

2045 Regional Long Range Transportation Plan

December 2021

MOVING THE MIDLANDS
2045 LONG RANGE TRANSPORTATION PLAN
FOR TRANSPORTATION PLANNING

IN THE

COLUMBIA METROPOLITAN PLANNING AREA

APPROVED BY THE POLICY COMMITTEE OF THE
COLUMBIA AREA TRANSPORTATION STUDY

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Table of Contents

Chapter 1	2045 Plan Overview.....	1
1.1	Introduction	1
1.2	COATS MPO and CMCOG RPO	1
1.3	Federal Transportation Planning Requirements	2
1.4	Transportation Conformity Requirements	3
1.5	Transportation Planning Partners	3
1.6	COATS MPO Structure	3
1.7	CMCOG RPO Structure	4
Chapter 2	2045 LRTP Public Participation Process.....	7
2.1	LRTP Branding	7
2.2	LRTP Website	7
2.3	Project Steering Committee.....	7
2.4	Stakeholder Listening Sessions	8
2.5	Needs Assessment Survey	11
2.6	Transportation Investments	15
2.7	Public Comments on Proposed Improvement Projects and Strategies.....	22
Chapter 3	Performance-Based Regional Transportation Policy.....	23
3.1	Introduction	23
3.2	Proposed Goals, Guiding Principles, Objectives, and Performance Measures for 2045 LRTP.....	26
Chapter 4	Performance-Based Planning Process and Framework.....	32
4.1	Introduction	32
Chapter 5	Socio-Economic Analysis.....	36
5.1	Introduction	36
5.2	CMCOG/COATS MPO Study Area Boundaries.....	36
5.3	Traffic Analysis Zones	38
5.4	Base Year Socioeconomic Data	39
5.5	2045 Horizon Year Socioeconomic Data.....	42
5.6	Socioeconomic Data Summary	47
Chapter 6	Social Environment.....	51
6.1	Overview of Title VI and Environment Justice	51
6.2	Equity Analysis Methodology & Analysis.....	51
6.3	CMCOG/COATS MPO Objectives and Strategies.....	57

6.4	CMCOG/COATS MPO Limited English Proficiency Policy.....	58
Chapter 7	Environmental Mitigation.....	59
7.1	Introduction.....	59
7.2	Environmental mitigation strategies.....	59
Chapter 8	Transit and Commuter Rail.....	67
8.1	COMET Service.....	67
8.2	EXISTING RIDERSHIP AND SERVICE TRENDS.....	69
8.3	TRANSIT VISION.....	72
8.4	Human Services Transportation Coordination Plan.....	73
8.5	Central Midlands Commuter Rail.....	73
Chapter 9	Bicycle & Pedestrian.....	75
9.1	Introduction.....	75
9.2	Existing Conditions.....	78
9.3	Recommendations for Bicycle and Pedestrian Projects, Programs and Policies.....	93
9.4	Project Prioritization.....	95
Chapter 10	Congestion Management Process.....	106
10.1	Introduction.....	106
10.2	CMP Process Model.....	106
10.3	Regional Congestion Management Objectives.....	107
10.4	Regional CMP Network.....	107
10.5	Regional CMP Performance Measures.....	108
10.6	Collect CMP Data/ Monitor System Performance.....	109
10.7	Analyze Congestion Problems and Needs.....	109
10.8	Identify and Assess CMP Strategies.....	109
10.9	Implement Strategies and Evaluate Effectiveness.....	118
10.10	Roadway Congestion Analysis.....	118
Chapter 11	Freight.....	120
11.1	Overview and Existing Regional Plans.....	120
11.2	Freight Infrastructure System and Existing Conditions.....	121
11.3	Freight Movement and Economic Impacts.....	124
11.4	Safety.....	125
11.5	Objectives and Strategies for Freight Mobility Improvements.....	126
Chapter 12	Safety & Security.....	129

12.1	Crash Analysis	129
12.2	Security	133
Chapter 13	Recommended COATS MPO Transportation Projects	134
13.1	Introduction	134
Chapter 14	Recommended CMCOG RPO Transportation Projects	143
14.1	Introduction	143
Chapter 15	Financial Plan.....	148
15.1	Introduction	148
15.2	Project Prioritization Methodology.....	148
15.3	Urban Area Highway Fiscally-Constrained Plan	149
15.4	Transit Fiscal Constraint.....	151
15.5	Rural Area Highway Fiscal Constraint.....	153
Appendix A	155
Appendix B	156
Appendix C	157

Figures

Figure 1.1 CMCOG AND COATS Study Area	2
Figure 2.1. PROJECT LOGOS AND TAGLINE	7
Figure 2.2. Zip code of Survey Responders	14
Figure 4.4.1 Creating a Framework for Performance-Based Planning Process.....	34
Figure 5.1. Historical COATS MPO BOUNDARIES.....	37
Figure 5.2. 2018 POPULATION DENSITY	47
Figure 5.3. 2045 POPULATION DENSITY	48
Figure 5.4. CHANGE IN POPULATION DENSITY 2018-2045	48
Figure 5.5. 2018 employment Density.....	49
Figure 5.6. 2045 employment Density.....	50
Figure 5.7. CHANGE IN employment DENSITY 2018-2045.....	50
Figure 6.1. CMCOG/COATS mpo Area Minority Population	53
Figure 6.2. CMCOG/COATS mpo Area Hispanic Population.....	54
Figure 6.3. CMCOG/COATS mpo Area Low Income Population	55
Figure 6.4. CMCOG/COATS mpo Area Population Over Age 65.....	56
Figure 6.5. CMCOG/COATS mpo Area Environmental Justice Areas.....	57
Figure 8.1. COMET Service Map	67
Figure 8.2. CMRTA Annual Vehicle Revenue Miles.....	70
Figure 8.3. CMRTA Annual Vehicle Revenue Miles.....	70
Figure 8.4. CMRTA Unlinked Passenger Trips Per Revenue Mile	71
Figure 8.5. CMRTA Unlinked Passenger Trips Per Revenue Hour	71
Figure 9.1. Bicyclist Design User Profiles	78
Figure 9.2. Existing Sidewalks.....	80
Figure 9.3. Intersection Improvement Project Locations	82
Figure 9.4. Existing and Proposed Bicycle Facilities.....	84
Figure 9.5. Existing and Proposed Greenways and Trails	86
Figure 9.6. Pedestrian and Bicycle Crashes (2016-2020)	88
Figure 9.7. Serious and Fatal Pedestrian and Bicycle Crashes	89
Figure 9.8. Heat Map of Serious and Fatal Pedestrian and Bicycle Crashes	91
Figure 9.9. Heat Map of Serious and Fatal Pedestrian and Fatal Crashes (Columbia Area)	92
Figure 9.10. High and Medium High Priority Projects	96
Figure 11.1. Central Midlands SCDOT Statewide Strategic Freight Network and Railroads.....	121

Figure 11.2. Freight Roadway Bottlenecks.....	123
Figure 11.3. Freight Across the Midlands	124
Figure 12.1. Severity of Crashes By Year (2016-2020)	129
Figure 12.2. Fatal Crash Types (2016-2020)	130
Figure 12.3. Regional Crash Types (2016-2020)	131
Figure 12.4. Density of Crashes (2016-2020)	132
Figure 13.1. COATS MPO Widening Projects.....	139
Figure 13.2. COATS MPO Intersection Projects.....	142
Figure 14.1. CMCOG RPO WIDENING AND INTERSECTION PROJECTS.....	147
Figure 15.1. Summary of Project Prioritization Methodology	148

Tables

Table 2.1. Top Priority Transportation Issues from Listening Sessions	8
Table 2.2. Top Priority mobility infrastructure investments from Listening Sessions.....	9
Table 2.3. Top Priority mobility improvement strategies from Listening Sessions	10
Table 2.4. Top transportation funding methods from Listening Sessions	11
Table 2.5. Survey Results for Age	12
Table 2.6. Survey Results for Gender.....	12
Table 2.7. Survey Results for Household Income.....	13
Table 2.8. Survey Results for Race/Ethnicity.....	14
Table 2.9. Survey Results for Top Transportation Issue.....	16
Table 2.10. Survey Results for Satisfaction of Existing Transportation System Components.....	16
Table 2.11. Survey Results for top mobility infrastructure investments	18
Table 2.12. Survey Results for top mobility improvement strategies	19
Table 2.13. Survey Results for top Funding methods.....	20
Table 2.14. Survey Results for Top Project type.....	21
Table 3.1. Comparison of Goals from the National Federal-aid Highway Program, FAST Act Metropolitan Planning Factors, SCDOT, and the 2040 COATS LRTP with proposed 2045 LRTP Goals	24
Table 3.2. Goal 1 Associated Guiding Principles, Objectives, and Performance Measures.....	26
Table 3.3. Goal 2 Associated Guiding Principles, Objectives, and Performance Measures.....	27
Table 3.4. Goal 3 Associated Guiding Principles, Objectives, and Performance Measures.....	28
Table 3.5. Goal 4 Associated Guiding Principles, Objectives, and Performance Measures.....	29
Table 3.6. Potential Data Sources for Performance Measures	30

Table 5.1. SOCIOECONOMIC VARIABLES IN 2018.....	39
Table 5.2. 2018 EMPLOYMENT CONTROL TOTALS	42
Table 5.3. 2018 AND 2045 POPULATION COMPARISON	43
Table 5.4. 2018 and 2045 Population Comparison	44
Table 5.5. EMPLOYMENT BY INDUSTRY TYPE – 2018 TO 2045	45
Table 5.6. POPULATION PROJECTION SUMMARY FOR THE	47
Table 6.1. CMCOG/COATS mpo Region Environmental Justice Profile	52
Table 8.1. COMET FARES.....	68
Table 8.2. CMRTA Ridership 2013-2019	69
Table 8.3. CMRTA Annual Vehicle Operating Expenses.....	71
Table 9.1. Bicycle and Pedestrian Crash Severity in the CMCOG/COATS MPO Area	90
Table 9.2. Prioritization Criteria for Bicycle and Pedestrian Projects.....	98
Table 9.3. List of Prioritized Bicycle and Pedestrian Projects that Received Scores of High or Medium High	99
Table 10.1. REGIONAL CMP NETWORK CORRIDORS	107
Table 10.2. REGIONAL CMP NETWORK CORRIDORS	111
Table 11.1. South Carolina Commercial Motor Vehicle Collisions Statistics.....	126
Table 12.1. Top Ranked Roadway Corridors for Crash Incidents (2016-2020)	132
Table 13.1. COATS 2045 Prioritized List of Road Widening Projects.....	134
Table 13.2. COATS 2045 Aspirations List of Road Widening Projects.....	136
Table 13.3. COATS 2045 Prioritized List of Intersection Projects	140
Table 14.1. CMCOG 2045 Prioritized List of Rural Widening Projects.....	143
Table 14.2. CMCOG 2045 Aspirations List of Rural Widening Projects	144
Table 14.3. CMCOG 2045 Prioritized List of Rural Intersection Projects	145
Table 15.1. ROAD WIDENING RANKING CRITERIA.....	149
Table 15.2. REVENUE PROJECTIONS.....	149
Table 15.3. EXISTING + COMMITTED PROJECT ALLOCATION.....	150
Table 15.4. Transit Funding Projections.....	151
Table 15.5. RURAL REVENUE PROJECTIONS.....	153
Table 15.6. RURAL EXISTING + COMMITTED PROJECT ALLOCATION	154

Chapter 1 2045 Plan Overview

1.1 Introduction

This 2045 Long Range Transportation Plan (LRTP) is a 25-year plan that provides a list of future multi-modal transportation needs for the urban and rural areas of the Central Midlands region. The Central Midlands Council of Governments (CMCOG) houses the designated Metropolitan Planning Organization (MPO) – Columbia Area Transportation Study (COATS) - and Rural Planning Organization (RPO) responsible for updating the LRTP in coordination with the South Carolina Department of Transportation (SCDOT), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). CMCOG is updating both the COATS MPO LRTP and RPO LRTP

1.2 COATS MPO and CMCOG RPO

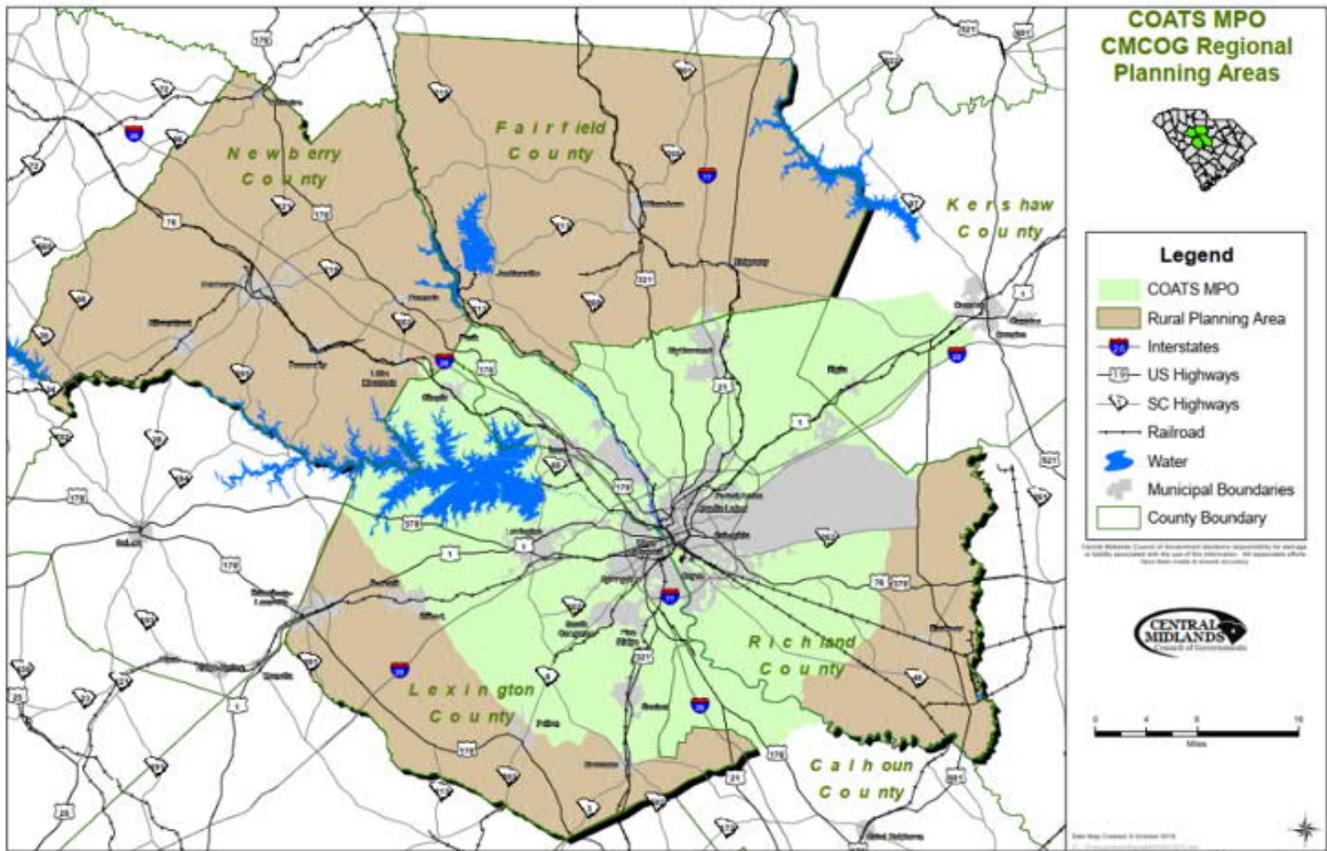
An MPO is the policy board of an organization created and designated to carry out the metropolitan transportation planning process. The U.S. Department of Transportation (USDOT) requires every urbanized area (UZA) with a population of over 50,000 to have a designated MPO with the responsibility of conducting a continuing, cooperative, and comprehensive transportation planning process. The MPO is responsible for transportation planning in the area defined by the most current Census as being urbanized, plus the area anticipated to become urbanized in the next 20 years.

Federal law also requires states to consult and coordinate with local officials in rural areas of the state. The RPO enhances state- and regional-level partnerships in the state's rural areas for transportation planning purposes. Funding for transportation projects and programs are channeled through this planning process.

The RPO serves a similar function as the MPO for rural areas of the state. The purpose of an RPO is to involve local officials in multi-modal transportation planning, through a structured process, to ensure quality, competence, and fairness in the transportation decision-making process. The RPO will consider multi-modal transportation needs on a local and regional basis, review long-term needs as well as short-term funding priorities, and make recommendations to the SCDOT.

CMCOG/COATS MPO is the designated MPO and RPO for all or portions of Richland, Lexington, Fairfield, Newberry, Kershaw, and Calhoun Counties, see Figure 1.1. The CMCOG/ COATS MPO comprises of 3,074 square miles with an estimated 2018 population of 1,077,341 residents. For MPOs such as the COATS MPO, which serve an urbanized population greater than 200,000, they are further classified as a Transportation Management Area (TMA). These areas have additional Federal requirements for planning, monitoring, and maintaining the transportation system.

FIGURE 1.1 CMCOG AND COATS STUDY AREA



1.3 Federal Transportation Planning Requirements

The MPO is directly responsible for developing a Long Range Transportation Plan (LRTP), a short-range Transportation Improvement Program (TIP), and a Unified Planning Work Program (UPWP). These plans serve as the vehicles for addressing growth and travel demand issues in metropolitan areas throughout the country. They must be updated at a minimum every five years in air quality attainment areas like the COATS MPO (four years otherwise). Regional transportation planning by legislative definition must be comprehensive (including all modes), cooperative (involving a broad array of stakeholders and other interested parties), and continuous (ever improving and evolving). This “3-C” process directs cooperation across all levels of government to develop transportation plans which provide for comprehensive, multimodal strategies to improve regional transportation system performance.

This Long Range Transportation Plan is prepared under the guidance of the Fixing America’s Surface Transportation (FAST) Act. The FAST Act requires that MPOs employ a transportation performance management approach in carrying out their federally-required planning and programming activities, in conformance with the following seven national performance goals for the Federal-Aid Highway Program:

- 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 practice.

This LRTP must be financially constrained, meaning that the Plan cannot include more transportation projects and services than what can be funded with the amount of revenue forecasted to be available during the next 25 years.

1.4 Transportation Conformity Requirements

As defined by the Clean Air Act Amendments of 1990, the COATS MPO has met the National Ambient Air Quality Standard (NAAQS) for particulate matter and ozone. Currently, the counties of Richland, Lexington, Newberry, Fairfield, Calhoun, and Kershaw are considered to be an air quality attainment area under the annual NAAQS for particulate matter of 2.5 microns or less in size (PM_{2.5}); and under the current eight-hour ozone standard 0.075 parts per million (ppm). The Clear Air Midlands coalition was initiated to promote regional cooperation for improving air quality to help ensure the Central Midlands region remains an attainment area.

1.5 Transportation Planning Partners

Transportation planning requires participation by transportation agencies at the local, regional, state and national levels, as well as users of the transportation system to achieve established goals and objectives. MPOs and RPOs are the primary entity in the planning process and are ultimately responsible for adopting and implementing transportation plans.

The 2045 LRTP represents a cooperative effort of citizens, planners, engineers, and public officials, who work with the MPO & RPO in developing and maintaining the plan.

1.6 COATS MPO Structure

The Central Midlands Council of Governments hosts the MPO, and is made up of a Policy Committee, Executive Committee, Transportation Subcommittee, and Technical Committee. The CMCOG Board of Directors serves as the MPO Policy Committee and is the official decision-making body. The Policy Committee decides how the Federal Planning Funds (PL), Transit Planning Funds, and Federal Surface Transportation Program-Urban (STP-U) Funds will be spent within the urban area. The Policy Committee also approves the MPO Work Program, Transportation Improvement Program, Long Range Transportation Program & adopts plans and programs prepared by the MPO staff. The Executive Committee is made up of Policy Committee members and provides oversight of transportation planning activities. The Transportation Subcommittee provides a forum for discussion and resolution of relevant issues and monitors technical activities, including development of the UPWP and TIP. The Technical Committee is composed of professional/ technical representatives of the member

governments and public agencies having indirect responsibility for transportation planning and/or implementation.

The MPO staff coordinates and administers these official committees, their meetings and leads development of all federally required MPO products, including: the long-range transportation plan, short-range transportation improvement program, associated transportation conformity determinations (if required), the UPWP, and the Congestion Management Process (CMP).

1.7 CMCOG RPO Structure

The Central Midlands Council of Governments hosts the RPO, and is made up of a Board of Directors, Executive Committee, and Rural Transportation Committee. The CMCOG Board of Directors serves as the official decision-making body. The Board of Directors decides how the State Planning Funds (PL), Transit Planning Funds, and Federal Surface Transportation Program-Urban (STP-U) Funds will be spent within the rural area. The Policy Committee also approves the RPO Work Program, Rural Transportation Improvement Program, Rural Long Range Transportation Program & adopts plans and programs prepared by the RPO staff. The Executive Committee is made up of Board of Directors members and provides oversight of transportation planning activities. The Rural Transportation Committee provides a forum for discussion and resolution of relevant issues and monitors technical activities, including development of the RPWP and RTIP.

The RPO staff coordinates and administers these official committees and their meetings, and leads development of all federally required RPO products, including: the rural Long-Range Transportation Plan, rural short-range Transportation Improvement Program, associated transportation conformity determinations (if required), and the RPWP.

The following agencies and stakeholders are involved in the CMCOG and/or COATS transportation planning process.

United State Federal Government

United States Department of Transportation – Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

The FHWA and FTA are non-voting members on the MPO Policy Committee. They provide guidance in the interpretation and implementation of Federal regulations pertaining to transportation planning. FHWA, because it has an office in the City of Columbia, has a greater opportunity to participate in the planning activities of the MPO and is involved with most aspects of the transportation planning process.

South Carolina State Government

South Carolina Department of Transportation (SCDOT)

The SCDOT is responsible for all Interstates, U.S. routes, and state highways in the planning area. SCDOT has the responsibility, together with the MPO, RPO, Central Midlands Regional Transit Authority, and the Santee Wateree Regional Transit Authority, to conduct the 3-C planning process. It has the lead responsibility in the preparation of a statewide long-range transportation plan and a statewide transportation improvement program.

South Carolina Department of Health and Environmental Control

The South Carolina Department of Health and Environmental Control has the responsibility to oversee air quality planning and participate in the review of the air quality aspects of the CMCOG/COATS MPO regional transportation plans and programs, and transportation air quality conformity requirements.

Municipal and County Governments

As part of the CMCOG and COATS MPO, portions of Richland, Lexington, Newberry, Fairfield, Kershaw, and Calhoun Counties participate in the transportation planning activities of the MPO and the RPO. Individual incorporated cities and towns included in the MPO and/or the RPO within these counties are represented on the CMCOG Board and/or transportation committees.

Regional Transit Authorities

The Central Midlands Regional Transit Authority (CMRTA) operating as The Comet and the Santee Wateree Regional Transit Authority (SWRTA) are responsible for providing the COATS MPO public transit service. Both the SWRTA and CMRTA, as the public transit system operators, are included in the transportation planning process. CMRTA has representation on the COATS Policy Committee. As the public transit service provider, it is responsible together with the MPO and the state for conducting the 3-C planning process.

Private Sector and Non-Profit Agencies

Under FAST Act legislation, grantees under the Elderly Individuals and Individuals with Disabilities (Section 5310) and the Large Urban Area Program (Section 5307) grant programs must meet certain requirements in order to receive funding. One of the requirements is that projects from the Job Access and Reverse Commute (Section 5307) and the New Freedom (Section 5310) components of the programs listed above must be part of a “locally developed Coordinated Public Transit-Human Services Transportation Plan.” This transportation plan is required to be developed through a process that includes representatives of public, private, and non-profit transportation services, human services providers, and the general public. CMCOG is in charge of administering this program in the Columbia urbanized area.

Private Sector and Non-Profit Agencies

Private providers of transportation services:

- Ridesharing agencies
- Transportation safety agencies
- Traffic enforcement agencies
- Commuter rail operators
- Freight companies
- Railroad companies
- Environmental organizations
- Neighborhood associations
- Local health departments
- Other city, county, and municipal departments
- Advocacy groups
- Interested citizens
- Public and Private schools
- Organizations representing the interest of the following:
 - » Elderly people;

- » Minority populations;
- » Transportation agency employees;
- » Users of various modes of transportation;
- » Persons with disabilities;
- » Economically disadvantaged persons; and
- » Others underserved by the transportation system.

The 2045 LRTP document contained herein satisfies the required five-year update from the 2040 COATS MPO LRTP & 2035 CMCOG RPO LRTP, while also ensuring a minimum 20-year planning horizon.

Chapter 2 2045 LRTP Public Participation Process

The Public Outreach and Engagement Plan for the COATS 2045 LRTP followed CMCOG’s Public Involvement Plan, which emphasizes:

- timely information about transportation issues and processes,
- reasonable public access to technical and policy information,
- adequate notice of public participation activities to allow time for public review and comment at key decision points,
- responsiveness to all applicable public input, and
- needs of those traditionally under-served by existing transportation systems.

Utilizing the U.S. Department of Transportation’s Best Practices for Metropolitan Transportation Plans as well as the Public Involvement Resources, the 2045 LRTP builds upon the goals, policies, and benchmarks of the 2040 COATS LRTP created in 2015, 2035 CMCOG Rural LRTP, and the regional vision set forth by the Central Midlands Comprehensive Economic Development Strategy 2017-2022 (CEDS).

2.1 LRTP Branding

A project brand was developed to represent the purpose and the benefits of the COATS 2045 Plan to the Central Midlands Region. Figure 2.1 shows the brand which was used with digital media, meeting materials and Plan documents.

FIGURE 2.1. PROJECT LOGOS AND TAGLINE



2.2 LRTP Website

A webpage on CMCOG’s website was created specifically for distributing information on the 2045 LRTP. The purposes for the page included 1) keeping the public informed on plan development progress, 2) providing access to the Needs Assessment Survey, 3) describing improvement strategies, and 4) summarizing final plan documentation. The link to the site is:

<https://centralmidlands.org/about/transportation-planning/2045-regional-long-range-transportation-plan.html>

2.3 Project Steering Committee

The Project Steering Committee (PSC) was briefed on upcoming LRTP tasks at a kick-off meeting held on July 22, 2020. The PSC included members of CMCOG, the Federal Highway Administration (FHWA) and the South Carolina Department of Transportation (SCDOT).

2.4 Stakeholder Listening Sessions

To gather input from a variety of stakeholders, CMCOG hosted seven virtual listening sessions using Zoom between October 7th and 20th, 2020:

- October 7th Fairfield and Newberry Counties
- October 14th Richland County and the City of Columbia
- October 15th Lexington and Kershaw Counties
- October 20th Calhoun County

The listening sessions started with an update on the 2045 LRTP process and schedule and offered an opportunity to comment on regional travel changes and transportation issues by responding to a needs-assessment survey. Participants were able to offer insights on land use changes (new industrial, commercial and residential areas), congestion “hot spots” and new bicycle, transit and pedestrian needs. Appendix A includes a detailed summary of the listening sessions, listing attendees by meeting and consolidating survey results into 15 charts. The appendix contains a discussion about planned projects and what had changed in stakeholder counties over the last five years. The summary also identifies new or future developments suggested by meeting participants which would impact countywide transportation systems and their thoughts on potential new projects. Because listening sessions were tailored to each local jurisdiction, their survey answers provide a more nuanced assessment of differing needs between communities within the CMCOG study area. The following section highlights key similarities and differences between communities based on Listening Session survey responses.

The Region’s Greatest Transportation Issues

Listening session attendees from nearly every community—except Calhoun County, Newberry County, and the City of Columbia—ranked condition of roadways as their top priority transportation issue. Roadway condition was the second priority for Listening Session attendees in Newberry County, but it was not selected as a top priority issue in either the Calhoun County or City of Columbia listening sessions. Listening session attendees from Calhoun County ranked traffic congestion as their top priority, while those from the City of Columbia selected both bicycle and pedestrian safety and lack of bicycle and pedestrian infrastructure as their top priorities. The following table details each Listening Session’s top priority transportation issues.

TABLE 2.1. TOP PRIORITY TRANSPORTATION ISSUES FROM LISTENING SESSIONS

LOCAL GOVERNMENT	TRANSPORTATION ISSUE PRIORITIES		
	1 st Priority	2 nd Priority	3 rd Priority
Calhoun County	Traffic congestion	Accessibility/connectivity to destinations	Bicyclist and pedestrian safety
City of Columbia	Bicyclist and pedestrian safety	Lack of public transit choices	Lack of bicycle/pedestrian infrastructure
Fairfield County	Condition of roadways, Lack of public transit choices (tie)	Vehicular safety	N/A
Kershaw County	Condition of roadways	Traffic congestion	Vehicular safety
Lexington County	Condition of roadways	Traffic congestion	Vehicular safety
Newberry County	Lack of public transit choices	Condition of roadways	Lack of bicycle/pedestrian infrastructure
Richland County	Condition of roadways	Lack of bicycle/pedestrian infrastructure	Traffic congestion

Satisfaction with the Existing Transportation System

Levels of satisfaction with the study area’s existing transportation system were fairly consistent across local governments. All listening session groups rated the following transportation system components as ‘fair’ or ‘poor’: roadway condition, bicycle and pedestrian safety, sidewalks, bicycle lanes and paths, and public transit access. Driver safety was rated as ‘fair’ or ‘poor’ by all communities except Lexington and Newberry counties, which selected ‘neutral.’ Traffic congestion and roadway landscaping/aesthetics were considered ‘fair’ or ‘poor’ by all local governments except for the City of Columbia, which rated both categories as ‘neutral.’ Greenways were rated as ‘neutral’ by the City of Columbia and Calhoun and Richland counties; Fairfield, Newberry, Lexington, and Kershaw counties selected ‘fair’ or ‘poor’ for their greenways. Lastly, the signal system was rated ‘poor’ by the City of Columbia and Fairfield and Calhoun counties, ‘neutral’ by Newberry and Kershaw counties, and ‘good’ by Richland and Lexington counties.

Mobility Infrastructure Investments

Listening session attendees from nearly every community—except Calhoun County and the City of Columbia—selected maintaining existing roads as their top priority mobility infrastructure investment. Both Calhoun County and the City of Columbia selected maintaining existing roads as their second priority. Listening session attendees from Calhoun County ranked paving dirt roads as their top priority, while those from the City of Columbia selected both expanding the bicycle and pedestrian network and expanding public transportation options as their top priorities. The following table details each Listening Session’s top priority mobility infrastructure investments.

TABLE 2.2. TOP PRIORITY MOBILITY INFRASTRUCTURE INVESTMENTS FROM LISTENING SESSIONS

LOCAL GOVERNMENT	MOBILITY INFRASTRUCTURE INVESTMENT PRIORITIES		
	1 st Priority	2 nd Priority	3 rd Priority
Calhoun County	Paving dirt roads	Maintaining existing roads	Widening existing roads
City of Columbia	Expanding the bicycle/ pedestrian network, Expanding public transportation options (tie)	Maintaining existing roads	Maintaining the bicycle/ pedestrian system
Fairfield County	Maintaining existing roads	Expanding public transportation options	N/A
Kershaw County	Maintaining existing roads, Widening existing roads (tie)	Expanding the bicycle/ pedestrian network	N/A
Lexington County	Maintaining existing roads	Expanding the bicycle/ pedestrian network	Expanding public transportation options
Newberry County	Maintaining existing roads	Expanding public transportation options	Expanding the bicycle/ pedestrian network
Richland County	Maintaining existing roads	Expanding the bicycle/ pedestrian network	Widening existing roads, expanding public transportation options (tie)

Mobility Improvement Strategies

Communities had varying top priority selections among the provided list of mobility improvement strategies. Widening existing roads, connecting existing roads, more public transit, enhanced public transit, changes to the

design of intersections, and more bicycle lanes and sidewalks were commonly selected as one of the top three priorities during the listening sessions. Congestion pricing, staggered commute times, carpooling and ridesharing, and working from home were not prioritized (with the exception of Calhoun County, which selected working from home as its third priority). The following table details each Listening Session’s top priority mobility improvement strategies.

TABLE 2.3. TOP PRIORITY MOBILITY IMPROVEMENT STRATEGIES FROM LISTENING SESSIONS

LOCAL GOVERNMENT	MOBILITY IMPROVEMENT STRATEGY PRIORITIES		
	1 st Priority	2 nd Priority	3 rd Priority
Calhoun County	Changes to the design of intersections, Widening existing roads (tie)	Connecting existing roads, Building new roads (tie)	Working from home
City of Columbia	More bicycle lanes and sidewalks, Enhanced public transit, More public transit (tie)	N/A	N/A
Fairfield County	More public transit	More bicycle lanes and sidewalks	Widening existing roads, Connecting existing roads (tie)
Kershaw County	Changes to the design of intersections, Connecting existing roads (tie)	Enhanced public transit, Widening existing roads (tie)	More bicycle lanes and sidewalks
Lexington County	Changes to the design of intersections	Widening existing roads	Connecting existing roads
Newberry County	Widening existing roads, More public transit (tie)	More bicycle lanes and sidewalks	Connecting existing roads, Enhanced public transit (tie)
Richland County	Widening existing roads	Enhanced public transit	More public transit, More bicycle lanes and sidewalks (tie)

Transportation Funding Methods

Listening session attendees from nearly every community—except Calhoun County, Richland County, and the City of Columbia—selected increased gas taxes as their top transportation funding method. Both Calhoun County and Richland County selected impact fees as their first choice, which was selected as the second or third choice during all other listening sessions. Transportation bonds and transportation sales taxes tied for first choice during the City of Columbia’s Listening Session; these methods were also often supported as one of the top three funding methods during the other listening sessions. The following table details each support for transportation funding methods by listening session.

TABLE 2.4. TOP TRANSPORTATION FUNDING METHODS FROM LISTENING SESSIONS

LOCAL GOVERNMENT	TRANSPORTATION FUNDING METHOD SUPPORT		
	1 st Choice	2 nd Choice	3 rd Choice
Calhoun County	Impact fees	Transportation sales tax	Transportation bonds
City of Columbia	Transportation bonds, Transportation sales tax (tie)	Impact fees, Increased gas tax (tie)	Increased property tax
Fairfield County	Increased gas tax, Transportation sales tax (tie)	Transportation bonds, Impact fees (tie)	N/A
Kershaw County	Increased gas tax	Transportation bonds	Impact fees
Lexington County	Increased gas tax	Impact fees	Transportation sales tax
Newberry County	Increased gas tax	Impact fees	Transportation bonds
Richland County	Impact fees	Increased gas tax	Transportation bonds

Project Types

The City of Columbia and Calhoun, Lexington, Richland, and Newberry Counties listening sessions selected maintenance and operations projects as being most important to the region. The listening sessions for Fairfield and Kershaw Counties thought that smaller, less expensive projects that provide benefits to local communities were more important to the region.

2.5 Needs Assessment Survey

Survey Development

A survey was conducted for the 2045 LRTP to gather feedback from residents on transportation issues throughout the COATS area and the Central Midlands Council of Governments. In addition, the survey aimed to understand how residents would prioritize transportation improvements under fiscal constraints. The survey was intended to be short and user-friendly, while also providing a breadth of information to inform the development of recommendations. Survey questions were also modeled after the 2040 LRTP survey with slight variations on question wording and options to allow for a comparison of overarching results over time and reflect changing transportation needs since 2015.

Distribution

The survey was primarily hosted online, but paper copies were also available via CMCOG. A link to the online survey was provided via website www.centralmidlands.org. The survey was open to the public from October 1, 2020 to January 15, 2021. Paper copies of the survey were also emailed to all Listening Session invitees, so those who were unable to attend or participate online could still contribute. A QR code was also generated for the online survey and distributed by CMCOG staff.

Online Survey Results

This survey had a much higher rate of participation than the 2040 LRTP questionnaire: 196 responses from throughout the region compared to 29 participants in last LRTP update.

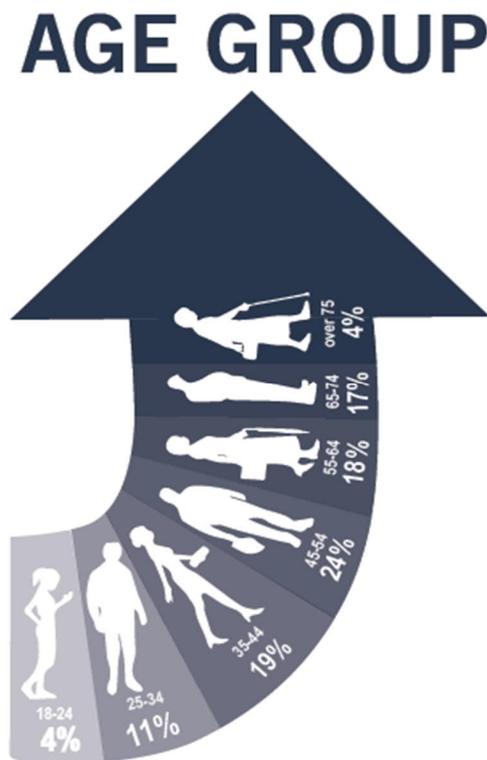
Demographics

The following sections provide demographic information of survey participants. The survey distribution methods were not designed to elicit a random sample of respondents and, therefore, the results cannot be claimed to be representative of all residents within the COATS study area. This is notable upon a comparison of demographics of study area residents and survey respondents based upon the American Community Survey 2019 5-Year Estimates.

Age

The graphic and table below show the age distribution of survey respondents. Compared to the average age distribution in the CMCOG/COATS MPO study area, the survey received less responses from people under the age of 25 or over the age of 75. Only 4% of respondents were under 25, despite comprising 27% of the COATS study area. Similarly, only 4% of respondents were 75 or older, while the proportion of COATS study area residents 75 and older is nearly double that (8.2%). The proportion of survey responses received from people within the 35-44, 45-55, and 65-74 age categories is higher than their respective contributions to the age distribution of the COATS study area (12%, 13%, and 11%, respectively).

TABLE 2.5. SURVEY RESULTS FOR AGE

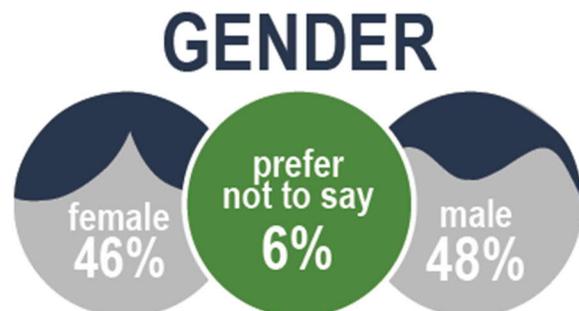


AGE GROUP	NUMBER OF RESPONDENTS	PERCENTAGE OF RESPONDENTS
Under 18	0	0.00%
18-24	7	3.57%
25-34	21	10.71%
35-44	37	18.88%
45-54	47	23.98%
55-64	36	18.37%
65-74	34	17.35%
75 and older	8	4.08%
Prefer not to say	6	3.06%
TOTAL	196	100%

The graphic and table below show the gender identities of survey respondents. Survey responses were nearly equally split between people identifying as female and male, with slightly more responses from males. The CMCOG/COATS MPO study area, on the other hand, has a slightly higher proportion of female-identifying residents (52%, compared to 48% male-identifying residents).

TABLE 2.6. SURVEY RESULTS FOR GENDER

GENDER	NUMBER OF RESPONDENTS	PERCENTAGE OF RESPONDENTS
Female	90	45.92%
Male	95	48.47%
Prefer not to say	11	5.61%
TOTAL	196	100%



Annual Household Income

The graphic and table below show the annual household incomes of survey respondents. Note that nearly a quarter of respondents elected not to share their annual household income. Overall, survey respondent incomes trended higher than CMCOG/COATS MPO study area residents. Half of CMCOG/COATS MPO study area residents have an annual household income of \$50,000 or below yet only about 10% of survey respondents reported an annual household income within this category. Conversely, while 40% of survey respondents reported an annual household income above \$100,000, only 20% of CMCOG/COATS MPO study area residents fall within this income category.

TABLE 2.7. SURVEY RESULTS FOR HOUSEHOLD INCOME

ANNUAL INCOME (HOUSEHOLD)	NUMBER OF RESPONDENTS	PERCENTAGE OF RESPONDENTS
Less than \$25,000	3	1.53%
\$25,000-\$50,000	17	8.76%
\$50,001-\$100,000	53	27.04%
\$100,001-\$150,000	35	17.86%
More than \$150,000	42	21.43%
Prefer not to say	46	23.47%
TOTAL	196	100%



Race and Ethnicity

The graphic and table below show the racial and ethnic identities of survey respondents. The proportion of respondents identifying as Asian, Native American Indian/Alaskan Native, and Native Hawaiian/Other Pacific Islander are similar to the population of the CMCOG/COATS MPO study area. However, proportion of responses from people who identify as White (and no other races/ethnicities) is much higher than the CMCOG/COATS MPO study area; 80% of survey respondents identified only as white, whereas 56% of the CMCOG/COATS MPO study area identifies as white alone. They survey had a lower proportion of respondents that identified as Black/African American and Latino(a)/Hispanic than the CMCOG/COATS MPO study area, where 36% and 5% of residents identify as Black/African American or Latino(a)/Hispanic respectively.



TABLE 2.8. SURVEY RESULTS FOR RACE/ETHNICITY

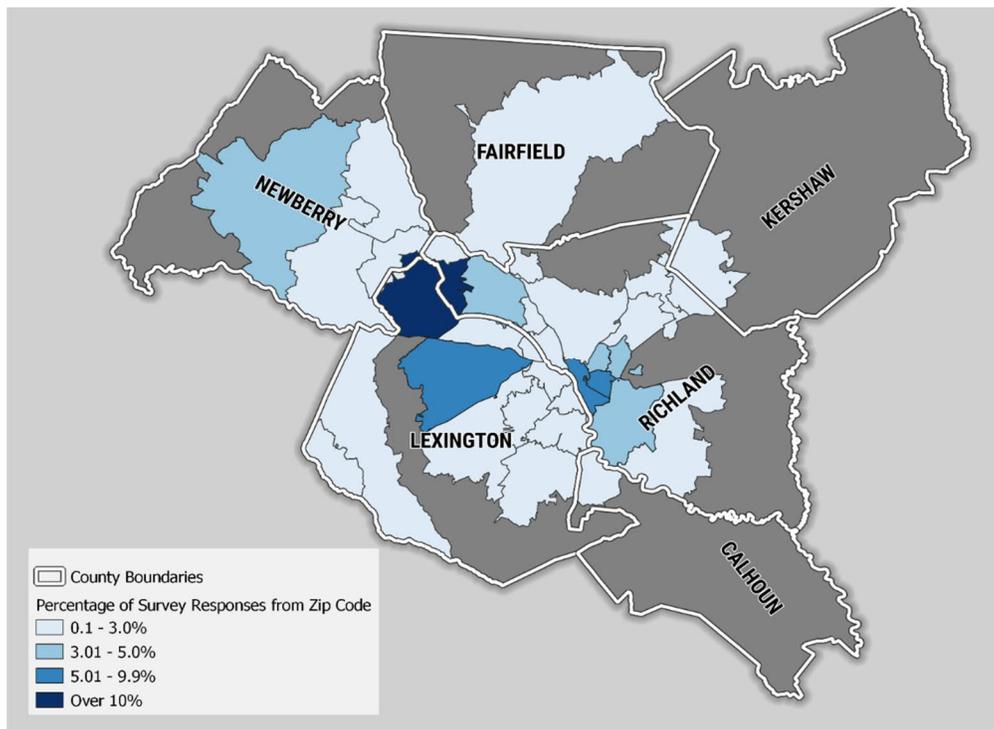
RACE/ETHNICITY	NUMBER OF RESPONDENTS	PERCENTAGE OF RESPONDENTS*
Asian	2	1.02%
Black/African American	12	6.12%
Latino(a)/Hispanic	3	1.53%
Native American Indian/Alaskan Native	1	0.51%
Native Hawaiian/Other Pacific Islander	0	0%
White	161	80.10%
Prefer not to say	21	10.71%
TOTAL	196	100%

*NOTE: Four respondents selected "White" and another race/ethnicity category. For the purposes of developing percentages, only those who identified solely with "White" (157 respondents) as their race/ethnicity are included in the percentage of "White" respondents. This is to avoid percentages over 100% (since some respondents selected multiple categories) and to allow for more a more nuanced understanding of non-white respondents rather than grouping them into a "two or more races" category.

Zip Code

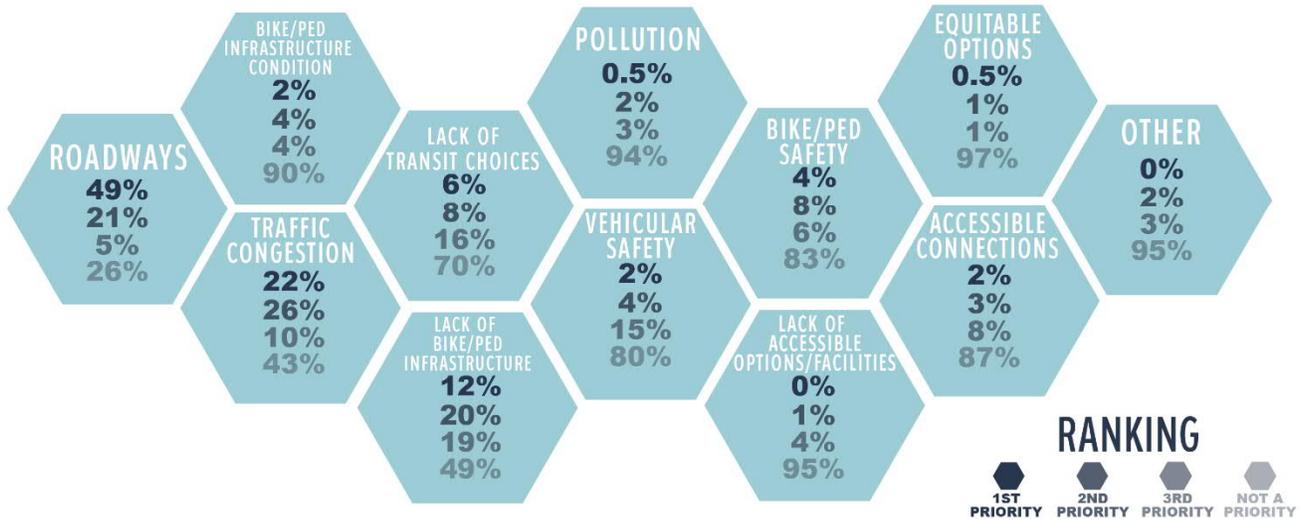
Nearly a third of survey respondents (32%) live within the 29036-zip code, which contains the Town of Chapin, Lake Murray of Lexington, White Rock, and Snug Harbor. Zip codes 29201 and 29205, within the City of Columbia, represented 7% and 9%, respectively, of survey respondents. Zip code 29072, comprising the City of Lexington, represented 6% of survey respondents. All other zip codes within the study area represented less than 5% of survey respondents. The following map depicts the percentage of survey responses received from each zip code geographically. Note that survey responses were only received from areas on the map colored in blue; no online survey responses were received from the areas colored in grey.

FIGURE 2.2. ZIP CODE OF SURVEY RESPONDERS



2.6 Transportation Investments
The Region's Greatest Transportation Issues

WHAT ARE THE REGION'S GREATEST TRANSPORTATION ISSUES?



Participants were asked to select what they consider the region's top three transportation issues and rank them in order of importance. Roadway condition was the most common top priority for respondents, nearly 50% of participants selected it as the region's most important transportation issue and three quarters selected it as one of their top three issues. Traffic congestion and lack of bicycle and pedestrian infrastructure follow as the second and third top priority issues for respondents. Traffic congestion was selected as the top priority by 22% of respondents and as one of the top three priorities of over half (57%) of respondents. Lack of bicycle and pedestrian infrastructure was selected as the top priority by 12% of respondents and as one of the top three priority issues by just over half (52%) of respondents.

Respondents were given the option to select and describe another issue that was not provided in the list. Nine alternative issues were detailed, though notably none were selected as a respondent's top priority. The alternative issues mentioned by respondents included:

- Safety for all roadway users,
- Bridge conditions,
- Appropriate traffic signaling and turn lane placement at intersections,
- Lack of transit amenities and safe bus stops,
- Focusing enforcement initiatives on motorists rather than pedestrians and bicyclists,
- Environmentally conscious transit infrastructure,
- Not delaying funding for transportation improvements,
- Traffic and lack of accessibility to connecting destinations, specifically on Amicks Ferry Road.

TABLE 2.9. SURVEY RESULTS FOR TOP TRANSPORTATION ISSUE

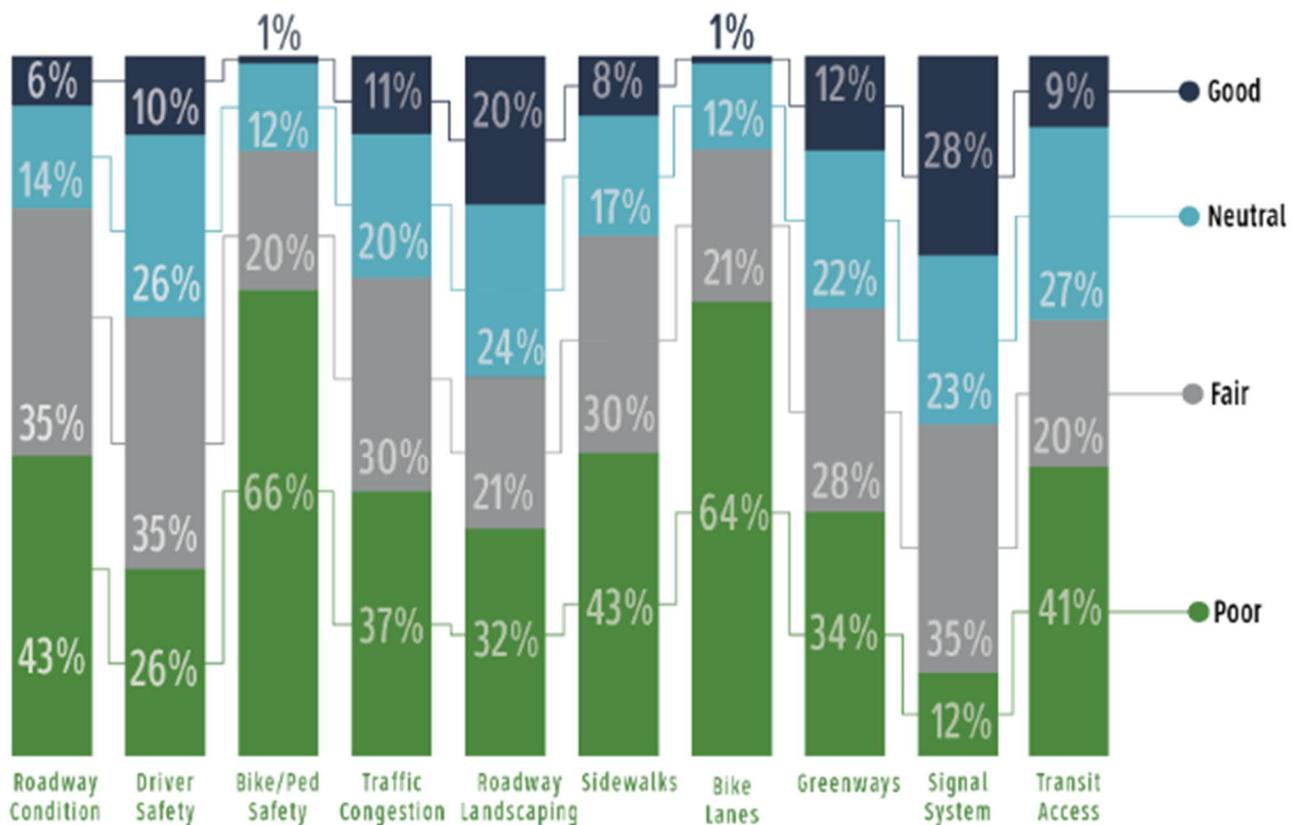
TRANSPORTATION ISSUES	LEVEL OF IMPORTANCE							
	1 st Priority		2 nd Priority		3 rd Priority		Not a Priority	
	#	%	#	%	#	%	#	%
Roadways condition	96	48.98%	41	20.92%	9	4.59%	50	25.51%
Bicycle/pedestrian infrastructure condition	3	1.53%	8	4.08%	8	4.08%	177	90.31%
Traffic congestion	43	21.94%	50	25.51%	19	9.69%	84	42.86%
Lack of public transit choices	11	5.61%	15	7.65%	32	16.33%	138	70.41%
Lack of bicycle/ pedestrian infrastructure	24	12.24%	39	19.90%	37	18.88%	96	48.98%
Pollution	1	0.51%	3	1.53%	6	3.06%	186	94.90%
Vehicular safety	3	1.53%	7	3.57%	29	14.80%	157	80.10%
Bicycle/pedestrian safety	7	3.57%	15	7.65%	11	5.61%	163	83.16%
Lack of accessible options or facilities	0	0%	2	1.02%	7	3.57%	187	95.41%
Equitable option	1	0.51%	2	1.02%	2	1.02%	191	97.45%
Accessibility/connections to destinations	4	2.04%	6	3.06%	16	8.16%	170	86.73%
Other	0	0%	3	1.53%	6	3.06%	187	95.41%

Satisfaction with the Existing Transportation System

Participants were asked to rate a variety of existing transportation system components from ‘very good’ to ‘poor.’ Few transportation system elements received a rating of ‘very good’ and every category was ranked as ‘fair’ or ‘poor’ by more than half of respondents. Compared to other categories, respondents were most satisfied with roadway landscaping and aesthetics and the signal system, with 21% and 29%, respectively, ranking the categories as ‘very good’ or ‘good.’ Respondents were least satisfied with roadway condition, bicycle and pedestrian safety, and bicycle lanes/paths; 87%, 86%, and 78% assigned a ‘fair’ or ‘poor’ score for bicycle lanes/paths, bicycle and pedestrian safety, and roadway conditions, respectively.

TABLE 2.10. SURVEY RESULTS FOR SATISFACTION OF EXISTING TRANSPORTATION SYSTEM COMPONENTS

TRANSPORTATION SYSTEM COMPONENTS	LEVEL OF SATISFACTION									
	Very Good		Good		Neutral		Fair		Poor	
	#	%	#	%	#	%	#	%	#	%
Roadway condition	1	0.52%	13	6.77%	28	14.58%	68	35.42%	82	42.71%
Driver safety	1	0.52%	21	10.94%	50	26.04%	69	35.94%	51	26.56%
Bicycle/pedestrian safety	0	0%	2	1.05%	24	12.63%	38	20.00%	126	66.32%
Traffic congestion	0	0%	22	11.46%	39	20.31%	59	30.73%	72	37.50%
Roadway landscaping/aesthetics	1	0.52%	40	20.83%	47	24.48%	42	21.88%	62	32.29%
Sidewalks	0	0%	17	8.85%	33	17.19%	59	30.73%	83	43.23%
Bicycle lanes/paths	0	0%	2	1.04%	24	12.50%	42	21.88%	124	64.58%
Greenways	2	1.05%	24	12.63%	43	22.63%	55	28.95%	66	34.74%
Signal system	1	0.52%	54	28.27%	45	23.56%	68	35.60%	23	12.04%
Public transit accessibility	1	0.52%	19	9.90%	53	27.60%	40	20.83%	79	41.15%



HOW RESPONDENTS RATED CENTRAL MIDLANDS REGION ON...

Mobility Infrastructure Investments

Participants were asked to select their top three mobility infrastructure investments and rank them in order of importance. Maintaining existing roads and widening existing roads were both selected by over 50% of respondents as their top priority investment and over 80% as one of their top three priority investments. Maintaining the bicycle and pedestrian network was the next top investment, selected by 56% of respondents as one of their top three priorities.

Respondents were also given the option to select and describe another mobility infrastructure investment that was not provided in the list. The alternative investments mentioned by respondents included:

- Roundabouts,
- Reducing noise pollution,
- Updating the transportation system to accommodating increasing volumes of drivers,
- Addressing safety issues, and
- Adding more access to the interstate system to alleviate congestion, particularly between Little Mountain and Chapin.

WHAT ARE THE MOST IMPORTANT MOBILITY INFRASTRUCTURE INVESTMENTS?

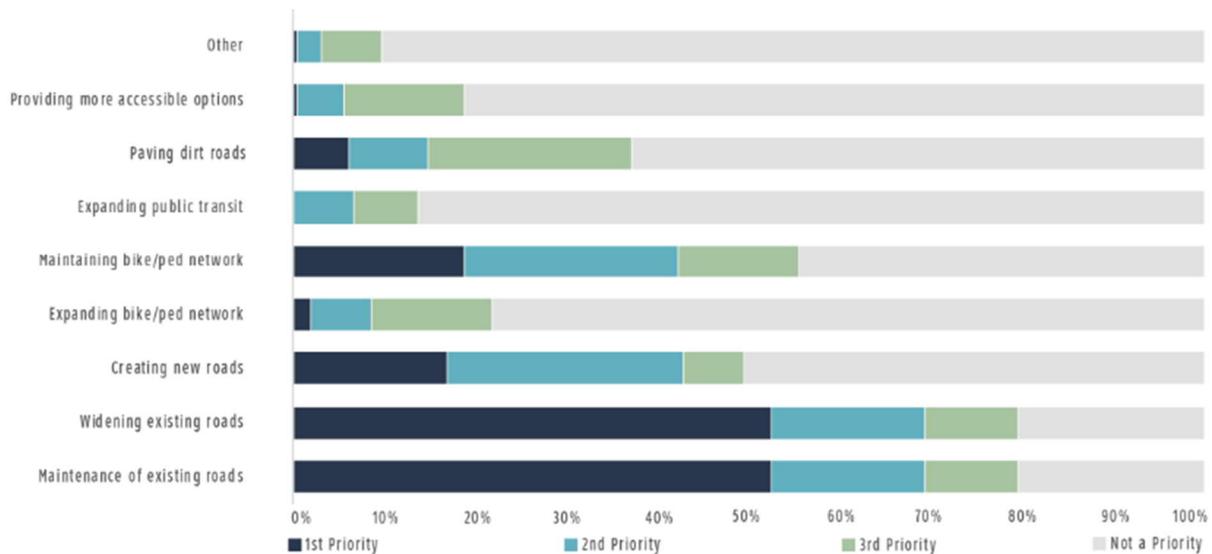


TABLE 2.11. SURVEY RESULTS FOR TOP MOBILITY INFRASTRUCTURE INVESTMENTS

MOBILITY INFRASTRUCTURE INVESTMENTS	LEVEL OF IMPORTANCE							
	1 st Priority		2 nd Priority		3 rd Priority		Not a Priority	
	#	%	#	%	#	%	#	%
Maintaining existing roads	103	52.55%	33	16.84%	20	10.20%	40	20.41%
Widening existing roads	103	52.55%	33	16.84%	20	10.20%	40	20.41%
Creating new roads	33	16.84%	51	26.02%	13	6.63%	99	50.51%
Expanding the bicycle/ pedestrian network	4	2.04%	13	6.63%	26	13.27%	153	78.06%
Maintaining the bicycle/ pedestrian network	37	18.88%	46	23.47%	26	13.27%	87	44.39%
Expanding public transit	0	0%	13	6.63%	14	7.14%	169	86.22%
Paving dirt roads	12	6.12%	17	8.67%	44	22.45%	123	62.76%
Providing more accessible options/ facilities	1	0.51%	10	5.10%	26	13.27%	159	81.12%
Other	1	0.51%	5	2.55%	13	6.63%	177	90.31%

Mobility Improvement Strategies

Participants were asked to select their top three mobility improvement strategies and rank them in order of importance. Widening existing roads was the top priority selected by participants, with 55% choosing it as one of their top three priority strategies. Other top strategies selected include providing

more bicycle lanes and sidewalks (selected by 44% as one of their top three priorities) and enhanced public transit (selected by 33% as one of their top three priorities).

Respondents were also given the option to select and describe another mobility improvement strategy that was not provided in the list. The alternative strategies mentioned by respondents included:

- Bolstering maintenance efforts,
- Eliminating or improving crossings at railroads,
- Adding advanced pavement signage to call out turn and through lanes before intersections,
- Prioritize walkability and eliminate the need to walk in roadways or on ground without sidewalks, and
- Implementing protected bicycle lanes not only conventional painted ones.

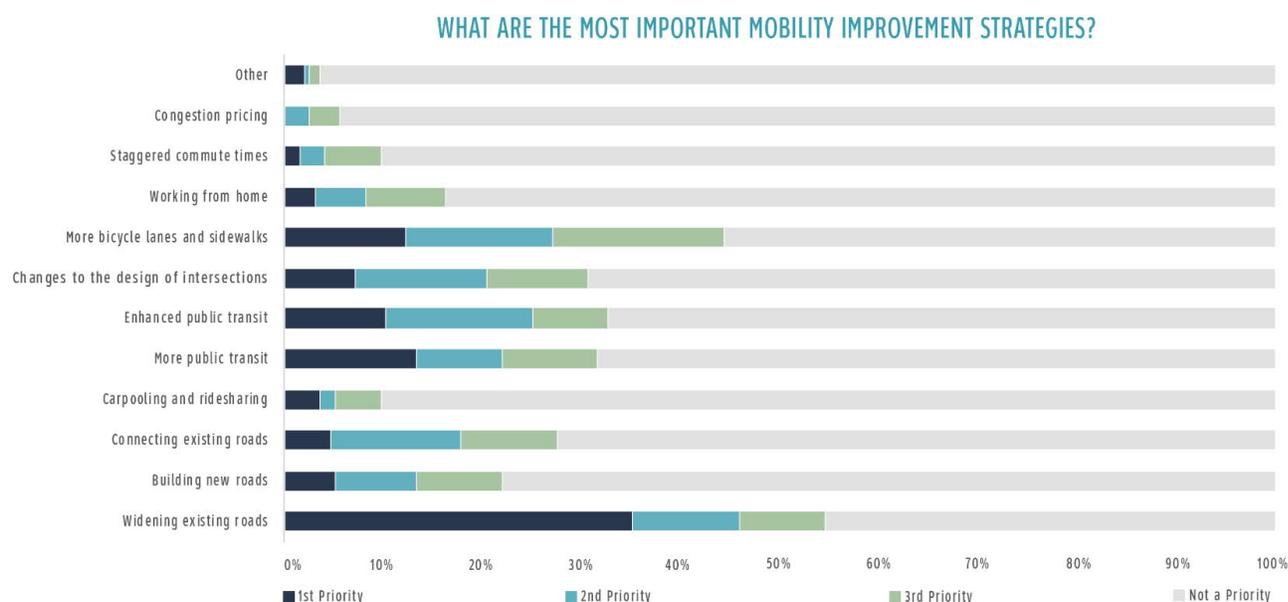


TABLE 2.12. SURVEY RESULTS FOR TOP MOBILITY IMPROVEMENT STRATEGIES

MOBILITY IMPROVEMENT STRATEGIES	LEVEL OF IMPORTANCE							
	1 st Priority		2 nd Priority		3 rd Priority		Not a Priority	
	#	%	#	%	#	%	#	%
Widening existing roads	69	35.20%	21	10.71%	17	8.67%	89	45.41%
Building new roads	10	5.10%	16	8.16%	17	8.67%	153	78.06%
Connecting existing roads	9	4.59%	26	13.27%	19	9.69%	142	72.45%
Carpooling and ridesharing	7	3.57%	3	1.53%	9	4.59%	177	90.31%
More public transit	26	13.27%	17	8.67%	19	9.69%	134	68.37%
Enhanced public transit	20	10.20%	29	14.80%	15	7.65%	132	67.35%
Changes to intersection design	14	7.14%	26	13.27%	20	10.20%	136	69.39%
More bicycle lanes and sidewalks	24	12.24%	29	14.80%	34	17.35%	109	55.61%
Working from home	6	3.06%	10	5.10%	16	8.16%	164	83.67%
Staggered commute times	3	1.53%	5	2.55%	11	5.61%	177	90.31%
Congestion pricing	0	0%	5	2.55%	6	3.06%	185	94.39%
Other	4	2.04%	1	0.51%	2	1.02%	189	96.43%

Transportation Funding Strategies

Participants were asked to select and rank the top three funding methods they would support. The majority of participants (66%) selected impact fees as one of the top three funding methods they would support. Increasing the gas tax was selected by 56% as a funding method they would support. No other funding methods were selected by more than half of participants. Increasing property taxes was the least popular funding method, with 91% of respondents not selecting as one of the top three funding methods they would support.

Respondents were also given the option to select and describe another funding method that was not provided in the list. The alternative methods mentioned by respondents included:

- Pursuing grant opportunities,
- Tax heavy roadway users such as logging companies,
- Increase sales taxes on vehicles,
- Penny taxes,
- Require developers to pay for transportation investments,
- Highway use tax for electric vehicles and hybrid vehicles, and
- Pursue private funding sources.

Respondents also stated that they felt the region should be more efficient with current funding sources.

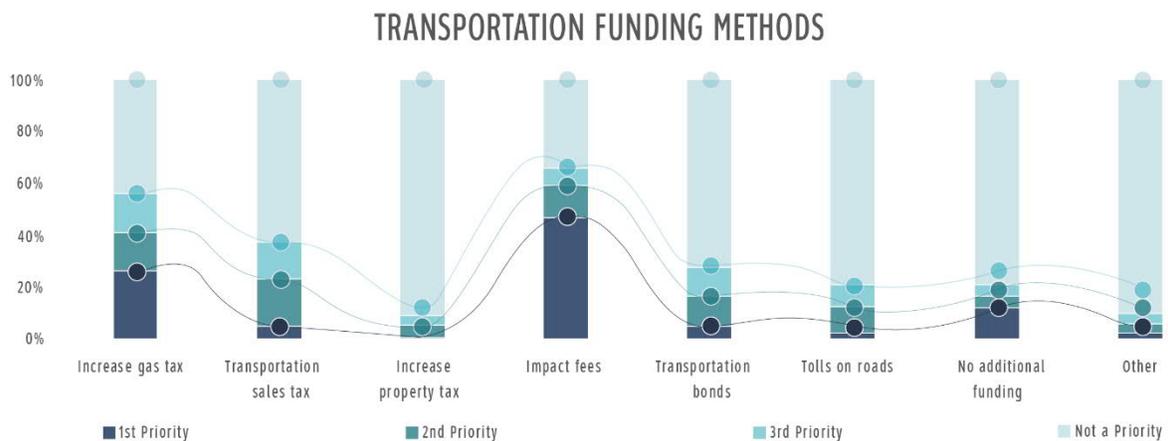


TABLE 2.13. SURVEY RESULTS FOR TOP FUNDING METHODS

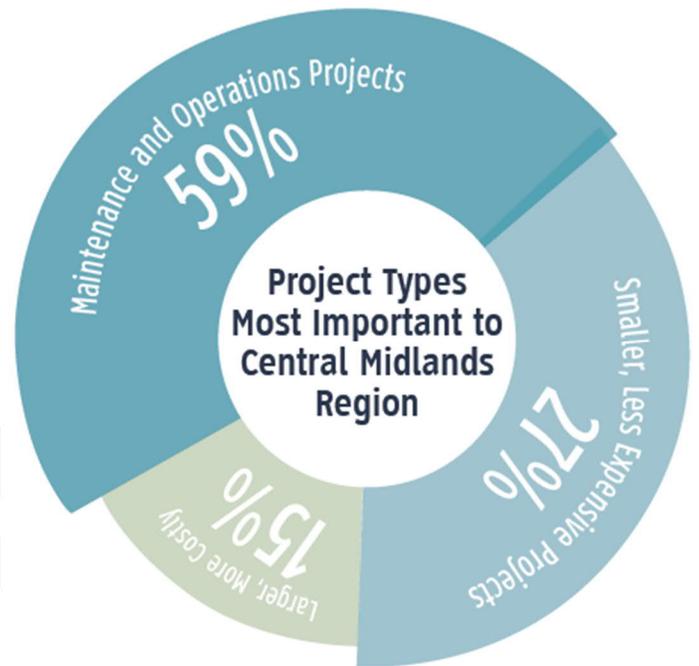
FUNDING METHODS	LEVEL OF SUPPORT							
	1 st Choice		2 nd Choice		3 rd Choice		Not Selected	
	#	%	#	%	#	%	#	%
Increase gas tax	51	26.02%	29	14.80%	30	15.31%	86	43.88%
Transportation sales tax	9	4.59%	36	18.37%	28	14.29%	123	62.76%
Increase property tax	1	0.51%	9	4.59%	7	3.57%	179	91.33%
Impact fees	91	46.43%	25	12.76%	13	6.63%	67	34.18%
Transportation bonds	9	4.59%	23	11.73%	22	11.22%	142	72.45%
Tolls on roads	4	2.04%	20	10.20%	17	8.67%	155	79.08%
Not supportive of additional funding	23	11.73%	9	4.59%	9	4.59%	155	79.08%
Other	4	2.04%	7	3.57%	8	4.08%	177	90.31%

Project Types

Participants were asked to select what type of project was important to the region: 1) larger, regional projects, 2) smaller, more local projects, or 3) maintenance and operations projects. More than half (57%) of respondents selected smaller, less expensive projects providing benefits to local communities as being most important to the Central Midlands region.

TABLE 2.14. SURVEY RESULTS FOR TOP PROJECT TYPE

PROJECT TYPE	RESPONDENTS	
	#	%
Larger, more costly projects beneficial to the entire region	28	14.66%
Smaller, less expensive projects providing benefits to local communities	112	58.64%
Maintenance and operations projects	51	26.70%
TOTAL	191	100%



Key Survey Findings

Overwhelmingly, the top transportation issues for both online survey respondents and listening session attendees are:

- Roadway condition,
- Traffic congestion, and
- Lack of bicycle and pedestrian infrastructure.

Listening sessions for specific communities also highlighted local transportation priorities, including:

- Lack of public transit choices (City of Columbia, Fairfield County, and Newberry County),
- Vehicular safety (Fairfield, Kershaw, and Lexington counties),
- Accessibility and connectivity to destinations (Calhoun County), and
- Bicycle and pedestrian safety (City of Columbia).

Respondents expressed dissatisfaction with much of the existing transportation system, assigning a rating of 'fair' or 'poor' for nearly all transportation system components. The signal system, roadway landscaping and aesthetics, and—depending on the community—greenways had higher levels of satisfaction than other transportation system components.

Following these top priorities, respondents expressed the most support for infrastructure investments in roadway maintenance and widening roads to accommodate higher traffic volumes. In addition to being

one of the top mobility infrastructure investments, widening roads was the most desired mobility improvement strategies among all respondents. More public transit, enhanced public transit, and more bicycle lanes and sidewalks were also highly desired improvement strategies.

The following funding strategies were supported by survey respondents:

- Impact fees,
- Increased gas taxes,
- Transportation bonds, and
- Transportation sales tax.

There was not wide-spread support for any of the additional funding methods provided.

It is important to caveat these findings with the limitation of the online survey in being representative of all residents within the COATS/CMCOG study area. The proportions of survey respondents in a variety of demographic categories—youth, young adults, adults 75 and older, lower-income earners, Black/African Americans, and Latino(a)/Hispanic residents—were far lower than their respective contributions to the demographic diversity of the study area.

In addition, the online survey received a very high number of responses, comprising nearly a third of all responses received, from the 29036-zip code which contains the Town of Chapin, Lake Murray of Lexington, White Rock, and Snug Harbor. No other zip code had such a strong presence in the online survey, meaning that the results may be skewed towards the opinions and priorities of the communities within the 29036-zip code.

Appendix B represents an overall summary of survey results including the survey instrument and a comparison of online survey results with stakeholder session feedback.

2.7 Public Comments on Proposed Improvement Projects and Strategies

An online public input page was created to allow the public an opportunity to review updates to the LRTP and to comment on projects being proposed. The following link is the online public input page:

<https://storymaps.arcgis.com/stories/3fd2cbd38d854e6d86eaa37bfb04f629>

Chapter 3 Performance-Based Regional Transportation Policy

3.1 Introduction

Establishing a meaningful strategic direction to guide multimodal investment decisions is a key component in developing the 2045 LRTP. Plan goals broadly define investment priorities, reflecting direction from federal and state goals while also considering the unique transportation challenges in the Central Midlands region. Guiding principles specify areas of policy, infrastructure, and programmatic focus for the Plan. Objectives build upon the guiding principles by describing how the CMCOG/COATS MPO will collaborate with its planning partners to achieve a shared transportation vision. Each objective represents the Plan's desired outcomes. Performance measures establish a way to evaluate success in reaching the Plan's goals, guiding principles, and objectives by defining methods of measuring, monitoring, and reporting on outcomes. Together, these form the foundation for envisioning and implementing the 2045 LRTP.

Table 3.1 compares high-level goals for transportation planning at the federal (National Federal-aid Highway Program goals and FAST Act metropolitan planning factors) and state (SCDOT) levels. The goals outlined in the previous iteration of the COATS LRTP are provided, as well as the suggested goals for this LRTP. The CMCOG/COATS MPO LRTP goals are strong and align well with federal and state planning efforts. Some slight changes are suggested, including separating Goal #1 into two goals, one focusing on preservation and efficiency of the transportation system and another focusing specifically on safety.

While the previous COATS LRTP included goals, it did not include guiding principles. Similarly, performance measures were only provided for design and bicycle and pedestrian facilities. Table 3.2, Table 3.3, Table 3.4, and Table 3.5 outline the proposed guiding principles, objectives, and performance measures for each CMCOG/COATS MPO LRTP goal. To better align with the SCDOT Multimodal Transportation Plan, previous COATS LRTP objectives will now be the plan's guiding principles. More specific objectives were created to build on these broad guiding principles. A range of possible performance measures are offered for the objectives under each goal. Table 3.6 highlights data sources for each performance measure.

TABLE 3.1. COMPARISON OF GOALS FROM THE NATIONAL FEDERAL-AID HIGHWAY PROGRAM, FAST ACT METROPOLITAN PLANNING FACTORS, SCDOT, AND THE 2040 COATS LRTP WITH PROPOSED 2045 LRTP GOALS

National Federal-aid Highway Program Goals	FAST Act Federal Metropolitan Planning Factors	SCDOT 2040 Statewide Multimodal Transportation Plan	2040 COATS LRTP (old)	2045 LRTP (new)
Infrastructure Condition: To maintain the highway infrastructure asset system in a state of good repair.	Promote efficient system management and operation.	Infrastructure Condition: Maintain, preserve and extend the service life of the state transportation infrastructure.	Goal 1: Preserve, make safe, and improve utilization of the existing transportation system.	Goal 1: Preserve, maintain, and extend the service life of the existing transportation system.
	Emphasize the preservation of the existing transportation system.			
Congestion Reduction: To achieve a significant reduction in congestion on the National Highway System.	Improve the resilience and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.			
Safety and Security: To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.	Increase the security of the transportation system for motorized and non-motorized users.	Safety: Improve the safety and security of the transportation system by implementing transportation improvements that reduce fatalities and serious injuries as well as enabling effective emergency management operations.		Goal 2: Increase the safety and security of the transportation system.
	Increase the safety of the transportation system for motorized and non-motorized users.			
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	Increase the accessibility and mobility of people and freight.	Equity: Manage a transportation system that recognizes the diversity of the state and strives to accommodate the mobility needs of all of South Carolina's citizens.	Goal 2: Enhance regional transportation mobility and accessibility.	Goal 3: Enhance regional transportation mobility, accessibility, and choices.

and delivery process, including reducing regulatory burdens and improving agencies' work practices.	Enhance the integration and connectivity of the transportation system for all modes.	Mobility and System Reliability: Provide surface transportation infrastructure and services that will advance the efficient and reliable movement of people and goods throughout the state.		
System Reliability: To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.	Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.	Economic and Community Vitality: Provide an efficient and effective interconnected transportation system that is coordinated with state and local planning efforts to support thriving communities and South Carolina's economic competitiveness in global markets.	Goal 3: Coordinate transportation system improvements to be consistent with regional values.	Goal 4: Coordinate transportation system improvements to promote prosperity and quality of life for the region.
	Promote consistency between transportation improvements and planned State and local growth and economic development patterns.	Environment: Partner to sustain South Carolina's natural and cultural resources by minimizing and mitigating the impacts of state transportation improvements.		
	Enhance travel and tourism.			
Environmental Sustainability: To enhance the performance of the transportation system while protecting and enhancing the natural environment.	Protect and enhance the environment.			
	Promote energy conservation.			
	Improve quality of life for the community.			

3.2 Proposed Goals, Guiding Principles, Objectives, and Performance Measures for 2045 LRTP

TABLE 3.2. GOAL 1 ASSOCIATED GUIDING PRINCIPLES, OBJECTIVES, AND PERFORMANCE MEASURES

Goal 1: Preserve, maintain, and extend the life of the existing transportation system.		
Guiding Principles	Objectives	Performance Measures
1. Maintain the existing network in a state-of-good repair.	1. Maintain or improve the current state of good repair for area roadways.	<ul style="list-style-type: none"> • Percent of street network in good/poor condition. • Percent of bicycle and pedestrian network in good/poor condition. • Percent of pavements on the non-Interstate Highway System in good/poor condition.* • Percent of pavements on the Interstate Highway System in good/poor condition.* • Percent of bridges by deck area in good/poor condition (structurally, not including functional obsolescence).* • Average age of public transit fleet in years. • Percent of public transit vehicles that have met or exceeded their useful life.* • Percent of all transit facilities less than \$50,000 with a condition rating below 3.0 on the federal Transit Economic Requirements (TERM) Scale.* • Percent of revenue vehicles (by type) that exceed the useful life benchmark.* • Percent of non-revenue service vehicles (by type) that exceed the useful life benchmark.* • Percent of track segments (by mode) that have performance restrictions. Track segments are measures to the nearest 0.01 of a mile.* • Average travel time to work. • Average delay per peak period traveler, in annual hours. • Peak period travel time index. • Interstate travel time reliability index.* • Non-interstate travel time reliability index.* • Average time to clear traffic incidents.
	2. Improve the condition of area bridges.	
	3. Improve area transit infrastructure in a state of good repair.	
2. Provide cost-effective transportation improvements to address identified mobility problems and reduce the growth in traffic congestion.	1. Reduce the number of system miles at unacceptable congestion levels.	<ul style="list-style-type: none"> • Average travel time to work. • Average delay per peak period traveler, in annual hours. • Peak period travel time index. • Interstate travel time reliability index.* • Non-interstate travel time reliability index.* • Average time to clear traffic incidents.
	2. Improve travel time reliability (on priority corridors or congested corridors).	
	3. Reduce the time it takes to clear incident traffic.	

*Federally required performance measure. See FAST Act §§ 1116, 1406; 23 U.S.C. 119, 148, 150, 167.

TABLE 3.3. GOAL 2 ASSOCIATED GUIDING PRINCIPLES, OBJECTIVES, AND PERFORMANCE MEASURES

Goal 2: Increase the safety and security of the transportation system.		
Guiding Principles	Objectives	Performance Measures
1. Use cost-effective transportation system management, transportation demand management, intelligent transportation system, and geometric and operational improvements and techniques to increase the safety of the existing transportation system.	1. Improve safety data collection, access, and analysis.	<ul style="list-style-type: none"> • Presence of safety as a key consideration in project prioritization, selection, and decision-making processes. • Safety analyses are included in multimodal planning efforts. • Safety criteria are included during project prioritization of local bicycle, pedestrian, or other multimodal planning efforts. • Safety impacts for transit-dependent or other vulnerable users are included in all transportation planning efforts. • Number of fatalities.* • Rate of fatalities per 100 million vehicle-miles traveled (VMT).* • Number of serious injuries.* • Rate of serious injuries per 100 million VMT.* • Number of non-motorized fatalities and non-motorized serious injuries.* • Total number of serious injuries and fatalities from crashes involving public transit vehicles recorded annually. • Rate of serious injuries and fatalities from crashes involving public transit vehicles recorded annually. • Safety-related training courses are completed by transit staff annually.
	2. Better integrate safety into project selection and decision making.	
	3. Better integrate safety improvements for bicycle, pedestrian, and other non-vehicular modes by identifying opportunities to accommodate vulnerable users when improvements are included in an adopted local plan.	
	4. Reduce the number and severity of crashes and safety incidents for all modes.	
	5. Reduce serious injuries and fatalities from public transit.	
	6. Reduce preventable public transit crashes.	

*Federally required performance measure. See FAST Act §§ 1116, 1406; 23 U.S.C. 119, 148, 150, 167.

TABLE 3.4. GOAL 3 ASSOCIATED GUIDING PRINCIPLES, OBJECTIVES, AND PERFORMANCE MEASURES

Goal 3: Enhance regional transportation mobility and accessibility.		
Guiding Principles	Objectives	Performance Measures
1. Provide appropriate travel options and choice for all users, including auto, transit, paratransit, bicycle, and pedestrian.	1. Encourage local governments to develop and adopt bicycle and pedestrian plans.	<ul style="list-style-type: none"> • Percentage of local governments that have a bicycle and pedestrian plan. • Percent of planned pedestrian or bicycle network that is constructed. • Percent of roadway miles with complete sidewalks on both sides. • Miles of bicycle facilities. • Percent of bus stops with accessible boarding and alighting areas. • Public transit load factor (passenger miles/vehicle revenue miles). • Average transit ridership, per hour. • Transit operating cost per hour. • Transit on-time performance. • Number of projects that increase multimodal connectivity. • Percent of total transit stops that are connected to sidewalks or pedestrian paths by an ADA-accessible route. • Total number of public park and ride parking spaces. • Truck travel time reliability index.* • Percent of reliable person-miles traveled on the Interstate Highway System.* • Percent of reliable person-miles traveled on the non-Interstate Highway System.*
	2. Partner with public and private sectors to identify and implement transportation projects and services that facilitate bicycle and pedestrian movement consistent with adopted bike/pedestrian plans.	
	3. Improve access to and accessibility of all modes, especially transit and active transportation.	
	4. Improve reliability of transit.	
2. Improve multimodal accessibility to regional employment and activity centers.	1. Fund improvements to bicycle/pedestrian networks aimed at creating a connected network of bicycle and sidewalk facilities (both regionally and in neighborhoods) by expanding existing facilities and closing gaps.	
	2. Increase accessibility of sidewalk network and ability to reach regional employment and activity centers.	
	3. Increase percentage of population and employment within ½ mile walking, or 2-mile biking distance of transit stations and stops.	
	4. Increase percentage of population within a 30-minute public transit trip, ½ mile walking distance, or 2-mile biking distance of employment opportunities and activity centers.	
3. Enhance connections between modes.	1. Fund improvements to the multimodal network that increase connections between modes.	
	2. Increase connectivity between transit, bicycle, and pedestrian networks.	
	3. Increase options for carpooling, vanpooling, or using transit	
4. Support commercial goods movement within and through the region.	1. Eliminate bottlenecks on freight network and improve freight reliability.	
	2. Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy.	

*Federally required performance measure. See FAST Act §§ 1116, 1406; 23 U.S.C. 119, 148, 150, 167.

TABLE 3.5. GOAL 4 ASSOCIATED GUIDING PRINCIPLES, OBJECTIVES, AND PERFORMANCE MEASURES

Goal 4: Coordinate transportation system improvements to be consistent with regional values.		
Guiding Principles	Objectives	Performance Measures
1. Partner with state and local jurisdictions to ensure transportation and land use are complementary.	1. Partner with state and local agencies to coordinate planning.	<ul style="list-style-type: none"> • Percent of transportation-related pollutants (e.g., carbon monoxide). • Percent of tree canopy coverage. • Number of projects that incorporate “green” design elements. • Percent of workforce population whose mobility needs are met (include in future surveying efforts). • Number of programs/projects that improve transportation security.
2. Enhance transportation system sustainability and minimize impacts of the transportation system to the built and natural environment.	1. Reduce greenhouse gases generated in the region by all transportation modes.	
	2. Reduce other transportation-related pollutants.	
	3. Minimize negative environmental impacts of the transportation system.	
3. Support regional economic development.	1. Respond to mobility needs of the workforce population.	
	2. Increase economic development in the region.	
4. Support transportation security.	1. Make investments and support initiatives that help protect transportation customers, employees, and the public from security threats.	

*Federally required performance measure. See FAST Act §§ 1116, 1406; 23 U.S.C. 119, 148, 150, 167.

TABLE 3.6. POTENTIAL DATA SOURCES FOR PERFORMANCE MEASURES

Performance Measure	Data Source
Goal 1	
Percent of street network in good/poor condition.	SCDOT
Percent of bicycle and pedestrian network in good/poor condition.	Municipalities
Percent of pavements on the non-Interstate Highway System in good/poor condition.*	SCDOT
Percent of pavements on the Interstate Highway System in good/poor condition.*	SCDOT
Percent of bridges by deck area in good/poor condition (structurally, not including functional obsolescence).*	National Bridge Inventory; SCDOT
Average age of public transit fleet in years.	The Comet
Percent of public transit vehicles that have met or exceeded their useful life.*	The Comet
Percent of all transit facilities less than \$50,000 with a condition rating below 3.0 on the federal Transit Economic Requirements (TERM) Scale.*	The Comet
Percent of revenue vehicles (by type) that exceed the useful life benchmark.*	The Comet
Percent of non-revenue service vehicles (by type) that exceed the useful life benchmark.*	The Comet
Percent of track segments (by mode) that have performance restrictions. Track segments are measures to the nearest 0.01 of a mile.*	The Comet
Average travel time to work.	US Census
Average delay per peak period traveler, in annual hours.	INRIX, SCDOT
Peak period travel time index.	INRIX or NPMRDS
Interstate travel time reliability index.*	INRIX or NPMRDS
Non-interstate travel time reliability index.*	INRIX or NPMRDS
Average time to clear traffic incidents.	SCDOT
Goal 2	
Presence of safety as a key consideration in project prioritization, selection, and decision-making processes.	COATS MPO; municipalities
Safety analyses are included in multimodal planning efforts.	COATS MPO; municipalities
Safety criteria are included during project prioritization of local bicycle, pedestrian, or other multimodal planning efforts.	COATS MPO; municipalities
Safety impacts for transit-dependent or other vulnerable users are included in all transportation planning efforts.	COATS MPO; municipalities
Number of fatalities.*	SCDOT
Rate of fatalities per 100 million vehicle-miles traveled (VMT).*	SCDOT
Number of serious injuries.*	SCDOT
Rate of serious injuries per 100 million VMT.*	SCDOT
Number of non-motorized fatalities and non-motorized serious injuries.*	SCDOT
Total number of serious injuries and fatalities from crashes involving public transit vehicles recorded annually.	National Transit Database
Rate of serious injuries and fatalities from crashes involving public transit vehicles recorded annually.	National Transit Database
Safety-related training courses are completed by transit staff annually.	The Comet

Performance Measure	Data Source
Goal 3	
Percentage of local governments that have a bicycle and pedestrian plan.	COATS MPO; municipalities
Percent of planned pedestrian or bicycle network that is constructed.	COATS MPO; municipalities
Percent of roadway miles with complete sidewalks on both sides.	COATS MPO; municipalities
Miles of bicycle facilities.	COATS MPO; municipalities
Percent of bus stops with accessible boarding and alighting areas.	The Comet
Public transit load factor (passenger miles/vehicle revenue miles).	The Comet
Average transit ridership, per hour.	National Transit Database; the Comet
Transit operating cost per hour.	The Comet
Transit on-time performance.	National Transit Database; the Comet
Number of projects that increase multimodal connectivity.	COATS MPO; municipalities
Percent of total transit stops that are connected to sidewalks or pedestrian paths by an ADA-accessible route.	Municipalities; The Comet
Total number of public park and ride parking spaces.	Municipalities; the Comet
Truck travel time reliability index.*	FHWA's National Performance Management Research Data Set (NPMRDS)
Percent of reliable person-miles traveled on the Interstate Highway System.*	SCDOT
Percent of reliable person-miles traveled on the non-Interstate Highway System.*	SCDOT
Goal 4	
Percent of transportation-related pollutants (e.g., carbon monoxide).	SCDOT
Percent of tree canopy coverage.	Municipalities
Number of projects that incorporate "green" design elements.	COATS MPO; municipalities
Percent of workforce population whose mobility needs are met (include in future surveying efforts).	CMCOG Human Services Transportation Coordination Plan
Number of programs/projects that improve transportation security.	COATS MPO; municipalities

*Federally required performance measure. See FAST Act §§ 1116, 1406; 23 U.S.C. 119, 148, 150, 167.

Chapter 4 Performance-Based Planning Process and Framework

4.1 Introduction

Performance-based planning and programming (PBPP) applies data to inform decisions aimed at helping to achieve desired outcomes for the region's multimodal transportation networks. The CMCOG/COATS MPO articulated its desired outcomes for the region's transportation system in its current 2045 LRTP.

The 2045 LRTP also created a framework to guide the CMCOG/COATS MPO in making investments through its planning and programming processes, namely, the LRTP, an investment plan covering more than 20 years; the Transportation Improvement Program (TIP), a five-year plan for funding capital infrastructure projects; and the Unified or Rural Planning Work Program), which is produced biannually to support conceptual plans and research. The LRTP, TIP, UPWP, and RPWP processes become PBPP processes when the CMCOG/COATS MPO takes the following actions:

- Sets goals and objectives for the transportation system
- Selects performance measures and sets targets for performance outcomes
- Gathers data and information to monitor and analyze trends
- Uses performance measures and data to make spending decisions
- Monitors, analyzes, and reports decision outputs and performance outcomes

The CMCOG/COATS MPO currently applies PBPP principles when making investment decisions as part of the LRTP, TIP, and UPWP development processes. For example, the CMCOG/COATS MPO established criteria based on its goals and objectives to use when evaluating LRTP and TIP projects. CMCOG/COATS MPO staff applies data gathered from project proponents to conduct those evaluations, which help the MPO make spending decisions. Staff also reports on expected performance outcomes from these projects in LRTP and TIP documents. In addition, the CMCOG/COATS MPO has started responding to new federal PBPP requirements, such as setting targets for specific measures. Over the next few years, the CMCOG/COATS MPO will need to continue to respond to federal PBPP requirements.

By implementing performance management practices in its planning and programming activities the CMCOG/COATS MPO can:

- Better understand how spending decisions affect the performance of the transportation system as a whole;
- Make better decisions, including difficult tradeoffs, by focusing on data and specific performance outcomes;
- Increase accountability and transparency in CMCOG/COATS MPO planning processes; and
- Better integrate CMCOG/COATS MPO planning and programming activities.

This chapter describes:

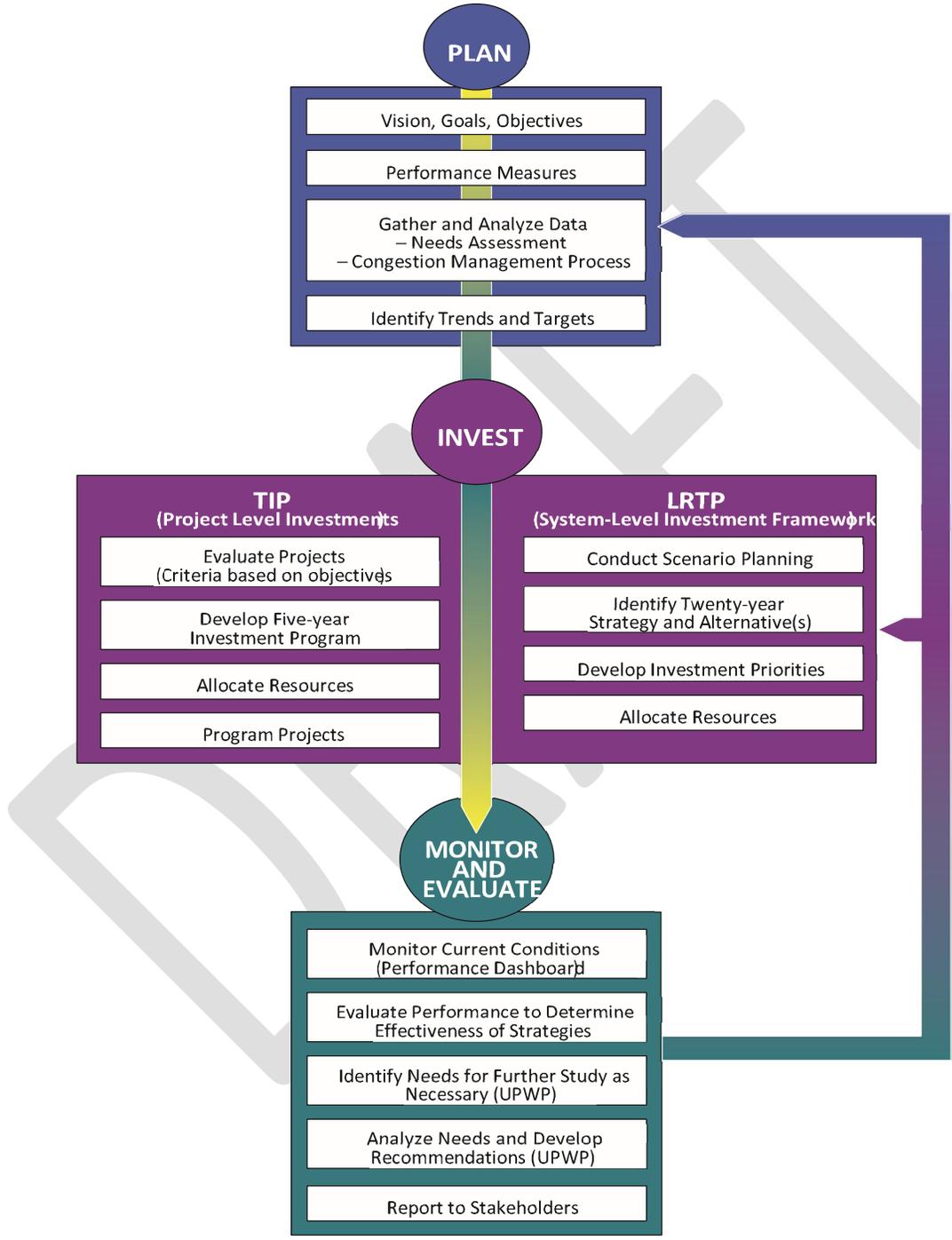
- The PBPP process;
- Federal requirements and activities related to PBPP;
- How the CMCOG/COATS MPO uses PBPP practices today; and
- Next steps for the CMCOG/COATS MPO to build its PBPP practice, including key decisions the CMCOG/COATS MPO will need to make.

The diagram on the next page (Figure 4.1) illustrates the elements involved in PBPP, and how they relate to some of the CMCOG/COATS MPO existing plans and activities. The PBPP process, which is cyclical, includes three phases:

- **Plan:** Set the goals, objectives, performance measures, and targets that will guide CMCOG/COATS MPO decision-making, and identify and acquire necessary data. This step involves multiple MPO documents and processes. Chapter 3 lists the CMCOG/COATS MPO's goals and objectives established during the 2045 LRTP planning process.
- **Invest:** Use the PBPP framework established in the aforesaid planning phase to create a strategy for investing CMCOG/COATS MPO discretionary funds, specifically in the LRTP and TIP.
- **Monitor and Evaluate:** Review and report on the outcomes of CMCOG/COATS MPO investment decisions with respect to performance measures and targets and determine what framework or strategy adjustments are needed. This monitoring and evaluation may also account for investments that SCDOT and other agencies make in the regional transportation system.

The sections that follow explain how these PBPP concepts relate to federal requirements for the MPO planning process—including requirements to monitor and set targets for performance measures—and to ways that the CMCOG/COATS MPO can use PBPP to help achieve its transportation goals.

FIGURE 4.4.1 CREATING A FRAMEWORK FOR PERFORMANCE-BASED PLANNING PROCESS



The CMCOG/COATS MPO goals relate to transportation goals set at the Federal level. The Moving Ahead for Progress in the 21st Century Act (MAP-21) identifies seven national goals for the nation's highway system, which have been continued under the Fixing America's Surface Transportation Act (FAST Act), the current transportation funding law. Chapter 3 lists these goals and shows how they align with the CMCOG/COATS MPO goal areas, as outlined in 2045 LRTP.

MAP-21 and the FAST Act direct CMCOG/MPOs to develop LRTPs and TIPs "through a performance driven, outcome-based approach to planning."¹ States, MPOs, and operators of public transportation are required to establish targets for performance measures in key performance areas, and to coordinate with each other when setting these targets. Through the federal rulemaking process, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have required states, MPOs, and transit operators to monitor the transportation system using specific performance measures.

¹ See 23 USC §134(c)(1) and 49 U.S.C. §5303(c)(1).

Chapter 5 Socio-Economic Analysis

5.1 Introduction

Over the past several decades, the population of the Columbia area, like that of many mid-sized cities in the Southeastern United States, has grown rapidly and, as a result, has undergone demographic and socioeconomic changes. The resulting growth in population has also caused residential and commercial development patterns to shift. Areas considered rural 20 years ago are now major regional residential and commercial hubs. Older, more established areas have seen some out-migration while others have undergone gentrification.

As the population continues to grow and as these trends extend into the future, the Columbia area will be faced with challenges to the functionality of its regional transportation system. Adequately planning for the region's future transportation needs will entail preserving mobility and providing accessibility, coupled with the protection of the natural and social environment. These goals are important for sustaining the long-term economic vitality of the region and enhancing its overall quality of life.

5.2 CMCOG/COATS MPO Study Area Boundaries

In the years following the World War II, residential growth in Columbia, like many similar-sized American cities, was confined to the urban core of the city, with limited development occurring in the rural or suburban areas. In 1950, 63.6 percent of the population of Richland County resided in the urbanized area, which included the newly incorporated city of Forest Acres (incorporated in 1935). In the middle of the twentieth century, Lexington County was a predominantly rural county with a total population of only 44,279 in 1950 (compared with Richland County's population of 142,565), of whom only 27.5 percent resided in incorporated areas.

Over the course of the next two decades, the population of the Columbia area continued to grow, but development trends were characterized by a rapid decentralization of the population from the urban core out into the newly constructed suburban neighborhoods. By 1970, the central urban core of the Columbia had lost 13 percent of its population to the suburbs. By 2000, 78.8 percent of the population of Richland County resided in the urbanized area, as many formerly rural portions of the Greater Columbia Area had been transformed into major residential and commercial centers. By 2010, 84.3 percent of the population of the Greater Columbia region was considered urbanized.

In 1964, the original COATS study area had a total population of 195,973 persons and covered just 182 square miles. Just five years later, the Columbia region was showing signs of its growth potential, having expanded significantly to encompass an area of more than 750 square miles including Fort Jackson, the Town of Lexington and the eastern portions of Lake Murray around Irmo. This boundary expansion caused the population of the 1969 COATS area to increase by 63.5 percent to 320,400 residents.

The COATS study area boundary was further expanded in the late 1990s to include newer areas that had experienced rapid growth. The 1998 COATS Long Range Transportation Plan addressed the needs of 1,049 square mile study area with a population of 424,605 residents. By the 2000 Census, the COATS area population had further increased to 496,625 persons, as it edged into Kershaw County for the first time.

After the Census in 2010, the CMCOG/COATS MPO study area boundary was expanded further to over 1,200 square miles with a total population of 647,091 persons based on the 2010 Census. The current CMCOG/COATS MPO study area encompasses 3,074 square miles with an estimated 2018 population of 1,077,341 residents. This includes all of Fairfield County, Lexington County, Newberry County, and Richland County, plus 14 percent of Calhoun County (54 square miles) and 33 percent of Kershaw County (244 square miles). These resulting population shifts over the decades have caused the boundaries of the Columbia Area Transportation System (COATS) study area to expand to accommodate the existing and future growth of the Columbia Urbanized Area.

FIGURE 5.1. HISTORICAL COATS MPO BOUNDARIES

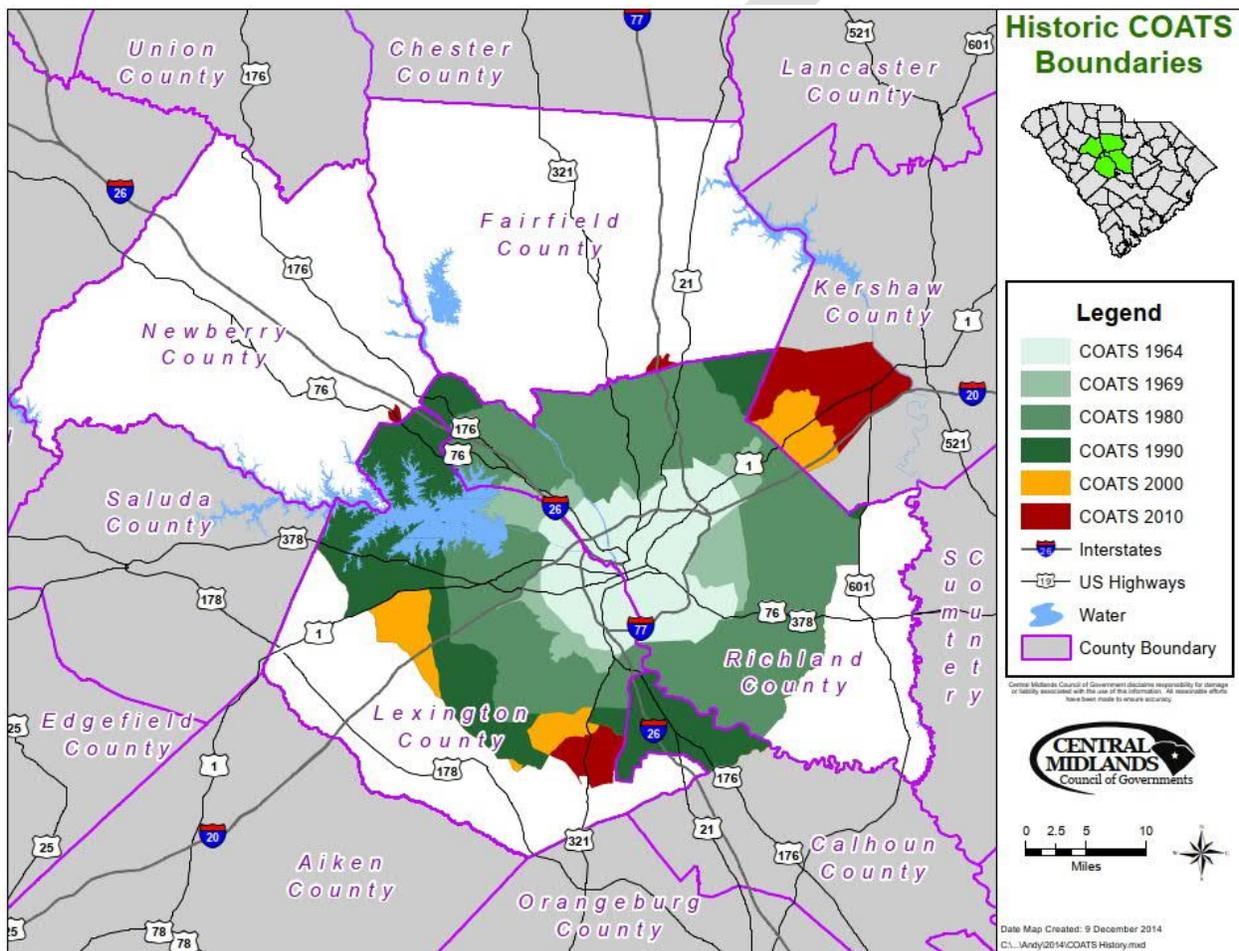
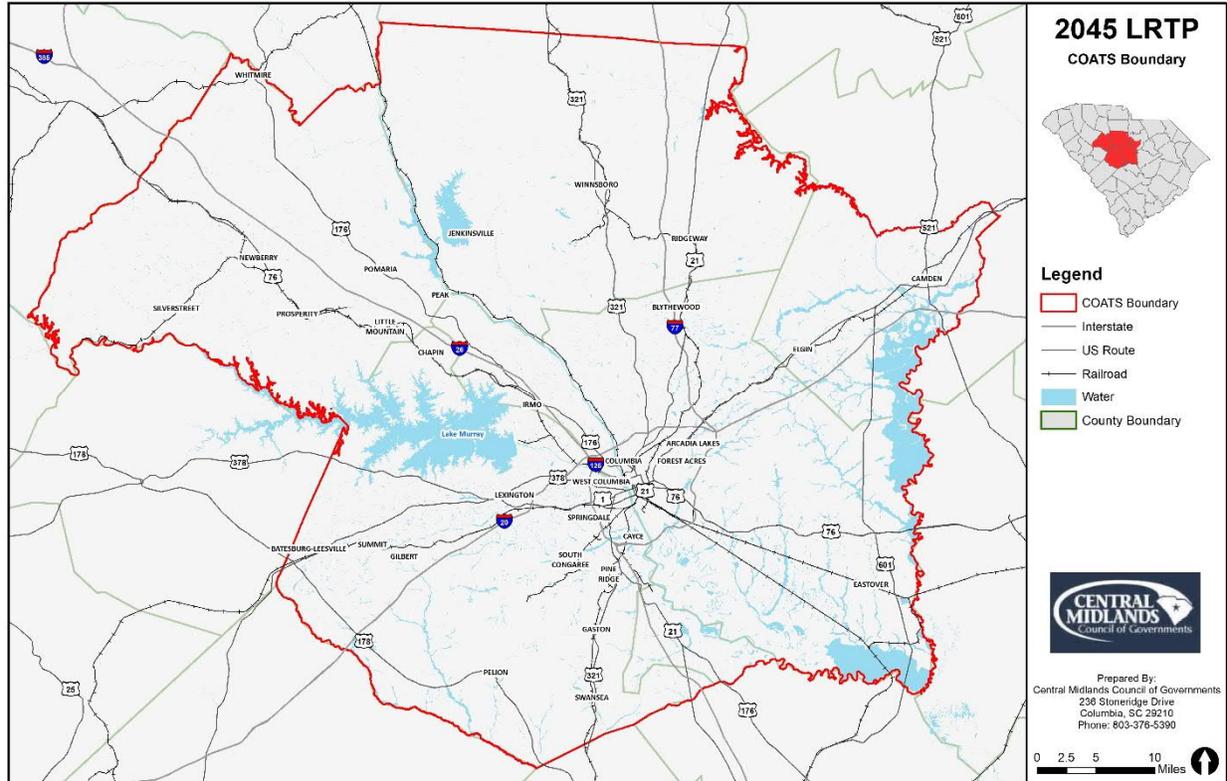


FIGURE 5.2. CURRENT CMCOG/COATS MPO STUDY AREA BOUNDARIES

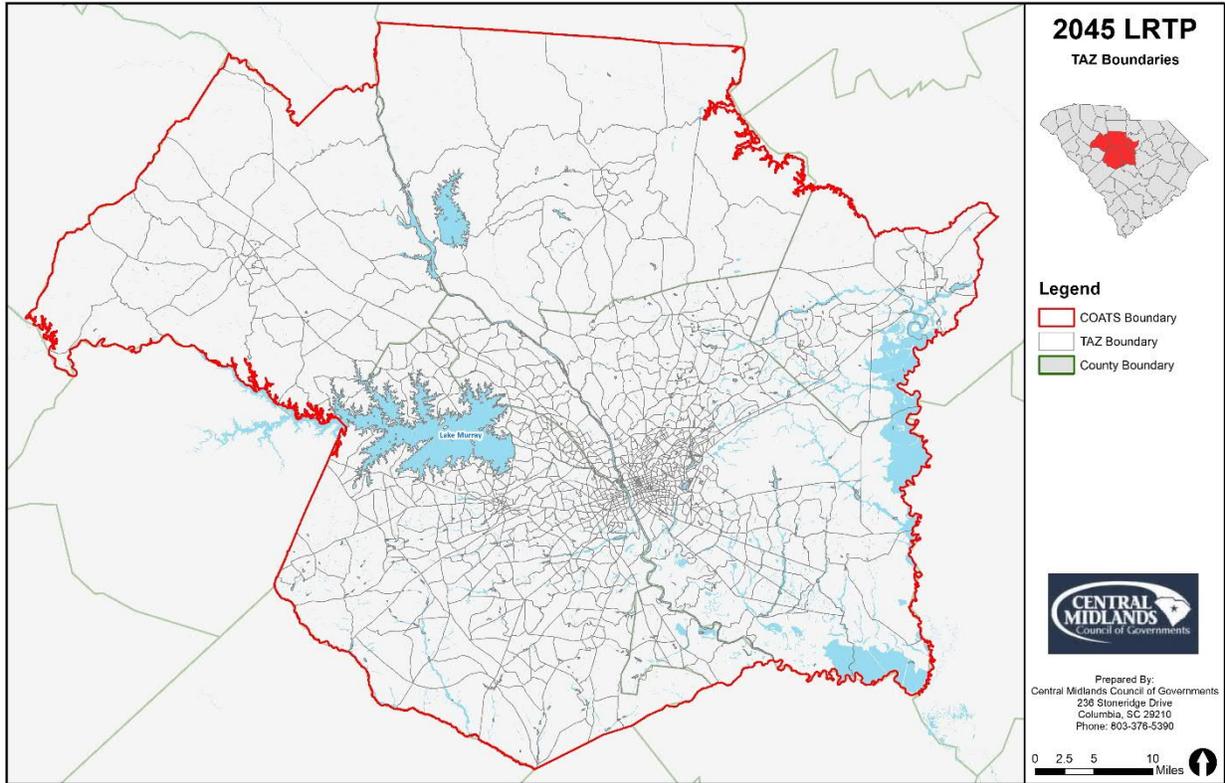


5.3 Traffic Analysis Zones

Traffic analysis zones (TAZs) are the units of geography used in travel demand models. Various socioeconomic data is developed for each zone to calculate the number of trips that are produced and attracted within the zone. The travel demand model uses this information to generate trip flows between each zone and evaluate the impact of these trips on the transportation network.

The TAZs were developed by aggregating census blocks while seeking consistency with Statewide Model TAZs where possible. In some cases, it was necessary to split blocks to achieve cohesive TAZ boundaries. The final system includes 1,066 TAZs for the entire CMCOG/COATS MPO Study Area.

FIGURE 5.3. CMCOG/COATS MPO TAZ SYSTEM



5.4 Base Year Socioeconomic Data

The base year for the CMCOG/COATS MPO travel demand model is 2018. Table 5.1 shows the socioeconomic variables in the model as well as their aggregate 2018 value.

TABLE 5.1. SOCIOECONOMIC VARIABLES IN 2018

Field Name	Total Value	Description
TAZ	NA	TAZ Number.
Households	305,514	Occupied housing units.
HHPopulation	771,827	Population living in households.
GQPopulation	35,690	Population living in group quarters. Not used by the model but left in to make the difference between Household Population & Total Population explicit.
Workers	371,376	Employed persons living in TAZ (not place of work).
Vehicles	564,323	Vehicles owned by households.
Industry	106,062	Industrial Employment.
Retail	51,639	Retail Employment.
Service	204,820	Service Employment.

Office	144,633	Office Employment.
K12Enrollment	129,685	K-12 School Enrollment. The number of students attending schools in each TAZ (not the number of school children in households in each TAZ).
USCEnrollOn	6,583	On-campus enrollment for University of South Carolina.
USCEnrollOff	21,472	Off-campus enrollment for University of South Carolina.
USCStudOff	21,603	Off-campus student households for University of South Carolina.
MedianIncome	NA	Median household income.

Housing Demographics

Households, Household Population, Group Quarters, Workers, and Vehicles were tabulated from the 2018 American Community Survey (ACS) five-year averages (2014-2018). Census Bureau privacy policies require that some data items must be suppressed at more detailed levels of geography. Thus, the required ACS data is only available at the block-group level. Within some block-groups, blocks may be allocated to different TAZs and some blocks had to be split across TAZ boundaries. The 2010 decennial census, which is available for population and households at the block level, was used to calculate the percentage (for both population and households) of each block that makes up the total block-group; and another set of percentages for each block that makes up the total tract. Additional percentages for those blocks that are split into multiple TAZs were estimated based on judgement and visual inspection of the block boundaries and Google Maps satellite imagery. ACS variables were then allocated to blocks based on block percentages. Population variables were allocated using population shares and household related variables were allocated using household shares. Disaggregated block level data was then re-aggregated to the TAZ level and rounded to integer values.

Median income cannot be disaggregated as described above and is only available in the ACS and only at the block-group level. TAZs were geospatially tagged with the block-group level median income, assigning median income from the enclosed or closest block-group. While median income is available in the ACS at the block-group level, some block-groups are suppressed because the population is too small to assure anonymity. For all TAZs tagged with a missing median income value, a manual, visual process was used to assign likely median incomes, based on values in adjacent TAZs.

Further adjustments to Workers, Vehicles, and Household Population were required to account for anomalies related to group quarters. Workers in the ACS include workers in group quarters. ACS block-groups with large group quarters populations, such as prisons, the University of South Carolina resident halls, and Fort Jackson, report workers from the group quarters without corresponding households. The result can be unrealistically high numbers of workers per household, or persons per household and/or vehicles per household. Also, small differences in Household Population and Households can occur due to rounding after disaggregation to blocks and re-aggregation to TAZs. TAZs were manually reviewed and adjusted.

Employment

Base year employment data was developed using the InfoUSA dataset provided by COATS (dated October 2018) adjusted to 2018 county control totals established based on data from Woods and Poole (W&P). The InfoUSA data contained coordinates that were tagged with model TAZs and reviewed. Some InfoUSA data points were moved if found to be in the wrong TAZ. Large employment sites (generally over 100 employees) were reviewed for reasonableness using satellite imagery and Google Map data in each TAZ. In some cases, a substitute employment value was used if the employment at a site appeared too high or too low. Some records were ignored if there were duplications or if no facility existed that represented the amount of employment indicated.

The aerial review also was used to identify large employment sites not included in the InfoUSA dataset. In these cases, an attempt was made to determine if the site was constructed prior or after 2018. The ones determined to be post-2018 were noted so they could be included as part of the employment forecasts in the horizon years. For sites assumed to be pre-2018, an estimated amount of employment and employment type was noted so it would be included before adjusting to the W&P county control totals.

The W&P data provides county level employment for 23 employment sectors that generally fall within the two-digit North American Industry Classification System (NAICS) codes. These 23 sectors were grouped into the four model employment categories (Industrial, Retail, Service, and Office). The exception was public schools and hospitals. These facilities, which are coded as NAICS 61 and 62 (i.e., Service) in the InfoUSA data, are considered part of State and Local Government Employment (NAICS 92) in the W&P dataset (i.e., Office). In this case, the InfoUSA data was used as a guide to shift a portion of the W&P employment from State and Local Government to Educational Services (NAICS 61) and Health and Social Assistance (NAICS 62).

Since there are two counties that are split by the CMCOG/COATS MPO model region (Calhoun and Kershaw), the W&P county control totals also had to be split. These splits were made based on the proportion of InfoUSA employment inside and outside the CMCOG/COATS MPO modeling area. Table 6.3 below shows the control totals for each employment category by county. These control totals were used to adjust the InfoUSA data at the TAZ level so that the sum of all TAZ by employment category match the control totals established based on W&P data.

W&P considers federal military locations as office employment. W&P estimated that there are 10,869 federal military employees in Richland County in 2018, which includes military contract workers as long as they are not self-employed. It is assumed that most of this employment is represented within Fort Jackson. To avoid spreading this employment across the entire county, the federal military employment was removed from the office county control total for Richland County before distributing office employment down to the TAZ level.

After applying the control totals, the total employment in each TAZ was reviewed again for reasonableness using satellite imagery. This review also included comparisons with the original InfoUSA total employment as well as data from the previous COATS model (where available) and data from the Statewide Model. This review process found that some of the TAZs with the most InfoUSA employment seemed to be overstated. This analysis indicated that TAZs with large numbers of InfoUSA records or TAZs with one major employer require less adjustments using the control totals.

To reduce the amount of adjustments in TAZs with the most employment, a smoothing technique was used to distribute employment out to TAZs that were underrepresented in the InfoUSA data. Examples would include agricultural employment in rural areas and service employment that primarily serve residential areas. This technique gave slightly more weight towards TAZs with the least amount of employment versus TAZs with the most employment.

TABLE 5.2. 2018 EMPLOYMENT CONTROL TOTALS

County	Industry	Retail	Service	Office	Total
Calhoun	3,579	352	1,742	1,060	6,733
Inside COATS	2,605	113	158	266	3,142
Outside COATS	974	239	1,584	794	3,591
Fairfield	2,582	1,022	3,057	2,308	8,969
Kershaw	7,644	3,539	10,243	4,712	26,138
Inside COATS	6,700	3,222	9,336	4,377	23,635
Outside COATS	944	317	907	335	2,503
Lexington	46,497	20,461	55,450	41,534	163,942
Newberry	8,473	1,788	6,685	1,829	18,775
Richland	39,129	25,066	130,124	94,319	288,638
Total	107,904	52,228	207,300	145,763	513,195
Inside COATS	105,986	51,672	204,810	144,633	507,101

Note: Richland County office employment excludes federal military employment.

5.5 2045 Horizon Year Socioeconomic Data

The first step in developing 2045 horizon year socioeconomic data is to establish county level control totals for population and employment. While the State of South Carolina provides population projections out to the year 2035 through the Department of Revenue and Fiscal Affairs (RFA), there is no comparable State source for employment projections. W&P is an independent firm that specializes in long-term county economic data and demographic data projections. W&P's database includes population and employment projections for all U.S. counties to 2050.

W&P was used for county control totals for several reasons:

- W&P is a more complete representation of employment including wage and salary workers reported to the State plus proprietors, private household employees, and miscellaneous workers.
- It provides a consistent source for estimates and projections for both employment and households that are linked together based on projected economic conditions, locally, regionally, and nationally.
- It provides annual projections of both employment and households that include the model base and horizon years, including 2045.

2045 Population Controls Totals

The RFA provides population estimates and projections in five-year increments from 2000 to 2035. This data was compared with the population data from W&P to verify that the projections from the two sources are reasonably close. Because the model's base year is 2018 and the horizon year is 2045, the RFA data was interpolated for these years for comparison purposes. Table 5.3 compares the two datasets. The table includes the entire population of Calhoun and Kershaw Counties, not just the portion within the COATS study area.

TABLE 5.3. 2018 AND 2045 POPULATION COMPARISON

County	RFA Interpolated		W&P		Percent Difference	
	2018	2045	2018	2045	2018	2045
Calhoun	14,159	11,878	14,520	14,377	2.6%	21.0%
Fairfield	21,910	17,776	22,402	21,713	2.2%	22.2%
Kershaw	64,890	81,071	65,592	77,241	1.1%	-4.7%
Lexington	294,237	409,903	295,032	389,440	0.3%	-5.0%
Newberry	38,495	42,417	38,520	41,234	0.1%	-2.8%
Richland	406,301	513,509	414,576	496,450	2.0%	-3.3%
Total	839,993	1,076,553	850,642	1,040,455	1.3%	-3.4%

The most notable differences in the two data sources are in Calhoun and Fairfield Counties, where W&P shows a stable change in population to 2045 versus RFA's declining population forecast. While the 2045 population for Newberry County shows a higher interpolated value based on the State data than W&P, the absolute difference is only 1,183. For the more populated counties of Kershaw, Lexington, and Richland, the differences between the interpolated State projection for 2045 and W&P is 5 percent or less. This comparison suggest that W&P is an acceptable source for population control totals as well as other population related data (households, household population, group quarters population, etc.).

2045 Household and Employment Control Totals

The 2045 household county control totals are a key variable in distributing household data to the TAZ level. All other household related variables (household population, workers, and vehicles) pivot from the number of households within each TAZ. Control totals for employment are also set for each county before distributing employment down to the TAZ level.

Since the CMCOG/COATS MPO model area includes only part of Calhoun County and Kershaw County, the W&P county data was proportionally split to establish control totals for these two counties. The household control totals were split utilizing household ratios inside and outside the CMCOG/COATS MPO region from the Statewide travel demand model. The employment control totals were split using ratios from the InfoUSA employment data provided by CMCOG/COATS MPO.

As previously stated, W&P considers federal military installations as office employment. W&P projects that there will be 10,957 federal military employees in Richland County by 2045. It is assumed that most of this employment is located within Fort Jackson. To avoid spreading this employment across the entire county, the federal military employment was removed from the office county control total for Richland County before distributing office employment down to the TAZ level.

TABLE 5.4. 2018 AND 2045 POPULATION COMPARISON

County	Households	Employment
Calhoun	6,527	9,376
Inside COATS	1,145	4,527
Outside COATS	5,382	4,849
Fairfield	9,653	12,219
Kershaw	26,210	31,535
Inside COATS	19,760	28,598
Outside COATS	6,450	2,937
Lexington	119,777	252,300
Newberry	15,323	22,119
Richland	154,719	360,317
Total	332,209	687,866
Inside COATS	320,377	680,080
Note: Richland County office employment excludes federal military employment.		

Major Employment Sectors

The service sector accounts for the largest share of jobs in the CMCOG/COATS MPO study area. This category of employment includes: Educational Services (colleges and schools); Health Care and Social Assistance; Arts, Entertainment, and Recreation; Accommodation and Food Services; and Other Services (except Public Administration). This sector is also projected to have the largest absolute increase in employment between 2018 and 2045.

The office sector has the second largest proportion of jobs. This category of employment includes: Information: Finance and Insurance; Real Estate Rental and Leasing; Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support; and Waste Management and Remediation Services. It also includes Federal, State, and Local Government employment (except education).

The industrial sector includes: Agriculture, Forestry, Fishing and Hunting; Mining; Utilities; Construction; Manufacturing; Wholesale Trade; and Transportation and Warehousing. A long mainstay of the southern economy, this sector has experienced decreases in workers employed over past decades, but it is showing a rebound and now accounts for 21 percent of the total employment in the region and is anticipated to increase by 15 percent between 2018 and 2045.

Retail trade establishments account for the smallest share of total employment with 10 percent in 2018. Retail trade includes any mercantile establishment from home improvement and grocery stores, auto dealer and gas stations/convenience stores, department and clothing stores, many of which are destinations in and of themselves, such as regional shopping malls or have high auto accessibility from locations along major thoroughfares.

TABLE 5.5. EMPLOYMENT BY INDUSTRY TYPE – 2018 TO 2045

Industry	2018	%	2045	%	% Change
Industry	105,986	21%	122,131	18%	15%
Retail	51,672	10%	58,171	9%	13%
Service	204,810	40%	320,055	47%	56%
Office	144,633	29%	179,723	26%	24%
Total	507,101	100%	680,080	100%	34%

2045 Household and Employment Disaggregation to TAZs

There are 1,066 TAZs in the CMCOG/COATS MPO modeling region. Each TAZ was evaluated to assess how much additional growth is anticipated in housing and employment between 2018 and 2045 multiple sources. These sources include:

- Previous CMCOG/COATS MPO TAZ Model Projections
- State TAZ Model Projections
- 2000/2010 Census
- County Comprehensive Plans
- County Zoning
- County Economic Development Information
- Current/Historic Aerials
- Wetland areas

Aerial photography was particularly helpful in determining which TAZs should be considered built-out, nearly built-out, or had available land for future development. COATS data from the previous model and data from the State travel demand model were used to identify growth areas from past modeling efforts. Past census data also identified areas that have experienced recent growth. Comprehensive plans, zoning and information from local economic development departments were used to determine where growth is anticipated or desired. Wetlands coverage was used to identify areas that would be restricted from future development.

The zone-by-zone evaluation resulted in a set of “uncontrolled” counts of new households and employment. These values were then proportionately adjusted so the sum of all TAZs equaled the county control totals. Fairfield County was unique in that the number of households is projected to decline slightly between 2018 and 2045 (by 190). In this case, it was assumed that some TAZs would show some growth based on supporting documentation and others would experience slight declines (i.e., increased vacancy rates).

General observations on the distribution of new households and employment in the COATS modeling region are:

Calhoun County

- Less than 300 new households are projected to occur within the modeling area of the county. No TAZs are assumed to increase by more than 100 households.

- Employment growth is assumed to be less than 250 employees per TAZ for most of the area. The exceptions are areas on the west side of I-26 south of Exit 119 and the Sandy Run Industrial Park.

Fairfield County

- Households are projected to decline slightly countywide. Some areas are assumed to have slight increases and others slight decreases.
- Employment growth is assumed to be less than 250 workers per TAZ for most of the area. The most notable exception is areas along the I-77 corridor representing the future Mega Site and Fairfield Commerce Center.

Kershaw County

- Most of the household growth is anticipated to occur along the Richland County boundary and around the Town of Elgin. There is also a higher concentration of growth anticipated on the east side of the City of Camden.
- Employment growth is assumed to be less than 250 employees per TAZ for most of the area. The exceptions are the Central South Carolina Mega Site area and along the US 1/601 corridor between Logoff and Camden.

Lexington County

- Most of the household growth is anticipated to occur around Lake Murray and the suburban areas of Lexington as well as within the Redbank and Gaston areas. Several areas within Cayce and West Columbia are assumed to be built out with some infill.
- Most of the employment growth is anticipated to occur along the interstate corridors of I-20, I-26, and I-77. Pockets of higher growth are also anticipated in the Chapin and Batesburg-Leesville areas.

Newberry County

- Households are projected to increase by less than 1000 between 2018 and 2045. No TAZs are anticipated to increase by more than 100 households.
- Employment growth is assumed to be less than 250 employees per TAZ for most of the area. The exceptions are areas along I-26 near the City of Newberry and the area south the Newberry County Airport.

Richland County

- The projected focus of household growth is in Irmo, Blythewood and along the Kershaw County boundary south of Elgin. Additional pockets of growth are anticipated along the Congaree River in Columbia and east of Columbia below Fort Jackson.
- Employment growth is anticipated to occur along the I-20, I-26, and I-77 corridors north of Columbia. A pocket of higher employment growth is also anticipated along Shop Road south of I-77.

5.6 Socioeconomic Data Summary

In the 27-year period between the base year (2018) and the horizon year (2045), the population of the CMCOG/COATS MPO study area is expected to increase by 17 percent. This growth represents an increase of 189,951 persons to 2045.

TABLE 5.6. POPULATION PROJECTION SUMMARY FOR THE
CMCOG/COATS MPO AREA

	2018 CMCOG/COATS MPO	2045 CMCOG/COATS MPO	% Change
Calhoun County	2,560	2,999	17%
Fairfield County	22,402	21,713	-3%
Kershaw County	49,732	60,937	23%
Lexington County	295,032	389,440	32%
Newberry County	38,520	41,234	7%
Richland County	414,576	496,450	20%
Total Population	822,822	1,012,773	17%

Figure 5.2 and Figure 5.3 show population densities at the TAZ level of geography for 2018 and 2045 while Figure 5.4 depicts the change in population density over the LRTP's 27-year life.

FIGURE 5.2. 2018 POPULATION DENSITY

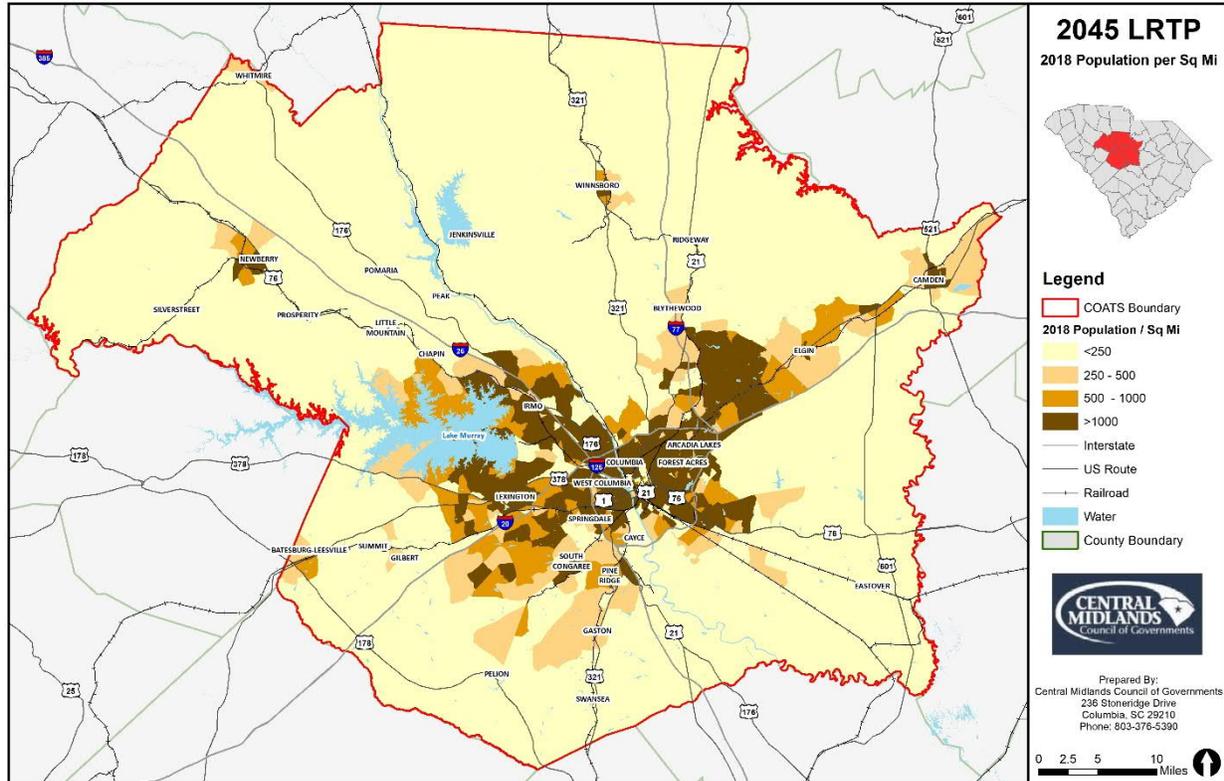


FIGURE 5.3. 2045 POPULATION DENSITY

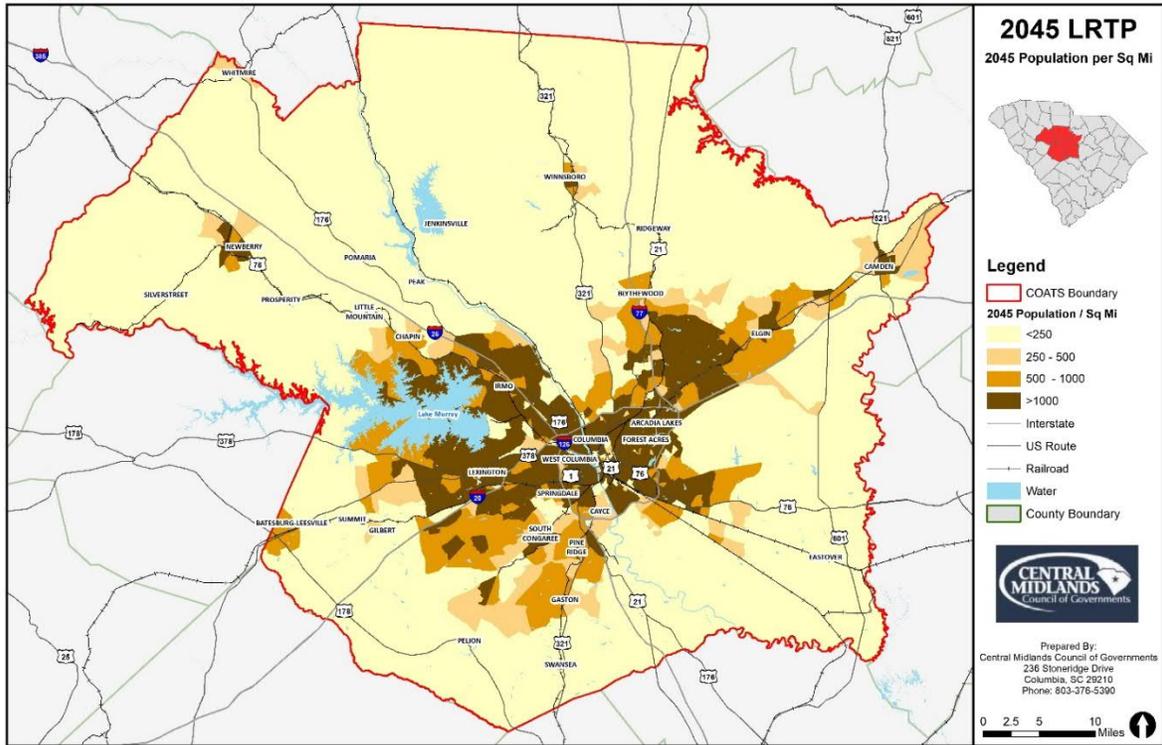
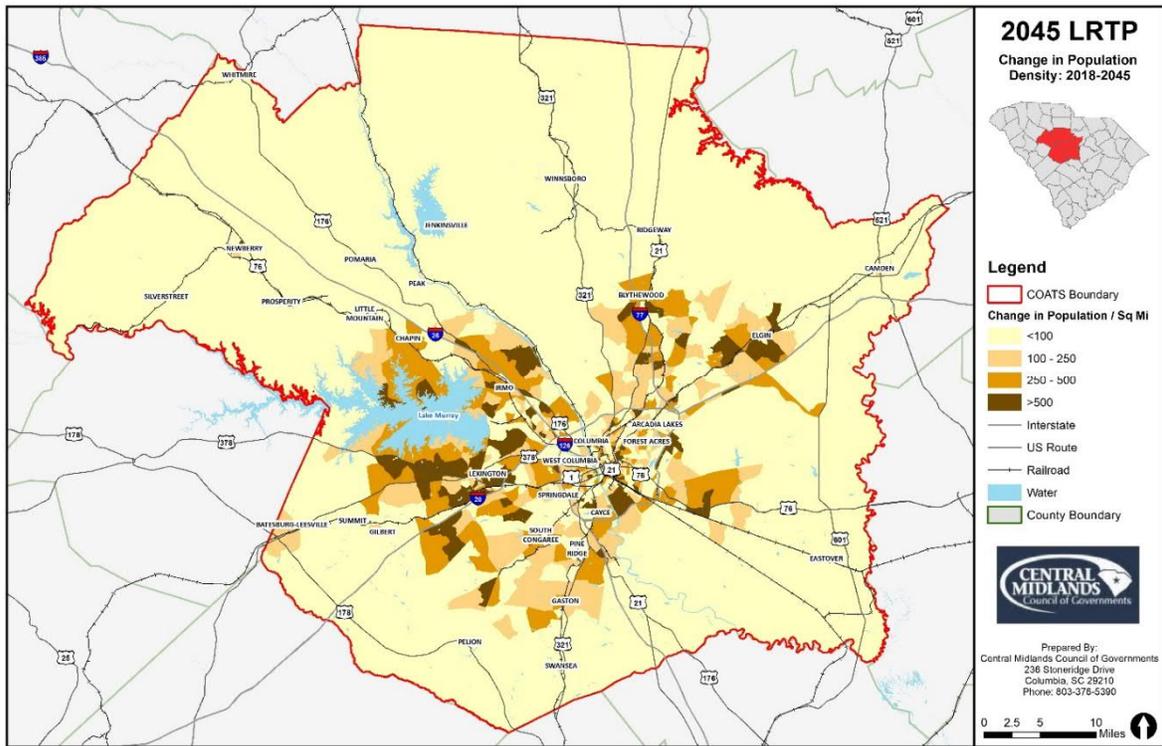


FIGURE 5.4. CHANGE IN POPULATION DENSITY 2018-2045



Existing and future employment trends are closely linked to population growth and depend on the functionality of the regional transportation system. With 173,000 jobs added to the Columbia metropolitan area over the next 27 years, this employment growth, which is expected to be more suburban in nature, has the potential to place the road network under considerable strain, as residents commute further to their place of employment, making the need for a functional transportation system a necessity. However, the central business district of the Columbia metropolitan area will continue to be a major employment center of the region and has shown in recent years promising growth in multiple employment sectors. Figure 5.5 and Figure 5.6 show employment densities at the TAZ level of geography for 2018 and 2045 while Figure 5.7 illustrates the change in employment density over this period.

FIGURE 5.5. 2018 EMPLOYMENT DENSITY

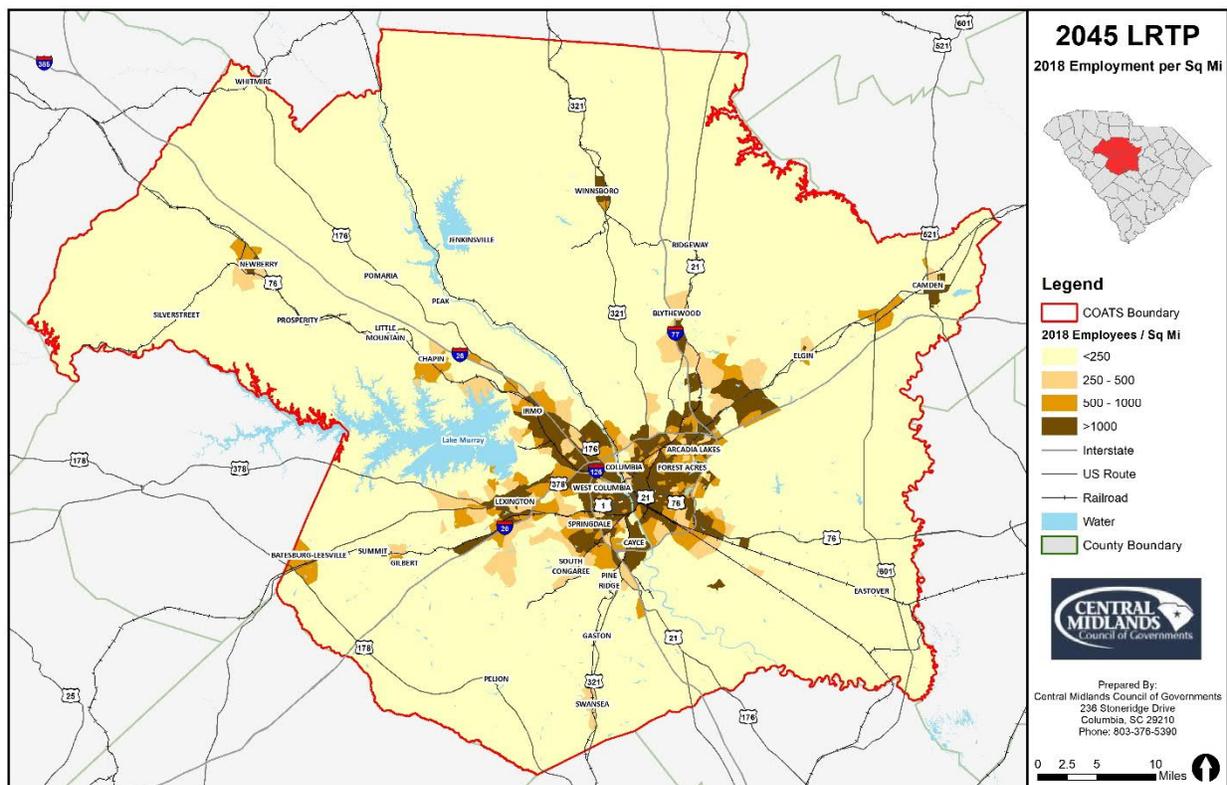


FIGURE 5.6. 2045 EMPLOYMENT DENSITY

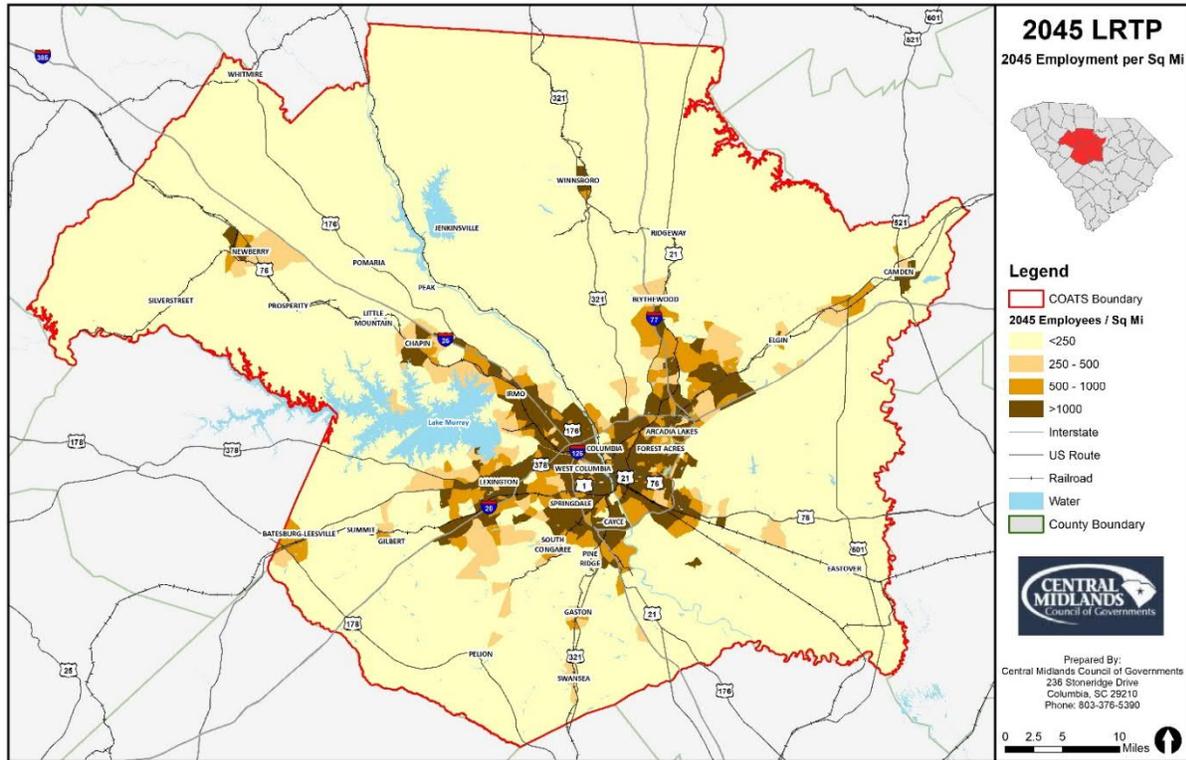
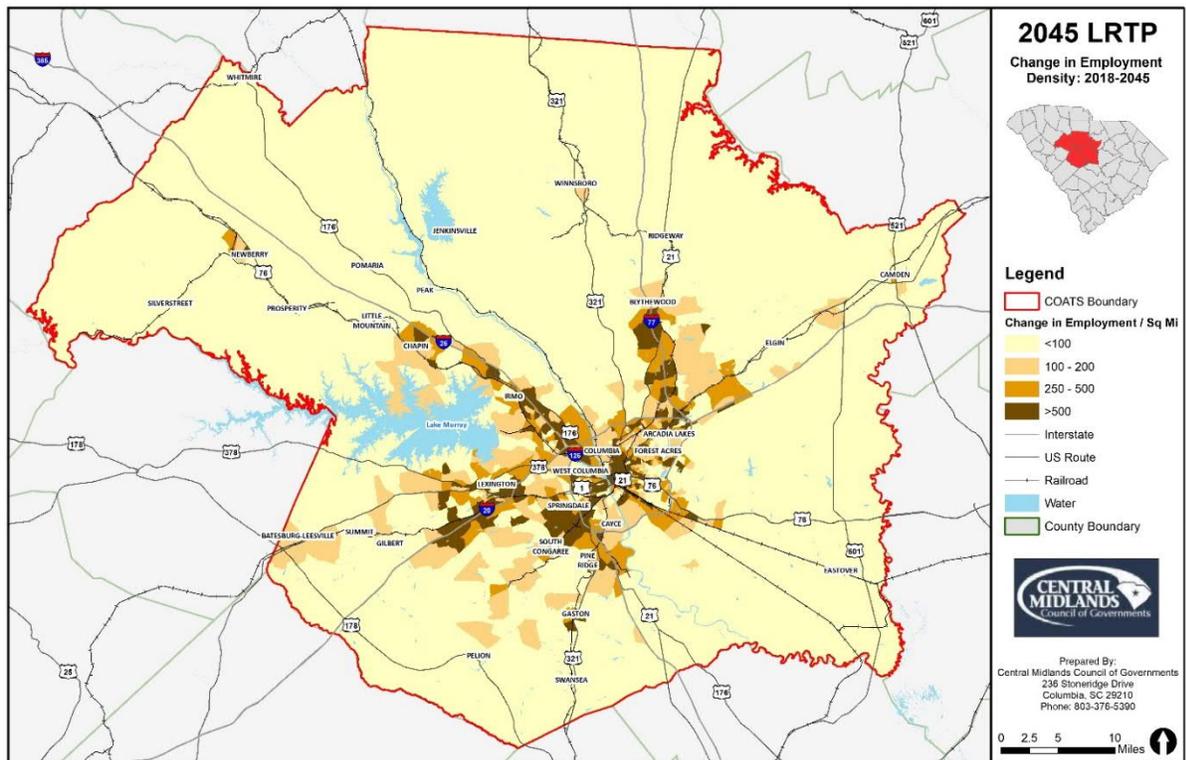


FIGURE 5.7. CHANGE IN EMPLOYMENT DENSITY 2018-2045



Chapter 6 Social Environment

This chapter provides information about the inclusion of protected classes and potentially disadvantaged populations in the transportation decision-making process. The first section provides an overview of the history of nondiscrimination laws and statutes and how the CMCOG/COATS MPO adheres to these as a recipient of federal funds. The second part discusses the equity analysis that was completed for the LRTP and then summarizes the CMCOG/COATS MPO's objectives and strategies for equitable engagement and decision-making.

6.1 Overview of Title VI and Environment Justice

Title VI of the Civil Rights Act of 1964 prohibits the discrimination on the basis of race, color, or national origin in programs that receive federal monies. Additional laws and guidance have been enacted since the Act to further protect and consider protected classes and potentially disadvantaged populations. In 1994, Executive Order (EO) 12898 was signed into law, directing federal agencies to take appropriate actions and steps to identify and address disproportionately high and adverse environmental effects of federal actions on minority and low-income populations to the greatest extent practicable. The Civil Rights Act and EO 12898, along with other nondiscrimination protections programs, protect populations that may be at risk of significant impacts associated with transportation decisions and encourage transportation decisions be more equitably distributed among communities. It is therefore the CMCOG/COATS MPO's responsibility, as a recipient of federal transportation funding, to comply with these laws. The CMCOG/COATS MPO uses analytics, such as identifying demographic profiles and assessing federal financial distributions of transportation investments across these communities, to accurately assess the compliance of planning programs with Title VI.

In addition, public involvement in the transportation planning process is a key element of ensuring compliance with Title VI and EO 12898. The public involvement process is intended to promote and remove barriers towards equitable participation within the CMCOG/COATS MPO region. The CMCOG/COATS MPO's adopted Public Participation Plan is intended to provide direction for public participation activities to be conducted by the CMCOG/COATS MPO and maintains the goals, visions, and objectives used by the MPO in public participation activities.

6.2 Equity Analysis Methodology & Analysis

The CMCOG/COATS MPO conducted an equity analysis as part of the LRTP update in order to understand particular areas where populations may most benefit or be unduly burdened by from future transportation projects. Since the CMCOG/COATS MPO is responsible for transportation decisions in 6 counties, including Calhoun, Fairfield, Kershaw, Lexington, Newberry and Richland, the analysis first identified the block groups within the CMCOG/COATS MPO boundaries using the 2015-2019 American Community Survey (ACS) 5-year data. The 2019 ACS data was used for this analysis because it provided

Block Group

A block group is defined by the U.S. Census Bureau as a statistical division of the larger census tract groupings, and generally contain between 600 to 3,000 people. The block group consists of clusters of blocks that are within the same census tract and covers a contiguous area. It is the smallest unit of demographic information provided by the

the most detailed demographic information to-date at the time of the LRTP. Each county's populations, listed in more detail below, were calculated based on block groups data.

- Minorities- Minority populations are readily identifiable group of minority persons who live in geographic proximity. A minority is defined by the Federal Highway Administration as Black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Pacific Islander.
- Hispanic- Ethnicity demographics are collected by the Census Bureau. Hispanic or Latino refers to a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.
- 65 and older- Males and females that are older than 65, who may benefit from enhanced mobility options to access key locations such as grocery stores, medical facilities, religious locations, or other social gatherings.
- Low income- considered families who are living below the poverty line. The poverty thresholds are updated annually by the U.S. Census Bureau.
- Limited English Proficiency- persons for whom English is not their first language and who have a limited ability to read, write, speak, or understand English. These populations are identified by people who reported to the U.S. Census Bureau that they speak English less than very well, well, not well, or not at all.

Each county's percentage of potentially disadvantaged populations for the portions of the county within the CMCOG/COATS MPO region were calculated and are shown below in Table 6.1. Calculations for the CMCOG/COATS MPO area were also completed and are used as a "baseline" for comparison on the following maps. For example, the CMCOG/COATS MPO region has an average low-income population of 14.3%. Figure 6.1 has ranges of low-income populations, where the lowest range is less than the CMCOG/COATS MPO average and the others are higher than the CMCOG/COATS MPO average.

TABLE 6.1. CMCOG/COATS MPO REGION ENVIRONMENTAL JUSTICE PROFILE

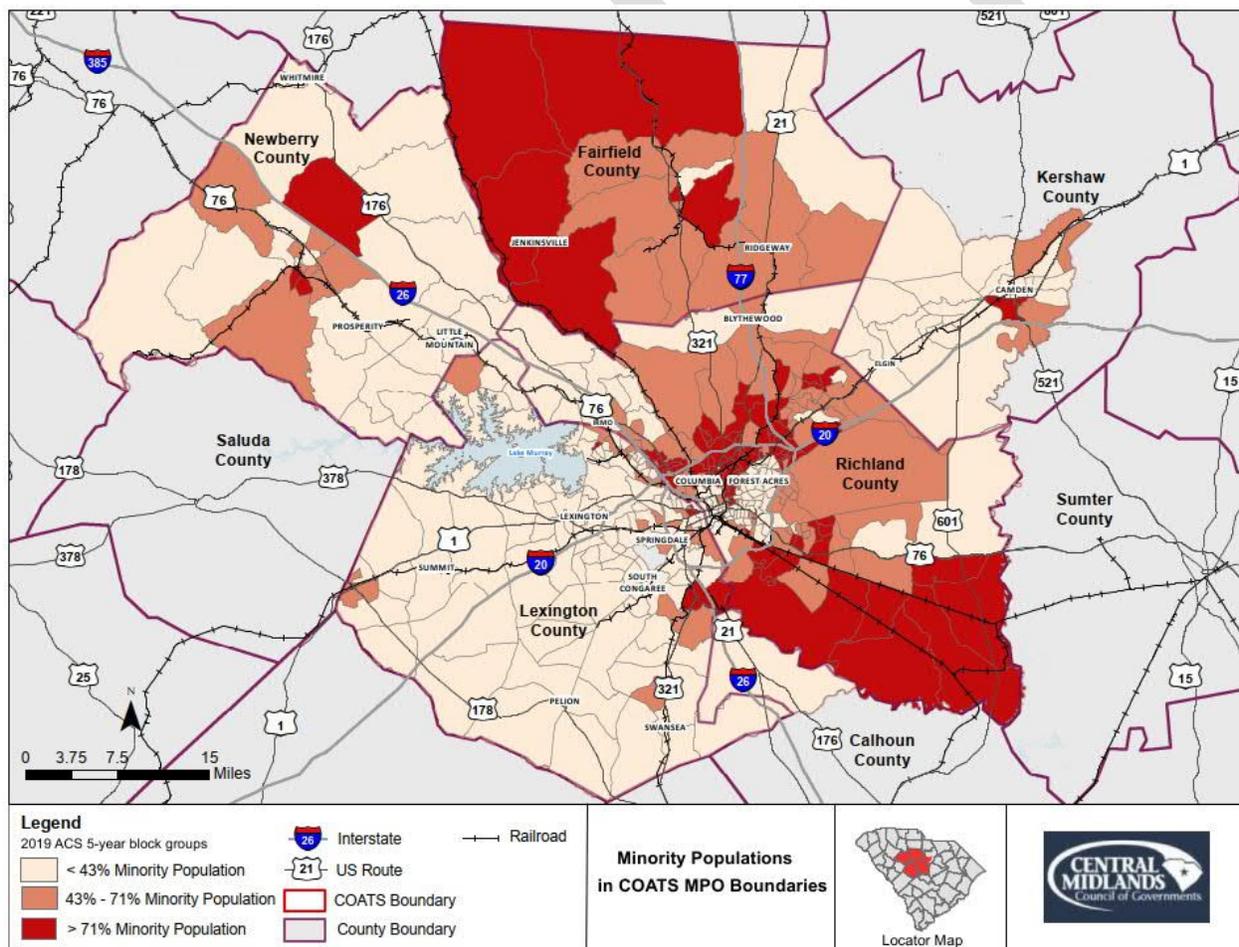
	Area Total	Richland Co.	Lexington Co.	Kershaw Co.	Calhoun Co. (COATS portion)	Newberry Co.	Fairfield Co.
Total Population	822,424	411,091	290,278	58,224	2,072	38,194	22,565
Minority Population	358,335	237,160	72,999	18,786	127	15,311	13,952
% Minority Population	43.6%	57.7%	25.1%	32.3%	6.1%	40.1%	61.8%
Hispanic Population	44,847	21,188	17,438	2,831	42	2,854	494
% Hispanic Population	5.5%	5.2%	6.0%	4.9%	2.0%	7.5%	2.2%
Over 65 Population	117,842	50,741	44,761	9,864	507	7,345	4,624
% Over 65 Population	14.3%	12.3%	15.4%	16.9%	24.5%	19.2%	20.5%
Households Below Poverty	117,812	61,864	35,934	8,559	265	6,539	4,651
% Households Below Poverty	14.3%	15.0%	12.4%	14.7%	12.8%	17.1%	20.6%

Note that there are two counties, Calhoun and Kershaw, that have several block groups outside of the CMCOG/COATS MPO region, while the remaining counties are completely encompassed in the CMCOG/COATS MPO region. Therefore, a true side-by-side comparison may not be accurate based on the calculations in Table 7.1. Additionally, the totals shown in the table do not include Fort Jackson, as military populations are not considered to be exposed to the same level of risk for environmental justice concerns as civilian populations.

Minority

The CMCOG/COATS MPO area has an average minority population of 43.6%, with the highest concentration of minority populations (66%) found in Richland County. As shown in Figure 6.1, Fairfield County also has several block groups that have higher minority populations compared to CMCOG/COATS MPO average minority population. Minority populations are concentrated in the southeastern portion of Richland County around Eastover, the northern portion of Fairfield County starting around Jenkinsville, and around the I-77 corridor.

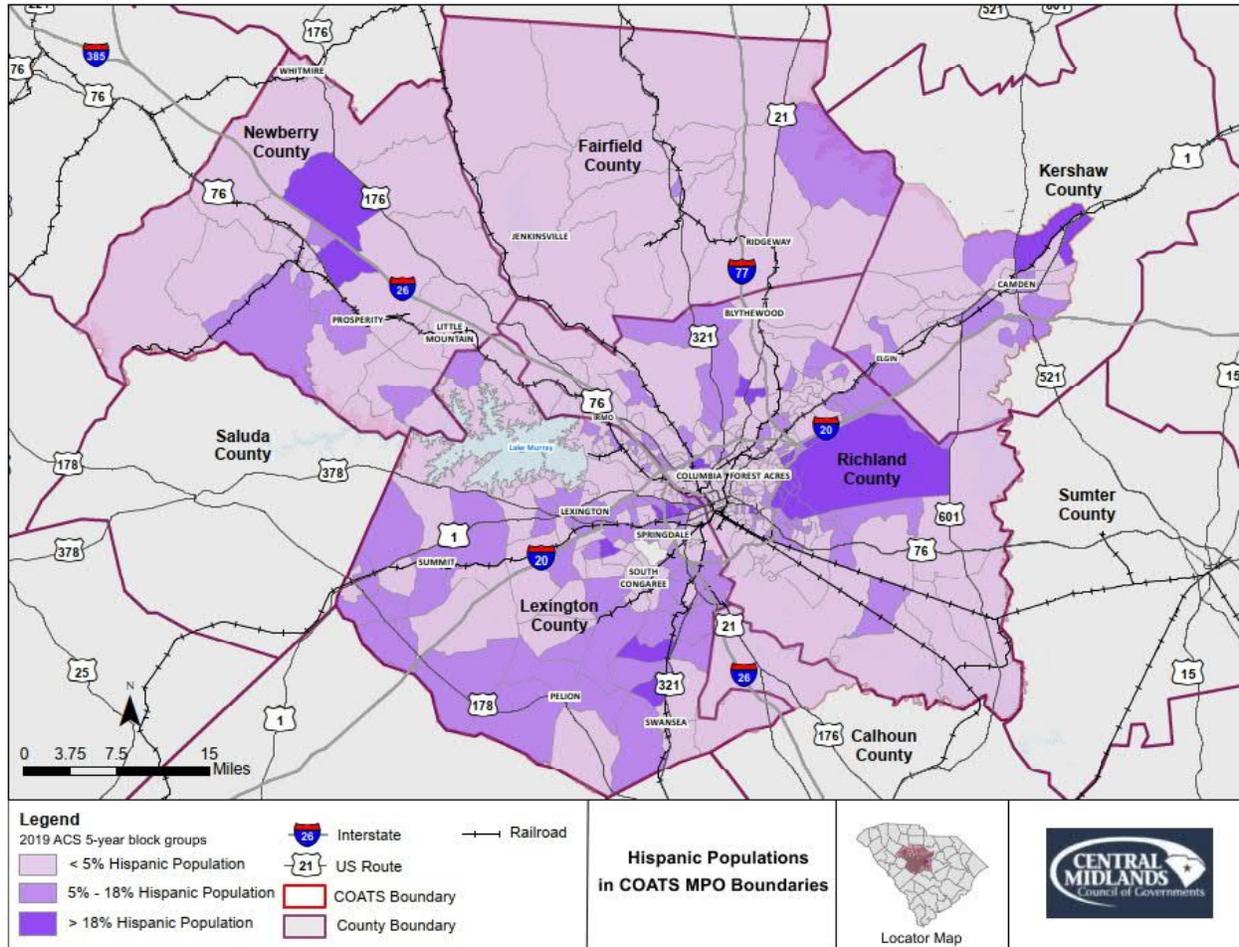
FIGURE 6.1. CMCOG/COATS MPO AREA MINORITY POPULATION



Hispanic

Richland County has the highest concentration of Hispanic populations (47%) within the CMCOG/COATS MPO region, although as shown on Figure 6.2, a large portion of the population appears around Fort Jackson, which is not included in this evaluation. Lexington County contains the second highest (39%) Hispanic populations, and populations appear to be relatively evenly distributed.

FIGURE 6.2. CMCOG/COATS MPO AREA HISPANIC POPULATION



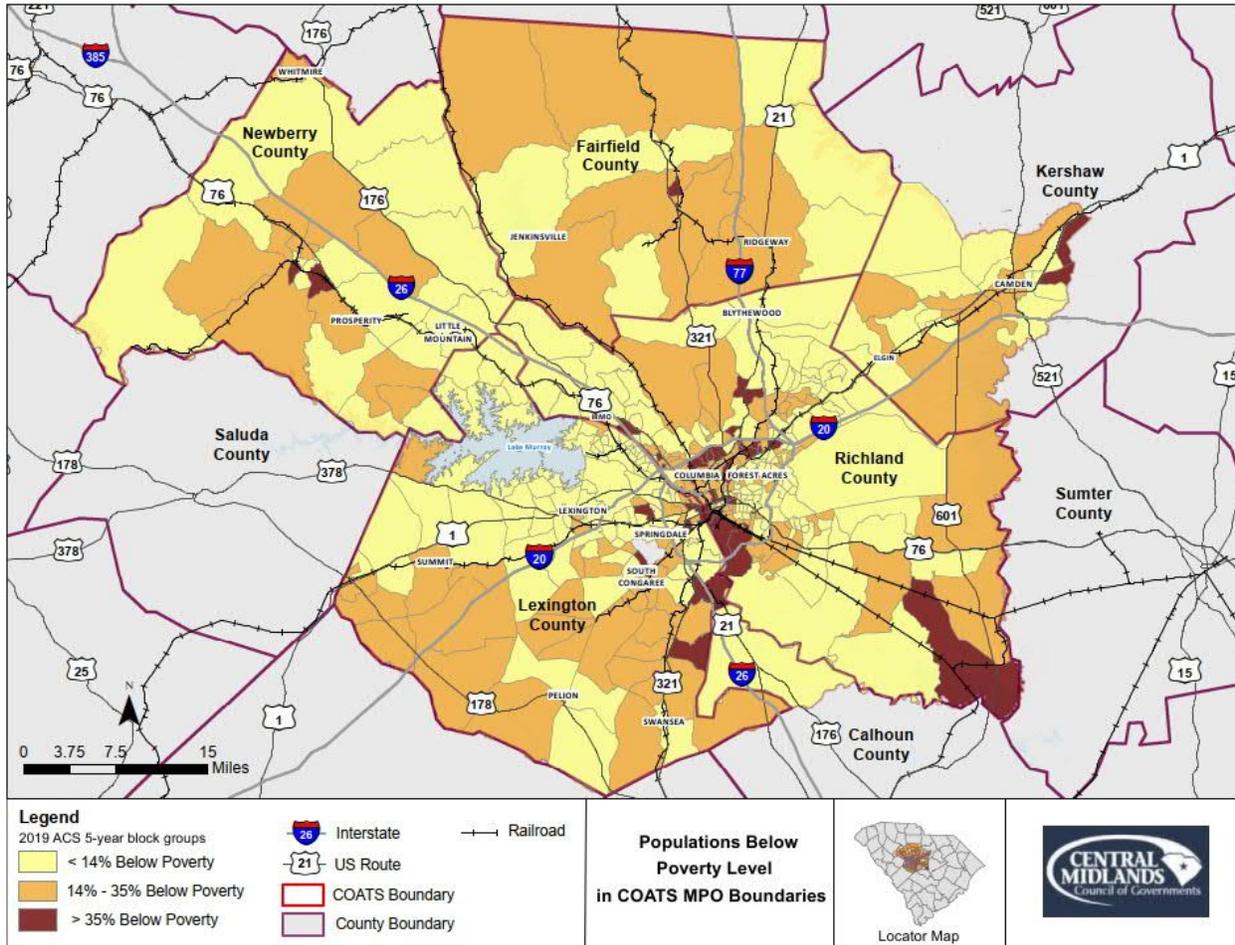
Limited English Proficiency

Approximately 7.7% of residents in the CMCOG/COATS MPO region that are 5 years or older speak a language other than English at home. Of the 59,186 residents in CMCOG/COATS MPO region who speak a language other than English at home, 36.6% indicated that they speak English less than “very well”. Spanish-speaking residents made up 61% of the group who speak English less than “very well”, and Richland County contains the most residents (51%) who speak English less than “very well”. Additional information about the COATS’ LEP Policy can be found at the end of this chapter.

Low Income

As seen on Figure 6.3, low income populations appear to be dispersed throughout the CMCOG/COATS MPO region. At a county-level, Richland has the highest number of the region's low-income populations (53%) and Lexington has the second (31%).

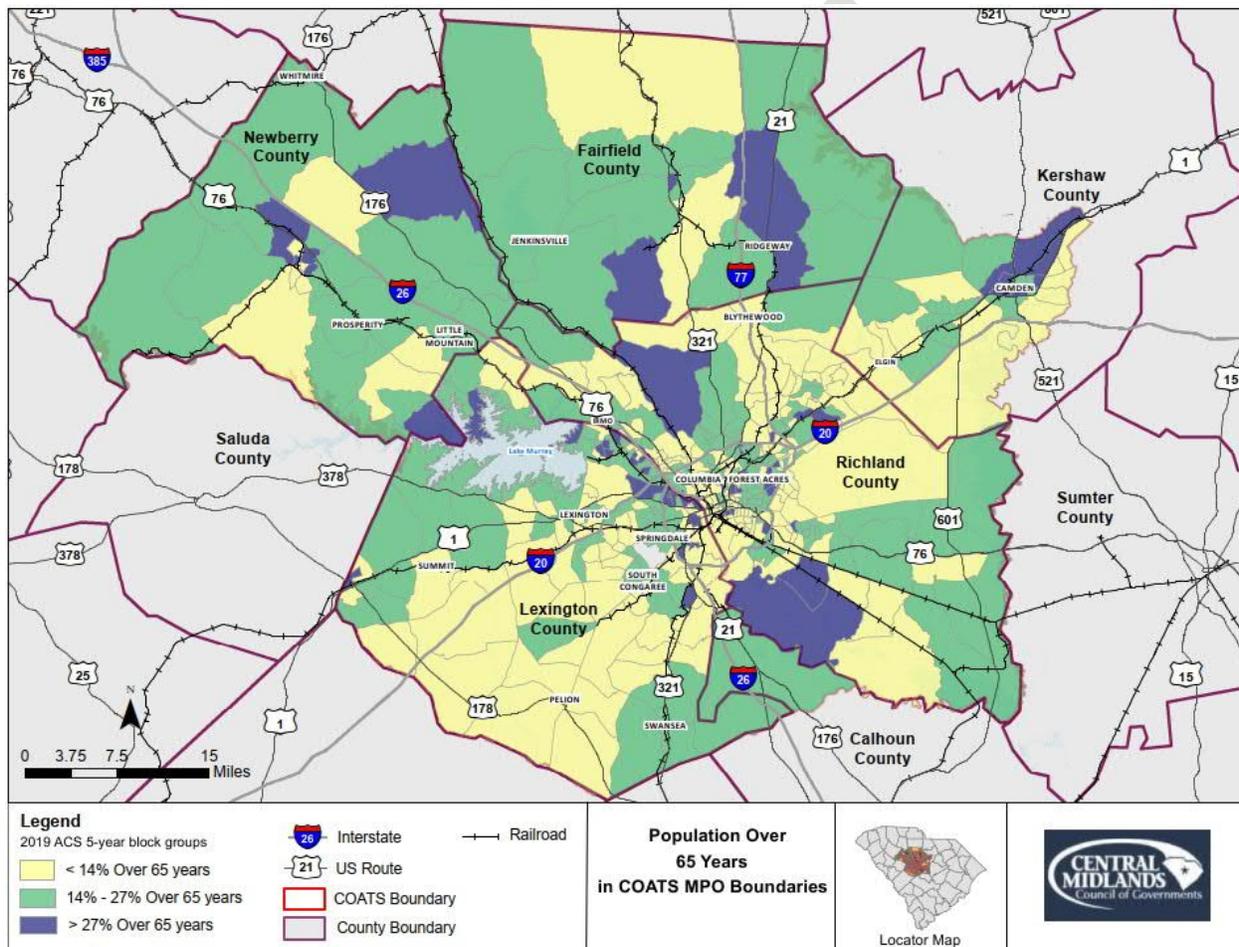
FIGURE 6.3. CMCOG/COATS MPO AREA LOW INCOME POPULATION



Population Over Age 65

Richland (43%) and Lexington (38%) have the highest populations of residents over 65 years old. However, as seen on Figure 6.4, each county within the CMCOG/COATS MPO region has several block groups with populations over 65 that are higher than the average percent of the over 65 population in the CMCOG/COATS MPO region. Residents over 65 are evenly grouped within the CMCOG/COATS MPO region, with more populations possibly residing around the outer boundaries of the region.

FIGURE 6.4. CMCOG/COATS MPO AREA POPULATION OVER AGE 65



Environmental Justice Areas

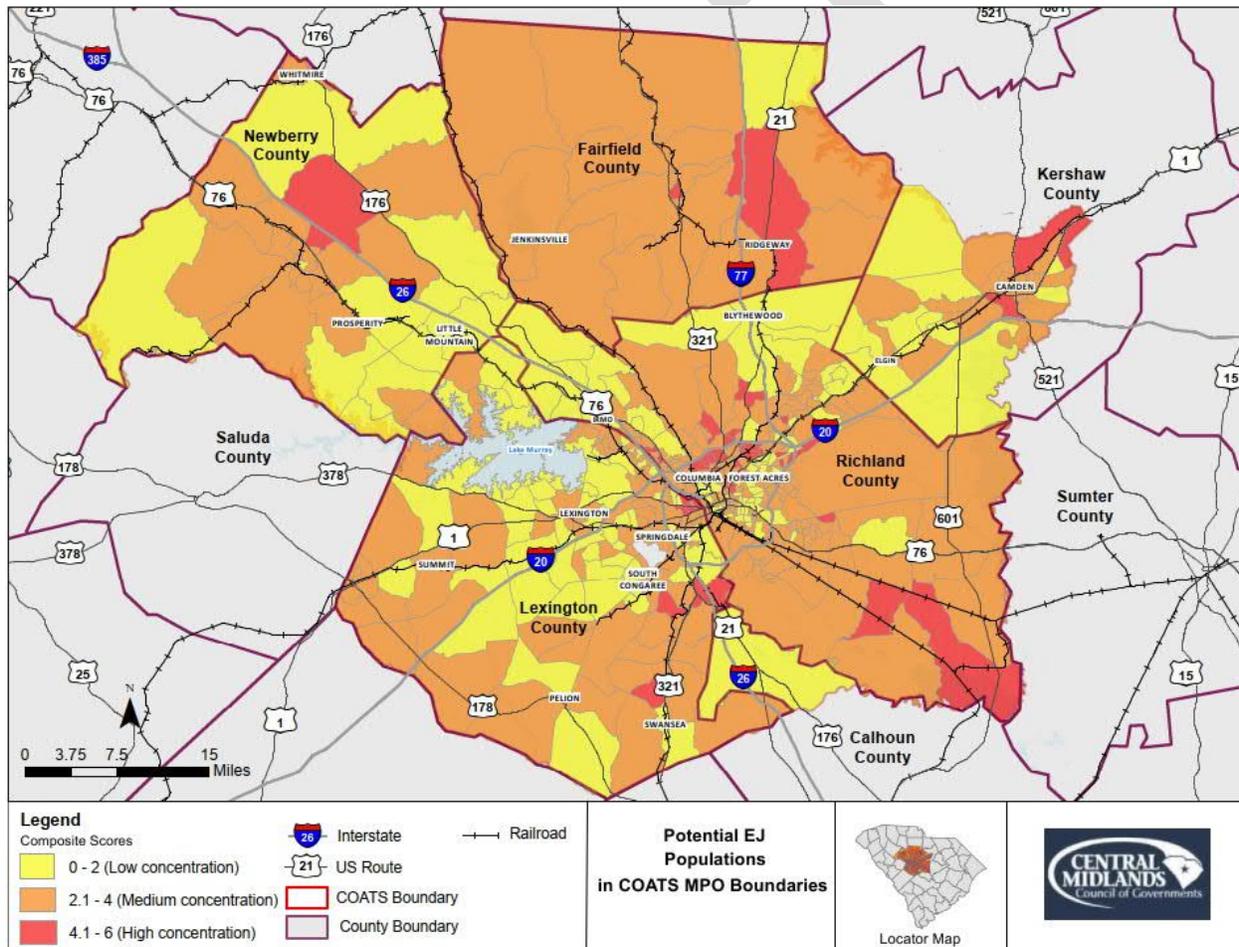
A composite map was created to display the highest concentrations of minority, Hispanic, low-income, and populations over 65 (Figure 6.5). This composite map is intended to help decision-makers identify areas where higher concentrations of protected classes and/or environmental justice communities reside. The composite map represents a useful benchmark for decision-makers to assess the likelihood of planned transportation projects positively or negatively impacting environmental justice or Title VI populations. Composite scores were created by assigning each block group in the CMCOG/COATS MPO region a score of 0, 1, or 2, based on the criteria below:

- Block groups that have a lower percentage than the CMCOG/COATS MPO regional average percentage for a given category = 0

- Block groups that have a percentage greater than the CMCOG/COATS MPO regional average percentage, but less than double the CMCOG/COATS MPO average for a given category = 1
- Block groups that have a greater percentage than double the COATS regional average percentage for a given category = 2

Scores were added for the four categories; total scores of less than 2 are considered to have a low potential for high concentrations of protected classes or EJ communities, while scores of greater than 4 are considered to have a high potential for high concentrations. As shown in Figure 6.5, there are few high concentrations of these communities, while the majority of the map shows medium concentrations that are evenly distributed across the CMCOG/COATS MPO region.

FIGURE 6.5. CMCOG/COATS MPO AREA ENVIRONMENTAL JUSTICE AREAS



6.3 CMCOG/COATS MPO Objectives and Strategies

With the data analyzed as part of the LRTP, CMCOG/COATS MPO can continue to implement the region’s four main goals for encouraging equitable engagement in the transportation decision-making process and prevent undue hardship on any one population. CMCOG/COATS MPO will work with local governments and encourage the regional and local implementation of these goals, as well as implement the strategies outlined in the CMCOG/COATS MPO Public Participation Plan.

1. Encourage regional collaboration and coordination amongst local jurisdictions in planning for future growth and development in the region.
2. Promote economic vitality by investing in infrastructure improvements that increase the potential for job creation and retention, improve linkages between housing and employment opportunities, and support regional economic development strategies.
3. Ensure that all citizens and communities within the Columbia Metropolitan Area are equitably served by the region's transportation system.
4. Ensure that all programs, policies, and activities do not have disproportionately adverse effects on minority and low-income populations and that all potentially affected communities are represented in the transportation decision-making process.

6.4 CMCOG/COATS MPO Limited English Proficiency Policy

CMCOG/COATS MPO follows the U.S. DOT's Policy Guidance Concerning Recipient's Responsibilities to Limited English Proficient (LEP) Persons for fulfilling responsibilities to LEP persons, pursuant to Title VI regulations. The Columbia Area Transportation Study (COATS) Metropolitan Planning Organization (MPO) has developed this Limited English Proficiency Plan (LEP) to help identify reasonable steps to provide language assistance for LEP persons seeking meaningful access to CMCOG/COATS MPO programs as required by Executive Order 13166. The plan follows the U.S. DOT'S "four factor analysis" method when determining the types of participation and engagement that occur to ensure meaningful access for LEP persons. The CMCOG/COATS MPO will use the following tools to identify persons who may need language assistance:

- The CMCOG/COATS MPO will examine records requests for language assistance from past meetings and events to anticipate the possible need for assistance at upcoming meetings;
- When CMCOG/COATS MPO sponsored public meetings, workshops or conferences are held, the MPO will setup a sign-in sheet table and have a staff member greet and briefly speak to each attendee. To informally gage the attendee's ability to speak and understand English, the CMCOG/COATS MPO staff will ask a question that requires a full sentence reply;
- The CMCOG/COATS MPO will have the Census Bureau's "I Speak Cards" at the meeting, workshop or conference sign-in sheet table. While staff may not be able to provide translation assistance at this meeting, the cards are an excellent tool to identify language needs for future meetings. The CMCOG/COATS MPO will also, have the cards available at the CMCOG/COATS MPO office reception area; and
- The CMCOG/COATS MPO will post a notice of available language assistance at CMCOG/COATS MPO reception area.

When an interpreter is needed, in person or on the telephone, the CMCOG/COATS MPO will determine what language is required. For a listing of available languages, persons can check the CMCOG website at: www.centralmidlands.org, to see what languages are offered. If the required language is not available or if a formal interpretation is required, the CMCOG/COATS MPO shall use a translation service.

The CMCOG/COATS MPO may be able to assist with written communications and small CMCOG/COATS MPO document translation requests from LEP persons. If not, a translation service shall be used for a fee. CMCOG/COATS MPO documents can be made available in another language, such as Spanish, upon request.

Chapter 7 Environmental Mitigation

7.1 Introduction

The COATS MPO and the Central Midlands region are situated in the middle of South Carolina, halfway between the Appalachian Mountains and the Atlantic Ocean. This central location on the dividing line between the mountains and the sea is characterized by an extremely diverse natural and cultural landscape. A vast network of streams, wetlands, woodlands, and productive agricultural areas extend from the sandhills eco-region south of Lake Murray to the extensive flood plains that provide the backdrop for Congaree National Park, located southeast of the City of Columbia.

The rapid pace of growth and development in the Central Midlands region requires planners and policy makers to develop long term strategies for protecting these unique and biologically diverse ecosystems. The implementation of large-scale transportation improvement projects can be particularly detrimental to the viability of these resources.

According to the FAST Act, metropolitan and statewide transportation plans must include a discussion on types of potential environmental mitigation activities as part of their plans. While not specifically mapped for this LRPT, there are environmentally sensitive resources located throughout the Central Midlands region that must be considered when doing individual projects.

Environmental mitigation measures therefore need to be an essential and ever present component of the long range transportation planning process. This can be accomplished by consulting and coordinating with other governmental, non-governmental, and private sector stakeholders to conduct a system-wide review of the potential environmental impacts of short and long term transportation investments. These coordination efforts are an initial step in identifying impacted areas and help to inform preliminary engineering and design. They also allow the CMCOG/COATS MPO to better facilitate the regional visioning and goal setting process. The end result is a transportation plan that minimizes environmental and social impacts, increases efficiency and cost effectiveness, and enhances the overall quality of life for area residents.

This chapter of the LRTP outlines strategies that CMCOG/COATS MPO is currently undertaking or plans to undertake to mitigate against environmental impacts through consultation and coordination, early project screening, and various regional planning initiatives.

7.2 Environmental mitigation strategies

CMCOG/COATS MPO uses or intends to use the following strategies to mitigate potential environmental impacts of multi-modal transportation projects identified in this LRTP:

Coordination

- Maintenance and deployment of a current resource agency contact database
- Utilization of the CMCOG/COATS MPO committee structure, CMCOG/COATS MPO public outreach and involvement strategy, and other CMCOG/COATS MPO planning activities
- Coordination with the Office of Planning and Environmental Services Division of SCDOT

CMCOG/COATS MPO will develop, maintain, and utilize a resource agency contact database to assist with collecting environmental data and soliciting input on the development of the LRTP and system wide

environmental and social impacts of project proposals. CMCOG will also use this database and consultation process to compare the transportation plan with available maps, inventories, plans, policies and strategies of the different agencies and organizations. CMCOG will also provide these agencies and organizations with an opportunity for review and comment of the plan as it is developed and during the public comment process. Agencies and organizations included in the contact database include, but are not limited to:

- Environmental Protection Agency Region IV
- USDA Natural Resources Conservation Service
- US Fish and Wildlife Service
- National Park Service – Congaree National Park
- US Department of Homeland Security Regional Environmental Officer
- US Army Corps of Engineers (Wetlands Protection and Floodplain Management)
- SC Department of Health and Environmental Control (Bureau of Water, Bureau of Air Quality, and the Bureau of Land and Waste Management)
- SC Department of Natural Resources
- SC Department of Parks, Recreation, and Tourism
- SC State Historic Preservation Office
- Richland County Conservation Commission
- Richland and Lexington Countywide Stormwater Consortiums
- Sustainable Midlands
- Congaree Riverkeeper
- Congaree Land Trust
- Community Open Land Trust

CMCOG will also coordinate planning activities with the various units of Local Government within the COATS MPO Planning Area through the existing MPO policy and technical committee structure. Other CMCOG committees and planning activities will also be coordinated with the long range transportation planning process to ensure compatibility and consistency with other regional planning programs, policies, and projects. The CMCOG environmental planning program and Environmental Planning Advisory Committee will play a particularly important role in coordinating transportation planning projects with regional water quality management and sustainability initiatives.

To ensure ongoing consultation efforts throughout the lifecycle of the plan, SCDOT will play an important role in project specific environmental mitigation activities by serving as a primary point of contact for many of the natural and cultural resource management agencies listed above. SCDOT will review the LRTP and solicit input and comments from these other agencies as priority projects begin to move through the project development process. This consultation will provide the opportunity to evaluate the consistency of individual projects with the relevant federal, state, and local environmental policies and programs.² SCDOT and CMCOG will continue to develop and strengthen these relationships

² SCDOT works closely with the major resource agencies and either funds full-time positions or has an interagency agreement with: the South Carolina Department of Archives and History, the United States Army Corps of

with the agencies and organizations responsible for natural and cultural resource management and preservation in the central midlands region.

Environmental Resource Mitigation

- Environmental Screening
- Green Infrastructure Planning
- Wetlands Mitigation Banking
- Regional Air Quality Planning

The scope and intended outcomes of each of these efforts will be summarized below, along with a discussion of their relationship to the LRTP and compliance with MAP 21/SAFETEA-LU environmental mitigation requirements.

Environmental Screening

CMCOG utilizes an early environmental screening process intended to pro-actively identify potential environmental or social issues that could impact the implementation of road improvement projects proposed in the Long Range Transportation Plan. An early evaluation of the location of proposed projects in relationship to sensitive environmental and cultural features is an essential component of transportation planning and provides the framework for later, more detailed pre-construction project specific analysis that is required by the National Environmental Policy Act (NEPA). The purpose is to subject projects to a planning level “fatal flaw” analysis to identify major problems or “showstoppers” so that appropriate mitigation activities and/or alternatives can be considered before a project enters the pre-construction phase. This process facilitates enhanced coordination between agencies, assists in setting realistic cost and construction estimates, and prepares projects for the NEPA review process.

The primary means for conducting the screening includes system-wide and project specific analysis of the data collected during the consultation and coordination process described above. Typical components of the screenings include spatially examining projects in the context of existing conditions related to:

- Congestion, Traffic Volumes, and Level of Service
- Crash and Safety Data
- Land Use, Growth, and Development Trends
- Preliminary Cost Estimates
- Hydrography
- 303(d) Impaired Streams
- Floodplains
- Wetlands (National Wetlands Inventory and Hydric Soils)
- Endangered Species Occurrence
- Hazardous Substance Disposal Sites
- Protected Lands

Engineers, the South Carolina Department of Health and Environmental Control, the US Fish and Wildlife Service and the US Environmental Protection Agency.

- Prime Farmland, Farmland of Statewide Importance
- Vulnerable Populations/Environmental Justice Areas
- Historic Areas/Historic Resources
- Schools, Parks, Churches, and Cemeteries

Although this type of early action screening does not substitute for more detailed, project specific environmental review, it can help to identify important issues that require further analysis.

Understanding the environmental and social complexities of a proposed project or package of projects early on, can reduce the likelihood of encountering unexpected environmental constraints that could stop a project or significantly increase the capital costs for completion.

Green Infrastructure

Green infrastructure is a term often applied to describe economical and environmentally friendly means for protecting and managing land and water resources. Over the past two decades separate but related conceptual definitions for Green Infrastructure have emerged, one centered on the protection of open space for its inherent natural value, and one centered on utilizing sustainable Low Impact Development (LID) strategies to address stormwater runoff related issues.

In the case of the open space definition, green infrastructure is commonly described as “an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations.” (Benedict and McMahon, 2006). This definition typically describes a hubs, links and sites approach to open space preservation. Hubs anchor green infrastructure networks and provide an origin or destination for wildlife and ecological processes moving to or through it. Different types of hubs can include:

- Reserves: Large protected areas, such as national and state parks and wildlife refuges
- Managed Native Landscapes: Large publicly-owned lands, such as national and state forests, managed for resource extraction as well as natural and recreational values
- Working Lands: Private farms, forests, and ranches that are managed for commodity production yet remain in a predominantly open and undeveloped state
- Regional Parks and Preserves: Less extensive hubs of regional ecological significance

Sites are smaller community parks and natural areas where natural features and ecological processes are protected and/or restored. Links are the connections that tie the system together and enable green infrastructure networks to work. They range in size, function and ownership, and can include the following:

- Landscape Linkages: Large, protected areas that connect existing parks, preserves, or natural areas and provide sufficient space for native plants and animals to flourish, while serving as corridors connecting ecosystems and landscapes
- Conservation Corridors: Less extensive linear protected areas, such as river and stream corridors, that serve as biological conduits for wildlife and may provide recreational opportunities;
- Greenways: Protected corridors of land managed for resource conservation and/or recreational use

- Greenbelts: Protected natural lands or working lands that serve as a framework for development while also preserving native ecosystems and/or farms or ranchland
- Ecobelts: Linear woody buffers that can ease the zone of tension between urban and rural land uses, while providing ecological and social benefits for urban and rural residents

Since 2006 CMCOG has been working with regional partners to develop a vision for creating a network of protected open spaces by utilizing the Green Infrastructure approach within the central midlands region. This approach is an important component of the COATS transportation planning process because it identifies priority conservation areas that can help guide transportation related environmental mitigation measures and engage stakeholders in discussions about long range plans for protecting the regions natural and cultural resources amidst increasing growth and development pressures.

The water resource definition of Green Infrastructure on the other hand refers more specifically to a natural or engineered system that use soil and vegetation to manage stormwater runoff by retaining and treating it where it falls, allowing for less disruptions to the natural hydrologic cycle and contributing to improved health of the overall watershed. Low Impact Development (LID) concepts are often used interchangeably with this definition of Green Infrastructure because they also refer to a planning, design and development framework for using natural site features along with engineered facilities to better manage land and water resources. Examples of LID techniques for managing water quality include:

- Bioretention and Infiltration (e.g., bioswales, filter strips, Rain Gardens)
- Pervious Pavement
- Rainwater Harvesting
- Green Roofs, Walls, and Planters
- Stormwater Wetlands
- Greenways, Parks, and Plazas
- Green Streets and Parking Lots

Green Streets and Parking lots in particular are important for consideration in long range transportation planning activities. The Institute of Transportation Engineers has defined a series of green streets principles and guidelines for transportation agencies to use. These guiding principles include:

- Minimizing street widths
- Providing pervious surfaces where possible
- Incorporating aesthetic design into retention and detention facilities
- Providing mechanical traps to capture pollutants and particulate matter
- Directing runoff into biofilters or swales where appropriate rather than relying solely on conventional storm drain systems

In regards to this last bullet point, bioswales can be appropriate in many different locations and in many different transportation facility contexts. They can be used in medians, planting strips, curb extensions, islands, and other areas of significant size where runoff can be collected and detained. They can also be employed in areas that slope downward from the curb or sidewalk. Stormwater is allowed to enter

bioswale areas by employing frequent curb and gutter cuts in down slope locations. As with bioswales and rain gardens in non-transportation settings, they can and should become an integral part of the existing landscaping treatment. Municipalities spend a great deal of public funds on streetscaping and beautification projects. By embracing green infrastructure and green street concepts, jurisdictions can better leverage these scarce financial resources.

In addition to bioswales, green street designs also rely heavily on pervious pavement systems. As discussed earlier, pervious pavement can be used in a variety of settings including on-street parking areas, off-street parking areas, and alley ways and on low volume collector streets. Sidewalks and pedestrian crosswalks can also use pervious pavement systems. Green street concepts are typically applied to the following five transportation facility types:

- urban commercial streets
- arterial streets
- residential streets
- alley ways and parking lots

Urban Commercial streets offer opportunities for pervious pavement in on-street parking areas, bioswale curb extensions, and stormwater planters around native street trees. Suburban Arterial roads which have much higher traffic volumes and often have two travel lanes in each direction, can use continuous bioswale features parallel to the road. The landscaped bioswale can provide a much needed separation between the vehicle travel lanes and the sidewalks, making for a much safer and aesthetically pleasing pedestrian experience. Residential Streets offer numerous green infrastructure opportunities.

Pervious pavement can be implemented along the edges of wide residential streets that can be used for on street parking (which provides the added benefit of calming traffic). Pervious pavement, such as gravel and turf, can also be used on residential driveways. Homeowners can also site rain gardens next to driveways and along the street frontage to serve as a filter strip and/or infiltration area. Curb extensions with bioswales or larger bioswale systems can also be used on residential streets. Urban Alleyways which often provide a connection to off street parking can use pervious pavement in access and parking areas. When implemented in tandem with urban commercial green street designs, it can have a positive cumulative impact on stormwater runoff.

Parking Lots represent one of the biggest contributions to impervious surface areas in any given watershed. Fortunately, bioswales and rain gardens are well suited to capture, store, and filter runoff from parking lots. Bioswales can be implemented in the center of a large parking area where frequent curb cuts allow stormwater to enter the bioswale system. If used in tandem with policies that promote shared parking and reduced parking requirements, the negative water quality impacts associated with these types of impervious surfaces can be dramatically reduced.

The green street concept represents a way to reduce impervious surface coverage, increase regional water quality, and support smart growth urban design strategies that facilitate the development of a “complete” street network.

One of the biggest constraints to green street development is a lack of existing technical specifications for planning, design, and construction. Because few projects currently exist in the state of South

Carolina, there are a limited amount of benchmarks for demonstrating the effectiveness of these types of projects. As already discussed, many of these techniques can be cost prohibitive for retrofit projects unless they are a part of a complete road redesign or capacity improvement project. As the designated Metropolitan Planning Organization (MPO) for the Columbia area, CMCOG can play an instrumental role in advocating for the use of complete street/green street concepts and should continuously work to identify creative ways for integrating green infrastructure concepts into the regional transportation planning process. This will assist with federal regulatory compliance by identifying potential sites for environmental protection as well as mitigating the adverse impacts of transportation improvements.

Wetlands Mitigation Banking

Wetland and stream mitigation banking is another important strategy for identifying potential environmental mitigation sites as well as providing project specific mitigation measures. CMCOG has actively engaged in regional mitigation bank planning activities to include developing an eco-region and watershed based site selection and prioritization process used to identify regional focus areas for mitigation banking activities.

The need for wetland and stream mitigation banks in the midlands has increased in recent years as Richland County is about to embark on considerable construction activity as a result of the passage of the Richland Transportation Penny Sales Tax in 2012. In order to meet the project demand for mitigation credits, Richland County is in the process of establishing their own 1,314 acre mitigation bank in the Mill Creek area adjacent to Congaree National Park. The bank, once operational, will preserve existing wetland areas as well as provide opportunities for wetlands restoration which is highly favored by the US Army Corps of Engineers. The bank will have the potential to restore 15,520 linear feet of stream and 267 acres of wetlands and will preserve 14,164 linear feet of existing stream and 662 acres of existing wetlands. In addition to creating a market for Richland County based construction activities, this site also has the potential to absorb pent up demand from SCDOT and private developers who until now have not been able to receive mitigation credits from within the same eco-region and drainage basin because of the absence of mitigation banks in the central midlands region.

In order to comply with federal environmental mitigation regulations, CMCOG will continue to monitor the progress of the Mill Creek mitigation bank and will continue to work with Richland and Lexington Counties to identify opportunities for establishing new banks that can be used for transportation related mitigation credits.

Regional Air Quality Mitigation

To proactively address regional air quality issues, primarily those associated with mobile source emissions, CMCOG is an active member of the Central Midlands Air Quality Coalition (CMAQC), which is a group of public, private, and citizen stakeholders who promote regional cooperation for air quality in the central midlands region of South Carolina. CMCOG serves on the CMAQC steering committee which is also comprised of representatives from Richland County, Lexington County, the City of Columbia, the University of South Carolina, The Central Midlands Regional Transit Authority (The Comet), and South Carolina Department of Health and Environmental Control. The goals of CMAQC are to raise public awareness, promote air quality improvement efforts, and work towards developing collaborative, sustainable solutions to regional air quality problems.

The CMAQC has previously developed and received signatures on an air quality pledge of support to promote local air quality initiatives, increased school district-wide participation in air quality awareness programs, and developed the “Clean Air Midlands” campaign to provide local air quality information on social media, TV and radio public service announcements. CMAQC is also in the process of developing a dedicated website called Clean Air Midlands (www.cleanairmidlands.com) which will serve to educate residents and businesses on local air quality conditions and to encourage involvement in collaborative solutions for emission reduction strategies.

The efforts of CMAQC will increase in importance for the COATS MPO region and surrounding areas if federal air quality standards for particulate matter and ground level ozone become more stringent in the near future. The COATS MPO region will likely trend towards falling into “non-attainment” status and this new designation could significantly hamper regional economic development initiatives and federal funding for transportation infrastructure improvements. To help maintain acceptable air quality, CMAQC will need to promote education and awareness about transportation related strategies that involve reducing number of vehicle miles traveled by single passenger automobiles. Such strategies include:

- The Congestion Management Process (CMP). The CMP is outlined in Chapter X of this document. In addition to identifying congested locations, the CMP provides a toolbox of congestion mitigation strategies and a five level screening process to address congestion issues quickly with relatively low-cost improvements. The five levels of strategies range from use of communications and work hour scheduling to reduce the need for travel to full-blown road widening projects. In between are strategies to shift trips from automobiles to other travel modes, increase the use of high-occupancy vehicles, improving the operating characteristics of existing roadways. The CMP approach advocates using the quickest, least expensive method to address the congestion problems identified in each corridor to reduce congestion and related air pollution.
- Improving the Availability and Service Quality of Alternative Travel Modes. Chapters 9 and 12 of this plan include proposals for improvement and expansion of bicycle, pedestrian and mass transit facilities and services. While these travel modes currently account for a small share of travel in the Central Midlands, improving these services result in a reduction, or a slowing in the rate of increase, in daily vehicle miles traveled in single passenger motor automobiles.
- Land Use Practices. Uncoordinated, disjointed development patterns, generally referred to as “sprawl”, are responsible for increasing the growth of automobile vehicle miles traveled at a much faster rate than actual population growth. Walkable, transit supportive, mixed use neighborhoods and communities, on the other hand, can reduce automobile dependence and enable more destinations to be reached by shorter vehicular trips or non-motorized forms of transportation. Walkable mixed use communities generally will include higher population densities and therefore make it more feasible to provide transit service for longer commuter oriented trips.

Chapter 8 Transit and Commuter Rail

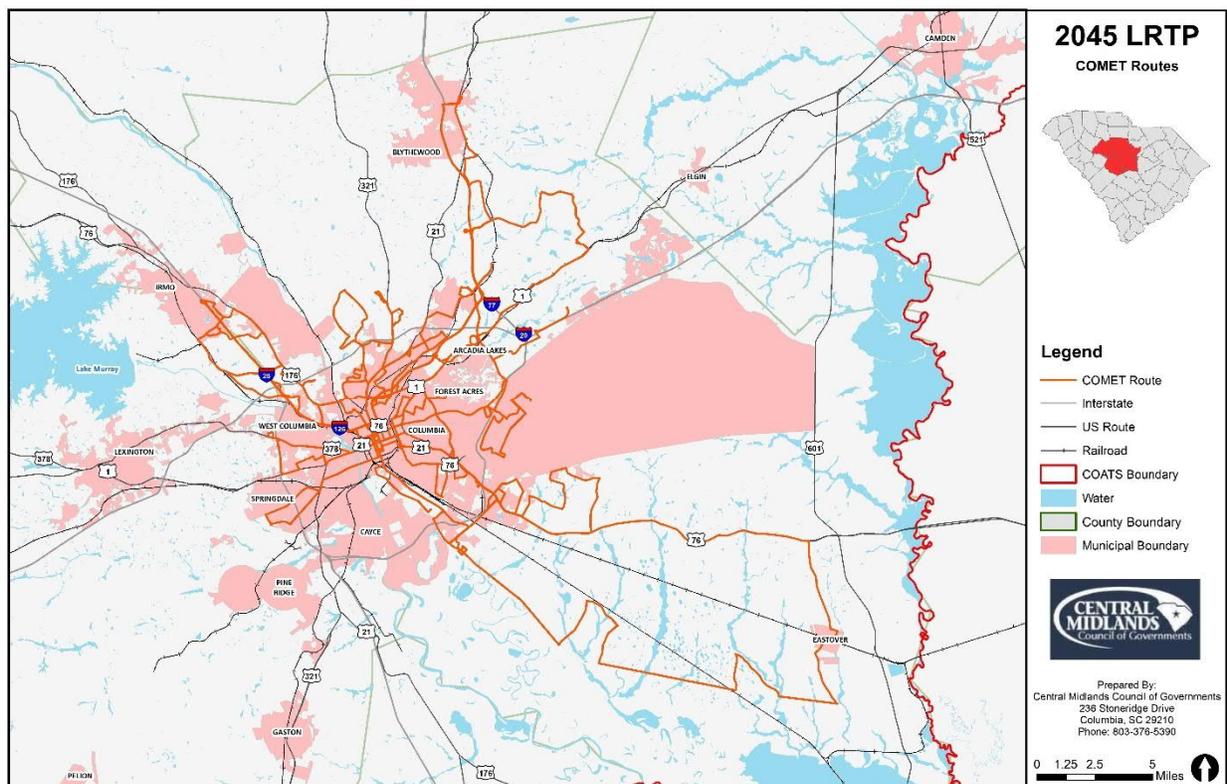
The primary public transit provider in the COATS MPO is the Central Midlands Regional Transit Authority (CMRTA) (aka The COMET). Much of The COMET fixed route service is provided within the City of Columbia, with operations reaching into nearby surrounding communities of Richland and Lexington Counties. Most COMET routes are radial routes which begin and end at COMET Central in Downtown Columbia or at a SuperStop. Routes designated with an "L" are routes local to a neighborhood, routes designated with an "X" are express routes which operate non-stop or with limited stops.

8.1 COMET Service

The COMET service map, as of January 2021, is shown in Figure 8.1, which is taken directly from the COMET website to reflect the most recent service. COMET service is generally provided as follows:

- Monday – Friday: Service generally operates between 5:15am and 10:15pm with service frequency generally every 15 to 60 minutes. Routes 24 and 25 operate late evening service.
- Saturday: Service generally operates between 5:45am and 10:15pm with most service operating at 60-minute headways.
- Sunday: Service generally operates between 5:45am and 10:15pm with most service operating at 60-minute headways.

FIGURE 8.1. COMET SERVICE MAP



COMET Fares

COMETCards can be purchased and used to load ride fares, 1-Day, 7-Day, and 31-Day passes and must be used for transfers. COMET Half Fare ID Card is available for purchase by passengers eligible for discounted fares. COMET fares are as indicated in Table 8.1.

TABLE 8.1. COMET FARES

	Basic	Discount*	Express
One Way	\$2.00	\$1.00	\$4.00
All-Day Pass	\$4.00	\$2.00	\$6.00
7-Day Pass	\$14.00	\$7.00	\$28.00
10-Day Pass	N/A	N/A	\$40.00
31-Day Pass	\$40.00	\$20.00	\$80.00
Route Deviation on Flex Routes	+ \$2.00	+ \$1.00	N/A
Express Route Upcharge	+ \$2.00	+ \$1.00	Varies
Soda Cap Connector	Free	Free	Free
Transfer (60 minutes only)	Free	Free	Free
	Free transfer requires COMETcard		

Special Services for Persons with Disabilities

Dial-A-Ride Transit (DART) is the complementary American with Disabilities Act (ADA) paratransit service for persons with disabilities unable to board the COMET buses or access a transit stop for any trip purpose. The service is a curb-to-curb, advance reservation, shared-ride transportation service. There are no restrictions on the purpose or frequency of reservations, however customers must board, travel, and alight within ¼ mile of an operating COMET route. The DART base fare is \$4.00 per one-way trip. A fleet of small buses provides DART service. Each bus is equipped with wheelchair lifts and can accommodate four wheelchairs.

V-TRIP and Pick Up Program are volunteer and subsidized transportation programs available to individuals that live outside the DART service area but within Richland and Lexington Counties and are at least 65 years old or have a disability.

Innovative Mobility

CMRTA operates several innovative mobility options across the Central Midlands, as discussed in the following.

- The COMET Vanpool is designed to assist employees to form vanpools for the home-to-work commute. A monthly subsidy of \$500 is available to help with the cost of the vanpool. In association with Commute with Enterprise, 7, 12, and 15-passenger vans are available, but the vans must originate or end in Richland or Lexington Counties.

- The COMET On the Go! Provides payment of up to \$8.00 for ridesharing trips that start and end in The COMET fixed route service area on Lyft and Uber through use of a promo code.
 - » COMET @ Night: Seven days a week between 8:00pm and 6:00am.
 - » COMET To The Market: Seven days a week between 6:00am and 8:00pm with a trip beginning or end at a grocery store.
- Blue Bike provides on-demand access to bicycles for short distance trips in Downtown Columbia. The COMET riders with a 1-day, 5-day, 7-day, 31-day, or 10-Ride pass can receive unlimited 45-minute Blue Bike ride sessions in a day by inputting a promo code.
- Soda Cap Connector is a festive service that connects many popular Downtown Columbia destinations, including West Columbia, Cayce, the Main Street District, the Vista, Five Points, Segra Park, Allen and Benedict Colleges, and University of South Carolina. The service operates every 30 minutes, seven days a week, and is free.

8.2 EXISTING RIDERSHIP AND SERVICE TRENDS

The following tables and figures present ridership and service trends for CMRTA from 2013 to 2019. Due to the COVID-19 pandemic, ridership figures were not used for 2020 or 2021 as these figures don't represent typical conditions. Ridership and service trends are taken from the National Transit Database, as reported to Federal Transit Administration (FTA) by CMRTA.

In the 7-year period, fixed-route bus service, like The COMET and Soda Cap Connector experienced a steady 110% increase in ridership, growing from 1,262,053 riders in 2013 to 2,654,874 riders in 2019. Demand response service (DART and V-TRIP) saw a 19% increase over the same time period. Vanpool service was just started in 2019 and saw 1,121 riders. Demand response service – taxi, which would represent those trips taken COMET On The Go!, saw 6,211 riders in its first year of operation in 2019. Total CMRTA system ridership in 2019 was 2,733,489, up from 1,322,052 in 2013. This reverses a trend seen in the 2040 LRTP, which reported ridership decreases between 2010 and 2013. Ridership trends are outlined in Table 8.2.

TABLE 8.2. CMRTA RIDERSHIP 2013-2019

CMRTA Ridership*							
Transit Mode	Calendar Year						
	2013	2014	2015	2016	2017	2018	2019
Fixed-route Bus	1,262,053	1,535,163	2,059,884	2,356,278	2,432,463	2,575,627	2,654,874
Demand Response	59,999	50,338	57,418	63,410	63,999	72,815	71,283
Demand Response - Taxi	N/A**	N/A	N/A	N/A	N/A	N/A	6,211
Vanpool	N/A	N/A	N/A	N/A	N/A	N/A	1,121
All Modes	1,322,052	1,585,501	2,117,302	2,419,688	2,496,462	2,648,442	2,733,489

*Unlinked Passenger Trips

**N/A = not reported in National Transit Database

Figure 8.2 and Figure 8.3 represent CMRTA annual vehicle revenue miles and annual vehicle revenue hours, respectively, between 2103 and 2109. The figures indicate both saw substantial increases.

FIGURE 8.2. CMRTA ANNUAL VEHICLE REVENUE MILES

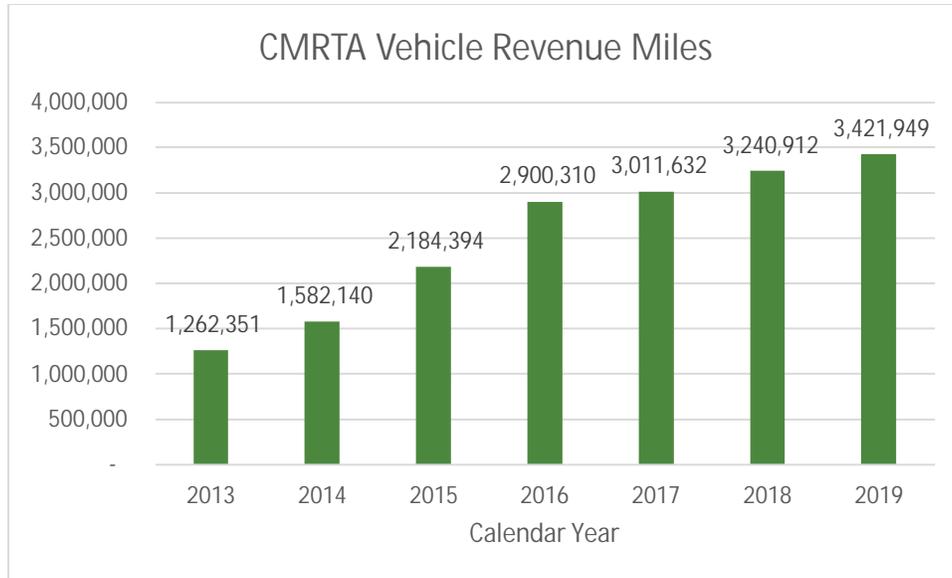
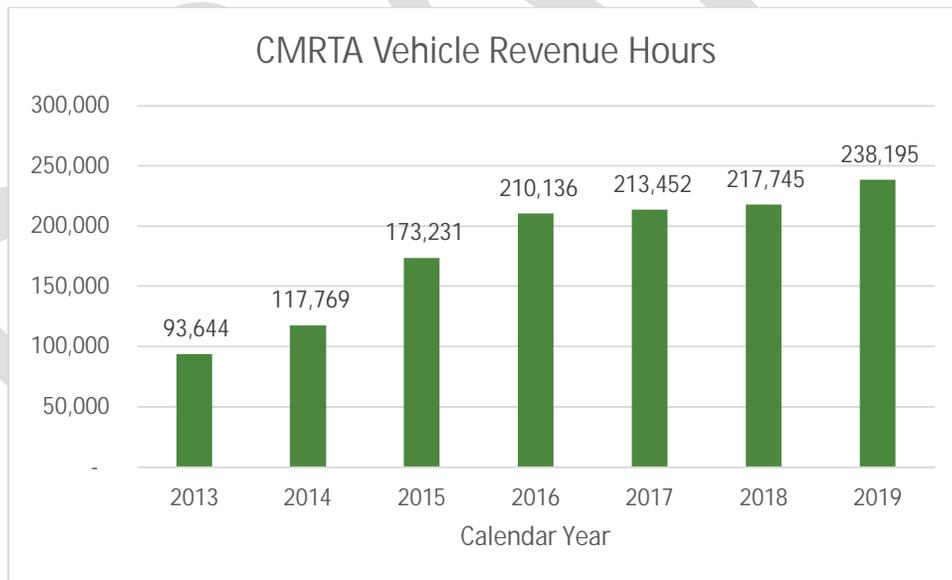


FIGURE 8.3. CMRTA ANNUAL VEHICLE REVENUE HOURS



In Table 8.3, as ridership, revenue miles, and revenue hours have all gone up between 2013 and 2019, so have CMRTA annual vehicle operating expenses have more than doubles, increasing from \$9,053,938 in 2013 to \$20,512,606 in 2019. Figure 8.4 and Figure 8.5 portray the annual unlinked passenger trips per revenue mile and by revenue hour.

TABLE 8.3. CMRTA ANNUAL VEHICLE OPERATING EXPENSES

CMRTA Annual Vehicle Operating Expenses							
Transit Mode	Calendar Year						
	2013	2014	2015	2016	2017	2018	2019
Fixed-route Bus	\$7,251,914	\$8,495,944	\$12,727,003	\$12,829,670	\$13,900,013	\$15,637,722	\$16,305,894
Demand Response	\$1,802,024	\$2,742,392	\$3,055,496	\$3,207,509	\$3,475,003	\$2,948,688	\$4,069,861
Demand Response - Taxi	N/A*	N/A	N/A	N/A	N/A	N/A	\$82,877
Vanpool	N/A	N/A	N/A	N/A	N/A	N/A	\$54,064
All Modes	\$9,053,938	\$11,238,336	\$15,782,499	\$16,037,179	\$17,375,01	\$18,586,410	\$20,512,696

*N/A = not reported in National Transit Database

FIGURE 8.4. CMRTA UNLINKED PASSENGER TRIPS PER REVENUE MILE

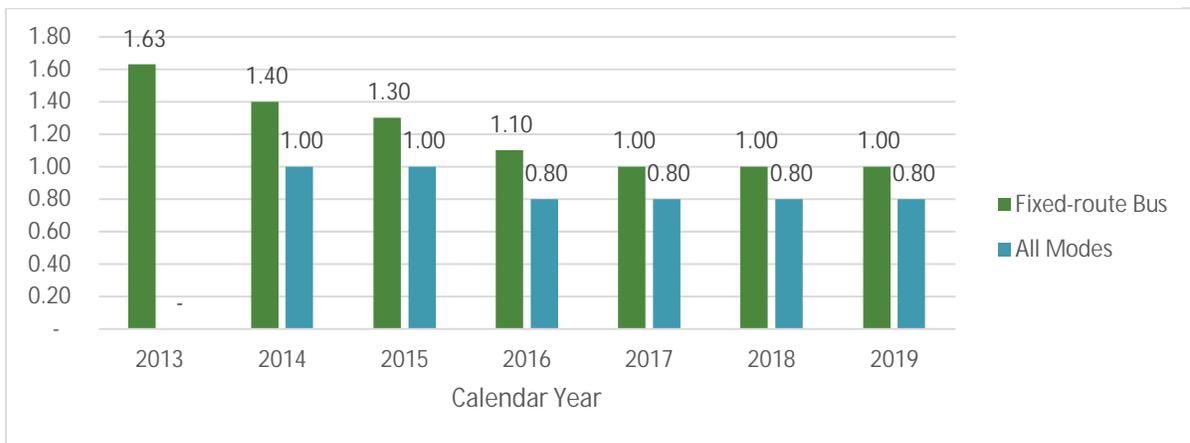
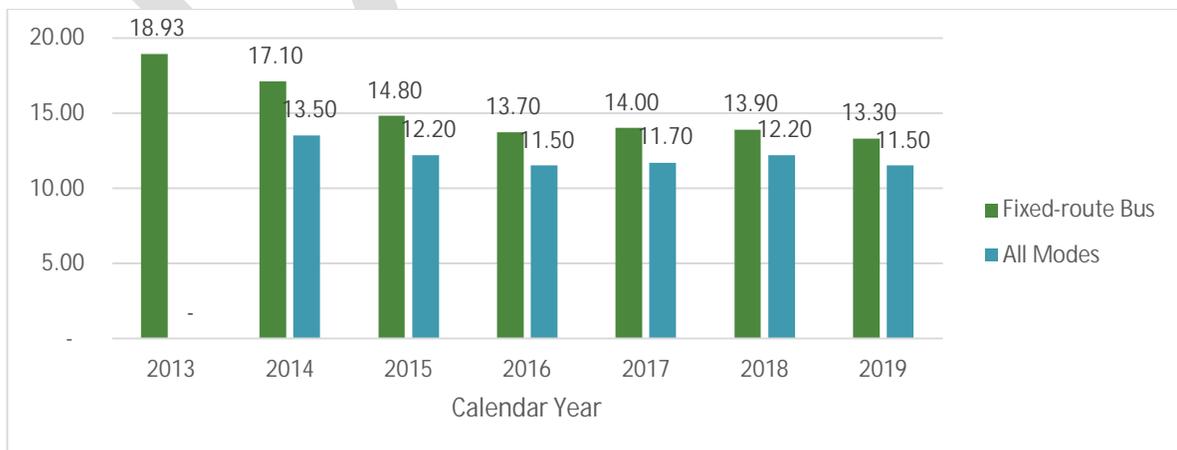


FIGURE 8.5. CMRTA UNLINKED PASSENGER TRIPS PER REVENUE HOUR



8.3 TRANSIT VISION

CMRTA is in the process of developing a transit vision called Reimagine The COMET. Reimagine The COMET is reviewing the existing bus network in the Central Midlands region and will recommend short and long-term changes to the system based on the goals and priorities of the community. A bus network redesign is a collaborative planning effort to decide where bus service should go, when it should run, and how frequently it should operate, starting from a clean slate. Redesigning The COMET's bus network is an opportunity to review existing and potential transit demand, and to design a network that meets those demands most efficiently. Ultimately, the goal is a network designed for the city and region of today and tomorrow, not one based on the past. The full documentation of the Reimagine The COMET project is provided in a separate document entitled "Reimagine The COMET Transit Choices Report." A brief summary is provided below.

The Transit Choices Report is the first step in Reimagine The COMET. It is meant to spark a conversation about transit needs and goals in the Central Midlands region for the short and long-term. The Transit Choices Report helps lay out relevant facts about transit and development in the region. The goal of this report is to assess the existing transit network and the geometry of the region today and engage the public, stakeholders and elected officials in a conversation about the goals of transit in the Central Midlands. For a transit agency like The COMET, learning how the community values different outcomes is an essential step in deciding where to run service, what kind of service to run, and how to define success. This report explains some of those trade-offs and helps the reader identify which choices are most consistent with his or her own values for transit.

Much of Reimagine The COMET is focused on the short term, focusing on things that can be accomplished in the next few years. This report focuses mostly on bus services because those services are relatively easy to develop or revise quickly. The goals articulated by the public, stakeholders and elected officials through this project will be carried forward into future long-range planning and this project will develop a 10-year transit plan, to guide both investment in transit and complementary land use policy.

[Why is it Important to Reimagine The COMET?](#)

There are several factors to consider as to why it is important to enhance transit and to Reimagine The COMET.

- Severe road space limitations. Across many parts of Columbia, West Columbia, and inner parts of the region, the road width is fixed and will never be wider. Efforts at widening roads in built-up areas are extremely costly, frequently destructive, and actually counterproductive—research shows that widening roads does not reduce congestion, due to induced car demand. Curb space is also limited and cannot be readily expanded.
- Intensification of land use. In response to growing demands for housing and commercial space, both central and outlying areas are growing more dense. More and more people are living within the same limited area.

These two factors combined mean that more and more people are trying to use a fixed amount of road space. If they are all in cars, they simply will not fit in the space available. The result is congestion, which cuts people off from opportunity and strangles economic growth. Figure 1 shows how much space the

same number of people take in cars, bikes, and buses. In a growing city that is getting more dense, relying on bikes and transit as major modes of transportation is the only way to have room for everyone.

An alternative to addressing congestion is for a larger share of the population to rely on public transit and other modes that carry many people in few vehicles, or that take far less space per person than cars (i.e. bicycles). This requires services that most efficiently respond to the city's changing needs, as well as corridor improvements to give buses a level of priority over cars that reflect the vastly larger numbers of people on each bus.

8.4 Human Services Transportation Coordination Plan

A Human Services Transportation Coordination Plan (HSTCP) was developed for Central Midlands to develop a coordinated approach for improving the network of transportation resources for older adults, individuals with disabilities, and people with low incomes in a manner that maximizes the utilization of existing resources and introduces new programs that will be most appropriate for addressing the needs identified by local stakeholders. The plan was prepared as part of the administration of CMCOG administration of the FTA Section 5310 Program, Enhanced Mobility for Seniors and Individuals with Disabilities.

The HSTCP identifies several unmet transportation needs and gaps in service, including:

- Connectivity between public transportation services is lacking in many parts of the region, which makes multi-county trips difficult.
- Access to fresh food and nutrition programs remains a challenge.
- Transportation to medical and wellness appointments is an ongoing challenge, particularly for trips from surrounding communities into Richland and Lexington Counties.
- Access to transportation is limited in Kershaw, Calhoun, Newberry, Fairfield, and Lexington Counties.
- Sustainable funding is needed to support and expand public, non-profit, and human service transportation.
- Specialized transportation services, including vehicles that are wheelchair accessible and drivers/ staff with experience and expertise to safely transport mobility devices are highly desirable.
- Travel Training and outreach education transportation options need to continue to improve.

The HSTCP looks to establish strategies to address the above unmet transportation needs and gaps.

8.5 Central Midlands Commuter Rail

The 2040 LRTP included a discussion on the potential for commuter rail in the Central Midlands region. As the Central Midlands region continues to grow in both population and employment, the likelihood of more traffic congestion will continue to rise. Providing transportation options, like transit (and commuter rail in the long run), will help maintain quality of life and lessen the need for investment in roadways. In 2006, CMCOG adopted the Commuter Rail Feasibility Study for the Central Midlands Region of South Carolina (aka Commuter Rail Plan) for purposes of fostering the establishment of regional land use policies that would play a major role in the future viability of rail transit in the Central Midlands region. The CMCOG Commuter Rail Plan examines three corridors in the region that exhibit characteristics most suitable for some type of commuter rail investment. These corridors are:

Batesburg-Leesville to Columbia, Camden to Columbia, and Newberry to Columbia. The Commuter Rail Plan envisions and encourages the establishment of transit-supportive developments and facilities, in order to reduce the dependence on the use of automobiles and improve air quality; and outlines a series of action steps that can be taken now to build toward high-capacity transit service in the future. This Commuter Rail Element incorporates by reference the CMCOG Commuter Rail Plan.

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Chapter 9 Bicycle & Pedestrian

9.1 Introduction

While transportation planning has historically focused on motorized vehicles, in recent years, communities throughout the United States have experienced a growing interest in transportation infrastructure that supports walking and bicycling. Rising gas prices, increasing congestion, lack of first- and last-mile connectivity to transit, and unprecedented events like the COVID-19 pandemic have elevated the need and desire for better integrating bicycle and pedestrian projects into the overall transportation planning process. Advancing bicycle and pedestrian projects is integral to meeting the 2045 LRTP goals and objectives. In addition, walking and bicycling provide a host of benefits to communities and regions by connecting destinations, encouraging healthy lifestyles, and protecting the environment.

People throughout the Columbia Area Transportation Study (COATS) area and the Central Midlands Council of Governments (CMCOG) region have embraced walking and bicycling as viable forms of transportation and recreation. As the communities within the region grow, it will be increasingly important to provide a safe and comfortable bicycle and pedestrian network that supports those who walk and bicycle out of necessity as well as provides mobility options for those who can choose to walk or bicycle instead of drive.

The purpose of this chapter is to provide an understanding of the context of walking and bicycling within the COATS area and the CMCOG region. In addition to presenting existing conditions, the chapter provides best practices for active transportation planning and policy as well as a list of prioritized bicycle and pedestrian projects.

[The E's of Bicycling and Walking](#)

At the heart of any quality bicycle and pedestrian network are what have been termed as the "E's." While the number of "E's" varies from community to community, in general the "E's" include: Engineering, Education, Encouragement, Enforcement, Evaluation, Engagement, and Equity. Considering each of the E's results in a thorough understanding of the issues at hand within individual communities and the CMCOG/COATS MPO region as a whole and leads to the development of comprehensive strategies to improve safety, enhance mobility, and increase the number of people walking and bicycling. The E's are described in more detail below.

Engineering refers to providing physical infrastructure for safe, convenient walking and bicycling. Engineering can be reflected in the capital improvement recommendations of planning documents or in the actual implementation of active transportation facilities. Engineering includes:

- On-street bike lanes, crosswalks, and paved shoulders
- Off-street shared use paths, trails, and greenways
- Sidewalks
- Grade separations, including pedestrian/bicycle tunnels and bridges
- Traffic calming devices
- Directional and wayfinding signage
- Anything physical in nature

Education efforts typically focus on teaching all users (i.e., people who drive cars, ride bicycles, and walk) how to safely operate within the transportation network. Education may focus on teaching bicyclists, particularly children, how to properly interact with motorists and how to avoid the most dangerous situations that commonly occur for bicyclists. Motorist education typically focuses on reminding drivers of the rules of the road and how to properly interact with bicyclists and pedestrians. Education efforts include:

- Bike rodeos and helmet fairs
- Safe Routes to School programs
- Public Service Announcements (PSAs)
- Informational brochures and marketing campaigns
- Driver education courses

Encouragement activities focus on increasing bicycling and walking through fun and interesting activities, promotional events, and avenues that make walking and bicycling more convenient. Encouragement efforts seek to demonstrate that bicycling and walking are valid modes of transportation.

Encouragement activities include:

- Bike to Work Week and Bike and Walk to School Day activities
- Walk to Lunch Day activities
- Open Streets events (i.e., closing a street for a few hours and allowing biking, walking, skating, etc.)
- Community bike rides
- Bike share systems
- Maps, brochures, websites, apps, and other ways of providing information to users

Enforcement activities focus on enforcing the rules of the road for all users (i.e., people who drive cars, ride bicycles, and walk). Enforcement also prioritizes having links between the law enforcement community and the active transportation community. Enforcement activities include:

- Training programs for drivers
- Training programs for bicyclists
- Training programs for law enforcement officers
- Efforts to reduce speeding, red light/stop sign running, and distracted driving
- Efforts to increase yielding to pedestrians
- Efforts to reduce leading bicycle/pedestrian crash types
- Efforts to reduce improper or unlawful cyclist and pedestrian behaviors

Evaluation efforts, which seek to quantify the impact of the other “E’s,” occur at the beginning of the planning process, during implementation, and as follow-up to implementation. Evaluation efforts may include:

- Measuring the growth of bicycle and pedestrian facilities in a region
- Walkability and bikeability audits
- Measuring the rate of walking or bicycling in an area or the number of users on a specific facility
- Evaluating the increase of users based on increase in facilities

- Evaluating crash data for patterns or frequency

Engagement refers to building partnerships with communities and stakeholders during the planning, implementation, and evaluation of bicycle and pedestrian programs, policies, and projects. Engagement efforts may include:

- Facilitating a bicycle and pedestrian task force or advisory committee with community representation
- Conducting outreach to ensure community feedback shapes the vision for bicycling and walking
- Efforts to engage traditionally marginalized communities
- Celebrating success as a community

Equity in bicycle and pedestrian planning seeks fairness in the distribution of projects, programs, and policies. Equity should not be confused with equality; equality assumes that all needs are the same, while equity allows resources to be provided based on need. In bicycle and pedestrian planning and design, discussion of equity acknowledges that, based on context, different solutions may be appropriate in different communities or for specific populations.

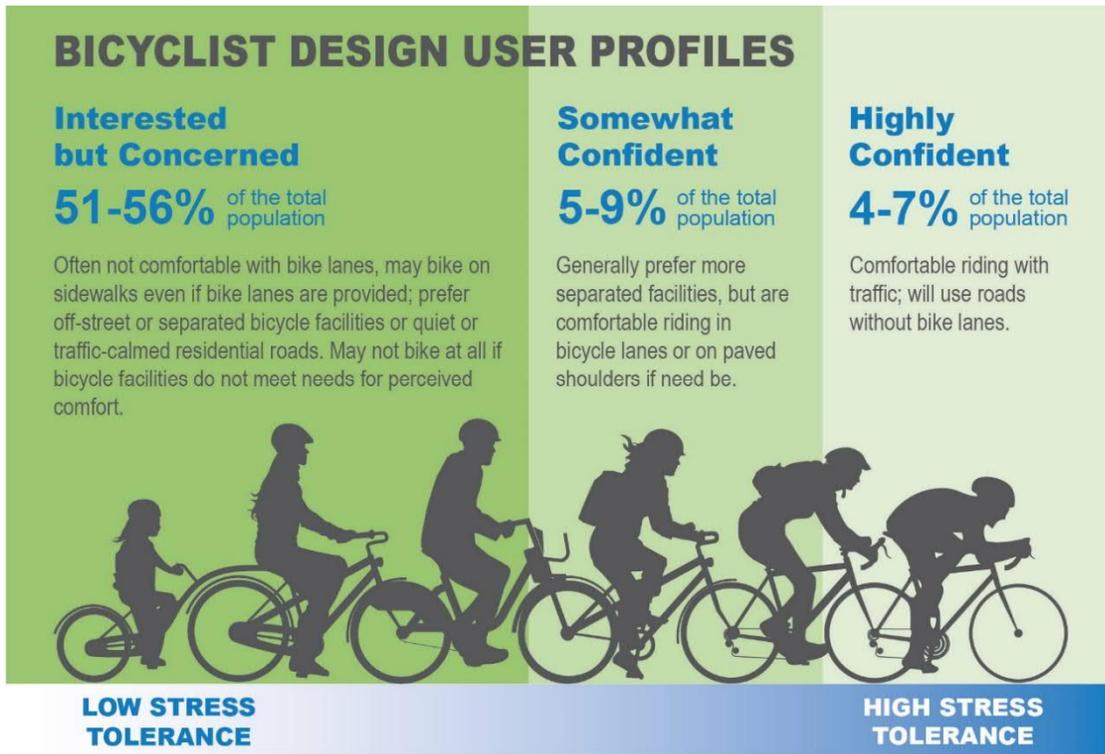
Understanding Users

Traditionally, bicycle and pedestrian facilities have been viewed as “alternative” forms of transportation, with cars, trucks, and other vehicular modes taking a more prominent role in transportation planning and design. Under this framing, bicycle facilities were designed to place bicyclists directly in or adjacent to vehicle travel lanes with little to no separation. While this approach met and continues to meet the needs of confident bicyclists, it does not attract new users or encourage a broader culture of bicycling among people of all ages and abilities. In 2012, 60 percent of people indicated that they were “interested but concerned” in bicycling and would like to ride more often.³ Over 50 percent said they were worried about being hit by a car and nearly 50 percent said they would be more likely to bicycle if physical separation were provided between motor vehicles and bicyclists.⁴ These trends still hold nearly a decade later. Similarly, pedestrians prefer to be placed further away from the curb and/or have a buffer between themselves and motor vehicle traffic. Lower stress environments result in increased numbers of people biking and walking.

³ Dill, J., McNeil, N. (2012). Four Types of Cyclists? Examining a Typology to Better Understand Bicycling Behavior and Potential. Transportation Research Board. Bicycles 2013: Planning, Design, Operations, and Infrastructure, 01514640, 129-138.

⁴ U.S. Bicycling Participation Benchmarking Study (2014).

FIGURE 9.1. BICYCLIST DESIGN USER PROFILES



9.2 Existing Conditions

Planning documents from throughout the region that incorporate bicycle and pedestrian elements were reviewed to ensure that the 2045 LRTP bicycle and pedestrian recommendations build upon planning efforts that have already been completed. In addition, existing conditions of the bicycling and walking environment were analyzed to understand what it is like to walk and bicycle in the CMCOG/COATS MPO area today. The following sections outline existing plans, infrastructure, and programming in the CMCOG/COATS MPO area.

Previous Plans

The CMCOG/COATS MPO has long recognized the importance of bicycle and pedestrian planning. Numerous planning efforts have been completed by CMCOG/COATS MPO member governments which laid the foundation for realizing each community's vision for walking and bicycling. Building upon this work is essential to enhancing the bicycle and pedestrian environment for communities throughout the region. The 2045 CMCOG/COATS MPO LRTP recognizes the importance of creating a safe, well-connected network of facilities that support bicycling and walking for both transportation and recreation.

Each of the following plans makes recommendations that benefit the overall bicycle and pedestrian network within the region:

- Kershaw County Bicycle, Pedestrian and Greenways Plan (2013)
- Walk Bike Columbia (2015)
- COATS 2040 Long Range Transportation Plan (2015)
- West Watertree Transportation Study (2017)
- West Metro Bike and Pedestrian Master Plan (2017)

- Chapin, Swansea, & Batesburg-Leesville Bike and Pedestrian Master Plan (2019)
- Lower Saluda Greenway Feasibility Study (2021)

See **Appendix C** for a comprehensive review of each plan's purpose, goals, key takeaways, and proposed projects.

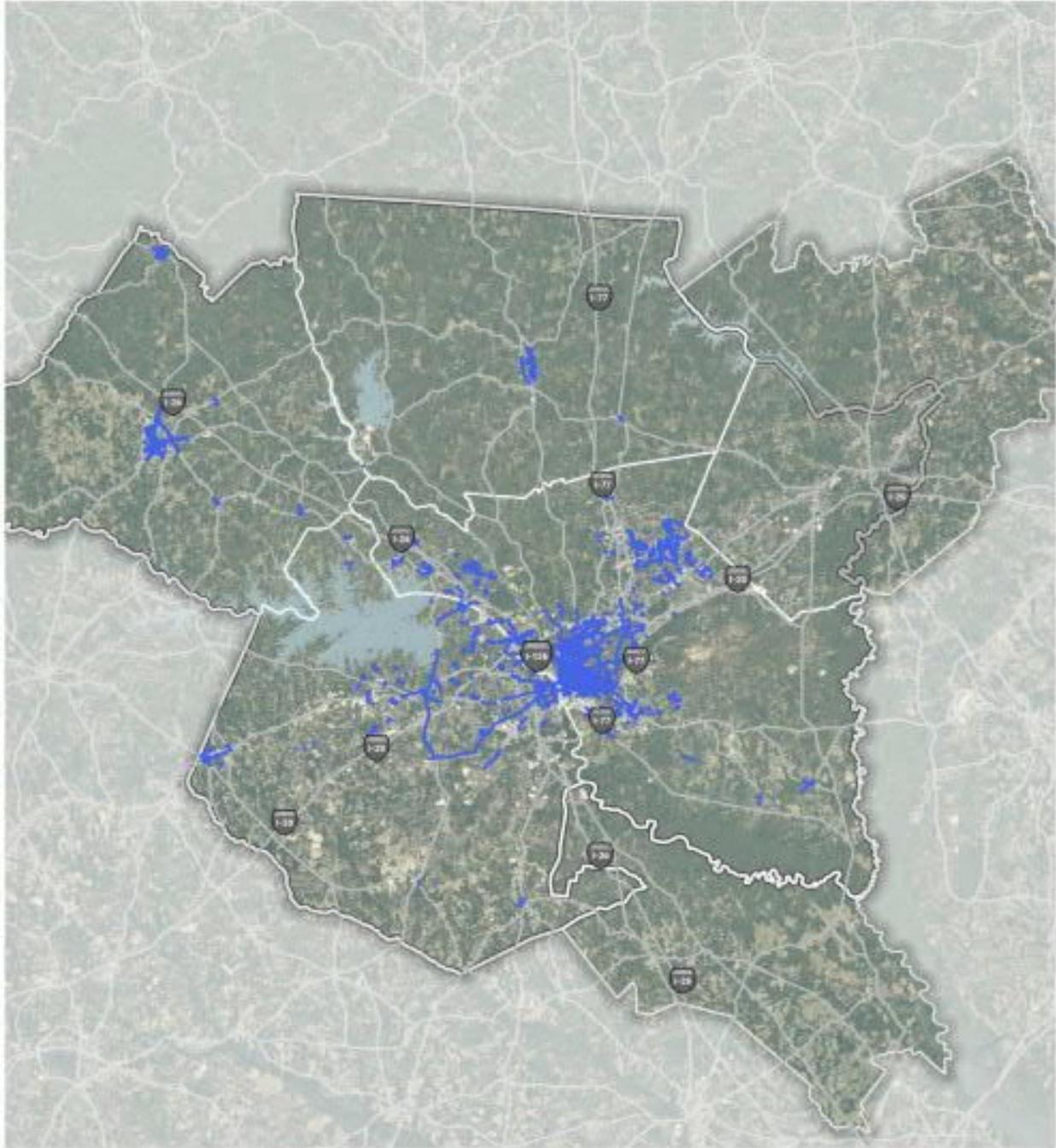
Existing Infrastructure

Sidewalks

The CMCOG/COATS MPO area has several geographies with robust sidewalk infrastructure. A well-connected sidewalk network is present in the downtown core and surrounding older neighborhoods of the cities of Columbia and West Columbia, as well as in smaller municipalities with commercial districts, such as the municipalities of Lexington, Chapin, Batesburg-Leesville, Swansea, Newberry, and Winnsboro. In addition, many neighborhoods and rural roads throughout the counties of Fairfield, Lexington, Newberry, and Richland have sidewalk present on at least one side of the road. No sidewalk data was available for Calhoun and Kershaw Counties at the time of this analysis. It should also be noted that while the existence of sidewalk is crucial to creating a pedestrian network, the quality of sidewalk (e.g., width, utility pole placement, cracking and heaving, root damage, uneven sidewalk slabs, etc.) also impacts how comfortable and convenient it is for people to walk along it. This is particularly important when considering accessibility for people using mobility devices. Data on sidewalk quality was not available at the time of this analysis but should be considered for future maintenance projects of existing sidewalk and in developing new sidewalk projects.

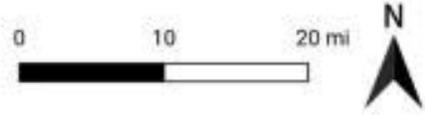
Figure 9.2 shows the location of sidewalks currently as indicated by the data available. As mentioned above no sidewalk data was available for Calhoun and Kershaw Counties but the sidewalk data from Fairfield, Lexington, Newberry, and Richland Counties was out of date and may be missing sidewalk installed over the last few years.

FIGURE 9.2. EXISTING SIDEWALKS



TOOLE
DESIGN

- Lakes and Rivers
- County Boundaries
- COATS Boundary
- Existing Sidewalk

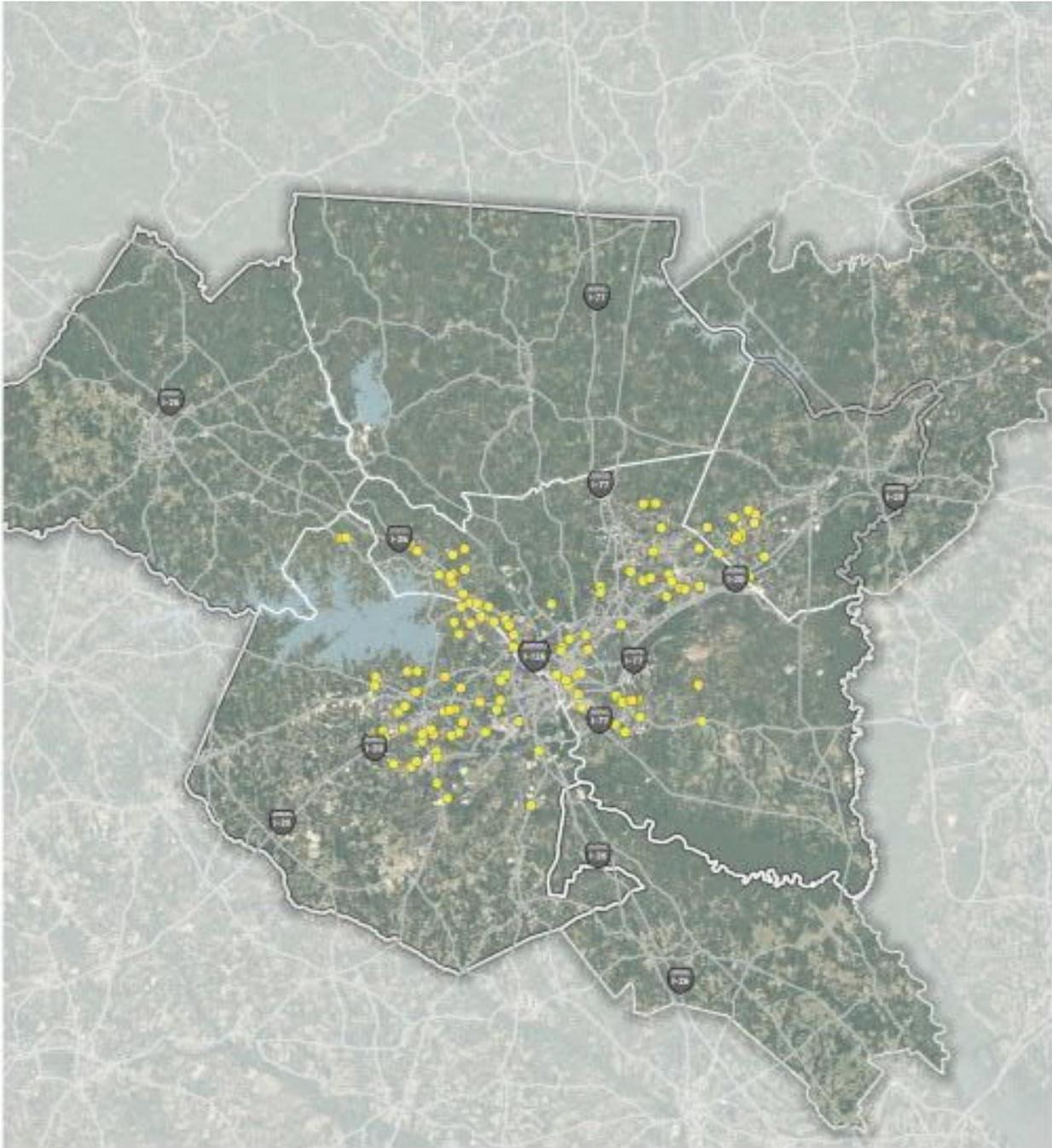


Crosswalks are another important component to the overall pedestrian network. Specific data on crosswalk locations, type, and quality (e.g., worn paint) was not available at the time of this analysis. However, in Richland County, crosswalks have been installed and/or replaced along Assembly Street, Rosewood Drive, Two Notch Road, and Blossom Street since the 2040 COATS LRTP. Many intersection improvements are planned throughout the CMCOG/COATS MPO area that aim to increase pedestrian safety and overall walkability. Figure 9.3 shows the locations of the planned intersection improvement projects.

Still, there are many physical barriers for pedestrians throughout the CMCOG/COATS MPO area. Large vehicular corridors, such as Garners Ferry Road, Fort Jackson Boulevard, Broad River Road, and North Main Street have many vehicular travel lanes and high traffic speeds and volumes, making it difficult for people walking to cross them. Other barriers include the high-frequency of curb-cuts and large parking lots fronting many businesses along commercial corridors, which decrease pedestrian comfort and create longer walking distances.

DRAFT

FIGURE 9.3. INTERSECTION IMPROVEMENT PROJECT LOCATIONS



TOOLE DESIGN

- Intersection Improvements
- COATS Boundary
- Lakes and Rivers
- County Boundaries

0 10 20 mi



Bikeways

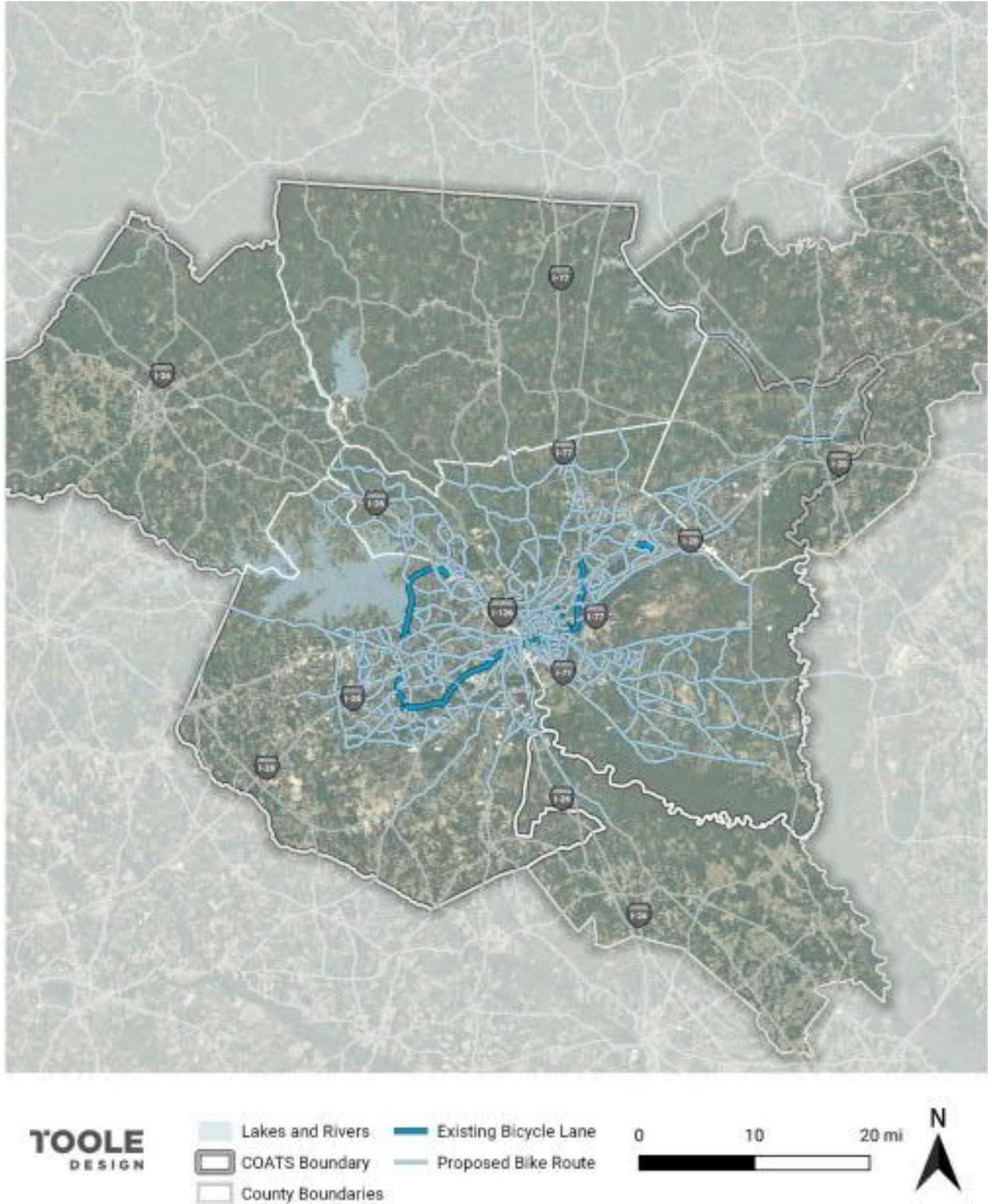
Bicycle lanes currently exist within the municipalities of Columbia, Forest Acres, West Columbia, Cayce, Springdale, Lexington, Irmo, and Camden and unincorporated areas within Richland and Lexington Counties. However, these facilities are mostly disconnected from one another, meaning bicyclists will often have to share space with vehicular traffic to reach most destinations or travel between bicycle facilities. In communities that have a grid street network, such as Downtown Columbia, there are many opportunities to establish a robust bicycle network. In addition, greenways, trails, and side paths provide another opportunity to connect bicycle facilities along higher-trafficked corridors or areas where on-street facilities may be less comfortable.

Physical barriers for bicyclists throughout the COATS area are similar to the barriers noted previously for pedestrians. Large vehicular corridors, such as US 378, US 1, Harbison Boulevard, Bower Parkway, St. Andrews Road, Elmwood Avenue, Bull Street, Gervais Street, Huger Street, Broad River Road, and Garners Ferry Road, have many travel lanes and carry many vehicles traveling at high speeds, creating an uncomfortable environment for most bicyclists. Without dedicated space for bicyclists, this type of road can also have real and perceived safety issues. Other physical barriers include the Saluda, Broad, and Congaree Rivers and the interstates, which do not have separated bicycle facilities that cross them.

In addition, on-street bicycle facilities physically separated from traffic by curbs, bollards, flexposts, or other treatments that create a vertical separation are limited throughout the CMCOG/COATS MPO area. Nearly all on-street bicycle facilities are conventional bicycle lanes striped with paint. Implementing more separated facilities will create a more comfortable environment for bicyclists of all ages and abilities.

Lastly, bicycle parking is an important amenity to support people who bicycle for all trip types, from those who bicycle to pick up groceries to those who ride to dinner with their friends. A lack of bicycle parking creates challenges for bicyclists who need a place to safely store their bicycle during their trip. While bicycle parking data was not available at the time of this analysis, the 2040 COATS LRTP noted that short- and long-term bicycle parking was limited in most areas throughout the COATS area, even within the central business districts of most municipalities, including Downtown Columbia. Figure 9.4 details the locations of existing and proposed bicycle lanes.

FIGURE 9.4. EXISTING AND PROPOSED BICYCLE FACILITIES



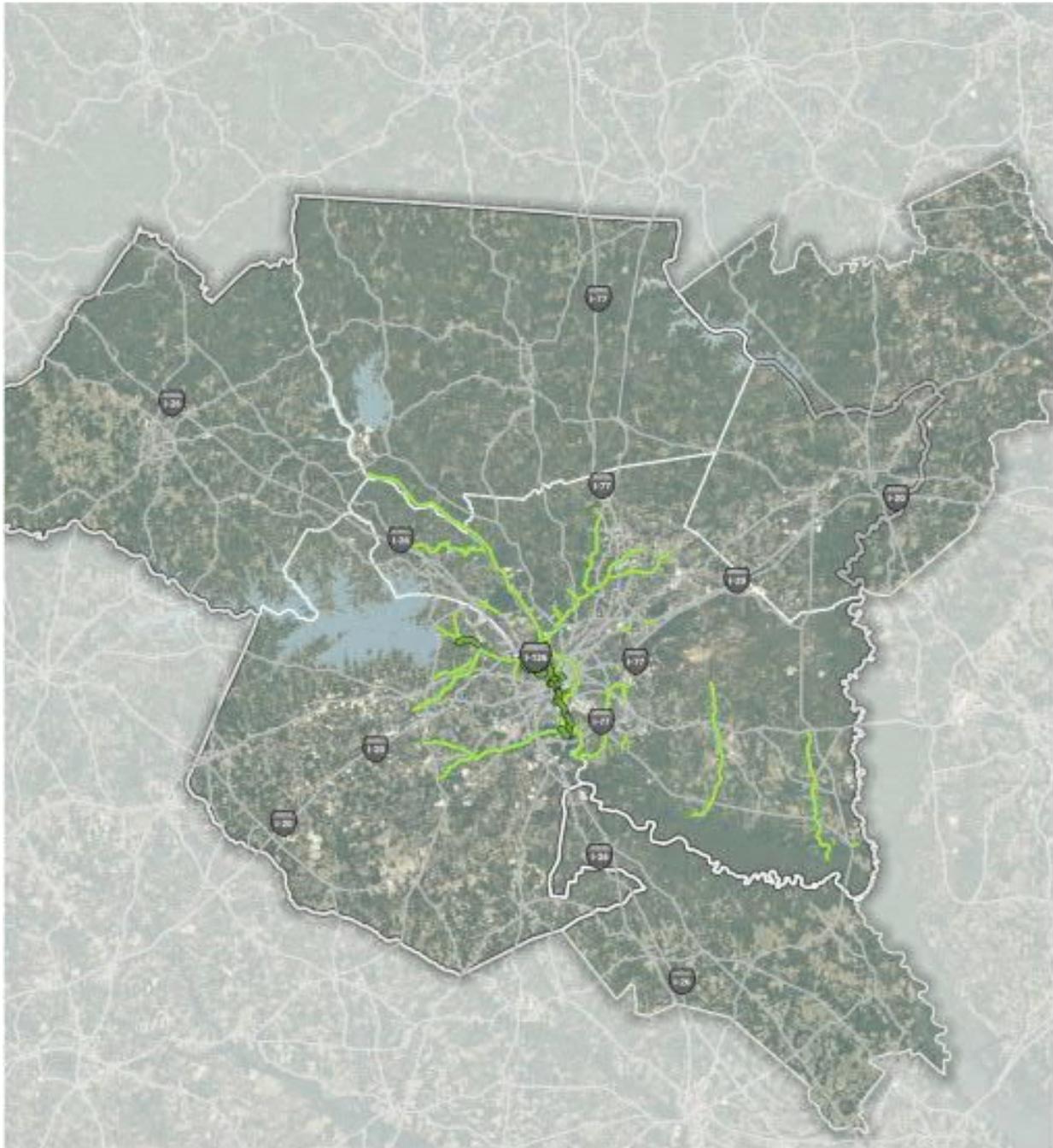
Greenways

Greenways are an important component of the regional bicycle and pedestrian network because they provide protected, paved, multi-use pathways that can accommodate both bicycle and pedestrian travel. The COATS area has the following greenways:

- Three Rivers Greenway in the City of Columbia
- Mill Villages River Link in the City of Columbia
- Harbison State Forest in the City of Columbia
- Sesquicentennial State Park in the Richland County
- Saluda Shoals Trails in unincorporated Lexington County
- Cayce River Walk in the City of Cayce
- West Columbia Riverwalk in the City of West Columbia
- Timmerman Trail in the City of Cayce
- Palmetto Trail in municipalities and unincorporated areas of the counties of Newberry, Richland, and Fairfield
- Harbison Trails in the cities of Irmo and Columbia, as well as unincorporated areas of Richland County

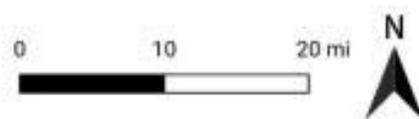
Many greenway projects are also planned throughout the COATS area, providing potential for a better-connected bicycle and pedestrian network that supports active transportation as well as recreation. Figure 9.5 highlights where existing and proposed greenways and trails are located.

FIGURE 9.5. EXISTING AND PROPOSED GREENWAYS AND TRAILS



TOOLE
DESIGN

- Lakes and Rivers
- COATS Boundary
- County Boundaries
- Existing Trail
- Proposed Greenway



Conclusion

While bicycle and pedestrian facilities exist throughout the CMCOG/COATS MPO area, there are numerous opportunities to strengthen connectivity within individual communities and throughout the region. Planning and design of bicycle and pedestrian infrastructure should build upon the existing segments and networks within the CMCOG/COATS MPO area and strive to implement facilities that attract new users while linking destinations and providing more accessibility. The planned facilities for bicycling and walking highlight the current gaps in the bicycle and pedestrian network. In many cases, the planned projects not only provide active transportation corridors within a single community, but also connect to neighboring communities and illustrate how a regional network of bikeways and walkways could exist to support regional connectivity.

Public Input

Public engagement activities during the 2045 LRTP planning process have reinforced excitement about the opportunity for more bicycle and pedestrian infrastructure and increased connectivity throughout the region's bicycle and pedestrian network. Community members were able to provide input on all modes of the existing transportation network through a survey and at virtual meetings. Comments received through both methods of outreach have been reviewed and incorporated into the 2045 LRTP.

Participant feedback illuminated the interest and concern for bicycling and walking in the CMCOG/COATS MPO area. Survey participants selected "lack of bicycle and pedestrian infrastructure" as the third greatest transportation issue the CMCOG region faces. Similarly, when survey participants were asked to rank elements of the existing transportation system from 'very good' to 'poor,' respondents were least satisfied with "bicycle and pedestrian safety" and "bicycle lanes/paths"; 87 percent and 86 percent assigned a 'fair' or 'poor' score for "bicycle and pedestrian safety" and "bicycle lanes/paths," respectively. Additionally, when asked about the most important mobility improvement strategies, "providing more bicycle lanes and sidewalks" was selected by 44 percent as one of their top strategies, making it the second highest priority among all participants. Virtual meeting attendees echoed these results, with many prioritizing the lack of bicycle and pedestrian infrastructure as a top transportation issue in the region.

Pedestrian and Bicycle Crash Analysis

To assess patterns in bicycle- and pedestrian-related crashes, South Carolina Department of Transportation (SCDOT) crash data for a five-year period (2016-2020) were analyzed. Within this timeframe, there were 905 pedestrian- or bicycle-related crashes in the COATS area. A quarter of those (231) resulted in a fatality or serious injury, nearly always to the pedestrian or bicyclist involved. The five municipalities in the Columbia metropolitan area (Columbia, West Columbia, Cayce, Springdale, and Forest Acres) contained a large portion of the crashes, with roughly 44 percent of the total crashes and 33 percent of the fatal or serious crashes. The maps below detail the locations of all pedestrian crashes (Figure 9.6) and serious injury and fatal crashes (Figure 9.7).

FIGURE 9.6. PEDESTRIAN AND BICYCLE CRASHES (2016-2020)

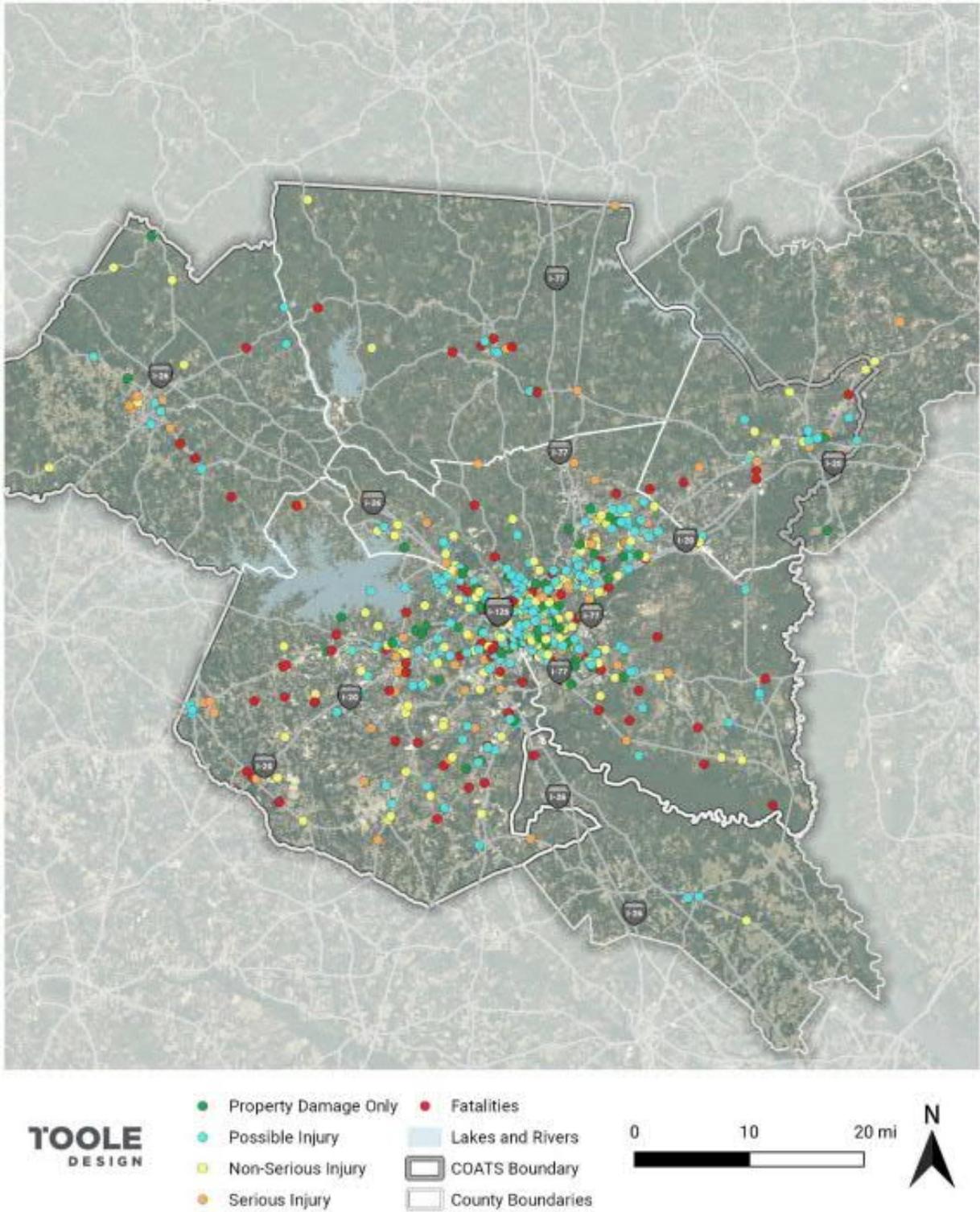
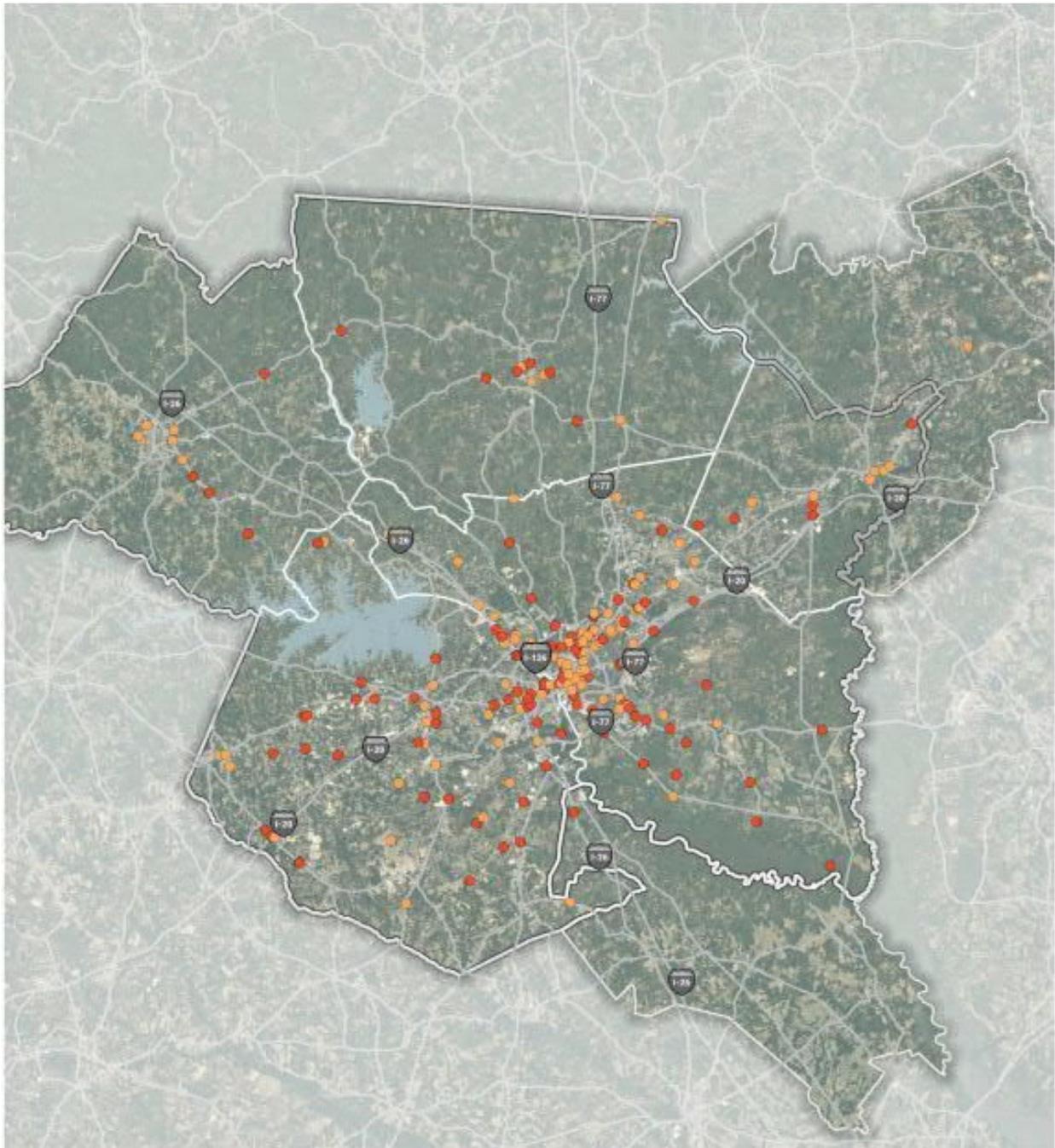


FIGURE 9.7. SERIOUS AND FATAL PEDESTRIAN AND BICYCLE CRASHES



TOOLE
DESIGN

- Serious Injury
- Fatalities
- Lakes and Rivers
- COATS Boundary
- County Boundaries

0 10 20 mi



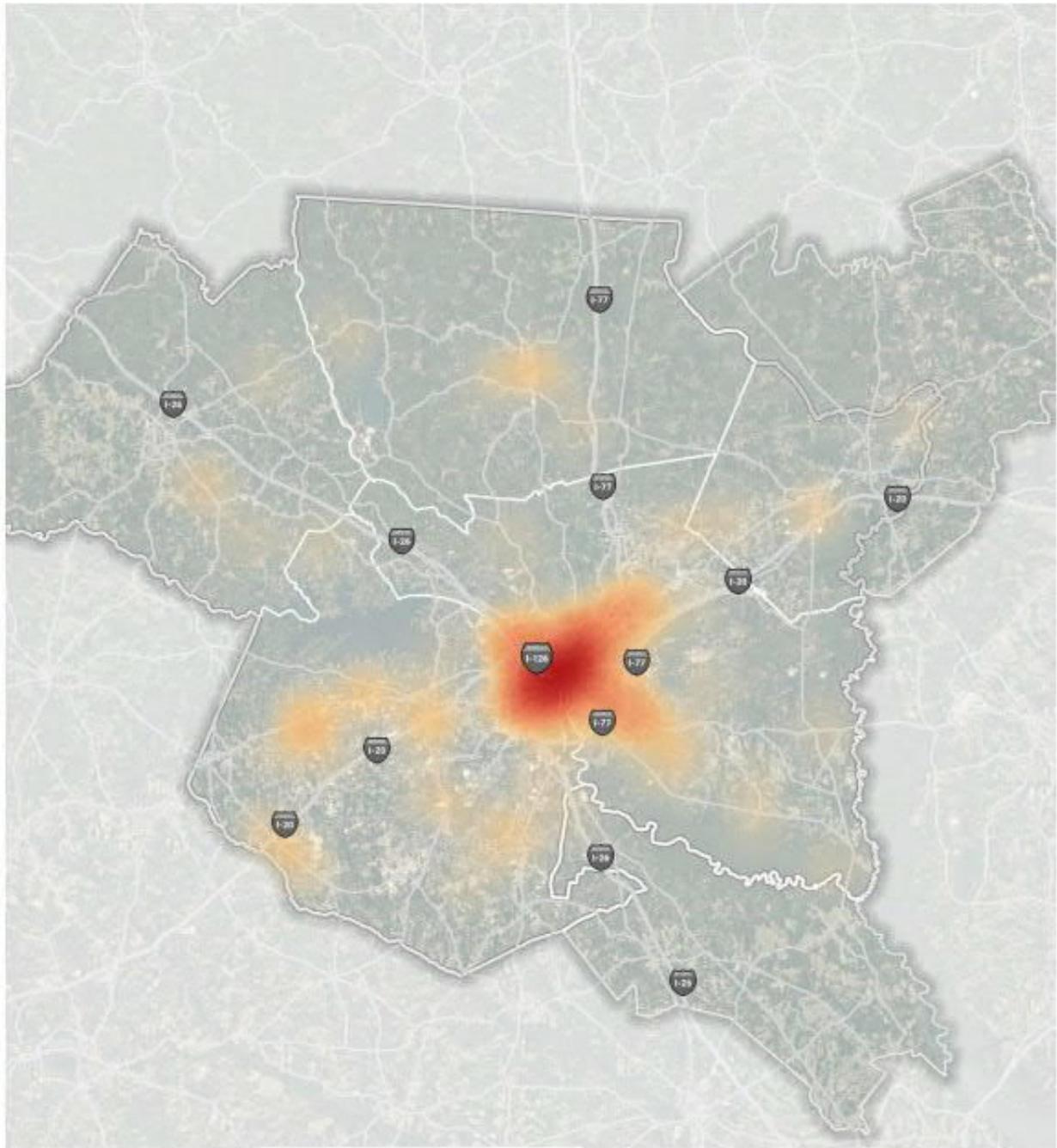
Unlike with crashes between two vehicles, crashes involving pedestrians and bicyclists often lead to some degree of injury. Table 9.1 details bicycle and pedestrian crashes throughout the CMCOG/COATS MPO area by type and severity. Between 2016 and 2020, over half of all crashes involved evident injuries (i.e., non-serious injuries, serious injuries, or fatalities). Adding in the possible injury category, which includes reported but not evident injuries, the proportion of crashes that involved some sort of injury climbs to nearly 90 percent.

TABLE 9.1. BICYCLE AND PEDESTRIAN CRASH SEVERITY IN THE CMCOG/COATS MPO AREA

Crash Severity	Pedestrian		Bicycle		Total Crashes	
	# of Crashes	% of Crashes	# of Crashes	% of Crashes	# of Crashes	% of Crashes
Fatality	96	13.8%	13	6.1%	109	12.1%
Serious Injury	103	14.8%	19	9.0%	122	13.5%
Non-Serious Injury	189	27.3%	53	25.0%	242	26.7%
Possible Injury	245	35.4%	92	43.4%	337	37.2%
No Injury	60	8.7%	35	16.5%	95	10.5%
Total Crashes	693	100%	212	100%	905	100%

Crash density clearly identifies locations where bicycle and pedestrian crashes occur with greater frequency. Figure 9.8 and Figure 9.9 show the density of serious and fatal crashes.

FIGURE 9.8. HEAT MAP OF SERIOUS AND FATAL PEDESTRIAN AND BICYCLE CRASHES



TOOLE
DESIGN

-  COATS Boundary
-  Lakes and Rivers
-  County Boundaries
-  High
- 
- 
-  Low

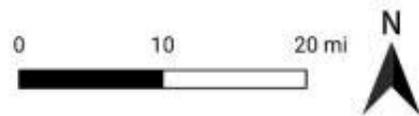
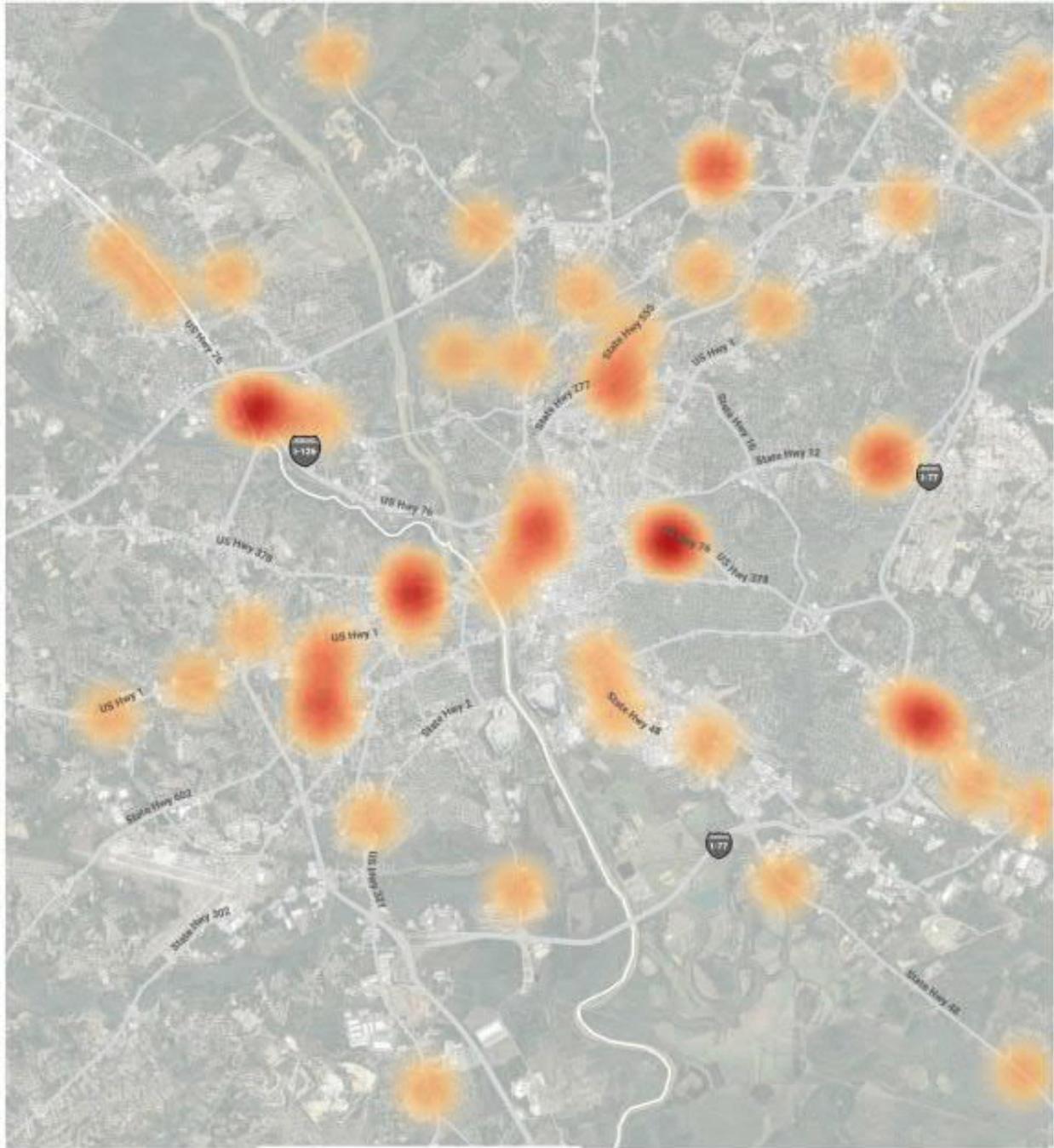


FIGURE 9.9. HEAT MAP OF SERIOUS AND FATAL PEDESTRIAN AND FATAL CRASHES (COLUMBIA AREA)



TOOLE
DESIGN

- | | |
|-------------------|-------------|
| COATS Boundary | High |
| Lakes and Rivers | Medium-High |
| County Boundaries | Medium |
| | Low |

0 2 4 mi



Intersections with a higher density of crashes in the CMCOG/COATS MPO area include:

- The Five Points area in Columbia (Devine Street, Blossom Street, Saluda Avenue, Harden Street, College Street, Santee Avenue, Green Street)
- Columbia Avenue at West Main Street in Lexington
- In unincorporated areas at:
 - » Broad River Road at Long Creek Drive, and at St. Andrews Road
 - » Two Notch Road at Alpine Road and at Decker Boulevard

9.3 Recommendations for Bicycle and Pedestrian Projects, Programs and Policies

Having a broad vision for bicycling and walking in the CMCOG/COATS MPO region is important; however, it is equally important to understand that bicycle and pedestrian projects, programs, and policies need to be implemented efficiently, in a cost-effective manner, and seeking to bring the highest number of new bicyclists and pedestrians to the network. To this end, the following sections highlight recommendations for successful implementation of bicycle and pedestrian projects, programs, and policies throughout the CMCOG region.

Benchmarking

As the CMCOG/COATS MPO region moves toward a more integrated bicycle and pedestrian network, it will be important to be able to measure the effectiveness of the efforts that are being undertaken. Benchmarking programs should be established through partnerships with member governments, non-profit organizations, and advocacy groups. One such program would be recording bicycle and pedestrian counts on regular intervals. Counts will help in quantifying the success of implemented facilities and in determining areas of demand where future facilities may be needed.

Develop Active Transportation Design Policies

CMCOG/COATS MPO should partner with member governments and the SCDOT to develop active transportation design policies. At a minimum, these four areas of design should be considered:

- Paved Shoulders – Rural roads within the CMCOG/COATS MPO area offer a unique opportunity for bicycling between communities without traveling along corridors with higher vehicle volumes. Rural roadway designs should include 4- to 8-foot paved shoulders to provide bicyclists and walkers an area of refuge from automobile traffic. Paved shoulders also provide an area where motorists may make course corrections when lane departures occur.
- Rumble Strips – While popular on rural roads for vehicular safety, rumble strips create hazards for people riding bicycles. When rumble strips are necessary, their design and placement are critical to safe bicycle travel. If rumble strips consume the entirety of the shoulder, or leave little to no shoulder passable, bicyclists are forced to ride in the travel lane, increasing the potential for automobile/bicycle conflicts. Additionally, periodic breaks in the rumble strips allow bicyclists to enter and exit the shoulder area when needed.
- Bridges – Bridges are often choke points for pedestrians and bicyclists. When bridges only provide the necessary width for vehicular travel lanes, people walking and bicycling have no safe travel path. Whenever possible, bridge replacement projects should include the continuation of shoulder

facilities (at a minimum) across their entire length. Even when these shoulders do not presently exist on the approaches, providing them on the bridge is good practice, as many years will pass before the bridge is replaced again.

- Signage – Basic signage is a very low-cost infrastructure improvement that provides increased safety and comfort to pedestrians and bicyclists. By including “Bikes May Use Full Lane” signs in roadway improvement designs, motorists become more aware of bicyclists even when bicyclists are not physically present.

[Make Active Transportation Part of Every Project](#)

Bicycle and pedestrian projects should be integrated within the overall transportation network, and it is much more efficient and cost effective to incorporate bicycle and pedestrian infrastructure into larger roadway and bridge projects. When pursuing all roadway, intersection, and bridge projects, CMCOG/COATS MPO should consider how bicyclists and pedestrians will be accommodated in a safe, convenient, and comfortable manner. Adopting a policy that requires all new projects to make accommodations for all modes of transportation should be considered throughout the CMCOG/COATS MPO area. Recently, SCDOT adopted a “Complete Streets” policy for the state-owned highway system. The policy includes funding for walking, bicycling, and transit accommodations for every project if warranted and in accordance with regional planning efforts, updating SCDOT design manuals to include multimodal accommodations, and establishing a council to facilitate ongoing improvements related to multimodal transportation across the state. Implementing a similar “Complete Streets” policy at the regional level will allow CMCOG/COATS MPO to support state-wide efforts to integrate multimodal elements into projects and ensure that active transportation is a part of every project within the CMCOG/COATS MPO.

[Prioritize Separated Facilities](#)

To meet the needs of all area residents and visitors, CMCOG/COATS MPO should prioritize bicycle and pedestrian facilities that are physically separated from motorized traffic, such as separated bicycle lanes, shared-use paths, trails, and greenways. While on-road facilities such as bike lanes are appropriate in certain situations, separated bicycle facilities provide lower stress environments that are more comfortable for people of all ages and abilities. These facilities also provide greater separation for pedestrians, making the walking environment more comfortable as well. When new location and widening projects are considered, CMCOG/COATS MPO should advocate for separated facilities over SCDOT’s standard cross sections. By providing facilities that everyone can use, especially the most vulnerable users like children and older adults, CMCOG/COATS MPO will elevate the perception of walking and bicycling, encourage more people to use the provided facilities, and meet the needs of a greater number of its constituents.

[Connect the Network](#)

Rather than having a myriad of facilities dispersed across the region, CMCOG/COATS MPO should focus its attention on connecting the overall bicycle and pedestrian network. By providing a better-connected network, facilities will be more useful for transportation trips as more destinations are reachable via walking and bicycling. This in turn will make it more plausible to use Surface Transportation Block Grant Program funding, or other federal funding for bicycle and pedestrian projects, as they will have a legitimate transportation nexus.

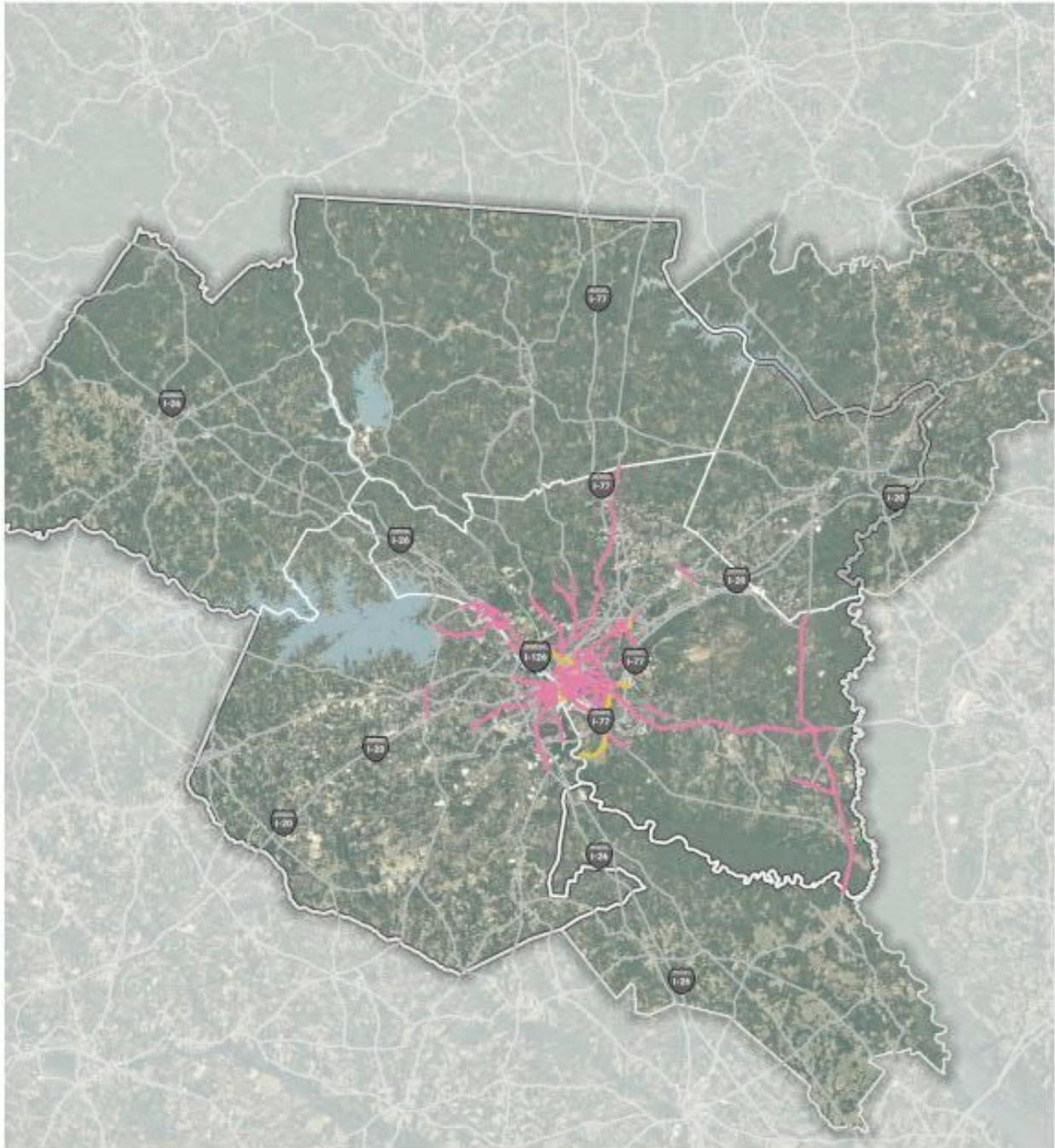
9.4 Project Prioritization

This section identifies planned bicycle and pedestrian projects in each county within the COATS area and CMCOG region. While each project aims to encourage bicycling and walking and increase the safety of pedestrians and bicyclists and, therefore, is valuable in its own right, some projects may contribute more to the goals of CMCOG/COATS MPO and its member governments. Prioritizing these projects will help guide implementation of the overall bicycle and pedestrian network through resource constraints. The prioritized project list serves as a decision-making tool when selecting bicycle and pedestrian projects for implementation. Table 9.2 presents the criteria used for project prioritization.

The planned bicycle and pedestrian projects included within this section were provided by CMCOG/COATS MPO. Based upon the data provided, there are 679 bicycle and pedestrian projects within the CMCOG/COATS MPO area; 623 are bikeway projects, 49 are greenway projects, 37 are sidewalk projects, and 6 are rural signed bike routes. Table 9.3 and Figure 9.10 present all projects that received a priority score of High and Medium-High.

DRAFT

FIGURE 9.10. HIGH AND MEDIUM HIGH PRIORITY PROJECTS



TOOLE
DESIGN

- Lakes and Rivers
- COATS Boundary
- County Boundaries
- Proposed Bike Route
- Proposed Greenway

0 10 20 mi



All projects along with their scores can be reviewed in [Appendix D](#). Also included in Appendix D is the map of all projects categorized into the five groups described below. Planned projects that were not included in the data provided by CMCOG were not included in the prioritization process and, therefore, are not reflected in the prioritized project list in Table 9.3 or Appendix D.

Once prioritized, projects were grouped into five categories based on their overall score:

- High Priority Projects received scores between 47 and 58 points
- Medium-High Priority Projects received scores between 36 to 46 points
- Medium Priority Projects received scores between 25 and 35 points
- Low-Medium Priority Projects received scores between 14 and 24 points
- Low Priority Projects received scores between 0 and 13 points

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TABLE 9.2. PRIORITIZATION CRITERIA FOR BICYCLE AND PEDESTRIAN PROJECTS

Criterion	Rationale	Scoring
Connects to Existing Bicycle and Pedestrian Network	Projects that directly touch existing facilities contribute to the expansion of the bicycle and pedestrian network. A well-connected bicycle and pedestrian network is more accessible and useful for commuting or utilitarian trip types than disconnected bicycle and pedestrian projects.	Directly touches an existing bicycle or pedestrian facility – 10 points Otherwise – 0 points
Connects to Major Destinations	Projects that connect to key destinations are more likely to be used and attract more people to walk and bicycle to that destination. Major destinations include retail and commercial centers, as well as leisure and entertainment venues.	Within ¼ mile of a major destination – 10 points Within ½ mile of a major destination – 5 points Otherwise – 0 points
Connects to Parks	Projects that connect to parks and recreation facilities provide important opportunities for people to enjoy nature and engage in physical activity.	Within ¼ mile of a park – 10 points Within ½ mile of a park – 5 points Otherwise – 0 points
Connects to Schools	Projects providing infrastructure for students, staff, and community members to walk or bicycle to school increases accessibility to schools for those without access to a vehicle and encourages active lifestyles.	Within ¼ mile of a school – 10 points Within ½ mile of a school – 5 points Otherwise – 0 points
Connects to Transit	Projects that connect to the COMET increase access to education and employment opportunities, as well as key destinations like grocery stores or civic buildings, that may be too far away to reach by walking or bicycling.	Within ¼ mile of transit stop – 10 points Within ½ mile of transit stop – 5 points Otherwise – 0 points
Connects to Area with Low Car Ownership	Households that do not have access to a personal vehicle endure more challenges when traveling to work, school, parks, or other community destinations. This criterion prioritizes areas in the CMCOG region where more households rely on transit, bicycling, and walking for trips. Census data was used to determine areas with a higher proportion of people living in a zero-car household.	Within area with high proportion of zero-car households – 10 points Within area with medium-high proportion of zero-car households – 8 points Within area with medium proportion of zero-car households – 6 points Within area with medium-low proportion of zero-car households – 4 points Within area with low proportion of zero-car households – 2 points
Provides Regional Connection	The 2045 LRTP is focused on the CMCOG region and specifically in projects that provide value to multiple communities throughout the CMCOG. For this reason, projects that cross counties received higher scores.	Within multiple counties – 10 points Within one county – 0 points
TOTAL POSSIBLE		60 points

TABLE 9.3. LIST OF PRIORITIZED BICYCLE AND PEDESTRIAN PROJECTS THAT RECEIVED SCORES OF HIGH OR MEDIUM HIGH

Rank	Type	Project Name	Counties	Connects to Schools	Connects to Major Destinations	Connects to Transit	Connects to Parks	Connects to Areas with Low Car Ownership	Connects to Existing Bicycle and Pedestrian Facilities	Provides Regional Connection	TOTAL SCORE
High	Bikeway	Two Notch	Richland	10	10	10	10	8	10	0	58
High	Bikeway	Piney Grove/St. Andrews/ Bush River	Lexington; Richland	10	0	10	10	6	10	10	56
High	Greenway	Off-Road; Along Gills Creek	Richland	10	10	10	10	6	10	0	56
High	Bikeway	Decker	Richland	10	10	10	10	4	10	0	54
High	Bikeway; Sidewalk	Broad River	Richland	10	5	10	10	6	10	0	51
High	Bikeway	Lady	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Saluda	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Hampton St	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Washington	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Lincoln St	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Pickens	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Gervais	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Pickens	Richland	10	0	10	10	10	10	0	50
High	Bikeway	Greene	Richland	10	0	10	10	10	10	0	50
High	Greenway	Off-Road; Starts at Maxcy Gregg Park and Runs North Along the R Line. Shifts West to Run Along Smith Branch Creek	Richland	10	0	10	10	10	10	0	50
High	Bikeway; Sidewalk	Harrison	Richland	10	10	10	10	10	0	0	50
High	Bikeway	Harbison	Lexington; Richland	5	10	10	0	4	10	10	49
High	Bikeway	Beltline	Richland	5	10	10	10	4	10	0	49
High	Bikeway	9th St	Lexington	10	0	10	10	8	10	0	48
High	Bikeway	State Street	Lexington	10	0	10	10	8	10	0	48
High	Bikeway	Assembly St	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Catawba	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Whaley	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Devine St	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Bluff	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Covenant	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Pickens	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Wayne	Richland	10	0	10	10	8	10	0	48
High	Bikeway	King	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Wheat St	Richland	10	0	10	10	8	10	0	48
High	Bikeway	Henderson	Richland	10	0	10	10	8	10	0	48

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
High	Bikeway	Wheat	Richland	10	0	10	10	8	10	0	48
High	Greenway	Greenway Starting in Maxcy Gregg Park Running Along Stream Corridor.	Richland	10	0	10	10	8	10	0	48
Medium - High	Bikeway	12th St	Lexington	10	0	10	10	6	10	0	46
Medium -High	Greenway	Off-Road; Adjacent to Decker Blvd, Runs Along Jackson Creek; Ends at N. Trenholm Rd	Richland	10	5	10	5	6	10	0	46
Medium -High	Bikeway	Columbia Mall	Richland	5	10	10	5	6	10	0	46
Medium -High	Bikeway	Ott	Richland	10	0	10	10	6	10	0	46
Medium -High	Bikeway	Blossom	Richland	10	0	10	10	6	10	0	46
Medium -High	Bikeway	Wheat St	Richland	10	0	10	10	6	10	0	46
Medium -High	Bikeway	Rosewood	Richland	10	0	10	10	6	10	0	46
Medium -High	Bikeway	Garners Ferry	Richland	10	0	10	10	6	10	0	46
Medium -High	Bikeway	Sumter	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Blossom	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Senate	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Sumter	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Lincoln	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Gadsden	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Bull	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Sumter	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Devine	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Park	Richland	10	0	10	5	10	10	0	45
Medium -High	Bikeway	Sumter	Richland	10	0	10	5	10	10	0	45

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
Medium-High	Bikeway	Lincoln	Richland	10	0	10	5	10	10	0	45
Medium-High	Bikeway	Pendleton	Richland	10	0	10	5	10	10	0	45
Medium-High	Bikeway	Pickens	Richland	10	0	10	5	10	10	0	45
Medium-High	Bikeway	Waccamaw Ave; Santee Ave;	Richland	5	0	10	10	10	10	0	45
Medium-High	Bikeway; Sidewalk	Columbiana	Lexington; Richland	10	10	10	0	4	0	10	44
Medium-High	Bikeway	Old Barnwell Rd	Lexington	10	0	10	10	4	10	0	44
Medium-High	Bikeway	Beltline	Richland	5	10	10	5	4	10	0	44
Medium-High	Bikeway	Devereaux	Richland	10	0	10	10	4	10	0	44
Medium-High	Bikeway	Charleston Highway	Lexington	10	0	10	5	8	10	0	43
Medium-High	Bikeway	Alexander Rd; Axtell Dr.	Lexington	5	0	10	10	8	10	0	43
Medium-High	Bikeway	Beltline	Richland	10	0	10	5	8	10	0	43
Medium-High	Bikeway; Sidewalk	Assembly	Richland	10	0	10	5	8	10	0	43
Medium-High	Bikeway	Sumter	Richland	10	0	10	5	8	10	0	43
Medium-High	Bikeway	Craig	Richland	10	0	10	5	8	10	0	43
Medium-High	Greenway	Off-Street; Starts at Anthony Ave And River Dr Intersection.	Richland	10	0	10	5	8	10	0	43
Medium-High	Bikeway	Olympia	Richland	10	0	5	10	8	10	0	43
Medium-High	Bikeway	Whaley	Richland	5	0	10	10	8	10	0	43
Medium-High	Bikeway	State Hwy 35	Lexington	10	0	10	10	2	10	0	42
Medium-High	Bikeway	Piney Grove	Lexington; Richland	10	0	10	5	6	0	10	41
Medium-High	Bikeway	Charleston Hwy And Knox Abbott Dr	Lexington	10	0	10	5	6	10	0	41
Medium-High	Bikeway	Oneil	Richland	5	5	10	5	6	10	0	41
Medium-High	Bikeway	Piney Woods	Richland	5	0	10	10	6	10	0	41
Medium-High	Bikeway	Trenholm	Richland	5	0	10	10	6	10	0	41

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
Medium-High	Bikeway	Trenholm	Richland	10	5	10	0	6	10	0	41
Medium-High	Bikeway	Rosewood	Richland	10	5	10	0	6	10	0	41
Medium-High	Bikeway	Parklane	Richland	10	5	10	0	6	10	0	41
Medium-High	Bikeway	Trenholm	Richland	10	5	10	0	6	10	0	41
Medium-High	Bikeway	Garners Ferry	Richland	10	10	10	5	6	0	0	41
Medium-High	Bikeway	Columbia Mall	Richland	10	10	10	5	6	0	0	41
Medium-High	Bikeway	Wayne	Richland	5	0	5	10	10	10	0	40
Medium-High	Bikeway	Williams	Richland	0	0	10	10	10	10	0	40
Medium-High	Bikeway	Greene	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	Pendleton	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	Main	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	Wheat	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	College	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	Sumter	Richland	10	0	10	0	10	10	0	40
Medium-High	Sidewalk	Assembly St Ph I	Richland	10	0	10	0	10	10	0	40
Medium-High	Bikeway	Beltline	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	College	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Gibbes	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Elmwood	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Main	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Harden	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Pickens	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Park	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Barnwell	Richland	10	0	10	10	10	0	0	40

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
Medium-High	Bikeway	Duke	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Main	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Oak	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Barhamville	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Pickens	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Gregg	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Chestnut	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Monticello	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Slighs	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Pickens	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Calhoun	Richland	10	0	10	10	10	0	0	40
Medium-High	Bikeway	Lake Murray	Lexington; Richland	5	0	10	10	4	0	10	39
Medium-High	Bikeway	Heathwood	Richland	10	0	10	5	4	10	0	39
Medium-High	Bikeway	Kilbourne	Richland	10	0	10	5	4	10	0	39
Medium-High	Bikeway	Datura	Richland	10	0	10	5	4	10	0	39
Medium-High	Bikeway	Beltline	Richland	10	0	10	5	4	10	0	39
Medium-High	Bikeway	Beltline	Richland	5	10	10	10	4	0	0	39
Medium-High	Bikeway	Burning Tree	Lexington; Richland	10	0	10	0	8	0	10	38
Medium-High	Bikeway	Browning	Lexington; Richland	10	0	10	0	8	0	10	38
Medium-High	Bikeway	South Lake Dr	Lexington	10	0	0	10	8	10	0	38
Medium-High	Bikeway	Sunset Blvd	Lexington	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Charleston Highway and Center Street	Lexington	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Augusta Rd (Meeting St)	Lexington	10	0	10	10	8	0	0	38
Medium-High	Bikeway	B Ave	Lexington	10	0	10	10	8	0	0	38

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
Medium-High	Bikeway	Harden	Richland	5	0	10	5	8	10	0	38
Medium-High	Greenway	Off-Road; Runs Along Utility Corridor; Starts at Riverfront Park; Ends at Granby Park	Richland	0	0	10	10	8	10	0	38
Medium-High	Greenway	Garner Lane	Richland	5	5	10	10	8	0	0	38
Medium-High	Bikeway	Pickens	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Fairfield	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Chester	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Pendleton St; Tree St	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Jim Hamilton	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Main	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Woodrow	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Senate	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Monticello	Richland	10	0	10	10	8	0	0	38
Medium-High	Bike Route	Main St SC 764	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Park	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Wayne	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway; Sidewalk	Bluff	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Rice	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Park	Richland	10	0	10	10	8	0	0	38
Medium-High	Bikeway	Forest	Richland	5	0	10	10	2	10	0	37
Medium-High	Bikeway	Forest Lake Place	Richland	5	0	10	10	2	10	0	37
Medium-High	Bikeway; Sidewalk	Clemson	Richland	10	10	10	5	2	0	0	37
Medium-High	Bikeway	Charleston Hwy	Lexington	10	0	10	10	6	0	0	36

Rank	Type	Project Name	Counties	Schools	Major Destinations	Transit	Parks	Areas with Low Car Ownership	Existing Bicycle and Pedestrian Facilities	Provides Regional	TOTAL SCORE
Medium-High	Bikeway	Arcadia Lakes	Richland	5	0	10	5	6	10	0	36
Medium-High	Bikeway	Shakespeare	Richland	10	5	10	5	6	0	0	36
Medium-High	Bikeway	Columbia Mall	Richland	5	10	10	5	6	0	0	36
Medium-High	Bikeway	Caughman	Richland	10	0	10	10	6	0	0	36
Medium-High	Bikeway	Ott	Richland	10	0	10	10	6	0	0	36
Medium-High	Bikeway	Crane Church	Richland	10	0	10	10	6	0	0	36
Medium-High	Bikeway	Bethel Church	Richland	10	0	10	10	6	0	0	36
Medium-High	Bikeway	Bush River	Richland	10	10	10	0	6	0	0	36
Medium-High	Bikeway	Columbia Mall	Richland	10	10	10	0	6	0	0	36
Medium-High	Bikeway	Columbia Mall	Richland	10	10	10	0	6	0	0	36
Medium-High	Bikeway	Columbia Mall	Richland	10	10	10	0	6	0	0	36

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Chapter 10 Congestion Management Process

10.1 Introduction

All metropolitan areas with a population over 200,000, known as Transportation Management Areas (TMAs) are required by federal regulations (23 CFR 450.320) to adopt a formal Congestion Management Process (CMP) that provides for the safe and effective integrated management and operation of the multimodal transportation system through performance monitoring and the use of travel demand reduction and operational management strategies. The CMP is an integral component of the metropolitan transportation planning process as it helps to identify areas with high congestion (as a complement to the travel demand modeling process) and recommends appropriate mitigation strategies that manage travel demand, reduce single occupancy vehicle (SOV) usage, and improve travel conditions without having to add roadway capacity. When capacity improvement projects are warranted, the CMP provides recommendations for facilitating future travel demand management strategies and operational improvements that will help maintain the functional integrity and safety of the roadway once additional travel lanes are added. Per federal regulations, the congestion management process should include the following activities:

- Development of congestion management objectives
- Establishment of measures of multimodal transportation system performance
- Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion
- Identification of congestion management strategies
- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy
- Evaluation of the effectiveness of implemented strategies

A successful CMP offers many benefits to the regional transportation system. Congestion concerns inevitably tie into community objectives regarding transit use, livability, and land use. When identifying goals and actions to address regional congestion, other planning goals should be considered as well in order to create one unified and efficient approach, thereby helping to ensure that the region's transportation investments support the desired vision of the community. The CMP is therefore not intended to be a standalone process, but instead an integral part of a larger overall planning process. Specific benefits of the CMP are:

- A structured process for analyzing congestion issues
- An objective-driven, performance-based approach
- Increased collaboration and coordination
- More effective resource allocation
- Linkage to project development and environmental review

10.2 CMP Process Model

To assist MPOs with CMP regulatory compliance, FHWA developed a CMP model based on implementing the following actions:

- Develop regional objectives for congestion management

- Define CMP network
- Develop multimodal performance measures
- Collect data/ monitor system performance
- Analyze congestion problems and needs
- Identify and assess strategies
- Program and implement strategies
- Evaluate strategy effectiveness

10.3 Regional Congestion Management Objectives

Regional objectives define what the COATS MPO hopes to achieve through the Congestion Management Process. This may include broader regional goals consistent with those defined as part of the overall LRTP, as well as more specific congestion management-oriented objectives that help to achieve regional goals. The COATS MPO therefore hopes to enhance regional mobility, increase transportation accessibility, and maintain existing infrastructure in a state-of-good repair by developing and implementing strategies that mitigate congestion through travel demand management, operational improvements, modal connectivity, land use compatibility, and where necessary, through capacity improvement projects.

10.4 Regional CMP Network

The geographic boundary of application for the CMP is consistent with the 2020 COATS MPO boundary, outlined in Chapter 1. The defined CMP road network is that which contains real-time traffic data that is readily available through the National Performance Management Research Data Set (NPMRDS). The corridors analyzed as part of the CMP are outlined in Table 10.1.

TABLE 10.1. REGIONAL CMP NETWORK CORRIDORS

Corridor	Corridor
Bluff Road	SC-215
Clemson Road	SC-277
Forest Drive	SC-302
Huger Street	US-1
I-20	US-21
I-26	US-21 Connector
I-77	US-76
John N. Hardee Expressway	US-176
Killian Road	US-321
Olympia Avenue	US-378
SC-6	US-521
SC-12	US-601
SC-34	Wayne Street
SC-48	Whaley Street
SC-72	

10.5 Regional CMP Performance Measures

Performance measures are used in the CMP to characterize current and future travel conditions, track progress toward meeting regional objectives, identify locations of congestion, assess the effectiveness of congestion mitigation strategies, and to communicate system performance. A wide range of performance measures are available for measuring and monitoring system performance. The COATS MPO selected a number of local and regional performance measures that are commonly used, relatively easy to communicate, and make use of readily available data sources. These performance measures include:

- Volume-to-Capacity (V/C) or Level of Service (LOS) Based Measures – Comparison of observed and estimated traffic volumes to planning level roadway design capacities. This measure uses SCDOT Average Annual Daily Traffic (AADT) counts and COATS updated travel demand model output. Regional and system level performance goals include reducing the number or share of road miles operating above V/C ration 1.15 or operating at a LOS E or F.
- Travel Time Index (TTI) Measures – The TTI compares peak-period travel times to free flow travel times, illustrating both the duration and intensity of congestion on a corridor. This measure uses real-time and archived speed data available through various data sources (such as NPMRDS). Regional and system level performance goals include reducing total excess delay time and the number or share of roads experiencing a comparatively high TTI.
- Congestion Index (CI) – The CI is the ration of the actual travel speed to the free flow travel speed. This measure uses real-time and archived speed data available through various data sources (such as NPMRDS). Regional and system level performance goals include reducing the number or share of congested road miles.
- Transit Ridership – Analysis of current and historic transit ridership data for transit routes adjacent to congested corridors. This measure will rely on data reported in the National Transit Database (NTD) and ridership information provided by The COMET. Regional and system level performance goals include increasing transit ridership on certain routes and reducing crowding via increased frequencies.
- Transit On-Time Performance – Analysis of on-time performance for certain transit routes. This measure will rely on data reported in the NTD and ridership information provided by The COMET. Regional and system level performance goals include increasing the percentage of buses arriving on-time.
- Bike and Pedestrian Amenities – Congested corridors will be assessed in terms of the percentage of the roadway with access to sidewalks, crosswalks, bike lanes, multi-use pathways, transit stops, and regional activity centers. This measure uses various data sources and GIS databases. Regional and system level performance goals include increasing access to bike, pedestrian, and transit facilities along congested corridors.
- Land Use Measures – Land use and transportation are very closely inter-connected. Land use measures look at ways in which land use policies and regulations can be updated to reflect the ability to reduce the number of trips made and less of a reliance on automobiles. This measure would use various GIS databases and zoning codes. Regional and system level performance goals include increasing mixed-use zoning along congested corridors and accommodating multi-modal transportation options and amenities.

10.6 Collect CMP Data/ Monitor System Performance

NPMRDS data will be utilized to collect data and monitor system performance. NPMRDS data contains field-observed travel time and speed data collected anonymously from a fleet of probe vehicles equipped with mobile devices. Using time and location information from probe vehicles, NPMRDS generates speed and travel time data aggregated in 5-minute, 15-minute, or 1-hour codes.

NPMRDS data is populated monthly for the previous month. For the purposes of analyzing what real-time traffic was like under normal commuting patterns, historical data was taken from 2019 to analyze conditions in a pre-Covid pandemic environment.

In the future, if additional subscriptions to real-time traffic data are available, these sources can be used to supplement NPMRDS.

10.7 Analyze Congestion Problems and Needs

Once collected, raw data is analyzed and translated into meaningful measures of performance. The purpose of this process is to identify specific locations with congestion problems and identify the sources of these problems.

10.8 Identify and Assess CMP Strategies

Once congestion is identified, the next step is to determine which strategies and types of infrastructure modifications have the most impact on relieving congestion. A primary component of the CMP involves developing a toolbox of mitigation strategies that are consistent with federal guidelines and can be applied to the identified congested corridors and intersections. The toolbox is intended to provide a hierarchical methodology for congestion mitigation that begins with the most cost effective and efficient strategies and ends with the most cost prohibitive and intrusive strategies. A wide range of strategies are available and can be broadly grouped into the following categories:

- Demand Management Strategies – Travel Demand Management (TDM), nonautomotive travel modes, and land use management can all help to provide travelers with more options and reduce the number of vehicles or trips during congested periods. These include strategies that substitute communication for travel, or encourage regional cooperation to change development patterns and/or reduce sprawl. Alternatives include programs that encourage transit use and ridesharing, pedestrian and bicycle improvements, congestion pricing strategies, parking management, flexible work programs, land use policies that encourage more compact, mixed use, and transit-supportive development.
- Traffic Operations Strategies – These strategies focus on getting more out of what we have. Rather than building new infrastructure, many transportation agencies have embraced strategies that deal with operation of the existing network of roads. Many of these operations-based strategies are supported by the use of enhanced technologies or ITS. Alternatives include ramp metering, reversible travel lanes, access management, automated toll collection, shoulder transit use, High Occupancy Vehicle (HOV) and High Occupancy Toll (HOT) lanes, traffic signal optimization, geometric improvements at intersections, transit signal priority, traffic calming, incident management, and traveler information systems.
- Public Transportation Strategies – Improving transit operations, improving access to transit, and expanding transit service can help reduce the number of vehicles on the road by making transit more attractive or accessible. Alternatives include enhanced transit operations, service, and

amenities, real-time transit information, universal fare collection, transit signal priority, high-capacity transit, transit-only lanes, more frequent transit service, and improved connectivity with the bicycle and pedestrian network.

- Road Capacity Strategies – This category of strategies addresses adding more base capacity to the road network, such as adding additional lanes and building new roads, as well as redesigning specific bottlenecks to increase their capacity. Alternatives include construction of new lanes and roadways, interchange and intersection improvements, addition of turn lanes, grade separation of congested intersections, and adding truck climbing lanes at steep grades.

Table 10.2 is a Congestion Management toolbox of strategies that can be used to address congestion across the region.

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TABLE 10.2. REGIONAL CMP NETWORK CORRIDORS

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
Demand Management	Travel Demand Management	Employer-based or geography-based strategies to reduce single occupancy vehicle usage, parking demand, and peak hour congestion by providing mode choice, time choice, location choice, and route choice.	<ul style="list-style-type: none"> • Flex work or alternative work schedules • Telecommuting • Reduced fare or free transit passes • Reduced cost parking passes for carpools and vanpools • Organized vanpools • Amenities at work for bicyclists and walkers (lockers, showers, etc.) • Tax incentives for workers that use alternative forms of transportation • Trip route planning services • Awareness, education, and promotional activities • Car and bike share • Micro-mobility options 	TDM is part of the congestion management toolbox in growing urban areas or in denser communities. These strategies tend to provide incentives or disincentives to either shift travel from peak hours to off-peak hours or reduce trips all together by providing alternative mode and work options.	CMCOG and SCDOT can take the co-lead in working with major employers in the region to develop employer-based TDM strategies. The region can develop and adopt a comprehensive TDM plan and incentives. There are several Federal funding sources that can be used to implement TDM strategies.
	Land Use Planning	Regulations, policies, and plans that link land use decisions with transportation decisions.	<ul style="list-style-type: none"> • Zoning and land development regulations, zoning overlay districts • Design standards • Master plans and subarea plans • Corridor studies/ plans • Transit-Oriented Development (TOD) • Redevelopment and revitalization plans • Promote infill development 	There is an inherent link between land use and transportation. Transportation improvements follow growth in land development because of an increase in mobility needs. Likewise, denser land use development tends to occur where transportation capacity exists. Thus, the two must be coordinated, with a land use vision in sync with a transportation vision.	For localized regulations, policies, and plans, individual jurisdictions are responsible for adoption and implementation. Larger master planning and corridor planning efforts typically involve multiple jurisdictions, agencies, and stakeholders and would likely need an agency like CMCOG or COATS MPO to take the lead.

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
	Growth Management	Regulations, policies, and plans that outline type, mix, intensity, and character of allowable growth by geographic areas and the mitigation requirements of such development to reduce or mitigate growth impacts on transportation, environment, utilities, and schools.	<ul style="list-style-type: none"> • Growth management plans and ordinances • Mobility management goals and LOS standards by geographic area • Adoption of smart growth principles • Transportation Impact Fees • Local and regional land use development regulations 	This strategy is similar to the land use planning strategy, but meant more for urbanized areas with limited developable or redevelopable land. The main principle of this strategy is focused on growth management so that land development doesn't occur in sprawling, uncontrolled ways that places undue hardship on the transportation system.	State legislative acts such as Growth Management Act is desirable in order to develop consistent local growth management plans. Local jurisdictions can adopt transportation impact fees based on detailed cost-benefit analysis of the impacts of new growth on public infrastructure.
	Congestion Management	Traffic congestion monitoring and mitigation prioritization plan that identifies recurrent and non-recurrent bottlenecks.	<ul style="list-style-type: none"> • Highway real-time speed and travel time data • Intersection delay and LOS studies • Transit travel time studies • Crash studies 	FAST Act mandates development of a Congestion Management Process (CMP) by MPOs in urbanized areas of 200,000 in population. The purpose of the CMP is to monitor traffic congestion in a systematic way such that effectiveness of mitigation strategies can be evaluated over time.	The data collected for CMP is expected to guide selection of short-term mitigation strategies that are easier to implement that roadway capacity projects. Congestion mitigation projects requiring Federal funds would require justification based on CMP evaluations.
	Congestion Pricing	Use of peak-period tolls to reduce traffic congestion on roadways. The toll amount is typically defined based on local prevailing traffic and market conditions to provide monetary incentive to travelers to find alternative routes, modes, or times of day for their travel.	<ul style="list-style-type: none"> • Freeway ramp metering • Toll roads and bridges • Variable priced lanes, such as High Occupancy Toll (HOT) lanes that allow free or reduced cost access to qualifying HOVs and also provide access to single-occupant vehicles for a cost • Per-mile charges for traveling on congested roadways 	Congestion pricing tends to provide monetary disincentives to either shift travel from peak hours to off-peak hours, from congested corridors to non-congested corridors, or reduce the number of trips all together. Pricing strategies make efficient	The region can develop a strategy for toll roads and HOV lanes prior to moving into congestion pricing.

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
			<ul style="list-style-type: none"> • Fees for single occupant vehicles to enter certain congested areas 	use of the transportation system.	
	Non-Motorized Transportation	Strategies and projects that facilitate safe and enhanced use of bicycles and/or walking trips.	<ul style="list-style-type: none"> • Bicycle and pedestrian plans • Adoption of bicycle and pedestrian LOS standards • Enhanced bicycle and pedestrian facilities and amenities • Complete streets, road diet and/or traffic calming • ADA compliant sidewalks • Safe routes to school • On-road facilities and protected bikeways • Off-road trails • Awareness, educational, and promotional programs 	Non-motorized transportation facilities should be an integral part of transportation planning projects and TIP development. It has been demonstrated that a good non-motorized transportation system contributes to healthier living, lower carbon footprint, and more equitable mobility options for communities.	FAST Act allows flexibility in using Federal transportation dollars for non-motorized projects that will benefit multimodalism.
	Access Management	Regulations, policies, and plans to manage residential and commercial access to highways, major arterials, and other roadways to promote safe and efficient use of the roadway capacities.	<ul style="list-style-type: none"> • Access management guidelines by roadway functional classification • Corridor studies/ plans, corridor access management plan • Spacing standards for interchanges, traffic signals, and driveways • Roadway median treatments • Left-turn treatments • Clear sight distance • Connectivity between adjoining parcels • Turn lanes and auxiliary lanes • Shared access points/ driveways 	Access management is an indirect congestion mitigation strategy. The purpose is often preserving the available capacity of a roadway by developing access approval guidelines for developments. This strategy should be applied to those highway corridors that not only provides local access, but also provides regional mobility to through traffic.	SCDOT is the lead agency to implement access management strategies. Local jurisdictions can incorporate access management strategies into local land use development codes.

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
	Parking Management	Regulation, policies, plans, and application of technologies to improve and optimize parking access, supply, safety, utilization, and payment management.	<ul style="list-style-type: none"> • Turn restrictions/ peak time turn restrictions • Parking capacity, utilization rate studies • Variable parking payment options (i.e., kiosks, mobile pay, pre-purchase) • Real-time parking availability • Dynamic parking pricing based on demand • Parking incentives for carpool and vanpools • Shared parking incentives 	Availability of parking and hourly/ daily/ monthly parking costs at central business districts and major activity centers are an important element of how people choose their mode of transportation.	Local jurisdictions are responsible for developing a comprehensive parking policy, as well as setting minimum parking requirements in land use regulations. Jurisdictions can set prices for publicly owned lots/ ramps.
Traffic Operations	Roadway Operational Improvements	Traffic control improvements to improve traffic flow and safety along roads and highways.	<ul style="list-style-type: none"> • New traffic signal • Signal timing and coordination • Street signs and markings, wayfinding • Adaptive signal control • Intersection turn lanes • Roadway realignments • Designated truck routes • Center left turn lanes • Complete streets, road diet and/or traffic calming 	Roadway operational improvements are desired in urbanized areas and congested roads where deficiencies exist in current conditions. These projects are far less expensive than roadway capacity projects and will result in significant reduction of traffic delays or crashes along congested corridors or intersections. These are also referred to as Transportation System Management (TSM) strategies.	Roadway operational improvement projects will require lesser amount of analysis and environmental assessment due to the limited influence area. These projects are typically identified and funded through a variety of existing statewide and local transportation programs, such as safety, traffic operations, congestion management, air quality, and traffic calming. Project planning would require some coordination and cooperation among agencies and stakeholders.

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
	High-Occupancy Vehicle (HOV) System	Highway lanes with limited access reserved for exclusive use by high-occupancy vehicles (HOV) and transit buses. HOV occupancy requirements typically vary from 2 or more persons (2+) to three or more persons (3+)	<ul style="list-style-type: none"> • HOV lanes • Intersection queue jump for HOV lane • HOV-only interchange • Conversion of general purpose lane to HOV lane • Ride share services • Employer-based carpool incentives • Preferential parking for carpools 	HOV lanes have proven to be effective congestion mitigation strategies along corridors with severe recurring congestion. HOV 3+ lane is to increase the person throughput capacity of the lane and provide significant travel time advantage for carpools, vanpools, and transit.	SCDOT would need to take the lead in evaluating the need and feasibility of HOV lanes along congested freeway corridors, while CMCOG or individual jurisdictions can take the lead in defining the need for arterial HOV treatments. A system-wide approach is required to develop an effective HOV system.
	Toll Roads	Highways constructed using all or a portion of private funds and financed by collecting user tolls.	<ul style="list-style-type: none"> • Roads with toll collection • Bridges with toll collection • Electronic toll collection • Traffic surveillance system • Traffic monitoring system for dynamic, variable toll pricing 	Toll road projects are very successful in South Carolina. The toll road projects in South Carolina helped in providing mobility along key transportation corridors. With shrinking transportation funding, toll roads are increasingly considered an important element of congestion management.	Toll road financing feasibility studies should be undertaken for the targeted corridors. These projects would require design-bid-build-operate type agreements.
	Intelligent Transportation Systems (ITS)	Application of smart technology solutions to improve the operation, safety, and security of the existing multimodal transportation system.	<ul style="list-style-type: none"> • Traffic surveillance cameras • Regional ITS deployment plan • Traffic operations center • Traffic monitoring devices • Traffic signal control and coordination • Real-time traveler information • Ease of payment options • Mobility and ride sharing apps • Trip planning services • Automated and Connected vehicle technology • 511 traveler hotline 	ITS improvements can help in getting extra capacity out of and optimizing the existing transportation system. ITS solutions improve traffic operations, safety, and security, and can support information dissemination to system users and operators.	SCDOT is the lead agency to implement ITS strategies. ITS implementation will require developing a regional ITS architecture that is in line with the national ITS architecture deployment plan.

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
			<ul style="list-style-type: none"> • Communication and data management systems • Variable speed limit • Commercial Vehicle Information System Networks (CVISN) • Work zone management 		
	Incident Management	Multi-agency program to detect, respond, and clear traffic incidents and restore traffic operations to normal conditions.	<ul style="list-style-type: none"> • Roadway incident response vehicles and roadside assistance • HAZMAT vehicle response team • Traffic surveillance system • Dynamic message boards to inform motorists about incidents and traffic conditions • 511 traveler hotline • Crash investigation sites • Emergency routing 	Incident management improvements are an important element to mitigate non-recurring traffic congestion, which is a larger part of traffic congestion. The traffic delays due to crashes and incidents can be reduced significantly by developing a coordinated incident response program.	SCDOT is the lead agency to implement incident response strategies, and should involve coordination amongst multiple transportation and emergency response agencies.
Public Transit	Transit Capital Projects	Capital improvements that increase person throughput capacity across transit markets.	<ul style="list-style-type: none"> • New buses • Park-and-ride lots • Enhanced transit stations/amenities • High capacity transit (commuter rail, light rail, bus rapid transit) • On-demand transit service • Intermodal facilities 	Transit capacity enhancements are desired in metropolitan and highly urbanized areas, as well as along congested corridors, as a means to enhance regional mobility, reduce congestion, and improve air quality. These projects are capital intensive and will result in significant capacity expansion of transit services.	Transit capital improvement projects typically require Federal funding and grants. Therefore, project planning typically involves alternatives analysis, cost-benefit analysis, environmental assessment, public engagement, and capital planning. Projects eligible for “New Starts” funding include any fixed guideway system which utilizes and occupies a separate right-of-way, or

Strategy Type	Strategy	Description	Typical Project Applications	Scope and Benefits	Implementation Needs
	Transit Operational Improvements	Operational improvements to improve travel time and reliability of transit services.	<ul style="list-style-type: none"> • Transit signal priority • Automatic Vehicle Location (AVL) Technology • Automatic Passenger Count (APC) technology • Express transit service • Coordinated payment system, smart fare card • Transit priority at intersections (queue jumps, pre-signal queue jump) • Transit only lanes • Increased transit frequency • Expanded transit service 	Transit operational improvements are typically targeted to increase ridership and travel time reliability of transit service through use of technological solutions, scheduling solutions, transit priority, or small scale roadway improvements.	<p>rail line for the exclusive use of mass transit.</p> <p>Transit operational improvements would typically need to be implemented based on detailed feasibility, environmental assessment, design, and contractual agreements between transit providers and roadway owners.</p>
Roadway Capacity	Roadway Capacity Improvements	Physical capital-intensive improvements that increase vehicle throughput capacity along roads and highways	<ul style="list-style-type: none"> • Roadway widening • Additional lanes • Providing new or additional turn lanes • New roadways • Grade-separation of congested intersections • Interchange configuration upgrade • Truck climbing lanes 	Roadway capacity enhancements are desired in high growth transitional areas to support forecasted growth in regional population and employment, in isolated areas with major development or redevelopment proposals, and along roadway corridors that carries interstate, inter-regional, and regional traffic. These projects are capital-intensive and will result in additional roadway capacity.	Roadway capacity expansion projects will typically require feasibility analysis, alternatives analysis, environmental assessment, funding priority, and/or public outreach. Project planning would require significant coordination and cooperation among multiple agencies and stakeholders Project utilizing Federal funds will also need to follow Federal guidelines, such as NEPA.

10.9 Implement Strategies and Evaluate Effectiveness

As part of the MPO ongoing planning processes, information about the best ways to minimize increases in single occupant vehicle usage and maintain a strong transportation network while limiting roadway expansions will be used to help select the types of projects to be included in future editions of the LRTP and TIP. This information will primarily be learned through data compiled in the regularly produces CMP Performance Reports as well as through travel demand modeling work to analyze impacts of various changes to the MPO's transportation network. The CMP will examine the effectiveness of CMP strategies at both the regional and corridor level by continuously applying the performance measures adopted as a part of this planning process.

10.10 Roadway Congestion Analysis

The defined CMP road network was established through an iterative process that considered a number of factors, including corridors analyzed in previous CMPs, an examination of base and horizon year travel demand model output, CMCOG staff and stakeholder input, and the availability of real-time data that is readily available through the National Performance Management Research Data Set (NPMRDS).

The selected roadway network consists of federal aid eligible roadways that are functionally classified by SCDOT as primary arterials, minor arterials, major collectors, and minor collectors. Interstates are not included as a part of the COATS MPO CMP network because all performance monitoring, analysis, and funding for Interstate improvements and congestion management projects are programmed and implemented directly by SCDOT. Local roads are also not included in the CMP network. Due to the availability of data, transit routes and bike/ ped facilities were not included as part of the CMP network and are included in the CMP in terms of their ability to contribute to the effectiveness of travel demand management strategies along adjacent congested roadway corridors.

The COATS MPO hopes to enhance regional mobility, increase transportation accessibility, and maintain existing infrastructure in a state-of-good repair by developing and implementing strategies that mitigate congestion through travel demand management, operational improvements, modal connectivity, land use compatibility, and where necessary, through capacity improvement projects. Primary performance measures adopted by the COATS MPO to analyze corridor system performance include Volume to Capacity ration and Travel Time Index measures.

Volume to capacity (V/C) ratio consists of a comparison of observed and estimated traffic volumes to planning level roadway design capacities. This measure uses the updated travel demand model to determine V/C ratio. For purposes of this CMP, a V/C ration of 0.9 or above represents potentially congested conditions. Each corridor has data control points that are broken out by Traffic Message Center (TMC) to assess various portions of a corridor.

The Travel Time Index relies on real-time and archived speed data provided through the available NPMRDS. The Travel Time Index compares the ratio of 95th percentile peak-period travel time to free flow travel time by hour of day, as taken from an average 24-hour period of Tuesday, Wednesday, and Thursday, illustrating both the duration and intensity of congestion on a corridor. For purposes of this CMP, a TTI value of 1.5 or above represents potentially congested conditions. The current CMP uses real-time and archived speed data available through the available NPMRDS.

Based on the overall assessment for the COATS CMP network, the following findings are derived:

- There are 25 TMC's that have a V/C ratio of 0.9 or greater, indicating a potential for congestion
- There are 356 TMC's that have a TTI of 1.5 or greater, indicating a potential for congestion
- There are 12 TMC's that have both a V/C ratio of 0.9 or greater and have a TTI of 1.5 or greater.

These areas indicate the most likely congested areas, and are as follows:

- Clemson Road NB/WB at Longtown Road
- SC-12 NB at US 176/ US 21/ US 321/ Huger Street
- US 1 NB at I-26
- US 1 SB at SC-6/ Lake Drive
- US 1 NB at I-20
- US 1 SB at I-20
- US 76 EB at SC-48/ Assembly Street
- US 176 WB at SC-16/ Sunset Drive
- US 321 NB at US 76. Elmwood Avenue
- US 378 EB at I-26
- US 378 EB at @C-6/ N. Lake Drive
- US 378 EB at SC-6

The full results of the roadway congestion analysis are outlined in the Congestion Management Plan.

Chapter 11 Freight

11.1 Overview and Existing Regional Plans

The Central Midlands region of South Carolina continues to be a transportation hub for freight. Freight travels to, through, and from the Central Midlands region and is a critical element to the region's business and industrial success. For many industries, economic competitiveness is defined by the ability of goods and services to be transported in an on-time-manner or next day delivery. A well-functioning commercial transport system brings modern quality-of-life benefits that consumers value. In the current cost-effective business environment, time sensitive transportation services are increasingly a strategy for gaining a competitive advantage in manufacturing and service-based industries. Global integration of the U.S. economy has grown at a rapid pace as domestic manufacturers now shop the world for components and subassemblies to manufacturing processes. Advances in technology and management practices are also allowing U.S. firms to develop strategies that enable customized products for mass market distribution.

Industries are intent on minimizing costs, focusing on ways to manage supply chains effectively and place a premium on logistics and transportation. Logistics is the art of moving the right material, to the right place, at the right time, at the least cost. For some industries, logistics are approximately 40% - 60% of the overall costs of a supply chain. The major costs of logistics are broken down into transportation and warehousing, with transportation serving as the highest logistics cost. Transportation is a variable cost, which can be managed to reduce overall costs. All industries rely on the nation's highways, rail, port, and air freight facilities to move their cargo.

However, freight is also viewed as a threat to commute times and safety. Several projects planned for our region will benefit both groups and reduce this conflict, for example SCDOT is currently adding travel lanes to sections of I-20 between US 378 and Longs Pond Road, widening I-26 from Columbia to Orangeburg, and widening 12 miles of I-26 from Little Mountain to Irmo. Projects such as modernizing several interchanges, raising low clearance bridges, and replacing several aging bridges would also improve freight safety. A major redesign of "Malfunction Junction" [I-20 at I-26/I-126] has recently been funded by SCDOT and SC State Infrastructure Bank and should reduce truck rollovers and traffic conflicts of trucks traversing through this congested and high volume juncture. The multimodal approach to addressing long term strategies for the region's transportation network will enable commercial and freight transportation to continue to improve and develop.

The CMOG Regional Freight Mobility Plan (2017) was the first regional freight study in South Carolina, and was developed to align with other regional and state planning-level documents and to provide an assessment of the current freight infrastructure. The plan identified specific projects and policies designed to support current and future freight movement and investigated the current freight system's needs and issues. This plan, combined with the LRTP and other regional and state planning documents, will help to prioritize projects for funding opportunities. Information provided in this chapter is primarily from existing adopted plans or studies, such as the Regional Freight Mobility Plan (2017) and the South Carolina DOT Statewide Freight Plan Update (2020).

industrial park located at Exit 190 off I-95 in Dillon. This adjacency to I-95 provides quick access to a critical trade artery for the entire US East Coast. The Mega Site is within 160 miles of the Port of Charleston, 89 miles of the Port of Georgetown, and 85 miles of the Port of Wilmington, NC. Overnight rail service to and from Charleston will be provided by CSX. SCPA expects the new inland port to handle about 45,000 containers per year initially. In addition to the inland ports, Palmetto Railways plans to construct a new intermodal container transfer facility, the Naval Base Intermodal Facility (NBIF) on a 118-acre site at the former Charleston Naval Complex. This new facility will provide better intermodal connectivity between the Port of Charleston and the state and national rail networks. It will include dual access by both NS and CSX, offering shippers maximum flexibility and lower transportation rates. The NBIF is expected to begin construction in 2020 and will increase the Port's intermodal capacity by 50%.

Roadways

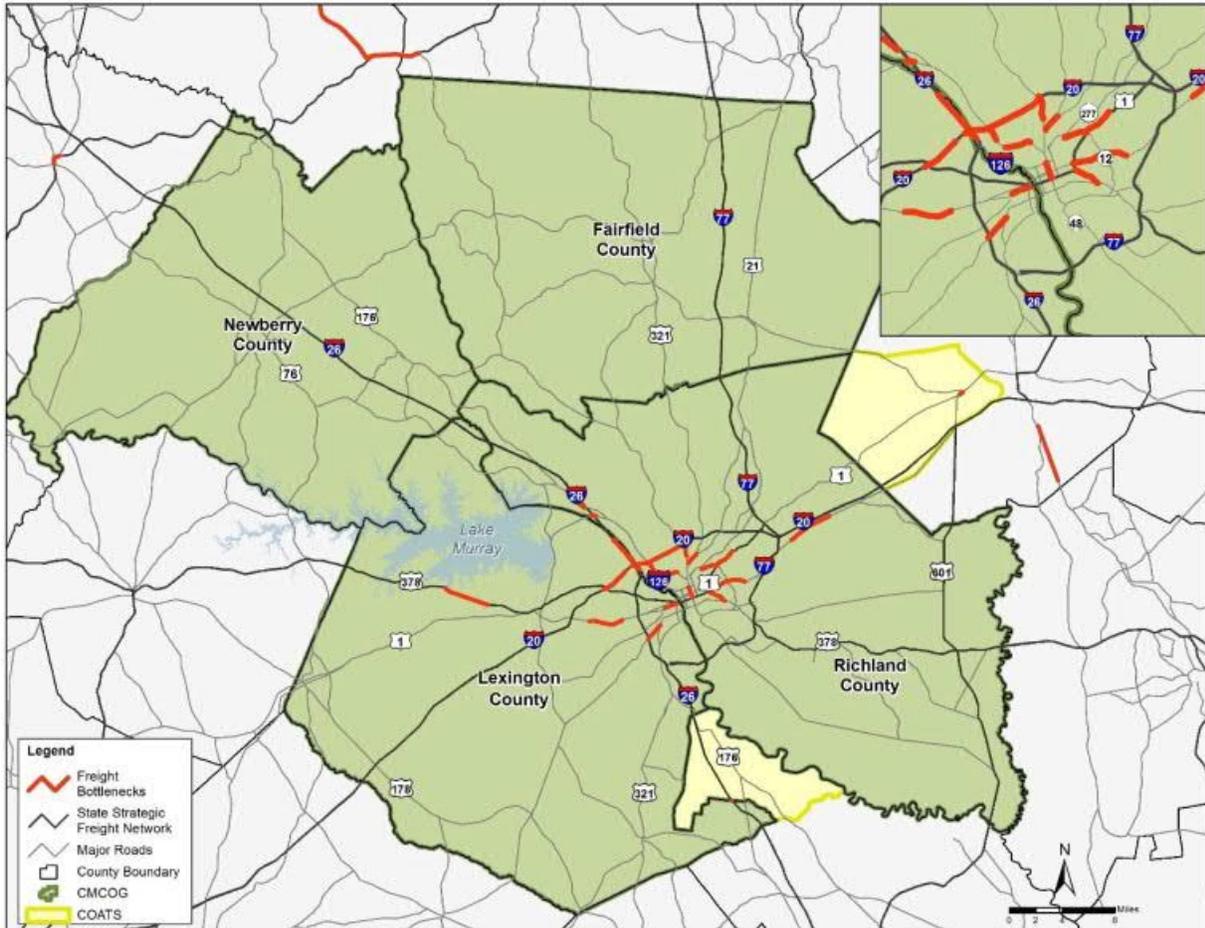
The SCDOT Statewide Strategic Freight Network roads in the Central Midlands area include all **four** interstates as well as US 1, US 378, SC 277, and US 601. These facilities carry some of the highest truck volumes in the region since they serve not only local markets in the Midlands but also statewide and national freight traffic. I-20 links the area to Atlanta and major markets on the Eastern Seaboard via I-95, while I-26 is a key route for freight going to and from Greenville, Spartanburg, and the Port of Charleston. I-77 links the Midlands to Charlotte. US 378 provides linkages to smaller cities around the Midlands such as Sumter and Saluda. Based on 2018 AADT data in the South Carolina DOT Statewide Freight Plan Update (2020), the average daily truck volume along interstates in the COATS region was approximately 7,600.

Highway and street congestion and bottlenecks – both in the CMCOG/COATS MPO region and throughout South Carolina – are a major concern for freight carriers and shippers in the state as well as government agencies. Freight bottlenecks contribute to cargo delays, higher fuel consumption, increased emissions, and increased transportation costs both within the Central Midlands and elsewhere. Truck bottlenecks were identified in the CMCOG/COATS MPO region during peak shipping season (October) and peak tourism season (June) in 2016. Trucks encounter bottlenecks in many known problem areas around the region including:

- “Carolina Crossroads” (the I-20/I-26 interchange)
- I-26 to the north of Columbia
- I-20 through the north side of Columbia
- I-20 from US 378 to roughly Bush River Road, perhaps because it is serving pass-through traffic as well as trucks going to and from the Two Notch Road/Industrial Drive corridor (around Exit 55) where several manufacturers such as Michelin Tire and International Paper are located.

Figure 11.2 shows the Freight Roadway Bottlenecks, as taken from the Central Midlands Regional Freight Mobility Plan.

FIGURE 11.2. FREIGHT ROADWAY BOTTLENECKS



Source: Central Midlands Regional Freight Mobility Plan

Truck Parking

In the Central Midlands, truck parking is mainly provided by private truck stops. An inventory of truck parking facilities was undertaken as part of the Central Midlands Regional Freight Mobility Plan. That inventory found 16 truck parking facilities within the COATS area, all along I-26 and I-20, encompassing nearly 1,000 truck parking spaces. Since 2017, additional truck parking area have been built along I-20 at Exit 51 near Longs Pond Road in Lexington and at Exit 5 near Bluff Road (SC 48) in Richland County.

Rail

As shown previously in Figure 13.1 SCDOT Statewide Strategic Freight Network Roads and Railroads, the Central Midlands region is served by two Class I railroads, CSX Corporation and Norfolk Southern (NS). Combined, they operate about 260 miles of track in the area. Columbia is a crossroads for key lines owned by both railroads. NS lines connect the CMCOG region with Charlotte to the north, Atlanta and Macon, GA to the west, and Savannah, GA to the south. NS also operates regular service between Greer and the Port of Charleston which passes through the Central Midlands. CSX lines in the region connect to Savannah, Charleston, Spartanburg, and Raleigh-Durham, NC.

NS operates 132 miles of rail in the Central Midlands region. There are two rail yards in the area, the CSX-West Columbia Thoroughbred Bulk Transfer terminal and the NS-Andrews Yard. CSX operates 128 miles of railroad in the CMCOG area. More than three quarters of the rail freight by weight and by value in the Central Midlands is simply moving through the region, with no origin or destination in the area. This means that although this traffic is not directly associated with economic activity in the Central Midlands, it creates regional impacts including traffic delays at grade crossings and potential safety concerns (a large share of this through freight consists of chemical products, some of which may be hazardous).

Aviation

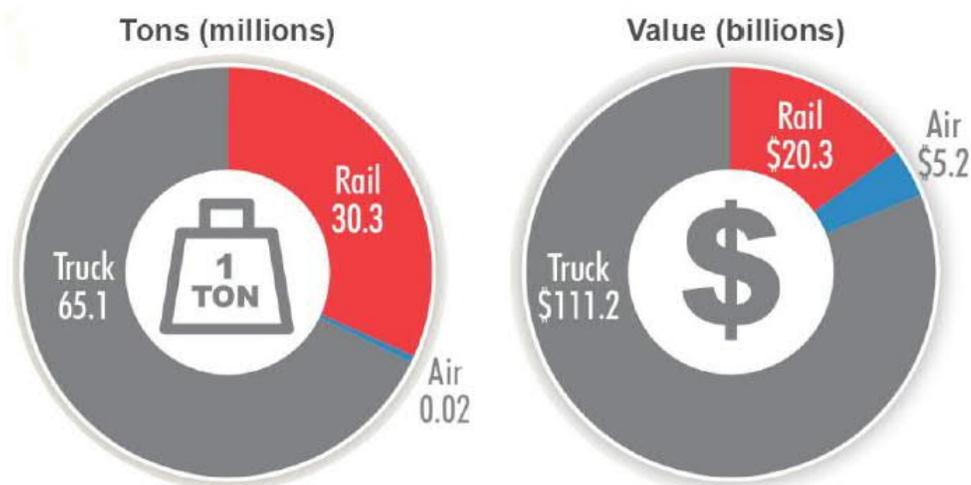
Columbia Metropolitan Airport (CAE) is the primary commercial airport serving the Central Midlands. It is located in Lexington County about 5 miles southwest of Columbia. The airport is the southeast regional cargo hub for UPS, which includes a 281,000 square foot sorting facility adjacent to the east cargo apron. UPS averages 10 flights per day in/out of the airport.

The Airport Master Plan Update calls for a 40,000 square yard cargo apron expansion and the construction of a new 30,750 square foot air cargo building adjacent to the existing air cargo facilities.

11.3 Freight Movement and Economic Impacts

Based on the South Carolina DOT Statewide Freight Plan Update (2020), over 465 million tons of freight moved across South Carolina’s freight network in 2016. In 2011, 95.5 million tons of freight moved across the Central Midlands regional transportation network alone. This included 65.1 million tons of truck movement and 30.3 million tons of rail (Figure 11.3).

FIGURE 11.3. FREIGHT ACROSS THE MIDLANDS



Out of the total freight movements across the region in 2011, approximately 18% were produced and/or used by Central Midlands shippers/receivers. The remainder were through movements, empty containers, secondary traffic, etc.

Based on projections over the next 25 years, the total volume of freight moving over the region’s infrastructure is projected to increase by 42%, to an estimated 325 million tons by 2030. Over the same

time period, truck shipments are forecast to grow by 30% and air shipments by 82%, while rail shipments are projected to increase by 18%, primarily due to through movements. The volume of freight moving in Fairfield County is estimated to grow by 745% by 2030 (to 5.5 million tons annually). This growth may be lowered due to the change in the expansion of VC Summer. Richland County is projected to experience a doubling in freight movements (to 45 million tons annually). This level of growth may strain highway infrastructure, specifically routes such as I-20 in the COATS area.

Currently, the primary commodity transported to, through, and from the region is nonmetallic minerals, with projected additional growth in volumes of 18% by the year 2030. Secondary traffic defined as freight transiting to and from distribution centers or through intermodal facilities, is projected to surpass nonmetallic minerals as the top commodity volume in the region by 2030, growing by 122%.

Trucks will continue to serve as the primary mode of transportation in the region in the future. It is also important to note that the types of commodities that originate in or are destined for the region that are projected to increase are primarily bulk commodities. These commodities are typically used for pure manufacturing purposes and the final products will most likely be consumed outside of the Central Midlands region. From an infrastructure perspective, these commodities dictate mode choice and supply chain efficiency, and are likely to impact roadways in the region by increasing Class 8 truck traffic (large 18 wheelers). The Irmo at Lake Murray electric power plant was converted to natural gas, and shipments continue to use the coal burning power plant, Eastover on the Wateree River. Shipments may continue to be shifted as additional plants in the region are converted to natural gas or are closed. The inland port of Greer (between Greenville and Spartanburg) will transport up to 2000 containers nightly from Charleston to Greer. The return daytime trip will fill empty containers with finished BMWs and tires bound for other east coast ports or for Europe. This inland should reduce the truck traffic on I-26 in the metro area.

11.4 Safety

The 2019 South Carolina Traffic Collision Fact Book was referenced to portray Commercial Motor Vehicle (CMV) safety data. A CMV is any motor vehicle used for the transportation of goods, property, or people in either interstate or intrastate commerce. In 2019, there were 3,929 CMVs involved in traffic collisions, accounting for 2.8% of all traffic collisions. CMVs traffic collisions accounted for 104 fatalities, or 11.2% of all fatal traffic collisions. The top three vehicle uses of CMVs involved in fatal traffic collisions are:

- Transport Property
- Logging
- Construction/ Maintenance

Further, out-of-state CMV drivers accounted for 42.3% of CMV drivers involved in traffic collisions. Table 11.1 offers collision statistics for CMVs across South Carolina.

TABLE 11.1. SOUTH CAROLINA COMMERCIAL MOTOR VEHICLE COLLISIONS STATISTICS

CMV Collision Statistics	2015	2016	2017	2018	2019	Percent Change 2018-2019
Fatal Collisions	98	101	89	105	104	-1.0%
Serious Injury Collisions	119	161	151	141	162	14.9%
Other Injury Collisions	1,171	1,470	1,511	1,587	1,643	3.5%
Total Collisions	2,782	3,632	3,677	3,989	3,929	-6.3%
Persons Killed	117	110	98	112	116	3.6%
Persons Seriously Injured	154	205	197	179	209	16.8%
Persons Other Injuries	1,889	2,297	2,596	2,522	2,596	2.9%

Additional concerns regarding the safe movement of freight in the region include hazardous materials movements and was a reoccurring public comment during engagement for the Regional Freight Mobility Plan. The Savannah River Site nuclear facility in Barnwell and Fort Jackson in Richland County both generate hazmat shipments. Flammable and corrosive materials are stored at the Savannah River Site while Fort Jackson requires shipments of arms and munitions. Nukem Nuclear Technologies, which specializes in radioactive waste management, operates a nuclear shipment and maintenance facility in Lexington County. Avantech, LLC, a similar type of facility, operates in Richland County. Specific roads and routings of these loads are considered security sensitive, but they sometimes must move through residential areas or other conflicting land uses. South Carolina does not impose any specific route restrictions on hazmat loads, so there is currently no designated hazmat route network statewide or in the Central Midlands region.

11.5 Objectives and Strategies for Freight Mobility Improvements

To meet the requirements of the Fixing America’s Surface Transportation Act (FAST Act), the Central Midlands Regional Freight Study proposed a Central Midlands Regional Freight Network. The network is critical to support the efficient movement of freight within the region and will be used to inform the CMCOG, local governments, and SCDOT of the corridors that need improvements in order to maintain efficient and safe movement of goods. The network can also assist in decision-making regarding recommendations for transportation projects, policies, and operational changes that impact freight mobility.

Objectives and strategies identified in the Central Midlands Regional Freight Study that can be implemented are discussed more below.

1. Create design standards for freight infrastructure. Officially recognized infrastructure and operational design guidelines implemented by all jurisdictional bodies within the region are a fundamental element of effective metropolitan freight and goods movement planning. Truck traffic, particularly heavy-truck traffic, causes a disproportionate amount of roadway wear and tear in comparison to passenger vehicle traffic. Central Midlands’ roadways should be designated on a network of freight transport corridors and designed to common physical standards that are more freight-tolerant than conventional roadways. For example, freight network roadways should be designed to higher lane and curb lane widths, as well as shoulder

widths. Pavement Condition Rating (PCR) values, as well as intersection radii should also be designed for a significantly higher volume of freight traffic than other facilities. Developing a truck friendly lane in each direction consisting of a 12 to 13-foot lane with freight friendly geometrics would promote freight mobility and enhance safety of operations for both trucks and passenger vehicles.

2. Prepare and adopt Regional Truck Route Plan. Truck routing strategies and restrictions for regional jurisdictions vary. It is recommended that a Regional Truck Route Plan be pursued to identify where trucks should travel in the region. The plan will provide a better and more concise way to identify maintenance needs along the regional system and may help recognize the appropriate routes that trucks hauling hazardous materials may take, since there are currently no restrictions. Identifying truck routes is an important component of freight mobility and mitigation of freight passenger conflicts. Designated truck routes focus on:
 - Targeted design standards: Truck routes provide a means for targeting truck supporting design standards and policies toward specific corridors rather than across the board.
 - Cost effective infrastructure: Improving roads to accommodate larger trucks requires significant investment. Designated routes provide a means to rationally allocate resources to specific corridors with higher benefits. Truck routes also allow favorable opportunities to implement Intelligent Transportation Systems (ITS) applications.
 - High safety standards: Improving design standards and segregating freight traffic along specific corridors would also reduce operating incompatibilities and diminish the incidence of crashes.
 - Operational productivity: Improving truck operations within trade corridors leads to increased productivity, lower truck operating costs and improved reliability.

This proposed truck route system can be framed around road characteristics, truck traffic and accessibility to major terminals and markets. Characteristics may include things like 12-foot lanes, 4-foot paved shoulders, clear site lines, bridges and overpasses that are over 14.6 feet in height, minimal 90-degree turns, major regional connectors, and railroad bridges upgraded to 23.6 feet to allow for double stacked shipping containers.

1. Improve signage and signalization along key truck routes. Key routes that are used by trucks often suffer from poor signage and signal timings. Limited signage poses a safety hazard for passenger and freight users. Freight route designation and utilization of rural routing to satisfy freight flow requirements should coincide with a review of all signage. Increased heavy equipment use requires a change in strategies, from earlier utilization marked by predominant passenger use.
2. Support regional economic development. As metropolitan truck corridors span multiple jurisdictions across a region, it is essential that there exists inter-jurisdictional cooperation for the maximum benefit of this strategy.
3. Work with governments and private sector to mitigate railroad crossings including reducing the number in downtown centers. Minimizing the number of crossings is the optimal way of addressing at-grade crossings and should be employed when possible. When elimination is not possible enhancing the safety at railroad crossings should be a priority.
4. Integrate ITS application along freight corridors. South Carolinas' Intelligent Transportation System (ITS) provides real time traffic information across the interstate/primary route system

pertain to accidents and detours. The ITS system includes eleven Variable Message Sign (VMS) and 73 traffic cameras (with radars) which are placed along the interstate and managed from the SCDOT control center which alerts travelers of the need for detouring or cautious driving during accidents or unusual road conditions. Variable message signs to inform truckers of lanes restrictions or dangerous ramps can further promote safety and mobility. Further expansion this application should be consider along other primary corridors.

5. Improve data collection between agencies and private sector. Freight data helps transportation planners and economic development analysts understand the trade environment of the region, state and multistate region. Commodity flow data helps supports the link between transportation and economic development by revealing information about key domestic and trading partners, key international gateways, high volume and high value industries, and provides indications of how private sector supply chains work. These groups may include, but are not limited to, SC Trucking Association, SCDOT Permitting Office and District engineers, SC Manufacturer's Association, and SC Department of Public Safety.
6. Establish advisory group to retrieve input on freight issues. CMCOG/COATS has established guidelines for public involvement but has not developed practices or guidelines specifically for engaging the private sector in planning activities. To facilitate greater participation in planning, federal legislation encourages metropolitan transportation organizations (MPOs) to provide opportunities for interested parties to provide input into the development of transportation plans and programs. The main goal would be to review future transportation plans and provide focused input on improving freight needs for the region. These groups may include, but are not limited to, SC Trucking Association, SC Manufacturer's Association, railroad companies, citizens groups, and the Columbia Chamber of Commerce.

Several projects identified in the Project List are meant to improve the region's freight transportation system.

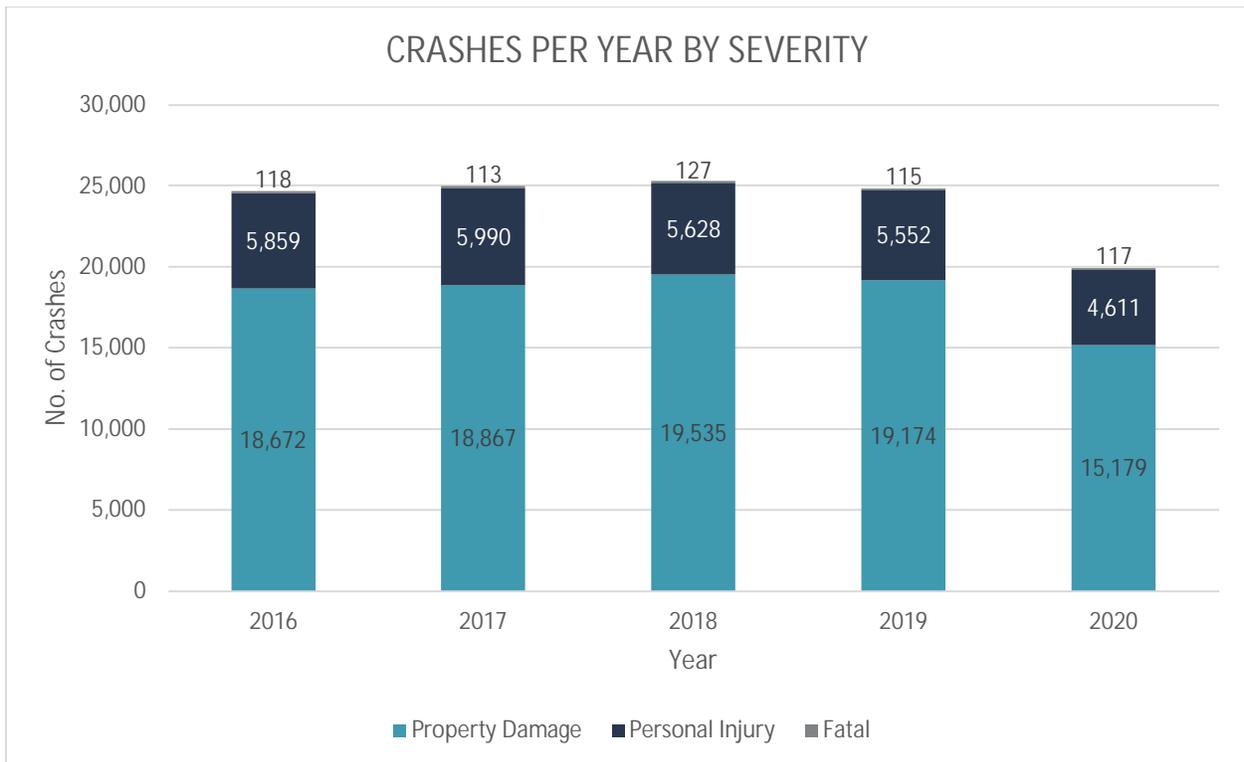
Chapter 12 Safety & Security

12.1 Crash Analysis

A high-level review of the crash data was performed to evaluate the safety performance of the CMCOG/COATS MPO region and to determine the type and severity of collisions that occurred throughout the study area. An analysis of the crash data is a way to detect high crash corridors and intersections in order to address safety deficiencies. Crash data records were provided by SCDOT for a five-year period (01/01/2016 to 12/31/2020). The crash data records included county name, latitude and longitude, route names, number of fatalities, number of injuries, date, road surface conditions, and collision type.

A total of 119,657 crashes were reported in the CMCOG/COATS MPO region with 91,427 classified as property damage only crashes, 27,640 classified as non-fatal personal injury crashes, and 590 classified as fatal crashes between 2016 and 2020. Figure 12.1 illustrates the number of crashes in the region per year by severity. The total number of crashes was consistent between 2016 and 2019 with around 25,000 crashes per year. The overall number of crashes drops by 20 percent in 2020 for a total of around 20,000 crashes. Most of the crashes were classified as property damage only crashes with this crash type accounting for around three-fourths of the total crashes in the region.

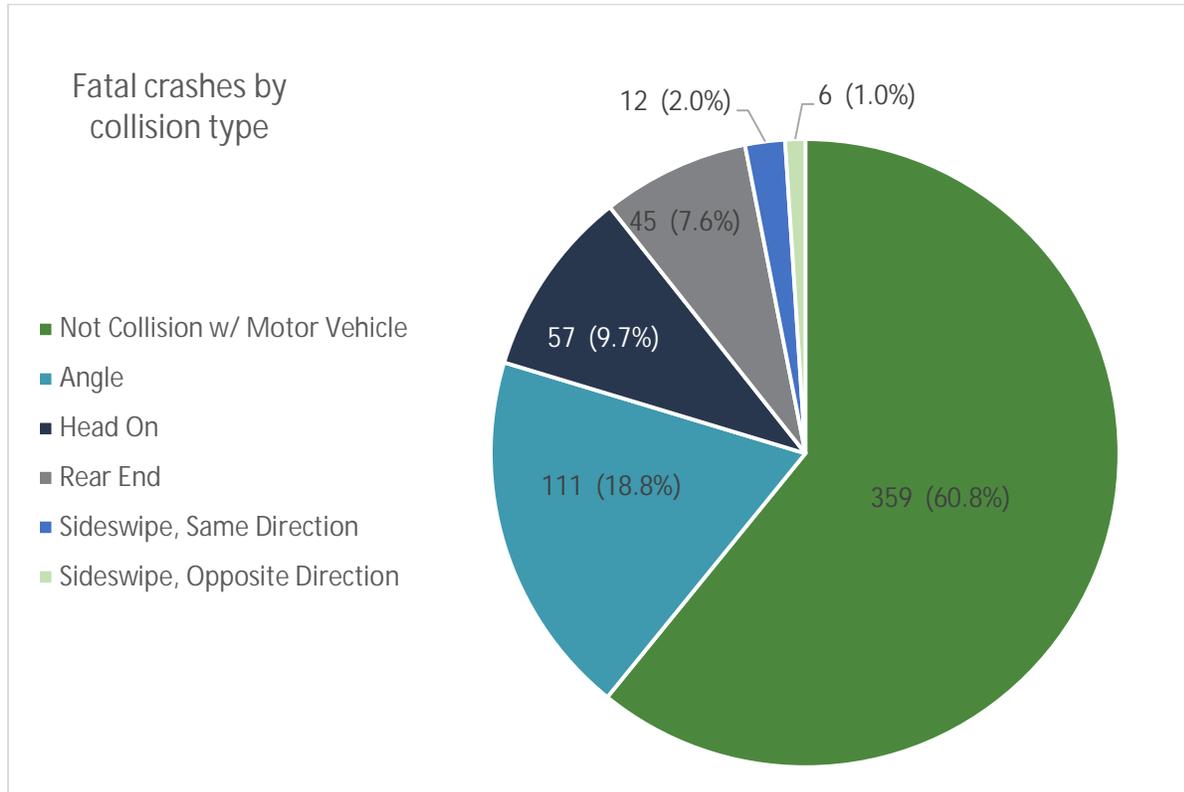
FIGURE 12.1. SEVERITY OF CRASHES BY YEAR (2016-2020)



There were 590 fatal crashes within the region between 2016 and 2020, with the highest number of fatal crashes being 127 which occurred in 2018. The 590 fatal crashes resulted in the deaths of 632 people. Over half of these fatal crashes were classified as not collisions with motor vehicles, nearly 61 percent, with many of the crashes attributing to driving too fast for conditions, pedestrian illegally in

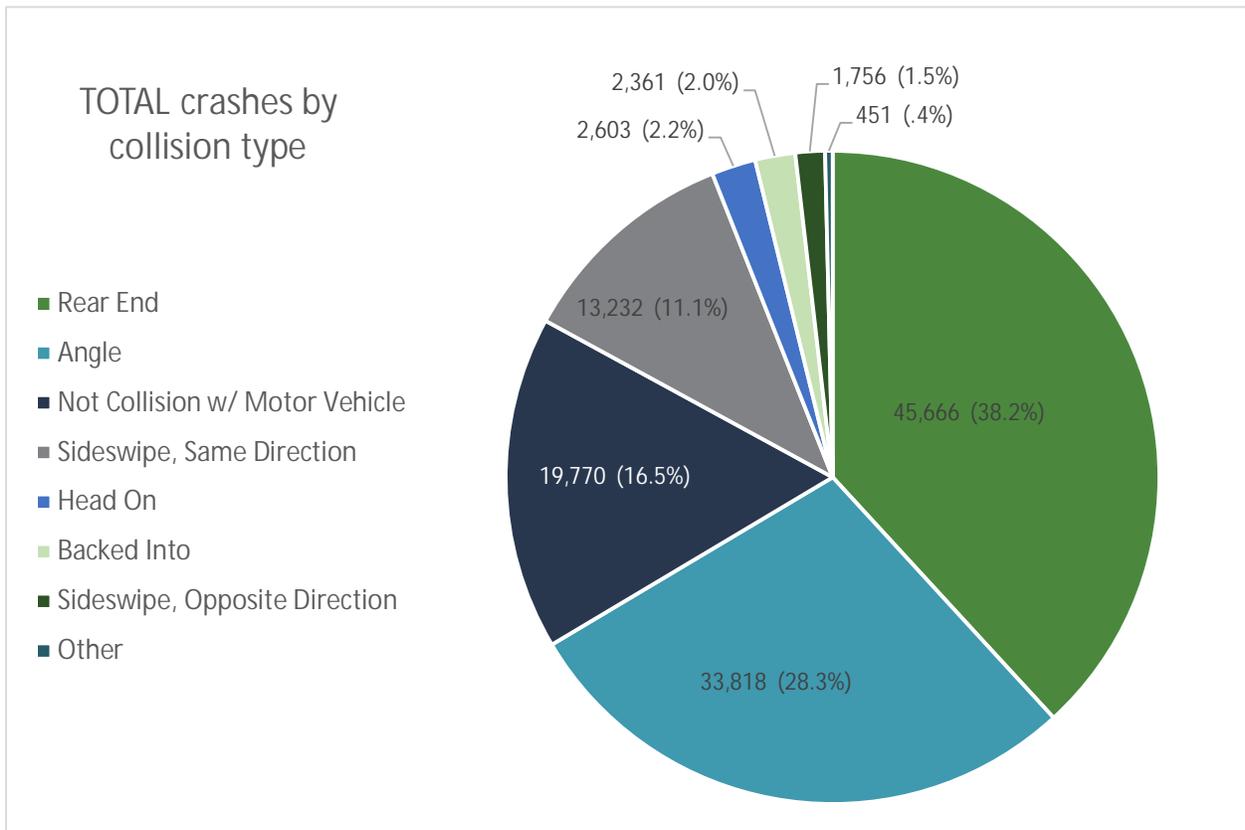
roadway, and driving under the influence. The three other most common types of fatal crashes were angle, head on, and rear-end collisions which accounted for an additional 36 percent of the total number of crashes. The number of fatal crashes are summarized by type in Figure 12.2.

FIGURE 12.2. FATAL CRASH TYPES (2016-2020)



Four types of crashes make up 94 percent of the total crashes in the region and these crash types include rear-end, angle, not collision with motor vehicle, and same direction sideswipe. Rear-end crashes are the most dominate crash type in the region with this crash type accounting for 38 percent of the total number of crashes. The majority of the rear-end crashes were attributed to driving too fast for roadway conditions, drivers following too closely, and drivers who were distracted or inattentive to the road. The second most common crash type was angle with probable causes including drivers failing to yield the right of way, drivers disregarding traffic control devices like signs or signals, improper lane changes, driving too fast for conditions, and drivers making an improper turning movements. A not collision with motor vehicle crash was classified as the third most common crash type in the region. The probable cause of this type of crash can be attributed to driving too fast for roadway conditions, driving under the influence, animal in the roadway, running off the road, and improper lane changes. The number of crashes are summarized by type in Figure 12.3.

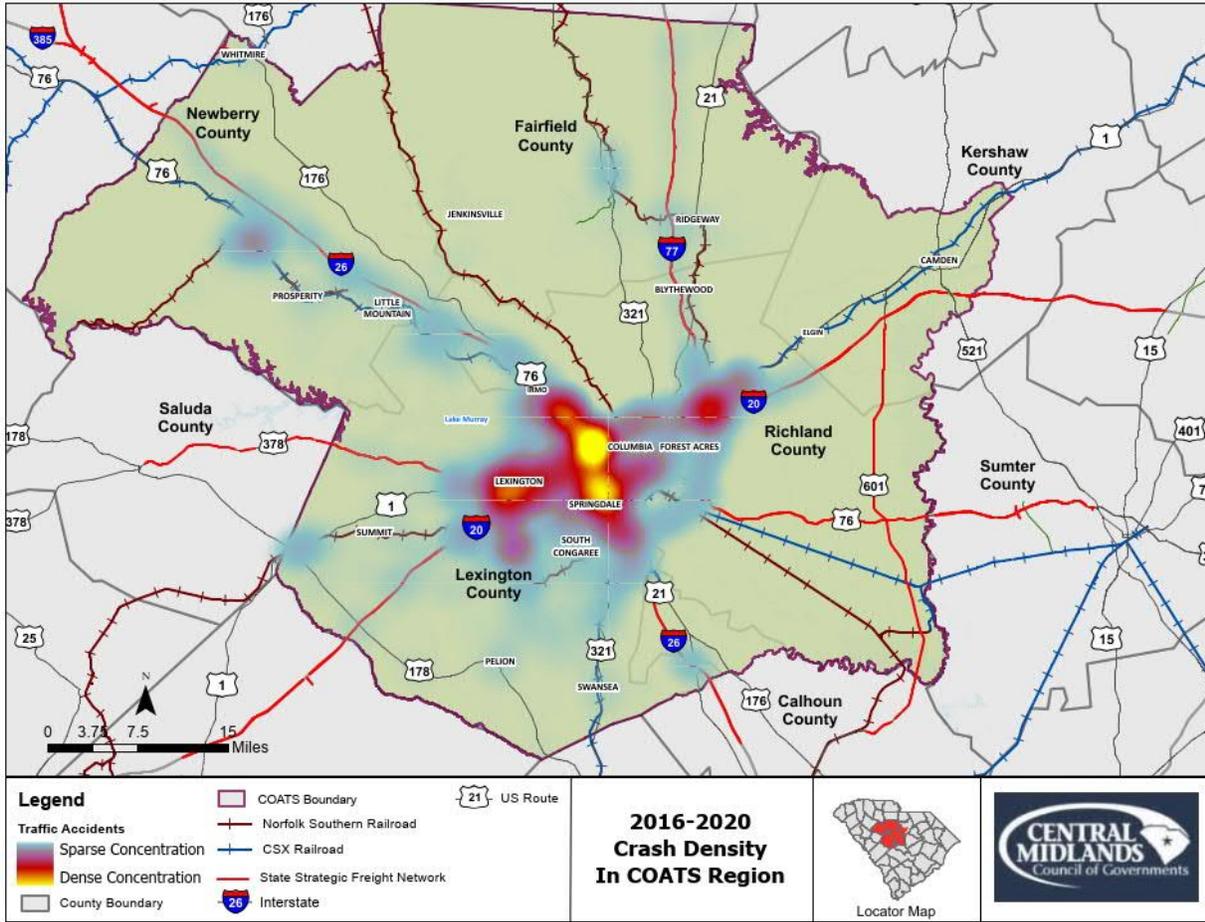
FIGURE 12.3. REGIONAL CRASH TYPES (2016-2020)



Crash Density Analysis

Crash density data from 2016 to 2020 was analyzed to assess areas of high concentrations of vehicular accidents within the CMCOG/COATS MPO region. As seen on the heat map on Figure 12.4, the highest density of crashes is primarily along I-26 in the downtown Columbia area between Irmo and Springdale. The I-20 corridor between the US 378 interchange and the I-77 interchange are also areas of high number of crashes. SCDOT has made this intersection the number one interstate priority in South Carolina with the Carolina Crossroads I-20/26/126 Corridor Project. The project is intended to improve local and freight mobility, safety while simultaneously reducing existing traffic congestion. Figure X provides an overview of the density of crashes that have occurred throughout the Central Midlands area between 2016 and 2020.

FIGURE 12.4. DENSITY OF CRASHES (2016-2020)



The top ten roadway corridors with the highest number of crashes in the region are shown in Table 12.1. This list accounts for all crashes associated with the route name including property damage only, non-fatal personal injury, and fatal crashes between 2016 and 2020.

TABLE 12.1. TOP RANKED ROADWAY CORRIDORS FOR CRASH INCIDENTS (2016-2020)

Rank	Roadway Corridor Name
1	Interstate 26 (between SC 60 and US 176)
2	Interstate 20 (between US 176 and US 378)
3	Two Notch Road (at I-77 interchange)
4	Broad River Road (Irmo)
5	Garners Ferry Road (near I-77 interchange)
6	Augusta Road (near I-20 interchange)
7	Sunset Boulevard (between I-20 and US 1)
8	Interstate 77 (between I-20 and US 21)
9	Farrow Road (between I-77 and SC 277)
10	Charleston Highway/ US 321 (in Gaston)

Several projects identified in the Project List are meant to improve safety of the region's roadways.

12.2 Security

Metropolitan Planning Organizations are charged with considering ways to increase the security of the transportation system for motorized and non-motorized users. Security is designated in the FAST Act as a stand-alone planning factor, which is outline in Chapter 3. CMCOG/COATS MPO primary role in planning for the security of the transportation system in the region is to provide support to existing Federal, state, and local agencies in the implementation of their security plans, as well as private sector freight and logistics companies in the movement of freight, especially hazardous materials. Several projects identified in this 2045 Long Range Transportation Plan are aimed at improving transportation security.

Chapter 13 Recommended COATS MPO Transportation Projects

13.1 Introduction

Below is a complete list of highway projects identified for the COATS MPO area as part of this 2045 Long Range Transportation Plan. The projects are prioritized and financially-constrained based on the Financial Plan in Chapter 15, with a list of widening projects that can be funded with anticipated revenues through 2045, a list of aspirational projects, and a list of intersection projects. The projects are derived based on community input, the transportation needs identified throughout this process, and the goals and objectives outlined in Chapter 3.

TABLE 13.1. COATS 2045 PRIORITIZED LIST OF ROAD WIDENING PROJECTS

COATS Priority	Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
1	17	W Main St Lexington US 1	Columbia Ave to N. Lake Dr (SC 6)	100	Lexington	\$6,600,000	\$6,600,000
2	26	US 378	Old Lexington Road (S-157) to Beulah Church Rd	87.9	Lexington	\$34,200,000	\$40,800,000
3	78	Two Notch Road US 1 Pontiac	Steven Campbell Rd (S-407, Kershaw Co.) to end to S-53 Spears Creek Church Rd	72.6	Richland	\$29,200,000	\$70,000,000
4	125	Leesburg Rd. (SC 262)	Greenlawn Drive to Patricia Drive	62.6	Richland	\$4,199,906	\$74,199,906
5	103	Industrial Drive	Two Notch Rd to South Lake Dr (SC 6)	59.6	Lexington	\$23,987,566	\$98,187,472
6	14	Corley Mill Rd S-68	Lee Kleckley Rd to Sunset Blvd (US 378)	58.5	Lexington	\$24,900,000	\$123,087,472
7	55	Jefferson Davis Hwy US 1	Steven Campbell Rd (S-407) to Sessions Rd (S-47)	57.9	Kershaw	\$19,500,000	\$142,587,472
8	38	Longs Pond Rd S-204	Barr Rd (S-77) to Nazareth Rd (S-243)	57.2	Lexington	\$30,700,000	\$173,287,472
9	7	Kennerley Rd S-129	Hollingshed Rd (S-635) to Broad River Rd	56.5	Richland	\$12,300,000	\$185,587,472
10	56	Jefferson David Hwy US 1 East	Sessions Rd (S-101) to Watts Hill Rd (S-757)	56.1	Kershaw	\$17,700,000	\$203,287,472
11	114	Gibson Road	W Main St (US 1) to South Lake Dr (SC 6)	55	Lexington	\$18,268,283	\$221,555,755
12	94	S Lake Dr I-20	Industrial Dr S-626 to US 1 (Main Street)	54	Lexington	\$13,900,000	\$235,455,755
13	102	Barr Rd/ Wildlife Rd	W Main St (US 1) to Industrial Drive	51.9	Lexington	\$23,422,342	\$258,878,097
14	108	Old Wire Rd	Charleston Highway (US 321/US 176) to 12 th St Extension	50.9	Lexington	\$11,154,929	\$270,033,026
15	107	Nazareth Road	Longs Pond Rd to South Lake Dr (SC 6)	50.1	Lexington	\$31,130,996	\$301,164,022
16	120	Shady Grove Rd	Broad River Rd (US 176) to Koon Rd	50.1	Richland	\$22,759,157	\$232,923,179

COATS Priority	Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
17	70	Broad River Rd US 176 North	I-26 to Chapin Rd (S-39)	50	Richland	\$34,300,000	\$358,223,179
18	112	Two Notch Rd/ Muddy Springs Rd	South Lake Dr (US 6) to Longs Pond Rd	49.9	Lexington	\$44,268,053	\$402,491,232
19	118	Lost Creek Rd	Broad River Rd (US 76/US 176) to Boat Ramp Road	49.2	Richland	\$28,766,404	\$431,257,636
20	62	Hardscrabble Rd North	Langford Rd to Summit Parkway	48.4	Richland	\$22,200,000	\$453,457,636
21	110	Rauch Metz Road	Dutch Fork Rd (US 76) to On/Off Ramp of I-26 near Broad River Rd (US 176)	47.2	Richland	\$11,591,322	\$465,048,958

TABLE 13.2. COATS 2045 ASPIRATIONS LIST OF ROAD WIDENING PROJECTS

Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
100	Platt Springs Rd West S-34/63	White Knoll HS past SC 6 to Boiling Springs Rd (S-279)	47.5	Lexington	\$63,900,000	\$528,948,958
69	Broad River Rd US 76/176	Dutch Fork Rd (US 76) to Woodrow St (S-27)	47.2	Richland	\$17,100,000	\$546,048,958
116	Highway Church Road	Blaney Rd to Fort Jackson Blvd (SC 12)	47.2	Kershaw	\$32,670,043	\$578,719,001
104	SC 6	Bush River Rd to US 76	47.2	Lexington	\$45,782,892	\$624,501,893
88	Fish Hatchery Rd S-37	Charleston Highway (US 321) to Pine Ridge Rd (S-103)	46.1	Lexington	\$22,700,000	\$647,201,893
97	Two Notch Rd S-70	S Lake Dr (SC 6) to Longs Pond Rd (S-204)	45.6	Lexington	\$35,400,000	\$682,601,893
119	Koon Road	Broad River Rd (US 76/US 176) to Old Tamah Rd	45.3	Richland	\$28,978,782	\$711,580,675
90	Edmund Hwy SC 302	Princeton Rd (S-1287) to S Lake Dr (SC 6)	44.7	Lexington	\$28,700,000	\$740,280,675
36	Fish Hatchery Rd South 2	Casa Dell Dr S-868 to Glenn Rd (S-875)	44.6	Lexington	\$28,900,000	\$769,180,675
122	Kelly Mill Road	Two Notch Rd (US 1) to Twenty Five Mile Creek Rd	44.6	Richland	\$38,521,761	\$807,702,436
25	Calks Ferry Rd S-278	I-20 to Pond Branch Rd (S-34)	44.3	Lexington	\$36,900,000	\$844,602,436
1	St. Peters Ch Rd S-29	Chapin Rd to Paul Fulmer Rd	43.5	Lexington	\$24,500,000	\$869,102,436
46	Percival Rd SC 12 East	Spears Creek Rd (S-53) to Highway Church Rd	43.3	Richland	\$32,600,000	\$901,702,436
123	Earth Road	Clemson Rd to Spears Creek Church Rd	42.2	Richland	\$3,528,677	\$905,231,113
64	Wilson Blvd US 21 North	Raines Rd (S-2126) to Langford Rd (S-54)	42.2	Richland	\$19,600,000	\$924,831,113
2	Amick Ferry Rd S-51 South	Paul Fulmer Rd to South of Shady Acres Drive	41.8	Lexington	\$13,800,000	\$938,631,113
121	Screaming Eagle Road	Percival Road (SC 12) to Dixie Road/Highway Church Road	41.3	Richland	\$23,141,928	\$961,773,041
113	Charter Oak Road/Pisgah Church Road	US 378 to Hermitage Road	41	Lexington	\$19,807,728	\$981,580,769
34	Fish Hatchery Rd S-73 south	Pine Ridge Drive (S-103) to Bachman Road (S-1257)	41	Lexington	\$6,900,000	\$988,480,769
68	Amick Ferry Rd S-51	Chapin Road to Paul Fulmer Road	40.8	Lexington	\$31,600,000	\$1,020,080,769
77	Wilson Rd US 21	I-77 to Blythewood Road (S-59)	39.5	Richland	\$30,800,000	\$1,050,880,769
117	Old Sandy Run Road	Pine Plain Road to I-26	39.3	Calhoun	\$25,472,324	\$1,076,353,093

Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
101	Wise Ferry Road/Hermitage Road	Old Cherokee Road to Pisgah Church Road	39.1	Lexington	\$28,144,205	\$1,104,497,298
124	Longtown Road	Farrow Road to Longtown Road East	38.9	Richland	\$25,360,070	\$1,129,857,368
109	Leaphart Road	Sunset Blvd (US 378) to Harbor Drive/Orchard Drive	38.8	Lexington	\$23,843,477	\$1,153,700,845
35	Emmanuel Ch Rd S-168	Old Barnwell Road (S-104) to W. Dunbar Road (S-72)	38.5	Lexington	\$17,300,000	\$1,171,000,845
65	Wilson Blvd US 21 south	Fulmer Road (S-1352) to south of Pisgah Church Road (S-34)	37.3	Richland	\$31,400,000	\$1,202,400,845
63	Blythewood Rd S-59	Muller Road to Wilson Blvd.	37.3	Richland	\$16,900,000	\$1,219,300,845
22	Pisgah Ch Rd S-204	Hermitage Road (S-172) to Barr Road (S-77)	36.7	Lexington	\$18,700,000	\$1,238,000,845
111	Pond Branch Road	Two Notch Road to I-20	36.5	Lexington	\$30,151,900	\$1,268,152,745
99	Heins Rd S-54	Langford Road to Cherokee Blvd.	35.9	Richland	\$10,200,000	\$1,278,352,745
29	SC 6	Edmund Highway to Meadowfield Road (S-65)	35.9	Lexington	\$16,400,000	\$1,294,752,745
105	Hope Ferry Road	Sunset Blvd (US 378) to Corley Mill Road	35.7	Lexington	\$24,682,666	\$1,319,435,411
59	White Pond Rd	US 1 (Main Street) to Heath Pond Road	35.5	Kershaw	\$21,800,000	\$1,341,235,411
28	Edmund Hwy SC 302 south	S. Lake Drive (SC 6) to Old Charleston Road (S-625)	35.2	Lexington	\$42,200,000	\$1,383,435,411
47	Percival Rd SC 12 Fort Jackson	Smallwood Road to Spears Creek Church Road	34.6	Richland	\$35,100,000	\$1,418,535,411
66	Farrow Rd SC 555	N Pines Road (S-1437) to Hard Scrabble Road	34.6	Richland	\$26,800,000	\$1,445,335,411
80	Spears Creek Ch Rd	I-20 to Two Notch Road (US 1)	34.4	Richland	\$22,400,000	\$1,467,735,411
89	Edmund Highway SC 302	S. Lake Drive (SC 6) to SC 6	34	Lexington	\$16,100,000	\$1,483,835,411
67	Sunset Dr SC 16	River Drive (US 176) to SC 277 interchange	33.9	Richland	\$8,400,000	\$1,492,235,411

Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
87	Pineview Rd SC 769	Bluff Road (SC 48) to Garners Ferry Road (US 76)	33.8	Richland	\$29,300,000	\$1,521,535,411
27	S Lake Dr South	Platt Springs Road (SC 602) to Boiling Springs Road (S-279)	33.4	Lexington	\$36,100,000	\$1,557,635,411
11	Bush River Rd S-273	Seawright Rd S-1002 to Woodlands Dr	33.1	Lexington	\$13,900,000	\$1,571,535,411
60	Langford Rd east	Hard Scrabble Road to Heins Road	32.8	Richland	\$25,500,000	\$1,597,035,411
91	Mineral Springs Rd S-106	Sunset Blvd (US 378) to Cedar Road (S-387)/Cromer	32.6	Lexington	\$17,800,000	\$1,614,835,411
58	Bookman Rd S-53	Robinhood Road (S-1051) to Two Notch Road	32.4	Richland	\$38,900,000	\$1,653,735,411
115	Bowen Street (S-28-48)	Cherokee Blvd to Jefferson Davis Highway (US 1)	32.2	Kershaw	\$32,964,958	\$1,686,700,369
43	Leesburg Rd SC 262 east	Lower Richland Blvd. (S-37) to Harmon Road (S-86)	31.9	Richland	\$43,800,000	\$1,730,500,369
44	Leesburg Rd SC 262 east 2	Harmon Road (S-86) to McCords Ferry Road	30.8	Richland	\$50,600,000	\$1,781,100,369
9	Bush River Rd S-107	N. Lake Drive (SC 6) to St. Andrews Road	30.6	Lexington	\$36,900,000	\$1,818,000,369
76	Winnsboro Rd US 321	Koon Store Road (S-61) to Blythewood Road (S-2200)	30.6	Richland	\$44,200,000	\$1,862,200,369
4	Broad River Rd US 176 north 2	Chapin Road (S-39) to north of Jake Eargle Road (S-592)	30.5	Richland	\$12,700,000	\$1,874,900,369
3	Chapin Rd US 76	Murray Lindler Road (S-82) to Sid Bickley Road (S-715)	30.1	Lexington	\$17,800,000	\$1,892,700,369
74	Chapin Rd/Dutch Fork Rd	Sid Bickley Road (S-715, Lex) to Three Dog Road	30	Richland	\$21,300,000	\$1,914,000,369
73	Dutch Fork Rd US 76	Twin Gates Road (S-1151) to Three Dog Road (S-1403)	29.4	Richland	\$28,200,000	\$1,942,200,369
106	Mineral Springs Road	I-20 to Leaphart Road	28.6	Lexington	\$36,755,526	\$1,978,955,895
13	Pilgrim Ch Rd S-408	N. Lake Drive (SC 6) Old Cherokee Road	27.5	Lexington	\$14,500,000	\$1,993,455,895
6	Broad River Rd US 76/176 Irmo	Woodrow St. to I-26 Interchange	24.2	Richland	\$11,700,000	\$2,005,155,895

Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
93	Old Cherokee Rd S-485/486/406	N. Lake Drive (SC 6) to Sunset Blvd (US 378)	22.5	Lexington	\$61,500,000	\$2,066,655,895
61	Langford Rd S-54	Wilson Blvd. (US 21) to Grover Wilson Road (S-60)	19.3	Richland	\$39,900,000	\$2,106,555,895
144	Bluff Rd SC 48 Montgomery to LR	Bluff Rd SC 48 Montgomery to LR	15.8	Richland	\$29,500,000	\$2,136,055,895
39	LR Blvd S-37 Goodson to Leesburg	LR Blvd S-37 Goodson to Leesburg	13	Richland	\$15,400,000	\$2,151,455,895

FIGURE 13.1. COATS MPO WIDENING PROJECTS

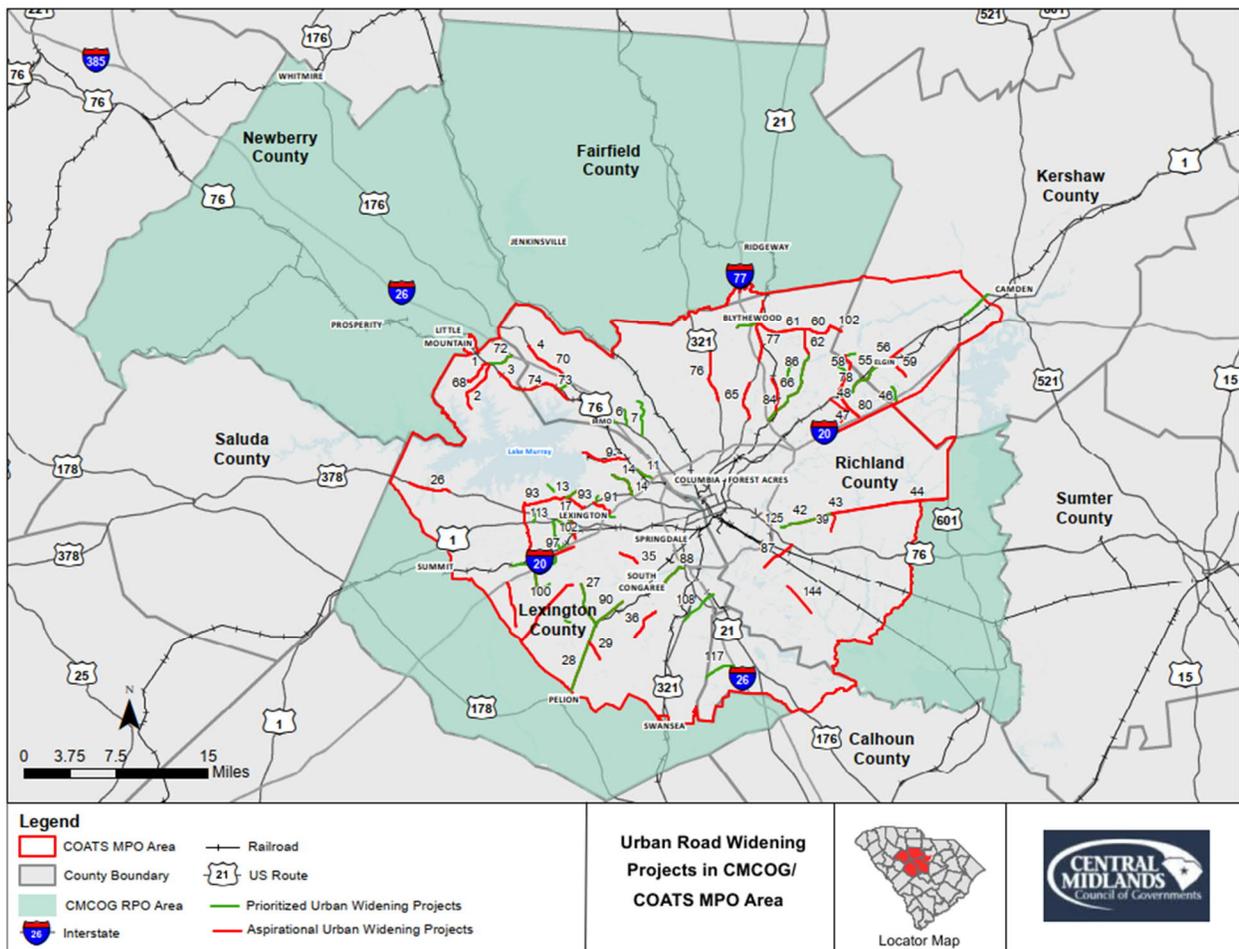
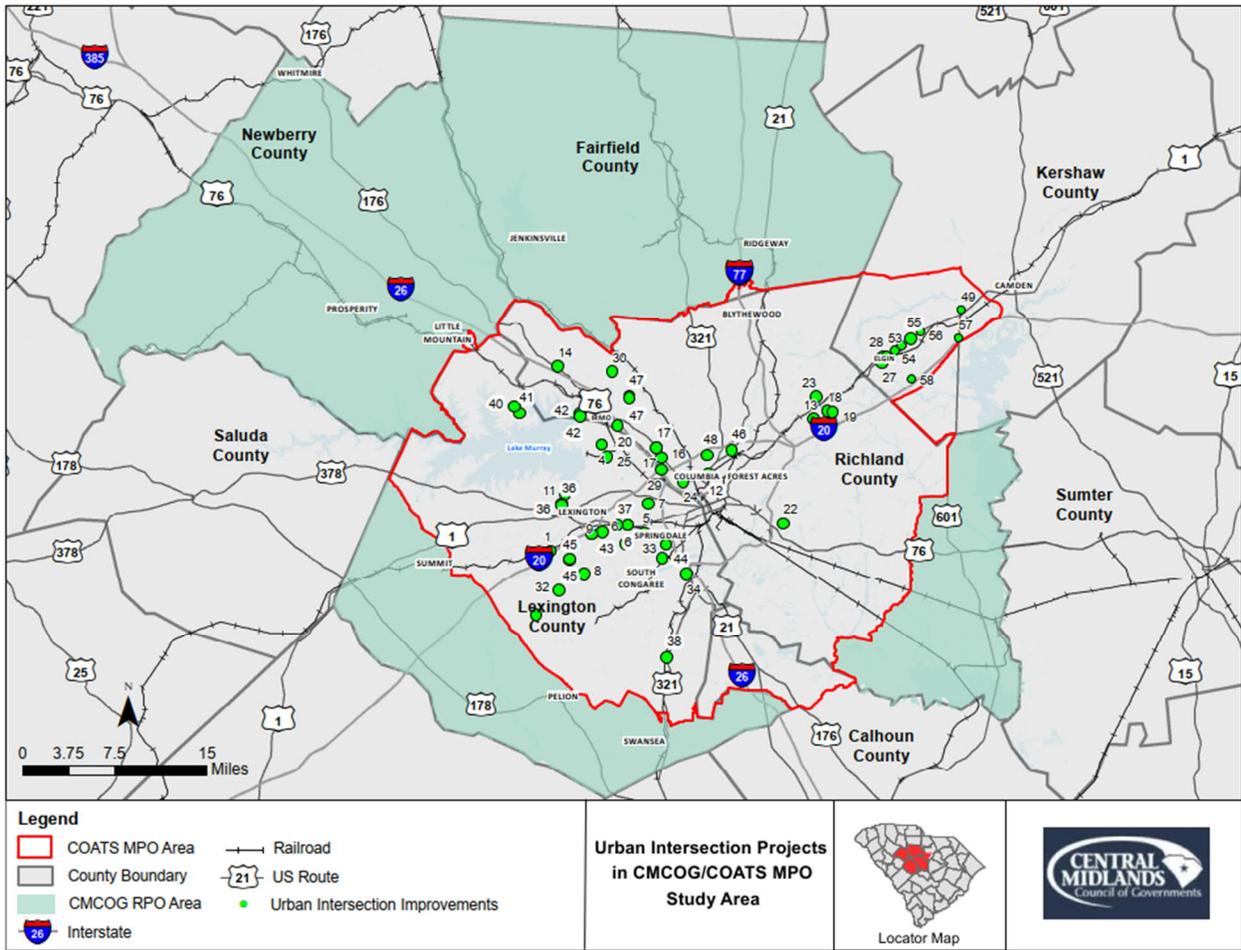


TABLE 13.3. COATS 2045 PRIORITIZED LIST OF INTERSECTION PROJECTS

CMCOG Priority	Project ID	Project Name	County	Project Score
1	20	SC 60 & Columbiana Drive	Richland	100.0
2	45	South Lake Drive & Stump Road and Old Barnwell Road	Lexington	85.2
3	12	North Main Street & Lamar St	Richland	84.7
4	44	Creekside Road & Edmunds Highway	Lexington	79.2
5	34	US 321 & Recycle Center	Lexington	77.0
6	6	US 1 & St. David Church	Lexington	76.3
7	48	Lawton Street & Monticello Road	Richland	70.7
8	16	Broad River Road & Shivers Road	Richland	69.9
9	24	Broad River Road & Riverhill Circle	Richland	69.7
10	38	US 321 Main Street & Mack Street	Lexington	68.7
11	17	US 176 & Piney Woods	Richland	62.1
12	54	US 1 and Watts Hill	Kershaw	52.9
13	32	Platt Springs Rd S-34 & Cannon Trail Rd S-1790	Lexington	50.9
14	57	US 601 and Whiting Way	Kershaw	49.8
15	56	US 1 and Whitehead Road	Kershaw	48.8
16	22	Leesburg Road & Patterson Road	Richland	48.6
17	52	US 1 and S-15	Kershaw	48.1
18	55	US 1 and Eskie Dixon	Kershaw	46.8
19	37	Kitti Wake Drive, Sycamore Tree Road & Two Notch Road	Lexington	46.5
20	53	US 1 and Chestnut Road	Kershaw	45.5
21	42	Village Lane & Leamington Way	Richland	45.4
22	5	Old Barnwell Road & Ermine Road	Lexington	44.4
23	23	North Springs Road & Risdon Way	Richland	39.4
24	31	Main St US 1 & Pine St S-109	Kershaw	34.6
25	1	Old Two Notch Road & Industrial Drive	Lexington	33.2
26	50	SC 34 and S-46	Kershaw	32.8
27	43	Sausage Lane & Old Barnwell	Lexington	28.7
28	46	Frye Road & US 21	Richland	28.4
29	40	Old Lexington Highway & Wessinger Road	Lexington	26.9
30	11	Pilgram Church & Old Cherokee Road	Lexington	26.9
31	39	Boiling Springs Road & Pond Branch Road and Platt Springs Road	Lexington	26.4
32	47	Hollingshed & Lost Creek and Raintree	Richland	26.3
33	29	Burning Tree Dr (Frontage Rd) S-2892 & Zimelcrest Dr S-672	Richland	25.2
34	41	Old Lexington Highway & Pebblebranch Drive	Lexington	25.0
35	49	SC 34 and S-901	Kershaw	24.7
36	14	Broad River Road & Hopewell Church Road	Richland	22.8

CMCOG Priority	Project ID	Project Name	County	Project Score
37	36	Old Chapin road, Rose Lake Road & Reed Avenue & S-32-145	Lexington	22.6
38	19	Sparkleberry Lane & Wotan Road	Richland	20.5
39	3	Old Barnwell Road & White Knoll Way	Lexington	20.1
40	51	SC 341 and S-15	Kershaw	19.5
41	25	Old Bush River Road & Wescot Road	Lexington	19.4
42	10	Old Two Notch Road & Shirway Road	Lexington	18.8
43	18	Sparkleberry Lane & Viking Drive	Richland	18.2
44	58	S-47 (White Pond Road) and Whiting Way	Kershaw	17.8
45	7	Leaphart Road & Mineral Springs	Lexington	17.2
46	28	Church St S-101-Secessions Rd S-101& Smyrna Road S-21	Kershaw	15.6
47	9	Old Two Notch Road & Dooley Road	Lexington	14.8
48	33	Boston Ave S-71& Kitty Hawk Dr S-326-Moblie Ave S-1592	Lexington	14.1
49	13	Polo Road & Running Fox Road West	Richland	13.9
50	4	Nursery Road & Nursery Hill Road	Lexington	8.7
51	30	Kennerly Rd S-217 & Old Tamah Rd S-244	Richland	6.0
52	27	Blaney Rd S-551/S-101 & Forest Drive Rd S-565-Hwy Ch St S-10	Kershaw	5.2

FIGURE 13.2. COATS MPO INTERSECTION PROJECTS



Chapter 14 Recommended CMCOG RPO Transportation Projects

14.1 Introduction

Below is a complete list of highway projects identified for the CMCOG RPO area as part of this 2045 Long Range Transportation Plan. The projects are prioritized and financially-constrained based on the Financial Plan in Chapter 15, with a list of widening projects that can be funded with anticipated revenues through 2045, a list of aspirational projects, and a list of intersection projects. The projects are derived based on community input, the transportation needs identified throughout this process, and the goals and objectives outlined in Chapter 3.

TABLE 14.1. CMCOG 2045 PRIORITIZED LIST OF RURAL WIDENING PROJECTS

CMCOG Priority	Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
1	39	Church St Savannah Hwy US 321	S-102 (Burton Gunter Rd) to SC 692 (E Fifth St/ Redmund Mill Rd)	100.0	Lexington	\$21,000,000	\$21,000,000
2	35	Kendall Rd SC 121 (B)	S-91 (Drayton St) to SC 395 (Nance St)	78.9	Newberry	\$12,000,000	\$33,000,000
3	36	Kendall Rd SC 121 (A)	SC 34 (Boundary St) to S-91 (Drayton St)	77.0	Newberry	\$16,000,000	\$49,000,000
4	37	Pine St Edmunds Hwy SC 302 (B)	S-245 (Hartley Quarter Rd) to S-73 (Fish Hatchery Rd)	43.1	Lexington	\$22,000,000	\$71,000,000

TABLE 14.2. CMCOG 2045 ASPIRATIONS LIST OF RURAL WIDENING PROJECTS

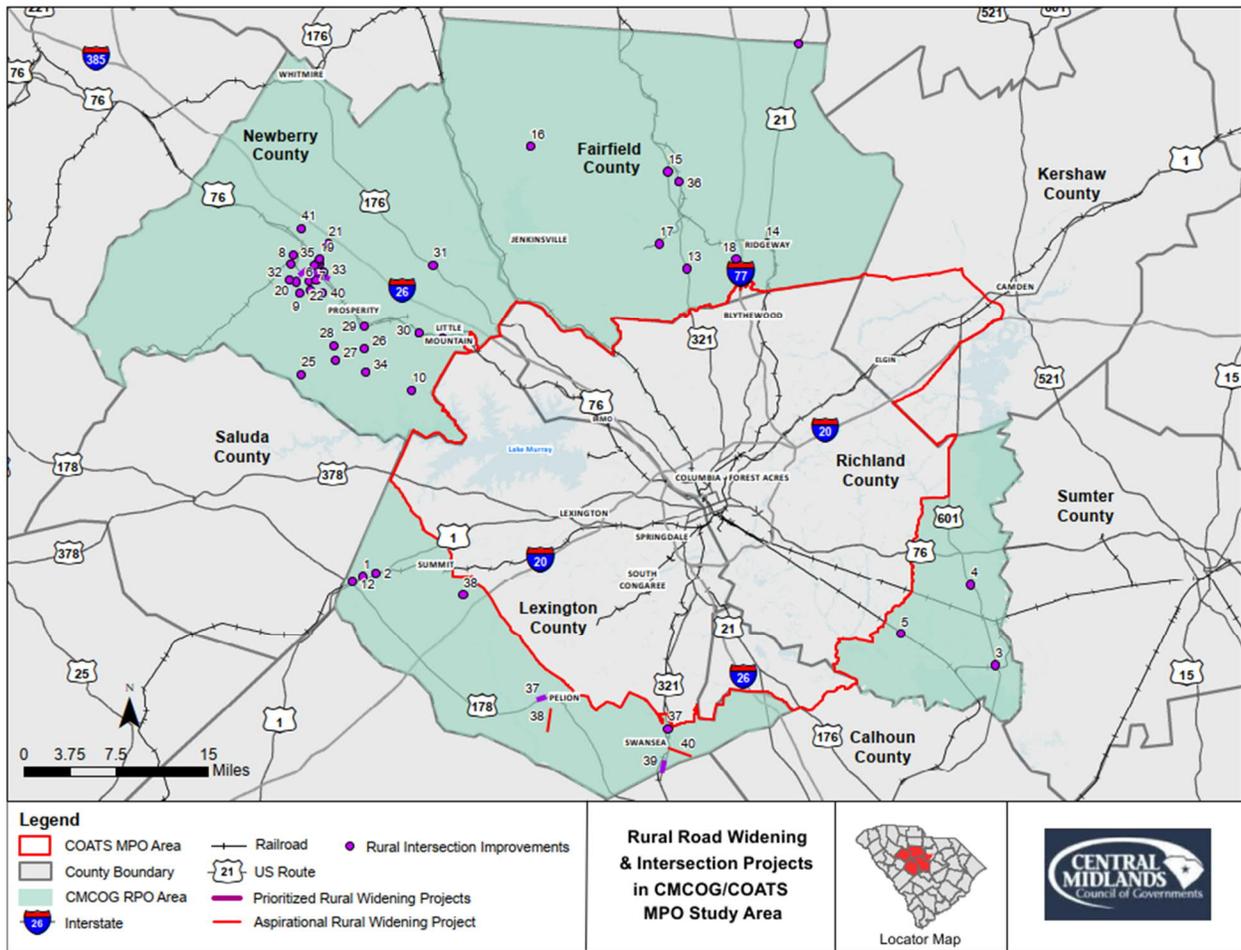
Project ID	Project Name	Project Limits	Project Score	County	Estimated Cost	Cumulative Total Cost
38	Pine St Edmunds Hwy SC 302 (A)	S-45 (Cedar Creek Rd) to S-245 (Hartley Quarter Rd)	4.1	Lexington	\$41,000,000	\$112,000,000
40	E 5 th St/ Redmund Mill Rd SC 692	US 321 (Church St/ Savannah Hwy.) to near S-164 (Calhoun Rd)	3.4	Lexington	\$34,000,000	\$146,000,000

TABLE 14.3.CMCOG 2045 PRIORITIZED LIST OF RURAL INTERSECTION PROJECTS

CMCOG Priority	Project ID	Project Name	County	Project Score
1	7	Wilson Rd & Winnsboro Road north	Newberry	100.0
2	2	Church Street & Lee Street	Lexington	78.5
3	38	Church St US 321 & 5th St SC 692	Lexington	72.0
4	6	Wilson Rd & Main Street	Newberry	69.5
5	29	Main Street & Counts Sausage Road	Newberry	59.3
6	19	Winnsboro Road & Mt. Bethel Garmany Road	Newberry	55.6
7	39	Juniper Springs Road & Two Notch Road	Lexington	55.1
8	40	Wilson Road (US 76) & Adelaide Street	Newberry	50.1
9	37	Columbia Ave US 1 & Mitchell Ave S-17	Lexington	47.5
10	8	Kendall Road & Nance Road	Newberry	46.8
11	43	SC 121 and S-56	Newberry	46.0
12	4	McCords Ferry Road & Van Boklen Road	Richland	45.3
13	22	Bob Lake Blvd & Nance Road	Newberry	41.9
14	35	Main St S-60 & Kinard St S-375	Newberry	40.7
15	14	SC 34 & US 21	Fairfield	39.7
16	20	Bob Lake Blvd & Boundary Street	Newberry	37.3
17	12	Church Street & Summerland Avenue	Lexington	37.0
18	36	Congress St US 321 Bus & Washington St S-61	Fairfield	36.9
19	33	Wilson Rd & Winnsboro Road south	Newberry	36.1
20	1	Church Street & Mitchell Street	Lexington	35.5
21	32	Boundary Street & Kendall Road	Newberry	34.7
22	3	McCords Ferry Road & Bluff Road	Richland	33.2
23	23	Bob Lake Blvd & Glenn Street	Newberry	32.5
24	31	US 176 & New Hope Road	Newberry	30.0
25	15	US 321 & SC 34	Fairfield	29.2
26	21	Winnsboro Road & S 462	Newberry	27.8
27	34	SC 391 & Bethel Chr Rd S-71	Newberry	25.4
28	41	Short Cut Road & Winnsboro Road (SC 34)	Newberry	25.4
29	16	SC 215 & SC 34	Fairfield	23.6
30	30	US 76 & Mount Pilgrim Church Road	Newberry	23.5
31	42	US 21 and SC 200	Fairfield	22.0
32	26	Sandy Hill Road & Stoney Hill Road	Newberry	21.6
33	11	Main Street & Wheeland Road	Newberry	20.1
34	24	SC 395 & Hawkins Road	Newberry	19.9
35	25	SC 395 & Stoney Hill Road	Newberry	19.9
36	13	US 321 & Peach Road	Fairfield	16.5
37	17	SC 269 & Kelly Miller Road	Fairfield	15.4
38	5	Bluff Road & St Marks Road	Richland	14.8

39	10	Macedonia Church Rd & Wheeland Road	Newberry	12.8
40	9	Dennis Dairy Rd & Hawkins Road	Newberry	11.5
41	27	Stoney Hill Road & St Lukes Church Road	Newberry	11.4
42	28	St Lukes Church Road & Counts Sausage Road	Newberry	10.5
43	18	SC 34 & Boney Road	Fairfield	7.6

FIGURE 14.1. CMCOG RPO WIDENING AND INTERSECTION PROJECTS



Chapter 15 Financial Plan

15.1 Introduction

Federal requirements mandate that this 2045 Long Range Transportation Plan include a financial plan that demonstrates how the future transportation project recommendations can be implemented based on order of magnitude cost estimates and reasonably expected revenues. These financial constraints are critical to ensuring that the 2045 Long Range Transportation Plan is credible and provides realistic expectations of what can be accomplished.

15.2 Project Prioritization Methodology

There is a need to prioritize projects that will receive funding based on how well a project performs against a number of performance criteria. Both the South Carolina Legislative Act 114 of 2007 (Act 114) along with FAST Act legislation require an objective, data-driven process for selecting projects for inclusion in the financially-constrained plan, and, ultimately, for funding and consideration. One key component of the process included using the Statewide Travel Demand Model to analyze current and anticipated travel patterns and traffic congestion rates. Following the requirements of Act 114, COATS MPO and CMCOG RPO adopted a project ranking system for transportation projects outlined in Chapters 13 and 14. It should be noted that the project ranking requirements do not apply to projects that do not use SCDOT guideshare funding. Projects funded entirely by state or federal earmarks, a local sales tax initiative, local government general obligation bonds or other exempt sources could be built as funds become available at the discretion of SCDOT and the funding entity.

For this 2045 LRTP, all urban MPO widening projects and intersection projects, as well as all rural RPO widening projects and intersection projects, were put through a project prioritization scoring, resulting in the project priority categories in Chapters 13 and 14. Figure 15.1 summarizes the project prioritization methodology used.

FIGURE 15.1. SUMMARY OF PROJECT PRIORITIZATION METHODOLOGY

Goal Area	Criteria	Rating Methodology	Required Data Set(s)
Asset Preservation	• Improves pavement quality	Calculate change in Pavement Quality Index [as defined by SCDOT]	Highway Performance Monitoring System
	• Improves bridge sufficiency	Calculate change in Bridge Sufficiency Rating	National Bridge Inventory
Safety	• Improves highest fatal crash frequency locations	Calculate historic crash frequency	Fatality Analysis Reporting System
Mobility and Accessibility	• Reduces congestion	Predict impact of changes in capacity on level of travel time reliability using regression	Regional Integrated Transportation Information Systems
	• Improves access on commute routes	Calculate peak hour flows for passenger vehicles	Regional Travel Demand Model
	• Peak auto and truck travel time savings	Estimate change in peak hour travel times and daily truck travel times	Regional Travel Demand Model
Regional Values	• Improves access to employment centers	Calculate employment accessibility using gravity model	Longitudinal Employer Household Dynamics Survey
	• Reduces pollutant emissions	Predict the emissions savings based on travel time savings for freight vehicles	Regional Travel Demand Model

Each of the above project prioritization areas were given a weight that results in each project being given a score. The road widening ranking criteria weights are outlined in Table 15.1.

TABLE 15.1. ROAD WIDENING RANKING CRITERIA

Criteria	Weighting
Asset Preservation – Pavement	8%
Asset Preservation – Bridge	8%
Safety	10%
Improved Access for Commute Routes	12%
Peak Auto Travel Time Savings	12%
Truck Travel Time Savings	8%
Improves Access to Employment Centers	8%
Reduces Pollutant Emissions	10%
On National Highway System	14%
Benefit/ Cost	10%
TOTAL	100%

15.3 Urban Area Highway Fiscally-Constrained Plan

To develop the financially-constrained highway plan for the urbanized area, the COATS MPO prepared revenue forecasts of anticipated Federal, state, and local revenues, along with planning-level cost estimates for each proposed highway project located in the urbanized area. The projected revenue is compared to the recommended projects and programs to determine which projects can be realistically funded, and thus are recommended based on the anticipated level of funding over the life of the Plan. This results in the financially-constrained list of projects, outlined in Chapter 13 as the Prioritized Widening Projects. Projects that cannot be funded through the financially-constrained plan are identified as aspirational projects. Error! Reference source not found.2 identifies the revenue projections used in the development of a financially-constrained plan.

TABLE 15.2. REVENUE PROJECTIONS

Fiscal Year	Guideshare	Debt Service	Total Revenue (Guideshare – Debt Service)
2020	\$19,199,714.00	\$3,398,706.12	\$15,801,007.88
2021	\$19,199,714.00	\$3,403,972.84	\$15,795,741.16
2022	\$21,925,067.00		\$21,925,067.00
2023	\$21,925,067.00		\$21,925,067.00
2024	\$21,925,067.00		\$21,925,067.00
2025	\$21,925,067.00		\$21,925,067.00
2026	\$21,925,067.00		\$21,925,067.00
2027	\$21,925,067.00		\$21,925,067.00
2028	\$21,925,067.00		\$21,925,067.00
2029	\$21,925,067.00		\$21,925,067.00
2030	\$24,556,075.04		\$24,556,075.04
2031	\$24,556,075.04		\$24,556,075.04

2032	\$24,556,075.04		\$24,556,075.04
2033	\$24,556,075.04		\$24,556,075.04
2034	\$24,556,075.04		\$24,556,075.04
2035	\$24,556,075.04		\$24,556,075.04
2036	\$24,556,075.04		\$24,556,075.04
2037	\$24,556,075.04		\$24,556,075.04
2038	\$24,556,075.04		\$24,556,075.04
2039	\$24,556,075.04		\$24,556,075.04
2040	\$27,502,804.04		\$27,502,804.04
2041	\$27,502,804.04		\$27,502,804.04
2042	\$27,502,804.04		\$27,502,804.04
2043	\$27,502,804.04		\$27,502,804.04
2044	\$27,502,804.04		\$27,502,804.04
2045	\$27,502,804.04		\$27,502,804.04
Totals (2020-2045)	\$624,377,538.64	\$6,802,678.96	\$617,574,859.69
Anticipated Revenues	\$617,574,859.69	This is the total anticipated revenue after debt service from FY 2020 to FY 2045	
Existing + Committed	\$150,727,000.00	This amount includes funding committed to intersections, sidewalks, signal systems, highway projects, and interchange improvements	
Remaining Revenues	\$466,847,859.69	This is the amount of revenue available for new transportation projects	
Cost Constrained Funding Available (Rounded to the nearest million)	\$466,000,000.00	This is the amount of revenue available (rounded down to the nearest million) that will be used to financially-constrain the plan	

Table 15.3 shows how the \$150,727,000 that will go towards Existing + Committed projects is allocated.

TABLE 15.3. EXISTING + COMMITTED PROJECT ALLOCATION

Project	Amount
Intersection Improvement Projects	\$2,115,000
South Main Street	\$6,000,000
Assembly Street	\$3,000,000
Hardscrabble Road Widening	\$6,667,000
Leesburg Road Widening	\$47,045,000
Columbia Avenue Widening	\$44,200,000
Exit 119 Interchange Improvement	\$41,700,000
TOTAL	\$150,727,000

15.4 Transit Fiscal Constraint

The continued operation and enhancement of transit service provided by Central Midlands Regional Transit Authority must also show fiscal constraint. Sources of Federal transit revenue include the following:

- Section 5307
- Section 5307 Operating Assistance
- Section 5310
- Section 5339

Table 15.4 indicates Transit Funding Projections, including sources of and anticipated revenues for transit operations and improvement projects.

TABLE 15.4. TRANSIT FUNDING PROJECTIONS

Fiscal Year	Section 5307	COATS MPO Planning Initiatives	Amount Typically Transferred to Regional Transit Authorities	Section 5307 Operating Assistance	Section 5310	Section 5339
2020	\$5,399,496.00	-	\$5,399,496.00	\$4,049,622.00	\$488,640.00	\$626,271.00
2021	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2022	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2023	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2024	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2025	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2026	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2027	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2028	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2029	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2030	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2031	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2032	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2033	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2034	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2035	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2036	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00

2037	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2038	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2039	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2040	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2041	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2042	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2043	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2044	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
2045	\$5,496,654.00	\$200,000.00	\$5,296,654.00	\$3,972,490.50	\$509,993.00	\$586,728.00
Totals (2020-2045)	\$142,815,846.00	\$5,000,000.00	\$137,815,846.00	\$103,361,884.50	\$13,238,465.00	\$15,294,471.00

Anticipated Revenues for Transit (Capital & Maintenance)	\$137,815,846.00	Funding can be used to purchase buses and/or provide preventive maintenance
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Anticipated Revenues for Operating Expenses	\$103,361,884.50	Up to 75% of the funding can be used for operating assistance
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Anticipated Revenues for Transit Planning	\$5,000,000.00	Funding can be used to provide planning and technical support for transit service
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Total Anticipated Transit Revenues	\$246,177,730.50	This is the amount of total revenue available for transit
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Transit Funding Available (Rounded to the nearest million)	\$246,000,000.00	This is the amount of revenue available (rounded to the nearest million) for transit
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15.5 Rural Area Highway Fiscal Constraint

To develop the financially-constrained highway plan for the rural area, CMCOG prepared revenue forecasts of anticipated Federal, state, and local revenues, along with planning-level cost estimates for each proposed highway project located outside of the urbanized area, outlined in Chapter 14. The projected revenue is compared to the recommended projects and programs to determine which projects can be realistically funded, and thus are recommended based on the anticipated level of funding over the life of the Plan. This results in a financially-constrained list of projects. Projects that cannot be funded through the financially-constrained plan are identified as aspirational projects. Table 15.5 identifies the revenue projections used in the development of a financially-constrained plan.

TABLE 15.5. RURAL REVENUE PROJECTIONS

Fiscal Year	Guideshare	Debt Service	Total Revenue (Guideshare – Debt Service)
2020	\$2,883,809.00		\$2,883,809.00
2021	\$2,883,809.00		\$2,883,809.00
2022	\$4,000,000.00		\$4,000,000.00
2023	\$4,000,000.00		\$4,000,000.00
2024	\$4,000,000.00		\$4,000,000.00
2025	\$4,000,000.00		\$4,000,000.00
2026	\$4,000,000.00		\$4,000,000.00
2027	\$4,000,000.00		\$4,000,000.00
2028	\$4,000,000.00		\$4,000,000.00
2029	\$4,000,000.00		\$4,000,000.00
2030	\$4,200,000.00		\$4,200,000.00
2031	\$4,200,000.00		\$4,200,000.00
2032	\$4,200,000.00		\$4,200,000.00
2033	\$4,200,000.00		\$4,200,000.00
2034	\$4,200,000.00		\$4,200,000.00
2035	\$4,200,000.00		\$4,200,000.00
2036	\$4,200,000.00		\$4,200,000.00
2037	\$4,200,000.00		\$4,200,000.00
2038	\$4,200,000.00		\$4,200,000.00
2039	\$4,200,000.00		\$4,200,000.00
2040	\$4,410,000.00		\$4,410,000.00

2041	\$4,410,000.00		\$4,410,000.00
2042	\$4,410,000.00		\$4,410,000.00
2043	\$4,410,000.00		\$4,410,000.00
2044	\$4,410,000.00		\$4,410,000.00
2045	\$4,410,000.00		\$4,410,000.00
Totals (2020-2045)			
Totals (2020-2045)	\$106,227,618.00		\$106,227,618.00
Anticipated Revenues	\$106,227,618.00	This is the total anticipated revenue after debt service from FY 2020 to FY 2045	
Existing + Committed	\$27,025,000.00	This amount includes funding committed to intersections, sidewalks, signal systems, highway projects, and interchange improvements	
Remaining Revenues	\$79,202,618.00	This is the amount of revenue available for new transportation projects	
Cost Constrained Funding Available (Rounded to the nearest million)	\$79,000,000.00	This is the amount of revenue available (rounded down to the nearest million) that will be used to financially-constrain the plan	

Table 15.6 shows how the \$27,025,000 that will go towards Existing + Committed projects is allocated.

TABLE 15.6. RURAL EXISTING + COMMITTED PROJECT ALLOCATION

Project	Amount
Intersection Improvement Projects	\$2,525,000
US 1 Phases II & III	\$7,500,000
Exit 119 Interchange Improvement	\$4,000,000
Longtown Road Resurfacing	\$6,000,000
Macedonia Road Resurfacing	\$7,000,000
TOTAL	\$27,025,000

Appendix A

Appendix B

Appendix C