

SUBREGIONAL FREIGHT PROFILE

Union County

ABOUT THIS PROFILE

The North Jersey Transportation Planning Authority (NJTPA) has developed a set of alternative freight forecasts to support transportation, land use, and economic development decisions. This Freight Profile is an update to a previous version published in 2012, and offers a snapshot of key metrics – Economy and Land Uses, Freight Flows, and Freight Transportation Networks in 2020 and in the forecast year, 2050.

ECONOMY AND LAND USES

With a 2018 population of 558,067, Union is the 7th most populous County in the state of New Jersey and in the NJTPA region. Union County's population growth rate has exceeded the State overall since 2000. Between 2010 and 2018, the inflation-adjusted median household income of Union County increased by about \$1,200, while income statewide declined by about \$4,000.

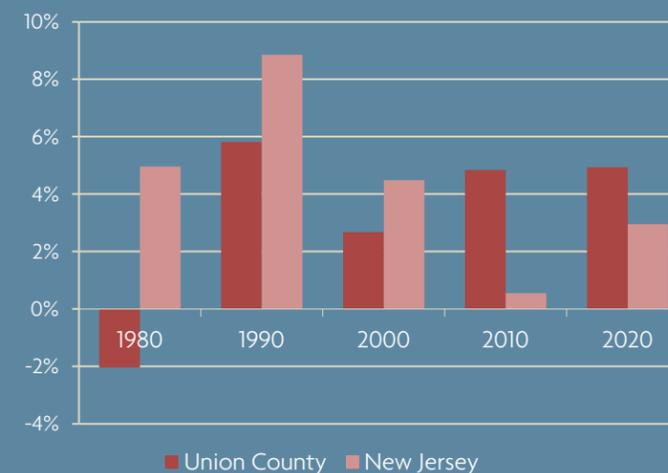
Union County is home to:

- 558,067 people
- Nearly 14,700 businesses that employ 228,000 people; about 38 percent of these jobs are in industry sectors that are highly dependent on freight movement
- About 70 million tons of domestic freight shipped or received annually
- Approximately 5.4 million e-commerce packages delivered 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

Highlights

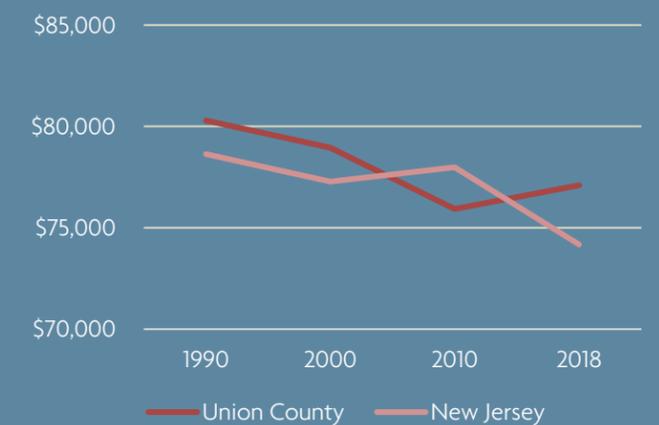
Population Growth by Decade

Source: U.S. Census Bureau



Median Household Income, Constant 2018 Dollars

Source: U.S. Census Bureau



EMPLOYMENT

The County's economy employs 228,000 people in close to 14,700 establishments. About 38 percent are employed in "freight-intensive" industries, such as construction, manufacturing, mining and extraction, retail trade, wholesale trade, and logistics. About 62 percent are employed in industries that may generate freight but are less dependent on freight movement.

FREIGHT FLOWS

In 2020, an estimated 65.9 million tons of domestic freight will move into, out of, or within Union County, by all modes of transportation (truck, rail, pipelines, 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).

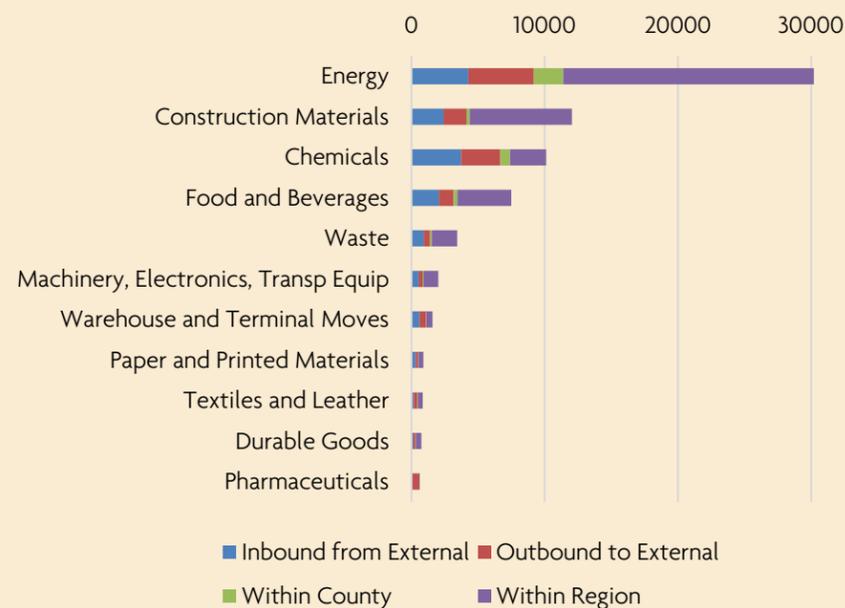
For domestic tonnage with an origin and/or destination in the County, about 43 percent consists of energy products, most of which traveled between Union County and locations in the NJTPA region. Other leading commodities in Union County include moves of construction materials, chemicals, food and beverages, and waste.

Employment by Industry, 2019



Source: U.S. Bureau of Labor Statistics

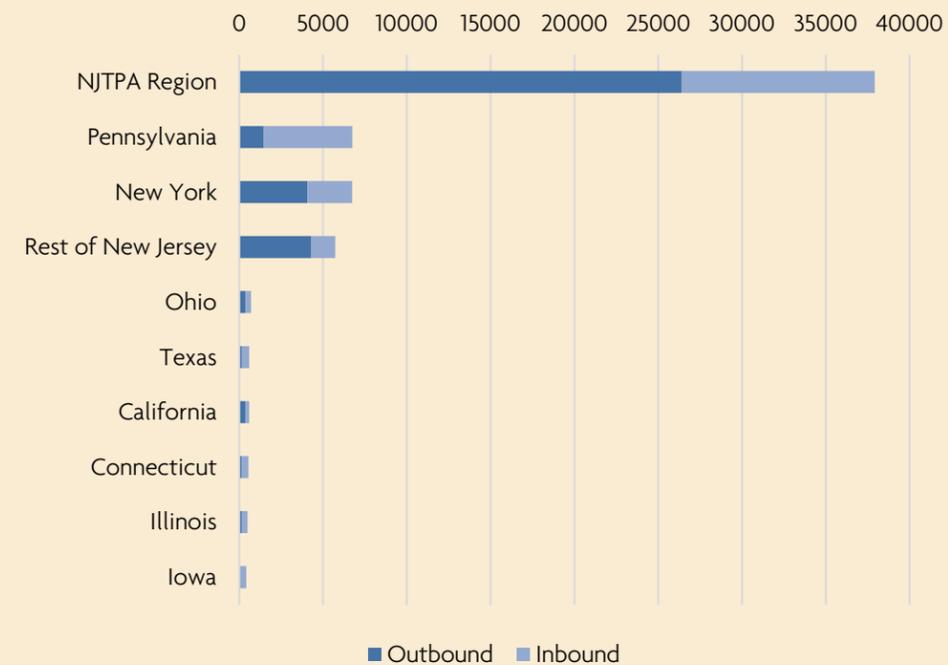
Thousands of Tons by Commodity by Direction, 2020



Source: NJTPA Freight Forecasting Tool, 2020

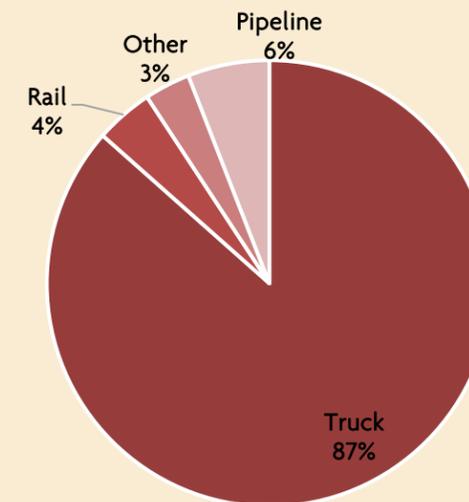
E-commerce has a growing presence in the retail landscape. Some of the freight shipments described in this profile include goods that are ultimately delivered to consumers who shop online. In 2019, about 5.4 million e-commerce shipments containing 7.6 million items were delivered to consumers in Union County.

Thousands of Tons by Domestic Trading Partner, 2020



Source: NJTPA Freight Forecasting Tool, 2020

Tons by Mode, 2020



Source: NJTPA Freight Forecasting Tool, 2020

TRADING PARTNERS

Union County's major trading partners are, not surprisingly, its neighbors. As illustrated to the left, locations in the NJTPA region are the greatest origins of inbound freight and destinations for outbound freight. Much of the outbound freight is energy product originating in Union County. Pennsylvania, New York, and the portions of New Jersey outside the NJTPA region are also among the top origins and destinations for freight traded with Union County.

FREIGHT TRANSPORTATION NETWORKS

Freight can be handled by truck, rail, pipelines, 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, and pipelines are suited for moving energy products), time sensitivity (truck and air are most competitive), need for door-to-door service (trucking is needed unless the customer has a dock or rail connection).

For domestic freight traveling to, from, or within Union County, 87 percent travels by truck, 6 percent moves by pipeline, 4 percent by rail, and 3 percent by other modes. These modes also connect with the marine and air cargo terminals located in Union County to move international freight to and from locations outside the United States.

HIGHWAY NETWORK UTILIZATION

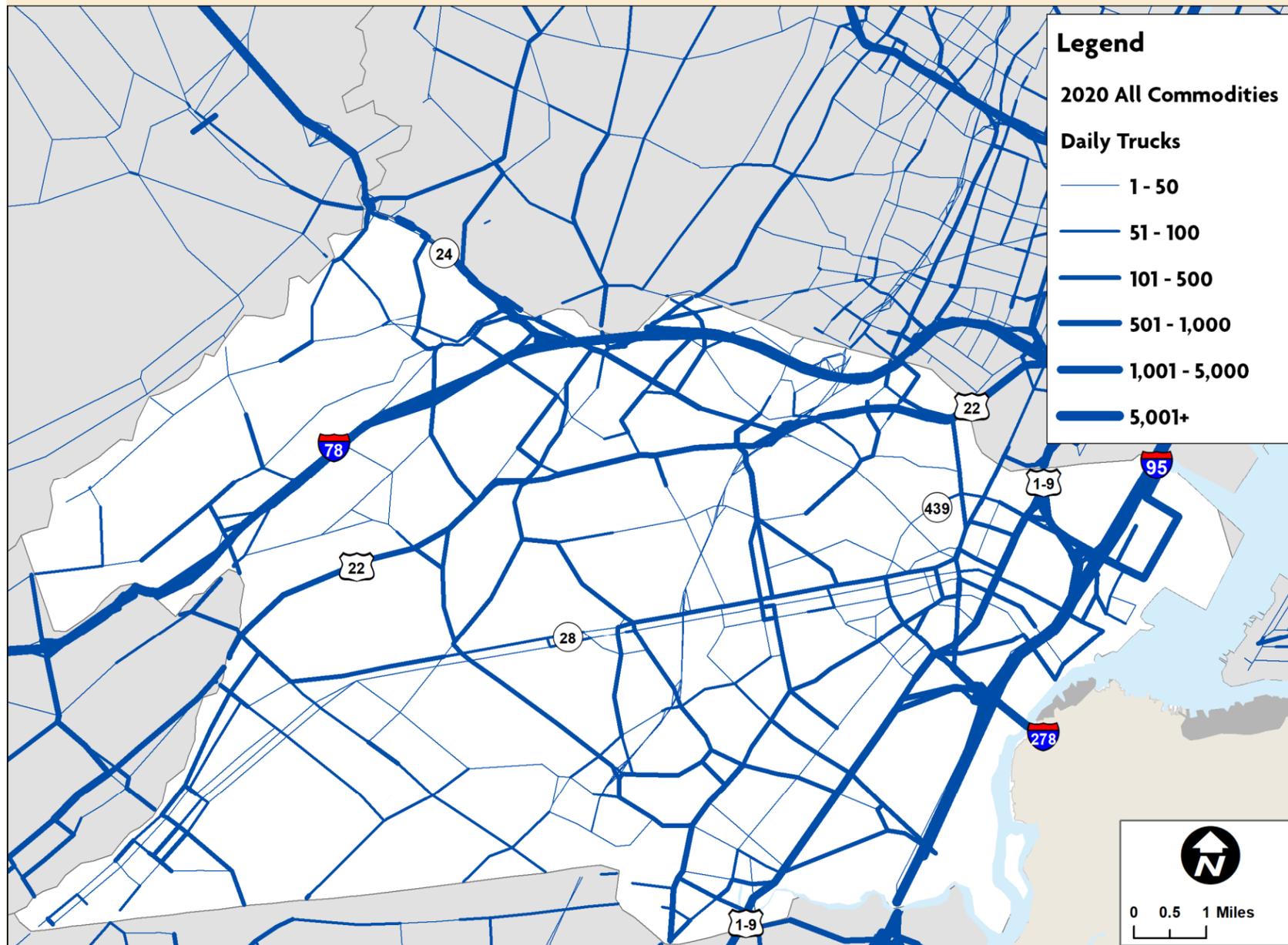
Union County's highway network serves to connect its major freight activity centers with key trading partners elsewhere in the County, in the State of New Jersey, in other parts of North America, and – via international seaports and airports – the world.

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.).

The map below illustrates the flows of commodity trucks, or trucks loaded with freight, on the highway network.

Portions of the New Jersey Turnpike/Interstate 95 that traverse Union County carry more than 8,000 commodity trucks per day in each direction. Portions of Interstate 78 carry about 6,000 commodity trucks per day in each direction. Between 2,000 and 3,000 commodity trucks per day per direction travel on Route 1/9 About 1,800-2,400 trucks per day per direction travel on Route 22 in Hillside and Route 24 in Summit.

Highway Network Utilization, 2020



Source: NJTPA Freight Forecasting Tool, 2020; NJRTM-E, 2019; NJOIT, 2008; Esri, 2014

BUSINESS ESTABLISHMENTS

The map on the next page illustrates the locations of facilities that ship, handle, or receive freight, including:

- Production facilities such as manufacturing businesses or mining and quarrying facilities where goods are produced or raw materials are extracted;
- Logistics facilities, including warehousing and transportation facilities through which goods are distributed; and
- Sales, including retail, services, and institutional establishments where goods are sold.

Large business establishments in the production and logistics categories are clustered on the east side of Elizabeth and in Linden, Rahway, and Hillside. Sales facilities are largely aligned with major retail corridors, such as Routes 22, 27, and 28.

Top 5 Business Establishments in Freight-Generating Industry Sectors, by Size

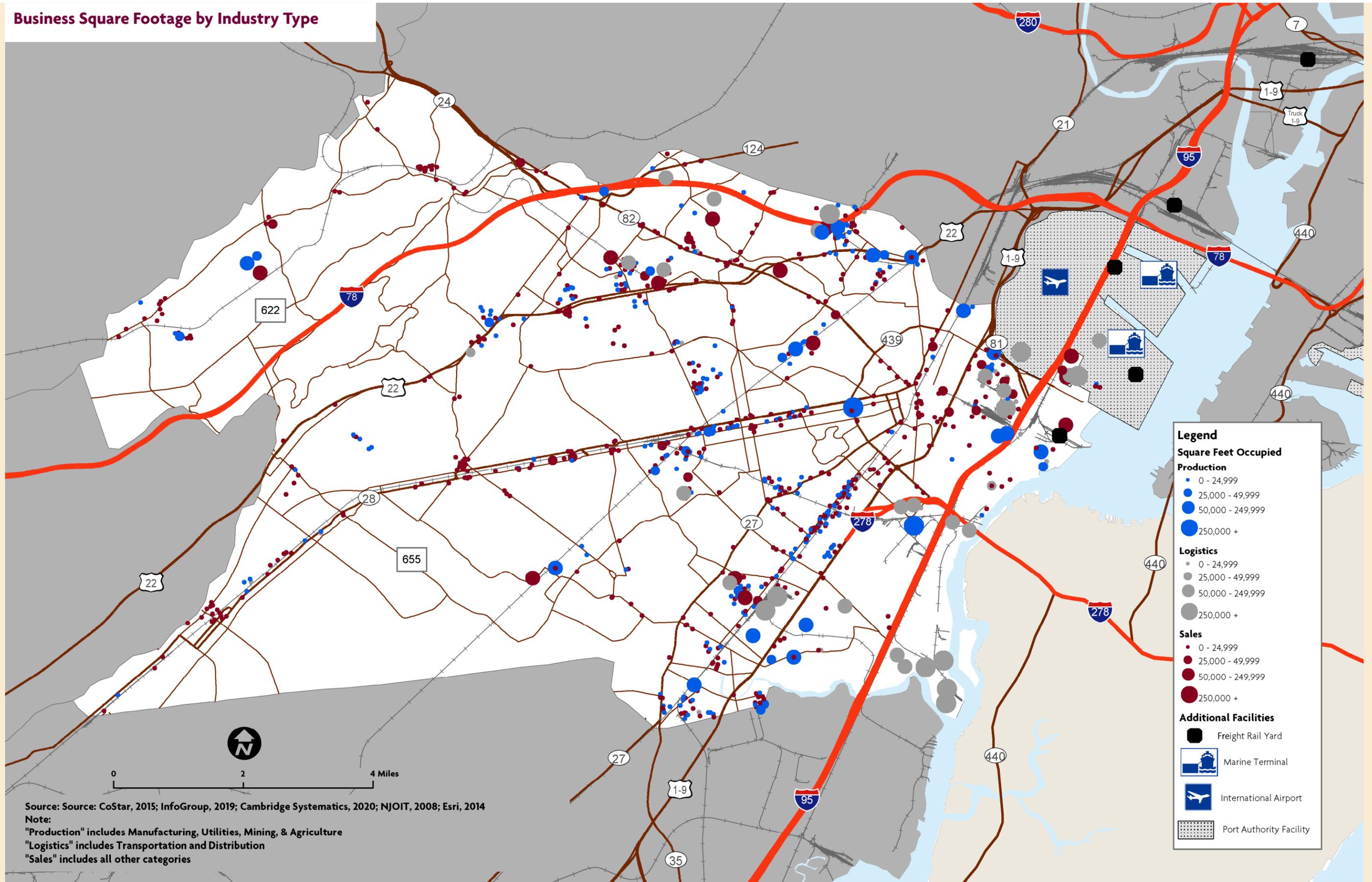
Company	Square Footage	Municipality	Business Type
FedEx	595,000	Elizabeth	Logistics
Wakefern	530,000	Elizabeth	Logistics
Wayfair Distribution	508,000	Linden	Logistics
Blue Apron	495,000	Linden	Logistics
Actavis	370,000	Elizabeth	Production

Source: Infogroup, 2019; CoStar, 2015

Note: In addition to the establishments listed in this table, other major freight generating facilities are in Union County, including the Phillips 66 Bayway Refinery complex in Linden and Elizabeth.

Note: Some companies may have multiple locations in the county and/or region.

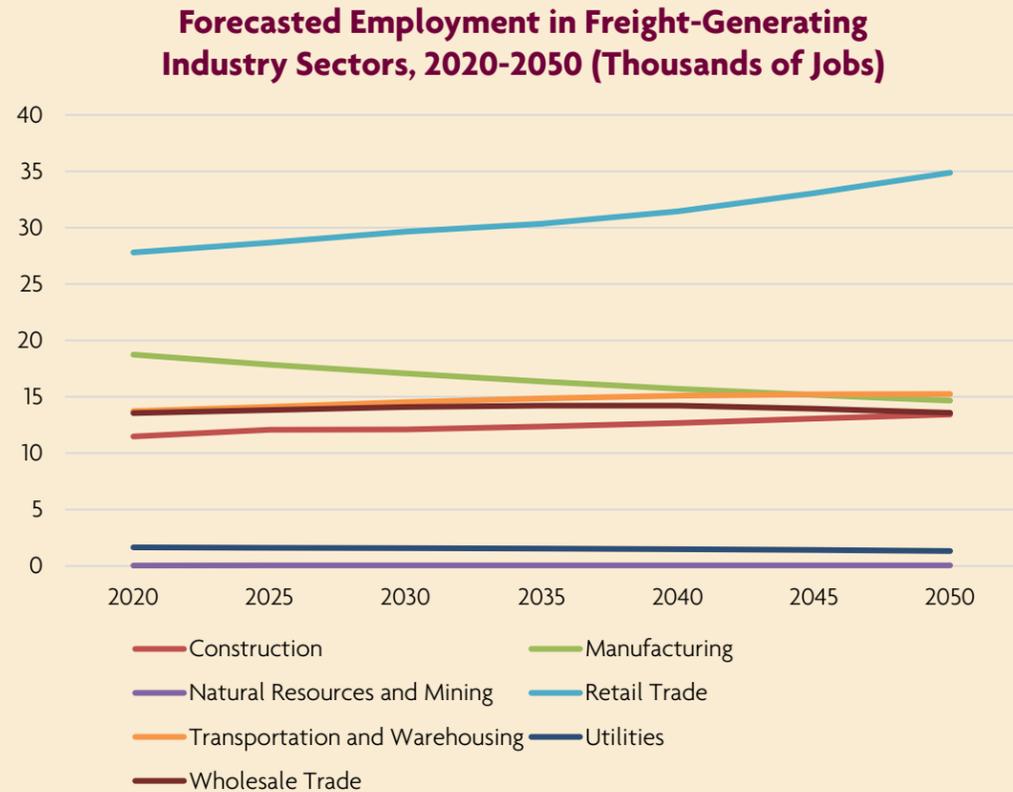
Business Square Footage by Industry Type



Source: Source: CoStar, 2015; InfoGroup, 2019; Cambridge Systematics, 2020; NJOIT, 2008; Esri, 2014
 Note:
 "Production" includes Manufacturing, Utilities, Mining, & Agriculture
 "Logistics" includes Transportation and Distribution
 "Sales" includes all other categories

EMPLOYMENT FORECAST

Employment in freight-intensive industries is expected to increase by about 7 percent during the forecast period. The manufacturing and utilities sectors are expected to experience reductions in employment. Retail trade and construction employment are expected to increase by the greatest margins, 25 percent and 17 percent, respectively, between 2020 and 2050.



Source: Moody's, 2020

Commodity Flow Forecast, 2020-2050

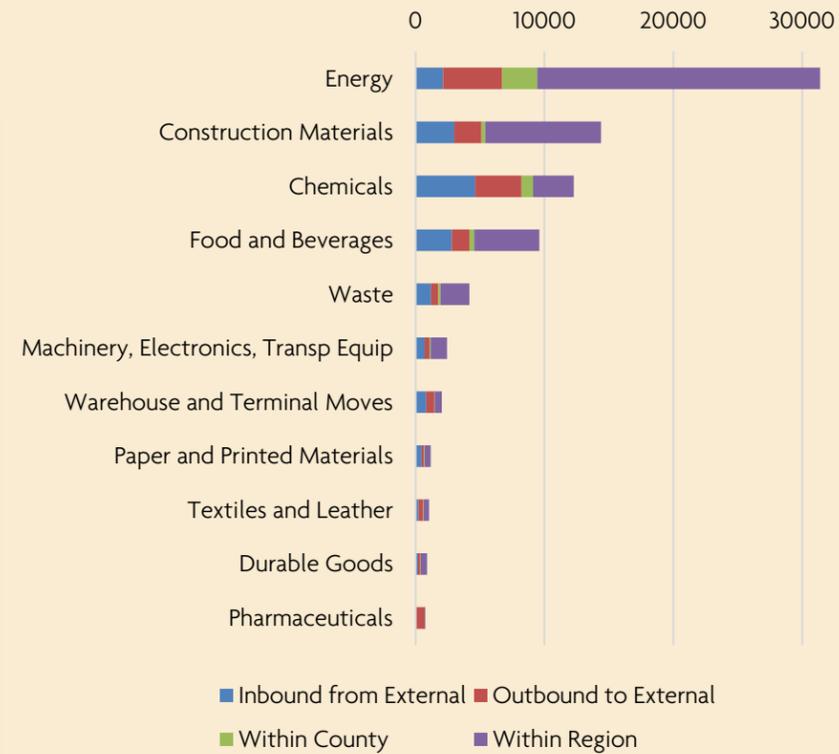
By 2050, commodity flows into, out of, and within Union County are expected to have increased by about 23 percent, from 70 million tons to 86.4 million tons (a difference of about 16.4 million tons). Energy products is expected to remain the number one commodity transported by tonnage, followed by construction materials and chemicals. Chemicals, energy products and machinery, electronics, and transportation equipment are the top commodity bundles by value of goods and are expected to remain the top two bundles by value through 2050.

Commodity Bundle	2020 Tons (thousands)	2050 Tons (thousands)	2020 Value (millions \$)	2050 Value (millions \$)	Change in Tons	Change in Value
Chemicals	10,114	12,275	38,451	46,698	21%	21%
Construction Materials	12,038	14,390	7,686	9,225	20%	20%
Durable Goods	749	894	4,829	5,892	19%	22%
Energy	30,199	37,568	24,093	29,267	24%	21%
Food and Beverages	7,495	9,607	14,225	18,070	28%	27%
Machinery, Electronics, Transp Equip	2,017	2,446	22,628	27,738	21%	23%
Paper and Printed Materials	901	1,173	1,945	2,783	30%	43%
Pharmaceuticals	628	766	14,162	17,212	22%	22%
Warehouse and Terminal Moves	1,583	2,045	10,831	14,400	29%	33%
Waste	3,440	4,182	1,362	1,683	22%	24%
Textiles and Leather	846	1,053	7,167	8,928	24%	25%
Grand Total	70,010	86,399	147,379	181,895	23%	23%

Source: NJTPA Freight Forecasting Tool, 2020

Note: Commodities assigned a value of \$0 indicate the absence of sales or commercial value

Thousands of Tons by Commodity by Direction, 2050



Source: NJTPA Freight Forecasting Tool, 2020

COMMODITY VOLUMES AND DIRECTION

The directional movement of shipments containing the top 10 commodities are expected to remain nearly constant as well. In 2050, like 2020, most energy product moves will be within the NJTPA region. Intraregional moves are expected to remain the predominant travel pattern across many of the other commodity bundles as well.

FUTURE TRADING PARTNERS

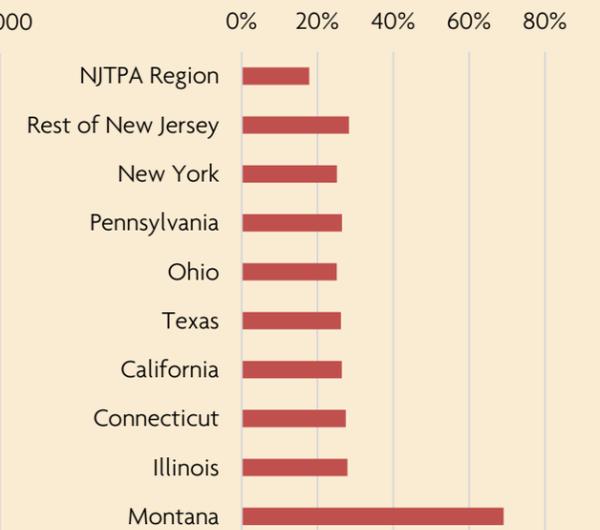
Union County's largest trading partners will continue to be other counties in the NJTPA region, followed by portions of New Jersey outside the NJTPA region, New York, and Pennsylvania. Freight tonnage moving between Union County and Montana is expected to increase by 69 percent, while trade with other top trading partners is expected to increase by 18 percent to 28 percent.

Thousands of Tons by Domestic Trading Partner, 2050



Source: NJTPA Freight Forecasting Tool, 2020

Growth, 2020-2050

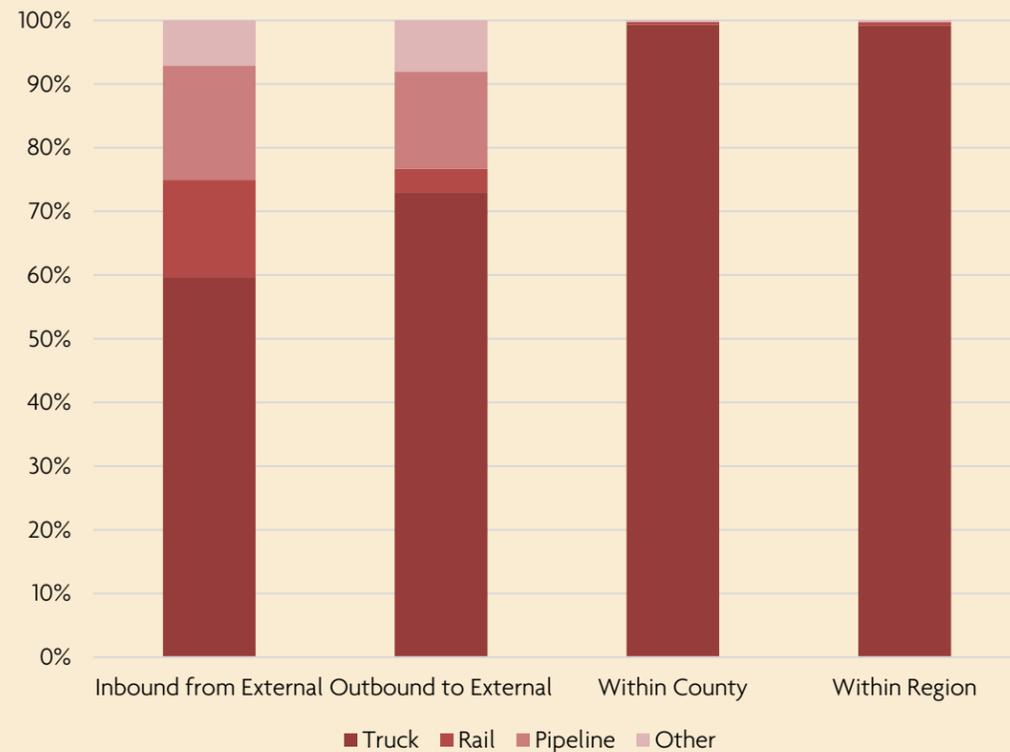


Source: NJTPA Freight Forecasting Tool, 2020

FUTURE MODE UTILIZATION

The forecast anticipates that freight mode splits in 2050 will be similar to 2020 mode splits. Trucks are expected to carry 91 percent of all freight tons, while rail is expected to move 5 percent and other modes are expected to carry about 4 percent. Pipelines are expected to carry 18 percent of inbound tonnage, and rail is expected to move 15 percent. Trucks are expected to carry about 99 percent of intracounty and intraregional freight moves.

Tons by Mode by Direction, 2050



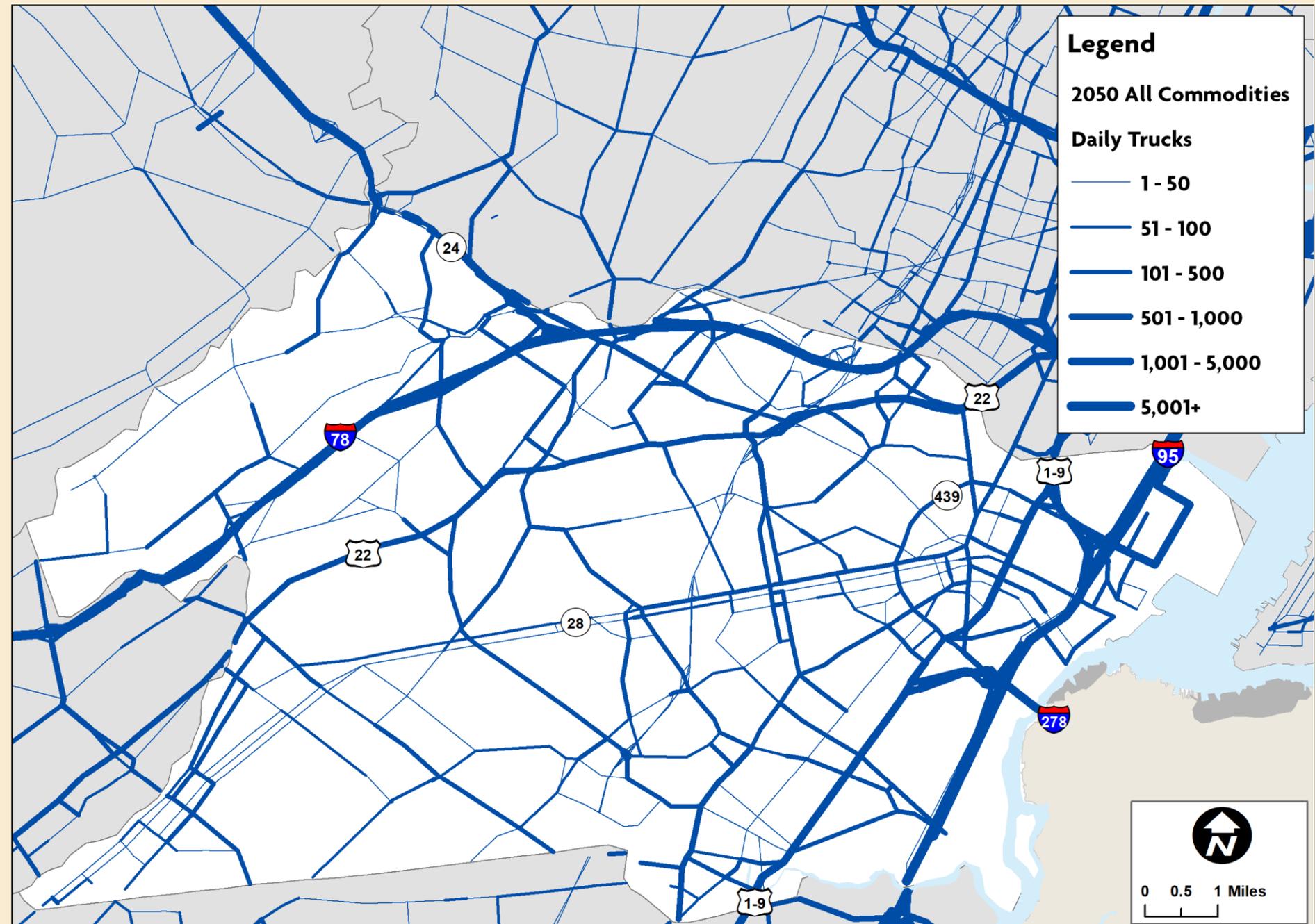
Source: NJTPA Freight Forecasting Tool, 2020

FUTURE HIGHWAY NETWORK UTILIZATION

In 2050, 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 commodity trucks traveling on Interstates 95 and 78 is expected to increase by about 500-600 trucks per day in each direction between 2020 and 2050. Commodity truck volumes on Route 1/9 and Route 24 are expected to increase by approximately 200 per day by 2050. On Route 22 in Hillside, 100 more daily commodity trucks are expected to travel in each direction by 2050.

The map below illustrates the projected commodity truck volumes in 2050 on highways in Union County.

Highway Network Utilization, 2050



Source: NJTPA Freight Forecasting Tool, 2020; NJRTM-E, 2019; NJOIT, 2008; Esri, 2014

ABOUT THE NJTPA

The North Jersey Transportation Planning Authority (NJTPA) is the federally authorized Metropolitan Planning Organization for 6.7 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, 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 Director of NJ TRANSIT, the Chairman of the Port Authority of New York and 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 County Freeholder Angel Estrada.

ABOUT THE STUDY

Conditions in the goods movement industry have changed over the last several years. The 2050 Freight Industry Level Forecasts Study developed updated information on current and projected freight demand through 2050 for the NJTPA to use in its freight planning activities. This effort built on two previous NJTPA freight planning studies: the 2040 Freight Industry Level Forecasts Study (completed in 2012) and the Regional Freight Commodity Profiles Study (completed in 2015).

This study helps identify locations with concentrations of goods movement activity and where they will occur in the future; the types of commodities that are and will be moving through the region; and where strategic investments should be considered to support economic growth and enhance regional resiliency. The results of this work will serve as background for the NJTPA's next Long Range Transportation Plan as well as freight planning and subregional planning studies.

For further information, please contact Jakub Rowinski, NJTPA Project Manager, at jrowinski@njtpa.org.

This Freight Profile is one of a series of profiles, covering the 13 counties of the NJTPA region, the City of Newark, Jersey City, and the region as a whole.

This document was prepared by the NJTPA with funding from the Federal Transit Administration and the Federal Highway Administration. The NJTPA is solely responsible for its contents.