

REGIONAL FREIGHT PROFILE

North Jersey Region

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 6.7 million, the 13-county NJTPA region is home to more than three-quarters of the population of New Jersey and just over half of the land area of the state. The population of the state and region have historically grown more slowly than the nation overall. Morris County has the highest median household income in the region (\$113,316 in 2018). Inflation-adjusted median household income has increased since 2010 in 8 of the region's 13 counties.

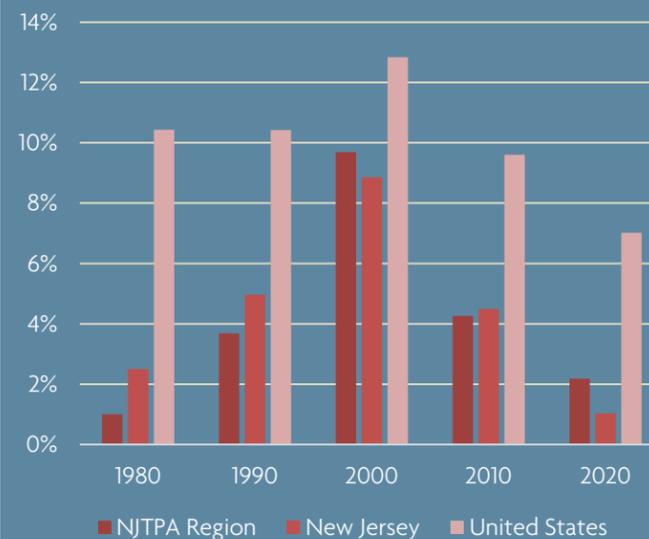
North Jersey is home to:

- 6.7 million people
- More than 192,000 businesses that employ 2.9 million people; about 32 percent of these jobs are in industry sectors that are highly dependent on freight movement
- About 372 million tons of domestic freight shipped or received annually
- More than 88 million e-commerce packages delivered annually
- Interstate, State, and County highways used by tens of thousands of trucks every day
- The East Coast's largest container port, major intermodal rail and air cargo terminals

Highlights

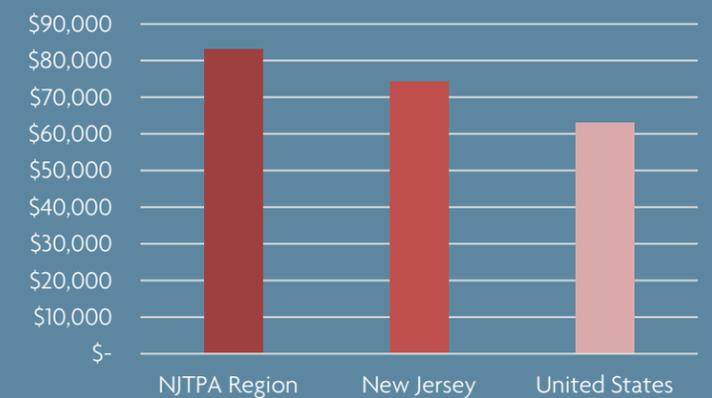
Population Growth by Decade

Source: U.S. Census Bureau



2018 Household Income

Source: U.S. Census Bureau



Note: This chart shows median household income for New Jersey and the United States. NJTPA Household Income calculated as a weighted average of median household incomes of member counties. New Jersey and U.S.

EMPLOYMENT

The region's economy employs more than 2.9 million people in about 192,000 establishments. About 32 percent are employed in "freight-intensive" industries, such as construction, manufacturing, mining and extraction, retail trade, wholesale trade, and logistics. About 68 percent are employed in industries that may generate freight but are less dependent on freight movement.

FREIGHT FLOWS

In 2020, an estimated 372 million tons of domestic freight will move into, out of, or within the NJTPA region, by all modes of transportation (truck, rail, pipeline, water, and air). This figure includes commodities moving into or out of the NJTPA region, 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.)

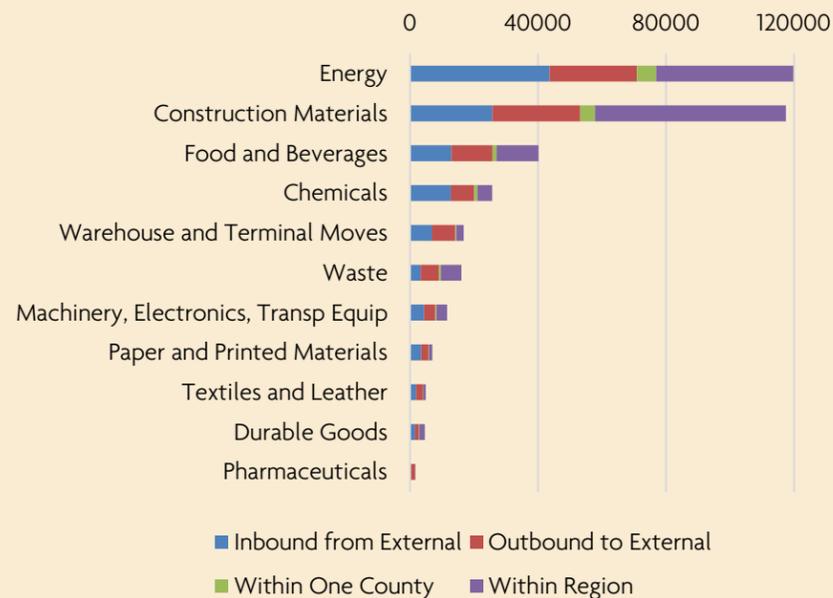
For domestic tonnage with an origin and/or destination in the region, around 32 percent consists of energy products and another 32 percent are construction materials, most which move between points within the NJTPA region. Other leading commodities include moves of food and beverages, chemicals, and movements of mixed freight from warehouses and terminals.

Employment by Industry, 2019



Source: U.S. Bureau of Labor Statistics

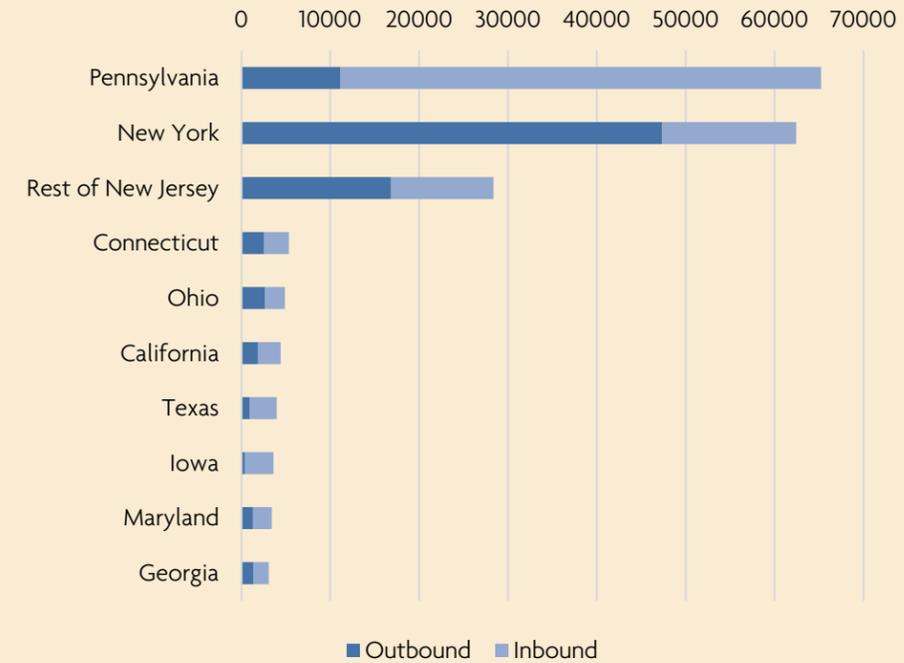
Thousands of Tons by Commodity by Direction, 2020



Source: NJTPA Freight Forecasting Tool, 2020

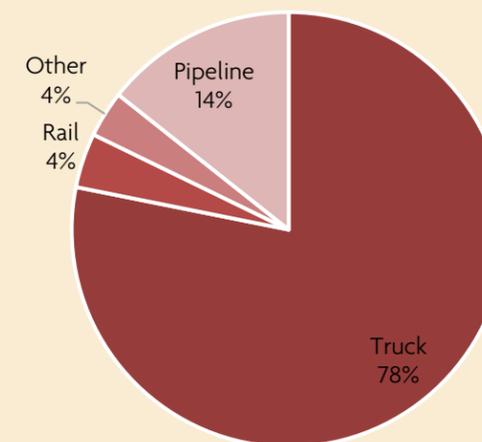
E-commerce has a growing presence in the retail landscape. Some of the freight shipments described in this profile include goods that are ultimately delivered to consumers who shop online. In 2019, about 88 million e-commerce shipments containing 126 million items were delivered to consumers in the NJTPA region.

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

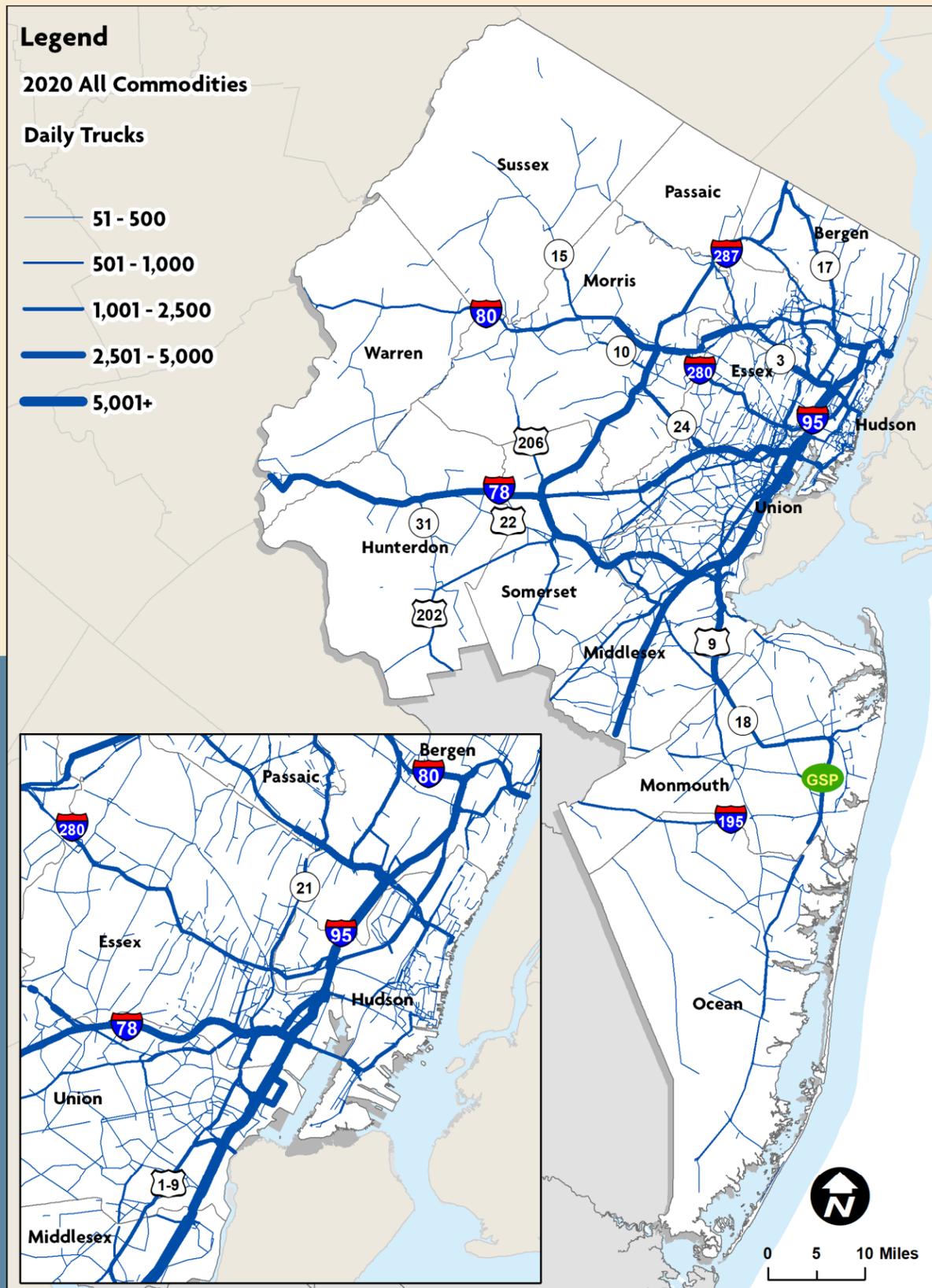
The NJTPA region's major trading partners are, not surprisingly, its neighbors. As illustrated to the left, locations in Pennsylvania and New York are the greatest origins of inbound freight and destinations for outbound freight. The rest of New Jersey outside the NJTPA region, Connecticut, and Ohio are also among the top origins and destinations for freight traded with the NJTPA region.

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 the NJTPA region, 78 percent travels by truck, 14 percent by pipeline, 4 percent by rail, and 3 percent by other modes. These modes also connect with the marine terminals and air cargo terminal in the region to move international freight to and from locations outside the United States.

Highway Network Utilization, 2020



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

HIGHWAY NETWORK UTILIZATION

North Jersey's highway network serves to connect its major freight activity centers with key trading partners elsewhere 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 on the previous page illustrates the flows of commodity trucks, or trucks loaded with freight, on the highway network.

Segments of the New Jersey Turnpike and Interstate 78 accommodate more than 5,000 commodity trucks per day in each direction. The highest volume of trucks in the Region is near the interchange of these two highways. Portions of the Turnpike south of Exit 9, Interstate 78 west of Route 24, Interstate 80 in Morris County, and Route 3 in Bergen and Passaic counties carry between 2,500 and 5,000 commodity trucks per day in each direction.

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.

The largest clusters of production facilities are in portions of southern Bergen County, southern Passaic County, eastern Essex County, and eastern Union County. Large logistics facilities are located along the entire New Jersey Turnpike corridor, Hudson County, and parts of Somerset and Morris counties. Sales establishments are clustered in the northeastern part of the region and along major highway corridors such as Routes 1, 9, 10, 22, 35, among others.

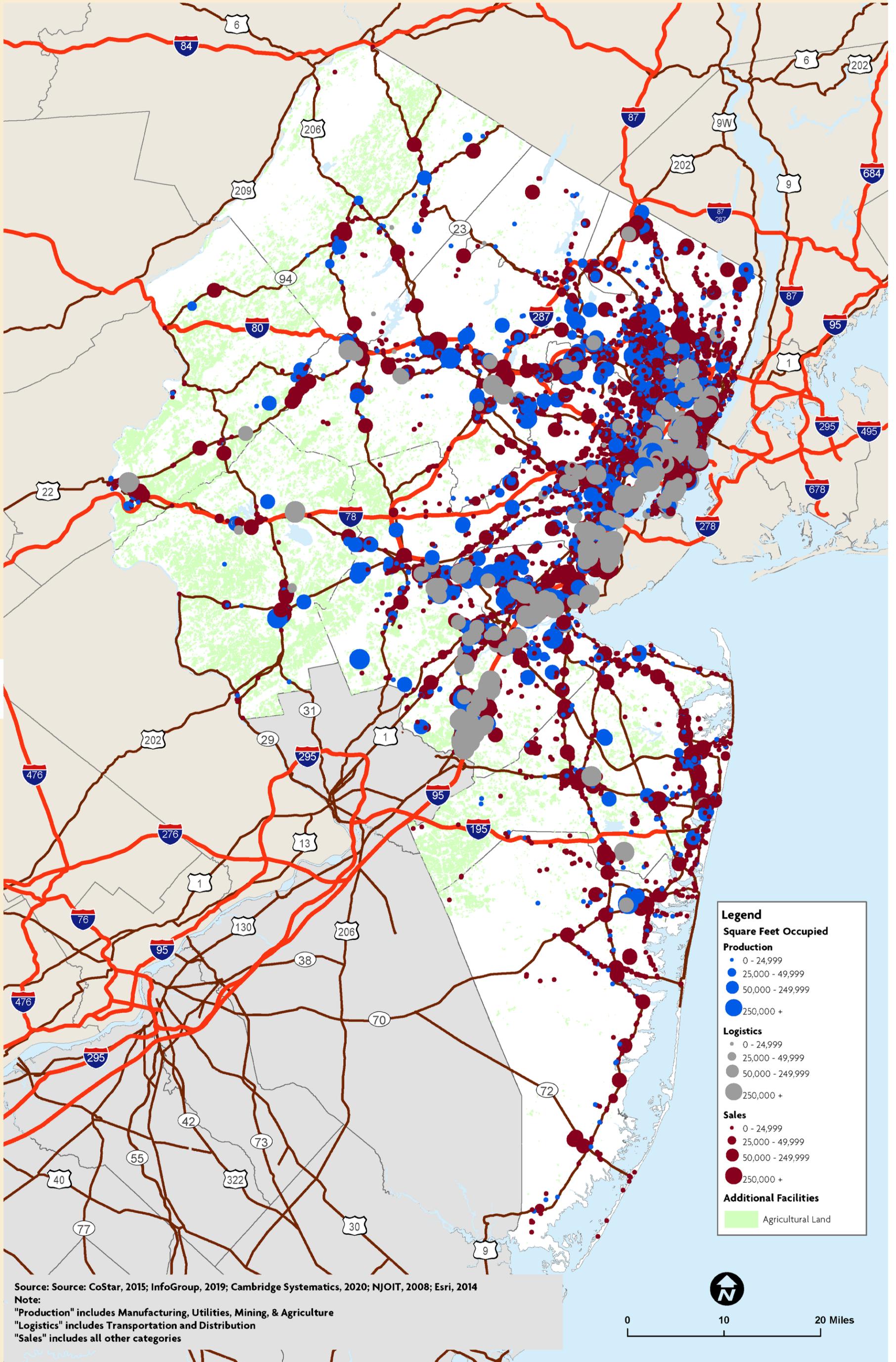
Top 5 Business Establishments in Freight-Generating Industry Sectors, by Size

Company	Square Footage	Municipality	Business Type
Williams-Sonoma Distribution Center	1,350,000	South Brunswick Township, Middlesex County	Logistics
Wayfair Distribution Center	1,200,000	Cranbury Township, Middlesex County	Logistics
USPS International Bulk Mail Center	1,150,000	Jersey City, Hudson County	Logistics
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Barnes & Noble Distribution Center	1,145,000	Monroe Township, Middlesex County	Logistics

Source: Infogroup, 2019; CoStar, 2015

Note: Some companies may have multiple locations in the region.

Business Square Footage by Industry Type



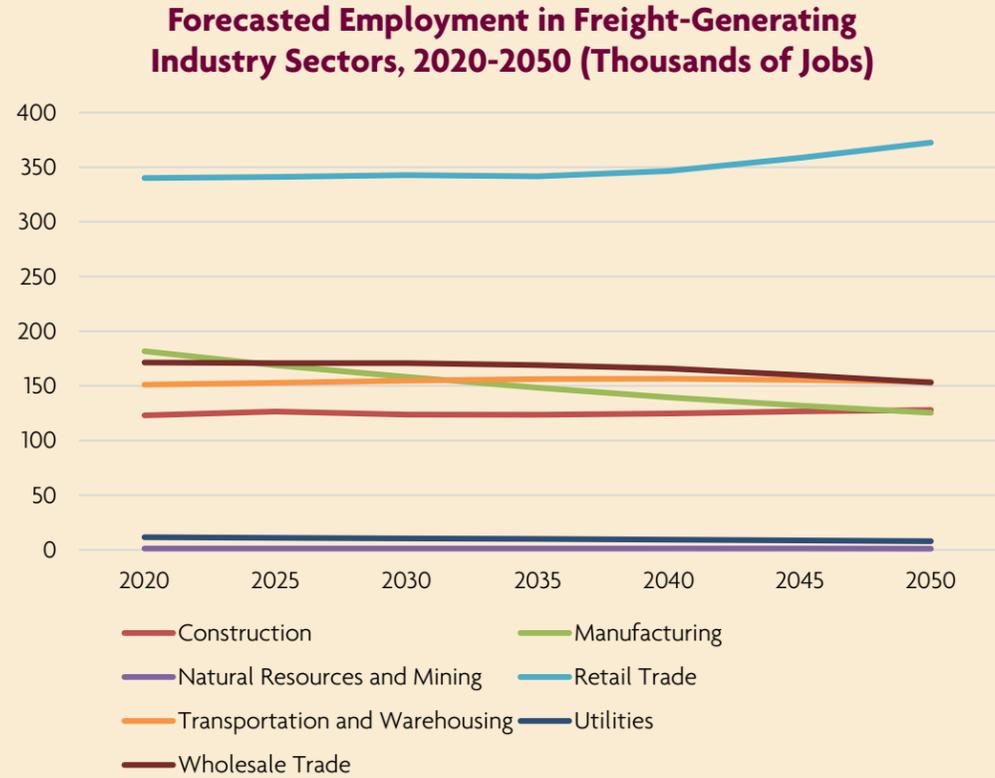
Source: Source: CoStar, 2015; InfoGroup, 2019; Cambridge Systematics, 2020; NJOIT, 2008; Esri, 2014
 Note:
 "Production" includes Manufacturing, Utilities, Mining, & Agriculture
 "Logistics" includes Transportation and Distribution
 "Sales" includes all other categories



0 10 20 Miles

EMPLOYMENT FORECAST

Employment in freight-intensive industries is expected to decrease by about 4 percent during the forecast period. Manufacturing, natural resources, utilities, and wholesale trade sector employment is expected to decline while retail trade, construction, and transportation and warehousing employment are expected to increase by 10 percent, 4 percent, and 2 percent, respectively, between 2020 and 2050.



Source: Moody's, 2020

Commodity Flow Forecast, 2020-2050

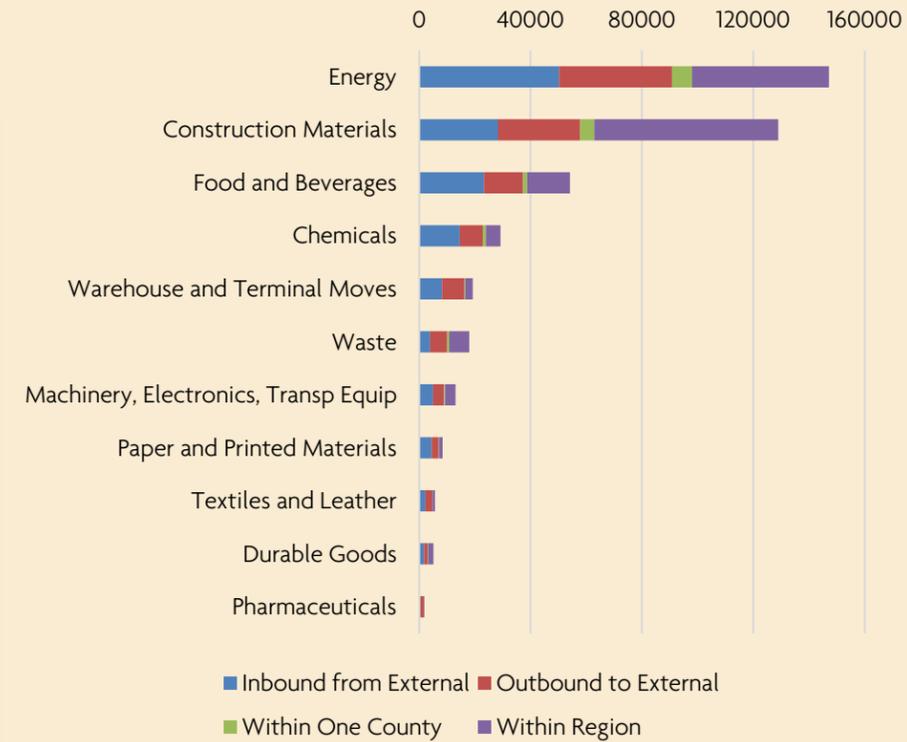
By 2050, commodity flows into, out of, and within the NJTPA region are expected to have increased by about 16 percent, from 372.2 million tons to 431 million tons (a difference of 58.8 million tons). Energy products is expected to remain the number one commodity transported by tonnage, followed by construction materials, food and beverages, and chemicals. Machinery, electronics, and transportation equipment, followed by chemicals and warehouse and terminal moves 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	25,684	29,214	98,379	111,844	14%	14%
Construction Materials	117,447	128,991	49,968	54,528	10%	9%
Durable Goods	4,661	5,137	40,022	44,250	10%	11%
Energy	119,791	147,187	75,104	89,590	23%	19%
Food and Beverages	46,609	54,153	87,772	100,087	16%	14%
Machinery, Electronics, Transp Equip	11,620	13,066	145,541	164,245	12%	13%
Paper and Printed Materials	6,984	8,436	15,769	20,746	21%	32%
Pharmaceuticals	1,681	1,892	49,477	55,050	13%	11%
Textiles and Leather	4,935	5,695	40,483	46,975	15%	16%
Warehouse and Terminal Moves	16,777	19,240	96,442	114,413	15%	19%
Waste	16,055	17,988	5,772	6,522	12%	13%
Grand Total	372,244	430,999	704,729	808,250	16%	15%

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

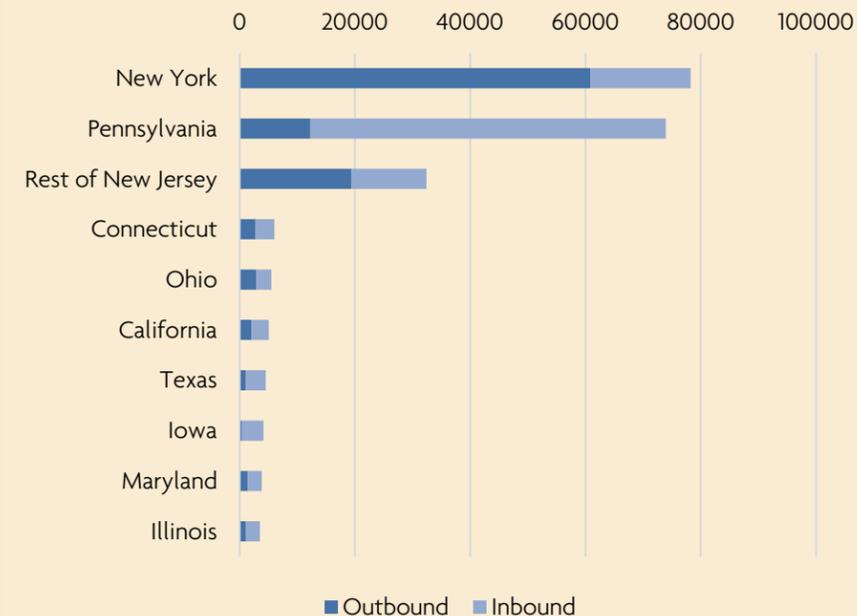
COMMODITY VOLUMES AND DIRECTION

The directional movement of shipments containing the top 10 commodities are expected to remain nearly constant as well. In 2050, like 2020, most of the construction material moves are expected to be intraregional moves. Inbound flows of food and beverages are expected to grow slightly more than intraregional moves between 2020 and 2050.

FUTURE TRADING PARTNERS

The NJTPA region's largest trading partners will continue to be New York, Pennsylvania, and the portions of New Jersey outside the NJTPA region and New York. The volume of trade with New York is expected to grow at a greater rate (25 percent) than trade with other top trading partners between 2020 and 2050.

Thousands of Tons by Domestic Trading Partner, 2050



Source: NJTPA Freight Forecasting Tool, 2020

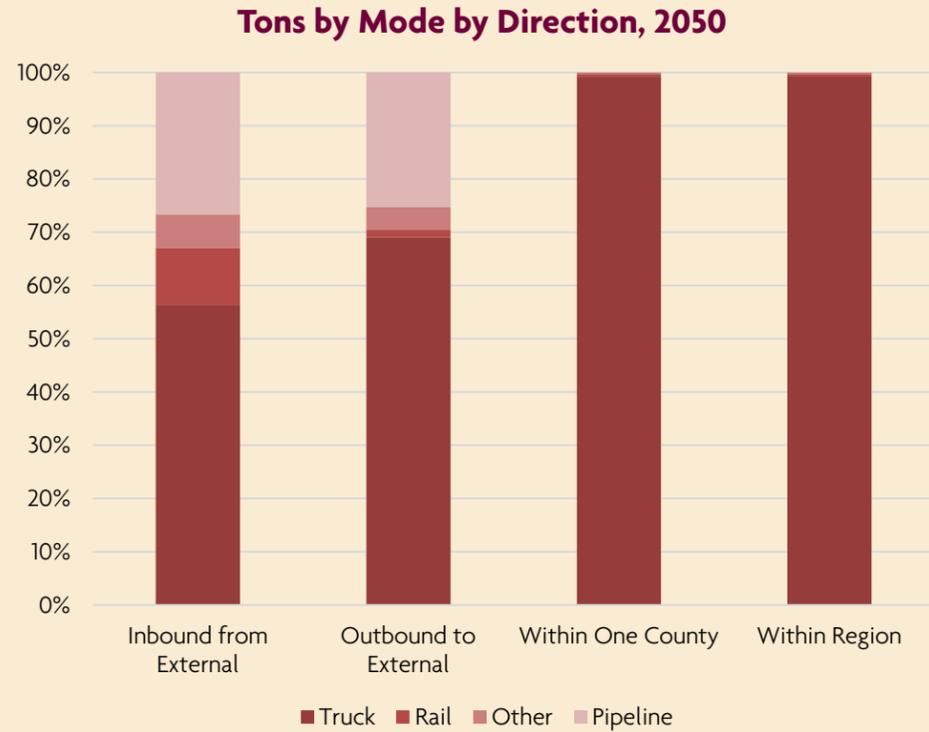
Growth, 2020-2050



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 74 percent of all freight tons, pipelines are expected to move 16 percent of freight tons in the region, rail is expected to move 4 percent, and other modes are expected to carry about 3 percent. About 26 percent of the region's inbound tonnage is expected to move by pipeline and 11 percent by rail. Truck will carry about 99 percent of intraregional moves and moves that stay within just one of the region's counties.



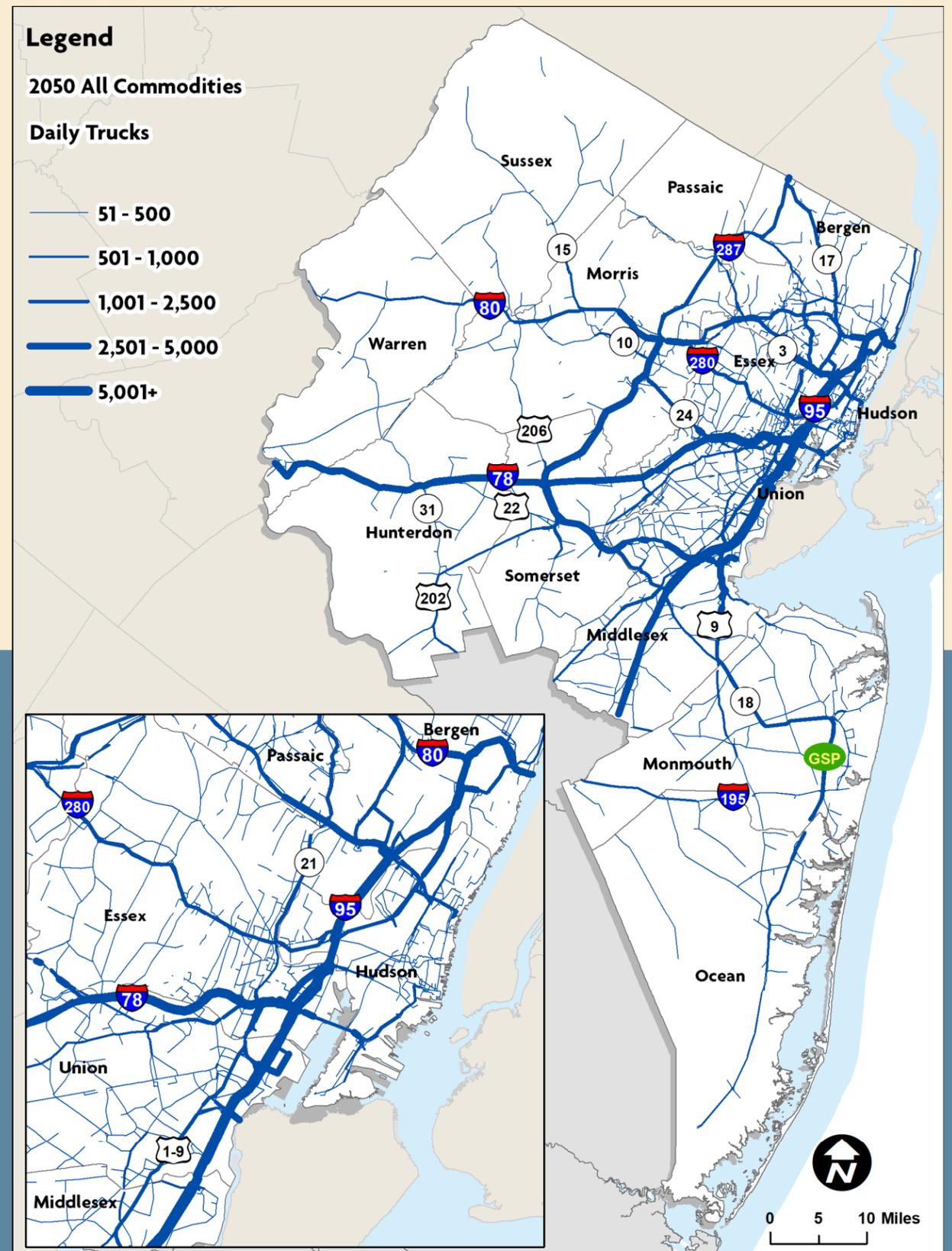
Source: NJTPA Freight Forecasting Tool, 2020

Future Highway Network Utilization

In 2050, the North Jersey region's highway network is expected to remain the primary conveyor of freight into, out of, within and through the region. The number of commodity trucks traveling on the New Jersey Turnpike/Interstate 95 is expected to increase by up to 2,000 trucks per day over the 2020 volume, to a total of about 18,000 daily trucks (9,000 in each direction). Daily commodity truck volumes on interstates 78 and 287 in parts of Morris and Somerset counties are expected to increase by 400-500 trucks per day in each direction between 2020 and 2050. Commodity truck volumes are expected to increase by more than 200 trucks per day in each direction on portions of Interstate 80 in Morris, Essex, and Passaic counties; in Bergen, Hudson, Essex, and Union counties on Routes 1 and 9; on Route 3 in Hudson, Bergen, and Passaic counties; and on portions of Route 9 in Middlesex County.

The map on Page 11 illustrates the projected commodity truck volumes in 2050 on highways in North Jersey.

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.

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.