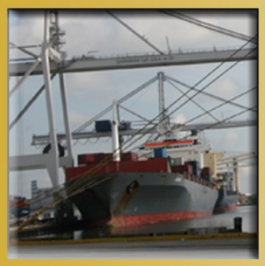
Georgia Department of Transportation
Office of Planning

Georgia Statewide Freight and Logistics Plan

Rail
Modal Profile



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1.0 Introduction

Georgia and railroads have a long history that traces back to the 1830s. Georgia quickly developed a lead among southern states in railroad mileage, and by the late 1800s, Atlanta had become Georgia and the Southeast's railroad center. Lines radiating from the city provided the most direct links between states bordering the Atlantic and the Gulf States, and the only overland link to Florida. Like Chicago, Atlanta grew greatly as the railroads prospered. The successors to those early railroads – NS and CSXT – continue to operate substantial facilities in and around Atlanta. Although the share of freight and passenger traffic diminished with the development of the highway network during the 20th Century, Georgia's railroads nevertheless have continued to maintain an important presence. In recent years, traffic has grown significantly, and changing trade patterns, new services, and economic performance vis-à-vis motor carriage offers continued and new opportunities for growth over the foreseeable future.

This modal profile provides a perspective of the current state of Georgia's freight rail system, its potential, and the critical needs and issues that the system must address to maintain its vitality into the future. With this profile being part of the overall Georgia Freight Plan, it provides an overview on the institutional structure, physical characteristics and conditions, and current and future system demand as it relates to freight.

A more complete discussion of these and other elements not covered here can be found in the 2009 Georgia Statewide Rail Plan. The 2009 Statewide Rail Plan (SRP) represented Georgia's first effort to create an integrated rail plan that addressed the State's needs for passenger and freight rail service, and was designed to be compliant with the Passenger Rail Investment and Improvement Act (PRIIA) of 2008. The plan provides an overview of the freight rail system, including an inventory of all of the freight carriers operating in the State, major facilities, and physical constraints. It further contains a discussion on passenger rail, various passenger rail planning efforts, as well as the economic impact of rail service. The report identifies needed infrastructure programs and funding options, and concludes with a set seven state goals for rail, of which all but the last one indirectly or directly affects the State's freight rail system:

1. Maintain the freight rail system in a state of good repair to move freight traffic efficiently.
2. Explore additional funding mechanisms to bring the existing freight lines to a state of good repair.
3. Implement initial intercity passenger rail service between Atlanta and Macon.
4. Take an active leadership role in the incremental development and implementation of High-Speed Passenger Rail service with efforts to realize

200 mph service in the future. Work with our sister states and create a high-speed rail network connecting major southeastern cities with Atlanta and Macon as multimodal hubs in the State of Georgia.

5. Work with the Georgia Center of Innovation for Logistics to identify and develop a comprehensive plan for capacity improvements to ensure proper movement of goods and maintain the State of Georgia as a leader in logistics.
6. Enhance State's economic development potential by providing statewide rail connectivity and subsequently providing high-quality job opportunities
7. Provide a key operational role for any and all potential passenger rail operators in the implementation of the State's passenger rail service.

The Georgia Freight and Logistics Plan, of which this modal profile forms a component, takes these goals into consideration, as well as the other findings and recommendations identified in the SRP. It will help define a strategy for utilizing Georgia's freight rail system, and develop a strategy that seeks to exploit the unique attributes of each mode. The Plan should further inform a future comprehensive statewide rail planning initiative.

This profile consists of five chapters. Chapter 1, this introduction, is followed by four additional chapters. These are:

- **Institutional Perspective** (Chapter 2) provides an overview of all railroads operating in Georgia, their institutional structure, and a delineation of the major differences among them. Georgia hosts a rich mix of railroads, ranging from the two large eastern railroads, NS and CSXT, to 25 short line and switching roads. Notably, the State owns 676 miles of track, which are leased out to carriers, and thus has a very direct stake in the future outlook and needs of these lines.
- **Rail Infrastructure** (Chapter 3) describes the physical system of rail lines and various terminals that are located in Georgia. The significance of rail facilities is characterized by traffic volumes; for terminals it is throughput in terms of carloads or trailers/containers, while for links it is million gross tons. Important carload yards, rail/highway intermodal terminals, and bulk transload facilities are inventoried. The chapter concludes with a review of Georgia's rail system from the standpoint of the number of mainline tracks and traffic control systems, as well as conformance to current standards for railcar weight and vertical clearance. The ability to handle 286,000-pound railcars is particularly critical as many branch lines that are reliant on carload traffic have yet to be upgraded to handle this increasingly common heavier equipment.
- **Rail Freight Demand** (Chapter 4) examines actual and projected demand for freight rail transportation in Georgia, using data from the STB Waybill Sample, FHWA Freight Analysis Framework 3 (FAF3), and a 2007 TRANSEARCH dataset provided by Georgia DOT. Through an adaptation of the FAF3 forecast, demand for goods movement was projected through 2050.

- **Issues and Needs** (Chapter 5) identifies issues affecting the long-term viability of Georgia's rail system. These include existing and future infrastructure constraints, which when combined with the coverage on weight limits and vertical clearances in Chapter 3 provide an indication of the physical improvements that are necessary for railroads to remain competitive in the transportation marketplace. Institutional and regulatory issues also come in to play, of which the particular challenges faced by the short line industry and the industry-wide mandate to implement Positive Train Control (PTC) by 2015 are discussed as well.

A broad range of sources was used for this profile. Underlying much of the work was extensive web research, outreach to carriers and other industry sources, the 2009 SRP*, and an updated version of the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT). ICAT provides a platform for geographically representing the rail network, and includes attribute data on key elements including ownership, trackage rights, number of mainline tracks, signal systems, and traffic density.

The consultant team engaged NS and CSXT, the two large railroads serving the State, as well as several of the small railroads to obtain information on current conditions. This was particularly beneficial with the short lines, as there have been several changes in ownership in the intervening months since the SRP was developed. Although the basis of the traffic data is from 2007 for both sources and thus predates the recent recession, the FAF3 forecast used in this effort is current as of mid-2010. Thus, the forecast does reflect the impact of the 2008 to 2009 recession.

**Note*: *Work to update the 2009 Georgia State Rail Plan has recently begun by GDOT. The update will build on the previous plan as well as the analysis, findings and recommendations contained in this Statewide Freight and Logistics Plan.*

Information on this update is available at: ***www.dot.ga.gov/IS/Rail***

2.0 Institutional Perspective

2.1 OVERVIEW

This chapter provides an overview of Georgia's railroads, their institutional structure, and a delineation of their key characteristics. Information for this effort was drawn from a range of materials, including the 2009 Georgia State Rail Plan, extensive web research, and direct contact with several carriers. Most beneficial were various railroad and government web sites, including those of the Association of American Railroads (AAR), the American Short Line and Regional Railroad Association, Georgia's Railroad History and Heritage, and the Georgia Railroad Association, and the web sites of the railroads operating within the State. Depending on the availability of information, the description of each rail carrier includes a brief summary of its history, revenues, carload, size, rail miles, and employees.

Apart from recent operational data for Georgia's two primary railroads, NS and CSXT, most of the operational and other presented in this report dates from 2008 and 2007, and thus does not reflect the dramatic drop in traffic volumes that took place during the recession that started in the second-half of 2008. Although traffic has recovered considerably since the depth of the economic recession in the second quarter of 2009, it has yet to recover to the levels that existed prior to the recent recession. Particularly hard hit were short lines, many of which saw traffic plummet by 30 to 50 percent.

There are 6,427 miles of track and right-of-way in Georgia, of which 4,832 are in active service, placing it seventh in the nation. The two large eastern Class I railroads – CSXT and Norfolk Southern (NS) – operate approximately 3,400 miles and 70 percent of the total active trackage in the State. The remaining 1,400 miles of track are operated by 25 Class III and switching railroads (revenues of less than $40 million). Major holding companies – Genesee & Wyoming, OmniTrax, and Pioneer Railcorp – manage the majority (14) of these short line (Class III) railroads and smaller operators manage the remaining 11 railroads. There are no Class II (regional) railroads in Georgia.

As with many other states, Georgia has taken an increasingly active role in acquiring rail lines. Two state agencies – the Department of Transportation and the State Property Commission - collectively own 676 miles of track and other rail facilities in the State. CSXT leases 136 miles from the State Property Commission, and various short line operators lease 540 miles from GDOT. In addition, the Georgia Ports Authority owns rail terminal facilities associated with the ports of Savannah and Brunswick.

2.2 INSTITUTIONAL STRUCTURE

The institutional structure of the rail industry in North America is quite different from the other transportation modes (highways, air, water, etc.) that have typically been the subject of public planning studies and policy development efforts. In contrast to highway, air, and water facilities, which are generally owned and maintained at public expense and accessible to any licensed operator, rail carriers provide not only the service but also maintain and control the tracks and other facilities that are required to provide service. Thus, physical conditions, service, and institutional structure are closely linked.

Understanding how the rail industry is structured, and the varying scale, ownership and operating arrangements that are present in Georgia is important to develop responsive strategies that will meet the goals set forth in a vision for rail. While the North American rail system is an integrated network, the individual carriers, which range from very small railroads that operate in only a county or two to the largest carriers that service much of the nation, have significantly varying perspectives and needs. In this context, North American railroads are typically categorized by the industry and government regulators into groups by size and type. The most common scheme is that used by the Association of American Railroads (AAR), which classifies carriers on the basis of revenue and mileage.[1] The classifications are:

- **Class I**: These are the largest railroads and are those with 2009 operating revenue in excess of $378.8 million (or the equivalent in U.S. dollars if it is a Canadian or Mexican Railroad). Nationally these railroads account for 67 percent of the industry's mileage, 90 percent of its employees and 93 percent of its freight revenue. Seven Class I railroads currently operate in the U.S.: CSXT, Norfolk Southern (NS), BNSF, Union Pacific (UP), Kansas City Southern (KCS), Canadian Pacific (CP), and Canadian National (CN). NS and CSXT operate in Georgia.
- **Regional or Class II**: Class II railroads, commonly known as regionals, are currently classified as having an operating revenue of anything greater than $20.5 million but less than $277.7 million, as stated by the Association of American Railroads (AAR). Regional railroads are line-haul railroads operating at least 350 miles of track and/or earning revenue of at least $40 million and the Class I threshold. Regional railroads that qualify using the 350 miles operated criterion must generate minimum revenue of $20 million. There are no Class II railroads in Georgia.
- **Short Line/Local or Class III**: These railroads are line-haul railroads below the regional criteria, and include railroads that perform only switching and

[1] For regulatory purposes the Surface Transportation Board (STB) classifies railroads using similar but different thresholds based on the railroads' inflation-adjusted annual operating revenues.

terminal operations. Switching and terminal railroads are either jointly owned by two or more railroads for the purpose of transferring cars between railroads or operate solely within a facility or group of facilities.

CSXT and Norfolk Southern are the two Class I railroads that operate in the eastern half of the U.S. The section below provides background information on the operating and financial characteristics of each railroad.

Overview of CSXT

As described in CSXT's 2010 Annual Report, CSXT's operations are primarily focused on four major transportation networks and corridors which are defined geographically and by commodity flows below and shown in Figure 2.1.

- Coal Network – The CSXT coal network connects the coal mining operations in the Appalachian mountain region with industrial areas in the Northeast and Mid-Atlantic, as well as many river, lake, and deep water port facilities. CSXT's coal network is positioned to supply utility markets in both the Northeast and Southeast and to transport coal shipments for exports outside of the U.S. Roughly three of every four tons of domestic coal and almost half of the export coal that the Company transports is used for generating electricity.
- Interstate 90 (I-90) Corridor – This CSXT corridor links Chicago and the Midwest to metropolitan areas in New York and New England. This route has minimal hills and grades and nearly all of it has two main tracks (referred to as double track) which permit the corridor to support consistent, high-speed intermodal, automotive and merchandise service. This corridor is a primary route for import traffic coming from the Far East through western ports moving eastward across the country, through Chicago and into the population centers in the Northeast. This route carries consumer goods from all three of the Company's major markets – merchandise, coal and intermodal.
- Interstate 95 (I-95) Corridor – The CSXT I-95 Corridor connects Charleston, Savannah, Jacksonville, Miami and many other cities throughout the Southeast with the heavily populated northeastern cities of Baltimore, Philadelphia and New York. CSXT primarily transports food and consumer products, as well as metals and chemicals along this line. It is important to note that this is the only rail corridor along the eastern seaboard south of Washington, D.C., and this rail line provides access to major eastern ports.
- Southeastern Corridor – CSXT considers this a critical part of their network. It runs between CSXT's western gateways of Chicago, St. Louis and Memphis through the cities of Nashville, Birmingham, and Atlanta and markets in the Southeast. The Southeastern Corridor is the premier rail route connecting these key cities, gateways, and markets and positions CSXT to efficiently handle projected traffic volumes of

intermodal, automotive and general merchandise traffic. The corridor also provides direct rail service between the coal reserves of the southern Illinois basin and the increasing demand for coal in the Southeast.

It is interesting to note that Georgia is home to three of the four major transportation networks and corridors for CSXT. The CSXT coal network terminates just north of the Atlanta region. The CSXT I-95 Corridor runs through Savannah and Waycross. Atlanta is also a critical node on the CSXT Southeastern Corridor providing the most direct connection between Chicago and Florida. CSXT's railyard in Waycross has the second highest volume of all CSXT yards with 644,415 units processed in 2010. This was second only to the CSXT railyard located in Chicago.

Overview of Norfolk Southern

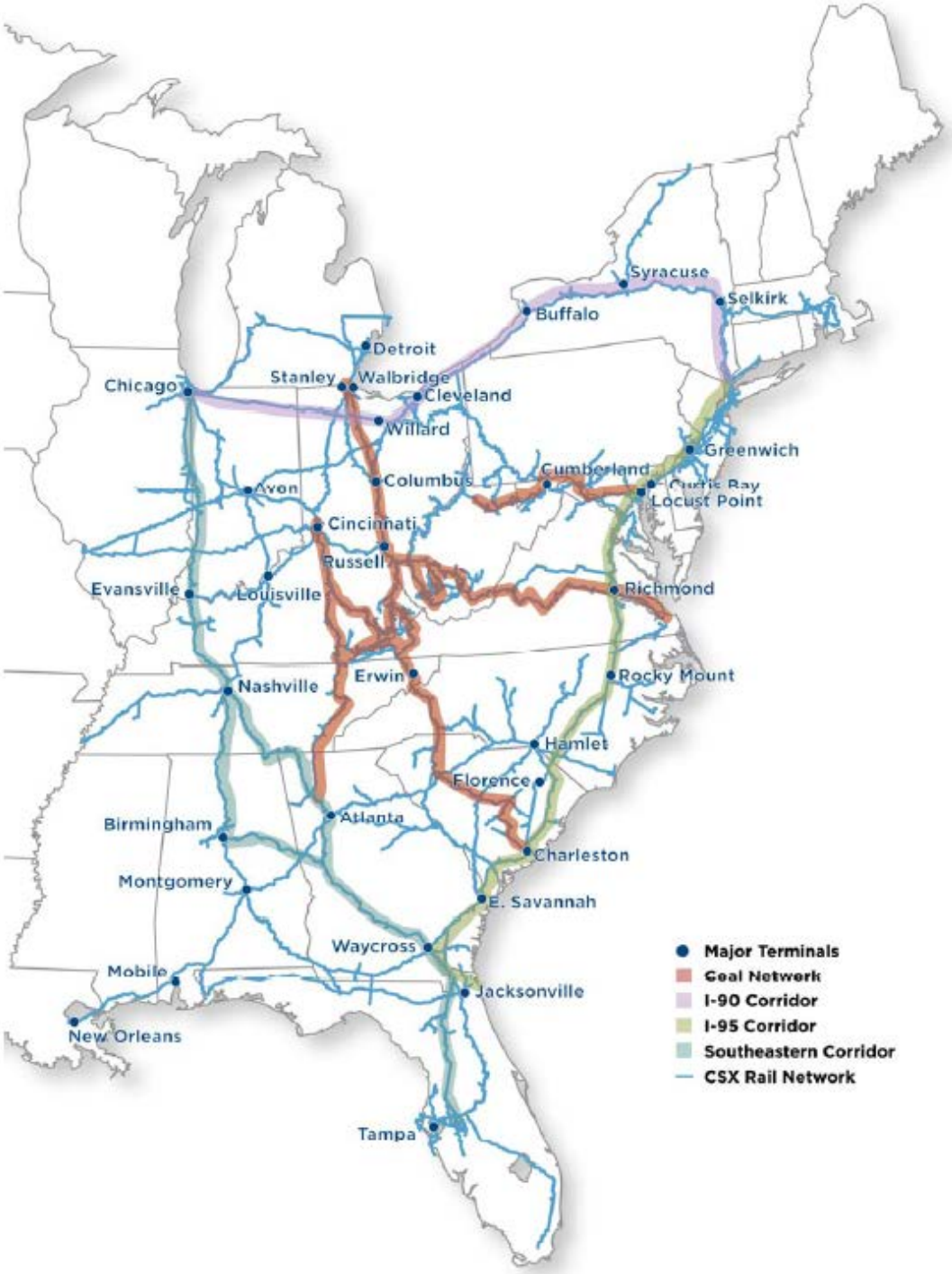
Norfolk Southern also operates an extensive rail network in the eastern half of the U.S. Their full rail network is shown in Figure 2.2. The corridors that Norfolk Southern feel are the most strategic are shown in Figure 2.3. Two of the five Norfolk Southern strategic corridors have a direct impact on Georgia. The first is the Crescent Corridor, which is an initiative to increase train speeds for intermodal traffic between the Northeast U.S. to Memphis and New Orleans. The second is the Titusville Corridor, which is targeted to increase train speeds between Atlanta and Central Florida.

It is also interesting to note that Norfolk Southern has a "straight-line" rail alignment between Savannah and Atlanta. This has allowed them to operate cost-effective service between these two fast growing freight nodes even though the two cities are only approximately 250 miles apart. Norfolk Southern recently increased the number of trains per day between Savannah and Atlanta locations from one to two.

Georgia is a feature state on one of Norfolk Southern's most frequently used rail lines. According to the Norfolk Southern 2010 Annual Report, the rail corridors with the heaviest freight volumes are:

- New York City area to Chicago;
- Chicago to Macon (via Cincinnati, Chattanooga, and Atlanta);
- Appalachian coal fields to Norfolk, Virginia and Sandusky, Ohio;
- Cleveland to Kansas City;
- Birmingham, AL to Meridian, MS; and
- Memphis, TN to Chattanooga, TN.

Figure 2.1 CSXT National Rail Network

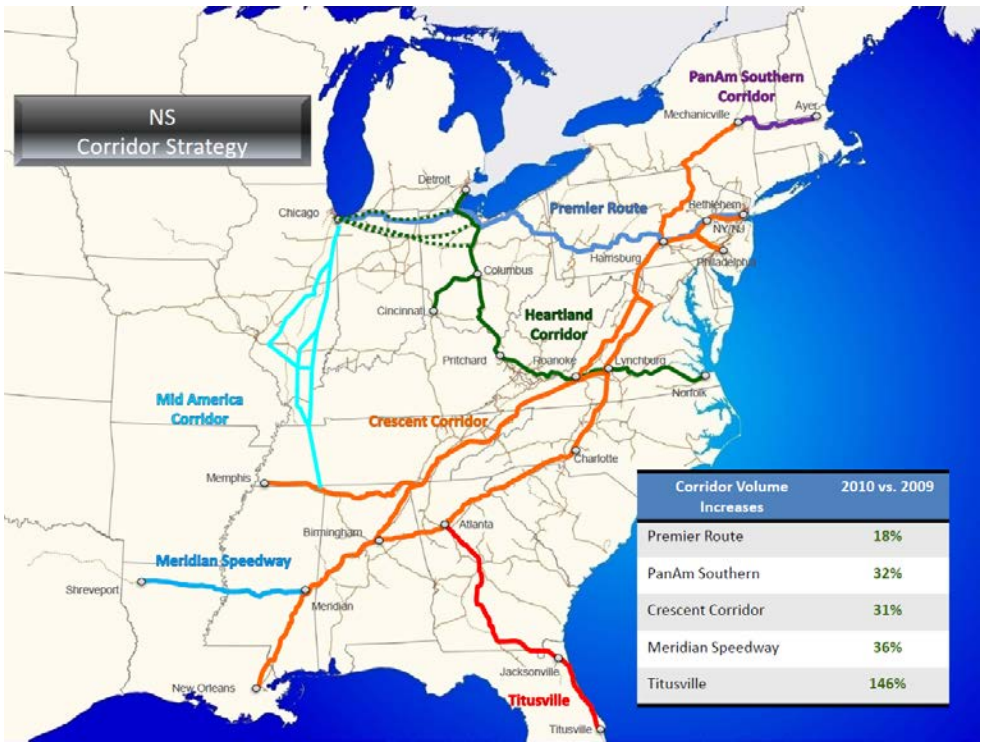


Source: CSXT 2010 Annual Report.

Figure 2.2 Norfolk Southern -- National Rail Network

Source: Norfolk Southern 2010 Annual Report.

Figure 2.3 Norfolk Southern -- Strategic Corridors



Source: Norfolk Southern CEO Presentation to Investors Stiffel Nicholas Transportation Conference, 2010.

Overview of Financial Structure and Markets Served

CSXT and Norfolk Southern both move goods across a broad spectrum of commodities. Table 2.1 shows the major industries served by each company. Coal is the largest revenue generator for both railroads comprising approximately 30 percent of the total revenues for each railroad. Norfolk Southern has a slightly higher percentage of intermodal traffic relative to CSXT. Chemicals and agricultural products are also key commodities for the railroads in terms of revenue generation.

The near-term future for the Class I railroads is very bright. Many of the commodities that are shipped by railroads are forecast to grow at a rapid clip. For intermodal rail moves, over 30 percent of the shipments are the result of international trade that moves through ports in the U.S. Therefore, as demand for intermodal goods increases, the demand for rail intermodal service will also increase. CSXT and NS will also benefit from the increased container traffic at the East Coast ports that will arrive due to the deepening and widening of the Panama Canal. CSXT and NS will be used to deliver many of these containers to the urban centers in the Eastern half of the U.S. Similarly, there is likely to be outsized demand for bulk commodities including coal, agricultural goods, and chemicals from developing economies such as those in China, Brazil and India.

Table 2.2 shows the 2010 expenses for both CSXT and NS. Despite the fact that railroads are capital intensive industries, the largest component of each company's expenses was devoted to wages for employees. Additionally, fuel is roughly 20 percent of the expenses for each company. Therefore, a 10-percent increase in the price of fuel roughly translates in a two-percentage point decrease in profit margins for the railroads. To lessen the impact of fuel volatility on the railroads finances, each railroad has developed a fuel surcharge that is adjusted periodically to account for the price of fuel.

Table 2.1 Revenue by Commodity for 2010

Commodity	CSXT ($ millions)	Percent of Total Revenue	Norfolk Southern ($ millions)	Percent of Total Revenue
Chemicals	1,485	14%	1,302	14%
Agricultural Products	1,056	10%	1,326*	14%
Automotive	800	8%	648	7%
Emerging Markets	615	6%	n/a	n/a
Forest products	600	6%	712	7%
Metals	520	5%	1,013	11%
Phosphates and Fertilizers	465	4%	n/a*	n/a*
Food and Consumer	245	2%	n/a*	n/a*
Total Merchandise	5,786	54%	5,001	53%
Coal	3,267	31%	2,719	29%
Intermodal	1,291	12%	1,796	19%
Other Revenue	292	3%	n/a	n/a*
Total	10,636	100%	9,516	100%

Source: CSXT 4Q2010 quarterly earnings release, NS quarterly earnings release, *For NS, agricultural products are combined with food and consumer products.

Table 2.2 Expenses of Freight Railroads Operating in Georgia

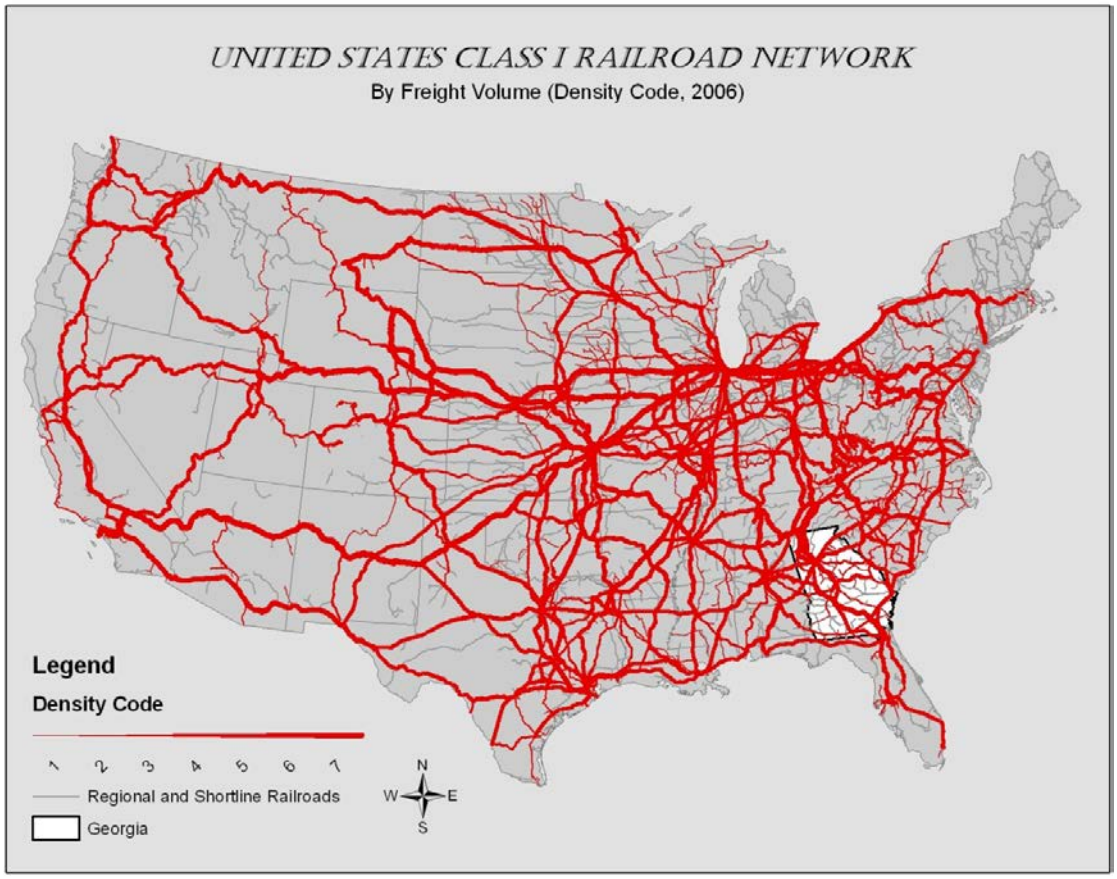
Expense Category	CSXT ($ Millions)	Norfolk Southern ($ Millions)
Labor and Fringe	2,957	2,708
Materials, Supplier, Equipment and Other*	2,449	2,234
Fuel	1,212	1,079
Depreciation	947	819
Equipment and Other Rents	374	n/a
Total Expenses	7,565	6,840

Source: Annual financial reports for CSXT and NS.

2.3 GEORGIA'S RAIL NETWORK

Georgia is an important crossroads for the nation's freight rail network. As Figure 2.4 illustrates, significant volumes of freight are transported on Class I railroad lines traversing the State.

Figure 2.4 U.S. Class I Railroad System

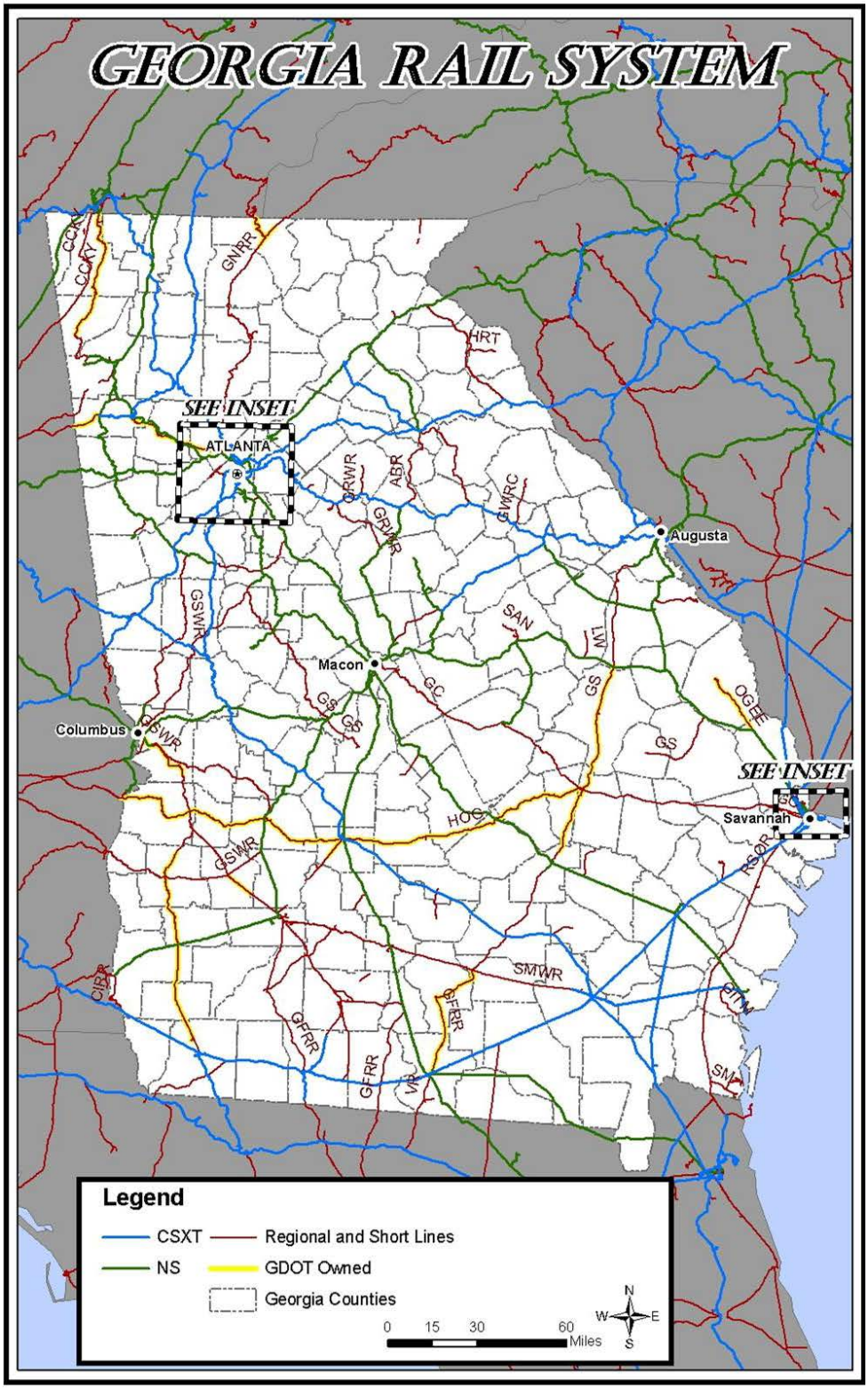


Source: Project team analysis, using 2009 version of I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) & Federal Railroad Administration's Class I railroad network density data from 2006.

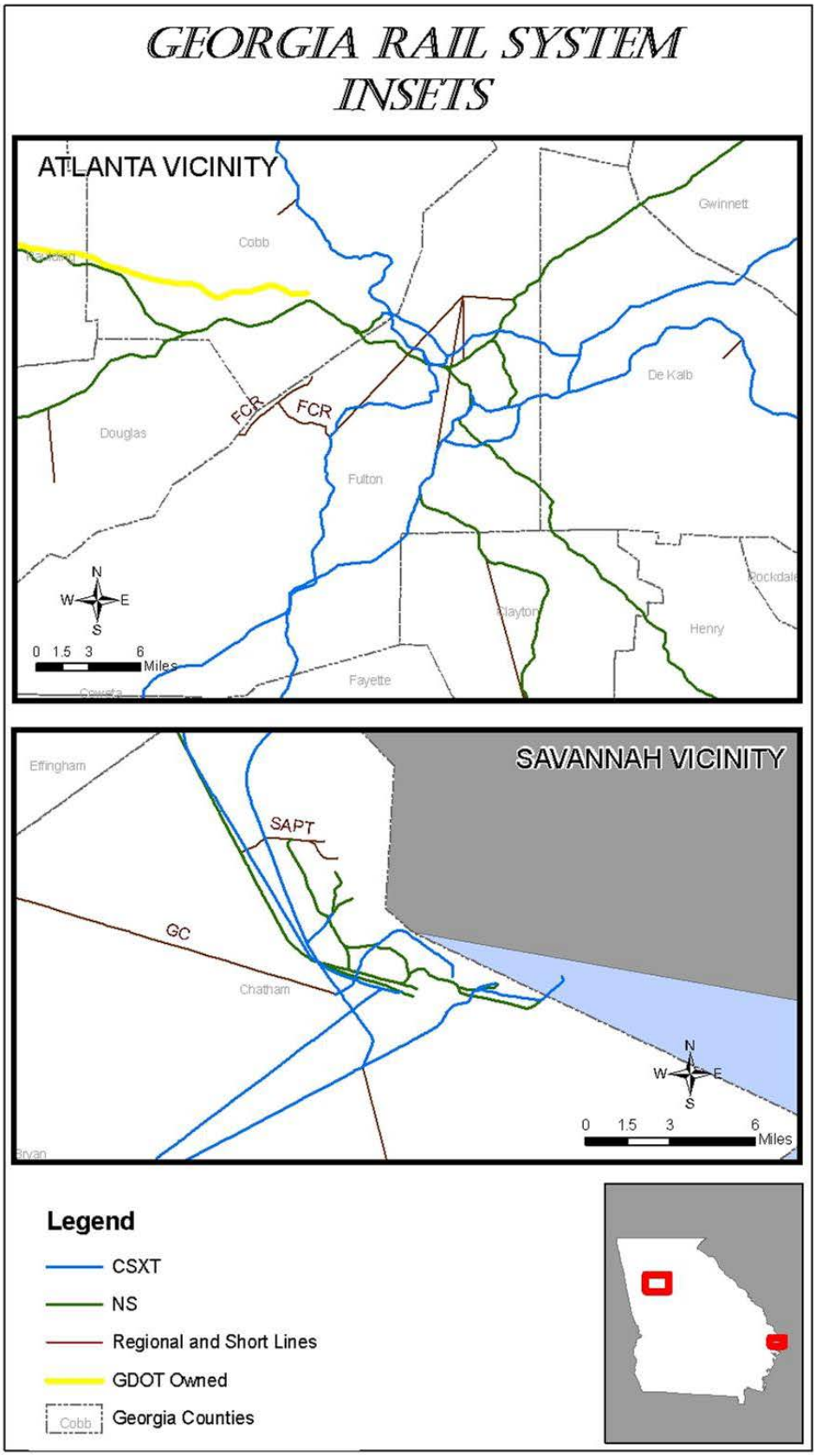
The Georgia rail system consists of 6,427 line miles of track and rights-of-way, of which 4,832 miles are in active service. The system is operated by two Class I railroads, Norfolk Southern (NS) and CSXT Transportation (CSXT), and 25 Class III short line railroads, including a switching and terminal railroad. NS and CSXT together own or operate approximately 70 percent of the total active track mileage in the State. The Class I railroads connect terminals and short line railroads to the wider national rail network.

Figure 2.5 shows Georgia's rail network by ownership and illustrates the relationship between the Class III short lines and the Class I railroad networks. Table 2.3 lists the rail carriers operating in the State as reported for 2008 by the Association of American Railroads or Georgia's recent State Rail Plan. For each railroad, the table lists the parent company or owning agency and the miles operated in Georgia. The mileage includes owned track and trackage rights. Each of the railroads is described briefly in the following sections.

Figure 2.5 Georgia Rail System



Source: Project team analyisis using ICAT, 2009.


GEORGIA RAIL SYSTEM INSETS
ATLANTA VICINITY
Cobb
Gwinnett
De Kalb
Douglas
FCR
FCR
Fulton
Rockdale
Clayton
Henry
Fayette
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
SAPT
GC
Chatham
Bryan
N
W
E
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0 1.5 3 6
Miles
Legend
CSXT
NS
Regional and Short Lines
GDOT Owned
Cobb
Georgia Counties

Table 2.3 Freight Railroads Operating in Georgia

Railroad	SCAC[a]	Parent Company	Rail Miles Operated in Georgia[b]	Percent Total GA Rail Miles Operated
Class I Railroads				
CSXT Transportation	CSXT		1,621[c]	33.5%
Norfolk Southern	NS		1,778	36.8%
Local Railroads				
The Athens Line, LLC	ABR	B. R. Anderson	37	0.8%
Chattahoochee Bay Railroad	CHAT	Genesee and Wyoming Inc.	2	0.0%
Chattahoochee Industrial Railroad	CIRR	Genesee and Wyoming Inc.	15	0.3%
Chattooga and Chickamauga Railway Co.	CCKY	Genesee and Wyoming Inc.	59[c]	1.2%
First Coast Railroad	FCRD	Genesee and Wyoming Inc.	8	0.2%
Fulton County Railway, LLC	FCR	OmniTRAX	55	1.1%
Georgia and Florida Railway	GFRR	OmniTRAX	255[c]	5.3%
Georgia Central Railway, LP	GC	Genesee and Wyoming Inc.	171	3.5%
Georgia Northeastern Railroad Co., Inc.	GNRR	Independent	95[c]	2.0%
Georgia Southern Railway	GS	Pioneer Railcorp	74[c]	1.5%
Georgia Southwestern Railroad, Inc.	GSWR	Genesee and Wyoming Inc.	216[c]	4.5%
Georgia Woodlands Railroad, Inc.	GWRC	OmniTRAX	17	0.4%
Golden Isles Terminal Railroad Inc.	GITM	Genesee and Wyoming Inc.	20	0.4%
Great Walton Railroad Co.	GRWR	B. R. Anderson	37	0.8%
Hartwell Railroad Co.	HRT	B. R. Anderson	58	1.2%
Heart of Georgia Railroad Inc.	HOG	Atlantic Western Transportation	177[c]	3.7%
Louisville and Wadley	LW	Independent	2	0.0%
Ogeechee Railway	OGEE	Independent	21[c]	0.4%
Riceboro Southern Railway, LLC	RSOR	Genesee and Wyoming Inc.	18	0.4%
Sandersville Railroad	SAN	Independent	9	0.2%
Squaw Creek Southern Railroad	SCS	Respondek Railroad Corp.	22	0.5%
St. Marys Railroad	SM	Independent	14	0.3%
St. Marys West Railway	SMWR	Independent	23	0.5%
Valdosta Railway, LP	VR	Genesee and Wyoming Inc.	10	0.2%
Switching and Terminal Railroads				
Savannah Port Terminal Railroad, Inc.	SAPT	Genesee and Wyoming Inc.	18	0.4%
Total Miles Operated (including trackage rights)			4,832	100.0%

[a] Standard Carrier Alpha Code, an industry standard two- to four-letter abbreviation.

[b] Mileage shown for each carrier includes trackage rights mileages; the total miles shown for all carriers exceeds physical mileage.

[c] Right-of-way fully owned or partially owned by GDOT or the State Property Commission.

Primary Source: AAR 2008 Freight Railroads in Georgia Fact Sheet. https://www.aar.org/data-center/railroads-states#state/GA. Accessed October 12, 2010.

Other Sources: Georgia State Rail Plan, 2009, and various railroad web sites.

Class I Carriers in Georgia

Norfolk Southern

Norfolk Southern Railway was established by the 1982 merger of Southern Railway and Norfolk and Western, creating an 18,000-mile system. In 1998, Norfolk Southern (NS) and CSXT took over Conrail in a $10 billion deal and divided Conrail's lines between them. Currently headquartered in Norfolk, Virginia, NS has over 28,500 employees and operates approximately 21,500 route miles in 22 states, the District of Columbia, and the Canadian province of Ontario. In 2010, NS' railway reported operating revenues of $9.5 billion and 182 billion ton-miles of freight service.

Within Georgia, NS has 4,585 employees and owns or operates approximately 1,778 rail miles (see Figure 2.6). The primary industries served by NS in Georgia are auto manufacturing, building materials, chemical plants, distribution warehouses, intermodal facilities, the kaolin industry, electric utilities, and stone quarries.

CSXT Transportation

CSXT Corporation, the parent company of CSXT Transportation, was formed in 1980 by the merger of Chessie System and Seaboard Coast Line, each of which was the product of many previous mergers. Today, the CSXT Transportation (CSXT) network encompasses 21,000 route miles of track in 23 states, the District of Columbia, and the Canadian provinces of Ontario and Quebec, moving about 3.9 million carloads of products and raw materials a year. Headquartered in Jacksonville, Florida, CSXT has about 30,000 employees, and for 2010 reported $10.6 billion in operating revenue and 211 billion ton-miles of freight in 2009.

Within Georgia, CSXT has approximately 2,750 employees and operates over 1,621 route miles (including 136 miles leased from the State Property Commission) transporting mainly agricultural products, automotive products, chemicals, coal, food and consumer products, forest products, metals, minerals, phosphates and fertilizer, and intermodal loads. During 2009, CSXT handled more than 1.4 million carloads of freight and reported nearly $181.5 million in compensation and benefits for current and former employees in Georgia.

Burlington Northern Santa Fe (BNSF), a Class I carrier operating primarily in the western United States, accesses the Atlanta area from Birmingham, Alabama via haulage rights over CSXT's A&WP Subdivision, which passes through LaGrange.[2] Figures 2.6 and 2.7 show the location of the NS and CSXT rail networks.

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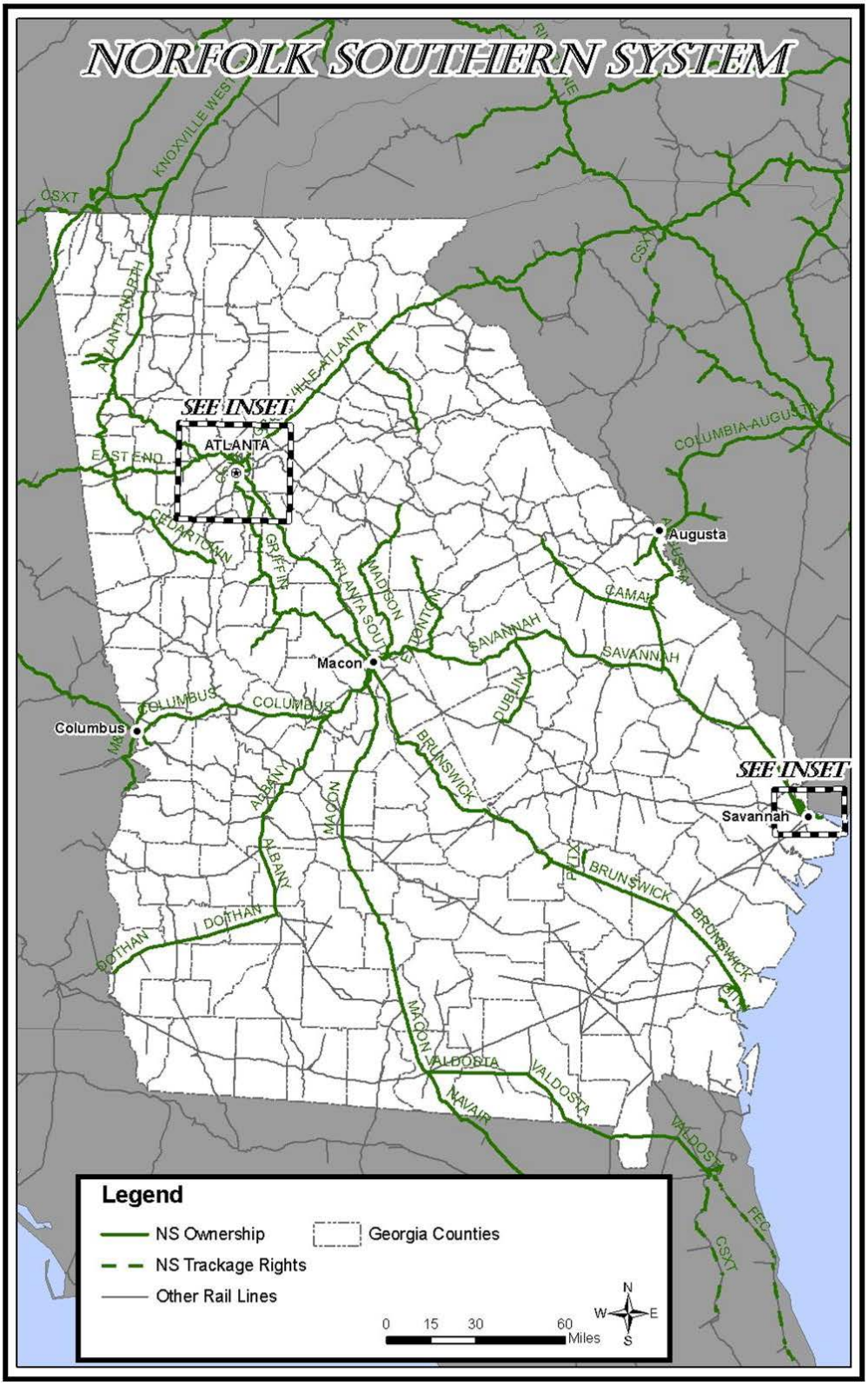
[2] CSXT hauls BNSF intermodal trains under contract between Birmingham, Alabama, and Fairburn Yard in Atlanta on a once to twice-daily frequency.

Figure 2.6 Georgia Norfolk Southern Lines



Source: Project team analysis using ICAT, 2009.

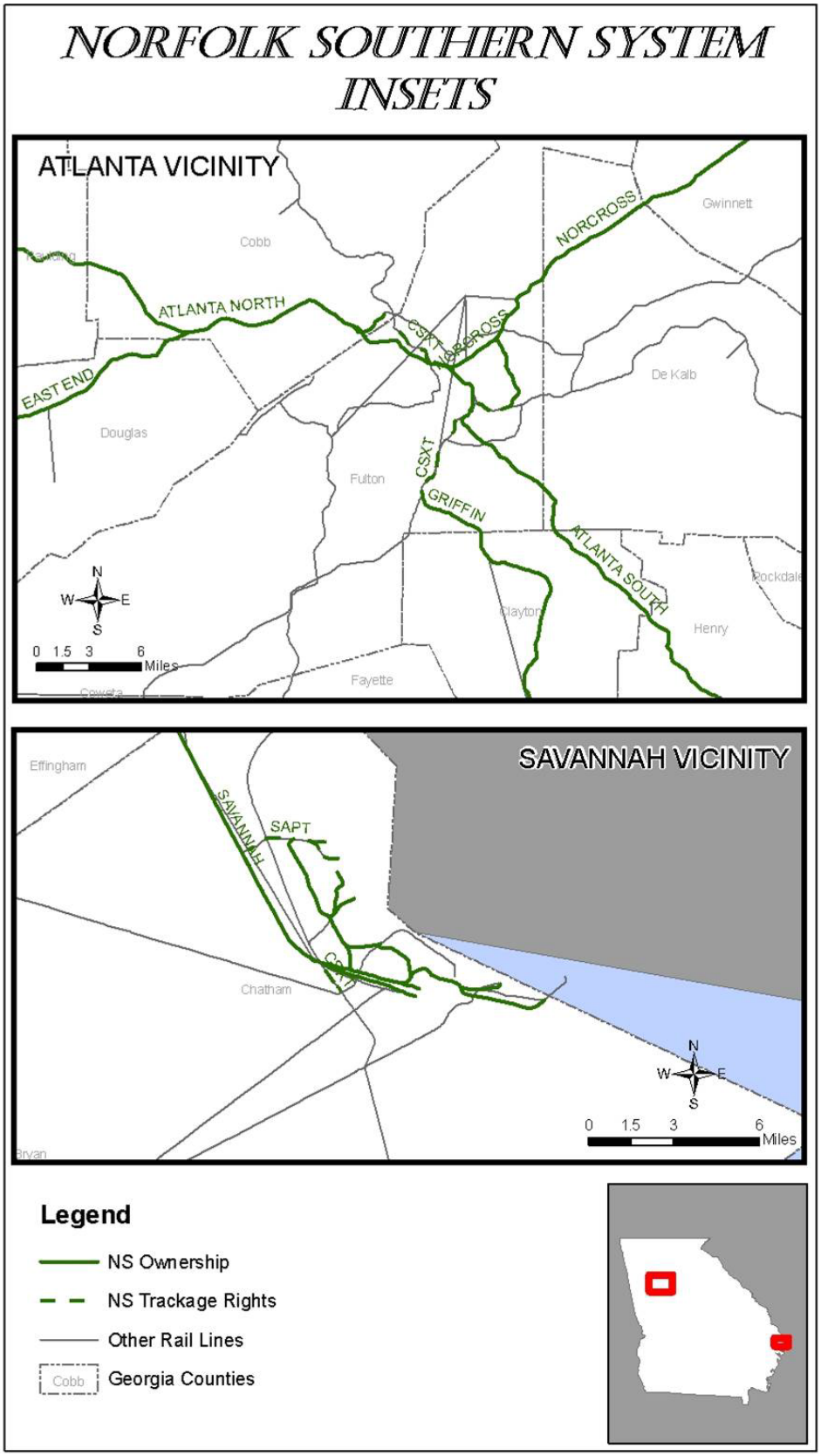
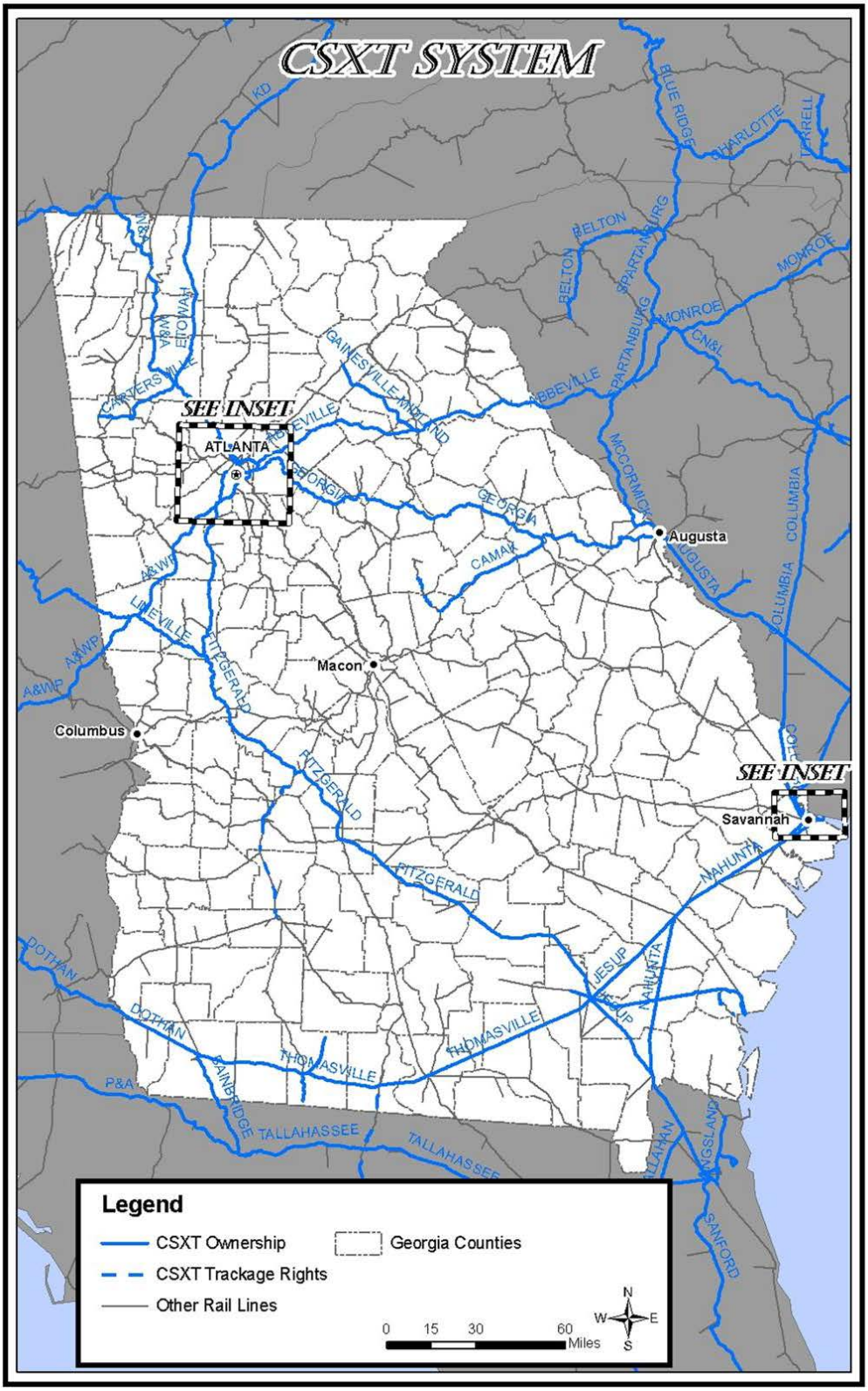
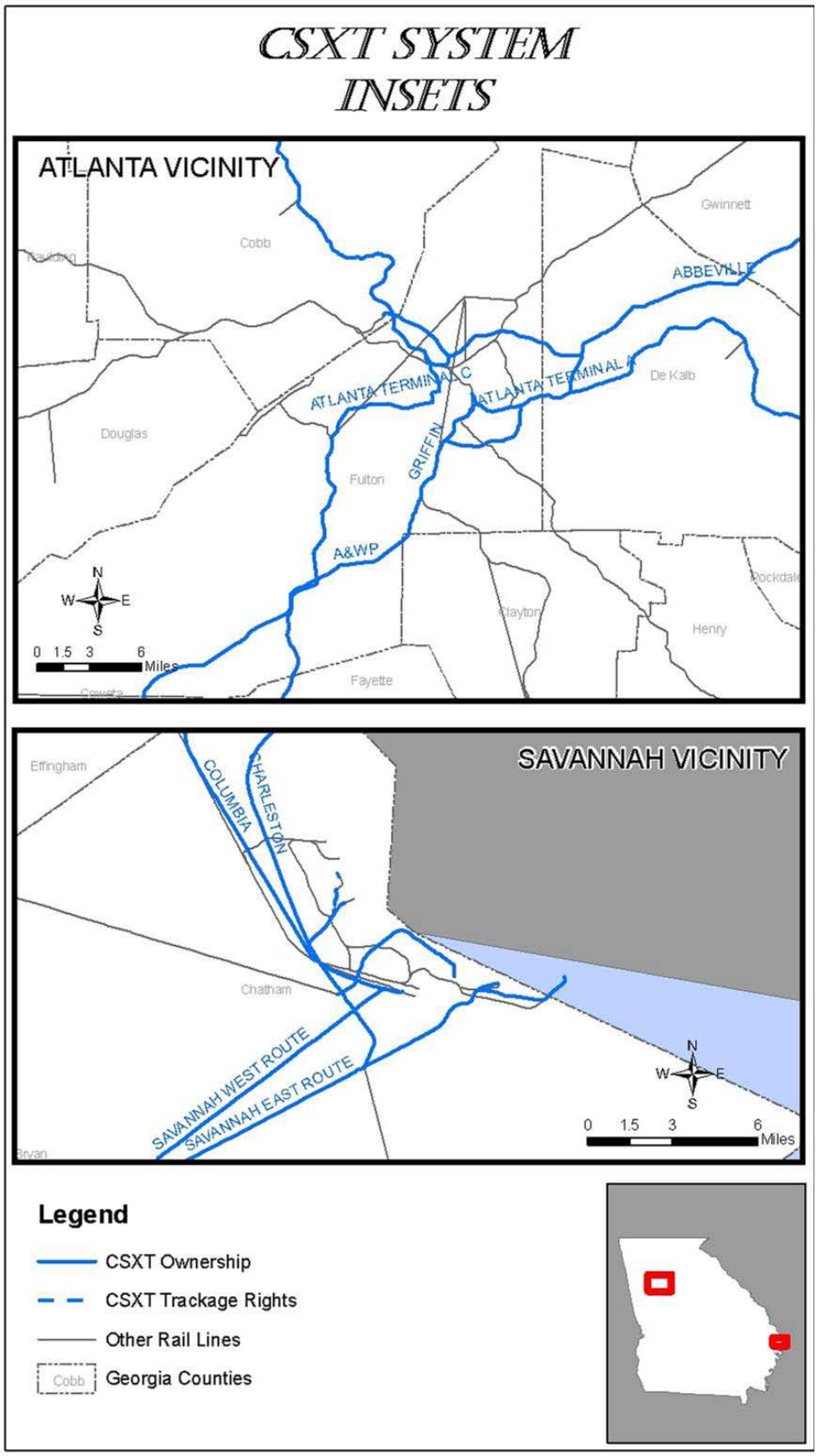

NORFOLK SOUTHERN SYSTEM INSETS
ATLANTA VICINITY
Cobb
Gwinnett
NORCROSS
ATLANTA NORTH
CSXT
NORCROSS
EAST END
De Kalb
Douglas
Fulton
CSXT
GRIFFIN
ATLANTA SOUTH
Rockdale
Clayton
Henry
Fayette
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
SAVANNAH
SAPT
Chatham
Bryan
N
W
E
S
0 1.5 3 6
Miles
Legend
NS Ownership
NS Trackage Rights
Other Rail Lines
Cobb
Georgia Counties

Figure 2.7 Georgia CSXT Transportation Lines



Source: Project team analysis using ICAT, 2009.


CSXT SYSTEM INSETS
ATLANTA VICINITY
Cobb
Gwinnett
ABBEVILLE
ATLANTA TERMINAL C
ATLANTA TERMINAL A
De Kalb
Douglas
GRIFFIN
Fulton
A&WP
Rockdale
Clayton
Henry
Fayette
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
COLUMBIA
CHARLESTON
Chatham
SAVANNAH WEST ROUTE
SAVANNAH EAST ROUTE
Bryan
Legend
CSXT Ownership
CSXT Trackage Rights
Other Rail Lines
Cobb
Georgia Counties

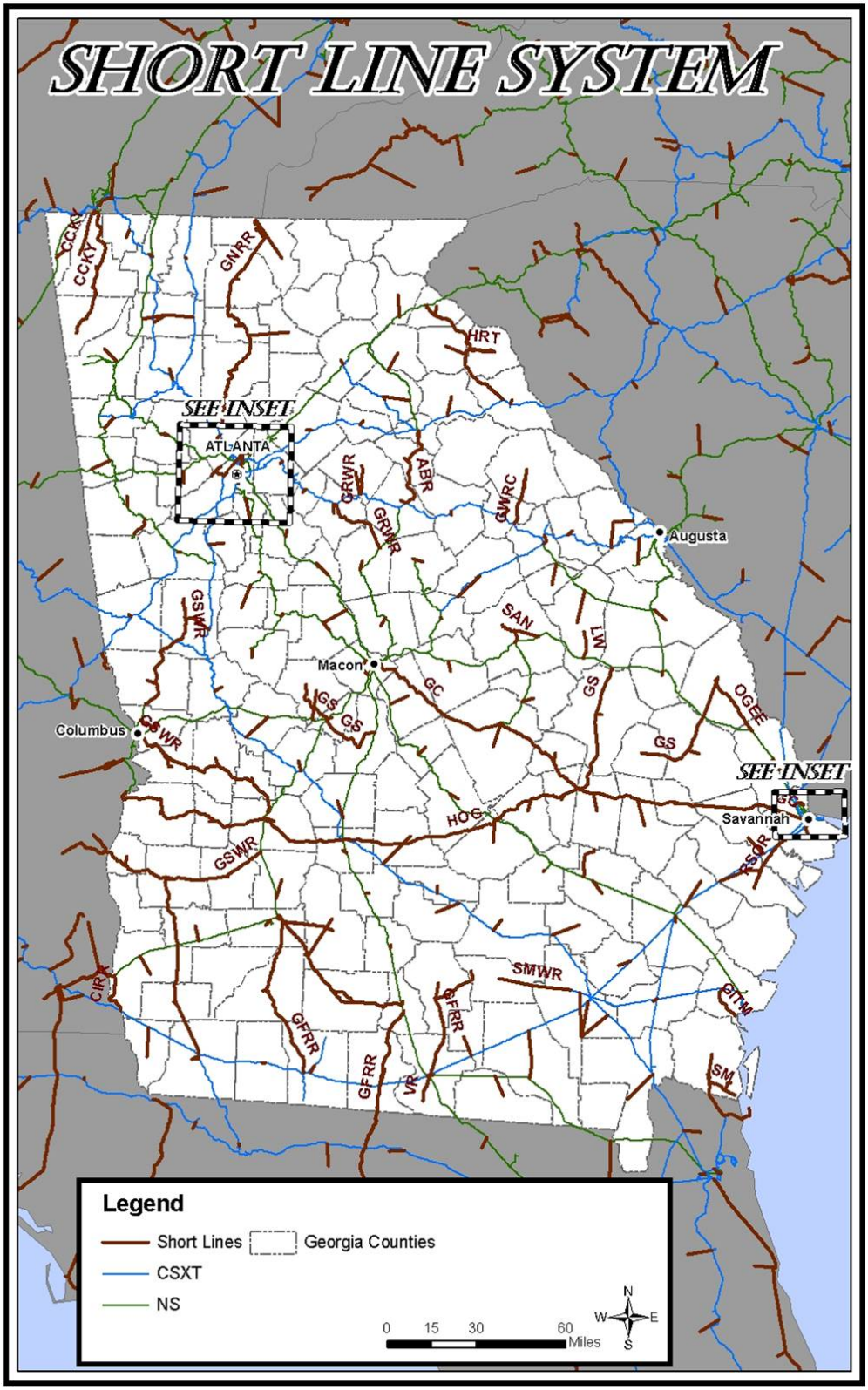
Short Line Railroads

In recent years, there has been significant trend towards consolidation of short line and switching road ownership, with many lines coming under the control of a handful of holding companies. In Georgia, 14 of the 25 short lines are owned by three major railroad holding companies: Genesee and Wyoming, OmniTRAX, and Pioneer Railcorp. In addition, three smaller multiproperty short line operators – B. R. Anderson, Atlantic Western Transportation, and Respondek Railroad Corp – control four railroads in the State.

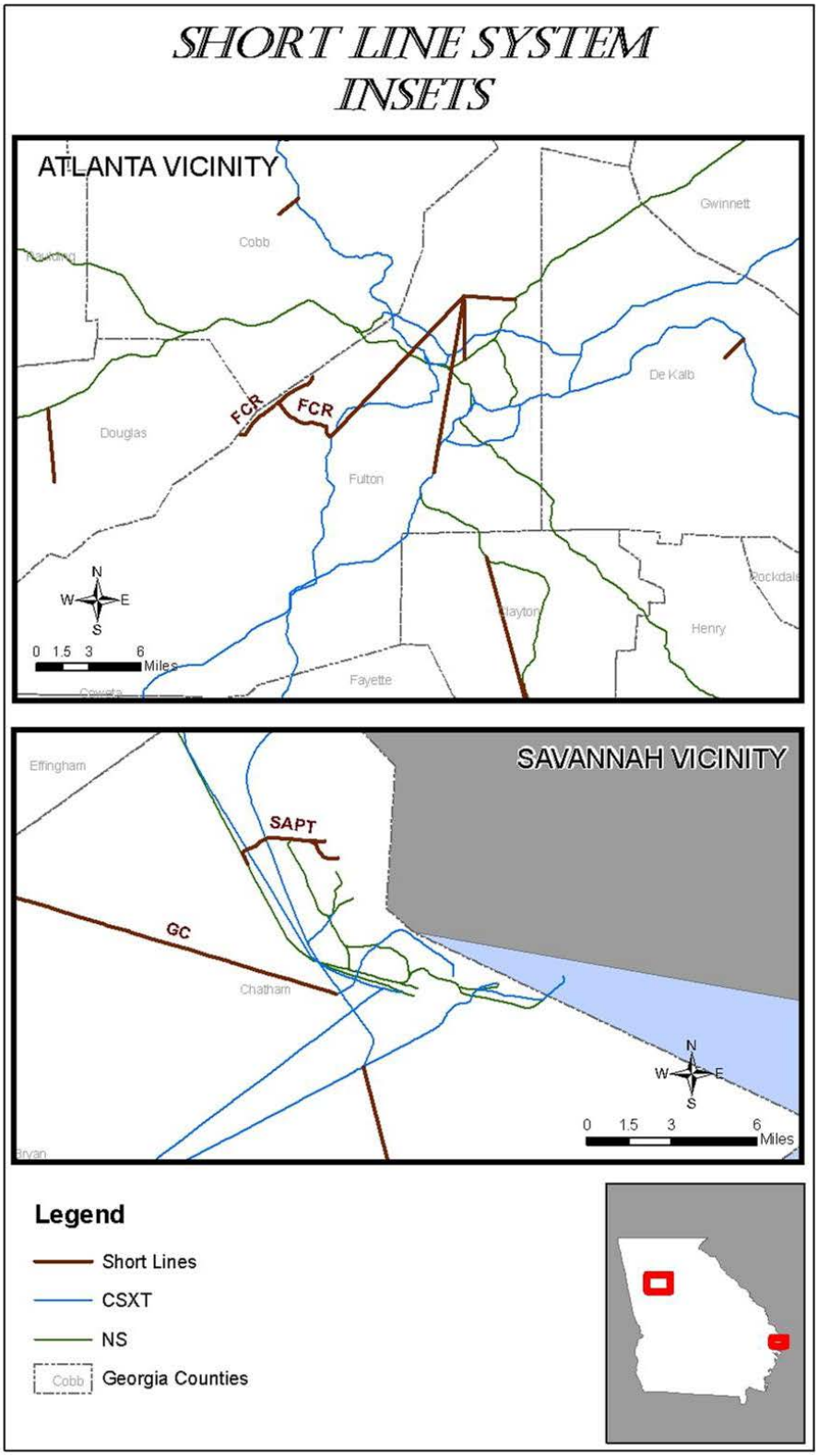
The railroads owned by these six companies account for 1,294 rail miles or 90 percent of the short line mileage in Georgia. Seven independent carriers operate the remaining 10 percent of short line mileage. Figure 2.8 shows the short lines. Over one-third of short line route-miles – 540 out of 1,433 miles – are leased by short line operators from GDOT.

The following sections provide a brief description of each of the short line railroads operating in Georgia. Summary statistics of each individual railroad's operations are given where available. In instances where the railroads are part of a holding company, they are grouped together by corporate parent.

Figure 2.8 Georgia Short Line Rail Lines



Source: Project team analysis using ICAT, 2009.


SHORT LINE SYSTEM INSETS
ATLANTA VICINITY
Cobb
Gwinnett
Douglas
FCR
FCR
Fulton
De Kalb
Rockdale
Clayton
Henry
Fayette
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
SAPT
GC
Chatham
Bryan
N
W
E
S
0 1.5 3 6
Miles
Legend
Short Lines
CSXT
NS
Cobb
Georgia Counties

B. R. Anderson

Bennie Ray Anderson owns three short line railroads in Georgia: the Athens Line (ABR), the Hartwell Railroad (HRT), and the Great Walton Railroad (GRWR). Based in Social Circle, Georgia, the Great Walton Railroad is the parent company and operator of both the Athens Line and Hartwell Railroad. These railroads operate in Georgia over a 132-mile system.

The Athens Line, LLC

The Athens Line (ABR) leases 37 miles of former NS track running between Madison and Junior State, Georgia via Athens. Established in 2001, ABR is operated under contract by GRWR. Headquartered in Social Circle, Georgia, the counties of operation of ABR are Clarke, Jackson, and Oconee; it interchanges with NS at Junior State, Georgia. ABR has four employees, and moves 51,000 tons of freight and 600 carloads annually. The primary commodities it transports are coal, paper, plastic, and oil.

Great Walton Railroad

The Great Walton Railroad (GRWR) has operated a 10-mile line between Monroe and Social Circle since 1987 and a 27-mile line between Machen and Covington since 1989. Based in Social Circle, GRWR employs 12 people in Georgia, and transports 328,000 tons and 3,650 carloads annually. It moves various commodities, including clay, feldspar, fertilizer, grains, machinery, plastics, pulp wood, silica, and woodchips. GRWR's lines interchange with CSXT at Social Circle and Covington, and with NS at Machen.

Hartwell Railroad

Based in Bowersville, Georgia, Hartwell Railroad (HRT) operates a 10-mile line from Hartwell to Bowersville. Originally a 3-foot gauge line, it was relaid to standard gauge in 1905 after coming under the control of the Southern Railway. Local interests operated the line from 1924 until 1990, when Benny Ray Anderson took control. In addition to its original line, the Hartwell now operates the 48-mile former NS line from Elberton to Toccoa, where it interchanges with NS. HRT traffic includes grain products, granite, lumber, oil, plastic pellets, starch and talc products, and woodchips. HRT has 10 employees, and it contracts with GRWR to operate its lines. Annually the road handles 650,000 tons of freight and 6,500 carloads.

Genesee and Wyoming Inc.

Genesee and Wyoming Inc. (GWI), based in Greenwich, Connecticut owns and operates short line and regional freight railroads in the United States, Canada, Australia, and the Netherlands. GWI has 2,481 employees, and for 2009 reported operating revenues of $545 million. Operations currently include 62 railroads, with 6,000 miles of owned and leased track and approximately 3,400 additional

miles under track access arrangements. GWI provides rail service at 16 ports in North America and Europe.

In Georgia, GWI operates 10 short line and switching and terminal railroads, comprising 537 miles or 37 percent of Georgia's short line mileage. Additionally, through its subsidiary Rail Link, GWI serves the ports of Savannah and Brunswick, Georgia, including operation of the CSXT Intermodal Facility in Savannah.

Chattahoochee Bay Railroad

The Chattahoochee Bay Railroad (CHAT) was formed in 2006 when GWI acquired Chattahoochee and Gulf Railroad (CGR) from Gulf and Ohio Railways and combined it with the adjacent H&S Railroad out of Dothan, Alabama. CHAT is a 25-mile short line freight railroad that operates from Dothan, Alabama to Hilton, Georgia; about two miles of the line are in Georgia. At Hilton, it interchanges with the Chattahoochee Industrial Railroad (CIRR) and NS. Commodities transported include chemicals, forest products, and food and feed products, generating 5,500 carloads annually.

Chattahoochee Industrial Railroad

Chartered in 1961 and opened in 1963, the Chattahoochee Industrial Railroad (CIRR) is a 15-mile short line that runs from Hilton to Saffold, connecting the CHAT, CSXT and NS lines in southwest Georgia. Previously owned by Georgia Pacific Corporation, the CIRR line was acquired by GWI in 2003. Twenty individuals currently are employed by this railroad and about 20,000 carloads are handled annually. Commodities transported include chemicals, coal, forest products, steel and scrap.

Chattooga and Chickamauga Railway Co.

The Chattanooga and Chickmauga Railway (CCKY) is a 65-mile railroad connecting Chattanooga, Tennessee to Hedges, Georgia on the former Tennessee, Alabama and Georgia Railway line, and connecting Chattanooga to Lyerly, Georgia on the former Central of Georgia Chattanooga Division line. About 59 miles of this railroad are in Georgia. CCKY leases 49 miles from Lyerly to Chattanooga owned by GDOT. CCKY is owned by CAGY Industries, which was acquired in 2008 by GWI. Headquartered in Lafayette, Georgia, CCKY has five employees in Georgia and handles about 2,000 carloads annually. It interchanges with NS, and the main commodities transported are chemicals, metals, and plastics.

First Coast Railroad

Based in Fernandina Beach, Florida, with 24 employees, the First Coast Railroad (FCRD) is a 32-mile short line railroad that operates on former Seaboard Air Line Railway tracks between Seals, Georgia and Yulee, Florida, of which about eight

miles are operated in Georgia. FCRD also operates the line between Yulee and Fernandina, Florida; it interchanges with CSXT and St. Marys Railroad (SM). The majority of FCRD's traffic consists of woodchips, coal, chemicals, paper products, agricultural products, steel, and petroleum products.

Georgia Central Railway, LP

The Georgia Central Railway (GC) operates on the former Macon, Dublin and Savannah Railroad (Macon to Vidalia) as well as former Seaboard Air Line Railway tracks from Vidalia to Savannah. As of 2005, it has been owned by GWI through its subsidiary Rail Link. Based in Lyons, Georgia, with about 45 employees, CG generates 1.3 million tons of freight and 15,000 carloads annually. This 171-mile short line interchanges with CSXT, Heart of Georgia Railroad (HOG), and NS. Commodities transported include, coal, corn, fertilizer, grain, kaolin, lumber, newsprint, plastics, pulpwood, scrap metal, scrap paper, and woodchips.

Georgia Southwestern Railroad, Inc.

Georgia Southwestern Railroad (GSWR), which began operations in 1989, operates over 234 miles of former Central of Georgia and former Seaboard Air Line Railway trackage in southwestern Georgia and southeastern Alabama; 216 miles of the line are in Georgia and 102 miles are leased to GSWR by GDOT. Previously owned by RailAmerica and then by local investors, GSWR was acquired by GWI in 2008. With main offices in Dawson, Georgia, GSWR has 30 employees and moves about 1.6 million tons of cargo and 13,000 carloads annually, mainly chemicals, ethanol, peanuts, food products, and scrap metal. It connects with CSXT at Bainbridge, with Heart of Georgia (HOG) at Americus, and with NS at Albany, Americus, and Columbus.

Golden Isles Terminal Railroad Inc.

Golden Isles Terminal Railroad (GITM) began operations in 1998, replacing the Colonel's Island Railroad Company. Its operations include 12 miles of mainline tracks serving the Georgia Ports Authority's Colonel's Island Bulk and Auto Processing Terminal in Brunswick, and eight miles in CSXT' Savannah intermodal facility. GITM has six employees and handles 10,000 carloads per year. Commodities transported include automobiles, chemicals, and grain. Its primary connections are with CSXT and NS.

Riceboro Southern Railway, LLC

Riceboro Southern Railway (RSOR) is an 18-mile short line operating on former Seaboard Air Line Railway tracks. It connects the Interstate Paper Co. mill at Riceboro (Liberty County) and the CSXT line in Savannah (Bryan County). RSOR is operated by Georgia Central Railway (GC); it has two employees and transports paper, chemicals and woodchips.

Savannah Port Terminal Railroad, Inc.

Savannah Port Terminal Railroad (SAPT) was established in 1998 to operate 18 miles of tracks in the Georgia Ports Authority's Garden City terminal area, interchanging with CSXT and NS. The tracks were previously operated by the Savannah State Docks Railroad. With 21 employees, it handles approximately 26,000 annual carloads transporting chemicals, food products, intermodal containers, and pulp and paper.

Valdosta Railway, LP

Valdosta Railway (VR) operates from Valdosta to Clyattville over 10 route miles on former Georgia and Florida Railway (GFRR) tracks. Established in 1992 as the successor to the Valdosta Southern Railroad, the railroad was acquired by GWI in 2005. An interchange with CSXT is located at Clyattville; and with NS at Valdosta. It has seven employees, and moves chemicals, food and feed products, woodchips, plastics, and pulp and paper products.

OmniTRAX, Inc.

Based in Denver, Colorado OmniTRAX is a privately held company that provides railroad, intermodal and industrial switching operations as well as port services. OmniTRAX has 172 employees and operates 17 local railroads in 10 states and three Canadian provinces. In Georgia, the company operates three lines: Fulton County Railway (FCR), Georgia and Florida Railway (GFRR), and Georgia Woodlands Railroad (GWRC), totaling 327 miles and accounting for 23 percent of Georgia's short line mileage.

Fulton County Railway, LLC

The Fulton County Railway (FCR) was originally built in 1956 by the Atlantic Coast Line to provide access to the (then new) Fulton County Industrial Park. Based in Atlanta, this short line employs nine people and operates over 55 miles of trackage that connect with CSXT. The industrial park is home to more than 40 rail-served warehousing and light manufacturing companies. FCR handles more than 7,800 cars annually; the commodities transported include food products, liquor, metals, asphalt, plastics, paper and packaging products.

Georgia and Florida Railway

Georgia and Florida Railway (GFRR) was known as Georgia and Florida Railnet prior to its acquisition in 2004 by OmniTRAX. GFRR is a network of approximately 297 miles of track radiating from its Albany, Georgia headquarters, and extending into northwestern Florida near the Gulf of Mexico over former Seaboard Coast Line trackage. Of the 297 network miles, 255 miles are in Georgia, of which the 43-mile line from Valdosta to Willachoochee is leased to the railroad by GDOT. The firm has over 43 employees, and reports an average of 21,000 carloads annually. GFRR connects with both Class I railroads

CSXT and NS. The commodities transported include corn, beer, scrap metal, wood pulp, peanuts, fertilizer, chemicals, aggregates, malt, syrup, clay, cement, ethanol, cottonseed, and paper.

Georgia Woodlands Railroad, Inc.

Established in 1988, the Georgia Woodlands Railroad (GWRC) became an OmniTrax property in 1992. Out of its base in Washington, the railroad operates over 17 miles of track between Washington and Barnett, Georgia, where it connects with CSXT. The firm has two employees and handles over 570 carloads per year transporting plastic pellets, woodchips, lumber, butane and other commodities.

Atlantic Western Transportation

Based in Americus, Georgia, Atlantic Western Transportation (AWT) is the holding company of Heart of Georgia Railroad (HOG). AWT owned the Georgia Midland Railroad (GMR) until early 2010 when it was sold to Georgia Southern Railway (GS). No further information was available about AWT other than the information on the HOG detailed below.

Heart of Georgia Railroad Inc.

HOG was created in 1999 to lease and operate 177 miles of track owned by the Georgia Department of Transportation between Mahrt, Alabama and Vidalia, Georgia. The railroad expanded in 2004 to include the Midville to Vidalia line, totaling over 200 miles of track. This line currently is now operated by Georgia Southern Railway (GS); however, from Kirby to Vidalia the line is not operational. HOG, based in Americus, is owned by Atlantic Western Transportation (AWT). HOG connects with Class I railroads CSXT and NS as well as local railroads GC and GSWR. It has 12 employees and the primary commodities hauled include feed products, chemicals, plastic pellets, aggregates, lumber, grain, pulp wood, scrap metal, and fertilizer, amounting to around 7,500 annual carloads. In addition to the freight services provided, HOG also hosts the SAM Shortline passenger excursion train, named in honor of the Savannah, Americus and Montgomery Railroad Company. The SAM excursion train is operated by the Georgia Department of Natural Resources (DNR) under the guidance of the Southwest Georgia Railroad Excursion Authority. The cars are owned by the Excursion Authority, and the engine is owned and operated by HOG.

Pioneer Railcorp

Based in Peoria, Illinois, Pioneer Railcorp is a railroad holding company that owns short line railroads and other railroad-related businesses, including a railroad equipment company and a contract switching services company. It employs 119 people nationwide. The company's wholly owned short line railroad subsidiaries collectively handle 24 rail operations in 13 states with over

600 miles of track. In Georgia, Pioneer Railcorp owns the Georgia Southern Railway (GS).

Georgia Southern Railway

Georgia Southern Railway (GS) operates three lines in Georgia: 30 miles between Perry and Roberta; 16 miles between Midville and Swainsboro; and 28 miles between Metter and Dover. The primary commodities moved are sand, asphalt, plastics, lumber, grain, scrap, fertilizer and stone aggregates, generating about 5,000 carloads per year. GS interchanges with NS.

Respondek Railroad Corporation

Based in Boonville, Indiana, Respondek Railroad Corporation is predominately a supplier of contract rail-car-switching services and short line rail operations. Respondek Railroad also is owner and operator of the Squaw Creek Southern Railroad (SCS), a common carrier railroad in southern Indiana. Respondek Railroad manages 10 sites, including four rail car storage yards. In Georgia, Respondek, through its subsidiary SCS, operates over 22 miles of track

Squaw Creek Southern Railroad

SCS is a coal-hauling line based in Boonville, Indiana, whose name also is used for Respondek's Georgia operation, which consists of the 22-mile, former Central of Georgia Athens to Macon line running between Madison and Shady Dale, Georgia. No further information was available about SCS' operations in Georgia.

Independent

Georgia Northeastern Railroad Co., Inc.

Georgia Northeastern Railroad (GNRR) was established in 1987 when it acquired 68 miles of former Louisville and Nashville track between Marietta and Ellijay from CSXT. GNRR purchased the tracks from Marietta to Tate and leased the tracks from Tate to Ellijay. In 1990, GNRR was sold to its current owners. In the mid-1990s, GDOT purchased the line north of Ellijay and began working with GNRR to put these tracks back to use. GNRR currently operates 95 route miles from Marietta, where it interchanges with CSXT, to Blue Ridge, Georgia. It has 26 employees and reports a total of 9,500 annual carloads. Freight products transported include aggregates, calcium carbonate, cement, coiled steel, corn, corn syrup, drywall, gasoline, industrial chemicals, logs, lumber, marble chips, sand, scrap paper, soapstock, soybean meal, and tallow oil. In addition to the freight services, in 1998 GNRR started the passenger excursion line, the Blue Ridge Scenic Railway.

Louisville and Wadley

Louisville and Wadley Railway (LW) was incorporated in 1961 to purchase the 10-mile Louisville and Wadley Railroad from the Central of Georgia. In 1971, the section of track from Louisville to Gibson Junction was abandoned. The remaining two miles from Wadley to Gibson Junction remain in operation. No further information about this carrier and its rail traffic were found.

Ogeechee Railway

The Georgia Midland Railroad (GMR), owned by Atlantic Western Transportation (AWT), sold in 2008 the Ardmore to Sylvania branch line to the Ogeechee Railway Co. (OGEE). The branch line is 21 miles of mainline track owned by GDOT and includes an interchange point with NS at Ardmore. In 2004, AWT had acquired OGEE's operations (four lines in central Georgia.) The Midville to Vidalia branch line–contiguous with AWT's the Heart of Georgia Railroad (HOG)–became part of HOG; the other three segments were reorganized as GMR. In early 2010, GMR was sold to Georgia Southern Railway which operates two of the former GMR lines plus Midville to Vidalia line formerly operated by HOG. No current information about OGEE was found.

Sandersville Railroad

Sandersville Railroad (SAN) was chartered in 1893 as a subsidiary of the Central of Georgia Railroad to operate over the 4-mile line built by Central of Georgia between Tennille and Sandersville. In 1957, the line was extended another five miles to a kaolin mine near Sandersville. Today, the railroad – nicknamed The Kaolin Road – operates the same nine miles between Tennille, where it connects with NS, and the mines and processing plants to the north. SAN serves the chemical, kaolin, plastics, and wood products industries. It operates six days a week with four train crews. The railroad's fleet consists of five locomotives, two boosters, and 400+ railcars. No traffic information about this carrier was found.

St. Marys Railroad

Organized in 1924 as the successor to the Atlantic, Waycross and Northern Railroad, the St. Marys Railroad (SM) consists of an 11-mile track from St. Marys to Kingsland, where it interchanges with FCRD. A 3-mile branch connects to the Kings Bay submarine base. In 1940, the railroad was purchased by Gilman Paper Company to service a new Kraft paper mill at St. Marys. Currently, SM primarily services companies transporting paper products and carriers freight (including ballistic missiles) to the Kings Bay naval base. SM has five employees and hauls 93,052 tons of cargo / 1,600 carloads annually.

St. Marys West Railway

Based in Waresboro, Georgia, St. Marys West Railway (SMWR) operates the former Atlantic Coast Line's 23-mile route between Pearson and Waresboro, Georgia. No further information about this carrier was available.

3.0 Rail Infrastructure

3.1 OVERVIEW

This chapter describes the physical characteristics of the terminals, main lines, and other critical infrastructure elements that make up the State's network. The research approach entailed a review of available materials, including the 2009 Georgia State Rail Plan, extensive web research, and direct contact with NS and CSXT, the largest carriers operating in the State. Data on main line attributes such as railcar weight limits, vertical clearance constraints, yard and terminal locations and attributes were sought directly from NS and CSXT, both of which graciously complied with our request. Additional information on the physical characteristics was obtained from the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT).

Georgia is the rail freight linchpin of the Southeast, providing the most direct links between southeastern states bordering the Atlantic and the Gulf states, and of course the only overland link to Florida. The city now known as Atlanta owes its existence to the railroads, which made it into the Southeast's most important rail crossroads. Like Chicago, Atlanta grew greatly as the railroads prospered. The successors to those early railroads – NS and CSXT – continue to operate substantial facilities in and around Atlanta.

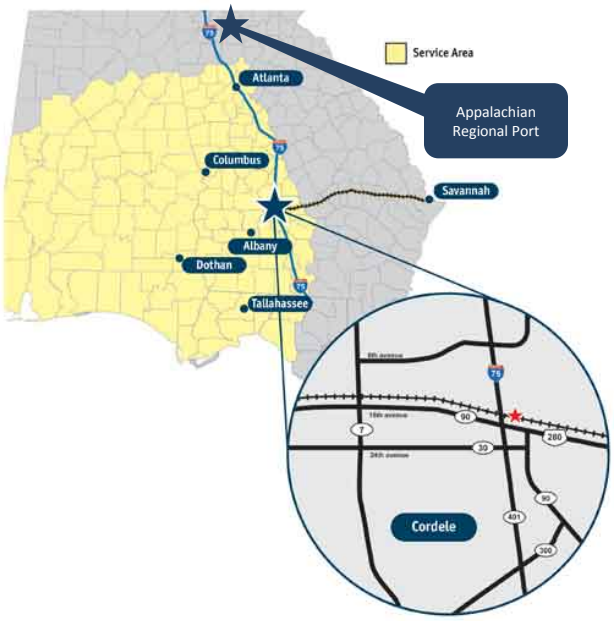
The major carload system yards on the CSXT network include Rice Yard (Waycross), Tilford (Atlanta) and Southford Yard (Savannah). Tilford Yard is a major hub for CSXT operations in the Southeast and Rice Yard is the largest by acreage. Norfolk Southern's primary carload yards are located in Atlanta (Inman Yard) and Macon (Brosnan Yard). Other significant yards are located in Savannah, Doraville, Valdosta, Albany, Augusta, Rosser, Columbus and East Point. Transload facilities facilitate the transfer of bulk goods between rail and highway for shippers and receivers who do not have direct access to carload rail service. There are 17 rail/highway bulk transload facilities in Georgia: seven are affiliated with Norfolk Southern and CSXT, while the rest are independent terminals located on CSXT, NS, and a variety of short line and terminal railroads. The largest facilities in size and volume are located in the Atlanta metro area and are operated by CSXT and NS. The remaining terminals are scattered throughout the State.

Intermodal terminals are clustered primarily in and around Atlanta and Savannah. The Atlanta region hosts five intermodal facilities, NS at Austell, Inman and East Point (RoadRailer); and CSXT at Hulsey and Fairburn terminals. Beyond Atlanta, the development of intermodal facilities in Georgia has primarily been driven by international trade. Four terminals now exist in Savannah – the Georgia Ports Authority Mason ICTF and Chatham ICTF, NS'

Dillard Yard and the CSXT's Savannah Yard, and at the Port of Brunswick the Georgia Ports Authority with its Anguilla and Myd Harris yards.

Additionally, at Cordele an inland port/intermodal terminal has been developed that is a 200 mile direct link to the Port of Savannah by the Heart of Georgia and Georgia Central railroads. As shown below, the facility at Cordele offers an efficient alternative to an all-truck-dray to the Port of Savannah for its target market of southwest Georgia, southern Alabama, and western Florida.[3] GDOT has made improvements to two bridges that the Heart of Georgia railroad crosses over in support of the terminal facility, and has programmed a project to widen US 280 between the facility and I-75 in 2017.

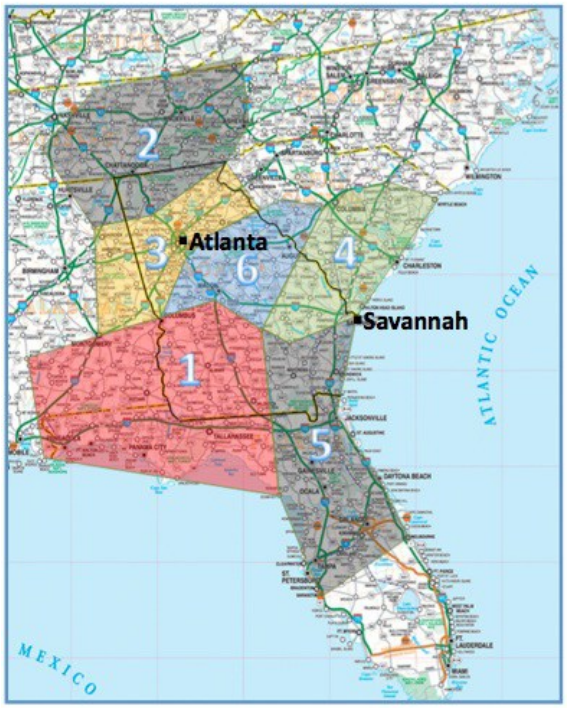
Another inland port intermodal facility is planned for Murray County near Chatsworth, in North Georgia, and will be known as the Appalachian Regional Port. This facility will be located 350 miles from the Port of Savannah, and is the second in a planned network of terminals which also includes the Cordele facility that will enhance the movement of goods by rail from across the state. In addition to North Georgia, the intended market for this facility includes Alabama, Tennessee, and parts of Kentucky.[4]



Cordele and the Appalachian Regional Port are the first two Georgia locations part of the Georgia Ports Authority's "Network Georgia" initiative, whose strategy is shown graphically on the top of the next page.

[3] www.gaports.com/IntermodalRail/CordeleInlandPort.aspx

[4] www.gaports.com/Media/PressReleases/tabid/379/xmmid/1097/xmid/10652/xmview/2/Default.aspx



NETWORK GEORGIA

Zones:

1. SW Georgia - Cordele
2. NW Georgia
3. Port Atlanta
4. I-95 Corridor - North
5. I-95 Corridor - South
6. Middle Georgia

Rail traffic density in Georgia is mostly concentrated on lines leading to Atlanta. Connections between the Midwest, Atlanta and Florida have the heaviest traffic flows, carrying a broad mix of commodities. The largest single commodity in terms of tonnage consists of Appalachian and Powder River Basin (PRB) coal. Connections towards the northeast have more modest volumes. The major issues confronting Georgia's rail system include capacity limitations relative to existing and projected demand, and infrastructure deficiencies, such as substandard weight limits and vertical clearances, which potentially limit the system's capacity to competitively accommodate increasing volumes of bulk commodities and double-stack container traffic.

Adopted as the North American standard in 1995, Class I railroads have been moving from 263,000- to 286,000-pound (286k) weight cars. 286k provides railroads with a significant productivity boost, but requires solid track and sufficiently strong bridges. Most of Georgia's Class I trackage can accommodate 286k, but many short lines cannot. Another important critical need is for double-stack clearance. Competitive intermodal service requires ability to handle double-stack containers: 19'6" for international doubles and tri-level auto racks, and 22'6" for unrestricted domestic double-stack. In Georgia, the CSXT and NS networks are cleared for double-stack service, with a few exceptions of mostly short branch lines located throughout the State. In contrast, many short lines do not even have 19'6" clearance.

Georgia's central location as the commercial hub of the Southeast, along with a diverse mix of industries, offers good opportunities for railroads to not only maintain, but also increase, the proportion of Georgia's freight that they handle.

The short lines presently do not have a significant intermodal presence, but new developments, such as the Cordele Inland Port may change that.

While the overall significance of small railroads may appear to be modest at 1.3 percent of all rail traffic, 6.3 percent of originated carloads start their trip on a short line. However, their ability to adapt to current standards for weight and vertical clearance is a growing concern for their future viability, as their relevance will diminish if they are unable to adapt. These and other critical issues faced by short lines are further discussed in Chapter 5.

3.2 RAIL INFRASTRUCTURE

The following sections summarize the essential infrastructure of Georgia's rail system. These consist of primary main lines, which are similar to the highways connecting the metropolitan regions and other areas of concentrated traffic development, and terminals or yards that receive and discharge traffic at origin or destination, as well as transfer it between trains at intermediate locations. For purposes of discussion, rail terminal facilities are classified into three general categories: 1) carload, 2) bulk transfer, and 3) intermodal.

- *Carload* facilities support traditional "loose car" services, such as would be used to handle a carload of feed grain going from a feed processor to a poultry producer. As the car travels across the rail network from origin to destination, it goes through a series of rail yards, somewhat akin to the way air passengers undertake their journeys with connecting flights through hub airports.
- *Bulk transfer* facilities facilitate the transshipment of bulk goods between rail and other modes, typically highway and water, and entail transferring the commodity from one mode-specific vehicle to another.
- *Intermodal* terminals typically describe facilities that handle the transfer of trailers or containers between highway and rail. An intermodal train consists of any combination of roadrailer equipment, double-stack or pedestal flat cars, and flat cars equipped for TOFC (Trailer on Flat Car), COFC (Container on Flat Car).

3.3 PRIMARY RAIL LINES AND TERMINALS

The primary rail lines traversing the State of Georgia are the Class I rail lines that connect the rail hubs in Atlanta to the Midwest and to the ports in Georgia and Florida. Figure 3.1 shows the State's rail network coded by rail density

measured in million gross ton-miles per mile (MGTM/mi) and reported by the FRA.[5] The two busiest corridors, as determined by rail density, are:

- The CSXT corridor between Jacksonville and Tennessee (and beyond) via Waycross, Cordele and Atlanta. The corridor includes the Jesup, Fitzgerald, Manchester, W&A, and Etowah subdivisions; and
- A parallel Norfolk Southern Corridor via Cordele, Macon and Atlanta. The corridor includes the Valdosta, Macon, Atlanta South, and Atlanta North subdivisions.

The other major corridors, which run generally parallel to Interstate 85, include the NS Greenville-Atlanta and East End subdivisions, the CSXT Abbeville and A&WP subdivisions, and the CSXT Columbia, Nahunta and Jesup subdivisions in the Coastal Georgia region. Several of the short line railroads also provide significant connections: the Georgia Central between Savannah and Macon; and the Heart of Georgia, which connects to the Georgia Central and serves the Cordele Intermodal Center. As of January 2015, Cordele is constructing a 6,500-foot double track rail spur that will connect the Heart of Georgia with the CSX mainline in Cordele.[6]

Through either CSXT or Norfolk Southern, the Savannah area features one-day round-trip rail service to the following cities outside the state of Georgia[7]:

- Birmingham, AL
- Charlotte, NC
- Chicago, IL
- Cincinnati, OH
- Dallas, TX
- Jacksonville, FL
- Louisville, KY
- Memphis, TN
- Nashville, TN
- Winter Haven, FL

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[5] Rail mainline attribute data collected from the railroads were mapped in a geographic information system (GIS), using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) rail network geodata as a geographic representation of the rail infrastructure in the State. The ICAT rail network represents all active mainline trackage throughout the United States, as defined by databases maintained by the Federal Railroad Administration (FRA) and the Oak Ridge National Laboratory (ORNL). The ICAT rail network geodata includes attribute data such as railroad ownership, trackage rights, subdivision name, number of mainline tracks, signal systems, and freight traffic density. Enhancements have been made to improve the geographic accuracy and some of the attribute data for trackage located in the I-95 Corridor Coalition's member states.

[6] http://www.cordeleintermodal.com/wp-content/uploads/2015/02/Marketing-Award-2014-ASLRRA.pdf

[7] http://saportareport.com/georgia-ports-seek-to-expand-rail-service-as-cargo-traffic-keeps-rising/

Intermodal Terminals

The State's rail intermodal terminals are clustered in the Atlanta and Savannah areas, as illustrated in Figure 3.2. The terminals are listed in Table 3.1 along with basic information on their capacity. In the Atlanta area, NS maintains intermodal facilities at Austell and East Point, and at Inman Yard in the City of Atlanta. CSXT operates intermodal terminals at Fairburn Yard and Hulsey Yard in Southeast Atlanta. Combined, the NS and CSXT Intermodal facilities in the Atlanta area complete more than 900,000 lifts annually.

Intermodal facilities in the Savannah area primarily serve port traffic and they include the Mason Intermodal Container Transfer Facility (ICTF) served by NS, the Chatham ICTF served by CSXT, the NS Dillard Yard, and the CSXT Savannah Yard. The two ICTF facilities in Savannah allow containers that are taken off of ships and bound for trains to be systematically grouped for loading at the port. These transfer facilities also allow containers to be grouped by car when a train is being built, allowing for more rapid transfer at switching yards down the line.[8] The Mason and Chatham ICTF facilities can accommodate longer trains than the on-dock rail facilities at the Port of Savannah that they replaced. Currently, roughly 20 percent of container volumes at the Port of Savannah are moved by rail.[9]

Intermodal terminals serving the Port of Brunswick include the Anguilla Yard on Colonel's Island and the Myd Harris Yard in Brunswick. Anguilla Yard is being expanded as part of Georgia Ports Authority's Phase III improvements to the facility.[10] The expansion of the yard will help it to handle the increasing amount of automobiles and bulk goods being moved along the railroad. The yard serves as a transfer point between the Golden Isles Terminal Railroad, which connects to the Port of Brunswick, and the Class I CSX mainline.

Table 3.1 Intermodal Terminals in Georgia

Terminal Name	Location	Annual Volume (Lifts)	Number and Type of Cranes	Length of Loading Tracks	Storage/ Stack Capacity
Hulsey Yard (CSXT)	Atlanta	125,000 +	4 Taylor side loaders	16,000 feet	1,600 wheeled spots
Fairburn (CSXT)	Atlanta	240,000 +	3 Mi-Jack overhead cranes and 3 Taylor side loaders	25,500 feet	1,300 wheeled spaces with 22,500 feet of storage and lead tracks

[8] http://businessinsavannah.com/bis/2015-01-24/rail-still-rules-logistics-landscape

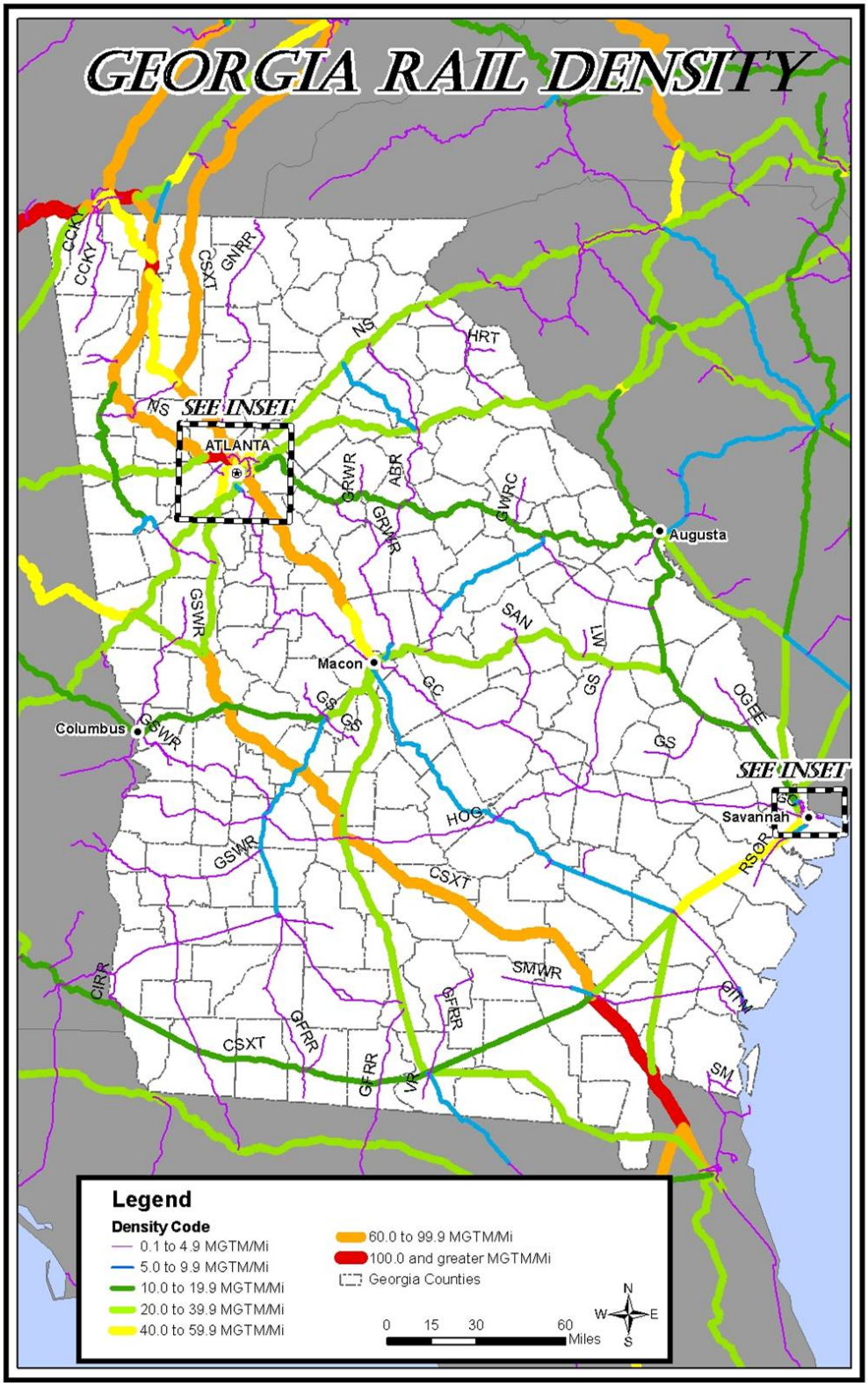
[9] http://businessinsavannah.com/bis/2015-07-23/portside-record-rail-traffic-port-speaks-volumes

[10] http://www.gaports.com/Departments/Engineering/Projects/tabid/563/bidid/152/Default.aspx

Terminal Name	Location	Annual Volume (Lifts)	Number and Type of Cranes	Length of Loading Tracks	Storage/ Stack Capacity
Savannah Yard (CSXT)	Savannah	50,000 +	3 Taylor side loaders	4,800 feet	650 wheeled spaces
Whitaker Yard (NS)	Austell	300,000	6 Overhead cranes, 1 Reachstacker	20,600 feet	3,563 wheeled parking 250 stacking spaces
Inman Yard (NS)	Atlanta	250,000	5 Overhead cranes	16,500 feet	2,100 wheeled spaces
Dillard Yard (NS)	Savannah	15,000	1 Sideloader	1,246 feet	210 wheeled spaces
East Point RoadRailer (NS)	Atlanta	N/A	N/A	N/A	N/A
Anguilla Yard (GITM)	Anguilla	N/A	N/A	N/A	20,940 feet of storage tracks (9,000 additional feet bid for construction in March, 2015)
Myd Harris	Brunswick	N/A	N/A	N/A	15,010 feet of storage tracks
Mason ICTF	Savannah	230,000 +	N/A	12,500 feet	7,500 feet of storage tracks
Chatham ICTF	Savannah	N/A	N/A	6,435 feet	12,406 feet of storage tracks
Cordele Intermodal Center/ Inland Port	Cordele	20,000 initial capacity; 230,000 eventual capacity	N/A	N/A	N/A

Source: CSXT Transportation; Norfolk Southern Corp.; Ga. Ports Authority; Cordele Intermodal Services.

Figure 3.1 Georgia Rail Density



Source: Project team analysis, using ICAT and FRA rail network density data, 2009.

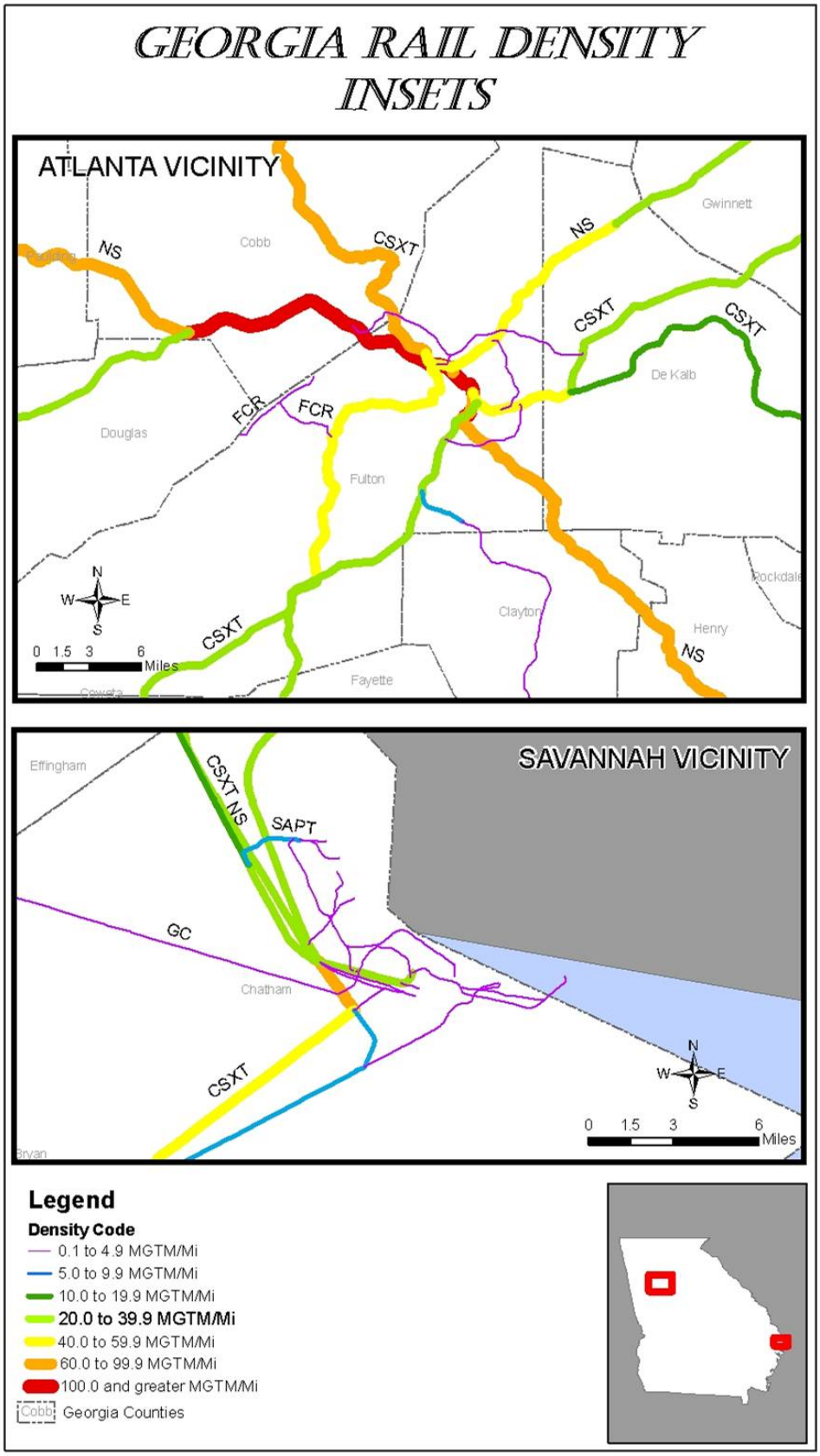
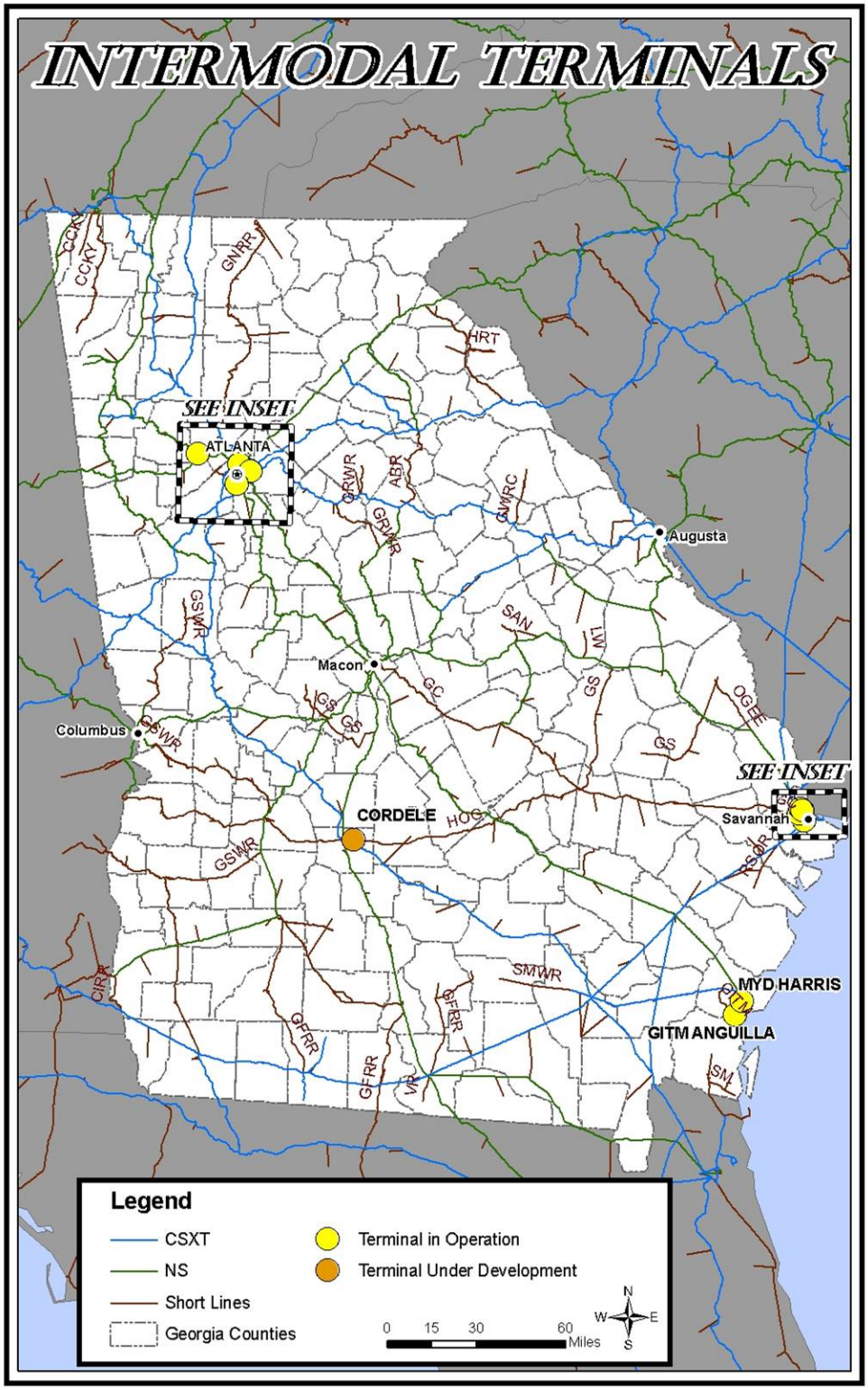
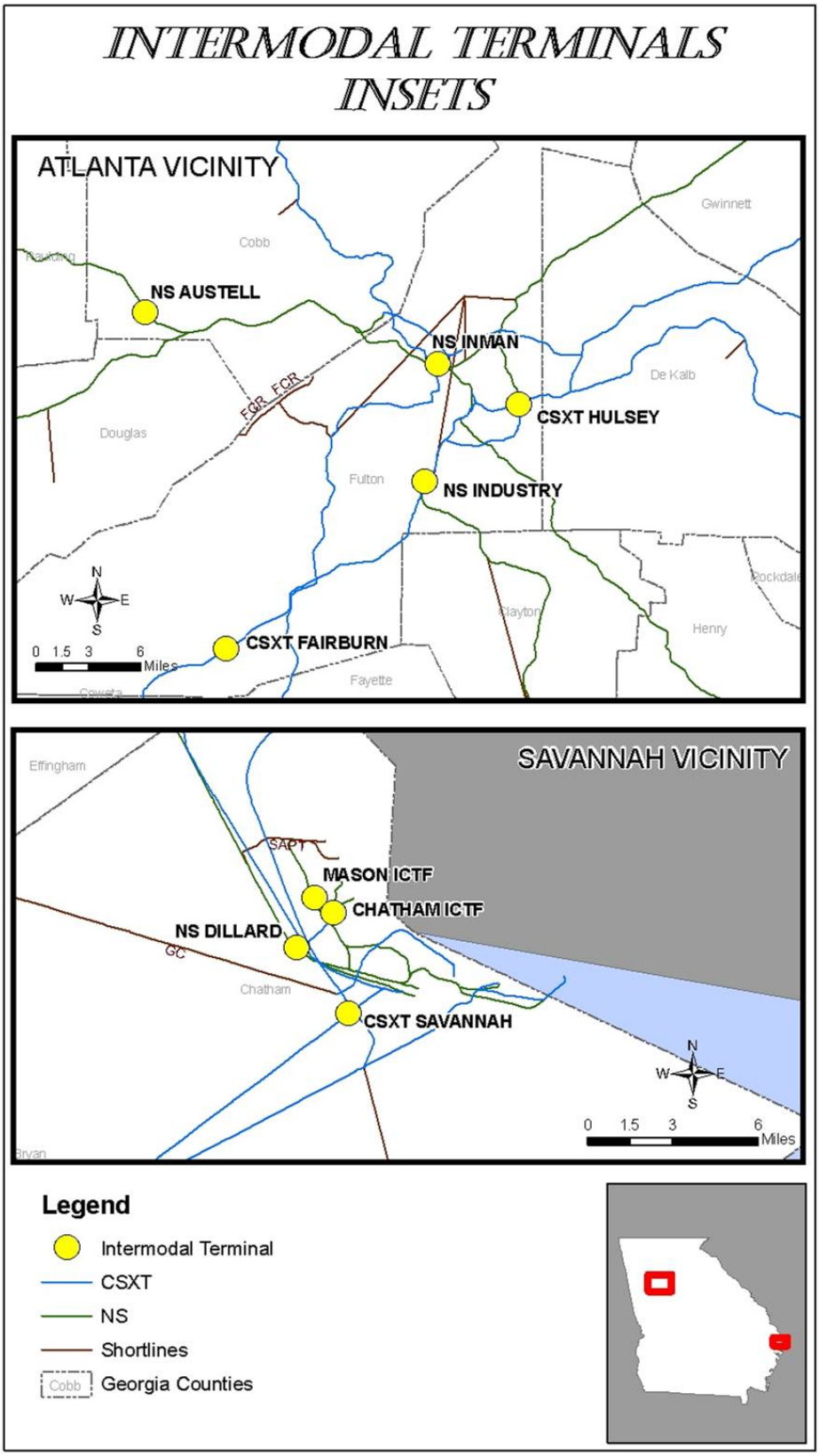

GEORGIA RAIL DENSITY INSETS
ATLANTA VICINITY
Cobb
Douglas
Fulton
De Kalb
Gwinnett
Clayton
Henry
Fayette
NS
CSXT
FCR
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
Chatham
Bryan
CSXT NS
SAPT
GC
CSXT
0 1.5 3 6 Miles
Legend
Density Code
0.1 to 4.9 MGTM/Mi
5.0 to 9.9 MGTM/Mi
10.0 to 19.9 MGTM/Mi
20.0 to 39.9 MGTM/Mi
40.0 to 59.9 MGTM/Mi
60.0 to 99.9 MGTM/Mi
100.0 and greater MGTM/Mi
Cobb Georgia Counties

Figure 3.2 Intermodal Terminals



Sources: Project team analysis using data from Norfolk Southern, CSXT Transportation; Georgia Department of Transportation, Georgia Ports Authority, and ICAT.


INTERMODAL TERMINALS INSETS
ATLANTA VICINITY
Cobb
Gwinnett
NS AUSTELL
NS INMAN
De Kalb
FCR FCR
CSXT HULSEY
Douglas
Fulton
NS INDUSTRY
Clayton
Henry
CSXT FAIRBURN
Fayette
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
SAPT
MASON ICTF
CHATHAM ICTF
NS DILLARD
GC
Chatham
CSXT SAVANNAH
Bryan
Legend
Intermodal Terminal
CSXT
NS
Shortlines
Cobb
Georgia Counties

Large Carload System Yards

The processing and handling of railcars, including receiving carloads, classification of railcars into blocks or units destined for common destinations, and the building and preparation of trains for departure, occur at carload system yards throughout the State.

Major carload system yards on the CSXT network in Georgia include Rice Yard in Waycross, Tilford Yard in Atlanta, and Southford Yard in Savannah. Tilford Yard is a major hub for CSXT operations in the Southeast. Rice Yard is the largest by acreage and serves CSXT operations in an area bounded by the I-95 Corridor, Florida, and New Orleans.

Norfolk Southern's primary carload yards are located in Macon, Atlanta, Savannah, Doraville, Valdosta, Albany, Augusta, Rosser, Columbus, and East Point. The Atlanta and Macon yards are major hubs for NS carload service in the Southeastern United States. Large carload yards on the CSXT and NS networks are presented in Table 3.2 and mapped in Figure 3.3.

Table 3.2 Large Carload System Yards in Georgia

Name	Location	Annual Cars Processed	Acreage	Purpose (Corridors/Markets served)
CSXT Rice Yard	Waycross	N/A	700+	I-95 Corridor, New Orleans, Florida
CSXT Tilford Yard	Atlanta	N/A	300+	Atlanta Region, Carolinas to New Orleans, Chicago to Southeast
CSXT Southover	Savannah	N/A	200+	I-95 Corridor, local industry
NS Macon Yard	Macon	500,000	N/A	Southeastern U.S. Hub
NS Atlanta Yard	Atlanta	350,000	N/A	Southeastern U.S. Hub
NS Savannah Yard	Savannah	100,000	N/A	Port of Savannah traffic
NS Doraville Yard	Doraville	100,000	N/A	N/A
NS Valdosta Yard	Valdosta	50,000	N/A	Gathering station for Florida traffic
NS Albany Yard	Albany	50,000	N/A	Local industries
NS Augusta Yard	Augusta	50,000	N/A	Port of Charleston traffic to the South
NS Rosser Yard	Rosser	50,000	N/A	N/A
NS Columbus Yard	Columbus	40,000	N/A	Birmingham traffic to the Southeast; local industries
NS East Point Yard	East Point	40,000	N/A	N/A

Sources: CSXT Transportation; Norfolk Southern Corporation.

Major Rail/Highway Bulk Terminals

Rail/highway bulk transload terminals are locations where outbound rail shipments of dry or liquid bulk commodities arrive by truck from points of

shipment or extraction and are transloaded onto tankers, hoppers, or other specialty railcars. Inbound rail shipments of bulk commodities arrive by train, are removed from the railcars, and transloaded to trucks for distribution to receivers or processing facilities. Rail/highway bulk terminals require equipment such as conveyors, pumps, vacuums, or blowers to move the bulk materials between truck and rail equipment. There are 18 rail/highway bulk transload facilities in Georgia: seven are maintained by Norfolk Southern and CSXT, the rest are independent terminals serving CSXT, NS, and short line and terminals railroads.

Norfolk Southern and CSXT operate terminals in Dalton in Northern Georgia, in Augusta, and the Atlanta metropolitan region (Doraville and Tilford yards), and CSXT also operates in Savannah. The Atlanta-area terminals are the largest by size and volume for both railroads. The rail/highway bulk terminals are listed in Table 3.3 and mapped in Figure 3.4.

Table 3.3 Rail/Highway Bulk Terminals

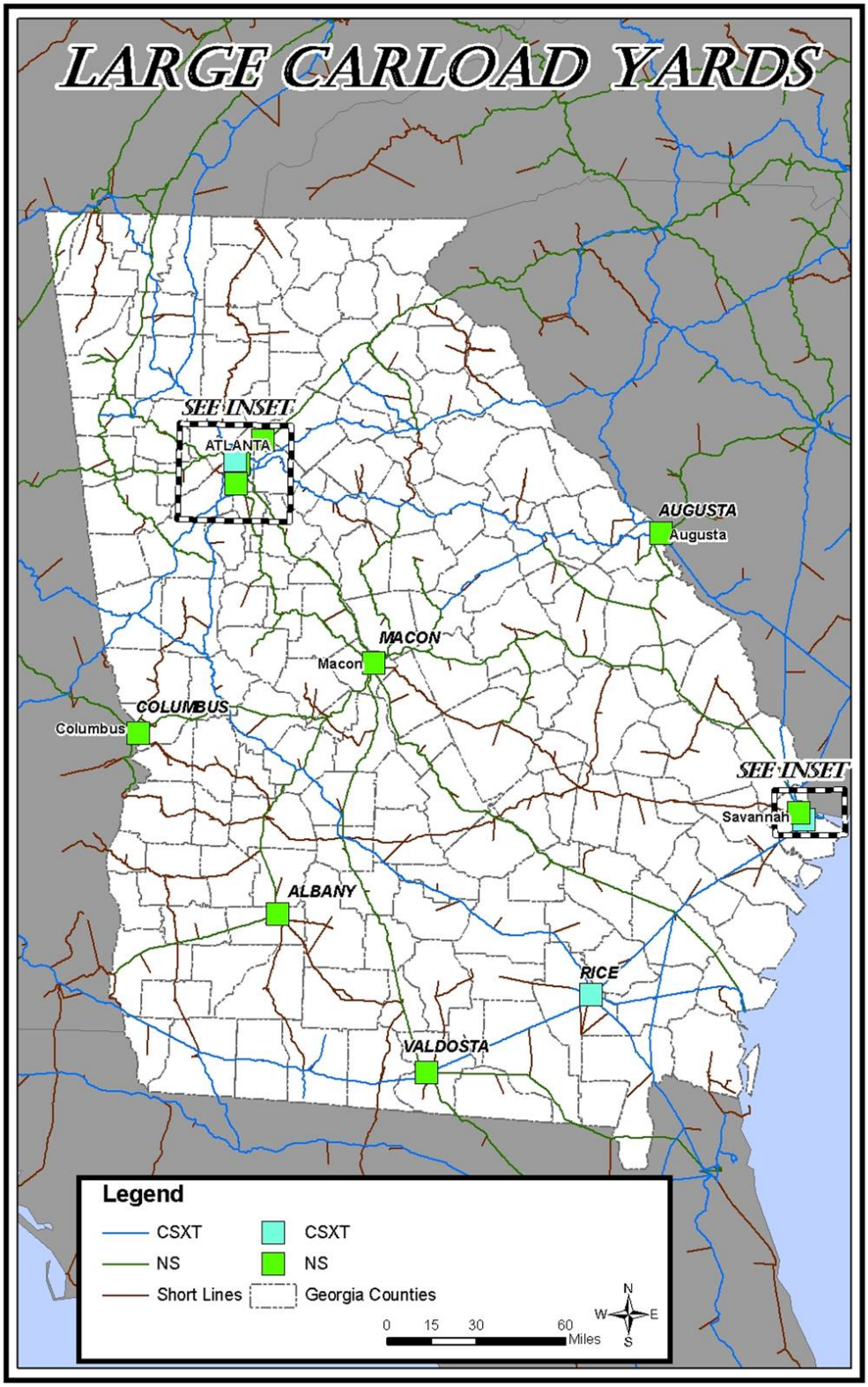
Terminal Name/ Location	Rail Carriers Served	Acreage	Annual Volume Processed	Loading/ Unloading Spots	Commodities Handled	Services/Equipment Available
CSXT Transflo – Atlanta	CSXT	26+	N/A	284	Chemicals (liquid or dry), asphalt, foods (liquid or dry), plastics (dry), petroleum products	Air compressor, tank trailer cleaning, conveyors, liquid pumps, vacuum, blower, truck scale
CSXT Transflo – Augusta	CSXT	10+	N/A	46	Acids, chemicals (dry), plastics (dry), petroleum products, minerals	Air compressor, tank trailer cleaning, conveyors, liquid pumps, vacuums, blower
CSXT Transflo – Dalton	CSXT	5+	N/A	65	Plastics (dry)	Conveyors, pumps, vacuums, blowers, truck scale, other
CSXT Transflo – Savannah	CSXT	14	N/A	45	Acids, chemicals (liquid)	Air compressor, sampling service, conveyors, pumps, vacuums, blowers, truck scale
NS Thoroughbred Bulk Transfer – Augusta	NS	N/A	500	44	Acids, chemicals (liquid or dry), foods (liquid or dry), plastics (dry), petroleum products, metals	Air compressor, scale, blending meters, sampling service, hot water heating, steam heating, liquid pumps, vacuum transfer, conveyors, blowers, auger

Terminal Name/ Location	Rail Carriers Served	Acreage	Annual Volume Processed	Loading/ Unloading Spots	Commodities Handled	Services/Equipment Available
NS Thoroughbred Bulk Transfer – Dalton	NS	N/A	2,000	135	Acids, chemicals (liquid or dry), foods (liquid or dry), plastics (dry), petroleum products, construction materials	Air compressor, scale, blending meters, sampling service, hot water heating, steam heating, tank trailer cleaning, liquid pumps, packaging, containment area, vacuum transfer, blowers, bagging, gaylords
NS Thoroughbred Bulk Transfer – Doraville	NS	N/A	3,000	77	Acids, chemicals (liquid or dry), foods (liquid or dry), plastics (dry), biofuels	Air compressor, scale, blending meters, sampling service, hot water heating, steam heating, tank trailer cleaning, liquid pumps, containment area, vacuum transfer, blowers, air conveyor
Pax Industries – Norcross	NS	N/A	N/A	35	Chemicals (dry), plastics (dry)	Air compressor, sampling service, vacuum trailer, gravity (trestle)
Dixie Transport – Calhoun	CSXT, NS	N/A	N/A	N/A	Foods (dry), plastics (dry)	Air compressor, scale, blending meters, vacuum trailer
A&R Transport – College Park (Atlanta)	CSXT, NS	N/A	N/A	100	Plastics (dry)	Scale, sampling service, vacuum trailer
New South Distribution – Dalton	CSXT	N/A	N/A	10	Chemicals (liquid or dry), plastics (dry)	Air compressor, sampling service, hot water heating, steam heating, tank trailer cleaning, liquid storage tanks, liquid pumps, blower, vacuum, air conveyor
Bulkmatic Transport – Doraville	NS	N/A	N/A	85	Chemicals (liquid or dry), foods (liquid or dry), plastics (dry), petroleum products	Air compressor, scale, sampling service, hot water heating, liquid pumps, vacuum trailer, blower
SPTS, Div of Trimac – Fairburn	CSXT	N/A	N/A	110	Acids, chemicals (liquid or dry), plastics (dry), petroleum products	Air compressor, scale, sampling service, blending meters, hot water heating, steam heating, tank trailer cleaning, liquid storage tanks, liquid pumps, vacuum trailer, gravity (trestle)

Terminal Name/ Location	Rail Carriers Served	Acreage	Annual Volume Processed	Loading/ Unloading Spots	Commodities Handled	Services/Equipment Available
B-H Transfer – Sandersville	SAN	N/A	N/A	20	Chemicals (dry), plastics (dry)	Scale, sampling service, vacuum trailer, blower, gravity (trestle)
Colonial Terminals – Savannah	CSXT, NS	N/A	N/A	N/A	Acids, chemicals (liquid), petroleum products	Air compressor, scale, sampling service, blending meters, hot water heating, steam heating, liquid storage tanks, liquid pumps, gravity (trestle)
Paktank – Savannah Terminal	Savanna h State Docks, NS, CSXT	N/A	N/A	18	Acids, chemicals (liquid), foods (liquid), petroleum products, clay slurry	Air compressor, scale, sampling service, blending meters, steam heating, liquid storage tanks, liquid pumps
St Mary's Railway West – Waresboro	SMWR	N/A	N/A	30	Chemicals (liquid or dry), foods (liquid or dry), plastics (dry)	Scale, vacuum trailer

Sources: CSXT Transportation; Norfolk Southern Corporation; Bulk Transporter "Georgia Bulk Intermodal Transload Facility," http://bulktransporter.com, accessed November 22, 2010.

Figure 3.3 Large Carload System Yards



Sources: Project team analysis using data from CSXT Transportation, Norfolk Southern Corporation,& ICAT.

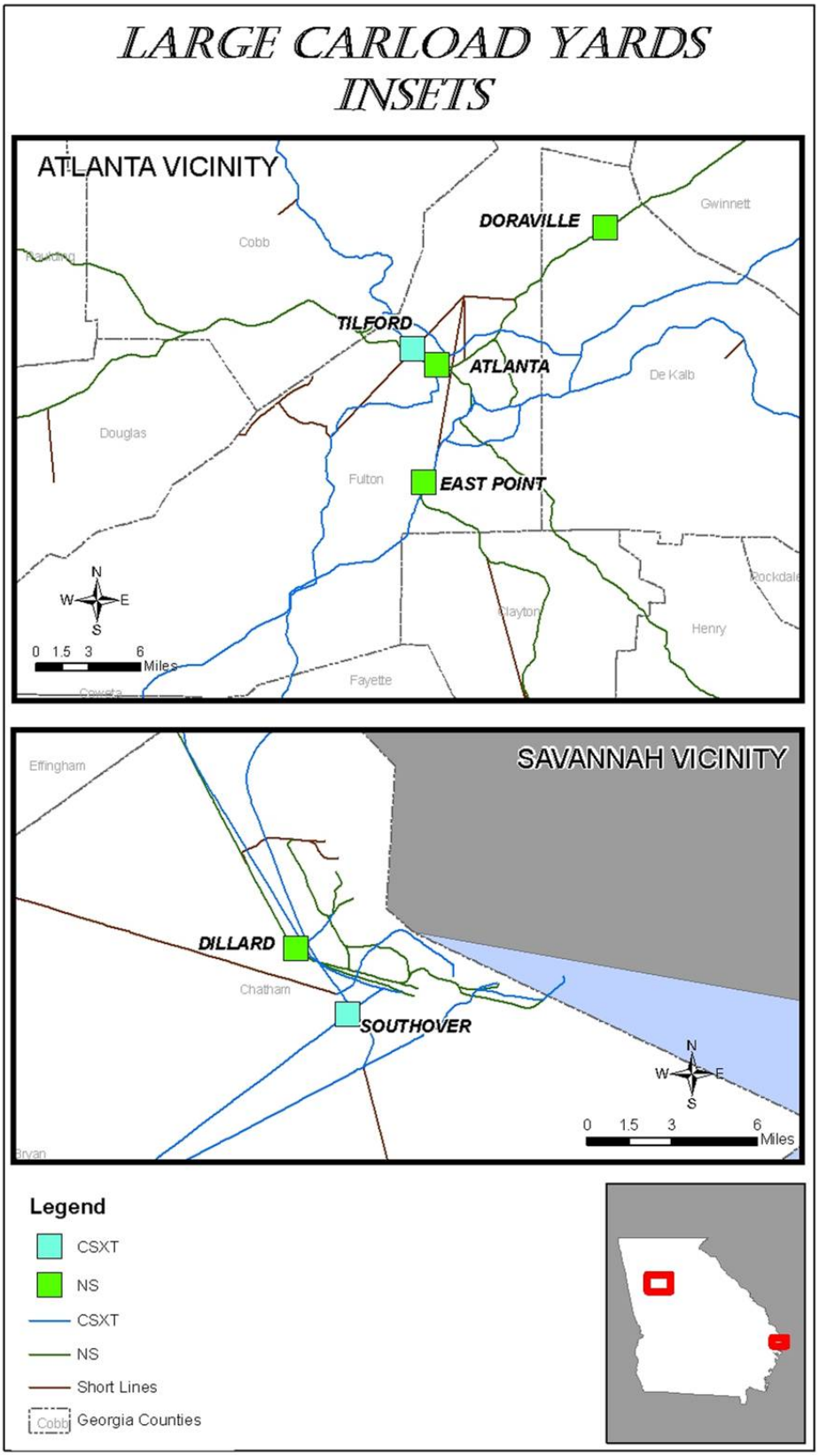
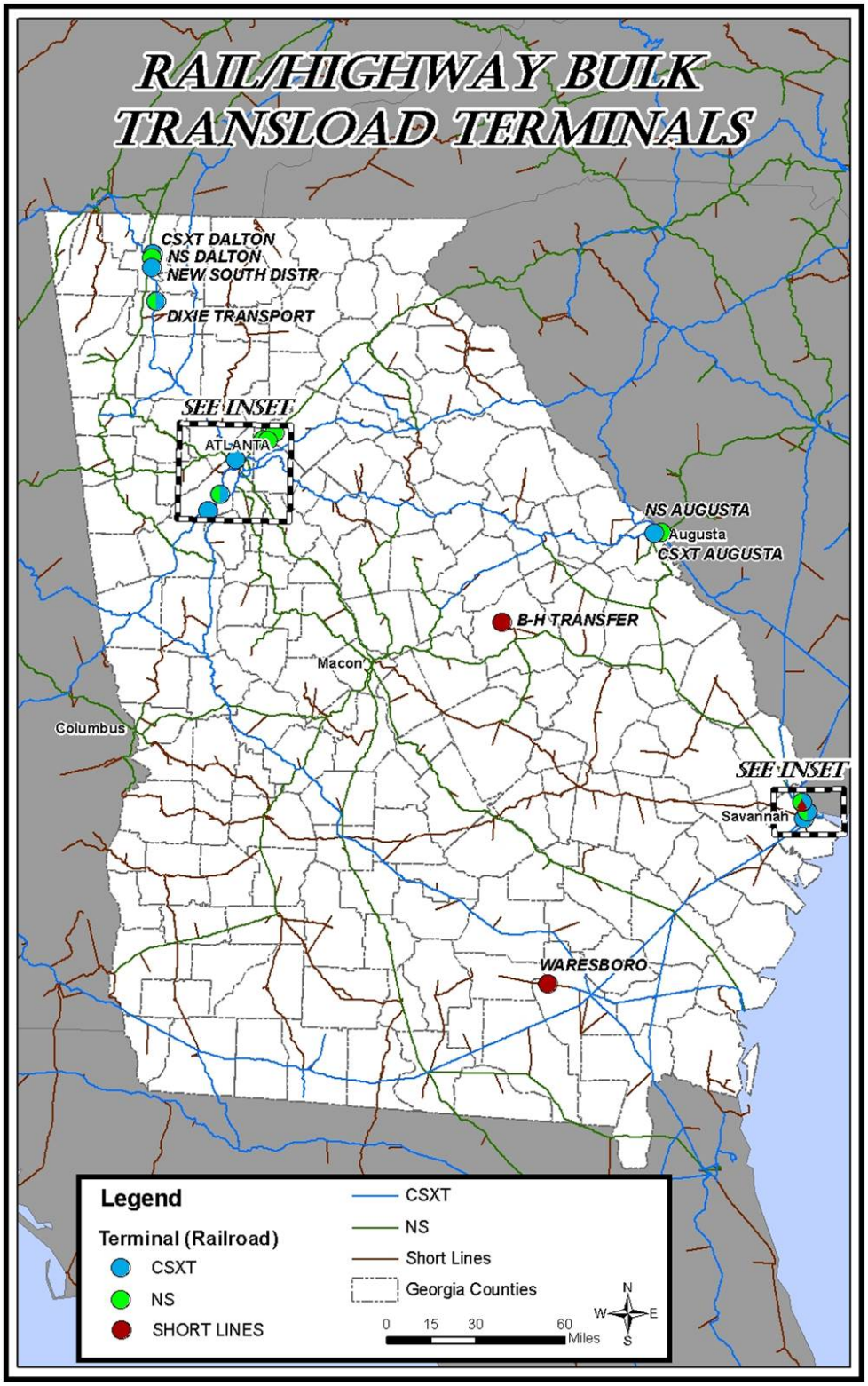
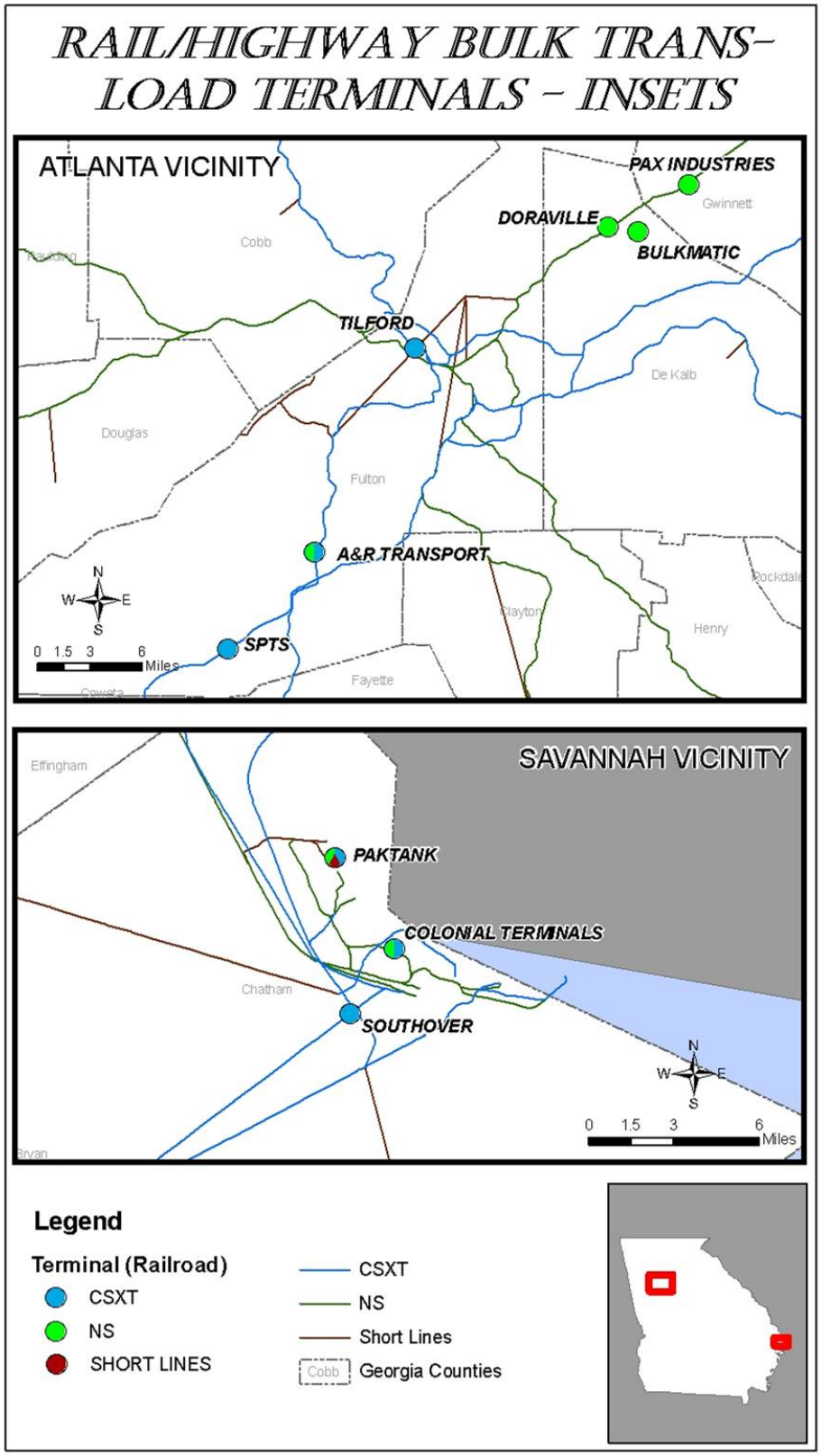

LARGE CARLOAD YARDS INSETS
ATLANTA VICINITY
DORAVILLE
Gwinnett
Cobb
TILFORD
ATLANTA
De Kalb
Douglas
Fulton
EAST POINT
Clayton
Henry
Fayette
N
W
E
S
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
DILLARD
Chatham
SOUTHOVER
Bryan
0 1.5 3 6 Miles
Legend
CSXT
NS
CSXT
NS
Short Lines
Cobb
Georgia Counties

Figure 3.4 Rail/Highway Bulk Terminals



Sources: Project team analysis using data from CSXT Transportation, Norfolk Southern Corp., & ICAT.


RAIL/HIGHWAY BULK TRANS-LOAD TERMINALS - INSETS
ATLANTA VICINITY
PAX INDUSTRIES
Gwinnett
DORAVILLE
BULKMATIC
Cobb
TILFORD
De Kalb
Douglas
Fulton
A&R TRANSPORT
Rockdale
Clayton
Henry
SPTS
Fayette
N
W
E
S
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
PAKTANK
COLONIAL TERMINALS
Chatham
SOUTHOVER
Bryan
Legend
Terminal (Railroad)
CSXT
NS
SHORT LINES
CSXT
NS
Short Lines
Cobb
Georgia Counties

3.4 CAPABILITY AND CAPACITY

In recent years, Georgia's freight rail system has largely been able to keep up with capacity demands. However, the system's ability to handle project demand will be contingent on addressing certain infrastructure deficiencies, most notably substandard weight limits and vertical clearances, as well as additional main line track, expanded terminals, and improved traffic management systems. These restrictions will limit the system's capability to accommodate higher volumes and a broader range of commodity types that would appeal to a more diverse range of existing and potential rail customers. Current conditions related to weight vertical clearances, number of main line tracks and signal types are reviewed in this section. Other issues and needs are examined in Chapter 5.

286,000-lb Railcar Capacity

The industry standard railcar weight for bulk commodities such as grain, lumber, coal, and paper products, has transitioned in recent years from 263,000 pounds to 286,000 pounds (referred to colloquially in the industry as 286K). While most of the primary Class I rail lines have achieved 286K capability, many short line railroads throughout the country are not capable of handling 286K railcars. As 286K railcars become ever more common, short line railroads will find themselves at a disadvantage if they are unable to accommodate them. Upgrading lightweight track requires a significant capital investment, however. Railcar weight limits for Georgia's Class I and short line railroads, as available, are illustrated in Figure 3.5.

In the State of Georgia, most of the main line trackage owned by the Class I railroads is capable of handling 286K railcars. The CSXT Cartersville Subdivision, a branch connecting the CSXT Etowah Subdivision with the NS Cedartown Subdivision, is the only segment of the CSXT network in Georgia that is not 286K-capable. The NS network is primarily capable of accommodating 286K railcars as well. Exceptions are limited to the Moores Subdivision in Augusta and the Dublin Subdivision, which is approximately 35 miles of track that connects the NS Savannah Subdivision near Sandersville and the Georgia Central near Dublin.

Short line railroads capable of accommodating 286K railcars include ABR, CCKY (between MP419 and 445.4 only), CHAT, FCR, GRWR north of the CSXT Georgia Subdivision (between Social Circle and Monroe), HOG, HRT between Toccoa and Elberton, SAN, and VR. Railroads that lack 286K capacity include CCKY (286K permitted between MP 419 and 445.4 only), CIRR, FCRD, GC, GITM, GNRR, GWRC, GRWR south of the CSXT Georgia Subdivision, GSWR, and RSOR. Weight limit data for several of Georgia's short line railroads, consisting of FCRD, GFRR, GS, LW, SCS, SM, and SMWR remain unknown.

Vertical Clearances

Much of Georgia's rail infrastructure was originally built to accommodate rail cars with a height of 15 feet. With the general adoption of larger railcars, most notably tri-level auto carriers and double-stack intermodal cars, vertical height requirements have grown to upwards of 20 feet, and the defined height for fully unrestricted clearance was raised to 22' 6". A height of 20' 8" can accommodate a pair of stacked domestic containers (each 9'6" high), and has become a defacto minimum standard for vertical clearance for main lines handling intermodal traffic. Due to bridges and other obstructions, many rail lines in Georgia do not meet this requirement. Vertical clearances on CSXT, NS and many of the State's short line railroads are mapped in Figure 3.6.

The most restrictive clearances of 15' 6" (AAR "Plate C") exist on the CSXT Cartersville Subdivision, CSXT Coolidge Spur, CSXT Metcalf Spur, CCKY, CIRR, FCRD, GC, GITM, GSWR, RSOR, and VR. Container on flat car (COFC) and trailers on flat car (TOFC) are permitted on the CSXT Etowah Subdivision and CSXT Gainesville-Midland Subdivision, but with 18'6" clearance, these lines cannot accommodate double-stack trains. With 19'6" clearance, low-cube double-stack and tri-level auto carriers can be accommodated on the CSXT Camak Subdivision, CSXT McCormick Subdivision, CSXT Bainbridge Subdivision, and CSXT Atlanta Terminal A.

The balance of the CSXT rail network in Georgia has a clearance of at least 22 feet by 6 inches, and is capable of accommodating standard double-stack trains. Norfolk Southern's primary main lines through the State of Georgia, including the Atlanta North, Atlanta South, Greenville-Atlanta, East End, Macon, Valdosta, and Savannah subdivisions, are double-stack cleared. Elements of the NS network that do not have the necessary clearance to accommodate double-stack service include the Albany, Brunswick, Columbus, Dothan, and Griffin subdivisions, and short spur lines throughout the State.

Main Line Track Capacity

According to ICAT, 95 percent of all mainline trackage, including Class I and short line railroad trackage, in the State of Georgia are single-track. Main Class I routes have passing sidings at regular intervals, which allow trains moving in opposite directions or at different rates of speed to pass one another. While this arrangement is effective for traffic volumes that have historically occurred over Georgia's main lines, as traffic increases and/or there is a greater mix of different types of trains, full double track becomes a necessity. Typically, this threshold falls in the range of 30+ trains per 24-hour period.

At present, most double track segments are located in the immediate vicinity of Atlanta and Savannah, as illustrated in the map in Figure 3.7. On the CSXT system, double-track segments include portions of the CSXT Terminal A Subdivision in Cobb and Fulton Counties, the Griffin Subdivision in central Fulton County, the Abbeville Subdivsion in DeKalb County, and portions of the

Savannah East Route and Charleston subdivisions in Chatham County. On the Norfolk Southern system, portions of the Norcross Subdivision in Fulton and DeKalb Counties, the Atlanta-North Subdivision in Fulton County, and the Savannah Subdivision in Chatham County are double-tracked. The aforementioned subdivision segments represent approximately 2 percent of mainline track miles in Georgia. Mainline track mileage by number of tracks is summarized in Table 3.5.

Table 3.4 Mainline Track Mileage by Number of Tracks

Number of Tracks	Mileage	Percent of Total Mileage
Unknown (Zero)	120 miles	2.5 %
One	4,563 miles	95.4 %
Two	100 miles	2.1 %
Total	4,783 miles	100.0 %

Sources: Project team analysis using ICAT, 2009.

Traffic Control Systems

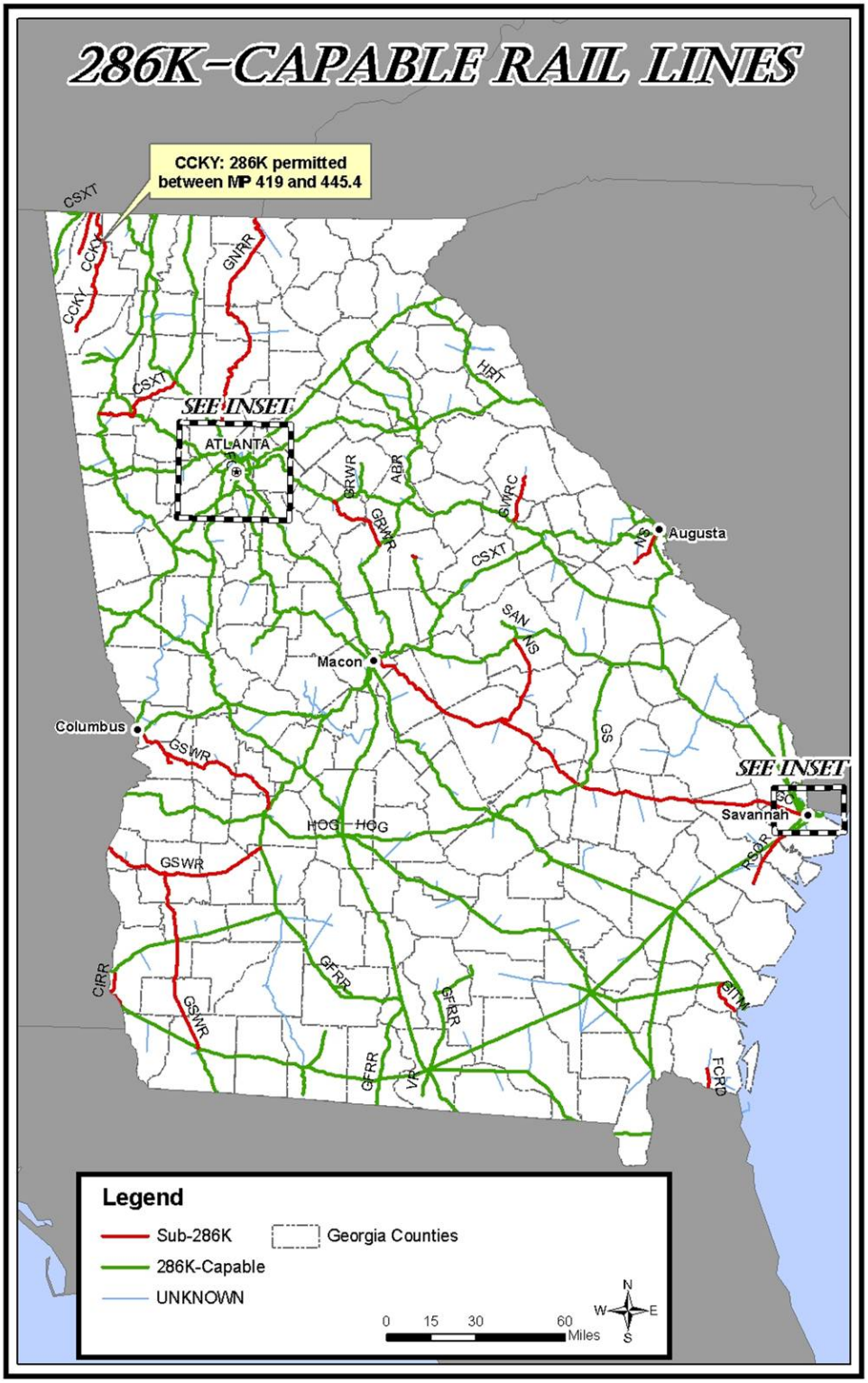
In addition to the number of main line tracks, another important attribute affecting main line capacity is the type of traffic control system. Railroads in Georgia primarily make use of three different signal systems to control traffic movements on their systems. Mapped in Figure 3.8, these are Manual, Automatic Block Signals (ABS), and Centralized Train Control (CTC). Manual (also known as "dark") systems rely on paper and/or radio-based dispatching techniques, with railroad crews specifically following the permissions given to them by the dispatchers to ensure safe operation and avoid conflicts. This system works best in areas where traffic is limited to a few trains per day, and speeds are limited to less than 49 mph for freight and 59 mph for passenger.

ABS systems also rely on dispatching using paper and/or radio-based techniques, but provide a layer of safety by automatically indicating the presence of trains in "blocks" located between signals, thus ensuring the safe separation of multiple trains operating over a line segment. The systems function by flowing low-voltage electric currents through the track to detect the presence of trains or obstructions on the track. The presence of an obstruction results in a warning signal displayed at the ends of the affected and adjacent blocks. With ABS in place, maximum permissible speeds can be up to 80 mph for both freight and passenger. Implementation of ABS offers some capacity gains over dark territory, primarily through higher speeds and closer following distances of trains. Within the State of Georgia, subdivisions equipped with ABS include the NS Valdosta, NS Albany, CSXT Georgia, CSXT A&WP, and a portion of the GSWR railroad near Columbus.

Centralized Train Control (CTC) systems permit the dispatcher to remotely manage train movements by controlling signal indications and train routing over

a geographic jurisdiction such as a subdivision or terminal area. CTC is layered on top of an ABS system, which provides occupied block protection. Implementation of CTC leads to considerable capacity improvements, and is almost always taken as a first less costly step when traffic increases call for increased line capacity. CSXT's Fitzgerald, Abbeville, Etowah, W&A, Jesup, and Nahunta Subdivisions, and NS' Atlanta North, Atlanta South, East End, and Greenville-Atlanta Subdivisions are controlled using a CTC system. On the CSXT Thomasville and Camak subdivisions and the NS Brusnwick, Cedartown, Griffin and Savannah subdivisions, switches are changed manually.

Figure 3.5 Rail Lines With Maximum Allowable Weight of 286,000 Pounds



Sources: Project team analysis using data from CSXT Transportation, Norfolk Southern Corporation, Genesee and Wyoming, Atlantic Western Transportation, American short line and Regional Railroad Association, and ICAT.

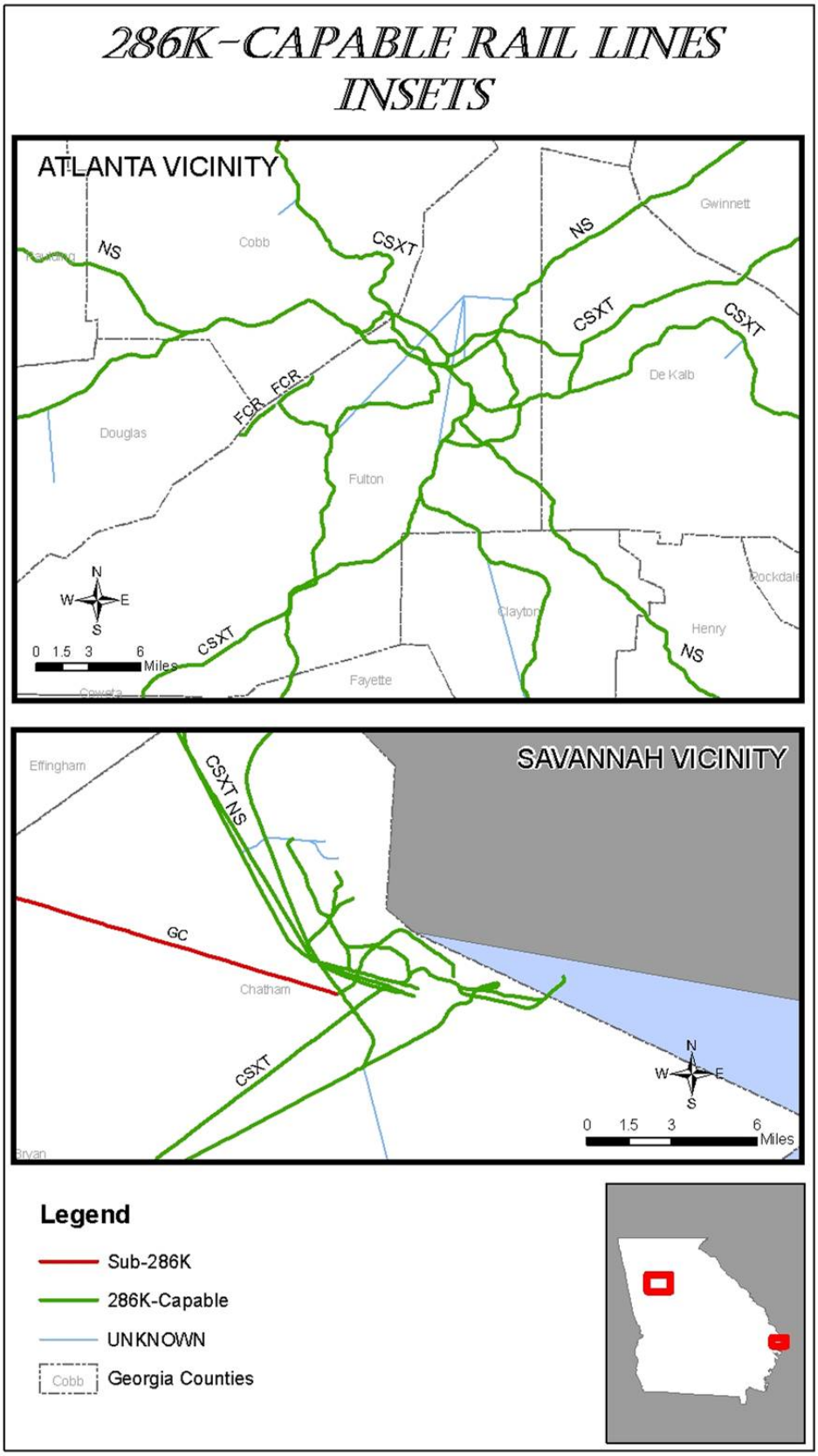
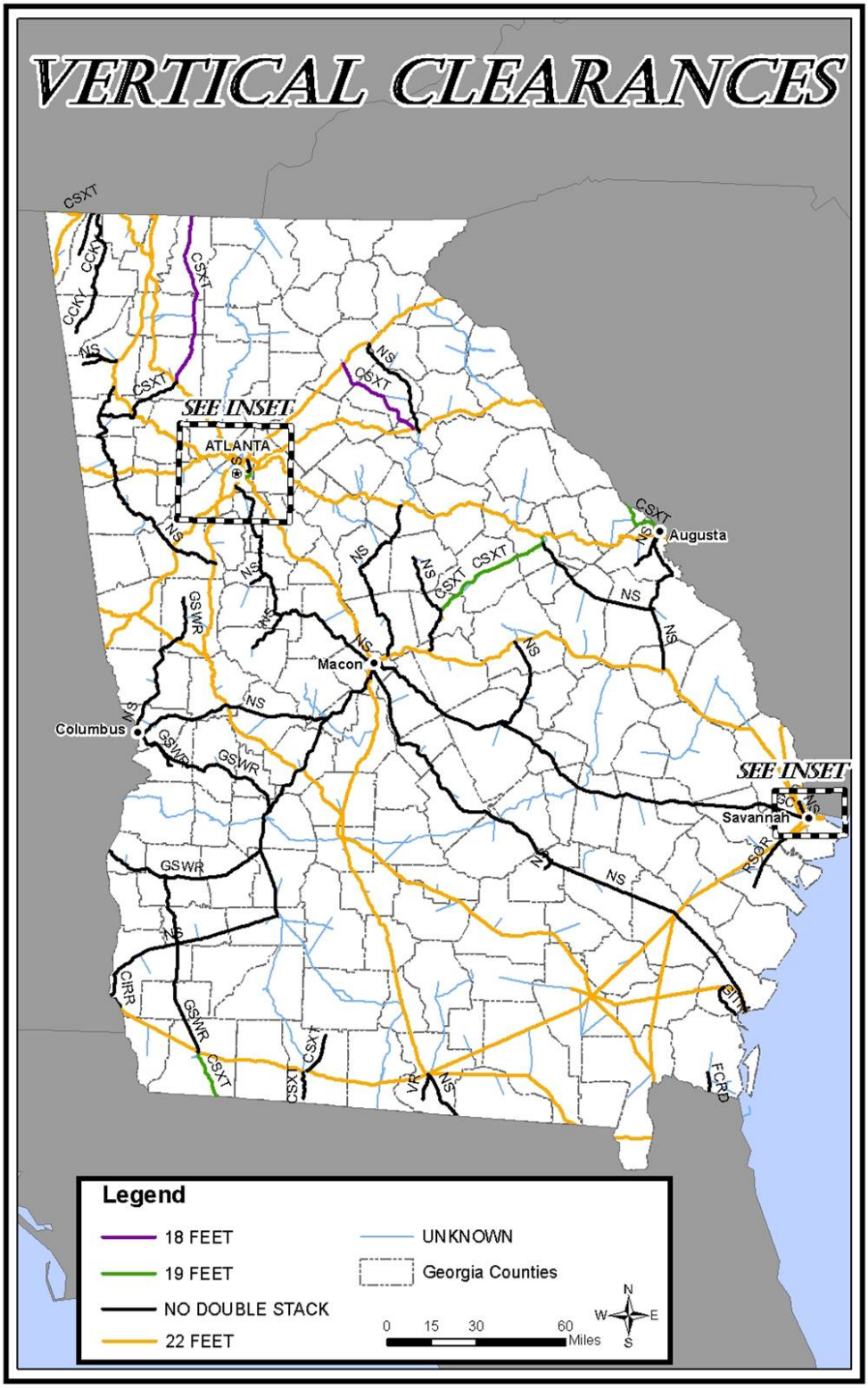

286K-CAPABLE RAIL LINES
INSETS
ATLANTA VICINITY
Cobb
Douglas
Fulton
De Kalb
Gwinnett
Clayton
Henry
Rockdale
Fayette
Coweta
NS
CSXT
FCR
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
Chatham
Bryan
GC
CSXT NS
Legend
Sub-286K
286K-Capable
UNKNOWN
Cobb
Georgia Counties

Figure 3.6 Vertical Clearances for Georgia Rail System



Sources: Project team analysis using data from CSXT Transportation, Norfolk Southern Corporation, Genesee and Wyoming, and ICAT.

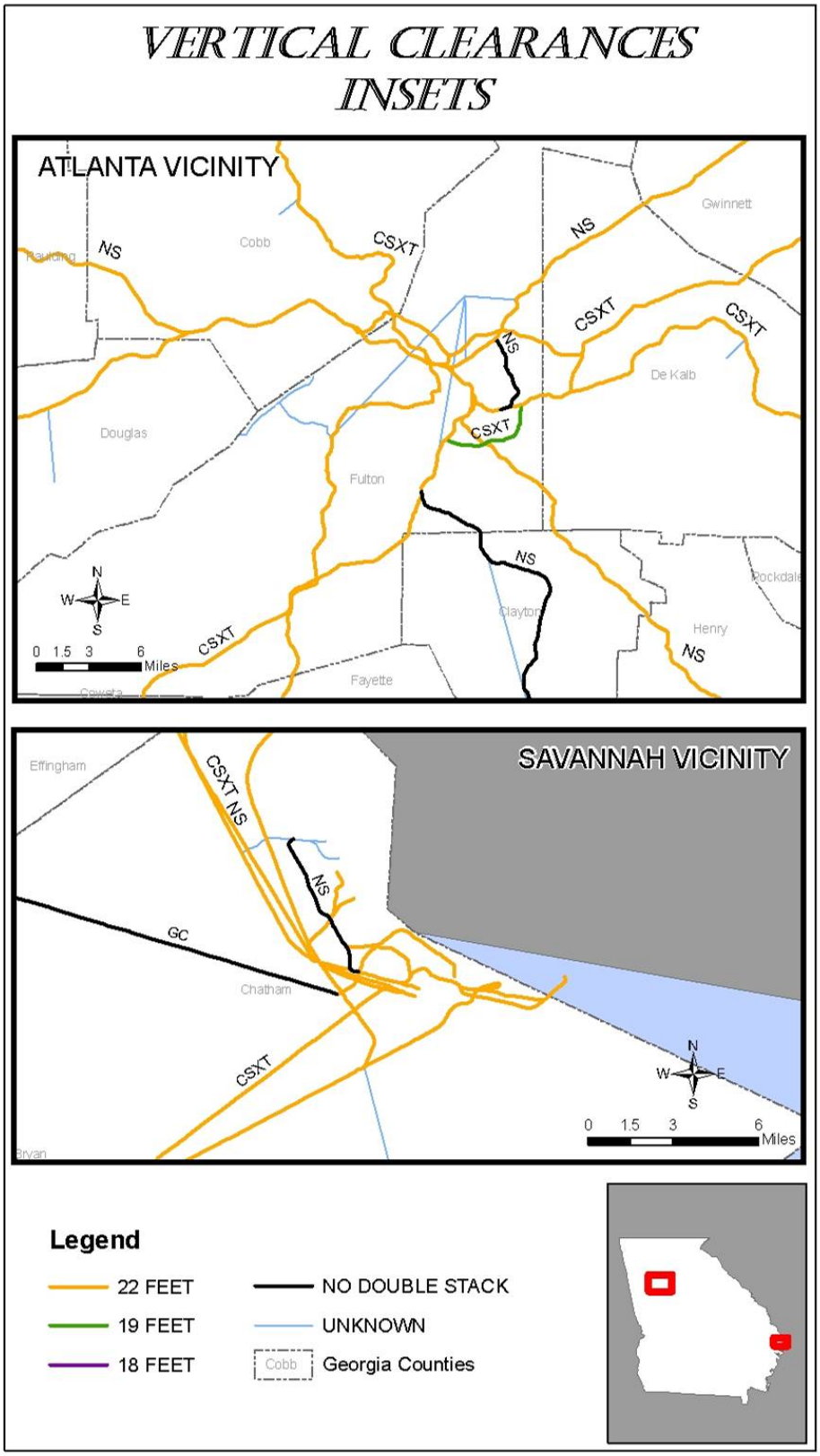
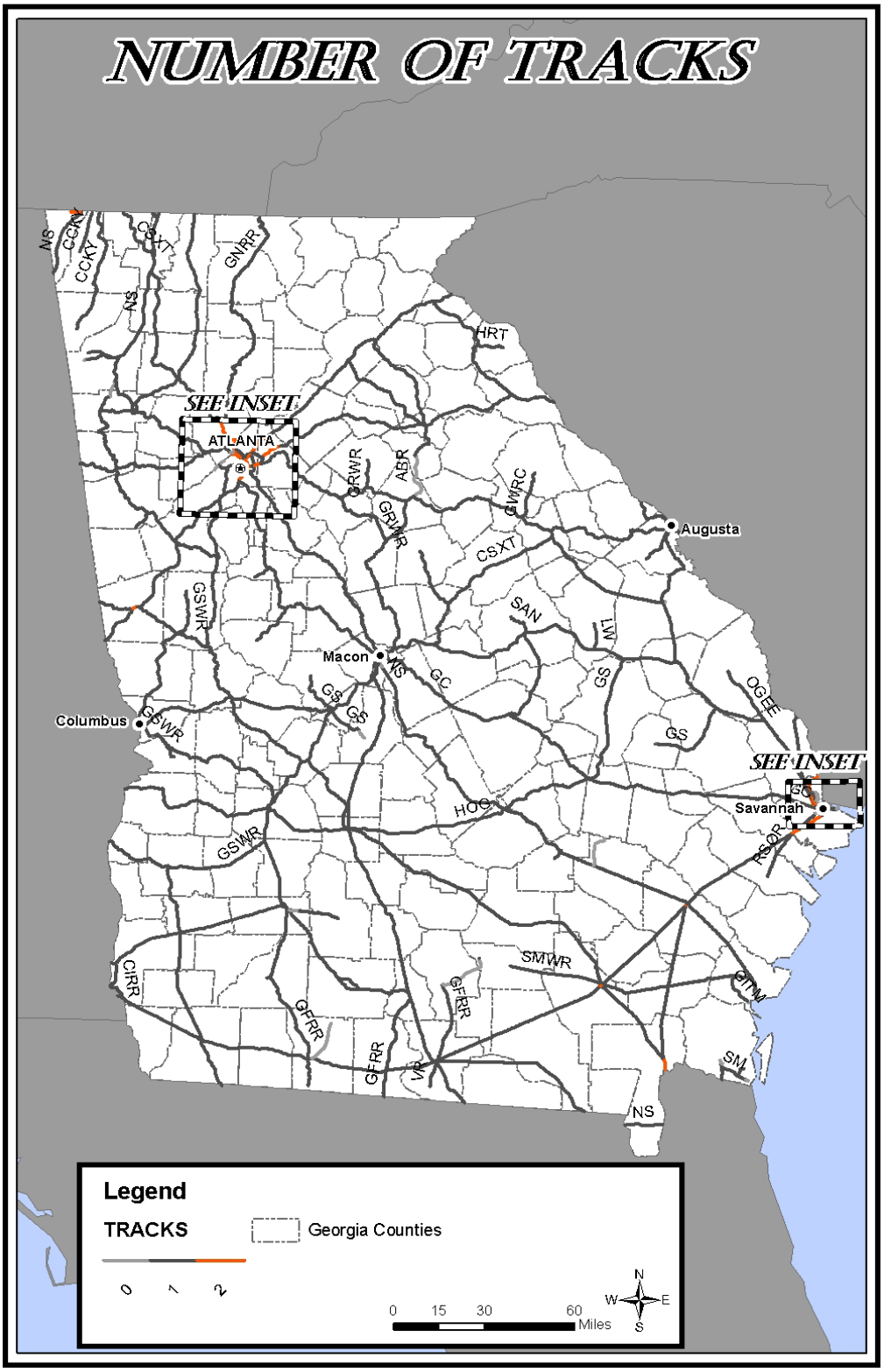

VERTICAL CLEARANCES INSETS
ATLANTA VICINITY
Cobb
Gwinnett
Douglas
Fulton
De Kalb
Clayton
Henry
Fayette
NS
CSXT
N
W
E
S
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
Chatham
Bryan
GC
Legend
22 FEET
19 FEET
18 FEET
NO DOUBLE STACK
UNKNOWN
Cobb
Georgia Counties

Figure 3.7 Number of Railroad Tracks for Georgia Rail System



Source: Project team analysis using ICAT, 2009.

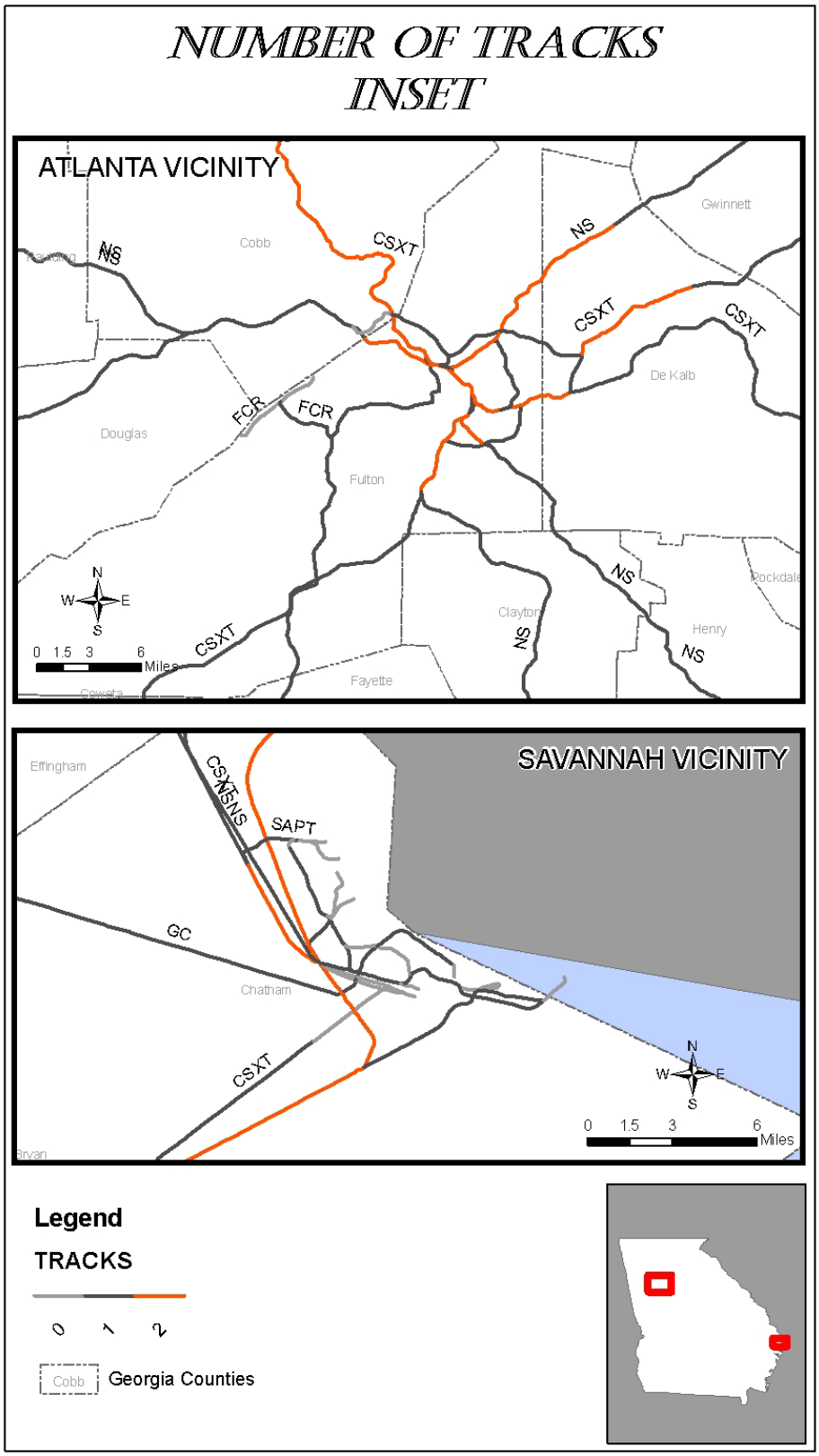
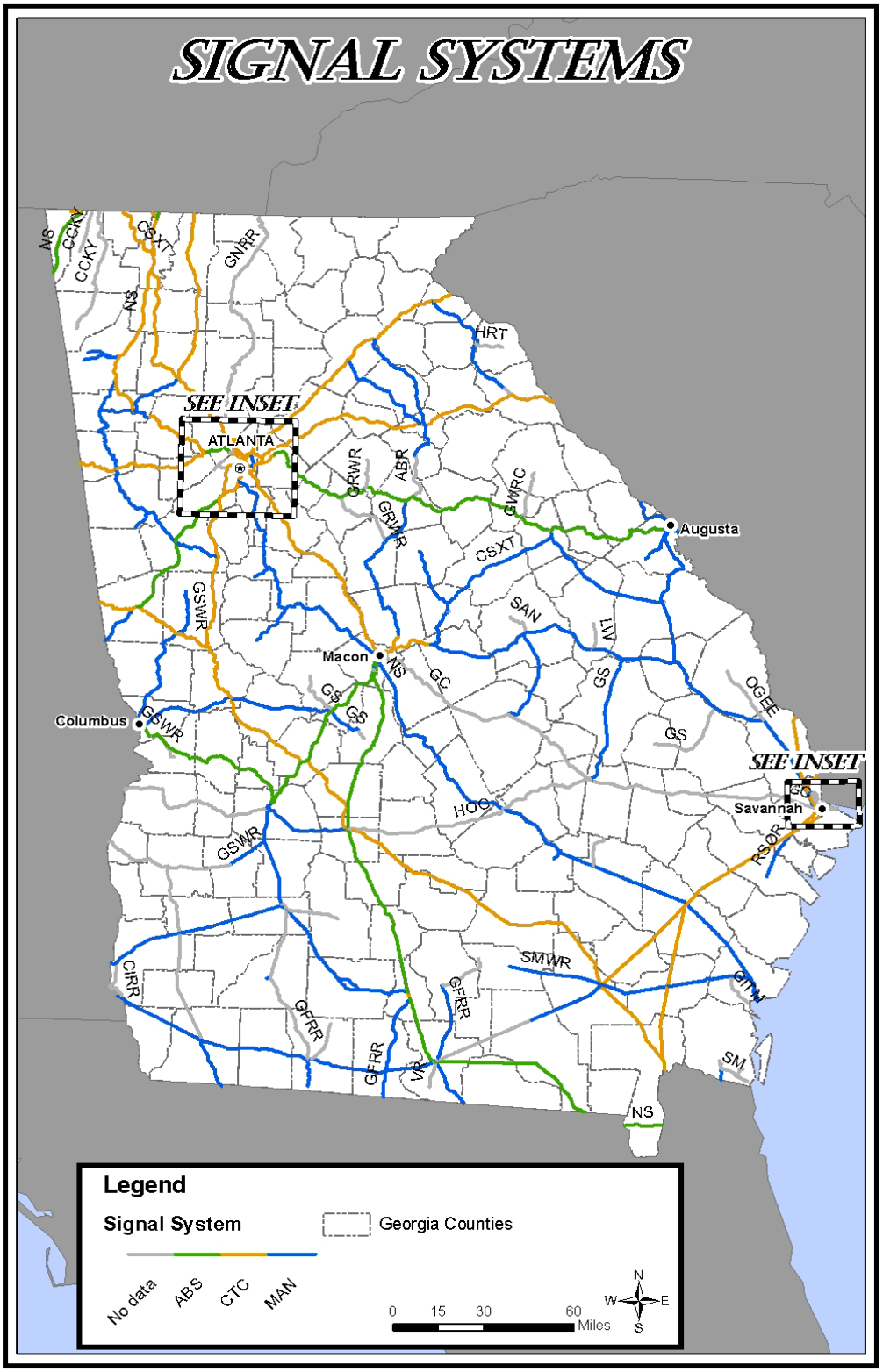
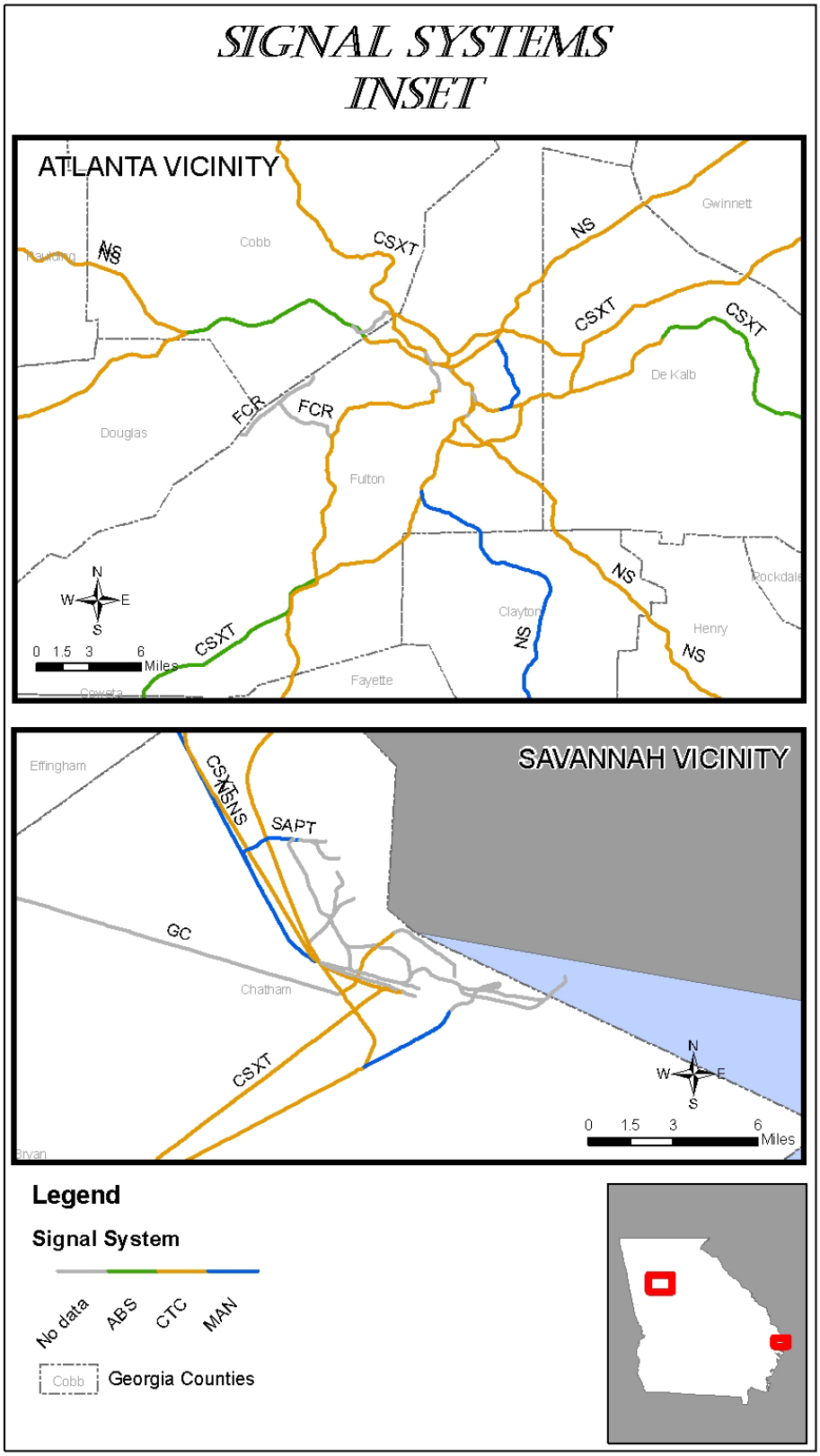

NUMBER OF TRACKS
INSET
ATLANTA VICINITY
Cobb
Gwinnett
De Kalb
Douglas
Fulton
Clayton
Henry
Fayette
Coweta
NS
CSXT
FCR
N
W
E
S
0 1.5 3 6
Miles
SAVANNAH VICINITY
Effingham
Chatham
Bryan
CSXT/NS
SAPT
GC
CSXT
Legend
TRACKS
0
1
2
Cobb
Georgia Counties

Figure 3.8 Signal Systems for Georgia Rail System



Source: Project team analysis using ICAT, 2009.


SIGNAL SYSTEMS INSET
ATLANTA VICINITY
Cobb
Gwinnett
Douglas
Fulton
De Kalb
Clayton
Henry
Fayette
Rockdale
NS
CSXT
FCR
N
W
E
S
0 1.5 3 6 Miles
SAVANNAH VICINITY
Effingham
Chatham
Bryan
SAPT
GC
Legend
Signal System
No data
ABS
CTC
MAN
Cobb
Georgia Counties

4.0 Rail Freight Demand

4.1 OVERVIEW

This chapter examines the current and projected rail freight demand in the State of Georgia. In order to get a sense of Georgia's role in the context of national and regional goods movement, a comparative analysis of Georgia with the Southeast and National freight flows is presented. In addition, a comprehensive analysis was done for the rail traffic in Georgia, including domestic and North American Free Trade Association (NAFTA) flows.

The primary sources of data for freight demand consisted of IHS-Global Insight's TRANSEARCH 2007 dataset provided by GDOT, and the recently released FHWA Freight Analysis Framework version 3 (FAF3). Since none of the available forecasts extended out to 2050, the FAF3 forecast was extrapolated to 2050 using 2035-2040 compound growth rates. The data were used as the source for the modal share analysis, that includes the National, Regional and State modal comparison. FAF3 forecast rates by origin-destination and commodity were applied to the TRANSEARCH 2007 data to estimate future demand through 2050.

In 2007, Georgia generated over 741 million tons of freight valued at $816 billion, excluding through traffic. Rail carries about 14 percent of freight by tonnage and 3 percent by value, reflecting the fact that rail is most effective at carrying heavier, bulkier, and lower-value freight. It is expected that over the next 40 years the rail tonnage share will decrease; however, the share of shipments handled by multiple modes, which includes intermodal rail, is projected to increase. Intermodal traffic represents modest tonnage but substantial unit volume.

Through traffic comprises a major part of the overall freight volume. It represents 33 percent of tonnage and 44 percent of value for all intercity freight in Georgia, and about half of all the rail volume. Through traffic is critical to the continued vitality of rail service in Georgia, and Georgia's strategic geographic position as the gateway to Florida is a key element. In 2007, Georgia's freight railroads moved 210 million tons of freight valued at $213 billion (including through traffic). Over the next four decades, it is projected that the volume of traffic handled by railroads will increase to more than 335 million tons and $525 billion in value, an increase of 60 percent by tonnage and 146 percent by value.

The top inbound, outbound, through and intrastate rail commodities measured in tons are coal, chemicals, nonmetallic minerals, clay, concrete, glass and stone products, and food. Measured in dollars the top commodities transported by rail are freight-all-kinds (i.e., intermodal), chemicals, transportation equipment (primarily assembled automobiles and parts), pulp and paper products, and food. Future trends indicate that with the exception of coal and outbound and

intrastate pulp and paper products, these rail shipments are projected to increase in weight and value.

Georgia's top trading partners for inbound and outbound rail shipments are Memphis TN, Lexington KY, Lexington VA, New Orleans LA, Chicago IL, Birmingham AL and Jacksonville FL. Traffic from the coal producing regions around Memphis TN, Lexington KY and Lexington VA is expected to decline by 50 percent. However, volume trends from the remaining regions are expected to rise sharply by 160 percent over the next 40 years.

4.2 FORECAST METHODOLOGY

The 2007 TRANSEARCH data for Georgia contained Origin-Destination (O-D) freight flows by commodity type (STCC4) measured in tons and value, for truck, air and water. Rail flows were retrieved from the STB 2007 full (confidential) Carload Waybill Sample, which is a stratified sample of rail traffic moving in the United States. Commodity, volume, type (intermodal and carload) and geographic data were drawn from the Waybill Sample and were incorporated to the TRANSEARCH dataset.

The newly released FHWA FAF3 was used to forecast the 2007 TRANSEARCH to 2040. FAF3 is based in 2007 and includes a forecast through 2040 in five-year increments. Growth rates were calculated with the FAF3 forecast by O-D and commodity type and were then applied to the TRANSEARCH dataset. The estimated 2040 TRANSEARCH dataset was then extrapolated to 2050.

Harmonize Geographies and Commodities

All commodities on the TRANSEARCH dataset were in 4-digit Standard Transportation Commodity Code (STCC4) and FAF3 commodity data is provided by 2-digit Standard Classification of Transported Goods (SCTG2) codes. A crosswalk was created that translated the STCC4 codes in TRANSEARCH into SCTG2 codes. All commodities but STCC 42 (Containers, Carriers or Devices, Shipping, Returned Empty) were included in the crosswalk.

The TRANSEARCH data was provided by origin and destination at the county level for Georgia, Florida, Alabama, Tennessee, North Carolina, and South Carolina. The remainder of the U.S. was provided by "state-share-of" data (not crossing state boundaries) from the US Bureau of Economic Analysis. Information on Canada and Mexico was included for rail flows.

FAF3 data provides information on international origin, domestic origin, domestic destination, and international destination. This allows traffic flows to be tracked from, say, China, to Los Angeles, to New York. FAF3 geographies are available at varying levels of detail, ranging from MSA (and state-share-of-MSA), to CMSA, and state remainders. Data for Georgia is provided for three CSAs: Atlanta GA-AL CSA (GA Part), Savannah GA CSA, and the Remainder of Georgia. Data for some states are provided only at the state level: Alaska, Idaho,

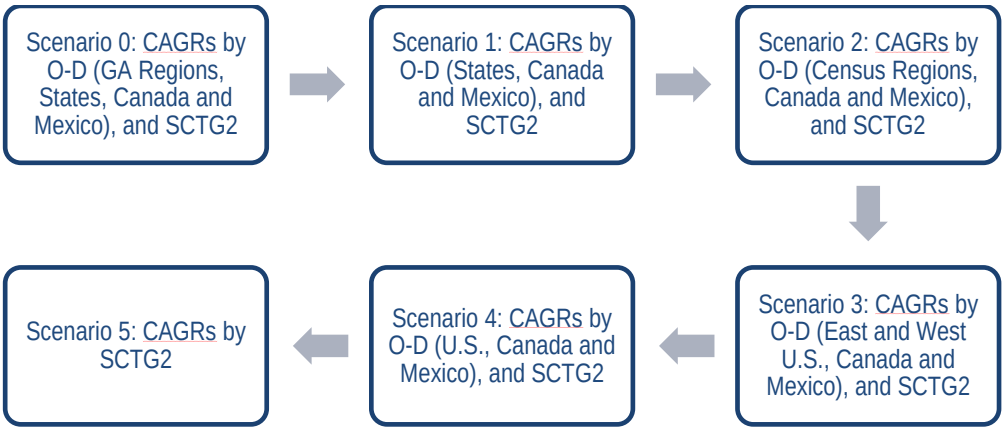
Iowa, Delaware, Maine, Mississippi, Montana, Nebraska, New Mexico, North Dakota, Rhode Island, Vermont, and Wyoming. Data for Canada and Mexico are provided at the most aggregate level. The two origin and two destination fields in FAF3 were combined into one origin field and one destination field, by discarding the foreign origins and destinations with the exception of Canada and Mexico.

Harmonizing the two data sets for the forecast required the TRANSEARCH Georgia flows to be rolled up to the three corresponding area definitions in FAF3. For the remainder of the U.S. both data sets were aggregated into states, and Canada and Mexico were included as two separate regions.

Geographic Aggregation Scenarios for Growth Rate Calculations

Compound Annual Growth Rates (CAGRs) were computed using the FAF3 Forecast by Origin-Destination and Commodity (SCTG2), on the assumption that mode share would remain unchanged. Because TRANSEARCH contains information on some flows that are not present in FAF3, CAGRs were calculated using a hierarchical approach to geographic aggregation. Maintaining the detail at the commodity level (SCTG2), growth rates were calculated for six scenarios with increasing geographic aggregation. Figure 4.1 illustrates the approach with the details of the geographic aggregation for each Scenario. In the original scenario (Scenario 0), the Origin-Destination geographies include three Georgia regions, U.S. states, Canada, and Mexico. For Scenario 1, the Georgia regions were aggregated to the state level. For Scenario 2, the states were rolled into census regions. In Scenario 3, the U.S. was divided into two regions, East and West, using the Mississippi River as the boundary. In Scenario 4, the U.S. was aggregated as one region, and in Scenario 5 geography was not taken into account.

Figure 4.1 Growth Rate Scenarios



Applying the Growth Rates

Growth rates were calculated between 2007 and the future years in the FAF3 data for each scenario. The FAF3 growth rates were then applied to the 2007 TRANSEARCH data, resulting in data for 2015, 2020, 2025, 2030, 2035, and 2040. The most disaggregate CAGRs were applied first (Scenario 0), and if there were flows missing the next level of CAGRs were applied (Scenarios 1 to 5). This process continued until all TRANSEARCH flows were forecasted. The forecasted TRANSEARCH data was then extrapolated to 2050 using the growth rates between 2035 and 2040, generating 2045 and 2050 TRANSEARCH data.

The STCC 42 (Containers, Carriers or Devices, Shipping, Returned Empty) flows in TRANSEARCH, which were not able to be matched to any SCTG, were forecasted to 2050 using the growth rates for the rest of the commodities of the projected TRANSEARCH dataset.

Adjustments

Once the future TRANSEARCH dataset was estimated, the growth rates were compared to the FAF3 growth rates by direction and commodity. Because of the hierarchical methodology used to apply the FAF3 growth rates, where the geographies were increasingly aggregated, some commodity groups (e.g., chemicals and ordnance and accessories) had to be manually adjusted in TRANSEARCH to match more closely the FAF3 growth rates.

4.3 STATEWIDE FREIGHT DEMAND

Total Demand

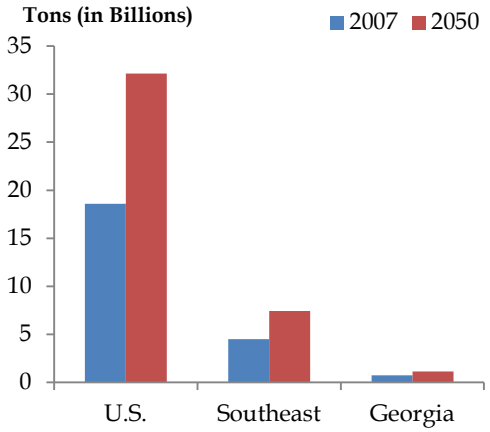
In 2007, Georgia generated over 741 million tons of freight. This corresponds to about 4 percent of the freight tonnage generated in the United States (18.6 billion tons).[11] For comparison, the Southeast – encompassing Georgia, Alabama, Mississippi, Tennessee, Florida, Kentucky, South Carolina, and North Carolina – generated around 4.5 billion tons of freight in 2007, so Georgia generated about 16 percent of the freight moved in the region. Figure 4.2 shows the current and projected tonnage of freight generated in Georgia and compares it with the current and projected tonnage for the Southeast and the United States. By 2050,

[11] The statistics presented in Figures 4.2 through 4.9 are derived from the Federal Highway Administration's Freight Analysis Framework version 3 (FAF3) The statistics presented in Figures 4.10 through 4.40 are derived from IHS-Global Insight TRANSEARCH data. The totals of freight tonnage and value differ because the TRANSEARCH data available for this study includes freight traffic moving through Georgia while the FAF3 data includes only inbound, outbound, and intrastate freight traffic.

tons originating or terminating in Georgia are expected to increase 54 percent to 1.1 billion.

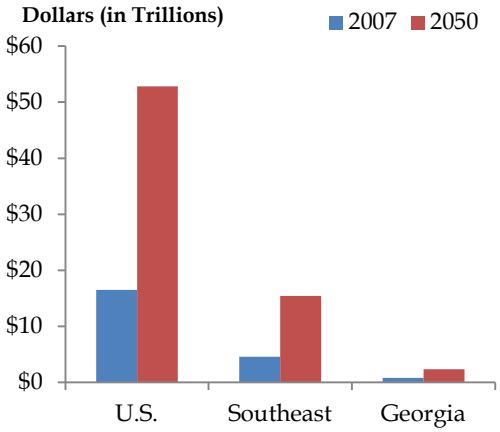
Measured by value, Georgia accounted for 5 percent or $816 billion annually of the $16.5 trillion of freight moved in the United States. Georgia's freight worth is expected to grow 187 percent to $2.3 trillion by 2050. However, Georgia's share of the National and Southeast freight generation (tons and value) is expected to remain constant over the next 40 years. The relative shares by value for Georgia, the Southeast, and the United States are shown in Figure 4.3.

Figure 4.2 Freight Tonnage for U.S., Southeast and Georgia *years 2007-2050*



Source: FHWA FAF3 extrapolated (excludes through traffic).

Figure 4.3 Freight Value for U.S., Southeast and Georgia *years 2007-2050*

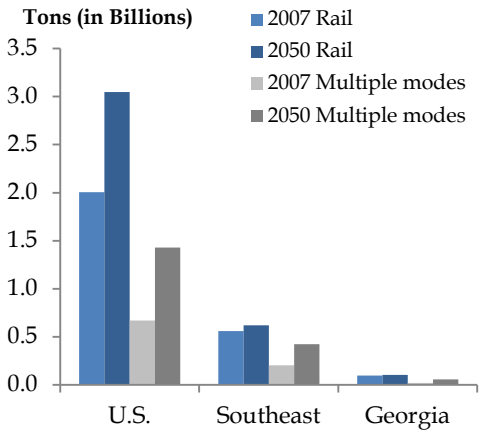


Source: FHWA FAF3 extrapolated (excludes through traffic).

Rail flows originating and/or terminating in Georgia account for 98.9 million tons and $24.9 billion in value. Compared to the overall U.S. volumes, Georgia represents 5 percent share of the rail tonnage and 4 percent by value. Figures 4.4 and 4.5 show the current and projected National, Southeast and State rail freight tonnage and value. In addition, these figures show the current and projected tonnage and value of shipments made by multiple modes and mail, which includes rail intermodal traffic. The state intermodal shipments represent 3 percent of the National intermodal tonnage and 5 percent of the National intermodal value, which is 21.8 million tons and $98.8 billion.

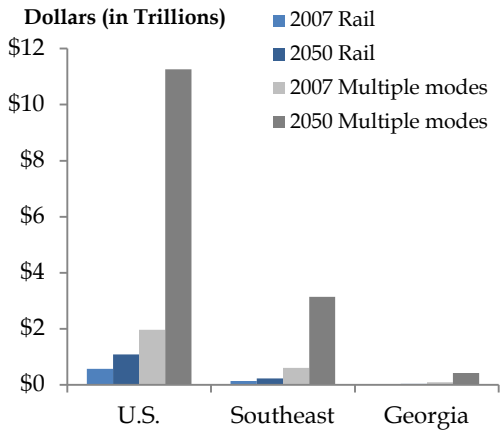
Over the next 40 years carload rail shipments are expected to experience moderate growth nationally but modest levels in the Southeast and Georgia. Overall, U.S. tonnage is expected to increase by 52 percent to 3 billion tons, while traffic originating or terminating in Georgia by 7 percent to 106 million tons. The picture for intermodal is quite different, with Georgia's traffic projected to increase by 167 percent to 58 million tons – higher growth than the National and Regional projections.

Figure 4.4 Rail Tonnage for U.S., Southeast and Georgia *years 2007-2050*



Source: FHWA FAF3 extrapolated (excludes through traffic).

Figure 4.5 Rail Value for U.S., Southeast and Georgia *years 2007-2050*



Source: FHWA FAF3 extrapolated (excludes through traffic).

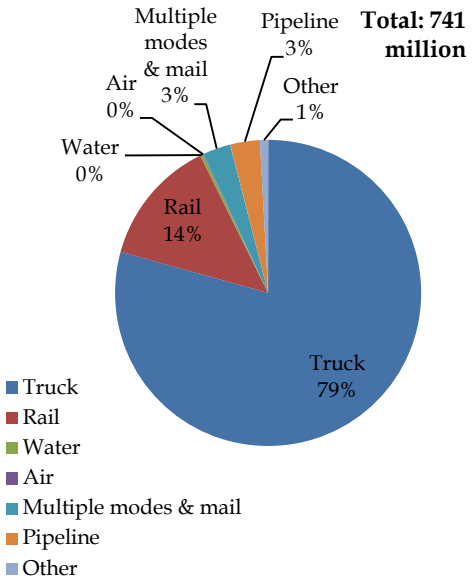
Demand by Mode

Rail carries about 14 percent of freight by tonnage and 3 percent by value, reflecting the fact that rail is cost-effective at carrying heavier, bulkier, and lower-value freight. Figure 4.6 shows the share of Georgia freight carried by each mode by tonnage. Figure 4.7 shows the shares by value.

Figures 4.8 and 4.9 show Georgia's projected freight modal share. In terms of tonnage (see Figure 4.8), by 2050 the share of trucks is expected to have a slight increase to 81 percent; and the rail share is expected to decrease from 14 percent in 2007 to 9 percent by 2050. However, the share of multiple modes and mail, which includes intermodal rail, is projected to increase to 5 percent by 2050.

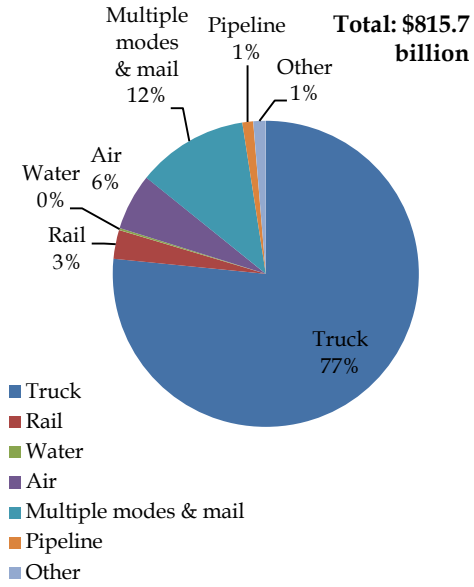
When measured by value (see Figure 4.9), the truck share is projected to decrease to 66 percent in 2050. The multiple modes and mail, and air shares of freight value are each expected to increase over the next 40 years.

Figure 4.6 Georgia Freight Tonnage by Mode
2007



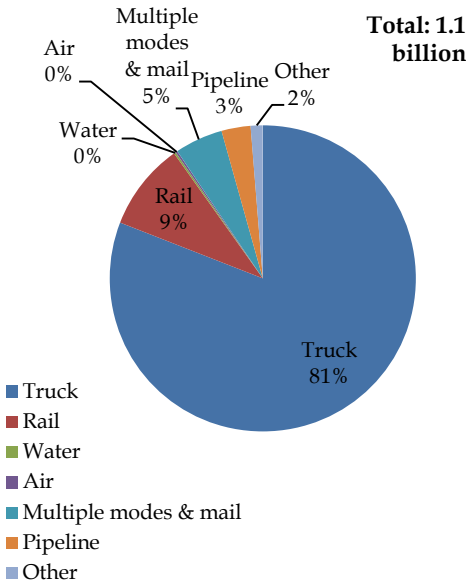
Source: FHWA FAF3 (excludes through traffic).

Figure 4.7 Georgia Freight Value by Mode
2007



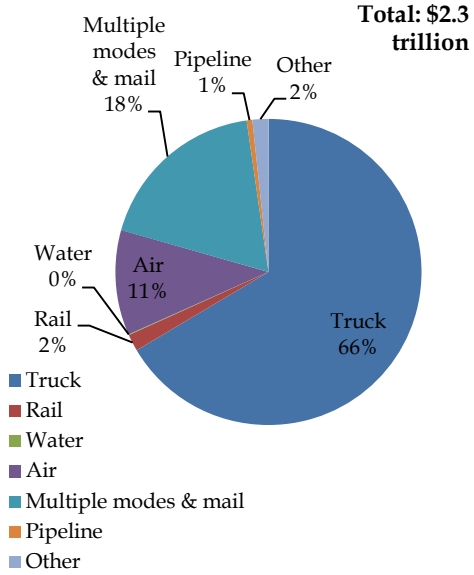
Source: FHWA FAF3 (excludes through traffic).

Figure 4.8 Georgia Freight Tonnage by Mode
2050



Source: FHWA FAF3 extrapolated (excludes through traffic).

Figure 4.9 Georgia Freight Value by Mode
2050



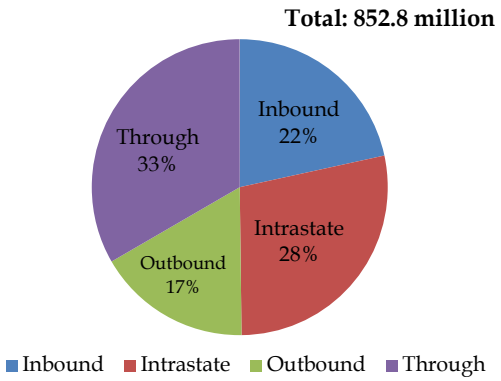
Source: FHWA FAF3 extrapolated (excludes through traffic).

Demand by Direction

Figures 4.10 and 4.11 show the directions of freight movement (i.e., inbound, outbound, through, and intrastate) by tons and value, respectively, for all modes. Measured in tons, one-third of the State's freight flow is through traffic. This share increases to 44 percent when measured in value. Inbound and outbound movements have similar shares of freight value and tonnage at about 20 percent. Intrastate movements account for a higher share of tonnage than of value.[12]

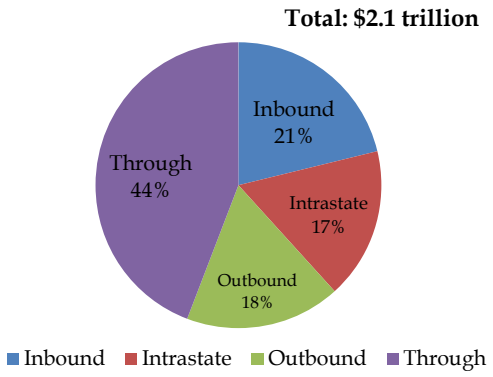
Through traffic in Georgia accounts for roughly 284.5 million tons and $918.7 billion of annual freight. Figures 4.12 and 4.13 show the modal shares of through freight traffic by weight and value. Through movements are split between truck and rail with trucks carrying 67 percent of through freight by tonnage and 86 percent by value.

Figure 4.10 Georgia Freight Tonnage by Direction, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

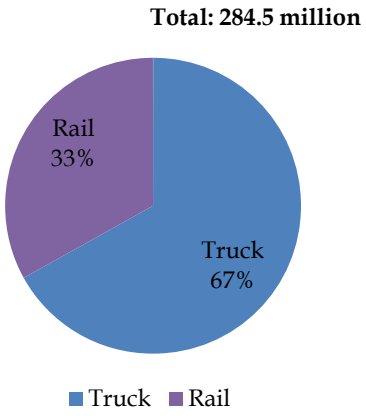
Figure 4.11 Georgia Freight Value by Direction, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

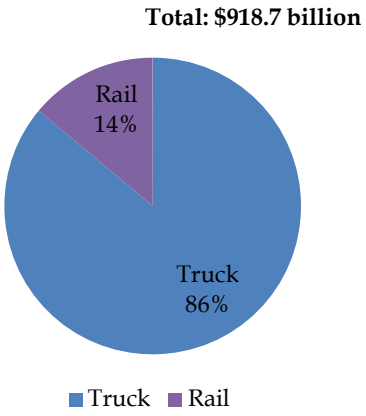
[12] The statistics are based on IHS-Global Insight TRANSEARCH data.

Figure 4.12 Georgia Through Freight Tonnage by Mode, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Figure 4.13 Georgia Through Freight Value by Mode, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

4.4 RAIL FREIGHT DEMAND

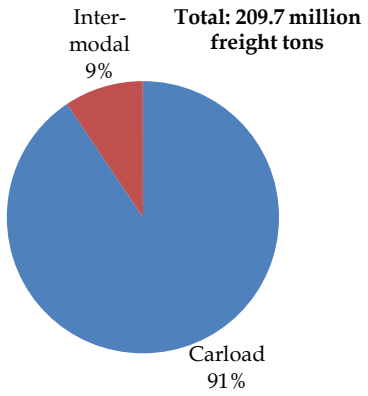
Total Demand

In 2007, Georgia's freight railroads moved 210 million tons of freight valued at $213 billion. By 2050, it is projected that the railroads will carry more than 335 million tons of freight annually, valued at $525 billion, an increase of 60 percent by tonnage and 146 percent by value.

Demand by Rail Equipment Type

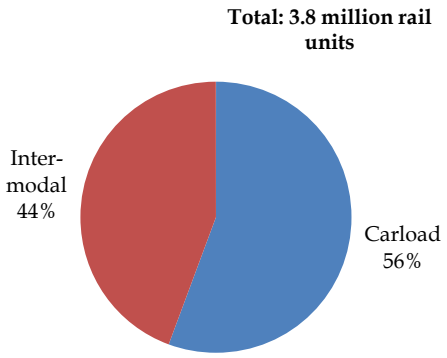
By type of rail equipment – carload or intermodal container – the data show that 91 percent of tonnage is carried in railcars and 9 percent in intermodal containers, as charted in Figure 4.14. However, intermodal containers (which for this statistic include both containers and truck trailers moved on flat cars) account for 44 percent of all rail equipment units moved in Georgia. The shares are illustrated in Figure 4.15. The disparity between the share of intermodal tonnage and intermodal units is due to the fact that intermodal shipments tend to be higher-value and lower-weight freight (such as consumer goods that require more packaging and have a low weight-to-volume ratio), while carload shipments tend to be heavier and lower value freight (such as coal and nonmetallic minerals that require little or no packaging and have a high weight-to-volume ratio). The projected shares of rail tonnage and rail units by equipment type are illustrated in Figures 4.16 and 4.17. By 2050, the share of rail tonnage and units for intermodal containers is expected to increase to 17 percent and 59 percent, respectively.

Figure 4.14 Georgia Rail Tonnage by Carload and Intermodal Equipment, *2007*



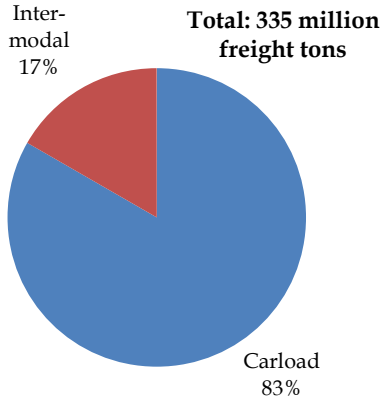
Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Figure 4.15 Georgia Rail Units by Carload and Intermodal Equipment, *2007*



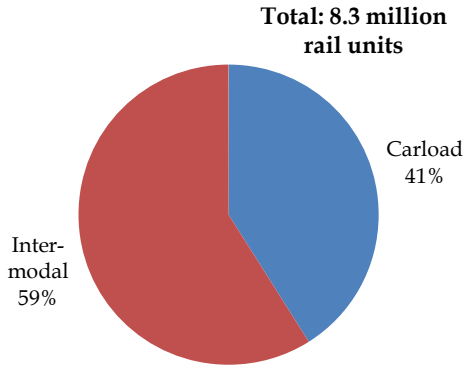
Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Figure 4.16 Georgia Rail Tonnage by Carload and Intermodal Equipment, *2050*



Source: 2050 TRANSEARCH forecast processed by Project team

Figure 4.17 Georgia Rail Units by Carload and Intermodal Equipment, *2050*



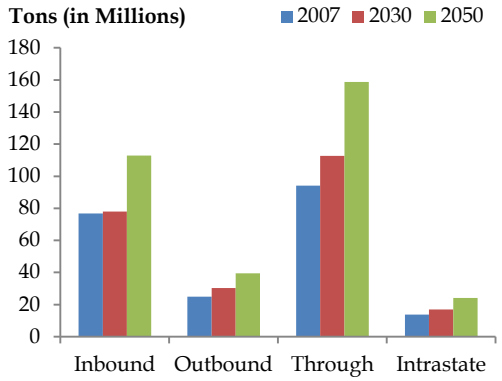
Source: 2050 TRANSEARCH forecast processed by Project team

Demand by Direction

Figures 4.18 and 4.19 chart the tonnage and value of inbound, outbound, intrastate and through freight by tonnage and value for 2007, 2030, and 2050. Through movements are dominant, accounting for 94 million tons and $128 billion of freight carried by rail in 2007. Over the next 40 years, it is projected that through traffic remains dominant carrying 159 million tons and $318 billion annually. Inbound movements account for 77 million tons and are projected to grow to 113 million tons in the next four decades. Inbound

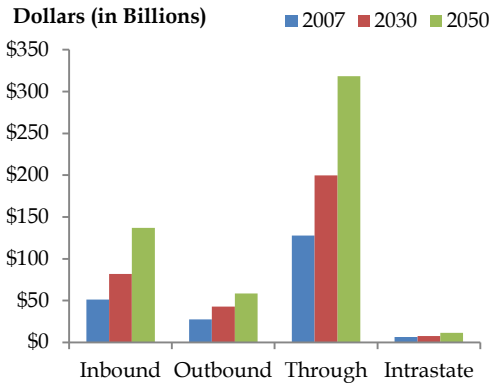
movements account for larger share of tonnage than value, an indication that the commodities that are moving into the State by rail tend to be relatively heavy, lower-value goods. Outbound shipments account for 25 million tons and are expected to grow to 40 million tons by 2050. Intrastate freight movements are significantly less than other directional flows; intrastate shipments represent 14 million tons annually valued at $6 billion.

Figure 4.18 Georgia Rail Tonnage by Direction and Year
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team

Figure 4.19 Georgia Rail Value by Direction and Year
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team

Demand by Direction and Commodity

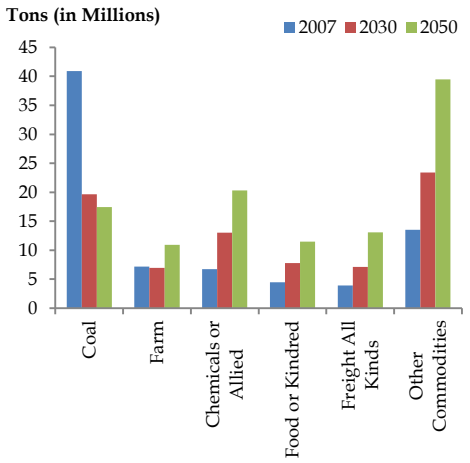
Inbound Commodities

The top five inbound commodities by tonnage account for 82 percent of all inbound tons. The largest inbound commodity is coal with over 40 million tons and 50 percent of the inbound share as shown in Figure 4.20. The next highest inbound commodities, farm products and chemicals, each represent about 7 million tons and 9 percent of the inbound share. The remaining top inbound commodities, which include food products and freight-all-kinds (that is, miscellaneous mixed shipments usually moving as intermodal shipments), each account for approximately 4 million tons.[13] Over the next four decades, coal shipments are estimated to significantly decline to 17 million tons – a 57-percent decrease. The remaining inbound top commodities (i.e., farm, food, chemicals, and mixed shipments) are expected to grow significantly.

[13] In IHS-Global Insight's 2007 TRANSEARCH data, 99.9 percent of the freight-all-kinds rail shipments are transported as intermodal shipments.

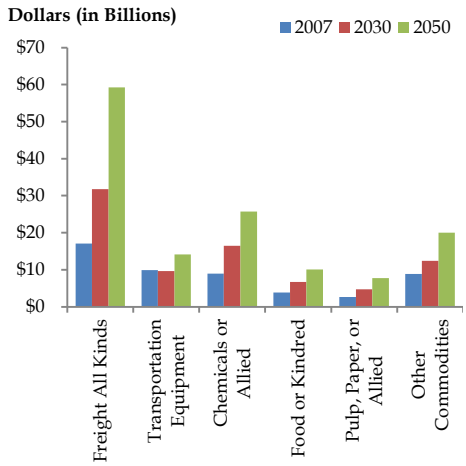
The top five inbound commodities by value are shown in Figure 4.21. Three of the top commodities by weight – freight-all-kinds shipments; chemicals or allied products; and food or kindred products – also are in the list of top five commodities by value. Freight-all-kinds shipments (i.e., freight moving intermodally) make up $17 billion and 33 percent of all inbound rail freight measured by value. By 2050, these shipments are expected to increase by 250 percent in value. Transportation equipment, the second highest top commodity at $10 billion and a 19 percent of the inbound share, is expected to grow by 40 percent by 2050. The remaining inbound top commodities – chemicals; food products; and pulp, paper and allied products – are expected to grow on average by 180 percent over the next 40 years.

Figure 4.20 Top Inbound Rail Commodities by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.21 Top Inbound Rail Commodities by Value
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

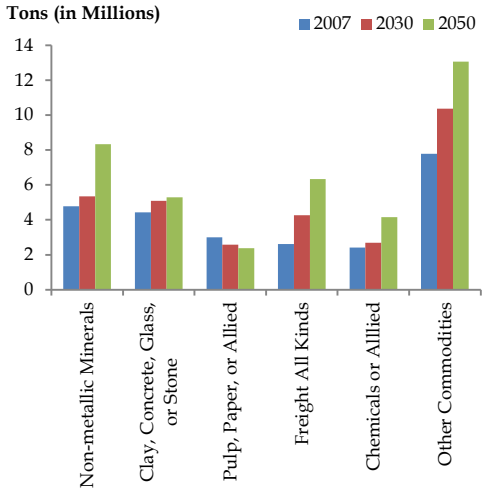
Outbound Commodities

The two top outbound rail commodities as measured by tonnage and shown in Figure 4.22 are nonmetallic minerals and clay, concrete, glass and stone products. Nonmetallic minerals and clay, concrete, glass and stone products each account for about 4.6 million tons or 18 percent of the total. The other significant top outbound commodities are pulp, paper and allied products at 12 percent, freight-all-kinds or miscellaneous mixed shipments at 10 percent, and chemicals or allied products at 10 percent. Over the next four decades, shipments of pulp, paper and allied products, and lumber and wood products are expected to decline by 20 percent; but freight-all-kinds shipments (i.e., intermodal shipments), nonmetallic minerals and chemicals are projected to grow 142 percent,

74 percent, and 72 percent, respectively. Clay, concrete, glass and stone products are projected to have a more moderate growth.

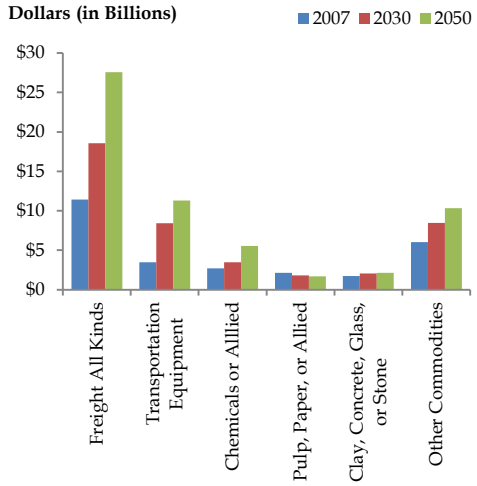
Four of the top commodities by weight – clay, concrete, glass and stone products, pulp, paper and allied products, chemicals, and freight-all-kinds shipments – also are in the top commodities by value. Freight-all-kinds shipments (i.e., intermodal shipments) accounted for 41 percent of the $28 billion value of outbound freight, and are expected to exhibit a significant growth of 141 percent by 2050, as shown in Figure 4.23. The other significant commodities as measured by value are transportation equipment, chemicals, pulp, paper and allied products, and clay, concrete, glass and stone products. The shares held by these commodities, which include transportation equipment at 13 percent, chemicals at 10 percent, and clay, concrete, glass and stone products at 6 percent, are projected to increase. Pulp, paper, and allied products at 8 percent, are expected to decrease moderately by 2050.

Figure 4.22 Top Outbound Rail Commodities by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.23 Top Outbound Rail Commodities by Value
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

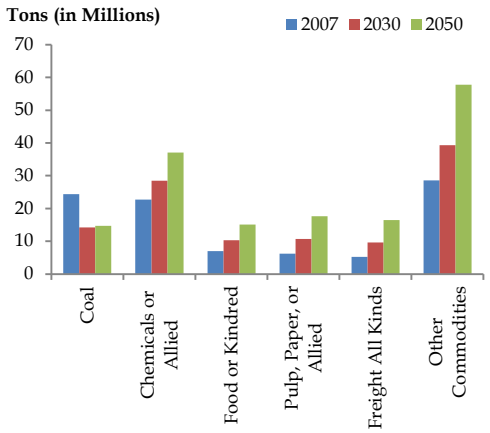
Through Commodities

In 2007, through-commodities (commodities moved through the State by rail) accounted to 94 million tons of freight, equivalent to 45 percent of all rail movements in Georgia. The top five commodities by tonnage accounted for 70 percent of through-commodities as shown in Figure 4.24. Coal is the dominant through-commodity at 24 million tons and 26 percent of tonnage; coal volumes are projected to decline significantly through 2050. Chemicals, the second largest through-commodity at 22.7 million tons and 24 percent, is

projected to grow to 37 million tons by 2040. Food and kindred products, and pulp, paper and allied products, each at approximately 6.5 million tons and 7 percent in 2007, are expected to grow significantly, increasing from 7 percent in 2007 to 10 percent in 2050. Freight-all-kinds, the remaining top five commodity, accounts for 5 million tons of through-commodity rail traffic, and is expected to increase to 16.5 million tons in the next 40 years.

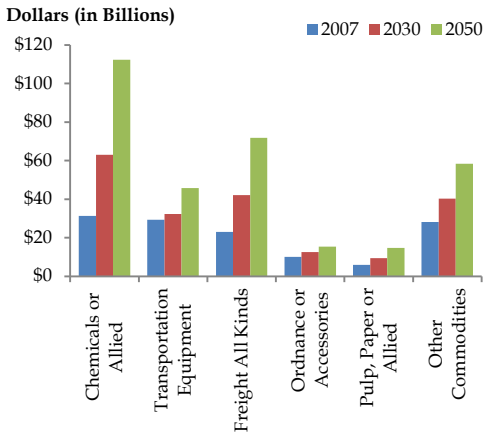
Measured by value, the top five through-commodities account for 78 percent of all through movements as shown in Figure 4.25. Chemicals or allied products is the top commodity group at $31 billion and 24 percent; it is projected to climb up to $112 billion by 2050, an increase of 260 percent over the next 40 years. Transportation equipment shipments, the second largest through-commodity with a value of $29 billion in 2007, are projected to grow by 56 percent by 2050. Freight-all-kinds shipments with a value of $23 billion and an 18 percent share, are expected to increase to a 23 percent share by 2050. The remaining two top-five through-commodities, ordnance and accessories with an 8-percent share are expected to drop by 2050 to 5 percent, and pulp and paper products with a 5-percent share, are expected to have a similar share by 2050.

Figure 4.24 Top Through Rail Commodities by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.25 Top Through Rail Commodities by Value
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

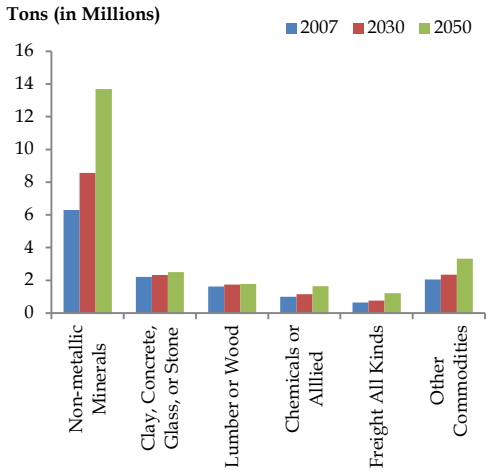
Intrastate Commodities

Approximately 7 percent of Georgia rail freight tonnage moves wholly within the State. The top five intrastate commodities by tonnage account for 85 percent of the total intrastate tons. The majority of this intrastate traffic is nonmetallic minerals at 6 million tons and 46 percent of intrastate freight. Over the next 40 years, these shipments are projected to have significant growth reaching

14 million tons in 2050. Clay, concrete, glass and stone products, and lumber and wood products are the next two highest intrastate commodities at approximately 2 million tons each. These shipments are projected to remain somewhat stable, exhibiting a moderate growth of 10 percent by 2050. The other two in the top five commodities are chemical products and freight-all-kinds shipments; each of which amount to 1 million tons and 600,000 tons, respectively. Over the next 40 years, these shipments are expected to increase by 64 percent and 88 percent, respectively. Figure 4.26 shows the current and projected relative shares of these top five intrastate commodities.

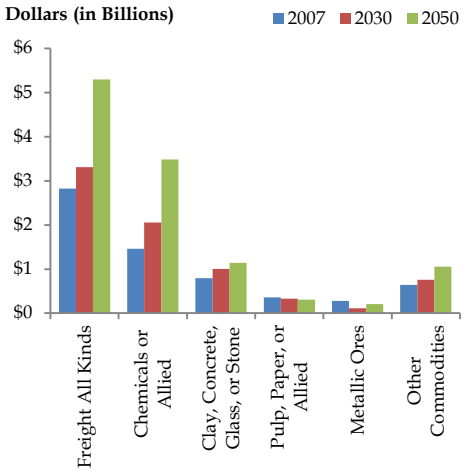
When measured by value, the top five intrastate commodities account for 90 percent of the total intrastate rail movements as shown in Figure 4.27. The largest intrastate commodity in terms of value is freight-all-kinds (intermodal freight) at $2.8 billion or 44 percent. Intermodal freight is projected to grow by 88 percent over the next 40 years. Chemicals or allied products, the next leading commodity, at $1.5 billion annually and 23 percent of intrastate freight shipments by value, are projected to increase to 30 percent of the intrastate shipments by value by 2050. The share intrastate freight shipment value accounted for by clay, concrete, glass and stone products at 12 percent, which is expected to increase over the next 40 years by 44 percent. Pulp and paper products and metallic ores, currently accounting for 6 percent and 4 percent, respectively, of the intrastate share, are expected to decline by 2050.

Figure 4.26 Top Intrastate Rail Commodities by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.27 Top Intrastate Rail Commodities by Value
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

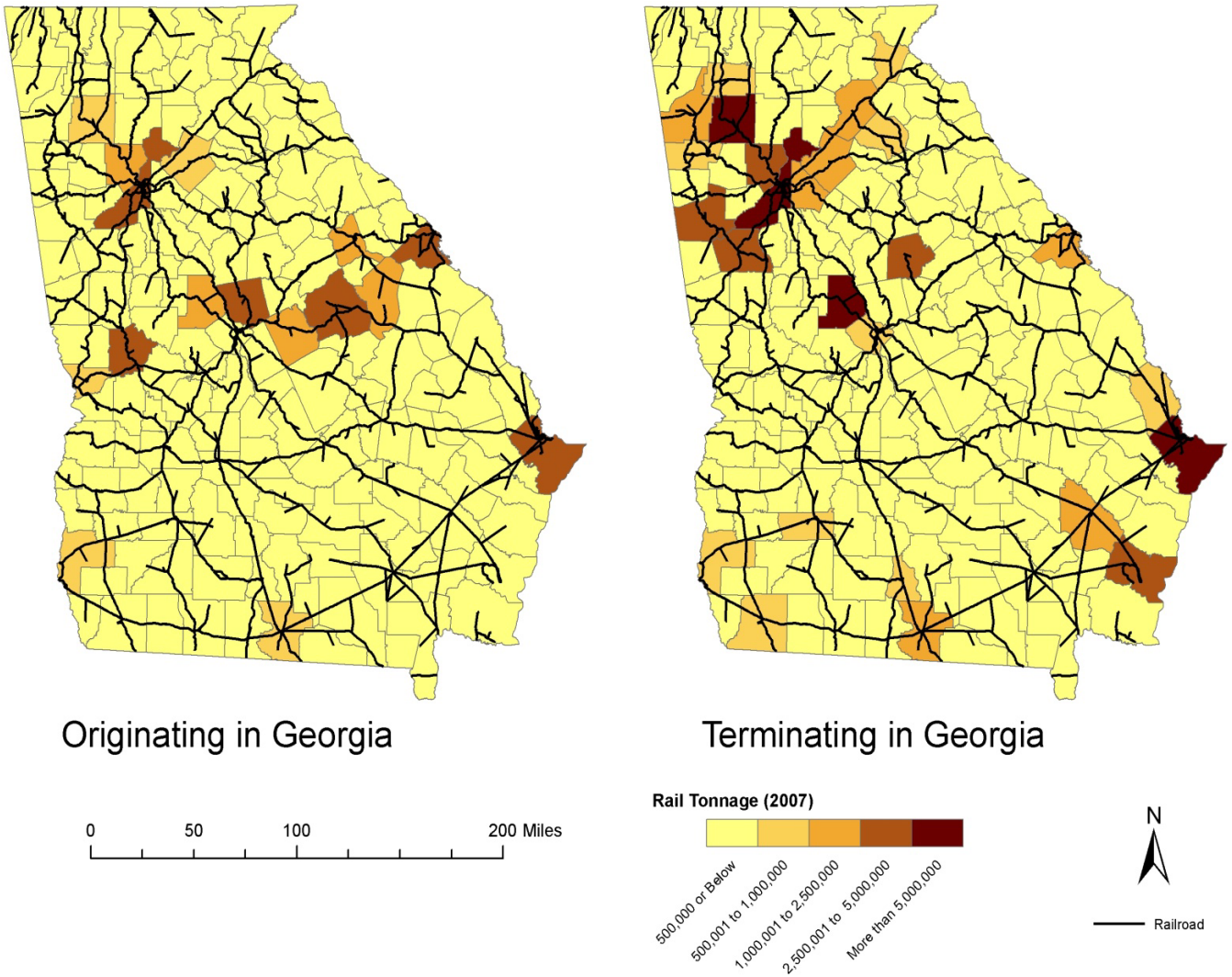
County Rail Freight Production and Attraction

Figure 4.28 depicts the 2007 geographic distribution of Georgia's originating and terminating rail tonnage by county. The leading rail freight originating counties are Chatham County, Washington County and Fulton County, respectively. Shipments from the Chatham County exceed 3.8 million tons annually and are mostly chemicals, freight-all-kinds (i.e., intermodal), pulp and paper, and food products.

Washington County primarily ships clay, concrete, glass or stone products (i.e., kaolin). More than 80 percent of the 3.3 million tons originating in Fulton County (Atlanta metro area) are intermodal shipments (e.g., freight-all-kinds, shipping containers, pulp and paper, apparel, transportation equipment, chemicals, food, and rubber and plastics). Other top freight producing regions in Georgia are Talbot, Jones, and Richmond Counties, shipping between 2.6 and 3 million tons each.

The top rail tonnage destination in Georgia is Monroe County, attracting 16.6 million carload tons of mostly coal from Tennessee. These shipments support a coal-fired power plant in the county. Bartow and Chatham Counties are the next destinations for rail tonnage, each accounting for more than 10 million tons. Shipments to Bartow County are largely of coal, and shipments to Savannah – Chatham County – are very diverse (e.g., nonmetallic minerals, clay, concrete, glass and stone products, freight-all-kinds (i.e., intermodal), pulp and paper, empty shipping containers, and chemicals). Fulton County is a top destination attracting over 7.4 million tons annually of freight-all-kinds (i.e., intermodal), food, clay, concrete, glass or stone, nonmetallic minerals, chemicals, and transportation equipment.

Figure 4.28 Rail Tonnage Originating and Terminating in Georgia Counties, 2007



Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data.

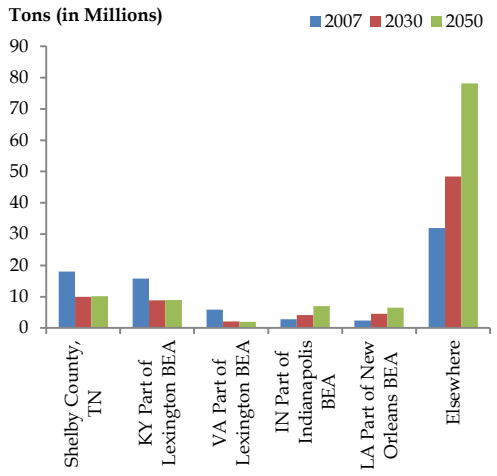
Top Trade Partners

Inbound Trade Partners

Figures 4.29 and 4.30 illustrate the top origin regions out of State (by weight and value respectively) for rail freight being shipped to destinations in Georgia. The top five origins represent a 58 percent share of the inbound rail tonnage. Shelby County in Tennessee – where Memphis is located – and Lexington in Kentucky are the top rail origins accounting together for 44 percent of the inbound rail traffic or 33.7 million tons in 2007. Over the next four decades, this share is expected to decline to 17 percent or 19 million tons, mainly because of the expected decline in coal. Shipments from Lexington, Virginia – mostly coal shipments as well, currently account for 5.8 million tons annually, and are expected to decrease to 2 million tons by 2050. Other important origins with respect to rail freight tonnage are Indianapolis in Indiana (2.8 million tons), and New Orleans in Louisiana (2.4 million tons). These shipments are projected to grow significantly over the next 40 years to 7 million tons each.

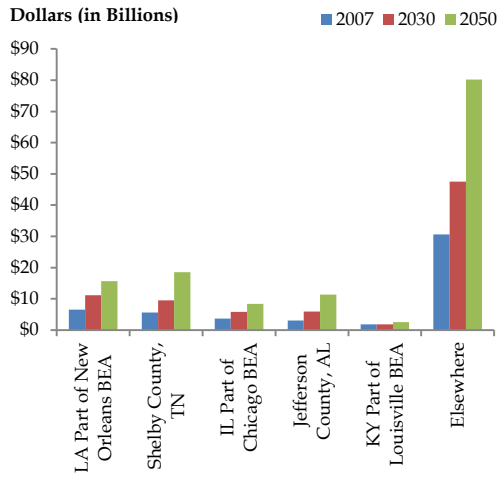
In terms of value, Georgia's top five trading partners account for 40 percent of the inbound rail share. The leading origins are New Orleans in Louisiana and Shelby County in Tennessee where Memphis is located, overall representing 24 percent or $12.1 billion. By 2050, these shipments are estimated to grow to $34 billion – a 25-percent share. The remaining top origins (i.e., Chicago in Illinois ($3.7 billion), Jefferson County in Alabama, where Birmingham is located ($3.1 billion), and Louisville in Kentucky ($1.9 billion)) are expected to increase over the next 40 years.

Figure 4.29 Top Rail Origins by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.30 Top Rail Origins by Value
years 2007 to 2050



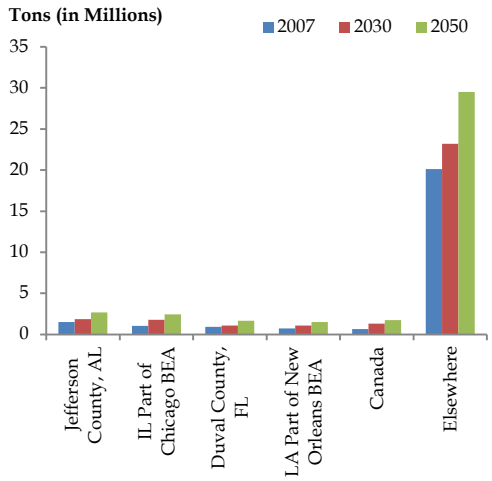
Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Outbound Trade Partners

Figures 4.31 and 4.32 depict the top out of state destinations of rail traffic from Georgia in 2007 and its projections over the next 40 years. The top five destinations account for 20 percent of the outbound tonnage and 34 percent of the outbound value. From a tonnage perspective, Jefferson County in Alabama (i.e., Birmingham – (1.5 million tons) and Chicago, Illinois (1.1 million tons)) is the destinations that attract more rail freight from Georgia; however, it only represents 10 percent of the total outbound rail traffic. In addition, Duval County in Florida, where Jacksonville is located (0.9 million tons), New Orleans, Louisiana (0.8 million tons), and Canada (0.7 million tons) also are important rail destinations. Overall, shipments to these regions are expected to grow proportionately over the next 40 years, with the majority of the shipments doubling by 2050.

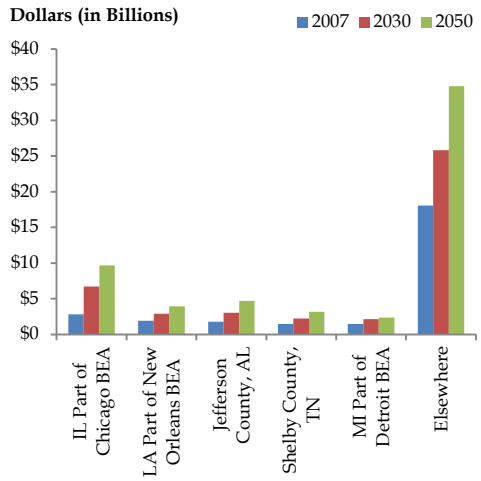
Chicago ($2.8 billion), New Orleans ($1.9 billion), and Birmingham (Jefferson County), Alabama ($1.8 billion) also are in the top destinations when measured by value. By 2050, shipments to Chicago are estimated to increase significantly to $9.7 billion, increasing its share of the outbound tonnage from 10 percent to 16 percent. Shipments to New Orleans are estimated to grow to $3.9 billion and shipments to Birmingham to $4.7 billion. The remaining top destinations, Memphis (Shelby County), Tennessee ($1.5 billion), and Michigan in Detroit ($1.4 billion), attract in total 10 percent of the rail shipped by Georgia, and this share is expected to remain stable over the next 40 years.

Figure 4.31 Top Rail Destinations by Tonnage
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

Figure 4.32 Top Rail Destinations by Value
years 2007 to 2050



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data, and 2050 TRANSEARCH forecast processed by Project team.

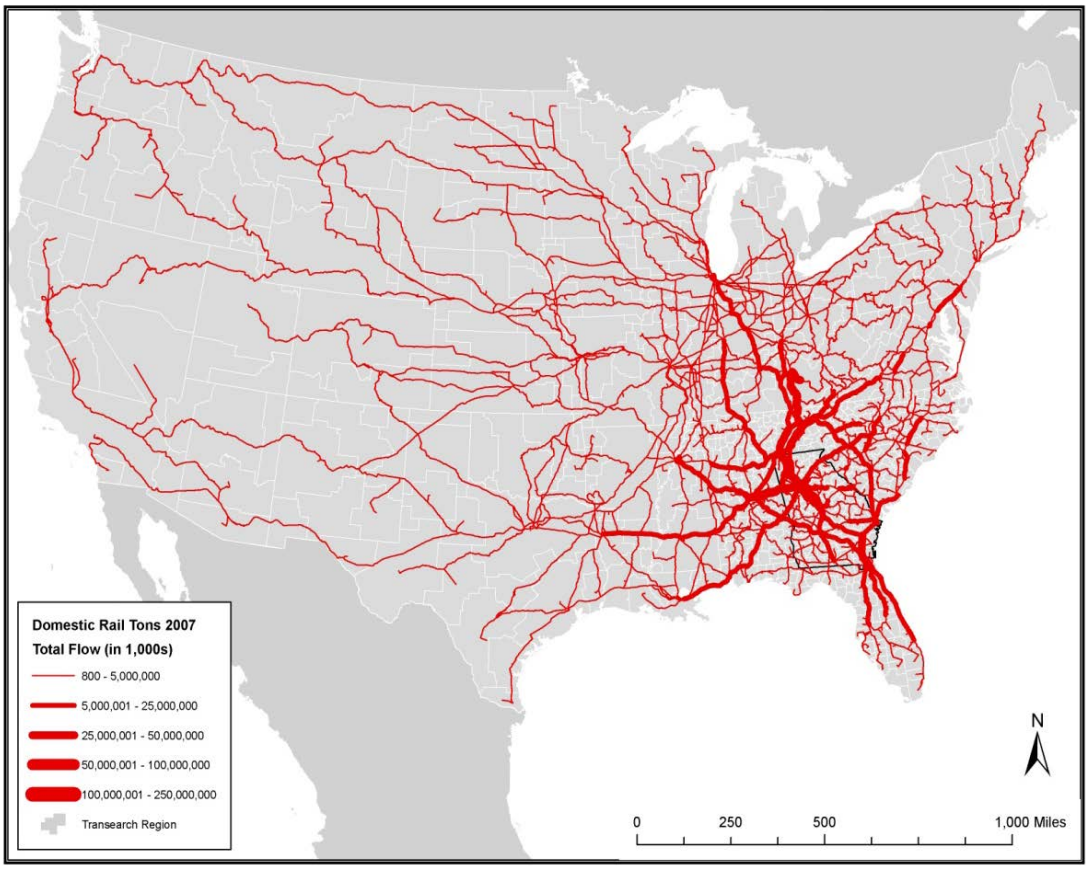
4.5 RAIL FLOWS

Figures 4.33 through 4.38 display the volume of freight moving on Georgia's railroads in 2007 and the predicted freight volumes in 2050. The flows shown in Figures 4.33 and 4.34 illustrate the concept of the metropolitan Atlanta area as a hub, to and from which inbound, outbound and through rail traffic flow over several key corridors radiating outward in all directions. Georgia's major trading partners for outbound and inbound rail tonnage include locations where the eastern Class I railroads (Norfolk Southern and CSXT) interchange with the western Class I railroads (Burlington Northern Santa Fe, Kansas City Southern, and Union Pacific). Some of these interchange locations are among Georgia's largest trading partners, including Memphis, Chicago, Meridian, and New Orleans. Freight passing through these interchange locations include inbound intermodal shipments of international cargo from West Coast ports, food and kindred products from California and Washington, and minerals and coal from the Rocky Mountain states. The Lexington, Kentucky and Lexington, Virginia regions are sources of coal that represent large volumes of rail tonnage traveling into Georgia. Indiana is a source of coal bound for Georgia and a growing intermodal lane between Indianapolis and Atlanta. Georgia also hosts a considerable volume of through traffic that originates or terminates in Florida, passing through Georgia from the northwest to the southeast.

As Figures 4.35 through 4.38 show, by 2050, significant growth in rail flow volumes are expected to occur along the intermodal lanes between Chicago and

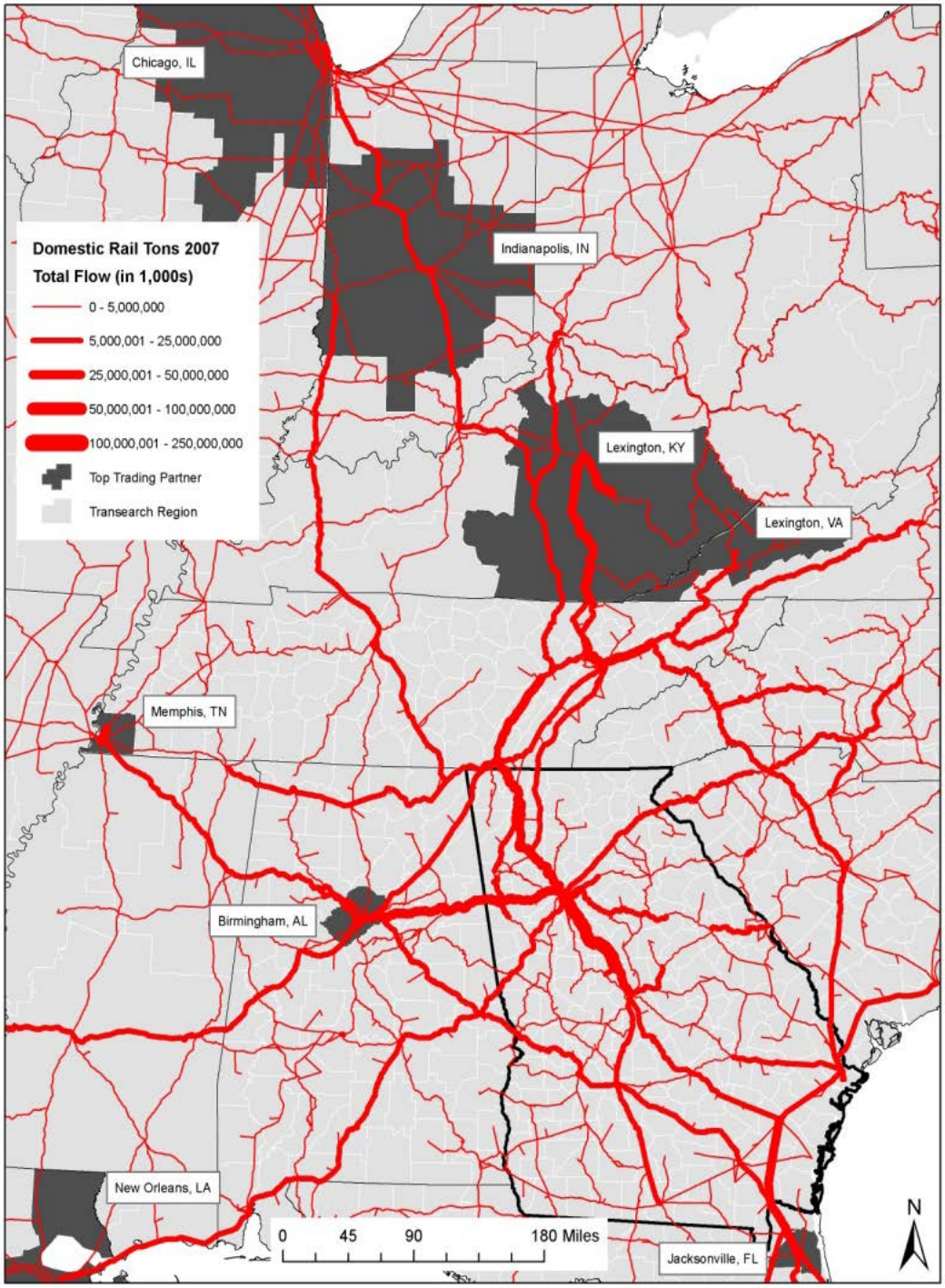
Indianapolis and the Atlanta area, and along the lanes connecting Georgia to the western United States through Memphis, Meridian, and New Orleans. Growth in traffic to and from the Savannah area, attributable to growth in activity at the seaport, also is anticipated. To a lesser degree, volume towards the mid-Atlantic and Northeastern states also is projected to increase. However, these projections do not take into account NS' ongoing Crescent Corridor initiative that is expected to substantially boost intermodal volumes between these regions.

Figure 4.33 Georgia Rail Flows
2007



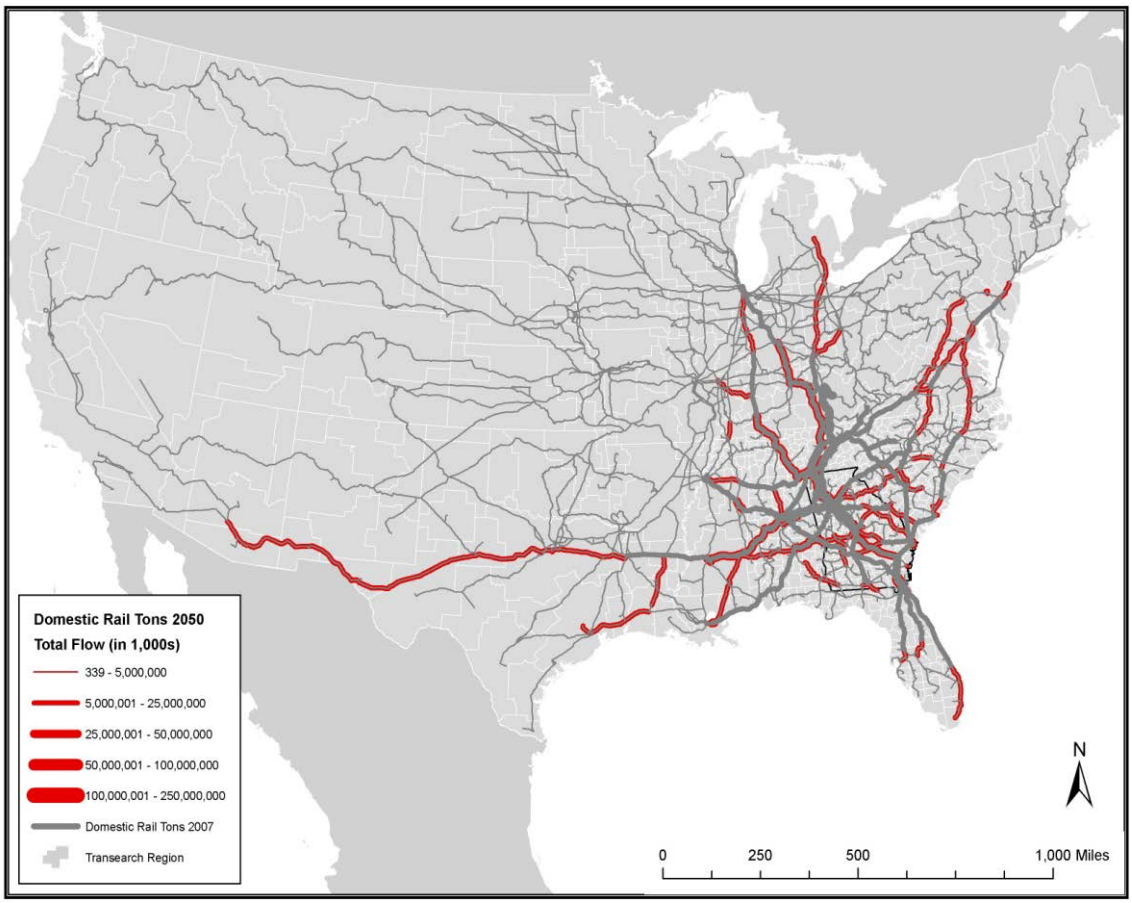
Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Figure 4.34 Georgia Rail Flows and Top Trading Partners *2007*



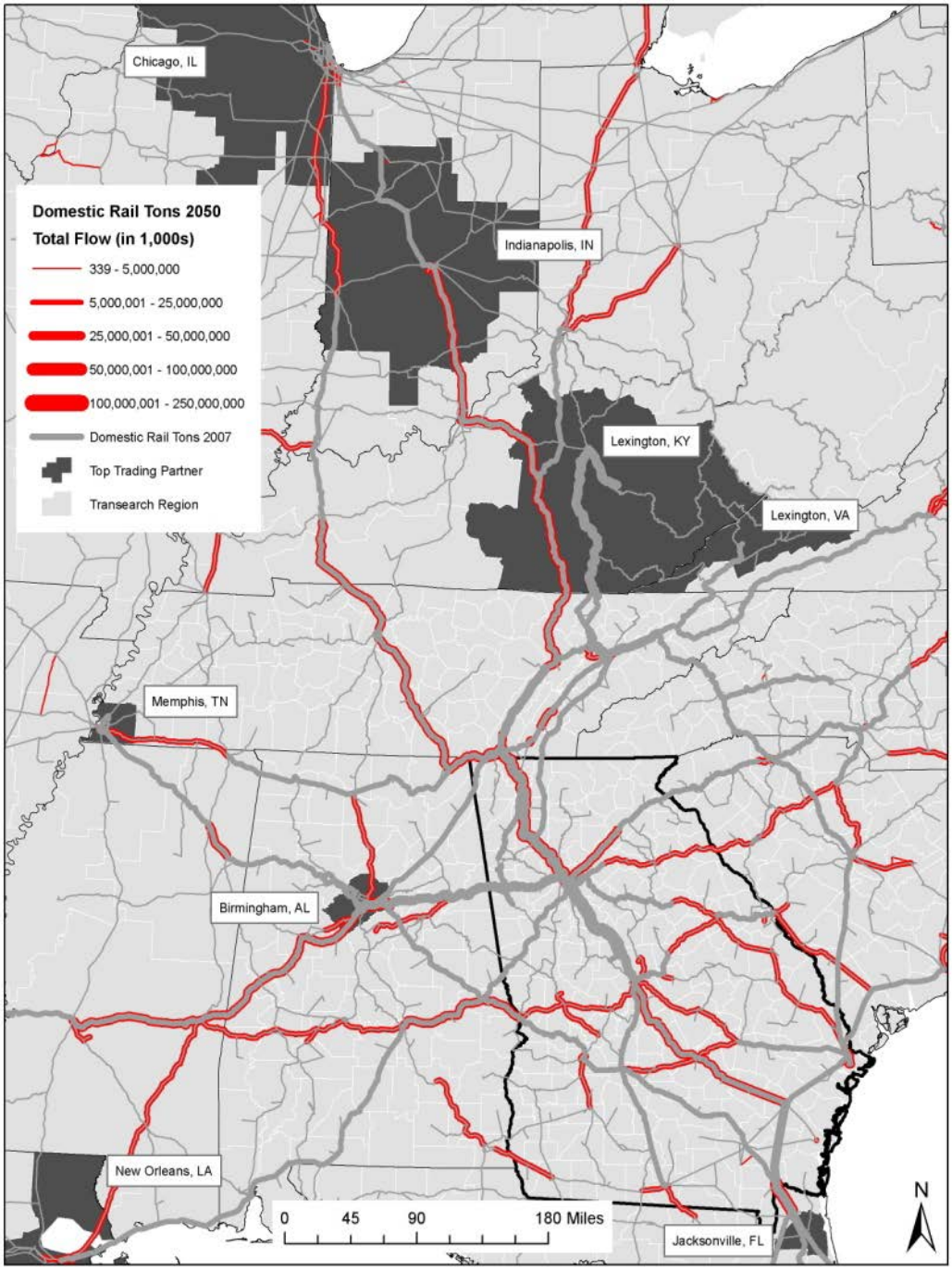
Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Figure 4.35 Georgia Rail Flows
2007 and 2050



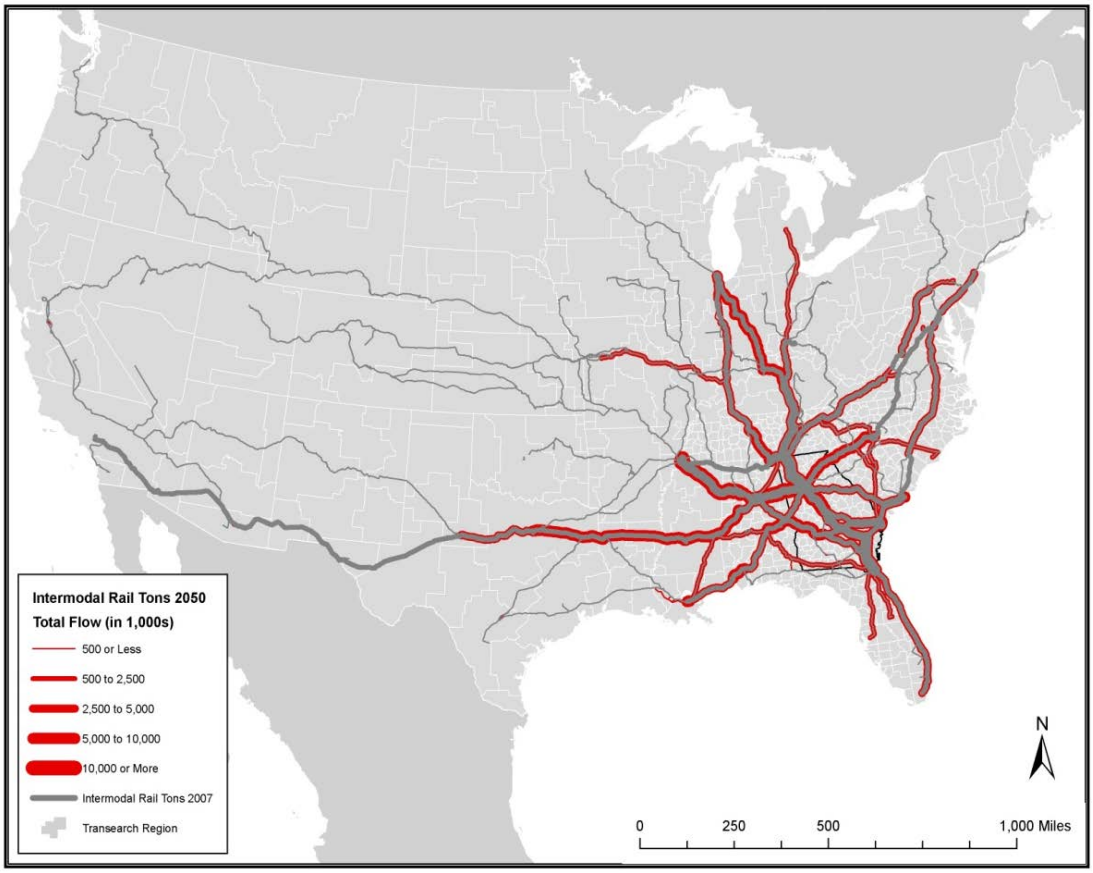
Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data and 2050 TRANSEARCH forecast processed by the Project team.

Figure 4.36 Georgia Rail Flows and Top Trading Partners
2007 and 2050



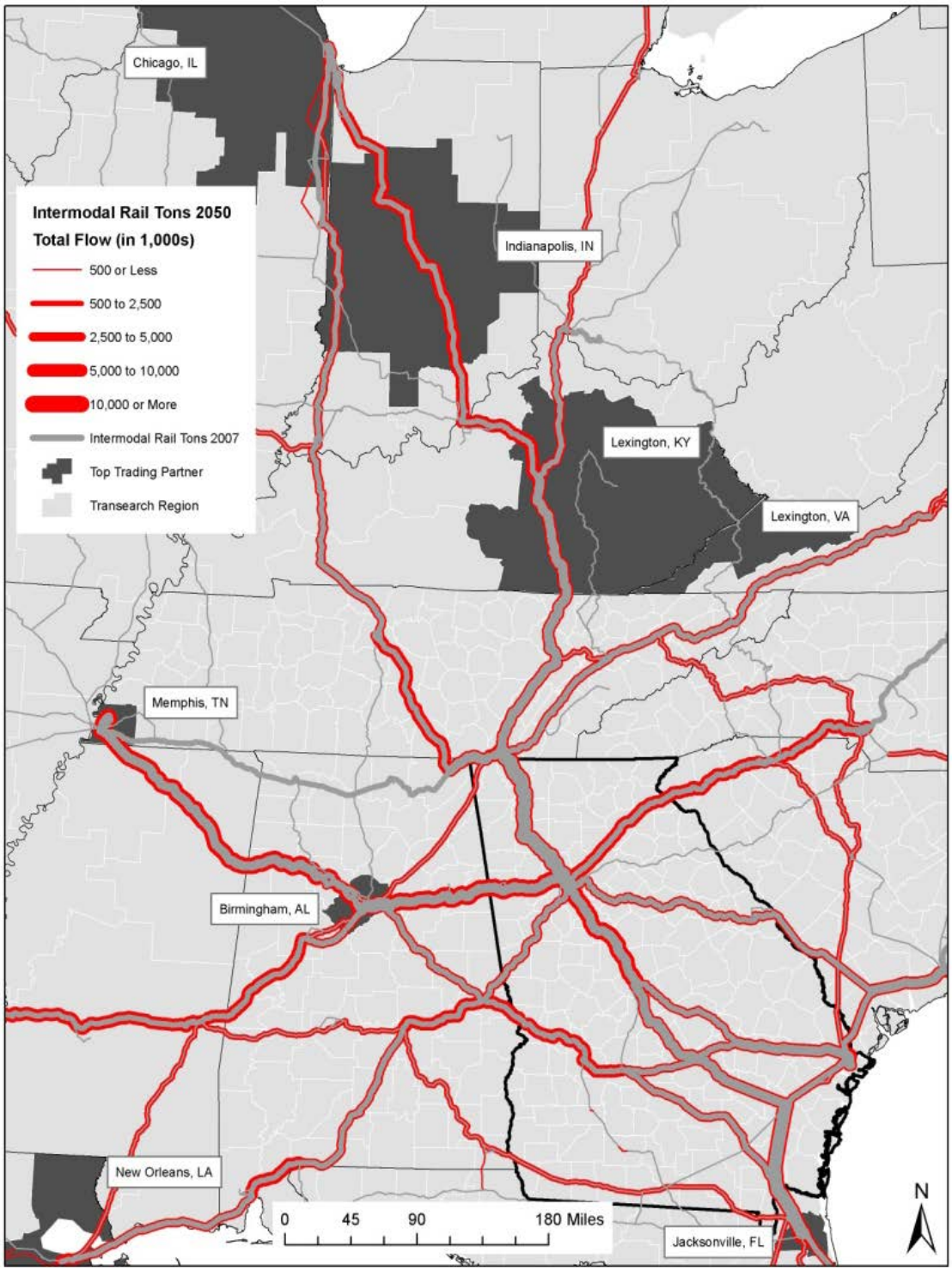
Source: Project team analysis, using the I-95 Corridor Coalition, Integrated Corridor Analysis Tool (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data and 2050 TRANSEARCH forecast processed by the Project team.

Figure 4.37 Georgia Intermodal Rail Flows
2007 and 2050



Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data and 2050 TRANSEARCH forecast processed by the Project team.

Figure 4.38 Georgia Intermodal Rail Flows and Top Trading Partners
2007 and 2050



Source: Project team analysis, using the I-95 Corridor Coalition's "Integrated Corridor Analysis Tool" (ICAT) and IHS-Global Insight, Inc., 2007 TRANSEARCH data and 2050 TRANSEARCH forecast processed by the Project team.

4.6 TRUCK-RAIL DIVERSION POTENTIAL

Over the last decade, increased use of rail intermodal shipments has been considered as a potential means of decreasing the amount of truck vehicle miles travelled in the U.S. There are several advantages to diverting freight from truck to rail including:

- Reduction in congestion on the highway network. Less trucks on the roadways means less trucks travelling during congested periods, and therefore a lower level of congestion.
- Reduction in fuel usage. On a per ton-mile basis, rail intermodal is more fuel efficient than trucks. Therefore, moving goods on rail intermodal consumes less energy than moving than by trucks.
- Reduction in mobile source emissions. On a per ton-mile basis, rail intermodal generates fewer emissions than trucks.
- Reduction in pavement wear and tear. Trucks create a relatively larger portion of pavement damage than automobiles based on vehicle miles travelled.

There are three key factors which determine the feasibility of truck to rail diversion, including the following[14]:

1. Travel distance characteristics;
2. Commodity type characteristics; and
3. Geographies.

Travel Distance Characteristics

Travel distance is perhaps the most important factor to consider when trying to divert truck traffic to rail. Some rail services are competitive with trucking at shorter distances, but these are almost always bulk commodities moving in unit trains. Except for movements of heavy commodities that never need to see a truck – such as coal or clay moving straight from a mine to a power plant or a port – freight that can be moved in less than a single driving day (11 hours, according to current Federal hours-of-service standards) have historically preferred trucking. This usually corresponds generally to a minimum distance of around 500 miles using conventional intermodal rail technology.

Figure 4.39 shows the freight choice of mode between truck and rail at different travel distances. Note that water and air values are not included because of their much smaller share of tonnage. We can see that trucks mostly dominate travel within short distances. However, even for trips below 500 miles, a significant

[14] Source: Feasibility Plan for Maximum Truck to Rail Diversion in Virginia's I-81 Corridor, Cambridge Systematics, 2009

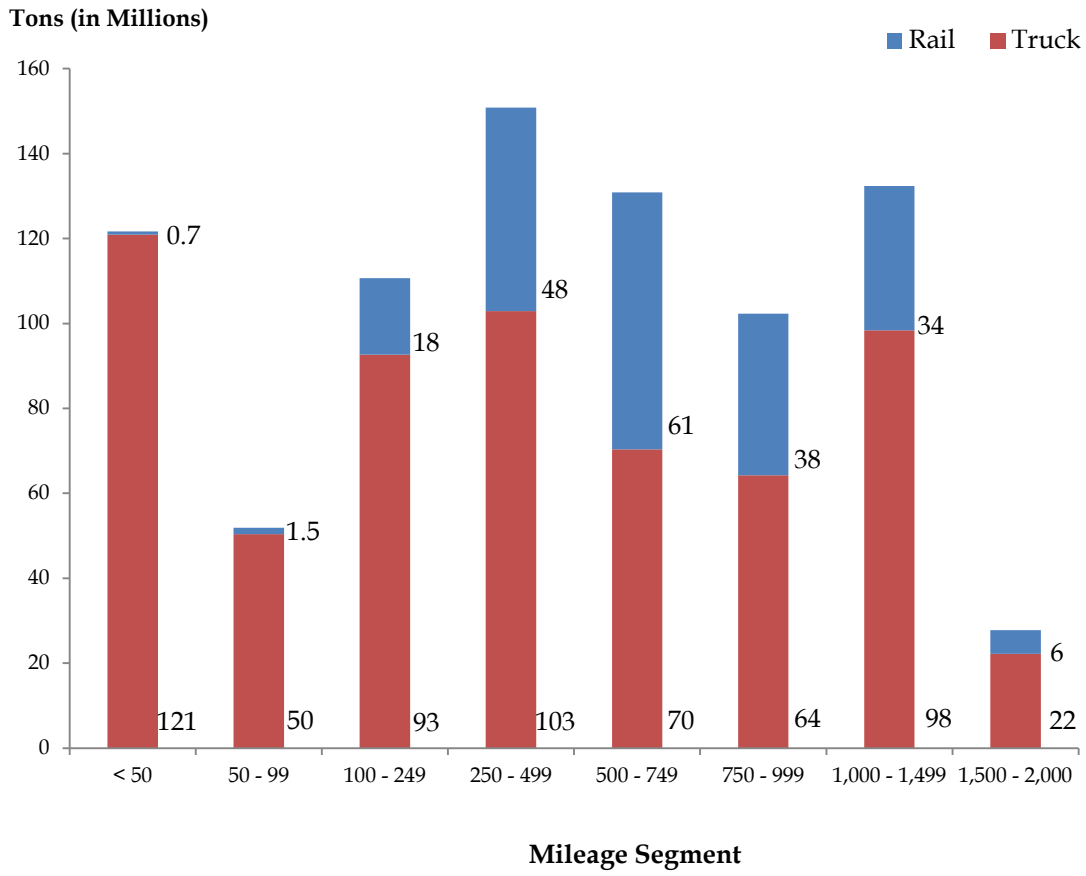
share is already taken by rail. For trips longer than 500 miles, the share of rail trips actually decreases as distance increases. For instance, for a trip distance of 500 to 749 miles, 53 percent of trips are made by trucks; and for a distance of 1,500 to 2,000 miles, 78 percent of trips are made by trucks. This shows an area that can be taken advantage by rail. While not all of the trips currently made by trucks can be diverted to rail, a significant share of those trips are good candidates for truck to rail diversion.

Commodity Characteristics

There are certain types of commodities that the railroads have not been, and will not be, competitive for. Certain automakers, for example, insist on trucking even for long-haul moves because of special handling requirements; shippers of live animals and other sensitive freight require the flexibility that trucking provides; bulk commodities may need to move in smaller quantities than can be handled efficiently by rail, or to places not served by rail.

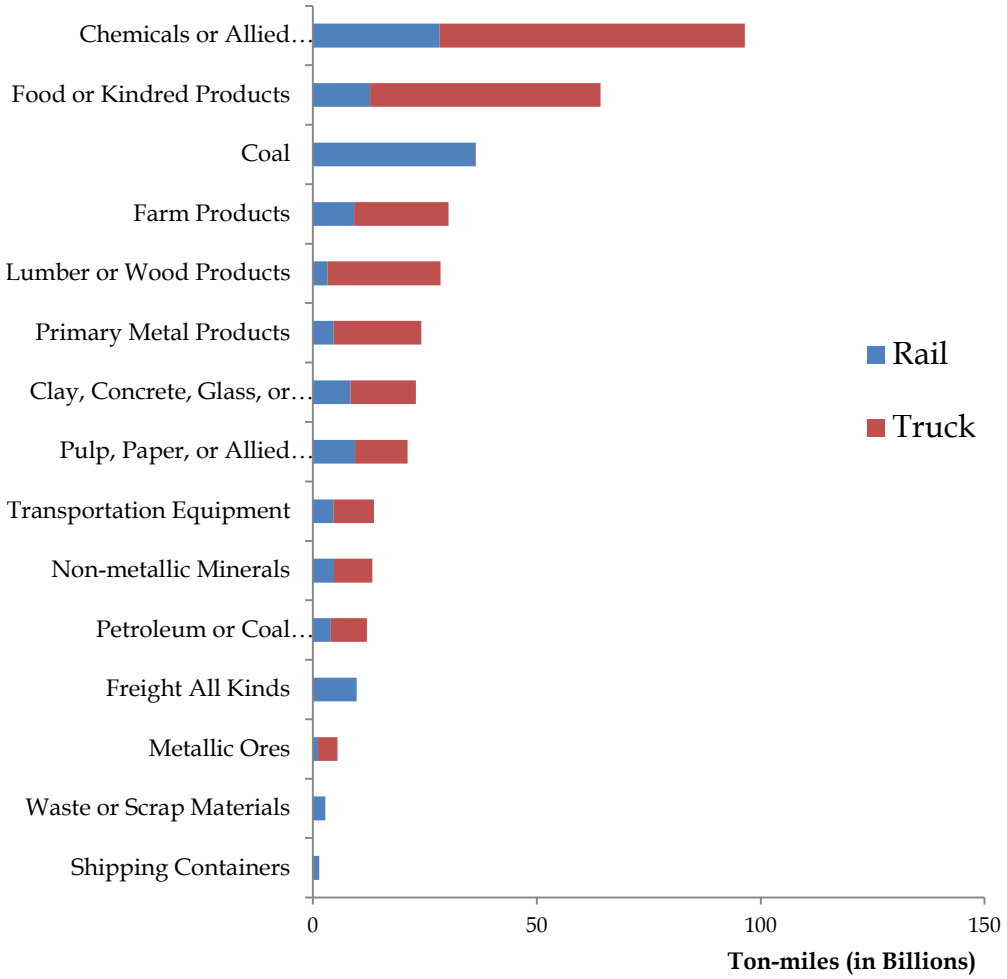
Figure 4.40 shows the freight mode choice by commodities. It shows in descending order the commodities with the largest share of ton-miles in Georgia, for 2007. The largest group of commodity by ton-miles is chemicals or allied products. This group of commodity has the potential to increase its share of rail ton-miles if special handling restrictions do not apply, and the materials are largely in bulk. Food or kindred products are more difficult to be diverted to rail because of the perishable nature of food products. Farm, lumber products, and other construction materials can be good candidates for truck to rail diversion because they are usually in bulk, have relatively low time sensitivities, and are not perishable.

Figure 4.39 Georgia Freight Rail and Truck Mode Share by Distance, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data and Oak Ridge National Laboratory (ORNL) Center for Transportation Analysis (CTA) Distance Matrix.

Figure 4.40 Georgia Freight Rail and Truck Mode Share by Commodity, *2007*



Source: IHS-Global Insight, Inc., 2007 TRANSEARCH data.

Geography

Geography also plays an important role in determining the feasibility of truck to rail diversion. If there are no rail lines that directly connects city A to city B, then no diversion can simply occur. From this aspect, it is important to examine whether rail lines exist parallel to major truck routes. Figure 4.41 shows the Georgia interstate network mapped with Class I railroads in Georgia.

Only Class I railroads are considered because short lines do not typically handle intermodal traffic. As the figure shows, the majority of rail and highway routes overlap between city pairs, indicating good connectivity and potential for diversion. However, there are places where rail connection is lacking (i.e., between Savannah and Macon, and between Columbus, Albany and Brunswick). For those corridors, diversion may be difficult since no Class I parallel tracks exist along the highways.

Another aspect of geography is the location of intermodal terminals relative to the demand for goods movement. The trip chain for rail intermodal is that first the container is moved by a truck a short distance to an intermodal terminal, and then the container is transferred on rail for the main portion of the trip. Finally, the goods are transferred back on to a truck to reach the final destination. For an intermodal move to be cost-effective, the intermodal terminals need to be relatively close to the final origin and destination region, so that minimal truck drayage distances are incurred. An examination of the prospects for increased rail intermodal traffic is the distance between major cities to the State's intermodal transfer centers, because the vast majority of intermodal traffic is generated in metropolitan regions. Figure 4.41 shows the locations of the existing and under construction intermodal terminals in Georgia.

Table 4.1 shows the distance between each metropolitan region and the nearest rail intermodal terminals. All of the metropolitan regions are within 200 miles of an intermodal yard, and over half are within 100 miles of a rail intermodal yard. These distances make it relatively cost-effective to utilize rail for intermodal shipments that are over 1,000 miles in length. It should be noted that the new rail intermodal center in Cordele does reduce the distance to intermodal yards for 4 of the 11 metropolitan regions in the State. This would reduce the cost of intermodal shipments for those four regions.

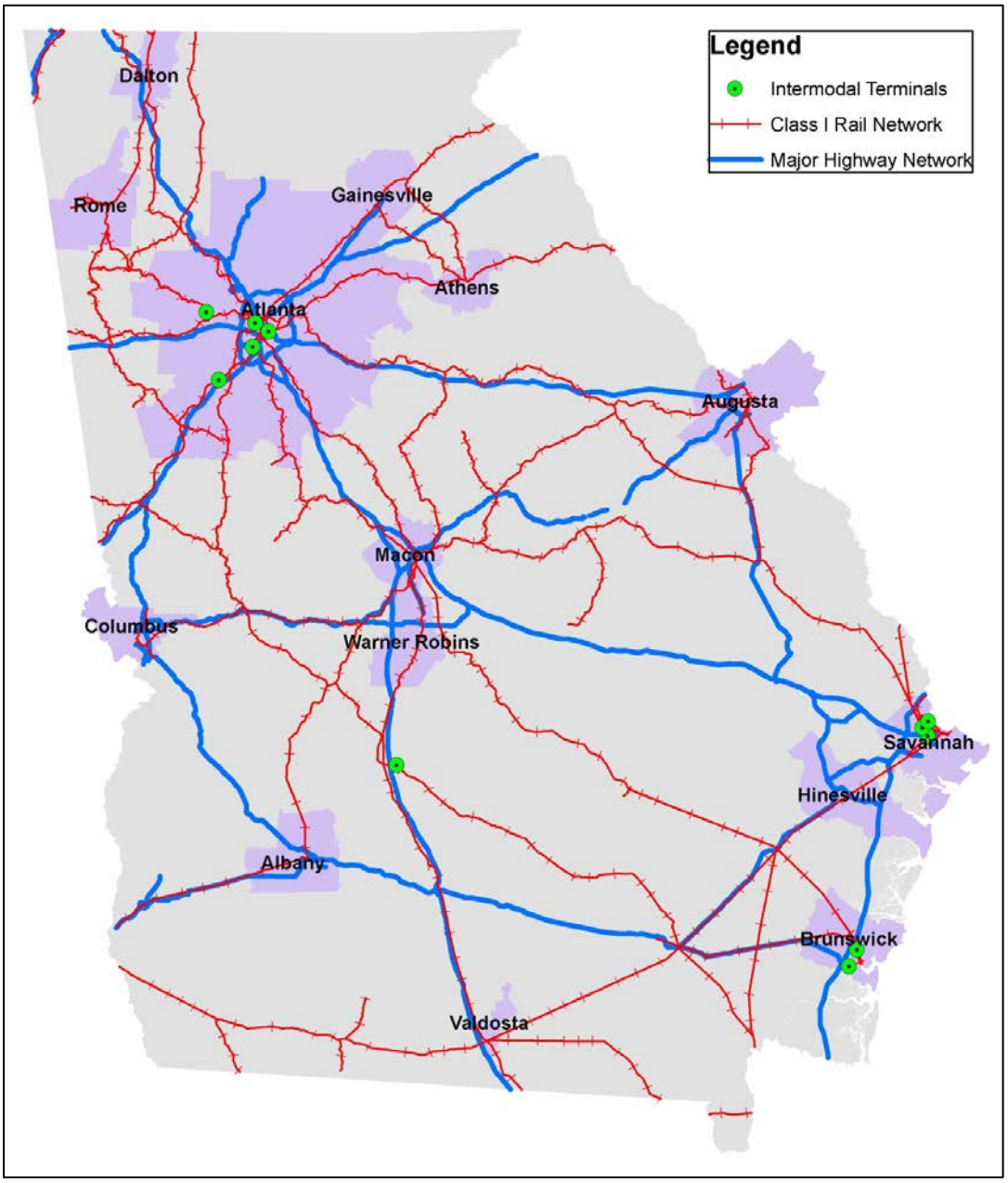
The truck-rail modal diversion analysis indicates that there are a set of commodities and travel distance characteristics that can be targeted to increase the amount of truck-rail diversion occurring in the State. These will be analyzed in greater detail in Task 5 of the Georgia Freight and Logistics Plan, as solutions to issues are described in greater detail.

Table 4.1 Mainline Track Mileage by Number of Tracks

Metropolitan Region	Nearest Intermodal Yard	Distance to Nearest Intermodal Yard	Distance to Cordele Intermodal Center
Albany	Atlanta	180	38
Athens	Atlanta	70	159
Atlanta	Atlanta	-	144
Augusta	Savannah	135	169
Chattanooga	Atlanta	120	260
Columbus	Atlanta	108	97
Dalton	Atlanta	90	232
Gainesville	Atlanta	55	192
Macon	Atlanta	84	68
Rome	Atlanta	70	212
Savannah	Savannah	-	186
Valdosta	Savannah	189	89
Warner-Robins	Atlanta	103	45

Source: Project team analysis.

Figure 4.41 Comparison of Georgia Rail and Interstate Network



Source: Project team analysis.

5.0 Issues and Needs

5.1 OVERVIEW

This chapter addresses issues and needs that most directly affect the future vitality of Georgia's railroads. These include existing and future infrastructure constraints, which when combined with the previous coverage of vertical clearances and weight limits describe the critical physical improvements that must be undertaken to accommodate future traffic. Also examined are issues affecting the long-term viability of the short line industry and the ongoing mandate to implement Positive Train Control (PTC). These are all issues that will impact the future of freight railroading in Georgia.

5.2 RAIL SYSTEM BOTTLENECKS

The 2009 GDOT State Rail Plan identified current and emerging rail bottleneck locations that hinder freight rail operations in the State. The bottlenecks were identified through interviews with CSXT and Norfolk Southern. The railroads identified specific bottlenecks along lines and within yards, but also identified the corridors impacted by the bottlenecks. In 2010, the I-95 Corridor Coalition's Southeast Rail Operations Study Phase 2 (SEROps II), identified priority rail investments of regional significance according to the region's state departments and interviews with the Class I railroads. In both the GDOT State Rail Plan and the I-95 Corridor Coalition study, the Atlanta metropolitan area was identified as the most significant bottleneck in the State due to yard and main line congestion and interchanging issues.

The primary source of rail operational problems in the area is Howell Junction in Northwest Atlanta. Howell Junction is the intersection of five rail lines most of which are at the same grade. In addition to CSXT and NS rail traffic, Howell Junction also carries Amtrak's once daily Crescent passenger service. In addition, a potential multimodal public transit center downtown would generate new passenger traffic that will have to pass through Howell Junction. Problems in Atlanta impact operations on several of the Class I lines that converge in the area, including the CSXT Etowah, W&A, Abbeville, and Manchester subdivisions and the NS East End Subdivision, and can have far-reaching impacts on freight movement through large portions of Georgia and into South Carolina, Tennessee, and Alabama.

Norfolk Southern is planning investments in the Atlanta area to accommodate growth associated with the Crescent Corridor initiative, which is aimed at improving infrastructure and operations between New Orleans, Northern New Jersey, and intermediate market areas. Anticipated future growth in intermodal

traffic being handled at the NS intermodal terminal in Austell will require expansion of the terminal yard.

In the central and southern regions of Georgia, NS identified its Savannah Subdivision between Macon and Savannah, including the Macon Terminal area as a bottleneck due to recent and anticipated growth in port-related traffic. CSXT identified the Nahunta Subdivision between Waycross and Jacksonville, the A-Line between Savannah and Florida, and the "Bowline" between Montgomery, Bainbridge and Waycross as current and emerging capacity issues. The bottlenecks identified by CSXT and NS are illustrated in Figure 5.1.

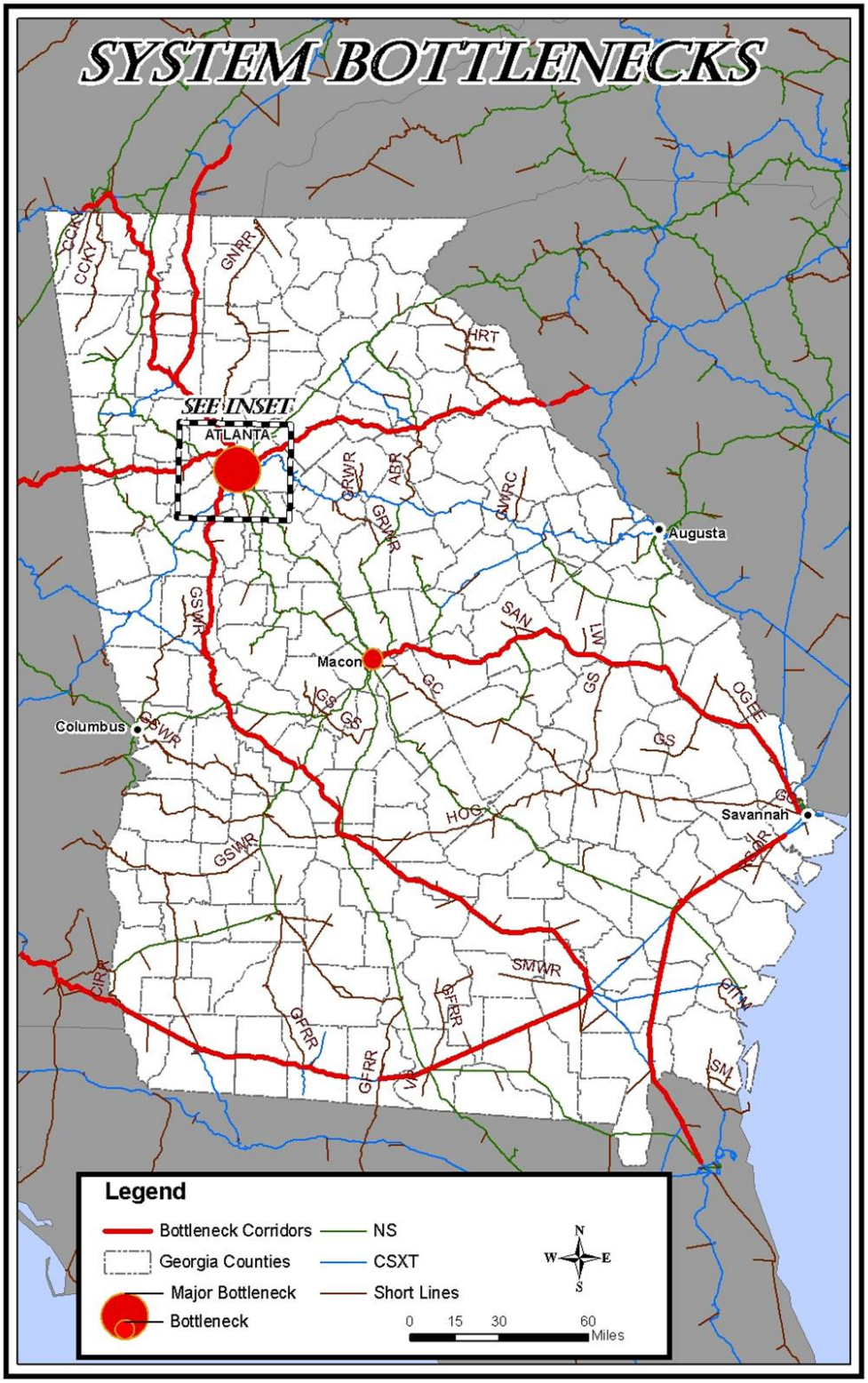
The consultant team conducted an analysis of these bottlenecks identified by the railroads relative to the growth patterns that are forecast using GDOT's TRANSEARCH database. This analysis was used to determine the growth rates of the Class I rail system in Georgia. It was also used to identify potential locations of future bottlenecks and determine which of the previously identified bottlenecks will become exacerbated based on the current forecast. Figure 5.2 illustrates four different categorizations of rail lines in the State based on this analysis:

1. No bottleneck today, no significant growth expected;
2. No bottleneck today, significant growth expected;
3. Bottleneck today, no significant growth expected; and
4. Bottleneck today, significant growth expected.

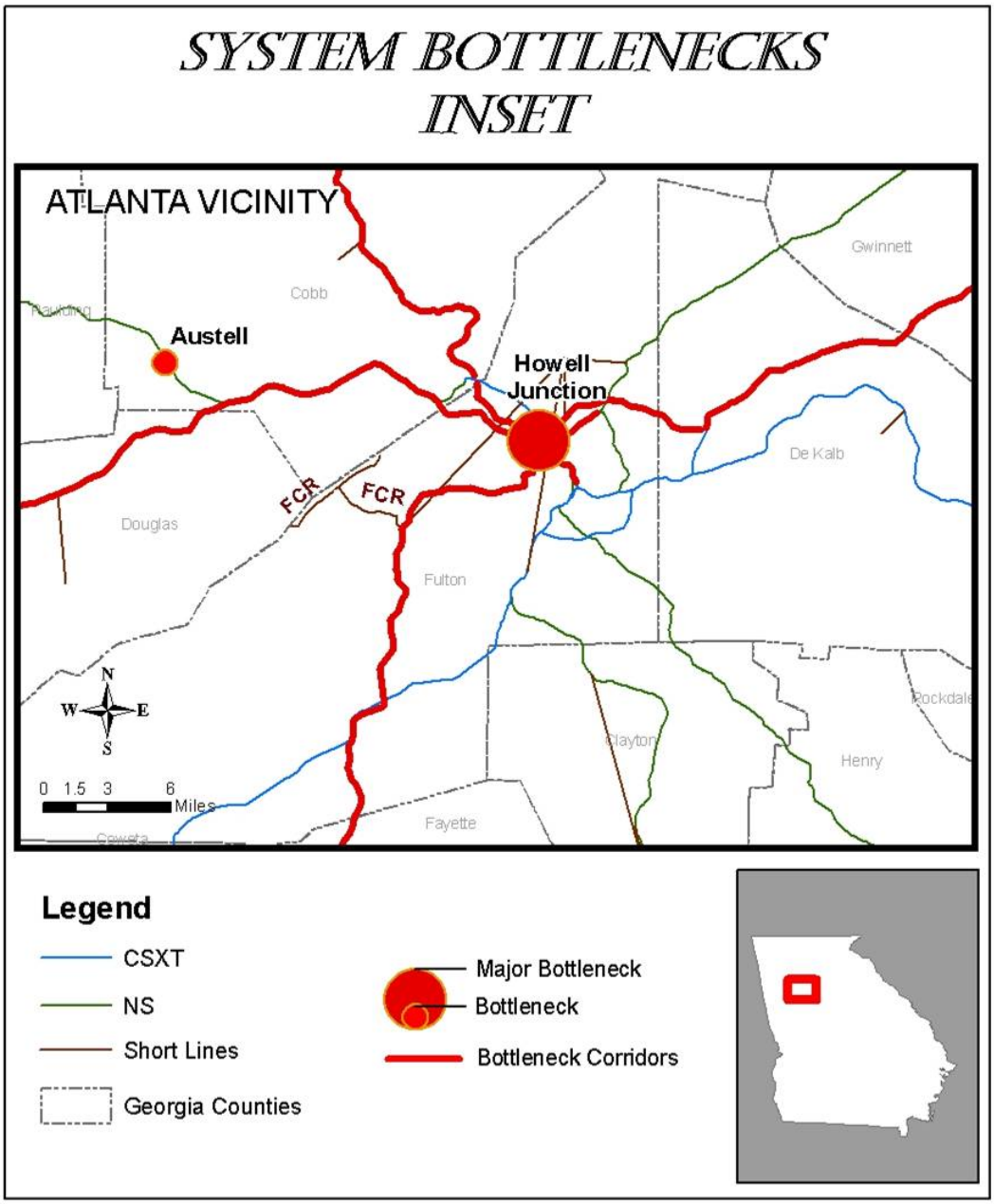
Based on this analysis, it is apparent that most of the current rail bottlenecks today will become significantly exacerbated based on the current forecasted growth for rail traffic in the State. The only current rail bottleneck that will not experience significant growth is the east-west line running along the southern portion of the State.

There are also two rail lines that are currently not bottlenecks that are likely to become bottlenecks in the future. These rail lines are the direct rail link between Atlanta and Macon, and the rail link between the Jacksonville area to Waycross, Georgia. This analysis indicates that significant investment will be needed in the State's rail infrastructure to maintain its current level of service for industries across the State.

Figure 5.1 Rail Bottlenecks Identified by Class I Railroads

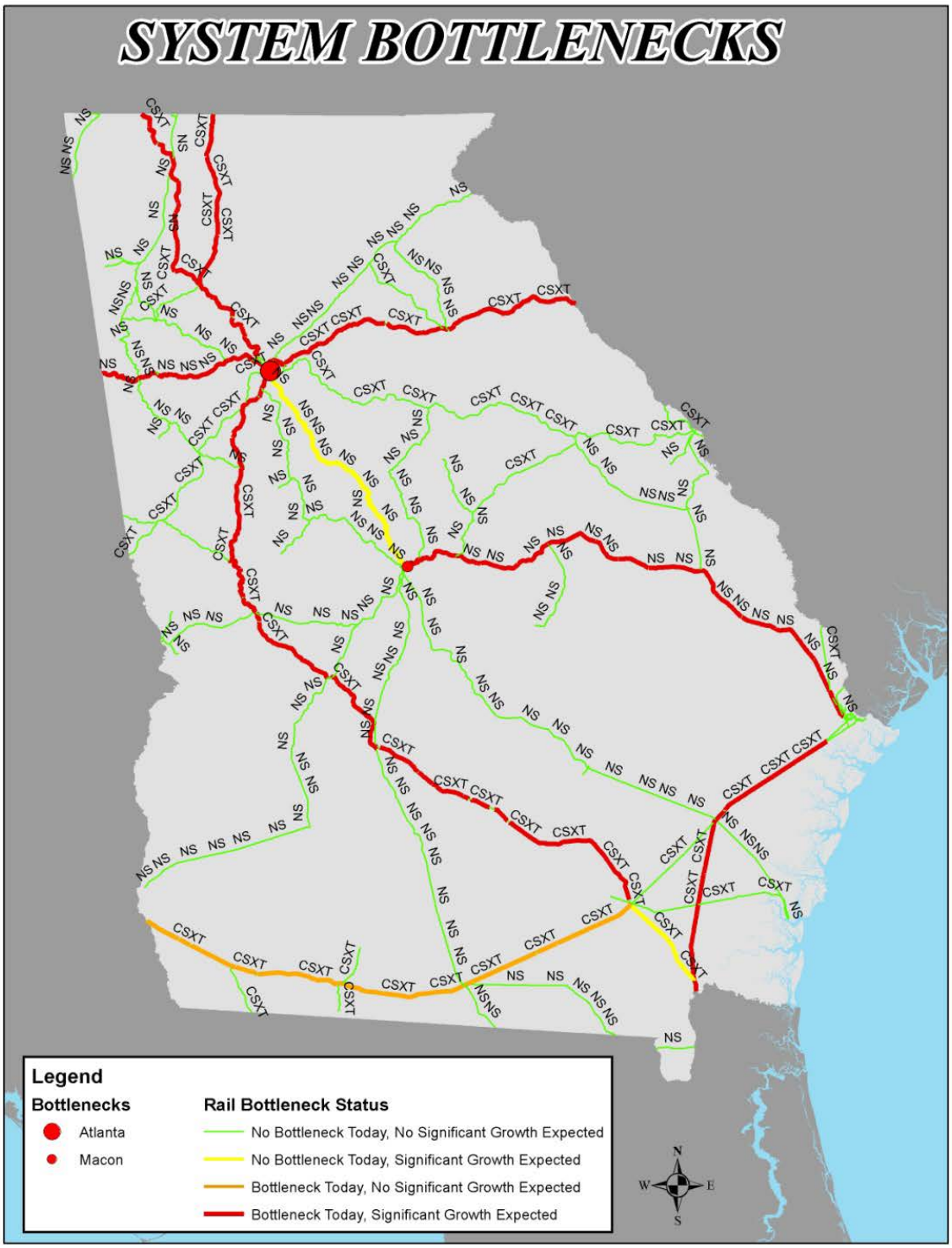


Source: Project team analysis, using data from I-95 Corridor Coalition's ICAT and the GDOT State Rail Plan, 2009.



Source: Project team analysis, using data from I-95 Corridor Coalition's ICAT and GDOT State Rail Plan, 2009

Figure 5.2 Rail Bottlenecks and Forecast Growth on Georgia's Rail Network



Source: Interviews with CSX and Norfolk Southern Corporation, Project team analysis.

5.3 TRACK CAPACITY

Many of the capacity issues in the State are related to growth in traffic on already-busy, single-track mainlines throughout the State. As presented in Chapter 3, more than 95 percent of the mainline trackage in Georgia is single track. Even with passing sidings, there is little room for traffic to grow given the current constraints on capacity on main lines with high volumes of current and anticipated future traffic. Subdivisions that are likely to become especially constrained, according to the traffic growth projections presented in Chapter 4, include the NS Atlanta North, Atlanta South, and Brunswick subdivisions, and the CSXT Etowah, Fitzgerald, and Manchester subdivisions.

As discussed in Chapter 3, there are also portions of Georgia's rail infrastructure that cannot accommodate the standard 286,000-pound railcar capacity. This includes short sections of the Class I railroad and some significant sections of the short line rail infrastructure. Similarly, there are portions of the rail infrastructure that have vertical clearance restrictions below the 22-foot by 6-inch standard for unrestricted double-stack clearance.

5.4 POSITIVE TRAIN CONTROL

PTC Positive Train Control (PTC) refers to technology that is capable of preventing train-to-train collisions, overspeed derailments, and casualties or injuries to roadway workers (e.g., maintenance-of-way workers, bridge workers, and signal maintainers), operating within their limits of authority, as a result of unauthorized incursion by a train. The technology combines GPS locating of all trains, infrastructure switches, crossings, and junctions; computer cataloging of speed restrictions and traffic conditions; and wireless communications between all operating units, including engineers, dispatchers, and work crews. Prior to October 2008, development of PTC systems was proceeding slowly among many of the major freight railroads and passenger operators on a voluntary basis. However, the Rail Safety Improvement Act of 2008 (RSIA) (signed by the President on October 16, 2008, as Public Law 110-432) mandated the widespread installation of PTC systems by December 2015 on all lines handling passenger trains or hazardous materials, essentially the majority of the entire national rail system. In Georgia, CSXT' and NS' main lines, along with a few segments of short lines, will require installation of PTC.

Subsequent to passage of RSIA, a concerted industry effort to implement PTC within the specified timetable commenced. However, the technology hurdles are very substantial, and major system elements, particularly communications radios and software, have not yet been developed as this is being written. Many in the industry have called the economic merits of the mandate into question; research by the FRA and others has found that the costs of deployment, expected to be a

minimum of $10 billion for the freight carriers, will far outweigh potential benefits on the order of 11:1 or more.[15] Without significant financial assistance from the Federal government, implementation of PTC is effectively an unfunded mandate, with the railroad industry burdened with the full cost of its implementation, and one that would not be possible absent the Class I railroads' present good financial condition. However, the financial demands of PTC certainly have an effect on the railroads' investment decisions, and divert funds from other aspects of their operations that may directly benefit capacity and service.

In March 2011, the Association of American Railroads reached agreement with the Federal Railroad Administration to reduce the 73,000 route miles over which PTC was to be installed by approximately 10,000. In addition, with the growing likelihood that the 2015 deadline will not be met, the industry has increased pressure on public decision-makers to extend the implementation deadline. While this effort has not yet borne fruit, it is quite possible that the mandated completion date will be deferred. In the meantime, the railroad industry continues to work towards complying with the legislated directive.

Among short lines, fewer than 100 among the 550 or so operating in the U.S. will require the installation of PTC. However, even those that do not require its installation may still incur PTC-related expenditures, if their locomotives operate over Class I lines that are required to have PTC lines installed. Installation costs of on-board hardware are expected to be at least $50,000, and considerably more for the older units that are typically operated by many short lines.[16]

5.5 SHORT LINE INDUSTRY CHALLENGES

In recent years, the short line industry has consisted of a mix of profitable and marginal performers. The volume of traffic handled by a short line has a direct impact on track maintenance levels, speeds, service reliability, and ultimately the financial viability of the short line service. High-volume markets and lines have done relatively well; low-volume markets and lines struggle. The national trend toward consolidation of short line ownership and some consolidation of low-density lines and collector/distributor functions has improved the business outlook for short lines in some areas. This trend is evident in Georgia, where 14 of 25 short lines are operated by three major holding companies. However, it is also apparent that some Georgia short lines are not meeting critical volume thresholds – as indicated by the frequent turnover among operators of some on some properties, as well as declining service and investment in track and

[15] William C. Vantuono, *PTC: Is Everyone on Board*, Railway Age, May 2010, pp. 29-37.

[16] Ibid., p. 30.

equipment. Without sufficient volume, it is difficult to maintain a railroad as a going enterprise.

The challenges of attracting sufficient volume are exacerbated by increasing pressures for a general increase in the maximum permissible weights for trucks. The federal maximum weight has been set to 80,000 pounds since 1983, and long combination vehicles were limited to certain highways located primarily in the West since 1991. Starting in the mid-1990s, individual states have given exemptions for weight limits to various industries, and the pressure to broadly increase weight limits at the federal level has grown increasingly intense.

The economic impact of a nationwide increase in truck size and weight on the rail industry has been a matter of contentious discussion for many years. However, any significant changes in truck size and weight beyond current limits that are broadly applicable could provide productivity gains to trucking firms that would influence modal economics towards highway transport. Short lines are likely to bear the brunt of these impacts disproportionately, given their heavy orientation towards small volume carload traffic. One study found that an increase in truck weight from 80,000 to 97,000 pounds could reduce merchandise traffic volumes by 44 percent and overall traffic by 17 percent.[17]

Beyond volume, short lines face several other critical challenges as an industry:

- Infrastructure conditions tend to be inferior to those of the large railroads. Track is less well maintained, with lighter weight rail, inferior tie and ballast conditions, and no active signaling system. As a result, mainline trains speeds are lower, typically 40 mph or less for freight trains, and operations are far less automated. Although these conditions are usually adequate for existing business, many carriers struggle to maintain track at minimal commercially acceptable levels, and are unable to accommodate some modern rolling stock. As noted previously, with the large railroads moving from 263,000 to 286,000 pounds as the standard maximum car weight, the ability to handle standard modern rolling stock has become a particular concern; without accommodation of these heavier cars, the competitive position of many short lines will be substantially compromised.
- The availability of suitable railcars for short line shippers can be problematic. Although railcar supply has exceeded demand in recent years, some smaller carriers continue to have difficulty obtaining proper equipment on a timely and cost-effective basis. Most commonly, this issue occurs when equipment supply is controlled by contractual agreements with the prior owners of the line.
- Smaller railroads, with their narrow geographic coverage, must rely far more heavily on connecting carriers to serve the market needs of their customers.

[17]Carl Martland, *Estimating the Competitive Effects of Larger Trucks on Rail Freight Traffic*, Sept. 2007.

Key are the agreements between short lines and their Class I connections, which are the result of a lines' prior history and present ownership. A short line may or may not have independent rate-making authority (i.e., the ability to negotiate its own revenue levels for local and interchanged traffic). If carloads were interchanged with one or more railroads, traditionally each rail entity would be entitled to individually establish a rate for its participation in transporting a shipment.

In the case of several short lines in the State, this ability to make rates is superseded or preempted by agreements with their Class I connections. These agreements, which were established when the line was spun off by the former Class I owner, often restrict independent rate making, car supply, and the interchange of cars to the line's original owner, even if connections to other Class I carriers are available. This process was designed to allow the seller to retain some of the benefits of having sole access to businesses on a branch, often in return for favorable purchase terms. These rate and operating restrictions, or the ability of the short line to only interchange with one railroad due lack of other connections, creates what is known as a "captive" short line.

- Although most of these restrictive terms are contractually agreed-upon relationships, with advantages or compensation accruing to both parties to the agreement, in a few cases the restrictions have led to ongoing inefficiencies, such as unintended increases in short-haul switching moves at or near the interchange point, and insufficient revenue yields with detrimental effects on the carriers' ongoing viability. In some cases, short lines have had to forego new business that would have been logically routed onto another connecting Class 1, or divert natural rail traffic onto trucks to reach final destinations that are otherwise rail accessible.

5.6 SUMMARY OF ISSUES AND NEEDS

This report has identified several issues and needs for the rail mode in Georgia. In summary, these issues are:

- There are significant bottleneck issues in the Atlanta region due to yard and main line congestion and interchanging issues. Howell Junction is seen as the most significant bottleneck location in the Atlanta region. Solving this bottleneck will make freight traffic more efficient and provide alternatives for passenger travel as well. The bottlenecks in the Atlanta region have significant upstream and downstream impacts on rail lines throughout the State.
- Due to the prevalence of single-track rail infrastructure in the State, much of the main line Class I rail infrastructure in the state experiences recurring bottlenecks.

- The bottlenecks described above will be exacerbated by the freight rail growth that is forecast throughout the State. Left unresolved, these bottlenecks will decrease the effectiveness of rail for serving Georgia's shippers and reduce the potential for diversion of freight traffic from truck to rail.
- Mandatory implementation of Positive Train Control will increase operational costs for railroads.
- There are also portions of Georgia's rail infrastructure that cannot accommodate the standard 286,000-pound railcar capacity. This includes short sections of the Class I railroad and some significant sections of the short line rail infrastructure.
- There are portions of the rail infrastructure that have vertical clearance restrictions below the 22-foot by 6-inch standard for unrestricted double-stack clearance.
- Shortline railroads are critically underfunded. Their infrastructure suffers from weight capacity limitations, speed limitations, and vertical clearance issues. Additionally, access to rail cars can be an issue for shortline railroads.

The recommendations document of this Freight and Logistics Plan identifies potential solutions to address these needs and prioritize these potential solutions based on their impact on the freight infrastructure and the State's economy.