



Upper Savannah Council of Governments Long Range Transportation Plan

2020 - 2040

ABBEVILLE, EDGEFIELD, GREENWOOD, LAURENS, MCCORMICK, SALUDA
COUNTIES

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Introduction

Upper Savannah Council of Governments (USCOG) is responsible for transportation planning activities within the rural portion of our six-county region while the urbanized areas are addressed by two Metropolitan Organizations (MPO's): Greenville Pickens Area Transportation Study (GPATS) for a small area of northern Laurens County and the Augusta Regional Transportation Study (ARTS) for a small area of southern Edgefield County. This arrangement is managed and funded by the South Carolina Department of Transportation (SCDOT) and the United States Department of Transportation (USDOT) through its components including the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). This layered approach provides financial and technical resources to ensure compliance with federal and state laws and policies regarding the transportation system. USCOG's 35-Member Board of Directors sets policy for the Council of Governments. Two-thirds of the members are local elected officials, including state legislators, county council members, and mayors or city council members. County councils appoint the remaining citizen and minority members, some of whom may also be elected officials. The USCOG Board acts as a Regional Transportation Committee that meets regularly to coordinate transportation projects and update various plans, including this Long Range Transportation Plan (LRTP). Public participation is accomplished in various ways as outlined the USCOG Public Participation Plan. USCOG also coordinates closely with our member jurisdictions and uses public comments made during their respective planning efforts to inform the rural transportation program. This is the LRTP for the rural area of the Upper Savannah Region which consists of the following six counties: Abbeville, Edgefield, Greenwood, Laurens, McCormick and Saluda. According to the 2010 Census, the total population for the six-county region is 218,000 of which all are located in the rural areas.

Planning Process

Federal Guidance

On December 4, 2015, President Obama signed into law the Fixing America's Surface Transportation Act, or "FAST Act." It is the first law enacted in over ten years that provides long-term funding certainty for surface transportation, meaning States and local governments can move forward with critical transportation projects, like new highways and transit lines, with the confidence that they will have a Federal partner over the long term. Overall, the FAST Act largely maintains current program structures and funding shares between highways and transit. It is a down-payment for building a 21st century transportation system. The law also makes changes and reforms to many Federal transportation programs, including streamlining the approval processes for new transportation projects, providing new safety tools, and establishing new programs to advance critical freight projects.

The FAST Act will continue MAP-21's emphasis on a performance-based approach to transportation decision-making to support the seven national goals of the federal-aid highway program. These seven national performance goals include:

| <u>Goal area</u> | <u>National goal</u> |
|--|--|
| Safety | To achieve a significant reduction in traffic fatalities and serious injuries on all public roads |
| Infrastructure condition | To maintain the highway infrastructure asset system in a state of good repair |
| Congestion reduction | To achieve a significant reduction in congestion on the National Highway System |
| System reliability | To improve the efficiency of the surface transportation system |
| Freight movement and economic vitality | To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development |
| Environmental sustainability | To enhance the performance of the transportation system while protecting and enhancing the natural environment |
| Reduced project delivery delays | To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices |

The previous transportation authorization, MAP-21, describes Federal Planning Factors issued by Congress to emphasize a national perspective. Under the FAST Act these existing planning factors remain unchanged. However, the FAST Act does add two additional factors to consider.

1. Support the economic vitality of the United States, the States, nonmetropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and nonmotorized users;
3. Increase the security of the transportation system for motorized and nonmotorized users;
4. Increase the accessibility and mobility of people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
10. Enhance travel and tourism.

State Guidance

USCOG adheres to the SCDOT Statewide Transportation Planning Process.

South Carolina Act 114

Each project must be financially constrained in order to be identified in the Transportation Improvement Plan (TIP). Moreover, each road widening, functional intersection and new-location roadway improvement projects must be rated and ranked in accordance with South Carolina Act 114. SCDOT performs the ranking; however, each COG may add regional specific ranking criteria if approved by SCDOT.

State C-Fund Law

The law stipulates that counties spend at least 25% of their apportionment of C-funds based on a biennial averaging of expenditures, on the state highway system for construction, improvements and maintenance. Furthermore, counties are to spend no more than 75% of their apportionment each year on their local system. Also, the balance of uncommitted funds carried forward from one year into the next cannot exceed 300% of the county's total apportionment for the most recent year. Each COG, in partnership with SCDOT, is responsible for implementing a transportation planning process that fully complies with the federal planning requirements established by the FAST Act. Through this process, each COG establishes regional goals and objectives, identifies the current condition of the transportation system, provides research and data analysis, identifies and prioritizes transportation needs for input to the Statewide Multi-Modal Transportation Plan and STIP. The rural planning process is based on the development and maintenance of regional long range transportation plans, which is the foundation for this document.

The vision of a safe, multi-modal, and inter-connected transportation system for the Upper Savannah Region can become a reality. This plan is intended to serve as a tool and guide for the future success in the implementation of the region's transportation system.

USCOG Transportation Goals

As established by the Board of Directors, the long-range transportation goals for the USCOG region are listed below:

1. Identify the current condition of the transportation system.
2. Provide research and data analysis to state and local governments.
3. Assist local governments with transportation and land use planning.
4. Encourage transit cooperation among regional transit authorities and human service providers.
5. Identify and prioritize transportation needs for input to the Statewide Multi-Modal Transportation Plan and STIP.
6. Implement a transportation planning process that fully complies with the federal planning requirements established by the FAST Act.
7. Develop a Rural Planning Work Program (RPWP).

In accordance with the aforementioned goals, the USCOG Long Range Transportation Plan will focus on the following key elements:

- Demographic Trends and Projections
- Roadway Network
- Intersections and Safety
- Bridge Replacement
- Maintenance and Resurfacing
- Signalization
- Public Transit
- Bicycle and Pedestrian Facilities
- Environmental Screening

By focusing on these elements there will be a comprehensive plan in place that be built upon in the future and that addresses the needs for the next 25 years.

Demographic Trends and Projections

1.1 Population

The USCOG region is a rural area, and it is important to understand how the population is changing in order to better plan for future transportation needs. The six-county region has a population of 220,027. The primary population centers are in Greenwood and Laurens Counties with populations of 70,811 and 67,493 respectively. Their combined populations make up nearly 63 percent of all people living in the region, and they are also the most likely to be considered urbanized counties in the area. The remaining counties tend to be more rural. This makes the rural planning effort very important to create opportunities to complement residential and economic growth instead of reacting to growth after it has happened.

Population by County

| | 1990 | 2000 | 2010 | 2019 | Change 2010-2019 | % Change 2010-2019 |
|-------------------------|----------------|----------------|----------------|----------------|---------------------|-----------------------|
| Abbeville | 23,862 | 26,167 | 25,328 | 24,527 | -801 | -3.2% |
| Edgefield | 18,375 | 24,595 | 26,963 | 27,260 | 297 | 1.1% |
| Greenwood | 59,567 | 66,271 | 69,766 | 70,811 | 1,046 | 1.5% |
| Laurens | 58,092 | 69,567 | 66,505 | 67,493 | 988 | 1.5% |
| McCormick | 8,868 | 9,958 | 10,209 | 9,463 | -746 | -7.3% |
| Saluda | 16,357 | 19,181 | 19,907 | 20,473 | 566 | 2.8% |
| USCOG Region | 185,121 | 215,739 | 218,678 | 220,027 | 1,350 | 0.6% |

Source: US Bureau of the Census

Although parts of the USCOG region have seen some growth since 2010, some of the higher growth areas over the last 15 years are:

- Northern Laurens County. This is largely defined as the area between the City of Laurens and the City of Fountain Inn. Growth in this area is largely tied to development along I-385, which is a major impetus for growth in the Upstate.
- Central and northern Greenwood County. The area around the City of Greenwood is prime for residential and industrial growth. A strong manufacturing corridor has developed along SC Highway 246. Industrial parks and open land are available along US Highway 25 north of Greenwood.
- Southern Edgefield County. Adjacent to the growing Augusta (GA) and North Augusta (SC) area, the southern part of the county is also close to roads accessing nearby Interstate 20
- Clinton area, Laurens County. At the intersection of Interstate 385 and Interstate 26, Clinton is poised for growth as a mid-point between the Greenville/Spartanburg area and Columbia.

- Eastern Saluda County. The area around the Lake Murray and US Highway 378 is beginning to see residential development.

1.2 Households

As the population increases slowly and only in certain areas, the number of households follows the same pattern. Household size across the nation has been on the decline, and that trend is true in South Carolina and the USCOG region as well. The number of households can be indicative of the amount of traffic more so than the actual population. All households generate traffic of some kind, even though everyone in that household may not drive.

Households by County

| | 2010 | Average Size | 2018 | Average Size |
|---------------------|---------------|---------------------|---------------|---------------------|
| Abbeville | 9,875 | 2.49 | 9,455 | 2.51 |
| Edgefield | 9,121 | 2.62 | 9,063 | 2.65 |
| Greenwood | 26,189 | 2.57 | 27,207 | 2.49 |
| Laurens | 25,583 | 2.51 | 25,373 | 2.54 |
| McCormick | 4,116 | 2.17 | 3,967 | 2.11 |
| Saluda | 6,827 | 2.85 | 7,211 | 2.77 |
| USCOG Region | 81,711 | 2.54 | 82,276 | 2.51 |

Source: US Bureau of the Census

The number of households in the USCOG region increased between 2010 and 2018 by approximately 565. Greenwood and Saluda Counties added the most households. Greenwood County has seen the largest increase in households, adding 1,018 during this period. Saluda County added 384 households.

1.3 Housing

As the population in the Upstate grows, so does the need for new housing. It is important to recognize the role of housing in transportation planning. As the number of housing units grows, the amount of traffic generated from new developments increases too. This, in turn, affects the travel and commute patterns of the region. As more development occurs in rural areas it will cause similar issues throughout the planning area. Additional investment will be needed to continue to meet the increasing needs.

Housing Units by County

| | 2010 | 2010 Occupied | 2018 | 2018 Occupied | Unit Change |
|--------------|--------|---------------|---------|---------------|-------------|
| Abbeville | 12,076 | 9,875 | 12,122 | 9,455 | 46 |
| Edgefield | 10,385 | 9,121 | 10,875 | 9,063 | 490 |
| Greenwood | 30,795 | 26,189 | 31,381 | 27,207 | 586 |
| Laurens | 30,816 | 25,583 | 31,182 | 25,373 | 366 |
| McCormick | 5,305 | 4,116 | 5,587 | 3,967 | 282 |
| Saluda | 9,194 | 6,827 | 9,384 | 7,211 | 190 |
| USCOG Region | 98,571 | 81,711 | 100,531 | 82,276 | 1,960 |

Source: US Bureau of the Census

Trends in the local housing market are relatively stable. The largest three counties (Greenwood, Laurens, and Edgefield) have maintained consistent new home starts over the eight-year period.

1.4 Population Projections

The USCOG region is expected to be the least populated region in South Carolina for the foreseeable future. Any new population will tend to be concentrated around Greenwood and in northern Laurens and southern Edgefield. The rural areas of the COG will increasingly feel the effects of the expanding influence of development and growth from surrounding metropolitan areas.

Population Projections by County

| | 2019 | 2025 | 2030 | 2035 | 2040 |
|--------------|---------|---------|---------|---------|---------|
| Abbeville | 24,527 | 23,710 | 23,025 | 22,195 | 22,100 |
| Edgefield | 27,260 | 27,310 | 27,475 | 27,425 | 27,500 |
| Greenwood | 70,811 | 71,385 | 71,575 | 71,600 | 72,000 |
| Laurens | 67,493 | 67,415 | 67,500 | 67,550 | 68,000 |
| McCormick | 9,463 | 9,565 | 9,500 | 9,000 | 9,000 |
| Saluda | 20,473 | 20,905 | 21,055 | 21,110 | 21,200 |
| USCOG Region | 220,027 | 220,290 | 220,130 | 218,880 | 219,800 |

Source: US Bureau of the Census, SC Office of Research and Statistics, USCOG Estimates

According to projections incorporating several available sources, the USCOG region as a whole is expected to change very little in population and perhaps to decline in total population by 2040.

1.5 Identified Needs

There is a limited amount of growth forecasted for certain areas of the USCOG region over the next 20 years.

- The Laurens – Fountain Inn area has the potential for the largest area of projected growth in the COG region. Proximity to Greenville and Spartanburg with easy access to Interstate 385 makes this area attractive for residential and industrial uses.
- Central and northern Greenwood County could see the largest concentrated area of residential growth with the addition of new industries. Moving people and goods around the City of Greenwood will be an area of need.
- Southern Edgefield County will see mostly residential growth from North Augusta.
- Eastern Saluda County and the area around Lake Murray will see residential growth.
- Abbeville County along the Greenwood County line near Hodges has the potential for some residential growth.
- McCormick County has future needs improving road connections between the Savannah Lakes Village area and shopping and services in Augusta and Greenwood.

2 Roadway Network

2.1 Existing Conditions

The USCOG region is served directly by two primary interstates and a network of state and federal highways. Interstates provide access to and from neighboring cities, regions, and ports. They are essential to transportation and the economic vitality of the area.

- Interstate 26 in Laurens County is the major interstate in the region. It links the region to the rest of South Carolina and to the Port of Charleston to the south. It also connects the area to Asheville, to the north. The interstate intersects I-85 in Spartanburg County near the city of Spartanburg. It serves as a major conduit for trucks to access the Port of Charleston, one of the largest ports on the East Coast. Sixty (60) percent of goods shipped through the port originate in the Upstate. I-26 in the region runs approximately 12 miles in eastern Laurens County, and it is a four-lane interstate throughout the county.
- Interstate 385 in Laurens County is an interstate spur that connects Greenville and the Upstate to the rest of South Carolina. The interstate connects to I-26 in Clinton and it provides access to Columbia and the Port of Charleston. It also serves as a major commuter corridor for the southern suburbs of Greenville.
- Other nearby interstates include Interstate 85 in the Upstate and Interstate 20 in the Midlands. Interstate 85 provides the impetus for much of the economic development in the Upstate, and provides a direct link to nearby Charlotte, NC and Atlanta, GA. The interstate is in urbanized areas that are not part of the USCOG area. Interstate 20 links Atlanta, GA to Columbia, SC and beyond. It is immediately south of the USCOG region.

United States Highways impact all the rural areas of the six-county region more directly. These roads provide access to many small cities and towns across the area and are the backbones of the rural areas.

U.S. Highway 25 enters the region from Greenville County, where it intersects Interstate 85 to the north and exits near Interstate 20 to the south.

U.S. Highway 76 is entirely in Laurens County within the region. Its path takes it to the southeast where it terminates in Charleston.

U.S. Highway 178 enters the region from Anderson County, where it intersects Interstate 85, and exits at Batesburg-Leesville in Saluda County.

U.S. Highway 221 enters the region from Spartanburg County in the north, crossing Laurens, Greenwood, and McCormick counties before moving into Georgia north of Augusta.

U.S. Highway 378 enters the region from Georgia near Savannah Lakes Village before crossing McCormick, Edgefield, and Saluda counties before leaving the region at the Lexington County line.

The South Carolina Department of Transportation (SCDOT) controls the majority of other roads in the state. There are numerous state designated highways in the rural COG area, and these routes are important to the rural economy, however, due to the large number of them it is impractical to list all of them.

State highways of note for transportation planning purposes:

- S.C. Highway 72 is a 125-mile (201 km) state highway, traversing interior portions of the South Carolina Piedmont region. The route connects many smaller communities outside major metropolitan areas and is roughly parallel with Interstate 85 (I-85) to the north. SC Highway 72 crosses the counties of Abbeville, Greenwood, and Laurens.
- S.C. Highway 28 runs north-south across Abbeville and McCormick counties. Once south of Anderson and Interstate 85, it switches into a two-lane rural road through Antreville, around Abbeville, and through McCormick. Along the banks of Lake Strom Thurmond, it eventually crosses over a non-dammed section of the Savannah River near Augusta, Georgia.
- S.C. Highway 121 runs north-south across Edgefield and Saluda counties. The route is concurrent with US Highway 25 north out of North Augusta and Interstate 20 to the intersection with SC Highway 19 at Trenton. Then it turns north through Johnston and Saluda before it crosses out of the region at the Newberry County line on its way to intersect with Interstate 26.

2.2 Strategic Corridor Network

As part of the 2040 South Carolina Multimodal Transportation Plan, the statewide Strategic Corridor Network was updated. These corridors provide connection both locally and regionally for the movement of goods and people for business and personal purposes.

The corridors are updated and determined through a quantitative process intended to both identify and differentiate these corridors. The roadways here categorized on a three scale rating: Low (1), Medium (2) and High (3). Below is a summary of the criterion used for this exercise:

1. Average Annual Daily Traffic
2. Truck Average Annual Daily Traffic
3. Statewide and Regional Connectivity
4. Parallel Reliever Potential
5. Multimodal Connectivity
6. Population Totals and Population Growth to 2040
7. Census Urbanized Area Classifications
8. Employment Impacts
9. Tourism Impacts

Once the roadways were scored and ranked, they were split into “Tiers,” intended to differentiate the corridors by means of their overall importance to the region and the state. The tier system is summarized as follows:

Tier 1: Roadways that are on the South Carolina primary and secondary network AND receive a high cumulative quantitative score.

Tier 2: Roadways that are on the South Carolina primary and secondary network AND receive a medium cumulative quantitative score.

Tier 3: Roadways that are on the South Carolina primary and secondary network AND receive a low cumulative quantitative score. Tier 3 also includes roadways that scored high on the quantitative factors, but are not classified as primary or secondary highways.

For the purposes of this plan, the Strategic Corridor Network roads in the Upper Savannah COG region include: Interstate 26 and Interstate 385 in Laurens County, SC Highway 72 across the region, US Highway 178 from Greenwood to Saluda, US Highway 378 from Saluda to the Lexington County Line, and SC Highway 121 from Saluda south to North Augusta.

2.3 Freight Network

The movement of goods is critical to the economic health of a state, particularly in one such as South Carolina that has access to major ocean ports, seven regional airports, inland ports, rail lines and highways. The purpose behind the development of South Carolina's first Statewide Freight Plan (SFP) is to satisfy the requirements of federal legislation and more importantly respond to the critical role of transportation infrastructure and freight movement to the economy of the state.

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

2.3.1 Highway

Highway goods movement is a cornerstone to the national freight transportation system. Highway, or "trucking", transports 70 percent of all the tonnage in the U.S. This takes place as "over-the-road" or short to long distance truck trips and "final mile" or pick-up and delivery movements. The dominance of the mode is derived through access and availability. Except where shippers or receivers have constructed facilities with immediate access to rail, water, or air assets, trucks serve as a connector between the alternative mode and the user or as the single transport mode.

2.3.2 Rail

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

2.4 Trends and Analysis

2.4.1 Mode Choice

The dominant mode of transportation in the Upstate continues to be the automobile. More than 85 percent of workers indicated that they drive to work alone; 9 percent carpool and approximately 2 percent walk. Public transit is not a popular option, but given the sprawling nature of the region and the relatively cheap cost of gasoline it is not a surprise. Abbeville County residents have the highest percentage of bike and pedestrian commuters at 3.5 percent, while Greenwood County residents have the highest percentage of single person auto commute trips at nearly 87 percent.

2.4.2 USCOG Travel Model Analysis: Current and Future Regional Traffic

The USCOG Regional Travel Demand Model was designed to support corridor planning, project-level travel forecasts, air quality conformity (cost-benefit measures), air quality analysis (pollution of HC, NOX, CO), environmental documents, freight planning, economic development studies, toll studies, public transportation planning, land use and zoning scenario planning, evacuation scenario planning, and many other land use and transportation planning activities. When simplified, the basic purpose of the USCOG Model is to replicate traffic conditions in the USCOG region on an average weekday, in base year 2010 and forecast year 2040.

2.5 Identified Needs

As the USCOG region continues to develop, roadway capacity projects will continue to be a staple in the more populated areas. However, as the travel model analysis indicates, capacity is not as important of an issue in the rural areas. The greatest needs identified consist of projects that mitigate intersection safety issues, roadway quality issues, and other function and safety issues.

2.5.1 Priority Projects

The USCOG Board of Directors began the process of updating the list of candidate projects in early 2020 by evaluating the condition of the existing transportation network.

Each county identified its highest priority projects based on field inspections, SCDOT priority lists, and interviews with key staff. To support this fieldwork, USCOG staff prepared maps and trend information discussed in the “Demographic Trends and Projections” and “Roadway Network” sections of this plan. Additionally, data from the Statewide Travel Demand Model was used to validate assumptions. Additionally, SCDOT’s 2040 Multimodal Transportation Plan was referenced as a policy guide and strategic tool for maximizing consistency and minimizing conflicts.

2.5.2 Financing and Fiscal Constraint

Guideshare is formula funding made available to each of the South Carolina Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs) for System Upgrade projects. The Guideshare dollar amount is calculated by taking the MPO’s and COG’s specific proportion of the state population and applying it to the total available funds for System Upgrade projects. Guideshare is the only revenue source that is taken into consideration in preparing the 2040 USCOG Fiscally Constrained Transportation Program. The most recent allocation of Guideshare funds for the USCOG region totals \$6,263,000 annually.

It is important to understand the different roles and relationship between the Long Range Transportation Plan (LRTP) and the Transportation Improvement Plan (TIP). The LRTP identifies critical transportation needs over 20 or more years and establishes a broad vision for meeting those needs. Conversely, the TIP is a short-range document that lists specific “programmed” projects that have actual committed funding (i.e. Guideshare) associated with them. Thus, it is accurate to characterize the LRTP as the “vision” document and the TIP as the “implementation” document. Currently, the USCOG RTIP identifies and programs projects from Fiscal Year (FY) 2019 through FY2024.

As stated, the current USCOG program projects through FY2024. Guideshare funding is currently “committed” to projects listed in the TIP through part of FY2022, leaving a balance of \$4,402,000 for FY2022 and the entire annual allocation of \$6,263,000 for FY 2023 that has not yet been committed to any projects. Adding these uncommitted funds to Guideshare revenue anticipated for FY2024 through FY2040, results in the following total anticipated Guideshare funds through FY2040 available for planning purposes;

| | |
|---|---------------|
| FY2022 Uncommitted Guideshare Funds (partial year) | \$ 4,402,000 |
| FY2023 through FY 2040 Guideshare Funds (18 full years) | \$112,734,000 |
| Total Uncommitted Guideshare Funds through FY2040 | \$117,136,000 |

Fiscal constraint is a demonstration of budgeting sufficient funds (Federal, State, local, and/or private) to implement proposed transportation system improvements, as well as to operate and maintain the entire system, through the comparison of revenues and costs. With respect to the 2040 USCOG LRTP Fiscally Constrained Transportation Program, this means restricting the list of proposed projects to be included in the transportation program to the amount of anticipated Guideshare revenue that is available through FY2040, or \$117,136,000.

Proposed projects were scored and ranked. If all projects were to be built based upon the preliminary project cost estimates calculated for each project, the sum total would be in excess of \$150 million dollars. However, as calculated above, there is only an available anticipated Guideshare revenue total through FY2040 of \$117,136,000. In order to prepare a fiscally constrained program, the total costs for all of the projects in the program must remain within the “constraint” of \$117,136,000. To stay consistent with the scoring and ranking process, the projects included must also be the highest ranked projects in their respective project types. The transportation program tables are followed by the list of potential but currently unfunded projects that represent transportation needs that cannot be addressed with anticipated Guideshare revenue before FY2040.

The priority for the 5-year lifecycle of the LRTP is to refocus our attention and resources, and to take a practical approach to addressing the needs of the transportation system by allocating future Guideshare funds towards intersection improvement projects that will help reduce congestion and system upgrades will improve safety measures.

2.5.3 Project Scoring and Ranking Methodology

With only minor variations, the 2040 USCOG LRTP Project Ranking Methodology is based upon SCDOT Act 114 of 2007, which established changes to the South Carolina Code of Laws, adding Sections 57-1-370 and 57-1-460 requiring the SCDOT to promulgate new regulations describing its project selection process. SCDOT released Engineering Directive Number 60 on May 17, 2010, detailing the COG and MPO project ranking process. The directive included commission-approved criteria with weightings recommended to be used by MPOs and COGs for road widening, functional intersection, and new-location roadway improvement projects.

As per SCDOT Offices of Planning and Environmental Management recommendations, USCOG has adopted ACT 114 ranking methodology with only minor variations. These minor variations include making some modifications to the weighting of the scoring criteria to give greater weight to projects that promote economic development. The complete 2040 USCOG LRTP Project Ranking Methodology is included in this document. SCDOT also recommended that proposed projects be divided into three distinct categories: intersection projects, new location projects, and widening projects. As explained by the SCDOT Offices of Planning and Environmental Management, this separation by project type allows for all projects to be scored and ranked against only projects of the same type; i.e. widening projects scored and ranked against other widening projects. For the purposes of this LRTP, projects were separated by project type as recommended by SCDOT and limited to intersections and widenings.

INTERSECTIONS

Scoring:

| | |
|----------------------|------------|
| Traffic Volume | 25% |
| Public Safety | 20% |
| Truck Traffic | 15% |
| Economic Development | 8% |
| Environmental Impact | 2% |
| Traffic Status | 20% |
| Priority Network | <u>10%</u> |
| | 100% |

Criteria: Traffic Volume

Weight: 25% of overall score (25 points maximum)

Basis: Quantifiable based on current traffic volumes

Methodology: Intersections to be scored based upon current traffic volumes: A total of 30 points shall be awarded to intersections with the highest traffic volumes. Remaining intersections receive points proportional to their current traffic volumes

Criteria: Public Safety

Weight: 20% of overall score (20 points maximum)

Basis: Quantifiable based on collision data.

Methodology: Intersections to be scored based upon a Safety Score provided by SCDOT Traffic Engineering: The safety score is derived based on an adjusted accident rate calculated by the number of crashes within given location divided by the volume and multiplied by the number of years. The adjusted accident rate incorporates an ADT factor to give greater consideration to higher volume roads. Safety scores range from 0 to 5 points. The higher the safety score, the higher the concern for safety. Therefore, safety scores will be multiplied by five; so that projects receiving the highest safety score (highest safety concern) will score the maximum 25 points.

Criteria: Truck Traffic

Weight: 15% of overall score (15 points maximum)

Basis: Quantifiable based on current volume and average daily truck traffic estimates.

Methodology: Intersections to be scored based upon data provided by SCDOT Road Data Service. The SCDOT Truck Traffic percentages are based on around the state. This then yields an average percent of trucks which SCDOT uses for all major collectors. Truck percentage is converted to a truck ADT to give greater consideration to higher volume roads. A total of 20 points shall be awarded for the road segment with highest Truck Traffic Percentage. Remaining segments shall receive points proportional to their Truck Traffic Percentage.

Criteria: Economic Development

Weight: 8% of overall score (8 points maximum)

Basis: Quantifiable based on specific impact to local economic development.

Methodology: Intersections to be scored based upon the following 4 economic development criteria:

2 points Accessibility to large employers/employment areas

2 points Reduces congestion or directly benefits regional freight mobility

2 points In vicinity or directly serving existing/proposed regional industrial areas

2 points Project facilitates regional transportation of the workforce

Criteria: Environmental Impact

Weight: 2% of overall score (2 points maximum)

Basis: Quantifiable based on an assessment of potential impacts to natural, social, and cultural resources.

Methodology: Road segments to be scored based upon their impact in the following criteria categories:

No negative impact on areas with over 50% Low and Moderate Income majority Census tract: 1 point

No negative impact on Natural Resources: 1 point

Criteria: Traffic Status

Weight: 20% of overall score (20 points maximum)

Basis: Quantifiable based on current traffic movement timing

Methodology: *Traffic status* presents the basic knowledge of road traffic. Here the traffic status is preliminarily divided into three classes, namely *free*, *jam*, and *accident*. By *free*, we mean that the drivers do not have to slow down due to external factors. Note that *free* and *jam* cannot occur simultaneously in the same road segment. Thus in order to confirm the status automatically in the management system, there must be criteria for *free*. The attribute can be defined on the basis of average speed or flow. *Jam* can be graded according to its severity. The jam grade an one important attribute of *jam*. *Accident* has general attributes such as location, grade, etc. The *accident* class can be further divided according to type or object if necessary in applications.

Criteria: Priority Network

Weight: 10% of overall score (10 points maximum)

Basis: Quantifiable based on location or proximity

Methodology: For the purposes of this plan, the Strategic Corridor Network roads in the Upper Savannah COG region include: Interstate 26 and Interstate 385 in Laurens County, SC Highway 72 across the region, US Highway 178 from Greenwood to Saluda, US Highway 378 from Saluda to the Lexington County Line, and SC Highway 121 from Saluda south to North Augusta.

WIDENINGS

Scoring:

| | |
|-------------------------------|------------|
| Traffic Volume and Congestion | 35% |
| Public Safety | 10% |
| Pavement Quality Index | 3% |
| Truck Traffic | 10% |
| Economic Development | 10% |
| Environmental Impact | 2% |
| Financial Viability | 5% |
| Priority Network | <u>25%</u> |
| | 100% |

Criteria: Traffic Volume and Congestion

Weight: 35% of overall score (35 Points maximum)

Basis: Quantifiable based on current traffic volumes and the associated level of service (LOS) condition.

Methodology: Road segments to be scored based upon calculated LOS:

0 points LOS A
5 points LOS B
10 points LOS C
15 points LOS D
20 points LOS E
25 points LOS F

The SCDOT LOS are determined using the daily volume-capacity ratio (V/C) and are based on LOS C capacities. The SCDOT V/C LOS criteria are:

LOS A V/C less than 0.50
LOS B V/C 0.50 and less than 0.75
LOS C V/C 0.75 and less than 1.00
LOS D V/C 1.00 and less than 1.15
LOS E V/C 1.15 and less than 1.35
LOS F Greater than 1.35 V/C

Criteria: Public Safety

Weight: 10% of overall score (10 points maximum)

Basis: Quantifiable based on collision data.

Methodology: Road segments to be scored based upon a Safety Score provided by SCDOT Traffic Engineering: The safety score is derived based on an adjusted accident rate calculated by the number of crashes within given location divided by the volume and multiplied by the number of years. The adjusted accident rate incorporates an ADT factor to give greater consideration to higher volume roads. Safety scores range from 0 to 5 points. The higher the safety score, the higher the concern for safety. Therefore, safety scores will be multiplied by three; so that projects receiving the highest safety score (highest concern) will score the maximum 15 points.

Criteria: Pavement Quality Index (PQI)

Weight: 3% of overall score (3 points maximum)

Basis: Quantifiable based on SCDOT Road Data Services most current pavement evaluation assessment.

Methodology: Road segments to be scored based on PQI provided by SCDOT Road Data Services: A total of 10 points will be awarded for the road segment with lowest PQI Score. Remaining segments receive points proportional to their PQI Score.

Grade for pavement condition is called a Pavement Quality Index (PQI). PQI is made up of two components—one that measures rutting and roughness and one that measures pavement distress (cracking, raveling). PQI range is from 0.0 to 5.0 where 0.0 – 2.6 is “poor” condition, 2.7–3.3 is “fair” condition, and 3.4–5.0 is “good” condition.

Reconstruction range is 0.0 to 2.4 and usually involves the complete replacement of the pavement structure.

Rehabilitation range is 2.4 to 3.2 and requires structural enhancements to improve a pavement’s load carrying capability—i.e.; adding additional layers of asphalt. Preservation range is 3.2 to 5.0 and involves low cost treatments such as chip seals, crack sealing, or ultrathin asphalt overlays placed at the right time to slow pavement deterioration.

Criteria: Truck Traffic

Weight: 10 % of overall score (10 points maximum)

Basis: Quantifiable based on current volume and average daily truck traffic estimates.

Methodology: Road segments to be scored based upon data provided by SCDOT Road Data Service. In some instances, the SCDOT Truck Traffic percentages are based on functional classification averages. This is because SCDOT can only do actual vehicle classification counts on a small percentage of the roads it maintains around the state. This then yields an average percent of trucks which SCDOT may use for a specific road classification. Truck percentage is converted to a truck ADT to give greater consideration to higher volume roads. A total of 10 points shall be awarded for the road segment with highest Truck Traffic Percentage. Remaining segments shall receive points proportional to their Truck Traffic Percentage.

Criteria: Economic Development

Weight: 10% of overall score (10 points maximum)

Basis: Quantifiable based on specific impact to local economic development.

Methodology: Intersections to be scored based upon the following 4 economic development criteria:

5 points Accessibility to large employers/employment areas

5 points Reduces congestion or directly benefits regional freight mobility

5 points In vicinity or directly serving existing/proposed regional industrial areas

5 points Project facilitates regional transportation of the workforce

Criteria: Environmental Impact

Weight: 2% of overall score (2 points maximum)

Basis: Quantifiable based on an assessment of potential impacts to natural, social, and cultural resources.

Methodology: Road segments to be scored based upon their impact in the following criteria categories:

No negative impact on areas with over 50% Low and Moderate Income majority Census tract: 1 point

No negative impact on Natural Resources: 1 point

Criteria: Financial Viability

Weight: 5% of overall score (5 points maximum)

Basis: Quantifiable based on project cost estimates and 20-year maintenance cost.

Methodology: Calculate total capital plus 20-year maintenance cost per mile:

Road segment with lowest Total 20-year cost per mile 5 pts

Road segment with highest Total 20-year cost per mile 0pts

Remaining segments receive points proportional to their Total 20-year cost per mile

Criteria: Priority Network

Weight: 25% of overall score (25 points maximum)

Basis: Quantifiable based on location or proximity

Methodology: For the purposes of this plan, the Strategic Corridor Network roads in the Upper Savannah COG region include: Interstate 26 and Interstate 385 in Laurens County, SC Highway 72 across the region, US Highway 178 from Greenwood to Saluda, US Highway 378 from Saluda to the Lexington County Line, and SC Highway 121 from Saluda south to North Augusta.

2.5.4 Project Recommendations

All transportation improvement projects will be evaluated and ranked. Those projects that are required to be rated and ranked in accordance with Act 114 will be done by SCDOT and all other projects that fall outside of Act 114 will be rated and ranked by guidelines established by the USCOG Board of Directors.

The transportation improvement recommendations within this plan will be broken out in two categories: **Priority Projects (fiscally constrained)** and **Potential Projects (unfunded)**. Priority Projects listed in the LRTP will be eligible for programming in the Transportation Improvement Program (TIP) when Guideshare funds are available. Once approved by the USCOG Board, the project will move to the SCDOT Commission to become part of the State Transportation Improvement Program (STIP). Unfunded projects can be shifted onto the priority projects list if the ranking of a project changes and funding is available. The LRTP is meant to be a living document. Therefore, prior to the next update of the plan (5 years from the approval date), identification of additional transportation projects can be submitted by letter to the USCOG. The identified transportation improvement project(s) will be provided to the USCOG Board of Directors to determine the appropriate action needed to ensure proper consideration is given to the new project.

The intent of this plan is to move down the list of prioritized intersections in a fiscally constrained manner. Widening projects are ranked in case funding becomes available from another resource. Widenings that will require multi-year amounts of Guideshare funding will be considered on an as-needed basis and if funding is available.

Intersections and Safety

3.1 Existing Conditions

A safe and efficient transportation system is critical to the livelihood of a community. The transportation network facilitates the internal day-to-day functioning of the community and provides access to and from the outside world whereby goods and services are exported and imported. Safety concerns are a major issue on roads in rural areas. Low traffic volumes encourage speeding along some routes and narrow, two-lane roads without paved shoulders can leave little room for error. Furthermore, many rural roads are simply paved dirt roads, and the resulting intersections are often angled in ways that are dangerous due to limited visibility of oncoming traffic. The need for safety and intersection improvements in rural areas is so widespread, that it is not practical to attempt to address all shortcomings at once. Careful review and prioritization of projects is needed to ensure that resources are used most effectively. An important part of prioritizing improvement projects is identifying opportunities when road widening occurs in a rural area. The new design can often be adjusted to upgrade the safety of the road and its intersections at the same time. However, many rural roads have safety issues but do not need to be or cannot be widened. Fortunately there are a number of options for addressing safety concerns on rural roads. These include:

- **Widening and paving shoulders.** Many rural roads are narrow and have very narrow or no paved shoulders, and frequently grassed shoulders slope steeply down into drainage ditches. This means that drivers veering even slightly out of a lane may lose control. Stabilizing and paving shoulders can provide a needed buffer for travelers on the road. As an added benefit, these can be designed into bike/pedestrian facilities. Rural accidents involving non-motorists have extremely high fatality rates due to increased speeds and limited visibility. Providing them facilities outside of the travel lanes can be very beneficial in preventing these accidents.
- **Realigning intersections and curves.** Rural roads are frequently winding and feature dangerous intersections. This can lead to drivers losing control of their vehicle, or failing to yield to oncoming traffic. Redesigning and straightening curves, as well as realigning intersections, can address problem locations.
- **Traffic calming.** Traffic calming can be defined as a combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users. The SCDOT outlines a range of options for traffic calming in their “Traffic Calming Guidelines” publication, including but not limited to speed humps, raised crosswalks and landscaped medians, traffic circles, physically reducing lane widths, and road closures. These guidelines are generally applied to low volume streets with a low amount of through traffic.
- **Other intersection improvements.** Review of the situation at key intersections can result in other suggested improvements, based on the problems that exist there. This can frequently overlap with other types of improvements, as described in the other chapters about signalization and maintenance.
- **Lowering speed limits.** This low-cost measure can help reduce speeding, and therefore reduce the number of severe accidents on the road. However, enforcement is key in ensuring speed limits are obeyed.

- Median barriers. Most prominently, this can be seen in the SCDOT's interstate cable barriers initiative. In general, the purpose of this is to prevent head-on collisions resulting from vehicles crossing over a median.
- Lane and road restrictions. This is also primarily used on interstates. Truck lane restrictions can result in fewer fatal accidents involving heavy trucks. A similar concept is designating certain roads as truck routes, while limiting truck access to others.
- Traffic law enforcement. Since driver error is a substantial contributing factor to rural accidents, law enforcement can be an important partner in addressing safety concerns in certain target areas. Additionally, law enforcement personnel can be very effective in identifying trouble spots that need to be addressed in some manner.

3.2 Identified Needs

SCDOT, through their safety program, already evaluates and prioritizes safety projects statewide.

Bridges

4.1 Existing Conditions

The Upstate has variable terrain that is typical of the piedmont region. Rivers and streams flowing down from the mountains create obstacles for human traffic. Many bridges exist as a result of this need. In the past, fording or ferrying was the primary method of crossing these waters. Over time technology advanced to the point that bridges were an effective and economical solution to crossing rivers and streams. Because the terrain ridges tend to run from the northwest to the southeast, the roads running perpendicular to the ridges tend to require bridges. This generally translates to an east-west traffic flow. The major cities and I-85 each line up in this way, making the need to the presence and maintenance of adequate bridges that much more important to the future of the Upstate.

The USCOG area has 2,000 SCDOT-maintained bridges; of which 350 bridges are considered substandard by SCDOT. There are two main categories of bridges which are considered substandard and eligible for rehabilitation or replacement. Structurally deficient bridges are either restricted to light vehicles only, closed, or require immediate rehabilitation to remain open. Functionally obsolete bridges, however, are not necessarily structurally deficient. A functionally obsolete bridge has deck geometry, load carrying capacity, clearance, or approach roadway alignment that no longer meets the criterion for the system in which it is part. There are 000 structurally deficient bridges and 000 functionally obsolete bridges in the region as of December 2019.

Maintaining all of the regions bridges in good, functional condition is a major task. Currently, bridge repair and replacement projects are prioritized by SCDOT. Similar to the pavement management used to prioritize road maintenance projects, SCDOT uses a Bridge Management System (BMS) to prioritize bridges. The development, implementation, and data collection of the BMS began in the early 1990's, with full scale operations starting in 1998. The system provides detailed analyses of South Carolina's bridge needs and prioritizes recommendations. Although replacement projects have been the primary focus, improvements such as widening and raisings, maintenance repairs, and rehabilitations are now being considered.

Statewide bridge inspection continues to be a critical component for federal Bridge Program Funds. SCDOT inspects approximately 6,500 bridges per year and contracts underwater inspections for another 60 each year. The data collected is an integral part of the BMS.

Statewide the number of substandard bridges continues to rise. Current bridge funding levels are far below what is required to make significant improvements to the system. The primary factors that affect this trend are the overall construction history and age of the bridge infrastructure, a historical lack of emphasis on bridge maintenance, and inadequate funding levels. Inadequate funding and the growing transportation needs of our state will prevent a major reduction in the percentage of substandard bridges.

4.2 Identified Needs

The SCDOT has designated 20 bridge projects for funding in the USCOG region (per the latest STIP).

Maintenance and Resurfacing

5.1 Existing Conditions

Maintenance is an essential part of any transportation network. Proper maintenance keeps a system functioning properly and safely. Improper or deferred maintenance can create hazards, as well as requiring a much larger expense for rebuilding of facilities at a later date. Regular maintenance activities include repaving and resurfacing, chip seal, slope and shoulder maintenance, pavement marking, mowing, drainage system improvements, maintenance of rest areas and other roadside facilities, and related activities.

As the road network grows, so does the maintenance burden for those responsible for the facilities. More than 60% of the USCOG's rural roads are SCDOT maintained. However, since most of these roads serve as local roads they are ineligible for federal aid dollars. Roads classified as a collector, with annualized average daily traffic (AADT) volume of 1,000 or greater are eligible for federal aid dollars. The remaining roads must be maintained with state or local funds. As funding for road maintenance has decreased many roads have not been maintained properly. To this end, counties in the region have begun to allocate funding for road maintenance.

The condition of the state maintained route system is assessed by the SCDOT Pavement management office. One third of the system is assessed annually to determine the surface conditions of the driving lanes. The condition of the pavement is expressed in terms of the Pavement Quality Index (PQI) and is based on pavement surface distress and roughness. The condition categories range from Very poor to Very Good. The PQI scale ranges from 0 to 5, with Poor ranging from 0 to 2.6 and Good ranging from 3.4 to 5. This information is used to prioritize maintenance projects.

Primary roads, US or SC routes, have a higher percentage of facilities that are ranked in the lowest categories of pavement quality, possibly due to heavy use. Table 13 lists all federal aid eligible primary roads in the USCOG region with PQI scores of less than 2.6. The road segments are categorized by milepost, the system used by the SCDOT. Note that some roads may be within MPO jurisdictions.

Signalization

6.1 Existing Conditions

Signalization is an integral part of a transportation system. Properly used, it can ensure safe and orderly progression of traffic. If improperly installed and maintained, however, it can result in unnecessary delays in traffic flows.

In the USCOG region all rural traffic signals are generally maintained by SCDOT. Maintenance and repair of traffic signals is a regular function of SCDOT's maintenance staff. The SCDOT frequently conducts traffic studies at intersections to determine whether new traffic signals are needed. The factors considered in determining whether a signal is warranted include the number of vehicles approaching the intersection, frequency and type of accidents, physical layout of the intersection, average speed, and future road construction plans.

In order to assure that signals are efficiently handling traffic flows, the timing of the light cycles for signals are periodically revisited by the maintaining authority. When there are a series of signals along a road, they are frequently connected in a system, which simplifies the process of coordinated signal timing along the road. This can help travelers avoid repeatedly hitting red lights, and can actually improve overall traffic flow on a road. There are more than 400 traffic signals in the USCOG region. They tend to be located at major intersections along primary routes in the region.

At-grade railroad crossings are another location where signalization is important. SCDOT staff also performs the function of inspecting and maintaining these crossings, and a pool of funding is available to upgrade these crossings as needed. These funds are extremely limited which means that only a few crossings are can be completed on a yearly basis statewide. Prioritization is based on similar criteria to other safety projects.

Intelligent Transportation System (ITS) strategies are increasingly used to manage traffic flow. ITS can be defined as electronics, communications, and information processing that are integrated to improve the efficiency or safety of surface transportation. SCDOT has developed and deployed ITS across the state. These systems include the latest transportation technologies, such as closed circuit television cameras, highway advisory radios, changeable message signs, local Traffic Control Centers (TCC) and a central Traffic Command Center (TMC). A key application for ITS in rural areas is notification of nonroutine traffic events, such as major delays due to accidents or construction.

6.2 Identified Needs

Here is a summary of identified signal needs for the USCOG region. These projects are not so much about installing new signals where there were none, but upgrading equipment and improving signal timing to increase traffic flow efficiency.

Public Transit

7.1 Existing Conditions

Rural public transportation presents a unique challenge. Long trips and low population densities mean that it is a challenge to get sufficient ridership to support transit routes. However, the lack of transportation options combined with the prevalence of elderly and low-income people in many rural communities means that there is a need for such a service.

7.2 Transit

7.2.1 McCormick Area Transit - Low cost public transportation in McCormick County. Areas served are McCormick, Greenwood, Abbeville, Edgefield, Aiken, and Augusta, GA.

7.2.2 Edgefield County Senior Center Peach Blossom Express provides public transportation to anywhere in the Central Savannah River Area (CSRA).

7.2.3 Disabilities and Special Needs Boards

The USCOG region has two Disabilities and Special Needs Boards that provide Title IX transportation services for eligible clients in their own service area respectively. Laurens County Disabilities and Special Needs serves Laurens County, and the other five counties in the region are served by the Burton Center. Both use agency- operated vehicles but may contract out for services as needed.

7.2.4 Private Providers

A number of private transportation companies, including taxicab and shuttle companies operate in the USCOG region. These companies provide specialized services for individuals and groups.

7.3 Regional Transportation

7.3.1 Bus

Greyhound has locations in the cities of Anderson, Greenville, Spartanburg, Columbia, Aiken, and Augusta. These locations are not in the USCOG region but should be noted. They are within driving distance if a connecting ride can be found.

7.3.2 Train

Amtrak does not have a stop in the region. There is a stop in Columbia, Clemson, Greenville, and Spartanburg if a connecting ride can be found.

7.4 Identified Needs

As previously mentioned, population and employment density are determining factors when looking at the viability of fixed route service. There are very few moderate density areas in the region: Greenwood, Laurens, Clinton, Abbeville, and Saluda. However, the majority of the rural area is low density.

Another key indicator of transit need is the percentage of households without access to a vehicle. Often these individuals depend on others to provide them transportation, particularly in rural areas where destinations are too far to reach by foot or pedal. There are particularly high concentrations of these households in the most rural areas.

The distribution of senior citizens and people with disabilities can also be an indicator of transit need, since many of these individuals may be unable or unwilling to drive an automobile. The USCOG region is becoming older on average. Overall, seniors aged 65 and up, account for 15 % of the region population.

Bicycle and Pedestrian Facilities

8.1 Existing Facilities

The facilities available to walkers and bikers are varied in the rural USCOG area. Walking and biking are, by their nature, localized modes of transportation. So, they tend to be focused around nodes of activity. These nodes are typically existing communities and other places with a relatively dense built environment. The parts of these towns that were constructed before the 1940s, before the widespread use of the automobile, tend to be more pedestrian friendly. However, many business centers and places of employment are no longer located in the historic cores. They tend to locate near major highways or in urban areas. As a result, the demand for pedestrian and bicycle facilities is low.

Historically, roads were designed for pedestrian and equine travel. It is only within the last century that the automobile has replaced the pedestrian as the primary mode of travel. Facilities accommodating pedestrians and bicycles tend to be separate from automobile traffic. Sidewalks and bicycle lanes are the most common modes for each mode, respectively and are becoming more prolific through the nation. Because of the historical connection with pedestrians, and the universal accessibility to walking, it can be assumed that all roads will be used for pedestrian traffic at some point.

Fatality rates for bicycle/ pedestrian traffic are higher in rural areas than in urban areas. Speed is a contributing factor to this problem. According to the National Highway Traffic Safety Administration, a pedestrian hit by a car traveling 20 miles per hour has a 95 percent chance of surviving. At 40 miles per hour the chance of survival drops to 15 percent.

Currently, the USCOG does not fund any bicycle/ pedestrian facilities the region. These are funded on the state or county level.

8.1.1 Pedestrian Facilities

The many small towns in the region each have their own pedestrian friendly zones that tend to be focused on the historic core of each community. These zones typically connect downtown areas to adjacent, historic neighborhoods. In many cases the infrastructure may exist but maintenance of these facilities has largely been ignored or deferred in favor of higher priority projects in recent times. A key issue to consider for pedestrians is safety. This typically comes in the form of crosswalks. Pedestrians tend to not like to cross large, busy highways. They prefer the more compact environment that the urban cores offer. There are some communities that have significant pedestrian facilities and other that have recently taken steps to enhance the quality of their pedestrian facilities:

- Greenwood recently completed several phases of sidewalk enhancements in the Uptown District. The projects created additional parking and worked to enhance the appearance of the historic core of the city.
- Edgefield recently renovated and enhanced its square downtown. The process changed traffic patterns from two-way around the square to one-way to add parking and promote safety.
- Abbeville and Laurens both have historic courthouse squares that have benefitted from grants to improve sidewalk quality and pedestrian safety.

Rural areas can present conditions that are threatening to pedestrian travel. In the remainder of the region, the pedestrian and bicycle traffic takes place on rural roads without any specific accommodations made for this type of traffic. Most rural roads are narrow and lack a paved shoulder, bike lanes, and sidewalks. Combined with low visibility and high speeds, these roads can be very dangerous for non-motorized traffic. The volume of this type of traffic is low.

8.1.2 Bicycle Facilities

Bicycling is becoming a more popular mode of transportation. Like pedestrians, bicycles have similar range restrictions. Bicycles have a more extended range than pedestrians, but prefer a similar dedication of facilities. Ultimately most non-recreational travel will have origins and destinations within the same community. Dedicated bike lanes paralleling traffic are the most frequent way of accommodating bikers, but share-the-lane demarcations are also common. Bike paths are another facility. They are completely separate from roadways and offer alternate connections to various destinations. Bike paths tend to be for recreational purposes and always include pedestrians. Bikers are more likely to occupy the same traffic lanes as automobiles, and are required by law to follow the same rules as larger motorized forms of transportation.

One important aspect of biking is the need for racks. Bicycles need bike-racks just like cars need parking lots. Bike racks can become in many forms, and the objects used for such can even be forms of public art. Transit can also enhance bikers' options by adding bike racks such as those recently added in the City of Clinton.

8.2 Facilities for Recreation

There are many parks and recreational trails in the USCOG region. These facilities are typically designed for leisure activities such as mountain biking or hiking. Users will usually drive to these facilities first, so their presence should be viewed within the context of destinations for vehicles, rather than pedestrian and bicycle traffic alone.

The region has many recreational facilities. Some of the larger facilities include state parks, national forests, and locally designated parks trails:

8.2.1 Trails

8.2.1.1 Palmetto Trail

Palmetto Trail was originally conceived in 1994 and will have over 425 miles of bicycling and walking paths through South Carolina once completed. It crosses only a small section of the region in Laurens County, but provides access to the larger trail system. It will go from the mountains to the sea, passing through large cities and small towns, and along lakes and rivers. South Carolina's Palmetto Trail is the state's largest bicycle and pedestrian project. This federally designated Millennium Legacy Trail is a project of the Palmetto Conservation Foundation. It will be one of only 13 cross-state trails in the United States.

8.2.1.2 Rails to Trails

The idea was to convert abandoned or unused rail corridors into public trails. The concept embraces many ideas that community leaders want to promote including: recycling, land conservation, wildlife habitat preservation and non-automobile transportation, historical preservation, physical fitness, and recreation access for wheelchair users.

8.2.2 Parks

There are a number of parks available to residents of the region. These parks offer numerous recreational hiking and biking opportunities. The area is fortunate to have a variety of parks to choose from, including two Revolutionary War battlefields.

8.2.2.1 State Parks

- Hickory Knob State Resort Park is a state park located on the shores of Lake Strom Thurmond near the Town of McCormick . It is the only resort park in the South Carolina State Park system.
- Baker Creek State Park is located south of the Town of McCormick along Lake Thurmond.
- Hamilton Branch State Park is located south of the towns of McCormick and Plum Branch along Lake Thurmond.
- Calhoun Falls State Park is located on the shores of Lake Russell at the Town of Calhoun Falls in Abbeville County.
- Lake Greenwood State Park is located on the shores of Lake Greenwood in Greenwood County.
- Musgrove Mill State Historic Site marks the location of an American Revolutionary War site in Laurens County along the Enoree River.

8.2.2.2 National Parks

- Ninety Six National Historic Site marks the location of an important battle of the American Revolution near the Town of Ninety Six in Greenwood County.

8.2.3 Identified Needs

Both bicycles and pedestrians are localized modes of transportation. Because of their limited range it is important to recognize that travel using each of these modes will tend to be restricted to short distances typically with origins and destinations in the same community for non-recreational travel. It will be important to enhance existing facilities in communities that are already recognized as urban centers while expanding from those areas at the same time. Recreational travel must also be accommodated. Safety is an important concern for bikers and hikers. The shoulders of roads should be assessed and widened appropriately to create a safer environment.

Environmental Screening

In an effort to streamline the project development process, the SCDOT, in partnership with the COG's statewide, are doing early environmental screening by clearly defining the project, purpose and need, design expectations, public concerns, and potential environmental, cultural, and social impacts. The SCDOT process now requires that all new projects in the STIP, as well as high priority long-range plan projects have Advance Planning Project Reports (APPR). The contents of the APPR will include several elements. An introduction will define the purpose of the document and the project sponsor (SCDOT, COG, Other). A description of the existing facility will illustrate the roadway characteristics and existing features such as utilities, railroad crossings, mass transit, bridges, etc. The purpose and need section will give background information with project goals, current roadway deficiencies, traffic data, socioeconomic projections, level of service, accident data, and funding priority. The proposed facility element defines what the requirements are to meet the need of the project, such as design criteria, potential cross sections, bicycle and pedestrian facilities, mass transit accommodations, design techniques, and projected project cost.

A summary of public involvement is included in the APPR, highlighting public meetings, comments, and public involvement activities. Also in the report is a corridor assessment of social, economic, and environmental concerns. This section discusses the environmental screenings and site information, potential cultural resources, public parks and recreational areas, wetlands and water bodies, endangered species, potential displacements, hazardous materials, and community impacts of the project. The final section of the APPR contains recommendations and preliminary plans for the project.

Elements of an Advanced Project Planning Report can include existing and proposed typical cross section information that can be represented using "before" and "after" computer-generated visualizations for select locations throughout the length of the project. Projected traffic volumes are generated using the travel demand model and provide projected average daily traffic volumes for the proposed facility and the no-build scenario. Social, cultural, natural resources, and environmental concerns are identified using GIS database information for the environmental screening process. The total number of crashes at particular locations is summarized by providing statistics on accidents involving fatalities, injuries, and property damage. Cost estimates are also provided for one or more typical cross sections and may prove to be a key variable in the decision-making process.

Advanced Project Planning Reports are conducted in close coordination between SCDOT, MPO's, and COG's for projects identified in the STIP and constrained projects included in long range plans. Planning reports typically involve transportation improvement projects, such as a widening and new location alignments.

Performance Management

10.1 Introduction

Performance management is a strategic approach that uses system information to make investment and policy decisions to achieve goals set for the multimodal transportation systems in the USCOG area. This process provides key information to decision makers allowing them to understand the consequences of investment decisions across transportation assets and modes. It is also credited with improving project and program delivery and providing greater transparency and accountability to the public.

Performance-Based Planning and Programming (PBPP) refers to the transportation agencies' application of performance management as standard state of the practice in the planning and programming processes. USCOG's Long Range Transportation Plan and Transportation Improvement Program are now required to incorporate a performance-driven, outcome-based approach to planning. The goal of PBPP is to ensure that transportation investment decisions – both long-term planning and short-term programming – depend on the ability to meet established goals. In addition to meeting the federal PBPP requirements, PBPP will help the USCOG better communicate the Upper Savannah Region specific performance story.

10.2 National Goal Areas

Through the federal rulemaking process, the Federal Highway Administration (FHWA) is requiring state DOT's, MPO's and COG's to monitor the transportation system using specific performance measures. These measures are associated with national goal areas prescribed in MAP-21 and the FAST Act. The following list describes these national goal areas for highway performance as well as performance measures.

National Goal Area Performance Area Performance Measure

Safety: To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

Injuries and Fatalities

- Number of Fatalities
- Fatality rate (per 100 million VMT)
- Number of serious injuries
- Number of non-motorized fatalities and non-motorized serious injuries

Infrastructure Condition: To maintain the highway infrastructure asset system in a state of goods repair.

Pavement Condition

- Percent of pavements on the Interstate System in Good Condition
- Percent of pavements on the Interstate System in Poor Condition
- Percent of pavements on the Non-Interstate System in Good Condition
- Percent of pavements on the Non-Interstate System in Poor Condition

Bridge Condition

Percent of NHS bridges classified as in Good Condition

Percent of NHS bridges classified as in Poor Condition

System Reliability: To improve the efficiency of the surface transportation system.

Performance of the National Highway System

Percent of person miles traveled on the Interstate System that are reliable

Percent of person miles traveled on the non-Interstate NHS that are reliable

Freight Movement and Economic Vitality: To improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

Freight Movement on the Interstate System

Truck Travel Time Reliability

Congestion Reduction: To achieve a significant reduction in congestion on the Nation Highway System.

Traffic Congestion

Annual hours of peak-hour excessive delay per capita

Percent of non-single-occupant vehicle traffic

Environmental Sustainability: To enhance the performance of the transportation system while protecting and enhancing the natural environment.

On-Road Mobile Source Emissions

Total emissions reduction

Reduced project delivery delays: To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion

Reduce delays in the project development and delivery process

Time spent on project development and planning

Time spent on project construction

10.3 Federal Requirements

10.3.1 Targets

- All MPO's are required to establish performance targets no later than 180 days after SCDOT or a public transportation operator sets performance targets.
- For each performance measure, the Policy Committee or Board of Directors will decide to commit to support a statewide target, or to establish a quantifiable target specific to the planning area.
- SCDOT, MPO's, and public transit operators must coordinate targets for performance measures to ensure consistency to the maximum extent practicable.
- Per SCDOT PL Agreements, all COG's shall comply with the same requirements of the MPO's beginning fiscal year 2019.

10.3.2 Reporting

- The LRTP must describe the performance measures and targets, evaluating the performance of the transportation system, and report on progress made.
- The TIP must link investment priorities to the targets in the LRTP's and describe, to the maximum extent practicable, the anticipated effect of the program toward achieving established targets.
- The MPO must also report baseline roadway transportation system condition and performance data and progress toward the achievement of targets to SCDOT.

10.3.3 Assessments

- FHWA and FTA will not directly evaluate the MPO/COG progress towards meeting targets for required performance measures. The MPO's and COG's performance will be assessed as part of regular cyclical transportation planning process reviews, including Transportation Management Area certification reviews, small MPO self-certification reviews, and the Federal Planning Finding associated with approval of the STIP.
- FHWA will determine if SCDOT has met or made significant progress towards attaining the selected targets for the highway system.

10.4 Performance Measure 1 (PM1) – Safety

South Carolina has the highest traffic fatality rate in the nation. It is 67% higher than the national rate and 40% higher than the states in the Southeast. Reducing the number of transportation-related collisions, injuries, and fatalities is SCDOT's highest priority and makes safety everyone's business. In 2011, the Director of the South Carolina Department of Public Safety (SCDPS), who also serves as the Governor's Representative for Highway Safety in South Carolina, announced the Agency's goal of zero traffic-related deaths in the State. This goal, also strongly supported by SCDOT and the South Carolina Department of Motor Vehicles, became the starting point for the State's update of the strategic highway safety plan (SHSP), entitled Target Zero. Target Zero is an aspirational goal for South Carolina and is based on the philosophy that no fatalities are acceptable. The state will set targets advancing this goal during the next twenty years.

10.4.1 Safety Needs

The information below summarizes the relevant 2014-2018 safety statistics in the USCOG region:

SCDOT provided a summary of USCOG region safety data, which provides perspective on what safety problems the region is experiencing. The graph below depicts the factors that were involved in vehicular crashes in the region from 2013 – 2017:

Based on analysis by the SCDOT safety office, roadway departures and fixed objects are significant factors involved in fatal and serious injury crashes. Countermeasures that can be applied to reduce roadway departures include: paved shoulders, rumble strips, adequate clear zones, cable guardrails, enhanced signalization, pavement friction and horizontal curve improvements.

10.4.2 Safety Targets

SCDOT evaluated and was required to first report on safety targets for the five measures on August 31, 2017. SCDOT recently issued their third annual report on safety targets for the five measures on August 31, 2019. This action started the 180-day clock for USCOG to take action to either set region-specific targets or accept and support the state's targets. When setting safety performance targets for the state, statisticians performed extensive analysis of the data related to each measure (i.e. traffic fatalities and severe injuries and vehicle miles traveled). South Carolina used a seven data-point graphical analysis with a five-year rolling average. After the data points were plotted and graphical representations of the data were created, trend lines were added to predict future values. The trend lines were based on linear and non-linear equations with R-squared (i.e. best fit measure) values. Using the models, statisticians predicted the values for the current year. Examining the current and planned education and engineering safety initiatives, they estimated reductions in fatalities and severe injuries to calculate the state's safety performance targets. Staff from the SCDOT Traffic Engineering Office also met with representatives from the MPO's and COG's to deliver a presentation on the state's target-setting methods.

Performance Measure 2018-2022 Statewide Targets

| | |
|---|-------|
| Total Number of Fatalities | 1,061 |
| Fatality Rate per 100 Million Vehicle Miles Traveled | 1.820 |
| Total Number of Serious Injuries | 2,850 |
| Serious Injury Rate per 100 Million Vehicle Miles Traveled | 4.892 |
| Total Number of Non-motorized Fatalities and Serious Injuries | 500 |

For the 2020 performance period, the USCOG has elected to accept and support the State of South Carolina's safety targets for all five safety performance measures. This means the USCOG will:

- Address areas of concern for fatalities and serious injuries within the rural planning area through coordination with SCDOT and incorporation of safety considerations on all projects;
- Integrate safety goals, objectives, performance measures, and targets into the planning process; and
- Include the anticipated effect toward achieving the targets noted above within the TIP, effectively linking investment priorities to safety target achievement.

10.5 Performance Measure 2 (PM2) – Pavement and Bridge Condition

10.5.1 Bridge Condition

The initial National Bridge Inspection Standards (NBIS) were established as part of the Federal Aid Highway Act of 1970 that were limited to bridges on the Federal-aid highway system. Currently, the NBIS regulations apply to all publicly owned highway bridges longer than twenty feet located on public roads. NBIS are federal regulations (23 CFR 650) establishing requirements for bridge inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and maintenance of bridge inventory. Information from these inspections is stored in the National Bridge Inventory (NBI) database, created in 1972. The NBI is the aggregation of structure inventory and appraisal data collected by each state to fulfill the requirements of NBIS. The NBI database contains condition information on five aggregate structural units (deck, superstructure, substructure, channel, and culvert) by assigning a condition rating to each of these components of a bridge on a scale from 9 (perfect) to 1 (severe deterioration/failure).

SCDOT's bridge inspection program started in the 1970's. The SCDOT Bridge Maintenance Office manages the bridge inspection program. As required by NBIS, SCDOT performs inspection on non-load restricted bridges biennially and annually on load restricted bridges. SCDOT's bridge inspection data are stored in the Roadway Information Management System (RIMS) and in the SCDOT Bridge Management System (BrM).

10.5.1.1 Bridge Needs

In the Upper Savannah Region, there are a total of 55 bridges in Poor Condition according to the NBI. USCOG has elected to accept and support the State of South Carolina's NHS Bridge condition target recommendations.

10.5.1.2 Bridge Targets

SCDOT is faced with significant challenges in addressing the highway bridge preservation and replacement needs. Approximately 40% percent of NHS bridges by count are approaching or have exceeded their theoretical design life and may need various levels of repairs, rehabilitation, or replacement. With limited resources and increasing travel demands, these circumstances require SCDOT to become more strategic by adopting and implementing performance and risk-based approaches to address the bridge program needs.

To set targets for future bridge conditions, it is important to understand bridge deterioration. Deterioration is a long-term process of decline in bridge conditions due to environmental factors, degradation of material, and vehicular loading. Different structural types of bridges, such as concrete slab, steel, and prestressed concrete, may have similar response and loading mechanisms; however, no two bridges are the same in all respects, especially in their deterioration and aging characteristics.

Most bridge deterioration models are based on statistical regression and/or stochastic modeling. A Markovian process, which has been adopted in many bridge management systems, is a stochastic process that takes the uncertainties involved in the bridge deterioration process into consideration. SCDOT ultimately decided to develop individual probability matrices based on ten-year deck, superstructure, substructure, and culvert ratings for each structure type. Whole bridge ratings were calculated based on the lowest element rating. The table below shows the NHS Bridge condition target recommendations.

The chosen targets are based on the projected conditions using Markovian process for the respective structure type and assumptions that planned construction projects will be finished and inspected within the first performance period as outlined in the methodology above. The 4-year percent poor target for NHS bridges meets the FHWA's 10.0% maximum threshold requirement.

For the 2019 performance period, USCOG has elected to accept and support the State of South Carolina's NHS Bridge condition target recommendations.

10.5.2 Pavement Condition

Since its inception in 1978, FHWA's Highway Performance Monitoring System (HPMS) has evolved into a robust national repository of data on the extent, condition, performance, use, and operating characteristics of the nation's highways. States report a variety of pavement condition statistics to HPMS each year for roads on the NHS, including, but not limited to, International Roughness Index (IRI) information, cracking, rutting and faulting data. Prior to MAP-21, each State decided its own index on pavement quality measurement.

SCDOT started collecting pavement condition data in 2000. In the early 2000s, SCDOT began measuring its pavement condition using PQI, which is a unique pavement index developed for SCDOT.

SCDOT chooses pavement preservation candidates based on the PQI of the roadway section. Once PQI is calculated, a candidate list of potential pavement preservation projects is developed. The type of treatment selected depends on several factors, including traffic condition, cost and location. A set of trigger values used for selecting pavement preservation projects for each route system in South Carolina are as follows:

- US and SC Routes: PQI greater than or equal to 3.2 but less than 4.0
- Federal-aid Secondary Routes: PQI greater than or equal to 3.2 but less than 4.0
- Secondary Routes: PQI greater than or equal to 3.0

10.5.2.1 Pavement Needs

10.5.2.2 Pavement Targets

Due to environmental conditions and traffic loading, pavements deteriorate with age. Well designed, constructed, and maintained roadways are a vital component of any transportation system. One of the main goals of performance-based planning is to apply the right preservation/rehabilitation method to the right pavement at the right time. Proper preventive maintenance treatments are a cost-effective means of obtaining the maximum life and performance from the pavement. Treatments applied too soon add little benefit and treatments applied too late are ineffective, failing to prolong the life of the pavement. The potential savings from following a cost-effective approach to meeting performance objectives for pavements could be significant. The table below shows the Interstate and Non-Interstate NHS pavement condition target recommendations:

The chosen targets are the median projected conditions using average deterioration rates for the respective systems and planned completed construction projects that will be finished in time to be rated by the Department's pavement condition collection contractor. The 4-year percent poor target for interstate pavements meets the FHWA 5.0% minimum threshold requirement.

For the 2020 performance period, USCOG has elected to accept and support the State of South Carolina's Interstate and non-Interstate NHS Pavement Condition target recommendations.

10.6 Performance Measure 3 (PM3) – System Performance and Freight

10.6.1 System Reliability

Transportation system users desire travel time reliability – consistent and predictable travel times. Travel time reliability is a reflection of the variability of travel time. Travelers and shippers like to know what to expect and travel time reliability gives them greater certainty when using the transportation system. Unreliable travel is caused by non-recurring events, such as weather conditions, work zones, special events, and traffic incidents, as well as fluctuations in traffic volumes.

10.6.1.1 System Reliability Needs

Given the rural nature of the USCOG study area, it is not surprising that both Interstate and Non-Interstate NHS reliability is high. There is very little congestion along the rural sections of Interstate 26, and most NHS roadways are serving small population centers. The table below shows the travel time reliability percentages for each facility:

10.6.1.2 System Reliability Targets

Planning practitioners are increasingly using vehicle probe data to obtain information on travel time reliability. FHWA has acquired a national data set of average travel times for use in performance measurement. This data set is being made available to States and metropolitan planning organizations (MPOs) as a tool for performance measurement. The National Performance Management Research Data Set (NPMRDS) is a vehicle probe-based travel time data set and consists of average travel times reported every 5 minutes on the National Highway System (NHS) as defined in MAP-21 and the FAST Act and on the five-mile radius of arterials at border crossings. The table below shows the Travel Time Reliability target recommendations:

All Travel Time based measures will be computed using the “Travel Time Metric Dataset” in HPMS for the reporting segments. Beginning in 2018, the State DOTs are required to submit travel time-related metric data and the data necessary for measure computation for reporting segments on NHS into HPMS (i.e., “Travel Time Metric Dataset” in HPMS) by June 15th of each year, 56 and the travel time based metrics are:

- Level of Travel Time Reliability (LOTTR) metrics, corresponding 80th and 50th percentile travel times, directional Average Annual Daily Traffic (DIR_AADT), and vehicle occupancy factor for each of the reporting segments on NHS, as required in 23 CFR 490.511(e).

10.6.2 Freight Movement and Economic Vitality

Understanding performance of the freight transportation system and the challenges that come with increasing demand for freight transportation is important to improving mobility and productivity and establishing goods movement goals in the transportation plan.

10.6.2.1 Freight Reliability Needs

As was the case with System Reliability, Freight Reliability in the rural study area is not a significant issue. According to 2017 data from SCDOT, the truck travel time reliability (TTTR) index for the USCOG study area is 0.00. The TTTR is the ratio of longer travel times (85th percentile) to a “normal” travel time (50 percentile). If the index equals 1, the corridor is 100% reliable because the longer travel times equal the normal travel times.

10.6.2.2 Freight Reliability Targets

The Travel Time Reliability (TTR) measure assesses the reliability of roadways on the Interstate and Non-Interstate (NHS) systems. TTR is defined by the FHWA as the percent of person-miles on the (Interstate/NHS) that are reliable. Concerning freight, reliability is the ratio of the Interstate System Mileage providing for reliable Truck Travel Time Reliability (TTTR). Data are derived from the travel time data set found in the National Performance Management Research Data Set (NPMRDS). The metrics to be used are Level of Travel Time Reliability (LOTTR) and the TTTR Index. The table below shows the Truck Travel Time Reliability target recommendations:

All Travel Time based measures will be computed using the “Travel Time Metric Dataset” in HPMS for the reporting segments. Beginning in 2018, the State DOTs are required to submit travel time-related

metric data and the data necessary for measure computation for reporting segments on NHS into HPMS (i.e., “Travel Time Metric Dataset” in HPMS) by June 15th of each year, 56 and the travel time based metrics are:

- Truck Travel Time Reliability (TTTR) metrics, corresponding 95th and 50th percentile truck travel times for each of the reporting segments on Interstate System, as required in 23 CFR 490.611(b).

10.7 Performance Measure 4 (PM4) – Public Transit Performance Measures

Recipients of public transit funds—which can include states, local authorities, and public transportation operators—are required to establish performance targets for safety and state of good repair; to develop transit asset management and transit safety plans; and to report on their progress toward achieving targets. Public transportation operators are directed to share information with COGs and states so that all plans and performance reports are coordinated. Information below identifies performance measures outlined in the National Public Safety Transportation Plan, released by the Federal Transit Administration (FTA), and in the final rule for transit asset management. USCOG will coordinate with public transit providers to set targets for these measures.

National Goal Areas and Performance Measures for Transit

Safety

Fatalities

Total number of reportable fatalities and rate per total vehicle revenue miles by mode

Injuries

Total number of reportable injuries and rate per total vehicle revenue miles by mode

Safety Events

Total number of reportable events and rate per total vehicle revenue miles by mode

System Reliability

Mean distance between major mechanical failures by mode

Infrastructure Condition (State of Good Repair: Transit Asset Management)

Equipment

Percent of vehicles that have met or exceeded their Useful Life Benchmark (ULB)

Rolling Stock

Percent of revenue vehicles within a particular asset class that have met or exceeded their ULB

Facilities

Percent of facilities within an asset class rated below 3.0 on the FTA Transit Economic Requirement Model scale

Priority Projects

Important intersections that will be completed in order and added to the Transportation Improvement Plan (TIP) and State Transportation Improvement Plan (STIP) in a fiscally constrained manner based on the amount of Guidesshare funds allocated by SCDOT to be spent in the region per year.

| Project Ranking | Major Route | Major Route Name | Minor Route | Minor Route Name | County |
|-----------------|-------------|--------------------------|-----------------|-------------------------------|-----------|
| 1 | US 25 | Edgefield Road | S-494 | Trailside Dr and Short Cut Rd | Edgefield |
| 2 | US 221 | Hwy 72/221 E | S-99 | Gateway | Greenwood |
| 3 | SC 14 | Hwy 14 | SC 101 | Hwy 101 | Laurens |
| 4 | US 25 | Bypass 25 SE | S-101 | Sweetwater Rd | Greenwood |
| 5 | US 25 | Augusta Rd | S-10 | Baskett St | Edgefield |
| 6 | SC 121 | Lee St | S-41 | Edisto St | Edgefield |
| 7 | SC 72 BUS | W Cambridge Ave | S-108 | Mathis Rd | Greenwood |
| 8 | SC 121 | Johnston Hwy | S-21 | Fruit Hill Rd | Saluda |
| 9 | US 221 | Hwy 221 South | S-49 | Lisbon Rd | Laurens |
| 10 | SC 49 | Hwy 49 | SC 308 | Hwy 308 | Laurens |
| 11 | SC 121 | Johnston Hwy | S-37 | Rocky Creek Rd | Saluda |
| 12 | S-178 | Murrah Rd | S-339 | Springhaven Dr | Edgefield |
| 13 | US 76 | Hwy 76 W | S-312 | Wilsontown Rd | Laurens |
| 14 | SC 14 | Hwy 14 | Owings Parkway | Owings Parkway (County) | Laurens |
| 15 | SC 20 | Hwy 20 | SC 201 | Hwy 201 | Abbeville |
| 16 | SC 28 | Hwy 28 N | SC 10 | Hwy 10 | McCormick |
| 17 | SC 418 | Gulliver St | S-67 | Durbin Rd | Laurens |
| 18 | US 221 | Hwy 221 South of Bradley | SC 10 | McCormick Hwy | Greenwood |
| 19 | SC 20 | Hwy 20 South of Due West | SC 185 | Hwy 185 | Abbeville |
| 20 | S-136 | Ivory Key Rd | Saluda MS Drive | Middle School Drive | Saluda |
| 21 | SC 252 | Hwy 252 | SC 184 | Hwy 184 | Abbeville |
| 22 | SC 20 | Hwy 20 North of Due West | SC 185 | Hwy 185 | Abbeville |
| 23 | SC 28 | Hwy 28 N | S-25 & S-37 | Richey Rd & Foster Rd | McCormick |

Red = Not state maintained roads, on MPO Boundary

Potential Projects

Widening projects that are ranked according to SCDOT standards but with no Guidesshare funding attached.

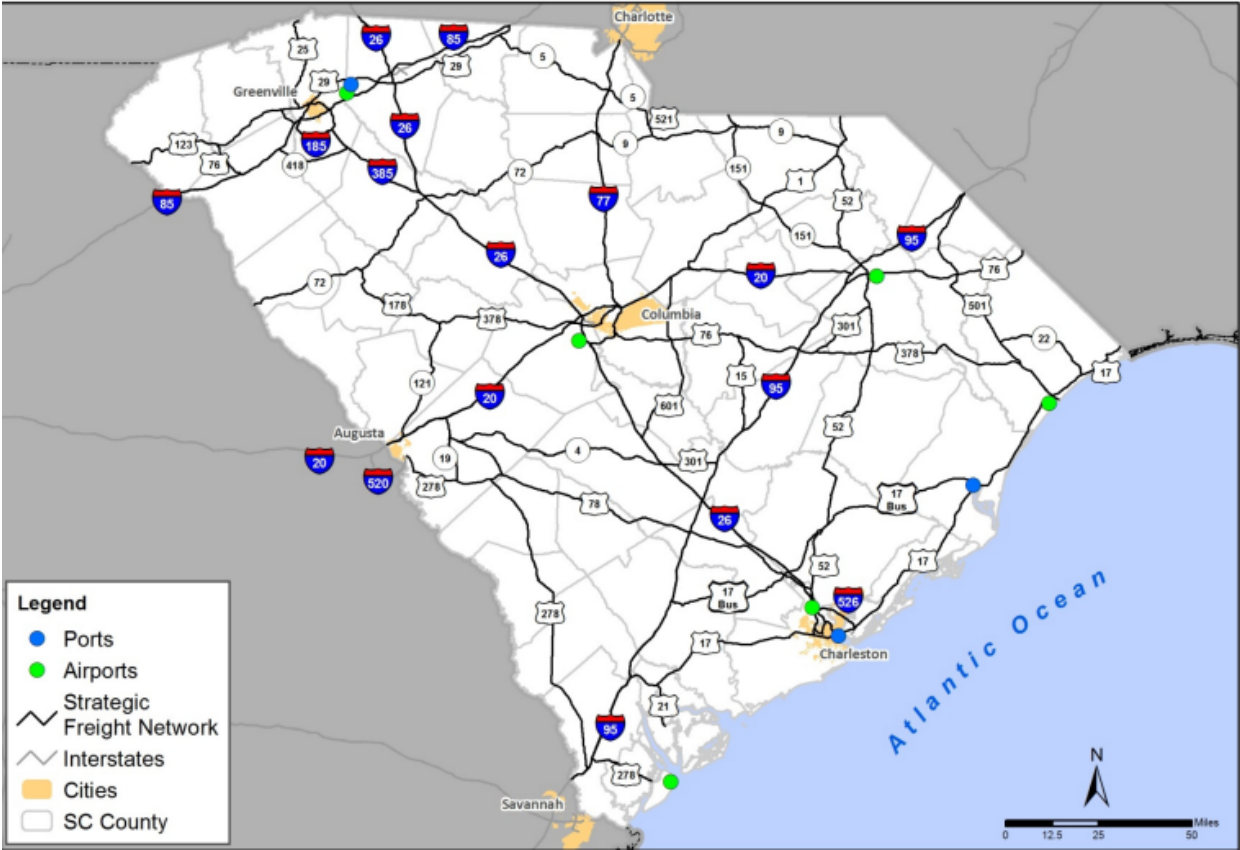
| <u>Rank</u> | <u>County</u> | <u>Road</u> | <u>From</u> | <u>To</u> | <u>Improvement</u> | <u>2020 Cost Estimate</u> |
|-------------|---------------|------------------------|---------------------|--|--------------------|---------------------------|
| 1 | Greenwood | SC 246 | SC 72/US 221 | S-100 Emerald Rd | 2-lane to 5-lane | \$ 58,191,617.00 |
| 2 | Greenwood | US 25 Bypass | US 178 BUS | S-29 E Cambridge Ave | 2-lane to 5-lane | \$ 72,836,000.00 |
| 3 | Edgefield | SC 121 | S-104 McQueen St | SC 191 (turn lanes) | 2-lane to 3-lane | \$ 16,485,031.00 |
| 4 | Laurens | SC 14 | S-183 Spring St | S-24 Lynn Ave | 2-lane to 5-lane | \$ 31,762,501.00 |
| 5 | Laurens | SC 56 | Springdale Dr | S-98 Barrel Stave Rd | 2-lane to 3-lane | \$ 37,715,786.00 |
| 6 | Greenwood | Emerald Road Phase II | S-100 Evans Pond Rd | SC 246 | 2-lane to 5-lane | \$ 79,506,040.00 |
| 7 | Saluda | US 178 | SC 121 | SC 39 Ridge Spring Rd (turn lane) | 2-lane to 3-lane | \$ 38,386,812.00 |
| 8 | Saluda | SC 121 | S-140 Wheeler Cir | S-51 Butler Rd (turn lane at med facility) | 2-lane to 3-lane | \$ 30,515,087.00 |
| 9 | Abbeville | SC 28 Bypass | SC 72 | S-32 Old Calhoun Falls Rd | 2-lane to 3-lane | \$ 24,268,448.00 |
| 10 | Laurens | SC 101 | I-385 | SC 14 | 2-lane to 3-lane | \$ 37,694,931.00 |
| 11 | McCormick | SC 28 | S-401 Cedar Rd | State Park Rd (Hamilton Branch St Park) | 2-lane to 3-lane | \$ 18,636,444.00 |
| 12 | Edgefield | S-37 Bettis Academy Rd | US 25 | Aiken County line | 2-lane to 5-lane | \$ 31,951,975.00 |

These widening projects are ranked, but unfunded and not included in the TIP.

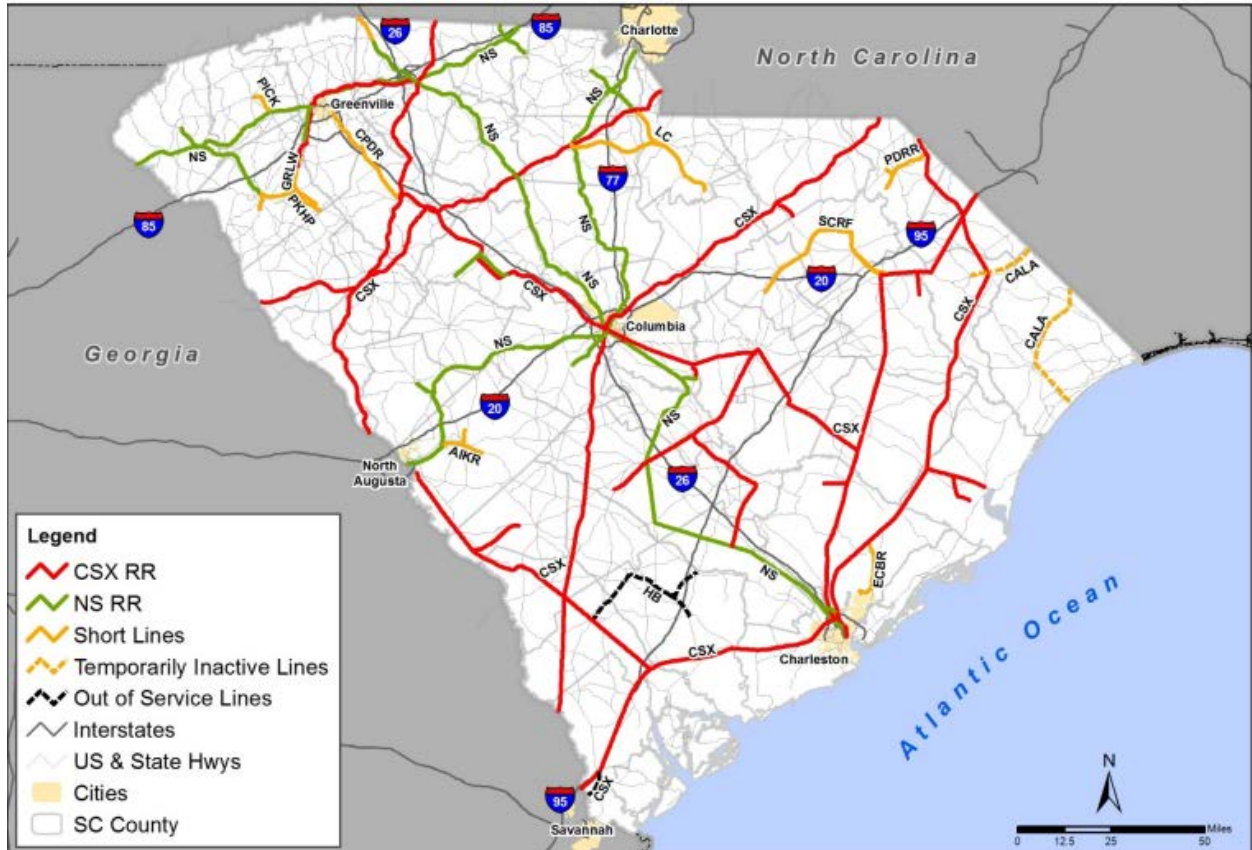
At the present time, the region is allocated \$6,263,000 in Guideshare funding from SCDOT per year.

Maps

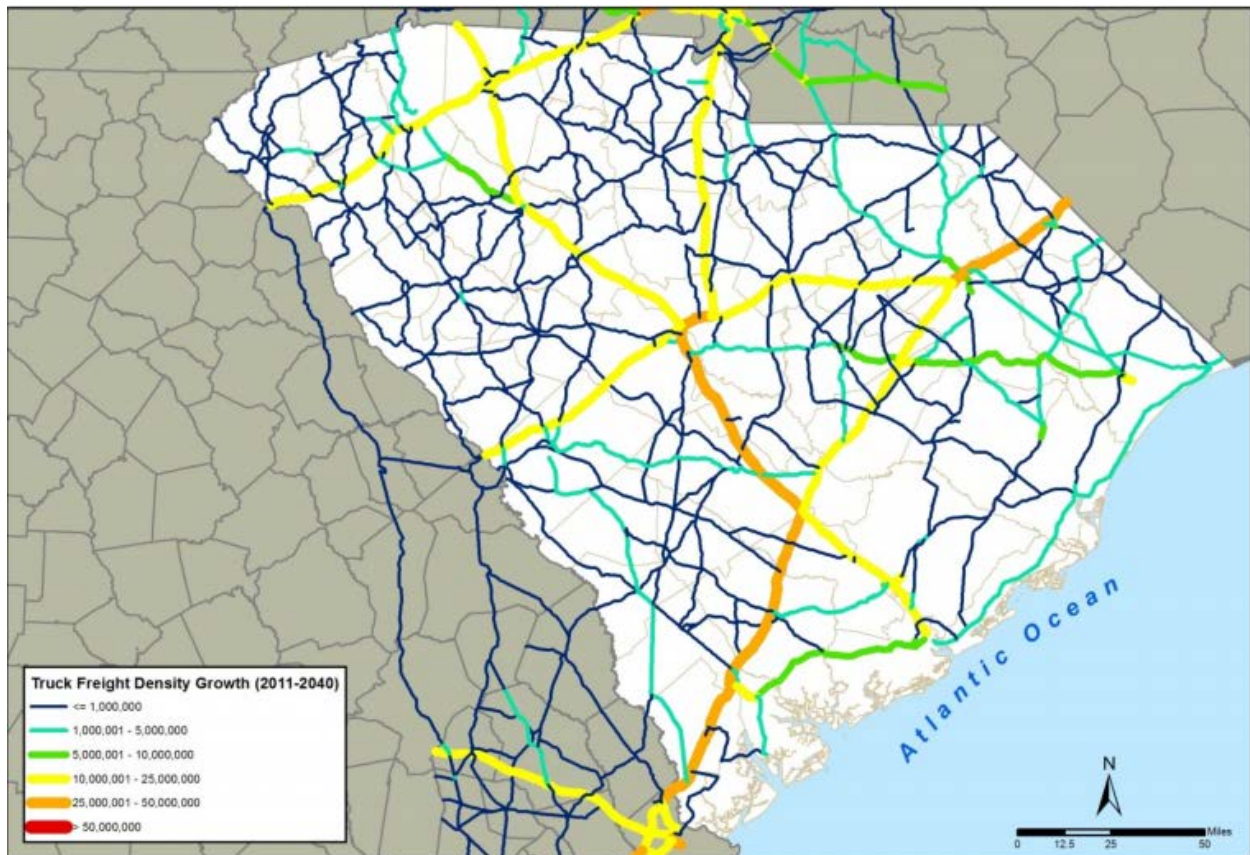
Statewide Freight Roadway Network



Statewide Railroad Infrastructure



State Truck Freight Density Growth from 2010 - 2040



Source: prepared by CDM Smith, based on TRANSEARCH data for 2011 and 2040

Amendment

South Carolina Department of Transportation System Performance Report

Through the federal rulemaking process, the Federal Highway Administration (FHWA) is requiring state DOTs and MPOs (and by extension the South Carolina Department of Transportation (SCDOT) is requiring COGs) to monitor the transportation system using specific performance measures. These measures are associated with the national goal areas prescribed in MAP-21 and the FAST Act. The following System Performance Report describes these national goal areas, rulemakings, performance areas, and prescribed measures. Performance measures have been identified for highway systems, including a set of measures to assess progress toward achieving the goals of the CMAQ Program. The requirements and targets of these measures and tools to calculate them are summarized in this report.

This System Performance Report presents the baseline, performance/condition measures, targets and the progress made towards achieving those targets. These performance measures are a part of SCDOT's Transportation Asset Management Plan (TAMP). SCDOT's TAMP has been developed in a collaborative effort with South Carolina's Division Office of the Federal Highway Administration (FHWA). The plan has been designed to not only satisfy federal rulemaking, but to transcend these requirements by setting 10-year performance estimates for *all* state maintained roads and bridges. By clearly identifying the needs of South Carolina's transportation infrastructure, the TAMP has provided SCDOT a platform to communicate existing infrastructure conditions and project constrained performance targets for SCDOT's physical assets over the next decade. The TAMP supports the primary goals of the agency's Strategic Plan by promoting the most efficient use of limited resources to extend the life of the State's transportation infrastructure.

In 2017, The General Assembly passed legislation (the South Carolina Infrastructure and Economic Development reform Act (Act 40)) to increase the State gas tax by (12) twelve cents by phasing in the increase at (2) two cents per year for (6) six years. These funds are deposited into a new trust fund called the Infrastructure Maintenance Trust Fund (IMTF). These new revenues, coupled with other Federal and State funds, form the financial foundation of SCDOT's Ten Year Plan and performance targets. For the first time in 30 years, the South Carolina Department of Transportation has been provided with an increased and sustainable revenue stream. The "Roads Bill" gives the agency the opportunity to make gradual, but real and significant strides toward bringing the highway system back from three decades of neglect.

The SCDOT's Strategic Plan forms the guiding principles of the agency's Investment Strategies, focusing on the maintenance, preservation and safety of the existing transportation infrastructure, directing investments of highway systems and priority networks, integrating risk-based prioritization, improving safety, advancing lifecycle cost in investment programming and enhancing mobility. The five major goals of the Strategic Plan are:

SCDOT Strategic Plan Goals

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

The Moving Ahead for Progress in the 21st Century (MAP-21) surface transportation legislation established National Goals and a performance and outcome based program. As part of the program federally established performance measures are set and those targets shall be monitored for progress. There is alignment between SCDOT's Strategic Plan Goals and the MAP-21 National Goals. The MAP-21 National Goals are as follows:

MAP-21 National Goals

- Safety - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- Infrastructure Condition - To maintain the highway infrastructure asset system in a state of good repair
- Congestion Reduction - To achieve a significant reduction in congestion on the National Highway System
- System Reliability - To improve the efficiency of the surface transportation system
- Freight Movement and Economic Vitality - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- Environmental Sustainability - To enhance the performance of the transportation system while protecting and enhancing the natural environment
- Reduced Project Delivery Delays - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

These goals provide clear asset management performance based direction to support the effective movement of people and goods. Specifically, transportation asset management focuses on preservation of existing infrastructure with a more cost-effective and efficient approach. SCDOT also utilizes transportation asset management principles to address mobility by planning for future demands on the system. These actions facilitate safe and efficient movement of citizens, goods, and services; thereby, enhancing performance of state and national commerce.

This System Performance Report details the federally required (MAP-21/FAST Act) performance measures for a State DOT. The following sections detail the performance measures, baseline and targets and the progress towards those targets based on the most recent Mid-Performance Report that was submitted October 1, 2020.

Highway Safety / PM-1

Effective April 14, 2016 the FHWA established the highway safety performance measures to carry out the Highway Safety Improvement Program (NSIP). Safety performance targets are developed in coordination with the South Carolina Department of Public Safety (SCDPS) and reported annually to FHWA in the state's Highway Safety Improvement Program (HSIP) Annual Report and to the National Highway Traffic Safety Administration (NHTSA) in the state's Highway Safety Plan (HSP) developed by SCDPS. The performance measures are:

1. Number of fatalities
2. Rate of fatalities per 100 million vehicle miles traveled
3. Number of serious injuries
4. Rate of serious injuries per 100 million vehicle miles traveled
5. Number of combined non-motorized fatalities and non-motorized serious injuries

The most recently assessed safety targets were for the five year rolling average from 2015 to 2019. South Carolina's statewide safety performance targets for this time period are included in Table 1, along with actual performance and the state's baseline data for the (5) five year rolling average from 2013 to 2017. A state is said to have met or made significant progress toward meeting its safety performance targets when at least (4) four of the (5) five targets established under 23 CFR 490.209(a) have been met or the actual outcome is better than the baseline performance. As shown in Table 1 below, South Carolina met or performed better than baseline for 2 of the 5 safety targets. SCDOT continues to implement proven countermeasures addressing the engineering emphasis areas identified in the State's Strategic Highway Safety Plan (SHSP). For more information regarding the recently updated SHSP, please visit our website here:

https://www.scdot.org/performance/pdf/reports/BR1_SC_SHSP_Dec20_rotated.pdf.

In response to the increasing number of non-motorized user fatalities, SCDOT began developing the state's first Pedestrian and Bicycle Safety Action Plan in December 2020 and is expected to have a final plan before the end of 2021.

| Table 1. South Carolina 2015-2019 Safety Performance Target Assessment | | | | | | |
|--|------------------|------------------|--------------------|-------------|-----------------------|-----------------------------------|
| Performance Measure | 2015-2019 Target | 2015-2019 Actual | 2013-2017 Baseline | Met Target? | Better than Baseline? | Met or Made Significant Progress? |
| Number of Traffic Fatalities | 988.0 | 1005.0 | 915.6 | No | No | No |
| Rate of Traffic Fatalities | 1.790 | 1.818 | 1.752 | No | No | |
| Number of Traffic Serious Injuries | 2986.0 | 2986.6 | 3108.2 | No | Yes | |
| Rate of Traffic Serious Injuries | 5.420 | 5.412 | 5.986 | Yes | N/A | |
| Number of Non-motorized Traffic Fatalities & Serious Injuries | 380.0 | 414.2 | 382.6 | No | No | |

Table 2 below provides the results of the department's first Safety Performance Target Assessment for 2014-2018. South Carolina met 4 of the 5 safety targets. During this time period, SCDOT began implementing the state's Rural Road Safety Program, specifically targeting roadway departure collisions on rural roads.

| Table 2. South Carolina 2014-2018 Safety Performance Target Assessment | | | | | | |
|--|------------------|------------------|--------------------|-------------|-----------------------|-----------------------|
| Performance Measure | 2014-2018 Target | 2014-2018 Actual | 2012-2016 Baseline | Met Target? | Better than Baseline? | Met or Made Progress? |
| Number of Traffic Fatalities | 970.0 | 969.6 | 890.4 | Yes | N/A | YES |
| Rate of Traffic Fatalities | 1.810 | 1.804 | 1.748 | Yes | N/A | |
| Number of Traffic Serious Injuries | 3067.0 | 2988.4 | 3195.4 | Yes | N/A | |
| Rate of Traffic Serious Injuries | 5.708 | 5.590 | 6.304 | Yes | N/A | |
| Number of Non-motorized Traffic Fatalities & Serious Injuries | 371.3 | 389.8 | 378.8 | No | No | |

Pavement and Bridge Condition / PM-2

Pavement and bridge performance measures are assessed and reported over a (4) four-year period with the first period beginning on January 1, 2018 and ending December 31, 2021. SCDOT reported baseline targets to FHWA on October 1, 2018. Mid-point (2) two-year performance targets were reported on October 1, 2020 and represented expected pavement and bridge conditions at the end of calendar year 2019. Final (4) four-year performance targets shall be reported on October 1, 2022 and represent expected pavement and bridge condition at the end of calendar year 2021. The second year performance period will begin January 1, 2022 and end December 31, 2025, with additional (4) four-year performance periods to follow. The performance measures are:

1. Percent of Interstate pavements in good condition – (4) four-year target
2. Percent of Interstate pavements in poor condition – (4) four-year target
3. Percent of non-Interstate NHS pavements in good condition – (2) two and (4) four year targets
4. Percent of non-Interstate NHS pavements in poor condition – (2) two and (4) four year targets
5. Percent of NHS bridges by deck area in good condition – (2) two and (4) four year targets
6. Percent of NHS bridges by deck area in poor condition – (2) two and (4) four year targets

MPOs and COGs can elect to establish their own targets or support the statewide targets. The SCDOT statewide PM-2 targets are listed in Table 3.

Table 3 provides a summary of pavement and bridge performance measures. The SCDOT has made measurable and positive progress implementing the strategic priorities of the TAMP that are key to aligning with SCDOT's internal and external efforts towards achievable results. The Ten Year Plan is underway to address infrastructure needs across the state which was initiated in 2017. The plan has seen progress, most notably in the pavement performance measures. At the update of the 2020 Annual Report <https://www.scdot.org/performance/pdf/reports/SCDOT-AnnualReport-2020.pdf> the agency is on target with approximately 80 miles of interstate widening completed or advancing to construction. Widening projects are currently under construction on I-85, I-26 and I-20 and are expected to be completed within the remainder of the final performance period. Interchange improvement projects that are moving forward on interstates include I-85/385, I-26/526 and I-26/I-126/I-20. In addition to widening projects there are preservation and rehabilitation projects that will be under construction to make progress toward the (4) four year targets for pavement condition on the Interstate System.

The (2) two-year performance measure for the percentage of pavements on the non-interstate NHS in good condition was exceeded by 12.5%. The (2) two-year performance target for the non-interstate NHS in poor condition exceeded the target by 0.4%. The SCDOT invested \$63 million above the planned level in 2018 and \$25 million more above the planned level in 2019 to the pavement program. The investment was reflected in the condition performance measure. In 2019 94% of the funding went toward preservation and rehabilitation which have shorter construction durations and were quickly reflected in the performance data contributing to the difference in actual and target values.

To calculate the bridge targets staff analyzed historic National Bridge Inventory (NBI) data and developed a Markov chain analysis to forecast the bridges that would move from Good to Fair and Fair to Poor during the target windows. Staff also collected data from SCDOT Construction and Maintenance offices to determine targets. The SCDOT is in the process of load rating all bridges and developing a new prioritization list that will take into account deck area of bridges on the NHS. The SCDOT fell slightly below the forecasted target of 42.4% at 40% actual for statewide percentage of deck area of bridges on

the NHS classified in Good condition, and above the forecasted target of 4.0% at 4.2% actual for statewide percentage of deck area of bridges on the NHS classified in Poor condition. The difference in actual and forecasted target (2) two-year values is a short term measure that will flatten as the bridge list is finalized and additional bridge replacement and rehabilitation projects are let and construction is completed. The average bridge projects takes (3) three to (4) four years to design and get to contract; therefore, the agency expects to see improvements in the number of load restricted and structurally deficient bridges in years (4) four, (5) five and beyond. Tackling the NHS bridges in Poor condition is a top priority for the SCDOT, and the agency is committed to obtaining long term goals outlined in the Ten Year Plan and meeting performance targets.

Table 3. SCDOT Pavement and Bridge Performance Measures

| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Target |
|---|----------|-------------------------------|---------------|---------------|
| Percentage of Pavements on the Interstate System in Good Condition | | 63.2% | | 71.0% |
| Percentage of Pavements on the Interstate System in Poor Condition | | 1.2% | | 3.0% |
| Percentage of Pavements of the Non-Interstate NHS in Good Condition | 50.4% | 54.3% | | |
| Percentage of Pavements of the Non-Interstate NHS in Good Condition (Full Distress + IRI) | | 27.4% | 14.9% | 21.1% |
| Percentage of Pavements of the Non-Interstate NHS in Poor Condition | 8.6% | 8.4% | | |
| Percentage of Pavements of the Non-Interstate NHS in Poor Condition (Full Distress + IRI) | | 3.9% | 4.3% | 1.6% |
| Percentage of NHS Bridges Classified as in Good Condition | 41.1% | 40.0% | 42.2% | 42.7% |
| Percentage of NHS Bridges Classified as in Poor Condition | 4.0% | 4.2% | 4.0% | 6.0% |

System Performance, and Freight Movement / PM-3

FHWA established measures to assess the performance and reliability of the National Highway System and freight movement on the interstate. These measures became effective on May 20, 2017 and are as follows:

System Performance Measures

1. Percent of person-miles on the Interstate system that are reliable – (2) two-year and (4) four-year targets
2. Percent of person-miles on the non-Interstate NHS that are reliable – (4) four-year targets
 - Performance measure assesses the reliability of travel time on the Interstate or non-Interstate NHS through the Level of Travel Time Reliability (LOTTR). It is ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) over four time periods (AM peak, Mid-day, PM Peak, and weekends) which covers 6AM to 8PM each day. The ratio is expressed as a percentage of the person miles traveled that are reliable through the sum of the number of reliable person miles traveled divided by the sum of total person miles traveled.

Freight Movement Performance Measures

3. Truck Travel Time Reliability (TTTR) – (2) two-year and (4) four-year targets
 - Performance measure is a ratio generated by dividing the longer travel time (95th percentile) by a normal travel time (50th percentile) for each segment of the interstate over five time periods throughout weekdays and weekends (AM Peak, Mid-day, PM peak, weekend and overnight). This performance measure covers all hours of the day. The TTTR's of Interstate segments are then used to create the TTTR index for the entire system using a weighted aggregate calculation for the worst performing times of each segment.

Table 4 displays the results of the performance measures and targets for system performance. The number of Vehicle Miles Traveled (VMT) has an inverse relationship with reliability. The VMT share of unreliable Traffic Message Channel (TMC) in 2019 decreased from the 2017 baseline year and from year 2018 contributing to the difference in actual and projected target (2) two-year values. In addition the effect of significant changes by construction on reliability was not observed over the conservative assumption which also contributed to the difference in values. With interstate improvement projects underway major pinch points will be improved to facilitate the movement of goods and people in our state. In the next (2) two-year target window widening projects, preservation and rehabilitation projects that are currently under construction and planned will make additional progress towards achievement of the projected target. There are consistently unreliable sections on the interstate system that are responsible for making 4.2% of South Carolina's interstates unreliable. The majority of which are located in Charleston, Greenville and Columbia. Addressing these unreliable sections and infrastructure challenges is being accomplished through the management of the Ten Year Plan, the Statewide Transportation Improvement Program (STIP), the Statewide Multimodal Transportation Plan (SMTP), and the Transportation Asset Management Plan (TAMP).

The (2) two-year performance measure for Truck Travel Time Reliability (TTTR) at 1.33 exceeded the target of 1.36. The SCDOT has made addressing congestion at freight bottlenecks a priority to improve operational efficiency and accommodate future traffic volumes. Some of the bottleneck areas with projects currently under construction and/or in planning stages include:

- I-20 / I-77 / Clemson interchanges along with respective bottleneck points along I-20 is currently under construction
- I-77 Widening and Rehabilitation between SC-12 and I-20 / Killian Road
- I-20 / I-126 / I-20 corridor, Carolina Crossroads Project
- US-378 Interchange at Corley Mill Road and I-20
- I-526 Interstate and I-26 Interchange, Leeds Avenue Merge, Paul Cantrell Blvd.
- Woodruff Road / I-385 / I-85
- I-85 / I-385 Gateway
- I-85 from Exit 40 to Exit 69 is currently being widened

In addition to addressing the pinch points the SCDOT Commission approved the Rural Interstate Freight Corridor Project Program in October 2018. The interstate widening program specifically targets the rural sections of the State's interstate system with a focus on freight mobility. These projects can be found on the SCDOT website under "Interstate Capacity" <https://www.scdot.org/inside/planning-project-prioritization-list.aspx>. This program is in addition to the interstate widening projects planned for urban areas of the state.

Table 4. System Performance Measures, and Freight

| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Target |
|--|----------|-------------------------------|---------------|---------------|
| Percent of the Person-Miles Traveled on the Interstate that are Reliable | 94.7% | 94.8% | 91.0% | 90.0% |
| Percent of the Person-Miles Traveled on the Non-Interstate that are Reliable | | 91.4% | | 81.0% |
| Truck Travel Time Reliability Index (TTTR) | 1.34 | 1.33 | 1.36 | 1.45 |

Congestion Mitigation & Air Quality Improvement Program / PM-3

Congestion Mitigation and Air Quality Improvement Program (CMAQ) measures apply to MPOs that are within the boundaries of each U.S. Census Bureau-designated Urbanized Area (UZA) that contains a NHS road, has a population of more than one million, and contains any part of nonattainment or maintenance area for emissions. If applicable the FHWA has established measures, which became effective on May 20, 2017 to assess the following performance measures.

1. CMAQ Only - Annual hours of peak hour excessive delay per capita (PHED) – (4) four-year targets
 - Peak Hour Excessive Delay (PHED) is a measurement of traffic congestion and is expressed as annual hours of peak hour excessive delay per capita. The threshold for excessive delay is based on travel time at 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater, and is measured in 15-minute intervals on National Highway System (NHS) roads. Peak travel hours are defined as 6:00 to 10:00 a.m. on weekday mornings; the weekday afternoon period is 3:00 to 7:00 p.m. or 4:00 to 8:00 p.m. The total excessive delay metric is weighted by vehicle volumes and occupancy. Thus, PHED is a measure of person-hours of delay experienced on NHS roads on an annual basis.
2. CMAQ Only - Percent of non-single occupant vehicle travel (Non-SOV) – (2) two-year and (4) four-year targets
 - Non-Single Occupancy Vehicle (Non-SOV) Travel measures the percent of vehicle travel that occurs with more than one occupant in the vehicle.
3. CMAQ Only - Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction) – (2) two-year and (4) four-year targets
 - The On-Road Emissions Reduction measure represents the cumulative two-year and four-year emission reductions in kg/day for CMAQ funded projects within the boundaries of the planning area.

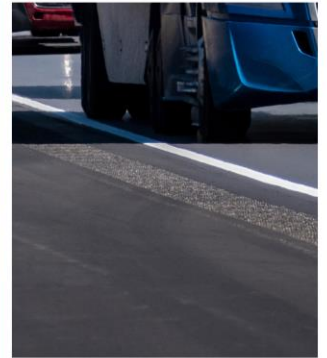
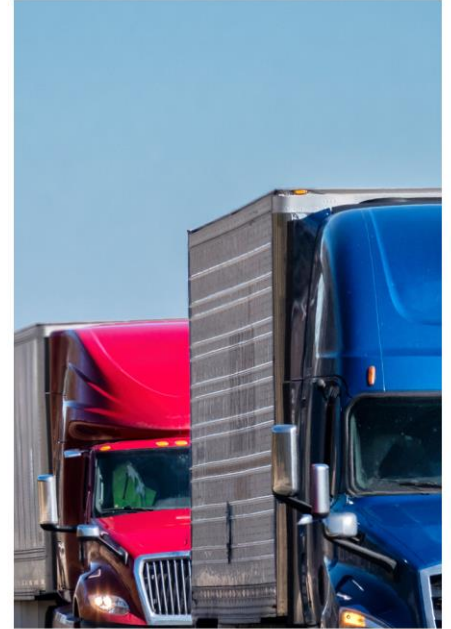
Table 5 provides the System Performance Congestion Mitigation and Air Quality Improvement Program. The SCDOT worked in conjunction with NCDOT and the relative MPO to develop the (2) two-year and (4) four-year targets with NCDOT taking the lead on data gathering and analysis due to most of the UZA being located in North Carolina. Trend lines in data have changed with the uncertainty involved with COVID-19 and reduced travel and social distancing practices that have affected travel behavior through the remainder of the performance period. Due to this uncertainty the (4) four-year target was elected to stay at 34.0 annual hours of PHED even though the (2) two-year performance target was reduced.

To develop the Non-SOV travel target a conservative approach was taken based on a trend analysis that was completed. Data used for the measure was developed from the communizing to work data from the American Community Survey. The data fluctuates slightly above 21.0%. The (2) two-year performance is slightly above the (2) two-year target, but in line with the trending data that was expected.

Total Emission reduction for Nitrous Oxide (NOx) and for Volatile Organic Compounds (VOC) performance measures were less than the expected (2) two-year target due to changes in project delivery schedules and a series of challenges encountered by the project management team. Projects that were anticipated to be complete during the 2018-2019 reporting period are now expected to be completed during the next reporting period of 2020-2021. The (4) four-year targets were adjusted accordingly.

| Table 5. System Performance Congestion Mitigation & Air Quality Improvement Program | | | | | |
|---|----------|----------------------------------|------------------|------------------|----------------------|
| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Target | 4-Year Adjustment |
| Annual Hours of Peak Hour Excessive Delay Per Capita: Urbanized Area 1 | | 14.8% | | 34.0% | |
| Percent of Non-Single Occupancy Vehicle (Non-SOV) Travel: Urbanized Area 1 | 21.7% | 21.6% | 21.0% | 21.0% | |
| Total Emission Reductions: NOx | 18.800 | 8.290 | 58.670 | 58.964 | 58.730 |
| Total Emission Reductions: VOC | 22.430 | 11.010 | 40.820 | 41.894 | 46.262 |

STAMP SYSTEM PERFORMANCE REPORT 2022



Date: February 1, 2023
CFR 450.324(f)(3-4)

South Carolina Department of Transportation STAMP System Performance Report 2022

*Full Performance Period Progress (FPP) Results of the 1st Performance Period (2018-2021) and
Baseline Performance Period (BPP) of the 2nd Performance Period (2022-2025)*

Through the federal rulemaking process, the Federal Highway Administration (FHWA) is requiring state DOTs and MPOs (and by extension the South Carolina Department of Transportation (SCDOT) is requiring COGs) to monitor the transportation system using specific performance measures. These measures are associated with the national goal areas prescribed in MAP-21 and the FAST Act. The following System Performance Report describes these national goal areas, rulemakings, performance areas, and prescribed measures. Performance measures have been identified for highway systems, including a set of measures to assess progress toward achieving the goals of the Congestion Mitigation Air Quality (CMAQ) Program. The requirements and targets of these measures and tools to calculate them are summarized in this report.

This System Performance Report presents the baseline, performance/condition measures, targets and the progress made towards achieving those targets. These performance measures are a part of SCDOT's Strategic Ten-Year Asset Management Plan (STAMP). SCDOT's STAMP has been developed in a collaborative effort with South Carolina's Division Office of the Federal Highway Administration (FHWA). The plan has been designed to not only satisfy federal rulemaking, but to transcend these requirements by setting performance estimates for **all** state maintained roads and bridges. By clearly identifying the needs of South Carolina's transportation infrastructure, the STAMP has provided SCDOT a platform to communicate existing infrastructure conditions and project constrained performance targets for SCDOT's physical assets over the next decade. The STAMP is an all-inclusive document that houses the Strategic Plan, Ten-Year Plan (2018-2027), Asset Management Plan (2022-2032) and Performance Measures. The timelines and horizons are illustrated below in Figure 1.

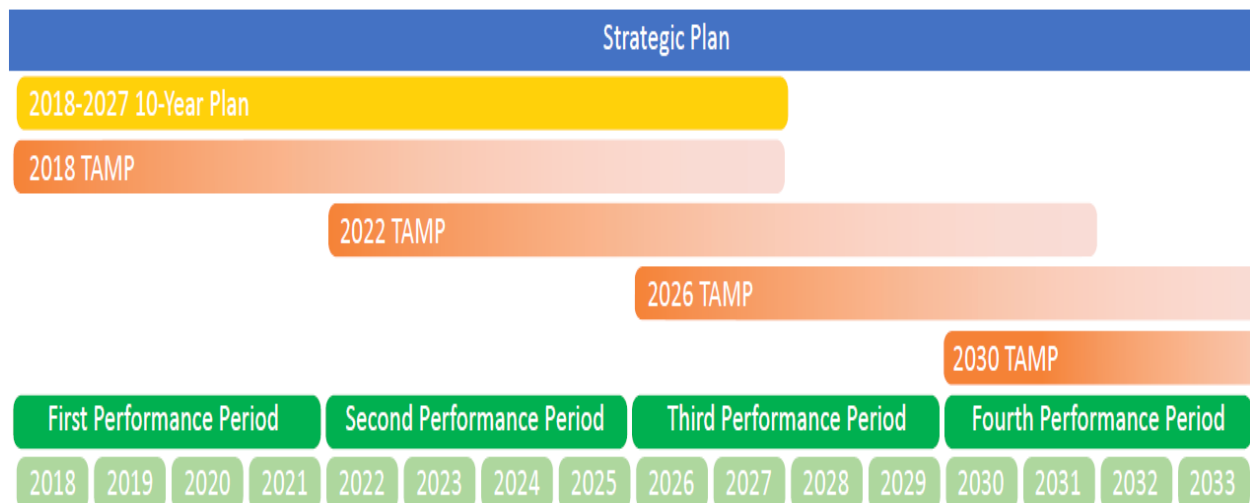


Figure 1. STAMP Timelines and Horizons

In 2017, The General Assembly passed legislation (the South Carolina Infrastructure and Economic Development reform Act (Act 40)) to increase the State gas tax by (12) twelve cents by phasing in the increase at (2) two cents per year for (6) six years. These funds are deposited into a new trust fund called the Infrastructure Maintenance Trust Fund (IMTF). In addition to state funding, SCDOT has received an increase of federal funding through the Infrastructure Investment and Jobs Act (IIJA) and recurring matching state funds. These new revenues, coupled with other Federal and State funds and one-time appropriations, form the financial foundation of SCDOT's Ten-Year Plan and performance targets. For the first time in 30 years, the South Carolina Department of Transportation has been provided with an increased and sustainable revenue stream. The additional funding gives the agency the opportunity to make gradual, but real and significant strides toward bringing the highway system back from three decades of neglect.

The SCDOT's Strategic Plan forms the guiding principles of the agency's Investment Strategies, focusing on the maintenance, preservation and safety of the existing transportation infrastructure, directing investments of highway systems and priority networks, integrating risk-based prioritization, improving safety, advancing lifecycle cost in investment programming and enhancing mobility. The three major goals of the Strategic Plan are:

SCDOT Strategic Plan Goals



Improve Safety Programs and Outcomes in Our High Risk Areas



Maintain and Preserve Our Existing Transportation Infrastructure



Improve Program Delivery to Increase the Efficiency and Reliability of Our Road and Bridge Network

Figure 2. Strategic Plan Goals

The Moving Ahead for Progress in the 21st Century (MAP-21) surface transportation legislation established National Goals and a performance and outcome based program. As part of the program federally established performance measures are set and those targets shall be monitored for progress. There is alignment between SCDOT's Strategic Plan Goals and the MAP-21 National Goals. The MAP-21 National Goals are as follows:

MAP-21 National Goals

- **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair
- **Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System
- **System Reliability** - To improve the efficiency of the surface transportation system
- **Freight Movement and Economic Vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- **Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment
- **Reduced Project Delivery Delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

These goals provide clear asset management performance based direction to support the effective movement of people and goods. Specifically, transportation asset management focuses on preservation of existing infrastructure with a more cost-effective and efficient approach. SCDOT also utilizes transportation asset management principles to address mobility by planning for future demands on the system. These actions facilitate safe and efficient movement of citizens, goods and services, thereby, enhancing performance of state and national commerce.

This System Performance Report details the federally required (MAP-21/FAST Act) performance measures for a State DOT. The following sections detail the performance measures, baseline and targets and the progress towards those targets based on the most recent Full Performance Period (FPP) that was submitted December 16, 2022, which is based on the first performance period (January 2018 – December 2021) and the Baseline Performance Period (BPP) submitted December 16, 2022, which is based on the second performance period (January 2022 - December 2025).

Highway Safety / PM-1

Effective April 14, 2016, FHWA established the highway safety performance measures to carry out the Highway Safety Improvement Program (HSIP). Safety performance targets are developed in coordination with the South Carolina Department of Public Safety (SCDPS) and reported annually to FHWA in the state's Highway Safety Improvement Program (HSIP) Annual Report and to the National Highway Traffic Safety Administration (NHTSA) in the state's Highway Safety Plan (HSP) developed by SCDPS. The performance measures are:

1. Number of fatalities
2. Rate of fatalities per 100 million vehicle miles traveled
3. Number of serious injuries
4. Rate of serious injuries per 100 million vehicle miles traveled
5. Number of combined non-motorized fatalities and non-motorized serious injuries

The most recently assessed safety targets were for the five-year rolling average from 2016 to 2020. South Carolina's statewide safety performance targets for this time period are included in Table 1, along with actual performance and the state's baseline data for the (5) five year rolling average from 2014 to 2018. A state is said to have met or made significant progress toward meeting its safety performance targets when at least (4) four of the (5) five targets established under 23 CFR 490.209(a) have been met or the actual outcome is better than the baseline performance. **As shown in Table 1 below, South Carolina met or performed better than baseline for 2 of the 5 safety targets.** SCDOT continues to implement proven countermeasures addressing the engineering emphasis areas identified in the State's Strategic Highway Safety Plan (SHSP). For more information regarding the recently updated SHSP, please visit our website here: https://www.scdot.org/performance/pdf/reports/BR1_SC_SHSP_Dec20_rotated.pdf. In response to the increasing number of non-motorized user fatalities, SCDOT has developed the state's first Pedestrian and Bicycle Safety Action Plan (PBSAP). It is available here: <https://www.scdot.org/projects/pdf/SC%20Pedestrian%20and%20Bicycle%20Safety%20Action%20Plan.pdf>. For a national perspective on state's setting and achieving safety performance targets, please visit FHWA's website https://safety.fhwa.dot.gov/hsip/spm/state_safety_targets/.

| Table 1. South Carolina 2016-2020 Safety Performance Target Assessment | | | | | | |
|--|---------------------|----------------------|-----------------------|---------------|-------------------------|--------------------------------------|
| PERFORMANCE MEASURE | 2016-2020 TARGET | 2016-2020 OUTCOME | 2014-2018 BASELINE | MET TARGET | BETTER THAN BASELINE | MET /MADE SIGNIFICANT PROGRESS |
| Number of Traffic Fatalities | 1,011.0 | 1,023.0 | 969.4 | No | No | No |
| Rate of Traffic Fatalities | 1.819 | 1.836 | 1.802 | No | No | |
| Number of Traffic Serious Injuries | 2,781.0 | 2,888.2 | 2,938.8 | No | Yes | |
| Rate of Traffic Serious Injuries | 4.979 | 5.180 | 5.584 | No | Yes | |
| Number of Non-motorized Traffic Fatalities and Serious Injuries | 380.0 | 438.8 | 393.2 | No | No | |

Table 2 and 3 below provides a historical look at the results of the department's Safety Performance Target Assessment for 2015-2019 and 2014-2018. **During the 2015-2019 assessment, South Carolina met 1 of the 5 safety targets.**

| Table 2. South Carolina 2015-2019 Safety Performance Target Assessment | | | | | | |
|--|------------------|------------------|--------------------|------------|----------------------|----------------------------------|
| Performance Measure | 2015-2019 Target | 2015-2019 Actual | 2013-2017 Baseline | Met Target | Better than Baseline | Met or Made Significant Progress |
| Number of Traffic Fatalities | 988.0 | 1005.0 | 915.6 | No | No | No |
| Rate of Traffic Fatalities | 1.790 | 1.818 | 1.752 | No | No | |
| Number of Traffic Serious Injuries | 2986.0 | 2986.6 | 3108.2 | No | Yes | |
| Rate of Traffic Serious Injuries | 5.420 | 5.412 | 5.986 | Yes | N/A | |
| Number of Non-motorized Traffic Fatalities & Serious Injuries | 380.0 | 414.2 | 382.6 | No | No | |

South Carolina met 4 of the 5 safety targets in 2014-2018. During this time period, SCDOT began implementing the state's Rural Road Safety Program, specifically targeting roadway departure collisions on rural roads.

| Table 3. South Carolina 2014-2018 Safety Performance Target Assessment | | | | | | |
|--|------------------|------------------|--------------------|------------|----------------------|----------------------------------|
| Performance Measure | 2014-2018 Target | 2014-2018 Actual | 2012-2016 Baseline | Met Target | Better than Baseline | Met or Made Significant Progress |
| Number of Traffic Fatalities | 970.0 | 969.6 | 890.4 | Yes | N/A | YES |
| Rate of Traffic Fatalities | 1.810 | 1.804 | 1.748 | Yes | N/A | |
| Number of Traffic Serious Injuries | 3067.0 | 2988.4 | 3195.4 | Yes | N/A | |
| Rate of Traffic Serious Injuries | 5.708 | 5.590 | 6.304 | Yes | N/A | |
| Number of Non-motorized Traffic Fatalities & Serious Injuries | 371.3 | 389.8 | 378.8 | No | No | |

Pavement and Bridge Condition / PM-2 – First Performance Period (2018-2021)

Pavement and bridge performance measures are assessed and reported over a (4) four-year period with the first period beginning on January 1, 2018 and ending December 31, 2021. SCDOT reported baseline targets to FHWA on October 1, 2018. Mid-point (2) two-year performance targets were reported on October 1, 2020, and represented expected pavement and bridge conditions at the end of calendar year 2019. Final (4) four-year performance targets were reported on December 16, 2022, and represent expected pavement and bridge condition at the end of calendar year 2021. MPOs and COGs can elect to establish their own targets or support the statewide targets. The SCDOT statewide PM-2 targets for the first performance period are listed in Table 4.

1. Percent of Interstate pavements in good condition – (4) four-year target
2. Percent of Interstate pavements in poor condition – (4) four-year target
3. Percent of non-Interstate NHS pavements in good condition – (2) two and (4) four year targets
4. Percent of non-Interstate NHS pavements in poor condition – (2) two and (4) four year targets
5. Percent of NHS bridges by deck area in good condition – (2) two and (4) four year targets
6. Percent of NHS bridges by deck area in poor condition – (2) two and (4) four year targets

Table 4 provides a summary of pavement and bridge performance measures. The SCDOT has made measurable and positive progress implementing the strategic priorities of the STAMP that are key to aligning with SCDOT's internal and external efforts towards achievable results. The Ten-Year Plan is underway to address infrastructure needs across the state which was initiated in 2017. The plan has seen progress, most notably in the pavement performance measures. At the update of the 2021 Annual Report https://www.scdot.org/performance/pdf/reports/SCDOT_Annual_Report_2021.pdf?v=2 the agency is on target with approximately 82.5 miles of interstate widening completed or advancing to construction. Widening projects are currently completed on I-20 and under construction on I-85, and I-26 and are expected to be completed within the next performance period. System to system interchange improvement projects that are moving forward include I-26/526, I-26/I-95 and I-26/I-126/I-20. The system to system interchange improvement at I-85/I-385 has been completed and is operational. To date approximately 5,800 lane miles of paving have been completed along with 274 bridges that are completed or under contract.

SCDOT made significant progress from the baseline statewide Percentage of Pavements on the Interstate in Good Condition of 63.2% to the actual 4-year performance condition of 75.8%. SCDOT also improved from the baseline statewide Percentage of Pavements on the Interstate in Poor Condition of 1.2% to the actual 4-year performance condition of 0.2%. The percentage of good pavements on the Interstate System will only continue to improve over the next performance period as the agency works towards a State of Good Repair (SOGR) and additional interstate work is completed in accordance with the asset management principles in the STAMP. Note that pavement metrics are reported in the federal metric of Full Distress + International Roughness Index (IRI) only for the 2nd Performance Period.

Significant progress has been made from the baseline statewide Percentage of Pavements on the Non-Interstate NHS System in Good Condition of 21.1% to the actual 4-year performance condition of 38.8%. SCDOT also improved from the baseline statewide Percentage of Pavements on the Non-Interstate NHS System in Poor Condition of 4.6% to the actual 4-year performance condition of 1.6%. Over the last 5-years the agency has spent over \$419 million on paving the Non-Interstate NHS in addition to the 100% state funded \$50 million annual program to address Rural Road Safety that improves select Non-Interstate NHS roadways. The percentage of good pavements on the Non-Interstate NHS System will only continue

to improve over the next performance period as the agency works towards a SOGR and additional paving is completed in accordance with the asset management principles in the STAMP.

SCDOT's Bridge Program was completely restructured in the middle of SFY 2022, focusing on regional mobility throughout the State. Changes to the program are detailed in the 2022 STAMP update. The Load Rating Program was completed in 2021, and based on those results the agency has implemented a balanced approach to bridge preservation, rehab and replacement. The agency presented new priorities and a new list of prioritized bridges that blended the original bridge list with the State's most pressing needs to Commission on December of 2021.

SCDOT did not meet the 4-year target for statewide Percentage of deck area of Bridges on the NHS classified as in Good Condition of 42.7% to the actual 4-year performance condition of 38.5%. The agency did meet the 4-year target of statewide Percentage of deck area of Bridges on the NHS classified as in Poor Condition of 6.0% to the actual 4-year performance condition of 4.3%. In the near term although the percent good target was not met the agency has boosted the funding to the bridge program by \$69 million and has balanced the approach to bridge preservation, rehabilitation and replacement projects. Additional funding has been strategically aligned with the STAMP to achieve asset management objectives and rebuild and improve the bridge network as the agency works towards a SOGR. The agency is well below the minimum threshold of 10% for the percentage of deck are of bridges on the NHS as classified in poor condition.

| Table 4. SCDOT Pavement and Bridge Performance Measures (1 st Performance Period) | | | | | |
|---|----------|----------------------------------|---------------|----------------------------------|---------------|
| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Condition/ Performance | 4-Year Target |
| Percentage of Pavements on the Interstate System in Good Condition (Federal Metric) | NA | 63.2% | NA | 75.8% | 71.0% |
| Percentage of Pavements on the Interstate System in Poor Condition (Federal Metric) | NA | 1.2% | NA | 0.2% | 3.0% |
| Percentage of Pavements of the Non-Interstate NHS in Good Condition (IRI) | 50.4% | 54.3% | NA | 56.9% | NA |
| Percentage of Pavements of the Non-Interstate NHS in Good Condition (Federal Metric) | NA | 27.4% | 14.9% | 38.8% | 21.1% |
| Percentage of Pavements of the Non-Interstate NHS in Poor Condition (IRI) | 8.6% | 8.4% | NA | 7.7% | NA |
| Percentage of Pavements of the Non-Interstate NHS in Poor Condition (Federal Metric) | NA | 3.9% | 4.3% | 1.6% | 4.6% |
| Percentage of NHS Bridges Classified as in Good Condition | 41.1% | 40.0% | 42.2% | 38.5% | 42.7% |
| Percentage of NHS Bridges Classified as in Poor Condition | 4.0% | 4.2% | 4.0% | 4.3% | 6.0% |

Pavement and Bridge Condition / PM-2 – Second Performance Period (2022-2025)

The second year performance period began January 1, 2022 and ends December 31, 2025, with additional (4) four-year performance periods to follow (See Figure 1). The new 2 and 4-year targets for the 2nd performance period for pavements and bridges are listed in Table 5 below.

The pavement targets were developed from historical performance trends and planned investments. The targets below are all reported in the federal metric of Full Distress + IRI which varies from the SCDOT metric of Pavement Quality Index (PQI). The trendlines derived to project targets were validated using project and budget data. The 75th percentile value was determined and used as the basis for establishing targets. With the expansive amount of Interstate work taking place and replacement of Open Graded Friction Course (OGFC) during the 2nd performance period, the working group recommended the targets below. For the Non-Interstate NHS System the agency used the same methodology described above but noted that the agency delegates the District Offices within each county of South Carolina to propose resurfacing projects causing the amount of Non-Interstate NHS versus Non-NHS projects to fluctuate from year to year.

Bridge targets were established using historical National Bridge Inventory (NBI) data and planned investments. The model was used to forecast a trendline and incorporated any projects that were let, forecasted to let and planned capital projects that would “move the needle” on bridge condition. The established targets took into consideration on-going inspections of NHS bridge condition and underwater inspections that would shift bridge condition categories. The group also expressed concern over effects of rising inflation costs for bridge letting over the 2nd performance period. Gathering all available data the agency established the targets below in Table 5 for bridges over the next performance period.

| Table 5. SCDOT Pavement and Bridge Performance Measures (2nd Performance Period) | | | | | |
|--|-----------------|--|--------------------------|--|--------------------------|
| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Condition/ Performance | 4-Year Target |
| Percentage of Pavements on the Interstate System in Good Condition (Federal Metric) | 75.8% | | 77.0% | | 78.0% |
| Percentage of Pavements on the Interstate System in Poor Condition (Federal Metric) | 0.2% | | 2.5% | | 2.5% |
| Percentage of Pavements of the Non-Interstate NHS in Good Condition (Federal Metric) | 38.8% | | 36.0% | | 38.0% |
| Percentage of Pavements of the Non-Interstate NHS in Poor Condition (Federal Metric) | 1.6% | | 10.0% | | 10.0% |
| Percentage of NHS Bridges Classified as in Good Condition | 38.5% | | 35.0% | | 34.0% |
| Percentage of NHS Bridges Classified as in Poor Condition | 4.3% | | 6.0% | | 6.0% |

System Performance, and Freight Movement / PM-3 - First Performance Period (2018-2021)

FHWA established measures to assess the performance and reliability of the National Highway System and freight movement on the interstate. These measures became effective on May 20, 2017, and are as follows:

System Performance Measures

1. Percent of person-miles on the Interstate system that are reliable – (2) two-year and (4) four-year targets
2. Percent of person-miles on the non-Interstate NHS that are reliable – (4) four-year targets
 - Performance measure assesses the reliability of travel time on the Interstate or non-Interstate NHS through the Level of Travel Time Reliability (LOTTR). It is ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) over four time periods (AM peak, Mid-day, PM Peak, and weekends) which covers 6AM to 8PM each day. The ratio is expressed as a percentage of the person miles traveled that are reliable through the sum of the number of reliable person miles traveled divided by the sum of total person miles traveled.

Freight Movement Performance Measures

3. Truck Travel Time Reliability (TTTR) – (2) two-year and (4) four-year targets
 - Performance measure is a ratio generated by dividing the longer travel time (95th percentile) by a normal travel time (50th percentile) for each segment of the interstate over five time periods throughout weekdays and weekends (AM Peak, Mid-day, PM peak, weekend and overnight). This performance measure covers all hours of the day. The TTTR's of Interstate segments are then used to create the TTTR index for the entire system using a weighted aggregate calculation for the worst performing times of each segment.

Table 6 displays the results of the performance measures and targets for system performance. The 4-year condition of 95.9% outperformed the 4-year target of 90.0% for the Percent of Person Miles Traveled on the Interstate that are Reliable. The number of Vehicle Miles Traveled (VMT) has an inverse relationship with reliability. The VMT share of unreliable TMC decreased from the baseline year due to the effects of COVID pandemic contributing to the difference in actual and target 4-year values. Over the first performance period over 82.5 miles of Interstate have been improved. Interstate capacity widening projects on I-85, I-26 and I-20 are currently under construction or completed in addition to preservation and rehabilitation projects that contributed towards progress towards the 4-year target. There are consistently unreliable sections on the Interstate System in South Carolina that are responsible for making 4.1% of the Interstate's unreliable, the majority of which are located in 3 MPO's: Charleston (CHATS), Greenville-Pickens (GPATS) and Columbia (COATS). Addressing these unreliable sections and pinch points of System to System Interchanges in these areas has been a top priority for the agency and is being completed through the management of the STAMP.

| Table 6. System Performance Measures, and Freight (1 st Performance Period) | | | | | |
|--|----------|-------------------------------|---------------|-------------------------------|---------------|
| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Condition/ Performance | 4-Year Target |
| Percent of the Person-Miles Traveled on the Interstate that are Reliable | 94.7% | 94.8% | 91.0% | 95.9% | 90.0% |
| Percent of the Person-Miles Traveled on the Non-Interstate NHS that are Reliable | 91.4% | NA | NA | 95.0% | 81.0% |
| Truck Travel Time Reliability Index (TTTR) | 1.34 | 1.33 | 1.36 | 1.31 | 1.45 |

Table 6 also displays the (4) four-year performance measure for Truck Travel Time Reliability (TTTR) at 1.31, which outperformed the target of 1.45. The SCDOT has made addressing congestion at freight bottlenecks a priority to improve operational efficiency and accommodate future traffic volumes. Some of the bottleneck areas with projects currently under construction and/or in planning stages include:

- **I-20:** The I-77 and Clemson Road interchanges are the respective bottleneck points along I-20 during the AM peak hour and PM peak hour. **This Corridor and Interchange improvement Project is complete and operational.**
- **I-77:** The primary bottleneck point along I-77 southbound is approaching the Forest Drive interchange in the Columbia area every Thursday in the AM peak hour, due to weekly graduation ceremonies of Fort Jackson. **This Corridor Improvement Project is complete and operational.**
- **I-26:** In the Columbia area, bottleneck points during the PM peak hours are located at the Broad River Road (Exit 101). Capacity improvements are needed from Exit 101 to east of the Saluda River (Exit 85). **Corridor improvements are currently underway to address these issues and estimated to be complete in 2024.**
- **I-26:** In the Columbia area, the I-20 interchange is the primary bottleneck points during the AM peak hour and the I-126, I-20 and St. Andrews Road interchanges are the primary bottleneck points during the PM peak hour. **As part of the 5-phase Carolina Crossroads Project, corridor and interchange improvement projects have begun and all phases are currently scheduled for completion by 2029.**
- **I-26:** In the Charleston area, the U.S. 52 Connector/Ashley Phosphate Road interchange and the merge to I-526 are the primary bottleneck points during the AM peak hour and the I-526 and Ashley Phosphate Road interchanges are the primary bottleneck points during the PM peak hour. **Planning activities for the Ashley Phosphate Road Safety Improvements Project are currently underway for these areas. ROW acquisition is estimated to begin in Fall 2022 with construction start estimated for 2023.**
- **I-526:** During the PM peak hour, the primary bottleneck along I-526 eastbound is the I-26 interchange and the primary bottleneck points along I-526 westbound are the I-26 interchange,

the merge from Leeds Avenue, and the Paul Cantrell Boulevard interchange. **Preliminary activities are underway on I-526 East & West interchange and corridor improvements. Phase 1 construction estimated to start 2023.**

- **I-85**: Corridor improvements necessary to alleviate traffic congestion, improve safety, and increase capacity. Widening and rehabilitation of the existing Interstate 85 beginning at mile marker 96 and continuing to the North Carolina state line. **Corridor Improvements are currently in construction.**
- **I-85**: The Woodruff Road/I-385 interchange is the primary bottleneck for both directions of I-85 during both the AM and PM peak hours. **Preliminary activities are underway for the Woodruff Road Congestion Relief Project. Estimated construction start is to be determined.**
- **I-385**: The primary bottleneck along I-385 is the interchange with I-85. **This interchange improvement project (as part of the 85/385 Gateway project) is complete and operational.**

In October 2018, the SCDOT Commission approved the Rural Interstate Freight Mobility Improvement Program (RIFMIP). This interstate widening program specifically targets rural sections of South Carolina's interstate system with a focus on freight safety and mobility. These projects can be found on the SCDOT website under "Interstate Capacity" <https://www.scdot.org/inside/planning-project-prioritization-list.aspx>. This program is in addition to the interstate widening projects planned for urban areas of the state.

- **I-26**: between Columbia and Charleston (MM-125 to MM-194). **Corridor Improvement Project construction between mile marker 184 and 194 near Charleston began in 2022. Preliminary activities for the remaining Corridor Improvement Project are underway. Construction estimated to begin in 2023.**
- **I-26 at I-95 Interchange**: in Dorchester and Orangeburg Counties (MM-172-182 and MM 69-86). **Preliminary activities for this Corridor Improvement Project are underway. Construction estimated to begin in 2023.**
- **I-95**: in the Lowcountry from the Georgia State Line (MM-0 to MM-33). **Preliminary activities for this Corridor Improvement Project are underway. Construction estimated to begin in 2024.**
- **I-85**: in the Upstate from the Georgia State Line (MM-0 to MM-19). **Preliminary activities for this Corridor Improvement Project are underway. Construction estimated to begin in 2035.**
- **I-77**: in the Catawba Region (MM-65 to MM-77). **Preliminary activities for this Corridor Improvement Project are underway. Construction estimated to begin in 2035.**

The RIFMIP was recently re-examined in 2022 based on new Transearch data and other data that was available to initiate planning to align with an updated 2050 horizon. Three additional segments were identified for future projects which include:

- **I-95**: from US-17 (Ridgeland North) / Exit 33 to I-26 / Exit 86
- **I-95**: from the North Carolina State Line (MM 198.76) to Exit 170 (SC-327)

- **I-26:** from I-385 / Exit 51 to SC-202 / Exit 85

System Performance, and Freight Movement / PM-3 - Second Performance Period (2022-2025)

For the 2nd Performance Period (2022-2025) the following targets were set in Table 7 below. To calculate travel time reliability the System Performance Group in the Planning Office observed historical trends and created scenarios to model the future impact that construction projects would have on the effected segments. *Due to the impacts of COVID-19 the years of 2020 and 2021 were excluded from the data set.* The baseline numbers below reflects the impacts of COVID-19 and the expectation is for a return to normal patterns of congestion which will negatively impact the performance measures.

Similar to Travel Time Reliability, Truck Travel Time Reliability (TTTR) was also effected by COVID-19 patterns. The expectation is for normal congestion patterns to return which will negatively impact the performance measures for TTTR. The established targets were adjusted to the 97th percentile to accommodate for the construction impact of interstate projects within the appropriate time frames.

| Table 7. System Performance Measures, and Freight (2 nd Performance Period) | | | | | |
|--|----------|-------------------------------|---------------|--------------------------------|---------------|
| Performance Measure | Baseline | 2-Year Condition/ Performance | 2-Year Target | 4-Year Condition / Performance | 4-Year Target |
| Percent of the Person-Miles Traveled on the Interstate that are Reliable | 95.9% | | 89.1% | | 89.1% |
| Percent of the Person-Miles Traveled on the Non-Interstate NHS that are Reliable | 95.0% | | 85.0% | | 85.0% |
| Truck Travel Time Reliability Index (TTTR) | 1.31 | | 1.45 | | 1.45 |

Congestion Mitigation & Air Quality Improvement Program / PM-3

Congestion Mitigation and Air Quality Improvement Program (CMAQ) measures apply to MPOs that are within the boundaries of each U.S. Census Bureau-designated Urbanized Area (UZA) that contains a NHS road, has a population of more than one million, and contains any part of nonattainment or maintenance area for emissions. If applicable the FHWA has established measures, which became effective on May 20, 2017 to assess the following performance measures.

1. CMAQ Only - Annual hours of peak hour excessive delay per capita (PHED) – (4) four-year targets
 - Peak Hour Excessive Delay (PHED) is a measurement of traffic congestion and is expressed as annual hours of peak hour excessive delay per capita. The threshold for excessive delay is based on travel time at 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater, and is measured in 15-minute intervals on National Highway System (NHS) roads. Peak travel hours are defined as 6:00 to 10:00 a.m. on weekday mornings; the weekday afternoon period is 3:00 to 7:00 p.m. or 4:00 to 8:00 p.m. The total excessive delay metric is weighted by vehicle volumes and occupancy. Thus, PHED is a measure of person-hours of delay experienced on NHS roads on an annual basis.
2. CMAQ Only - Percent of non-single occupant vehicle travel (Non-SOV) – (2) two-year and (4) four-year targets
 - Non-Single Occupancy Vehicle (Non-SOV) Travel measures the percent of vehicle travel that occurs with more than one occupant in the vehicle.
3. CMAQ Only - Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction) – (2) two-year and (4) four-year targets
 - The On-Road Emissions Reduction measure represents the cumulative two-year and four-year emission reductions in kg/day for CMAQ funded projects within the boundaries of the planning area.

Table 8 provides the System Performance Congestion Mitigation and Air Quality Improvement Program. The SCDOT worked in conjunction with NCDOT and the relative MPO to develop the (2) two-year and (4) four-year targets with NCDOT taking the lead on data gathering and analysis due to most of the UZA being located in North Carolina. Trend lines in data have changed with the uncertainty involved with COVID-19 and reduced travel and social distancing practices that have affected travel behavior through the remainder of the performance period. Due to this uncertainty the (4) four-year target was elected to stay at 34.0 annual hours of Peak Hour Excessive Delay (PHED) even though the (2) two-year performance target was reduced.

To develop the Non-Single Occupancy Vehicle (SOV) travel target a conservative approach was taken based on a trend analysis that was completed. Data used for the measure was developed from the commuting to work data from the American Community Survey. The data fluctuates slightly above 21.0%. The (2) two-year performance was slightly above the (2) two-year target, but in line with the trending data that was expected.

Total Emission reduction for Nitrous Oxide (NOx) and for Volatile Organic Compounds (VOC) performance measures were less than the expected (2) two-year target due to changes in project delivery schedules and a series of challenges encountered by the project management team. Six (6) of the eight (8) CMAQ projects in the 2020 CMAQ Performance Plan were completed with two projects expected to be completed in the next performance period.

| Table 8. System Performance Congestion Mitigation & Air Quality Improvement Program (1 st Performance Period) | | | | | |
|--|----------|------------------------------|---------------|--------------------------------|---------------|
| Performance Measure | Baseline | 2-Year Condition/Performance | 2-Year Target | 4-Year Condition / Performance | 4-Year Target |
| Annual Hours of Peak Hour Excessive Delay Per Capita: Urbanized Area 1 | NA | 14.8 | NA | 9.8 | 34.0 |
| Percent of Non-Single Occupancy Vehicle (Non-SOV) Travel: Urbanized Area 1 | 21.7% | 21.6% | 21.0% | 25.6% | 21.0% |
| Total Emission Reductions: NOx | 18.800 | 8.290 | 58.670 | 8.290 | 58.730 |
| Total Emission Reductions: VOC | 22.430 | 11.010 | 40.820 | 11.010 | 46.262 |

Congestion Mitigation & Air Quality Improvement Program / PM-3

Table 9 represents the CMAQ Program for the 2nd Performance Period (January 2022 – December 2025). The unified PHED and Non-SOV targets were set in conjunction with NCDOT and represent continued uncertainty about the lingering effects from the COVID pandemic.

Total Emission reductions for Nitrous Oxide (NOx) and Volatile Organic Compounds (VOC) represent the estimated reductions benefit resulting from the CMAQ projects authorized for funding in the 2022-2025 performance period. These benefits are highly dependent on the project type and project delivery schedules.

| Table 9. System Performance Congestion Mitigation & Air Quality Improvement Program (2 nd Performance Period) | | | | | |
|--|----------|------------------------------|---------------|--------------------------------|---------------|
| Performance Measure | Baseline | 2-Year Condition/Performance | 2-Year Target | 4-Year Condition / Performance | 4-Year Target |
| Annual Hours of Peak Hour Excessive Delay Per Capita: Urbanized Area 1 | 9.8 | | 34.0 | | 34.0 |
| Percent of Non-Single Occupancy Vehicle (Non-SOV) Travel: Urbanized Area 1 | 25.6% | | 21.0% | | 21.0% |
| Total Emission Reductions: NOx | 8.290 | | 58.670 | | 58.963 |
| Total Emission Reductions: VOC | 11.010 | | 40.820 | | 41.894 |