to carry the same loads. A recent study for the U.S. Department of Energy (DOE)[5] indicates, for example, that rail uses approximately 1/10th the amount of energy (per ton-mile of freight) as a similar movement by truck.[6]

Subsequent chapters of this Delmarva Freight Plan transition into scenario planning efforts that attempt to gain insights into potential mode-shift benefits or impacts under different sets of future assumptions. While an ideal finding would identify practical opportunities to influence truck-to-rail mode shifts, it is understood that realistically affecting such shifts faces several constraints. Research by Cambridge Systematics for the same U.S. DOE study noted above identifies several constraining factors:

- While opportunities may exist to reduce energy usage and greenhouse gas (GHG) emissions by improving the efficiency of truck, rail, and water freight operations, research suggests that truck-to-rail mode shift possibilities are mostly limited to freight moving in the 250 to 750 mile range.
- Despite any mode-shift potential in the mileage range noted above, it is also clear that "service differentiation limits opportunities for shifting freight from one mode to another, because the different modes are not perfect substitutes for one another." Peninsula-specific examples of this constraint would include first/last mile rural agricultural traffic, truckloads of live poultry, or perishable fruit leaving the Port of Wilmington, all of which occur almost exclusively via truck freight.
- The study further indicates that "major mode shifts are unlikely without substantial changes in costs or strong regulatory measures." Such measures may include fuel pricing and taxes, user fees, truck hour-of-service regulations, truck size/weight limits, as well as infrastructure and operational improvements. Many of these policies require changes or legislation at the federal level and can only be influenced, but not controlled, at the local, state, or regional level.

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[4]http://www.epa.gov/otaq/ports/ports-initiative.htm

[5]Cambridge Systematics for the U.S. Department of Energy, Transportation Energy Future Series: Freight Transportation Modal Shares: Scenarios for a Low-Carbon Future, March 2013.

[6]Based on British thermal unit (Btu) energy estimates (listed in the above reference) of 4 Btu per ton-mile for truck versus 0.4 for rail and 0.5 for water.

Summary Perspective

Issues presented in this chapter were organized within focus areas corresponding to the plan's categorical goals; summary lists are presented below (*Exhibits 6.9-6.10*). Subsequent chapters will detail various performance measure, modeling, and scenario planning assumptions to help assess the impact and/or influence of these issues. This assessment, coupled with related considerations documented throughout this plan, will ultimately support the development and selection of freight policy and project assumptions to create the recommended action plan.

Exhibit 6.9 – Freight Planning Issues (Overview)

Economic Vitality	
1	Supply Chain Positioning
2	Import/Export Opportunities
3	Land Use Issues
4	Site-specific Issues
5	Hidden Impacts
Freight Connectivity, Mobility and Accessibility	
6	Truck Network Connectivity
7	Multimodal Network Connectivity
8	Traffic Congestion
9	Passenger Linkages and Conflicts
Safety and Security	
10	Safety Planning
11	Emergency Planning
12	Hazardous Materials
13	Homeland Security
System Management, Operations and Maintenance	
14	Jurisdictional Relationships
15	Truck Policies
16	Pavement Management
17	Technologies and ITS
18	Waterway Dredging
Sustainability and Environmental Stewardship	
19	Air Quality Issues
20	Water Resource Issues
21	Community Issues
22	Other Environmental Planning

Exhibit 6.10 – Freight Planning Issues (by Focus Area)

Economic Vitality
1 Supply Chain Positioning
a. Growth areas (anticipated or incentivized)
b. System efficiencies
c. Core commodity groups*
d. Key supply chains*
2 Import/Export Opportunities
a. Import of Midwest/Canadian crude
b. Import of Midwest/other grain
c. Export of fracking support materials
d. Export of oil products
e. Export of frozen poultry
f. International trade pattern changes
3 Land Use Issues
a. Land use compatibility
b. Local land use decisions
c. State land use oversight
4 Site-specific Issues
a. Freight hubs or Local Freight Zones
b. PBF Energy Refinery
c. Dover AFB Air Cargo Ramp
d. Dogfish Head Brewery
e. NASA Wallops Flight Facility
5 Hidden Impacts
a. Freight-dependent industry migration
b. Reduced Modal Options
c. Delmarva Secondary (vs. coal or oil freight)
d. Indian River Secondary (vs. coal freight)
e. Post-Panamax influence

Freight Connectivity, Mobility and Accessibility
6 Truck Network Connectivity
a. Primary Freight Network
b. Peninsula freight network
c. Critical Rural Freight Corridors*
d. Other rural truck routes*
e. First/last mile facilities
f. Secondary road/bridge conditions
7 Multimodal Network Connectivity
a. Rail accessibility
b. Rail schedules / delays
c. Rail cost effectiveness / economies of scale
d. Cape Charles Rail Carfloat
e. Access to regional air hubs
f. Access to peninsula-specific air hubs
g. Access to key ports
h. Local drayage services
i. Multimodal transfer options
8 Traffic Congestion
a. General traffic congestion
b. Regional metropolitan area congestion
c. Urban area congestion
d. Peak seasonal conflicts
e. Time sensitive commodity impacts
9 Passenger Linkages and Conflicts
a. NEC freight access constraints
b. Chesapeake Connector
c. At-grade rail crossings
d. Air Cargo Ramp constraints

Exhibit 6.10 - Freight Planning Issues (by Focus Area) Cont'd

Safety and Security
10 Safety Planning
a. Crash prevention/mitigation
b. Freight operations and technology
11 Emergency Planning
a. Agency coordination
b. Evacuation planning
c. First-responder capabilities
d. Land use considerations
12 Hazardous Materials
a. Site-specific hazardous material issues
b. Hazmat tracking
c. Hazmat security screening
13 Homeland Security
a. Agency coordination
b. Cargo security and inspection
c. Asset protection

System Management, Operations and Maintenance
14 Jurisdictional Relationships
a. Land use in operations planning
b. Infrastructure ownership
c. Management needs
d. ITS integration
e. Proprietary issues
15 Truck Policies
a. Hours-of-service impacts
b. Truck parking and rest areas*
c. Local delivery restrictions
d. Agricultural freight
e. Motor freight costs (fuel, tolls)
f. Motor freight weight limits
16 Pavement Management
a. Pavement management program
b. Resilience and system impacts
c. Recycled materials
17 Technologies and ITS
a. ITS monitoring for freight/rail activity
b. ITS monitoring for safety/security
c. Weight and safety enforcement
d. All Electronic Tolling (AET)
e. Traffic Responsive Signalization (TRS)
18 Waterway Dredging
a. Federally-allocated funding for dredging
b. Excess dredge material sites
c. Site-specific dredging issues*

Exhibit 6.10 - Freight Planning Issues (by Focus Area) Cont'd

Sustainability and Environmental Stewardship	
19	**Air Quality Issues**
a.	Emissions control and monitoring
b.	Truck idling regulations
c.	Truck Stop Electrification (TSE)
d.	Truck efficiencies
20	**Water Resource Issues**
a.	Dredging-related issues
b.	Spills control
c.	Sea-Level Rise (SLR)
21	**Community Issues**
a.	Land use conflicts
b.	First/last mile conflicts
c.	Port conflicts
22	**Other Environmental Planning**
a.	Modal shifts and barge usage
b.	Modal shifts and rail usage

* *See Chapter 6 details for candidate types, routes, locations, etc.*