Technical Memorandum

# FORECASTING FUTURE FREIGHT GROWTH

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## 1.1    Purpose

The Coastal Region Metropolitan Planning Organization (CORE MPO) Freight Transportation Plan will provide a road map for enhancing freight mobility within and outside of the study area (Bryan, Chatham and Effingham Counties) in an effort to improve the study area's economic competitiveness. It is critical to understand the freight movements coming into, out of, within, and through the study area. The lack of locally available data makes it necessary to consider other data sources such as the Freight Analysis Framework (FAF). However, the FAF is not reflective of movements at the county level. In FAF's existing format, the study area is part of an analysis zone consisting of Bryan, Chatham, Effingham, Liberty, and Long Counties. To draw meaningful conclusions using the FAF, it is necessary to divide the Savannah FAF analysis zone into freight districts by disaggregating the FAF database. These districts are a collection of Traffic Analysis Zones (TAZs) from the CORE MPO travel demand model. This technical memorandum details the disaggregation process.

## 1.2    Data Sources

### 1.2.1    FAF

The FAF is a Federal Highway Administration (FHWA) database to help users understand how the movement of freight affects the transportation system and where problems with the transportation system could affect the flow of freight. FAF Version 3 (FAF$_3$) provides freight flow information for tonnage, value, and domestic ton-miles by region of origin and destination, commodity type, and mode for the baseline year of 2007, for 2011, and for five-year increments projected through 2040. The FAF analysis zones consist of 123 domestic areas that are divided into metro regions, state remainders and entire states. Metro regions consist of 74 metropolitan areas. The state remainders represent each of the state's territory outside of the metropolitan areas. Entire states are the 16 regions that do not have a metropolitan region. **Figure 1-1** shows the analysis zones used in the FAF$_3$.

The FAF$_3$ has a number of improvements to the commodity flow matrix over previous versions including:

- A roughly doubling of the number of U.S. shipping establishments sampled as part of the 2007 U.S. Commodity Flow Survey (CFS)—from approximately 50,000 establishments in 2002 to approximately 100,000 establishments surveyed in 2007;

- The use of Port Import/Export Reporting Service (PIERS) data[1] to support improved allocations of imports and exports to FAF domestic zones of freight origins (for U.S. exports) and destinations (for U.S. imports);

- Incorporation of additional federal datasets within an improved FAF3 log-linear modeling/iterative proportional fitting algorithm, as well as the development of estimates of flows for commodities that were out-of-scope for the 2007 CFS;

- Greater use of U.S. inter-industry input-output coefficients in estimating commodity flows that were out-of-scope for the 2007 CFS; and

- The FAF3 provides an origin-destination (O-D) specific treatment of natural gas products, which were evaluated only at the level of national or broad regional activity totals in the FAF2.

**Figure 1-1: Analysis Zones Used in FAF3**



Source: Freight Analysis Framework, *http://faf.ornl.gov/fafweb/Default.aspx*

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[1] https://www.piers.com/home
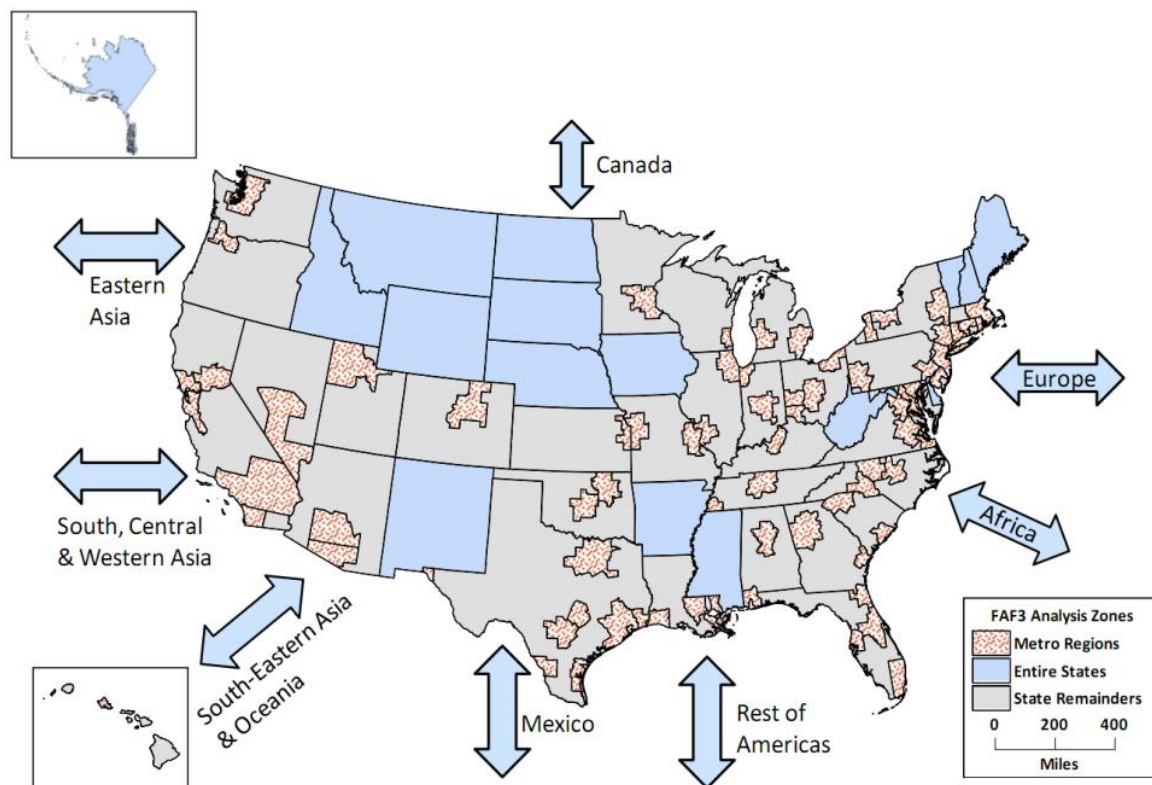
**Figure 1-2** shows the FAF₃ freight flow matrix construction process. The matrix construction begins with the data from the 2007 CFS, and uses the same geography (123 FAF domestic zones) and commodity (43 Standard Classification of Transported Goods (SCTG)) definitions as the CFS but uses a modified version of the CFS modal definitions.

### Figure 1-2: Overview of the FAF₃ Freight Flow Matrix Construction Process



*Source: Freight Analysis Framework, http://faf.ornl.gov/fafweb/Default.aspx*
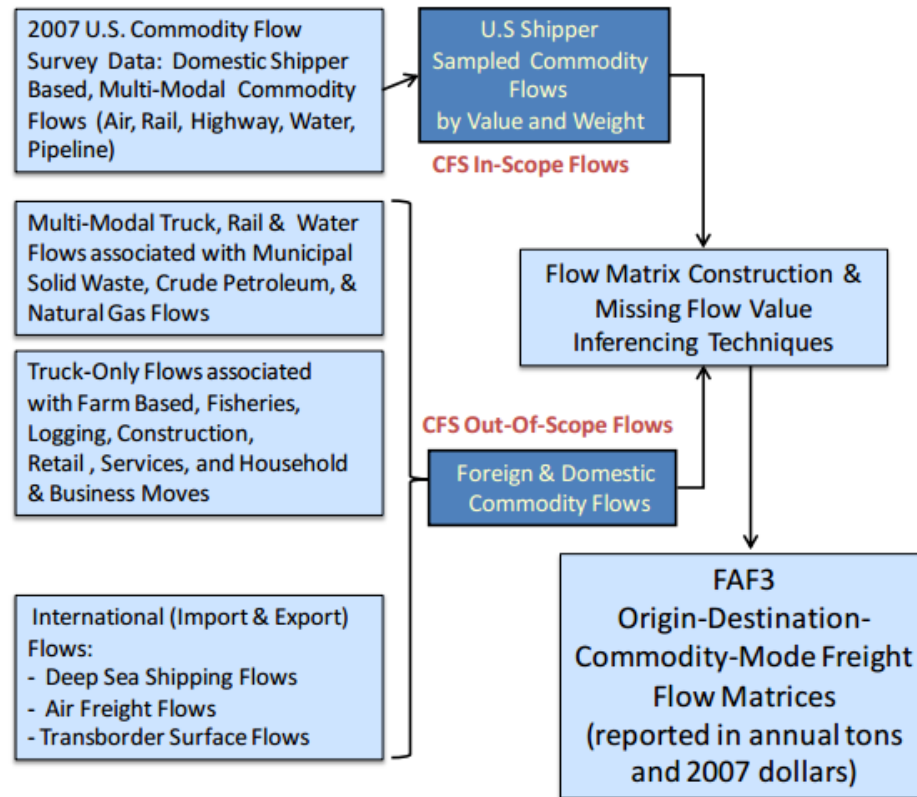
## 1.2.2    LEHD

The Longitudinal Employer Household Dynamics (LEHD) database is the result of a partnership between the U.S. Census Bureau and the States to provide high quality local labor market information and to improve the Census Bureau's economic and demographic data programs.

The LEHD data is based on census data, government surveys, and different administrative sources. These administrative sources include Unemployment Insurance (UI) earnings data and Quarterly Census of Employment and Wages (QCEW) data.

The point data in the LEHD summarizes employment for specific industry types by race, gender, and age; however, it is only available at the census block and the 2 digit North American Incorporation Census State (NAICS) code level. The intent of the file is to reflect the high employment locations for

specific industry types in the area. The LEHD data will provide information for both the economic analysis and the validation of the existing and forecasted FAF₃ data.

Produced by the U.S. Census Bureau, **Figure 1-3** shows the combined level of activity of population and employment in the Savannah Metropolitan Area. For instance, the darker blue color would indicate a high concentration of employment and/or households in a particular area.

**Figure 1-3: Level of Population and Employment Concentration in the Study Area**
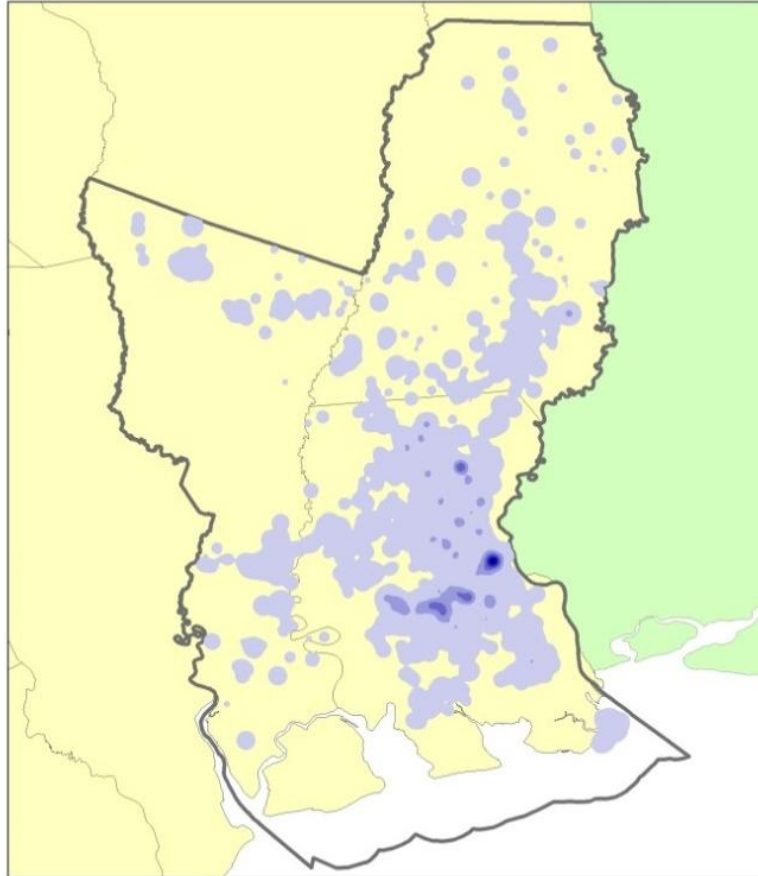


*Source: LEHD, U.S. Census Bureau*

This section provides a description of the FAF disaggregation methodology, which utilizes the relationship between employment by industry and the commodities which those industries produce and consume. While the FAF$_3$ data is available only at regional level, the employment data by industry is more readily available at smaller levels of geography.

The U.S. Census Bureau provides County Business Patterns (CBP), a publicly available database that provides employment data by county by NAICS industry. Commercial and state data sources may also provide employment by NAICS or comparable industry classifications at smaller levels of geography.

The employment data by industry would be aggregated and subsequently used in mathematical equations to ultimately estimate the commodity flow (i.e., freight tonnage) to and from a FAF$_3$ analysis zone and the units of smaller geography in that FAF$_3$ analysis zone. The equation represents a relationship between the FAF$_3$ commodity shipments to and from a FAF$_3$ analysis zone and the employment by industry in that FAF$_3$ analysis zone.

Essentially, the share of the smaller units of geography tonnage to the regional tonnage is used to disaggregate the freight flows from FAF$_3$ analysis zones to the smaller units of geography within those FAF$_3$ analysis zones. Therefore, the method described herein is suitable for disaggregating the FAF$_3$ regional flows to derive flows to and from the counties and TAZs in the Savannah Combined Statistical Area (CSA)[2]. The Savannah FAF$_3$ analysis zone (Savannah FAF Region in short) covers the same geographic area as the Savannah CSA - Bryan, Chatham, Effingham, Liberty, and Long Counties.

The FAF$_3$ database covers all 50 states including non-metropolitan areas. The FAF$_3$ contains freight flow information for 2011 and for forecasts at five-year intervals from 2010 to 2040 using 2007 as the base year. The base year for the purposes of this analysis is 2011.

It must be noted that the best way to understand freight flows is to collect local information via establishment surveys and other primary data collection methods, and the disaggregation methodology only provides a substitute for local data. Many researchers have noted that there may be weak relationships between commodity production/consumption and the economic indicator data, which are often used in the disaggregation procedure. For example, industry-specific employment is often used as an indicator variable for consumption or production within an industry. Outcomes have

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[2] A Combined Statistical Area (CSA) is a grouping of adjacent metropolitan and/or micropolitan statistical areas (MSAs). The United States Office of Management and Budget (OMB) defines combined statistical areas based on social and economic ties measured by commuting patterns between adjacent MSAs. The areas that combine retain their own designations as metropolitan or micropolitan statistical areas within the larger combined statistical area. The primary distinguishing factor between a CSA and an MSA is that the social and economic ties between the individual MSAs within a CSA are at lower levels than between the counties within an MSA. The Savannah CSA includes all of Bryan, Chatham, and Effingham Counties, along with small portions of Liberty and Long Counties. This report will illustrate and discuss the area in Section 2.1.1 and Figure 2.3.

found that for certain commodities there is not a strong correlation between the quantities of goods produced in an industry and the number of people employed in that industry.

## 2.1 Disaggregation Inputs

The FAF disaggregation is a relationship between employment and commodities. The primary steps of disaggregation include linking freight activities with economic activities, the actual disaggregation of the FAF$_3$ database to the district level, and the estimation of average shipment distance by mode on the multimodal network systems. The following sections describe the primary inputs to the disaggregation process.

### 2.1.1 Zonal Data

As previously mentioned, the geographic portion of the FAF disaggregation used TAZs from the travel demand model. The TAZs have employment data as part of the socio economic attributes of the model. These TAZs were aggregated into common areas, which were referred to as freight districts. The freight districts have common industry types and employment characteristics, as well as some geographic boundaries. The freight districts were limited by political boundaries, major roadways such as interstates, or physical features such as rivers. Clustering smaller TAZs would increase the reliability of the disaggregation and its eventual results.

The CORE MPO travel demand model has 796 internal TAZs populated by the 2010 base year socioeconomic data. The model area includes Chatham, Effingham, and Bryan Counties. **Figure 2-1** illustrates the model TAZs.

After aggregating the TAZs with input from the CORE MPO staff, the FAF disaggregation will have 48 freight districts in the study area. **Figure 2-2** illustrates these freight districts. However, the federal CSA Boundary for Savannah (the same as the Savannah FAF Region) contains all of Bryan, Chatham, and Effingham Counties, along with small portions of Liberty and Long Counties. **Figure 2-3** shows the freight districts of the study area as well as the portions of Long and Liberty Counties in the Savannah CSA. These districts—the 48 freight districts for the three-county study area and the two additional counties—will be used in the analysis as reflected in Section 3.

## Figure 2-1: CORE MPO Travel Demand Model Traffic Analysis Zones
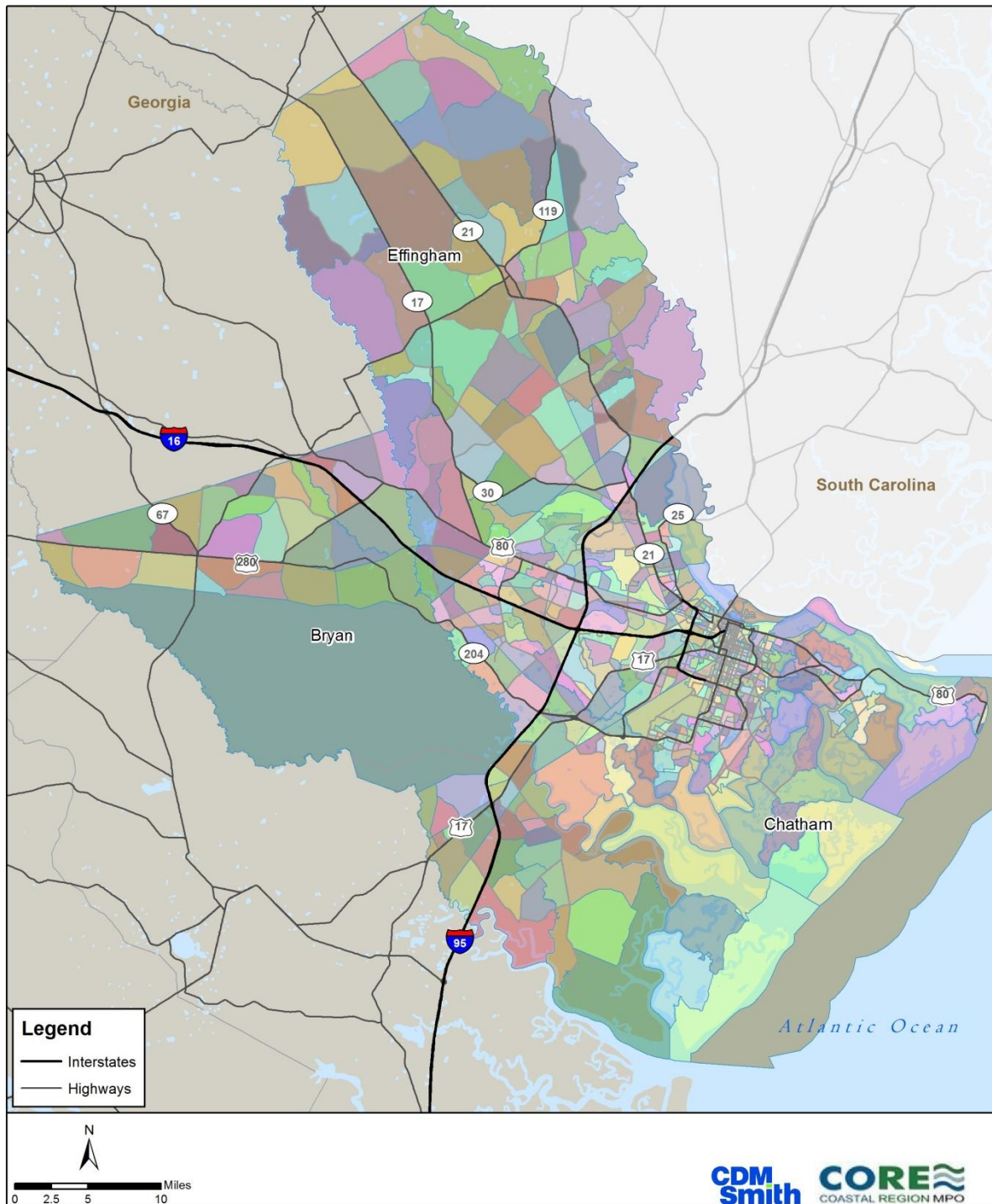


*Source: CORE MPO*

**Figure 2-2: Freight Districts of the Study Area**
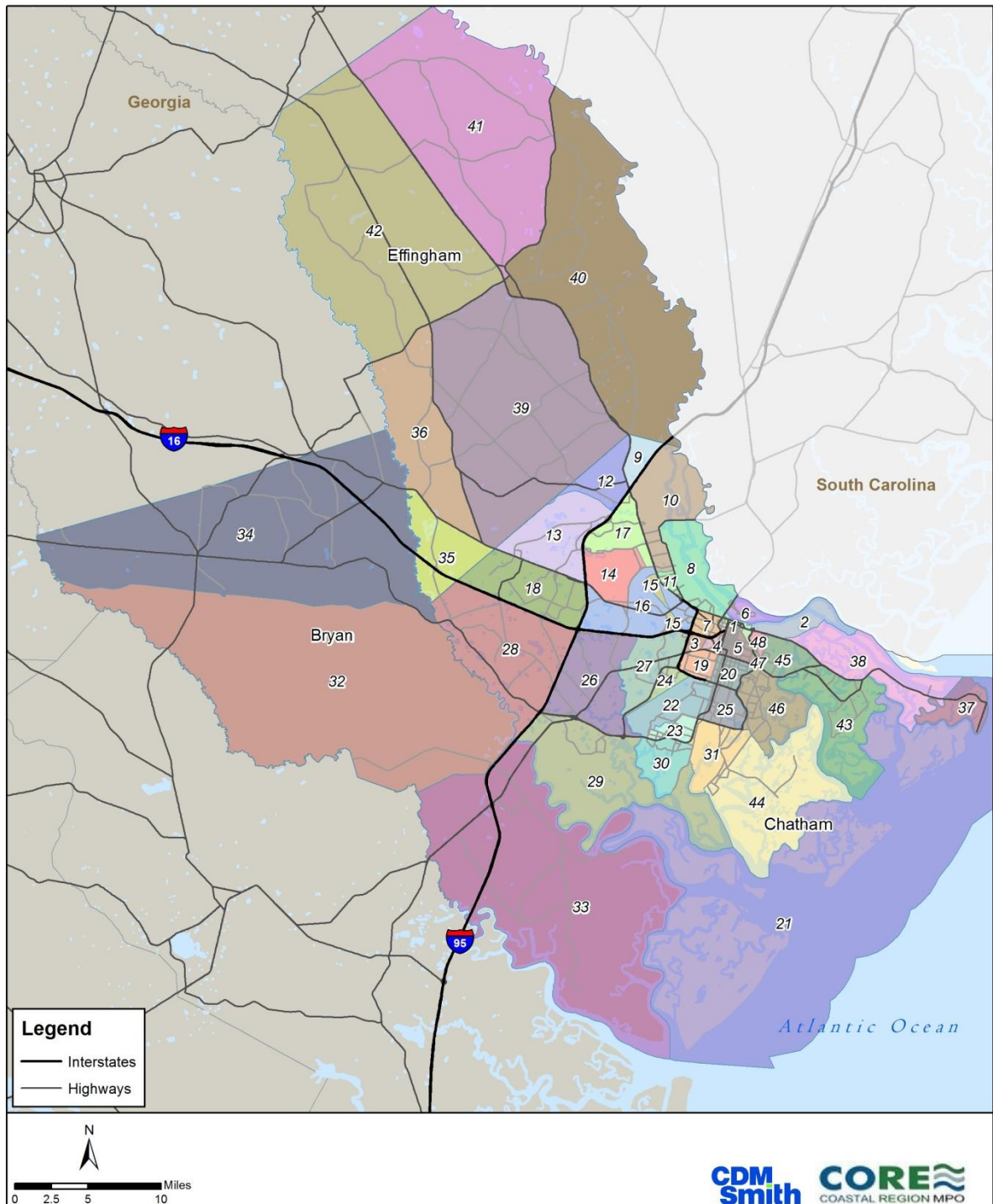


Source: CDM Smith

**Figure 2-3: FAF Disaggregated CSA Analysis Zone**



*Source: CDM Smith*
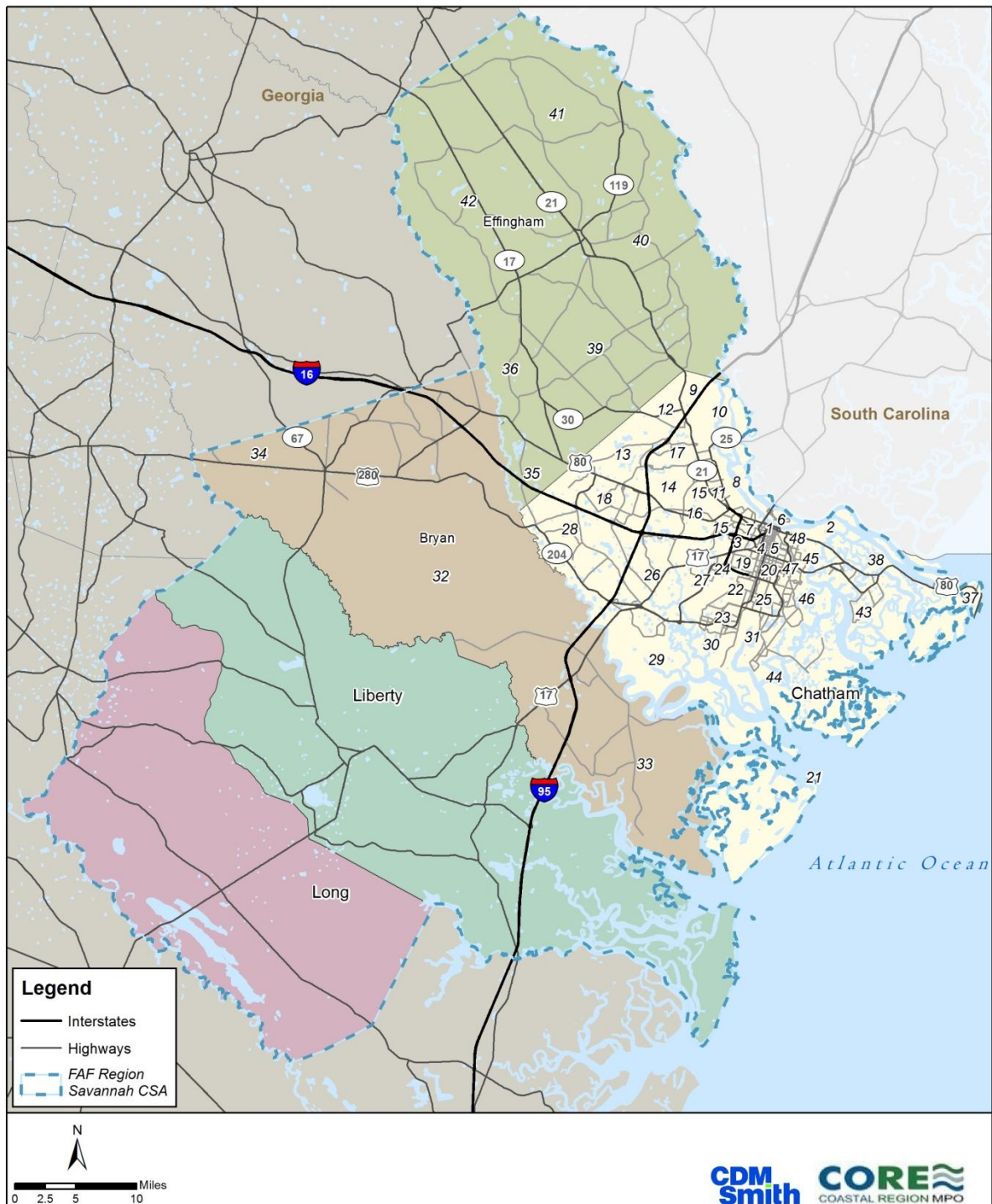
## 2.1.2　FAF Version 3 Data

The FAF integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. With data from the 2007 CFS and additional sources, the FAF$_3$ provides estimates for tonnage, value, and domestic ton-miles by region of origin and destination, commodity type, and mode for 2007, 2011, and forecasts through 2040.

One of the FAF$_3$ metro regions is Savannah CSA[3] (Savannah FAF Region in short), which will be used in the disaggregation process and relate to all other regions throughout the nation. The FAF$_3$ data currently shows a heavy truck influence in the Savannah FAF Region for 2011. The imports from 2011 data included coal not-elsewhere-classified (n.e.c.), crude petroleum and fuel oils. In contrast, exports included nonmetallic minerals, newsprint/paper and meat/seafood. Truck transportation was the heaviest used mode for both imports and exports. **Table 2-1** and **Table 2-2** show the kilotons (KTons) and millions of dollars (in the 2007 base year) for each domestic mode as the freight enters, exits, and stays within the Savannah FAF Region for the various years. **Table 2-3** shows the percent change between the previous two tables by mode for tonnage and value.

### Table 2-1: 2011 Mode Values

| 2011 | Into Savannah FAF Region | | Out Of Savannah FAF Region | | Internal | |
|---|---|---|---|---|---|---|
| | KTons | $M | KTons | $M | KTons | $M |
| Truck | 37,663.7 | 38,794.5 | 42,243.3 | 64,684.1 | 16,691.6 | 15,878.6 |
| Rail | 7,731.6 | 3,110.3 | 2,926.4 | 2,025.4 | 646.2 | 289.4 |
| Water | 3,008.8 | 2,396.5 | 7.0 | 4.0 | 5.2 | 0.7 |
| Air | 2.2 | 489.9 | 3.8 | 1,090.7 | - | 2.0 |
| Multiple modes & other | 15,504.8 | 15,313.3 | 11,421.9 | 12,883.4 | 9,016.3 | 4,478.1 |

*Source: Freight Analysis Framework, http://faf.ornl.gov/fafweb/Default.aspx*

### Table 2-2: 2040 Mode Values

| 2040 | Into Savannah FAF Region | | Out Of Savannah FAF Region | | Internal | |
|---|---|---|---|---|---|---|
| | KTons | $M | KTons | $M | KTons | $M |
| Truck | 85,123.1 | 103,822.2 | 89,371.6 | 170,871.0 | 31,256.2 | 36,468.0 |
| Rail | 11,516.8 | 6,042.2 | 5,866.8 | 5,866.5 | 1,426.5 | 613.3 |
| Water | 2,354.5 | 1,868.1 | 20.8 | 4.5 | 15.4 | 2.2 |
| Air | 6.5 | 1,335.3 | 11.8 | 3,416.7 | 5,054.8 | 5,305.0 |
| Multiple modes & other | 35,883.6 | 46,514.0 | 26,936.9 | 38,534.2 | 15,679.2 | 6,132.0 |

*Source: Freight Analysis Framework, http://faf.ornl.gov/fafweb/Default.aspx*

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[3] The Savannah CSA Metro Region in FAF$_3$ includes Bryan, Chatham, Effingham, Liberty and Long Counties.

**Table 2-3: Percent Change between 2011 and 2040**

| 3. Mode/Pct Change | Into Savannah FAF Region | | Out Of Savannah FAF Region | | Internal | |
|---|---|---|---|---|---|---|
| | KTons | $M | KTons | $M | KTons | $M |
| Truck | 126.0% | 167.6% | 111.6% | 164.2% | 87.3% | 129.7% |
| Rail | 49.0% | 94.3% | 100.5% | 189.6% | 120.8% | 111.9% |
| Water | -21.7% | -22.0% | 197.1% | 12.5% | 196.2% | 214.3% |
| Air | 195.5% | 172.6% | 210.5% | 213.3% | - | - |
| Multiple modes & other | 131.4% | 203.7% | 135.8% | 199.1% | 73.9% | 36.9% |

As will be discussed in more detail within the modal sections, the majority of this tonnage for water and air are international movements coming into the Savannah FAF Region and moving out via other modes once the freight is off loaded domestically. For the purposes of the analysis, these international tons are captured in the truck and rail movements domestically. Domestic movements can be defined as having both origin and destination in the U.S.

### 3.1.1 LEHD and CBP Data

The employment data used in the disaggregation is from the LEHD and the CBP. The LEHD is only available at the census block and the 2 digit NAICS code level. The CBP is available at 3 digit NAICS code level but does not go below the county level. Therefore, given the need to disaggregate the FAF database to the freight district level which is smaller than the county level, it is necessary to obtain the 3 digit NAICS at the FAF district level. To obtain the 3 digit NAICS at the freight district level, this freight study used the following process.

- First, the LEHD workplace characteristics information was aggregated from the census block to the freight district. This step provided 2 digit NAICS employment information at each of the freight district.

- The next step was to obtain the distribution of 3 digit NAICS employment in each 2 digit NAICS employment category for the counties in the study area. As a result, a listing of the distribution of 3 digit NAICS by 2 digit NAICS was obtained for each county.

- The distribution from the previous step was applied to each freight district 2 digit NAICS to obtain 3 digit NAICS employment information at each freight district. The resulting dataset was then used for disaggregation.

### 3.1.2 Other Data Sources

The CBP does not provide the complete information for agricultural employment. To provide comprehensive information, the U.S. Department of Agriculture (USDA) data was used as the source of agricultural employment. For coal consumption, coal powered electric plants were used as the source for obtaining the megawatt-hours (MWh) of electricity generated from coal. This information was obtained from the Energy Information Agency (EIA) of the U.S. Department of Energy (DOE).

## 3.2    Disaggregation Procedure

The first step of disaggregation is to determine employment at the three digit NAICS for each FAF freight district, and the process to do so is detailed in **Section 2.1.3**. The next step is to build a bridge between the employment information and the commodities in the $FAF_3$ report using the two digit SCTG and three digit NAICS. These relationships identify industries by disaggregating the origin and destination of freight shipments. The methodology develops regression equations for the 2011 $FAF_3$ SCTG commodity flows against NAICS employment for the 123 $FAF_3$ analysis zones.

These regressions guide the development of factors for each commodity for the disaggregation of freight flow productions and attractions. For planning purposes, the grouping of the data into commodities will not be necessary, but more detailed information about SCTG commodity flows at the county level will be needed. The use of the factors developed with the regression equations will ensure that the disaggregation is consistent with observed data.

The share of the origin and destination tonnage by industry for each of the counties within a specific $FAF_3$ analysis zone is applied to the reported $FAF_3$ regional tonnage, to obtain the disaggregated $FAF_3$ origin-destination (O-D) database.

### 3.2.1    Development of Regression Equations

Regression equations were developed for each of the 42 commodity types. The commodity tonnage is the dependent variable. The independent variables include 2011 employment by three digit NAICS, total employment, 2011 population, and 2011 farm acreage and livestock information from the National Agricultural Statistics Service (NASS) database.

The employment by three digit NAICS and total employment were derived from the 2011 CBP data. For a number of equations related to farming, the production and attraction equations fit poorly against farm employment, therefore farm acreage was used in those situations instead. Such a variable was originally derived from NASS database and then acres of farmland by county were aggregated to $FAF_3$ analysis zones.

Linear regressions were developed using the origin tonnages (produced) and destination tonnages (attracted) and the employment by industry in each of the 123 $FAF_3$ analysis zones as the data for the regressions. The linear regressions were calculated using zero intercepts since it is assumed that an analysis zone with zero employment in an industry would not produce/attract any freight in the commodities associated with those industries. The complete 123 zones in $FAF_3$ were chosen because it was felt that the confidence in the relationships would be greater for the 123 data points as opposed to the single data point available for only the Savannah FAF Region. It was assumed that the regressions for each commodity group developed with the national data would be applicable to the Savannah area. Where needed, exceptions are noted. The equations were fitted to the observed annual tonnage for each of the 42 commodity groups. In all of these equations, the sample size is the number of $FAF_3$ analysis zones in the U.S. which is 123. The Make-Use table from the Bureau of Economic Analysis' Input-Output Model was used as guidance in the selection of independent

variables. After testing several variables, a final model was constructed on the basis of statistical significance, and sensible and logical judgment.

For some commodities, it was decided to aggregate them in order to obtain a statistically significant industry category that is realistically involved in the production or attraction of the specific commodity. In addition, each coefficient's statistical significance (t-stat) is also given. The format for reading the equations are as follows:

- Productions (Commodity Group) = Coefficient1*Variable1 + Coefficient2*Variable2 + Coefficient3*Variable3

- Attractions (Commodity Group) = Coefficient1*Variable1 + Coefficient2*Variable2

Most of the production of commodities in a region is a function of the employment in the industry directly associated with that commodity. For example, the production of paper shipments from a region is directly associated with the employment in the paper industry in that region. The attraction industries are different in that they are associated with the industries that consume that commodity. With some exceptions, only those employment categories that were statistically significant at the 95% confidence level was included as independent variables in the regression. In addition to NAICS 2-digit or NAICS 3-digit employment data, NASS data, population and total employment, the following aggregations of employment were also tested as independent variables in the regressions:

- Transportation (NAICS 481 to 499)
- Non-durable Manufacturing (NAICS 321 to 327)
- Durable Manufacturing (NAICS 331 to 339)

The coefficients in the regression equations can be considered to be the annual thousands of tons produced, or consumed, by an employee in that industry. For some commodity groups, the relationship between the production/attraction of freight tonnage and the producing and consuming industries was quite strong. An example of this is the relationship between the origin (production) of nondurable goods tonnage and nondurable manufacturing employment, and the destination (attraction) of nondurable goods tonnage and consumer manufacturing and wholesale industry employment. Another example is that mixed freight is attracted to rail yards, airports (Transportation) and warehouses (Wholesale). Many of these relationships are supported by known relationships between production industries, consumption industries, and commodities as reflected in economic input-output models.

## 3.2.2   Development of Expansion Factors

For use in disaggregating freight in the Savannah FAF Region[4], the production and attraction equations are applied to the region to estimate the thousands of tons that are produced or attracted. The estimates for FAF freight districts are summed to the Savannah FAF Region including counties. The ratio of county production or attraction to $FAF_3$ zone production or attraction is applied to the 123 by 123 zone $FAF_3$ origin-destination database to expand that $FAF_3$ zonal database to a 172 by 172 zone database including the 48 CORE MPO FAF freight districts as individual zones and two partial counties.

The steps to this expansion are detailed below for each commodity group.

- Estimate the annual tonnage of each commodity produced $P_{FDIST}(i)$ or attracted $A_{FDIST}(j)$ for each Freight District (FDIST) using the production and attraction equations;

- Aggregate the FDIST productions $P_{FDIST}(i)$ and attractions $A_{FDIST}(j)$ to the Savannah FAF Region to create $P_{FAF}(i)$ and $A_{FAF}(j)$;

- Expand the $FAF_3$ Region matrix, FAF(k,l), to CORE MPO FDIST matrix, FDIST (i,j), as follows :

  - If both origin i and destination j are in the Savannah FAF Region then
    - FDIST(i,j)=[FAF(k,l)*PFDIST(i)/PFAF(i)* AFDIST(j)/ AFDIST(j)]

  - If origin i is in the Savannah FAF Region but destination l is out of this region, then
    - FDIST(i,l)=[ FAF(k,l)*PFDIST(i)/PFAF(i)]

  - If origin k is out of the Savannah FAF Region but destination j is in this region, then
    - FDIST(k,j)=[ FAF(k,l)*AFDIST(j)/AFAF(j)]

This methodology was applied to the truck and rail modes. With the rail mode, it was assumed that rail terminals are available only at certain FDISTs and not applied region wide. For air and water, since the airport and port are in only one Freight District respectively (14 for air and 8 for water), it was assumed that all air and water movements coming into the Savannah FAF Region come to those freight districts and it was not disaggregated further.

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[4] Savannah FAF Region or Savannah FAF Analysis Zone includes Bryan, Chatham, Effingham, Liberty and Long Counties, as shown in Figure 2-3.

# 4. DISAGGREGATION OUTPUTS

The results of the disaggregation are a series of tables showing the commodity flow into and out of each FAF freight district by truck, rail, water, and air by commodity for 2011 and 2040. The top districts, commodities, and origin-destination pairs are shown in the following sections.

## 4.1 Truck Imports/Exports

Truck transportation represents the largest mode share for freight to and from the Savannah FAF Region[5]. **Table 4-1** and **Table 4-2** describe the trends in imports and exports by product by truck for the existing conditions (data from 2011) and for projected future conditions (data from 2040), respectively. **Table 4-3** through **Table 4-8** display the top trade partners (origin and destination pairs) of the total commodities moved for 2011 and 2040 by truck.

**Table 4-1** and **Table 4-2** examine the Savannah FAF Region's economy, showing the top 10 commodities for imports and exports that occur within the area boundary via truck movement. Total imports increase from 37,663.7 KTons in 2011 to 85,123.1 KTons in 2040 using truck as the domestic mode choice. Nonmetallic Minerals remains the largest import (by tonnage) to use truck. From 2011 to 2040, it increases in its share of total import from 12.0 percent to 23.8 percent. The increase may suggest developing industries since other commodities continue to grow in total tonnage as well.

**Table 4-1: Top 10 Commodity by Tonnage by Truck (2011)**

| Import | | | Export | | |
|---|---|---|---|---|---|
| Commodity | KTons | % of total | Commodity | KTons | % of total |
| Nonmetallic minerals | 4,489.8 | 12.0% | Coal-n.e.c. | 5,059.9 | 20.7% |
| Logs | 3,678.5 | 9.8% | Mixed freight | 3,238.9 | 13.2% |
| Nonmetal min. prods. | 3,525.2 | 9.4% | Nonmetal min. prods. | 1,835.4 | 7.5% |
| Waste/scrap | 2,981.8 | 8.0% | Other foodstuffs | 1,244.8 | 5.1% |
| Newsprint/paper | 2,631.6 | 7.0% | Machinery | 1,098.1 | 4.5% |
| Fertilizers | 2,393.5 | 6.4% | Waste/scrap | 1,077.6 | 4.4% |
| Gasoline | 2,280.6 | 6.1% | Fuel oils | 959.3 | 3.9% |
| Fuel oils | 1,543.4 | 4.1% | Nonmetallic minerals | 932.1 | 3.8% |
| Basic chemicals | 1,275.1 | 3.4% | Newsprint/paper | 919.2 | 3.8% |
| Coal-n.e.c. | 1,158.0 | 3.1% | Base metals | 804.9 | 3.3% |

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[5] Savannah FAF Region or Savannah FAF analysis zone includes Bryan, Chatham, Effingham, Liberty and Long Counties, as shown in Figure 2-3.

**Table 4-2: Top 10 Commodity by Tonnage by Truck (2040)**

| Import | | | Export | | |
|---|---|---|---|---|---|
| Commodity | KTons | % of total | Commodity | KTons | % of total |
| Nonmetallic minerals | 20,032.4 | 23.8% | Other foodstuffs | 9,656.9 | 10.9% |
| Nonmetal min. prods. | 7,854.3 | 9.3% | Nonmetal min. prods. | 9,312.0 | 10.5% |
| Newsprint/paper | 6,998.0 | 8.3% | Coal-n.e.c. | 8,824.9 | 10.0% |
| Waste/scrap | 6,109.0 | 7.3% | Mixed freight | 8,603.4 | 9.7% |
| Logs | 3,932.8 | 4.7% | Nonmetallic minerals | 5,578.0 | 6.3% |
| Meat/seafood | 3,393.8 | 4.0% | Machinery | 5,044.1 | 5.7% |
| Plastics/rubber | 3,228.9 | 3.8% | Newsprint/paper | 4,539.7 | 5.1% |
| Gasoline | 3,075.8 | 3.7% | Waste/scrap | 3,891.1 | 4.4% |
| Basic chemicals | 2,852.3 | 3.4% | Chemical prods. | 3,399.1 | 3.8% |
| Fertilizers | 2,386.2 | 2.8% | Furniture | 3,390.7 | 3.8% |

Total exports increase from 42,243.3 KTons in 2011 to 89,371.6 KTons in 2040 using truck as the domestic mode choice. Coal and petroleum products are the largest export (by tonnage) to use truck in 2011, as shown in **Table 4-1**; however, it only increases from 5,059.9 KTons to 8,824.9 KTons between 2011 and 2040. This commodity is outpaced by the rise of "other foodstuffs" (such as dairy products, sugar, oils, and coffee), whose export increases from 1,244.8 to 9,656.9 KTons, and "nonmetal mineral products" (such as ceramic and glass products) whose export increases from 1,835.4 to 9,312.0 KTons between 2011 and 2040.

**Table 4-3** and **Table 4-4** show tonnage of the goods by origin and destination. Exports travel from the Savannah FAF Region and imports travel to the Savannah FAF Region. The freight districts are shown as origin and destination pairs to allow for a finer level of detail within the Savannah FAF Region. Please refer back to **Figure 2-2** for an illustration of the freight districts.

**Table 4-3: Top 10 Export Trade Partners by Tonnage by Truck (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 08 | Atlanta, GA | 801.7 |
| Freight District 16 | Houston, TX | 491.3 |
| Freight District 16 | Atlanta, GA | 432.9 |
| Freight District 16 | State of Georgia | 397.0 |
| Freight District 08 | State of Georgia | 391.7 |
| Freight District 14 | Houston, TX | 385.6 |
| Freight District 10 | Atlanta, GA | 362.4 |
| Freight District 10 | Houston, TX | 351.9 |
| Liberty County | State of Georgia | 350.6 |
| Freight District 10 | State of Georgia | 338.0 |

**Table 4-4: Top 10 Import Trade Partners by Tonnage by Truck (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Atlanta, GA | Liberty County | 577.6 |
| State of Georgia | Liberty County | 488.0 |
| Newark, NJ (New York) | Liberty County | 417.4 |
| State of Georgia | Freight District 10 | 369.4 |
| State of Georgia | Freight District 16 | 344.7 |
| State of South Carolina | Liberty County | 297.4 |
| State of South Carolina | Freight District 18 | 249.9 |
| State of Georgia | Freight District 14 | 225.9 |
| Atlanta, GA | Freight District 16 | 206.8 |
| Newark, NJ (New York) | Freight District 14 | 183.7 |

Perhaps most notable in **Table 4-4** are the common origins of Districts 08, 10, and 16 along with the common destinations of Atlanta and the rest of Georgia as major freight destinations for trucks. As we will discuss later, Freight District 08 is home to the port activities in the Savannah FAF Region. The O-D pairs in the table likely reflect the offloading of freight through the port onto truck for domestic delivery. This table begins to highlight a heavy truck movement from the Savannah FAF Region via I-16 WB and potentially I-95 SB.

Liberty County, part of the Savannah FAF Region, was disaggregated as part of the process to make sure tonnages were properly associated with the county and not the freight districts in the three-county study area. As shown in **Table 4-5**, Liberty County is a major destination for some truck movements from Atlanta, the rest of Georgia, South Carolina, and Newark.

**Table 4-5: Top 10 Internal Trade Partners by Tonnage by Truck (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Liberty County | Liberty County | 277.8 |
| Freight District 08 | Liberty County | 237.7 |
| Freight District 16 | Freight District 10 | 183.7 |
| Freight District 16 | Freight District 16 | 175.4 |
| Freight District 08 | Freight District 16 | 165.2 |
| Freight District 08 | Freight District 10 | 156.7 |
| Freight District 10 | Freight District 10 | 147.2 |
| Freight District 18 | Liberty County | 146.9 |
| Freight District 10 | Freight District 16 | 145.1 |
| Freight District 14 | Freight District 10 | 139.1 |

Part of this freight equation includes analysis of the internal truck movements for the Savannah FAF Region, particularly between the freight districts in the three-county study area. **Table 4-5** reflects the freight carried by trucks that originates in the Savannah FAF Region, and is also delivered within the

region. There are some intra-county and even intra-district O-D pairs in this table. Some freight will originate from Freight District 08, home to the port activities, and terminate in the other freight districts within the Savannah FAF Region.

**Tables 3-6** through **3-8** show the growth and change in trade partners in 2040. Perhaps most notable in **Table 4-6** are the common origins of Districts 08, 10, and 16 (as mentioned in the analysis for 2011) along with the common destinations of Atlanta and the rest of Georgia as major freight destinations for trucks. Important items to note here are:

1) The increase of port movement to Atlanta, from 801.7 KTons in 2011 to 2,413.2 KTons in 2040, and

2) The rise of Houston, TX as an export trade partner in future years.

**Table 4-6: Top 10 Export Trade Partners by Tonnage by Truck (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 08 | Atlanta, GA | 2,413.2 |
| Freight District 16 | Houston, TX | 942.6 |
| Freight District 16 | Atlanta, GA | 801.8 |
| Freight District 14 | Houston, TX | 746.2 |
| Freight District 08 | State of Georgia | 695.0 |
| Freight District 10 | Atlanta, GA | 687.7 |
| Freight District 10 | Houston, TX | 681.7 |
| Liberty County | Atlanta, GA | 623.6 |
| Liberty County | State of Georgia | 611.4 |
| Freight District 14 | Atlanta, GA | 593.7 |

The major imports for the Savannah FAF Region will increasingly originate from the north in Newark, NJ metropolitan region (

**Table** 4-7). Trucks will take I-95 south to enter the Savannah area. This could reflect not only a potential need on the roadway aspect of this movement, but also an opportunity for the Port of Savannah as much of this freight may be originating from the Port of New York/New Jersey and be trucked down the coast.

**Table 4-8** reflects the freight carried by trucks that originates in the Savannah FAF Region and is also delivered within the region. The O-D pairs between the freight districts within the region for 2040 are similar to 2011. This table also reflects the potential growth of Liberty County in the region.

Though the disaggregation process involves analysis for the whole Savannah FAF Region, the CORE MPO's Freight Transportation Plan focuses on freight movements in the three-county study area (Bryan, Chatham and Effingham). **Figure 4-1** and **Figure 4-2** show the truck tons into and out of the three-county study area for 2011.

**Table 4-7: Top 10 Import Trade Partners by Tonnage by Truck (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Newark, NJ (New York) | Liberty County | 3,654.8 |
| Newark, NJ (New York) | Freight District 14 | 1,557.2 |
| Newark, NJ (New York) | Freight District 16 | 1,467.3 |
| Newark, NJ (New York) | Freight District 10 | 1,169.7 |
| Atlanta, GA | Liberty County | 937.5 |
| Newark, NJ (New York) | Freight District 22 | 866.8 |
| Newark, NJ (New York) | Freight District 08 | 864.8 |
| Newark, NJ (New York) | Freight District 40 | 790.1 |
| State of Georgia | Liberty County | 748.2 |
| State of Georgia | Freight District 10 | 680.3 |

**Table 4-8: Top 10 Internal Trade Partners by Tonnage by Truck (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Liberty County | Liberty County | 566.2 |
| Freight District 08 | Liberty County | 535.4 |
| Freight District 08 | Freight District 16 | 338.6 |
| Freight District 16 | Freight District 10 | 313.0 |
| Freight District 16 | Freight District 16 | 312.8 |
| Freight District 08 | Freight District 10 | 307.3 |
| Freight District 18 | Liberty County | 299.8 |
| Freight District 16 | Liberty County | 269.3 |
| Freight District 10 | Liberty County | 259.7 |
| Freight District 10 | Freight District 16 | 259.4 |

**Figure 4-1: Truck Tons from the Study Area (2011)**



*Source: CDM Smith*

## Figure 4-2: Truck Tons to the Study Area (2011)
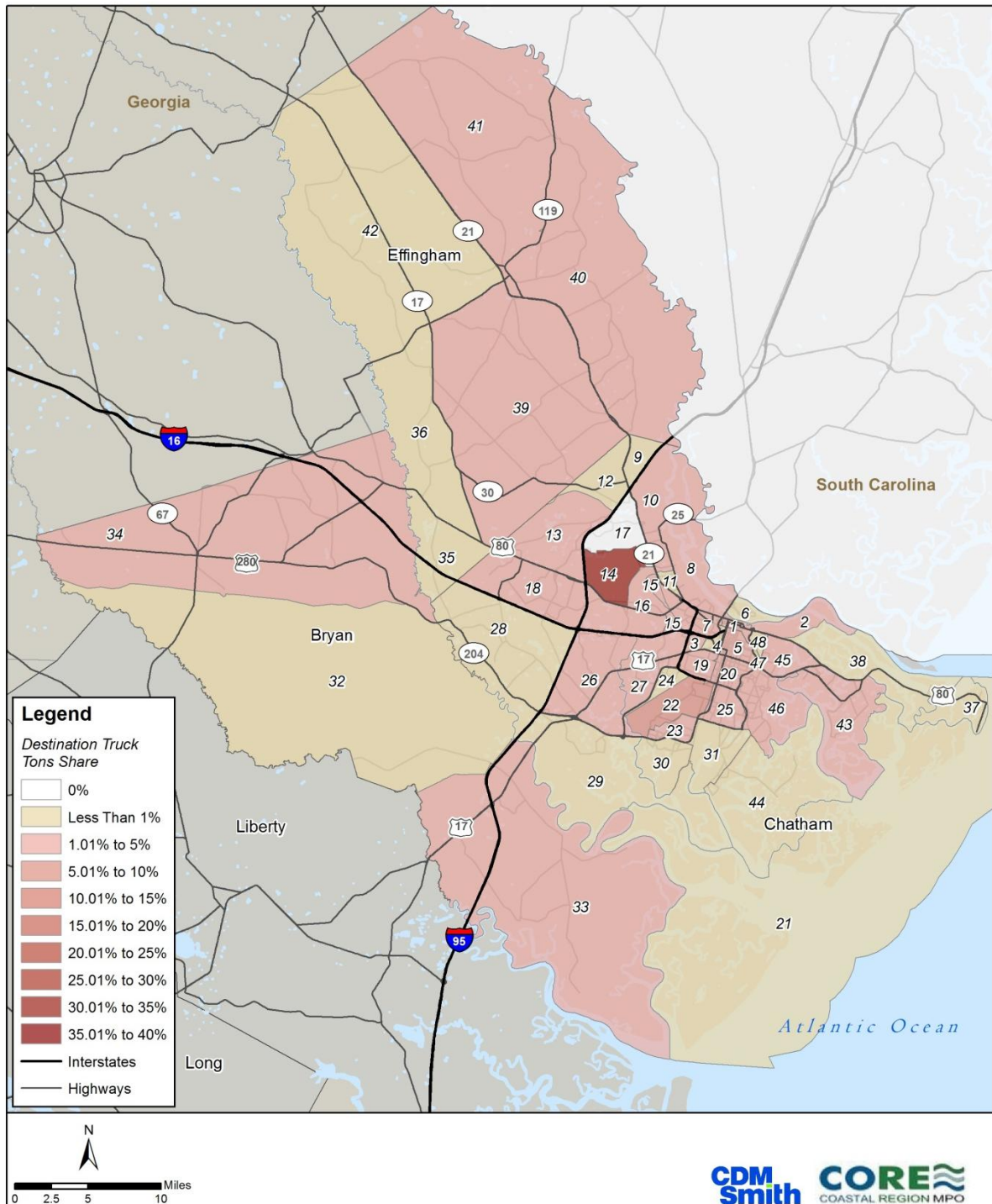


*Source: CDM Smith*

## 4.2　Rail Imports/Exports

Truck transportation represents the largest mode share for freight to and from the Savannah FAF Region. However, rail transportation provides another important mode. **Table 4-9** and **Table 4-10** describe the trends in imports and exports by product by rail for existing conditions (data from 2011) and for projected future conditions (data from 2040), respectively. **Table 4-11** through **Table 4-16** display the top origin and destination pairs of the total commodities moved for 2011 and 2040 by rail.

**Table 4-9** and **Table 4-10** examine the Savannah FAF Region's economy by showing the top five commodities for imports and exports that occur via rail movement. Total imports increase from 7,731.6 KTons in 2011 to 11,516.8 KTons in 2040 using rail as the domestic mode choice. Fertilizers and Newsprint/paper supplies are the top two commodities imported in both years. **Table 3-9** shows 2,681.8 KTons of Fertilizers were imported in 2011, accounting for 34.7 percent of the total. While the 2040 import tonnage for Fertilizers remains similar (2,787.0 KTons), its share decreases to 24.3 percent.  From 2011 to 2040, newsprint and paper supplies will double in import tonnage from 1,464.5 KTons in 2011 to 2,861.7 KTons in 2040, with its share of import increased to 24.9 percent.

### Table 4-9: Top 5 Commodity by Tonnage by Rail (2011)

| Import | | | Export | | |
|---|---|---|---|---|---|
| Commodity | KTons | % of total | Commodity | KTons | % of total |
| Fertilizers | 2,681.8 | 34.7% | Newsprint/paper | 796.7 | 27.3% |
| Newsprint/paper | 1,464.5 | 19.0% | Coal-n.e.c. | 581.7 | 19.9% |
| Nonmetallic minerals | 814.9 | 10.6% | Basic chemicals | 362.3 | 12.4% |
| Gravel | 723.2 | 9.4% | Other foodstuffs | 305.4 | 10.5% |
| Basic chemicals | 557.5 | 7.2% | Nonmetallic minerals | 239.9 | 8.2% |

### Table 4-10: Top 5 Commodity by Tonnage by Rail (2040)

| Import | | | Export | | |
|---|---|---|---|---|---|
| Commodity | KTons | % of total | Commodity | KTons | % of total |
| Newsprint/paper | 2,861.7 | 24.9% | Other foodstuffs | 1,574.1 | 26.9% |
| Fertilizers | 2,787.0 | 24.3% | Newsprint/paper | 1,293.0 | 22.1% |
| Gravel | 1,239.0 | 10.8% | Basic chemicals | 734.7 | 12.5% |
| Nonmetallic minerals | 1,229.4 | 10.7% | Nonmetallic minerals | 704.4 | 12.0% |
| Basic chemicals | 715.5 | 6.2% | Chemical prods. | 242.8 | 4.1% |

Total exports increase from 2,926.4 KTons in 2011 to 5,866.8 KTons in 2040 using rail as the domestic mode choice. Newsprint/paper is the largest export commodity  (by tonnage) to use rail in 2011. However it only increases from 796.7 KTons to 1,293.0 KTons between 2011 and 2040. This commodity is outpaced by the rise of "other foodstuffs" (such as dairy products, sugar, oils, and coffee), which increases from 305.4 to 1,574.1 KTons between 2011 and 2040. This is a similar occurrence to projected exports for truck in **Table 4-2**.

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**Table 4-11** and **Table 4-12** show tonnage of the goods by origin and destination. Exports travel from the Savannah FAF Region and imports travel to the region. The freight districts are shown as origin and destination pairs to allow for a finer level of detail within the Savannah FAF Region.  Please refer back to **Figure 2-2** for an illustration of the freight districts.

**Table 4-11: Top 10 Export Trade Partners by Tonnage by Rail (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 08 | Atlanta, GA | 211.1 |
| Freight District 22 | Atlanta, GA | 183.1 |
| Freight District 16 | Atlanta, GA | 124.7 |
| Freight District 08 | Houston, TX | 81.3 |
| Freight District 22 | Houston, TX | 80.3 |
| Freight District 08 | Minneapolis, MN | 80.1 |
| Freight District 22 | Minneapolis, MN | 74.2 |
| Freight District 08 | State of Georgia | 54.7 |
| Freight District 16 | Houston, TX | 54.1 |
| Freight District 27 | Atlanta, GA | 51.3 |

**Table 4-12: Top 10 Import Trade Partners by Tonnage by Rail (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Baton Rouge, LA | Freight District 16 | 653.0 |
| Baton Rouge, LA | Freight District 22 | 651.5 |
| Baton Rouge, LA | Freight District 08 | 619.2 |
| New Orleans, LA | Freight District 22 | 325.2 |
| State of Virginia | Freight District 16 | 320.3 |
| New Orleans, LA | Freight District 16 | 314.5 |
| New Orleans, LA | Freight District 08 | 310.4 |
| State of Georgia | Freight District 22 | 289.6 |
| State of Georgia | Freight District 08 | 285.5 |
| State of Florida | Freight District 22 | 259.5 |

Perhaps most notable in **Table 4-11** are the common origins of Districts 08, 16, and 22 along with the common destinations of Atlanta and Houston as freight destinations for rail. As mentioned previously, Freight District 08 is home to the port activities in the Savannah FAF Region. The O-D pairs in the table likely reflect the offloading of freight through the port onto rail for domestic delivery. Likewise, **Table 4-12** shows similar origins of Baton Rouge, New Orleans, and Georgia (non-Atlanta) that are moving freight to the Savannah FAF Region via rail. Many of these imported goods are going to the same Freight Districts of 08, 16, and 22.

**Table 4-13** shows only the top five O-D pairs from freight district to freight district since the distance within the region is not great enough to make rail a viable mode for intra-study area movements. Most of the internal movements are between the yard areas of Freight District 02, 16, and 22, along with the port-based Freight District 08. District 02 contains warehouse and industrial plants, such as BASF and Conoco-Phillips, which produce tons of freight for distribution, mainly by rail.

**Table 4-13: Top 5 Internal Trade Partners by Tonnage by Rail (2011)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 02 | Freight District 08 | 111.7 |
| Freight District 02 | Freight District 22 | 110.6 |
| Freight District 08 | Freight District 22 | 80.0 |
| Freight District 08 | Freight District 08 | 78.4 |
| Freight District 02 | Freight District 16 | 76.4 |

**Table 4-14** shows the projected 2040 top export O-D pairs for rail freight movements. While the origins are similar to 2011, as shown in **Table 4-11**, the destinations change slightly with the rise of Tennessee as a top destination for the Savannah FAF Region's freight. The overall export growth in all O-D pairs is reflected evenly.

**Table 4-14: Top 10 Export Trade Partners by Tonnage by Rail (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 08 | Atlanta, GA | 288.9 |
| Freight District 22 | Atlanta, GA | 193.1 |
| Freight District 08 | Houston, TX | 186.8 |
| Freight District 22 | Houston, TX | 185.2 |
| Freight District 08 | State of Tennessee | 166.6 |
| Freight District 22 | State of Tennessee | 165.2 |
| Freight District 08 | Minneapolis, MN | 139.0 |
| Freight District 16 | Atlanta, GA | 132.7 |
| Freight District 22 | Minneapolis, MN | 131.6 |
| Freight District 16 | Houston, TX | 125.0 |

**Table 4-15** shows the projected 2040 top import O-D pairs for rail freight movements. This table is very similar to **Table 4-12** in both O-D pairs and tonnage. Most notable here though is the growth of rail freight moving out of Virginia and into the Savannah FAF Region, specifically to Freight District 16. In 2040, 602.0 KTons will move by rail from Virginia to the Savannah FAF Region. This almost doubles the 320.3 KTons in 2011.

**Table 4-16** shows only the top 5 O-D pairs of rail freight movements for 2040 between freight districts.

As mentioned before, the CORE MPO's Freight Transportation Plan focuses on freight movements in the three-county study area (Bryan, Chatham and Effingham). **Figure 4-3** and **Figure 4-4** show the rail tons into and out of the study area for 2011.

**Table 4-15: Top 10 Import Trade Partners by Tonnage by Rail (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Baton Rouge, LA | Freight District 16 | 672.6 |
| Baton Rouge, LA | Freight District 22 | 667.6 |
| Baton Rouge, LA | Freight District 08 | 633.5 |
| State of Virginia | Freight District 16 | 602.0 |
| State of Georgia | Freight District 22 | 399.5 |
| State of Georgia | Freight District 08 | 391.5 |
| New Orleans, LA | Freight District 22 | 348.6 |
| New Orleans, LA | Freight District 16 | 335.7 |
| New Orleans, LA | Freight District 08 | 331.9 |
| State of Georgia | Freight District 16 | 283.3 |

**Table 4-16: Top 5 Internal Trade Partners by Tonnage by Rail (2040)**

| Origin | Destination | KTons |
|---|---|---|
| Freight District 02 | Freight District 08 | 222.5 |
| Freight District 02 | Freight District 22 | 220.7 |
| Freight District 08 | Freight District 22 | 194.7 |
| Freight District 08 | Freight District 08 | 188.1 |
| Freight District 02 | Freight District 16 | 152.8 |

**Figure 4-3: Rail Tons from the Study Area (2011)**



*Source: CDM Smith*

**Figure 4-4: Rail Tons to the Study Area (2011)**
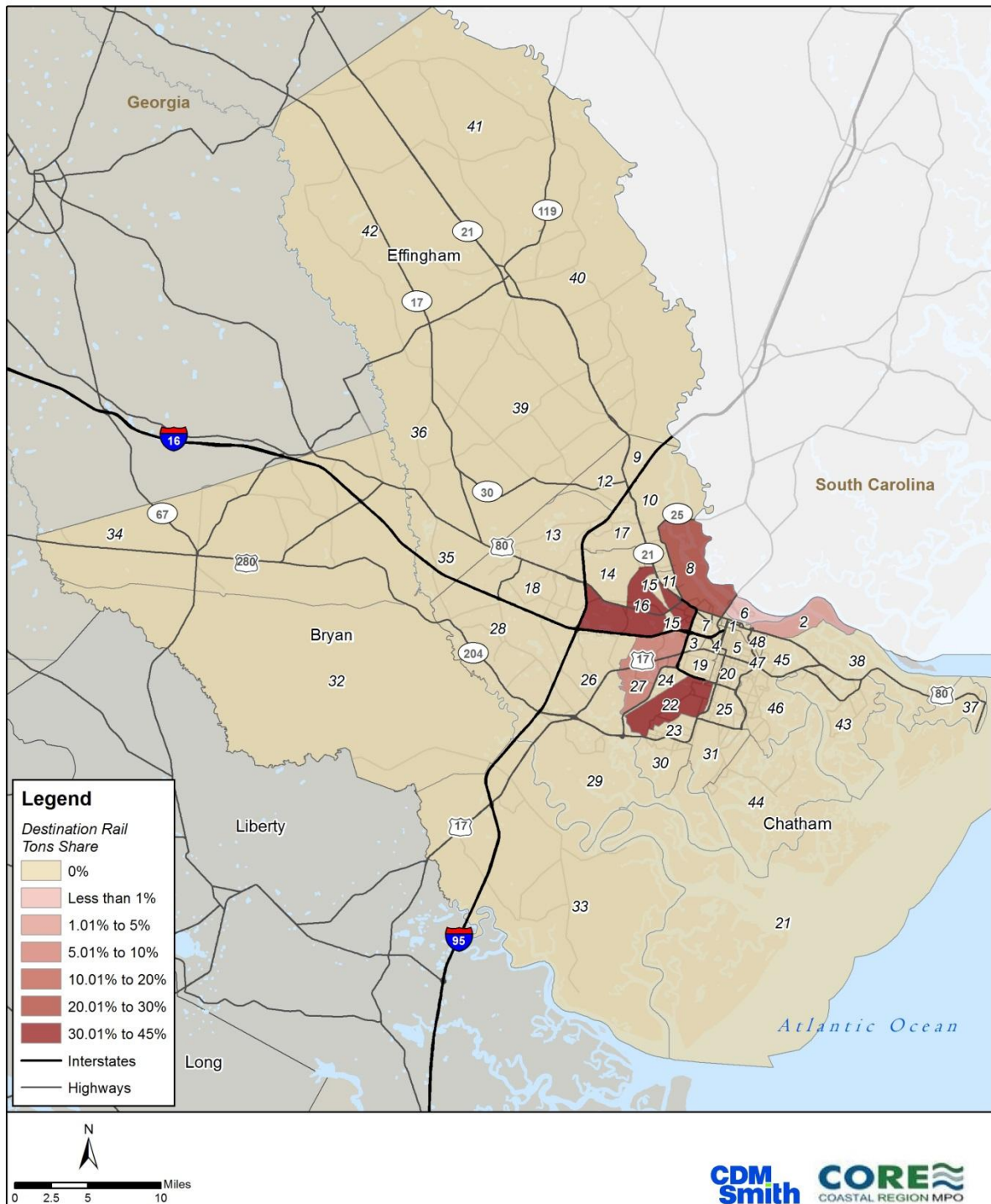


*Source: CDM Smith*

## 4.3    Water Imports/Exports

Waterborne freight is a major economic engine for not only the Savannah FAF Region, but also the State of Georgia. Savannah's port is a top five port nationally for capacity and freight movement[6]. For this study, all water activity is located within Freight District 8, which is the location of all port terminals.

For 2011, 31,561.6 KTons of freight came into the Port of Savannah while 19,238.6 KTons shipped out of the port to other destinations, as shown in **Table 4-17**. The major import (approximately 40 percent) is Coal (SCTG #19) via North and South American markets, as well as Africa. The principal exports from the Savannah area are nonmetallic materials and Newsprint/paper at 33 and 24 percent respectively of all exports. In 2040, the international imports are expected to be surpassed by the exports in the Savannah FAF Region. Total imports are expected to be 70,097.0 KTons while exports are projected to reach 67,997.5 KTons. The principal commodities are the same, but Furniture is an emerging import while waste/scrap is a growing export commodity group.

**Table 4-17 : Total Water movement by tonnage, 2011 and 2040**

| Freight Movement | | 2011 | 2040 | Total Change | Annual Growth |
|---|---|---|---|---|---|
| International | Import | 28,560.8 | 67,742.5 | 137.19% | 3.02% |
| | Export | 19,231.7 | 67,976.7 | 253.46% | 4.45% |
| Domestic | Import | 3,000.8 | 2,354.5 | -21.54% | -0.83% |
| | Export | 7.0 | 20.8 | 197.14% | 3.85% |
| Total | Import | 31,561.6 | 70,097.0 | 122.10% | 2.79% |
| | Export | 19,238.6 | 67,997.5 | 253.44% | 4.45% |

The vast majority of this tonnage was international freight movements coming into the port and moving out via other modes once the freight is off loaded domestically. For this study, these international tons are captured in the truck and rail movements domestically. Domestic water movements are actual O-D pairs between two U.S. locations of the origins and destinations.

Overall, the port growth is projected to increase three percent annually on imports and approximately 4.5 percent on exports. This is driven by the port's international movements to foreign markets, but it is important to note the decrease in domestic imports to the port.

Domestic imports to the Port of Savannah's terminal locations totaled slightly over 3,000 KTons in 2011. The largest domestic imports include coal shipments from Beaumont, TX (Port of Beaumont) and Delaware (likely the Port of Wilmington). However, each of these origin-destination pairs is projected to decrease out to 2040, as shown in **Table 4-18**. The port does project a small increase in domestic imports of paper products from Florida (12 KTons).

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[6] http://www.americanprogress.org/wp-content/uploads/issues/2012/08/pdf/freight_infrastructure.pdf

**Table 4-18 : Top Domestic Port Origins**

| Origin | Top Commodities Shipped | 2011 | 2040 |
|---|---|---|---|
| Beaumont, TX | Coal and petroleum products | 2,350.9 | 2,083.2 |
| State of Delaware | Coal and petroleum products | 585.6 | 172.8 |
| State of Florida | Pulp, newsprint, paper, and paperboard | 48.1 | 60.1 |

Domestic exports from the port are smaller in scale. Freight is primarily moved out of the port to other local areas (via barge perhaps). The major export destination is Honolulu, HI. Coal and petroleum products are shipped out of the port and carried west. In 2011, this movement totaled only 0.12 KTons. This shows that the vast majority of exports are staying in the Georgia area. Most of these exports are nonmetallic minerals (at an estimate 5.3 KTons in 2011) and nonmetallic mineral products (1.3 KTons in 2011).

These commodity groups and trade partners are projected to continue through 2040. Exports of nonmetallic minerals are projected to increase to 17.5 KTons, more than triple the tonnage of 2011. Nonmetallic mineral products will double in export to 2.6 KTons by 2040.

## 4.4    Air Imports/Exports

The Savannah / Hilton Head International Airport (SAV) is the center for commuter air travel in the Coastal Empire of Georgia, the Golden Isles and South Carolina's Low Country[7]. It is also a major air freight destination for the Savannah FAF Region. The physical carriage of goods in this mode occurs on dedicated, cargo configured aircraft or in the "belly" or luggage compartments of passenger aircraft. Aside from the five commuter carriers that service the airport, the SAV has small firms and major industry providers (such as FedEx and DHL) who serve the airport too. For this study, all air cargo activity is located within Freight District 14, which is the location of the airport.

For 2011, 4.1 KTons of air cargo came into the Savannah FAF Region while 5.8 KTons flew out of SAV to other destinations, as shown in **Table 4-19**. Compared to other modes, air products are typically time sensitive, smaller, lighter and more expensive than the "bulk" items. This explains the small tonnages and the commodity mix.

Domestic air cargo has many O-D pairs between SAV and the other U.S. airports. The largest import region for SAV's air freight is Pennsylvania, while the greatest export partner for SAV in 2011 was Massachusetts. The commodity to Massachusetts was Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes, accounting for one-third of SAV's export tonnage.

The principal international import is other agricultural products, which are items such as vegetables and nuts and fresh cut flowers, at 0.8 KTons. The international export is machinery, such as pumps and refrigeration units, at 0.6 KTons.

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[7] http://savannahairport.com/index.php

**Table 4-19 : Total Air Movement by Tonnage, 2011 and 2040**

| Freight Movement | | 2011 | 2040 | Total Change | annual growth |
|---|---|---|---|---|---|
| International | Import | 1.9 | 6.0 | 215.79% | 4.08% |
| | Export | 2.0 | 8.2 | 310.00% | 4.91% |
| Domestic | Import | 2.2 | 6.5 | 195.45% | 3.81% |
| | Export | 3.8 | 11.8 | 210.53% | 3.98% |
| Total | Import | 4.1 | 12.5 | 204.88% | 3.93% |
| | Export | 5.8 | 20.0 | 244.83% | 4.34% |

At the Savannah airport, cargo transport is mixed between FedEx who handles 95 percent of the cargo using Boeing 727's five days a week service to the FedEx hub in Memphis, TN. The remaining five percent is carried by Delta in the belly of passenger aircraft. The Savannah airport staff reported that there is also limited feeder service on smaller general aviation aircraft contracted by UPS and ABX.[8]

For 2040, 12.5 KTons of air cargo came into the Savannah FAF Region while 20.0 KTons flew out of SAV to other destinations. This is an annual growth rate of 3.9 percent for imports and 4.3 percent for exports. This pace is similar to the port and other modes.

Domestic air cargo grows at a slower pace (both import and export below four percent). However, 6.5 KTons in imported air freight and 11.8 KTons in export in 2040 reflect a growing importance of SAV in the marketplace. The largest import region for SAV's air freight is still projected to be Pennsylvania. The export partner projected for SAV in 2040 will be Massachusetts as Base Metal freight is projected to increase to 4.8 KTons.

The international market has a promising future growth potential in SAV. Growth rates for imports and exports will increase annually above four percent with agricultural products and machinery projected to remain the top commodities.

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[8] http://www.dot.ga.gov/Projects/programs/georgiafreight/logisticsplan/Documents/Plan/GeorgiaAirCargoModal-Task3.pdf

**Commodity Codes Used In FAF**

| SCTG | Commodity | Commodity Description |
|------|-----------|----------------------|
| 01 | Live animals/fish | Live animals and live fish |
| 02 | Cereal grains | Cereal grains |
| 03 | Other ag prods. | Other agricultural products |
| 04 | Animal feed | Animal feed and products of animal origin, n.e.c. |
| 05 | Meat/seafood | Meat, fish, seafood, and their preparations |
| 06 | Milled grain prods. | Milled grain products and preparations, bakery products |
| 07 | Other foodstuffs | Other prepared foodstuffs and fats and oils |
| 08 | Alcoholic beverages | Alcoholic beverages |
| 09 | Tobacco prods. | Tobacco products |
| 10 | Building stone | Monumental or building stone |
| 11 | Natural sands | Natural sands |
| 12 | Gravel | Gravel and crushed stone |
| 13 | Nonmetallic minerals | Nonmetallic minerals n.e.c. |
| 14 | Metallic ores | Metallic ores and concentrates |
| 15 | Coal | Coal |
| 16 | Crude petroleum | Crude Petroleum |
| 17 | Gasoline | Gasoline and aviation turbine fuel |
| 18 | Fuel oils | Fuel oils |
| 19 | Coal-n.e.c. | Coal and petroleum products, n.e.c. |
| 20 | Basic chemicals | Basic chemicals |
| 21 | Pharmaceuticals | Pharmaceutical products |
| 22 | Fertilizers | Fertilizers |
| 23 | Chemical prods. | Chemical products and preparations, n.e.c. |
| 24 | Plastics/rubber | Plastics and rubber |
| 25 | Logs | Logs and other wood in the rough |
| 26 | Wood prods. | Wood products |
| 27 | Newsprint/paper | Pulp, newsprint, paper, and paperboard |
| 28 | Paper articles | Paper or paperboard articles |
| 29 | Printed prods. | Printed products |
| 30 | Textiles/leather | Textiles, leather, and articles of textiles or leather |
| 31 | Nonmetal min. prods. | Nonmetallic mineral products |
| 32 | Base metals | Base metal in primary or semi-finished forms and in finished basic shapes |
| 33 | Articles-base metal | Articles of base metal |
| 34 | Machinery | Machinery |
| 35 | Electronics | Electronic and other electrical equipment and components and office equipment |
| 36 | Motorized vehicles | Motorized and other vehicles (including parts) |
| 37 | Transport equip. | Transportation equipment, n.e.c. |
| 38 | Precision instruments | Precision instruments and apparatus |
| 39 | Furniture | Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs |
| 40 | Misc. mfg. prods. | Miscellaneous manufactured products |
| 41 | Waste/scrap | Waste and scrap |
| 43 | Mixed freight | Mixed freight |
| 99 | Unknown | Commodity unknown |

| Acronym | Definition |
|---|---|
| CBP | County Business Patterns |
| CFS | Commodity Flow Survey |
| CORE MPO | Coastal Region Metropolitan Planning Organization |
| CSA | Combined Statistical Area |
| DOE | U.S. Department of Energy |
| EIA | Energy Information Agency |
| FAF | Freight Analysis Framework |
| FAF3 | Freight Analysis Framework Version 3 |
| FHWA | Federal Highway Administration |
| Ktons | kilotons |
| LEHD | Longitudinal Employer Household Dynamics |
| MSA | Micropolitan Statistical Area or Metropolitan Statistical Area |
| MWh | megawatt-hours |
| n.e.c. | not elsewhere classified |
| NAICS | North American Incorporation Census State |
| NASS | National Agricultural Statistics Service |
| O-D | Origin-Destination |
| OMB | Office of Management and Budget |
| PIERS | Port Import/Export Reporting Service |
| QCEW | Quarterly Census of Employment and Wages |
| SAV | Savannah / Hilton Head International Airport |
| SCTG | Standard Classification of Transported Goods |
| TAZ | Traffic Analysis Zone |
| UI | Unemployment Insurance |
| USDA | U.S. Department of Agriculture |