

## 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

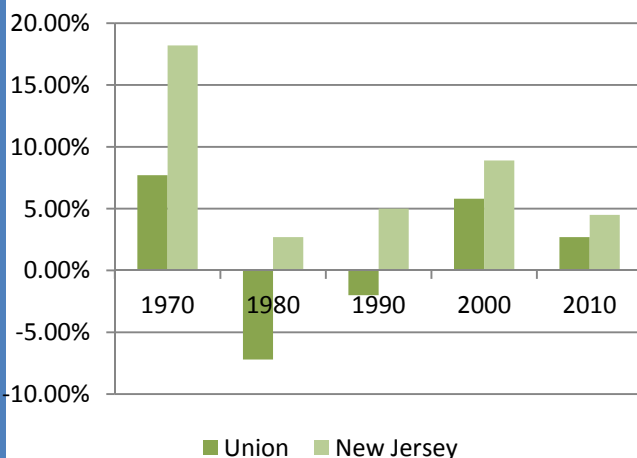
With a 2010 population of 536,499 Union is the seventh most-populous County in the State of New Jersey and in the NJTPA region. Since the 1960s, Union County has had a lower population growth rate than the State overall, due to much of the County's urbanized land having been developed by the middle of last century. Union County's median household income has closely tracked the Statewide median since 2002. Between 2008 and 2009, the median income of Union County and New Jersey, measured in constant 2010 dollars, decreased by about 3%.

### Union County is home to...

- 536,499 people
- 26,567 businesses that employ 224,200 people; 35% of these jobs are in businesses that are highly dependent on freight movement
- About 700 warehousing/distribution buildings and 328 manufacturing buildings
- About 52.5 million tons of domestic freight shipped or received annually
- Interstate, State, and County highways used by tens of thousands of trucks every day
- Port Elizabeth, E-Rail, E-Port and Expressrail intermodal terminals, several major Conrail rail lines

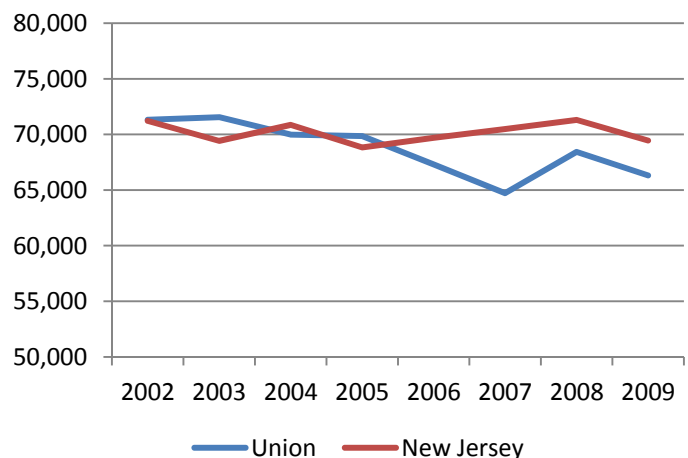
### Population Growth by Decade

Source: U.S. Census Bureau



### Household Income, Constant 2010 Dollars

Source: U.S. Census Bureau



### Employment

The County's economy employs 224,200 people in more than 26,567 establishments. About 35% are employed in "freight-intensive" industries, such as construction, manufacturing, mining and extraction, retail trade, wholesale trade, and logistics. About 65% are employed in industries that may generate freight, but are less dependent on freight movement.

### FREIGHT FLOWS

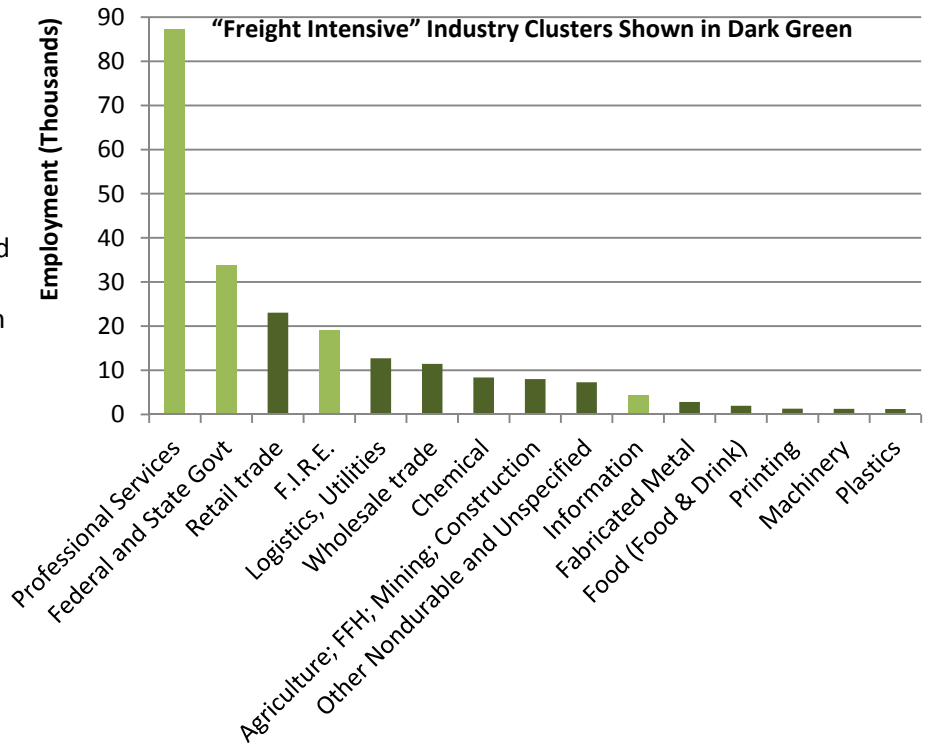
In 2007, approximately 52.5 million tons of domestic freight moved into, out of, or within Union County, by all modes of transportation (truck, rail, water, and air). This figure includes commodities moving into or out of Union County, but excludes pass-through tonnage. (The movement of international cargo to and from seaports, airports, and border crossings is captured and counted as domestic tonnage.)

### Commodities

For domestic O-D tonnage, about 30% (15.9 million tons) consisted of freight moving to or from warehouses or distribution centers. Outbound shipments of petroleum or coal products, chemicals, food, and paper exceeded inbound shipments. Most nonmetallic minerals and clay, concrete, glass, or stone moved inbound.

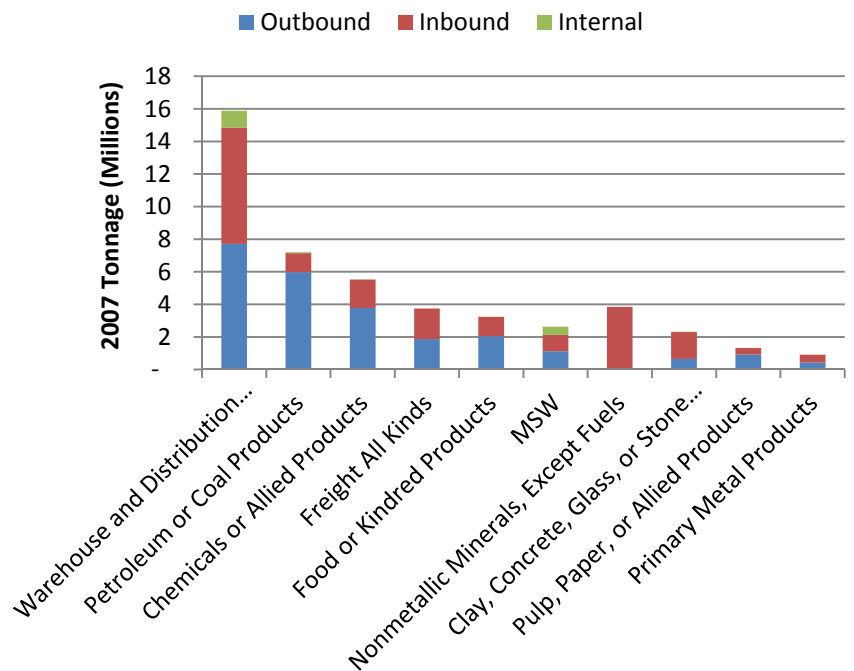
### Employment by Industry, 2010

Source: R/ECON



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

Source: IHS Global Insight



## Trading Partners

Not surprisingly, Union County’s largest trading partner by tonnage is the rest of the State of New Jersey. Pennsylvania and New York are the second and third largest trading partners. Other major origins and destinations of freight traveling into or out of Union County include the Midwestern States of Illinois and Michigan, Canada, and the Mid-Atlantic States of Virginia, Maryland, and Delaware.

## FREIGHT TRANSPORTATION NETWORKS

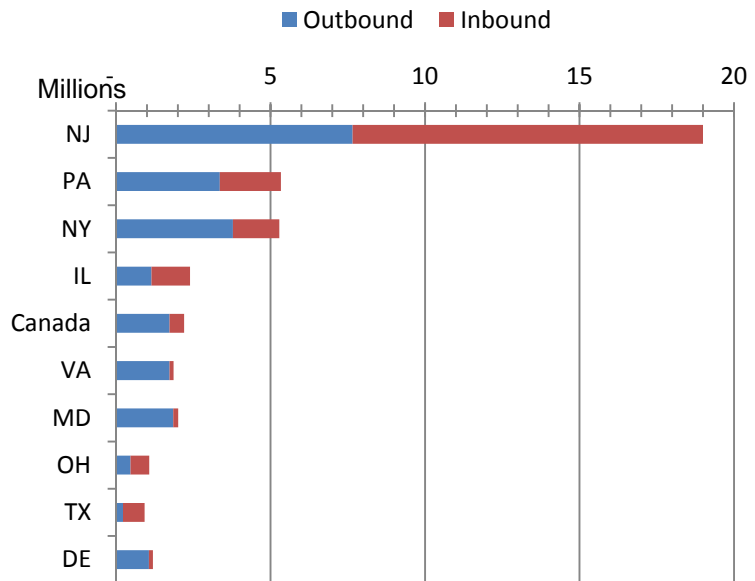
Freight can be handled by truck, rail, air or water. The choice of mode depends on a variety of factors, including: length of trip (rail and air are more competitive at longer distances), commodity type (rail and water are more competitive for heavy materials), time sensitivity (truck and air are most 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 Union County, about 87% travels by truck, primarily to and from warehouses, distribution centers, manufacturing facilities and retail centers. About 13% arrives or departs by rail through one of the major rail intermodal terminals in the County, or from freight-generating businesses which have on-site access to rail.

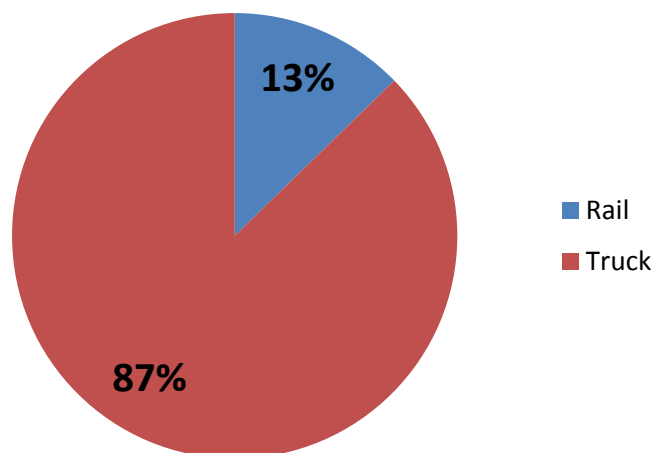
## Top Origins and Destinations of Domestic O-D Freight Tonnage, 2007

Source: IHS Global Insight



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

Source: IHS Global Insight



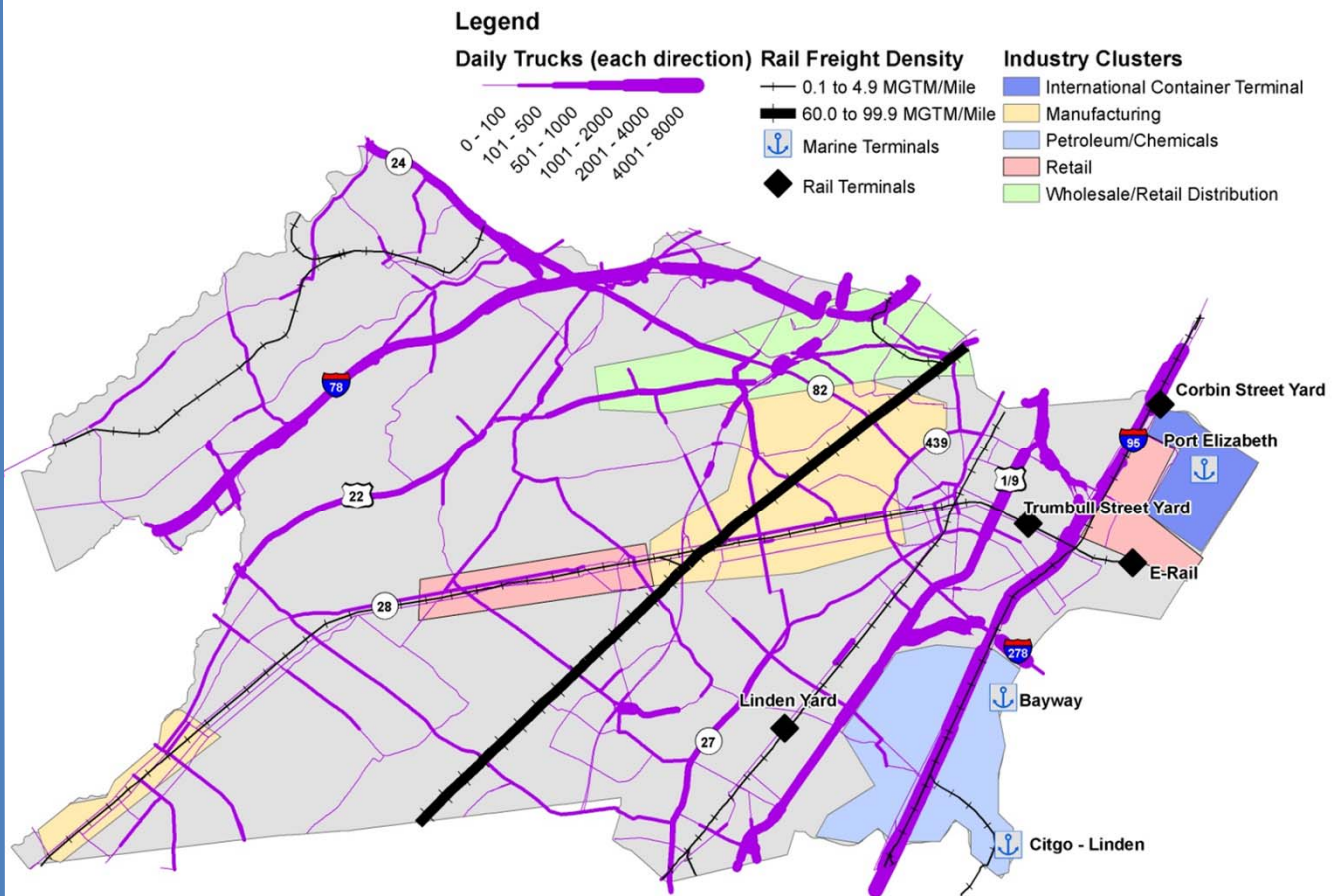
## Highway and Rail Network Utilization

Union 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 traverses the County north-to-south along its eastern edge, carries 16,000 trucks per day on some segments. Portions of Interstate 78 carry more than 10,000 trucks per day. US Routes 1/9, and NJ Route 24 carry more than 4,000 trucks per day on some segments. Not all trucks on the road are carrying freight. Some are moving empty. Others are providing municipal services (waste transfer, utility services, etc.) or commercial services (contractors, lumber, landscapers, etc.).

On the rail network, the Conrail Lehigh Line passes through the County, carrying between 60 and 99.9 million gross ton-miles per mile (MGTM/Mile) per year. Norfolk Southern’s E-Rail Terminal, CSX’s E-Port Yard and the Conrail served Expressrail on-dock Intermodal Terminal, which serves Port Newark and Port Elizabeth, are the County’s three major rail intermodal terminals. The map below illustrates how the highway and rail networks and terminals align with industrial activity clusters.

## Commodity Truck and Rail Flows in Union 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)



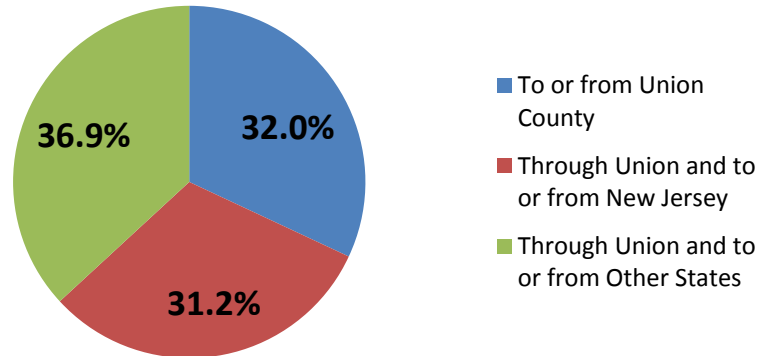
## Highway Link Analysis

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 Union County, including Interstates 95 and 78 and US Routes 1/9 and 22, the average values of internal and through traffic are shown in the graph to the right.

About 37% of truck trips on the selected highways in Union County were traveling through Union County between origins or destinations outside the State. An estimated 32% of truck trips were traveling to or from a location within Union County. Just over 31% of trucks on the selected highways were traveling through Union County on their way to or from a location in another New Jersey county.

## Truck Trips on Union County Highway Links, 2007

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



## 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. About 330 manufacturing buildings are located in the County. As illustrated on Pages 6 and 7, manufacturing buildings tend to be clustered along major highways (US Route 22, NJ Route 27, and NJ Route 28) as well as rail lines. Nearly 700 warehousing/ distribution buildings are located within the County, two of which are more than 1 million square feet, and seven of which are between 500,000 and 1 million square feet. These buildings are mostly clustered along US Routes 1/9 and 22, NJ Routes 27 and 28, and in the Elizabethport area of Elizabeth.

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, 595 facilities in Union County receive nearly 5.8 million tons of freight annually, and ship 16.3 million tons outbound. 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 and international cargo 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

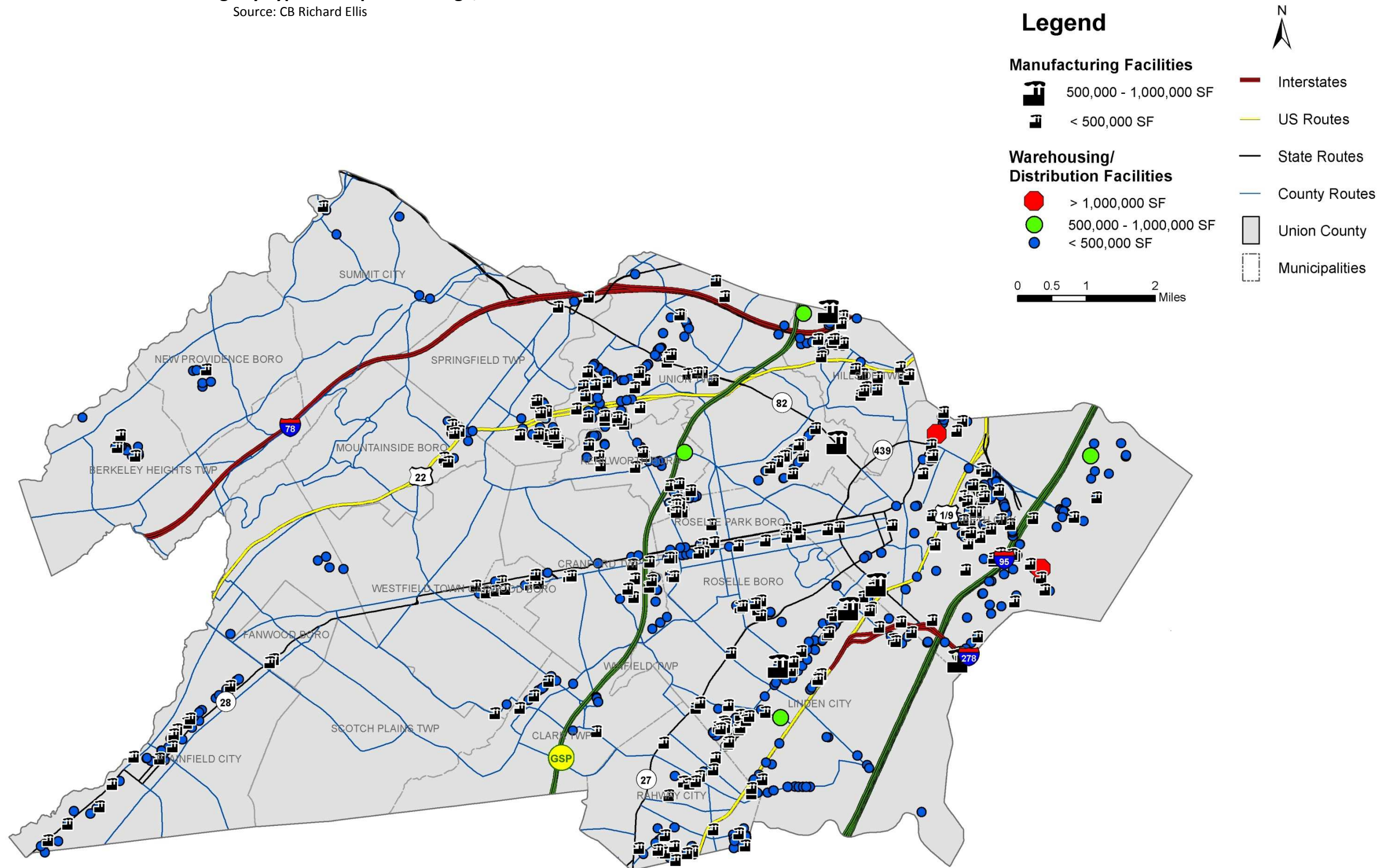
| COMPANY NAME            | CITY        | INBOUND TONS |
|-------------------------|-------------|--------------|
| CONOCO PHILLIPS BAYWAY  |             |              |
| RFNRY                   | LINDEN      | 1,146,743    |
| PEERLESS BEVERAGE CO    | UNION       | 127,107      |
| LORCO PETROLEUM SVC     | ELIZABETH   | 121,189      |
| ACUPOWDER INTERNATIONAL | UNION       | 98,896       |
| ZEP MANUFACTURING CO    | SPRINGFIELD | 89,467       |

| COMPANY NAME           | CITY           | OUTBOUND TONS |
|------------------------|----------------|---------------|
| CONOCO PHILLIPS BAYWAY |                |               |
| RFNRY                  | LINDEN         | 9,930,730     |
| LORCO PETROLEUM SVC    | ELIZABETH      | 1,049,485     |
| WORLD CLASS KITCHEN    | LINDEN         | 564,935       |
| CMC JOIST & DECK       | NEW PROVIDENCE | 433,266       |
| MAXIMUM QUALITY FOODS  | LINDEN         | 282,467       |

**Industrial Buildings by Type and Square Footage, 2010**

Source: CB Richard Ellis

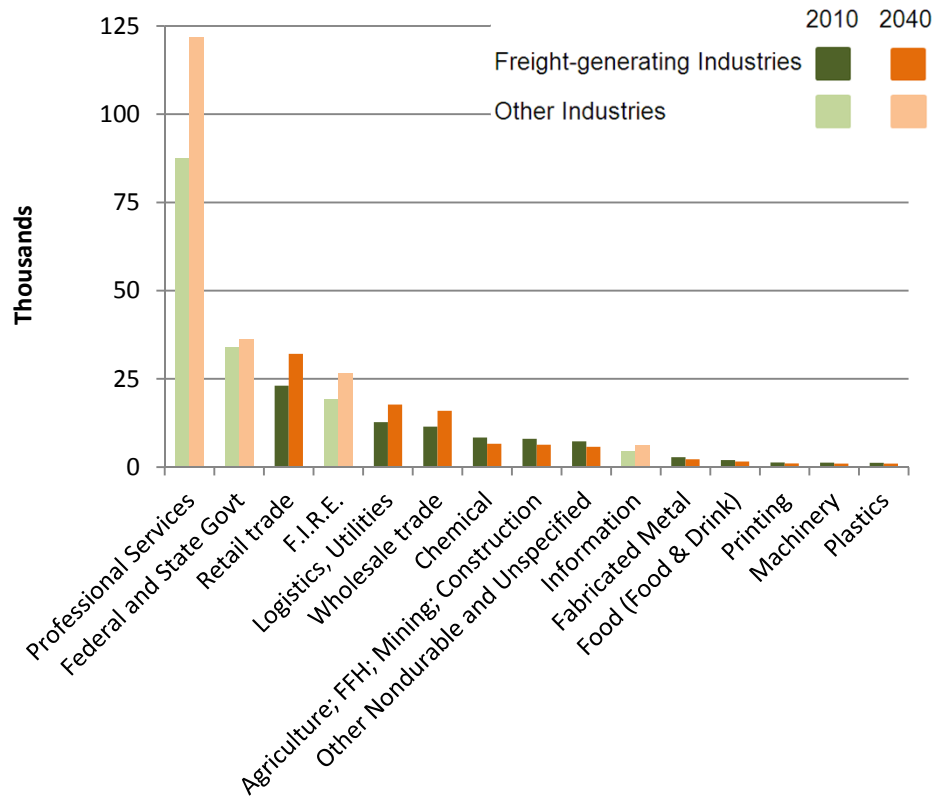


## EMPLOYMENT FORECAST

Between 2010 and 2040, non-farm employment in Union County is expected to grow by 26%, from 224,200 to 281,600. Employment in freight-intensive industries is expected to grow by 15% during the forecast period, compared to 32% for other industries. The faster-growing services, finance, insurance, and real estate, and other less freight-intensive industries will make up a larger share of the County's employment in the future (68% in 2040, compared to 65% in 2010). Among individual industry groups, professional services is expected to experience the greatest employment growth (34,300 jobs), while there may be 1,600 to 1,800 fewer people employed in chemicals, agriculture, and other nondurable goods.

### Industry Employment Forecast, 2010 - 2040

Source: R/ECON



## 2040 COMMODITY FLOWS

By 2040, overall commodity flows into, out of, and within Union County are expected to have increased by about 30%, from 52.5 million tons to 68.2 million tons (a difference of 15.7 million tons). Warehouse and distribution center traffic is expected remain the greatest commodity by tonnage. Among the top ten commodities, freight all kinds is expected to grow fastest (62%), followed by municipal solid waste and warehouse or distribution center traffic. Nonmetallic minerals are expected to decrease by 3% during the forecast period.

### Top 10 Commodities by Tonnage, 2040

Sources: Cambridge Systematics, with data from IHS Global Insight

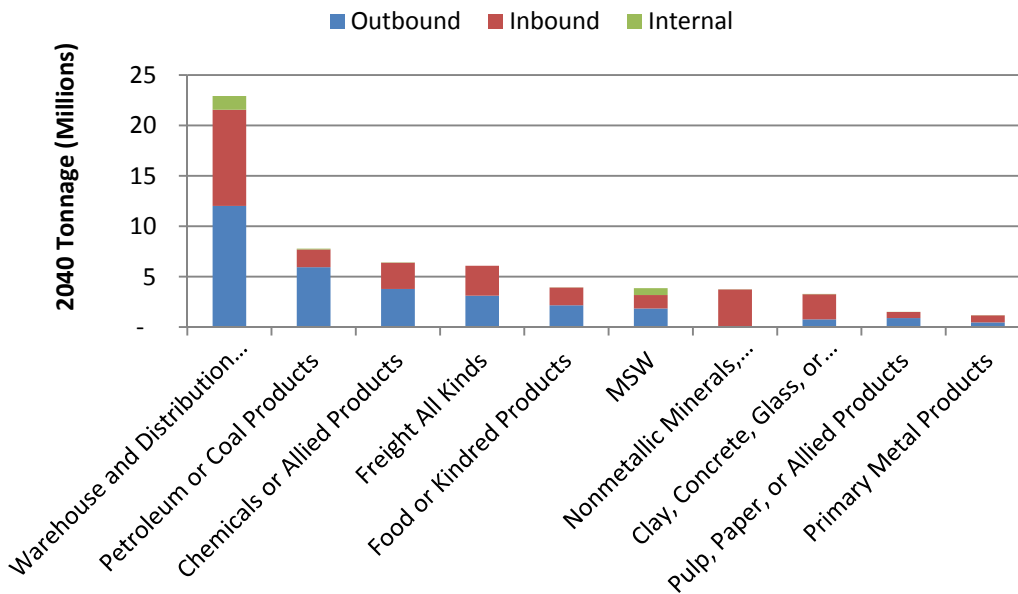
| Commodity                                | 2007 Tons  | 2040 Tons  | Difference | Growth Rate |
|--|------------|------------|------------|-------------|
| Warehouse and Distribution Center        | 15,886,800 | 22,934,213 | 7,047,413  | 44%         |
| Petroleum or Coal Products               | 7,199,570  | 7,781,666  | 582,096    | 8%          |
| Chemicals or Allied Products             | 5,532,332  | 6,412,383  | 880,051    | 16%         |
| Freight All Kinds                        | 3,744,897  | 6,072,870  | 2,327,974  | 62%         |
| Food or Kindred Products                 | 3,238,251  | 3,941,192  | 702,941    | 22%         |
| MSW                                      | 2,630,987  | 3,850,000  | 1,219,013  | 46%         |
| Nonmetallic Minerals, Except Fuels       | 3,847,963  | 3,735,696  | (112,266)  | -3%         |
| Clay, Concrete, Glass, or Stone Products | 2,319,554  | 3,279,618  | 960,064    | 41%         |
| Pulp, Paper, or Allied Products          | 1,319,274  | 1,497,295  | 178,021    | 13%         |
| Primary Metal Products                   | 918,145    | 1,180,914  | 262,769    | 29%         |

## 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 52% of warehouse and distribution center traffic will be moving outbound, and 42% will be moving inbound. Petroleum or coal products, chemicals, and food will be moving primarily outbound, while most nonmetallic minerals and clay, concrete, glass or stone products will move inbound. Freight all kinds will have a nearly balanced inbound versus outbound flow.

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

Sources: Cambridge Systematics, with data from IHS Global Insight

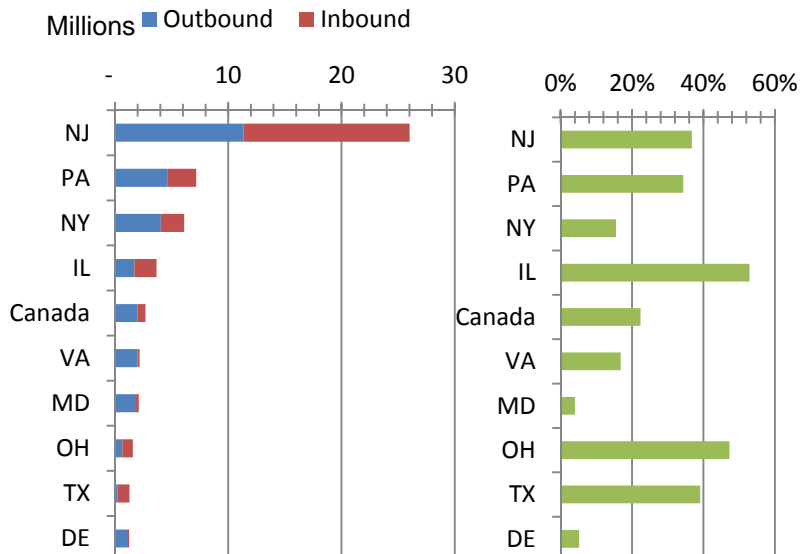


## Future Trading Partners

Union County's largest trading partners will continue to be other counties in New Jersey, followed by Pennsylvania and New York. While the top ten trading partners will each retain their relative rank in 2040, the gap between many will narrow or widen due to differing rates of growth. Trade with Midwestern States and Texas is expected to grow fastest (between 40% and 57%), while trade with New York and the Mid-Atlantic States of Virginia, Maryland, and Delaware will grow between 4 and 17% during the forecast period.

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

Source: Cambridge Systematics, with data from IHS Global Insight



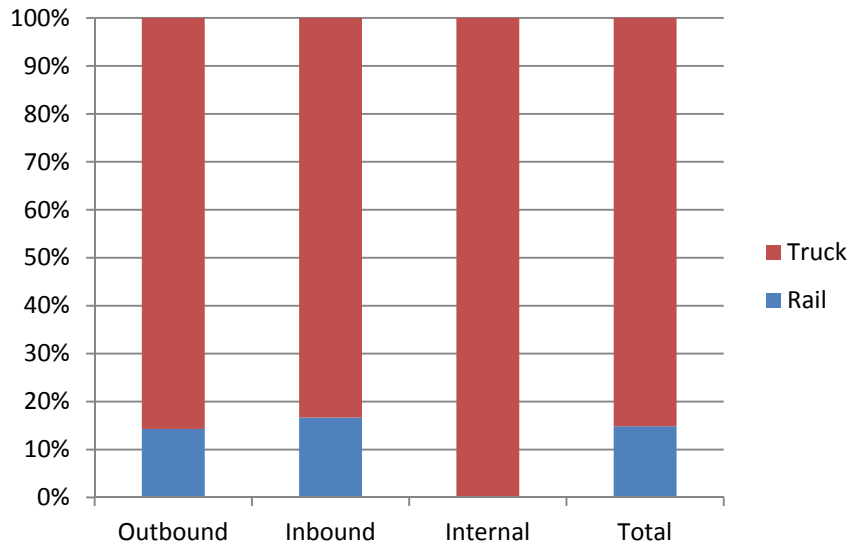


**Future Mode Utilization**

The forecast anticipates that a larger share of freight will travel by rail in the future (15% in 2040, versus 13% in 2007). Trucks are expected to continue to carry more than 80% of all freight tons, including 100% of shipments traveling entirely within Union County. Rail is expected to transport about 17% of outbound and 20% of inbound shipments.

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

Source: Cambridge Systematics, with data from IHS Global Insight

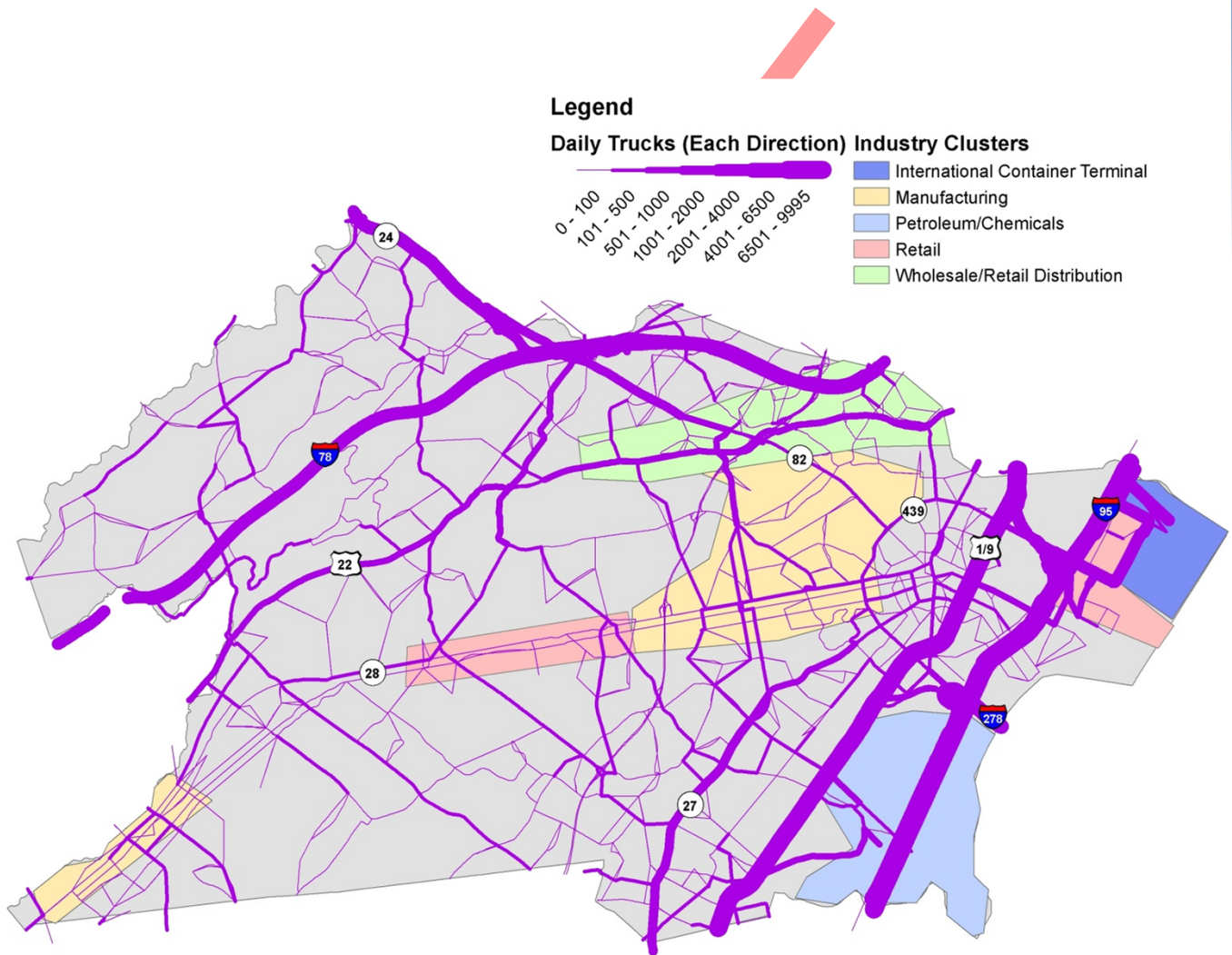

**Future Highway Network Utilization**

In 2040, Union 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 about 3,000 trucks per day, from 16,000 to as many as 19,000 trucks per day. Segments of Interstate 78, US Routes 1&9, and NJ Route 24 could carry 500 to 1,000 more trucks per day in 2040 than in 2007.

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

### Commodity Truck Flows in Union 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.

Union County’s representative on the NJTPA Board of Trustees is Freeholder Angel Estrada, who also serves as Vice-Chairman of the Freight Initiatives Committee.

## 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.