



2045 METROPOLITAN TRANSPORTATION PLAN UPDATE

Appendix F: Future Transportation Facilities

Prepared for:

GSATS

The Grand Strand Area Transportation Study



Prepared by:

**CDM
Smith**[®]

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GRAND STRAND AREA TRANSPORTATION STUDY
METROPOLITAN PLANNING ORGANIZATION

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INTRODUCTION

The purpose of this memorandum is to present the 2045 future year conditions for the update of the Grand Strand Area Transportation Study (GSATS) Metropolitan Transportation Plan (MTP). The GSATS Travel Demand Model (TDM) is updated and calibrated with a 2019 base year. The GSATS 2045 TDM was calibrated using SCDOT-collected and calibrated average annual daily traffic numbers, along with estimated land use.

This technical memorandum examines the 2045 future conditions found in the GSATS study area. An understanding of future conditions, trends, opportunities, and challenges is vital to planning for a transportation system that can meet the future needs of residents and visitors of the Grand Strand area. Transportation is both affected by and affects many aspects of modern society. Population growth, employment and economic trends, education, tourism, and land use are all key components of urbanized areas that a transportation system must be able to serve in providing mobility and access. This technical memorandum provides a brief analysis of key trends in the Grand Strand area, including a series of maps.

SUMMARY OF EXISTING (2019) CONDITIONS

Existing conditions were established in the *GSATS 2045 MTP - Existing Transportation Facilities and Demographic Conditions Memo*, submitted in June 2023, to understand the current operations of the roadways in the GSATS region. Capacity analysis evaluated the existing network by utilizing roadway and intersection LOS performance metrics. These capacity performance measures were evaluated using v/c and assigned to an associated LOS using criteria defined by the SCSWM (South Carolina Statewide Model). Figure 1 provides the existing (2019) conditions peak season daily LOS results for key roadways and **Figure 2** provides existing LOS results for all signalized intersections in the GSATS region.

Figure 1: Existing (2019) Conditions Peak Season Daily Roadway LOS

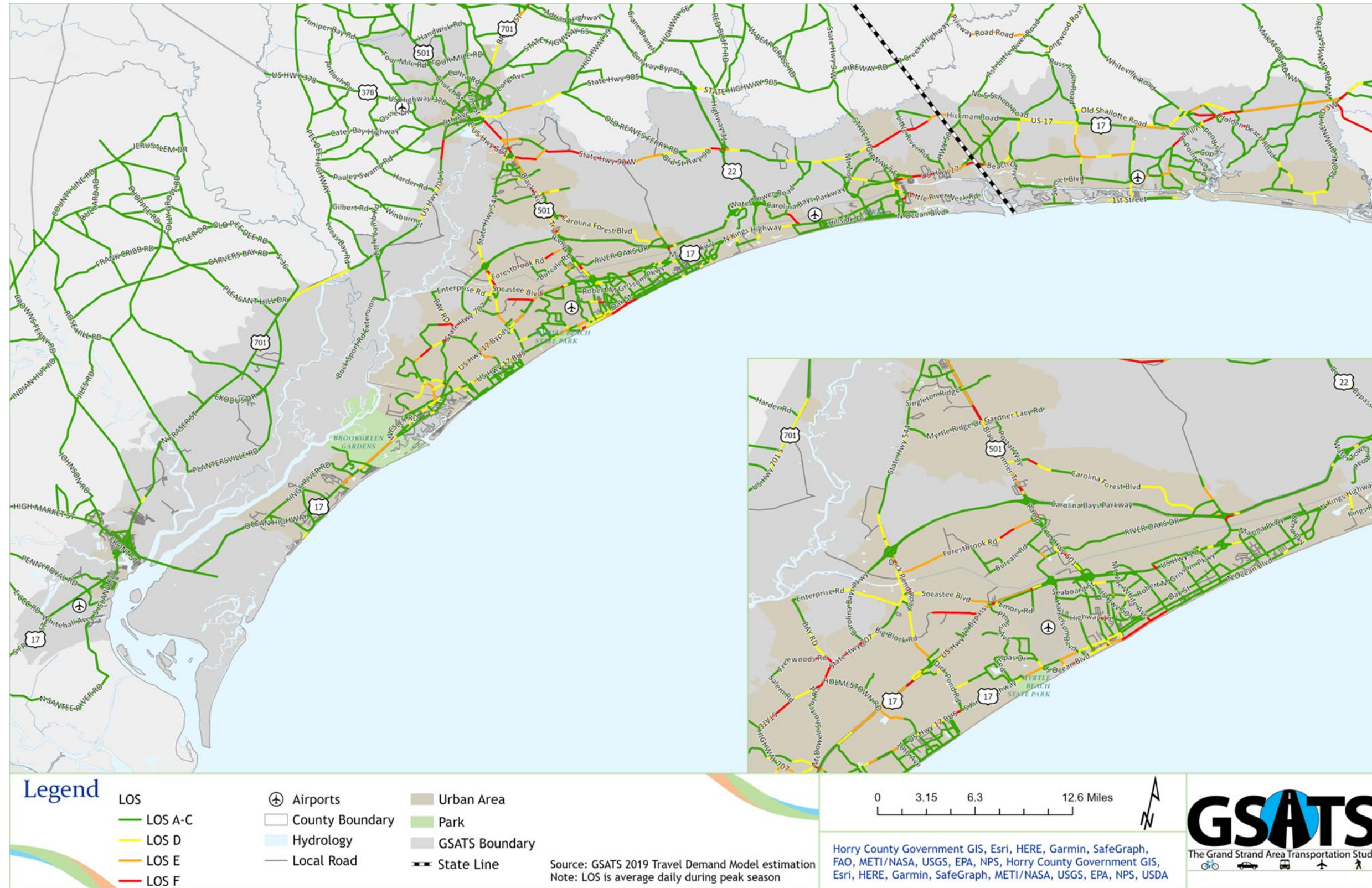
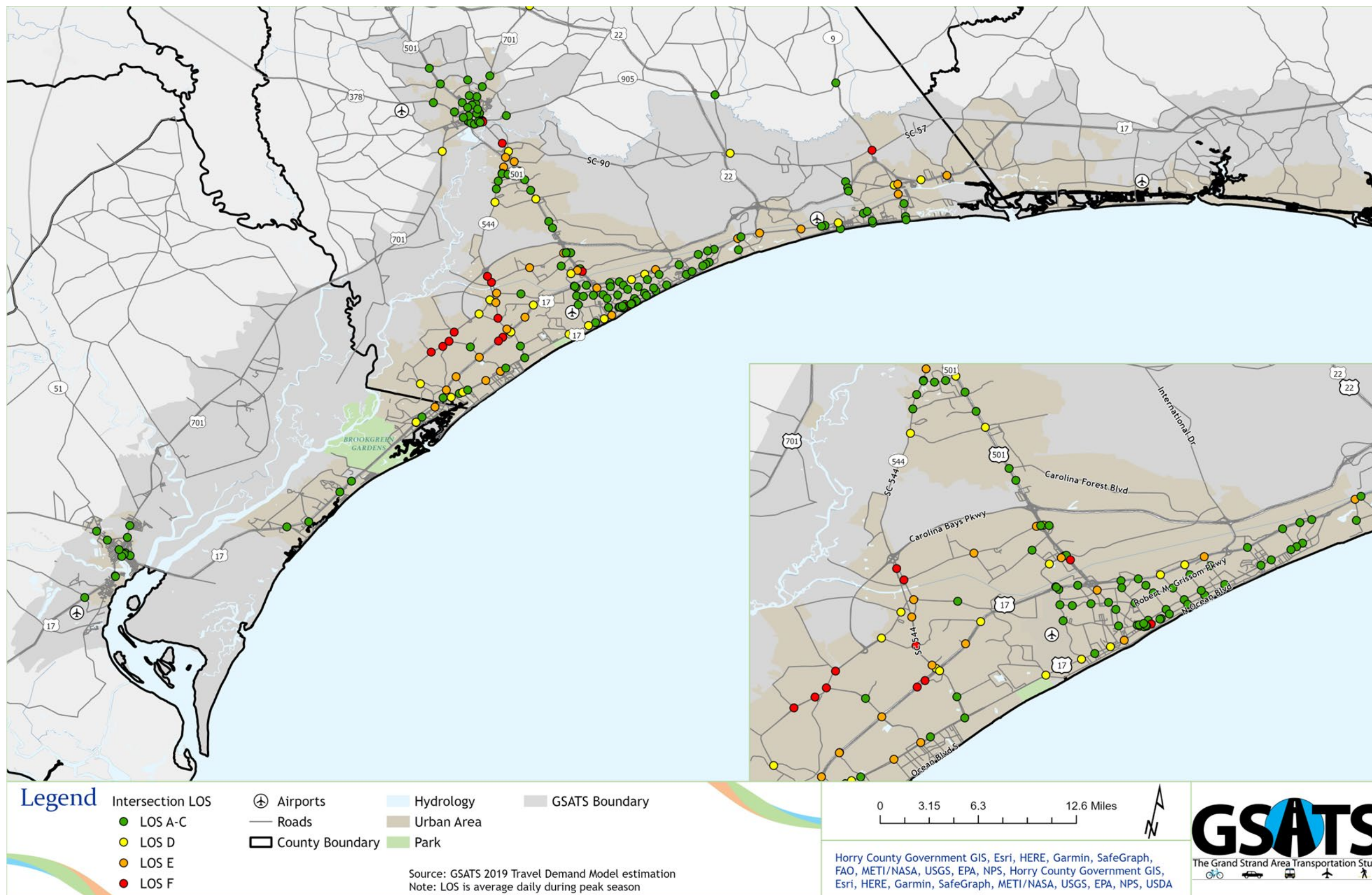


Figure 2: Existing (2019) Conditions Peak Season Daily Intersection LOS



A planning-level analysis evaluated the existing network by utilizing Travel Time Index (TTI) and Planning Time Index (PTI) performance metrics. by calculating the v/c for roadway segments within the existing GSATS TDM. These performance measures were evaluated using guidance from the Federal Highway Administration (FHWA)¹. **Figure 3** provides the existing (2019) conditions TTI and **Figure 4** PTI results in the GSATS region. These results indicate that, under current conditions, 81% of all roadways experience severe congestion.

¹ <https://www.fhwa.dot.gov/tpm/guidance/hif18040.pdf>

Figure 3: Existing (2019) Conditions Peak Season Daily TTI

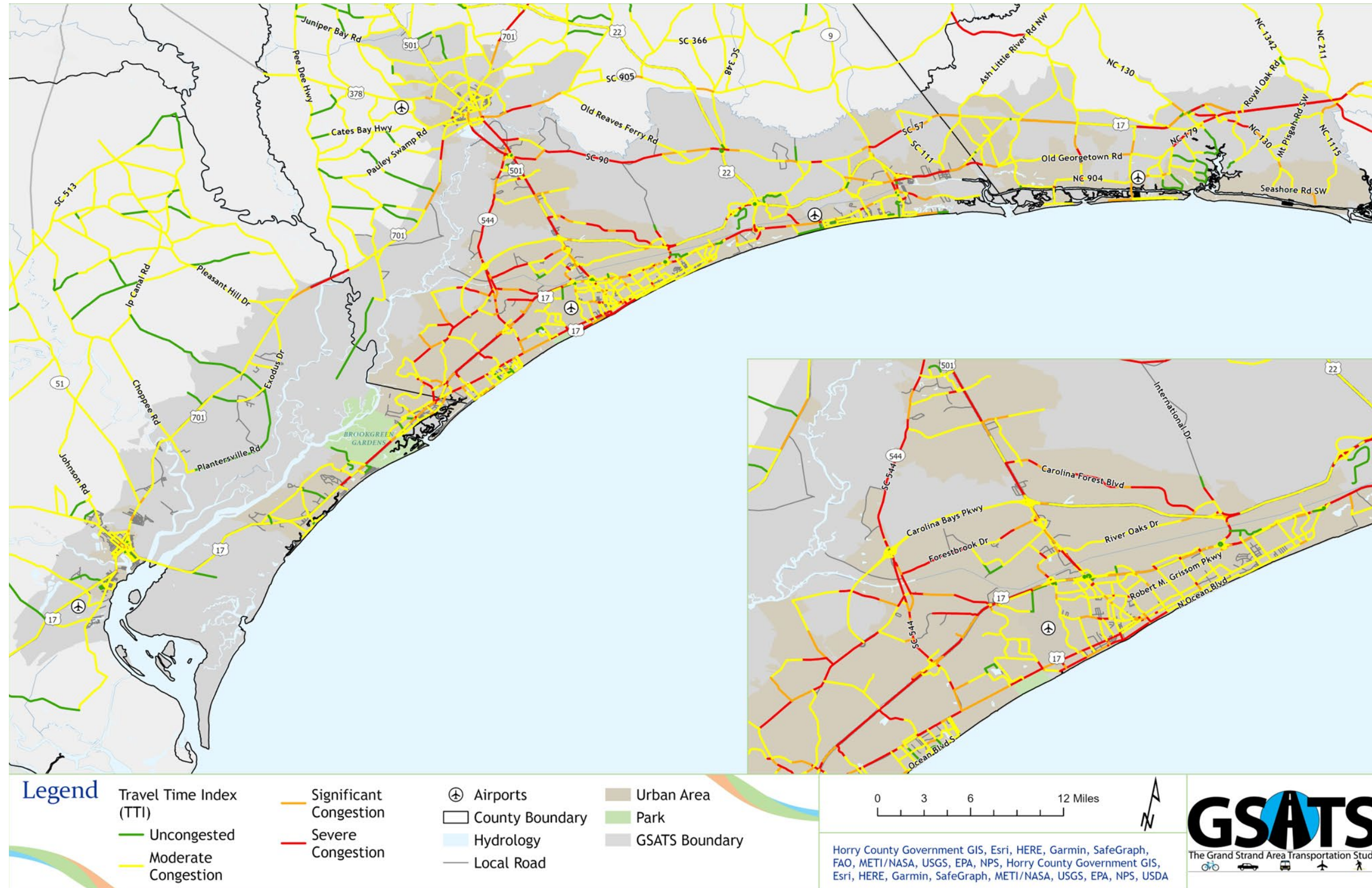
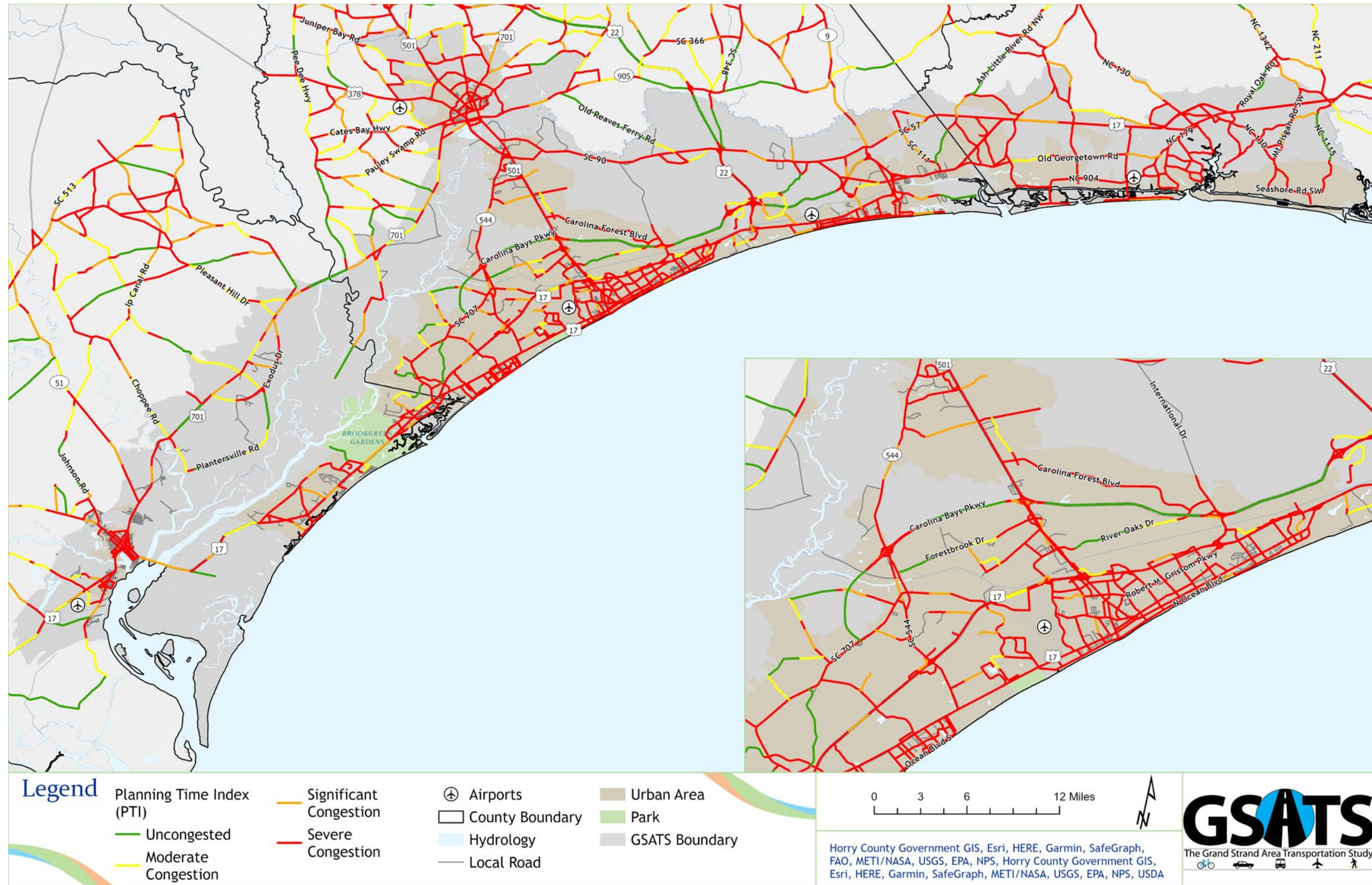


Figure 4: Existing (2019) Conditions Peak Season Daily PTI





FUTURE (2045) STUDY METHODOLOGY

FUTURE (2045) TRAVEL DEMAND MODEL ESTIMATION

An understanding of future conditions, trends, opportunities, and challenges is vital to planning for a transportation system that can meet the current and future needs of residents and visitors of the Grand Strand area. Transportation is both affected by and affects many aspects of modern society. Population growth, employment and economic trends, education, tourism, and land use are all key components of urbanized areas that a transportation system must be able to serve in providing mobility and access.

The following sections present the inputs and outputs of the 2045 future year which reflects 2045 future year conditions. The subsequent sections are organized into different inputs and outputs of the future model including distribution patterns for vehicle trips, study area growth, peak season daily traffic volumes from the traffic assignments, study area land use, demographics and growth.

Trip Length Distribution

Within the travel demand model, trips are estimated in different categories. For this model, trips are grouped into origin and destination groups, allowing planners to understand the nature of auto travel in the region. These origin and destination pairs include: Internal to Internal (trips made completely within the GSATS region), External to Internal (outside the GSATS region to locations within the study area), Cruising Trips (visitor trips cruising without specific destinations), and External to External Trips (those passing completely through the study area without an internal destination). **Table 1** presents the average trip length in minutes and miles by trip purpose. The 2045 average trip for the GSATS study area is 12.1 minutes or 7.3 miles long. Intuitively, the through trips have the longest lengths followed by the external to internal vehicle trips because they originate and end outside the model area. These patterns inform planners of the estimated volume of travel demand visiting the region on a daily basis to access jobs, education, recreation and other services.



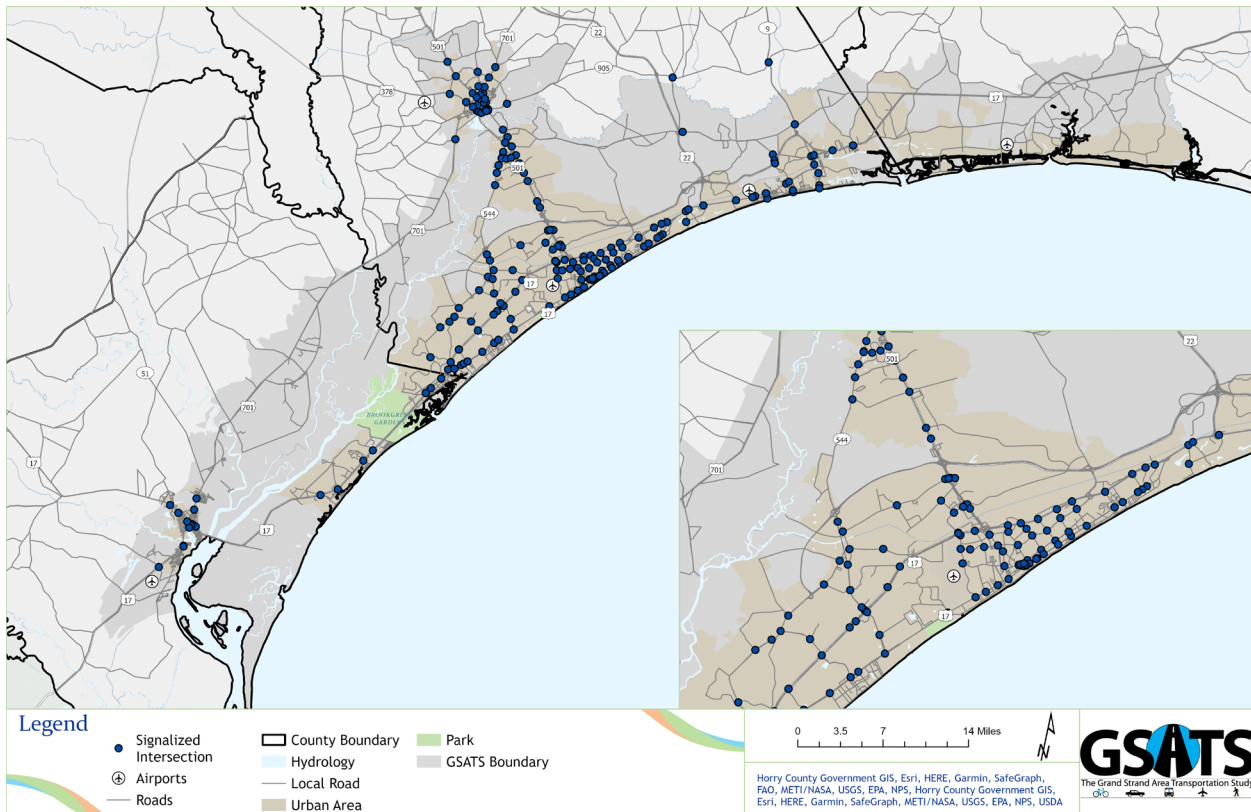
Table 1: Future (2045) GSATS Average Trip Data

Trip Purpose	Average Trip Length in Minutes	Average Trip Length in Miles
Internal to Internal Trips	9.9	5.5
External to Internal Trips	45.8	34.2
Cruising Trips	5.6	2.3
External to External Trips	63.6	61.7
Total Trips	12.1	7.3

Traffic Operations

Traffic operations is an aspect of the model development that contributes to intersection LOS and overall operations of the study area. Depending on the intersection geometry, capacity, and demand, the presence of signalized intersections can either increase or decrease congestion and is a relevant factor in analyzing the GSATS corridor. The future signalized intersection locations are illustrated in Figure 5.

Figure 5: Inventory of GSATS Future Signalized Intersection Locations





Committed Projects

To determine which roadway projects are initially needed, a 2045 Existing plus Committed (E+C) network was established. The 2045 E+C network is comprised entirely of major arterial and collector roads within the study area, plus new or expanded (committed) roadways funded for construction.

Projects include those contained in the North and South Carolina Statewide Transportation Improvement Programs (STIP), the Waccamaw Council of Governments Rural Transportation Improvement Program (RTIP), the current GSATS 2019-2028 Transportation Improvement Program (TIP) and the Horry County RIDE III referendum. A listing of committed projects is included in **Table 2**.

Table 2: GSATS Let, Programmed, and Committed Projects

Road Name	Project Description
Carolina Bays Pkwy. Extension (SC 31)	Extend SC 31 to US 17
US 17 Bypass Widening	Widen US 17 Bypass from Shetland Ave. to SC 707/Farrow Pkwy.
US 17 (Shalotte Bypass) U-5826 - Smith Rd.	Extend US 17 Bypass to Smith Rd.
US 501	Realign Broadway St. to 7 th Ave.
Forestbrook Rd.	Widen between US 501 and Dick Pond Rd.
Conway Perimeter Rd.	Construct between US 378 (El-Bethel Rd.) to US 701 South
Fred Nash Blvd.	Construct connection between Fred Nash Blvd. and Harrelson Blvd.
Carolina Forest Rd.	Widen existing 4 lane section of Carolina Forest Rd. to US 501
Tournament Blvd.	Widen Tournament Blvd. to McDowell Rd. from the four-way stop to US 17
SC 57 at SC 111	Improve intersection at SC 57 and SC 111
Riverwood Dr. at Old Kings Hwy.	Improve intersection at Riverwood Dr. and Old Kings Hwy.
Middle Ridge Extension	Construct new roadway from Middle Ridge Ave. to West Perry Rd. and Singleton Rd.
Augusta Plantation Overpass	Construct new overpass from Revolutionary War Way to Augusta Plantation Dr.
US 701	Widen US 701 north of Conway, from SC 319 to US 22
US 501	Widen US 501 from SC 31 to SC 544
US 701	Widen US 701 north of Loris, from US 22 to SC 9
US 17 Business	Improve intersections on US 17 Bus. at Pine Ave., Atlantic Ave., and Mt. Gilead Rd.
SC 9	Widen SC 9 to improve safety from east of Loris to SC 66



US 17 (Shallotte Bypass)	Improve intersection of Ocean Highway and US 17 Bus. for both North and South
US 17 (Shallotte Bypass)	Improve intersection of US 17 Byp. at US 17 Bus.
US 17 Superstreet	Improve intersection of US 17 at NC 904
US 17	Improve interchange at NC 211
US 17 Business	Improve US 17 Bus. at Main St. and Wall St.
US 17 Superstreet	Improve intersections from Red Bug Rd. to Royal Oak Rd.



FUTURE E+C (2045) CONDITIONS

The 2045 future E+C transportation system in the Grand Strand area provides area residents and visitors with the ability to travel for work, school, shopping, and recreation. The efficiency with which these trips can be made determines the effectiveness of the current roadway network. A few major roadways that act as links between the various communities in the GSATS region dominate the network. While some existing mobility options such as bicycle lanes, sidewalks, and transit service are present in the region, increased accommodation is necessary for residents and tourists alike as travel demand increases. This creates challenges for cities, counties, and the states in the GSATS region as each must continue to manage their existing facilities while planning for anticipated growth.

CAPACITY ANALYSIS

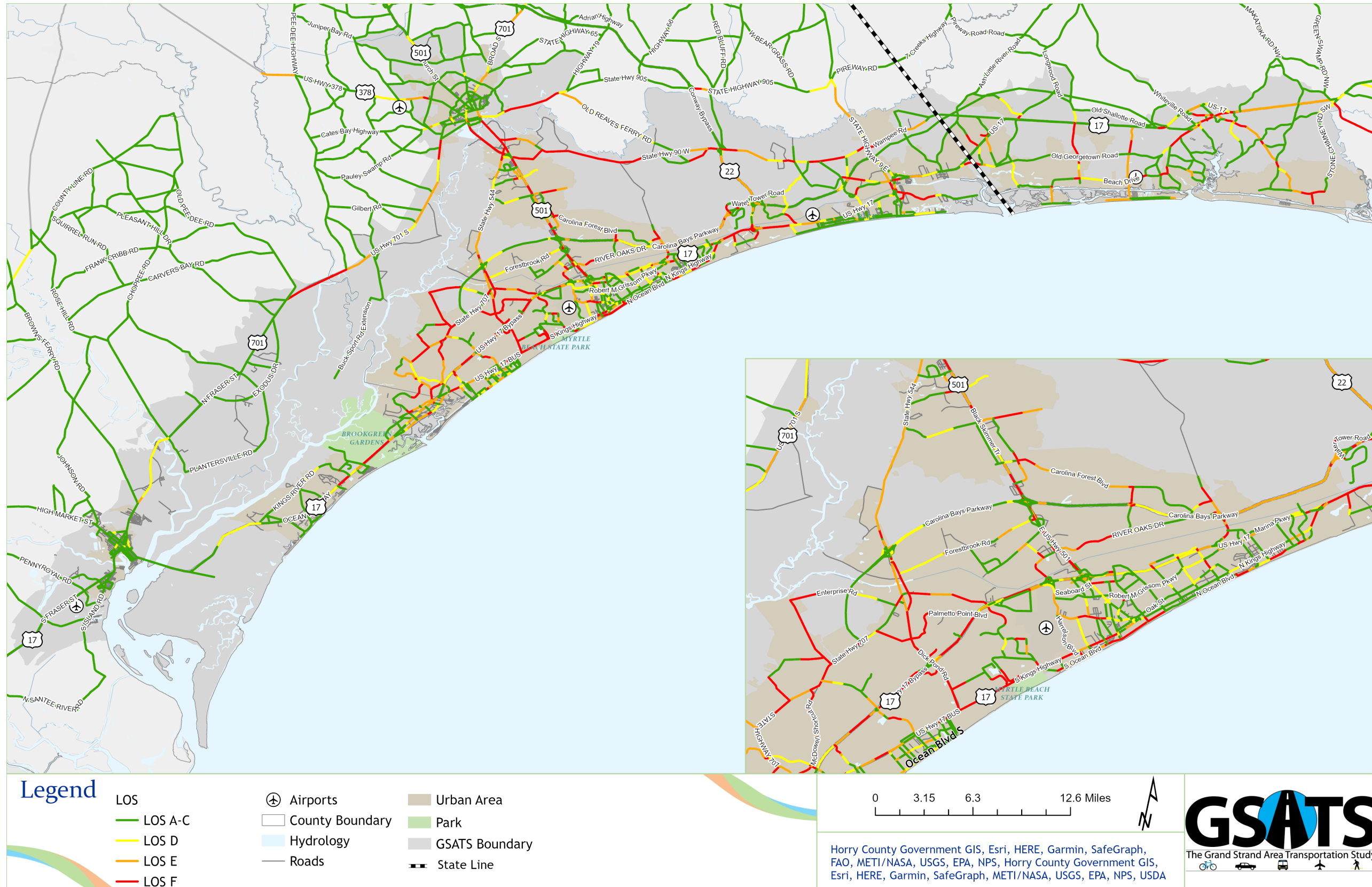
Stated in the *GSATS 2045 MTP Technical Memorandum: Level of Service Standards and Road Functional Classifications*, a LOS goal of D is proposed for this MTP update. Roadway LOS goals are used by GSATS to establish the desired operating conditions of the roadway network. The appropriate degree of congestion (or LOS) to be used in planning and designing highway improvements in the developed suburban and urban environment is determined by a variety of factors. The 2045 future E+C conditions are obtained under the assumption that historical traffic growth rates will continue and are based on updated demographic and land use projections conducted as part of the MTP update.

Roadway Capacity

Roadway capacity is dependent on functional classification, the number of lanes, speed limits, and the presence of medians and intersections. The LOS criteria for roadway capacities are established based on the thresholds established by the South Carolina Statewide Travel Demand Model (SCSWM). Roadway LOS is expressed as a ratio of the peak season peak hour traffic volume and the capacity of the roadway segment.

Future conditions are established to understand the forecasted operations of the roadways in the GSATS region. Figure provides the 2045 future conditions peak season daily LOS results for key roadways

Figure 6: Future E+C (2045) Conditions Roadway LOS



Out of the total 822 roadways analyzed in the future TDM, 183 (22%) roadways operate at a LOS D or worse. Out of those 183 roadways, 66 operate at LOS D, 46 at LOS E, and 71 at LOS F. **Table 3** shows the segment LOS distribution for the entire GSATS network and between North Carolina and South Carolina. **Table 4** provides the roadways in the GSATS network that are forecasted in 2045 to operate at a LOS D or worse.

Table 3: Future (2045) Segment LOS Distribution Between NC and SC

	Total		NC		SC	
A	400	49%	38	10%	362	91%
B	137	17%	26	19%	111	81%
C	102	12%	19	19%	83	81%
D	66	8%	8	12%	58	88%
E	46	6%	5	11%	41	89%
F	71	9%	14	20%	57	80%
Total	822		110		712	

Table 4: Future (2045) Roadways with LOS D-F Conditions

Road Name City	Functional Class	V/C	LOS	State	County
11th Avenue Myrtle Beach	Undivided Minor Arterial	1.97	F	South Carolina	Horry
17th Avenue Myrtle Beach	Undivided Collector	1.06	D	South Carolina	Horry
48th Avenue Myrtle Beach	Undivided Collector	1.06	D	South Carolina	Horry
48th Avenue North Myrtle Beach	Undivided Minor Arterial	1.01	D	South Carolina	Horry
6th Avenue North Myrtle Beach	Undivided Collector	1.06	D	South Carolina	Horry
7th Avenue Myrtle Beach	Undivided Minor Arterial	1.09	D	South Carolina	Horry
Barefoot Resort Bridge Road North Myrtle Beach	Undivided Minor Arterial	1.01	D	South Carolina	Horry
Bay Road Socastee	Undivided Collector	1.60	F	South Carolina	Horry
Beach Drive Calabash	Undivided Major Collector	1.14	D	North Carolina	Brunswick
Beach Drive Ocean Isle Beach	Undivided Major Collector	1.18	E	North Carolina	Brunswick
Beach Drive Sunset Beach	Undivided Major Collector	1.03	D	North Carolina	Brunswick
Beaver Run Boulevard Myrtle Beach	Undivided Collector	1.72	F	South Carolina	Horry
Big Block Road Socastee	Undivided Collector	1.43	F	South Carolina	Horry
Black Creek Road Georgetown	Undivided Minor Arterial	1.03	D	South Carolina	Georgetown
Br 501 Conway	Undivided Minor Arterial	1.19	E	South Carolina	Horry
Br 501 Red Hill	Undivided Minor Arterial	1.03	D	South Carolina	Horry
Brick Landing Road Ocean Isle Beach	Undivided Collector/Local	1.09	D	North Carolina	Brunswick
Brick Landing Road Shallotte	Undivided Major Collector	1.45	F	North Carolina	Brunswick
Bridger Road Shallotte	Divided Collector	1.40	F	North Carolina	Brunswick
Broad Street Conway	Undivided Minor Arterial	1.17	E	South Carolina	Horry
Broad Street Homewood	Undivided Minor Arterial	1.02	D	South Carolina	Horry
Broad Street Loris	Undivided Minor Arterial	1.07	D	South Carolina	Horry



Road Name City	Functional Class	V/C	LOS	State	County
Burgess Road Murrells Inlet	Undivided Minor Arterial	1.37	F	South Carolina	Horry
Calabash Road Carolina Shores	Undivided Collector	1.45	F	North Carolina	Brunswick
Canal St Myrtle Beach	Undivided Collector	1.04	D	South Carolina	Horry
Cannon Road Myrtle Beach	Undivided Collector	1.01	D	South Carolina	Horry
Carolina Bays Parkway Carolina Forest	Expressway	1.10	D	South Carolina	Horry
Carolina Bays Parkway North Myrtle Beach	Expressway	1.14	D	South Carolina	Horry
Carolina Forest Boulevard Carolina Forest	Divided Minor Arterial	1.04	D	South Carolina	Horry
Causeway Drive Ocean Isle Beach	Undivided Major Collector	1.29	E	North Carolina	Brunswick
Church Street Conway	Undivided Collector	1.01	D	South Carolina	Horry
Claire Chapin Epps Drive Myrtle Beach	Undivided Collector	1.12	D	South Carolina	Horry
Claypond Road Myrtle Beach	Undivided Collector	1.29	E	South Carolina	Horry
Country Club Drive Carolina Shores	Undivided Collector	1.01	D	North Carolina	Brunswick
Cox Ferry Road Conway	Undivided Collector	1.04	D	South Carolina	Horry
Cox Ferry Road Red Hill	Undivided Collector	1.07	D	South Carolina	Horry
Dick Pond Road Myrtle Beach	Undivided Minor Arterial	1.62	F	South Carolina	Horry
Dick Pond Road Socastee	Undivided Minor Arterial	1.53	F	South Carolina	Horry
Dick Pond Road Surfside Beach	Undivided Minor Arterial	1.48	F	South Carolina	Horry
E Cox Ferry Road Conway	Undivided Collector	2.25	F	South Carolina	Horry
E Us Highway 501 Carolina Forest	Divided Principal Arterial	1.54	F	South Carolina	Horry
E Us Highway 501 Conway	Undivided Principal Arteri	1.47	F	South Carolina	Horry
E Us Highway 501 Forestbrook	Divided Principal Arterial	1.34	F	South Carolina	Horry
E Us Highway 501 Myrtle Beach	Divided Principal Arterial	1.20	E	South Carolina	Horry
E Us Highway 501 Red Hill	Divided Principal Arterial	1.70	F	South Carolina	Horry
Enterprise Road Socastee	Undivided Collector	1.31	E	South Carolina	Horry
Forestbrook Road Forestbrook	Divided Collector	1.10	D	South Carolina	Horry
Fred Nash Boulevard Myrtle Beach	Undivided Collector	1.09	D	South Carolina	Horry
Fulford Avenue Holden Beach	Undivided Major Collector	1.54	F	North Carolina	Brunswick
Garden City Connector Garden City	Undivided Minor Arterial	1.15	E	South Carolina	Horry
Gardner Lacy Road Carolina Forest	Undivided Collector	1.43	F	South Carolina	Horry
Gardner Lacy Road Conway	Undivided Collector	1.27	E	South Carolina	Horry
George Bishop Parkway Myrtle Beach	Divided Minor Arterial	1.24	E	South Carolina	Horry
Glenns Bay Road Carolina Forest	Undivided Minor Arterial	1.38	F	South Carolina	Horry
Glenns Bay Road Garden City	Undivided Minor Arterial	1.41	F	South Carolina	Horry
Glenns Bay Road Surfside Beach	Undivided Minor Arterial	1.24	E	South Carolina	Horry
Gray Bridge Road Shallotte	Undivided Collector/Local	1.14	D	North Carolina	Brunswick
Hale Swamp Road Shallotte	Undivided Collector/Local	1.07	D	North Carolina	Brunswick
Hickman Road Shallotte	Divided Major Collector	1.71	F	North Carolina	Brunswick
Highway 15 Myrtle Beach	Undivided Collector	1.51	F	South Carolina	Horry
Highway 179 Little River	Undivided Major Collector	1.43	F	South Carolina	Horry



Road Name City	Functional Class	V/C	LOS	State	County
Hill Street North Myrtle Beach	Undivided Collector	2.26	F	South Carolina	Horry
Holden Beach Road Shallotte	Undivided Major Collector	1.41	F	North Carolina	Brunswick
Holmestown Road Carolina Forest	Undivided Minor Arterial	1.24	E	South Carolina	Horry
Holmestown Road Garden City	Undivided Minor Arterial	1.24	E	South Carolina	Horry
Howard Parkway Myrtle Beach	Divided Collector	1.12	D	South Carolina	Horry
Inlet Square Drive Garden City	Undivided Minor Arterial	1.07	D	South Carolina	Horry
Juniper Drive Myrtle Beach	Undivided Collector	1.46	F	South Carolina	Horry
Kates Bay Highway Conway	Undivided Minor Arterial	1.13	D	South Carolina	Horry
Kings Road Myrtle Beach	Undivided Minor Arterial	1.16	E	South Carolina	Horry
Lake Arrowhead Road Myrtle Beach	Undivided Minor Arterial	1.33	E	South Carolina	Horry
Little River Neck Road North Myrtle Beach	Undivided Collector	1.59	F	South Carolina	Horry
Longwood Drive Murrells Inlet	Undivided Collector	1.22	E	South Carolina	Horry
Loyola Drive Socastee	Undivided Collector	1.43	F	South Carolina	Horry
Main Street Conway	Undivided Minor Arterial	1.13	D	South Carolina	Horry
Mallardlake Drive Myrtle Beach	Undivided Collector	1.46	F	South Carolina	Horry
Marlowtown Road Carolina Shores	Undivided Collector/Local	1.42	F	North Carolina	Brunswick
Mcdowell Shortcut Road Garden City	Undivided Collector	1.39	F	South Carolina	Horry
Meyers Avenue Myrtle Beach	Divided Collector	1.04	D	South Carolina	Horry
Midway Road Oak Island Beach	Undivided Major Collector	1.15	D	North Carolina	Brunswick
N Fraser Street US 701 between Bucksport and Georgetown	Undivided Minor Arterial	1.06	D	South Carolina	Georgetown
N Hollywood Drive Surfside Beach	Undivided Collector	1.19	E	South Carolina	Horry
N Kings Highway Briarcliff Acres	Divided Principal Arterial	1.43	F	South Carolina	Horry
N Kings Highway Myrtle Beach	Divided Minor Arterial	1.11	D	South Carolina	Horry
N Kings Highway North Myrtle Beach	Divided Principal Arterial	1.33	E	South Carolina	Horry
N Ocean Boulevard Myrtle Beach	Undivided Collector	1.13	D	South Carolina	Horry
Ocean Highway Litchfield Beach	Divided Principal Arterial	1.18	E	South Carolina	Georgetown
Ocean Highway Murrells Inlet	Divided Principal Arterial	1.45	F	South Carolina	Georgetown
Ocean Isle Beach Road Ocean Isle Beach	Undivided Major Collector	1.23	E	North Carolina	Brunswick
Old Kings Highway Murrells Inlet	Undivided Collector	1.14	D	South Carolina	Georgetown
Old Reaves Ferry Road Conway	State Maintained Local	1.07	D	South Carolina	Horry
Old State Highway 90 SC 90 between Conway and North Myrtle Beach	Undivided Collector	1.01	D	South Carolina	Horry
Palmetto Point Boulevard Socastee	Undivided Collector	1.91	F	South Carolina	Horry
Palmetto Street Conway	Undivided Minor Arterial	1.04	D	South Carolina	Horry
Persimmon Road Carolina Shores	Undivided Collector/Local	1.22	E	North Carolina	Brunswick
Phillis Boulevard Myrtle Beach	Undivided Collector	1.50	F	South Carolina	Horry
Posatal Way Carolina Forest	Undivided Collector	1.21	E	South Carolina	Horry
Postal Way Carolina Forest	Undivided Collector	1.03	D	South Carolina	Horry
Prestwick Club Drive Myrtle Beach	Undivided Collector	2.17	F	South Carolina	Horry



Road Name City	Functional Class	V/C	LOS	State	County
Prince Creek Parkway Murrells Inlet	Undivided Collector	1.15	D	South Carolina	Horry
Queen Harbour Boulevard Socastee	Undivided Collector	1.75	F	South Carolina	Horry
Revolutionary War Way Carolina Forest	Divided Minor Arterial	1.36	F	South Carolina	Horry
River Oaks Drive Myrtle Beach	Divided Minor Arterial	1.55	F	South Carolina	Horry
Robert M Grissom Parkway Carolina Forest	Expressway	1.13	D	South Carolina	Horry
Royal Tern Court Conway	Undivided Minor Arterial	1.36	F	South Carolina	Horry
S Hollywood Drive Surfside Beach	Undivided Collector	1.09	D	South Carolina	Horry
S Kings Highway Myrtle Beach	Divided Minor Arterial	1.58	F	South Carolina	Horry
S Kings Highway Surfside Beach	Divided Minor Arterial	1.58	F	South Carolina	Horry
S Ocean Boulevard Myrtle Beach	Divided Minor Arterial	1.21	E	South Carolina	Horry
S Ocean Boulevard Surfside Beach	Undivided Collector	1.14	D	South Carolina	Horry
Sabbath Home Road Holden Beach	Undivided Collector/Local	1.44	F	North Carolina	Brunswick
Sayebrook Parkway Socastee	Undivided Collector	2.92	F	South Carolina	Horry
Sea Mountain Highway Little River	Undivided Minor Arterial	1.23	E	South Carolina	Horry
Seaside Road Sunset Beach	Undivided Major Collector	1.38	F	North Carolina	Brunswick
Shetland Lane Socastee	Undivided Collector	1.95	F	South Carolina	Horry
Singleton Ridge Road Conway	Undivided Minor Arterial	1.29	E	South Carolina	Horry
Smith Street Conway	Undivided Collector	1.44	F	South Carolina	Horry
Socastee Boulevard Myrtle Beach	Undivided Minor Arterial	1.56	F	South Carolina	Horry
Socastee Boulevard Socastee	Undivided Minor Arterial	1.43	F	South Carolina	Horry
South Strand Drive Myrtle Beach	Undivided Collector	1.54	F	South Carolina	Horry
South Strand Drive Socastee	Undivided Collector	1.99	F	South Carolina	Horry
Southport Supply Road Bolivia	Undivided Collector/Local	1.47	F	North Carolina	Brunswick
Southport Supply Road Oak Island Beach	Major Collector	1.44	F	North Carolina	Brunswick
Southport Supply Road St. James	Major Collector	2.07	F	North Carolina	Brunswick
Spruce Drive Myrtle Beach	Undivided Collector	1.46	F	South Carolina	Horry
State Highway 1342 Myrtle Beach	Undivided Collector	1.65	F	South Carolina	Horry
State Highway 544 Conway	Undivided Principal Arterial	1.19	E	South Carolina	Horry
State Highway 544 Red Hill	Undivided Collector	1.36	F	South Carolina	Horry
State Highway 544 Socastee	Divided Principal Arterial	1.24	E	South Carolina	Horry
State Highway 707 Murrells Inlet	Undivided Minor Arterial	1.25	E	South Carolina	Horry
State Highway 707 Myrtle Beach	Undivided Minor Arterial	1.56	F	South Carolina	Horry
State Highway 707 SC 707 between Socastee and Murrells Inlet	Undivided Minor Arterial	1.61	F	South Carolina	Horry
State Highway 707 Socastee	Undivided Minor Arterial	1.10	D	South Carolina	Horry
State Highway 9 Little River	Undivided Principal Arteri	1.12	D	South Carolina	Horry
State Highway 90 Conway	Undivided Minor Arterial	1.93	F	South Carolina	Horry
State Highway 90 Little River	Undivided Minor Arterial	1.21	E	South Carolina	Horry



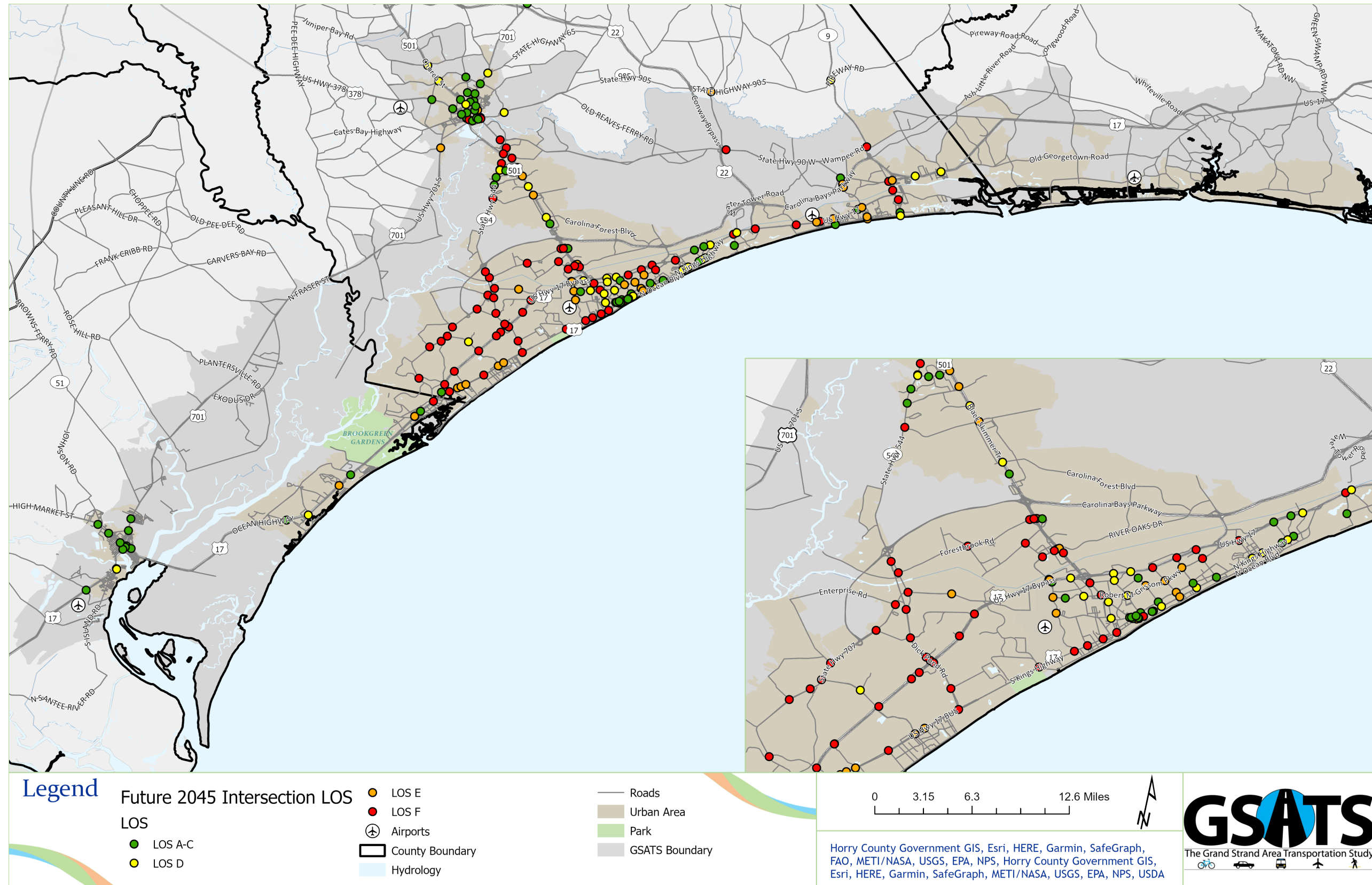
Road Name City	Functional Class	V/C	LOS	State	County
State Highway 90 Red Hill	Undivided Minor Arterial	1.33	E	South Carolina	Horry
State Highway 90 SC 90 between Conway and North Myrtle Beach	Undivided Minor Arterial	1.60	F	South Carolina	Horry
State Highway 905 Conway	Undivided Minor Arterial	1.06	D	South Carolina	Horry
State Highway 905 SC 905 between Conway and NC State Line	Undivided Major Collector	1.00	D	South Carolina	Horry
Technology Boulevard Conway	Undivided Collector	1.19	E	South Carolina	Horry
Tournament Boulevard Garden City	Divided Minor Arterial	1.20	E	South Carolina	Horry
Tournament Boulevard Murrells Inlet	Divided Minor Arterial	1.03	D	South Carolina	Horry
Tpg Boulevard Murrells Inlet	Undivided Collector	1.31	E	South Carolina	Horry
Us Highway 17 Atlantic Beach	Undivided Principal Arterial	1.21	E	South Carolina	Horry
Us Highway 17 Murrells Inlet	Undivided Minor Arterial	1.12	D	South Carolina	Georgetown
Us Highway 17 Myrtle Beach	Divided Principal Arterial	1.13	D	South Carolina	Horry
Us Highway 17 Shallotte	Divided Principal Arterial	1.09	D	North Carolina	Brunswick
Us Highway 17 Business Garden City	Divided Minor Arterial	1.23	E	South Carolina	Horry
Us Highway 17 Business Shallotte	Divided Major Collector	1.19	E	North Carolina	Brunswick
Us Highway 17 Business Socastee	Divided Minor Arterial	1.70	F	South Carolina	Horry
Us Highway 17 Business Surfside Beach	Divided Minor Arterial	1.44	F	South Carolina	Horry
Us Highway 17 Bypass Carolina Forest	Divided Principal Arterial	1.04	D	South Carolina	Horry
Us Highway 17 Bypass Garden City	Divided Principal Arterial	1.34	E	South Carolina	Horry
Us Highway 17 Bypass Murrells Inlet	Divided Principal Arterial	1.13	D	South Carolina	Georgetown
Us Highway 17 Bypass Myrtle Beach	Divided Principal Arterial	1.15	D	South Carolina	Horry
Us Highway 17 Bypass Socastee	Divided Principal Arterial	1.35	F	South Carolina	Horry
Us Highway 501 Aynor	Undivided Minor Arterial	1.19	E	South Carolina	Horry
Us Highway 501 Carolina Forest	Divided Principal Arterial	1.21	E	South Carolina	Horry
Us Highway 501 Conway	Divided Principal Arterial	1.29	E	South Carolina	Horry
Us Highway 501 Myrtle Beach	Divided Minor Arterial	1.03	D	South Carolina	Horry
Us Highway 501 US 501 between Aynor and Conway	Divided Minor Arterial	1.13	D	South Carolina	Horry
Us Highway 501 US 501 North of Conway	Divided Minor Arterial	1.03	D	South Carolina	Horry
Us Highway 501 Business Conway	Undivided Minor Arterial	2.29	F	South Carolina	Horry
Us Highway 501 Business Red Hill	Undivided Minor Arterial	1.91	F	South Carolina	Horry
Us Highway 701 US 701 from Conway to Bucksport	Undivided Minor Arterial	1.15	E	South Carolina	Horry
Us Highway 701 Bucksport	Undivided Minor Arterial	1.02	D	South Carolina	Horry
Us Highway 701 Conway	Undivided Minor Arterial	1.05	D	South Carolina	Horry
Us Highway 701 Loris	Undivided Minor Arterial	1.33	E	South Carolina	Horry
Us Highway 701 US 701 from Brunswick County Line to Loris	Undivided Minor Arterial	1.68	F	South Carolina	Horry
Us Highway 701 US 701 from Conway to Bucksport	Undivided Minor Arterial	1.04	D	South Carolina	Horry
Van Buren Drive Garden City	Undivided Minor Arterial	1.25	E	South Carolina	Horry



Road Name City	Functional Class	V/C	LOS	State	County
Van Buren Drive Murrells Inlet	Undivided Minor Arterial	1.25	E	South Carolina	Horry
Village Road Shallotte	Undivided Collector	1.41	F	North Carolina	Brunswick
Waccamaw Boulevard Forestbrook	Divided Collector	1.16	E	South Carolina	Horry
Waccamaw Drive Garden City	Undivided Minor Arterial	1.05	D	South Carolina	Horry
Wall Street Shallotte	Undivided Collector/Local	2.22	F	North Carolina	Brunswick
Wampee Road Little River	Undivided Collector	1.36	F	South Carolina	Horry
Waterside Lane Murrells Inlet	Undivided Minor Arterial	1.12	D	South Carolina	Georgetown
Wildair Circle Conway	Undivided Minor Arterial	1.65	F	South Carolina	Horry
Wilderness Lane Murrells Inlet	Undivided Collector	1.07	D	South Carolina	Horry
William Finlayson Road Red Hill	Undivided Collector	1.17	E	South Carolina	Horry
Winwyh Road Conway	Undivided Collector	1.13	D	South Carolina	Horry

Figure 7 provides the future (2045) conditions peak season daily LOS results for key intersections in the GSATS region.

Figure 7: Future (2045) Conditions Peak Season Daily Intersection LOS



Of the 217 intersections analyzed in the future TDM, 137 intersections operate at a LOS D or worse. This means 63% of intersections in the future GSATS network are deficient. Of those 137 intersections, 33 operate at LOS D, 36 at LOS E, and 68 at LOS F. Table 5 provides the intersections in the GSATS network that are forecasted in 2045 to operate at a LOS D or worse.

Table 5: Future (2045) Intersections with LOS D-F Conditions

Main Roadway	Intersecting Roadway	V/C	LOS
US 501	Frye Rd	1.12	D
US 501 Bus	SC 544	1.72	F
US 17	Mr Joe White Ave	1.15	D
US 501	Seaboard St	1.82	F
US 501	Robert M Grissom Pkwy	1.34	F
US 17 Bus	17th Ave S	1.55	F
George Bishop Pkwy	US 501 SB On Ramp/Off Ramp	1.57	F
River Oaks Dr	Waccamaw Blvd	1.23	E
Forestbrook Rd	Dick Pond Rd	1.95	F
SC 707	Luttie Rd	1.27	E
SC 707	Salem Rd	1.87	F
SC 707	McDowell Shortcut Rd	2.00	F
SC 707	Circle Ln	2.32	F
US 701	Pitch Landing Rd	1.29	E
US 17 Bus	SC 544	1.92	F
US 17	Esso Rd	1.76	F
US 17	Glenns Bay Rd	1.78	F
SC 544	Prestwick Club Dr	1.81	F
US 17 Bus	Glenns Bay Rd	1.17	E
SC 707	Dick Pond Rd	2.00	F
SC 544	US 17 SB On Ramp/Off Ramp	1.34	F
SC 544	US 17 NB On Ramp/Off Ramp	1.35	F
SC 707	Holmestown Rd	2.10	F
Holmestown Rd	Scipio Ln	1.12	D
SC 707	Enterprise Ln	1.78	F
SC 707	Big Block Rd	1.67	F
SC 544	Dick Pond Rd	1.75	F
SC 544	Palmetto Pointe Blvd	2.06	F
US 17	Palmetto Pointe Blvd	1.56	F
US 17 Bus	SC 707	1.88	F
US 17 Bus	Harrelson Blvd	1.49	F
US 501	Carolina Forest Blvd	1.12	D
Forestbrook Rd	McCormick Rd	1.51	F
SC 544	Dick Pond Rd	1.89	F
US 501	Singleton Ridge Rd	1.24	E
US 501	University Blvd	1.30	E
SC 544	Myrtle Ridge Dr	1.34	F
US 378	SC 544	1.93	F
SC 544	Founders Dr	1.49	F

Main Roadway	Intersecting Roadway	V/C	LOS
US 501	Cox Ferry Rd	1.59	F
US 501	Wild Wing Blvd	1.09	D
US 501	Gardner Lacy Rd	1.31	E
Forestbrook Rd	Fantasy Harbour Blvd	1.38	F
US 501 NB Off Ramp	Waccamaw Blvd	1.52	F
Dick Scobee Rd	US 501 NB On Ramp/Off Ramp	1.23	E
Robert M Grissom Pkwy	Pine Island Rd	1.09	D
Harrelson Blvd	Robert M Grissom Pkwy	1.31	E
Harrelson Blvd	SC 15	1.25	E
SC 9	Hill St	1.35	F
US 501 Bus	SC 90	2.74	F
US 701	SC 65	1.07	D
US 501	El Bethel Rd	1.04	D
US 501	SC 548	1.13	D
US 501	US 378	1.33	E
US 378	US 701	1.34	F
US 501 Bus	9th Ave	1.20	E
US 501	16th Ave	1.09	D
US 501 Bus	SC 905	1.43	F
SC 905	E Country Club Dr	1.12	D
US 17	Kings Rd	1.90	F
US 17 Bus	3rd Ave S	1.60	F
US 17 Bus	9th Ave S	1.51	F
US 17	62nd Ave N	1.49	F
US 17 Bus	79th Ave N	1.13	D
US 17 Bus	21st Ave N	1.05	D
US 17	38th Ave N	1.48	F
US 17 Bus	38th Ave N	1.02	D
N Oak St	29th Ave N	1.22	E
Robert M Grissom Pkwy	29th Ave N	1.27	E
US 17	21st Ave N	1.13	D
Robert M Grissom Pkwy	Mr Joe White Ave	1.14	D
3rd Ave S	SC 15	1.09	D
US 501	3rd Ave S	1.02	D
Seaboard St	Mr Joe White Ave	1.05	D
US 17 Bus	11th Ave N	1.77	F
US 17 Bus	US 501	1.19	E
N Oak St	Broadway St	1.26	E
US 17	Waterside Dr	1.05	D
Robert M Grissom Pkwy	21st Ave N	1.23	E
US 17	29th Ave N	1.51	F
US 17 Bus	29th Ave N	1.16	E
US 17	48th Ave N	1.91	F
Robert M Grissom Pkwy	48th Ave N	1.53	F
Robert M Grissom Pkwy	38th Ave N	1.22	E
US 17	Barefoot Resort Bridge Rd	1.71	F

Main Roadway	Intersecting Roadway	V/C	LOS
US 17 Bus	62nd Ave N	1.12	D
US 17 Bus	67th Ave N	1.11	D
US 17	Grande Dunes Blvd	1.02	D
US 17	Lake Arrowhead Rd	1.91	F
US 17	Chesnut Rd	1.11	D
US 17	17th Ave S	1.28	E
SC 9	SC 905	1.02	D
SC 31	SC 905	1.20	E
SC 31	SC 90	1.68	F
US 701	SC 9	1.10	D
SC 9	SC 57	1.80	F
Old Highway 17 N	Sea Mountain Hwy	1.85	F
Sea Mountain Hwy	SC 90	1.57	F
SC 9 Off Ramp/US 17 On Ramp	SC 90	1.33	E
US 17	Mineola Ave	1.04	D
US 17	River Hills Dr	1.08	D
US 17	Wachesaw Rd	1.07	D
US 17 SB Off Ramp	George Bishop Pkwy	1.73	F
US 17	Cravens St	1.10	D
US 17	Litchfield Dr	1.21	E
US 17	Waverly Rd	1.10	D
US 17	Wachesaw Rd	1.23	E
US 17	SC 707	1.58	F
US 17 Bus	Inlet Square Dr	1.42	F
US 17 Bus	Rebecca Ln	1.33	E
US 17 Bus	Jamestown Dr	1.31	E
US 17	Tournament Blvd	1.42	F
US 17	Indigo Club Dr	1.48	F
US 17	Indigo Club Dr	1.55	F
US 17 Bus	Melody Ln	1.67	F
SC 9	SC 65	1.00	D
US 17	Robert Edge Pkwy	1.32	E
SC 65	Main St	1.17	E
Main St	Hillside Dr N	1.17	E
US 17	SC 65	1.38	F
US 17	30th Ave S	1.21	E
SC 31 WB On Ramp/Off Ramp	Robert Edge Pkwy	1.16	E
Burcale Rd	Claypond Rd	1.38	F
George Bishop Pkwy	Fantasy Harbour Blvd	1.46	F
George Bishop Pkwy	Claypond Rd	1.62	F
SC 707	Tournament Blvd	1.51	F
SC EB On Ramp/Off Ramp	Robert Edge Pkwy	1.20	E
US 17 SB Off Ramp	George Bishop Pkwy	1.22	E
US 17	Coventry Rd	2.03	F
SC 544	Sayebrook Pkwy	2.43	F
US 17 Bus	5th Ave N	1.16	E

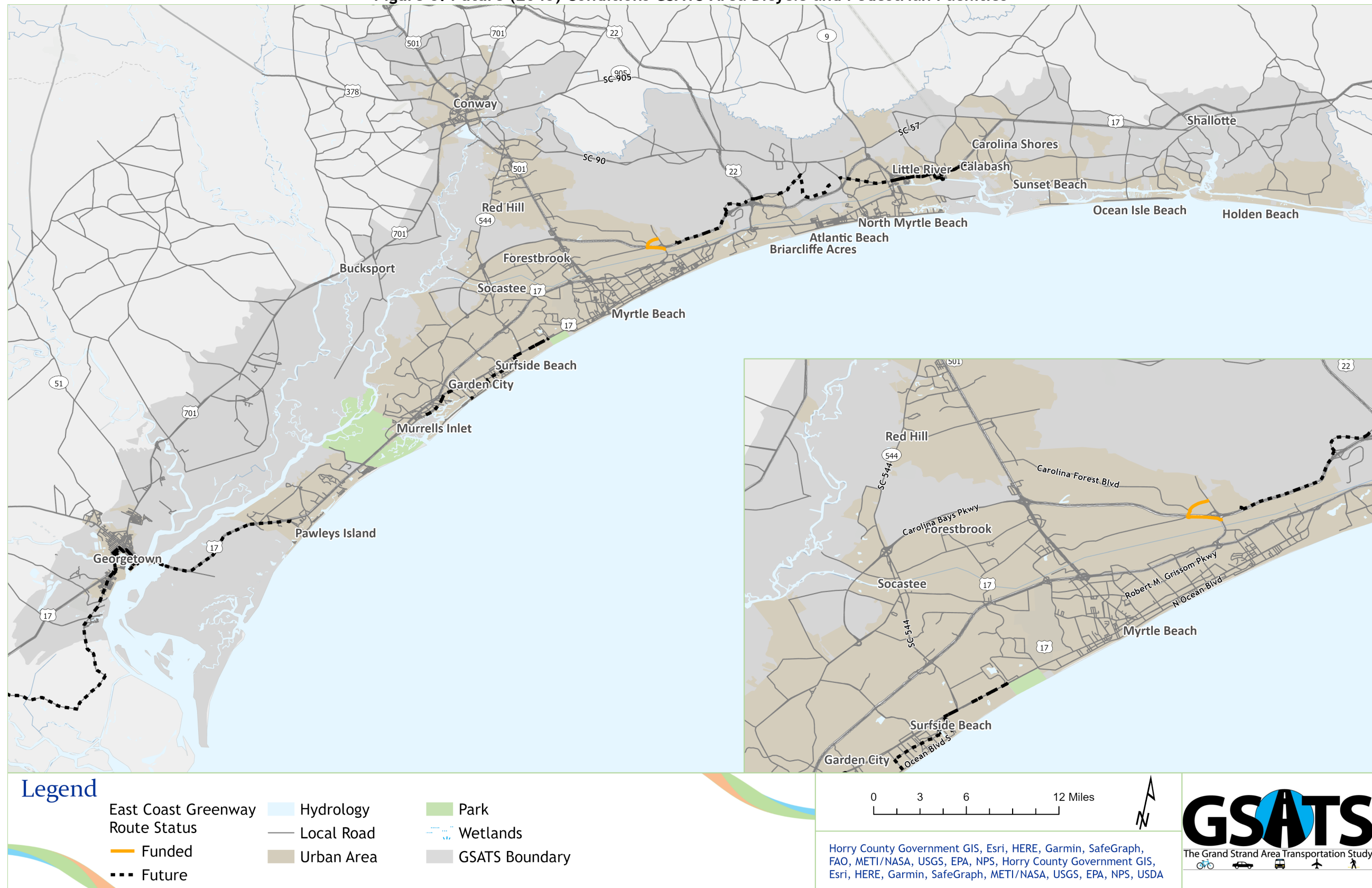
Main Roadway	Intersecting Roadway	V/C	LOS
US 17 Bus	Garden City Conn	1.27	E
SC 544	University Blvd	1.24	E
SC 544	University Blvd	1.04	D
Forestbrook Rd	US 501 SB On Ramp/Off Ramp	1.46	F
US 501 Bus	3rd Ave	2.20	F
US 17	Queens Harbour Blvd	1.88	F
US 501	Frye Rd	1.12	D
US 501 Bus	SC 544	1.72	F
US 17	Mr Joe White Ave	1.15	D
US 501	Seaboard St	1.82	F
US 501	Robert M Grissom Pkwy	1.34	F
US 17 Bus	17th Ave S	1.55	F
George Bishop Pkwy	US 501 SB On Ramp/Off Ramp	1.57	F
River Oaks Dr	Waccamaw Blvd	1.23	E
Forestbrook Rd	Dick Pond Rd	1.95	F
SC 707	Luttie Rd	1.27	E
SC 707	Salem Rd	1.87	F
SC 707	McDowell Shortcut Rd	2.00	F
SC 707	Circle Ln	2.32	F
US 701	Pitch Landing Rd	1.29	E
US 17 Bus	SC 544	1.92	F
US 17	Esso Rd	1.76	F
US 17	Glenns Bay Rd	1.78	F
SC 544	Prestwick Club Dr	1.81	F
US 17 Bus	Glenns Bay Rd	1.17	E
SC 707	Dick Pond Rd	2.00	F
SC 544	US 17 SB On Ramp/Off Ramp	1.34	F
SC 544	US 17 NB On Ramp/Off Ramp	1.35	F
SC 707	Holmestown Rd	2.10	F
Holmestown Rd	Scipio Ln	1.12	D
SC 707	Enterprise Ln	1.78	F
SC 707	Big Block Rd	1.67	F
SC 544	Dick Pond Rd	1.75	F
SC 544	Palmetto Pointe Blvd	2.06	F
US 17	Palmetto Pointe Blvd	1.56	F
US 17 Bus	SC 707	1.88	F
US 17 Bus	Harrelson Blvd	1.49	F
US 501	Carolina Forest Blvd	1.12	D
Forestbrook Rd	McCormick Rd	1.51	F
SC 544	Dick Pond Rd	1.89	F
US 501	Singleton Ridge Rd	1.24	E
US 501	University Blvd	1.30	E
SC 544	Myrtle Ridge Dr	1.34	F
US 378	SC 544	1.93	F
SC 544	Founders Dr	1.49	F
US 501	Cox Ferry Rd	1.59	F

Main Roadway	Intersecting Roadway	V/C	LOS
US 501	Wild Wing Blvd	1.09	D
US 501	Gardner Lacy Rd	1.31	E
Forestbrook Rd	Fantasy Harbour Blvd	1.38	F
US 501 NB Off Ramp	Waccamaw Blvd	1.52	F
Dick Scobee Rd	US 501 NB On Ramp/Off Ramp	1.23	E
Robert M Grissom Pkwy	Pine Island Rd	1.09	D
Harrelson Blvd	Robert M Grissom Pkwy	1.31	E
Harrelson Blvd	SC 15	1.25	E
SC 9	Hill St	1.35	F
US 501 Bus	SC 90	2.74	F
US 701	SC 65	1.07	D

BICYCLE AND PEDESTRIAN FACILITIES

The GSATS region currently has several bike and pedestrian facilities throughout the jurisdictions of its member governments. **Figure 8** shows the future facilities throughout the region. Several bikeways are proposed primarily within the urban areas within the region. The East Coast Greenway, a planned urban trail system from Maine to Florida, will also provide a significant active transportation connection for bicyclists and pedestrians when fully implemented.

Figure 8: Future (2045) Conditions GSATS Area Bicycle and Pedestrian Facilities





PERFORMANCE MEASURES

The guiding principle behind the development and implementation of performance measures for MPOs is to provide a means to assess how the transportation system and/or the agency is functioning and operating. Performance measures help inform decision-making and create better accountability for efficient and effective program implementation. Performance measurements serve the following three functions:

Travel Time Index (TTI)

The TTI quantifies congestion based on user experienced travel time for a given time interval. The TTI is defined as the ratio between the observed travel time to free flow travel time, which represents the percentage increase in travel time compared to free flow conditions. The formula for TTI is presented below:

$$TTI = \frac{\text{Observed Travel Time}}{\text{Free Flow Travel Time}}$$

For example, if under free flow conditions a trip takes 10 minutes, but during a congested time interval that trip takes 15 minutes, the TTI would be equal to 1.5. This TTI indicates that it took the traveler 50% longer than what it would have taken under the free flow conditions to complete the trip.

For purposes of this analysis TTI thresholds will follow guidance from the Federal Highway Administration (FHWA)². This metric is used to quantify how frequently and how severely congested segments and paths in the study corridor are for the average peak season day.

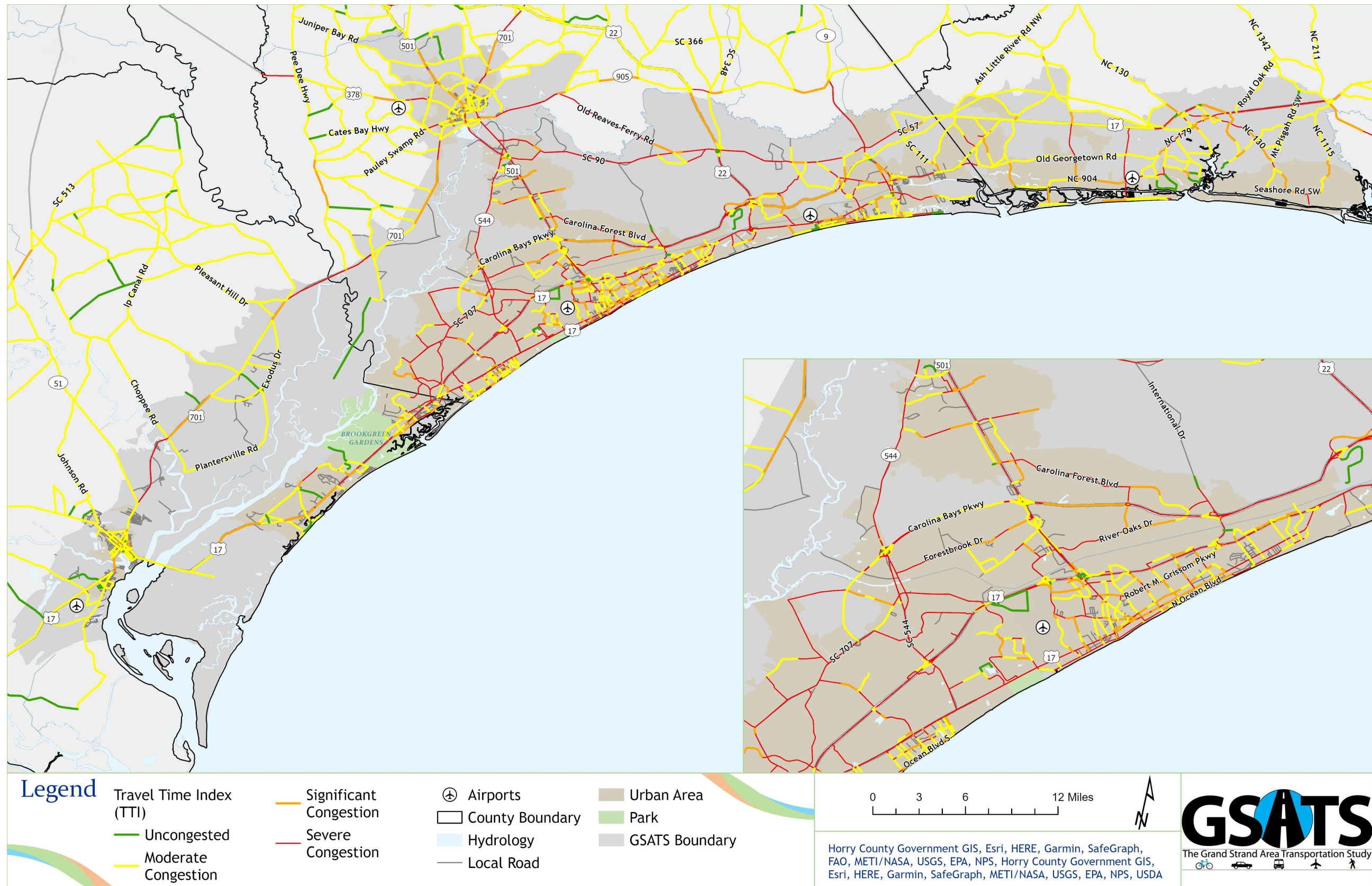
The peak period TTI can be used to describe the severity of congestion under the following:

- Uncongested: $TTI \leq 1.0$
- Moderate Congestion: $1.1 < TTI \leq 1.5$
- Significant Congestion: $1.5 < TTI \leq 2.0$
- Severe Congestion: $TTI > 2.0$

These TTIs are calculated using the 2045 future E+C TDM estimated volumes as ‘observed speeds’ with free flow speeds calculated based on posted speeds. **Figure 9** reveals where future congestion issues occur in the GSATS corridor by summarizing the peak season daily TTI. From the 2019 existing to the future 2045 E+C networks, degraded levels of congestion were consistent throughout the GSATS area in South Carolina with a notable improvement in North Carolina. In North Carolina, a segment of U.S. 17 improved from significant to moderate congestion.

² <https://www.fhwa.dot.gov/tpm/guidance/hif18040.pdf>

Figure 9: Future (2045) Conditions Peak Season Daily TTI



Planning Time Index (PTI)

PTI describes how much total time a traveler would have to plan to ensure on-time arrival compared to free flow conditions for a given time period. When compared to an average TTI, the PTI can be an indicator of the reliability for a segment or path. PTI is another metric used to characterize travel time and is defined as the travel time (95th percentile) to the free flow travel time.

For purposes of this analysis PTI thresholds will follow guidance from the Federal Highway Administration (FHWA). This metric is used to quantify how frequently and how severely congested segments and paths in the study corridor are during the representative month.

The peak hour PTI can be used to describe the severity of congestion under the following:

- Uncongested: $PTI \leq 1.0$
- Moderate Congestion: $1.1 < PTI \leq 1.5$
- Significant Congestion: $1.5 < PTI \leq 2.0$
- Severe Congestion: $PTI > 2.0$

Figure 10 reveals where existing reliability issues occur in the GSATS corridor. The greatest travel time reliability issues occur in all major subsidiaries of the GASTS region. Roadways shaded red indicate severe congestion ($PTI > 2$), meaning it took vehicles over twice as long to complete their trip during the worst day of the peak season compared to free flow conditions. Out of the total 822 roadways analyzed in the existing TDM, 701 roadways (85% of all roadways) operate at severe congestion. The congestion and reliability patterns indicate that vehicles in the GSATS region, traveling during peak times on these roadways, should plan for over double the travel time it would take to complete their trip during free-flow or off-peak times. **Table 6** shows the existing TDM PTI results for congestion for all roadways in the GSATS region and the percentage of these segments in North Carolina and South Carolina.

Table 6: Future E+C (2045) Conditions Peak Season Daily PTI

PTI District	Segments	% of all Segments	NC		SC	
Uncongested	21	2.6%	3	14%	18	86%
Moderate Congestion	24	2.9%	1	4%	23	96%
Significant Congestion	76	9.2%	6	8%	70	92%
Severe Congestion	701	85.3%	100	14%	602	86%
Total	822		110		713	

Figure 10: Future (2045) Conditions Peak Season Daily PTI

