

Delmarva Freight Plan

Chapter 3

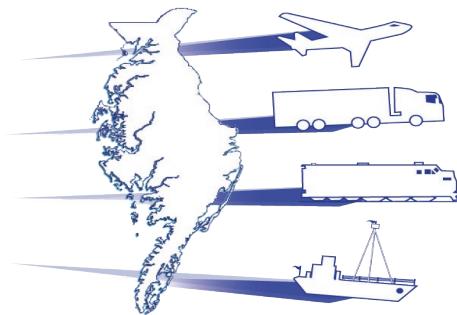
Existing Commodity Flows



Chapter 3

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 data¹ 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.



3.1 Delmarva Freight

Overall Tonnage and Value

Commodity flows on the Delmarva Peninsula² 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.

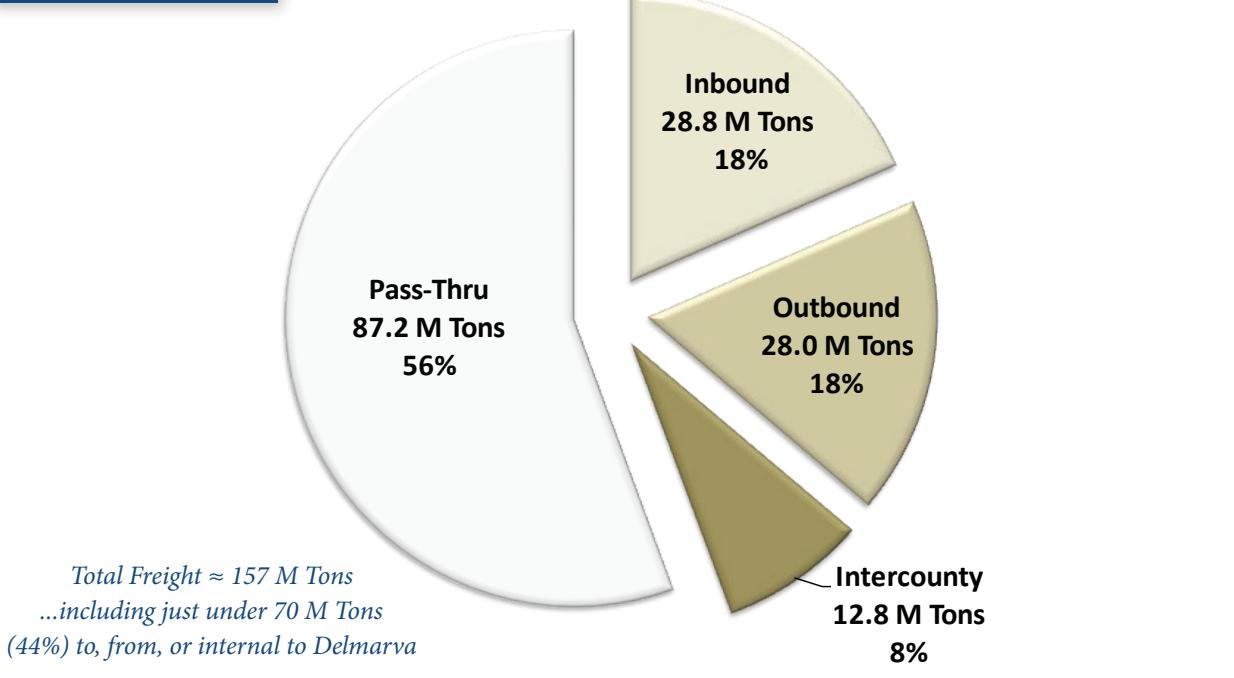
Global Trading Partners

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)



(by Value)

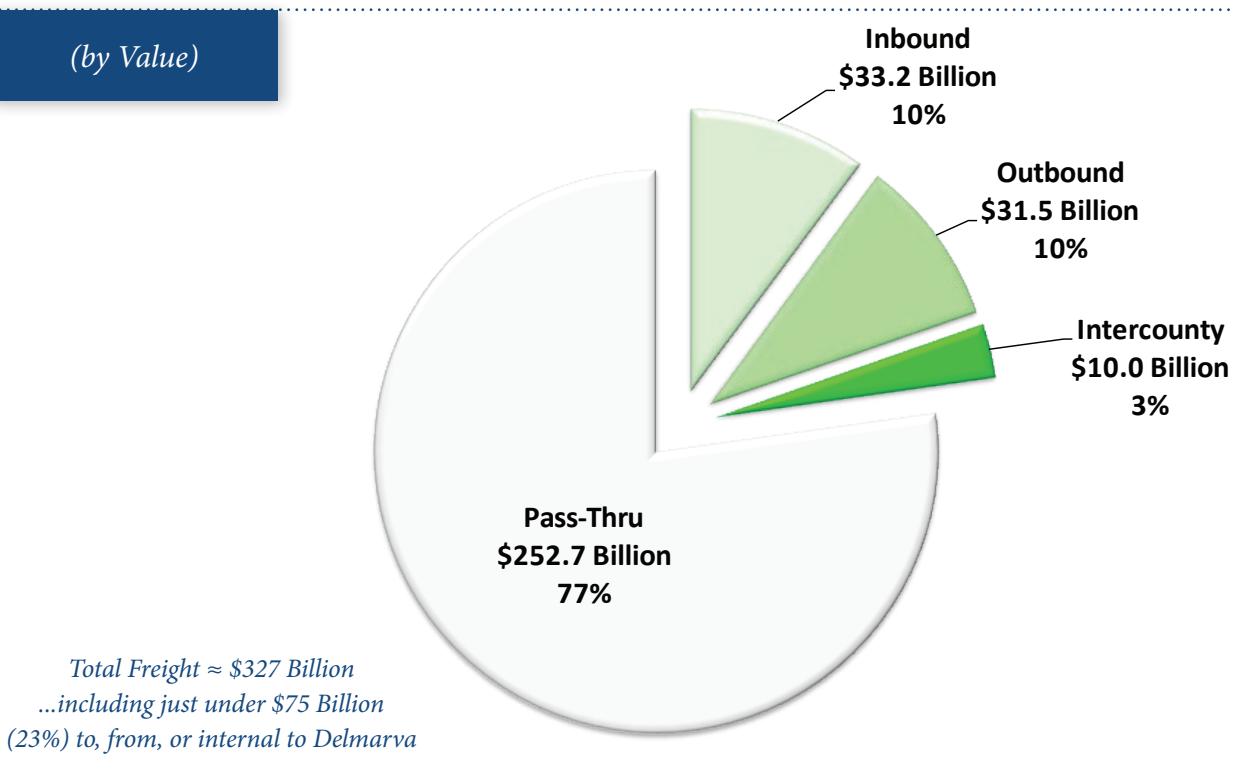


Exhibit 3.3 - Domestic Trading Partners (Freight Origin)

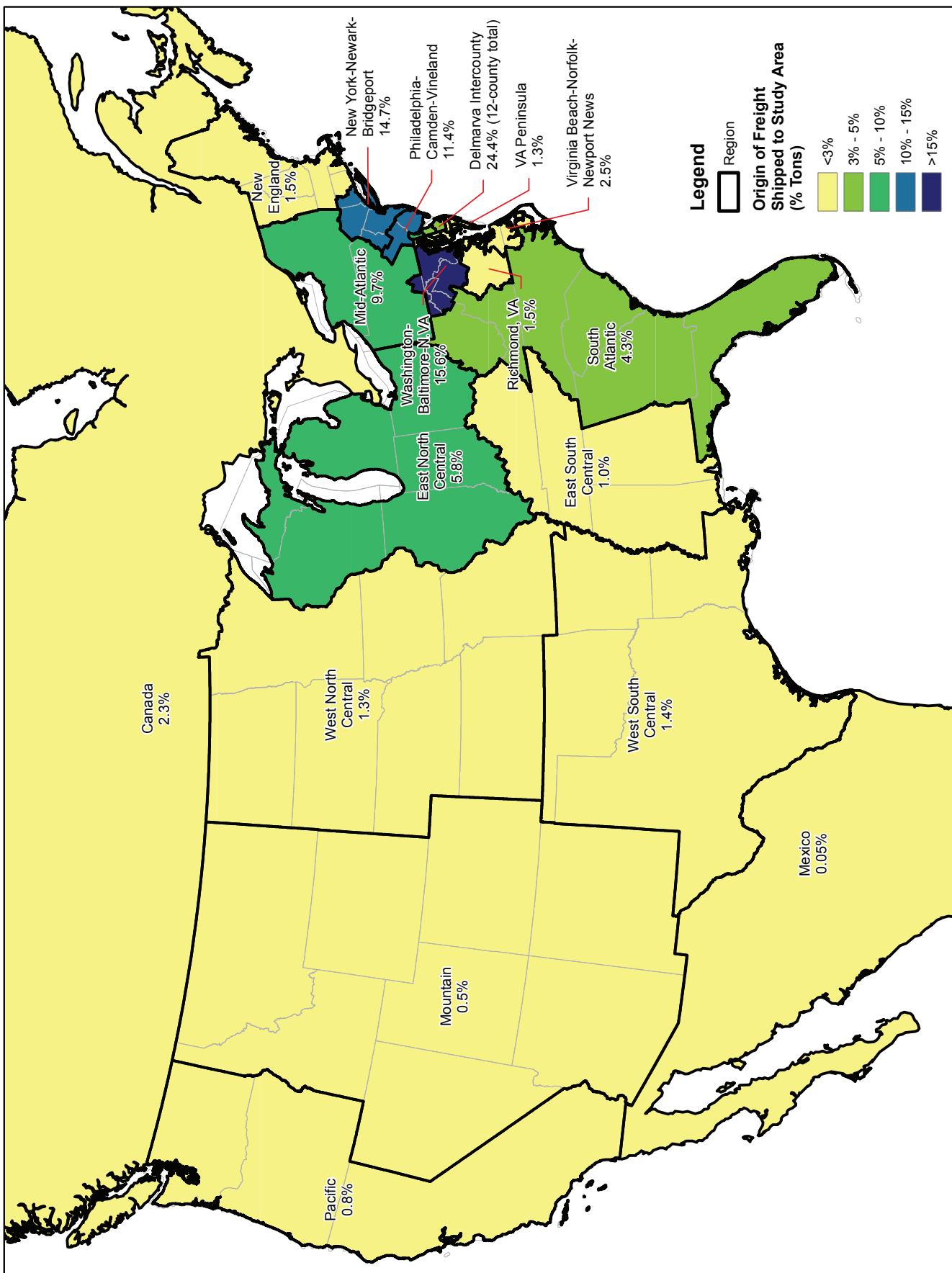


Exhibit 3.4 – Domestic Trading Partners (Freight Destination)

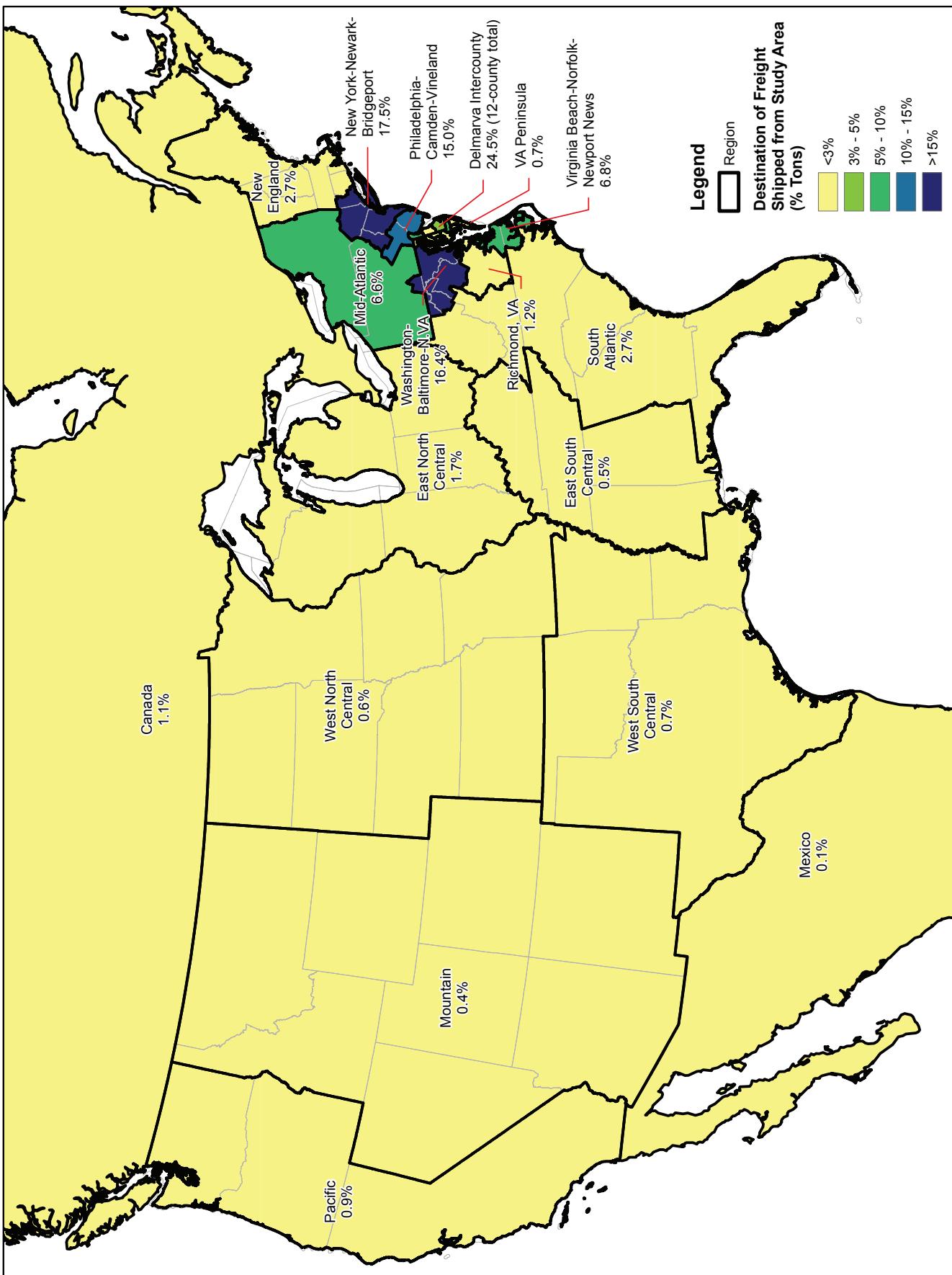
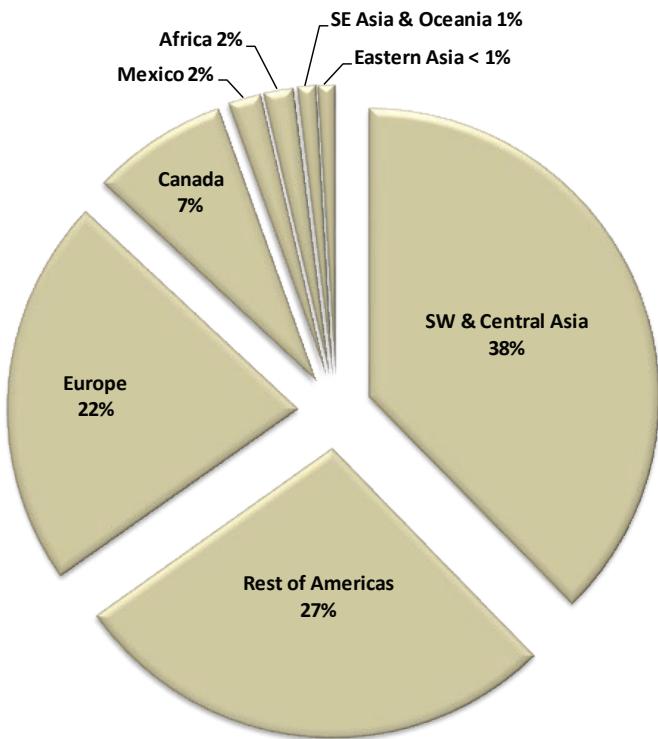


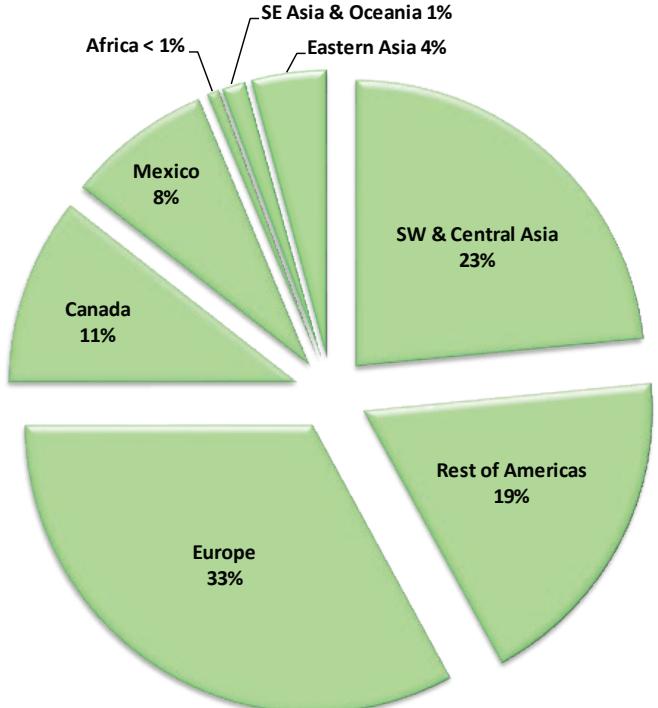
Exhibit 3.5 – International Trading Partners (Foreign Origin of Imports)

(by Weight)



Import Total \approx 12M Tons

(by Value)

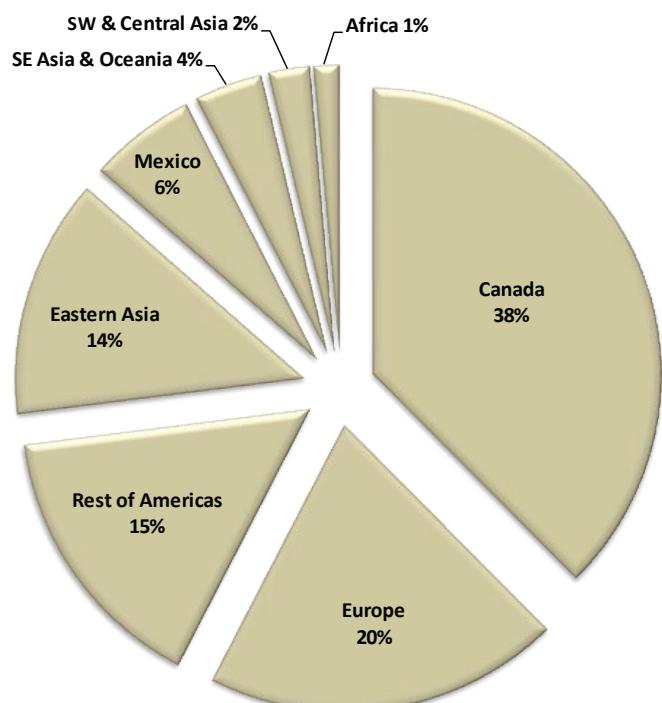


Import Total \approx \$8.2 Billion

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

(by Weight)

Export Total ≈ 1.8M Tons



(by Value)

Export Total ≈ \$4.9 Billion

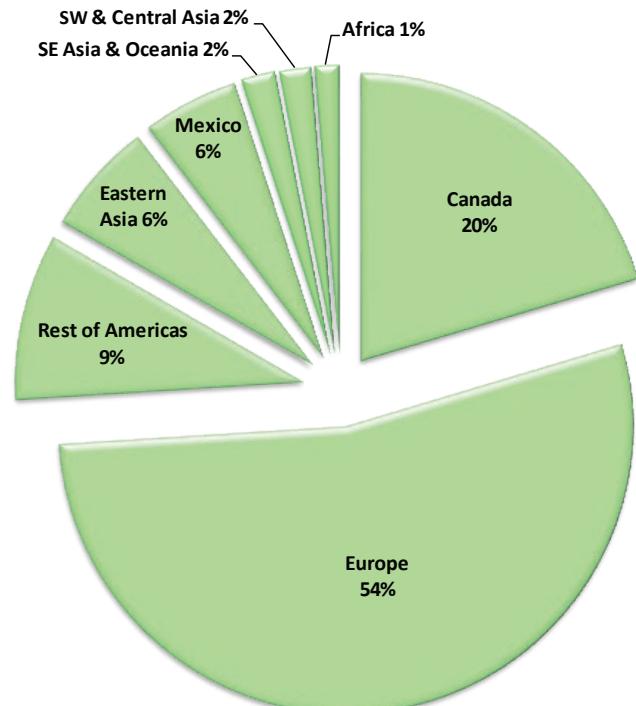


Exhibit 3.7 – Leading Foreign Import/Export Commodities

Foreign Zone	Delmarva Leading Imports (from Foreign Zone)	Delmarva Leading Exports (to Foreign Zone)
Africa	Metallic Ores* , Gasoline** also Crude Petroleum, Fuel Oils	Cereal Grains* , Basic Chemicals* , Plastics/Rubber**
Canada	Crude Petroleum* , Motorized Vehicles** also Fuel Oils	Ag Products* , Motorized Vehicles** also Basic Chemicals, Chemical Products, Plastics/Rubber
Eastern Asia	Articles-Base Metal* , Textiles/Leather** also Plastics/Rubber, Machinery, Furniture, Misc. Mfg. Products	Basic Chemicals* , Plastics/Rubber** , also Meat/Seafood, Precision Instruments
Europe	Fuel Oils*** , Pharmaceuticals** also Machinery, Motorized Vehicles, Basic Chemicals, Plastics/Rubber	Basic Chemicals* , Plastics/Rubber** , Machinery** , Electronics** , Precision Instruments** , also Pharmaceuticals
Mexico	Crude Petroleum* , Motorized Vehicles** also Machinery	Plastics/Rubber* , Motorized Vehicles** also Basic Chemicals, Chemical Products, Machinery
Rest of Americas	Crude Petroleum*** also Ag Products, Machinery, Plastics/Rubber	Basic Chemicals* , Motorized Vehicles** also Foodstuffs, Plastics/Rubber, Newsprint/Paper
SE Asia & Oceania	Ag Products* , Furniture** also Metallic Ores	Basic Chemicals* , Plastics/Rubber** , also Motorized Vehicles
SW & Central Asia	Crude Petroleum*** also Fuel Oils, Textiles/Leather	Basic Chemicals*** also Plastics/Rubber, Machinery, Electronics, Precision Instruments

Table Source: 2012 FAF3 Import/Export Data Compilation

Table Notes:

* **Bold Tan** implies leading commodity by weight

** **Bold Green** implies leading commodity by value

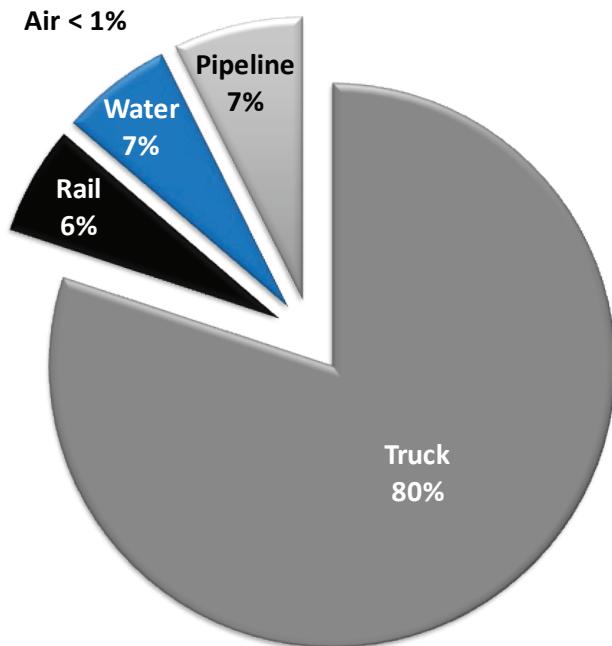
*** **Bold Black** implies leading commodity by both weight and value

Modal Insights

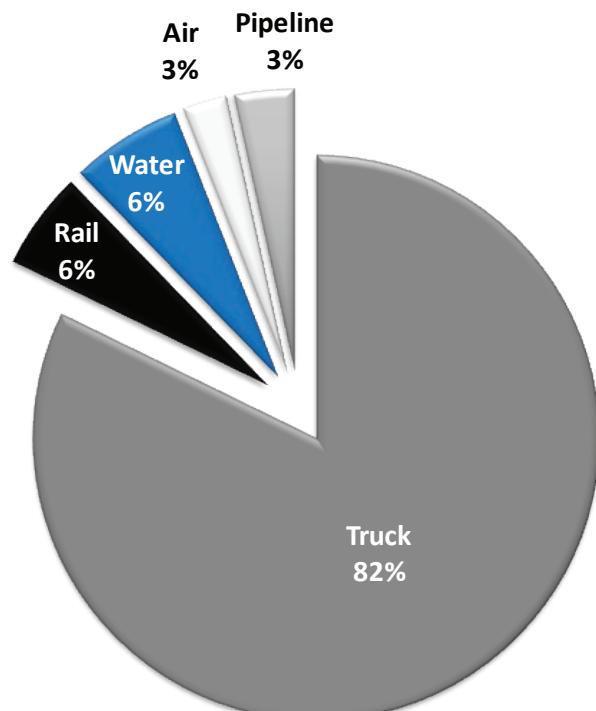
By weight, trucks carry approximately 80% of all goods moved to, from, or on the peninsula; travel by rail, water, or pipeline contributes up to 7% each; and air contributes less than 1% (*Exhibit 3.8*). If considering freight value in lieu of tonnage, air accounts for 3% given a modal tendency toward lower weight and higher value shipments, while rail and water shares each decrease given their typically heavier bulk products. If considering pass-thru freight, truck and rail shares increase slightly given the influence of I-95 and the Northeast Corridor, while water and pipeline shares decrease accordingly. In all cases, however, motor freight truck travel is clearly the dominant mode.

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>

Commodity Details

The leading commodity groups for the Delmarva Peninsula vary by weight versus value ([Exhibit 3.10-Exhibit 3.11](#)). However, in either case there are five core groups that make up almost two-thirds of the overall freight flows. These core groups consist of relatively high tonnage/high value freight that includes:

- Petroleum or coal products
- Secondary traffic
- Farm products
- Food or kindred products
- Chemicals or allied products

A list of the top 10 commodities by weight includes the core groups listed above and accounts for 92% of Delmarva's freight by adding 5 additional groups of relatively high tonnage/low value freight that includes:

- Non-metallic minerals
- Clay, concrete, glass, or stone
- Waste or scrap materials
- Lumber or wood products
- Pulp, paper, or allied products

A list of the top 10 commodities by value also includes the core groups listed above and accounts for 84% of Delmarva's freight by adding 5 different groups of relatively low tonnage/high value freight that includes:

- Transportation equipment
- Miscellaneous manufacturing products
- Electrical equipment
- Machinery
- Rubber or miscellaneous plastics

The above groups are based on the two-digit Standard Transportation Commodity Code (STCC) groupings utilized in the project's Transearch® commodity flow data and common in rail freight reporting. A wide variety of detailed commodity types are included as sub-groups under each of the more general two-digit STCC groups. A review of those sub-groups indicates that just a handful of specific commodities often account for the vast majority of each group's overall tonnage or value. These specific commodities also provide a better practical understanding of what types of freight are moving in comparison to the area's business and industry sites. To that end, the prevailing detailed commodity types that generally make-up each of Delmarva's leading commodity groups have been summarized here ([Exhibit 3.12](#)).

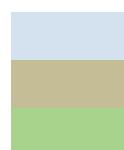
Exhibit 3.10 – Delmarva Top Commodity Groups

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)

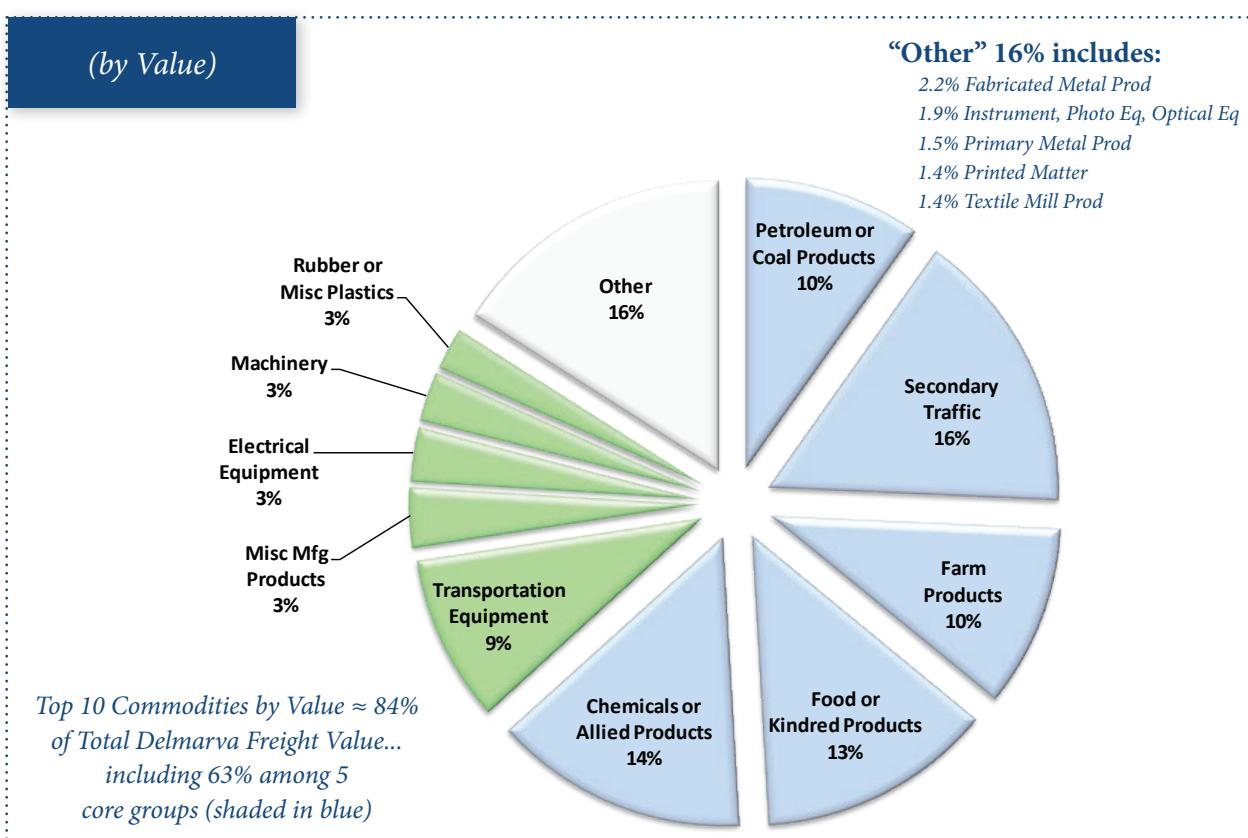
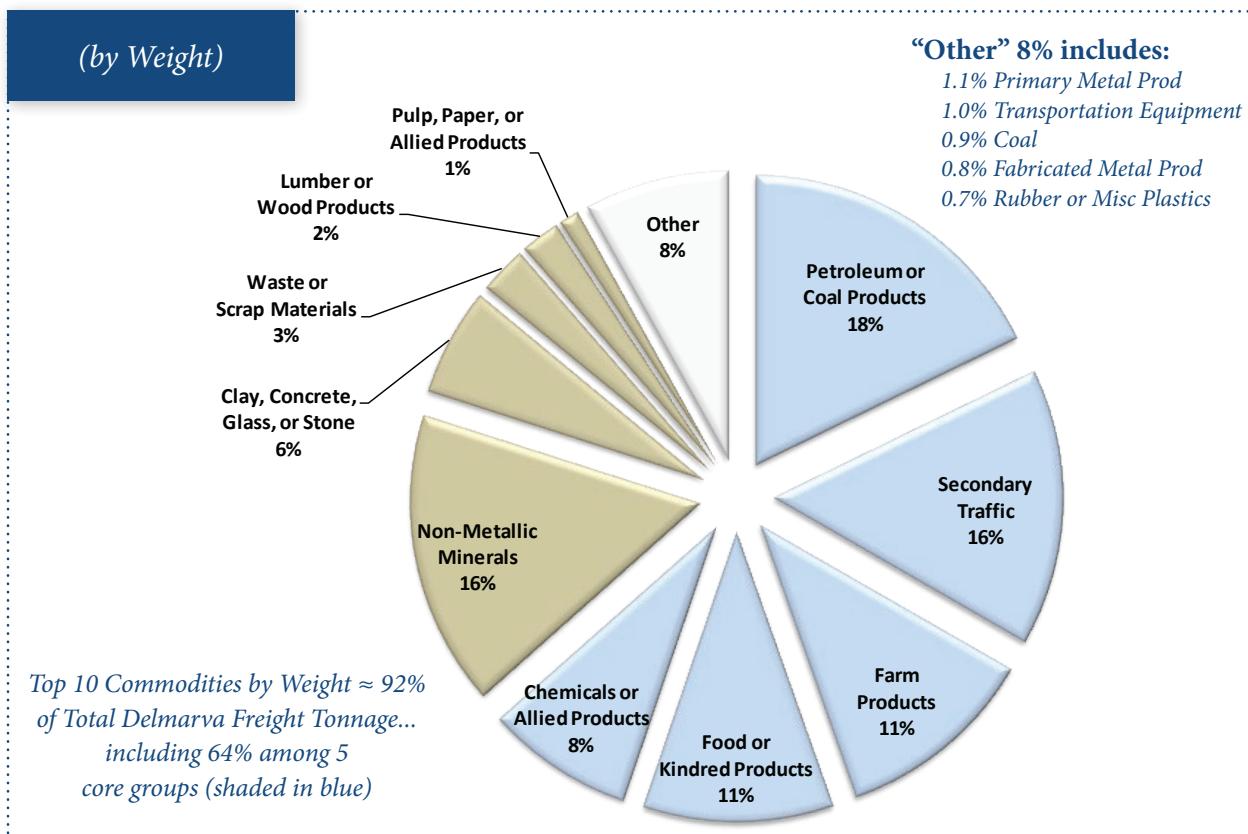


Exhibit 3.12 – Delmarva Top Commodity Group/Type Details

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

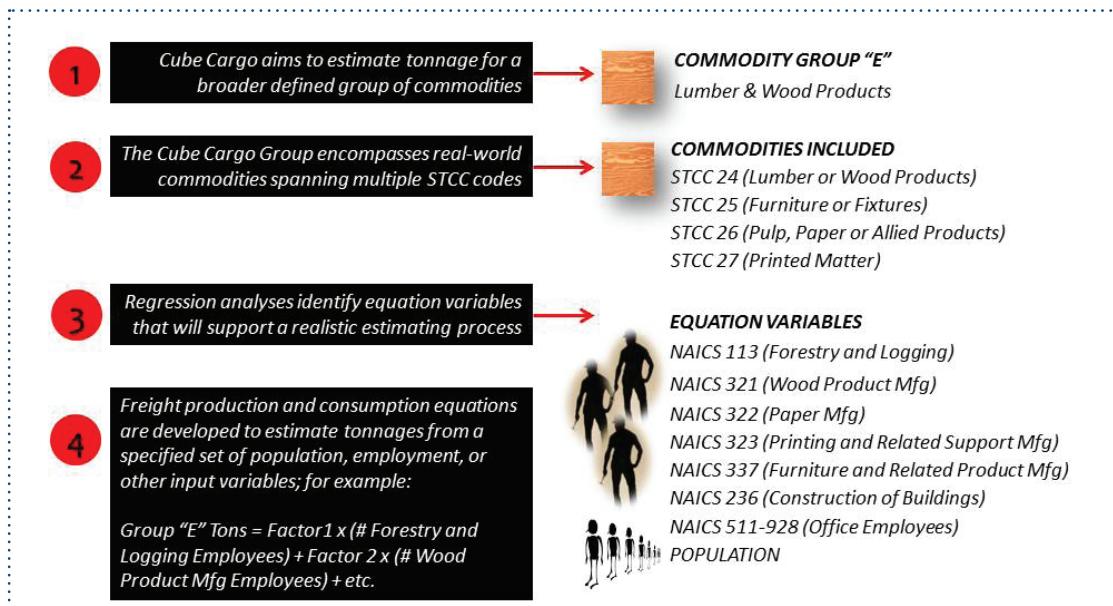
3.2 Commodity Flow Model Perspectives

The Delmarva Freight Plan includes the development and customization of a Commodity Flow Model using the Cube Voyager/Cube Cargo software platform.⁵ This model is a powerful 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 trends or decisions in areas such as infrastructure investments, regulation changes, modal enhancements, or industry/employment modifications. To help facilitate and simplify development of that model, the review of existing commodity flows and trends – which thus far in this chapter have been based on STCC groupings from the available data sources – must shift toward consolidating that information into a lesser number of customizable Cargo Model groupings.

As part of the modeling process, each Cargo Model commodity group encompasses a variety of real-world freight traffic in a manner that allows the model to accurately reproduce and predict the amount of freight generated in a specific area based on employment, population, or similar variables (*Exhibit 3.13*). While details of that process are expanded elsewhere in this plan (*Chapter 7*), the important issue here is to organize the existing commodity flow data appropriately. Based on extensive background efforts, 11 Cargo Model commodity groupings have been selected, ranging from Agricultural & Fishing Products to Manufactured Products or Miscellaneous Freight (*Exhibit 3.14*).

The Commodity Flow Model distinguishes between freight production (i.e., tonnage that is created in or originating from an area) and freight consumption (i.e., tonnage that is delivered to or used in an area). The initial model estimates are calibrated to match the net totals of the various STCC-based tonnage data covered in this chapter, including production/consumption targets by Cargo Model commodity group and by county (*Exhibit 3.15-Exhibit 3.16*). Based on these perspectives, the leading Cargo Model commodity groups are as expected including Agricultural & Fishing Products, Ores & Petroleum, Processed Food, and Chemical, Petroleum, or Coal Products. Additionally, and in comparison to previous economic context discussions (*Chapter 2*), the leading counties in terms of overall freight tonnage are also as expected including Kent, New Castle, and Sussex Counties in Delaware; as well as Cecil and Wicomico Counties in Maryland.

Exhibit 3.13 – Sample Process for Development of Cube Cargo Model Commodity Groups



⁵ <http://www.citilabs.com/products/cube/cube-cargo>

Exhibit 3.14 – Cube Cargo Model Commodity Groupings

Commodity Groups (CARGO MODEL)		Commodity Groups (TRANSEARCH)	
Group	Description	STCC2	Description
A	Agricultural & Fishing Products	01 08 09	Farm Products Forest Products Fresh Fish or Marine Products
B	Ores & Petroleum	10 13 14	Metallic Ores Crude Petrol or Natural Gas Nonmetallic Minerals
BB	Coal	11	Coal
C	Processed Food	20 21	Food or Kindred Products Tobacco Products
D	Textiles & Apparel	22 23	Textile Mill Products Apparel or Related Products
E	Lumber & Wood Products	24 25 26 27	Lumber or Wood Products Furniture or Fixtures Pulp, Paper or Allied Products Printed Matter
F	Chemical, Petroleum, or Coal Products	28 29 30	Chemicals or Allied Products Petroleum or Coal Products Rubber or Misc Plastics
H	Nonmetallic Products	31 32	Leather or Leather Products Clay, Concrete, Glass or Stone
I	Machinery & Metal Products	33 34 35 36 37 38	Primary Metal Products Fabricated Metal Products Machinery Electrical Equipment Transportation Equipment Instruments, Photo Equip, Optical Equip
J	Manufactured Products	19 39	Ordnance or Accessories Misc Manufacturing Products
K	Miscellaneous	40 41 42 43 46	Waste or Scrap Materials Misc Freight Shipments Shipping Containers Mail or Contract Traffic Misc Mixed Shipments

Exhibit 3.15 – Delmarva Freight Production and Consumption by Cube Cargo Model Commodity Group

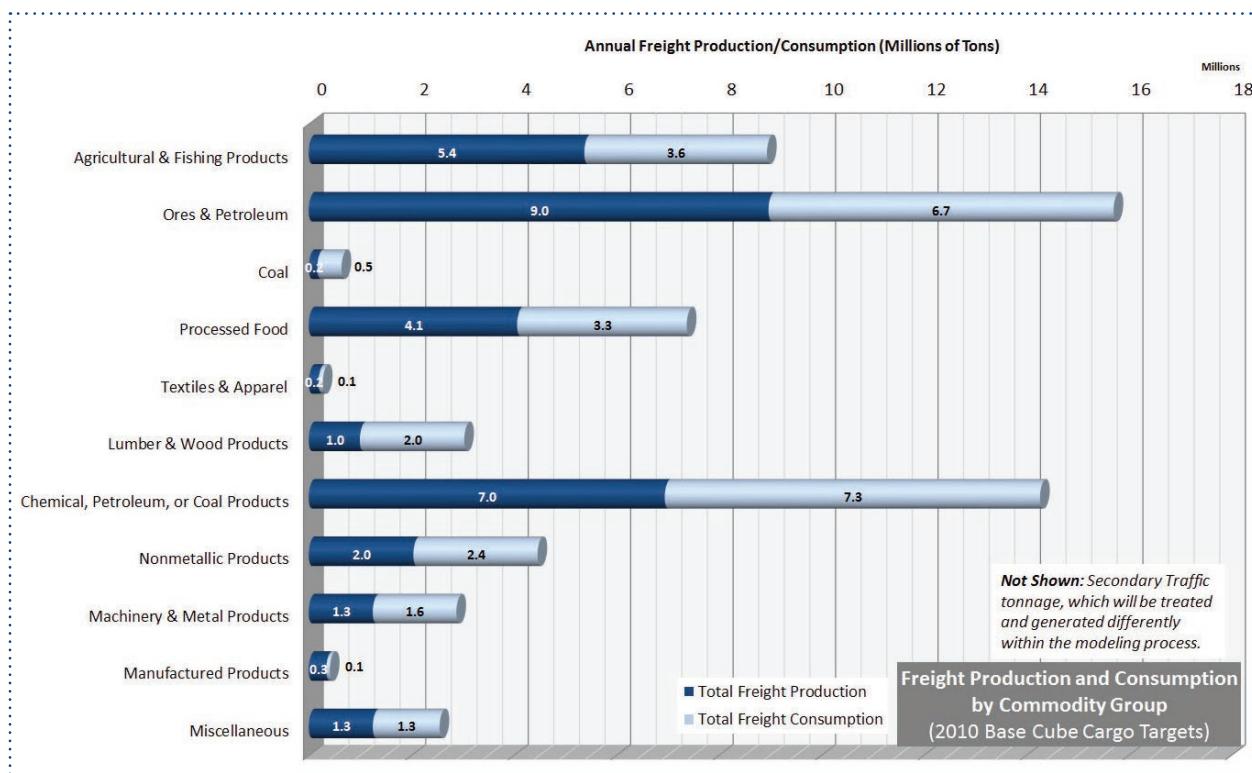
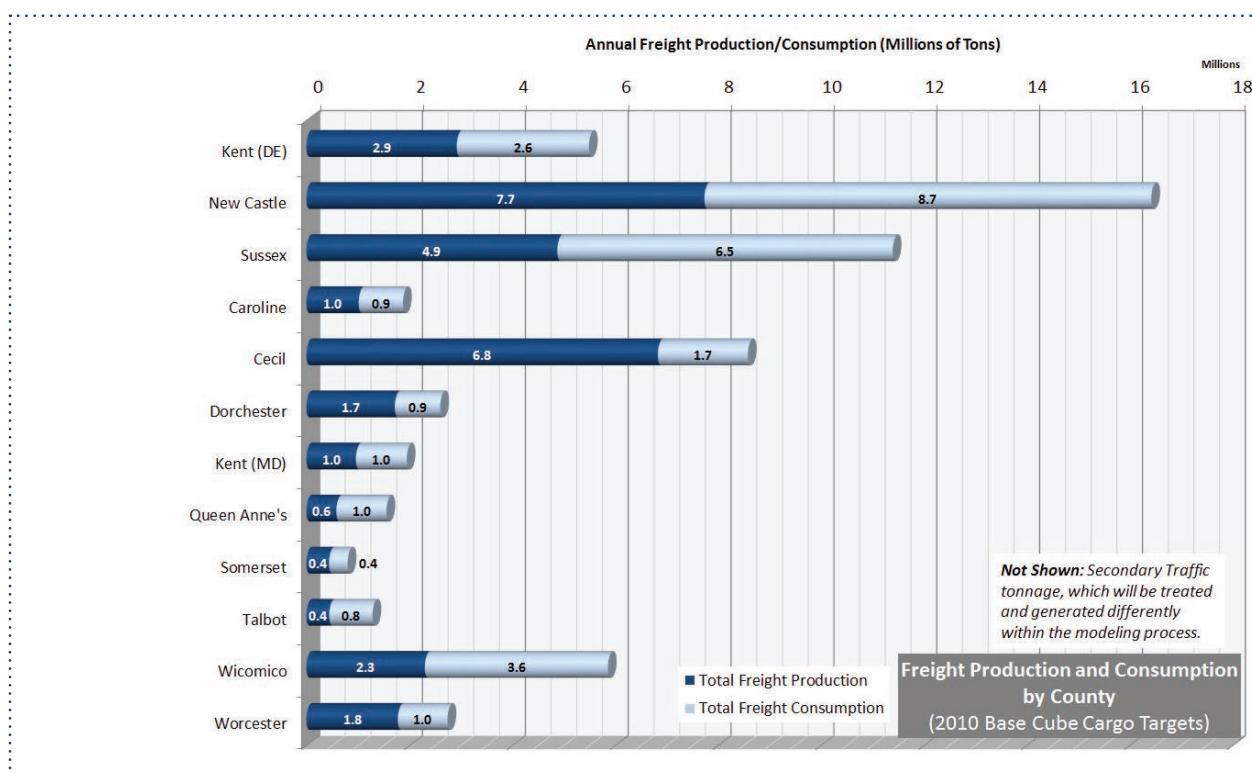


Exhibit 3.16 – Delmarva Freight Production and Consumption by County



3.3 Supply Chain Perspectives

Key Supply Chains

MAP-21 emphasizes a need for increased understanding of a region's key industries and supply chains, including their related transportation modes and potential influence on export activities. *Chapter 2* of this plan provided such insights from an economic and business/industry perspective; a review of the existing commodity flows summarized herein generally confirms those insights. While any of the peninsula's key industries or leading commodity groups fill a supply chain role in some manner, exceptional or unique interests are noted as follows:



Energy Supply Chain: The movement or processing of energy-related products is a major influence on the peninsula. The Petroleum and Coal Products commodity group, for example, ranks highest (by weight) among all others, and crude petroleum or fuel oils are leading imports from six of eight foreign freight zones. Related to the extraction of shale oil or gas reserves, the PBF Refinery in Delaware City receives tremendous amounts of crude oil by rail from the Midwest and Canada, while other industries on the peninsula may supply sand or chemical products for hydraulic fracturing (fracking) in Pennsylvania and beyond. In the wind energy market,

the Port of Wilmington serves as an ideal seaport and distribution hub with the specialized equipment and experience needed to transfer massive cargo such wind turbine blades. Other influences by mode are reflected in rail-based coal deliveries to the Indian River Power Plant near Millsboro; gasoline and fuel oil barges along the Wicomico River; lightering operations in Delaware Bay; over 70% of reported pipeline flows as intercounty storage and distribution movements; aviation fuel needed to support Dover AFB's military air cargo mission; and truck transfers ranging from large-scale operations to individual home heating oil deliveries. Combined, these activities are critical supply chain links not only on the peninsula, but also throughout the surrounding region and across the nation.

Agricultural Supply Chain (Including Poultry and Agribusiness): Major agricultural influences and relationships, including those in the poultry and agribusiness industries, are undeniable as they are reflected in several of the peninsula's leading commodity groups. The Farm Products group, for example, reflects large amounts of grain, live poultry, and various field crops; while the Food or Kindred Products group subsequently includes processed, fresh, or frozen poultry and eggs. In related areas, fertilizers or fertilizer components are prominent among the Chemicals or Allied Products group and the Non-Metallic Minerals group; and the peninsula's high-value Machinery group specifically reflects a large proportion of farm machinery or equipment, refrigeration machinery, ventilating equipment, and other potential agricultural support items. The various agricultural and support products are shipped by truck (especially fresh product), by rail (especially grain), and by barge (especially grain along the Wicomico River and liquid fertilizer along the Nanticoke River). Previous economic insights have noted that motor freight trucks allow for the delivery of fresh products to 50-60% of the U.S. east coast market, while frozen poultry may also be a viable international export via the Port of Norfolk or other locations.

Food Products Supply Chain: In addition to the agriculture and poultry industries noted above, supply chains pertaining to the broader manufacturing, processing, or handling and distribution of various food products are also prevalent. The scale and scope of operations vary, ranging from seafood and oyster harvesting, to beverage production and bottling, to large-scale food manufacturing (e.g., Kraft Foods or Hanover Foods). Several niche products including tropical fruits, juices, and concentrates are also imported in large volumes through the Port of Wilmington for well-known brands such as Dole and Chiquita. In related areas, warehousing and distribution facilities such as C&S Wholesale Grocers or Sysco Eastern Maryland help to link the food production aspects with wholesale, retail, and restaurant markets. Packaging products such as sanitary food containers, paper containers, or boxes are also reflected in the Pulp, Paper, or Allied Products group. Packaging relationships may include local supplies or uses far beyond Delmarva's borders including, for example, kraft linerboard exported through Wilmington that may return as boxes filled with tropical fruit.

Chemical Products Supply Chain: Independent of this freight plan, a detailed Delmarva Chemical Supply Chain Analysis study was recently conducted through WILMAPCO to identify key trends and insights relative to this important industry on the peninsula. As a core commodity group in terms of both tonnage and value, typical commodities under the Chemicals or Allied Products group include miscellaneous industrial organic chemicals, fertilizers, plastic material or synthetic fiber, specialty cleaning agents, and drugs or pharmaceuticals. Truck and rail movements are exceptionally important to these products, while air delivery of pharmaceuticals also contributes value. Pharmaceuticals were also identified as accounting for a fair share of import/export trade values with the European market.

Retail Supply Chain: Secondary Traffic – or the movement, typically by truck, of mixed shipments of goods from warehousing or distribution facilities to final destinations – is prominent across the peninsula. While this may accompany any commodity group, it also adds insight into the depth of the region's retail and distribution industry. Traditional storefronts coupled with e-commerce and major distribution facilities such as Amazon, Wal-Mart, or IKEA are contributing factors. Coupled with consumer demands of the broader tourist, hospitality, restaurant, or related industries on the peninsula, the importance of Secondary Traffic flows are apparent.



Other Supply Chains

The key supply chains noted above generally capture the influence of the peninsula's core commodity groups. Other potential interests beyond those core groups may expand to include the following:

Construction: Common Delmarva commodities include aggregates, asphalt, cement, concrete and cut stone products, and other materials that are critical to construction activities in the region.

Transportation Equipment: Despite drastic changes in the region's automotive industry over the past several years, motor vehicles and related parts and accessories are still factors in terms of value on the peninsula. Motorized vehicles are leading import/export commodities for various foreign trading partners. Multimodal access with specialized vehicle processing/storage facilities and roll-on/roll-off (RoRo) shipping capabilities are located at major ports on the peninsula (e.g., Auto-Port, Inc., at the Port of Wilmington) and in the surrounding region (e.g. various public/private terminals in/around the Port of Baltimore and the Port of Virginia).

Miscellaneous Manufacturing: Miscellaneous commercial, industrial, or consumer retail products of various types are manufactured across the peninsula including, for example, products through many of the major employers listed previously in *Chapter 2*. It is anticipated that while each product line has unique raw material, packaging, scrap, or similar commodity influences, all rely on an efficient and effective freight transportation system and related Secondary Traffic or distribution network.

Natural Resource Access

MAP-21 places particular emphasis on infrastructure that is used to access and transport equipment or products related to natural resources such as those found in the mining, agricultural, energy, and timber industries. Adequate freight transportation access is critical to these types of industries and related plans/policies. However, in most cases the potential impacts of heavy freight traffic must also be balanced alongside first/last mile considerations, community interests, or the preservation of local roadway conditions. On the Delmarva Peninsula, potential natural resource access issues may be tied to at least two major interest groups including:

Energy: focusing on any location or resource-specific operations noted in the Energy Supply Chain discussions in the previous section, particularly including access to/from the Port of Wilmington, the PBF Refinery in Delaware City, and the Indian River Power Plant near Millsboro; and along the Wicomico River to/from Salisbury.

Agriculture: focusing on a broad presence of poultry, agribusiness, or other large and small-scale farming operations across several counties and as noted in the agricultural supply chain discussions in the previous section, and including protected fishery/hatchery sites that may be related to the Food Products supply chain, particularly for oyster and seafood harvesting at the southern end of the peninsula.