NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
Defining the Vision. Shaping the Future.

REGIONAL FREIGHT COMMODITY PROFILE

Waste

COMMODITY BUNDLE OVERVIEW

As the graphs below show, waste commodities are classified as one group. The waste commodity group includes waste and scrap materials, municipal solid waste, construction and demolition debris, chemical, hazardous waste material, and other waste materials.

The primary data source for commodity flows reported in this profile is NJTPA's Freight Forecasting Tool, which generates commodity freight data and forecasts for a 2020 base year and 2050 forecast year. This profile describes freight flows between domestic origins and destinations.

Highlights

- 16.1 million tons in 2020, increasing 12 percent to 18.0 million tons in 2050.
- Represents 4 percent of the freight moved in the region by weight and 1% by value.
- Nearly 600,000 square feet of warehousing/ distribution center space dedicated to this commodity bundle.
- 93 percent moves by truck, 3 percent moves by rail, and 4 percent moves by other modes

Composition

Domestic Tons in 2020

Total Tons: 16.1 million

Source: NJTPA Freight Forecasting Tool, 2012

Domestic Value in 2020

Total Value: $6 billion

Source: NJTPA Freight Forecasting Tool, 2012

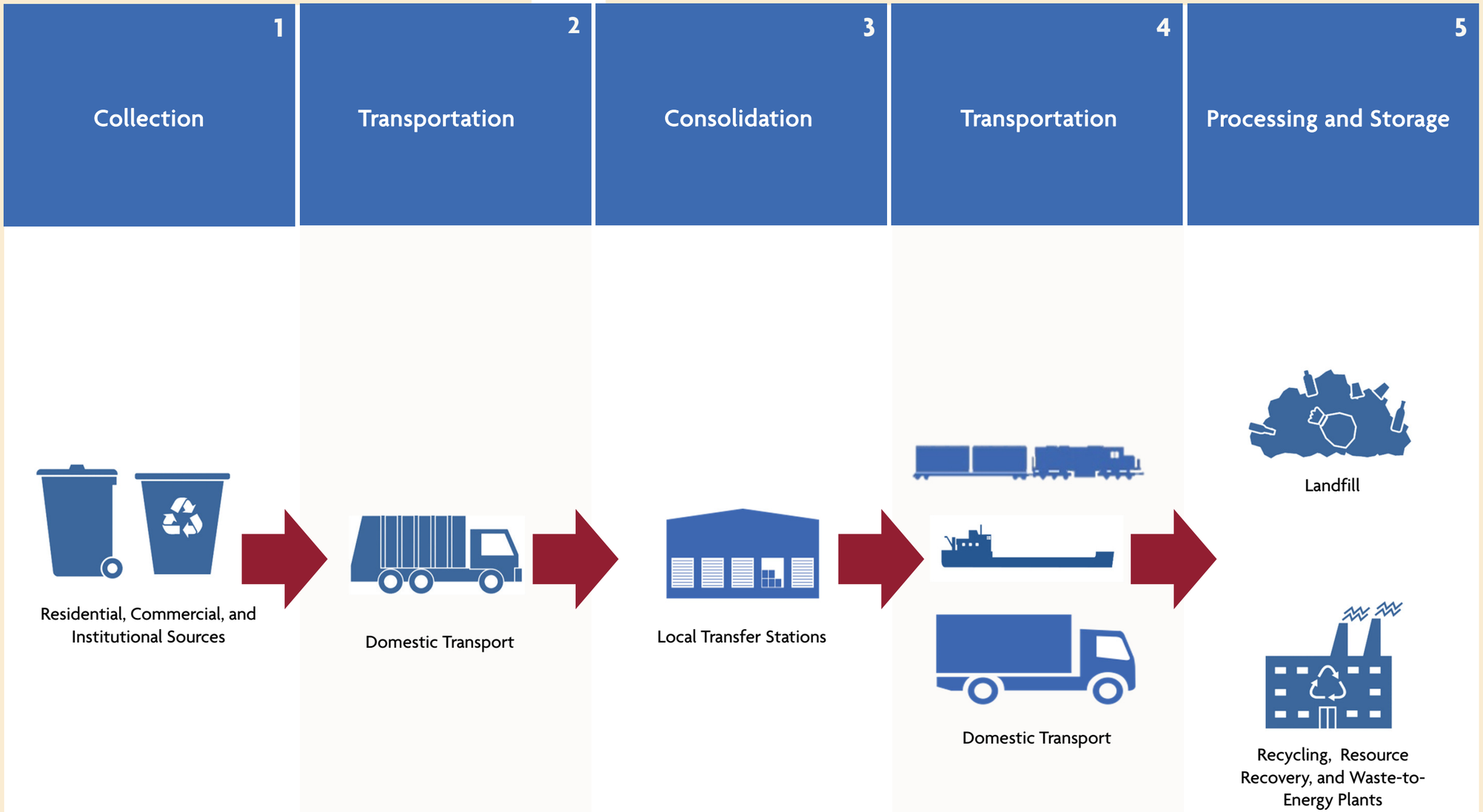
Waste commodities are grouped into one standard classification of transported goods (SCTG) classification code. 100 percent of the goods in this bundle are in waste SCTG category.

LOGISTICS SUMMARY

The graphic to the right represents the supply chain for the waste commodity bundle from initial recovery from residential, commercial, and institutional sources to final processing and storage.

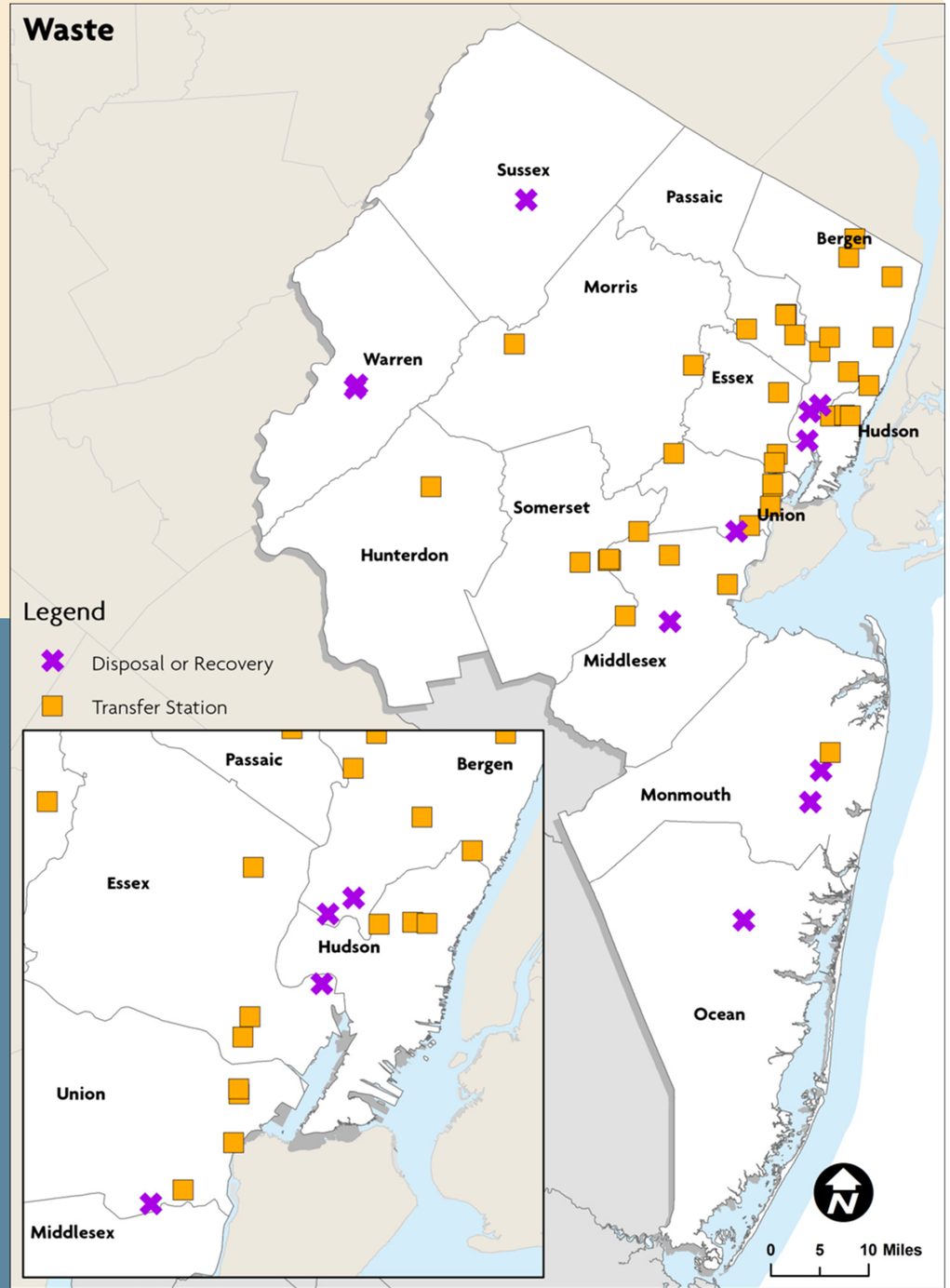
This supply chain consists of five steps:

1. Collection of waste from sources including residential, commercial, and institutional locations.
2. Transport of waste by garbage trucks.
3. Consolidation of waste at local consolidation centers or transfer stations.
4. Transport of consolidated waste by container truck. Limited amounts of waste are transported by rail, mainly to locations outside of the NJTPA region.
5. Storage of waste in landfills, or processing of materials by recycling and resource recovery centers.



Waste Facility Locations

Waste Processing and Disposal Facility Locations by Type



Source: NJDEP, 2011; NJOIT, 2008; Esri, 2014.

BUSINESS LOCATIONS SUMMARY

The map on the previous page illustrates the locations of waste transfer stations, where residential and commercial municipal solid waste, some construction and demolition waste and debris, and other permitted types of waste are sorted and/or consolidated. Waste transfer stations are clustered near some of the most densely-populated areas of the region, close to residential and commercial sources of waste.

Shipments of waste departing the transfer stations are moved to recycling, waste-to-energy plants, or to landfills for disposal. Many of these facilities are located in the region, as the map shows.

Most of the waste received at Northern New Jersey resource recovery facilities originated in New Jersey or in New York. Northern New Jersey also exports waste for disposal in other parts of New Jersey and in other states.

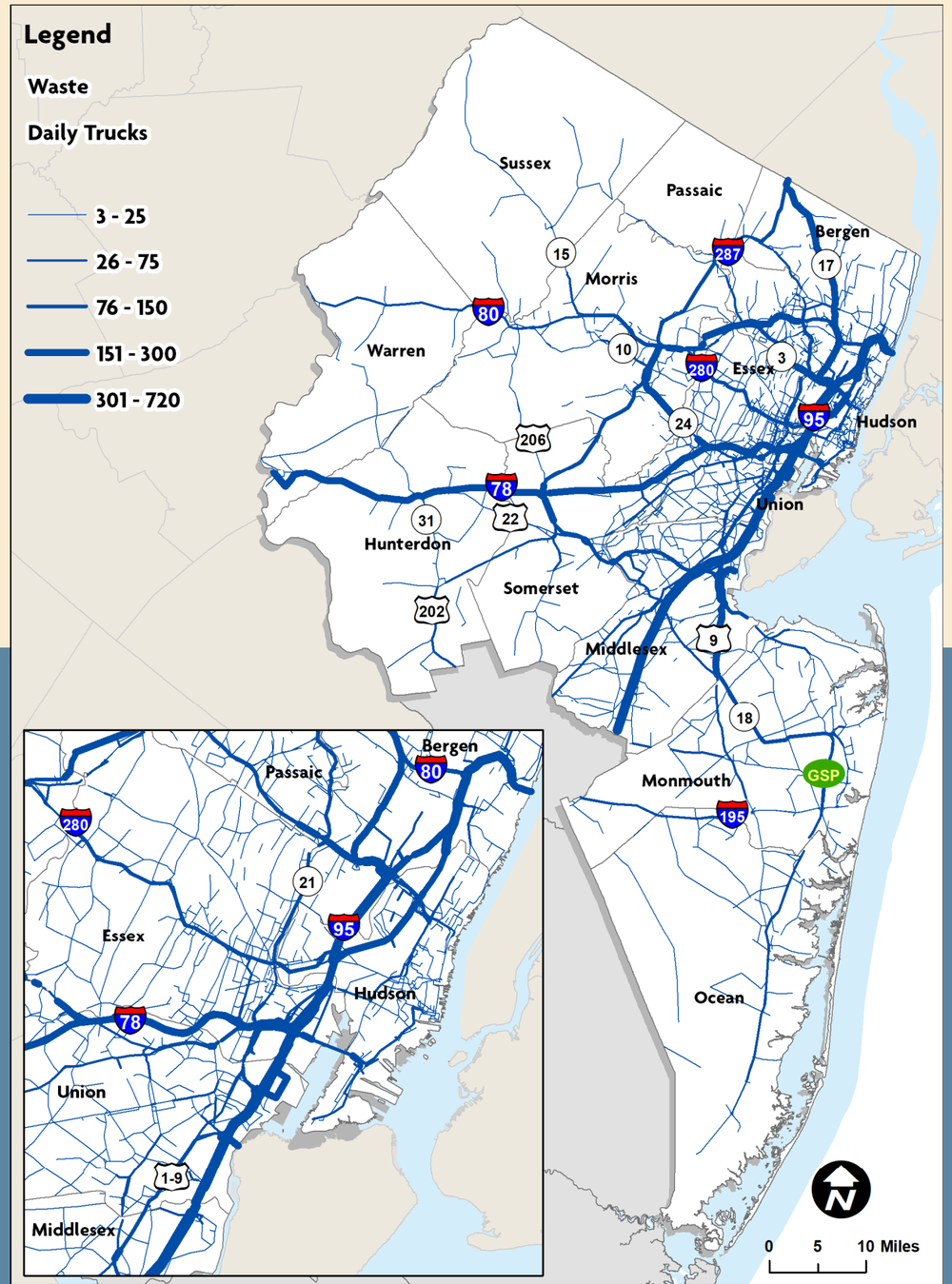
KEY INDUSTRY TRENDS

The following trends are shaping demand for waste commodities today, and projected demand in the future:

- More efficient packaging processes and packaging have continued to reduce the volumes of waste generated. More efficient manufacturing and food preparation processes have also reduced waste volumes.
- Changes in behavior, such as the reduced consumption of print media like newspapers and magazines combined with increased digital communication, continue to reduce paper waste.
- Stricter recycling acceptance rules in China, a major destination of U.S. recycling materials, have decreased the market value for recyclables and upended recycling economics for haulers and municipalities.

A Recycling Facility (Left) and the Essex County Resource Recovery Facility (Right)

Highway Network Utilization, 2020



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

HIGHWAY NETWORK FLOWS OF WASTE

The map on the previous page shows the volume of truckloads of waste products in this bundle traveling on highway segments in the NJTPA region every day.

The New Jersey Turnpike/Interstate 95 between the Middlesex County-Mercer County border and Exit 16W in Bergen County carry between 301 and 720 truckloads of waste per day in each direction.

Interstate 78 west of the Turnpike, Interstate 80 in Passaic and Essex counties, Route 3, Route 9, Route 24, and a short segment of Interstate 287 in Morris County carry between 151 and 300 daily truckloads of waste in each direction.

COMMODITY FLOW SUMMARY

More than 16 million tons of waste commodities, worth about $5.8 billion, moved in the NJTPA region in 2020. By 2050, 18 million tons worth more than $6.5 billion are expected to move in the region. These projections represent 12 percent growth by tons and 13 percent growth by value.

Waste represented 4 percent of the freight moved in the region by weight and 1 percent by value in 2020 are expected to represent the same shares of weight and value of goods moved in the region in 2050.

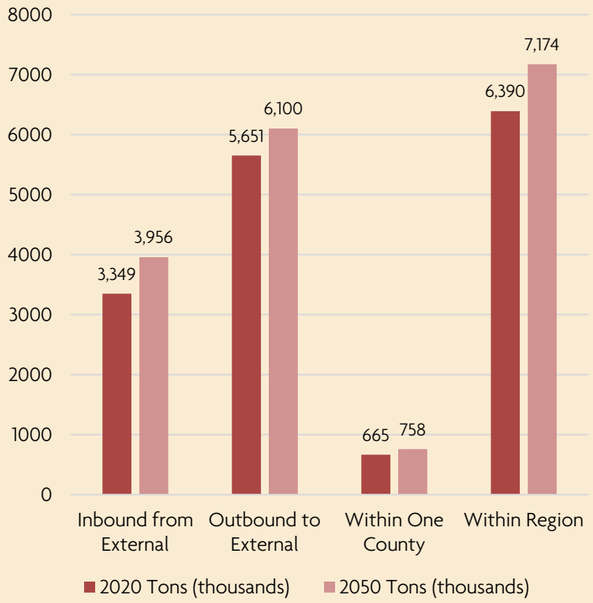
As the table below shows, waste/scrap materials is the single commodity group in this bundle.

Forecasted Change in Commodity Flows in the Waste Bundle by Weight and Value, 2020 and 2050

Commodity	2020 Tons (thousands)	2050 Tons (thousands)	2020 Value (millions $)	2050 Value (millions $)	Change in Tons, 2020-2050	Change in Value, 2020-2050
Waste/scrap	16,055	17,988	5,772	6,522	12%	13%
Grand Total	**16,055**	**17,988**	**5,772**	**6,522**	**12%**	**13%**

Source: NJTPA Freight Forecasting Tool, 2020

Domestic Tons by Direction, 2020 and 2050



Source: NJTPA Freight Forecasting Tool, 2020

About 6.4 million tons of waste (40 percent of all tons in this bundle) moved between counties in the NJTPA region. About 35 percent moved outbound from the NJTPA region to locations outside the region.

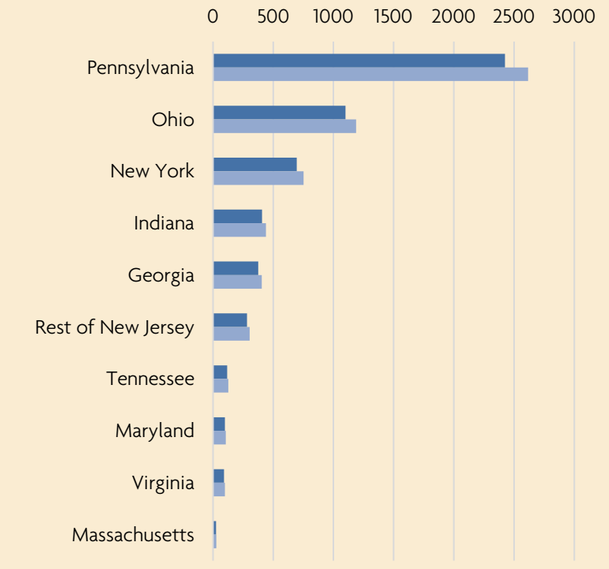
About 95 percent of the waste commodities imported to the NJTPA region originate in one of the locations shown in the graph on the next page. More than 1.5 million tons originate in portions of New Jersey outside the NJTPA region. New York is the origin of nearly 900,000 tons. Inbound flows from the rest of New Jersey and Illinois are expected to grow faster (20 percent) than flows from other top origins through 2050.

The graph on the next page also shows the destinations of 99 percent of the waste products in this commodity bundle that leave the NJTPA region. Locations in Pennsylvania, Ohio, New York, and Indiana are the top destinations of outbound waste.. Outbound flows to all of the top destinations are expected to grow by 7 to 8 percent through 2050.

About Two-Thirds of Waste Moved in the NJTPA Region Travels by Truck

Top Origins of Inbound Commodities (Left) and Top Destinations of Outbound Commodities (Right), 2020 and 2050

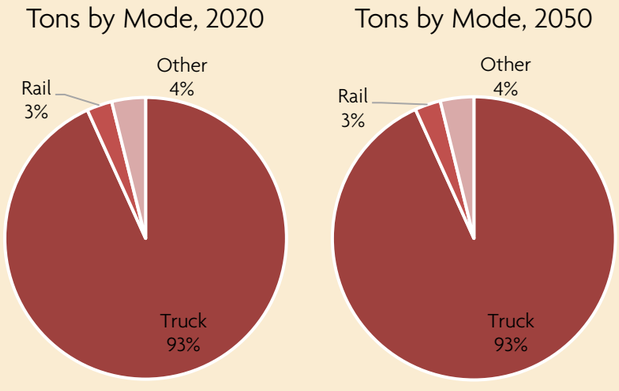
Source: NJTPA Freight Forecasting Tool, 2020



Source: NJTPA Freight Forecasting Tool, 2020

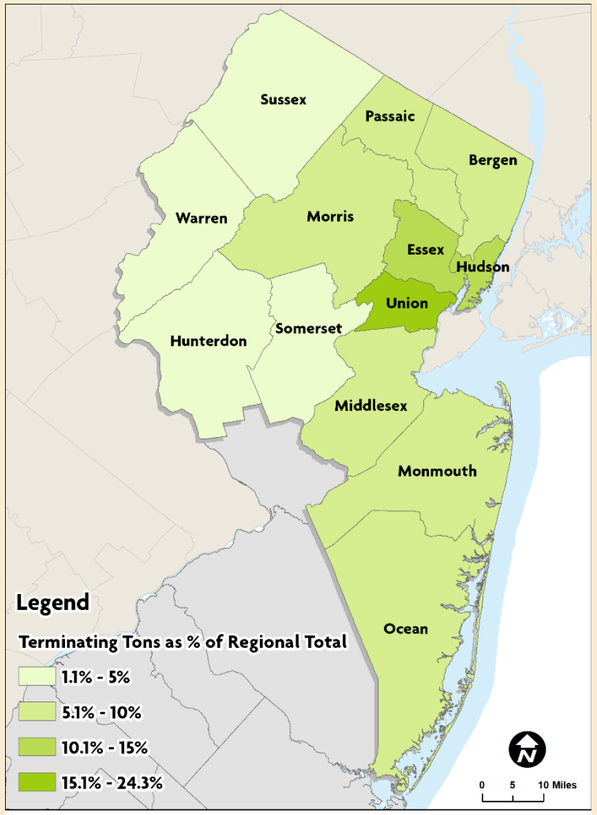
Mode Splits, 2020 and 2050

In 2020, about 93 percent of the waste commodities moving in the NJTPA region traveled by truck. Rail carried about 3 percent, and 4 percent moved by other modes. By 2050, the share of tons moving by each mode is expected to remain similar.



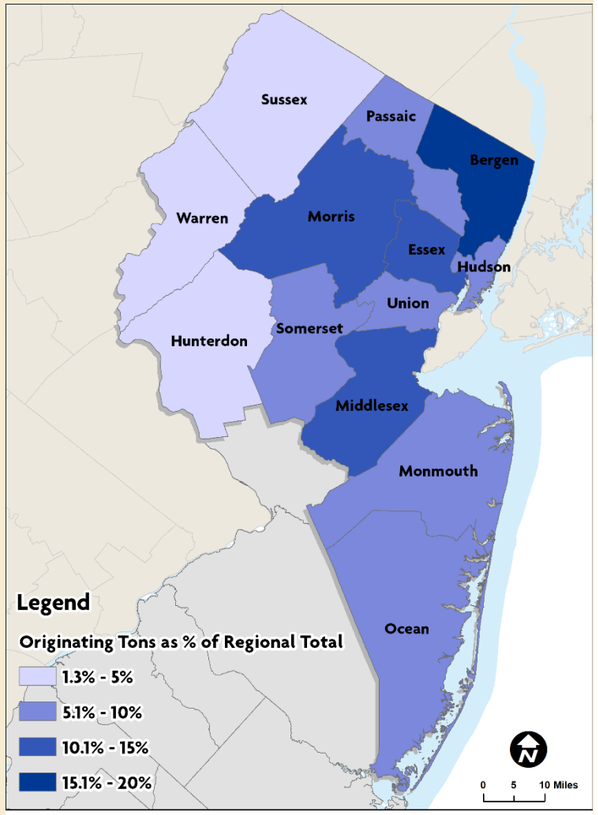
Source: NJTPA Freight Forecasting Tool, 2020

Inbound Domestic Tons by County, 2020



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

Outbound Domestic Tons by County, 2020



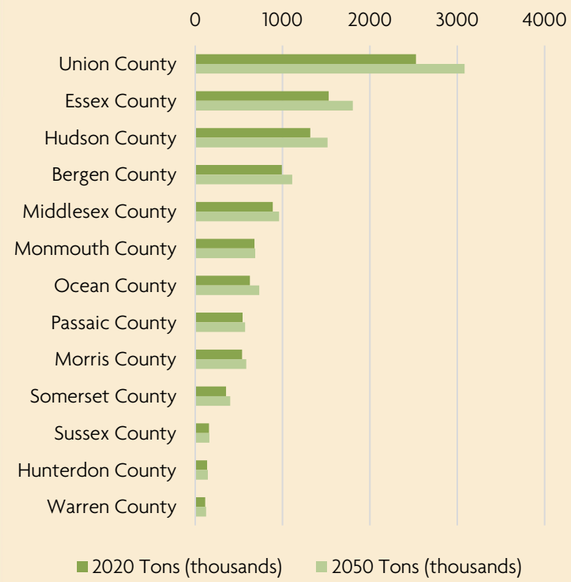
Source: NJTPA Freight Forecasting Tool, 2020; NJRTM-E, 2019; NJOIT, 2008; Esri, 2014.

The maps above and the graphs on the next page show the top counties of origin and top counties of destination for waste products in this commodity bundle traveling to or from the NJTPA region.

More than half of all waste traveling into the NJTPA region terminates in Union, Essex, or Hudson counties. Each received more than 1 million tons in 2020. Projected growth rates in inbound waste tonnage between 2020 and 2050 range from 1 percent (Monmouth County) to 22 percent (Union County).

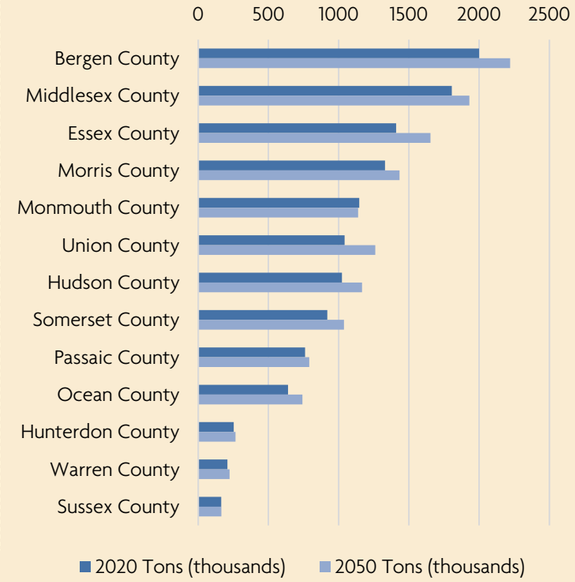
More than 60 percent of all waste shipped outbound originates in Bergen, Middlesex, Essex, or Morris counties. Projected growth rates in outbound tonnage between 2020 and 2050 range from -1 percent (Monmouth County) to 21 percent (Union County).

Inbound Domestic Tons by County, 2020 and 2050



Source: NJTPA Freight Forecasting Tool, 2020

Outbound Domestic Tons by County, 2020 and 2050



Source: NJTPA Freight Forecasting Tool, 2020

References

For more information on waste commodity flows and logistics in the North Jersey region and elsewhere, consult the following sources:

- Solid Waste Association of North America, www.swana.org
- Air and Waste Management Association, Northern & Central New Jersey, www.mass-awma.net/nj-chapter.html
- State of New Jersey Department of Environmental Protection, www.state.nj.us/dep/
- National Waste & Recycling Association, www.wasterecycling.org
- Bureau of Labor Statistics, U.S. Department of Labor, www.bls.gov

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, representing 12 freight commodity bundles in the 13-county NJTPA region.

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.