



Technical Memorandum
**Land Use Assessment and
Analysis**

DRAFT

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1. INTRODUCTION

1.1 Benefits of Freight Generating Land Uses

Freight generating land uses include warehousing, manufacturing, logistics, agriculture, natural resources and mining, port and harbor operations, and construction. Such land uses typically produce important benefits for a regional economy, which supports not only their presence within an urban area, but also the need for freight stakeholder participation in the land use planning process. The benefits provided by freight-related land uses primarily include:

- Employment,
- Tax Benefits, and
- Other Benefits.

The Coastal Region Metropolitan Planning Organization’s (CORE MPO’s) Freight Transportation Plan study area, as home to the City of Savannah known throughout the U.S. Southeast region and internationally as a significant gateway for freight, realizes these benefits, as discussed in the sections that follow.

1.1.1 Employment

The CORE MPO’s Freight Transportation Plan study area is the Savannah MSA. The area includes Chatham County, which experiences substantial freight flows that have a significant impact on the local, regional, and state economy, as well as Bryan and Effingham Counties. According to the Savannah Economic Development Authority (SEDA) and its international arm, World Trade Center Savannah, the economy of the City of Savannah and the surrounding region is rapidly evolving and growing.

Much of this local and regional economy is connected with the Port of Savannah, one of only two deepwater seaports in Georgia. The Port of Savannah handles a significant volume of imports and exports each year that are transferred to and from other modes of transport, such as rail, truck, and air, in order to reach their destinations. Freight generating land uses such as the port support employment directly related to the activities occurring on-site as well as indirectly related to the economic activity produced by the on-site jobs. Specifically, the port contributes more than 352,000 full- and part-time jobs to the local, regional, and state economy. According to the Georgia Ports Authority, employment at the port accounts for 8.3 percent of the total employment in Georgia.

1.1.2 Tax Benefits

Freight generating land uses in the Savannah MSA also provide a substantial fiscal impact. For example, the Port of Savannah produces considerable tax benefits that include:

- \$4.5 billion in federal taxes,
- \$1.4 billion in state taxes, and
- \$1.1 billion in local taxes.

1.1.3 Other Benefits

Some of the benefits tied to freight generating land uses in the Savannah MSA are difficult to quantify and require a qualitative description of their importance. Most obvious among these is that the presence of freight generating land uses within an urban area means goods and services are in closer proximity to local businesses and residents, which reduces consumer costs. In the case of the Port of Savannah, the region benefits from the proximity of freight moving through the port’s facilities since goods do not need to be transported over long distances prior to reaching consumers. In addition, although freight generating land uses have associated environmental impacts (discussed below), programs like the United States Environmental Protection Agency’s (EPA’s) SmartWay Transport program are making freight transportation cleaner and safer.

1.2 Drawbacks of Freight Generating Land Uses

Despite the positive benefits of freight land uses, there are drawbacks to their presence within an area such as the Savannah MSA. These impacts include air quality impacts, greenhouse gas emissions, and concerns regarding environmental justice.

1.2.1 Air Quality Impacts

Freight vehicle-related air quality impacts in the Savannah MSA result from particulate matter, oxides of nitrogen, and sulfur dioxide emitted by the combustion of diesel fuel, which is used not only for truck and railroad freight transport, but also support equipment such as yard hostlers and cargo cranes. Reductions in diesel fuel emissions are on the horizon due to new regulations for several types of freight vehicles, but are not imminent due to the long service-lives of those vehicles.

1.2.2 Greenhouse Gas Emissions

Freight generating land uses in the Savannah MSA also emit greenhouse gases (GHGs). GHGs are gases that trap heat in the atmosphere, which contributes to the “greenhouse effect,” global warming, and climate change. These gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. Of these, carbon dioxide is the primary GHG emitted within the transportation sector. Passenger vehicles produce 60 percent of transportation-related GHGs, while freight vehicles produce the majority of the remainder.

1.2.3 Environmental Justice

A relatively new concern in planning and policy that has relevance to the freight industry is environmental justice. Environmental justice refers to the historically disproportionate share of benefits and burdens of government policies, programs, and investments on low-income or minority populations and the need for more geographically equitable distribution of those benefits and burdens. More specifically, the EPA’s Office of Environmental Justice defines environmental justice as “the fair treatment and meaningful involvement of all people regardless

of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local and tribal programs and policies.”

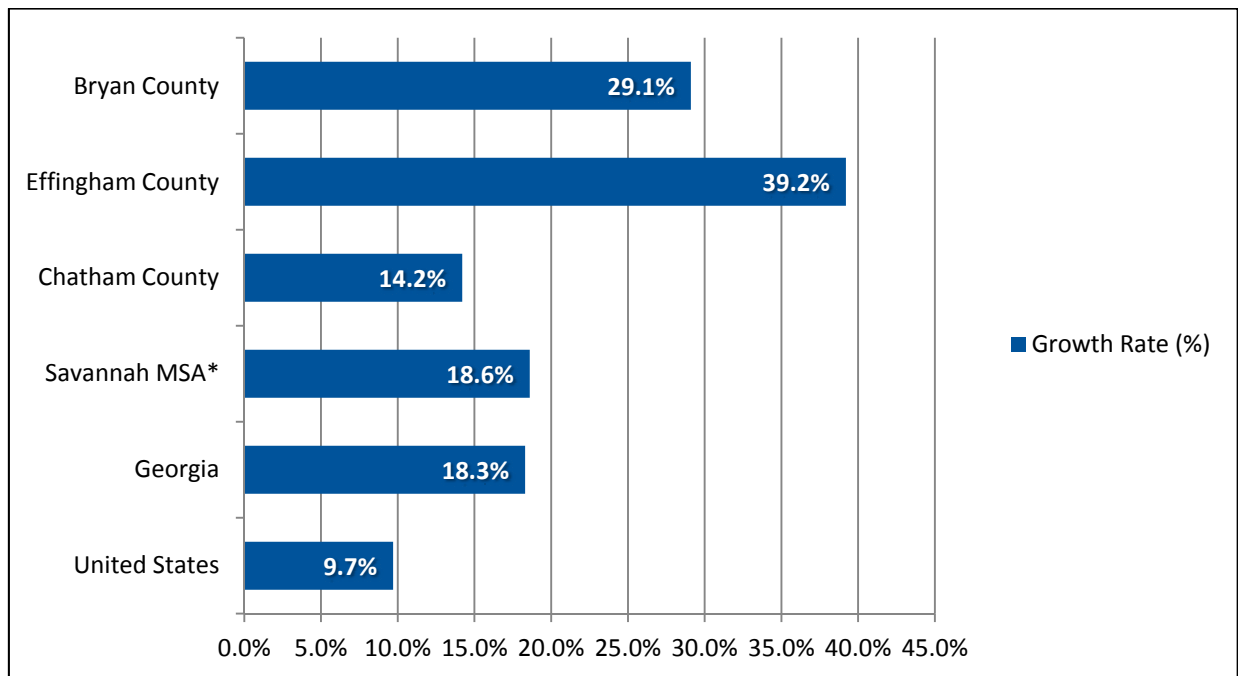
Freight generating land uses are often located in parts of urban areas where there are large concentrations of low-income or minority residents who are unfairly burdened with the environmental impacts associated with freight facilities and freight traffic. This is certainly the case in the CORE MPO’ Freight Transportation Plan study area, where large populations of low-income and minority residents as well as freight facilities such as the Port of Savannah, Savannah / Hilton Head International Airport, and numerous rail lines are found.

2. REGIONAL GROWTH

Section 2 reviews where population and industry growth is most likely to occur in Bryan, Chatham, and Effingham Counties. Coordination is required by local, regional, and state partners to target the most strategic parcels of land in the Savannah region to use and preserve for freight-related land uses to assure the continued freight growth for the region and the state.

The Savannah Metropolitan Statistical Area (MSA) is comprised of Bryan, Effingham, and Chatham Counties. As shown in **Figure 2-1**, the Savannah MSA’s population increased by 18.6 percent from 2000 to 2010. This growth rate was slightly higher than that of the state of Georgia (18.3 percent) and nearly doubled the growth rate of the United States (9.7 percent) during the same period. Within the Savannah MSA, Effingham County experienced the largest growth rate at 39.2 percent, with Chatham County seeing the lowest growth rate at 14.2 percent.

Figure 2-1: 10-Year Population Growth Rates (2000 – 2010)



Source: Savannah Economic Development Authority, 2014; U.S. Census Bureau, 2011

Although Chatham County’s growth rate was the lowest among the counties in the Savannah MSA, it is the most populous county and experienced the largest actual number increase from 2000 to 2010, growing by 14.2 percent, or 33,080 residents (see **Table 2-1**). Bryan County grew by 29.1 percent, or 6,816 residents and Effingham County experienced the largest percentage growth with 39.2 percent, or 14,715 residents.

Looking to the future, the Savannah MSA’s population growth between 2010 and 2030 (37.5 percent) is anticipated to be higher than that for the state of Georgia (35.8 percent) and more than double the growth rate for the United States (16.4 percent), as presented in **Table 2-1**. Effingham County is projected to see the largest percentage increase in population (50.3 percent) in the Savannah MSA, while Chatham County is projected to experience the largest actual number increase (89,817 residents).

Table 2-1: Population Growth (2000 – 2030)

Population Area	2000	2010	2020	2030	Projected Population Growth (2010 – 2030)
Bryan County	23,417	30,233	36,930	44,465	47.1%
Chatham County	232,048	265,128	306,088	354,945	33.9%
Effingham County	37,535	52,250	64,553	78,507	50.3%
Savannah MSA	293,000	347,611	407,571	477,917	37.5%
Georgia	8,186,453	9,687,653	11,326,787	13,154,530	35.8%
United States	281,421,906	308,758,105	334,503,000	359,402,000	16.4%

Source: Population Projections. Georgia’s Office of Planning and Budget, 2014; U.S. Census Bureau

2.1 Freight Transportation Infrastructure

The Savannah MSA is supported by a large freight transportation network and strategically locating Freight Related Land Uses on or near the freight transportation network is ideal to allow freight to enter the freight transportation network as quickly as possible, while having minimal impact on the community and the rest of the transportation network.

2.1.1 Roadway Infrastructure

The state of Georgia is fortunate to have one of the most extensive roadway networks in the United States. In fact, Georgia ranks 8th nationally in terms of its roadway network connecting all of its major metropolitan areas with each other and beyond.

The Savannah MSA is also fortunate to have an extensive network of state, county, and municipal roadways that provides outstanding access to all of the region’s rail, seaport, and airport facilities. The major roadway facilities located within the Savannah MSA are identified in **Table 2-2**. The Savannah MSA contains a total of 1,660 centerline miles of state and county roadways. Within the counties comprising the MSA, Chatham, Bryan, and Effingham Counties contain 543, 391, and 726 centerline miles, respectively. The majority of centerline mileage in Bryan and Effingham Counties exists on each county’s respective County Road system.¹ Centerline mileage for the municipalities within the Savannah region totals approximately 840 miles, the majority of which are located within the Savannah municipal jurisdiction.²

¹ Georgia Department of Transportation. 2012.
http://www.dot.ga.gov/informationcenter/statistics/RoadData/Documents/437/DPP437_2012.pdf

² Georgia Department of Transportation. 2009.
http://www.dot.ga.gov/informationcenter/statistics/RoadData/Documents/449/DPP449_2009.pdf

Table 2-2: Major Roadway Facilities in the Savannah MSA

Highway Type	Lane Number Range	Highway Name
Interstates	4 to 6	<ul style="list-style-type: none"> • Interstate 95 (I-95) • Interstate 16 (I-16) • Interstate 516 (I-516)
U.S. Highways	2 to 4	<ul style="list-style-type: none"> • US Highway 17 • US Highway 17A • US Highway 80
State (Georgia) Highways	2 to 4	<ul style="list-style-type: none"> • State Road 21 • State Road 204 • State Road 307

Source: 2014 Savannah Economic Development Agency

2.1.2 Rail Infrastructure

The Savannah MSA is served by three primary rail carriers. These include CSX Transportation, Genesee & Wyoming, Inc., and Norfolk Southern. Of these, CSX Transportation and Norfolk Southern have the most significant presence in Georgia, owning and operating 71 percent of the entire active rail track in the state. The CSX Transportation and Norfolk Southern rail lines are categorized as Class I Railroads, which function as the main regional freight lines and comprise more than half of rail track mileage in the nation. Class I Railroads had carrier operating revenues of greater than \$433.2 million in 2011.³ CSX Transportation and Norfolk Southern have 1,626 miles and 1,912 miles of rail lines, respectively, within Georgia, with both carriers' networks extending through the Savannah MSA.^{4,5} Norfolk Southern's rail network includes a "straight-line" rail alignment between Savannah and Atlanta that provides a lower cost alternative to trucking and aids in alleviating roadway congestion between the two cities.

Genesee & Wyoming, Inc. owns four short line rail lines, or Class III Railroads, within the Savannah MSA. Class III Railroads are local railroads that typically feed traffic to Class I Railroads and receive traffic from Class I Railroads.⁶ Carrier operating revenues for Class III Railroads are \$37.4 million or less.⁷ The Class III Railroads in the Savannah MSA are operated by Rail Link, a subsidiary of Genesee & Wyoming that primarily operates port-related railroads.⁸ These short lines include:

- **Georgia Central Railway** – The Georgia Central Railway is a 171-mile freight short line which runs between Savannah and Macon, Georgia, similar to Norfolk Southern's Class I

³ <https://www.aar.org/StatisticsAndPublications/Documents/AAR-Stats-2013-07-09.pdf>

⁴ <http://www.intermodal.com/index.cfm/intermodal-maps/>

⁵ Georgia Department of Transportation. 2013. Fact Book.

⁶ <http://archive.freightrailworks.org/network/class-ii-and-class-iii/>

⁷ http://www.aslrra.org/about_aslrra/FAQs/

⁸ Genesee & Wyoming, Inc., 2014. Rail Link Overview.

http://www.gwrr.com/operations/industrial_switching/rail_link_overview

line between Savannah and Atlanta. The rail line connects with CSX Transportation, Norfolk Southern, and Heart of Georgia Railroad lines.

- **Savannah Port Terminal Railroad** – The Savannah Port Terminal Railroad is an 18-mile short line freight rail line at the Port of Savannah which connects with rail lines and intermodal facilities for CSX Transportation and Norfolk Southern.
- **Riceboro Southern Railway** – The Riceboro Southern Railway is an 18-mile freight short line which runs between Riceboro and Georgetown, Georgia and ultimately connects with a CSX Transportation rail line.
- **Golden Isle Terminal Wharf** – Golden Isle Terminal Wharf is a 7-mile short line which serves the Savannah Wharf customers and connects with a CSX Transportation rail line.

The state of Georgia owns an additional short line railroad located in Effingham County that is operated and maintained by the Georgia Department of Transportation (GDOT). This railroad, the Ogeechee Railway, runs between Effingham and Screven Counties and connects with Norfolk Southern’s line in Ardmore, Georgia.

In addition to the Class I and Class III Railroads discussed above, there are also various supporting rail facilities located within the Savannah MSA. Chatham County is home to three intermodal rail terminals, three bulk transload terminals, and two large carload yards, most of which are associated with the Port of Savannah.

2.2 Summary of Major Freight-Related Industries and Associated Commodities

The primary freight-related industry sectors in the state of Georgia include transportation and warehousing, manufacturing, wholesale trade, and retail trade.⁹ Similarly, retail trade, transportation and warehousing, and manufacturing make up a significant portion of the industry mix in Chatham County, which serves as the center of the Savannah MSA’s diverse and robust economy. This section provides a discussion of the major freight industries and associated commodities in the Savannah MSA, focusing on transportation, warehousing and manufacturing.

2.2.1 Manufacturing

The manufacturing industry has a strong and diverse presence in the Savannah MSA, consisting of 262 companies that employ nearly 17,000 individuals earning a total annual payroll of nearly \$1.6 billion.¹⁰ The diversity of the manufacturing industry is illustrated in **Table 2-3**, which identifies the top fifteen manufacturing companies in the Savannah MSA in terms of employment, along with their associated products and services. Products and services offered range from equipment manufacturing, food products, to pulp and paper products.

⁹ Georgia Department of Transportation. 2013. Georgia Statewide Freight Plan.

¹⁰ Georgia Department of Labor. 2015. Chatham County Area Labor Profile.

Table 2-3: Top Fifteen Manufacturing Companies and Commodities¹¹

Company	Commodity/Service
Gulfstream Aerospace Corporation	Jet aircraft, aerospace equipment
International Paper	Paper products, chemicals, corrugated containers and packaging
JCB Americas, Inc.	Agricultural equipment, construction equipment
Imperial Sugar	Refined sugar
Brasseler USA, Inc.	Dental instruments
Kerry Ingredients and Flavours	Formulation, manufacture, and containerization of technological-based flavors, ingredients, and integrated solutions
Mitsubishi Hitachi Power Systems Americas, Inc.	Power plant gas and steam turbines
Strength of Nature Global, LLC	Ethnic hair care products
Weyerhaeuser	Bleached pulp
Derst Baking Company	Bread, rolls, cakes
Diamond Crystal Brands	Salt, pepper, and sugar packaging
Roger Wood Foods Inc.	Smoked sausage, meats
Arizona Chemical	Specialty resins, pine-based chemicals
Johnson Matthey Process Technologies Inc.	Catalyst production
Lummus Corporation	Cotton ginning equipment manufacturer

Source: Savannah Economic Development Authority, 2015

As shown in **Table 2-3**, Gulfstream Aerospace Corporation is the largest manufacturing company in the Savannah MSA, employing more than 10,000 individuals in 2015.¹² Gulfstream Aerospace is a premier manufacturer of business jets which began its Savannah operations in 1967 when Grumman Aircraft Engineering Corporation, a leading manufacturer of military aircraft during World War II, chose the Savannah region to be the headquarters for the company’s new civilian business aircraft division.^{13, 14} The company has experienced tremendous growth since then, developing numerous business jets that revolutionized business aviation and undergoing major expansions of their Savannah facilities in 2010 and 2013.

Other major manufacturing employers include International Paper, Weyerhaeuser, Imperial Sugar, and Arizona Chemical, all of which are tied to Georgia’s thriving agricultural and agribusiness industry. These companies are involved in forestry and the production and processing of food and fiber, all of which have a tremendous impact on the statewide economy. For example, forestry contributes nearly \$20 billion annually to Georgia’s economy due to the presence of approximately 24 million acres of commercial forest land in the state.¹⁵

¹¹ As determined by number of employees. Additional employment information to be found under Section 2.2.

¹² Savannah Economic Development Authority. 2015. Leading Manufacturing Employers in Chatham County.

<http://www.seda.org/Data-Sets/Employers-by-sector.aspx>

¹³ <http://www.gulfstream.com/company/history>

¹⁴ World Trade Center Savannah. 2014. Key Industries. <http://www.wtcsavannah.org/invest-here/key-industries/>

¹⁵ World Trade Center Savannah. 2014. Key Industries. <http://www.wtcsavannah.org/invest-here/key-industries/>

2.2.2 Transportation and Warehousing

Recognized as the fastest growing container port in the United States and the second largest volume container port on the Atlantic Coast, the Port of Savannah is a large deepwater seaport that was ranked fourth in the nation in waterborne container traffic in 2012 and 2013.¹⁶ The Port of Savannah serves as a major distribution hub for a 26-state region, which includes approximately 75 percent of the nation’s population.¹⁷ As such, the transportation and warehousing industry is a large component of the Savannah MSA’s economy, with nearly 400 companies and more than 9,500 employees in the first quarter of 2015.¹⁸ Also contributing to the size of the transportation and warehousing industry in the Savannah MSA is the presence of more than 1,650 companies in the retail and wholesale trade industries that employed more than 22,200 individuals in the first quarter of 2015.¹⁹ **Table 2-4** identifies the top ten largest companies in the Savannah MSA that use the Port of Savannah, along with the companies’ associated commodities. These companies include nationally known brands such as Home Depot, Target, and Coca-Cola Bottling as well as more locally known brands such as Chatham Steel Corporation. More than 45 million square feet of warehousing and distribution space is located in Chatham County to accommodate the demand of these and other companies that use the port.

Table 2-4: Top Ten Transportation and Warehousing Companies

Company	Commodity/Service
Colonial Group Inc.	Petroleum products and petrochemicals
CSX Transportation	Freight railroad
Dollar Tree Stores	Sundry retail product distribution
Chatham Steel Corporation	Steel service center
The Home Depot	Home improvement supplies
Coca-Cola Bottling Company United	Soft drink/water bottling warehouse
Target	Sundry retail import center
Pier 1 Imports	Household goods
United Distributors Inc.	Beverage distribution
IKEA Wholesale Inc.	Furniture distribution

NOTE: As determined by number of employees. Additional employment information to be found under Section 2.2.

Source: Savannah Economic Development Authority, 2014 and 2015

Transportation and warehousing companies in the Savannah MSA are also found in Bryan and Effingham Counties. Notable among these in Bryan County are Orafol and Oneida. Orafol is a global manufacturing company which produces vinyl films for graphic design and digital printing applications. The company maintains a 333,000-square-foot manufacturing and distribution facility in Bryan County. Oneida, one of the world’s largest marketers of stainless steel silverware

¹⁶ US Army Corps of Engineers. 2012. Navigation Data Center. http://www.navigationdatacenter.us/wcsc/by_porttons12.html ; Georgia Port Authority, 2014.

¹⁷ Savannah Economic Development Authority. 2014. Industries and Companies. <http://www.seda.org/savannah/40/port-related-distribution.html>

¹⁸ Georgia Department of Labor. 2015. Chatham County Area Labor Profile.

¹⁹ Ibid.

and associated products, maintains a 499,000-square-foot distribution facility in Bryan County that serves the nation’s southern region. Bonded Service Warehouse, located in Effingham County, provides private sector warehousing and distribution services. The company also provides rail service for CSX Transportation, which owns and operates a rail line that interchanges with the Port of Savannah’s on-port rail system.²⁰

2.3 Areas of Future Growth

Growth of the Savannah MSA’s primary freight-related industries is an important factor that will determine the region’s ability to capitalize on the growth of domestic and international trade flows. Identifying what industries will need additional land will be important in predicting what type of land parcels will be required to accommodate this future growth. The section that follows documents recent changes in the Savannah MSA’s manufacturing, transportation and warehousing, wholesale trade, and retail trade industries and highlights subsectors of those industries that are projected to grow and decline by 2020.

2.3.1 Chatham County

Table 2-5 presents the changes in the manufacturing industry that were observed in Chatham County from 2010 to 2013. As shown in **Table 2-5**, there was a large decrease (66.3 percent) in the number of manufacturing companies in the county coupled with a significant increase (160.7 percent) in the number of employees during this period. Subsectors experiencing the largest decreases in the number of companies included apparel, petroleum and coal products, and printing and related support activities. Subsectors benefiting from the largest gains in employment were textile product mills; electrical equipment, appliance, and component; fabricated metal product; and wood product. Subsectors where the number of companies decreased but employment either remained unchanged or grew likely experienced consolidation or acquisition, such as the case with Chatham Steel and Reliance.²¹

With regards to the service industry overall in Chatham County, the changes in the number of companies and employment between 2010 and 2013 were less drastic, as shown in **Table 2-6**. The number of companies increased by 7.4 percent and employment grew by 8.6 percent. Within the service industry, the freight-related subsectors all experienced growth in the number of companies and employment, with wholesale trade experiencing the largest increase in the number of companies (12.0 percent) and retail trade witnessing the largest growth in employment (9.0 percent).

²⁰ Bonded Service Warehouse. 2014. <http://www.bondedservice.com/>

²¹ This acquisition happened outside of the 2010 to 2013 time period, but is mentioned here to provide a local example.

Table 2-5: Changes in Manufacturing Industry in Chatham County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)	Number of Employees (Percent Change)
Manufacturing (Overall)	-66.3%	160.7%
Apparel	-99.5%	N/A*
Beverage and Tobacco Product	0.0%	N/A
Chemical	21.4%	-4.5%
Computer and Electronic Product	0%	14.8%
Electrical Equipment, Appliance, and Component	0%	36.4%
Fabricated Metal Product	-3.5%	24.5%
Food	-9.5%	-49.4%
Furniture and Related Product	-15.4%	-31.6%
Leather and Allied Product	0.0%	N/A
Machinery	-14.3%	-15.8%
Miscellaneous	0.0%	16.7%
Nonmetallic Mineral Product	0.0%	4.3%
Paper	0.0%	4.6%
Petroleum and Coal Products	-25.0%	-8.0%
Plastics and Rubber Products	0.0%	N/A
Primary Metal	50.0%	N/A
Printing and Related Support Activities	-21.1%	0.0%
Textile Mills	100.0%	N/A
Textile Product Mills	16.6%	54.0%
Transportation Equipment	10.0%	N/A
Wood Product	-16.7%	24.4%

*Note: N/A denotes incomplete data because of confidential data relating to individual employees that cannot be released.
Source: Georgia Department of Labor

Table 2-6: Changes in Freight-Related Service Industry in Chatham County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)	Number of Employees (Percent Change)
Service (Overall)	7.4%	8.6%
Wholesale Trade	12.0%	1.6%
Retail Trade	4.9%	9.0%
Transportation and Warehousing	8.0%	5.4%

Source: Georgia Department of Labor

2.3.2 Bryan County

Table 2-7 identifies the changes occurring in the manufacturing industry in Bryan County during the same time period. The manufacturing sector in the county overall saw a 35.3 percent decrease in the number of firms. The chemical subsector saw the largest decrease (66.7 percent) and the fabricated metal product subsector witnessed the only increase (50.0 percent). Other industry sectors, such as machinery, paper, and plastics and rubber products, remained unchanged. It should be noted that there previously were companies within the primary metal, transportation equipment, and wood product subsectors in Bryan County, but as of 2013, those firms have left. Those subsectors are therefore not included in **Table 2-7**.

Table 2-7: Changes in Manufacturing Industry in Bryan County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)
Manufacturing (Overall)	-35.3%
Chemical	-66.7%
Fabricated Metal Product	50.0%
Food	-50.0%
Machinery	0.0%
Nonmetallic Mineral Product	-25.0%
Paper	0.0%
Plastics and Rubber Products	0.0%

Source: Georgia Department of Labor

*Please note that employment data for the majority of areas identified under manufacturing in Bryan County are designated as confidential.

The service industry saw a significant decline in Bryan County during the period of 2010–2013, as presented in **Table 2-8**. The freight-related subsectors experienced similar declines, with the number of firms decreasing from 26.7 percent in the transportation and warehousing subsector to 64.0 percent in the retail trade subsector, and the number of employees decreasing from 64.4 percent in the transportation and warehousing subsector to 82.1 percent in wholesale trade.

Table 2-8: Changes in Freight-Related Service Industry in Bryan County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)	Number of Employees (Percent Change)
Service (Overall)	-81.0%	-71.1%
Wholesale Trade	-57.9%	-82.1%
Retail Trade	-64.0%	-72.1%
Transportation and Warehousing	-26.7%	-64.4%

Source: Georgia Department of Labor

2.3.3 Effingham County

In Effingham County, moderate gains in the overall number of manufacturing firms occurred, as displayed in **Table 2-9**. Subsectors witnessing increases included fabricated metal products (66.7 percent), miscellaneous products (33.3 percent), and nonmetallic mineral products (400.0 percent). These gains offset sharp losses in the chemical (75.0 percent), electrical equipment

(50.0 percent), furniture and related products (66.7 percent), machinery (33.3 percent), and paper (80.0 percent) subsectors.

Table 2-9: Changes in Manufacturing Industry in Effingham County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)
Manufacturing (Overall)	8.0%
Beverage and Tobacco Product	0.0%
Chemical	-75.0%
Electrical Equipment, Appliance, and Component	-50.0%
Fabricated Metal Product	66.7%
Furniture and Related Product	-66.7%
Machinery	-33.3%
Miscellaneous	33.3%
Nonmetallic Mineral Product	400.0%
Paper	-80.0%
Printing and Related Support Activities	0.0%
Wood Product	0.0%

Source: Georgia Department of Labor

*Please note that the employment data for majority of areas identified under manufacturing under Effingham County as designated confidential.

As presented in **Table 2-10**, there were slight increases in the overall number of service-related firms and employees in Effingham County between 2010 and 2013. For two of the freight-related subsectors, however, more significant changes occurred. In the wholesale trade subsector, the number of companies and employees increased by 33.3 percent and 18.6 percent, respectively. The transportation and warehousing subsector saw notable declines in the number of firms and employees of 17.0 percent and 9.8 percent, respectively.

Table 2-10: Changes in Freight-Related Service Industry in Effingham County (2010 to 2013)

Industry Name	Number of Companies (Percent Change)	Number of Employees (Percent Change)
Service (Overall)	0.6%	1.1%
Wholesale Trade	33.3%	18.6%
Retail Trade	-1.0%	4.9%
Transportation and Warehousing	-17.0%	-9.8%

Source: Georgia Department of Labor

2.4 Freight Related Industries Outlook

The preceding discussion identified areas of growth and decline in the freight-related industries in the Savannah MSA during the 2010 to 2013 time period. With regards to the outlook for these industries in the Savannah region, the Georgia Department of Labor developed 2012 to 2022 projections for the state’s Workforce Investment Areas (WIA). Chatham County, which as previously noted serves as the center of the Savannah MSA’s diverse and robust economy, is

located within the Coastal WIA along with eight other counties. **Table 2-11** summarizes the subsectors of the transportation and warehousing, retail trade, manufacturing, and wholesale trade industries that are projected to experience growth and decline in the Coastal WIA during the 2012 to 2022 period. The transportation equipment manufacturing subsector is projected to experience the most growth during the 2012 to 2022 time period, while the paper manufacturing subsector is projected to see the largest decline.

Table 2-11: 10-Year Freight-Related Industry Projections for Coastal WIA (2012 to 2022)

Rank	Growing Industries
1	Transportation Equipment Manufacturing
2	Support Activities for Transportation
3	Wholesale Electronic Markets and Agents and Brokers
4	General Merchandise Stores
5	Food and Beverage Stores
6	Motor Vehicle and Parts Dealers
Rank	Declining Industries
1	Paper Manufacturing
2	Clothing and Clothing Accessories Stores
3	Crop Production
4	Postal Service
5	Gasoline Stations
6	Miscellaneous Store Retailers
7	Publishing Industries (except Internet)
8	Forestry and Logging
9	Miscellaneous Manufacturing
10	Textile Product Mills
11	Beverage and Tobacco Product Manufacturing
12	Printing and Related Support Activities
13	Furniture and Related Product Manufacturing
14	Electronics and Appliance Stores

Source: Georgia Department of Labor.
<http://explorer.dol.state.ga.us/gsipub/index.asp?docid=386>

3. LAND USE ANALYSIS METHODOLOGY

This section of the technical memorandum provides a summary of the methodology implemented to identify existing areas which allow for freight-related activities as well as areas of undeveloped lands within the CORE MPO's Freight Transportation Plan study area. First, a discussion will briefly describe data collection and the methodology used for the area. Then, the discussion will switch to how this general methodology was implemented at the county level.

3.1 Data Collection

In order to organize and identify freight-related land uses within the Savannah MSA, it is necessary to gather all relevant land use data and documentation for Bryan, Chatham, and Effingham Counties as well as their associated municipalities. Land use data gathered from these areas were in GIS-format, with geographic locations of land uses within a jurisdiction. To understand the land use data gathered for all the jurisdictions within the area, documentation regarding those identified land uses was necessary. Documentation regarding the intent, allowable and prohibited uses, and other criteria associated with a specific land use category or zoning district included, but was not limited to, the:

- 2033 Chatham County-Savannah Tricentennial Plan,
- Bryan County and the Cities of Pembroke and Richmond Hill Joint Comprehensive Plan,
- 2027 Effingham County and the Cities of Guyton, Rincon, and Springfield Joint Comprehensive Plan, and,
- Zoning Ordinances for all applicable jurisdictions.

3.2 Methodology Framework

The identification of freight-related land uses involved the reviewing of future land use categories and zoning districts within an area for what is considered freight-related activities. That would mean identifying those categories and districts which allow for freight-related activities and those that prohibit such activities. Freight-related activities are generally defined for the CORE MPO's Freight Transportation Plan study area as activities related to:

- 1) Warehousing,
- 2) Transportation-related facilities and infrastructure such as aviation, seaports, highway corridors, freight terminals and intermodal facilities,
- 3) Distribution centers and wholesale trade facilities,
- 4) Manufacturing, and
- 5) Industrial activities.

For the jurisdictions within the study area, the information from those documents identified in the previous sub-section were separated by type of land use, future land use (i.e. Future Development

Designation) and zoning, and by jurisdiction. Although future land use and zoning districts may have similar naming conventions across jurisdictions, the intent, allowances and prohibitions in regards to activities, and other policies and regulations vary greatly across jurisdictions. For example, Effingham County’s commercial future land category does not allow for freight-related activities while the Chatham County-Savannah area has four distinct commercial future land use categories of which two allow for freight-related activities.

Some jurisdictions have future land use categories which accommodate a multitude of mixed-uses including freight-related activities while others have created specific future land use categories which cater to only freight-related uses. For example, Bryan County and its municipalities have specific Future Development Designations to encourage and develop freight-related commerce along identified highway corridors including, but not limited to, Interstate 16, Interstate 95, US Highway 17, State Road (SR) 17 and SR 144. With this wide range of possibilities, a crosswalk, or table, for each jurisdiction was created to identify whether a future land use or zoning district would allow for freight-related activity. This crosswalk was then applied to the land use data to display areas with existing or the potential to have or expand freight-related activities. Inconsistencies concerning the land use and zoning records were identified for each county regarding Total Developable Acres, which will be discussed in Section 4.²²

In addition to the identification of land use areas which would allow for freight-related activities, the crosswalk that was developed for each area also identified those land uses designated as undeveloped lands within a jurisdiction. Identification of undeveloped lands is another critical component of this land use analysis. Undeveloped lands can provide for areas of opportunity to expand existing freight-related activities.

²² **Effingham County** – Inclusion of Transportation/Utilities as a land use within the Land Use file means that the Land Use file will always be larger (in terms of total acreage) when compared to the Parcel file.

Chatham County – Missing land use data within the Future Land Use makes the total acreage size of this file significantly smaller compared to Parcels and Zoning; and, Zoning and Parcel have different total acreages because the Zoning file contains more land than the Parcel file such as roadways, right of way, and utility areas. The Chatham Parcel file also appears to be missing a few non-transportation/utility properties that are picked up within the Zoning file.

Bryan County – FDM files have a higher total acreage compared to Zoning file due to missing zoning data for Pembroke; Two different Zoning total acreages are seen because the Zoning file for Richmond Hill doesn’t contain information to identify vacant parcels, only the County’s Zoning file does; and, FDM file for Bryan County includes less land than the Zoning file. The County Zoning file includes additional land within the county, much of which is zoned A-5 (Ag District/Residential Use). The same goes between the FDM and Zoning files for Richmond Hill.

3.3 Freight Use Identification by County and Municipalities

Each county and municipality has the authority to develop their own set of land uses and zoning for their communities. Land use captures the existing activities which are conducted on the parcel, while zoning identifies the planned uses for the parcel. In **Table 3-1**, the Freight-Related Land Uses are identified for the study area. Only one jurisdiction has identified land uses in Chatham and Effingham Counties. The City of Savannah has adopted the land uses of Chatham County. In Bryan County, the County has their own set of land uses, while the municipalities of Pembroke and Richmond Hill each have their own set of land uses.

Table 3-1 Freight-Related Land Uses Identified by County and Municipalities

County	Municipality	Freight-Related Land Use
Bryan		Corridor/Gateway Regional Commercial
	Pembroke	Highway Commercial Industrial
	Richmond Hill	Commercial Corridor/Gateway Mixed Use
Chatham		Commercial – Regional Commercial – Marine Industry – Light Industry – Heavy Transportation/Communication/Utilities
Effingham		Industrial Transportation/Utilities

Zoning for the study area differs greatly from the land use categories, as the zoning has several more categories. As shown in **Table 3-2**, municipalities in Chatham and Effingham Counties have their own zoning codes, unlike for land use, where zoning for all of Bryan County is only represented by the county’s zoning.

Table 3-2: Freight-Related Zoning Categories by County and Municipalities

County	Municipality	Freight-Related Zoning Category	
Bryan		General Commercial District General Industrial District Interchange Commercial District Light Industrial District Waterfront Commercial - Industrial	
Chatham ²³		Business Business Limited Business General Heavy Industrial Light Industrial	Manufacturing Planned Light Industrial Transition Waterfront Industry
	Bloomingtondale	General Commercial Intensive Industry Extensive Industry	
	Garden City	Industrial	
	Pooler	Industrial, light district Industrial, heavy district	
	Port Wentworth	Economic Development Zone Industrial Planned Industrial	
	Savannah	General Business General Business Transition General Business Transition 2 Highway Business	Heavy Industrial Light Industrial Light Industrial Business Manufacturing
	Thunderbolt	Light Industrial Industrial Waterfront Industry	
	Tybee Island	Maritime District	
Effingham		Highway Commercial Districts Industrial Districts	
	Guyton	Industrial	
	Rincon	General Commercial Use District Limited Industrial Use District General Industrial Use District Planned Unit Development-MXU	
	Springfield	General Commercial District Industrial District	

²³ Planned Development versions of the listed uses are also considered Freight-Related.

4. FREIGHT-RELATED LAND USE AND ZONING

4.1 Existing Freight-Related Zoning

In the CORE MPO’s Freight Transportation Plan study Area, over two-thirds of the existing land zoned for freight-related uses is located in Chatham County, which is home to major freight generators such as the Port of Savannah, major freight rail terminals, and the Savannah/Hilton Head International Airport. As shown in **Table 4-1**, over 25,000 acres of land is zoned for freight-related use in Chatham County, which is about 18 percent of the total land in the county. Displayed in **Figure 4-1**, in Chatham County, a large concentration of the freight-related zoning is bordered by I-95 to the west, I-16 to the south, I-516 to the east, and the Savannah River to the north.

Table 4-1: Existing Freight-Related Zoning in the CORE MPO’s Freight Plan Study Area

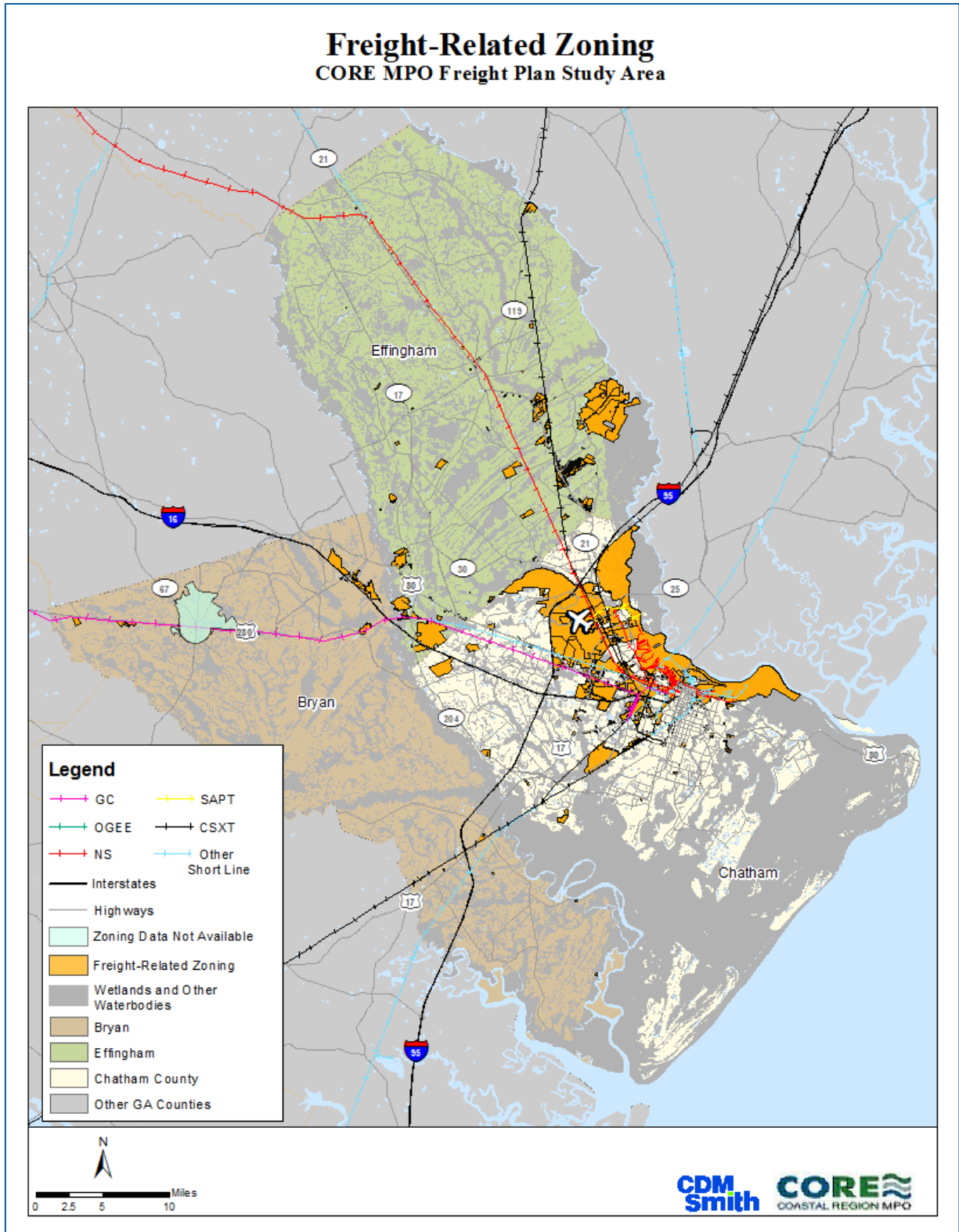
County	Total Developable Acres	Existing Freight-Related Zoning Acreage	Percentage of Land Currently Zoned for Freight-Related Uses
Bryan	98,792	1,497	1.52%
Chatham	140,772	25,442	18.07%
Effingham	189,121	7,686	4.06%
Total ²⁴	428,685	34,625	8.08%

In Effingham County, less than 8,000 acres of land is zoned for freight-related use, a total of four percent of the county’s land. These sites are located primarily in the southern half of Effingham County along the I-16 corridor, adjacent to the Class I railroads in the south central section of Effingham County, and along the SR 21 corridor.

Bryan County is home to less than 1,500 acres zoned for freight-related use. This land is concentrated in one area, the Interstate Centre, located along I-16 in the western section of the county. The Belfast Commerce Center, an industrial park located along I-95 in the eastern section of the county, was not listed by the county as being zoned for freight-related uses.

²⁴ Note that total developable acreages used for each land use analysis subset are dependent upon the amount of land use and zoning data available for that analysis subset for each jurisdiction. In addition, for Bryan County, any land coverage associated with Ft. Stewart was not included in any of these analyses.

Figure 4-1: Existing Freight-Related Zoning within CORE MPO's Freight Plan Study Area



4.2 Existing Freight-Related Land Use

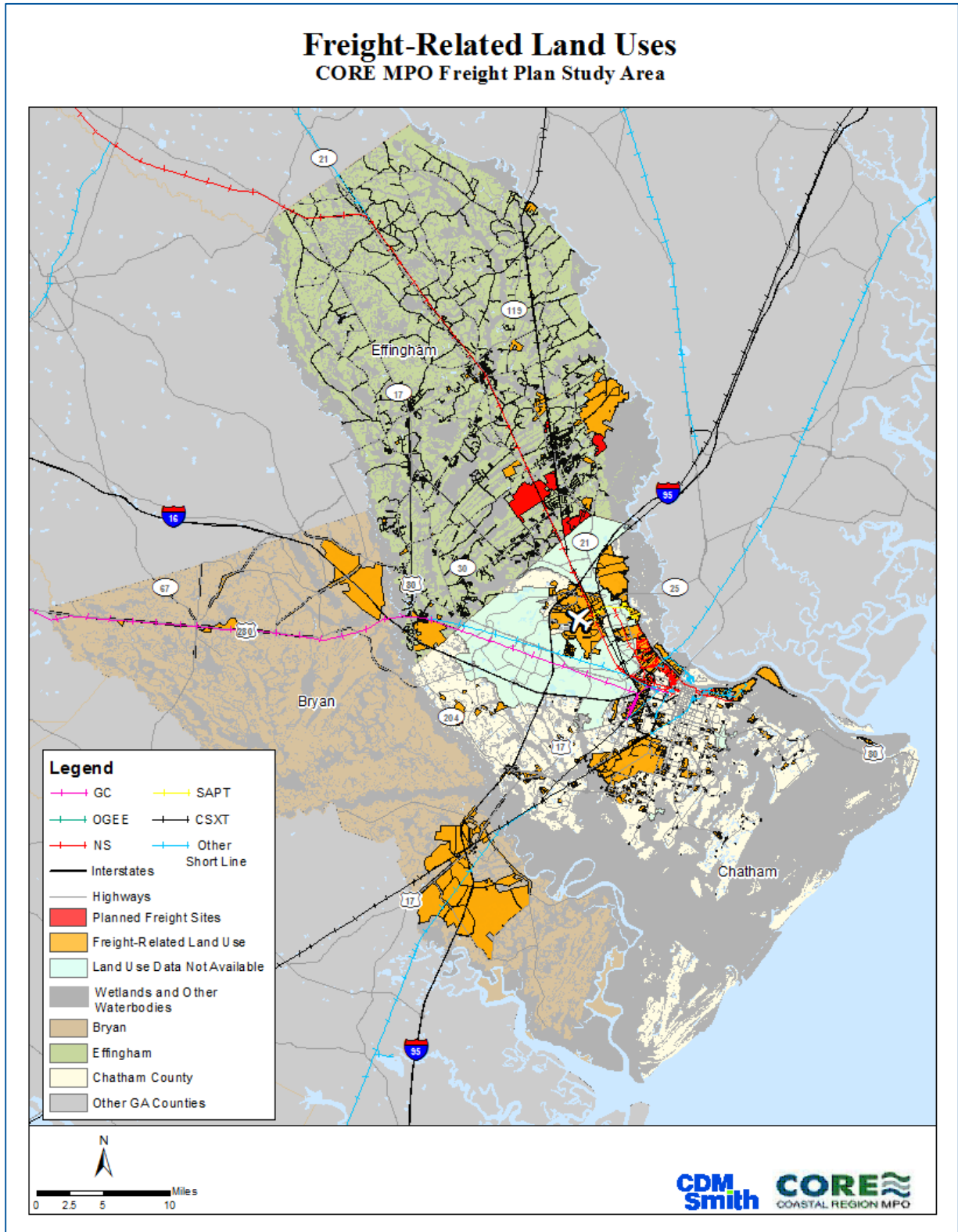
For the CORE MPO’s Freight Transportation Plan study Area, the total percentage of freight-related land use is over nine percent for the region of Bryan, Chatham, and Effingham counties. As shown in **Table 4-2** and illustrated in **Figure 4-2**, Chatham County and Bryan County have the two highest percentages of freight-related land use, about 25 percent and 19 percent respectively. In Chatham County, the freight-related land uses are located along the Savannah River, in the vicinity of I-95 and the Savannah/Hilton Head International Airport, and around Hunter Army Airfield. In Bryan County, the freight-related land uses are concentrated in two areas, Interstate Centre, located in western Bryan County along I-16, and Belfast Commerce Centre, located in eastern Bryan County along I-95 and the CSX rail line.

Table 4-2: Existing Freight-Related Land Use in the CORE MPO’s Freight Plan Study Area

County	Total Developable Acres	Existing Freight-Related Land Use Acreage	Percentage of Land Currently Utilized for Freight-Related Uses
Bryan	118,342	22,502	19.02%
Chatham	98,343	25,344	25.76%
Effingham	192,934	13,189	6.84%
Total	409,619	61,035	14.90%

Effingham County has about 13,000 acres, or under seven percent of land used for freight-related land uses. Similar to the Effingham County freight-related zoned areas, these sites are located primarily in the southern half of Effingham County along the I-16 corridor, adjacent to the Class I railroads in the south central section of Effingham County, and along the SR 21 corridor.

Figure 4-2: Existing Freight-Related Land Use within CORE MPO's Freight Plan Study Area



4.3 Existing Vacant/Undeveloped Land

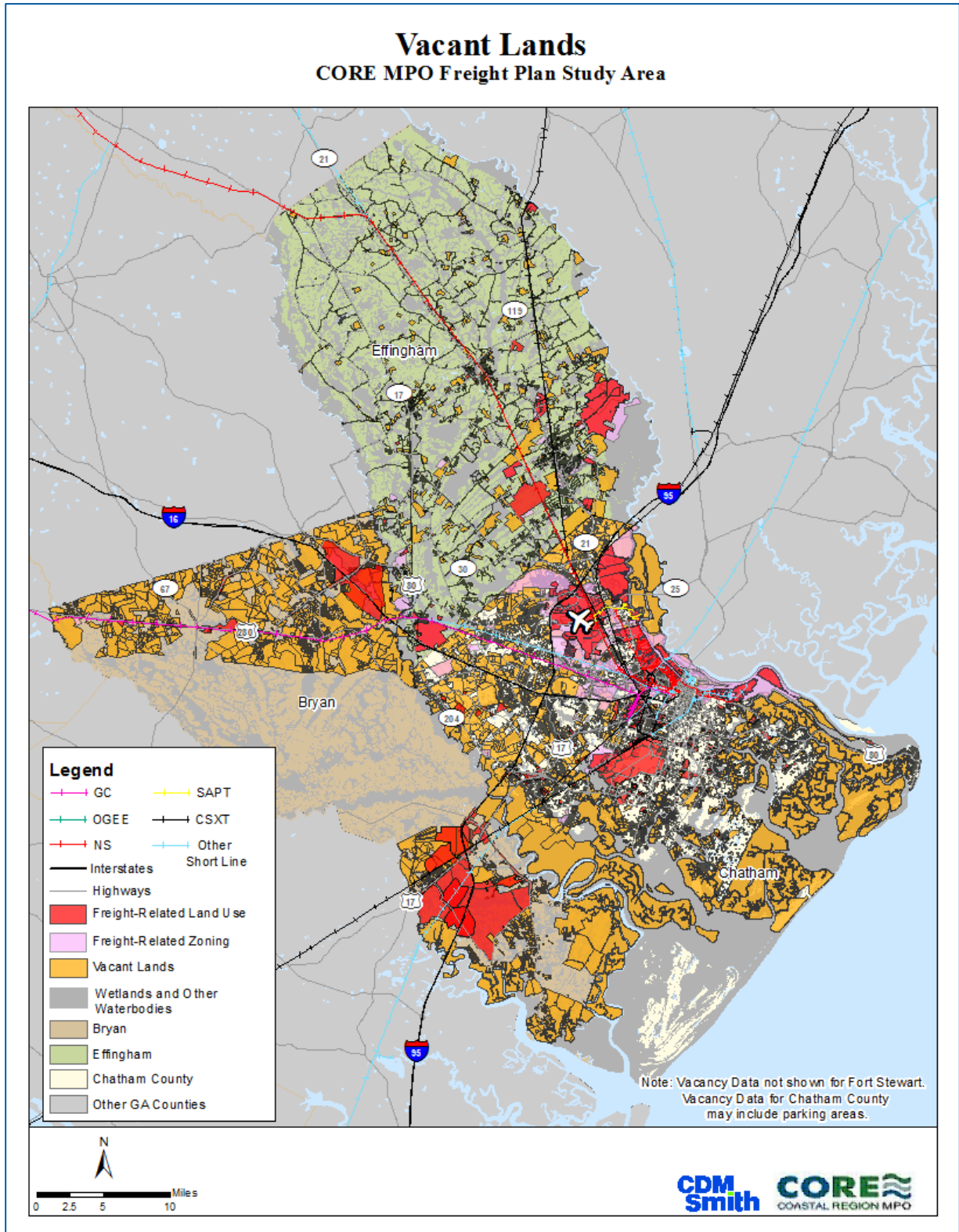
The existing vacant and undeveloped land potentially available for development for future growth in the CORE MPO’s Freight Transportation Plan study area totals over 197,000 acres of land, which is just under half of the total 400,000 plus acres of developable land. (Table 4-3 and Figure 4-3). Chatham County, the most developed county of the three, has only about 46,000 acres classified as vacant or undeveloped, which is about a third of total developable land in the county.

As the region continues to grow, developers may look outside of Chatham County and towards neighboring counties of Bryan and Effingham for future growth. Effingham County has about 92,000 acres of vacant and undeveloped land in the county. Bryan County has about 65 percent of its 92,000 acres of land vacant or undeveloped.

Table 4-3: Existing Vacant/Undeveloped Land in the CORE MPO’s Freight Plan Study Area

County	Total Developable Acres	Existing Acres of Vacant/Undeveloped Land	Percentage of Land Vacant/Undeveloped
Bryan	92,121	59,708	64.82%
Chatham	121,631	45,835	37.68%
Effingham	192,934	91,696	48.49%
Total	406,686	197,239	48.50%

Figure 4-3: Vacant/Undeveloped Land within CORE MPO's Freight Plan Study Area



5. NEXT STEPS

This technical memorandum evaluates the freight-related zoning and land use practices for the counties and municipalities in the CORE MPO's Freight Transportation Plan study area. Utilizing the base line data of where freight zoning and land uses are currently located in the study area provides the building blocks for where to locate future freight-related developments, which will be discussed in TM 6 – Recommendations for Future Land Uses Related to Freight and Goods Movement Needs and Forecasts. Recommendations will be provided to identify strategies to accommodate future freight growth and development policies to assist in the implementation of these strategies.