APPALACHIAN REGIONAL FREIGHT MOBILITY PLAN

Appendix C
FREIGHT NETWORK ASSESSMENT

DRAFT – FOR REVIEW

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APPALACHIAN COUNCIL OF GOVERNMENTS

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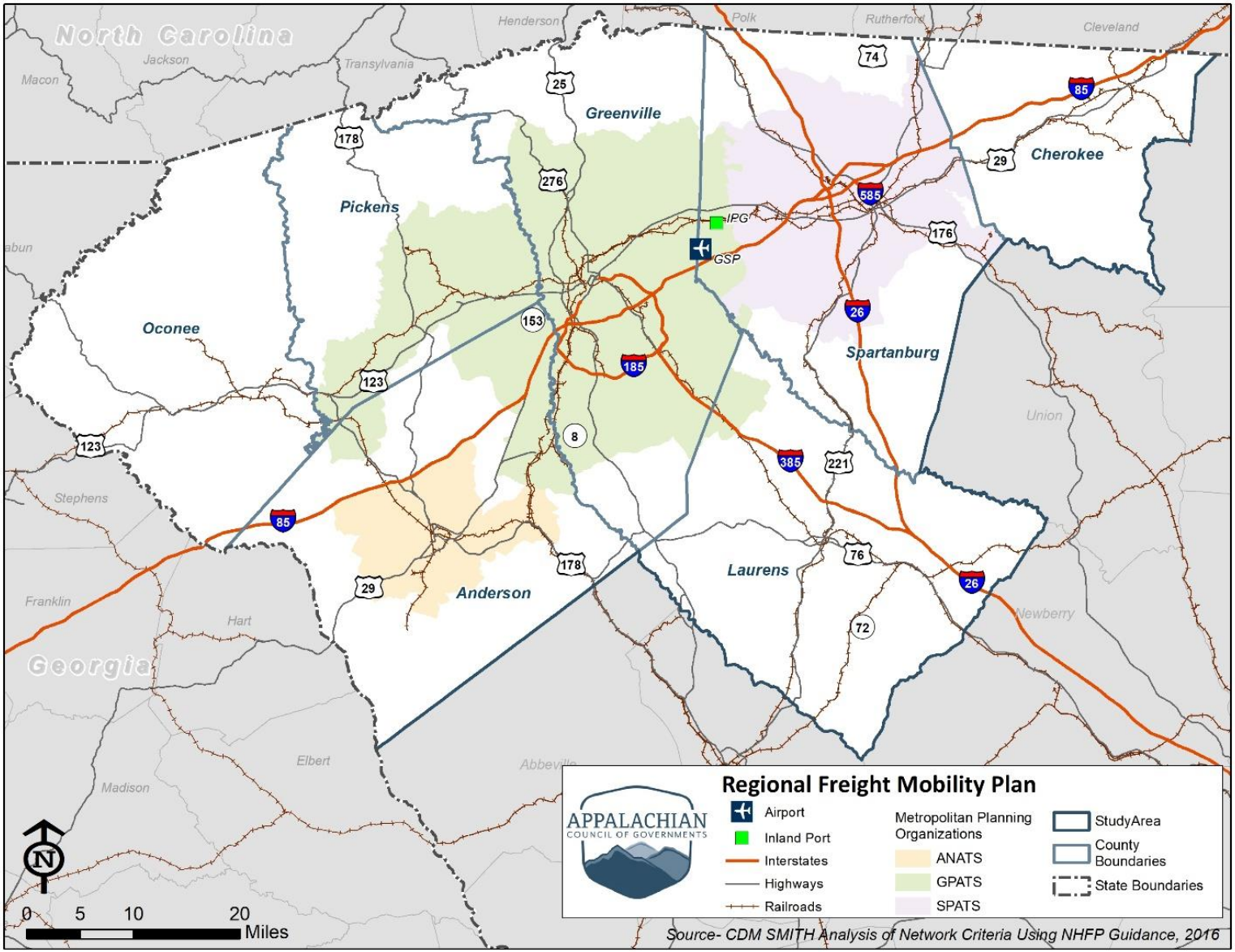
1. Introduction

The Appalachian Council of Governments (ACOG) is creating a Regional Freight Mobility Plan to help address freight transportation needs and challenges in the Appalachian Region of South Carolina. The Regional Freight Mobility Plan includes the six member counties of the Appalachian Council of Governments plus Laurens County (see **Figure 1-1**). Laurens County was included in the freight plan due to I-385 emerging as a future freight related economic growth corridor. The region includes three Metropolitan Planning Organizations (MPOs): the Anderson Area Transportation Study (ANATS), Greenville-Pickens Area Transportation Study (GPATS), and Spartanburg Area Transportation Study (SPATS). With the addition of Inland Port Greer in 2013, access to two major Interstate highways (I-85 and I-26), two Class I railroads, an international airport, and a cluster of warehouses, distribution centers, and logistics companies, the region is highly dependent on trade.

According to ACOG, the Appalachian Region population has grown by nearly 24 percent since 2000, with current Census Bureau trends projecting the Appalachian Region's 2030 population to be around 1,400,000, an increase of 10 percent from the current population estimate of 1,271,000. The 10-county Upstate Region is experiencing significant growth as well. By 2040, the Upstate Region's population is projected to reach nearly 1,750,000 –an increase of 64 percent since 1990. Approximately 51.8 percent of the statewide economic impact associated with the South Carolina State Ports Authority (SCSPA) is concentrated within the Upstate Region of South Carolina. This is largely because the primary users of SCSPA port facilities are manufacturers, which are also disproportionately concentrated within the Upstate Region. The manufacturing industry comprises 20 percent of all jobs in the Upstate, compared to 14.7 percent for South Carolina as a whole.[1] Growth in residents commuting to jobs as well as cargo moving through the inland port has contributed to congestion, safety, and quality of life concerns. Moreover, freight congestion reduces regional economic competitiveness and may lead to slower economic growth in the future.

[1] 2020 South Carolina Statewide Freight Plan Update (draft), www.scdot.org/inside/pdf/Combined-Notebook-for-July-16-2020.pdf [page 203 of PDF], accessed August 2020

Figure 1-1: ACOG Regional Freight Plan Study Area



This technical memorandum provides a Freight Network Assessment for the ACOG region focusing on the roadway and rail networks. This initial step provides baseline regional freight conditions which can then be used to identify freight-related issues and needs. The remainder of this memo is organized as follows:

- **State of Freight** provides an assessment of the seven-county study area's multimodal freight infrastructure, recent or planned projects affecting freight flows, and overall tonnage moving across the regional highway and rail networks.
- **Definition of the ACOG Regional Freight Network** identifies the regional freight network using a data-driven process that accounts for existing federal and state networks and identifies critical last-mile routes to intermodal terminals and major freight generators.
- **Freight Network Operational Analysis** assesses regional conditions on the previously identified network, looking specifically at freight safety, congestion and truck bottlenecks, pavement condition, and bridge conditions.

2. State of Freight Discussion

South Carolina has become a major freight focus point in the southeastern United States. The presence of a major deep-water port in Charleston, key Interstate highway trade corridors, two Class 1 railroads, and strategic investments in inland ports have contributed to statewide freight and trade growth. Freight tonnage across South Carolina is expected to grow by 60 percent from 2016 to 2040.[2]

Within the Upstate, the ACOG region has shared in this growth. The presence of a major inland port, international airport, freight rail connections, Interstate highway trade corridors, and a large automotive manufacturing base has ensured that freight continues to be a major part of the regional and statewide economy. Key regional freight infrastructure includes:

- **Greenville-Spartanburg International Airport** was the 62nd busiest cargo airport in the United States in 2018, handling roughly 449 million pounds of freight.[3] The average air commodity is valued at $107,661 per ton, significantly higher than all other modes.
- **Major highway freight corridors** include I-26 and I-85, which connect the region to the entire southeast and other markets. One route, I-26, connects to I-95, which is the primary highway trade corridor for the entire Eastern Seaboard. I-26 also connects to the Port of Charleston. The other, I-85, connects major urban areas like Atlanta and Charlotte.
- **The CSX and Norfolk Southern (NS)** railroads are the major Class 1 freight railroads that serve the ACOG region. Norfolk Southern has an intermodal yard near Spartanburg and CSX has an intermodal yard near Laurens. Norfolk Southern is also the primary provider for Inland Port Greer.
- **Inland Port Greer-** the port opened in 2013 and is located 212 miles inland from the Port of Charleston. Norfolk Southern provides overnight rail service from the Port of Charleston six days per week to the terminal, which operates 24 hours per day, 7 days per week.

[2] 2020 South Carolina Statewide Freight Plan Update (draft), www.scdot.org/inside/pdf/Combined-Notebook-for-July-16-2020.pdf [page 203 of PDF], accessed August 2020

[3] https://www.ttnews.com/top100/airports/2019

Recent and ongoing projects on freight mobility include:

- **Airport Cargo Facility-** At the Greenville-Spartanburg International Airport, a new 110,000 square foot, 33-million-dollar cargo facility was opened in 2019.[4] The new facility will be able to handle three Boeing 747-8F aircrafts at the same time with the addition of the 17 acre apron in front of the facility. With the addition of this new facility, the airport will triple the previous handling capacity.

- **I-85 Corridor Improvements-** SCDOT is widening I-85 from mile marker 77 in Spartanburg County to mile marker 98 in Cherokee County. The reconstruction of this corridor should be completed in 2021 and will improve travel lanes, interchanges and two railroad bridges. The project will help alleviate congestion throughout the corridor and increase capacity on this section of the interstate.[5]

- **I-85/I-385 Gateway Interchange-** Improvement to this interchange started in 2016 and was opened to traffic in late 2019. This project entails a new interchange with ten new bridges, including several intersections. This project is designed to alleviate traffic congestion through the entire corridor, provide a financial boost to the local economy and increase capacity of this interchange for many years to come.[6]

- **Expansion of Inland Port Greer-** South Carolina was awarded a $25 million Better Utilizing Better Utilizing Investments to Leverage Development (BUILD) grant to support the expansion at South Carolina Ports Authority's (SCPA) Inland Port Greer, and the extension of Norfolk Southern's Carlisle Passing Siding.[7]

2.1 Regional Highway and Rail Flows

The IHS Markit TRANSEARCH database was queried to identify overall highway and rail freight tonnage moving to, from, within, and through the ACOG region. TRANSEARCH is an origin-destination commodity flow database providing county-level estimates of freight flows by mode, direction, and commodity. This initial assessment focused on identifying tonnage density by major truck and rail corridors within the region and the share of such traffic consisting of through movements.

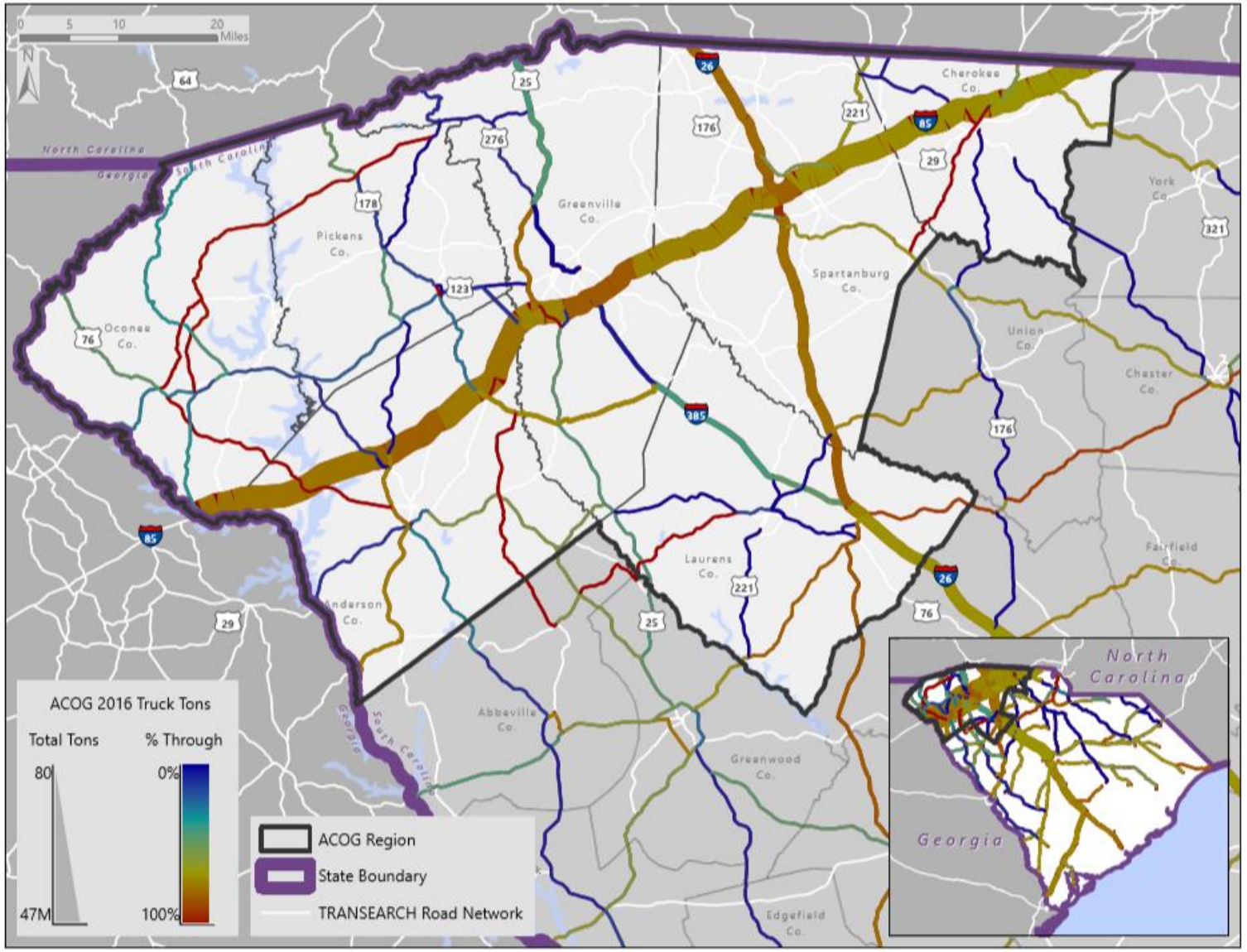
[4] https://www.aircargonews.net/cargo-airport/greenville-spartanburg-international-triples-cargo-capacity-with-new-facility/
[5] http://www.85widening.com/default.html#about-section
[6] http://www.85385gateway.com/
[7] http://scspa.com/news/25-million-build-grant-awarded-to-improve-south-carolinas-supply-chain/

Figure 2-1 shows truck tonnage density running through the region in 2016 per TRANSEARCH data. Unsurprisingly, I-85 and I-26 are the major regional trade corridors. I-85 handles the largest amount of truck freight, and most of it is through traffic. I-26 accommodates marine port-generated truck traffic, including significant flows between the Charleston region and the Upstate. I-385 carries less truck freight, but most of the volume is generated locally, meaning it is related to economic activity in the ACOG region (e.g., automotive manufacturing).

Figure 2-2 provides similar data for the rail network. The Norfolk Southern and CSX lines handle most of the regional rail freight. As with the highway mode, through movements make up a considerable share of this traffic. There is significant rail intermodal traffic moving between the Charleston port terminals and the Upstate. According to SCPA representatives who attended the July 16th Freight Advisory Committee Meeting, approximately 25 percent of inbound marine freight at Charleston leaves the Charleston region by rail; much of it is then transferred to truck in Inland Port Greer or Inland Port Dillon.

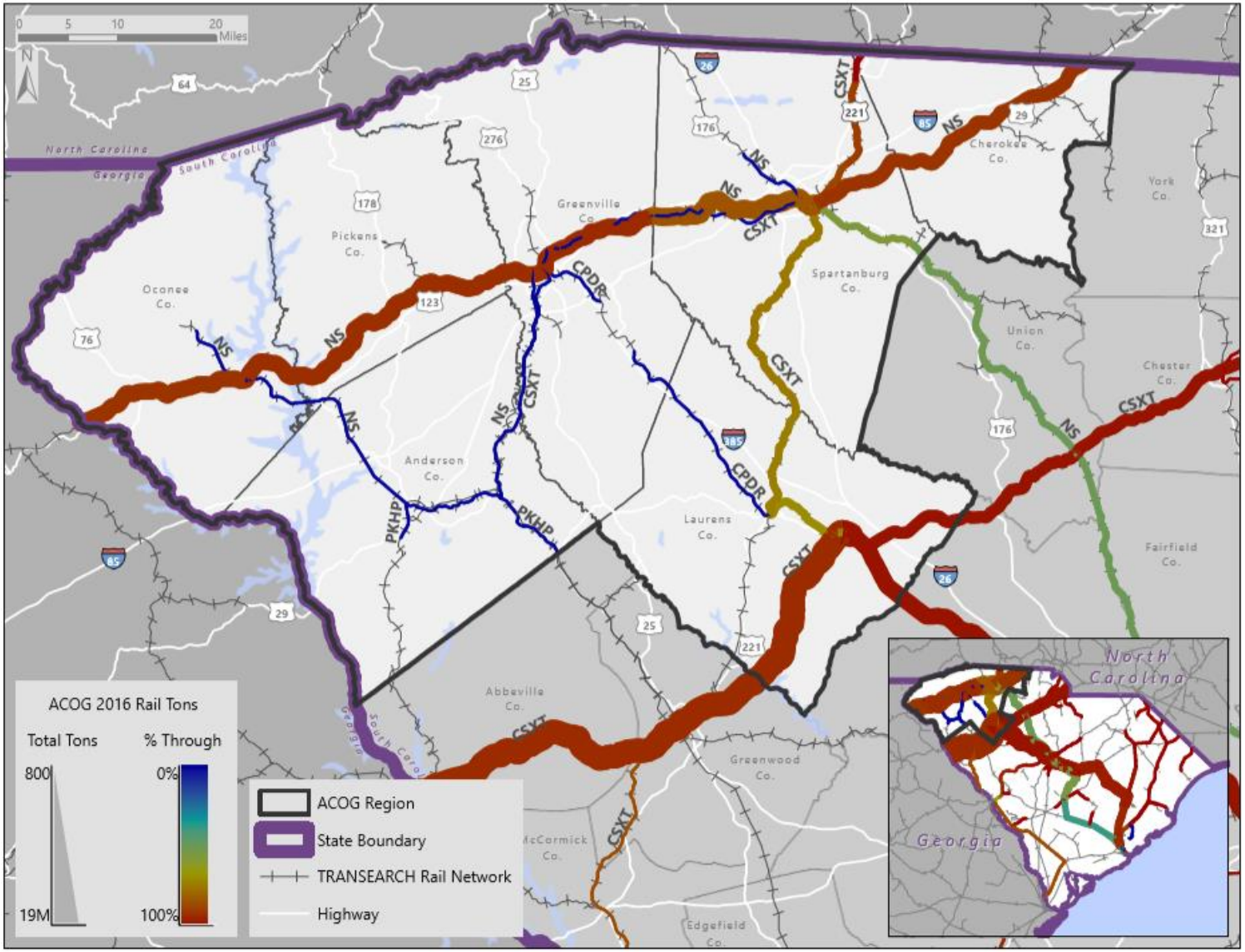
Additional detail on regional commodity flows including tonnage, value, directionality, mode splits, and origin-destination analysis will be provided in a forthcoming Commodity Flow Technical Memorandum.

Figure 2-1: ACOG Truck Freight Density, 2016



Source: TRANSEARCH, 2016

Figure 2-2: ACOG Rail Tonnage Density, 2016



Source: TRANSEARCH, 2016

3. Define ACOG Regional Freight Network

A key first step in evaluating freight operations is to define the regional freight network. This provides a baseline surface transportation infrastructure network for use in identifying needs and monitoring performance over time. The regional freight network should incorporate existing state and national designations as well as important local freight corridors and first/last mile connections.

The following methodology was used to develop the ACOG regional freight network:

- Existing state and federal network designations were included. These include the National Multimodal Freight Network, the South Carolina Freight Network, the South Carolina Strategic Corridor Network, and National Highway System Intermodal Connectors serving freight facilities.
- Key freight-generating businesses from the TRANSEARCH Freight Finder database[8] were overlaid on the highway and rail networks to understand location patterns of regional freight generators and their relationship to the surface transportation network. Other major freight generating facilities such as Greenville-Spartanburg International Airport and Inland Port Greer were also mapped. A threshold of generated freight greater than 200,000 annual tons and where clusters of generators together indicated a large total volume were used to help evaluate network additions.
- Truck volumes from the statewide regional travel demand (2015) model were mapped to assess which roadways carry the most truck traffic. Network links were assessed using a natural breaks approach where the top three out of five categories for total daily truck traffic were selected for inclusion in the freight network. In the ACOG region, such links carry 1,491 or more trucks per day.
- The resulting network was visually assessed to ensure connectivity between major freight generators or industry clusters, connectivity with rail intermodal facilities, and to add overall network continuity.

[8] TRANSEARCH Freight Finder is supplemental to the TRANSEARCH commodity flow data set and includes geo-referenced locational data for freight producing and generating businesses categorized by industry and inbound/outbound tonnage.

The resulting regional freight highway and rail network is shown in **Figure 3-1**. It includes major trade corridors such as I-85 and I-26, as well as SCDOT Freight Network corridors (e.g., US 123) and local/regional routes that provide last-mile connections to the inland port and other freight generators. All freight railroads are included given their importance in moving cargo within the region and throughout the state. In addition to the two Class 1 railroads in the ACOG region (Norfolk Southern and CSX), several shortlines serve this region. Those include Carolina Piedmont Division, Greenville and Western, and Pickens Railroad Honea Path Division.

The identified freight road network was further sorted and tiered as follows:

- **Tier 1 – Interstate Highways.** These routes are nationally significant and are designed for long-distance travel and trade. (An exception was made for I-385/North Street in downtown Greenville, which connects I-385 with Church Street near downtown; this location is near a pedestrian-oriented area and was thus deemed less appropriate for truck traffic.)
- **Tier 2 – Non-Interstate South Carolina Freight Network.**[9] These facilities include routes like US 123 and US 25 that are strategically important to the state of South Carolina but are not part of the Interstate Highway system.
- **Tier 3 – Local freight routes.** These roads provide critical last-mile connections to freight-generating land uses and the other segments of the state/national highway network.

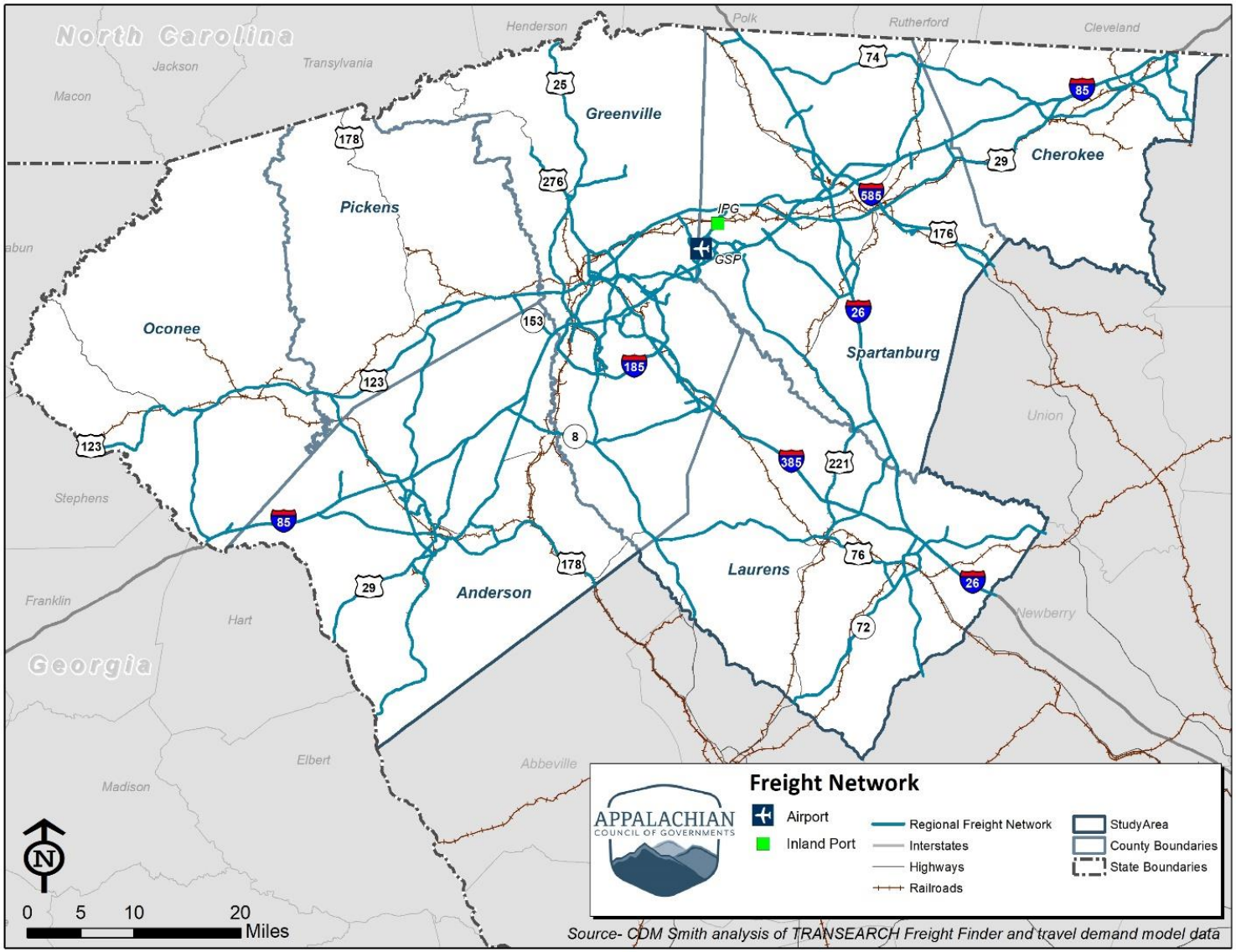
All freight railroads are included and are not tiered.

The resulting multimodal freight network is shown in **Figure 3-2.** Note that 'non-freight generators' refers to a category within the Freight Finder data set for businesses that have only inbound cargo, whereas 'freight generators' have both inbound and outbound freight.

Appendix A – Summary of Freight Network Data by Tier provides summary information about the tiered network including roadways by tier, corridor mileage, average number of lanes, total traffic and truck volumes (minimum and maximum), commercial motor vehicle (CMV) crash data, and intermodal facilities accessed. Additional analysis and data describing network performance (safety, congestion, and infrastructure conditions) is provided in **Section 4**, followed by a summary high-level needs assessment in **Section 5**. **Section 6** offers conclusions and next steps.

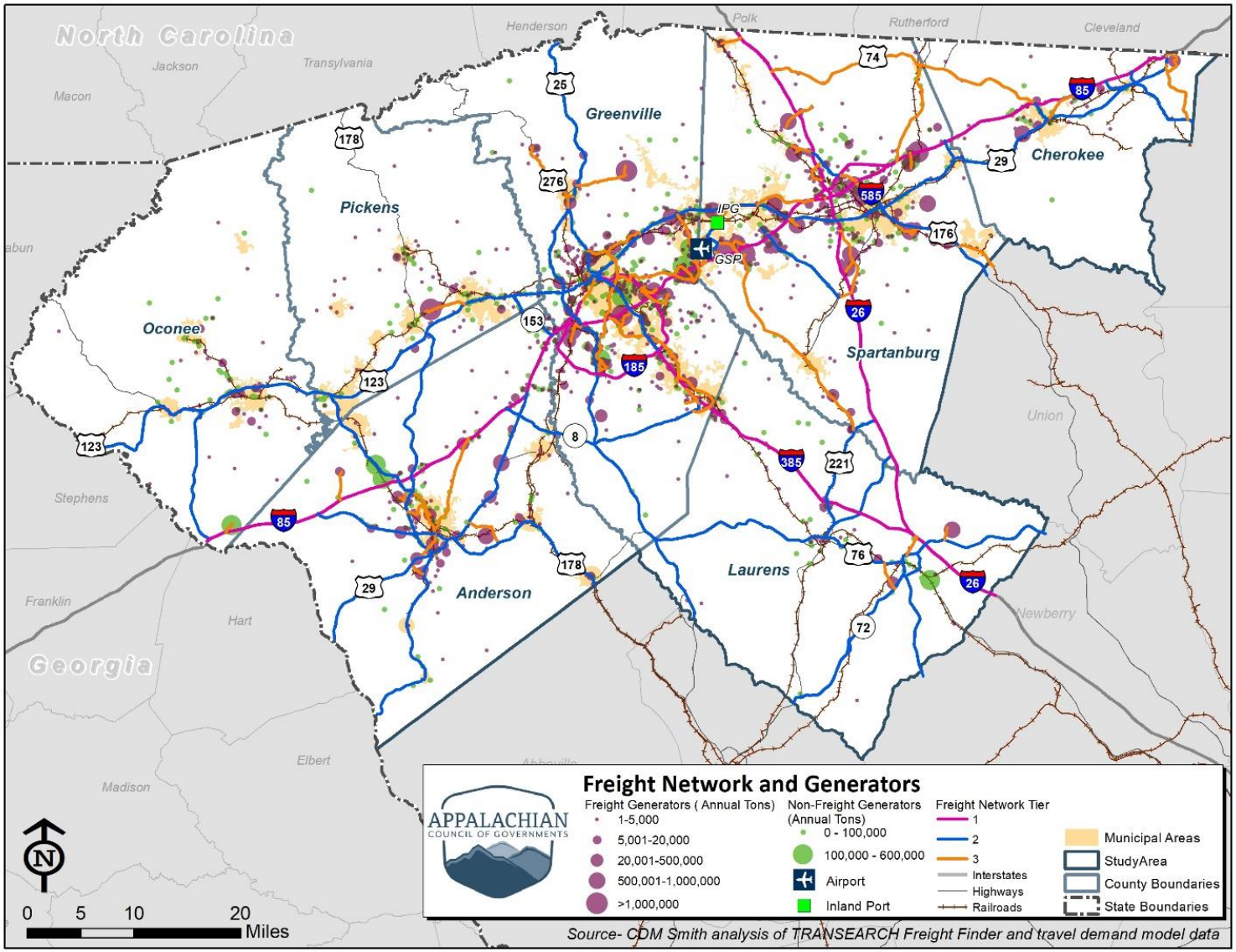
[9] 2020 South Carolina Statewide Freight Plan Update (draft), www.scdot.org/inside/pdf/Combined-Notebook-for-July-16-2020.pdf [page 203 of PDF], accessed August 2020

Figure 3-1: ACOG Regional Freight Network



Source- CDM Smith analysis of TRANSEARCH Freight Finder and travel demand model data

Figure 3-2: ACOG Regional Freight Network with Freight Generators



4. Freight Network Operational Analysis

Once a regional freight network is identified, it's important to analyze and monitor performance of the network to understand freight needs and potential strategies to address them. The network identified in the previous section was therefore evaluated on the following metrics:

- **Safety** – Locations of severe truck-involved crashes, rail-highway grade crossing safety hotspots, and potential truck parking shortages
- **Freight congestion** – Truck vehicle hours of delay, level of service (LOS), and truck bottlenecks
- **Infrastructure conditions** – Bridges in poor condition and pavement condition ratings

4.1 Freight Safety

Freight-related crashes occur less frequently than many other types of crashes but can be more severe due to the size and weight of the vehicles. It's therefore important to understand where such crashes tend to occur as well as the infrastructure conditions that may contribute to them. The following sections assess commercial motor vehicle (CMV)-involved crashes in the region, rail-highway grade crossing safety hotspots, and truck parking capacity.[10]

4.1.1 Truck-Involved Crashes

Figure 4-1 is a heat map of the seven-county study area showing the density of severe truck-involved crashes from 2015-2019. Any crash that includes one or more fatalities or incapacitating injuries is considered severe. Commercial vehicle-involved crash hotspots are found at the I-85/I-385 interchange and near the I-26/I-85 interchange. The I-85 corridor segment from Greenville to Spartanburg is also the location of a higher number of crashes.

[10] Truck parking is included with safety as truck drivers must park periodically to comply with federal hours of service safety regulations.

Figure 4-1: Severe Truck-Involved Crashes on the Regional Freight Network, 2015-2019

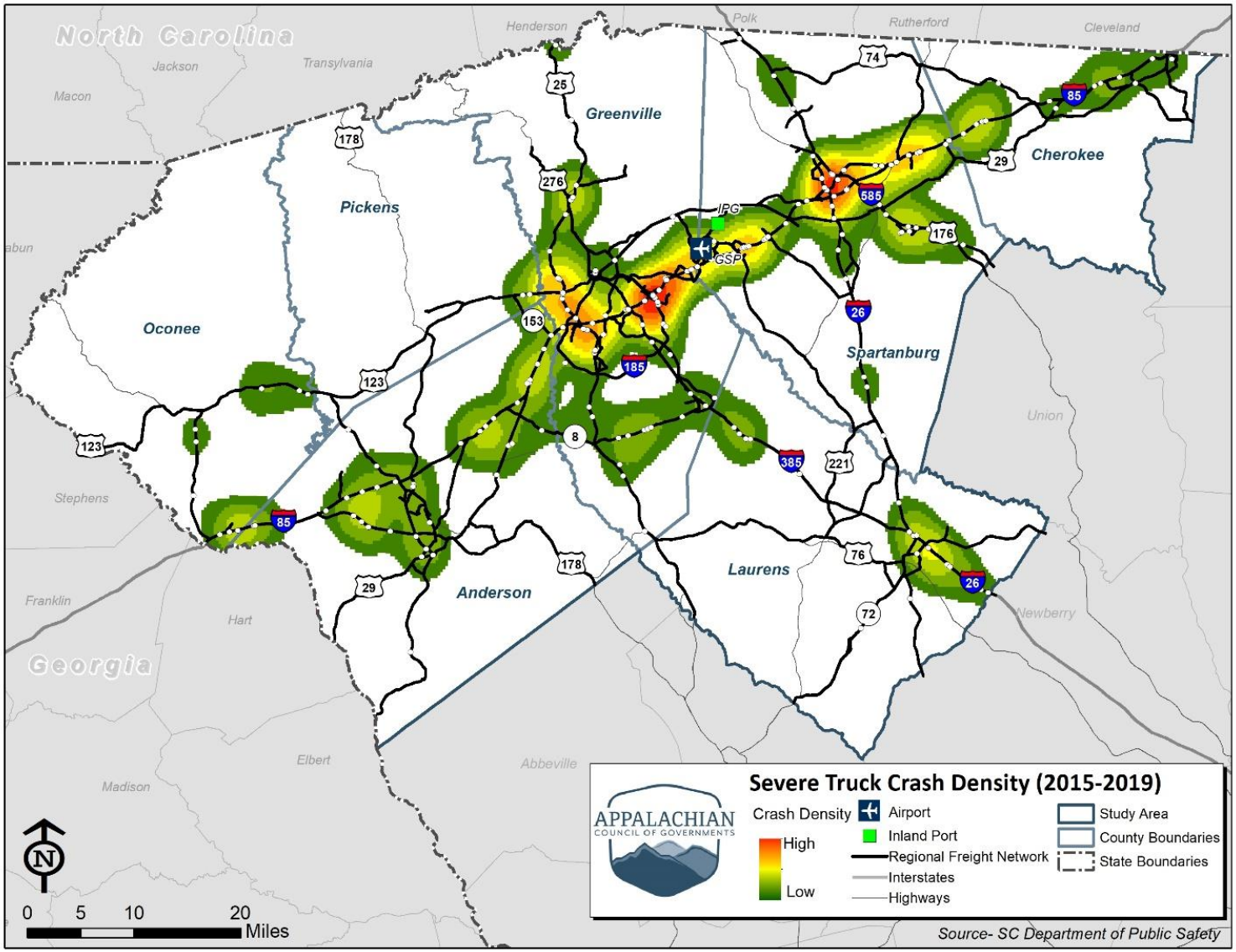


Table 4-1 describes the top truck-involved crash hotspots by freight network tier. Hotspots were identified by dividing the network into 1-mile segments, summing severe truck-involved crashes on each segment and isolating those with the most CMV crashes, and calculating the CMV-involved crash rate (per 100 million vehicle miles traveled, or VMT) and the ratio of severe CMV crashes to all CMV crashes on each segment for the selected segments. If more than one segment had the same number of crashes, each such segment is listed. As shown in the table, each regional Interstate highway has multiple crash hotspots. Some, such as I-85 at I-385, have a lot of CMV-involved crashes and higher crash rates but comparatively few severe crashes. Others, like I-385 near Friendship Church Road and at the SC 14 interchange, have fewer overall truck-involved crashes but a greater share of them are severe, which may indicate a need for targeted safety improvements. Among the lower tier routes, hotspots include US 123 from Lamar Road to Joshua Street, several segments of US 25, US 176, SC 14, and SC 295.

4.1.2 Grade Crossing Safety

Safety is also a concern at rail-highway grade crossings. To assess grade crossing safety, the project team collected Federal Railroad Administration grade crossing crash statistics from 2009-2019 for each crossing in the seven-county region, totaling over 500 crossings. There were 133 grade crossing crashes at 104 crossings during this period, an average of 12 crashes per year. However, injury and fatal crashes were comparatively rare as shown in **Table 4-2** and **Table 4-3**.

Given the infrequency of severe crashes, grade crossing safety risk was assessed based on the total number of crashes at each crossing, including those that only resulted in property damage. The results are shown in **Table 4-4** and mapped in **Figure 4-2**. The Norfolk Southern crossing at West Cleveland Street in Spartanburg County had the most crashes at six, followed by the CSX crossing at North Line Street near SR 718 with four crashes.

4.1.3 Truck Parking

Truck drivers have two major options for parking legally, public or private facilities. Public facilities can be rest areas, truck weigh stations, or truck rest stops. Private facilities usually include truck stops/fueling stations (sometimes with amenities like showers and food), lodging establishments or shopping centers. Drivers will decide what options they have for parking depending on the haul length, movement type and staging requirements. Truck drivers are subject to hours of service regulations which govern how long they may drive without stopping for rest. Legislation mandating the use of electronic hours of service logging devices prohibit drivers from exceeding their hours of service limits. Hence, when truckers run out of hours of service, they must pull over whether there is a safe place to park or not. Sometimes, drivers are forced to park on highway shoulders or other unauthorized locations, creating safety challenges, infrastructure deterioration, and community quality of life issues.

Table 4-1: Top Truck-Involved Crash Hotspots by Tier, 2015-2019

Tier	Roadway Name	Location	Begin Mileage	End Mileage	Average Total Daily Traffic (2015)	Average Total Daily Truck Traffic (2015)	Number of CMV Crashes (2015-2019)	Number of Severe CMV Crashes (2015-2019)	CMV-Involved Crash Rate (per 100 mil VMT)	Ratio of Severe Crashes to All Crashes
1	I-26	I-26 (E Frontage Rd to County Line)	60.3	61.3	17,174	6,833	9	2	28.715	22.22%
1	I-26	I-26 (I-26 next to I-385 Ramp)	51.2	52.2	16,345	5,537	13	2	43.581	15.38%
1	I-26	I-26 (Around Fuller Rd)	55.7	56.7	17,408	6,196	15	3	47.215	20.00%
1	I-385	Around Friendship Church Rd	17.5	18.5	16,324	3,699	6	2	20.140	33.33%
1	I-385	Smith Hiners Rd to I-85	35.1	36.1	35,074	3,416	39	3	60.928	7.69%
1	I-385	I-385 and SC-14 Intersection	18.5	19.5	16,460	3,706	6	2	19.974	33.33%
1	I-85	I-85 and SC-129 Intersection	67.3	68.3	49,226	8,876	58	2	64.561	3.45%
1	I-85	I-85 and US-276 Intersection	47.7	48.7	53,382	8,707	97	2	99.567	2.06%
1	I-85	I-85 (Hombree Rd to Boggs Rd)	28.4	29.4	35,373	7,888	18	2	27.883	11.11%
1	I-85	I-85 and SC-290 Intersection	62.5	63.5	47,281	9,082	72	3	83.442	4.17%
1	I-85	I-85 (W fairplay Blvd to Durham Rd)	2.5	3.5	22,131	7,960	13	2	32.187	15.38%
1	I-85	Next to Old Jones Rd	58.6	59.6	48,462	8,818	66	2	74.624	3.03%
1	I-85	I-85 (Rupe Easter Dr to Conway Black Rd)	79.6	80.6	37,166	6,933	71	3	104.677	4.23%
1	I-85	S Batesville Rd to S Highway 14	54.9	55.9	51,863	9,270	135	4	142.631	2.96%
1	I-85	I-85 (Old Dobbins Bridge Rd to Wooten Rd)	4.4	5.4	22,248	7,879	18	3	44.332	16.67%

Tier	Roadway Name	Location	Begin Mileage	End Mileage	Average Total Daily Traffic (2015)	Average Total Daily Truck Traffic (2015)	Number of CMV Crashes (2015-2019)	Number of Severe CMV Crashes (2015-2019)	CMV-Involved Crash Rate (per 100 mil VMT)	Ratio of Severe Crashes to All Crashes
1	I-85	I-85 (Milliken Rd to Orlando Rd)	98	99	32,062	7,415	18	2	30.762	11.11%
1	I-85	Muddy Ford Rd to Honbarrier Dr	52.2	53.2	62,811	10,102	129	3	112.536	2.33%
1	I-85	I-85(SC-S-11-39 to SC-S-11-274)	86.4	87.4	31,672	6,113	29	3	50.172	10.34%
1	I-85	I-85 (Studhorse Rd to Sun Rd)	76.5	77.5	35,776	6,092	48	2	73.517	4.17%
1	I-85	I-85 and SC-86 Intersection to County Manor Rd	35.2	36.2	39,457	7,990	36	2	49.994	5.56%
1	I-85	Midpoint Blvd to S Danzler Rd	60.4	61.4	49,020	9,313	42	4	46.948	9.52%
1	I-85	I-85 (Watson Rd to Studhorse Rd)	75.5	76.5	38,556	6,569	23	2	32.687	8.70%
1	I-85	I-85 and I-385 Intersection	49.8	50.8	49,757	7,916	84	2	92.504	2.38%
1	I-85	I-85 and I-385 Intersection	50.8	51.8	57,878	9,367	243	2	230.054	0.82%
2	SC-24	SC-24 (Pearl Harvor Way to SC-187)	9.2	10.2	13,715	2,244	9	3	35.957	33.33%
2	SC-28	SC-28 (W Shockley Ferry Rd to Frampton St)	12.7	13.7	19,717	1,811	10	2	27.790	20.00%
2	SC-418	SC-418 (Reedy Fork Rd to Slatton Shoals Rd)	2.4	3.4	7,685	822	4	2	28.520	50.00%
2	SC-418	SC-418 (Fork Shoals Rd to Woodside Rd)	5	6	8,563	836	11	3	70.389	27.27%
2	US-123	Lamar Rd to Joshua St	23.1	24.1	29,231	3,699	7	4	13.122	57.14%
2	US-176	Monks Grove Church Rd to SC-56	18.7	19.7	17,515	3,411	10	2	31.284	20.00%

Tier	Roadway Name	Location	Begin Mileage	End Mileage	Average Total Daily Traffic (2015)	Average Total Daily Truck Traffic (2015)	Number of CMV Crashes (2015-2019)	Number of Severe CMV Crashes (2015-2019)	CMV-Involved Crash Rate (per 100 mil VMT)	Ratio of Severe Crashes to All Crashes
2	US-176	Claremont Cir to Old Petrie Rd Ext	28.6	29.6	17,719	4,187	9	2	27.832	22.22%
2	US-178	Manse Jolly Rd to Liberty Hwy	12.1	13.1	18,351	1,888	9	2	26.873	22.22%
2	US-25	Little Texas Rd to State Park Rd	36.9	37.9	26,173	1,776	18	4	37.684	22.22%
2	US-25	Gap Creek Rd to Wild Magnolia Way	52.8	53.8	13,200	1,536	8	2	33.209	25.00%
2	US-25	Rosemond Sr to Lenhard Grove Rd	22.3	23.3	19,451	1,625	23	2	64.792	8.70%
2	US-25	S Wingate Rd to Bracken Rd	19.7	20.7	26,943	2,741	8	3	16.270	37.50%
2	US-25	Pendleton Rd to Ashe Dr	28.3	29.3	32,217	1,527	33	3	56.126	9.09%
2	US-25	Lauderdale Dr to Spur Rd	13.7	14.7	14,265	1,384	3	2	11.524	66.67%
2	US-25	Old Easley Bridge Rd to N Washington Ave	26.5	27.5	25,926	1,487	31	3	65.518	9.68%
2	US-25	Gabriel Dr to E Settlement Rd	31.3	32.3	25,254	1,180	7	2	15.188	28.57%
2	US-76	US-123 (Davis Creek Rd to Pendleton Rd)	32.5	33.5	28,311	3,288	10	2	19.354	20.00%
3	SC-14	SC-14 and SC-80 Intersection	17.5	18.5	24,571	2,223	11	2	24.531	18.18%
3	SC-295	Old Canaan Rd to Keltner Ave	10.7	11.7	11,532	1,339	18	3	85.527	16.67%

Sources: SC Department of Public Safety (2015-2019), SCDOT Travel Demand Models (2015)

Table 4-2: Top 3 Rail Crossing Injury Hotspots, 2009-2019

Crossing ID	Rank	Railroad	Street Crossing	Near	County	Number of Crashes	Total Injuries
244274B	1	CSX	Island Ford Road	Hicks Grove Road Ext.	Cherokee	2	3
716587W	1	NS	Private Access Rd	Dairy Ridge Rd & Southport Road	Spartanburg	1	3
716652A	1	NS	W. Cleveland Street	Hayne Street	Spartanburg	3	3

Source: Federal Railroad Administration, 2009-2019

Table 4-3: Top Rail Crossing Fatality Hotspot, 2009-2019

Crossing ID	Rank	Railroad	Street Crossing	Near	County	Number of Crashes	Total Injuries
716726P	**1**	**NS**	**Stephenson Street**	**School Street**	**Greenville**	**1**	**2**

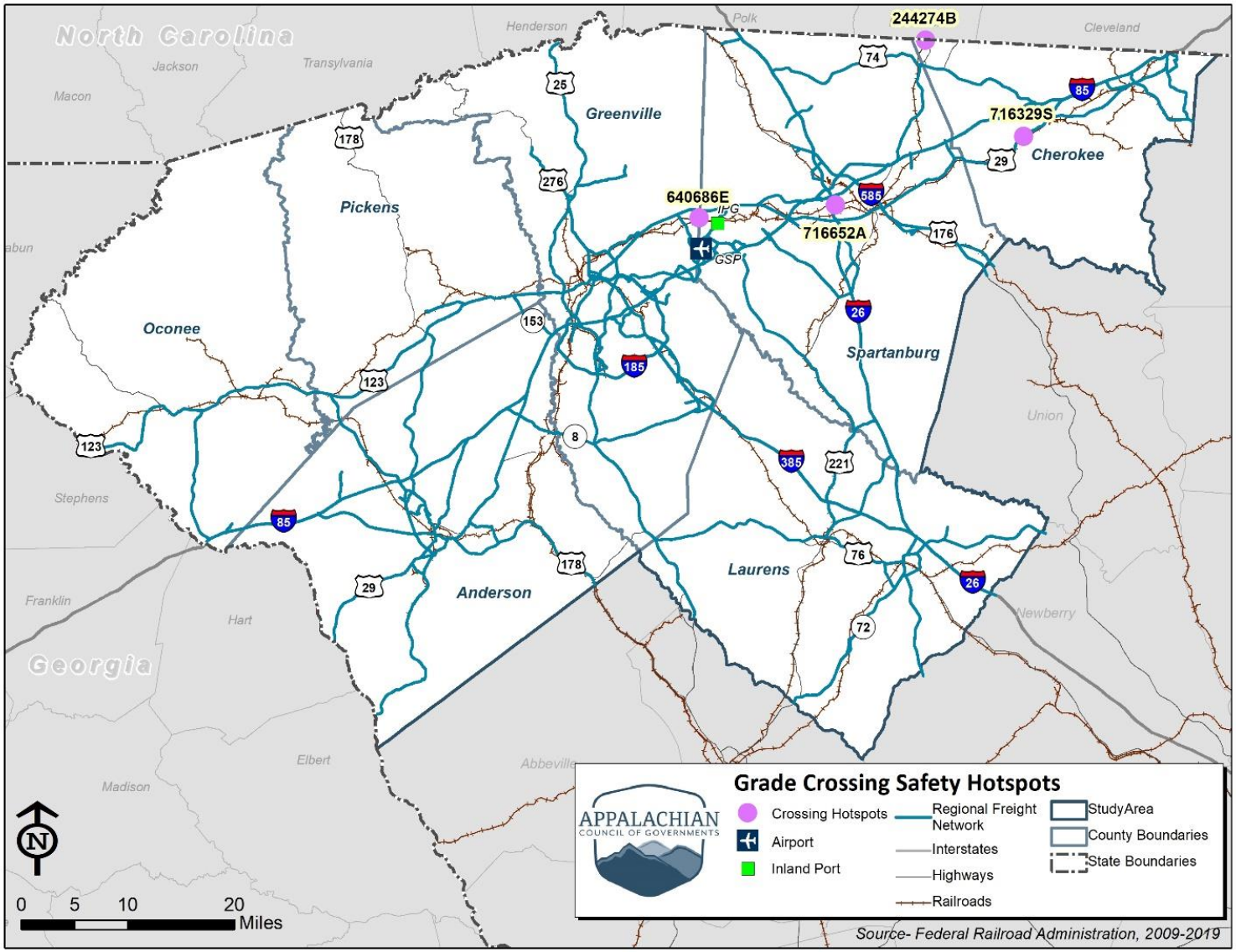
Note: Eight other crossings had 1 fatality each from 2009-2019.
Source: Federal Railroad Administration, 2009-2019

Table 4-4: Rail Crossing Crash Hotspots, 2009 – 2019

Crossing ID	Rank	Railroad	Street Crossing	Near	County	Number of Crashes
716652A	**1**	**NS**	**W. Cleveland Street**	**Hayne Street**	**Spartanburg**	**6**
640686E	**2**	**CSX**	**N. Line Street**	**SR 718**	**Spartanburg**	**4**
716329S	**3**	**NS**	**Hamrick Street**	**Co Op Way**	**Cherokee**	**3**
244274B	**3**	**CSX**	**Island Ford Road**	**Hicks Grove Road Ext.**	**Cherokee**	**3**

Source: Federal Railroad Adminstration, (2009 – 2019)

Figure 4-2: Grade Crossing Hotspots, 2009 – 2019



The I-85 and I-26 corridors carry a significant amount of the states' trucks and tonnage. **Figure 4-3** shows the truck parking supply in the ACOG region. As shown, most of the locations are along the corridors mentioned. According to the I-85 truck parking study completed in July 2017, 21 exits were identified where trucks were parking illegally. It was noted that illegal parking occurred most on exits where the larger truck stops were located, suggesting that this occurred due to drivers being familiar with the truck stop brands, the amenities offered, and likelihood of no parking spaces available.[11] As freight related industries continue to grow in this area and other states, more truck parking supply will be needed to keep up with the anticipated demand in the ACOG region.

The project team also conducted phone surveys with seven regional truck stops in July 2020 to gather information about their parking capacity, utilization, amenities, and operational patterns. The seven stops were:

- Spinx at 1301 Fairview Rd in Simpsonville
- QuikTrip at 1840 Highway 101 S in Greer
- Flying J at 1011 North Mountain St in Blacksburg
- Marathon at 5415 Highway 187 in Anderson
- QuikTrip at 4535 Liberty Highway in Anderson
- Spinx at 2497 S. Highway 14 in Greer
- Westar Citgo at 175 Truck Stop Rd in Cowpens
- Data extracted from each interview are provided in **Table 4-5**. As shown in the survey results, almost all the locations are open 24 hours a day, 7 days a week and have no cost associated with using their facilities for truck parking. None of the respondents were aware of any changes in utilization due to the COVID-19 pandemic. Most truck stops reported that their peak occupancy occurs during the morning hours.

[11] SCDOT, I-85 Truck Parking Analysis, July 2017

Figure 4-3: ACOG Freight Region Truck Parking Supply

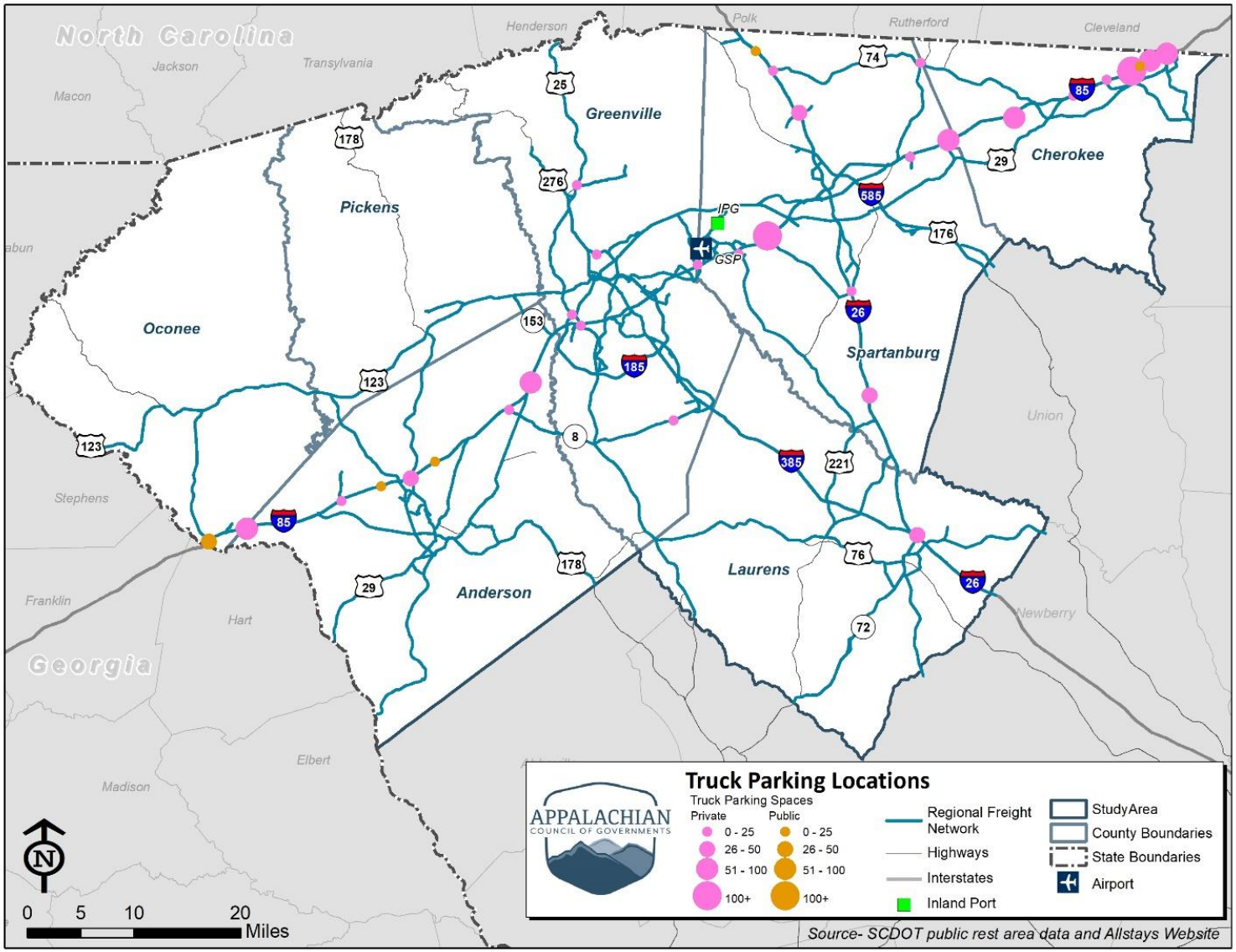


Table 4-5: Truck Parking Interview Responses (2020)

Question	1301 Fairview Rd, Simpsonville, SC 29680	1840 Hwy 101 S, Greer, SC 29651	1011 North Mountain St, Blacksburg, SC 29702	5415 Hwy 187, Anderson, SC 29625	4535 Liberty Hwy, Anderson, SC 29621	2497 S. Hwy 14, Greer, SC 29651	175 Truck Stop Rd, Cowpens, SC 29330
What is the Facility Name?	Spinx	QuikTrip	Flying J	Marathon	QuikTrip	Spinx	Westar Citgo
Can you please confirm your physical address is _____?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
What are the hours of operation?	24/7, no overnight parking	24/7	24/7	6 A.M. - 12 A.M.	24/7	24/7	24/7
How many truck parking spaces are currently at your facility?	16 spaces	26 spaces	20 spaces	20 spaces	20 spaces	7 spaces	150 spaces
What is the typical cost of renting a space?	No rentals	No rentals	$15/night	$10/night; $200/month	No rentals	No rentals	No rentals
What types of trailers can your facility accommodate?	All	All	All	All	All	All	All
What types of amenities does your facility have?	Public bathroom	Public bathroom	Laundry, truck wash, scale, showers, bathrooms	None	Public bathroom	Public bathroom	Laundry, scale, showers, bathrooms
What was the estimated occupancy rate Pre-COVID? Currently?	Unaware	Unaware	Unaware	Unaware	Unaware	Unaware	Unaware
What hour ranges typically see the highest occupancy? Is there a typical length of stay?	Morning until 1 P.M.	Morning	Varies day to day	7 A.M. – 11 A.M.	Spaces full by 6 P.M. for the night	8 A.M. – 2 P.M. 2 hours	Night shift
Do you have plans to add additional spaces or amenities in the future?	No	No	No	No	No	No	No

Source: CDM Smith, July 2020

4.2 Highway Congestion

Highway congestion impacts shippers' ability to deliver cargo to destinations within time window commitments. Unreliable travel conditions create inefficiencies and increase costs that are often passed on to the customer and ultimately to consumers. Highway bottlenecks therefore impact not only area traffic conditions and quality of life, but also regional economic competitiveness.

The 2015 South Carolina statewide travel demand model was used to assess freight congestion by calculating truck vehicle hours of delay (VHD) and roadway Level of Service (LOS).[12] In addition, data from the National Performance Management Research Data Set (NPMRDS) were used to identify truck bottlenecks and calculate truck travel time reliability. The following sections describe overall congestion in the region and identify potential truck bottlenecks using the NPMRDS truck travel time data.

4.2.1 Truck Vehicle Hours of Delay and Roadway Level of Service

The project team used the South Carolina statewide travel demand model to evaluate truck delay and daily LOS on the freight network. The statewide model doesn't allow for calculating truck-specific LOS, so this measure is provided for all traffic. All LOS and delay metrics are daily averages.

Figure 4-4 shows the model results for truck VHD in 2015. The greatest truck delays are shown to the east of the I-85/I-385 interchange, near where the Greenville-Spartanburg International Airport, BMW plant and other major manufacturing companies are located. The other section of interest where vehicle hours of delay are high is along I-85 east of Spartanburg. Currently, SCDOT has been working on a resurfacing and widening project for I-85 in the same area where delay is high for trucks, potentially mitigating this traffic congestion.

The level of service (LOS) map shown in **Figure 4-5** paints a similar picture to the vehicle hours of delay in the region. The segments showing poor LOS are east of the I-85/I-385 interchange and east of Spartanburg along I-85. Although this metric is not specific to trucks, the fact that these slowdowns occur on the regional freight network (which has generally higher truck volumes) implies they are freight bottlenecks. Outside of the areas already mentioned, local routes like US 29 show as LOS E.

[12] LOS is a qualitative measure describing operational conditions in a traffic stream based on measures such as speed and travel time. LOS is categorized into letter grades with A being free-flow conditions and F being gridlock.

Figure 4-4: Average Daily Truck Vehicle Hours of Delay, 2015

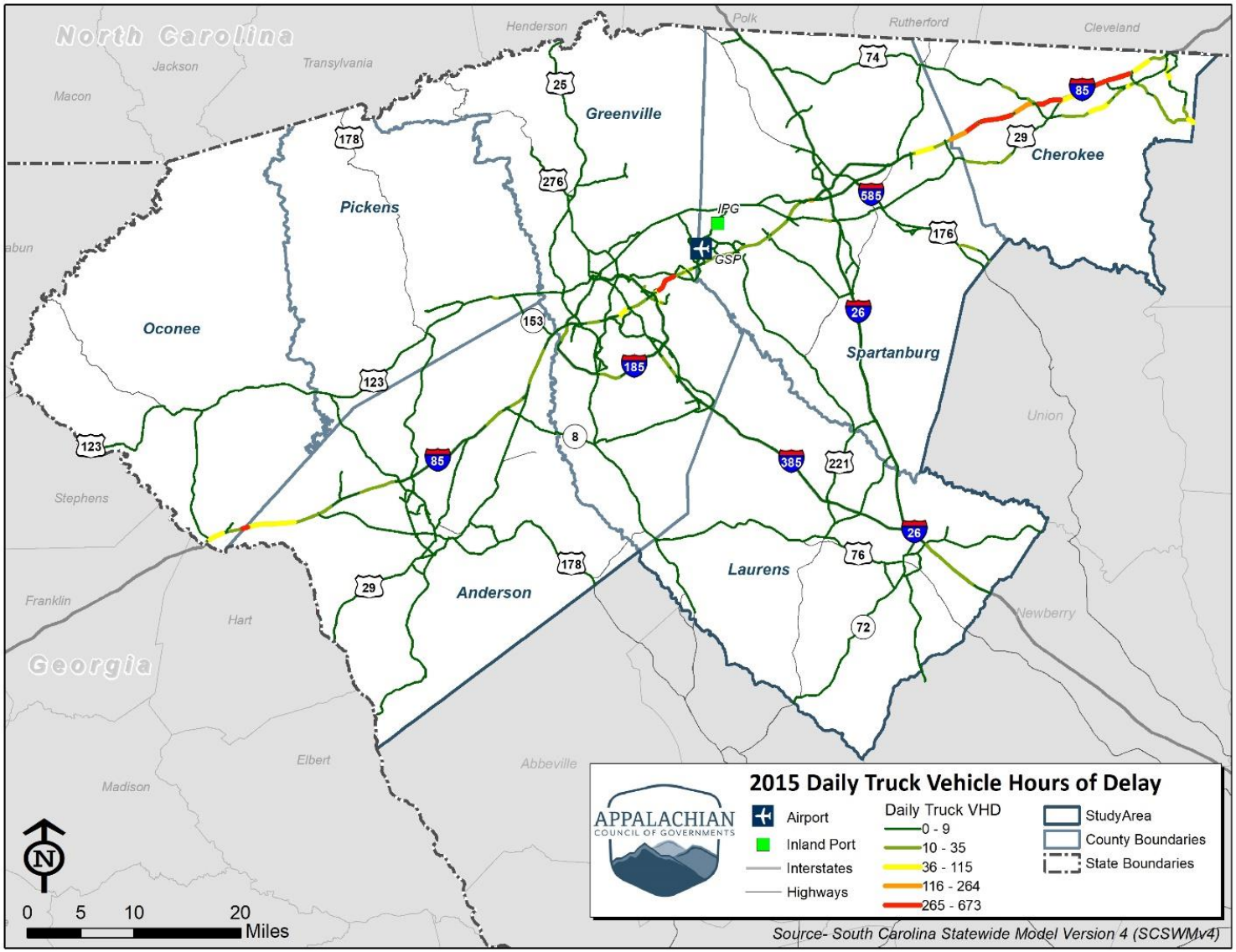
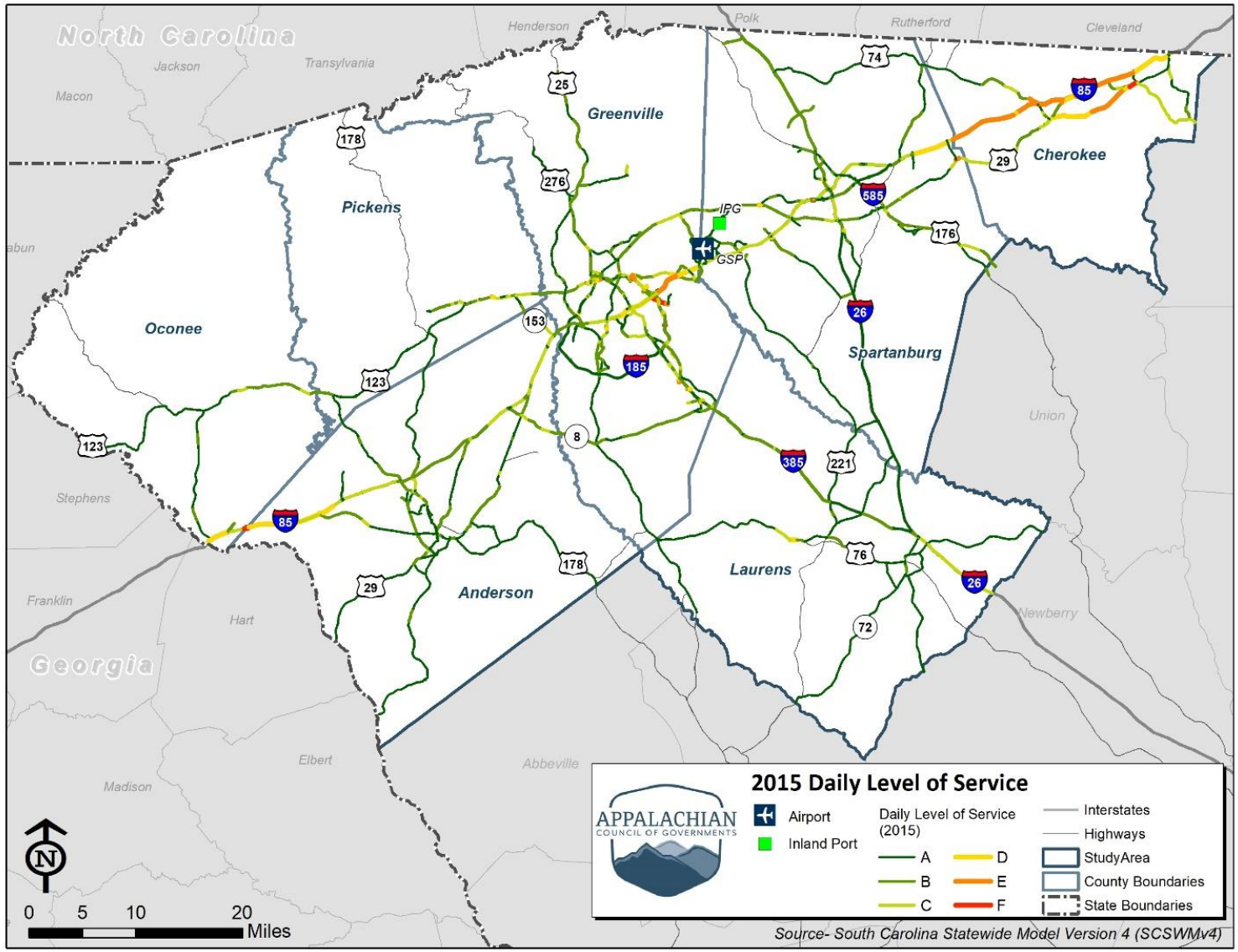


Figure 4-5: Average Daily Level of Service (All Vehicles), 2015



4.2.2 National Performance Management Research Data Set

Freight bottlenecks in the ACOG region were identified using the Federal Highway Administration's NPMRDS vehicle probe data. The NPMRDS is a national data set of average travel times for use in analyzing highway system performance. The data provided is actual observed measurement of travel times. No estimates or historical data substitutions for missing data are included. The data used in this analysis cover truck speed data from March 2019 through February 2020, aggregated in 15-minute time periods. The NPMRDS data includes distinct average travel time information for each 15-minute-interval for freight and all traffic on the National Highway System (NHS), organized by Traffic Message Channel (TMC) segments on roadways to enable mapping of the data.

Since there is no universally accepted methodology to identify truck bottlenecks, multiple parameters were defined to better understand traffic congestion patterns in the ACOG region:

- **Free-flow Speed** – This measure indicates the travel time on a roadway under free-flow conditions, with little to no interaction from traffic. To calculate this measure, the 85th percentile travel times during weekday overnight hours (10:00 p.m. to 6:00 a.m.) are considered because of low traffic volumes. If insufficient data are available (less than 50 percent coverage), the midday data (11:00 a.m. to 4:00 p.m.) are added to the pool and the 95th percentile is considered. This measure was calculated based on all vehicles, not just trucks.

- **95th Percentile Travel Time** – This measure is derived from travel times on a segment based on multiple observations, usually over a period of months. It indicates that 95% of the time, the travel time on a roadway segment is lower than the 95th percentile value. So, the higher the 95th percentile travel time, the longer it takes to travel on a roadway.

- **Planning Time Index 95th (PTI 95th)** – The planning time index is computed as the 95th percentile travel time divided by the free-flow travel time. For example, a planning time index of 1.60 means that, for a 15-minute trip in light traffic, the total time that should be planned for the trip is 24 minutes. So, the higher the PTI the longer the travel time that should be budgeted to reach a destination on time.

- **Frequency of Congestion** – This is expressed as the percentage of time that travel speeds fall below 75 percent of the free-flow speed during the worst peak period (from 6:00 a.m. to 9:00 a.m. for the morning peak period and from 4:00 p.m. to 7:00 p.m. for the afternoon peak period). So, the higher the frequency of congestion, the longer the roadway is congested during that period.

Freight bottlenecks were identified using a combination of PTI 95th percentile (calculated using free-flow speed and 95th percentile travel time) and frequency of congestion. The PTI is a measure of congestion intensity while the frequency of congestion is a measure of congestion

recurrence. The portions of the congested roadway network which had the highest combination of planning time index and frequency of congestion were identified as bottlenecks. Road segments were scored based on their frequency of congestion and PTI scores as shown in **Table 4-6**. So, for example, a roadway segment with a frequency of congestion of 70 percent and a PTI of 4 would receive a score of 8.

Table 4-6: Road Segment Scoring

Score	Frequency of Congestion	Score	Planning Time Index 95th
1	Frequency ≤ 15%	1	PTI ≤ 1.50
2	15% < Frequency ≤ 30%	2	1.50 < PTI ≤ 2.00
3	30% < Frequency ≤ 60%	3	2.00 < PTI ≤ 3.00
4	60% < Frequency ≤ 90%	4	3.00 < PTI ≤ 5.00
5	Frequency > 90%	5	PTI > 5.00

The results of this process are shown in **Figure 4-6**. Interstates 26 and 185, US 123, US 29, US 276, US 178, SC 81, SC 14 and several streets in downtown Greenville all appear to present significant bottlenecks for trucks. Note that some of the off-Interstate bottlenecks may result from signal timing or other local delays related to ingress/egress near freight generating businesses. For example, SC 81 in Anderson County is near a large Bosch manufacturing facility, so the slowdown may represent trucks turning into the plant.

4.3 Infrastructure Condition

Poor pavement condition reduces freight efficiency and contributes to increased wear and tear on trucks. Bridges in poor condition may require increased maintenance in the future, especially if truck traffic increases. Bridges that are restricted to less than the standard legal weight limit and those with low vertical clearance can impede commerce by forcing trucks to use alternate, less efficient routes. Some of these routings may be circuitous, adding cost and time to shipments. This section identifies potential issues related to bridges and pavement on the regional freight network.

4.3.1 Bridge Conditions

Bridges in poor condition were identified and mapped using the 2018 SCDOT bridge database. There are 60 bridges in the ACOG region that are on the regional freight network and rated in poor condition, as shown in **Figure 4-7** and **Appendix A – Bridges in Poor Condition**, including several located on major interstates like I-85 and I-26. Such bridges are more likely to require costly repairs in the future to continue in service. If they must be posted for load, trucks may have to detour around them, adding cost and time to shipments. While any poor condition bridge on the freight network is noteworthy, those on the Interstates and other primary freight corridors are critical for efficient goods movement.

Figure 4-6: NPMRDS Truck Bottlenecks

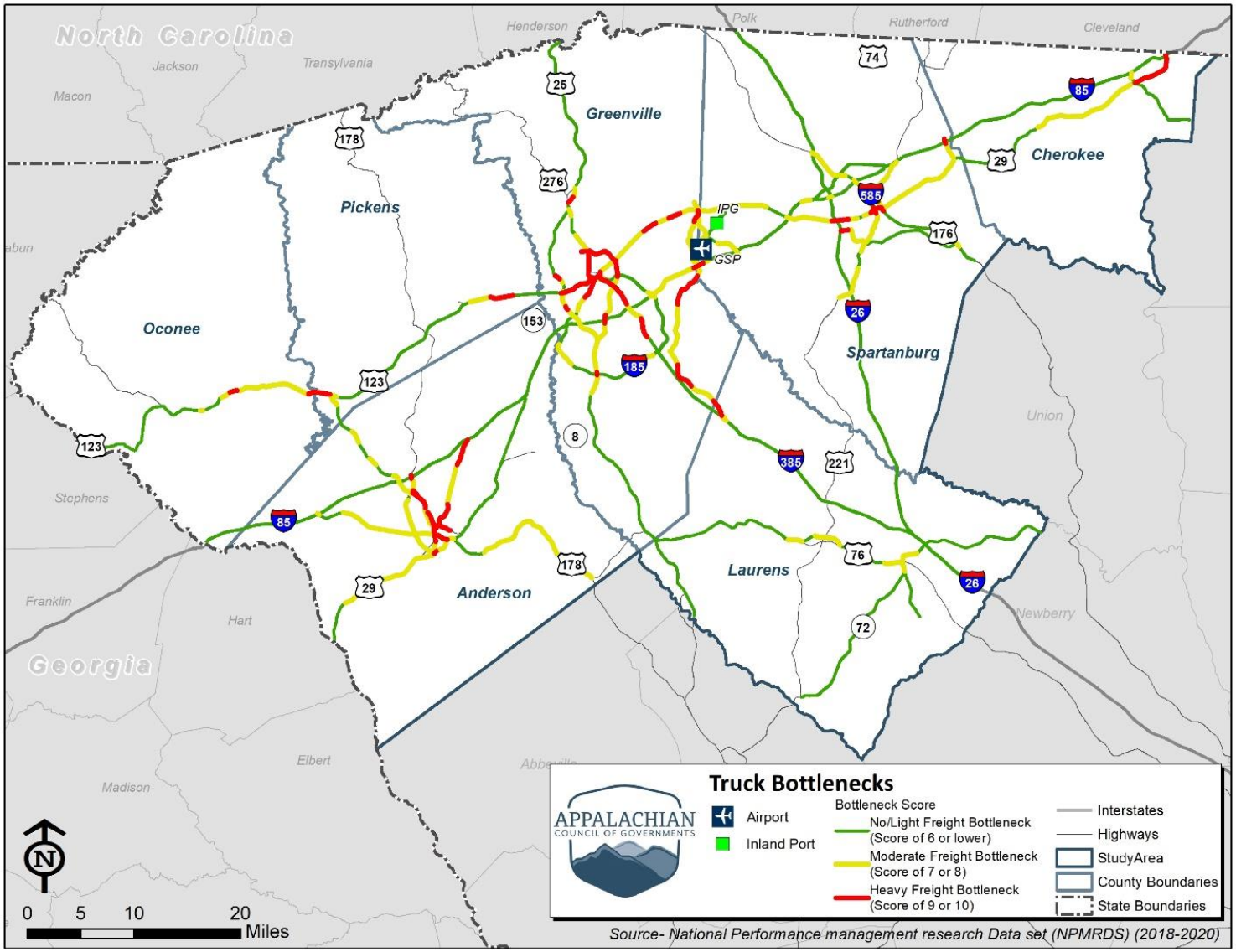
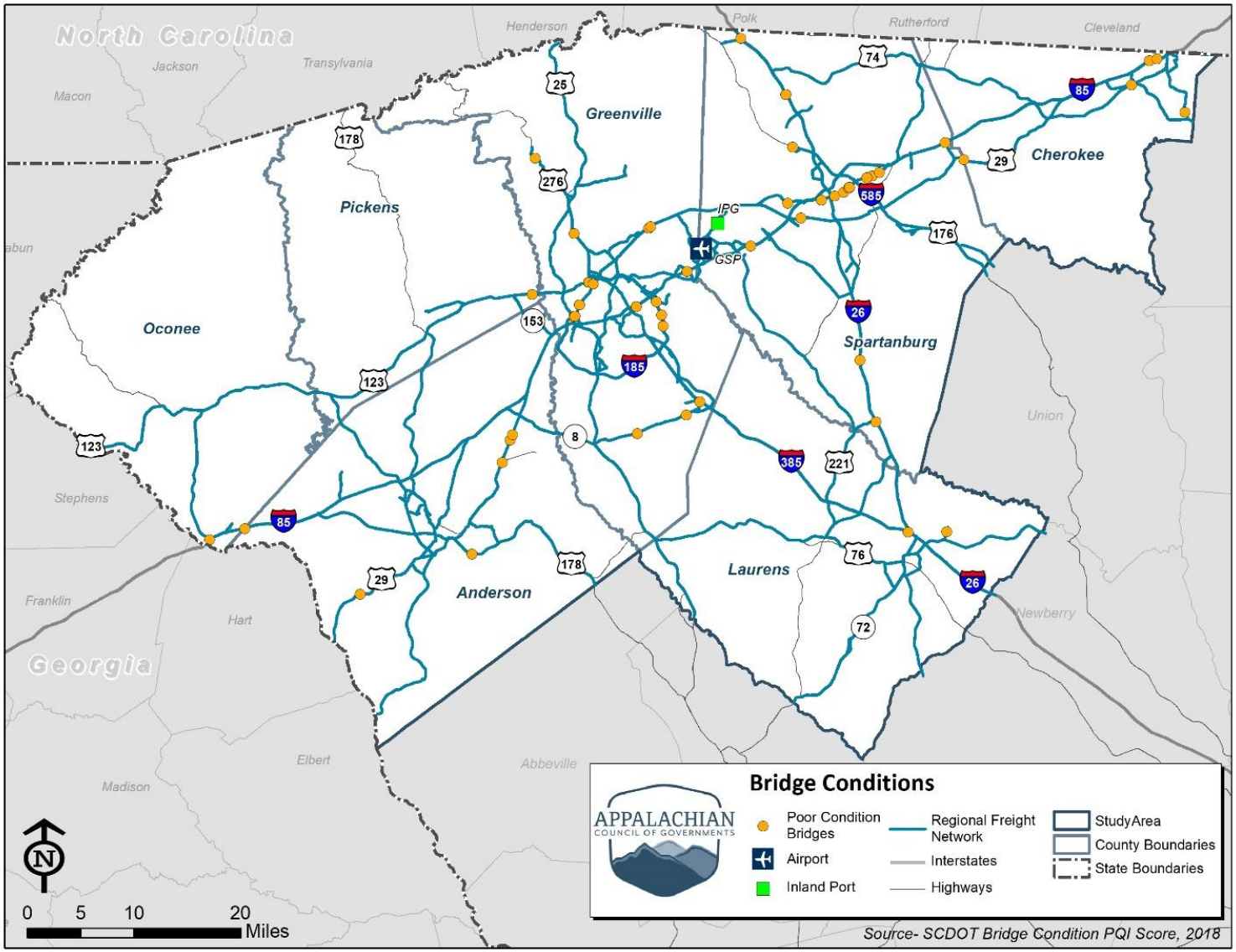


Figure 4-7: ACOG Regional Freight Network Bridge Conditions



The project team also assessed bridges that are restricted to less than the standard legal weight limit and those with low vertical clearance (less than 15'). **Figure 4-8** shows that one bridge is posted for load, on Duncan Creek Church Road off SC 72. This bridge is near the entrance to the Hanson Clinton Quarry, but it's north of the quarry entrance and thus not likely being used by trucks accessing the facility. In addition, the map shows that 20 bridges have low vertical clearance with most of them being near Spartanburg on I-85 Business. **Table 4-7** lists all 20 low clearance bridges and the bridge posted for load.

Figure 4-8: ACOG Regional Freight Network Bridges Posted for Load and Low Vertical Clearance Bridges

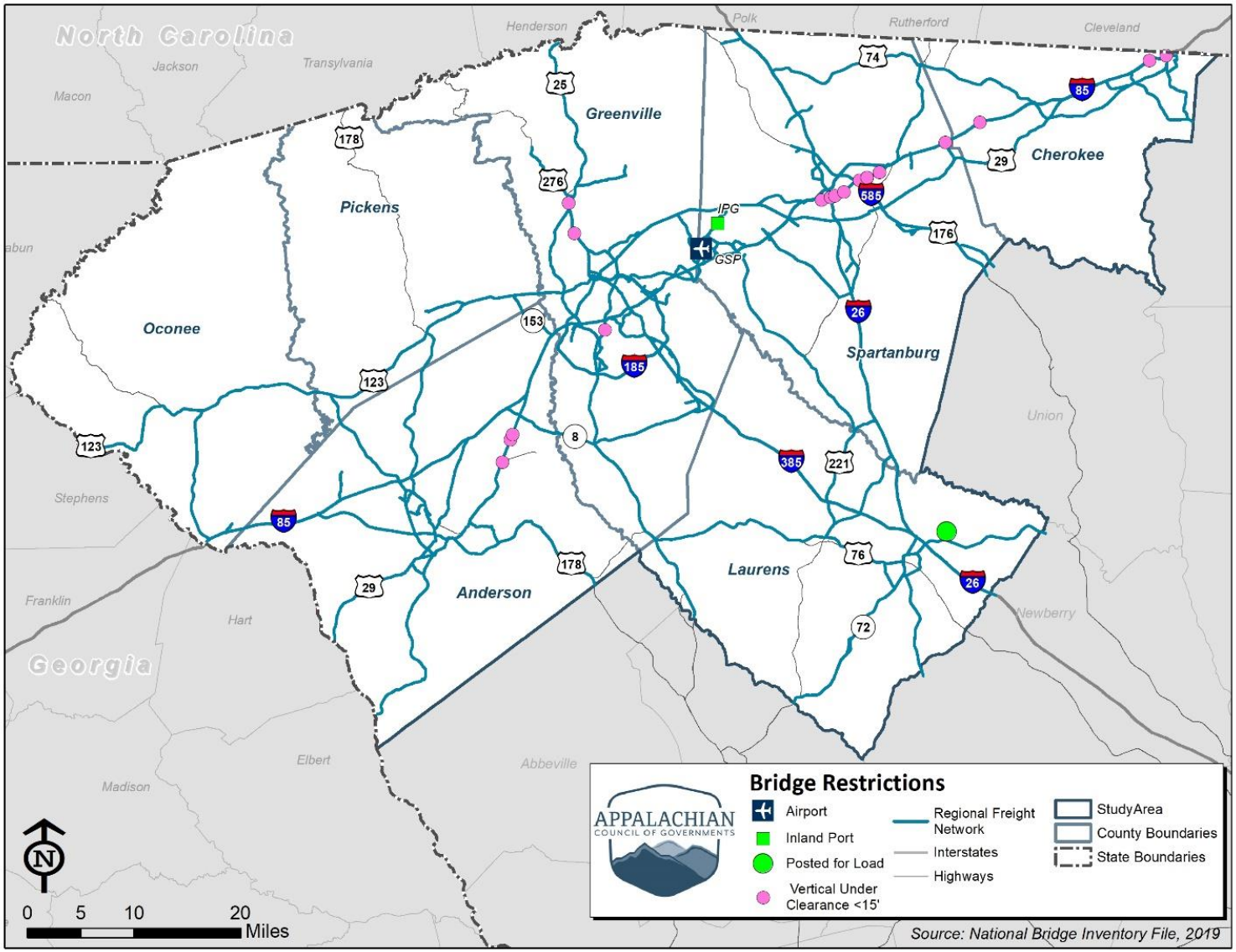


Table 4-7: Low Vertical Clearance Bridges and Bridge Posted for Load

Bridge ID	Route Carried	Route Under Bridge	Location	County	Vertical Clearance in Feet
Low Vertical Clearance Bridges					
4270012400100	California Ave	US-176	IN SPARTANBURG	Spartanburg	13.85
1170009900100	Tribal Rd	I-85	3.2MI NE BLACKSBURG	Cherokee	14.40
1170003900100	S Green River Rd	I-85	5.9MI NW GAFFNEY	Cherokee	14.40
4240011000100	SC-110	I-85	2.0 MI N OF COWPENS	Spartanburg	14.76
1120002901100	US-29	I-85	4.6 MI N OF BLACKSBURG	Cherokee	14.99
2390047800100	Woodmont Cir	SC-291	4.5 MI S GREENVILLE	Greenville	13.91
4270004100200	N Blackstock Rd	I-85 Business	5.1 MI NW SPARTANBURG	Spartanburg	14.60
4270019100200	Bryant Rd	I-85 Business	3.5 MI N SPARTANBURG	Spartanburg	14.76
4240000900200	SC-9	I-85 Business	2.0 MI N OF SPARTANBURG	Spartanburg	14.83
4240000900200	SC-9	I-85 Business	2.0 MI N OF SPARTANBURG	Spartanburg	14.83
4210002620900	I-26	I-85 Business	4.3 MI NW SPARTANBURG	Spartanburg	14.83
4210002640900	I-26	I-85 Business	4.3 MI NW SPARTANBURG	Spartanburg	14.83
4270052500300	Fairforest Rd	I-85 Business	4.0 MI W SPARTANBURG	Spartanburg	14.83
4290096500100	N Campus Blvd	I-85 Business	3.2 MI N SPARTANBURG	Spartanburg	14.99
4270006500100	New Cut Rd	I-85 Business	3.4MI NW SPARTANBURG	Spartanburg	14.93
2370001300300	Old Buncombe	US-276	3.7MI S TRAVELERS REST	Greenville	14.93
470007500300	Cherokee Rd	US-29	3.0 MI NW WILLIAMSTON	Anderson	13.68
470117800100	Beaverdam Rd	US-29	3.0 MI NW WILLIAMSTON	Anderson	14.50
420002949100	US-29	US-29	3.7MI SW OF WILLIAMSTON	Anderson	14.34
2320002530901	US-25	US-25	0.5MI S OF TRAVELERS REST	Greenville	14.24
Bridge Posted for Load					
3070003400100	Golden Acres Rd	MILLERS FORK CREEK	5.0 MI NE CLINTON	Laurens	N/A

N/A: Not applicable

Source: SCDOT Bridge Database, 2018

4.3.2 Pavement Conditions

Figure 4-9 shows SCDOT pavement condition data for the freight network; the mileage and percentage shares are detailed in **Table 4-8.** The pavement condition ratings are based on SCDOT's Pavement Quality Index (PQI), which is a combination of Pavement Serviceability Index (a roughness/rutting measure) and Pavement Distress Index (a measure of cracking or other distress). PQI scores are given on a 5-point scale as:

- Poor – PQI 0.0 to 2.6
- Fair – PQI 2.7 to 3.3
- Good – PQI 3.4 to 5.0

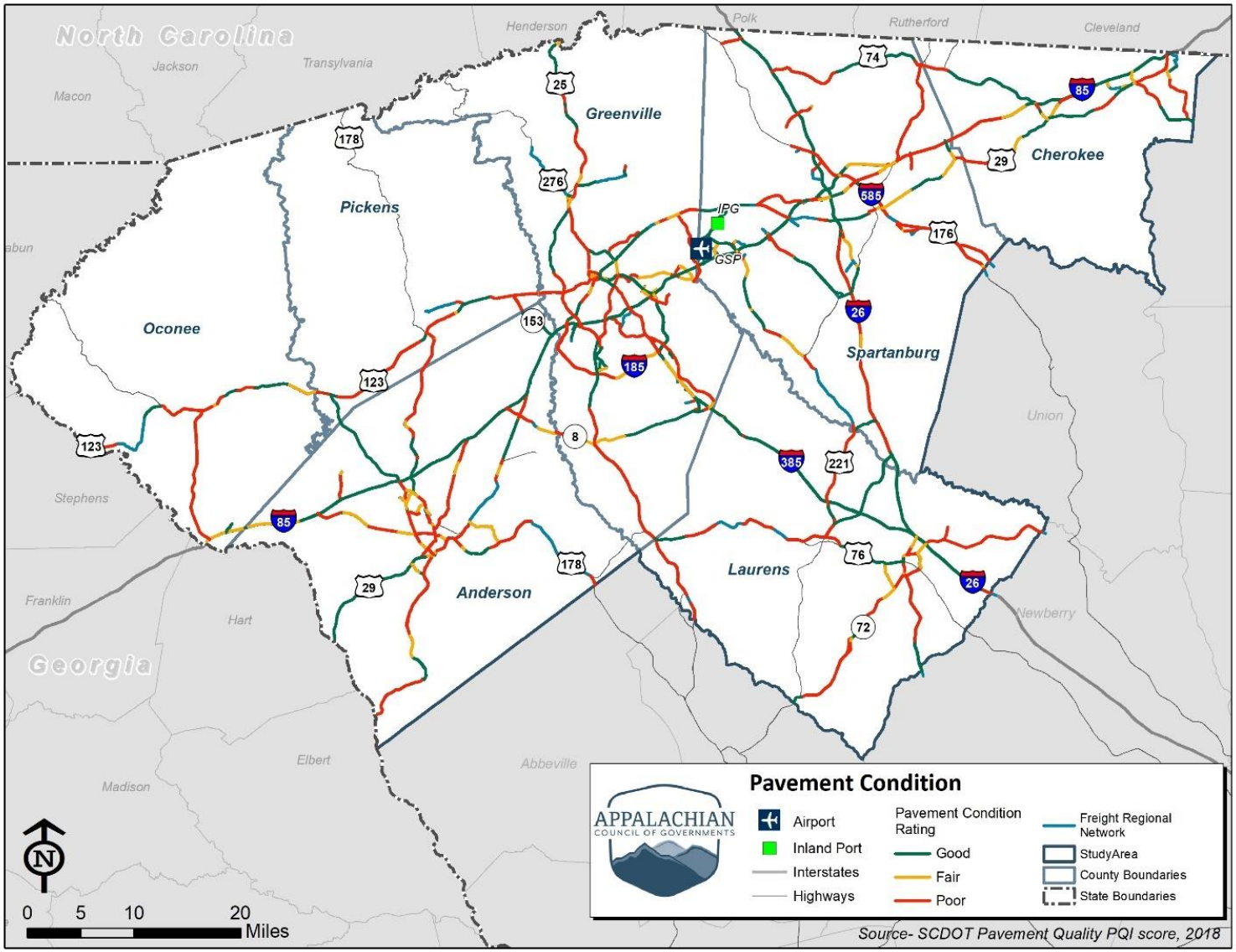
As evident in the map, there are many roadways that are in poor condition, including some on Interstate routes. Regional freight network corridors with poor pavement condition should be prioritized for routine maintenance and resurfacing projects. Primary focus in the region will be on Interstates due to the volume of truck traffic carried on these facilities. Other facilities on the freight network that will require attention include US 29, US 123 and US 25.

Table 4-8: Freight Network Condition Summary, 2018

Tier	Good	Fair	Poor	Total
1	313.5 miles (68%)	60.7 miles(13.2%)	87 miles (18.9%)	461.2 miles (100%)
2	180.8 miles (32%)	57 miles (10.1%)	326.9 miles (57.9%)	564.7 miles (100%)
3	63.8 miles (26.9%)	43.4 miles (18.3%)	130.1 miles (54.8%)	237.3 miles (100%)

Note: Mileage in this table is greater than total freight network centerline mileage because pavement condition data are calculated for both sides of the road.
Source: SCDOT, 2018

Figure 4-9: ACOG Regional Freight Network Pavement Conditions



5. Needs Summary

Appendix C – Summary of Safety, Congestion, and Infrastructure Conditions on the Regional Freight Network provides summary information about the tiered network including roadways by tier, corridor mileage, maximum total traffic and truck volumes, intermodal facilities accessed, CMV crash data, freight congestion metrics (truck bottlenecks and level of service on the freight network), and infrastructure condition data (poor condition bridges and pavement quality issues). Note that the LOS measures also include future year (2040) LOS derived from the South Carolina statewide travel demand model.

Tier 1 routes in the ACOG region consist of I-85/I-85 Business, I-26, I-185, and I-385. These are the most important regional freight corridors, connecting the region to markets elsewhere in the Southeast and across the nation. I-26 also links the region to the Port of Charleston, as do the rail lines serving Inland Port Greer. The key findings for Tier 1 routes are:

- Most truck-involved crashes occur on the Tier 1 roads. Of the 11,878 CMV crashes that occurred on the regional freight network from 2015 to 2019, 52% (6,163) happened on Tier 1 routes, including 4,766 on I-85 alone. Of these, 131 crashes were severe (injury or fatal), including 88 severe crashes on I-85. CMV crash rates per 100 million vehicle miles traveled on these routes are sometimes lower than on lower tier roads, but I-85 has a higher CMV crash rate than other regional Interstate highways.
- From a congestion standpoint, the Tier 1 routes are generally performing well except for I-85 and I-385. I-85 has severe truck bottlenecks (score of 9 or 10 from the NPMRDS data) and failing LOS in 2015 and 2040. I-385 also has failing LOS in the base and future model years. The rest of the Tier 1 routes are operating at an acceptable LOS (defined as D or better) in both 2015 and 2040.
- There are some infrastructure concerns on the region's Interstate highways. More than half of I-85 Business and I-185 and nearly a quarter of I-26 in the region have poor quality pavement, and there are 33 bridges rated in poor condition on Tier 1 routes. There are also 13 bridges with vertical clearance less than 15 feet, all of them on I-85 or I-85 Business. Given the importance of these roads for regional freight flows, such locations should be prioritized for maintenance and rehabilitation projects.

Tier 2 roads generally don't carry as much truck traffic as the Interstates, but are still significant routes for freight and passenger traffic (e.g., SC 101 and SC 80, both of which connect to Inland

Port Greer and SC 290 because of its inland port and railroad access). Key findings for these routes include:

- While there are generally fewer CMV crashes on these routes, some hotspots do exist. For instance, US 25 in the study region had 648 truck-involved crashes from 2015 to 2019, and although its CMV crash rate is lower than most of the Interstate highways, 30 of the crashes (4.63%) were severe.
- While most of the Tier 2 routes are performing at an acceptable LOS, some are bottlenecked for trucks (e.g., US 123, US 276, US 29, SC 178) and/or show failing LOS in 2015 or 2040 (e.g., SC 11, US 276, US 29). As freight volumes expand due to regional economic growth, these congestion hotspots will likely worsen. Freight congestion hotspots that aren't already programmed for capacity improvements should be prioritized for additional capacity projects.
- As with the Interstate (Tier 1) routes, many Tier 2 freight corridors also have infrastructure condition issues. As an example, 96% of the pavement US 176 on the freight network is rated in poor condition, as is 89% of the pavement on US 276. These roads handle an average of 5,243 and 7,063 trucks per day respectively. There are also 22 bridges rated in poor condition on Tier 2 freight routes (including 10 on US 29) and five bridges with low vertical clearance (less than 15 feet).

Tier 3 routes generally carry fewer trucks than Tier 1 and 2 routes but a few of them provide last-mile connections for Inland Port Greer (SC 101) and Greenville-Spartanburg International Airport (Aviation Parkway). Many Tier 3 routes are located near industrial land uses, or are planned for future industrial development, such as Rutherford Road and US 221. Key findings for Tier 3 routes include:

- These routes generally feature lower numbers of CMV crashes due to the generally lower truck volumes, but truck-involved crash rates on some links are comparatively high. For example, 0.15 miles of South Main Street experienced 24 crashes between 2015 and 2019, with a crash rate of 2,158 crashes per 100 million VMT. Such locations may warrant further investigation for potential spot safety improvements.
- Since Tier 3 routes carry comparatively little traffic in relation to higher tier roads, most of them are operating at an LOS of D or better and will continue to do so in the future. However, some Tier 3 roads that carry significant freight and/or passenger traffic are showing failing LOS in 2015 and/or 2040. SC 101, for instance, which handled up to 4,150 daily trucks in 2015 and connects to Inland Port Greer, is performing at LOS E in 2015 and 2040. Other Tier 3 routes with failing LOS include Mauldin Road, SC 11, and SC 146, among others.

- Many Tier 3 routes have pavement condition and/or bridge condition issues. Of 108 total Tier 3 road links, 55 have at least some pavement in poor condition. US 29, for example, constitutes seven miles of Tier 3 roadway, nearly 78% of which is rated in poor condition per SCDOT. This route carries up to 5,082 trucks per day. Tier 3 routes also have seven poor condition bridges, two low vertical clearance bridges, and one bridge posted for load.

6. Conclusion

Developing the ACOG regional freight network is the first process in completing the Regional Freight Mobility Plan. The network assessment provides baseline regional freight conditions which will be used to identify freight-related issues and needs. The freight operational analysis evaluates the network by three metrics: safety, freight congestion and infrastructure conditions. These three metrics analyze and monitor performance on the network and help identify freight needs and potential strategies to address them.

This network assessment will be used to conduct a land use analysis for the study. The freight network provides a starting point for the ACOG and its member governments to encourage freight related land use growth. Parcels and tracts of land surrounding the freight network are prime locations where freight related industry should be located and targeted to accommodate future freight growth. Identifying the freight network and potential corridors of freight development leads to an analysis of network performance to generate system needs.

Freight system needs and network gaps will be determined building on the analysis provided herein. Freight needs will then be compared to planned and programmed projects to understand where ACOG member projects are addressing freight needs, and where gaps may exist that constitute unmet needs. Such gaps will form the basis for prioritized program, policy, and project recommendations to achieve regional freight network performance goals and objectives.

Appendix A - Summary of Freight Network Data by Tier

Summary of Freight Network Data by Tier

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
1	I- 85 Business	20.84	2	167	19,239	7	2,455		335	4
1	I-185	20.55	2	554	9,701	29	1,565		65	0
1	I-26	75.46	2	8,748	29,935	2,516	7,042		592	27
1	I-385	51.21	2	9,927	48,861	2,416	5,207		405	12
1	I-85	129.87	3	2,267	63,843	175	10,134		4766	88
2	Beattie Pl	0.17	3	14,923	14,940	2,217	2,218		17	0
2	Brockman Mcclimon Rd	1.82	3	2,229	3,171	151	997		18	0
2	Fairview St Ext	0.97	2	3,839	10,284	248	461		4	0
2	I-385	0.52	5	23,151	46,759	3,344	5,934		25	0
2	Liberty Hwy	0.86	3	6,447	18,253	189	1,349		7	0
2	SC_49	11.31	3	2,541	4,312	462	1,052		8	0
2	SC-101	1.42	4	14,223	15,632	2,582	2,587	Inland Port Greer	19	1
2	SC-11	2.39	4	9,921	22,030	726	1,401		33	0
2	SC-11 (Andrew Pickens Scenic Pkwy)	15.94	2	2,431	5,794	801	1,131		22	3
2	SC-110	2.51	3	5,787	9,228	451	951		33	1
2	SC-153	6.78	4	3,983	29,249	123	1,754		61	1
2	SC-178	1.58	4	9,604	16,157	1,415	1,602		5	0
2	SC-183	0.99	3	10,948	16,899	1,853	2,397		48	0
2	SC-184	8.02	2	799	4,821	74	294		1	0
2	SC-198	1.48	4	12,553	18,051	779	1,502		14	0
2	SC-24	14.17	3	4,354	13,715	414	2,252		75	5

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
2	SC-28	8.19	4	15,590	24,735	1,419	2,644		92	3
2	SC-290	12.17	4	3,642	27,920	446	2,341		206	1
2	SC-418	12.04	2	6,605	8,853	719	836		50	6
2	SC-5	11.94	3	7,972	33,385	572	4,548		15	1
2	SC-56	13.01	2	1,617	3,669	207	265		18	1
2	SC-651	0.76	2	1,643	1,643	118	118		0	0
2	SC-8	11.22	2	5,412	13,295	456	1,058		75	2
2	SC-80	2.52	4	5,697	5,950	385	455	Inland Port Greer	10	0
2	SC-81	16.04	4	2,140	16,924	180	1,362		14	1
2	SC-92	2.96	2	2,521	2,906	223	303		4	0
2	Springdale Dr	4.11	4	3,860	8,229	228	636		10	1
2	US-123	70.45	4	2,400	43,667	113	4,001		220	8
2	US-176	21.06	4	8,734	34,086	1,205	5,243		237	9
2	US-178	42.16	2	3,371	18,351	506	1,895		73	3
2	US-221	13.84	3	2,387	12,177	221	1,565		19	0
2	US-25	75.78	5	6,971	35,867	770	3,267		648	30
2	US-276	24.08	4	1,763	44,153	70	7,063		307	3
2	US-29	120.60	4	472	57,036	18	5,259		523	6
2	US-72	44.27	3	3,165	14,274	654	2,828		37	2
2	US-76	50.06	3	1,431	29,420	180	4,006		98	2
3	Antioch Church Rd	1.27	2	5,089	8,468	166	637		23	0
3	Antioch Rd	1.28		N/A	N/A	N/A	N/A		0	0
3	Augusta Arbor Way	1.26	2	1,193	1,704	117	137		3	0
3	Aviation Pkwy	2.38	2	386	3,441	110	1,040	Greenville-Spartanburg International Airport	48	0
3	Ballfield Rd	0.89	2	4,045	4,045	3,014	3,014		0	0
3	Bishop Rd	0.57	2	112	112	1	1		0	0

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
3	Cedar Springs Ave	0.71	2	259	4,025	9	527		1	0
3	Chapel Rd	0.28	2	5,233	5,233	977	977		0	0
3	Charlottes Rd	3.23	2	3,707	3,707	267	267		2	0
3	College Dr	1.26	2	1,040	2,371	138	211		17	0
3	County Club Rd	0.34	4	5,081	6,898	166	183		11	0
3	Dogwood Club Rd	0.79	2	6,210	6,296	795	795		8	0
3	Donaldson Rd	1.02	2	1,264	5,233	470	977		7	0
3	E Market St	0.24	2	2,021	2,021	116	116		0	0
3	FairforestWay	2.64	3	6,894	9,512	438	1,030		26	0
3	Falling Creek Rd	2.44	2	370	4,869	46	428		132	1
3	Feaster Rd	1.28	2	2,227	4,361	82	160		6	0
3	Frontage Rd	0.76	1	1,624	1,624	1,474	1,474		8	0
3	Golden Acres Rd	1.49		N/A	N/A	N/A	N/A		0	0
3	GPS Dr	1.41	2	N/A	N/A	N/A	N/A		20	0
3	Greer Dr	0.47	2	N/A	N/A	N/A	N/A		2	0
3	Haywood Rd	0.79	5	22,462	58,393	794	2,979		18	0
3	I-26 Ramp	0.89	1	445	7,185	33	561		31	0
3	I-385 Ramp	0.48	2	6,469	8,936	540	710		23	0
3	I-85 Ramp	2.57	2	145	1,257	19	307		31	0
3	Independence Blvd	2.02	2	1,442	3,788	114	211		41	0
3	Indian Springs Rd	1.67	2	4,851	4,851	2,819	2,819		0	0
3	Innovation Way	1.15	2	2,421	2,421	186	186		4	0
3	John Dodd Rd	1.52	2	1,453	6,803	104	319		18	0
3	Keltner Ave	0.48	2	1,589	1,589	160	160		7	1
3	Lenhardt Grove Rd	0.77	2	2,436	6,536	51	516		17	0
3	Lowndes Hill Rd	0.09	2	3,995	3,995	201	201		7	0
3	Martin Luther King Jr Blvd	1.64	4	4,331	11,882	94	379		2	0
3	Masters Blvd	1.91	4	5,766	7,010	356	422		9	0

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
3	Mauldin Rd	3.44	4	15,624	28,229	1,137	1,824		37	0
3	Mill Creek Rd	2.25		N/A	N/A	N/A	N/A		2	0
3	N Blackstock Rd	1.27	2	1,898	4,919	89	349		11	0
3	N Maple St	0.59	2	9,616	9,616	644	644		1	1
3	N Nelson Dr	2.33	2	742	6,956	22	329		11	1
3	New Cut Rd	1.00	2	5,196	12,007	297	689		10	0
3	New Hope Rd	0.51	2	3,508	3,508	207	207		4	0
3	Old Perman Dairy Rd	0.95	2	8,300	9,250	610	968		19	0
3	Old Woodruff Rd	0.49	2	2,599	2,599	248	248		6	0
3	Pecan Ter	0.26	2	7,001	7,001	555	555		21	0
3	Pelham Rd	7.67	4	17,815	32,936	1,427	3,183		108	0
3	Perimeter Rd	2.97	2	263	6,426	5	1,094		4	0
3	Phil Watson Rd	1.24	2	4,532	4,532	647	647		7	0
3	Pine Knoll Dr	0.16	6	20,156	20,156	1,676	1,676		39	1
3	Pine Log Ford Rd	3.32	2	2,868	3,660	74	84		3	0
3	Possum Trot Rd	5.28	2	2,913	4,045	2,624	3,014		0	0
3	Quarry Rd	0.44	2	2,209	2,209	703	703		0	0
3	Railroad St	1.43		N/A	N/A	N/A	N/A		0	0
3	Rogers Bridge Rd	0.82	2	6,272	6,651	822	1,220		16	0
3	Roper Mountain Rd	0.70	4	19,700	29,271	1,496	1,963		43	0
3	Rutherford Rd	4.71	4	8,088	18,810	388	796		37	0
3	Rutherford St	0.34	4	13,808	16,334	1,127	1,148		19	0
3	S Batesville Rd	2.32	2	5,002	8,420	176	762		26	1
3	S Buncombe Rd	2.92	4	14,142	21,120	917	1,083		49	0
3	S Main St	0.15	2	4,164	4,164	527	527		24	0
3	S Old Piedemont Hwy	0.47	2	2,018	2,018	68	68		4	0
3	SC-101	18.31	4	3,820	19,396	360	4,150	Inland Port Greer	143	0
3	SC-11	34.38	2	1,861	15,676	755	2,082		56	1

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
3	SC-118	2.15		N/A	N/A	N/A	N/A		1	0
3	SC-129	5.98	2	738	32,649	55	1,801		37	0
3	SC-14	16.35	4	3,083	29,288	82	3,529		161	4
3	SC-146	3.15	4	19,932	59,967	960	3,899		112	1
3	SC-18	4.43	2	7,563	15,781	1,523	3,102		61	1
3	SC-183	0.60	4	6,106	32,361	815	2,169		15	0
3	SC-187	3.38	2	4,383	8,870	467	810		11	0
3	SC-20	2.04	4	11,445	14,318	509	679		20	0
3	SC-215	4.87	4	7,130	16,605	322	918		26	1
3	SC-246	2.79	2	1,191	1,836	65	72		0	0
3	SC-253	1.16	2	10,035	10,035	392	392		6	0
3	SC-28	0.67	4	5,277	12,597	239	1,035		20	1
3	SC-28 (N Main St)	1.01	4	8,389	12,187	580	669		4	0
3	SC-291	13.72	5	18,495	48,477	1,218	3,683		289	3
3	SC-292	4.01	2	7,118	8,937	558	1,322		10	0
3	SC-295	1.30	4	11,431	13,410	1,462	1,743		15	1
3	SC-296	0.15	7	38,299	43,651	2,217	2,725		30	0
3	SC-417	3.29	3	5,213	20,101	276	1,377		12	0
3	SC-418	2.89	2	6,471	11,931	675	780		15	0
3	SC-55	0.75	4	21,557	40,152	838	1,804		17	0
3	SC-56	2.39	2	2,998	5,460	360	645		14	0
3	SC-57	1.85	2	2,855	6,561	458	780		16	0
3	SC-59	1.24	2	3,773	3,999	1,207	1,468		2	0
3	SC-674 (Pelham Rd)	0.24	2	9,616	9,616	644	644		2	0
3	SC-80	4.40	4	5,956	14,034	636	2,162		36	1
3	SC-81	11.30	4	11,916	26,673	1,489	2,570		59	0
3	SC-9	4.92	2	7,968	11,070	3,597	3,725		2	0
3	SC-93	4.45	2	3,294	10,376	312	829		6	0

Tier	Road Name	Mileage	Average Number of Lanes	Min AADT (2015)[1]	Max AADT (2015)[1]	Min AADTT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	Severe CMV Crashes (2015-2019)[2]
3	State Park Rd	0.68	2	2,061	2,250	40	42		20	3
3	Stevens Rd	1.40	2	1,753	1,753	1,047	1,047		2	0
3	The Pkwy	1.20	4	15,020	16,089	878	907		13	0
3	Tigerville Rd	2.54	2	6,284	6,998	461	532		12	1
3	Union St	1.20	4	4,353	16,312	554	1,132		10	0
3	US-176	11.84	2	6,480	29,293	993	4,067		79	0
3	US-178	6.03	4	4,424	30,355	819	3,309		21	1
3	US-221	27.09	3	2,656	19,250	114	1,409		98	1
3	US-276	8.94	4	9,527	14,499	548	1,084		27	0
3	US-29	7.08	4	4,331	35,554	530	5,082		75	1
3	US-585 Ramp	1.45	1	114	3,648	6	425		16	0
3	Victor Hill Rd	1.18	2	1,181	1,783	114	203		13	0
3	W Butler Rd	2.00	4	25,310	29,852	1,256	1,492		30	0
3	Whitehall Rd	1.42	4	10,851	12,140	277	662		14	0
3	Wilson Bridge Rd	1.38	2	7,698	7,989	245	252		1	0
3	Woods Chapel Rd	0.41	2	2,599	2,821	248	264		3	0
3	Woods Lake Rd	1.61	2	3,995	6,996	201	535		14	0

Sources:

[1] SCDOT Travel Demand Model (2015)

[2] SC Department of Public Safety (2015-2019)

Appendix B - Bridges in Poor Condition

ACOG REGIONAL FREIGHT MOBILITY PLAN

Bridges in Poor Condition on the ACOG Regional Freight Network

Bridge ID	County	Route	Crossing	Location	Rating
80870	Anderson	US 76	Broadway Creek	3.8 mi SE of Anderson	Poor
80771	Anderson	S- 23	I-85	18.0 mi W Anderson	Poor
81561	Anderson	S- 1178	U.S. 29	3.0 mi NW Williamston	Poor
81562	Anderson	S- 75	U.S. 29	3.0 mi NW Williamston	Poor
81503	Anderson	US 29	U.S. 29 NBL	3.7 mi SW of Williamston	Poor
83516	Cherokee	US 29	Southern Rwy.	Spartanburg Co Ln	Poor
83713	Cherokee	S- 286	Kings Creek	5.9 mi SE Blacksburg	Poor
83920	Cherokee	S- 99	I-85	3.2 mi NE Blacksburg	Poor
83922	Cherokee	I- 85	Southern Railroad	4.0 mi N of Blacksburg	Poor
83908	Cherokee	US 29	Southern Railroad	City Limits Blacksburg	Poor
81261	Greenville	SC 418	Payne Creek	3.0 mi SW Fountain Inn	Poor
83797	Greenville	US 25	S-119 & N. Saluda River	10.1 mi N. Travelers Rest	Poor
83798	Greenville	US 25	S-119 & N. Saluda River	10.1 mi N. Travelers Rest	Poor
82963	Greenville	US 29	Mountain Creek	4.5 mi SW of Greer	Poor
82964	Greenville	US 29	Mountain Creek	4.5 mi SW of Greer	Poor
82965	Greenville	US 29	Enoree River	4.5 mi SW of Greer	Poor
82227	Greenville	I- 85	Trib Laurel Crk	4.9 mi E of Greenville	Poor
82228	Greenville	I- 85	Trib Laurel Crk	4.9 mi E of Greenville	Poor
82124	Greenville	I- 185	S-149	2.2 mi SW Greenville	Poor
82125	Greenville	I- 185	S-149	2.2 mi SW Greenville	Poor
81638	Greenville	SC 418	Huff Creek	8.0 mi SW Fountain Inn	Poor
82462	Greenville	I- 185	U.S. 25 By Pass	3.0 mi S of Greenville	Poor
82463	Greenville	I- 185	U.S. 25 By Pass	3.0 mi S of Greenville	Poor
82166	Greenville	US 123	Reedy River-Rr-C0X St&St	City of Greenville	Poor
82466	Greenville	I- 185	S-5 And Southern R.R.	2.5 mi S of Greenville	Poor
82467	Greenville	I- 185	S-5 And Southern R.R.	2.5 mi S of Greenville	Poor
82284	Greenville	S- 164	I-85	5 mi S Greer	Poor
82167	Greenville	US 123	Reedy River-Rr-C0X St&St	City of Greenville	Poor
82176	Greenville	US 29	S-75	City of Greenville	Poor
82177	Greenville	US 29	S-75	City of Greenville	Poor
81268	Greenville	S- 543	I-385	Fountain Inn	Poor
82020	Greenville	S- 941	I-385	1.8 mi NE Mauldin	Poor
82869	Greenville	S- 13	U.S. 276	3.7mi S Travelers Rest	Poor
82236	Greenville	SC 146	I-385	6.4 mi SE Greenville	Poor
82026	Greenville	S- 107	I-385	2.3 mi NE Mauldin	Poor
82916	Greenville	US 276	North Saluda River	4.5 mi NW of Travelers Rest	Poor
81095	Laurens	I- 385	Beards Creek	8.2 mi NE of Laurens	Poor
81127	Laurens	S- 34	Millers Fork Creek	5.0 mi NE Clinton	Poor

Bridge ID	County	Route	Crossing	Location	Rating
80762	Oconee	SC 11	I-85	13.0 mi S Westminster	Poor
82096	Pickens	US 123	Georges Creek	6.0 mi E of Easley	Poor
83512	Spartanburg	SC 110	I-85	2.0 mi N of Cowpens	Poor
83338	Spartanburg	SC 85	Lawson Fork Creek	3.2 mi N Spartanburg	Poor
83340	Spartanburg	S- 191	SC 85	3.5 mi N Spartanburg	Poor
83377	Spartanburg	US 176	Southern Railroad	1.0 mi E of Inman	Poor
83193	Spartanburg	S- 41	SC 85	5.1 mi NW Spartanburg	Poor
83210	Spartanburg	S- 525	SC 85	4.0 mi W Spartanburg	Poor
83217	Spartanburg	S- 65	SC-85__(Old_I-85)	3.4mi NW Spartanburg	Poor
83218	Spartanburg	SC 85	Southern Rr & S-42-995	3.2 mi NW Spartanburg	Poor
83219	Spartanburg	SC 85	Southern Rr & S-42-995	3.2 mi NW Spartanburg	Poor
83325	Spartanburg	SC 9	Sc 85	2.0 mi N of Spartanburg	Poor
83306	Spartanburg	SC 85	S-2	3.2 mi NW Spartanburg	Poor
83307	Spartanburg	SC 85	S-2	3.2 mi NW Spartanburg	Poor
82988	Spartanburg	S- 242	I-85	6.0 mi SE Greer	Poor
83870	Spartanburg	SC 14	I-26	2.0 mi NE of Landrum	Poor
83960	Spartanburg	I- 26	Bowen Lake (S.Pac. Rv)	4.0 mi N of Inman	Poor
83961	Spartanburg	I- 26	Bowen Lake (S.Pac. Rv)	4.0 mi N of Inman	Poor
83148	Spartanburg	US 29	North Tyger River	6.0 mi W of Spartanburg	Poor
81738	Spartanburg	SC 92	I-26	3.0 mi E of Enoree	Poor
81755	Spartanburg	S- 50	I-26	4.8 mi E Woodruff	Poor
85487	Spartanburg	SC 9	SC 85	2.0 mi N of Spartanburg	Poor

Source: SCDOT Bridge Database, 2018

Appendix C - Summary of Safety, Congestion, and Infrastructure Conditions on the Regional Freight Network

Summary of Safety, Congestion, and Infrastructure Conditions on the Regional Freight Network

Tier	Road Name	Mileage	Max AADT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	CMV Crash Rate (per 100 mil VMT)	Severe CMV Crashes (2015-2019)[2]	Ratio of Severe to All CMV Crashes	Max Freight Bottleneck Score[3]	Max LOS (2015)[1]	Max LOS (2040)[1]	Percent Roadways with Poor PQI[4]	# of Poor Condition Bridges[5]
1	I- 85 Business	20.84	19,239	2,455		335	90.77	4	1.19%	7	D	D	55.42%	11
1	I-185	20.55	9,701	1,565		65	33.80	0	0.00%	8	A	A	55.59%	6
1	I-26	75.46	29,935	7,042		592	22.22	27	4.56%	3	D	D	23.60%	4
1	I-385	51.21	48,861	5,207		405	14.74	12	2.96%	7	E	E	0.80%	5
1	I-85	129.87	63,843	10,134		4,766	60.83	88	1.85%	9	F	F	14.24%	7
2	Beattie Pl	0.17	14,940	2,218		17	362.04	0	0.00%	N/A	C	C	100.00%	
2	Brockman McClimon Rd	1.82	3,171	997		18	200.37	0	0.00%	N/A	A	A	0.00%	
2	Fairview St Ext	0.97	10,284	461		4	32.12	0	0.00%	N/A	D	D	0.00%	
2	I-385	0.52	46,759	5,934		25	74.94	0	0.00%	N/A	E	E	0.00%	
2	Liberty Hwy	0.86	18,253	1,349		7	36.11	0	0.00%	7	C	C	0.00%	
2	SC_49	11.31	4,312	1,052		8	11.32	0	0.00%	N/A	B	B	0.00%	
2	SC-101	1.42	15,632	2,587	Inland Port Greer	19	49.02	1	5.26%	5	B	B	5.03%	
2	SC-11	2.39	22,030	1,401		33	47.42	0	0.00%	N/A	F	F	36.62%	
2	SC-11 (Andrew Pickens Scenic Pkwy)	15.94	5,794	1,131		22	18.39	3	13.64%	N/A	C	C	100.00%	1
2	SC-110	2.51	9,228	951		33	95.90	1	3.03%	9	B	B	0.00%	1
2	SC-153	6.78	29,249	1,754		61	29.68	1	1.64%	N/A	D	D	31.92%	
2	SC-178	1.58	16,157	1,602		5	13.45	0	0.00%	10	D	D	44.28%	
2	SC-183	0.99	16,899	2,397		48	190.54	0	0.00%	9	D	D	100.00%	
2	SC-184	8.02	4,821	294		1	2.43	0	0.00%	N/A	B	B	96.88%	
2	SC-198	1.48	18,051	1,502		14	33.87	0	0.00%	7	F	F	0.00%	
2	SC-24	14.17	13,715	2,252		75	32.11	5	6.67%	8	F	F	59.96%	
2	SC-28	8.19	24,735	2,644		92	30.52	3	3.26%	8	C	C	57.16%	
2	SC-290	12.17	27,920	2,341		206	58.78	1	0.49%	N/A	F	F	32.84%	

Tier	Road Name	Mileage	Max AADT (2015)[1]	Max AADTT (2015)[1]	Intermodal Facilities Served	CMV Crashes (2015-2019)[2]	CMV Crash Rate (per 100 mil VMT)	Severe CMV Crashes (2015-2019)[2]	Ratio of Severe to All CMV Crashes	Max Freight Bottleneck Score[3]	Max LOS (2015)[1]	Max LOS (2040)[1]	Percent Roadways with Poor PQI[4]	# of Poor Condition Bridges[5]
2	SC-418	12.04	8,853	836		50	29.44	6	12.00%	N/A	C	C	0.00%	2
2	SC-5	11.94	33,385	4,548		15	3.33	1	6.67%	4	E	E	41.22%	
2	SC-56	13.01	3,669	265		18	28.67	1	5.56%	6	B	B	69.42%	
2	SC-651	0.76	1,643	118		0	0.00	0	0.00%	N/A	A	A	100.00%	
2	SC-8	11.22	13,295	1,058		75	39.15	2	2.67%	N/A	E	E	45.48%	
2	SC-80	2.52	5,950	455	Inland Port Greer	10	37.30	0	0.00%	7	A	A	0.00%	
2	SC-81	16.04	16,924	1,362		14	5.02	1	7.14%	N/A	B	B	65.47%	
2	SC-92	2.96	2,906	303		4	27.30	0	0.00%	N/A	B	B	0.00%	1
2	Springdale Dr	4.11	8,229	636		10	22.06	1	10.00%	N/A	A	A	56.10%	
2	US-123	70.45	43,667	4,001		220	7.43	8	3.64%	10	E	E	71.21%	3
2	US-176	21.06	34,086	5,243		237	28.80	9	3.80%	9	D	D	96.05%	
2	US-178	42.16	18,351	1,895		73	8.74	3	4.11%	9	F	F	64.60%	1
2	US-221	13.84	12,177	1,565		19	10.33	0	0.00%	0	C	C	90.85%	
2	US-25	75.78	35,867	3,267		648	21.88	30	4.63%	9	D	D	67.29%	2
2	US-276	24.08	44,153	7,063		307	30.43	3	0.98%	10	E	E	89.08%	1
2	US-29	120.60	57,036	5,259		523	8.26	6	1.15%	10	F	F	34.41%	10
2	US-72	44.27	14,274	2,828		37	5.25	2	5.41%	8	E	E	76.53%	
2	US-76	50.06	29,420	4,006		98	6.95	2	2.04%	8	D	D	32.60%	
3	Antioch Church Rd	1.27	8,468	637		23	146.00	0	0.00%	N/A	C	C	0.00%	
3	Antioch Rd	1.28	N/A	N/A		0	N/A	0	0.00%	N/A	N/A	N/A	0.00%	
3	Augusta Arbor Way	1.26	1,704	137		3	90.26	0	0.00%	N/A	A	A	0.00%	
3	Aviation Pkwy	2.38	3,441	1,040	Greenville-Spartanburg International Airport	48	576.71	0	0.00%	N/A	B	B	N/A	
3	Ballfield Rd	0.89	4,045	3,014		0	0.00	0	0.00%	N/A	B	B	0.00%	
3	Bishop Rd	0.57	112	1		0	0.00	0	0.00%	N/A	A	A	N/A	
3	Cedar Springs Ave	0.71	4,025	527		1	35.90	0	0.00%	N/A	A	A	N/A	
3	Chapel Rd	0.28	5,233	977		0	0.00	0	0.00%	N/A	B	B	N/A	
3	Charlottes Rd	3.23	3,707	267		2	9.17	0	0.00%	N/A	A	A	0.00%	
3	College Dr	1.26	2,371	211		17	432.15	0	0.00%	N/A	A	A	100.00%	

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3	County Club Rd	0.34	6,898	183		11	292.37	0	0.00%	N/A	A	A	100.00%	
3	Dogwood Club Rd	0.79	6,296	795		8	88.72	0	0.00%	N/A	A	A	N/A	
3	Donaldson Rd	1.02	5,233	977		7	115.44	0	0.00%	N/A	B	B	100.00%	
3	E Market St	0.24	2,021	116		0	0.00	0	0.00%	N/A	A	A	N/A	
3	FairforestWay	2.64	9,512	1,030		26	65.76	0	0.00%	N/A	C	C	N/A	
3	Falling Creek Rd	2.44	4,869	428		132	1,133.05	1	0.76%	N/A	C	C	N/A	
3	Feaster Rd	1.28	4,361	160		6	77.78	0	0.00%	N/A	B	B	100.00%	
3	Frontage Rd	0.76	1,624	1,474		8	356.50	0	0.00%	N/A	A	A	100.00%	
3	Golden Acres Rd	1.49	N/A	N/A		0	N/A	0	0.00%	N/A	N/A	N/A	100.00%	1
3	GPS Dr	1.41	N/A	N/A		20	N/A	0	0.00%	N/A	A	A	N/A	
3	Greer Dr	0.47	N/A	N/A		2	N/A	0	0.00%	N/A	A	A	0.00%	
3	Haywood Rd	0.79	58,393	2,979		18	31.06	0	0.00%	N/A	F	F	100.00%	
3	I-26 Ramp	0.89	7,185	561		31	500.08	0	0.00%	N/A	D	D	100.00%	
3	I-385 Ramp	0.48	8,936	710		23	344.15	0	0.00%	N/A	B	B	N/A	
3	I-85 Ramp	2.57	1,257	307		31	944.15	0	0.00%	N/A	A	A	N/A	
3	Independence Blvd	2.02	3,788	211		41	424.68	0	0.00%	N/A	A	A	0.00%	
3	Indian Springs Rd	1.67	4,851	2,819		0	0.00	0	0.00%	N/A	B	B	100.00%	1
3	Innovation Way	1.15	2,421	186		4	78.83	0	0.00%	N/A	A	A	N/A	
3	John Dodd Rd	1.52	6,803	319		18	157.30	0	0.00%	N/A	B	B	100.00%	
3	Keltner Ave	0.48	1,589	160		7	498.93	1	14.29%	N/A	A	A	N/A	
3	Lenhardt Grove Rd	0.77	6,536	516		17	270.40	0	0.00%	N/A	B	B	100.00%	
3	Lowndes Hill Rd	0.09	3,995	201		7	1,082.62	0	0.00%	N/A	A	A	0.00%	
3	Martin Luther King Jr Blvd	1.64	11,882	379		2	8.26	0	0.00%	N/A	B	B	0.00%	
3	Masters Blvd	1.91	7,010	422		9	40.42	0	0.00%	N/A	A	A	0.00%	
3	Mauldin Rd	3.44	28,229	1,824		37	26.90	0	0.00%	N/A	F	F	100.00%	
3	Mill Creek Rd	2.25	N/A	N/A		2	N/A	0	0.00%	N/A	N/A	N/A	N/A	
3	N Blackstock Rd	1.27	4,919	349		11	138.86	0	0.00%	N/A	C	C	N/A	
3	N Maple St	0.59	9,616	644		1	9.65	1	100.00%	N/A	C	C	0.00%	
3	N Nelson Dr	2.33	6,956	329		11	67.09	1	9.09%	N/A	B	B	0.00%	
3	New Cut Rd	1.00	12,007	689		10	63.96	0	0.00%	N/A	E	E	N/A	

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3	New Hope Rd	0.51	3,508	207		4	122.47	0	0.00%	N/A	A	A	N/A	
3	Old Perman Dairy Rd	0.95	9,250	968		19	124.24	0	0.00%	N/A	D	D	0.00%	
3	Old Woodruff Rd	0.49	2,599	248		6	259.86	0	0.00%	N/A	A	A	100.00%	
3	Pecan Ter	0.26	7,001	555		21	634.12	0	0.00%	N/A	B	B	0.00%	
3	Pelham Rd	7.67	32,936	3,183		108	30.41	0	0.00%	N/A	F	F	27.61%	
3	Perimeter Rd	2.97	6,426	1,094		4	22.04	0	0.00%	N/A	B	B	0.00%	
3	Phil Watson Rd	1.24	4,532	647		7	68.35	0	0.00%	N/A	B	B	100.00%	
3	Pine Knoll Dr	0.16	20,156	1,676		39	663.83	1	2.56%	N/A	A	A	0.00%	
3	Pine Log Ford Rd	3.32	3,660	84		3	15.15	0	0.00%	N/A	A	A	N/A	
3	Possum Trot Rd	5.28	4,045	3,014		0	0.00	0	0.00%	N/A	B	B	87.23%	
3	Quarry Rd	0.44	2,209	703		0	0.00	0	0.00%	N/A	A	A	N/A	
3	Railroad St	1.43	N/A	N/A		0	N/A	0	0.00%	N/A	N/A	N/A	N/A	
3	Rogers Bridge Rd	0.82	6,651	1,220		16	166.09	0	0.00%	N/A	C	C	100.00%	
3	Roper Mountain Rd	0.70	29,271	1,963		43	137.31	0	0.00%	N/A	F	F	0.00%	
3	Rutherford Rd	4.71	18,810	796		37	32.02	0	0.00%	N/A	B	B	100.00%	
3	Rutherford St	0.34	16,334	1,148		19	201.81	0	0.00%	N/A	B	B	100.00%	
3	S Batesville Rd	2.32	8,420	762		26	91.41	1	3.85%	N/A	C	C	0.00%	
3	S Buncombe Rd	2.92	21,120	1,083		49	52.09	0	0.00%	N/A	C	C	100.00%	
3	S Main St	0.15	4,164	527		24	2,158.38	0	0.00%	N/A	B	B	N/A	
3	S Old Piedemont Hwy	0.47	2,018	68		4	230.27	0	0.00%	N/A	A	A	N/A	
3	SC-101	18.31	19,396	4,150	Inland Port Greer	143	36.86	0	0.00%	8	E	E	15.73%	
3	SC-11	34.38	15,676	2,082		56	10.18	1	1.79%	N/A	F	F	38.34%	
3	SC-118	2.15	N/A	N/A		1	N/A	0	0.00%	N/A	N/A	N/A	0.00%	
3	SC-129	5.98	32,649	1,801		37	20.29	0	0.00%	N/A	F	F	97.87%	1
3	SC-14	16.35	29,288	3,529		161	33.33	4	2.48%	10	E	E	96.27%	
3	SC-146	3.15	59,967	3,899		112	48.70	1	0.89%	N/A	F	F	64.87%	
3	SC-18	4.43	15,781	3,102		61	64.60	1	1.64%	N/A	F	F	51.62%	
3	SC-183	0.60	32,361	2,169		15	71.64	0	0.00%	9	C	C	100.00%	
3	SC-187	3.38	8,870	810		11	26.94	0	0.00%	N/A	C	C	91.40%	

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3	SC-20	2.04	14,318	679		20	41.61	0	0.00%	N/A	B	B	0.00%	
3	SC-215	4.87	16,605	918		26	24.67	1	3.85%	N/A	C	C	18.26%	
3	SC-246	2.79	1,836	72		0	0.00	0	0.00%	N/A	A	A	0.00%	
3	SC-253	1.16	10,035	392		6	28.25	0	0.00%	N/A	C	C	56.88%	
3	SC-28	0.67	12,597	1,035		20	183.09	1	5.00%	N/A	A	A	0.00%	
3	SC-28 (N Main St)	1.01	12,187	669		4	21.09	0	0.00%	10	B	B	0.00%	
3	SC-291	13.72	48,477	3,683		289	34.46	3	1.04%	10	E	E	66.98%	
3	SC-292	4.01	8,937	1,322		10	17.00	0	0.00%	N/A	C	C	92.82%	
3	SC-295	1.30	13,410	1,743		15	51.02	1	6.67%	6	A	A	100.00%	
3	SC-296	0.15	43,651	2,725		30	263.19	0	0.00%	9	E	E	100.00%	
3	SC-417	3.29	20,101	1,377		12	15.81	0	0.00%	N/A	E	E	100.00%	
3	SC-418	2.89	11,931	780		15	30.91	0	0.00%	N/A	C	C	12.16%	
3	SC-55	0.75	40,152	1,804		17	40.07	0	0.00%	N/A	F	F	100.00%	
3	SC-56	2.39	5,460	645		14	75.81	0	0.00%	N/A	D	D	46.05%	
3	SC-57	1.85	6,561	780		16	100.86	0	0.00%	N/A	C	C	100.00%	
3	SC-59	1.24	3,999	1,468		2	22.74	0	0.00%	N/A	C	C	0.00%	
3	SC-674 (Pelham Rd)	0.24	9,616	644		2	46.69	0	0.00%	N/A	C	C	N/A	
3	SC-80	4.40	14,034	2,162		36	44.84	1	2.78%	8	A	A	0.00%	
3	SC-81	11.30	26,673	2,570		59	14.83	0	0.00%	9	C	C	88.11%	
3	SC-9	4.92	11,070	3,725		2	2.34	0	0.00%	N/A	D	D	100.00%	
3	SC-93	4.45	10,376	829		6	10.80	0	0.00%	N/A	C	C	100.00%	
3	State Park Rd	0.68	2,250	42		20	746.60	3	15.00%	N/A	A	A	0.00%	
3	Stevens Rd	1.40	1,753	1,047		2	44.55	0	0.00%	N/A	A	A	N/A	
3	The Pkwy	1.20	16,089	907		13	38.07	0	0.00%	N/A	B	B	100.00%	
3	Tigerville Rd	2.54	6,998	532		12	39.03	1	8.33%	N/A	C	C	0.00%	
3	Union St	1.20	16,312	1,132		10	44.09	0	0.00%	N/A	B	B	53.95%	
3	US-176	11.84	29,293	4,067		79	20.43	0	0.00%	8	C	C	55.23%	1
3	US-178	6.03	30,355	3,309		21	10.98	1	4.76%	9	D	D	72.40%	
3	US-221	27.09	19,250	1,409		98	18.10	1	1.02%	7	C	C	67.39%	
3	US-276	8.94	14,499	1,084		27	13.78	0	0.00%	N/A	B	B	43.69%	1

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3	US-29	7.08	35,554	5,082		75	29.09	1	1.33%	9	D	D	77.62%	2
3	US-585 Ramp	1.45	3,648	425		16	320.47	0	0.00%	N/A	A	A	N/A	
3	Victor Hill Rd	1.18	1,783	203		13	408.48	0	0.00%	N/A	A	A	N/A	
3	W Butler Rd	2.00	29,852	1,492		30	29.82	0	0.00%	N/A	D	D	100.00%	
3	Whitehall Rd	1.42	12,140	662		14	47.09	0	0.00%	N/A	B	B	100.00%	
3	Wilson Bridge Rd	1.38	7,989	252		1	5.05	0	0.00%	N/A	C	C	61.54%	
3	Woods Chapel Rd	0.41	2,821	264		3	146.26	0	0.00%	N/A	A	A	55.57%	
3	Woods Lake Rd	1.61	6,996	535		14	86.96	0	0.00%	N/A	C	C	100.00%	

Data Sources:

1 SCDOT Travel Demand Model (2015)
2 SC Department of Public Safety (2015-2019)
3 National Performance Management Research Data Set (March 2019-February 2020)
4 SCDOT Pavement Condition Database (2018)
5 SCDOT Bridge Database (2018)

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