ISSUES AND OPPORTUNITIES

7. Rail Capacity Requirements

Rail line capacity is dependent on a number of factors related to infrastructure and operations. The number of main tracks on a given route is one measure, the type of signal system another, and the types of trains using the route another, among many others. While each characteristic does in fact impact capacity, it is the interrelationship of all factors that actually determines capacity.

7.1 Mainline Development

Today's South Carolina rail infrastructure has evolved over time. Much of it was reduced during the period of the 1960s through the 1990s, not only in total system composition, but in capacity on individual routes.

7.1.1 Double-track and Single–track Lines

Two of South Carolina's north-south main line routes were derived from two CSXT predecessor railroads competing for rail traffic from the northeast between Richmond and Florida. The railroad's main track through Florence and Charleston, now CSXT's "A" Line, was the principal route of the Atlantic Coast Line Railroad. A project to double-track the route from Richmond to Jacksonville, 661 miles, was completed in 1925.[32] Two of the last major segments to be finished were in South Carolina -- Java (between Florence and New Hope) to Lanes and Drayton Hall to Yemassee.

Advances in railway signaling, namely centralized traffic control (CTC),[33] provided improvements in operations to the extent that many carriers found they didn't need as many multiple-track route miles to provide the same capacity. Savings in track maintenance and other costs lead to programs to eliminate much of the second track on double-track routes. Such an effort was begun in 1959[34] between Rocky Mount, North Carolina and Savannah and thus through South Carolina. Track sections ranging from two to twenty miles were left to function as double track and passing tracks.

Norfolk Southern mainline in Upstate South Carolina

The NS main track between Washington, DC and Atlanta, which runs through the Upstate, underwent a similar process. The reduction effort eliminated the second track in approximately ten-mile sections, every other ten route miles.

[32] *Building a Great Railroad*, p 214.
[33] A system governing the movement of trains through signals controlled and track selections made from a centralized point
[34] *Building A Great Railroad*, p 294.

All of the remaining main track routes in South Carolina were and are single-track lines. Seaboard Air Line Railroad, the ACL's competing CSXT predecessor, did, however, install CTC on its north-south main track from Hamlet, North Carolina to Savannah (CSXT's "S" line) running through Columbia, and its freight route between the same two points running through Charleston, providing boosts in capacity without double track.[35]

7.1.2 Positive Train Control

The Rail Safety Improvement Act of 2008 requires all Class I and passenger railroads to implement a positive train control system (PTC) by December 31, 2015 on all main line tracks where passenger trains, intercity or commuter, operate, or toxic-by-inhalation hazardous materials are being transported. The legislative effort in large part was the result of a deadly collision of a Metro-Link commuter train and a Union Pacific freight in September of 2008.

Positive train control is not a singular technology but the marriage of several technologies into a system that provides train collision avoidance, and keeps a train within authorized operating limits and prevents a variety of other railroad accidents. Its use, however, is not limited to safety applications as it will also permit operating efficiencies that will improve capacity. Various PTC systems have been undergoing tests for sometime now with eleven[36] different projects underway. One such test is being conducted on the NS line between Columbia and Charleston.

The industry's major carriers have agreed to establish interoperability standards for PTC, a major step in developing an industry-wide application. The cost of implementation presents another major hurdle. Industry-wide costs could approach $4.5 billion (2001 dollars).[37]

7.2 Capacity Studies

Two recent studies have been completed or are on-going that involve capacity on rail lines in South Carolina. They are reviewed in the following paragraphs.

7.2.1 Southeast Rail Operations Study

The Southeast Rail Operations Study (SEROps) is sponsored by the I-95 Coalition and the Departments of Transportation in four Southeastern States, namely North Carolina, South Carolina, Georgia, and Florida.[38] The study is one of three regional efforts intended to cover the entire length of the I-95 Corridor.

The Mid-Atlantic Rail Operations Study (MAROps) was completed in 2002 and the Northeast Rail Operations Study (NEROps), like SEROps is underway. These studies are intended to identify trends and issues affecting freight and passenger transportation and related needs and recommendations.

[35] A program initiated in 1941 between Richmond and Alberta, Virginia was one of the earliest CTC installations in the U.S.
[36] AAR website
[37] FRA website
[38] With assistance from Cambridge Systematics

Phase I of SEROps was completed in mid-2008 and found existing congestion in both the highway and rail systems, combined with dramatic growth in both population and employment, as well as transportation demand. Several recommendations were made for Phase II including:

- Identification of the regional chokepoints, issues and constraints;
- Development of a better understanding of the traffic flows, freight and passenger;
- Identification of rail infrastructure / operational improvements currently planned or programmed, as well as additional improvements that would further enhance regional operations;
- Development of costs and benefits associated with identified improvements and a consensus-based prioritization of potentials; and,
- Identification of institutional means of financing and implementing a regional rail improvement program.

A scope of work is being prepared for Phase II of SEROps. This phase will begin the identification of specific issues and problem locations.

7.2.2 Association of American Railroads

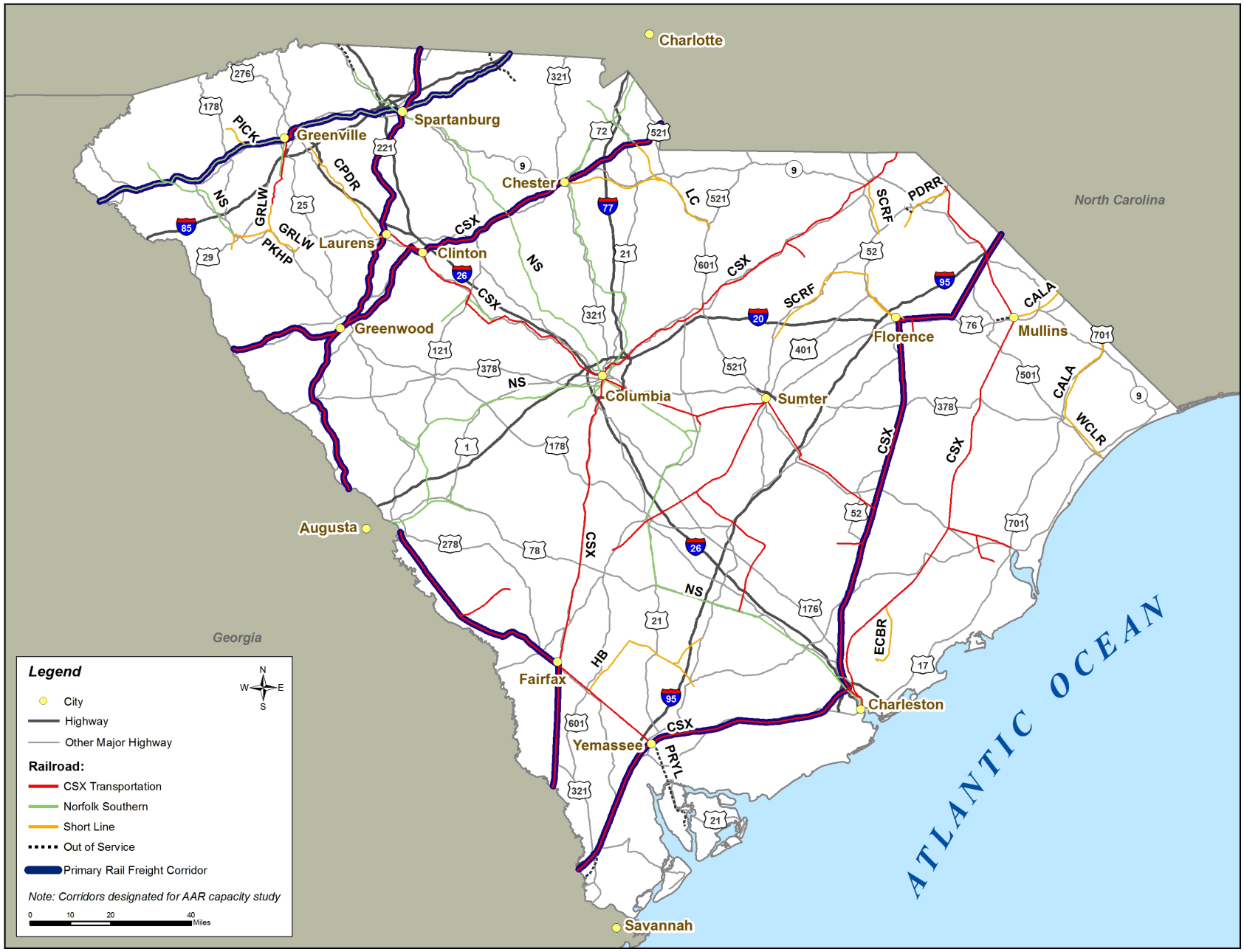
A recent (September 2007) study of rail capacity on a national basis was performed by the Association of American Railroads (AAR). It was prepared with member involvement including a steering committee that included representatives of both of South Carolina's Class I railroads, CSXT and NS.[39] This assessment of long-term capacity needs of the rail industry requested by the National Surface Transportation Policy and Revenue Study Commission was based on satisfying the U.S. DOT's projected rail freight demand for 2035. Estimates at that time projected an increase in demand of 88 percent (tonnage) by that date.

Methodology - The study rail system comprised 52,340 route miles of primary rail freight corridors, approximately one-third of the total U.S. rail system. The rail lines included in South Carolina were comprised of the NS mainline through the Upstate, CSXT's "A" Line through Florence, its Hamlet-Atlanta mainline through Greenwood, and its Savannah-Elkhorn City, KY mainline through Greenwood and Spartanburg, as shown in **Exhibit 7-1**.

While existing capacity assessments included existing passenger service, future needs were based on additional freight demand without consideration of new passenger service needs. Existing levels of rail traffic were assigned to the study system using data from the STB's Carload Waybill Sample and line capacity estimated using track, signal and freight traffic/train type characteristics. Traffic volumes and the capacity of each segment of the rail system were compared and volume-to-capacity ratios developed and level of service ratings established.

[39] With assistance from Cambridge Systematics

Exhibit 7-1: South Carolina Primary Rail Freight Corridors



SC Results - Based on current traffic flows and line segment use characteristics, all of South Carolina's study system components were rated to have excess capacity.

Rail traffic characteristics were then forecast to 2035 for each system segment and compared to existing corridor capacity. Level-of-service ratings for two segments of CSXT's Savannah-Spartanburg route in South Carolina deteriorated – one to near-capacity and the other to at-capacity. CSXT has been making improvements on this single-track route with signalization and passing siding additions. Additional efforts planned consist of islands of Train Control System (TCS) between Augusta and Yemassee and siding extensions (4) between Laurens and Augusta.[40] The same project submittal contains an extension of the side track at Fuller (near Clinton) and signalization of the existing pass track at Catawba is proposed[41]on the Hamlet-Atlanta CSXT primary freight corridor.

7.3 Corridor Initiatives

Both of the state's Class I railroads have proposals for the development of long-distant corridors, most developed essentially for intermodal traffic, but serving to improve operations for all rail movements. Several of the corridors run through South Carolina.

7.3.1 CSXT I-95 Corridor

In 2007, CSXT submitted an application to the U.S. DOT requesting the 1,200-mile-long I-95 rail corridor be designated a Corridor of the Future. The program is one element of the DOT's National Strategy to Reduce Congestion on America's Transportation Network. CSXT's vision of the corridor would enable both passenger and freight trains to travel faster with greater safety, reliability,[42] and recoverability, as well as permit increased freight and passenger train volumes. The application divided the corridor into four segments with South Carolina lines[43] lying in the last segment between South Collier, Virginia and West Palm Beach, Florida.

While the application states that most of the Corridor segments between Richmond and Callahan, Florida (just north of Jacksonville) can effectively accommodate current traffic volumes, sections north of Selma, North Carolina were stressed due principally to the number and coordination of freight and passenger trains.[44] Additional main tracks were recommended, especially in existing single-track locations, in the corridor segment passing through South Carolina for future freight and passenger traffic levels, but no specific recommendations were made as in the other segments to address chokepoints.[45] However, specific projects in the Corridor were submitted for inclusion in this rail plan from Dillon to Charleston. These projects primarily consist of

[40] Submitted by CSXT for this Rail Plan. See Appendix C for a detailed project listing. Projects for this line have mile post prefix AK.
[41] See Appendix C for projects with the mile post prefix SG.
[42] CSX Transportation, *I-95 Corridor of the Future application*, p. 5
[43] The I-95 Corridor includes both the CSXT "A and S" lines in the state although the emphasis is on the "A" Line.
[44] Ibid, p. 28
[45] Ibid, p. 38

extension of double-track sections and creation of universal crossovers[46] in both the extensions and in existing double-track sections of the corridor. Eleven locations are proposed. Work on the Santee River bridge and two siding improvements are also proposed.

In addition, the application considered higher-speed passenger train operation in the Corridor. In this case, additional recommendations were made, namely:

- Separation of high-speed trains from freight and conventional passenger trains;
- Grade separation of roadways and high-speed trains from freight trains serving on-line industries on either side of the Corridor; and,
- Additional rights-of-way to accommodate grade separations and curve reductions (for higher-speed operations).[47]

7.3.2 CSXT National Gateway

In May of 2008, CSX Corporation announced the National Gateway initiative to create a $724 million public-private corridor project linking Mid-Atlantic Ports and the Midwest. While the Corridor initiative does not use any of South Carolina's rail lines, it is part of the carrier's I-95 Corridor and the southern most component begins just north of the North Carolina-South Carolina state line at Pembroke. The corridor will connect Charlotte, Wilmington, Norfolk, Portsmouth and Baltimore with Columbus, Ohio. It could also be used as a conduit for South Carolina intermodal traffic bound for the Midwest.

The project is to increase clearances to accommodate double-stack containers, increase track capacity and expand terminal capacity at several locations. Currently, double-stack clearance does not effectively exist north of Florence. The project limits are depicted on **Exhibit 7-2**. CSX Corporation has committed $300 million[48] to the total estimated cost of over $700 million and plans to work for funding assistance with involved states and the federal government for the balance. Pennsylvania has agreed to fund clearance and bridge projects for $35 million and Ohio has expressed interest.[49]

Sixty-one clearance projects are involved including increasing clearances and adding track to the Virginia Avenue tunnel in Washington, DC, a notorious bottleneck. It does not, however, include another severe clearance restriction, the Howard Street tunnel in Baltimore.[50] The Virginia Avenue tunnel project is the most expensive single effort in the initiative with an estimated cost of $136 million. The Baltimore tunnel clearance project cost has been estimated to approach $1 billion. A new Baltimore intermodal terminal would be constructed south of the bottleneck.

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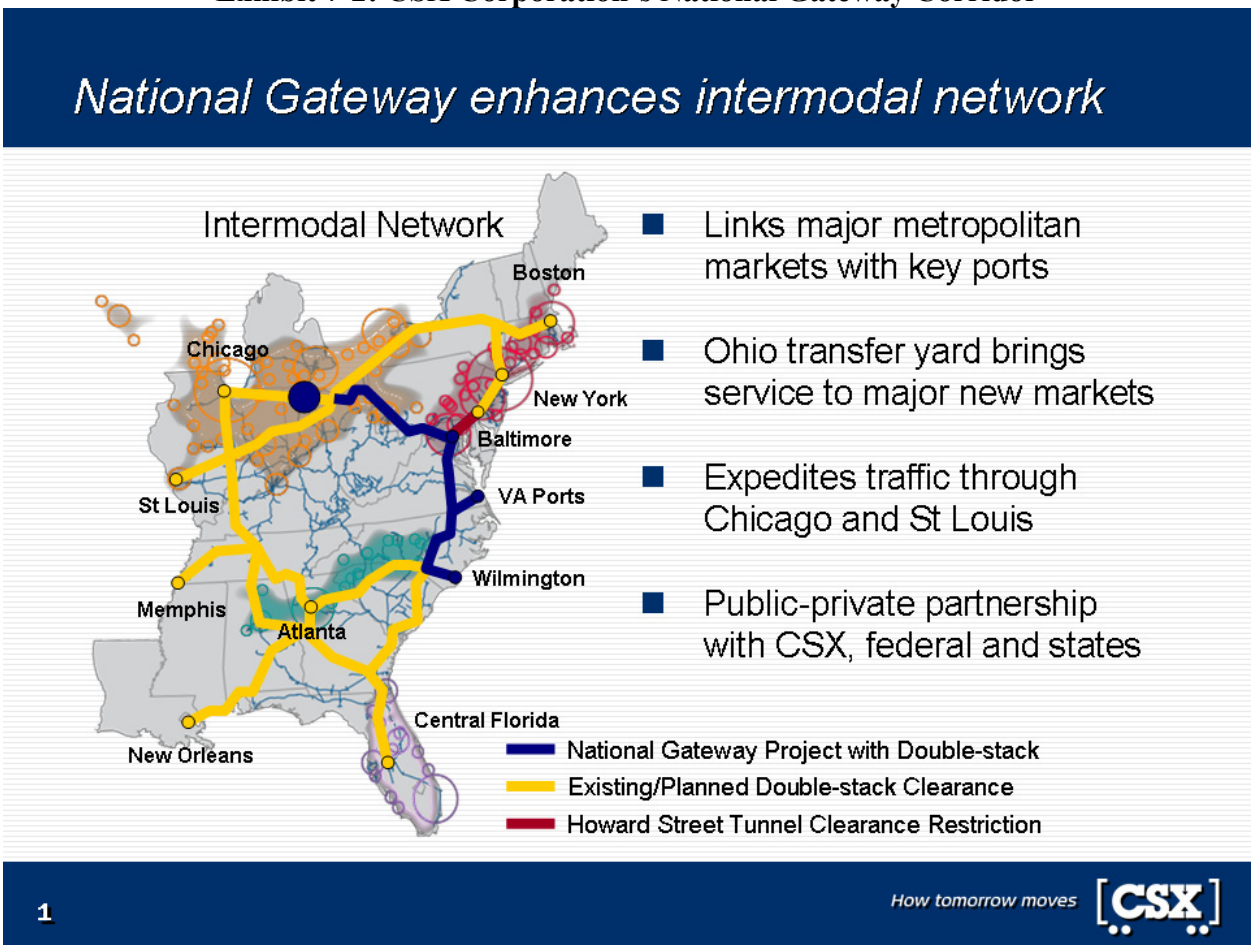
[46] Permits a train to cross from either track to the other in either direction in double-track sections, providing flexibility for meeting and passing trains, which increases capacity. See Appendix C for listing of projects with mile post prefix A.
[47] Ibid, pages 38 and 39
[48] CSX news release, May 1, 2008
[49] Jeff Stagl, *Progressive Railroading,* January,2009, p.22.
[50] Rip Wilson, Transport Topics,, November 24, 2008

A study of public benefits[51] concluded that $8 in safety, congestion, environmental, highway maintenance and job creation benefits would result from every dollar of public investment. Rail passenger service such as Amtrak, and Maryland and Virginia Washington, DC area commuter operations will also benefit from the improved corridor.

Exhibit 7-2: CSX Corporation's National Gateway Corridor



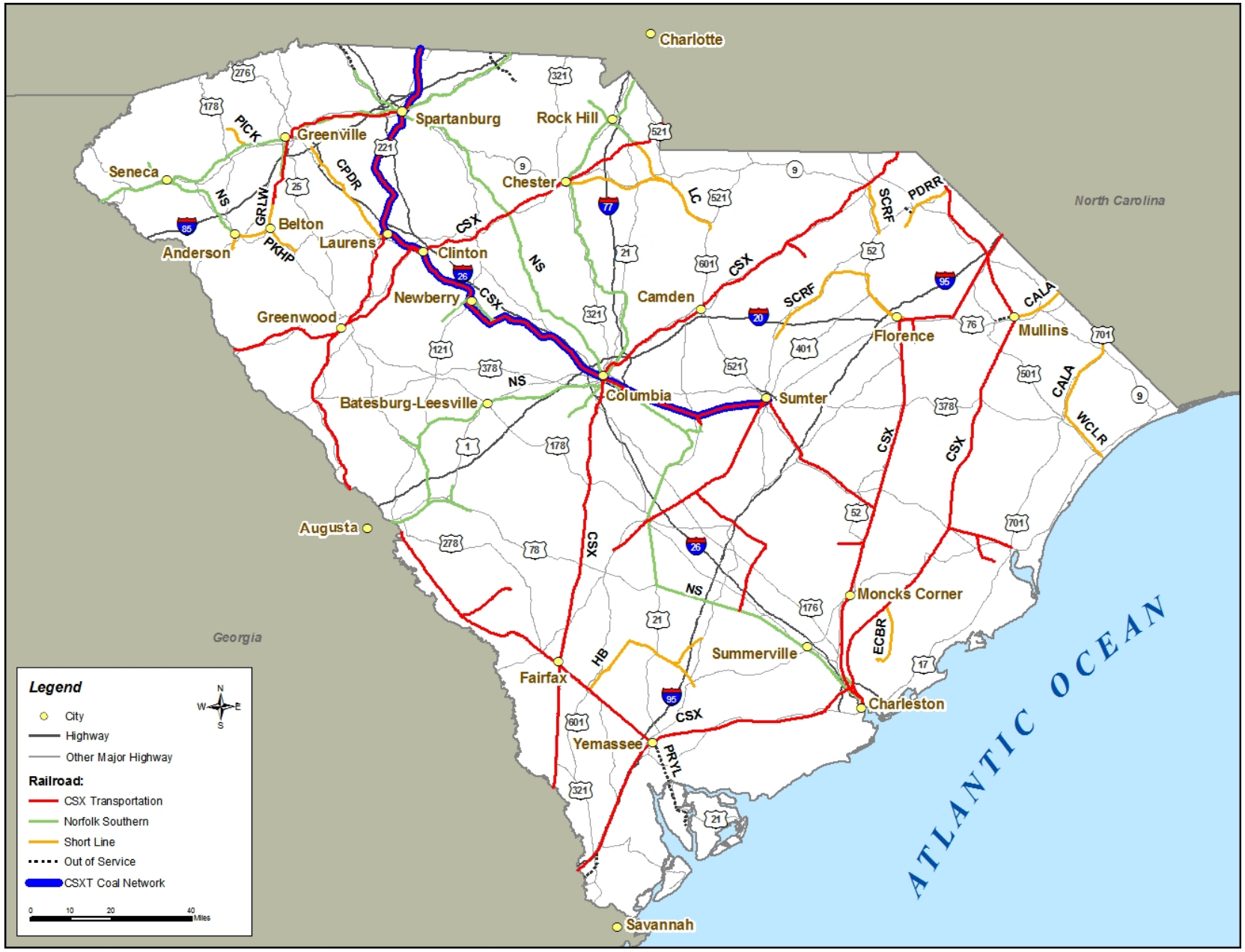
Source: CSXT Corporation.

7.3.3 CSXT Coal Network

CSX Transportation has one other designated corridor within South Carolina, namely components of its coal network (see **Exhibit 7-3**). This network is significant in that coal is not only the single largest commodity for CSXT in the state, but it is the single largest rail commodity transported in and out of South Carolina at 17.1 million tons in 2006, accounting for 34 percent of all originating and terminating tonnage.

[51] CSX news release, May 1, 2008, CSX commissioned study performed by Cambridge Systematics.

Exhibit 7-3: CSXT Coal Network in South Carolina



South Carolina has a significant generating capacity in coal-fired power plants with most of it located in the eastern part of the state. In addition, Santee Cooper has proposed a new generating plant near Florence to meet growing demand. The new plant would burn four million tons of coal per year.

The network as depicted enters the state from North Carolina on the railroad's Blue Ridge Subdivision and passes through Spartanburg, Columbia and Sumter. The carrier has been making capacity improvements on the involved lines with the construction of new and extension of existing passing tracks and signalization. Additional improvements submitted by CSXT[52] for inclusion in this Rail Plan consist of a siding extension, a new siding, additional signalization and a 4-track local yard at Lakeside (near Newberry). In Columbia, a third track is proposed in the "ditch" with reconfigured interlockings, and the connection of sidings at Dixiana south of town. Another siding extension for coal trains is proposed at Manning, between Sumter and Lane.

7.3.4 NS Crescent Corridor

Norfolk Southern's Crescent Corridor took root in the railroad's proposal initiated in Virginia to alleviate truck traffic on I-81. In 2000, the Virginia General Assembly requested the Secretary of Transportation to examine the potential for shifting the state's highway traffic to rail. Two evaluations followed of the use of public funding for railway improvements that would mitigate expenditures planned for I-81.

Originally presented as an improved route through east Tennessee and western Virginia, the corridor as now proposed has two legs. The second leg consists of the carrier's Atlanta-Manassas, Virginia main track, which traverses South Carolina's Upstate. The 1,400-mile corridor as now proposed is the subject of **Exhibit 7-4**. As shown in the exhibit, the corridor connects the east-west rail gateways of New Orleans and Memphis with the Northeast. The Dallas-Meridian, Mississippi line shown on the same exhibit is the railroad's Meridian Speedway, a joint-venture with the Kansas City Southern Railway and provides connections with western railroads at Dallas and Shreveport.

Norfolk Southern is currently working on the corridor plan and to obtain funding. The thrust of the latter is through a public-private partnership (PPP). Public funding justification is based on public benefits derived from highway congestion reductions, increases in safety, and reduction in highway capital and maintenance expenditures, as well as greenhouse gases. The Commonwealth of Virginia has committed $40 million to improvements (double track, signaling and passing sidings) between Manassas and Fort Royal. Pennsylvania and Tennessee are also interested.[53] No specific corridor projects have been identified in South Carolina.

Expansion of the railroad's intermodal terminal capacity in Charlotte, North Carolina, however, is already occurring on the corridor. The state, city and airport authority are working with NS to locate a new terminal. Assistance from the state is being planned through the provision of tax credits.[54]

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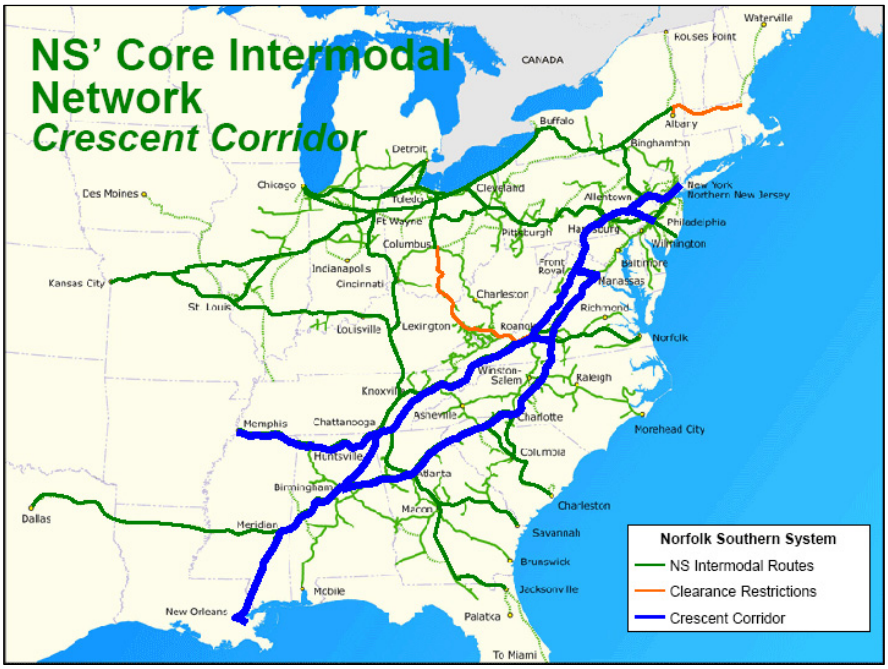
[52] Appendix C mile post prefix C, S and AL.
[53] Stagl, Jeff, Progressive Railroading, September 2008, pp 38, 42
[54] Ibid, p. 44

Exhibit 7-4: Norfolk Southern's Crescent Corridor



Source: NS website, used with permission.

7.4 Short Line Capacity Needs

South Carolina's short line railroads also have capacity issues relating principally to interchange capacity at Class I connection points and handling increased freight car capacity in terms of greater weights. These capacity needs, with the possible exception of the interchange location, do not impact Class I main line capacity, but rather are limited to the lines operated by the short lines.

Many of the short lines were created from branch or light density lines of the larger railroads that were either abandoned or "spun off". Most of these lines were in poor physical condition with smaller rail sections than necessary for today's modern car loadings as well as weight-restricted bridges. The "capacity" needs for this group of rail carriers are discussed in more detail in **Section 8**.

7.5 Intercity Rail Passenger Proposals

There are three active proposals involving intercity passenger rail service that involve South Carolina. One was originally proposed over a decade ago and the other two have just been advanced.

All three initiatives are based on the provision of transportation choices for the traveling public while at the same time generating a wealth of societal benefits. Benefits typically attributed to rail passenger transport compared with vehicular roadway travel are congestion mitigation, fuel consumption and therefore emission reductions, and other positive environmental and economic impacts. Land use, economic development, safety and other corridor-specific benefits are also applicable on a case-by-case basis.

7.5.1 Southeast High Speed Rail Corridor (SEHSR)

The Southeast Rail Corridor was originally designed 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, North Carolina. A four-state coalition consisting of Virginia, North Carolina, South Carolina, and Georgia is guiding development of the corridor.

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, Georgia, tying the two branches together. The current Southeast High-Speed Rail Corridor is shown in **Exhibit 7-5**.

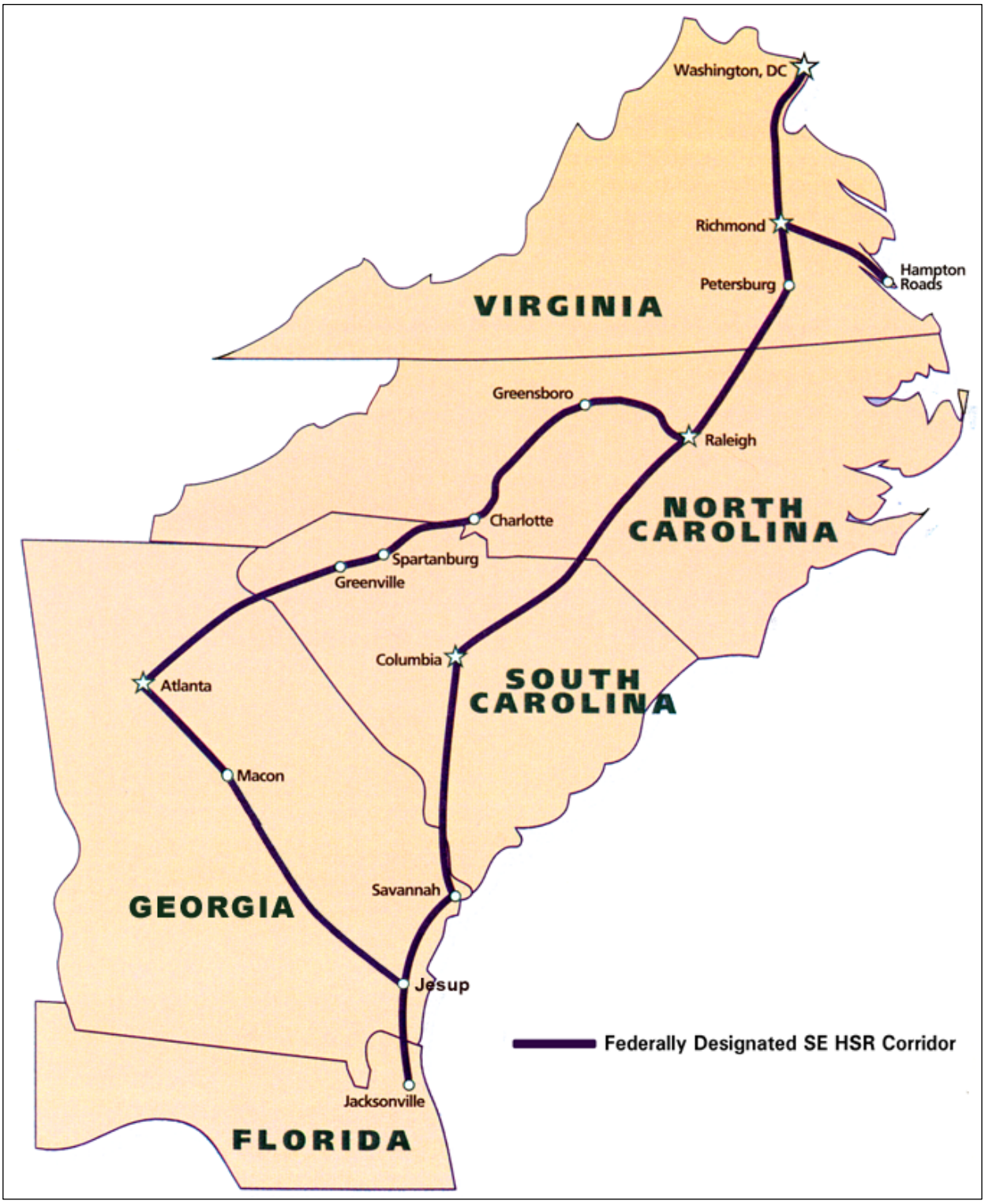
In 2001, a study[55] was prepared to examine the two routes through South Carolina and determine infrastructure improvements needed to operate passenger trains at speeds of at least 90 mph with a goal of 110 mph. The evaluation determined that the top speed was in excess of the characteristics of either 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[56] the Upstate route holds the most promise from a travel demand standpoint.

Status - The Richmond-Raleigh segment of the SEHSR Corridor is currently the subject of a Tier II EIS with the final EIS scheduled to be completed in mid-2011. The South Carolina, Georgia and North Carolina DOTs continue to study the route from Charlotte to Macon. An ongoing evaluation by the US DOT's Volpe Center is being administrated by the Georgia Department of Transportation. The work effort is to:

1. Recommend rail top speeds and technologies;
2. Forecast ridership over at least a 25-year time frame;
3. Assess operating revenues and costs, as well as infrastructure maintenance costs;
4. Compare with other similar corridors; and,
5. Identify economic benefits.

[55] *South Carolina Southeast High Speed Rail Corridor Improvement Study*
[56] *Southeast High Speed Rail Market and Demand Study*

Exhibit 7-5: Southeast High Speed Rail Corridor



Source: North Carolina DOT.

The Volpe Report - The Volpe Report[57], made available in January of 2009, examined several means of providing "higher-speed" rail passenger service between Charlotte and Macon, Georgia 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.

The study was predicated upon development of a dedicated track[58] 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, operating and access control. Demand and associated revenue along with capital, maintenance and operating costs were developed for each scenario.

The study concluded that the "best case" scenario is either 125 or 150 mph diesel-power[59] 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[60] 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.

Next steps include a more detailed ridership study, further investigation into the best operating speed-ridership-construction cost scenario, and to obtain funding for environmental studies.

7.5.2 High Speed Coastal Connection

The SCDOT is performing an in-house study to determine the feasibility of using existing railroad corridors to link Florence, Myrtle Beach and Charleston with the federally designated high-speed rail corridor from Raleigh to Columbia to Jacksonville. Myrtle Beach and Charleston are two of the foremost tourism destinations on the east coast. Relieving the increased traffic congestion in these areas, coupled with the need for visitors to access the Southeastern High-Speed Rail Corridor are both necessary and essential to the economy of South Carolina and the safety and convenience of tourists to the state.

This study will consider track connectivity, geometry, condition/suitability, signalization, grade crossing conditions, and assessment of the conditions, as well as the possible need for improvement/replacement/construction of bridges and trestles. It is intended the Corridor would

[57] 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.
[58] Two tracks for electrified service
[59] Technology to meet U.S. safety standards will have to be developed and speeds in this range require grade separation of highway crossings.
[60] Not including equipment or operating and maintenance costs.

eventually connect to and become a part of the nation's network of federally-designated high-speed rail corridors.

7.5.3 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.

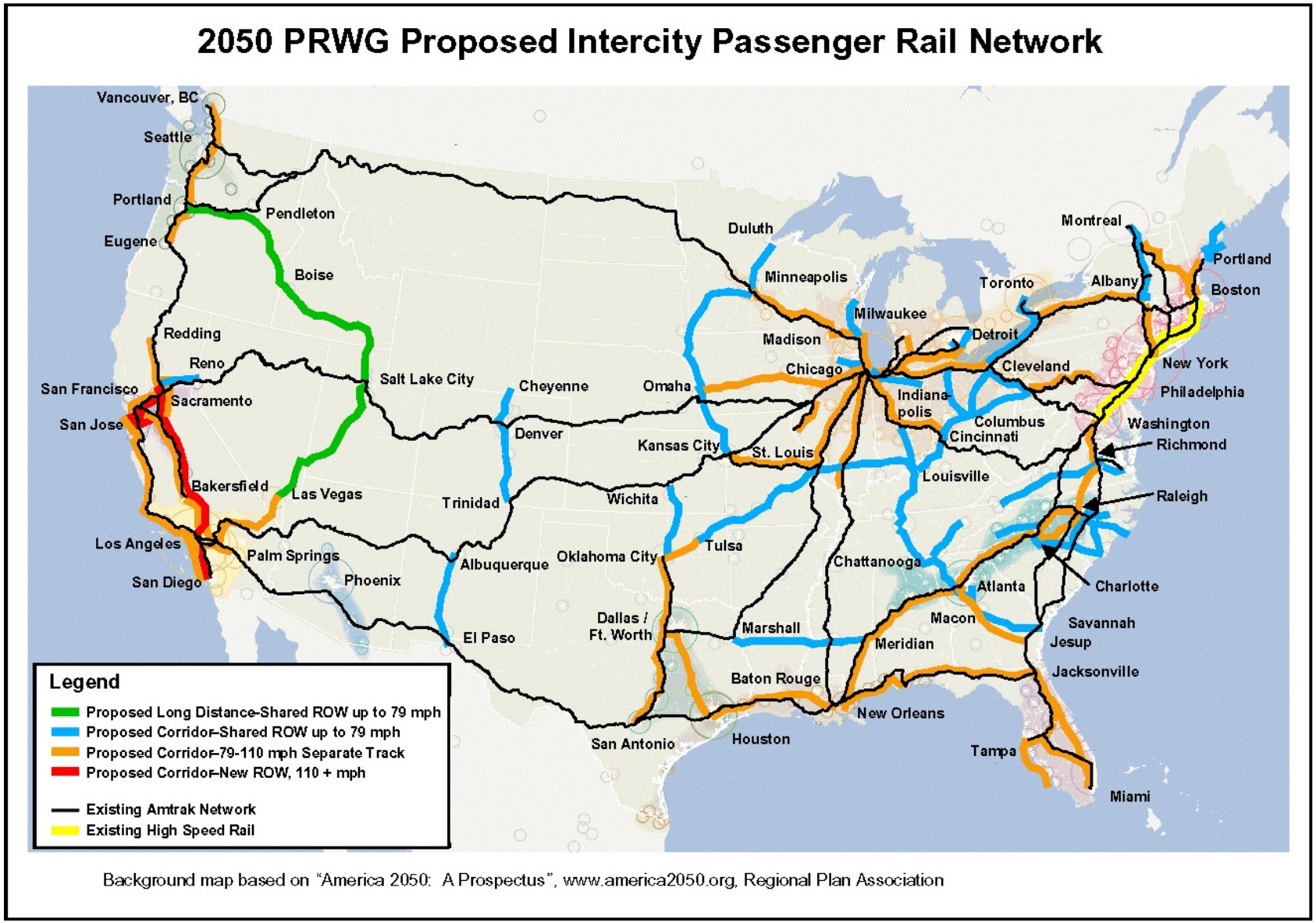
The Group used an overlay approach to create the system incorporating the existing national passenger rail system (Amtrak) as a base and adding federally designated corridors, corridors in the planning or development stages by states or regional organizations, and potential future routes either in the 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.[61] 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).

The group's proposed intercity passenger rail network in South Carolina for 2015 and 2030 consists of the current Amtrak routes. The 2050 system remains the same with the exception of proposed operations of 79-110 mph[62] passenger trains on a separate track along the current Amtrak route through the Upstate. The South Carolina routes as well as those for the rest of the U.S. are the subject of **Exhibit 7-6**.

[61] *America 2050: A Prospectus*

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

Exhibit 7-6: Passenger Rail Working Group Proposed 2050 Intercity Passenger Rail Network



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

7.6 Rail Passenger Commuter Corridors

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 **Exhibit 7-7**.

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.

7.6.1 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[63] and the region was becoming transit supportive, the subject of promoting commuter rail planning was transferred back to BCDCOG.

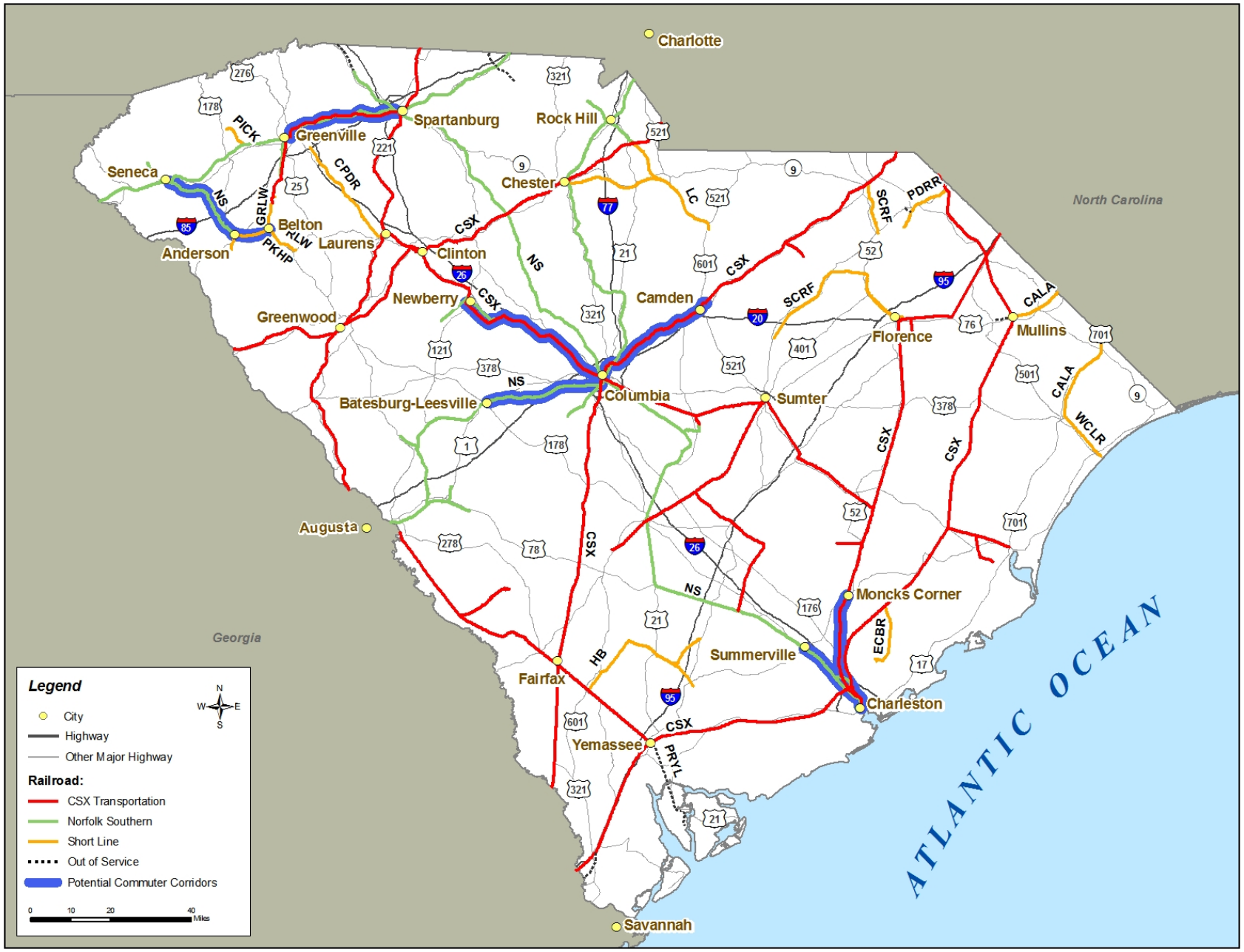
Benefits – The benefits discussed are particular to Charleston, but are generally applicable to other regions of the state -- just change the highway route number or the name of the area.

Economic Development - Transit corridors have become a desirable location for businesses, retail centers, and high density residential developments, especially within walking distance of transit facilities. 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 widening 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, if not impossible, to further widen the facility beyond current proposals. Studies conducted by the 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.

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

Exhibit 7-7: Potential Commuter Corridors



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.

Status - Currently, BCDCOG is conducting studies for commuter rail service on two routes in the Charleston Metropolitan Area. During this phase of planning a preliminary meeting was held jointly with representatives from both Norfolk Southern Railway and CSX Transportation requesting cooperation in these preliminary planning phases. BCDCOG is conducting an FTA-funded Alternatives Analysis for the NS Summerville corridor and a preliminary feasibility study for the Charleston-Moncks Corner CSXT corridor.

In October of 2008, financial assistance was requested of 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 is designed to connect 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.

Future phases of work include the conclusion of the ongoing feasibility study, which will include estimates of capital investment needed for infrastructure. BCDCOG is also in the process of developing a mode split travel demand model to be used for estimating ridership for the proposed system. Ridership estimates are expected late summer/early fall 2009. Aside from the active application to the SIB, additional funds are yet to be identified for the future phases of planning, engineering, or construction.

7.6.2 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 early 2009 Greenville County plans to commence a 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.

7.6.3 Columbia

The Central Midland Council of Governments has been pursing commuter rail service since 2000 when it completed its first study.[64] 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[65] 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:

- 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.

An RFP was issued by CMCOG in November 2008 for an alternative analysis of the Camden Corridor. Selection of a consultant is pending.

7.6.4 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.[66] A route along the US 21 corridor is to connect with Charlotte's

[64] *Central Midlands Regional Rail Study*
[65] *Central Midlands Commuter Rail Feasibility Study*
[66] *Rock Hill-York County-Charlotte Rapid Transit Study*, *Locally Preferred Alternative (LPA) Summary Document*, p.1-3

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.

7.6.5 Anderson County

The commuter system under investigation runs from Clemson in Pickens County to Belton in Anderson County passing through the town of Anderson. 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 - 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.[67] The proposal is pending, awaiting further developments.

7.7 Summary of Main Track Capacity Requirements

While the indications are that the state's rail system in general is currently capable of handling anticipated rail freight volumes (freight forecasts and existing passenger), many of the principal system components are also the subject of various passenger proposals that will increase capacity needs if implemented. Also the various freight corridor initiatives could result in unanticipated increases in demand due to traffic being re-directed to the corridors as a result of improved operations, or increased business resulting from related service improvements.

The proposals/initiatives and impacted rail segments by category are as follows:

- Freight:
  - Crescent Corridor – NS Upstate main track, NC to GA;
  - I-95 Corridor – CSXT "A" Line and "S" Line, NC to GA;
- Passenger:
  - SEHSR Corridor – NS Upstate main track, NC to GA and CSXT "S" Line, NC to GA;
  - Passenger Rail Working Group – NS Upstate main track,[68] NC to GA and all current Amtrak routes, NC to GA;
  - Commuter Rail:

[67] Discussion based on information contained in *Anderson County Railroad and Street Railway Service*.
[68] Separate high speed track(s) by 2050

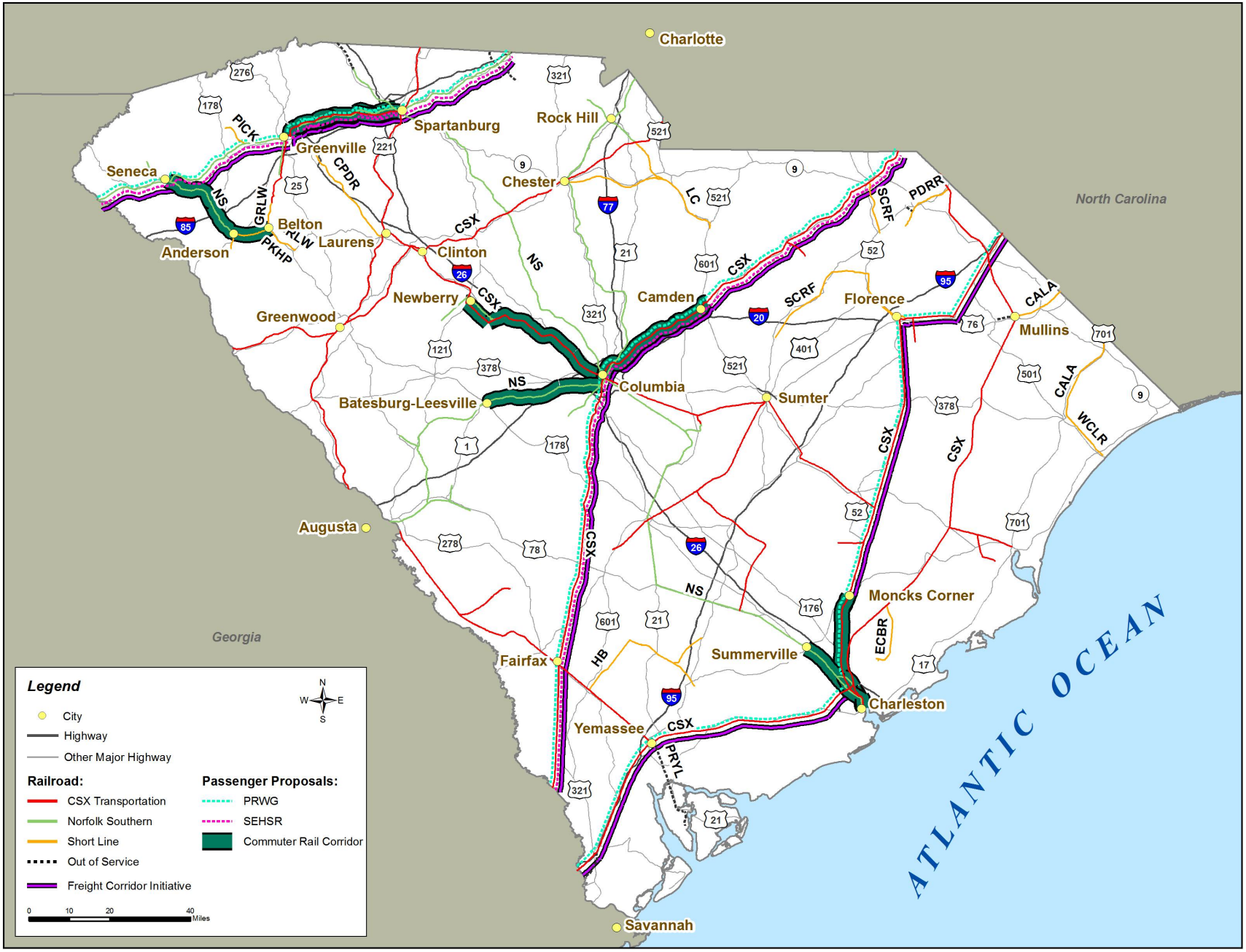
- Charleston – NS main track, Charleston to Summerville and CSXT "A" Line, Charleston to Moncks Corner;
- Greenville – Spartanburg, NS main track, Greenville to Spartanburg and CSXT, Greenville to Spartanburg;
- Columbia:
  - CSXT "S" Line, Columbia to Camden;[69]
  - CSXT Coal Corridor, Columbia to Newberry;
  - NS main track, Columbia to Batesburg – Leesville; and
- Anderson County – NS, Clemson to Anderson and PKHP, Anderson to Belton

Exhibit 7-8 depicts the routes that are impacted by the various service plans and initiatives as listed above. As evident from examining these routes, the accumulation of all proposals on the state's rail system would have a significant impact on several of its components, principally its three north-south main tracks. All three are the subject of the respective owner's public-private partnership freight corridor initiatives, intercity and commuter rail proposals.

While the SEHSR and the 2050 PRWG proposals for the NS main track in the Upstate will involve separate "higher-speed" trackage, all of the others would place demands on existing alignments. The PRWG conventional Amtrak–type intercity proposals would involve existing Amtrak routes, but presumably with more frequent service as demand from increasing populations and energy/environmental considerations grow. Superimpose commuter rail proposals with rush-hour demands and it becomes evident that significant needs for additional rail capacity will result. The capacity needs will then translate to public finance needs.

[69] Principal current focus

Exhibit 7-8: Freight and Passenger Rail Initiative Corridors



8. Light Density Rail Line Needs

8.1 Eligible Lines

Under the federal regulations for the preparation of rail plans to obtain funding from LRSA and later LRFA, one requirement was to develop a listing of lines "eligible" to participate.[70] The universe from which "eligible" lines were selected was based on usage as measured in ton-miles generated. The purpose of the federal programs was to preserve service on lesser used rail that were abandonment candidates or could potentially be candidates in the future. The universe included lines transporting less than three million gross ton-miles per mile per year (3MGTM/M/Y),[71] which included lines that had already been abandoned but could be reactivated. In some cases lines transporting between three and five MGTM/M/Y were also eligible. The rail lines in this universe became known as light density lines (LDLs).

Not only were these lines the focus of the federal program, but also programs that were developed and funded by individual states, principally those with serious abandonment concerns. Light density lines still remain the focus of most active state programs.

8.2 South Carolina Eligible Universe

The LDLs falling into each of the former "eligible" categories were tabulated for the current statewide rail system. The components are identified on **Exhibit 8-1**, a geographic presentation of each category -- abandoned and out-of-service lines, and those transporting 3.0 MGTM/M/Y or less. The tabulation of abandoned lines does not include all that were previously abandoned, but only those that appear to offer a reasonable chance of being returned to service.[72] Lines or rights-of-way that fall into this category total 566 miles, while the active light density lines add another 694 miles, which includes all of the state's short line carriers.

8.3 LDL Assistance Projects

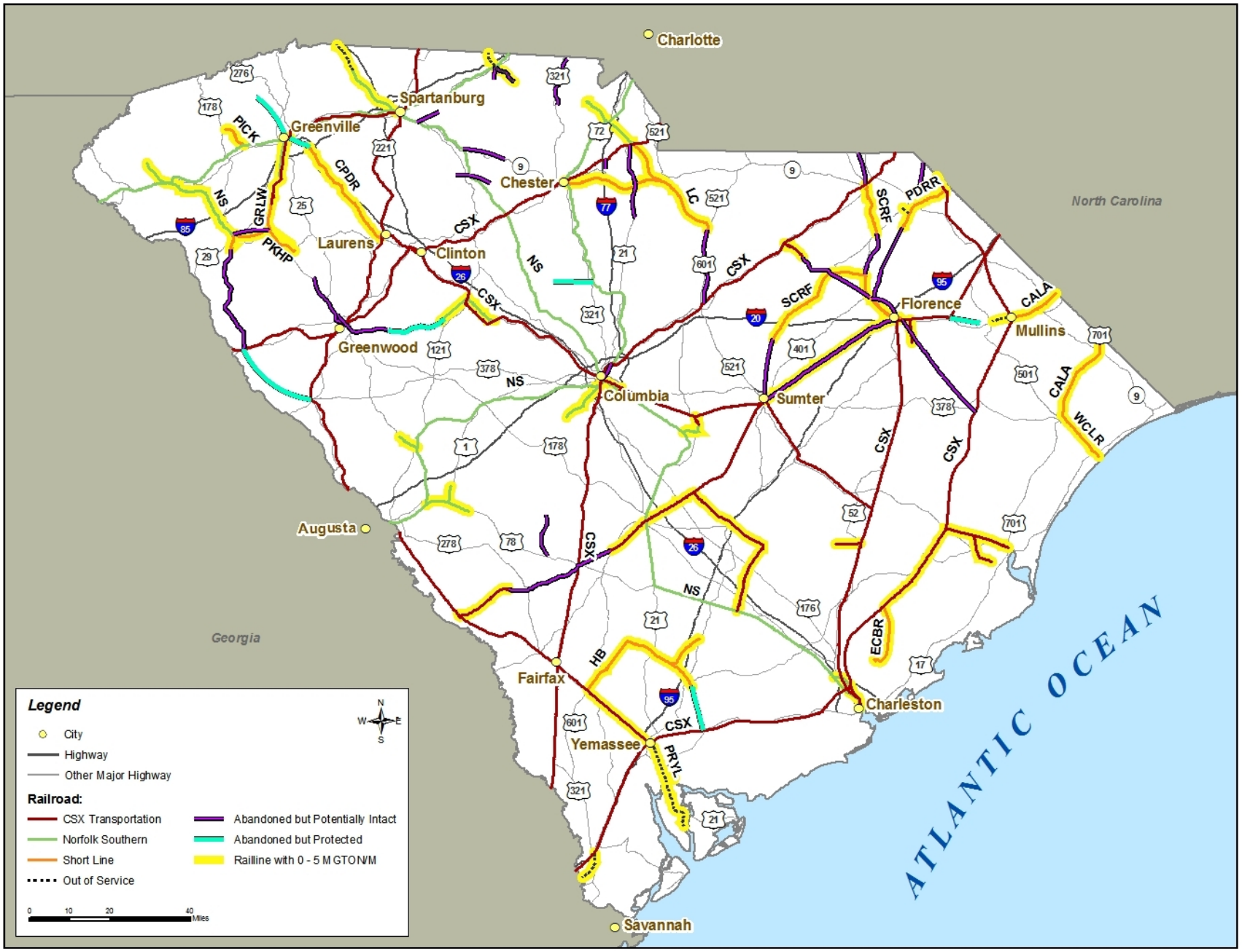
Potential assistance projects were developed principally from contacts with short line railroads. Class I railroad branch lines were pared down during the heavy abandonment / spin-off activity of the 1980s and 1990s. The state's short lines are operating many of these properties now. The project candidates fall into three broad categories – rehabilitation, capacity/service improvement, or safety. While the three categories overlap in most cases, e.g., rehabilitation projects also improve rail safety, they are descriptive of the principal purpose of each project.

[70] CFR 266.17

[71] For comparative purposes, main tracks typically transport over 20 MGTM/M/Y and the most heavily used, over 100 MGTM/M/Y

[72] Derived from data provided by SCDOT, prepared by TranSystem for the current *SC Statewide Multimodal Transportation Plan*.

Exhibit 8-1: Eligible Rail Lines



8.3.1 Rehabilitation

Rehabilitation projects involve improvement of deficient components of a railroad's physical plant. In the broader sense, they are also capacity/service improvement efforts as they permit the use of equipment capable of carrying heavier loads, the use of larger locomotives, and / or operation at higher speeds. The standard weight capacity not long ago was the nominal 100-ton carload with a gross weight of 263,000 lbs. (100 tons of the commodity being transported, or 200,000 lbs, with 63,000 lbs allowed for the tare or empty weight of the freight car). Today's standard has been increased to a total of 286,000 lbs – requiring better (heavier) rail, better cross tie condition, and stronger bridges than before. Some components also need replacing due to age and wear.

8.3.2 Capacity/Service Improvements

Some of the candidate projects result from capacity or service needs, primarily relating to interchange activities at short line connections with Class I carriers and to meet shipper needs. These projects involve new-track construction of varying degrees and result from rail traffic growth or are needed to promote growth.

8.3.3 Estimated Costs

The projects are listed in **Exhibit 8-2** and are divided into the three broad categories and by railroad. A brief description of each project is provided along with estimated planning level costs.

Exhibit 8-2: Cost Estimates for Short Line Projects

Project	Estimated Cost ($ millions)
Rehabilitation	
Lancaster and Chester	
Relay 17.5 miles of rail between Lancaster and Kershaw	$14.0
Relay 12.5 miles of rail between Lancaster and Catawba, and replace Bowater - Catawba River Bridge	$18.0
Replace SC Rt. 9 - Catawba River Bridge	$8.5
Replace Landsford Road bridge with box culvert	$0.4
Pee Dee River	
Relay 7.6 miles of rail between McColl and Bennettsville (Two phases)	$5.1
Pickens	
Relay 6.7 miles of rail south of Belton	$5.2
Relay 6.8 miles of rail west of Belton	$5.2
Replace cross ties between Pickens and Easley	$0.7
Subtotal for Rehabilitation	**$57.1**
Capacity / Service	
Lancaster and Chester	
CSXT Interchange improvements	$4.5
Relocate NS interchange	$7.0

Project	Estimated Cost ($ millions)
Pee Dee River	
Additional yard capacity at Bennettsville	$1.9
Additional interchange capacity at McColl	$1.3
Additional industry service trackage	$0.4
East Cooper and Berkeley	
Additional interchange capacity at State Junction	$3.1
Pickens	
Additional industry trackage	$0.9
Subtotal for capacity / Service	**$18.2**
Safety	
Lancaster and Chester	
Raise and widen Rt.521 overpass at Lancaster	$1.6
Greenville and Western	
Raise and widen J. Gossett Drive overpass near Williamston	$1.4
Subtotal for Safety	**$3.0**
Total for Short Line Projects	**$78.3**

Note: All rail relay projects include appropriate timber and surfacing.

9. Rail to Port Opportunities

9.1 Opportunities to Relieve Highway Congestion

Vehicular traffic resulting in roadway congestion, safety concerns, and air quality degradation is of particular concern, especially in urban areas and on principal links between urban areas. Concerns in South Carolina's water port communities, especially Charleston, are well documented and have existed for some time. It was a major issue for the SCSPA's planned expansion into a new terminal on the CNC in North Charleston.

To place the Charleston congestion issue in perspective, the SCDOT Planning Office estimated the 2005 cost of delays on the statewide highway system at $345 million. Almost 1/3 of this total, $110 million, occurred in the Charleston area (MPO and COG). The only other area close to this amount was the Grand Strand at $97 million. The state's other two metro areas, Columbia and Greenville-Spartanburg, accumulated delay costs of $38 million and $36 million, respectively.[73]

9.1.1 Charleston Highway Traffic Volumes

Exhibit 9-1 depicts the location of the Port's marine terminals and the highway traffic volumes that existed in 2003, which is the latest year for which information is available from the area's long range transportation planning model. For all practical purposes, port traffic ends up on either I- 26 or I-526 (Mark Clark Expressway) for at least part of the trip. The measures of the level of service (LOS) categories for these roadways are not good. As shown in the exhibit, I-526 and I-26 (north of I-526) are considered failing under current conditions (LOS E or F). Non-Interstate roadways providing connecting access to the terminals had acceptable LOS.

According to the CHATS Long Range Transportation Plan, most of I-26 will be failing before 2030 as shown in **Exhibit 9-2**. Levels of service on port-related truck route roadways in the Charleston area, based on application of the BCDCOG travel demand model, reveal continuous stretches with LOS of E or F as vehicles traffic volumes grow. Widening needs are forecasted by SCDOT (2030) for all of the area's interstate highway system.[74] However, only that portion of I-26 from the U.S. 52 Connector to I-526 and I-526 from SC 7 to S-97 (Long Point Road) are expected to be funded over the next 20 years.

[73] Executive Summary, *2008 South Carolina Comprehensive Multimodal Long-Range Transportation Plan*, p.6.
[74] Ibid, p.8.

Exhibit 9-1: 2003 Charleston Area Traffic Volumes and Levels of Service

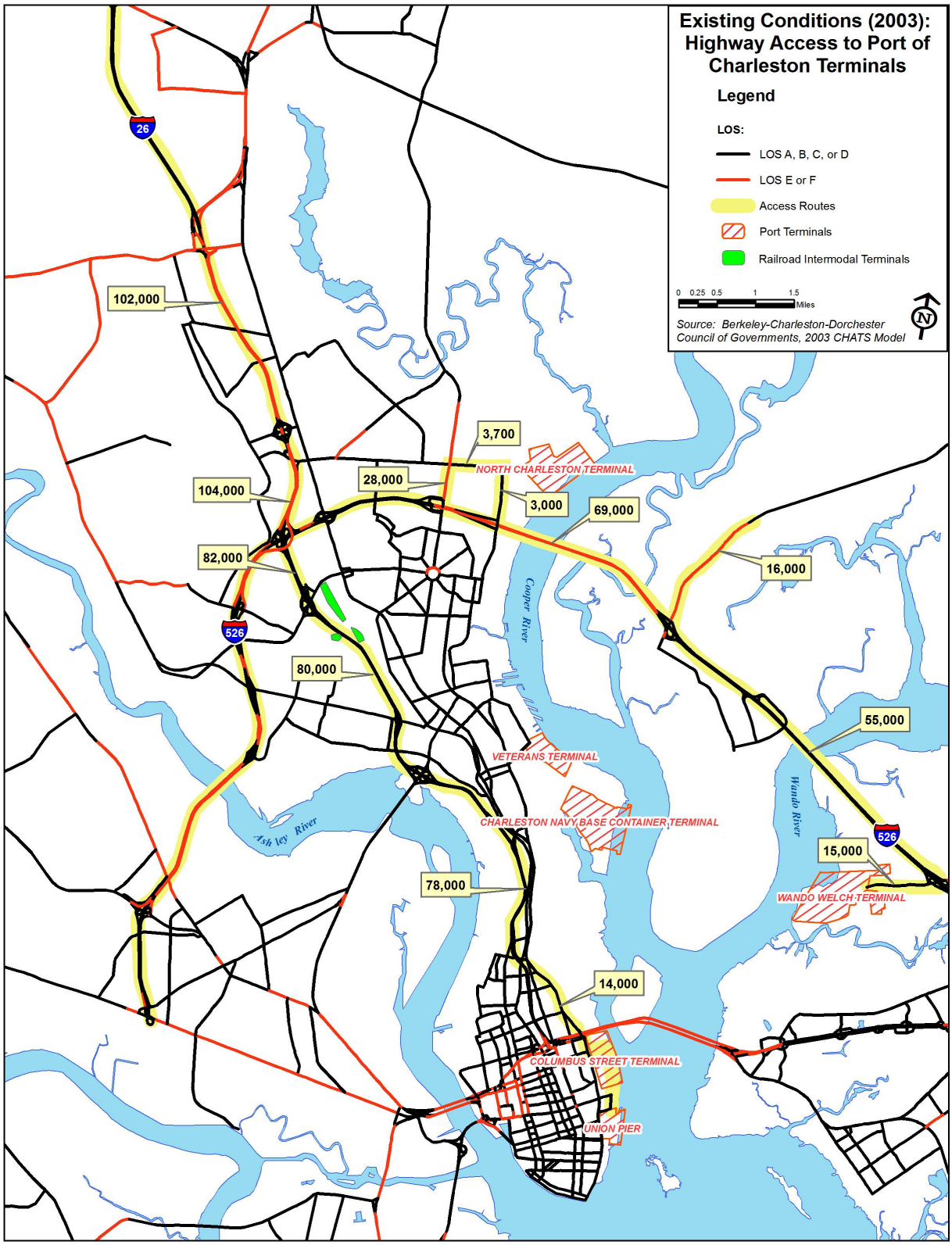
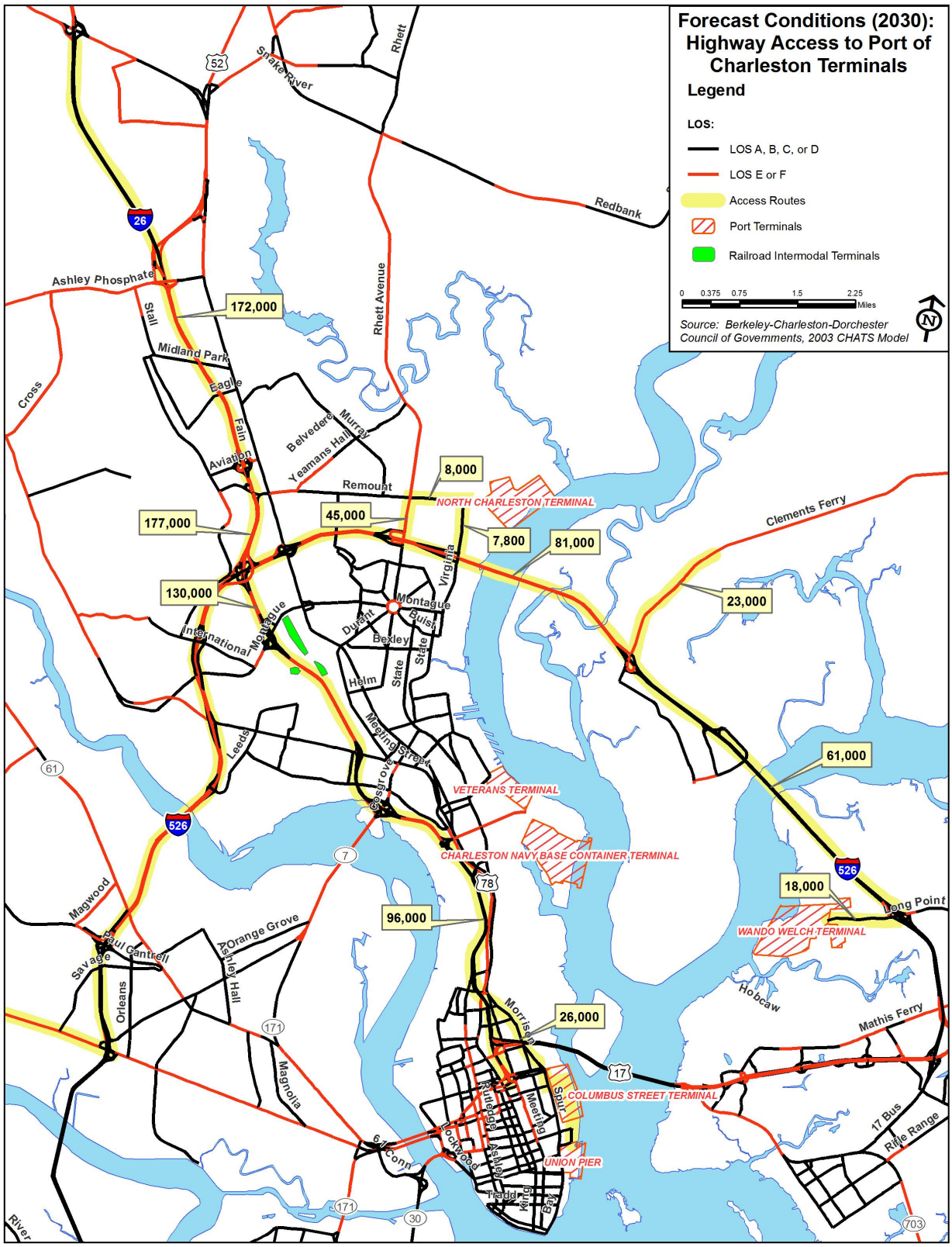


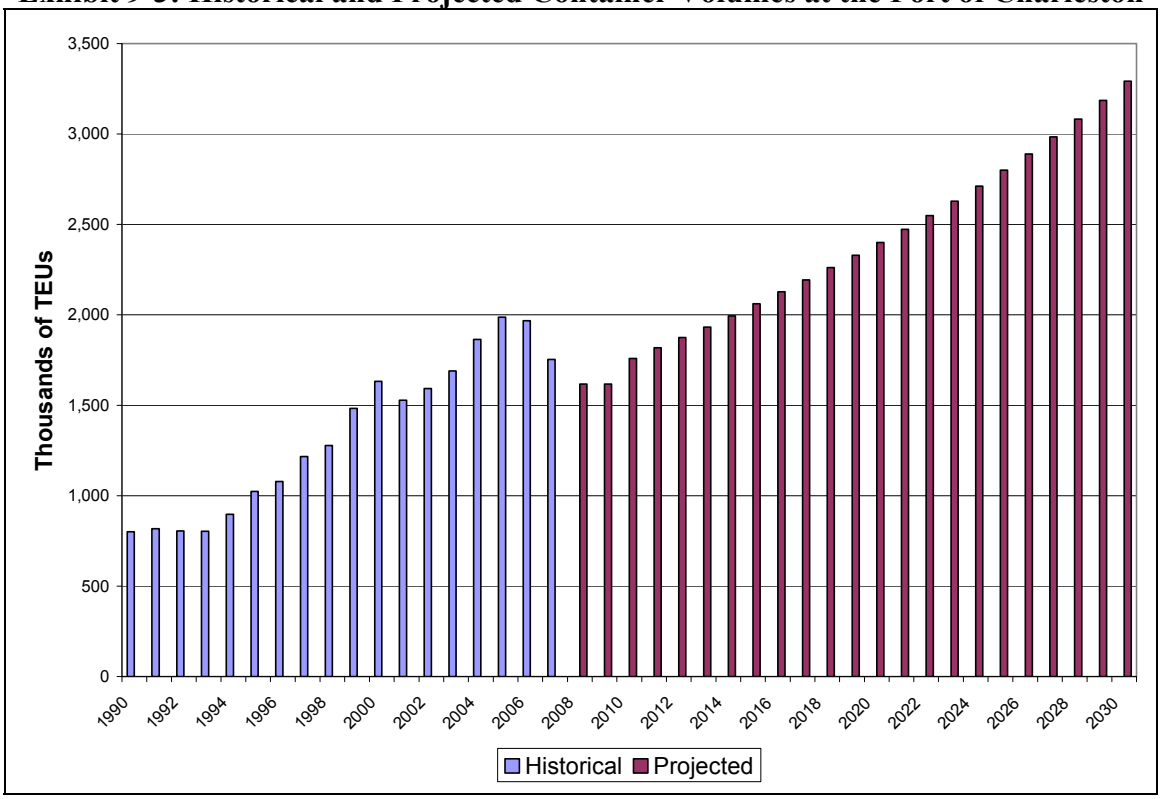
Exhibit 9-2: Charleston Area Projected Traffic Volumes and Levels of Service



9.1.2 Projected Container Growth

Port-related truck traffic will also continue to grow as forecasts for freight movements at the Port of Charleston continue to grow. As shown in **Exhibit 9-3**, container volumes and related freight movements are expected to essentially double between now and 2030.

Exhibit 9-3: Historical and Projected Container Volumes at the Port of Charleston



Source: Historical data AAPA (based on USACE). Projected data: Norbridge, Inc.

9.1.3 Traffic Mitigation

The future of I-26 is a constant topic of debate for policymakers and planners in the Charleston area. There is no question of its importance as the spine of the region's transportation system, connecting workers to jobs and commercial vehicles with places of business. Along with US 17 northbound and southbound (coastal highway), this is the Charleston area's connection between the Port of Charleston to the remainder of the state and southeast region.

In an attempt to mitigate congestion and /or divert truck traffic in the Charleston region, a variety of approaches have been evaluated by planners and policymakers in the past, including dedicated truck access roads, rail shuttle to an inland port, widening I-26, direct rail access to terminals, and relocating railroad intermodal terminals, among others. The following paragraphs review the issues at hand and discuss attempts made or being made and the findings of previous analyses. This report also evaluates alternatives considered and adopted at other port communities.

9.1.3.1 Dedicated Truck Routes

In the Charleston region, four of the port's five existing terminals, along with the proposed Navy Base Container Terminal in North Charleston, are accessed via I-26. It is unreasonable to assume that a truck-only route could parallel the full extent of I-26 that trucks travel to reach these terminals. The improbability of locating ample rights of way and funding for such a project would eliminate such an option. There is a possibility, though, to dedicate truck facilities through some sections of the Charleston area to relieve pressure on I-26 and provide additional vehicular access to existing and planned port terminals.

In the 2006 study sponsored by the Berkeley-Charleston-Dorchester Council of Governments[75], findings suggested the redevelopment of the North-South corridor of existing Meeting Street extension and King Street include consideration of a truck-only facility connecting the port and industrial facilities on the east side of the "Neck Area" of Charleston and North Charleston. This would provide safer routes for trucks entering and exiting Veterans Terminal and existing terminals at Columbus Street and Union Pier in downtown Charleston, as well as support other industrial properties in the corridor. This would also provide safer conditions for passenger vehicles in the corridor by designing facilities for specific vehicle types. The feasibility and implementation of this recommendation will be evaluated further as part of the Neck Area Comprehensive Transportation Plan soon to be initiated by the Berkeley-Charleston-Dorchester Council of Governments.

9.1.3.2 Port Access Road

In October, 2002, a Memorandum of Understanding (MOU) and agreement was executed between the SCSPA and the City of North Charleston that, among other items, included provisions for both highway and rail access. On the highway side, agreement was reached that a certain minimum infrastructure be in place before container operations commenced at the planned new terminal on the CNC. "The minimum infrastructure includes a truck access road leading directly from the Port Facility Area to I-26 and three railroad overpasses in the areas of Rivers Avenue and Harley Street, Rivers Avenue and Durant Road, and North Rhett and I-526 Streets." The first and third involve the NS Reads Branch to North Charleston and the second one, CSXT's line to North Charleston. It also directed the SCSPA to "encourage all trucks delivering or picking up cargo…..use designated truck routes after the SPA commences operations."

On the rail side, the SCSPA acknowledged that the City of North Charleston did not want the Port Authority to utilize rail access from the north end of the property, and that rail access would exclusively be from the south end of the property.

And so, the port access road was born. It has been planned and funded. The Environmental Impact Statement was drafted and approved in 2007. Reinforcing the MOU, the terminal permit contains a special condition (m) requiring the access roadway be in service prior to the terminal commencing operations. The road will connect the planned terminal directly with I-26 replacing existing Exits 218A and 218B near the border of Charleston and North Charleston. The access

[75] Wilbur Smith Associates, *Interstate 26 Relocation Feasibility Study* prepared for Berkeley Charleston Dorchester Council of Governments (December 2006)

road is expected to be a design-build project, with the final design process beginning in late 2009 or early 2010.

In the traffic study for the terminal, it was estimated that port related truck traffic would increase on most arterial routes in the vicinity of the terminal, especially those connecting the terminal with local intermodal yards. It also estimated that it would raise the percent of trucks on I-26 between I-526 and Remount Road from eight to nine percent by the terminal build-out year of 2025. It observed that this section of I-26 would fail "with or without the CNC project traffic under future 2025 projected conditions" resulting from other residential and commercial growth in the region.[76]

9.1.3.3 Adding Capacity to Interstate 26

Several efforts are being made or investigated to add capacity to I-26. For example, construction is currently in progress, as of August 2008, to add one lane each way on I-26 between Remount Road and the interchange with I-526.

Also in 2008, the South Carolina Department of Transportation undertook an analysis of incorporating HOV/HOT (High Occupancy Vehicle/High Occupancy Toll) lanes on I-26 between Summerville and downtown Charleston. As part of this planning effort, the SCDOT held a series of public meetings and hosted an online survey to gather public comments on the project[77]. This study evaluated the redesignation of general purpose lanes to either HOV or HOT lanes, as well as incorporating additional (new construction) lanes that would function as HOV or HOT lanes. At the date of publication of this report, that study was not yet complete.

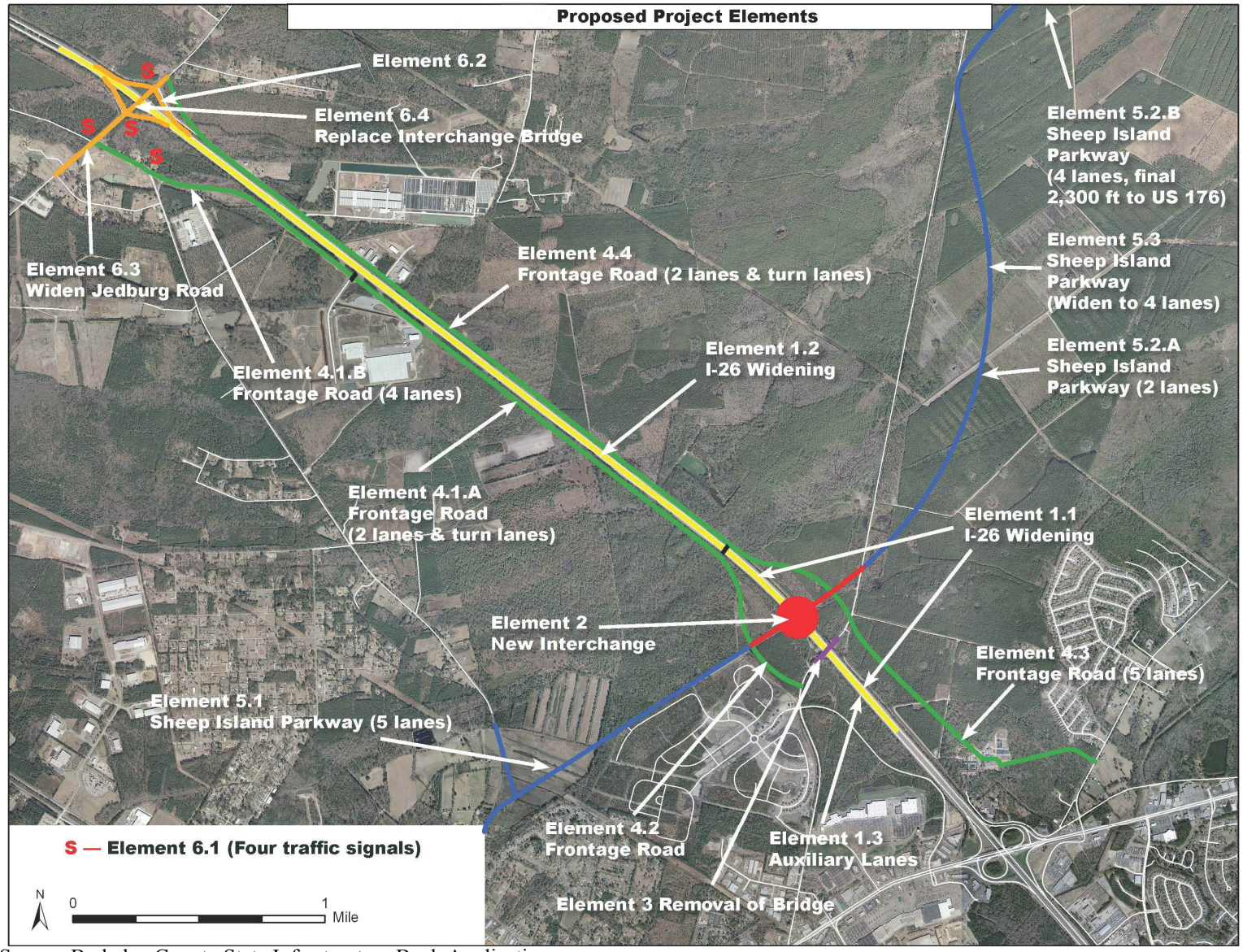
Inside I-526, the Environmental Assessment document for adding one lane, each way, from I-526 through the existing North Meeting Street Exit is in draft form. There is currently no funding identified for this project nor any I-26 projects other than the current on-going widening effort. This study area is illustrated in **Exhibit 9-4**.

[76] US Army Corps of Engineers, "Final Environmental Impact Statement: Proposed Marine Container Terminal at the Charleston Naval Complex" (December 2006)
[77] http://www.scdot.org/inside/hov-hot.shtml

Exhibit 9-4: I-26 Environmental Assessment Study Area

In Berkeley County, the State Infrastructure Bank has approved the funding of widening a portion of I-26 and adding an interchange near existing Sheep Island Road (see **Exhibit 9-5**). While not adjacent to Port terminals, this project was planned and funded to support development of port-related distribution centers in suburban Berkeley County and Dorchester County (see the discussion on Inland Ports, in **Section 9.2**).

Exhibit 9-5: Sheep Island Parkway Project Area



Source: Berkeley County State Infrastructure Bank Application

9.1.4 Air Quality at the Port of Charleston

Closely correlated with increased roadway traffic volumes and fuel consumption and exacerbated by congestion, are emissions and deterioration of air quality. In all areas of South Carolina, air quality is a growing concern. With new air quality standards being lower by the year 2010, many of our state's metropolitan areas will be considered non-attainment by the US Environmental Protection Agency standards.[78] This will mean funding restrictions on infrastructure projects, which will have a direct negative impact on the state's economic development. By developing a transportation plan to move goods and people as efficiently as possible by a combination of highway and rail, in both time and energy use, the state can clearly demonstrate to permitting agencies, as well as private industry, that the State of South Carolina is taking a proactive role in averting the danger of air quality deterioration and protecting the environment, quality of life, and the sustainability of the state's economic development objectives.

The "land side" of port operations, moving goods onto and off of ships, moving goods into and out of the port terminal areas, and moving goods in and out of the Charleston area continue to present opportunities for improvement in efficiency, thus reducing emissions.

The South Carolina State Ports Authority has taken a proactive role in improving air quality in the Charleston region. As part of the SPA's "Pledge for Growth," a partnership has been formed between the SPA and the South Carolina Department for Health and Environmental Control (DHEC) to reduce port-related air impacts. Some of the measures taken, as of January 2009, include:

- SPA agreed to evaluate the use of cleaner fuels, such as biodiesel and ultra low sulfur diesel (ULSD) three years ahead of federal mandates.
- SPA has worked with on-site partners, including SC Public Railways and Charleston Harbor Pilots, to switch to ULSD, cutting emissions up to 10 percent two to four years ahead of federal mandates.
- SPA has recently replaced four diesel-electric container cranes with all electric models and has retired older, less efficient, equipment. This equipment includes ten yard trucks, four container cranes, three rubber tired gantries, and two additional gantry cranes and seven full container handlers.
- SPA, Charleston Motor Carriers Association, the South Carolina Trucking Association, the Charleston Metro Chamber of Commerce, DHEC and the American Lung Association have jointly applied for EPA grant funding to improve trucks in the private sector fleet for retro-fitting over-the-road trucks with new, less emitting, high efficiency vehicles.
- SPA has also installed on-site air quality monitors at port terminals to assist in the on-going evaluation of emissions.

[78] Only York County is currently designated a nonattainment area, but many other areas, including Charleston and Berkeley Counties would exceed the new standards.

- SPA has met a target goal of a "30 minute or less turn time" on port sites, reducing idling times and air emissions of motor carriers. A duration of 22.8 minutes was the average turn time in June 2008.
- SPA has set, and met, a target goal of 40 container moves per hour per crane, decreasing the time a ship is at berth and the time cranes are in operation, resulting in a reduction in local ship emissions.
- SPA has set contractor guidelines for best "green" practices for the construction of the new port facility in North Charleston.
- The SPA utilizes refrigerated container plugs on its facilities, allowing cargo to be temperature controlled onsite, using electric power, rather than via diesel powered generators.

In addition, the South Carolina Public Railways is reducing locomotive emissions by reducing idle times. The prime movers are shut off after 30 minutes of idling.

9.2 Potential Inland Port Operations

Inland ports have become an increasingly popular concept as the drive for transportation efficiency continues. Inland ports are perceived to reduce congestion, improve transit times and reliability, while at the same time decreasing costs and promoting economic development.

9.2.1 Inland Port Concepts

Inland ports have several dimensions. In the narrowest sense, an inland port is an inland container transfer facility that performs many of the cargo processing functions that are performed at seaports, including customs clearance. Intermodal containers are moved from the seaport to the inland port, often in bond, thus freeing valuable land at the port for maritime activity. In effect, the inland port serves as an extension of the seaport, although at a remote location, typically close to either a key market or principal components of the highway system.

If rail is used to transport the cargo to the inland port, trucks are removed from the highways and roadway congestion near the water port can be reduced. This possibility has also led to the concept of moving cargo to a remote point outside of the immediate seaport area by a rail shuttle service and then returning it to truck on less congested highways.

A broad array of multi-modal facilities that support international trade can also be defined as inland ports. An often-cited example of such a development is the Alliance Texas Logistics Park, a 15,000-acre development 15 miles north of Fort Worth that includes air, rail, and highway connections, a foreign trade zone, an enterprise zone, inventory tax exemption, and business parks, distribution areas, and other facilities. Another is the development surrounding the Rickenbacker International Airport and the Columbus International Airport mentioned elsewhere in the discussions of the ongoing NS Heartland Corridor and proposed CSX National Gateway initiatives.

Others have been built around rail intermodal facilities on a smaller scale with varying degrees of success. CSX is proposing such a facility it calls a "freight village", an integrated logistics

center in central Florida near Lakeland. Such facilities serve as an intermodal transfer terminal with additional logistics services provided, such as distribution and warehousing.

In the broadest sense, Atlanta and Charlotte serve as Southeastern inland ports due to the presence of intermodal facilities of both of the area's Class I railroads, access to multiple interstate highways and major airports combined with very significant industrial and distribution bases.

9.2.2 Inland Port Benefits

Benefits of an inland port can include:

- Relieves road congestion, reduces motor vehicle emissions and fuel usage
- Reduces highway maintenance and capital expenses
- Spurs economic development
- Enhances a port's competitiveness

9.2.3 Inland Port Examples

9.2.3.1 Virginia Inland Port

A successful example of the seaport extension type of inland port is the Virginia Inland Port (VIP) in Front Royal, Virginia, which acts as an extension of the Virginia Port Authority's Norfolk International Terminals (NIT). VIP, located some 200 miles from the marine terminal, was originally established as a marketing tool to gain market share from the Port of Baltimore. The facility began operations in 1989 and reached its target volume of handling 20,000 containers per year in 1999. By 2005, the terminal was processing 35,000 containers.

The VIP was built and is owned and operated by the Virginia Port Authority (VPA). The connecting marine terminal in Norfolk is also owned by the VPA and operation of both terminals provided by a subsidiary, Virginia International Terminals. The service is marketed as part of it's terminal service package. A full range of container terminal services is offered at VIP, as well as Customs functions. Rail service is provided by NS under contract to Virginia International Terminals.

Transportation Costs - VIP offers shippers a lower cost alternative to truck with rail costs to move a container by rail between NIT and the VIP less than the cost to truck the container. As of October 1, 2008, the rail tariff rate for loaded and empty containers was $278.00 and $193.00, respectively, for the 220 mile movement to the inland port. This is equivalent to $1.26 per mile for the full container and $0.88 for the empty. By comparison truck costs are likely to cost over $2.00 per mile. The terminal has been self-sufficient and operating profitably since 1994.[79]

Economic Development - Viable inland ports can spur economic development. As mentioned previously, service to the VIP costs less than what a comparable truck dray between Norfolk and Front Royal, VA could cost. A number of companies have located near Front Royal, VA to take

[79] The Tioga Group, *Inland Port Feasibility Study*, for the Southern California Association of Governments, June 30, 2006.

advantage of the facility. For example, Home Depot, Family Dollar, Ford Motor Company, H.D. Hood, and a subsidiary of SYSCO moved into the area. The terminal has provided economic benefits to the area far in excess of the 17 employees that the terminal employs. The *South Carolina Inland Container Port Concept Study* estimated the job creation from an inland port in South Carolina to be somewhere between 150 and 840 jobs.

Port Competitiveness - Rail access is a significant element of port strategy. The Virginia Inland Port, for example was originally conceived as a service that would help the Port of Virginia compete with the Port of Baltimore. J. Robert Bray, Executive Director, Virginia Port Authority, prepared a paper for the American Association of Port Authorities, in which he described the rationale for the Virginia Inland Port as follows:

> "*The original marketing plan was based on aiding ship lines who had abandoned Baltimore to maintain their Ohio Valley base of business which the lines had previously carried over Baltimore. The lines at the time (1989) were carrying cargo to and from Baltimore by truck or barge. VIP rail charges were less, so in theory VIP gets the cargo…we continue to pursue marketing presentation to all current and potential ship line users. These meetings focused on market research, operational flexibility, closed loop on equipment, rate comparisons and cost savings over existing liner methods of handling intermodal containers. We pitched – if it reaches VIP – it is on the ship."*[80]

By providing an inland port service, a seaport can make intermodal rail service available to a broader range of customers. If priced sufficiently low, the inland port service can offer cost savings to shippers and thereby increase the port's competitiveness.

9.2.3.2 South Carolina Inland Port Concept

In the local context, *The South Carolina Inland Container Port Concept Study* prepared for the South Carolina Department of Commerce in 2003[81] analyzed container traffic patterns and evaluated several potential locations for an inland port that would serve to remove trucks from the Charleston urban area and I-26 for three alternative distances. Each location was situated at a major highway intersection, and in one case, combined with a major market area. Ranked by distance from the Port of Charleston, the following locations were considered:

- Summerville area, approximately 25 miles
- The intersection of I-26/I-95, approximately 60 miles
- The Upstate near the intersection of I-26, I-85, I-385, approximately 200 miles

Inland Terminal Location - The distance from the Port of Charleston significantly dictates the economics of inland port facilities. The farther the facility is located from the Port of Charleston, the lower the share of Charleston's container traffic that would be expected to divert to rail to use the facility. This is because Charleston's container traffic disperses with distance from the port.

[80] J. Robert Bray, *Virginia Inland Port: The Case for Moving a Marine Terminal to an Inland Location*, prepared for the American Association of Port Authorities Professional Port Management Program; quote taken from The Tioga Group, *Inland Port Feasibility Study: Inland Port Case Studies*, June 30, 2006 for the Southern California Association of Governments.

[81] Wilbur Smith Associates, *South Carolina Inland Container Port Study*, prepared for the South Carolina Department of Commerce, October 2003

For example, a location at the I-26/I-95 interchange will capture Port of Charleston traffic moving upstate along the I-26 corridor, as well as traffic traveling along the I-95 corridor. By contrast, an inland terminal upstate near the I-26, I-85, and I-385 intersections will only capture that portion of Port of Charleston traffic moving upstate. See **Exhibit 9-6** for truck transported container flows.

While the potential volume of traffic is higher at an inland port location closer to Charleston, the transportation costs to serve these locations are also higher. Rail moves involve significant fixed costs. For moves more distant from the Port of Charleston, these fixed costs are defrayed over a larger number of miles. Generally, rail intermodal moves are considered to have a low line haul cost per mile. However, containers must be drayed to and from the intermodal facilities, and these short truck movements add significant costs. Furthermore, intermodal facilities are expensive to build and to operate. The cost of building a small starter size facility is estimated to be around $25 million and one that would handle a significant volume some $70 to $80 million. In addition, since this would be operated as a shuttle service, rail intermodal equipment would have to be acquired since it would be captive to the service. Due to the high fixed costs of rail intermodal operations, railroads do not typically market intermodal services for short distances.

Transportation Costs - The 2002 *South Carolina Inland Container Port Concept Study* found that the costs of using an inland port to ship containers between Charleston and Atlanta (one of three origin-destination locations evaluated) were higher than the costs of shipping containers from Charleston to Atlanta by all-truck moves. Costs were higher for each potential terminal location, but the cost premium of the truck/rail transportation was particularly high for the shorter intermodal rail moves to inland port locations closer to Charleston. The findings are summarized in **Exhibit 9-7**.

A multi-year study[82] to determine if and how inland port concepts could be applied to reduce drayage miles and generate other public benefits in Southern California, reached similar conclusions, namely the cost would be substantial and an operating subsidy would be required. The results of the study's cost analysis suggested it would amount to at least $200 per container at current cost levels (2008).[83]

Fuel prices as of September 2008 were nearly triple their 2002 levels. This would tend to make rail transportation costs more competitive with trucking costs, since fuel is a larger component of truck operating expenses than it is for rail. But, the relative economics have not changed sufficiently for the results to have changed significantly since the 2002 study. **Exhibit 9-8** summarizes rail and truck cost indexes. They reveal that both the railroad producer price index and the Unadjusted Railroad Cost Adjustment Factors have increased faster than the truck cost indexes.

[82] The Tioga Group, Railroad Industries, Inc, and Iteris, *Inland Port Feasibility Study*, *Project No. 06-023, Tasks 3-5 Draft Report*, prepared for the Southern California Council of Governments, June 5, 2008
[83] Ibid, p.4

Exhibit 9-6: Port of Charleston Container Origins / Destinations

Exhibit 9-7: Alternative Costs of Container Movements for the Atlanta Market

Transportation Alternative	Cost Range Per Container	Cost Differential
All Truck Drayage	$400 - $600	--
Rail/Truck via Upstate Inland Port	$510 - $770	$110 - $170
Rail/Truck via I-95/I-26 Inland Port	$580 - $870	$180 - $270
Rail/Truck via Summerville Area Inland Port	$600 - $900	$200 - $300

Source: 2002 South Carolina Inland Container Port Concept Study

Exhibit 9-8: Comparison of Truck and Rail Cost Indexes

Index	2002	3rd Qtr 2008	Percent Change
Rail Cost Indexes			
STB Railroad Cost Adjustment Factor – Unadjusted (1)	0.759	1.156	52%
STB Railroad Cost Adjustment Factor – Adjusted (1)	0.400	0.527	32%
Producer Price Index - Railroad Transportation	106.6	163.2	53%
Truck Cost Indexes			
Producer Price Index – Truck Transportation	96.2	127.1	32%
Index Cost Components Individually (2)	100.0	136.6	37%

(1) Unadjusted and adjusted for improvements in railroad productivity
(2) Reflects the distribution of cost components from American Trucking Association's Motor Carrier Annual Reports applied series of indexes to each cost component

Rail intermodal moves involve high fixed costs but low variable costs. By contrast truck transport involves high variable costs but lower fixed costs. If forecasted container volumes increased significantly since 2002, then the economics of an inland port could have changed. An increase in container volumes would help to defray the fixed costs of an inland port, and a combined truck/rail move through an inland port could be found to be less costly than an all truck move between Charleston and Atlanta. However, revised container volume forecasts are now lower than forecasts made in 2002.

The *South Carolina Inland Container Port Study* assumed that the container throughput of the Port of Charleston would reach four million TEUs by 2020. By contrast the forecast presented by the Port to the Army Corps of Engineers as part of the Environmental Impact Statement (EIS) for the Navy Terminal forecasted that the Port would not reach a 4 million TEU throughput until 2025. A more recent forecast (see **Exhibit 9-3**) supplied by SCSPA in late 2008 was even lower. This lowering of forecasts would increase forecasted costs per container at an inland port. Therefore, the rail/truck move through an inland port would still be found to be more expensive than a truck only move.

Benefits – As the study revealed, the costs associated with creating and operating an inland port may not be justified from direct transportation savings, but can be with the inclusion of public benefits. Benefits estimated in the study equated to a range of 5 to 70 percent of the estimated transportation cost difference depending on inland terminal location and estimated cost differential range. The most distant terminal resulted in the best cost coverage combining a smaller cost differential and greater benefits.

Analysis Implications - Based on the analyses performed, an inland terminal in the Upstate provides the greatest proportional share of public benefits and it is also a location with a large concentration of Port customers. A starter intermodal facility would require an initial volume of

some 20,000 to 30,000 containers, which should be readily available in this region. With existing train service already connecting Charleston and the Upstate, the economics will probably hinge on investment in an Upstate intermodal facility.

9.2.4 Distribution Centers Serving the Port of Charleston

In addition to port terminals, port-related distribution properties require a sustainable amount of truck access to provide service to their clients, who are, in turn, clients of the Port of Charleston. Along with the previously identified routes providing access to the port terminals, principal arterials and interstate interchanges in close proximity of the area's distribution centers must also be considered in regional transportation plans. A constant in the business of economic development for these types of properties is that current and prospective owners and users of distribution centers prefer "dual access." Existing and planned distribution centers pepper the I-26 corridor, placing added pressure on the transportation infrastructure, as illustrated in **Exhibits 9-9 and 9-10**, respectively. Examples of several of the developments follow.

Site 1 on **Exhibit 9-10** is the planned Charleston Trade Center being developed by Hillwood. The 750-Ac. development is planned for 13 buildings with up to 9 million square feet of logistics and light manufacturing space.[84]

Site 17 is owned by developer Trammell Crow. The company plans to develop a 500,000 square-foot cross-dock facility initially, but the site may eventually contain seven buildings with a total of 3.2 million square feet.[85]

Site 11 on **Exhibit 9-10** is Jafza, USA, a 1,300-acre planned logistics and distribution center with plans for a rail intermodal facility in its second phase of development in 2016. By that time the property is to have 3 million square feet of warehousing and distribution space on some 230 acres.[86]

Economic planners for the company are predicting 50,000 truck trips per day will be generated, 60 percent of which will move to and from the Port while the others would move inland over I-26 and I-95. The development would eventually bring 660,000 containers through to the Port of Charleston yearly.[87]

[84] Port of Charleston website.
[85] Ibid.
[86] Wilkinson, Jeff, The State, November 13, 2008 pp.A1 and A5.
[87] Philips, Noelle, The State, November 12, 2008.

Exhibit 9-9: Existing Distribution Centers and Warehouses

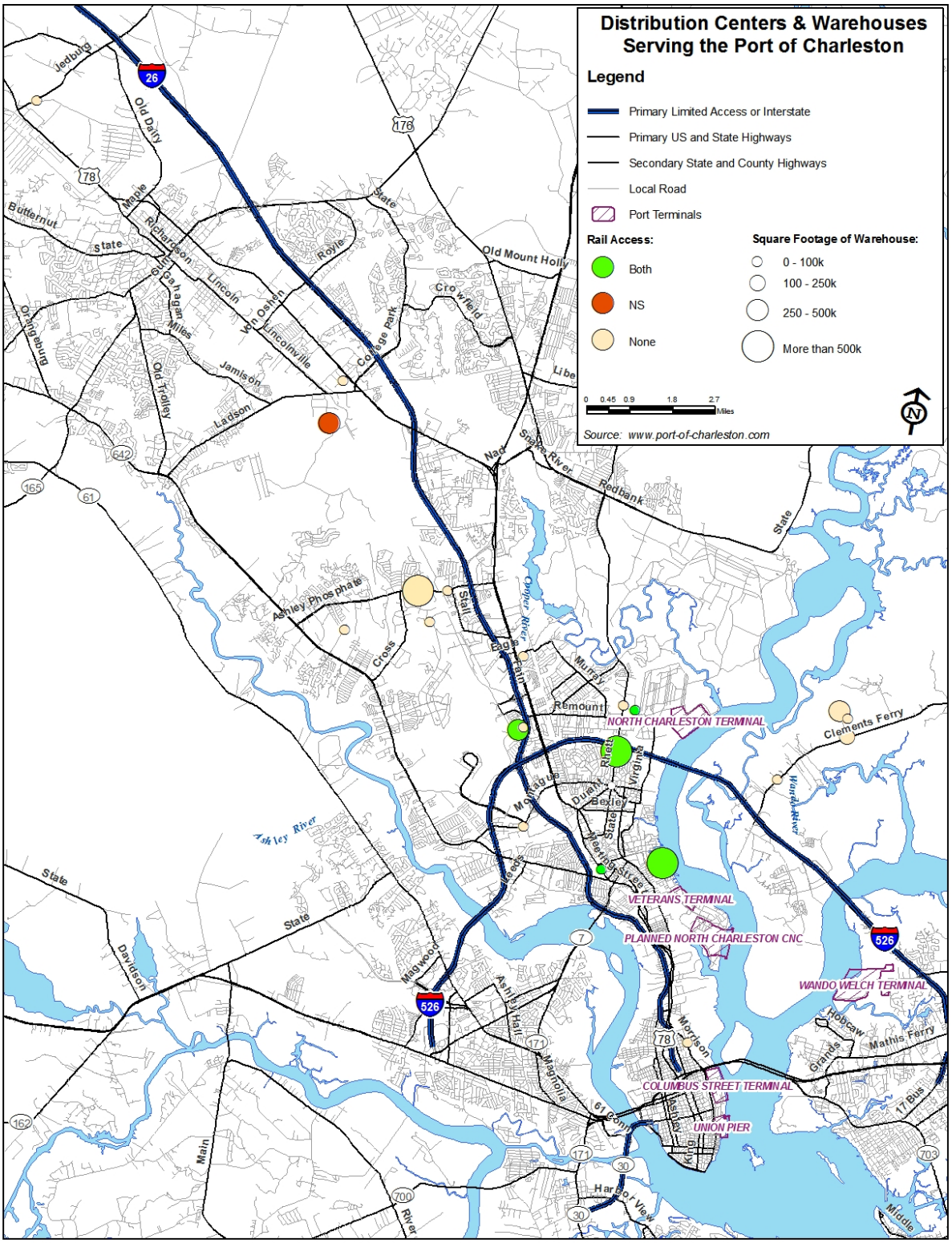
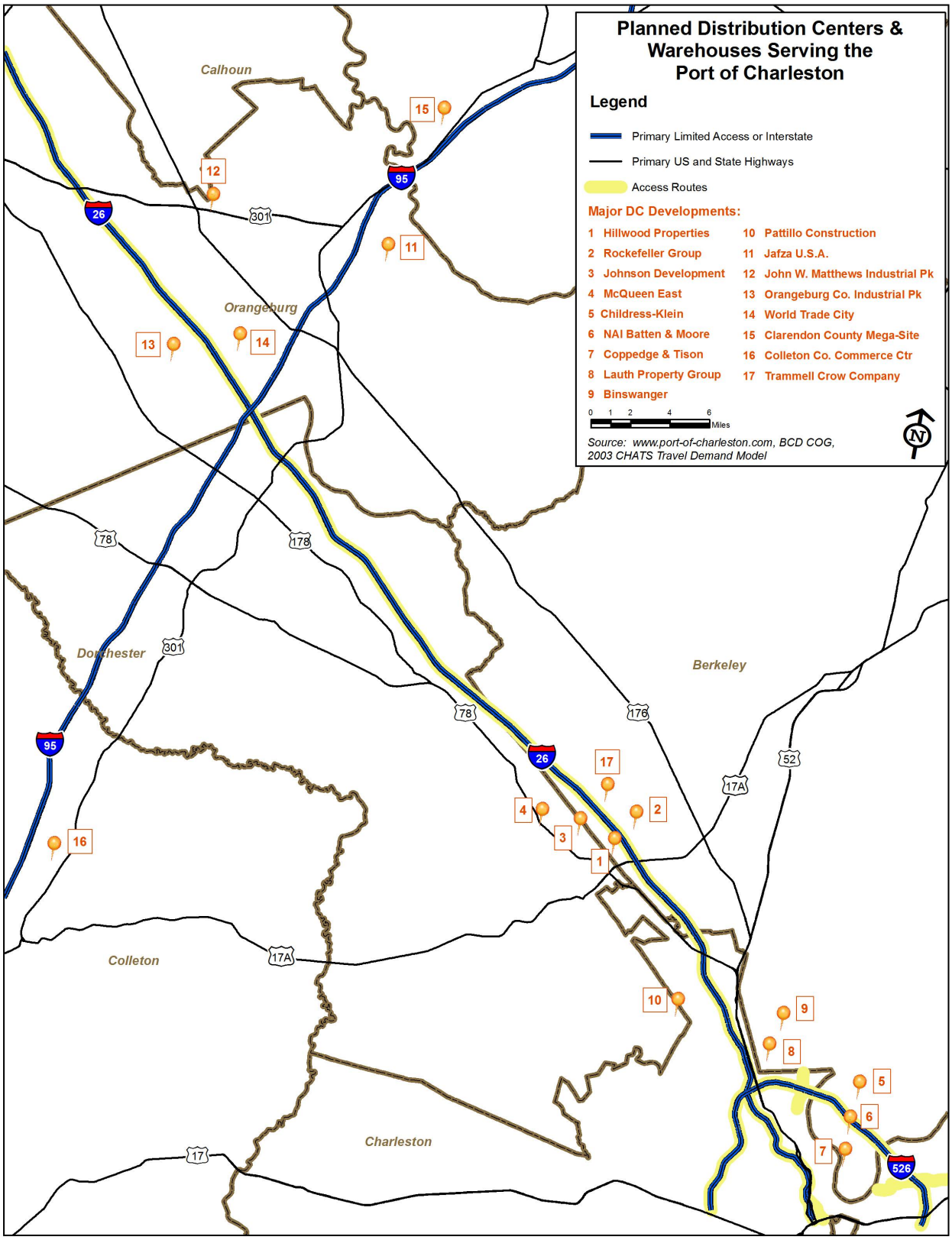


Exhibit 9-10: Planned Distribution Centers and Warehouses



This particular site is served by CSXT but its route to the Port of Charleston is very circuitous (131 miles). The shortest, most direct, route (59 miles) involves use of the NS Charleston-Columbia main track connecting with the CSXT line. Such a through route will require the cooperation of the two railroads involving either a joint operation or provision of trackage rights. CSXT currently has trackage rights over the NS track segment, but it is not clear if they would be valid for the proposed traffic. Trackage rights could also be granted to a third party. In the case of the latter, not only will trackage rights have to be provided, but they will also have to be provided at a reasonable cost.

Such a development could provide the base volume to generate the level of public benefits necessary to help justify the cost of a shuttle-type rail service to and from the Port. The feasibility will depend on a number of variables, including access as discussed above, what facilities are actually available at the Port to transfer containers to rail and inland terminal capital and operating cost provisions.

9.2.5 Critical Success Factors

There are a number of factors that are key to the success of an inland port. Among these are the following:

- Location: An inland port should intercept major container flows and provide easy access to rail and interstate highway networks that connect it with key markets.
- Functions: The inland port should perform a range of functions including intermodal transfers, storage/warehousing, staging, inspections, parking, service, etc.
- Institutional Arrangements: Arrangements must be made with rail carriers and port operators to establish the rail service, as well as the container consolidation and railcar loading at the port.
- Scheduled and Reliable Service: Using the inland port cannot cause an excessive delay, either due to train scheduling, transfers, or the nature of the train service.
- Costs: The capital and operating costs of an inland port must not exceed the expected benefits of the service. This does not necessarily mean that the service would operate without subsidies, only that the subsidies should not exceed the public benefit of the facility.

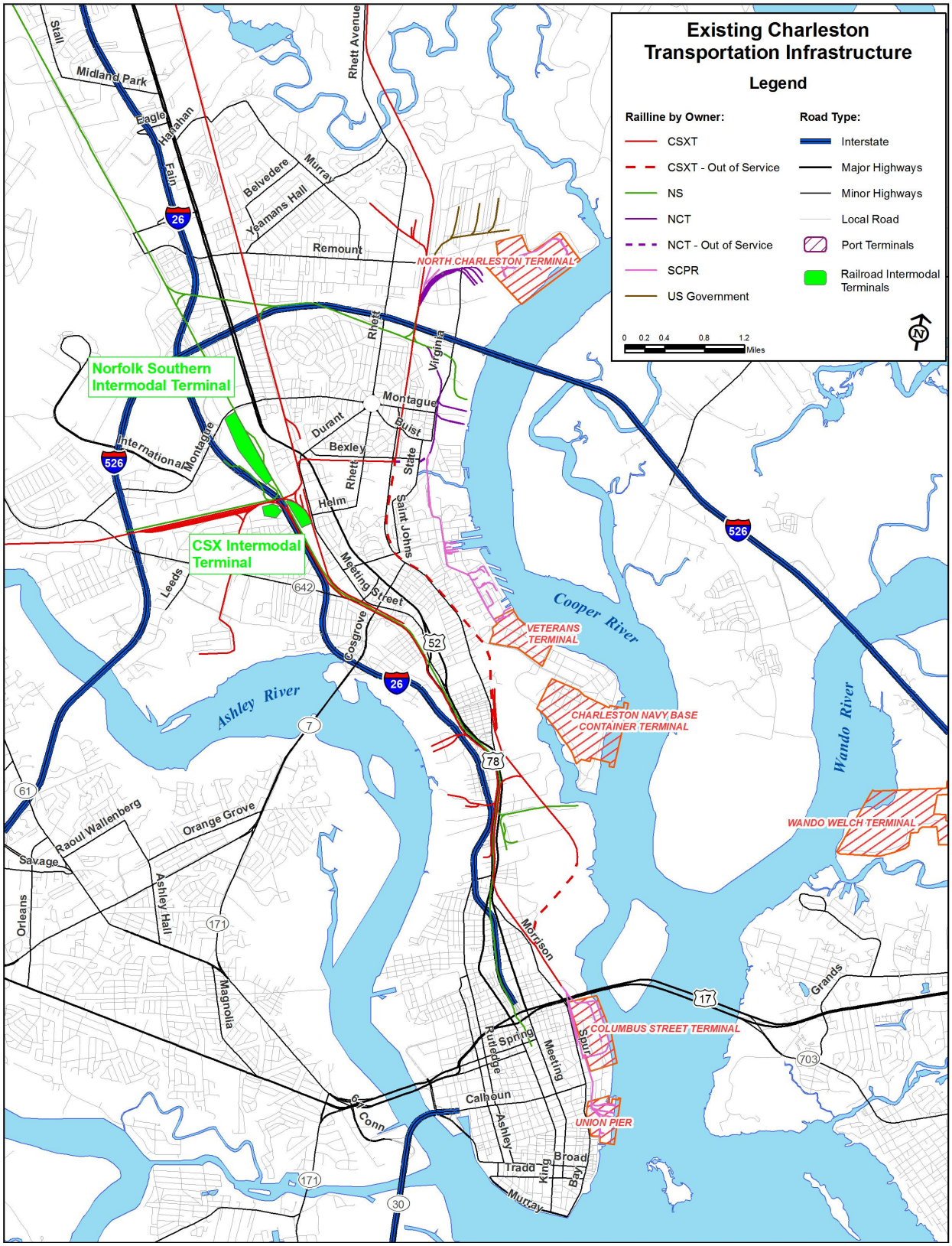
9.3 Charleston Portside Intermodal Facilities

One of the largest, if not the largest, rail issues in South Carolina concerns Class I service to the Port of Charleston. Concerns exist related to both container and non-container traffic. Rail service at the Port received poor ratings in availability, capacity, quality and service levels (the only "needs improvement" overall) from shipper's perspectives in the recently completed *SC Transportation Cost Competitive Analysis Report*[88] prepared for the South Carolina Public Railways.

All containers moved by rail to or from the Port (other than empties at Columbus Street Terminal as discussed later) are currently drayed to railroad terminals located adjacent to I-26 between Montague Ave and Dorchester Road (see **Exhibit 9-11**). Approximately 20 percent of containers move between the rail intermodal facilities and the Port's container terminals.

[88] Tompkins Associates, Global Insight, pp 24,25

Exhibit 9-11: Existing Port of Charleston Transportation Infrastructure



9.3.1 Future Demand

The capacity of the existing container terminals at Wando Welch, North Charleston and Columbus Street totals 2.6 million TEUs. The new container terminal on the CNC will be capable of handling 1.4 million TEUs, resulting in a total Port capacity of 4.0 million TEUs. Capacity enhancements planned or in progress could raise total capacity to 4.2 million, or more. The distribution of capacity by terminal is shown in **Exhibit 9-12**.

Exhibit 9-12: Port of Charleston Container Capacity

Terminal	Capacity (million TEUs)	Percent of Total
Wando Welch	1.8	43 %
N. Charleston	0.6	15 %
Columbus Street	0.4	9 %
Navy Base	1.4	33 %
Total	**4.2**	**100 %**

Assuming the total capacity of the Port of Charleston is 4.2 million TEUs with the full development of the Navy Base Container Terminal, the actual number of containers to be handled equates to 2,730,000 considering the high percentage of FEUs. Assuming the rail share remains at 20 percent of the total, then 546,000 containers would move by rail. Since almost 2.0 million TEU totals have occurred in recent years, the ultimate capacity in TEUs is 2.1 times the highest years of record.

During the planning for the new container terminal, demand at the Port of Charleston was anticipated to double by 2025 as stated earlier. A more recent forecast provided by the SCSPA in the fall of 2008 (see **Exhibit 9-3**) reveals the earlier forecast has been tempered considerably. Given the uncertainty of the state of the global economy today and for the foreseeable future, the projected total Port capacity of 4.2 million TEUs is adopted for certain planning purposes. Given that the number of potential rail-related alternatives has diminished as land uses, regulations, attitudes, and private and public-sector managements have changed over time, some options for portside intermodal facilities, if not exercised now, may no longer exist in the future and it is best to plan for the ultimate demand.

9.3.1.1 Terminal Size

The existing railroad terminals use about 90 acres of land combined. Assuming they were operating close to capacity in the busiest years, application of volume ratio results in a need for 190 acres of future terminal space. However, guidelines developed by the Tioga Group[89] in performing studies for Class I carriers and the AAR indicate that 2,000 lifts per acre is a conservative estimate for conducting common intermodal functions, including car storage, but that well-operated facilities can make do with less. Terminals at the Port of Los Angeles were found to vary in efficiency from 2,000 TEUs per acre per year to 5,000 TEUs (approximately

[89] Tioga Group, Inc, Railroad Industries, Inc., Iteris, *Inland Port Feasibility Study*, *Project No. 06-023, Task 1and 2 Draft Report*, prepared for the Southern California Association of Governments, August 4, 2006, p.31.

3,000 containers) per acre per year for the most efficient.[90] At 2,000 lifts per acre, 273 acres are needed to handle the projected 546,000 containers, and 182 at 3,000 per acre.

Considering the possibility of increasing rail share through potential shuttle services, and/or resulting from the increased demand for long-haul rail due to an expanded hinterland of the Port derived from the growing use of the Suez Canal and the widening of the Panama Canal (2014), the larger site might be a more realistic goal.

9.3.2 On-Dock and Near-Dock Intermodal Approaches

In addition to rail served inland ports, the two most prominent alternatives that involve rail transportation are on-dock intermodal and near-dock intermodal.

9.3.2.1 On-Dock Intermodal

Two of the Port's container terminals are rail-served and some 5,000 empty containers have been handled at Columbus Street in the last couple of years. Switching times and extra charges have discouraged container traffic at North Charleston. The Port's largest container terminal, Wando Welch located on the east side of the Wando River, is 11 miles from the nearest rail line with a Wando River crossing required. The new Navy Base Container Terminal, although not located directly on rail, can be made rail accessible, but on-dock rail is not planned for the facility.

In reality, the Port is constrained in terms of terminal space and does not have room to accommodate on-dock rail facilities of any size without seriously impacting marine container handling needs. The most effective means would require a small on-dock loading area with frequent shuttle trains to railroad intermodal facilities, which would be costly. Therefore, on-dock rail intermodal of any significant magnitude is not a realistic alternative.

9.3.2.2 Near-Dock Intermodal

Near-dock intermodal is hampered by a lack of available property near the Port's mainland container terminals which are all located in developed areas. The only properties with promise are those undergoing redevelopment or reuse. Access by both railroads due to rail line ownership and the terms of the MOU between the City of North Charleston and the SCSPA as it pertains to rail access to port facilities from the north and the south also place limitations on site availability and / or use, as discussed in more detail in the following paragraphs.

Macalloy-Cooper Yard - The 135-acre Macalloy property adjacent to the Navy Base Container Terminal is the only truly available site (see **Exhibit 9-13** for the location of potential near-dock sites). The property is currently vacant having undergone contamination remediation after the Macalloy Corporation closed its plant. It also lies adjacent to CSXT's Cooper Yard, and the two properties have been combined in a proposal by CSX to develop a near-dock facility. Actually it could function like an on-dock facility with a private roadway connection to the container terminal. In this fashion yard tractors could move containers over the private road rather than having to venture out on public streets and use over-the-road rigs. The development plan proposed by CSX is the subject of **Exhibit 9-14**.

[90] *Intermodal Freight Terminal of the Future*, Transportation Research Circular Number 459, July 1996, p. 201

Exhibit 9-13: Potential Near-Dock Intermodal Sites

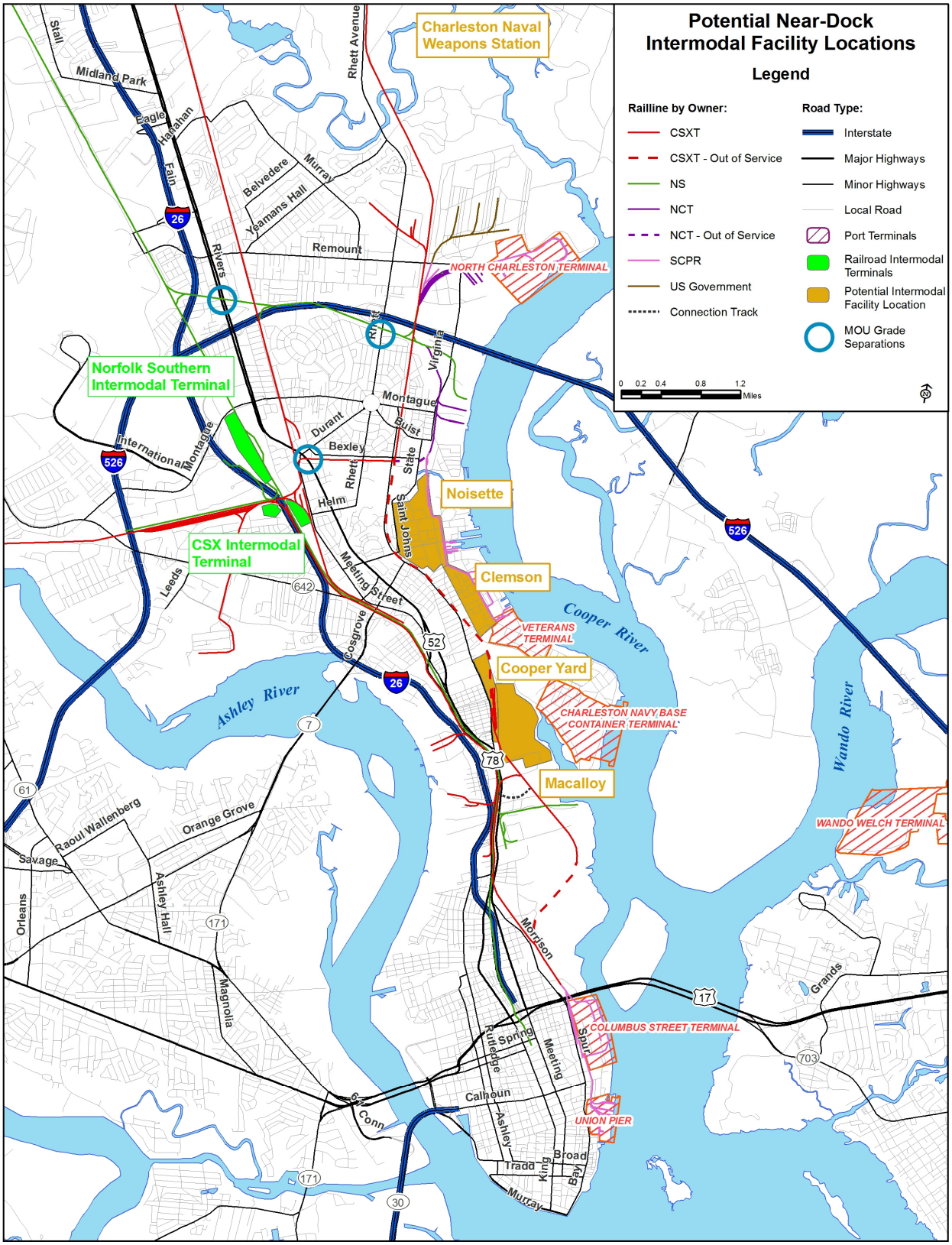
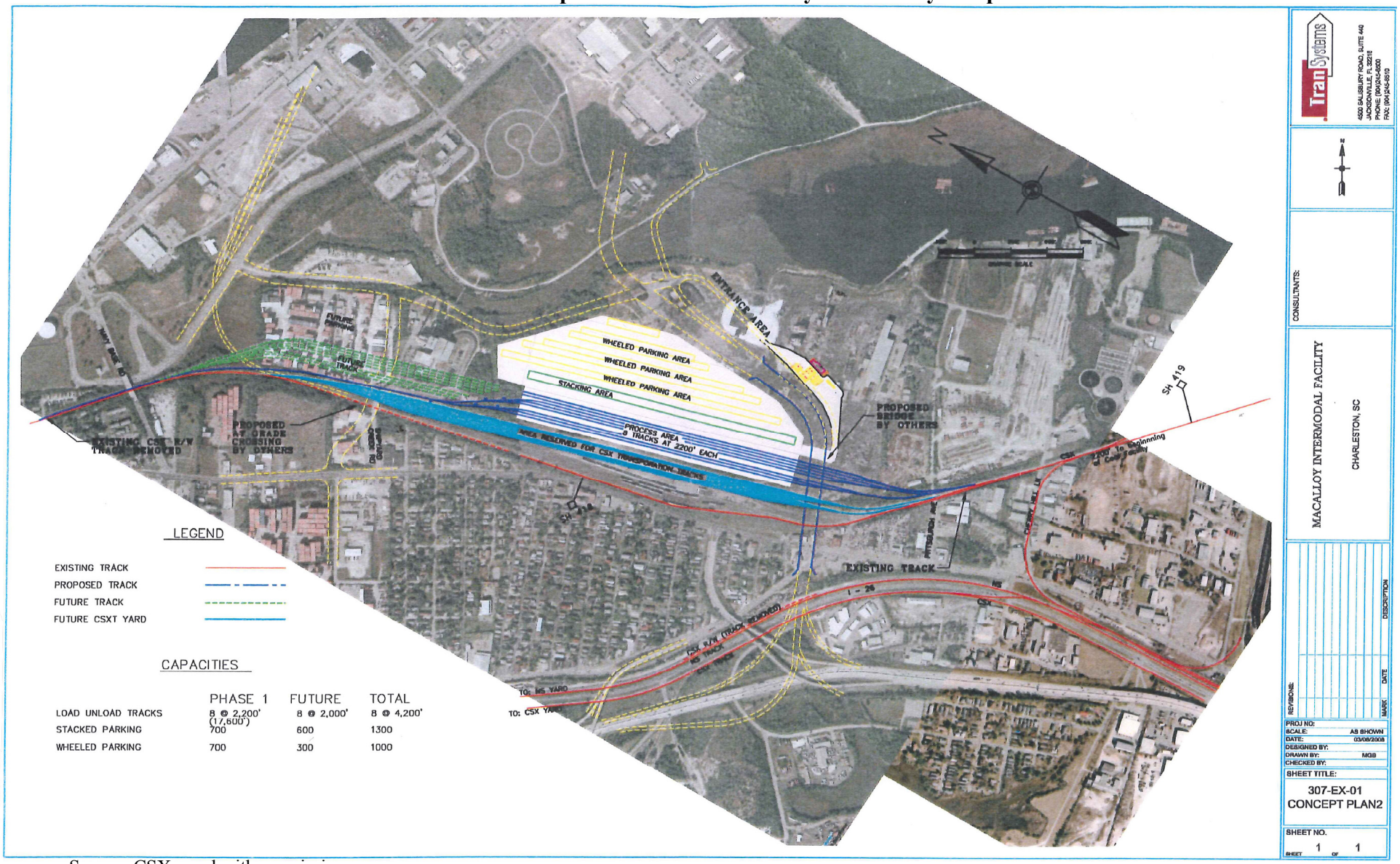


Exhibit 9-14: CSX's Proposed Intermodal Facility at Macalloy-Cooper Yard



Source: CSX, used with permission.

The terminal is proposed to be developed in two phases, the first on 65-70 acres of the Macalloy property and CSXT's Cooper yard. A second phase would extend the terminal to Viaduct Road with acquisition of the intervening property. It is planned to operate the facility using wide span cranes capable of working multiple tracks and truck lanes to maximize throughput on the confined site. According to CSX, the capacity of the fully developed facility is 1 million lifts per year, more than adequate to handle projected port demand. Also on the plus side is the rail access from the south as specified in the MOU and the capability of use of the Port Access Road via an on-site interchange. Off-site improvements would consist of restoration of approximately four miles of "A" Line track between Bennett Yard (actually Ashley Junction, the location of its current intermodal facility) and Kinder Morgan, and a new connection track between the line and Cooper Yard near Kinder Morgan. If the current intermodal yard is closed with the opening of the new facility, that and reconstruction of the "A" Line would also facilitate the operation of commuter trains between Moncks Corner and downtown Charleston.

The downside of the proposal is that in order to construct an efficient container transfer facility, the planned Port Access Road will need to be relocated in part. Given one of the special conditions (m) of the terminal permit that requires the Port Access roadway be open before operation of the terminal can commence, it is imperative there are not any delays. In addition, in order to expand the facility in Phase 2, one of the proposed surface roadway elements to facilitate access to the Port Access Road for local residents will have to be closed. CSX objected to this road, which creates an at-grade crossing of the railroad at the north end of Cooper Yard during the public comment period for the new terminal permit.[91] Even without the second development phase, the proposed grade crossing will conflict with the railroad's switching of the facility.

The planned capacity of Phase 1 of the facility could suffice for CSXI needs, and as stated previously, full build-out would be ample for the Port's forecasted needs and it could function as a joint terminal serving both rail carriers. However, NS cannot access the facility without CSXT approval and that has not been forthcoming to date, and both railroads would prefer to operate in separate facilities.

Consideration should be given to redesigning the facility to fit on the site without relocating the port access road. A different type of lift equipment may be necessary and the ability to move containers under the elevated roadway would be required. No doubt capacity would be impacted, but a major issue could be avoided.

Development of the facility is being proposed as a public-private partnership. The cost is subject to on-going analysis.

Charleston Naval Complex - The former Charleston Navy Base is in the process of being redeveloped and all of the property has been parceled out to various parties, including the Port of Charleston (location of the Navy Base Container Terminal and Veterans Terminal). All of the parcels are yet to be redeveloped and until such time as they are, could potentially be adopted for other uses. A parcel designated for Clemson University located on the west side of Hobson and lying between Cosgrove Avenue and Viaduct Road (90-95 acres) has potential, but is undersized for development of a facility adequate to handle all of the Port's container capacity but could

[91] Record of Decision, pp 33 and 34

serve one railroad. **Exhibit 9-15** depicts a potential intermodal facility on the parcel with associated warehousing nearby and extension of rail to Veterans Terminal.

The proposal includes a relocation and grade separation of Cosgrove Avenue which permits switching of the intermodal facility. Roadway access to the Interstate highway system would be available via Cosgrove to I-26 or Virginia Avenue to I-526. Rail access to Veterans Terminal could make use of the Viaduct Road overpass, which the SCDOT is preparing to replace. In addition, the site is close enough that with some roadway changes and agreement with the intervening property owner, a private roadway connection to the new port terminal might be possible. Access to Veterans Terminal would permit barging of containers from Wando Welch.

While the site would be accessible by both railroads, NS access would have to come from the north, which is contrary to the desires of the City of North Charleston contained in the MOU, and the existing access through the CNC on existing trackage by the SC Public Railways is in litigation. Since the property is already designated for another use, its availability is questionable, perhaps depending on location of a suitable alternative site on the CNC, which in reality may well render the other concerns moot points.

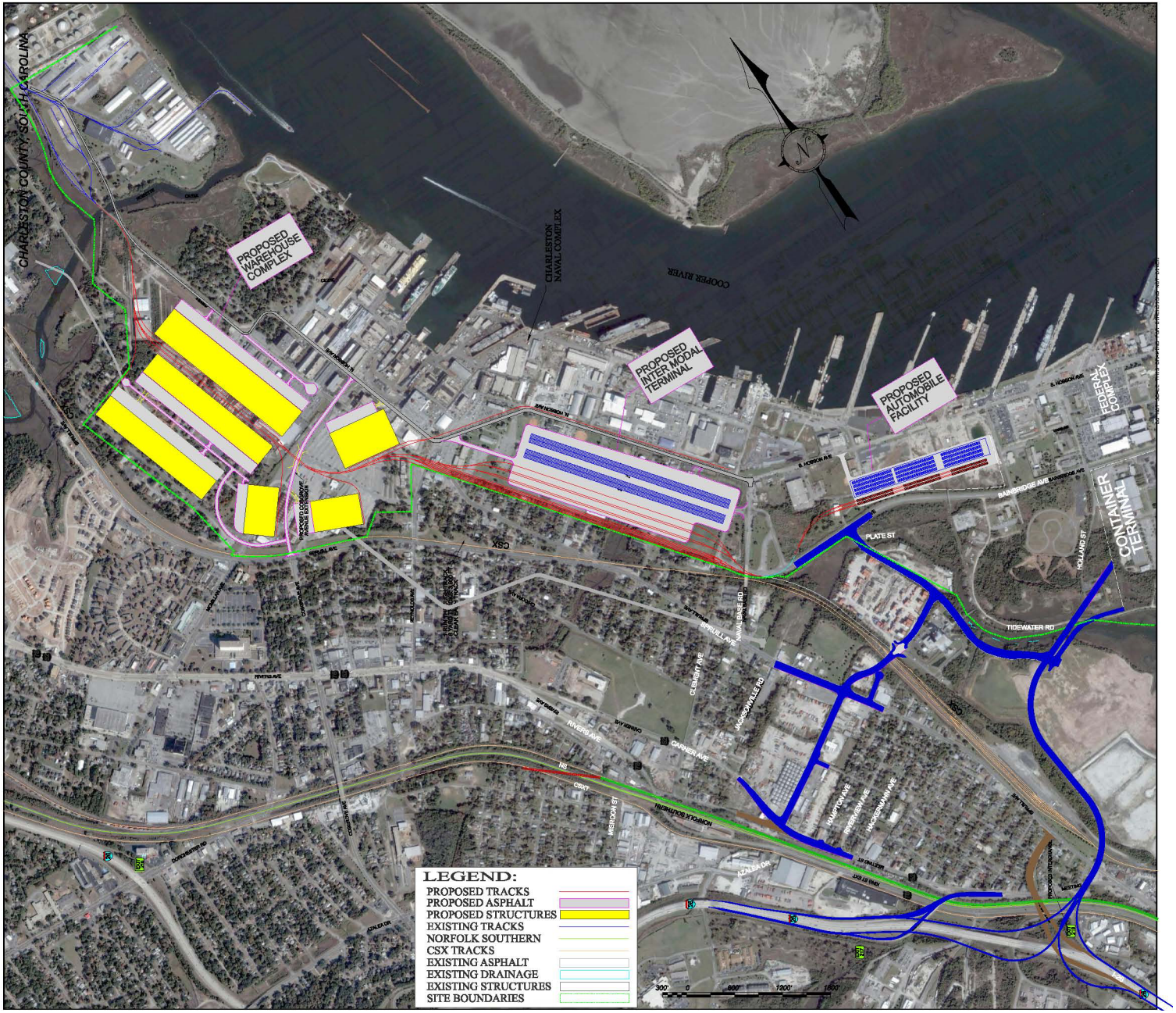
Noisette Site - Another potential parcel is part of the Noisette holdings lying on the north side of Cosgrove Avenue extending east and west from St. Johns Avenue and Avenue D. This is a much larger site, almost 200 acres. It is the same area as shown populated with warehouses in **Exhibit 9-15**. Again, the parcel is large enough for one railroad, but not both and northern access would be required for NS operations.

The site has the same access and availability conditions as the Clemson site with the exception of a possible private roadway connection to the new Port terminal. It is most likely too far removed.

Naval Weapons Station Charleston - The Naval Weapons Station/Naval Annex has been mentioned as a possible site for more than one proposal concerning the Port of Charleston. In fact it was one of the candidates for the location of the Port's new container terminal but it has never been available. It has been suggested often since the area running north-south from Remount Road to Red Bank, and east-west from North Rhett Avenue Extension to the Cooper River is a very large area. A portion of the property lies adjacent to North Charleston Terminal in the ideal location for a near-dock intermodal facility, but while the parcel is a fairly large one, not withstanding the location of the Naval Brig on the same parcel, it is not configured for an intermodal terminal and facility switching across Remount Road would be a problem. The northern portion of the site is much larger, in fact capable of containing a facility large enough for both Class I rail carriers.

The site is in the process of being transferred to another branch of the service, but its availability may be years away, if at all, and thus it was not considered further.

Exhibit 9-15: Potential Intermodal Facility at Charleston Naval Complex



9.3.2.3 Impact on Vehicular Traffic

Existing dray distances from the Port's container terminals to the rail intermodal facilities range from 4.7 to 14.2 miles as shown in **Exhibit 9-16.**

Exhibit 9-16: Existing Intermodal Facility Dray Distances

Port Terminal	Existing Rail Terminal Distances (miles)	
	CSXI	NS
Wando Welch	13.5	14.2
Columbus Street	6.9	8.1
North Charleston	5.7	6.4
Navy Base	4.2	5.4

Source: Google maps

In addition to improving container handling at the port, another goal of relocating the rail intermodal terminals would be to reduce the number of miles trucks would travel in the urban area in the process of draying containers to and from the marine terminals. A look at comparative distances is provided by examining **Exhibit 9-17**, which lists the distances between the marine terminals and the potential terminal locations described earlier.

Exhibit 9-17: Potential Intermodal Facility Dray Distances

Port Terminal	Relocated Rail Terminal Distances (miles)(2)	
	Macalloy	CNC (1)
Wando Welch	18.3	17.5
Columbus Street	3.4	6.4
North Charleston	11.5	10.3
Navy Base	-	1.0

Note: (1) CNC – Clemson / Noisette sites.
Note: (2) Via I-526 , I-26, and Port Access Road as applicable.
Source: Google Maps

Applying the difference in drayage distances to the number of containers resulting from development of total terminal capacity, the net impact of the potential terminal locations is an increase of 320,000 and 430,000 truck miles traveled respectively for the Macalloy and Clemson sites as compared to existing rail intermodal terminal locations. Increases result from longer distances from Wando Welch and North Charleston Terminals, but savings from the other two. The routes were comprised of I-526, I-26, and the Port Access Road as applicable. Use of local roadways, for example, Virginia Ave to the CNC for North Charleston Terminal and Wando Welch Terminal traffic would result in much shorter distances. The use of Virginia Avenue, however, would conflict with the MOU between the Port and the City of North Charleston.

9.4 Port Non-Intermodal Rail Capabilities

The South Carolina State Ports Authority (SCSPA) operates the following terminals for non-containerized cargo. All but one is located in Charleston.

- The Union Pier Terminal is a dedicated breakbulk and roll-on/roll-off (RO-RO) terminal. It has rail access to both CSXT and NS via SCPR, and much of the rail activity is generated by BMW auto trains. The terminal includes four berths with 2,470 feet of continuous berth space.

- The Columbus Street Terminal is a combination of container, bulk, and breakbulk terminal. The terminal includes four breakbulk berths and two container berths along 3,500 feet of berth space. It has rail access to both NS and CSXT via SCPR.
- The North Charleston Terminal is primarily a container terminal but has break-bulk and RO-RO capability. It has access to NS and CSXT via SCPR.
- The Veterans Terminal recently began operations. It is a dedicated bulk, break-bulk, RO-RO facility with four piers. Pier Zulu is 1,330 feet; Pier Mike is 1,170; Pier November is 1,330 feet, and Pier Lima is 952 feet. It currently is served by SCPR connecting to both CSXT and NS.

The Port of Georgetown is a breakbulk facility with four berths totaling 1,800 feet. It is served by CSXT.

9.4.1 Current Rail Traffic

No cars were switched at the Veteran's Terminal in 2007, although some cars were switched at the CNC. The number of cars switched into and out of the North Charleston Terminal and Navy base totaled over 1,600 in 2007, mostly pulpboard and woodpulp, and chemicals.

A much higher number of cars, over 26,000, were switched through the Columbus Street and Union Pier Terminals. Major commodities consist of automobiles, paper/pulpboard and empty containers. Of these, roughly equal numbers are inbound and outbound. The automobile traffic consists of NS unit trains of import and export BMW automobiles. The "Other" cargo consists primarily of machinery and project cargo.

The volumes shipped by rail from the Port of Georgetown are minimal. Much of the traffic that passes through the Port originates or terminates within 300 miles of the port, not distant enough for rail to be a strong alternative.

9.4.2 Recent Trends

Automobile traffic has increased through the Port of Charleston in recent years - almost 50 percent between 2003 and 2007. Forecasts in early 2008 were for a 50 percent increase in exports over the next 5-6 years, but that was before the economic downturn. In addition, there is stiff competition for automobile traffic from other southeastern ports.

Data from the PIERS trade data information service suggests that bulk/breakbulk traffic has shown very little variation over the last few years[92], as shown in **Exhibit 9-19**. The statistics exclude domestic traffic but include all Charleston traffic regardless of the mode by which it leaves the port and regardless of whether the traffic was handled by a SCSPA or a private terminal.

Exhibit 9-18: Tonnage at Charleston Breakbulk Terminals

Fiscal Year(1)	Charleston Breakbulk	Veterans Terminal	Total
FY2004	613,864	52,570	666,434
FY2005	612,486	113,201	725,687
FY2006	581,642	125,159	706,801
FY2007	537,251	50,851	588,102
FY2008	660,096		660,096

Note: (1) July 2003 – June 2008. Source: SCSPA

9.4.3 Forecast Rail Volumes

The U.S. Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF) predicts that between 2010 and 2025 rail shipments of imports and exports through the Port of Charleston will increase by an overall annual percentage change of 2.3 percent, as shown in **Exhibit 9-20**.

Exhibit 9-19: Forecasts for Rail Transportation of Charleston Seaport Shipments

Commodity (1)	2010	2015	2020	2025	Annual % Chg
Animal feed	23	24	26	28	1.3%
Base metals	1,674	1,909	2,123	2,332	2.2%
Cereal grains	7	8	8	8	0.8%
Chemical products	279	350	426	517	4.2%
Coal	0	0	0	0	-0.1%
Coal-n.e.c.	0	0	0	0	-1.2%
Fertilizers	1	1	1	1	-4.3%
Machinery	28	31	36	43	2.9%
Natural sands	75	79	81	83	0.7%
Newsprint/paper	148	139	131	122	-1.3%
Nonmetal min. products	94	109	123	139	2.7%
Nonmetallic minerals	7	8	9	10	2.5%
Other agriculture products	84	97	110	124	2.6%
Paper articles	0	0	0	0	1.7%
Waste / scrap	2	2	2	2	-1.3%
Wood products	23	28	34	39	3.7%
Grand Total	**2,446**	**2,787**	**3,110**	**3,449**	**2.3%**

Note: (1) Thousands on Tons. Source: FHWA's Freight Analysis Framework (FAF)

[92] SCSPA fiscal year which covers the third and fourth quarter of one calendar year with the first and second quarters of the next calendar year.

9.4.4 Breakbulk Cargo Rail Concerns

The largest breakbulk cargo issue from a rail standpoint in Charleston is Veterans Terminal, which is intended to serve as the primary source of additional port capacity for breakbulk/RO-RO cargo. Veterans Terminal is located near the center of the CNC property along the Cooper River. The north end of the complex is planned be redeveloped as a residential community, the Noisette development. The southern end is to be developed as the new Navy Base Container Terminal. While preexisting facilities are available at Veterans Terminal, the area has not been fully developed as a civilian cargo terminal. Rather, much of the current infrastructure is the same as when the area was owned by the U.S. Navy. The SCSPA is developing a strategic plan for the Veterans Terminal facility.

Competitive access represents the most significant rail issue that impacts the future usage and development of Veterans Terminal. The 2002 MOU between the SCSPA and the City of North Charleston regarding the usage of former Navy property, as stated earlier, restricts rail access to the site. Currently access is provided through the north end of the property from North Charleston Terminal Company trackage jointly owned by both CSXT and NS. When the CNC property is fully developed, this northern access will be closed per the MOU limiting rail access to one carrier, CSXT from the south. Competitive access to Veterans Terminal should be included in any negotiations concerning rail service to the CNC.

9.4.5 Non-Intermodal Rail Conclusions

Breakbulk cargoes in the Charleston port area have not increased significantly in recent years and are expected to decline over the next year or so. Over the long term, however, cargoes are expected to increase. Neither rail capacity nor port capacity for non-containerized cargo is expected to be a significant issue, at least in the short term. Of more pressing concern is competitive access.

9.5 Proposed Port in Jasper County

The Jasper Ocean Terminal Joint Project Office was created by the Intergovernmental Agreement that was signed in November of 2007 by the states of South Carolina and Georgia. It has a six member board, three from each state, charged with conducting the organizational and management groundwork for the port. The chair of the office alternates between states. As of January 2009, a consultant has been hired to conduct preliminary terminal planning, economic analyses, market studies, dredged material management, and conceptual infrastructure planning. Among other things, this project manager will be responsible for conducting the studies to choose a new site for the dredge spoils that currently occupy the Jasper port site. This study and spoil site selection must occur before the project can move forward.[93]

9.5.1 Proposed Port Terminal Site and Existing Infrastructure

The proposed Ocean Terminal in Jasper County is located on 1,400 acres on the northeast side of the Savannah River. Currently, no highway infrastructure exists between the port terminal site and other area highways such as I-95. According to a regional field survey conducted by

[93] http://www.jasperportnow.com/timeline-now.html.

representatives from South Carolina and Georgia State Departments of Transportation, the main routes assumed to access the future port site are SC 170, US 17, and I-95. It was considered that additional access to I-95 be constructed at SC 34 near mile marker 3 on I-95.

Currently, I-95 is a four lane divided highway in Jasper County. The portion adjacent to the state boundary is ranked 53rd statewide for capacity needs and is not funded for improvements. The I-95 interchange at US 17 in Jasper County (Exit 5) ranks 68th statewide based on performance metrics and crash rates and also has no funds committed for improvements. These access routes and their 2007 existing conditions are listed in **Exhibit 9-21**, and are illustrated in **Exhibit 9-23**.

Exhibit 9-20: Jasper Port Existing Access Route Conditions

Route	Termini	Length (Mile)	Existing Lanes (Two Way)	2007 AADT	2007 LOS
I-95	Georgia State Line to US 17/321	5.0	4	49,800	C
I-95	US 17/321 to US 278	3.0	4	52,200	C
US 17	Georgia State Line to SC 170 Alt	4.1	2	13,700	C
US 17	SC 170 Alt to SC 170	2.5	2	5,800	A
US 17	SC 170 to SR 34	2.6	4	10,900	A
US 17	SR 34 to Interstate 95	3.8	4	10,100	A
SC 170	Georgia State Line to US 17	3.3	2	4,500	A

Source: SCDOT Office of Statewide Planning

9.5.2 Forecast Conditions

The roadway infrastructure is expected to experience increases in travel demand over the next 25 years due to an increase in residential and other commercial development in the Lowcountry of South Carolina. According to traffic forecasts from the Lowcountry Council of Governments regional travel demand model, conducted in cooperation with the South Carolina Department of Transportation, levels of service on the main access routes listed above are expected to deteriorate, but not to a detrimental level. As shown in **Exhibit 9-22**, these routes are expected to experience only slight deterioration in level of service. These forecasts do not include estimated traffic from the planned Port Terminal. **Exhibit 9-24** displays the expected "background traffic" for the access routes in Jasper County. These traffic volumes and levels of service should be considered when planning for the future port and port-related developments.

Exhibit 9-21: Projected Access Route Conditions without Port Traffic

Route	Termini	Length (Mile)	Planned Lanes (Two Way)	2025 Est. Volume	2025 LOS
I-95	Georgia State Line to US 17/321	5.0	4	85,200	F
I-95	US 17/321 to US 278	3.0	4	78,800	F
US 17	Georgia State Line to SC 170 Alt	4.1	2	16,000	D
US 17	SC 170 Alt to SC 170	2.5	2	5,300	A
US 17	SC 170 to SR 34	2.6	4	8,900	A
US 17	SR 34 to Interstate 95	3.8	4	11,900	A
SC 170	Georgia State Line to US 17	3.3	2	3,600	A

Source: Lowcountry Council of Governments Regional Travel Demand Model/SCDOT

Exhibit 9-22: Jasper Port Site Existing Conditions in 2007

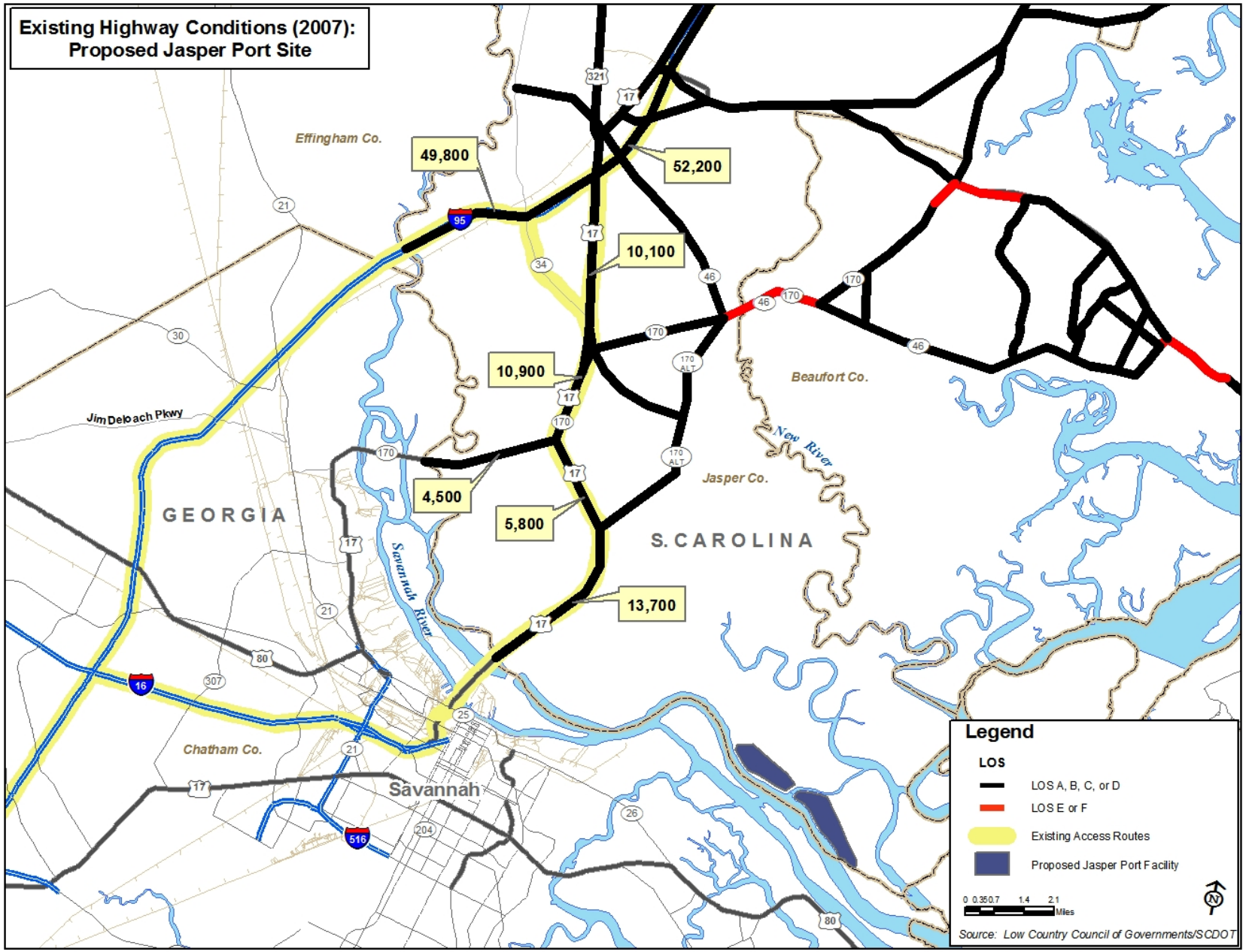
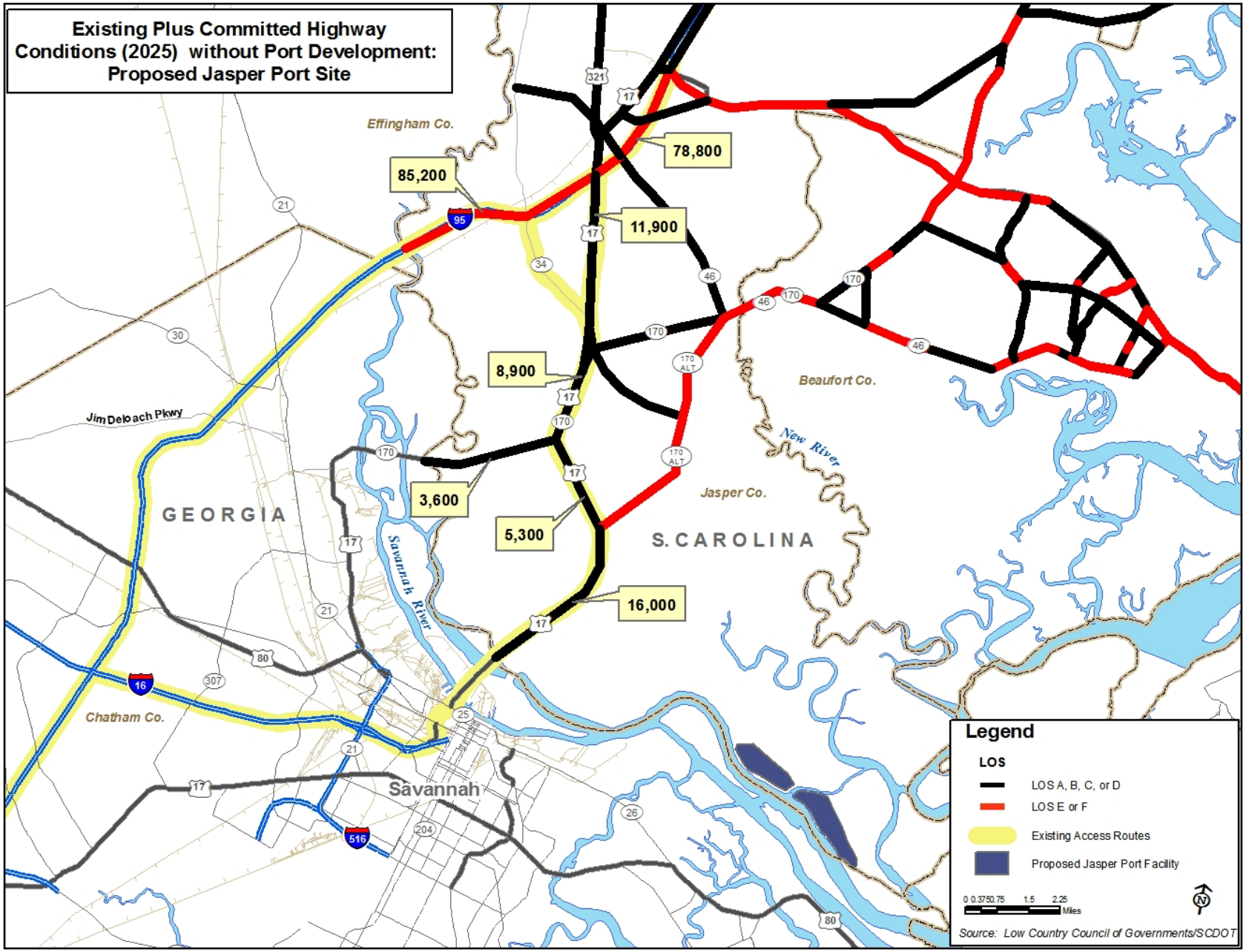


Exhibit 9-23: Jasper Existing Plus Committed Highway Conditions



9.5.3 Recommendations for Improvements to Support Highway Access

As noted, a direct route connecting the planned Jasper Port Terminal with I-95 does not yet exist. Representatives from South Carolina and Georgia State Departments of Transportation have made preliminary assumptions and plans for highway access to the planned terminal. Collectively, it is agreed that the planned Jasper Port Terminal presents a unique opportunity to plan infrastructure in a comprehensive manner ahead of port construction to manage anticipated growth rather than reactionary planning and construction after the terminal becomes active.

As illustrated in **Exhibit 9-25**, a number of new connections and other improvements are recommended by SCDOT and GaDOT planning staff. It has been recommended by state transportation planners that a travel demand model be created to estimate supply and demand for highway infrastructure for both port and port-related developments, such as warehouses and distribution centers. This would lead to an objective evaluation of potential improvement concepts, estimates of traffic distribution and impacts to highway capacity. This would also enable planners to estimate the benefits of access by both highway and rail to move goods into and out of the region.

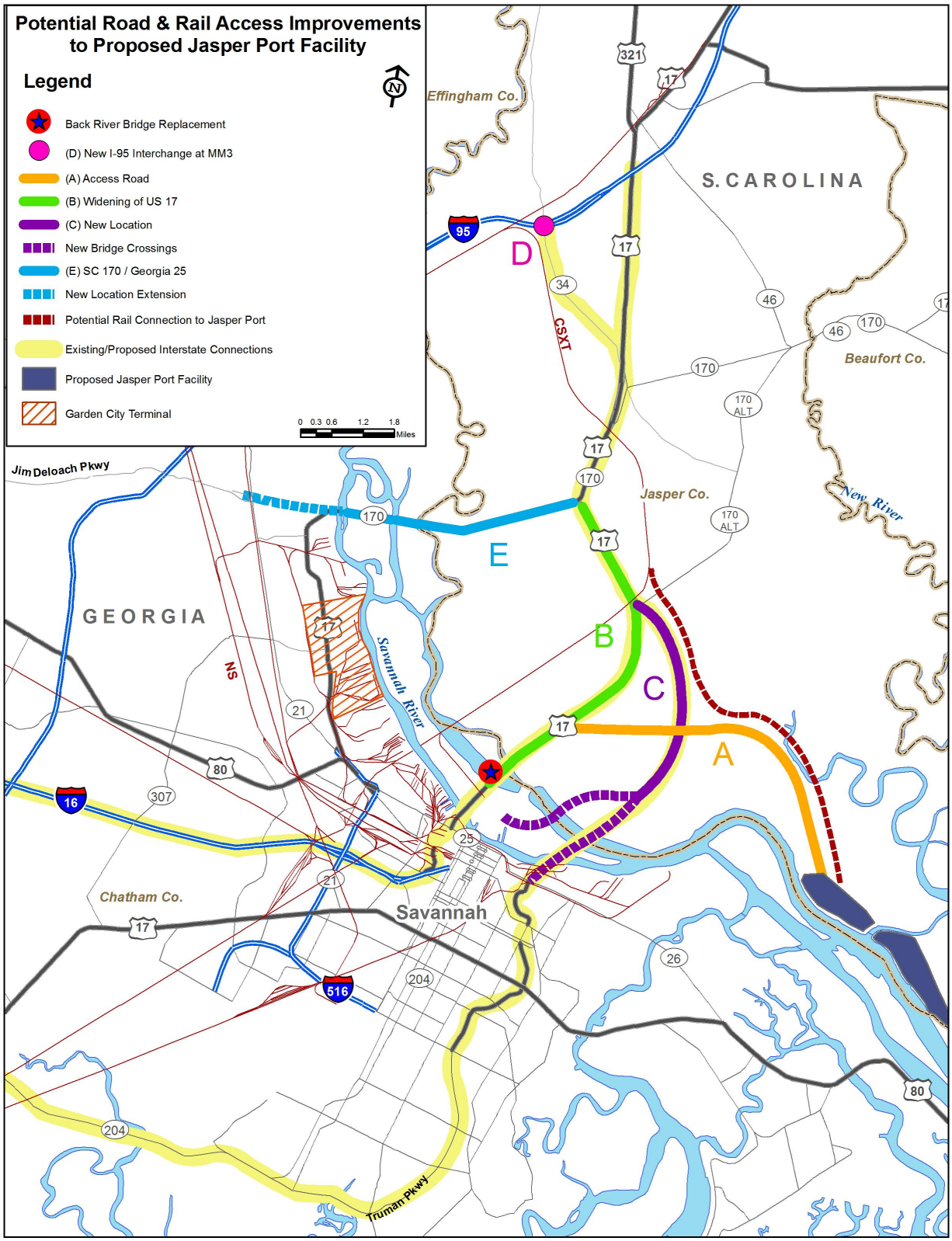
9.5.4 Jasper County Rail Access

The proposed Port site is not currently rail served. There is, however, a former CSXT branch line, its Hutchinson Island Lead, not too distant – approximately 5 miles away. The branch, now inactive, connects with the railroad's "A" line just south of Hardeeville and runs to Hutchinson Island on the Savannah River as shown on **Exhibit 9-25**. Restoration of this line was one of the projects submitted by CSXT for inclusion in this Rail Plan (see **Appendix C**). A likely extension of this line would follow proposed new roadways to the site such that the necessary right of way could be acquired along with that for the roadways. The existing branch will need significant rehabilitation.

The closest NS line lies on the opposite side of the Savannah River from the proposed terminal. Direct NS access would require either trackage rights over CSXT or construction of a new alignment from the west of some 13-14 miles that would have to cross at least one CSXT main line as well as the CSXT branch and the Savannah River. A more likely scenario would be drayage to the NS intermodal facility at the Port of Savannah's Garden City Terminal (Mason ICTF). Drayage would also be an option for CSXI. The drayage route would total approximately 17 miles over suggested new or improved roadways. The Port is already planning a connection from the Garden City Terminal to the Jimmy DeLoach Parkway

Unless volumes at the Port of Charleston increase to a level to entice CSXI to restart a direct train to Atlanta via Yemassee, its service from the Jasper County site would represent a significant saving in time over Charleston. Service via NS to points moving through Atlanta could improve, but those through Charlotte would most likely suffer.

Exhibit 9-24: Potential Access Improvements to Jasper Port



9.5.5 Relative Locations of Port Terminals

The southeastern coast of South Carolina is served by the existing five marine terminals collectively known as the Port of Charleston. The proposed Jasper County port would only expand upon this resource for economic development along the coast. The attractiveness of these port locations for shippers is their relative location to other major cities in the Southeastern United States. As outlined in **Exhibit 9-26**, the Port of Charleston is three and a half hours or less to Greenville, South Carolina and Charlotte, North Carolina and approximately five hours to Atlanta, Georgia. The planned terminal in Jasper County is closer to Atlanta by Interstate with a travel time of four and a quarter hours, but more distant to the other destinations.

Exhibit 9-25: Comparison of Port Access Times to Regional Destinations

	Estimated Travel Times to/from Ports			
Destinations	Charleston		Jasper County	
	(hr:mins)	(miles)	(hr:mins)	(miles)
Atlanta, GA	5:02	321	4:13	258
Charlotte, NC	3:23	209	4:07	254
Columbia, SC	1:55	114	2:39	160
Greenville, SC	3:24	213	4:09	259

Source: MapQuest for Interstate times and distances
Wilbur Smith Associates for access to Interstates from Jasper County Port

10. Other Issues Affecting Rail Traffic

10.1 Public Concerns

10.1.1 Grade Crossings

At-grade crossings of railroads and roadways result in a number of problems for both the rail carriers and the motoring public. Foremost is safety with delays to motorists and noise from locomotive horn warnings the most common concerns from a public viewpoint. Safety, liability, maintenance and other costs are concerns for the carrier.

Safety is addressed with warning devices at crossings, programs such as Operation Lifesaver, and enforcement initiatives. Even crossings with the most advanced warning devices, however, are still subject to incidents. Grade separations are the solution of choice for the public and crossing closures are for the railroads. Advanced warning devices are expensive to install, a typical cost for lights and gates is around $200,000, and expenses are incurred for maintenance thereafter. Grade separations are even more expensive, $20 million and up for an urban overpass, so they are typically reserved for only heavily traveled roadways. Closures are relatively inexpensive, but are not usually acceptable to the public as it often increases travel distances via alternate routes.

A 10-year record of grade crossing incidents in South Carolina is the subject of **Exhibit 10-1**.

Exhibit 10-1: Highway-Rail Incidents 1999-2008

Category	Annual Number			Total for Period
	Highest	Lowest	Average	
Incidents	72	44	61.3	613
Injuries	42	9	22.3	223
Fatalities	10	4	7.5	75

Source: Federal Railroad Administration

Note: 549 of the total incidents occurred at public crossings

In the very worse cases railroad consolidation or relocation is a solution. Examples of such efforts in South Carolina have been completed in Columbia and Greenwood. A second project in Columbia centered around South Assembly Street is awaiting funding and a relocation effort has been considered in Orangeburg.

10.1.2 Columbia At-grade Rail Crossing Initiatives

Both CSXT and NS have more than one route running through Columbia and there are a number of junctions and at-grade rail crossings involving different line segments of both owners. Delays for both the rail carriers and area motorists can result at these locations, the latter where at-grade highway-rail crossings exist.

Columbia completed one major rail relocation project in the 1980s and has developed another involving Assembly Street and both Class I railroads. The intent of both projects is to remove and /or mitigate highway-rail conflicts to the benefit of both parties. The Assembly Street project is pending, awaiting funding. Grade crossing delays and safety concerns are the downside of the increased use of rail transportation and the related disbenefits have to be

considered. In addition, solutions to grade crossing problems, especially involving urban grade separations, are expensive and thus create significant long-term funding needs.

10.1.3 Horn Noise

Another common problem with grade crossings is the noise resulting from the use of locomotive horns for warnings of approaching trains. Relief is available through the creation of "quiet zones."

In 2005, the Federal Railroad Administration (FRA) issued a final rule[94] permitting the discontinuance of train horn warnings at grade crossings through several methods of deploying increased safety measures. While the most effective means is to eliminate crossings either through closure or grade separation, the former is not always attractive and the latter is costly. A number of alternate approaches classified as supplemental safety measures (SSMs) can be used, the selection of which depends in large part on the characteristics of the crossing. Most of the measures are directed at discouraging vehicular traffic from entering the crossing by using gates that block both sides of the roadway (four quadrant gates), medians or channelization devices to prohibit crossing onto the opposite side of the road to bypass the gate blocking the travel lane, or the use of paired one-way streets necessitating blockage of only one directional approach.

The City of Columbia has performed a quiet zone feasibility study which included 40 crossings on CSXT and NS routes running through the city. The project has yet to be implemented, however, due to a lack of funds.

10.1.4 Hazardous Materials

Transportation of hazardous materials (hazmat) is also of concern to both the public and the carriers and a number of initiatives are underway.

The railroads are assessing their routes to comply with federal regulations announced in November of 2008 for the transport of commodities comprising a toxic inhalation hazard. The results of an accident involving these materials are far too well known in this state. Railroads are required to route these substances on the safest most secure rail lines. These assessments examine population and traffic density, emergency response capability and known threats, among others. There is also an active effort to permit state or local authorities to ban hazmat movements through their jurisdictions.

The railroads, however, are concerned that these proposals would not eliminate risks, but would merely shift them from one location to another, and in the process increase exposure by increases in distances and time. They also consider the transport of toxic inhalation hazard materials, which they are required to do, a "potentially ruinous liability."[95]

Other initiatives include the means of making railroad tank cars safer through improvements in materials and construction to make them less likely to rupture in an accident. This effort is and has been a continuing process. The replacement of hazardous materials with safer chemicals is

[94] Subsequently amended August 16, 2006.
[95] Association of American Railroads position paper "Hazmat Transportation by Rail: An Unfair Liability"

another effort strongly supported by the railroad industry. Many cities have already found materials or processes to replace the use of chlorine.

10.2 Shipper Concerns

Rail users in the state have a variety of concerns regarding the rail industry (see letter from The South Carolina Manufactures Alliance in **Appendix A**. Most of the problems have at least partial solutions in truly competitive rail service. As the number of railroads operating in the country has declined through bankruptcies and mergers, so has competition as many areas have been left with only one railroad limiting transportation competition to other freight–transporting modes.

The railroads were essentially deregulated in large extent with the passage of the Staggers Rail Act of 1980. South Carolina, given provisions of the Act, relinquished its railroad regulatory power to the federal government. Therefore, there are limits as to what impact the state can have on many aspects of the competitive issue. The concern over competitive service has led to a number of proposals that would essentially "re-regulate" the railroads. The U.S. Government Accountability Office (GAO) has prepared several reports on the freight railroad industry since enactment of Staggers and one in 2006 after finding that the downward trend in railroad rates had been reversed in the early 2000s, recommended that the Surface Transportation Board (STB) conduct a "rigorous analysis" of the state of competition nationwide.

The study completed in 2008[96] found some evidence to support claims on both sides of the argument. For example, among several findings[97] were the following:

- "For most years in the 1987 to 2006 period of our study, the Class I railroad industry does not appear to be earning above normal profit," and
- "The increase in railroad rates experienced in recent years is the result of declining productivity growth and increased costs rather than the increased exercise of market power," however,
- "Different commodity groups face different markups of railroad rates over marginal costs," and,
- "Within commodity groups, shippers with no or very limited transportation options tend to pay higher rates than shippers with the same shipment characteristics who enjoy more or better transportation alternatives."

The study also concluded that "incremental policies such as reciprocal switching and terminal agreements have a greater likelihood of resolving shipper concerns via competitive response, and have a lower risk of leading to adverse changes in industry structure, costs and operations."

[96] Lauritis R. Christensen Associates, *A Study of Competition in the U.S. Freight Railroad Industry and Analysis of Proposals that Might Enhance Competition*, prepared for the Surface Transportation Board, November 2008
[97] Ibid, pp. Es-5 and Es-6

This conclusion suggests a way that the state, by developing policies and procedures, can promote the development of competitive rail service resulting from the presence of, or access to, more than one Class I railroad or "dual rail service." **Exhibit 10-2** depicts the areas of the state where both Class I railroads have trackage, and short line railroads have connections to both CSXT and NS. It is evident from examination of the exhibit that the presence of only one carrier exists in large areas of the state. Even in locations with lines of both large railroads, there are still many industries and sites with only one rail carrier. Relief in these cases would be through means of providing "open access" through trackage rights, haulage agreements, or reciprocal switching, all of which require carrier agreement and approval of the STB.

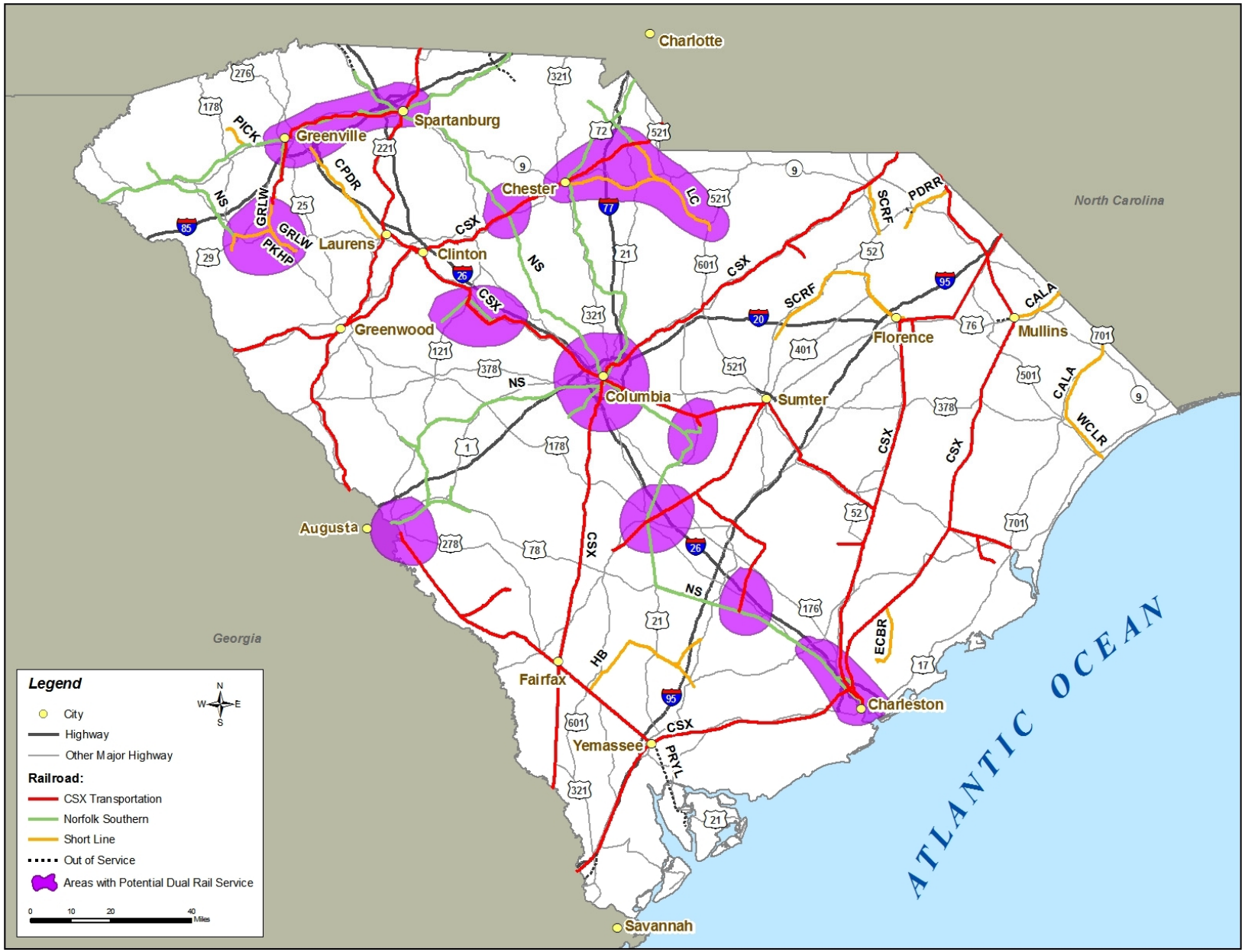
10.3 Freight Railroad Concerns

The largest issue the freight railroads have with the State of South Carolina is a lack of support for the industry. While many states have active rail programs designed and funded to preserve and improve the rail system within their boundaries and its service to businesses and citizens, South Carolina does not.

The state did participate in the federal rail freight programs LRSA and LRFA in the 1980s and 1990s. The state's participation was managed first by the Public Service Commission and then by the SCPR on behalf of the Governor's office until federal funding ceased. On the passenger side, there has been participation by the SCDOT's Department of Mass Transit in the efforts related to the Southeast High Speed Rail (SEHSR) Corridor, Southeast Rail Operations Study (SEROPs), and several of the commuter rail proposals. However, a comprehensive freight and passenger rail program is yet to be developed.

Throughout all components of this report are examples of programs and funding designed to promote rail transportation by neighboring states. Needs associated with both freight and passenger service are also documented and public approaches are suggested.

Exhibit 10-2: Areas with Potential Competitive Rail Service



11. Opportunities for Short Line Expansion

One potential means to expand competitive access or "dual rail" service is through the expansion of the state's short line railroads. There are, however, limited opportunities due principally to the significant areas of the state with only one Class I railroad.

11.1 Geographic Distribution of Railroads

As discussed in **Section 10, Exhibit 10-2** depicts the areas of the state with potential access to both Class Is. Note that with the exception of the Norfolk Southern (NS) Columbia-Charleston line, virtually all of the state east of U.S. 1 is dependent on CSXT for rail service. Five of the state's ten short lines lie within this geographic region. The Hampton and Branchville Railroad Company (HB), is just six miles away from the NS Charleston line, but extension is not likely due to extensive wetland crossings, as well as the need to bridge the Edisto River.

Three of the remaining five short line railroads do have connections with both CSXT and NS -- the Lancaster and Chester Railway Company (LC) running from Chester to Kershaw, and the Pickens, Honea Path Division / Greenville and Western Railway Company (GRLW) combination in the Anderson-Belton area. The Pickens connecting with NS at Easly and the Carolina Piedmont connecting with CSXT at Laurens are within reasonable distances of competing Class Is, but connecting lines would have to pass through a rapidly developing area. Connections and distances to nearest competing Class I carriers are summarized in **Exhibit 11-1.**

Note that two terminal railroads of the SC Public Railways provide connections to both NS and CSXT in Charleston. These operations are the subject of a more detailed discussion in **Section 9**.

Another potential means of expansion is through acquisition of additional connecting lines (most likely light density lines) or use of rights-of-way of abandoned lines that are still intact. Examination of **Exhibit 11-2** reveals several possibilities for extension of lines into new territory to reach potential sites, but few to expand "dual rail" service. In the latter case, the possibilities are limited to the short line carriers that already connect with both Class Is.

Exhibit 11-1: Short Line Connections to Class I Railroads

Short Line Railroads	Proximity to Class I railroads
Carolina Southern	Connects with CSXT, closest NS line 100 miles
East Cooper & Berkeley	Connects with CSXT, closest NS line 20 miles
Greenville & Western	Connects with CSXT and PKHP to reach NS
Hampton & Branchville	Connects with CSXT, closest NS line 6 miles
Lancaster & Chester	Connects with both CSXT and NS at Chester
Pee Dee River	Connects with CSXT, closest NS line 75 miles
Pickens	Connects with NS, closest CSXT line 11 miles
Pickens Honea Path Division	Connects with NS and G&W to reach CSXT
South Carolina Central	Connects with CSXT, closest NS line 40 miles
Carolina Piedmont	Connects with CSXT, closest NS line 10 miles

Note: All mileages are straight line distances.

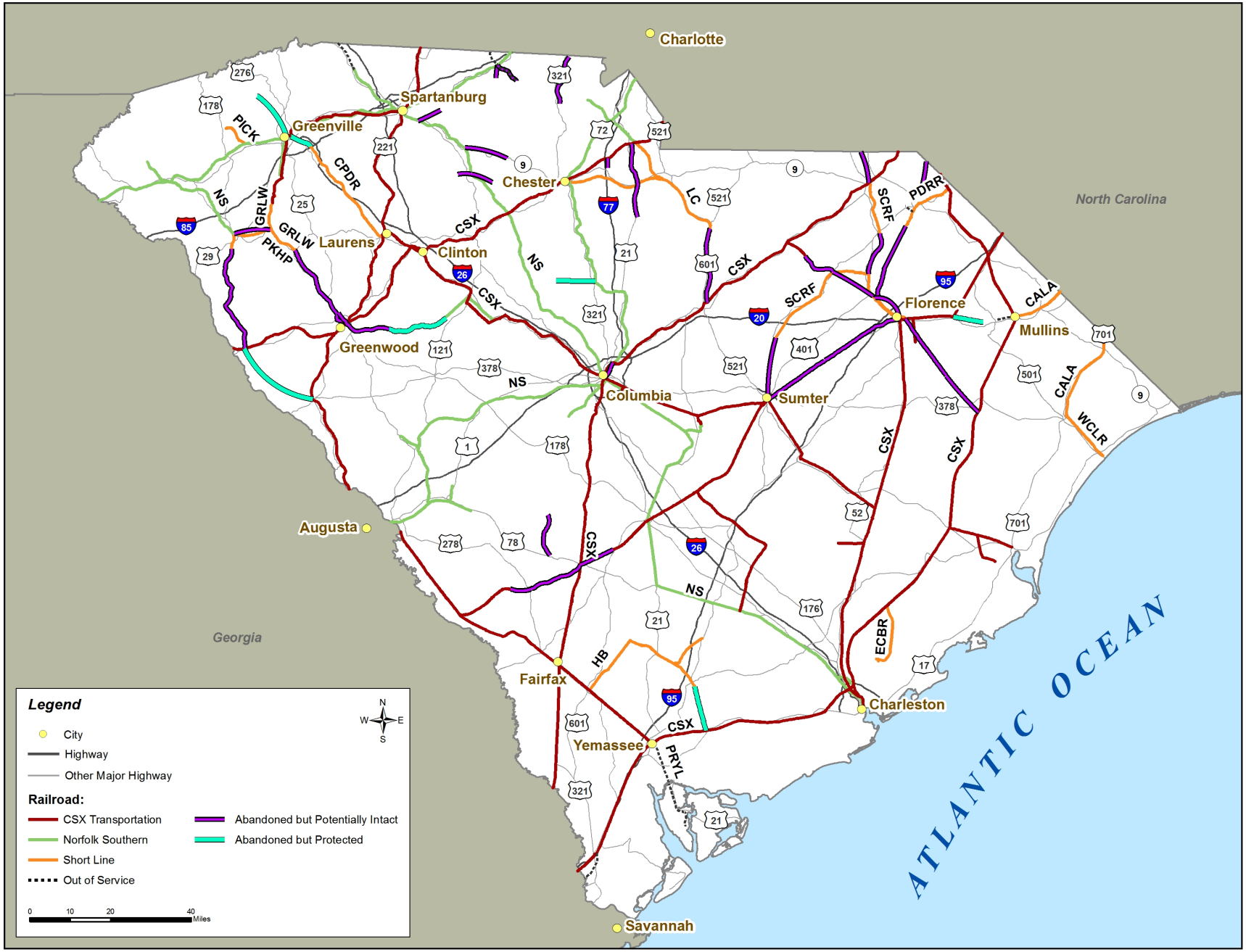



Exhibit 11-2: Potential Short Line Connections