EXISTING SOUTH CAROLINA RAIL SYSTEM

2. Public Rail Planning in South Carolina

2.1 State Agency Responsibilities

There are three state agencies that have a direct involvement with the railroads. The responsibilities of each and the manner in which they are executed are the subject of the following paragraphs.

2.1.1 Department of Commerce

The South Carolina Department of Commerce is the state's leading economic development agent. As such, Commerce representatives work with all of the state's rail carriers in the effort to attract new business to the state, and retain and grow existing businesses. The Department maintains relationships with railroad economic development representatives, maintains an inventory of rail-served industrial sites, and administers a grant program for infrastructure improvements discussed in **Section 8.3.1**. It is also home to the Division of Public Railways.

The South Carolina Public Railways (SCPR) operates three common carrier railroads, as discussed in Section 3.2.8, all in the Charleston area, and provides technical assistance and consulting services to South Carolina's governmental bodies. The Public Railways was operated as an independent commission until the 1993 South Carolina government reorganization at which time it became a Division within the Department of Commerce.[19] The Division is the designated freight rail planning agency for South Carolina and has the authority to acquire rail equipment, rights of way, rail operations, and construct and operate rail lines deemed to be in the public interest to promote and foster economic growth and development.

2.1.2 South Carolina Department of Transportation

The SCDOT is responsible for highway-rail crossings and the state's rail passenger efforts. Its rail responsibilities are spread out over three different units.

Management of the program for existing crossings lies within the Traffic Safety Division. That division manages the federal funds for grade crossing improvements, which total some $4 million per year, and are used to improve 18-20 crossings annually. In the process, each of the 2,700 public crossings in the state is ranked for priority. The rankings are re-evaluated on an annual basis. A safety inspection program is also conducted as directed by law[20] of all U.S., state and county roads on the state system. Counties and municipalities are responsible for roadways they maintain. Inspection procedures are set forth in a manual prepared by the Division.

Crossings involved in construction projects, at-grade or grade-separated, are the responsibility of the Right of Way Division. That unit also handles payment of safety project invoices.

The Division of Mass Transit (DMT), since the 1993 amendments to Section 1506, Article 1, Chapter 3, Title 57 of the 1976 Code, is charged to "develop and coordinate a general mass transit program and policy for the State…." In performance of its duty, "The Division is further designated as the agency of the state principally responsible for preserving railroad rights-of-way

[19] See South Carolina Code, Article 9, Section 13-1-1330.
[20] Section 58-17-1450, Coder of Laws of South Carolina, as amended February 24, 1988.

for future use, and coordinating rail passenger service and high-speed rail planning and development. This authority includes, but is now limited to, the power to apply for and to receive state, federal, or other funds for rail passenger service, high-speed rail planning and development, bus passenger service, and rail corridor preservation and revitalization programs." In addition, DMT must submit an annual report to both houses of the Legislative containing, among other items, "a state railroad corridor presentation and revitalization plan."

The Department's Planning Division collaborates with the Division of Mass Transit on passenger services.

2.1.3 Office of Regulatory Staff

Enactment of Act 175 of 2004 created the South Carolina Office of Regulatory Staff (ORS). The charge of the ORS is to represent the public interest in utility regulation, previously a function of the Public Service Commission. Included in that charge is the responsibility for railroad and natural gas pipeline safety oversight. Railroad safety falls under the Transportation Division of the ORS.

The ORS works in partnership with the Federal Railroad Administration (FRA) through a legal agreement that permits state employees to enforce federal law. The FRA's Office of Safety specializes in six safety disciplines:

- Hazardous materials;
- Motive power and equipment;
- Operating practices;
- Signal and train control;
- Track and structures; and
- Industrial hygiene.

More than 400 safety inspectors operate nationwide for the FRA. South Carolina has two inspectors that specialize in two of the disciplines, namely motive power and equipment and track and structures. Assistance is also provided in the remaining disciplines as possible, as well as support for other state agencies such as the Emergency Management Division. Rail-related complaints are fielded and processed that fall under the jurisdiction of the ORS, while others are referred to the appropriate party.

2.2 Rail Goals and Plan Objectives

The *2008 South Carolina Comprehensive Multimodal Long-Range Transportation Plan* adopted a set of eight key goals[21] in preparation of the plan. They are:

- Mobility - promote efficient movement of people and freight and reduced travel times for all modes of transportation.

[21] *2008 SC Comprehensive Multimodal Long-Range Transportation Plan*, SCDOT, Executive Summary, p.3

- Accessibility - ensures that transportation facilities and services are coordinated with land development patterns and community needs to ensure that all citizens easily can reach important destinations.
- Safety - Minimize crashes and fatalities and ensure efficient coastal evacuation routes.
- Security - increase security of the transportation system for motorized and non-motorized users.
- Economic vitality - provide an efficient, interconnected transportation system to maintain economic competitiveness.
- Community vitality - minimize and mitigate community disruptions resulting from existing and future transportation facilities, and ensure citizens have appropriate, accessible, multimodal transportation choices to serve their mobility needs.
- Environment - minimize and mitigate transportation system impacts on water resources, natural habitats, cultural resources and air quality, and ensure transportation investments are consistent with efforts to preserve and improve environmental quality.
- Equity - develop a transportation system that meets the needs of all citizens, recognizing that variations in income, age, ability, and regional location produce different mobility needs.

The provision of adequate rail service, freight and passenger, has a role to play in meeting each of these goals. In fact it is a necessity to meet the description of mobility and economic vitality, and has the potential to make a significant contribution to meet environmental targets.

Current state rail planning goals and objectives are contained in the *1999 Update of the South Carolina Rail Plan* prepared for the South Carolina Public Railways. The goal is to contribute to the statewide transportation goal "to encourage and promote a safe, economical and energy efficient transportation system to meet the needs of the State". To achieve this goal, the following objectives are established:

1. Provide information and guidance for rail users and others affected by rail transportation;
2. Involve the public and private sectors in decisions affecting the existing and developing transportation network;
3. Establish state rail transportation policies that are sensitive to the needs of the citizens of South Carolina, and
4. Provide for a continuing, comprehensive and coordinated rail program and promote the continuation of those rail services that are economically justified.

The contents of this State Rail Plan 2008 Update are directed toward these same objectives.

3. State Rail System

This section defines the existing South Carolina rail system by describing the major characteristics of each of the System's components and the use made of them. Also discussed are system wide trends and conditions.

The South Carolina rail system, as depicted in **Exhibit 3-1**, is operated by 11 rail carriers. The carriers range in size from fairly small intrastate railroads to members of large rail systems serving the entire eastern U.S. Of the line-haul railroads, two are Class I carriers[22] and the remainder are Class III carriers or terminal companies. As seen in **Exhibit 3-2**, these railroads comprise a 2007 state rail system of 2,258 miles. CSX Transportation's (CSXT) 1,249 South Carolina route miles represent 55 percent of the statewide rail system. The Norfolk Southern Railway (NS), with 679 route miles, is the second largest carrier in terms of South Carolina mileage accounting for 30 percent of the state rail system.

3.1 Class I Railroads

3.1.1 CSX Transportation (CSXT)

This Class I railroad, a transportation unit of CSX Corporation (CSX), operates approximately 23,000 route miles and serves 23 states, the District of Columbia and two Canadian provinces. As South Carolina's largest railroad with 1,249 route miles, it covers virtually every area of the state. The railroad has a division office in Florence. In addition to the mileage it owns, it also has trackage rights over NS between Columbia and Charleston. Major South Carolina commodities are petroleum and coal products, lumber and wood products, chemicals and allied products, coal, and miscellaneous mixed shipments (intermodal). CSX Intermodal is the intermodal arm of CSX Corporation.

3.1.2 Norfolk Southern Railway (NS)

This Class I railroad operates a total of approximately 21,500 route miles and serves 22 states, the District of Columbia, and one Canadian province. In South Carolina, NS operates 679 route miles and has trackage rights over CSXT from Newberry to Spartanburg. The Norfolk Southern Railway Company is owned by the Norfolk Southern Corporation. The railroad has a division office in Greenville. Major commodities transported over the NS in South Carolina are coal; lumber and wood products; chemicals; pulp, paper, and allied products; and, transportation equipment.

[22] As of December 2006, Class I railroads have annual gross revenues of $346.8 million or more. Class III carriers have annual gross revenues less than $28 million. These limits are updated annually to reflect inflation.

Exhibit 3-1: State Rail Map

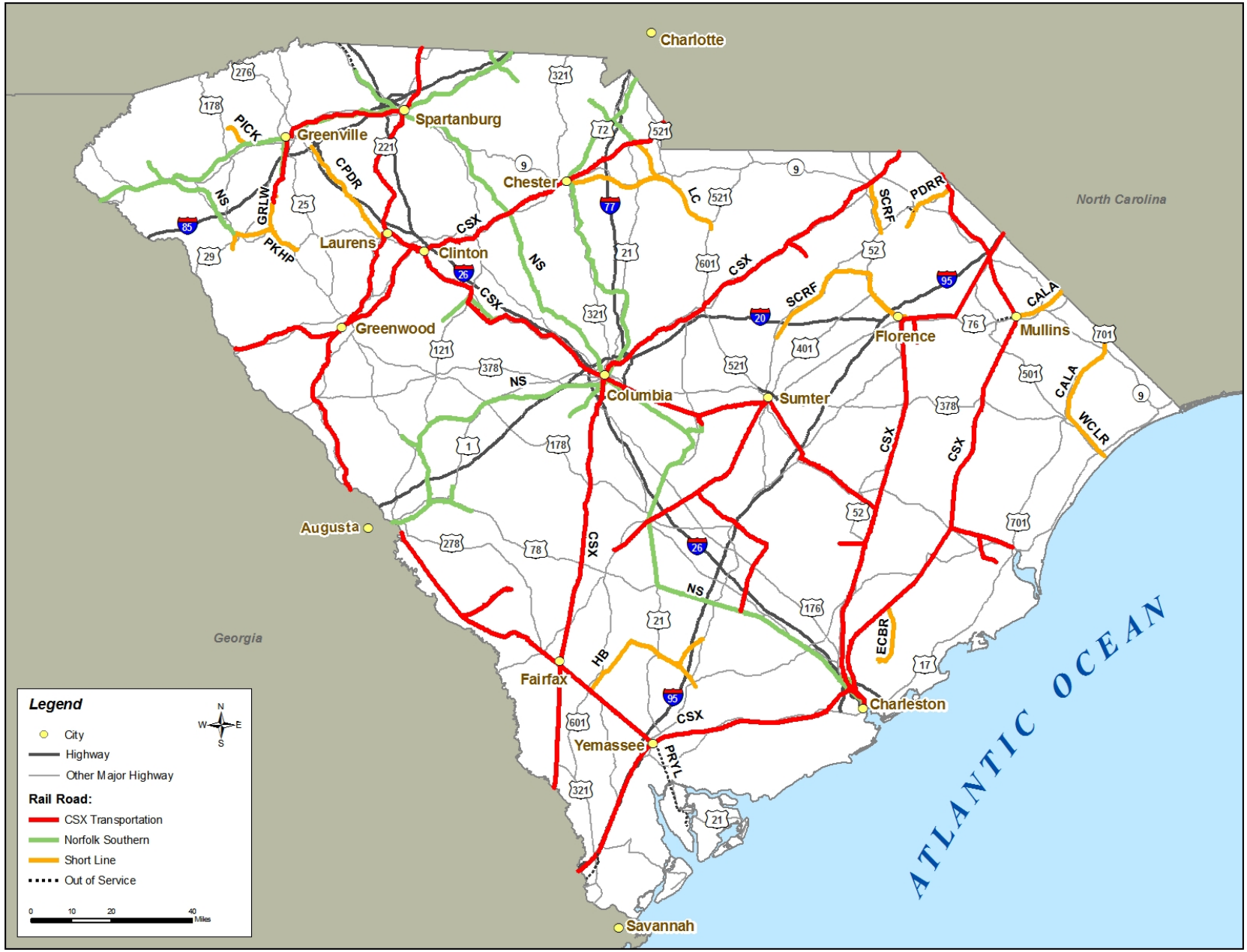


Exhibit 3-2: 2007 South Carolina Freight Railroads

Railroad (1)	Route Miles of Railroad		% of Rail System Owned/Leased
	Owned/Leased	Trackage Rights	
Carolina Piedmont Railroad (CPDR)	35		1.6
Carolina Southern Railroad (CALA)	51		2.3
CSX Transportation (CSXT)	1,249	17	55.3
East Cooper & Berkley Railroad ECBR)	17		0.8
Greenville & Western Railway (GRLW)	13		0.6
Hampton & Branchville Railroad (HB)	40		1.8
Lancaster & Chester (LC)	60		2.7
Norfolk Southern Railway (NS)	679	104	30.1
Pee Dee River Railway (PDRR)	25		1.1
Pickens Railway (PICK and PKHP)	37		1.6
South Carolina Central Railway (SCRF)	52		2.3
Totals	**2,258**	**121**	**100.0(2)**

Note: (1) Amtrak also operates over 549 route miles in SC but does not own any mainline trackage in the state. It operates over CSXT main tracks, one through Florence and another through Columbia, from North Carolina to Georgia. Norfolk Southern also hosts Amtrak trains in the upstate running between North Carolina and Georgia.

(2) Does not add due to rounding.

3.2 Class III Railroads

The nine Class III carriers in South Carolina are described below.

3.2.1 Carolina Southern Railroad Company (CALA)

After purchasing 75.5 miles of track from CSXT, this Class III or short line carrier began operations in 1987 as the Mid-Atlantic Railroad. The purchase included the Mullins, S.C. to Whiteville, N.C. branch line (36.5) miles, and the Chadbourn, N.C. to Conway, S.C. branch line (39.0) miles. The company changed hands in 1995 and is now known as the Carolina Southern Railroad. It operates over 51 miles of track within South Carolina, serving Marion and Horry Counties, including 14.5 miles of the Mullins-Whiteville branch, 25.0 miles of the Chadbourn-Conway branch, and 11.5 miles of the Horry County Railroad leased to Waccamaw Coast Line-WCLR, and operated by CALA. Headquarters is located in Conway, S.C. The CALA interchanges rail traffic with CSXT at Mullins, S.C.

Principal commodities include coal, aggregates, wallboard, paper and lumber. Major shippers include Santee Cooper, Martin Marietta, Builder's First Source, Atlantic Publishing, Perdue and Southern States Cooperative.

3.2.2 Greenville & Western Railway Company (GRLW)

The newest of South Carolina's railroads commenced operations in late 2006 after acquiring a 13-mile-long CSXT line segment from Pelzer to Belton in Anderson County. The railroad interchanges traffic with CSXT at Pelzer and with the Pickens Railroad Company at Belton, which also provides access to NS. The railway has been transloading ethanol at Belton for

Lincoln Energy Solutions and soon will be receiving unit trains at the company's on-site blending facility. Belton Industries is another on-line rail user. Principal on-line commodities are ethanol and polypropylene.

3.2.3 Hampton and Branchville Railroad Company (HB)

This short line carrier was originally chartered in December, 1891 to serve the local timber industry. Prior to 1986, the HB operated over 17 route miles of track from H&B Junction to Hampton. In 1986, 29 additional miles of track were acquired from CSXT. The HB currently operates over 40 miles of track between Hampton and Canady's, all in Hampton and Colleton Counties. The railroad's largest customer is SCE&G. The HB interchanges rail traffic with CSXT at Hampton.

3.2.4 Lancaster and Chester Railway Company (LC)

Prior to 2001, the railroad ran 29 miles between Chester and Lancaster. This original line segment dates back to an 1873 charter for a three-foot narrow gauge railroad that finally reached Lancaster from Chester in 1894. In 2001 an NS branch line running from Catawba to Lancaster and continuing east to Kershaw was acquired extending the railroad's total length to almost 60 miles and it's presence to four counties - Chester, Kershaw, Lancaster, and York.

The railroad serves a variety of shippers/receivers, including Omnova Chemicals, Chester Wood, PPG, Specialty Polymers, Guardian Glass, Thyssen-Krupp Steel, Mississippi Lime, ADM, Ameristeel, GAF Materials, Circle S Mills, and Owens Corning among others. Major commodities are coal, chemicals, sand, steel, corn, soybeans, soybean oil, and building materials. The railroad interchanges traffic with both CSXT and NS at Chester.

3.2.5 Pee Dee River Railway Corporation (PDRR)

In 1987 Marlboro County purchased the CSXT branch line extending from McColl to Marlboro via Tatum and Bennettsville along with a spur from Bennettsville to Breeden and contracted with the Pee Dee Railway Corporation (PDRR) to provide rail service. The PDRR began operations the same year.

A 3.8-mile spur was soon constructed to a new Willamette Industries (now Domtar) pulp, paper, and board complex (the latter now Flakeboard). The PDRR is a subsidiary of the Aberdeen and Rockfish Railroad Company, which has headquarters in Aberdeen, N.C.

Pulp and paper, chemicals, aggregates, fertilizer, and grain are the predominate products handled over its current 25-mile length. Its major customers are Domtar, Mohawk, Flakeboard, Hanson Aggregates, and Southern States Cooperative. Traffic is interchanged with CSXT at McColl.

3.2.6 Pickens Railroad Company (PICK and PKHP)

The Pickens Railway Company consists of two separate operations located in the Upstate. One is the original Pickens Railroad (PICK), which runs 8.5 miles from a connection with the NS main track at Easley to Pickens in Pickens County that began operation in 1898. The other, the railroad's Honea Path Division (PKHP) is a combination of NS and CSXT branch lines located in Anderson County running from Anderson to Honea Path, via Belton, 28.5 miles. Service began over the first of these line segments in 1990.

The railroad's principal shippers include: Owens Corning, Electrolux, Scots, Michelin, Southern States Cooperative, Crop Production Services, Carolina Recycling, PCA, Morningsong, and Tri County Fertilizer. These customers account for the majority of the railroad's carloadings comprised of kaolin, limestone, plastics, rubber, carbon black, fertilizer, scrap metal, paper, grain, ethanol and borate ore. Traffic is interchanged with NS at Easley and Anderson, and with GRLW at Belton to CSXT connection.

3.2.7 S.C. Central Railroad Company (SCRF)

In 1987, RailTex, Inc. purchased two disconnected segments of railroad from CSXT totaling 58 miles in length located in Florence, Darlington, Chesterfield, and Lee Counties. The SC Central Railroad Company, Inc. (SCRF) began operations over the two line segments in December of that year. RailAmerica, Inc., which acquired RailTex in 2000, now owns the railroad and operates its 52-mile mainline. One segment connects and interchanges traffic with CSXT at Cheraw and extends southward to Society Hill. The line has one user, Galey & Lord. The other segment connects and interchanges traffic with CSXT at Florence and extends to Bishopville via Darlington, Floyd, and Hartsville. It has a broad base of customers the largest being Nucor Steel, Sonoco Products, and Republic Services. Commodities handled by the railroad are dominated by coal, steel, and waste.

3.2.8 Carolina Piedmont Railroad (CPDR)

In 1990, RailTex, Inc. purchased from CSXT and began operating the 39-mile branch line between Laurens and East Greenville as its Carolina Piedmont Division (CPDR). The railroad is now owned by RailAmerica Inc. and is operated as the Carolina Piedmont Railroad. Traffic is interchanged with CSXT at Laurens. The railroad currently operates 35 mainline miles in Laurens, and Greenville Counties. Major commodities transported include resins and turbines, gas and wind. Major customers include General Electric and Cryovac.

3.2.9 S.C. Public Railways (SCPR)

The South Carolina Public Railways operates three railroads, two of which serve terminals of the Port of Charleston and one that serves two major industries. The Port Utilities Commission of Charleston (PUCC) is a terminal switching railroad located in Charleston. Terminal switching service is provided to the South Carolina State Ports Authority's Columbus Street and Union Pier Terminals. Traffic is interchanged with both CSXT and NS. The Port Terminal Railroad (PTR) is also a terminal switching railroad located in North Charleston where service is provided to the South Carolina State Ports Authority's North Charleston Terminal and the Charleston Naval Complex. Traffic is interchanged with both CSXT and NS. As terminal switching railroads, PUCC and PTR have no mainline route miles of track.

The East Cooper and Berkley Railroad (ECBR) was built in the late 1970s. This 17-mile line extends from State Junction (Cordesville) to Charity Church in Berkeley County. Operations began on November 15, 1978. Major commodities are comprised of chemicals and steel transported for BP Chemical and Nucor Steel. Traffic is interchanged with CSXT at State Junction.

3.3 Rail Passenger Service

3.3.1 Amtrak

Existing rail passenger service in South Carolina is provided by Amtrak. The National Railroad Passenger Corporation, better known as Amtrak, is America's passenger railroad. It was created by an act of Congress (the Rail Passenger Service Act of 1970) to take over from the railroads the increasingly heavy financial burden of operating a national rail passenger system.

The railroads, with a few exceptions at the time, were glad to donate equipment and pay fees in order to avoid the deficits they were incurring on passenger operations. Ever since then, Amtrak has been in financial straits and its skeletal operations have satisfied few people. Its annual budget requests always result in a political fight, but none the less the company has continued to operate and provide a variety of services. Ridership was at record levels nationwide in 2008.

3.3.1.1 Amtrak Service

Today Amtrak operates up to 300 intercity trains a day over 21,000 route miles serving more than 500 communities in 46 states. Amtrak carried in excess of 25.8 million passengers in FY2007. **Exhibit 3-3** provides a map of Amtrak's passenger service within the continental United States. There has been an enormous resurgence of interest in nearly every region of the country for expanded rail passenger service as a means of coping with growing highway and air transportation congestion, and fuel costs.

3.3.1.2 South Carolina Routes

South Carolina is fortunate when compared to some states in that it has four trains (actually eight when trains in both north and south bound directions are counted) operating over three routes all owned by freight railroads (one NS, two CSXT) all of which connect the South with the Northeast. **Exhibit 3-4** illustrates the locations of the three routes as well as Amtrak stops in the state.

3.3.1.3 South Carolina Schedules

Amtrak's South Carolina service consists of the following four daily trains:

- Silver Star – New York/Tampa/Miami via Columbia
- Silver Meteor – New York/ Miami via Charleston
- Palmetto – New York/Savannah via Charleston
- Crescent – New York/New Orleans via Greenville

Amtrak Station in Upstate South Carolina

With the exception of the Palmetto, Amtrak trains pass through the state in evening or early morning hours, which tend to discourage riders. In addition, Amtrak on-time performance suffers from running over privately owned freight railroads with the ever present operating conflicts. Current South Carolina schedules are shown in **Exhibit 3-5.**

Exhibit 3-3: Amtrak National System

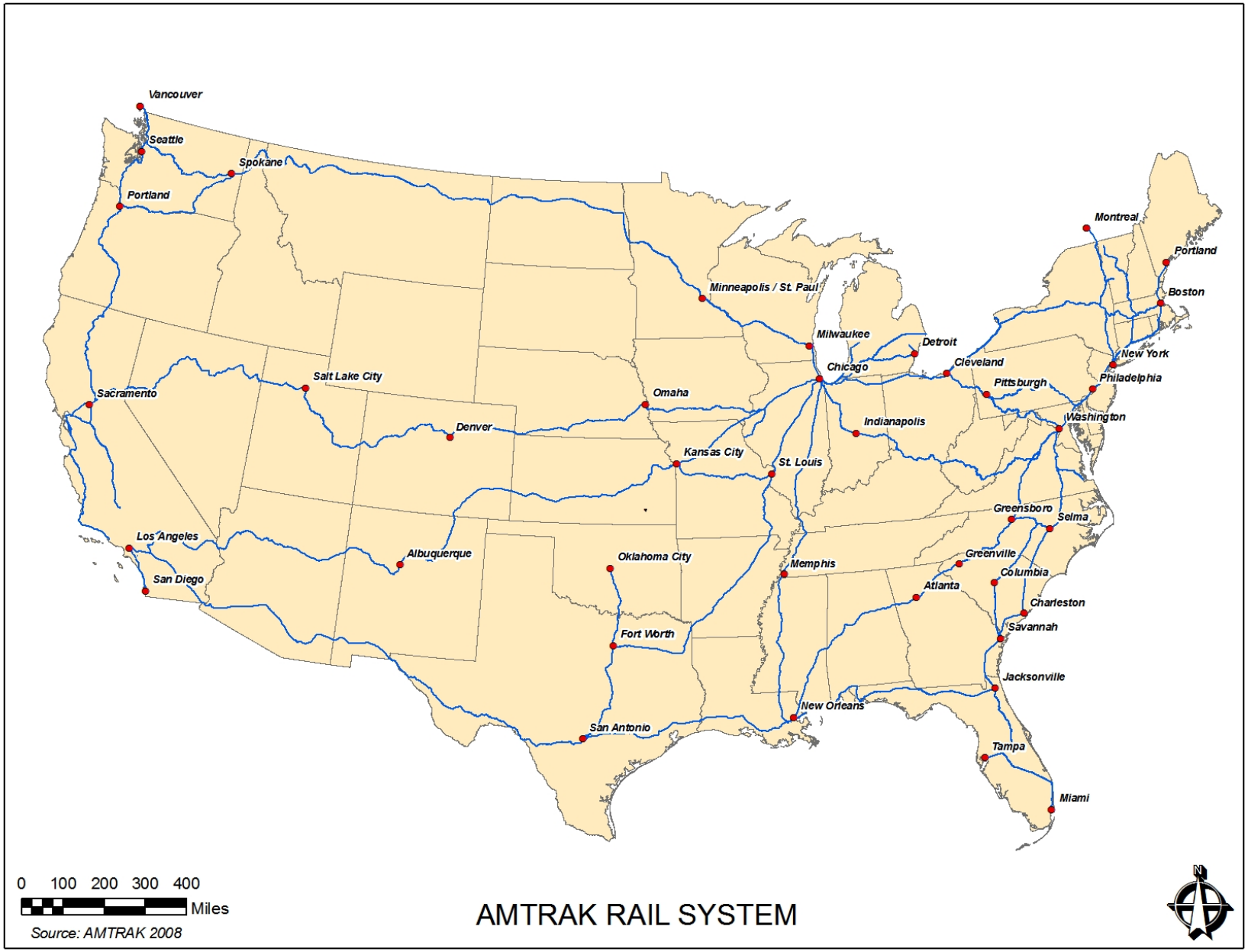


Exhibit 3-4: South Carolina Rail Passenger Routes and Stops

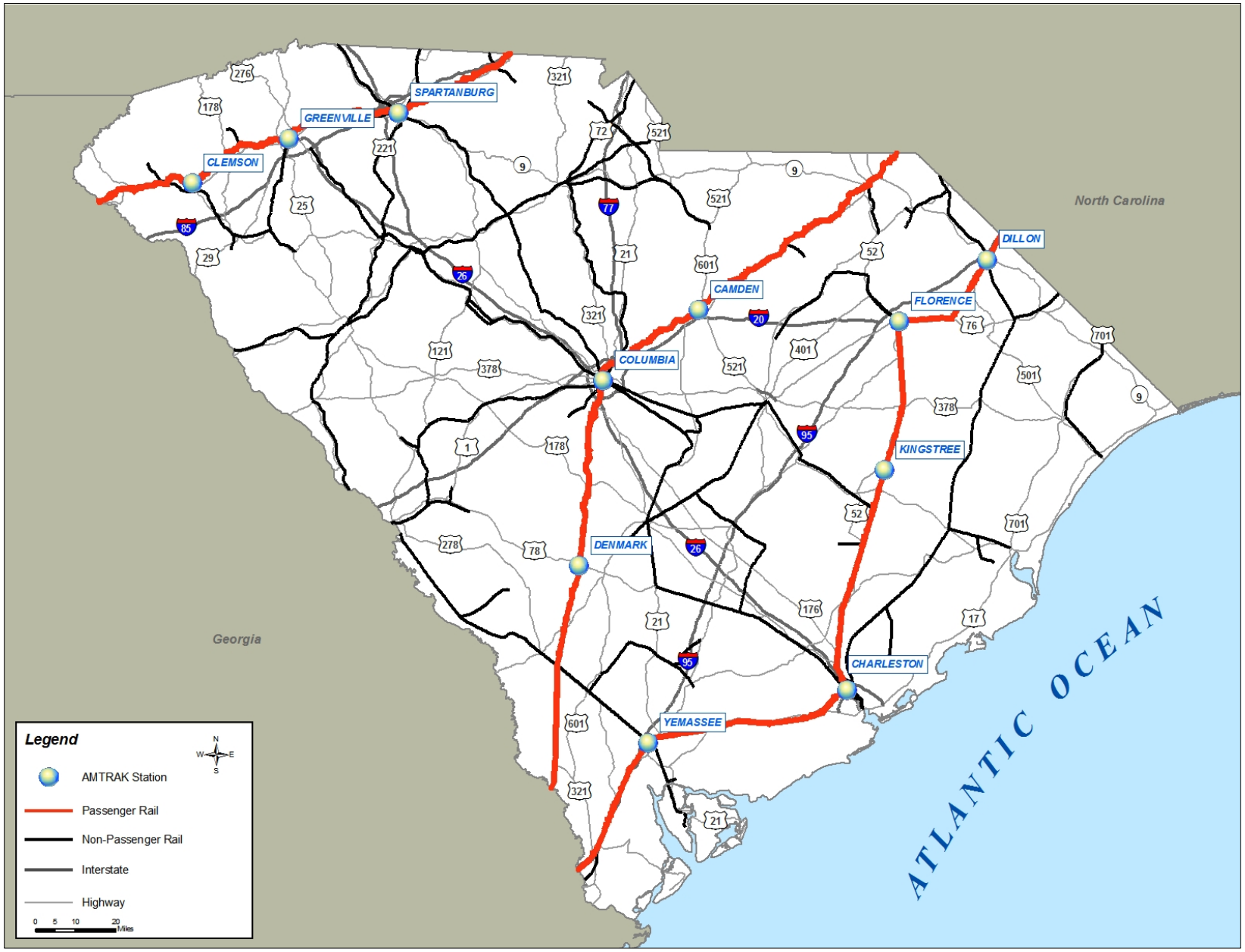


Exhibit 3-5: Amtrak South Carolina Schedule

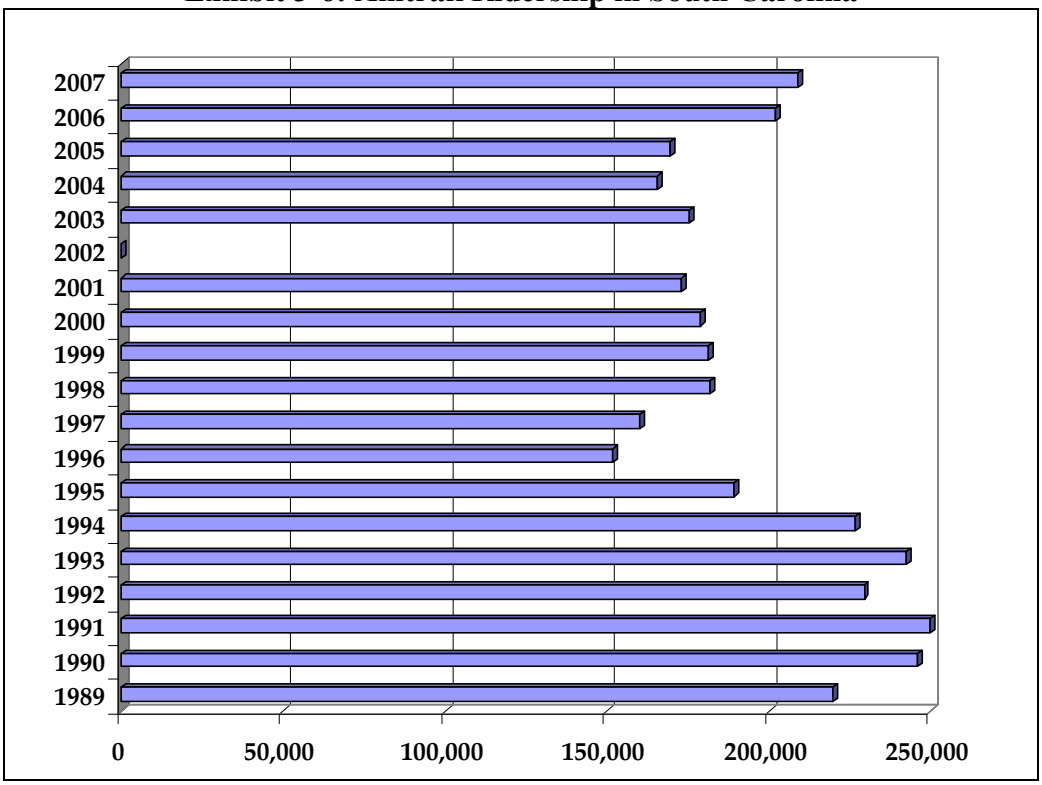
Train Service	Operating Between	SC Stops	Schedule	
			SB	NB
Crescent	New York- Atlanta- New Orleans	Spartanburg Greenville Clemson	4.14A 4:54A 5:39A	11:56P 11:10P 10:33P
Silver Star	New York- Washington- Miami	Camden Columbia Denmark	12:50A 1:44A 2:41A	4:49A 4:08A 2:53A
Silver Meteor	New York- Washington- Miami	Florence Kingstree Charleston Yemassee	3:20A 4:05A 5:06A 5:56A	11:45P 10:42P 9:48P 8:52P
Palmetto	New York- Washington- Savannah	Dillon Florence Kingstree Charleston Yemassee	4:40P 5:28P 6:11P 7:20P 8:09P	12:13P 11:39A 10:55A 10:00A 9:08A

Source: Amtrak, effective October 27, 2008

3.3.1.4 South Carolina Patronage

Passengers boarding or alighting Amtrak trains in South Carolina have risen and fallen over the last two decades from a high of almost 250,000 in 1990 to a low of 151,985 in 1996, as shown in **Exhibit 3-6**. The number of current (2007) passengers is 208,914. Ridership by station for the last year of record is the subject of **Exhibit 3-7.** Note that Charleston attracts the most riders, followed by Florence, Columbia, and Kingstree. All stations are served by two daily trains with the exception of Columbia, which has only one. Station patronage has remained relatively the same proportionally over the years, although Kingstree and Greenville have exchanged fourth and fifth place a number of times. The maximum number of riders at any one station for the period between 1989 and 2007 was 73,700 in Florence in 1991, closely followed again in 1993 with 73,600.

Exhibit 3-6: Amtrak Ridership in South Carolina



Note: Total passengers boarding or alighting at stations. Data not available for 2002.
Source: Amtrak

Exhibit 3-7: South Carolina Amtrak Patronage (FY2007)

City	Boardings + Alightings
Camden	3,702
Charleston	66,655
Clemson	5,416
Columbia	34,613
Denmark	4,680
Dillon	7,461
Florence	44,828
Greenville	11,700
Kingstree	13,888
Spartanburg	4,245
Yemassee	11,762
Total	**208,914**

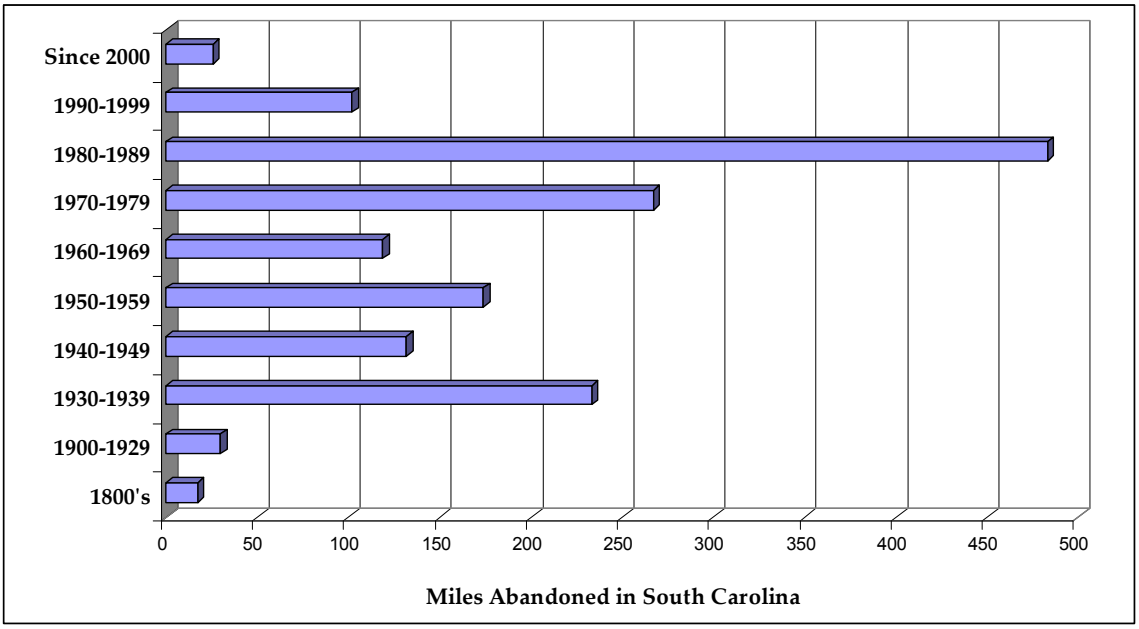
Source: Amtrak

3.4 Abandoned Lines

The U.S. rail system hit its peak in 1916 at 254,000 route miles. In 1970, the system was comprised of 206,000 miles, but after massive abandonments resulting from bankruptcies and major efforts to reduce costs during the 1970s and 1980s, it is comprised of 94,000 miles today.

South Carolina Abandonment History – The South Carolina rail system suffered a similar fate as shown in **Exhibit 3-8**. The abandoned miles total some 1,600 miles, with almost half of them occurring in the 1970s and 1980s. Only in the 1930s did the abandoned mileage approach that witnessed between 1970 and 1990.

Exhibit 3-8: Historic South Carolina Rail Abandonments



Source: South Carolina Statewide Comprehensive Multimodal Transportation Plan – Right of Way Inventory, p. 1

Those portions of the rail system lost through abandonment are portrayed in **Exhibit 3-9**. Several long routes were either lost in their entirety or severed in such a fashion that they no longer function as through routes. Many of the longer abandonments resulted from elimination of duplicate routes with railroad mergers, and most were lost segment by segment over time rather than all at once.

Preserved Rights of Way – There are a number of locations throughout the state where rights of way of lines abandoned or threatened with abandonment have been preserved typically for alternate uses such as trails. Some line segments have been taken out of service but not formally abandoned for one reason or another. These lines are depicted in **Exhibit 3-10** and total some 180 miles in length. Many of the rights of way are short with the longest segments, Calhoun Falls to McCormick and Yemessee to Port Royal, 25 and 28 miles long, respectively.

Abandoned but Potentially Intact – There are a number of rights of way of abandoned lines that are still wholly intact or have major segments intact, but have not been adopted for alternative uses and thus preserved for the future. The ownership and availability of these lines has yet to be confirmed, but based on searches of readily available information, a potential list of candidate rail lines in this category was prepared with the results presented on **Exhibit 3-11**[23]. The combined rights of way total 386 miles in length.

[23] Determinations made in preparation of *South Carolina Statewide Multimodal Transportation Plan*. Data provided by SCDOT.

Exhibit 3-9: South Carolina Abandoned Rail Lines

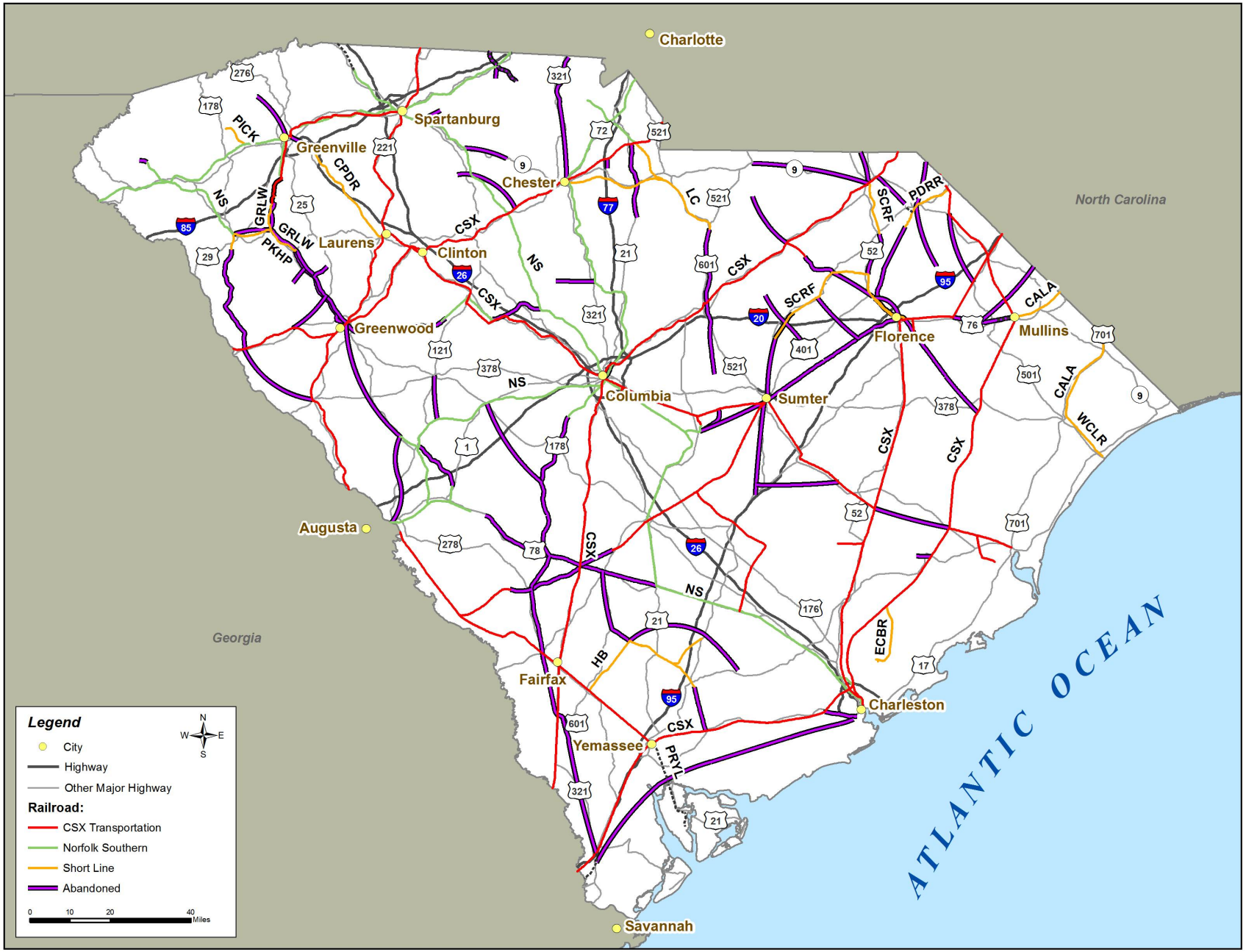


Exhibit 3-10: Preserved Rights of Way

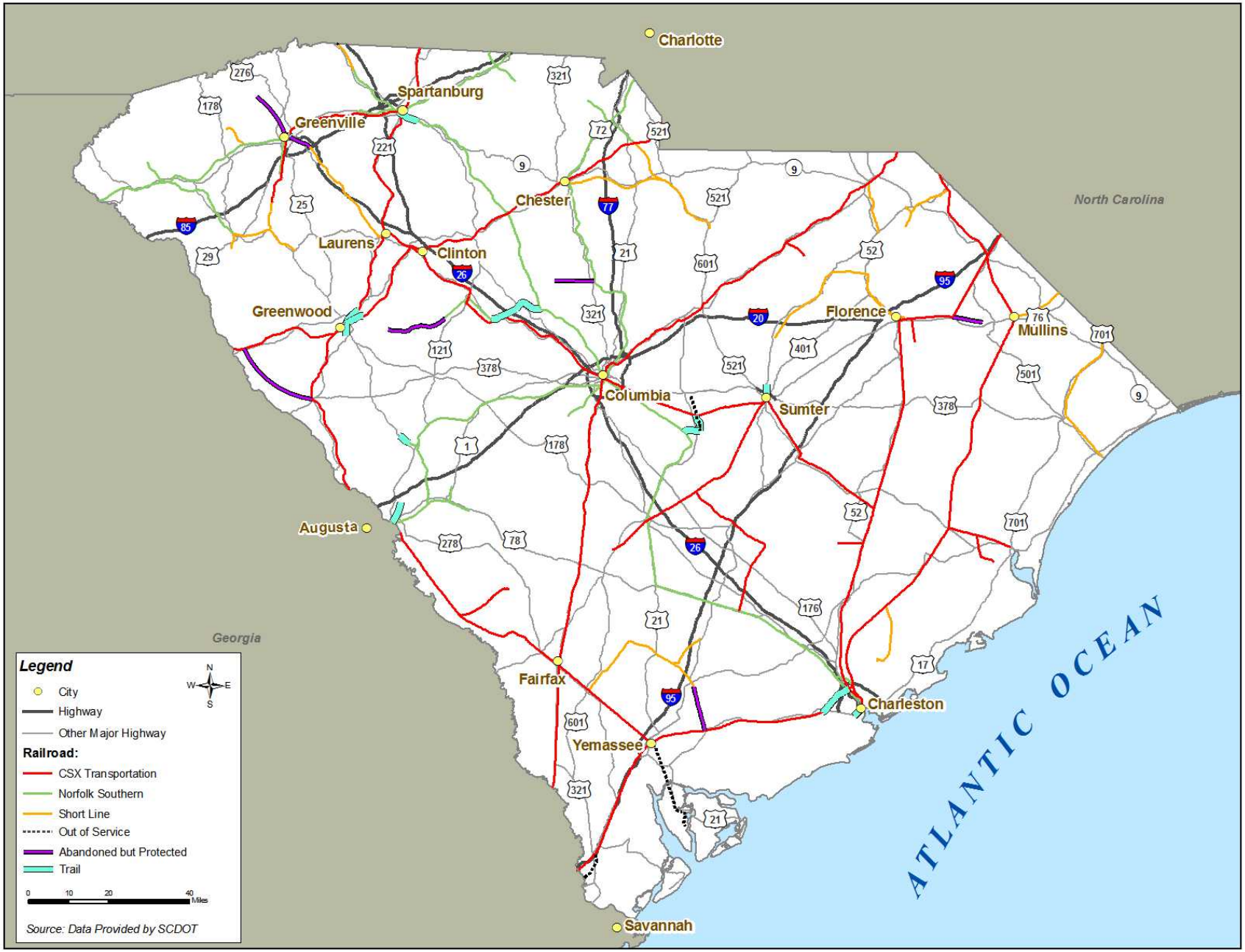
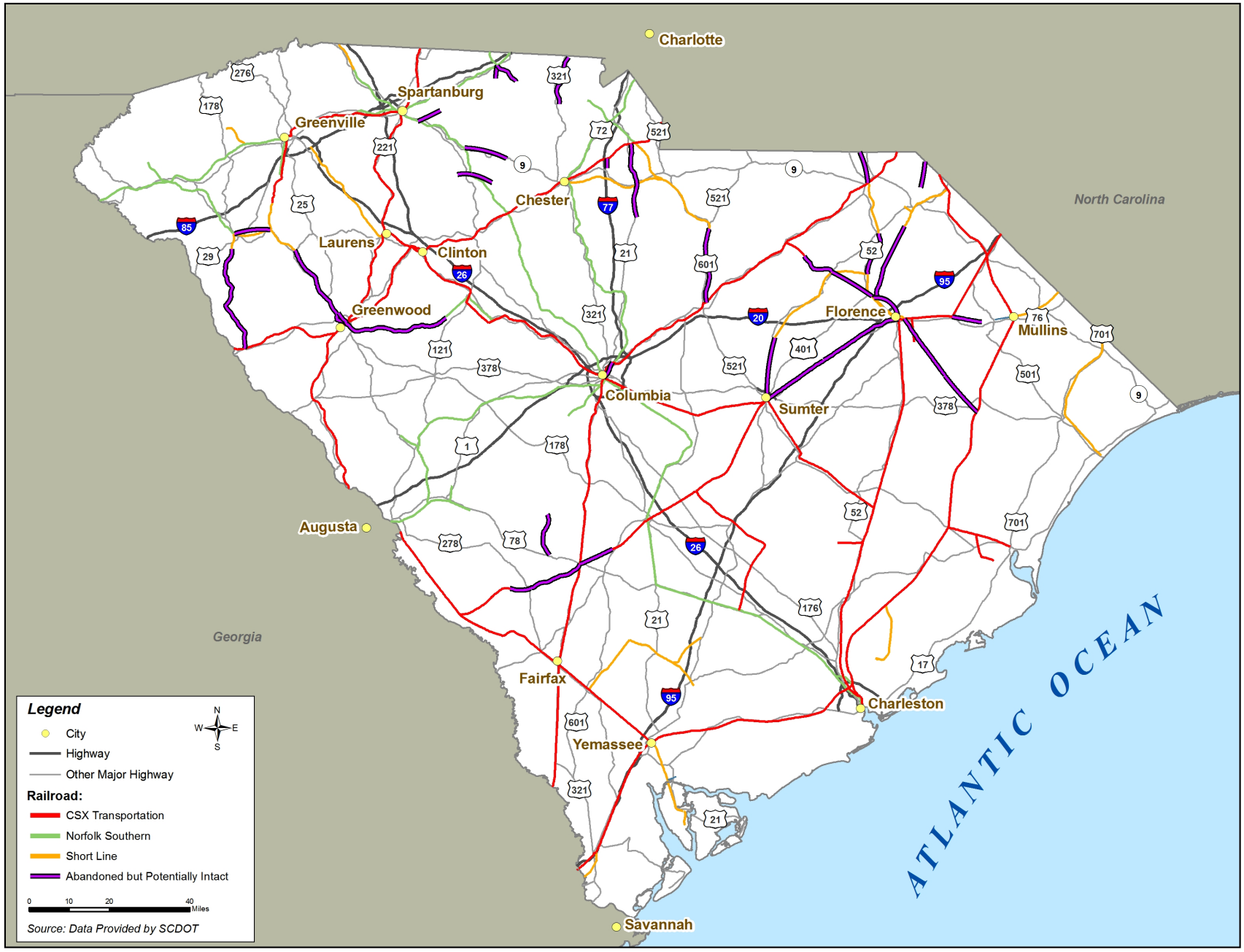


Exhibit 3-11: Potentially Available Abandoned Rights of Way



4. Rail Traffic and Flows

The state's rail system handles a variety of freight traffic, but as will be shown, it is dominated by bulk commodities.

4.1 Commodities Transported

Exhibit 4-1 depicts the rail freight tonnages and carloads originating and terminating in South Carolina in 2006 by commodity classification. Of the total 50.5 million tons originated or terminated, 5.1 million tons were intrastate traffic (both originating and terminating within South Carolina). The traffic statistics are dominated by one commodity group, coal, accounting for 34 percent of total originating and terminating tonnage. In a distant second place are chemicals or allied products with 8.7 percent, and there are five tied as the third-ranking commodity: non-metallic minerals; lumber or wood products; pulp, paper or allied products; petroleum or coal products; and hazardous materials; ranging from 6.3 to 6.6 percent of total tonnage.

Exhibit 4-1: SC Rail Freight Traffic 2006

Commodity		Tonnage (1)			Carloads (1)		
STCC	Description	Tons (000)	Percent of Total	Rank	Units (000)	Percent of Total	Rank
11	Coal	17,143	34.0	1	156.8	21.2	1
14	Non-metallic minerals	3,323	6.6	5	32.7	4.4	9
24	Lumber or wood products	3,281	6.5	6	37.3	5.1	8
26	Pulp, paper or allied products	3,165	6.3	7	47.0	6.4	4
28	Chemicals or allied products	4,369	8.7	2	51.9	7.0	3
29	Petroleum or coal products	3,346	6.6	3	30.6	4.1	10
32	Clay, concrete, glass or stone products	2,376	4.7	8	24.8	3.4	
33	Primary metal products	2,301	4.6	9	26.2	3.5	
37	Transportation equipment	999	2.0	-	43.9	5.9	5
42	Containers (returned empty)	263	0.5	-	41.3	5.6	7
46	Misc. mixed shipments	1,997	4.0	10	154.0	20.9	2
49	Hazardous materials	3,340	6.6	4	41.8	5.7	6
	All others	4,562	9.0	-	50.3	6.8	
Totals		**50,465**	**100**		**738.5**	**100**	

Note: (1) Freight tonnages and carloads originating and terminating in South Carolina.
Source: Compiled from 2006 STB Carload Waybill Sample

Commodities that terminate in the state from origins outside of the state total 32.5 million tons, which far outweigh those that originate in the state and are shipped out of it (12.8 million tons). Intrastate traffic contributes another 5.1 million tons. Coal is the principal terminating commodity from out-of-state, with chemicals a distant second. Pulp, paper or allied products comprises the largest originating commodity group with out-of-state destinations.

In addition, there was 37.9 million tons of rail traffic that passed through South Carolina with neither origins nor destinations in the state. Coal and chemical products are the principal through commodities, accounting for approximately one-third of total through tonnage.

4.2 Traffic by Railroad

Based on the same 2006 total tonnage figures, CSXT is not only the largest rail carrier in the state in terms of physical plant, but also in terms of traffic volume. Of the total tonnage moved by South Carolina's Class I railroads in 2006, CSXT accounted for 75 percent of the total and NS 25 percent. Based on data obtained from South Carolina's Short Line railroads, collectively they originated or terminated 25-30 percent of the two Class I's total tonnage.

4.3 Traffic Patterns

Another view of the state's rail traffic is obtained by examining the movement of that traffic between origin and destination, and the generation of traffic by regions within South Carolina.

4.3.1 Origins and Destinations

Terminations of freight tonnage originating in South Carolina are shown in **Exhibit 4-2** based on 2006 Surface Transportation Board (STB) Carload Waybill Sample statistics. As shown, major destinations of freight tonnage originating in South Carolina, included Georgia, North Carolina and Florida with over one million tons each. Ohio, Tennessee, Pennsylvania, and Virginia were the next largest with over 500,000 tons each.

Originations of freight tonnage terminating in the state are shown in **Exhibit 4-3**. Major origins of freight tonnage terminating in South Carolina included Kentucky, North Carolina, Pennsylvania and Tennessee in that order. Kentucky, largely coal, was by far the largest with over 12 million tons or over one-third of the total. Interstate freight tonnage terminating in the state in 2006 was 2.5 times the originating tonnage.

4.3.2 Originating and Terminating Tonnage by South Carolina Region

Another view of the states rail traffic flows is provided in **Exhibit 4-4 and Exhibit 4-5**, which depicts traffic origins and destinations by area using the 10 Council of Government (COG) Planning Districts. Two COGs stand out in both originating and terminating volumes, namely Central Midlands and Berkley, Charleston, Dorchester.

4.3.3 Intrastate Traffic

As mentioned earlier, 5.1 million tons of rail traffic both originate and terminate in South Carolina. The major flows between counties are the subject of **Exhibit 4-6**. As evident from examination of this exhibit, Charleston, Berkeley and Richland Counties are major players in these flows. Also noteworthy is the number of major rail moves between adjacent counties contrary to the perceived notion that rail is only a long haul transportation mode.

Exhibit 4-2: South Carolina Originating Rail Traffic Tonnage

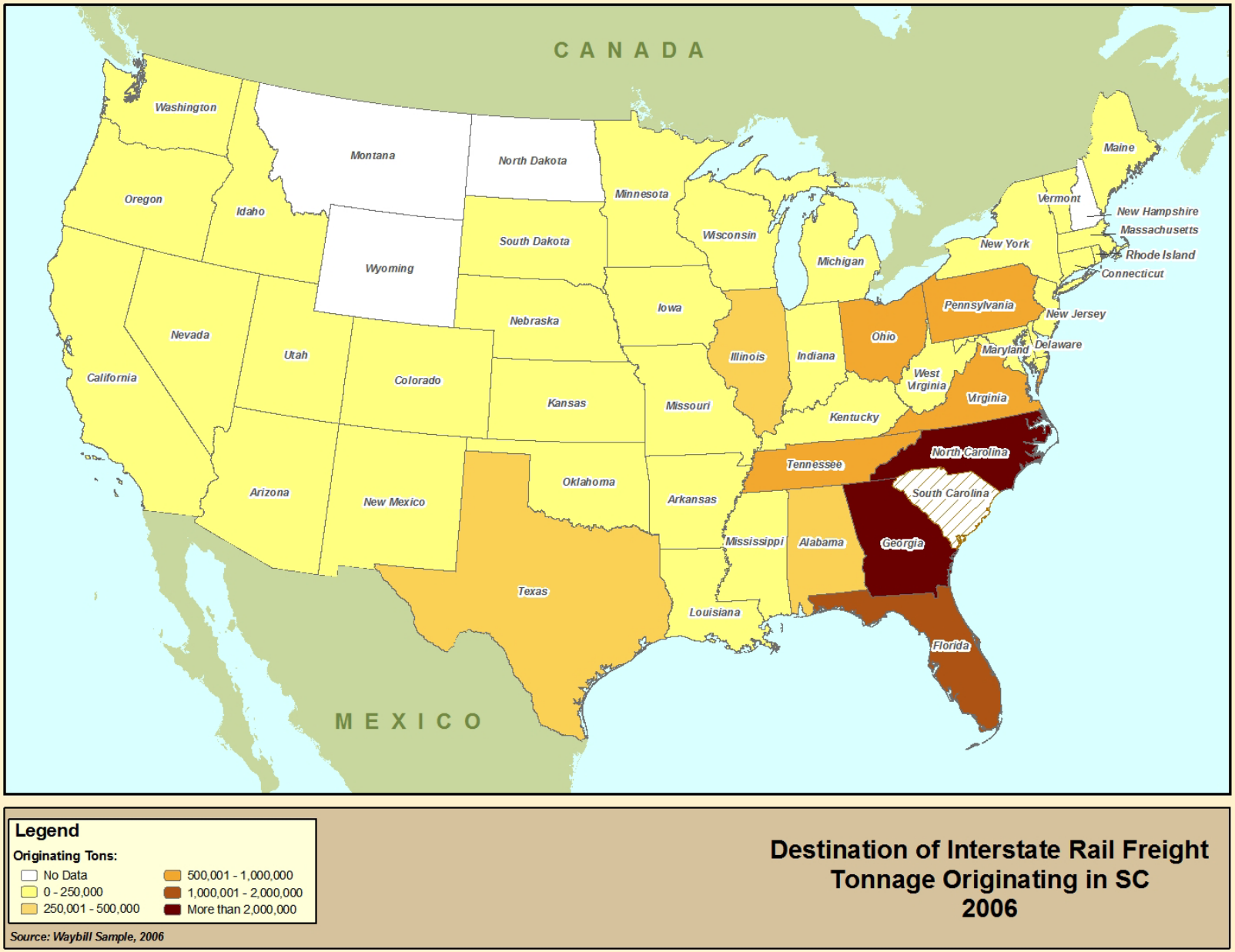


Exhibit 4-3: South Carolina Terminating Rail Traffic Tonnage

Legend

Terminating Tons:

- No Data
- 0 - 250,000
- 250,001 - 500,000
- 500,001 - 1,000,000
- 1,000,001 - 2,000,000
- More than 2,000,000

Source: Waybill Sample, 2006

Origination of Interstate Rail Freight Tonnage Terminating in SC 2006

Exhibit 4-4: Originating Interstate Rail Traffic Tonnage

Exhibit 4-5: Terminating Interstate Rail Traffic Tonnage

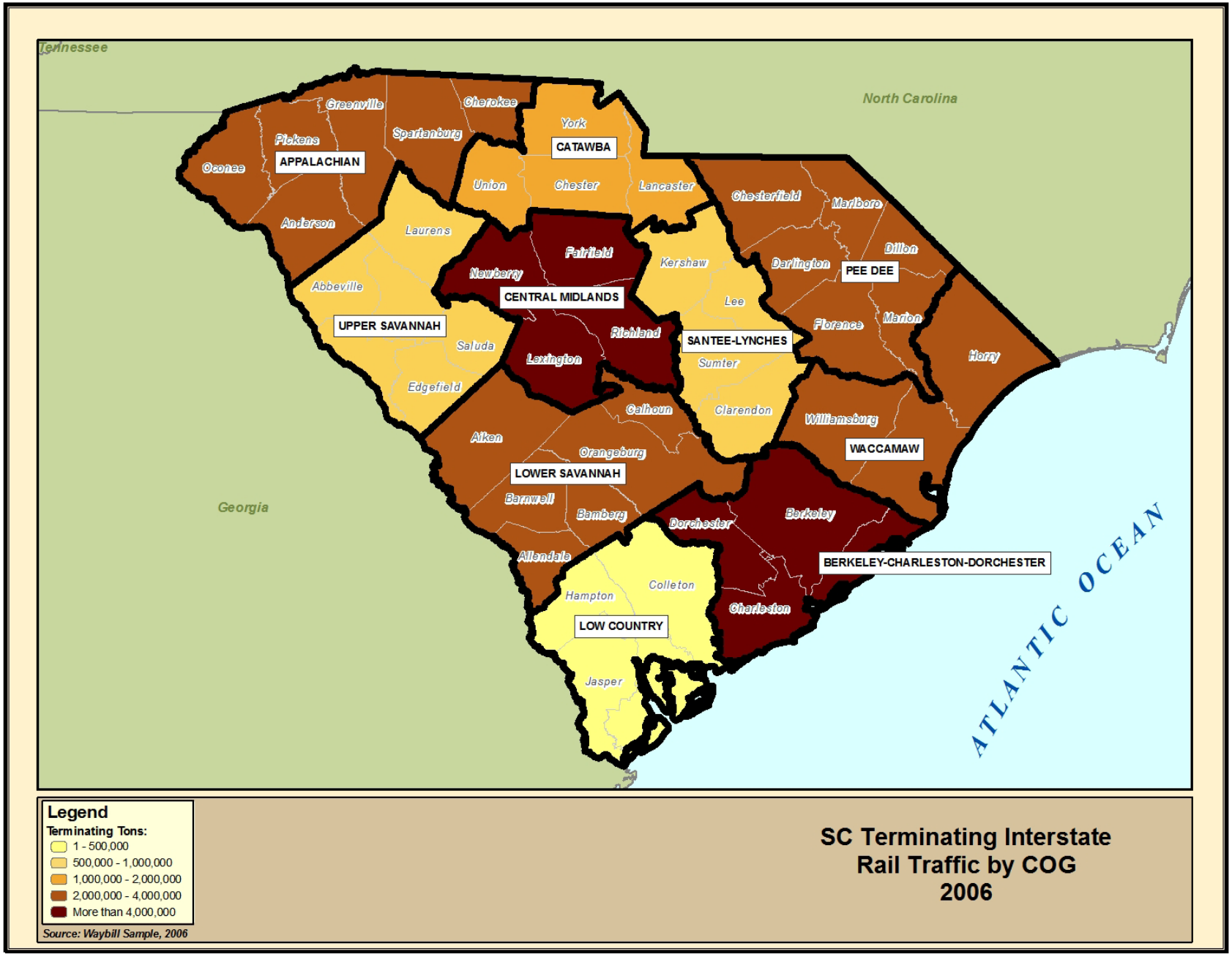
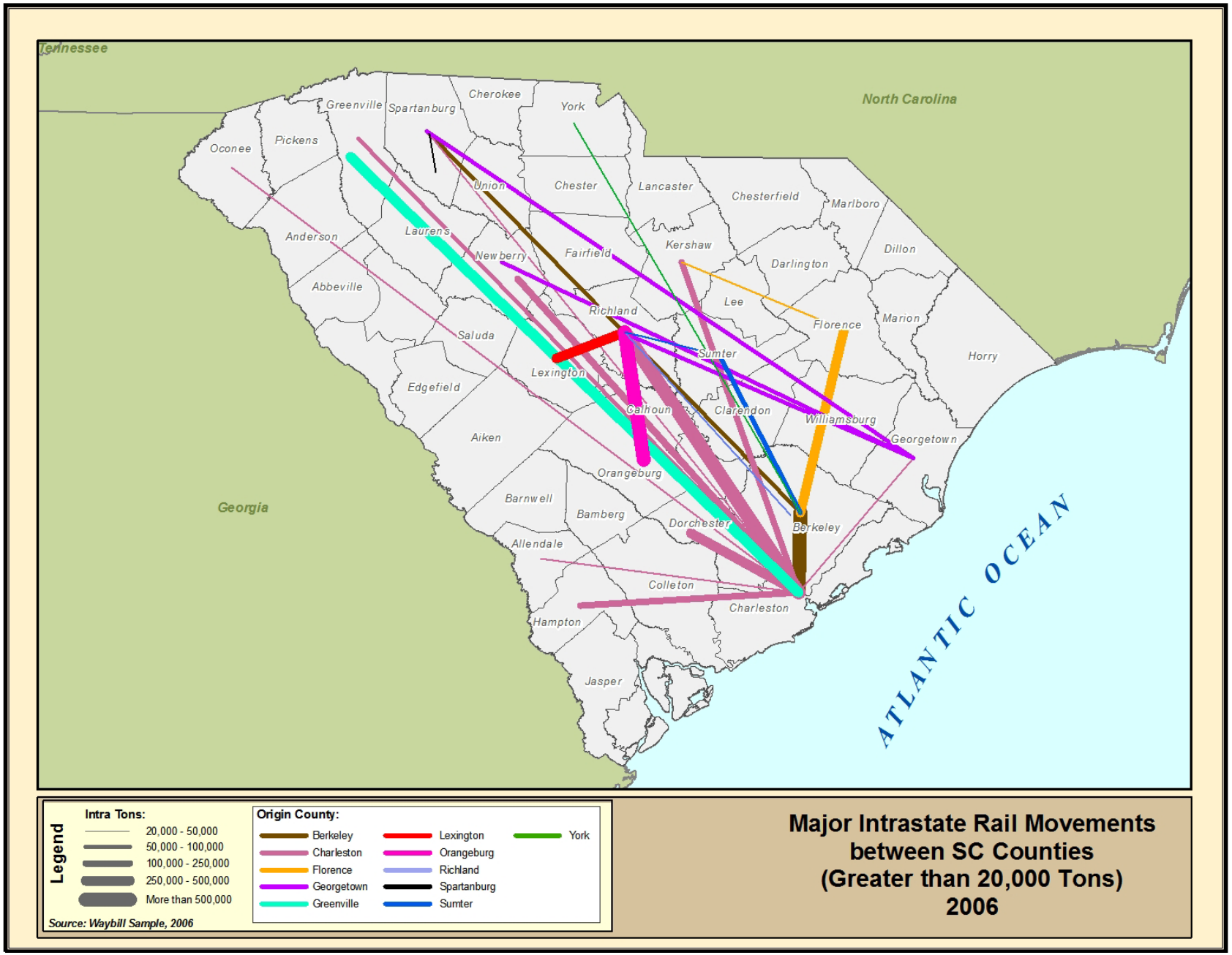


Exhibit 4-6: South Carolina Intrastate Rail Traffic Tonnage



4.3.4 Through Traffic

Rail traffic passing through the state varied over the selected years ranging between 28.5 (1990) and 42.3 million tons (2001). Relatively speaking, however, the variation was consistent with other movement types. An examination of 2006 through data revealed that 37.9 million tons flowed through South Carolina between out-of-state origin-destinations pairs. Not surprisingly, three of the four largest flows originated in the coal producing state of Kentucky destined for the Southeastern states of North Carolina, Georgia and Florida. The third largest through movement was 1.9 million tons of Georgia intrastate traffic. These four through movements ranged from 1.4 to 4.2 million tons per state pair, and totaled 9.8 million tons, or 26 percent of the total 37.9 million for the year. No other single pair movement totaled over 1.0 million tons. The remaining 28.1 million tons were spread over origin-destination pair tonnages ranging from 120 to 872,000 tons each. The principal flows (65% of total) are depicted on a regional basis (for clarity) in **Exhibit 4-7.**

4.3.5 Traffic History

Exhibit 4-8 depicts a rail traffic history for the state based on selected years from prior rail reports and other data. The volumes fluctuate up and down by as much as 26 million tons on an annual basis for the years depicted. However, tonnage basically increased from the late 1970s through the 1990s peaking in 1996 at 91 million. However, it has been on the decline since then, dropping about 3 million tons in 2001, and holding more or less stable in 2006.

While traffic volumes fluctuated over the almost three decades shown, overall rail traffic has increased about 15 percent with an increase of 30 percent in terminating tonnage and a like decrease in originating traffic. In terms of commodities intermodal traffic was up significantly, 50 percent, coal slightly, 20 percent, and all others down with lumber and wood products the most extreme at 70 percent.

4.3.6 Traffic Density

Exhibit 4-9 depicts the traffic density of each rail line of the South Carolina rail system in 2007. The traffic density measure employed is million gross ton-miles per mile of track. Gross tons are comprised of the weight of locomotives, rolling stock and lading (freight). A traffic density figure of 5.0 shown on the map, for example, indicates that 5.0 million gross ton-miles per mile moved over the particular line segment in 2007.

Examination of the traffic density map reveals the relative use of each component of the state's rail system. The highest tonnages occur on the CSXT north-south route between Dillon and Charleston, and other short segments on CSXT near Greenwood and Spartanburg. Other high tonnage lines are segments of CSXT south of Charleston, between Georgia (near Savannah) and Augusta, from North Carolina to Georgia via Greenwood, and Greenwood to Spartanburg. The main track of the Norfolk Southern from North Carolina to Georgia is that railroad's highest tonnage line in South Carolina.

Exhibit 4-7: Major Interstate Rail Movements Passing Through South Carolina

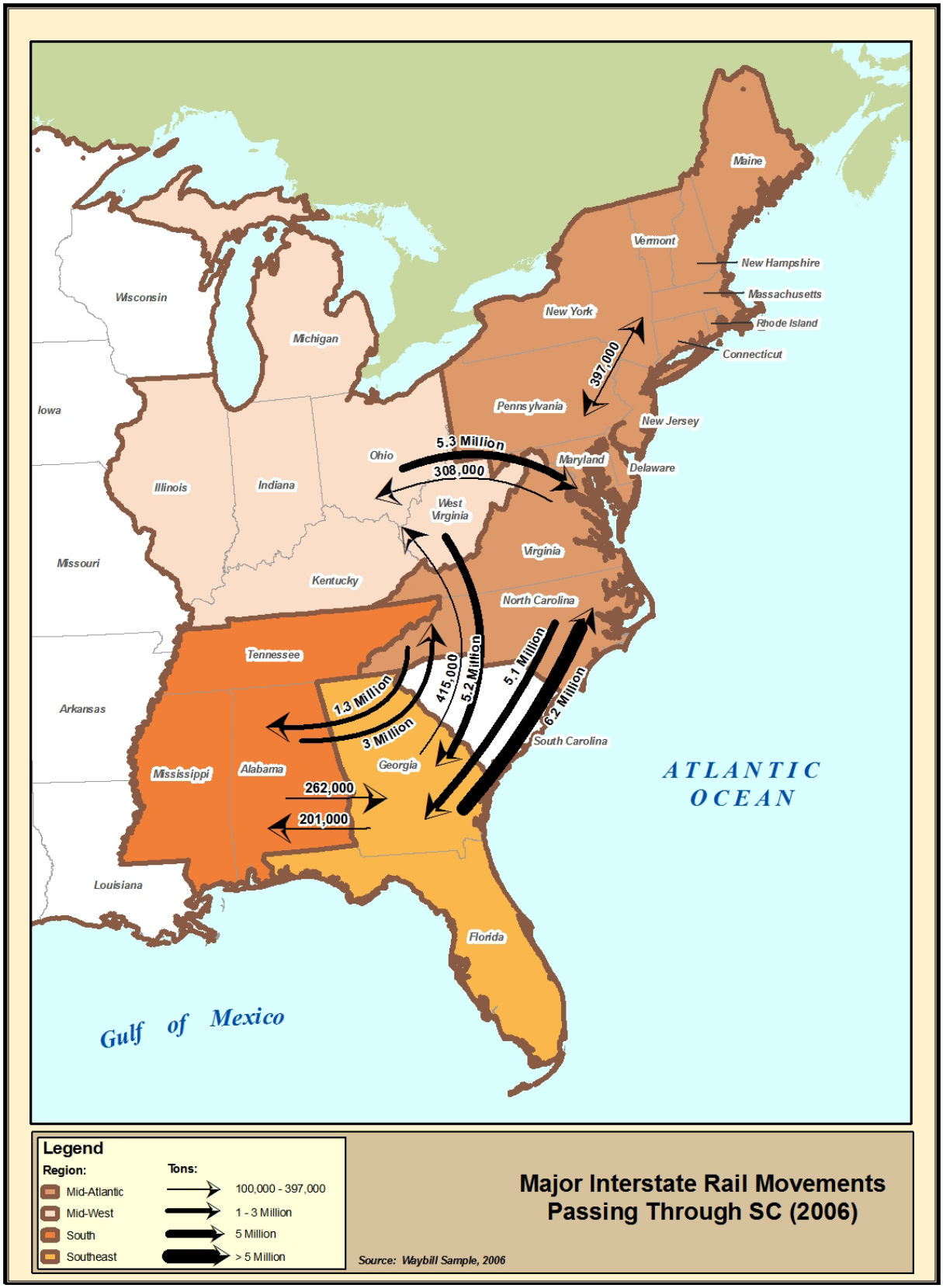
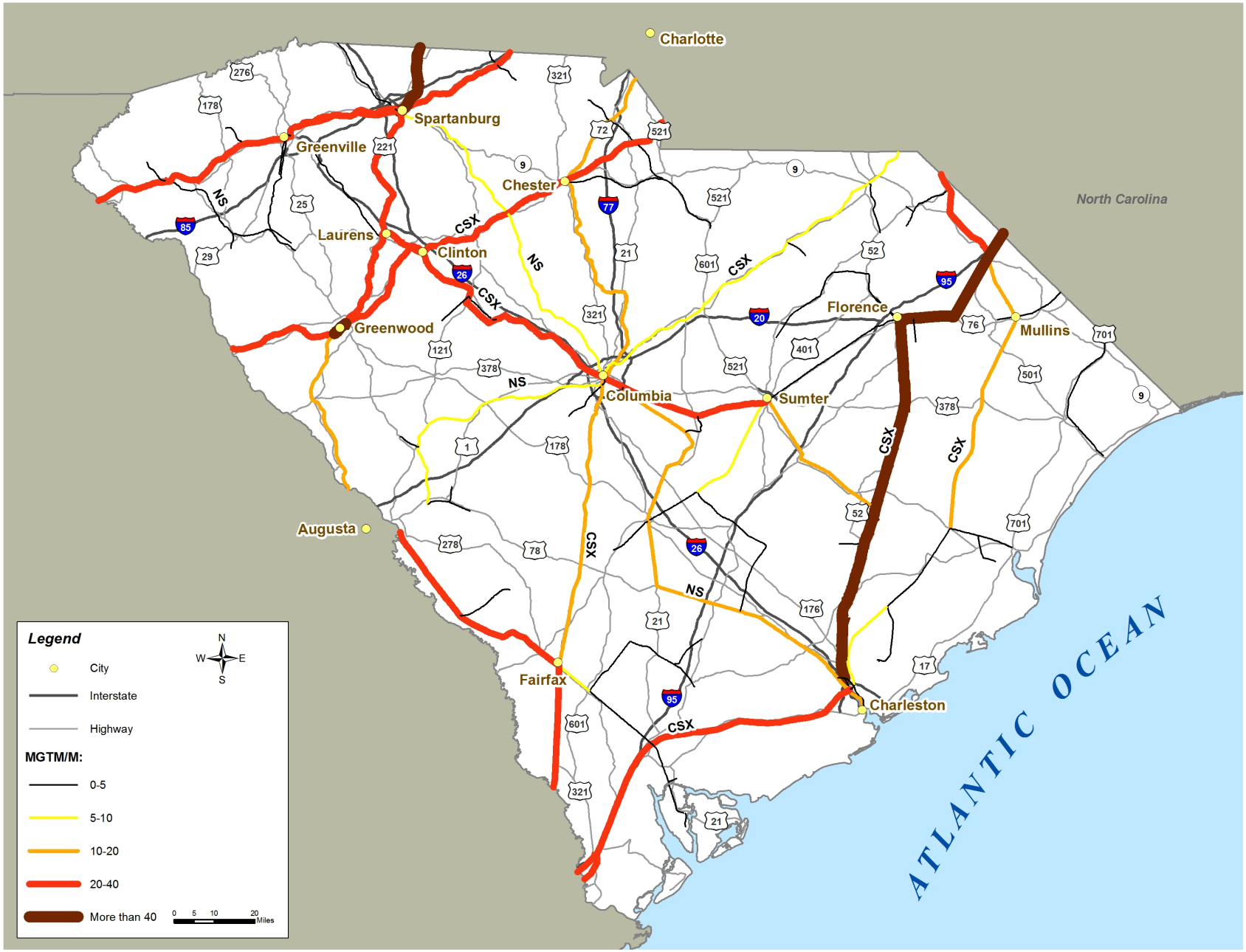


Exhibit 4-8: Historical SC Rail Freight Tonnage

Movement	Freight Tonnage (Million Tons)					
	1978	1982	1990	1996	2001	2006
Originating	17.8	15.0	11.8	14.6	11.0	12.8
Terminating	24.8	23.7	24.4	31.8	30.5	32.5
Intrastate	NA	NA	NA	5.0	4.3	5.1
Sub Total	42.6	38.7	36.2	51.4	45.8	50.4
Through	33.9	32.7	28.5	39.6	42.3	37.9
Totals	**76.5**	**71.4**	**64.7**	**91.0**	**88.1**	**88.3**

Note: NA - Not available as stand-alone quantity, but included in originating/terminating tonnages.

Exhibit 4-9: 2007 Rail Line Traffic Density Map



5. Intermodal Connectivity

"Intermodal" refers to an approach to planning, building and operating a multimodal transportation system that optimizes use of the strengths of each mode and the connections between modes. This is accomplished through the interface between transportation modes that carry both freight and passengers. It is the efficiency and effectiveness of this interconnection that determines the quality of intermodal transportation. The benefits of an efficient intermodal transportation system can be numerous. Intermodal offers the promise of lowering transportation costs, increasing economic productivity, reducing congestion, increasing returns from private/public infrastructure investments, improving mobility of all sectors of the population, and reducing energy consumption and mitigating environmental impacts.

5.1 Federal Initiative

Congress recognized the importance of the intermodal approach to transportation decision-making and the transportation system in 1991's Intermodal Surface Transportation Efficiency Act (ISTEA) by stating "it is the policy of the United States to develop a National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." This policy continued in 1997 with the Transportation Equity Act for the 21st Century (TEA-21) and subsequent transportation bills. Railroads, through their connections with other modes, are involved in many intermodal transportation movements.

5.2 Rail Intermodal Facilities

At the heart of intermodal transportation is the use of each mode of transportation for the type of transport for which it functions most efficiently. Transfers of freight and passengers between modes are necessary in the process, and they occur through a variety of processes and facilities.

5.2.1 TOFC / COFC

The most common form of freight intermodal transportation, or at least perceived to be, is related to piggyback movements, namely, trailer on flat car (TOFC) and container movements, namely, container on flat car (COFC). Highway-rail intermodal facilities were once more numerous when the focus was on the transportation of trailers (TOFC) and only a ramp and a tractor were needed for loading and unloading. A combination of an increased use of containers, requiring more investment in loading equipment, and overall operating efficiency including first dedicated unit trains, and then double stacks, has led to the creation of hub centers consolidating many former facilities and increasing drayage distances. The advent of the double-stack car and its cost savings spurred the use of containers and the number of containers in intermodal movements surpassed the number of trailers for the first time in 1992. Over 85 percent of all rail intermodal movements in 2007 occurred in containers.

5.2.1.1 National Service

Intermodal services in South Carolina are provided by the two Class I railroads serving the state. Those on CSXT are provided by CSX Intermodal (CSXI), a fully owned subsidiary of CSX

Corporation, which has a nationwide network built through contracting transportation with both eastern and western rail carriers. The CSXI national system is the subject of **Exhibit 5-1**. The NS intermodal system is shown in **Exhibit 5-2**. Coast-to-coast service is also available on NS through joint service agreements with western railroads operating through east-west gateways, such as New Orleans, Memphis, and Chicago.

5.2.1.2 SC Facilities and Service

In South Carolina there are two railroad intermodal facilities, both located in Charleston, one each for CSXI and NS. Neither railroad handles trailers at its Charleston facilities, only containers. CSXI has 5-day-per-week service to Savannah where traffic is split and forwarded south to Florida points and west to Atlanta with connecting service to mid-western and west coast points. NS also provides 5-day-per-week service to Atlanta with connections south and west, and 5-day-per-week service to Charlotte.

In addition to the intermodal facilities located in the state, service to some South Carolina locations is also available at nearby terminals in Charlotte and Savannah where both railroads also have facilities. In addition, Atlanta terminals are within acceptable drayage distances for some intermodal traffic.

5.2.1.3 SC Routes

Exhibit 5-3 depicts the intermodal network of the two Class I railroads in the state. The NS route system is comprised of its through route in the Upstate running southwest-northeast that connects Atlanta with Charlotte and points south, west and north, respectively, and is one of its principal intermodal routes (Crescent Corridor discussed later). The route segment to Charleston connects with this route in Spartanburg. The route from Charleston to Charlotte departs the Spartanburg to Charleston route at Columbia.

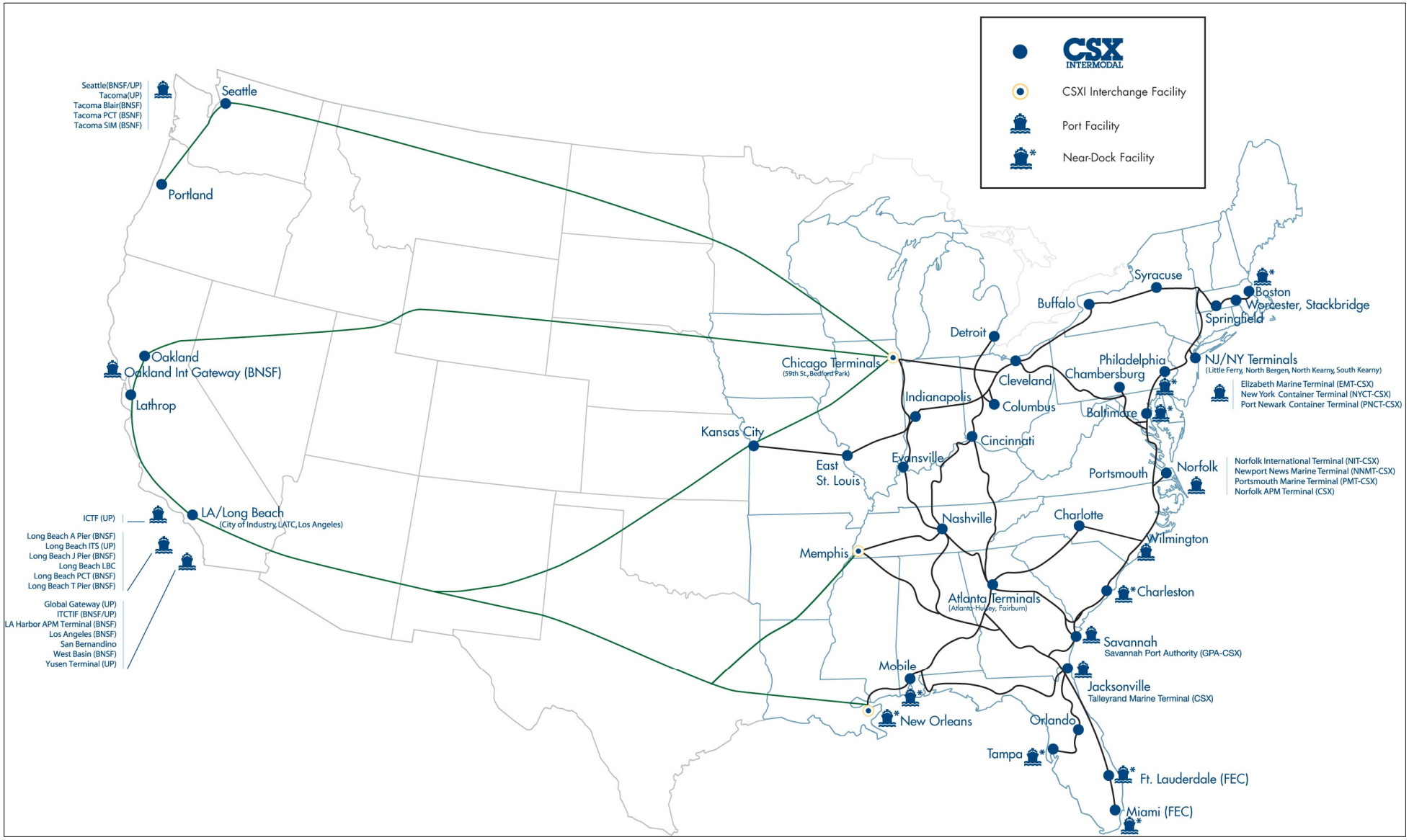
CSXI route segments connect Charlotte and Atlanta through Chester and Greenwood, Savannah and Atlanta through Fairfax and Augusta, and Savannah and Baltimore through Charleston. The latter route is part of CSXT's I-95 Corridor discussed in greater detail in **Section 7.3.1**.

5.2.2 Bulk Facilities

Another form of intermodal terminal used by the railroads is the bulk transfer facility. These facilities permit the transfer of bulk materials between rail and truck for those businesses that do not have direct rail service. They possess the necessary equipment to transfer all types of products efficiently and safely. However, all products are not handled at all terminals. Some terminals are owned by the railroads, such as Transflow Terminals for CSX and Thoroughbred Bulk Terminals for NS, although usually operated under contract by an outside party, while others are privately owned and operated, including many associated with trucking companies. There are six bulk transfer facilities located in South Carolina,[24] as shown in **Exhibit 5-4.**

[24] As listed by CSXT and NS

Exhibit 5-1: CSXI National Intermodal System



Source: CSX Corporation

Exhibit 5-2: NS Core Intermodal Network

Source: NS website, used with permission

Exhibit 5-3: South Carolina Intermodal Network

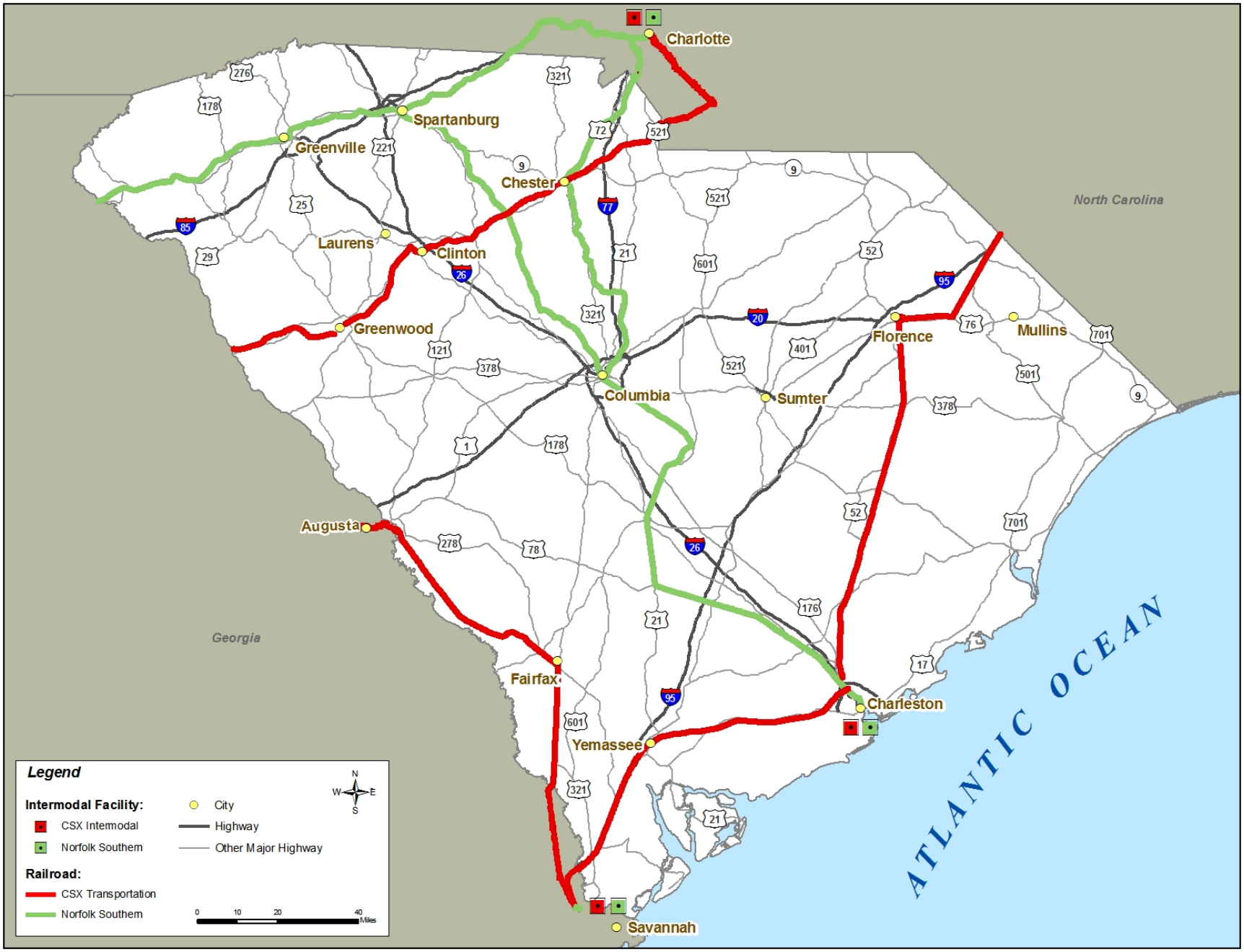
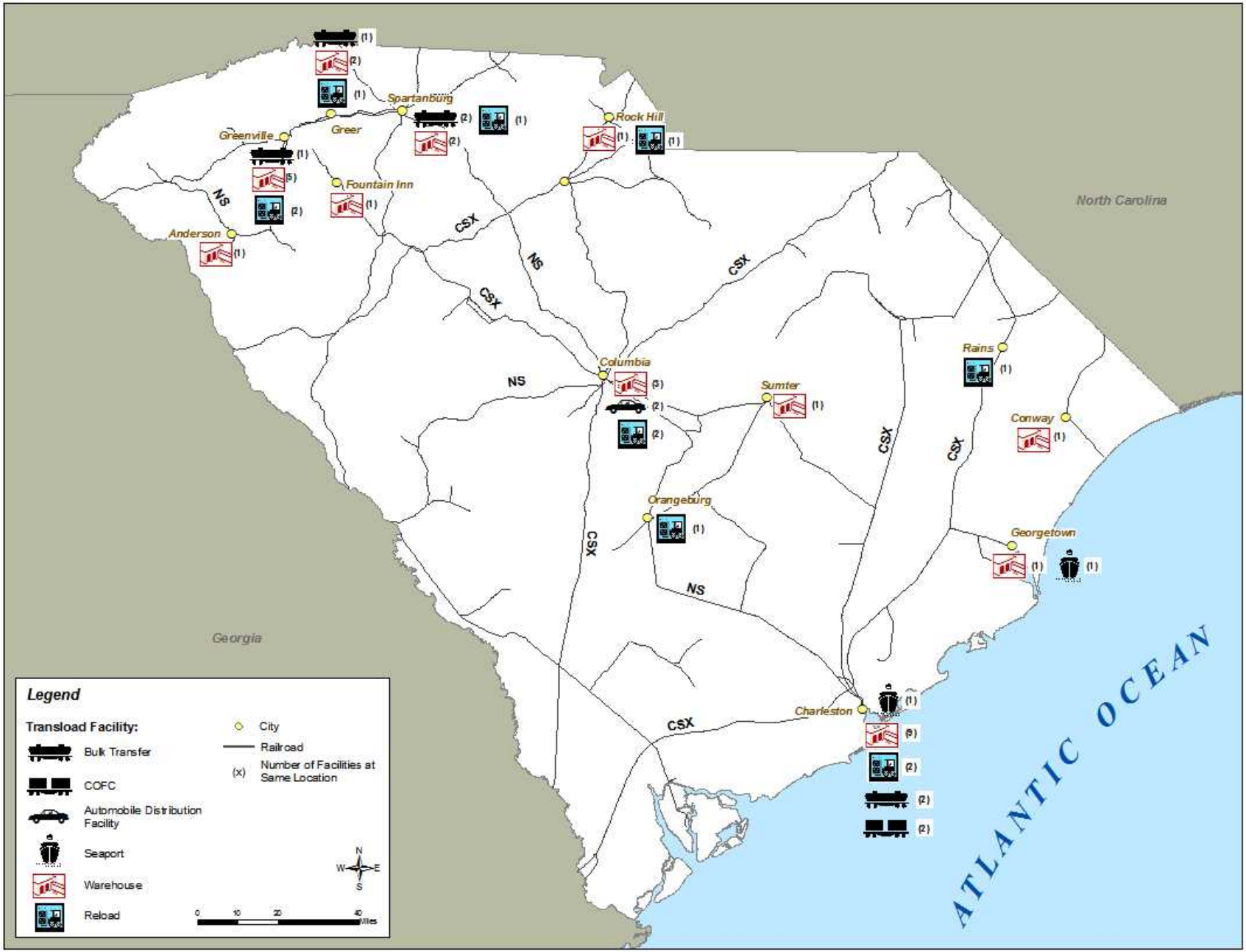


Exhibit 5-4: Intermodal Bulk, Automobile Distribution and Reload / Warehouse Locations



5.2.3 Automobile Distribution Facilities

Both railroads have automobile transload facilities in South Carolina where automobiles are unloaded from railcars and loaded on trucks for distribution. As shown in **Exhibit 5-4**, both are located in the Columbia area, with CSXT at Dixiana (TDSI Automobile Facility) and NS in Cayce (Auto Distribution Facility). There is a third similar facility located at Union Pier at the Port of Charleston. In this case, automobiles are transloaded between water (RO-RO ships) and rail cars, both import and export. They move by rail between the Port and the Upstate.

5.2.4 Reload/Warehouse Operations

There are also many other facilities located on the state's rail system where rail cars are loaded or unloaded for businesses that do not have direct rail service, and/or also provide storage or distribution services. These shipments typically involve break-bulk commodities such as lumber and other building materials, paper or consumer products. The locations of these facilities are also displayed on **Exhibit 5-4.**

5.2.5 Team Tracks

Railroads provide team tracks in many locations. These facilities typically are side tracks with varying amounts of space to transfer freight between rail cars and trucks and they may or may not also provide a dock to facilitate the transfer. They are usually available for use by the general public. The name, team track, is a hold over from the time wagons pulled by teams of horses was used instead of trucks. These facilities are located throughout the state in most communities served by rail.

5.3 Water Ports

International trade is a principal component of South Carolina's economy. A recent economic study[25] found that the South Carolina State Ports Authority (SCSPA) facilitates over $44.8 billion in total economic output annually and impacts almost 11 percent of all jobs statewide. South Carolina's railroads play a major role in landside transport relating to the state's ports, making them major intermodal partners. The rail-seaport relationship in Charleston is discussed in the following paragraphs and in much greater detail elsewhere.

5.3.1 Port of Charleston

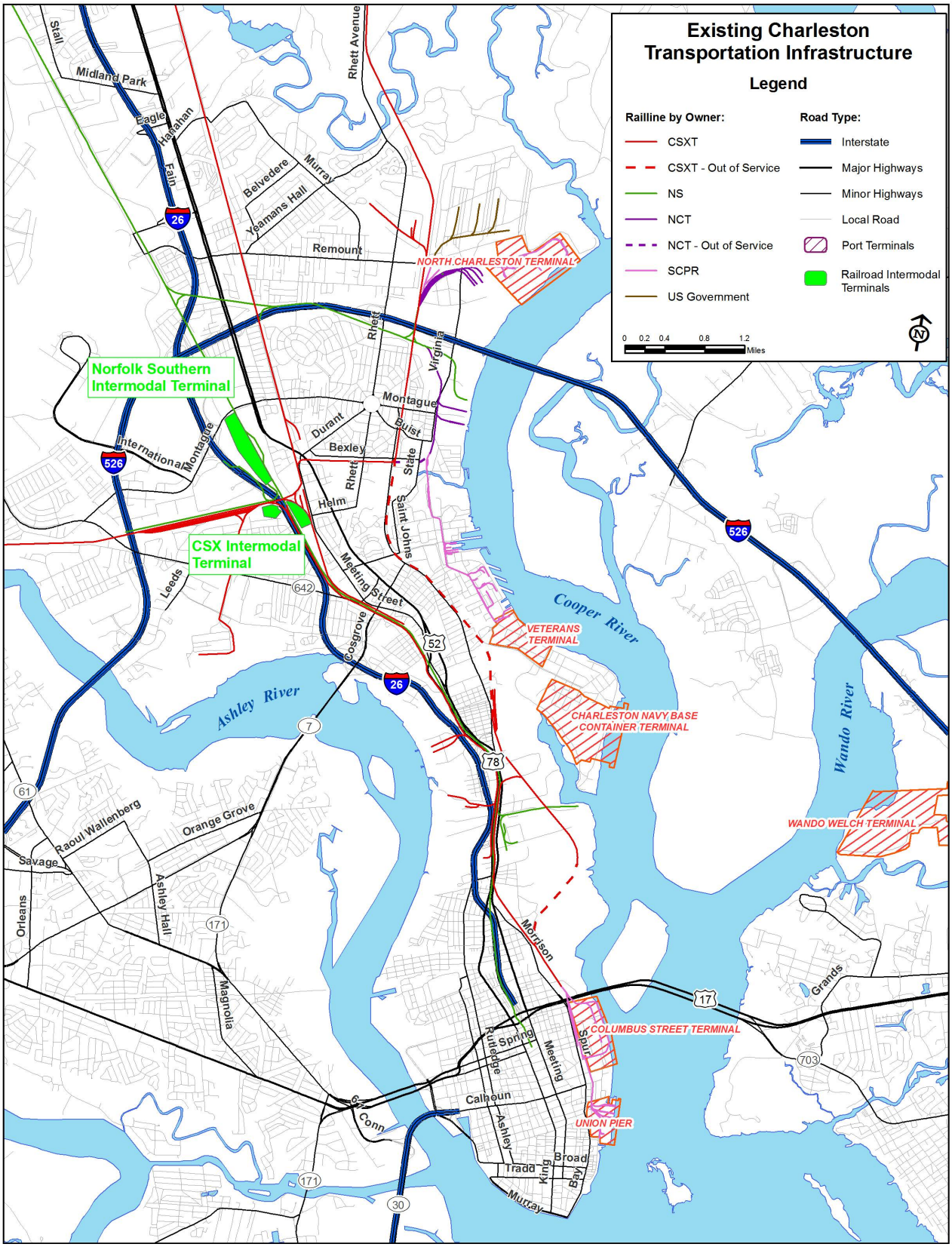
The Port of Charleston operates a number of terminals along the Cooper River and one located on the Wando River. **Exhibit 5-5** shows the Port of Charleston terminal locations.

5.3.1.1 Union Pier Terminal

The Union Pier Terminal is a dedicated break-bulk and roll-on/roll-off (RO-RO) terminal. It has on-dock rail service available from both CSXT and NS via SCPR. Much of the rail activity is generated by transportation equipment. The terminal includes four break-bulk berths with 2,470 feet of continuous berth space.

[25] *SC State Port Economic Impact Study*

Exhibit 5-5: Existing Charleston Transportation Infrastructure



5.3.1.2 Columbus Street Terminal

The Columbus Street Terminal handles a combination of container, bulk, and break-bulk cargo. The terminal also is capable of handling rolling stock, heavy-lift and project cargo. The terminal includes four break-bulk berths and two container berths along 3,500 feet of dock space. On-dock rail service is provided by SCPR with access to both NS and CSXT.

5.3.1.3 Veterans Terminal

The Veterans Terminal recently began operations in the Charleston Navel Complex. It is a dedicated bulk, break-bulk, RO-RO and project cargo facility with four piers: Pier Zulu, 1,330 feet long; Pier Mike, 1,170 feet long; Pier November, 1,330 feet long; and, Pier Lima, 952 feet long. The terminal is currently accessible by SCPR.

5.3.1.4 North Charleston Terminal

North Charleston Terminal is a container terminal with three berths totaling 2,500 feet in length. It has a container freight station as well as break-bulk and RO-RO capability. On- dock rail service is provided by SCPR, connecting with both CSXT and NS.

5.3.1.5 Wando Welch Terminal

The Wando Welch Terminal, opened in 1982, is the largest terminal in the Port of Charleston. It has 3,800 feet of continuous berth space (4 berths) and 242 acres of container storage space. It has an on-terminal container freight station, U.S. Customs and Department of Agriculture inspection facilities, immigration and maintenance facilities. The terminal is located on the Wando River and is not rail served.

5.3.2 Port of Georgetown

The Port of Georgetown, a break-bulk and bulk cargo facility with four berths totaling 1,800 feet in length, is located on Winyah Bay in Georgetown. The Port has open and covered storage, specialty cargo handling facilities (metals, cement, chemicals, aggregates, forest products and ore) and on-dock rail. Principal commodities handled are steel, cement, aggregates and forest products. Rail service is provided by CSXT from its Georgetown Subdivision.

5.3.3 Jasper County

The South Carolina State Ports Authority and the Georgia Ports Authority are examining the potential for a new marine terminal located in Jasper County, South Carolina on the Savannah River. The terminal site is located just east of and across the river from the City of Savannah, Georgia, some five miles from a CSXT branch line, which has been abandoned but remains intact. The nearest Norfolk Southern lines lie on the opposite side of the Savannah River.

5.4 Rail Passenger Intermodal

The Charleston Area Regional Transportation Authority (CARTA) has acquired 30 acres of land for an intermodal facility in North Charleston on Montague Avenue. The facility in the future will combine rail, intercity bus, transit, taxi and vanpool services. Phase 1 of the project is underway, consisting of site clearing, excavation, storm water retention, and a park and ride lot. Future development phases will depend on funding availability.

Other less advanced passenger intermodal projects are being purposed in Sumter and Florence.

6. Rail-Related Economic Impacts in South Carolina

This section quantifies the annual employment, labor income (earnings), value added, economic output, and taxes associated with the public and private firms that provide rail service in South Carolina, as well as the firms that use rail to transport goods and materials. Specifically, rail operation impacts reflect the provision of cargo handling services, and rail user impacts reflect the impacts associated with shippers/consignees that use rail to transport freight.

6.1 Approach and Methodology

The economic impacts associated with the rail movements in South Carolina are based on tonnage flow data (both volume and value), a multi-regional economic model, and Consultant analysis of the state economy and transportation system. The freight movement's assumptions and economic methodology are outlined below. All impacts are expressed in annual terms, with all impact calculations based on the latest year for which data are available, namely **2006**.

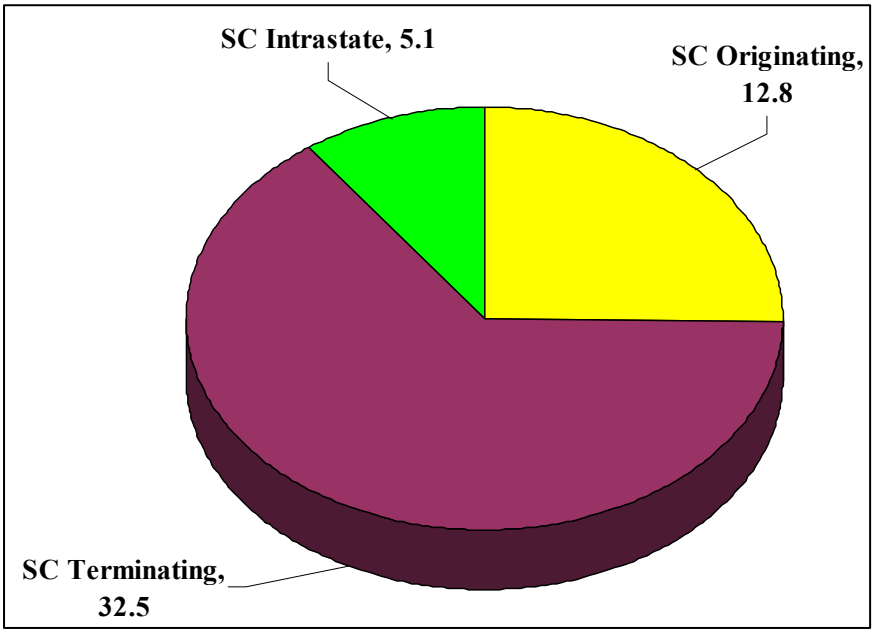
6.1.1 Rail Tonnage

These rail operation and user impacts are based on the service provided by the railroads and the tonnage shipped/received by South Carolina firms, as summarized below.

6.1.1.1 SC Rail Freight Tonnage

A total of 50.5 million tons of freight originated and/or terminated in South Carolina in 2006. These movements, summarized by direction flow in **Exhibit 6-1**, exclude the 37.9 million tons of through-state tonnage that originates ***and*** terminates outside South Carolina. It is notable that inbound tonnage flows (32.5 million) accounts for 64 percent of the flows versus outbound flows of 25 percent (12.8 million), and intra-state flows of 10 percent (5.1 million).

Exhibit 6-1: South Carolina Rail Freight Traffic Summary (Tons-Millions, 2006)



Source: Compiled from 2006 STB Waybill Sample

6.1.1.2 Port of Charleston Through-State Tonnage

Similarly, some of the 50.5 million tons of South Carolina rail freight is actually out-of-state tonnage imported or exported through the Port of Charleston. Specifically, 5.6 million tons of the South Carolina-Originating rail movements (versus the 12.8 million total) are Port of Charleston imports that are railed to terminuses out-of-state, and 3.2 million tons of South Carolina-Terminating movements (versus the 32.5 million total) are Port of Charleston exports that originate out-of-state. This distinction is important in estimating the economic impacts associated with rail users that ship goods and materials produced in South Carolina, or receive materials or components used in South Carolina production. The breakdown of Port of Charleston through-state tonnage versus other South Carolina rail flows is summarized in **Exhibit 6-2**.

Exhibit 6-2: South Carolina Rail Freight Summary by Direction (Tons-000's, 2006)

South Carolina Rail Flows	Originating	Terminating	Intra-State	Total
South Carolina Production-Related	7,147	29,338	5,146	41,631
Port of Charleston Through-State	5,625	3,209	0	8,834
Total	**12,772**	**32,547**	**5,146**	**50,465**

6.1.1.3 SC Production-Related Tonnage

Tonnage breakdown by commodity type and direction, as shown in **Exhibit 6-3**, indicates that of the 29.3 million tons of freight that arrive in South Carolina from out-of-state sources, over half of which is coal used in power generation. Comparatively, 7.1 million freight tons are railed from South Carolina, led by 1.9 million tons of pulp/paper/allied products.

Also of note is that rail movements of empty shipping containers (STCC 42) and miscellaneous mixed shipments (STCC 46) are virtually all out-of-state/Port movements. In other words, South Carolina firms are not transporting containers by rail to/from the Port.

These refined South Carolina-Production tonnage volumes provide a foundation for estimating the economic impacts associated with rail users in South Carolina. Lastly, while the 8.8 million tons of Port of Charleston through-state rail tonnage does not generate direct South Carolina user-industry impacts, the rail traffic does contribute to the overall direct rail operation impacts associated with freight handling as well as making overall rail freight in South Carolina more viable.

Exhibit 6-3: Rail Freight Tonnage by Direction and Commodity (000's, 2006)

Commodity		Total South Carolina Tonnage	South Carolina Production-Related Tonnage			
STCC	Description		Originating	Terminating	Intra-State	Total
11	Coal	17,143	0	15,225	26	15,251
14	Nonmetallic Minerals	3,323	449	2,041	832	3,322
24	Lumber or Wood Products	3,281	1,183	652	1,037	2,872
26	Pulp, Paper or Allied Products	3,165	1,902	697	99	2,698
28	Chemicals or Allied Products	4,369	1,193	1,649	616	3,458
29	Petroleum or Coal Products	3,346	0	1,783	1,062	2,844
32	Clay, Concrete, Glass or Stone	2,376	933	947	12	1,892
33	Primary Metal Products	2,301	705	388	76	1,169
37	Transportation Equipment	999	70	386	420	876
42	Shipping Containers (Empty)	263	0	0	0	0
46	Misc. Mixed Shipments (Containers)	1,997	0	0	0	0
49	Hazardous Materials or Substances	3,340	153	2,551	133	2,837
--	All Others	4,562	559	3,019	833	4,411
Total		**50,465**	**7,147**	**29,338**	**5,146**	**41,630**

Source: Compiled from 2006 STB Carload Waybill Sample

Note: Excludes the 37.9 million tons of through tonnage that originates and terminates outside South Carolina

6.1.2 Rail Tonnage Value

Tonnage value estimates by 4-digit commodity type were made based on these directional flows into, out of, and within South Carolina. These tonnage value estimates were based on value-per-ton ratios from various sources, which include the Waybill Sample and Transearch. The resulting rail tonnage value estimates by direction and commodity total $26.7 billion, as summarized by major commodity type in **Exhibit 6-4**.

The $7.3 billion worth of South Carolina-Originating volume accounts for about 28 percent of the total value, versus in-bound South Carolina-Terminating volume of $12.2 billion (46% of total). Intra-state volume accounts for $7.1 billion (27%). By commodity type, chemicals ($7.2 billion) and transportation equipment ($7.1 billion) are the most valuable commodities railed in gross value terms. At $3.1 billion, pulp & paper is also notable. Comparatively, the value of coal movements ($0.4 billion) pales in comparison despite dominating the tonnage volume movements, which reflects the low-value-to-volume nature of coal movements compared to value-added and finished goods.

Exhibit 6-4: Rail Freight Values by Direction and Commodity ($Millions, 2006)

Commodity		South Carolina Production-Related Tonnage			
STCC	Description	Originating	Terminating	Intra-State	Total
11	Coal	$0	$406	$1	$407
14	Nonmetallic Minerals	18	90	40	148
24	Lumber or Wood Products	231	259	56	546
26	Pulp, Paper or Allied Products	2,137	795	120	3,052
28	Chemicals or Allied Products	2,381	3,313	1,497	7,191
29	Petroleum or Coal Products	0	975	589	1,564
32	Clay, Concrete, Glass or Stone	185	333	3	521
33	Primary Metal Products	1,052	586	114	1,752
37	Transportation Equipment	521	2,961	3,662	7,144
49	Hazardous Materials or Substances	56	928	48	1,032
--	All Others	765	1,596	976	3,337
Total		**$7,346**	**$12,242**	**$7,106**	**$26,694**

6.1.3 Impact Categories

South Carolina rail economic impacts are categorized by the rail-operation that would most assuredly be lost without rail, versus the rail-user impacts that use rail as one of several modes to transport freight.

Rail Operation Impacts – The rail-operation impacts include a wide range of, primarily, on-terminal operations, but also include off-terminal operations associated administration. Such administration includes both private and government operators. Such service includes both the South Carolina Public Railways, as well as private sector rail carriers: namely CSX Transportation and Norfolk Southern Railway, as well as the other small Class III operators.

Rail Users – Shippers/consignees are categorized as rail users, versus those firms that coordinate shipments, and/or handle cargo at, to, or from the rail yards. The rail users have several options available to transport cargo and could possibly survive if rail services were unavailable. However, the choice to use the railroads to ship/receive cargo indicates cost and/or logistical advantages. Removal of such advantages would negatively affect rail users. For this reason, the employment and expenditure impacts associated with firms that ship/receive freight rail are estimated.

6.1.4 Impact Measures

The economic impacts associated with rail operation and users are measured in five ways: economic output, income, value added, jobs, and taxes, as defined below.

- Output – The total dollar value of all final goods and services produced.
- Value Added – The additional value of a commodity over the cost of commodities used to produce it from the previous stage of production; provides a gross-state-product (GSP) comparison.
- Income – The total dollar value of wages and salaries of employees and proprietors.

- Jobs – The number of full-time-equivalent (FTE) jobs for all industries.
- Taxes – The income and indirect business taxes associated with rail operations and rail users.

These five impact measures comprise two impact types (direct and indirect), as discussed below.

6.1.5 Impact Types

Two primary impacts types are considered: direct and multiplier impacts.

Direct Impacts – Measured in terms of employment, income, value added, and economic output, direct impacts are generated by firms or entities that ship and/or receive materials and goods by rail, or provide rail-operation transport services.

Multiplier Impacts – Multiplier economic impacts are derived using the IMPLAN Pro input-output model. The economic multiplier impacts typically include both "indirect" and "induced" impacts. *Indirect* impacts reflect support services and/or supplies provided to the firms/entities that generate direct impacts. The *induced* impacts reflect the expenditure effect of people employed directly or indirectly by rail activities. For example, the induced impact measures how income circulates through a region as people spend income on groceries, housing, entertainment, etc.

An input-output model is a structural mathematical matrix, representing the interrelations of industries within an economy. This model is used to estimate the economic impacts on an entire economy associated with expenditures in one or a group of industries. Input-output coefficients quantifiably measure the connections between industries and sectors. The coefficients are used in a mathematical structural matrix to solve a series of simultaneous equations to determine the total economic impact on an entire economy.

Multipliers are produced by an input-output model to determine the effect of a change to one industry on other industries and the economy. Multipliers are derived from the relations between industries, as the outputs of one industry are used as the inputs in other industries, or the earnings of employees from one industry are, in turn, spent within other industries (induced impact). Multipliers account for local industrial capacity to satisfy local demand while also accounting for leakages outside a regional economy. Economic multipliers are calculated for each of the economic impact measures: economic output, employment, value added, and income (earnings). Additionally, multipliers were derived for indirect business taxes, which include sales and excise taxes, custom duties, motor vehicle licenses, and property taxes, as well as other state and local fees, etc.

IMPLAN – The IMPLAN model, produced by the Minnesota IMPLAN Group, Inc., provides two components; a software system and a socioeconomic database. The software provides the necessary calculations to estimate impact changes for an industry in a particular region. The socioeconomic database provides the information needed to populate the model. The IMPLAN data and industry-accounts closely follow the conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis.

Total Impacts – Total economic impacts are the aggregation of the direct impacts and multiplier impacts derived from the input-output model and are measured in terms of output, earnings,

value added, and jobs for the impact regions. These impacts are presented separately for rail operations and rail users.

6.2 Demographic and Economic Profile

South Carolina's industry sectors, especially manufacturing, rely on transportation infrastructure to facilitate trade, sustain current growth trends, and to accommodate future economic expansion. The provision of water transport enables these key sectors, as well as others, to effectively compete in an increasingly challenging and competitive global commercial environment. This socioeconomic profiling section summarizes recent trends in population, employment, household income levels, and industry level production for South Carolina. These data provide the context from which to compare the rail economic impact findings presented in the subsequent sections.

6.2.1 Population

South Carolina is ranked as the 24th largest state in the Union in terms of resident population, as of the inter censes July 1, 2007 estimate, with 4.4 million residents[26]. Between the years 1990 and 2007, South Carolina's population increased 26.4 percent, from 3.5 million to 4.4 million persons[27], as shown below in **Exhibit 6-5**, or at an average per annum growth rate of 1.4 percent, modestly higher than the national growth over the same historical period. With 1.6 million people in 2007, the Piedmont region comprises the largest population share (37.2%) of the six sub-state regions, followed by the Midlands region, accounting for 22.7 percent (1.0 million) of the statewide total. One of the least populated regions, the Lowcountry region, with over 229,000 residents, is growing the quickest at 1.9 percent per annum between 2000 and 2007.

Exhibit 6-5: South Carolina Population Trends – 1990-2007

Geography	Population			Average Annual % Change		
	1990	2000	2007	1990 to '00	2000 to '07	1990 to '07
South Carolina						
Tri-County	506,877	549,033	630,100	0.8%	2.0%	1.3%
Lowcountry	154,475	201,265	229,382	2.7%	1.9%	2.4%
Pee Dee	534,669	620,572	680,769	1.5%	1.3%	1.4%
Aiken	188,273	218,494	226,644	1.5%	0.5%	1.1%
Midlands	815,074	932,115	1,000,368	1.4%	1.0%	1.2%
Piedmont	1,286,942	1,490,533	1,640,446	1.5%	1.4%	1.4%
Total	3,486,310	4,012,012	4,407,709	1.4%	1.4%	1.4%
United States	**248,790,925**	**281,421,906**	**301,621,157**	**1.2%**	**1.0%**	**1.1%**

Source: United States Bureau of Economic Analysis

6.2.2 Employment

South Carolina employment, in 2007, totaled almost 2.4 million, with average annual wage earnings of $36,113, as shown below in **Exhibit 6-6**. Of the major industry sectors within the

[26] U.S. Census Bureau, Population Estimates Program.
[27] Ibid.

state, the public administration sector employs the most persons, with almost 380,000 employees. Within the private sector, retail trade and total manufacturing constitute a significant percentage of total industry employment, following closely behind public administration in total employed persons, with 282,000 and 258,000, respectively. Combined service industries, i.e., NAICS industries 54 through 81, are also noteworthy sectors within the state, with the health care and social assistance services and accommodation and food services industries employing the largest share of those aggregated sectors.

Sub-state region industry sectors yield employment distributions similar to the state total, with a few minor exceptions. In the Lowcountry region, manufacturing is not as predominate as other regions of the state; but retail trade, accommodation and food services are more highly concentrated. Construction within the Lowcountry is also relatively high as a percent of total industry employment, which may be attributable to the relatively higher population growth within that region.

Exhibit 6-6: South Carolina Employment and Average Annual Wages

NAICS Industry		2007 Employment	Annual Wages
11	Agr., Forestry, Fishing & Hunting	40,266	$11,938
21	Mining	2,844	30,313
22	Utilities	12,432	86,992
23	Construction	180,532	33,475
31-33	Manufacturing	258,069	57,239
42	Wholesale Trade	76,567	55,154
44-45	Retail Trade	281,747	23,957
48-49	Transportation and Warehousing	77,754	39,366
51	Information	33,083	48,976
52	Finance and Insurance	91,472	47,332
53	Real Estate, Rental and Leasing	89,665	12,917
54	Professional and Technical Services	113,153	40,260
55	Mgmt. of Companies & Enterp.	16,648	64,063
56	Administrative and Waste Services	162,836	24,854
61	Educational Services	32,636	21,974
62	Health Care & Social Assistance	175,792	38,305
71	Arts, Entertainment, and Recreation	40,865	14,397
72	Accommodation and Food Services	192,422	16,349
81	Other Services, ex. Public Administration	133,731	18,334
92	Public Administration	379,023	51,328
	Total	**2,391,537**	**$36,113**

Source: IMPLAN and U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), obtained from the SC Commerce Workforce

Of the private sector industries, paper manufacturing sector employees are paid the highest in average annual earnings, slightly over $87,000, followed closely by employees within the utilities industry, both of which nearly double the average annual wage earnings across all industry sectors. Comparatively, the manufacturing sector, the major port user, generates average wages statewide of $57,200, with a low of $45,000 in the Lowcountry and a high of

$67,700 in the Tri-County region. Unfortunately, in 2007, South Carolina exhibited a high unemployment rate of 5.9 percent, higher than all but three other states in the Union (e.g. Alaska, Mississippi, and Michigan), as shown in **Exhibit 6-7**.

Exhibit 6-7: National and State Unemployment Rates –2007

Rank	Geography	Rate	Rank	Geography	Rate
	United States	**4.6%**	25	Pennsylvania	4.4%
1	Hawaii	2.6%	27	Indiana	4.5%
2	Idaho	2.7%	27	Massachusetts	4.5%
2	Utah	2.7%	27	New York	4.5%
4	Nebraska	3.0%	27	Washington	4.5%
4	South Dakota	3.0%	31	Connecticut	4.6%
4	Virginia	3.0%	31	Minnesota	4.6%
4	Wyoming	3.0%	31	West Virginia	4.6%
8	Montana	3.1%	34	Maine	4.7%
9	North Dakota	3.2%	34	North Carolina	4.7%
10	Delaware	3.4%	34	Tennessee	4.7%
11	Alabama	3.5%	37	Nevada	4.8%
11	New Mexico	3.5%	38	Wisconsin	4.9%
13	Maryland	3.6%	39	Illinois	5.0%
13	New Hampshire	3.6%	39	Missouri	5.0%
15	Arizona	3.8%	39	Rhode Island	5.0%
15	Colorado	3.8%	42	Oregon	5.2%
15	Iowa	3.8%	43	Arkansas	5.4%
15	Louisiana	3.8%	43	California	5.4%
19	Vermont	3.9%	45	Kentucky	5.5%
20	Florida	4.0%	46	Ohio	5.6%
21	Kansas	4.1%	47	District Of Columbia	5.7%
22	New Jersey	4.2%	48	**South Carolina**	**5.9%**
23	Oklahoma	4.3%	49	Alaska	6.2%
23	Texas	4.3%	50	Mississippi	6.3%
25	Georgia	4.4%	51	Michigan	7.2%

Source: U.S. Bureau of Labor Statistics: Local Area Unemployment Statistics

6.2.3 Income

Mean household income in 2007 is shown below in **Exhibit 6-8**, with the Lowcountry region showing the highest mean household income, followed by the Tri-County region (with mean household incomes of $90,700 and $83,400, respectively). Mean household income for the entire State of South Carolina in 2007 is $76,000, about $19,000 below the average for the entire United States.

Exhibit 6-8: South Carolina Mean Household Income – 2007

Geography	Household Income
South Carolina	
Tri-County	$83,432
Low Country	$90,694
Pee Dee	$68,680
Aiken	$75,606
Midlands	$78,084
Piedmont	$73,091
Statewide	**$76,011**
United States	**$94,884**

Source: U.S. Bureau of Economic Analysis

6.2.4 Gross State Product

South Carolina's Gross State Product (GSP), broken down by major industry sector, is presented in **Exhibit 6-9**. Between 2002 and 2007, real GSP for the state increased 10.1 percent, with the largest real growth, by industry, occurring in the information sector (64.6%), followed by retail trade and professional and technical services, respectively. While *Transportation and Warehousing* grew at 21.9 percent, more than double the state's average growth rate, *Manufacturing* fell 7.8 percent in real terms. By contrast, the United States GDP increased 14.9 percent between 2002 and 2007, from $10.0 trillion in 1998 (2000$) to $11.5 trillion in 2007 (2000$).[28]

[28] Source: Bureau of Economic Analysis

Exhibit 6-9: South Carolina State GSP (Millions 2000$) – 2002-2007

Industry		2002	2003	2004	2005	2006	2007	Change ('02 to '07)
11	Agr., Forestry, Fishing & Hunting	$843	$1,185	$1,148	$1,078	$1,222	$1,168	*38.6%*
21	Mining	168	182	198	196	207	127	*-24.4%*
22	Utilities	2,916	3,165	3,169	3,102	3,079	3,019	*3.5%*
23	Construction	5,903	5,844	5,720	5,945	5,718	4,996	*-15.4%*
31-33	Manufacturing	25,059	26,898	23,553	23,242	22,744	23,101	*-7.8%*
42	Wholesale Trade	6,668	6,663	7,157	7,532	7,650	7,872	*18.1%*
44-45	Retail Trade	9,667	10,156	10,578	11,331	11,965	12,646	*30.8%*
48-49	Transportation and Warehousing	2,701	2,774	2,948	3,123	3,264	3,292	*21.9%*
51	Information	3,169	3,331	3,823	4,400	4,884	5,217	*64.6%*
52	Finance and Insurance	5,423	5,511	5,485	5,745	6,179	6,178	*13.9%*
53	Real Estate, Rental and Leasing	12,577	12,241	12,770	12,690	13,098	13,671	*8.7%*
54	Professional and Technical Srvs.	4,777	4,943	5,486	5,773	6,097	6,494	*35.9%*
55	Mgmt. of Companies & Enterp.	620	749	1,021	896	909	841	*35.6%*
56	Administrative and Waste Srvs	3,961	4,337	4,290	4,517	4,492	4,800	*21.2%*
61	Educational Services	531	544	552	547	561	584	*10.0%*
62	Health Care & Social Assistance	6,222	6,444	6,610	6,866	7,166	7,416	*19.2%*
71	Arts, Entertainment, and Recr.	824	840	865	864	868	882	*7.0%*
72	Accommodation and Food Srvs	3,656	3,819	3,996	4,074	4,209	4,319	*18.1%*
81	Other Srvs, Ex. Public Admin	2,656	2,690	2,763	2,747	2,721	2,789	*5.0%*
99	Unclassified	17,466	17,540	17,784	18,028	18,181	18,741	*7.3%*
	Total	**$115,713**	**$119,631**	**$119,865**	**$122,542**	**$124,874**	**$127,358**	***10.1%***

Source: Bureau of Economic Analysis, U.S. Department of Commerce
[1]$Millions 2000$

6.3 Economic Impacts Findings

The South Carolina Rail affects an estimated 339,700 jobs across the state. The vast majority of the impacts arise from rail users who ship goods via the state's rail system, with the balance, 7,000 (2%) jobs, directly and indirectly attributable to rail operations. In terms of jobs, such users employ an estimated 332,700 people (98% of total jobs). These rail-operation and rail-user

impacts include the direct and multiplier (i.e., indirect and induced) impacts associated with those firms that handle freight and rail-related services.

These employment impacts, as well as the output, income, and value-added impacts are detailed below by impact category (rail operation versus rail user), as well as by impact type (i.e., direct and multiplier) and for rail users' impacts, movement directionality.

6.3.1 Rail Operation Impacts

The direct impact of South Carolina rail operations totals 2,000 jobs. The indirect and induced multiplier effect associated with rail operations yield an additional 5,000 jobs throughout the state. Combined, an estimated 7,000 people owe their jobs, directly or indirectly to the actual physical movement of freight by rail. This excludes the impacts associated with the shippers/consignees that ship/receive goods, as quantified in **Section 6.3.2**.

Rail Operations – The South Carolina rail system comprises 11 rail carriers ranging from small intrastate railroads to large rail systems serving the entire Eastern US. The line haul railroads include two Class I carriers and the other nine are either Class III carriers or terminal companies. These railroads comprise a 2007 state rail system of 2,256 miles, led by CSX Transportation (CSXT) with 1,249 route miles in SC and Norfolk Southern Railway (NS) with 679 route miles.

Direct Rail Operation Impacts – The direct impacts related to rail service and capital improvements total $505 million annually, of which $171 million is paid in the form of income to the 2,000 people directly employed by the railroads as shown in **Exhibit 6-10**. The vast majority of the direct jobs result from freight service. This includes train service personnel such as engineers and conductors, maintenance of way and signal employees, as well as those in administration/management, etc.

Exhibit 6-10: Rail-Operation Impacts – 2007

Impact Measure	Direct	Multiplier	Total
Output[1]	$505	$495	$1,000
Value Added[1]	$299	$299	$599
Labor Income[1]	$171	$196	$368
Employment	2,000	5,000	7,000

Source: Wilbur Smith Associates
Note: (1) Millions

Total Rail Operation Impacts – The multiplier impacts include the indirect and induced impacts associated with the direct rail operation impacts. The indirect impacts reflect the activities associated with the supply of products and services, while the induced impacts reflect the re-spending of wages and earnings. Specifically, the job impacts total 7,000 with labor income of $368 million and output of $1.0 billion. These estimates include the direct and multiplier effects associated with the rail service and capital improvement aspects of rail operation.

6.3.2 Rail User Impacts

In addition to the rail operation impacts detailed above, many consignees and shippers in the state heavily depend on rail service to receive and/or ship freight. In doing so, they generate significant impacts as well. While these firms are not entirely dependent on the freight shipments by rail, it is hard to envision their continued operation levels without such access. In fact, rail access is often instrumental in major manufacturing business location decisions.

If CSXT, NS, and the other railroads were unable to accommodate demand, consignees and shippers could use other modes (i.e. truck and water) to transport freight. However, the use of other modes would likely entail higher ground transport costs (due to longer transport distances, price, logistics, etc.), and could increase overall demand (and resulting handling costs) for the other modes for all users (both the diverted rail users as well as current users). The long-term result would be a migration of industry away from South Carolina to other locations with better rail accessibility.

The following analysis identifies the number of job and expenditure impacts associated with firms in South Carolina that rely on rail transport. These job and expenditure impacts are presented in terms of the direct, multiplier (i.e. indirect and induced), and total impact components.

Rail User Impacts – The direct output of rail user firms in South Carolina totals $31.0 billion annually, of which $6.0 billion is paid in the form of income to 104,300 people directly employed. The multiplier impacts associated with suppliers (e.g., "indirect") and the respending of wages (e.g., "induced") generate another $24.8 billion in output, of which $9.0 billion is paid in labor income to 228,400 jobs.

As shown below in **Exhibit 6-11,** a total of 332,700 jobs in South Carolina can be traced back to the firms that ship and or receive freight via rail in South Carolina. Of these total 332,700 jobs, approximately 32 percent (105,500 jobs) are attributable to freight that originates in SC (including intra-state movements) and 68 percent (227,200) are attributable to freight that terminates in SC. These impact estimates were derived based on the freight volumes and values previously presented in **Exhibit 6-3**.

Exhibit 6-11: Rail-User Impacts by Direction – 2007

Impact Type and Measure	Trade Direction		
	Origin./Intra	Terminating	Total
Direct			
Output[1]	$14,207	$16,825	$31,031
Value Added[1]	$3,004	$7,576	$10,580
Labor Income[1]	$1,739	$4,272	$6,011
Employment	24,600	79,700	104,300
Multiplier			
Output[1]	$9,522	$15,244	$24,766
Value Added[1]	$5,116	$9,013	$14,129
Labor Income[1]	$3,240	$5,756	$8,996
Employment	$80,900	147,500	228,400
Total			
Output[1]	$23,729	$32,069	$55,798
Value Added[1]	$8,120	$16,589	$24,709
Labor Income[1]	$4,979	$10,028	$15,007
Employment	105,500	227,200	332,700

Source: Wilbur Smith Associates
[1]$Millions

Originating and Intra-State User-Firm Impacts – The 12.3 million tons of rail freight that originates in South Carolina and is railed out-of-state (7.2 million tons) or stays within the state (5.1 million tons) is valued at $14.5 billion (see **Exhibit 6-4**) and generates an estimated $14.2 billion in direct output in South Carolina.[29] This direct output was disaggregated by industry and applied to IMPLAN multipliers to estimate the associated indirect, multiplier and total impacts associated with South Carolina goods and materials transported by rail. As also shown in **Exhibit 6-11**, the total impact associated with such movements totals $23.7 billion in output, of which $5.0 billion is paid in income to 105,500 jobs statewide.

Terminating User-Firm Impacts – The 29.3 million tons of rail freight from out-of-state that terminates in SC, valued at $12.2 billion, is used by South Carolina firms to generate $16.8 billion in direct output. Specifically, the inbound tons are used by South Carolina manufacturers, producers and others to generate materials and products. To estimate the direct output value associated with such inputs, required identifying whether the various commodities were wholesale goods of intermediate materials. In the case of intermediate materials, a markup estimate for each industry was calculated and applied. Doing so yields a direct terminating user-firm impact estimate of $16.8 billion in output and 79,700 jobs (see **Exhibit 6-11**). These direct jobs reflect those in-state jobs that depend on inbound rail freight to generate goods and materials. Including the resulting multiplier impacts (i.e., $15.2 billion in output and 147,400 jobs), the impacts associated with inbound rail freight totals $32.1 billion in output, with $10.0 billion paid to 227,200 jobs.

[29] Note that some scrap and other materials are secondary products of low value that are not directly related to output, which is why the direct output is slightly less than the tonnage value.

6.3.3 Impact Summary

Rail service is essential to the state's economy. While the basic provision of rail service generates a modest 2,000 jobs (7,000 including multiplier effects), rail user industry in the state generate 104,300 direct jobs. These firms use a myriad of other instate suppliers. Combining the direct and multiplier impacts of the rail-user related impacts of 332,700 with rail operations jobs yield a total rail-related impact of 339,700 jobs, with $15.4 billion paid in income and output of $56.8 billion.

The 339,700 jobs directly or indirectly affected by rail represent 14.2 percent of the 2.4 million jobs statewide (in 2007). The $15.4 billion earned by these employees represents 17.8 percent of South Carolina's total income (in 2007). And, the combined value-added impact, $25.3 billion, associated with the rail operations and rail users represents 16.6 percent of state gross state product (GSP). These impact summaries by type, measure, and category are summarized in **Exhibit 6-12**.

Exhibit 6-12: Rail-Related Impact Summary – 2007

Impact Type and Measure	Impact Category		
	Operation	Users	Total
Direct			
Output[1]	$505	$31,031	$31,537
Value Added[1]	$299	$10,580	$10,879
Labor Income[1]	$171	$6,011	$6,182
Employment	2,000	104,300	106,300
Multiplier			
Output[1]	$495	$24,766	$25,261
Value Added[1]	$299	$14,129	$14,428
Labor Income[1]	$196	$8,996	$9,193
Employment	5,000	228,400	232,500
Total			
Output[1]	$1,000	$55,798	$56,798
Value Added[1]	$599	$24,709	$25,308
Labor Income[1]	$368	$15,007	$15,375
Employment	7,000	332,700	339,700

Source: Wilbur Smith Associates
Note: (1) $Millions

Industry Employment Impacts by Sector – The total employment impacts are also evaluated on a sector perspective, as shown in **Exhibit 6-13**. Key observations include:

- The 55,930 retail and dealer jobs related to rail service comprise about 16 percent of sector jobs in the state. While this reflects a significant multiplier impact (indirect and induced effects), it also indicates the importance of rail-service to automobile dealerships and other retailers who transport finished goods by rail.

- The manufacturing sector in South Carolina depends on rail service with approximately 48,520 manufacturing jobs in the state being related to rail, which account for nearly 20 percent of all manufacturing jobs.
- The transportation and warehousing sector is also heavily dependent on rail service with an estimated 32,750 sector jobs directly or indirectly related to rail movements, which represents approximately 42 percent of the sector's total employment.
- The 15,410 agriculture jobs that are traceable to rail service represent 38 percent of total agriculture jobs statewide.
- At 2,490 jobs, the rail-related mining jobs account for 87 percent of total mining jobs statewide.

Exhibit 6-13: Rail-Related Employment Impacts by Industry Sector – 2007

Industry Sector	Employment
Agriculture & Forestry	15,410
Mining & Extraction	2,490
Power	4,590
Construction & Maintenance	19,560
Manufacturing	48,520
Food & Beverage	*2,480*
Textile, Apparel & Leather	*1,260*
Wood & Paper Products	*7,700*
Petro.,Chem., Plastics & Rubber	*14,490*
Non Metal Mineral Mfg. Prod.	*1,760*
Primary & Fabr. Metal Prod.	*5,640*
Misc. Equip. & Machinery	*2,920*
Machinery & Electronics	*4,740*
Transportation Equipment	*6,220*
Furniture & Miscellaneous	*1,310*
Transportation & Warehousing	32,750
Retail and Dealers	55,930
Media	2,020
FIRE	15,620
Miscellaneous Services	26,900
Education & Medical	25,900
Entertainment	4,290
Services	29,570
Government, Social, Religious & Misc.	56,150
Total	**339,700**
Percent of State Total	14.2%

Tax Impacts – Lastly, the tax impacts associated with rail-related activities totals an estimated $2.5 billion annually. These impacts include income and indirect business taxes. The income taxes include both personal and corporate taxes, while the indirect business taxes include sales and excise taxes, federal non taxes, custom duties, motor vehicle licenses, and property taxes, as well as other state and local fees, etc. These indirect business taxes are calculated using the

IMPLAN model. Conversely, the estimated income taxes are based on the calculation of an effective statewide income tax rate (both personal and corporate) per employee, based on net income taxes paid (e.g., total payments less refunds). This ratio is then applied to the rail-related employment impacts. As shown in **Exhibit 6-14**, the indirect business taxes comprise property, sales, and excise taxes.

Exhibit 6-14: Rail-Related Tax Impacts by Region ($Millions) – 2007

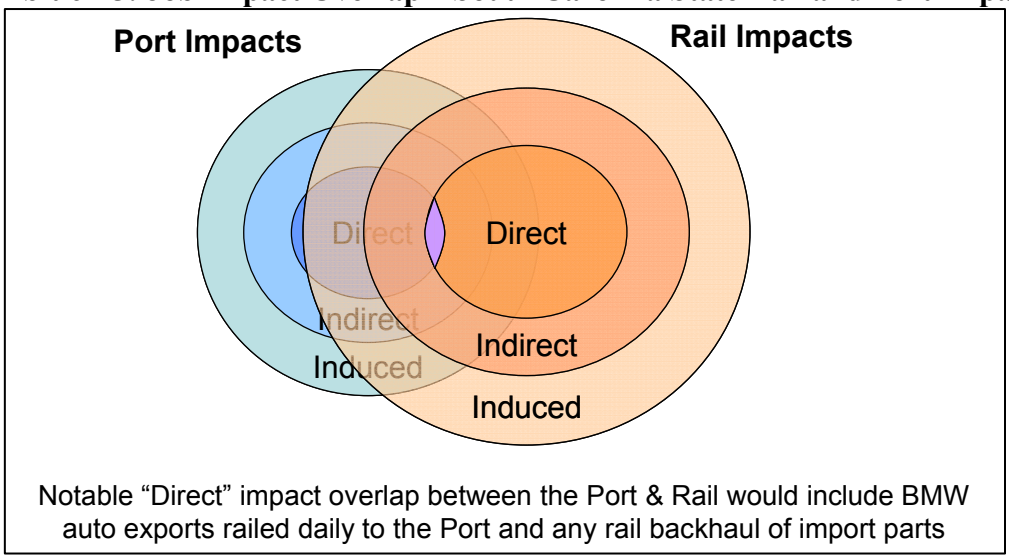
Region	Personal Income[1]	Corporate Income[1]	Indirect Business[2]	Total
Total	$276.8	$37.3	$2,166.9	$2,481.0

Source: Wilbur Smith Associates
Note: (1) Net (Gross less refunds)
(2) Includes sales and excise taxes, federal non taxes, Custom duties, motor vehicle licenses, property taxes, other state and local fees, etc

Other Recent Impact Studies – Within the last year, two other notable economic impact studies were released that tracked the economic impacts associated with BMW automobile manufacturing in the Upstate[30] and the Port of Charleston in the Lowcountry[31]. Similar to this study, both addressed the direct impacts associated with the studies central focus, as well as the related multiplier affects associated with suppliers and respending.

Manufacturing and transportation are cornerstones to each of these studies. For this reason, a fair amount of overlap exists in their impact findings, as exemplified in **Exhibit 6-15**, which shows the total job impacts associated with both the SCSPA Port-related activities (260,000 total jobs) and this rail impact study (340,000 total jobs).

Exhibit 6-15: Job Impact Overlap – South Carolina State Rail and Port Impacts



[30] *BMW in South Carolina: The Economic Impact of a Leading Sustainable Enterprise*; Division of Research, Moore School of Business; September 2008
[31] *South Carolina State Ports Authority Economic Impact Study;* conducted for The South Carolina State Ports Authority by Wilbur Smith Associates, 2008

The germane point being that the impacts associated with this rail impact study should not be added to those from other studies. Rather, each of the studies provides insight into the scale and breadth of the subject industry impact. In doing so, the existing impact of the subject industry can be better understood. Additionally, findings provide insight into the likely or potential economic consequences of expanding or contracting the subject industry's operations.

6.4 Conclusions on Rail-related Economic Impacts

The economic analysis clearly demonstrates that rail activities and services provide a vital role in South Carolina's economy. The associated employment, income, output, and tax impacts span all industries and reach every region of the state:

- In terms of employment, the 339,700 rail-related jobs represent 14.2 percent of the 2.4 million jobs statewide.
- The $15.4 billion earned by these employees represents 17.8 percent of South Carolina's total income.
- The tax impacts associated with rail-related activities totals an estimated $2.5 billion annually.
- The combined value-added impact, $25.3 billion, associated with the rail operations and rail users represents 16.6 percent of the state's gross state product (GSP).

While it would be erroneous to conclude that all of these impacts are entirely and solely dependent on rail, the findings do suggest that rail service facilitates business for a wide range of economic activities throughout the state. Specifically, these impacts highlight the magnitude of rail use by manufacturers across the state, as well as dealers, retailers, and others who transport materials, component parts, and products.

Increasingly, the globalization of trade and manufacturing require dependable and efficient access to transport facilities. Significantly, cheaper than highway, rail transport provided by the various railroads provides cost and/or logistical advantages to South Carolina firms that enable the state to compete efficiently in the global market place.