

REGIONAL FREIGHT COMMODITY PROFILE

Paper and Printed Materials

COMMODITY BUNDLE OVERVIEW

This bundle consists of two specific commodities: pulp, paper, or allied products; and printed matter. These products include pulps from wood and other cellulose fibers used to manufacture paper and paperboard, and manufactured paper or paperboard products, such as stationery, envelopes, packaging, paper food containers, and boxes. Printed materials include books, magazines, brochures, and newspapers.

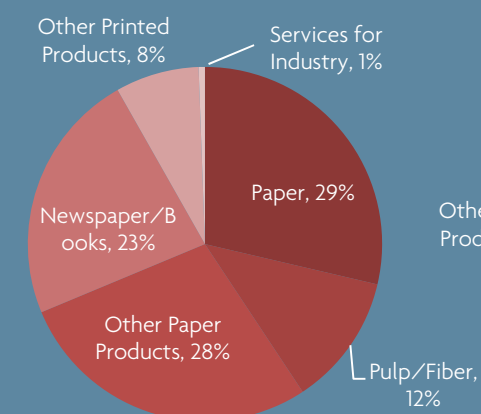
The primary data source for commodity flows reported in this profile is NJTPA's Freight Forecasting Tool, which generates commodity freight data and forecasts for a 2010 base year and 2040 forecast year. This profile describes freight flows between domestic origins and destinations.

- 24 million tons in 2010, increasing 41% to 34 million tons in 2040.
- Represents 3.6% of the goods moved in the region by weight and 3.7% by value.
- 732 business establishments employing 16,839 people send or receive goods in this commodity bundle.
- Nearly 11 million square feet of warehousing/distribution center space dedicated to this commodity bundle.
- 86% moves by truck, 13% by rail, and 1% by multiple or other modes.

Highlights

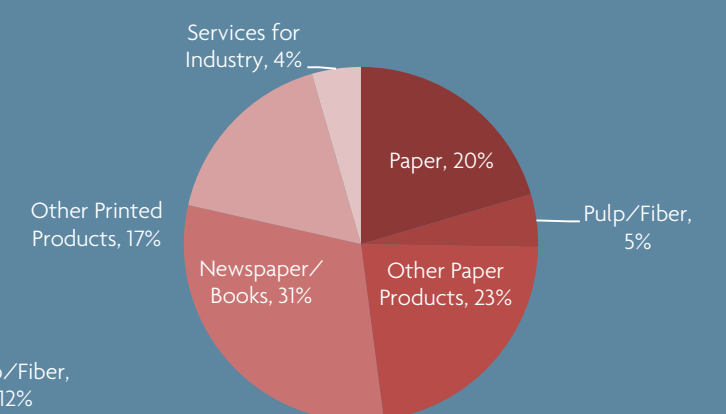
Composition

Domestic Tons in 2010



Total Tons: 24 million
Source: NJTPA Freight Forecasting Tool, 2012

Domestic Value in 2010



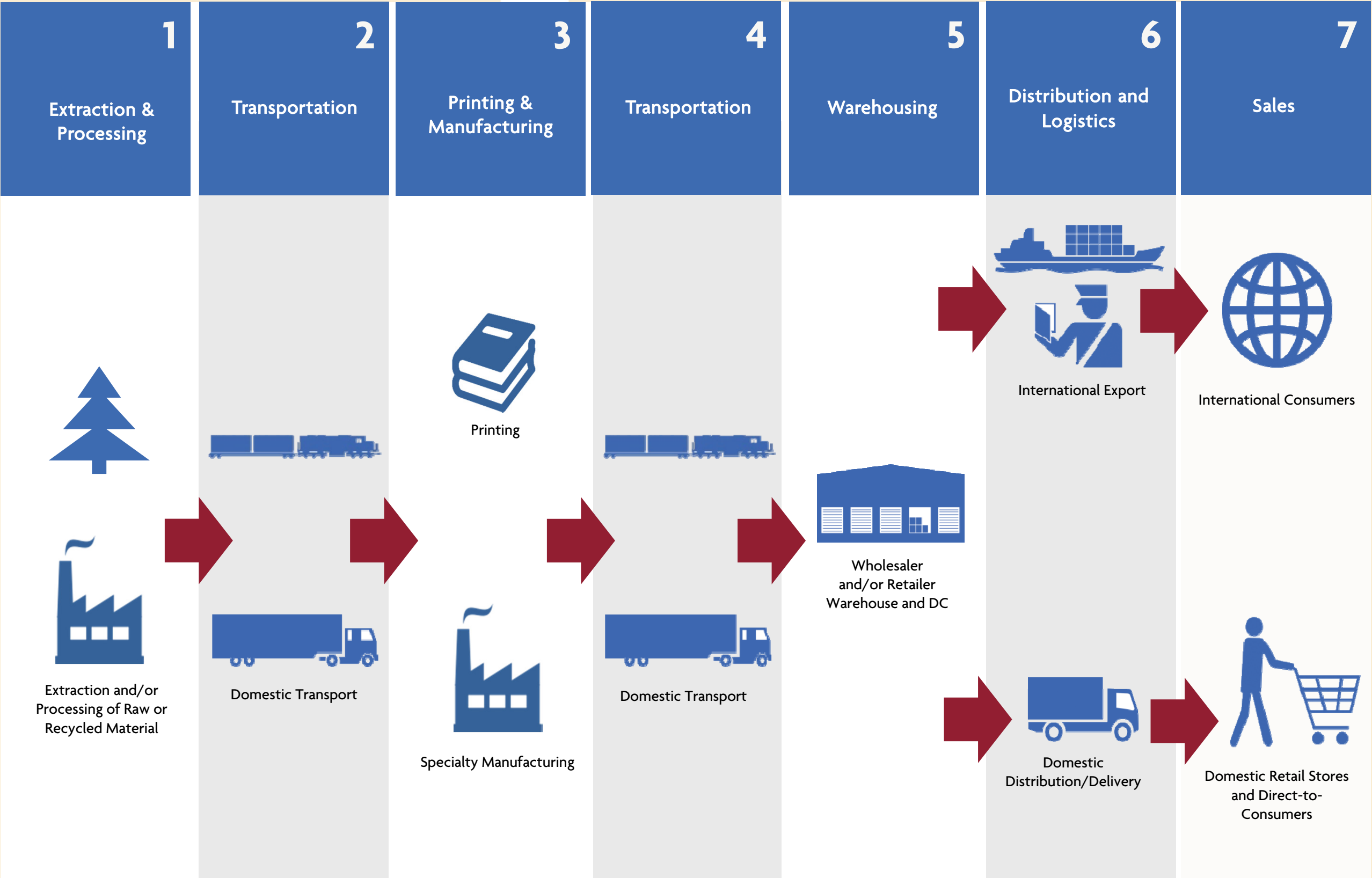
Total Value: \$69 billion
Source: NJTPA Freight Forecasting Tool, 2012

Paper products represent the largest sub-group by weight in this commodity bundle. Newspapers, books, and periodicals account for the greatest percent of goods moved by value. Other paper products, including paper bags, containers and boxes, and envelopes, account for the second-largest sub-group in both categories—28% of shipments by weight and 23% by value.

LOGISTICS SUMMARY

The graphic to the right represents the supply chain for the paper and printed materials commodity bundle, illustrating the process of producing books, other printed materials, and specialty paper products, and distributing those products to retail stores, institutions, and directly to consumers. This supply chain consists of seven steps:

1. Raw material is extracted, or recycled pulp is produced, and sent for initial processing to produce raw paper, pulp, and allied products.
2. Products are transported by truck or rail carload.
3. Printing facilities or specialty paper product manufacturers, such as a cardboard box or cardstock manufacturer, produce finished goods.
4. Finished products are transported by truck or by rail.
5. Goods are processed through a warehouse or distribution center, and shipments are prepared for delivery to customers. The warehouse or distribution center may be owned by the publisher, a wholesaler, or a retailer.
6. Shipments are then distributed via one of the following two routes:
 - A. By truck or rail intermodal to an export distributor or freight forwarder for export by ocean vessel to international customers.
 - B. By truck directly from the distribution center to retail stores, institutional customers, or to fulfill direct-to-consumer orders.
7. Shipments are delivered to international and domestic customers, according to the customers' specifications.



Business Square Footage by Industry Type

Paper and Printed Materials

Legend

Square Feet Occupied

Production

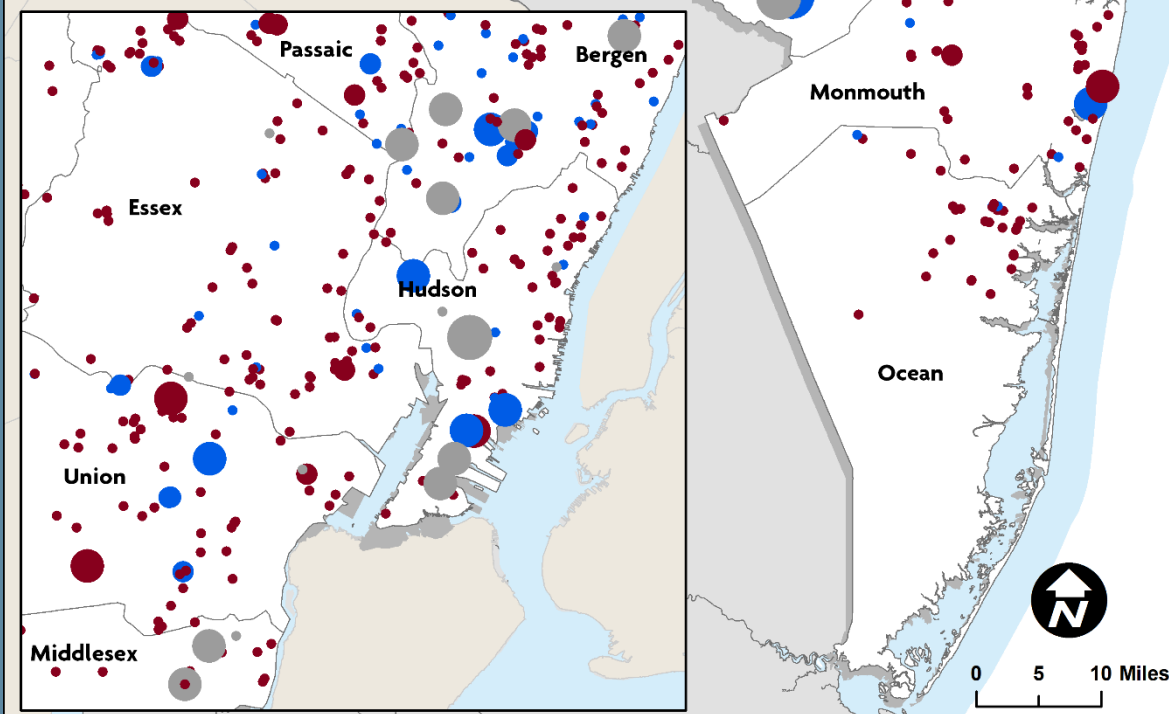
- 0 - 24,999
- 25,000 - 49,999
- 50,000 - 249,999
- 250,000 +

Logistics

- 0 - 24,999
- 25,000 - 49,999
- 50,000 - 249,999
- 250,000 +

Sales

- 0 - 24,999
- 25,000 - 49,999
- 50,000 - 249,999
- 250,000 +



Source: Co-Star, 2014; NJOIT, 2008; Esri, 2014.

Note: "Production" includes Manufacturing, Utilities, Mining & Agriculture, corresponding to Step 1 in the Logistics Summary on Pages 2-3.

"Logistics" includes Wholesale Trade and Warehousing, corresponding to Steps 2-6 in the Logistics Summary on Pages 2-3.

"Sales" includes Retail, Health Care, and Professional Services, corresponding to Step 7 in the Logistics Summary on Pages 2-3.

BUSINESS LOCATIONS SUMMARY

The map on the previous page illustrates the locations of facilities that ship, handle, or receive commodities in this bundle, including:

- Production facilities such as manufacturing businesses where goods are produced, and correspond to Step 1 in the logistics summary chart on pages 2 and 3.
- Logistics facilities, including warehousing and transportation facilities through which goods are distributed, and correspond to steps 2 through 4 on the logistics summary chart.
- Sales, represented in Step 5 on the logistics summary chart, including retail, services, and institutional establishments where goods are sold.

The largest facilities are clustered near major roadways (I-95, I-287, I-80, NJ 17, NJ 208, NJ 35), reflecting the supply chains' reliance on trucks for the transport of shipments throughout the supply chain, and to make connections to rail and marine terminals.

KEY INDUSTRY TRENDS

As described below, some segments of this industry are projected to grow, while others decline, which may change the composition of this bundle in the future:

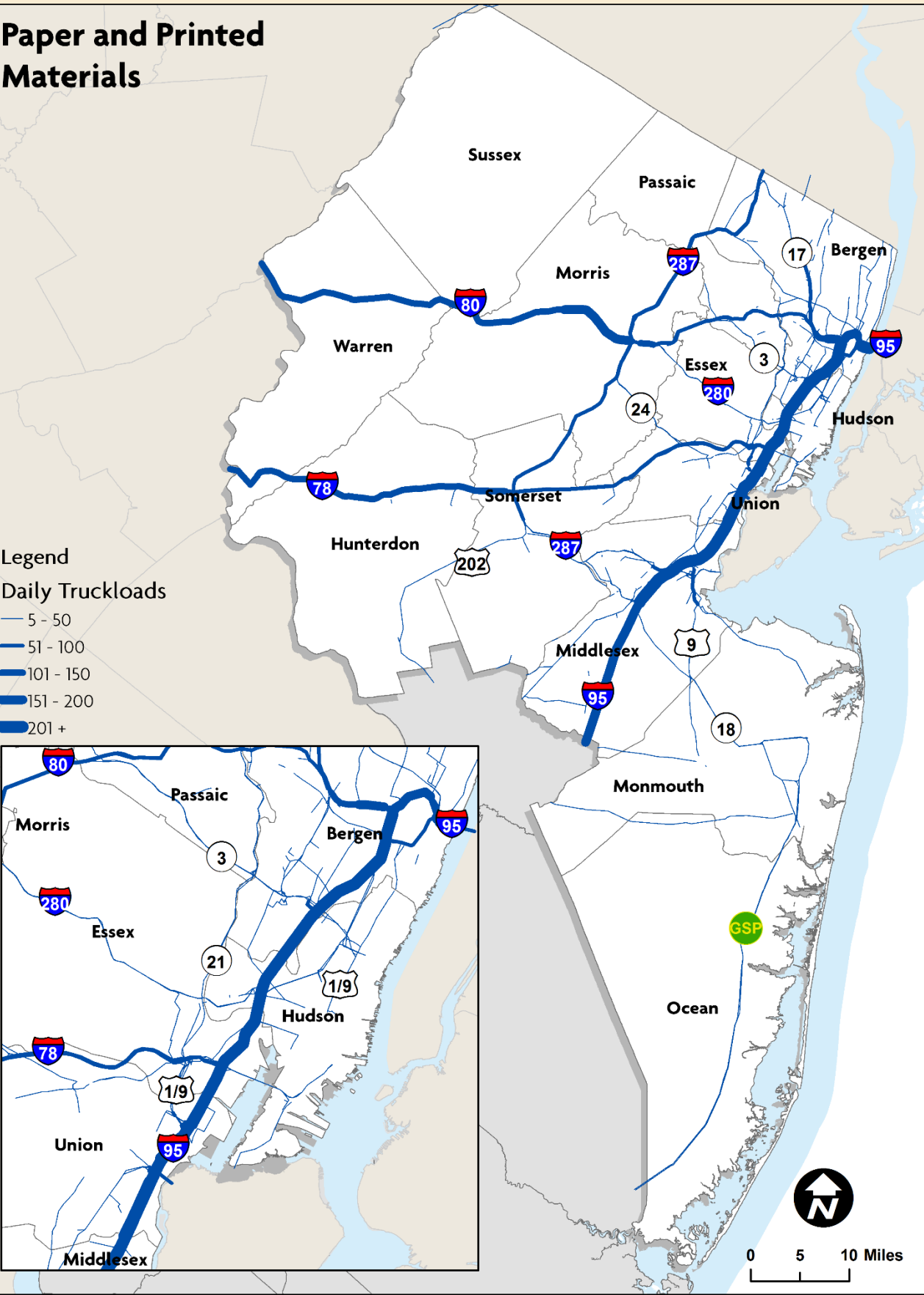
- Demand for paper products such as household goods, food containers, etc., is growing globally.
- Packaging and label printing are growing, especially as e-commerce continues to grow robustly.
- Printed newspapers continue to decline in favor of online versions and social networks.
- The printing industry is shifting from fulfillment of high-volume orders on revolving contract cycles to greater numbers of short-run "print-on-demand" orders in response to changing demand and accelerating update cycles for many publications, such as educational textbooks.
- In an effort to preserve or augment consumer demand for printed editions of books and periodicals, many publishers are finding ways to add value to printed editions.

Examples of Printed Goods Manufacturing Processes, and a Major Printing Facility in Jersey City, Hudson County



Highway Network Utilization, 2010

Paper and Printed Materials



Source: NJTPA Freight Forecasting Tool, 2012; NJOIT, 2008; Esri, 2014.

HIGHWAY NETWORK FLOWS OF PAPER AND PRINTED MATERIAL

The map to the left shows the volume of truckloads of paper and printed materials traveling on highway segments in the NJTPA region every day.

The portion of the New Jersey Turnpike (Interstate 95) between Exit 9 in Middlesex County and Exit 18 in Bergen County carries the greatest volume of trucks. More than 200 truckloads of paper and printed materials are transported there daily. More than 150 trucks carrying paper and printed materials move on portions of Interstate 80 between Interstate 287 and Route 15 in Morris County and on the NJ Turnpike/Interstate 95 south of Exit 9 and north of Exit 18. Portions of Interstate 80 west of Route 15 and in the vicinity of Hackensack in Bergen County, and Interstate 78 west of Interstate 287 carry 100-150 trucks hauling paper and printed materials daily.

COMMODITY FLOW SUMMARY

Collectively, 24 million tons of paper and printed materials worth \$69 billion moved into, out of, through, or within the NJTPA region in 2010. By 2040, nearly 34 million tons worth \$98 billion will move in the region. These projections represent 40 percent growth by tons and 41 percent growth by value.

Paper and printed materials represented 3.6 percent of the goods moved in the region by weight and 3.7 percent by value in 2010. These shares are expected to remain nearly constant through 2040.

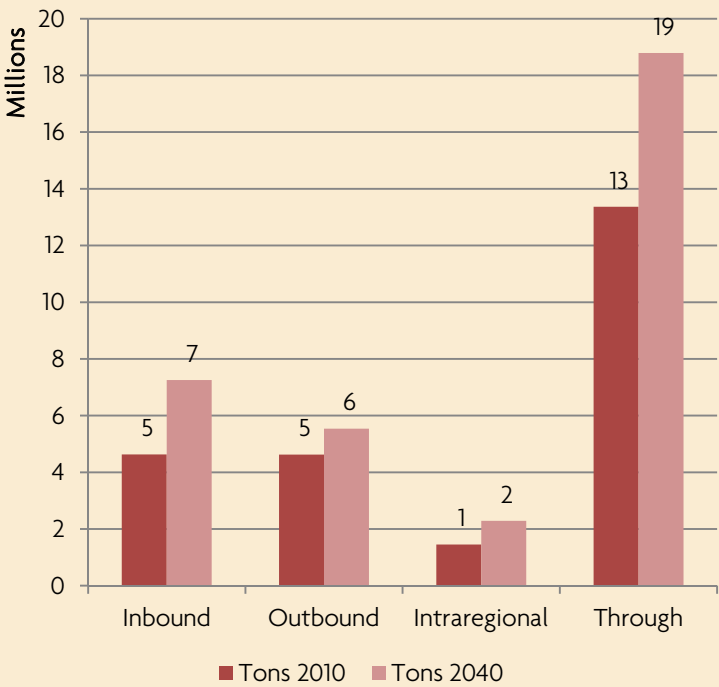
Paper; newspapers; fiber, paper, or pulpboard; containers or boxes made from paper; and miscellaneous printed matter are the top five commodities within this bundle that originate and/or terminate in the region. Together they represent 30 percent of all goods in this bundle, as the table below shows.

Commodities in the Paper and Printed Material Bundle

STCC4	Commodity	Tons (thousands)	Value (millions)	STCC4	Commodity	Tons (thousands)	Value (millions)
2621	Paper	3,058	\$4,818	2771	Greeting Cards, Seals, Etc.	83	\$666
2711	Newspapers	1,747	\$2,512	2791	Service Industry For Print Trades	62	\$1,057
2631	Fiber, Paper or Pulpboard	1,035	\$686	2650	Containers or Boxes, Paper	59	\$5
2651	Containers or Boxes, Paper	952	\$1,532	2761	Manifold Business Forms	46	\$201
2741	Miscellaneous Printed Matter	588	\$2,801	2655	Fibre Cans, Drums or Tubes	36	\$56
2721	Periodicals	551	\$2,723	2630	Fiber, Paper or Pulpboard	17	\$5
2643	Paper Bags	397	\$1,016	Converted Paper or Paperboard			
2644	Wallpaper	394	\$509	2640	Products	11	\$13
Miscellaneous Converted				2620	Paper	10	\$14
2649	Paper Products	329	\$877	2740	Miscellaneous Printed Matter	3	\$11
2661	Paper or Building Board	217	\$159	2730	Books	2	\$5
Die-cut Paper or Paperboard				2610	Pulp or Pulp Mill Products	1	\$2
2645	Products	187	\$187	2770	Greeting Cards, Seals, Etc.	<1	<\$1
2731	Books	170	\$1,981	2780	Blankbook, Loose Leaf Binder	<1	<\$1
2642	Envelopes	156	\$417	2710	Newspapers	<1	\$2
2647	Sanitary Paper Products	136	\$397	2660	Paper or Building Board	<1	\$1
2611	Pulp or Pulp Mill Products	132	\$176	2790	Service Industry For Print Trades	<1	<\$1
2654	Sanitary Food Containers	124	\$186	2760	Manifold Business Forms	<1	<\$1
2646	Pressed or Molded Pulp Goods	105	\$266				
2781	Blankbook, Loose Leaf Binder	95	\$333				

Source: NJTPA Freight Forecasting Tool, 2012
Note: "STCC4" represents the four-digit Standard Transportation Commodity Code (STCC)

Domestic Tons by Direction, 2010 and 2040



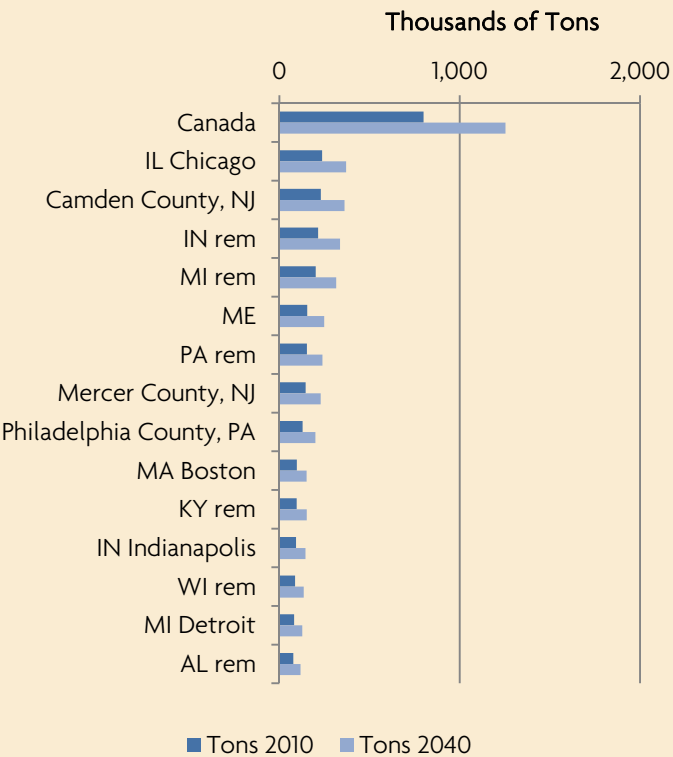
Source: NJTPA Freight Forecasting Tool, 2012

About 13 million tons (54 percent) of the paper and printed materials moving in the NJTPA region are moving through the region, between origins and destinations located in other parts of the U.S. About 5 million tons (21 percent) moved into the region from elsewhere, and a similar share moved outbound from the NJTPA region to other parts of the U.S.

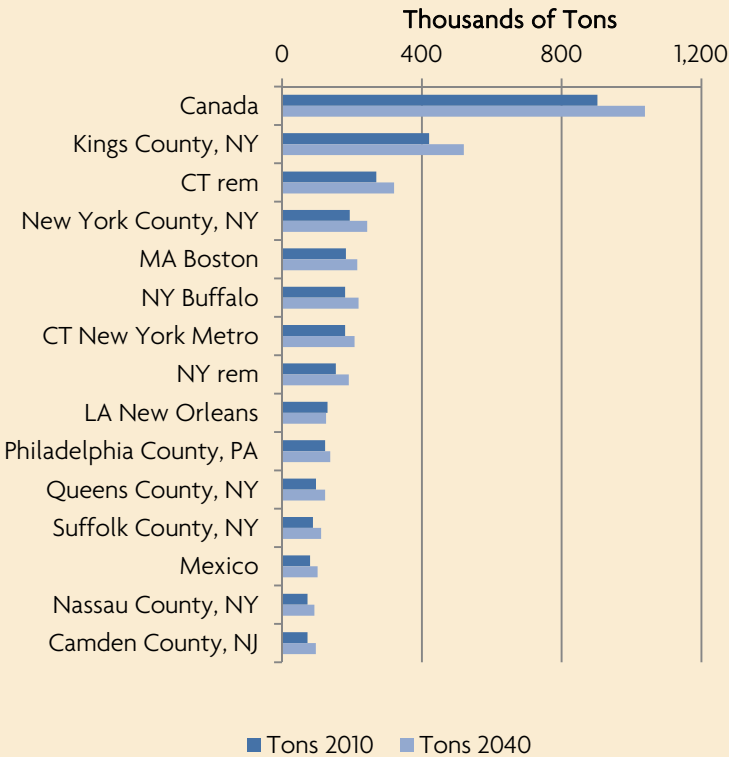
About 60 percent of the paper and printed materials imported to the NJTPA region originate in one of the locations shown in the graph to the right. About 800,000 tons come from Canada. Among the top origins, flows from Maine are expected to grow fastest (61 percent) and flows from Alabama are expected to grow slowest (57 percent) through 2040.

The locations shown in the far-right graph are the destinations of 68 percent of the paper and printed material that leave the NJTPA region. About 900,000 tons are destined for Canada, and more than 400,000 tons are destined for Kings County, NY (Brooklyn). Among the top destinations, flows to Camden County are expected to grow fastest (33 percent), while flows to the New Orleans region are expected to decline by 3 percent through 2040.

Top Origins of Inbound Paper and Printed Materials (Left) and Top Destinations of Outbound Paper and Printed Materials (Right), 2010 and 2040



Source: NJTPA Freight Forecasting Tool, 2012
Note: “rem” stands for “remainder,” which refers to the portions of a state outside major metropolitan regions.



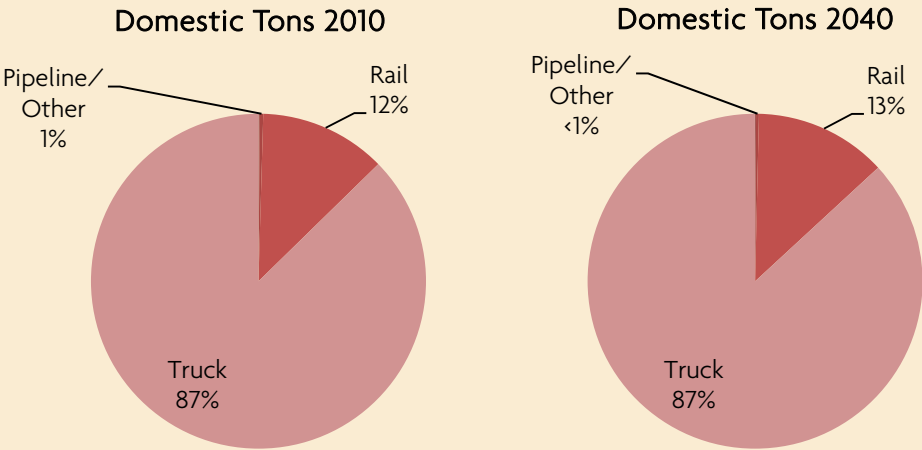
Source: NJTPA Freight Forecasting Tool, 2012
Note: “rem” stands for “remainder,” which refers to the portions of a state outside major metropolitan regions.

Nearly All of the Paper and Printed Materials in the Region Travel by Truck or Rail



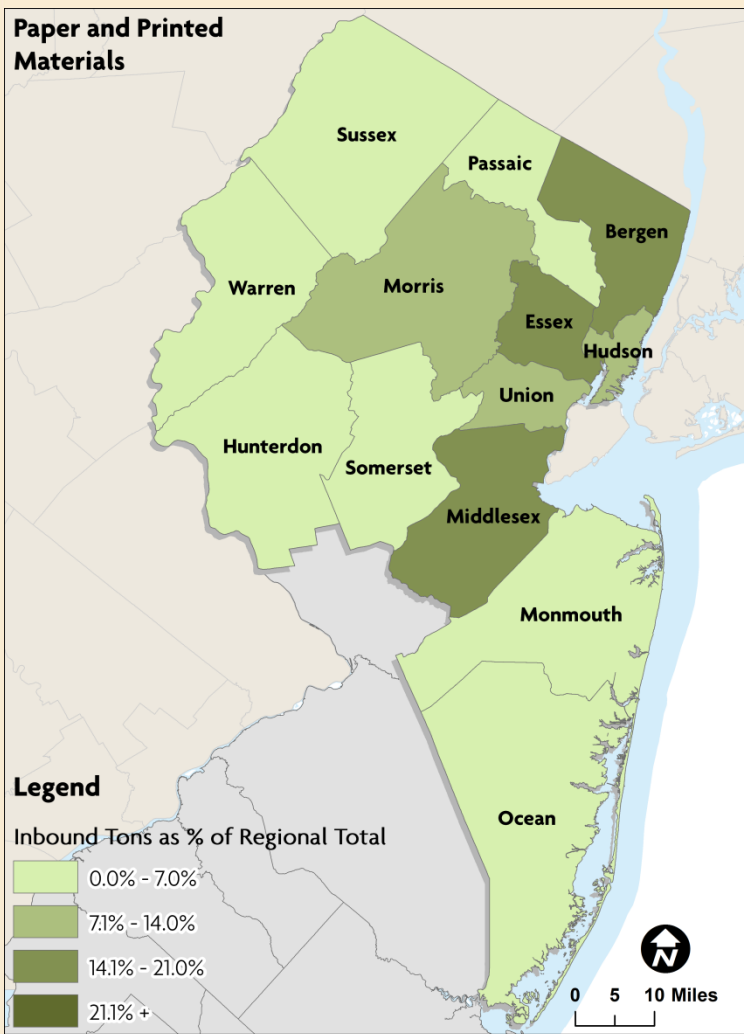
Mode Splits, 2010 and 2040

In 2010, about 87 percent of the paper and printed materials moving in the NJTPA region traveled by truck. Rail carried about 12 percent of goods in this commodity bundle. Pipeline/other and multiple modes carried less than 1 percent, and air and domestic water carried no significant volume of goods in this commodity bundle. By 2040, the share of tons moving by each mode is expected to remain similar.



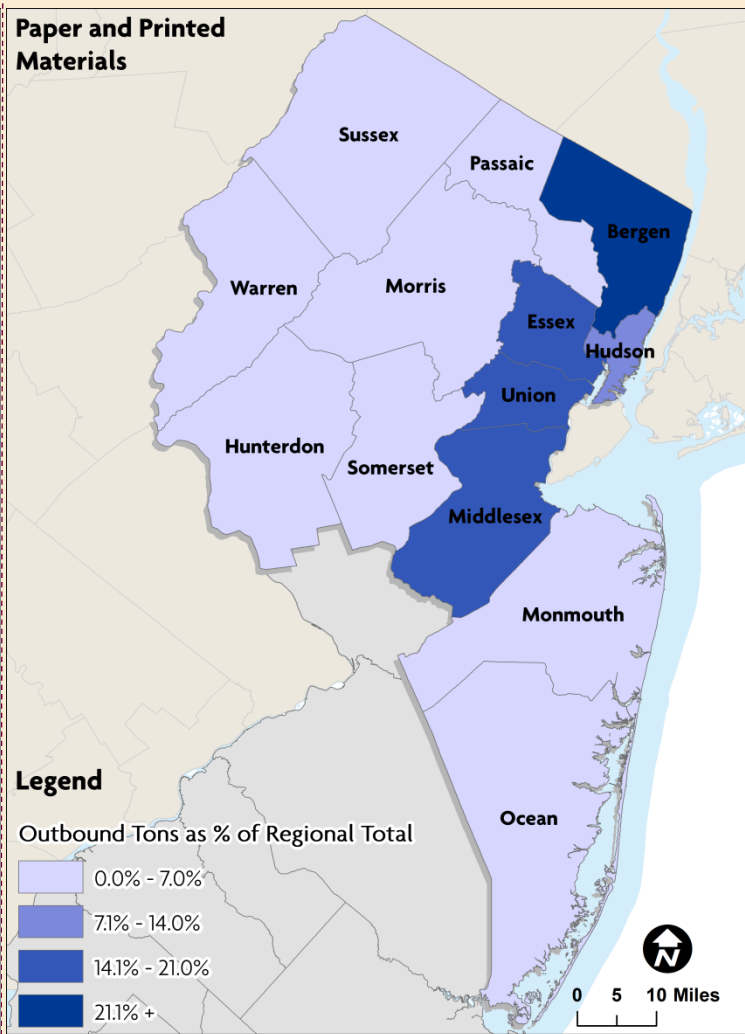
Source: NJTPA Freight Forecasting Tool, 2012

Inbound Domestic Tons by County, 2010



Source: NJTPA Freight Forecasting Tool, 2012; NJOIT, 2008; Esri, 2014.

Outbound Domestic Tons by County, 2010



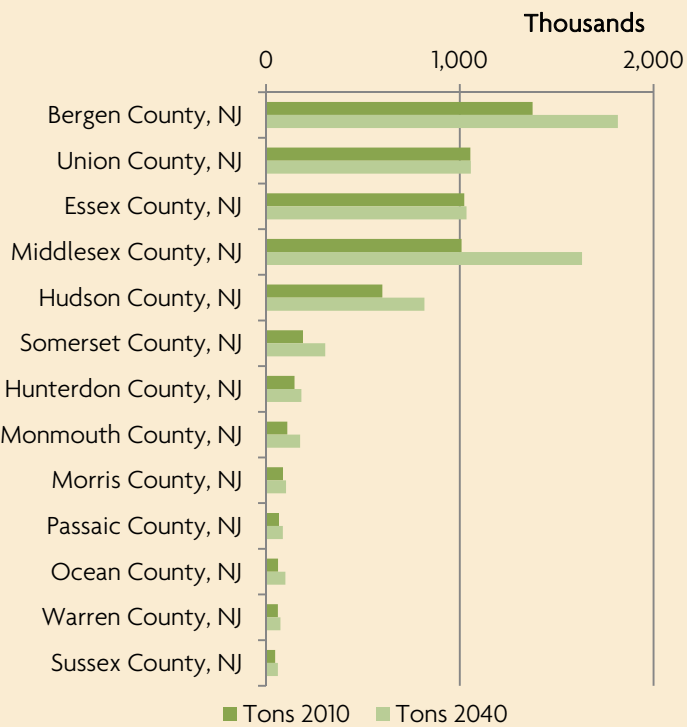
Source: NJTPA Freight Forecasting Tool, 2012; NJOIT, 2008; Esri, 2014.

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

Bergen County is the top destination for tons of paper and printed material that move into the NJTPA region. Inbound paper and printed materials are distributed to businesses, homes, and institutions throughout each of the counties in the region. Bergen, Essex, and Middlesex counties together receive about half of the region's inbound paper and printed materials. Projected growth rates in inbound tonnage between 2010 and 2040 range from 50 percent (Essex, Union, Morris, Hunterdon and Sussex counties) to 65 percent (Middlesex County).

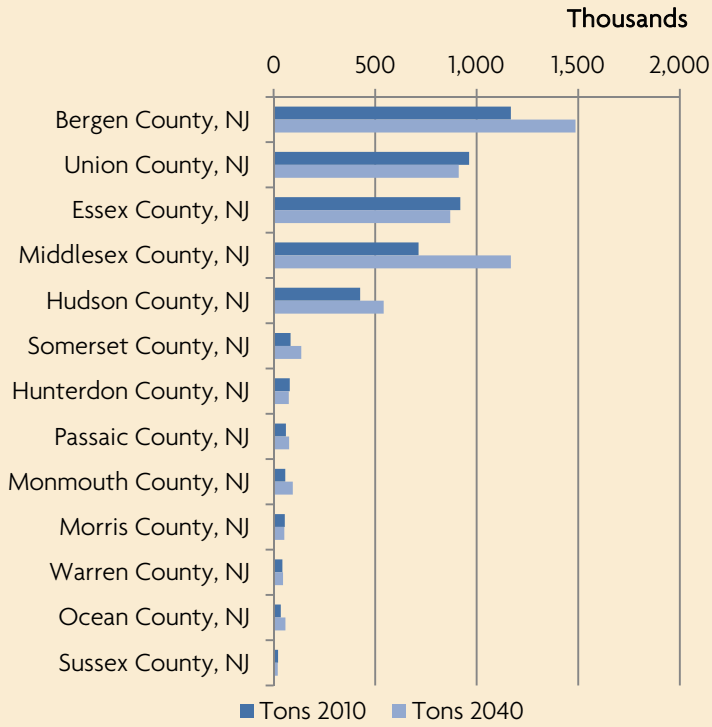
Shipments of outbound paper and printed materials originate at wholesalers and distributors concentrated primarily in five of the region's counties, as shown in the graph to the upper right. Ninety-one percent of all outbound paper and printed materials originate in one of those top five counties. Projected growth rates in outbound tonnage between 2010 and 2040 range from 0.2 percent (Union County) to 62 percent (Middlesex County).

Inbound Domestic Tons by County, 2010 and 2040



Source: NJTPA Freight Forecasting Tool, 2012

Outbound Domestic Tons by County, 2010 and 2040



Source: NJTPA Freight Forecasting Tool, 2012

References

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

- National Paper Trade Association, www.gonpta.com.
- Association of American Publishers, www.publishers.org.
- Newspaper Association of America, www.naa.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 6.6 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, 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

The NJTPA regional Freight Commodity Profiles study enhanced the NJTPA’s freight modeling tools, analyzed, and identified gaps in existing freight and industry data, collected data and information to fill those gaps, and prepared summary data products, including a set of Regional Commodity Profile documents. In addition to supporting freight planning, these profiles will be used in stakeholder outreach and education. Key work tasks included:

- Enhancement of the NJTPA’s Freight Forecasting Tool to produce commodity-specific truck trip tables.
- Identification of “Top 11 Regional Commodity Groups” based upon economic and commodity flow data.
- Collection and analysis of data on each of the commodity groups, including: direction of movement; locations of production, shipping, handling, and receiving centers; modes and routes used to transport the commodities.
- Production of “Regional Commodity Profile” documents for each of the Top 11 Regional Commodity Groups, which summarize the data analysis findings using charts, graphs, maps, and descriptive text.

ABOUT THIS PROFILE

The NJTPA developed a Freight Forecasting Tool (FFT) in 2012, which generates alternative domestic freight forecasts to support transportation, land use, and economic development decisions. The FFT was built by Cambridge Systematics, Inc., using commodity flow data from IHS Global Insight and econometric forecasts from the R/ECON model, produced and managed by the Center for Urban Policy Research at Rutgers University. Cambridge Systematics and Parsons Brinckerhoff enhanced the FFT in 2015 to produce commodity group-specific forecast tables.

The NJTPA conducted research on commodity flows and logistics chains for 11 key “commodity bundles,” that move in the North Jersey region, including warehouse and terminal moves, food, apparel, paper and printed materials, waste, construction materials, machinery and transportation equipment, other durable goods, pharmaceuticals, chemicals, and hazardous materials. This profile offers an overview of the components, freight demand, and logistics chain for paper and printed materials moving into, out of, through, and within the North Jersey region.

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