2020

SOUTH CAROLINA STATEWIDE FREIGHT PLAN UPDATE

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

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1 INTRODUCTION

The movement of goods is critical to the economic health of a state, particularly in one such as South Carolina that has access to major ocean ports, seven regional airports, inland ports, rail lines and highways. On December 4, 2015, President Obama signed into law the Fixing America's Surface Transportation Act, or "FAST Act." On October 14, 2016 the U.S. Department of Transportation published Guidance on State Freight Plans and State Freight Advisory Committees. The purpose of this amendment of South Carolina's Statewide Freight Plan (SFP) is to satisfy the requirements as outlined in the FAST Act and respond to the critical role of transportation infrastructure and freight movement to the economy of the state.

The SFP includes an inventory of transportation assets that contribute to the movement of goods in South Carolina complete with all modes of transportation, regardless of asset ownership. The inventory also includes a profile of goods movement for South Carolina, summarizing the tonnages and commodities for both historical years and forecast years of data, aligning data analyses for the MTP and the SFP.

Similar to the national freight focus, a Statewide Freight Network is identified in the SFP. This system reflects the roadways, railroads, and other transportation infrastructure needed for the efficient movement of goods in to, out of, and through South Carolina. The identification of a Statewide Freight Network in South Carolina assists the state in identifying its critical rural freight corridors and helps SCDOT justify the inclusion of significant corridors in the National Multimodal Freight Network. The process of identifying this network in South Carolina can support SCDOT in making prioritization decisions regarding investments in transportation infrastructure across the state and can inform SCDOT of what roadway corridors, in addition to those included in the National Multimodal Freight Network, need particular attention to support efficient and safe goods movement.

Taking the overarching goals and objectives of the MTP, the SFP begins to address those performance measures identified for the MTP as well as expand upon the overall goals and incorporate the needs of the freight community of South Carolina, reflecting input from freight stakeholders and information derived from other elements of the MTP. The SFP identifies the freight system and infrastructure available for goods movement, presents estimated demands on the freight system, and recommends potential project and policy level strategies to accomplish these goals.

1.1 FAST Act and the South Carolina Statewide Freight Plan[1]

The National Multimodal Freight Policy (Section 70101 of Title 49 of the United States Code (U.S.C.)) states that it is the policy of the United States to maintain and improve the condition and performance of the National Multimodal Freight Network established under Section 70103

[1] https://www.federalregister.gov/documents/2016/10/14/2016-24862/guidance-on-state-freight-plans-and-state-freight-advisory-committees

to ensure that the Network provides a foundation for the United States to compete in the global economy and achieve the following goals:

1. Identify infrastructure improvements, policies, and operational innovations that-
    a. strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;
    b. reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and
    c. increase productivity, particularly for domestic industries and businesses that create high-value jobs;
2. Improve the safety, security, efficiency, and resiliency of multimodal freight transportation;
3. Achieve and maintain a state of good repair on the National Multimodal Freight Network;
4. Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;
5. Improve the economic efficiency and productivity of the National Multimodal Freight Network;
6. Improve the reliability of freight transportation;
7. Improve the short- and long-distance movement of goods that-
    a. travel across rural areas between population centers;
    b. travel between rural areas and population centers; and
    c. travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;
8. Improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity;
9. Reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and
10. Pursue the goals described in Title 23 U.S.C. 167 in a manner that is not burdensome to State and local governments.

49 U.S.C. 70202 lists ten required elements that all State Freight Plans must address for each of the transportation modes:

1. An identification of significant freight system trends, needs, and issues with respect to the State;

2. A description of the freight policies, strategies, and performance measures that will guide the freight-related transportation investment decisions of the State;

3. When applicable, a listing of—

a. multimodal critical rural freight facilities and corridors designated within the State under 49 U.S.C. 70103 (National Multimodal Freight Network);

b. critical rural and urban freight corridors designated within the State under 23 U.S.C. 167 (National Highway Freight Program);

4. A description of how the plan will improve the ability of the State to meet the national multimodal freight policy goals described in 49 U.S.C. 70101(b) and the national highway freight program goals described in 23 U.S.C. 167;

5. A description of how innovative technologies and operational strategies, including freight intelligent transportation systems, that improve the safety and efficiency of the freight movement, were considered;

6. In the case of roadways on which travel by heavy vehicles (including mining, agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate the condition of the roadways, a description of improvements that may be required to reduce or impede the deterioration;

7. An inventory of facilities with freight mobility issues, such as bottlenecks, within the State, and for those facilities that are State owned or operated, a description of the strategies the State is employing to address those freight mobility issues;

8. Consideration of any significant congestion or delay caused by freight movements and any strategies to mitigate that congestion or delay;

9. A freight investment plan that, subject to 49 U.S.C. 70202(c), includes a list of priority projects and describes how funds made available to carry out 23 U.S.C. 167 would be invested and matched; and

10. Consultation with the State Freight Advisory Committee, if applicable.

The SFP addresses these elements and continues to identify strategies for incorporating freight planning into regular practice for SCDOT and partner agencies. This SFP also includes a statewide freight network for the state and relative performance measures to identify and prioritize projects impacting the performance of the freight transportation system of South Carolina.

1.2 Freight Transportation Goals and Objectives for South Carolina

The SFP is intended to function as a stand-alone supplement to the MTP. The development of the MTP began with a comprehensive process of Vision development and the development of overarching goals, objectives and performance measures. The project management team for the MTP executed an integrated process of data collection, information and survey data gathering, and analysis. This SFP reflects and references elements of the MTP as well as the Statewide Interstate Plan, Statewide Strategic Corridor Plan, the Statewide Transit and Human Services Coordination Plan, and the Statewide Rail Plan.

The vision statement of the MTP is as follows:

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

In addition to this vision statement, a series of goals were identified to further develop the statewide plan. For each of these goals, an additional series of itemized metrics were developed as performance measures to implement throughout the statewide plan.

- **MOBILITY AND SYSTEM RELIABILITY GOAL:** Provide surface transportation infrastructure and services that will advance the efficient and reliable movement of people and goods throughout the state.
- **SAFETY GOAL:** Improve the safety and security of the transportation system by implementing transportation improvements that reduce fatalities and serious injuries as well as enabling effective emergency management operations.
- **INFRASTRUCTURE CONDITION GOAL:** Maintain surface transportation infrastructure assets in a state of good repair.
- **ECONOMIC AND COMMUNITY VITALITY GOAL:** Provide an efficient and effective interconnected transportation system that is coordinated with the state and local planning efforts to support thriving communities and South Carolina's economic competitiveness in global markets.
- **ENVIRONMENTAL GOAL:** Partner to sustain South Carolina's natural and cultural resources by minimizing and mitigating the impacts of state transportation improvements.

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

From a federal perspective, additional goals for a statewide freight plan are identified in the **FAST Act**. The national goals established in 23 U.S.C. 167 are incorporated into the South Carolina SFP:

1. to invest in infrastructure improvements and to implement operational improvements on the highways of the United States that-
    a) strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;
    b) reduce congestion and bottlenecks on the National Highway Freight Network;
    c) reduce the cost of freight transportation;
    d) improve the year-round reliability of freight transportation; and
    e) increase productivity, particularly for domestic industries and businesses that create high-value jobs;
2. to improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;

3. to improve the state of good repair of the National Highway Freight Network;
4. to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;
5. to improve the efficiency and productivity of the National Highway Freight Network;
6. to improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address highway freight connectivity; and
7. to reduce the environmental impacts of freight movement on the National Highway Freight Network.

The following pages contain a series of recommendations that will advance both national freight goals and SCDOT's own transportation goals and assist in improving the efficient movement of freight on the National Highway Freight Network. As a planning and programming tool, this plan will be utilized as a guide in addressing statewide freight program investment priorities. As a dedicated document associated with the statewide multimodal planning process, the Statewide Freight Plan will improve the ability of the State to meet the national multimodal freight policy goals described in Section 49 U.S.C. 70101(b) and the National Highway Freight Program goals described in 23 U.S.C. 167.

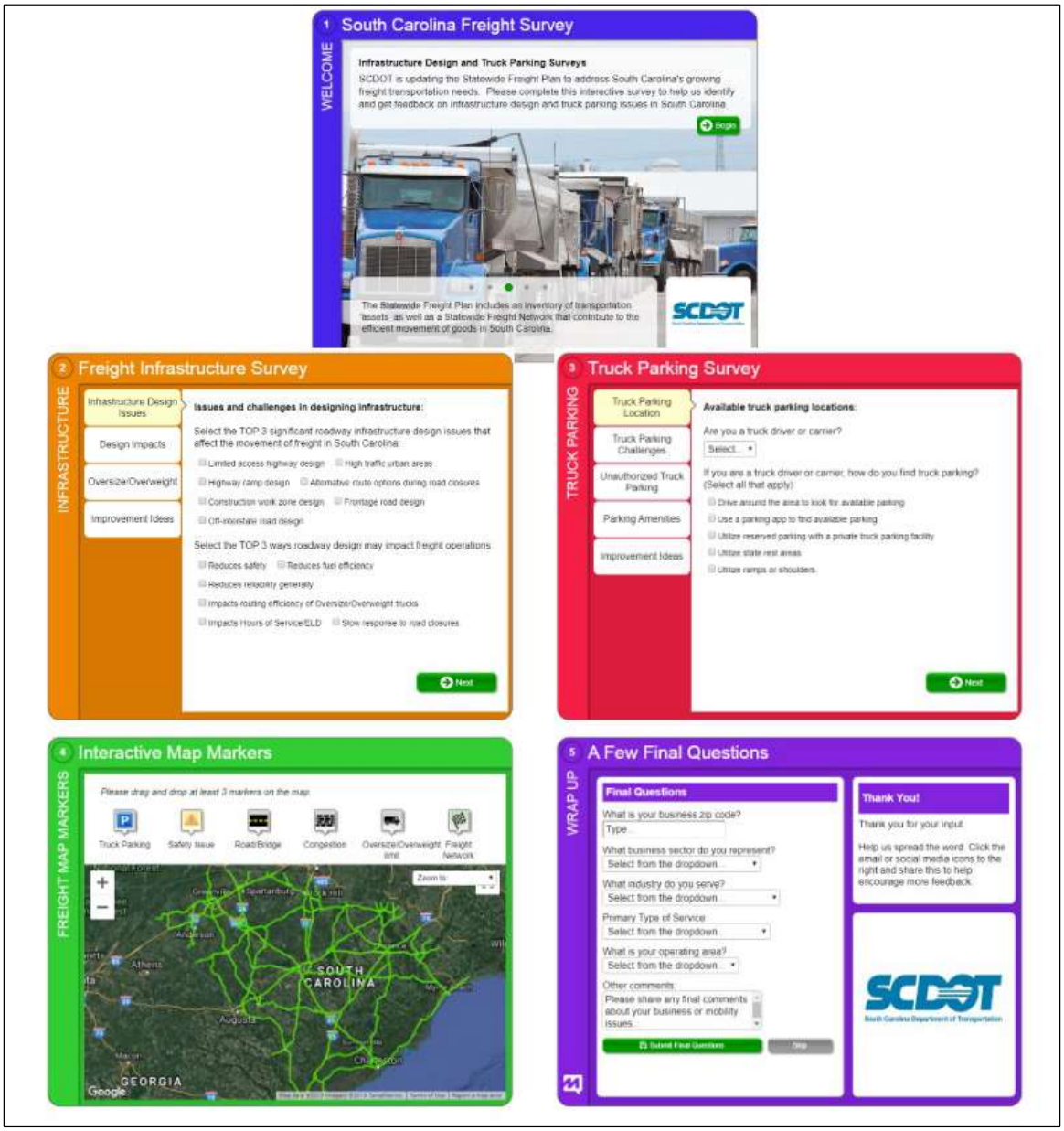
1.3 Stakeholder Input

Utilizing the *MetroQuest* online public engagement product, in September 2019 the South Carolina Department of Transportation (SCDOT) launched the South Carolina Freight Mobility Survey (**Appendix A**) specifically targeted at freight industry partners who operate and travel the transportation infrastructure in South Carolina (**Figure 1-1**). The online survey was broadcast to members of the transportation industry active in South Carolina, intermodal partners, state and local government agencies. The interactive survey addressed the following topics:

- **ROADWAY INFRASTRUCTURE:** Feedback included roadway design, design impacts, oversize/overweight freight, and requested suggestions for improvement.
- **TRUCK PARKING:** Questions included location of parking, amenities, unauthorized parking and parking challenges, and a request for truck parking improvement ideas.
- **INTERACTIVE ISSUES/FREIGHT NETWORK MAP:** Participants were asked to identify at least three or more freight mobility improvement or concern areas that affect day-to-day operation/freight mobility**.** Through the use of interactive map markers SCDOT sought input on Truck Parking, Safety, Road and Bridge, Congestion, and Oversize/Overweight issues within South Carolina. Additionally, requested comment on proposed updates to the Statewide Freight Network.

A limitation to the accuracy of this information was the sample size, rate of survey completion, and with general anonymity of the respondent, the ability to clarify or fact check responses. The value of stakeholder input posed significant benefit for the plan by providing practical operator experience in comparison to the policy and investment outcomes of previous planning efforts.

Figure 1-1: South Carolina Freight Mobility Survey



1.3.1 Survey Audience

A link to the survey was provided to various partners including freight and logistics stakeholders, Metropolitan Planning Organizations (MPOs), Councils of Governments (COGs), the South Carolina Freight Logistics/Advisory Council and trucking industry partner outlets. The intended audience was, but was not limited to:

- Carriers among the transportation modes, e.g. air, highway, rail, water
- Manufacturers and industrial facilities
- 3PL, 4PL, logistics, freight forwarders
- Distributors

- Shippers/Receivers
- Advocacy groups, associations
- State and Local Government Offices
- Planning organizations/Freight Planners

A total of 66 participants completed the survey in the four-week period that the survey as available through a dedicated link on the SCDOT website.

1.3.2 Survey Structure

The interactive survey utilized an online form consisting of twenty-two multiple choice and open-ended/comment questions. The survey was formatted into five sections (or screens), listed below:

- Introduction to and purpose of the South Carolina Freight Mobility Survey
- Freight Infrastructure and design impacts input
- Truck Parking availability and challenges
- Interactive map to identify specific locations for infrastructure and/or truck parking improvement
- A final screen requesting basic demographic and operations area questions

1.3.3 Respondent Demographics

While completing demographic questions was not required, among the forty-one respondents who participated in the online survey and provided demographic information, the following business sectors were represented: trucking business owners, transportation and warehousing sector, manufacturing, shipper-receiver, truck driver, ports and state or local government. The majority of responders indicated that they operated in the Southeast Region while others indicated that they operated in South Carolina only. A small number indicated that their operating area was national or global or that the question related to operating area did not apply. Industry served by respondents was overwhelming described as “freight of all kinds.” Other industries represented included construction and building materials, automotive, transportation equipment, retail, petroleum, lumber or wood products and furniture. The major types of service provided by survey respondents included truck load, less than truck load, intermodal, logistics services and “other,” followed by tanker, motor vehicle carrier, household goods and flatbed services.

1.3.4 Survey Highlights

1.3.4.1 Freight Infrastructure

Survey participants were asked to help SCDOT better understand issues surrounding roadway infrastructure as it relates to truck mobility. Feedback topics included roadway design, design impacts, oversize/overweight freight and requested suggestions for improvement.

Participants were asked to select the top three significant roadway infrastructure design issues that affect the movement of freight in South Carolina. The top three issues collected from respondents indicated that high traffic volume in urban areas was a significant concern (26%), having alternative route options during road closures (17%) and highway ramp design (16%).

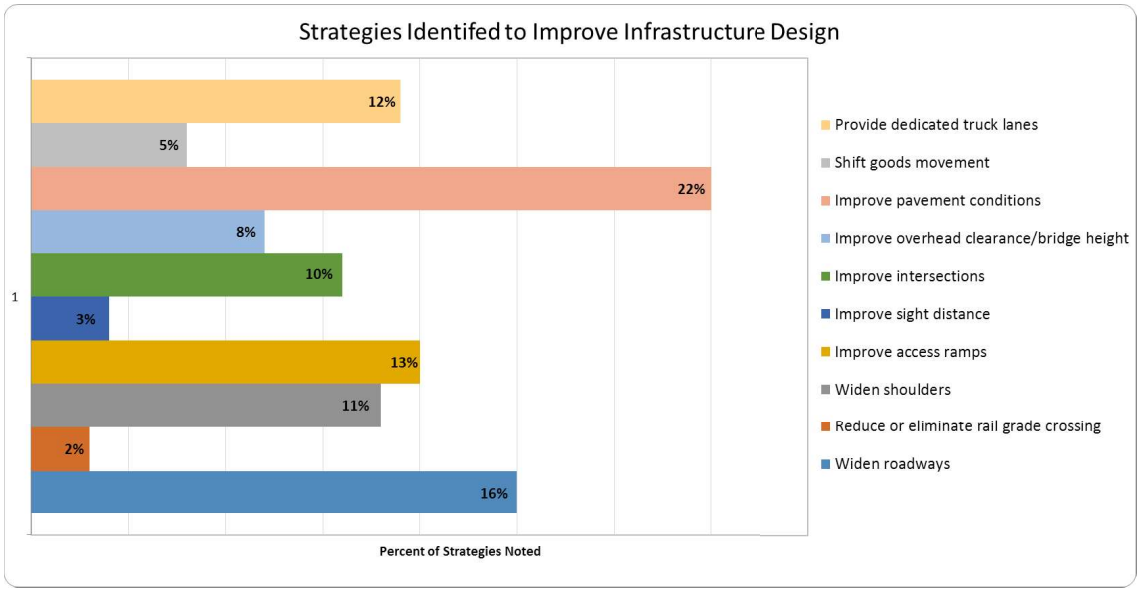
Other infrastructure design concerns included limited access highway design (15%), off interstate road design (13%), construction work zone design (9%) and frontage road design (3%).

The follow-on question to infrastructure design concerns asked participants to select the top three ways roadway design may impact freight operations. The top three responses were: reduces safety (25%), reduces reliability (24%), and impacts hours of service (22%). Other impacts included slow response to road closures (10%), impact to routing efficiency of oversize/overweight trucks (9%) and reduces fuel efficiency (9%). When asked for comments on design impacts to freight mobility, feedback included concerns regarding "weight limits on interstates," "tight interstates," "bottlenecks on the South Carolina I-85 corridor," "reduced lane size during construction," capacity in general, and safety issues such as incident management and speed enforcement.

Questions regarding infrastructure continued by asking participants to identify their top three challenges transporting oversize/overweight (OSOW) freight. The top three challenges identified by respondents were absent or narrow shoulders (19%), lane widths (17%) and bridge height and weight restrictions (16%). Rough pavement was also a ranking concern at 15% response selection. Remaining concerns were access ramp design (7%), construction work zones (6%), vertical clearance (utilities) (6%), line of site (3%) and lack of frontage roads (1%). Comments related to OSOW included concern regarding the length of time that it takes to get an OSOW permit in South Carolina ("longer than neighboring states"), pot holes and privately owned vehicle (POV) driver behavior ("darting around big trucks").

As shown in **Figure 1-2**, respondents were asked to select their top three strategies for improving infrastructure design (overall) which could result in increased efficiency of freight operations in South:

Figure 1-2: Strategies to Improve Infrastructure Design



1.3.4.2 Truck Parking

Survey participants were asked to help SCDOT understand issues surrounding truck parking. Questions were asked regarding location of parking, amenities, unauthorized parking, parking challenges and truck parking improvement ideas. It is interesting to note that of the responders for this section of survey questions, thirty-seven (70%) indicated that they were truck drivers or carrier. The remaining indicated that they were not a truck driver or carrier.

Truck drivers/carriers were asked to select all methods use to find truck parking (**Table 1-1**):

Table 1-1: Methods Used To Find Truck Parking

How Do You Find Truck Parking?	Response Count	Percent
Drive around the area to look for available parking	19	24%
Use a parking app to find available parking	10	13%
Utilize reserved parking with a private truck parking facility	17	22%
Utilize state rest areas	23	29%
Utilize ramps or shoulders	10	13%
Total	**79**	**100%**

Participants shared the top truck parking challenges and sources of parking frustration for truck drivers: lack of overnight parking options (21%), hours of service limitations (17%), no authorized parking at the shipper/receiver location (17%) and limited parking available at state rest areas (13%). Responses also indicated lack of long term parking options (10%), lack of or limited alternative parking sites (10%), limited emergency parking for weather or unexpected closures (8%) and lastly, the lack of availability of advance reserved parking (5%).

Truck drivers/carriers were asked what the primary reason was that might force them to park in an unauthorized area. Hours of service demands was the number one reason a driver would choose to park in an unauthorized area (57%) followed by emergency weather/road closures and limited access to truck parking (both at 15% response rate). Seven percent (7%) of responders indicated that they were unaware of available parking areas. When asked how frequently they are forced to use unauthorized parking on average, most respondents stated that did not apply (29%). However, 21% of responders shared that they are forced to use unauthorized parking multiple times per week and 18% responded that they park in unauthorized areas once a week.

When asked how to improve truck parking in South Carolina as well as a canvas of responders for preferred amenities, a majority of responders shared that safety features such as lighted areas and patrolled locations were important as well as parking locations with restroom facilities. Participants also desired rest areas that were easy to navigate when pulling in, parking and pulling out, areas that are close to restaurants. Other comments included suggestions to reopen closed truck parking and rest areas, increase the amount of truck only parking areas, expand current rest areas to increase truck parking spaces, and increased truck parking near the Port.

1.3.4.3 Freight Survey Interactive Map

Finally, participants were offered an opportunity to utilize and interactive map of the state to identify locations affecting freight mobility and to suggest changes (add/remove) to the proposed 2040 Statewide Freight Network (**Figure 1-3**). We asked responders to drag and drop at least three topical markers onto the map and to provide additional clarifying information when placing a marker by using the comment box following each suggestion. Topical issue markers were: Truck Parking, Safety Issue, Road/Bridge Issue, Congestion, Oversize/Overweight Limitation, and a Freight Network Comment marker.

A total of 168 map markers were placed in the interactive map by participants. The majority of feedback concerned congestion issues/locations (38%) and safety issues/locations (30%). Most congestion issues were predominantly specified on the South Carolina interstates as shown in **Figure 1-4.** There was some correlation to the placement of the safety issue markers (**Figure 1-5**) to congestion markers on interstates or metropolitan locations (Charleston, Columbia and Greenville). Significant congestion and safety concerns were identified in the Charleston region, specifically on the I-526 east and west corridors (**Figure 1-6**); the Columbia metropolitan area (**Figure 1-7**) and the Greenville/Spartanburg region along and adjacent to the I-85 corridor (**Figure 1-8**). The other significant area of concern was road design and bridge height issues at various locations around the state (**Figure 1-9**). While not all participants provided specific information or comment when placing a marker, a listing of all comments received through the interactive map marker placement exercise is included as **Appendix B** of this document.

Figure 1-3: SCDOT Freight Mobility Survey - Interactive Map

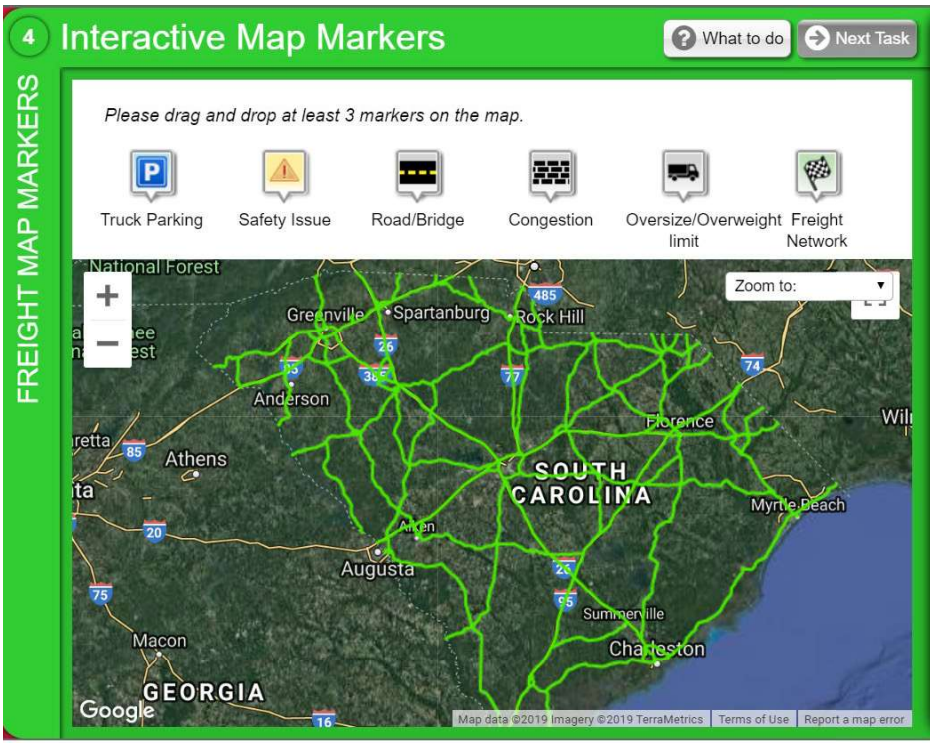


Figure 1-4: SCDOT Freight Mobililty Survey - Congestion Marker Locations

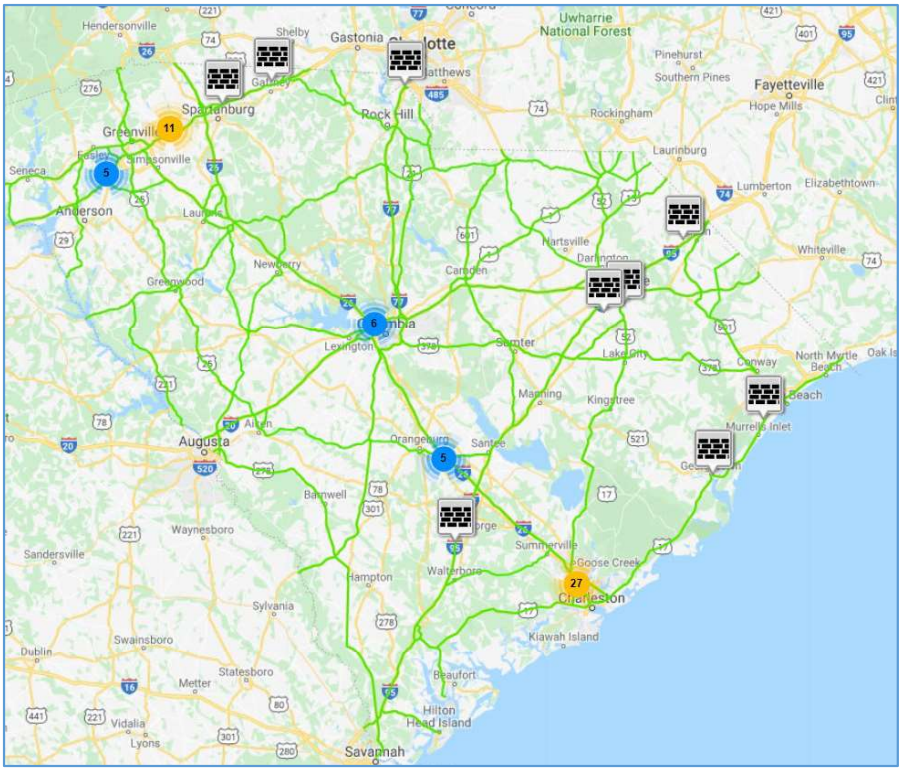


Figure 1-5: SCDOT Freight Mobility Survey - Safety Marker Locations

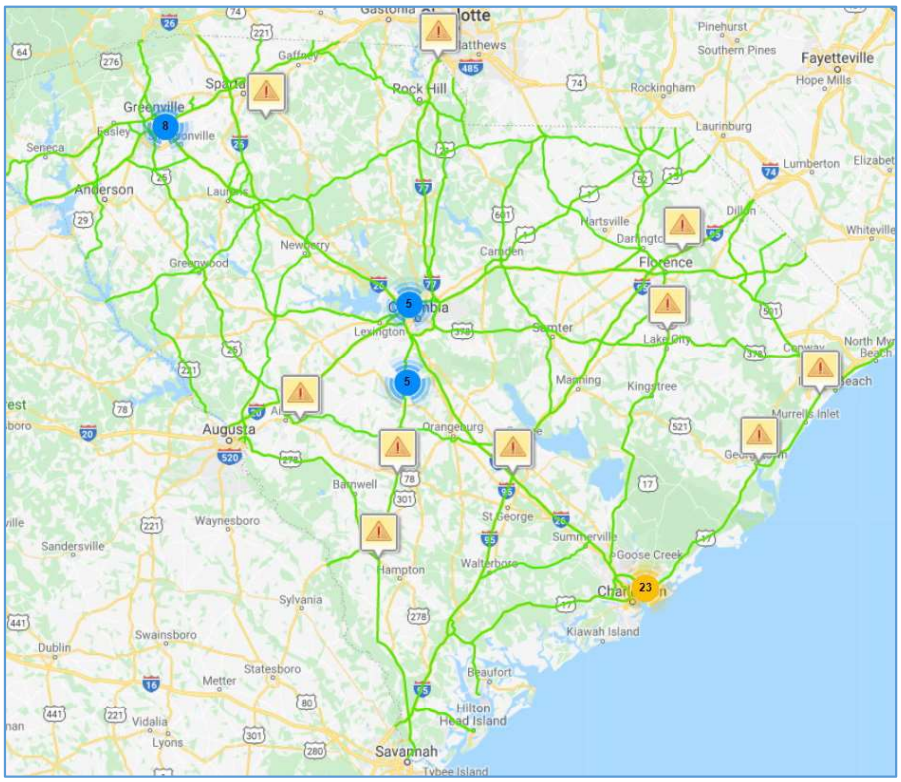


Figure 1-6: SCDOT Freight Mobility Survey - Congestion & Safety Issues - Charleston Region

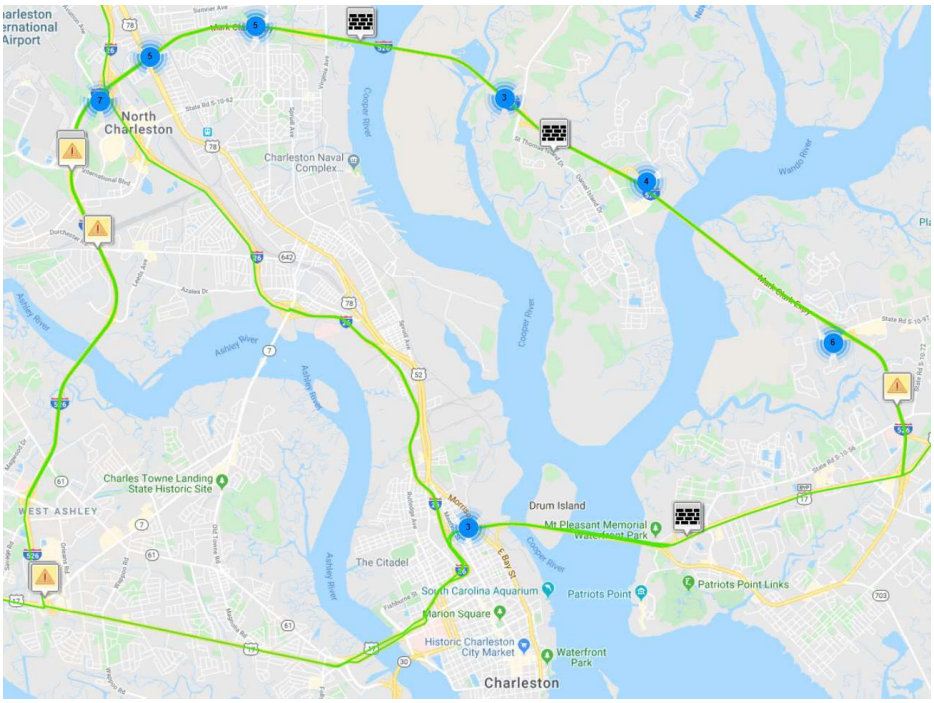


Figure 1-7: SCDOT Freight Mobility Survey - Congestion & Safety Issues - Columbia

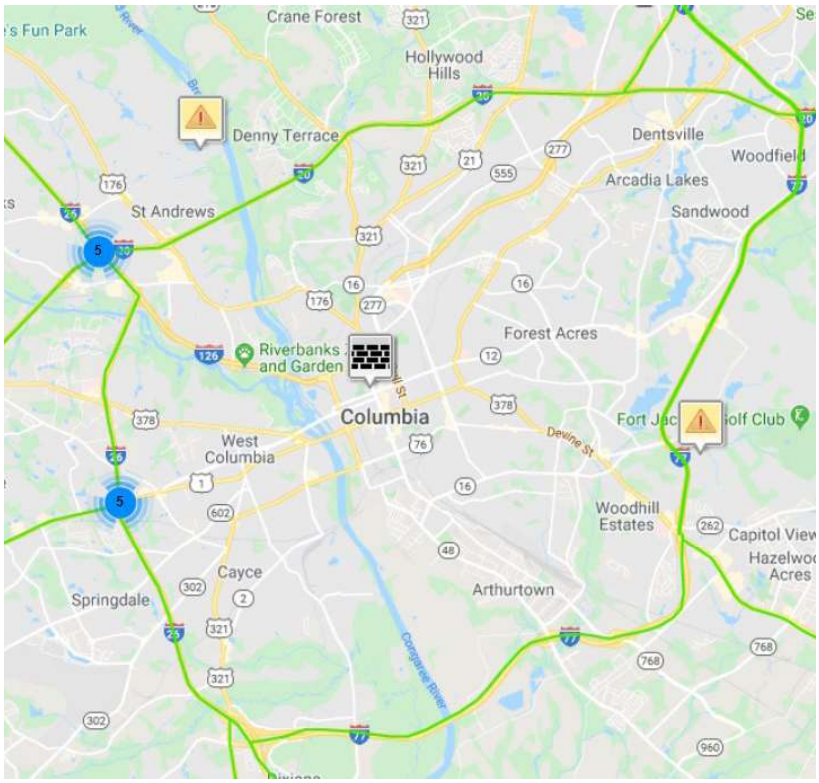


Figure 1-8: SCDOT Freight Mobility Survey - Congestion & Safety Issues - Greenville/Spartanburg

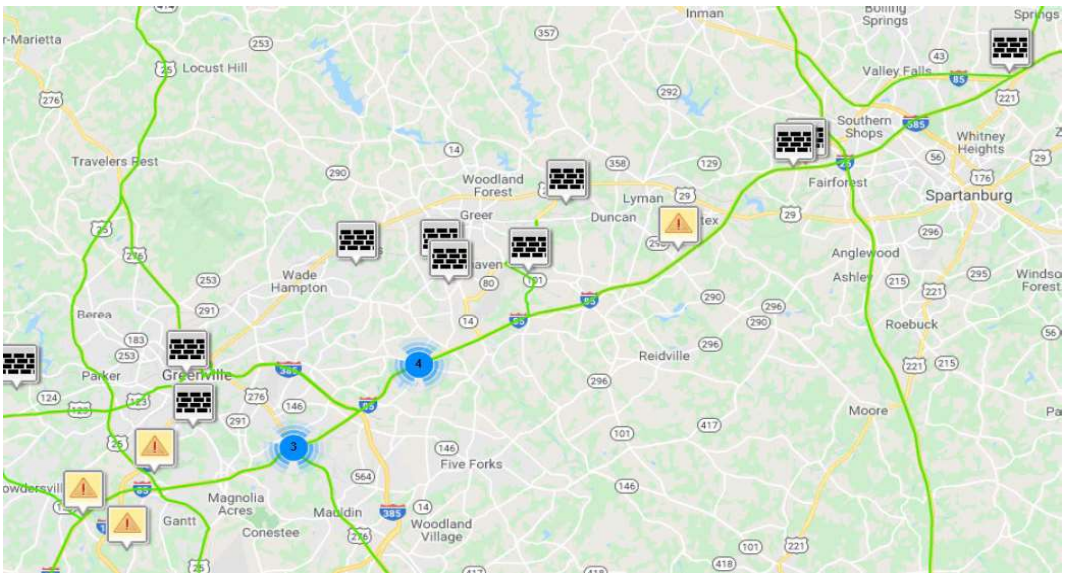
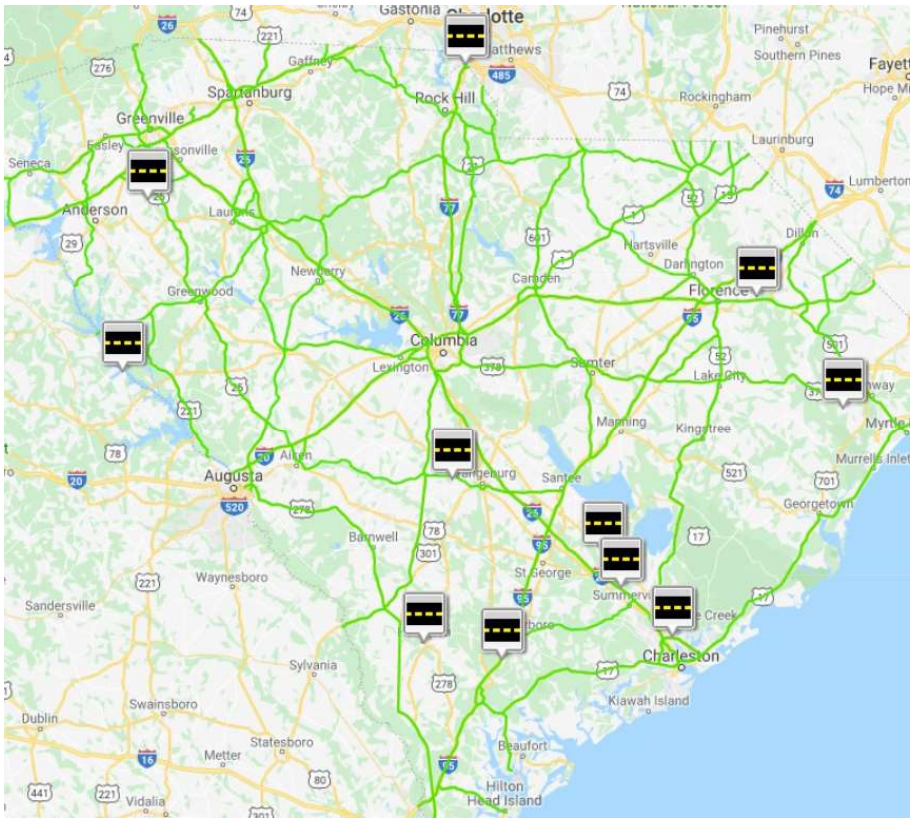


Figure 1-9: SCDOT Freight Mobility Survey - Road Design & Bridge Height Markers



1.4 Freight Advisory Committee / South Carolina Logistics Council

The FAST Act provides guidance for the development of a SFP to establish a State Freight Advisory Committee to assist in the development of the plan and provide an ongoing advisory role in statewide freight planning. While USDOT has no statutory requirement that a State Freight Advisory Committee approve a State Freight Plan, SCDOT partners with the "South Carolina Logistics Council" which will support SCDOT Freight planning efforts as the Freight Advisory Committee (FAC), participate in the late phases of the development of the SFP and continue monitoring on-going freight related planning activities. The inaugural meeting of this committee was held in May 2014. The Logistics Council meets on a quarterly basis.

1.4.1 Purpose for the State Freight Advisory Committee

As recommended by the FAST Act and USDOT-published *Guidance on State Freight Plans and State Freight Advisory Committees (October 2016)*, the purpose of the South Carolina State Freight Advisory Committee is twofold:

- As drafts of the Statewide Freight Plan become available, the SFAC would be consulted for review and to assist in the finalization of the SFP;

- After the completion of the SC MTP and SFP, the Committee's long term purpose is to continue to provide guidance to SCDOT on freight transportation matters, issues, trends, and needs.

1.4.2 Duties and Responsibilities of the State Freight Advisory Committee

A list of proposed duties and responsibilities of a State Freight Advisory Committee follows. The SFAC's proposed duties and responsibilities are intended to compliment and not duplicate the roles or responsibilities of existing state mandated committees.

Through a consultative process, the State Freight Advisory Committee will:

1) Make recommendations and propose methods, strategies, or technologies to improve, promote, and preserve the freight rail, water, highway, air cargo, and intermodal facilities and transportation systems in South Carolina;

2) Provide guidance on freight-related transportation issues including priorities, projects, and funding needs;

3) Promote freight related transportation systems and capital infrastructure improvements throughout South Carolina;

4) Assist SCDOT in ensuring that the department's program prioritization process and methods for determining priorities among locations remain accurate and responsive to freight needs;

5) Guide SCDOT's continuous state transportation systems planning processes;

6) Provide a forum for exchange of information concerning the public and private sectors' view of needs and requirements in the state's transportation systems; and

7) Participate in future statewide freight planning efforts.

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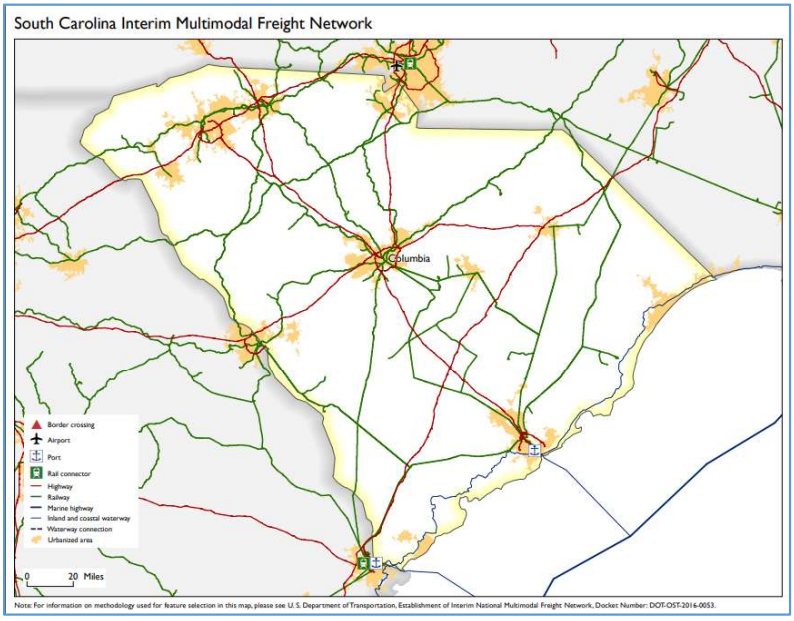
2 FREIGHT INFRASTRUCTURE, CONDITIONS AND THE STATEWIDE FREIGHT NETWORK

Preserving and enhancing the infrastructure that moves goods through and within South Carolina for all modes is important. Continuing to provide important connections for freight generators/attractors to the routes moving freight and connections between modes is critical in retaining existing industries and attracting new industries in the state. Identifying a Statewide Freight Network (SFN) including roadway and railway networks and the modes they connect is an important step in identifying what corridors and assets are important to the movement of freight.

2.1 Interim National Multimodal Freight Network

The Interim Multimodal Freight Network is based on the statutory requirements identified in 49 U.S.C. 70103(b)(2) and includes the National Highway Freight Network , the freight rail systems of Class I railroads, the public ports of the United States that have total annual foreign and domestic trade of at least 2,000,000 short tons, the inland and intracoastal waterways of the United States, the Great Lakes, the St. Lawrence Seaway, and coastal and ocean routes along which domestic freight is transported, the 50 airports located in the United States with the highest annual landed weight, and other strategic freight assets such as railroad connectors and border crossings. The Under Secretary of Transportation announced the Interim National Multimodal Freight Network via Federal Register on June 6, 2016 which also serves as the Interim NMFN. **Figure 2-1** illustrates the South Carolina Interim National Multimodal Freight Network identified by the Under Secretary.

Figure 2-1: South Carolina Interim Multimodal Freight Network



Source: https://www.transportation.gov/Freight/South-Carolina-State-Map, accessed December 2019

2.2 Profile of South Carolina Freight Transportation Assets

Reemergence of high volumes of waterborne traffic at the Port of Charleston facilities in recent decades has and is continuing to shape the current multimodal infrastructure within the state. Investment has occurred, publicly and privately funded, generating a network reflective of the modal needs of the freight transportation system user. As the needs of the user change or shift in priority, the current system will serve as the foundation on which investments will be applied. This section will provide a catalogue of each mode's specific infrastructural features.

2.2.1 Highway

Highway goods movement is a cornerstone to the national freight transportation system. Highway, or "trucking", transports 70 percent of all the tonnage in the U.S. This takes place as "over-the-road" or short to long distance truck trips and "final mile" or pick-up and delivery movements. The dominance of the mode is derived through access and availability. Except where shippers or receivers have constructed facilities with immediate access to rail, water, or air assets, trucks serve as a connector between the alternative mode and the user or as the single transport mode. The lack of immediate access to other modes extends beyond the individual user. Resulting from geography, consolidations or bankruptcies, and operational decisions within the individual modes, communities and regions have been left without direct service by the other modes of water, rail or air. This lack of access to alternative modes has resulted in 80 percent of those communities, across the country, singularly dependent on trucking for access to goods and materials.

Availability is a second factor in this mode's dominant position in the freight transportation system. The "barrier to entry" or level of start-up and continuing costs for trucking is the lowest of all the modes. This characteristic has generated an extremely high number of providers. The lower operating costs, as compared to rail or air, and the elevated number of participants in this mode has produced a trend of lower costs to users accompanied by a higher level of service customization to meet the individual user's needs. As a result, users engage highway transport, in many cases, where alternative modes are accessible, as a part of or encompassing the entire transportation solution.

Highway infrastructure consists of several key elements. The key associated features of the infrastructure can be examined through a comprehensive examination of:

- Functional Class
- Bridges
  - Minimum Vertical Clearance
  - Weight or Load Restrictions
- Railroad Crossings
  - At-grade
  - Grade Separated

2.2.1.1 Infrastructural Features

The dominant feature utilized by trucking is the publicly available roadway network. This network consists of multiple classifications, each assigned to a specific roadway in a collaborative manner by the involved jurisdictions. Assignment of the specific classification is dependent upon the intended use. The major functional systems, as defined by American Association of State Highway and Transportation Officials (AASHTO) Design Policy Manual, are Freeway, Arterial, Collectors, and Local Streets. As local streets are typically not intended to carry truck traffic, except to accommodate immediate access for pick-up or delivery functions, the focus for truck movements are Collector and above. These three classifications have additional sub-classifications within each, providing further definition, e.g. urban versus rural, principle versus minor.

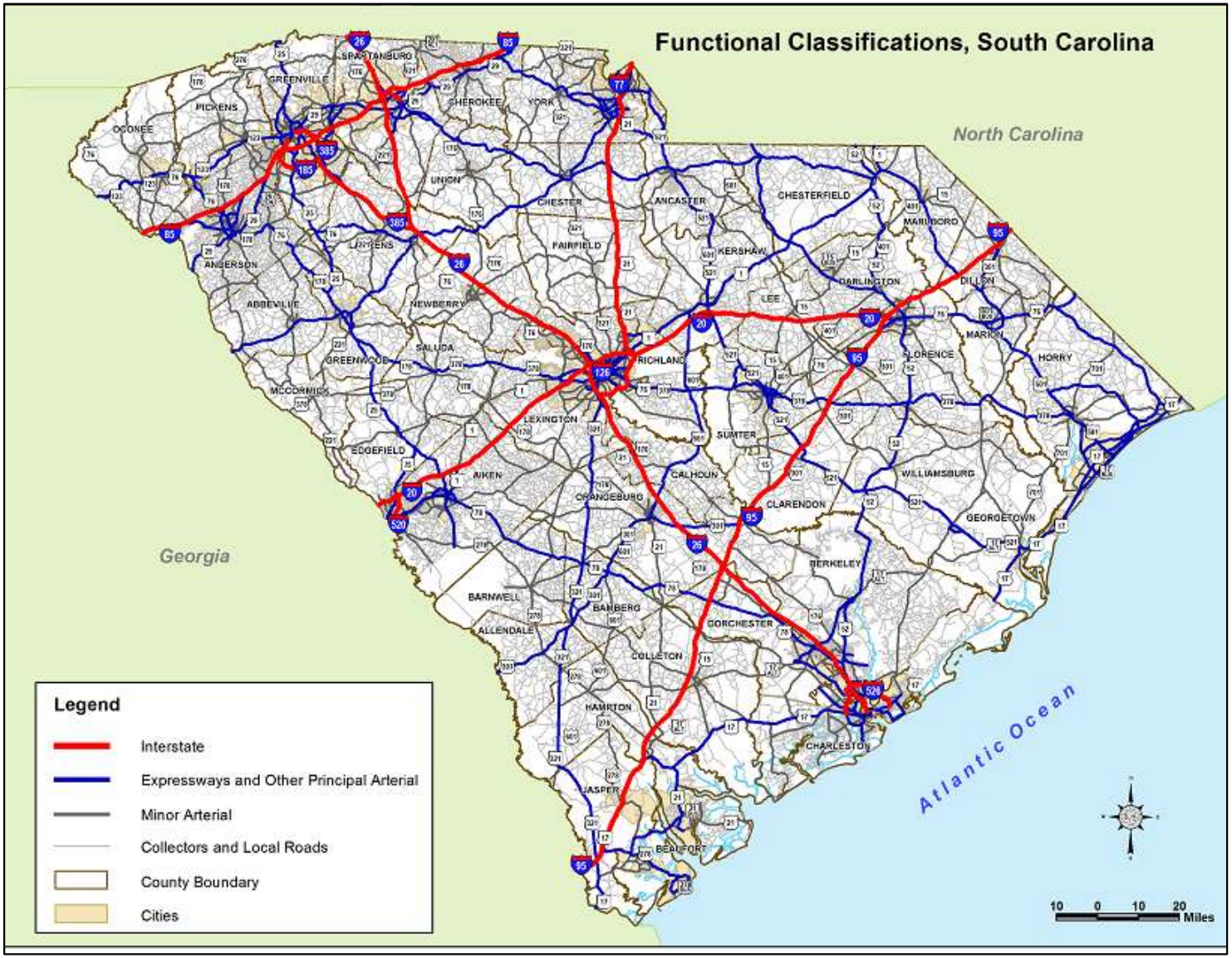
SCDOT maintains the fourth largest center line miles measured state network in the nation. **Table 2-1** notes the total mileage for each of the classifications inclusive of state-maintained mileage, with Figure 2-2illustrating the presence of each of these classifications within the state.

Table 2-1: Mileage, by Classification in South Carolina (2018)

Road Classification		
	Miles	Lane Miles
Rural Roads		
Rural Interstates	546.3	2,239.9
Rural Expressway	44.6	186.8
Rural Principal Arterials	1,545.6	4,655.2
Rural Minor Arterials	2,985.1	6,310.2
Rural Major Collectors	10,020.3	20,124.2
Rural Minor Collectors	2,031.2	4,062.5
Rural Local Roads	37,955.6	75,642.7
Rural Totals	**55,128.7**	**113,221.5**
Urban Roads		
Urban Interstates	304.3	1,606.1
Urban Expressway	83.8	366.5
Urban Principal Arterials	1,064.1	4,113.6
Urban Minor Arterials	1,775.8	4,921.0
Urban Major Collectors	2,811.1	5,886.5
Urban Minor Collectors	77.4	155.8
Urban Local Roads	16,746.7	33,622.9
Urban Totals	**22,863.2**	**50,672.4**
Rural + Urban	**77,991.9**	**163,893.9**

Source: 2018 SCDOT - Road Data Services - RIMS (Roadway Information Management System)

Figure 2-2: Functional Classifications, South Carolina



Functional classification and the associated characteristics may be used as a predictor of truck usage. Though final construction may be inconsistent with the design characteristics, as a whole, the intended use and design vehicle will guide features that may induce commercial operator usage.

2.2.1.2 Interstates

The first and most identified functional class for truck use is the interstate system. This limited access highway provides a reliable and safe roadway to transport goods typically over long distances. Though restricted by the ability to access other roadways, local or shorter distance trips may gravitate to these systems. This classification is described as:

- Designed for uninterrupted flow
- Access to the freeway facility is controlled and limited to ramp locations. A freeway experiencing extreme congestion differs greatly from a non-freeway facility experiencing extreme congestion, in that the conditions creating the congestion are commonly internal to the facility, not external to the facility.
- May have interactions with other freeway facilities as well as other classes of roads in the vicinity. The performance of a freeway may be affected when demand exceeds capacity on these nearby road systems.

Five interstates travel through the state; I-20, I-26, I-77, I-85, and I-95.

- I-20
  - Termini
    - Near Florence, SC, at the junction with I-95
    - Near Kent, TX, at the junction with I-10
  - Total distance is 1,539 miles with 141 miles within the state
  - Major municipalities
    - Florence, SC
    - Columbia, SC
    - Augusta, GA
    - Atlanta, GA
    - Birmingham, AL
    - Jackson, MS
    - Dallas/Ft Worth, TX
- I-26
  - Termini
    - In Charleston, SC, at the junction with U.S. 17
    - In Kingsport, TN, at the junction with U.S. 11W
  - Total distance is 347 miles with 221 miles within the state
  - Major municipalities
    - Charleston, SC
    - Columbia, SC
    - Spartanburg, SC
    - Asheville NC

- I-77
  - Termini
    - Near Columbia, SC at the junction with I-26
    - In Cleveland, OH, at the junction with I-90
  - Total distance is 611 miles with 90 miles within the state
  - Major municipalities
    - Columbia, SC
    - Charlotte, NC
    - Charleston, WV
    - Cleveland, OH

- I-85
  - Termini
    - In Montgomery, AL, at the junction with I-65
    - In Petersburg, VA, at the junction with I-95
  - Total distance is 669 miles with 106 miles within the state
  - Major municipalities
    - Montgomery, AL
    - Atlanta, GA
    - Greenville/Spartanburg, SC
    - Charlotte, NC
    - Greensboro, NC
    - Petersburg, VA

- I-95
  - Termini
    - In Miami, FL, at the junction with U.S. 1
    - Near Houlton, ME, at the Canadian border
  - Total distance is 1,924 miles with 199 miles within the state

The posted speed limit for interstates and other limited access facilities in the state is noted in **Table 2-2** . The design vehicle[2] for this classification is wheelbase-67, or WB-67, with a design speed of 70 mph. The WB-67 is defined as a tractor-trailer, instate combination vehicle with an overall wheelbase of 67 feet.

Table 2-2: Posted Speed Limits, Interstate and Other Limited Access, South Carolina

State	Rural Interstates		Urban Interstates		Other Limited Access Roads	
	Cars *(mph)*	Trucks *(mph)*	Cars *(mph)*	Trucks *(mph)*	Cars *(mph)*	Trucks *(mph)*
South Carolina	70	70	70	70	55	55

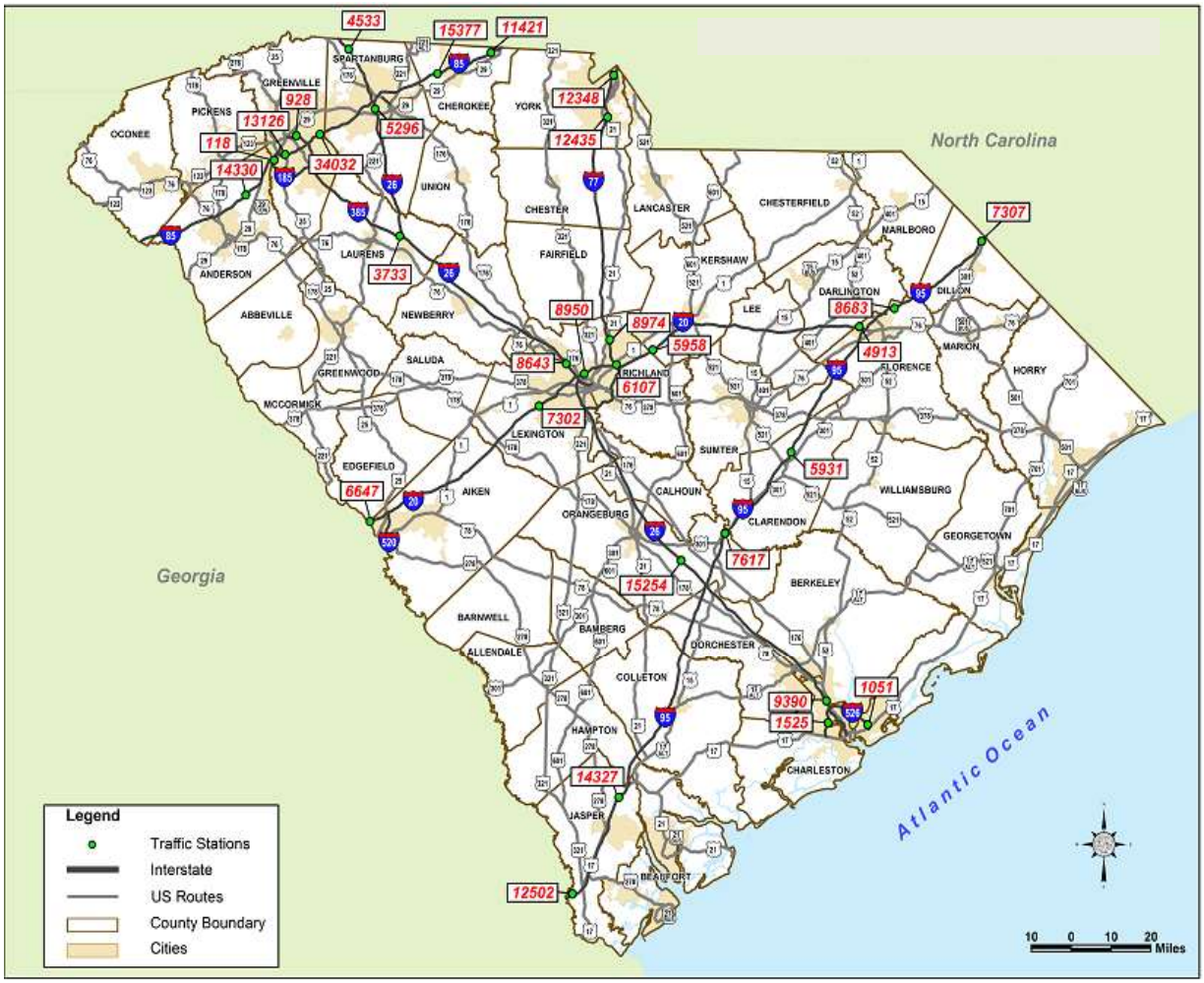
Source: GHSA, http://www.ghsa.org/html/stateinfo/laws/speedlimit_laws.html, January 14, 2019

[2] Vehicle type with defined operational characteristics utilized in the design of features on a roadway. Design vehicle represents the vehicle with the most significant performance needs for the intended use of the roadway.

Truck Traffic

The amount of traffic carried by a roadway is measured by volume and is expressed as Average Annual Daily Traffic (AADT). According to the Federal Highway Administration (FHWA), AADT is "estimated as the total traffic volume passing a point of a road in both directions for a year divided by the number of days in the year".[3] In a similar way, the volume of truck movements on a road can be also be measured as AADT. FHWA defines trucks "as vehicles of classes 4 through 13 in the FHWA's 13-category vehicle classification system".[4] Truck AADT is computed in the same manner as AADT except that only volumes related to trucks are used to make the calculation. Being aware of truck AADT has a variety of uses including ". . . design and analysis of pavement, freight, air quality, crash data, highway planning and performance assessment".[5] Within the Statewide Freight Plan, truck volumes highlighted are for Class 8 and above. Truck volumes on South Carolina interstates for 2018 are shown in **Figure 2-3**.

Figure 2-3: 2016 Interstate Truck Volumes



[3] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018
[4] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018
[5] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018

2.2.1.3 Arterial

The arterial class represents a set of roadways intended to be used for longer trips and accommodate greater traffic volumes than collectors or local roads. Arterials can provide for more efficient through trips, which are longer than trips on collector facilities and local streets.

This classification provides access to areas not adjacent to the interstate system and between non-adjacent areas of freight activity, not immediately accessible by the interstate system.

Arterial posted speeds are designated in coordination between relevant jurisdictions. This applies to existing and future roadways.

The design vehicle for this classification consists of three types, corresponding to the sub-classification. For Interstate Principle Arterial the design vehicle is WB-67 with a design speed of 65 mph. Primary or Principal Arterial, rural and urban, range from WB-40 to WB-62, with rural design speed of 65 mph and urban of 55 mph. Minor arterial, rural, the SU or single unit truck is the design vehicle at 65 mph. The urban sub-classification differs, using the WB-40 at 40 mph.

2.2.1.4 Collector

This classification provides traffic circulation patterns in commercial, residential areas and distributes traffic from arterials to local destinations. Truck utilization of these roadways typically reflects local truck trips.

The design vehicle for rural and urban collector is the SU or single-unit truck. Design speed varies from 55 mph for rural to 35 mph for urban.

2.2.1.5 Bridges

Two physical characteristics of bridges located on or spanning the roadway impact the inclusion as part of a commercial motor vehicle (CMV) operator's route: Vertical Minimum Clearance and Weight-Load Restrictions. Vertical minimum clearance is the distance from the road surface to the lowest point on the overhead obstruction (bridge) within the confines of the travel lane. The larger CMV, class 8, which includes interstate tractor-trailer combinations and many of those combinations used for pick-up and delivery, has an operating height of 13 feet and 6 inches.[6] Interstate design standards have a minimum vertical clearance standard of 16 feet for existing bridges and 17 feet for new or replaced bridges. Other functional classes may not define clearance standards or include structures built prior to standards being introduced. As of 2018[7], on collector, arterial and interstate roadways within the state, there are 276 bridges reported as having less than 16 feet clearance. 199 bridges are on the classification itself, presenting less than 16 feet clearance to vehicles traveling on roadways passing beneath. 77 bridges pass over the classified roadways with less than 16 feet clearance. **Figure 2-4** illustrates the location of these bridges.

Weight-load restrictions limit the gross vehicle weight (GVW) of a vehicle driving across the structure. These restrictions may be a function of the bridge design and intended purpose or use. Another factor may be the level of previous use or structural age. In combination, a restriction placed on a bridge may

[6] Equipment in excess of this height, dependent upon state and local regulations, are subject to permitting requirements. Those requirements have a route selection component that must account for and avoid low clearances.

[7] SCDOT Road Data Services

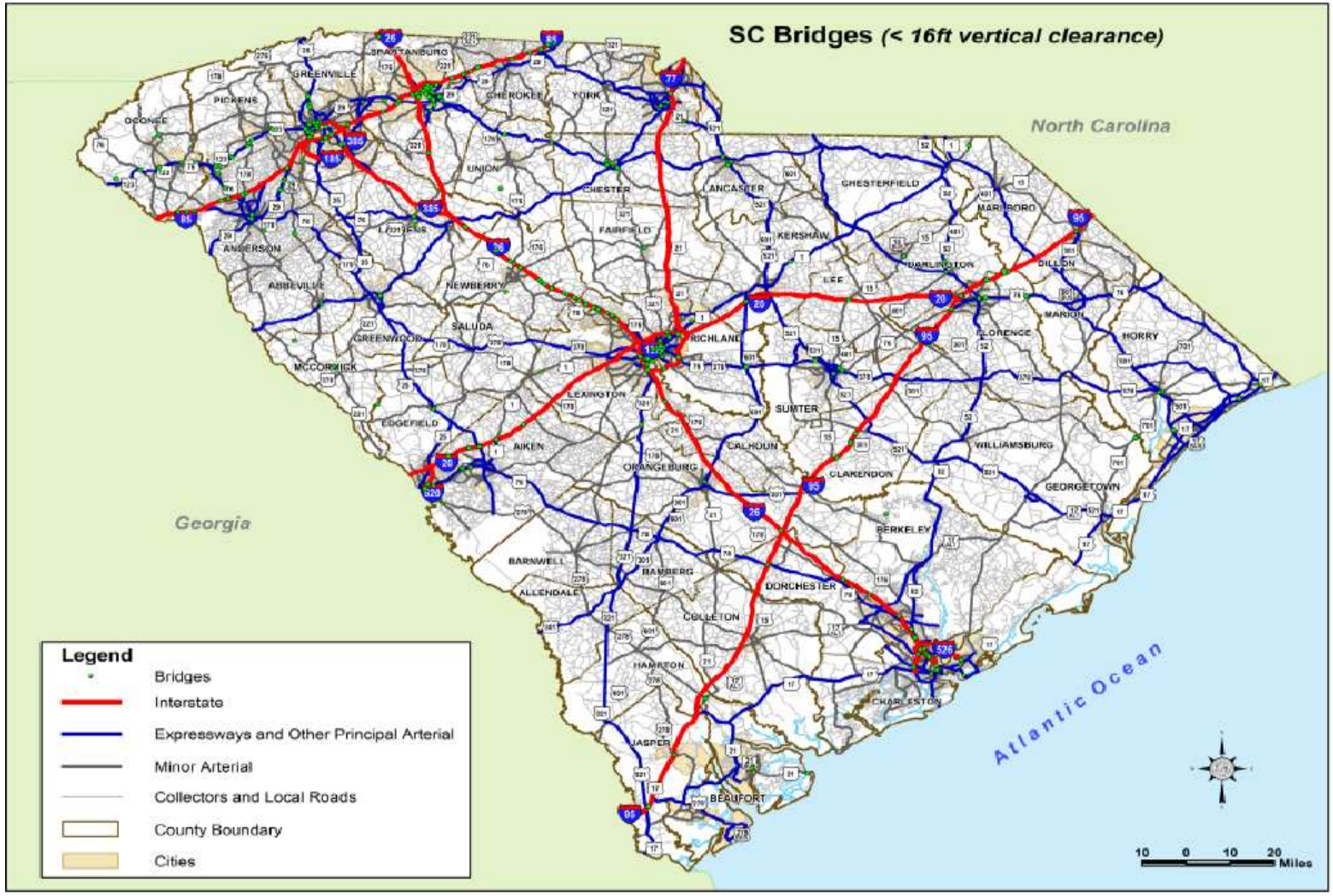
range from a simple notation, without any formal limitations, to a more defined restriction on what weight and types of vehicles may use the structure. As of the 4th quarter of 2018, SCDOT Road Data Services reports that there were 664 bridges with specific load restrictions assigned. Three are categorized as a "B," 76 are "K," and 585 are "P." Relevant categories for this inventory are described in **Table 2-3**. These are illustrated in **Figure 2-5.**

Table 2-3: Load Restriction Categories

Load Restriction Categories	Description
B	Open, posting recommended but not legally implemented (all signs not in place or not correctly implemented)
K	Bridge closed to all traffic
P	Posted for load (may include other restrictions such as temporary bridges which are load posted)

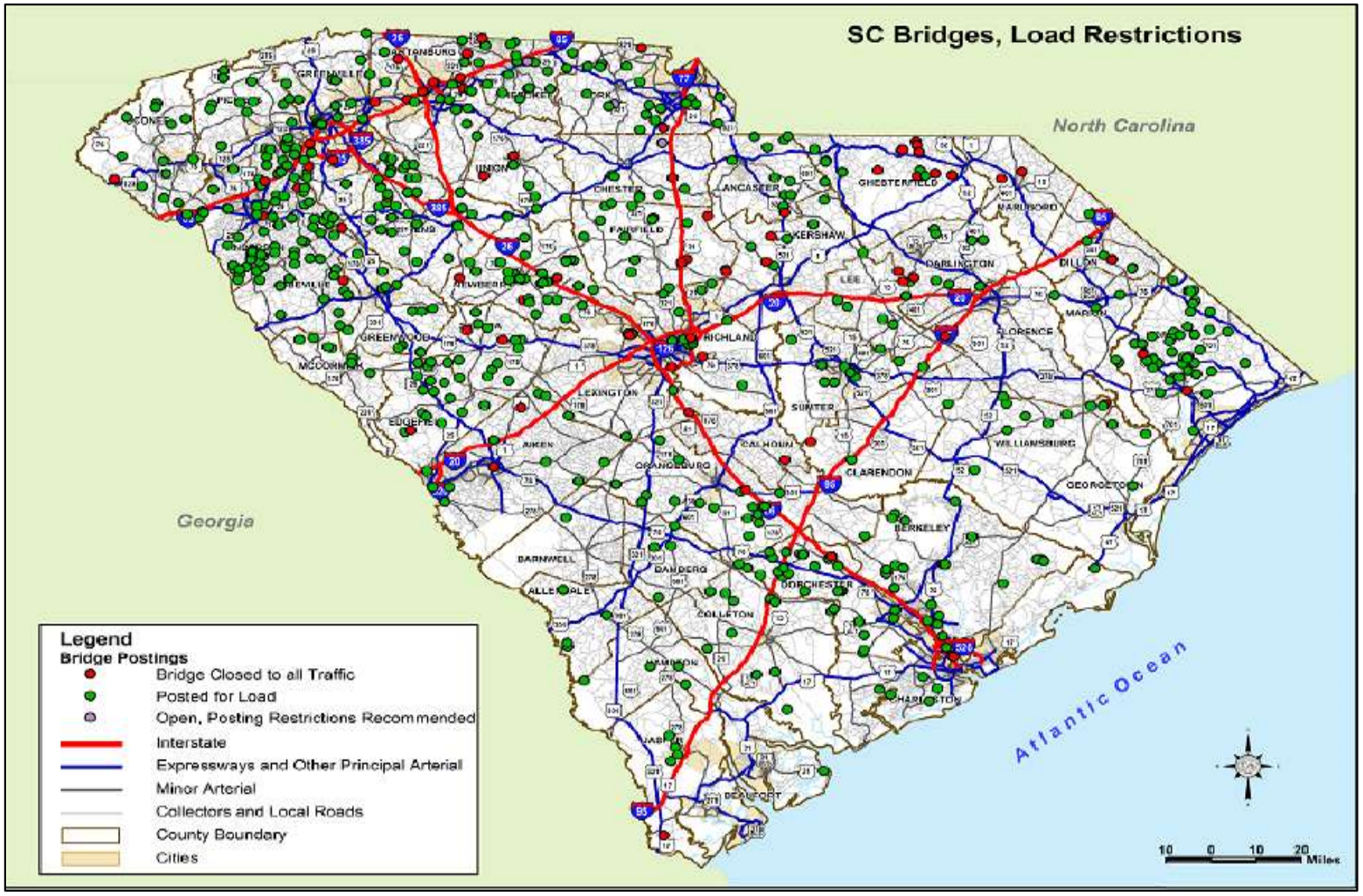
Source: SCDOT Director of Maintenance

Figure 2-4: Bridges, Vertical Clearances (less than 16 feet)



Source: SCDOT, Road Data Services and GIS

Figure 2-5: Bridges, Load Restrictions



Source: SCDOT Office of Road Data Services, Bridge Data as of Quarter 4, 2018

2.2.1.6 Railroad Crossings

The presence of railroad crossings, more specifically at-grade, on roadways has the potential to offer safety or operational concerns to those CMV utilizing the roadway. Grade separated crossings, where the roadway and rail are at different elevations, pose a concern of clearance versus an actual CMV and train interaction. The ability for the CMV to travel across a raised track, to fully exit the path of a potential train before reaching a stop bar, or have the line of sight to identify warning signalization are three leading causes of CMV and train related accidents. Depending on the type of cargo being transported, CMV operators may be required to come to a complete stop before proceeding across an at-grade crossing. This has the potential to adversely affect the flow of CMV and passenger vehicles.

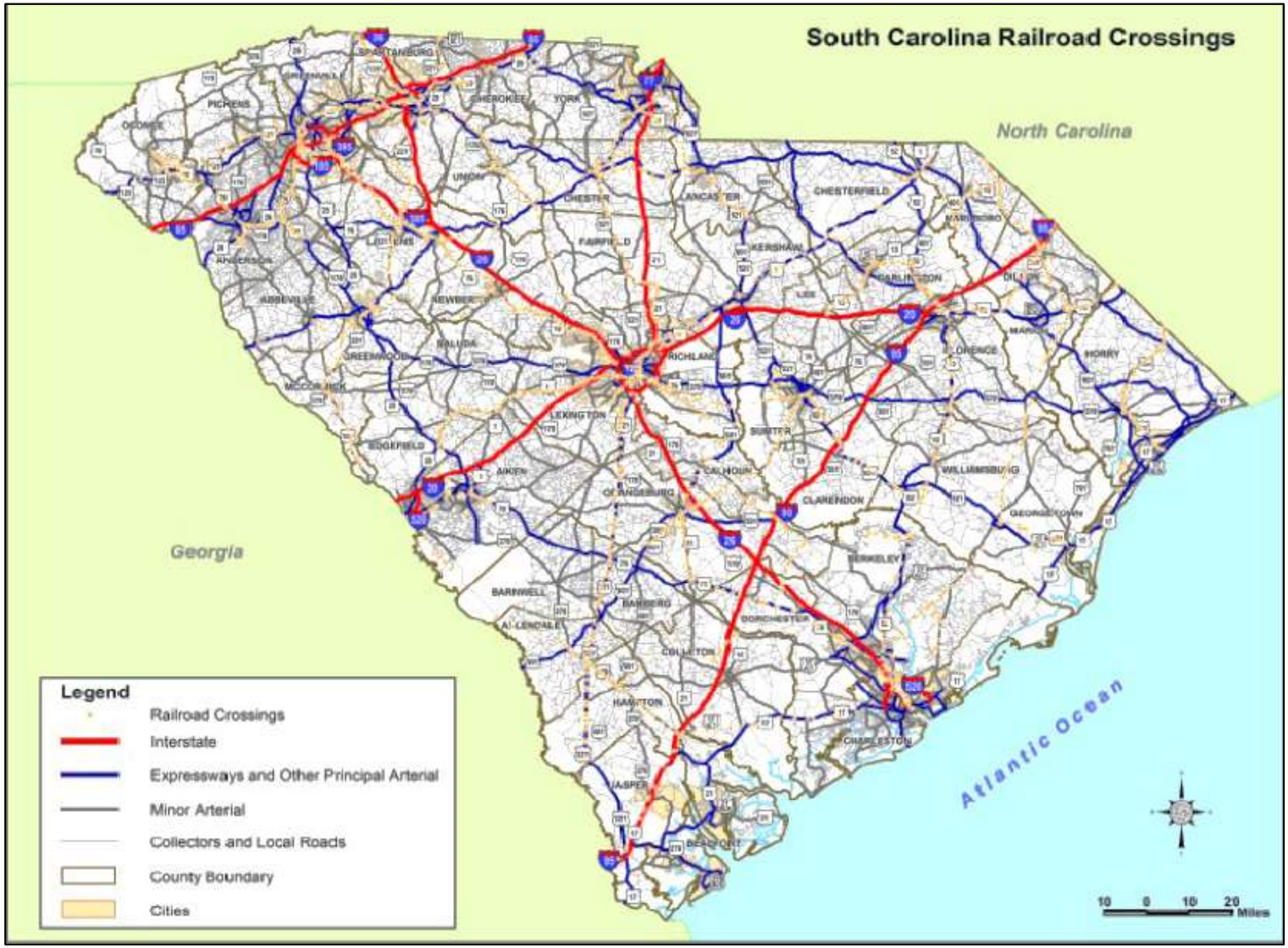
There are 712 grade separated crossings located within the state. At-grade crossings are more prevalent at 3,627. **Table 2-4** notes the number of crossings by functional classification. A high number of crossings lack a detailed road classification. The absence of this field, in the Federal Railroad Administration's data base for railroad crossings, results from individual inspectors failing to notate the proper or any classification at the time of the inspection. **Figure 2-6** illustrates the locations of known grade separated and at-grade crossings.

Table 2-4: Railroad Crossings, by Functional Classification

Highway Classification	Total Crossings	At Grade	Grade Separated
Urban Interstate	9	0	9
Urban -- Principal Arterial - Other Freeways & Expressways	1	1	0
Urban -- Principal Arterial - Other	134	126	8
Urban -- Minor Arterial	304	292	12
Urban – Collector	266	260	6
Rural Interstate	1	0	1
Rural -- Principal Arterial - Other	54	50	4
Rural -- Minor Arterial	140	136	4
Rural -- Major Collector	406	403	3
Rural -- Minor Collector	184	184	0
Total Known	**1,499**	**1,452**	**47**
Classification Unknown	2,840	2,175	665
Total	**4,339**	**3,627**	**712**

Source: SCDOT Road Data Services

Figure 2-6: Railroad Crossings, At-grade and Grade Separated, Interstate, Arterial, Collector



Source: SCDOT, Road Data Services and GIS

2.2.2 Rail

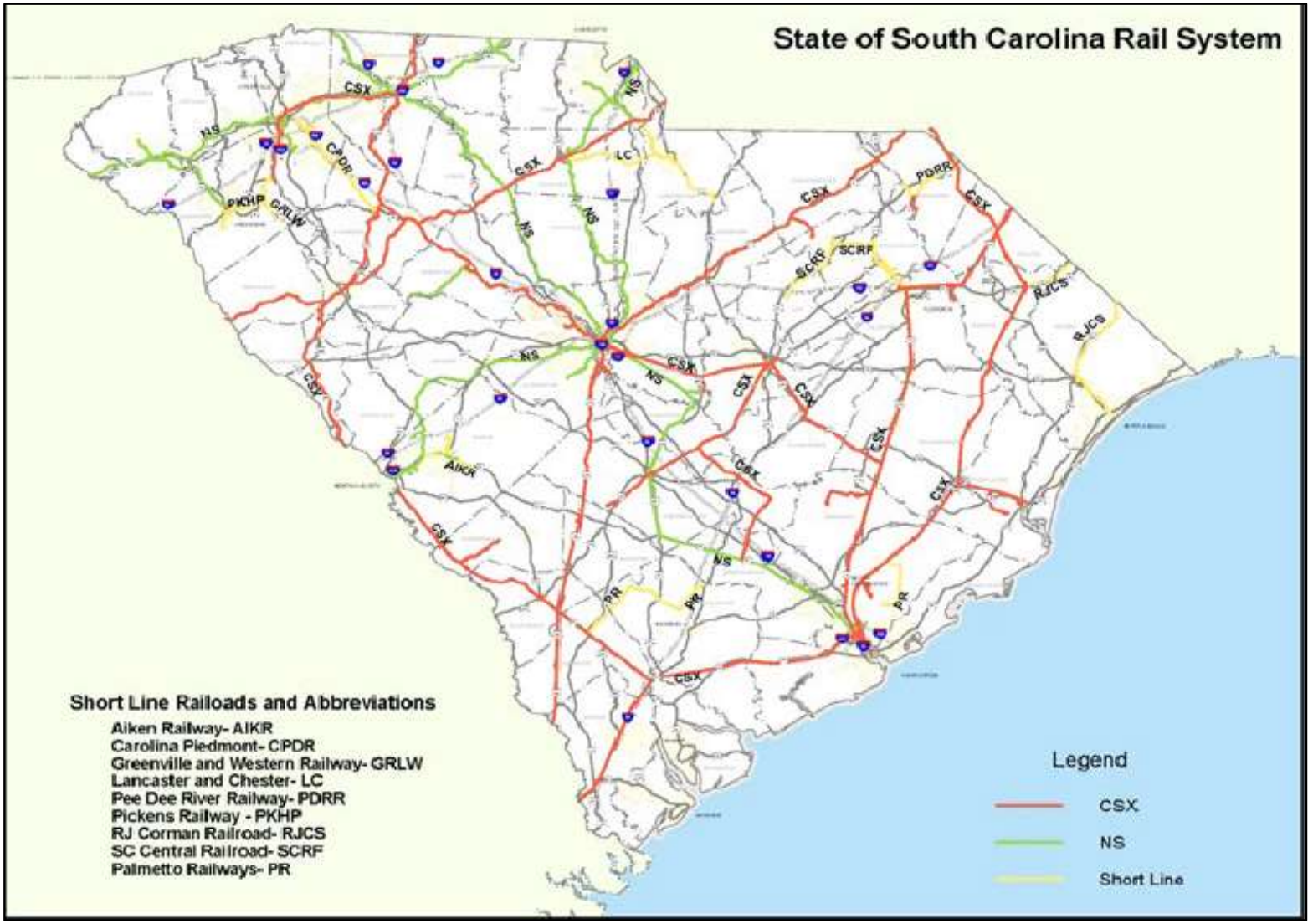
Railroad transport provides a relatively lower cost, higher capacity and low environmental impact landside solution to the long distance movement of goods. Operating a variety of rail car configurations, (e.g. tanker, open top hopper, side load, closed boxcar, flatcar) and the ability to compile trains of over 100 units; rail provides shippers with a low cost solution to moving goods. Due to the nature of the load-unload and overall train operations, rail typically reduces rates or costs to the shipper as the distance traveled increases. With a limited number of locomotives or power units required to transport the significant volume of goods, in comparison to other landside solutions (e.g. truck) the impact on air quality, noise pollution, and other environmental factors is significantly reduced.

Intermodal traffic on today's railroads has been the fastest growing segment of all the cargo types. Around 50 percent of the tonnages transported as intermodal rail are imports or exports.[8]

Railroads, unlike trucking, operate on infrastructure primarily owned by the railroad company. Though regulated by the federal government, the railroad has the opportunity to make all operational decisions regarding services and market place without outside influences. **Figure 2-7**: illustrates the current rail infrastructure in the state, noting Class I and Class III (Short Lines).

[8] https://www.aar.org/wp-content/uploads/2018/07/AAR-Rail-Intermodal.pdf, March 7, 2019

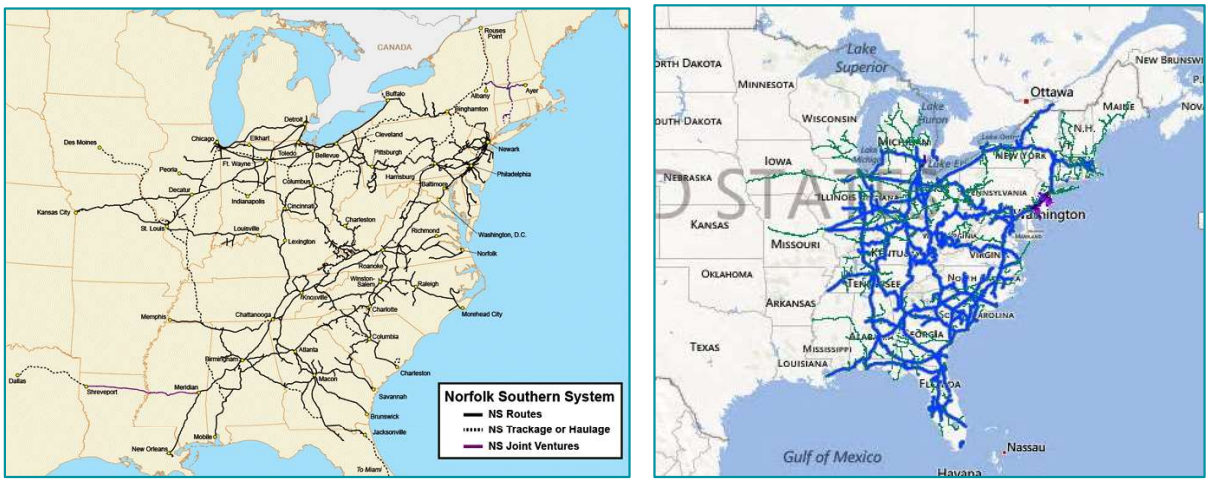
Figure 2-7: Railroad Infrastructure with Owner Assignments



2.2.2.1 Class I

There are seven Class I[9] railroads in operation within the U.S. Two Class I railroads operate in South Carolina: Norfolk Southern (NS) and CSX Transportation (CSX). Each operates exclusively east of the Mississippi River. Illustrations of the individual coverage or service areas are presented in **Figure 2-8**:

Figure 2-8: Norfolk Southern and CSX Coverage Areas



Source: www.nscorp.com, www.csx.com,

CSX Transportation (CSXT)

This Class I railroad, a transportation unit of CSX Corporation (CSX), operates approximately 23,000 route miles and serves 23 states, the District of Columbia and two Canadian provinces. As South Carolina's largest railroad with 1,307 route miles, it covers much of the state. The railroad has a division office in Florence. In addition to the mileage it owns, it also has trackage rights over NS between Columbia and Charleston. Major South Carolina commodities for CSX include petroleum and coal products, lumber and wood products, chemicals and allied products, coal, and miscellaneous mixed shipments (intermodal). CSX Intermodal is the intermodal arm of CSX Corporation.

Norfolk Southern Railway (NS)

This Class I railroad operates a total of approximately 21,500 route miles and serves 22 states, the District of Columbia, and one Canadian province. In South Carolina, NS operates 762 route miles and has trackage rights over CSXT from Newberry to Spartanburg. The Norfolk Southern Railway Company is owned by the Norfolk Southern Corporation. The railroad has a division office in Greenville. Major commodities transported over the NS system in South Carolina are coal; lumber and wood products; chemicals; pulp, paper, and allied products; and, transportation equipment.

[9] Based on Deflator Factor established and calculated by the Surface Transportation Board

2.2.2.2 Short Line or Class III

Aiken Railway Company, LLC (AIKR)

The Aiken Railway Company began service in December, 2012, and is a wholly-owned subsidiary of Western Carolina Railway Service Corporation, the same company that owns and operates the Greenville and Western. It leases and operates two NS branch lines in Aiken County – the 12.45-mile line between Warrenville and Oakwood, and the 6.45-mile line running between Aiken and North Aiken – totaling 19 miles in length.

Carolina Piedmont (CPDR)

In 1990, RailTex, Inc. purchased from CSXT and began operating the 30-mile branch line between Laurens and East Greenville as its Carolina Piedmont Division (CPDR). The railroad is now owned by Genesee & Wyoming and is operated as the Carolina Piedmont Railroad. Traffic is interchanged with CSXT at Laurens. Major commodities transported include plastic resin, gas turbines and chemicals.

Greenville & Western Railway Company (GRLW)

This railroad commenced operations in late 2006 after acquiring a 13-mile-long CSXT line segment from Pelzer to Belton in Anderson County. The railroad interchanges traffic with CSXT at Pelzer and with the Pickens Railroad Company at Belton, which also provides access to NS. The railway receives unit trains for Kinder Morgan with Belton Industries and Belton Metals other on-line rail users. Principal on-line commodities are ethanol, biodiesel, plastics, scrap metal, limestone, paper, and fertilizer.

Lancaster and Chester Railway Company (LC)

Prior to 2001, the railroad ran 29 miles between Chester and Lancaster. This original line segment dates back to an 1873 charter for a three-foot narrow gauge railroad that reached Lancaster from Chester in 1894. In 2001 a NS branch line running from Catawba to Lancaster and continuing east to Kershaw was acquired extending the railroad's total length to almost 62 miles and its presence to four counties - Chester, Kershaw, Lancaster, and York.

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

Palmetto Railways

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

The Charleston Subdivision (Port Utilities Commission of Charleston – PUCC) and North Charleston Subdivision (Port Terminal Railroad – TPR) provide switching services to the terminals of the South Carolina State Ports Authority and other various industries in Charleston County, interchanging with CSXT and NS. As terminal switching railroads, PUCC and PTR have no mainline miles of track, but estimates of route miles are approximately 22 miles.

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

Pee Dee River Railway Corporation (PDRR)

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

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

Pulp, paper, chemicals, aggregates, fertilizer, and plastic pellets are the predominate products handled over its current 24-mile length. Its major customers are Domtar, Mohawk, Flakeboard, Hanson Aggregates, and Southern States Cooperative. Traffic is interchanged with CSXT at McColl.

Pickens Railroad Company (PICK and PKHP)

The Pickens Railway Company consists of two separate operations located in the Upstate. One is the original Pickens Railroad (PICK), which runs 8.5 miles from a connection with the NS main track at Easley to Pickens in Pickens County that began operation in 1898. The other, the railroad's Honea Path Division (PKHP), is a combination of NS and CSXT branch lines located in Anderson County running from Anderson to Honea Path, via Belton for approximately 28 miles. Service began over the first of these line segments in 1990.

The railroad's principal shippers include, among others: Owens Corning, Electrolux, Scots, Michelin, Southern States Cooperative, Crop Production Services, Carolina Recycling, PCA, and Tri-County Fertilizer. These customers account for the majority of the railroad's car-loadings comprised of limestone, plastics, rubber, carbon black, fertilizer, scrap metal, paper, grain, and borate ore. Traffic is interchanged with NS at Easley and Anderson, as well as with GRLW at Belton and hence to a CSXT connection in Pelzer. The railroad has filed an abandonment application for the 8.5-mile-long original Pickens Railroad.

R.J .Corman (RJCS)

The R. J. Corman Railroad Group national headquarters is located in Central Kentucky in the City of Nicholasville. There are 67 strategically placed field offices in 22 different states across the US. The company serves all seven Class I railroads, many regional and short line railroads as well as various rail-served industries. R. J. Corman Railroad Company purchased the former Carolina Southern Railroad (approximately 86 track miles) in August 2015, and subsequently invested more than three million dollars to restore freight service. The R. J. Corman Railroad Company Carolina Lines ran its first train on March 25, 2016, however, due to the disrepair of the track prior to the acquisition, the trains are still limited to 5 and 10 miles per hour. In February 2019 R. J. Corman Railroad Company Carolina Lines and Horry County Government (South Carolina) are breaking ground on Moving the Carolinas Forward: A Rural Freight Rail Project, which will significantly improve the value of rail service to the region. The $17.5 million project, funded by a Federal TIGER Grant as well as significant contributions from South Carolina and R. J. Corman, is expected to be completed over four years. The project will include replacing approximately 60,000 crossties, upgrading nine miles of rail, upgrading nine bridges with a complete rebuild on a 220-foot bridge that spans the Crab Tree Swamp in Conway, SC and rehabilitating 39 at-grade crossings.

South Carolina Central Railroad Company (SCRF) (GWR)

In 1987, RailTex, Inc. purchased two disconnected segments of railroad from CSXT located in Florence, Darlington, Chesterfield, and Lee Counties. The SC Central Railroad Company, Inc. (SCRF) began operations over the two line segments in December of that year. Genesee & Wyoming Inc., now owns the railroad and operates 41 miles of mainline. The one operational segment connects and interchanges traffic with CSXT at Florence and extends to Bishopville via Darlington, Floyd, and Hartsville. It has a broad base of customers, with the largest being Nucor Steel, Sonoco Products, and Republic Services. Commodities handled by the railroad are dominated by chemicals, plastics, steel, and waste. The other segment connected and interchanged traffic with CSXT at Cheraw and extended southward to Society Hill. Service is no longer provided on this segment and abandonment has been approved but not yet implemented.

2.2.3 Water

Ocean and inland water transport provide access to markets overseas and a low cost solution via barge and short sea shipping around the state and continent. With the globalization of the supply chain over the previous decades, the ability to transport materials and goods between continents has flourished. This movement is characterized by the increasing utilization of containerization. With this method as a standard, intermodal connectivity between ocean and landside transport eases cost and increases speed across the entire supply chain. The use of inland waterway and short sea shipping, a transport method having been in decline within the U.S., has experienced a minor renaissance with recent innovations and capital investment.

Significant water ports are illustrated in **Figure 2-9**. The SCPA operates six facilities, five of which are located in or near the city of Charleston. The sixth terminal is located in Georgetown SC, approximately 60 miles north of the area.

The states of Georgia and South Carolina have entered into a partnership called the Jasper Ocean Terminal Joint Venture to develop a container port along the Savannah River in South Carolina to provide both states future expansion opportunities (**Figure 2-10**). The Joint Venture is currently conducting studies and planning efforts to bring this project to fruition in the coming years. Best estimates demand this terminal to be operational in 2035.

The proposed Jasper Ocean Terminal (JOT) includes the construction and operation of a marine container terminal on an approximately 1,500-acre site along the north bank of the Savannah River in Jasper County, South Carolina. The JOT would increase the region's capacity to efficiently handle the forecasted cargo throughput into the hinterland market region over the next 35 years. The Georgia Ports Authority (GPA) currently operates the Garden City Terminal, approximately 8 miles upriver from the proposed JOT site, while the South Carolina Ports Authority (SCPA) operates several container terminals in Charleston, South Carolina, such as Wando Welch, Columbus Street, and North Charleston. Even with the opening of SCPA's Hugh Leatherman Terminal in 2019, both ports forecast the need for additional capacity to handle projected future containerized cargo throughput and minimize future operational limitations and efficiencies at the current and future ports' facilities.

The proposed JOT would be a state-of-the-art marine container terminal using efficient and sustainable technologies to transfer containerized cargo between container ships, over-the-road trucks, and intermodal rail cars. Elements of the terminal would include a pile supported wharf to accommodate approximately eight Neo-Panamax containerships, a container storage yard, intermodal rail yard, gate facilities to process entering and exiting over-the-road truck traffic, administrative buildings, and equipment service facilities. The proposed JOT would also include elements common to industrial sites such as a water tower, underground utilities, electrical substations, backup generators, high-mast lighting, storm water management facilities, perimeter fencing, and parking areas for personal vehicles.

Figure 2-9: Water Ports of South Carolina

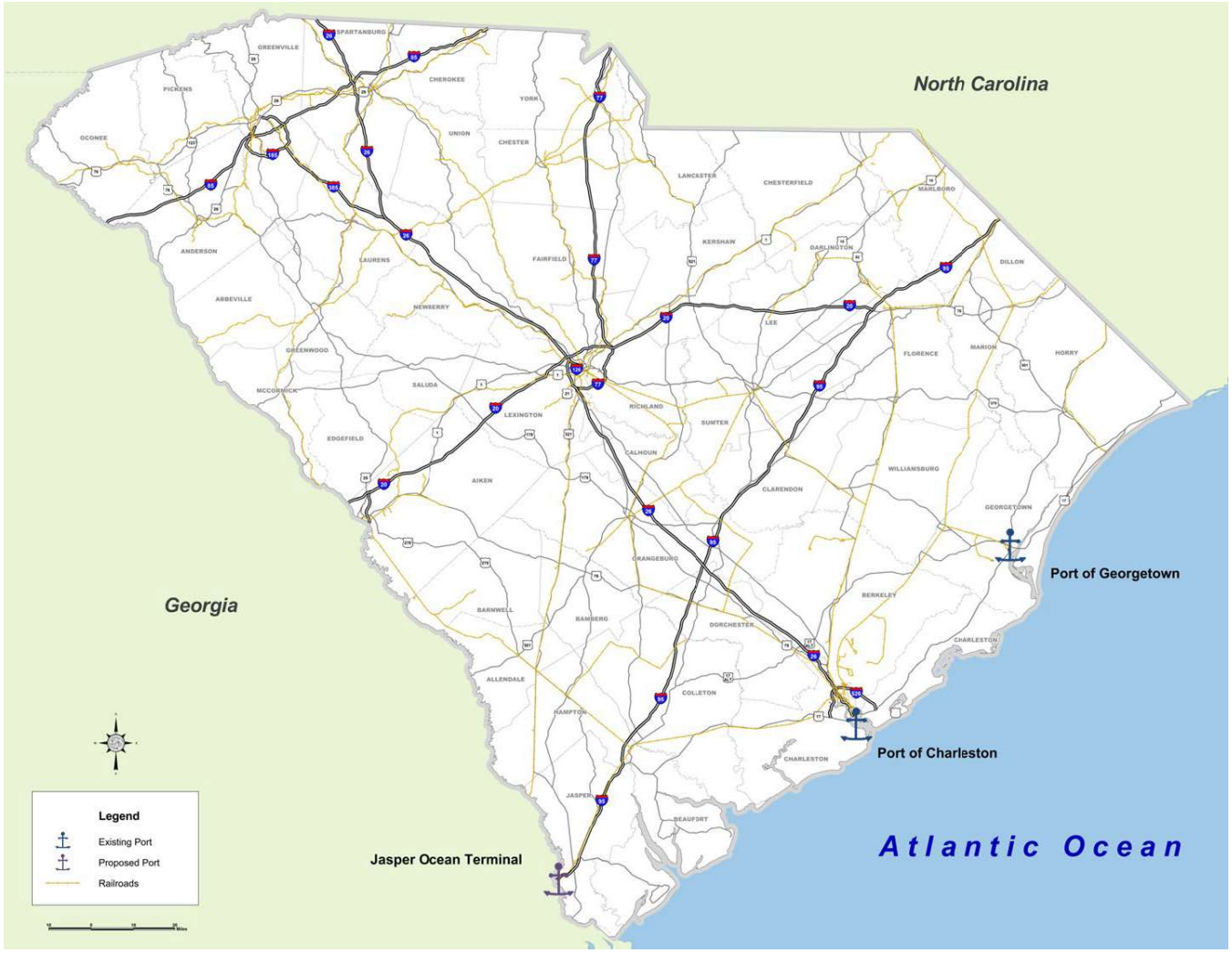
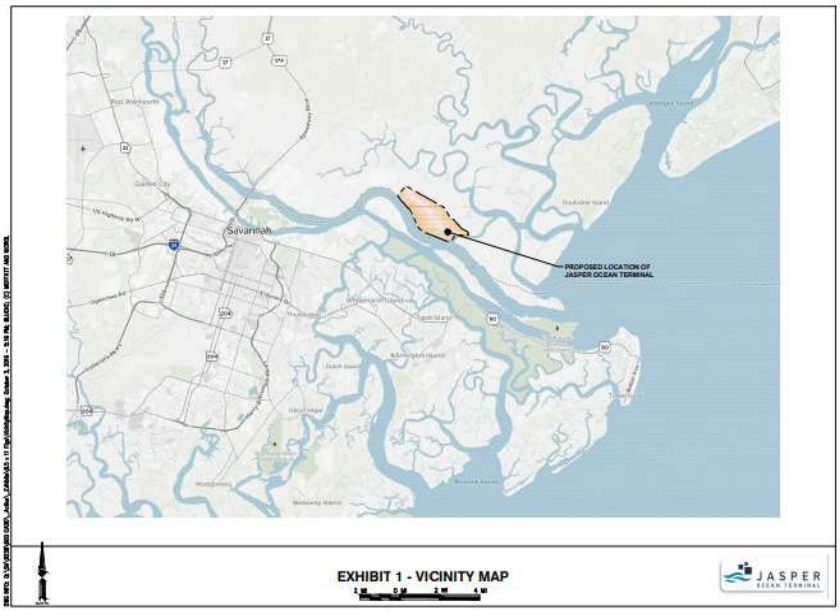


Figure 2-10: Proposed Jaster Ocean Terminal (JOT)



Source: http://www.jasperoceanterminaleis.com/Project.aspx

2.2.4 Air

Air cargo consists of mail products and freight commodities. There are numerous entities that are participants in this mode, e.g. freight forwarders, deferred air carriers. The physical carriage of goods in this mode occurs on dedicated, cargo configured aircraft or in the "belly" or luggage compartments of passenger aircraft. With the transition to regional jets to service smaller markets (e.g. Columbia, Florence, Greenville-Spartanburg, and Charleston) major airlines and their regional partners have reduced the overall available space for air cargo. Increased requirements to satisfy elevated security for this cargo type has also decreased the amount of cargo by limiting the number of acceptable shippers at smaller airports. This reduction has shifted cargo to other modes or to consolidators or forwarders who transport these shipments to larger airports via ground transportation. A third factor in the reduction of air cargo volumes are economic conditions. As the asset costs (e.g. aircraft, fuel, and terminals) outweigh those of other modes, the cost to shippers is extremely high. As economic pressures influence transportation budgets, many former air customers shift to less costly but slower transportation modes by modifying the needs of their individual supply chains.

With the economic development pursuits of high technology industries, the need for accessible air transport, passenger and cargo, is a high priority in site selection. Other areas of the country have identified the need to understand the physicality of smaller airports and airfields located throughout their state to forecast potential investment needs to satisfy these site needs. **Figure 2-11**: illustrates those airports and fields open for public usage. Six are classified as "primary" by the FAA as they accommodate greater than 10,000 enplanements annually. There are an additional forty-five general aviation airports and two reliever airports available for public use. **Figure 2-12** illustrates the airfields that are currently designated for private use. These include both military and civilian airfields.

Figure 2-11: Airports and Airfields, Public Access, South Carolina

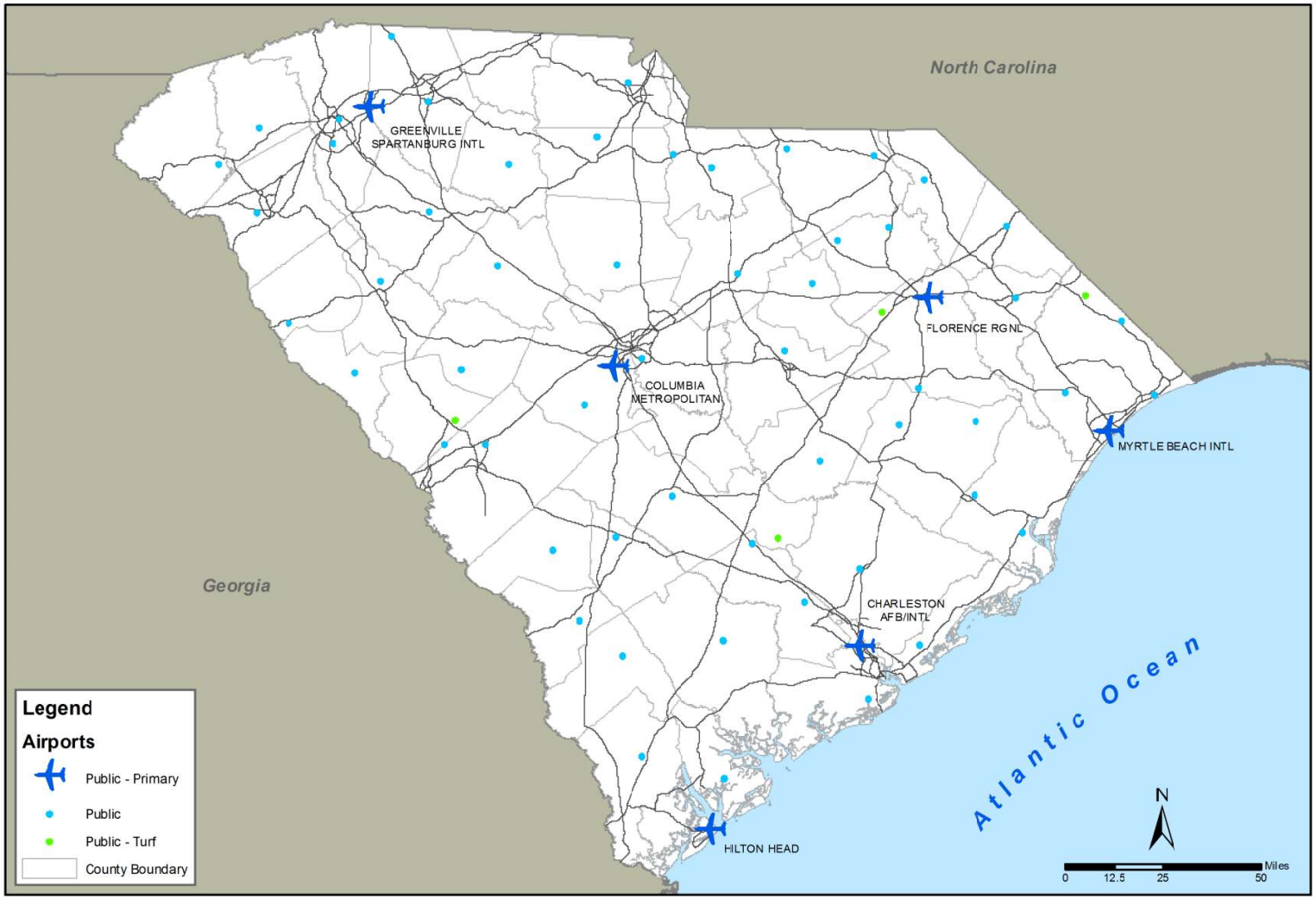
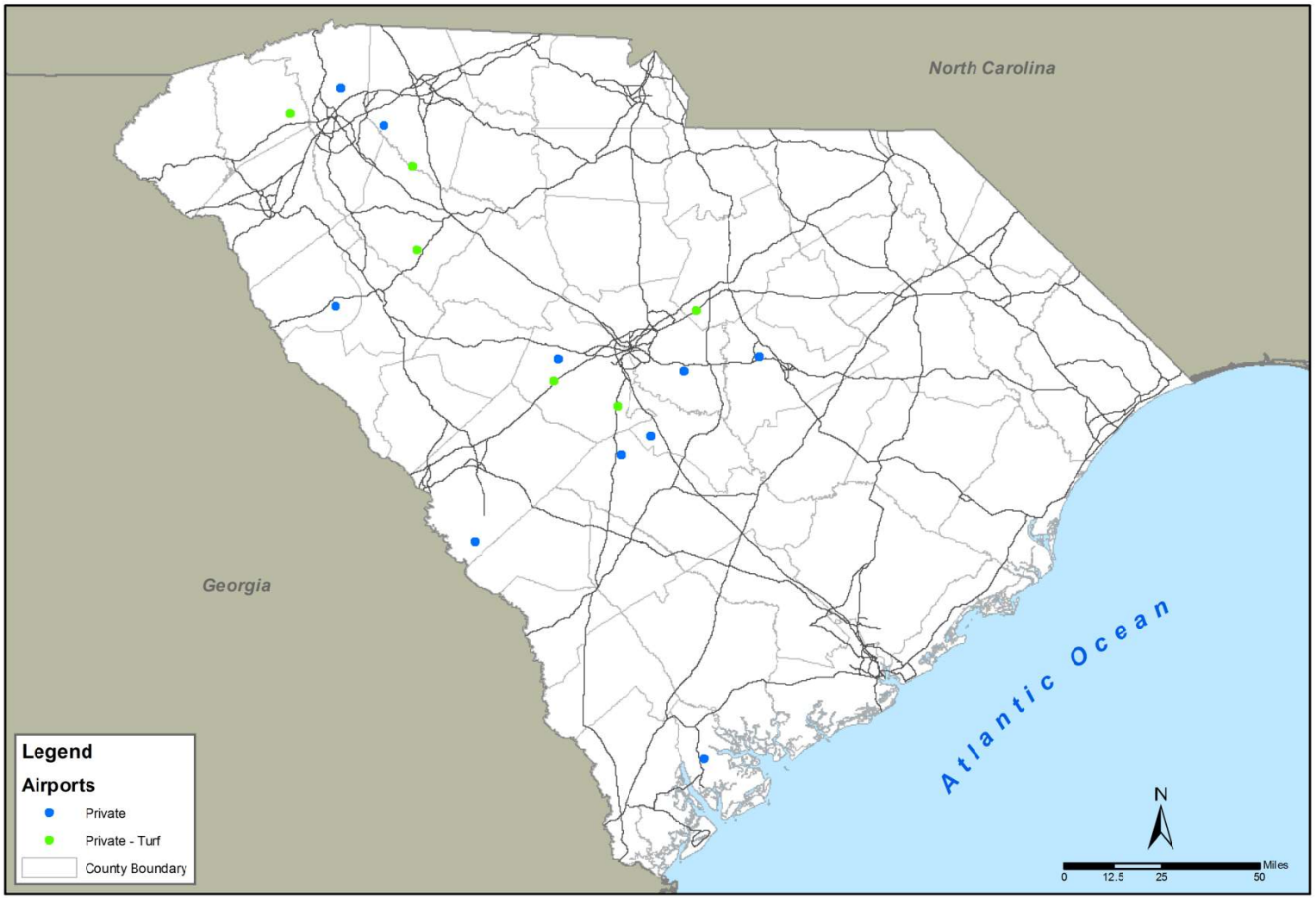


Figure 2-12: Airports and Airfields, Private Access, South Carolina

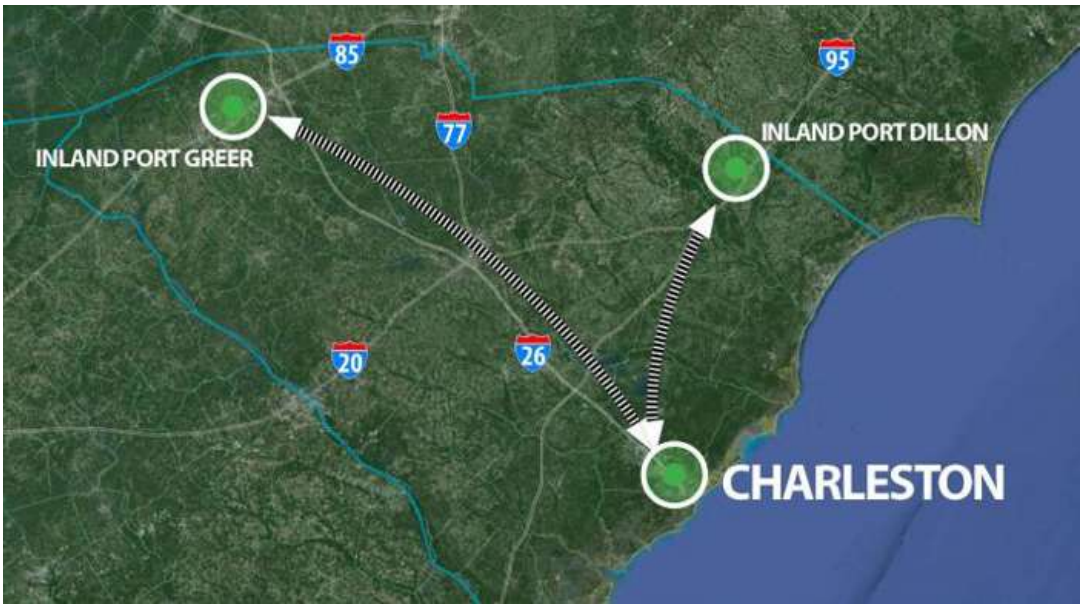


2.2.5 Freight Transfer Facilities

To facilitate the efficient usage of individual modes, in a multimodal system, nodes of interactivity are necessary. These nodes, commonly referred to as "intermodal", provide the equipment and real estate to productively move goods from one mode to another, e.g. truck and rail. Within the state four significant examples of intermodal facilities exists

Two "rail-truck" intermodal facilities exist in North Charleston: Norfolk Southern and CSXT. A third facility has been operating in Greer since October 2013 and a fourth facility recently opened in Dillon in April 2018. Furthermore, a new container port terminal is currently under construction in Charleston. One "air-truck" facility exists in Columbia: UPS. **Figure 2-13** identifies operational Inland Ports/Terminals in South Carolina:

Figure 2-13: Location of Existing and Proposed Inland Ports/Terminal in South Carolina



An additional intermodal facility has been constructed near the Charlotte-Douglas airport in Charlotte, NC on the Norfolk Southern Crescent Corridor. While outside of South Carolina, this facility is served by I-85 and I-77 in South Carolina.

2.3 Statewide Freight Network

2.3.1 National Highway Freight Network

The FAST Act repealed both the Primary Freight Network and National Freight Network from MAP-21 and directed the FHWA Administrator to establish a National Highway Freight Network (NHFN) to strategically direct Federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system. The NHFN includes the following subsystems of roadways:

- Primary Highway Freight System (PHFS): This is a network of highways identified as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The network consist of 41,518 centerlines miles,

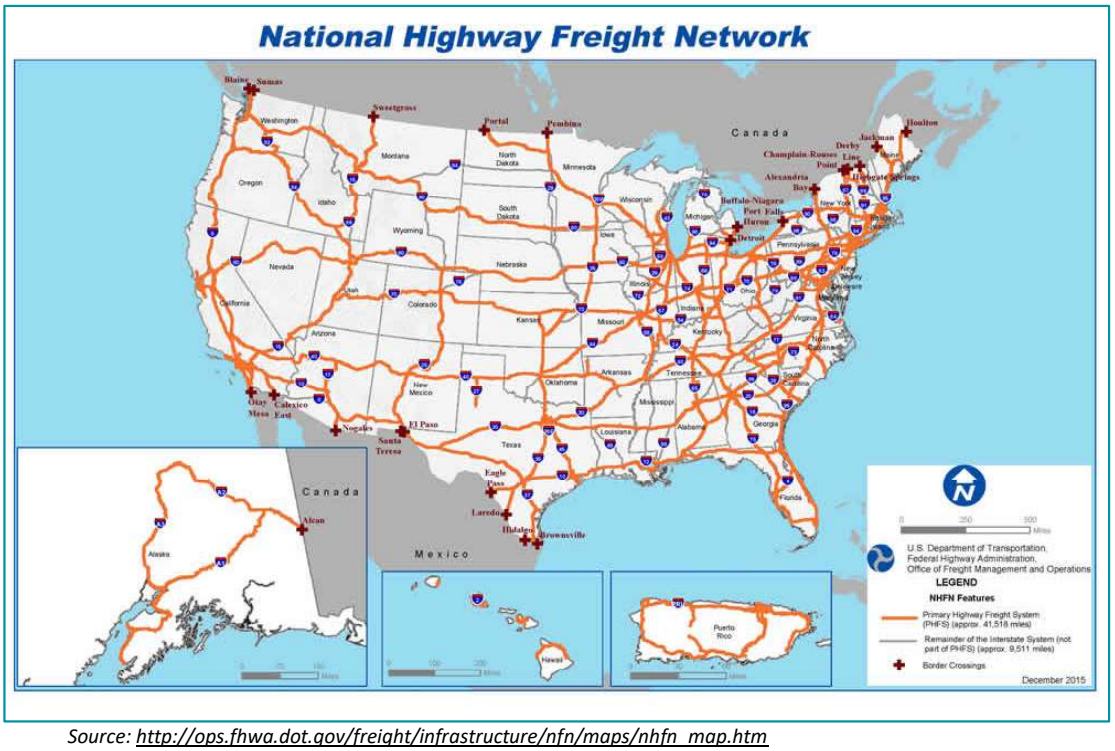
including 37,436 centerline miles of Interstate and 4,082 centerline miles of non-Interstate roads.

- Other Interstate portions not on the PHFS: These highways consist of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities. These portions amount to an estimated 9,511 centerline miles of Interstate, nationwide, and will fluctuate with additions and deletions to the Interstate Highway System.
- Critical Rural Freight Corridors (CRFCs): These are public roads not in an urbanized area which provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities.
- Critical Urban Freight Corridors (CUFCs): These are public roads in urbanized areas which provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities.

Prior to designation of CRFCs and CUFCs, the Interim NHFN consists of the PHFS and other Interstate portions not on the PHFS, for an estimated total of 51,029 centerline miles.

Figure 2-14: shows the Primary Highway Freight System (PHFS) plus remaining Interstates not on the HFS, approximately 51,029 miles of roads (December 2015). These routes are identified as the most critical highway portions of the U.S. freight system and that is informed by measurable and objective national data.

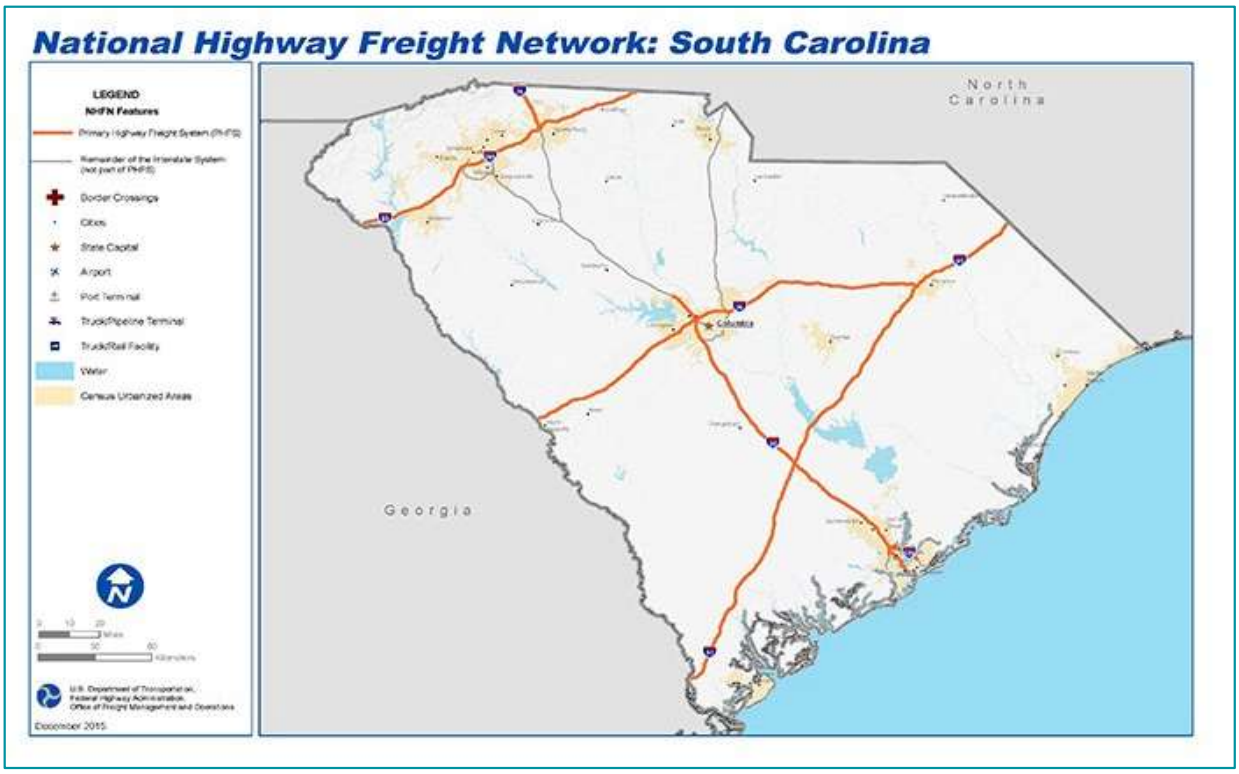
Figure 2-14: National Highway Freight Network – Primary Highway Freight System



Source: http://ops.fhwa.dot.gov/freight/infrastructure/nfn/maps/nhfn_map.htm

Figure 2-15 indicates the portions of the National Highway Freight Network system within South Carolina.

Figure 2-15: National Highway Freight Network (South Carolina)



Source: http://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/south_carolina.htm

2.3.1.1 Critical Rural and Urban Freight Corridors

CRFCs and CUFCs are important freight corridors that provide critical connectivity to the NHFN. By designating these important corridors, States can strategically direct resources toward improved system performance and efficient movement of freight on the NHFN. The designation of CRFCs and CUFCs will increase the State's NHFN, allowing expanded use of National Highway Freight Program (NHFP) formula funds and FASTLANE or INFRA Grant Program funds for eligible projects that support national goals identified in 23 U.S.C. 167(b) and 23 U.S.C. 117(a)(2).

States and in certain cases, Metropolitan Planning Organizations (MPOs), are responsible for designating public roads for the CRFCs and CUFCs in accordance with section 1116 of the FAST Act. State designation of the CRFCs is limited to a maximum of 150 miles of highway or 20 percent of the PHFS mileage in the State, whichever is greater. South Carolina is limited to a maximum of 150 miles of designated CRFCs. State and MPO designation of the CUFC is limited to a maximum of 75 miles of highway or 10 percent of the PHFS mileage in the State, whichever is greater. South Carolina is limited to a maximum of 75 miles of designated CUFCs

Critical Rural Freight Corridors (CRFC): 23 U.S.C. 167(e) identifies the requirements for designating CRFCs. A State may designate a public road within the borders of the State as a CRFC if the public road is not in an urbanized area and meets one or more of the following seven elements:

1. is a rural principal arterial and has a minimum of 25 percent of the annual average daily traffic of the road measured in passenger vehicle equivalent units from trucks (Federal Highway Administration vehicle class 8 to 13);
2. provides access or service to energy exploration, development, installation, or production areas;
3. provides access or service to-
    a. a grain elevator;
    b. an agricultural facility;
    c. a mining facility;
    d. a forestry facility; or
    e. an intermodal facility;
4. connects to an international port of entry;
5. provides access to a significant air, rail, water, or other freight facility in the State; or
6. has been determined by the State to be vital to improving the efficient movement of freight of importance to the economy of the State.

First and last mile connectivity is essential to an efficiently functioning freight system. These public roads provide immediate links between such freight generators as manufacturers, distribution points, rail intermodal and port facilities and a distribution pathway. FHWA encourages States, when making CRFC designations, to consider first or last mile connector routes from high-volume freight corridors to key rural freight facilities, including manufacturing centers, agricultural processing centers, farms, intermodal, and military facilities.

Critical Urban Freight Corridors (CUFC): 23 U.S.C. 167(f) identifies the requirements for designating CUFCs. In an urbanized area with a population of 500,000 or more individuals, the MPO, in consultation with the State, may designate a CUFC. In an urbanized area with a population of less than 500,000 individuals, the State, in consultation with the MPO, may designate a CUFC.

A public road designated as a CUFC must be in an urbanized area, regardless of whether the population is above or below 500,000 individuals, and meet one or more of the following four elements:

1. connects an intermodal facility to:
    a. the PHFS;
    b. the Interstate System; or
    c. an intermodal freight facility;
2. is located within a corridor of a route on the PHFS and provides an alternative highway option important to goods movement;
3. serves a major freight generator, logistic center, or manufacturing and warehouse industrial land; or
4. is important to the movement of freight within the region, as determined by the MPO or the State.

FHWA encourages States, when making CUFC designations, to consider first or last mile connector routes from high-volume freight corridors to freight-intensive land and key urban freight facilities, including ports, rail terminals, and other industrial-zoned land.

The State, in consultation with urbanized areas with a population of less than 500,000 (2010 Census Urban and Rural Classification and Urban Area Criteria webpage), designated CUFC routes. The MPOs with urbanized areas population of more than 500,000 (Charleston and Columbia), consulted with the State, is designating the CUFCs in their areas. SCDOT's proposed CUFCs for this 2019 Freight Plan update are found in **Appendix C** of this document.

2.3.2 Freight Movement in South Carolina

Over 465 million tons of freight, valued at nearly $739 billion, moved across South Carolina's freight network in 2016. While the predominant form of transport of freight in South Carolina is by truck, the state is also served by a system of Class I and short line railroads, marine port terminals, inland port terminals, six primary public airports and a range of intermodal facilities. Trucking accounts for the largest modal share: 375.1 million tons (81.0 percent) valued at $611.8 billion (83 percent). Rail comprises the second largest modal share at 63.2 million tons (14 percent) and $93.6 billion (13 percent). Major truck and rail tonnage movements are followed by pipeline, water and air respectively.

In 2017, the logistics sector, comprised of Retail Trade, Wholesale Trade and Transportation, Warehousing and Utilities industries, accounted for 19.1 percent of all South Carolina employment, illustrating the significance of the transportation and logistics industry in the state. In the same year, manufacturing, a freight intensive industry, accounted for 11 percent of total employment in South Carolina.[10] In recent decades, multi-national companies, including BMW and Boeing as well as large tire manufacturers, including Continental, Michelin and Bridgestone have located major facilities in the state. In addition, the U.S. Department of Defense, a significant driver of freight demand, has installations for all five branches of the military in the state. With a large percentage of freight moved by truck through the state, the estimated 4.4 million trips made annually by out-of-state leisure visitors has a substantial impact on the movement of goods across the state's roadway network.[11] As is evident, the movement of goods along all modes is critical in South Carolina.

Understanding the supply chain and providing sufficient connections between modes is important to the economic vitality of the state. Site selection practices by current and future businesses evaluating South Carolina look to the availability and capacities of the freight transportation system to move raw materials, sub-assemblies, and finished goods along the supply chain. Modal selection is done by a process of evaluating each mode with six criteria: transit times, reliability, cost, capacity, safety and accessibility.

[10] http:// www.sccommerce.com/research-data
[11] http://www.scprt.com/research

Preserving and enhancing the infrastructure that moves goods through and within the state for all modes is important. Continuing to provide important connections for freight generators/attractors to the routes moving freight and connections between modes is critical in retaining existing industries and attracting new industries in the state. Identifying a Statewide Freight Network including roadway and railway networks and the nodes they connect is an important step in identifying what corridors and assets are important to the movement of freight.

2.3.3 Freight Transportation Goals and Objectives for South Carolina

A number of goals have been identified and developed as part of the planning process for the South Carolina Multimodal Transportation Plan (MTP) to support the vision statement of the plan. The vision statement established for the MTP is as follows:

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

The goals for the South Carolina Statewide Freight Plan (SFP) incorporate the goals of the MTP as well as goals identified for a freight plan within FAST Act legislation (23 U.S.C. 167). As a result, the goals for the SFP encompass specific goals for the state while incorporating the National Freight Policy goals to be consistent with these. The specific goals of the South Carolina SFP are as follows:

- Mobility and System Reliability Goal
- Safety Goal
- Infrastructure Condition Goal
- Economic and Community Vitality Goal
- Environmental Goal
- Equity Goal

Objectives and guiding principles have also been developed for each of the goal areas. In addition, performance measures have been developed for each objective in order to provide a base reference point and understanding of the performance of the goods movement network in South Carolina.

2.3.4 South Carolina Statewide Freight Network

The movement of goods is critical to the economic health of a state, particularly in one such as South Carolina that has access to major ocean ports, regional airports, inland ports, rail lines and highways. Preserving the infrastructure that supports the movement of goods into, through and out of the state and improving the efficiency and reliability of the existing system is important to the economy of the state.

By identifying a Statewide Freight Network, SCDOT is in a better position to make informed decisions regarding projects to improve the efficiency of the freight infrastructure. The efforts to improve the efficiency and reliability can be strategically focused on the network identified in this planning process. Performance measures identified to measure the current system and the future performance of the system can be applied to the Statewide Freight Network to focus on the performance of the strategic network. The South Carolina Statewide Freight Network identifies

those routes and assets on which to plan for funding and projects to facilitate and improve freight movement.

2.3.4.1 Statewide Network Evaluation Criteria

The South Carolina Statewide Freight Network was developed using various information sources and a number of criteria. The network takes into account all modes of transporting freight including the physical networks – roadways and railroads, as well as the nodes that they connect – airports, water ports and significant freight transfer facilities.

2.3.4.2 Airports, Water Ports and Inland Port

All six of the "primary" public airports are included in the Statewide Freight Network. Airports provide transport of goods that are often high value and require timely delivery.

The water ports described above are all included in the Statewide Freight Network, including the developing container terminal in North Charleston. These facilities provide important access of waterborne freight for exports and imports internationally as well as movements across states.

The inland ports in Greer and Dillon are included in the Statewide Freight Network for their ability to provide an important connection between truck and rail freight movement. The inland port in Greer is located in the Northwest portion of the state while the inland port in Dillon is located in the Northeast portion of the state. Both can provide important connections to the Norfolk Southern Class I railroad, CSX Class I railroad and the roadway system. Each allows for the transfer of shipping containers between rail and truck for shipment to and from the coastal water ports.

These facilities are included in the Statewide Freight Network and are used in developing the roadway and railway portions of the network. The Statewide Freight Network should include routes that provide connectivity to the overall system to and from these assets.

2.3.4.3 Statewide Freight Network

The mission of SCDOT is to connect communities and drive our economy through the systematic planning, construction, maintenance and operation of the state highway system and the statewide intermodal transportation and freight system. It is SCDOT's vision to rebuild our transportation system in order to provide adequate, safe and efficient transportation services for the movement of people and goods in the Palmetto state.

Focusing on SCDOT's strategic priority to "increase mobility along the freight network," the South Carolina Statewide Freight Network (SFN) was updated with freight tonnage growth as the driving factor in determining the network. Utilizing TRANSEARCH, a comparison of truck freight tonnage growth on South Carolina roadways between 2016 and 2040 was evaluated. Truck freight tonnage is estimated to increase from 375 million tons (2016) to 600 million tons (2040); truck commodity value is forecast to increase from $612 billion in 2016 to $1.18 trillion by 2040. Forecasts are detailed in Chapter 3 of this plan.

While truck AADT, percent truck and freight value were considered as SFN evaluation factors, truck freight tonnage estimates for 2040 were utilized as the primary contributing factor in determining which routes should be maintained, added or deleted from the 2014 Statewide Freight Network baseline map. Connectivity to freight generators, key intermodal facilities and

South Carolina's Interstate network, along with neighboring freight networks in Georgia and North Carolina, was a determining factor as well.

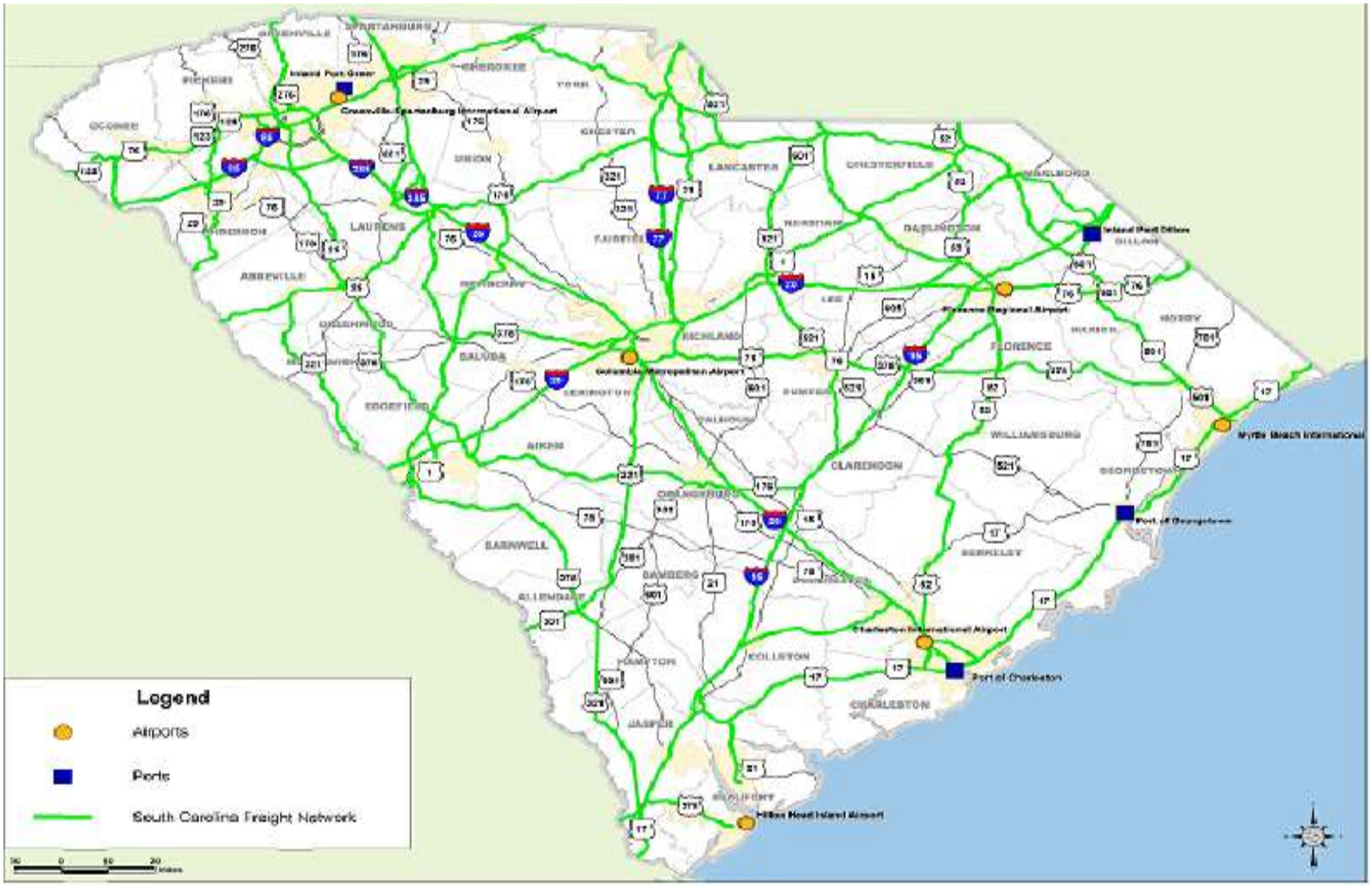
Once year 2040 tonnage was established as the sole factor to be used, a review of the pre-existing statewide freight network was undertaken to determine what currently existed. Over the course of the review, it was noted that year 2040 freight tonnage ranged from greater than 50 million tons to less than 1 million. The majority of roads were those which carried less than 1 million tons, and frequently included roads which were not useful in the movement of freight or predominantly of local importance. When highways greater than one million tons were considered, those remaining were predominantly primary and secondary routes which were designed to efficiently move freight within and through the state and typically connected with the SC interstate system or freight generator locations. Outreach regarding oversize/overweight (OSOW) needs and observations was also conducted. Most needs and route designations for OSOW corresponded with routes that were identified as carrying over 1 million tons in year 2040.

Given the evaluation as explained above, it was determined that statewide freight network designation would consist of roads and highways projected to carry at least one million tons of freight or greater in year 2040 and provided appropriate connectivity to freight generators, key intermodal facilities and South Carolina's Interstate network. Public comment on the proposed update to the Statewide Freight Network was conducted through the SCDOT Freight Mobility Survey in September/October 2019. Outreach was also accomplished by evaluating routes identified as important to regional economic growth and mobility by the Councils of Governments and Metropolitan Planning Organizations. As well, Georgia and North Carolina Freight Planning Office staff reviewed routes for connectivity. **Figure 2-16** illustrates the updated Statewide Freight Network with projected tonnage of 1 million or greater in 2040 and totals 2,362 miles.

2.3.4.4 Rail

The Statewide Freight Network includes all active lines on the Class I and Class III railroads throughout the state.

Figure 2-16: Statewide Freight Network



2.3.5 Current Conditions of the Statewide Freight Network

Preserving the assets that are part of the Statewide Freight Network is important to improve and sustain the reliability and efficiency of the goods movement network in South Carolina. Congestion, bottlenecks, weight restrictions, clearance restrictions and at-grade railroad crossings are factors that impact the reliability of a system. The Statewide Freight Network identifies the roadway and rail networks that provide through state and cross-regional movement as well as connections to the nodes of the network that include ports, airports and inland freight facilities. These networks have been identified as important to the flow of goods. This section provides information regarding the current condition of the network.

2.3.5.1 Interstate System

All interstates through South Carolina are included in the Statewide Freight Network, except I-85 Business in Spartanburg. The existing conditions of the system as well as bottlenecks and locations of recurring congestion were analyzed and evaluated.

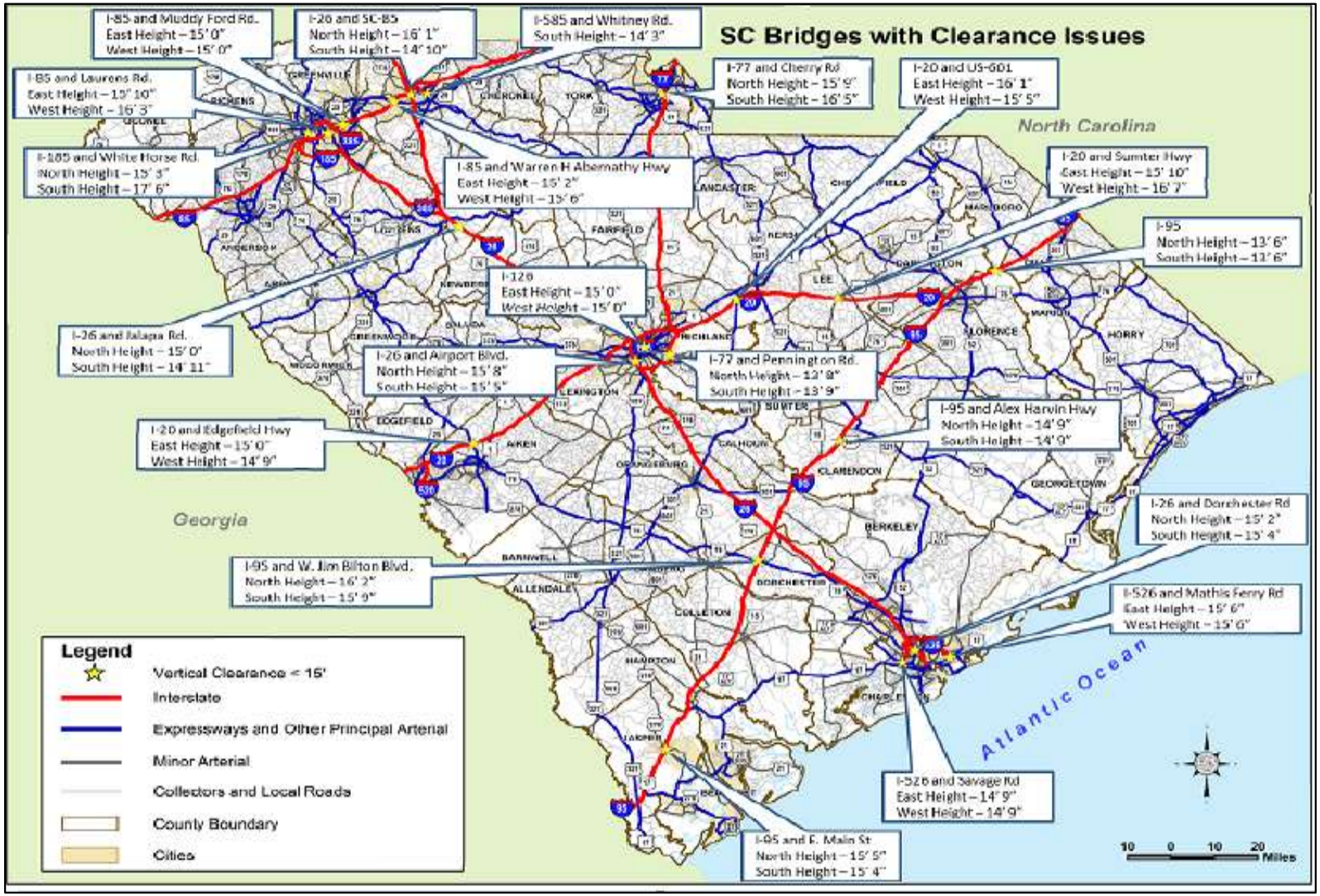
As reported by the SCDOT Planning Office, Transportation Asset Management Unit, the majority of Interstate centerline miles are categorized as being in good condition (74 percent), with 14 percent in fair condition and the remaining 12 percent in poor condition (2018). Though the majority of the Interstate system in South Carolina currently has a pavement rating of good and the state continues to add service life to the system through a resurfacing program, there has still been a net loss in service life due to deterioration. Between 2013 and 2018, the Interstate roads, gained 14,590 miles of service life year. At the same time however, the Interstate roads lost 22,798 miles of service life resulting in a net loss of 8,208 miles of service life for the five year period.

There are 544 bridges on urban interstates and 568 on rural interstates in South Carolina.[12] Of these bridges, there were seven weight restricted bridges on the statewide freight network, four along I-85 and three along I-26 as of the 4th Quarter of 2018. During this same period, there were also 122 bridges on or over the interstates which had vertical clearance restrictions less than 16 feet. Interstate 20 features 12 such bridges, 10 on the route and 2 over the interstate. Interstate 26 features 41 bridges, 13 on the route and 28 over the route. Interstate 77 features 4 bridges, all on the route. Interstate 85 features 25 bridges, 6 on the route and 19 over the route. Interstate 95 features 23 bridges; 21 on the route and 2 over the route. Interstates 126, 185, 526 and 585 respectively feature the following bridges. Interstate 126, 3 bridges total, all on the route; Interstate 185, 4 bridges total, 3 on the route and 1 over the route; Interstate 526, 8 bridges total, all on the route and Interstate 585, 2 bridges total, one on the route and one over the route. These clearance restrictions along or over the interstates impact the movement of freight along these corridors. **Figure 2-17**: illustrates these bridges with the associated cross street.

Since the initial freight plan was completed in 2014, work to reduce the number of bridges with clearance issues statewide remains an ongoing effort. Many of the bridges identified as having clearance or weight restrictions are being replaced as part of ongoing and planned Interstate capacity projects.

[12] SCDOT Road Data Services, Bridge Count for 4th quarter 2018

Figure 2-17: Bridges with Clearance Issues



Source: SCDOT Office of Road Data Services, Bridge Data as of Quarter 4, 2018

Density and Level of Service analyses were completed for the interstate system in South Carolina as part of the SC MTP. This analysis identified bottlenecks and congested corridors along the interstates. No points of recurring congestion or bottlenecks were identified along I-95, I-185, I-520, or I-585. The following describes the congestion points and bottlenecks along the other interstates. **Figure 2-18** illustrates these locations.

- I-20: The I-77 and Clemson Road interchanges are the respective bottleneck points along I-20 during the AM peak hour and PM peak hour. It should be noted that this segment is currently under construction for widening from four to six lanes. In addition, during the PM peak hour, the bottleneck points along I-20 include the three interchanges with Broad River Road, I-26, and U.S. 378.
  - I-77 Interchange: No mitigation activity is presently underway or proposed for this interchange.
  - Clemson Road Interchange: Widening activities are taking place along Clemson Road near the Clemson Road interchange through the Richland Pennies for Progress program. These activities are expected to help improve how the interchange functions which in turn should help alleviate traffic issues through the interchange.
  - Broad River Road Interchange: It is expected that the bottleneck issue will be addressed through the Carolina Crossroads Project. The Carolina Crossroads Project seeks to improve mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/26/126 corridor while accommodating future traffic needs. Future information regarding the Carolina Crossroad Project is seen at http://www.scdotcarolinacrossroads.com.
  - I-26 Interchange: It is expected that the bottleneck issue will be addressed through the Carolina Crossroads Project.
  - US-378 Interchange: Intersection improvements are proposed at US 378 and Corley Mill Road. It is expected that the improvements to the intersection will alleviate the current backups currently seen between Corley Mill Road and I-20 and will allow the interchange to better function which in turn should help alleviate traffic issues through the interchange.
- I-26: In the Columbia area, the I-20 interchange is the primary bottleneck point during the AM peak hour and the I-20 and St. Andrews Road interchanges are the primary bottleneck points during the PM peak hour. In the Charleston area, the U.S. 52 Connector/Ashley Phosphate Road interchange and the merge to I-526 are the primary bottleneck points during the AM peak hour and the I-526 and Ashley Phosphate Road interchanges are the primary bottleneck points during the PM peak hour.
  - I-20 Interchange: It is expected that the bottleneck issue will be addressed through the Carolina Crossroads Project.
  - St Andrews Road Interchange: It is expected that the bottleneck issue will be addressed through the Carolina Crossroads Project.
  - US 52 Connector/Ashley Phosphate Interchange: No mitigation activity is presently underway or proposed for this interchange.

  - I-526 Interchange: The I-526 West Project is expected to address bottlenecks along the I-526 corridor. It is anticipated that a design build contract will be entered into in 2022 and construction is initially expected to be complete by 2027. Further information regarding the I-526 West Project is seen at: https://www.526lowcountrycorridor.com/west

- I-77: The primary bottleneck point along I-77 southbound is approaching the Forest Drive interchange in the Columbia area every Thursday in the AM peak hour, due to weekly graduation ceremonies of Fort Jackson.

  - I-77 Approaching Forest Drive: No mitigation activity is presently underway or proposed for this interchange.

- I-85: The Woodruff Road/I-385 interchange is the primary bottleneck for both directions of I-85 during both the AM and PM peak hours.

  - Woodruff Road/I-385 Interchange: I-85 is currently being widened from six (6) lands to eight (8) lanes from near Exit 40 to near Exit 69. It is anticipated that the end of construction activities combined with the improvements to I-85 will help alleviate traffic issues through the interchange.

- I-126: The I-26 interchange is the primary bottleneck along I-126 westbound during the PM peak hour.

  - I-126 Interchange: It is expected that the bottleneck issue will be addressed through the Carolina Crossroads Project.

- I-385: The primary bottleneck along I-385 is the interchange with I-85.

  - I-85 Interchange: I-85 is currently being widened from six (6) lands to eight (8) lanes from near Exit 40 to near Exit 69. It is anticipated that the end of construction activities combined with the improvements to I-85 will help alleviate traffic issues through the interchange.

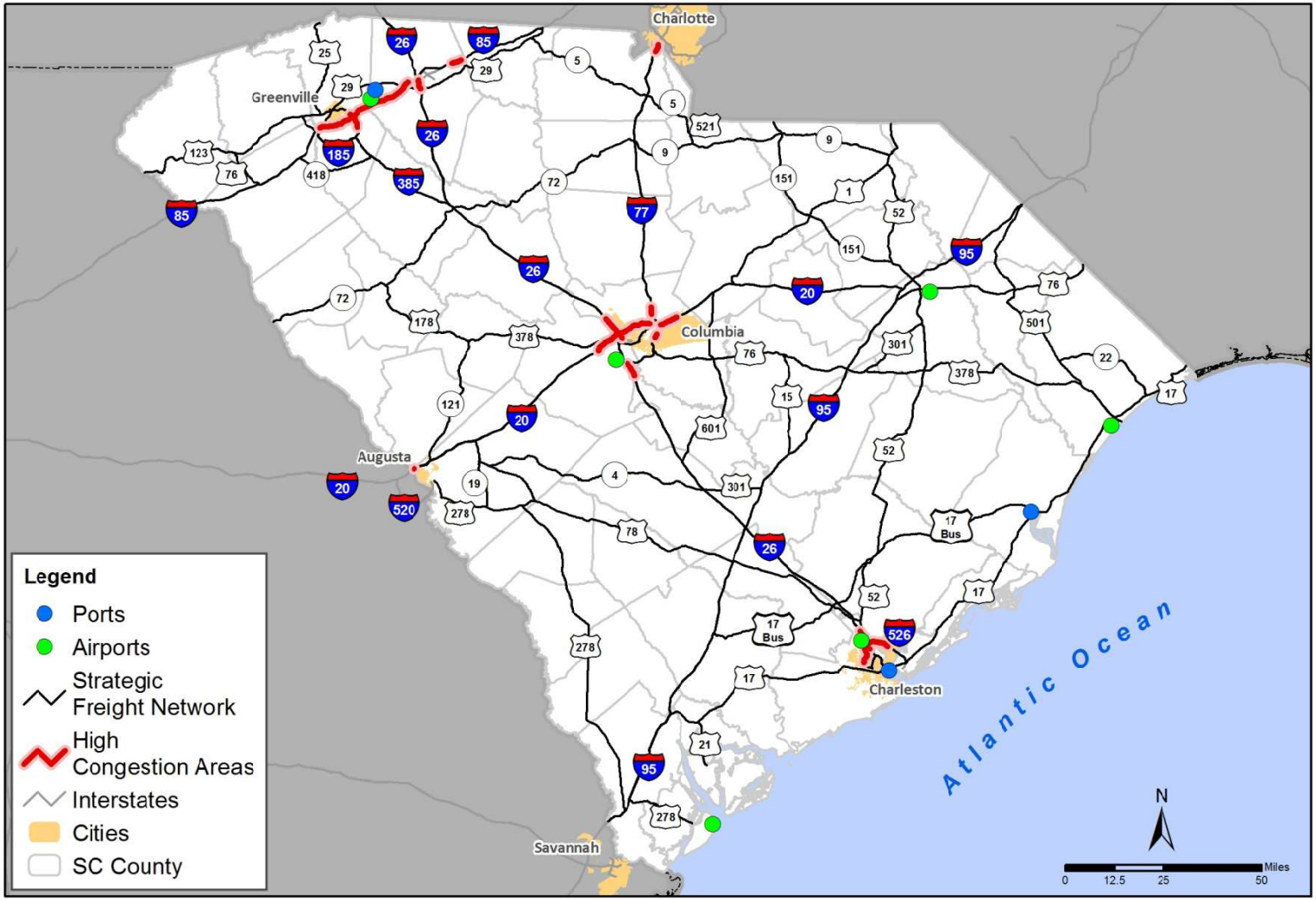
- I-526: During the PM peak hour, the primary bottleneck along I-526 eastbound is the I-26 interchange and the primary bottleneck points along I-526 westbound are the I-26 interchange, the merge from Leeds Avenue, and the Paul Cantrell Boulevard interchange.

  - At I-26 Interchange: The I-526 West Project is expected to address bottlenecks along the I-526 corridor. It is anticipated that a design build contract will be entered into in 2022 and construction is initially expected to be complete by 2027.

  - At Leeds Avenue Merge: The I-526 West Project is expected to address bottlenecks along the I-526 corridor. It is anticipated that a design build contract will be entered into in 2022 and construction is initially expected to be complete by 2027.

  - At Paul Cantrell Boulevard Interchange: The I-526 West Project is expected to address bottlenecks along the I-526 corridor. It is anticipated that a design build contract will be entered into in 2022 and construction is initially expected to be complete by 2027.

Figure 2-18: Freight Bottleneck Locations (2011/2019)



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3.1 Current Freight Trends

Over 465 million tons of freight moved across South Carolina's infrastructure in 2016. Such freight includes finished goods, materials, and supplies. Classified as commodities, this chapter summarizes tonnage movements and their associated values. Following an overview of the commodity reporting convention and the primary data source used to evaluate freight flows and values, current year volumes are summarized by mode and direction.

3.1.1 Overview

South Carolina freight movements are evaluated by mode, direction, quantity, and year using TRANSEARCH data. Modes include truck, rail, port, air, and pipe. Directional flows include inbound (from outside the state into South Carolina), outbound (from South Carolina to another state/country), intrastate, and through-state and provide key information in assessing the role of freight in the South Carolina economy. Freight quantities include tons, units,[13] and values (expressed in 2016 constant dollars). Movements are summarized for the most recent year available (2016) and the Statewide Freight Plan's planning horizon year of 2040.

Standard Transportation Commodity Code (STCC) – STCC is a publication containing specific product information used on waybills and other shipping documents. A STCC is a seven digit code categorized by 38 commodity groupings. A STCC for any physical product is associated with a commodity description conforming to exact descriptions in freight transportation classifications of rail and motor carriers.[14] STCC is maintained and published by the Association of American Railroads (AAR), and updated annually to meet user needs, particularly North American Freight Railroads. The Railroad Waybill, 1993 Commodity Flow Survey (CFS), and TRANSEARCH use the STCC coding system. The hierarchical STCC structure allows data collapsibility, enabling summarization of commodity information at various levels. For example, the 2-digit STCC of '01' represents 'Farm Products,' the 3-digit of '011' identifies 'Field Crops,' the next level '0112' indicates 'Raw Cotton.' While freight flows are tallied at the 4-digit STCC level, information is typically reported at the 2-digit commodity level.[15]

TRANSEARCH® – Developed by IHS Global Insight, TRANSEARCH is a comprehensive database of North American freight flows, compiled from more than a hundred industry, commodity, and proprietary data exchange sources. TRANSEARCH combines primary shipment data obtained from some of the nation's largest rail and truck freight carriers with information from public, commercial, and proprietary sources to generate a base year estimate of freight flows at the county level. Further, TRANSEARCH establishes market-specific production volumes by industry or commodity, drawn mostly from IHS Global Insight's Business Markets Insights (BMI) database, and supplemented by trade association and industry reports, and U.S. government-collected data – especially from the Input/Output (I/O) tables produced by the Bureau of Economic Analysis (BEA). Note that waterborne port movements reported by TRANSEARCH exclude foreign

[13] units are unavailable for air, port, and pipe modes
[14] Rail Inc.; https://www.railinc.com/rportal/37
[15] Freight Analysis Framework (FAF): Issues and Plans, U.S. DOT Federal Highway Administration; http://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_reports/report4/rpt4_commodity_class.pdf

non-NAFTA movements (i.e., to/from Europe, Asia, South America, etc.), as discussed subsequently.

Freight Analysis Framework (FAF) - The Freight Analysis Framework (FAF), produced through a partnership between BTS and FHWA, integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. Starting with data from the 2012 Commodity Flow Survey (CFS) and international trade data from the Census Bureau, FAF incorporates data from agriculture, extraction, utility, construction, service, and other sectors. FAF version 4 (FAF4) provides estimates for tonnage, value, and ton-miles by regions of origin and destination, commodity type, and mode. As of the development of this Freight Plan update in early 2019, FAF data are available for the base year of 2012, the recent years of 2013-2016, and forecasts from 2020 through 2045 in 5-year intervals. Data may be accessed through the Data Extraction Tool, downloaded as a complete database, or in summary files.

3.1.2 Freight Summary

Over 465 million tons of freight, valued at nearly $739 billion, moved across South Carolina's freight network in 2016. Trucking accounts for the largest modal share: 375.1 million tons (81 percent) valued at $611.8 billion (83 percent). Rail comprises the second largest modal share at 63.2 million tons (14 percent) and $93.6 billion (13 percent). Major truck and rail tonnage movements are followed by pipeline, water and air, respectively.

Directionally, through traffic comprises the largest share: 229 million tons (49.2 percent) valued at $417.5 billion (56.5 percent). State inbound tonnages (97.6 million, 21 percent) are slightly greater than outbound (87.2 million, 18.8 percent); but, outbound values ($144.2 billion, 19.5 percent) are notably greater than inbound values ($115.6 billion, 15.6 percent), indicating a relative trade value surplus. As such, on average, the state imports lower value-per-ton commodities and exports higher-value-per-ton commodities. This suggests that South Carolina imports raw materials used in the production of value-added goods and then exports processed goods. Lastly, intrastate goods movements comprise the smallest directional movement by volume (51.1 million tons, 11 percent) and value ($61.7 billion, 8.4 percent).

Tonnage and value movements are summarized by mode and direction in

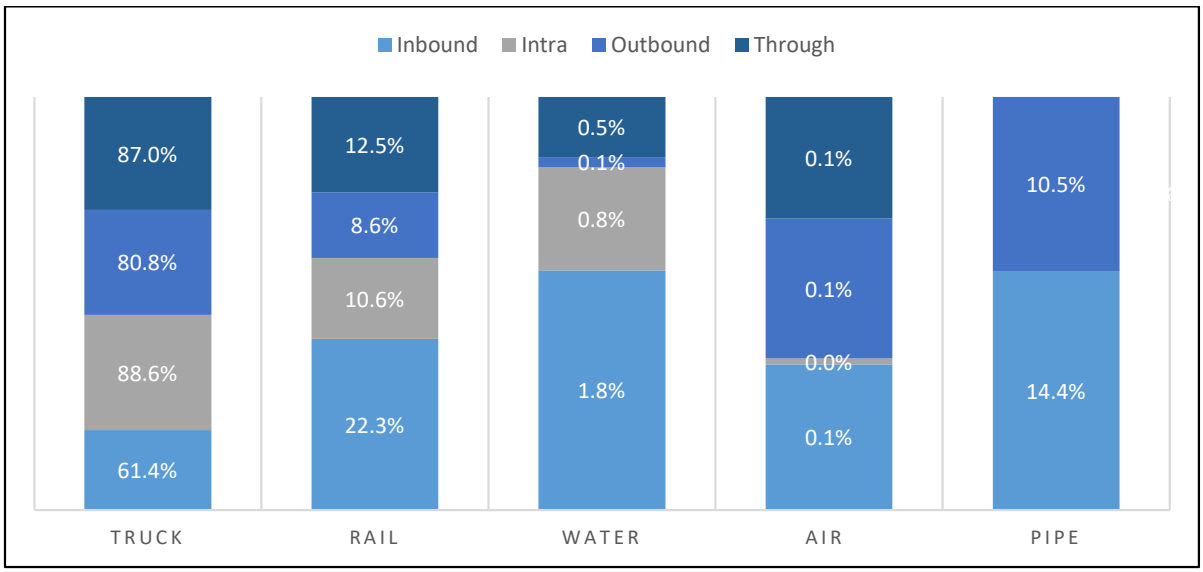
Table 3-1 and relative tonnage and value shares are illustrated in **Figure 3-1** and **Figure 3-2**. The ensuing sections aggregate the modal and directional freight flows by major commodity type and domestic trading partners with South Carolina.

Table 3-1: South Carolina Total Freight Traffic by Mode and Direction (2016)

Direction	Truck	Rail	Water	Air	Pipe	Total
Tons						
Inbound	59,934,986	21,811,904	1,767,954	66,756	14,051,968	97,633,568
Intra	45,289,394	5,404,653	397,996	1,461	353	51,093,857
Outbound	70,535,532	7,484,310	66,869	57,450	9,154,090	87,298,251
Through	199,287,208	28,539,454	1,043,533	130,925	N/A	229,001,120
Total	375,047,119	63,240,321	3,276,352	256,592	23,206,411	465,026,795
Value, in millions						
Inbound	$87,724	$16,867	$180	$7,337	$3,447	$115,554
Intra	$49,863	$11,712	$94	$71	$0.086	$61,740
Outbound	$122,340	$11,629	$35	$8,250	$1,966	$144,220
Through	$351,912	$53,391	$272	$11,967	N/A	$417,542
Total	$611,839	$93,599	$581	$27,625	$5,413	$739,056

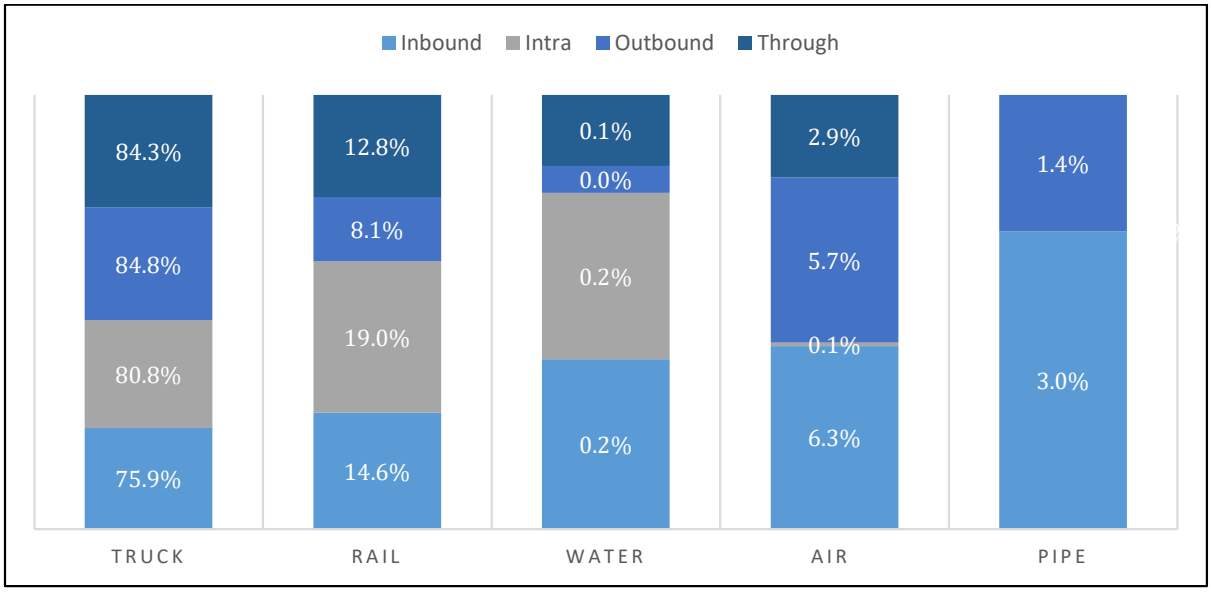
Source: TRANSEARCH and FAF 4 data for 2016

Figure 3-1: South Carolina Freight Traffic by Mode and Direction (2016 Tons)



Source: TRANSEARCH data for 2016

Figure 3-2: South Carolina Freight Traffic by Mode and Direction (2016 Value)



Source: TRANSEARCH data for 2016

3.1.3 Current Freight Flows

The following discussion presents year 2016 freight flows by mode and direction. Each subsection summarizes modal directional flows by the top ten two-digit STCC commodity movements.

3.1.3.1 Truck Freight

South Carolina truck movements in 2016 totaled 375.1 million tons, valued at $611.9 billion, and carried within 30.8 million units, as shown in **Table 3-2**. On average, total truck commodity movements are valued at $1,631/ton. Through truck movements are the largest directional movements, 53.1 percent of total tonnage, 48.8 percent of units, and 57.5 percent of value. At nearly $1,766 per ton, through movements are also the most valuable per-ton (on average) of the directional movements. Outbound truck tonnage (70.5 million) and value ($122.3 billion) are greater than inbound movements (59.9 million tons, $87.7 billion). Intrastate movements are the smallest of the directional movements (45.3 million tons, $49.9 billion).

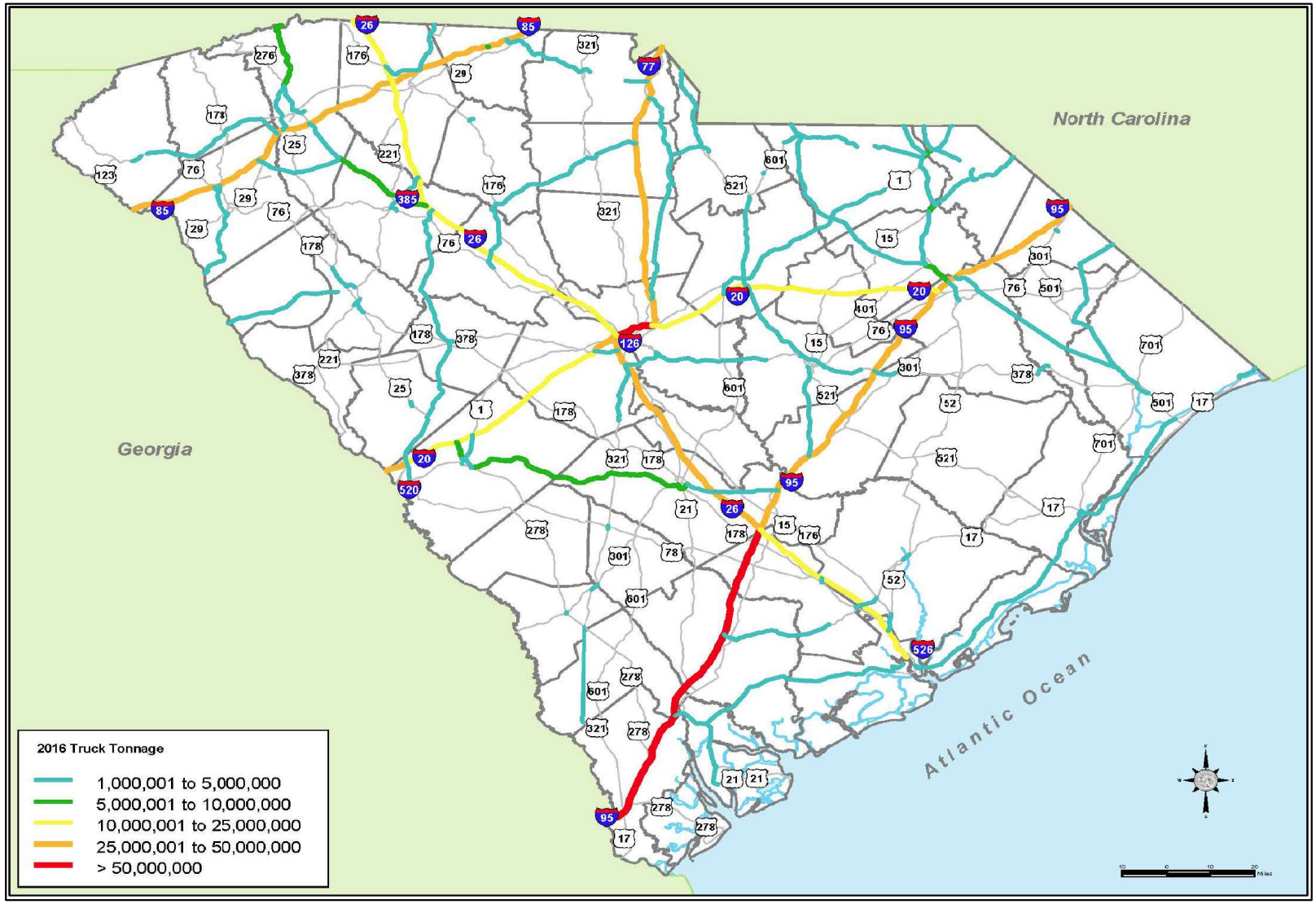
Table 3-2: South Carolina Truck Freight by Direction (2016)

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Inbound	59,934,986	16.0%	5,231,872	17.0%	$87,724	25.8%	$1.464
Intra	45,289,394	12.1%	5,191,529	16.9%	$49,863	17.2%	$1,101
Outbound	70,535,532	18.8%	5,361,856	17.4%	$122,340	4.7%	$1,734
Through	199,287,208	53.1%	15,022,442	48.8%	$351,912	52.4%	$1,766
Total	**375,047,119**	**100.0%**	**30,807,700**	**100.0%**	**$611,839**	**100.0%**	**$1,631**

Source: TRANSEARCH data for 2016

As one might expect, the major freight corridors include the five interstates (I-20, I-26, I-77, I-85, and I-95), as seen in **Figure 3-3**. Additionally, major U.S. and state highways in the urban centers also accommodate significant freight flows.

Figure 3-3: South Carolina Truck Freight Tonnage (2016)



Source: TRANSEARCH data for 2016

Inbound Truck

Table 3-3 presents major inbound truck commodities to South Carolina in 2016. Such movements total 59.9 million tons, via 5.2 million units, valued at $87.7 billion, with an average value/ton of $1,464. In tonnage terms, top inbound movements include: *Nonmetallic Mineral* (10.8 million, 18.1 percent), *Chemical or Allied Products* (6.7 million, 11.1 percent), and Clay, Concrete Glass or Stone (6.6 million, 11.1 percent). In unit terms, *Shipping Containers* constitute almost half (2.3 million, 43.6 percent) of the total 5.2 million inbound truck units.[16] In value terms, the top commodities include: *Chemicals and Allied Products* ($15.1 billion, 17.2 percent), *Transportation Equipment* ($11.9 billion, 13.6 percent), and *Food and Kindred Products* ($9.9 billion, 11.3 percent).

Table 3-3: South Carolina Truck Inbound Freight by Major Commodities (2016)

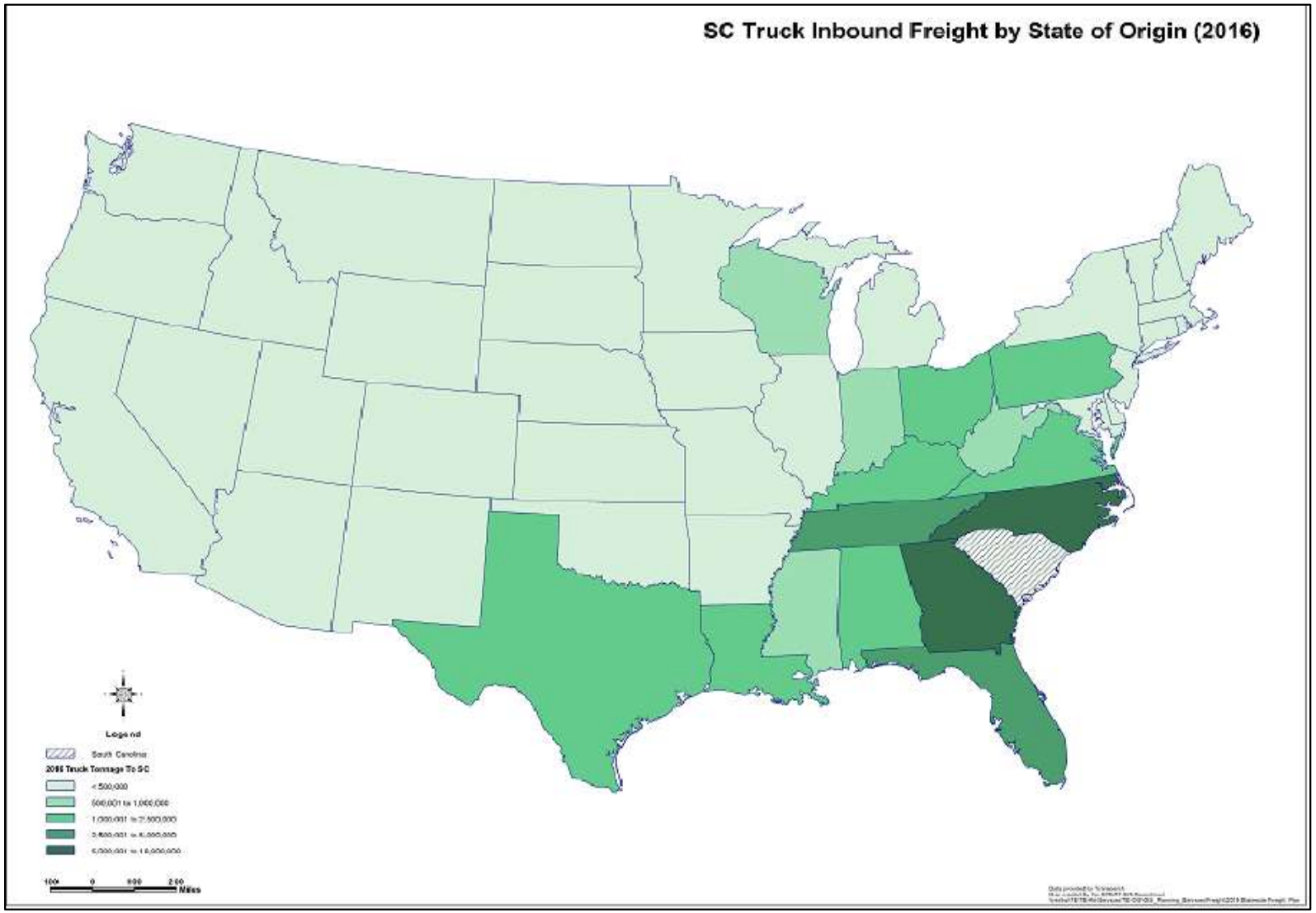
STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
14	Nonmetallic Minerals	10,823,764	18.1%	445,233	8.5%	$190.3	0.2%	$18
28	Chemical or Allied Products	6,657,847	11.1%	321,224	6.1%	$15,069	17.2%	$2,263
32	Clay, Concrete, Glass or Stone	6,627,171	11.1%	415,444	7.9%	$1,422	1.6%	$215
20	Food and Kindred Products	5,904,142	9.9%	257,290	4.9%	$9,925	11.3%	$1,681
01	Farm Products	5,398,548	9.0%	312,970	6.0%	$5,164	5.9%	$957
40	Waste or Scrap Materials	4,648,759	7.8%	191,105	3.7%	$1,453	1.7%	$313
29	Petroleum or Coal Products	4,127,580	6.9%	171,546	3.3%	$1,608	1.8%	$390
50	Secondary Traffic	3,539,625	5.9%	185,715	3.5%	$6,321	7.2%	$1,786
24	Lumber or Wood Products	2,736,792	4.6%	107,679	2.1%	$1,234	1.4%	$451
33	Primary Metal Products	2,190,093	3.5%	87,727	1.7%	$4,806	5.5%	$2,194
	Remaining Commodities	7,280,667	12.1%	2,735,939	52.3%	$40,531	46.2%	$5,567
	Total	**59,934,986**	**100.0%**	**5,231,872**	**100.0%**	**$87,724**	**100.0%**	**$1,464**

Source: TRANSEARCH data for 2016

Truck Inbound Origin and Destination – Truck movements originating beyond South Carolina are primarily traveling to urban areas in South Carolina, led by port-related movements in Charleston County (8.3 million tons), and the Upstate manufacturing counties of Greenville (8.1 million tons) and Spartanburg (5.3 million tons). More than half of the inbound tonnages in 2016 to South Carolina were from Georgia and North Carolina, as shown in **Figure 3-4.** The 14.1 million tons from Georgia (23.5 percent of total inbound, valued at $16.1 billion) are led by *Nonmetallic Minerals* (3.7 million tons, $43.9 million), *Clay, Concrete, Glass or Stone Products* (2.4 million ton, $456 million) and *Waste or Scrap Material* (1.2 million, $329 million) The 17.4 million tons from North Carolina (29.1 percent of total inbound, valued at $16.1 billion) is distributed among several commodity types including *Nonmetallic Minerals* (4.9 million, $75.8 million), *Clay, Concrete, Glass or Stone Products* (2.5 million, $391.7 million) and *Petroleum or Coal Products* (2.0 million, $902 million). Major inbound tonnages in 2016 are shown by county destination in **Figure 3-5**.

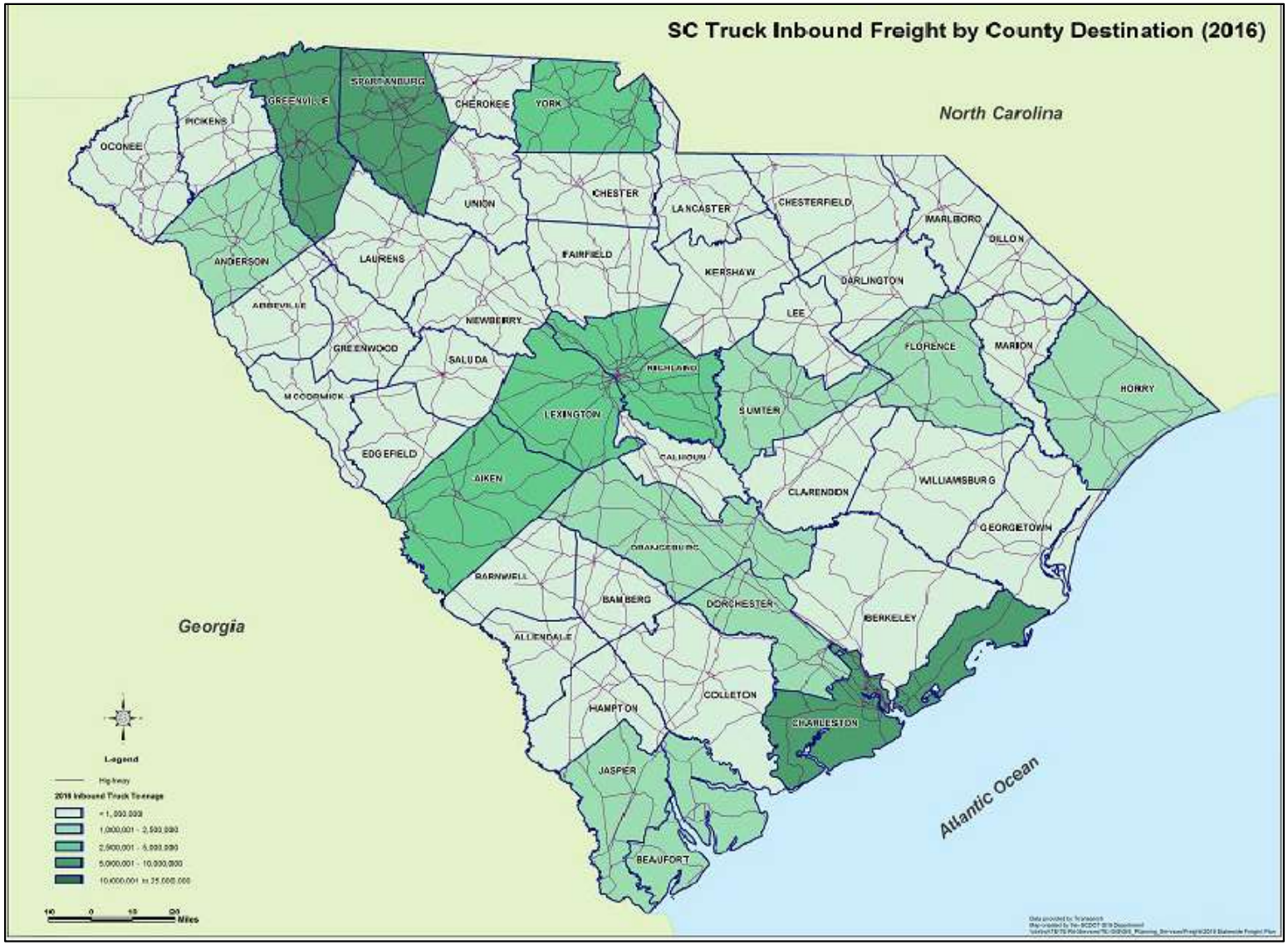
[16] Note, since the tonnage associated with *Shipping Containers* is not in the top ten, the associated units are not shown separately in Table 3-3, rather it is included under *Remaining Commodities*; similar occurrences are also present in other tables.

Figure 3-4: South Carolina Truck Inbound Freight by State of Origin (2016)



Source: TRANSEARCH data for 2016

Figure 3-5: South Carolina Truck Inbound Freight by County Destination (2016)



Outbound Truck

Table 3-4 presents major outbound truck commodities from South Carolina in 2016. Such outbound truck movements total 70.5 million tons, via 5.4 million units, valued at $122.3 billion, with an average value/ton of $1,734. In tonnage terms, top outbound movements include: *Nonmetallic Minerals* (26.7 million, 37.9 percent), *Waste or Scrap Materials* (4.8 million, 6.8 percent), and *Chemicals or Allied Products* (4.7 million, 6.8 percent). In unit terms, *Nonmetallic Minerals and Shipping Containers* constitute more than half (3.1 million, 57.1 percent) of the total 5.4 million outbound truck units. In value terms, top commodities include: *Transportation Equipment* ($25.2 billion, 20.6 percent) and *Machinery* ($14.0 billion, 11.5 percent).

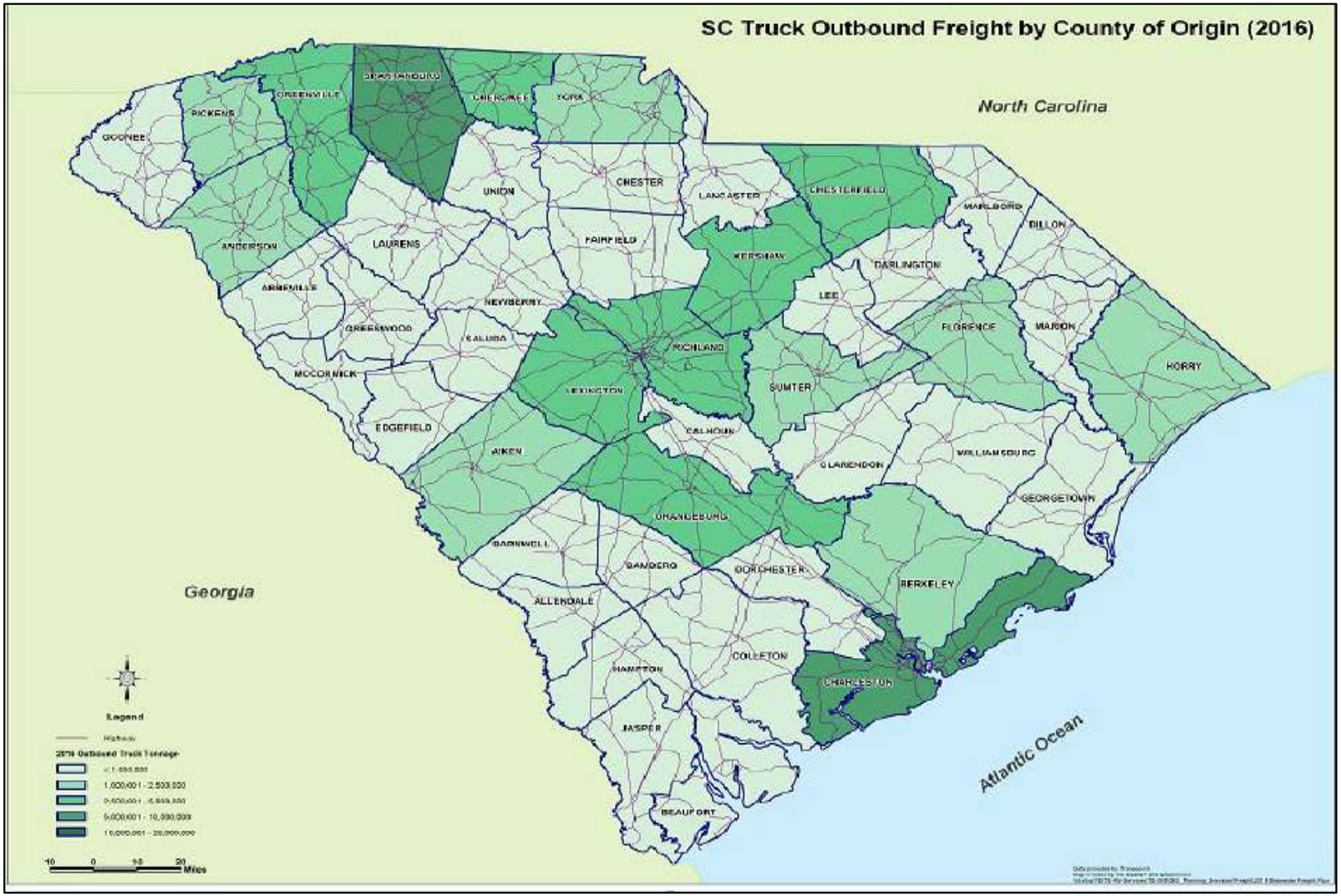
Table 3-4: South Carolina Truck Outbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
14	Nonmetallic Minerals	26,719,658	37.9%	1,099,107	20.5%	$290	0.2%	$11
40	Waste or Scrap Materials	4,804,825	6.8%	197,317	3.7%	$1,191	1.0%	$248
28	Chemicals or Allied Products	4,792,798	6.8%	230,562	4.3%	$12,048	9.8%	$2,517
20	Food or Kindred Products	4,658,702	6.6%	203,321	3.8%	$9,115	7.5%	$1,957
24	Lumber or Wood Products	4,335,967	6.1%	171,850	3.2%	$1,127	0.9%	$260
50	Secondary Traffic	4,123,312	5.8%	226,801	4.2%	$8,104	6.6%	$1,965
01	Farm Products	3,046,217	4.3%	188,864	3.5%	$3,483	2.8%	$1,143
29	Petroleum or Coal Products	2,886,075	4.1%	119,260	2.2%	$1,299	1.1%	$450
37	Transportation Equipment	2,598,305	3.7%	185,360	3.5%	$25,242	20.6%	$9,715
32	Clay, Concrete, Glass or Stone	2,347,686	3.4%	144,356	2.7%	$935	0.9%	$398
	Remaining Commodities	10,221,988	14.5%	2,595,058	48.4%	$59,507	48.6%	$5,821
	Total	**70,535,532**	**100.0%**	**5,361,856**	**100.0%**	**$122,340**	**100.0%**	**$1,734**

Source: TRANSEARCH data for 2016

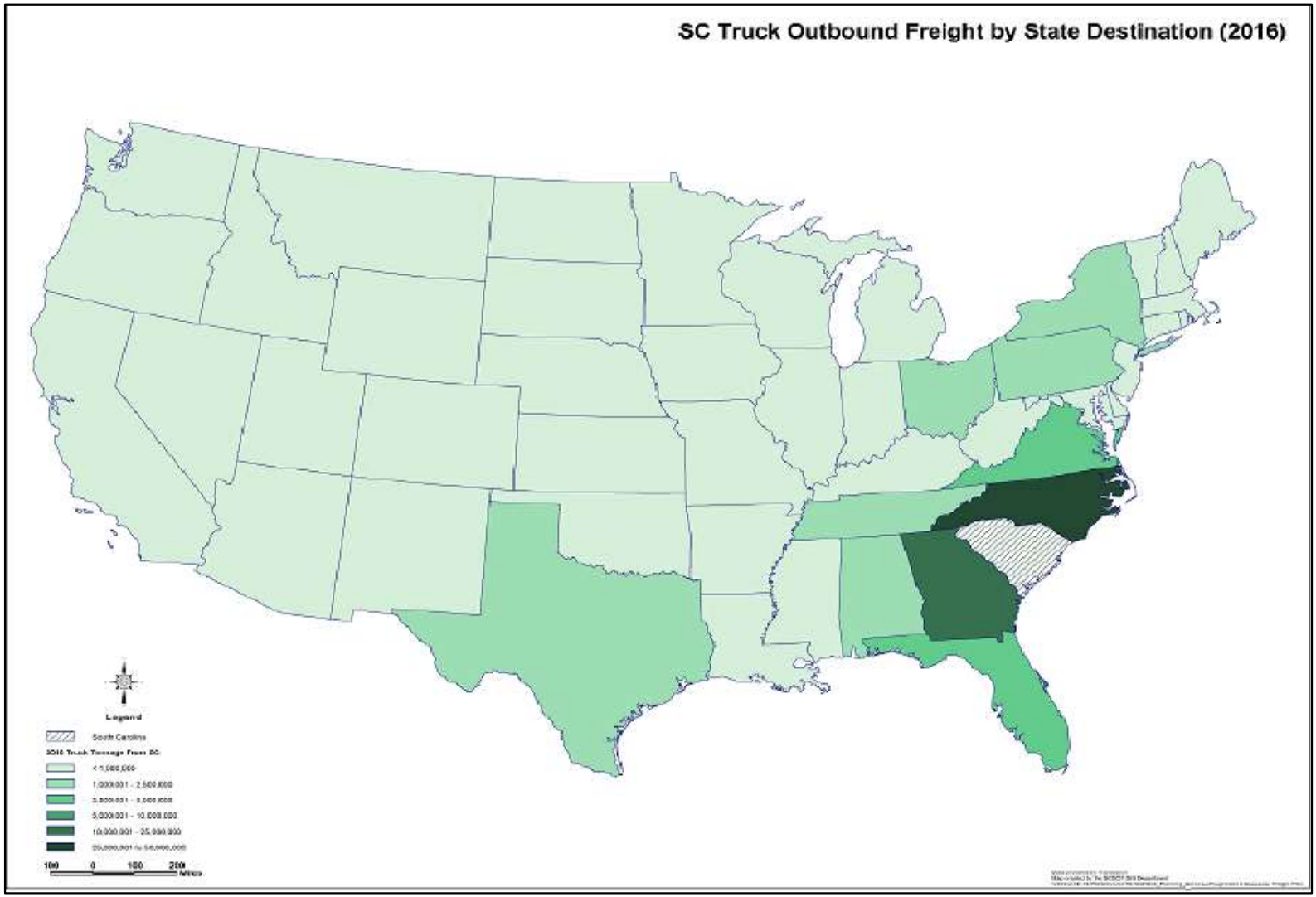
Outbound Tonnage Origin and Destination – Major outbound tonnages from South Carolina in 2016 are shown by county origin in **Figure 3-6**. Truck movements destined out-of-state are primarily traveling from Charleston County (8.4 million tons), Spartanburg County (6.7 million tons), and Lexington County (4.6 million tons). Of the total outbound tonnage in 2016, 60 percent was destined to North Carolina (28.4 million tons, 40.3 percent) and Georgia (14 million tons, 19.8 percent) as shown in **Figure 3-7.** The 28.4 million tons from North Carolina (valued at $20.1 billion) are led by *Nonmetallic Minerals* (17.8 million tons, $176.1 million), *Petroleum or Coal Products* (1.6 million tons, $725 million) and *Secondary Traffic* (1.5 million ton, $3.9 billion). The 14 million tons from Georgia (valued at $14.8 billion) is distributed among several commodity types including *Nonmetallic Minerals* (6.8 million, $76 million), *Petroleum or Coal Products* (1.1 million, valued $526.5 million) and *Lumber or Wood Products* (0.9 million, $219 million).

Figure 3-6: South Carolina Truck Outbound Freight by County Origin (2016)



Source: TRANSEARCH data for 2016

Figure 3-7: South Carolina Truck Outbound Freight by State Destination (2016)



Source: TRANSEARCH data for 2016

Through Truck

Table 3-5 presents through-state truck commodities in 2016. Such movements totaled 199.3 million tons, via 15.0 million units, valued at $351.9 billion, with an average value/ton of $1,766. In tonnage terms, the top through movements include: *Nonmetallic Minerals* (31.1 million, 15.6 percent), *Clay, Concrete, Glass or Stone Products* (23.4 million, 11.7 percent), and Secondary Traffic (21.4 million, 10.7 percent). In unit terms, the top commodities include: *Shipping Containers* (4.8 million, 32.2 percent), *Clay, Concrete Glass and Stone Products* (1.5 million, 9.6 percent) and *Secondary Traffic* (1.3 million, 8.6 percent). In value terms, the top commodities include: *Secondary Traffic* ($50.8 billion, 14.4 percent), *Transportation Equipment* ($37.1 billion, 10.5 percent), and *Food or Kindred Products* ($35.2 billion, 10.0 percent).

Table 3-5: South Carolina Truck Through-State Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
14	Nonmetallic Minerals	31,116,647	15.6%	1,279,976	8.5%	$550,527	0.2%	$18
32	Clay, Concrete, Glass or Stone	23,378,363	11.7%	1,446,821	9.6%	$5,572	1.6%	$238
50	Secondary Traffic	21,398,553	10.7%	1,297,330	8.6%	$50,713	14.4%	$2,370
20	Food or Kindred Products	20,240,534	10.2%	882,758	5.9%	$35,215	10.0%	$1,740
40	Waste or Scrap Materials	13,704,024	6.9%	569,485	3.8%	$3,759	1.1%	$274
24	Lumber or Wood Products	13,414,331	6.7%	523,356	3.5%	$7,311	2.1%	$545
01	Farm Products	12,800,033	6.4%	726,787	4.8%	$13.934	4.0%	$1,089
29	Petroleum or Coal Products	12,680,990	6.4%	528,149	3.5%	$4,864	1.4%	$384
28	Chemical or Allied Products	11,571,498	5.8%	563,197	3.7%	$29,943	8.5%	$2,588
26	Pulp, Paper or Allied Products	11,550,332	5.8%	478,207	3.2%	$11,874	3.4%	$1,028
	Remaining Commodities	27,431,902	13.8%	6,726.376	44.9%	$188,174	53.3%	$6,860
	Total	**199,287,208**	**100.0%**	**15,022,442**	**100.0%**	**$351,912**	**100.0%**	**$1,766**

Source: TRANSEARCH data for 2016

Intrastate Truck

Table 3-6 summarizes intrastate truck commodities in South Carolina in 2016. Such movements total 45.3 million tons, via 5.2 million units, valued at $49.9 billion, with an average value/ton of $1,101. In tonnage terms, top intrastate movements include: *Nonmetallic Minerals* (17.6 million, 38.8 percent), *Petroleum or Coal Products* (9.9 million, 21.9 percent), and *Secondary Traffic* (6.2 million, 13.8 percent). In unit terms, *Shipping Containers* and *Nonmetallic Minerals* together constitute nearly three-quarters (3.8 million tons, 72.1 percent) of the total 5.2 million intrastate truck units, with 3.0 million and 722,705, respectively. In value terms, the top commodities include: *Secondary Traffic* ($4.8 billion, 98 percent), *Transportation Equipment* ($6.5 billion, 13.1 percent), and *Chemicals and Allied Products* ($1.6 billion, 3.3 percent). Intrastate movements are dominated by *Nonmetallic Minerals* (in tonnage terms); but, because the commodity has one of the lowest values/ton ($10), the total value of such commodity movements is a small fraction of intrastate commodity values.

Table 3-6: South Carolina Truck Intrastate Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
14	Nonmetallic Minerals	17,569,194	38.8%	722,705	13.9%	$183,628	0.4%	$10
50	Secondary Traffic	9,920,525	21.9%	406,678	7.8%	$4,866	9.8%	$490
32	Clay, Concrete, Glass or Stone	6,240,544	13.8%	429,703	8.3%	$18,8848	37.9%	$3,026
24	Lumber or Wood Products	2,167,101	4.8%	137,757	2.7%	$408	0.8%	$188
40	Waste or Scrap Materials	2,143,077	4.7%	102,751	2.0%	$5,228	10.5%	$2,439
01	Farm Products	1,976,805	4.4%	78,707	1.5%	$502	1.0%	$254
29	Petroleum or Coal Products	1,143,393	2.5%	65,194	1.3%	$695	1.4%	$608
28	Chemicals or Allied Products	787,010	1.7%	34,217	0.7%	$1,622	3.3%	$2,061
20	Food or Kindred Products	748,823	1.7%	29,669	0.6%	$208	0.4%	$277
33	Primary Metal Products	700,254	1.5%	50,164	1.0%	$6,530	13.1%	$9,325
	Remaining Commodities	1,892,667	4.2%	3,133,983	60.2%	$10,739	21.4%	$5,674
	Total	**45,289,394**	**100.0%**	**5,191,529**	**100.0%**	**$49,863**	**100.0%**	**$1,101**

Source: TRANSEARCH data for 2016

3.1.3.2 Rail Freight

South Carolina rail movements in 2016 totaled 63.2 million tons, valued at $93.6 billion, and carried within 1.4 million units, as shown in **Table 3-7**. On average, total rail commodity movements are valued at $1,480/ton. Through-state rail movements are the largest directional movements: 45.2 percent of total tonnage, 58 percent of units, and 57.1 percent of value. Inbound rail tonnage (21.8 million) is significantly greater than outbound (7.5 million); however, in terms of value, inbound and outbound movements are closer ($16.9 billion inbound versus $11.6 billion outbound) due to the notably higher average value/ton of outbound ($1,554) versus inbound ($773).

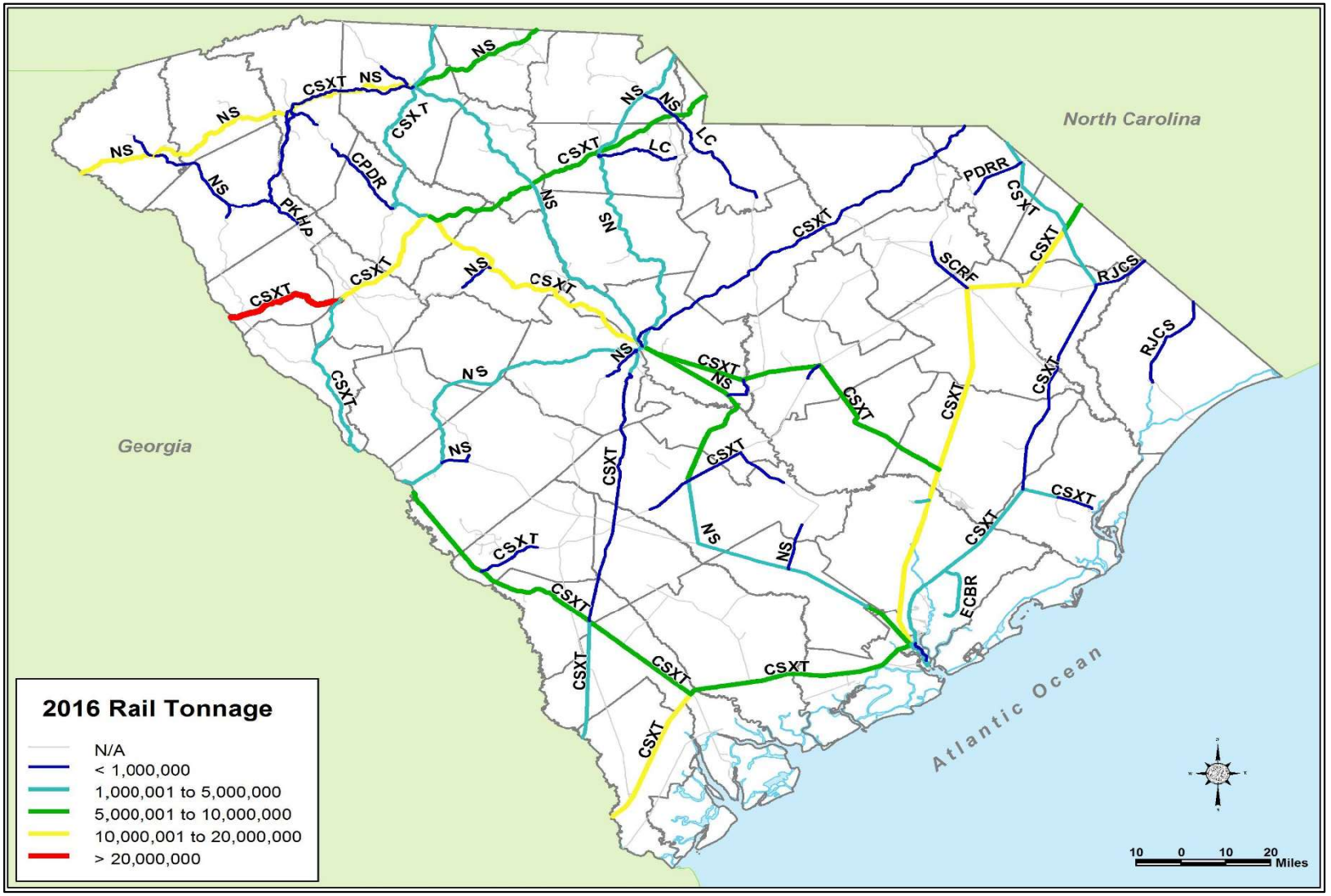
Table 3-7: South Carolina Rail Freight by Direction (2016)

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Inbound	21,811,904	34.5%	303,927	21.7%	$16,867	18.0%	$773
Intra	5,404,653	8.5%	147,855	10.5%	$11,712	12.5%	$2,167
Outbound	7,484,310	11.8%	137,932	9.8%	$11,629	12.4%	$1,554
Through	28,539,454	45.2%	812,047	58.0%	$53,391	57.1%	$1,871
Total	**63,240,321**	**100.0%**	**1,401,761**	**100.0%**	**$93,599**	**100.0%**	**$1,480**

Source: TRANSEARCH data for 2016

As shown in Figure 3-8, the CSXT link between Greenwood, SC and Athens, GA handles the greatest rail tonnage per line. In this segment, two separate CSX lines share trackage, contributing to this high density. Other notable tonnage movements go through Laurens County, Columbia and Charleston.

Figure 3-8: South Carolina Rail Freight Tonnage (2016)



Source: TRANSEARCH data for 2016

Inbound Rail

Table 3-8 presents major inbound rail commodities to South Carolina in 2016. Such movements total 21.8 million tons, via 303,927 units, valued at $16.9 billion, with an average value/ton of $773. In tonnage terms, top inbound movements include: *Coal* (8.0 million, 36.9 percent), *Chemical or Allied Products* (3.8 million, 16.7 percent), and *Nonmetallic Mineral* (2.1 million, 9.7 percent). In unit terms, *Coal* and *Miscellaneous Mixed Shipments* constitute almost half (149,105, 49 percent) of the total 303,927 inbound rail units. In value terms, the top commodities include: *Chemical or Allied Products* ($5 billion or 29.6 percent), *Miscellaneous Mixed Shipments* ($5 billion or 29.6 percent), and *Transportation Equipment* ($3.6 billion or 21.2 percent).

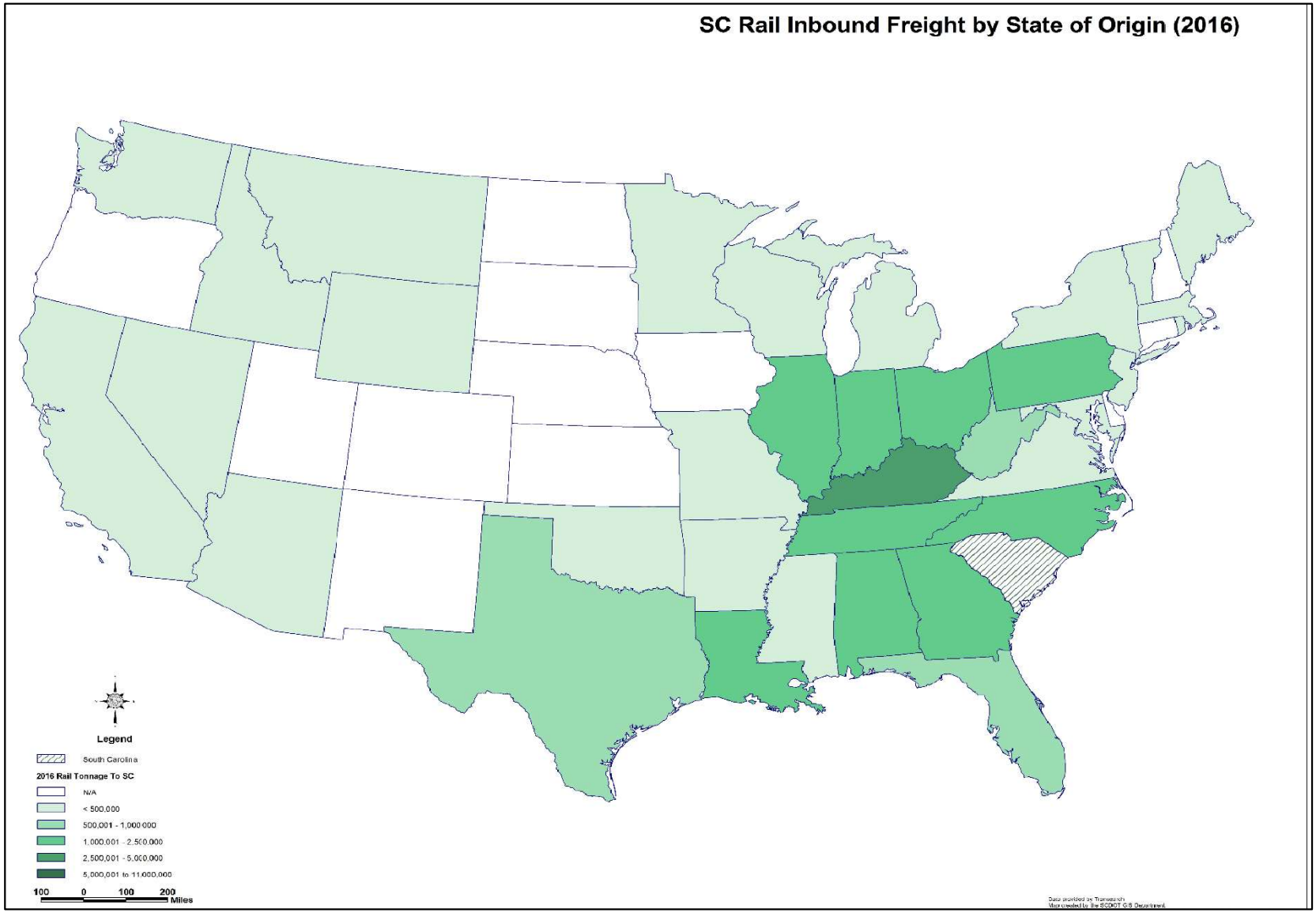
Table 3-8: South Carolina Rail Inbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
11	Coal	8,038,140	36.9%	69,025	22.7%	$280	1.7%	$35
28	Chemicals or Allied Products	3,638,412	16.7%	41,320	13.6%	$5,000	29.6%	$1,374
14	Nonmetallic Minerals	2,110,293	9.7%	19,272	6.3%	$22	0.1%	$11
01	Farm Products	1,376,168	6.3%	13,010	4.3%	$145	0.9%	$105
20	Food or Kindred Products	1,141,612	5.2%	13,484	4.4%	$601	3.6%	$526
46	Misc. Mixed Shipments	964,240	4.4%	80,080	26.3%	$4,997	29.6%	$5,183
40	Waste or Scrap Materials	940,008	4.3%	10,524	3.5%	$181	1.1%	$193
26	Pulp, Paper or Allied Products	921,520	4.2%	12,440	4.1%	$661	3.9%	$717
32	Clay, Concrete, Glass or Stone	723,396	3.3%	7,980	2.6%	$124	0.7%	$172
29	Petroleum or Coal Products	561,996	2.6%	6,852	2.3%	$415	2.5%	$740
	Remaining Commodities	1,396,119	6.4%	29,940	9.9%	$3,515	26.3%	$4,438
	Total	21,811,904	100.0%	303,927	100.0%	$16,867	100.0%	$773

Source: TRANSEARCH data for 2016

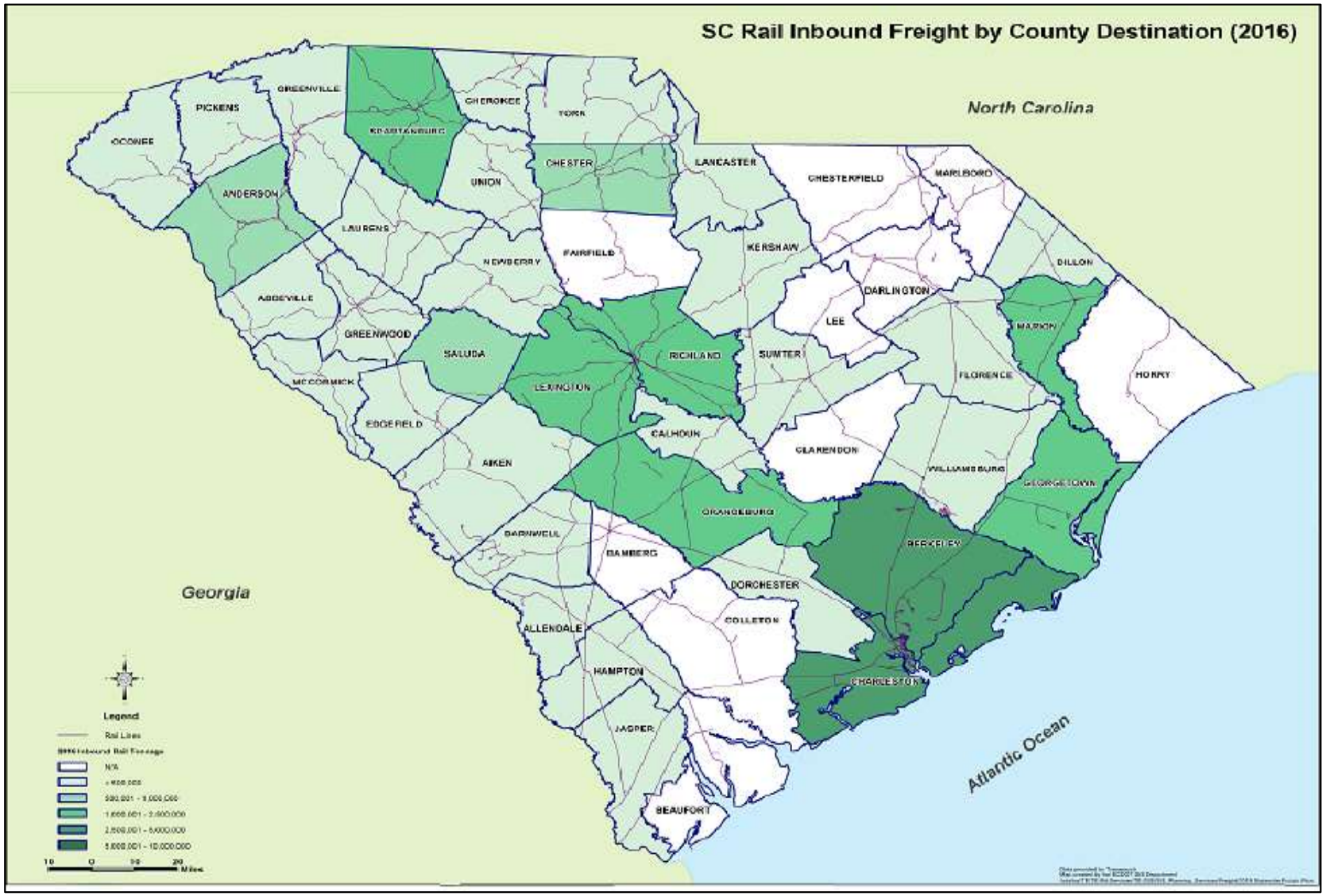
Rail Inbound Tonnage Origin and Destination – Rail movements originating from out-of-state are primarily traveling to Berkeley County (4.8 million tons), Charleston County (3.6 million tons), and Richland County (1.7 million tons). Inbound rail tonnage by state of origin is shown in **Figure 3-9**. The major commodity railed into South Carolina in terms of inbound tonnages is *Coal (8 million tons, valued at $280 million)*, chiefly from Kentucky (3.7 million, $130 million), but also from Indiana (1.8 million, $62.4 million), and Pennsylvania (1.4 million, $49.5 million). The second major commodity railed into South Carolina is *Chemical or Allied Products (3.6 million tons, valued at $5 billion)*, led by Louisiana, Texas, Illinois, and Alabama (ranging from 0.3 million tons, $350 million to 1.0 million tons, $1.8 billion). Major inbound tonnage in 2016 are shown by county destination in **Figure 3-10**.

Figure 3-9: South Carolina Rail Inbound Freight by State of Origin (2016)



Source: TRANSEARCH data for 2016

Figure 3-10: South Carolina Rail Inbound Freight by County Destination (2016)



Source: TRANSEARCH data for 2016

Outbound Rail

Table 3-9 presents the outbound major commodities by rail from South Carolina in 2016. Such outbound rail movements total 7.5 million tons, via 137,932 units, valued at $11.6 billion, with an average value/ton of $1,554. In tonnage terms, top outbound movements include: *Chemicals or Allied Products* (1.4 million, 18.8 percent), *Primary Metal Products* (1.4 million, 18.7 percent), and *Pulp, Paper or Products* (1.3 million, 17 .4 percent). In unit terms, *Miscellaneous Mixed Shipments* and *Pulp, Paper or Allied Products* together constitute more than half (72,960, or 52.9 percent) of the total 137,932 outbound rail units. In value terms, the top commodities include: *Miscellaneous Mixed Shipments* ($3.7 billion or 31.7 percent), *Chemicals or Allied Products* ($2.9 billion or 24.8 percent), and *Primary Metal Products* ($2.0 billion or 17.3 percent).

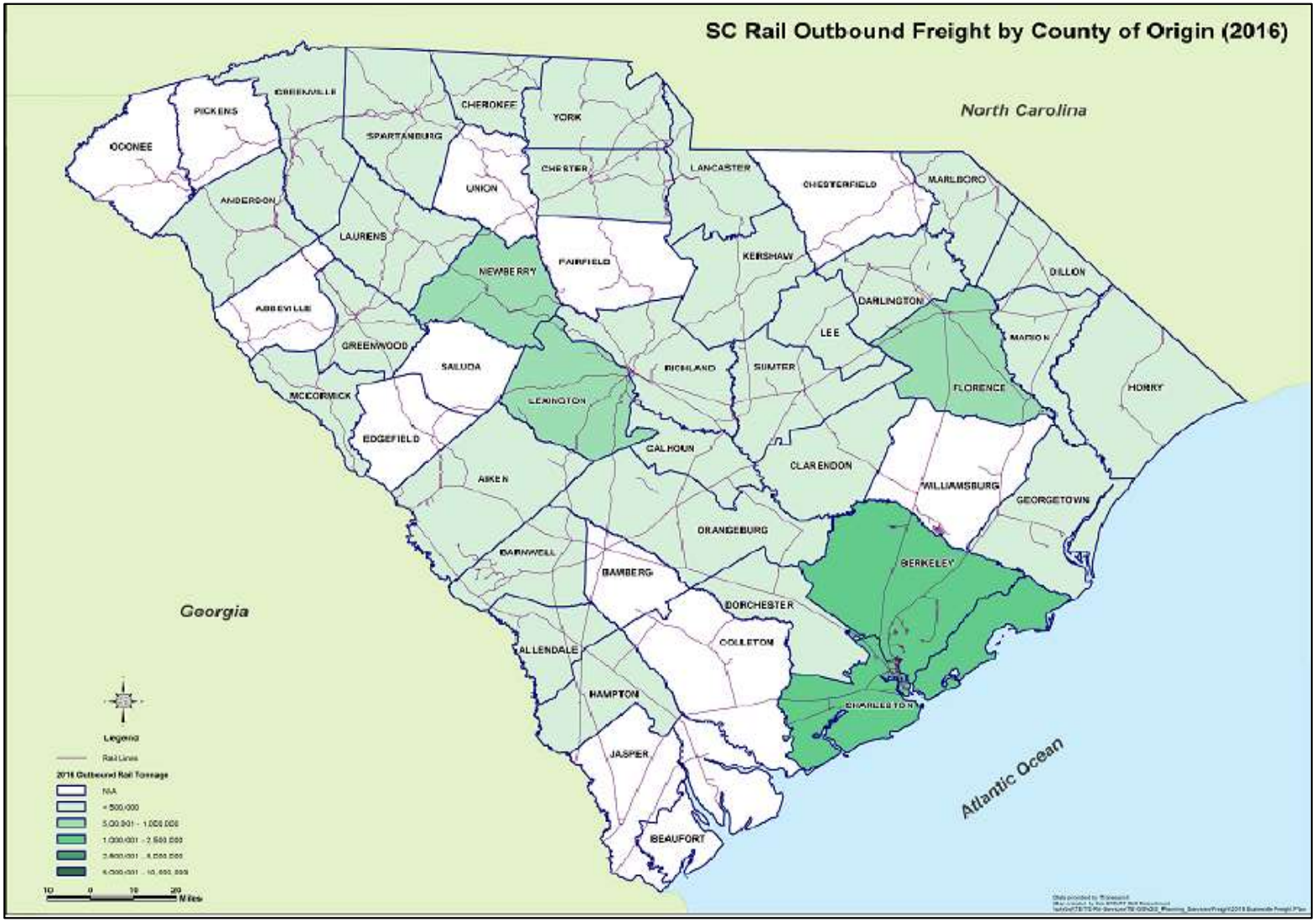
Table 3-9: South Carolina Rail Outbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
28	Chemical or Allied Products	1,404,760	18.8%	15,760	11.4%	$2,882	24.8%	$2,052
33	Primary Metal Products	1,396,828	18.7%	15,436	11.2%	$2,014	17.3%	$1,442
26	Pulp, Paper or Allied Products	1,299,480	17.4%	19,360	14.0%	$1,417	12.2%	$1,090
24	Lumber or Wood Products	1,006,364	13.4%	11,660	8.5%	$263	2.3%	$261
32	Clay, Concrete, Glass or Stone	764,056	10.2%	7,320	5.3%	$96	0.8%	$125
46	Misc. Mixed Shipments	710,720	9.5%	53,600	38.9%	$3,682	31.7%	$5,180
40	Waste or Scrap Materials	382,356	5.1%	4,552	3.3%	$67	0.6%	$174
14	Nonmetallic Minerals	155,236	2.1%	1,536	1.1%	$8	0.1%	$49
20	Food or Kindred Products	137,692	1.8%	1,528	1.1%	$102	0.9%	$737
37	Transportation Equipment	109,760	1.5%	5,380	3.9%	$845	7.3%	$7,694
	Remaining Commodities	117,058	1.5%	1,800	1.3%	$257	2.0%	$2,192
	Total	**7,484,310**	**100.0%**	**137,932**	**100.0%**	**$11,629**	**100.0%**	**$1,554**

Source: TRANSEARCH data for 2016

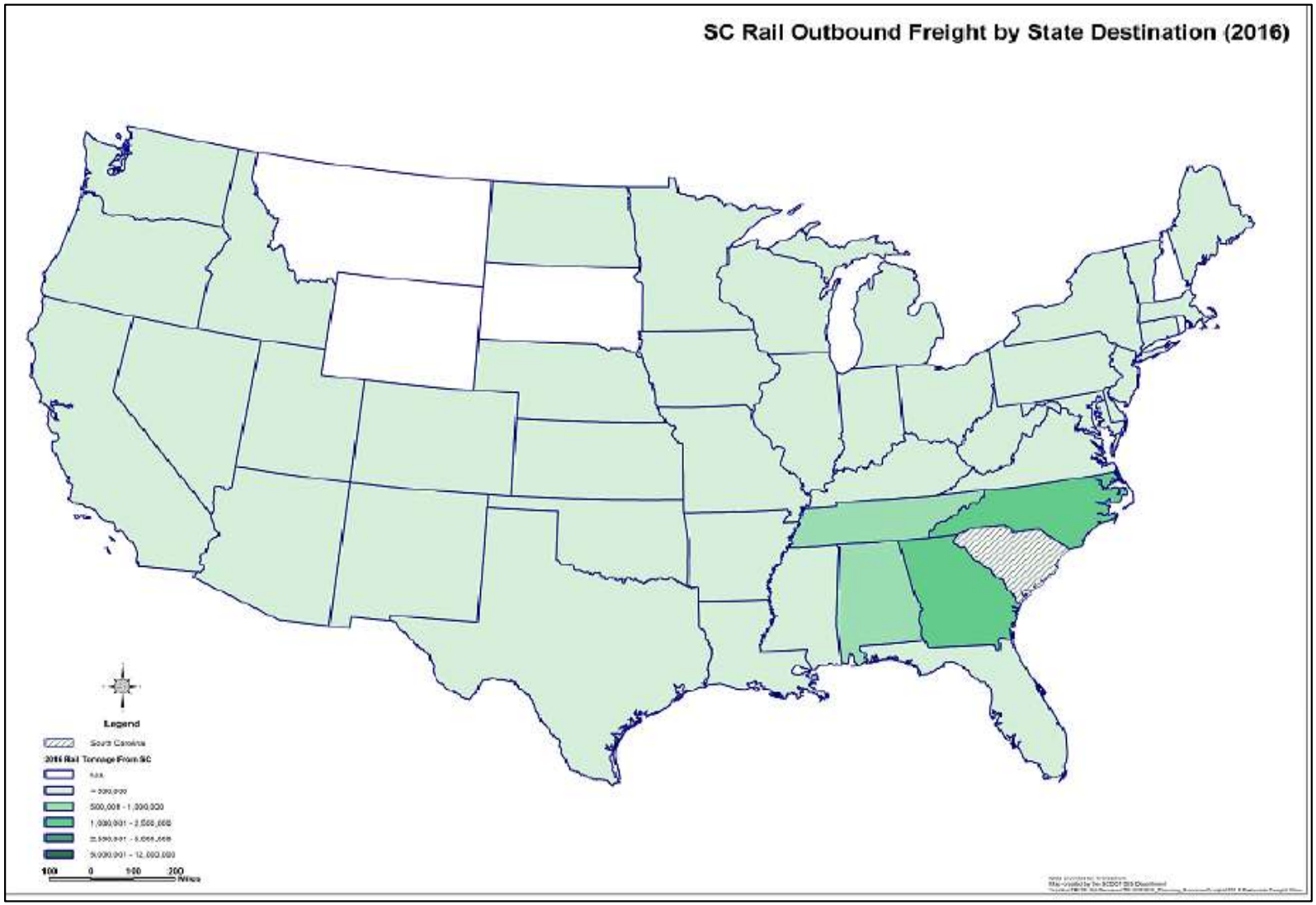
Outbound Tonnage Origin and Destination – Major outbound tonnages in 2016 are shown by county origin in **Figure 3-11**. Rail movements destined out-of-state primarily originated from Charleston County (1.4 million tons), Berkeley County (1.2 million tons) along with Florence County and Lexington County (0.6 million tons each). More than a quarter of outbound rail went to North Carolina (1.2 million tons, 15.4 percent) and Georgia respectively (1.1 million tons, 15.4 percent) followed by Alabama (0.6 million tons, 8.0 percent) as shown in Figure 3-12. North Carolina movements were led by *Clay, Concrete, Glass or Stone* (0.4 million tons, $44.5 million) and *Lumber or Wood Products* (0.3 million tons, $63.8 million). Nearly half of Georgia-bound tonnage was led by *Pulp, Paper or Allied Products* (0.3 million tons, $195 million), and *Lumber or Wood Products (0.3 million tons, $45 million).* Alabama-bound shipments were primarily *Miscellaneous Mixed Shipment* (0.3 million tons, $1.5 billion) and *Waste or Scrap Materials* (0.08 million tons, $14.1 billion).

Figure 3-11: South Carolina Rail Outbound Freight by County Origin (2016)



Source: TRANSEARCH data for 2016

Figure 3-12: South Carolina Rail Outbound Freight by State of Destination (2016)



Source: TRANSEARCH data for 2016

Through Rail

Table 3-10 presents through-state rail commodities in 2016. Such movements total 28.5 million tons, via 812,047 units, valued at $53.4 billion, with an average value/ton of $1,871. In tonnage terms, the top through movements include: *Chemicals or Allied Products* (6.2 million, 21.7 percent), *Miscellaneous Mixed Shipments* (4.7 million, 16.3 percent), and *Food or Kindred Products* (3.4 million tons, 12 percent). In unit terms, *Miscellaneous Mixed Shipments* constitute nearly half (355.760 or 43.8 percent) of the total 812,047 through rail units. In value terms, *Miscellaneous Mixed Shipments* and *Chemicals or Allied Products* constitute more than half of the total $53.4 billion ($23.9 billion, 44.7 percent and $10.7 billion, 20.1 percent respectively).

Table 3-10: South Carolina Rail Through-State by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
28	Chemicals or Allied Products	6,194,380	21.7%	81,588	10.0%	$10,742	20.1%	$1,734
46	Misc. Mixed Shipments	4,649,360	16.3%	355,760	43.8%	$23,882	44.7%	$5,137
20	Food or Kindred Products	3,419,493	12.0%	63,838	7.9%	$2,757	5.2%	$806
14	Nonmetallic Minerals	3,369,266	11.8%	30,926	3.8%	$51	0.1%	$15
26	Pulp, Paper or Allied Products	2,346,496	8.2%	62,088	7.6%	$2,302	4.3%	$981
32	Clay, Concrete, Glass or Stone	2,230,692	7.8%	28,880	3.6%	$485	0.9%	$218
11	Coal	1,195,733	4.2%	10,462	1.3%	$42	0.1%	$35
01	Farm Products	914,486	3.2%	9,427	1.2%	$239	0.4%	$261
24	Lumber or Wood Products	761,372	2.7%	11,752	1.4%	$321	0.6%	$422
29	Petroleum or Coal Products	623,570	2.2%	7,726	1.0%	$371	0.7%	$596
	Remaining Commodities	2,834,606	9.9%	149,600	18.4%	$12,198	22.9%	$4,303
	Total	**28,539,454**	**100.0%**	**812,047**	**100.0%**	**$53,391**	**100.0%**	**$1,871**

Source: TRANSEARCH data for 2016

Intrastate Rail

Table 3-11 summarizes intrastate rail commodities in South Carolina in 2016. Such movements total 5.4 million tons, via 147,855 units, valued at $11.7 billion, with an average value/ton of $2,167. In tonnage terms, top intrastate movements include: *Chemicals or Allied Products* (1.6 million tons, 28.6 percent), *Nonmetallic Minerals* (1.2 million tons, 21.4 percent) and *Miscellaneous Mixed Shipments* (0.8 million tons, 14 percent). In unit terms, *Miscellaneous Mixed Freight* and *Transportation Equipmen*t together constitute almost three quarters (105,112, 71.1 percent) of the total 147,855 intrastate rail units. In value terms, the top commodities include: *Transportation Equipment* ($5.4 billion, 46.2 percent), *Miscellaneous Mixed Freight* ($3.9 billion, 33.4 percent) and *Chemicals or Allied Products* ($1.9 billion or 16.3 percent).

Table 3-11: South Carolina Rail Intrastate by Major Commodities (2016)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
28	Chemicals or Allied Products	1,545,880	28.6%	16,360	11.1%	$1,905	16.3%	$1,232
14	Nonmetallic Minerals	1,156,333	21.4%	10,779	7.3%	$12	0.1%	$10
46	Misc. Mixed Shipments	754,800	14.0%	75,480	51.1%	$3,912	33.4%	$5,183
24	Lumber or Wood Products	691,600	12.8%	7,480	5.1%	$110	0.9%	$160
37	Transportation Equipment	571,160	10.6%	29,632	20.0%	$5,407	46.2%	$9,468
10	Metallic Ores	264,816	4.9%	2,448	1.7%	$92	0.8%	$348
26	Pulp, Paper or Allied Products	151,440	2.8%	2,160	1.5%	$95	0.8%	$630
33	Primary Metal Products	92,000	1.7%	1,040	0.7%	$130	1.1%	$1,414
40	Waste or Scrap Materials	83,640	1.5%	1,040	0.7%	$15	0.1%	$173
48	Waste Hazardous Materials	58,600	1.1%	640	0.4%	$0	0.0%	$0
	Remaining Commodities	34,384	0.6%	796	0.4%	$32	0.3%	$928
	Total	**5,404,653**	**100.0%**	**147,855**	**100.0%**	**$11,712**	**100.0%**	**$2,167**

Source: TRANSEARCH data for 2016

3.1.3.3 Port Freight

South Carolina port (water) movements in 2016 reported by TRANSEARCH totaled 3.3 million tons, valued at $581 million, see **Table 3-12**. It is important to note that the TRANSEARCH reported movements *exclude* foreign non-NAFTA movements to Europe, Asia, South America, etc. However, ground movements by truck/rail to and from South Carolina ports are included under the other modal movements.[17]

On average, reported port commodity movements are valued at $177/ton. In terms of tonnage, inbound port movements are the largest directional movements constituting 54.0 percent of total tonnage with through port movements constituting 31.9 percent of total tonnage. With respect to total value, through port movements have the largest percent of value, 46.8 percent with inbound port constituting 30.9 percent of total of total value. In a comparison of inbound vs. outbound volumes and value, inbound port volumes and values are far greater than outbound movements: 26.4 times the volume and 5.1 times the value. As such, the outbound value/ton for waterborne movements are almost five times the value/ton for inbound waterborne movements: $530 and $102, respectively. Note that the TRANSEARCH does not provide units for waterborne movements.

The following subsections detail the TRANSEARCH-reported movements by direction. Further, it is noted that due to the exclusion of foreign non-NAFTA movements the reported volumes are significantly less than those reported by U.S. Army Corps of Engineers (USACE). Hence, the last subsection summarizes the directional tonnage differences between the two sources.

[17] This is further discussed in subsections 3.1.3.1 and 3.1.3.2.

Table 3-12: South Carolina Port Freight by Direction (2016), excluding Foreign Non-NAFTA Movements

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Outbound	66,869	2.0%	$35	6.1%	$530
Inbound	1,767,954	54.0%	$179	30.9%	$102
Intra	397,995	12.1%	$94	16.2%	$236
Through	1,043,533	31.9%	$272	46.8%	$260
Total	**3,276,351**	**100.0%**	**$580**	**100.0%**	**$177**

Source: TRANSEARCH data for 2016, due to rounding, numbers may not equal

Inbound Port

Table 3-13 summarizes inbound port commodities from the U.S., Mexico, and Canada to South Carolina in 2016, as reported by TRANSEARCH. Such reported movements total 1.8 million tons, valued at $180 million, with an average value/ton of $102. In tonnage terms, the top inbound movements include: *Nonmetallic Minerals* (1.2 million, 70.6 percent), *Petroleum or Coal Products* (0.2 million, 16.7 percent), and *Clay, Concrete, Glass or Stone* (0.1 million, 5.7 percent). In value terms, the top commodities include: *Petroleum or Coal Products* ($127 million, 70.4 percent), *Chemical or Allied Products* ($16 million, 9.2 percent), and *Clay, Concrete, Glass or Stone* ($15 million, 8.5 percent).

Table 3-13: South Carolina Port Inbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
14	Petroleum or Coal Products	1,248,135	70.6%	$7	3.8%	$6
29	Chemicals or Allied Products	295,148	16.7%	$127	70.4%	$428
32	Nonmetallic Minerals	100,733	5.7%	$15	8.5%	$152
40	Waste or Scrap Materials	73,662	4.2%	$13	7.1%	$174
28	Lumber or Wood Products	50,250	2.8%	$15	9.2%	$328
35	Food or Kindred Products	19	0.0%	$0.2	0.2%	$8,978
37	Coal	5	0.0%	$1	0.8%	$269,978
36	Farm Products	0	0.0%	$0.009	0.0%	$0
34	Clay, Concrete, Glass or Stone	0	0.0%	$0.011	0.0%	$0
	Total	**1,767,954**	**100.0%**	**$179**	**100.0%**	**$102**

Source: TRANSEARCH data for 2016; due to rounding, numbers may not equal

Outbound Port

Table 3-14 summarizes outbound port commodities from South Carolina to the U.S., Mexico, and Canada in 2016, as reported by TRANSEARCH. Such reported movements totaled 66,869 tons, valued at $35.4 million, with an average value/ton of $530. In tonnage terms, the top outbound movements include: *Clay, Concrete, Glass or Stone* (58,400, 87.3 percent), *Fabricated Metal Products* (4,280, 6.4 percent), and *Petroleum or Coal Products* (3,110, 4.7 percent). In value terms, the top commodities include: *Fabricated Metal Products* ($20.1 million, 56.6 percent), *Clay, Concrete, Glass, Stone* ($7.4 million, 20.9 percent), and *Machinery* ($4.6 million, 13.0 percent).

Table 3-14: South Carolina Port Outbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
32	Clay, Concrete, Glass or Stone	58,400	87.3%	$7.4	20.9%	$127
34	Fabricated Metal Products	4,280	6.4%	$20	56.6%	$4,685
29	Petroleum or Coal Products	3,110	4.7%	$0.8	2.1%	$240
33	Primary Metal Products	847	1.3%	$2.6	7.4%	$3,080
35	Machinery	232	0.3%	$4.6	13.0%	$19,842
	Total	**66,869**	**100.0%**	**$35**	**100.0%**	**$530**

Source: TRANSEARCH data for 2016, due to rounding, numbers may not equal

Through Port

Table 3-15 summarizes through port commodities via South Carolina in 2016, as reported by TRANSEARCH. Such reported movements totaled 1 million tons, valued at $272 million, with an average value/ton of $260. In terms of both tonnage and value, the top through movements are *Petroleum or Coal Products*, constituting 483,538 tons (46.2 percent of tonnage totals) and $147.1 million (54.1 percent of value totals).

Table 3-15: South Carolina Port Through Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
29	Petroleum or Coal Products	482,538	46.2%	$147	54.1%	$305
14	Nonmetallic Minerals	269,327	25.8%	$3	0.9%	$9
28	Food or Kindred Products	249,052	23.9%	$81.7	30.1%	$328
20	Chemicals or Allied Products	40,974	3.9%	$15.2	5.6%	$371
35	Pulp, Paper or Allied Products	459	0.2%	$18.5	6.8%	$40,214
26	Lumber or Wood Products	418	0.0%	$0.2	0.1%	$391
33	Misc. Mixed Shipments	408	0.0%	$0.9	0.3%	$2,124
34	Textile Mill Products	151	0.0%	$0.8	0.3%	$5,346
24	Primary Metal Products	145	0.0%	$0.023	0.0%	$160
36	Electrical Equipment	47	0.0%	$3.3	1.2%	$69,308
	Remaining Commodities	14	0.0%	$1	0.6%	$129,614
	Total	**1,043,533**	**100%**	**$272**	**100%**	**$248,170**

Source: TRANSEARCH data for 2016; due to rounding, numbers may not equal

Intrastate Port

Table 3-16 summarizes intrastate port commodities within South Carolina in 2016, as reported by TRANSEARCH. Such reported movements totaled 397,996 tons, valued at $94 million, with an average value/ton of $236. As of 2016, only three aggregate STCC commodities were moved intrastate via port/water: *Petroleum or Coal Products*, *Clay, Concrete, Glass or Stone* and *Machinery*. *Petroleum or Coal Products*, constitute the major intrastate tonnage moved (369,270, 92.8 percent) and commodity value ($88.5 million, 94.2 percent).

Table 3-16: South Carolina Port Intrastate Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
29	Petroleum or Coal Products	369,270	92.8%	$89	94.2%	$914
32	Clay, Concrete, Glass, Stone	28,616	7.2%	$4	4.6%	$34
35	Primary Metal Products	109	0.0%	$1	1.2%	$1,195
	Total	**397,995**	**100.0%**	**$94.0**	**100.0%**	**$730**

Source: TRANSEARCH data for 2016

Port Tonnage Comparison

As noted, the TRANSEARCH-reported water tonnage movements (and the associated values) are lower than United States Army Corp of Engineers (USACE) data for the Port of Charleston. **Table 3-17** summarizes total tonnage volumes reported by the USACE at 23 million tons in year 2016, which is 602 percent (19.1 million tons) greater than the 3.3 million tons reported by TRANSEARCH. Differences are significant for all inbound and outbound movements.[18] While TRANSEARCH port movements includes all waterborne freight to/from the U.S. and NAFTA countries (i.e., Canada and Mexico), it excludes foreign movements to/from Europe, Asia, South America, etc. Hence, TRANSEARCH waterborne movements are significantly lower than the USACE reported tonnage movements.[19]

The various factors that result in different tonnage volumes between the two sources are outlined below.

- *U.S. and NAFTA vs. All Movements* – USACE tonnage data includes all foreign and U.S. tonnage movements. Conversely, TRANSEARCH only includes port waterborne movements within the U.S. and NAFTA countries (i.e., Mexico and Canada); other foreign movements to/from Europe, Asia, South America, etc. are not included in the TRANSEARCH port waterborne movement data. However, it is important to note that once all waterborne movements (i.e., U.S., NAFTA, European, Asian, etc.) reach South Carolina their movement is tracked by ground modes (i.e., truck and rail). Similarly, all landside truck and rail tonnage movements to the Port of Charleston are included in TRANSEARCH, regardless of destination (U.S., NAFTA, Europe, Asia, etc.).

Table 3-17: South Carolina Port Tonnage Discrepancy Summary (2016)

Direction	Tons		Difference	
	TRANSEARCH	USACE	Tons	Percent
Outbound	66,869	7,790,791	7,723,922	11,551%
Inbound	1,767,954	13,173,818	11,405,864	645%
Intrastate	397,996	N/A	N/A	N/A
Intra-port	N/A	2,050,894	N/A	N/A
Through	1,043,533	N/A	N/A	N/A
Total	**3,276,352**	**23,015,503**	**19,129,786**	**602%**

Source: TRANSEARCH data and USACE data for 2016.
Note TRANSEARCH does not report *intra-port* movements and excludes foreign non-NAFTA movements, and USACE does not breakout *intrastate* or *through* movements.

- *Intrastate Movements* – USACE reports all port origin and destination movements, but does not breakout intrastate movements between South Carolina ports. Conversely, TRANSEARCH

[18] Intrastate and through-state movements are not reported by USACE; conversely, intra-port movements are not reported by TRANSEARCH.
[19] More detailed tonnage movements are compared by direction and commodity with the widely vetted USACE volumes.

focuses on a commodity's movement assigning an origin region, destination region, and in some cases, an intrastate movement.

- *Intra-port Movements* – USACE reports intra-port tonnage (2,050,894) while TRANSEARCH does not.
- *Commodity Convention* – TRANSEARCH reports data using the STCC (Standard Transportation Commodity Code) commodity classification versus the HS (Harmonized System) used by the USACE. The concordance is not uniform or direct.
- *Time Lag* – Due to the significant time reporting lag of USACE data (e.g., end-of-year) incorporated into the TRANSEARCH estimates, TRANSEARCH tonnage estimates are made in part from prior-year USACE Waterborne Commerce Statistics.
- *Bunkering* – Maritime fuel pumped from on-shore fuel farms to bunker ships that then supply fuel to moored vessels (including tug boats/barges). Such harbor fueling operations (akin to fuel trucks at airports) are counted as freight movements by USACE but are not by TRANSEARCH.

So, both sources are pertinent to the South Carolina freight movement analysis. While USACE tonnage closely approximates actual individual port-reported volumes, the TRANSEARCH data tends to eliminate multiple movements of the same commodity (intra-port movements), as well as other non-freight movements (i.e., bunker fueling).

3.1.3.4 Air Freight

South Carolina air freight movements reported by TRANSEARCH in 2016 totaled 256,592 tons, valued at $27.6 billion, as shown in **Table 3-18**. On average, total air commodity movements are valued at $107,661/ton, which is significantly higher than all other transportation modes. Through air movements comprise the largest direction movement by both tonnage and value (51 percent of total tonnage and 43.3 percent of total value). Note that the TRANSEARCH does not provide units for air movements.

Table 3-18: South Carolina Air Freight by Direction (2016)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Inbound	66,756	26.0%	$7,336	26.6%	$109,906
Intra	1,461	0.6%	$71	0.3%	$48,865
Outbound	57,450	22.4%	$8,250	29.9%	$143,595
Through	130,925	51.0%	$11,967	43.2%	$91,404
Total	256,592	100.0%	$27,624	100.0%	$107,661

Source: TRANSEARCH data for 2016

Inbound Air

Table 3-19 summarizes the inbound air commodities to South Carolina in 2016. Such movements total 66,756 tons, valued at $7.3 billion, with an average value/ton of $109,906. In tonnage terms, the top inbound movements include: *Small Packaged Freight Shipments* (26,821, 40.2 percent), *Food or Kindred Products* (7,538, 11.3 percent) and *Miscellaneous Mixed Shipments* (5,140, 7.7 percent). In

value terms, the top commodities include: *Transportation Equipment* ($1.7 billion, 22.6 percent) and *Electrical Equipment* ($1 billion, 13.7 percent).

Table 3-19: South Carolina Air Inbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	26,821	40.2%	$0	0.0%	$0
20	Food or Kindred Products	7,538	11.3%	$99	1.4%	$13,204
46	Misc. Mixed Shipment	5,140	7.7%	$672	9.2%	$130,720
37	Transportation Equipment	5,102	7.6%	$1,656	22.6%	$324,656
38	Instruments, Photo and Optical Equip.	4,187	6.3%	$936	12.8%	$223,645
36	Electrical Equipment	3,887	5.8%	$1,005	13.7%	$258,557
35	Machinery	3,025	4.5%	$444	6.1%	$146,807
28	Chemicals or Allied Products	2,206	3.3%	$661	9.0%	$299,461
22	Textile Mill Products	2,019	3.0%	$39	0.5%	$19,418
30	Rubber or Miscellaneous Products	1,843	2.8%	$69	0.8%	$37,490
	Remaining Commodities	4,990	7.5%	$1,755	23.9%	$351,731
	Total	**66,756**	**100.0%**	**$7,336**	**100.0%**	**$109,906**

Source: TRANSEARCH data for 2016

Outbound Air

Table 3-20 summarizes major outbound air commodities from South Carolina in 2016. Such movements total 57,450 tons, valued at $8.3 billion, with an average value/ton of $143,595. In tonnage terms, the top inbound movements include: *Small Packaged Freight Shipments* (22,622, 39.4 percent), *Rubber or Miscellaneous Products* (9,122, 15.9 percent), and *Miscellaneous Manufacturing Products* (6,204, 10.8 percent). In value terms, the top commodities include: *Miscellaneous Manufacturing Products* ($4.6 billion or 55.8 percent), *Electrical Equipment* ($1.3 billion, 15.7 percent), and *Miscellaneous Mixed Shipments* ($610 million, 7.4 percent).

Table 3-20: South Carolina Air Outbound Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	22,622	39.4%	$0	0%	$0
30	Rubber or Miscellaneous Products	9,122	15.9%	$343	4.2%	$37,572
39	Misc. Manufacturing Products	6,204	10.8%	$4,605	55.8%	$742,188
36	Electrical Equipment	5,275	9.2%	$1,296	15.7%	$245,610
46	Miscellaneous Mixed Shipments	4,667	8.1%	$610	7.4%	$130,720
35	Machinery	3,471	6.0%	$440	5.3%	$126,828
28	Chemicals or Allied Products	1,938	3.4%	$517	6.3%	$266,529
37	Transportation Equipment	1,378	2.4%	$291	3.5%	$210,893
27	Printed Matter	914	1.6%	$21	0.3%	$23,595
43	Mail or Contract Traffic	449	0.7%	$1	0.0%	$2,969
	Remaining Commodities	1,409	2.5%	$126	0.5%	$89,585
	Total	**57,450**	**100.0%**	**$8,250**	**100.0%**	**$143,595**

Source: TRANSEARCH data for 2016

Through Air

Table 3-21 summarizes major through-traffic air commodities via South Carolina in 2016. Such movements total 130,925 tons, valued at $11.9 billion, with an average value/ton of $91,404. In tonnage terms, the top through movements include: *Small Packaged Freight Shipments* (47,613, or

36.4 percent), *Mail or Contract Traffic* (17,879, 13.7 percent), and *Machinery* (10,876, 8.3 percent). In value terms, the top commodities include: *Electrical Equipment* ($2.5 billion, 20.9 percent), *Transportation Equipment* ($1.9 billion, 16.6 percent) and *Miscellaneous Manufacturing Products* ($1.9 billion, 16.6 percent).

Table 3-21: South Carolina Air Through Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	47,613	36.4%	$0	0.0%	$0
43	Mail or Contract Traffic	17,879	13.7%	$53	0.4%	$2,969
35	Machinery	10,876	8.3%	$1,383	11.6%	$127,170
36	Electrical Equipment	10,210	7.8%	$2,504	20.9%	$245,208
38	Instruments, Photo and Optical Equip	6,789	5.2%	$1,513	12.6%	$222,843
46	Misc. Mixed Shipments	6,392	4.9%	$836	7.0%	$130,709
37	Transportation Equipment	3,075	4.6%	$1,985	16.6%	$326,806
28	Chemicals or Allied Products	4,547	3.5%	$1,015	8.5%	$223,233
34	Fabricated Metal Products	3,886	3.0%	$142	1.2%	$36,563
27	Printed Matter	3,171	2.4%	$75	0.6%	$23,596
	Remaining Commodities	13,485	10.2%	$2,461	20.6%	$182,528
	Total	**130,925**	**100.0%**	**$11,967**	**100.0%**	**$91,404**

Source: TRANSEARCH data for 2016

Intrastate Air

Table 3-22 summarizes major through-traffic air commodities via South Carolina in 2016. Such movements total 1,461 tons, valued at $71 million, with an average value/ton of $48,865. In tonnage terms, *Small Packaged Freight Shipments* and *Textile Mill Products* constitute the top intrastate movements (730, 50 percent and 305, 20.9 percent respectively). In value terms, the top commodities include: *Electrical Equipment* ($14 million, 19.8 percent), *Machinery* ($11 million, 15.6 percent) and *Remaining Commodities* ($13 million, 18.5 percent).

Table 3-22: South Carolina Air Intrastate Freight by Major Commodities (2016)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	730	50.0%	$0	0.0%	$0
22	Textile Mill Products	305	20.9%	$6	8.5%	$19,406
35	Machinery	83	5.7%	$11	15.6%	$126,829
36	Electrical Equipment	57	3.9%	$14	19.8%	$245,627
28	Chemicals or Allied Products	56	3.8%	$10	14.2%	$175,519
38	Instruments, Photo/Optical Equip.	35	2.4%	$7	9.9%	$222,897
20	Food or Kindred Products	30	2.0%	$0.3	0.4%	$10,691
01	Farm Products	28	1.9%	$0.3	0.4%	$10,928
30	Rubber or Miscellaneous Products	28	1.9%	$1	1.4%	$37,572
37	Transportation Equipment	25	1.7%	$8	11.3%	$326,932
	Remaining Commodities	84	5.8%	$13	18.5%	$160,015
	Total	**1,461**	**100.0%**	**$71**	**100.0%**	**$48,865**

Source: TRANSEARCH data for 2016, due to rounding, numbers may not equal

3.1.3.5 Pipeline Flows

Total pipeline movements, as reported by FAF 4 in 2016, encompassed a single commodity: *Petroleum or Coal Products* in the amount of 23,206,411 tons, valued at $5.4 billion, for a value/ton of $233. Inbound pipe movements are the largest directional movements: 60.6 percent of total tonnage and

63.7 percent of value. Outbound pipe tonnage (9.2 million) is considerably larger than intrastate pipe tonnage (353). Outbound pipe value is also greater than intrastate ($1.9 billion outbound versus $86,600).

3.1.4 Freight Growth

Tonnage across the South Carolina freight network is forecast by TRANSEARCH to grow 65 percent from 2016 to 2040, as summarized in **Table 3-23**. While rail yields the fastest tonnage growth rate (69 percent), truck growth is nearly as rapid (60 percent), and much greater in terms of volume (224.6 million ton increase). Specifically, truck tonnage is forecast to grow from 375.1 million tons in 2016 to 599.6 million in 2040. While inbound truck growth is the fastest (64 percent), through tonnage growth is the greatest by volume (124.1 million tons). Rail tonnage is forecast to grow from 63.2 million tons to 106.6 million tons. Of this growth, intra-state rail is project to increase fastest at 116% while through-state rail is project to growth the fastest by volume (20.8 million tons). Waterborne tonnage is forecast to increase 13%, from 3.3 million tons in 2016 to 3.7 million tons in 2040. This growth is projected to be led by inbound movements (216,955 tons, 12% increase) and intra-state movements (174,457 tons, 44% increase). Air tonnage is projected to increase from 256,592 tons to 377,924 tons and is led by inbound (52,884 tons, 79% increase) and outbound movements (38,823 tons, 68% increase). Strong growth is forecast for pipe which is expected to increase from 23.2 million tons to 58.1 million tons and is led by inbound movements (19.9 million tons, 142% increase) and outbound movements (14.9 million tons, 163% increase).

The following subsections detail the modal tonnage and value growth by direction between 2011 and 2040, as well as the interim year of 2025. Tables are sorted by top ten commodities in 2040 in terms of either volume or units.

Table 3-23: South Carolina Freight Ton Forecast by Modal Direction (2016 and 2040)

Direction	Air	Pipe	Rail	Truck	Water	Total
Tons, in thousands						
Year 2016						
Outbound	57	9,154	7,484	70,536	66	87,298
Inbound	67	14,052	21,812	59,935	1,768	97,633
Intra	1	0.3	5,405	45,289	398	51,094
Through	131	N/A	28,539	199,287	1,044	229,001
Total	**256**	**23,206**	**63,240**	**375,047**	**3,276**	**465,026**
Year 2040						
Outbound	96	24,108	13,853	109,333	97	147,487
Inbound	120	33,966	31,750	98,553	1,985	166,373
Intra	2	1	11,652	68,348	573	80,578
Through	159	N/A	49,312	323,375	1,034	373,881
Total	**377**	**58,075**	**106,567**	**599,609**	**3,689**	**768,319**
Growth, 2016 to 2040						
Year 2016-2040						
Outbound	68%	163%	85%	55%	45%	69%
Inbound	79%	142%	46%	64%	12%	70%
Intra	74%	316%	116%	51%	44%	58%
Through	22%	N/A	73%	62%	-1%	63%
Total	**47%**	**150%**	**69%**	**60%**	**13%**	**65%**
Tons, in thousands						
Outbound	39	14,954	6,368	38,798	30	60,189
Inbound	53	19,914	9,938	38,618	217	68,740
Intra	1	1	6,248	23,059	174	29,483
Through	28	N/A	20,773	124,087	-9	144,880
Total	**121**	**34,869**	**43,327**	**224,562**	**412**	**303,292**

Source: TRANSEARCH data for 2016 and 2040, due to rounding, numbers may not equal

3.1.4.1 Truck Forecasts

Table 3-24 depicts the directional composition of truck movements in South Carolina between 2016 and 2040, which is relatively constant over the future analysis horizon. Truck tonnage is forecast to increase from 375 million in 2016 to 599.6 million in 2040, a cumulative increase of 60 percent, for a compound average annual growth rate (CAGR) of 2.0 percent. Truck commodity value is forecast to increase from $611.9 billion in 2016 to $1.18 trillion by 2040, a cumulative increase of 93 percent, for a CAGR of 2.8 percent.

Table 3-24: South Carolina Truck Freight Tonnage and Value by Year and Direction (2016, 2025, 2040)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2016					
Outbound	70,535,532	18.8%	$122,340	20.0%	$1,734
Inbound	59,934,986	16.0%	$87,724	14.3%	$1,464
Intra	45,289,394	12.1%	$49,862	8.1%	$1,101
Through	199,287,208	53.1%	$351,912	57.6%	$1,766
Total	**375,047,119**	**100.0%**	**$611,838**	**100.0%**	**$1,631**
Year 2025					
Outbound	85,053,981	18.8%	$160,376	20.6%	$1,886
Inbound	73,874,852	16.4%	$113,447	14.5%	$1,536
Intra	54,424,787	12.1%	$65,071	8.3%	$1,196
Through	237,537,841	52.7%	$441,321	56.6%	$1,858
Total	**450,891,462**	**100.0%**	**$780,215**	**100.0%**	**$1,730**
Year 2040					
Outbound	109,333,542	18.2%	$249,856	21.1%	$2,285
Inbound	98,552,708	16.4%	$163,175	13.8%	$1,656
Intra	68,348,700	11.5%	$98,183	8.3%	$1,436
Through	323,374,494	53.9%	$672,497	56.8%	$2,080
Total	**599,609,444**	**100.0%**	**$1,183,711**	**100.0%**	**$1,974**

Source: TRANSEARCH data for 2016, 2025, and 2040

Freight density across the South Carolina road network is shown in **Figure 3-13**, which indicates the highest truck volumes are on I-77, I-85, I-26 from Columbia south to the I-95 interchange, and on I-95. Truck freight density change between year 2011 and 2040 is shown in **Figure 3-14**, which indicates the I-26 and I-95 segments as having the highest growth.

Table 3-25 summarizes major commodity tonnage movements by truck in 2040, and the associated commodity tonnage growth from 2016.

- *Total Tonnage* – Major commodities in 2040 include: *Nonmetallic Minerals (121.8 million, 20.3 percent), Secondary Traffic* (62.5 million, 10.4 percent), and *Clay, Concrete, Glass or Stone Products* (60.9 million, 10.2 percent), exhibiting 2.3 percent, 3.2 percent, and 2.7 percent CAGR, respectively.
- *Tonnage Growth* – Commodities with the highest tonnage growth rates between 2016 and 2040 include: *Instrument, Photo Equipment, Optical Equipment* (436,228 to 1.4 million, 5.0 percent CAGR), *Miscellaneous Mixed Shipments* (70,649 to 220,813, 4.9 percent CAGR), and *Machinery* (5.3 million to 13.6 million, 4.0 percent CAGR).

- *Value Growth* – Commodities with the highest value growth rates between 2016 and 2040 include: *Instrument, Photo Equipment, Optical Equipment* (5.0 percent CAGR), *Miscellaneous Mixed Shipments* (4.9 percent CAGR) and *Electrical Equipment* (4.2 percent CAGR).

Table 3-26 summarizes major truck movements (i.e., units) in 2040 by commodity type. Truck movements in 2040 total 599.6 million tons, via 49.7 million units, valued at $1.1 trillion, with an average value/ton of $1,974.

- *Total Units – Shipping Containers* and *Nonmetallic Minerals* constitute nearly one half (24.5 million, 49.2 percent) of the total 49.7 million 2040 truck units.
- *Total Value* – Top commodities include: *Secondary Traffic* ($143.9 billion or 12.2 percent), *Chemicals or Allied Products* ($128.8 billion or 10.9 percent) and *Food or Kindred Products* (95.9 billion or 8.1 percent).

Table 3-25: South Carolina Truck Freight Tonnage Forecast by Major Commodity (Tons)

STCC2	Commodity	2016		2040		Percent Change	
		Tons	Percent	Tons	Percent	Total	CAGR
14	Nonmetallic Minerals	69,803,461	18.6%	121,848,069	20.3%	74.6%	2.3%
50	Secondary Traffic	29,061,490	7.7%	62,459,478	10.4%	114.9%	3.2%
32	Clay/Concrete/Glass/Stone	32,378,852	8.6%	60,980,891	10.2%	88.3%	2.7%
20	Food or Kindred Products	31,552,200	8.4%	53,415,086	8.9%	69.3%	2.2%
28	Chemical or Allied	23,158,143	6.2%	50,351,829	8.4%	117.4%	3.3%
40	Waste or Scrap Materials	23,157,607	6.2%	44,389,731	7.4%	91.7%	2.7%
29	Petroleum or Coal Products	19,754,743	5.3%	34,771,069	5.8%	76.0%	2.4%
1	Farm Products	38,813,992	10.3%	29,493,154	4.9%	-24.0%	-1.1%
24	Lumber or Wood Products	20,787,328	5.5%	27,482,435	4.6%	32.2%	1.2%
26	Pulp, Paper, Allied Product	13,928,796	3.7%	18,659,819	3.1%	34.0%	1.2%
	Remaining Commodities	72,650,507	19.5%	95,757,883	16.0%	31.8%	1.2%
	Total	**375,047,119**	**100.0%**	**599,604,444**	**100.0%**	**59.9%**	**2.0%**

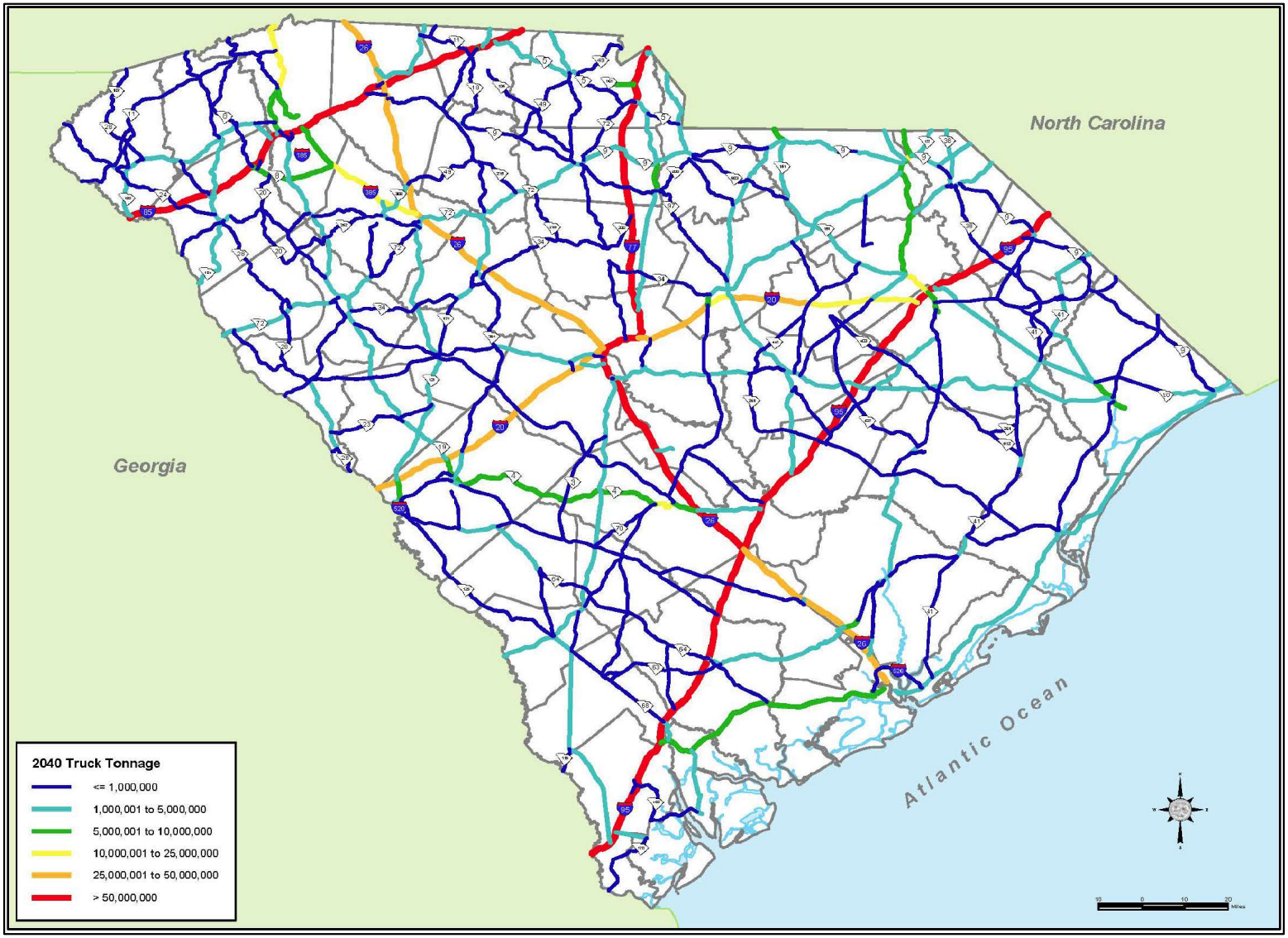
Source: prepared by CDM Smith, based on TRANSEARCH data for 2016 and 2040

Table 3-26: South Carolina Truck Freight Forecast – Tons, Units, and Value by Commodity (2040 Units)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
42	Shipping Containers	0	0.0%	19,481,004	39.1%	$0	0.0%	$0
14	Nonmetallic Minerals	121,848,069	20.3%	5,012,192	10.1%	$1,690	0.1%	$14
32	Clay, Concrete, Glass or Stone	60,980,891	10.2%	3,795,626	7.6%	$14,230	1.2%	$233
50	Secondary Traffic	62,459,478	10.4%	3,722,631	7.5%	$143,876	12.2%	$2,304
28	Chemical or Allied	50,351,829	8.4%	2,434,360	4.9%	$128,838	10.9%	$2,559
20	Food or Kindred Products	53,415,086	8.9%	2,329,207	4.7%	$95,902	8.1%	$1,795
40	Waste or Scrap Materials	44,389,731	7.4%	1,857,127	3.7%	$12,174	1.0%	$274
1	Farm Products	29,493,154	4.9%	1,705,967	3.4%	$41,205	3.5%	$1,397
29	Petroleum or Coal Products	34,771,069	5.8%	1,440,019	2.9%	$14,959	1.3%	$430
30	Rubber or Misc. Plastics	15,915,706	2.7%	1,341,325	2.7%	$70,815	6.0%	$4,449
	Remaining Commodities	125,984,432	21.0%	6,664,059	13.4%	$660,018	55.8%	$5,239
	Total	**599,609,444**	**100.0%**	**49,763,517**	**100.0%**	**$1,183,711**	**100.0%**	**$1,974**

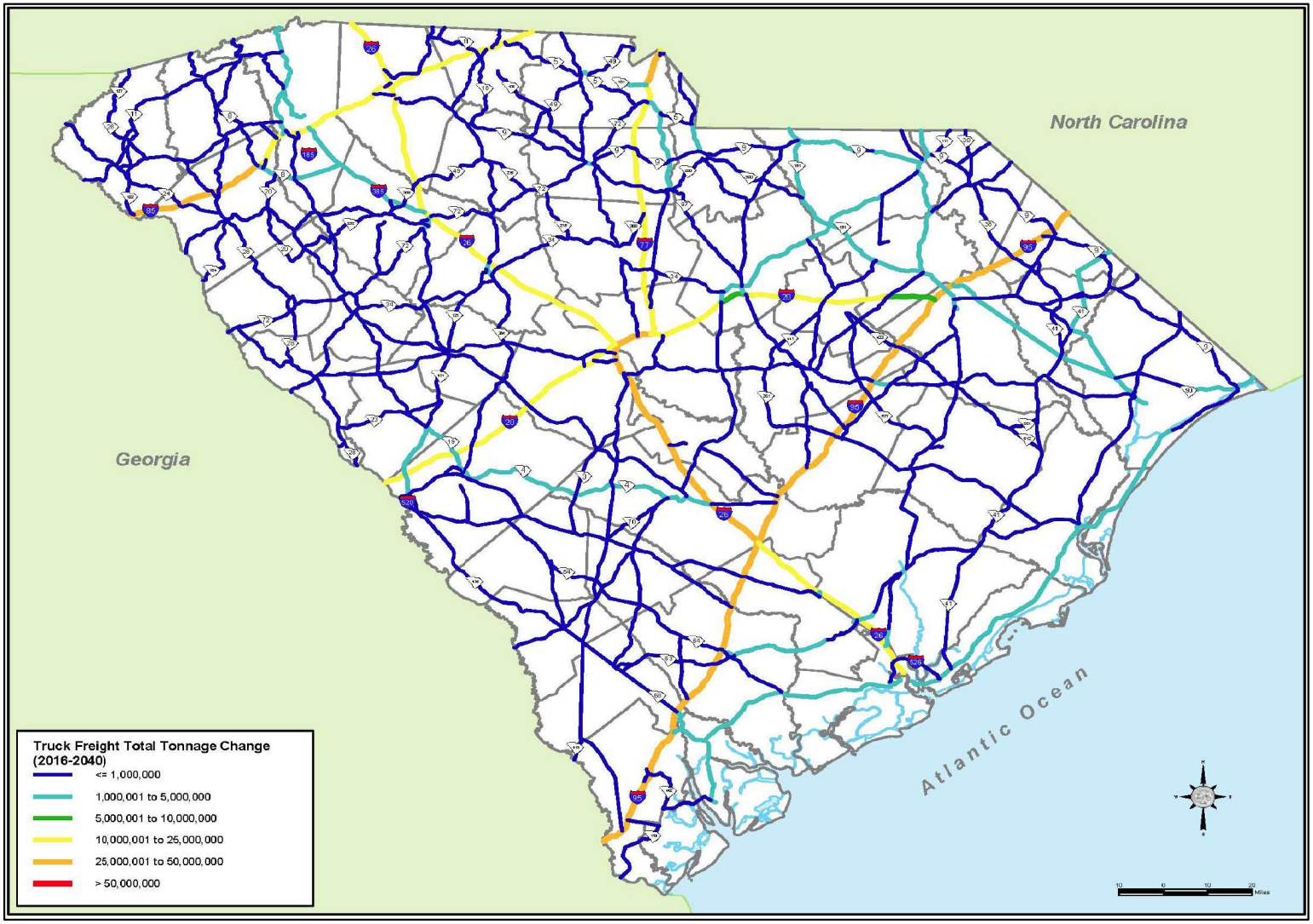
Source: prepared by CDM Smith, based on TRANSEARCH data for 2040

Figure 3-13: South Carolina Truck Freight Tonnage (2040)



Source: TRANSEARCH data for 2040

Figure 3-14: South Carolina Truck Freight Tonnage Growth (2016-2040)



Source: TRANSEARCH data for 2016 and 2040

3.1.4.2 Rail Forecast

Table 3-27 depicts the directional composition of rail movements in South Carolina between 2016 and 2040, which is relatively constant over the future analysis horizon. Rail tonnage is forecast to increase from 63.2 million in 2016 to 106.6 million in 2040, a cumulative increase of 69 percent, for a CAGR of 2.2 percent. Rail commodity value is forecast to increase from $93.6 billion in 2016 to $190.2 billion by 2040, a cumulative increase of 103 percent, for a CAGR of 3.0 percent.

Table 3-27: South Carolina Rail Freight Tonnage and Value by Year and Direction (2016, 2025, 2040)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2016					
Outbound	7,484,310	11.8%	$11,629	12.5%	$1,554
Inbound	21,811,904	34.5%	$16,867	18.0%	$773
Intra	5,404,653	8.6%	$11,711	12.5%	$2,167
Through	28,539,454	45.1%	$53,391	57.0%	$1,871
Total	**63,240,321**	**100.0%**	**$93,598**	**100.0%**	**$1,480**
Year 2025					
Outbound	9,673,958	12.1%	$15,677	12.9%	$1,621
Inbound	26,646,442	33.4%	$21,759	17.9%	$817
Intra	8,241,132	10.3%	$15,345	12.6%	$1,862
Through	35,292,374	44.2%	$68,906	56.6%	$1,952
Total	**79,853,906**	**100.0%**	**$121,687**	**100.0%**	**$1,524**
Year 2040					
Outbound	13,852,936	13.0%	$24,095	12.7%	$1,739
Inbound	31,750,234	29.8%	$32,644	17.2%	$1,028
Intra	11,652,371	10.9%	$23,054	12.1%	$1,979
Through	49,312,383	46.3%	$110,388	58.0%	$2,239
Total	**106,567,924**	**100.0%**	**$190,181**	**100.0%**	**$1,785**

Source: TRANSEARCH data for 2040

As shown in **Figure 3-15**, the link between Greenwood, SC and Athens, GA continues to handle the greatest rail tonnage per line (compare with **Figure 3-8**). Other notable tonnage movements go through Berkeley, Charleston, Greenville, Pickens and Oconee counties. The greatest rail tonnage growth appears to accrue to the major Class I rail lines (**Figure 3-16**).

Table 3-28 summarizes major commodity tonnage movements by rail in 2040, and the associated commodity tonnage growth from 2016.

- *Total Tonnage* – Major rail commodities in 2040 include: *Chemicals or Allied Products* (26.7 million, 25.1 percent), *Misc. Mixed Shipments* (14.7 million, 13.8 percent), and *Nonmetallic Minerals* (11.1 million, 10.4 percent), exhibiting 3.1 percent, 3.1 percent, and 2.1 percent CAGR, respectively.
- *Tonnage Growth* – Commodities with the highest tonnage growth rates between 2016 and 2040 include: *Instrument, Photo Equipment, Optical Equipment* (7,200 to 31,505, 6.3 percent CAGR), *Electrical Equipment* (124,080 to 387,702, 4.9 percent CAGR), and *Apparel or Related Products* (457,280 to 1,384,472, 4.7 percent CAGR).

- *Value Growth* – Commodities with the highest value growth rates between 2016 and 2040 include: *Instrument, Photo Equipment, Optical Equipment* (6.0 percent CAGR), *Apparel or Related Products* (4.8 percent CAGR), and *Rubber/Misc. Plastics* (4.6 percent CAGR).

Table 3-28: South Carolina Rail Tonnage Freight Forecast by Commodity (2016, 2040)

STCC2	Commodity	2016		2040		Percent Change	
		Amount	Percent	Amount	Percent	Total	CAGR
28	Chemicals or Allied Products	12,783,432	20.2%	26,740,277	25.1%	109.2%	3.1%
46	Misc. Mixed Shipments	7,079,120	11.2%	14,730,673	13.8%	108.1%	3.1%
14	Nonmetallic Minerals	6,791,128	10.7%	11,123,794	10.4%	63.8%	2.1%
11	Coal	9,259,507	14.6%	9,328,425	8.8%	0.7%	0.0%
20	Food or Kindred Products	4,702,517	7.4%	8,025,399	7.5%	70.7%	2.3%
32	Clay, Concrete, Glass or Stone	3,741,344	5.9%	6,289,475	5.9%	68.1%	2.2%
26	Pulp, Paper or Allied Products	4,718,936	7.5%	6,285,483	5.9%	33.2%	1.2%
33	Primary Metal Products	2,202,991	3.5%	5,195,923	4.9%	135.9%	3.6%
24	Lumber or Wood Products	2,975,188	4.7%	5,191,573	4.9%	74.5%	2.3%
01	Farm Products	2,358,878	3.7%	3,221,862	3.0%	36.6%	1.3%
	Remaining Commodities	6,627,280	10.6%	10,435,040	9.8%	57.5%	1.9%
	Total	**63,240,321**	**100.0%**	**106,567,924**	**100.0%**	**68.5%**	**2.2%**

Source: TRANSEARCH data for 2016 and 2040

Table 3-29 summarizes major railcar movements (i.e., units) in 2040 by commodity type. Rail movements in 2040 total 106.6 million tons, via 2.7 million units, valued at $190.2 billion, with an average value/ton of $1,785.

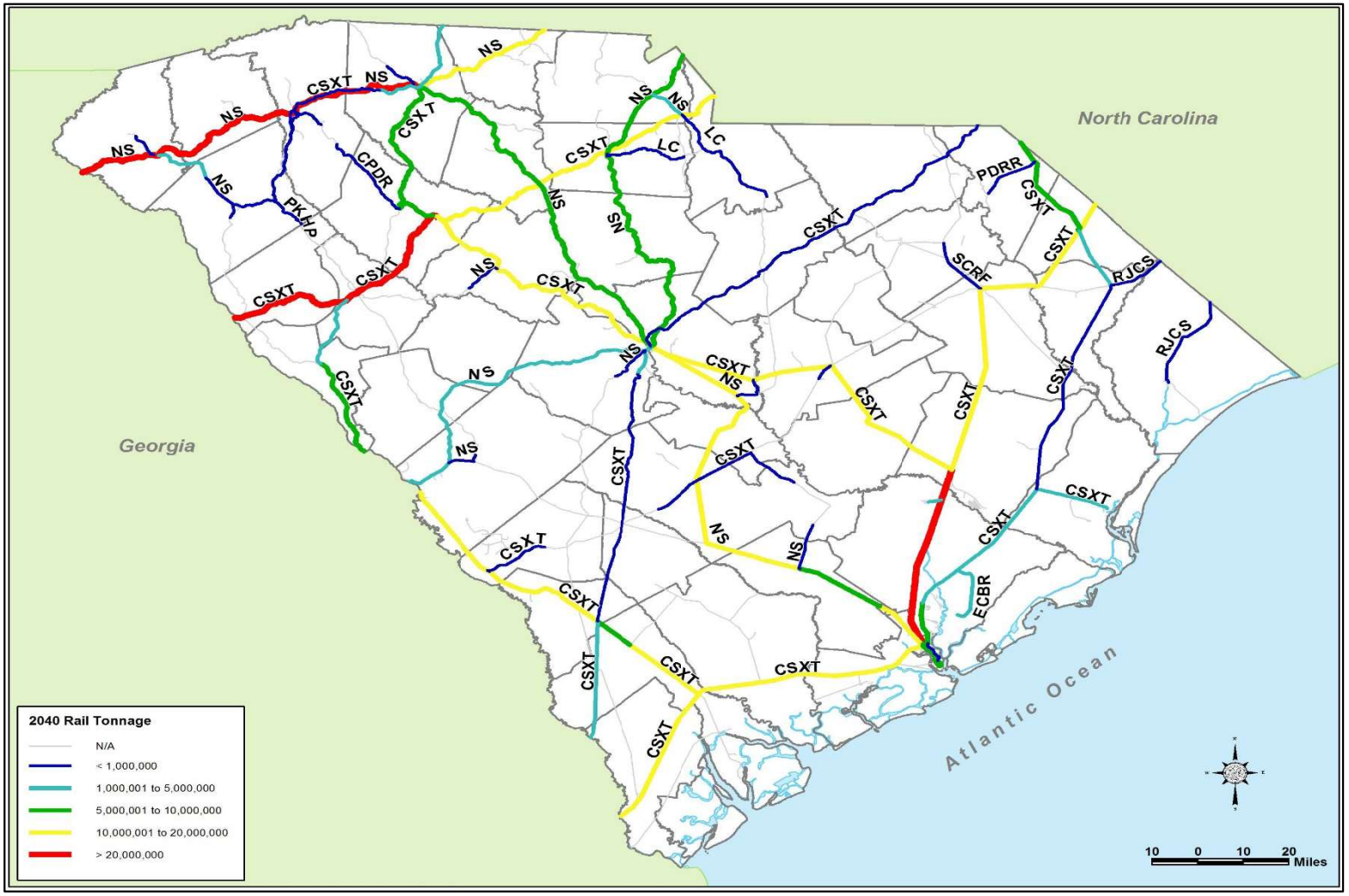
- Total Units – *Miscellaneous Mixed Shipments* and *Chemicals or Allied Products* constitute more than half (930,552, 56.7 percent) of the total 2.7 million 2040 rail units.
- *Total Value* – Top commodities include: *Miscellaneous Mixed Shipments* ($76.0 billion or 39.9 percent), *Chemicals or Allied Products* ($45.2 billion or 23.7 percent), and *Transportation Equipment* ($21.4 billion or 11.3 percent).

Table 3-29: South Carolina Rail Freight Forecast – Tons, Units, and Value by Commodity (2040 Units)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
46	Misc. Mixed Shipments	14,730,673	13.8%	1,179,687	44.1%	$75,959	39.9%	$5,157
28	Chemicals or Allied Products	26,740,277	25.1%	337,406	12.6%	$45,160	23.7%	$1,689
20	Food or Kindred Products	8,025,399	7.5%	143,142	5.4%	$6,252	3.3%	$779
26	Pulp, Paper or Allied	6,285,483	5.9%	137,511	5.1%	$6,129	3.2%	$975
23	Apparel or Related	1,384,472	1.3%	130,628	4.9%	$7,810	4.1%	$5,641
37	Transportation Equipment	2,237,304	2.1%	114,324	4.3%	$21,442	11.3%	$9,584
14	Nonmetallic Minerals	11,123,794	10.4%	103,103	3.9%	$143	0.1%	$13
11	Coal	9,328,425	8.8%	80,298	3.0%	$325	0.2%	$35
32	Clay, Concrete, Glass or Stone	6,289,475	5.9%	76,801	2.9%	$1,235	0.6%	$196
24	Lumber or Wood Products	5,191,573	4.9%	64,852	2.4%	$1,292	0.7%	$249
	Remaining Commodities	15,231,049	14.3%	306,250	11.4%	$24,435	12.9%	$1,604
	Total	**106,597,924**	**100.0%**	**2,674,002**	**100.0%**	**$190,182**	**100.0%**	**$1,785**

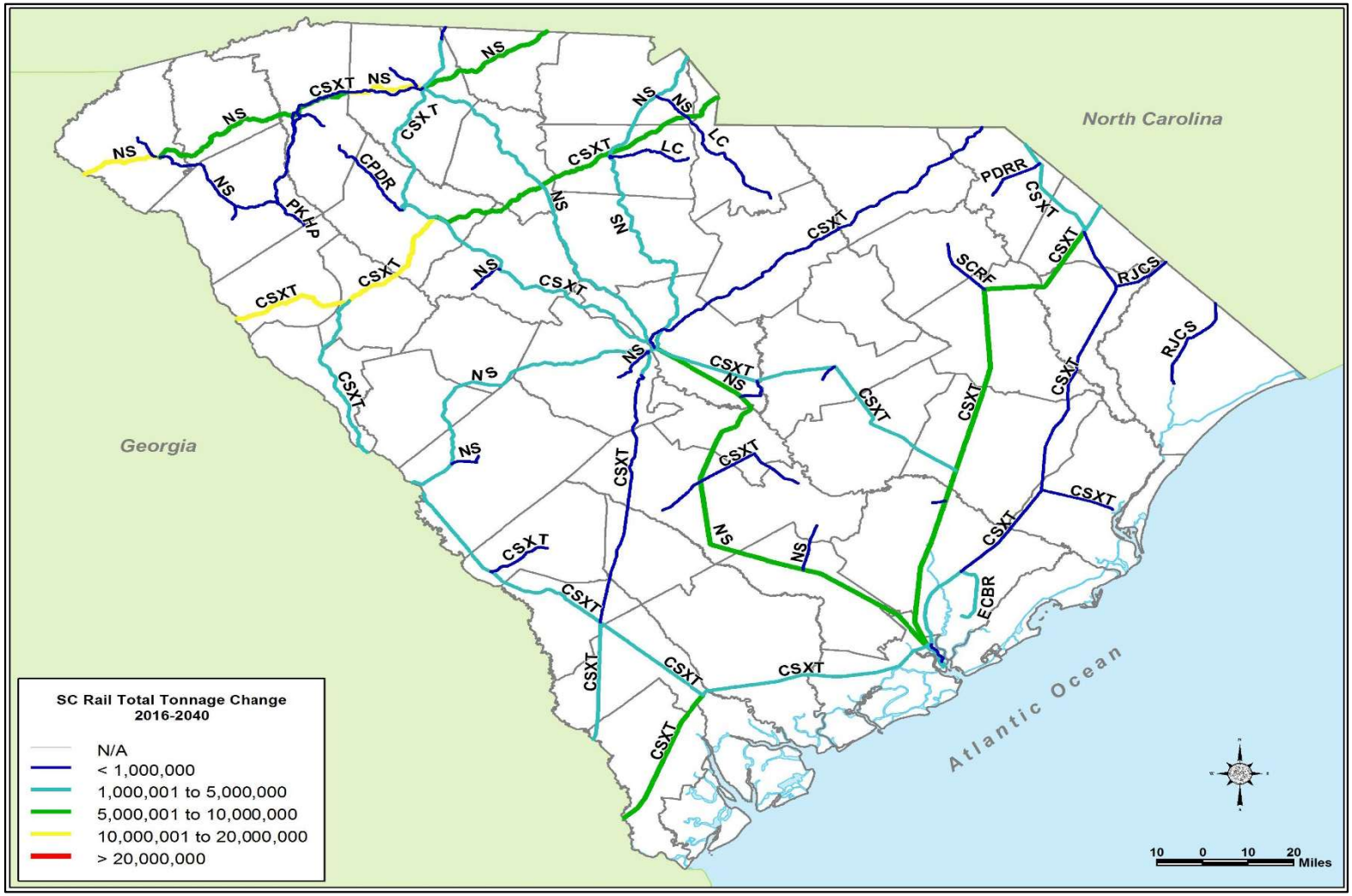
Source: TRANSEARCH data for 2040

Figure 3-15: South Carolina Rail Freight Density (2040)



Source: TRANSEARCH data for 2040

Figure 3-16: South Carolina Rail Freight Tonnage Growth (2016-2040)



Source: TRANSEARCH data for 2016 and 2040

3.1.4.3 Port Forecast

Table 3-30 depicts the directional composition of port movements in South Carolina between 2016 and 2040. TRANSEARCH forecasts South Carolina port tonnage to increase from 3.3 million in 2016 to 3.7 million in 2040, a cumulative increase of 12.6 percent, for a CAGR of 0.5 percent. Port commodity values are forecast to increase from $581 million in 2016 to $882 million by 2040, a cumulative increase of 51.9 percent, for a CAGR of 1.8 percent.

Table 3-30: South Carolina Port Freight Tonnage and Value by Year and Direction (2016, 2025, 2040)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2016					
Outbound	66,868	2.0%	$35	6.1%	$530
Inbound	1,767,954	54.0%	$180	30.9%	$102
Intra	397,996	12.1%	$94	16.2%	$236
Through	1,043,532	31.9%	$272	46.8%	$260
Total	**3,276,350**	**100.0%**	**$581**	**100.0%**	**$177**
Year 2025					
Outbound	78,561	2.3%	$40	5.5%	$505
Inbound	1,956,574	56.6%	$290	39.8%	$148
Intra	423,861	12.3%	$100	13.7%	$236
Through	995,927	28.8%	$298	41.0%	$300
Total	**3,454,923**	**100.0%**	**$728**	**100.0%**	**$211**
Year 2040					
Outbound	97,202	2.6%	$50	5.7%	$518
Inbound	1,984,909	53.8%	$339	38.4%	$171
Intra	572,453	15.5%	$135	15.3%	$235
Through	1,034,456	28.1%	$358	40.6%	$346
Total	**3,689,020**	**100.0%**	**$882**	**100.0%**	**$239**

Source: TRANSEARCH data for 2016, 2025, and 2040

Table 3-31 summarizes major commodity tonnage movements by port in 2040, and the associated commodity tonnage growth from 2011.

- *Total Tonnage* – In 2040, the largest commodities include: *Petroleum or Coal Products* (1.6 million, 41.9 percent), *Nonmetallic Minerals* (1.4, 37.0 percent), and *Chemicals and Allied Products* (408,336, 11.1 percent), exhibiting 1.2 percent, -0.4 percent, and 1.3 percent CAGR, respectively.

Table 3-31: South Carolina Port Freight Tonnage Forecast by Commodity (2016, 2040)

STCC2	Commodity	2016		2040		Percent Change	
		Amount	Percent	Amount	Percent	Total	CAGR
29	Petroleum or Coal Products	1,150,066	35.1%	1,546,341	41.9%	34.5%	1.2%
14	Nonmetallic Minerals	1,517,462	46.3%	1,363,767	37.0%	-10.1%	-0.4%
28	Chemicals or Allied Products	299,303	9.1%	408,336	11.1%	36.4%	1.3%
32	Clay, Concrete, Glass or Stone	187,750	5.7%	232,979	6.3%	24.1%	0.9%
40	Waste or Scrap Materials	73,662	2.2%	65,106	1.8%	-11.6%	-0.5%
20	Food or Kindred Products	40,974	1.3%	62,844	1.7%	53.4%	1.8%
34	Fabricated Metal Products	4,430	0.1%	4,653	0.1%	5.0%	0.2%
33	Primary Metal Products	1,255	0.0%	2,794	0.1%	122.7%	3.4%
35	Machinery	819	0.0%	1,400	0.0%	70.8%	2.3%
26	Pulp, Paper or Allied Products	418	0.0%	534	0.0%	27.7%	1.0%
	Remaining Commodities	211	0.0%	266	0.0%	25.6%	1.0%
	Total	**3,276,350**	**100.0%**	**3,689,020**	**100.0%**	**12.6%**	**0.5%**

Source: TRANSEARCH data for 2016 and 2040; due to rounding, numbers may not equal

- *Tonnage Growth* – Commodities with the highest rates of tonnage growth between 2016 and 2040 include: *Instruments, Photo Equipment, Optical Equipment* (2 to 7, 4.8 percent CAGR), *Transportation Equipment* (16 to 37, 3.6 percent CAGR), and *Rubber or Miscellaneous Plastics* (0 to 1, 3.5 percent CAGR).

- *Value Growth* – Commodities with the highest rates of value growth between 2016 and 2040 include the same three, with 4.8 percent, 5.0 percent, and 3.5 percent growth, respectively.

3.1.4.4 Air Freight Forecast

Table 3-32 depicts the directional composition of air movements in South Carolina between 2016 and 2040, which is relatively constant over the future analysis horizon. Air tonnage is forecast to increase from 256,592 in 2016 to 377,924 in 2040, a cumulative increase of 47.3 percent, for a CAGR of 1.6 percent. Air commodity value is forecast to increase from $27.6 billion in 2016 to $48.9 billion by 2040, a cumulative increase of 77 percent, for a CAGR of 2.4 percent.

Table 3-33 summarizes major commodity tonnage movements by air in 2040, and the associated commodity tonnage growth from 2016.

- *Total Tonnage* – Major air commodities in 2040 include: *Miscellaneous Mixed Shipments* (133 thousand or 18.1 percent), *Electrical Equipment* (36 thousand or 17.1 percent), and *Machinery* (32.8 thousand or 15.4 percent), exhibiting 1.3 percent, 2.6 percent, and 2.7 percent CAGR, respectively.

Table 3-32: South Carolina Air Freight Tonnage and Value by Year and Direction (2016, 2025, 2040)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2016					
Outbound	57,450	22.4%	$8,249	29.8%	$143,595
Inbound	66,756	26.0%	$7,337	26.6%	$109,906
Intra	1,461	0.6%	$71	0.3%	$48,865
Through	130,925	51.0%	$11,967	43.3%	$91,404
Total	**256,592**	**100.0%**	**$27,624**	**100.0%**	**$107,661**
Year 2025					
Outbound	70,329	24.3%	$9,154	27.2%	$130,152
Inbound	83,610	28.9%	$10,076	30.0%	$120,509
Intra	1,847	0.6%	$87	0.3%	$47,295
Through	133,836	46.2%	$14,260	42.5%	$106,553
Total	**289,622**	**100.0%**	**$33,577**	**100.0%**	**$115,935**
Year 2040					
Outbound	96,273	25.5%	$11,709	23.9%	$121,622
Inbound	119,641	31.6%	$17,112	35.0%	$143,030
Intra	2,542	0.7%	$119	0.3%	$46,719
Through	159,468	42.2%	$19,960	40.8%	$125,168
Total	**377,924**	**100.0%**	**$48,900**	**100.0%**	**$129,391**

Source: TRANSEARCH data for 2016

Table 3-33: South Carolina Air Freight Tonnage Forecast by Commodity (2016, 2040)

STCC2	Commodity	2016		2040		Percent Change	
		Amount	Percent	Amount	Percent	Total	CAGR
47	Small Packaged Freight Shipments	97,787	38.1%	133,823	18.1%	36.9%	1.3%
36	Electrical Equipment	19,429	7.6%	36,055	17.1%	85.6%	2.6%
35	Machinery	17,454	6.8%	32,873	15.4%	88.3%	2.7%
30	Rubber or Miscellaneous Products	13,642	5.3%	28,505	12.7%	109.0%	3.1%
46	Misc. Mixed Shipments	16,203	6.3%	24,367	10.5%	50.4%	1.7%
37	Transportation Equipment	12,580	4.9%	20,558	7.2%	63.4%	2.1%
28	Chemicals or Allied Products	8,747	3.4%	19,250	6.0%	120.1%	3.3%
38	Instruments, Photo/Optical Equip.	11,351	4.4%	18,621	4.6%	64.0%	2.1%
39	Misc. Manufacturing Products	10,718	4.2%	16,728	3.3%	56.1%	1.9%
43	Mail or Contract Traffic	18,342	7.1%	10,858	2.5%	-40.8%	-2.2%
	Remaining Commodities	30,339	11.9%	36,286	2.6%	19.6%	0.7%
	Total	**256,592**	**100.0%**	**377,924**	**100.0%**	**47.3%**	**1.6%**

Source: TRANSEARCH data for 2016

- *Tonnage Growth* – Commodities with the highest rates of tonnage growth between 2016 and 2040 include: *Forest Products* (3 to 12, 6.5 percent CAGR), *Coal* (29 to 71, 3.8 percent CAGR), and *Chemicals or Allied Products* (8,747 to 19,250, 3.3 percent CAGR).

- *Value Growth* – Commodities with the highest rates of tonnage growth between 2016 and 2040 include: *Chemicals or Allied Products* ($2.2 billion to $6.3 billion, 4.5 percent CAGR), *Coal* ($11,474 to $28,248, 3.8 percent CAGR), and *Rubber or Miscellaneous Products* ($512 million to $1.1 billion, 3.1 percent CAGR).

3.1.4.5 Pipeline Forecast

Total South Carolina pipeline movements in 2040 comprise only one commodity, *Petroleum or Coal Products*. FAF 4 forecasts South Carolina pipeline tonnage to increase from 23.2 million in 2016 to 58.1 million in 2040, a cumulative increase of 150.3 percent, for a CAGR of 3.9 percent. Pipeline commodity values are forecast to increase from $5.4 billion in 2016 to $13.5 billion by 2040, a cumulative increase of 149.6 percent, for a CAGR of 3.9 percent.

4 FREIGHT POLICY REVIEW AND PERFORMANCE MEASURES

4.1 The National Focus on Freight

The FAST Act continues the National Highway Performance Program (NHPP), which was established under MAP-21. The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. Collectively, the rules address challenges facing the U.S. transportation system, including:

- improving safety
- maintaining infrastructure condition
- reducing traffic congestion
- improving efficiency of the system and freight movement
- protecting the environment and
- reducing delays in project delivery

In May 2017, FHWA implemented and published national performance measures and guidance to be used by state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to assess the performance of various aspects of the national highway system. The FAST Act also includes two additional provisions related to performance management:

- If a state fails to meet (or make significant progress toward meeting) its freight performance targets within two years after establishment of the targets, then the state's next performance report must include what actions it will take to achieve the targets.

- The FAST Act shortens the timeframe for states and MPOs to make progress toward meeting performance targets under the NHPP and clarifies the significant progress timeline for the Highway Safety Improvement Program (HSIP) performance targets.

23 U.S.C. 150(c)(6) established performance measures for state DOTs and MPOs to use to assess the national freight movement on the interstate system. The performance measure to assess freight movement on the interstate system is the Truck Travel Time Reliability (TTTR) Index (referred to as the Freight Reliability measure).

Starting in 2018 and annually thereafter, state DOTs shall report the TTTR metrics in accordance with the HPMS Field Manual by June 15th of each year for the previous year's Freight Reliability measures. State DOTs must have established 2- and 4-year targets by May 20, 2018. Those targets will be reported in the State's October 2018 baseline performance period report. The State DOTs have the option to adjust 4-year targets in their mid-performance period progress

report, due October 1, 2020. MPOs must either support the State target or establish their own quantifiable 4- year targets within 180 days of the State target establishment.

The 2018 baseline TTTR Index in South Carolina, is 1.34. The 10-year target TTTR Index is 1.53. The MPOs in South Carolina have adopted the same measures.

South Carolina's ability to provide a robust, multimodal freight transportation system has been critically important in supporting the current trend of growth in freight movements. The SFP identifies potential SCDOT policy directions to support the continued success of the state's freight generating industries. While policy-making is a multi-facetted activity, it is important to note there are four primary policy documents that will guide the creation of South Carolina's freight policies:

- South Carolina's Statewide Multimodal Transportation Plan, provides an overall framework and vision for the State Freight Plan;
- Corresponding 2040 SCDOT Plans: These plans supplement the State Freight Plan by providing detailed information about other transportation modes (such as rail and public transportation);
- The SCDOT Strategic Plan provides the framework for SCDOTs internal implementation of potential policy changes to improve transportation infrastructure; and
- The FAST Act establishes a recommended framework for state freight plans and provides national freight policy and investment guidance.

4.2 Framework for Freight Policy

4.2.1 Charting a Course to 2040: South Carolina's Statewide Multimodal Plan

The SFP is intended to function as a stand-alone supplement to the MTP. The development of the MTP began with a comprehensive Visioning process, inclusive of workshops and meetings with SCDOT executive leadership, which was the foundation to developing the 2040 MTP goals and objectives. SCDOT coordinated the vision development with Plan partners including the Department of Commerce, the Federal Highway Administration and the South Carolina Ports Authority. This SFP reflects and references elements of the MTP as well as the Statewide Interstate Plan, Statewide Strategic Corridor Plan, and the Statewide Rail Plan.

4.2.1.1 MTP Goals and Objectives

As a result of the visioning process and outreach events, SCDOT concluded that the state is facing significantly different challenges than during the last MTP update in 2008. As such, the goals and objectives of this plan cannot just be extensions of previous plans. In particular, the goals and objectives developed are closely aligned with supporting the state's economy and addressing MAP-21 and FAST Act requirements.

The goals for the SFP incorporate the goals of the MTP as well as goals identified for a freight plan within FAST Act legislation (23 U.S.C. 167). Specific goals of the SFP are as follows:

- Mobility and System Reliability Goal
- Safety Goal
- Infrastructure Condition Goal
- Economic and Community Vitality Goal
- Environmental Goal
- Equity Goal

Recommended policies for freight transportation planning have been developed for each objective identified for these six SFP goals in order to provide a base and understanding of the performance of the goods movement network in South Carolina.

4.3 SCDOT Strategic Plan

The Strategic Plan is SCDOT's internal business plan; it describes "how" SCDOT will deliver products and services. The document is designed to guide SCDOT employees in the fulfillment of the department's mission and priorities. This contrasts with the MTP, which is an externally-focused document, intended to describe broadly "what" the Department will provide to its customers. The Department's Strategic and Multimodal plans have separate audiences, but must be carefully crafted to complement each other. Similarly, the SFP reflects and references elements of the MTP and Strategic Plan.

It is the mission of SCDOT to connect communities and drive the state's economy through the systematic planning, construction, maintenance and operation of the state highway system and the statewide intermodal transportation and freight system. It is the SCDOT's vision to rebuild our transportation system over the next decade in order to provide adequate, safe and efficient transportation services for the movement of people and goods in the Palmetto state. The following goals will assist SCDOT in reaching its statewide vision:

- Improve safety programs and outcomes in our high-risk areas
- Maintain and preserve our existing transportation infrastructure
- Improve SCDOT program delivery to increase the efficiency and reliability of our road and bridge network
- Provide a safe and productive work environment for SCDOT employees
- Earn public trust through transparency, improved communications and audit compliance

4.4 Moving Ahead for Progress in the 21st Century (MAP-21) and Fixing America's Surface Transportation (FAST) Act

MAP-21 transformed the policy and programmatic framework for investments to guide the infrastructure growth and development. In particular, MAP-21 modernized and consolidated many of the surface transportation programs developed in the 1990s into a few core performance based programs.

MAP-21 integrated performance into many federal transportation programs and contains several performance elements. The cornerstone of MAP-21's highway program transformation is the

transition to a performance and outcome-based program, requiring states to invest resources in projects to achieve individual targets that collectively will make progress toward national goals. Among these, one of the larger MAP-21 goals was to improve freight movement and economic vitality, "to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development."

MAP-21 required the USDOT establish a national freight policy to improve the condition and performance of the national freight network. The law includes the following seven goals the policy should achieve:

- **Economic Competitiveness -** Invest in infrastructure improvements and to implement operational improvements that strengthen the contribution of the national freight network to the economic competitiveness of the United States; reduce congestion; and increase productivity, particularly for domestic industries and businesses that create high-value jobs.
- **Safety, Security, Resiliency** - Improve the safety, security, and resilience of freight transportation.
- **State of Good Repair** - Improve the state of good repair of the national freight network.
- **Advanced Technology** - Use advanced technology to improve the safety and efficiency of the national freight network.
- **Performance and Accountability** - Incorporate concepts of performance, innovation, competition, and accountability into the operation and maintenance of the national freight network.
- **Economic Efficiency** - Improve the economic efficiency of the national freight network.
- **Environmental** - Reduce the environmental impacts of freight movement on the national freight network.

The FAST Act builds on the changes made by MAP-21. Setting the course for transportation investment in highways, the FAST Act seeks to:

- ***Improves mobility on America's highways***

  The FAST Act establishes and funds new programs to support critical transportation projects to ease congestion and facilitate the movement of freight on the Interstate System and other major roads. Examples include developing a new National Multimodal Freight Policy, apportioning funding through a new National Highway Freight Program, and authorizing a new discretionary grant program for Nationally Significant Freight and Highway Projects (FASTLANE Grants).

- ***Creates jobs and supports economic growth***

  The FAST Act authorizes $226.3 billion in Federal funding for FY 2016 through 2020 for road, bridge, bicycling, and walking improvements. In addition, the FAST Act includes a number of provisions designed to improve freight movement in support of national goals.

- ***Accelerates project delivery and promotes innovation***

Building on the reforms of MAP-21 and FHWA's Every Day Counts initiative, the FAST Act incorporates changes aimed at ensuring the timely delivery of transportation projects. These changes will improve innovation and efficiency in the development of projects, through the planning and environmental review process, to project delivery.

4.4.1 FAST Act Statewide Freight Plans

MAP-21 included two provisions that required USDOT to encourage States to establish State Freight Plans and State Freight Advisory Committees. The FAST Act moved these provisions from title 23 to title 49 (49 U.S.C. 70202: State Freight Plans) and required that States complete a State Freight Plan in order to obligate freight formula funds under 23 U.S.C. 167. State Freight Plans and State Freight Advisory Committees are complementary to other FAST Act freight provisions, such as the development of the National Freight Strategic Plan and the release of a Final National Multimodal Freight Network (NMFN; USDOT released an Interim NMFN on May 27, 2016 per the statutory requirement and is the process of finalizing at this time).

Unlike the provisions in MAP-21, which only *encouraged* the development of State Freight Plans, Section 8001 of the FAST Act *requires* that each state that receives NHFP funds under 23 U.S.C. 167 shall develop a freight plan that provides a comprehensive plan for the immediate and long-range planning activities and investments of the state with respect to freight.

In addition to the requirements for State Freight Plans under MAP- 21, each FAST Act–compliant Plan must include a FHWA-approved fiscally constrained freight investment plan and a list of the multimodal critical rural freight facilities and corridors as designated by the state under 49 U.S.C. 70103, and the critical rural freight corridors and critical urban freight corridors as designated by the state and MPOs under 23 U.S.C. 167.

4.5 Partnership and Coordination

As mentioned earlier, partnerships with local governments and other funding partners have been indicative of the larger shift to developing projects collaboratively. However, SCDOT's partnerships are not strictly financial ones. In fact, very few are. By its nature, SCDOT is a partner driven organization. Partnership is identified as a critical management area and is prominent in the SCDOT culture. As such, SCDOT partnered with the Department of Commerce, SCPA and FHWA to develop the MTP and SFP. In addition, the following partners participate in the day-to-day and long-term success of the South Carolina freight system.

4.5.1 Airports

South Carolina's major cargo airports serve an important role in the state's multimodal freight transportation network. South Carolina is home to two, top 100 air cargo airports in the U.S. (by landed weight); Charleston International (73rd) and Greenville-Spartanburg International (84th). While, shipping by air is the quickest and most reliable mode of transport, it is also the most costly. Because of this, air freight usually consists of goods that are highly perishable or particularly valuable. The quality of the connection between the air and highway mode is critical to the success of the air cargo mode.

4.5.2 Councils of Government

South Carolina is divided into ten planning districts served by a Council of Government (COG). Each COG serves as a roundtable for local governments to address common challenges like infrastructure and economic development. The COGs and SCDOT work together to address transportation issues outside of MPO designated areas. In particular, the COGs receive a sub-allocation from the SCDOT's Guideshare program and develop a five year programming document. The projects selected by COGs are included in the Statewide Transportation Improvement Program.

4.5.3 Economic Development Organizations and Chambers of Commerce

South Carolina has been economically successful by continuously adapting to market changes. Much of the credit for these successes has been the many public and quasi-public organizations across the state whose goal it is to attract, expand, and maintain business in South Carolina. Groups like the Economic Development Organizations and Chambers of Commerce, serve as a critical linkage between SCDOT and potential economic development opportunities. These relationships will be critical tactically, for direct infrastructure development, but also strategically as SCDOT continues to focus on improving the state's economy through transportation investment.

4.5.4 Freight Railroads

Freight rail services in South Carolina are provided by 11 railroads including two Class I railroads (CSX and Norfolk Southern). Palmetto Railways (formerly South Carolina Public Railways), a branch of the South Carolina Department of Commerce, operates three of the 12 short line or terminal switching railroads. Freight rail will continue to play an increasing role in the state's multimodal freight network. Several projects are in development to improve the connectivity between the maritime, rail, and truck modes.

In particular, there are improvements planned at the Port of Charleston including a new intermodal container transfer facility with dual access for the state's two Class I railroads. This new Hugh K. Leatherman Sr. Terminal is under construction on the Charleston Naval Complex. SCPA is currently building the only permitted new container terminal on the U.S. East and Gulf Coasts. Since receiving the final permit approvals in 2007, the Ports Authority has completed demolition, site preparation and containment wall construction. Phase One Wharf construction is ongoing and construction of the Phase One buildings, site package and site access contracts will be underway by the summer of 2019. Phase One of the terminal is expected to open in 2021. At full buildout, the terminal will consist of more than 280 acres and will boost capacity in the port by 50%. An agreement between the state of South Carolina and the City of North Charleston will permit rail access from both the north and south of a proposed rail yard that will serve the Ports Authority's container terminals and thereby provide dual access to two Class I carriers.

Inland Port Greer opened in November 2013, which was estimated to take 25,000 truck-trips off of I-26 by converting those loads to rail. However, I-85 and those state roads in the Greer area now have increased demands. Tools should continue to be put in place to ensure the capacity of critical intermodal connectors as freight demand grows in the area. Following the success of the

Inland Port Greer, the Inland Port Dillon opened in April 2018 and serves the Eastern Carolinas and is located along I-95 in Dillon, South Carolina. Inland Port Dillon utilizes an existing CSX intermodal train service to handle container movement to and from the Port of Charleston. It is expected to convert an estimated 45,000 container movements from truck to rail in the first year of operation, deepening the Port's reach into markets to the northeast and Midwest. Located within the Carolinas I-95 Mega Site, Inland Port Dillon is a critical transportation artery in the Southeast. Each of these projects will significantly impact South Carolina's freight community and SCDOT's Statewide Freight Network.

4.5.5 Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are responsible for transportation planning and overseeing transportation investments in South Carolina's urban areas. Each MPO receives a federally mandated sub-allocation of Guideshare funds to develop transportation programs and projects in their respective areas. Each of South Carolina's 11 MPOs develops a fiscally constrained long range transportation plan and Transportation Improvement Program, and some of the major MPOs are directly engaged in freight planning. Outside of their formal role in transportation planning, MPOs serve as an important facilitator and convener of local interests that can be very helpful with developing sensitive freight transportation projects.

4.5.6 Other State Agencies

While SCDOT is the primary state agency responsible for transportation, there are other state agencies and organizations that have a formal or related role. For example, Palmetto Railways operates three common carrier railroads. Similarly agencies like the SCPA operate the Port of Charleston. Agencies like the Department of Motor Vehicles, Department of Public Safety, and the State Law Enforcement Division have a regulatory but critical role in the success of the South Carolina freight transportation system.

4.5.7 Professional Associations

Professional associations and advocacy groups can be an important partner in the freight planning process. Groups like the South Carolina Logistics Council, South Carolina Trucking Association and the South Carolina Association of Railroads can communicate industry concerns and feedback to SCDOT through their leadership or access to their members. Additionally, these groups add some legitimacy to outreach efforts both in terms of communicating the importance of SCDOT's efforts to stakeholders, but also for vetting stakeholder feedback.

4.5.8 South Carolina Ports Authority

The South Carolina Ports Authority (SCPA) is a quasi-state agency governed by a nine-member Board of Directors, each appointed by the Governor and confirmed by the Senate, along with two non-voting, ex-officio members - the state Secretary of Commerce and Secretary of Transportation. SCPA promotes, develops and facilitates waterborne commerce for the economic benefit of the citizens and businesses of South Carolina. SCPA's port system is the ninth-busiest in the United States, handling more than 1.996 million TEUs and 922,242 tons of non-containerized cargo in CY 2016. In addition, SCPA serves diverse activities, such as containerized, break-bulk, and rolling stock commerce, as well as passenger cruises. Since 2011, SCPA is the fastest growing

major U.S. port, with container volume up 45% between CY 2011 through CY 2016. In addition to its high productivity, a 2015 study by the University of South Carolina's Darla Moore School of Business concluded that the Port's statewide impacts include $53 billion in annual economic activity.

4.5.9 Multijurisdictional Partnerships

SCDOT is a member of the I-95 Corridor Coalition, a voluntary multi-state partnership that includes all major transportation related agencies along this busy interstate corridor from Maine to Florida. The Coalition allows jurisdictions throughout the corridor to make decisions through consensus to enhance overall transportation system performances along the eastern seaboard.[20] This partnership will be critical as it is projected that by 2035, without further improvements, the average daily traffic is projected to exceed 133,000 vehicles daily on the I-95 corridor, including more than 20,000 trucks. Further 100% of the I-95 corridor urban segments will be under heavy congestion and 55% of the non-urban segments of the corridor will see increased congestion.

South Carolina is home to many multi-jurisdictional/state freight corridors. I-95, I-26, I-77 and I-85 are heavily used interstates , and project's like Norfolk Southern' s Crescent Corridor connects the major northern and southern U.S. population centers and passes directly through the state. It is critical for South Carolina's freight future that collaborative partnerships like the I-95 Corridor Coalition continue into the future.

4.6 A New Way to Look at Freight

A principal message from previous outreach efforts was the need for a fundamental policy shift to sharpen South Carolina's focus on the role of freight and how it supports the state's economy. While the freight assets of the state are many, so are the decision-makers who guide investment throughout the state. The shift in policy has:

1) Increased focus on the multimodal system,
2) Approached freight as a mode, and
3) Included the dedication of a flexible funding source for freight projects.

4.6.1 Recognize the Multimodal Freight Transportation System

Recognizing that transportation funds come from a variety of sources and have a wide range of planning stipulations attached, SCDOT can increase collaboration to coordinate transportation infrastructure investments to better align goals and performance of the freight transportation system as a whole.

4.6.1.1 Potential Strategies

- SCDOT should focus on further developing and supporting rail options as it works closely with private sector railroads and Palmetto Railways to increase the resiliency, effectiveness and efficiency of the freight transportation system.

[20] https://i95coalition.org/

- SCDOT should maintain the designation of a formal liaison to work closely with the Port of Charleston to increase throughput at the port but also the state. This liaison would focus on improving communication between agencies and therefore raise the profile of land-side transportation needs that hinder further port productivity. This partnership should focus on maximizing the value captured at the port and corresponding inland ports while minimizing public costs for moving freight destined beyond the state's borders.

4.6.2 Approach Freight as a Mode in the SCDOT Project Prioritization Process

Approved in 2007, the South Carolina General Assembly enacted Act 114. One of the landmark items in Act 114 was the requirement that the SCDOT establish a project prioritization process. Act 114 dramatically changed the structure of SCDOT and the project prioritization methodology. An important aspect of Act 114 is the inclusion of truck traffic percentages in the methodology. While the inclusion of truck volumes does not completely capture South Carolina's freight needs, it does show a historical focus on freight projects in the selection process. The act requires SCDOT and its MPO/COG partners to prioritize projects within certain project types, as shown in **Table 4-1.**

Table 4-1: Act 114 Required Project Prioritization Categories

SCDOT Prioritization Project Types	MPO/COG Prioritization Types
Interstate Mainline Capacity & Interchanges	Roadway Widening
Interstate Rehabilitation	New Facilities
Bridge Replacement	Intersection Improvements
Non-interstate Resurfacing	
Safety	

4.6.2.1 Act 275 and Potential Strategy

In 2016, the General Assembly enacted Act 275[21]. Act 275 eliminated some of Act 114's requirements but it retained the requirement for project prioritization. This requirement is codified in Section 57-1-370 of the South Carolina Code of Laws, 1976, as amended. Additional detail on the process is found in S.C. Code of Regulations 63-10, as amended.

Performance-based investment decision making is a strategic approach SCDOT uses to link department goals, objectives, and risks in allocating resources effectively. Performance-based resource allocation is effective with the use of well-defined performance measures and the establishment of practical and achievable performance targets. Performance targets are vital elements in the SCDOT's performance and risk-based asset management program. SCDOT uses 10-year projected performance condition targets as benchmarks in evaluating progress made from baseline performance after the implementation of an investment strategy. These targets are used to assess the effectiveness of selected investment strategies. The use of targets in

[21] http://www.scstatehouse.gov/billsearch.php?billnumbers=1258&session=121&summary=B

performance management allows for accountability to decision makers and the general public by communicating the effectiveness of investment actions.

SCDOT has designated broad Program Categories for project consideration and selection. They are: Pavements (Resurfacing); Interstate Upgrades; Bridges; Safety; MPO/COG Programs (projects prioritized at the local level); and Freight.

Potential projects are scored within each category based on the applicable criteria. The top candidates in the pool are further evaluated in the field and a final ranking score is determined using input from local engineers familiar with the current needs of the area. Projects are then selected from the candidate pool and developed in priority order based on the planned program funding. Most resurfacing projects are prioritized on a county level, with only interstate and routes on the National Highway System (NHS) being prioritized on a state level. Interstate widenings, bridge replacements, safety and freight programs are ranked on a statewide basis. MPO/COG programs are ranked within the respective geographic region.

As part of its overall strategy to meet the intent of Act 275, SCDOT utilizes the following statutory criteria for project selection and prioritization:

- Financial viability
- Public safety
- Potential for economic development
- Traffic volume and congestion
- Truck traffic volume
- Pavement Quality Index (PQI)
- Environmental impact
- Alternative transportation solutions
- Consistency with local land use plans

Relevant Criteria may or may not include all of the statutory criteria. All statutory criteria must be at least considered for relevance, but if a particular criterion does not relate to a particular program category, it need not be used in the ranking process for projects in that Program Category. Relevant criteria must support the purpose and need for the projects included in a particular program category. For example, the structural condition of a bridge is a factor that may be utilized to rank projects in the bridge replacement program but this factor would not apply to resurfacing programs.

4.6.3 Dedication of a Flexible Funding Source for Freight Projects

Rural Interstate Freight Network Mobility Improvement Program

Act 40, enacted in 2017 by the South Carolina State Legislature, provides dedicated funding to improve transportation infrastructure in South Carolina.

In February 2018, the SCDOT Commission concurred with the strategic priorities identified by the SCDOT Secretary and staff for the use of the future funding that is expected to be returned to SCDOT due to the anticipated sunset of the preventative maintenance tax credit identified in Act 40. Included within the strategic priorities identified is recurring funding to increase mobility

along the state's freight network, with a focus on rural interstate widenings to target high-density truck freight corridors.

In accordance with SCDOT's Transportation Asset Management Plan (TAMP) and the 10-year plan for rebuilding South Carolina's roads, in October 2018 the SCDOT Commission approved the Rural Interstate Freight Network Mobility Improvement Program and a ranked list of corridors for inclusion under this program. The Rural Interstate Freight Network Mobility Improvement Program specifically targets the rural sections of South Carolina's interstate system with a focus on freight mobility, and is in addition to previously approved interstate widening projects planned for the urban areas of the state. Preliminary feasibility analyses are undertaken for each corridor prioritized under this program in order to be prepared to advance projects once significant funding becomes available as the tax credits identified under Act 40 sunset.

Act 40 of 2017

Act 40 of 2017 provides the state with roughly $600 million in new revenues *(once fully implemented in 2022)* which must be used solely on repairs and improvements to South Carolina's roads and bridges.

FUNDING COMPONENTS

- Increase the motor fuel user fee by 12 cents over six years (2 cents per year).
- Increase biennial registration fees on private passenger vehicles by $16.
- Impose an "Infrastructure Maintenance Fee" upon the purchase of a motor vehicle *(capped at $500).*
- Impose a one-time $250 registration fee for anyone who transfers a motor vehicle from another state to South Carolina.
- Create new registration fees for alternative vehicles: $120 for EV's & $60 for hybrid vehicles.
- Rolls the truck property tax into the existing registration process for interstate fleets.

Act 40 also requires that SCDOT prepare a Transportation Asset Management Plan which includes objectives and performance measures for the preservation and improvement of the State Highway System.

4.7 Transportation Asset Management

SCDOT has adopted transportation asset and performance management as a best management practice and has fully embraced the concept for all of its programs. At its core, transportation asset management is the process of operating, maintaining, and improving infrastructure through maintenance, preservation, repair, and rehabilitation during the assets' life.. The Secretary of Transportation and the SCDOT Commission have reaffirmed the importance of the transportation asset management plan (TAMP) for accountability and transparency regarding the use of tax payer funds especially in light of the 2017 legislation that dramatically increased state funding for

infrastructure in South Carolina. Tying a planned investment level to a predicted outcome is a major shift in the way SCDOT manages its programs and is essential to earning the public's trust through the effective deployment of resources to achieving results. SCDOT's TAMP is all-inclusive by incorporating state and federal funding together for a more robust plan for the State.

4.7.1 SCDOT's Strategic Plan goals

The leadership team of SCDOT recently deployed a new Strategic Plan, which form the guiding principles of SCDOT's Investment Strategies, focusing on the maintenance, preservation, and safety of the existing transportation infrastructure, directing investments based on a hierarchy of highway systems and priority networks, integrating risk-based prioritization, improving safety, advancing lifecycle cost in investment programming, and enhancing mobility.

The five major goals of the SCDOT Strategic Plan are to:

- Improve safety programs and outcomes in high-risk areas;
- Maintain and preserve its existing transportation infrastructure;
- Improve program delivery to increase the efficiency and reliability of the road and bridge network;
- Provide a safe and productive work environment for SCDOT employees; and
- Earn public trust through transparency, improved communications, and audit compliance.

4.7.2 SCDOT's 10-year Performance Strategies

SCDOT has divided work on its transportation infrastructure into several major program categories: Safety, Pavements, Bridges, Interstate Upgrades, Metropolitan Planning Organization/Council of Governments (MPO/COG) Programs, and a Freight Program. In developing infrastructure investment priorities, SCDOT aligns the programs to the strategic plan and factors in other items such as applicable state and federal laws, asset condition and performance trendlines, revenue trends, industry capacity, public input, and asset management principles.

Over the past two years, SCDOT has fully migrated the Safety, Pavement, and Bridge programs, and travel time reliability to become elements within the TAMP. Additional elements will be added in the future to cover the remaining programs.

As part of the new Strategic Plan, SCDOT has identified some very specific goals for the next ten years for the Safety, Pavement, Bridge, and Interstate Upgrade (capacity and mobility) programs:

Safety

- Improve 1,000 miles of non-interstate rural roads with tailored safety solutions. South Carolina has the deadliest rural roads in the Nation. SCDOT has developed and implemented a targeted solution to address the "worst of the worst" rural roads in the State.

Pavements

- Use a performance-based approach to drive the recovery of South Carolina's pavements through a blend of preservation, rehabilitation, and reconstruction projects.

Bridges

- Specifically target two bridge categories: 1. Load-restricted bridges; and, 2. Structurally Deficient bridges on the National Highway System. In 2016 (the baseline year for the 10-Year Plan), there were 348 load-restricted (Poor Condition) bridges in South Carolina, which impacted the movement of goods, school bus routing, and emergency response times in the State. Also, in 2016, there were 51 structurally deficient bridges not yet programmed for replacement or repair on the National Highway System that could significantly hamper South Carolina's ability to move freight across the major routes in the State.

Capacity

- Widen 100+ centerline miles of interstate and address major freight pinch points at interstate-to-interstate interchanges.

Mobility

- Improve the percentage of reliable travel times for Interstate highways and improve truck (Freight) travel reliability.

The 10-year investment plan is projected to enable SCDOT to reduce fatalities and serious injuries on South Carolina's highways, substantially improve the percent of the State's pavements considered to be in good condition measured by its pavement quality index (PQI), reduce the number of load-restricted bridges in the State, and widen a substantial amount of the State's interstates. PQI is a metric specifically designed to measure road quality in South Carolina based on the State's unique characteristics.

The 10-year plan also will enable SCDOT to dramatically improve the condition and operation of the backbone of the State's infrastructure network, the National Highway System (NHS). NHS pavement condition and NHS bridge condition are both predicted to improve and the percent in poor condition is projected to decrease

4.8 Freight Strategies

To achieve the goals and objectives of the SFP, several strategies were developed to serve as a framework for the implementation of the Plan. Each strategy is designed to both serve as guidance for SCDOT as they work to improve the SC National Highway System and Statewide Freight Network.

4.8.1 Goal 1: Mobility and System Reliability

Provide surface transportation infrastructure and services that will advance the efficient and reliable movement of people and goods throughout the state.

4.8.1.1 Guiding Principles:

- Utilize the existing transportation system to facilitate enhanced modal options for a growing and diverse population and economy.
- Improve cost efficiency of intermodal goods movement, increasing diversity in modal choice.
- Encourage availability of both rail and truck modes to major freight hubs (ports, airports, intermodal facilities). Develop efficient connectivity from railroads and roadways to ports, airports and other intermodal facilities.
- Use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system.

4.8.1.2 Strategies:

Objective 1-A: Reduce the number of system miles at unacceptable congestion levels.

- Prioritize projects designed to improve freight mobility and eliminate freight bottlenecks.
- Identify opportunities with private sector stakeholders where operational-level decisions could be made to reduce reoccurring congestion (i.e. shifting delivery times, mode shift, etc.).
- Identify corridors where non-traditional improvements may significantly reduce congestion (e.g. Intelligent Transportation Systems (ITS), Managed Lanes, Value Pricing, etc.).

Objective 1-B: Utilize the existing transportation system to facilitate modal options for a growing population and economy

- Develop local transportation plans for areas adjacent to freight intermodal facilities.
- Support the development of local multi-jurisdictional groups to prioritize and address freight issues as one group (e.g. to implementation of the local plans mentioned above)
- Continuously monitor intermodal connectors for maintenance and operations issues.
- Continue to Identify and close any first/last mile gaps near major intermodal centers and manufacturing hubs.
- Develop a process to leverage private and local investment to expedite transportation project delivery to be more responsive to private sector needs.
- Identify the key operating characteristics of each major modal connection hub to develop strategies to improve the public infrastructure supporting the facility.
- Maintain a Freight Advisory Committee as recommended by FAST Act.
- Support and participate in industry groups like the South Carolina Logistics (formerly TDL) Council and economic development groups.

- Working with the railroads, identify potential non-traditional funding sources for freight rail investment.

Objective 1-C: Improve the average speed on congested corridors

- Prioritize improvements along major truck corridors.
- Promote the use of real-time traffic information to support private sector routing decisions.
- Continue to work with multi-state partners to make corridor-wide system decisions
  - Important to system improvements, but also better coordination of regulations like truck size and weight.

Objective 1-D: Improve the year round reliability of freight transportation on the South Carolina Interstate System

- Continue the use of national and local data sources to identify the consistency or dependability of travel times across multiple time periods on the SC interstate system
- Continue the use of ITS technology to increase the reliability of key corridors.
- Develop a common information technology solution/protocol to share real-time information with freight system users.
- Continuously monitor operational information to identify and rectify system issues before they become problems.

Objective 1-E: Reduce congestion on the freight transportation system

- Identify a SC National Highway Freight Network for South Carolina.
  - Include the FHWA Primary Freight Network, as well as other highway and multimodal routes which are critical to South Carolina's critical industries.
  - Develop this network in concert with a supply-chain analysis of South Carolina's critical industries.
- Identify and address freight bottlenecks on the SC National Highway and Statewide freight networks.
- Ensure freight implications and benefits are included in the SCDOT project prioritization process.

4.8.2 Goal 2: Safety

Improve the safety and security of the transportation system by implementing transportation improvements, including enhanced Intelligent Transportation Systems (ITS), which reduce fatalities and serious injuries as well as enabling effective information and emergency management operations.

4.8.2.1 Guiding Principles

- Better integrate safety improvements for all users of roadways in preservation programs by identifying opportunities to better accommodate vulnerable users, such as pedestrians or bicycles, when improvements are included in adopted local or state plan:

4.8.2.2 Strategies

Objective 2-A: Improving the safety, security, and resilience of the freight transportation system.

- Develop a freight network resiliency plan.
  - This plan would help bring freight dependent industries back online after an emergency event and would assist with hurricane relief efforts.
  - To be successful, the plan will need to be developed with SCDOT's freight and homeland security partners.

- Identify opportunities for enhanced truck parking availability and information management
  - Utilizing enhanced mapping application and/or ITS, develop a sustainable, user-friendly system for real-time truck parking locations and availability along Statewide Freight Network.

- Create a commercial vehicle crash database.
  - Extract commercial vehicle crash data from the statewide database to identify patterns or particular situations to address.

- Reduce risk to non-motorized transportation users.
  - Clearly sign and mark bicycle and pedestrian facilities where the Statewide Freight Network and state/local bike routes overlap.

- Explore programs to incentivize short line rail infrastructure investment.

- Enter into a partnership with the railroads to prioritize grade crossing improvements

- Explore opportunities where small public investments can be used to leverage the railroad's responsibility to maintain/improve crossings.

Objective 2-B: Improve substandard roadways and bridges

- Identify and prioritize substandard roadways on the Statewide Freight Network in the SCDOT maintenance/construction program.
  - Special emphasis should be put on intermodal connectors, because of their importance to multimodal connectivity and therefore potentially reduced supply chain costs.

- Identify and prioritize sub-standard bridges on the Statewide Freight Network to meet current and future fleet vehicle dimensional needs.

4.8.3 Goal 3: Infrastructure Condition

Maintain surface transportation infrastructure assets in a state of good repair.

4.8.3.1 Guiding Principles

- Improve prioritization of "first mile" and "last mile" infrastructure.

- Recognize the importance of infrastructure condition in attracting new jobs to South Carolina by considering economic development when determining improvement priorities.
- Encourage availability of both rail and truck modes to major freight hubs (for example ports, airports and intermodal facilities).
- Continue to coordinate with Palmetto Railways and SCPA to consider road improvements needed to support the efficient movement of freight between the inland ports, the Port of Charleston, and between port terminals.

4.8.3.2 Strategies

Objective 3-A: Maintain or improve the current state of good repair for the NHS.

- Actively managing the condition of NHS Intermodal Connectors.
- Continue work with state agency partners like Palmetto Railways and SCPA to identify opportunities to support freight movement by identifying potential efficiencies created by utilizing multiple modes or a complete mode shift.
- Particular attention must be made to roadways that are subject to heavy vehicles (increased pavement depths, maintenance, etc.)

Objective 3-B: Reduce the percentage of remaining state highway miles (non-interstate/strategic) moving from a "fair" to a "poor" rating while maintaining or increasing the percent of miles of pavement condition as "good".

- Strategically allocate maintenance funding consistent with the goals outlined in SCDOT's Transportation Asset Management Plan and Ten-Year Plan for system condition.

Objective 3-C: Improve the condition of the state highway system bridges.

- Prioritize work to reinforce bridges on the SC National Highway and Statewide Freight Networks that are structurally obsolete.
- Track and analyze bridge inspection trends on the SC National Highway and Statewide Freight Networks to identify issues to alleviate future system disruptions.

4.8.4 Goal 4: Economic and Community Vitality

Provide an efficient and effective interconnected transportation system that is coordinated with the state and local planning efforts to support thriving communities and South Carolina's economic competitiveness in global markets.

4.8.4.1 Guiding Principles

- Work with economic development partners to identify transportation investments that will improve South Carolina's economic competitiveness.
- Encourage availability of both rail and truck modes to major freight hubs (ports, airports, and intermodal facilities).
- Partner with public and private sectors to identify and implement transportation projects and services that facilitate freight movements.

- Encourage rail improvements that will improve connectivity and reliability of freight movement to global markets.
- Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.
- Increase public awareness of the significance of goods movement and freight transportation 1infrastructure on South Carolina economic sustainability and growth.
- Partner with communities to improve "first mile" and "last mile" planning efforts in urban communities to minimize the impact of goods movement and improve efficiencies.
- Raise profile of integrated multi-agency, state level freight planning.
- Support private investment in freight infrastructure.

4.8.4.2 Strategies

Objective 4-A: Improve access and interconnectivity of the state highway system to major intermodal facilities (road, rail, marine, and air).

- Prioritize intermodal connection projects, as these projects are more often the most conducive to reducing overall supply chain costs; similarly this could reduce overall maintenance costs to the state for maintaining roads that are not built to handle heavy truck traffic.
- Undertake an effort to educate the public on the importance of freight to South Carolina, including elected officials, and the general public.
- Work with rail, marine, and air partners to create cross-functional relationships to help identify non-highway projects and key connectors on the SC National Highway and Statewide freight network.

Objective 4-B: Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy.

- Instill goods movement in the SCDOT's planning process and decisions by:
  - Ensuring SCDOT policies incorporate freight movements in planning, design, and operations.
  - Update SCDOT organization and processes to be more truly multimodal.
    - Increase the role of the SCDOT Office of Intermodal and Freight Programs in conversations internally and externally to enhance the multi-modal system.
- Become champions of freight and educate local land use and transportation staff to support economic development and freight mobility.
- Work with other state agencies to ensure consistency of regulations that impact freight mobility.
- Coordinate freight plans and programs of municipalities, counties, MPOs, and COGs.
- Identify infrastructure corridors that are critical to developing South Carolina's export market.

- Work with local jurisdictions to create truck routing that will expedite freight trips while minimizing impact on surrounding community.

Objective 4-C: Maintain, or improve upon, current truck travel speed and/or travel time reliability performance.

- Working with the private sector, identify freight bottlenecks on or off the SCDOT system.
- Continuously monitor SFP performance measures to identify and rectify system challenges before they become problems.

4.8.5 Goal 5: Environmental

Be a partner to sustain South Carolina's natural and cultural resources by minimizing and mitigating the impacts of state transportation improvements.

4.8.5.1 Guiding Principles

- Reduce adverse environmental and community impacts of the freight transportation system.
- Work with environmental resource agency partners to explore the development of programmatic mitigation in South Carolina.
- Partner to be more proactive and collaborative in avoiding versus mitigating environmental impacts.

4.8.5.2 Strategies

Objective 5-A

- Develop a post-process tool to quantify freight system investment's effect on the environment in the South Carolina Travel Demand Model, both in terms of statewide benefits, and localized impacts.
- Work with agency partners to expedite the environmental permitting process while maintaining a focus on minimizing environmental impacts.

4.8.6 Goal 6: Equity

Manage a transportation system that recognizes the diversity of the state and strives to accommodate the mobility needs of all of South Carolina's citizens.

4.8.6.1 Guiding Principles

- Ensure planning and project selection processes adequately consider rural accessibility and the unique mobility needs of specific groups.
- Ensure broad based public participation is incorporated into all planning and project development processes.

4.8.6.2 Strategies

Objective 6-A: Identify a Statewide Freight Network that supports all modes (road, rail, ship, air) and all users (owners, operators, users).

- Prioritize freight projects across the modes.

  - Develop tools to help decision-makers weigh projects among all modes against each other.

- Balance financial justifications like returns on investment (ROI) and benefit cost analyses (BCA) with the community impacts.

- Leverage private sector investment to amplify the effects of public sector funding and to gain political support for non-traditional project types.

- Formally incorporate outreach to certain SCDOT's freight partners to capture rural accessibility and the unique mobility needs of specific groups.

Objective 6-B: Incorporate valuation of economic impact into project prioritization.

- Develop a tool to analyze impact of proposed freight projects that evaluates the following:

  - Economic Feasibility (BCA) – The effects of any freight improvements on mobility, livability, and connectivity will be evaluated. Of these, mobility is often the most easily quantified in economic terms since it addresses the travel efficiency gains associated with user travel time; vehicle miles traveled (VMT) and accidents.

  - Economic Impact – An additional economic impact analysis can then be done that builds upon the benefit perspective. The resultant personal and business transport costs savings can be assessed to ascertain the resultant job, income, and output related impacts that arise from the improvement alternatives key to any impact analysis is to avoid, or at least identify, any transfer impacts; for example business relocation from area to another because of an improvement (e.g., no "net" gain).

  - Funding/Financial Analysis – Financial analyses usually refer to "revenue-generating" projects in which a financial analysis of a revenue stream (i.e., tolls) are compared to the project construction and operation costs over the project life (i.e., construction period plus 20 years of operation). Such financial analyses commonly referred to as "Return-on-Investment" in the private sector, can be pursued as either a privately- or publicly-funded project.

4.9 Freight Performance Measures

Performance measures are an effective method to focus attention on organizational goals and monitor progress towards achieving the goals. Externally communicated, a simple and streamlined performance management program can drastically improve communication with the general public, the private sector and elected officials. In particular, performance measurement can justify past and future investment in freight infrastructure. Internally, performance measures can be integrated into SCDOT to provide three distinct functions:

PLANNING: Performance measures can be used as a tool to evaluate proposed plan elements and scenarios to gauge their effectiveness in achieving the plan's goals and objectives. These high-level metrics are created to evaluate trade-offs and are projected over the 25 year planning horizon.

IMPLEMENTATION: Performance measures can be used as a tool to emphasize agency goals and objectives within the policy development, budgeting, programming, and project selection processes. For example, the measures might assist decision makers in the project selection process by providing metrics about their potential effectiveness in meeting the plan's goals and objectives.

ACCOUNTABILITY: Performance measures can be used as a tool to facilitate tracking and reporting South Carolina's progress in achieving the plan's goals and objectives to support accountability for plan implementation and results.

Freight specific performance measures provide SCDOT with the ability to monitor how well the transportation system is accommodating safe and efficient freight movement and how well South Carolina is meeting the national freight policy and program goals as defined in Section 70101(b) of title 49 and section 167 of title 23. The measures will allow for the identification of trends or challenges before they become problems and in turn make SCDOT more flexible and responsive to private sector needs. In addition, freight performance measures will allow SCDOT to more effectively communicate with freight stakeholders. Ultimately, the recommended freight performance measures should become a reasonable, updatable element to the regular planning and programming process for SCDOT.

These measures have been developed within the context of the goals established in the SFP, the overall MTP and published national freight goals. These measures, designed specifically to capture performance of South Carolina's National Multimodal Freight Network and the state-identified freight system, are intended to supplement, not replace, the measures in the MTP, which are intended to demonstrate overall performance of the transportation system.

4.9.1 Freight Performance Measures for South Carolina

The establishment of freight performance measures by SCDOT assists in the SFP and MTP, by providing the link from the agency policies, programs, plans, and projects back to the goals and objectives of the SFP and MTP. The measures allow SCDOT to actively track the performance of the freight network and are important for the identification of freight specific trends and challenges. The measures make SCDOT more flexible and responsive to the needs of its freight stakeholders and assists in communicating freight performance to external partners. The considerations used for recommending measures include:

- **Data availability** – the data and analysis tools needed for the measure should be readily available or easy to obtain. The data should be reliable, accurate, and timely.
- **Strategic alignment** – the measures should align well with the goals and objectives of the SFP and MTP.
- **Understandable and explainable** – the measures should be easy to understand and useful when communicating to external partners.
- **Causality** – the measures should focus on the items under SCDOT's span of control.
- **Decision-making value** – The measures should provide predictive, diagnostic and reporting value to agency decision makers.

Using these criteria and the lessons learned from the efforts discussed above, eight freight performance measures were identified. Many of these measures are redundant with the MTP, but some have been enhanced to reflect more relevant freight-specific metrics. These measures, and the associated SFP goals and objectives, are outlined in **Table 4-2** through **Table 4-7.** The measures considered for each goal and objectives are also identified.

Table 4-2: Mobility and System Reliability Goal

Objective	Measures	Selected Measures
Reduce the number of system miles at unacceptable congestion levels (1)	Reduction of South Carolina's Statewide Freight Network mileage that at less than a LOS E for urban areas and LOS C for rural areas	Reduction of South Carolina's Interstate mileage that operates at less than a LOS E for urban areas and LOS C for rural areas Improvement of travel time reliability on South Carolina National Highway System and Interstate System
Improve travel time reliability (on priority corridors or congested corridors) (1)	Average or weighted buffer index or travel time index on Interstate System and National Highway System	
Reduce congestion on the freight transportation system. (2)	Miles of Interstate System above acceptable congestion levels	
Improve the year-round reliability of freight transportation on the interstate system	The dependability of travel times across multiple time periods on the Interstate system	

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

Table 4-3: Safety Goal

Objective	Measures	Selected Measure
Improve the safety, security, and resilience of the freight transportation system. (2)	Number of large trucks reported in crashes (fatal, non-fatal, injury reported, hazardous materials) Five year trends	Number of large trucks reported in crashes (fatal, non-fatal, injury reported, hazardous materials) Five year trends
Improve substandard roadways (1)	Percent of substandard roadway improved	
Enhance truck parking availability and information management on SC interstates/South Carolina Freight Network	The availability and published mapping of public or private truck parking spaces on the Interstate network	

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

Table 4-4: Infrastructure Condition Goal

Objective	Measure	Selected Measures
Maintain or improve the current state of good repair for the NHS [2]	Number of Miles of Interstate and NHS rated at "good" or higher condition	Percentage of miles of Interstate and NHS rated at "good" or higher condition Percent of deficient bridge deck area
Reduce the percentage of remaining state highway miles (non-interstate/strategic corridors) moving from a "fair" to a "poor" rating while maintaining or increasing the percentage of miles rated as "good".	Reduction in the percentage of remaining state highway miles (non-interstate/ strategic corridors) moving from a "fair" to a "poor" rating while maintaining or increasing the percentage of miles rated as "good".	
Improve the condition of the state highway system bridges [1]	Percent of deficient bridge deck area	

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

Table 4-5: Economic and Community Vitality Goal

Objective	Potential Measures	Selected Measures
Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy. [1]	Truck travel time index on the South Carolina Interstate System Relative costs of logistics to overall statewide productivity	Truck travel time index on the interstate system; Annual hours of truck delay; Freight Reliability

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

Table 4-6: Environmental Goal

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

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

Table 4-7: Equity Goal

Guiding Principles
Ensure planning and project selection processes adequately consider rural accessibility and the unique mobility needs of specific groups. [1]
Ensure broad based public participation is incorporated into all planning and project development processes. [1]
Identify a Statewide Freight Network that supports all modes (road, rail, ship, air) and all users (owners, operators, users).
Incorporate valuation of economic impact into project prioritization.

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

4.9.2 Details of Performance Measures

The following tables provide performance targets as defined within the SCDOT TAMP. Each table includes a description of the baseline measure from 2016 and the 10-Year target for improvement. In addition, the table provides information on how the measures is defined. These established measures are published on the SCDOT Strategic Plan Performance Dashboard web page.[22]

[22] https://www.scdot.org/StrategicPlanning/Dashboards/SMPlan2018/index.aspx

Mobility: Interstate Travel Time Reliability		
SCDOT Transportation Asset Management Plan Measures		**Definition of Measure:** Percent of interstate segments with reliable travel times.
Baseline (2016)	94.8%	
Ten Year Target	86%	
Key Inputs: Speed/travel-time, Density (Vehicle Counts/Capacity), Delay.	**Method of Calculation:** SCDOT Travel Demand Model	

Mobility: Truck Travel Time Reliability		
SCDOT Transportation Asset Management Plan Measures		**Definition of Measure:** Truck travel time reliability (TTTR) for each time period and each segment on the interstate system
Baseline (2016)	1.34	
Ten Year Target	1.45	
Key Inputs: National Performance Management Research Data Set for Truck Travel Time Reliability (TTTR) metric / maximum TTTR for each reporting segment	**Method of Calculation:** $\frac{\sum_i^T = 1(SL_i \, x \max TTTR_i)}{\sum_i^T = 1(SL_i)}$ See below The sum of maximum TTTR for each segment, divided by total interstate miles[23]	

Pavement Quality: Interstate and NHS Condition		
SCDOT Transportation Asset Management Plan Measures		**Definition of Measure:** Percentage of Pavements rated at "good" or higher condition
Baseline (2016)	65%	
Long-Term goal	92%	
Key Inputs: PCR Ratings	**Method of Calculation:** Lane Miles of "Good" or higher rated pavement on IR and NHS routes / Total lane miles of IR and NHS routes	

[23] *Where,*
i = An Interstate System reporting segment;
Max TTTRi = The maximum TTTR of the five time periods in paragraphs (a)(1)(i) through (v) of § 490.611, to the nearest hundredth, of Interstate System reporting segment "i";
SLi = Segment length, to the nearest thousandth of a mile, of Interstate System reporting segment "i"; and
T= A total number of Interstate System reporting segments.

5 ECONOMIC CONTEXT OF FREIGHT TRANSPORTATION IN SOUTH CAROLINA

Historically, South Carolina has prospered by investing in strategic infrastructure to capitalize on shifts in the global supply chain. The transformation of the state's economy from largely agricultural to a manufacturing and service based one increased the need for an efficient and competitive freight transportation system. The ability of South Carolina to respond quickly to the changing business environment enabled the state to become a major advanced-manufacturing center in the Southeast. In recent decades, multi-national companies like BMW, Boeing and large tire manufactures like Continental, Michelin and Bridgestone have located major facilities in the state. In 2017, manufacturing accounted for 11.5 percent of total employment in the state.[24]

In addition to manufacturing, the U.S. Department of Defense is a large driver of freight demand in South Carolina. All five branches of the military have installations in the state. The SC Department of Commerce estimates that the military has a nearly $24.1 billion economic impact on the state, and supports more than 182,000 jobs.[25]

Tourism has a substantial impact on the availability of the state's transportation network for freight users. Annually, the South Carolina Department of Parks, Recreation and Tourism estimates that over 4.4 million trips are made on South Carolina highway by out-of-state leisure visitors.[26] The majority of these trips are made on major corridors that service major pass-through tourist traffic as well, like I-95 and I-26.

Though the major means of freight transport in South Carolina is by truck, the state is also served by a system of Class I and short line railroads, marine port terminals, inland port terminals, six primary public airports and a range of intermodal facilities.

In 2017, the logistics sector (comprised of Retail Trade, Wholesale Trade and Transportation, Warehousing and Utilities industries) accounted for 19.1 percent of all South Carolina employment, illustrating the significance of the transportation and logistics industry in the state. In the same year, manufacturing, a freight intensive industry, accounted for 11 percent of total employment in South Carolina.[27] As is evident, the movement of goods along all modes is critical in South Carolina.

Understanding the supply chain and providing sufficient connections between modes is important to the economic vitality of the state. Site selection practices by current and future businesses evaluating South Carolina look to the availability and capacities of the freight transportation system to move raw materials, sub-assemblies, and finished goods along the

[24] https://www.sccommerce.com/research-data
[25] http:// https://www.sccommerce.com/news/economic-impact-military-presence-sc-reaches-241-billion
[26] http://www.scprt.com/research
[27] http:// www.sccommerce.com/research-data

supply chain. Modal selection is done by a process of evaluating each mode with six criteria: transit times, reliability, cost, capacity, safety and accessibility.

The relationship between the freight transportation infrastructure and the users of the system should be viewed as a mutually evolving relationship essential to the economic health of the state. The presence of inherent agricultural and trade opportunities in the early history of the state fostered the development of modes of transportation to support these businesses by transporting goods to markets. As these business models matured, bringing competition from other producers, a range of geographic markets, and evolving technological solutions to historical challenges, business sectors built upon existing freight systems and developed new economic activities and models. The increased need for efficiency required by changing models advanced enhancements within existing, and supported new, modes of freight transportation. These reactionary responses to sector and modal emergence led to the ability to meet changing supply chain needs in the state. Attracting new businesses produced new needs as these organizations matured and adapted to meet global competition. These building blocks of the current freight transportation system can be expected to continue to evolve as the economy of South Carolina grows.

An examination of the modal infrastructure within the state, the symbiotic inventory of businesses and the users of the freight system, is required to understand each side of the evolutionary equation.

Most South Carolinians are aware of the role played by the Port of Charleston in the economy of South Carolina. According to the 2019 South Carolina State Ports Authority (SCSPA) Economic Impact Study,[28] the total economic impact resulting from all activities associated with the SCSPA on the state of South Carolina is estimated to be approximately $63.4 billion. This figure reflects the dollar value of all final goods and services in South Carolina that can be attributed (either directly or indirectly) to the SCSPA. This impact corresponds to 224,963 jobs and nearly $12.8 billion in labor income for South Carolinians that would not exist otherwise. Along with the Port, high profile, freight-intensive employers have driven the state's economy. Approximately 51.8 percent of the statewide economic impact associated with the SCSPA is concentrated within the Upstate region of South Carolina. This is largely because the primary users of SCSPA port facilities are manufacturers, which are also disproportionately concentrated within the Upstate region. The manufacturing industry comprises 20.0 percent of all jobs in the Upstate, compared to 14.7 percent for South Carolina as a whole. The Midlands experiences 24.6 percent of all economic impacts associated with the SCSPA, followed by the Lowcountry region (12.3%), and the Pee Dee region (11.3%).

South Carolina is a "gateway" state and a major freight focus point for the U.S. due to the significant imports and exports passing through the Port of Charleston. Also, South Carolina is a "connector" state because of significant volumes of north-south freight flows along the U.S. east coast. Both roles are critical to the economic posture of the U.S. and the southeast region. Because of its geographical location, South Carolina serves as a gateway for international trade.

[28] http://scspa.com/wp-content/uploads/full-scpa-economic-impact-study-2019.pdf

As a consequence, manufacturing and the logistics and distribution industries have experienced significant growth in the state.

5.1 Importance of Meeting Supply Chain Needs

Site selection practices by current and future businesses evaluating South Carolina as a potential location for business look to the availability and capacities of the freight transportation system to move raw materials, sub-assemblies, and finished goods along the supply chain. Businesses select locations for facilities within the supply chain, such as manufacturing facility or distribution center, based upon the presence of current or anticipated transportation infrastructure to meet these supply chain needs. Once there is an understanding of current supply chain needs and identification of forecast needs, freight policy and infrastructure improvement plans can be prepared to sustain the existing economy of the state as well as support potential growth.

5.2 Modal Selection Process within the Supply Chain

Supply chain theory and practice defines a process for the evaluation and selection of the various modes to satisfy freight transportation needs between the differing stages of product delivery. Modal usage is determined through the application and evaluation of each mode to a set of six criteria. Each criterion describes a condition that can be unique to the particular commodity, supply chain, or business model. The six criteria are compared to the needs of a specific movement within a complete supply chain. In satisfying these six criteria, modes of transportation are chosen and may be selected as a "chain" or combination of modal selections. This latter selection, "multimodal", encompasses a significant percentage of movements for modern product manufacturing.

The six criteria are:

- **Transit Times**: The time required for the movement of materials or goods from one point to another within the supply chain. This may encompass raw materials to refinement, refinement to manufacturing, manufacturing to distribution, and distribution to consumer. It is noted that this may not always result in a selection of the fastest as other factors influence the relevant need for speed of movement.
- **Reliability**: The degree of predictability that the stated transport time will be adhered to when the materials or goods are shipped. Acceptance of known and predictable delays, e.g. rush hour congestion for truck movement in a major metropolitan area, may not be viewed as a disqualifier where the delay can be predicted and planned for.
- **Cost**: Cost is taken into consideration with the previous two criteria and heavily influences modal selection. Transportation cost must not place an inordinate burden on the final cost of the product. Transportation may impart a cost on the final price of the product sufficient to render the goods non-competitive to another supplier offering.
- **Capacity**: The potential mode of transportation must meet the need to transport sufficient quantities. The mode should also have the ability to transport quantities at an acceptable price per weight or volume measure.

- **Safety**: Safety is the stewardship to other occupants of the mode of transportation. This may be to adjacent shipments or passengers traveling on the same mode. Businesses need the confidence that the mode of transportation will provide damage-free, good condition receipt of materials or goods transported.
- **Accessibility**: The mode of transportation must be available to both the shipper and the receiver. It is also considered that the connecting modes, or intermodal connections, are available at a reasonable cost.

In responses from a survey conducted with freight transportation providers and users in South Carolina, transit time and reliability ranked highly in their supply chain decision making, as the demand for just-in-time delivery has increased in recent years. Cost was also considered a key factor in supply chain management for providers and users in South Carolina.

5.3 Application of Criteria

The practical application of these six criteria can be viewed as two stages: Assessment and Application.

In the Assessment stage, Safety and Accessibility may be used to accept or reject a mode for further consideration. Business planners assess the ability of the mode of transportation to safely move the commodity, particularly challenging commodities such as hazardous materials or oversized windmill assemblies. The availability and accessibility of the mode is assessed. All modes may be available yet must be reasonably located and accessible for the movement of the commodity. A railroad may be located three hours by truck, in the opposite direction of the final destination. The overall truck transit time from origin to destination is six hours. This may render the railroad as "out of route" or circuitous. This may negatively impact the necessary transit times and required cost needs of the supply chain.

Table 5-1 illustrates the generally accepted reliability and relevant transit time of each mode.

Table 5-1: Modal Comparisons by Selection Criteria

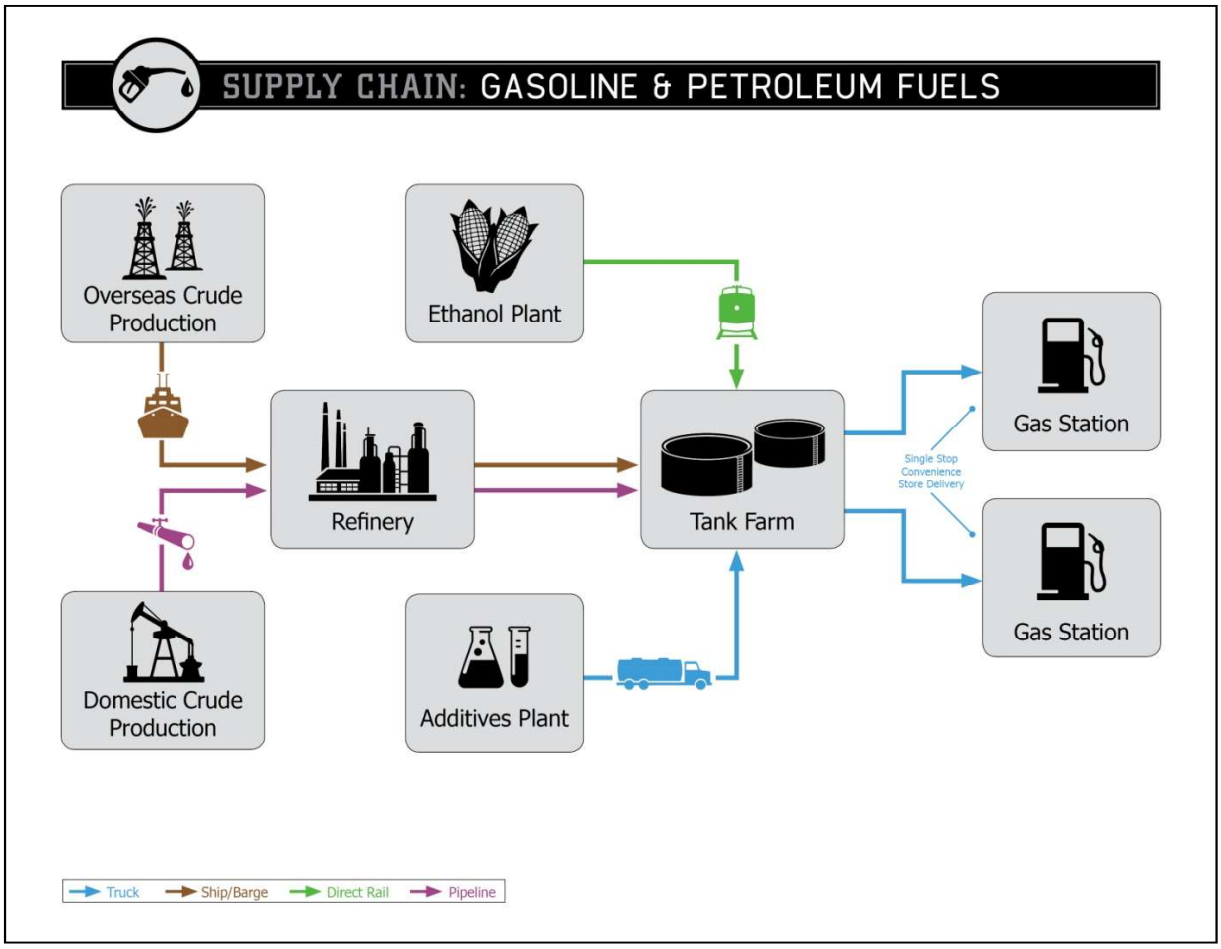
Transit	FAST	<----------			SLOW
Mode	Air	Truck	Rail	Water	Pipeline
Reliability	Higher	Variable		Lower	Higher
Freight Profile	Low Weight, High Value, High Time Sensitive, High Inventory Cost	Broad Range of Weight, Value, Sensitivity, and Inventory Cost		High Weight, Lower Value, Low Time Sensitivity, Low Inventory Cost	Variable characteristics associated with the specialized nature of the commodity

Once this assessment takes place for the region, the "Application" of the criteria can describe the type or profile of the freight most likely to employ the mode. This becomes the fundamental planning criteria for transportation facilities enhancing freight mobility. Not only does this identify needed facilities but supports the prevention of planning and designing for unnecessary transportation facilities or facilities not appropriate to support the local freight needs.

5.3.1.1 Case Study of Modal Selection and Usage

A real world example of this modal selection process, the global gasoline and petroleum supply chain is presented. The gasoline supply chain is concisely traced from origin to final distribution location, where the end user intersects with the supply chain. The entire process is illustrated in **Table 5-1**.

Figure 5-1: Case Study, Gasoline and Petroleum Supply Chain



Source: CDM Smith

The supply chain is subject to provider-supplier locations, having both overseas and domestic sources. Foreign sources are transported by ocean tanker, which is an example of geographically limited modal choices or accessibility. Domestic sources, national and continental, gravitate to that mode providing the most reliable and cost efficient transport. Though rail and truck are available, this sector typically transports by pipeline, where that mode exists. Pipeline presents the least potential for regular disruptions to supplies and satisfies the need to provide a steady source material for the continuous operation of the refinery. Water and pipeline modes continue beyond the refinery to provide product to various points for distribution across the country.

Stored in “tank farms”, the product requires an injection from two separate supply chains, which may or may not be subject to the supply chain decision making process guiding the overall modal selection process. As many grades of fuel are blended with ethanol, movement of large quantities of liquid ethanol products is necessary. Transported in bulk, requiring a low cost mode to carry high volumes, this is typically carried to the tank farms for mixing via rail. Other chemicals are required to raise the refined product to grades for commercial usage. These are not necessary in such large quantities as the ethanol additive, and may be co-located with the tank farm. To efficiently transport these additives, truck is the common selection. The quantities may be high volume, which may lend itself to rail, but these producers may not have direct rail access. “Final mile” or distribution to the point where the consumer is located, is from the tank farm or “rack” to the local fueling station. Truck is the final mode to conclude this supply chain as the local gasoline station typically does not have access to other modes.

It is this understanding of commodity types and modal selection that planners apply additional data to drive freight planning policy and programming in South Carolina. As demonstrated, a wide range of components are present in the supply chain decision making process, resulting in site selection processes unique to each business currently operating or considering future operations in South Carolina. With these considerations, the statewide freight plan applied these concepts to help formulate a set of policies to support a resilient and sustainable freight transportation system.

6 CORRIDOR LEVEL STRATEGIES AND CONTINUED FREIGHT PLANNING

6.1 The Freight Planning Process

This SFP was developed in partnership of SCDOT, SCPA, FHWA, and the SC Department of Commerce, along with a wide range of public and private sector partners around the region. Chapter 1 details this outreach effort, and SCDOT continuously supported and facilitated participation in the development of plan documents and strategies through the planning process.

Per FAST Act guidance, a freight plan is required to include a fiscally constrained list of projects and describe how formula funds available under the new National Highway Freight Program will be invested and matched.

The identified freight related improvements on the corridor level recommended in this plan were derived from an analysis of freight movement and potential growth on the state's rural interstate infrastructure assets. As well, assessment was conducted as part of the larger statewide MTP process, partnered with the development of the Statewide Freight Network and input from freight stakeholders. This list is presented as an initial methodology for continued freight planning and prioritization process for SCDOT and partner planning agencies. These projects are identified in alignment with strategies made for sustained or enhanced partnerships with other agencies in the state, including both public entities and private sector representatives. This is demonstrated in Chapter 5 and allows for the potential leverage of financial resources to both plan and program infrastructure improvements on the public roadway system as well as private infrastructure assets, such as marine terminals, intermodal facilities, airports or railroads.

SCDOT also included data and information available from MPO and other local level freight planning efforts. Drawing from those experiences and resources allowed for aligned SFP and individual freight planning efforts. This is evident in the inclusion of "first mile" and "last mile" considerations in policy and project strategies. Recognizing that not all local projects are of national or statewide significance, this was considered in the methodology for the identification of the Critical Rural and Urban Freight Corridors as well as development of an independent Statewide Freight Network for South Carolina.

6.2 Corridor Level Strategies

In Chapter 2, a list of freight bottlenecks were identified through a preliminary analysis of observed truck counts, feedback from freight stakeholders, travel time data, and TRANSEARCH commodity flow data. This initial list included the following bottleneck locations:

- I-20: The I-77 and Clemson Road interchanges are the respective bottleneck points along I-20 during the AM peak hour and PM peak hour. It should be noted that this segment is currently under construction for widening from four to six lanes. In addition, during the

PM peak hour, the bottleneck points along I-20 include the three interchanges with Broad River Road, I-26, and U.S. 378.

- I-26: In the Columbia area, the I-20 interchange is the primary bottleneck point during the AM peak hour and the I-20 and St. Andrews Road interchanges are the primary bottleneck points during the PM peak hour. In the Charleston area, the U.S. 52 Connector/Ashley Phosphate Road interchange and the merge to I-526 are the primary bottleneck points during the AM peak hour and the I-526 and Ashley Phosphate Road interchanges are the primary bottleneck points during the PM peak hour.
- I-77: The primary bottleneck point along I-77 southbound is approaching the Forest Drive interchange in the Columbia area every Thursday in the AM peak hour, due to weekly graduation ceremonies of Fort Jackson.
- I-85: The Woodruff Road/I-385 interchange is the primary bottleneck for both directions of I-85 during both the AM and PM peak hours.
- I-126: The I-26 interchange is the primary bottleneck along I-126 westbound during the PM peak hour.
- I-385: The primary bottleneck along I-385 is the interchange with I-85.
- I-526: During the PM peak hour, the primary bottleneck along I-526 eastbound is the I-26 interchange and the primary bottleneck points along I-526 westbound are the I-26 interchange, the merge from Leeds Avenue, and the Paul Cantrell Boulevard interchange.

With the passage of the ***South Carolina Infrastructure and Economic Development Reform Act* (Act 40)**[29] and in an effort to improve mobility and facilitate freight movement on rural interstate highways, analysis was conducted to specifically assess rural interstates within South Carolina. The Rural Interstate Freight Network Mobility Improvement program is designed to improve reliability and productivity, reduce travel costs and sustain the economic health of the state. The program prioritizes interstate corridors in rural areas that could benefit from added capacity. Funds used towards tackling these much needed widening projects will be available Infrastructure Maintenance Trust Fund motor fuel tax credit program sunsets in July of 2023.

Rural interstate corridors were prioritized through a weighted ranking process assessing rural interstate future freight tonnage, truck-related safety concerns, truck travel time reliability through the rural interstate corridors and annual average daily truck traffic. The South Carolina Department of Commerce and the South Carolina Ports Authority were also asked to provide input indicating their highest priority rural corridors within the state. Proposed corridors were ranked based on highest weighted score. In October 2018, in accordance with the TAMO and the SCDOT 10-year plan for rebuilding South Carolina's roads, the SCDOT Commission approved the Rural Interstate Freight Network Mobility Improvement Program. This interstate widening program specifically targets rural sections of South Carolina's interstate system with a focus on freight safety and mobility:

- I-26 between Columbia and Charleston (MM-125 to MM-139)

[29] https://www.scstatehouse.gov/billsearch.php?billnumbers=3516&session=122&summary=B

- I-95 in the Lowcountry from the Georgia State Line (MM-0 to MM-18)
- I-26 at I-95 Interchange in Orangeburg County (MM-169)
- I-85 in the Upstate from the Georgia State Line (MM-0 to MM-19)
- I-77 in the Catawba Region (MM-65 to MM-77)

Detailed information and funding estimates are provided in **Appendix D**, Financial Investment Summary.

6.3 Modal Shift Potential

According to the TRANSEARCH database, in 2016, 80.6 percent of shipments in South Carolina were transported by truck, 13.6 percent by rail, and 5.8 percent by air, pipeline and water. Regardless of the data source, it is clear that truck is the preferred mode for goods movement and the demand for truck mobility has continued to grow with the economy of South Carolina. With the establishment of the Inland Port in Greer (October 2013) as well as the Inland Port in Dillon (April 2018) along with the planned Palmetto Railways' *Intermodal Container Transfer Facility* in North Charleston, South Carolina continues taking a proactive role in expanding modal options for the transportation industry.

With the understanding that goods movement and model choice for goods movement are largely determined by the private transportation industry, the SFP provides an opportunity to explore additional options for planning for non-highway movement of goods in South Carolina. A modal shift analysis incorporating the USDOT's Intermodal Transportation and Inventory Cost (ITIC) model was used to assess the impact of the selected scenarios on modal shift in South Carolina. The ITIC model was also used to investigate the modal diversion potentials for I-26, I-95, I-85 and I-20 corridors in South Carolina.

As was presented in the SCDOT Freight Plan (2013 and 2017 amendment), in 2011 the percentage of local, short haul, and long haul truck trips represented 33 percent, 53 percent and 14 percent of truck movements (inbound and outbound) respectively. These percentages are projected to change to 32 percent, 52 percent and 16 percent in 2040. Local and short haul truck trips are not candidates for diversion because their short distances do not allow them to take advantage of the low-cost, long-distance rail transport. Thus, truck movements with potential for diversion are limited to long haul truck movements, which is forecast at 16 percent in 2040.

Based on the previous ITIC analysis, reducing rail cost and terminal dwell time identified the highest state and corridor-level modal diversion potential from highways to rail. Given that the percentages of truck trips available for diversion to rail are a limited subset of overall truck movements, the ITIC analysis identified modal diversion potential to be no more than 5 to 6 percent of total truck movements. Both scenarios would require additional infrastructure investment or fiscal incentives to recognize the diversion potential.

No scenarios are specifically intended for adoption, but instead were simply identified to illustrate the nature of intervention needed to induce a private sector modal shift in goods

movement beyond normal market-induced shifts. Modal shift continues to be greatly influenced by the types of goods being moved, final destinations, and the total transport costs from origin to destination. With actual data from the SC Inland Port, the ICTF and new Navy Base terminal under development, and new intermodal facilities in Charlotte*, the state will be in a much better position to* estimate growth and cost/benefit of additional modal options. While this analysis begins the discussion, additional state and corridor-level analyses should continue in order to truly quantify the benefit of additional intermodal opportunities and investment.

6.4 Framework for Continuing Freight Planning

In addition to freight policy strategies outlined in Chapter 4, the following provides a general framework for continuing freight planning in South Carolina.

6.4.1 State Rail Plan

A State Rail Plan follows a formula of data inventory, analyses and strategies as prescribed by the FRA. For planning purposes in South Carolina, an integrated planning process, as conducted with the SC MTP, is recommended for future updates to both the State Rail Plan and the SFP. While limitations in governance and funding exist, both plans mutually benefit from synergistic stakeholder engagements, data collections and analyses, and collaborative strategies and project identification. Avoiding redundancy in effort and data prevent wasted planning funds, and preventing contradiction in strategies should minimize the potential for conflict in plan implementation.

6.4.2 Long Range Statewide Multimodal Transportation Plan (SC MTP)

Similar to a State Rail Plan, a Long Range Statewide Transportation Plan benefits from the combined effort of developing a SFP. A collaborative, iterative planning process that utilizes a common data set and common set of assumptions allows the planning team to align goals and objectives with analyses with final strategies. It is recommended that the SFP be a tool for future project identification, project prioritization, and project funding scenario planning.

6.4.3 Metropolitan Area Freight Plans

The SFP should be available for use by MPO level planners when developing local LRTPs and urban freight plans. These data inputs and assumptions allow for aligned goals and objectives as well as statewide priorities for project prioritization. This also provides data resources for local planners, often without such resources, to identify regional freight needs. This supports local, “last mile” planning challenges and opportunities. This SFP should also provide a tool for state level planners to review local freight plans for alignment in priority.

6.4.4 Plans for Adjacent States

Goods movement is rarely guided or limited by geopolitical boundaries. Making the South Carolina SFP available to neighboring states benefits all parties in data sharing, project prioritization, and opportunities for collaboration in planning for major regional freight supportive projects. Historically, projects of regional significance, such as interstate widening, high speed rail, or other major investments benefit from multijurisdictional planning, cooperation and funding. As demonstrated throughout the SFP, commodity flow data reflect significant

influence from goods movements throughout the Southeastern United States and beyond. Collaborative planning makes for more effective use of freight transportation dollars.

More specifically, this SFP provides input to future multi-state freight corridor plans for both highway and rail movements. This also supports freight planning efforts for metropolitan areas on or near state borders, such as Charlotte, NC, Augusta, GA, and Savannah, GA and as far as Atlanta, GA or Jacksonville, FL.

6.4.5 Collaborative Planning Throughout Supply Chain

As partner agencies (such as SCPA and Palmetto Railways) proceed with projects like the Inland Ports in Greer and Dillon and the NBIF in North Charleston, SC, SCDOT should preserve and enhance the collaborative planning efforts with these agencies. As those projects become operating pieces of the supply chain in South Carolina, SCDOT should closely monitor their performance, as well as the performance of the roadway and rail systems supporting them. Close attention should be paid to the role those facilities play in the trends in goods movements and modal share of goods movement in the state. This will allow planners to prioritize appropriate transportation funding to preserve the freight infrastructure of South Carolina and remain flexible to the changing trends in distribution patterns.

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7 FREIGHT INVESTMENT PLANNING

7.1 Funding for Freight Infrastructure

7.1.1 Administrative Structure of SCDOT

SCDOT is established by South Carolina law as an administrative agency of the state government. The SCDOT Commission is the general policy making body of the Department and is vested with the responsibility for the approval of SCDOT's long-range and short-term transportation plans, priority lists of projects, state transit program, annual budget, additions and deletions to the state highway system and consideration of State Infrastructure Bank decisions on project funding. The Commission is comprised of nine members, two at-large members and one from each of the state's seven Congressional Districts. The Commission appoints the Secretary of Transportation, who is the chief administrative officer of the Department. SCDOT's Secretary of Transportation is charged with carrying out the policies of the Commission, managing the day-to-day activities of the agency and represents the Department in dealings with other state agencies, local governments, special districts, other states and the federal government.[30]

7.1.2 Funding Challenges

South Carolina is home to the 4th largest state-maintained highway system in the nation. South Carolina is one of five states responsible for their secondary road network. The national average for state-maintained road miles is approximately 19 percent of the respective state's total roadway network; SCDOT is responsible just over one-half of all public roads in the state, which totals 41,314.5 miles (2018).[31]

7.1.3 Freight Investment - Moving Forward

As required in 49 U.S.C 70202(c)(2), a freight investment plan component shall include a project, or identified phase of a project, only if funding for completion of the project can be reasonably anticipated to be available for the project within the time period identified in the freight investment plan. In the State Freight Plan, the term "fiscally-constrained" has the same meaning as is applied to TIPs and STIPs. Multi-state projects would require coordination of the States involved such that the project is accurately and consistently reflected in each State's Freight Plan.

All freight projects that are included in the State Freight Plan and which involve the expenditure of public funds should necessarily be included in TIPs, STIP, and be consistent with Long-Range Metropolitan and Statewide Transportation Plans.

To the extent that States have prepared economic analysis for specific projects, USDOT encourages States to consider the results of those analyses when determining which projects are included on their freight investment plan, and also to refer to the results of benefit-cost analyses, as appropriate, when and if the project is mentioned in the State Freight Plan.

[30] https://www.scdot.org/inside/inside-commission.aspx
[31] SCDOT Highway Performance Management System (HPMS) database, Road Data Services

This freight plan includes a Freight Investment Plan that presents prioritized projects or project phases where funding is expected to be available for completion of the project and that will carry out the goals set forth Title 23 U.S.C. 167.

7.1.4 Federal Funding Sources

7.1.4.1 National Highway Freight Program (NHFP)

The FAST Act establishes a new National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals, including:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
- Improving the state of good repair of the NHFN;
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
- Improving the efficiency and productivity of the NHFN;
- Improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and
- Reducing the environmental impacts of freight movement on the NHFN. [23 U.S.C. 167 (a), (b)]

Generally, NHFP funds must contribute to the efficient movement of freight on the NHFN and be identified in a freight investment plan included in the State's freight plan (required in FY 2018 and beyond). [23 U.S.C. 167 (i)(5)(A)] In addition, a State may use not more than 10% of its total NHFP apportionment each year for freight intermodal or freight rail projects.

7.1.4.2 National Highway Performance Program (NHPP)

The FAST Act continues the NHPP, which was established under MAP-21. The NHPP provides support for the condition and performance of the NHS, for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.

A State may transfer up to 50% of available NHPP apportioned funds to the National Highway Freight Program, Surface Transportation Block Grant Program, Transportation Alternatives, Highway Safety Improvement Program, and Congestion Mitigation and Air Quality Improvement Program each fiscal year (per 23 U.S.C. 126).

7.1.5 State Funding Sources

South Carolina's state funding sources are organized into four main programs. Two are controlled by SCDOT; the remaining two programs are controlled by independent commissions. These programs are funded largely (71 percent) from the state motor fuels user fee, which through Act 40 of 2017 increases the motor fuel user fee by 12 cents over six years (2 cents per year commencing in 2018).

7.1.5.1 State Highway Fund (SHF)

SCDOT's major state funding program is the SHF. It functions similar to a general revenue account for the agency. The SHF is formally administered by the Secretary of Transportation and governed by the Commission. The SHF funds maintenance and operations, construction, transit, debt service, payroll and other overhead expenses, and provides the local match for federal funding. There are annual statutory transfers from this fund to the South Carolina Transportation Infrastructure Bank and C-Fund (described below).

7.1.5.2 Non-Federal Aid Highway Account (NFAHA)

In 2005, the NFAHA was created to fund maintenance projects that were not eligible for federal maintenance dollars. Therefore, this account can only be used for maintenance on non-federal aid roads and cannot be used to pay for administrative expenses. The NFAHA is funded from many sources including driver license fees and inspection fees for petroleum products. The NFAHA is formally administered by the Secretary of Transportation and governed by the Commission.

7.1.5.3 Infrastructure Maintenance Trust Fund (IMTF)

In 2017, the South Carolina General Assembly passed legislation to increase the State gas tax by 12 cents by phasing in the increase at 2 cents per year for six years. These funds are deposited into a new trust fund called the Infrastructure Maintenance Trust Fund (IMTF). These new revenues, coupled with other Federal and State funds, form the financial foundation of SCDOT's Ten Year Plan and performance targets.

7.1.5.4 C-Fund

Unlike the previous two programs, the C-Fund program is controlled by 46 individual County Transportation Committees (CTC) whose membership is appointed by their respective legislative delegation. The individual CTCs select their own projects. However, state law limits the amount of C-Funds spent on local roads to 75 percent of the CTC's C-Fund allocation. CTCs are enabled to administer their C-Fund programs/projects independently. However, a number of CTCs request SCDOT manage the administration of their local programs.[32]

7.1.5.5 South Carolina Transportation Infrastructure Bank (SCTIB)

The SCTIB has an independent board comprised of members including the SCDOT Commission Chairman, two appointed by the Governor, two appointed by the Speaker of the House, and two

[32] https://www.scdot.org/projects/c-program.aspx

appointed by the President Pro Tempore of the Senate. Any state or local agency/district can apply for a SCTIB loan to construct an eligible project.[33]

Eligible projects include major projects which provide a public benefit required by the South Carolina Transportation Infrastructure Bank Act (the Act), SC Code Sections 11-43-110 et seq., are eligible for financial assistance from the Bank.[34] There are two requirements for eligibility:

- **Major Projects** – Construction of or improvements to highways, including bridges, with at least $25 million in cost are eligible for financial assistance. This cost includes: preliminary engineering; traffic and revenue studies; environmental studies; rights of way acquisition; legal and financial services associated with the development of projects; construction; construction management; facilities; and other costs necessary for the project. The cost shall not include financial costs or interest on loans used for the project. While the total cost must be at least $25 million, the final assistance requested may be less than $25 million. Projects may not be combined to meet the minimum project cost of $25 million. No minimum cost has been established for transit facilities.
- **Public Benefit** – The proposed project must provide a public benefit in one or more of the following areas: enhancement of mobility and safety; promotion of economic development; or increase in the quality of life and general welfare of the public.

7.1.5.6 Local and Non-Traditional Funding Sources

Over the past two decades, local governments have played an increasing role in funding transportation projects. Since 1996, SCDOT estimates local investment in Federal-Aid projects to be about $1.2 billion. A large majority of that amount served as matching dollars for investment dollars from the SCTIB. The state's Transportation Infrastructure Task Force (TITF) report stated that local investment in SCTIB projects averaged about $89 million annually.

In 1998, SCDOT formed a public/private partnership to design, build, finance, operate and maintain a four-lane bypass around Greenville. When the project opened in 2001, toll revenue collected was well below projections that were used to structure the toll revenue backed bonds used to fund the construction of the facility. This shortfall continued until 2010, when the partnership filed for bankruptcy and the bonds were subsequently restructured in August 2012.[35]

While this proved a challenge for the partnership, it did represent a private investment of $211 million in the highway network. Subsequently, this investment was used as a SCTIB funding match for the Upstate GRID project. The match leveraged $406 million from the SCTIB to build 14 projects in the Greenville region.[36]

[33] South Carolina Code Section 11-43-130
[34] South Carolina Transportation Infrastructure Bank ("Bank"), Financial Assistance Application Process
[35] http://www.fhwa.dot.gov/ipd/project_profiles/sc_southern_connector.htm
[36] TITF Report

7.1.6 House Bill 3516 (Act 40)

On May 10, 2017 the South Carolina House and Senate voted on House Bill H. 3516[37], otherwise known as the Act 40, establishing SC Code Section 12-28-310(D). The centerpiece of the legislation is the increase in sustained funding for improving and maintaining roads and bridges through a graduated increase in the state gas tax. Key highlights include:

- Establishes the Infrastructure Maintenance Trust Fund for repairs, maintenance and improvements to the existing highway system.
- Effective on July 1, the state gas tax increases two cents per year for the next six years. The total increase will be 12 cents per year after the sixth year.

Act 40 of 2017 provides roughly $600 million in recurring funds, once fully implemented, to be used solely on the improvements of South Carolina's roads and bridges. Funding components include:

- Increases the motor fuel user fee by 12 cents over six years (2 cents per year commencing in 2018).
- Increase of biennial registration fees on private passenger vehicles by $16.
- Imposes an "Infrastructure Maintenance Fee" upon the purchase of a motor vehicle (capped at $500).
- Imposes a one-time $250 registration fee for anyone who transfers a motor vehicle from another state to South Carolina.
- Create new registration fees for alternative vehicles: $120 for EV's & $60 for hybrid vehicles.
- Rolls the truck property tax into the IRP for out-of-state IRP-registered fleets.

7.1.7 State Funding Limitations on Freight

While there are no direct statutory limitations on using state-based funding sources for freight projects, there are some limitations based on project eligibility. The four major state funding sources are largely funded (71 percent) by state-motor fuel tax revenue. As such, there is a statutory limitation on allocating funding to non-traditional projects. This impacts SCDOT's ability to choose the most effective freight related improvements. For example, small rail projects that could have large impacts on long-haul truck traffic on South Carolina's highways would be difficult to fund using traditional state or federal programs.

Taking advantage of opportunities to shift some goods movements from truck to rail, especially heavy bulk shipments, may help reduce roadway congestion and highway maintenance costs but also result in less pollutants and a lower cost due to better efficiencies in fuel per ton-mile. Based on American Association of Railroad estimates, it would have taken an approximately 3.6 million additional trucks to handle the 65.3 million tons of freight that originated in, terminated in, or moved through South Carolina by rail in 2017.[38] Rail is a critical mode in South Carolina and should remain viable to ensure freight moves efficiently throughout the state.

[37] http://www.scstatehouse.gov/sess122_2017-2018/bills/3516.htm
[38] https://www.aar.org/wp-content/uploads/2019/01/AAR-South-Carolina-State-Fact-Sheet.pdf

An example of a project that may not be eligible to receive traditional state highway funding would be Norfolk Southern's Crescent Corridor initiative. As part of this effort, the railroad improved the rail mainline that parallels I-85, a major truck route, through the upstate of South Carolina. The railroad estimates that the route will divert over 1.3 million long-haul trucks from South Carolina's roadways annually resulting in the savings of more than million gallons of fuel annually and reduce 1.9 million tons of CO_2 annually.[39]

With additional flexibility to provide funding assistance for projects like this, SCDOT could help improve freight transportation through smaller, more strategic investments. However for larger projects, South Carolina's current restrictions closely mirror similar constraints placed on the use of traditional formula-based funding from the Federal Highway Administration.

7.2 National Highway Freight Program Planning

7.2.1 Freight Investment Plan

The FAST Act requires that states include a fiscally constrained freight investment plan that includes a list of priority projects and describes how the National Highway Freight Program (NHFP) funds will be invested.

Focusing on rural interstate mobility opportunities to enhance the movement and safety of people and goods, the financially constrained Freight Investment Summary provided in **Appendix D** identifies priority projects eligible for NHFP funding along with a description of how funds made available to carry out the goals and provisions of the National Highway Freight Program would be invested and matched. Project costs are summarized based on the fiscal year(s) in which various phases of the projects are to be completed. The Freight Investment Summary identifies projects that are already programmed in the STIP and will utilize NHFP funding as well as other Non-NHFP funds and required State and/or Local funds.

The list of projects is subject to change due to changes in project details, and as amendments may be made to the STIP and South Carolina's portion of the NHFN.

[39] http://www.nscorp.com/content/nscorp/en/shipping-options/corridors/crescent-corridor.html

APPENDIX A: SCDOT FREIGHT MOBILITY SURVEY

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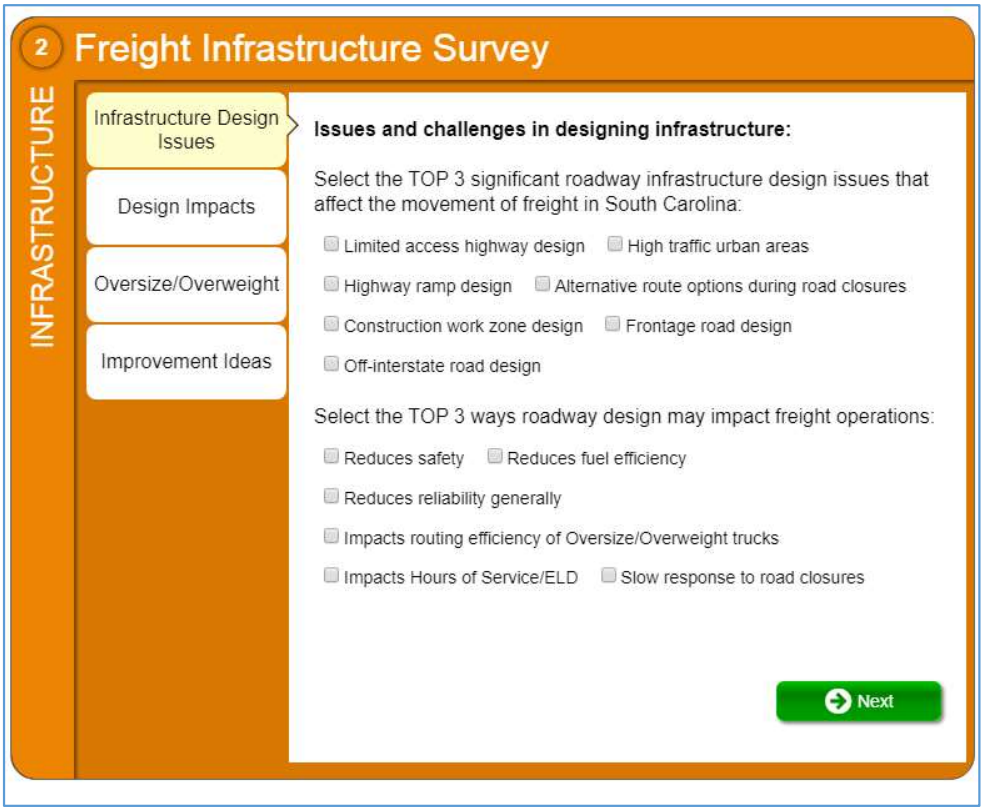
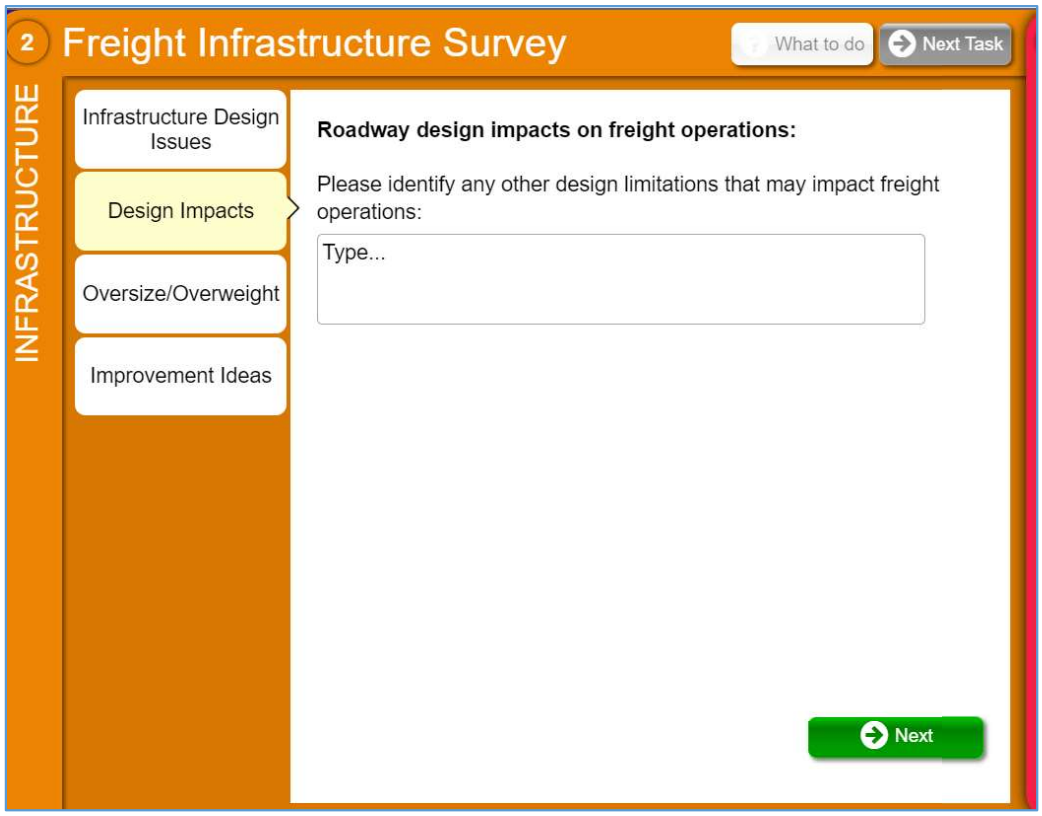
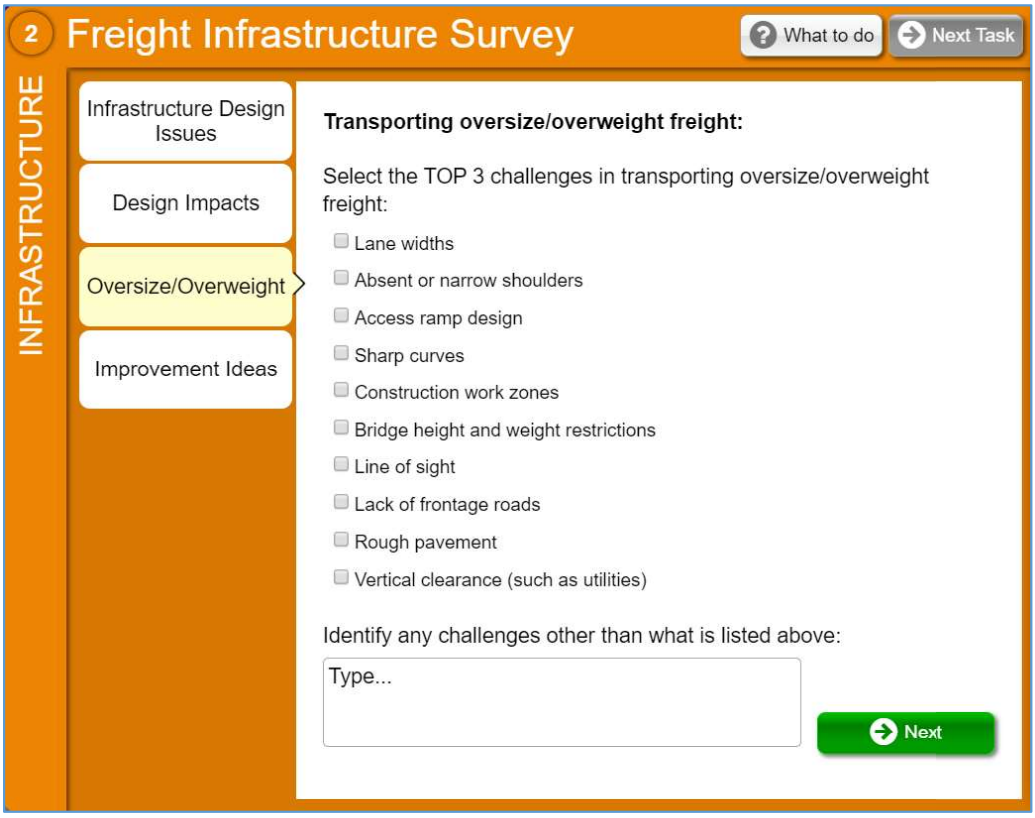
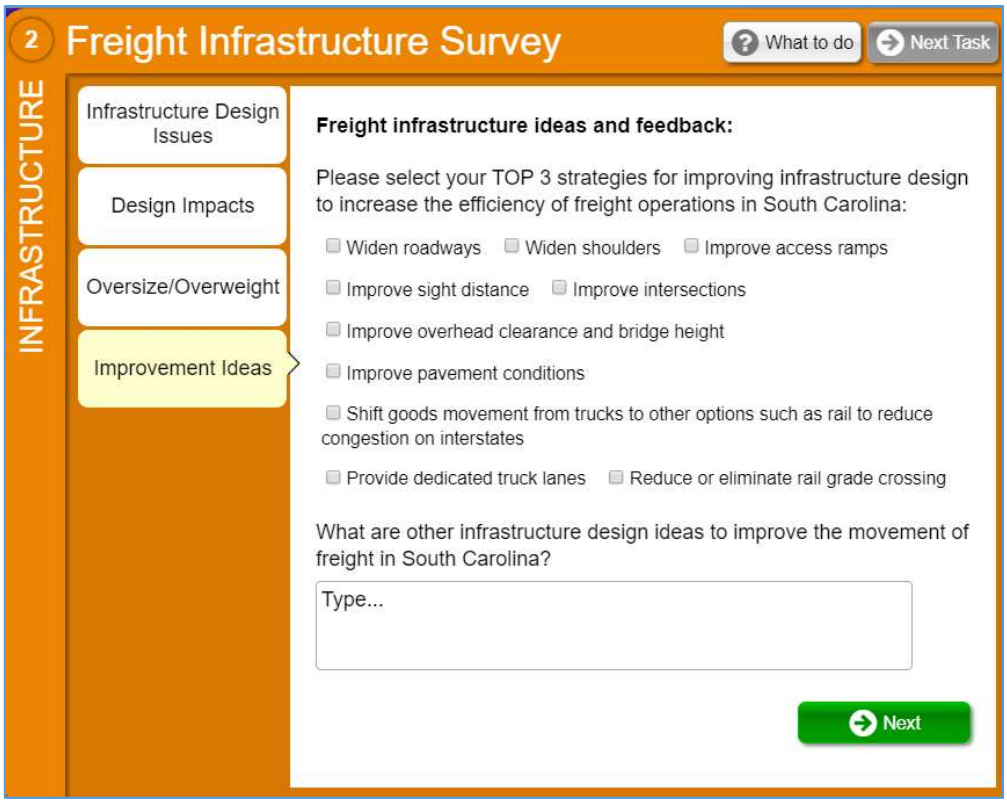
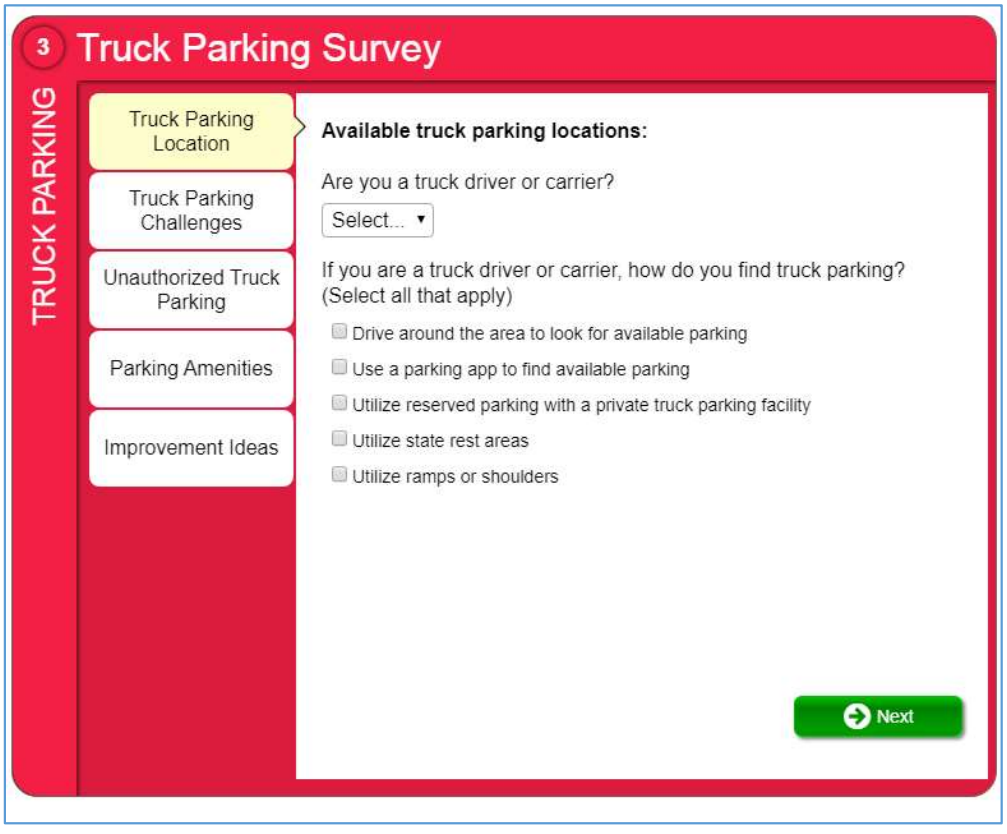
1
South Carolina Freight Survey
WELCOME
Infrastructure Design and Truck Parking Surveys
SCDOT is updating the Statewide Freight Plan to address South Carolina's growing freight transportation needs. Please complete this interactive survey to help us identify and get feedback on infrastructure design and truck parking issues in South Carolina.
Begin
The Statewide Freight Plan includes an inventory of transportation assets as well as a Statewide Freight Network that contribute to the efficient movement of goods in South Carolina.
SCDOT
South Carolina Department of Transportation

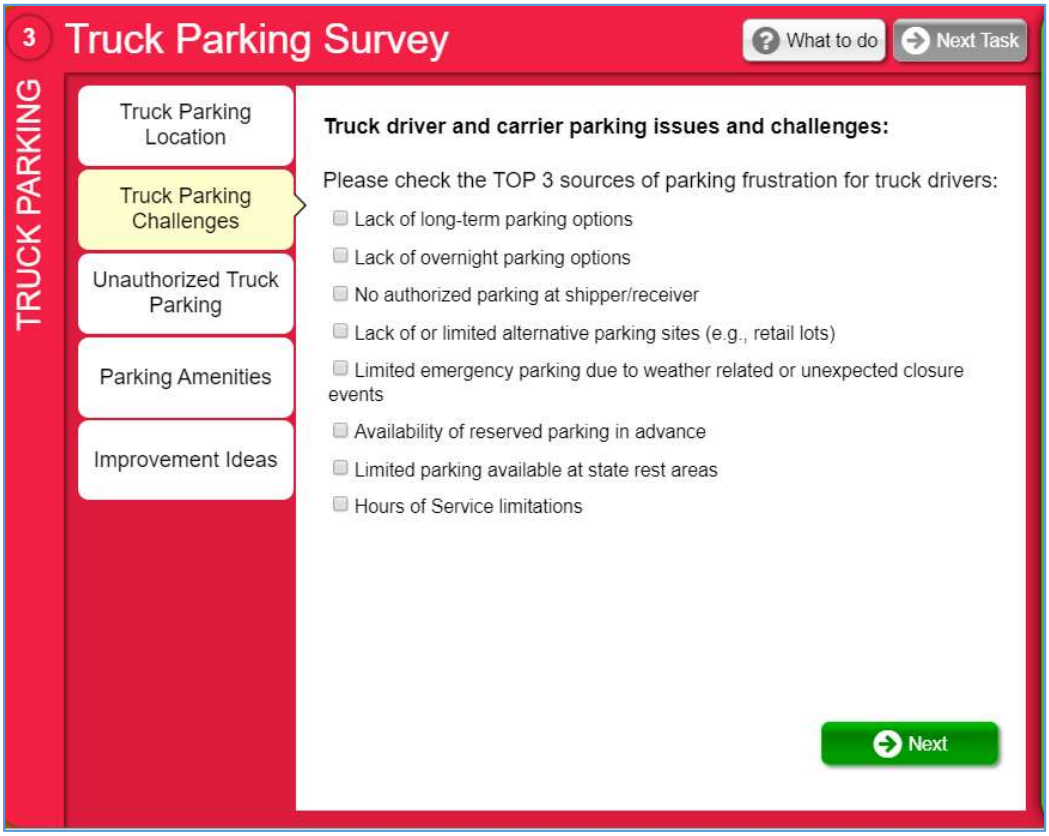

2
Freight Infrastructure Survey
INFRASTRUCTURE
Infrastructure Design Issues
Design Impacts
Oversize/Overweight
Improvement Ideas
Issues and challenges in designing infrastructure:
Select the TOP 3 significant roadway infrastructure design issues that affect the movement of freight in South Carolina:
Limited access highway design
High traffic urban areas
Highway ramp design
Alternative route options during road closures
Construction work zone design
Frontage road design
Off-interstate road design
Select the TOP 3 ways roadway design may impact freight operations:
Reduces safety
Reduces fuel efficiency
Reduces reliability generally
Impacts routing efficiency of Oversize/Overweight trucks
Impacts Hours of Service/ELD
Slow response to road closures
Next

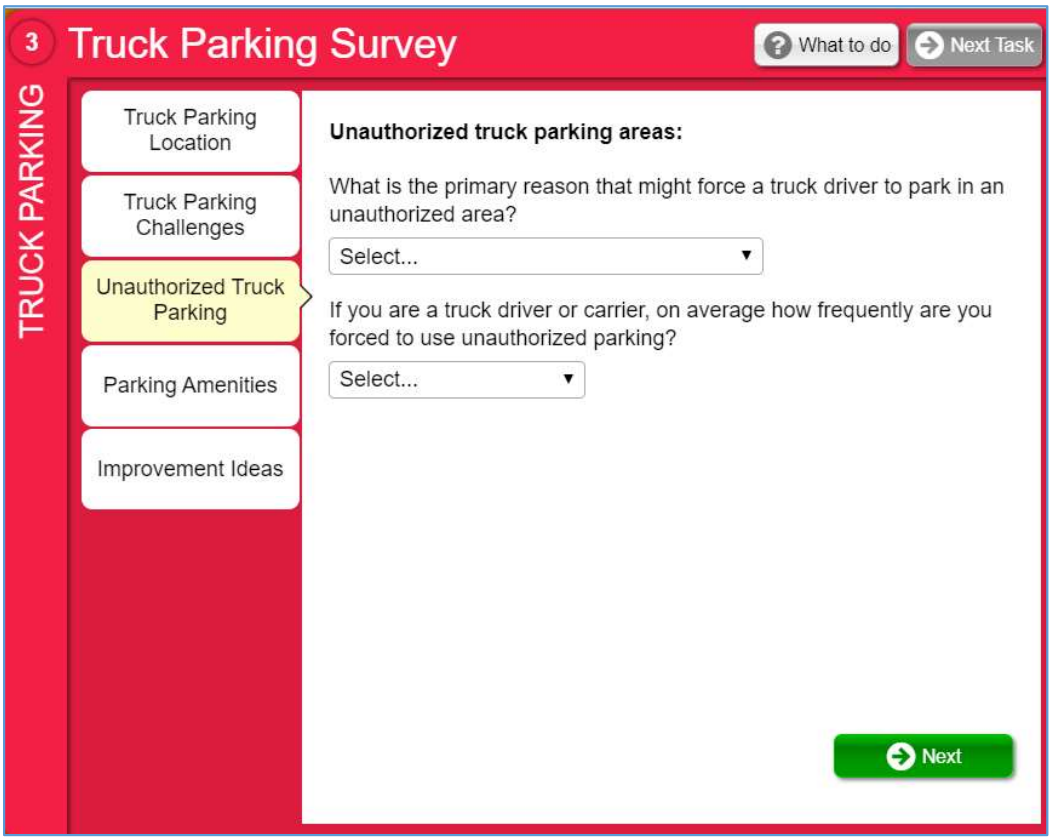

2
Freight Infrastructure Survey
What to do
Next Task
INFRASTRUCTURE
Infrastructure Design Issues
Design Impacts
Oversize/Overweight
Improvement Ideas
Roadway design impacts on freight operations:
Please identify any other design limitations that may impact freight operations:
Type...
Next

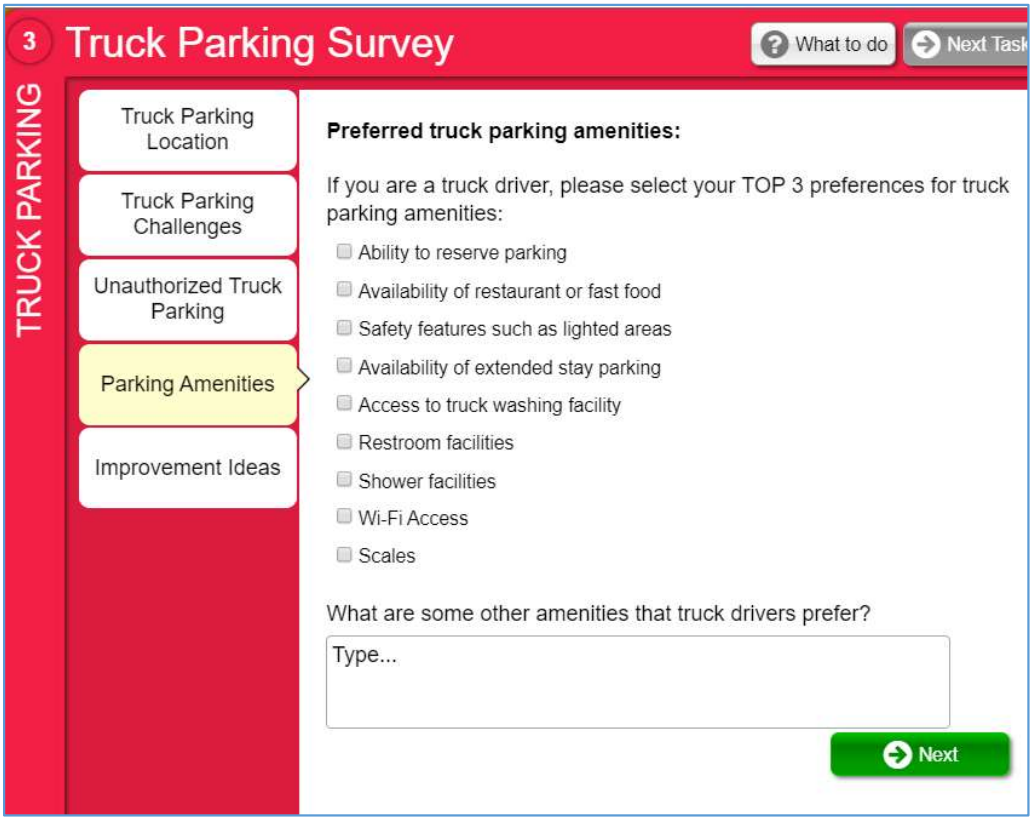

2
Freight Infrastructure Survey
What to do
Next Task
INFRASTRUCTURE
Infrastructure Design Issues
Design Impacts
Oversize/Overweight
Improvement Ideas
Transporting oversize/overweight freight:
Select the TOP 3 challenges in transporting oversize/overweight freight:
Lane widths
Absent or narrow shoulders
Access ramp design
Sharp curves
Construction work zones
Bridge height and weight restrictions
Line of sight
Lack of frontage roads
Rough pavement
Vertical clearance (such as utilities)
Identify any challenges other than what is listed above:
Type...
Next

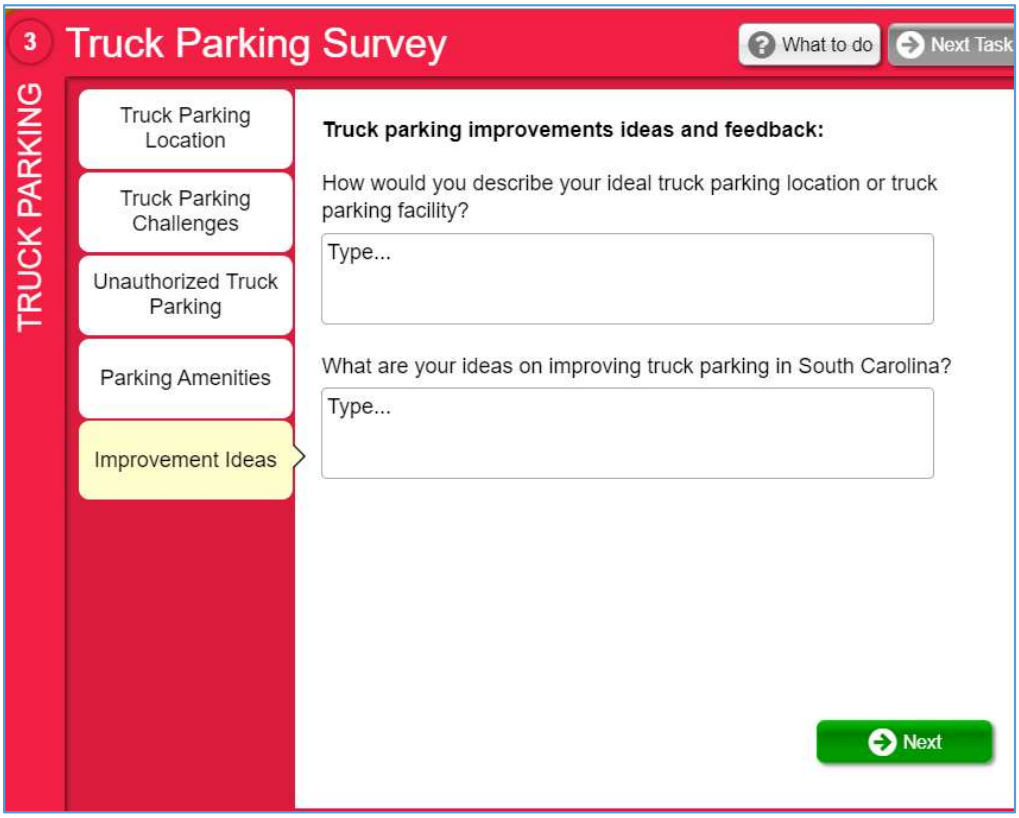

2
Freight Infrastructure Survey
What to do
Next Task
INFRASTRUCTURE
Infrastructure Design Issues
Design Impacts
Oversize/Overweight
Improvement Ideas
Freight infrastructure ideas and feedback:
Please select your TOP 3 strategies for improving infrastructure design to increase the efficiency of freight operations in South Carolina:
Widen roadways
Widen shoulders
Improve access ramps
Improve sight distance
Improve intersections
Improve overhead clearance and bridge height
Improve pavement conditions
Shift goods movement from trucks to other options such as rail to reduce congestion on interstates
Provide dedicated truck lanes
Reduce or eliminate rail grade crossing
What are other infrastructure design ideas to improve the movement of freight in South Carolina?
Type...
Next

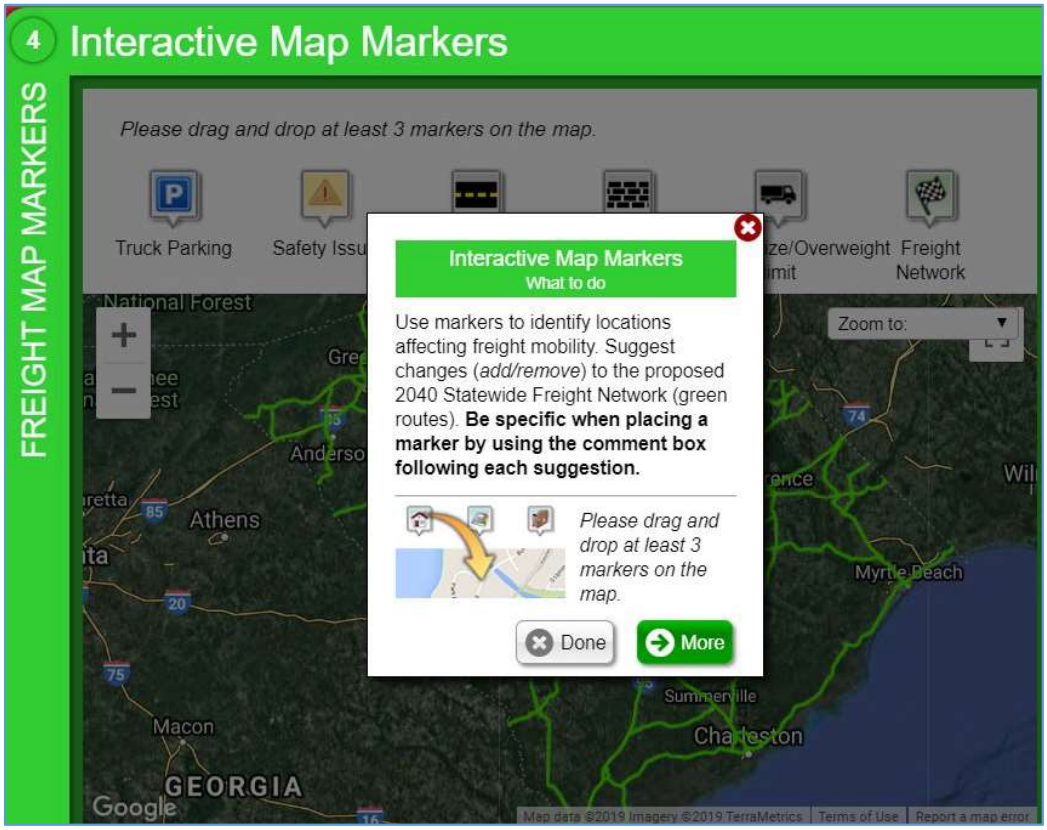

3
Truck Parking Survey
TRUCK PARKING
Truck Parking Location
Truck Parking Challenges
Unauthorized Truck Parking
Parking Amenities
Improvement Ideas
Available truck parking locations:
Are you a truck driver or carrier?
Select...
If you are a truck driver or carrier, how do you find truck parking? (Select all that apply)
Drive around the area to look for available parking
Use a parking app to find available parking
Utilize reserved parking with a private truck parking facility
Utilize state rest areas
Utilize ramps or shoulders
Next

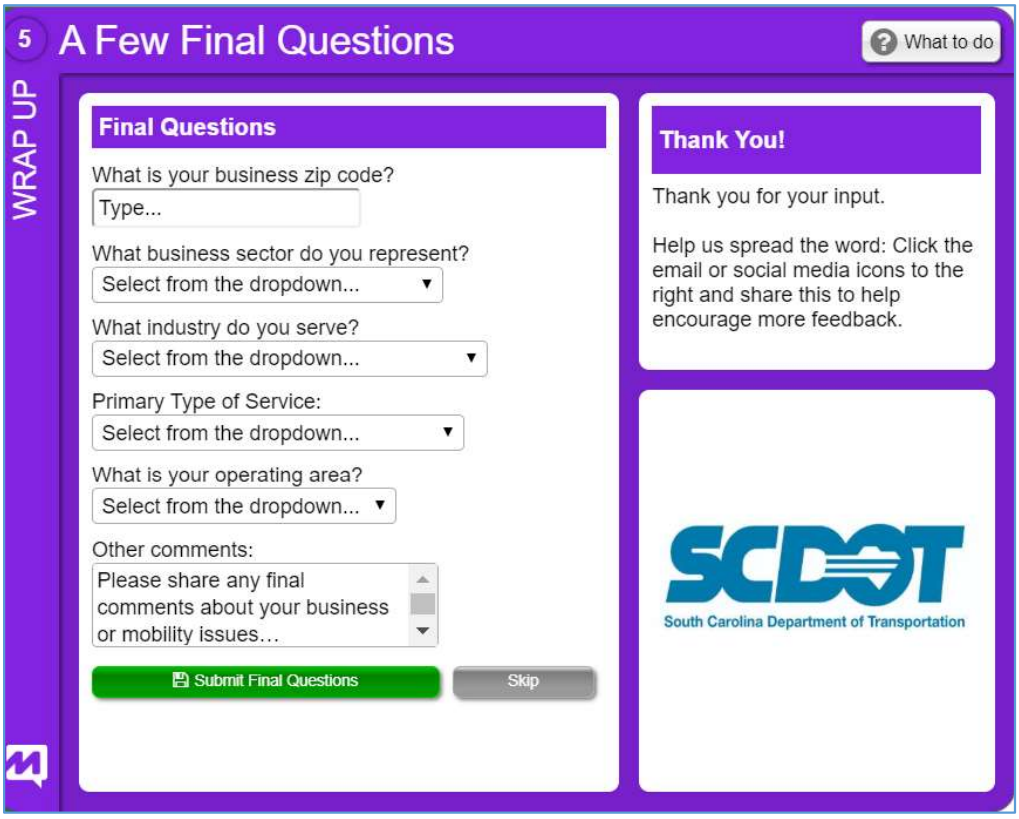

3
Truck Parking Survey
What to do
Next Task
TRUCK PARKING
Truck Parking Location
Truck Parking Challenges
Unauthorized Truck Parking
Parking Amenities
Improvement Ideas
Truck driver and carrier parking issues and challenges:
Please check the TOP 3 sources of parking frustration for truck drivers:
Lack of long-term parking options
Lack of overnight parking options
No authorized parking at shipper/receiver
Lack of or limited alternative parking sites (e.g., retail lots)
Limited emergency parking due to weather related or unexpected closure events
Availability of reserved parking in advance
Limited parking available at state rest areas
Hours of Service limitations
Next


3
Truck Parking Survey
What to do
Next Task
TRUCK PARKING
Truck Parking Location
Truck Parking Challenges
Unauthorized Truck Parking
Parking Amenities
Improvement Ideas
Unauthorized truck parking areas:
What is the primary reason that might force a truck driver to park in an unauthorized area?
Select...
If you are a truck driver or carrier, on average how frequently are you forced to use unauthorized parking?
Select...
Next


3
Truck Parking Survey
What to do
Next Task
TRUCK PARKING
Truck Parking Location
Truck Parking Challenges
Unauthorized Truck Parking
Parking Amenities
Improvement Ideas
Preferred truck parking amenities:
If you are a truck driver, please select your TOP 3 preferences for truck parking amenities:
Ability to reserve parking
Availability of restaurant or fast food
Safety features such as lighted areas
Availability of extended stay parking
Access to truck washing facility
Restroom facilities
Shower facilities
Wi-Fi Access
Scales
What are some other amenities that truck drivers prefer?
Type...
Next


3
Truck Parking Survey
What to do
Next Task
TRUCK PARKING
Truck Parking Location
Truck Parking Challenges
Unauthorized Truck Parking
Parking Amenities
Improvement Ideas
Truck parking improvements ideas and feedback:
How would you describe your ideal truck parking location or truck parking facility?
Type...
What are your ideas on improving truck parking in South Carolina?
Type...
Next


4
Interactive Map Markers
FREIGHT MAP MARKERS
Please drag and drop at least 3 markers on the map.
Truck Parking
Safety Issu
ze/Overweight
mit
Freight Network
Interactive Map Markers
What to do
Use markers to identify locations affecting freight mobility. Suggest changes (add/remove) to the proposed 2040 Statewide Freight Network (green routes). Be specific when placing a marker by using the comment box following each suggestion.
Please drag and drop at least 3 markers on the map.
Done
More
Zoom to:
National Forest
Athens
Macon
GEORGIA
Google
Myrtle Beach
Charleston
Summerville


5
A Few Final Questions
What to do
WRAP UP
Final Questions
What is your business zip code?
Type...
What business sector do you represent?
Select from the dropdown...
What industry do you serve?
Select from the dropdown...
Primary Type of Service:
Select from the dropdown...
What is your operating area?
Select from the dropdown...
Other comments:
Please share any final comments about your business or mobility issues…
Submit Final Questions
Skip
Thank You!
Thank you for your input.
Help us spread the word: Click the email or social media icons to the right and share this to help encourage more feedback.
SCDOT
South Carolina Department of Transportation

APPENDIX B: SCDOT FREIGHT MOBILITY SURVEY COMMENTS

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Map Marker	Estimated Longitude	Estimated Latitude	Participant Comment
CONGESTION ISSUES			
Congestion	34.71407313	-82.53423571	-----
Congestion	34.04765295	-81.10051989	I-26 through & around Columbia
Congestion	32.88576408	-80.01579605	Too many vehicles moving a different speeds trying to squeeze through the same area.
Congestion	32.88915867	-80.01914345	Too many vehicles converging at different speeds
Congestion	32.88109334	-80.02004467	Too many vehicles
Congestion	32.89453534	-79.98766505	I-526 at North Rhett Avenue
Congestion	32.89413895	-79.98120428	I-526 at Virginia Avenue.
Congestion	32.89150836	-79.96551872	Don Holt Bridge in general does not offer capacity In either direction
Congestion	32.88172773	-79.93404032	Too many vehicles attempting to get off the exit
Congestion	32.87888053	-79.93002773	Too many vehicles attempting to exit I-526 at Clements Ferry Rd. During peak times the traffic backs up onto the interstate due to lack of capacity on Clements Ferry Rd.
Congestion	32.86822833	-79.90995481	Too many vehicles merging into congested traffic
Congestion	32.86516441	-79.90389222	I-526 Wando River Bridge. East and West Bound
Congestion	32.84054107	-79.86477414	Longpoint Rd. Exit Ramp to Longpoint Rd. form I-526
Congestion	32.83938724	-79.86127654	Large vehicles merging onto I-526 Westbound cause congestion
Congestion	32.80271321	-79.89556066	Hwy. 17 South before the Ravenel Bridge
Congestion	32.80458894	-79.94190923	Exit/Merge ramp from the Ravenel Bridge Hwy. 17 South to I-26 Westbound. Not enough capacity
Congestion	32.93314087	-80.04601938	Ashley Phosphate Road Exit is poorly designed, not able to handle the volume and too windy.
Congestion	33.37296263	-79.28407102	Transiting Georgetown is unsafe. Too many vehicles both commercial and personal.
Congestion	33.61317828	-79.01126339	Hwy. 17 North and South between Georgetown and Myrtle Beach, SC Too many small towns and poorly, poorly time traffic lights.
Congestion	34.13083595	-79.75992799	Not enough capacity
Congestion	34.41681173	-79.44132447	I-95 needs additional capacity
Congestion	33.44789232	-80.73033295	I 26 Please add lanes!!!
Congestion	32.88615166	-80.01814823	-----
Congestion	32.89018633	-80.0202411	-----
Congestion	32.84028397	-79.86517963	Poor exit ramp for heavy equipment mixed in with personal vehicles. exit lane is way too short on 526
Congestion	34.90724943	-82.19524646	-----
Congestion	32.87167979	-79.92413403	-----
Congestion	32.83479342	-79.8240917	-----
Congestion	32.885688	-80.01710681	-----
Congestion	34.03564599	-81.1105864	-----
Congestion	33.30791963	-80.54316429	-----
Congestion	33.22350276	-80.42502856	I-26 needs to be three lanes from border to border
Congestion	34.85417966	-82.27446404	I-85 N from MM51 to 56 I-85 S from MM60 to 51

Congestion	32.86953119	-80.02754745	International Blvd., North Charleston has too much traffic in all directions on too small a road way. The light are poorly timed.
Congestion	32.79205477	-80.03355887	I-526 Terminus onto Hwy. 17 South. Too many vehicles for the intersection to process effectively.
Congestion	32.80280662	-80.10907626	Hwy. 17 at Main Rd. Too much traffic turning left backing up onto Hwy. 17 in both directions. Truck Traffic is impeded by cars slowing, backed up due to traffic lights that are poorly timed. Cars are often speeding.
Congestion	32.80575032	-79.94488956	-----
Congestion	33.9741038	-81.10620488	-----
Congestion	33.48069763	-80.78485479	-----
Congestion	33.06966758	-80.66263188	-----
Congestion	34.91139663	-82.29869233	I-85 through Greenville and past Spartanburg
Congestion	32.76150513	-79.98959286	-----
Congestion	33.81384798	-81.08780714	-----
Congestion	34.09369313	-79.8667492	-----
Congestion	34.91199725	-82.24852143	-----
Congestion	34.85186998	-82.4003612	385
Congestion	34.00696805	-81.03862869	20/26
Congestion	35.11078033	-81.64562332	85
Congestion	34.96573621	-82.02960711	-----
Congestion	35.01411433	-81.90704086	-----
Congestion	34.86518349	-82.28063539	-----
Congestion	35.09080602	-80.93258997	Carowinds Blvd; Hwy 51
Congestion	34.90129998	-82.24299339	from 54mm to 46mm
Congestion	34.85892296	-82.25981301	-----
Congestion	34.83298087	-82.29720826	-----
Congestion	34.96364278	-82.03702597	-----
Congestion	32.88618805	-80.01856015	Intersection of I-26 and I-526
Congestion	34.82331291	-82.39607194	-----
Congestion	33.39863924	-80.58573195	I-26 from Jedburg to east of Columbia
Congestion	34.21110274	-81.37674757	I-26 from Lake Murray Blvd to I-26/I-385 split
Congestion	34.94379478	-82.17325636	I-85 from I-26 to I-185
Congestion	34.84438658	-82.50192287	I 85 ex 50 to exit 40
Congestion	34.64728445	-82.7406957	-----

SAFETY ISSUES			
Safety Issue	34.04310134	-81.10738635	Safety issues due to congestion in and around Columbia
Safety Issue	32.88432254	-80.01680456	Too many vehicles merging including commercial vehicles and cars. All attempting to get ahead of the other.
Safety Issue	32.88721265	-80.01937949	Too many vehicles converging at different speeds
Safety Issue	32.88908659	-80.01062476	Interstate exits and entrances too close together with I-26 and I-526
Safety Issue	32.88109334	-80.02126776	Too many vehicles of different sizes moving at different speeds.
Safety Issue	32.89457137	-79.98807274	Too many vehicles slowing and stopping on the Interstate due to poor light timing. Too many vehicles of different sizes slowing and accelerating in the same general vicinity
Safety Issue	32.89417499	-79.98174072	Too many large vehicles originating from a industrial area merging in with faster moving traffic and too close to an exit with slowing or stopping traffic
Safety Issue	32.89352636	-79.98581768	Poorly designed interchange meant to handle the traffic of two interchanges but too congested.
Safety Issue	32.88158357	-79.93487716	Too many personal and commercial vehicles backing up on to a busy interstate
Safety Issue	32.86826438	-79.9103625	Too many vehicles merging into congested traffic
Safety Issue	32.84097375	-79.86597577	Too many large vehicles getting off. The exit ramp is insufficiently long. Too many vehicles of different sizes attempting to stop. Cars do not pay attention
Safety Issue	32.83938724	-79.86071864	The ramp leading from Longpoint Rd. onto I-526 Westbound is poorly constructed. It is too tight for the large vehicles. The merge ramp is inadequate. Due to the two lane construction of I-526 too many vehicles exceeding the speed limit are mixed in with large vehicles attempting to merge onto I-526
Safety Issue	32.82591775	-79.8507785	Too many speeding vehicles attempting to get ahead of queued traffic getting off I-526 Eastbound onto Hungry Neck/Hwy 17
Safety Issue	32.80292964	-79.89560357	Three lanes abruptly become two lanes only. No merging lane to help ease the funneling. Poorly designed from the outset.
Safety Issue	32.80437251	-79.94261733	Too many speeding drivers causing congestion in an attempt to beat the traffic. Speeding!
Safety Issue	32.9335731	-80.04608375	Poorly designed intersection. Too many vehicles large and small attempting to slow or stop. Long queuing lines backing up onto the exit ramp.
Safety Issue	32.97712153	-80.07638326	The College Park Interchange is not designed for large or small vehicles. The entire interchange needs to be redone to accommodate large commercial and personal vehicles
Safety Issue	33.3752563	-79.27995115	Too many vehicles transiting a town designed to stop traffic flow.
Safety Issue	33.66691393	-78.96457149	Too many small towns with little to no alternative routes.
Safety Issue	33.93736718	-79.75168824	Too many speeding vehicles.

Safety Issue	34.27621505	-79.67203736	I-95 demands speed and traffic enforcement
Safety Issue	33.31976849	-80.54682374	Intersection of I-95 and I-26 - too many speeding vehicles
Safety Issue	33.99190525	-80.94948112	I-77 needs speed enforcement
Safety Issue	33.72246138	-81.09288178	I 526 Please add lanes
Safety Issue	32.8665447	-79.90450839	-----
Safety Issue	32.83765178	-79.8645359	Residential business located on long point road. they need to be moved out of that location
Safety Issue	33.98132679	-81.10667576	Better design of entry /exit ramps.
Safety Issue	33.98121113	-81.10747506	Better design of entry /exit ramps.
Safety Issue	33.98049051	-81.10650947	Better design of entry /exit ramps.
Safety Issue	33.98011685	-81.10724439	Better design of entry /exit ramps.
Safety Issue	34.81371522	-82.33660455	Intersection design - interstate entry/exit lanes are shared and too short, entrance ramp to 85 N from 276 is way too short
Safety Issue	32.86823356	-80.02720412	Too many vehicles speeding while traffic is attempting to exit I-526 in both directions. Traffic congestion in all directions is awful often times.
Safety Issue	32.85439101	-80.02171096	The ramp from Dorchester Road leading to I-526 East bound is awful. The grade lurches Class 8 Trucks in a direction helpful for trucks to turn over. The pavement is cracked and unsafe. The traffic on I-526 Eastbound is moving at too high a speed which causes issues for trucks and cars attempting to merge onto I-526
Safety Issue	32.7915497	-80.03299024	Large trucks mixed with cars are forced into a single lane with a stop light - poorly coordinated with traffic. Slower moving trucks are merging into lanes with faster moving traffic. Additionally, the faster moving traffic is often cutting in front of the trucks to turn right immediately after the trucks are on a straight route.
Safety Issue	32.80298698	-80.1090548	Too many cars queuing up to turn onto Main Rd. from Hwy. 17
Safety Issue	34.03701869	-81.11029865	Concerning Ramps
Safety Issue	34.75809735	-82.43602143	congestion
Safety Issue	34.06017944	-81.08470307	-----
Safety Issue	34.0377815	-81.11253218	-----
Safety Issue	34.84093206	-81.8158995	-----
Safety Issue	33.32296781	-81.14069738	Downtown should be 2 lanes, not 4. This is a safety, social and economic development issue
Safety Issue	32.95729885	-81.23648442	Currently the configuration of road and rail impedes safe travel and economic development. We hope the new design will alleviate these issues
Safety Issue	33.55359674	-81.639717	This urban area is experiencing very high truck traffic and causes congestion and safety issues
Safety Issue	34.63995866	-82.52655887	13' clearance is inaccurate. Many trucks stop on road to check clearance
Safety Issue	34.77681759	-82.46169182	Traffic backs up and comes to a complete stop on the interstate to exit southbound 153
Safety Issue	34.85835208	-82.26179556	Traffic slows and people jockeying for position to exit to 385 ahead. This backup and danger starts at mm56. People need to be forced into committing to exit 51 sooner than last minute.

Safety Issue	35.09108694	-80.93331953	Elevated Accident Levels
Safety Issue	34.91931863	-82.10566429	By restricting trucks to the inner two lanes it causes traffic to back up. It would make more sense to let them use outside lane as they are generally passing through and not going between exits
Safety Issue	32.88561143	-80.01907513	Too many vehicles, going too fast and drivers are impatient.
Safety Issue	34.8255676	-82.29582169	-----
Safety Issue	34.79929146	-82.41952591	New highway project disastrous planning

OVERSIZE/OVERWEIGHT ISSUES

Oversize/Overweight Issues	32.85669825	-80.02205428	The ramp grade is uncomfortable for large trucks when moving from Dorchester Rd. to I-526 via the ramp.
Oversize/Overweight Issues	34.46632621	-81.87277712	-----

ROAD DESIGN/BRIDGE HEIGHT ISSUES

Road Design / Bridge Height	34.20611284	-79.57887857	I-95 Has got to be widened.
Road Design / Bridge Height	33.50360306	-80.99062174	I26 has got to be widened
Road Design / Bridge Height	33.777995	-79.17787759	Myrtle beach has got to have a better evacuation route that doesn't flood.
Road Design / Bridge Height	32.89194079	-79.96805073	-----
Road Design / Bridge Height	34.57715047	-82.40067335	-----
Road Design / Bridge Height	35.09143809	-80.93263289	Demand Level Versus Roadway Capacity
Road Design / Bridge Height	32.8699959	-81.12087796	Draw a circle around for 40 miles...the bridges are all bad.
Road Design / Bridge Height	33.22204921	-80.29261078	Four lane it to Orangeburg, and replace bridges. Bridges were authorized by the Great Depression WPA Act
Road Design / Bridge Height	32.80711044	-80.76239003	Twenty years behind on I-95, good Luck catching up.
Road Design / Bridge Height	33.08386514	-80.20984133	Charleston to NC State Line on I-26
Road Design / Bridge Height	33.92109423	-82.52096913	-----

TRUCK PARKING ISSUES			
Truck Parking	32.87847409	-80.02055057	-----
Truck Parking	32.87715303	-80.00479421	short and long term
Truck Parking	32.83613733	-79.86899909	no open overnight parking near port gates
Truck Parking	33.97851543	-81.11456146	Perfect Parking area spot.
Truck Parking	32.76150513	-80.18602143	-----
Truck Parking	33.23598187	-80.43024925	Not enough truck parking along this stretch of Interstate

PROPOSED FREIGHT NETWORK MARKERS/COMMENTS			
Proposed Freight Network	32.88566301	-80.01822077	-----
Proposed Freight Network	32.88843792	-80.01139723	-----
Proposed Freight Network	32.88185018	-80.01852118	-----
Proposed Freight Network	32.87774383	-79.93002661	-----
Proposed Freight Network	32.86797601	-79.90963294	-----
Proposed Freight Network	32.86491208	-79.90296954	-----
Proposed Freight Network	32.86480394	-79.90365618	Major Truck Route
Proposed Freight Network	32.84036078	-79.86406604	-----
Proposed Freight Network	32.8390436	-79.86135713	-----
Proposed Freight Network	32.80253285	-79.89551774	-----
Proposed Freight Network	32.80430036	-79.94377605	-----
Proposed Freight Network	32.97856157	-80.07913043	-----
Proposed Freight Network	32.95881309	-80.08950744	-----
Proposed Freight Network	32.96590651	-80.11040721	-----
Proposed Freight Network	32.98138762	-80.12583528	-----
Proposed Freight Network	32.95800723	-80.11393442	-----
Proposed Freight Network	32.9403927	-80.06923809	-----
Proposed Freight Network	33.3752563	-79.26484495	Hwy. 17 in Georgetown, SC
Proposed Freight Network	32.90465655	-79.73018124	Hwy. 17 South and North
Proposed Freight Network	33.68519927	-78.95152523	Hwy 17 North and South
Proposed Freight Network	33.77314303	-78.82861568	Carolina Bays Parkway
Proposed Freight Network	34.01025426	-79.75443482	Hwy. 52 between Charleston and Florence, SC
Proposed Freight Network	34.33747161	-79.53058839	I--95
Proposed Freight Network	32.97021744	-80.66904664	I-95 between the GA and North Carolina state lines
Proposed Freight Network	33.94862674	-81.00578606	I-77 between I-26 and the North Carolina border
Proposed Freight Network	34.12357811	-80.88963471	-----
Proposed Freight Network	32.86895447	-80.02771911	-----
Proposed Freight Network	32.85453521	-80.01965102	Dorchester Rd. at I-526
Proposed Freight Network	32.79111678	-80.03415969	I-526 Terminus onto Hwy 17 South
Proposed Freight Network	32.80316734	-80.1094625	Hwy. 17 at Main Rd.
Proposed Freight Network	36.43784592	-77.18957891	-----
Proposed Freight Network	32.88155694	-79.73959286	-----
Proposed Freight Network	32.88762956	-80.01804516	Intersection of I-26 and I-526
Proposed Freight Network	34.82444026	-82.34251359	-----
Proposed Freight Network	34.85340264	-82.36459327	-----

APPENDIX C: CRITICAL URBAN & RURAL FREIGHT CORRIDORS

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Critical Urban Freight Corridors

County	Route Number	Begin Milepoint	End Milepoint	Length
Spartanburg County	SC 101	17.382	20.772	3.39
Spartanburg County	SC 80	1.48	3.53	2.05
Spartanburg County	Secondary 12	0	0.66	0.66
Spartanburg County	Secondary 12	0.66	1.088	0.428
Spartanburg County	US176	20.237	21.77	1.533
Greenville County	US 25	24.93	25.73	0.8
Greenville County	US 25	25.73	27.142	1.412
Greenville County	US 25	27.142	27.64	0.498
Greenville County	US 25	27.64	31.49	3.85
Greenville County	US 25	31.49	33.3	1.81
Greenville County	US 25	33.3	36.12	2.82
Greenville County	US 25	36.12	36.604	0.484
Greenville County	US 25	36.604	38.04	1.436
Greenville County	US 25	38.04	38.13	0.09
Greenville County	US 25	38.13	38.27	0.14
Greenville County	US 25	38.27	40.502	2.232
Horry County	US 501	12.885	14.24	1.355
Horry County	US 501	14.24	15.018	0.778
Horry County	US 501	15.018	15.103	0.085
Horry County	US 501	15.103	15.33	0.227
Horry County	US 501	15.33	16.45	1.12
Horry County	US 501	16.45	17.7	1.25
Horry County	US 501	17.7	17.76	0.06
Horry County	US 501	17.76	17.83	0.07
Horry County	US 501	17.83	18.055	0.225
Horry County	US 501	18.055	18.46	0.405
Horry County	US 501	18.46	18.5	0.04
Horry County	US 501	18.5	18.58	0.08
Horry County	US 501	18.58	18.67	0.09
Horry County	US 501	18.67	18.719	0.049
Horry County	US 501	18.719	18.77	0.051
Horry County	US 501	18.77	18.94	0.17
Horry County	US 501	18.94	19.01	0.07
Horry County	US 501	19.01	19.083	0.073
Horry County	US 501	19.083	19.155	0.072
Horry County	US 501	19.155	19.204	0.049
Horry County	US 501	19.204	19.251	0.047
Horry County	US 501	19.251	19.31	0.059

Horry County	US 501	19.31	19.36	0.05
Horry County	US 501	19.36	19.5	0.14
Horry County	US 501	19.5	20.735	1.235
Horry County	US 501	20.735	20.98	0.245
Horry County	US 501	20.98	21.593	0.613
Horry County	US 501	21.593	21.76	0.167
Horry County	US 501	21.76	21.95	0.19
Horry County	US 501	21.95	22.58	0.63
Horry County	US 501	22.58	22.88	0.3
Horry County	US 501	22.88	23.09	0.21
Horry County	US 501	23.09	23.58	0.49
Horry County	US 501	23.58	23.765	0.185
Horry County	US 501	23.765	25.582	1.817
Horry County	US 501	25.582	28.18	2.598
Horry County	US 501	28.18	28.42	0.24
Horry County	US 501	28.42	29.59	1.17
Horry County	US 501	29.59	31.53	1.94
Marion County	US 501	9.232	9.502	0.27
Marion County	US 501	9.502	10.061	0.559
Charleston County	US 17	17.518	17.79	0.272
Charleston County	US 17	17.79	19.95	2.16
Charleston County	US 17	19.95	20.63	0.68
Charleston County	US 17	20.63	24.04	3.41
Charleston County	US 17	24.04	24.58	0.54
Charleston County	US 17	24.58	25.29	0.71
Berkeley County	SC-41	1.09	1.871	0.781
Total CUFC Miles				**51.66**

Critical Rural Freight Corridors

County	Route Number	Begin Milepoint	End Milepoint	Length
Greenville County	US 25	40.502	43.22	2.718
Greenville County	US 25	43.22	46.88	3.66
Greenville County	US 25	46.88	53.89	7.01
Dillon County	SC-34	11.2	11.31	0.11
Dillon County	SC-34	11.31	11.745	0.435
Dillon County	SC38	0	0.011	0.011
Dillon County	SC 38	0.011	0.429	0.418
Dillon County	SC 38	0.429	0.59	0.161
Dillon County	SC 38	0.59	0.93	0.34
Dillon County	SC 38	0.93	0.935	0.005
Dillon County	SC 38	0.935	2.71	1.775
Dillon County	SC 38	2.71	3.923	1.213
Dillon County	SC 38	3.923	4.01	0.087
Dillon County	SC 38	4.01	4.59	0.58
Dillon County	SC 38	4.59	4.95	0.36
Dillon County	SC 38	4.95	6.12	1.17
Marion County	SC 38	0	0.97	0.97
Marion County	SC 38	0.97	1.06	0.09
Horry County	US 501	0	0.18	0.18
Horry County	US 501	0.18	0.38	0.2
Horry County	US 501	0.38	4.188	3.808
Horry County	US 501	4.188	4.81	0.622
Horry County	US 501	4.81	4.93	0.12
Horry County	US 501	4.93	5.05	0.12
Horry County	US 501	5.05	5.171	0.121
Horry County	US 501	5.171	5.2	0.029
Horry County	US 501	5.2	5.34	0.14
Horry County	US 501	5.34	5.36	0.02
Horry County	US 501	5.36	5.61	0.25
Horry County	US 501	5.61	6.63	1.02
Horry County	US 501	6.63	7.42	0.79
Horry County	US 501	7.42	7.81	0.39
Horry County	US 501	7.81	10.6	2.79
Horry County	US 501	10.6	10.68	0.08
Horry County	US 501	10.68	10.88	0.2
Horry County	US 501	10.88	11.253	0.373
Horry County	US 501	11.253	12.4	1.147
Horry County	US 501	12.4	12.63	0.23

Horry County	US 501	12.63	12.885	0.255
Marion County	US 501	0.72	2.11	1.39
Marion County	US 501	2.11	4.33	2.22
Marion County	US 501	4.33	5.22	0.89
Marion County	US 501	5.22	9.232	4.012
Marion County	US 501	10.061	12.27	2.209
Marion County	US 501	12.27	13.594	1.324
Marion County	US 501	13.594	14	0.406
Marion County	US 501	14	14.108	0.108
Marion County	US 501	14.108	20.07	5.962
Marion County	US 501	20.07	21.195	1.125
Marion County	US 501	21.195	23.53	2.357
Beaufort County	US 17	0	0.3	0.3
Beaufort County	US 17	0.3	4.42	4.12
Beaufort County	US 17	4.42	6.58	2.16
Beaufort County	US 17	6.58	7.01	0.43
Beaufort County	US 17	7.01	7.791	0.781
Beaufort County	US 17	7.81	12.65	4.84
Charleston County	US 17	0	5.92	5.92
Charleston County	US 17	5.92	13.4	7.48
Charleston County	US 17	13.4	13.61	0.21
Charleston County	US 17	13.61	17.518	3.908
Colleton County	US 17	0	16.242	16.242
Colleton County	US 17	16.242	17.31	1.068
Jasper County	US 17	0	4.1	4.1
Jasper County	US 17	4.1	6.61	2.51
Jasper County	US 17	6.61	9.22	2.61
Jasper County	US 17	9.22	12.469	3.249
Jasper County	US 17	12.469	12.91	0.441
Jasper County	US 17	12.91	13.05	0.14
Jasper County	US 17	40.56	42.299	1.739
Berkeley County	SC-41	1.871	12.9	11.029
Berkeley County	SC-41	12.9	27.96	15.06
Total CRFC Miles				**144.338**

APPENDIX D: FINANCIAL INVESTMENT SUMMARY

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FINANCIAL INVESTMENT SUMMARY (2020-2025)								
FISCAL YEAR 2020**								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
I-85 - Widening from near SC 18 (Exit 96) to near NC State Line (Phase 3)	Appalachian	Spartanburg, Cherokee	20	$30,045	CON	$12,620	$3,155	$14,270
I-26 widening from near SC 202 (Exit 85) to near US 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	20	$57,136	CON	$12,620	$3,155	$41,361
TOTAL				**$87,181**		**$25,240**	**$6,310**	**$55,631**
FISCAL YEAR 2021								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
I-85 - Widening from near SC 18 (Exit 96) to near NC State Line (Phase 3)	Appalachian	Spartanburg, Cherokee	21	$30,045	CON	$12,500	$3,125	$14,420
I-26 widening from near SC 202 (Exit 85) to near US 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	21	$57,136	CON	$12,500	$3,125	$41,511
TOTAL				**$87,181**		**$25,000**	**$6,250**	**$55,931**
FISCAL YEAR 2022								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
I-85 - Widening from near SC 18 (Exit 96) to near NC State Line (Phase 3)	Appalachian	Spartanburg, Cherokee	22	$30,045	CON	$12,500	$3,125	$14,420
I-26 widening from near SC 202 (Exit 85) to near US 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	22	$57,136	CON	$12,500	$3,125	$41,511
TOTAL				**$87,181**		**$25,000**	**$6,250**	**$55,931**

** Includes carry-forward

FISCAL YEAR 2023								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
I-85 - Widening from near SC 18 (Exit 96) to near NC State Line (Phase 3)	Appalachian	Spartanburg, Cherokee	23	$30,045	CON	$12,500	$3,125	$14,420
I-26 widening from near SC 202 (Exit 85) to near US 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	23	$57,136	CON	$12,500	$3,125	$41,511
TOTAL				**$87,181**		**$25,000**	**$6,250**	**$55,931**
FISCAL YEAR 2024								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
Rural Interstate Freight Mobility: I-26 Corridor Improvement from Exit 125 (Old Sandy Run Road) to Exit 139 (Sumter County)	Lower Savannah	Calhoun, Orangeburg	24	Project under development	CON	$12,500	$3,125	Project under development
Rural Interstate Freight Mobility: I-95 Widening Exit 0 (GA State Line) to Exit 8 (US278)	Lowcountry, LATS	Jasper	24	Project under development	CON	$12,500	$3,125	Project under development
TOTAL				Project under development		**$25,000**	**$6,250**	Project under development
FISCAL YEAR 2025								
Project	**COG/MPO**	**County**	**FY**	**Estimated Cost (*thousands*)**	**Phase**	**NHFP Funds**	**NHFP Match**	**Other Federal/State**
Rural Interstate Freight Mobility: I-26 Corridor Improvement from Exit 125 (Old Sandy Run Road) to Exit 139 (Sumter County)	Lower Savannah	Calhoun, Orangeburg	25	Project under development	CON	$12,500	$3,125	Project under development
Rural Interstate Freight Mobility: I-95 Widening Exit 0 (GA State Line) to Exit 8 (US278)	Lowcountry, LATS	Jasper	25	Project under development	CON	$12,500	$3,125	Project under development
TOTAL				Project under development		**$25,000**	**$6,250**	Project under development