

## 2040 Freight Industry Level Forecasts

### ABOUT THIS PROFILE

The NJTPA has developed a set of alternative freight forecasts to support transportation, land use, and economic development decisions. The first step in the study process was to document current baseline conditions. This Freight Profile offers a snapshot of key metrics – Economy and Land Uses, Freight Flows, and Freight Transportation Networks in 2010 and in the forecast year, 2040.

### ECONOMY AND LAND USES

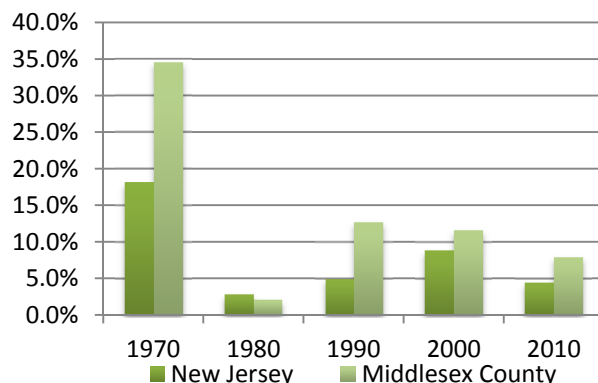
With a 2010 population of 809,858, Middlesex is the second most-populous County in the State of New Jersey. Middlesex County has historically outpaced the state in population growth and household income, two key drivers of demand for consumer goods. Similar to the state overall, Middlesex saw its growth rate slow over the last two decades. The County's average household income is higher than that of the state overall.

### Middlesex County is home to...

- 809,858 people
- 35,953 businesses that employ 391,600 people; 37% of these jobs are in businesses that are highly dependent on freight movement
- More than 1,300 warehousing/distribution buildings and 400 manufacturing buildings
- About 71.6 million tons of domestic freight shipped or received annually
- Interstate, state, and County highways used by tens of thousands of trucks every day
- The Conrail Lehigh Line and several secondary freight rail lines

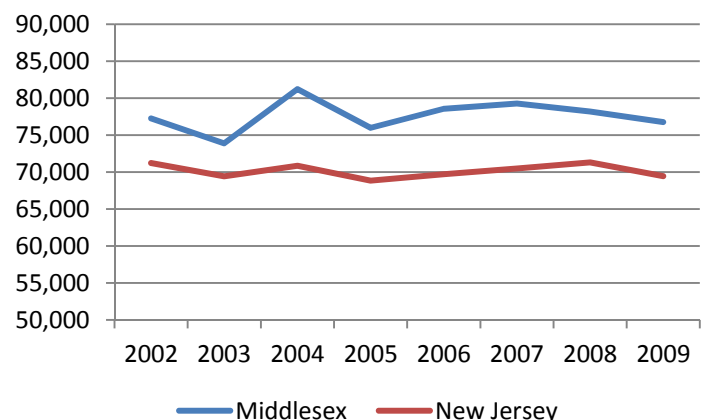
### Population Growth by Decade

Source: U.S. Census Bureau



### Household Income, Constant 2010 Dollars

Source: U.S. Census Bureau



### Employment

The County's economy employs 391,600 people in more than 35,000 establishments. About 37% are employed in "freight intensive" industries, such as construction, manufacturing, mining and extraction, retail trade, wholesale trade, and logistics. About 63% are employed in industries that may generate freight, but are less dependent on freight movement.

### FREIGHT FLOWS

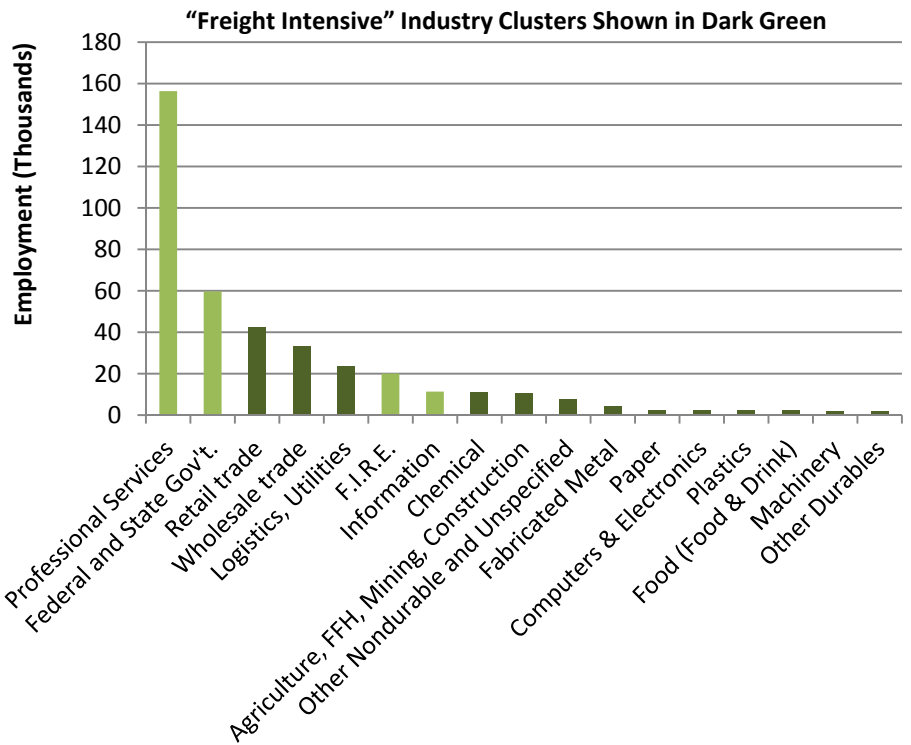
In 2007, approximately 71.6 million tons of domestic freight moved into, out of, or within Middlesex County, by all modes of transportation (truck, rail, water, and air). This figure includes commodities moving into or out of Middlesex County, but excludes pass-through tonnage. (The movement of international cargo to and from seaports, airports, and border crossings is captured and counted as domestic tonnage.)

### Commodities

For domestic O-D tonnage, around one-third consisted of moves of goods between warehouses/distribution centers and freight transportation terminals. Other leading commodities include chemicals or allied products, nonmetallic minerals, petroleum and coal, clay/concrete/glass/stone products, and food or kindred products.

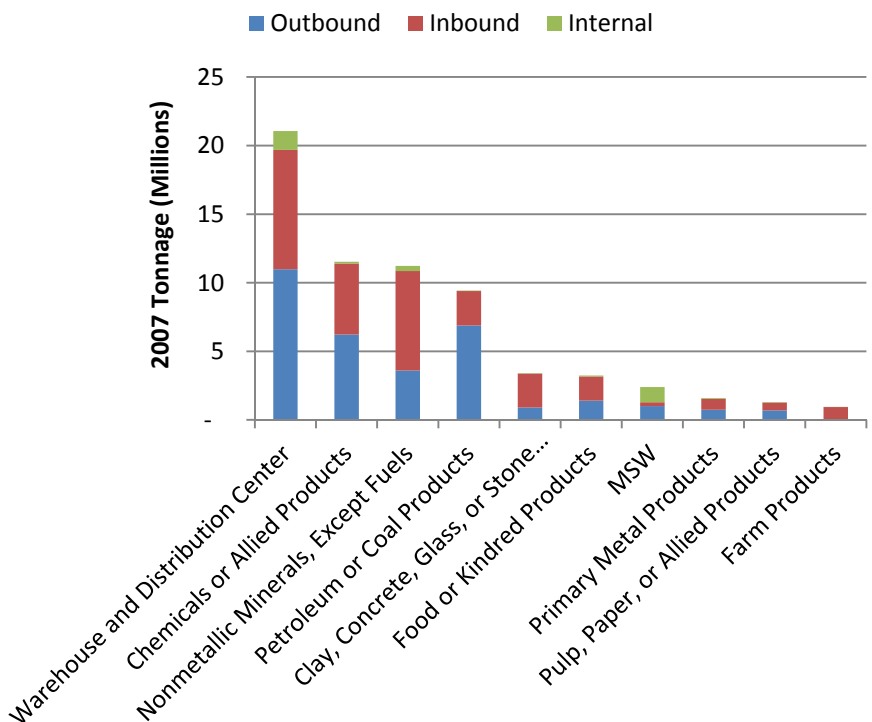
### Employment by Industry, 2010

Source: R/ECON



### Domestic O-D Commodities by Tonnage, 2007

Source: IHS Global Insight



## Trading Partners

Middlesex County’s major trading partners are, not surprisingly, its neighbors. As illustrated to the right, locations in New Jersey are the greatest origins of inbound freight and destinations of outbound freight. Beyond New Jersey, New York and Pennsylvania are the largest destinations for outbound freight. Illinois is the top origin of freight tonnage coming into Middlesex County. Other key trading partners include the New England states, Canada, Maryland, and Virginia.

## FREIGHT TRANSPORTATION NETWORKS

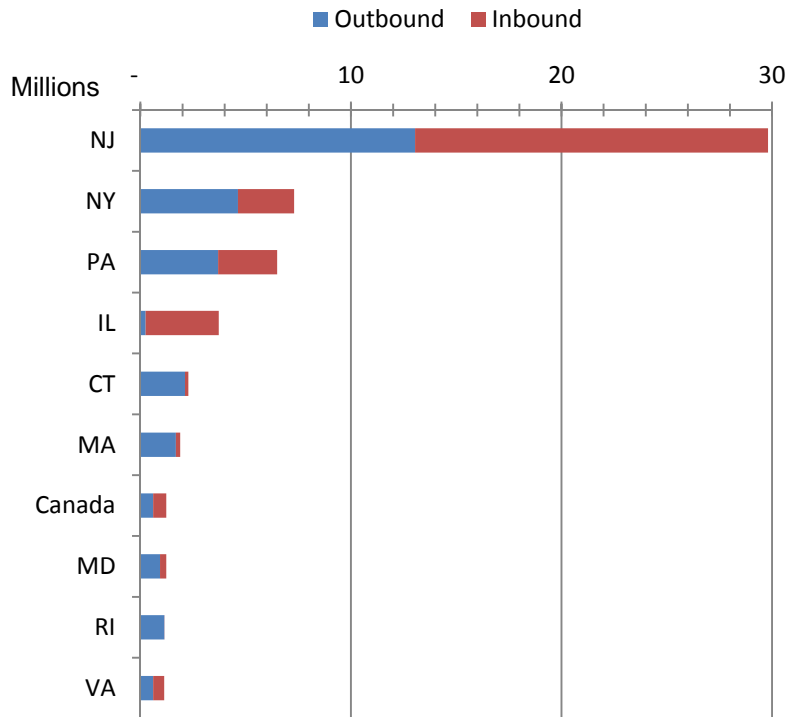
Freight can be handled by truck, rail, air or water. The choice of mode depends on a variety of factors, including: length of trip (rail and air are more competitive at longer distances), commodity type (rail and water are more competitive for heavy materials), time sensitivity (truck and air are most competitive), need for door-to-door service (trucking is needed unless the customer has a dock or a rail connection).

### Mode Split

For domestic freight traveling to, from or within Middlesex County, 81 % travels by truck, primarily to and from warehouses, distribution centers, manufacturing facilities and retail centers. Around 10 % travels by water, mostly petroleum and chemical products transported through terminals along the Arthur Kill. About 9 % arrives or departs by rail.

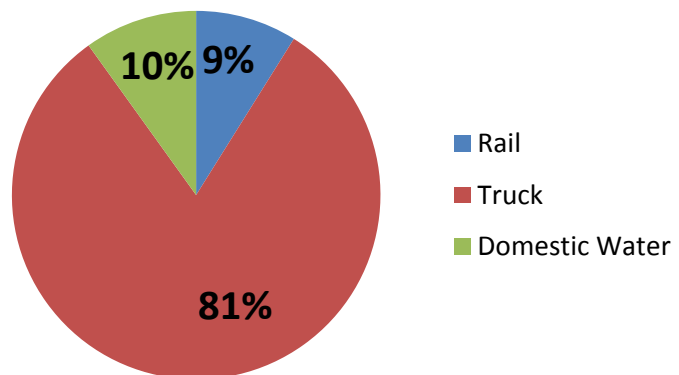
## Top Origins and Destinations of Domestic O-D Freight Tonnage, 2007

Source: IHS Global Insight



## Mode Split, Domestic O-D Tonnage, 2007

Source: IHS Global Insight



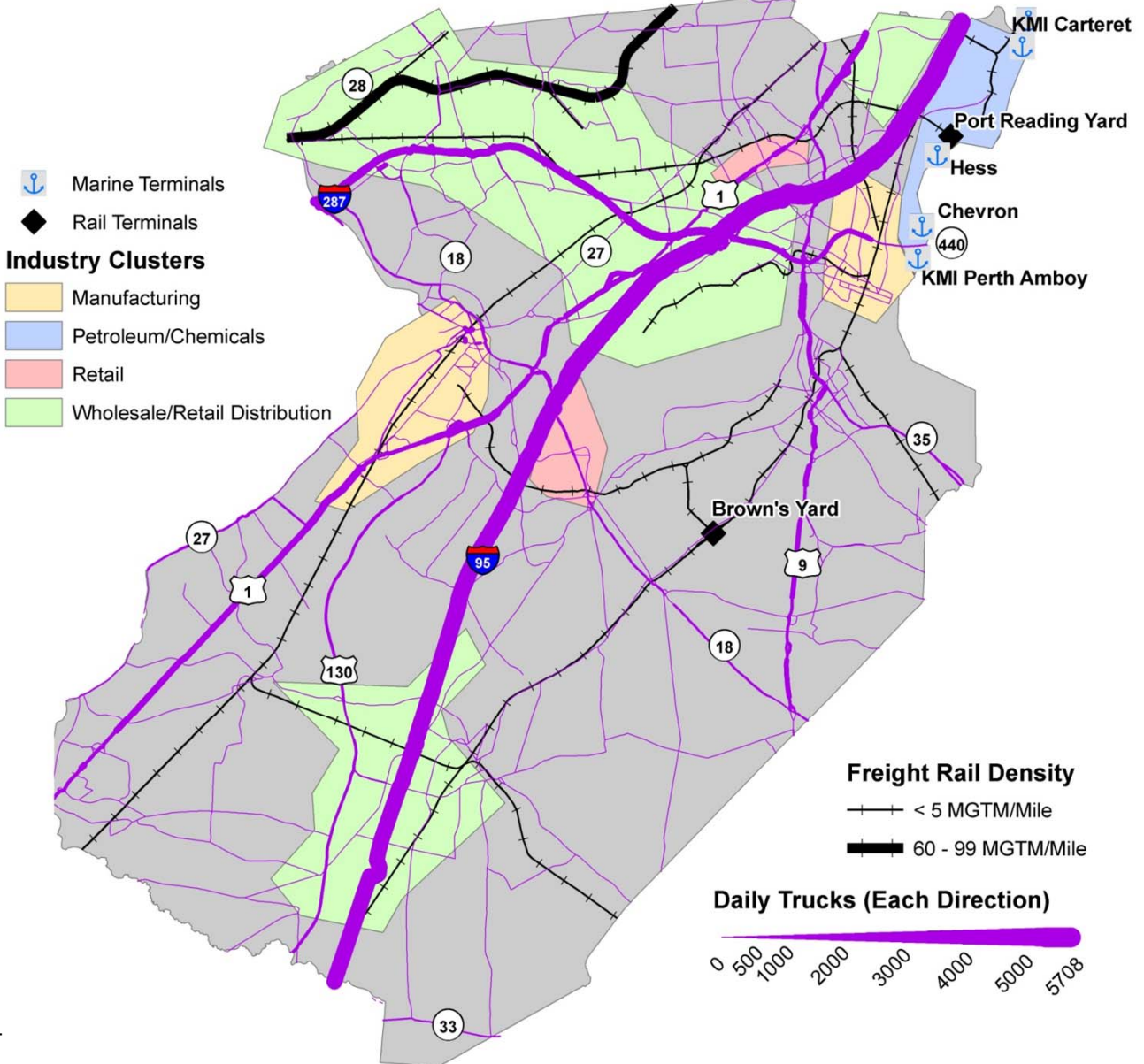
## Highway and Rail Network Utilization

Middlesex County’s highway network serves to connect its major freight activity centers with key trading partners elsewhere in the County, in the State of New Jersey, in other parts of North America, and – via international seaports and airports – the world. The New Jersey Turnpike, which runs the length of the County, accommodates more than 11,000 trucks per day on some segments, while portions of I-287/NJ 440, US 1, US 9/NJ 35, and NJ 18 carry more than 1,000 trucks per day. Not all trucks on the road are carrying freight. Some are moving empty. Others are providing municipal services (local waste collection, utility services, etc.) or commercial services (contractors, lumber, landscapers, etc.).

On the rail network, the Conrail Lehigh Line, which runs through the northwestern portion of the County, is one of the most heavily-traveled freight rail lines in the State. The map below illustrates how the highway and rail networks and terminals align with industrial activity clusters.

## Commodity Truck and Rail Flows in Middlesex County, 2007

Sources: IHS Global Insight (2007), NJTPA Regional Transportation Model-Enhanced (NJRTM-E), I-95 Corridor Coalition Integrated Corridor Analysis Tool Rail Network, and Dun and Bradstreet (2010)

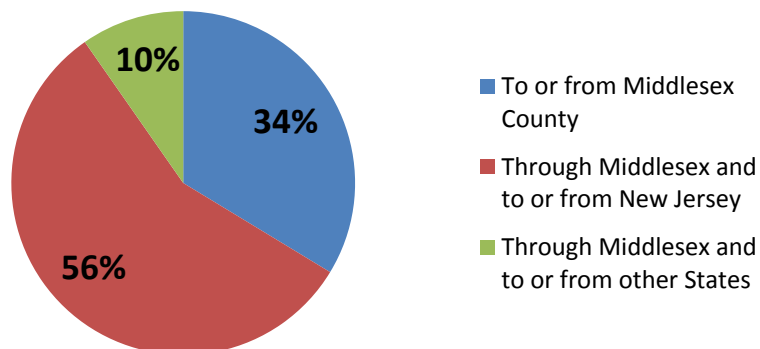


## Highway Link Analysis

Different highways can be used by trucks carrying freight in different ways. Some highways have a high % of local traffic; others a high % of pass-through traffic. Many highways show significant differences at different locations. Among major highways in Middlesex County, including the New Jersey Turnpike, Interstate 287, US Route 1 and US Route 9, the average values of internal and through traffic are shown in the graph to the right.

## Truck Trips on Middlesex County Highway Links, 2007

Source: IHS Global Insight and USDOT Freight Analysis Framework-3



About one-third of truck trips on the selected highways in Middlesex County were traveling either from an origin point in Middlesex County or to a destination in Middlesex County (or both). About two-thirds of truck trips on the major highways were passing through Middlesex County between origins or destinations outside the County. Most of the through trips (56% of all trips) were traveling to or from points in New Jersey, while about 10% of truck trips were traveling between origins or destinations outside the State.

## Industrial Buildings Inventory

Freight-generating industries are supported by industrial buildings. The location of these buildings often depends on transportation access, and their uses may be significant generators of freight traffic. Nearly 400 manufacturing buildings are located in the County. Manufacturing buildings tend to be clustered near the I-287/Route 440 corridor in the northern portion of the County, and along the Jersey Avenue corridor in New Brunswick. More than 1,300 warehousing/distribution buildings are located within the County, six of which are more than 1 million square feet, and 39 of which are between 500,000 and 1 million square feet. These buildings are mostly clustered near the New Jersey Turnpike Interchanges 8-A and 10. Five of the County's six largest warehousing/distribution buildings are located near Interchange 8-A. The distribution of industrial buildings throughout the county is shown on the following two pages.

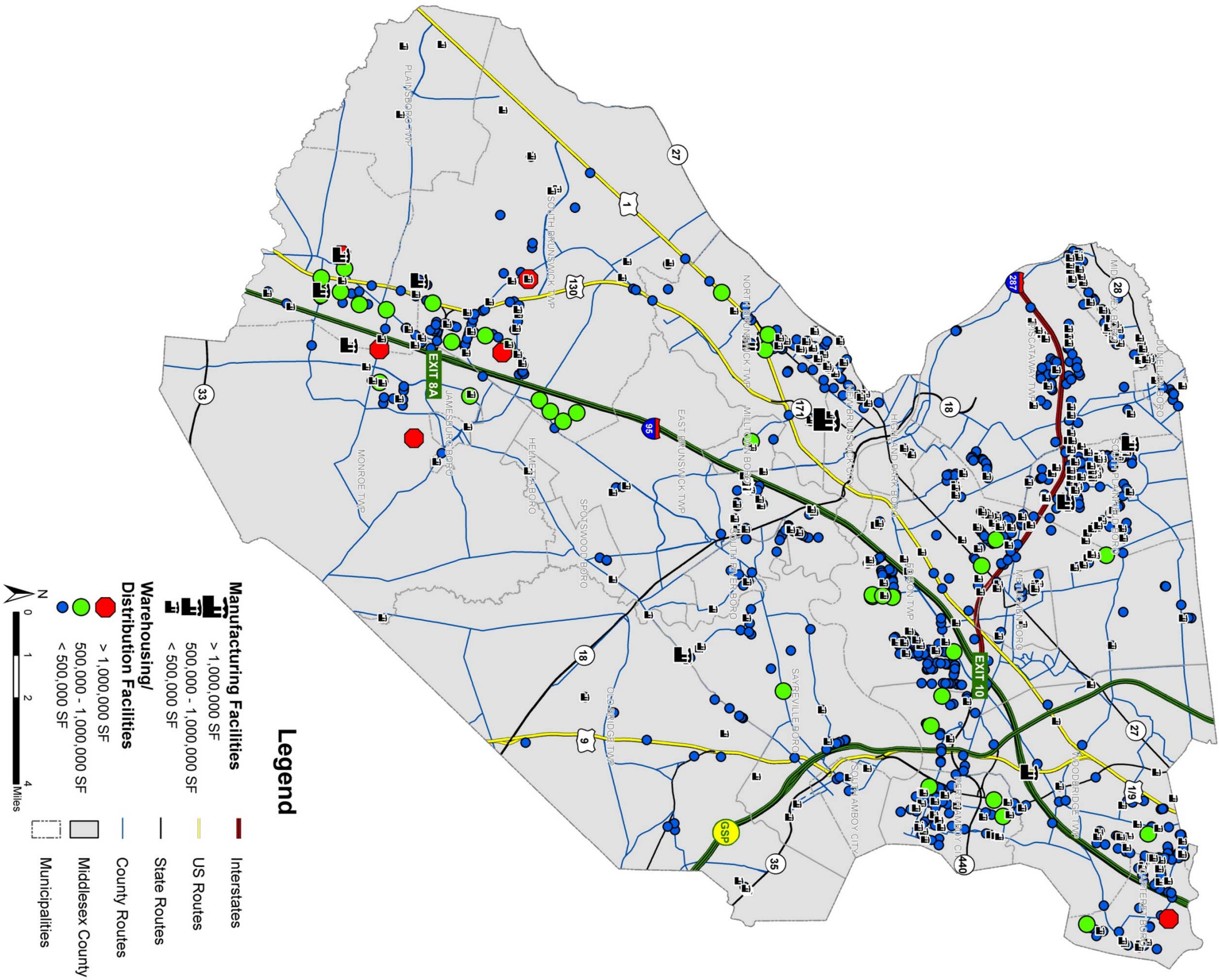
As summarized in the two tables to the right, many of the industrial buildings generate large volumes of freight. According to the Freight Locator database, 765 facilities in Middlesex County receive more than 11.7 million tons and ship 12.2 million tons of freight annually. It is important to note that some facilities' inbound and outbound tonnage values do not match. This is because some types of local delivery and pickup moves are not classified as "commodity moves" in the source data.

## Top 5 Facilities by Inbound/Outbound Tonnage, 2007

Source: IHS Global Insight Freight Locator Database

COMPANY NAME	CITY	INBOUND TONS
L'OREAL USA INC	PISCATAWAY	1,133,070
DOW CHEMICAL CO	PISCATAWAY	1,123,871
ALLEGIANCE HEALTHCARE CORP	EDISON	620,424
CHANEL INC	PISCATAWAY	434,741
PEPSI BOTTLING GROUP	PISCATAWAY	412,056
COMPANY NAME	CITY	OUTBOUND TONS
GERDAU AMERISTEEL	PERTH	
PLANT FOOD CO INC	AMBOY	1,283,408
SCHWEITZER-MAUDUIT INTL INC	CRANBURY	1,153,908
FERRARO FOODS INC	SPOTSWOOD	1,071,316
L'OREAL USA INC	PISCATAWAY	564,935
	PISCATAWAY	365,185





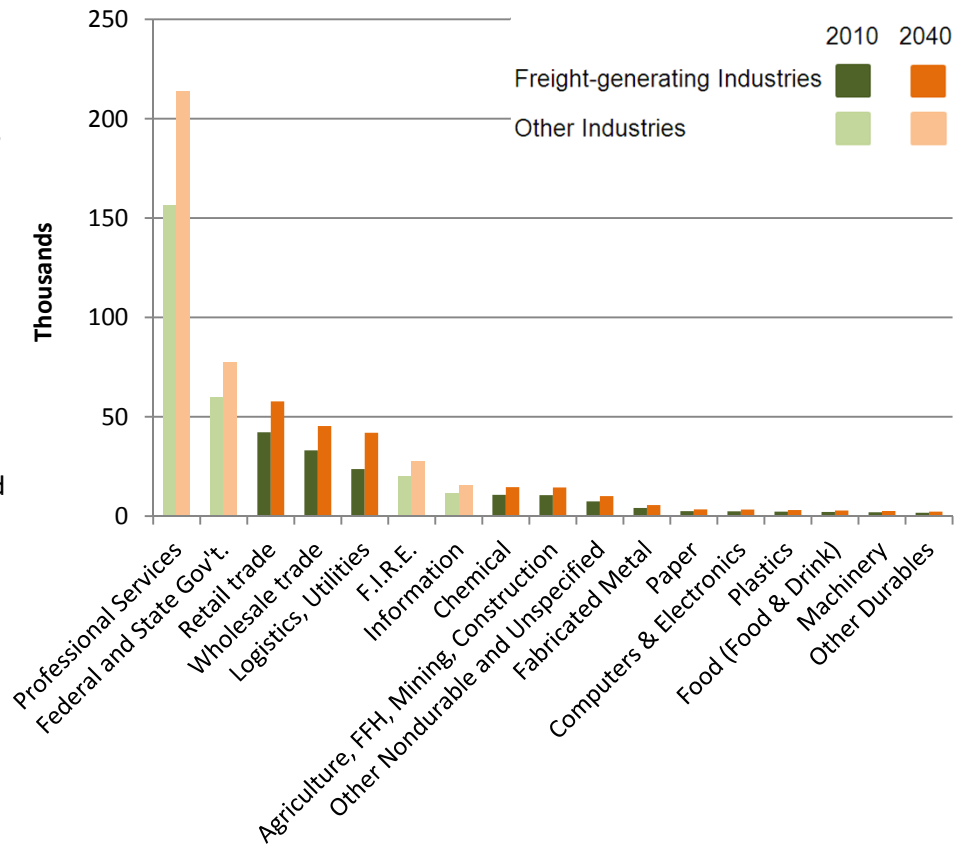
**Industrial Buildings by Type and Square Footage, 2010**  
 Source: CB Richard Ellis

## EMPLOYMENT FORECAST

Between 2010 and 2040, non-farm employment in Middlesex County is expected to grow by 38 %, from 391,600 to 541,000. Employment in freight-intensive industries is expected to grow by 43 % during the forecast period, compared to 35 % for other industries. The faster-growing freight-intensive industries will make up a larger share of the County's employment in the future (38.2 % in 2040, compared to 36.8 % in 2010). Among individual industry groups, Logistics and Utilities is expected to experience the greatest employment growth (77 %), while Federal and State Government are expected to grow at the slowest rate (under 30 %).

### Industry Employment Forecast, 2010 - 2040

Source: R/ECON



## 2040 COMMODITY FLOWS

By 2040, overall commodity flows into, out of, and within Middlesex County are expected to have increased by about 64.5 %, from 71.6 million tons to 115.3 million tons (a difference of 43.7 million tons). The forecast anticipates that the top ten commodities in 2007 will continue to account for 90 % of overall freight movement in 2040. Warehouse and Distribution Center traffic is expected to remain the number one commodity transported in Middlesex County by tonnage, followed by chemicals or allied products, nonmetallic minerals, and petroleum or coal products. Growth rates for most commodity groups are expected to range from 56 % to 65 %.

### Top 10 Commodities by Tonnage, 2040

Sources: Cambridge Systematics, with data from IHS Global Insight

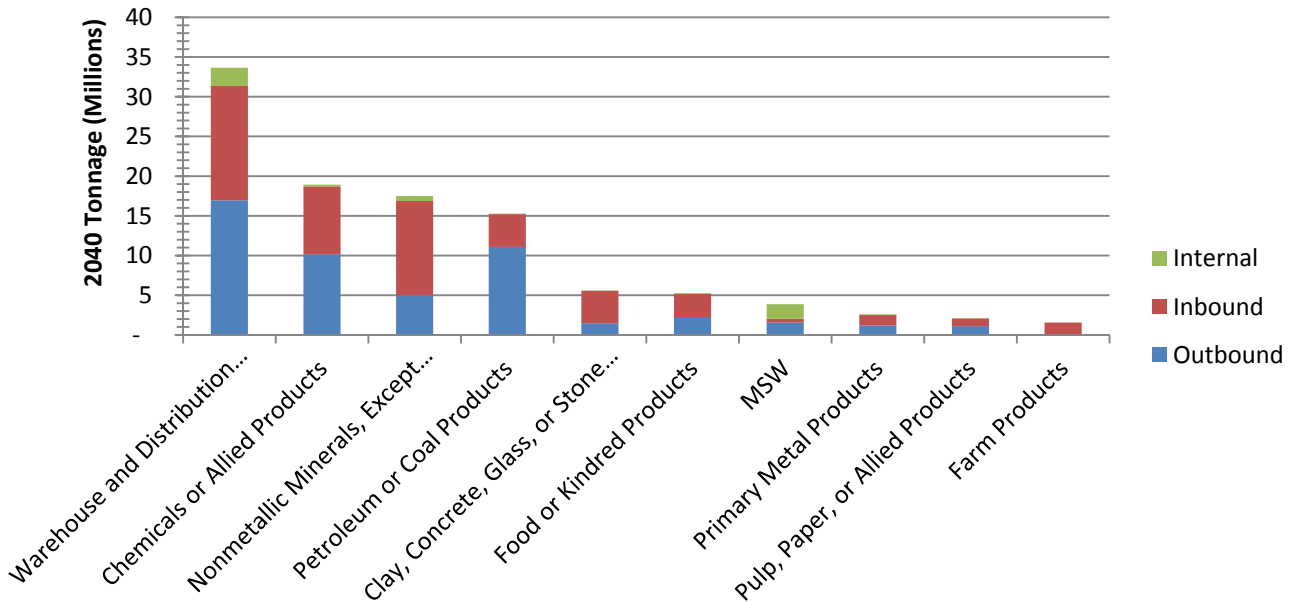
Commodity	2007 Tons (millions)	2040 Tons (millions)	Difference (millions)	Growth Rate
Warehouse and Distribution Center	21.1	33.7	12.6	60%
Chemicals or Allied Products	11.5	18.9	7.4	64%
Nonmetallic Minerals, Except Fuels	11.2	17.5	6.3	56%
Petroleum or Coal Products	9.4	15.3	5.9	62%
Clay, Concrete, Glass, or Stone Products	3.4	5.6	2.2	64%
Food or Kindred Products	3.3	5.3	2.0	63%
MSW	2.4	3.9	1.5	61%
Primary Metal Products	1.6	2.6	1.0	63%
Pulp, Paper, or Allied Products	1.3	2.1	0.8	63%
Farm Products	0.9	1.5	0.6	64%

## Commodity Volumes and Direction

The directional movement of shipments containing the top ten commodities is expected to remain fairly constant as well. In 2040, like 2007, about 40 % of warehouse and distribution center tonnage will be moving into Middlesex County, and 40 % will be moving outbound. Chemicals, petroleum or coal, and pulp or paper products will be moving primarily in the outbound direction. Nonmetallic minerals, clay/concrete/glass/stone, food, metals, and farm products will be moving primarily inbound.

### Top 10 Commodities by Tonnage by Direction, 2040

Sources: Cambridge Systematics, with data from IHS Global Insight



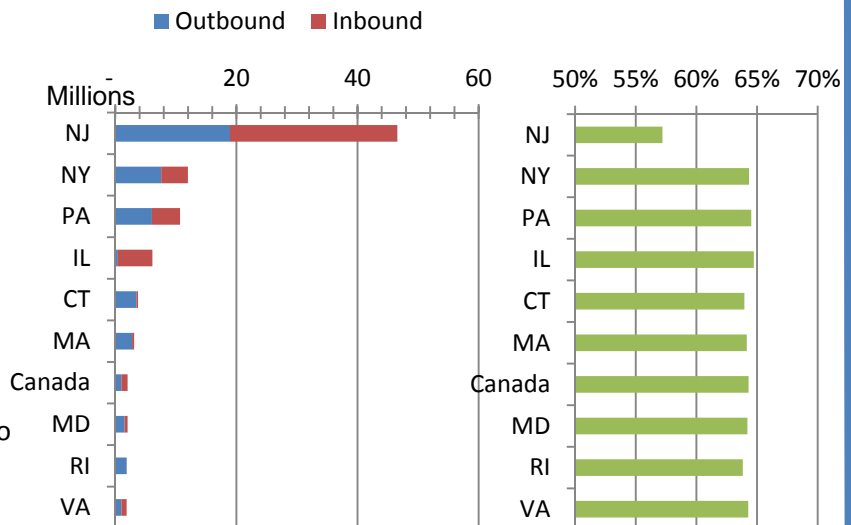
## Future Trading Partners

Middlesex County's largest out-of-state trading partners will continue to be New York, followed by Pennsylvania and Canada. Most of the trade with New York is outbound moves, primarily consisting of moves to and from warehouses and distribution centers. Most trade with other states is moving in the inbound direction, and trade with Canada is split evenly.

Middlesex County's trade with partners outside the State of New Jersey is expected to grow at a faster rate than intra-state trade. Growth in trade with other New Jersey counties is expected to exceed 55 % between 2007 and 2040. Trade with out-of-state partners is expected to grow by 63-64 % during the forecast period.

### Trading Partners by 2040 Tonnage (Left) and 2007-2040 Growth (Right)

Source: Cambridge Systematics, with data from IHS Global Insight



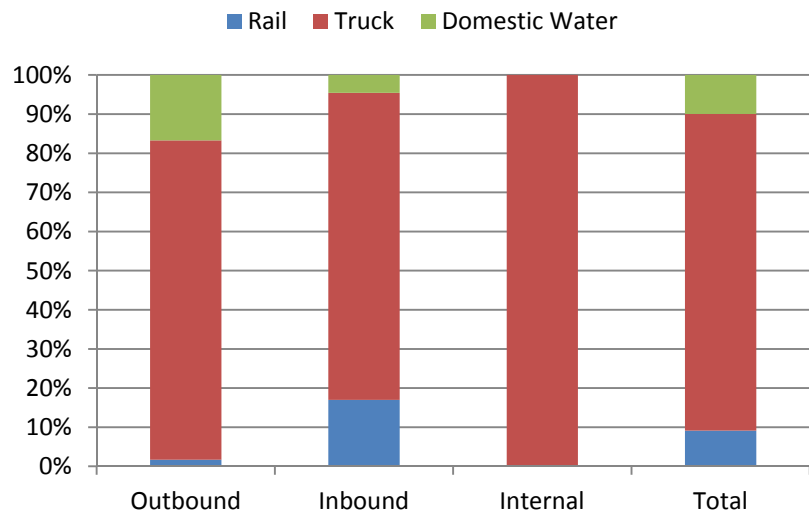


**Future Mode Utilization**

The forecast anticipates that freight mode splits in 2040 will be similar to 2007 mode splits. Trucks are expected to carry 81% of all freight tons, while domestic water and rail are expected to carry 10% and 9%, respectively. Trucks will have the largest share of movement in all directions, especially internal trips, while rail will have its highest share (17%) among inbound trips.

**Freight Tonnage by Mode and Direction, 2040**

Source: Cambridge Systematics, with data from IHS Global Insight

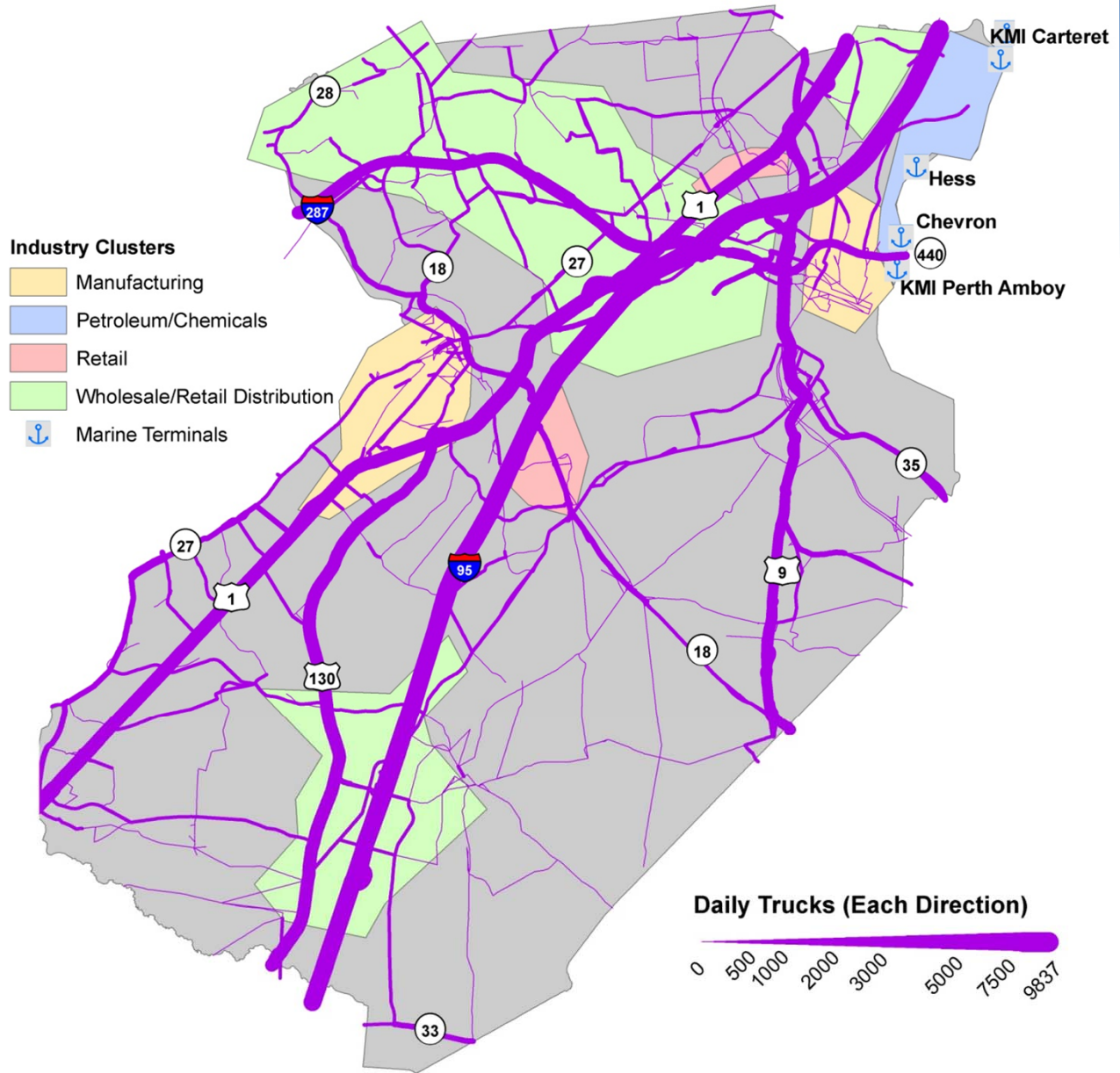

**Future Highway Network Utilization**

In 2040, Middlesex County’s highway network is expected to remain the primary conveyor of freight into, out of, within and through the County. The number of trucks traveling on the New Jersey Turnpike is expected to increase by more than 70 % between 2007 and 2040, from just over 11,000 to more than 19,000 per day. Interstate 287, US Route 1, US Route 9, US Route 130, and New Jersey Route 440 , and portions of NJ Route 18 in New Brunswick and Piscataway and NJ Route 27 in North Brunswick, are expected to see numeric increases in truck traffic between 2007 and 2040 of more than 1,000 trucks per day. Parts of NJ Route 18 in East Brunswick, NJ Route 27 in Edison, NJ Route 34, NJ Route 35, County Route 514 (Woodbridge Avenue) and County Route 535 (Cranbury Road) could see truck traffic increase by more than 500 trucks per day.

The map on Page 11 illustrates the projected truck volumes in 2040 on highways in Middlesex County.

### Commodity Truck Flows in Middlesex County, 2040

Sources: IHS Global Insight, NJTPA Regional Transportation Model-Enhanced (NJRTM-E), Dun & Bradstreet (2010)



## ABOUT THE NJTPA

The North Jersey Transportation Planning Authority (NJTPA) is the federally authorized Metropolitan Planning Organization for 6.6 million people in the 13-county northern New Jersey region. Each year, the NJTPA oversees the investment of more than \$1 billion in federal funding for transportation projects and provides a forum for interagency cooperation and public input into funding decisions. It also sponsors and conducts studies, assists county planning agencies and monitors compliance with national air quality goals.

The NJTPA Board of Trustees includes 15 local elected officials, including one representative from each of the 13 northern New Jersey counties—Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren—as well as from the cities of Newark and Jersey City. The Board also includes the Commissioner of the New Jersey Department of Transportation (NJDOT), the Executive Directors of NJ Transit and the Port Authority of New York & New Jersey, a Governor’s Representative and a Citizens’ Representative appointed by the Governor.

Middlesex County’s representative on the NJTPA Board of Trustees is Freeholder Stephen J. Dalina.

## ABOUT THIS STUDY

This Profile is one component of a major NJTPA freight planning initiative – the development of Year 2040 Freight Industry Level Forecasts.

Freight issues are extremely important in northern New Jersey. The region hosts: the Port of New York and New Jersey, one of the nation’s top three ports on the basis of tonnage and containers; heavily-used local, regional, and interstate truck corridors and crossings; heavy concentrations of intermodal and non-intermodal rail activity; significant national and international air cargo facilities; and hundreds of millions of square feet of warehouse/distribution space. These networks and facilities are essential to the economic and transportation well-being of the region’s residents and 20 million in the larger NY/NJ metropolitan statistical area, along with more than 312,000 regional businesses. Understanding the effects and importance of freight is therefore critical – not only to ensure the accuracy of the regional transportation planning process, but also to effectively communicate the importance of freight to the region’s freight stakeholders, businesses, communities, residents, and funding decision-makers.

The primary goal of the 2040 Freight Industry Level Forecasts project was to develop a clear, accurate and comprehensive picture of regional freight activity, both current and future. The end product is an accurate picture of where concentrations of goods movement activity can be expected to occur in the region in the future, the types of commodities that will be moving, and where strategic investments should be made.

## FOR FURTHER INFORMATION

For further information, please contact Jakub Rowinski, NJTPA Project Manager, at [jrowinski@njtpa.org](mailto:jrowinski@njtpa.org).

This Freight Profile is one of a series, covering the 13 counties of the NJTPA region, Newark, Jersey City, and the region as a whole. This document was prepared by the North Jersey Transportation Planning Authority, Inc. with funding from the Federal Transit Administration and the Federal Highway Administration. The NJTPA is solely responsible for its contents.