2022

SOUTH CAROLINA STATEWIDE FREIGHT PLAN UPDATE

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DECEMBER 2022

South Carolina Statewide Freight Plan Update

prepared for

South Carolina Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

CDM Smith

Quetica, LLC

date

December 15, 2022

FHWA Approved

March 3, 2023

U.S. Department of Transportation
Federal Highway Administration

South Carolina

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March 3, 2023

In Reply Refer To:
HDA-SC

Mr. Brent Rewis
Deputy Secretary for Intermodal Planning
South Carolina Department of Transportation
955 Park Street
Columbia, SC 29201

Dear Mr. Rewis:

The Federal Highway Administration (FHWA) has reviewed the South Carolina Department of Transportation (SCDOT) South Carolina Statewide Freight Plan Update dated December 15, 2022.

The FHWA finds that the Plan contains all elements required by 49 U.S.C. § 70202. The State has, therefore, met the prerequisite in 23 U.S.C. § 167(h)(4) that it develops a State Freight Plan in accordance with 49 U.S.C. § 70202 before it may obligate funds apportioned to the State under 23 U.S.C. § 104(b)(5). The State may now obligate such funds for projects that meet all National Highway Freight Program (NHFP) eligibility requirements described in 23 U.S.C. § 167, and all other applicable Federal requirements.

Please be advised that the FHWA's finding that the Plan satisfies the requirements of 49 U.S.C. § 70202 and 23 U.S.C. § 167(h)(4) is not a determination that the projects listed in the freight investment plan component of the plan required by 49 U.S.C. § 70202(c)(2) meet all other NHFP eligibility requirements set forth in 23 U.S.C. § 167, or any other applicable Federal requirement.

If you have any questions regarding NHFP eligibility requirements, please contact Teresa Parker at 803- 765-5458.

Sincerely yours,

Emily O. Lawton
Division Administrator

ec: Diane M. Lackey, SCDOT
Doug Frate, SCDOT
Caitlin Hughes, FHWA
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EXECUTIVE SUMMARY

Federal and State Legislative Basis

The South Carolina Statewide Freight Plan (Freight Plan) is the 2022 update to the South Carolina Department of Transportation's (SCDOT) 2020 freight plan. This document is a comprehensive multimodal freight transportation plan that describes the immediate and long-range freight planning activities and investments for South Carolina's freight transportation network. The purpose of the Freight Plan is to inform state and regional transportation agencies, as well as private sector entities, on South Carolina's freight transportation goals, needs, and strategies. The information in this plan is current as of October 31, 2022.

The development of this Freight Plan update is guided by the 2015 Fixing America's Surface Transportation (FAST) Act, which required states to develop freight plans and dedicated freight funding to states for the first time. The recently passed 2021 Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA), reauthorizes transportation funding for five fiscal years (2022–2026) and continues and increases funding for many FAST Act programs. The BIL continues the State Freight Plan requirement with additional required elements.

This Freight Plan is intended to function as a stand-alone supplement to the South Carolina 2040 Statewide Multimodal Transportation Plan (MTP). The MTP provides an overall long-range framework and vision for the multimodal transportation system in South Carolina. The development of the MTP began with a comprehensive process of vision development and the development of overarching multimodal transportation goals, objectives, and performance measures. In addition to serving as a supplement to the MTP, this Freight Plan also reflects and references additional SCDOT transportation policy documents, including the:

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.

- SCDOT Strategic Plan, which forms the guiding principles of SCDOT's Investment Strategies.
- SCDOT 10-Year Investment Plan, which establishes targets and programmed dedicated funding allocated in the *Roads Bill* (Act 40) of 2017.
- SCDOT Transportation Asset Management Plan (TAMP), which documents the direction the SCDOT has taken in managing the state's assets.
- SC Statewide Rail Plan, which provides an overview and inventory of the passenger and freight rail systems and facilities in South Carolina, asset conditions, services provided, and service constraints.
- SC Interstate Plan, which provides the existing and projected conditions of the state's interstate network.
- SC Strategic Corridors Plan, which documents the system of roadways identified as the Statewide Strategic Corridor Network and the associated multimodal needs.
- South Carolina Strategic Highway Safety Plan (SHSP), which identifies a strategic approach to support the state's goal of eliminating fatalities and reducing serious injuries on South Carolina roadways.

This Freight Plan contains a series of freight recommendations intended to 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 and Statewide Freight Network. As a planning and programming tool, this Freight Plan will continue to 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.

Commodity Flow Analysis

Commodity and goods movement was assessed utilizing a Transearch 2019 base year database, as well as the Federal Highway Administration's Freight Analysis Framework (FAF) database. For planning purposes, analyses were projected to years 2025 and 2050. Over 557.7 million tons of freight, valued at nearly $866.4 billion, moved across South Carolina's freight network in 2019. Such freight includes finished goods, materials, and supplies—classified as commodities. The tonnage and value shares by mode are presented in **Table ES.1**.

ES.1.1 South Carolina Freight Tons and Value by Mode (2019 and 2050)

	2019		2050		Growth, 2019 to 2050	
Mode	**Tons (in thousands)**	**Value (in millions)**	**Tons (in thousands)**	**Value (in millions)**	**Tons**	**Value**
Air	272	$36,715	754	$90,820	177%	147%
Water	2,254	$1,659	4,894	$3,846	117%	132%
Rail	135,201	$208,209	230,320	$486,452	70%	134%
Truck	390,997	$614,013	743,341	$1,268,692	90%	107%
Pipe	28,930	$5,751	45,528	$8,640	57%	50%
Total	**557,654**	**866,347**	**1,024,837**	**1,858,450**	**84%**	**115%**

Source: TRANSEARCH data for 2019 and 2050

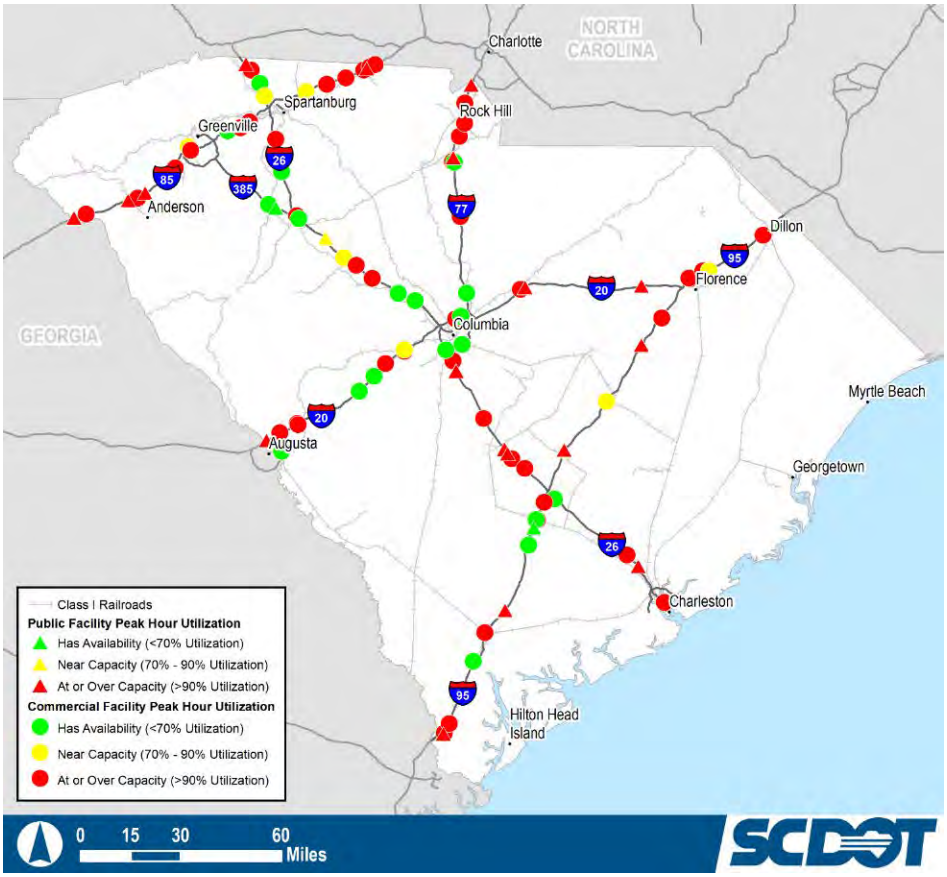
Freight tonnage and value movement for South Carolina freight is forecast to grow 84 percent and 115 percent respectively from 2019 to 2050. In terms of volume of tonnage growth, truck tonnage is forecast to grow from nearly 391 million tons in 2019 to 743.3 million in 2050. While intrastate truck growth is the fastest (111 percent), through tonnage growth is the greatest by volume (186.5 million tons). Rail tonnage is forecast to grow from 135.2 million tons to 230.3 million tons. Of this growth, intrastate rail is project to increase fastest at 96% while through-state rail is project to growth the fastest by volume (57.4 million tons).

Truck Parking Assessment

A Statewide Truck Parking and Assessment Study was completed in October 2022. The purpose of the study was to assess the adequacy of truck parking along Interstate corridors, commercial parking safety and freight travel time reliability. A gap assessment was conducted that measured the shortage and surplus between truck parking supply and demand across South Carolina. The shortage or surplus of truck parking is the difference between the number of spaces at designated truck parking facilities and the demand for parking at designated facilities and surrounding undesignated parking on Interstate ROW during the peak hour. There is a statewide shortage of truck parking needed to meet peak period demand (1:00am to 2:00am) of over 1,000 spaces.

Of the 124 total sites (with available data), only 26 percent have availability during the statewide peak hour and the remaining 74 percent are nearing, at, or over capacity, (**Figure ES.1**).[1] It should be noted that locations that are nearing, at, or over capacity correlates with truck volume congestion on South Carolina interstates. When truck parking facilities fill up, drivers often find no other options than to park on roadway shoulders and freeway ramps, in some cases leading to other vehicles crashing into them. For the 2015-2019 period, there were 119 crashes involving parked trucks on South Carolina Interstate highways.

Figure ES.1 Truck Parking Demand at Designated Parking Locations



Source: ATRI; Cambridge Systematics, Inc. analysis.

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 (SFN), 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

[1] The study used global positioning system (GPS) information provided by the American Transportation Research Institute (ATRI) to estimate the demand for truck parking along South Carolina's Interstate highway network.

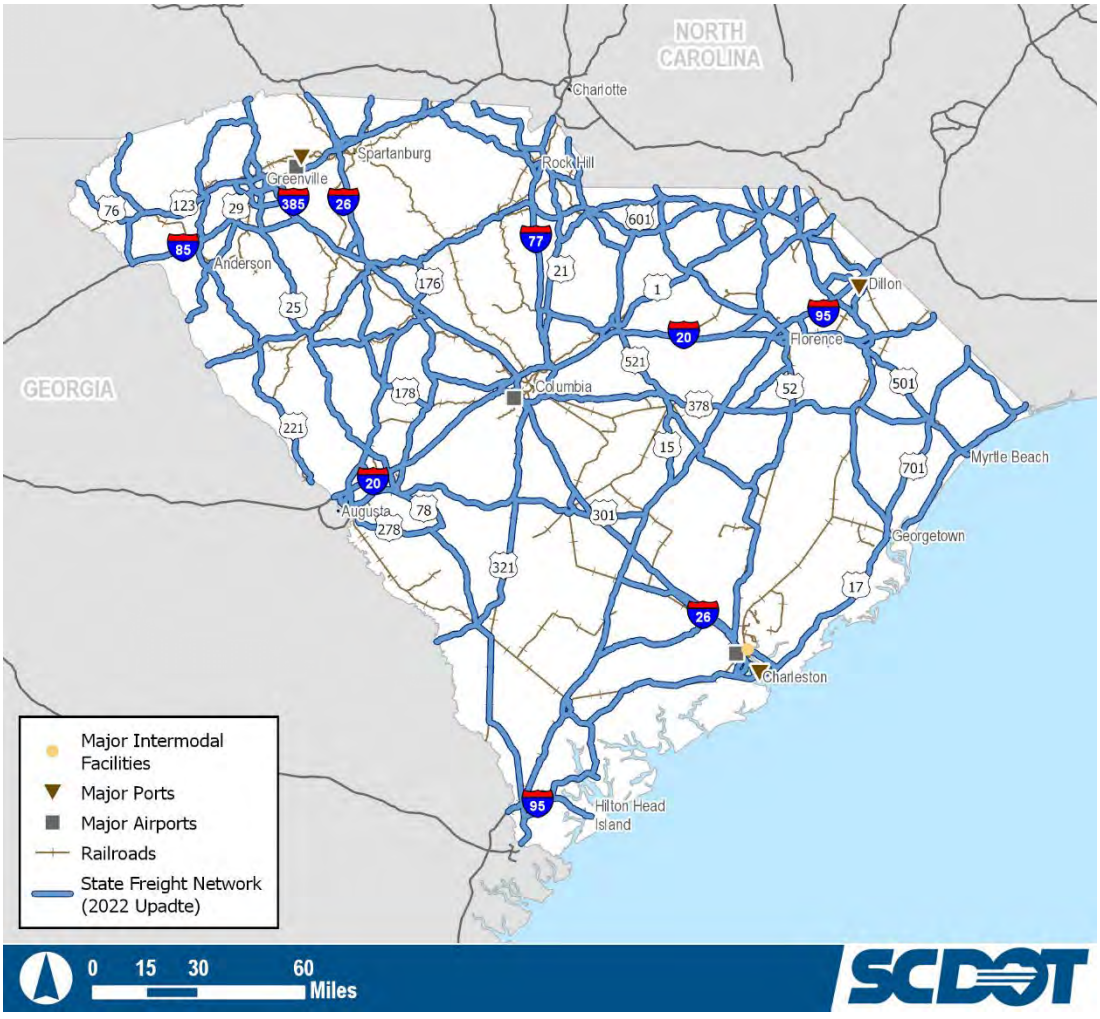
to the SFN to focus on the performance of the strategic network. The South Carolina SFN identifies those routes and assets on which to plan for funding and projects to facilitate and improve freight movement.

Statewide Freight Network Evaluation Criteria and Map

Focusing on SCDOT's strategic priority to "increase mobility along the freight network," the South Carolina SFN was reviewed with freight tonnage growth as the driving factor in determining the network. The South Carolina SFN is made up of South Carolina roadways estimated to carry 1 million or more truck freight tonnage by year 2050. TRANSEARCH data was used to forecast truck freight tonnage. The resulting SFN, shown in **Figure ES.2**, displays 3,466 route miles designated as SFN and also considered:

- South Carolina's Interstate network and freight generators.
- Water and inland port locations.
- Military facilities (new).
- Neighboring freight networks in Georgia and North Carolina.
- Primary public airports that handle cargo.
- South Carolina Councils of Government (COGs) and Metropolitan Planning Organizations (MPOs) input.

Figure ES.2 South Carolina Statewide Freight Network (2022)



Source: TRANSEARCH data for 2050.

Freight Investment Planning

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 is reasonably anticipated to be available for the project within the time period identified in the freight investment plan. The FAST Act and BIL require 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 interstate mobility opportunities that enhance the movement and safety of people and goods, the financially constrained Freight Investment Summary shown in **Table ES.2,** identifies projects eligible for NHFP funding 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.

Table ES.2 Financial Investment Summary

FINANCIAL INVESTMENT SUMMARY (2021-2027)

National Highway Freight Program Funding Summary (Federal and State Match)

($Millions)

FFY2021	FFY2022	FFY2023	FFY2024	FFY2025	FFY2026	FFY2027
$31,106	$31,106	$31,106	$31,106	$31,106	$31,106	$31,106

Proposed Potential Projects	COG/MPO	County	Estimated STIP Cost ($1000's)	Phase
I-26 widening from near SC 202 (Exit 85) to near U.S. 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	$115,868	CON
I-20/I-26/I-126 - Corridor Improvements Carolina Crossroads	COATS	Lexington, Richland	$2,605,743	CON
I-26 from near SC 27 (Exit 187) to near Jedburg Road (Exit 194)	BCD CHATS	Berkeley	$190,459	CON
I-26 from near Jedburg Road (Exit 194) to near Nexton Parkway (Exit 197)	CHATS	Berkeley	$22,735	CON
I-526 from near Paul Cantrell Road (Exit 11) to near Virginia Avenue (Exit 20)	CHATS	Berkeley	$190,000	CON
I 26 Corridor Improvement from Exit 125 (Old Sandy Run Road) to Exit 136	Central Midlands COATS	Calhoun Lexington	$30,876	CON
I-26 from near I-526 (Exit 212) to near Port Access Road (Exit 217)	CHATS	Charleston	$10,000	CON
I-85 Widening from near SC 153 (Exit 40) to near SC 85 (Exit 69)	GPATS SPATS	Greenville Spartanburg	$244,833	CON
I-95 Widening (MM8 – MM21)	Lowcountry LATS	Jasper	$335,600	CON

FINANCIAL INVESTMENT SUMMARY (2021-2027)

National Highway Freight Program Funding Summary (Federal and State Match)

($Millions)

FFY2021	FFY2022	FFY2023	FFY2024	FFY2025	FFY2026	FFY2027
$31,106	$31,106	$31,106	$31,106	$31,106	$31,106	$31,106

Proposed Potential Projects	COG/MPO	County	Estimated STIP Cost ($1000's)	Phase
I-26/I-95 Interchange Improvement	Lower Savannah BCD	Orangeburg Berkeley Dorchester	TBD	CON
I-526 from near Rivers Avenue (Exit 18) to near US 17 (Exit 30)	CHATS	Berkeley Charleston	TBD	CON

1.0 Introduction

The South Carolina Department of Transportation (SCDOT) presents the update to the South Carolina Statewide Freight Plan (Freight Plan), a comprehensive multimodal freight transportation plan that describes the immediate and long-range freight planning activities and investments for South Carolina's freight transportation network. The purpose of the Freight Plan is to inform state and regional transportation agencies, as well as private sector entities, on South Carolina's freight transportation goals, needs, and strategies. The information in this plan is current as of October 31, 2022.

1.1 Federal Legislative Basis

The development of this Freight Plan update is guided by the recently passed 2021 Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA) and the 2015 Fixing America's Surface Transportation (FAST) Act. The BIL reauthorizes transportation funding for five fiscal years (2022–2026) and continues and increases funding for many FAST Act programs.

Federal Freight Plan Requirements

The FAST Act included a provision requiring each state that receives funding under the National Highway Freight Program (NHFP) to develop a State Freight Plan. The BIL continues the State Freight Plan requirement with additional required elements. **Table 1.1** lists the Federal freight plan requirements and the location found within this Freight Plan. Requirements added through the BIL are noted as "(NEW)" in the table below.

Table 1.1 Federal Freight Plan Requirements—Location in the Freight Plan

FAST Act and BIL Requirements	Freight Plan Reference(s)
Identify significant statewide freight trends, needs, and issues within the state.	Chapters 3 through 7
Describe freight policies, strategies, and performance measures that will guide freight-related transportation investment decisions.	Chapter 1.2 and 1.3 Chapters 9 and 10
List the critical multimodal rural freight facilities and rural and urban freight corridors.	Chapter 8 Appendix D
Describe how the plan will enable the state to meet the national multimodal freight policy goals (49 U.S.C. § 70101[b]) and the national freight program goals (23 U.S.C. § 167).	Chapter 1.3 Chapter 9
Description of how innovative technologies and operational strategies, including freight intelligent transportation systems that improve the safety and efficiency of freight movement, were considered.	Chapter 3
Describe improvements to mitigate the deterioration of roadways serving heavy vehicles.	Chapter 9
Provide an inventory of facilities within the state with freight mobility issues and describe potential strategies to address such issues for state-owned or operated facilities.	Chapter 3 Chapter 9
Describe significant congestion or delay caused by freight movements and potential strategies to mitigate that congestion or delay.	Chapter 3.1 Chapter 9

FAST Act and BIL Requirements	Freight Plan Reference(s)
Include a freight investment plan listing priority projects and funding mechanisms.	Chapter 10
Consult with the state freight advisory committee, as applicable.	Chapter 2
(NEW) Assess the truck parking and rest facilities for commercial vehicles in the State. Assess the volume of commercial motor vehicle traffic in the state and identify areas within the state that have a shortage of adequate commercial motor vehicle parking facilities, including an analysis (economic or otherwise, as the state determines to be appropriate) of the underlying causes of such a shortage.	Chapter 5 Appendix C
(NEW) Describe the most recent supply chain cargo flows in the state, by mode of transportation.	Chapter 4
(NEW) Provide an inventory of commercial ports in the state.	Chapter 3.3
(NEW) Describe the findings or recommendations made by any multi-state freight compact to which the state is party under Section 70204, if applicable.	Not applicable in South Carolina
(NEW) Describe the impacts of e-commerce on freight infrastructure in the state	Chapter 7
(NEW) Describe any considerations of military freight.	Chapter 6
(NEW) Include strategies and goals to decrease: • Severity of impacts of extreme weather and natural disasters on freight mobility • Impacts of freight movement on local air pollution • Impacts of freight movement on flooding and stormwater runoff • Impacts of freight movement on wildlife habitat loss	Chapter 3.7
(NEW) Include a requirement that the State, in carrying out activities under the state freight plan will: • Enhance reliability or redundancy of freight transportation; or • Incorporate the ability to rapidly restore access and reliability with respect to freight transportation.	Chapter 3.7

FAST Act Freight Policy

The FAST Act, passed by Congress in 2015, dedicated freight funding to states for the first time, required states to develop freight plans, and contained several initiatives and provisions to improve the condition and performance of the freight network and supported investment in freight-related surface transportation projects.[2] Key programs of the FAST Act further continued under the BIL include:

- **National Highway Freight Program**—South Carolina is estimated to receive about $120.8 million from this program for FY2022—FY2026 to make improvements to the National Highway Freight Network (NHFN). States are permitted to use a portion of their NHFP funding for public or private freight rail, ports

[2] 49 U.S.C. 70101.

and water facilities, and intermodal facilities.[3,4] States are required to have a federally approved freight plan to obligate and expend NHFP funds.

- **National Multimodal Freight Network (NMFN)**—The FAST Act directed the U.S. DOT to establish an interim NMFN to identify critical national transportation assets for freight movement. The 2016 interim NMFN includes the NHFN, all Class I railroads, public ports and airports meeting certain tonnage/landed weight criteria set in law, key inland and intracoastal waterways, and other strategic freight assets defined by U.S. DOT.

- **National Freight Strategic Plan—**U.S. DOT released the final National Freight Strategic Plan in September 2020. The vision of the plan is for the U.S. freight system to strengthen economic competitiveness via safe and reliable supply chains that connect producers, shippers, and consumers. The plan highlights key trends and challenges, including safety risks, congestion, and deteriorating infrastructure and describes a range of possible public and private sector actions to improve freight infrastructure and planning processes. The plan includes three strategic policy goals:

  1. Improve the safety, security, and resilience of the national freight system.

  2. Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life.

  3. Prepare for the future by supporting the development of data, technologies, and workforce capabilities that improve freight system performance.

  The goals are supported by strategic objectives aimed at integrating freight into planning, policy, and funding priorities.

- **Performance-Based Planning and Reporting**—The FAST Act established national goals and related performance measures requiring agencies to track and report performance data using a national framework of consistent performance measures. For freight, the FAST Act requires states to analyze and report on truck travel time reliability (TTTR) on South Carolina interstates.

- **State Freight Advisory Committees**—The FAST Act encourages states to establish a freight advisory committee composed of a representative cross-section of public and private sector freight stakeholders.

BIL Additional Freight Policy

The BIL also initiates a number of new programs and grant opportunities and mandates studies relevant to freight, as listed below. Additional information is provided in Chapter 10:

- National Infrastructure Project Assistance.

- Reduction of Truck Emissions at Port Facilities.

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[3] Funding estimates for South Carolina are from the AASHTO publication located at: https://policy.transportation.org/wp-content/uploads/sites/59/2021/11/IIJA-Highway-Apportionment-Estimates-August-2021.pdf, retrieved 9/23/22.

[4] The FAST Act limited such multimodal funding to 10 percent of states' NHFP funding; the BIL increased it to 30 percent.

- Consolidated Rail Infrastructure and Safety Improvement (CRISI) Grants.
- Multi-State Freight Corridor Planning.
- National Freight Strategic Plan.
- State Freight Plans.
- National Multimodal Cooperative Freight Research Program.

Other BIL Components that May Impact Freight

In addition to the components of the BIL noted above, the act includes several programs, funding sources, and research that may impact freight. These components of the act include:

- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Grant Program.
- Formula Carbon Reduction Program.
- Congestion Relief Program.
- Grants for Charging and Fueling Infrastructure.
- National Electric Vehicle Infrastructure (NEVI) Program.
- Safe Streets and Roads for All Grant Program.
- Bridge Investment Program.
- Strengthening Mobility and Revolutionizing Transportation (SMART) Grant Program.
- Rural Surface Transportation Grant Program.
- Congestion Mitigation and Air Quality Improvement Program.
- Emerging Technology Research Pilot Program.
- Research and Technology Development and Deployment.

National Freight Performance Requirements

The Federal Highway Administration (FHWA) oversees a national transportation performance management system to monitor and base investment decisions on transportation performance. SCDOT has implemented these performance management requirements, which encompasses system condition, safety, air quality, congestion, and mobility performance considerations. These system wide highway measures address the condition and performance of the shared use highway system, which serves many travel markets, including long- and short-distance freight needs. Under the FAST Act, 23 U.S.C. 150(c)(6) established performance measures for state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs)

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, SCDOT has reported the TTTR metric performance. The 2022 baseline TTTR Index in South Carolina is 1.31. The 2-year and the 4-year target TTTR indices are 1.45. The MPOs in South Carolina have adopted the same measures. Detailed information on the Freight Plan's performance measures is found in Chapter 10.

1.2 South Carolina Freight Planning Context

This Freight Plan is intended to function as a stand-alone supplement to the South Carolina Statewide Multimodal Transportation Plan (MTP). The MTP provides an overall long-range framework and vision for the multimodal transportation system in South Carolina. The development of the MTP began with a comprehensive process of vision development and the development of overarching multimodal transportation goals, objectives, and performance measures. In addition to serving as a supplement to the MTP, this Freight Plan also reflects and references additional SCDOT transportation policy documents:

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.

SCDOT Strategic Plan—The SCDOT Strategic Plan establishes SCDOT's transportation vision, mission, values, and goals. It forms 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.

SCDOT 10-Year Investment Plan—SCDOT prepared a 10-year investment plan to establish targets and program dedicated funding made possible by the enactment of the *Roads Bill* (Act 40) passed by the General Assembly and signed by the Governor in June of 2017. The 10-year plan covers the period 2018—2027 and focuses on four areas of greatest need: pavements/resurfacing, bridge replacements, Rural Road Safety Program, and interstate capacity improvements. The 10-year investment plan guides SCDOT in dramatically improving the condition and operation of the backbone of the state's infrastructure network, the National Highway System (NHS).

SCDOT Transportation Asset Management Plan (TAMP)—The SCDOT TAMP documents the direction the SCDOT has taken in managing the state's assets. It outlines the approach SCDOT is using to effectively manage resources and add value to the highway transportation infrastructure. At its core, transportation asset management is the process of operating, maintaining, and improving infrastructure through maintenance, preservation, repair, and rehabilitation during an assets lifecycle. SCDOT has adopted transportation asset and performance management as a best management practice and has fully embraced the concept for all of its programs.

South Carolina Statewide Rail Plan—The SC Statewide Rail Plan, last updated in 2020, serves as a companion document to the SC Statewide Freight Plan and supporting document to the MTP. The Rail Plan provides an overview and inventory of the passenger and freight rail systems and facilities in South Carolina, asset conditions, services provided, and service constraints. The Rail Plan complies with Chapter 227 of Title 49, as enacted in the Passenger Rail Investment and Improvement Act (PRIAA) of 2008.

South Carolina Interstate Plan—The SC Interstate Plan serves as a supporting document to the MTP that provides the existing and projected conditions of the state's interstate network. The existing and future interstate conditions analysis provides SCDOT with vital information on congested areas and bottlenecks and supports where additional in-depth studies or actions are needed to improve conditions. The analysis and output from the existing and future conditions is also used in prioritizing interstate improvements based on South Carolina Act 114 of 2007 requirements.

South Carolina Strategic Corridors Plan—The purpose of the SC Strategic Corridors Plan is to provide a connected, continuous network that serves the traveling public and movement of freight. As a supporting document to the MTP, the SC Strategic Corridors Plan documents the system of roadways identified as the Statewide Strategic Corridor Network and the associated multimodal needs. The benefit of having the Statewide Strategic Corridor Network is to develop a focused strategic system that provides the needed connectivity to allow South Carolina to maintain and enhance its economic vitality.

South Carolina Strategic Highway Safety Plan (SHSP), 2020-2024—The purpose of the SHSP is to lay out a strategic approach to further the state's goal of eliminating fatalities and reducing serious injuries on South Carolina roadways. The plan provides a comprehensive and coordinated framework for safety partners to unite around in reducing fatalities and serious injuries on all public roads in South Carolina.

Regional Freight Plans—The Freight Plan serves as a resource for Council of Governments (COGs) and/or Metropolitan Planning Organizations (MPOs) in developing local and regional freight plans. The freight data inputs and assumptions allow for aligned goals and objectives as well as statewide priorities for project prioritization. The Freight Plan 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. The Freight Plan also provides a tool for SCDOT to review regional and local freight plans for alignment in priority. Both the Appalachian Council of Government's (ACOG) *2021 Appalachian Regional Freight Mobility Plan* and the Berkeley-Charleston-Dorchester Council of Government's (BCDCOG) *2022 BCD Regional Freight Mobility Plan* were developed in alignment with the 2020 SC Statewide Freight Plan.

1.3 South Carolina Freight Plan Goals, Objectives, and Performance Measures

South Carolina's freight goals and objectives were initially established in the South Carolina 2017 Statewide Freight Plan, updated in the South Carolina 2020 Statewide Freight Plan Update, and are again updated to reflect the 2020 National Freight Strategic Plan's goals as well as policy guidance on equity and resiliency in the BIL. These goals and objectives maintain their consistency with the previous 2015 FAST Act legislation (23 U.S.C. 167) and the multimodal goals established in the South Carolina 2040 Statewide MTP and South Carolina Rail Plan Update. In addition, SCDOT has adopted performance measures and set targets as part of the Federal planning requirements for state Departments of Transportation (DOT). The Freight Plan's goals, objectives, and performance measures are summarized in **Table 1.2** and are further discussed in detail in Chapter 10.

Table 1.2 SC Statewide Freight Plan Goals, Objectives, and Performance Measures

Goal Area	Supporting Objectives	Related Measures
Mobility and System Reliability	Reduce the number of system miles at unacceptable congestion levels.	Reduction of South Carolina's Statewide Freight Network mileage that is less than a LOS E for urban areas and LOS C for rural areas.
	Improve travel time reliability (on priority corridors or congested corridors).	Average or weighted buffer index or travel time index on Interstate System and National Highway System.
	Reduce congestion on the freight transportation system.	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.
Safety	Improve the safety, security, and resilience of the freight transportation system.	Number of large trucks reported in crashes (fatal, non-fatal, injury reported, hazardous materials), five-year trends.
	Improve substandard roadways.	Percent of substandard roadway improved.
	Enhance truck parking availability and information management on SC interstates/South Carolina Freight Network.	Availability and published mapping of public or private truck parking spaces on the Interstate network.
Infrastructure Condition	Maintain or improve the current state of good repair for the NHS.	Number of Miles of Interstate and NHS rated at “good” or higher condition.
	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.	Percent of deficient bridge deck area.
Economic and Community Vitality	Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy.	Truck travel time index on the South Carolina Interstate System. Relative costs of logistics to overall statewide productivity.
Environmental	Improve travel time delay on the interstate and Strategic Corridor Network to reduce Greenhouse Gas Emissions through interstate capacity improvement projects and transportation system management strategies	Truck Travel Time Reliability
	Work with environmental and resilience resource agency partners (including South Carolina’s lead agency, The Office of Resilience) to establish goals and strategies to expedite the environmental permitting process, maintain a focus on minimizing environmental impacts such as extreme weather, flooding/stormwater runoff and wildlife habitat loss and explore the development of programmatic mitigation in South Carolina.	None
	Support expanded public and private multimodal freight service as a means of reducing carbon emissions and increasing the resiliency and redundancy of the system against extreme weather events.	None
Equity	Identify a Statewide Freight Network that supports all modes (road, rail, ship, air) and all users (owners, operators, users).	None
	Ensure planning and project selection processes adequately consider rural accessibility and the unique mobility needs of specific groups and communities.	None
	Ensure broad-based public participation is incorporated into all planning and project development processes	None
	Incorporate valuation of economic impact into project prioritization.	None

This Freight Plan contains a series of freight recommendations intended to 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 Freight Plan will continue to 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.

1.4 What's In this Plan?

The South Carolina Freight Plan update is organized as follows:

Chapter 1.0—Introduction. This chapter documents the Federal legislative basis for freight planning and provides a brief summary of the South Carolina freight-planning environment including the freight goals, objectives, and performances.

Chapter 2.0—Stakeholder and Public Input. Chapter 2.0 documents the stakeholder and public input received during the update of the Freight Plan. It also documents the partnerships and coordination necessary for the day-to-day and long-term success of the implementation of the Freight Plan.

Chapter 3.0—Profile of South Carolina Freight Transportation Assets. This chapter 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.

Chapter 4.0—Commodity Flow Analysis. Chapter 4.0 provides an overview of the existing and forecast tonnage movements and associated values of freight moved across South Carolina's freight transportation network.

Chapter 5.0—Truck Parking Assessment. This chapter summarizes the availability and demand of truck parking on South Carolina Interstate Highways. The 2022 South Carolina Statewide Truck Parking Assessment Study (a stand-alone document) provides detailed information on the truck parking study process, findings, and recommendations.

Chapter 6.0—Military Freight Assessment. Chapter 6.0 documents the military facilities located in South Carolina and the associated freight transportation needs of those facilities, if applicable.

Chapter 7.0—E-commerce Assessment. This chapter describes how e-commerce has grown substantially across the U.S. over the past two decades. It provides an overview of potential impacts of e-commerce on the freight transportation network in South Carolina.

Chapter 8.0—South Carolina Statewide Freight Network. This chapter summarizes the Statewide Freight Network in South Carolina that reflects the roadways, railroads, and other transportation infrastructure needs for the efficient movement of goods into, out of, and through South Carolina.

Chapter 9.0—Corridor Level Strategies and Continued Freight Planning. Chapter 9.0 describes the freight strategies that serve to meet the freight plan goals and objectives, and a general framework for continuing freight planning in South Carolina.

Chapter 10.0—Freight Investment Planning. Chapter 10.0 describes the funding environment in South Carolina for transportation infrastructure and provides the Freight Investment Plan. The Freight Investment Plan identifies the constrained freight projects for utilizing South Carolina's National Highway Freight Program (NHFP) funds.

2.0 Stakeholder and Public Input

Stakeholder and public participation were an important part of updating the South Carolina Statewide Freight Plan. Utilizing the *MetroQuest* online public engagement product, SCDOT launched two Statewide Freight Planning surveys. One survey was specifically geared towards freight industry and economic development partners while a second survey was prepared and shared with South Carolina's general public communities (available in both English and Spanish). **Figure 2.1** provides a sample of both survey screen formats. As an information-gathering tool for the freight plan update, the online surveys were broadcast to respective audiences in South Carolina through the South Carolina Logistic Council (acting as the state FAC), the South Carolina Manufacturers Alliance, intermodal partners, SCDOT public announcement, and state and local Government agencies. The interactive surveys were available to participants from September 8, 2022 through October 10, 2022 and sought comment and opinion to gain input on current and future investments for freight-related transportation.

Figure 2.1 South Carolina Statewide Freight Plan Update Survey

The surveys asked participants to rank priorities, assign a priority value to transportation planning goals and requested information related to infrastructure mobility. Specifically, the surveys addressed the following:

- **Ranking of statewide freight transportation goals:** Asked respondents to rank the top 5 goals that they felt SCDOT should focus on or continue to focus on to improve freight mobility and goods movement in South Carolina.

- **Statewide freight transportation priorities:** Participants were provided the value of 100 tokens and asked to distribute the tokens among eight freight transportation priorities; ranking which priorities they thought South Carolina should focus on most.

- **Interactive issues/freight network map:** Participants were asked to identify at least three freight mobility improvement or concern areas that affect day-to-day operation/freight mobility**.** Using interactive map markers, SCDOT sought input on safety, truck parking, congestion, rail crossing, and infrastructure mobility issues within South Carolina. Additionally, an interactive map requested recommended updates to the Statewide Freight Network.

- **Demographics:** Depending on the audience/survey, a questionnaire to determine home or business location, type of respondent (business type or individual), age group of individual responding, or industry operating area.

- **Direct feedback:** Both surveys presented the opportunity for respondents to provide any additional comments on how SCDOT can support freight and goods movement within the state.

At the conclusion of the 30-day survey period, there were 38 industry partner respondents, 398 citizen respondents and a cumulative 749 comments shared. A separate Spanish language version of the general public survey was published, however no comments were received. A full list of participant comments is located in **Appendix B** of this document.

The value of stakeholder and community input provided a significant benefit to the plan by providing practical operator experience as well as valuable general public input regarding general transportation and freight-related movements.

2.1 Survey Highlights

Ranking Transportation Goals

All participants were presented with eight transportation goals and asked to rank the top 5 goals that they felt SCDOT should focus on or continue to focus on to improve freight mobility and goods movement in South Carolina and/or to suggest additional focus areas or provide further comment. The goals listed were:

- **Mobility and Reliability:** Provide surface transportation infrastructure and services throughout the state with a focus on regional mobility projects that are designed to reliably move people and goods, combat urban congestion and improve economic development in rural areas.

- **Safety and Security:** 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.
- **Economic Vitality:** Economic vitality supports the development of transportation systems that stimulate, support, and enhance the movement of goods to ensure a prosperous economy.
- **Supply Chain Resilience:** The ability of a transportation system to move goods in the face of one or more major obstacles to normal function. These obstacles can include extreme weather events, major accidents, and equipment or infrastructure failures.
- **Infrastructure Condition:** Maintain surface transportation assets in a state of good repair.
- **Land Use/Environment:** As it relates to goods movement, strive to sustain South Carolina's natural and cultural resources by avoiding, minimizing, and mitigating the impacts of freight movement while being mindful of water, air, and noise quality within the state.
- **Equity:** Recognizing the diversity of the state, ensure that transportation investments and benefits accommodate goods movement, mobility and resource needs of all South Carolina citizens including those in underserved and overburdened communities.
- **Innovation:** Prepare for the future by supporting the development of technologies that improve system performance and safety.

Based on the number of responses when asked to rank transportation goals, **Figures 2.2** (Industry Input) and **2.3** (Citizen Input) indicate that safety and security is the top transportation goal followed by infrastructure condition. The industry stakeholder's third most ranked transportation goal is supply chain resilience. Citizen input equally ranked mobility/reliability and land use/environment as third priority goals.

Figure 2.2 Industry Ranked Goals

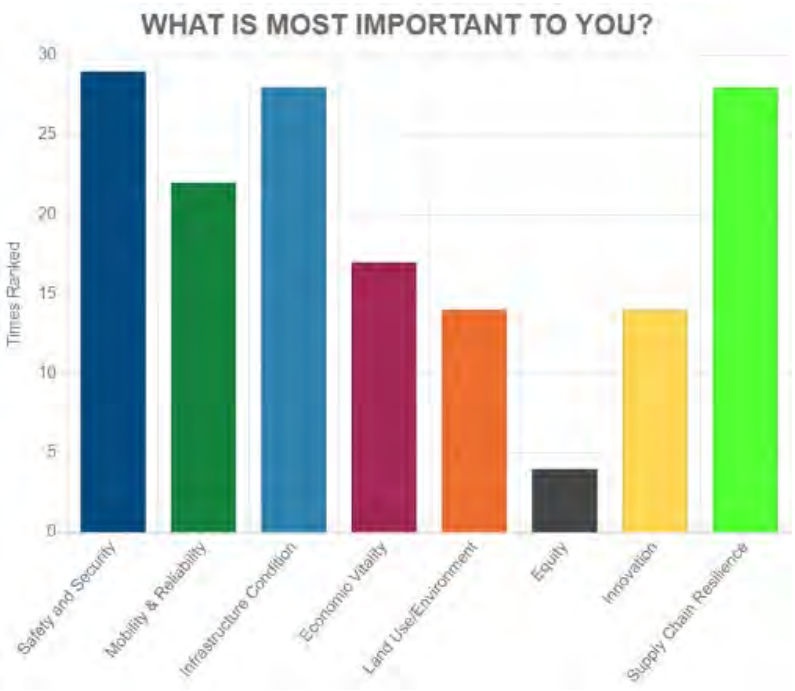
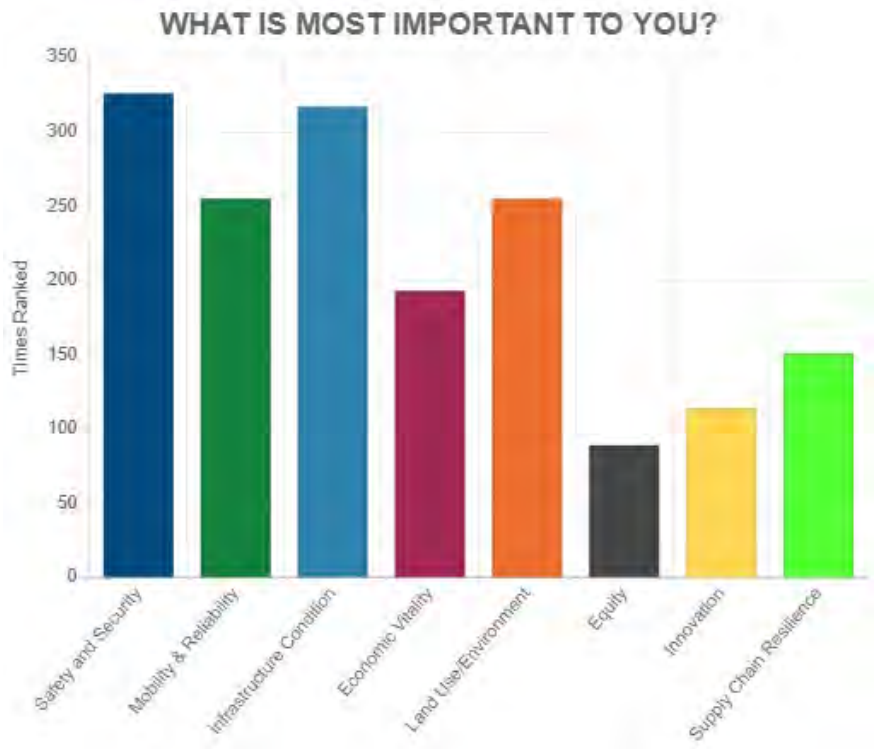


Figure 2.3 SC Citizen Ranked Goals



Ranking Transportation Goals Additional Comments

The majority of citizen comments regarding safety and security related to freight movements in and through urbanized areas, as well as speed enforcement and infrastructure condition on South Carolina primary and secondary roads. An industry participant comment recommended that South Carolina (as a whole) should focus on: alternative fuel opportunities; infrastructure; alternative fuel infrastructure; and electric vehicles.

Ranking Transportation Priorities

Participants were asked to identify which transportation priorities they would focus on in South Carolina. In this exercise, participants had the value of 100 tokens (weighted at 1 or 5) to distribute across any or all of the transportation priority categories including: safety and security, mobility and reliability, improved infrastructure condition, new or improved truck parking, project development in rural areas, reduction of truck emissions, intermodal/multimodal movements and real-time information systems. The purpose of the exercise was to assist SCDOT in identifying which priorities tend to be “more valuable” to industry and citizens. Additional comments were also encouraged.

Figures 2.4 (Industry Survey) and **2.5** (Citizen Survey) display the average total value of tokens given to each item listed as a transportation priority. As seen in Figure 2.4, industry responses indicated on average that improved infrastructure condition is the highest priority followed by safety and security and mobility and reliability. Similarly, the average total value of tokens distributed by citizens indicated that the transportation priorities are safety and security, followed by improved infrastructure condition and mobility and reliability.

Figure 2.4 Industry Transportation Priority Averages

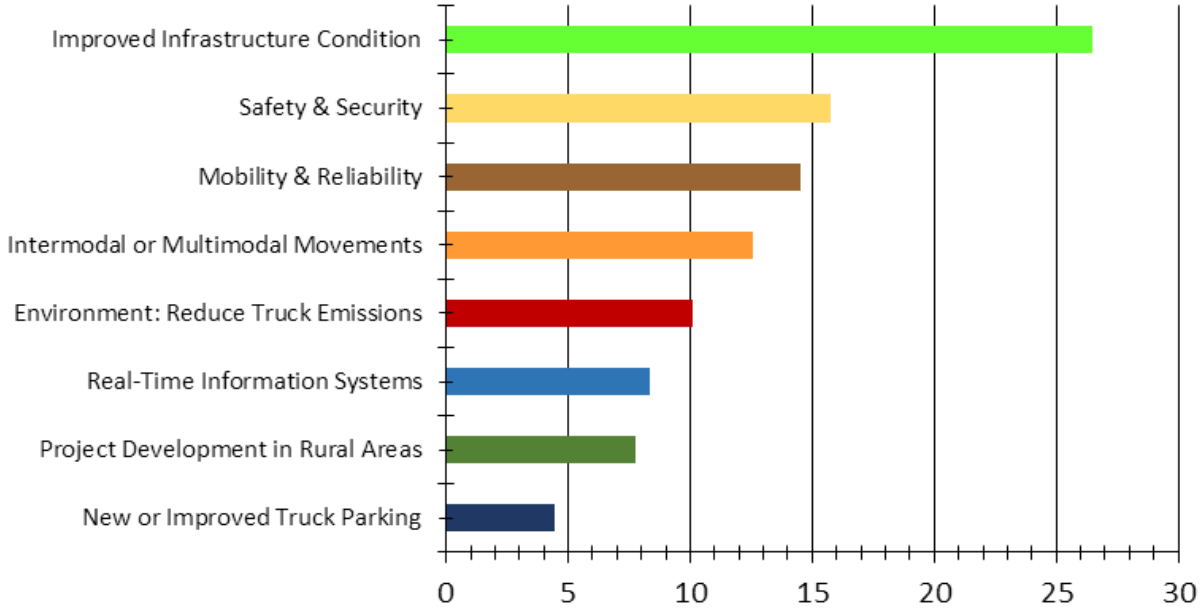
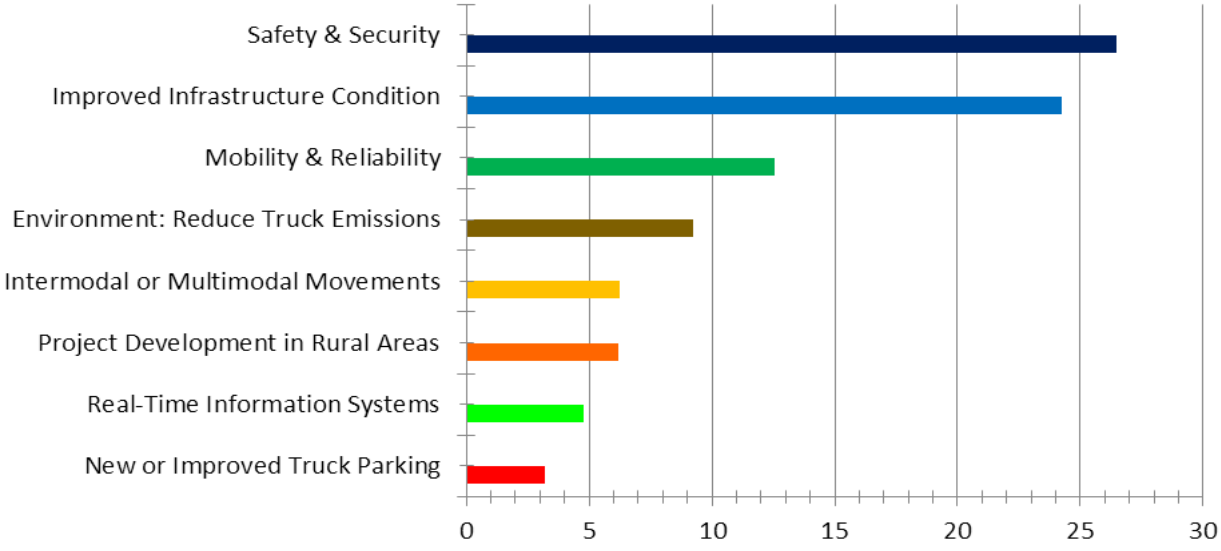


Figure 2.5 Citizen Transportation Priorities Averages



Transportation Priorities Additional Comments

Citizen comments were local in nature and shared concerns related to truck speeds and routing locations within the community, as well as shared use among bicyclists, pedestrians, the motoring public and goods movement. Comments focused on urbanized areas of the state. There were no comments from industry stakeholders provided.

Interactive Map and Survey Wrap Up

Participants were asked to drop interactive markers onto a map of South Carolina identifying locations affecting freight mobility. Issue identification markers included safety, truck parking, congestion, rail crossing and infrastructure/mobility issues. Participants could drop as many markers to as many locations on the map as they wished. Participants were also asked to suggest changes to the existing Statewide Freight Network (identified by magenta route marking). Results from Industry participants and Citizen participants are presented independent of each other in the following narrative.

2.2 Industry Partner Interactive Map Results

Figure 2.6 provides a snapshot of the 119 map markers placed in the interactive map by Industry Stakeholder participants. As seen in **Figure 2.7**, the highest frequency issue identified by Industry participants was congestion areas throughout the state (37%), followed by infrastructure mobility issues (20%) and safety issues (18%). Congestion was noted as most frequently observed in the evening between the hours of 4:00pm and 8:00pm (**Figure 2.8**) on all routes.

Figure 2.6 Industry Stakeholder Interactive Map Overview

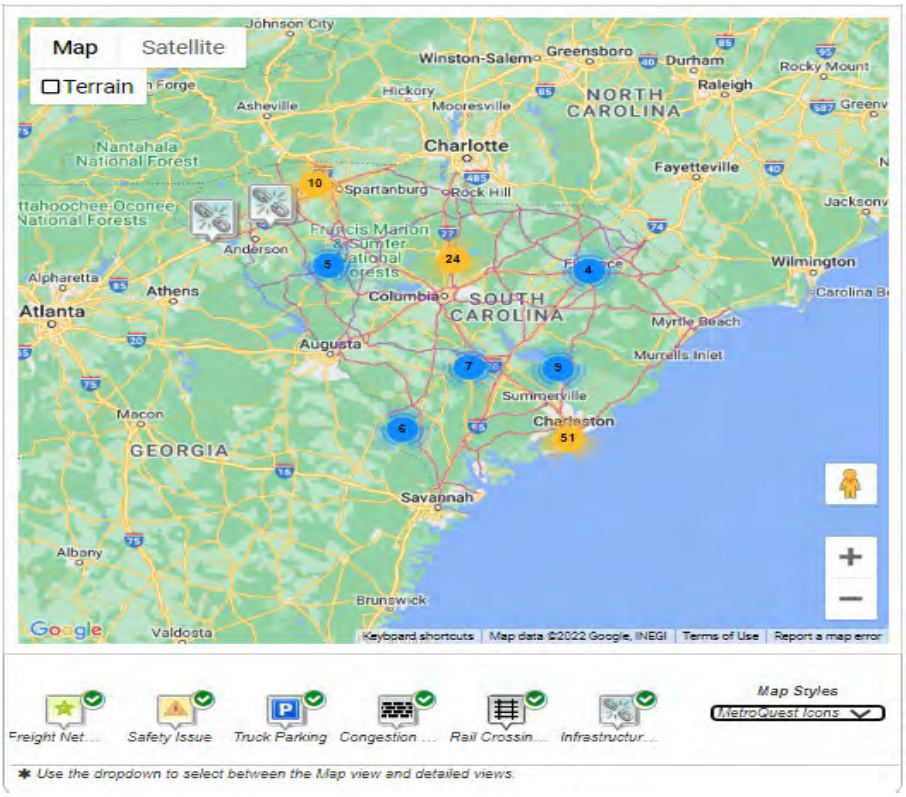


Figure 2.7 Industry Stakeholder Issue Identification Frequency

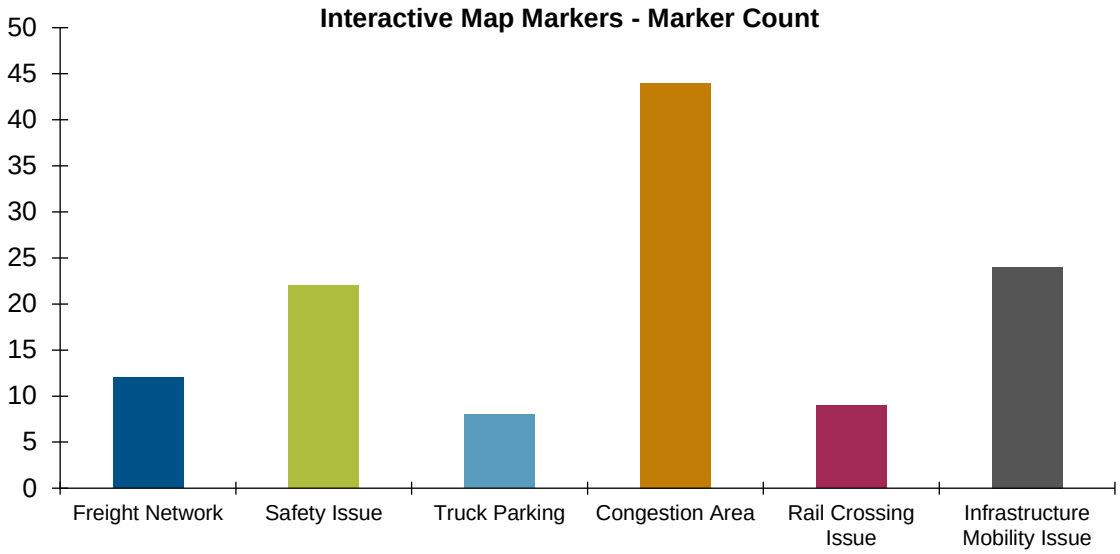
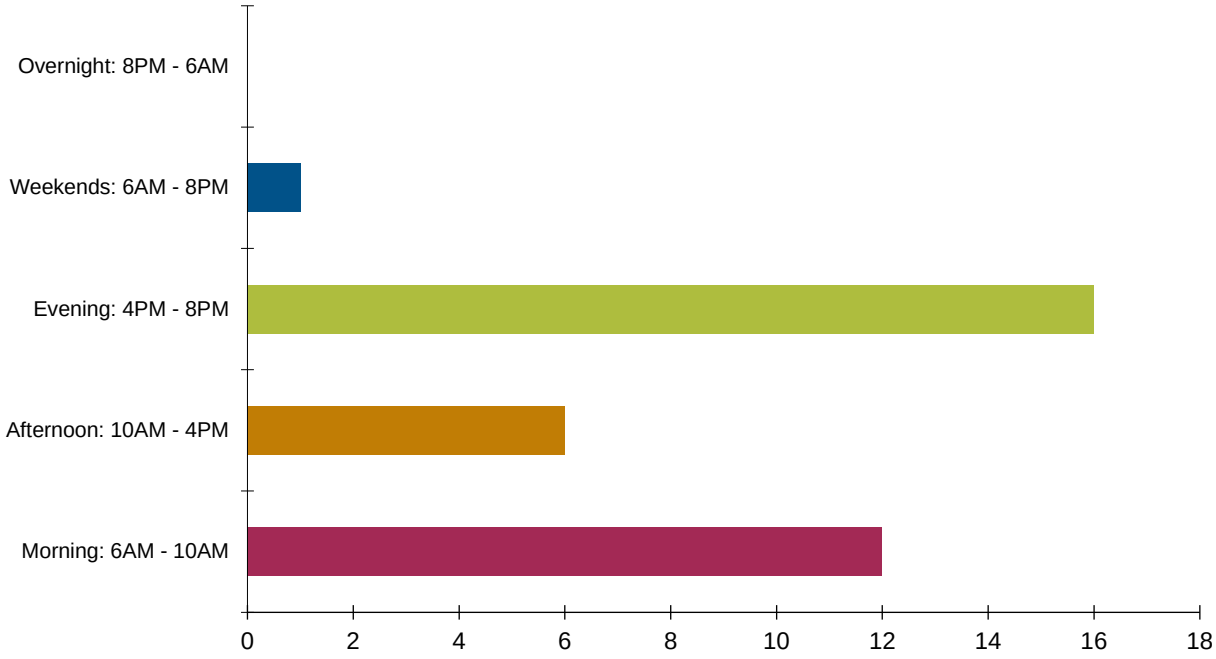
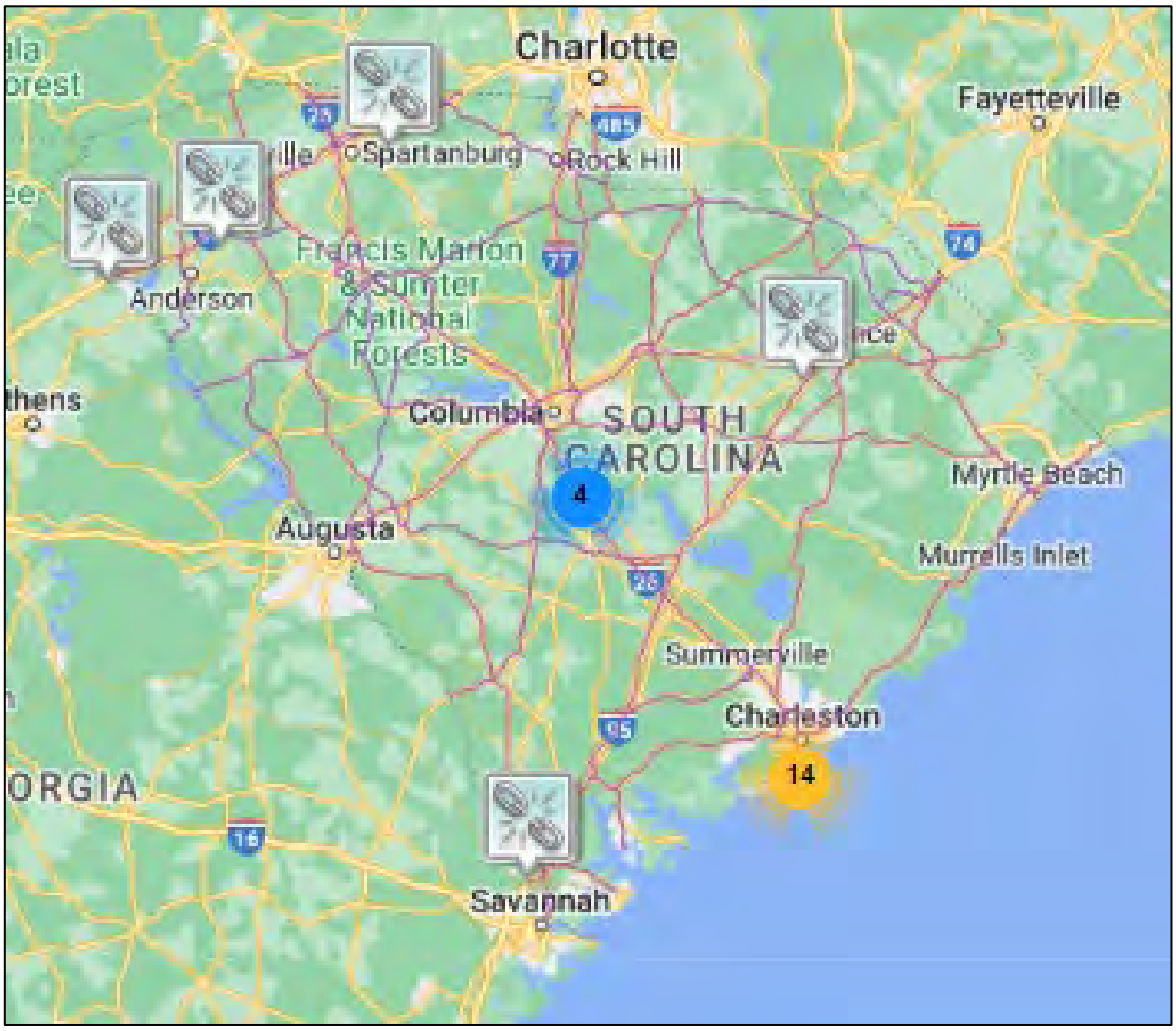


Figure 2.8 Industry Stakeholder Congestion Observation (Time of Day)



Areas reported as heavily congested by industry stakeholder participants included South Carolina's Upstate, Central Midlands and a large concentration of congestion identified in the Charleston/Lowcountry region as displayed in **Figure 2.9**.

Figure 2.9 Industry Stakeholder Observations: Congestion Areas, Safety and Infrastructure Mobility Issues

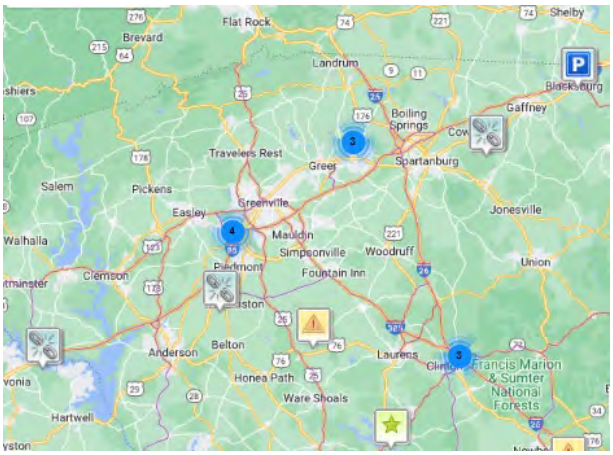


Markers and comments related to the **Upstate Region** (see **Figure 2.10**) were predominantly annotating congestion, and included:

- I-85 is heavily congested between the hours of 4:00pm and 8:00pm.
- I-85 is an issue between GSP and the Gateway Project at normal rush hour times and even in the afternoons.
- Additional lanes needed on I-85 at the Georgia/South Carolina state line.

- Indication that US25 is congested between Woodville and I-185.
- Truck parking is needed in the Powdersville area in the vicinity of I-85 and SC-81 and in the Blacksburg area in the vacinity of I-85 and U.S.-29.
- Entering I-26 from Exit 52 (heading to Greenville) it is sometimes difficult to work over to the correct lane.
- It was noted that the Clinton Commerce Park (Clinton, SC) located near I-26 and SC-72 has expanded.

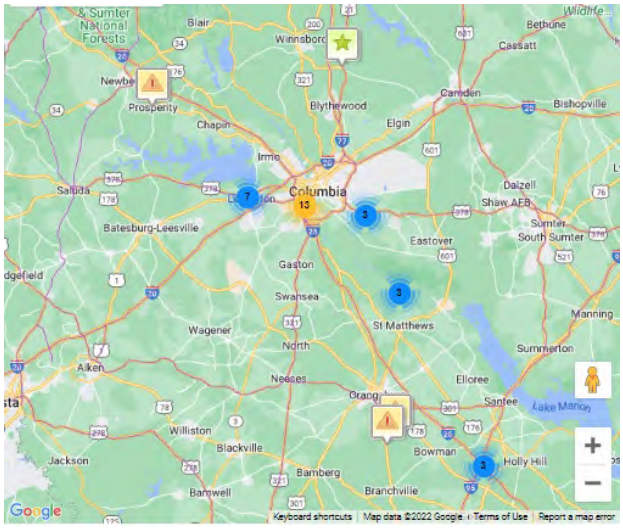
Figure 2.10 Map of Upstate Region



Markers and comments related to the **Central Regions of South Carolina** (see **Figure 2.11**) (Central Midlands, Lower Savannah and Santee Lynches regions) also predominantly annotated congestion, and included:

- Congestion markers were place on the interstates around and leading into and out of the City of Columbia; two (2) congestion markers were placed on US176 (one in the Irmo/Ballentine area and one in the Providence area just northwest of I-95).
- Additional lanes needed on U.S.-378 near the McEntire Joint National Guard Base.
- Large trucks routing through City of Columbia.
- Need to “clear the way” [in the I-26 and U.S.-21 area] near St. Matthews, South Carolina for large manufacturing related [truck] loads from the SC Port in Charleston to the Upstate.

Figure 2.11 Map of Central Regions

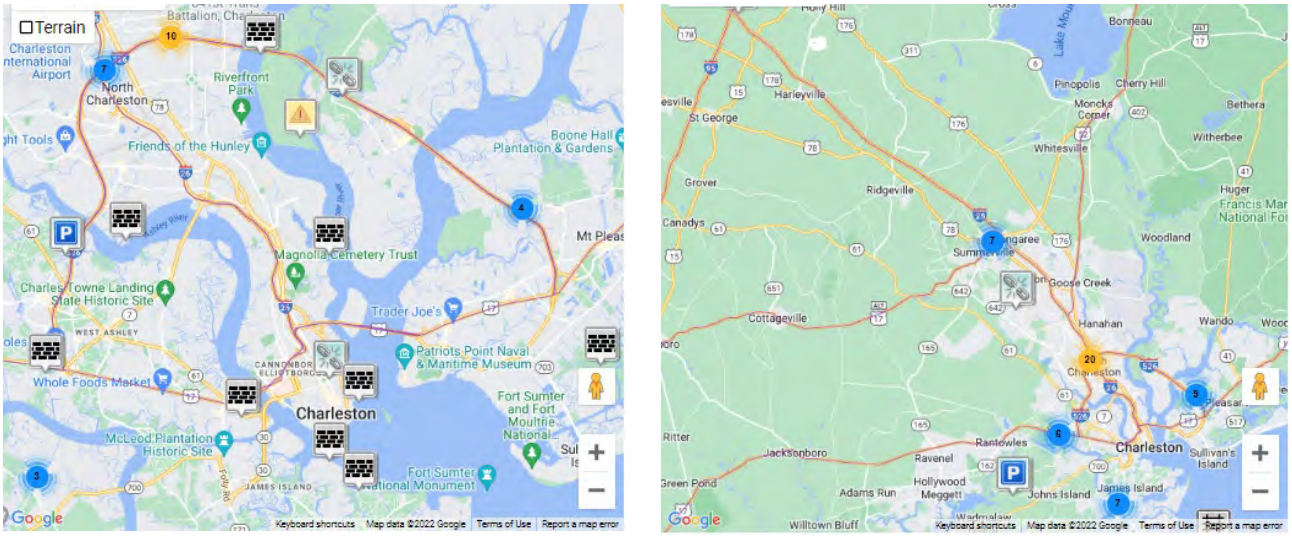


- Poor pavement quality on U.S.-301 near St. Matthews, South Carolina.
- Numerous road safety issues related to road geometry on secondary roads were posted around the Central Midlands area.
- In Lexington, it was noted that U.S.-378 (Columbia Ave at W. Main Street) was noted as needing a median.
- U.S.-378 at I-20 was noted as being a frequent roadway departure area.
- The merge onto I-26 from I-95 was noted as being difficult and unsafe.

Markers and comments related to the **Lowcountry** (see **Figure 2.12**) of South Carolina predominantly annotated congestion, and included:

- Congestion areas along interstates 95 from Savannah and 26 into and out of Charleston.
- Roads near Varnfield Drive in the Summerville area have become a “cut through” off U.S.-17Alt [to avoid congestion on I-26 in the region].
- Immediately surrounding the Charleston area, many comments were received observing morning congestion (6:00am to 10:00am) on I-526US-17, SC-700, SC-30 and East Bay Street.
- Congestion into and out of the SC Port was noted along with a recommendation for implementation of “better multimodal options for the state.”
- A comment was made suggesting that I-95 entering into South Carolina from Georgia needs to be widened to 4 lanes.
- Fourteen (14) markers were placed in the Charleston Lowcountry region indicating observed infrastructure mobility issues including locations on I-526 near the Cooper River, narrow or poor geometry of roads on Johns Island and Folly Beach areas, and the need for additional lanes in the downtown area of the City of Charleston.
- Numerous safety issues were identified around I-526 indicating high crash areas and or speeding being an issue.
- It was noted that “new truck parking” is needed near I-526 near the West Ashley area and on John’s Island near the Maybank Highway.
- A section of U.S.-17 between I-526 and Main Road near the Stono River and West Ashley area is noted as flooding frequently or having water on the road.

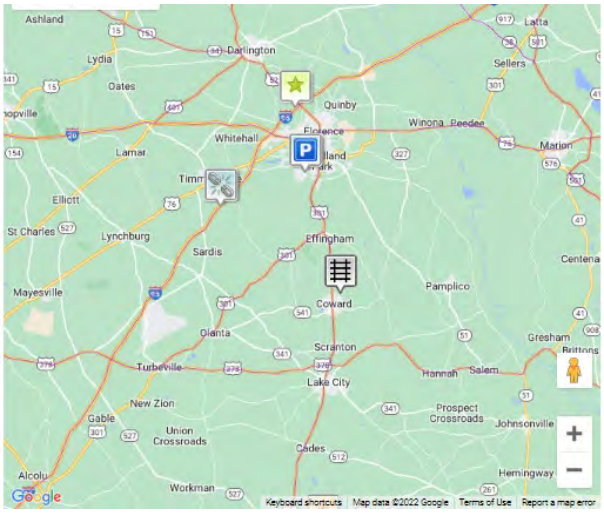
Figure 2.12 Map of Lowcountry Region



Markers placed in the **Pee Dee Region** (see **Figure 2.13**) of the state suggested:

- The need for new truck parking near I-95 and I-20.
- Need for improved and modern transportation infrastructure along I95 entering the Florence area.
- Observation regarding the length of trains in the area causing backup during peak commute times.

Figure 2.13 Map of Pee Dee Region



While there were a handful of remarks related to the Statewide Freight Network within the Industry partner survey, none were specific in nature. There was a handful of comments suggesting the need for enhanced multimodal goods movement in the state. Further discussion regarding the South Carolina Statewide Freight Network is located in Chapter 9 of this document.

Industry Partner Survey Wrap Up

At the conclusion of the survey, Industry respondents were asked general information that included identifying their business sector, primary mode of service, operating area and business zip code. The heat map shown in **Figure 2.14**Figure 2.14 shows the concentration of business zip codes that respondents indicated:

Figure 2.14 Industry Partner Survey Business Zip Code

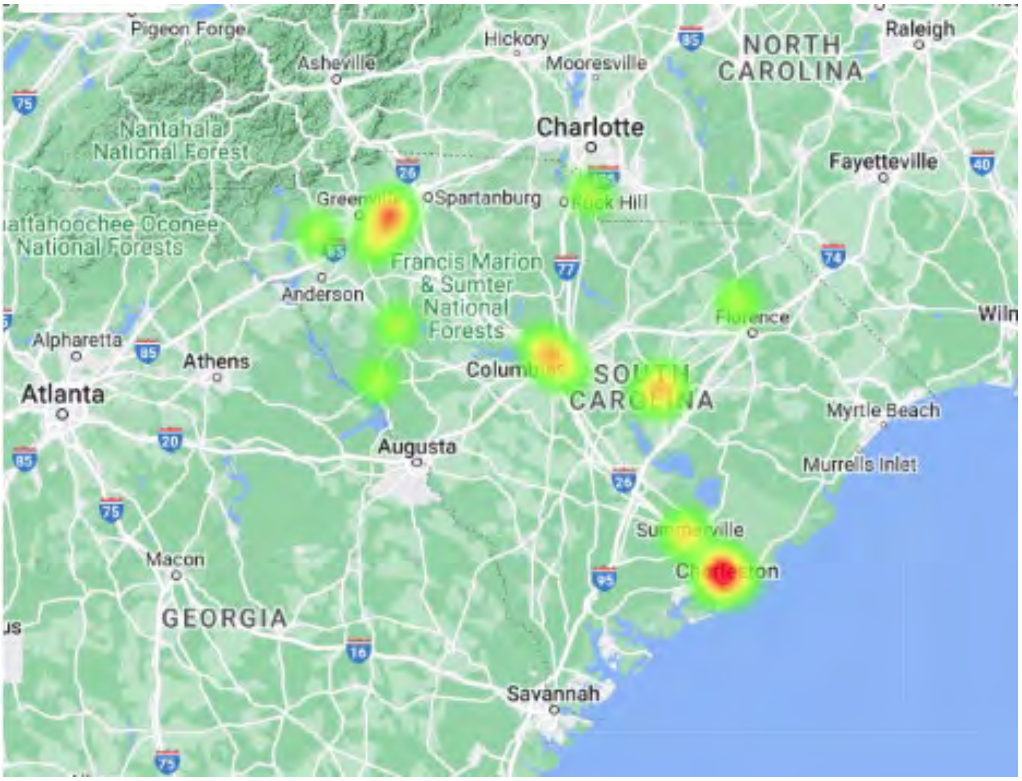


Figure 2.15 indicates the primary mode of service shared by 22 Industry survey participants with the highest percentage of responses from respondents who are in the trucking industry, with the remaining indicating that they were associated with rail, air, port, intermodal freight shipping or parcel services. **Figure 2.16** shows the operating area of Industry Survey participants who indicated their primary operating area reported by respondents.

Figure 2.15 Industry Survey Primary Mode of Service

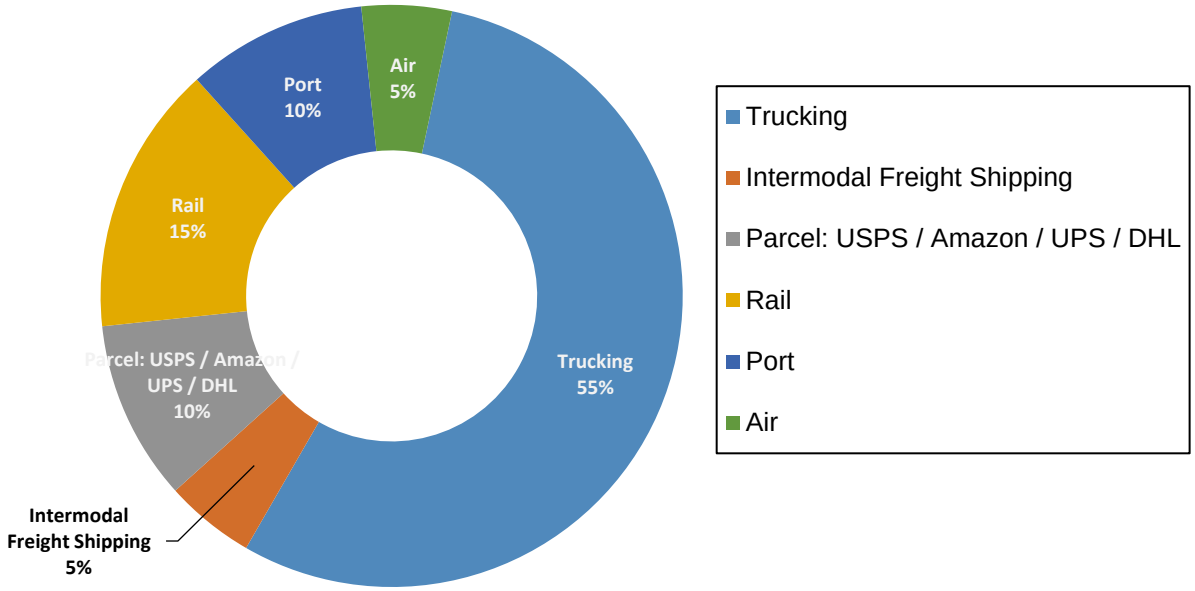
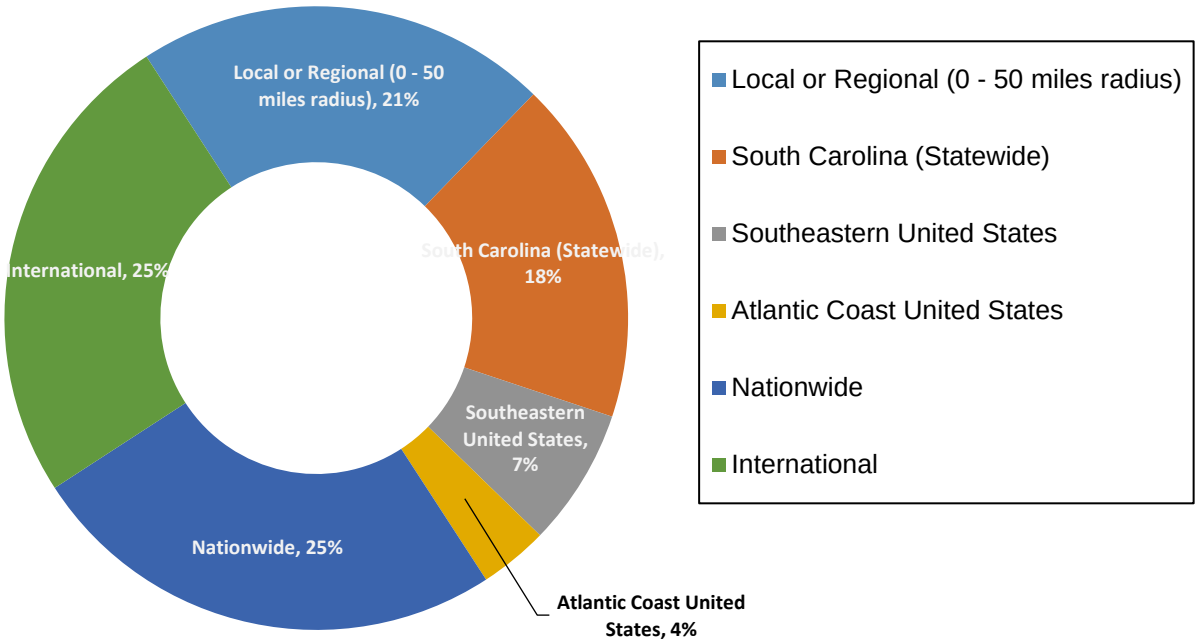


Figure 2.16 Industry Survey Primary Operating Area



2.3 Citizen Interactive Map Results

South Carolina citizens placed 948 markers in the interactive map (**Figure 2.17**) and provided 502 comments. As shown in **Figure 2.18**, results indicated that safety issues as their top concern (40% of markers) followed by identifying areas of congestion (33% of markers).

Figure 2.17 Citizen Interactive Map Overview

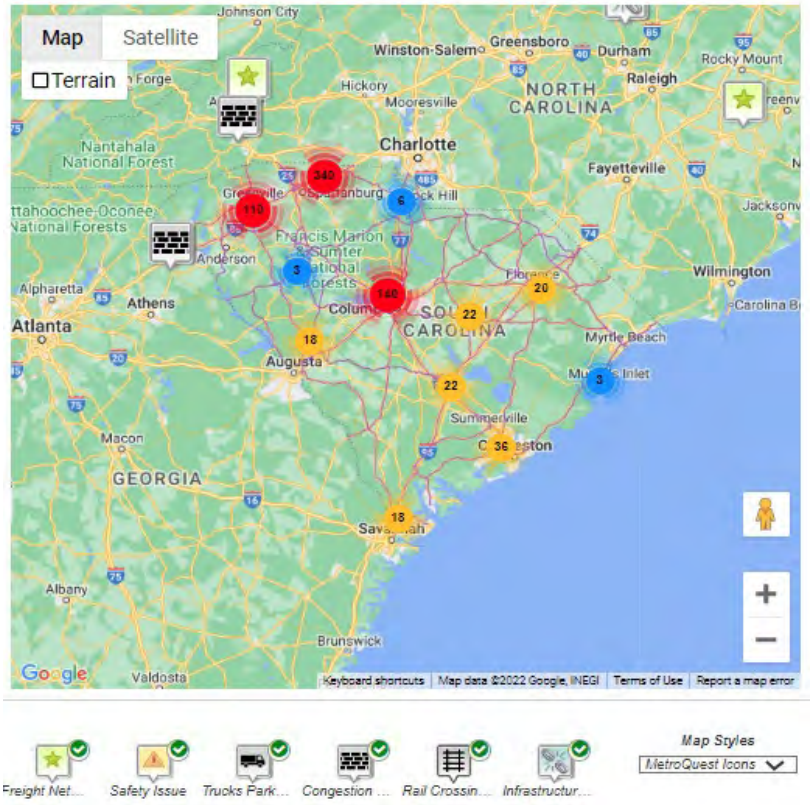


Figure 2.18 Citizen Issue Identification Frequency

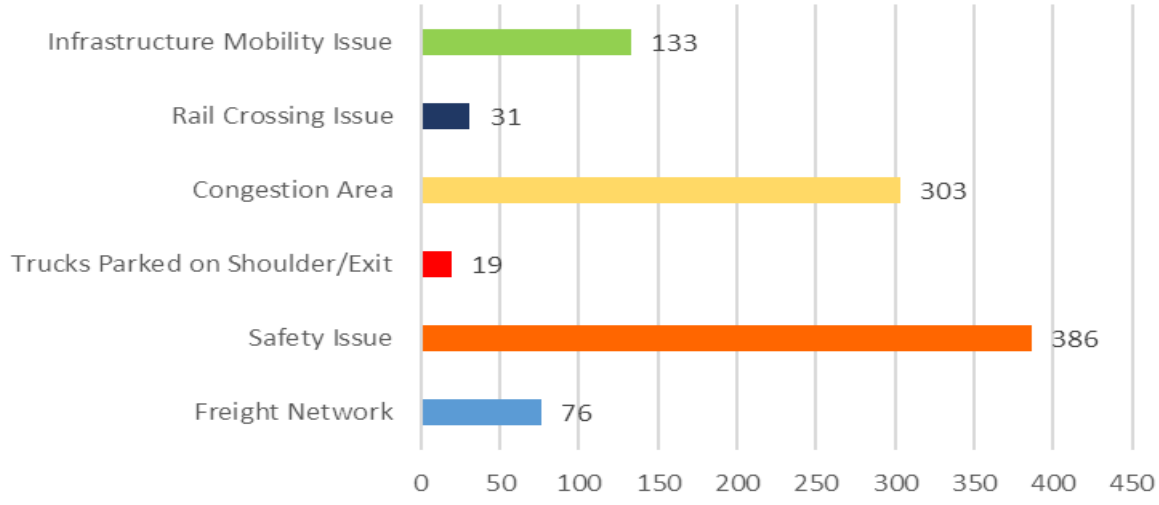


Figure 2.19 displays the number of reported citizen observations based on the statewide interactive map exercise. Safety issues and congestion were the most frequent markers utilized on the statewide map by citizen respondents.

Figure 2.20 shows the frequency of marker responses from citizen respondents. Speeding on South Carolina roadways was reported as a major safety concern for citizens (31%), followed by areas where frequent crashes occur (16%), safety related to bike and pedestrian activity (16%), and intersection issues (13%).

Figure 2.19 Citizen Interactive Map Markers—Safety

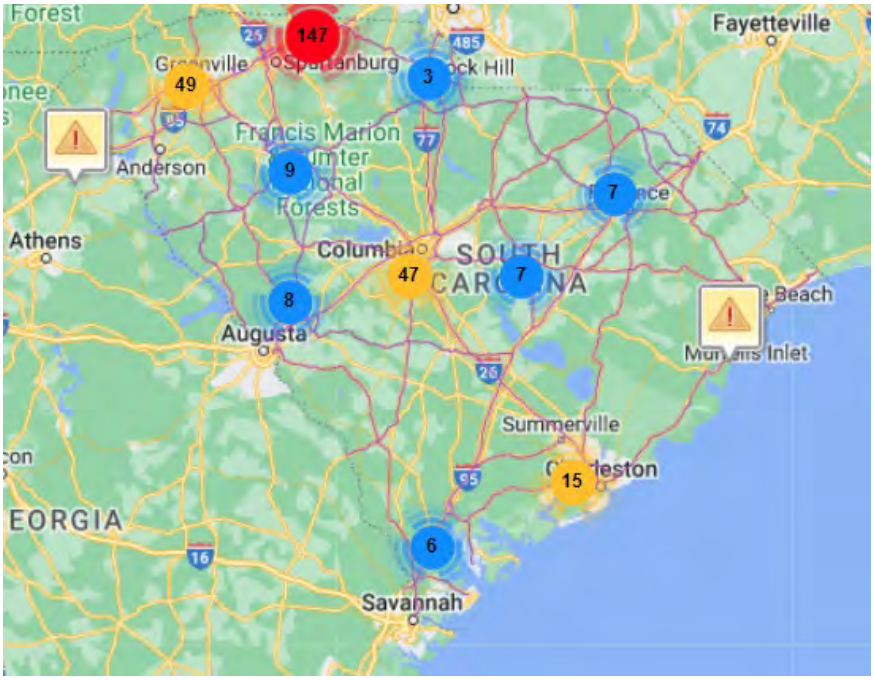


Figure 2.20 Citizen Interactive Map—Safety Issues

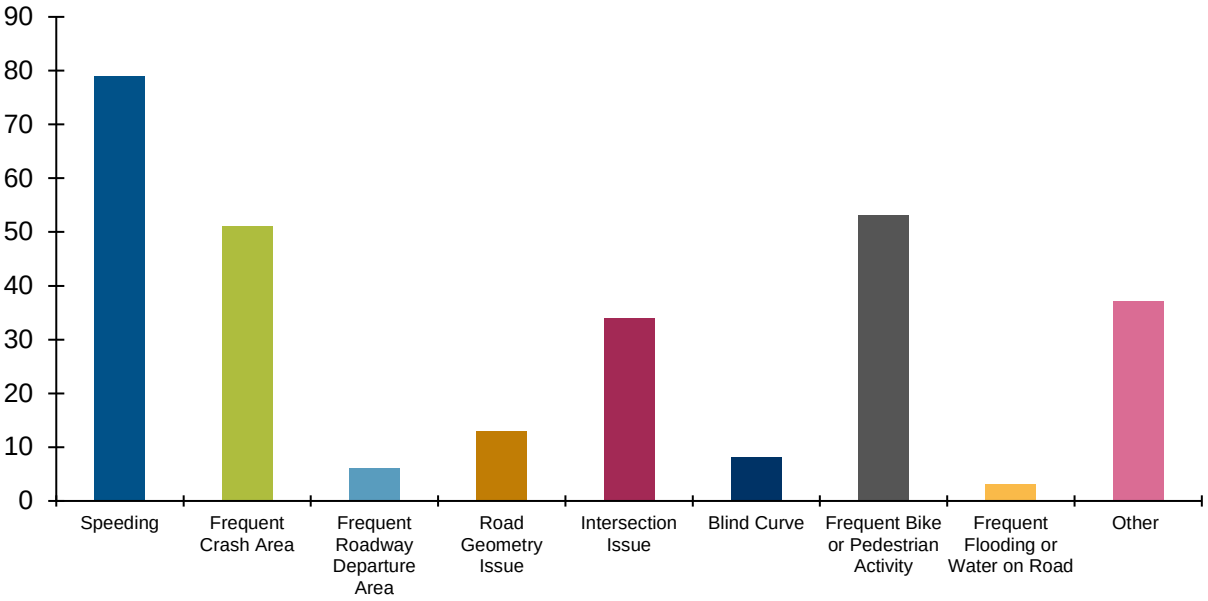


Figure 2.21 shows markers dropped indicating congestion areas in the state. As was indicated by Industry Stakeholders, when asked what time of day they observe or experience congestion, most citizens indicated that the evening hours between 4:00pm and 8:00pm is when South Carolina roads are most congested (**Figure 2.22**).

Figure 2.21 Citizen Interactive Map Markers—Congestion

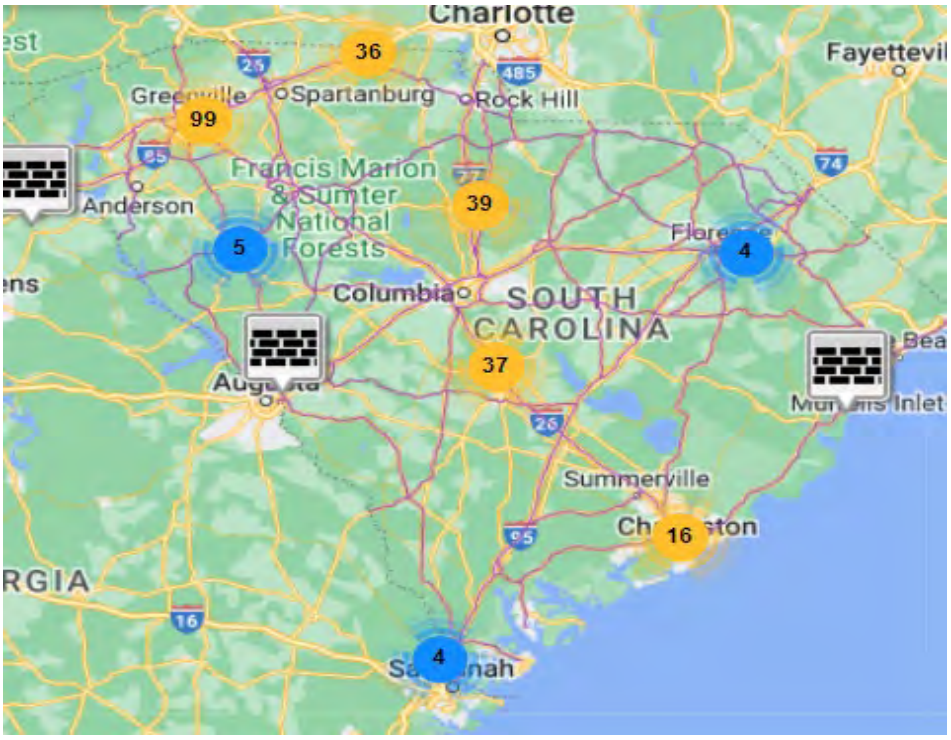
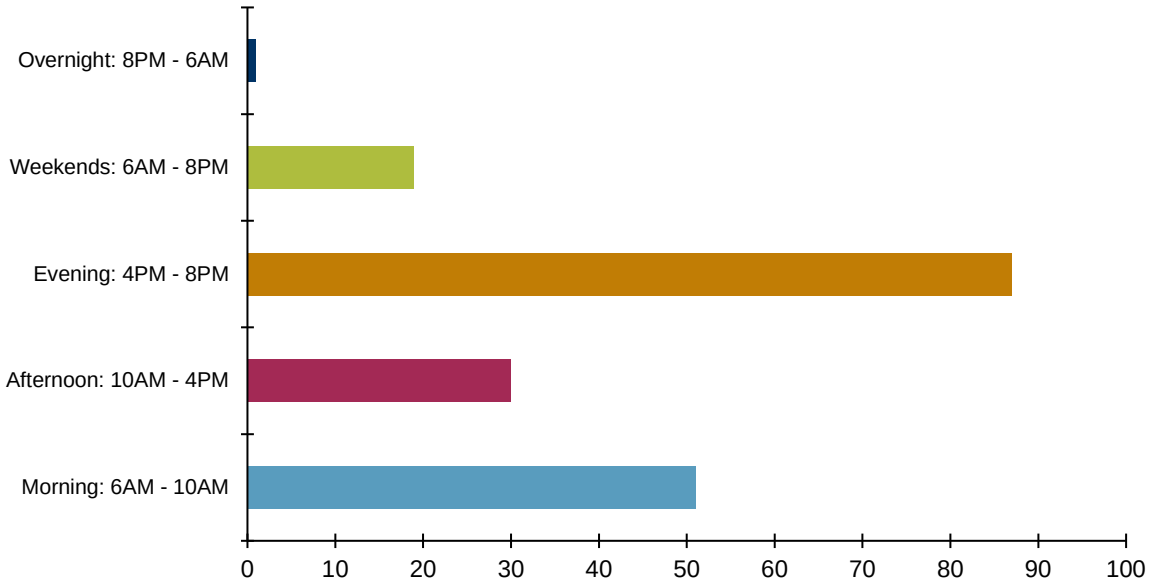


Figure 2.22 Citizen Interactive Map—Congestion Hours



Citizen Freight Related Comments

As noted previously, many of the comments provided through the Citizen Interactive Map exercise were safety observations. The highest number of comments provided were from citizens in the Upstate of South Carolina (Greenville/Spartanburg area).

For the purposes of this plan, the comments that were freight related in nature are presented below:

- I-95 in bad shape near Ridgeland.
- Need for better signage in rural areas.
- High volume and speeds of truck traffic in residential or school areas.
- Speeding vehicles in areas of congestion or where there is ongoing road construction.
- I85, 385 intersection in Greenville [have] heavy congestion, especially south bound lanes.

While completing demographic questions was not required, about three quarters of participants (70%) shared their demographic information within the wrap up section of the survey:

- 87% stated that they are South Carolina residents. Remaining descriptors were Local or Regional Government (7%), Business Owner (2%), Public Agency (1%), Non-Profit Organization (1%), Resident of another state (1%) or Other (1%).
- 33% of respondents were 55—70 years of age; 24% were above 70 years old; 19% were between 45—54, 18% were between 35 -44, 5% were between 25-34, and 1% were between 18—24.

2.4 Survey Summary

As a planning and programming tool, the survey results will be utilized as a guide in addressing statewide freight program priorities. A summary of all Industry and Citizen comments received is located in **Appendix B** of this plan. 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.

2.5 Freight Advisory Committee / South Carolina Logistics Council

The FAST Act encourages the establishment a State Freight Advisory Committee to assist in the development of the plan and provide an ongoing advisory role in statewide freight planning. While U.S. DOT 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

supports ongoing freight related planning activities. The inaugural meeting of this committee was held in May 2014. The Logistics Council meets on a quarterly basis.

Purpose for the State Freight Advisory Committee

As recommended by the FAST Act and U.S. DOT-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 comment as SCDOT finalized 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.

Duties and Responsibilities of the State Freight Advisory Committee

A list of general support activities associated with a State Freight Advisory Committee follows. The SFAC's general duties and responsibilities are intended to complement and not duplicate the roles or responsibilities of existing state mandated committees.

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

- 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.
- Provide guidance on freight-related transportation issues including priorities, projects, and funding needs.
- Promote freight related transportation systems and capital infrastructure improvements throughout South Carolina.
- 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.
- Guide SCDOT's continuous state transportation systems planning processes.
- Provide a forum for exchange of information concerning the public and private sectors' view of needs and requirements in the state's transportation systems.
- Participate in future statewide freight planning efforts.

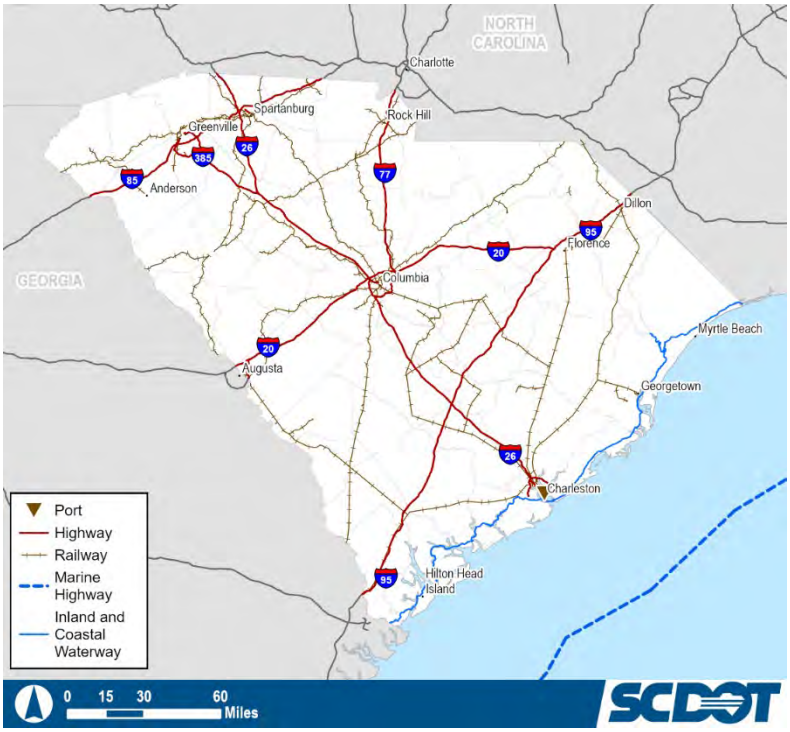
3.0 Profile of South Carolina Freight Transportation Assets

Preserving and enhancing the infrastructure that moves goods through and within South Carolina for all modes is important to the economic vitality of South Carolina. Continuing to provide 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. Based on the statutory requirements identified in 49 U.S.C. 70103(b)(2), assets of greatest importance to goods movement include:

- The National Highway Freight Network.
- Freight Rail Systems of Class I railroads.
- Public ports of the United States that have total annual foreign and domestic trade of at least 2,000,000 short tons.
- Inland and Intracoastal Waterways of the United States, the Great Lakes, the St. Lawrence Seaway.
- Coastal and Ocean Routes along which domestic freight is transported.
- 50 Airports located in the United States with the highest annual landed weight.
- 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. **Figure 3.1** illustrates the South Carolina Interim National Multimodal Freight Network identified by the Under Secretary. The remainder of this section describes assets within South Carolina, along with a summary of current conditions.

Figure 3.1 South Carolina Interim Multimodal Freight Network



Source: https://www.transportation.gov/Freight/South-Carolina-State-Map, accessed October 2022.

3.1 Highways

Highway goods movement is the cornerstone to the national freight transportation system. In 2019, highway, or "trucking," transported approximately 64 percent of all the tonnage in the U.S. based on data from the Federal Highway Administration's (FHWA) Freight Analysis Framework version 5 (FAF5). 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.

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 historically 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.

Functional Classifications

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) Policy on Geometric Design of Highways and Streets (or Green Book), 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 is Collector and above. These three classifications have additional sub-classifications within each, providing further definition, e.g., urban versus rural, principle versus minor. SCDOT design for freeway and arterial routes are consistent with the AASHTO Green Book.

SCDOT maintains the fourth largest centerline miles measured state network in the Nation. **Table 3.1** notes the total mileage for each of the classifications inclusive of state-maintained mileage, with **Figure 3.2** illustrating the presence of each of these classifications within the state.

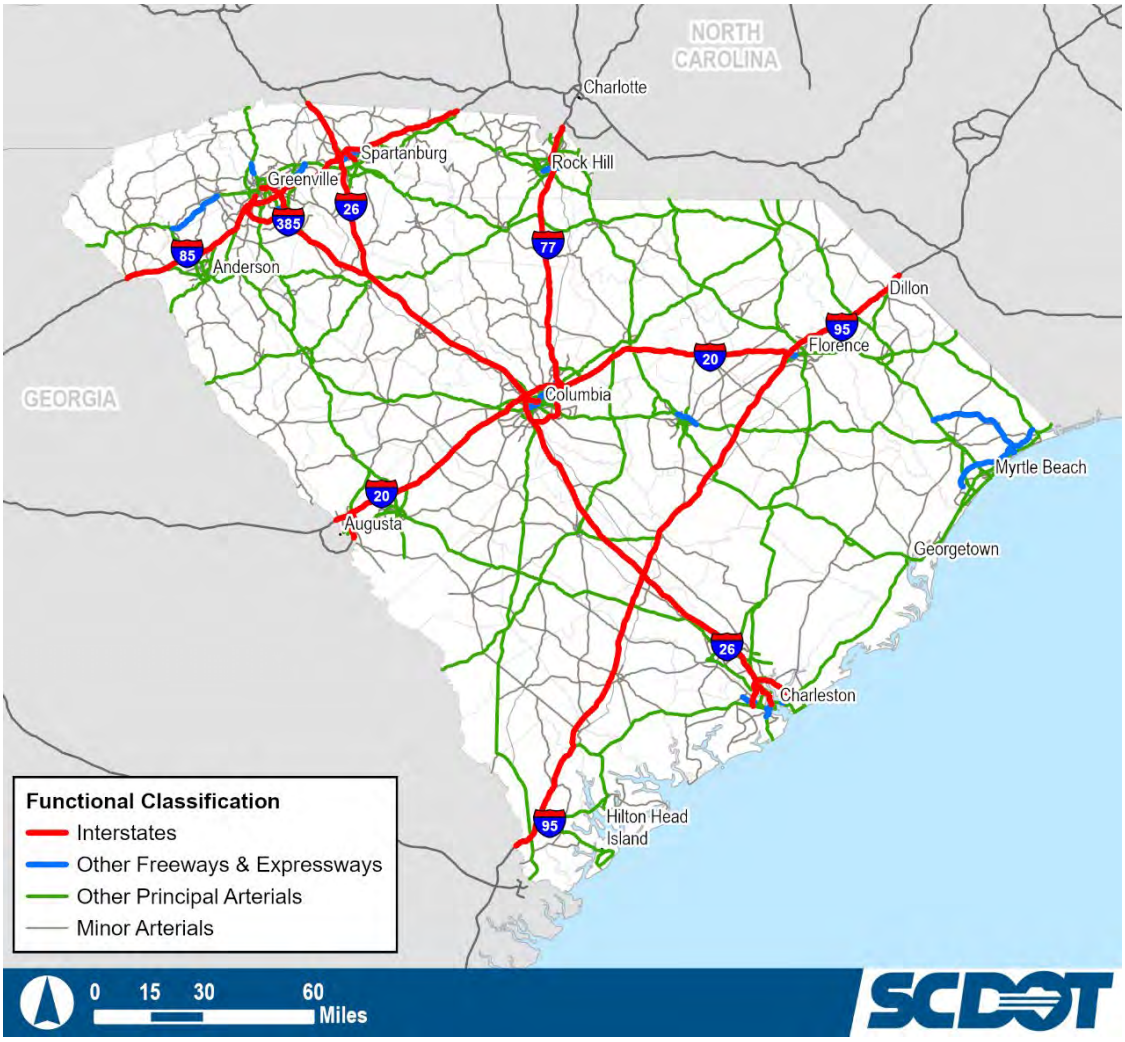
Table 3.1 Mileage, by Classification in South Carolina (2018)

Road Classification	Miles	Lane Miles
Rural Roads		
Rural Interstates	546.3	2,239.9
Rural Expressway	45.8	198.3
Rural Principal Arterials	1,541.1	4,632.7
Rural Minor Arterials	2,985.4	6,310.3
Rural Major Collectors	10,010.9	20,117.6
Rural Minor Collectors	2,027.5	4,054.9
Rural Local Roads	37,597.4	74,931.5
Rural Totals	*54,754.4*	*112,485.2*
Urban Roads		
Urban Interstates	304.3	1,626.3
Urban Expressway	82.4	367.5
Urban Principal Arterials	1,075.8	4,176.2
Urban Minor Arterials	1,770.6	4,930.3

Road Classification	Miles	Lane Miles
Urban Major Collectors	2,815.8	5,924.1
Urban Minor Collectors	79.3	160.6
Urban Local Roads	18,307.1	36,772.7
Urban Totals	*24,435.3*	*53,957.7*
Rural + Urban	**79,189.7**	**166,442.9**

Source: 2021 SCDOT—Road Data Services—RIMS (Roadway Information Management System).

Figure 3.2 Functional Classification



Source: Highway Performance Monitoring System, 2019.

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.

Interstate System

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:

1. Designed for uninterrupted flow
2. 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.
3. 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. Details about the interstates are below in **Table 3.2.**

Table 3.2 Interstates in South Carolina

Interstate	Termini	Length	Major Municipalities
I-20	• Near Florence, SC at the junction with I-95 • Near Kent, TX at the junction with I-10	• Total Length: 1,539 mi. • 141 mi. in South Carolina	• Florence, SC • Columbia, SC • Augusta, GA • Atlanta, GA • Birmingham, AL • Jackson, MS • Dallas/Ft Worth, TX
I-26	• In Charleston, SC at the junction with U.S.-17 • In Kingsport, TN at the junction with U.S.-11W	• Total Length: 347 mi. • 221 mi. within South Carolina	• Charleston, SC • Columbia, SC • Spartanburg, SC • Asheville, NC
I-77	• Near Columbia, SC at the junction with I-26 • In Cleveland OH at the junction with I-90	• Total Length: 611 mi. • 90 mi. within South Carolina	• Columbia, SC • Charlotte, NC • Charleston, WV • Cleveland, OH
I-85	• In Montgomery, AL at the junction with I-65 • In Petersburg, VA at the junction with I-95	• Total Length: 669 mi. • 106 mi. within South Carolina	• Montgomery, AL • Atlanta, GA • Greenville/Spartanburg, SC • Charlotte, NC • Greensboro, NC • Petersburg, VA

Interstate	Termini	Length	Major Municipalities
I-95	• In Miami, FL at the junction with U.S.-1 • Near Houlton, ME at the Canadian border	• Total Length: 1,924 mi. • 199 mi. within South Carolina	• Boston, MA • New York, NY • Philadelphia, PA • Baltimore, MD • Washington D.C. • Richmond, VA • Savannah, GA • Jacksonville, FL • Miami, FL

The posted speed limit for interstates and other limited access facilities in the state is noted in **Table 3.3**. The design vehicle for this classification is wheelbase-67, or WB-67, with a design speed of 70 mph.[5]

Table 3.3 Posted Speed Limits, Interstate and Other Limited Access, South Carolina

	Rural Interstates		Urban Interstates		Other Limited Access Roads	
State	Cars (mph)	Trucks (mph)	Cars (mph)	Trucks (mph)	Cars (mph)	Trucks (mph)
South Carolina	70	70	70	70*	60	60

*60 on specified segments
Source: Governors Highway Safety Association, accessed October 31, 2022.

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.

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.

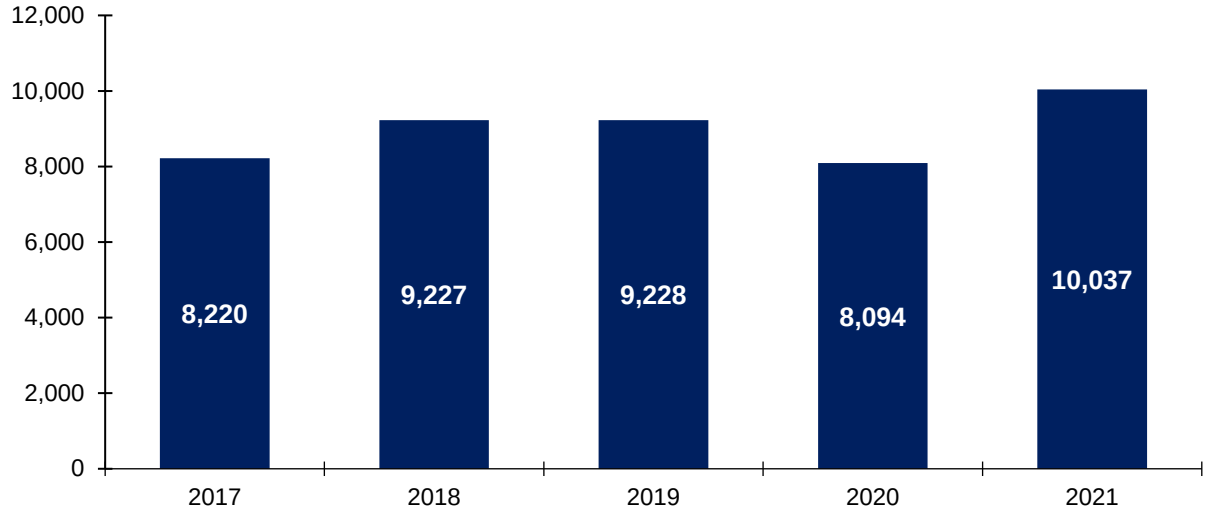
The design vehicle for rural and urban collector is the SU or single-unit truck. Design speed varies from 55 mph for rural to 35 mph for urban.

[5] 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.

Safety

Figure 3.3 shows the number of truck-involved crashes from 2017 to 2021. Over that period, the number of crashes increased every year except 2020 (when the COVID-19 pandemic reduced the number of vehicles on the road). From 2017 to 2021, truck-involved crashes rose from 8,220 to 10,037, an increase of 22%.

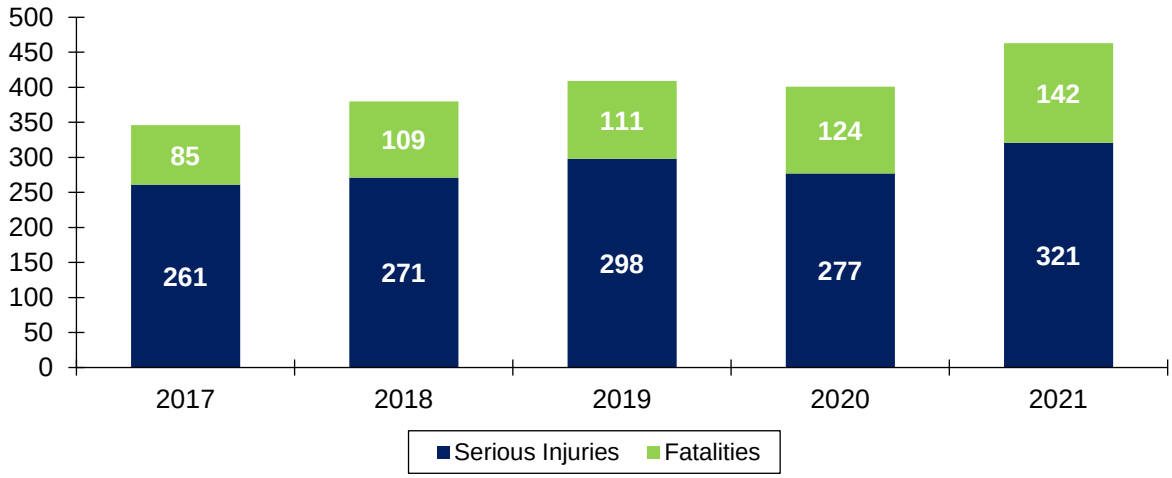
Figure 3.3 Total Truck-Involved Crashes (2017-2021)



Source: SCDOT Crash Data, 2017-2020.

Figure 3.4 shows the number of fatalities and serious injuries resulting from truck-involved crashes during the same period. Serious injuries follow a similar pattern as the overall crashes, increasing every year except 2020. Serious injuries rose from 261 in 2017 to 321 in 2021, an increase of 23%. However, fatalities increased every year, even in 2020 when the rest of the crash types decreased. Fatalities increased from 85 in 2017 to 142 in 2021, an increase of 67%, which is significantly more than the total number of crashes and serious injuries (22-23%).

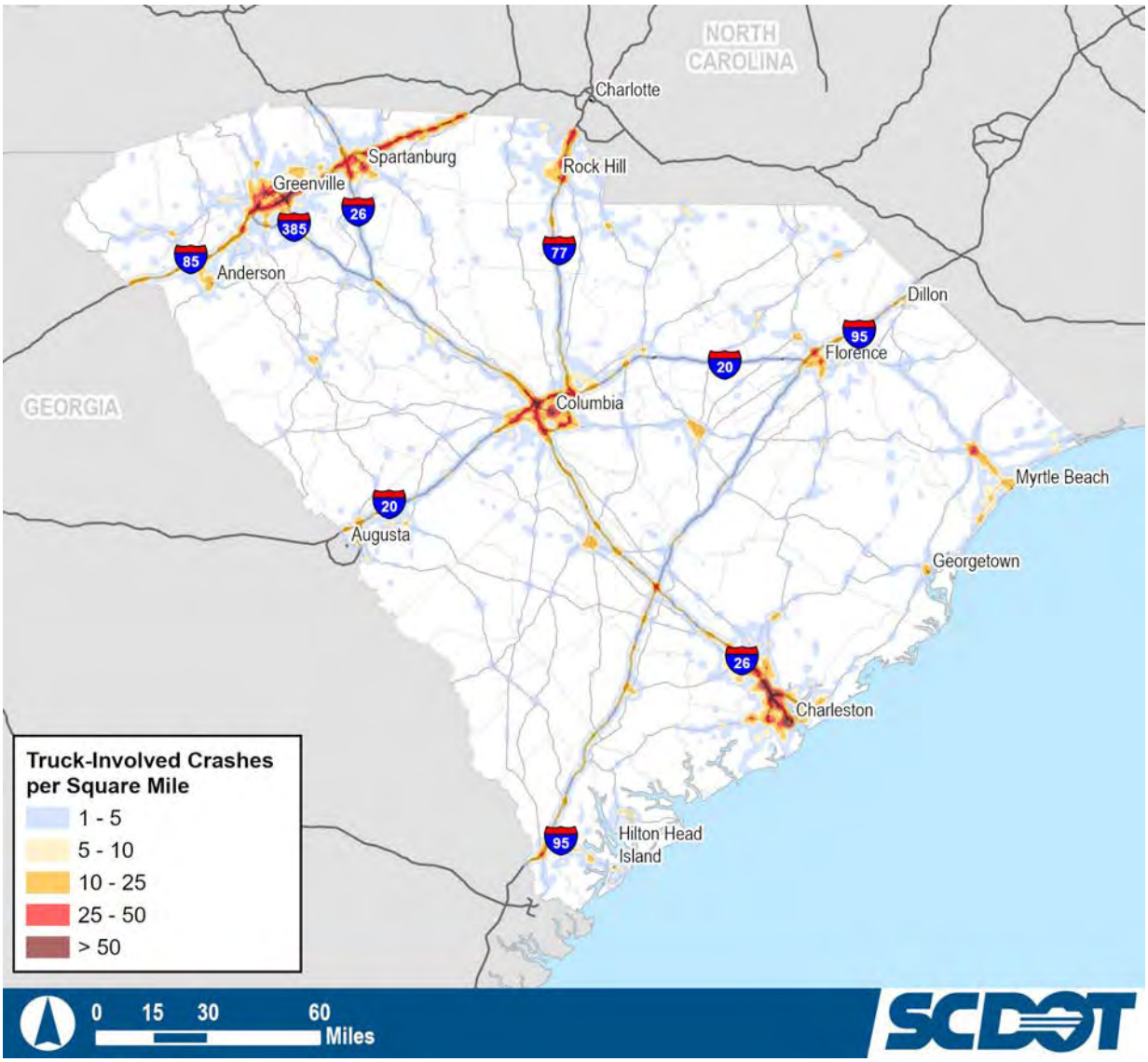
Figure 3.4 Fatalities and Serious Injuries in Truck-Involved Crashes (2017-2021)



Source: SCDOT Crash Data, 2017-2020.

Figure 3.5 shows a heat map of the truck-involved crashes. The darker the color, the more crashes in that area. Truck-involved crashes are concentrated in urban areas near Interstates. I-85 in particular has high crash densities from Greenville through Spartanburg to the North Carolina border. Levels of traffic activity, including freight, are higher in urban areas creating more opportunities for crashes.

Figure 3.5 Truck-Involved Crashes per Square Mile (2017-2021)



Source: SCDOT Crash Data, 2017-2020.

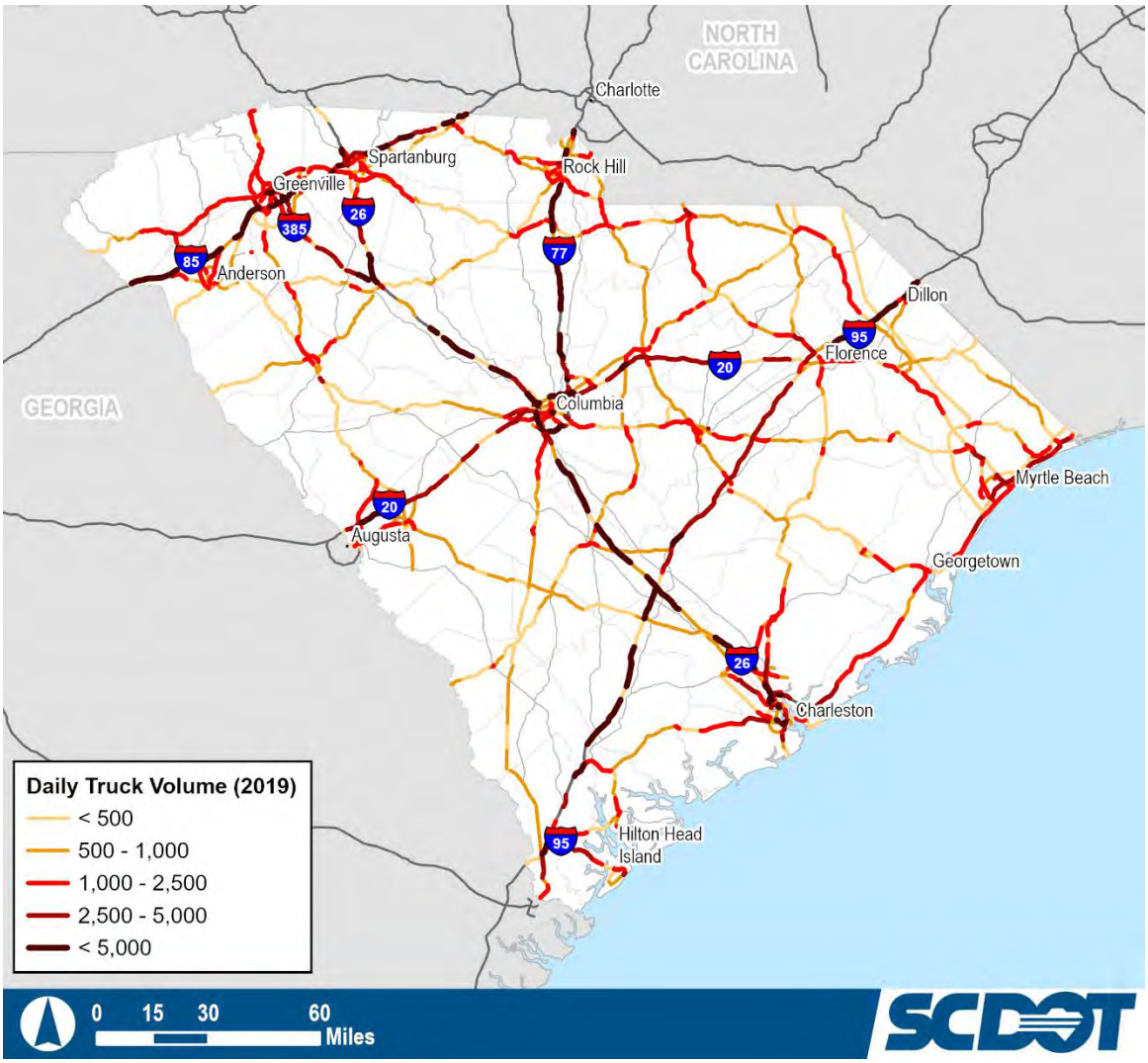
Truck Volumes

The amount of traffic carried by a roadway is measured by volume and is expressed as Annual Average 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."[6] In a similar way, the volume of truck movements on a road can also be measured as AADT. FHWA

[6] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018.

defines trucks "as vehicles of classes 4 through 13 in the FHWA's 13-category vehicle classification system."[7] Annual Average Daily Truck Traffic (AADTT) 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."[8] Within the Statewide Freight Plan, truck volumes are for Class 8 and above. Truck volumes on South Carolina roads for 2019 are shown in **Figure 3.6**.

Figure 3.6 Annual Average Daily Truck Traffic, 2019



Source: Highway Performance Monitoring System, 2019.

The data show that daily truck traffic in South Carolina is highest on the Interstate highway system. Portions of I-95, I-26, I-85, and I-77 carry more than 5,000 trucks per day. Several of South Carolina's arterials also carry substantial volumes of trucks. Examples include U.S. 17 between Charleston and Myrtle Beach, U.S. 25 between Greenville and the North Carolina state line, U.S. 123 between Greenville and the Georgia state line, and U.S. 29 between Greenville and Spartanburg.

[7] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018.

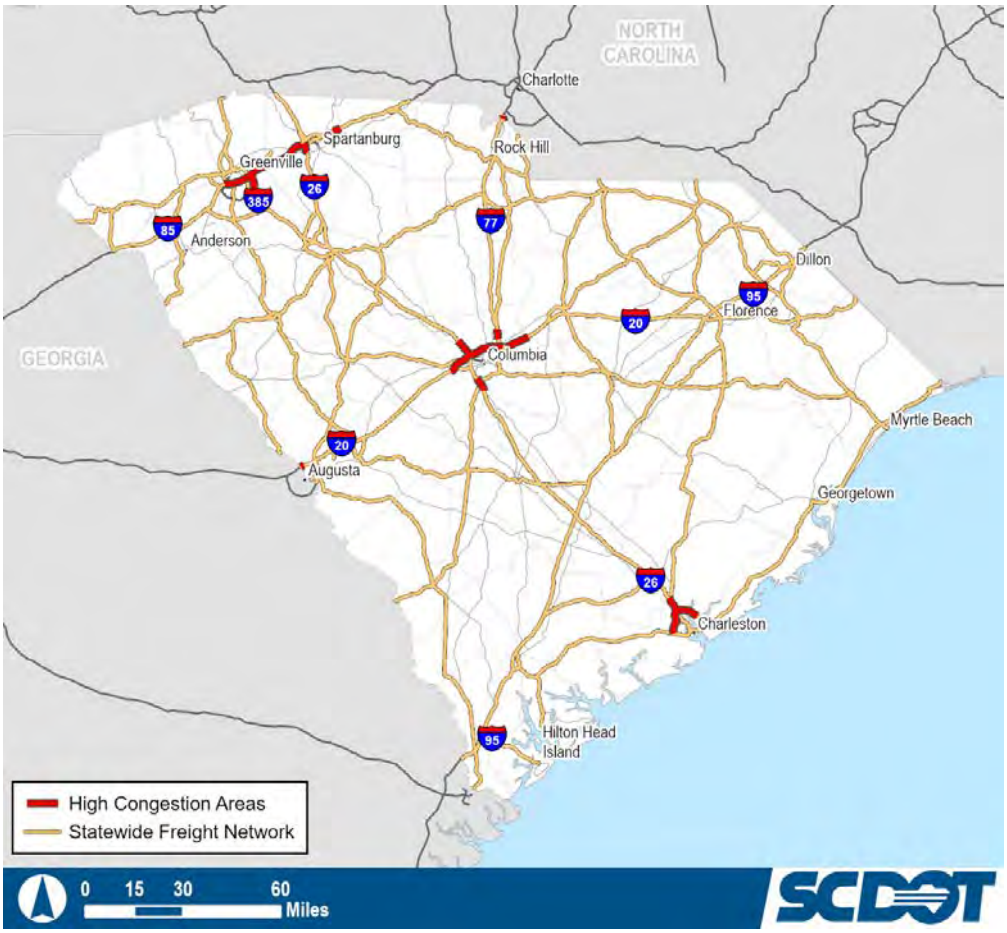
[8] Traffic Computation Method (FHWA-PL-18-027, Federal Highway Administration, August, 2018.

Truck Bottlenecks

Truck bottlenecks negatively impact the mobility and reliability of freight travel. Truck bottlenecks occur when trucks are delayed by slow speeds due to general traffic congestion, truck travel times are inconsistent due to traffic conditions, or where restrictions limit truck travel.[9] This is costly to motor carriers in the form of wasted fuel, missed delivery or pickup windows, and extra time and staff resources that must be factored into schedules to manage around bottlenecks.

Density and Level of Service analyses were completed for the interstate system in South Carolina as part of the SC MTP. The results of these analyses were used to identify 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. **Figure 3.7** illustrates these locations.

Figure 3.7 Freight Bottleneck Locations (2019)



Source: SCDOT.

Pavement Condition

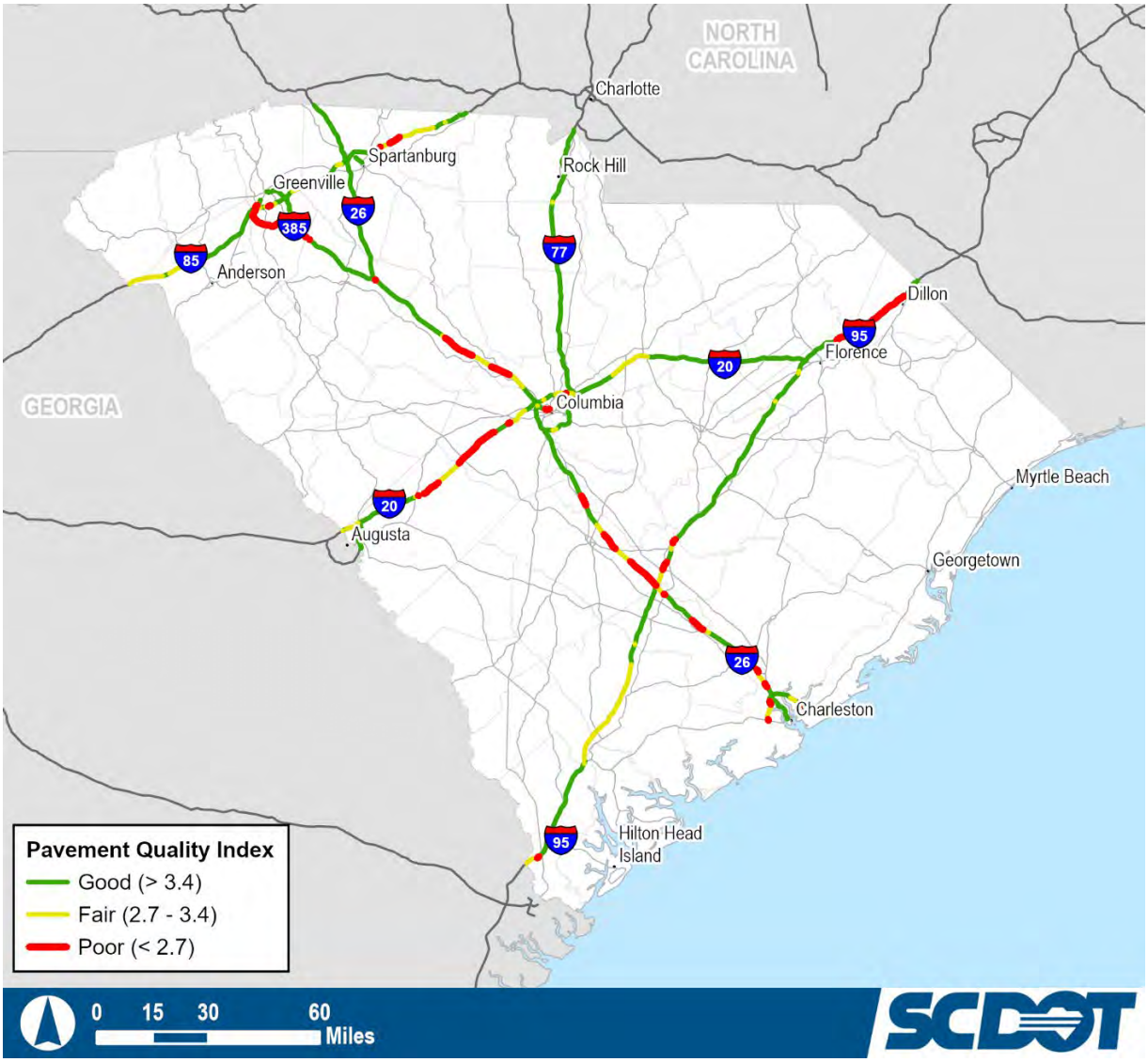
Roadway pavement condition can impact the cost and safety of travel for passengers and freight. Cracked and rutting roadway surfaces can cause additional wear and tear on freight vehicles as well as damage the

[9] FHWA, Truck Freight Bottleneck Reporting Guidebook, FHWA-HOP-18-070, July 2018, https://www.fhwa.dot.gov/tpm/guidance/hop18070.pdf.

goods they are transporting. Poor pavement conditions can also impact congestion and safety if vehicles must avoid potholes or other condition-related hazards.

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. As reported by the SCDOT Planning Office, Transportation Asset Management Unit, the majority of Interstate centerline miles are categorized as being in good condition (78 percent), with 14 percent in fair condition and the remaining 8 percent in poor condition (2021). **Figure 3.8** shows these Interstate pavement conditions, categorized by good/fair/poor with respect to Pavement Quality Index (PQI).

Figure 3.8 Interstate Pavement Conditions (2021)



Source: SCDOT, 2021.

Bridges

Bridges which cannot handle typical truck sizes or weights may contribute to congestion and lead to significant re-routing as trucks must find alternative detours. If a truck cannot pass over a bridge and does not have a close alternative route, the detour can prove costly in both time and money. Three physical

characteristics of bridges located on or spanning the roadway can impact the routing of commercial motor vehicles (CMVs):

- Minimum Vertical Clearance.
- Weight-Load Restrictions (Posted Bridges).
- Bridge Condition Ratings.

Minimum vertical 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 and above, 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.[10] 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.

Since the previous freight plan was adopted in July 2020, 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.

As of mid-2022, there were 230 bridges reported as having less than 16 feet of vertical clearance on interstates, arterials, and collectors. Of those 230 bridges, 108 involve Interstates and are summarized in **Table 3.4** and depicted in **Figure 3.9**.

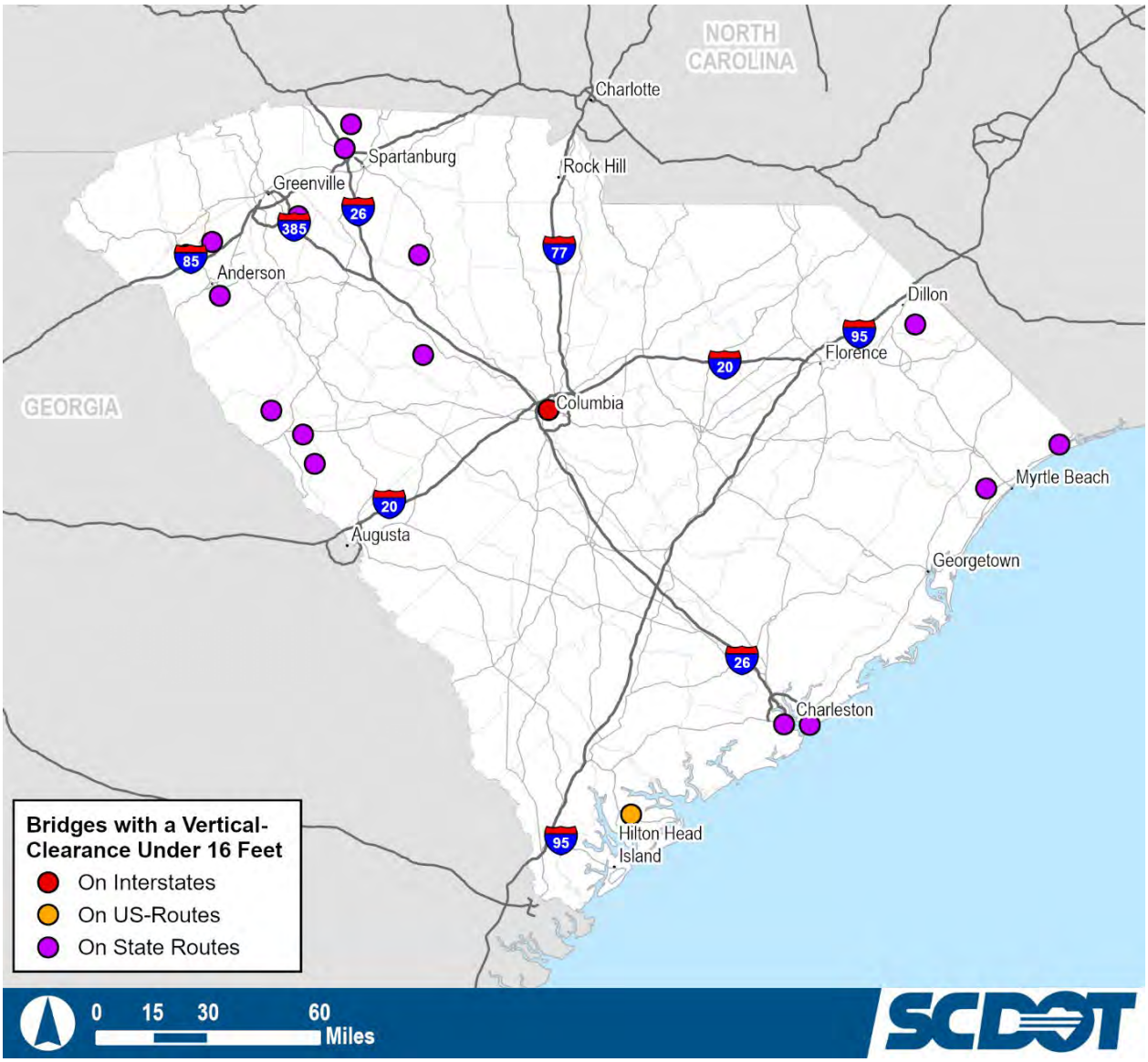
Table 3.4 Bridges with Vertical Clearances Less than 16 Feet on Interstates

Interstate	# Bridges On the Route	# of Bridges Over the Route	Total
I-20	10	3	13
I-26	13	22	35
I-77	7	0	7
I-85	7	14	24
I-95	13	3	16
I-126	4	0	4
I-185	3	1	4
I-526	7	0	7
I-585	1	0	1

Source: SCDOT Road Data Services complied from 2022 bridge maintenance data.

[10] 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.

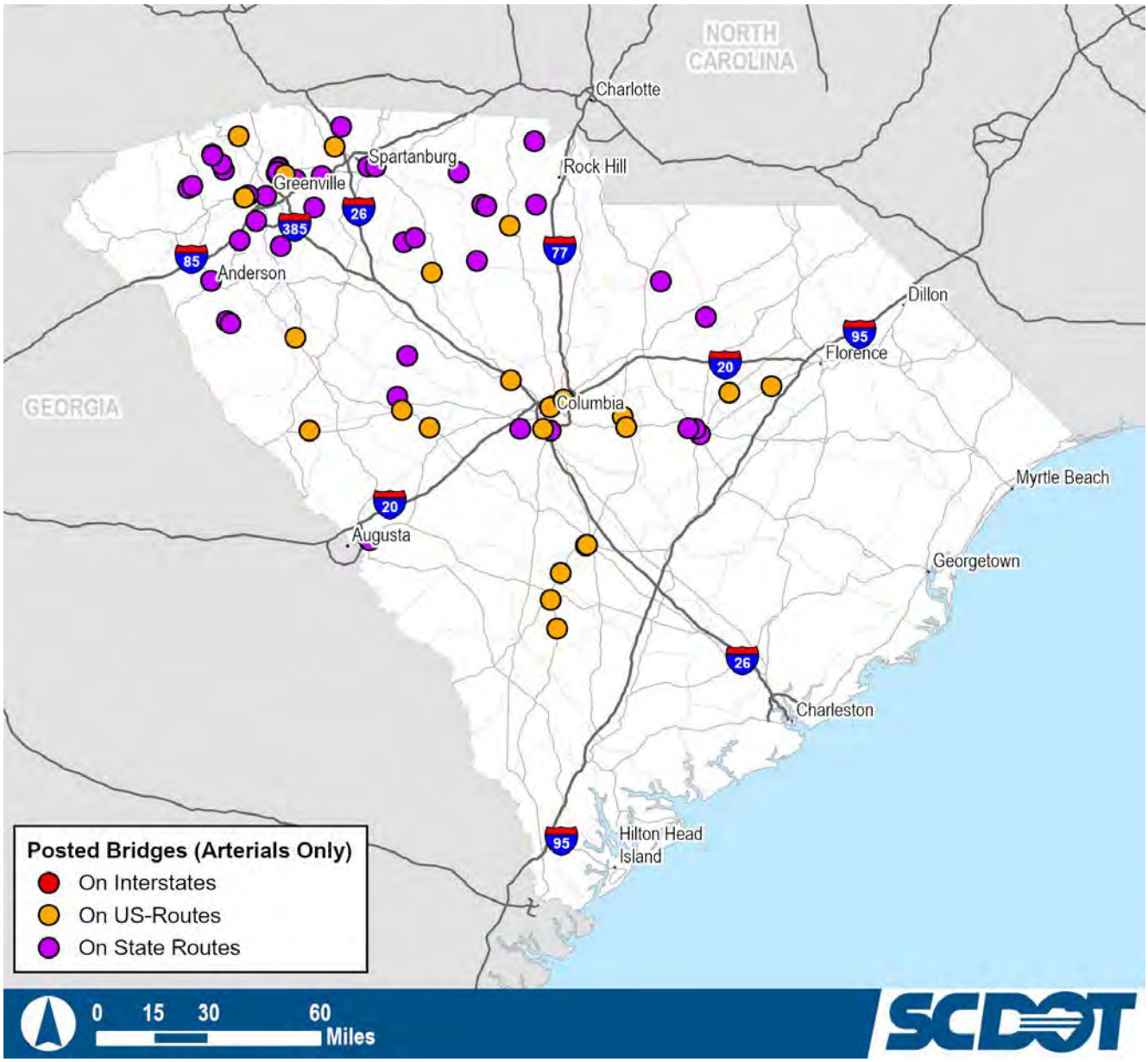
Figure 3.9 Summary of Bridges with Less than 16 Feet of Minimum Vertical Clearance (2022)



Source: National Bridge Inventory, https://www.fhwa.dot.gov/bridge/mtguide.cfm, 2022.

Posted bridges have weight-load restrictions that 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 that could contribute to posting a bridge may be the level of previous use or structural age. In combination, a posting restriction placed on a bridge may range from a simple notation, without any formal limitations, to a more defined restriction stating how much weight and what types of vehicles may use the structure. As of the beginning of 2022, there were 1,465 bridges with specific load restrictions assigned in the state. Posted bridges on arterials only are shown in **Figure 3.10**. It should be noted that currently there are no weight-restricted bridges on the statewide freight network.

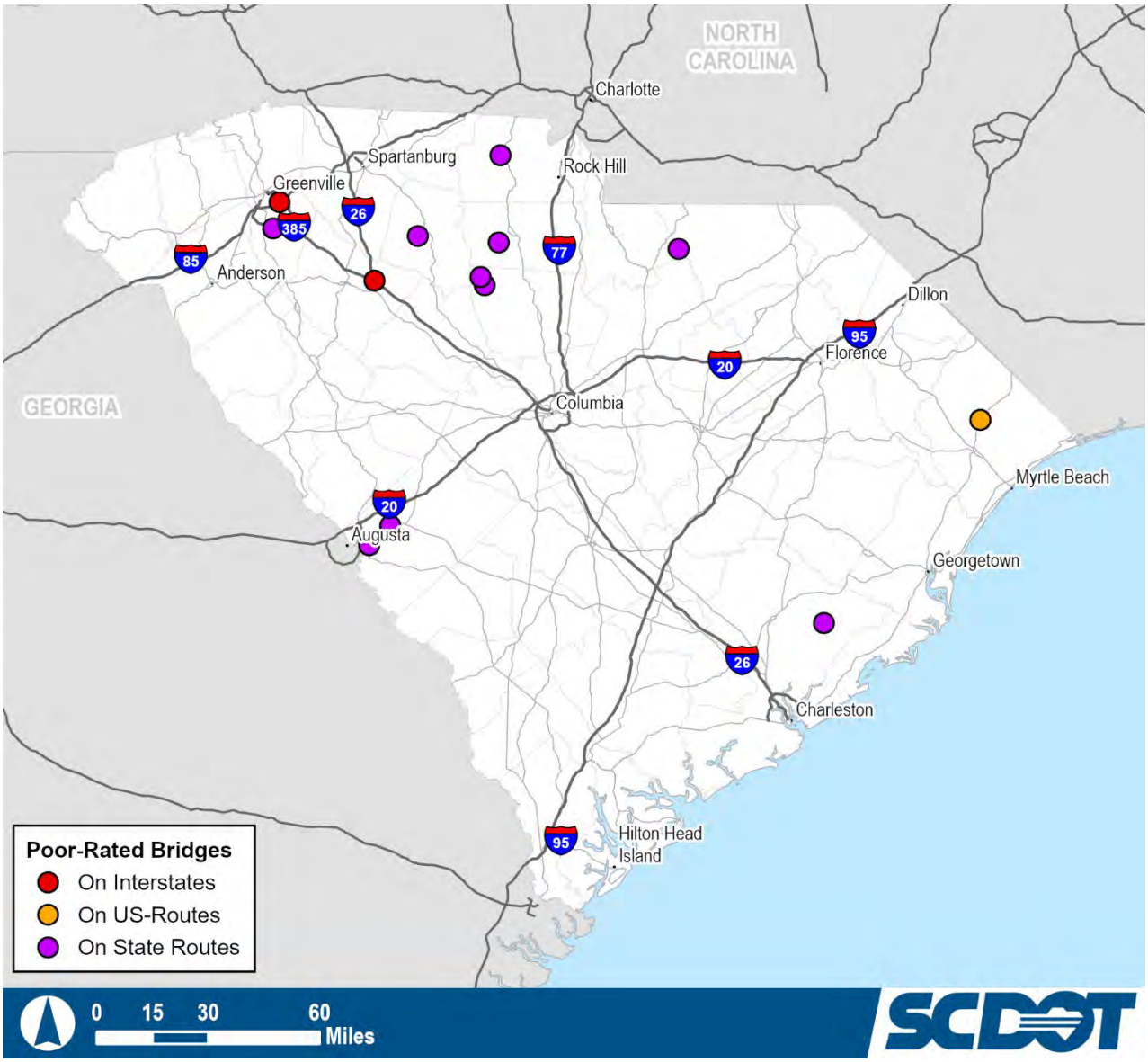
Figure 3.10 Posted Bridges (2022)



Source: National Bridge Inventory, https://www.fhwa.dot.gov/bridge/mtguide.cfm, 2022.

Bridges that are in "poor" condition may not impact the routing of a vehicle driving throughout the state, but may be close to the end of their lifespan and more susceptible to failure. Bridge condition is determined by rating the bridge's deck, superstructure, and substructure each on a scale from 1-9. If any of those values are rated at a four (4) or below, the bridge is considered to be in poor condition. **Figure 3.11** shows the general location of these bridges.

Figure 3.11 Bridges with Poor Condition Ratings



Source: National Bridge Inventory, https://www.fhwa.dot.gov/bridge/mtguide.cfm, 2022.

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 2,651 at-grade crossings located within the state. **Table 3.5** notes the number of crossings by functional classification. **Figure 3.12** illustrates the locations of known crossings on the National Highway

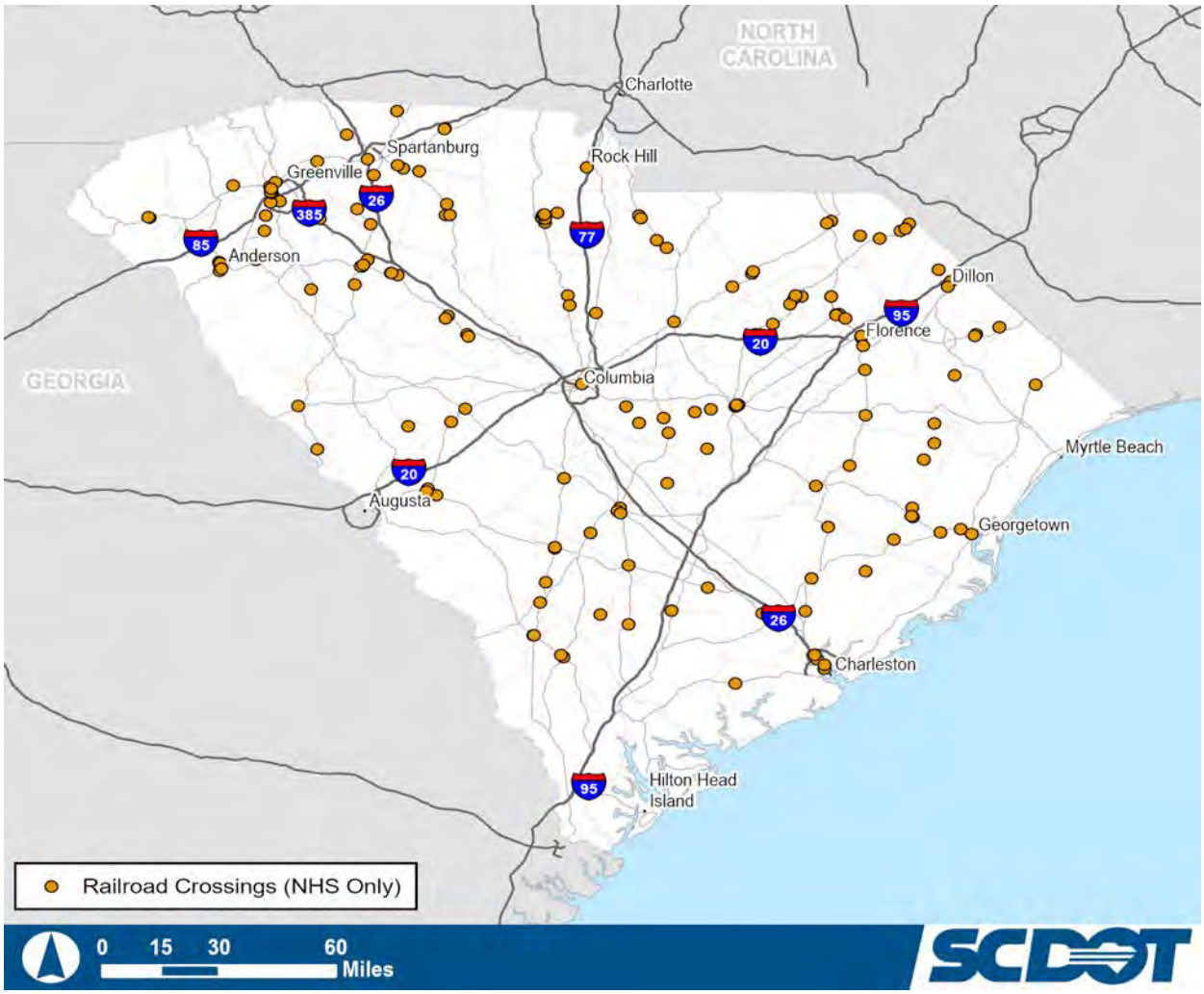
System. **Figure 3.13** indicates crashes involving trucks at railroad crossings during the five-year period from 2017 to 2021.

Table 3.5 At-Grade Railroad Crossings, by Functional Classification

Highway Classification	Total Crossings	At-Grade Crossings	Grade-Separated Crossings
Urban Interstate	4	0	4
Urban—Principal Arterial—Other Freeways & Expressways	0	0	0
Urban—Principal Arterial—Other	95	78	17
Urban—Minor Arterial	171	169	2
Urban—Major Collector	343	337	6
Urban—Minor Collector	7	7	0
Urban—Local	709	705	4
Rural Interstate	3	0	3
Rural—Principal Arterial—Other	33	26	7
Rural—Minor Arterial	51	49	2
Rural—Major Collector	269	267	2
Rural—Minor Collector	59	59	0
Rural—Local	907	905	2
Total Known	**2,651**	**2,602**	**49**

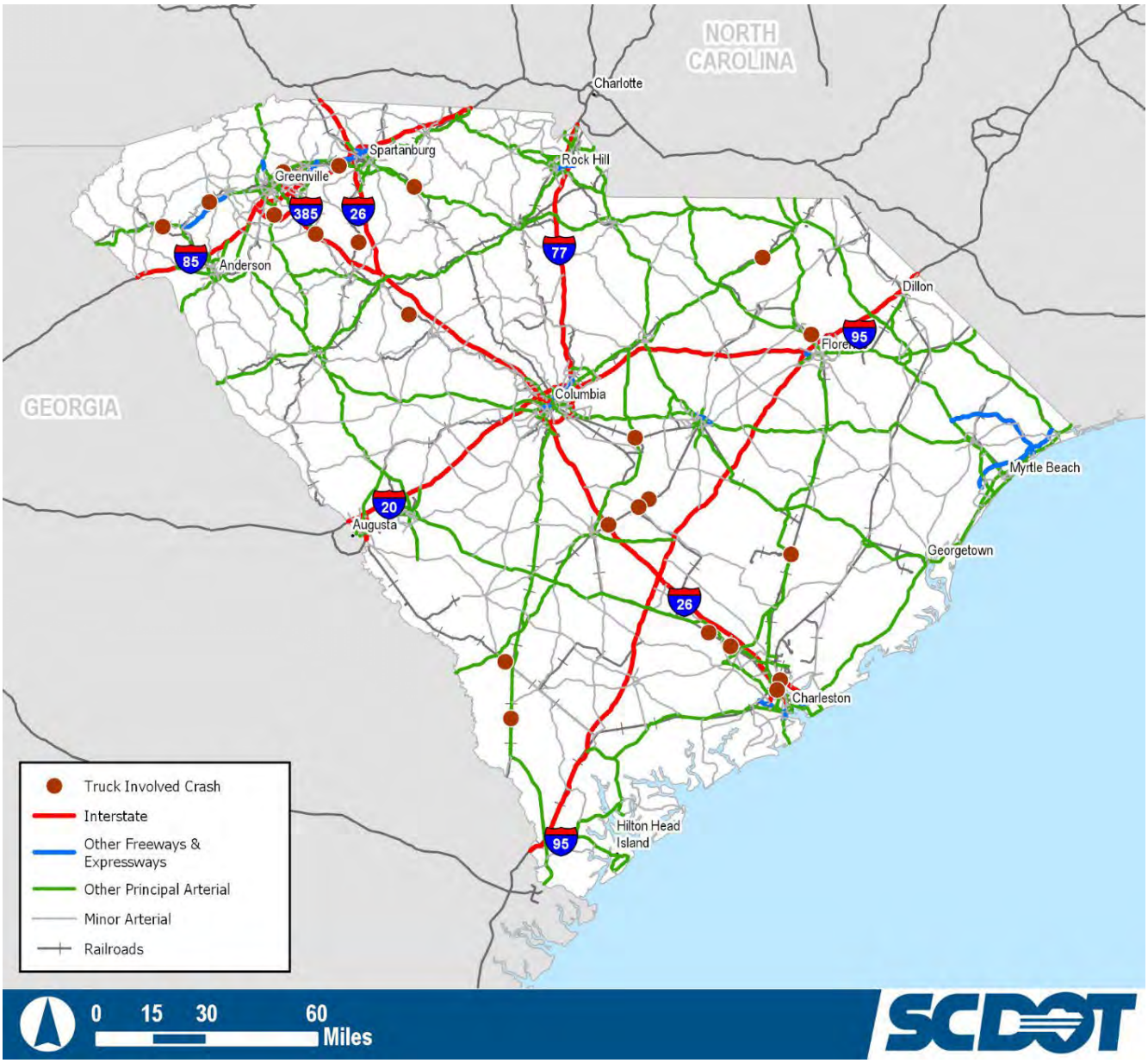
Source: SCDOT Road Data Services, 2022.

Figure 3.12 Railroad Crossings (2022)



Source: Federal Railroad Administration Highway-Rail Crossing Database, https://safetydata.fra.dot.gov/officeofsafety/publicsite/downloaddbf.aspx, 2022.

Figure 3.13 Truck-Involved Crashes at Railroad Crossings (2017—2021)



Source: SCDOT Crash Data, 2017-2021.

Summary of Highway Conditions

With the fourth-largest state network in the Nation, South Carolina maintains a robust highway network with many of the highest-trafficked Interstates in the Nation, especially I-95 and I-85, which connect major cities along the east coast. Recognizing that the efficient and effective movement of people and goods is of paramount importance to the economic and social vitality of South Carolina, SCDOT has sought to aggressively address the states infrastructure deficiencies as noted. Since 2017, with the implementation of its 10-Year Investment Plan, SCDOT has improved 756 miles of rural roads under the Rural Road Safety Program; improved pavement on over 5,800 miles of state-maintained roads; replaced 239 bridges; and addressed mobility issues through capacity improvements on 80 miles of interstates. SCDOT currently operates the State Highway-Rail Crossing Safety Program to improve safety at all public highway-rail grade

crossings. The elements of the existing program address maintenance, operation, and upgrades of crossing safety devices. Other strategies for consideration to improve system reliability and safety include identifying corridors where non-traditional improvement may significantly reduce congestion (e.g., Intelligent Transportation Systems (ITS), Managed Lanes, Value Pricing, etc.) or other enhanced ITS that assist in reducing fatalities and enable effective information and emergency management operations.

3.2 Rail

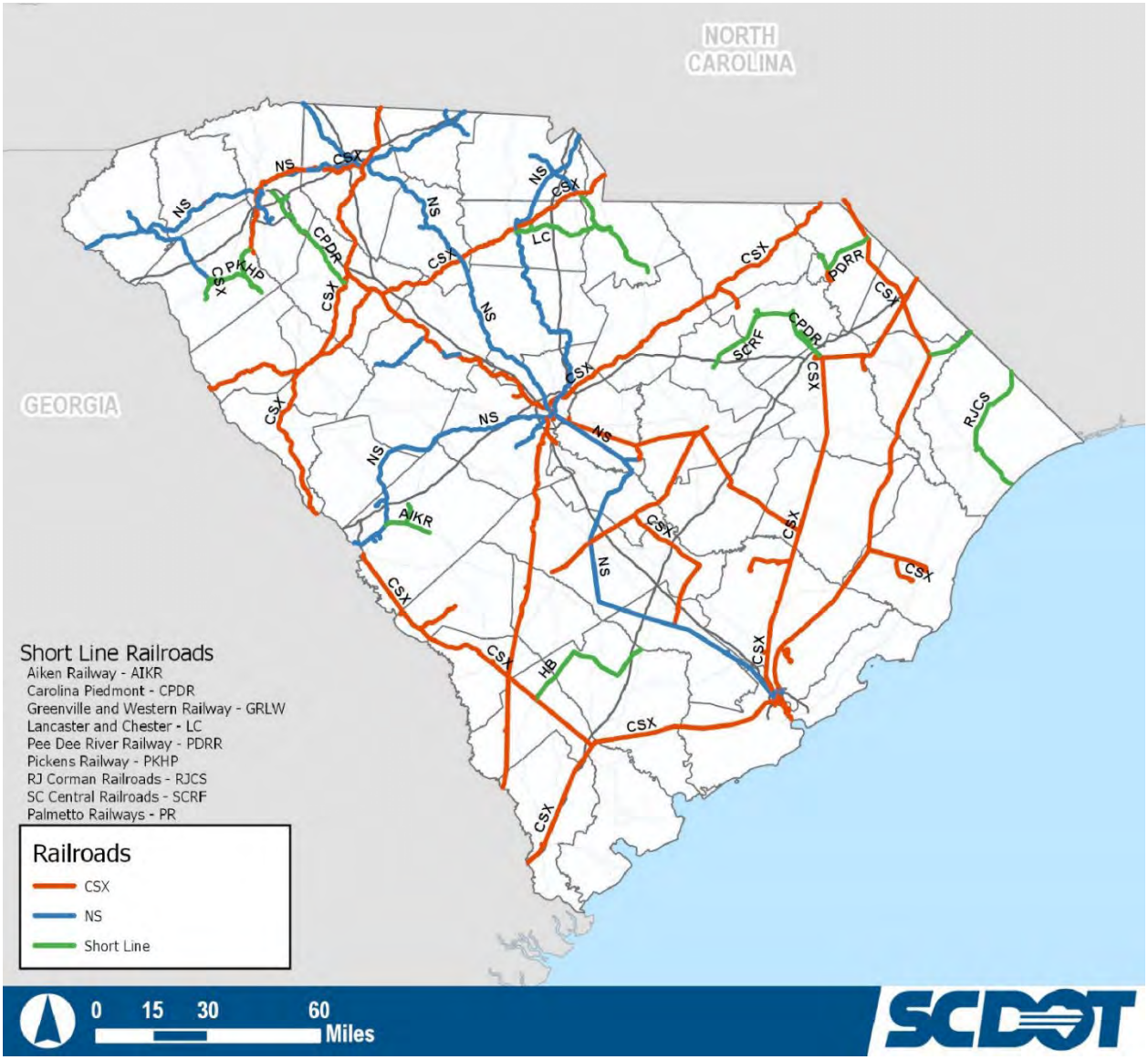
Railroad transport provides a relatively lower cost, higher capacity and low environmental impact landside solution to the long distance movement of goods. Operating a variety of rail car configurations, (e.g., tanker, open top hopper, side load, closed boxcar, flatcar) and the ability to compile trains 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. In 2021, U.S. rail intermodal volume was 14.1 million units and intermodal accounted for approximately 25% of revenue for major U.S. railroads, more than any other traffic category.[11]

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 3.14** illustrates the current rail infrastructure in the state, noting Class I and Class III (Short Lines).

[11] https://www.aar.org/issue/freight-rail-intermodal/.

Figure 3.14 Railroad Infrastructure with Owner Assignments



Class I

There are seven Class I railroads in operation within the U.S.[12] Class I railroads are the largest railroad companies and they operate at the national scale, transporting shipments between various regions of the U.S. Two Class I railroads operate in South Carolina: Norfolk Southern (NS) and CSX Transportation (CSX). Each primarily operates east of the Mississippi River, but often partner with other Class I railroads that generally operate west of the Mississippi River (e.g., Burlington Northern Santa Fe Railway, Canadian National Railway, Canadian Pacific Railway, Kansas City Southern Railway, and the Union Pacific Railroad) for longer distance shipments. Illustrations of the individual coverage or service areas are presented in **Figure 3.15**.

[12] American Association of Railroads classification, railroad with revenues in excess of $378 million.

Figure 3.15 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 20,000 route miles and serves 23 states, the District of Columbia and two Canadian provinces. As South Carolina's largest railroad with 1,764 track 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 agriculture and food, automotive, chemicals, coal, intermodal, metals and equipment, minerals, forest and paper products, phosphates and fertilizers. CSX Intermodal is the intermodal arm of CSX Corporation.

Norfolk Southern Railway (NS)

This Class I railroad operates over 20,000 miles of track and serves 22 states and the District of Columbia. In South Carolina, NS operates 762 route miles and has trackage rights over CSXT from Newberry to Spartanburg. The Norfolk Southern Corporation owns the Norfolk Southern Railway Company. The railroad has a division office in Greenville. Commodities moved over the NS system in South Carolina include automotive, agriculture and forest, metals and construction, chemicals and coal. There are approximately 76 percent outbound and 70 percent inbound intermodal movements.

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, predominantly carry nonmetallic minerals (kaolin, limestone, sand, dolomite, and borate), fertilizers, and agricultural products.[13]

[13] https://scrailroads.org/aiken-railway-company/.

Carolina Piedmont (CPDR)

In 1990, RailTex, Inc. purchased from CSXT and began operating the 33-mile branch line between Laurens and East Greenville as its Carolina Piedmont Division (CPDR). The railroad has 286k capacity, and 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 scrap metal, plastic resin, gas turbines and chemicals.[14]

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, mostly serving the Belton, Cheddar, Williamston, and Pelzer communities. 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 online rail users. Principal online commodities are ethanol, biodiesel, plastics, scrap metal, heavy machinery, 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 Steel, 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 four 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

[14] https://www.gwrr.com/cpdr/.

railroad. This 17-mile line, which began operations on November 15, 1978, extends from State Junction (Cordesville) to Charity Church in Berkley County.

The Salkehatchie Subdivision, formerly Hampton & Branchville Subdivision, is a commercial railroad that runs 40 miles from Hampton to Canadys.[15] The former line was closed due to the local coal industry downturn. Palmetto Railways purchased the assets of the Hampton and Branchville Railroad Company in 2017.

Pee Dee River Railway Corporation (PDRR)

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

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

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

Pickens Railway Company (PICK and PKHP)

The Pickens Railway Company operates 28.5 mile branch between Anderson to Pickens, which interchanges with NS in Anderson and CSXT in Belton. The railroad was first chartered in 1890 and started providing rail services between Easley and Pickens. In 1990, the company obtained a second line from Norfolk Southern, which provides services from Anderson to Honea Path.

The railroad's principal shippers include, among others: Owens Corning, Electrolux, Michelin, First Quality, Southern States Cooperative, PCA, Omnisource, Coveris and Duke Power 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 U.S. 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) broke ground on Moving the Carolinas Forward: A Rural Freight Rail Project. The $17.5 million project, which was funded by a Federal TIGER Grant ($9.7 million) as well as significant

[15] https://www.scdot.org/business/pdf/bridgemaintenance/bigd/AppI.pdf.

contributions from South Carolina and R. J. Corman, was completed in November of 2021. The project included 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.

RJCS track distance is 103.3 miles, and interchanges with CSXT at Mullins. The yard office for RJCS is located in Chadbourn, and the service area predominantly covers Chadbourn, Clarendon, Fair Bluff, Tabor City, Whiteville, Conway, Homewood, Loris, Myrtle Beach, Mullins, and Nichols[16].

South Carolina Central Railroad Company (SCRF) (GWR)

The SC Central Railroad Company, Inc. (SCRF) began operations in December of 1987. Genesee & Wyoming Inc., now owns the railroad and operates 51 miles of mainline. SC Central Railroad 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, fertilizer, lime and waste.

Rail Intermodal Facilities

South Carolina has three rail intermodal facilities in Charleston, where containers are transferred between trucks and trains, with another under construction in Charleston. In addition, rail intermodal facilities in Greer and Dillon serve as inland ports, described below in **Section 3.3**. NS also runs two Thoroughbred Bulk Transfer (TBT) terminals in Columbia and Spartanburg. Both TBTs assist customers in moving a broad array of non-containerized bulk commodities between rail and trucks. The Spartanburg TBT is located 5 minutes from Interstates 1-85, I-585, and I-26 and primarily handles ethanol, plastics, dry or liquid chemicals, and food-grade products.[17] The Columbia TBT is located southwest of Columbia, opened in 2013, and currently has a capacity of 18 cars primarily handling dry or liquid bulk, chemicals, and plastics.[18] An intermodal facility just across the border at the Charlotte-Douglas airport in Charlotte, NC is also strongly connected to the freight system in SC.

3.3 Sea and Inland Ports

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 3.16**. The South Carolina Ports Authority (SCPA) operates five facilities, which are located in or near the city of Charleston and boasts designation as a top 10 U.S. container port. The Port of Charleston is the largest in South Carolina. In calendar year 2020, in terms of

[16] https://www.rjcorman.com/companies/railroad-company/our-short-lines/carolina-lines-rjcs.

[17] https://www.rsilogistics.com/blog/rsi-logistics-to-operate-norfolk-southern-thoroughbred-bulk-terminal-in-spartanburg-sc/.

[18] https://www.rsilogistics.com/rail-solutions/rail-terminal-services/columbia-sc/.

dollar value of goods handled by U.S. Seaport Districts, the Port of Charleston ranked sixth with a total value of $72,705 million handled.[19] In fiscal year 2022 (July 2021 – June 2022) SCPA handled 2.85 million twenty-foot-equivalent units (TEUs), a 12% increase over the previous fiscal year. SCPA has invested over $2 billion to improve the port's capacity and efficiency to keep the fluidity of cargo. The Charleston Harbor Deepening Project, which completed in November 2022, deepened the harbor from 45-feet to 52-feet, which allows the biggest vessels to call on the port at any time of the day, regardless of tides[20]. This depth makes SC Ports more competitive, helping to attract new ship services, first-in-calls and more cargo to South Carolina. Up until August 2022, fifteen ship-to-shore cranes have been operated at the Wando Welch Terminal at Port of Charleston. SCPA voted to purchase six rail-mounted gantry cranes on Sept. 20, 2022, to accelerate the Navy Base Intermodal Facility project, along with the barge facility improvement at the Wando Welch Terminal, which is funded by the S.C Legislature.[21]

In October 2022, SCPA announced its partnership with Palmetto Railways, CSX and NS to develop the Navy Base Intermodal Facility, which will provide near-doc rail to Charleston. The facility will be located one mile from the Leatherman Terminal. In addition, SCPA will also be developing an inner-harbor barge operation that will serve the new Navy base facility, acting as a marine highway between the facility and the Wando Welch and Leatherman terminal. The new intermodal facility and barge operation are scheduled to open in summer 2025.[22] Having such a rail yard facilities will increase Charleston Port's competitiveness compared with adjacent ports, and improve the connectivity between Charleston Port and other inland ports. Given the convenience of rail freight transporting near the port, will also reduce truck freight and truck traffic on local roadways.

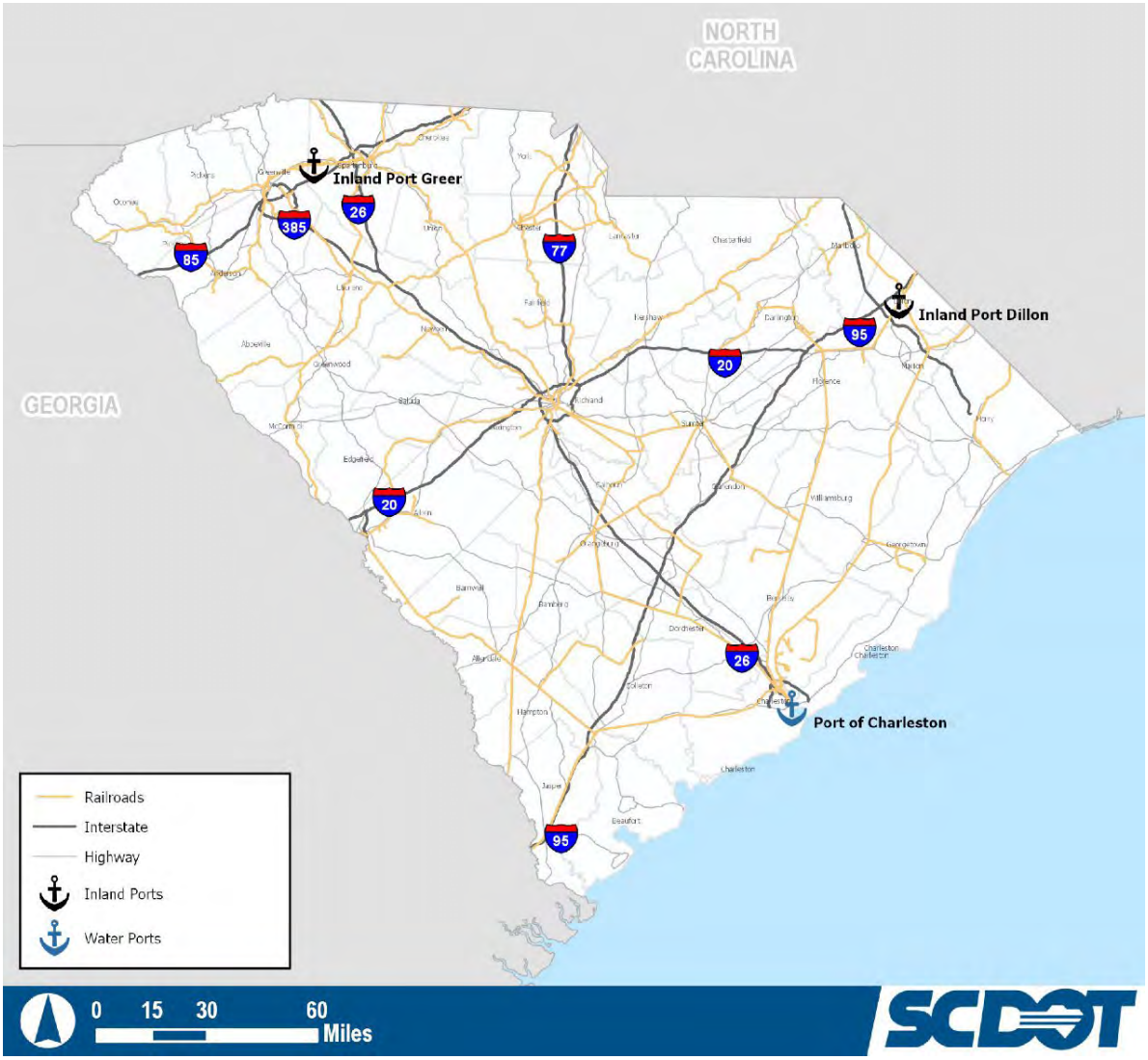
[19] https://scspa.com/about/statistics/cargo-value/.

[20] https://scspa.com/facilities/port-expansion/.

[21] https://www.postandcourier.com/business/crane-purchase-puts-charleston-ports-rail-yard-project-on-fast-track/article_d77c20f0-3b48-11ed-8b12-bba7b6c52c69.html.

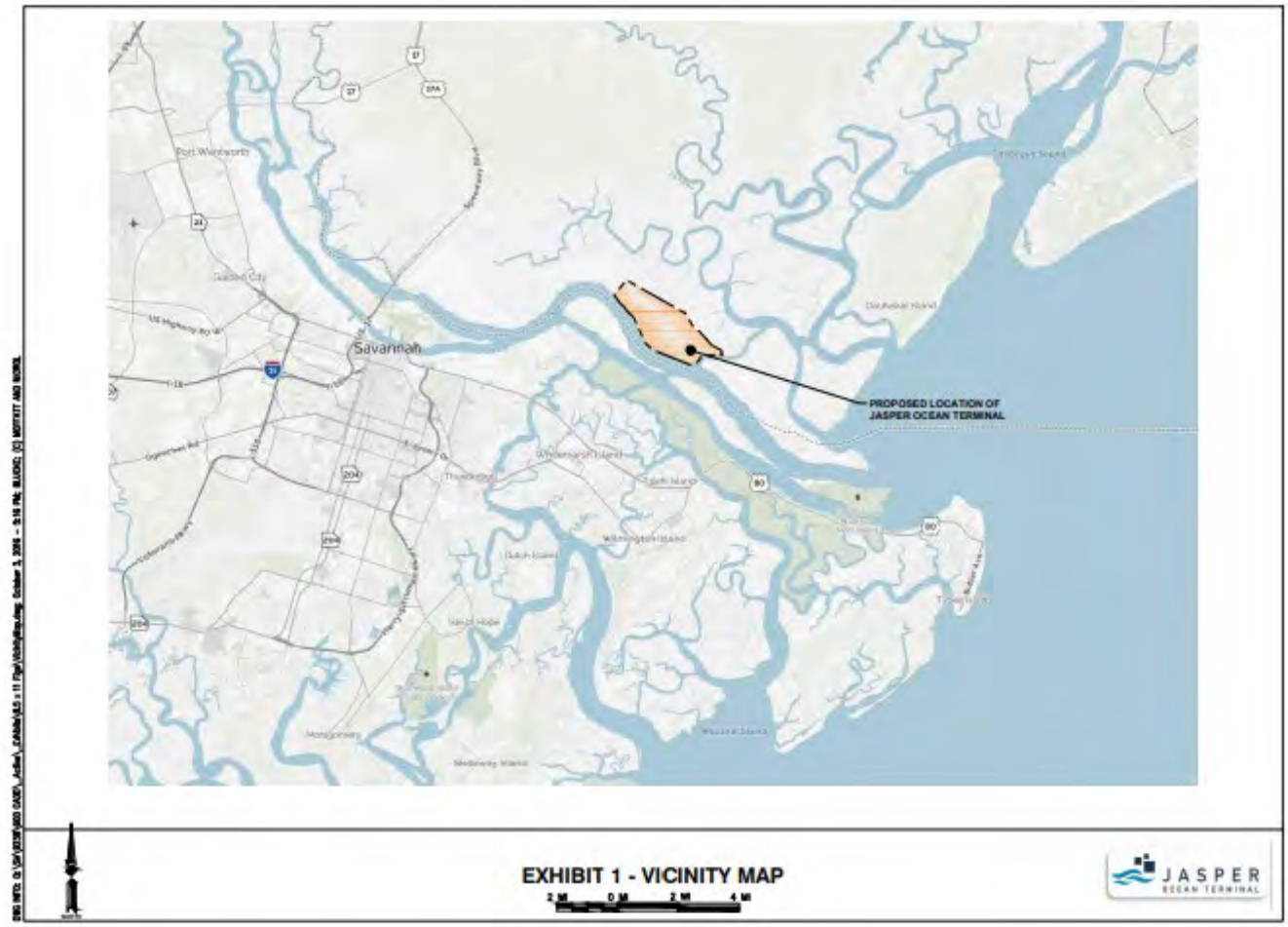
[22] https://www.freightwaves.com/news/sc-ports-to-construct-intermodal-facility-to-serve-charleston.

Figure 3.16 Water and Inland Ports of South Carolina



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 3.17**). The U.S. Army Corps of Engineers Charleston District is preparing an Environmental Impact Statement to assess the potential impacts associated with the construction and operation of a new marine container terminal on the Savannah River by the Jasper Ocean Terminal Joint Venture, a partnership between the Georgia Ports Authority (GPA) and the SCPA. The JOT marine container terminal will be constructed on an approximately 1,500-acre site (an existing Dredged Material Containment Area) on the north bank of the Savannah River in Jasper County, South Carolina across the Savannah River from Elba Island in Chatham County, Georgia.

Figure 3.17 Proposed Jasper Ocean Terminal (JOT)



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

The proposed JOT would use 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. The proposed JOT is being designed for the GPA and the SCPA to meet the current forecasted demand for additional containerized cargo for the Port of Savannah and the Port of Charleston through the Design Year 2050.

South Carolina Inland Ports

There are two inland ports in South Carolina located in Greer and Dillon. Inland Port Greer was first put into operation in 2013 and provides services between the Charleston Port and the I-85 Corridor.The Inland Port Greer, in partnership with Norfolk Southern, is currently under expansion as a result of funding from a Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary 2018 grant award. The project will make freight rail infrastructure improvements to expand and improve the Inland Port Greer (IPG), extend the IPG lead track, and lengthen the NS Carlisle Siding which will increase shipping capacity and

alleviate bottlenecks along the mainline route between IPG Greer and the Port of Charleston. Total project costs are $51.1 million, of which $25 million is Federal BUILD program funding and the remaining non-Federal share split between SCPA and NS.

Inland Port Dillon commenced operation in 2018. Located in close proximity to I-95, Inland Port Dillon gives importers and exporters in the eastern Carolinas a powerful option for connecting supply and demand. Using CSX rail to/from the Dillon market gives cargo owners the ability to control costs and reduce inland truck miles.

3.4 Air Cargo

Air cargo typically consists of mail products and higher value freight commodities. Numerous entities are participants in this mode, e.g., freight forwarders, and deferred air carriers. In this mode, goods are physically transported on cargo-configured aircraft or in the "belly" or luggage compartments of passenger aircraft. Air freight, the most expensive mode for shippers, has relatively strict restrictions on the commodities that can be shipped and frequently require connections to other freight modes, such as rail and truck, to transport cargo to final destinations. Currently, none of the state's airports are served directly by rail. In terms of cost efficiency, customers may shift to less expensive but slower modes of transportation by modifying their needs.

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 3.18** illustrates the major airports in South Carolina. The FAA classifies six of the airports as “primary.” Among the six primary commercial airports, Charleston AFB/International Airport, Greenville-Spartanburg International Airport, and Columbia Metropolitan Airport are the major freight airports serving South Carolina.

Greenville-Spartanburg International (GSP) Airport is one of the busiest airports in South Carolina. As **Figure 3.19** shows, it outperformed the other commercial airports in South Carolina and handled the largest amount of cargo in 2021 among the three major commercial airports. FedEx is the largest cargo tenant at the airports. Other major tenants include American Airlines Cargo, Delta Cargo, Southwest Cargo, Senator International Freight Forwarding, and UPS. The airport handled 54,721 tons of freight in 2020 and 87,351 tons in 2021, which is a sixty percent increase[23]. The GSP Airport Master Plan forecasted the airport will experience a compound annual growth rate between 3.2 percent and 6.1 percent in air cargo, and the current air cargo facilities are not sufficient for handling future needs. In the master plan, the airport proposed a four-phase Air Cargo Apron and Building Expansion project. [24] In May 2022, the U.S. Economic Development Administration awarded GSP $5.2 million based on the Rescue Plan Act for infrastructure improvement, which facilitates the airport to continue to expand air cargo services[25].

Columbia Metropolitan Airport (CAE) is the predominant airport located the central part of South Carolina, serving FedEx, UPS, and Mountain Air Cargo. The airport handled 36,684 tons of air cargo in 2020 and 32,698 tons in 2021. Due to the pandemic, the airport experienced an eleven percent decrease in air cargo from 2020 to 2021. In 2022, the airport received approximately $4.2 million from the Federal Aviation

[23] https://gspairport.com/statistics/.

[24] https://gspairport.com/wp-content/uploads/2022/07/GSP-Executive-Summary-for-Web-Viewing.pdf.

[25] https://gspairport.com/statistics/.

Administration (FAA), and part of the funds will be used to redesign and rehabilitate the taxiway system to accommodate larger cargo aircraft accommodate UPS's largest aircraft Boeing 747-8.

Figure 3.18 Commercial Airports, South Carolina

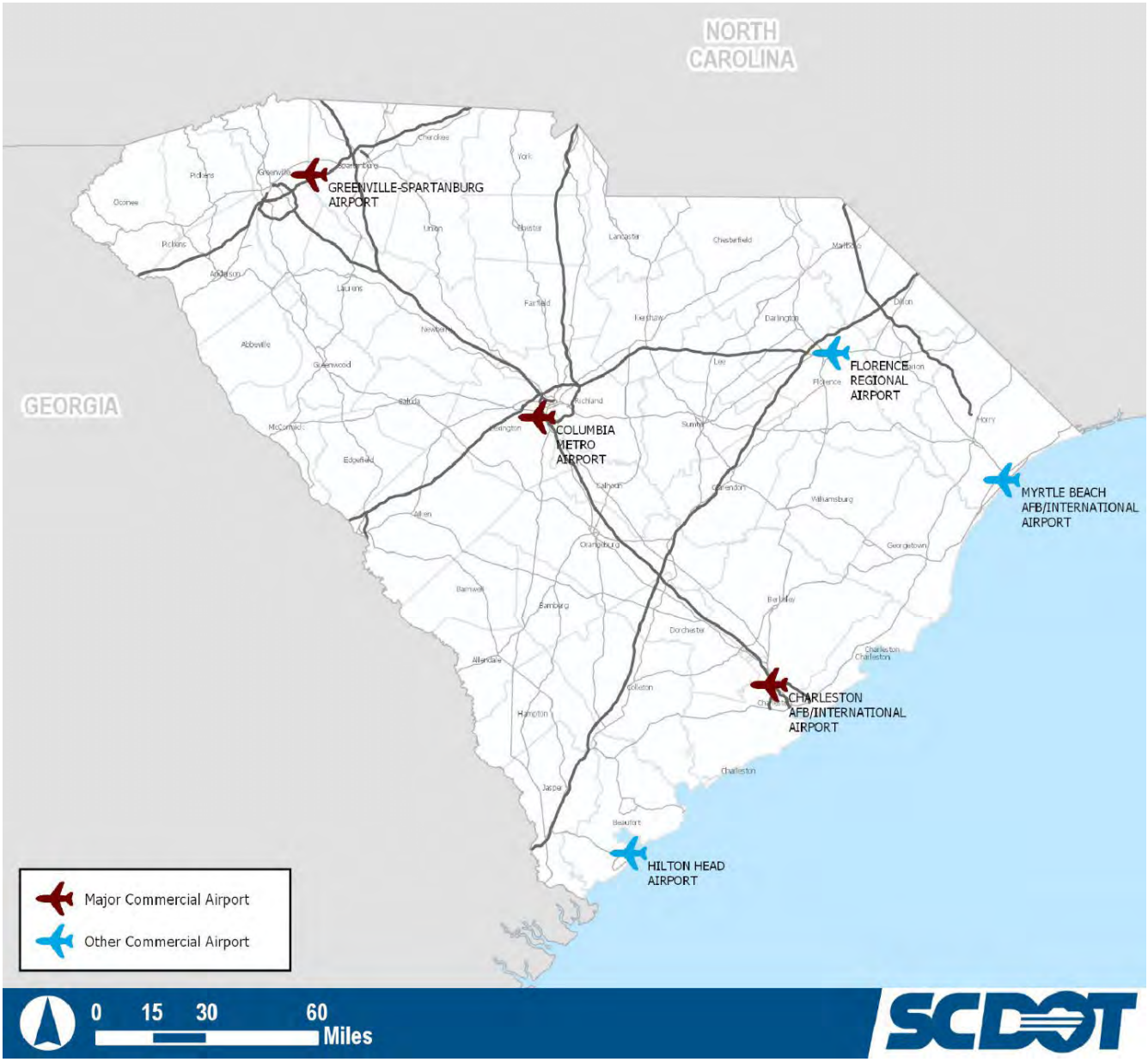
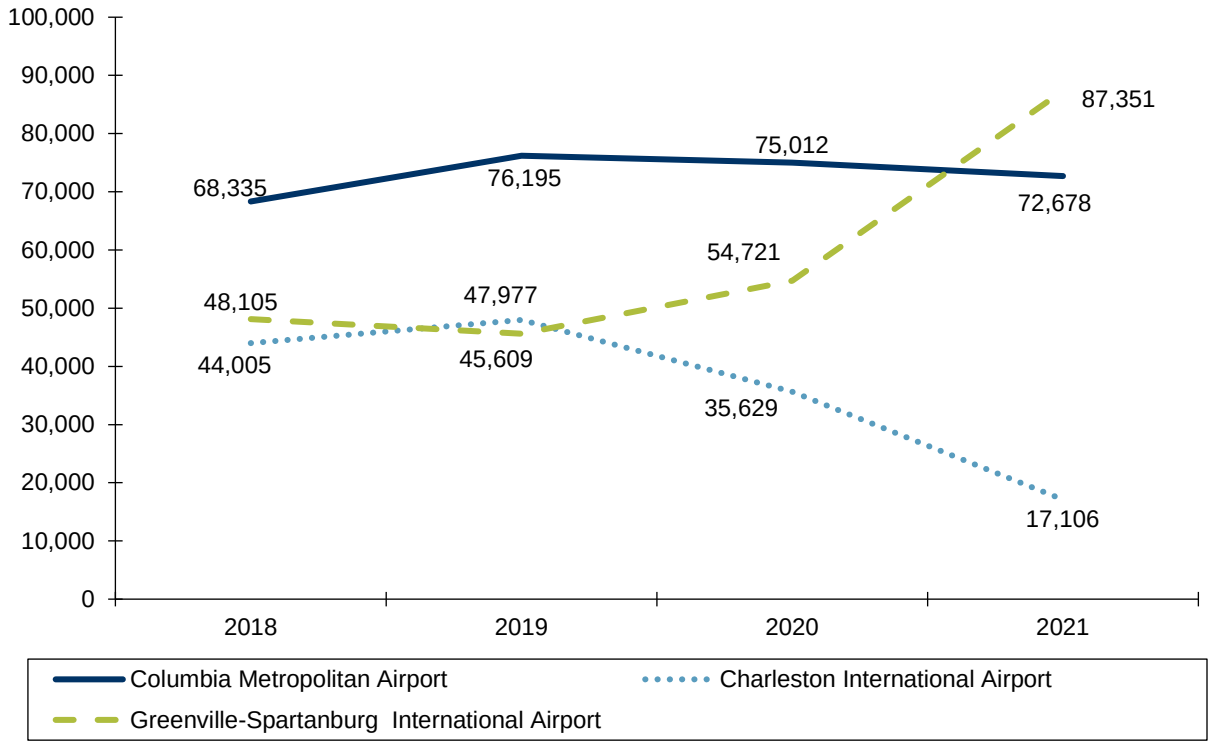


Figure 3.19 Major Commercial Airport Cargo Trend, 2018—2021



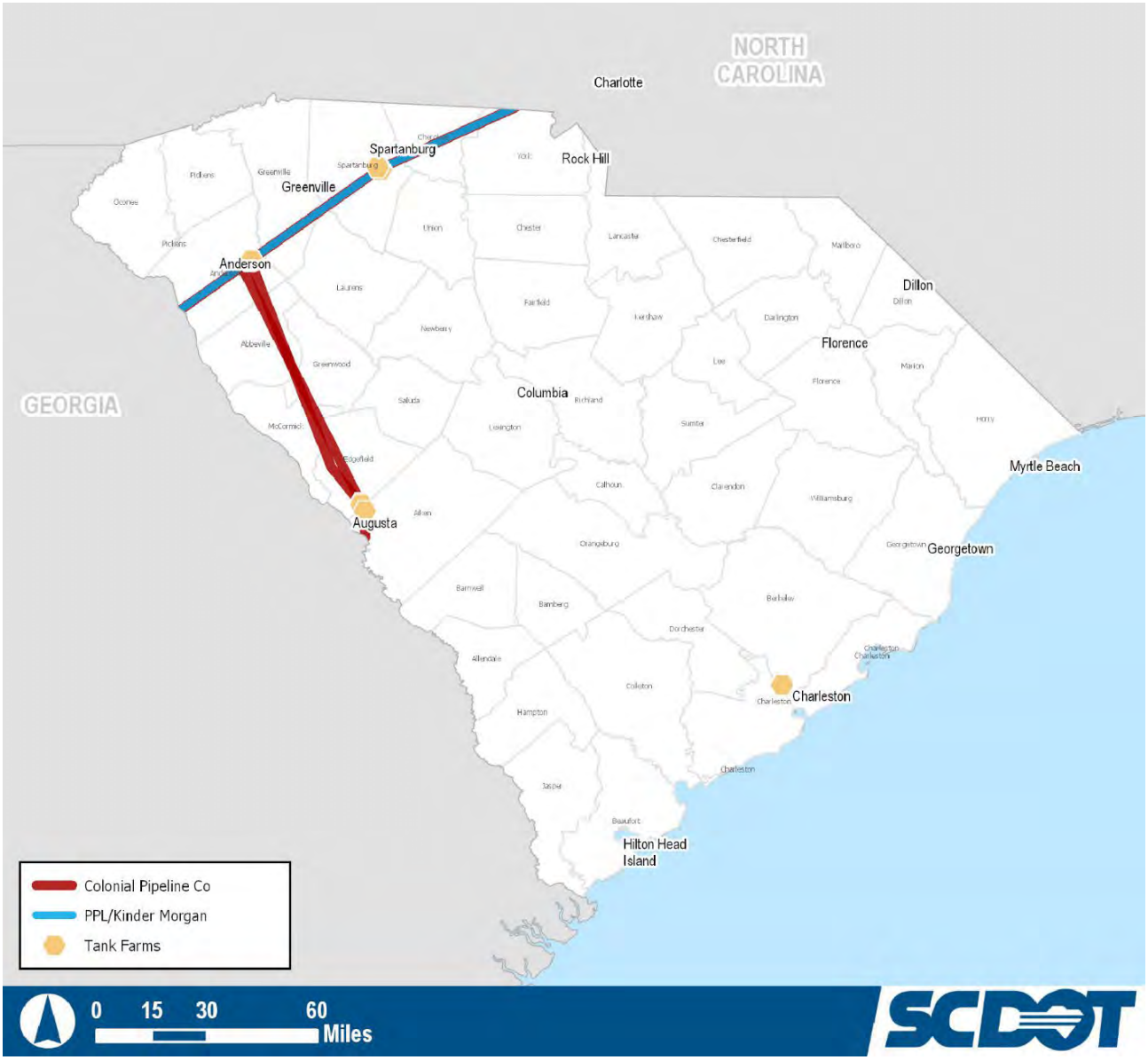
Source: Charleston County Aviation Authority Operation Summary, CAE Detailed Statistics, GSP Cargo Statistics, for 2018–2021.

3.5 Pipeline

Pipe freight specializes in a few commodities, including gas, liquids, and fluids. However, pipeline can transport large volumes of commodities with relatively less impact from weather and traffic compared to other modes of freight transport.

South Carolina ranks in the top one-fourth of the states in per capita motor gasoline expenditure, and ninety percent of the state's total petroleum consumption is from the transportation sector. However, the state has neither crude oil reserves nor petroleum refineries. All petroleum products consumed in South Carolina are imported from other states via the Charleston Port or two pipelines. Figure 3.20**Figure 3.20** depicts the major petroleum product pipelines and associated major tank farms, where tanker trucks fill up for distribution to fueling stations and other petroleum users. The Colonial Pipeline operates 5,500 miles of pipe throughout 14 states in the Southern and Eastern United States and runs through the northern part of South Carolina. The Pipe Line Corporation (PPL), formerly known as the Plantation Pipeline and now operated by Kinder Morgan. The major pipeline terminals are in Belton, Augusta, and Spartanburg.

Figure 3.20 Petroleum Pipelines in South Carolina and Major Tank Farms

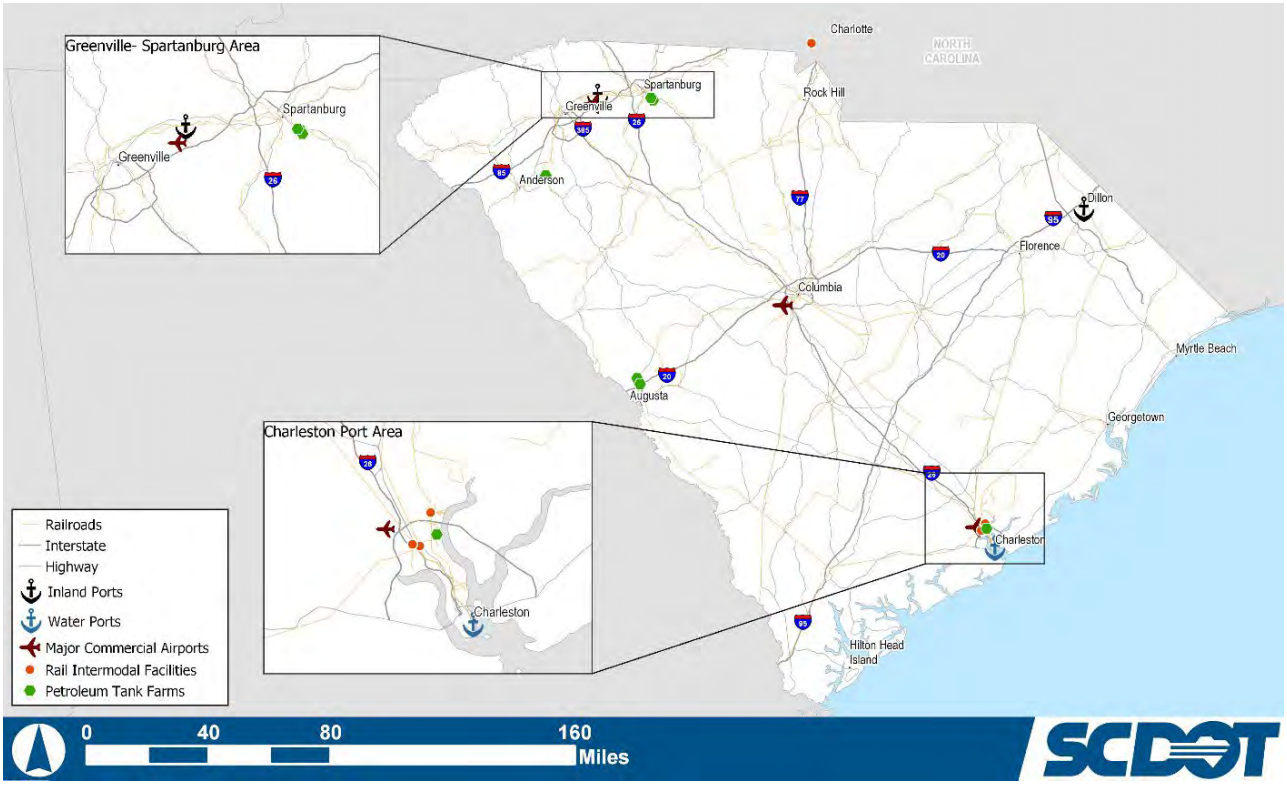


Source: U.S. Energy Information Administration.

3.6 Summary of Freight Transfer Facilities

To facilitate the efficient usage of individual modes (e.g., truck, rail, air, ship, pipeline) 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. **Figure 3.21** shows all of the intermodal transfer facilities described in the previous sections.

Figure 3.21 Location of Existing Freight Intermodal Facilities



3.7 Environment and Equity Impacts

Resilience of Freight to the Impacts of Extreme Weather and Natural Disasters

The personal and economic well-being of South Carolina and its residents is dependent upon the ability to move freight across South Carolina's transportation network effectively. Extreme weather and natural disasters such as storms (hurricane, tornados), flooding, wildfires and earthquakes can disrupt and impact freight mobility. While the state has avoided the worst impacts associated with hurricanes of recent years, the state regularly declares a state of emergency due to hurricane-related flooding for any hurricane that makes landfall in the eastern United States (including the recent Hurricane Ian).[26] The last Category 4 hurricane to make landfall in the state, Hurricane Hugo, caused between $8-10 billion in damage.[27]

Resiliency is the capacity for resistance and recovery or having the capability to mitigate disruptions and greatly limit the impact of those that occur.[28] The FAST Act required the consideration of projects and strategies to "improve the resilience and reliability of the transportation system" in the planning process. The South Carolina Office of Resilience (SCOR) was established in September 2020 by SC Code §48-62-10 and exists to increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters. The Office is currently in the process of developing a Strategic Statewide Resilience and Risk Reduction Plan to

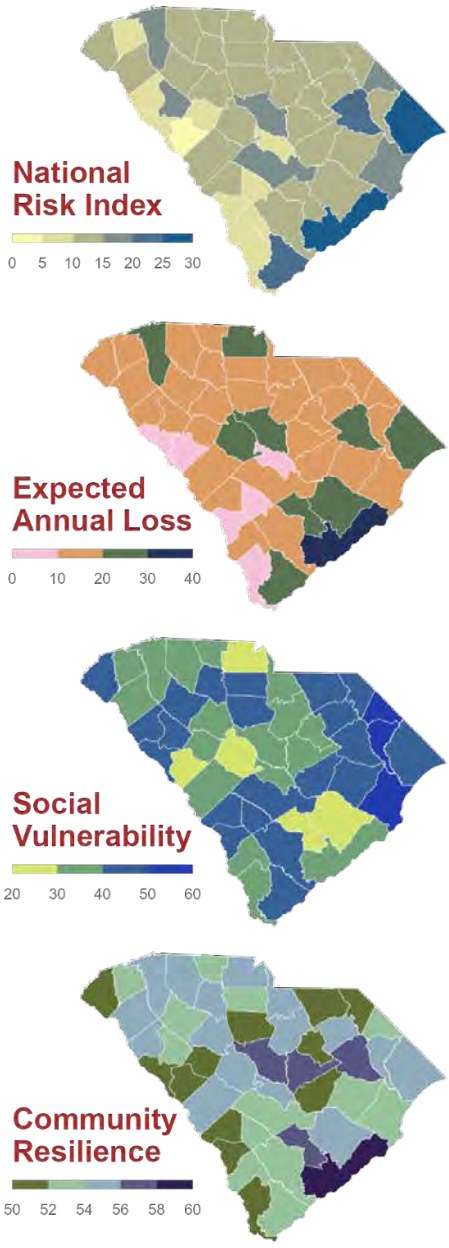
[26] https://scemd.org/news/south-carolina-prepares-for-hurricane-ian/.

[27] https://www.weather.gov/ilm/hurricanehugo.

[28] Baking Resiliency into Freight Mobility Planning

identify major flood risks around the state, and identify potential losses that could occur as a result of extreme weather events. Once complete, the Plan will provide strategies for local governments to implement resilience in their communities.

Figure 3.22 FEMA National Risk Index Components for South Carolina



Other key resources used to assess the state's vulnerability include the Hazard Vulnerability Assessment Tool (HVA) developed with support of the South Carolina Department of Health and Environmental Control (DHEC) in partnership with the Governors' South Atlantic Alliance, which suggests that there are more than 1,400 structures vulnerable to erosion within 50 years. This study found that the highest rates of shoreline erosion occur along oceanfront and inlet shorelines, with a mean erosion rate of approximately 2.12 m/year from the 1800s to the 2000s. Docks, seawalls, bulkheads, and revetments can provide protection to areas that have been identified as vulnerable, but can also translate erosion to adjacent, unprotected shorelines.[29]

In South Carolina, the Federal Emergency Management Agency (FEMA) reports that the areas of highest exposure are located along the coast.[30] FEMA publishes the National Risk Index (NRI), an online mapping application that identifies communities and counties most at risk to identified natural hazards. The NRI can help in prioritizing resilience efforts by visualizing natural hazard risk metrics with data scoring about expected annual losses from natural hazards, social vulnerability and community resilience.

Expected Annual Losses represents the average economic loss in dollars resulting from natural hazards each year, measured against other communities at the same level. Social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood, measured against other communities at the same level. Each of these two scores is proportional to a community's risk, with a higher score resulting in a higher overall Risk Index score. Community resilience is the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. This score contributes in a more positive manner to the overall Risk Index score. **Figure 3.22** illustrates South Carolina's Risk Index.

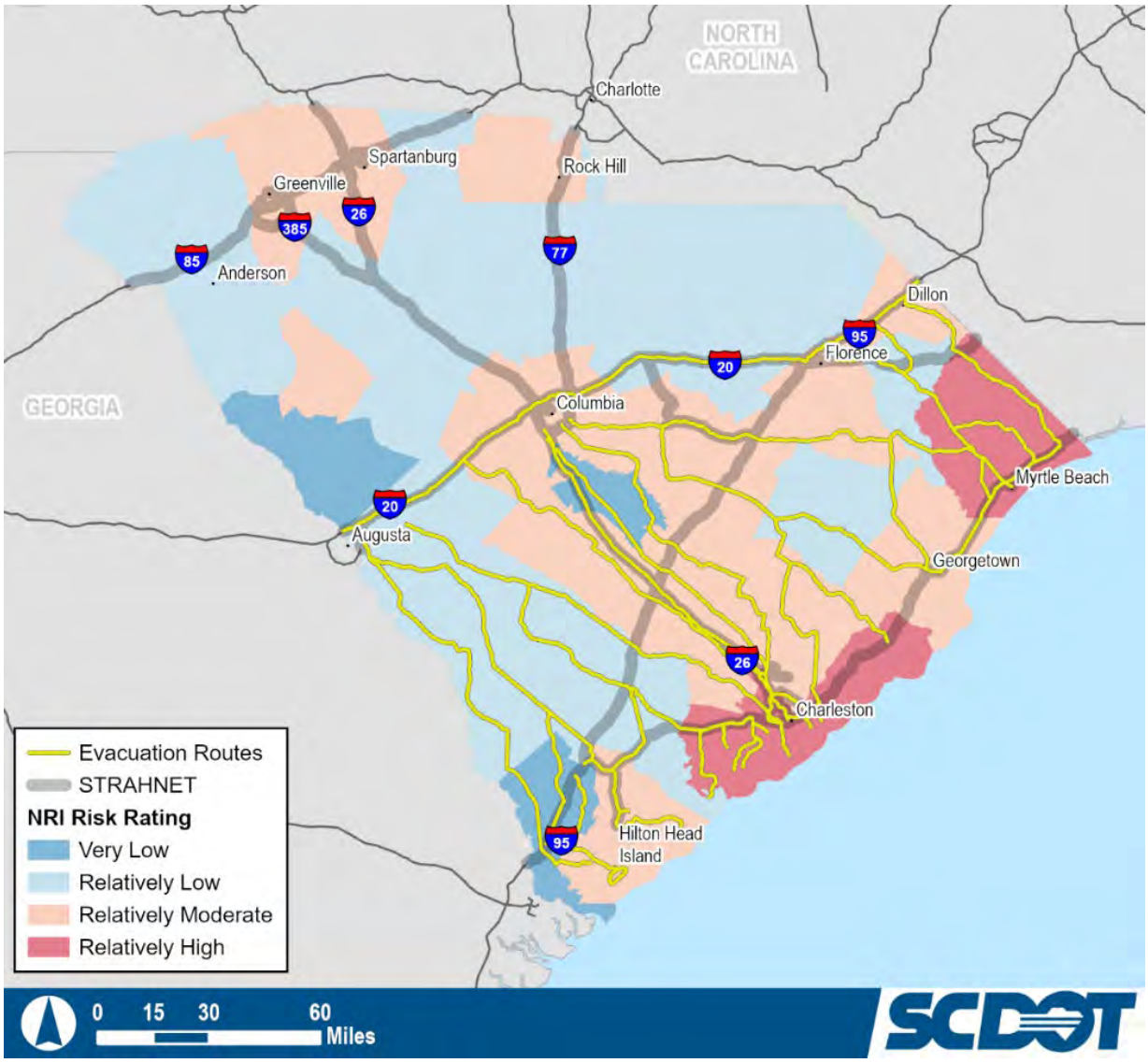
In South Carolina, areas of high risk identified as 'Relatively High' risk are served by evacuation routes to direct traffic away from coasts to I-20 and I-95 (**Figure 3.23**). Evacuation routes are predetermined so all motorists can make an evacuation plan during periods of predicted hazardous weather or other events. Traffic along certain sections of major evacuation routes can be adjusted to flow in one direction away from

[29] https://scdhec.gov/environment/your-water-coast/ocean-coastal-resource-management/hazard-vulnerability-assessment-tool.

[30] FEMA. 2022. National Risk Index. https://hazards.fema.gov/nri/map#.

the coast. State and local law enforcement post at traffic control points along these evacuation routes to guide motorists to safety.

Figure 3.23 South Carolina Evacuation Routes



Source: Cambridge Systematics, FEMA (2022).

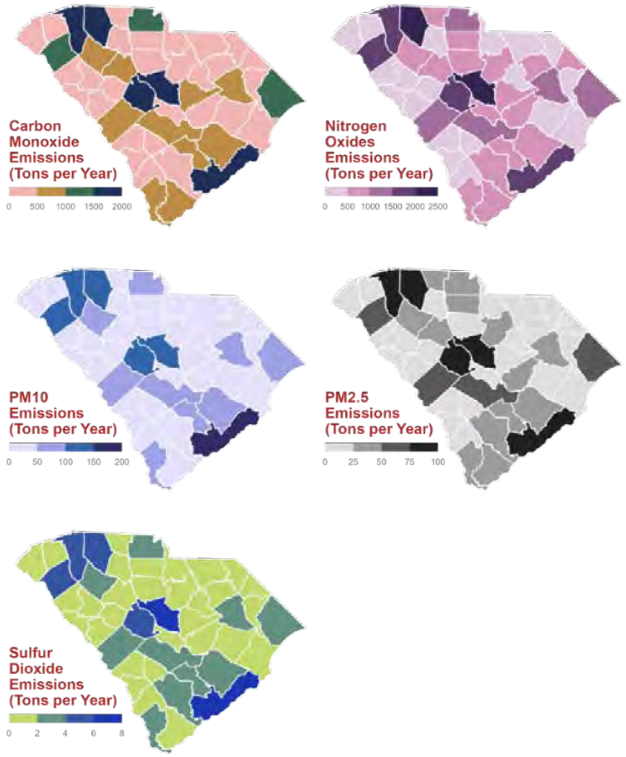
To mitigate the impacts of extreme weather and natural disasters on freight, SCDOT relies on a combination of current and future planning and construction. Present planning for extreme weather includes the funding of 82 permanent gauges and 16 rapid deployment gauges across the state which are part of the U.S. Geological Survey (USGS) Stream Gauging Program. This program provides for the collection of stream flow and elevation data that SCDOT utilizes in the development of bridge and crossing hydraulic equations. The results of those equations provide a baseline mitigation standard that SCDOT uses for the design and building of roadways and bridges. SCDOT presently uses the 50 year storm as the design and construction standard for the states prominent freight corridors which include primary roads such as interstates, freeways, arterials and collectors. For secondary roads, SCDOT presently uses the 25 year storm as the design and construction standard. In addition to providing data for design and construction, the stream flow and elevation data offers SCDOT the ability to respond rapidly to extreme weather in order to better protect the motoring public and to better preserve the state's current transportation assets.

SCDOT is also a core agency within the South Carolina Emergency Operations Plan (SCEOP). The SCEOP is an all-hazard plan developed for use by state government departments and agencies to ensure a coordinated and effective response to natural, technological, or man-made disasters that may occur in South Carolina. The plan and associated processes are organized to correspond to the four phases of emergency management: mitigation, preparedness, response, and recovery. State agencies use the SCEOP in preparing, marshaling and distributing resources, and in providing services and assistance during disasters and extreme weather events. SCDOT is the Lead Agency for ESF-1 (Transportation) and responsible for the coordination of all ESF-1 administrative, management, planning, training, preparedness, mitigation, response, and recovery activities related to securing and supporting South Carolina's multimodal transportation network. SCDOT's core responsibilities in responding to disasters and extreme weather events include Prevention/Protection, Response, Recovery, and Mitigation. SCDOT also provides statewide support where appropriate across other emergency support functions.

Impacts of Freight Movement on Local Air Pollution

Combustion engines, tire wear and braking all produce a range of air pollutant emissions, regulated by the U.S. EPA in accordance with the Clean Air Act (as amended) as criteria air pollutants. As required, the U.S. EPA periodically conducts a comprehensive review of the scientific literature on health and welfare effects associated with exposure to these pollutants, which includes a wide variety of negative health effects including asthma, respiratory disease, headaches, fatigue, cardiovascular disease, and early death.[31] In South Carolina, the U.S. EPA's 2017 National Emissions Inventory Data (2021) shows that EPA emissions associated with heavy-duty gasoline and diesel vehicles are concentrated at truck bottleneck locations (**Figure 3.24**).[32] PM10, or very fine particulate matter, is slightly more concentrated near the Port of Charleston, likely as a result of port-related traffic patterns. Sulfur dioxide and nitrogen oxides emissions are highest during periods of acceleration and idling,[33] and are concentrated in areas with frequent congestion. Transportation projects can affect a wide spectrum of environmental components. Early identification of impacts to the environment allows for avoidance, minimization, or timely mitigation of those impacts. Environmental impacts must be balanced with the public's need for safe and reliable transportation systems. South Carolina air quality continues to comply with all National Ambient Air Quality Standards (NAAQS). The only exception to this is the portion of York County located closest to Charlotte, North Carolina, which has been designated "nonattainment." Within our State's nonattainment area, transportation projects are modeled

Figure 3.24 Gasoline and Diesel Heavy-Duty Vehicle Criteria Air Pollutant



Source: Cambridge Systematics, 2017 NEI On-Road Diesel and Gasoline Heavy Duty Vehicles.

[31] U.S. EPA. 2013. America's Children and the Environment, Third Edition. https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NCEE&dirEntryID=217843.

[32] U.S. EPA. 2021. 2017 National Emissions Inventory (NEI) Data. https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

[33] B. Ashok, et. al. 2022. Sulfur Emission. NOx Emission Control Technologies in Stationary and Automotive Internal Combustion Engines. https://www.sciencedirect.com/topics/engineering/sulfur-emission.

against and comply with plans for improving air quality. SCDOT also works with regional MPO's on development of Regional Air Quality Plans and Models (where appropriate) to ensure minimal air quality impacts and adherence to NAAQS. As SCDOT is in the process of updating its Statewide Long Range Transportation Plan to be BIL compliant, consideration will be made to include targets to reduce total emissions from freight sources that will then be incorporated in future Statewide Freight Plan updates sources that will then be incorporated in future Statewide Freight Plan updates.

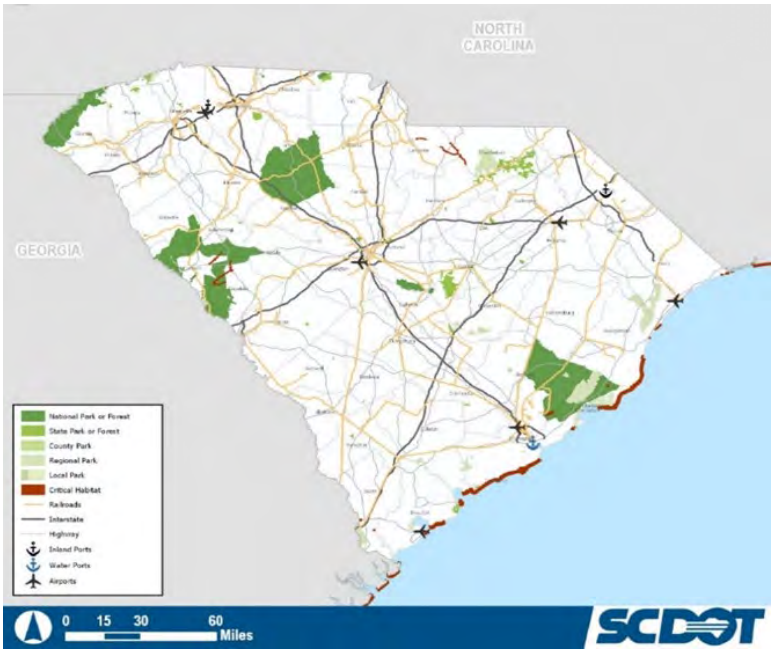
Impacts of Freight Movement on Flooding and Stormwater Runoff

Goods movement impacts flooding and stormwater runoff due to highways, airports, freight rail terminals, and other freight assets having substantial amounts of impervious surfaces. Incorporating green infrastructure such as bioswales, planter boxes, and street trees into the multimodal freight network can help to filter surface pollutants from stormwater runoff before they enter water bodies and generally serve as another layer of flooding control for freight assets. It can also help to preserve existing, aging gray infrastructure (e.g., curbs, gutters, pipes) as green infrastructure would divert some stormwater before it enters those systems.

Impacts of Freight Movement on Wildlife Habitat Loss

Transportation networks intertwine with wildlife habitats and can have adverse effects such as loss of habitat, degradation of habitat quality, crashes that can reduce animal populations, and population fragmentation and isolation. Consideration of the effects of transportation on wildlife and mitigation projects that facilitate movement of animals across transportation infrastructure helps support the natural patterns of wildlife. Specifically, in South Carolina fish require a healthy environment to survive and reproduce. Essential Fish Habitat (EFH) includes all types of aquatic habitat that is tidally influenced (for example, wetlands, coral reefs, seagrasses, and streams) where fish spawn, breed, feed, or grow to maturity. Impacts from coastal and marine development threaten to alter, damage, or destroy these habitats. SCDOT works to avoid, minimize, or mitigate for these impacts through consultation with the NOAA NMFS. As shown in **Figure 3.25**, South Carolina is home to several state parks, national parks and forests, and national forests that serve as wildlife habitats, some with close proximity to the statewide freight network.

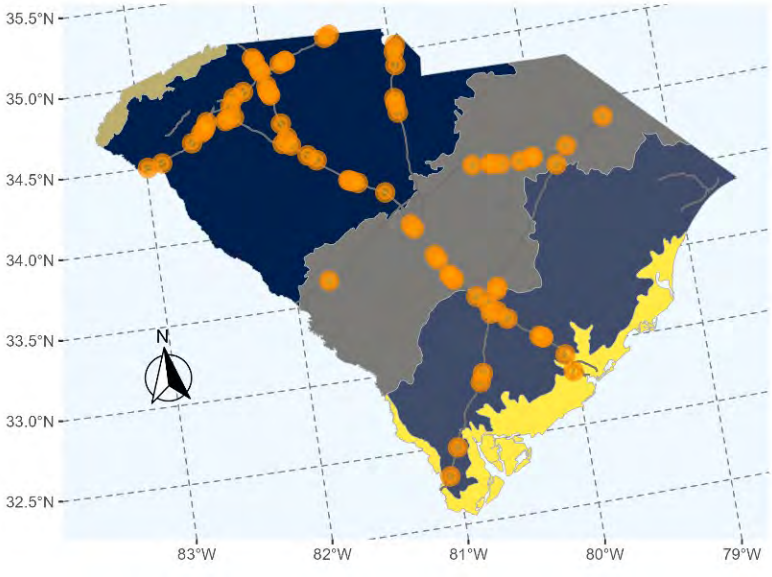
Figure 3.25 Parks and Critical Habitat in South Carolina



Several areas in the state have been identified as critical habitats for threatened and endangered species by the United States Fish and Wildlife Service (USFWS). Threatened, endangered, priority, and unique species found in these locations include the Carolina Heelsplitter (freshwaster mussels located primarily in inland areas), Diamondback Terrapin (turtle located on the coast), Gopher Tortoise (located on inland areas), Manatee (located on coasts), Redeye bass (located in the Savanah Basin), Robust Redhorse (sucker fish located in rivers), Sea Turtles (located on coasts), and Oysters (located on coasts).[34]

Figure 3.26 shows interstate Animal-Vehicle Crashes by Ecoregion, informed by two datasets: SCDOT safety data and ecoregions identified by the U.S. EPA and other state and Federal agencies.[35] Animal-vehicle crashes for the last five years (2017-2021) were identified in the crash data where the probable cause for the crash involved a live animal. For this analysis, only crashes involving trucks (specifically, truck tractor) that occurred on the National Highway Freight Network (i.e., interstates) are shown. In South Carolina, there were 78 non-fatal crashes from 2017-2021. In **Figure 3.26**, crashes are shown with corresponding ecoregions, or areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. Ecoregions often support similar wildlife and may correspond with migration routes that benefit from particular attention. SCDOT relies on the NEPA process to identify issues that require mitigation, such as wildlife crossings, as a project is developed. When NEPA identifies wildlife as an issue, design accommodations are considered.

Figure 3.26 Animal-Truck Crashes on the National Highway Freight Network by Ecoregion (2017-2021)



Equity Considerations

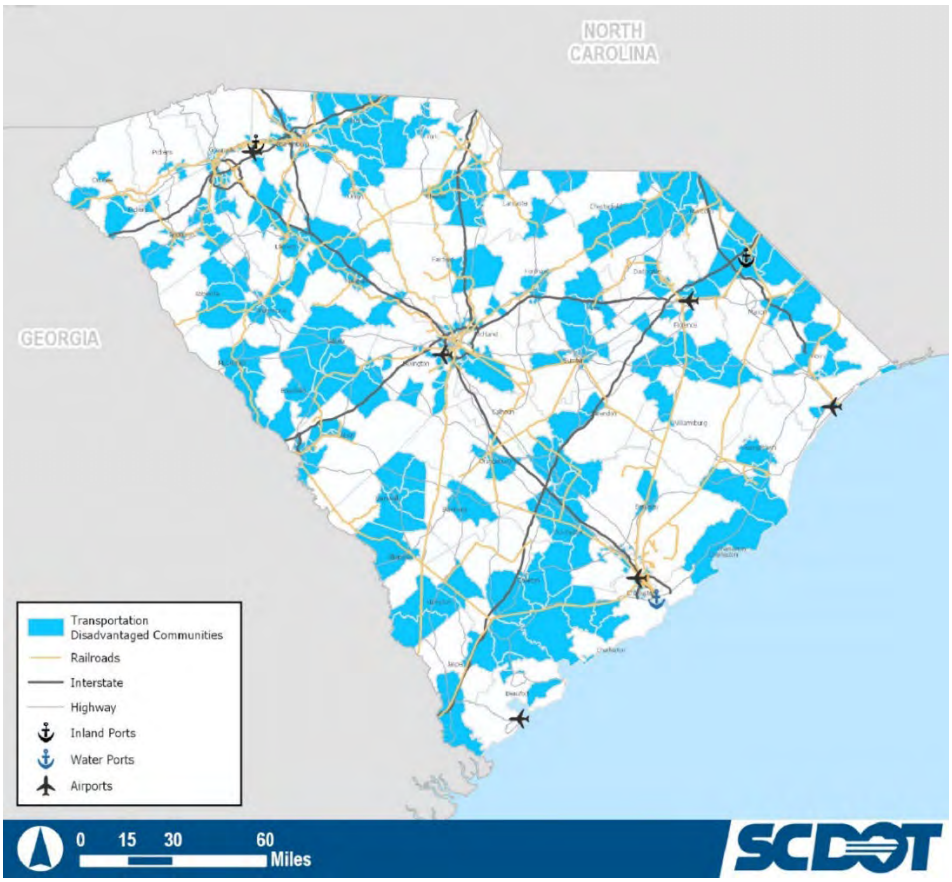
Transportation equity seeks to ensure that the benefits and burdens of the transportation system are equitably distributed and provide fairness in mobility and accessibility to meet the needs of all community members. Under Federal Executive Order 13985 (January 2021), equity is defined as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment. The South Carolina Multimodal Transportation Plan follows the U.S. DOT definition for disadvantaged communities, which classifies Census tracts as disadvantaged or non-disadvantaged according to six factors including transportation access, health disadvantage, environmental disadvantage, economic disadvantage, resilience disadvantage, and equity disadvantage.[36] **Figure 3.27** shows disadvantaged communities in South Carolina in relation to state infrastructure. As shown, there are areas of concentration throughout the state.

[34] https://www.dnr.sc.gov/wildlife/wildconserv.html.

[35] http://ecologicalregions.info/htm/reg4_eco.htm

[36] https://usdot.maps.ArcGIS.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a.

Figure 3.27 Transportation Disadvantaged Communities in South Carolina Identified by U.S. DOT Under the Justice 40 Initiative



SCDOT recognizes the diversity of the state and strives to accommodate the mobility needs of all South Carolina citizens by ensuring that planning and project selection processes adequately consider rural accessibility and unique mobility needs of specific groups, to include freight. SCDOT also ensures broad-based public participation is incorporated into all planning and project development processes. Effective transportation decision making requires understanding the needs of different demographics.

4.0 Commodity Flow Analysis

Over 557.7 million tons of freight, valued at nearly $866.4 billion, moved across South Carolina's freight network in 2019. 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.

4.1 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, number of shipping units, and dollar values of shipped goods (expressed in 2019 constant dollars).[37] Shipping units vary for goods shipped by truck of by rail: for trucks, a unit is one truck regardless of size and type, from straight trucks to double or triple trailers; for rail, a unit is a trailer or container for intermodal flows, and a railcar for all other cases. Throughout this report, freight quantities are reported simply as tons, units, and values. Movements (e.g., inbound, outbound) are summarized for the most recent year available (2019) and the Statewide Freight Plan's planning horizon year of 2050.

Standard Transportation Commodity Code (STCC)—STCC is a publication containing specific product information used on waybills and other shipping documents. A STCC Code 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.[38] 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 STCC codes use a hierarchical structure that captures the relationship of an individual item to a particular category, and enables data to be summarized at different levels of specificity. 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.[39]

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

[37] Units are unavailable for air, port, and pipe modes.

[38] Rail Inc.; https://www.railinc.com/rportal/37.

[39] 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.

Economic Analysis (BEA). Note that waterborne port movements reported by TRANSEARCH exclude foreign 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 2017 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 5.4 (FAF5) 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, FAF data are available for the base year of 2017, the recent years of 2018-2020, and forecasts from 2022 through 2050 in 5-year intervals. Data may be accessed through the Data Extraction Tool, downloaded as a complete database, or in summary files. The Statewide Freight Plan uses data on freight movements via pipeline as this information is not contained in the TRANSEARCH database.

4.2 Current Commodity Flows

Over 557.7 million tons of freight, valued at nearly $866.4 billion, moved across South Carolina's freight network in 2019. Freight was shipped via air, water, rail, truck, pipeline, and other modes (i.e., mail, foreign trade zone shipments, and shipments for which the mode is unknown). The tonnage and value of freight movements are summarized by mode and direction in **Table 4.1**.

Table 4.1 South Carolina Total Freight Traffic by Mode and Direction (2019)

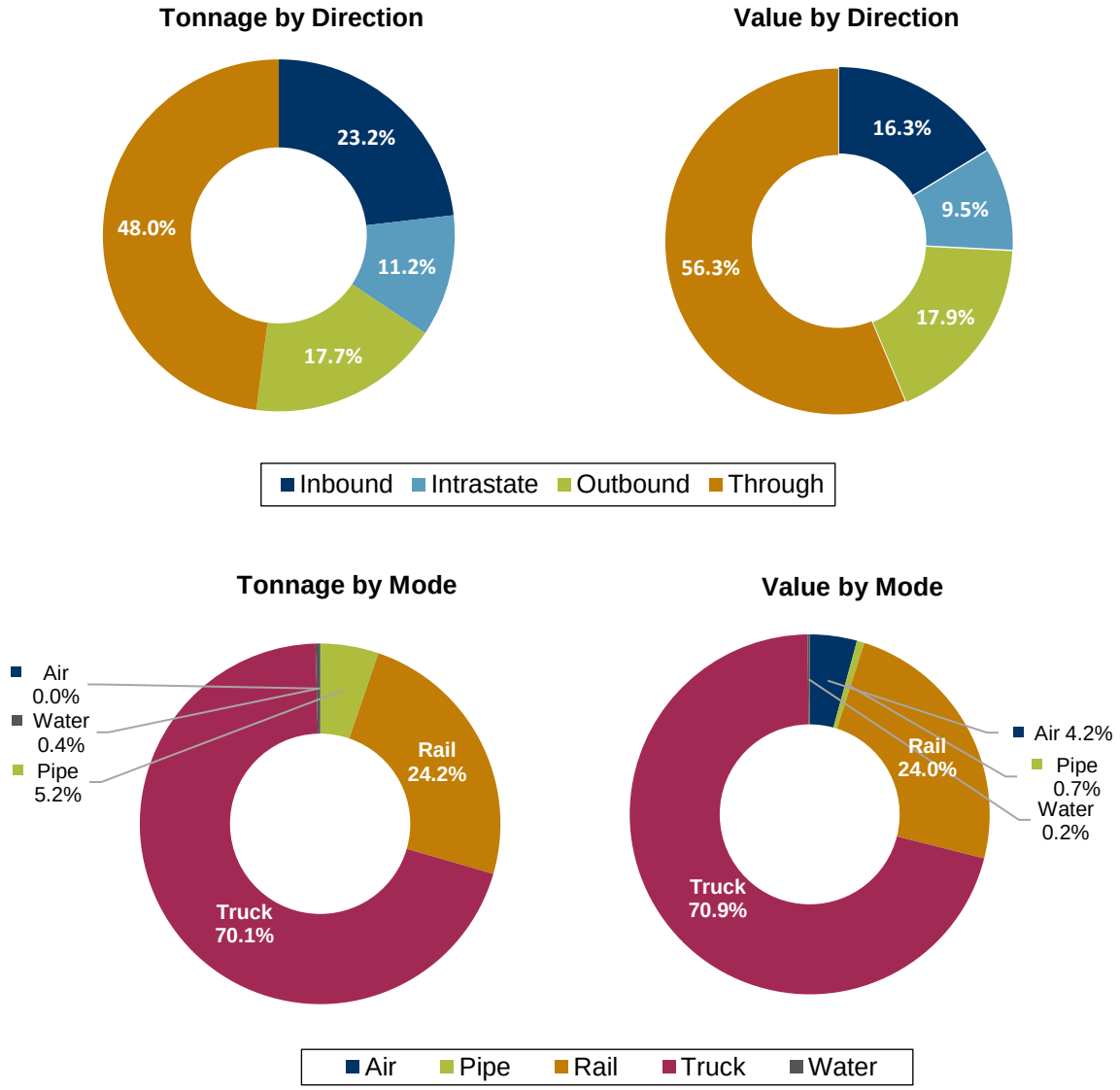
Direction	Air	Water	Rail	Truck	Pipe	Total
Tons						
Inbound	73,234	1,079,502	46,715,100	64,452,025	16,882,803	129,202,664
Intrastate	954	105,134	11,923,456	44,097,307	6,330,447	62,457,298
Outbound	57,679	75,302	16,063,941	76,655,632	5,716,500	98,569,054
Through	140,252	993,926	60,498,773	205,792,106	0	267,425,057
Total	**272,119**	**2,253,864**	**135,201,270**	**390,997,070**	**28,929,750**	**557,654,073**
Value, in millions						
Inbound	$11,544	$680	$37,119	$88,038	$3,554	$140,935
Intrastate	$49	$96	$29,848	$51,410	$1,154	$82,556
Outbound	$8,406	$96	$25,253	$120,129	$1,043	$154,927
Through	$16,716	$787	$115,989	$354,436	-	$487,928
Total	**$36,715**	**$1,659**	**$208,209**	**$614,013**	**$5,751**	**$866,346**

Source: TRANSEARCH and FAF 5.4 data for 2019.

The relative tonnage and value shares are illustrated in **Figure 4.1** by direction and mode. Through traffic comprises the largest share of freight in South Carolina: nearly 267 million tons (48 percent) valued at $488 billion (56.3 percent). State inbound tonnages (129 million, 23.2 percent) are slightly greater than outbound (98.6 million, 17.7 percent); but, outbound values ($154.9 billion, 17.9 percent) are notably greater than inbound values ($141 billion, 16.3 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 volume (62.5 million tons, 11.2 percent) and value ($82.6 billion, 9.5 percent).

Figure 4.1 South Carolina Freight Traffic by Direction and Mode (2019 Tons, Value)



Source: TRANSEARCH FAF 5.4 data for 2019.

Trucking accounts for the largest modal share: 391 million tons (70.1 percent) valued at $614 billion (70.9 percent). Rail comprises the second largest modal share at 135 million tons (24.2 percent) and $208 billion (24 percent). Major truck and rail tonnage movements are followed by pipeline, water and air, respectively.

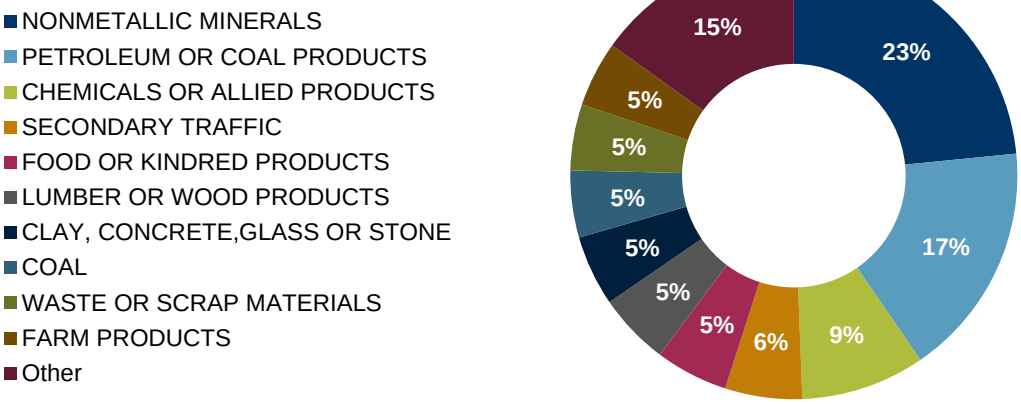
The top commodities by value and tonnage (excluding through movements) are shown in **Figure 4.2**. The top ten commodities account for 85 percent of the total tonnage of freight shipments with an endpoint in South Carolina. Nonmetallic minerals, petroleum or coal products, and chemicals or allied products are the most prevalent goods on the state's freight network in terms of tonnage. Nonmetallic minerals include commodities such as stone, sand, and gravel. Petroleum and coal products include goods such as refined

petroleum products (e.g., gasoline, kerosene, lubricant oils) and paving and roofing materials. Chemicals or allied products include goods such as plastics, soaps, drugs and pharmaceutical products.

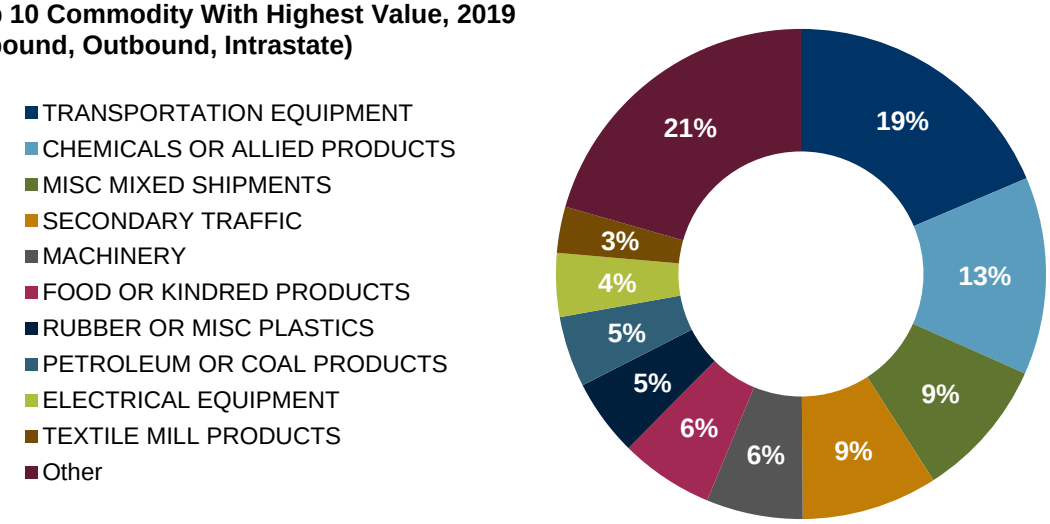
In terms of value, the top ten commodities account for about 79 percent of freight shipments with an endpoint in South Carolina. Transportation equipment, chemicals or allied products, and miscellaneous mixed shipments are the most prevalent goods shipped in South Carolina. Transportation equipment includes goods such as motor vehicles and equipment, aircraft and parts, and railroad equipment. Mixed shipments are those where two or more commodities have been packaged together for transport.

Figure 4.2 South Carolina Freight Top Commodities (2019 Tons, Value)

Top 10 Commodity With Highest Tonage, 2019 (Inbound, Outbound, Intrastate)

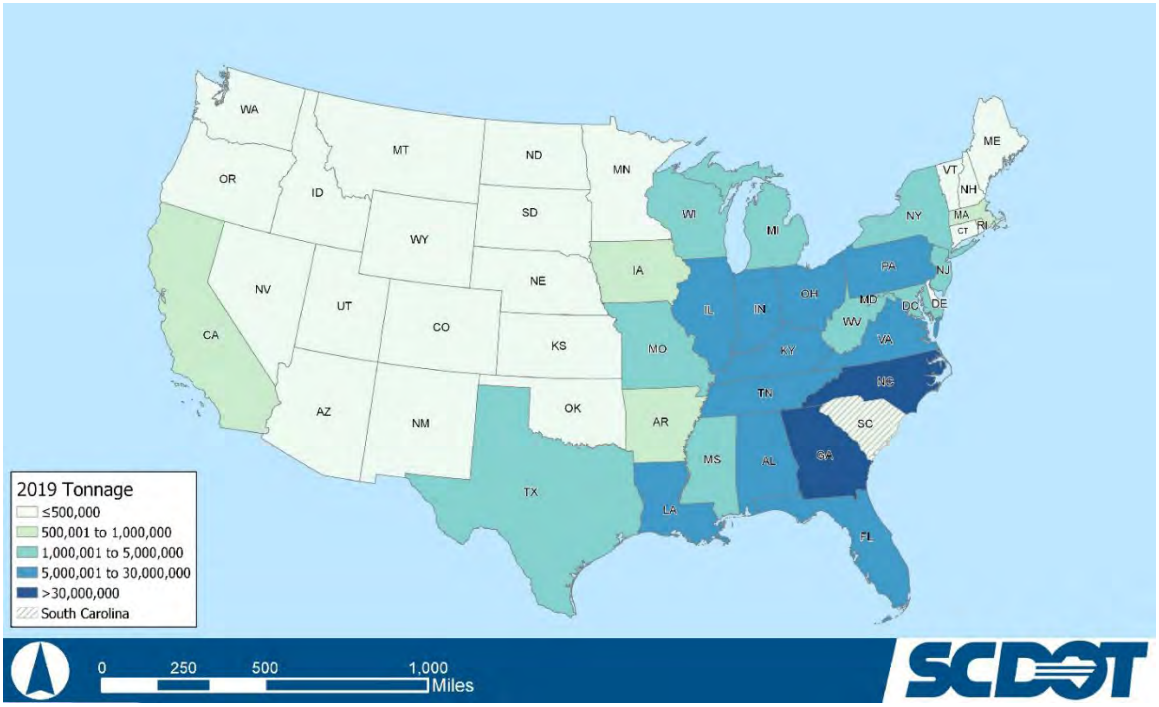


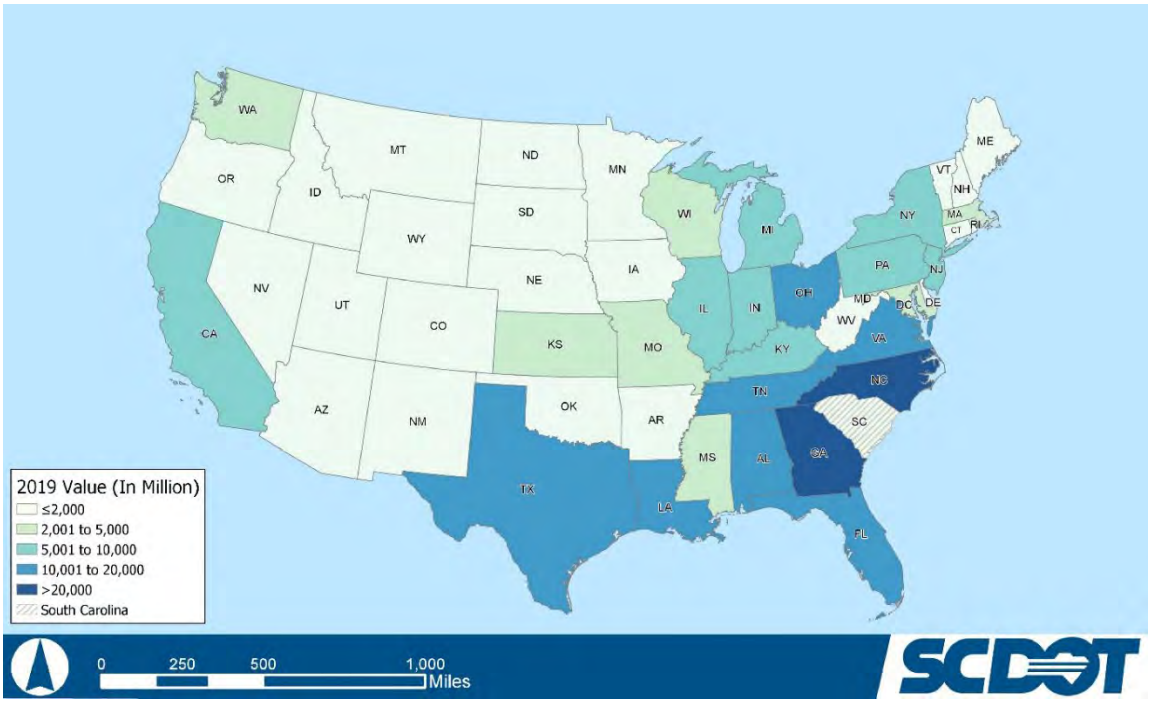
Top 10 Commodity With Highest Value, 2019 (Inbound, Outbound, Intrastate)



South Carolina's top trading partners are shown in **Figure 4.3**. North Carolina, Georgia, Tennessee, Florida, and Alabama are the top 5 states for freight moving into or out of South Carolina. In 2019, these states generated nearly 128 million tons of freight moving in South Carolina (excluding through movements). This represents about 23 percent of the state's total freight flows.

Figure 4.3 South Carolina Freight Top Trading Partners (2019 Tons, Value)





Source TRANSEARCH, 2019.

The following discussion presents year 2019 freight flows by mode and direction. Each subsection summarizes modal directional flows by the top ten two-digit STCC commodity movements.

Truck Freight

Freight moved by truck in South Carolina in 2019 totaled nearly 391 million tons, was valued at over $614 billion, and generated over 31.8 million units (or trucks) as shown in **Table 4.2**. On average, total truck commodity movements are valued at $1,570/ton. Through truck movements are the largest of the 'directional' movements (i.e., inbound, internal, outbound, or through the state), comprising 53 percent of total tonnage, 48 percent of units, and 58 percent of value. At $1,722 per ton, through movements are also the most valuable per-ton (on average) of the directional movements. Outbound truck tonnage (76.7 million) and value ($120.1 billion) are greater than inbound movements (65 million tons, $88.3 billion). Intrastate movements are the smallest of the directional movements (44.1 million tons, $51.4 billion).

Table 4.2 South Carolina Truck Freight by Direction (2019)

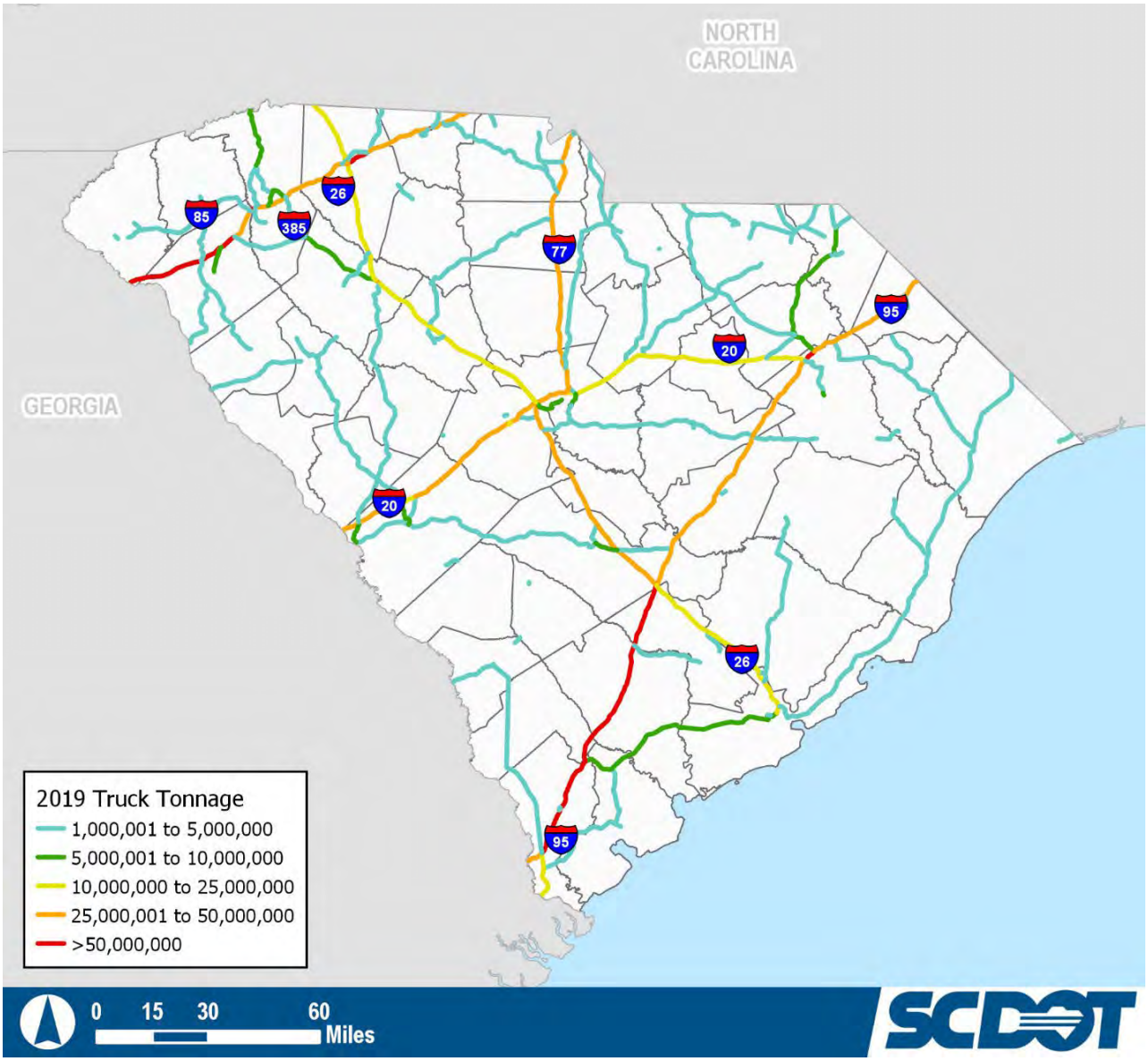
	Tons		Units		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
Inbound	64,452,025	16.5%	5,604,545	17.6%	$88,038	14.3%	$1,366
Intrastate	44,097,307	11.3%	5,276,902	16.6%	$51,410	8.4%	$1,166
Outbound	76,655,632	19.6%	5,701,707	17.9%	$120,129	19.6%	$1,567
Through	205,792,106	52.6%	15,233,809	47.9%	$354,436	57.7%	$1,722
Total	**390,997,069**	**100.0%**	**31,816,964**	**100.0%**	**$614,012**	**100.0%**	**$1,570**

Source: TRANSEARCH and FAF 5.4 data for 2019.

Note: Components may not appear to sum because of rounding.

The largest freight flows in terms of total annual tonnage are observed on South Carolina's interstate highways. As shown in **Figure 4.4**, I-95 south of I-26 and I-85 south of I-185 near Greenville are estimated to carry more than 50 million tons annually. In addition to these, I-20 west of I-26, I-26 between I-95 and I-20, I-77 north of I-20, I-85 north of I-185, and I-95 north of I-26 all have substantial tonnages of freight. They are estimated to carry between 25 million and 50 million tons annually. Besides Interstate highways, major U.S. and state also accommodate significant freight flows. For example, U.S. 17 between Charleston and I-95 is estimated to carry 5 to 10 million tons of freight annually. U.S. 52 from Florence to the North Carolina state line and U.S. 25 from Greenville to the North Carolina state line also carry about 5 to 10 million tons of freight annually.

Figure 4.4 South Carolina Truck Freight Tonnage (2019)



Source TRANSEARCH, 2019.

Inbound Truck

Table 4.3 presents major inbound truck commodities to South Carolina in 2019. Such movements total 64.5 million tons, via 5.6 million units, valued at $88 billion, with an average value/ton of $1,366. In tonnage terms, top inbound movements include: *Nonmetallic Minerals* (13 million, 20 percent), *Food or Kindred Products* (7.6 million, 12 percent), *Farm Products* (6.7 million, 10 percent), and other bulk commodities. *Nonmetallic minerals* include commodities such as stone, sand, and gravel. Overall, the top ten commodities shown in **Table 4.3** account for about 88 percent of total tonnage shipped into South Carolina.

Table 4.3 South Carolina Truck Inbound Freight by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
14	Nonmetallic Minerals	12,983,922	20.1%	534,091	9.5%	$224	0.3%	$17
20	Food Or Kindred Products	7,614,517	11.8%	331,597	5.9%	$11,510	13.1%	$1,512
1	Farm Products	6,717,311	10.4%	396,698	7.1%	$5,537	6.3%	$824
29	Petroleum Or Coal Products	5,034,212	7.8%	209,518	3.7%	$2,402	2.7%	$477
32	Clay, Concrete, Glass Or Stone	4,952,529	7.7%	305,417	5.4%	$1,173	1.3%	$237
28	Chemicals Or Allied Products	4,572,362	7.1%	223,044	4.0%	$10,142	11.5%	$2,218
50	Secondary Traffic	4,436,104	6.9%	230,698	4.1%	$7,105	8.1%	$1,602
24	Lumber Or Wood Products	4,113,611	6.4%	162,762	2.9%	$1,583	1.8%	$385
40	Waste Or Scrap Materials	4,012,003	6.2%	166,944	3.0%	$1,147	1.3%	$286
33	Primary Metal Products	2,474,550	3.8%	99,212	1.8%	$4,562	5.2%	$1,843
	Remaining Commodities	7,540,903	11.7%	2,944,564	52.5%	$42,654	48.4%	$5,656
	Total	**64,452,025**	**100.0%**	**5,604,545**	**100.0%**	**$88,038**	**100.0%**	**$1,366**

Source: TRANSEARCH data for 2019.

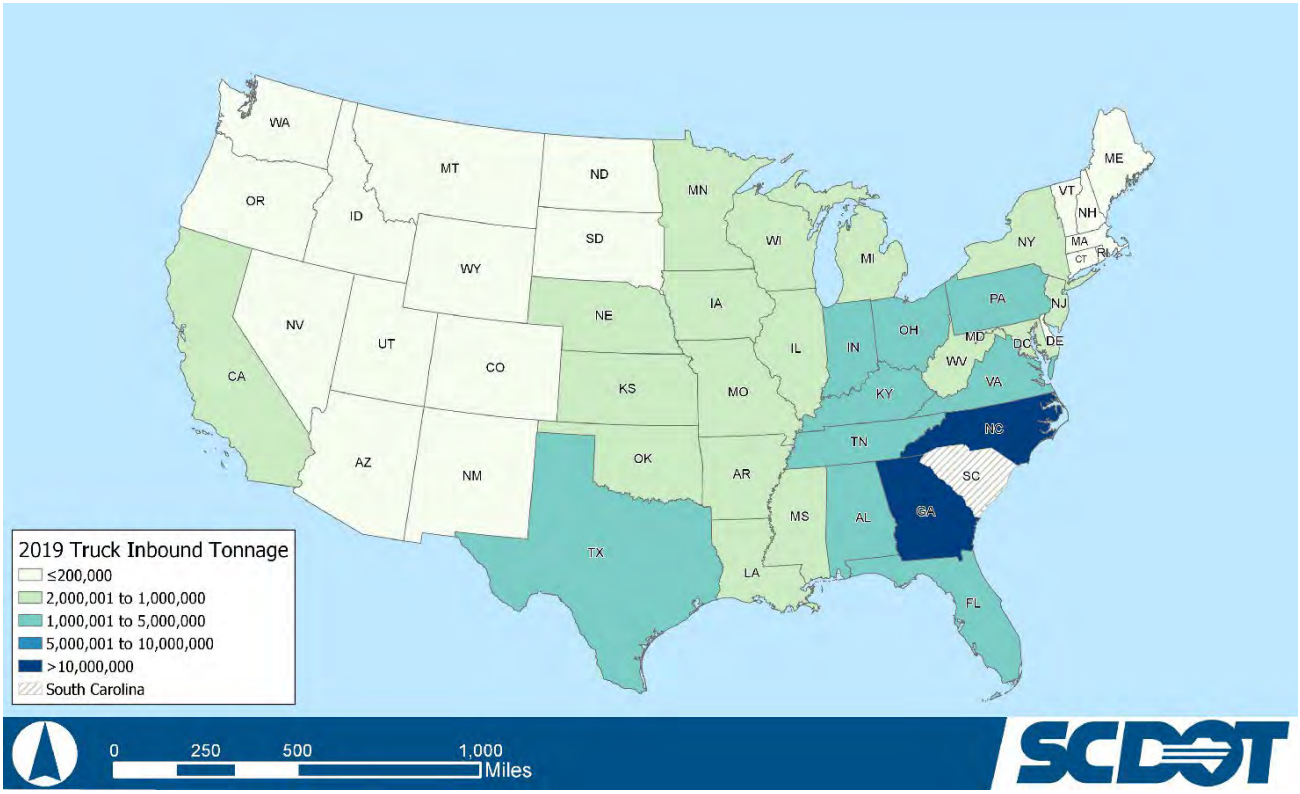
Note: Components may not appear to sum because of rounding.

The top ten inbound truck commodities by tonnage account for much smaller shares of total units and total value. The top inbound truck commodities represent about 47 percent of total units, or trucks, which is much smaller than the share of total tonnage. It suggests that the truck carrying these commodities are loaded at or near their maximum capacities. The top inbound commodities account for about 52 percent of total value. This suggests that the top ten commodities inbound to the state are priced at lower values than commodities such as electronics.

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 (7.3 million tons) and Spartanburg (6.4 million tons). More than half of the inbound tonnages in 2019 to South Carolina were from Georgia and North

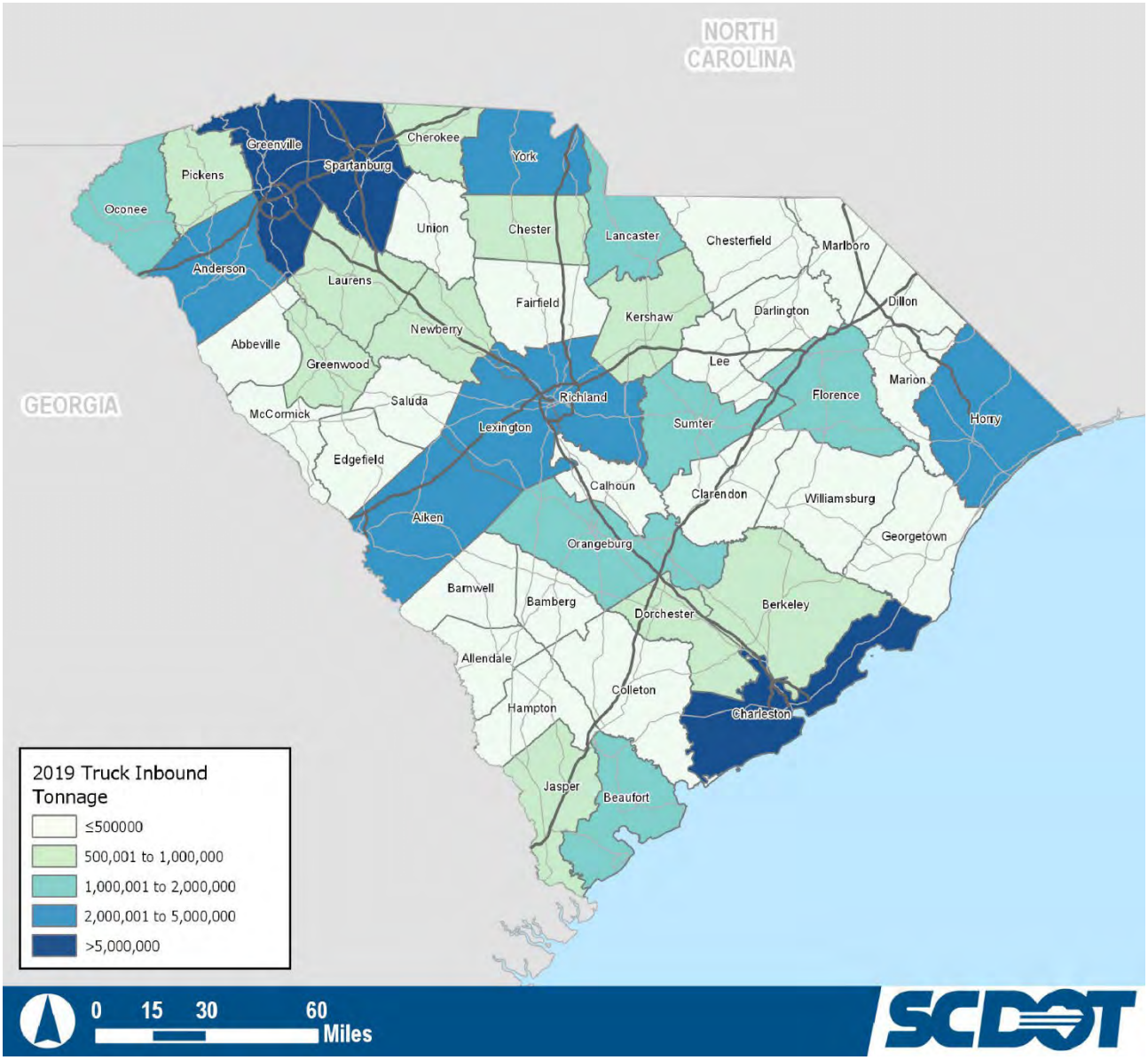
Carolina, as shown in **Figure 4.5**. The 19.6 million tons from North Carolina (30.5 percent of total inbound, valued at $18.5 billion) are led by *Nonmetallic Minerals* (5.9 million tons, $85.6 million), *Petroleum or Coal Products* (2.7 million ton, $1.6 billion) and *Farm Products* (2.1 million, $2 billion) The 15.7 million tons from Georgia (24.3 percent of total inbound, valued at $16.9 billion) is distributed among several commodity types including *Nonmetallic Minerals* (4.6 million, $68.3 million), *Lumber or Wood Products* (1.7 million, $527.1 million) and *Farm Products* (1.5 million, $2 billion). Major inbound tonnages in 2019 are shown by county destination in Figure 4.6.

Figure 4.5 South Carolina Truck Inbound Freight by State of Origin (2019)



Source: TRANSEARCH data for 2019.

Figure 4.6 South Carolina Truck Inbound Freight by County Destination (2019)



Source: TRANSEARCH data for 2019.

Outbound Truck

Table 4.4 presents major outbound truck commodities from South Carolina in 2019. Such outbound truck movements total 76.7 million tons, via 5.7 million units, valued at $120.1 billion, with an average value/ton of $1,567. In tonnage terms, top outbound movements include: *Nonmetallic Minerals* (28.9 million, 38 percent), *Lumber or Wood Products* (5.8 million, 7 percent), Waste or Scrap Materials (5.5 million tons, 7 percent), Petroleum or Coal Products (4.9 million, 6 percent), and Secondary Traffic (4.9 million tons, 6 percent). Though not in the top ten commodities by tonnage, *Transportation Equipment* ($27.2 billion, 22.7 percent), *Machinery* ($14.1 billion, 11.8 percent), *Rubber or Miscellaneous Plastics* ($12.1 billion, 10 percent), and *Chemicals or Allied Products* ($9.6 billion, 8 percent) are top commodities in terms of value. All other or remaining commodities comprise 12.5 percent of inbound truck tonnage and nearly 58.5 percent of value.

Table 4.4 South Carolina Truck Outbound Freight by Major Commodities (2019)

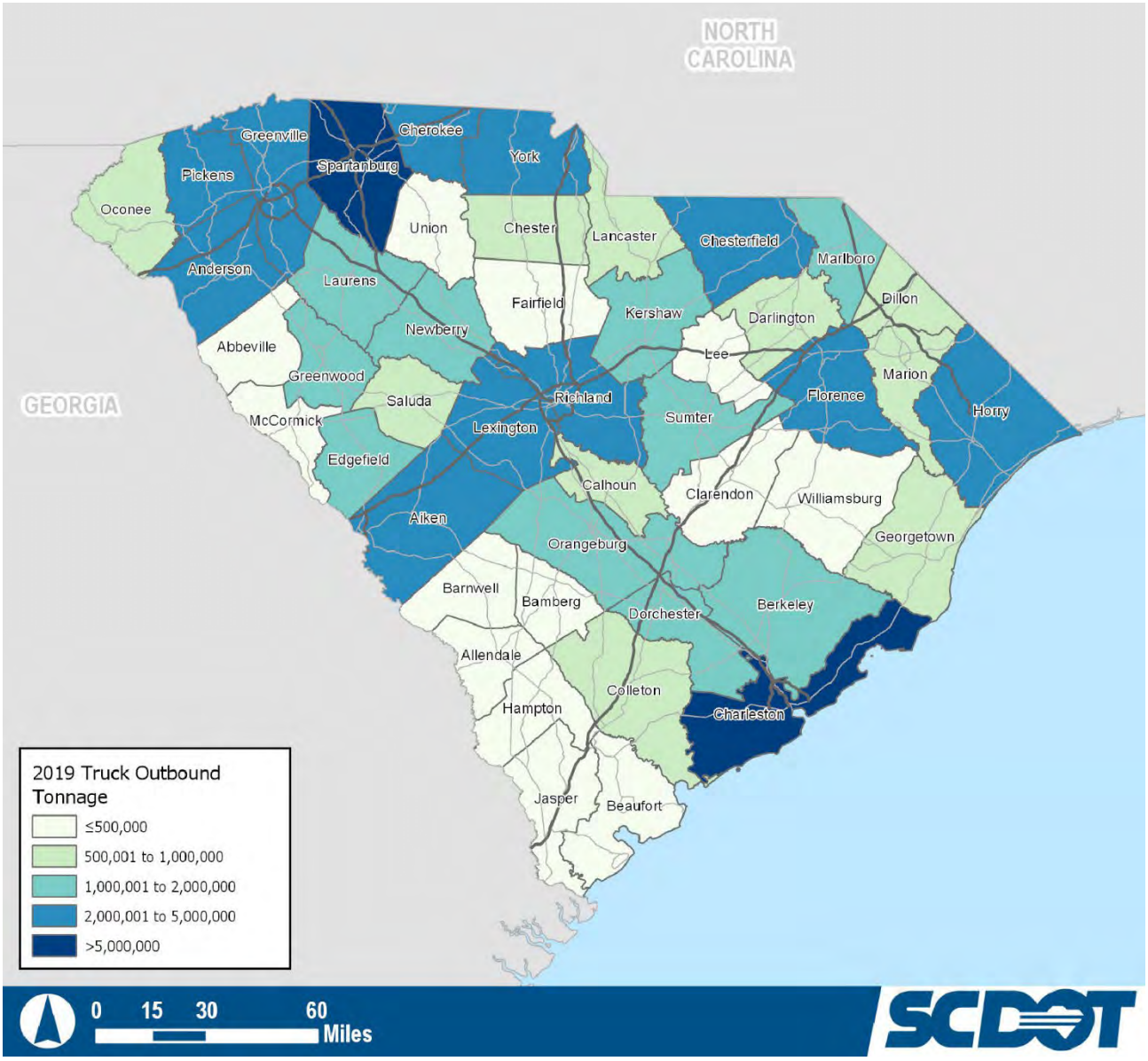
		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/ Ton
14	Nonmetallic Minerals	28,895,657	37.7%	1,188,616	20.8%	$364	0.3%	$13
24	Lumber Or Wood Products	5,748,356	7.5%	227,752	4.0%	$1,609	1.3%	$280
40	Waste Or Scrap Materials	5,535,236	7.2%	228,140	4.0%	$1,941	1.6%	$351
29	Petroleum Or Coal Products	4,939,758	6.4%	204,028	3.6%	$2,852	2.4%	$577
50	Secondary Traffic	4,880,109	6.4%	258,781	4.5%	$8,290	6.9%	$1,699
20	Food Or Kindred Products	4,491,772	5.9%	195,231	3.4%	$8,622	7.2%	$1,919
28	Chemicals Or Allied Products	3,681,189	4.8%	178,198	3.1%	$9,623	8.0%	$2,614
30	Rubber Or Misc. Plastics	3,001,787	3.9%	252,742	4.4%	$12,064	10.0%	$4,019
32	Clay, Concrete, Glass Or Stone	2,961,212	3.9%	182,134	3.2%	$1,030	0.9%	$348
1	Farm Products	2,906,423	3.8%	179,607	3.2%	$3,507	2.9%	$1,207
	Remaining Commodities	9,614,134	12.5%	2,606,478	45.7%	$70,227	58.5%	$7,305
	Total	**76,655,632**	**100.0%**	**5,701,707**	**100.0%**	**$120,129**	**100.0%**	**$1,567**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

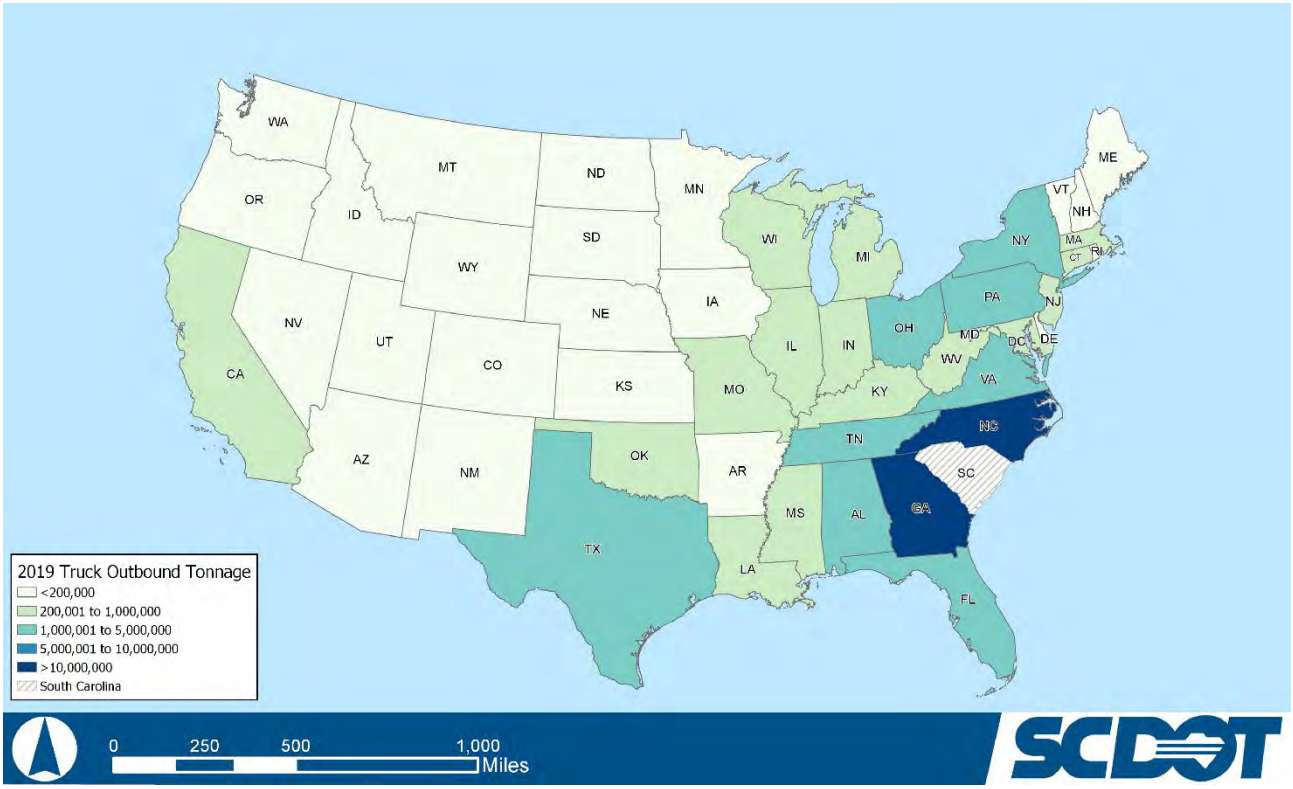
Outbound Tonnage Origin and Destination—Major outbound tonnages from South Carolina in 2019 are shown by county origin in **Figure 4.7**. Truck movements destined out-of-state are primarily traveling from Spartanburg County (10.3 million tons), Charleston County (8.5 million tons), and Greenville County (4.9 million tons). Of the total outbound tonnage in 2019, 63 percent was destined to North Carolina (30.4 million tons, 39.7 percent) and Georgia (17.5 million tons, 22.9 percent) as shown in **Figure 4.8.** The 30.4 million tons from North Carolina (valued at $ 20.3 billion) are led by *Nonmetallic Minerals* (19.2 million tons, $212 million), *Lumber or Wood* (1.9 million tons, $487.3 million) and *Secondary Traffic* (1.5 million ton, $3.3 billion). The 17.5 million tons from Georgia (valued at $17.8 billion) are distributed among several commodity types including *Nonmetallic Minerals* (7.5 million, $95.7 million), *Petroleum or Coal Products* (2.1 million, valued $ 1.3 billion) and *Lumber or Wood Products* (1.6 million, $366.5 million).

Figure 4.7 South Carolina Truck Outbound Freight by County Origin (2019)



Source: TRANSEARCH data for 2019.

Figure 4.8 South Carolina Truck Outbound Freight by State Destination (2019)



Source: TRANSEARCH data for 2019.

Through Truck

Table 4.5 presents through-state truck commodities in 2019. Such movements totaled 205.8 million tons, via 15.2 million units, valued at $354.4 billion, with an average value/ton of $1,722. In tonnage terms, the top through movements include: *Nonmetallic Minerals* (34.1 million, 17 percent), *Food or Kindred Products* (27.3 million, 13 percent), and *Secondary Traffic* (23.9 million, 12 percent). All other or *Remaining Commodities* comprise 27.5 million tons of through movements which is about 13 percent of the total. These include goods such as *Transportation Equipment*, *Rubber or Miscellaneous Plastics*, *Primary Metal Products*, *Machinery*, and *Fabricated Metal Products*.

In unit terms, *Remaining Commodities* constitute nearly half (6.8 million, 45 percent) of the total 15.2 million through truck units. Though not listed as the top ten commodities in terms of tonnage, *Secondary Traffic* ($53.3 billion, 15 percent) and *Food or Kindred Products* ($42.2 billion, 11.9 percent) are the leading commodities in terms of value.

Table 4.5 South Carolina Truck Through-State Freight by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
14	Nonmetallic Minerals	34,048,504	16.5%	1,400,577	9.2%	$665	0.2%	$20
20	Food Or Kindred Products	27,326,642	13.3%	1,191,129	7.8%	$42,201	11.9%	$1,544
50	Secondary Traffic	23,972,430	11.6%	1,385,210	9.1%	$53,255	15.0%	$2,222
32	Clay, Concrete, Glass Or Stone	18,432,075	9.0%	1,118,991	7.3%	$4,922	1.4%	$267
24	Lumber Or Wood Products	14,873,263	7.2%	582,410	3.8%	$7,805	2.2%	$525
40	Waste Or Scrap Materials	13,424,020	6.5%	555,050	3.6%	$3,790	1.1%	$282
29	Petroleum Or Coal Products	12,847,197	6.2%	535,599	3.5%	$5,795	1.6%	$451
1	Farm Products	12,309,989	6.0%	717,427	4.7%	$11,944	3.4%	$970
26	Pulp, Paper Or Allied Products	11,047,433	5.4%	456,481	3.0%	$14,246	4.0%	$1,290
28	Chemicals Or Allied Products	10,024,888	4.9%	486,448	3.2%	$26,733	7.5%	$2,667
	Remaining Commodities	27,485,665	13.4%	6,804,486	44.7%	$183,078	51.7%	$6,661
	Total	**205,792,106**	**100.0%**	**15,233,809**	**100.0%**	**$354,436**	**100.0%**	**$1,722**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Intrastate Truck

Table 4.6 summarizes intrastate truck commodities in South Carolina in 2019. Such movements total 44.1 million tons, via 5.3 million units, valued at $51.4 billion, with an average value/ton of $1,166. In tonnage terms, top intrastate movements include: *Nonmetallic Minerals* (16.3 million, 37 percent), *Petroleum or Coal Products* (8.3 million, 19 percent), and *Secondary Traffic* (6.9 million, 16 percent). In unit terms, *Remaining Commodities* and *Nonmetallic Minerals* together constitute nearly three-quarters (3.9 million units, 74 percent) of the total 5.3 million intrastate truck units, with 3.2 million and 672,388, respectively. In value terms, the top commodities include: *Secondary Traffic* ($18.6, 36.1 percent), *Remaining Commodities ($9.9 billion, 19.3 percent) and Transportation Equipment* ($7.1 billion, 13.9 percent). Though *Nonmetallic Minerals* dominate intrastate movements in terms of tonnage terms, the total value of those movements is a small

fraction of the total value for intrastate truck movements. This is because the commodity has one of the lowest values/ton ($11).

Table 4.6 South Carolina Truck Intrastate Freight by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
14	Nonmetallic Minerals	16,345,971	37.1%	672,388	12.7%	$186	0.4%	$11
29	Petroleum Or Coal Products	8,291,585	18.8%	340,070	6.4%	$5,373	10.5%	$648
50	Secondary Traffic	6,883,475	15.6%	466,709	8.8%	$18,584	36.1%	$2,700
32	Clay, Concrete, Glass Or Stone	2,761,630	6.3%	175,287	3.3%	$483	0.9%	$175
28	Chemicals Or Allied Products	2,712,982	6.2%	130,460	2.5%	$6,774	13.2%	$2,497
40	Waste Or Scrap Materials	1,630,227	3.7%	66,258	1.3%	$736	1.4%	$451
24	Lumber Or Wood Products	1,287,853	2.9%	51,073	1.0%	$327	0.6%	$254
1	Farm Products	1,170,292	2.7%	68,421	1.3%	$719	1.4%	$615
20	Food Or Kindred Products	654,821	1.5%	28,446	0.5%	$1,175	2.3%	$1,794
37	Transportation Equipment	586,250	1.3%	41,979	0.8%	$7,126	13.9%	$12,155
	Remaining Commodities	1,772,221	4.0%	3,235,812	61.3%	$9,928	19.3%	$5,602
	Total	**44,097,307**	**100.0%**	**5,276,902**	**100.0%**	**$51,410**	**100.0%**	**$1,166**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Rail Freight

South Carolina rail movements in 2019 totaled 135.2 million tons, valued at $208.2 billion, and carried within 3.3 million units, as shown in **Table 4.7**. On average, total rail commodity movements are valued at $1,540/ton. Through-state rail movements are the largest directional movements: 45 percent of total tonnage, 55 percent of units, and 56 percent of value. Inbound rail tonnage (46.7 million) is significantly greater than outbound (16 million); however, in terms of value, inbound and outbound movements are closer ($37.1 billion inbound versus $25.25 billion outbound) due to the notably higher average value/ton of outbound ($1,572) versus inbound ($795).

Table 4.7 South Carolina Rail Freight by Direction (2019)

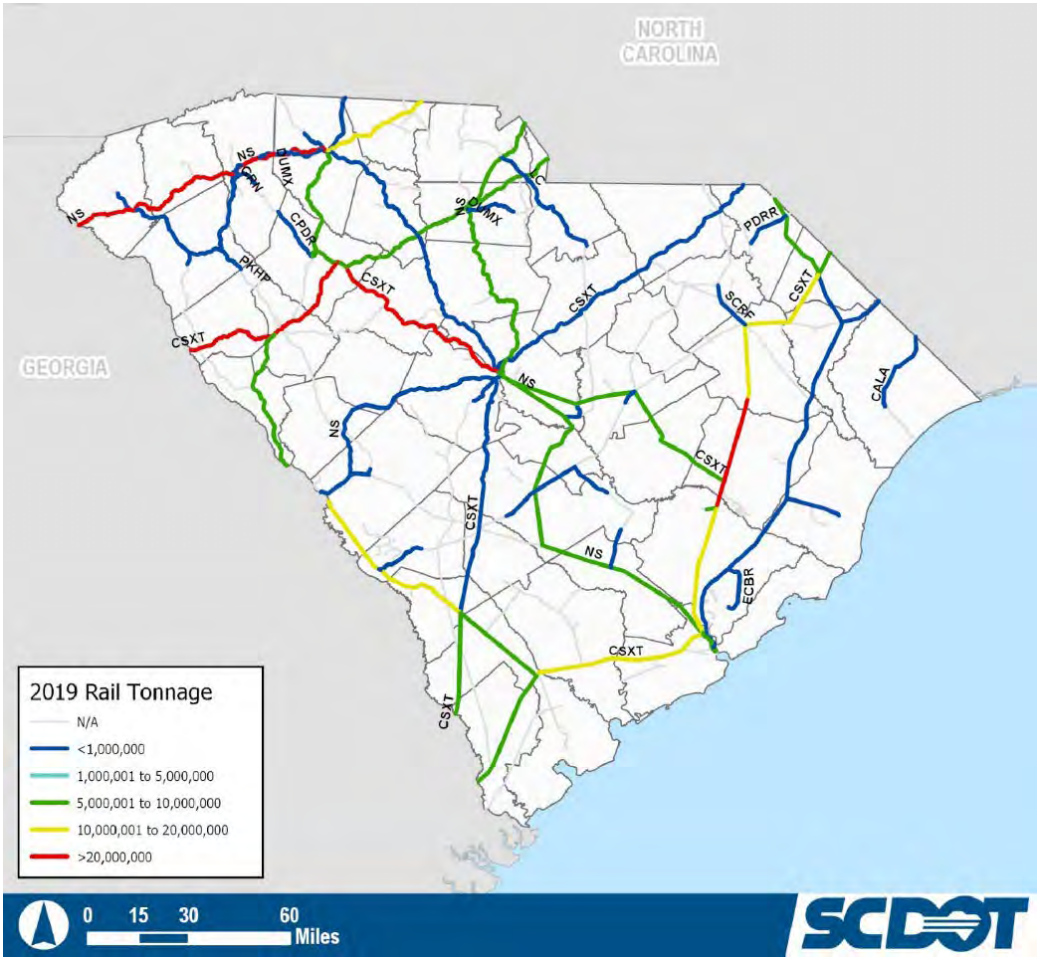
	Tons		Units		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
Inbound	46,715,100	34.6%	742,665	22.5%	$37,119	17.8%	$795
Intrastate	11,923,456	8.8%	474,696	14.4%	$29,848	14.3%	$2,503
Outbound	16,063,941	11.9%	280,224	8.5%	$25,253	12.1%	$1,572
Through	60,498,773	44.7%	1,804,024	54.6%	$115,989	55.7%	$1,917
Total	**135,201,270**	**100.0%**	**3,301,609**	**100.0%**	**$208,210**	**100.0%**	**$1,540**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

As shown in **Figure 4.9**, 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 4.9 South Carolina Rail Freight Tonnage (2019)



Source: TRANSEARCH data for 2019.

Inbound Rail

Table 4.8 presents major inbound rail commodities to South Carolina in 2019. Such movements total 46.7 million tons, via 742,665 units, valued at $37.1 billion, with an average value/ton of $795. In tonnage terms, top inbound movements include: *Coal* (13.7 million, 29 percent), *Chemical or Allied Products* (8.7 million, 19 percent), and *Nonmetallic Minerals* (7.2 million, 15 percent). In unit terms, *Remaining Commodities* and *Miscellaneous Mixed Shipments* constitute almost half (327,564, 45 percent) of the total 742,665 inbound rail units. In value terms, the top commodities include: *Chemical or Allied Products* ($11.7 billion or 31.4 percent), *Remaining Commodities (10.4 billion or 27.9 percent), and Miscellaneous Mixed Shipments* ($10.1 billion or 27.1 percent).

Table 4.8 South Carolina Rail Inbound Freight by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
11	Coal	13,721,500	29.4%	118,860	16.0%	$440	1.2%	$32
28	Chemicals or Allied Products	8,647,704	18.5%	98,400	13.2%	$11,650	31.4%	$1,347
14	Nonmetallic Minerals	7,196,461	15.4%	62,614	8.4%	$87	0.2%	$12
1	Farm Products	2,940,542	6.3%	27,885	3.8%	$473	1.3%	$161
26	Pulp, Paper or Allied Products	2,121,904	4.5%	25,978	3.5%	$1,339	3.6%	$631
40	Waste or Scrap Materials	2,098,399	4.5%	24,938	3.4%	$638	1.7%	$304
20	Food or Kindred Products	2,015,301	4.3%	24,334	3.3%	$1,083	2.9%	$537
46	Misc. Mixed Shipments	2,002,417	4.3%	160,042	21.5%	$10,065	27.1%	$5,026
32	Clay, Concrete, Glass or Stone	1,735,732	3.7%	19,095	2.6%	$364	1.0%	$210
29	Petroleum or Coal Products	1,113,508	2.4%	12,997	1.8%	$635	1.7%	$570
	Remaining Commodities	3,121,633	6.7%	167,522	22.6%	$10,347	27.9%	$3,314
	Total	**46,715,100**	**100.0%**	**742,665**	**100.0%**	**$37,119**	**100.0%**	**$795**

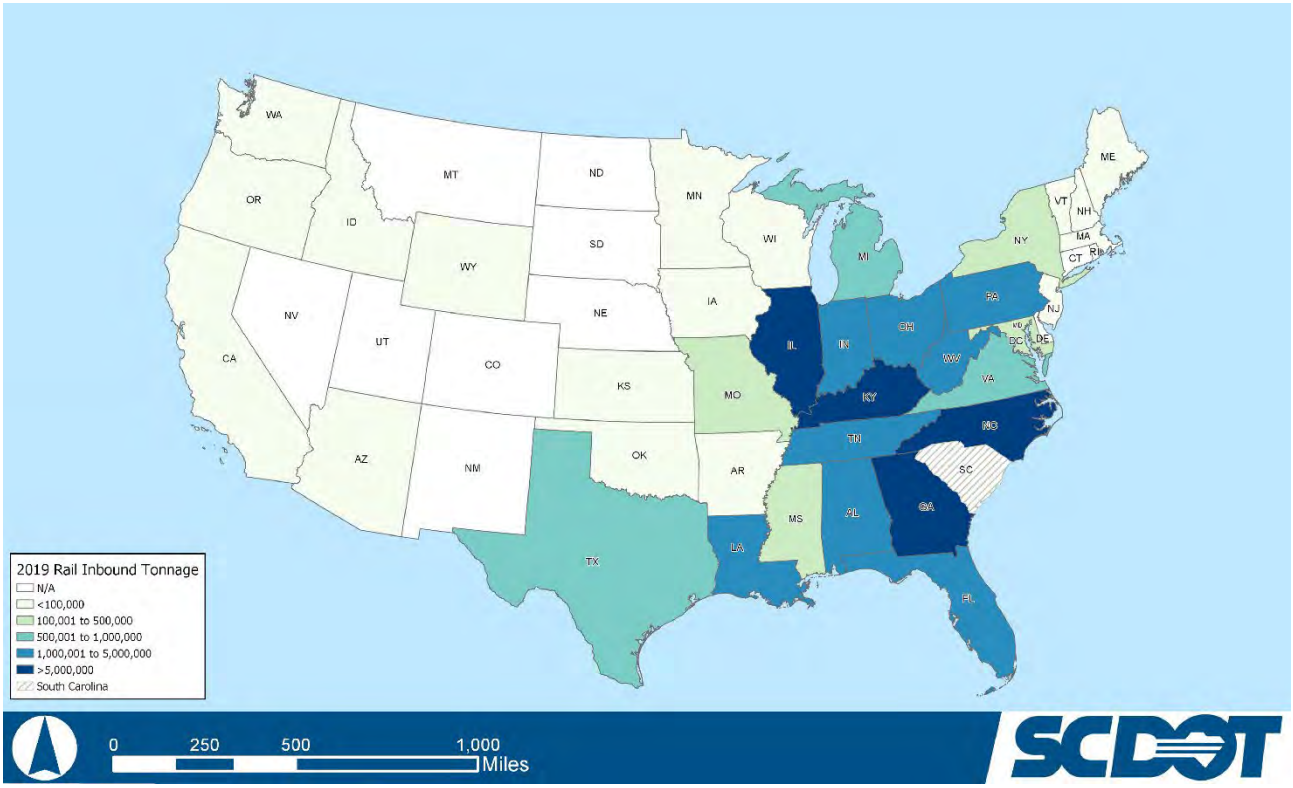
Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Rail Inbound Tonnage Origin and Destination

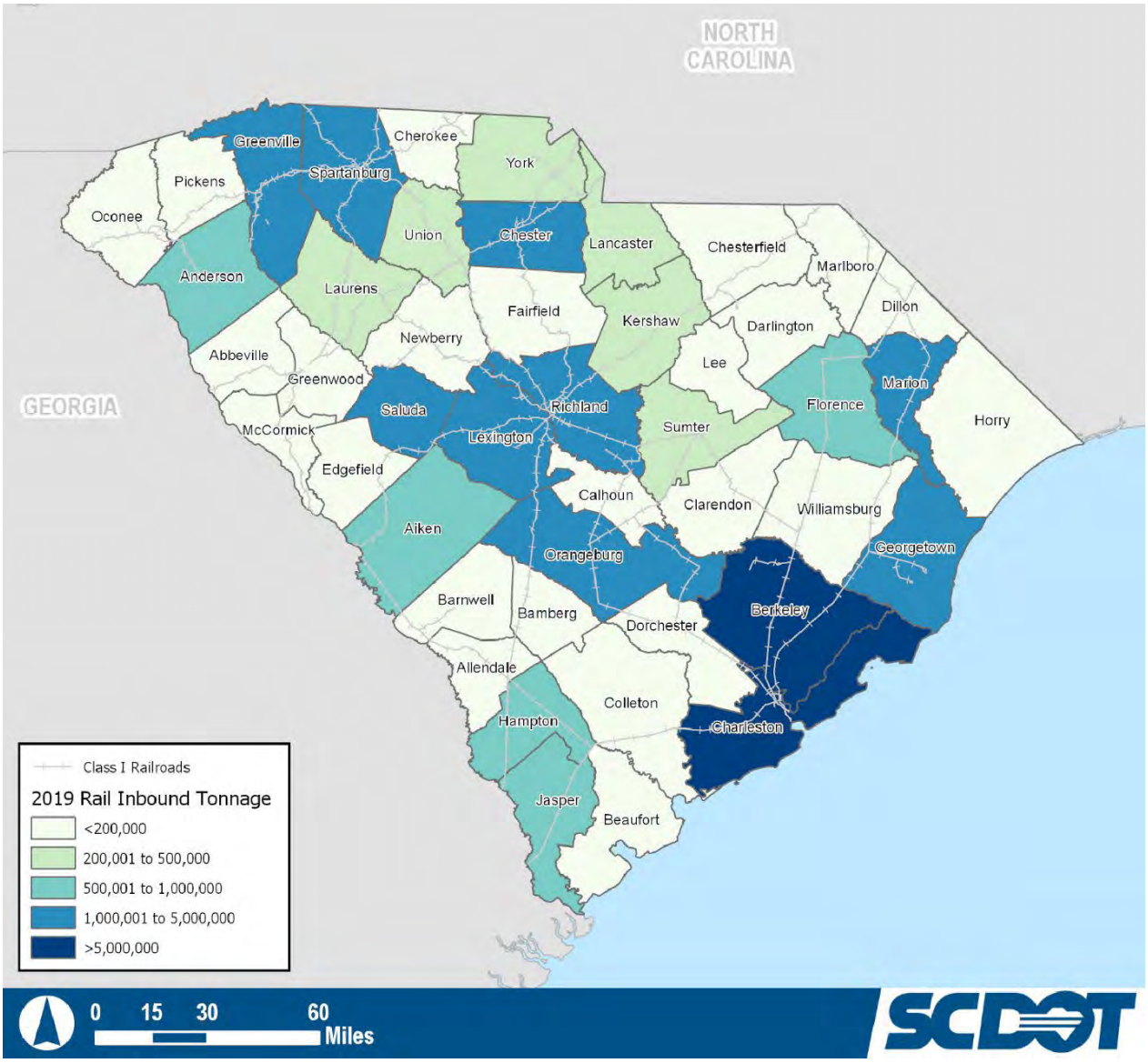
Rail movements originating from out-of-state are primarily traveling to Berkeley County (11.1 million tons), Charleston County (8.4 million tons), and Marion County (3.7 million tons). Inbound rail tonnage by state of origin is shown in **Figure 4.10**. The major commodity railed into South Carolina in terms of inbound tonnages is *Coal (*13.7 million tons, valued at $440 million), chiefly from Kentucky (4.8 million, $152.8 million), but also from Indiana (2.9 million, $92.2 million), and West Virginia (2 million, $65.2 million). The second major commodity railed into South Carolina is *Chemical or Allied Products* (8.6 million tons, valued at $11.7 billion), led by Louisiana, Illinois, Texas, and Alabama (ranging from 0.6 million-3.2 million tons and $589.6 million-$5.5 billion). Major inbound tonnage for 2019 is shown by the county of destination in **Figure 4.11**.

Figure 4.10 South Carolina Rail Inbound Freight by State of Origin (2019)



Source: TRANSEARCH data for 2019.

Figure 4.11 South Carolina Rail Inbound Freight by County Destination (2019)



Source: TRANSEARCH data for 2019.

Outbound Rail

Table 4.9 presents the outbound major commodities by rail from South Carolina in 2019. These movements totaled over 16 million tons, via 280,224 units and were valued at nearly $25.3 billion. The average value/ton was $1,572. By tonnage, top outbound movements included the following: *Chemicals or Allied Products* (3.5 million, 22 percent), *Pulp, Paper or Allied Products* (2.8 million, 18 percent), and *Clay, Concrete, Glass or Stone* (2.2 million, 14 percent). In terms of units, *Miscellaneous Mixed Shipments, Chemicals or Allied Products* and *Pulp, Paper or Allied Products* together constituted more than half (168,993 or 60 percent) of the total 280,224 outbound rail units. In value terms, the top commodities included: *Chemicals or Allied Products ($6.8 billion, 26.8 percent), Miscellaneous Mixed Shipments* ($6.5 billion or 25.6 percent), and *Pulp, Paper or Allied Products* ($ 3.3 billion or 13.2 percent).

Table 4.9 South Carolina Rail Outbound Freight by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
28	Chemicals or Allied Products	3,527,187	22.0%	37,047	13.2%	$6,771	26.8%	$1,920
26	Pulp, Paper Or Allied Products	2,837,664	17.7%	37,713	13.5%	$3,339	13.2%	$1,177
32	Clay, Concrete, Glass Or Stone	2,232,297	13.9%	21,212	7.6%	$329	1.3%	$147
33	Primary Metal Products	2,202,188	13.7%	25,032	8.9%	$3,005	11.9%	$1,364
24	Lumber Or Wood Products	2,109,818	13.1%	23,098	8.2%	$567	2.2%	$269
46	Misc. Mixed Shipments	1,259,082	7.8%	94,233	33.6%	$6,476	25.6%	$5,143
20	Food Or Kindred Products	466,502	2.9%	5,005	1.8%	$905	3.6%	$1,941
40	Waste Or Scrap Materials	394,241	2.5%	6,430	2.3%	$100	0.4%	$253
37	Transportation Equipment	325,390	2.0%	16,128	5.8%	$3,046	12.1%	$9,360
11	Coal	287,908	1.8%	2,420	0.9%	$9	0.04%	$32
	Remaining Commodities	421,664	2.6%	11,906	4.2%	$706	2.8%	$1,675
	Total	**16,063,941**	**100.0%**	**280,224**	**100.0%**	**$25,253**	**100.0%**	**$1,572**

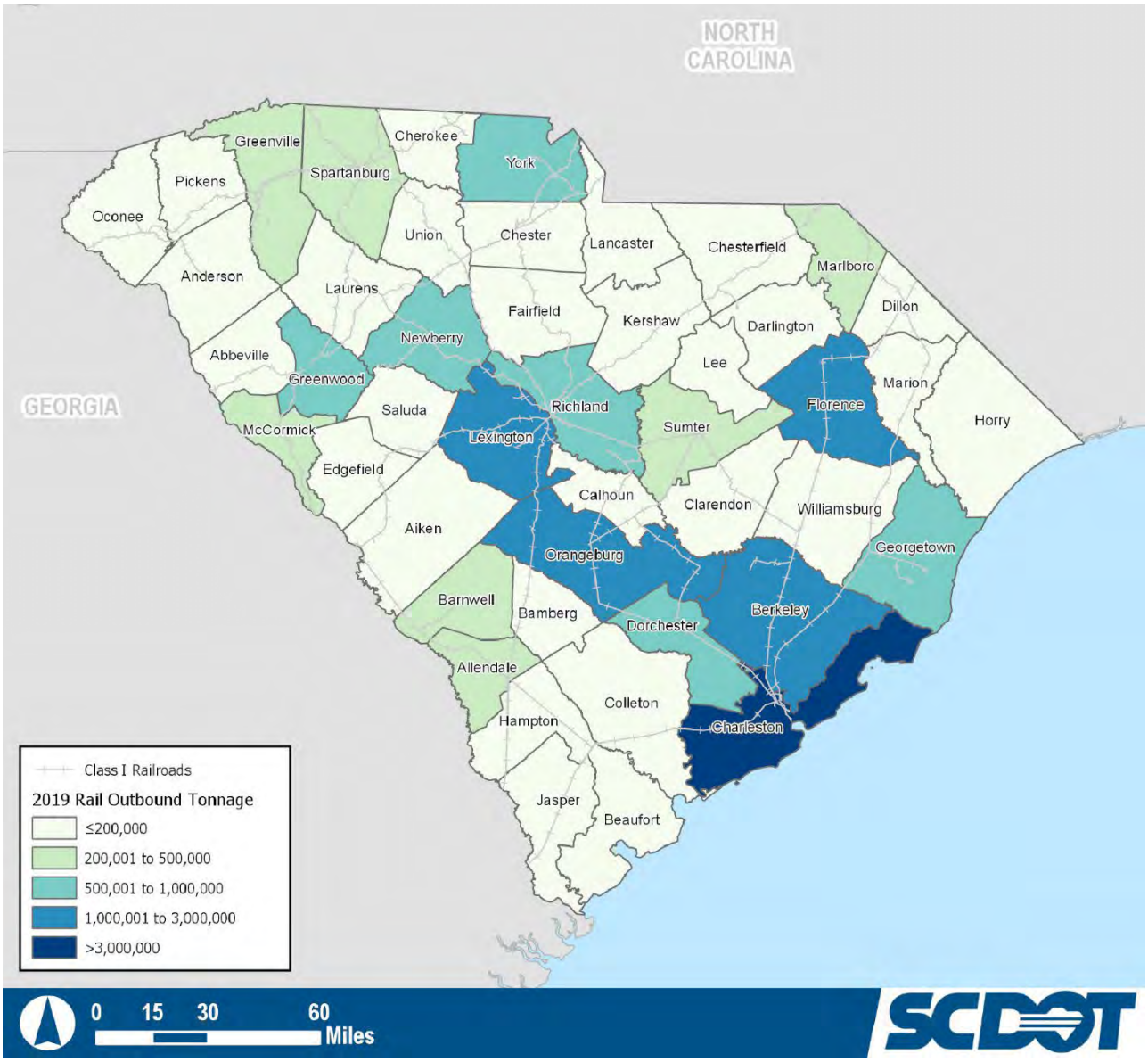
Source: TRANSEARCH data for 2019

Note: Components may not appear to sum because of rounding.

Outbound Tonnage Origin and Destination

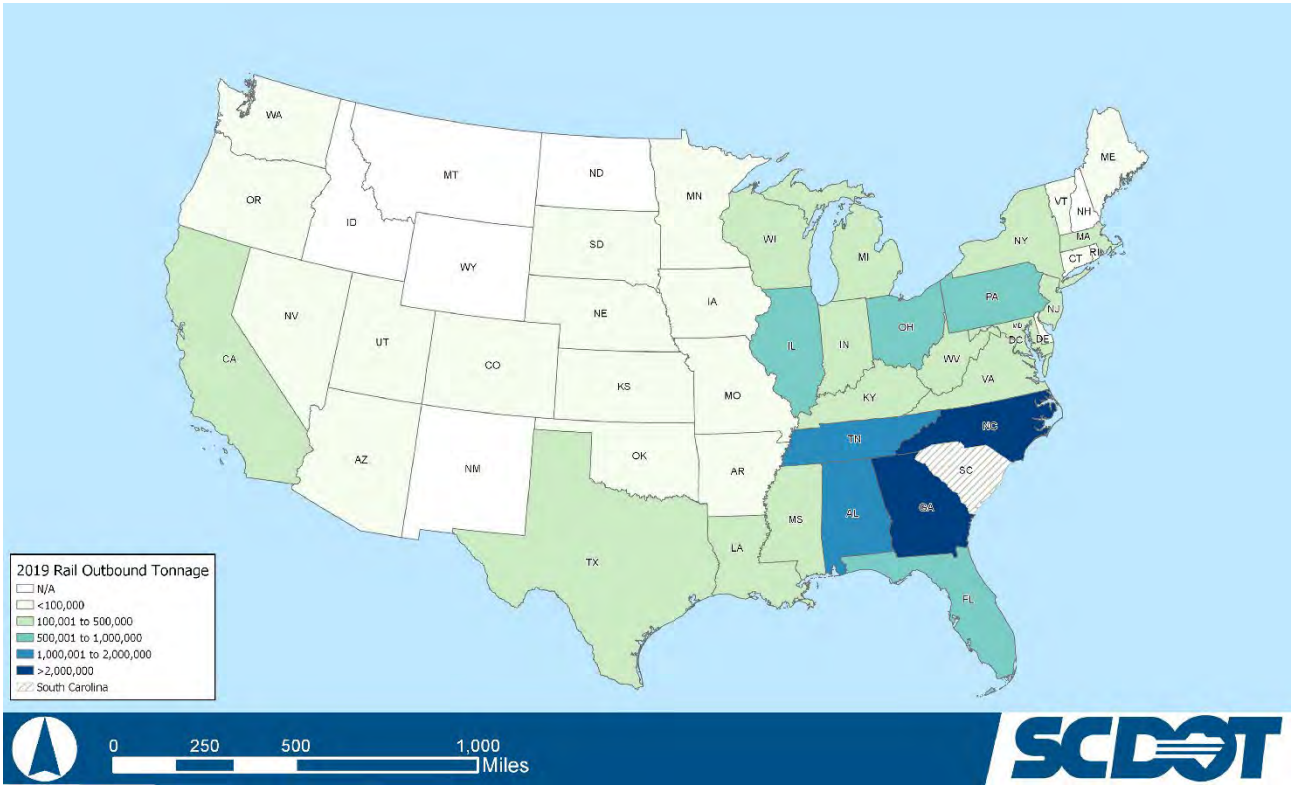
Major outbound tonnages in 2019 are shown by county origin in **Figure 4.12**. Rail movements destined out-of-state primarily originated from Charleston County (3.2 million tons), Berkeley County (2.2 million tons) along with Lexington County (1.4 million tons), and Florence County (1.1 million tons). More than a third of outbound rail went to North Carolina (3.3 million tons, 20.6 percent) and Georgia respectively (2.3 million tons, 14.3 percent) followed by Tennessee (1.3 million tons, 8.1 percent) as shown in **Figure 4.13**. North Carolina movements were led by *Clay, Concrete, Glass or Stone* (1.5 million tons, $192.5 million) and *Lumber or Wood Products* (0.8 million tons, $139.4 million). More than a third of Georgia-bound tonnage was led by *Lumber or Wood Products* (0.5 million tons, $82.2 million), and *Pulp, Paper or Allied Products (0.4 million tons, $433.7 million).* Tennessee-bound shipments were *Miscellaneous Mixed Shipments* (0.45 million tons, $2.3 billion) and *Chemical or Allied Products* (0.44 million tons, $688.8 million).

Figure 4.12 South Carolina Rail Outbound Freight by County Origin (2019)



Source: TRANSEARCH data for 2019.

Figure 4.13 South Carolina Rail Outbound Freight by State of Destination (2019)



Source: TRANSEARCH data for 2019.

Through Rail

Table 4.10 presents through-state rail commodities in 2019. Such movements total 60.5 million tons, via 1.8 million units, valued at $116 billion, with an average value/ton of $1,917. In tonnage terms, the top through movements include: *Chemicals or Allied Products* (14.9 million, 24.6 percent), *Miscellaneous Mixed Shipments* (9.7 million, 16.1 percent), and *Nonmetallic Minerals* (7.3 million tons, 12 percent). In unit terms, *Miscellaneous Mixed Shipments* constitute nearly half (762,500 or 42 percent) of the total 1.8 million through rail units. In value terms, *Miscellaneous Mixed Shipments* and *Chemicals or Allied Products* constitute more than half of the total $116 billion ($49.2.9 billion, 42.4 percent and $23.5 billion, 20.2 percent respectively).

Table 4.10 South Carolina Rail Through-State by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
28	Chemicals Or Allied Products	14,900,445	24.6%	195,377	10.8%	$23,486	20.2%	$1,576
46	Misc. Mixed Shipments	9,729,989	16.1%	762,500	42.3%	$49,156	42.4%	$5,052
14	Nonmetallic Minerals	7,255,278	12.0%	65,969	3.7%	$103	0.1%	$14
20	Food Or Kindred Products	6,404,748	10.6%	121,520	6.7%	$7,811	6.7%	$1,220
26	Pulp, Paper Or Allied Products	5,475,211	9.1%	129,281	7.2%	$5,441	4.7%	$994
32	Clay, Concrete, Glass Or Stone	4,153,992	6.9%	51,879	2.9%	$1,366	1.2%	$329
24	Lumber Or Wood Products	2,599,290	4.3%	34,047	1.9%	$1,065	0.9%	$410
29	Petroleum Or Coal Products	1,473,742	2.4%	20,928	1.2%	$728	0.6%	$494
1	Farm Products	1,402,530	2.3%	14,592	0.8%	$332	0.3%	$237
11	Coal	1,348,468	2.2%	12,728	0.7%	$43	0.04%	$32
	Remaining Commodities	5,755,079	9.5%	395,205	21.9%	$26,459	22.8%	$4,597
	Total	**60,498,773**	**100.0%**	**1,804,024**	**100.0%**	**$115,989**	**100.0%**	**$1,917**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Intrastate Rail

Table 4.11 summarizes intrastate rail commodities in South Carolina in 2019. These movements totaled over 11.9 million tons, comprised nearly 475,000 units, and were valued at over $29.8 billion, with an average value/ton of $2,503. In tonnage terms, top intrastate movements included: *Miscellaneous Mixed Shipments* (3.3 million tons, 28 percent), *Chemicals or Allied Products* (nearly 2.9 million tons, 24 percent), and *Nonmetallic Minerals* (nearly 2.3 million tons, 19 percent) and. In terms of units, *Miscellaneous Mixed Freight* alone accounts for 62 percent (294,000) of total intrastate rail units. By value, the top commodities include: *Miscellaneous Mixed Freight* ($17 billion, 57 percent), *Transportation Equipment* (nearly $8.6 billion, 29 percent), and *Chemicals or Allied Products* nearly $3.2 billion, 11 percent).

Table 4.11 South Carolina Rail Intrastate by Major Commodities (2019)

		Tons		Units		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Amount	Percent	Average Value/Ton
46	Misc. Mixed Shipments	3,309,920	27.8%	294,000	61.9%	$17,057	57.1%	$5,153
28	Chemicals Or Allied Products	2,875,552	24.1%	29,792	6.3%	$3,180	10.7%	$1,106
14	Nonmetallic Minerals	2,277,664	19.1%	20,320	4.3%	$27	0.1%	$12
24	Lumber Or Wood Products	919,680	7.7%	10,136	2.1%	$158	0.5%	$172
37	Transportation Equipment	884,640	7.4%	44,072	9.3%	$8,647	29.0%	$9,774
10	Metallic Ores	564,368	4.7%	5,200	1.1%	$88	0.3%	$155
26	Pulp, Paper Or Allied Products	273,920	2.3%	3,440	0.7%	$217	0.7%	$793
48	Waste Hazardous Materials	164,080	1.4%	1,760	0.4%	$0	-	-
33	Primary Metal Products	157,360	1.3%	1,760	0.4%	$213	0.7%	$1,354
32	Clay, Concrete, Glass Or Stone	150,584	1.3%	1,248	0.3%	$20	0.1%	$135
	Remaining Commodities	345,688	2.9%	62,968	13.3%	$241	0.8%	$697
	Total	**11,923,456**	**100.0%**	**474,696**	**100.0%**	**$29,848**	**100.0%**	**$2,503**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Port Freight

South Carolina port (water) movements in 2019 as reported by TRANSEARCH totaled nearly 2.3 million tons, valued at $1.66 billion, see **Table 4.12**. 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.[40]

On average, reported port commodity movements are valued at $736 per ton. In terms of tonnage, inbound port movements are the largest directional movements constituting 48 percent of total tonnage with through port movements constituting 44 percent of total tonnage. With respect to total value, through port movements have the largest percent of value at over 47 percent with inbound port movements constituting 41 percent of

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

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: 14.3 times the volume and 7.1 times the value. As such, the outbound value/ton for waterborne movements are twice the value/ton for inbound waterborne movements: $1,272 and $630 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.

Table 4.12 South Carolina Port Freight by Direction (2019), excluding Foreign Non-NAFTA Movements

	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Inbound	1,079,502	47.9%	$680	41.0%	$630
Intrastate	105,134	4.7%	$96	5.8%	$914
Outbound	75,302	3.3%	$96	5.8%	$1,272
Through	993,926	44.1%	$787	47.4%	$792
Total	**2,253,864**	**100.0%**	**$1,659**	**100.0%**	**$736**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Inbound Port

Table 4.13 summarizes inbound port commodities from the U.S., Mexico, and Canada to South Carolina in 2019, as reported by TRANSEARCH. Such reported movements total 1.08 million tons, valued at $680 million, with an average value/ton of $630. In tonnage terms, the top inbound movements include: *Petroleum or Coal Products* (over 961,000 tons, 89 percent), *Waste or Scrap Materials* (over 102,000 tons, 9 percent), *Chemicals or Allied Products* (over 16,300 tons, 2 percent), and *Coal* (4 tons, less than 1 percent). *Petroleum or Coal Products* ($641 million, 94 percent) and *Waste or Scrap Materials* ($33 million, 5 percent) account for the vast majority of the value for inbound port shipments.

Table 4.13 South Carolina Port Inbound Freight by Major Commodities (2019)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
29	Petroleum Or Coal Products	961,074	89.0%	$641	94.2%	$667
40	Waste Or Scrap Materials	102,046	9.5%	$33	4.9%	$325
28	Chemicals Or Allied Products	16,378	1.5%	$6	0.9%	$362
11	Coal	4	0.0004%	$0.0001	0.00002%	$32
	Total	**1,079,502**	**100.0%**	**$680**	**100.0%**	**$630**

Source: TRANSEARCH data for 2019.

Notes: (1) Components may not appear to sum because of rounding.(2) Value per ton is reported in whole dollars while value is reported in millions of dollars.

Outbound Port

Table 4.14 summarizes outbound port commodities from South Carolina to the U.S., Mexico, and Canada in 2019, as reported by TRANSEARCH. Such reported movements totaled 75,303 tons, valued at $96 million, with an average value/ton of $1,272. In tonnage terms, the top outbound movements include: *Primary Metal Products* (73,400 tons, 98 percent), *Petroleum or Coal Products* (816 tons, 1 percent), and *Machinery* (704 tons, 1 percent). In value terms, the top commodities are *Primary Metal Products* ($84 million, 88 percent) and *Machinery* ($10 million, 10 percent).

Table 4.14 South Carolina Port Outbound Freight by Major Commodities (2019)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
33	Primary Metal Products	73,400	97.5%	$84.0	87.7%	$1,145
29	Petroleum Or Coal Products	816	1.1%	$0.6	0.7%	$788
35	Machinery	704	0.9%	$9.8	10.2%	$13,911
24	Lumber Or Wood Products	205	0.3%	$0.3	0.3%	$1,373
25	Furniture Or Fixtures	167	0.2%	$0.9	0.9%	$5,272
36	Electrical Equipment	11	0.01%	$0.2	0.2%	$16,588
	Total	**75,302**	**100.0%**	**$95.0**	**100.0%**	**$1,272**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Through Port

Table 4.15 summarizes through port commodities via South Carolina in 2019, as reported by TRANSEARCH. Such reported movements totaled nearly 1 million tons, valued at $787 million, with an average value/ton of $792. In terms of both tonnage and value, the top through movements are *Petroleum or Coal Products*, constituting over 640,000 tons (64 percent of tonnage totals) and $423 million (nearly 54 percent of value totals).

Table 4.15 South Carolina Port Through Freight by Major Commodities (2019)

		Tons		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Average Value/Ton
29	Petroleum Or Coal Products	640,004	64.4%	$423	53.8%	$661
28	Chemicals Or Allied Products	173,139	17.4%	$60	7.6%	$348
20	Food Or Kindred Products	109,351	11.0%	$66	8.3%	$599
24	Lumber Or Wood Products	20,362	2.0%	$15	1.9%	$718
40	Waste Or Scrap Materials	17,698	1.8%	$2	0.2%	$92
35	Machinery	12,129	1.2%	$144	18.3%	$11,900
32	Clay, Concrete, Glass Or Stone	8,933	0.9%	$6	0.8%	$671
46	Misc. Mixed Shipments	4,718	0.5%	$24	3.1%	$5,153
1	Farm Products	2,862	0.3%	$6	0.7%	$1,925
25	Furniture Or Fixtures	2,453	0.2%	$12	1.5%	$4,883
	Remaining Commodities	2,277	0.2%	$30	3.8%	$13,012
	Total	**993,926**	**100.0%**	**$787**	**100.0%**	**$792**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

Intrastate Port

Table 4.16 summarizes intrastate port commodities within South Carolina in 2019, as reported by TRANSEARCH. Such reported movements totaled 105,134 tons, valued at $96 million, with an average value/ton of $914. *Petroleum or Coal Products*, *Nonmetallic Minerals*, and *Waste or Scrap Materials* are the largest commodity groups in terms of tonnage. Collectively, they comprise over 98 percent of intrastate port tonnage. *Petroleum or Coal Products, Electrical Equipment, and Machinery* are the top commodities by value. Together, they account for about 91.4 percent of the total value of intrastate port movements.

Table 4.16 South Carolina Port Intrastate Freight by Major Commodities (2019)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
29	Petroleum Or Coal Products	82,102	78.1%	$64.7	67.3%	$788
14	Nonmetallic Minerals	10,566	10.1%	$0.4	0.4%	$40
40	Waste Or Scrap Materials	10,400	9.9%	$3.4	3.5%	$325
34	Fabricated Metal Products	673	0.6%	$4.0	4.2%	$5,961
35	Machinery	646	0.6%	$8.0	8.4%	$12,422
36	Electrical Equipment	589	0.6%	$15.1	15.7%	$25,596
33	Primary Metal Products	158	0.2%	$0.5	0.5%	$3,006
	Total	**105,134**	**100.0%**	**$96.1**	**100.0%**	**$914**

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

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 4.17** summarizes total tonnage volumes reported by the USACE at nearly 25 million tons in year 2019, which is 952 percent (21.4 million tons) greater than the 2.3 million tons reported by TRANSEARCH. Differences are significant for all inbound and outbound movements. 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. 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 4.17 South Carolina Port Tonnage Discrepancy Summary (2019)

	Tons		Difference	
Direction	TRANSEARCH	USACE	Tons	Percent
Outbound	75,302	8,526,975	8,451,673	11,224%
Inbound	1,079,502	14,075,971	12,996,469	1,204%
Internal	105,134	N/A	N/A	N/A
Intra-port	N/A	1,993,544	N/A	N/A
Through	993,926	N/A	N/A	N/A
Total	**2,253,864**	**24,596,490**	**21,448,142**	**952%**

Source: TRANSEARCH data for 2019; USACE Waterborne Commerce Statistics Center.

Intrastate Movements—USACE reports all port origin and destination movements, but does not breakout intrastate movements between South Carolina ports. Conversely, TRANSEARCH 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 (1,993,544) 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.

Ultimately, 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).

Air Freight

South Carolina airfreight movements reported by TRANSEARCH in 2019 totaled 272,119 tons, valued at $36.7 billion, as shown in **Table 4.18**. On average, total air commodity movements are valued at $134,923/ton, which is significantly higher than all other transportation modes. Through air movements comprise the largest direction movement by both tonnage and value (52 percent of total tonnage and 46 percent of total value). Note that the TRANSEARCH does not provide units for air movements.

Table 4.18 South Carolina Air Freight by Direction (2019)

	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Inbound	73,234	26.9%	$11,544	31.4%	$157,635
Intrastate	954	0.4%	$49	0.1%	$51,012
Outbound	57,679	21.2%	$8,406	22.9%	$145,732
Through	140,252	51.5%	$16,716	45.5%	$119,186
Total	**272,119**	**100.0%**	**$36,715**	**100.0%**	**$134,921**

Source: TRANSEARCH data for 2019

Note: Components may not appear to sum because of rounding.

Inbound Air

Table 4.19 summarizes the inbound air commodities to South Carolina in 2019. Such movements total 73,232 tons, valued at $11.5 billion, with an average value/ton of $157,635. In tonnage terms, the top inbound movements include: *Small Packaged Freight Shipments* (25,471, 34.8 percent), *Transportation Equipment* (8,100 tons, 11 percent), and *Instruments, Photo Equipment, and Optical Equipment* (5,708 tons, 8 percent). In value terms, the top commodities include: *Miscellaneous Manufacturing Products* ($3.6 billion, 31.5 percent) and *Transportation Equipment* ($3.2 billion, 27.9 percent).

Table 4.19 South Carolina Air Inbound Freight by Major Commodities (2019)

		Tons		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Average Value/Ton
47	Small Packaged Freight Shipments	25,471	34.8%	$0	–	–
37	Transportation Equipment	8,100	11.1%	$3,217	27.9%	$397,205
38	Photo Equip, Optical Eq.	5,708	7.8%	$1,364	11.8%	$238,889
20	Food Or Kindred Products	5,221	7.1%	$72	0.6%	$13,752
46	Misc. Mixed Shipments	4,459	6.1%	$637	5.5%	$142,895
39	Misc. Manufacturing Products	4,156	5.7%	$3,631	31.5%	$873,726
30	Rubber Or Misc. Plastics	3,910	5.3%	$159	1.4%	$40,667
35	Machinery	3,603	4.9%	$512	4.4%	$142,025
36	Electrical Equipment	3,581	4.9%	$957	8.3%	$267,297
22	Textile Mill Products	2,857	3.9%	$58	0.5%	$20,303
	Remaining Commodities	6,166	8.4%	$937	8.1%	$151,957
	Total	**73,234**	**100.0%**	**$11,544**	**100.0%**	**$157,635**

Source: TRANSEARCH data for 2019

Notes: (1) TRANSEARCH does not assign a value for STCC 47: Small Packaged Freight Shipments.
(2) Components may not appear to sum because of rounding.

Outbound Air

Table 4.20 summarizes major outbound air commodities from South Carolina in 2019. Such movements total 57,679 tons, valued at $8.4 billion, with an average value/ton of $145,732. In tonnage terms, the top inbound movements include: *Small Packaged Freight Shipments* (21,547 tons, 37 percent), *Rubber or Miscellaneous Products* (9,746 tons, 17 percent), and *Miscellaneous Manufacturing Products* (6,334, 11 percent). In value terms, the top commodities include: *Miscellaneous Manufacturing Products* ($5.2 billion or 61.6 percent), *Electrical Equipment* ($1.1 billion, 13 percent), and *Miscellaneous Mixed Shipments* ($592 million, 7 percent).

Table 4.20 South Carolina Air Outbound Freight by Major Commodities (2019)

		Tons		Value (in millions)		Average
STCC2	Commodity	Amount	Percent	Amount	Percent	Value/Ton
47	Small Packaged Freight Shipments	21,547	37.4%	$0	–	–
30	Rubber or Misc. Plastics	9,746	16.9%	$397	4.7%	$40,709
39	Misc. Manufacturing Products	6,334	11.0%	$5,179	61.6%	$817,690
22	Textile Mill Products	4,703	8.2%	$95	1.1%	$20,287
46	Misc. Mixed Shipments	4,139	7.2%	$592	7.0%	$143,036
36	Electrical Equipment	4,072	7.1%	$1,092	13.0%	$268,205
35	Machinery	2,288	4.0%	$292	3.5%	$127,568
28	Chemicals Or Allied Products	1,854	3.2%	$439	5.2%	$236,543
27	Printed Matter	837	1.5%	$17	0.2%	$20,906
38	Instruments, Photo Equip, Optical Eq	502	0.8%	$117	1.4%	$232,304
	Remaining Commodities	1,658	2.9%	$186	2.2%	$111,968
	Total	**57,679**	**100.0%**	**$8,406**	**100.0%**	**$145,732**

Source: TRANSEARCH data for 2019.

Notes: (1) TRANSEARCH does not assign a value for STCC 47: Small Packaged Freight Shipments.
(2) Components may not appear to sum because of rounding.

Through Air

Table 4.21 summarizes major through-traffic air commodities via South Carolina in 2019. For purposes of this analysis, air cargo shipments that have an endpoint in a county bordering South Carolina are considered through air movements. Such movements total 140,252 tons, valued at $16.7 billion, with an average value/ton of $119,186. In tonnage terms, the top through movements include: *Small Packaged Freight Shipments* (46,714 tons, or 33 percent), *Machinery* (21,786 tons, 16 percent), and *Electrical Equipment* (15,835 tons, 11 percent). In value terms, the top commodities include: *Electrical Equipment* ($4.2 billion, 25 percent), *Machinery* ($2.8 billion, 16 percent), and *Transportation Equipment* ($2.8 billion, 16 percent).

Table 4.21 South Carolina Air Through Freight by Major Commodities (2019)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	46,714	33.3%	-	-	-
35	Machinery	21,786	15.5%	$2,778	16.6%	$127,530
36	Electrical Equipment	15,835	11.3%	$4,245	25.4%	$268,054
38	Instruments, Photo Equip, Optical Eq	7,648	5.5%	$1,777	10.6%	$232,287
43	Mail Or Contract Traffic	7,009	5.0%	$22	0.1%	$3,207
37	Transportation Equipment	6,938	4.9%	$2,775	16.6%	$400,018
46	Misc Mixed Shipments	6,472	4.6%	$925	5.5%	$142,969
28	Chemicals Or Allied Products	5,233	3.7%	$1,263	7.6%	$241,421
27	Printed Matter	4,063	2.9%	$85	0.5%	$20,906
34	Fabricated Metal Products	3,479	2.5%	$154	0.9%	$44,373
	Remaining Commodities	15,075	10.7%	$2,691	16.1%	$178,490
	Total	**140,252**	**100.0%**	**$16,716**	**100.0%**	**$119,186**

Source: TRANSEARCH data for 2019

Notes: (1) TRANSEARCH does not assign a value for STCC 47: Small Packaged Freight Shipments.
(2) Components may not appear to sum because of rounding.

Intrastate Air

Table 4.22 summarizes major through-traffic air commodities via South Carolina in 2019. Such movements total 953 tons, valued at $48 million, with an average value/ton of $50,367. In tonnage terms, *Small Packaged Freight Shipments* (477 tons, 50 percent) and *Textile Mill Products* (211 tons, 22 percent) comprise the top intrastate movements. In value terms, the top commodities include: *Electrical Equipment* ($10 million, 21 percent), *Machinery* ($6 million, 13 percent) and *Transportation Equipment* ($6 million, 13 percent).

Table 4.22 South Carolina Air Intrastate Freight by Major Commodities (2019)

STCC2	Commodity	Tons		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	
47	Small Packaged Freight Shipments	477	50.0%	-	-	-
22	Textile Mill Products	211	22.1%	$4.3	8.8%	$20,287
35	Machinery	50	5.2%	$6.3	13.0%	$127,5910
36	Electrical Equipment	36	3.7%	$9.5	19.6%	$268,487
28	Chemicals Or Allied Products	35	3.7%	$6.0	12.4%	$173,152
38	Instruments, Photo Equip, Optical Eq	22	2.3%	$5.1	10.5%	$232,304
20	Food Or Kindred Products	18	1.9%	$0.2	0.4%	$11,454
1	Farm Products	17	1.8%	$0.2	0.4%	$12,455
30	Rubber Or Misc Plastics	17	1.8%	$0.7	1.4%	$
37	Transportation Equipment	15	1.6%	$6.2	12.7%	$398,243
	Remaining Commodities	55	5.8%	$10.1	20.7%	$18,2,005
	Total	**954**	**100.0%**	**$48.7**	**100.0%**	**$51,012**

Source: TRANSEARCH data for 2019

Notes: (1) TRANSEARCH does not assign a value for STCC 47: Small Packaged Freight Shipments.
(2) Components may not appear to sum because of rounding.

Pipeline Flows

Total pipeline movements, as reported by FAF5 in 2019 totaled 29 million tons, valued at $5.8 billion as shown in **Table 4.23**. **Table 4.24** lists the three commodities that comprise South Carolina's pipeline flows. In terms of Tonnage, pipeline movements include *Petroleum or Coal Products* (28.9 million, 99.9 percent), *Nonmetallic Minerals* (40,447, 0.1 percent), *Chemicals or Allied Products* (1,413, 0.005 percent). In this case, *Nonmetallic Minerals* shipped by pipeline likely consists of brine which is classified under that commodity code. Inbound pipe movements are the largest directional movements: 58.4 percent of total tonnage and 61.8 percent of value. Intrastate pipeline tonnage (6.3 million) is larger than outbound pipe tonnage (5.7 million). Intrastate pipeline value is also slightly greater than outbound ($1.2 billion outbound versus $1 billion).

Table 4.23 South Carolina Pipeline Freight by Direction

	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Inbound	16,882,803	58.4%	$3,554	61.8%	$211
Intrastate	6,330,447	21.9%	$1,154	20.1%	$182
Outbound	5,716,500	19.8%	$1,043	18.1%	$182
Through	–	–	–	–	–
Total	**28,929,750**	**100.0%**	**$5,751**	**100.0%**	**$199**

Source: FAF5 data for 2019.

Note: Components may not appear to sum because of rounding.

Table 4.24 South Carolina Pipeline Freight by Commodity Type

		Tons		Value (in millions)		
STCC2	Commodity	Amount	Percent	Amount	Percent	Average Value/Ton
29	Petroleum Or Coal Products	28,887,890	99.9%	$5,743	99.9%	$199
14	Nonmetallic Minerals	40,447	0.1%	$6	0.1%	$153
28	Chemicals Or Allied Products	1,413	0.0%	$1	0.0%	$835
	Total	**28,929,750**	**100.0%**	**$5,751**	**100.0%**	**$199**

Source: FAF5 data for 2019.

Note: Components may not appear to sum because of rounding.

4.3 Forecast Commodity Flows

Tonnage across the South Carolina freight network is forecast by TRANSEARCH to grow 84 percent from 2019 to 2050, as summarized in **Table 4.25**. While air yields the fastest tonnage growth rate (177 percent), truck growth (90 percent) is much greater in terms of total tonnage (352.3 million ton increase). Specifically, truck tonnage is forecast to grow from nearly 391 million tons in 2019 to 743.3 million in 2050. While intrastate truck growth is the fastest (111 percent), through tonnage growth is the greatest by volume (186.5 million tons). Rail tonnage is forecast to grow from 135.2 million tons to 230.3 million tons. Of this growth, intrastate rail is project to increase fastest at 96% while through-state rail is project to growth the fastest by volume (57.4 million tons). Waterborne tonnage is forecast to increase 117%, from 2.3 million tons in 2019 to 4.9 million tons in 2050. This growth is projected to be led by inbound movements (1.3 million tons, 117% increase) and through movements (1.1 million tons, 109% increase). Air tonnage is projected to increase from about 272,000 tons to about 754,000 tons and is led by outbound (about 226,000 tons, 392 percent increase) and through movements (about 154,000 tons, 110 percent increase). Strong growth is forecast for pipelines which is expected to increase from 29 million tons to 46 million tons and is led by outbound movements (7.6 million tons, 133 percent increase) and inbound movements (6.5 million tons, 39 percent increase).

Table 4.25 South Carolina Freight Ton Forecast by Modal Direction (2019 and 2050)

Direction	Air	Rail	Truck	Water	Pipe	Total
Tons, in thousands						
Year 2019						
Outbound	58	16,064	76,656	75	5,717	98,572
Inbound	73	46,715	64,452	1,080	16,883	129,209
Intrastate	1	11,923	44,097	105	6,330	62,457
Through	140	60,499	205,792	994	-	267,428
Total	***272***	***135,201***	***390,997***	***2,254***	***28,930***	***557,666***
Year 2050						
Outbound	284	28,748	134,544	133	13,294	177,010
Inbound	172	60,277	123,634	2,338	23,412	209,845
Intrastate	4	23,413	92,898	344	8,823	125,482
Through	294	117,882	392,264	2,078	-	512,525
Total	***754***	***230,320***	***743,341***	***4,894***	***45,528***	***1,024,862***
Growth 2019 to 2050						
Tons Increase, in thousands (2019-2050)						
Outbound	226	12,684	57,888	58	7,578	78,438
Inbound	99	13,562	59,182	1,259	6,529	80,636
Intrastate	3	11,490	48,801	239	2,492	63,025
Through	154	57,383	186,472	1,084	-	245,097
Total	***481***	***95,119***	***352,344***	***2,640***	***16,599***	***467,196***
Percentage Growth (2019-2050)						
Outbound	392%	79%	76%	77%	133%	80%
Inbound	135%	29%	92%	117%	39%	62%
Intrastate	298%	96%	111%	227%	39%	101%
Through	110%	95%	91%	109%	-	92%
Total	***177%***	***70%***	***90%***	***117%***	***57%***	***84%***

Source: TRANSEARCH data for 2019.

Note: Components may not appear to sum because of rounding.

The following subsections detail the modal tonnage and value growth by direction between 2019 and 2050, as well as the interim year of 2025. Tables are sorted by top ten commodities in 2050 in terms of either volume or units.

Truck Forecasts

Table 4.26 depicts the directional composition of truck movements in South Carolina between 2019 and 2050, which is relatively constant over the future analysis horizon. Truck tonnage is forecast to increase from nearly 391 million in 2019 to 743.3 million in 2050, a cumulative increase of 90 percent, for a compound average annual growth rate (CAGR) of 2.1 percent. Truck commodity value is forecast to increase from $614 billion in 2019 to $1.27 trillion by 2050, a cumulative increase of 106 percent, for a CAGR of 2.4 percent.

Table 4.26 South Carolina Truck Freight Tonnage and Value by Year and Direction (2019, 2025, 2050)

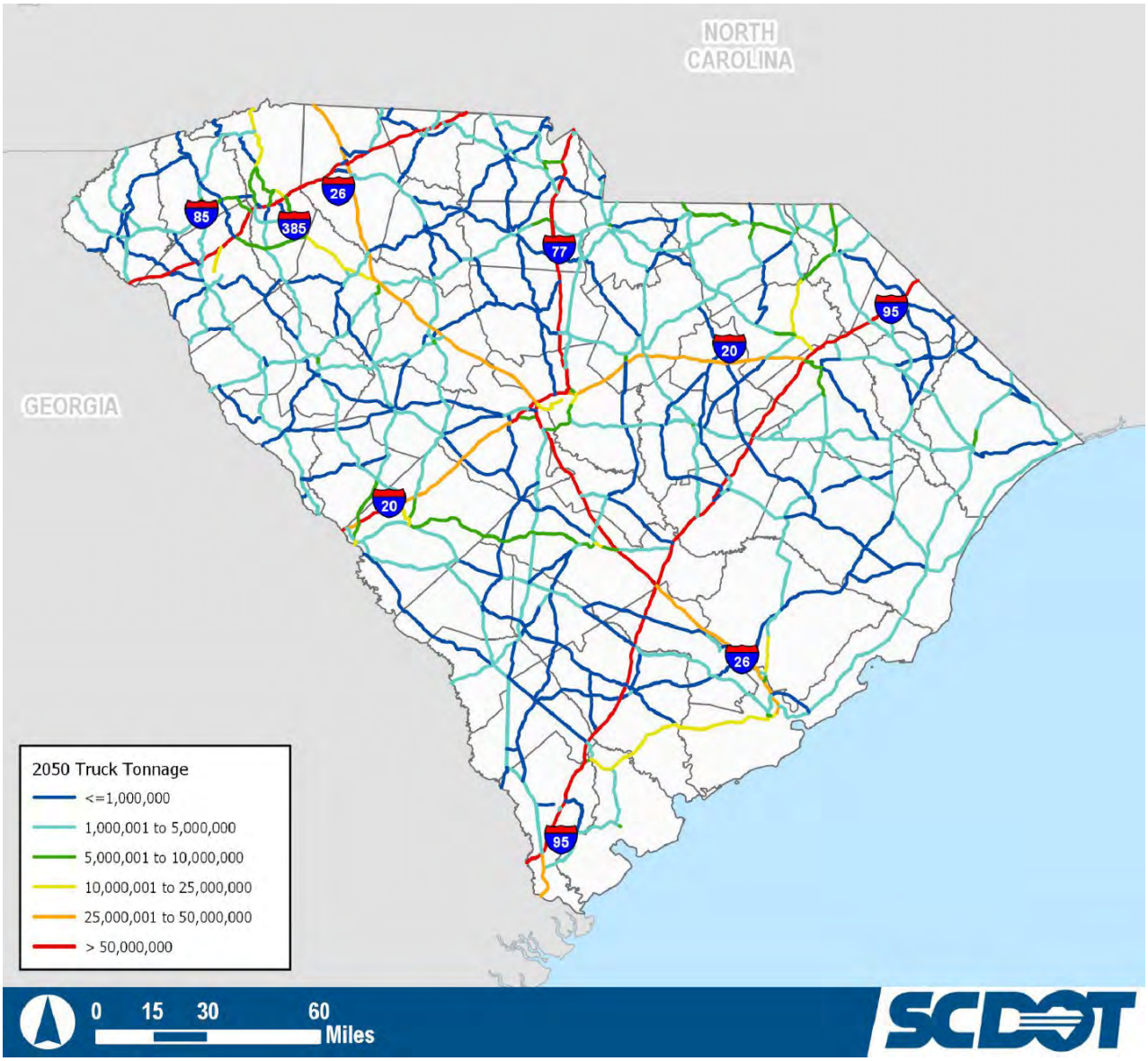
	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Year 2019					
Outbound	76,655,632	19.6%	$120,129	19.6%	$1,567
Inbound	64,452,025	16.5%	$88,038	14.3%	$1,366
Intrastate	44,097,307	11.3%	$51,410	8.4%	$1,166
Through	205,792,106	52.6%	$354,436	57.7%	$1,722
Total	***390,997,069***	***100.0%***	***$614,012***	***100.0%***	***$1,570***
Year 2025					
Outbound	91,928,131	20.4%	$144,085	20.0%	$1,567
Inbound	72,955,790	16.2%	$104,459	14.5%	$1,432
Intrastate	55,091,329	12.2%	$63,796	8.9%	$1,158
Through	229,861,998	51.1%	$407,871	56.6%	$1,774
Total	***449,837,249***	***100.0%***	***$720,212***	***100.0%***	***$1,601***
Year 2050					
Outbound	134,544,055	18.1%	$260,378	20.5%	$1,935
Inbound	123,634,313	16.6%	$181,759	14.3%	$1,470
Intrastate	92,898,278	12.5%	$113,570	9.0%	$1,223
Through	392,264,360	52.8%	$712,986	56.2%	$1,818
Total	***743,341,006***	***100.0%***	***$1,268,692***	***100.0%***	***$1,707***

Source: TRANSEARCH data for 2019, 2025, and 2050.

Note: Components may not appear to sum because of rounding.

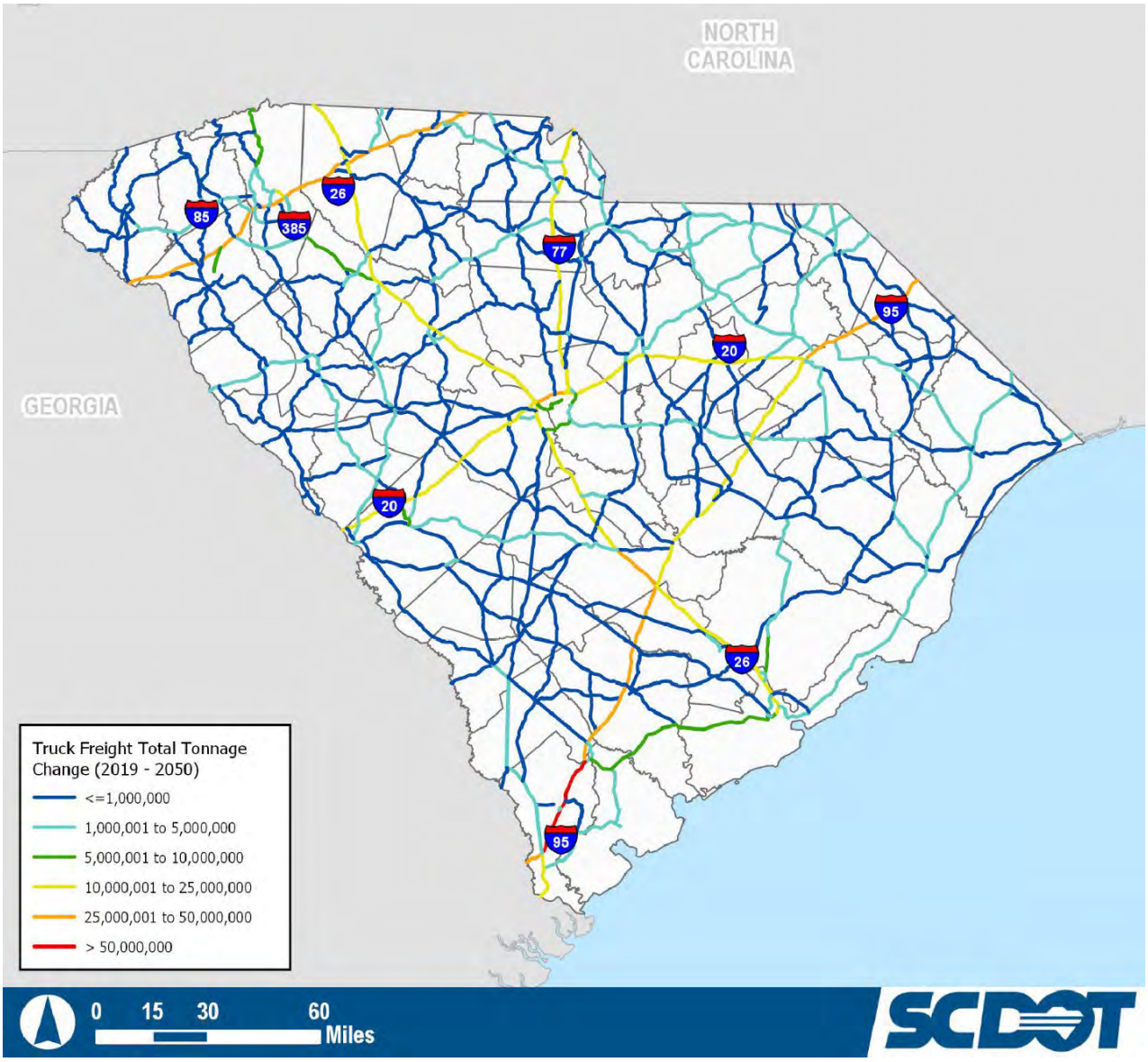
Freight density across the South Carolina road network is shown in **Figure 4.14**Figure 4.14, which indicates the highest truck volumes are on I-77, I-85, I-26 from Columbia south to the I-95 interchange, and on I-95. Truck freight density change between year 2019 and 2050 is shown in **Figure 4.15**Figure 4.15, which indicates that I-85 and I-95 generally have the highest growth.

Figure 4.14 South Carolina Truck Freight Tonnage (2050)



Source: TRANSEARCH data for 2050.

Figure 4.15 South Carolina Truck Freight Tonnage Growth (2019-2050)



Source: TRANSEARCH data for 2019 and 2050.

Table 4.27 summarizes major commodity tonnage movements by truck in 2050, and the associated commodity tonnage growth from 2019.

Total Tonnage—Major commodities in 2050 include: *Nonmetallic Minerals (129.7 million, 17 percent), Secondary Traffic* (121.4 million, 16 percent), and *Petroleum or Coal Products* (104 million, 14 percent), exhibiting 1.1 percent, 3.6 percent, and 4 percent CAGR, respectively.

Tonnage Growth—Commodities with the highest tonnage growth rates between 2019 and 2050 include: *Petroleum or Coal Products* (31.1 million to 104 million, 4 percent CAGR), *Secondary Traffic* (40.2 million tons to 121.4 million tons, 3.6 percent CAGR), and *Chemicals or Allied Products* (21 million to 55.1 million, 3.2 percent CAGR).

Value Growth—As **Table 4.28** shows, Commodities with the highest value growth rates between 2019 and 2050 include: *Crude Petroleum or Natural* Gas ($420 to $2,703, 9.3 percent CAGR), Petroleum or Coal Products ($16.4 billion to $63.1 billion. 6.6 percent *CAGR) Miscellaneous Mixed Shipments* ($17.5 million to $62.6 million, 6.3 percent CAGR).

Table 4.27 South Carolina Truck Freight Tonnage Forecast by Major Commodity (Tons)

		2019		2050		Percent Change	
STCC2	Commodity	Tons	Percent	Tons	Percent	Total	CAGR
14	Nonmetallic Minerals	92,274,055	23.6%	129,700,474	17.4%	40.6%	1.1%
50	Secondary Traffic	40,172,118	10.3%	121,390,768	16.3%	202.2%	3.6%
20	Food Or Kindred Products	40,087,752	10.3%	83,047,133	11.2%	107.2%	2.4%
29	Petroleum Or Coal Products	31,112,751	8.0%	103,985,572	14.0%	234.4%	4.0%
32	Clay, Concrete, Glass Or Stone	29,107,446	7.4%	42,152,699	5.7%	44.8%	1.2%
24	Lumber Or Wood Products	26,023,083	6.7%	21,045,024	2.8%	-19.1%	-0.7%
40	Waste Or Scrap Materials	24,601,486	6.3%	43,185,213	5.8%	75.5%	1.8%
1	Farm Products	23,104,015	5.9%	27,334,025	3.4%	18.3%	0.5%
28	Chemicals Or Allied Products	20,991,421	5.4%	55,144,178	7.4%	162.7%	3.2%
26	Pulp, Paper Or Allied Products	13,214,188	3.4%	23,262,190	3.1%	76.0%	1.8%
	Remaining Commodities	50,308,755	12.9%	93,093,732	12.5%	85.0%	2.0%
	Total	**390,997,069**	**100.0%**	**743,341,006**	**100.0%**	**90.1%**	**2.1%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Table 4.28 South Carolina Truck Freight Value Growth Forecast by Major Commodity (Value)

		2019		2050		Percent Change	
STCC2	Commodity	Value (in million)	Percent	Value (in million)	Percent	Total	CAGR
13	Crude Petroleum Or Natural Gas	$0.00042	0.0000001%	$0.003	0.0000002 %	542.9%	6.2%
29	Petroleum Or Coal Products	$16,423	2.7%	$63,099	5.0%	284.2%	4.4%
41	Misc Freight Shipments	$17	0.003%	$63	0.005%	258.1%	4.2%
38	Instruments, Photo Equip, Optical Eq	$8,924	1.5%	$26,782	2.1%	200.1%	3.6%
46	Misc Mixed Shipments	$879	0.1%	$2,482	0.2%	182.3%	3.4%
28	Chemicals Or Allied Products	$53,271	8.7%	$142,804	11.3%	168.1%	3.2%
50	Secondary Traffic	$87,233	14.2%	$209,899	16.5%	140.6%	2.9%
36	Electrical Equipment	$34,532	5.6%	$77,418	6.1%	124.2%	2.6%
30	Rubber Or Misc Plastics	$35,697	5.8%	$79,107	6.2%	121.6%	2.6%
35	Machinery	$53,893	8.8%	$118,262	9.3%	119.4%	2.6%
	Remaining Commodities	$323,141	52.6%	$548,777	43.3%	69.8%	1.7%
	Total	**$614,012**	**100.0%**	**$1,268,692**	**100.0%**	**106.6%**	**2.4%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Table 4.29 summarizes major truck movements (i.e., units) in 2050 by commodity type. Truck movements in 2050 total 743.3 million tons, via 60.8 million units, valued at $1.27 trillion, with an average value/ton of $1,707.

Total Units—Secondary Traffic is the most prevalent commodity in terms of truck units (6.3 million, 10 percent) in 2050.

Total Value—Top commodities include: *Secondary Traffic* ($209.9 billion or 16.5 percent), *Transportation Equipment* (186.9 billion or 14.7 percent), and *Chemicals or Allied Products* ($142.8 billion or 11.3 percent).

Table 4.29 South Carolina Truck Freight Forecast—Tons, Units, and Value by Commodity (2050 Units)

STCC2	Commodity	Tons		Units		Value (in millions)		Average Value/Ton
		Amount	Percent	Amount	Percent	Amount	Percent	
50	Secondary Traffic	121,390,768	16.3%	6,285,045	10.3%	$209,899	16.5%	$1,729
37	Transportation Equipment	17,854,983	2.4%	1,270,192	2.1%	$186,856	14.7%	$10,465
28	Chemicals Or Allied Products	55,144,178	7.4%	2,683,207	4.4%	$142,804	11.3%	$2,590
20	Food Or Kindred Products	83,047,133	11.2%	3,614,180	5.9%	$127,232	10.0%	$1,532
35	Machinery	11,895,262	1.6%	885,450	1.5%	$118,262	9.3%	$9,942
30	Rubber Or Misc. Plastics	19,161,774	2.6%	1,616,883	2.7%	$79,107	6.2%	$4,128
36	Electrical Equipment	8,015,088	1.1%	480,488	0.8%	$77,418	6.1%	$9,659
29	Petroleum Or Coal Products	103,985,572	14.0%	4,281,342	7.0%	$63,099	5.0%	$607
34	Fabricated Metal Products	9,094,780	1.2%	505,459	0.8%	$37,566	3.0%	$4,130
26	Pulp, Paper Or Allied Products	23,262,190	3.1%	962,400	1.6%	$33,085	2.6%	$1,422
	Remaining Commodities	290,489,279	39.1%	38,245,088	62.9%	$193,365	15.2%	$666
	Total	**743,341,006**	**100.0%**	**60,829,734**	**100.0%**	**$1,268,692**	**100%**	**$1,707**

Source: TRANSEARCH data for 2050.

Note: Components may not appear to sum because of rounding.

Rail Forecast

Table 4.30 depicts the directional composition of rail movements in South Carolina between 2019 and 2050. Rail tonnage is forecast to increase from 135.2 million in 2019 to 230.3 million in 2050, a cumulative increase of 70 percent, for a CAGR of 1.7 percent. Rail commodity value is forecast to increase from $208.2 billion in 2019 to $486.5 billion by 2050, a cumulative increase of 134 percent, for a CAGR of 2.75 percent.

Table 4.30 South Carolina Rail Freight Tonnage and Value by Year and Direction (2019, 2025, 2050)

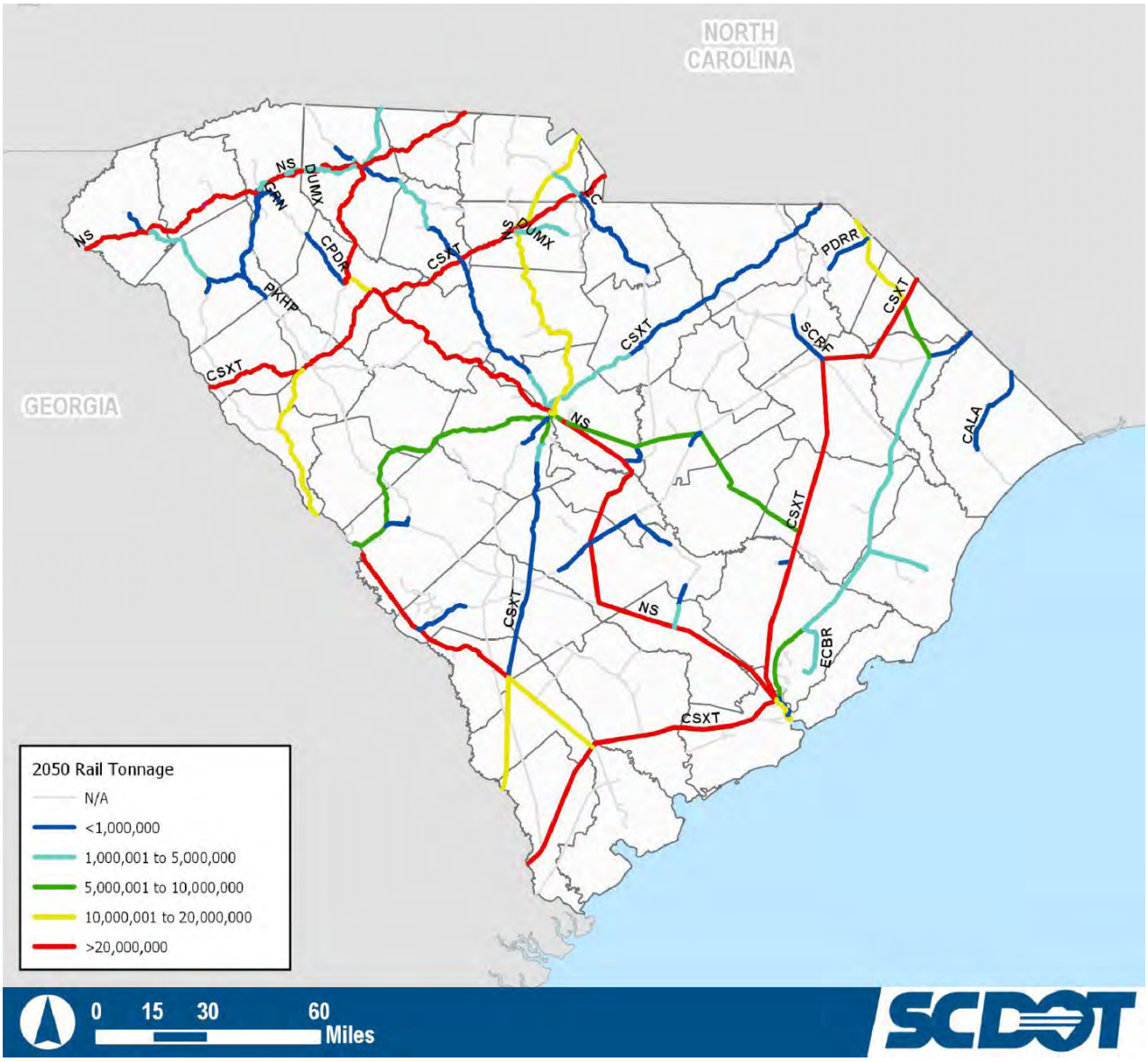
	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Year 2019					
Outbound	16,063,941	11.9%	$25,253	12.1%	$1,572
Inbound	46,715,100	34.6%	$37,119	17.8%	$795
Intrastate	11,923,456	8.8%	$29,848	14.3%	$2,503
Through	60,498,773	44.7%	$115,989	55.7%	$1,917
Total	***135,201,270***	***100.0%***	***$208,210***	***100.0%***	***$1,540***
Year 2025					
Outbound	18,413,039	12.2%	$30,907	12.2%	$1,679
Inbound	48,539,731	32.3%	$45,847	18.1%	$945
Intrastate	13,995,872	9.3%	$37,193	14.7%	$2,657
Through	69,421,541	46.2%	$139,509	55.0%	$2,010
Total	***150,370,183***	***100.0%***	***$253,456***	***100.0%***	***$1,686***
Year 2050					
Outbound	28,748,273	12.5%	$56,843	11.7%	$1,977
Inbound	60,276,618	26.2%	$81,456	16.8%	$1,351
Intrastate	23,413,160	10.2%	$67,259	13.8%	$2,873
Through	117,882,166	51.2%	$280,894	57.7%	$2,383
Total	***230,320,218***	***100.0%***	***$486,452***	***100.0%***	***$2,112***

Source: TRANSEARCH data for 2019, 2025 and 2050.

Note: Components may not appear to sum because of rounding.

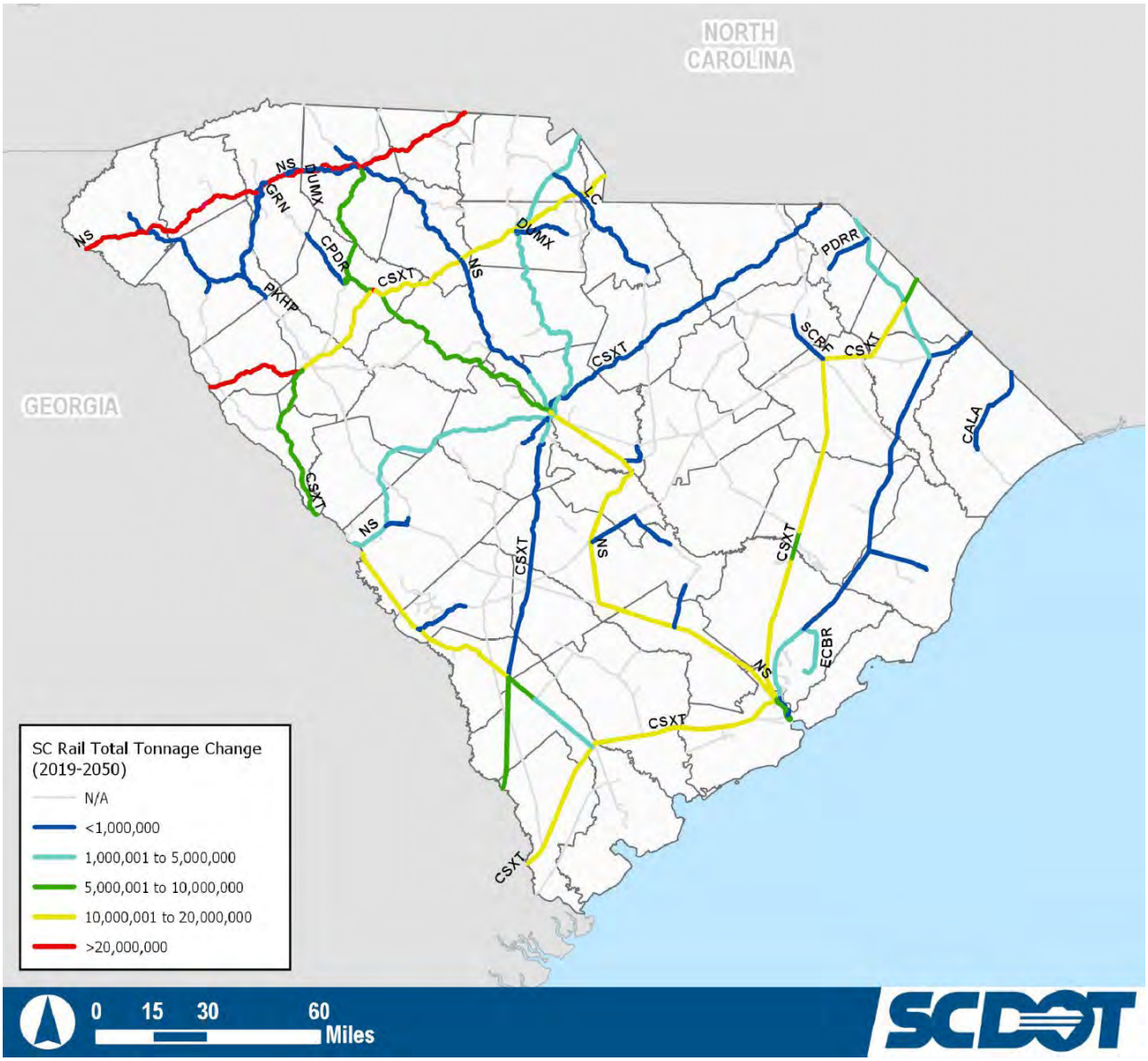
As shown in **Figure 4.16**, several lines on the CSXT and NS networks are projected that carry 20 million tons or more of freight by 2050. Substantial volumes of rail freight are predicted to travel through Greenwood, Berkeley, Charleston, Greenville, Pickens and Oconee counties. The greatest rail tonnage growth appears to accrue to the major Class I rail lines (**Figure 4.17**).

Figure 4.16 South Carolina Rail Freight Density (2050)



Source: TRANSEARCH data for 2050.

Figure 4.17 South Carolina Rail Freight Tonnage Growth (2019-2050)



Source: TRANSEARCH data for 2019 and 2050.

Table 4.31 summarizes major commodity tonnage movements by rail in 2050, and the associated commodity tonnage growth from 2019.

Total Tonnage—Major rail commodities in 2050 include: *Chemicals or Allied Products* (71.7 million, 31 percent), *Misc. Mixed Shipments* (41.7 million, 18 percent), and *Nonmetallic Minerals* (23.5 million, 10 percent), exhibiting 4.2 percent, exhibiting 2.9 percent, 3.1 percent, and 1 percent CAGR, respectively. *Tonnage Growth*—Commodities with the highest tonnage growth rates between 2019 and 2050 include: *Misc. Mixed Shipments* (16.3 million to 41.7 million, 3.1 percent CAGR), *Chemicals or Allied Products* (30 million to 71.7 million, 2.9 percent CAGR), and *Food or Kindred Products* (8.9 million to 16.9 million, 2.1 percent CAGR).

Table 4.31 South Carolina Rail Tonnage Freight Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Tons	Percent	Tons	Percent	Total	CAGR
28	Chemicals Or Allied Products	29,950,888	22.2%	71,728,883	31.1%	139.5%	2.9%
14	Nonmetallic Minerals	16,970,687	12.6%	23,458,328	10.2%	38.2%	1.0%
46	Misc Mixed Shipments	16,301,408	12.1%	41,695,815	18.1%	155.8%	3.1%
11	Coal	15,399,324	11.4%	1,824,294	0.8%	-88.2%	-6.6%
26	Pulp, Paper Or Allied Products	10,708,699	7.9%	17,587,186	7.6%	64.2%	1.6%
20	Food Or Kindred Products	8,886,551	6.6%	16,945,646	7.4%	90.7%	2.1%
32	Clay, Concrete, Glass Or Stone	8,272,604	66.1%	10,591,814	54.6%	28.0%	0.8%
24	Lumber Or Wood Products	6,563,655	4.9%	6,670,019	2.9%	1..6%	0.1%
1	Farm Products	4,393,040	3.2%	5,589,346	2.4%	27.2%	0.8%
33	Primary Metal Products	4,039,617	3.0%	7,577,748	3.3%	87.6%	2.0%
	Remaining Commodities	13,714,798	10.1%	26,651,138	11.6%	94.3%	2.2%
	Total	**135,201,270**	**100.0%**	**230,320,218**	**100.0%**	**70.4%**	**1.7%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Value Growth—As **Table 4.32** shows, commodities with the highest value growth rates between 2019 and 2050 include: *Crude Petroleum or Natural Gas* ($184 to $823, 4.9 percent CAGR), *Instruments, Photo Equipment, Optical Equipment* ($163.9 million to $667 million, 4.6 percent CAGR), and *Petroleum or Coal Product* ($1.4 billion to $3.9 billion, 3.4 percent CAGR).

Table 4.32 South Carolina Rail Freight Value Growth Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Value (in million)	Percent	Value (in million)	Percent	Total	CAGR
13	Crude Petroleum Or Natural Gas	$0.0002	0.0000001%	$0.001	0.0000002%	346.5%	4.9%
38	Instruments, Photo Equip, Optical Eq	$164	0.1%	$667	0.1%	307.0%	4.6%
29	Petroleum Or Coal Products	$1,370	0.7%	$3,860	0.8%	181.7%	3.4%
28	Chemicals Or Allied Products	$45,087	21.7%	$123,575	25.4%	174.1%	3.3%
35	Machinery	$1,393	0.7%	$3,809	0.8%	173.4%	3.3%
46	Misc Mixed Shipments	$82,754	39.7%	4211,162	43.4%	155.2%	3.1%
41	Misc Freight Shipments	$832	0.4%	$2,086	0.4%	150.6%	3.0%
22	Textile Mill Products	$238	0.1%	$519	0.1%	118.1%	2.5%
47	Small Packaged Freight Shipments	$80	0.04%	$170	0.03%	111.4%	2.4%
39	Misc Manufacturing Products	$250	0.1%	$528	0.1%	111.3%	2.4%
	Remaining Commodities	$76,041	36.5%	$140,076	28.8%	84.2%	2.0%
	Total	**$208,210**	**100.0%**	**$486,452**	**100.0%**	**133.6%**	**2.8%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Port Forecast

Table 4.33 depicts the directional composition of port movements in South Carolina between 2019 and 2050. TRANSEARCH forecasts South Carolina port tonnage to increase from 2.3 million in 2019 to 4.9 million in 2050, a cumulative increase of 117 percent, for a CAGR of 2.5 percent. Port commodity values are forecast to increase from $1.66 billion in 2019 to $3.85 billion by 2050, a cumulative increase of 132 percent, for a CAGR of 2.75 percent.

Table 4.33 South Carolina Port Freight Tonnage and Value by Year and Direction (2019, 2025, 2050)

	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Year 2019					
Outbound	75,302	3.3%	$96	5.8%	$1,272
Inbound	1,079,502	47.9%	$680	41.0%	$630
Intrastate	105,134	4.7%	$96	5.8%	$914
Through	993,926	44.1%	$787	47.4%	$792
Total	***2,253,864***	***100.0%***	***$1,659***	***100.0%***	***$736***
Year 2025					
Outbound	83,765	3.2%	$109	5.5%	$1,298
Inbound	1,293,203	48.7%	$821	41.5%	$635
Intrastate	150,544	5.7%	$134	6.8%	$890
Through	1,125,432	42.4%	$915	46.2%	$813
Total	***2,652,944***	***100.0%***	***$1,979***	***100.0%***	***$746***
Year 2050					
Outbound	132,969	2.7%	$168	4.4%	$1,263
Inbound	2,338,189	47.8%	$1,527	39.7%	$653
Intrastate	344,302	7.0%	$299	7.8%	$868
Through	2,078,062	42.5%	$1,852	48.1%	$891
Total	***4,893,522***	***100.0%***	***$3,846***	***100.0%***	***$786***

Source: TRANSEARCH data for 2019, 2025, and 2050.

Note: Components may not appear to sum because of rounding.

Table 4.34 summarizes major commodity tonnage movements by port in 2050, and the associated commodity tonnage growth from 2019.

Total Tonnage—In 2050, the largest commodities include: *Petroleum or Coal Products* (3.8 million, 78 percent), *Chemicals and Allied Products* (360,162 tons, 7 percent), and *Food or Kindred Products* (323,856 tons, 7 percent) exhibiting 2.7 percent, 2.1 percent, and 3.6 percent CAGR, respectively.

Tonnage Growth—Commodities with the highest rates of tonnage growth between 2019 and 2050 include: *Food or Kindred Products* (109,351 tons to 323,856 tons, 3.6 percent CAGR), *Misc. Mixed Shipments* (4,718 tons to 13,143 tons, 3.4 percent CAGR), and *Machinery* (13,479 tons to 35,603 tons, 3.2 percent CAGR).

Value Growth—As shown in

Table 4.35 Commodities with the highest rates of value growth between 2019 and 2050 include the same three, with 4.9 percent, 3.4 percent, and 3.1 percent growth, respectively.

Table 4.34 South Carolina Port Freight Tonnage Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Tons	Percent	Tons	Percent	Total	CAGR
29	Petroleum Or Coal Products	1,683,995	74.7%	3,804,331	77.7%	125.9%	2.7%
28	Chemicals Or Allied Products	189,517	8.4%	360,162	7.4%	90.0%	2.1%
20	Food Or Kindred Products	109,351	4.9%	323,856	6.6%	196.2%	3.6%
40	Waste Or Scrap Materials	130,144	5.8%	169,222	3.5%	30.0%	0.9%
33	Primary Metal Products	73,558	3.3%	129,627	2.6%	76.2%	1.8%
35	Machinery	13,479	0.6%	35,603	0.7%	164.1%	3.2%
14	Nonmetallic Minerals	10,566	0.5%	23,670	0.5%	124.0%	2.6%
46	Misc Mixed Shipments	4,718	0.2%	13,143	0.3%	178.6%	3.4%
24	Lumber Or Wood Products	20,567	0.9%	11,581	0.2%	-43.7%	-1.8%
32	Clay, Concrete, Glass Or Stone	8,933	0.4%	9,343	0.2%	4.6%	0.1%
	Remaining Commodities	9,035	0.4%	12,984	0.3%	43.7%	1.2%
	Total	**2,253,864**	**100.0%**	**4,893,522**	**100.0%**	**117.1%**	**2.5%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Table 4.35 South Carolina Port Freight Value Growth Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Value (in million)	Percent	Value (in million)	Percent	Total	CAGR
20	Food Or Kindred Products	$66	4.0%	$293	7.6%	346.5%	4.9%
46	Misc Mixed Shipments	$24	1.5%	$68	1.8%	178.6%	3.4%
35	Machinery	$162	9.8%	$416	10.8%	156.5%	3.1%
29	Petroleum Or Coal Products	$1,129	68.1%	$2,610	67.9%	131.1%	2.7%
34	Fabricated Metal Products	$4	0.2%	$9	0.2%	125.4%	2.7%
14	Nonmetallic Minerals	$0.4	0.03%	$1	0.02%	124.0%	2.6%
28	Chemicals Or Allied Products	$66	4.0%	$126	3.3%	90.4%	2.1%
33	Primary Metal Products	$85	5.1%	$152	3.9%	79.6%	1.9%
32	Clay, Concrete, Glass Or Stone	$6	0.4%	$10	0.3%	74.6%	1.8%
36	Electrical Equipment	$45	2.7%	$77	2.0%	72.9%	1.8%
	Remaining Commodities	$71	4.3%	$84	2.2%	17.3%	0.5%
	Total	**$1,659**	**100.0%**	**$3,846**	**100.0%**	**131.9%**	**2.7%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Air Freight Forecast

Table 4.36 depicts the directional composition of air movements in South Carolina between 2019 and 2050, which is relatively constant over the future analysis horizon. Air tonnage is forecast to increase from 272,119 in 2019 to 753,539 in 2050, a cumulative increase of 177 percent, for a CAGR of 3.3 percent. Air commodity value is forecast to increase from $36.7 billion in 2019 to $90.8 billion by 2050, a cumulative increase of 147 percent, for a CAGR of 3.0 percent. Note that for purposes of this analysis, through air movements are considered as those shipments that have an endpoint in a county bordering South Carolina.

Table 4.36 South Carolina Air Freight Tonnage and Value by Year and Direction (2019, 2025, 2050)

Direction	Tons		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	
Year 2019					
Outbound	57,679	21.2%	$8,406	22.9%	$145,732
Inbound	73,234	26.9%	$11,544	31.4%	$157,635
Intrastate	954	0.4%	$49	0.1%	$51,012
Through	140,252	51.5%	$16,716	45.5%	$119,186
Total	***272,119***	***100.0%***	***$36,715***	***100.0%***	***$134,921***
Year 2025					
Outbound	83,191	24.7%	$11,226	24.4%	$134,937
Inbound	88,771	26.4%	$14,709	31.9%	$165,694
Intrastate	1,289	0.4%	$61	0.1%	$47,274
Through	162,983	48.5%	$20,083	43.6%	$123,221
Total	***336,234***	***100.0%***	***$46,078***	***100.0%***	***$137,042***
Year 2050					
Outbound	283,953	37.7%	$25,818	28.4%	$90,925
Inbound	171,882	22.8%	$28,268	31.1%	$164,462
Intrastate	3,800	0.5%	$150	0.2%	$39,443
Through	293,904	39.0%	$36,584	40.3%	$124,474
Total	***753,539***	***100.0%***	***$90,820***	***100.0%***	***$120,525***

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Table 4.37 summarizes major commodity tonnage movements by air in 2050, and the associated commodity tonnage growth from 2019.

Total Tonnage—Major air commodities in 2050 include: *Small Packaged Freight Shipments* (305 thousand or 40 percent), *Rubber or Miscellaneous Plastics* (nearly 60 thousand or 8 percent), and *Machinery* (57 thousand or 8 percent), exhibiting 3.9 percent, 4.2 percent, and 2.4 percent CAGR, respectively.

Tonnage Growth—Commodities with the highest rates of tonnage growth between 2019 and 2050 include: *Chemicals or Allied Products* (over 9,600 tons to nearly 40 thousand, 4.7 percent CAGR), *Rubber or Miscellaneous Plastics* (nearly 17 thousand to nearly 60 thousand, 4.2 percent CAGR), and *Misc. Mixed Shipments* (15 thousand to 52 thousand, 4.1 percent CAGR).

Table 4.37 South Carolina Air Freight Tonnage Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Tons	Percent	Tons	Percent	Total	CAGR
47	Small Packaged Freight Shipments	94,210	34.6%	304,297	40.4%	223.0%	3.9%
30	Rubber Or Misc Plastics	16,672	6.1%	59,675	7.9%	257.9%	4.2%
35	Machinery	27,726	10.2%	57,026	7.6%	105.7%	2.4%
46	Misc Mixed Shipments	15,077	5.5%	51,942	6.9%	244.5%	4.1%
36	Electrical Equipment	23,523	8.6%	51,581	6.8%	119.3%	2.6%
37	Transportation Equipment	15,387	5.7%	41,088	5.5%	167.0%	3.2%
28	Chemicals Or Allied Products	9,622	3.5%	39,728	5.3%	312.9%	4.7%
38	Instruments, Photo Equip, Optical Eq	13,880	5.1%	29,984	4.0%	116.0%	2.5%
39	Misc Manufacturing Products	13,008	4.8%	29,565	3.9%	127.3%	2.7%
22	Textile Mill Products	9,820	3.6%	24,943	3.3%	154.0%	3.1%
	Remaining Commodities	33,194	12.2%	63,711	8.5%	91.9%	2.1%
	Total	**272,119**	**100.0%**	**753,539**	**100.0%**	**176.9%**	**3.3%**

Source: TRANSEARCH data for 2019 and 2050.

Notes: (1) TRANSEARCH does not assign a value for STCC 47: Small Packaged Freight Shipments.
(2) Components may not appear to sum because of rounding.

Value Growth—As **Table 4.38** shows, Commodities with the highest rates of tonnage growth between 2019 and 2050 include: *Rubber or Miscellaneous Products* ($678.5 million to $2.4 billion, 4.2 percent CAGR), *Chemical or Allied Products* ($2.5 billion to $8.8 billion, 4.2 percent CAGR), and *Miscellaneous Mixed Shipments* ($2.2 billion to $7.4 billion, 4.1 percent CAGR).

Table 4.38 South Carolina Air Freight Value Growth Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Value (in million)	Percent	Value (in million)	Percent	Total	CAGR
30	Rubber Or Misc. Plastics	678	1.8%	2,429	2.7%	258.0%	4.2%
28	Chemicals Or Allied Products	2,469	6.7%	8,798	9.7%	256.3%	4.2%
46	Misc. Mixed Shipments	2,155	5.9%	7,426	8.2%	244.5%	4.1%
11	Coal	0.01	0.00002%	0.03	0.00003%	237.6%	4.0%
26	Pulp, Paper Or Allied Products	4	0.01%	12	0.01%	211.3%	3.7%
20	Food Or Kindred Products	91	0.2%	264	0.3%	189.4%	3.5%
37	Transportation Equipment	6,141	16.7%	16,428	18.1%	167.5%	3.2%
10	Metallic Ores	12	0.03%	31	0.03%	160.7%	3.1%
14	Nonmetallic Minerals	0.1	0.0002%	0.2	0.002%	154.2%	3.1%
22	Textile Mill Products	199	0.5%	506	0.6%	154.0%	3.1%
	Remaining Commodities	24,963	68.0%	54,926	60.5%	120.0%	2.6%
	Total	**36,715**	**100.0%**	**90,820**	**100.0%**	**147.4%**	**3.0%**

Source: TRANSEARCH data for 2019 and 2050.

Note: Components may not appear to sum because of rounding.

Pipeline Forecast

As shown in **Table 4.39** FAF5 forecasts South Carolina pipeline tonnage to increase from 28.9 million in 2019 to 45.5 million in 2050, a cumulative increase of 57.4 percent, for a CAGR of 1.5 percent. As shown in **Table 4.40**, petroleum is the primary commodity moved by pipeline in South Carolina. Pipeline commodity values, shown in **Table 4.41**, are forecast to increase from $5.8 billion in 2019 to $8.6 billion by 2050, a cumulative increase of 50.2 percent, for a CAGR of 1.3 percent.

Table 4.39 South Carolina Pipe Freight Tonnage Forecast by Year and Direction (2019, 2050)

	Tons		Value (in millions)		
Direction	Amount	Percent	Amount	Percent	Average Value/Ton
Year 2019					
Outbound	5,716,500	19.8%	$1,043	18.1%	$182
Inbound	16,882,803	58.4%	$3,554	61.8%	$211
Intrastate	6,330,447	21.9%	$1,154	20.1%	$182
Through	-	-	-	-	-
Total	***28,929,750***	***100.0%***	***$5,751***	***100.0%***	***$199***
Year 2050					
Outbound	13,294,100	29.2%	$2,426	28.1%	$182
Inbound	23,411,591	51.4%	$4,606	53.3%	$197
Intrastate	8,822,562	19.4%	$1,608	18.6%	$182
Through	-	0.0%	-	0%	-
Total	***45,528,253***	***100.0%***	***$8,640***	***100.0%***	***$190***

Source: FAF5 data for 2019

Note: Components may not appear to sum because of rounding.

Table 4.40 South Carolina Pipe Freight Tonnage Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Tons	Percent	Tons	Percent	Total	CAGR
29	Petroleum Or Coal Products	28,887,890	99.9%	45,464,790	99.9%	57.4%	1.5%
14	Nonmetallic Minerals	40,447	0.1%	58,062	0.1%	43.6%	1.2%
28	Chemicals Or Allied Products	1,413	0.005%	5,401	0.01%	282.3%	4.4%
	Total	**28,929,750**	**100.0%**	**45,528,253**	**100.0%**	**57.4%**	**1.5%**

Source: FAF5 data for 2019.

Note: Components may not appear to sum because of rounding.

Table 4.41 South Carolina Pipe Freight Value Growth Forecast by Commodity (2019, 2050)

		2019		2050		Percent Change	
STCC2	Commodity	Value (in million)	Percent	Value (in million)	Percent	Total	CAGR
29	Petroleum Or Coal Products	5,743	99.9%	8,627	99.8%	50.2%	1.3%
14	Nonmetallic Minerals	6	0.1%	9	0.1%	43.5%	1.3%
28	Chemicals Or Allied Products	1	0.002%	5	0.1%	282.3%	4.4%
	Total	**5,751**	**100.0%**	**8,640**	**100.0%**	**50.2%**	**1.3%**

Source: FAF5 data for 2019.

Note: Components may not appear to sum because of rounding.

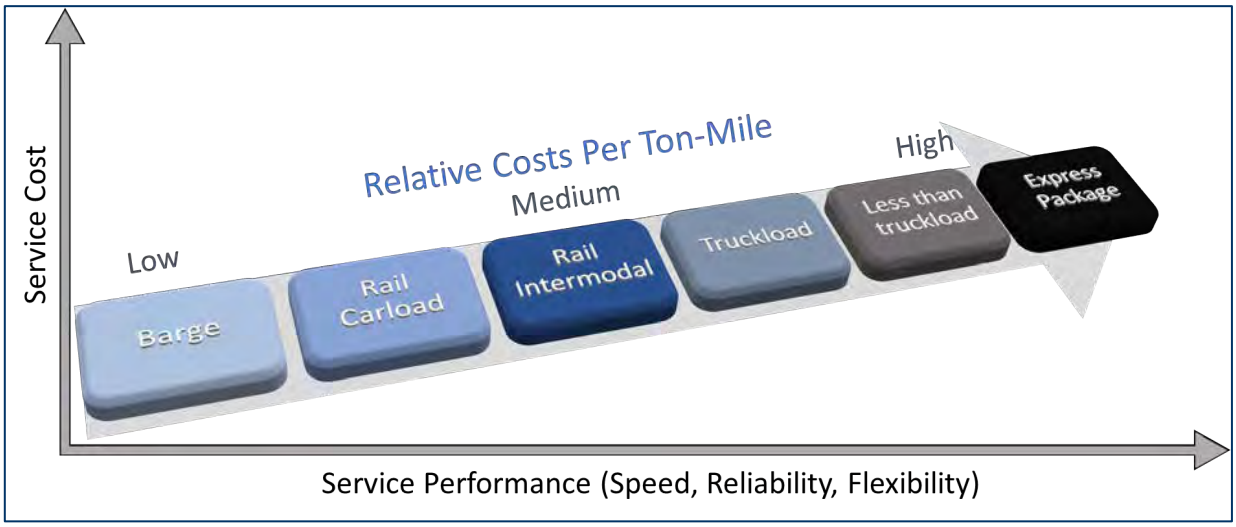
4.4 Freight Fluidity

Freight Fluidity is an evolving concept in U.S. freight planning efforts that attempts to assign performance analytics related to cost, reliability, speed, and resilience to supply chains. An analysis of freight fluidity for South Carolina conflated a sample of private sector Bill of Lading (BOL) records to commodity flow data, to develop initial freight service cost benchmarks for shipments with a South Carolina origin or destination. The SCDOT procured nearly 1 million BOL data records for use in its Statewide Freight Plan Update. A third-party data integrator desensitizes these records prior to analysis, to protect shipper confidentiality. The records were for calendar year 2019, matching the base year South Carolina TRANSEARCH commodity dataset. The analysis provided unique insight into a historically difficult area of freight planning for public sector agencies, analyzing freight expenditures of private sector businesses. Understanding logistics expenditures is a topic that resonates with the private sector, as evidenced by the Annual State of Logistics Report now in its 32nd year.[41]

The supply chain fluidity analysis undertaken for the South Carolina Freight Plan Update focused on cost metrics, by using commodity flows enhanced with shipping records to explore the economic competitiveness of the state's multimodal transportation services. The analysis compared benchmark rates for some of the most common freight services by commodity group, equipment type, trade lane and region.

[41] The Annual State of Logistics Report published by the Council of Supply Chain Management, Kearney, and Penske Logistics.

Figure 4.18 Modal Service Attributes and Cost

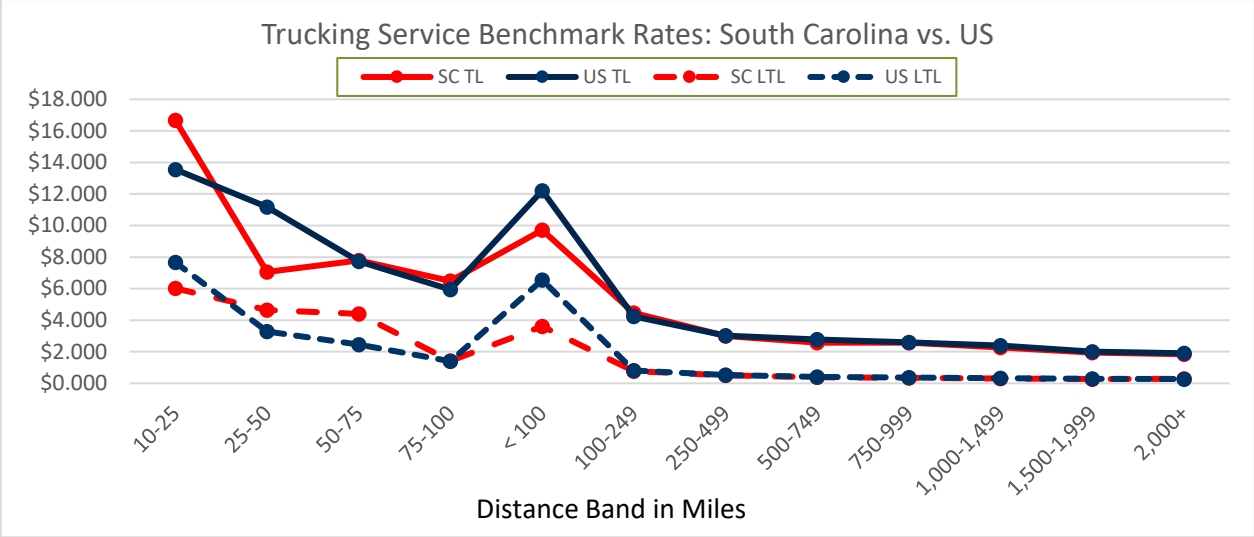


Each modal service offering has a different cost function associated with the level of initial capital investment and on-going operating costs. The rates shippers pay for modal services whether on a per-mile or per ton-mile basis vary, sometimes greatly. Factors influencing freight service pricing include market competition, freight volume, lane balance, congestion and other market dynamics. In general, each mode of freight transportation provides a mix of cost, speed, accessibility, and flexibility that shapes its service attributes and offerings. Service needs also play a major role in determining the mode(s) used by specific industries for the commodities they consume and produce. As shown in the **Figure 4.18**, competition between service and price tends to be greatest the closer the modal options are on the spectrum.

In total, data indicated that shippers spent an estimated $23.2 billion on trucking and rail services to move goods and products to, from and within South Carolina in 2019. Trucking services comprised the largest percentage of this spending with more than $14.6 billion with nearly $13 billion from truckload (TL) services and $1.6 billion from less-than-trucking (LTL). Modal expenditures for trucking were evenly split between outbound and inbound freight with outbound only slightly higher at $7.4 billion versus $7.1 billion. Shippers expended the second most on service, enlisting rail carload services totaling more than $7.3 billion, followed by intermodal services at $1 billion, and other rail services at $213.7 million.

Analysis of trucking service rates found that in most cases, shipments to, from and within South Carolina, are conducted at rates that are less expensive than the U.S. average. As shown in the line chart in **Figure 4.19**, with a few short-distance exceptions, rates in South Carolina trucking services are lower or equivalent to national average rates.

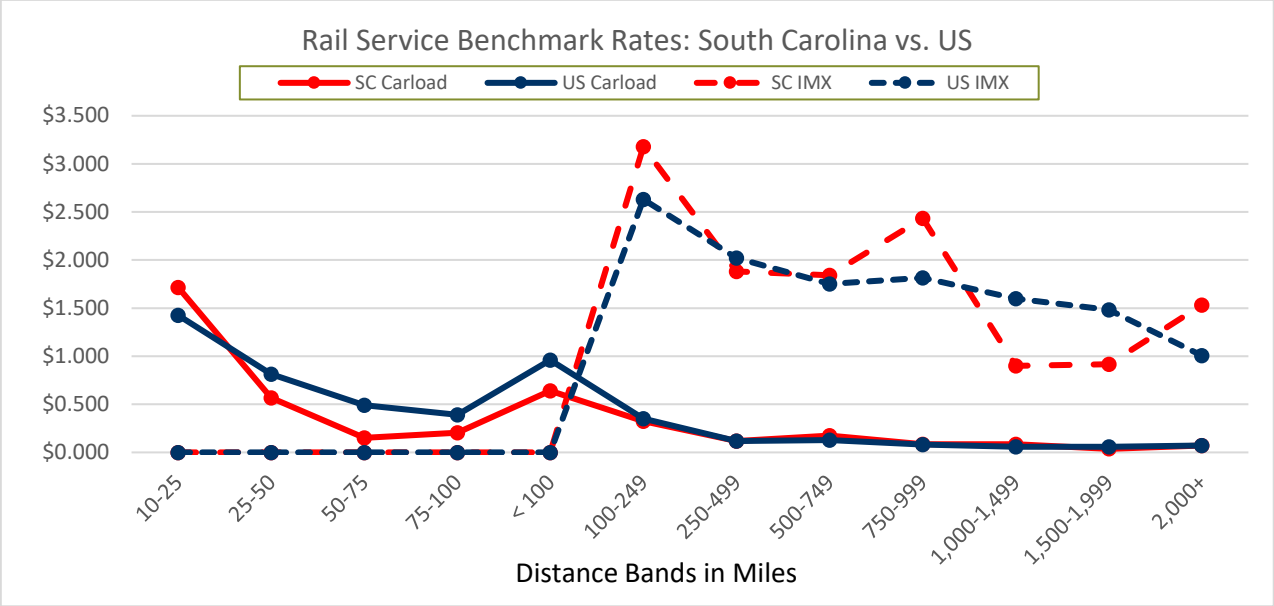
Figure 4.19 Trucking Service Benchmark Rate Comparison



Source Quetica, LLC. Data from a conflation of TRANSEARCH and BOL data

Analysis of rail service rates for South Carolina found that rail shipping rates are generally equivalent to or lower than the U.S. average (**Figure 4.20**). In some trade lanes, higher outbound rail rates raised the average South Carolina rate above the national average for some distance bins.

Figure 4.20 Rail Service Benchmark Rate Comparison



Source Quetica, LLC. Data from a conflation of TRANSEARCH and BOL data

Another element of the analysis examined the level of benchmark rates by regions in South Carolina. It was no surprise that freight expenditures on truck and rail services were concentrated in the metropolitan areas of Charleston, Columbia, and Greenville-Spartanburg. In addition to being concentrated geographically, the analysis showed that trucking service benchmark rates for both TL and LTL were highest in the Charleston

Region. It is likely the higher rates reflect regional congestion and facility access issues that required more time to make and receive loads. Carload railroad rates were highest in the Columbia region.

In general, this initial freight fluidity analysis examining freight rates, suggests that South Carolina is an attractive location for freight intensive industries with the most common freight services priced at or below the national market in most instances.

5.0 Truck Parking Assessment

The efficient movement of goods is critical to both South Carolina and the national economy. The quality of life in South Carolina depends on the daily delivery of millions of goods shipped by a network of highways, railways, waterways, ports, airports, and pipelines. The state's economy also relies upon its multimodal freight transportation system to efficiently connect local, regional, national, and global markets. The safe and efficient movement of freight in South Carolina depends on adequate and strategically located truck parking. Hours-of-service (HOS) regulations created by the Federal Motor Carrier Safety Administration (FMCSA) require truck operators to stop and rest at defined intervals. However, parking shortages can lead truck operators to stop at an unsafe location or stop before they are required, cutting into the driver's wages.

A Statewide Truck Parking and Assessment Study (STPAS) was completed in October 2022 with input from various departments within SCDOT, as well as other statewide stakeholders such as South Carolina Department of Parks and Recreation, South Carolina Department of Public Safety, South Carolina Trucking Association, and Councils of Governments. The objectives of the assessment and study were to complete an analysis of the adequacy of truck parking along Interstate corridors, driver safety and freight travel time reliability. The study provided truck parking recommendations to serve freight transportation and truck parking needs in South Carolina.

The South Carolina Statewide Truck Parking Assessment Study (October 2022) describes in detail the study process, findings, and recommendations. The Executive Summary of this study is available in Appendix C. Below are a few of the key findings and recommendations.

5.1 Inventory of Public and Private Truck Parking Spaces

A gap assessment was conducted that measured the shortage (i.e., the gap) and surplus between truck parking supply and demand across South Carolina. The shortage or surplus of truck parking is the difference between the number of spaces at designated truck parking facilities and the demand for parking at designated facilities and surrounding undesignated parking on Interstate ROW during the peak hour. There is a statewide shortage of truck parking needed to meet peak period demand of over 1,000 spaces. The statewide utilization rate based on peak-hour truck parking is approximately 114 percent, indicating that peak hour demand for parking exceeds capacity.

The assessment found that, in total, there are over 6,400 truck parking spaces provided at public and commercial facilities in South Carolina. There are 90 commercial truck stops in South Carolina with 10 or more spaces, with a combined total of nearly 5,592 spaces. There are 34 public parking facilities (including rest areas, truck parking areas, and welcome centers) which have a total of 824 spaces.

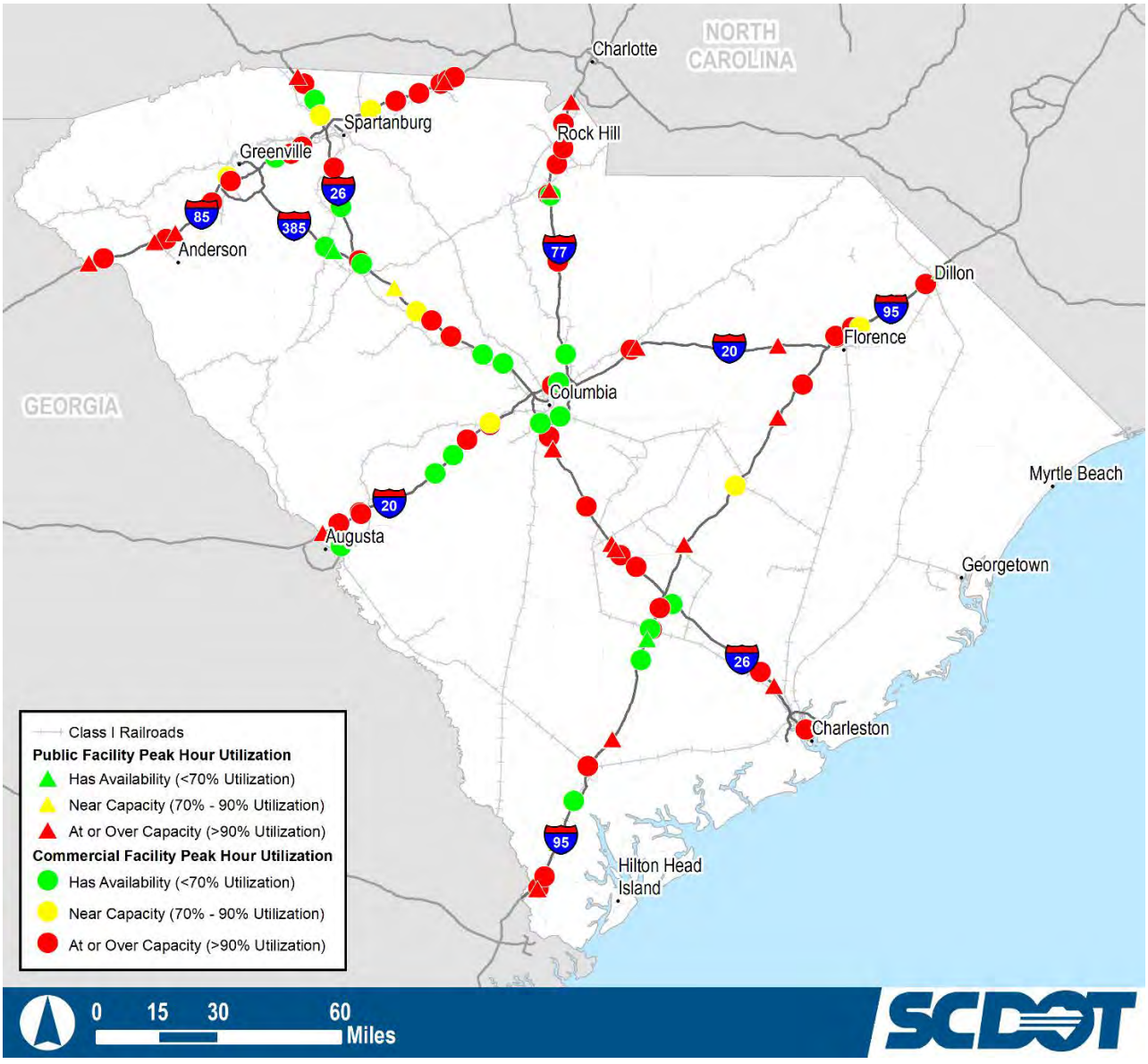
Of the 124 total sites (with available data), only 26 percent have availability during the statewide peak hour (1:00am to 2:00am) and the remaining 74 percent are nearing, at, or over capacity, shown in **Figure 5.1**.[42] It should be noted that locations that are nearing, at, or over capacity correlates with truck volume congestion on South Carolina interstates (refer to Chapter 3). When truck parking facilities fill up, drivers often find no other options than to park on roadway shoulders and freeway ramps, in some cases leading to other vehicles

[42] The study used global positioning system (GPS) information provided by the American Transportation Research Institute (ATRI) to estimate the demand for truck parking along South Carolina's Interstate highway network.

crashing into them. For the 2015-2019 period, there were 119 crashes involving parked trucks on South Carolina Interstate highways.

Across the state, many of the trucks stopped at undesignated locations are stopping for less than one hour. These stops are short breaks for drivers likely trying to meet HOS requirements, making emergency repairs, or checking and securing their load. Stops between one and four hours comprise the majority of trucks parked at undesignated locations. These stops are often related to staging needs—drivers needing a place to park near a pickup or delivery location (such as a distribution center, port, warehouse or while they wait for dock access to load or unload). The smaller percentage of longer stops are likely associated with overnight stops to reset daily HOS requirements.

Figure 5.1 Truck Parking Demand at Designated Parking Locations

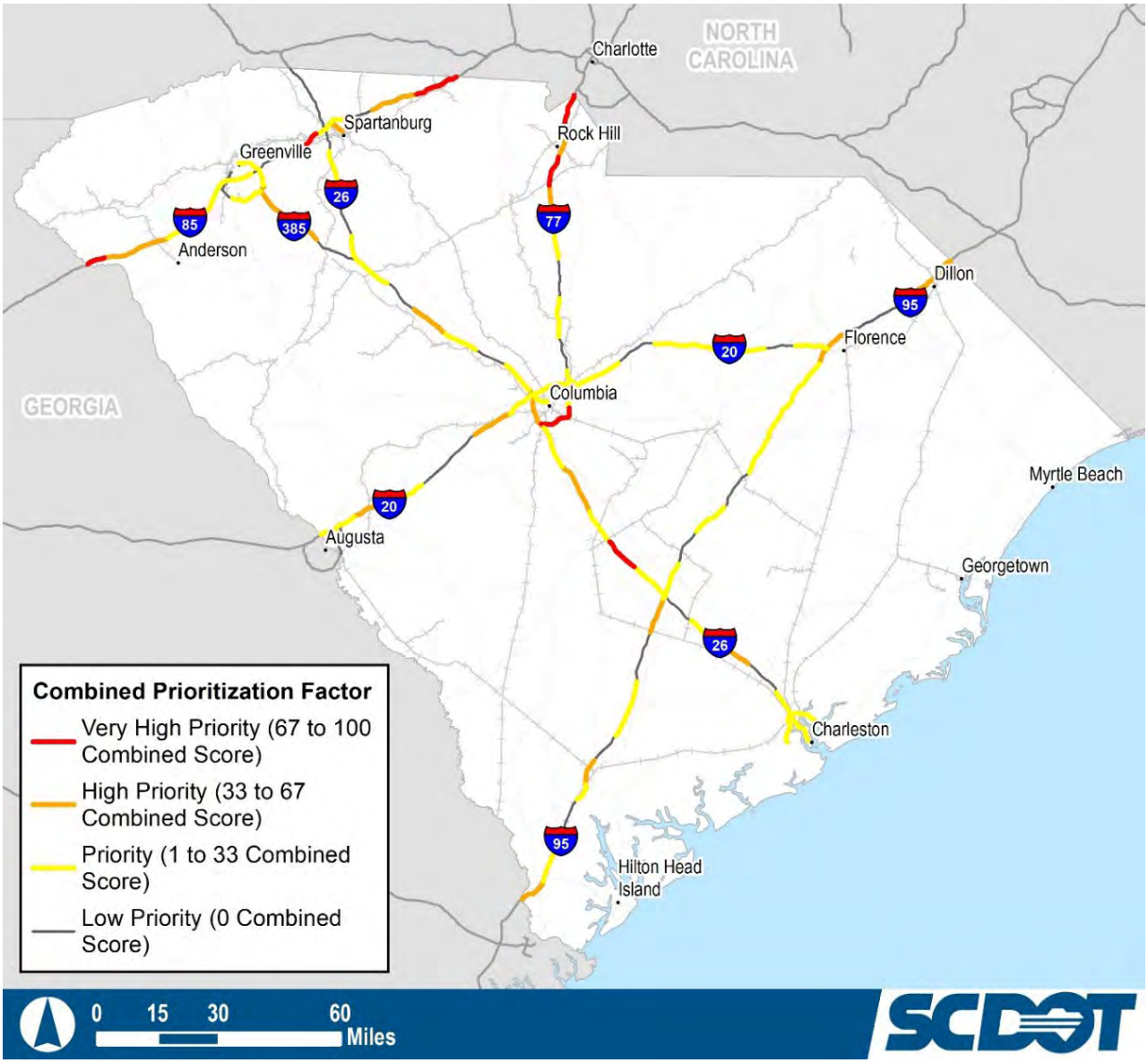


Source: ATRI; Cambridge Systematics, Inc. analysis.

5.2 Prioritized Needs Assessment

To identify segments with the greatest need for additional truck parking, Interstate corridor segments with the highest gaps in truck parking and the highest rate of crashes involving parked trucks were combined into a prioritization score as shown in **Figure 5.2**.

Figure 5.2 Interstate Segments with the Greatest Need for Additional Truck Parking

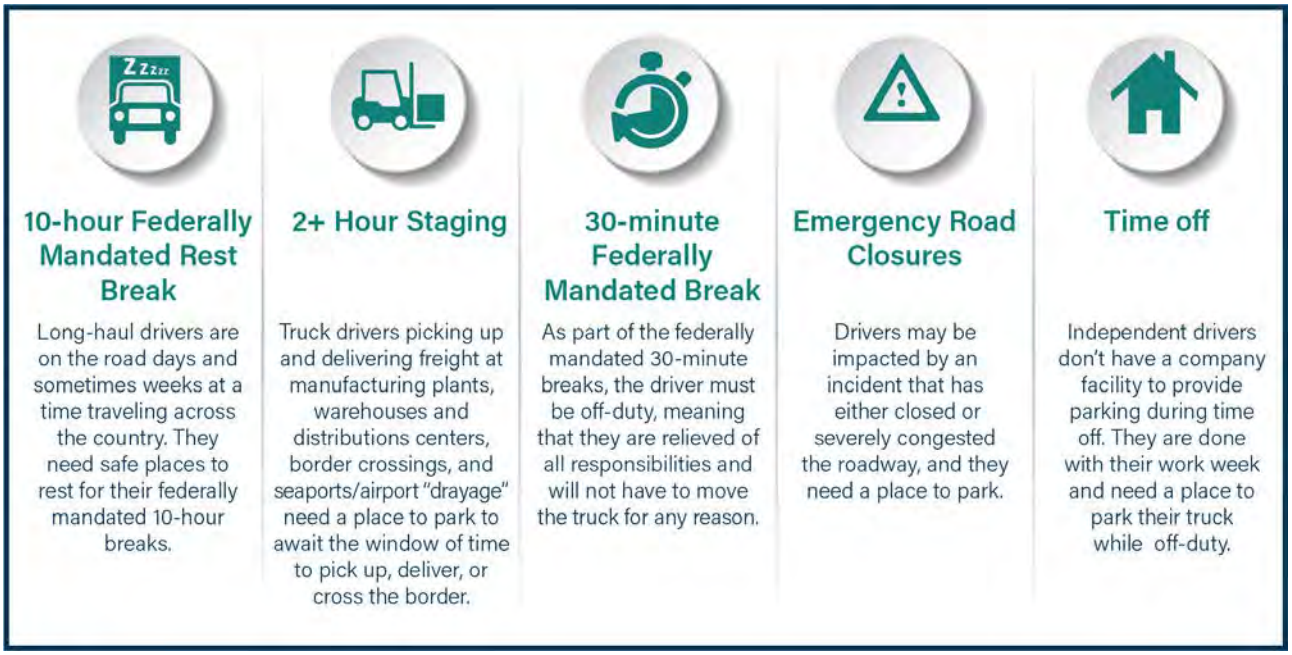


Source: Cambridge Systematics, Inc.

5.3 Why Truck Drivers Need to Park

Truck drivers need to park for different reasons and there are unique challenges for various types of parking needs (see **Figure 5.3**). Drivers must adhere to Federal and State hours of service (HOS) regulations that place specific time limits on driving and rest intervals. Drivers almost always need to park and wait for delivery windows at shippers and receivers, and sometimes are impacted by unexpected road closures or congestion. Finally, truck drivers are essential workers, who need to take personal breaks for rest and safety.

Figure 5.3 Reasons Truck Drivers Park



5.4 Strategies for Addressing Truck Parking Needs

South Carolina has several strategies that it may pursue to address its truck parking needs. Broadly, those strategies are grouped into three different categories:

1. **Strategies to Increase Truck Parking Capacity—**Strategies to build new or expand existing facilities.

2. **Strategies to Better Utilize Existing Infrastructure for Truck Parking—**Operational strategies to improve utilization of existing and non-traditional capacity.

3. **Policy and Program Strategies—**Strategies to address regulatory, communication, and knowledge gap hurdles to enhancing capacity. These include strategies to leverage private-sector resources for providing truck parking.

A toolbox of strategies available to SCDOT, by category and the truck driver parking need they satisfy, are listed in **Table 5.1**.

Table 5.1 State Strategies to Address Truck Parking Needs

Strategy	10-Hour Rest	2+ Hour Staging	30-Minute Break	Road Closures	Time off
Strategies to Increase Truck Parking Capacity					
Expand and upgrade truck parking at existing SCDOT rest areas and truck parking facilities	✓		✓	✓	
Expand and upgrade truck parking at existing South Carolina Department of Parks, Recreation, and Tourism (SCPRT) Welcome Centers	✓		✓	✓	
Build dedicated, SCDOT maintained, truck parking facilities within highway ROW	✓		✓	✓	
Expand existing commercial vehicle weigh stations to accommodate overnight truck parking	✓		✓	✓	
Strategies to Better Utilize Existing Infrastructure for Truck Parking					
Develop a Truck Parking Information Management System (TPIMS)	✓	✓	✓	✓	✓
Install Static Signs Indicating Upcoming Locations for Truck Parking (pre-TPIMS)	✓	✓	✓	✓	
Policy and Program Strategies in Support of Truck Parking					
Support private-sector deployment of zero emissions fuels (ZEF) at truck parking facilities	✓		✓	✓	
Develop guidelines for integrating truck parking into the SCDOT project development process	✓	✓	✓	✓	
Consider truck parking needs prior to the purchase or sale of ROW	✓	✓	✓	✓	
Consider truck parking needs and the potential for conversion to truck parking prior to the closure of a SCDOT facility	✓	✓	✓	✓	
Reassess public facility designs to accommodate OS/OW vehicles	✓	✓	✓	✓	
Modify the design guidelines for new commercial vehicle inspection facilities to include space for overnight truck parking, where feasible	✓	✓	✓	✓	
Collect truck and car utilization data	✓		✓	✓	
Encourage, educate, and coordinate with local and regional agencies to advance truck parking in their jurisdictions	✓	✓	✓	✓	✓

Source: Cambridge Systematics, Inc.

6.0 Military Freight Assessment

When the Infrastructure Investment and Jobs Act (IIJA) was enacted in 2021, it imposed several new requirements on state freight plans, including a requirement that states examine freight movement from the perspective of the military. South Carolina has a rich military history and today is home to nearly a dozen military installations. This section explores the multimodal transportation networks serving South Carolina's military facilities and includes the results of a military facility survey conducted for the freight plan update.

South Carolina hosts eight major military installations across the state. The eight major military installations discussed in this section are mapped in **Figure 6.1**.[43] Seven of these facilities are owned and operated various branches of the U.S. Government. The exception is the McEntire Joint National Guard facility, which is owned by the Federal Government, but operated by the South Carolina Air National Guard. It should be noted that the South Carolina National Guard Construction and Facilities Maintenance Office oversees more than 3.5 million feet of building space and 16,000 acres of training facilities dispersed across the state. In addition, the state hosts the Charleston District Army Corp of Engineers offices and a facility for the National Nuclear Security Administration (part of the U.S. Department of Energy).

6.1 The Strategic Highway Network (STRAHNET) Serving South Carolina

The National Highway System (NHS) has five components;

- The Interstate System;
- Oother principal arterials deemed most important for commerce and trade;
- The Strategic Highway Network (STRAHNET) which consists of highways important to military mobilization;
- STRAHNET connectors that provide access between major military installations and routes that are part of STRAHNET; and
- Intermodal connectors, which provide access between major intermodal passenger and freight facilities and the other four subsystems that comprise the NHS.[44]

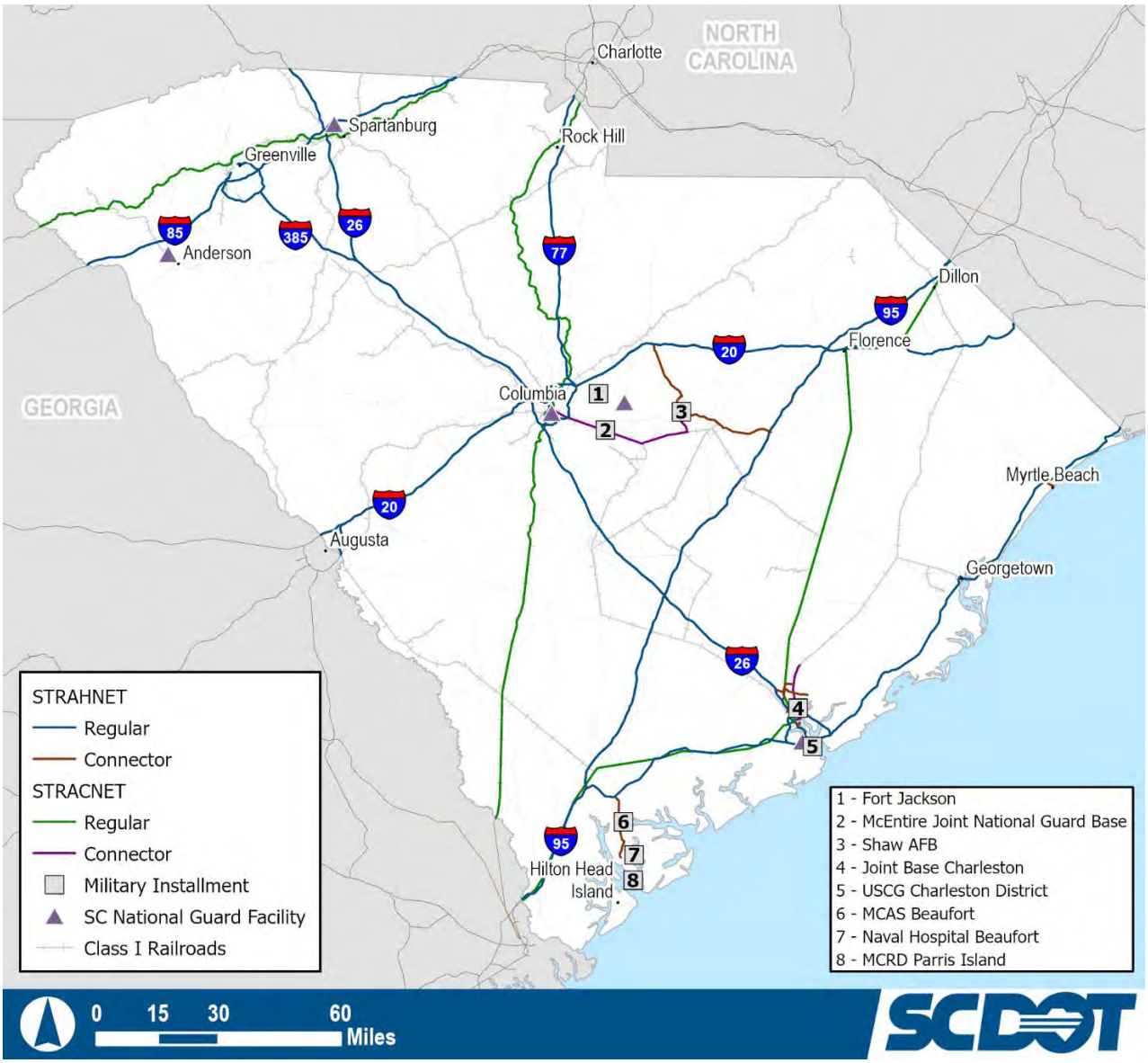
The primary national STRAHNET highway network includes over 61,000 miles of Interstate and other important highways. An additional 1,700 miles of STRAHNET connectors link over 200 military installations and ports to STRAHNET. The South Carolina STRAHNET includes all or portions of Interstates 20, 26, 77, 85, 95, 185 and 385. It also includes U.S. Highways 17 and 76. The Strategic Rail Corridor Network

[43] Information presented about military facilities in South Carolina were assembled from a variety of sources including base facility websites, an email survey to base contacts, and public reports including: 1) Joseph C. Von Nessen; *The 2022 Economic Impact of South Carolina's Military Community,* June 2022 2017 and, 2) USAF, *Final Joint Base Charleston and North Auxiliary Airfield; Air Installations Compatible Use Zones Study,* March 2019. 3) South Carolina Military Department Annual Report FY2021. The study team wishes to acknowledge the support and assistance of the United States Transportation Command (USTRANSCOM) staff for their assistance with base contacts and survey responses.

[44] U.S. DOT/FHWA/FTA, *Status of the Nation's Highways, Bridges and Transit. Conditions and Performance.* 23rd Edition. Pg. 1-7.

(STRACNET), consists of 38,800 miles of rail lines important to national defense, and provides service to 193 defense installations whose mission requires rail service.

Figure 6.1 STRAHNET, STRACNET and Major Military Facilities in South Carolina



1. **Fort Jackson:** Located in Columbia**,** Fort Jackson, shown in **Figure 6.2**, was built in 1917 initially to support the training of U.S. troops entering WWI. Today it remains a training center and is the primary Basic Combat Training site for the U.S. Army. During WWII more than a half-million soldiers received some form of training at Fort Jackson. Today, it is the largest Army Initial Entry Training Center with roughly half of all new recruits going to Fort Jackson for their initial training. The South Carolina National Guard also operates on about 15,000 acres of the facility, including the McCrady National Training Center. A study released in June 2022 estimates that Fort Jackson supported over 15,000 direct jobs and created an additional 25,616 jobs in the regional economy. The base generated direct and indirect

economic activity of $4.7 billion annually.[45] Primary highway access to the facility is provided by I-20 and I-77.

2. **McEntire Joint National Guard Base (JNGB):** The South Carolina National Guard (SCNG), shown in **Figure 6.2**, consists of the approximately 1,200 members of the South Carolina Air National Guard (SCANG) and nearly 10,000 members of the South Carolina Army National Guard (SCARNG). The majority of the SCANG trains and operates out of McEntire JNGB, with the 169th Fighter Wing as the primary formation. McEntire JNGB is a Federal military installation operated by the SCANG. The base is approximately 2,400 acres and is located 10 miles west of Eastover and approximately 15 miles southeast of Columbia. The base is home to over 60 military aircraft including F-16s, Apache and Blackhawk helicopters.

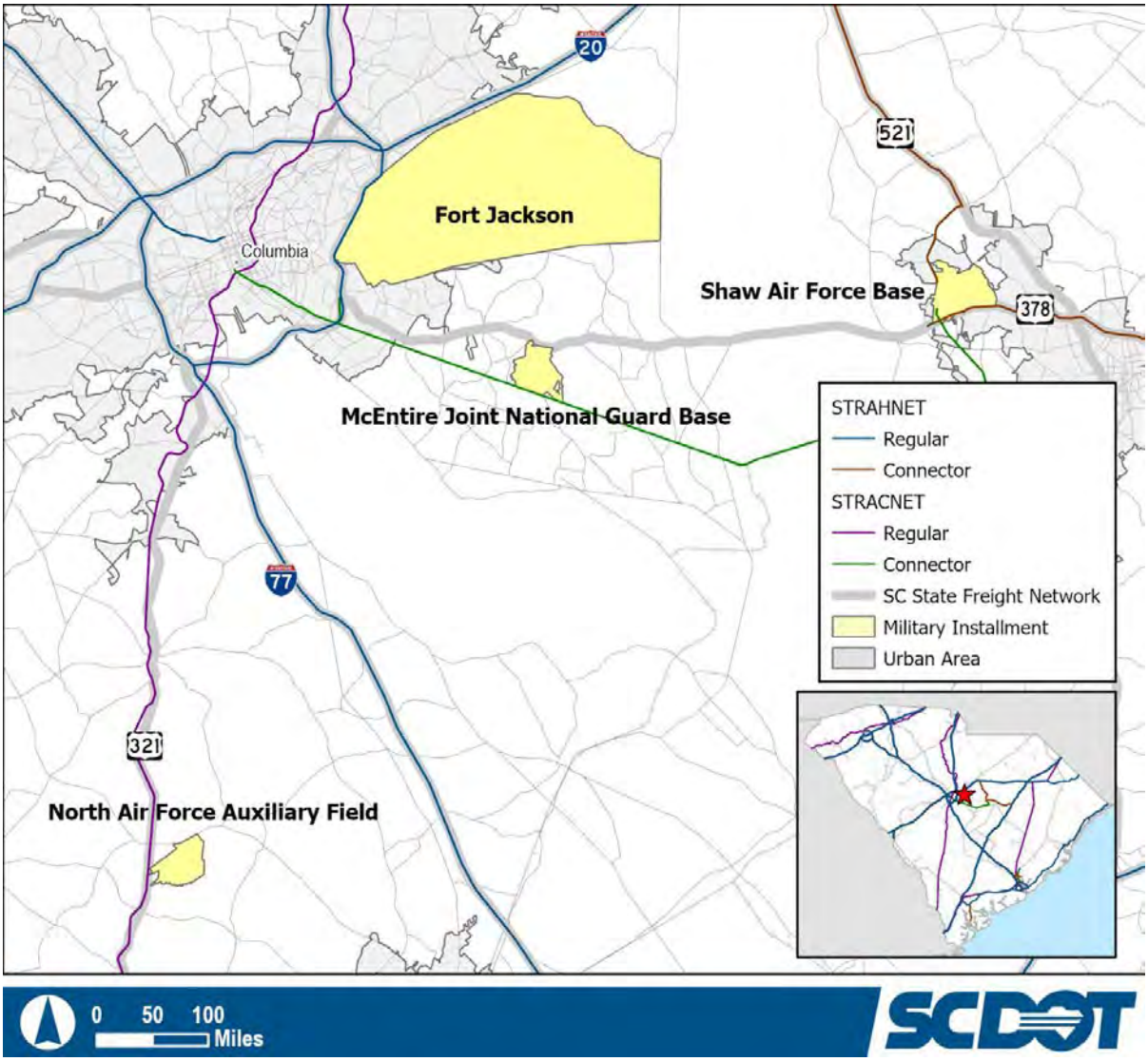
   Major units of the SCARNG include the Joint Force Headquarters—South Carolina (Columbia), 263rd Army Air Missile Defense Command (Anderson), 218th Maneuver Enhancement Brigade (Charleston), 228th Signal Brigade (Spartanburg), 59th Aviation Troop Command (McEntire Joint National Guard Base), 59th Troop Command (McEntire), and 218th Regiment (McCrady Training Center).

3. **Shaw Air Force Base (AFB):** Located in Sumter, South Carolina, Shaw AFB (**Figure 6.2**) was built in 1941 and is one of the oldest regional Unified Combat Commands in the USAF. Shaw is home to the 20th AF Fighter Wing (FW), and headquarters, Ninth Air Force, U.S. Air Forces Central, Third Army and U.S. Army Central. The 20th FW is the largest F-16 combat wing in the Air Force. The base is home to over 8,200 active-duty military members, 1,200 civilian employees and roughly 12,000 family members. In 2021, Shaw was estimated to generate over $1.5 billion in regional economic activity, and over $2 billion on the state economy.[46]

[45] Multiple Sources, including Fort Jackson website: https://home.army.mil/jackson/index.php. Also, Dr. Joseph C. Von Nessen, *The 2022 Economic Impact of South Carolina's Military Community,* June 2022.

[46] Dr. Joseph C. Von Nessen, *The 2022 Economic Impact of South Carolina's Military Community,* June 2022.

Figure 6.2 Map Detail of Fort Jackson, McEntire JNGB and Shaw AFB



4. **Joint Base Charleston (JB CHS):** Located partly in the City of North Charleston, and partly in Goose Creek, JB CHS, shown in **Figure 6.3**, was created in 2010 resulting from a recommendation of the Base Realignment and Closure (BRAC) Commission. Prior to 2010, Charleston was home to both the Naval Weapons Station (NWS) Charleston, and the Charleston Air Force Base (AFB). Today, JB CHS is comprised of the Air Base (JB CHSAB), the Weapons Station (JB CHS-WS) and the North Auxiliary Airfield (NAAF) and specializes as a logistics, transportation, training and engineering hub. The facility is under the jurisdiction of the USAF 628th Air Base Wing (ABW), Air Mobility Command (AMC). The 628th ABW provides installation support to more than 60 DOD and Federal agencies serving more than 90,000 Airmen. The wing maintains $7.5 billion of physical infrastructure across 23,000 noncontiguous acres. Mission partners to the 628th ABW include the 437th Airlift Wing of the USAF and the 315th Airlift Wing (USAF Reserve) which together operate over 40 C-17A Globemaster III aircraft, the 841st Transportation Battalion (U.S. Army Reserve) and Army Strategic Logistics Activity Command (U.S. Army Reserve). The base also houses the Naval Consolidated Brig, Naval Health Clinic, and the Navy's nuclear training facilities for operators onboard nuclear-powered Navy vessels.

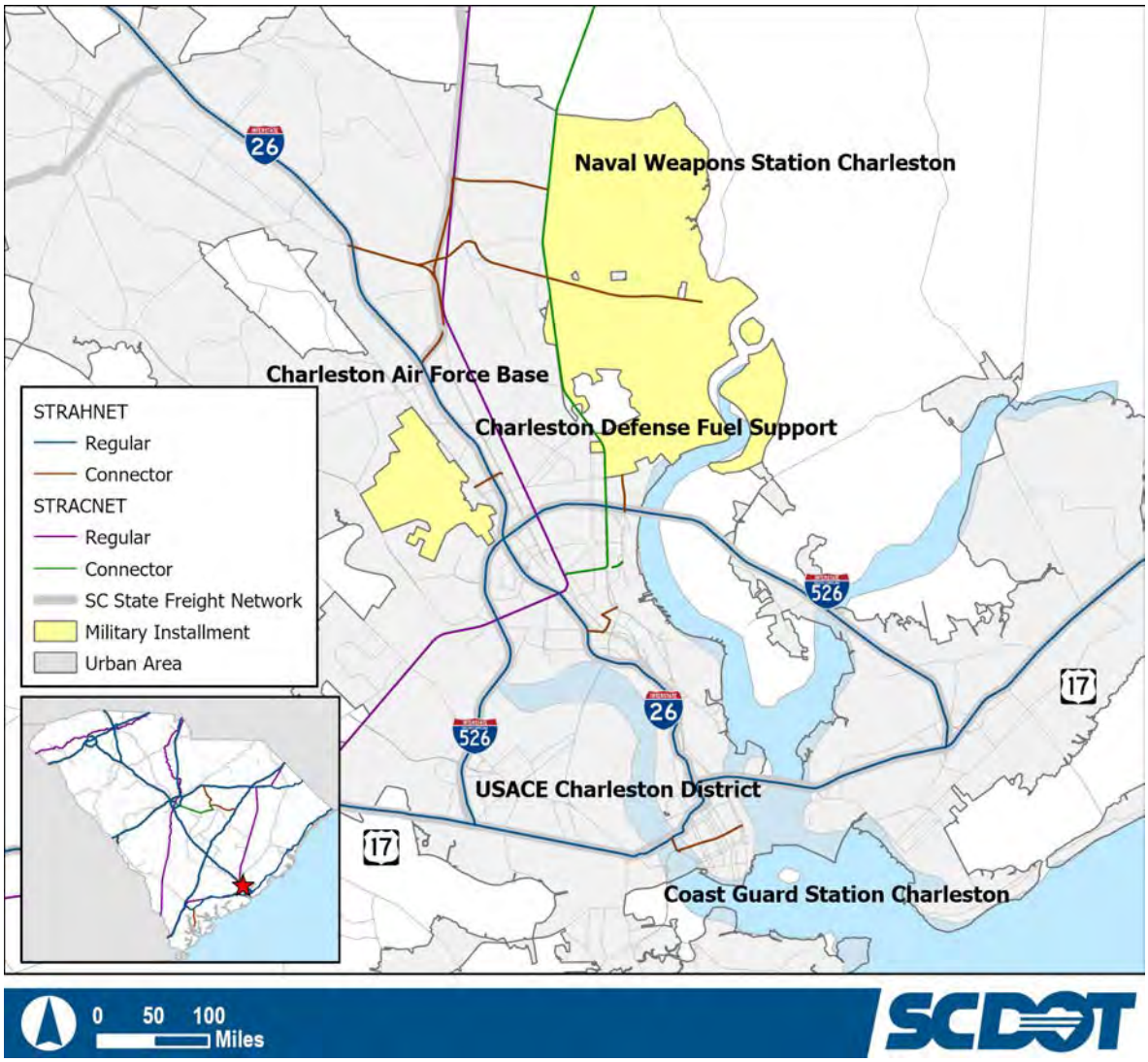
JB CHS uses virtually all modes of transportation to support the supply chain needs of the various base commands and operations. For example, the Army Reserve's 841st Transportation Battalion specializes in handling large medium speed roll on / roll off (RO/RO) vessels, operating one of the busiest military transportation terminals in the U.S. Army. Primary highway access to JB CHS is accomplished via I-26 and I-526. The base is supported either directly or through adjacent rail, pipeline, intracoastal barge, deep water ocean vessels and air cargo modes. JB CHS shares two intersecting runways with Charleston International Airport. The primary runway was recently renovated and is 9,000 feet long. The intersecting runway is 7,000 feet long. The base maintains the runways, most taxiways, and security and crash rescue response for all flights. The Port of Charleston is approximately 17 miles via I-26 from JB CHS.

JB CHS is also a major departure point for troop deployments, meaning the base must manage surges in the movement of personnel, equipment, and supplies on a regular basis. During the COVID-19 pandemic, the base reported experiencing several sourcing issues related to supply chain bottlenecks. The base reported recent investments in security systems for truck delivery access, facility renovations, pier repair and a new passenger terminal. It is estimated that in 2021, JB CHS created approximately $8.3 billion annually in direct and indirect economic activity in the regional economy.[47]

5. **U.S. Coast Guard (USCG) Sector Charleston:** The mission of the USCG, shown in **Figure 6.3**, is to ensure the Nation's maritime safety, security, and stewardship. A unit of the U.S. Department of Homeland Security, it is a unique branch of the military responsible for eleven official missions including, defense readiness, port and waterway security, search and rescue, and law enforcement. USCG Sector Charleston is located in South Charleston near the waterfront, positioned for seagoing missions and for a variety of shore-based activities. The Charleston Sector oversees and manages three cutters, three Aids to Navigation (ATON) teams, and four small boat stations (located in Georgetown, Charleston, Tybee Island, GA, and Brunswick, GA). The Sector includes approximately 800 permanent active-duty personnel as well as 150 reserve officers.

[47] Dr. Joseph C. Von Nessen, *The 2022 Economic Impact of South Carolina's Military Community,* June 2022.

Figure 6.3 Map Detail of JB CHS and USCG Sector Charleston

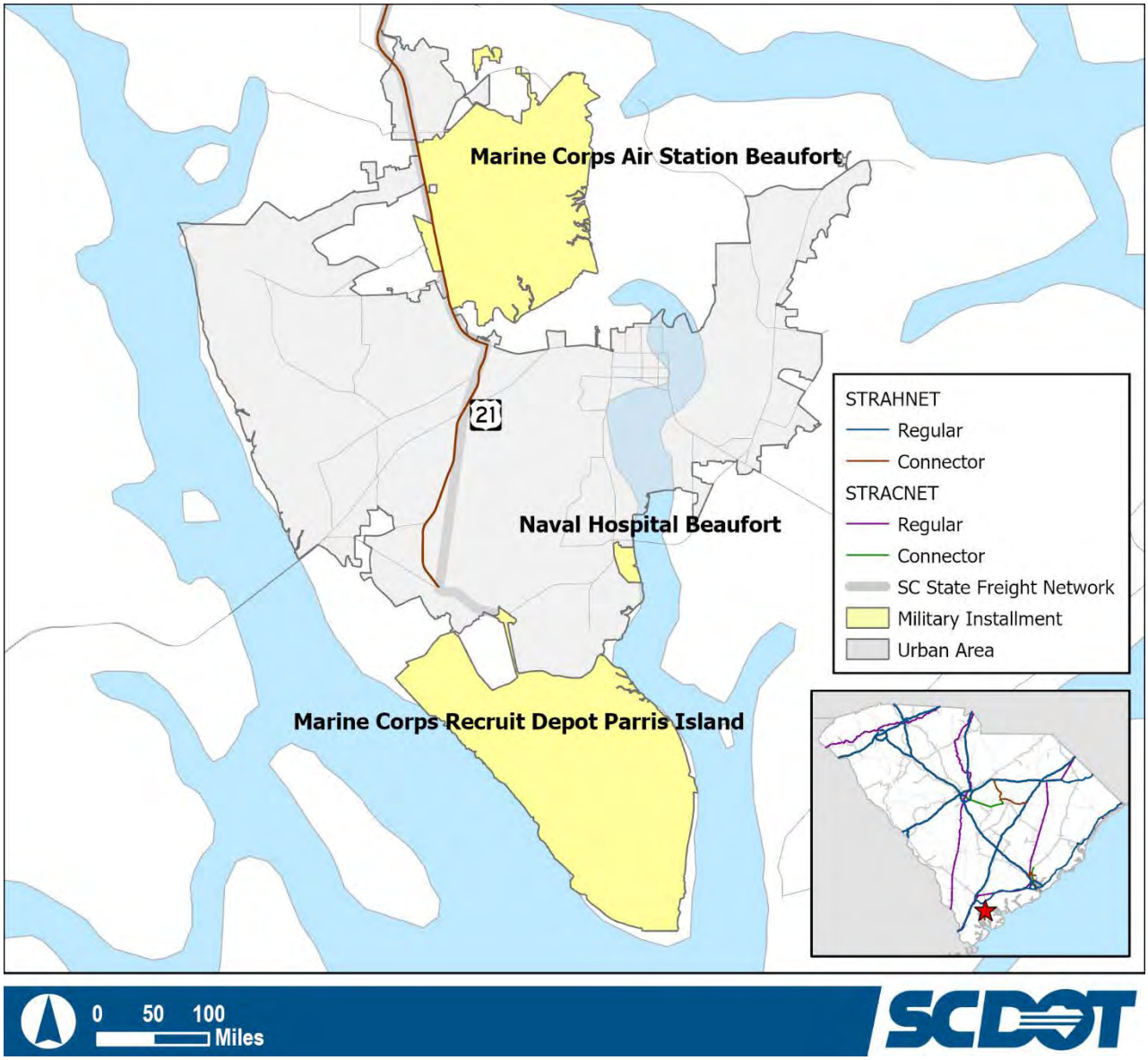


6. **Marine Corps Air Station (MCAS) Beaufort**: Originally commissioned as a Naval Air Station in 1943 for training related to anti-submarine patrols during WWII, Beaufort was deactivated from 1946 to 1956. The Base reopened in 1960 as MCAS Beaufort, shown in **Figure 6.4**. Today MCAS Beaufort supports the 2nd Marine Aircraft Wing, which has included F/A-18 air operations on the east coast. The base recently completed a new hanger for the F-35B, part of a transition to 5th generation aircraft. Beaufort is located about 65 miles south of Charleston. Primary highway access to the facility is U.S.-21.

7. **Naval Hospital Beaufort**: Located in Port Royal, SC Naval Hospital Beaufort, shown in **Figure 6.4**, provides general medical, surgical and urgent care services to all active-duty Navy and Marine Corps personnel, as well as retired military personnel and all military dependents residing in the Beaufort area. It specifically serves both MCRD Parris Island and MCAS Beaufort. The hospital's mission is to keep the Navy and Marine Corps family ready, healthy, and on the job. Freight responsibilities are handled by MCAS Beaufort.

8. **Marine Corps Recruit Depot (MCRD) Paris Island**: Designated as a Marine Recruit Depot in 1915, shown in **Figure 6.4**, Parris Island facility is the second oldest post in the U.S. Marine Corps. The primary mission of MCRD Parris Island is recruitment and training. The facility trains an average of 19,000 recruits per year. Having trained well over 1 million troops, it has earned the nickname "Cradle of the Corps." Paris Island is located within Port Royal, about 5 miles south of Beaufort.

Figure 6.4 Map Detail MCRS Beaufort, Naval Hospital Beaufort and MCRD Beaufort



6.2 South Carolina Military Installations Survey

As part of the effort to include military considerations in the freight plan update, surveys were emailed to each of the eight military facilities discussed in the previous section. The survey process was facilitated by the U.S. Transportation Command, Joint Distribution Process Analysis Center, Surface Deployment and Distribution Command, Transportation Engineering Agency (USTRANSCOM JDPAC / SDDC TEA). TEA

staff provided initial base contacts and provided follow-up requests for completing the survey. Five surveys were returned by the established deadline, including two responses from JB CHS, representing transportation and logistics responsibilities for both the Air Force and Army. In addition, responses were received from Fort Jackson, USCG Sector Charleston and Joint Base McEntire. It should be noted that the response window for completing surveys, also overlapped with Hurricane Ian's landfall in South Carolina September 30, 2022.

From the survey responses received, JB CHS is by far the most active base from a freight movement standpoint. JB CHS relies on virtually all modes of freight transport, however the base reported that many products are consolidated at adjacent facilities external to the base such as the Port Charleston, a pipeline tank farm, and CSX rail yard and then moved into the base by truck. When questioned about any identified transportation needs or infrastructure improvements, none of the survey respondents noted any upgrades beyond modernization of some on base infrastructure. Other than JB CHS, respondents noted using an array of trucking services for shipping and receiving goods. Several noted moving oversize or overweight (OS/OW) highway loads that they move under permit from the SCDOT OS/OW Permit Office.

Both JB Charleston and JNGB McEntire noted that they conduct troop deployment operations, which are typically associated with surges in both people and cargo movements. Several survey respondents reported recent on transportation related investments, but most were modernization projects of existing facilities and repairs, along with upgrades to gate security systems for clearing commercial transportation providers. None of the respondents reported any infrastructure issues or needs from the highway systems serving their facilities. Congestion for trucks entering the Port of Charleston on Remount Road and JB CHS commercial entrance were noted.

Several respondents noted some supply chain issues for certain items during the pandemic, and some noted occasional issues related to hurricanes and flooding, however none reported supply chain resiliency planning efforts at the base level.

Conclusions

South Carolina's military facilities and supporting community have a significant impact on the economy of South Carolina and is important to our national defense. The most recent estimates suggest that military activity contributes over $34 billion annually to the South Carolina economy and supports over a quarter-million jobs.[48] One of the key roles played by South Carolina's military establishments is strategic transportation. JB CHS, the largest installation in South Carolina specializes as a hub for logistics, transportation, training, and engineering. The Charleston Port is currently one of only 17 designated strategic commercial seaports prepared to support force deployment during contingencies and other defense emergencies.

Recently the Army Corp of Engineers undertook a project to deepen the Charleston Harbor to 52 feet, making it the deepest port on the East Coast, and allow Neo-Panamax ships to call on the port.[49]

[48] Dr. Joseph C. Von Nessen, *The 2022 Economic Impact of South Carolina's Military Community,* June 2022.

[49] Neo-Panamax or new Panamax vessels refer to container ships capable of carrying 10,000—14,000 twenty foot equivalent unit (TEU) shipping containers.

While JB CHS and other important facilities surveyed around the state use a variety of modes to move materials, equipment and people, all of respondents to a survey supporting the state freight plan update, noted the critical importance of the highway network in supporting facility operations.

7.0 E-commerce Assessment

Electronic commerce (e-commerce) is the use of electronic devices and technologies to buy and sell goods or services, primarily over the Internet. E-commerce has grown substantially over the past two decades with widespread use of online retailers such as eBay and Amazon. The increase of e-commerce decentralizes traditional distribution methods and delivery of goods, increases the labor intensity of logistics operations, and is heavily influenced by automation and technological advances.

According to the U.S. Census Bureau, online sales as a share of total retail sales have been growing, from five percent of the total retail sales in 2011 to almost 14 percent in 2020. E-commerce sales totaled $792 billion in 2020, an increase of 32 percent since 2019.[50] Moreover, in 2020, the Secretary of the South Carolina Department of Commerce noted that Cyber Monday sales were over 15 percent higher than the year prior, totaling $10.8 billion.[51] In 2022, e-commerce sales accounted for 15 percent of total retail sales in the second quarter of 2022, a seven percent increase from the second quarter of 2021.[52]

The COVID-19 pandemic accelerated this trend. One estimate based on Adobe Digital Insights data found that COVID-19 accelerated e-commerce growth by four to six years in a matter of months as lockdowns forced consumers to purchase more goods online.[53] Post-pandemic, consumers continue to expect to be able to shop from home with free delivery to their doorstep or use a buy online, pick up in store model. Consumers have reported a high intention to continue using buy online, pick up in store, and home delivery models post-pandemic.[54] A survey completed by the Rensselaer Polytechnic Institute indicated that respondents expect that post-pandemic, monthly grocery deliveries will remain 64 percent higher than pre-pandemic rates.[55]

This rapid growth in e-commerce has changed shipping patterns and freight movements in particular, at the regional and local level. As individual's homes replaced retail locations as freight destinations, the distribution and delivery of good becomes decentralized and regional distribution and trucking needs increased.[56] As a result, repurposing land uses for regional distribution warehouses is likely.[57] In 2020, Walmart began construction on an approximately three million square foot distribution center in Dorchester County, South

[50] U.S. Census Bureau, "Estimated Quarterly U.S. Retail Sales (Adjusted): Total and E-commerce," retrieved October 5, 2022, from https://www2.census.gov/retail/releases/historical/ecomm/20q4.pdf.

[51] https://www.sccommerce.com/newsletter/message-secretary-hitt-holiday-e-commerce-boom.

[52] https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf.

[53] Koetsier, John, "COVID-19 Accelerated E-commerce Growth 4 to 6 Years," *Forbes*, June 12, 2020.

[54] https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/njtpa_Covid-19_freight_report.pdf.

[55] https://news.rpi.edu/content/2020/08/03/consumer-behavior-has-shifted-significantly-during-pandemic-survey-reveals.

[56] https://truckingresearch.org/wp-content/uploads/2019/02/ATRI-Impacts-of-E-commerce-on-Trucking-02-2019.pdf.

[57] https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/njtpa_Covid-19_freight_report.pdf

Carolina.[58] In February 2022, a 75-acre complex in Dorchester County was identified for the development of two warehouses that would support tenants such as Amazon, the United Postal Service, or Fed-Ex.[59]

Operational logistics for e-commerce is labor intensive.[60] E-commerce relies heavily on the trucking industry, with long-haul transport, regional and urban transfers, followed by last-mile trips, usually completed through the U.S. Postal Service, private fleet delivery vehicles or app-based delivery services. This increase in road freight carriers can lead to increased traffic congestion, resulting in delays in the delivery of goods to both residential consumers and businesses. In addition, increased road freight carrier needs exacerbate the driver and workforce shortages, of all skill levels, in the trucking industry.[61]

As e-commerce has grown, consumer demand for faster home delivery has also grown. The growth in home deliveries, particularly in heavily populated areas, has increased the need for last-mile direct to consumer truck trip solutions and research into delivery technologies. Last-mile delivery is becoming a critical differentiator and a strategic priority. According to a survey by Accenture in 2016, two-thirds of online consumers choose a retailer based on the number of delivery options while three-quarters look at a retailer's return policy before completing an order.[62] In a more recent survey by Pitney Bowes released in early 2022, 64 percent of consumers still prefer at-home delivery over curbside pickup when free shipping is offered.[63]

More recently, e-retailers have implemented centralized customer pick-up lockers, private fleets of delivery vehicles, and new delivery technologies (e.g., robots and drones) to supplement other last-mile services. Rapid e-commerce requires fast, on-time delivery which is sensitive to both distance and congestion. One result of this trend is a higher number of delivery vehicles entering residential neighborhoods and more frequent deliveries to businesses, causing increased congestion and wear and tear to the local road network. Additionally, e-commerce introduces the need for reverse logistics to handle returns or recycling of goods that were formerly brought to a retail location, further increasing the strain on the freight network.

Rapid advances in digital technology and automation are expected to continue to influence e-commerce logistics, while also increasing the demand on communication infrastructure and utilities that support automation.[64] In South Carolina, the logistics industry's reliance on technology tripled between 2010 and 2020.[65] Retailers are expected to continue to look for opportunities to increase same-day delivery options and force a growing need for shortening the last-mile delivery distance. As demand for e-commerce

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[58] https://scspa.com/news/walmart-breaks-ground-on-distribution-center-in-sc/

[59] https://www.live5news.com/2022/02/23/dorchester-co-approves-agreement-build-489m-industrial-warehouses-near-summerville/.

[60] https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/njtpa_Covid-19_freight_report.pdf

[61] https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/njtpa_Covid-19_freight_report.pdf.

[62] [77] Accenture, "Shipping Options and Delivery Partners Essential to Winning the e-commerce Battle, Accenture Study Shows," Retrieved October 3, 2022 from https://newsroom.accenture.com/news/shipping-options-and-delivery-partners-essential-to-winning-the-e-commerce-battle-accenture-study-shows.htm.

[63] https://www.pitneybowes.com/us/blog/curbside-pickup2022.html.

[64] https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Planning%20for%202050/njtpa_Covid-19_freight_report.pdf.

[65] https://www.sccommerce.com/newsletter/message-secretary-hitt-holiday-e-commerce-boom.

continues to increase, intermodal solutions, such as a combination of two or more different shipping modes such as trucks, trains, ships, and aircraft, is needed to accommodate the increasing complexity of supply chains, to reduce costs, and to reduce the timeframe of e-commerce deliveries. Additionally, regional intermodal facilities that can transfer commodities from one mode to another may also help to reduce the complexities of transporting goods.[66]

Major delivery companies such as Amazon, Google, DHL, FedEx, and UPS are now working on meeting the demand for faster, less-expensive package deliveries by looking for efficient, time saving methods for last-mile delivery. Emerging strategies include:

- **Setting up smaller consolidation centers—**Some retailers are placing smaller consolidation centers, or microhubs, in dense urban communities. Goods get delivered from warehouses and distribution centers via truck to a microhub facility where a package can be picked up by a customer or delivered by cargo bike, bicycle, robot, or drone to its destination.[67]

- **Setting up a network of regional carriers—**Rather than relying on one or two large national carriers, some retailers are experimenting with several regional carriers to quickly deliver parcels to customers.

- **Using gig and platform services—**Technology platforms like Instacart and Shoprunner provide options for same-day fulfillment. Although this is a high-cost approach, the benefits of converting more online shoppers may outweigh the fees for using the platforms.

- **Drone delivery—**Companies including Amazon and Google subsidiary, Wing, have received Federal Aviation Administration approval to operate drone delivery services. Such services may allow drivers to make more deliveries per hour without driving additional miles and therefore reducing emissions as a result, or customers could receive drone parcel shipments directly from nearby warehouses.

Weather restrictions, regulations, and public acceptance obstacles may make drones a longer-term solution, but wide adoption of drone delivery could disrupt the local parcel and trucking industry. Platform services could reduce the number of parcel trucks on the road but would presumably increase conventional vehicle traffic since gig workers would be using their personal vehicles to make deliveries.

[66] https://www1.nyc.gov/html/dot/downloads/pdf/smart-truck-management-plan.pdf.

[67] https://www.portlandoregon.gov/transportation/article/751002.

8.0 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 (SFN), 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 SFN to focus on the performance of the strategic network. The South Carolina SFN identifies those routes and assets on which to plan for funding and projects to facilitate and improve freight movement.

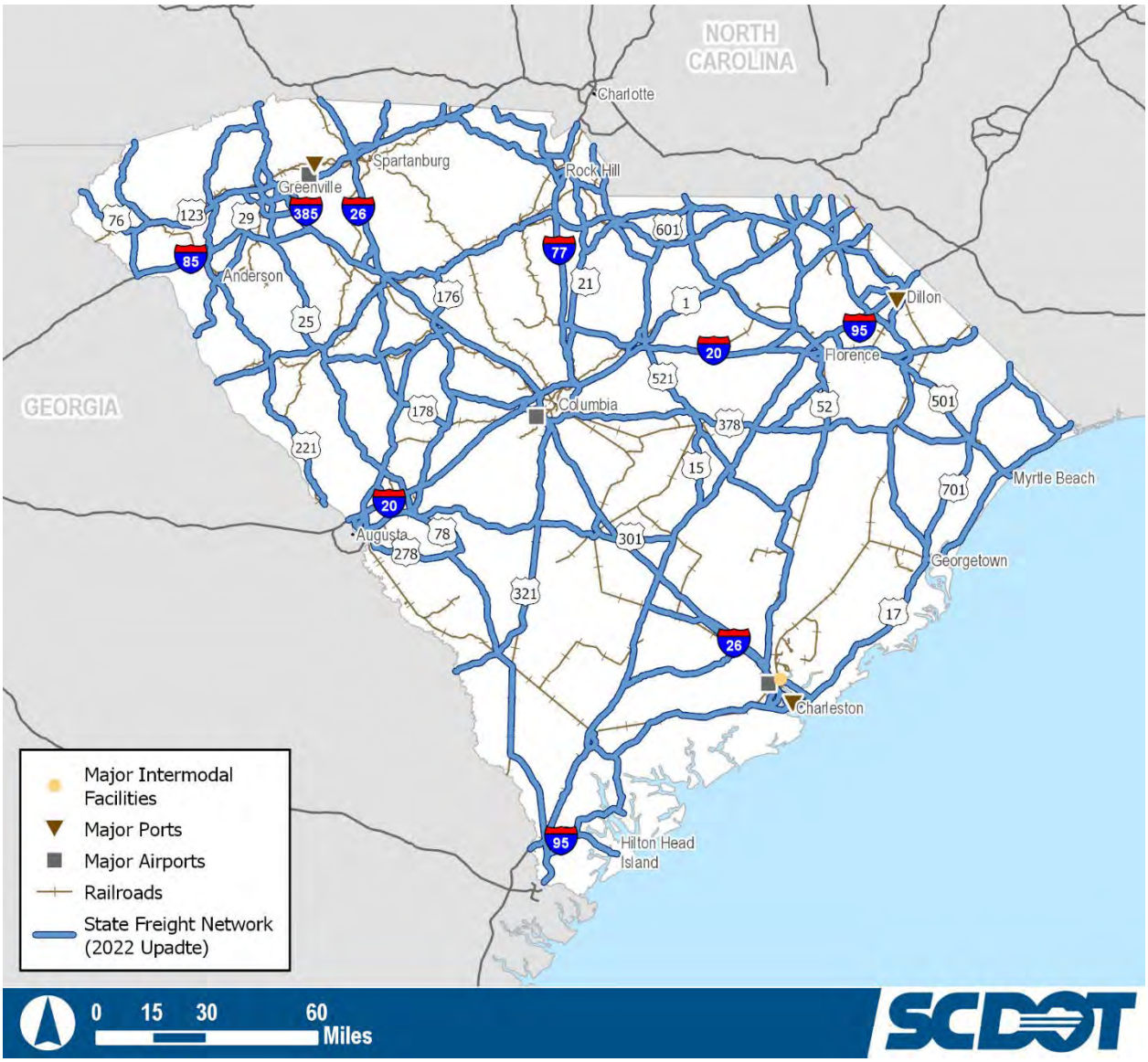
8.1 Statewide Freight Network Evaluation Criteria and Map

The South Carolina SFN was developed using various information sources and a number of criteria. The network considers 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.

Focusing on SCDOT's strategic priority to "increase mobility along the freight network," the South Carolina SFN was updated with freight tonnage growth as the driving factor in determining the network. The South Carolina SFN is made up of South Carolina roadways estimated to carry 1 million or more truck freight tonnage by year 2050. TRANSEARCH data was used to forecast truck freight tonnage. Truck freight tonnage forecasts are further detailed in Chapter 4 of this plan. The SFN, shown in **Figure 8.1**, displays 3,466 miles designated as SFN and also considered:

- South Carolina's Interstate network and freight generators.
- Water and inland port locations.
- Military facilities (new).
- Neighboring freight networks in Georgia and North Carolina.
- Primary public airports that handle cargo.
- Councils of Governments (COGs) and Metropolitan Planning Organization (MPO) input.

Figure 8.1 South Carolina Statewide Freight Network (2022)



Source: TRANSEARCH data for 2050.

8.2 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.

8.3 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. Under the FAST Act, State designation of the CRFCs was limited to a maximum of 150 miles of highway or 20 percent of the PHFS mileage in the State, whichever is greater and CUFC was limited to a maximum of 75 miles of highway or 10 percent of the PHFS mileage in the State, whichever is greater. The mileage allocation guidance was updated under the BIL (Section 1114).

Critical Rural Freight Corridors (CRFC)

The BIL increased the mileage that states can identify as Critical Rural Freight Corridors (CRFC). For a state with a population density per square mile greater than or equal to the national average, state designation of the CRFCs is the greater of 300 miles of highway or 20 percent of the PHFS mileage in the State. For a state with a population density per square mile lower than the national average, state designation of the CRFCs is the greater of 600 miles of highway or 25 percent of the PHFS mileage in the State. South Carolina is limited to a maximum of 300 miles of designated CRFCs.

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;[68]
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. 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)

The BIL also increased the number of miles that can be designated as Critical Urban Freight Corridors (CUFC). The BIL increases the maximum number of miles that can be designated as CUFCs in a state to 150 or 10 percent of the PHFS mileage in the State, whichever is greater. CUFC designation in South Carolina is increased to a maximum of 150 miles. 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:

[68] Federal Highway Administration vehicle class 8 to 13, https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/vehicle-types.cfm.

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;

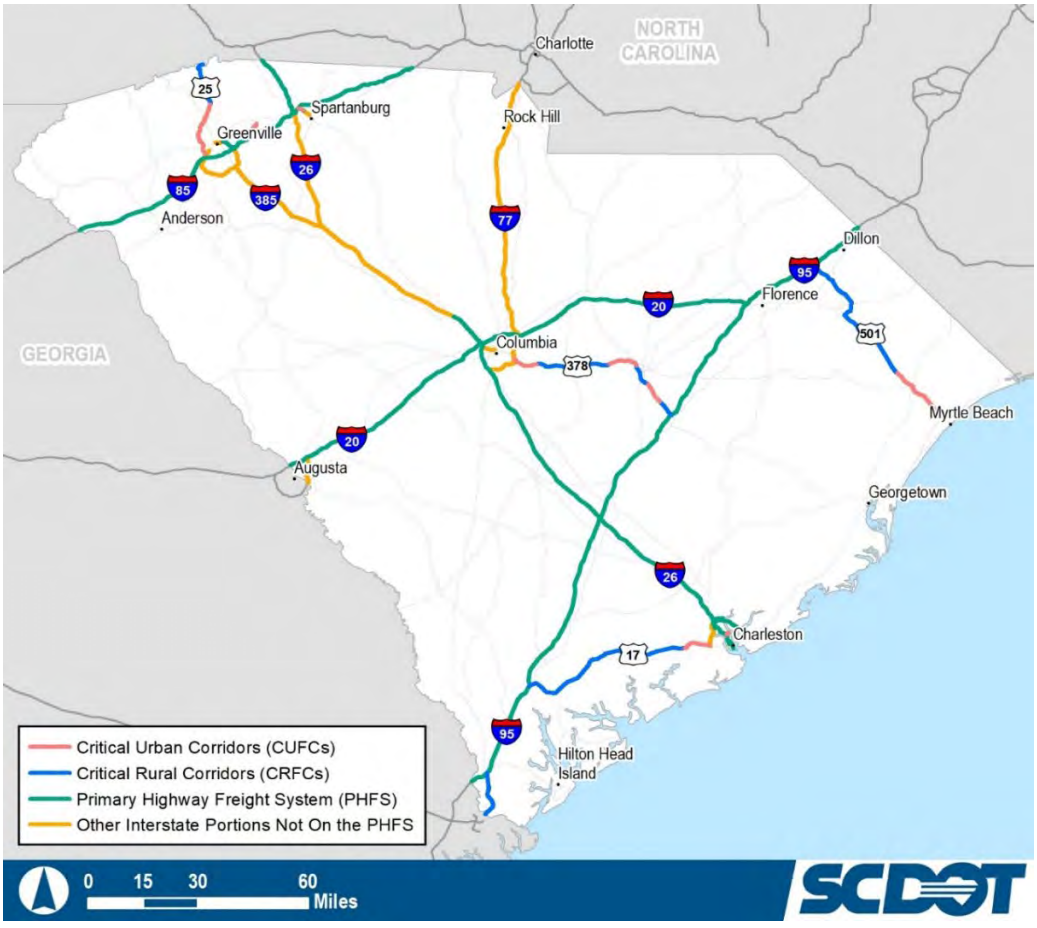
3. Serves a major freight generator, logistic center, or manufacturing and warehouse industrial land; or

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.

SCDOT, in consultation with urbanized areas with a population of less than 500,000 designated CUFC routes in 2020. At that time, MPOs with urbanized areas population of more than 500,000 (Charleston and Columbia), consulted with the State. The National Highway Freight Network within South Carolina (2020) is shown on **Figure 8.2.** A list of SCDOT's CRFCs and CUFCs is found in **Appendix D** of this document.

Figure 8.2 National Highway Freight Network within South Carolina



9.0 Corridor Level Strategies and Continued Freight Planning

9.1 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 state. **Chapters 1** and **2** detail 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 strategies are identified in alignment with activities associated with sustained or enhanced partnerships with other agencies in the state, including both public entities and private sector representatives. This is demonstrated in **Chapters 3** and **4** 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.

9.2 Corridor Level Strategies

Statewide freight bottlenecks, discussed in **Chapter 3.0**, were identified through a preliminary analysis of observed truck counts, feedback from freight stakeholders, travel time data, and TRANSEARCH commodity flow data. The bottleneck locations included:

- 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. **This Corridor and Interchange improvement Project is complete and operational.**

- 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. **This Corridor Improvement Project is complete and operational.**

- I-26: In the Columbia area, bottleneck points during the PM peak hours are located at the Broad River Road (Exit 101). Capacity improvements are needed from Exit 101 to east of the Saluda River (Exit 85). C**orridor improvements are currently underway to address these issues.**

- I-26: In the Columbia area, the I-20 interchange is the primary bottleneck points during the AM peak hour and the I-126, I-20 and St. Andrews Road interchanges are the primary bottleneck points during the PM peak hour. **As part of the 5-phase Carolina Crossroads Project, corridor and interchange improvement projects have begun with all phases currently scheduled for construction.**

- I-26: 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. **Planning activities for the Ashley Phosphate Road Safety Improvements Project are currently underway for these areas, with construction scheduled.**

- 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. **Preliminary activities are underway on I-526 East & West interchange and corridor improvements, with Phase I scheduled for construction.**

- I-85: Corridor improvements necessary to alleviate traffic congestion, improve safety, and increase capacity. Widening and rehabilitation of the existing Interstate 85 beginning at mile marker 96 and continuing to the North Carolina state line. **Corridor Improvements are currently in construction.**

- 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. **Preliminary activities are underway.**

- I-385: The primary bottleneck along I-385 is the interchange with I-85. **This interchange improvement project (as part of the 85/385 Gateway project) is complete and operational.**

With the passage of the ***South Carolina Infrastructure and Economic Development Reform Act*** **(Act 40)**[69] 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 needed widening projects are available through the Infrastructure Maintenance Trust Fund motor fuel tax credit program which 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 TAMP 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

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

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-194). **Corridor Improvement Project construction between mile marker 184 and 194 near Charleston began in 2022. Preliminary activities for the remaining Corridor Improvement Project are underway and construction scheduled.**

- I-26 at I-95 Interchange in Dorchester and Orangeburg Counties (MM-172-182 and MM 69-86). **Preliminary activities for this Corridor Improvement Project are underway and construction scheduled.**

- I-95 in the Lowcountry from the Georgia State Line (MM-0 to MM-33). **Preliminary activities for this Corridor Improvement Project are underway and construction scheduled.**

- I-85 in the Upstate from the Georgia State Line (MM-0 to MM-19). **Preliminary activities for this Corridor Improvement Project are underway.**

- I-77 in the Catawba Region (MM-65 to MM-77). **Preliminary activities for this Corridor Improvement Project are underway.**

Use of National Highway Freight Program (NHFP) funds to address some of these projects is provided in the Financial Investment Summary.

9.3 Modal Shift Potential

According to the TRANSEARCH database, in 2019, 70.1 percent of shipments in South Carolina were transported by truck, 24.2 percent by rail, and 5.7 percent by air, pipeline and water. Nationally, just 60.9 percent of freight tonnage is moved by trucks, the share increases to 63.4 percent by weight. 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.

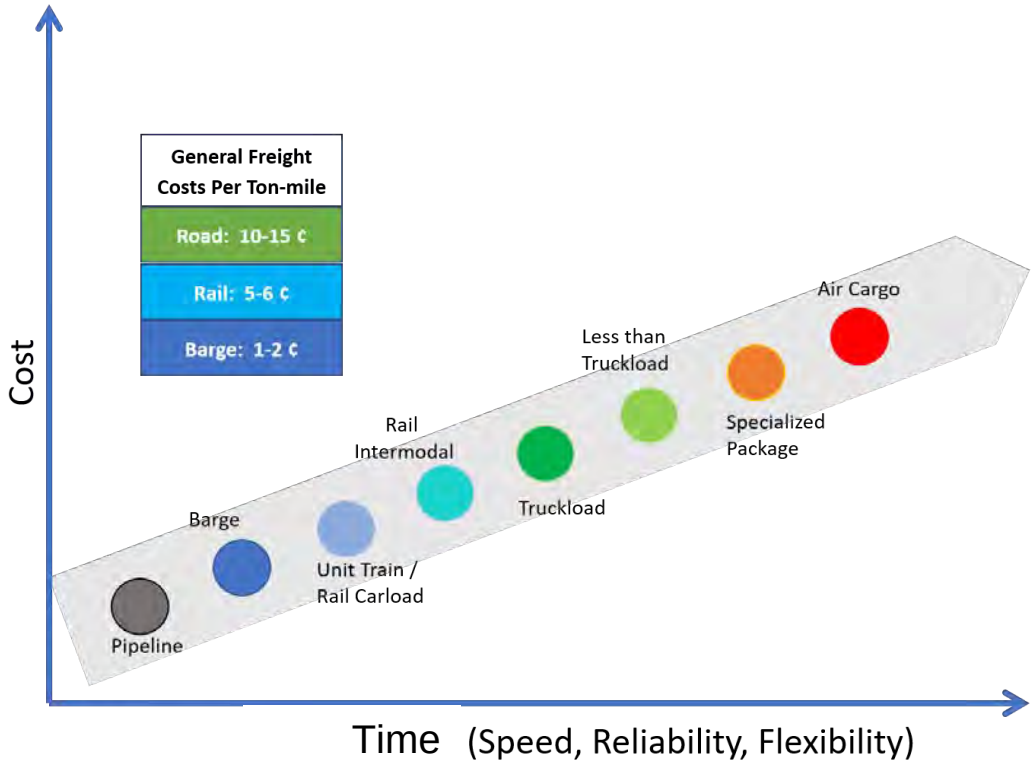
During the latter half of the twentieth century the acceleration of global trade, low transportation costs and cheap foreign labor prompted many U.S. companies to adopt global sourcing policies and far-flung international supply chains. The Boeing 787 Dreamliner aircraft assembled in North Charleston, SC offers a pertinent case study of evolving supply chain practices and the need to continuously reassess multimodal networks. When Boeing first opened the 787 Dreamliner assembly facility in 2011, it pursued an innovative supply chain strategy of outsourcing nearly three-quarters of aircrafts components from approximately 50 domestic and international tier-1 suppliers. However, the strategy quickly experienced challenges in having to rely heavily on such a wide array of specific suppliers for key components. Part and software shortages delayed production schedules and resulted in Boeing redesigning its supply chain.

The supply chain risks that Boeing experienced during the past decade foreshadowed what many manufacturing companies have experienced since 2020 and the onset of the COVID-19 pandemic. After decades of focusing on inventory reduction and supply chain cost cutting, companies today are reshoring

and creating redundancy in supplier networks and increasing inventories. These recent supply chain risk reduction strategies, coupled with steep increases in fuel prices are causing many private sector firms to reassess their supply chain networks, including production and sourcing locations, distribution center and terminal locations. These shifts in private sector supply chain networks, also create opportunities for public agencies to encourage mode shifts, and investments that can facilitate more goods moving by more efficient non-highway modes.

In general terms, each mode of freight transportation provides a mix of cost and time (speed, accessibility, and flexibility) that shapes its service attributes and offerings. Service needs also play a major role in determining the mode(s) used by specific industries for the commodities they consume and produce. For example, air cargo services are most often used to transport products with a high value to weight ratio (e.g., computer chips), or products that are extremely time sensitive (e.g., fresh flowers), and/or require a high-level of flexibility (e.g., on-site replacement parts). At the opposite end of the modal spectrum, pipelines are very inflexible and usually handle only a single product. Barges usually transport products with low time sensitivity (e.g., sand, gravel, road salt). **Figure 9.1** shows a common array of modal services for moving goods along with the general service attributes that define modal options. Competition between service and price tends to be greatest the closer the modal options are on the spectrum.

Figure 9.1 Modal Service Cost – Time Matrix



Source: Quetica

Products depend on different transport services that are influenced by inventory policy, product weight, perishability/shelf-life, fragility, and product value. Private sector supply chain managers frequently reassess their supply chain networks using data analytics and optimization modeling. As public sector agencies advance their freight planning practices and as real-time or near real-time freight data becomes more

accessible to public agencies, the ability to assess public sector investments in multimodal networks will continue to advance. A number of public agencies in other states (e.g., Florida, Illinois, and Iowa) have adapted tools (e.g., network optimization) typically used by private sector supply chain managers to assess opportunities to shift freight to more efficient modes.

9.4 Framework for Continuing Freight Planning

In addition to freight corridor level and modal shift strategies, the following provides a general framework for continuing freight planning in South Carolina.

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.

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.

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.

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.

Collaborative Planning Throughout Supply Chain

As partner agencies (such as SCPA and Palmetto Railways) proceed with projects such as the Hugh K Leatherman Terminal 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.

10.0 Freight Investment Planning

10.1 Funding for Freight Infrastructure

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.[70]

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 for just over one-half of all public roads in the state. SCDOT has 41,295.4 state system centerline miles and 79,189.7 public centerline miles (2021).[71]

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, U.S. DOT 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.

[70] https://www.scdot.org/inside/inside-commission.aspx.

[71] SCDOT 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.

Federal Funding Sources

National Highway Freight Program (NHFP)

The Infrastructure Investment and Jobs (IIJA) Act continues the National Highway Freight Program, which was established under the FAST Act. The purpose of the National Highway Freight Program is 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.
- 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 FY2018 and beyond). [23 U.S.C. 167 (h)(5)(A)] In addition, a State may use not more than 30% of its total NHFP apportionment each year for freight intermodal or freight rail projects. [23 U.S.C. 167 (h)(5)(B)]

National Highway Performance Program (NHPP)

The Infrastructure Investment and Jobs (IIJA) Act continues the NHPP which was initially established under MAP-21 and continued under the FAST Act. The NHPP provides support for the condition and performance of the NHS, for the construction of new facilities on the NHS, 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 and to provide support for activities to increase the resiliency of the NHS to mitigate the cost of damages from sea level rise, extreme weather events, flooding, wildfires, or other natural disasters.

A State may transfer up to 50% of available NHPP apportioned funds to Surface Transportation Block Grant Program, Highway Safety Improvement Program, Congestion Mitigation and Air Quality Improvement Program, National Highway Freight Program, Carbon Reduction Program, and Promoting Resilient

Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program each fiscal year (per 23 U.S.C. 126).

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Grant Program

Established a new funding formula to help states improve the resilience of transportation infrastructure. States that voluntarily develop a resilience improvement plan would receive an increased Federal share of funding for projects.

Formula Carbon Reduction Program

Aimed to reduce transportation emissions, eligible projects establish or operate traffic monitoring, management, and control facility or program. Projects that could impact freight under this may include advanced truck stop electrification systems, advanced transportation and congestion management technologies, deployment of infrastructure-based intelligent transportation systems, capital improvements and the installation of vehicle to infrastructure communications equipment, and carbon reduction strategy development.

Congestion Relief Program

State DOTs, MPOs, and local governments in large, urbanized areas are eligible for grants over $10 million to plan, design, implement, and construct congestion relief projects with a Federal cost share of 80 percent. This includes the use of tolls on the Federal interstate system.

Grants for Charging and Fueling Infrastructure

This program makes available $2.5 billion over 5 years (50 percent of which is allocated to the Community Grants Program) to states, MPOs, special purpose districts/public authorities, Indian tribes/territories, and local governments to deploy publicly accessible charging infrastructure.

National Electric Vehicle Infrastructure (NEVI) Program

This program makes available $5 billion over 5 years allocated to states based on a funding formula to deploy charging facilities and establish an interconnected network to facilitate data collection. State DOTs are required to develop a plan or funds will be re-allocated to MPOs and local governments.

Safe Streets and Roads for All Grant Program

Established a grant program for MPOs, local governments, and Tribal governments to develop and carry out comprehensive safety plans to prevent death and injury on roads and streets, commonly known as ‘Vision Zero’ or ‘Toward Zero Deaths’ initiatives. One billion dollars are allocated for the program, no less than 40 percent of which will support the development of safety plans.

Bridge Investment Program

A new competitive grant program to assist state, local, Federal, and Tribal entities in rehabilitating or replacing bridges, including culverts, and eligibility for large projects and bundling of smaller bridges.

Administered through a funding formula, $27.5 billion has been allocated over 5 years to award each state no fewer than one large project or two non-large projects.

Strengthening Mobility and Revolutionizing Transportation (SMART) Grant Program

Establishes a competitive grant program for city or community demonstration projects that incorporate innovative transportation technologies or uses of data, including coordinated automation, connected vehicles, and intelligent sensor-based infrastructure. Annually, $100 million is authorized to fund projects across rural, midsize, and large communities.

Rural Surface Transportation Grant Program

Establishes a rural surface transportation grant program to provide competitive grants to improve and expand the surface transportation infrastructure in rural areas.

Congestion Mitigation and Air Quality Improvement Program

This section of the act adds flexibility to the Congestion Mitigation and Air Quality Improvement Program (CMAQ). It allows states to spend up to 10 percent of CMAQ funds on certain lock and dam modernization or rehabilitation projects and certain marine highway corridor, connector, or crossings projects that are functionally connected to the Federal-aid highway system and contribute to the attainment or maintenance of a national ambient air quality standard.

Emerging Technology Research Pilot Program

Establishes a pilot program to conduct emerging technology research and authorizes $5 million from the General Fund to support the program. Eligible emerging technologies include advanced and additive manufacturing (3D printing) technologies and research into activities to reduce the impact of automated driving systems and advanced driver automation systems technologies on pavement and infrastructure performance, as well as to improve transportation infrastructure design.

Research and Technology Development and Deployment

Supports research on non-market-ready technologies in consultation with public and private entities, adds a focus on accelerated market readiness efforts to the Technology and Innovation Deployment Program, and extends the authorization for the Accelerated Implementation and Deployment of Pavement Technologies program to consider how pavement can enhance the environment and promote sustainability. Additionally, this section of the act authorizes the Center of Excellence on New Mobility and Automated Vehicles to research the impact of automated vehicles and new mobility.

State Funding Sources

South Carolina's state funding sources are organized into five main programs. Two are controlled by SCDOT; the remaining programs are controlled by separate entities. These programs are funded largely 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).

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).

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.

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.

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.

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 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.[72]

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. [73] There are two requirements for eligibility:

[72] South Carolina Code Section 11-43-130.

[73] South Carolina Transportation Infrastructure Bank ("Bank"), Financial Assistance Application Process.

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.

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.

House Bill 3516 (Act 40)

On May 10, 2017 the South Carolina House and Senate voted on House Bill H. 3516[74], 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.

[74] http://www.scstatehouse.gov/sess122_2017-2018/bills/3516.htm.

- 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.

House Bill 5150

On June 15, 2022, the South Carolina House and Senate voted on House Bill H. 5150, also known Act 239. Act 239 provides $120 million in recurring General Funds to SCDOT for Federal aid match for enhancements, operations, rehabilitation, widening and bridges. (https://scstatehouse.gov/sess124_2021-2022/appropriations2022/ta22ndx.php)

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 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. SCDOT can strategically apply funds to projects where i) it makes the most sense and ii) where SCDOT can get the biggest return on investment. As a result this flexibility, SCDOT is in a position help improve freight transportation through smaller, more strategic investments.

10.2 National Highway Freight Program Planning

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 interstate mobility opportunities to enhance the movement and safety of people and goods, the financially constrained Freight Investment Summary provided in Error! Reference source not found. identifies projects eligible for NHFP funding. The Freight Investment Summary identifies projects that are identified in the STIP and could 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.

Table 10.1 Freight Investment Summary

FINANCIAL INVESTMENT SUMMARY (2021-2027)

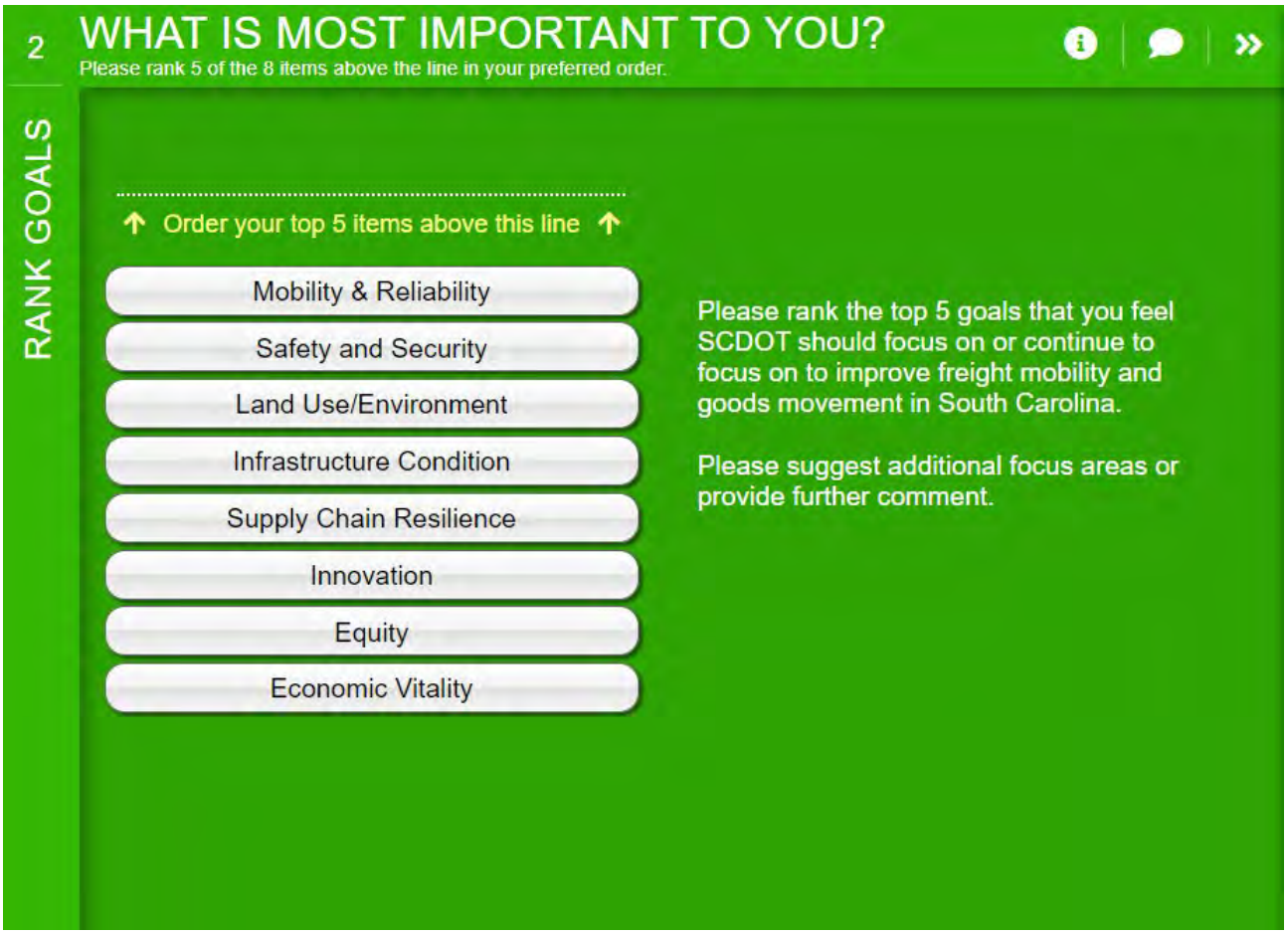
National Highway Freight Program Funding Summary (Federal and State Match)

($Millions)

FFY2021	FFY2022	FFY2023	FFY2024	FFY2025	FFY2026	FFY2027
$31,106	$31,106	$31,106	$31,106	$31,106	$31,106	$31,106

Proposed Potential Projects	COG/MPO	County	Estimated STIP Cost ($1000's)	Phase
I-26 widening from near SC 202 (Exit 85) to near U.S. 176 (Exit 101)	Central Midlands, COATS	Lexington, Newberry, Richland	$115,868	CON
I-20/I-26/I-126 - Corridor Improvements Carolina Crossroads	COATS	Lexington, Richland	$2,605,743	CON
I-26 from near SC 27 (Exit 187) to near Jedburg Road (Exit 194)	BCD CHATS	Berkeley	$190,459	CON
I-26 from near Jedburg Road (Exit 194) to near Nexton Parkway (Exit 197)	CHATS	Berkeley	$22,735	CON
I-526 from near Paul Cantrell Road (Exit 11) to near Virginia Avenue (Exit 20)	CHATS	Berkeley	$190,000	CON
I 26 Corridor Improvement from Exit 125 (Old Sandy Run Road) to Exit 136	Central Midlands COATS	Calhoun Lexington	$30,876	CON
I-26 from near I-526 (Exit 212) to near Port Access Road (Exit 217)	CHATS	Charleston	$10,000	CON
I-85 Widening from near SC 153 (Exit 40) to near SC 85 (Exit 69)	GPATS SPATS	Greenville Spartanburg	$244,833	CON
I-95 Widening (MM8 – MM21)	Lowcountry LATS	Jasper	$335,600	CON
I-26/I-95 Interchange Improvement	Lower Savannah BCD	Orangeburg Berkeley Dorchester	TBD	CON
I-526 from near Rivers Avenue (Exit 18) to near US 17 (Exit 30)	CHATS	Berkeley Charleston	TBD	CON

Appendix A. SCDOT Statewide Freight Plan 2050 Survey Screens


2
WHAT IS MOST IMPORTANT TO YOU?
Please rank 5 of the 8 items above the line in your preferred order.
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Please rank the top 5 goals that you feel SCDOT should focus on or continue to focus on to improve freight mobility and goods movement in South Carolina.
Please suggest additional focus areas or provide further comment.


2
WHAT IS MOST IMPORTANT TO YOU?
Please rank 5 of the 8 items above the line in your preferred order.
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Mobility & Reliability
Provide surface transportation infrastructure and services throughout the state with a focus on regional mobility projects that are designed to reliably move people and goods, combat urban congestion and improve economic development in rural areas.

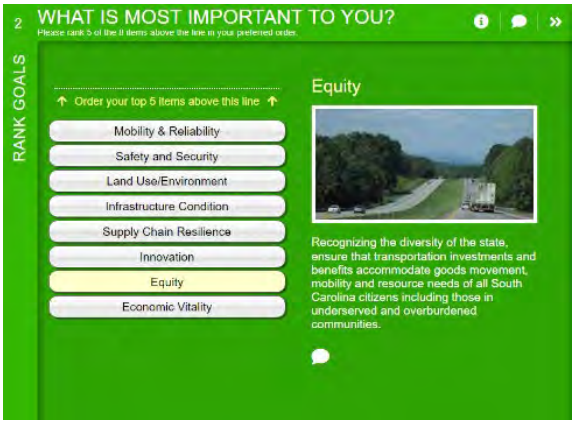

2
WHAT IS MOST IMPORTANT TO YOU?
Please rank 5 of the 8 items above the line in your preferred order.
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Safety and Security
REST AREA
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.


2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Land Use/Environment
As it relates to goods movement, strive to sustain South Carolina's natural and cultural resources by avoiding, minimizing, and mitigating the impacts of freight movement while being mindful of water, air, and noise quality within the state.

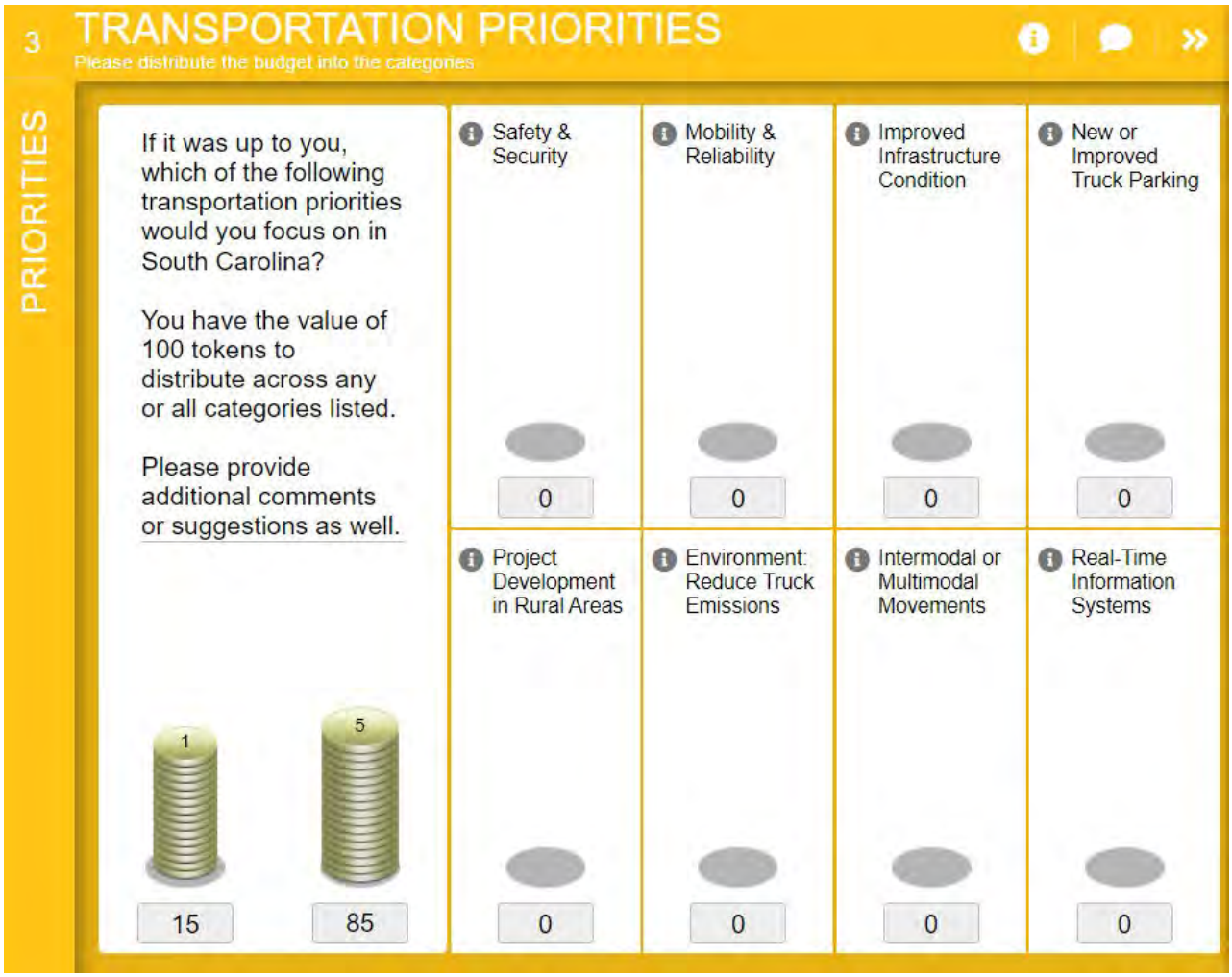

2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Infrastructure Condition
Maintain surface transportation assets in a state of good repair.

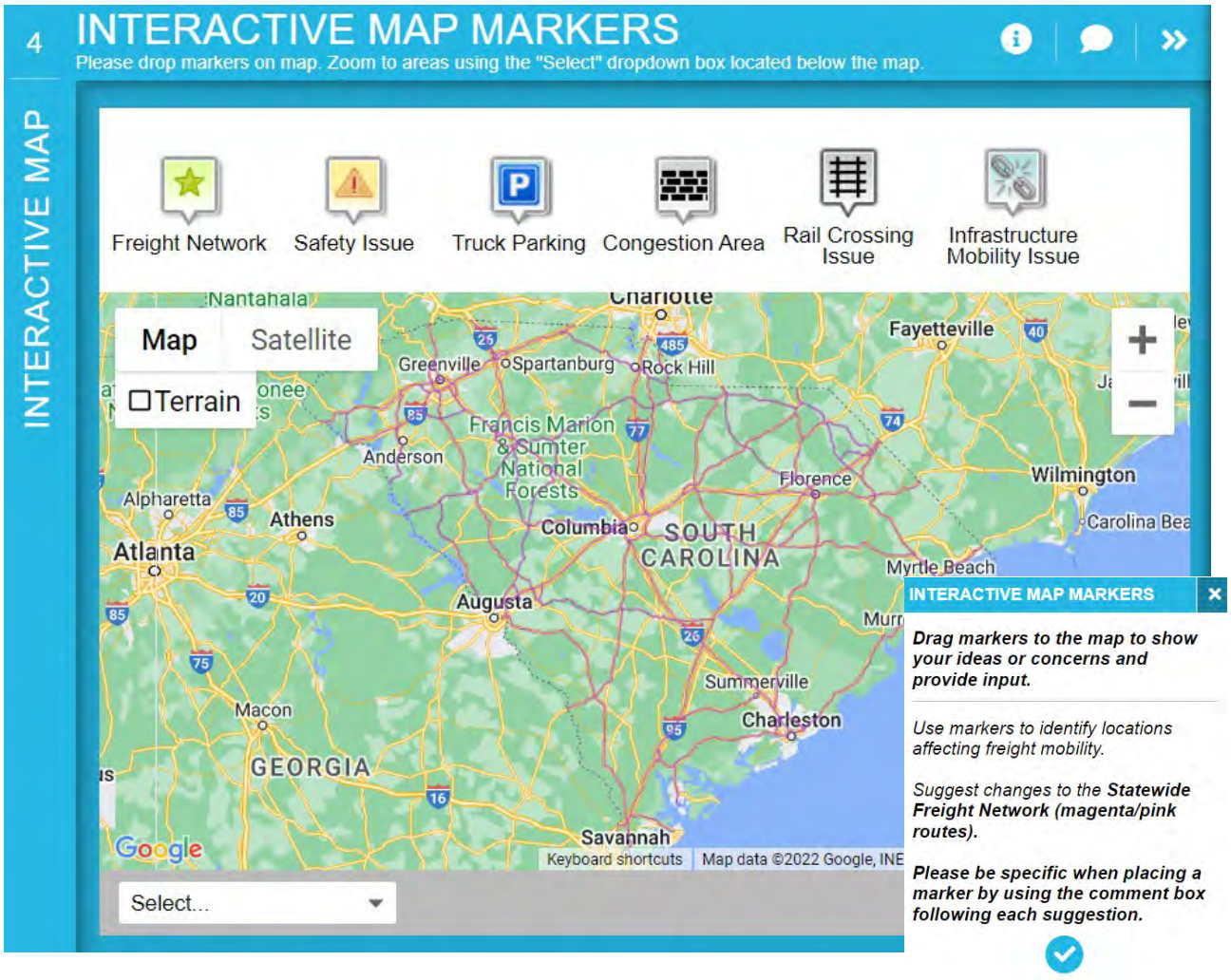

2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Supply Chain Resilience
The ability of a transportation system to move goods around in the face of one or more major obstacles to normal function. These obstacles can include extreme weather events, major accidents, and equipment or infrastructure failures.


2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Innovation
Prepare for the future by supporting the development of technologies that improve system performance and safety.

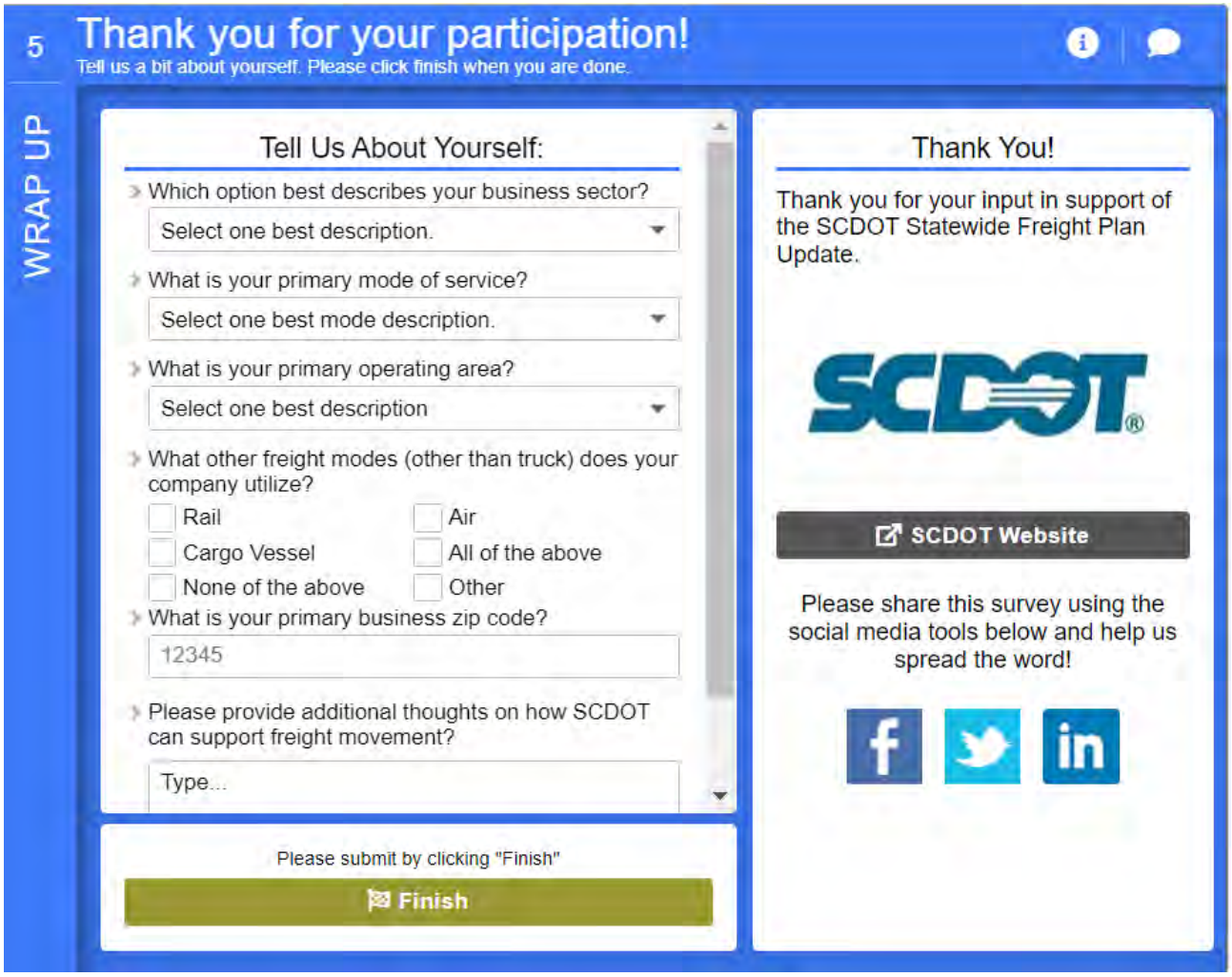

2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Equity
Recognizing the diversity of the state, ensure that transportation investments and benefits accommodate goods movement, mobility and resource needs of all South Carolina citizens including those in underserved and overburdened communities.


2
WHAT IS MOST IMPORTANT TO YOU?
RANK GOALS
Order your top 5 items above this line
Mobility & Reliability
Safety and Security
Land Use/Environment
Infrastructure Condition
Supply Chain Resilience
Innovation
Equity
Economic Vitality
Economic Vitality
Economic vitality supports the development of transportation systems that stimulate, support, and enhance the movement of goods to ensure a prosperous economy.

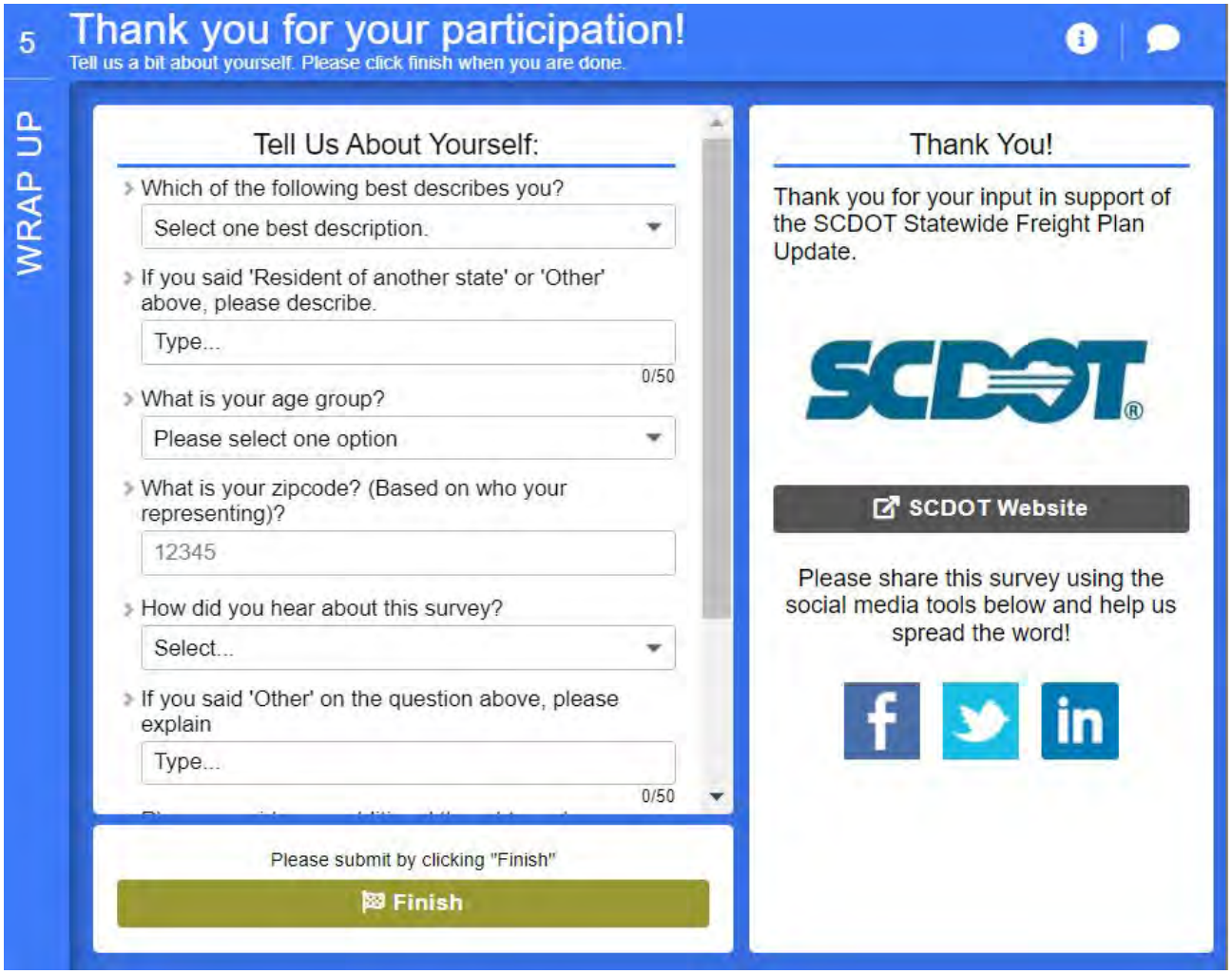

3
TRANSPORTATION PRIORITIES
Please distribute the budget into the categories
PRIORITIES
If it was up to you, which of the following transportation priorities would you focus on in South Carolina?
You have the value of 100 tokens to distribute across any or all categories listed.
Please provide additional comments or suggestions as well.
1
5
15
85
Safety & Security
0
Mobility & Reliability
0
Improved Infrastructure Condition
0
New or Improved Truck Parking
0
Project Development in Rural Areas
0
Environment: Reduce Truck Emissions
0
Intermodal or Multimodal Movements
0
Real-Time Information Systems
0


4
INTERACTIVE MAP MARKERS
Please drop markers on map. Zoom to areas using the "Select" dropdown box located below the map.
INTERACTIVE MAP
Freight Network
Safety Issue
Truck Parking
Congestion Area
Rail Crossing Issue
Infrastructure Mobility Issue
Map
Satellite
Terrain
Nantahala
Greenville
Spartanburg
Rock Hill
Fayetteville
Anderson
Francis Marion & Sumter National Forests
Florence
Wilmington
Alpharetta
Athens
Atlanta
Columbia
SOUTH CAROLINA
Myrtle Beach
Augusta
Summerville
Charleston
Macon
GEORGIA
Savannah
Google
Keyboard shortcuts
Map data ©2022 Google, INE
Select...
INTERACTIVE MAP MARKERS
Drag markers to the map to show your ideas or concerns and provide input.
Use markers to identify locations affecting freight mobility.
Suggest changes to the Statewide Freight Network (magenta/pink routes).
Please be specific when placing a marker by using the comment box following each suggestion.

Industry Partner Wrap Up Screen 5



Public Participant (Citizen) Wrap Up Screen 5



Appendix B. SCDOT Freight Plan Survey Comments (2022)

Industry Partner Survey

Screen 4: Interactive Map

Congestion Area
85 becomes a parking lot mid afternoon to evening in the upstate.
Congestion into an out of the port. We need better multimodal options for the state.
I-85 still an issue between GSP and the Gateway Project at normal rush hour times and even in the afternoons.
Too many cars and trucks to handle.
Port Trucks and over to much volume.
Heavy Congestion
Heavy Congestion
7:00 am—9:30 am / 4:00 PM—7:00 PM Traveling to and from work. Because everyone is always in a hurry, it would help easy stress to keep trucks out of furthest left lane. This applies to all interstate travel.
Early morning commute is difficult as well
Congestion on I-95 coming out of Georgia into SC
SO much congestion with amount of trucks and cars. The right turn lane is not safe due to everyone getting into the right lane to get onto the ramp. People tend to avoid the right turn to merge. Instead, they go through the light and then turn right which is extremely dangerous.
Improve access points and road to accommodate the traffic. Especially around the port.
Constant Congestion
This has become a cut through from 17A causing major congestion for workers leaving the Varnfield Rd facilities.
Infrastructure Mobility
Need to clear the way for large manufacturing related loads from the port to the Upstate
I95 needs widening/ GDOT is already talking about going to 4 lanes. SC is so behind. By the time we have 3 lanes they will be moving on to 4.
Difficult to serve in the CBD with big trucks.
It's not just the narrow roads but the way in which the roads are laid out and the poor conditions of many.
Not only do we have a lag in road improvement in Florence but we also have out grown our infrastructure. There desperately needs to be a focus on the layout of roads and the quality with the growth that we have had and hope to have in the Florence area.
Recent change to this intersection has made it extremely bad for trucks and individuals to navigate. Trucks cannot make the turn at all and can only do it while running over the curb if all traffic moves out of the way, backing up.
Recent change to intersection has created a blind curve that is dangerous.
This is a vital business park and trucks cannot efficiently navigate to this area due to recent changes in the roads of the area. There is no way to avoid 17A and use the Nexton Exit due to truck restrictions and turns from 17A are not truck friendly
Safety Issue

Horrible merge at interchange
I95 near Ridgeland is in terrible condition.
A very tight turning radius for trucks.
A median is needed.
Exiting at 102B and trying to make a left turn onto Kinley Road. Not a lot of distance and with a backed up left turn lane, it can be impossible to get over in time at certain times of the day.
I-26 congestion from Charleston thru Columbia.
Entering I-26 from Exit 52 (heading to Greenville) it is sometimes difficult to work over to the correct lane
There are a lot of blind spots pulling out of the Chamber/Ingevity parking lot. With the car parking on the street, you cannot see if people are coming or not. It's very dangerous and almost got hit.
378 & I-20
Congestion; widen road
I95 top to bottom of SC needs widened and resurfaced
Truck Parking Issue
Trucks parking on the exit 8 ramp
Rail Crossing Issue
train scheduling
Should be gated
This should we a railroad crossing with appropriate safety measures. With the development of Park circle, this road is becoming contested and there's no lights or automated blocking like the one on Montague. This would be amazing for the safety of so many in Park Circle. I don't feel safe crossing these.
Need automatic guards and lights. Very dangerous and the trains comes up fast. Not safe for residents and all of the new drive through traffic coming to business area in Park Circle.
The trains have become super long and I get that from CSX perspective but it causes much congestion during peak times of day in Florence.
pedestrian safety
Freight Network
The freight plan needs to have a much greater focus on air cargo and multimodal transportation.
Change the freight network of how trucks pass through the Town of Ridgeway.
Class I railroads and short line railroads are not clearly shown in this map yet they are a key part of South Carolina's transportation system.
Clinton 26 Commerce Park has been expanded

Screen 5: Wrap Up and Additional Comments

Additional Comments
We need to develop multimodal solutions in the state to reduce long haul truck movements. This should be applicable to both domestic and international.
SCDOT needs to make investments in all transportation modes, i.e., air, rail, sea and roads.
Get started on improving 526 and 26. It has reached its limits. Finish Clements Ferry Road and Hwy 41.
Help design a game plan to serve challenging areas that will not add to the existing congestion or restrict mobility and accessibility to the road network.

I have a tremendous concern for road workers. People do not follow the speed limits in construction areas creating a great hazard for everyone. The heat is another issue. The asphalt is very hot to work on let alone spreading hot asphalt. The temperatures surely present a health issue. Are policies and procedures in place to protect the workers?
Taking a more active role in support of freight railroads, particularly short line railroads.
As highlighted in previous comments, SCDOT should proactively think of ways to support freight mobility economic development, manufacturing, retaining/attracting businesses, supporting tourism/retail, and workforce opportunities through the utilization of Federal funds that enable the development of electric vehicle infrastructure related to medium and heavy duty vehicles. Thank you
Repair the roads so they do not tear up truck tires as easily
More communication with the public, not just the businesses.
Add additional lane on top of already planned widening to I-26 from Columbia to Greenville and designate a freight lane similar to HOV lanes in other states.
I am in the financial sector and headquartered out of Sumter. However, I work at the Florence location. With all that being said I am very interested in the transportation sector and how it affects everyone whether you work in it or rely on it for all commerce.

Public Participation/Citizen Survey

Screen 2: Rank Transportation Goals

Supply Chain Resilience
Yes we need to help the supply chain come back.
The Supply Chain Resilience could be better served by rerouting Tractor Trailers and Tankers to I-26 to Hwy 295 to Pine St Extension
Very important for the state growth
Economic Vitality
Let's not just plan for the larger cities let's plan for the whole state so all South Carolina people can benefit
Safety & Security
Freight movement on US176 through downtown Spartanburg has become dangerous and untenable. This needs to be rerouted for the communities safety and population and quality of life goals.
Highway 176 and 56 should be truck free within the Spartanburg city limits. There is a loop around town and they should have to use it. Traffics already congested and they do not fit in the lanes. They also drive by Pine St Elementary school which is grossly unsafe.
Freight carriers in a residential neighborhood should be rerouted. Specifically, 176/Pine St in Spartanburg from Crystal Drive to E. Main St
It's very scary driving around town. People are speeding and not obeying traffic lights.
Pine St- especially around intersection of pine and country club Rd is a nightmare with the 18 wheelers that cannot stop
Most important
yes
The 18 wheelers that comes threw my street if main road is blocked no traffic personnel help to navigate the traffic
Trucks routes should not be in school zones &neighborhoods. Running red lights is awful in SC
Traffic safety—speeding and running red lights is rampant, especially on 9 through Boiling Springs. There are not enough officers patrolling 9. I have seen cars run red lights & speeding while police cars are in the same line of traffic, and the officers ignore the infractions.

Trucks speeding on Pine Street in Spartanburg, SC, especially near Pine St school.
Truck drivers do not abide by safe driving and consideration for other drivers, they consistently speed, run red lights, pull into the middle of intersections obstructing the flow of traffic as well as making sure they do not have to wait for another Green light.
People crossing center lines every day. Big concern. And also trees leaning over back roads. They will fall soon
I live in lake view manor. There are a lot of abandoned houses here. I also see a lot of street walkers. My area needs to get cleaned up.
Too many semi-tractor trailers in or near residential neighborhoods
Cars and trucks speeding through our residential area in Converse. Heights should be disallowed. Too much dangerous speeding traffic on Pine Street especially neat the Pine Street school.
Cameras at intersections to establish who is running red lights, erratic driving, aggressive driving
I would also include the preservation of small towns—no 4 lane highways thru rural communities
Running stop lights in the city of Spartanburg has become a sport. People will die and be injured
The area on Pine Street near Pine Street Elementary is a hazard with all the fuel trucks on Pine St. Almost a million gallons daily? You've got to be kidding me!
Elmwood Drive is starting to get allot of cars parking on the side of the road after dark for 40 minutes to an hour woke me up at 3:00am in front of my house. One time they put a hooker out on the road they throw their trash out on the ground at Glennwood Park in front of me. Some even come in the day time and smoke dope and leave this needs cleaned up. We need more patrol in this area.
My concern is tractor trailers using Pine St in Spartanburg as a thorough fare to transport everything from fuel to supplies for retail warehouses. It is a safety issue, and they could be routed by I-26 to Hwy 295 to Pine St extension.
Intersection signs not appropriately displayed
We put our lives at risk daily on this horrible stretch of 95. It is only bad in SC. Why?! We need more lanes. We need shoulders to safely pull off. We need MILE MARKERS so we can report the location of the daily accidents. You have fallen short.
462 in Jasper County is a death trap
Keep people on bikes safe.
Pedestrians should come before trucking. Too often they come second. We need PROTECTED spaces for bikes, walkers, runners to safely move without worrying every second about whether a car will see or yield to them. Too often in SC, vehicles do not yield to pedestrians.
Improved the road system that we have now… South Carolina roads are in awful shape
Mobility & Reliability
Each neighborhood should have the feeling of safety with reliable and present law influences
Bottle neck on 501 around Carolina Forest Blvd
I would like to easily be able to take the bus or other Government provided transit systems. Without going through a great ordeal.
We are locked down to zero options. The only2 options provided are a complete mess. Hazardous. This cannot wait another ten years. We deserve safe roadways to navigate life and for quality of life.
Better planning on future roads…Let's not allow developers to develop before the roads are developed.
Infrastructure Condition
Repair our roads. Worst in the southeast. Dangerous, extremely hard on our vehicles
Fix roads

The focus seems to be primarily on the interstates; however, there is a lot of truck traffic on the secondary roads and state highways as well, which are in very bad condition. SC should accept Federal funds and Medicare expansion.
yes
There should be more concerns handling infrastructure
Repair roads better. Patching potholes needs to be done better. Not just throwing asphalt in a hole.
Roads and bridges need to be kept in top condition to prevent accidents and avoidable tragedies.
For trucks to speed down Pine Street is ridiculous, knowing this a well-known issue the police should have a more significant appearance, if an example is made of few the word will spread to the others.
I was embarrassed for my brother from Oxford, CT to visit with his family and see the condition of our roads. Connecticut's roads are meticulously maintained. Our roads in the upstate are a disgrace.
There are too many speeders around dumping trash on mount pleasant road. Street signs are not helping
Roads are in poor conditions in some areas
Some of the secondary roads have no shoulders-dangerous if you have to pull over say for a flat tire or car trouble
Needs to be upgraded in areas of bridges and secondary roads width
The underpass on new cut to Howard street the train bridge needs replaced before more people die do to water trapping them or tractor trailers trying to go under it and get stuck tear the bridge up. I have lived here 22 years and every year on average 18-20 trucks a year. How many times of damage before the weight of a train comes down on someone? Trying to get through their at 5 p.m. takes 20 minutes of back up people running red lights itis terrible. Please help before more lives are lost
I would like to see the Blackwell bridge replaced or repaired. I have property on both sides of the bridge and use the road frequently.
Not enough lights on any major road 501 31 and 17 bypass
I-95 and 472 are a wreck and incredibly dangerous. Why does GA it open to 4 well maintained roads at the GA border. Why are you so far behind making our roads acceptable? Where is OUR money being spent?
Road conditions are awful
Equity
Everyone should have equal access
Spartanburg should be more aware of the concerns of its community
18-wheelers barreling down Pine Street in route to/from Spartanburg worsens daily. They speed through school zones and residential areas. Consider routing alternatives. Our roads are unsafe. Place cameras on stoplights issue hefty fines for those who ignore red lights, People are dying because this is not being enforced. Please leave green space TRAINS a means of transportation between upstate and lower SC. The traffic on I26 is worsens with overbuilding, lack of consideration for traffic flow.
Protect citizens safety over the needs of companies
Ensure safe access to spaces by people who cannot afford cars.
Equal access to safety should occur for all residents.
Again, good for all of South Carolinas
Land Use & Environment
Protect environment for people and wildlife
In making more space for new homes and trails threw out our areas we should pay more attention to our wildlife that's being pushed out of their habitat
Protect environment
Abandon houses in lake view manor need to be torn down
Too little green space

Earth's warming and our county gives build permits to clear cut huge parcels of forest
One of the main reasons that I moved to South Carolina and 84 what is the beauty. Let's not destroy that…
Innovation
Think about best practices for the future
Poor planning is evident.
Finding ways to intersperse trucking amid general traffic- maybe peak times for either
Trail to rail
Let's try and plan for the distant future not what's around the corner.
General Comment
We need somebody to address the speeding by Semi trucks on Pine Street I'm Spartanburg. Not once, but twice, a truck has run the red light on Pine and Forest Street. Had I not been vigilant, I would have been killed. I have also observed them speeding in the school zone on Pine and Boyd streets. Before somebody is killed, I implore you to put a stop to this situation.

Screen 3: Transportation Priority Ranking

General Comments
Stop truck traffic in Spartanburg city limits on highways 176 and 56. Build a pedestrian bridge or more cross walks over Hwy 176.
Big trucks fly through Spartanburg on Pine Street with no regard for the speed limit, especially through a school zone—Pine Street Elementary School. I am never aware that anything is ever done to slow the trucks down.
This page does not work. I would always place my highest dollar amount on safety and security which comes along with keeping infrastructure and road condition in safe condition. Respond when we call about a dangerous pothole! Keep the big rigs out of the middle of our city such as Main Street and Pine Street in Spartanburg. This will cut down on the gas fumes and emissions within the city
Cannot make this work. Environment would get 90%, with safety and infrastructure 5% each.
1. Your definition of multimodal is totally different than mine. I think of multimodal as being able to take a bike someplace and then get on a bus or a train. I am not even sure how this fits with your survey. 2. When I think of safety and security, I think of protecting the lives of people, and not just cars. I don't see that reflected here (or maybe it is?)

Screen 4: Interactive Map

Congestion
I-85 N and S from MM 56 to MM 46 should be 4-5lanes
Too many cars for too few lanes. I see where this area of I-77 is supposed to be widened in 2035. Too late!
Morning & evening congestion, especially on weekdays.
Morning & evening congestion.
need to clear limbs and trees along entire SC277 ramp
westbound at least one accident every week day
northbound congestion every weekday
eastbound congestion every weekday
ramp backing up to mainline
Walmart traffic backs up along bridge

signal at Lowes is out of sync with others causing congestion
Jacobs Mill Pond Rd being used as alternate toI-20 in conjunction with new neighborhood all causing delays
4 way stop causing congestion
Need to work on i26 & i20 interchange
I-26 needs to be widened; has been needed for many years
Gas station traffic and neighborhood traffic makes people take short cuts through neighborhood
The construction on THE SIDE of the road, continually slows down traffic even though it shouldn't. Happens. EVERY. DAY. There's got to be a better way to move things along.
All day, but this system wouldn't let me choose more than one.
Mornings and evenings and often during the day
Various times. Construction slowdowns. Safety issues.
frequent congestion to GA border
construction slowdowns
Construction slowdowns. All times of day.
Very congested. Need left turn signal
Friday and Sunday afternoons
The traffic turning left onto Pine Street often has to wait for cars turning left from Pine street that block the intersection and disobey the traffic light, limiting traffic from Isom turning left onto Pine Street, as the light seems to allow minimum left-turn traffic to flow.
Bad place to put the high school—congestion was already bad, now you could spend 15-20 minutes going a mile or so
Traffic gets backed up along the Isom, Garner, and McCravy Drive intersections, especially in the evenings, creating numerous wrecks among these intersections as the intersections get blocked by traffic, the lights are disregarded, and many drivers use the far right lane to race up towards McCravy and dart over before that lane ends, as it is a right turn only lane onto McCravy.
Volume
Vehicles entering onto I-85 south and north bound, all lanes slowing down because cars are stopping to let vehicles enter. Entrance ramps need lights like the ones in Georgia to enter freeways, this would prevent a lot of rear end collisions on 85
Too many houses being built. Too many cars for that small of an area. Instead of housing build target, home depot, sit down restaurants (not fast food) Belk, home goods, Need these more that the millions of houses being built which causes horrible traffic.
I-85
Dangerous and lots of congestion
Stupid people driving in stupid ways
Boiling springs too many houses built but no roads are being built. Planning is none existing. In
road construction constriction
Backups in the mornings and afternoons
This intersection is mind boggling and was created by a blind cow!
all the time
Large trucks cause congestion issues on this road
Always backed up from Pelgam Rd to Hwy 14 especially in the afternoon but other times too
Backed up to Pelham Rd

Too many trucks
All the time
All day, every day
All day. too many truck for the 4 lane road in the middle of residential neighborhood
I-85, 385 intersection in Greenville always heavy congestion, especially south bound lanes.
All times of day
Impossible and impassable
Need for turning lights at intersection.
School zone
This intersection last year had turn arrows applied to 2 of the 4 sides, but not all 4 and it needs left turn arrows on all 4 sides of the intersection. There are 6 or 7 new neighborhoods either in the middle of being built or proposed on the roads of this intersection which will only make things worse shortly. Furthermore the new current signals do not operate properly.
All day every day. I-85 is a disaster from Spartanburg going south to below Greenville
Congestion around Pine Street school is unacceptable. A bypass route around Pune Street school in Spartanburg needs to be built fir commercial trucks.
All day every day
Congestion all day every day along I-85 between Spartanburg to below Greenville.
rush hour traffic slow down
Road congestion, traffic slow down due to rush hour
All the time
Constant construction
Too many cars
Hard to get to Gaffney. Not enough lanes and too much construction
US176 in city of Spartanburg is dangerous with its mixture of heavy semi-truck traffic and autos especially in school zone
Traffic routinely backs up on 85 heading south near the GSP exit
High congestion in front of school before 8amMonday—Friday.
Very long light change time causing backups during rush hour in the morning.
High congestion as High School release time.
Traffic backups between 7-8am that stops traffic flow on 85 north each weekday morning.
Afternoon, weekends, summer weekends especially
This project should have been finished years ago. The delay has cost numerous lives.
20+cars backed up onto W Mountain Creek Church Rd between 7:30-8:15 & 3:30-6:00 each weekday, making the wait to turn left up to 10 minutes for the 1st car. 3-way stop/traffic light needed. Excessive speeding along Hwy 253 & blind corners give false sense of security turning onto/off of W Mountain Creek Church Road
All day during work week
Congestion on a small road used to get to Interstate.
Greenville county 85 is always busy except at overnight. Horrible drive between Spartanburg and Greenville. Too many speeders!! Dangerous to travel.
Intersection gets blocked.

Hardee's has got to go.
E. Main Street is becoming bumper to pumper. All lights need turn lights
Horrible design the way this exchange works
People trying to go through under pass tractor trailers trying to go through and get stuck damaging the bridge the trains ride on above us. The should be #1 priority before more people are hurt or killed
Pine St in Spartanburg is too congested with heavy trucks
I-26, I-20 intersection congestion especially in the 4 to 7 PM timeframe
Outbound traffic is congested. People slow poke in the left lane.
Inbound traffic is congested. Slow poke drivers in the left lane.
Pine street from E. Main St to Country club road is highly dangerous due to heavy truck traffic—-go to fast
Devine Street is a major corridor. Merging onto Blossom to get to/from USC campus is a MESS!
All day. Intersection is way too tight.
Morning hours prior to Wando Terminal Container Gates opening eastbound from I26/I526 to Long Point Exit
526W to I-26W especially from Clements Ferry road
I26W from Charleston to Columbia starting around 2pm until approximately 7pm. I26 needs to be widen from Charleston to Columbia.
I526W/I26 E interchange causes backup in mornings all the way to Summerville.
I-95 but only from Georgia to North Carolina.
All day issues with construction
All times especially in the late afternoons
All the time
Serious congestion here
Truck traffic from the port of Charleston creates difficult traffic patterns as freight moves from port to highway. Suggest tolls lanes dedicated to freight movements directly connect the port with the interstate to limit the chaos on current highway lanes. This toll should fund the project, improve freight mobility, improve local traffic congestion, reduce emissions and improve rail freight movements if those express lanes connect to rail yard.
Unfortunately this "truck route" was allowed to develop into the busiest commercial zone in the county. It's a VERY dangerous mix of passenger vehicles & freight trucks with no room for alternate modes of transportation, like walking or cycling. As much as possible truck traffic needs to be rerouted or dispersed, rather than funneled thru this corridor. But NOT thru Uptown Greenwood. A north side bypass might need to be in the long term plans, and quickly, before the area develops even more.
all of the above—truck route to north of Cheraw needed to bypass congested areas for freight
All of above—significant truck traffic/congestion anticipated as a result of Dillion inland port
I-126 & I-26 have several pinch points entering & leaving downtown Columbia.
This road is terrible Monday-Saturday.
All through town on Pine St. /Hwy176.
Morning and evening commuter traffic is very busy on 462. This road needs to be at least 4 lanes the entire length but especially from 336-170. Saturday traffic is bonkers with tourists as well. The light at 170 and 462 was helpful but there is still too much traffic for this 2 lane rd. Frequent accidents and the road condition is poor. Ridgeland is growing and 462 needs to as well.
All day every day. This bridge is a huge bottleneck and although it might be fixed it keeps getting delayed. Very dangerous too
95 is terribly congested. Needs to be 6-8 lanes all through SC but at the very least from GA to exit 28

278 and Buckwalter is very congested. Heading east in the morning in 278 the light backs up and heading west in the afternoon. Light timing needs to be adjusted! Should be green much longer on 278. Folks on BW need to wait longer for green. This light backs up to 170 and then some most mornings! Increase my commute time by 15 minutes.
Too few lanes!!!
Too few lanes!!
This is an embarrassment to our state. 20 years' worth.
Horrible area for tourist traffic with regular shipping and truck traffic.
Hwy 462 needs to be at least a 4 lanes… very dangerous road.
Congested
Too many accidents and congestion. Cars entering Chic Fil-A and now Tropical Grill
Trucks causing congestion
Too many trucks on Pibe street
Trucks further congest this area at all hours of the day
Freight Network
Too many large trucks using Pine Street in Spartanburg as a thoroughfare. It's dangerous for foot traffic as well as auto
move the freight traffic off of Pine St to Union St.
Too many gigantic trucks through U.S. 176 in Spartanburg
It is downhill here and full size semis have a hard time slowing down enough for this neighborhood and school district
Pine Street in Spartanburg. Trucks drive too fast in town and ignore yellow and red lights making intersections dangerous.
Heavy truck traffic through downtown Spartanburg.
PINE STREET many big trucks and tankers and very congested and unsafe with elementary school on S. Pine.
Trains often blocking road
All truck traffic needs to be removed form 176/ Pine street. The road is too small to accommodate trucks. It has an historical elementary school and is residential.
Dangerous due to trucks
Too much coming and going
Large trucks should not be on this road bordering a residential neighborhood.
Less traffic
The freight networks need to stay on the Interstates, they should never be allowed to use the residential roads
Hwy 290 to 26 can be increased for truck use.
Businesses are growing on Hwy 9 but traffic is not as heavy on this end. Trucks use this route to avoid car traffic and make it to Hwy 26.
Heavy tractor trailer traffic
Too many double haulers
This road is the backup plan for business freight from companies on Hwy 290 to BMW if Hwy 85 is congested or stopped in both directions.
Too many trucks for a residential area
Broad Street does not need to be a freight corridor for thru traffic
Washington Street does not need to be a freight route for thru traffic
Oakland Ave does not need to be a freight route for thru traffic

Manning Ave should be removed from the freight network
I do not know what these options mean. I travel pine street daily and do not have an issue with freight trucks. It's the passenger vehicles that speed and run red lights beyond belief! It's funny that pine street parents seem to focus their attention on trucks when regular cars travel in larger volumes and at higher speeds! It's shameful how they drive!
Rosewood Drive has too many pedestrians to be used as a freight line. That area needs traffic calming.
Trucks are using North Rhett Ave, a residential area, rather than Virginia Ave, an industrial area, to go to the port. Creates backup and hazardous conditions. Very difficult to get onto North Rhett from side streets as there are no traffic signals. Primary truck route should be Virginia Avenue there is room to widen Virginia Avenue no room to widen North Rhett Avenue
Small two-lane roads and neighborhood streets are not designed to accommodate large freight trucks. Freight should be limited to only roadways with 4 or more lanes.
This road as it comes through the city cannot support the trucks and local traffic. The trucks travel entirely too fast and you have an elementary school on the route
Too many high speed trucks near school and residential communities!!
There are too many pedestrians in this area for freight trucks. They should be rerouted.
Please reroute trucks off of Pine street.
Infrastructure and Mobility Issues
More lanes, more alternate routes needed.
Trucks pull out unexpectedly & trucks have long wait times to enter mainline.
huge neighborhood causing delays along I-20
Improve roads to Hilton Head for trucks
I-95 north and south bound from North Carolina state line to Hwy 327 in Florence County
I-95 mile marker 170 to 199
Lowered manhole covers and potholes.
Manhole covers are too low
And traffic patterns needs adjustment
Truck restrictions
Intersection on Main Street and Pine Street in Spartanburg, going east on Main Street, the right turn unto Pine Street is not clearly marked.
A Hwy not suited for trucks is being used to transport freight through a residential neighborhood and in front of an elementary school Hwy 176 in Spartanburg, Pine Street
Road is in poor condition
Road is in poor condition with haphazard repairs
Road is in poor condition
Throughout entire state.
Turn business 85 into a boulevard
585 needs to be extended from 85 to 26
Construction
Need additional study to make this area safer.
I have lived here for 20 years. And all that happens is holes get patched. Pave this road. To many new neighborhoods
Poor road conditions

Hearon Circle at 85 taking too long to fix bridge
Much construction
On most of the rural roads need improvements from potholes and widening
I-85 Spartanburg County up to NC state line the construction site gets longer with nothing being completed. There should be a time limit for the construction. Less than a decade preferably.
The condition of the roads is deplorable. Resurface/Replace all roads.
These closed interstate rest areas are not only embarrassing for SC to leave abandoned and neglected, but could be used for electric vehicle charging stations.
New Pepsi distribution center uses trucks to move material in and out of building but the road it is on is very narrow and never had high traffic.
Large trucks use this access to Performance Pipe and the road conditions are very poor.
Awful roads
hump in the roadway and median heading south on Pine St @ 2345 S. Pine
No pull off or truck parking. HWY patrol pulls them over for inspection in our parking lot. Trucks with mechanical issues or drive time expiration pull in our parking lot.
terrible road condition, cracked and holes
Bad conditions until you get into North Carolina
Intersection condition and geometry is not good
Needs signalization
Construction on 85 in Spartanburg and Cherokee Counties has taken too long. Also why chop up 30+ miles at a time?
We have waited years for country club road to be paved. It’s an embarrassment to our city!
This end of I-95 all the way to GA has huge cracks, holes, in the right lane.
When highway is closed the semi-trucks and traffic make it impossible to get around
Malfunction Junction
Mobility needs to be addressed. This is the main road leading traffic to and from Myrtle Beach. Accidents are common during the peak season. When an accident occurs, local responders are unable to divert traffic to single lanes on the opposite bridge.
Needs entrance and exit controls at Sparky's.
Project taking way too long and missing deadline.
Highway congestion; needs widening
This is an old four lane road that is incredibly narrow. I often feel as though I will be hit by oncoming traffic if car is in the lane next to me. Many accidents here.
Rough roads are distracting taking attention from pedestrians and children!
Parking is needed for residents, but road is super narrow!
Duh! Everyone knows Devine St. is too narrow. Traffic and parking are absolutely essential. What else can be done??
Roadway needs attention!!
Specifically on game day!
Desperately needs structural adjustments and repaving!!
Needs protected bike lane
Needs protected bike lane/walking path

Make into roundabout
The entire Columbia area has significant mobility issues across all modes. Bike lanes, trails, rail, and highway connectivity is fractured and often conflicts with other modes. Suggest working with MPO to better identify projects and align funding opportunities.
US1 bridge two narrow—structurally deficient-
Obvious!
Many roads in Columbia area have little or no markings. Many signs are covered with trees & limbs. Street lighting is marginal or non-existent.
Non-motor vehicle transportation is unsafe
Many streets are in horrible shape and need resurfacing. Some have not been addressed in over 30 years although these are streets located in residential areas. The main thoroughfares have been maintained but the residential streets in subdivisions or "side" streets have not.
Same as above
The whole road is awful and needs to be re paved. Not safe at all.
Closed road. Dam needs repair
Rail Crossing
Low railroad track bridges
Trains blocking roads for hours.
It was proposed at the construction of the new Spartanburg High School that this crossing would be upgraded to a 4 quadrant crossing. Will this happen?
railroad backs up traffic at the worst times
Train should be limited to when it can stop at this major intersection.
The entire stretch from Irmo to Newberry has difficult grade crossings (and sometimes excessive numbers of grade crossings). These crossings exacerbate road congestion and create difficult sight lines for motorists. These issues will continue to be problematic as the area grows rapidly. Suggest infrastructure improvements and working with towns/county on land use near crossings.
The railroad crossing in Coronaca on Hwy246 is in terrible shape and needs to be repaired, for area residents as well as freight/trucks, especially in light of the 246 expansion project nearby.
Greenville Road, Aiken
The crossing areas have been in bad shape resulting in damages to vehicles over the years although not as bad now
Safety Issue
Hwy 123. Hwy 124
Hwy 123 thru west Greenville is too narrow and not enough turn lanes
Interaction with East Coast Greenway along all of 17
Neighborhood bike/pedestrian access and adjacent to East Coast Greenway, West Ashley Greenway, Maryville Bikeway
Bike/pedestrian connectivity to new development, hospital district, new bike/pedestrian bridge
Interaction with East Coast Greenway along entirety of 17
I-77 NC line south past Rock Hill is having a high rate of accidents fatalities.
No safety arms
Extremely wide lanes and fast speed
Horrible interchange. Merge is too short for the amount of traffic

On off ramps are almost reduced to gravel at some exits. Terrible condition.
I-95 in bad shape near Ridgeland.
Crashes on weekday mornings
Need to clear trees and limbs along this entire ramp
Westbound crashes on weekday mornings
Regular crashes in evening peak times at merge area
Regular crashes and roadway departures on eastbound weekdays
Trucks pulling out into mainline without much advance notice
Vehicles from I-20 both directions are exiting the roadway and ending up on U.S. 601 below the overpass. need longer guardrail
4-way stop causing congestion and delay. Vehicles/trucks no longer able to use SC 12 as an alternate to I-20.
Vehicles lined up along shoulder in evening along I-20 eastbound
Buckees
Heavy pedestrian use during game times, and used by pedestrian heavily as it's a transit route and residential area further down Shop road
This massive intersection isn't friendly for pedestrians, while demand for pedestrian use is high since it's an in -town area with students, football games, and residential areas adjacent.
There are bad wrecks here all the time between cars. This area has high pedestrian traffic, due to apartments and likely low car ownership in this specific area. I hope this isn't a truck route, because I'd hate for a trucking company to be involved in a likely wreck here with another car or pedestrian.
Safety
Need better signs in the rural area
Road condition on 321 is horrible and needs to be repaved. Driving this road causes damage to vehicle.
Road conditions are horrible. Semi-Trucks pullout in front of cars traveling on Hwy 17 all the time. Trucks don't stop at stops signs they just pull out in front of people causing wrecks and dangerous situations.
High volume truck traffic thru residential /school area
Too much truck traffic on U.S. 176 within Spartanburg city limits
Considerable traffic. Above speed limit. Near school and through residential area.
Speeding trucks going past elementary school
Too many speeding trucks near residential area and by elementary school.
Potholes all up and down meeting street.
Motorists are frequently making U turns and trying to beat red lights because of traffic. Left hand turning lanes to turn from Dorchester onto Ladson and old trolley are too short and hold up thru traffic. Motorist drive over concrete medians to enter businesses on opposite sides of Dorchester so they do not have to pass the business and make a upturn to enter
Major 18 wheeler route through downtown Spartanburg including a school, major intersections, college, and high traffic.
So many 18-wheelers speeding in front of school.
Very dangerous for pedestrians. Pedestrians are in danger daily here
Pedestrians with children cross here from neighborhood to YMCA and downtown. Very dangerous with the traffic lights unclear and blind spots.
Pedestrians walking from downtown to neighborhood (converse heights). Very dangerous for pedestrians
Frequent speeding to avoid congestion on Pine street and Main Street. Children are at risk

Traffic light for pedestrians is not working
Speeding, red light running, container trucks, pedestrian and bicycle area and a school zone. These things don't mix!
Along the entire length of Pine Street. Red lights are, apparently, just a suggestion. The same for East Main Street.
Too many giant semi and tanker trucks zooming through downtown Spartanburg
Giant trucks speeding past this school
No trucks. Elementary school
Need pedestrian bridge
Lanes are too narrow for trucks
Really sharp curve and people use it as a cut through. Needs a speed bump or other way to slow traffic before someone goes into the ravine.
Cars go too fast and it is a blind turn. Needs a speed bump or way to slow traffic.
There is a much loved trail on the other side of Pine street, but not a safe way to cross the street from the neighborhood across Pine. It would be wonderful and increase pedestrian traffic and connect more of downtown Spartanburg if there was a pedestrian bridge across Pine Street from Converse Heights.
Heavy truck traffic through congested downtown zones and school zones. Lots of speeding. Rarely see enforcement presence. Scares the life out of me.
Large trucks
Speeding cars in a high pedestrian area.
Terrible interchange. Traffic on & off too close together, especially after fairly sharp curve heading east on I-26
More often than not, turning left onto Boundary from Isom allows 1 or 2 cars at best to turn. Area is partially shielded by bridge. Many wrecks, several fatalities. Need left turn arrow installed from Isom to Boundary Drive.
Speeding trucks in a school zone.
This is a small 2 lane, curvy road that has a lot of freight/dump truck traffic. This has degraded the condition of the road in a serious way, and the trucks routinely speed well over the limit.
Semi's use this route and can be found consistently speeding through this area which includes a school zone.
Trucks going too fast
This is where 18 wheelers fly down the road…by a school. I have almost been hit several times when trying to pull out onto Pine St.
Major issue with trucks coming through this area
All of 9. Speeding, running red lights, blind entry
Trucks excessive speed, running red lights
Tractor trailers consistently disregarding speed limits and red lights along Pine Street.
Traffic very fast, especially large trucks
Especially with speeding, really hard to see here
Trucks cannot stop quickly enough on Pine St coming into Spartanburg
School zone Pine Street
All trucks FLY down S. Pine Street. Even in the school zone! Extremely unsafe!
Lights need to be installed on entrance ramps for entrance
Speeding careless driving
Trucks carrying dangerous and flammable liquids speed in front to the elementary school and through a residential neighborhood. Hwy 176 Pine Street in Spartanburg

Speeding trucks and pedestrians
Traffic speed is very dangerous especially when trucks come barreling by at 60 mph. My husband is blind and does not dare go out to check themail.
Taking too long to widen this road.
Freight trucks run the red light and almost kill pedestrians
There are no crosswalks
Trucks driving by Pine Street Elementary school
It is difficult for pedestrians to cross to go to the YMCA. And trucks often run the red lights
85 between Spartanburg and Charlotte, and specifically around Gaffney is dangerous
Pine Street traffic is too fast. Goes thru town and right past an elementary school with minimal enforcement. Should be narrowed like a residential street.
Speeding heavy trucks
A lot of trucks speeding through on Hwy 176/9through Spartanburg
85 on-ramp northbound from GSP is a death trap
Too many trucks on pine Street 176
Too much traffic
Large elementary school with trucks speeding by and blowing through red lights
Trucks blowing through red lights at intersection with pedestrians, gas station
Trucks at school crossing
Speeding
Semi trucks are a problem on this road.
This is bordering a residential neighborhood and large transportation vehicles (trucks) are a problem here.
Trucks fly up & down 176/Pine St. It's a School zone & neighborhood. Business also
All over Spartanburg (and elsewhere) speeding is a major problem. Also, running red lights. Need more enforcement of laws.
Large trucks
Trucks speeding through residential area and school zone
Frequent issues with merging and entering
18 wheelers on Pine Street near grammar school and residential neighborhood
There are large 18 wheelers constantly flowing through this school zone and business district traveling to the interstate. No controls are placed on these trucks and the city of Spartanburg does nothing to control or divert this traffic. This is a major safety concern that nobody will take seriously until Something or numerous tragedies occur.
Driving as if it is highway traffic in a school zone and neighborhood
Truck traffic is overwhelming on South Pine street and I -585 especially weekday mornings. Dangerous tanker trucks
Too many freight trucks coming through this area especially near Pine Street School.
Such a mess trying to cross to continue on Dogwood Club
Hundreds of large trucks of all types speed down this road every day. They are just a few feet from a school and neighborhoods.
speeding trucks
Heavy congestion area with lights that trucks speed through and ignore

Big trucks use this as a cut through constantly!
Meadowbrook Road is about to become the area of a massive new neighborhood. It currently is a one lane road with curves from Shelton Drive to Cherry Hill Road They are working on widening it in the vicinity of the new neighborhood and straightening out curves, but only about half of the narrow road. I would like to have the whole stretch widened from Shelton Drive to Cherry Hill Rd so it will be widened and after the whole way when the new neighborhood is complete for safety.
Truck traffic in and around Pine Street school in Spartanburg needs to be significantly reduced as well as slowed down
Interstate is in poor shape
To many 18 wheelers for the size lane
Too many trucks speeding directly in front of elementary school. Busy city road is not the place for so many tanker and semi-trucks.
Constant construction
We should not have so many 18 wheelers taking a major residential hub as Pine Street as a standard shipping route. Much too dangerous
Congested
Not enough lanes for all the traffic
Trees falling over sandy ford road Going to fall soon
Long two lane road with illegal passing on double yellow line
4 years to widen I-85. Horrible workmanship and planning plus it's unsafe
Pine Street is unsafe with too many tanker trucks.
Cars use these neighborhood road as a cut-thru to avoid congestion on main roads. Cars frequently speed through trying to time lights, often running red lights as well.
Traffic is very heavy between Spartanburg and Greenville, especially truck traffic
Excessive truck traffic and speeds through City limits
Neighborhood road with extremely heavy 18 wheeler traffic. I consider this to be the most dangerous road in the state due to tractor trailer traffic mixed in the normal day to day traffic of people going to work and schools.
Where Cameron intersects Pine Street (Hwy 176) is extremely dangerous. With Ingles having two parking lot entrances/exits at this location and the amount of 18 wheelers on the road it makes this section of Pine St (Hwy 176) difficult to navigate.
Crossing Pine St/176 to get to rail trail and frequently trucks do not stop.
From Spartanburg to Gaffney road needs to be finished. Taking forever. Dangerous!
Speeding trucks near Elementary school and 35mph zones
Speeding trucks near Elementary school and residential area
Road Construction never ends to see the benefit.
Road Construction never ends to see the benefit.
Speeding truck traffic through high traffic/residential/school zone areas
Hwy 26 on and off ramp design make it difficult to trucks to on to 26 from 85 with normal traffic flowing.
Poor traffic control
Speeding and barriers
Malfunction junction
Backed up traffic
Traffic backups on Old Furnace Rd make it difficult to turn left.

Death trap
Pine St school—trucks drive too fast on Pine St passing an elementary school
Hwy 253 traveling south provides false sense of security for those turning onto/off of W Mountain Creek Church Rd
Excessive speed along Hwy 253, especially sport cars/motorcycles at night. 3-way stop/traffic light to reduce speed & increase safety.
Bad road—rough—neglected roadway.
Construction
Congestion due to 4 lane in SC. Once you hit Georgia, congestion clears due to 6 lanes.
Too Many large trucks operating (often too fast) in a residential and elementary school area
Wrecks
Big trucks in residential area.
Restrict trucking during drop off/pick up times for school; expand school zone
And Large trucks on small road with no shoulders
Congestion
Speeding & large 18 wheel trucks on a road with small bridge (Weight limit). Residential area also.
Safety issue. Construction deathtrap entire length from Charlotte to Spartanburg/ Greenville. Should be done in segments and completed by segments rather than the whole length. Now drivers get frustrated at time required in whole length so that they actually speed up and take undue chances to get thru it.
poor visibility due to overgrowth
Shot Pouch Greenway Crossing
Frequent Pedestrian Crossings of unsafe highway
Speeding, trucks, dangerous drivers, rage,
Roads deteriorated too narrow.
Speeding, shoulder deteriorated. Someone slowdown dump trucks they go extremely fast. Was nearly hit head on by one last week.
Speeding by all type vehicles (18 wheeler and automotive). Churches and schools located on this Hwy. 176. Heavy concentration of residential neighborhoods
Excessive trucks through neighborhood and schools at excessive speeds
Horrible spot for people trying to get on I-26. The right lane is useless. But you have to travel the area to know to get in the left lane so people can get on safely.
Horrible spot to have traffic merge. You have to travel this area often to know not to use the right lane near this section.
School
Pedestrian/bike crossing provisions are not safe. Need more people friendly access from residential area to the YMCA and downtown.
Pine St, Hwy 76. Passes a school. Big trucks, speeders, too
Due to construction
Truck traffic in a congested and pedestrian area. One million gallons of gasoline a day is transported.
Trucks going through residential areas
Trucks going through downtown
Speeding is crazy

Traffic on Pine Street is terrible in front of my office. I regularly see 18 wheelers and other automobiles speeding by and running red lights. Pine Street School is right here and there is a rail trail across the street that people should be able to get to far more safely. Very dangerous area.
Construction and the safety issue created with the cement barriers. one lane rat races took away, however the two lane with no extra space is still a major issue
Floods when we have heavy rain in the underpass. People are killed being trapped. Tractor trailers hitting the underpass getting stuck damage the train bridge when hitting it and again trying to get them out which takes hours. Not to mention you have millions of pounds riding across the train bridge daily moving freight.
Reroute Heavy trucks away from Pine St Spartanburg
Mobility needs to be addressed. This is the main road leading traffic to and from Myrtle Beach. Accidents are common during the peak season. When an accident occurs, local responders are unable to divert traffic to single lanes on the opposite bridge.
Extremely narrow road that has large amounts of freight traffic.
Access management issue. The parking lot is at least 600 ft. long; the entirety serves as both entrance and exit. Camper trailers have literally been sticking out in the highway, impeding traffic, waiting their turn at the fuel pumps. This is an extremely popular place for vacationers to visit when leaving the beach.
Many cars ignore double solid yellow line (faded) trying to make lefts into gas station from broad coming to dead stop feet within light.
Congestion; road needs widening
Too much water runs down Bethel Church Rd and into the private businesses in this area, often causing flooding and unsafe conditions.
Two accidents in two weeks- bicycle versus car in front of my business. Many more accidents all along Old Buncombe Road.
Not adequate lighting. And increase of pedestrian and cycling activity.
The increased congestion and risk to populated areas, including school grounds, from large trucks on Pine St. in Spartanburg
4 way stops and 4 lane roads are a recipe for disaster.
Roads need to be re-striped, especially if no road repair/repaying is scheduled for the coming year.
Teenager drivers and trucks are a scary combo. This intersection is very scary for a major school crossing!
Children play in the road. Homeowners need to understand it is not a cul-de-sac!
All of Assembly forms a barrier for multimodal travel in downtown Columbia. The one-way pairs of Taylor and Hampton are also over designed, especially at Hampton, and safety could be vastly improved through a two-way and road diet plan.
Congestion getting onto I-95
Pedestrian safety in the midlands is awful. Sidewalks are missing. Bike lanes are non-existent and there are no alternatives to driving. Freight movements should be prioritized To avoid urban areas (and not stimulate strip mall development along corridors). This coordination should reduce congestion, improve safety, and allow for introducing bike/pedestrian improvements before areas fully develop. Suggest coordinating with local agencies to create development regulations on designated truck routes.
Trucks turning off ramps use sidewalk to make the turn. Do not watch for pedestrians or cyclists. Need a barrier between road and sidewalk.
Near school
Dangerous intersection, also near school
Intersection with school
inadequate passing opportunities between 265 and 151
inadequate for freight network

inadequate passing opportunities—frequent accidents—inadequate for freight network
2 lanes, rushing, aggressive semi-truck drivers!
I rarely see state troopers on the highways. Too much speeding & tailgating on highways.
This intersection is often at a standstill for several light cycles weekday mornings. Truck turning left from Remount Rd to North Rhett Ave block the intersection and no traffic can move when remount headed East gets a green light. Trucks should be using Virginia Ave to get to 526 and 26. Restrict the use of North Rhett Avenue North Rhett has a fair amount of bike/pedestrian use were Virginia Ave has little. There is also room to widen Virginia Ave, not so easy to widen North Rhett.
Trucks swing wide and use the sidewalk like itis part of the roadway. Have had near missing with trucks when biking on the sidewalk. Trucks should not be using North Rhett Avenue there needs to be a safety barrier between road and sidewalk.
Very difficult to get onto North Rhett Ave from Sumner. High volume and 40 mph limit make it very dangerous. There is no traffic signal at this intersection. Frequent accidents. Nearest pedestrian crossing is at Remount road. Not practical for pedestrians going to church or restaurants.
Lack of safe cycling routes, Aiken
The dips in the bridges and all the large potholes.
School
There has been several accidents/deaths on Hwy 9
Crossing Pine St. from neighborhood to town.
1) Running thru red lights 2) speeding through intersection Both 1) and 2) result in too many crashes and near misses.
Delivery vehicles along Ocean Blvd utilize the center turn lane as a "loading zone" blocking driver views of the mid-block crosswalks.
The interstates, major roads and rivers form barriers that prevent safe movement of bicycles and pedestrians into and out of the Columbia Metropolitan area. Trails, over and underpasses need to be built for safe travel for the non-motorized user.
170 is very dangerous. There are too many people make left turns and crossing traffic in both directions. Lefts into and off of 170 are a huge issue. 170 to 278 needs a flyover. That clover leaf backs up all times of the day. 170 from 278 to Callawassie Drive is so dangerous!
I-95 is a death trap due to congestion
Completely un-walkable or rideable. Trips less than two miles require a car because pedestrians have no safe place to travel. Dangerous. Numerous pedestrian to car accidents.
Hey 462: An overabundance of commercial trucks/vehicles using this very small road. Very dangerous conditions. No emergency lanes, etc.
Either this pond needs to be drained or the dam needs to be repaired and reopened. If it is faulty then anyone farming, hunting or living downstream from it stands to be harmed. If it isn't faulty beyond repair it needs to be reopened as this is a growth area and it's being closed is a hindrance to emergency personal... EMS, Fire/Rescue and Law Enforcement response. Either drain pond or reopen the dam!
It's absolutely ridiculous that this road hasn't been repaved in over 20 years. You did 1/2 of it and left the other equally damaged 1/2 undone 15years ago and traffic on this road has doubled or tripled in the last 15 years! Repave desperately needed! Stop allowing unofficial trailer parks to pop up everywhere in this area on 50-100 acres. Truck has 100 trailers confined to a small space. Same on Hardwood. Tons of people, tons of trash never picked up and tons of speeding cars over pot holes!
Malfunction junction, speeding
Trucks are endangering lives of pedestrians, bikers, and motorists speeding on 176/Pine St. in Spartanburg. This route goes by an elementary school, a University, and the YMCA, through a residential area. Speed limits are posted but not observed by the freight traffic. Please find an alternate route around Spartanburg.

Brush and trees block view
Too much freight traffic going down Pine St to get to 85. They need to be routed on Southport to 26.
Too many freight trucks driving way too fast by this school
Trucks drive entirely too fast on Pine Street
Need a protected island or pedestrian bridge. Lots of crossing to get to the recreational trail
Need a sidewalk South to intersection at Country Club or North to connect with existing sidewalk. People try to cross 4 lanes to get to recreational trail. Dangerous
Trucks
Big trucks
Big trucks
So many crashes here.
So many crashes
Freight on this road runs through residential areas, school walkers and alongside a walking trail.
Little or no biking and pedestrian infrastructure makes these activities dangerous.
Trucks Parked on Shoulder/Exit
Road in terrible shape
Trucks parking on ramps
On the ramps of 290 exit ramp N I-85
Parked along interstate and exits
Trucks park on shoulder of Highway 25 to walk to fast food.
Extreme amount of truck/car traffic in this road construction area. Should have provided detour which would have made it possible to expedite new construction
Semis parked in the tree line
I-26 rest stop Dixianna area
Need parking area for trucks near the industrial park.
Need area for trucks to park near existing and under development industrial park.
General Comment
What symbols do I select for wishing we had a state, regional and local transit system?

Screen 5: Public Participation

Additional Thoughts
When making a left turn (when only a single left turn is possible) into a double lane (or more) roadway, a dashed line should be added to alert the driver to keep in the extreme left lane during the turn. Also, the same should be done for the approaching/oncoming traffic's right turn lane to keep them to the far right when making a right turn. Thanks for considering this idea since it is a serious safety issue as well.
Add toll plazas on main interstate corridors every 25 miles, but dedicated lane for freight haulers only to pass through, no payment required. One lane for anything smaller who purchases annual pass, finally stations for all others to stop long enough for photo to take pictures of plate. Payment vouchers will mail out. If not paid by 1 month, vehicle is impounded.
Widen the I-77 corridor from NC to Charleston SC. It is all used by intermodal truck. Not just the Charleston end. I-77 from NC not slated to be widened until 2035. Too late. Too many more wrecks and many more lives will be lost.

Invest in alternate types of roadway design. Plan for bus only and HOV lanes, etc.
Road condition, roadside and better connection system between cities
Improve all highways
As a longtime resident having to deal with the traffic and road conditions are ridiculous.
We love trucks, they are essential. SCDOT policy restricts thru truck traffic in residential/school zones. This policy is violated on US176 i Spartanburg city limits. There is a bypass available
The stretch of Hwy 176 through Spartanburg and the heavy truck traffic on it is a constant cause for concern
We are way behind in the widening of our interstate highways
Allow red light cameras
improve road quality,
Creatively address the major through truck issue in Spartanburg.
Thank you for all your work in South Carolina! I love our state and I am proud to live here.
That's a tough question to answer and a tough problem to solve. I am grateful there are truck drivers bringing goods to us for all our needs. My biggest concern is the number of trucks coming through our neighborhood- not literally through but alongside an elementary school. It just does not seem safe.
Tractor trailers, gas tankers, etc. should NOT be allowed on Hwy 585 and Main St in the city limits of Spartanburg SC
Get trucks off neighborhoods streets
Focus on safety, use technology to improve routing/scheduling, reduce potential truck/car conflict, look at needs holistically rather than focusing primarily on roads and trucks
I am primarily interested in safety and environmental issues due to the 18 wheelers
NOT GO THROUGH THE CENTER OF TOWNS!!! Use other routes! Use 295 instead of Pine Street!!!
Improve speed enforcement
SCDOT needs to follow the SCDOT regulations regarding freight and shipping lanes through residential neighborhoods and in front of schools. Hwy 176 should be returned to the citizens.
More rail shipping
Please make trucks stay off Pine Street in Spartanburg. Southport Road was built several decades ago to redirect traffic off Pine but it is not used for that purpose, Spartanburg needs more crosswalks and less truck traffic in the city
I was not able to make the survey record my safety concern on 4. Here it is: Pine Street in Spartanburg is too fast with little traffic enforcement. Goes right by an elementary school and through the heart of town. Trucks have an alternate route and should be made to use it. Pine Street should be narrowed like a residential street.
More frequent road repairs. Limit weight of trucks going through neighborhoods and city streets
There has been a substantial emphasis on industrial development in the state however the implementation of infrastructure to support this development has been sorely lacking. All of our interstate highways are inadequate now and by the time current projects to improve this are completed they will still not be sufficient to handle the increased usage. The agency needs to be planning at least 15 to 20 years out.
Find alternate routes to cut back on the trucks that are allowed to go through our neighborhood damaging our rural streets
Please reroute truck away from Pine Street in Spartanburg. The intersection at Pine Street and St. Andrews St is dangerous. Too many trucks run the red light.
Install left turn signals at congested intersections. Many major thoroughfares with left turn lanes are lacking in left turn signals. This is a serious safety issue! Drivers have little or no opportunity to turn left on a green light because there isn't a break in oncoming traffic and left turn arrow signals are nonexistent. This dangerous situation leads to traffic accidents on a regular basis. I have witnessed such accidents many times and have barely avoided being hit on several occasions.
Work with local police to ensure road safety by having current speed limits enforced. As well as obedience of traffic lights and stop signs.
Safety, traffic control, best possible infrastructure

the huge trucks that travel from Pacolet/Jonesville through Spartanburg on Pine Street 176/Union Street clogged our street and create traffic and dangerous situations for our children at Pine Street elementary as well as residents in the neighborhood adjacent to Pine Street
The road project on 85 between Spartanburg and the state line is a dangerous trap and has been for years. The state should be embarrassed at the progress of this job over the years. It reeks of incredible incompetent planning.
Improve train connections, add local passenger trains, and combine school bus routes with local transport when feasible and safe. Increases frequency of routes and better usage. General public and students benefit.
Re-route dangerous speeding 18-wheels/tanker trucks though the City of Spartanburg. GO AROUND the city on I-285,
Need for improved condition of roads
Try to lower the cost of gasoline if possible!
Frankly, I prefer to see more emphasis on moving me in my vehicle more efficiently. I pay $2,500+ in car taxes and $35,000+ annually in state income tax. The highways in this state are woefully neglected and outdated. I want to see my tax dollars used to move me in my vehicle quickly and efficiently. I also want the tax burden of industry that uses SCDOT facilities/roads significantly increased to cover delayed expansion and upkeep.
It is time that the funds are used in the northern part of the state to maintain roads. BMW has had enough work done
Safety on 176 through Spartanburg
Safety in residential areas and near schools is a real issue. Large trucks should not be speeding or using Pine Street in Spartanburg.
Big rigs have no place on busy neighborhood streets. They speed and run stop lights endangering all who live and drive in the area. Alternatives need to be found!
Roads in extremely poor condition. Work on road to Charlotte is never finished.
You need to restrict distribution centers to locations where there is direct access to Interstates or rail movements. A Distribution Center should never be located in an area where transportation has to use major residential road arteries.
Thank you for providing this link to hear our concerns,
There are too many roads in the Spartanburg/Greenville area that are in poor condition. Paris bridge road is one example, as it is so rough that you cannot drive the posted speed limit safely and without damaging your vehicle. I-85 is a deathtrap with too much tractor trailer traffic, no matter what time of day.
All things said I am proud of the job our SCDOT does and I am confident our fellow citizens in that department will build on their successes and continue helping SC to grow and become even better
Two of my friend's cars have been hit by large trucks when parked at stop lights on this road. We like to cross it to go to rail trail on bikes and travel to town but are reluctant to do that because of the trucks.
Need to figure out a way to re-route or restrict 18 wheeler traffic on 176 through Spartanburg. The city is growing and having what in essence is a commercial interstate cut through the middle of Spartanburg neighborhoods is a safety issue.
SC has the resources and people to be a world leader in goods movement. We should be developing, or should have already developed a statewide rail system, raised highways and dedicated truck avenues, pedestrian and bike safe commute routes. Limit passenger cars in downtown Charleston by providing perimeter parking areas and good safe public transport by commuter rails and dedicated electric bus routes.
Overall concerned about infrastructure with all the new housing. Nothing seems to be planned but build more houses. 2 years will tell all
Use our SC rail systems
Send this survey to every company in SC that has over 1,000 employees for their input.
Be vigilant
NO NEW PROJECTS!!! Allocate all manpower to existing projects and get them finished.
Ship more by rail to get so many trucks off the road.
Light rail

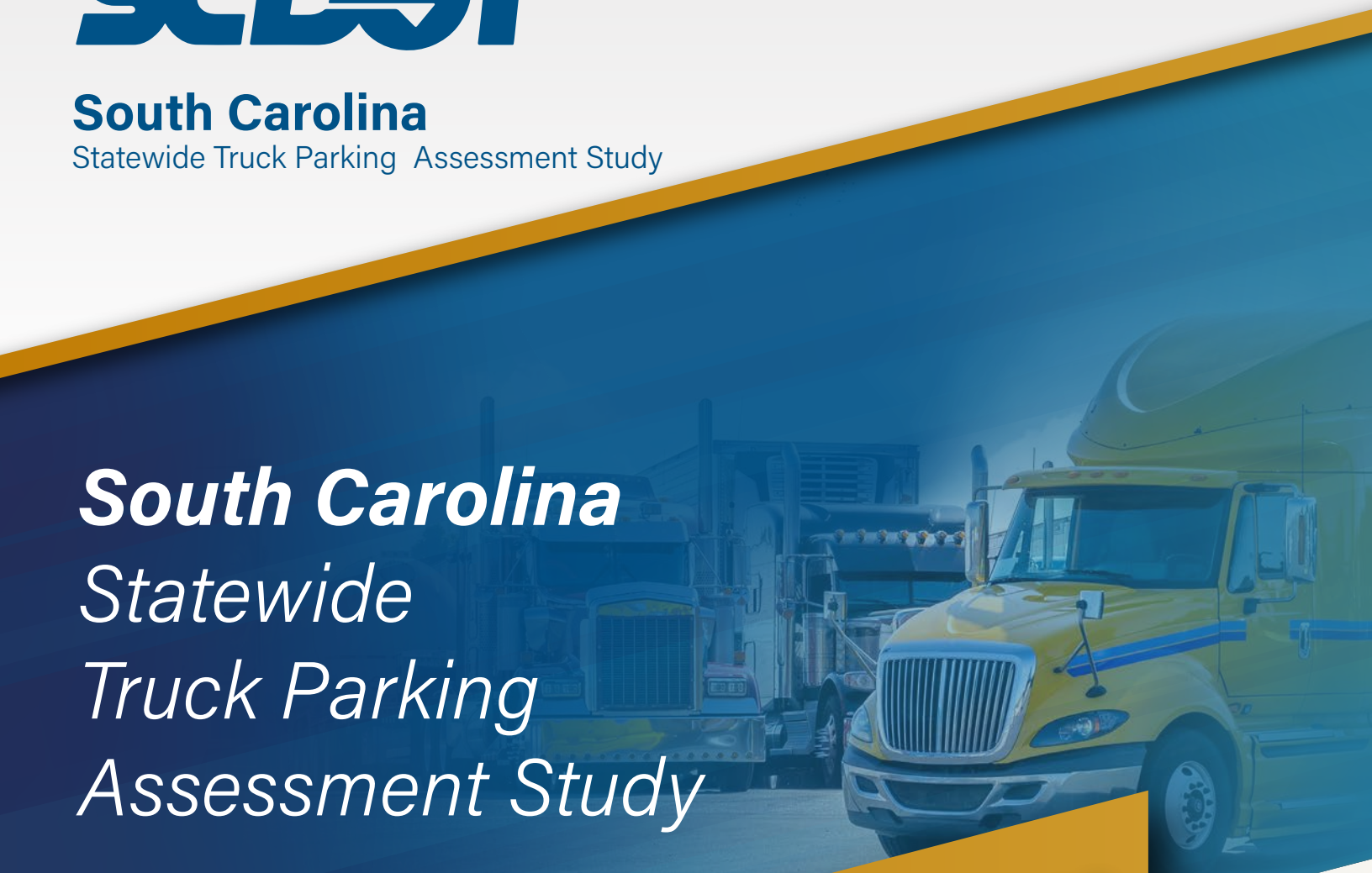
Reroute 18 wheeler trucks around the city limits of Spartanburg. There are alternate routes they are able to take.
Travel laws are just not being followed by drivers, Improve lane changing, not using signals, running traffic lights & signs. Seems to be worst.
Enforce the laws re speeding, tailgating, and passing in the right lanes. Re-enact yearly vehicle inspections.
The roads in the upstate are still terrible after we were promised they would be improved with the gas tax, and it has been years.
improve road conditions
Why are we adding more housing/ people when our roads cannot handle the traffic we have now?? Makes me wonder who is in control of this plan. First things first. The entire country is doing the same thing. Come Lord Jesus.
Be more proactive. As communities grow, more transportation movements increase. Need evaluate increase in truck movements as it relates to nearby residential neighborhoods. Conduct studies on increased truck traffic & how it impacts housing. Increased truck traffic in residential areas is a "disaster waiting to happen."
This has been an outstanding issue for years, please pay attention to this request before life is lost.
Please fix this.
Speeding and red light running is everywhere. Trucks and cars alike. There must be consequences to oriole's actions and I never see traffic patrolling anywhere.
None
Safety is a priority—efforts to mitigate the impact of pollution in our area is important as well.
Pay attention to the underpasses more trains are going to crash and come down on someone. They can only take some much damage then the integrity of the metals and structural damage are a mixture of a major disaster. Why would this be ignored not even lived lost there? Not enough flooding there yearly with deaths occurring? It is time to make a stand and stand up for the mist precious cargo in the area OUR PEOPLE. It is a nightmare at this underpass. People running the red lights at Howard St
They can restrict heavy trucks to the right lane on Interstate highways
Add additional traffic lanes to I-26, I-77 and I-20 to move trucks from Charleston to within and out of SC.
Provide transparency on projects finished on time vs not. Public opinion is that SCDOT projects take forever within my neighborhood.
A bypass need to be built to move large trucks tanker trucks and cargo around town residential areas and schools. 176/ Pine Street is a danger. It is inappropriate to allow trucks to go directly in front of a school and through residential neighborhoods. Allowing trucks to go I. Front of the elementary school is against DOT regulations. We have to move cargo off this Hwy which is not built to handle the traffic
Great Job with new funding
Better roads and more attention to upgrading current roads we have.
Truck only lanes; truck lane restrictions; improve / upgrade infrastructure
I believe safety of ALL road users (not just car users) should be considered when designing roads. Large trucks moving goods as well as general car traffic pose a threat to bikers and pedestrians without barriers in place for protection.
FIX OUR ROADS!!!
The designation of vehicular freight travel routes at the cost of multimodal transportation improvements in what should be walkable corridors will continue to hamper both safety and economic development throughout the state. We all too soon forget that communities are built for people to live in, not to travel through at high rates of speed.
Work with the Federal Government and State to provide for the Statewide Freight Plan and the overall viable flow of motor carrier public to travel congestion free.
We need safer roadways and a hands free bill passed to make our residents safer.
Automation on limited access highways is possible, switching to manual for local traffic at truck fueling sites.
Separate goods movement from pedestrian areas as much as possible. Shift away from trucks to even more rail. Put the people who leave around those areas before companies.

Goods movement is part of an overall transportation system. Doing what is best exclusively for freight movement may not yield the best outcomes (and may even make freight movement worse overall if not evaluated in the context of moving all goods and people). The DOT should work to prioritize mobility corridors statewide and also ensure connectivity across modes. Personal choice and multiple options for mobility can improve the entire system for all modes.
Shift to rail and barges. Reduce the use of trucks. Better long term solution.
Avoid bottlenecks from Dillion Inland Port along SC 9 Corridor to points west
Raise gasoline tax & fix these roads. Low taxes & bad roads are what we have. It doesn't matter if the gasoline tax is low. Poor quality roads &highways ware out our cars at a faster rate & are unsafe which raises our insurance rates. Everything has a price there is no such thing as a free lunch.
Widen the 95 and provide shoulders for pull off. If our neighboring states have long ago done this (and they have), what is the hold up for SC? We pay our taxes. You owe us safe and efficient roads.
Follow the complete streets guidelines. Think of it as a transportation system not a highway system. Include rail and barge transport in your plan. Work to remove vehicles from the roadways not to accommodate more. More and wider roads is a short sighted approach that has been proven ineffective.
Beyond safe lanes for large trucks, last mile solutions utilizing smaller, more environmentally friendly vehicle like electric vans and cargo bikes.
State highways ignored. 95 in SC the bottleneck of the East. Highways 462, 17, 170, 278 just in my area. Affecting tourism, therefore our economy. People are taking huge losses traveling here, wrecks, lost time, destroyed property and lives lost. Fix the roads, widen I-95 so to connect to NC and GA with 6 lanes. Get foreign non English reading or speaking truck drivers off our roads. There are great numbers of them. Get some actual regulations that protect the truckers and citizens.
Bicycle use by residents going to work and for recreational use should be kept as one priority when planning budgets and designing improvements.
Fox the flow of traffic! Fox bottlenecks, use fly overs, eliminate left turns, and fix light timing at busy intersections during rush hour.
More ability for bikes and pedestrians to move around away from roads. Greenways and non-vehicular infrastructure is poorly lacking in our state. Let's limit how often people need to rely on a car to make short trips! The lacking infrastructure actually makes people drive more due to the unsafe streets for pedestrians.
Son
Neely Wingard Rd in Gilbert SC 29054 needs to be paved! It's the worst road in the whole County. Additionally the dam road on Ben Franklin Rd Gilbert 29054 needs to be reopened.
Thank you for considering the safety and opinions of SC residents and motorists by offering us a chance to voice our concerns.
Please reroute the freight trucks on Pine Street/585 in Spartanburg!! We can hardly cross that street to make use of trails and bike paths for the large trucks speeding past.
No heavy truck traffic on city streets in high density neighborhoods in front of a school like Pine Street in Spartanburg.
Pine Street/Highway 176 coming through Spartanburg has too many trucks driving down this area for such a residential part of town. The speed limit is only 35 to 40 miles an hour and we have a lot of young drivers in that area.
Too many freight trucks speeding down Pine street in front of elementary school. So dangerous!
Ban tractor trailers from left lanes.
Please get 18 wheelers off Pine street!!!
General Comment
I really like this, please have more concern about our communities

Appendix C. South Carolina Statewide Truck Parking Study, Executive Summary

SCDOT

South Carolina
Statewide Truck Parking Assessment Study



South Carolina
Statewide Truck Parking Assessment Study

EXECUTIVE SUMMARY

October 2022

Study Objective

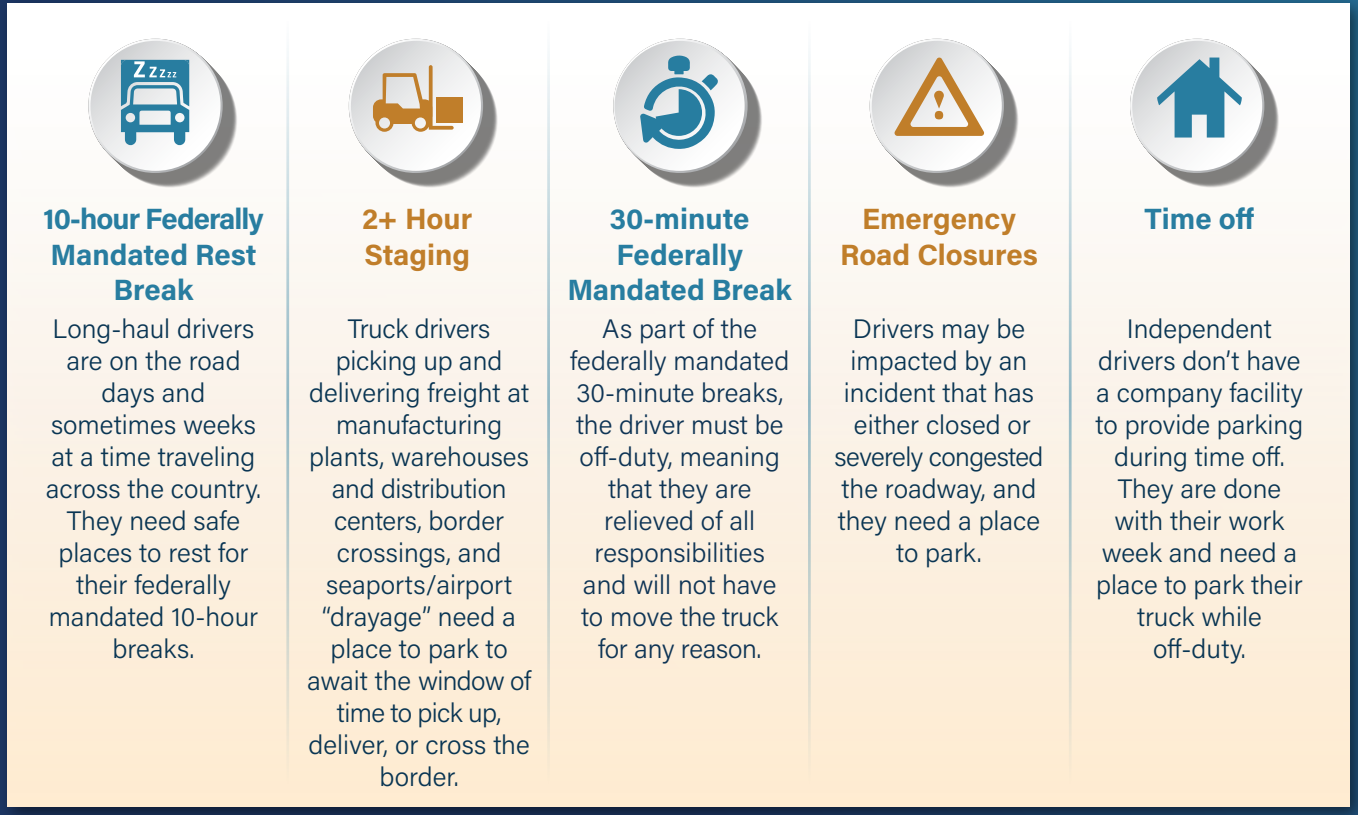
The Statewide Truck Parking and Assessment Study (STPAS) provides AN ANALYSIS OF THE ADEQUACY OF TRUCK PARKING ALONG INTERSTATE CORRIDORS BY EVALUATING STATEWIDE TRUCK PARKING SUPPLY, DEMAND, GAPS, AND NEEDS; and provides a toolbox of strategies for addressing the needs. The study area for the STPAS is defined as the one-mile buffer surrounding all Interstate highways in South Carolina. These include I-20, I-26, I-77, I-85, I-95, I-385, I-520, and I-526.

Throughout the study, the STPAS' Steering Committee and Technical Advisory Committee provided guidance to the project team. The Steering and Technical Advisory Committees consisted of experts from both the public and private sectors.

The EFFICIENT MOVEMENT OF GOODS IS CRITICAL TO BOTH THE SOUTH CAROLINA AND THE NATIONAL ECONOMY. The quality of life in South Carolina depends on the daily delivery of millions of goods shipped by a network of highways, railways, waterways, ports, airports, and pipelines. The State's economy also relies upon its multimodal freight transportation system to efficiently connect local, regional, national, and global markets. The movement of freight through, from, within, and into South Carolina will continue to expand as the State's economy and population grow and as trade increases. The South Carolina Department of Transportation (SCDOT) is working towards a more efficient and higher-capacity freight system. An adequate supply of truck parking is critical to achieving that goal. To that end, the SCDOT decided to undertake a statewide assessment of truck parking needs.

TRUCK DRIVERS NEED TO PARK FOR DIFFERENT REASONS AND THERE ARE UNIQUE CHALLENGES FOR VARIOUS TYPES OF PARKING NEEDS (see Figure 1). Drivers must adhere to Federal and state hours of service (HOS) regulations that place specific time limits on driving and rest intervals. Drivers almost always need to park and wait for delivery windows at shippers and receivers, and sometimes are impacted by unexpected road closures or congestion. Finally, truck drivers are essential workers who need to take personal breaks for rest and safety.

Figure 1. Reasons Truck Drivers Park

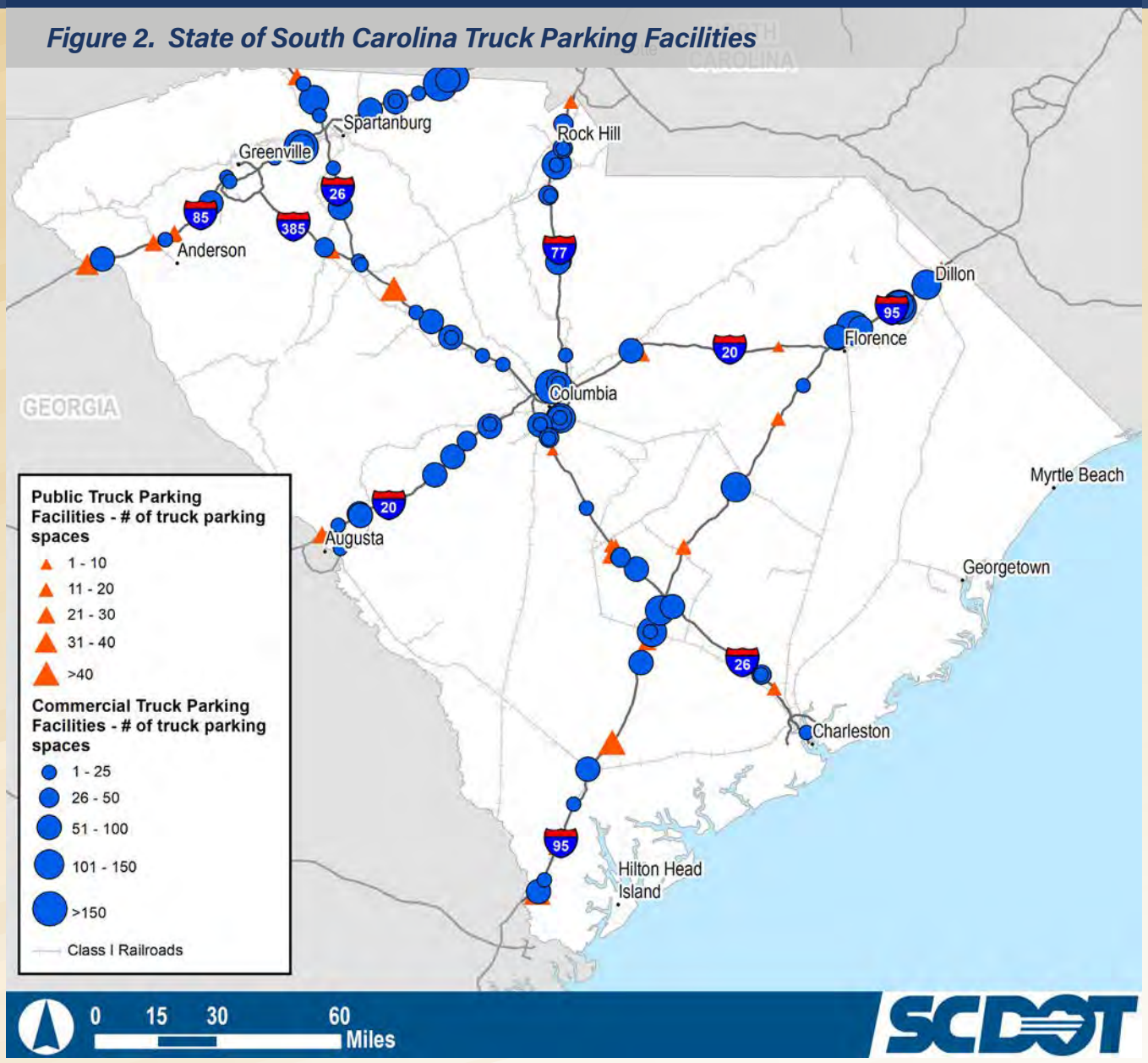


Inventory

In total, there are OVER 6,400 TRUCK PARKING SPACES provided at public and commercial facilities in South Carolina. There are 90 commercial truck stops in South Carolina with 10 or more spaces, with a combined total of nearly 5,592 spaces.

There are 34 public parking facilities (including rest areas, truck parking areas, and welcome centers) which have a total of 824 spaces (about 13 percent of the statewide capacity). The Colleton I-95 Northbound Rest Area (near Yemassee) is the largest public truck parking facility in the State with 57 spaces. In total, there are 124 public and commercial truck parking facilities with approximately 6,443 truck parking spaces, shown in Figure 2.

Figure 2. State of South Carolina Truck Parking Facilities



Source: WSP Global.

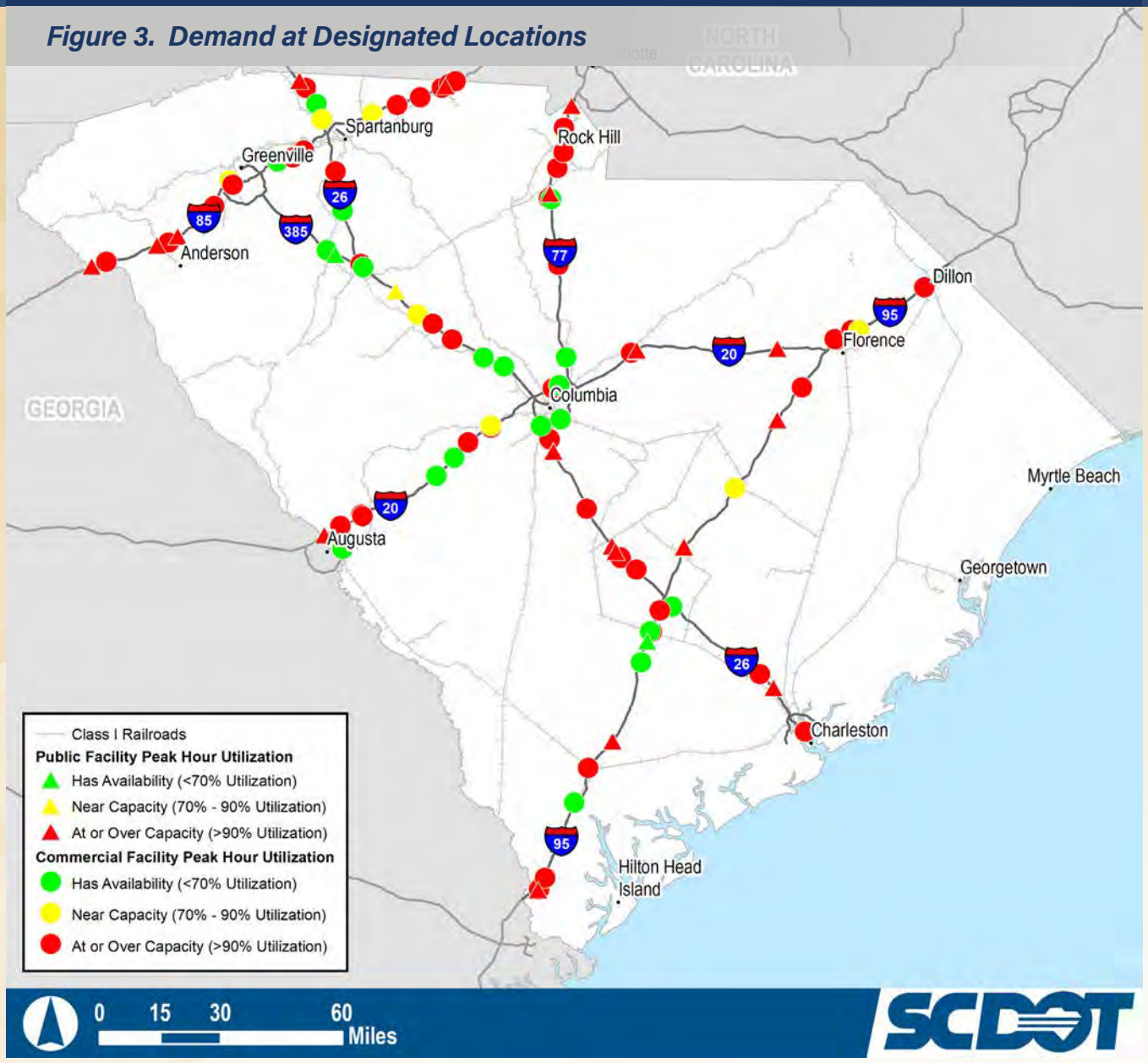
Demand and Gap Assessment

This study uses global positioning system (GPS) information provided by the American Transportation Research Institute (ATRI) TO ESTIMATE THE DEMAND FOR TRUCK PARKING ALONG SOUTH CAROLINA'S INTERSTATE HIGHWAY NETWORK.

DESIGNATED TRUCK PARKING ALONG INTERSTATE CORRIDORS

Parking demand at designated locations during the statewide peak hour is shown in Figure 3. Of the 124 total sites with demand data, only 26 percent of the locations have availability and the remaining 74 percent are nearing, at, or over capacity. Note that "Has Availability" is defined as anything under 70 percent utilization. Over one quarter of the State's public sites are near, at, or over capacity.

Figure 3. Demand at Designated Locations



Source: ATRI; Cambridge Systematics, Inc. analysis.

UNDESIGNATED TRUCK PARKING ON INTERSTATES

Undesignated parking is truck parking outside of a dedicated truck parking facility, quantified for the purposes of this study as truck parking within Interstate right-of-way (ROW). Undesignated parking introduces safety and security risks for drivers as well as the traveling public. Trucks parked on shoulders and ramps can reduce visibility, damage pavement, and result in crashes. The highest rates of peak hour (i.e., 1:00 a.m. to 2:00 a.m.) undesignated truck parking along Interstate ROW occurs on portions of I-77, I-85, and I-26 near the North Carolina border as shown in Figure 4.

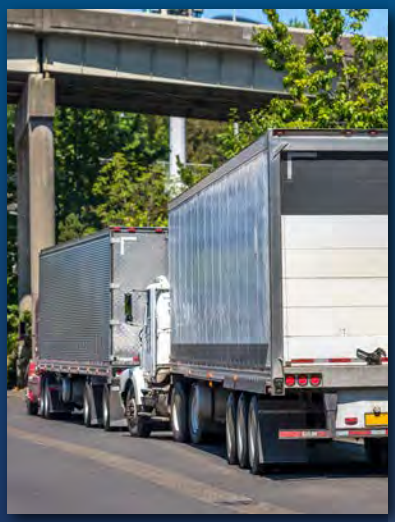
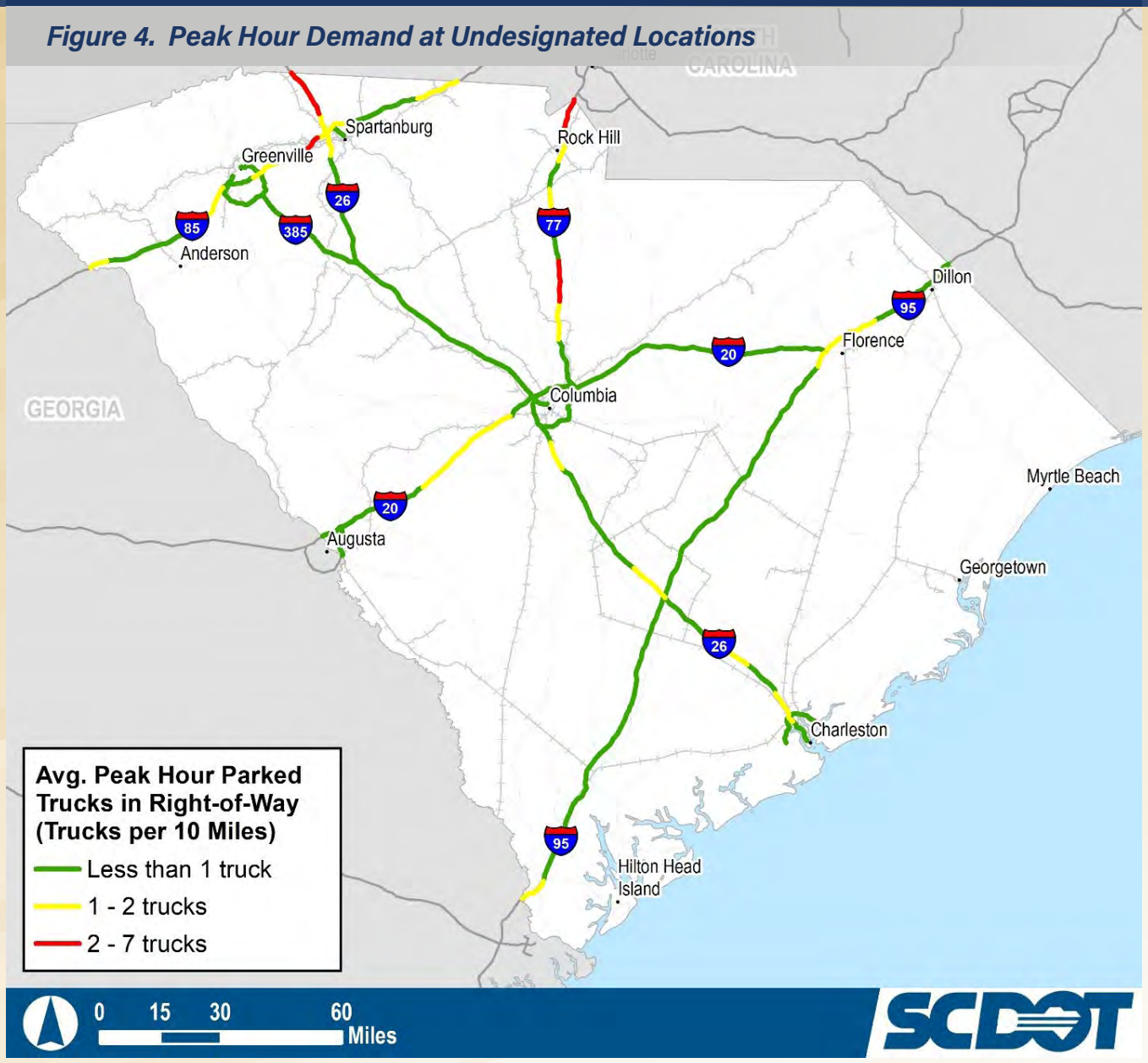


Figure 4. Peak Hour Demand at Undesignated Locations



Source: ATRI; Cambridge Systematics, Inc. analysis.

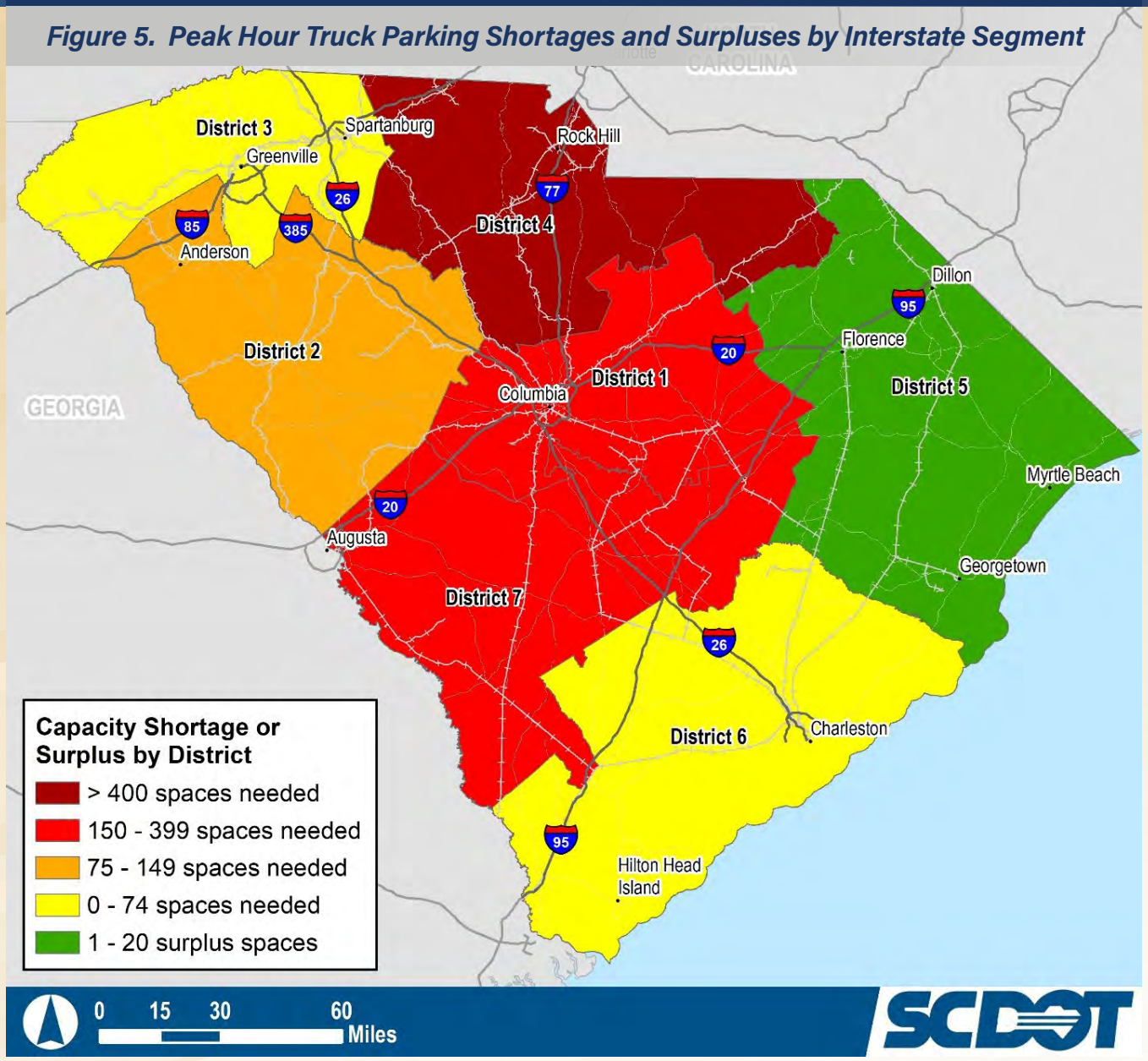
GAP ASSESSMENT

The gap assessment measures the shortage (i.e., the gap) and surplus between truck parking supply and demand across South Carolina. The shortage or surplus of truck parking is the difference between the number of spaces at designated truck parking facilities and the demand for parking (at designated facilities and surrounding undesignated parking on Interstate ROW during the peak hour.

There is a statewide shortage of truck parking needed to meet peak period demand of over 1,000 spaces. The statewide utilization rate based on peak-hour truck parking is approximately 114 percent, indicating that peak hour demand for parking exceeds capacity.

Figure 5 shows truck parking shortages and surpluses by district. District 4 has the highest utilization of designated truck parking locations (e.g., rest areas, commercial truck stops) and undesignated truck parking (e.g., ROW, on-/off-ramps). About 3,600 trucks per day park in District 4 facilities resulting in a peak utilization rate of 135 percent. With a deficit of over 400 spaces, District 4 accounts for about 40 percent of the 1,000+ space statewide deficit.

Figure 5. Peak Hour Truck Parking Shortages and Surpluses by Interstate Segment

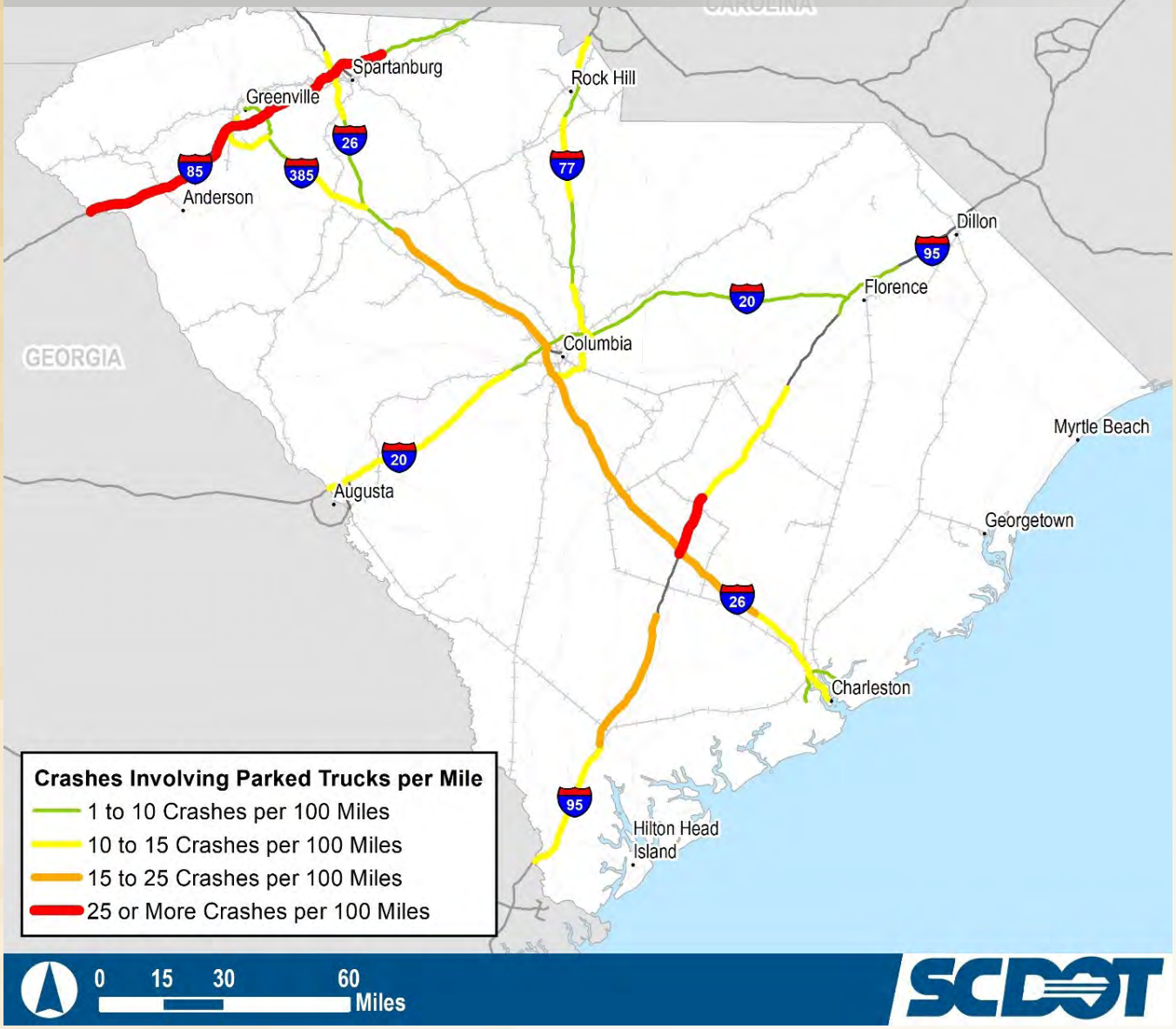


Source: ATRI; Cambridge Systematics, Inc. analysis.

SAFETY CHALLENGES

For the 2015-2019 time period, there were 119 crashes involving parked trucks on South Carolina Interstate highways. In order to compare the safety performance of Interstate highway corridors, it was necessary to determine the crash rates for incidents involving parked trucks. Crash rates were calculated as the total number of incidents involving parked trucks per mile for Interstate highways over the 2015-2019 time period. As shown in Figure 6, the highest crash rates were observed on I-85 between the Georgia state line and the City of Spartanburg. On this corridor, 5-year total crash rates for incidents involving parked trucks ranged from about 33 to 48 crashes per 100 miles.

Figure 6. Five-Year Total Crash Rates for Incidents Involving Parked Trucks, 2015-2019

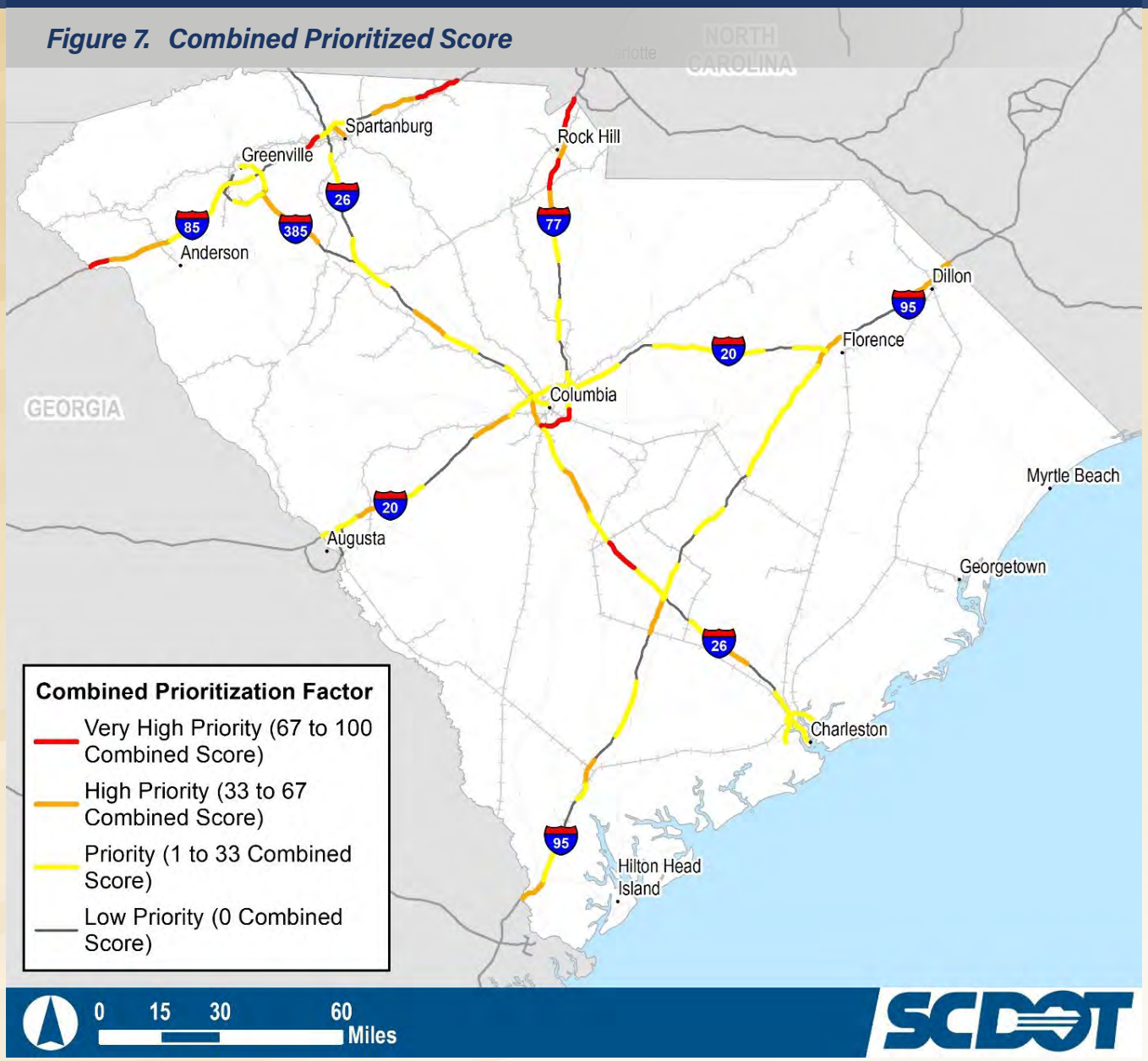


Source: South Carolina Department of Transportation; Cambridge Systematics, Inc. analysis.

Prioritization of Truck Parking Needs

To identify segments with the greatest need for additional truck parking, segments of Interstate corridors with the highest gap in truck parking and the highest rate of crashes involving parked trucks were combined into a prioritization score (described in Chapter 4) as shown in Figure 7. **I-77, I-26, AND I-85 CONTAIN THE HIGHEST NEED CORRIDORS IN THE STATE.** In particular, I-77 from the South Carolina-North Carolina state line to the Catawba River in York County, I-26 east of U.S. 21 in Calhoun County, and I-85 from the South Carolina-Georgia state line to Oconee-Anderson County line are priority locations for addressing truck parking needs.

Figure 7. Combined Prioritized Score



Source: Cambridge Systematics, Inc.

Toolbox of Strategies

OVER ONE-FOURTH OF THE MORE THAN 1,000 TRUCK SPACE DEFICIT MAY BE MET BY CONVERTING CLOSED REST AREAS AND WEIGH STATIONS TO DEDICATED TRUCK PARKING FACILITIES. These closed facilities, already owned by SCDOT and South Carolina Department of Public Safety and located in high need areas, could add approximately 284 truck parking spaces to the State's supply at a cost of about $3,500,000 per 50-space site. Along with the State's planned investment in rest area rehabilitations and expansions and the potential to add truck parking spaces to Department of Parks and Recreation operated welcome centers, South Carolina can substantially close the gap between demand and supply. Additionally, South Carolina has several options for further enhancing access to truck parking and improving the utilization of public and commercial facilities.

Despite the various challenges that create barriers to implementing truck parking solutions, there are several strategies available to address truck parking needs. *The Statewide Truck Parking Assessment Study* proposed strategies are grouped into three broad categories: increasing capacity (adding spaces), better utilizing existing infrastructure, and supportive policies and programs. Table 1 lists the strategies under each category and indicates the truck parking needs it satisfies:

STRATEGIES TO INCREASE TRUCK PARKING CAPACITY—These strategies work to build new or expand existing truck parking facilities. As such, they typically are more difficult to implement given the required resources (e.g., planning and environmental reviews, engineering design, construction) and time. However, in scenarios where there is simply insufficient capacity to meet demand, strategies to increase truck parking capacity are necessary.

STRATEGIES TO BETTER UTILIZE EXISTING INFRASTRUCTURE FOR TRUCK PARKING—As opposed to building new capacity, these are operational strategies to improve the utilization of existing capacity and take advantage of non-traditional capacity. Examples include using technology to provide information to drivers on where parking is available and leveraging parking capacity at non-truck facilities in appropriate situations. The advantage of these types of strategies is that they are less costly and have a higher ease of implementation than capacity-based strategies.

POLICY AND PROGRAM STRATEGIES—These include a broad range of strategies which address the hurdles of regulatory, communication, and knowledge gaps to enhancing capacity. They vary from reassessing decision-making processes at SCDOT as they pertain to truck parking to modifying data collection practices. As the private sector is the largest provider of truck parking capacity in South Carolina, these include strategies to leverage private sector resources.

Table 1. State Strategies to Address Truck Parking Needs

	10-Hour Rest	2+ Hour Staging	30-Minute Break	Road Closures	Time off
STRATEGIES TO INCREASE TRUCK PARKING CAPACITY					
Expand and upgrade truck parking at existing SCDOT rest areas and truck parking facilities	✓		✓	✓	
Expand and upgrade truck parking at existing Department of Parks, Recreation, and Tourism Welcome Centers	✓		✓	✓	
Build dedicated, SCDOT maintained, truck parking facilities within highway ROW	✓		✓	✓	
Expand existing commercial vehicle weigh stations to accommodate overnight truck parking	✓		✓	✓	
STRATEGIES TO BETTER UTILIZE EXISTING INFRASTRUCTURE FOR TRUCK PARKING					
Develop a Truck Parking Information Management System (TPIMS)	✓	✓	✓	✓	✓
Install Static Signs Indicating Upcoming Locations for Truck Parking (pre-TPIMS)	✓	✓	✓	✓	
POLICY AND PROGRAM STRATEGIES IN SUPPORT OF TRUCK PARKING					
Support private sector deployment of zero emissions fuels at truck parking facilities	✓		✓	✓	
Develop guidelines for integrating truck parking into the SCDOT project development process	✓	✓	✓	✓	
Consider truck parking needs prior to the purchase or sale of right of way	✓	✓	✓	✓	
Consider truck parking needs and the potential for conversion to truck parking prior to the closure of a SCDOT facility	✓	✓	✓	✓	
Reassess public facility designs to accommodate oversize or overweight vehicles	✓	✓	✓	✓	
Modify the design guidelines for new commercial vehicle inspection facilities to include space for overnight truck parking where feasible	✓	✓	✓	✓	
Collect truck and car utilization data	✓		✓	✓	
Encourage, educate, and coordinate with local and regional agencies to advance truck parking in their jurisdictions	✓	✓	✓	✓	✓

Source: Cambridge Systematics, Inc.

Appendix D. Critical Urban & Rural Freight Corridors

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	U.S. 25	24.93	25.73	0.8
Greenville County	U.S. 25	25.73	27.142	1.412
Greenville County	U.S. 25	27.142	27.64	0.498
Greenville County	U.S. 25	27.64	31.49	3.85
Greenville County	U.S. 25	31.49	33.3	1.81
Greenville County	U.S. 25	33.3	36.12	2.82
Greenville County	U.S. 25	36.12	36.604	0.484
Greenville County	U.S. 25	36.604	38.04	1.436
Greenville County	U.S. 25	38.04	38.13	0.09
Greenville County	U.S. 25	38.13	38.27	0.14
Greenville County	U.S. 25	38.27	40.502	2.232
Horry County	U.S. 501	12.885	14.24	1.355
Horry County	U.S. 501	14.24	15.018	0.778
Horry County	U.S. 501	15.018	15.103	0.085
Horry County	U.S. 501	15.103	15.33	0.227
Horry County	U.S. 501	15.33	16.45	1.12
Horry County	U.S. 501	16.45	17.7	1.25
Horry County	U.S. 501	17.7	17.76	0.06
Horry County	U.S. 501	17.76	17.83	0.07
Horry County	U.S. 501	17.83	18.055	0.225
Horry County	U.S. 501	18.055	18.46	0.405
Horry County	U.S. 501	18.46	18.5	0.04
Horry County	U.S. 501	18.5	18.58	0.08
Horry County	U.S. 501	18.58	18.67	0.09
Horry County	U.S. 501	18.67	18.719	0.049
Horry County	U.S. 501	18.719	18.77	0.051
Horry County	U.S. 501	18.77	18.94	0.17
Horry County	U.S. 501	18.94	19.01	0.07

County	Route Number	Begin Milepoint	End Milepoint	Length
Horry County	U.S. 501	19.01	19.083	0.073
Horry County	U.S. 501	19.083	19.155	0.072
Horry County	U.S. 501	19.155	19.204	0.049
Horry County	U.S. 501	19.204	19.251	0.047
Horry County	U.S. 501	19.251	19.31	0.059
Horry County	U.S. 501	19.31	19.36	0.05
Horry County	U.S. 501	19.36	19.5	0.14
Horry County	U.S. 501	19.5	20.735	1.235
Horry County	U.S. 501	20.735	20.98	0.245
Horry County	U.S. 501	20.98	21.593	0.613
Horry County	U.S. 501	21.593	21.76	0.167
Horry County	U.S. 501	21.76	21.95	0.19
Horry County	U.S. 501	21.95	22.58	0.63
Horry County	U.S. 501	22.58	22.88	0.3
Horry County	U.S. 501	22.88	23.09	0.21
Horry County	U.S. 501	23.09	23.58	0.49
Horry County	U.S. 501	23.58	23.765	0.185
Horry County	U.S. 501	23.765	25.582	1.817
Horry County	U.S. 501	25.582	28.18	2.598
Horry County	U.S. 501	28.18	28.42	0.24
Horry County	U.S. 501	28.42	29.59	1.17
Horry County	U.S. 501	29.59	31.53	1.94
Marion County	U.S. 501	9.232	9.502	0.27
Marion County	U.S. 501	9.502	10.061	0.559
Charleston County	U.S. 17	17.518	17.79	0.272
Charleston County	U.S. 17	17.79	19.95	2.16
Charleston County	U.S. 17	19.95	20.63	0.68
Charleston County	U.S. 17	20.63	24.04	3.41
Charleston County	U.S. 17	24.04	24.58	0.54
Charleston County	U.S. 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	U.S. 25	40.502	43.22	2.718
Greenville County	U.S. 25	43.22	46.88	3.66
Greenville County	U.S. 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	U.S. 501	0	0.18	0.18
Horry County	U.S. 501	0.18	0.38	0.2
Horry County	U.S. 501	0.38	4.188	3.808
Horry County	U.S. 501	4.188	4.81	0.622
Horry County	U.S. 501	4.81	4.93	0.12
Horry County	U.S. 501	4.93	5.05	0.12
Horry County	U.S. 501	5.05	5.171	0.121
Horry County	U.S. 501	5.171	5.2	0.029
Horry County	U.S. 501	5.2	5.34	0.14
Horry County	U.S. 501	5.34	5.36	0.02
Horry County	U.S. 501	5.36	5.61	0.25
Horry County	U.S. 501	5.61	6.63	1.02
Horry County	U.S. 501	6.63	7.42	0.79
Horry County	U.S. 501	7.42	7.81	0.39
Horry County	U.S. 501	7.81	10.6	2.79
Horry County	U.S. 501	10.6	10.68	0.08
Horry County	U.S. 501	10.68	10.88	0.2
Horry County	U.S. 501	10.88	11.253	0.373

County	Route Number	Begin Milepoint	End Milepoint	Length
Horry County	U.S. 501	11.253	12.4	1.147
Horry County	U.S. 501	12.4	12.63	0.23
Horry County	U.S. 501	12.63	12.885	0.255
Marion County	U.S. 501	0.72	2.11	1.39
Marion County	U.S. 501	2.11	4.33	2.22
Marion County	U.S. 501	4.33	5.22	0.89
Marion County	U.S. 501	5.22	9.232	4.012
Marion County	U.S. 501	10.061	12.27	2.209
Marion County	U.S. 501	12.27	13.594	1.324
Marion County	U.S. 501	13.594	14	0.406
Marion County	U.S. 501	14	14.108	0.108
Marion County	U.S. 501	14.108	20.07	5.962
Marion County	U.S. 501	20.07	21.195	1.125
Marion County	U.S. 501	21.195	23.53	2.357
Beaufort County	U.S. 17	0	0.3	0.3
Beaufort County	U.S. 17	0.3	4.42	4.12
Beaufort County	U.S. 17	4.42	6.58	2.16
Beaufort County	U.S. 17	6.58	7.01	0.43
Beaufort County	U.S. 17	7.01	7.791	0.781
Beaufort County	U.S. 17	7.81	12.65	4.84
Charleston County	U.S. 17	0	5.92	5.92
Charleston County	U.S. 17	5.92	13.4	7.48
Charleston County	U.S. 17	13.4	13.61	0.21
Charleston County	U.S. 17	13.61	17.518	3.908
Colleton County	U.S. 17	0	16.242	16.242
Colleton County	U.S. 17	16.242	17.31	1.068
Jasper County	U.S. 17	0	4.1	4.1
Jasper County	U.S. 17	4.1	6.61	2.51
Jasper County	U.S. 17	6.61	9.22	2.61
Jasper County	U.S. 17	9.22	12.469	3.249
Jasper County	U.S. 17	12.469	12.91	0.441
Jasper County	U.S. 17	12.91	13.05	0.14
Jasper County	U.S. 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**