Charting a Course to 2040

SOUTH CAROLINA | MULTIMODAL TRANSPORTATION PLAN

SOUTH CAROLINA STATEWIDE RAIL PLAN

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SCDOT

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EXECUTIVE SUMMARY

The South Carolina State Rail Plan 2014 Update has been prepared for the South Carolina Department of Transportation in close coordination with the following South Carolina statewide plans that were developed in parallel in a fully integrated manner:

- 2040 Statewide Multimodal Transportation Plan (MTP);
- Interstate Plan 2014 Update;
- Strategic Corridor Plan 2014 Update;
- Public Transit and Coordination Plans; and
- Freight Plan.

The Statewide Multimodal Transportation Plan or MTP is South Carolina's Long-Range Statewide Transportation Plan as required by the current federal transportation funding legislation, Moving Ahead for Progress in the 21st Century (MAP-21).

The State Rail Plan is consistent with the MTP, the State Freight Plan and other modal plans, including adoption of common goals and objectives and a planning horizon year of 2040.

Rail Planning in South Carolina

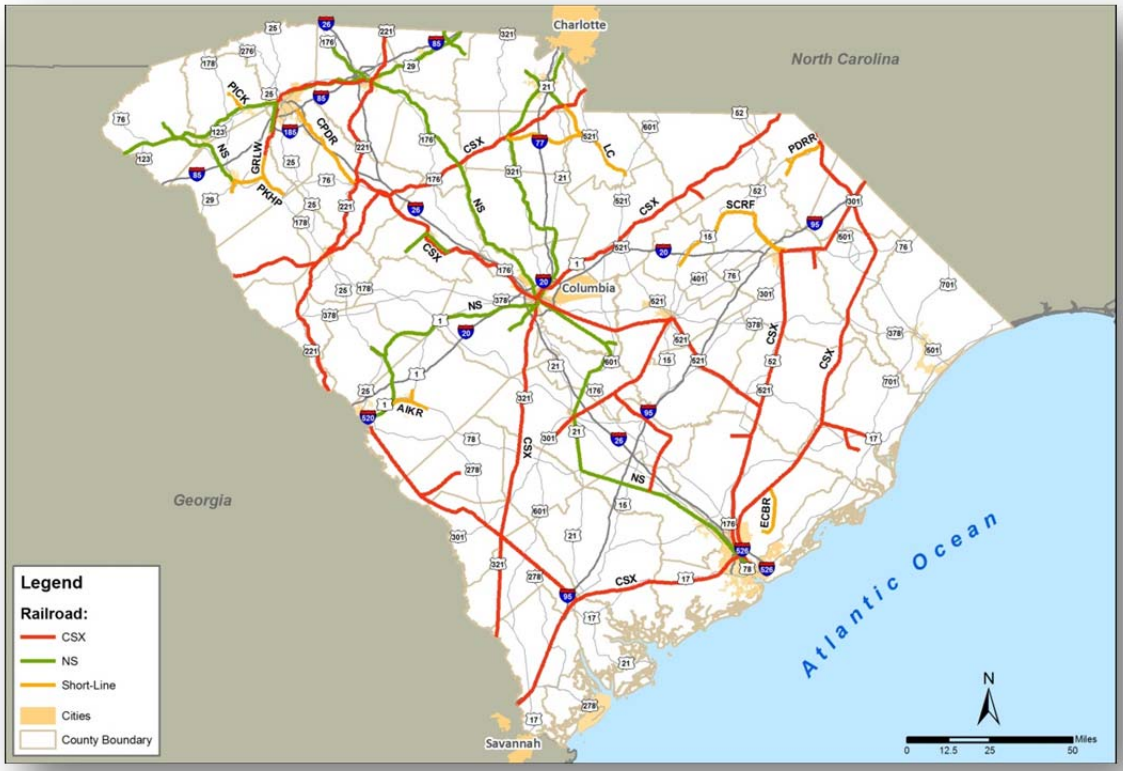
The Department of Transportation (SCDOT) is South Carolina's "State Rail Transportation Authority" as defined by the federal Passenger Rail Investment and Improvement Act of 2008 (PRIIA). SCDOT ensures that the State Rail Plan documents the state's policy on freight and passenger rail transportation – including commuter rail – within the State's boundaries, establishes priorities and implementation strategies to enhance rail service in the public interest, and serves as the basis for Federal and State rail investment.

SCDOT reviews and provides final approval of the State Rail Plan.

The Role of Freight Rail in South Carolina

The South Carolina rail system, as depicted **Figure ES-1**, is operated by 12 rail carriers. The carriers range in size from fairly small intrastate railroads to large rail systems serving the entire eastern U.S. Of the line haul railroads, two are Class I carriers and the remainder are local carriers or switching and terminal companies. The state itself is a freight railroad operator. Palmetto Railways, a branch of the South Carolina Department of Commerce, operates three railroad subdivisions. All rail lines within the state are single-tracked with the exception of the NS main track in the Upstate and the CSXT "A Line" that lies in the I-95 corridor. Neither line is completely double-tracked, but both have double-track segments of various lengths at several locations.

Figure ES-1: State Rail Map



Rail freight serves a dual role in the state's economy by providing efficient transportation of raw materials and goods for industries and businesses located here, as well as a distribution channel for products exported to other states and countries. The freight rail network in South Carolina serves an equally important role in the region's and national economies with 44 percent of rail tonnage and 60 percent of rail freight value passing through the state.

Rail tonnage is forecast to increase from 70.3 million in 2011 to 101.4 million in 2040, a cumulative increase of 44.3 percent, as shown in **Table ES-1**. A number of developments already underway in various parts of the state and region will result in an increasingly important role for rail in the state's multimodal transportation network and economy. These include a new inland port in the Upstate and an intermodal container transfer facility in Charleston.

Table ES-1: Forecast South Carolina Rail Freight Tonnage and Value

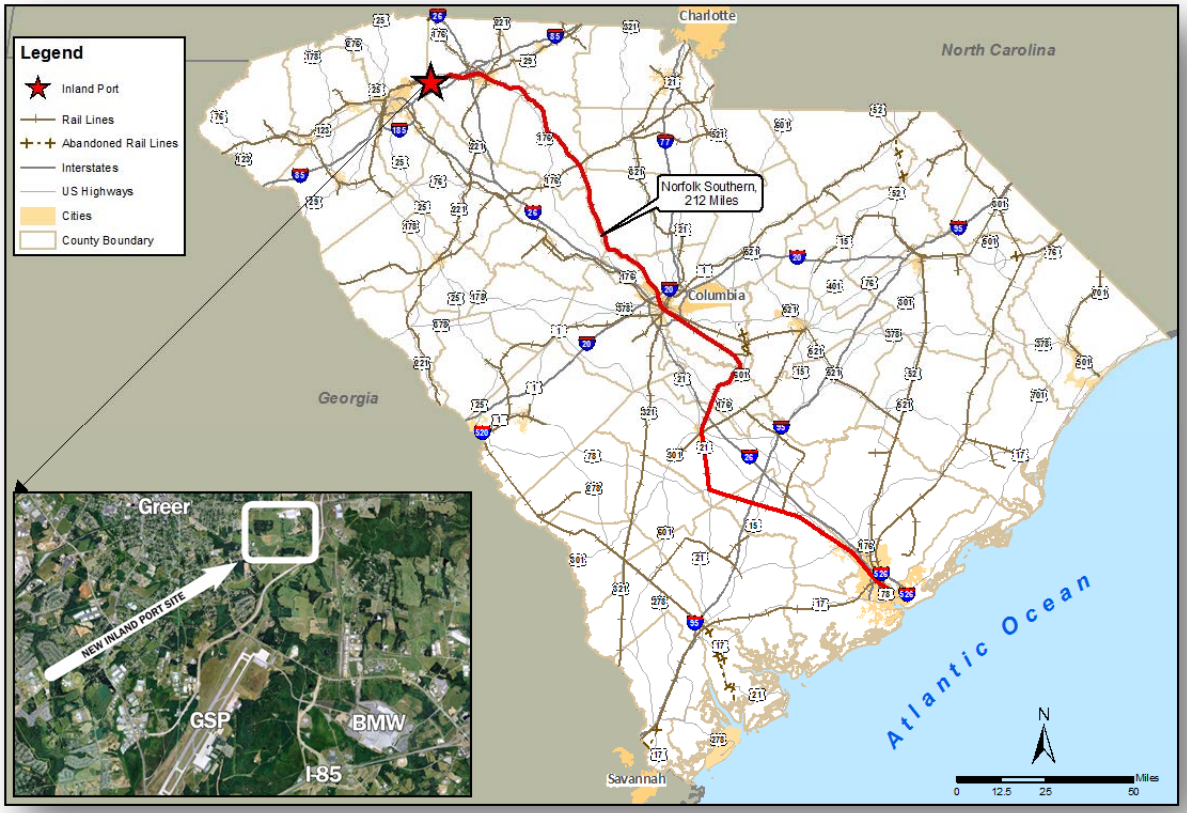
Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2011					
Outbound	8,114,084	11.5%	$11,249	14.2%	$1,386
Inbound	26,631,734	37.9%	$15,098	19.1%	$567
Intra	4,681,040	6.7%	$5,938	7.5%	$1,268
Through	30,872,783	43.9%	$46,853	59.2%	$1,518
Total	**70,299,641**	**100.0%**	**$79,137**	**100.0%**	**$1,126**
Year 2025					
Outbound	12,201,205	13.3%	$17,765	14.3%	$1,456
Inbound	31,409,789	34.2%	$25,403	20.5%	$809
Intra	7,572,991	8.3%	$14,742	11.9%	$1,947
Through	40,564,508	44.2%	$66,050	53.3%	$1,628
Total	**91,748,492**	**100.0%**	**$123,960**	**100.0%**	**$1,351**
Year 2040					
Outbound	14,680,693	14.5%	$19,905	14.9%	$1,356
Inbound	32,300,623	31.8%	$24,016	18.0%	$744
Intra	7,671,510	7.6%	$9,181	6.9%	$1,197
Through	46,790,954	46.1%	$80,589	60.3%	$1,722
Total	**101,443,780**	**100.0%**	**$133,691**	**100.0%**	**$1,318**

Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011, 2025, and 2040

Rail Served Inland Container Port - The South Carolina Ports Authority (SCPA) opened a rail-served container terminal at Greer in October 2013 to provide overnight service between the Port of Charleston and the rapidly developing I-85 corridor. The inland port built upon the existing nightly double-stacked container service between Atlanta and the Port of Charleston. The inland port's location and NS rail connection to the Port of Charleston is shown in **Figure ES-2** The SCPA FY 2012 capital budget included $23.5 million for the project[1] being jointly developed with Norfolk Southern Railway, which invested $7.5 million. The impetus for the project was an initial 20,000-25,000 containers annually from BMW expected by SCPA to grow to 50,000 within three years and remove the corresponding number of trucks from the highway.

[1] SCPA press release, 7-9-12.

Figure ES-2: Inland Port Location in Greer



Intermodal Container Transfer Facility with Dual Rail Access - In Charleston, developments include the planned expansion of the Port of Charleston involving harbor deepening, a new three berth container terminal, and a new intermodal container transfer facility with dual access for the State's two Class I railroads. The new 280-acre, 3-berth container terminal is under construction on the Charleston Naval Complex. The 171-acre first phase of construction is scheduled for completion in 2018.[2] When fully developed, the terminal will increase the Port's capacity by 50 percent. A rendering of the new terminal is shown **Figure ES-3**. A recent agreement between the state of South Carolina and the City of North Charleston will permit rail access from both the north and south for a proposed intermodal container transfer facility that will serve the Ports Authority's container terminals and thereby provide dual access to the Class I carriers.

[2] *South Carolina Port Guide*, second edition, SCSPA, p. 30.

Figure ES-3: Rendering of the Built-Out New Container Terminal at Port of Charleston

Source: South Carolina Ports Authority

Key issues Impacting Freight Rail Service

Based on input gathered from the plan's outreach process, four principal issues were identified, namely intermodal traffic, infrastructure and expansion, grade crossings, and funding.

Intermodal – Intermodal rail traffic is growing significantly for the state's two Class I railroads. Issues raised included lack of facilities, capacity, access, and local impacts. Two current projects, the inland port at Greer and the planned North Charleston Intermodal Container Transfer Terminal (ICTF) will add facilities and increase capacity for the handling of containers. Including the two terminals in Charlotte (one for each of the Class I railroads), no part of the state will lie more than 100 miles from such a facility, and much of the state will have more than one option within that radius. However, there are suggestions that additional inland terminals be considered, and from public and business perspectives, roadway access needs to be addressed in terms of both adequacy and community impacts.

Infrastructure – Comments involving preservation and expansion of the rail network were principally related to industrial development potential and growth. Improvements can consist of capacity increasing projects such as adding passing or second tracks on mainlines, improving train control signal systems, or clearances, for example. Extension of tracks to reach new industries or add connections also fall into the same category.

Although rail line abandonments have been rare in South Carolina of late, there are currently four line segments in the process of, or in danger of, being abandoned. All of these segments belong to short line carriers:

- Hampton and Branchville Railroad Company – currently out of service following the closure in November 2013 of SCE&G's Canaday's Station power plant, which was their major customer.
- Pickens Railroad Company – filed an abandonment application for the 8.5 mile long original Pickens Railroad (PICK) from Pickens to the Norfolk Southern interchange at Easley following the end of operations in April 2013.
- Carolina Southern Railroad Company - currently out of service due to bridge deficiencies. The entire railroad is 75.5 miles in length serving both Carolinas with 51 miles located in South Carolina.
- South Carolina Central Railroad – one segment that connected and interchanged traffic with CSXT at Cheraw and extended southward to Society Hill (12.8 miles) is no longer in service and abandonment has been approved but not yet implemented.

Grade Crossings – Safety, rail-highway conflicts and need for grade separations comprised grade crossing related comments.

Funding – There is no dedicated source of state funding for rail projects. If funding were available, additional comments on the subject suggested expenditures should be subjected to cost-benefit analyses and prioritized. Included in the prioritization process was a suggestion that assistance be directed at system components generating South Carolina rail traffic rather than through traffic.

Opportunities to Address Freight Rail Needs and Issues

There are a number of opportunities to address some of the issues and/or add to the rail system's effectiveness.

The improved Panama Canal will soon permit larger ships to reach east coast ports, which include Charleston. The deepening of the harbor at Charleston required to handle the large ships is gaining traction. A new marine container terminal is being constructed with a near-dock rail ICTF. Both projects will increase the flow of containers through the port and will provide rail carriers an opportunity to increase intermodal traffic to/from the port.

Construction of the Greer inland port and the consideration of others, offer an opportunity to decrease highway truck trips; reduce congestion and associated economic, safety and environmental impacts; reduce pavement maintenance and replacement; and the need for capacity improvements.

Rail corridor improvement initiatives offer operating efficiency opportunities, such as CSX's I-95 Corridor, its "A line" from Florida to the Northeast, and NS' Crescent Corridor, the railroad's main track from the Northeast to New Orleans. In addition, they provide the public a vehicle to address grade crossing issues and reduce vehicular traffic on paralleling interstates (I-95 and I-85 respectively) by attracting additional rail traffic from the highways.

The improving economy and the state's recent success in recruiting new rail dependent industry will increase demand for rail transportation, and expansion of existing industries bodes well for the railroads. It also bodes well for the public in keeping increased traffic off of the highways. Preservation and improvement of light density lines, principally short line railroads, provide access to potential industrial sites, as well as maintaining transportation alternatives for existing businesses.

Funding – It will not be possible to take advantage of the opportunities identified without addressing state funding for projects. South Carolina needs a dedicated source of monies above federal contributions (for grade crossing improvements). As demonstrated throughout this report, many public and private railroad benefits can result, which creates opportunities for public and private project funding participation.

Proposed Freight Rail Improvements and Investments

CSX Transportation – CSX Transportation (CSXT) is South Carolina's largest railroad with 1,269 route miles. CSXT's needs and improvements to address them are generally steered toward grade crossings, line capacity additions, and bottleneck issues, as well as industrial development potentials. For purposes of identifying needs and planning rail line improvements, CSXT classifies each of their lines into one of three categories (core, strategic, and non-strategic). Typically CSXT line improvement needs are identified, planned and, in some cases implemented, in a shorter time frame than the five-year cycle for updating state Rail Plans. In the absence of a freight rail funding program in South Carolina, CSXT improvement projects have in the past been primarily privately funded, with applications for Federal grants being submitted when the improvement projects comply with the necessary federal requirements.

Norfolk Southern – Norfolk Southern (NS) operates 679 route miles in South Carolina. NS's needs and improvements are similar in nature to those of CSXT, including grade crossings, line capacity additions, bottleneck issues, and industrial development potentials. In addition to the planned ICTF project in Charleston, NS is interested in the Assembly Street Corridor project in Columbia, which is currently on hold due to lack of funding and coordination issues.

Short Line Railroads – All short line railroads operating in the state were contacted to update the short line needs previously identified in the 2008 State Rail Plan. These needs, totaling almost $250 million, were grouped into three types of improvements, as shown in **Table ES-2**. Over 60 percent of short line needs fall in the Capacity/Service group. One project is the planned Intermodal Container Transfer Facility (ICTF) in North Charleston near the Port of Charleston's new 280-acre, 3-berth container terminal under construction on the Charleston Naval Complex, which accounts for over half of the identified needs. This terminal will be operated by Palmetto Railways and will serve the Ports Authority's container terminals and provide dual access to the two Class I carriers.

Table ES-2: Short Line Railroad Needs by Improvement Category

Type of Needs	Needs (Millions)
Rehabilitation	$91.8
Capacity / Service	$153.0
Safety	$3.4
Short Line Total	**$248.2**

Excluding the North Charleston ICTF since it principally benefits the Class I carriers, short line needs total $118.3 million, $91.8 million of which (78 percent) are rehabilitation projects.

The average cost of the 20 short line improvement projects, excluding the ICTF, is estimated at $5.9 million. These projects, while comparatively modest in scale and cost, can have significant beneficial impacts on the local, regional and state economy – making them candidates for existing or new state funding programs where economic benefits have a high priority among selection criteria.

Freight Rail Strategies

Freight rail strategies incorporated in the Statewide Multimodal Transportation Plan and the Freight Plan, include:

- Reduce freight bottlenecks that cause significant freight congestion by investing in rail improvements that improve safety and travel times.
- Coordinate with the South Carolina Ports Authority and the Department of Commerce and develop a formal mechanism to purchase abandoned rail right-of-way that has been identified as having future freight transportation applications.

Existing Passenger Rail Services

South Carolina is currently served by eight Amtrak daily trains running in north bound and south bound over three routes, all of which connect the South with the Northeast. These routes operate on lines owned by freight railroads (one NS and two CSXT).

Amtrak's South Carolina service consists of the following four daily services. Each service offers one round trip daily with multiple stops in South Carolina:

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

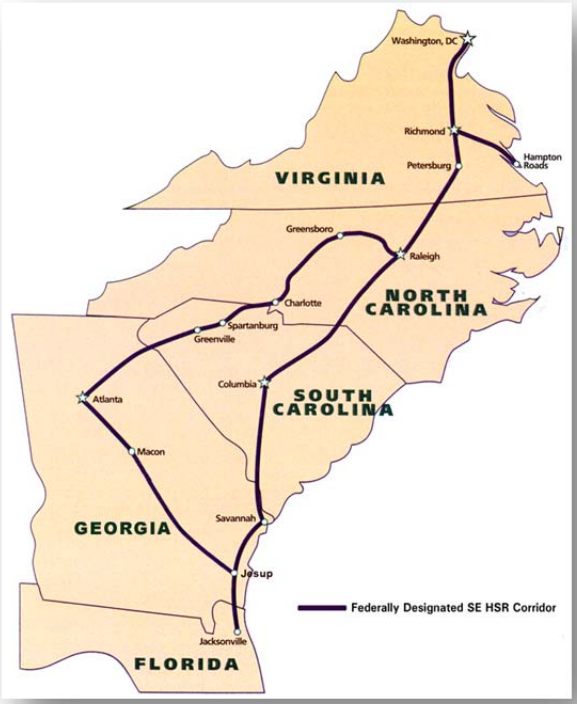
There are currently no commuter rail services operating in the state.

Proposed Passenger Rail Services

High Speed Rail – Georgia DOT, in partnership with South Carolina DOT and North Carolina DOT, are leading development of a Tier I EIS for a high speed rail corridor between Charlotte and Atlanta that passes through the state's Upstate region roughly parallel to I-85. This Passenger Rail Corridor Investment Plan (PRCIP), which is scheduled for completion in mid-2015, is part of a larger high-speed rail initiative on the behalf of the Federal Railroad Administration (FRA) that extends north to Washington, DC and is commonly referred to as the Southeast High Speed Rail (SEHSR) Corridor (**Figure ES-4**).

The purpose of the Atlanta to Charlotte PRCIP is to improve intercity travel and mobility between Atlanta and Charlotte by expanding the region's transportation capacity and reliable mode choices through improvements in passenger rail services. This corridor will also be an important extension to the planned SEHSR Corridor system developing important linkages to other metropolitan areas along the East Coast (Washington, D.C., New York and Boston). Investment in passenger rail is an essential part of the region's multimodal transportation system and its ability to support population and economic growth throughout the SEHSR Corridor network.

Figure ES-4: Southeast High Speed Rail Corridor



Source: North Carolina DOT.

The projected increases in population and economic growth for the Piedmont Atlantic Megaregion create a need for a carefully planned approach to improving rail infrastructure that will benefit Georgia, South Carolina, North Carolina, the southeastern United States and the nation.

Charlotte to Columbia Passenger Rail Corridor – Two of the alignments being evaluated in the Charlotte to Atlanta PRCIP study connect Charlotte, NC with Columbia. One proposed alignment follows an existing CSX freight line, while the other is a Greenfield alignment roughly parallel to I-77. Regardless of whether high-speed rail service is found to be feasible, interest has been expressed in passenger rail service between Charlotte and Columbia that would connect to the expanding passenger rail network being developed in the Charlotte region.

Proposed Commuter Rail Services – Commuter rail or rail-transit efforts have been investigated in five areas of the state, primarily in urban regions. As a result of the investigations, proposals are being advanced in two urban regions (Charleston and Greenville) and one has selected Bus Rapid Transit over commuter rail (Rock Hill). Commuter rail corridors are not currently being considered in the other two urban areas (Columbia and Anderson).

Charleston – In 1990 the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) conducted a Commuter Rail Feasibility Study that concluded that the I-26 corridor was developing trends that might eventually support commuter rail service. In 2005, the Charleston Area Regional Transit Authority (CARTA) reopened the study to re-evaluate those trends. Having found that they

were still valid and the region becoming transit supportive, the subject of promoting commuter rail planning was transferred back to BCDCOG.

Since the 2005 study BCDCOG has conducted studies for commuter rail service on two routes in the Charleston Metropolitan Area. In October of 2008, financial assistance was requested from the South Carolina Transportation Infrastructure Bank to enable the planning and eventual construction of a commuter rail system connecting the suburban areas of Summerville, Goose Creek and Monks Corner to the central business districts of North Charleston and Charleston. It has been proposed that this commuter rail system be considered in two phases:

- Phase 1: Summerville – Charleston, predominantly on the NS corridor; and
- Phase 2: Moncks Corner – Goose Creek – Charleston, predominantly on the CSXT corridor.

This regional system envisioned connecting growing suburban communities with the urban centers of the Charleston region, providing an alternative mode of transportation for the area's workforce and relieving congestion during the peak times on I-26.

Greenville – In 2009, Greenville County Economic Development Corporation (GCEDC) initiated the Multimodal Transit Corridor Alternatives Feasibility Study focused on a 3.42-mile section of inactive freight rail line extending from N. Pleasantburg Road in Greenville to just north of Mauldin. This line segment is owned by GCEDC. The study was completed in March 2010. Four transit alternatives were considered, including commuter rail, light rail transit (LRT), streetcar and Bus Rapid Transit (BRT). The study envisioned a commuter rail option using existing tracks from Fountain Inn to eastern Greenville at Forester Road. The service then would continue on the rail corridor owned by GCEDC into Greenville. Of the four alternatives, BRT was ranked highest and was recommended.

Opportunities to Address Passenger Rail Needs and Issues

Implementation of commuter rail service in congested metro areas provides an opportunity to reduce associated highway congestion and adverse impacts such as maintenance and replacement. The location of parts of the state in the predicated 2050 Piedmont Atlantic Megaregion increases opportunities for intercity passenger service by high-speed or other rail technologies, on a regional basis within the megaregion, as well as long distance travel between megaregions.

Passenger Rail Strategies

Strategies related to passenger rail that have been incorporated in the Statewide Multimodal Transportation Plan, include:

- Coordinate with appropriate federal, state agencies and rail providers to advance passenger rail service from Charlotte to Atlanta through the Upstate of South Carolina.
- Coordinate with MPOs, COGs, state agencies and rail partners to explore initial intercity passenger rail feasibility studies for identified corridors in the state.

- Partner with FTA, MPOs, COGs, and transit providers to implement approved premium transit services in urban areas.
- Continue to coordinate with railroad companies to ensure that no right-of-way is abandoned and lost for future public use.
- Coordinate with the MPOs, COGs, and transit providers to identify funding to purchase abandoned rail right-of-way that has been identified as having future passenger rail transportation applications.

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1 THE ROLE OF RAIL IN STATEWIDE TRANSPORTATION

The South Carolina State Rail Plan has been prepared for the South Carolina Department of Transportation in close coordination with the following South Carolina statewide plans that were developed in parallel in a fully integrated manner:

- 2040 Statewide Multimodal Transportation Plan (MTP);
- Interstate Plan;
- Strategic Corridor Plan;
- Public Transit and Coordination Plans; and
- Freight Plan.

The Statewide Multimodal Transportation Plan or MTP is South Carolina's Long-Range Statewide Transportation Plan as required by the current federal transportation funding legislation, Moving Ahead for Progress in the 21st Century (MAP-21).

This State Rail Plan is consistent with and contains all elements required under Chapter 227 of Title 49, as enacted in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). While development of this Plan began before issuance of Draft State Rail Plan Guidance by the Federal Railroad Administration (FRA) in August 2012 and was being drafted at the time Final Guidance was issued in September 2013, the Plan has been structured to the extent possible in line with that guidance to simplify future Plan updates that will comply with legislation and FRA guidelines current at that time.

The Plan updates the previous plan of 2008, which had been developed to comply with Title 49, Part 266.15 and Requirements for a State Rail Plan. The 2008 Rail Plan was under development before enactment of PRIIA.

1.1 South Carolina's Goals for Multimodal Transportation

The state's goals for the multimodal transportation system have been identified in South Carolina's 2040 Statewide Multimodal Transportation Plan. These goals build upon the Multimodal Transportation Plan Vision:

Safe, reliable surface transportation and infrastructure that effectively supports a healthy economy for South Carolina.

- **MOBILITY AND SYSTEM RELIABILITY GOAL:** Provide surface transportation infrastructure and services that will advance the efficient and reliable movement of people and goods throughout the state.

- **SAFETY GOAL:** Improve the safety and security of the transportation system by implementing transportation improvements that reduce fatalities and serious injuries as well as enabling effective emergency management operations.
- **INFRASTRUCTURE CONDITION GOAL:** Maintain surface transportation infrastructure assets in a state of good repair.
- **ECONOMIC AND COMMUNITY VITALITY GOAL:** Provide an efficient and effective interconnected transportation system that is coordinated with the state and local planning efforts to support thriving communities and South Carolina's economic competitiveness in global markets.
- **ENVIRONMENTAL GOAL:** Partner to sustain South Carolina's natural and cultural resources by minimizing and mitigating the impacts of state transportation improvements.
- **EQUITY GOAL:** Manage a transportation system that recognizes the diversity of the state and strives to accommodate the mobility needs of all of South Carolina's citizens.

Each of these goals has a series of objectives, guiding principles, and performance measures that tie the conceptual elements of the vision and goals to actual program and project implementation.

Moving Ahead for Progress in the 21st Century (MAP-21) identified additional goals for a statewide freight plan. Since the freight rail mode is an integral part of the state's freight transport system, the six national goals below are incorporated into the State Rail Plan. National goals have been integrated into the above goals established for the SMTP as objectives and guiding principles of the State Rail Plan goals.

Goals in the National Freight Policy established in 23 U.S.C. 167

1. Improving the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness
2. Reducing congestion on the freight transportation system
3. Improving the safety, security, and resilience of the freight transportation system
4. Improving the state of good repair of the freight transportation system
5. Using advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system
6. Reducing adverse environmental and community impacts of the freight transportation system

1.1.1 Rail Plan Goals and Objectives

The South Carolina State Rail Plan fully supports the specific goals, with associated Objectives, Guiding Principles, and Performance Measures shown in **Table 1-1** through **Table 1-6.**

Table 1-1: Mobility and System Reliability Goal

Objective	Potential Measure
Reduce the number of system miles at unacceptable congestion levels [1]	Miles of NHS and state Strategic Corridor System above acceptable congestion levels
Utilize the existing transportation system to facilitate enhanced modal options for a growing and diverse population and economy	% change in tonnage moved by freight rail % change in rail passenger trips
Guiding Principles	
Improve cost efficiency of intermodal goods movement, increasing diversity in modal choice.	
Encourage availability of both rail and truck modes to major freight hubs (ports, airports, intermodal facilities)	
Use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system. [2]	

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 1-2: Safety Goal

Objective	Potential Measure
Improve the safety, security, and resilience of the freight transportation system [2]	FRA Reportable Railroad Incidents
Reduce rail grade crossing crashes involving fatality or serious injury. [1]	Fatalities and injuries in rail grade crossing accidents. Percent of crossings with active safety warning devices installed

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 1-3: Infrastructure Condition Goal

Objective	Potential Measure
Maintain or improve the current state of good repair of rail components of the freight transportation system [2]	Miles of rail lines identified as out of service due to condition
Guiding Principles	
Improve prioritization of “last mile” infrastructure to intermodal facilities.	
Recognize the importance of infrastructure condition in attracting new jobs to South Carolina by considering economic development when determining improvement priorities. [1]	
Encourage availability of both rail and truck modes to major freight hubs (for example ports, airports and intermodal facilities). [1]	
Continue to coordinate with the Palmetto Railways to consider road and rail improvements needed to support the efficient movement of freight between the Inland Port and the Port of Charleston and between port terminals.	

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 1-4: Economic and Community Vitality Goal

Guiding Principles
Work with economic development partners to identify transportation investments that will improve South Carolina's economic competitiveness. [1]
Encourage availability of both rail and truck modes to major freight hubs (ports, airports, and intermodal facilities). [1]
Partner with public and private sectors to identify and implement transportation projects and services that facilitate freight movements. [1]
Encourage rail improvements that will improve connectivity and reliability of freight movement to global markets. [1]
Improve the contribution of rail components of the freight transportation system to economic efficiency, productivity, and competitiveness. [2]
Increase public awareness of the significance of goods movement and freight transportation infrastructure on SC economic sustainability and growth.
Partner with communities to improve "last mile" planning efforts in urban communities to minimize the impact of goods movement and improve efficiencies.
Raise profile of integrated multi-agency, state level freight planning.
Explore public-private investment in supporting rail transportation infrastructure.

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 1-5: Environmental Goal

Guiding Principles
Reduce adverse environmental and community impacts of rail components of the freight transportation system. [2]
Work with environmental resource agency partners to explore the development of programmatic mitigation in South Carolina [1]
Partner to be more proactive and collaborative in avoiding versus mitigating environmental impacts. [1]

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 1-6: Equity Goal

Guiding Principles
Ensure broad based public participation is incorporated into all planning and project development processes related to rail infrastructure improvements, maintenance and operations. [1]
Ensure planning and project selection processes adequately consider rural accessibility and the unique mobility needs of specific groups

Notes:
[1] Included in MTP Goals and Performance Measures

1.2 The Role of Rail Transportation in South Carolina

1.2.1 Rail Freight

Rail freight serves a dual role in the state's economy by providing efficient transportation of raw materials and goods for industries and businesses located here, as well as a distribution channel for products exported to other states and countries.

The freight rail network in South Carolina serves an equally important role in the regional and national economies with 44 percent of rail tonnage and 60 percent of rail freight value passing through the state.

South Carolina rail movements in 2011 totaled 70.3 million tons, valued at $79.1 billion, and carried within 1.3 million units (see **Table 1-7**). On average, total rail commodity movements are valued at $1,126/ton. Through-State rail movements are the largest directional movements: 43.9 percent of total tonnage, 59.7 percent of units, and 59.2 percent of value. Inbound rail tonnage (26.6 million) is significantly greater than outbound (8.1 million); however, value is closer ($15.1 billion inbound versus $11.2 billion outbound) due to the notably higher average value/ton of outbound ($1,386) versus inbound ($567).

Table 1-7: South Carolina Rail Freight by Direction (2011)

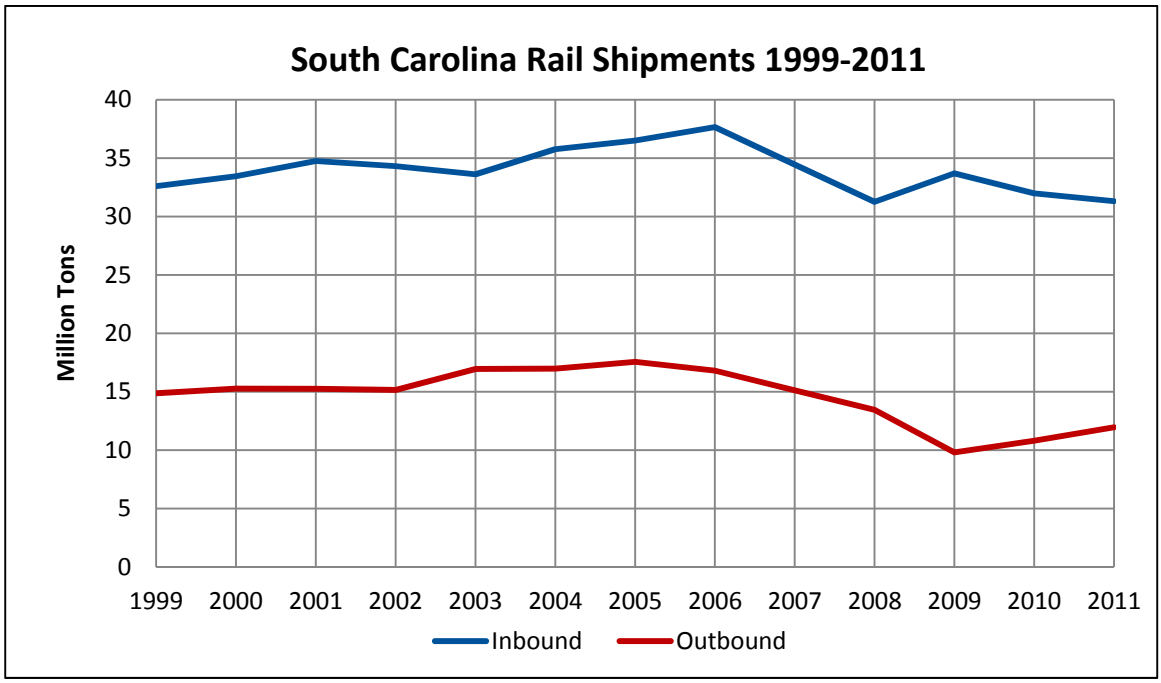
Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Outbound	8,114,084	11.5%	132,876	10.3%	$11,249	14.2%	$1,386
Inbound	26,631,734	37.9%	326,686	25.2%	$15,098	19.1%	$567
Intra	4,681,040	6.7%	62,648	4.8%	$5,938	7.5%	$1,268
Through	30,872,783	43.9%	772,568	59.7%	$46,853	59.2%	$1,518
Total	**70,299,641**	**100.0%**	**1,294,778**	**100.0%**	**$79,137**	**100.0%**	**$1,126**

Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

1.2.2 Rail Traffic Growth

Figure 1-1 illustrates the historical trends in inbound and outbound rail tonnages for South Carolina. Inbound traffic has exceeded outbound by a factor that has ranged from 2.0 to 3.4 in the period from 1999 to 2010. Coal has been the most significant inbound commodity in terms of weight throughout this period. For outbound traffic lumber and wood products was the leading commodity for the first five years. Since then chemicals has been the leading commodity by weight in five of the six years from 2004 to 2010.

Figure 1-1: Rail Traffic Growth



**2007 Data are not available. Values shown are average of 2006 and 2008.*
Source: United States Dept. of Transportation, Research and Technology Administration, Bureau of Transportation Statistics, State Transportation Statistics

1.2.3 The Rail System's Impact on the State Economy

The significant role played by rail in the state's transportation system is demonstrated by the economic impacts of rail in terms of employment, income, output, and taxes, which span all industries and reach every region of the state. Rail service facilitates business for a wide range of economic activities throughout the state, including manufacturers, 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. Rail transport provides cost and/or logistical advantages to South Carolina firms that enable the state to compete efficiently in the global market place. Rail transport is playing an increasingly valuable role in serving the state's major economic growth areas, such as the Charleston region, including the Port of Charleston, and the I-85 corridor in the upstate.

1.2.4 Rail's Increasing Future Role

As discussed elsewhere in this Plan, as well as in the South Carolina Freight Plan, a number of developments already underway in various parts of the state and region will result in an increasingly important role for rail in the state's multimodal transportation network and economy.

These developments include the planned expansion of the Port of Charleston involving harbor deepening, a new three berth container terminal, and a new intermodal container transfer facility with dual access for the State's two Class I railroads. An inland port, which commenced operations in

October 2013, has been developed in Greer in the upstate of South Carolina to provide overnight service between the Port of Charleston and the rapidly developing I-85 corridor. The inland port built upon the existing nightly double-stacked container service between Atlanta and the Port of Charleston.

While less advanced in planning than the rail freight projects mentioned above, the federally designated Southeast High Speed Rail Corridor passes through South Carolina. Georgia DOT, in partnership with South Carolina DOT and North Carolina DOT, are leading development of a Tier I EIS for a high speed rail corridor between Charlotte and Atlanta that passes through the state's Upstate region roughly parallel to I-85.

1.3 Institutional Governance Structure of the State Rail Programs

The South Carolina Code of Laws, Section 57-3-30 (See **Appendix A**), provides the Division of Intermodal Planning with the responsibilities and authority to meet the eligibility requirements of Section 22102. In addition, the State of South Carolina has been participating in the federal rail programs since 1980.

SCDOT is South Carolina's "State Rail Transportation Authority" as defined by PRIIA. SCDOT ensures that the State rail plan documents the State's policy on freight and passenger rail transportation – including commuter rail – within the State's boundaries, establishes priorities and implementation strategies to enhance rail service in the public interest, and serves as the basis for Federal and State rail investment.

SCDOT reviews and provides final approval of the State Rail Plan.

There are three state agencies in South Carolina that have a direct involvement with the railroads:

- Department of Transportation
  - The Intermodal Planning Division is responsible for preservation of railroad rights-of-way, coordination of high speed and intercity rail passenger planning and development, associated funding, and submittal of plans and annual legislative reports as required. The Division is responsible for preparing, maintaining, coordinating, and administering a comprehensive passenger and freight state rail plan with coordination of infrastructure services with other modes of transportation every five years in that it's the designated state rail planning agency.
  - Traffic Engineering manages federal funds for highway-rail grade crossing improvements.
  - Preconstruction is responsible for crossings involved in construction projects, at-grade or grade-separated.
  - The Intermodal Planning division is also charged with development and coordination of a general mass transit program and policy for the implementation, operation, evaluation, and monitoring of public transit systems, funding of same and preparation of plans (including a five-year plan detailing needs and goals) and annual legislative reports as necessary.

- Department of Commerce
  - Works with all the state's rail carriers to attract new business to the state

  - Home to the Division of Palmetto Railways – formerly Public Railways (SCPR)
    - Operates three common carrier railroads in the Charleston area
    - Provides technical assistance and consulting services to South Carolina's governmental bodies

- Office of Regulatory Staff (ORS) is responsible for railroad and natural gas pipeline safety oversight. Railroad safety falls under the Transportation Division of the ORS.

1.4 Rail Funding in South Carolina

South Carolina does not have any state revenue source dedicated for passenger or freight rail, nor any grant or loan programs for rail projects. The state does have public-private partnership (P3) legislation for highway projects; however, the current P3 law does not include either passenger or freight rail projects. South Carolina freight rail companies have taken the initiative to recommend P3s for large-scale projects that benefit the public and the railroad and have had a role in highway and bridge P3s in the state.

There are some limited opportunities for state and local financial assistance for Class I and Short Line freight rail companies and passenger rail initiatives that include South Carolina Department of Commerce grants for infrastructure improvements tied to job creation and assistance from the South Carolina Transportation Infrastructure Bank.

1.5 Summary of Freight and Passenger Rail Services

1.5.1 Rail Services

Freight rail services in South Carolina are provided by 12 railroads including two Class I railroads, namely CSXT and Norfolk Southern. Palmetto Railways, a branch of the South Carolina Department of Commerce, operates three railroad subdivisions.

Existing rail passenger service in South Carolina is provided by Amtrak. Four Amtrak services pass through the state:

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

Amtrak passenger stations are located in 11 cities and towns throughout the state.

1.5.2 Initiatives and Plans

1.5.2.1 SCPA Initiatives

Initiatives considered during development of the Rail Plan include a number being undertaken by the South Carolina Ports Authority (SCPA):

- Rail served inland container port located in Greer, 212 miles from the Port of Charleston with daily intermodal services, which commenced operations in October 2013;
- Intermodal container transfer facility with dual rail access adjacent to a 280-acre, 3-berth container terminal under construction on the Charleston Naval Complex; and,
- Port of Charleston Harbor deepening to 50 feet in the harbor and 52 feet outside.

1.5.2.2 Private Sector Initiatives

Private sector railroad initiatives considered in the Plan include Norfolk Southern Railway's joint development of the Inland Container Port with SCPA. Norfolk Southern is investing $7.5 million in the project and will operate the daily intermodal service to the Port of Charleston.

1.5.2.3 Commuter Rail Initiatives

Commuter rail or rail-transit efforts have been investigated in five different areas of the state, primarily in urban regions. As a result of the investigations, proposals are being advanced in two urban regions and one has selected Bus Rapid Transit over commuter rail. All five, however, are discussed further in Section 3.4.

The Berkeley-Charleston-Dorchester COG has examined the potential of commuter rail from Summerville to Charleston (Phase 1) and from Moncks Corner to Charleston (Phase 2)[3]. The 2011 study recommended a complete Alternatives Analysis be conducted.

1.5.2.4 Other Plans

Numerous other plans were considered during development of the Rail Plan, including the state's 2008 Rail Plan Update, 2040 Statewide Multimodal Transportation Plan, Public Transit and Coordination Plans, Freight Plan, and Strategic Corridor Plan, which are all being prepared in parallel with this plan.

[3] *Charleston Metropolitan Area Commuter Rail – Feasibility Study – Phase 2*, prepared for BCDCOG by Wilbur Smith Associates, August 2011.

2 SOUTH CAROLINA'S EXISTING RAIL SYSTEM

2.1 Existing Rail System Description and Inventory

This section provides an inventory of the existing overall rail transportation system and rail services and facilities within the State.

2.1.1 Existing System, Services, and Performance

The South Carolina rail system, as depicted in **Figure 2-1**, is operated by 12 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[4] and the remainder are local carriers or switching and terminal companies[5]. As seen in **Table 2-1**, CSX Transportation's (CSXT) 1,269 route miles represent 56 percent of the statewide rail system of 2,258 miles. 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.

All rail lines are single-tracked with the exception of portions of the NS main track in the Upstate and the CSXT "A Line" that lies in the I-95 corridor. Both have double-track segments of various lengths at several locations.

2.1.1.1 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 1,269 route miles, it covers much 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 for CSX include 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.

[4] As of December 2010, Class I railroads have annual gross revenues of $398.7 million or more. These limits are updated annually to reflect inflation.

[5] Local carriers are non-Class I railroads that perform principally line-haul services while switching and terminal carriers perform those services for other railroads.

Figure 2-1: State Rail Map

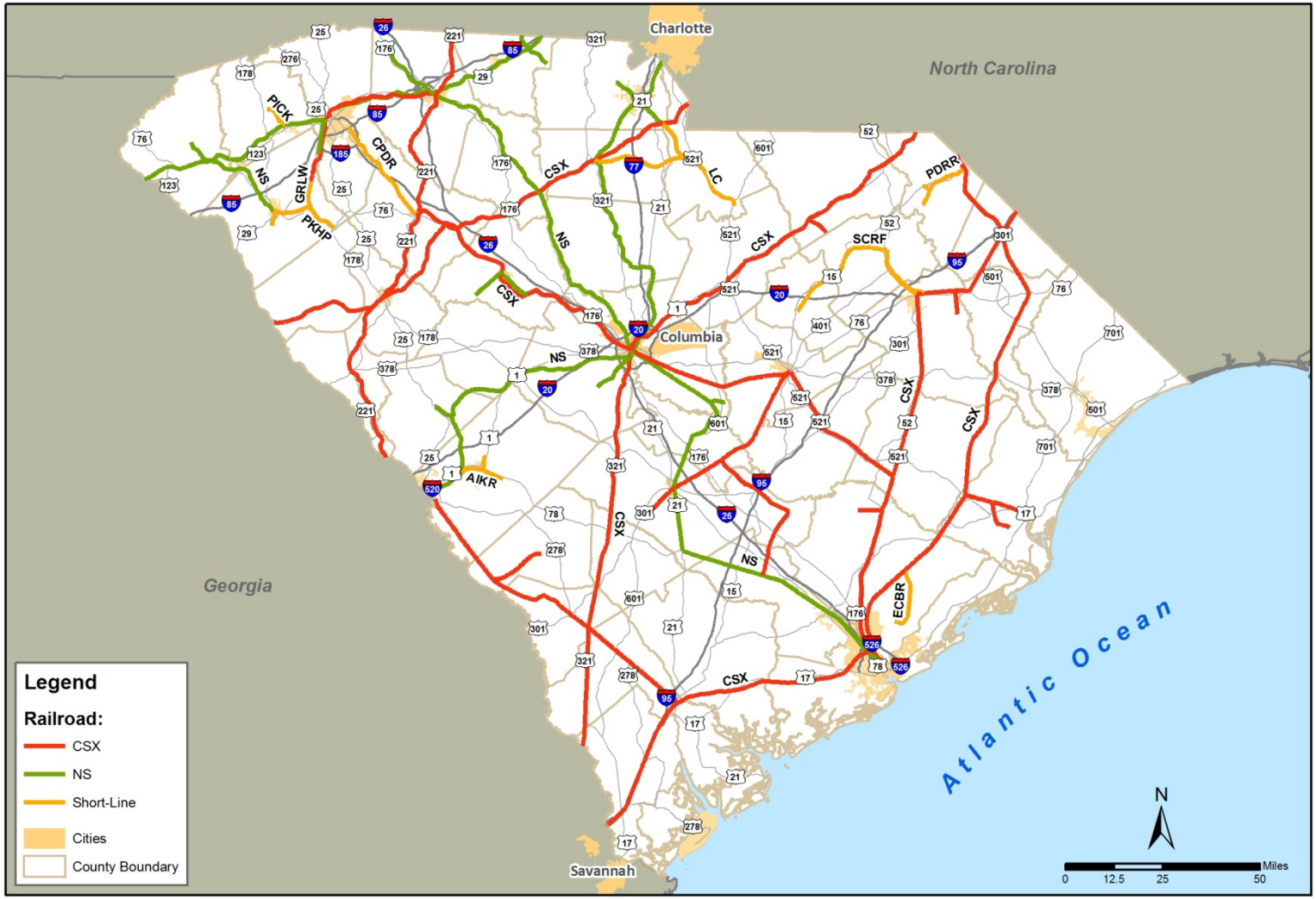


Table 2-1: 2011 South Carolina Freight Railroads

Railroad[1]	Route Miles of Railroad			Percent of Rail System Operated[2]
	Owned/ Leased	Trackage Rights	Owned/Not Operated	
Aiken Railway	19			0.8
Carolina Piedmont Railroad (CPDR)	34			1.5
Carolina Southern Railroad (CALA)	51			2.2
CSX Transportation (CSXT) [3]	1,269	17	12	55.4
East Cooper & Berkeley Railroad (ECBR) [4]	17			0.7
Greenville & Western Railway (GRLW)	13			0.6
Hampton & Branchville Railroad (HB)	40			1.7
Lancaster & Chester (LC)	60			2.6
Norfolk Southern Railway (NS) [3]	679	104	85	29.6
Pee Dee River Railway (PDRR)	25			1.1
Pickens Railway (PICK and PKHP)	37			1.6
Port Terminal Railroad (PTR) [4]	1			0.0
Port Utilities Commission of Charleston (PUCC) [4]	4			0.2
South Carolina Central Railway (SCRF)	42			1.8
Totals	**2,291**	**121**	**97**	**100.0**

Notes:
[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] Owned/Leased lines less Owned/Not Operated and exclusive of trackage rights to prohibit double counting.
[3] As of December 2010, Class I railroads have annual gross revenues of $398.7 million or more. These limits are updated annually to reflect inflation
(4) Operated by Palmetto Railways
Sources: 2011 Class I Railroad Annual Reports to Surface Transportation Board
SC Association of Railroads
Association of American Railroads

2.1.1.2 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 system in South Carolina are coal; lumber and wood products; chemicals; pulp, paper, and allied products; and, transportation equipment.

2.1.1.3 Aiken Railway Company, LLC (AIKR)

The Aiken Railway Company began service in December, 2012, and is a wholly-owned subsidiary of Western Carolina Railway Service Corporation, the same company that owns and operates the Greenville and Western. It leases and operates two NS branch lines in Aiken County – the 12.45-mile line between Warrenville and Oakwood, and the 6.45-mile line running between Aiken and North Aiken – totaling 18.9 miles in length.

2.1.1.4 Carolina Piedmont

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 Genesee & Wyoming 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 plastic resin gas turbines and wind turbines. Major customers include General Electric and Cryovac.

2.1.1.5 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, SC to Whiteville, NC branch line (36.5) miles, and the Chadbourn, NC to Conway, SC 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. The headquarters is located in Conway. The CALA interchanges rail traffic with CSXT at Mullins. The railroad is currently out of service except in the Mullins area due to bridge deficiencies.

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

2.1.1.6 Greenville & Western Railway Company (GRLW)

This railroad 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 receives unit trains for Kinder Morgan with Belton Industries and Belton Metals other on-line rail users. Principal on-line commodities are ethanol, biodiesel, plastics, scrap metal, limestone, paper, and fertilizer.

2.1.1.7 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 operates over 40 miles of track between Hampton and Canady's, all in Hampton and Colleton Counties. The railroad's major customer was SCE&G, which closed its Canaday's power plant in 2013. As a result, the railroad is currently out of service. The HB connects with CSXT at Hampton.

2.1.1.8 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 a 1873 charter for a three-foot narrow gauge railroad that reached Lancaster from Chester in 1894. In 2001 a 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 its presence to four counties - Chester, Kershaw, Lancaster, and York.

The railroad serves a variety of shippers/receivers, including PPG, Guardian Glass, Thyssen-Krupp Steel, Mississippi Lime, ADM, Gerdau Ameristeel, GAF Materials, Circle S Mills, and Boral/Owens Corning among others. Major commodities are chemicals, sand, steel, corn, soybeans, soybean oil and meal, recycled base oil, and building materials. The railroad interchanges traffic with both CSXT and NS at Chester. It became a part of Gulf and Ohio Railways, Inc. in December, 2010.

2.1.1.9 Palmetto Railways

Palmetto Railways, previously known as South Carolina Public Railways (SCPR), provides technical assistance and consulting services in railroad matters to state, local, and municipal governments. As a division of the South Carolina Department of Commerce, Palmetto Railways operates three railroad subdivisions.

The Charleston Subdivision (Port Utilities Commission of Charleston – PUCC) and North Charleston Subdivision (Port Terminal Railroad – TPR) provide switching services to the terminals of the South Carolina State Ports Authority and other various industries in Charleston County, interchanging with CSXT and NS. As terminal switching railroads, PUCC and PTR have no mainline miles of track, but estimates of route miles are contained in Table 2-1.

The Charity Church Subdivision (East Cooper and Berkley Railroad – ECBR) located in southern Berkeley County serves BP Chemical, Nucor Steel and Santee Cooper Cross Generating Station, interchanging with CSXT at State Junction. In addition, several industrial sites are available for development adjacent to the railroad. This 17-mile line, which began operations on November 15, 1978, extends from State Junction (Cordesville) to Charity Church in Berkley County.

2.1.1.10 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 (Flakeboard) complex. The PDRR is a subsidiary of the Aberdeen and Rockfish Railroad Company, which has headquarters in Aberdeen, NC

Pulp, paper, chemicals, aggregates, fertilizer, and plastic pellets 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.

2.1.1.11 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, among others: Owens Corning, Electrolux, Scots, Michelin, Southern States Cooperative, Crop Production Services, Carolina Recycling, PCA, and Tri-County Fertilizer. These customers account for the majority of the railroad's carloadings comprised of limestone, plastics, rubber, carbon black, fertilizer, scrap metal, paper, grain, and borate ore. Traffic is interchanged with NS at Easley and Anderson, as well as with GRLW at Belton and hence to a CSXT connection in Pelzer.

The railroad has filed an abandonment application for the 8.5-mile-long original Pickens Railroad.

2.1.1.12 South Carolina Central Railroad Company (SCRF)

In 1987, RailTex, Inc. purchased two disconnected segments of railroad from CSXT 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.[vi] acquired RailTex in 2000, but was itself purchased in 2012 by Genesee & Wyoming Inc., who now owns the railroad and operates 42 miles of mainline. The one operational 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, with the largest being Nucor Steel, Sonoco Products, and Republic Services. Commodities handled by the railroad are dominated by chemicals, plastics, steel, and waste. The other segment connected and interchanged traffic with CSXT at Cheraw and extended southward to Society Hill. Service is no longer provided on this segment and abandonment has been approved but not yet implemented.

2.1.1.13 Freight Traffic

Rail freight traffic patterns in South Carolina have been summarized in Chapter 1. Additional information is provided in this section, in terms of tonnage and value of major inbound and outbound commodities, as well as total annual tonnage by individual rail line segment.

South Carolina rail movements in 2011 totaled 70.3 million tons, valued at $79.1 billion, and carried within 1.3 million units, see **Table 2-2**. On average, total rail commodity movements are valued at $1,126/ton. Through-State rail movements are the largest directional movements: 43.9 percent of total tonnage, 59.7 percent of units, and 59.2 percent of value. Inbound rail tonnage (26.6 million) is significantly greater than outbound (8.1 million); however, value is closer ($15.1 billion inbound versus $11.2 billion outbound) due to the notably higher average value/ton of outbound ($1,386) versus inbound ($567).

[vi] RailAmerica, Inc. has been acquired by Genesee and Wyoming, Inc. (October, 2012) and is awaiting Surface Transportation Board approval to control the company.

Table 2-2: South Carolina Rail Freight by Direction (2011)

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Outbound	8,114,084	11.5%	132,876	10.3%	$11,249	14.2%	$1,386
Inbound	26,631,734	37.9%	326,686	25.2%	$15,098	19.1%	$567
Intra	4,681,040	6.7%	62,648	4.8%	$5,938	7.5%	$1,268
Through	30,872,783	43.9%	772,568	59.7%	$46,853	59.2%	$1,518
Total	**70,299,641**	**100.0%**	**1,294,778**	**100.0%**	**$79,137**	**100.0%**	**$1,126**

Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

As shown in **Figure 2-2**, the short CSXT line segment between Greenwood, SC and Athens, Georgia handles the greatest rail tonnage per line as a result of north-south and east-west CSXT routes crossing in that part of the state. Other notable tonnage movements go through Laurens County, Columbia, and Charleston.

2.1.1.14 Inbound Rail Freight

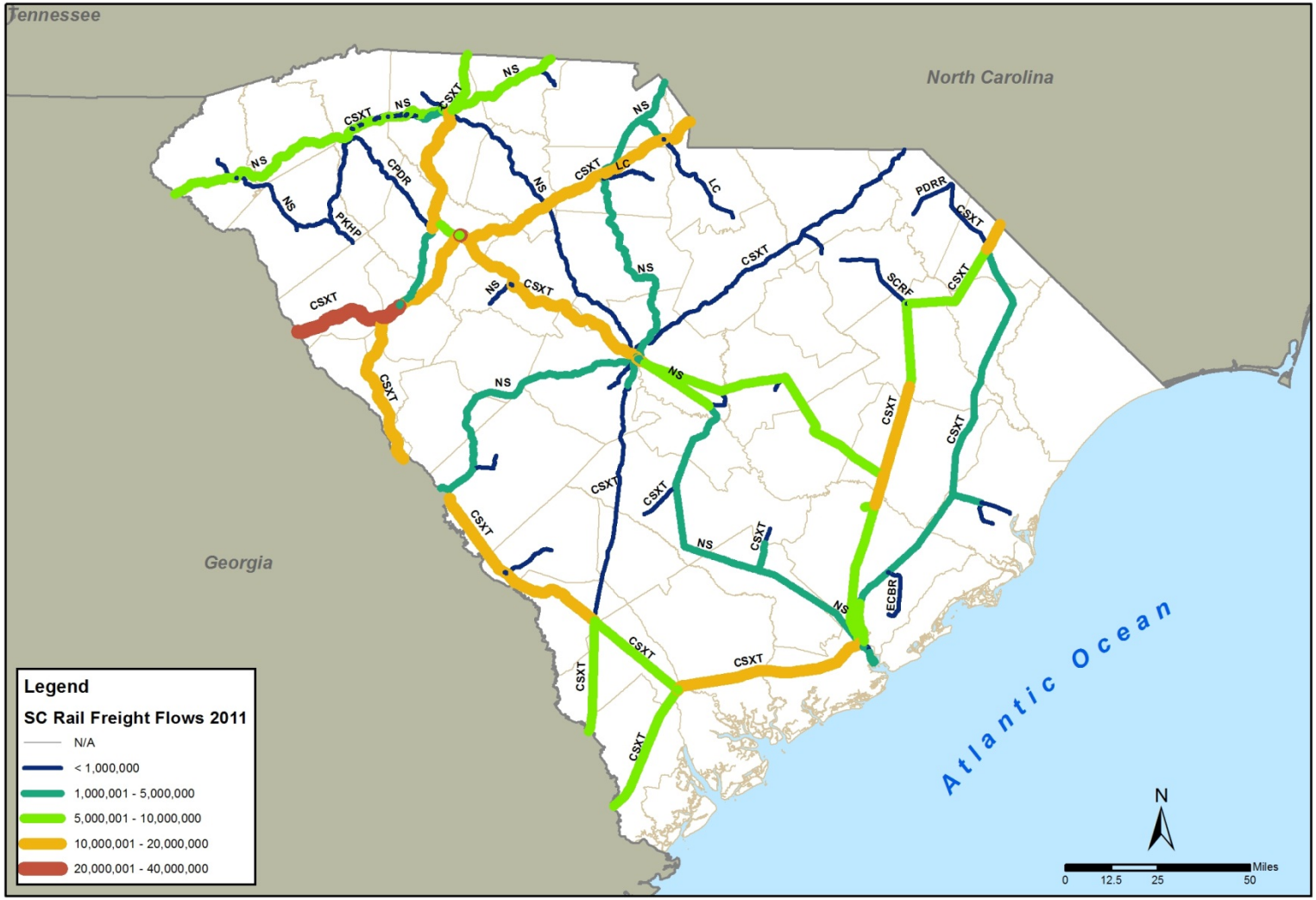
Table 2-3 presents major inbound rail commodities to South Carolina in 2011. Such movements total 26.6 million tons, via 326,686 units, valued at $15.1 billion, with an average value/ton of $567. In tonnage terms, top inbound movements include: *Coal* (14.0 million, 52.5 percent), *Chemical or Allied Products* (3.8 million, 14.3 percent), and *Farm Products* (1.4 million, 5.3 percent). In unit terms, *Coal* and *Miscellaneous Mixed Shipments* constitute over half (172,931, 52.9 percent) of the total 326,686 inbound rail units. In value terms, the top commodities include: *Chemical or Allied Products* ($5.6 billion or 37.4 percent), *Miscellaneous Mixed Shipments* ($3.3 billion or 21.7 percent), and *Transportation Equipment* ($2.6 billion or 17.3 percent). *Transportation Equipment* values are included in *Remaining Commodities* in this table.

Table 2-3: South Carolina Rail Inbound Freight by Major Commodities (2011)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
11	Coal	13,983,033	52.5%	121,091	37.1%	$512	3.4%	$37
28	Chemicals or Allied Products	3,809,668	14.3%	42,340	13.0%	$5,639	37.4%	$1,480
01	Farm Products	1,418,092	5.3%	13,612	4.2%	$261	1.7%	$184
40	Waste or Scrap Materials	1,172,576	4.4%	12,824	3.9%	$339	2.2%	$289
14	Nonmetallic Minerals	1,048,310	3.9%	10,196	3.1%	$11	0.1%	$11
26	Pulp, Paper or Allied Products	1,011,832	3.8%	13,740	4.2%	$772	5.1%	$763
32	Clay, Concrete, Glass or Stone	941,196	3.5%	9,792	3.0%	$132	0.9%	$140
20	Food or Kindred Products	816,624	3.1%	10,380	3.2%	$564	3.7%	$690
46	Misc. Mixed Shipments	647,560	2.4%	51,840	15.9%	$3,279	21.7%	$5,063
24	Lumber or Wood Products	606,736	2.3%	6,820	2.1%	$76	0.5%	$125
	Remaining Commodities	1,176,107	4.4%	34,051	10.4%	$3,515	23.3%	$2,989
	Total	**26,631,734**	**100.0%**	**326,686**	**100.0%**	**$15,098**	**100.0%**	**$567**

Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

Figure 2-2: South Carolina Rail Freight Density (2011)



Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

Rail Inbound Tonnage Origin – Over half (52.5 percent) of inbound tonnage is *Coal*, chiefly from Kentucky (10.2 million), but also from Pennsylvania (1.6 million), and Illinois (1.3 million). The second major commodity railed into South Carolina is *Chemical or Allied Products*, led by Louisiana, Illinois, Texas, and North Carolina (ranging from 0.5 million to 0.7 million). Inbound rail tonnage by state of origin is shown in **Figure 2-3**.

Rail Inbound Tonnage Destination – Major inbound tonnage in 2011 are shown by county destination in **Figure 2-4**. Rail movements originating from out-of-State are primarily traveling to the coastal counties: Berkeley (7.4 million tons), Charleston (3.5 million tons), and Georgetown (2.5 million tons). Berkeley and Georgetown movements are dominated by coal (84 percent of both counties). Regarding the second largest inbound rail tonnage, *Chemicals or Allied Products*, 25.0 percent (1.0 million tons) of the 3.8 million tons go to Spartanburg County. Other major inbound rail movements include 0.8 million tons of *Waste or Scrap Materials* to Berkeley County, and 0.8 million tons of *Nonmetallic Minerals* to Marion County.

2.1.1.15 Outbound Rail Freight

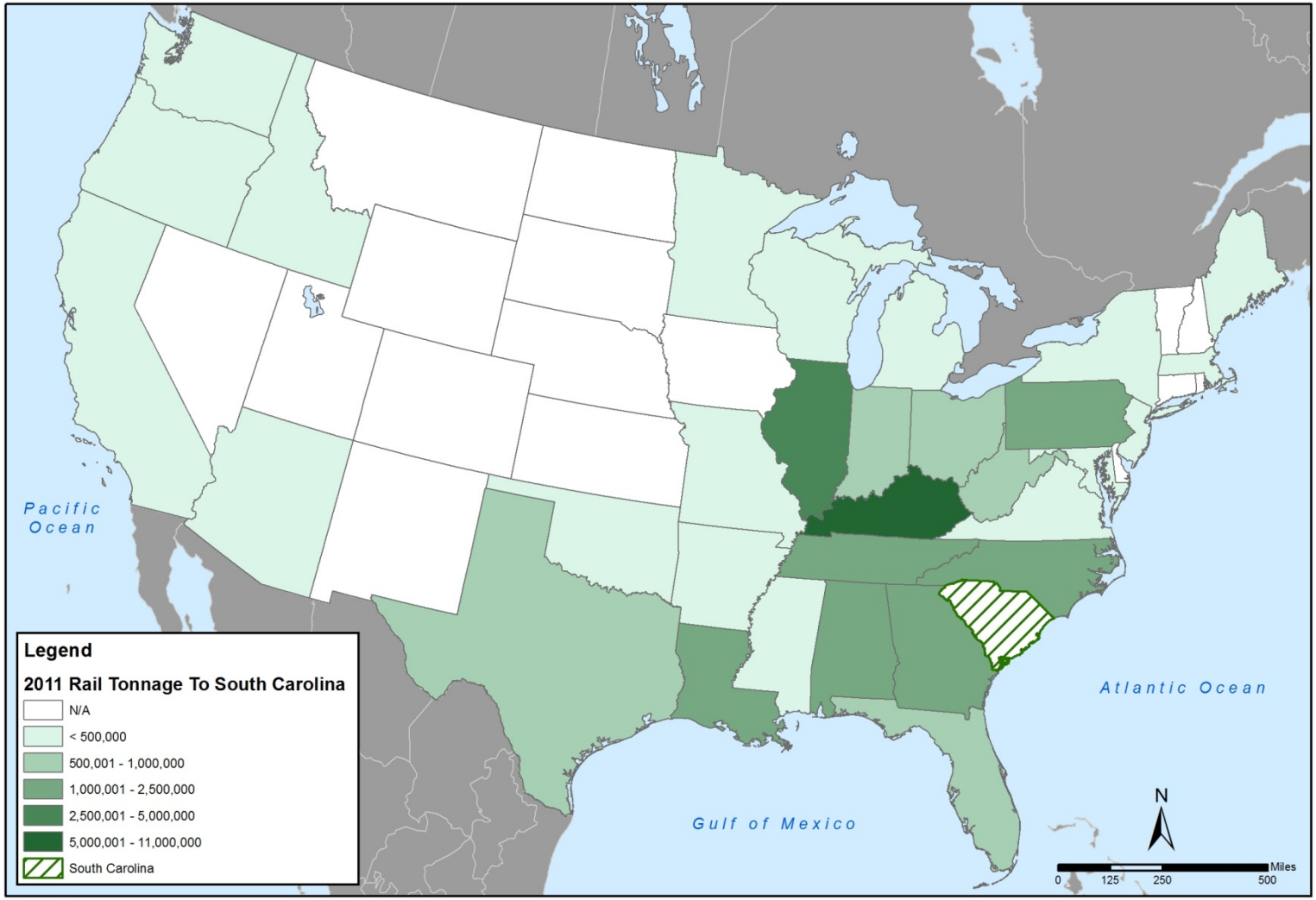
Table 2-4 presents the outbound major commodities by rail from South Carolina in 2011. Such outbound rail movements total 8.1 million tons, via 132,876 units, valued at $11.2 billion, with an average value/ton of $1,386. In tonnage terms, top outbound movements include: *Pulp, Paper or Allied Products* (1.7 million, 20.9 percent), *Primary Metal Products* (1.6 million, 19.2 percent), and *Chemicals or Allied Products* (1.5 million, 18.4 percent). In unit terms, *Miscellaneous Mixed Shipments* and *Pulp, Paper or Allied Products* together constitute almost one half (58,636, or 44.1 percent) of the total 132,876 outbound rail units. In value terms, the top commodities include: *Chemicals or Allied Products* ($3.1 billion or 27.1 percent), *Primary Metal Products* ($2.4 billion or 21.7 percent), and *Miscellaneous Mixed Shipments* ($2.4 billion or 21.0 percent).

Table 2-4: South Carolina Rail Outbound Freight by Major Commodities (2011)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
26	Pulp, Paper or Allied Products	1,694,212	20.9%	22,756	17.1%	$1,917	17.0%	$1,131
33	Primary Metal Products	1,554,440	19.2%	17,480	13.2%	$2,440	21.7%	$1,570
28	Chemicals or Allied Products	1,494,440	18.4%	15,744	11.8%	$3,053	27.1%	$2,043
24	Lumber or Wood Products	1,072,916	13.2%	12,052	9.1%	$247	2.2%	$231
32	Clay, Concrete, Glass or Stone	827,204	10.2%	7,792	5.9%	$83	0.7%	$101
46	Misc Mixed Shipments	467,240	5.8%	35,880	27.0%	$2,366	21.0%	$5,063
40	Waste or Scrap Materials	354,348	4.4%	4,204	3.2%	$96	0.9%	$271
14	Nonmetallic Minerals	279,364	3.4%	2,712	2.0%	$2	0.0%	$8
20	Food or Kindred Products	115,604	1.4%	1,448	1.1%	$71	0.6%	$618
37	Transportation Equipment	91,340	1.1%	4,304	3.2%	$792	7.0%	$8,671
	Remaining Commodities	162,976	2.0%	8,504	6.4%	$182	1.6%	$1,114
	Total	**8,114,084**	**100.0%**	**132,876**	**100.0%**	**$11,249**	**100.0%**	**$1,386**

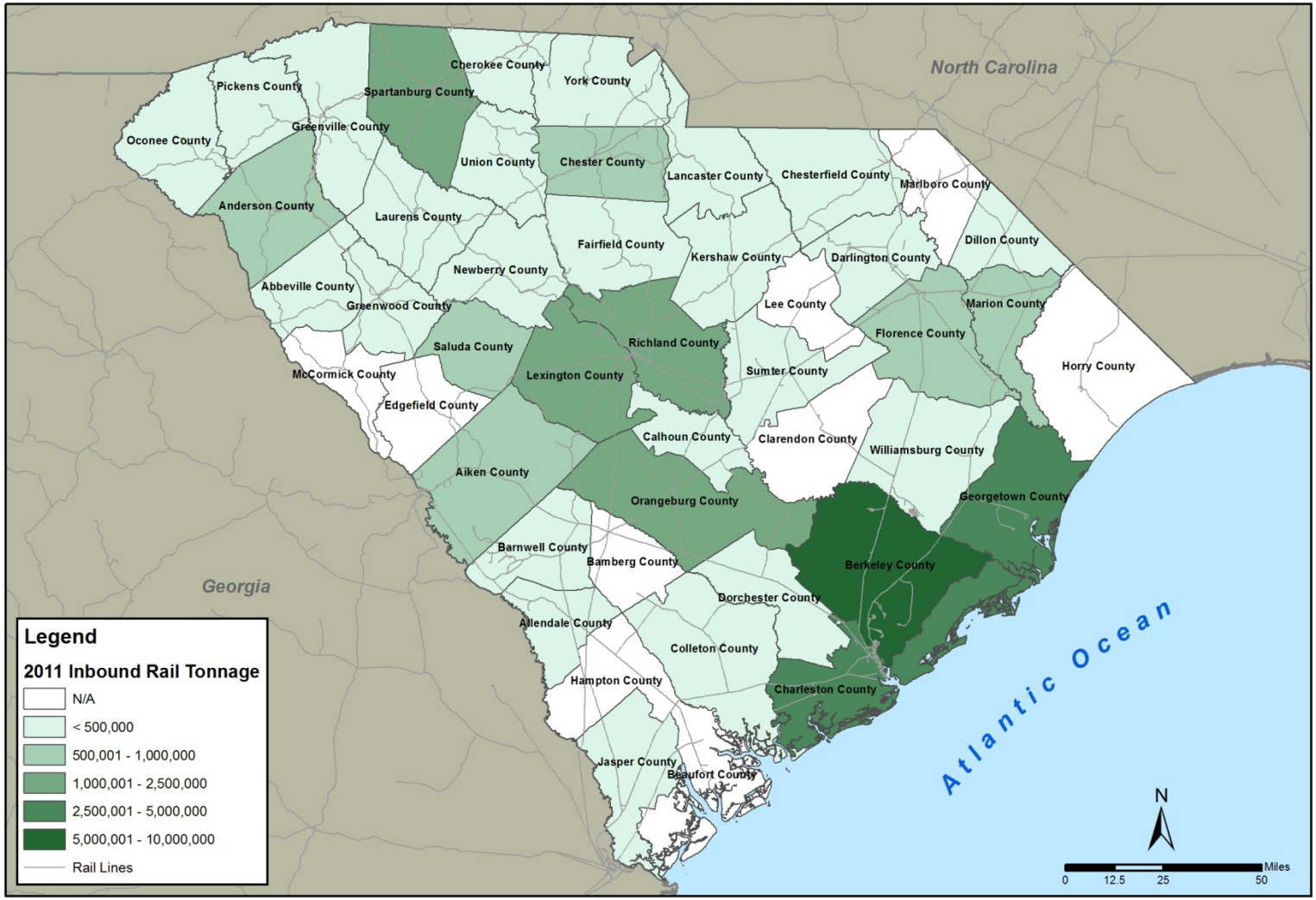
Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011

Figure 2-3: South Carolina Rail Inbound Freight by State of Origin (2011)



Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

Figure 2-4: South Carolina Rail Inbound Freight by County Destination (2011)



Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011

Outbound Tonnage Origin – Major outbound tonnages in 2011 are shown by county origin in **Figure 2-5**. Rail movements destined out-of-state primarily originate from Charleston County (1.2 million tons), Berkeley County (1.1 million tons), and Lexington County (1.0 million tons). From a commodity perspective; *Pulp, Paper or Allied Products* are led by 0.5 million tons from York county and 0.3 million from both Charleston and Florence Counties; *Primary Metal Products* predominantly originate from Berkeley County (0.9 of 1.6 million tons); and *Chemicals or Allied Products* predominately originate from Lexington and Charleston Counties.

Outbound Tonnage Destination – One-fifth of outbound rail in 2011 went to North Carolina (1.7 million tons, 20.4 percent), followed by Georgia (0.9 million tons, 10.6 percent), and Pennsylvania (0.6 million tons, 7.8 percent) as shown in **Figure 2-6**. North Carolina movements were led by *Lumber or Wood Products* (0.6 million tons) and *Clay, Concrete, Glass or Stone* (0.5 million tons). Georgia-bound tonnage was led predominantly by *Pulp, Paper or Allied Products* (0.3 million tons), and Pennsylvania-bound shipments were primarily *Primary Metal Products* (0.3 million tons) and *Pulp, Paper or Allied Products* (0.2 million tons).

2.1.1.16 Through Rail Freight

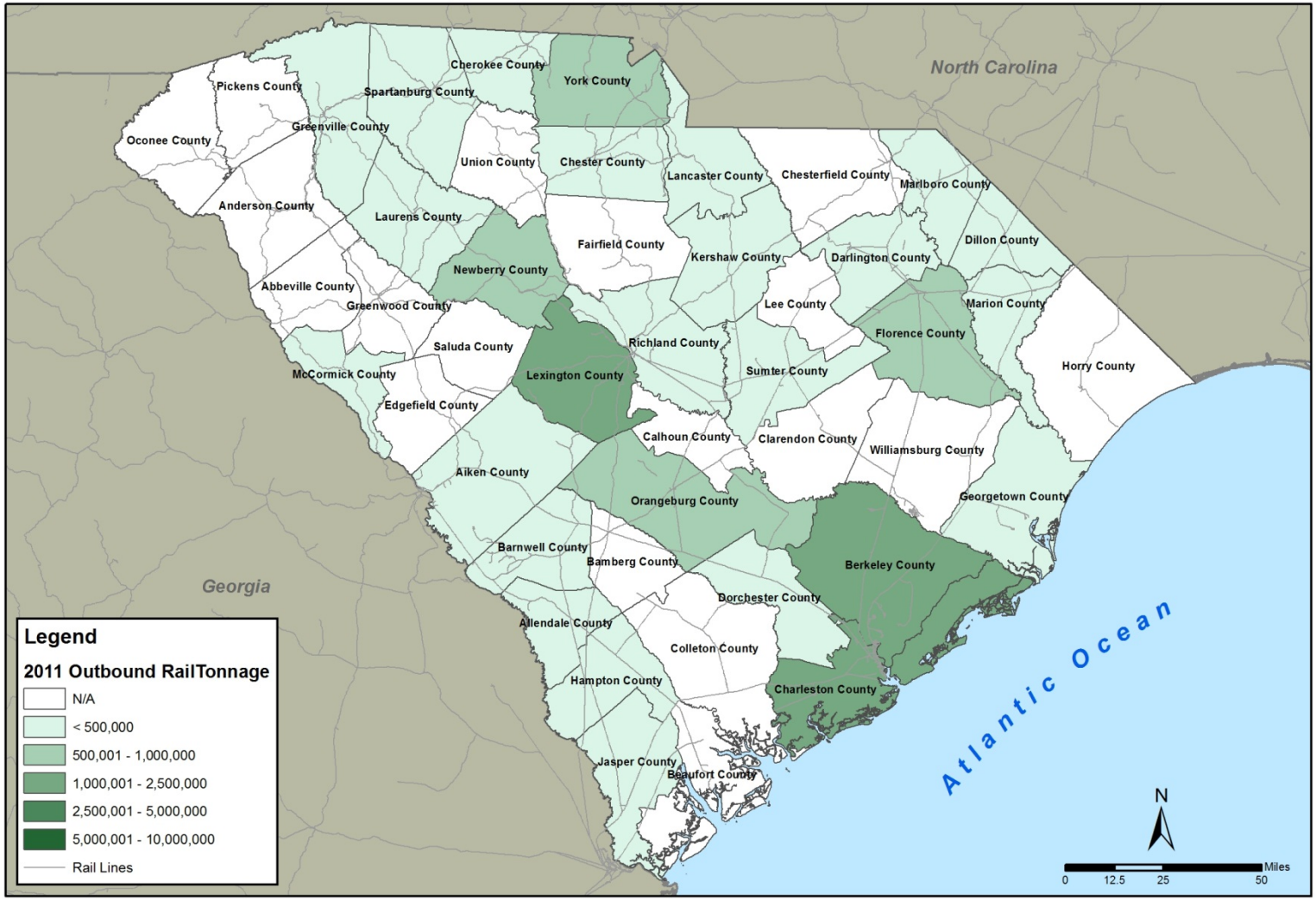
Table 2-5 presents through-State rail commodities in 2011. Such movements total 30.9 million tons, via 772,568 units, valued at $46.9 billion, with an average value/ton of $1,518. In tonnage terms, the top through movements include: *Chemicals or Allied Products* (6.3 million, 20.3 percent), *Coal* (5.4 million, 17.6 percent), and *Miscellaneous Mixed Shipments* (4.2 million, 13.6 percent). In unit terms, *Miscellaneous Mixed Shipments* constitute over one third (298,376 or 38.6 percent) of the total 772,568 through rail units. In value terms, the top commodities include: *Miscellaneous Mixed Shipments* ($21.1 billion or 45.1 percent), *Chemicals or Allied Products* ($10.0 billion or 21.3 percent), and *Food or Kindred Products* ($2.3 billion or 5.0 percent).

Table 2-5: South Carolina Rail Through-State by Major Commodities (2011)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
28	Chemicals or Allied Products	6,259,967	20.3%	76,505	9.9%	$9,979	21.3%	$1,594
11	Coal	5,424,923	17.6%	47,487	6.1%	$198	0.4%	$37
46	Misc. Mixed Shipments	4,190,264	13.6%	298,376	38.6%	$21,126	45.1%	$5,042
20	Food or Kindred Products	2,973,736	9.6%	62,392	8.1%	$2,347	5.0%	$789
26	Pulp, Paper or Allied Products	2,327,000	7.5%	51,920	6.7%	$2,231	4.8%	$959
32	Clay, Concrete, Glass or Stone	1,786,024	5.8%	18,944	2.5%	$352	0.8%	$197
14	Nonmetallic Minerals	1,771,967	5.7%	17,655	2.3%	$56	0.1%	$31
01	Farm Products	1,475,440	4.8%	15,483	2.0%	$364	0.8%	$247
24	Lumber or Wood Products	872,488	2.8%	13,028	1.7%	$263	0.6%	$302
29	Petroleum or Coal Products	733,796	2.4%	8,523	1.1%	$849	1.8%	$1,157
	Remaining Commodities	3,057,178	9.9%	162,255	21.0%	$9,089	19.4%	$2,973
	Total	**30,872,783**	**100.0%**	**772,568**	**100.0%**	**$46,853**	**100.0%**	**$1,518**

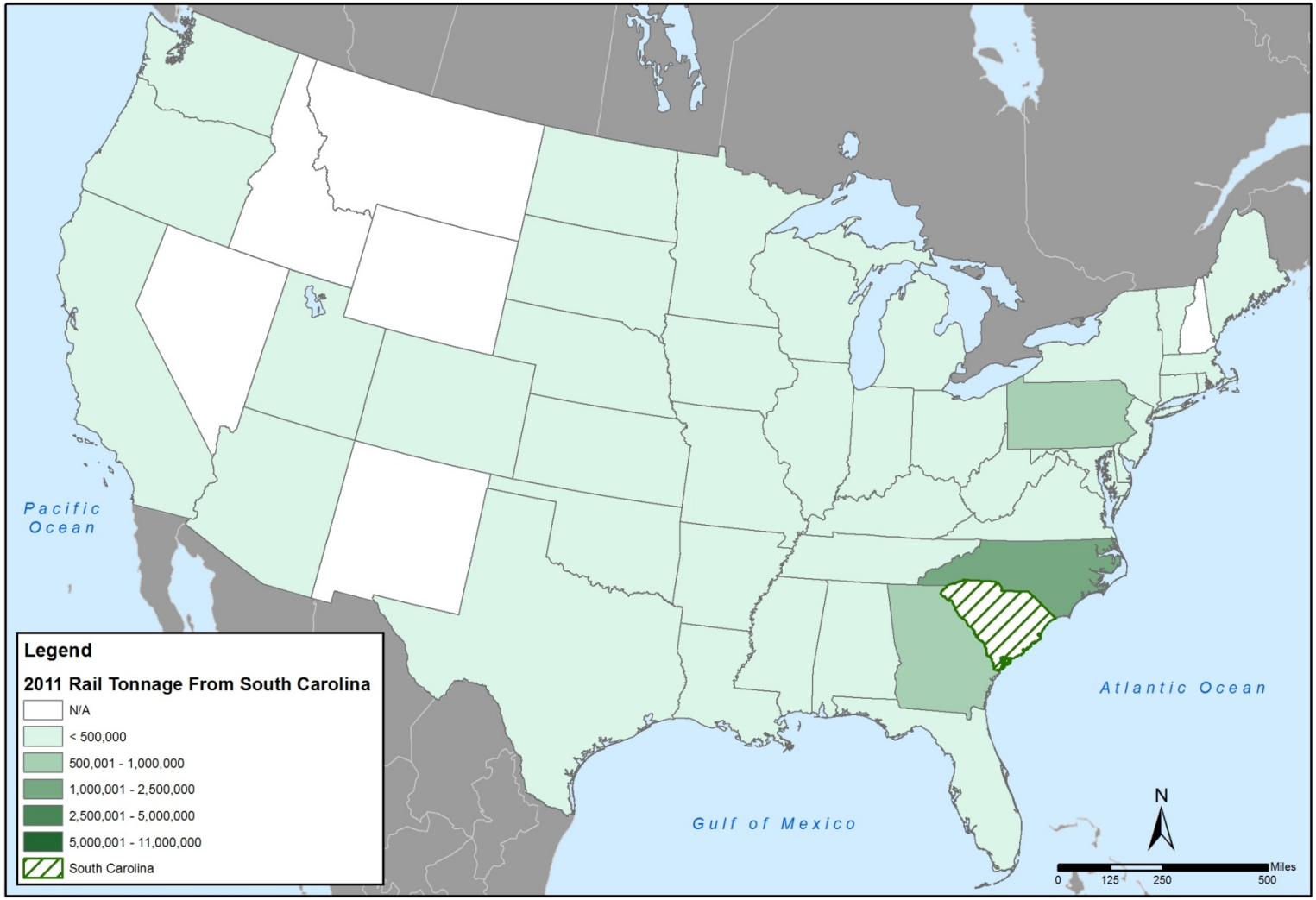
Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

Figure 2-5: South Carolina Rail Outbound Freight by County Origin (2011)



Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

Figure 2-6: South Carolina Rail Outbound Freight by State of Destination (2011)



Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

2.1.1.17 Intrastate Rail Freight

Table 2-6 summarizes intrastate rail commodities in South Carolina in 2011. Such movements total 4.7 million tons, via 62,648 units, valued at $5.9 billion, with an average value/ton of $1,268. In tonnage terms, top intrastate movements include: *Chemicals or Allied Products* (1.1 million, 23.3 percent), *Nonmetallic Minerals* (0.9 million, 20.0 percent), and *Lumber or Wood Products* (0.9 million, 18.7 percent). In unit terms, *Transportation Equipment* and *Chemicals or Allied Products* together constitute almost one half (29,560 or 47.2 percent) of the total 62,648 intrastate rail units. In value terms, the top commodities include: *Transportation Equipment* ($3.4 billion or 58.1 percent), *Chemicals or Allied Products* ($1.5 billion or 25.3 percent), and *Machinery* ($0.4 billion or 7.3 percent). *Machinery* values are included in *Remaining Commodities* in the table.

Table 2-6: South Carolina Rail Intrastate by Major Commodities (2011)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
28	Chemicals or Allied Products	1,088,680	23.3%	10,360	16.5%	$1,501	25.3%	$1,379
14	Nonmetallic Minerals	934,604	20.0%	8,916	14.2%	$9	0.2%	$10
24	Lumber or Wood Products	876,560	18.7%	9,520	15.2%	$109	1.8%	$124
10	Metallic Ores	466,800	10.0%	4,652	7.4%	$14	0.2%	$31
37	Transportation Equipment	392,596	8.4%	19,200	30.6%	$3,448	58.1%	$8,784
40	Waste or Scrap Materials	359,960	7.7%	3,680	5.9%	$106	1.8%	$295
26	Pulp, Paper or Allied Products	229,760	4.9%	3,160	5.0%	$168	2.8%	$730
32	Clay, Concrete, Glass or Stone	136,480	2.9%	1,200	1.9%	$12	0.2%	$86
33	Primary Metal Products	74,680	1.6%	840	1.3%	$115	1.9%	$1,543
48	Waste	58,680	1.3%	640	1.0%	$0	0.0%	$0
	Remaining Commodities	62,240	1.3%	480	0.8%	$455	7.7%	$7,308
	Total	**4,681,040**	**100.0%**	**62,648**	**100.0%**	**$5,938**	**100.0%**	**$1,268**

Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

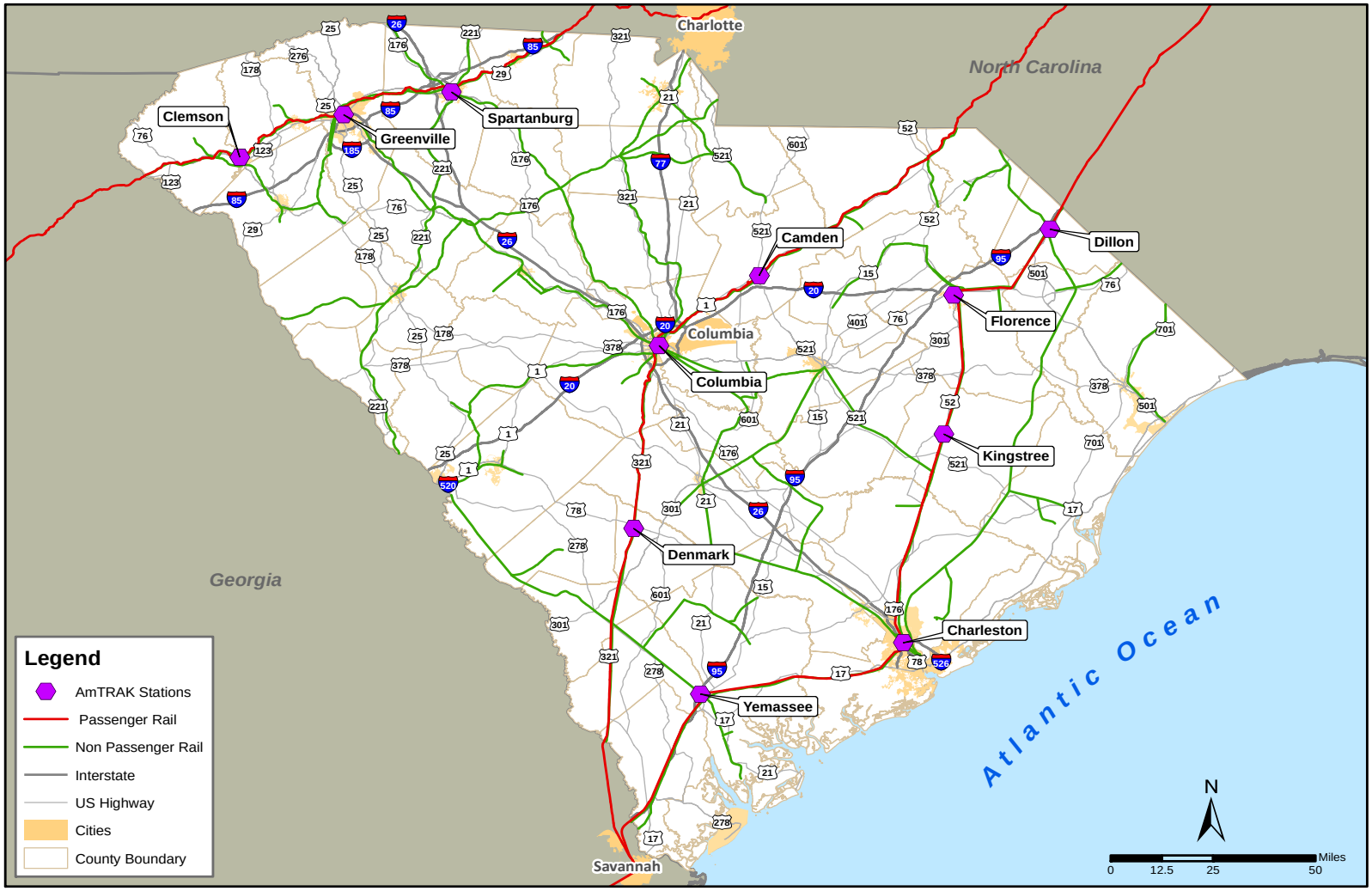
2.1.1.18 Existing Passenger Rail Services

South Carolina Routes – South Carolina is served by eight Amtrak daily trains running north bound and south bound over three routes, all of which connect the South with the Northeast. These routes use lines owned by freight railroads (one NS and two CSXT). **Figure 2-7** illustrates the locations of the three routes, as well as Amtrak stops in the state.

South Carolina Schedules – Amtrak's South Carolina service consists of the following four daily services. Each service offers one round trip daily with multiple stops in South Carolina:

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

Figure 2-7: South Carolina Rail Passenger Routes and Stops



With the exception of the Palmetto, Amtrak trains pass through the state in evening or early morning hours, which tend to be inconvenient for riders. In addition, Amtrak on-time performance suffers from running over privately-owned freight railroads which can present significant operating conflicts. Current South Carolina schedules are shown in **Table 2-7.**

Table 2-7: 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	11:39P 10:53P 10:16P
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	11:10P 10:17P 9:23P 8:27P
Palmetto	New York- Washington- Savannah	Dillon Florence Kingstree Charleston Yemassee	4:35P 5:23P 6:06P 7:15P 8:04P	12:13P 11:34A 10:55A 10:00A 9:08A

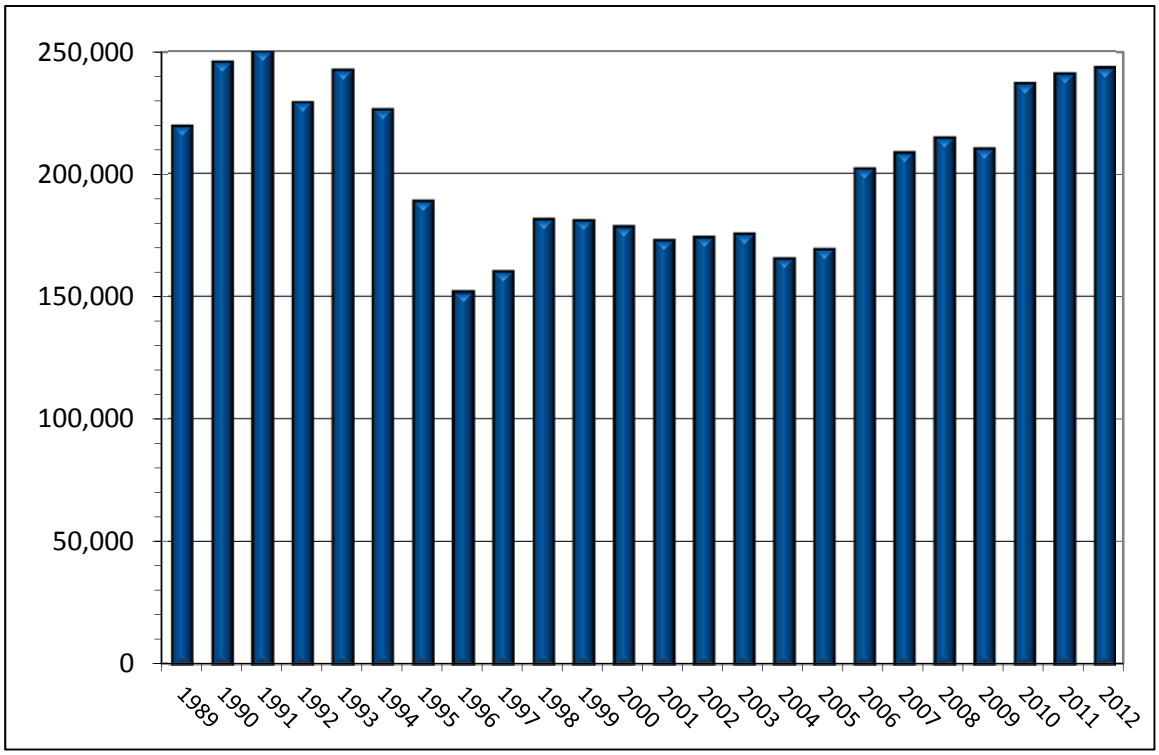
Source: Amtrak, effective October 10, 2012.

In addition, Amtrak's *Auto Train* also passes through the state on the easternmost route, but does not stop in South Carolina. The only stops it makes are at its two end points, Lorton, Virginia and Sanford, Florida.

Passenger Boardings and Alightings – 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 **Figure 2-8**. The number of current (FY 2012) passengers is 243,669, which is within 3 percent of the 1990 high. Ridership by station for the last seven years of record is shown in **Table 2-8**. Note that in 2012 Charleston attracted the most riders, followed by Florence, Columbia, and Kingstree. Charleston, Florence, Kingstree and Yemassee are served by two services daily; all other stations are served by one service. 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 of record was 84,956 in Charleston in FY 2012. This level is well above the 73,700 count in Charleston in 1991, which stood as the record high for many years.

Amtrak Station in Columbia, South Carolina

Figure 2-8: Amtrak Ridership in South Carolina



Note: Total passengers boarding or alighting at stations.
Source: Amtrak (except 2008 and 2009). National Association of Rail Passengers (2008 and 2009)

Table 2-8: South Carolina Amtrak Patronage (FY 2006 - FY 2012)

City	Boardings + Alightings						
	2006	2007	2008	2009	2010	2011	2012
Camden	3582	3,702	3,809	3,940	3,588	3,923	3,699
Charleston	66,272	66,655	67,049	66,867	79,806	81,180	84,956
Clemson	5,065	5,416	5,841	5,988	6,941	6,466	5,807
Columbia	34,431	34,613	37,412	36,441	36,297	36,786	37,577
Denmark	4,643	4,680	4,903	4,617	4,485	4,344	4,254
Dillon	6,393	7,461	7,693	7,126	8,463	9,490	8,745
Florence	41,643	44,828	45,992	44,384	47,344	49,569	52,178
Greenville	12,136	11,700	12,897	11,874	17,490	17,366	12,565
Kingstree	12,996	13,888	12,991	12,682	14,153	13,539	14,812
Spartanburg	4,252	4,245	4,238	4,102	4,955	4,469	4,452
Yemassee	10,790	11,762	12,064	12,346	13,516	13,748	14,624
Total	**202,203**	**208,914**	**214,889**	**210,367**	**237,038**	**240,880**	**243,669**

Existing Commuter Rail System – There are no commuter rail services currently operating in the state of South Carolina.

2.1.2 Freight and Passenger Terminals

2.1.2.1 Major Freight Intermodal Terminals

The principal freight rail facilities are listed in **Table 2-9**. All of the railroads in the state have yards, and the Class I carriers have additional yards, that are smaller than the ones listed. In addition, all serve additional facilities, e.g., bulk transfer and commodity-specific reloads and storage facilities that are privately owned and operated.

Table 2-9: Major South Carolina Rail Facilities

Facility	CSXT	NS
Principal Yards	Florence, Charleston	Columbia
Intermodal[1]	Charleston	Charleston
Bulk Transfer[2]	Charleston, Greenville[2], Spartanburg	Spartanburg, West Columbia
Automotive Terminal	West Columbia (Dixiana)	Columbia (Kinsler), Charleston
Division Office[3]	Florence	Greenville

[1] *Containers*
[2] *Railroad owned – TRANSFLO (CSX); Thoroughbred Bulk Transfer (NS)*
[3] *CSXT – Florence Division; NS – Piedmont Division*

The two intermodal facilities that are operational in Charleston are shown in **Figure 2-9.** Each terminal is operated by one of the two Class I railroads, CSXT and NS. Trucks dray freight between these terminals and Port of Charleston Terminals.

2.1.2.1.1 Rail Served Inland Container Port

The South Carolina Ports Authority (SCPA) opened a rail-served container terminal at Greer in October 2013. The inland port's location and NS rail connection to the Port of Charleston is shown in **Figure 2-10**. The SCPA FY 2012 capital budget included $23.5 million for the project[7] being jointly developed with Norfolk Southern Railway, which invested $7.5 million. The impetus for the project is an initial 20,000-25,000 containers from BMW expected by SCPA to grow to 50,000 within three years and remove the same number of trucks from the highway. An illustration of the layout of the Inland Port is shown in **Figure 2-11**.

2.1.2.1.2 Intermodal Container Transfer Facility with Dual Rail Access

A new 280-acre, 3-berth container terminal is under construction on the Charleston Naval Complex. The 171-acre first phase of construction is scheduled for completion in 2018.[8] When fully developed, the terminal will increase the Port's capacity by 50 percent. A rendering of the new terminal is shown **Figure 2-12**. A recent agreement between the state of South Carolina and the City of North Charleston will permit rail access from both the north and south of a proposed rail yard that will serve the Ports Authority's container terminals and thereby provide dual access to two Class I carriers.

[7] SCPA press release, 7-9-12.
[8] *South Carolina Port Guide*, second edition, SCSPA, p. 30.

Figure 2-9: Port of Charleston Facility Locations

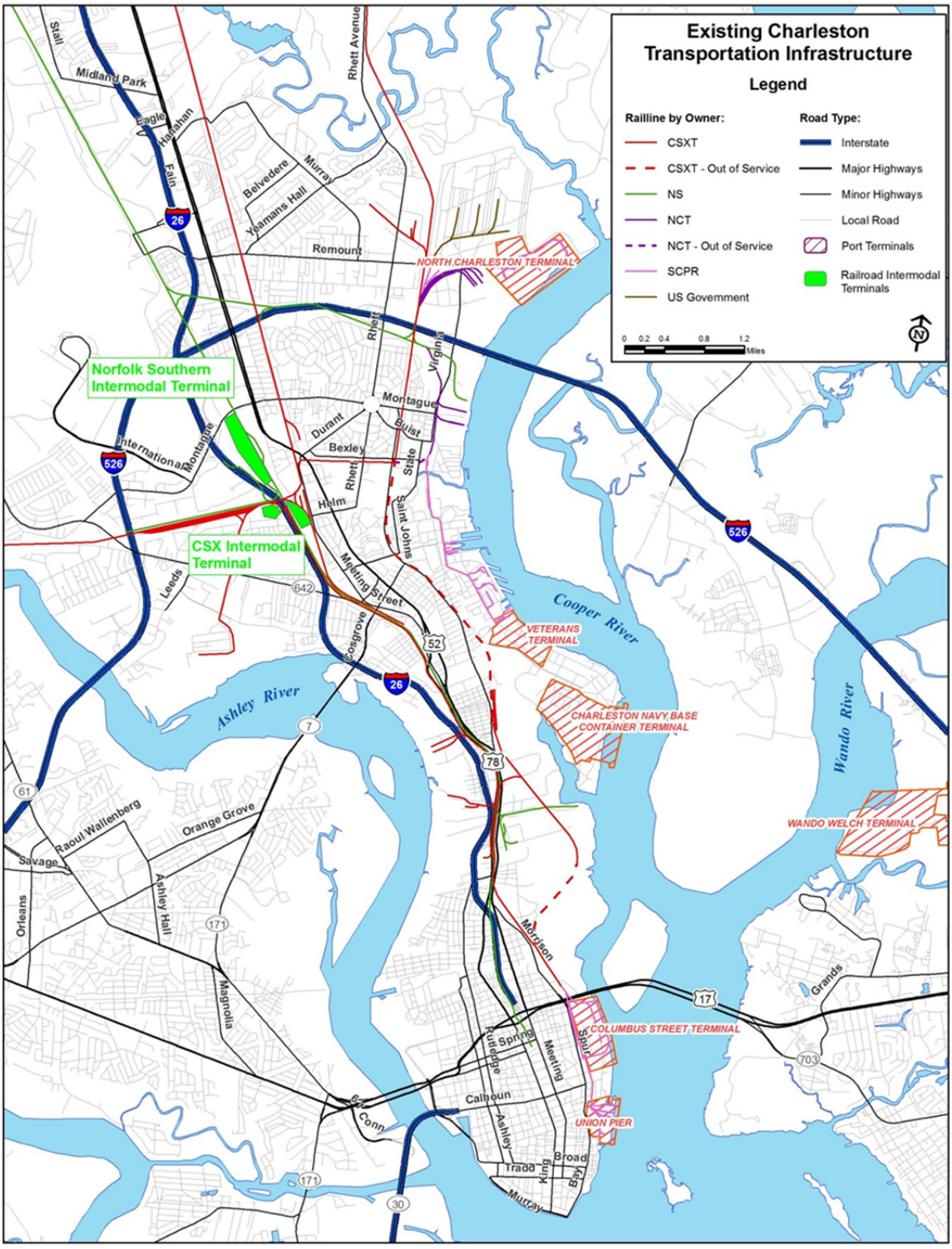


Figure 2-10: Inland Port Location in Greer

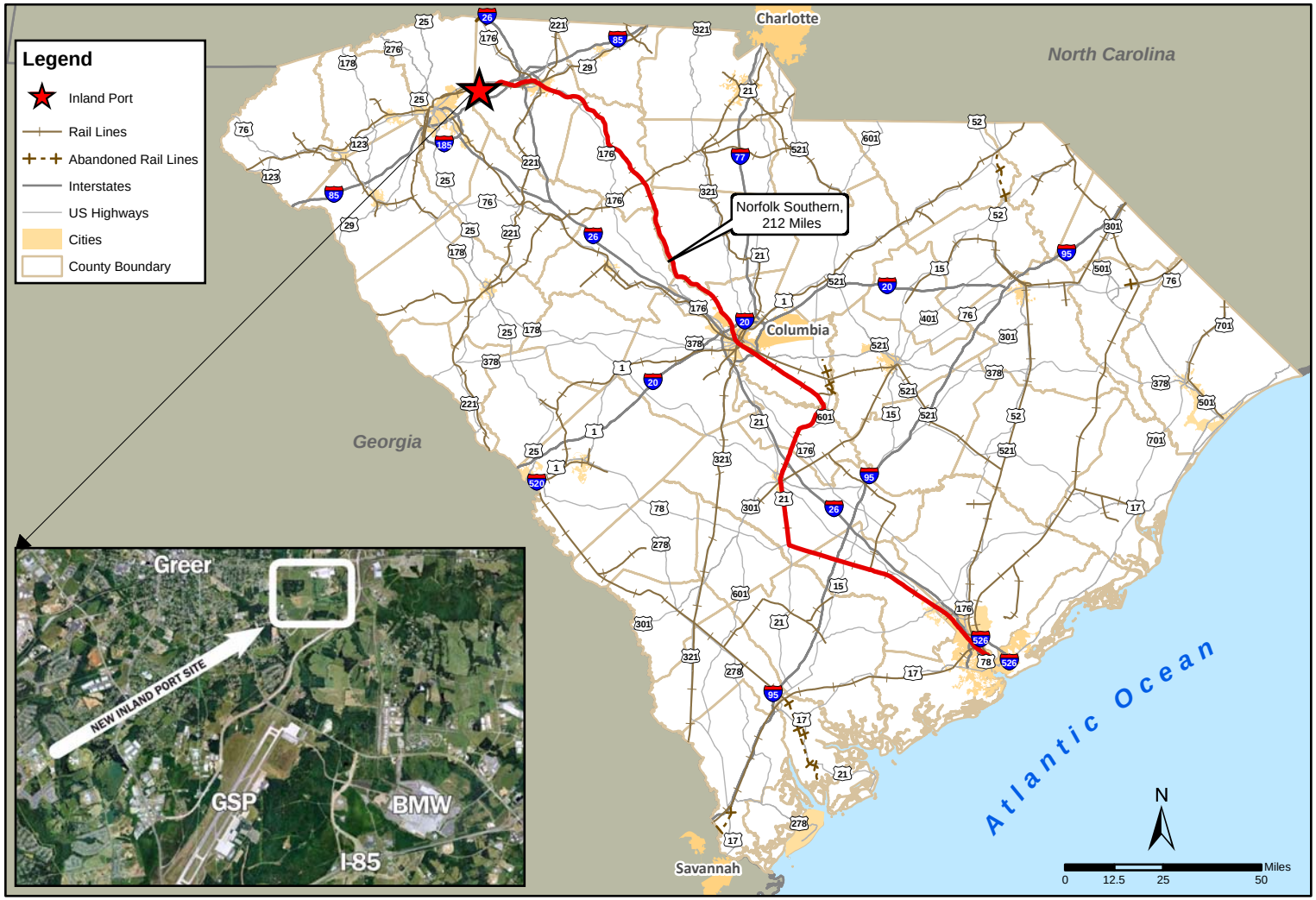


Figure 2-11: Illustrated Layout of Inland Port in Greer

Figure 2-12: Rendering of the Built-Out New Container Terminal at Port of Charleston

Source: South Carolina Ports Authority

2.1.2.1.3 Other Rail Served Ports

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.

2.1.2.2 Rail Passenger Stations

Rail passenger stations are discussed in Section 2.1.1.18.

2.1.2.3 Intermodal Connections at State Airports

South Carolina has six primary commercial airports, as shown in **Figure 2-13**. None of these airports are directly served by rail for purposes of freight or passenger intermodal services. These airports serve as intermodal hubs for shipping overnight packages and other freight that is brought to the airports by road.

2.1.3 Objectives for Rail Passenger Services

As noted previously all rail passenger services operating in the state are provided by Amtrak over lines owned by private freight railroads. As such, no South Carolina agency has responsibility or control over setting or meeting objectives for minimum service levels, service frequency, capacity or projected ridership.

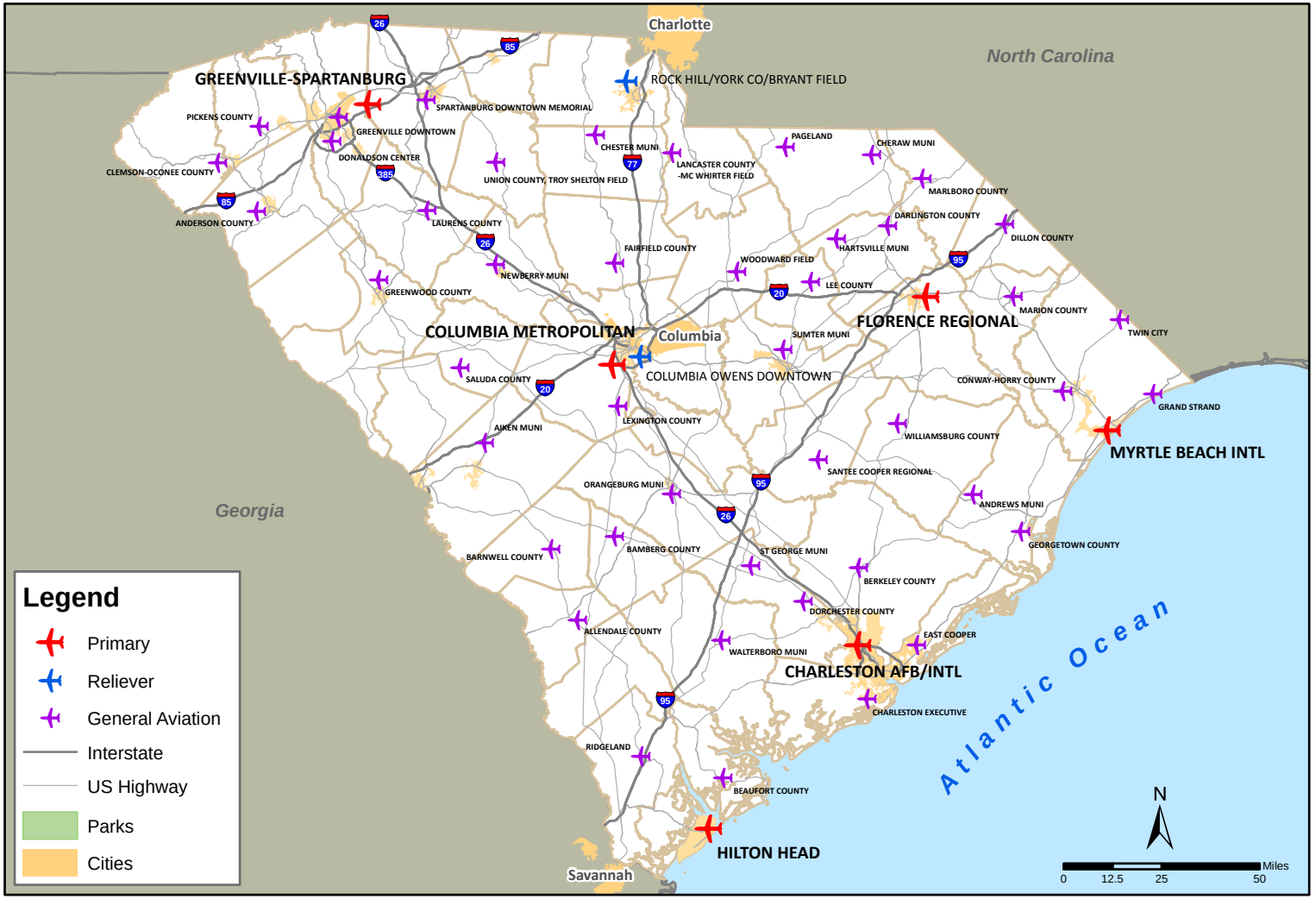
2.1.4 Performance Evaluation of Rail Passenger Services

2.1.4.1 Amtrak

Existing rail passenger service in South Carolina is provided by the National Railroad Passenger Corporation, better known as Amtrak. Amtrak 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, donated equipment and paid fees in order to avoid the deficits they were incurring on passenger operations. Amtrak has been in financial difficulties, but has continued to operate and provide a variety of services. Ridership has been increasing in recent years.

Figure 2-13: Map of Airports in South Carolina



Amtrak operates more than 300 intercity trains a day over 21,000 route miles serving more than 500 communities in 46 states. Amtrak's ridership in Fiscal Year 2012 totaled 31.2 million passengers, the highest ridership since Amtrak began operations in 1971. On average, more than 78,000 passengers ride more than 300 Amtrak trains per day[9]. **Figure 2-14** provides a map of Amtrak's passenger service network throughout the United States. There has been a 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.

2.1.4.2 Amtrak On-time Performance

Amtrak defines On-time Performance (OTP) as the total number of trains arriving on-time at an end-point station divided by the total number of trains operated on that route. A train is considered on-time if it arrives at the final destination within an allowed number of minutes, or tolerance, of its scheduled arrival time. Trains are allowed a certain tolerance based on how far they travel.

The on-time performance at end-points for the four Amtrak long distance trains serving South Carolina appears in **Table 2-10**. The August 2013 performance for these trains is compared to all Amtrak long distance train performance for the month.

Table 2-10: On-time Performance for Amtrak Trains at End Points

Amtrak Service	Aug-13	Aug-12	Change
Crescent	67.7%	80.6%	-12.9%
Palmetto	69.4%	75.8%	-6.5%
Silver Meteor	58.1%	48.4%	9.7%
Silver Star	64.5%	59.7%	4.8%
Amtrak Long Distance Trains	**65.7%**	**61.3%**	**4.4%**

Source: Amtrak Monthly Performance Report for August, 2013

Amtrak also calculates on-time performance at all stations, as seen in **Table 2-11**. The performance for these trains for August 2013 is close to or better than the 46.7 percent for all Amtrak long distance trains.

Table 2-11: On-time Performance for Amtrak Trains at All Stations

Amtrak Service	Aug-13	Aug-12	Change
Crescent	61.3%	69.8%	-8.5%
Palmetto	67.5%	71.9%	-4.5%
Silver Meteor	45.0%	41.0%	4.1%
Silver Star	56.3%	47.9%	8.3%
Amtrak Long Distance Trains	**46.7%**	**43.7%**	**3.0%**

Source: Amtrak Monthly Performance Report for August, 2013

[9] Amtrak National Fact Sheet – 2010, http://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&cid=1246041980246

Figure 2-14: Amtrak's National Network

Table 2-12 shows the causes of delay for Amtrak trains serving South Carolina. Delays are shown in minutes of delay. Definitions of the various major causes of delay are:

- **Train interference delays** are related to other train movements in the area. These can be freight trains as well as other Amtrak trains.
- **Track and signals delays** are related to the railroad infrastructure and/or maintenance work being done on the tracks or signaling systems. Included are delays from reduced speeds to allow safe operation due to the track problems.
- **Operational delays** are related to equipment turning and serving, crewing, and detours.
- **All other delays** could include delays caused by the weather, assisting passengers, and non-railroad third party factors such as customs and immigration, a bridge opening for waterway traffic, police activity, grade crossing accidents or loss of power due to a utility company failure.

Table 2-12: Causes of Delay to Amtrak Trains in August 2013

	Train Interference		Track and Signal		Operations		All Other		Total	
Amtrak Service	Min.	%	Min.	%	Min.	%	Min.	%	Min.	%
Crescent	3,751	34%	1,507	14%	575	5%	5,279	48%	11,112	100%
Palmetto	2,931	45%	501	8%	372	6%	2,778	42%	6,582	100%
Silver Meteor	3,788	29%	1,674	13%	798	6%	6,956	53%	13,216	100%
Silver Star	3,781	25%	2,315	15%	1,008	7%	7,981	53%	15,085	100%

Source: Amtrak Monthly Performance Report for August, 2013

Table 2-13 shows delays by railroad (Amtrak or host railroad) to the four Amtrak long distance trains serving South Carolina. Delays are shown in minutes of delay.

Table 2-13: Delays by Railroad to Amtrak Trains in August 2013

	Amtrak		Host		Other Delay		Total	
Amtrak Service	Min.	%	Min.	%	Min.	%	Min.	%
Crescent	2,387	22%	6,951	63%	1,774	16%	11,112	100%
Palmetto	1,378	21%	4,479	68%	725	11%	6,582	100%
Silver Meteor	3,263	25%	8,964	68%	989	8%	13,216	100%
Silver Star	3,565	24%	9,842	65%	1,678	11%	15,085	100%

Source: Amtrak Monthly Performance Report for August, 2013

2.1.4.3 Financial Performance

Amtrak's fiscal year (FY) begins on October 1. Amtrak reports route revenue and operating costs for its trains on a monthly and year-to-date basis. The figures for its last full fiscal year appear in the *Amtrak Monthly Performance Report for September 2012*. The figures for the four Amtrak long distance trains serving South Carolina appear in **Table 2-14**.

Table 2-14: Financial Performance of Amtrak Trains in FY 12

Amtrak Service	Revenue ($Millions)	Operating Cost ($M)	Fare Box Recovery
Crescent	$32.3	$75.4	42.8%
Palmetto	$17.4	$33.2	52.4%
Silver Meteor	$41.6	$83.7	49.7%
Silver Star	$36.3	$85.0	42.7%
Amtrak Long Distance Trains	**$518.5**	**$1,090.7**	**47.5%**

The relationship between revenue to operating costs is called the fare box recovery ratio. The ratio shows the degree to which revenues cover operating costs; it is a common measure of the financial success of public transport services. The fare box recovery ratios of the four Amtrak long distance trains that serve South Carolina bracket Amtrak's overall long distance service fare box recovery ratio of 47.5 percent. The best performer is the *Palmetto*, showing a fare box recovery ratio of 52.4 percent.

2.1.5 Public Financing for Rail Projects

As explained in Section 1.4, South Carolina does not have dedicated state revenue sources for passenger or freight rail, or any grant or loan programs for rail projects. In addition, the state's current public-private partnership (P3) legislation does not include passenger or freight rail projects. There are some limited opportunities for state and local financial assistance for Class I and Short Line freight rail companies and passenger rail initiatives from South Carolina's Department of Commerce and the South Carolina Transportation Infrastructure Bank.

2.1.6 Rail Safety and Security Programs

Rail safety and security is a high priority for both railroads and the public. Rail security involves protection of the physical rail system, operations, and freight being transported, including the threat posed by terrorists using the rail mode to disrupt transportation in general or harm large numbers of people. Although most rail safety falls under the jurisdiction of the Federal Railroad Administration (FRA), in reality a number of federal and South Carolina agencies work in concert with the railroads to improve both safety and security in the state. South Carolina programs, projects, and participating partners are the subject of this section.

2.1.6.1 Reportable Railroad Incidents

Railroad related incidents and causalities for the last full 10-year period 2003-2012 in South Carolina are summarized in **Table 2-15**. Train accidents include derailments, collisions and any accidents involving on-track rail equipment with property damage exceeding a monetary amount established by the FRA. Highway-rail grade crossing accidents or incidents are between a rail and highway user/pedestrian at a public or private crossing regardless of severity. Other Incidents are those that result in death or non-fatal conditions (reportable injuries occurring to employees or trespassers). Because property damage-only accidents are included, there is no direct correlation between the number of fatalities/non-fatalities and the total number of accidents.

Table 2-15: FRA Reportable Railroad Incidents 2003-2012 in South Carolina

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Incidents	**168**	**163**	**163**	**137**	**142**	**127**	**104**	**114**	**105**	**121**
Deaths	12	18	29	21	17	14	12	10	11	10
Injuries	98	84	370	80	77	53	56	64	63	111
Train Accidents	**19**	**39**	**26**	**17**	**21**	**22**	**18**	**10**	**11**	**10**
Deaths	0	0	9	0	0	0	0	0	0	0
Injuries	0	6	296	1	2	0	1	0	0	41
Highway-Rail Incidents	**70**	**67**	**75**	**47**	**66**	**63**	**41**	**51**	**36**	**59**
Deaths	5	12	9	12	7	6	6	4	4	6
Injuries	25	27	17	14	30	17	16	17	12	22
Other Incidents	**79**	**57**	**62**	**73**	**55**	**42**	**45**	**53**	**58**	**52**
Deaths	7	6	11	9	10	8	6	6	7	4
Injuries	73	51	57	65	45	36	39	47	51	48

Source: FRA Office of Safety Analysis

Note there is a general downward trend in all three kinds of reportable incidents: train accidents, highway-rail accidents, and other incidents. South Carolina's experience with an across-the-board decline in FRA reportable incidents during the past decade, including a 28 percent decline in total incidents, mirrors that of the US where total incidents fell by 25 percent (**Table 2-16)**.

Table 2-16: FRA Reportable Railroad Incidents 2003-2012 in All States

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Incidents	**14,370**	**14,523**	**14,311**	**13,793**	**13,905**	**12,864**	**11,089**	**11,632**	**11,439**	**10,797**
Deaths	865	891	884	903	851	804	707	736	698	706
Injuries	9,264	9,194	9,550	8,790	9,638	8,974	7,852	8,376	8,340	7,993
Train Accidents	**3,019**	**3,385**	**3,266**	**2,995**	**2,690**	**2,471**	**1,894**	**1,902**	**2,018**	**1,718**
Deaths	4	13	33	6	9	27	4	8	6	9
Injuries	232	346	787	220	307	324	118	110	207	285
Highway-Rail Incidents	**2,977**	**3,085**	**3,066**	**2,942**	**2,776**	**2,422**	**1,924**	**2,052**	**2,063**	**1,958**
Deaths	334	371	359	369	339	290	250	261	251	233
Injuries	1,035	1,094	1,053	1,070	1,057	977	729	886	1,035	929
Other Incidents	**8,374**	**8,053**	**7,979**	**7,856**	**8,439**	**7,971**	**7,271**	**7,678**	**7,358**	**7,121**
Deaths	527	507	492	528	503	487	453	467	441	464
Injuries	7,997	7,754	7,710	7,500	8,274	7,673	7,005	7,380	7,098	6,779

Source: FRA Office of Safety Analysis

South Carolina deaths and injuries, however, are more dispersed reflecting the variations in incident severity. The large increase in injuries in 2005 was driven by the Graniteville derailment and the release of chlorine gas.

2.1.6.2 South Carolina Strategic Highway Safety Plan

The South Carolina Strategic Highway Safety Plan is currently being updated by the Department. The last plan completed in 2007[10] identified a Vision for safety – *"Highway users will reach their destination safely"* – and three goals:

- **Fatality Reduction Goal** – reduce fatal accidents by 25 percent over a six-year period, from 1,046 in 2004 to 784 or less by 2010.
- **Injury Reduction Goal** – reduce the number of injuries by 3 percent annually.
- **Safety Resources Goal** – to endorse and support, as appropriate, efforts to increase funding for state and local traffic law enforcement safety improvements to highways, and enhanced EMS and first responder capabilities.

The 2007 plan defined five Emphasis Areas to help move towards the state's vision and goals. A comprehensive review of South Carolina's crash data revealed that several specific crash types result in numerous fatalities and injuries each year. Based on data analysis, nine serious crash types were identified as being of particular concern and were selected as the focus of Emphasis Area 1:

- Run-off-Road (includes hydroplaning and median crossover);
- Horizontal Curves;
- Intersection;
- Roadside Clear Zone – Trees and Utility Poles;
- Head-On;
- Secondary Collisions on Interstates;
- Work Zone;
- Animals; and
- Highway-Rail Grade Crossing.

Collectively, these serious crash types resulted in 6,241 fatalities and 28,832 injuries between 2000 and 2004, as shown in **Table 2-17**.

2.1.6.3 Highway-Rail Grade Crossings

In the last twenty years, South Carolina has made significant progress in reducing the number of at-grade crossing accidents. This type of collision was included in the 2007 Strategic Safety Plan because of the tremendous economic cost from this type of crash and the high proportion of fatalities to motor vehicle occupants when these events occur. Many grade crossing incidents are the result of drivers deliberately circumventing or otherwise purposely violating active control devices, such as flashing lights, bells, and crossing arms.

[10] South Carolina Strategic Highway Safety Plan: The Road Map to Safety, February, 2007

Table 2-17: Fatalities and Injuries by Crash Type 2000 – 2004

Crash Type [1]	5-Year Total Fatalities	5-Year Total Injuries
Run-Off-Road	2,202	6,515
Horizontal Curves	1,350	3,090
Intersection	969	6,315
Roadside Clear Zones	779	1,991
Head-On	677	2,551
Secondary Crashes on Interstates	110 [2]	3,538 [2]
Work Zone	88	4,205
Animals	35	4,322
Highway-Rail Grade Crossings	31	170

Notes: (1) Crashes can involve more than one factor (e.g. speeding, impaired by alcohol or other drugs); therefore, adding these numbers together will represent more than the total number of fatalities and injuries.
(2) Estimate only-data not currently captured.

The Strategic Highway Safety Plan defined the following objective specific to highway- rail grade crossing collisions:

To reduce the number of Railgrade Crossing traffic crashes, related traffic injuries and fatalities reported on South Carolina's roads and highways

The strategies to achieve this objective are:

- Engineering
  - Coordinate closely spaced signals near at-grade railroad crossings.
  - Eliminate and/or consolidate crossings.
  - Enhance warning signs/signals at selected rail grade crossings in targeted areas.
  - Install signalized gale crossings at targeted rail crossings.
- Enforcement
  - Implement railroad grade crossing requirements under Motor Carrier Safety Improvement Act (MCSIA).
  - Increased visibility/aggressive enforcement in high crash/risk area.
  - Implement and/or enhance high visibility, selective traffic enforcement program efforts at high incident locations.
  - Coordinate the "Trooper on the Train" Program with Operation Lifesaver and the media.
- Education
  - Support Operation Lifesaver.
- EMS
  - Improve response times in rural areas.
  - Implement NEMSIS.
- Public Policy and Other
  - Secure passage of automated enforcement legislation at rail grade crossings.
  - Investigate use of signs with Radio Frequency Identification (RFID) chips that can capture gate violation data.

- Enact and implement Driver's License Agreement (DLA) to enforce "one driver, one license, one state" rule and to enhance reciprocity in transfer of violations and suspensions among states.
- Implement Motor Carrier Safety Improvement Act (MCSIA) to ensure proper recording and transfer of violations and disqualifications for commercial drivers among states.
- Implement interface with SC Courts to transit dispositions of violations electronically.

The rail safety area most visible to the general public as a whole is the interface between the rail and highway systems at grade crossings. There are 3,927 highway-rail crossings in South Carolina, with 2,635 located on public roadways, 1,262 crossings on private roads, and 30 pedestrian crossings. The highway-rail safety program in South Carolina is the responsibility of the Traffic Safety arm of the Traffic Engineering Group of the SCDOT Engineering Division. It manages federal funds for grade crossing improvements derived from Section 103 monies. Funding levels total some $4 million per year, and are used to improve 18-20 crossings annually. Improvements currently consist principally of converting at-grade crossings protected with flashing lights to gated crossings. 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. The SCDOT currently has 73 grade crossing improvement projects underway. The projects listed in **Table 2-18** include those for 2013 along with those ongoing from prior years.

2.1.6.4 Rail Safety Inspection

In addition to the grade crossing inspections conducted by SCDOT, the Office of Regulatory Staff (ORS) works in partnership with the FRA to provide routine compliance inspections in two areas – federal track safety standards and federal standards related to motive power and equipment. The latter includes locomotives, freight and passenger cars, and safety appliances.

In 2011, ORS inspectors conducted 294 routine inspections[11] and detected 22 safety violations and documented 1,897 safety defects. In addition, ORS co-sponsors Operation Lifesaver and offers free safety education to schools and community groups in the state. Warning alerts are received from the state's Emergency Management Division related to rail incidents enabling quick response.

2.1.6.5 South Carolina Emergency Management Division

The South Carolina Emergency Management Division (SCEMD) is the coordinating agency responsible for the statewide emergency management program. A division of the Adjutant General's Office, SCEMD's mission is "to develop, coordinate, and lead the state emergency management program, enabling effective preparation for, response to and recovery from emergencies and disasters in order to save lives, reduce human suffering and minimize property loss" stemming from natural and technological hazards[12].

[11] Annual Report on Railroad Transportation Activities, 2011, The Office of Regulatory Staff.
[12] http://scemd.org/

Table 2-18: FY 2013 Active Railroad Projects

County	Route	RR Crossing Number	Upgrade
Aiken	S-2240 (Bath Mill St)	715 636M	Std FLS w / Gates
Dillon	S-195	634 483L	Upg FLS Add Gates
Marion	SC 41A	634 593W	Upg FLS Add Gates
Dillon	SC 41A	634 533M	Upg FLS Add Gates
Dillon	S-683	634 482E	Std FLS w / Gates
Sumter	S-466	633 106U	Upg FLS Add Gates
Sumter	S-94	633 098E	Add Gates
Sumter	S-479	632 617B	Cant / Std FLS w / Gates
Lexington	S-77 Barr Rd.	715 811B	Upg Cant FLS / Gates / XingS
Orangeburg	S-1336 State A&M Rd.	720 887S	Add Gates
Lee	SC-154	632 918W	Std FLS w / Gates
Hampton	SC-363	633 501D	Add Gates
Florence	S-953	632 667E	Std FLS w / Gates
Laurens	S-142	843 485B	Std FLS w / Gates
Dorchester	S-5 North Main Street	721 485N	Upg FLS Add Gates
Fairfield	S-88 Moultrie St.	715 952K	Upg FLS Add Gates
Charleston	S-60	721 434D	Add Gates
Richland	S-234	843 356L	Add Gates
Lexington	Doe Trail	843 319J	Add Gates
Greenville	S-149	717 108T	Add Gates
Aiken	US-1	715 764V	Add Gates
Greenville	S-149	640 599B	Add Gates
Greenville	S-657	640 586A	Add Gates
Greenville	S-106	640 578H	Std FLS w / Gates
Greenville	Oil Mill Road	640 572S	Std FLS w / Gates
Greenville	S-440	640 369A	Add Gates
Richland	Lincoln Street	634 655S	Std FLS w / Gates
Florence	SC-41	634 612Y	Add Gates
Darlington	SC-34	632 704E	Add Gates
Charleston	SC-642	632 034P	Add Gates
Richland	S-484	716 365M	Add Gates
Greenville	SC-101	640 685X	Add Gates
Darlington	SC-151Bus	632 863L	Add Gates
Sumter	S-101	633 109P	Add Gates
Dorchester	S-26	720 807W	Add Gates
Greenville	S-540	640 675S	Add Gates
York	S-697	723 896B	Add Gates
Marion	S-41	634 549J	Add Gates
Aiken	SC-191	715 675D	Add Gates
Greenville	US-25	717 083A	Add Gates
Lexington	S-167	715 821G	Add Gates
Williamsburg	US-521	633 050C	Add Gates
Greenville	S-335	640 663X	Add Gates
Lexington	SC-2	715 844N	Add Gates
Lexington	S-72	715 607C	Add Gates
Cherokee	S-66	724 053A	Std FLS w / Gates

County	Route	RR Crossing Number	Upgrade
Greenville	Tulip Street	640 645A	Std FLS w / Gates
Marlboro	S-47	634 400V	Std FLS w / Gates
Orangeburg	US-15	632 075U	Add Gates
Orangeburg	SC-210	632 086G	Std FLS w / Gates
Orangeburg	US-15	632 075G	Add Gates
Berkeley	S-24	632 243X	Std FLS w / Gates
Darlington	S-49	632 693U	Add Gates
Darlington	S-179	632 694B	Add Gates
Sumter	Race Track Road	633 101K	Std FLS w / Gates
Sumter	Cedar Avenue	633 107B	Std FLS w / Gates
Florence	S-174	633 405B	Std FLS w / Gates
Laurens	S-24	634 076H	Add Gates
Aiken	S-454	715 646T	Std FLS w / Gates
Marlboro	SC-381	634 387J	Std FLS w / Gates
Orangeburg	So. Patio Parkway	720 863D	Std FLS w / Gates
Marlboro	S-114	634 458D	Std FLS w / Gates
Georgetown	S-132	634 923A	Std FLS w / Gates
Edgefield	S-29	715 682N	Add Gates
Chester	S-36	715 981V	Std FLS w / Gates
Union	S-438	716 430R	Std FLS w / Gates
Newberry	S-87	716 821K	Std FLS w / Gates
Newberry	S-258	716 825M	Std FLS w / Gates
Newberry	S-91	716 826U	Std FLS w / Gates
Dorchester	S-135	720 778N	Std FLS w / Gates
Dorchester	S-120	720 806P	Std FLS w / Gates
Orangeburg	S-117	720 842K	Std FLS w / Gates
Chesterfield	S-534	634 186T	Std FLS w / Gates

To accomplish its mission, the SCEMD established three principal efforts, which are described below:[13]

- Develop plans and procedures to ensure the highest levels of mitigation, preparedness, response, and recovery;
  - Including the South Carolina Emergency Operations Plan, Hurricane Plan, Earthquake Plan, Terrorism Plan and other selected plans.

- Maintain a comprehensive, risked-based, multi-hazard emergency management and training program;
  - Including training of emergency planners and response personnel at the state and county levels, as well as the development and execution of state emergency management exercises.

- Promote public education for citizen preparedness and emergency management issues;
  - Coordinate federal, state and local resources for mitigation, preparedness, response and recovery operations;

[13] http://www.scemd.org/index.php?option=com_content&view=article&id=31&Itemid=242

- Maintenance and operation of the State Emergency Operations Center (SEOC) and the Alternate EOC;
- State assistance in preparedness and response through six emergency management regions;
- Mitigation programs that focus on the prevention of damage to personal dwellings and state and local infrastructure through technical assistance, including state and local risk assessment, and planning as well as administering the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation Program (PDM) and the Hazard Mitigation Grant Program (HMGP); and
- Public Assistance (infrastructure) and Individual Assistance (human services) programs, activities and planning to assist citizens during the recovery phase through programs that provide for the repair of damaged infrastructures and the human services programs administered to the public in the aftermath of a disaster where there is a Presidential disaster declaration.

2.1.6.6 Class I Railroad Homeland Security

CSX has established several public-private partnerships with homeland security officials in 17 states, South Carolina being one, the American Chemistry Council's Chemtrec call-response center, and the Transportation Security Administration. These partnerships provide information, resources and strategies related to the security of the railroad.

Norfolk Southern lists SCEMD as the state contact for Homeland security on their "Protect the Line" website.[14]

2.1.6.7 Strategic Rail Corridor Network

The US Military Surface Deployment and Distribution Command's Transportation Engineering Agency has identified the most important rail lines to national defense in the national Strategic Rail Corridor Network (STRACNET). STRACNET is comprised of a 32,000-mile interconnected network of rail corridors and associated connector lines throughout the country. South Carolina's lines included in STRACNET are shown in **Figure 2-15**.

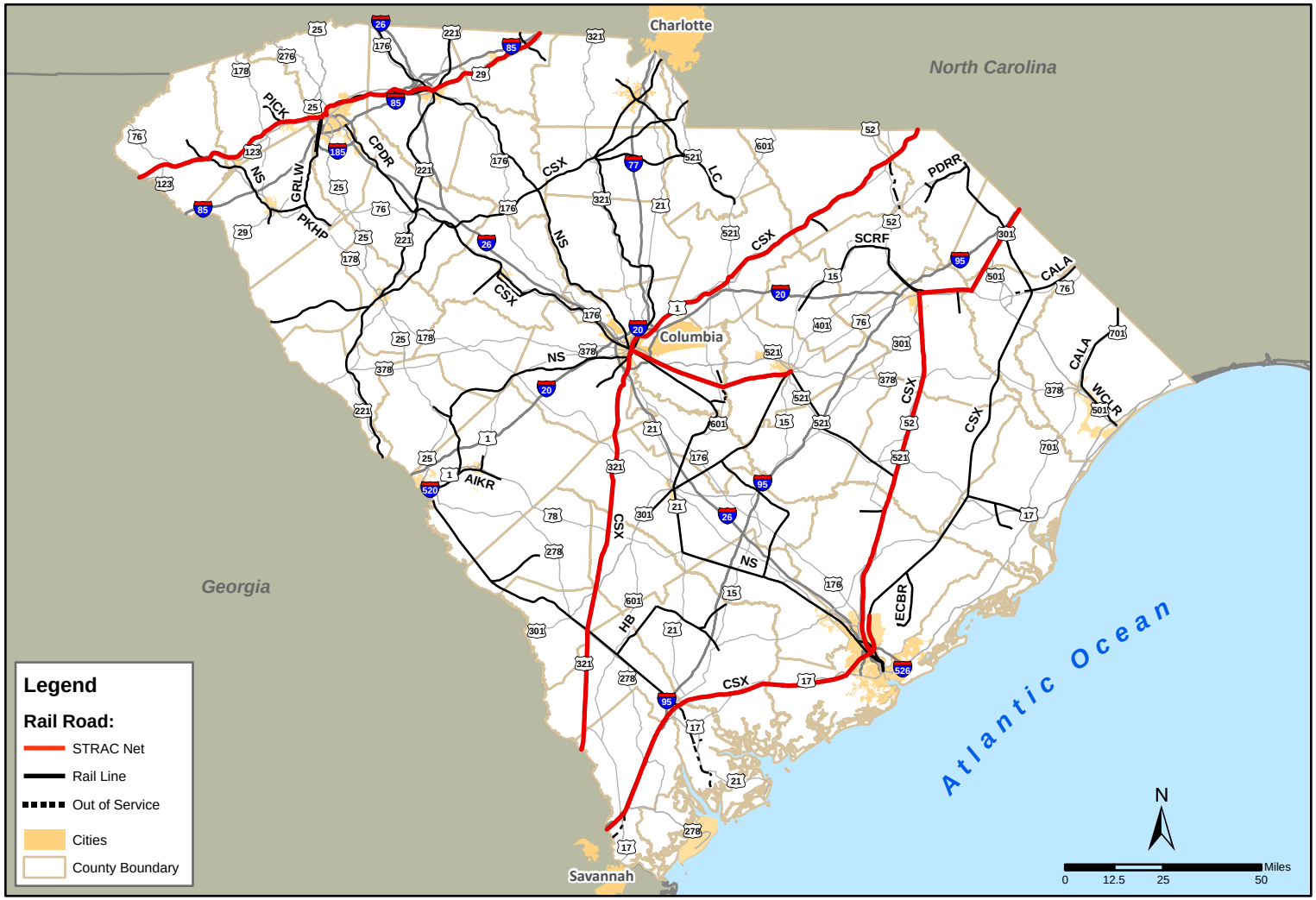
Fort Jackson in Columbia, Shaw Air Force Base in Sumter and two US Navy installations in the Charleston area (North Charleston and Goose Creek) are identified as defense installations requiring rail service. The first two are served from a CSXT line that runs from Columbia through Sumter to Lane.

2.1.7 Rail Transportation's Impacts

The impacts of rail transportation on congestion mitigation, trade and economic development, air quality, energy use, and land use in South Carolina are described in this section. Safety impacts are addressed in Section 2.6.

[14] http://www.protecttheline.com/homeland_security.php

Figure 2-15: South Carolina's STRACNET Rail Lines



2.1.7.1 Congestion Mitigation

Railroads play a double role in roadway congestion. Congestion can result because of railroad operations, but on the flip side, railroads can assist in mitigating congestion.

2.1.7.1.1 Railroad Induced Congestion

The most common induced cause of roadway congestion relates to at-grade highway-rail crossings. The slow passage of long trains over busy roadways, principally in urban areas, creates vehicular backups resulting in delays with loss of the driver's time combined with additional fuel consumption and emissions, among others. The most common approach to this problem is grade separation, construction of overpasses or underpasses either for individual roadways or as part of a corridor project involving several crossings in the same area. The latter could consist of crossing consolidation involving grade separations combined with selective closures.

Another approach is railroad relocation, or construction of expanded rail sidings. Relocation through new construction on a new alignment is one means, but expensive. Another approach is rerouting trains over another rail line that has fewer crossings and/or less roadway traffic. Often the two are used in combination.

Another induced cause ironically results from mitigation efforts, namely intermodal connection points. A connection between the rail network and other modes typically occurs at ports or intermodal facilities. Proper planning, local commitment and support for improvements are required to ensure proper connectivity with minimal negative impact is in place.

2.1.7.1.2 Railroad Mitigation Impacts

Increased demand and continued reliance on auto and air travel for passenger trips and on trucks for freight movement can lead to negative impacts, not only increased congestion, but additional safety and environmental concerns. The most familiar mitigation approach involving railroads is to divert truck transportation to rail for freight, and vehicular and air personal travel to passenger trains. Currently, passenger and freight rail transport face challenges when competing with auto, air, and truck travel. However, perceived rail shortcomings, often due to rail being slower, less convenient and less connected than other modes of travel, can be overcome.

High speed rail offers potential to relieve air transport congestion. For example, travel on the Northeast Corridor between Washington and Boston has attracted a large percentage of former air shuttle passengers between the major cities along the corridor, and the same result is projected for other planned corridors. The status of high speed rail in South Carolina is discussed in Section 2.3.5.

Likewise, commuter trains are effective in mitigating roadway congestion in urban areas during the traditional morning and afternoon rush hours. Rail commuter service does not currently exist in South Carolina, but studies have been conducted in Charleston, Columbia and in the Upstate between Greenville and Spartanburg, the three metro areas that have the most severe rush-hour congestion. Interest remains strong in Charleston.

Mitigation of freight traffic is largely approached using intermodal conversions – rail replacing the line-haul portion of truck movements with the local pick-up and delivery continuing to be performed by the latter. The most common approach considered is rail transport of trailers (piggyback) and containers, but it can also be accomplished with conversion to carload traffic, both point-to-point and transfer between rail and truck. Facilities permitting both forms are located in the state. As an example, the inland port at Greer is expected to remove 25,000 trucks from I-26 between Charleston and the Upstate initially and potentially 100,000 in five years.[15]

2.1.7.2 Trade and Economic Development

South Carolina's railroads play a major transportation role in the conduct of the state's trade and in the attraction of new industry. They serve all of the major population and commerce centers as well as the Ports of Charleston and Georgetown. In addition to the provision of direct rail service, they serve multimodal facilities throughout the state, some of which they own and operate, providing rail access to shippers and consignees that do not have access to direct rail service at their place of business.

2.1.7.2.1 Early History of South Carolina Trade

To facilitate trade, the Charleston and Hamburg Rail Road was chartered in 1827[16] to build and operate a "railed road" between the two cities as well as Columbia and Camden. Its purpose was not only to reach the interior of the state, but to divert steamboat shipments bound for the Port of Savannah to the Port of Charleston, thus the selection of the terminus, which was across the Savannah River from Augusta. Regular operations began on Christmas Day in 1830 between Charleston and Sans Souci (the current location of the Norfolk Southern-Dorchester Road crossing in North Charleston), the first such in the country. The line reached Columbia in 1842, via a line originating in Branchville, and Camden in 1848.[17]

2.1.7.2.2 Economic Development and Rail

Railroads have long been actively involved in economic development to develop business and generate revenue along their lines. Southern Railway, a Norfolk Southern predecessor, established a Land and Industrial Department in 1896 to encourage growth of industrial, agricultural and natural resource development in its Southeastern service area.[18]

Economic development efforts today consist of resident officers that not only work directly with prospects, but also with state and local development organizations, and those of other service companies such as energy and utility providers. Some prospects specifically search for sites suitable for direct rail service, and many others are looking for sites proximate to intermodal facilities.

Rail carriers also offer services such as site selection, planning and engineering related to site development as it pertains to the provision of rail service. Special programs are also being developed such as CSX's Select Sites -- certified, rail-ready industrial properties with known risk factors identified

[15] " S.C.'s inland port open for business in Greer" by Bruce Smith, *The State,* p.B4, October 16, 2013
[16] In 1828, the charter fell under the control of the much broader South Carolina Canal and Rail Road charter.
[17] Data obtained from *The Charleston and Hamburg*, by Thomas Fetter, History Press, 2008
[18] http://www.areadevelopment.com/logisticsInfrastructure/Q1-2013/rail-road-infrastructure-projects-support-LNG-industry-27627.shtml

and potential issues resolved. To receive the CSX Select Site designation, the sites – from one hundred to one thousand acres in size must meet key criteria, "including infrastructure and utility availability, environmental reviews, appropriate zoning and entitlement, air quality permitting, rail serviceability, proximity to highways or interstates and other attributes. CSX has partnered with The Austin Company, a nationally known site selection certification consulting firm, to screen candidate sites and assist communities with the application and certification process."[19]

Short line carriers now operating former Class I branch lines were initially instrumental in preserving service for a number of on-line businesses. Now they are active in promoting economic development as a means of growing traffic bases. Several of the state's short lines have connections with both Class I carriers offering industrial prospects additional transportation choices.

In addition to the private carriers, the South Carolina Public Railways, operating as Palmetto Railways, a Division of the Department of Commerce, is also active in economic development as it is charged with supporting economic development efforts throughout the state in addition to operating three railroads. In doing so, it provides technical assistance and consulting services in railroad matters to state, local and municipal governments and has the authority to acquire rail equipment, rights of way, operations, and construct and operate rail lines deemed to be in the public interest to promote and foster economic growth.

2.1.7.3 Energy Use and Air Quality

2.1.7.3.1 Energy Use and Costs

Numerous sources from a wide range of perspectives conclusively indicate that rail transport saves energy and, hence, is vastly more cost efficient than truck highway transport.

U.S. Department of Energy – According to the US Department of Energy's *2012 Transportation Energy Data Book,* intercity rail passenger service is 6 percent more efficient than commercial aviation and 25 percent more efficient than the automobile[20]. Amtrak onboard surveys indicate that the majority of rail passengers are traveling alone. This is largely because rail passenger service tends to be more attractive economically for the solo traveler than the automobile. As a key priority, focusing on shifting solo travelers from auto to rail yields the greatest energy and greenhouse gas savings.

The Association of American Railroads (AAR) has noted that in 2011 one gallon of diesel fuel moved a ton of freight by rail 469 miles – four times the efficiency of trucks. The US Environmental Protection Agency estimates that for every ton-mile, a typical truck emits three times more nitrogen oxides and particulates than a train. Related studies suggest that trucks emit 6 to 12 times more pollutants per ton-mile than railroads, depending on the pollutant measured. The American Society of Mechanical Engineers found that 2.5 million fewer tons of carbon dioxide would be emitted into the air annually if 10 percent of intercity freight now moving by highway were shifted to rail.

[19] www.csx.com

[20] In past years, rail was even more efficient than commercial aviation. The drop has resulted from higher load factors due to flight cuts and retirement of older aircraft. In 2008, for example, the same report showed intercity rail as 18 percent more efficient than the automobile.

The American Association of State Highway Officials (AASHTO) noted that for each 1 percent of long-haul freight currently moving by truck, fuel savings would be approximately 111 million gallons per year if moved by rail instead; and annual greenhouse gas emissions would fall by 12 million tons. If 10 percent of truck traffic went by rail – via intermodal movements involving both railroads and trucks – the cumulative estimated greenhouse gas reductions from 2007 to 2020 would be 210 million tons. Finally, rail lines can be electrified, yielding additional efficiencies from regenerative braking, and creating opportunities for alternative power sources. Thus shifting of traffic to the rail mode can reduce the energy intensity of transportation while somewhat insulating users from dramatic changes in fuel prices.

National Waterway Foundation – This organization found that fuel usage and associated transport costs vary considerably given the various cargo carrying capacities and the different vehicles required to transport goods. For example, one gallon of fuel can transport one cargo ton approximately 150 miles by truck. Rail can transport the same ton of cargo 3.2 times as far, 478 miles (roughly similar to the AAR figure) on a gallon of fuel. As seen in **Table 2-19**, the energy transport costs of rail transport are approximately 30 percent those of truck. The rail transport cost comparisons are even greater when one considers: (1) labor costs; (2) operation and management costs associated with both vehicles and the infrastructure; and (3) safety and environmental costs.

Table 2-19: Modal Ton-Mile and Energy Cost per Gallon of Fuel

Mode	Ton-Miles	$/Ton-mile
Tug Barge	616	$0.0065
Rail Locomotive	478	$0.0084
Truck	150	$0.027

National Waterway Foundation and Texas Transportation Institute; http://www.nationalwaterwaysfoundation.org/study/public%20study.pdf
Assume $4.00 cost per gallon

Ongoing Energy Use Improvements – Railroads are working to even further reduce energy consumption and emissions by using more efficient motive power and cleaner fuels.

The Environmental Protection Agency (EPA) initiated a multi-step program in 2008 to reduce diesel locomotive emissions. The EPA's stringent Tier 4 standards for newly built and remanufactured locomotives will take effect Jan. 1, 2015. The agency estimates 90 percent particulate matter (PM) reductions and 80 percent nitrogen oxide (NOX) reductions from Tier 4 engines meeting these standards compared to engines meeting the current Tier 2 standards. Further, by 2030, it is estimated the program will result in the reduction of annual emissions of NOX by about 800,000 tons and PM emissions by 27,000 tons. In addition, emission reductions will continue to grow beyond 2030 as fleet turnover is completed. [21] Locomotive builders and diesel power plant suppliers are already supplying power meeting Tier 4 standards.

On another front, using LNG (liquefied natural gas) as a locomotive fuel is being tested, or preparations are being made to test, by four Class I railroads – BNSF, UP, CN, and NS. Significant benefits are

[21] http://www.epa.gov/nonroad/420f08004.pdf

expected in both costs and emissions. In terms of reduced fuel expenses, based on current LNG costs, a savings of up to $200,000 per year per locomotive could be reached. And, while not currently supported by data analyses, some national stakeholders project that greenhouse gas emissions will be lower than diesel fuel capable of meeting Tier 4 standards.[22]

Another approach to reduce fuel consumption and thus emissions is the "genset" locomotive. Railroads are currently adopting this form of motive power for use in yard switching, especially where strict air quality standards have to be met, and serving industrial areas. A few carriers are also using them for light work on branch lines. Classic diesel electric locomotives have a large diesel engine that generates electric power for the traction motors turning the axles. A "genset" locomotive, on the other hand, has two or three smaller engine-generators that are programmed to start up only as needed to meet the traction demand at any one time resulting in less overall fuel consumption

2.1.7.3.2 Environmental Damages and Costs

Comprehensive and easily digestible data on environmental impacts and costs by mode are difficult to find. Nonetheless, the various data sources indicate that freight transport by rail and water vessels generate significantly less environmental impacts and costs than truck transport. Such information follows the general efficiency trends regarding trip distance and costs per ton-mile; both rail and water transport are significantly more efficient than truck.

Regarding fine particle matter with a diameter of 2.5 microns or less (PM2.5), the ton impact per million ton-miles of rail and water transport is approximately one-tenth of truck transport (0.0158 and 0.0128 versus 0.1126, respectively). Similarly, the NOX emission tons per ton-mile traveled for rail and water transport approximate a fifth of truck transport (0.5954 and 0.5171 versus 2.8549, respectively), as seen in **Table 2-20**. Combined, PM2.5 and NOX emissions generate environmental damages per million ton-miles of $41,480 for truck transport, which is several times greater than rail ($6,710) or water ($5,610) transport damages.

Further, man-made greenhouse gases include CO2, methane, nitrous oxide, and fluorinated gases. Of these, CO2 is the dominant emission. Similar to the PM2.5 and NOX emissions, the impact of both rail and water freight transport is a fraction of truck transport.

[22] http://www.railwayage.com/index.php/mechanical/locomotives/experts-weigh-in-on-lng.html

Table 2-20: Environmental Damages and Costs per Million Ton-Mile, by Mode

	Trucks	Rail Locomotives	Waterborne Vessels
Ton Miles (Millions)[1]	2,040,000	1,819,633	274,367
PM2.5 Emissions			
Tons (Total)	229,754	28,690	3,520
Tons per Million Ton-Miles	0.1126	0.0158	0.0128
Damages per Ton	$251,466	$251,466	$251,466
Damages per Million Ton-Miles	*$28,320*	*$3,960*	*$3,230*
NOX Emissions			
Tons (Total)	5,824,060	1,083,320	141,865
Tons per Million Ton-Miles	2.8549	0.5954	0.5171
Damages per Ton	$4,610	$4,610	$4,610
Damages per Million Ton-Miles ($000)	*$13,160*	*$2,740*	*$2,380*
CO2 Emissions			
Tons (Total)	468,702,800	52,690,500	5,286,600
Tons per Million Ton-Miles	229.76	28.96	19.27
Damages per Ton[2]	na	na	na
Damages per Million Ton-Miles ($000)	na	na	na
Summary Damages per Million Ton-Miles[2]	***$41,480***	***$6,710***	***$5,610***

Source: Surface Freight Transportation; A Comparison of the Costs of Road, Rail, and Waterways Freight Shipments That Are Not Passed on to Consumers; GAO, January 2011; http://www.gao.gov/new.items/d11134.pdf
Monetary values in 2010$
[1]*Trucks and Locomotives reflect 2007 ton-miles, versus year 2005 for waterborne vessels*
[2]*Damages per ton not available*
[3]*Excludes CO_2 damages*

2.1.7.4 Noise

Noise generated in rail operations that receive the most attention are those associated with rail facilities, such as yards and components thereof, and trains passing through at-grade highway-rail crossings. Rail facilities generate noise of a longer duration than passing trains which are intermittent in nature with the frequency depending on the use of the rail line involved. The noise associated with passing trains, however, is intensified with the blowing of train horns at grade crossings.

2.1.7.4.1 Rail Facilities

Most rail facilities have been in operation since the railroad was originally constructed or just after, prior to any environmental impact processes and community input, and land uses have adjusted to them over time. The construction of new facilities, however, faces review through the environmental assessment and impact process, which results in rejection, modification and/or prescribed mitigation measures. The most common community objections are noise generation and vehicular traffic impacts, the latter having been discussed previously. Noise generation is typically addressed with various types of noise barriers, berms and walls for example, distance from the source, and facility equipment selection, such as on-terminal cranes and transport units using electric power rather than diesel.

2.1.7.4.2 At-Grade Crossings

In addition to the potential to create roadway congestion, grade crossings are also noise generators due principally to the blowing of train horns as required by law as a safety precaution. One means to combat train horn noise is the implementation of railroad quiet zones. These are zones involving one or more highway-rail crossings where the locomotive engineer is not obligated to blow his horn approaching the crossing(s)[23].

The procedures whereby a community can implement a quiet zone are specified by the Federal Railroad Administration[24]. Typically, improvements need to be made to enhance safety at the crossings as a means to mitigate the absence of the train horn warning. Steps are taken to prevent roadway vehicles from crossing the track(s) and include such measures as four-quadrant gates, medians on approaches along with gates at the crossings, one-way streets, street closures, etc. Once the improvement designs are reviewed and approved by the FRA and the railroad(s) involved, a quiet zone can be established. After implementation locomotive engineers will not blow their horns in the zone except when they feel it necessary to rectify an unsafe condition, such as pedestrians traversing the crossing despite the gates and flashing lights. Quiet zones are generally implemented by the impacted communities.

Three quiet zones have been implemented in the state, in North Charleston (CSX), Spartanburg (NS), and Charleston (NS), and others have been studied. Columbia is one of the communities that has expressed interest and prepared a preliminary appraisal of several rail corridors.[25]

2.1.7.5 Land Use

There are linkages between transportation and land use that support or encourage the development of certain land uses. They exist both for freight and passenger service.

2.1.7.5.1 Compatibility

Freight railroads are best suited to traverse industrial, agricultural, natural resource and other non-residential land uses. In this manner conflicts associated with developed and populated areas are avoided while simultaneously creating opportunities to capture additional revenue-generating traffic. Preservation of such properties, however, requires vigilance, especially in growth communities, to prohibit them from being consumed by urban sprawl. Vacant land with industrial zoning and good rail access should be a priority as well as that with the potential to be zoned industrial.

Passenger trains, on the other hand, need access to stations in developed and populated areas to generate ridership. This holds true for long-distance trains as well as local and regional service. Passenger service, principally local service, also can spur development around station locations resulting in land use that often takes the form of mixed-use development with higher densities, an integrated mobility system, and a more pedestrian-friendly environment. Smart growth and the development around train stations facilitate travel patterns that are more energy efficient than auto-

[23] Federal regulations specify that trains horns be sounded while trains approach and enter highway-rail crossings.
[24] http://www.fra.dot.gov/rpd/freight/1318.shtml
[25] *Columbia Quiet Zone Feasibility Study,* prepared for the City of Columbia by Wilbur Smith Associates, 2003

oriented development and contribute to a safer, more livable, sustainable community. However, there is no regional or local service in the state, and although there is some interest, only preliminary studies have been conducted. Thus the only South Carolina rail stations serve as Amtrak stops with most of the stations built by the original railroads serving the community.

2.1.7.5.2 Barriers

Rail lines traversing developed areas can also act as barriers. They have the potential to physically and socially divide neighborhoods, cause traffic congestion and limit access by emergency response services. In addition to the accident potential created at at-grade highway-rail crossings, the temptation for pedestrians to cross the tracks and to use the tracks and rights-of-way as paths generates trespassing safety concerns. In 2013 there were 12 trespassing deaths and 12 injuries in South Carolina, up from 7 and 6, respectively, in 2011.[26] Continued growth of rail traffic on the state's rail system will intensify the need to improve safety and other community concerns.

2.2 Existing Rail System: Trends and Forecasts

This section discusses trends and forecasts that may impact rail freight and passenger demand in future years.

2.2.1 Demographic and Economic Growth Factors

2.2.1.1 Population

2.2.1.1.1 Historical Population Trends

Between 2000 and 2010, the population of South Carolina increased by 15 percent, from 4.012 million to 4.625 million. Compared to the US growth during the same period of 9 percent, South Carolina's growth was almost 70 percent greater than the nation's, but comparable to nearby states. Population totals and growth rates in the past two decades are shown in **Table 2-21** and **Figure 2-16** for South Carolina, nearby states and the country as a whole.

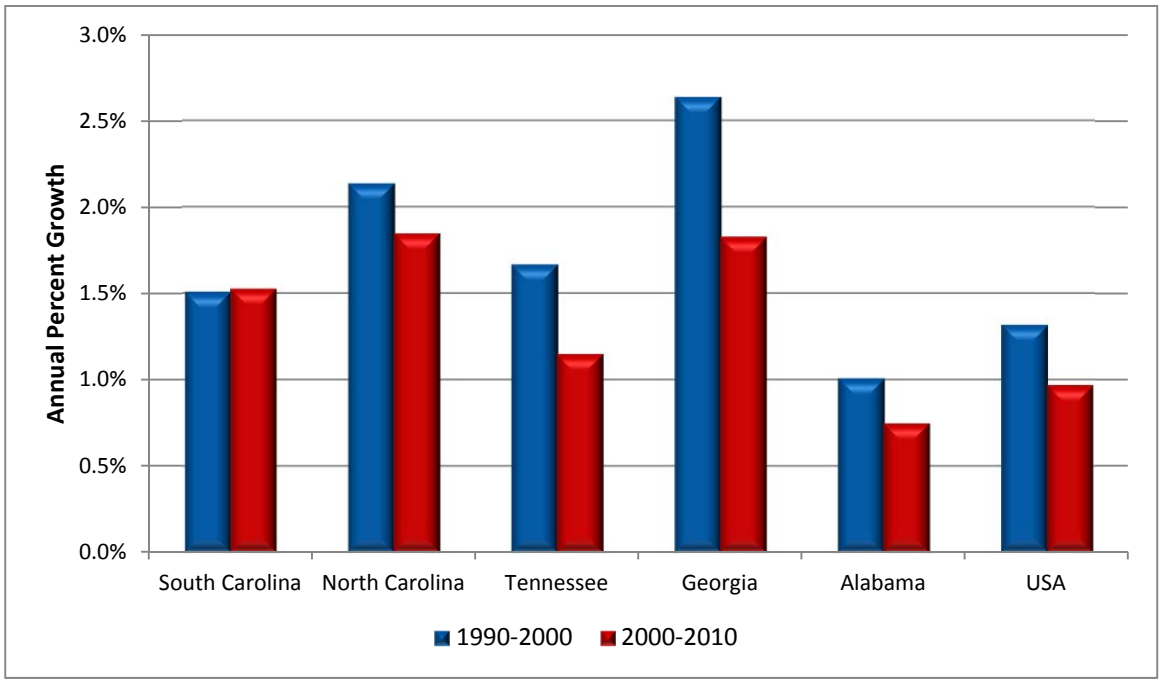
Table 2-21: South Carolina Population in 1990, 2000, and 2010

	Population			Annual Growth Rate	
State	1990	2000	2010	1990-2000	2000-2010
South Carolina	3,486,703	4,012,012	4,625,364	1.51%	1.53%
North Carolina	6,628,637	8,049,313	9,535,483	2.14%	1.85%
Tennessee	4,877,185	5,689,283	6,346,105	1.67%	1.15%
Georgia	6,478,216	8,186,453	9,687,653	2.64%	1.83%
Alabama	4,040,587	4,447,100	4,779,736	1.01%	0.75%
United States	**248,709,873**	**281,421,906**	**308,745,538**	**1.32%**	**0.97%**

Source: U.S. Census Bureau

[26] U.S. Department of Transportation, Federal Railroad Administration, *Office of Safety Analysis. Data* available at http://safetydata.fra.dot.gov/officeofsafety/ as of May 21, 2014 (Excludes highway-rail crossing incidents).

Figure 2-16: South Carolina and Nearby States Population Growth Rates



Source: U.S. Census Bureau

South Carolina's 2010 population placed it 24th in rank compared to other states, compared to 26th in 2000 and 25th in 1990.

2.2.1.1.2 Population Projections

Population projections for South Carolina and nearby states, based on US Census Bureau publications,[27] are summarized in **Table 2-22**.

The 15.1 percent rate of growth in population experienced by South Carolina in the 1990s (1.5 percent annually) increased slightly during the 2000s to 1.53 percent annually, but the rate of growth is projected to decrease over the next 20 years. Overall, between 2010 and 2030, it is projected that South Carolina's population will increase by 11.1 percent, from 4,625,364 at the 2010 Census to approximately 5,148,569 in 2030.

The population of South Carolina is projected by the U.S. Census Bureau to increase over the next two decades, but at a slower rate than adjacent states and slower than the United States as a whole. This projection would reverse the trend seen from 1990 to 2010 when South Carolina increased in population at a rate greater than that of the U.S. and at a pace to neighboring states.

[27] U.S. Census Bureau, website at http://www.quickfacts.census.gov

Table 2-22: Population Projections, 2010 – 2030

State	Population[1]	
	2020	2030
South Carolina	4,822,577	5,148,569
North Carolina	10,709,289	12,227,739
Tennessee	6,780,670	7,380,634
Georgia	10,843,753	12,017,838
Alabama	4,728,915	4,874,243
United States	**341,387,000**	**373,504,000**

State	Annual Percentage Growth		Total Percent Growth
	2010-2020	2020-2030	2010-2030
South Carolina	0.4%	0.7%	11.1%
North Carolina	1.2%	1.4%	26.5%
Tennessee	0.7%	0.9%	15.7%
Georgia	1.2%	1.1%	22.7%
Alabama	-0.1%	0.3%	2.0%
United States	**1.1%**	**0.9%**	**20.0%**

Note: (1) 1990, 2000 and 2010 populations from Census. 2020, 2030 populations are U.S. Census Bureau projections from 2008. Projections to 2040 have not yet been released by the US Census Bureau.

2.2.1.1.3 Distribution of Population Growth within South Carolina

The growth in population in South Carolina over the last 20 years has not been evenly distributed throughout the state. Growth in ten regions is shown in **Table 2-23**. Projected populations are also shown to 2040. These regions follow COG boundaries shown in **Figure 2-17**.

All COG regions experienced growth from 1990 to 2010. In seven of the regions, growth was higher during the first decade than the second. Waccamaw Regional PDC and Lowcountry COG, both of which lie along the coast, saw the highest population increases over the two decades with Lower Savannah COG and Pee Dee Regional COG seeing the lowest

Based on the regional population projections from the state data center the Catawba RPC and Waccamaw PDC will be the fastest growing regions over the 30-year period from 2010 to 2040. The Upper Savannah, Pee Dee Regional, and Santee-Lynches COGs are projected to have the lowest growth. Based on these projections the population of South Carolina will reach 6 million by 2040, some 30 percent higher than at the 2010 census, as shown in **Figure 2-18**.

Table 2-23: Population Growth by Council of Government

Council of Government Areas	Population (Thousands)						Annual Growth				
	1990	2000	2010	2020	2030	2040	90-00	00-10	10-20	20-30	30-40
Appalachian COG	888.0	1,028.7	1,171.5	1,260.2	1,371.3	1,512.4	1.5%	1.3%	0.7%	0.8%	1.0%
Berkeley-Charleston-Dorchester COG	506.9	549.0	664.6	736.0	806.0	891.6	0.8%	1.9%	1.0%	0.9%	1.0%
Catawba RPC	248.5	289.9	364.8	419.4	476.5	522.8	1.6%	2.3%	1.4%	1.3%	0.9%
Central Midlands	508.8	596.3	708.4	778.5	853.5	940.2	1.6%	1.7%	0.9%	0.9%	1.0%
Lowcountry COG	154.5	201.3	247.0	276.9	304.3	335.6	2.7%	2.1%	1.1%	0.9%	1.0%
Lower Savannah COG	300.7	309.6	313.3	327.4	338.8	380.0	0.3%	0.1%	0.4%	0.3%	1.2%
Pee Dee Regional	307.1	330.9	346.3	355.1	366.1	404.3	0.7%	0.5%	0.3%	0.3%	1.0%
Santee-Lynches COG	193.1	209.9	223.3	231.2	239.5	261.8	0.8%	0.6%	0.3%	0.4%	0.9%
Upper Savannah COG	185.2	215.7	218.7	220.6	226.0	247.5	1.5%	0.1%	0.1%	0.2%	0.9%
Waccamaw Reg. PDC	227.2	289.6	363.9	415.5	469.7	513.1	2.5%	2.3%	1.3%	1.2%	0.9%
South Carolina	**3,486.7**	**4,012.0**	**4,625.4**	**5,020.8**	**5,451.7**	**6,009.3**	**1.4%**	**1.4%**	**0.8%**	**0.8%**	**1.0%**

Source: South Carolina Data Center

Figure 2-17: South Carolina MPO and COG Boundaries

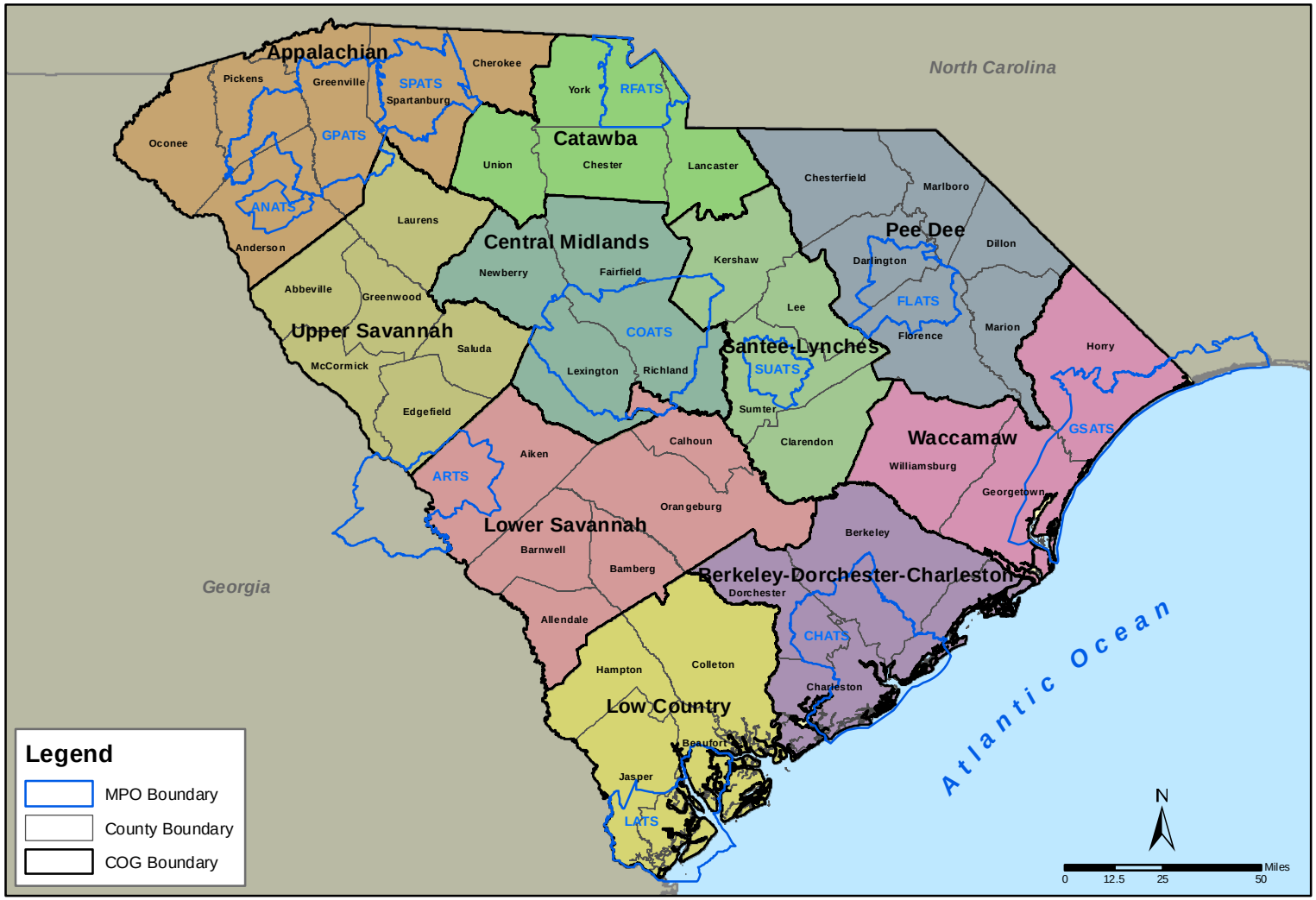
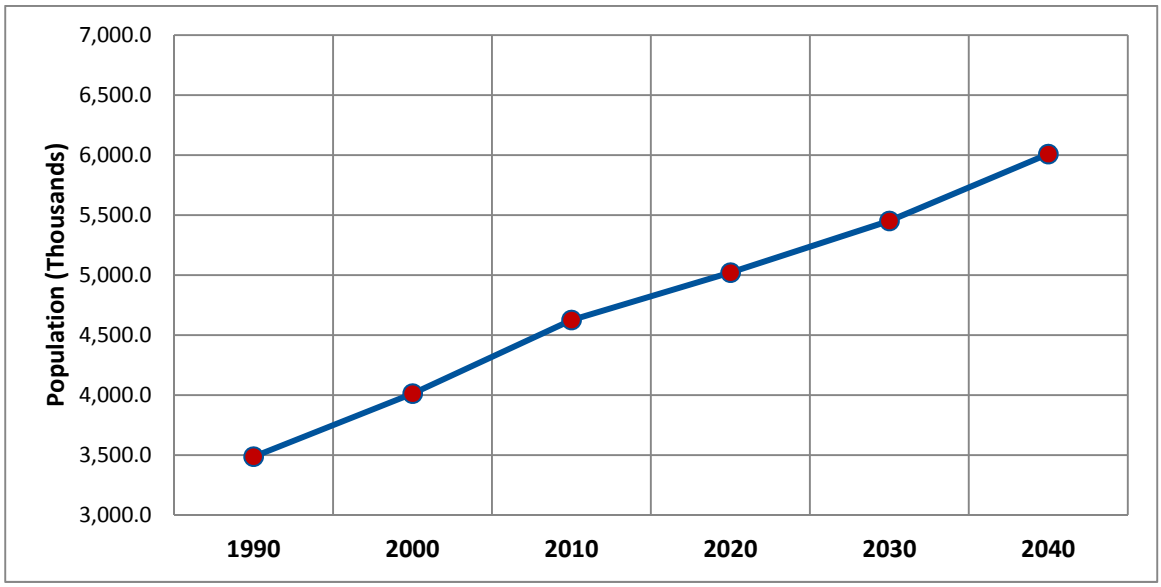


Figure 2-18: South Carolina Population: 1990 to 2040



Source: U.S. Census Bureau - 1990, 2000, 2010, SC State Data Center - 2020, 2030, 2040

2.2.1.2 Employment

South Carolina's continued economic development depends heavily on transportation infrastructure. The transportation system can also greatly influence the character and impact of development. If the system fails to provide the means for efficient and convenient movement of people and goods, the state's economy may fail to grow to its potential.

2.2.1.2.1 Historical Employment Trends

Between 2000 and 2010 South Carolina's employment rate as a percentage of the employable population (population over 16 years of age in the labor force) decreased from 63.4 percent to 62.9 percent. However the number employed grew by 269,475 or approximately 1.4 percent per year. **Table 2-24** compares employment data for South Carolina, nearby states and the nation. Employment growth in the state was greater than the nation's rate of 1.1 percent per year. Nearby states ranged from 0.9 percent in Alabama to 1.6 percent in Georgia. South Carolina grew employment at a slower rate than population during the 10-year period, as was the case in all neighboring states except Alabama. Population aged 16 years and older is also shown to provide a comparison of the number of employed to the number of employable. This number can also be compared to population numbers above to see how much of the total population is employable.

2.2.1.2.2 Employment Projections

Future trends for South Carolina employment are based on data obtained through the SC Works online website application. This site provided Occupational Employment Projections in South Carolina for all occupations using a base year of 2010 and a projected year of 2020. Employment projections are shown in
Table 2-25**.**

Table 2-24: Statewide Employment Data for 2000 and 2010

State	2000 Employment	2010 Employment	Annual Growth		
			Employment	Population	2010 16 + Pop
South Carolina	1,974,222	2.243,697	1.37%	1.53%	3,567,959
North Carolina	4,130,579	4,725,801	1.44%	1.85%	7,287,107
Tennessee	2,822,908	3,098,473	0.98%	1.15%	4,919,958
Georgia	4,129,666	4,770,546	1.55%	1.83%	7,287,745
Alabama	2,061,169	2,246,848	0.90%	0.75%	3,714,504
United States	**138,820,935**	**154,400,000**	**1.12%**	**0.97%**	**243,275,505**

Source: U.S. Census Bureau. Employed persons 16 and over, excluding Armed Forces.

Table 2-25: South Carolina Occupational Employment Projections – All Occupations

	2010 Estimated Employment	2020 Projected Employment	Employment Change	Annual Average Percent Change	Total Percent Change
All Occupations	1,956,014	2,227,380	271,366	1.3%	14.0%

Source: SC Works website

2.2.1.3 Personal Income

In the first quarter of 2013 the average weekly wage in South Carolina was $773, which represented an increase of 1.2 percent over the same period in 2012[28].

2.2.1.4 Industrial Outlook by Sector

This section provides brief summaries of the outlook for major industrial sectors that use rail freight services in South Carolina. The rail borne shipments of these five industrial sectors comprise 46.7 million tons of shipments inbound, outbound, through and within the state; or 66.4 percent of the 70.3 million tons shipped by rail in 2011. Total freight tonnage shipped by rail in South Carolina is forecast to grow by 44.6 percent through the period to 2040. As shown in **Table 2-26**, forecasted growth varies widely by sector ranging from negative growth to doubling in volume.

Coal – In 2011 Coal accounted for 27.6 percent of freight tonnage shipped by rail in South Carolina, with the great majority (72 percent) being inbound shipments, chiefly from Kentucky (10.2 million), but also from Pennsylvania (1.6 million), and Illinois (1.3 million). Over time rail shipments of Coal are forecast to decline and fall by 28.3 percent by 2040 from 19.4 to 13.9 million tons. This decline is forecast to impact inbound and through movements equally, as shown in **Table** 2-27**.**

[28] South Carolina Department of Employment and Workforce, South Carolina Economic Trends, www.dew.sc.gov

Table 2-26: South Carolina Rail Freight by Major Commodities, 2011

STCC2	Commodity	2011 (tons)					2040 Tons	Percent Growth
		Inbound	Outbound	Through	Intrastate	Total		
11	Coal	13,983,033	0	5,424,923	0	19,407,956	13,908,527	-28.3%
28	Chemicals or Allied Products	3,809,668	1,494,440	6,259,967	1,088,680	12,652,755	23,695,739	87.3%
46	Miscellaneous Mixed Shipments	647,560	467,240	4,190,264	0	5,305,064	9,073,440	71.0%
26	Pulp, Paper or Allied Products	1,011,832	1,694,212	2,327,000	229,760	5,262,804	9,356,797	77.8%
14	Nonmetallic Minerals	1,048,310	279,364	1,771,967	934,604	4,034,245	5,261,962	30.4%
20	Food or Kindred Products	816,624	115,604	2,973,736	0	3,905,964	6,438,792	64.8%
32	Clay, Concrete, Glass or Stone	941,196	827,204	1,786,024	136,480	3,690,904	7,712,312	109.0%
24	Lumber or Wood Products	606,736	1,072,916	872,488	876,560	3,428,700	5,436,834	58.6%
1	Farm Products	1,418,092	23,712	1,475,440	0	2,917,244	4,798,603	64.5%
Remaining Commodities		2,348,683	2,139,392	3,790,974	1,414,956	9,694,005	15,760,773	62.6%
Total		**26,631,734**	**8,114,084**	**30,872,783**	**4,681,040**	**70,299,641**	**101,443,780**	**44.3%**

Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011 and 2040

Table 2-27: Projected Rail Freight by Major Commodities, 2040

STCC2	Commodity	2040 (tons)				
		Inbound	Outbound	Through	Intrastate	Total
28	Chemicals or Allied Products	7,040,289	3,454,643	11,168,419	2,032,388	23,695,739
11	Coal	9,982,555	0	3,925,972	0	13,908,527
26	Pulp, Paper or Allied Products	1,709,975	3,023,966	4,156,310	466,545	9,356,797
46	Miscellaneous Mixed Shipments	960,559	744,427	7,368,454	0	9,073,440
32	Clay, Concrete, Glass or Stone	1,913,572	1,820,541	3,665,545	312,654	7,712,312
40	Waste or Scrap Materials	3,389,025	1,171,289	1,537,916	1,266,139	7,364,368
20	Food or Kindred Products	1,367,027	241,871	4,829,894	0	6,438,792
24	Lumber or Wood Products	867,085	1,539,592	1,797,229	1,232,928	5,436,834
14	Nonmetallic Minerals	1,286,637	419,656	2,356,598	1,199,071	5,261,962
Remaining Commodities		3,783,899	2,264,708	5,984,617	1,161,785	13,195,009
Total		**32,300,623**	**14,680,693**	**46,790,954**	**7,671,510**	**101,443,780**

Source: Prepared by CDM Smith, based on TRANSEARCH data for 2040

Chemicals or Allied Products – Through movements accounted for almost half the rail shipments of Chemicals or Allied Products in the state in 2011, followed by inbound movements at 30.1 percent. All movements for this sector totaled 12.7 million tons or 18 percent of the 70.3 million tons of rail shipments. Rail shipments of Chemicals or Allied Products are forecast to grow by 87.3 percent by 2040 to 23.7 million tons, making it by far the largest user of rail in the state in 2040 with 23.4 percent of the forecast total. This increase is projected to be led by outbound movements, which are forecast to more than double from 1.5 million to 3.5 million tons by 2040.

Miscellaneous Mixed Shipments – Rail freight movements passing through the state again dominate this sector, accounting for 80.0 percent of the total of 5.3 million tons. Miscellaneous Mixed Shipments are forecast to grow by 71.0 percent by 2040.

Pulp, Paper or Allied Products – Inbound and outbound rail movements in this sector combine for 51.4 percent of the total, with through movements accounting for 44.2 percent. Pulp, Paper or Allied Products are forecast to grow by 77.8 percent by 2040.

Nonmetallic Minerals – In 2011 this sector was fifth in rail tonnage at 4.0 million tons, of which 33.7 percent were movements passing through the state. Rail freight shipments of Nonmetallic Minerals are forecast to grow by a modest 30.4 percent by 2040, which would see this sector replaced by Clay, Concrete, Glass or Stone for the fifth most tonnage. Clay, Concrete, Glass or Stone rail movements are forecast to double to 7.7 million tons by 2040 from 3.7 in 2011.

2.2.2 Freight Demand and Growth

2.2.2.1 Rail Forecast

Table 2-28 shows the directional composition of rail movements in South Carolina between 2011 and 2040, which remains relatively constant over the analysis horizon. Rail tonnage is forecast to increase from 70.3 million in 2011 to 101.4 million in 2040, a cumulative increase of 44.3 percent, for an average annual growth rate of 1.3 percent[29]. Rail commodity value is forecast to increase from $79.1 billion in 2011 to $133.7 billion by 2040, an increase of 68.9 percent, or 1.8 percent per year. Inbound tonnage is projected to increase by 0.7 percent a year, less than half the rate of outbound tonnage (2.1 percent).

As shown in **Figure 2-19**, the link between Greenwood, SC and Athens, GA continues to handle the greatest rail tonnage per line as it did in 2011, as a result of north-south and east-west CSXT routes crossing in that part of the state. The greatest rail tonnage growth between 2011 and 2040 appears to accrue to the major Class I rail lines, as shown in **Figure 2-20**.

[29] Transearch data for 2011 and 2040.

Table 2-28: Forecast South Carolina Rail Freight Tonnage and Value

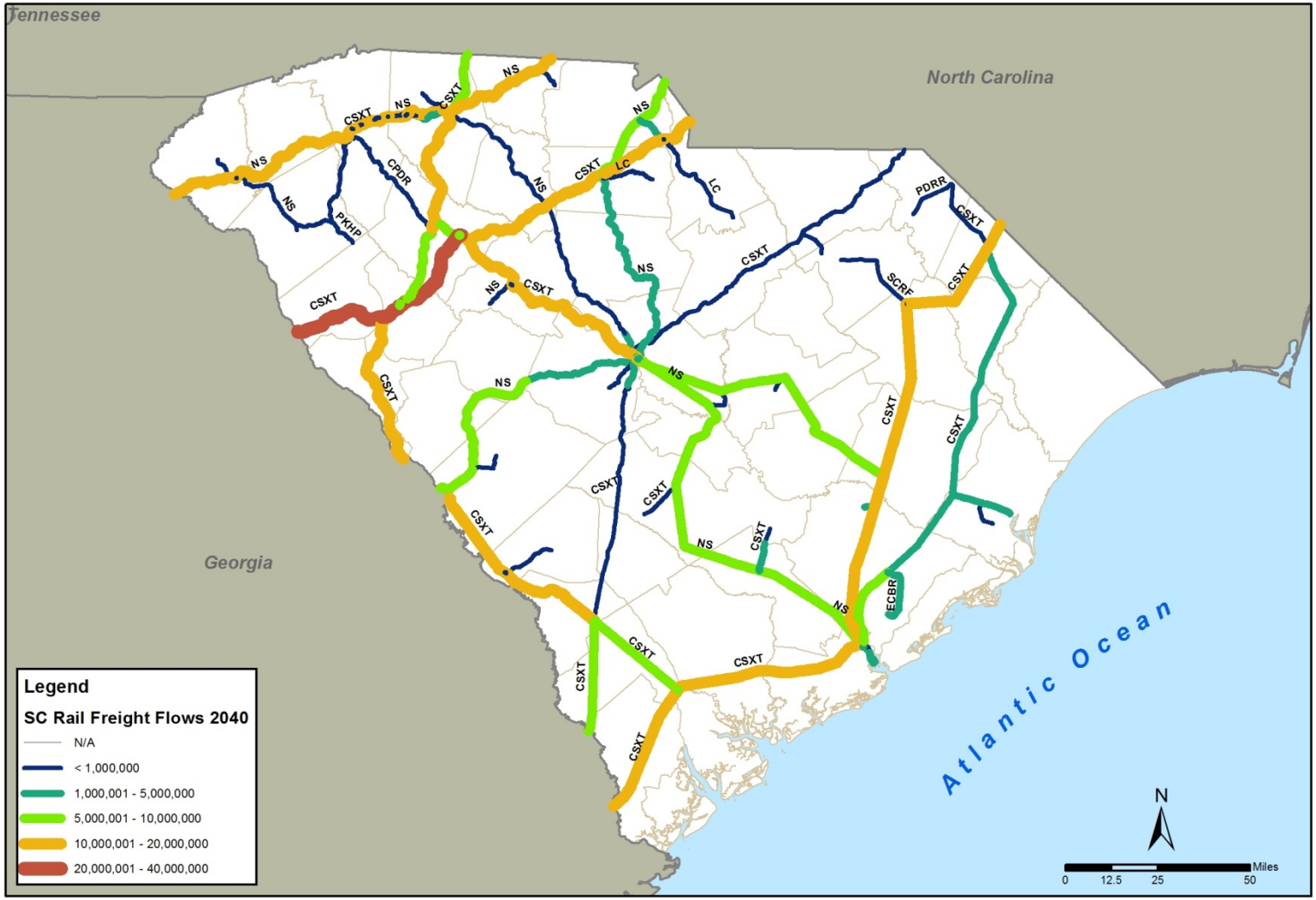
Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2011					
Outbound	8,114,084	11.5%	$11,249	14.2%	$1,386
Inbound	26,631,734	37.9%	$15,098	19.1%	$567
Intra	4,681,040	6.7%	$5,938	7.5%	$1,268
Through	30,872,783	43.9%	$46,853	59.2%	$1,518
Total	**70,299,641**	**100.0%**	**$79,137**	**100.0%**	**$1,126**
Year 2025					
Outbound	12,201,205	13.3%	$17,765	14.3%	$1,456
Inbound	31,409,789	34.2%	$25,403	20.5%	$809
Intra	7,572,991	8.3%	$14,742	11.9%	$1,947
Through	40,564,508	44.2%	$66,050	53.3%	$1,628
Total	**91,748,492**	**100.0%**	**$123,960**	**100.0%**	**$1,351**
Year 2040					
Outbound	14,680,693	14.5%	$19,905	14.9%	$1,356
Inbound	32,300,623	31.8%	$24,016	18.0%	$744
Intra	7,671,510	7.6%	$9,181	6.9%	$1,197
Through	46,790,954	46.1%	$80,589	60.3%	$1,722
Total	**101,443,780**	**100.0%**	**$133,691**	**100.0%**	**$1,318**

Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011, 2025, and 2040

Table 2-29 summarizes major commodity tonnage movements by rail in 2040, and the associated commodity tonnage growth from 2011.

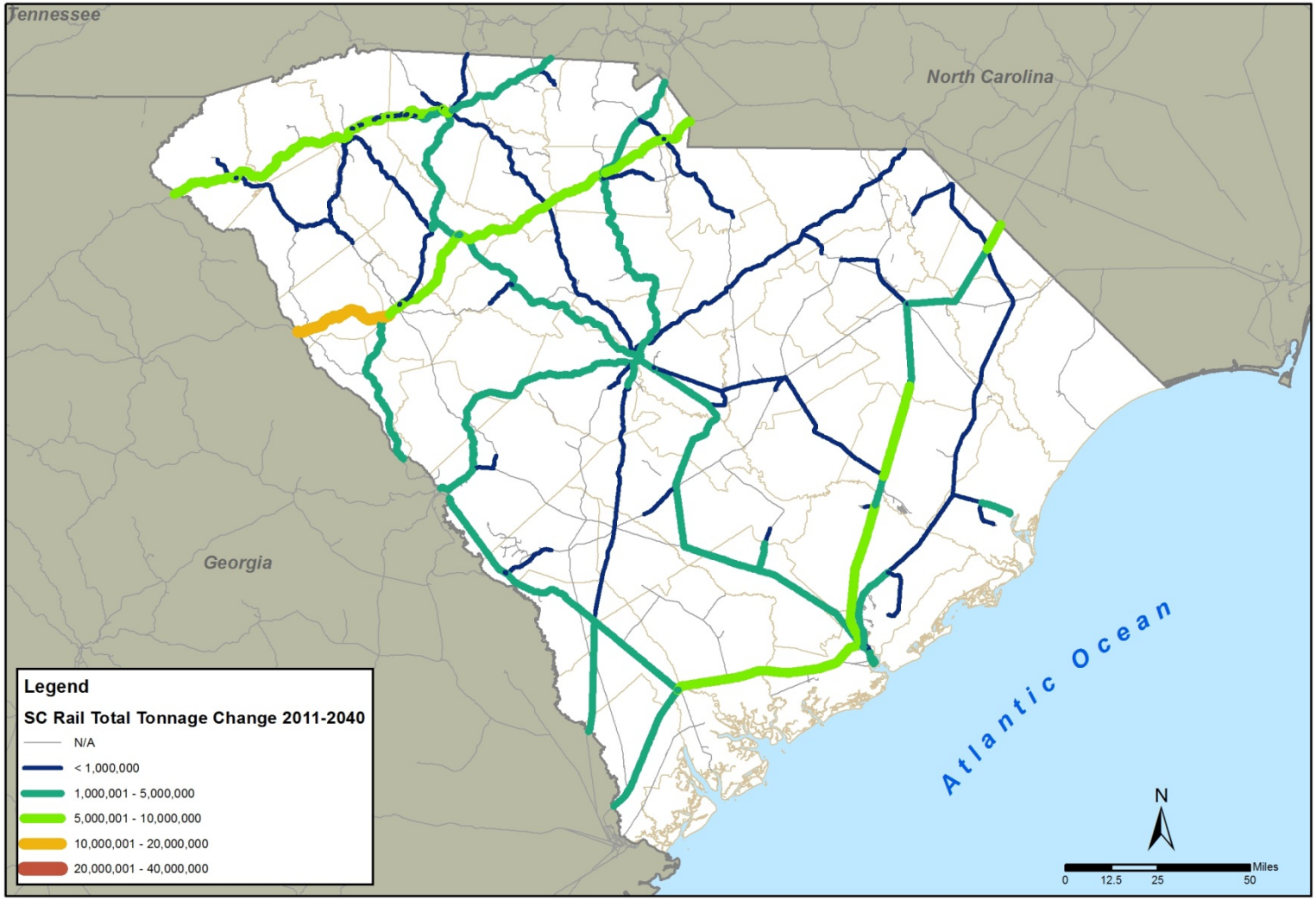
- *Total Tonnage* – Major rail commodities in 2040 include: Chemicals or Allied Products (23.7 million, 23.4 percent), Coal (13.9 million, 13.7 percent), and Pulp, Paper or Allied Products (9.4 million, 9.2 percent), exhibiting 2.2 percent, -1.1 percent, and 2.0 percent CAGR, respectively.
- *Tonnage Growth* – Commodities with the highest tonnage growth rates between 2011 and 2040 include: Miscellaneous Manufacturing Products (15,720 to 68,609, 5.2 percent CAGR), Machinery (73,400 to 277,897, 4.7 percent CAGR), and Instrument, Photo Equipment, Optical Equipment (6,120 to 19,392, 4.1 percent CAGR).
- *Value Growth* – Commodities with the highest value growth rates between 2011 and 2040 include: Miscellaneous Manufacturing Products (5.2 percent CAGR), Machinery (4.6 percent CAGR), and Instrument, Photo Equipment, Optical Equipment (4.4 percent CAGR).

Figure 2-19: South Carolina Rail Freight Density (2040)



Source: Prepared by CDM Smith, based on TRANSEARCH data for 2040

Figure 2-20: South Carolina Rail Freight Density Growth (2011-2040)



Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011 and 2040

Table 2-29: South Carolina Rail Tonnage Freight Forecast by Commodity (2011, 2040)

STCC2	Commodity	2011		2040		Percent Change	
		Amount	Percent	Amount	Percent	Total	CAGR
28	Chemicals or Allied Products	12,652,755	18.0%	23,695,739	23.4%	87.3%	2.2%
11	Coal	19,407,956	27.6%	13,908,527	13.7%	-28.3%	-1.1%
26	Pulp, Paper or Allied Products	5,262,804	7.5%	9,356,797	9.2%	77.8%	2.0%
46	Misc. Mixed Shipments	5,305,064	7.5%	9,073,440	8.9%	71.0%	1.9%
32	Clay, Concrete, Glass or Stone	3,690,904	5.3%	7,712,312	7.6%	109.0%	2.6%
40	Waste or Scrap Materials	2,401,380	3.4%	7,364,368	7.3%	206.7%	3.9%
20	Food or Kindred Products	3,905,964	5.6%	6,438,792	6.3%	64.8%	1.7%
24	Lumber or Wood Products	3,428,700	4.9%	5,436,834	5.4%	58.6%	1.6%
14	Nonmetallic Minerals	4,034,245	5.7%	5,261,962	5.2%	30.4%	0.9%
01	Farm Products	2,917,244	4.1%	4,798,603	4.7%	64.5%	1.7%
	Remaining Commodities	7,292,625	10.4%	8,396,405	8.3%	15.1%	0.5%
	Total	**70,299,641**	**100.0%**	**101,443,780**	**100.0%**	**44.3%**	**1.3%**

Source: Prepared by CDM Smith, based on TRANSEARCH data for 2011 and 2040

Table 2-30 summarizes major railcar movements (i.e., units) in 2040 by commodity type. Rail movements in 2040 total 101.4 million tons, via 2.0 million units, valued at $133.7 billion, with an average value/ton of $1,318.

- Total Units – Miscellaneous Mixed Shipments and Chemicals or Allied Products constitute almost half (930,552, 46.1 percent) of the total 2.0 million 2040 rail units.
- *Total Value* – Top commodities include: Miscellaneous Mixed Shipments ($45.8 billion or 34.2 percent), Chemicals or Allied Products ($42.7 billion or 32.0 percent), and Pulp, Paper or Allied Products ($9.1 billion or 6.8 percent).

Table 2-30: South Carolina Rail Freight Forecast – Tons, Units, and Value by Commodity (2040 Units)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
46	Misc. Mixed Shipments	9,073,440	8.9%	649,852	32.2%	$45,760	34.2%	$5,043
28	Chemicals or Allied Products	23,695,739	23.4%	280,700	13.9%	$42,742	32.0%	$1,804
26	Pulp, Paper or Allied Products	9,356,797	9.2%	160,799	8.0%	$9,141	6.8%	$977
11	Coal	13,908,527	13.7%	120,821	6.0%	$509	0.4%	$37
20	Food or Kindred Products	6,438,792	6.3%	120,281	6.0%	$4,954	3.7%	$769
42	Shipping Containers	912,868	0.9%	117,973	5.8%	$0	0.0%	$0
40	Waste or Scrap Materials	7,364,368	7.3%	92,888	4.6%	$2,074	1.6%	$282
32	Clay, Concrete, Glass or Stone	7,712,312	7.6%	78,453	3.9%	$1,175	0.9%	$152
24	Lumber or Wood Products	5,436,834	5.4%	75,627	3.7%	$1,041	0.8%	$192
14	Nonmetallic Minerals	5,261,962	5.2%	51,501	2.6%	$141	0.1%	$27
	Remaining Commodities	12,282,140	12.1%	270,450	13.4%	$26,153	19.6%	$2,129
	Total	**101,443,780**	**100.0%**	**2,019,345**	**100.0%**	**$133,691**	**100.0%**	**$1,318**

Source: prepared by CDM Smith, based on TRANSEARCH data for 2040

2.2.3 Passenger Travel Demand and Growth

As described previously, Amtrak provides intercity passenger rail service in South Carolina on their *Silver Star, Silver Meteor, Palmetto*, and *Crescent* routes making stops at 11 different locations in the state. Based on a simplified calculation of boardings and alightings at these stations in 2012 and projected growth in population in the station's region, the estimate of passenger rail patronage for Amtrak services reflects total growth of 26 percent to 2040 as shown in **Table 2-31**. The actual 2040 figures may be significantly different than forecast.

Table 2-31: Projected Rail Passenger Growth

City	Population (AAGR (1)	Boardings + Alightings	
		2012	2040
Camden	0.53%	3,699	4,300
Charleston	0.98%	84,956	111,800
Clemson	0.86%	5,807	7,400
Columbia	0.95%	37,577	48,900
Denmark	0.65%	4,254	5,100
Dillon	0.52%	8,745	10,100
Florence	0.52%	52,178	60,300
Greenville	0.86%	12,565	15,900
Kingstree	1.15%	14,812	20,400
Spartanburg	0.86%	4,452	5,700
Yemassee	1.03%	14,624	19,500
Total		**243,669**	**309,400**

Note: Annual Average Growth Rate (AAGR) in Council of Governments (COG) population, from South Carolina Data Center

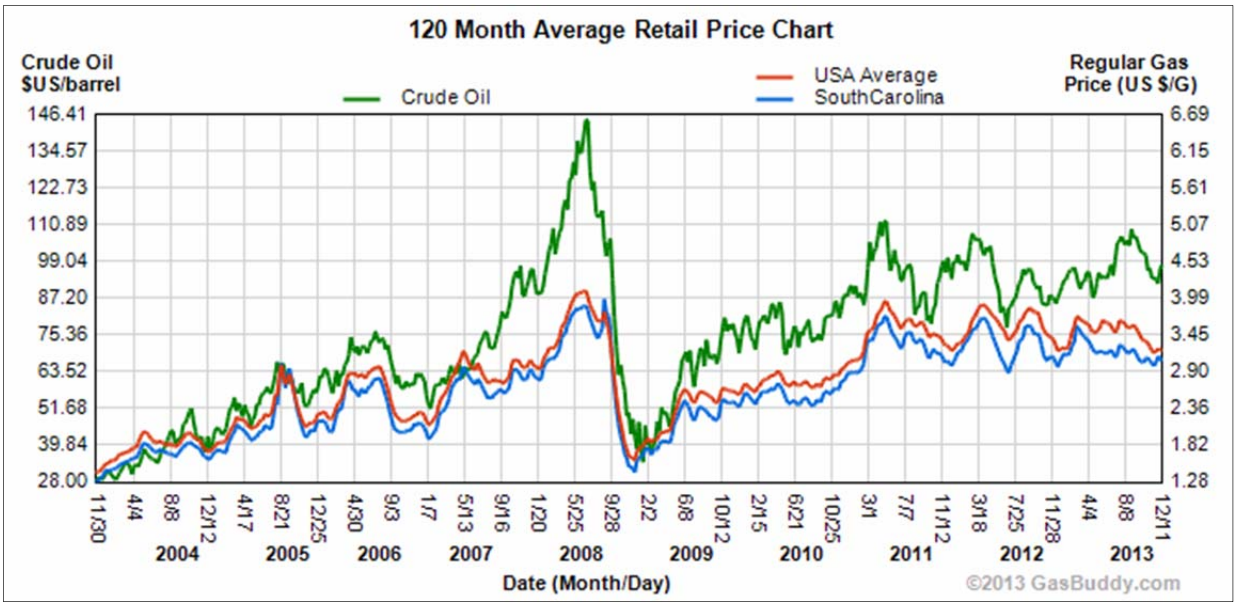
2.2.4 Fuel Cost Trends

Trends in fuel costs (crude oil and regular gasoline) over the last 10 years are shown in **Figure 2-21**. Costs for fuel rose steadily until the 2008 recession, and have been recovering steadily ever since, though they have not attained their pre-recessionary highs. Gas prices are shown for both South Carolina and the U.S. national average. The regular gas price in South Carolina and the U.S. averages track each other closely, though the South Carolina price is slightly lower consistently over the period, due to the lower than average state motor fuel user fee.

2.2.5 Rail Congestion Trends

As discussed in Section 2.2.2, rail tonnage is forecast to increase from 70.3 million in 2011 to 101.4 million in 2040, a cumulative increase of 44.3 percent, for an average annual growth rate of 1.3 percent. The short link between Greenwood, SC and Athens, GA is projected to continue to handle the greatest rail tonnage per line as it did in 2011, as a result of north-south and east-west CSXT routes crossing in that part of the state. The greatest rail tonnage growth between 2011 and 2040 appears to accrue to the major Class I rail lines.

Figure 2-21: Fuel Cost Trends, 2004 - 2013



2.2.6 Highway and Airport Congestion Trends

2.2.6.1 Highway Congestion Trends

2.2.6.1.1 Interstate Congestion

The ten most congested locations on interstate highways in the state are concentrated in three areas[30]:

- I-85, Greenville
  - Between Exits 51 and 54, east of the interchange with I-385 (Rank #1)
  - Between Exits 54 and 56, east of the above segment (Rank #4)
  - Between Exits 46 and 48, west of the interchange with I-385 (Rank #5)
- I-26, Columbia
  - Between Exits 107 and 107, northwest of the interchange with I-20 (Rank #2)
  - Between Exits 104 and 106, northwest of the above segment (Rank #3)
  - Between Exit 108 and the interchange with the I/126 spur to downtown Columbia (Rank #10)
- I-526, North Charleston
  - Between Exits 17 and 18A (US 52/Rivers Ave), east of the interchange with I-26 (Rank #6)
  - Between Exits 16B (International Blvd) and 17, west of the interchange with I-26 (Rank #7)
  - Between Exits 16A (W. Montague Ave) and 16B (International Blvd), west of the above segment (Rank #8)
  - Between Exits 19 (N. Rhett Ave) and 20 (Virginia Ave) (Rank #9)

[30] Source: INRIX data for 2012

The level of congestion throughout the state during evening peak-hour conditions is illustrated in **Figure 2-22**.

2.2.6.1.2 Highway Congestion Growth

Vehicle miles of travel on the state's Interstate and Arterials highways are estimated to increase by 58.5 percent between 2011 and 2040, as shown in **Table 2-32**. Future estimates of highway travel were derived from the HERS-ST tool used to estimate highway expansion needs for the state's 2040 Long Range Multimodal Transportation Plan. Without sufficient improvements in highway capacity on the state's interstates and arterials increased vehicle miles of travel will result in significant growth in highway congestion.

Table 2-32: Projected Growth in Highway VMT to 2040

Year	Rural Highways			Urban Highways			Statewide Interstates and Arterials
	Interstate	Principal and Minor Arterials	Total	Interstate and Expressways	Principal and Minor Arterials	Total	
2011	7,452	8,760	16,212	5,988	12,054	18,042	34,254
2040	12,347	13,972	26,319	9,721	18,242	27,963	54,282
Growth	**65.7%**	**59.5%**	**62.3%**	**62.3%**	**51.3%**	**55.0%**	**58.5%**

Note: Annual VMT in Millions

2.2.6.2 Airport Congestion Trends

In 2013 the six primary commercial service airports in South Carolina accommodated almost 3.5 million enplanements through November, as shown in **Table 2-33**.

Table 2-33: South Carolina Passenger Enplanements, 2012 and 2013

Airport Code and Location		Passenger Enplanements	
		2012	2013
CAE	Columbia Metropolitan Airport	498,830	468,855
CHS	Charleston AFB/International Airport	1,297,337	1,357,813
FLO	Florence Regional Airport	68,375	52,701
GSP	Greenville Spartanburg International	936,371	763,419
HXD	Hilton Head Airport	60,902	57,743
MYR	Myrtle Beach Airport	740,457	791,264
All South Carolina Commercial Airports		**3,602,272**	**3,491,795**

Source: South Carolina Aeronautics Commission Website – Airport Data
Table to be updated when December 2013 data available

The longer term trends in passenger enplanements, shown in **Figure 2-23**, indicate that passenger traffic has not yet returned to levels seen before the economic recession.

Figure 2-22: Congestion Levels on Interstate Highways, 2012

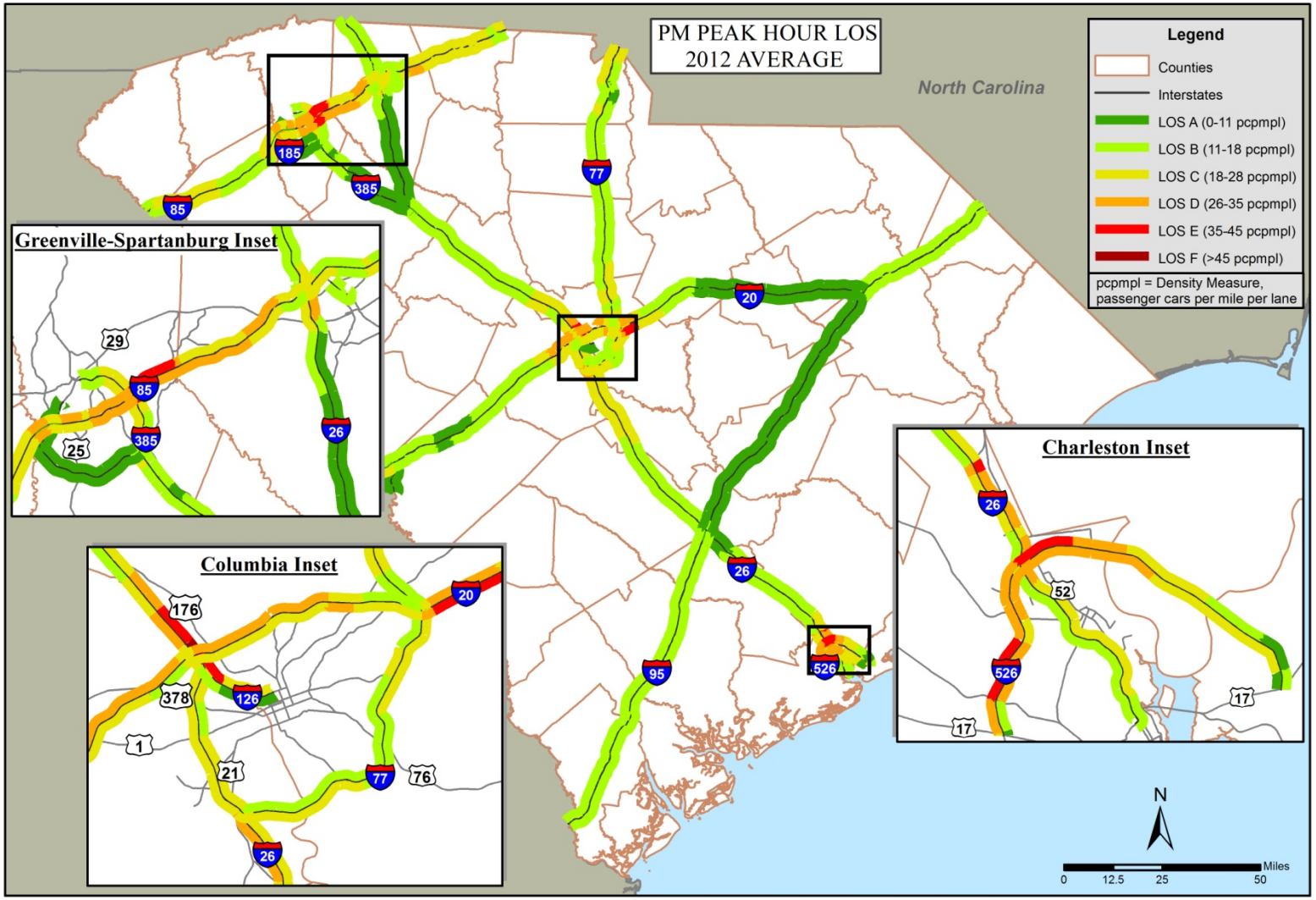
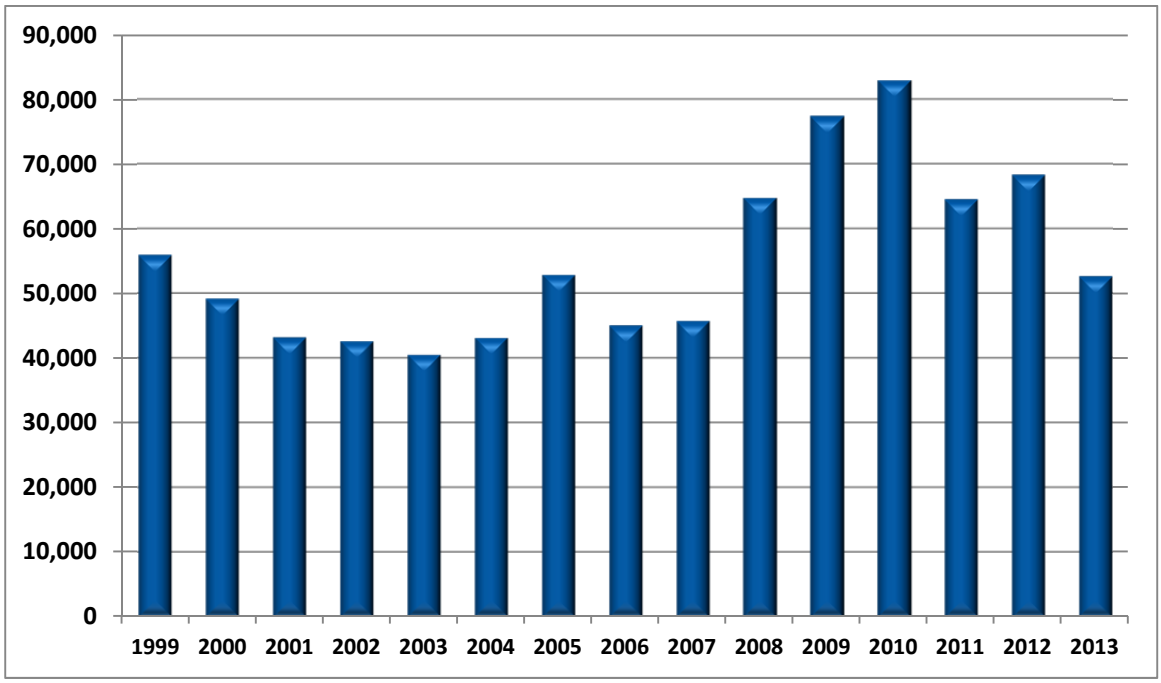


Figure 2-23: South Carolina Passenger Enplanements, 1999-2013



Source: South Carolina Aeronautics Commission Website – Airport Data

2.2.7 Land Use Trends

The importance of maximizing the social and economic impacts of land use through insightful and long range land use/transportation planning and decision-making is well understood in South Carolina.

Two examples have been described in Section 2.1.2.1 of this report. The first is the rail served Inland Container Port in the upstate of South Carolina in Greer just north of the I-85 corridor that connects Charlotte with Atlanta. The inland port, which commenced operations in October 2013, is located near BMW, Michelin, and numerous other major manufacturers and distributors serving the Piedmont Atlantic megaregion, as well as other US and international markets. The second is the planned Intermodal Container Transfer Facility in Charleston. The facility will provide rail access to two Class I carriers and be located near the 280-acre, 3-berth container terminal currently under construction on the Charleston Naval Complex.

The high-speed passenger rail corridor currently being evaluated in a Tier I EIS has the potential to provide further opportunities for key land use planning initiatives related to multimodal transportation in South Carolina (see Section 3.1).

2.3 Existing Rail System: Rail Service Needs and Opportunities

2.3.1 Key Issues Impacting Rail Service

This section describes rail issues derived from the outreach process conducted as part of the overall state freight plan[31] and conversations with other interested parties. These issues cover a broad scope of rail industry and public sector needs. Four principal issues stood out in the process – intermodal traffic, infrastructure and expansion, grade crossings, and funding. Each is discussed in more detail in the following paragraphs.

Intermodal – Intermodal rail traffic is growing significantly for the state's two Class I railroads. While comments reflected opinions regarding all intermodal facilities in the state (airports, water ports and rail), those applicable to rail or rail-specific included lack of facilities, capacity, access, and local impacts. Two current projects, the inland port at Greer, which just opened in October 2013, and the planned North Charleston Intermodal Container Transfer Terminal (ICTF) will add facilities and increase capacity for the handling of containers. Including the two terminals in Charlotte (one for each of the Class I railroads), no part of the state will lie more than 100 miles from such a facility, and much of the state will have more than one option within that radius. However, additional inland terminals have been suggested, and from public and business perspectives, roadway access needs to be addressed in terms of both adequacy and community impacts.

In addition to facilities for containers and trailers, there are a number of terminals throughout the state for the transloading of freight along with cross dock and storage facilities. These terminals can handle dry and liquid bulk commodities such as flour, sugar, and plastic pellets, as well as aggregates, steel, and lumber among others.

Adding to existing facilities, a new Thoroughbred Bulk Transfer (TBT) terminal opened in Columbia in June 2013. TBT terminals are specialized facilities that allow customers to transfer a large array of commodities between rail cars and trucks. TBT terminals are owned by Norfolk Southern and operated by independent contractors that are industry experts in facilitating safe and efficient bulk transfer and distribution. The facilities allow customers without rail sidings to receive the benefits of rail economics and service quality. NS has a network of 31 TBT facilities in 17 states.

Infrastructure – Comments involving preservation and expansion of the rail network were principally related to industrial development potential and growth. Although rail line abandonments have been rare in South Carolina of late, there are currently four line segments in the process of, or in danger of being abandoned. All three segments belong to short line carriers and total about 112 miles:

- Hampton and Branchville Railroad Company – currently out of service following the closure in November 2013 of SCE&G's Canaday's Station power plant, which was their major customer.

[31] *SC Statewide Freight Plan Stakeholder Input*, Draft Technical Memorandum Prepared by CDM Smith, May, 2013.

- Pickens Railroad Company – filed an abandonment application for the 8.5 mile long original Pickens Railroad (PICK) from Pickens to the Norfolk Southern interchange at Easley following the end of operations in April 2013.
- Carolina Southern Railroad Company - currently out of service due to bridge deficiencies. The entire railroad is 75.5 miles in length serving both Carolinas with 51 miles located in South Carolina.
- South Carolina Central Railroad – one segment that connected and interchanged traffic with CSXT at Cheraw and extended southward to Society Hill (12.8 miles) is no longer in service and abandonment has been approved but not yet implemented.

The physical needs of all of the state's short lines are listed in Table 2-36.

Other improvements can consist of capacity increasing projects such as adding passing or second tracks on mainlines, improving train control signal systems, or clearances, for example. Extension of tracks to reach new industries or add connections also fall into the same category.

Grade Crossings – Safety, rail-highway conflicts and need for grade separations comprised grade crossing related comments. Quiet zones have also been a subject of interest in some locales. Improvements can consist of single crossings or several, the latter typically in a corridor of some length. Such a project is common on lines with passenger trains or one with severe rail-highway conflicts. The Assembly Street project in Columbia is an example of the latter.

Passenger Service – The need for commuter service on South Carolina's major metro areas is more of a public issue than intercity travel.

Funding – Lack of adequate highway funding and its impact on the condition of the state's roadway infrastructure was a common comment as it was for rail. There is no dedicated source of state funding for rail projects. If funding were available, additional comments on the subject suggested expenditures should be subjected to cost-benefit analyses and prioritized. Included in the prioritization process was a suggestion that assistance be directed at system components generating South Carolina rail traffic rather than through traffic.

2.3.2 Opportunities to Address Rail Needs and Issues

There are a number of opportunities to address some of the issues and/or add to the rail system's effectiveness. Freight opportunities are discussed initially followed by passenger considerations.

2.3.2.1 Freight Rail

Intermodal – The improved Panama Canal will soon permit larger ships to reach east coast ports, which include Charleston. The deepening of the harbor at Charleston required to handle the large ships is gaining traction. A new marine container terminal is being constructed with a near-dock rail ICTF. Both projects are expected to increase the flow of containers through the port and will provide rail carriers an opportunity to increase intermodal traffic to/from the port.

Construction of the Greer inland port and the consideration of others, offer an opportunity to decrease highway truck trips; reduce congestion and associated economic, safety and environmental impacts; reduce pavement maintenance and replacement; and the need for capacity improvements.

Corridor Initiatives – Rail corridor improvement initiatives such as CSX's I-95 Corridor, its "A line" from Florida to the Northeast, and NS' Crescent Corridor, the railroad's main track from the Northeast to New Orleans offer opportunities for rail operating improvements, and for the public, a vehicle to address grade crossing issues and reduce vehicular traffic on paralleling interstates, I-95 and I-85, respectively, by attracting additional rail traffic from the highways.

Development Activity – The improving economy and the state's recent success in recruiting new industry of the type that is expected to increase demand for rail transportation in addition to the expansion of existing industries bodes well for the railroads. It also bodes well for the public in diverting traffic from the highways.

Preservation and improvement of light density lines, principally short line railroads, provide access to additional potential industrial sites, as well as maintaining transportation alternatives for existing businesses.

2.3.2.2 Passenger Rail

Commuter Rail – Implementation of commuter rail service in congested metro areas provides an opportunity to reduce associated highway congestion and adverse impacts such as maintenance and replacement.

Intercity Rail – The location of parts of the state in the predicated 2050 Piedmont Atlantic Megaregion increases opportunities for intercity passenger service by high-speed or other rail technologies, on a regional basis within the megaregion, as well as long distance travel between megaregions.

2.3.2.3 Funding

It will not be possible to take advantage of the opportunities identified without funding. South Carolina could benefit from a dedicated source of funding for the facilitation of rail projects including grade crossing improvements (which can receive federal contributions). As demonstrated throughout this report, many public benefits can result as well as benefits to the railroads. Railroad benefits can also result from private project participation.

3 PROPOSED PASSENGER RAIL IMPROVEMENTS AND INVESTMENTS

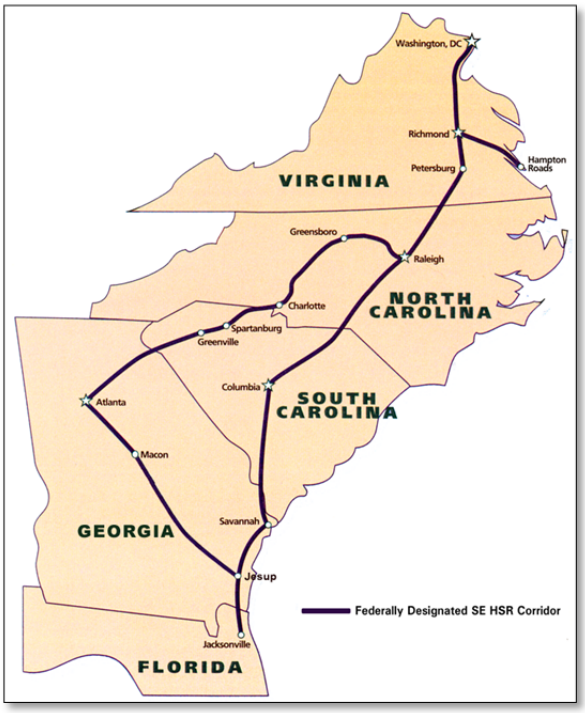
The opportunities for rail passenger service in South Carolina lie principally in commuter services in its metro regions. Interest in improved intercity service is limited to proposed high-speed passenger operation linking Charlotte, NC to Atlanta, GA, and connectivity between Charlotte and Columbia. There have not been any proposals made in terms of improving existing Amtrak service.

3.1 Proposed Passenger Rail Services

Proposed High Speed Passenger Services

Southeast High Speed Rail Corridor – The federally designated Southeast High Speed Rail Corridor, illustrated in **Figure 3-1**, passes through South Carolina. Georgia DOT, in partnership with South Carolina DOT and North Carolina DOT, are leading development of a Tier I EIS for a high speed rail corridor between Charlotte and Atlanta that passes through the state's Upstate region roughly parallel to I-85. This Passenger Rail Corridor Investment Plan (PRCIP), which is scheduled for completion in mid-2015, is part of a larger high-speed rail initiative on the behalf of the Federal Railroad Administration (FRA) that extends north to Washington, DC and is commonly referred to as the Southeast High Speed Rail (SEHSR) Corridor.

Figure 3-1: Southeast High Speed Rail Corridor



Source: North Carolina DOT.

PRCIP Purpose and Need – The Atlanta to Charlotte Passenger Rail Corridor serves as an extension of the section of the southeast High-Speed Rail Corridor (SEHSR) that is under development from Charlotte to Washington DC. The extension from Charlotte would travel southeast through portions of South Carolina and into Atlanta. Connectivity to proposed and existing passenger rail stations, airports and other regional transportation services along the corridor will be addressed through the scoping process.

High-speed rail is an alternative mode for business and nonbusiness travelers that is competitive in terms of travel time, convenience and safety. The proposed Atlanta to Charlotte high-speed passenger rail service would satisfy the following needs:

- **Provide Regional Linkage** – Improve overall regional connectivity by providing high-speed rail linkage between Atlanta and Charlotte and other proposed SEHSR locations, and enhance multimodal transportation connections;
- **Improve Capacity** – Supplement Interstate highways and commercial airports to provide increased corridor capacity to support freight movement;
- **Improve Travel Times** – Decrease travel times between major urban centers compared to auto and total air travel;
- **Provide Alternative Mode** – Provide a mobility alternative to automobile, bus, conventional passenger rail and air travel that is safe, reliable and efficient;
- **Enhance Energy Efficiency** – Improve energy efficiency by reducing dependence on foreign oil and decreasing greenhouse gas emissions; and
- **Promote Economic Development** – Promote economic development and job creation through improved connectivity resulting in a more productive and competitive economy with an expansion of the labor pool market along the corridor.

The purpose of the Atlanta to Charlotte PRCIP is to improve intercity travel and mobility between Atlanta and Charlotte by expanding the region's transportation capacity and reliable mode choices through improvements in passenger rail services. This corridor will also be an important extension to the planned SEHSR Corridor system developing important linkages to other metropolitan areas along the East Coast (Washington, D.C., New York and Boston). Investment in passenger rail is an essential part of the region's multimodal transportation system and its ability to support population and economic growth throughout the SEHSR Corridor network.

The projected increases in population and economic growth for the Piedmont Atlantic Megaregion (**Figure 3-2**) create a need for a carefully planned approach to improving rail infrastructure that will benefit Georgia, South Carolina, North Carolina, the southeastern United States and the nation.

The Atlanta to Charlotte corridor and the region have to contend with serious mobility challenges that will adversely affect local, regional and national economies if left unaddressed. The existing transportation infrastructure in the project area is out dated, lacks connectivity, is congested, and provides few options for reliable passenger travel.

Presently, interstates are operating at or near capacity, therefore alternative modes of transportation are being considered to mitigate congestion. Improving rail infrastructure through the development of this corridor will in turn facilitate the improvement of intercity travel and mobility between Atlanta and Charlotte by expanding the region's transportation capacity and reliable mode choices through improvements in passenger rail services. Evidence of the demand for intercity travel is supported

through the high frequency of flights between the two terminal cities (Atlanta and Charlotte) with 20 flights per day, and 23 flights between Greenville and Charlotte. Individuals who for various reasons cannot or choose to not drive, or travelers looking for other options require alternative transportation choices. This corridor will be an important extension to the planned SEHSR Corridor System while developing important linkages to other metropolitan areas along the east coast including Washington D.C., New York and Boston with an Atlanta or Charlotte departure.

Figure 3-2: U.S. Megaregions

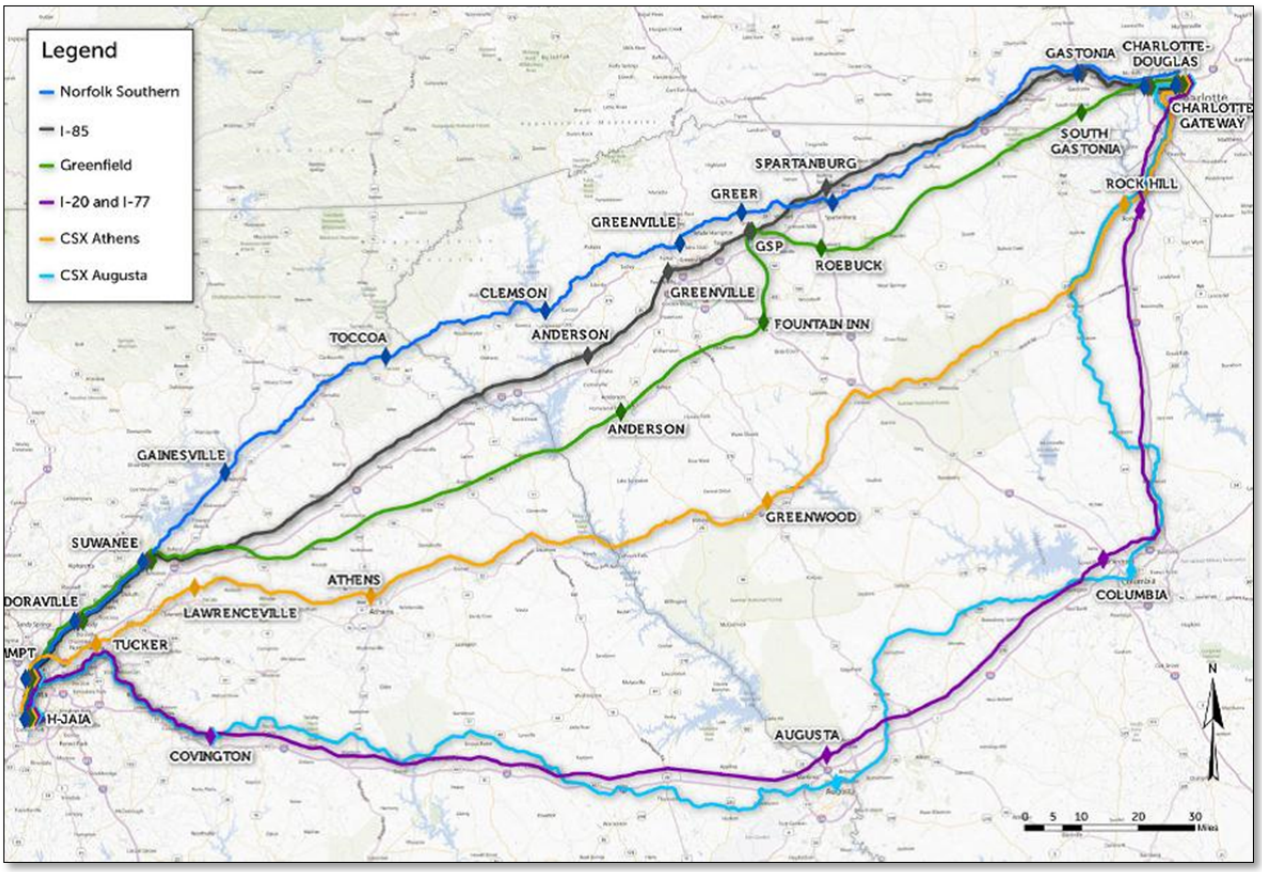
Source: Atlanta to Charlotte Passenger Rail Corridor Investment Plan

Summary of Alternative Routes – There are six potential corridor routes, as shown in **Figure 3-3**.

- The Norfolk Southern (NS) railroad corridor (also referred to as the Southern Crescent Corridor route);
- The CSX Transportation (CSX) right-of-way between Atlanta and Chester, SC via Athens, GA and NS right-of-way between Chester and Charlotte via Rock Hill, SC;
- CSX right-of-way between Atlanta and Augusta and NS right-of-way between Augusta and Charlotte via Columbia;
- I-85 corridor;
- I-20 and I-77 corridor; and

- A Greenfield corridor that offers the opportunity to define a fully grade-separated route alignment that has optimal geometric characteristics for high-speed passenger rail service.

Figure 3-3: Charlotte to Atlanta Passenger Rail Corridor Study Area



Source: Atlanta to Charlotte Passenger Rail Corridor Investment Plan.

For the three routes along existing freight rail corridors it is assumed that diesel-electric technology with speeds capable of 90-110 mph would be utilized. For the Interstate highway routes diesel-electric technology with a top speed of up to 150 mph would be used. The Greenfield route considered fully electrified technology with a top speed of 220 mph. Some of these corridor alternatives were previously defined as a result of a 2008 Feasibility Study. A possibility exists for other routes to be identified should they meet the basic requirements of the purpose and needs statement.

Key Terminal Locations – Potential strategically located stations for each of these routes were also identified. Proposed service to the Georgia Multimodal Passenger Terminal, Hartsfield-Jackson Atlanta and Charlotte-Douglas International Airports in addition to the proposed Charlotte Gateway Station multimodal facility have been incorporated into each alternative route along with stations in metropolitan areas.

Overall Performance – Overall performance of the alternatives was assessed by how well the criteria of purpose and need, route length, travel time, population served, employment served, regional and

intermodal linkages were met.[32] In terms of overall performance, upon an initial evaluation the Greenfield corridor received the best performance rating, followed by the I-85 corridor. The Norfolk Southern-identified corridor received an overall performance rating of Good. The other three alternatives had overall performance ratings of Poor.

3.2 History of the Southeast High Speed Rail Corridor (SEHSR) and Previous Studies

The Southeast Rail Corridor was originally designated as a high-speed corridor in Section 1010 of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. More specifically, it involved the high-speed grade crossing improvement program of the Act to reduce or eliminate the hazards of at-grade highway-rail crossings in the designated corridors. At that time, the Southeast Rail Corridor was one of five so designated, and was to connect the southern end of the Northeast Corridor to Charlotte, NC.

South Carolina Routes – The high-speed rail grade crossing improvement program was carried over into the Transportation Equity Act for the 21st Century (TEA-21) as Section 1103(c). Subsequently, the Southeast High-Speed Rail Corridor (SEHSR) was extended in December 1998 south from Charlotte to Atlanta and Macon, Georgia running 122 miles over the NS main track through the Upstate of South Carolina. Another branch was added running from Raleigh, North Carolina through Columbia to Savannah, Georgia (205 miles over CSXT's "S" Line) and Jacksonville, Florida. The Corridor was further extended in October 2000 from Macon to Jessup, GA, tying the two branches together.

In 2001, a study[33] was prepared to examine the two routes through South Carolina and determine infrastructure improvements needed to operate passenger trains at speeds of at least 90 mph with a goal of 110 mph. The evaluation determined that the top speed was in excess of the characteristics of either route and improvements in alignment, signal systems and highway-rail crossing treatments were necessary to increase operating speeds. The study concluded that the degree of development in the Upstate precluded implementation of significant alignment changes and that the route through the center part of the state held more promise for increasing operating speeds. However, based on a 1997 ridership study[34] the Upstate route holds the most promise from a travel demand standpoint.

The Volpe Report[35], made available in January of 2009, examined several means of providing "higher-speed" rail passenger service between Charlotte and Macon, GA via Atlanta. Operating scenarios with speeds of 90, 110, and 125 mph with diesel locomotives, both diesel and electric for 150 mph, and electric locomotives for 200 mph were developed. A variety of station stop scenarios were also developed with Spartanburg, Greenville-Spartanburg International Airport (GSP), Greenville and Clemson candidates in South Carolina. The only candidate not presently served by Amtrak is GSP.

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[32] *Atlanta to Charlotte Passenger Rail Corridor Investment Plan*
[33] *South Carolina Southeast High Speed Rail Corridor Improvement Study*
[34] *Southeast High Speed Rail Market and Demand Study*
[35] Economic and Industry Analysis Division, Volpe National Transportation Systems, *Evaluation of High-Speed Rail Options in the Macon-Atlanta-Greenville-Charlotte Rail Corridor*, prepared for the Georgia Department of Transportation, August 2008.

The study was predicated upon development of a dedicated track[36] for the service, not use of existing freight trackage although freight right of way might be used in places, as well as highway right of way. A dedicated track was selected for reasons of safety, reliability, maintenance, operations, and access control. Demand and associated revenue along with capital, maintenance and operating costs were developed for each scenario.

The Volpe study concluded that the "best case" scenario was either 125 or 150 mph diesel-power[37] trains with total capital costs of $2.06 to $2.52 billion with revenue-cost break-even in 2031 or 2032. Stops would be made at all stations. Recommendations included the need for the states to develop innovative funding approaches to pay for capital and unified operating deficits, with the latter estimated at $4 to $5 million in 2025. Capital route costs[38] for the Charlotte-Atlanta segment running through South Carolina with the "best case" scenarios were $1.162 billion and $1.379 billion for 125 mph and 150 mph operation, respectively. Approximately one-half of the 262 miles between these two points lies in South Carolina.

Richmond to Raleigh Segment – A Tier II Draft Environmental Statement has been approved for the Richmond-Raleigh segment of the SEHSR Corridor as the states of Virginia and North Carolina continue to pursue development of that route segment.

The Passenger Rail Working Group – The Passenger Rail Working Group was established by the National Surface Transportation Policy and Revenue Study Commission (section 1909 SAFETEA-LU). The Group was charged with developing a vision for intercity passenger rail through 2050 including costs, a funding program, and a governance structure.

The Group used an overlay approach to create the system incorporating the existing national passenger rail system (Amtrak) as a base and adding federally designated corridors, corridors in the planning or development stages by states or regional organizations, and potential future routes either in the talking stage or those representing missing links between major population centers. Special attention was paid to the ten emerging mega regions of the U.S.[39] established by the Regional Plan Association. Parts of South Carolina (Upstate and along the North Carolina border) are included in the "Piedmont Atlantic" emerging mega region extending from Raleigh-Durham to Atlanta and Birmingham. This is the only designated mega- region lying between the Northeast (Washington, DC to Portland, ME) and Florida (entire state with exception of the Panhandle).

[36] Two tracks for electrified service
[37] Technology to meet U.S. safety standards will have to be developed and speeds in this range require grade separation of highway crossings.
[38] Not including equipment or operating and maintenance costs.
[39] *America 2050: A Prospectus*

The group's proposed intercity passenger rail network in South Carolina for 2015 and 2030 consists of the current Amtrak routes. The 2050 system shown in **Figure 3-4** remains the same with the exception of proposed operations of 79-110 mph[40] passenger trains on a separate track along the current Amtrak route through the Upstate.

3.3 Intercity Passenger Rail Corridors

Two of the alignments being evaluated in the Charlotte to Atlanta Passenger Rail Corridor Study connect Charlotte, North Carolina with Columbia, the capital city of South Carolina. Regardless of the ultimate feasibility for high-speed rail service, interest and in some cases multi-jurisdictional discussions have occurred for multiple intercity passenger rail corridors in the state. These include Columbia to Charlotte (with potential extension to Charleston), the Upstate (Greenville and Spartanburg) to Columbia and Charleston, and Florence to Raleigh (with potential extension to Charleston).

Each of these corridors could provide connectivity between key population, economic and tourism areas in South Carolina with existing and proposed intercity passenger rail corridors in North Carolina, with Florence providing close proximity to the significant tourism area of Myrtle Beach. Initial feasibility studies for these corridors would dictate the need for further analysis.

3.4 Proposed Commuter Rail Services

Commuter rail or rail-transit efforts have been investigated in five different areas of the state, primarily in urban regions. As a result of the investigations, proposals are being advanced in two urban regions and one has selected Bus Rapid Transit over commuter rail. All five, however, are discussed in this section. The commuter corridors in these five areas are shown in **Figure 3-5**.

The proposed commuter rail systems will provide public benefit in a myriad of forms. Congestion during peak hours caused by workers making the daily commute on area highways that not only negatively impact the quality of life for the workers, but also impact potential area economic prosperity by limiting mobility of people and goods.

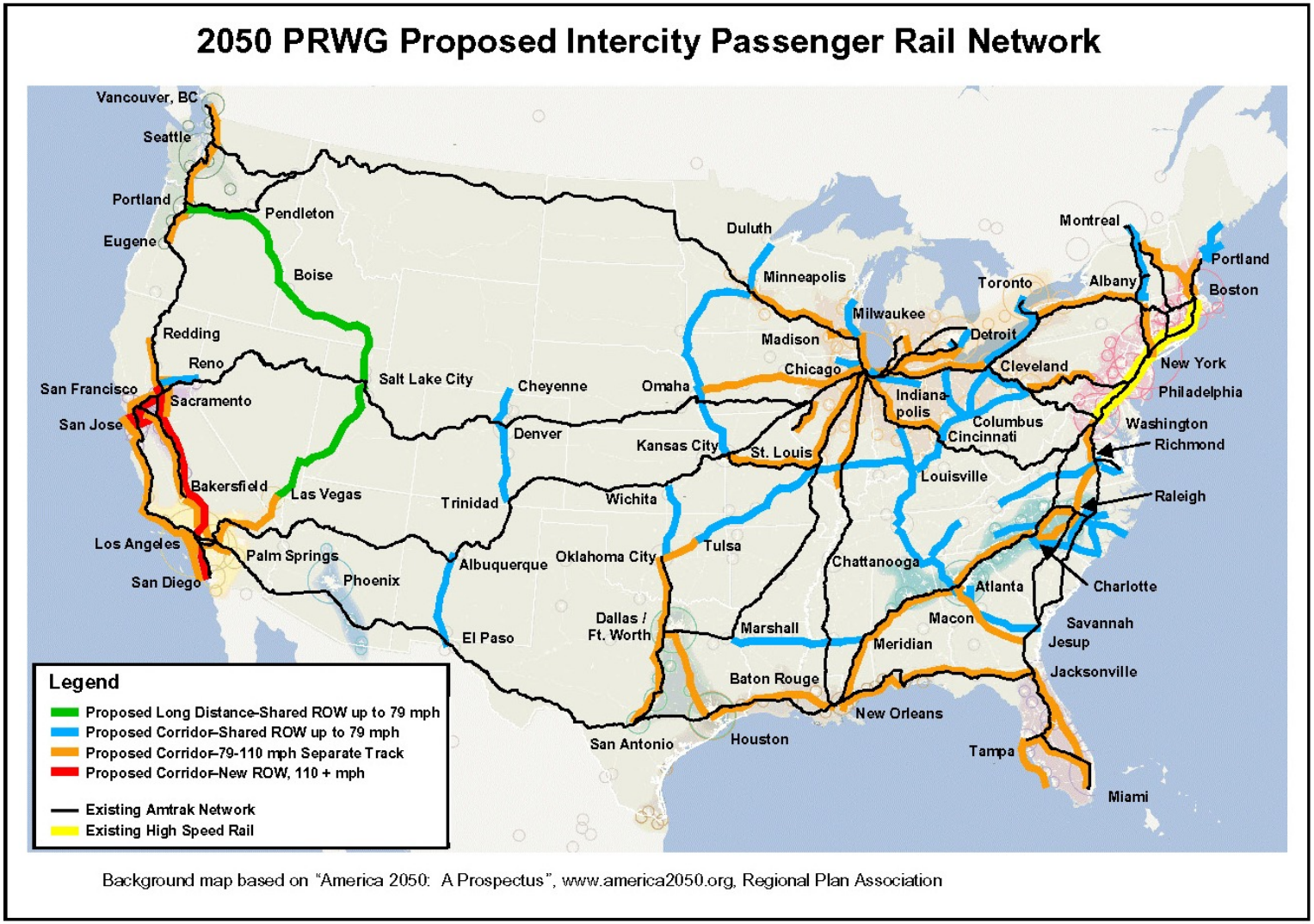
Charleston – In 1990 the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) conducted a Commuter Rail Feasibility Study that concluded that the I-26 corridor was developing trends that might eventually support commuter rail service. In 2005, the Charleston Area Regional Transit Authority (CARTA) reopened the study to re-evaluate those trends. Having found that they were still valid[41] and the region becoming transit supportive, the subject of promoting commuter rail planning was transferred back to BCDCOG.

Benefits of Commuter Rail in Charleston – The benefits discussed are particular to Charleston, but are generally applicable to other urban regions of the state.

[40] Association of American Railroads (AAR) policy specifies separate tracks for freight and passenger service with passenger train speeds of 90 mph or greater.

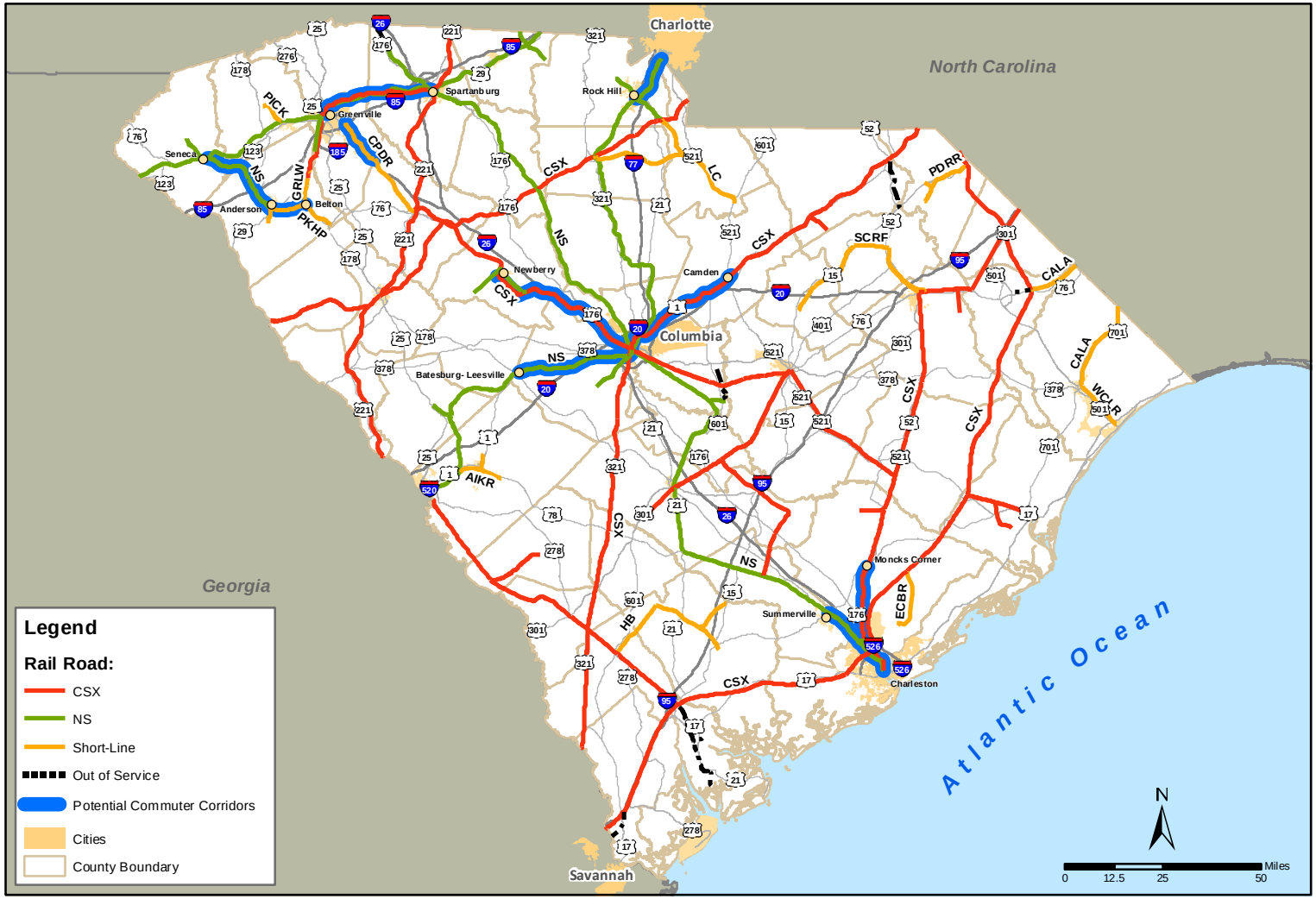
[41] *Charleston Metropolitan Area Commuter Rail Feasibility Study*, for the Charleston Regional Transit Authority, May 2006, prepared by Wilbur Smith Associates, URS Corporation.

Figure 3-4: Passenger Rail Working Group Proposed 2050 Intercity Passenger Rail Network



Source: Vision for the Future, Passenger Rail Working Group, p. 35.

Figure 3-5: Potential Commuter Corridors



Economic Development – Transit corridors have become a desirable location for businesses, retail centers, and high density residential developments, especially within walking distance of transit stops. In recent years, the Neck Area of Charleston has become the focus of planned ”infill” developments. With the new port terminal in North Charleston, the I-26 Corridor is expecting to see an increase in port-related truck traffic. To balance this increase in truck traffic between the port and distribution centers throughout the I-26 Corridor and the projected increase in traffic in general, commuter rail would provide a non-highway alternative to peak-hour commuters, mitigating congestion on the interstate. Roadway congestion relief can only aid efforts to develop the interstate corridor to its fullest potential for both residential and commercial land uses.

Transportation Alternatives – While road widening projects are both proposed and programmed in selected sections of I-26, additional capacity within the corridor is needed to accommodate future demand. With this most recent set of proposed widening for I-26, it was concluded that it will be extremely difficult to further widen the facility beyond current proposals. Studies conducted by SCDOT found that there is inadequate right of way to continue adding lanes to I-26. While it is recognized that no one project or measure will address long term solutions for the I-26 corridor, commuter rail could make a contribution as part of a comprehensive program of multiple approaches such as ride sharing, staggered work hours, etc.

Air Quality – In addition to postponing and possibly avoiding additional capacity in the future, providing options other than automobile transportation for commuters will reduce the region’s dependency on private vehicles, improving air quality and reducing carbon emissions in the Lowcountry. As the Charleston area approaches possible non-attainment status, this improvement in emissions will have immeasurable impacts for federal funding and other issues related to non-attainment status. While EPA standards are tightening, it is valid to assume that areas demonstrating proactive measures to mitigate worsening air quality and overall vehicle miles traveled with mass transit projects, will be supported by the EPA and other permitting agencies in those areas of project development.

Current Status of Charleston Commuter Rail Development – Since the 2005 study BCDCOG has conducted studies for commuter rail service on two routes in the Charleston Metropolitan Area. A preliminary meeting was held jointly with representatives from both Norfolk Southern Railway and CSX Transportation requesting cooperation in preliminary planning phases.

In October of 2008, financial assistance was requested from the South Carolina Transportation Infrastructure Bank to enable the planning and eventual construction of a commuter rail system connecting the suburban areas of Summerville, Goose Creek and Monks Corner to the central business districts of North Charleston and Charleston. It has been proposed that this commuter rail system be considered in two phases:

- Phase 1: Summerville – Charleston, predominantly on the NS corridor; and
- Phase 2: Moncks Corner – Goose Creek – Charleston, predominantly on the CSXT corridor.

This regional system envisioned connecting growing suburban communities with the urban centers of the Charleston region. Like commuter rail systems around the country, this system would be designed to serve workers typically commuting during weekday peak times (morning and evening), providing an alternative mode of transportation for the area's workforce and relieving congestion during the peak times for I-26.

Greenville-Spartanburg – The Greenville County Planning Commission and the Spartanburg County Planning Department examined the feasibility of a commuter rail system for the Greenville-Spartanburg area in 1999. The growth in both population and employment with the attendant growth in roadway traffic prompted the investigation of transportation alternatives.

The study involved two rail lines: the NS main track and a CSXT secondary route acquired from the Piedmont and Northern Railway, which originally had been an electric interurban line. Service patronage was forecast to the year 2015 for several rail operating and connecting feeder bus scenarios. Annual ridership ranged between 240,000 and 650,000 for the 1993 base case and the most service intensive 2015 case. Ridership scenarios were used to develop revenues and operating costs. Capital costs were also developed and the impact of different patronage levels fully considered. Fare box recoveries of 20 to 30 percent were estimated. A peer city system examination was also made. It was concluded that the proposal had a low feasibility level given projected patronage levels. Recommendations were made as to how ridership might be improved.

In 2009, Greenville County Economic Development Corporation (GCEDC) initiated the Multimodal Transit Corridor Alternatives Feasibility Study focused on a 3.42-mile section of inactive freight rail line extending from N. Pleasantburg Road in Greenville to just north of Mauldin. This line segment is owned by GCEDC. The study was completed in March 2010. Four transit alternatives were considered, including commuter rail, light rail transit (LRT), streetcar and Bus Rapid Transit (BRT). The study envisioned a commuter rail option using existing tracks from Fountain Inn to eastern Greenville at Forester Road. The service then would continue on the rail corridor owned by GCEDC into Greenville. Of the four alternatives, BRT was ranked highest and was recommended.

Columbia – The Central Midland Council of Governments (CMCOG) has been exploring commuter rail service since 2000 when it completed its first study.[42] The results of that study, which assessed nine corridors, identified three that possessed characteristics that would benefit from commuter rail service. They were: Columbia to Newberry; Columbia to Camden; and, Columbia to Batesburg-Leesville.

Another work effort concluded in 2006[43] was intended to further evaluate the three corridors previously identified. This effort also contained a peer area comparison, and examined alternative technologies. After evaluation, each corridor was compared and ranked based on:

[42] *Central Midlands Regional Rail Study*
[43] *Central Midlands Commuter Rail Feasibility Study*

- Ridership potential;
- Station access and land use support;
- Potential implementation cost;
- Ease of implementation; and,
- Public opinion.

Of the three corridors, the Columbia-Camden corridor was the clear choice receiving the highest ranking overall in four of the five criteria. It also compared favorably with the peer corridors in Albuquerque, Charlotte and Nashville. Ridership was estimated to range between 1,900-2,300 per day and the capital cost estimated at $80 million.

Camden-Columbia Alternatives Analysis (AA) Study - In May of 2011, CMCOG completed its Camden / Columbia Alternatives Analysis Study. Three "build" alternatives were identified: one commuter rail and two bus rapid transit (BRT). Ultimately, however, the study found that the three build alternatives were too costly relative to the need for transit service at the time. Instead, low cost investments enhancing mobility options for traveling within Columbia were recommended, as well as between suburban areas and downtown Columbia.

The Camden/Columbia Alternatives Analysis evaluated rapid transit options for the corridor between Camden and Columbia, including urban areas of Columbia, suburban areas of northeast Richland County, and rural areas of Kershaw County, with project goals of:

- Fostering economic development along the corridor;
- Providing regional connectivity;
- Managing congestion;
- Improving regional air quality;
- Increasing smart growth initiatives; and
- Expanding transportation options available to commuters.

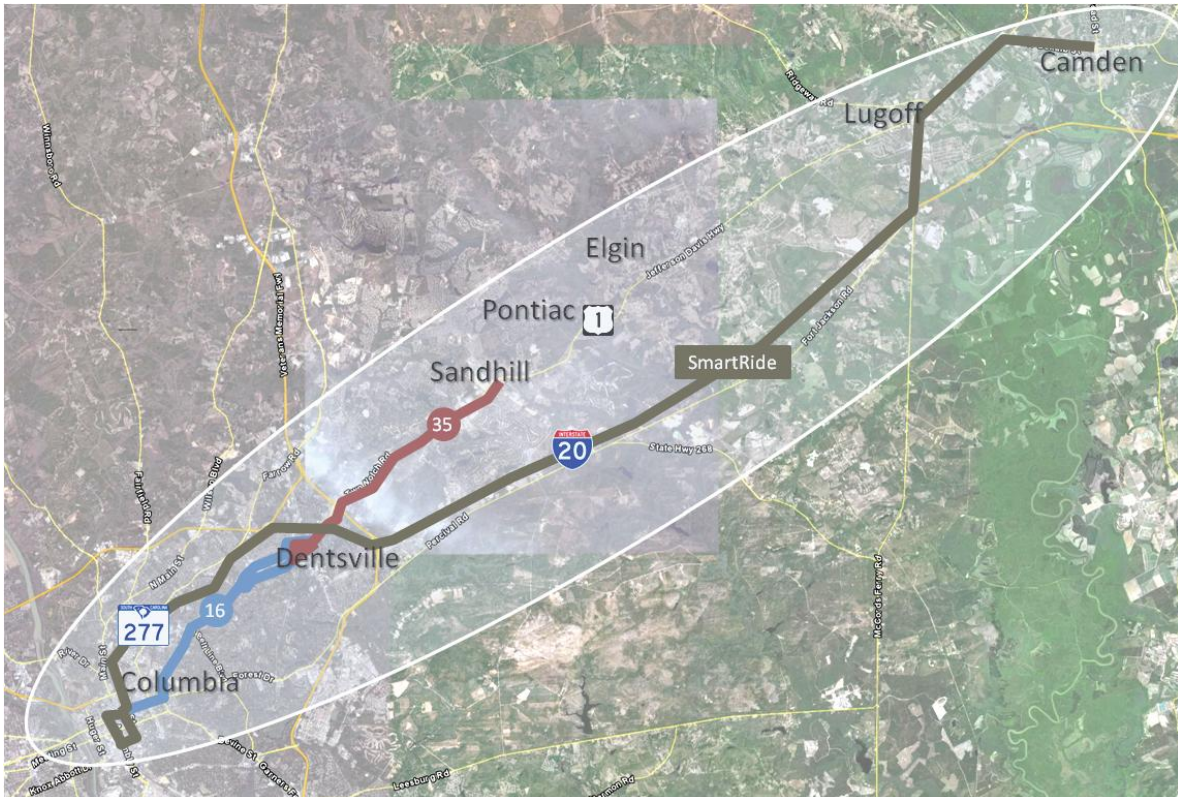
The study was a follow-up to the previously mentioned 2006 Commuter Rail Feasibility Study. Existing transportation corridors in the study area included: Intestate 20, US Highway 1, and a CSX single-track railroad line. Existing bus transit service in the corridor at the time of the study included Central Midlands Regional Transit Authority (CMRTA) routes 16 (Dentsville), 35 (Sandhills), and SmartRide (commuter bus service between Camden and Columbia). Existing transportation corridors and transit routes are shown in **Figure 3-6**.

The study initially considered six transit technologies: express bus, streetcar, light rail transit (LRT), bus rapid transit (BRT), commuter rail, and heavy rail. Through the screening process, streetcar, LRT, and heavy rail were eliminated due to incompatibility within the study corridor. The resulting three "build" alternatives for further analysis were commuter rail, BRT along I-20/SC-277, and BRT along US 1/Two Notch Road. In assessing the three technologies, screening results found that:

- Population density in the corridor is too low to support high-capacity transit service (all forms of passenger rail and BRT);

- Congestion levels in the study area are light compared to cities that have invested in high-capacity transit service;
- Most highway segments in the corridor are projected to remain below high-congestion levels until 2035, with currently congested segments undergoing widening/capacity enhancements;
- Columbia's downtown has inexpensive and readily available parking, so these factors make single-occupancy vehicle (SOV) commuting equally or more attractive than transit commuting.

Figure 3-6: Camden-Columbia Alternatives Analysis (AA) Study



These findings led the study to conclude that "build" alternatives were too costly relative to transit needs at the time. The study instead recommended Transportation Systems Management (TSM) improvements, which enhances existing capacity and improves future operations of existing travel options in the corridor. The TSM approach proposed three phases of future development as shown in **Table 3-1.**

In addition to transportation initiatives, the study recognized future land use as a key factor in fostering transportation options. The study included a *Land Use & Transit Oriented Development Analysis* that evaluated sites within the corridor for future redevelopment potential in a more urban pattern (i.e. higher residential and employment densities, urban lot/block/street patterns). The study concluded that transit-supportive land use is critical for the corridor if future high-capacity transit such as commuter rail is desired.

Table 3-1: Camden-Columbia: Three Phases of Future Development Approach

Service Type	Phase 1	Phase 2		Phase 3
	Local	Express	Local	Express
	Improvements to Route 16	*New Service*	*Improvements to Route 35*	*New Service*
Vehicles	Four new buses with enhanced amenities, reducing wait-times from every 30 minutes to every 15 minutes	Continue Phase 1 service levels, adding three new buses with enhanced amenities for peak-period express service from the Village at Sandhill (mixed-use center) to downtown Columbia	Two new buses with enhanced amenities for Route 35	Continue Phase 1-2 service levels, adding three new buses with enhanced amenities for peak-period express service from the Village at Sandhill to Camden
	$2,200,000	*$1,650,000*	*$1,100,000*	*$1,050,000*
Transit Centers	Development of transit hub at Columbia Place Mall	-	-	-
	$200,000			
Transit Stops	Improvements at a minimum of 10 transit stops along the alignment (highest ridership stops)	Relocation and upgrades to the bus stop at the Village at Sandhill	Improvements at six transit stops along the alignment (highest ridership stops)	Installation of stations at Elgin and Lugoff, and improvements at Amtrak station in Camden
	$250,000	*$35,000*	*$150,000*	*$570,000*
Signal Preemption	-	Installation at 12 intersections on US-1 / Two Notch Road, between Decker Boulevard and Alpine Road	-	-
		$180,000		
Capital Cost	**$2,650,000**	**$1,865,000**	**$1,250,000**	**$1,620,000**
Operating Cost	**$775,000 per year**	**$200,000 per year**	**$775,000 per year**	**$200,000 per year**

The study concluded by providing two recommended action items in order to enhance and advance the recommendations identified in the study for supporting TOD and transportation options within the corridor:

- Secure a funding source for transit capital and operational costs.
- Further develop the concept of a transit hub at Columbia Place Mall.

Rock Hill – Rail service interest in the Rock Hill area has been tied to efforts in the Charlotte, North Carolina metropolitan region. In 2007 Rock Hill MPO selected Bus Rapid Transit (BRT) as its preferred service alternative.[44] A route along the US 21 corridor is to connect with Charlotte's light rail system at I-485. The decision reflected the most cost-effective of five alternative routes and three different modes or technologies including commuter rail. The process and selection represents one of the earliest steps in the Federal Transit Administration's (FTA) requirements for receiving funding from that agency's New Starts program.

[44] *Rock Hill-York County-Charlotte Rapid Transit Study, Locally Preferred Alternative (LPA) Summary Document*, pp. 1-3

Earlier, a commuter rail alternative was the subject of a 1994 analysis, Commuter Rail Transit from Rock Hill, SC to Charlotte, NC, published by the University of North Caroline at Charlotte.

Anderson County – A commuter system from Clemson in Pickens County to Belton in Anderson County passing through the town of Anderson has been investigated. The route is some 26 miles long and would use an NS branch line between Clemson and Anderson and a line of the Pickens Railway-Honea Path Division (PKHP) between Anderson and Belton. Existing transit systems (bus) in Anderson and Clemson would be linked. The study effort was intended to provide a level of data suitable for a planned alternatives analysis to meet the Federal Transit Administration's (FTA) New Starts Planning criteria.

Station locations were developed and travel times for various types of rolling stock were developed and example schedules presented. Ridership was estimated for alternative levels of service and station location scenarios. Annual trips in 2030 were projected to range between a low of 62,000 to a high of 270,000 equating to 117 to 453 daily riders. Capital, as well as operating and maintenance, costs were estimated for system component and service level alternatives and presented in terms of annualized and per trip (per rider) costs.[45]

The study showed that the build alternatives were too costly relative to the benefits.

[45] Discussion based on information contained in *Anderson County Railroad and Street Railway Service*.

4 PROPOSED FREIGHT RAIL IMPROVEMENTS AND INVESTMENTS

This chapter describes the improvements and investments that could address the freight rail needs of the state's Class I and short Line carriers. Safety improvements in terms of grade crossing are also included.

4.1 Rail Freight Needs, Class I Railroads

4.1.1 CSX Transportation

CSX Transportation (CSXT) is South Carolina's largest railroad with 1,269 route miles, which cover virtually every area of the state, as shown in Figure 2-1. 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.

CSXT needs and improvement projects generally address grade crossings, line capacity additions, and bottleneck issues, as well as industrial development potentials. For purposes of identifying needs and planning rail line improvements, CSXT classifies each of their lines into one of three categories (core, strategic, and non-strategic). Typically CSXT line improvement needs are identified, planned and, in some cases implemented, in a shorter time frame than the five-year cycle for updating state Rail Plans. In the absence of a freight rail funding program in South Carolina, CSXT improvement projects have in the past been privately funded for the most part, with applications for Federal grants being submitted when the improvement projects comply with the necessary federal requirements.

4.1.2 Norfolk Southern

Norfolk Southern (NS) operates 679 route miles in South Carolina 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.

NS needs and improvement projects are similar in nature to those of CSXT, including grade crossings, line capacity additions, bottleneck issues, and industrial development potentials. In addition to the planned ICTF project in Charleston, NS is interested in the Assembly Street Corridor project in Columbia. This latter project has not progressed further for lack of funding and coordination problems.

4.2 Rail Freight Needs, Short Line Railroads

All short line railroads operating in the state were contacted to update short line needs identified in the 2008 State Rail Plan. These needs, totaling almost $250 million, were grouped into three types of improvements, as shown in **Table 4-1**. Over 60 percent of short line needs fall in the Capacity / Service group. One project is the planned Intermodal Container Transfer Facility (ICTF) in North Charleston near the Port of Charleston's new 280-acre, 3-berth container terminal under construction on the Charleston Naval Complex, which accounts for over half of all short line needs. This terminal will be operated by Palmetto Railways, and will serve the Ports Authority's container terminals and provide dual access to the two Class I carriers.

Table 4-1: Short Line Railroad Needs by Improvement Category

Type of Needs	Needs (Millions)
Rehabilitation	$91.8
Capacity / Service	$153.0
Safety	$3.4
Short Line Total	**$248.2**

If the North Charleston ICTF is set aside for a moment as a special case, since it principally benefits the Class 1 carriers, short line needs are reduced to $118.3 million, of which $91.8 million or 78 percent are rehabilitation projects.

The average cost of the 20 short line improvement projects, excluding the ICTF, is estimated at $5.9 million (**Table 4-2**). These projects, while comparatively modest in scale and cost, can have significant beneficial impacts on the local, regional and state economy – making them candidates for existing or new state funding programs where economic benefits have a high priority among selection criteria.

Table 4-2: Short Line Needs

Short Line Improvement Project	Estimated Cost ($ millions)
Rehabilitation	
Lancaster and Chester	
Relay 17.5 miles of rail between Lancaster and Kershaw to accommodate 286,000 lb loads	$14.0
Relay 12.5 miles of rail between Lancaster and Catawba, and replace Bowater-Catawba River Bridge	$22.0
Replace SC Rt. 9 – Catawba River Bridge	$9.8
Replace Landsford Road bridge with box culvert	$0.6
Pee Dee River	
Relay 7.6 miles of rail between McColl and Bennettsville (two phases)	$5.7
Pickens	
Relay 6.7 miles of rail south of Belton	$5.8
Relay 6.8 miles of rail west of Belton	$5.9
Carolina Southern	
Upgrade track and bridges	$15.8
Aiken	
Drainage Improvements in Aiken (1)	$7.0
Bridge Improvements, MP AB 195	$5.3
Subtotal for Rehabilitation	**$91.8**
Capacity/Service	
Lancaster and Chester	
CSXT Interchange improvements for unit train movements, safety, and congestion relief on SC 9 in Chester County	$5.1
Improve/relocate NS interchange in downtown Chester to improve congestion/safety and efficiently move unit trains	$8.0
Pee Dee River	
Additional yard capacity at Bennettsville	$2.1
Additional interchange capacity at McColl	$1.4
Additional industry service trackage	$0.5
Palmetto Railways	
Additional interchange capacity at State Junction (ECBR)	$3.5
New industry track (North Charleston)	$0.4
Yard Expansion (PUC)	$2.0
Intermodal Container Transfer Facility (North Charleston)	$130.0
Subtotal for Capacity/Service	**$153.0**
Safety	
Lancaster and Chester	
Raise and widen Rt. 521 overpass at Lancaster	$1.8
Greenville and Western	
Raise and widen J. Gossett Drive overpass near Williamston	$1.6
Subtotal for Safety	**$3.4**
Total for Short Line Projects	**$248.2**

Notes: (1) Mid-point in estimated range of $2M to $12M used. All rail relay projects include appropriate timber and surfacing. Cost estimates are preliminary.

5 THE STATE'S LONG-RANGE RAIL SERVICE AND INVESTMENT PROGRAM

5.1 South Carolina's Rail Vision

The specific goals of the State Rail Plan, with associated Objectives, Guiding Principles, and Performance Measures are shown in **Table 5-1** through **Table 5-6.** The goals were developed from consideration of the state's multimodal goals, those of the National Freight Policy established in U.S.C. 167 and the National Rail Plan 2010 progress report, and are fully supported by the South Carolina State Rail Plan 2014 Update.

Table 5-1: Mobility and System Reliability Goal

Objective	Potential Measure
Reduce the number of system miles at unacceptable congestion levels [1]	Miles of NHS and state Strategic Corridor System above acceptable congestion levels
Utilize the existing transportation system to facilitate enhanced modal options for a growing and diverse population and economy	% change in tonnage moved by freight rail % change in rail passenger trips
Guiding Principles	
Improve cost efficiency of intermodal goods movement, increasing diversity in modal choice.	
Encourage availability of both rail and truck modes to major freight hubs (ports, airports, intermodal facilities)	
Use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system. [2]	

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 5-2: Safety Goal

Objective	Potential Measure
Improve the safety, security, and resilience of the freight transportation system [2]	FRA Reportable Railroad Incidents
Reduce rail grade crossing crashes involving fatality or serious injury. [1]	Fatalities and injuries in rail grade crossing accidents. Percent of crossings with active safety warning devices installed

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 5-3: Infrastructure Condition Goal

Objective	Potential Measure
Maintain or improve the current state of good repair of rail components of the freight transportation system [2]	Miles of rail lines identified as out of service due to condition
Guiding Principles	
Improve prioritization of "last mile" infrastructure to intermodal facilities.	
Recognize the importance of infrastructure condition in attracting new jobs to South Carolina by considering economic development when determining improvement priorities. [1]	
Encourage availability of both rail and truck modes to major freight hubs (for example ports, airports and intermodal facilities). [1]	
Continue to coordinate with the Palmetto Railways to consider road and rail improvements needed to support the efficient movement of freight between the Inland Port and the Port of Charleston and between port terminals.	

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 5-4: Economic and Community Vitality Goal

Guiding Principles
Work with economic development partners to identify transportation investments that will improve South Carolina's economic competitiveness. [1]
Encourage availability of both rail and truck modes to major freight hubs (ports, airports, and intermodal facilities). [1]
Partner with public and private sectors to identify and implement transportation projects and services that facilitate freight movements. [1]
Encourage rail improvements that will improve connectivity and reliability of freight movement to global markets. [1]
Improve the contribution of rail components of the freight transportation system to economic efficiency, productivity, and competitiveness. [2]
Increase public awareness of the significance of goods movement and freight transportation infrastructure on SC economic sustainability and growth.
Partner with communities to improve "last mile" planning efforts in urban communities to minimize the impact of goods movement and improve efficiencies.
Raise profile of integrated multi-agency, state level freight planning.
Explore public-private investment in supporting rail transportation infrastructure.

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 5-5: Environmental Goal

Guiding Principles
Reduce adverse environmental and community impacts of rail components of the freight transportation system. [2]
Work with environmental resource agency partners to explore the development of programmatic mitigation in South Carolina [1]
Partner to be more proactive and collaborative in avoiding versus mitigating environmental impacts. [1]

Notes:
[1] Included in MTP Goals and Performance Measures
[2] Included in National Freight Planning goals established under 23 U.S.C. 167

Table 5-6: Equity Goal

Guiding Principles
Ensure broad based public participation is incorporated into all planning and project development processes related to rail infrastructure improvements, maintenance and operations. [1]
Ensure planning and project selection processes adequately consider rural accessibility and the unique mobility needs of specific groups

Notes:
[1]) Included in MTP Goals and Performance Measures

5.2 Integration of the Rail Vision with Other Transportation Plans

The state's rail vision is integrated with the state's Multimodal Transportation Plan, Freight Plan, Interstate Plan, Strategic Corridor Plan, and Transit Plan through use of common goals and objectives.

5.3 Planned Rail Planning Process Changes

The South Carolina Department of Transportation is the designated Rail Planning Agency. The effort is part of the Intermodal Planning Division responsibilities as stated in Chapter 1. No organizational changes have been proposed although a source of funding has yet to be identified to permit the Division to meet its rail responsibilities.

5.4 Potential Effects of Rail Program Implementation

There is no dedicated rail improvement program in South Carolina. There are, however, needs as identified in preceding Chapters, primarily in the freight element. These needs are based on preservation and improvement of the state's existing rail system to maintain and better rail service for the benefit of rail passengers and freight customers, and promote economic development potential.

The projects listed in this discussion do not include any specific Class I railroad needs. Both CSXT and NS advanced general need categories, such as at-grade highway-rail crossings, capacity, and economic development.

As the state has no dedicated rail improvement program, the implementation of, and schedule for projects to meet the known needs is largely problematic.

5.4.1 Proposed Short-Range Passenger Rail Projects

No short-range (next four years) rail passenger projects have been identified.

5.4.2 Proposed Long-Range Passenger Rail Projects

Several long-range passenger rail projects (4-20 years), for both intercity and commuter service, have been listed in previous Chapters.

5.4.2.1 Charlotte-Atlanta High Speed Rail Service

This project is currently in the initial stage of planning, currently evaluating alternative routes. Costs and schedules are yet to be developed.

5.4.2.2 Commuter Rail Projects

Commuter rail proposals in South Carolina's three largest metro regions have been identified and subjected to very preliminary assessments, but none are currently being pursued. Given roadway congestion in these regions, it is anticipated pursuit of these projects will resume within the next 20 years.

5.4.2.3 Amtrak

No proposals have been advanced for improvement of or addition to current Amtrak services.

5.4.3 Proposed Short-Range Freight Rail Projects

A number of projects have been advanced by the state's short line rail carriers that total $248.2 million in costs, as shown in **Table 5-7**. These projects fall in the preservation/service improvement categories.

Table 5-7: Short Line Railroad Needs by Improvement Category

Type of Needs	Needs (Millions)
Rehabilitation	$91.8
Capacity / Service	$153.0
Safety	$3.4
Short Line Total	**$248.2**

Most of these projects are short-range in nature, or would be, if funding was in place today to implement them. The exception is the Intermodal Container Transfer Facility (ICTF) at North Charleston that the Palmetto Railways is developing, which comprises over half of the total estimated costs.

5.4.4 Proposed Long-Range Freight Rail Projects

The Palmetto Railways' ICTF is currently being progressed, but falls into the 20-year category for completion. The project is currently in the final planning and initial environmental review process. The safety projects are also long-range in nature.

5.5 Passenger Element

With the exception of Charlotte-Atlanta High Speed project, no intercity service proposals have been advanced in the state. Others have been discussed but never progressed. The high speed service will provide an alternative means of intercity travel, improve travel times and thus create the potential for reductions in highway passenger travel. In this case, it also has the potential to provide improved access to airports along the line and at its terminus stations.

Amtrak intercity service in the state consists of long-distance trains for which Amtrak has full fiscal responsibility and no state-supported regional service has been proposed.

Commuter rail service has the potential to partially reduce highway congestion and associated economic and environmental impacts in impacted urban areas. Again, no projects have been advanced to the stage financing is required.

5.6 Freight Element

5.6.1 Financing Plan

There are a number of freight rail projects that need financing, but state funding is not available at this time to establish an implementation program in the short term.

5.6.2 Public and Private Benefits

The benefits of the state's freight rail service are substantial. They include provision of transportation alternatives, reduction of highway impacts, improvement of air quality, and expansion of economic development opportunities among others.

5.7 Rail Studies

No specific studies were identified in the outreach process. Expressions of transportation problems and lack of planning, however, were expressed and provide guidance of studies of various levels of scope and detail. The most frequently mentioned were:

- Intermodal connections;
- Prioritization of infrastructure projects;
- Location for additional inland ports;
- Unsafe at-grade rail-highway crossings;
- Last mile freight planning; and
- Continued evaluation of rail to contribute to the reduction of urban highway congestion.

5.8 Rail Capital Program

Desired rail capital projects are listed in Chapters 3 and 4. Again, a lack of funding has deterred development of capital programs.

5.9 Rail Strategies

5.9.1 Freight Rail Strategies

Strategies related to freight rail that have been incorporated in the Statewide Multimodal Transportation Plan and the Freight Plan, include:

- Explore dedicated rail infrastructure funding program.
- Reduce freight bottlenecks that cause significant freight congestion by investing in rail improvements that improve safety and travel times.
- Coordinate with the South Carolina Ports Authority and the Department of Commerce and identify funding to purchase abandoned rail right-of-way that has been identified as having future freight transportation applications.

5.9.2 Passenger Rail Strategies

Strategies related to passenger rail that have been incorporated in the Statewide Multimodal Transportation Plan, include:

- Coordinate with appropriate federal, state agencies and rail providers to advance passenger rail service from Charlotte to Atlanta through the Upstate of South Carolina.
- Coordinate with MPOs, COGs, state agencies and rail partners to explore initial intercity passenger rail feasibility studies for identified corridors in the state.
- Partner with FTA, MPOs, COGs, and transit providers to implement approved premium transit services in urban areas.
- Continue to coordinate with railroad companies to ensure that no right-of-way is abandoned and lost for future public use.
- Coordinate with the MPOs, COGs, and transit providers to identify funding to purchase abandoned rail right-of-way that has been identified as having future passenger rail transportation applications.

6 COORDINATION AND REVIEW

Stakeholders contributed to the development of the South Carolina State Rail Plan 2014 Update through participation in stakeholder and public outreach efforts coordinated for all statewide planning initiatives being conducted in parallel in a fully integrated manner:

- 2040 Statewide Multimodal Transportation Plan (SMTP);
- Interstate Plan 2014 Update;
- Strategic Corridor Plan 2014 Update;
- Public Transit and Coordination Plans;
- Freight Plan; and
- State Rail Plan.

6.1 Approach to Public and Agency Participation

The integrated approach to public participation for all parallel statewide planning efforts included four main elements:

- Kick-off meeting;
- Statewide Plan Website;
- Webinars; and
- Status Reports.

In addition, all railroads operating in South Carolina were individually contacted to seek their input on needs and concerns. Stakeholder interviews (Spring 2013) and five regional listening sessions (Fall 2013), conducted as part of the South Carolina Freight Plan, also provided input on freight rail issues and concerns.

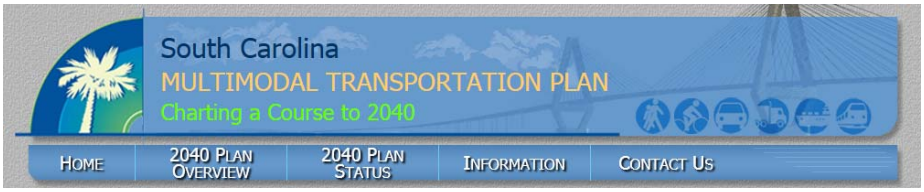
6.1.1 Kick-off Meeting

A formal kick off meeting of the 2040 South Carolina Statewide Multimodal Transportation Plan was held on July 31, 2012 at the Colonial Center in Columbia. Hosted by South Carolina Department of Transportation (SCDOT), the kick off meeting was attended by approximately 140 stakeholders from around South Carolina.

During the kickoff meeting, stakeholders participated in three interactive breakout sessions that focused on freight and rail (encompassing the modes of rail, ports, airports, highways, and intermodal facilities), interstate and state strategic corridors (highways), and non-highway modes (public transportation, and bicycle and pedestrian systems). A series of questions were asked of the freight and rail group, and the group continued a lively discussion of freight and rail issues around South Carolina and the southeastern United States.

6.1.2 Project Website

A project website[46] was hosted by SCDOT to keep stakeholders and members of the public informed of upcoming events and to provide an opportunity to express concerns and comments, as well signup for email updates and event invitations.



6.1.3 Webinars

In an effort to reach out to stakeholders throughout the development of the SC MTP, a series of webinars were hosted by SCDOT. The format of the webinar was an online based presentation with telephone access, and spoken presentations. Participants had the ability to post questions and ask them over the phone through a meeting operator. The audience was presented with poll questions from time to time when feedback was requested of the group. All webinars were hosted during the business day, allowing stakeholders from around the state to participate from their home or place of business without the burden of travel to a central meeting location. Handouts and agendas were provided through both the project website as well as the webinar LiveMeeting© interface. Following the webinars copies of the presentations were made available on the project website for those unable to attend these live events.

The first stakeholder webinar was hosted on Wednesday, April 10, 2013 from 1:30 to 3:30 PM. The webinars were grouped by mode to appeal to a synergistic group of stakeholders. The rail stakeholders were grouped with the stakeholders also interested in the Freight Plan due to the overlap of information, data, and analysis of the two modal plans. The agenda of the webinar included an overview of the overall statewide plan, specifically the Vision, Goals, and Performance Measures along with an update on the progress of the Statewide Multimodal Transportation Plan. The discussion of the Rail Plan included federal legislation impacting the rail plan, a progress report on plan development, current and forecast rail freight flows, rail freight needs, issues and opportunities. An opportunity was provided for stakeholder questions and input.

The second stakeholder webinar was hosted on Tuesday, January 7, 2014 from 1:30 to 3:30 PM and followed the same format and structure as the first. The rail portion of the webinar included discussion of goals and performance measures specific to the Rail Plan, FRA's vision for State Rail Plan, and the role of the Plan in state, regional, and national rail planning.

6.1.4 Status Reports

During the period of development of the State Rail Plan, five Status Reports were published to keep stakeholders and the public informed of progress and aware of current and future opportunities for

[46] www.scdot.org/multimodal/

involvement. These Status Reports, which encompassed all six parallel statewide planning efforts, were distributed via the project emailing list and project website in:

- December, 2012;
- March, 2013;
- June, 2013;
- November; 2013
- March, 2014.

6.1.5 Rail Carrier Input

All railroads operating in South Carolina were contacted directly to solicit input to the State Rail Plan on needs and concerns. All carriers provided input as described in Chapter 4.

6.1.6 Freight Stakeholder Interviews, Surveys and Regional Listening Sessions

6.1.6.1 Freight Stakeholder Interviews

One-on-one interviews were conducted in December 2012 with key freight stakeholders. These entities were identified after canvasing private stakeholders in South Carolina in order to select a broad cross-sectional representation of manufacturers, shippers, and transportation service providers. While the respondents' identities remain confidential as per the terms of conducting the interviews, a summary of the types of key stakeholders that were interviewed is as follows:

- Cargo Airport
- Class I Railroad
- Full Service Heavy Haul Carrier
- Full Truckload carrier
- Large Manufacturer
- Multi-modal logistics service provider

6.1.6.2 Freight Surveys

In accordance with USDOT guidance in section 1117 of the transportation reauthorization legislation, *Moving Ahead for Progress in the 21st Century Act (MAP-21)*, the South Carolina's Multimodal Transportation Plan solicited input from the users and providers of the state's freight transportation system. The information requested from this stakeholder group, e.g. motor carriers, manufacturers, distributors, provides private sector observations on:

- Supply chain influences on modal availability and selection; and
- Contribution of the state's freight transportation infrastructure to goods movement.

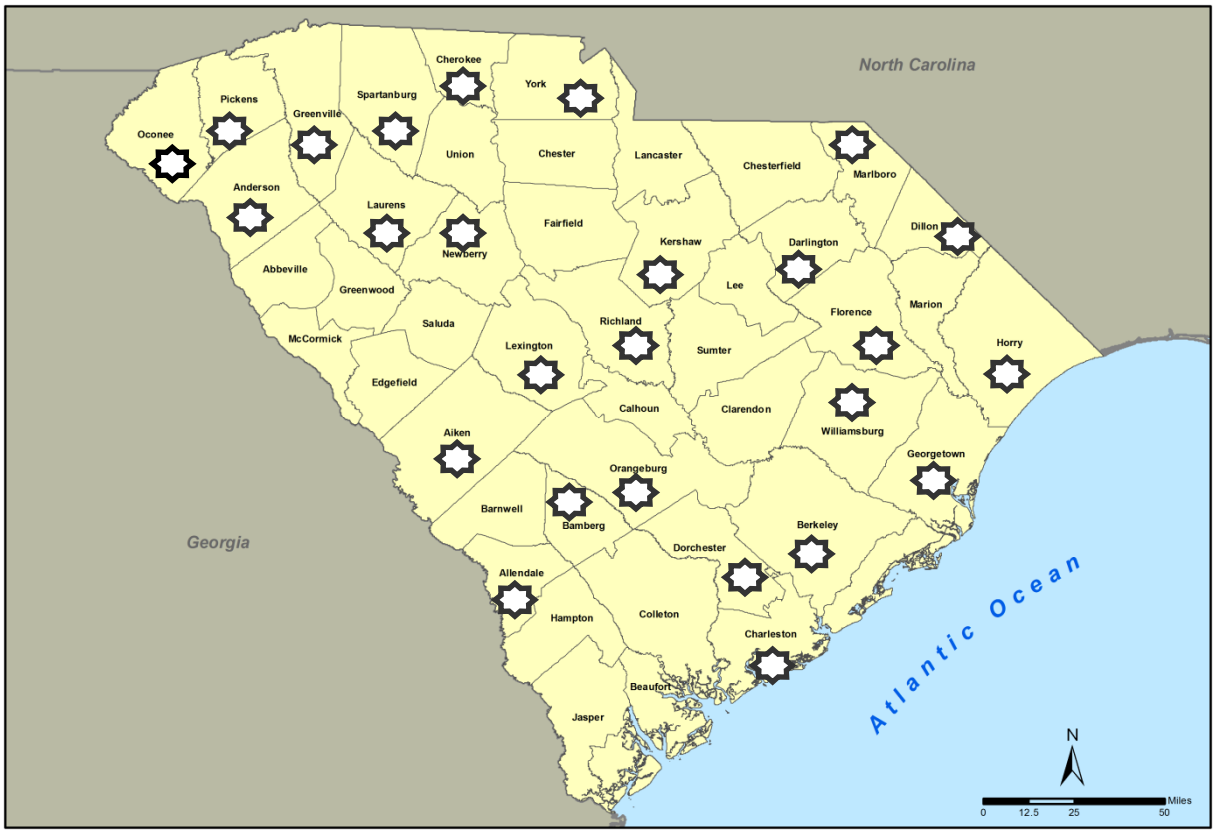
This information was gathered through an online survey. A link to the survey was provided to the stakeholders through SCDOT and the TDL Council-New Carolina. The intended audience was, but was not limited to:

- Carriers among the transportation modes, e.g. air, highway, rail, water
- Manufacturers and industrial facilities

- 3PL, 4PL, logistics, freight forwarders
- Distributors
- Advocacy groups, associations

Almost 100 survey responses were received. Eighty-four respondents identified their location as being in a county within South Carolina, as shown in **Figure 6-1**. The remaining respondents self-identified as counties located in neighboring states, simply as the United States, or international.

Figure 6-1: Survey Respondents by County



6.1.6.3 Freight Regional Listening Sessions

The statewide planning team held a series of Regional Listening Sessions (RLS). Geographically, the meetings were held in locations where attendees had to drive less than one hour to attend. Four locations were identified: Columbia, Florence, Greer, and North Charleston. Invitations were sent via email and invitees were asked to register via the online based Evite invitation service.

The total number of attendees at the RLS meetings was 95, with 79 meeting worksheets being completed.

The meeting format for each of the RLS meetings was identical with an introduction from SCDOT, a welcome from the Transportation Distribution and Logistics (TDL) Council, and then a facilitated

discussion about freight and infrastructure. During the facilitated discussion, notes were typed and projected for the attendees to review and correct as necessary.

6.2 Coordination with Neighboring States

Facilities and services crossing state boundaries are currently limited to Amtrak passenger rail services and Class 1 railroad operations. Together with North Carolina, the state coordinates in high speed rail passenger planning through their participated in the Georgia DOT led Passenger Rail Corridor Investment Plan (PRCIP), which is part of a larger high-speed rail initiative on the behalf of the Federal Railroad Administration (FRA) that extends north to Washington, DC and is commonly referred to as the Southeast High Speed Rail (SEHSR) Corridor. SCDOT provided the draft State Rail Plan to the North Carolina and Georgia DOTs for their review and input as well.

6.3 Involvement in Preparation of State Rail Plan

The public, rail carriers, local government agencies, and other stakeholders participated in the preparation of the State Rail Plan through the activities described in Section 6.1. Opportunities for review of the plan were provided in the webinars through presentation of draft findings as plan development progressed. A formal public review period for the Draft 2040 Statewide Multimodal Transportation Plan provided a further opportunity to review and comment on that plan, which included a summary of the State Rail Plan.

6.4 Issues Raised

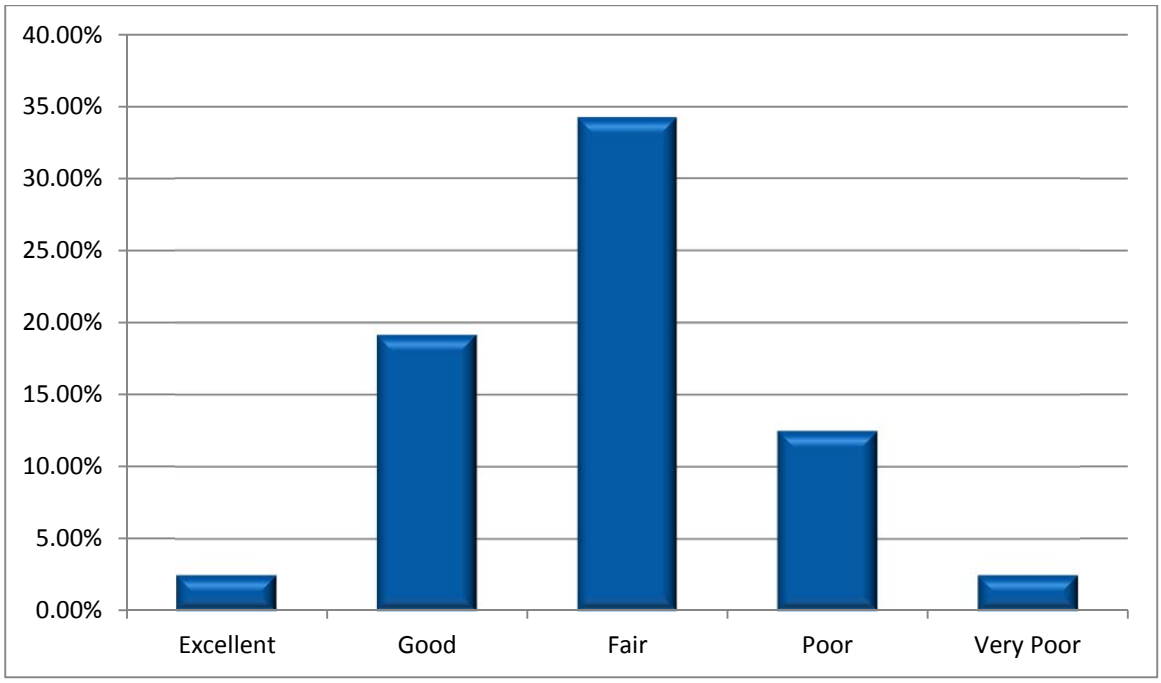
Rail-related Issues from Freight Stakeholder Interviews - During the freight stakeholder interviews the development of an inland port in Greer by the Port of Charleston and Norfolk Southern Railroad was identified by some respondents as potentially beneficial, while others indicate it would not be helpful to their needs. While an interesting mix of responses were received from the stakeholders, the predominant tone of these responses was positive as rail was seen an economical, environmentally friendly way to move freight. In addition, as South Carolina's Upstate region both sources and consumes a large amount of the state's TDL freight, the location of the port was deemed reasonable by the respondents and identified as a way to both grow Greenville-area businesses and help reduce the volume of trucks on the I-26 corridor. However, some respondents feared that the inland port will cause some truck carrier's business to decline and could cause additional, unwanted traffic issues on the roads that service the inland port's Greer location (including SC 101 and I-85). However, from an infrastructure perspective, having the multi-modal option was viewed as necessary and it will provide opportunities for geographic expansion to the west from the Upstate.

The freight stakeholders interviewed had many positive comments pertaining to the Statewide Multimodal Transportation Plan and the current state of Transportation, Distribution and Logistics in South Carolina. The strengths of South Carolina that were mentioned include the Port of Charleston and its deep water draft and a reliable work force. South Carolina's outstanding cargo airports were cited for their ease of accessibility, and the state's truck and rail capabilities were seen as reputable and effective. Finally, many respondents applauded SCDOT for their progressive leadership.

When asked about overall improvement opportunities for South Carolina's TDL industry, many respondents focused on the state's transportation infrastructure. Comments focused on areas of roads that have been neglected, needed infrastructure maintenance, and limited resources for our state's infrastructure. Many of the key stakeholders interviewed suggested that if no solution is found to our state's current infrastructure issues, there will be no reason for companies to set up businesses in South Carolina. Further, the newly announced inland port's operations may be hampered if/when companies cannot successfully get to the port due to infrastructure and congestion issues. The general sentiment was that infrastructure repair and maintenance is needed to keep South Carolina TDL firms competitive, especially on our state's bridges and interstates. Closures, detours, and re-routes can be severely detrimental to business and economic development.

Rail-related Issues from Online Freight Surveys - A total of forty-six responded to the online survey question on rail usage, with seventeen noting that rail was used in their operations. Twenty nine graded the performance of rail services within the state, as shown in **Figure 6-2**.

Figure 6-2: S.C. Rail Transportation Services Scoring



When providing observations on transportation system weaknesses, in addition to critical issues concerning highway maintenance and capacity, other areas observed as hindering the state's competitive abilities to provide efficient freight transportation included:

- Lack of available intermodal, multi-modal facilities
  - Lack of on-port rail
  - Lack of inland ports

- Out of state influences
  - Capacities and conditions in neighboring states, e.g. congestion in Atlanta
  - Imbalanced modal usage and trade lanes
- Port operations and infrastructure improvements are necessary
- Transportation rates
- Lack of alternative passenger rail to alleviate highway congestion
- Workforce availability, e.g. commercial vehicle operators

Rail-related Issues from Regional Listening Sessions - The overarching themes in the listening sessions that relate to rail and the access to rail were as follows:

- Positive Conditions
  - Interstate System
  - Intermodal Connectivity
  - Supportive SCDOT
- Negative Conditions
  - Interstate Congestion
  - Pavement conditions (Interstate and Secondary)
  - Capacity and conditions of local intermodal connections
- Opportunities
  - Multimodal Planning
    - Transit potential
    - Modal shift for goods
  - Coordination across all levels of public sectors
    - Land use
    - Highway Planning
    - Project prioritization
  - High level of transportation investment and awareness
    - Support for Port expansion and Charleston Harbor Deepening
    - Political awareness and support for finance of projects
  - Expected growth
    - New and growing industries in South Carolina
- Challenges:
  - Planning to the “final mile”
  - Coordinated Planning
    - State and Local
    - Land Use and Transportation
  - Pavement Condition and design standards
  - Education of citizenry and officials (local) of importance on freight planning
  - Congestion
  - Funding
  - Project Implementation

- State and Federal permitting guidelines
- Subjectivity of project support
- Public opinion

6.5 Stakeholder Input to State Rail Plan

The valuable input provided by stakeholders during Statewide Multimodal Transportation Plan development was considered and presented in the State Rail Plan in a number of ways, including Chapter 4, Proposed Freight Rail Improvements and Investments, where rail improvement needs identified by all individual rail carriers operating in South Carolina were fully documented, including cost estimates where available.

In other chapters of the State Rail Plan stakeholder input served to:

- Show support for recent or ongoing rail developments, such as the Inland Port in Greer that commenced operations in October 2013 and the Intermodal Container Transfer Facility in Charleston that is in the planning stage;
- Highlight issues, concerns, and challenges for freight and passenger rail, including lack of funding, and highway maintenance/capacity needs;
- Support the need for continuing close coordination in multimodal transportation planning in the future between SCDOT and other agencies, as illustrated by the team approach to development of the 2040 Statewide Multimodal Transportation Plan, which was developed by SCDOT in partnership and in coordination with the South Carolina Department of Commerce (DOC), South Carolina Ports Authority (SCPA), and Federal Highway Administrations (FHWA), as well as hundreds of regional and local stakeholders from a variety of agencies and organizations throughout the state.

6.6 Coordination of State Rail Planning

As noted previously the South Carolina State Rail Plan was developed in parallel with and in a fully integrated manner with other statewide planning initiatives that collectively results in the following long range planning documents:

- 2040 Statewide Multimodal Transportation Plan (SMTP);
- Interstate Plan;
- Strategic Corridor Plan;
- State Public Transit Plan and ten Regional Transit Coordination Plans;
- Freight Plan; and
- State Rail Plan.

APPENDIX A: SOUTH CAROLINA CODE OF LAWS

SOUTH CAROLINA CODE OF LAWS

SECTION 57-3-30. Office of Railroads; establishment; responsibilities; comprehensive state rail plan; interagency cooperation.

(A) The Office of Railroads is established within the Division of Intermodal and Freight Programs. The office is principally responsible for:

(1) preserving railroad rights-of-way for future use and coordinating the preparation of a state railroad corridor preservation and revitalization plan;

(2) coordinating high-speed and intercity passenger rail planning and development;

(3) planning, developing, maintaining, and coordinating a comprehensive state rail plan for passenger and freight railroads and infrastructure services with other modes of transportation to help facilitate effective and efficient interstate and intrastate movement of people and freight;

(4) applying for and receiving state, federal, or other funds for passenger and freight rail service and infrastructure needs, high-speed and intercity passenger rail planning and development, and rail corridor preservation and revitalization programs; and

(5) preparing and submitting by February first of each year a full, printed, detailed report to the House Education and Public Works Committee and the Senate Transportation Committee containing an analysis of the:

(a) state railroad corridor preservation and revitalization plan; and

(b) comprehensive state rail plan for passenger and freight railroads and infrastructure services.

(B) Every five years the office must develop and prepare a comprehensive state rail plan for passenger and freight railroads and infrastructure services. The plan must be approved by the United States Department of Transportation. The plan, and any updates, must be submitted to the General Assembly.

(C) All departments, boards, public authorities, or other agencies of the State or its political subdivisions, local government, transportation authorities, and other local public entities must cooperate with the office, provide assistance, data, and advice upon request, and must reimburse any such entity necessary costs in the event of any expense. This authority does not preclude another governmental entity, public or private organization, or individual from entering into a contract or agreement concerning the purposes set forth in this section.

(D) Nothing in this section may be interpreted to subrogate the powers and duties of the Division of Public Railways to the Office of Railroads.

HISTORY: 2010 Act No. 206, Section 5, effective June 7, 2010.

APPENDIX B: SOUTH CAROLINA PORT TONNAGE

South Carolina Port Tonnage by Commodity – TRANSEARCH Reported (2011)

STCC2	Commodity	Inbound	Outbound	Intrastate	Through	Total
01	Farm Products	1,023	0	0	0	1,023
08	Forest Products	0	0	0	0	0
09	Fresh Fish or Marine Products	0	0	0	0	0
10	Metallic Ores	0	0	0	0	0
11	Coal	3,524	0	112,493	0	116,018
13	Crude Petrol. or Natural Gas	0	0	0	0	0
14	Nonmetallic Minerals	162,874	1,803	0	342,976	507,653
19	Ordnance or Accessories	0	49	0	0	49
20	Food or Kindred Products	7,585	179	0	198,179	205,942
21	Tobacco Products	0	0	0	0	0
22	Textile Mill Products	0	485	0	368	853
23	Apparel or Related Products	2	9	0	11	22
24	Lumber or Wood Products	10,892	0	0	767	11,659
25	Furniture or Fixtures	116	0	0	6	122
26	Pulp, Paper or Allied Products	0	15,114	0	3,494	18,608
27	Printed Matter	0	0	0	0	0
28	Chemicals or Allied Products	702,522	23,719	0	126,599	852,841
29	Petroleum or Coal Products	736,474	48,160	387,795	1,604,744	2,777,173
30	Rubber or Miscellaneous Plastics	40	5	0	8	54
31	Leather or Leather Products	0	0	0	0	0
32	Clay, Concrete, Glass or Stone	981	71,095	0	211	72,287
33	Primary Metal Products	188	35,244	19,588	252	55,271
34	Fabricated Metal Products	157	983	0	69	1,210
35	Machinery	298	4,383	0	172	4,852
36	Electrical Equipment	63	908	0	226	1,196
37	Transportation Equipment	27	205	0	34	265
38	Instruments, Photo Equipment, Optical Equipment	2	0	0	48	51
39	Miscellaneous Manufacturing Products	2	0	0	6	9
40	Waste or Scrap Materials	127,999	1,959	3,744	183	133,885
41	Miscellaneous Freight Shipments	0	0	0	2	2
42	Shipping Containers	0	0	0	0	0
43	Mail or Contract Traffic	0	0	0	0	0
44	Freight Forwarder Traffic	0	0	0	0	0
45	Shipper Association Traffic	0	0	0	0	0
46	Miscellaneous Mixed Shipments	31	137	0	728	896
47	Small Packaged Freight Shipments	0	0	0	0	0
48	Waste	0	0	0	0	0
49	Hazardous Materials	0	0	0	0	0
50	Secondary Traffic	0	0	0	0	0
60	Unclassified	0	0	0	0	0
	Remaining Commodities	0	0	0	0	0
	Total	1,754,800	204,436	523,621	2,279,084	4,761,940

Source: prepared by CDM Smith, based on TRANSEARCH data for 2011

South Carolina Port Tonnage by Commodity – USACE Reported (2011)

Commodity	Inbound (Receipts)	Outbound (Shipments)	Intraport	Through	Total
Coal	1,213	358	0	na	1,571
Crude Petroleum	0	0	0	na	0
Petroleum Products	2,426,259	57,061	445,540	na	2,928,860
Fertilizers	52,995	5,850	0	na	58,845
Other Chemicals and Related Prod.	1,874,161	1,240,996	0	na	3,115,157
Forest Products, Wood and Chips	281,143	261,314	0	na	542,457
Pulp and Waste Paper	10,594	790,464	0	na	801,058
Soil, Sand, Gravel, Rock and Stone	276,910	9,097	0	na	286,007
Iron Ore and Scrap	702,255	32,467	0	na	734,722
Marine Shells	62	11	0	na	73
Non-Ferrous Ores and Scrap	543,574	55,311	0	na	598,885
Sulphur, Clay and Salt	9,401	43,737	0	na	53,138
Slag	0	22	0	na	22
Other Non-Metal. Min.	243,398	6,441	0	na	249,839
Paper Products	154,337	857,762	0	na	1,012,099
Lime, Cement and Glass	100,690	502,761	0	na	603,451
Primary Iron and Steel Products	951,136	142,975	6,678	na	1,100,789
Primary Non-Ferrous Metal Products	339,456	341,339	0	na	680,795
Primary Wood Products; Veneer	56,277	10,637	0	na	66,914
Fish	7,299	627	0	na	7,926
Grain	11,551	4,724	0	na	16,275
Oilseeds	5,895	8,771	0	na	14,666
Vegetable Products	49,817	24,890	0	na	74,707
Processed Grain and Animal Feed	9,800	51,658	0	na	61,458
Other Agricultural Products	303,703	492,761	0	na	796,464
Mfg. Equip., Machinery and Products	2,856,384	1,357,949	0	na	4,214,333
Waste and Scrap NEC	0	0	0	na	0
Unknown or Not Elsewhere Classified	137,884	194,783	0	na	332,667
Total	**11,406,194**	**6,494,766**	**452,218**	**na**	**18,353,178**

Source: prepared by CDM Smith, based on USACE data for 2011 (http://www.navigationdatacenter.us/wcsc/webpub11/Part1_Ports_tonsbycommCY2011.HTM)
Note: Through movements not reported by USACE