GPATS LONG-RANGE TRANSPORTATION PLAN

Horizon 2040

Long-Range Transportation Plan

Adopted November 2017

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ACKNOWLEDGMENTS

On behalf of the project team, the Greenville-Pickens Area Transportation Study (GPATS) thanks the diverse group of participants whose input was instrumental to creating the blueprint for a safe, multimodal, and interconnected transportation system for this portion of the Upstate. Horizon 2040 reflects the collaborative efforts of the public, stakeholders, focus groups, local staff and officials, the South Carolina Department of Transportation (SCDOT), the Federal Highway Administration (FHWA), and GPATS staff. The efforts of everyone are greatly appreciated.

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Executive Summary

Horizon 2040, the Long-Range Transportation Plan (LRTP) for the Greenville-Pickens area, outlines a regional strategy for a connected transportation system that accommodates the region's existing and future mobility needs. *Horizon 2040* is a financially constrained plan, meaning it identifies projects and programs that can reasonably be implemented with anticipated funding levels through the year 2040. In response to federal mandates and the expressed wishes of local residents, the LRTP addresses all modes of transportation in some manner, including automobile, bicycle, pedestrian, transit, air, and rail.

Reason for the Plan

GPATS reviews the LRTP every five years and completes a major update every 10 years. Horizon 2040 is the first major update to the region's LRTP since 2007. The plan fulfills federal requirements and serves as the region's transportation vision. It characterizes current and future transportation needs, outlines the region's long-range transportation goals, identifies multimodal transportation strategies to address needs through the year 2040, and documents long-term opportunities beyond current funding capabilities. Federal funding cannot be allocated to transportation projects unless they are included in the financially-constrained plan. In other words, GPATS cannot plan to spend more money than it reasonably expects to receive.

Study Area

The Horizon 2040 study area covers 777 square miles of the Upstate, including portions of Greenville, Pickens, Anderson, Laurens, and Spartanburg Counties.

Planning Process

The Horizon 2040 process began with a review of current socioeconomic and transportation conditions. Guiding principles and goals were established prior to identifying multimodal recommendations. Once the recommendations were developed, the project team estimated available resources through the year 2040 and used the prioritization process to help identyify which projects to put forward for consideration. The financially-constrained plan provides a blueprint of transportation projects through the year 2040 and will be re-evaluated in five years.

Public Engagement

As part of Horizon 2040, GPATS staff engaged municipal and county staff, elected officials, SCDOT, FHWA, state and federal agencies, various public agencies, advocacy groups, and community leaders in a variety of ways. Engagement for Horizon 2040 included two regional workshops, 17 sub-regional community meetings, 25 stakeholder and small group interviews, three focus group work sessions, three surveys, and multiple meetings with the GPATS Policy Committee and Study Team.

GUIDING STATEMENTS

The guiding statements below represent six interrelated value statements that conform to national, state, and regional long-range planning goals. The guiding statements, which reflect the region's transportation needs and desires, provided direction throughout the planning process and helped inform the prioritization of recommendations.

Culture and Environment

Enhance the region's quality of life by preserving and promoting its valued places and natural assets.

Economic Vitality

Support regional economic vitality by making it easier to move people and freight within and through the region.

Growth and Development

Make traveling more efficient by coordinating transportation investments with land use decisions.

Mobility and Accessibility

Provide a balanced transportation system that makes it easier to bike, walk, and take transit.

Safety and Security

Promote a safe and secure transportation system by reducing crashes, making travel reliable and predictable, and improving emergency response

System Preservation and Efficiency

Extend the life of the transportation system and promote fiscal responsibility by emphasizing maintenance and operational efficiency.

ROADWAY RECOMMENDATIONS

The Upstate's transportation system must strike a balance between serving the mobility needs of existing residents, businesses, and visitors and planning for the region's growth and economic wellbeing. As it grows, the GPATS area will face a continued rise in travel demand, placing pressure on the roadway network to accommodate more trips each year. A balanced region should plan for the future through a mix of capacity and operational improvements, access management, and active transportation projects that improve safety and travel efficiency for all users.

The Horizon 2040 roadway recommendations are a crucial component of building and maintaining a safe, efficient, and accessible network. An existing network assessment allowed the Horizon 2040 team to fully understand the region's existing challenges and to be better stewards of limited resources.

In total, Horizon 2040 recommends:

- 123 corridor improvements throughout the region.
- 137 intersection improvements

These projects were identified in close consultation with local staff and the public, based on safety, operational, or congestion concerns. The exact scope of many improvements identified here will be further refined as projects move forward in the funding cycle.

Project Prioritization

Each roadway project was scored based on an SCDOT-driven process, which is standard across the state. A project receives an individual score in each category below according to its performance in that category, scored on a scale of 1 (worst) to 10 (best). Different project types are ranked against the same criteria; however, each category is weighted differently, providing each project with a separate "weighted score." Projects are then ranked according to this measure. For more information on the prioritization process, see Appendix D (http://www.gpats.org/plans/horizon2040).

- **Environmental Impacts:** based on an assessment of potential impacts to natural, social, and cultural resources.
- **Truck Traffic:** based on current truck percentages.
- **Economic Development:** determined using the Transportation, Distribution, and Logistics (TDL) tool developed by Clemson University. The tool assesses the economic development impact of transportation infrastructure projects.
- **Located on a priority network:** based on a project's location in relation to defined priority networks.
- **Consistency with Local Land Use Plans:** verification is confirmed during the Statewide Transportation Improvement Program (STIP).
- **Traffic Volume and Congestion:** based on current and future traffic volumes and the associated level-of-service condition.
- **Alternative Transportation Solutions:** confirmed during the National Environmental Policy Act (NEPA) process.
- **Public Safety:** based on an accident rate calculated by the total number of crashes within a given road segment, divided by the traffic volume, and multiplied by the number of years.
- **Geometric Alignment Status:** based on an assessment of the intersection's functionality and operational characteristics.
- **Financial Viability:** based on estimated project cost in comparison to the six-year STIP budget. Additional consideration will be given to projects supplemented with local project funding and/or other federal and state funding.
- **Pavement Quality Index (PQI)**: based on pavement condition assessments.

Congestion Management Process (CMP)

As an urbanized area with a population greater than 200,000, GPATS is required by federal law to implement a CMP for its entire planning area. Therefore, GPATS has chosen to incorporate the CMP into their LRTP planning efforts. The improvements can be implemented in a relatively short time frame (within 5-10 years) compared to more traditional capacity improvements, such as adding additional travel lanes, which can take more than 10 years to implement and costs significantly more. Projects identified through the CMP may also be added to future updates of the LRTP should they require additional funding or a longer time frame for implementation.

The GPATS Study Team and Policy Committee will address CMP issues routinely as an ongoing planning activity. They will identify, track, and evaluate potential congestion or safety-related issues on the CMP roadway network.

The full regional CMP is included in Appendix E.

Other Roadway Recommendations:

- Safety improvements toolbox and demonstration intersections
- Access management toolbox and demonstration corridors
- Connectivity best practices

BICYCLE AND PEDESTRIAN RECOMMENDATIONS

Horizon 2040 envisions a network of active transportation infrastructure that connects communities of all sizes across the GPATS region, and encourages walking and bicycling as common parts of everyday life. Across the region, people of all ages and abilities should enjoy access to safe, comfortable, and convenient walking and bicycling infrastructure and benefit from an enhanced quality of life, healthier lifestyles, greater economic opportunity, and a culture of safety and respect for all transportation users.

Bicycle Recommendations

The GPATS bicycle network recommendations detail a robust system of interconnected facilities that connect all regional communities. The recommendations are divided into two types of facilities: on-street and off-street. Recommended on-street infrastructure may vary depending on the surrounding context and corridor and include bike routes, on-street markings, paved shoulders, bike lanes, buffered bike lanes, and separated bike lanes/cycle tracks. Off-street infrastructure are shared-use paths that can be used by both cyclists and pedestrians.

Pedestrian Recommendations

The pedestrian network recommends a system of shared-use paths paired with sidewalk priority areas centered around schools. The shared-use paths double as bicycle infrastructure and connect regional communities to provide recreational and functional transportation benefits.

The school sidewalk priority areas designate a half-mile buffer surrounding elementary, middle, and high schools, as well as central business districts. All roadways within these areas should be designed to maximize pedestrian accessibility and safety as opportunities arise and funding allows for improvements.

Bicycle and Pedestrian Prioritization

Three factors were used to select a list of high priority projects from the hundreds of recommended bicycle and pedestrian improvements. These factors include:

- Connectivity
- Length and Cost
- Community and Regional Impact

Finally, projects of all priority levels were checked to ensure their compatibility with SCDOT Guideshare guidelines. To be eligible for Guideshare funding, a bicycle or pedestrian project must meet certain criteria detailed in the plan. In this way, several priority projects were identified to be funded through Horizon 2040 Guideshare funds.

Other Bicycle and Pedestrian Recommendations:

- Program recommendations
- Design guidelines

PUBLIC TRANSPORTATION

The Transit element of *Horizon 2040* evaluates recent and on-going transit planning efforts, and recommends policy-based strategies and system-level service improvements to enhance access and mobility for residents throughout the area.

The transit recommendations build upon previous and ongoing planning efforts and evaluate opportunities to create a system that serves existing and future needs of the area while satisfying state and federal eligibility requirements for financial assistance.

Priority Corridors

Transit in the GPATS area should develop with the goal of serving the needs of the local workforce and the transit-dependent community. Greenlink's current planning efforts are a major opportunity to revamp the system with regional mobility in mind. By connecting more communities, serving regional activity centers, and developing a comprehensive network that links routes throughout the area, transit can become a viable mobility option that serves the local workforce, employers, and choice riders alike.

Horizon 2040 identifies priority transit corridors that link major employment centers, medical services, and educational centers, while serving the needs of the GPATS population.

Policy Recommendations

- Expand service to connect more communities within the metro region
- Provide extended service hours that better serve the needs of employers and employees
- Prioritize service to areas that depend on transit as their primary means of mobility and to high growth corridors as a means of traffic mitigation
- Dedicate a percentage of guideshare funds to transit system capital improvements

Passenger Rail

GPATS is committed to actively participating in the development of improved passenger rail service and will remain adaptable as circumstances evolve and improvement opportunities arise. Fortunately, GPATS and its member jurisdictions will have plenty of time to adapt infrastructure and land use policies once improved passenger rail service is announced, as it will take a number of years to implement. In the interim, GPATS is committed to improving the modes that will support regional rail stations.

FREIGHT

Freight and logistics is a major building block of the Upstate economy, and freight traffic is expected to continue growing for the foreseeable future. Freight activity remains a high priority to ensure infrastructure is in place to efficiently move goods through the region or deliver them to end users. Improvements, such as corridor management, road maintenance, and traffic mitigation, will help priority corridors serve existing and projected freight movements. These improvements will also help prevent freight traffic from spilling over into unsuitable areas, yielding a safer environment for all users.

Horizon 2040's freight recommendations include:

- State coordination
- Rail crossing improvements
- Regional freight plan
- Transportation technology
- Industry collaboration
- Freight security

TRANSPORTATION DEMAND AND EMERGING TECHNOLOGIES

The transportation systems of cities, states, and nations are transforming. As a 2040 plan, *Horizon 2040* must respond not only to the transportation needs as they stand today, but also to the potential for change in the future. To do this, we must look beyond the current transportation strategies and technologies being leveraged to better understand what trends and shifts are on the way.

Horizon 2040 contains recommendations regarding:

- Transportation demand management
- Transportation system management
- Advanced and emerging technologies

Performance Measures

As a federal requirement, states must now invest resources in projects to achieve individual targets that will collectively make progress toward national goals. MPOs are also responsible for developing LRTPs and Transportation Improvement Programs (TIP) through a performance-driven, outcome-based approach to planning.

GPATS is now developing its process to meet federal requirements—including requirements for tracking specific measures and setting targets—and to meet the unique planning needs of the MPO.

For the 2018 performance period, the MPO has elected to accept and support the State of South Carolina's safety targets for five safety performance measures. More information is in Chapter 9.

FINANCIAL PLAN

Projected Revenue

SCDOT allocates funds to its member MPOs through a program known as Guideshare funding. Guideshare funding is separate from funding for items such as maintenance, safety, and interstates, which are allocated and prioritized at a statewide level. Guideshare funding is allocated by SCDOT by leveraging the MPO planning process, including the LRTP and the MPO Transportation Improvement Program (MTIP). In 2017, the GPATS region received a total of $18.078 million in Guideshare funding. This number is inclusive of a 20% match, which is funded by SCDOT. The 2017 funding amount is expected to stay constant throughout the life of the plan. When inflation is considered, this approach will lead to a decline in the region's purchasing power.

GPATS has the opportunity to consider how best to allocate these Guideshare funds during the life of the plan. To help better understand the optimal allocation of these funds, GPATS reached out to the public at the second regional workshop. The exit questionnaire (discussed in Chapter 2) asked participants to allocate funds to various transportation modes. More than 120 respondents to this question strongly advocated for enhanced multimodal funding, along with strong funding for safety. These priorities were considered to inform regional allocation of Guideshare funding percentages, as detailed below.

- ***Roadway Corridors - 50% Guideshare funding.*** Projects within the roadway category include widening projects, new road projects, access management projects, and road diets.
- ***Intersections - 25% Guideshare funding.*** Projects within the intersection category include intersection and interchange projects that have been identified to improve safety or capacity. This Guideshare allocation gives the region added flexibility to focus on its own priorities, while the state continues to address safety concerns using their statewide prioritization method.
- ***Bicycle/Pedestrian - 10% Guideshare funding.*** Projects within the bicycle and pedestrian category include on- or off-street projects that are independent of other roadway improvements. This Guideshare allocation is in addition to potential Transportation Alternatives Program monies that can be applied for by individual jurisdictions. For a bicycle or pedestrian project to be considered for Guideshare funding, the project must satisfy a series of criteria set forth by SCDOT. Projects should be vetted against these criteria prior to being considered.
- ***Transit - 10% Guideshare funding.*** Projects within the transit category consist of capital projects rather than operations and maintenance. This funding is in addition to transit capital, operations, and maintenance funding received through other statewide sources.
- ***Signal Upgrades - 5% Guideshare funding.*** Currently, $150,000 annually is allocated within the GPATS region for signal upgrades. The increase in funding would help accelerate these improvements, including signal installation, improvements to current signals, signal retiming, or other Intelligent Transportation System (ITS) improvements (introduced in Chapter 8).

The table below shows the proposed allocation of funding for each category for the two planning horizon-year periods.

GPATS GUIDESHARE MODAL SPLITS

	Roadway Corridors	Intersections	Bike/Ped	Transit	Signal Upgrades
2024–2030	$63,273,000	$31,636,500	$12,654,600	$12,654,600	$6,327,300
2031–2040	$90,390,000	$45,195,000	$18,078,000	$18,078,000	$9,039,000
Total	$153,663,000	$76,831,500	$30,732,600	$30,732,600	$15,366,300
Notes	50% allocation	25% allocation	10% allocation	10% allocation	5% allocation

FINANCIALLY-CONSTRAINED PROJECTS

Roadway Corridors

While it would be ideal to implement every project, only a portion can be funded. Because of this, the projects identified during the recommendations development phase are known as "financially-constrained projects." The 123 roadway corridor projects identified during the recommendations development phase were evaluated based on qualitative and quantitative measures during a regional prioritization process. Then, the projects were ranked. Only higher-ranked projects will receive the allocated funding.

The project prioritization process determined cost estimates for the roadway corridor projects. These estimates capture the full cost of a project, including construction, right-of-way, design, contingency, and environmental/utilities cost. While these costs were all initially prepared in 2017 dollars, they were inflated to compare with the available funding during our horizon-year periods. To maintain consistency, the project team inflated projected funding for projects in the first horizon-year period (2024–2030) to the midpoint of that period (2027). The team included projects that could not be funded during the first horizon-year period in the second (2031–2040), accounting for inflation to the midpoint year of 2035.

Once funding during these periods was allocated, the remaining projects were placed in the unfunded vision. These projects should be considered for implementation at a later date, when funding is available.

Funded Corridor Improvements

Horizon-Year Period	Project ID	Facility	From	To	Type	Rank	Project Cost	"Anticipated Year of Expenditure" Costs	Balance
2024–2030	37	Garlington Rd	SC-146	Roper Mountain Rd	Widening	1	$8,550,000	$$11,490,000	$51,783,000
	94	US 29/Mills Ave	Augusta St	Stevens St	Corridor Improvements	2	$2,522,793	$3,390,000	$ 48,393,000
	11	Grove Rd	US 25	W. Faris Rd	Widening	3	$9,813,960	$113,189,000	$35,204,000
	100	Laurens Rd	I-85	Innovation Dr	Corridor Improvements	4	$6,941,330	$9,329,000	$25,875,000
	118	Academy St/US 123	Pendleton St	Washington Ave	Corridor Improvements	5	$7,644,736	$9,402,000	$ 15,601,000
	92	Wade Hampton Blvd	Pine Knoll Dr	Reid School Rd	Access Management	6	$10,451,625	$14,046,000	$ 1,555,000
2031–2040	10	Woodruff Rd	Miller Rd	Smith Hines Rd	Widening	7	$1,490,000	$2,537,000	$86,363,000
	88	SC 357/Arlington Rd	Study area boundary	E Wade Hampton Blvd	Widening	8	$27,026,688	$46,011,000	$40,352,000
	20	Bridges Rd	E Butler Rd	Holland Rd	Widening	9	$4,593,622	$7,820,000	$32,532,000
	91	N Pleasantburg Dr/Pine Knoll Dr	I-385	Wade Hampton Blvd	Corridor Improvements	10	$4,614,147	$7,855,000	$24,677,000
	43	Pine Knoll Dr	Wade Hampton Blvd	Rutherford Rd	General Improvements	11	$3,284,783	$5,592,000	$ 19,085,000
	22	US 123 (Phase 1)	Jasper St	Powdersville Rd	Widening	12	$11,000,000	$18,727,000	$358,000

Intersections

Using a process identical to the one used in the roadway corridors section, intersection-level projects were also financially constrained based on available funding. As with the roadway corridor projects, all of the financially constrained projects are near-term projects and there are many other unfunded near-term projects. If additional funding, such as funds procured through the statewide safety program, is secured for a certain intersection, the financially constrained plan should be adjusted to accommodate another near-term intersection project.

Transit

The GPATS region's public transportation needs and recommendations are introduced in Chapter 6. Based on feedback from the public, the plan allocates additional Guideshare funding for capital improvements. Coordination with Greenlink and CAT will be needed to determine the best application of this additional capital funding. This may initially take the form of funding for bus replacement and expansion of the bus system, and may ultimately include facility improvements or new facilities.

Signal Upgrades

SCDOT leads efforts within the GPATS region to maintain and enhance signals. As a result, GPATS will work closely with SCDOT to understand how best to allocate these additional funds.

Funded Intersection Improvements

Horizon-Year Period	Project ID	Road 1	Road 2	Rank	Project Cost	"Anticipated Year of Expenditure" Costs	Balance
2024–2030	107, 126	Roper Mountain Rd	I-385, Independence Blvd (address as single interchange)	1, 11	$7,000,000	$9,407,000	$22,229,500
	117	Haywood Rd	Pelham Rd	2	$3,000,000	$4,032,000	$18,197,500
	116	Pleasantburg Dr	Rutherford Rd	3	$3,500,000	$4,704,000	$13,493,500
	72	White Horse Rd	W Blue Ridge Rd	4	$3,500,000	$4,704,000	$8,789,500
	81	E Blue Ridge Dr/State Park Rd	Poinsett Hwy	4	$3,500,000	$4,704,000	$4,085,500
2031–2040	121	Laurens Rd	Woodruff Rd	4	$3,500,000	$5,959,000	$39,236,000
	90	Rutherford St	James St/W Earle St	7	$3,500,000	$5,959,000	$33,277,000
	101	SC 8	Murray St/Courtney Street/Smythe Street	9	$3,500,000	$5,959,000	$27,318,000
	124	Pelham Rd	E North St	10	$3,500,000	$5,959,000	$21,359,000
	113	Pleasantburg Dr	Antrim Dr	11	$3,500,000	$5,959,000	$15,400,000
	114	Academy St	Pendleton St	11	$3,500,000	$5,959,000	$9,441,000
	125	Laurens Rd	Verdae Blvd	11	$3,500,000	$5,959,000	$3,482,000

Bicycle and Pedestrian

The recommendations development process for bicycle and pedestrian projects detailed in Chapter 5 resulted in more than 800 recommended projects. From those, 63 were designated high-priority projects. Following a process outlined in Chapter 5, the project team took these high priority projects through the financial constraint exercise and checked them against SCDOT standards for Guideshare eligibility.

Horizon-Year Period	Facility	Type	Road Name	Guideshare Points	Rank	Project Cost	"Anticipated Year of Expenditure" Costs	Balance
2024–2030	Mauldin Golden Strip Greenway (Swamp Rabbit Trail Extension)	Shared-Use Path	US 276 Corridor, SC 417 Corridor	7	1	$3,308,753	$4,446,700	$8,207,900
	Clemson-Central Green Crescent Connector	Shared-Use Path	SC 93 Corridor	7	2	$2,676,913	$3,597,500	$4,610,400
	Augusta Street Area Bike Network	Bike Lane, Bicycle Route, Shared Lane Markings	parallel street network	7	3	$361,379	$485,700	$4,124,700
	Greer-Taylors Greenway	Shared-Use Path	US 29 Corridor	7	4	$3,474,611	$5,915,300	$12,162,700
2031–2040	Travelers Rest Area Bike/Ped Network Expansion	Shared-Use Path, Bike Lane, Bicycle Route	US 276 Corridor, Poinsett Hwy, McElhaney Rd	6	5	$1,733,809	$2,951,700	$9,211,000
	City of Easley Doodle Trail Extension	Shared-Use Path	Fleetwood Dr Corridor	6	6	$682,983	$1,162,700	$8,048,300
	Palmetto Area Bike/Ped Network Expansion	Shared-Use Path, Bike Lane, Shared Lane Markings	SC 20, SC 8, Rail Corridor	6	7	$2,263,830	$3,854,000	$4,194,300
	Simpsonville Golden Strip Greenway (Swamp Rabbit Trail Extension)	Shared-Use Path	SC 14 Corridor	7	8	$2,008,699	$3,419,700	$774,600

1: Introduction and Process Overview

INTRODUCTION

Transportation is a fundamental part of daily life. It affects everyone in many ways and plays a critical role in shaping a region's physical and social infrastructure. Reliable access to efficient and safe modes of transportation goes a long way toward improving the region's economic equity, environmental footprint, and overall quality of life. *Horizon 2040*, the LRTP for the Greenville-Pickens area, outlines a regional strategy for providing a connected transportation system that accommodates existing and future mobility needs. *Horizon 2040* is a financially constrained plan, meaning it identifies projects and programs that can reasonably be implemented with anticipated funding levels through the year 2040. In response to federal mandates and expressed wishes of local residents, this plan addresses all transportation modes, including automobile, bicycle, pedestrian, transit, air, and rail.

BACKGROUND

The scope of *Horizon 2040* included establishing goals, reviewing current plans and studies, analyzing current transportation conditions, engaging regional residents and stakeholders, identifying multimodal recommendations, and developing a financially-constrained plan. GPATS' Study Team and Policy Committee offered feedback throughout plan development.

About GPATS

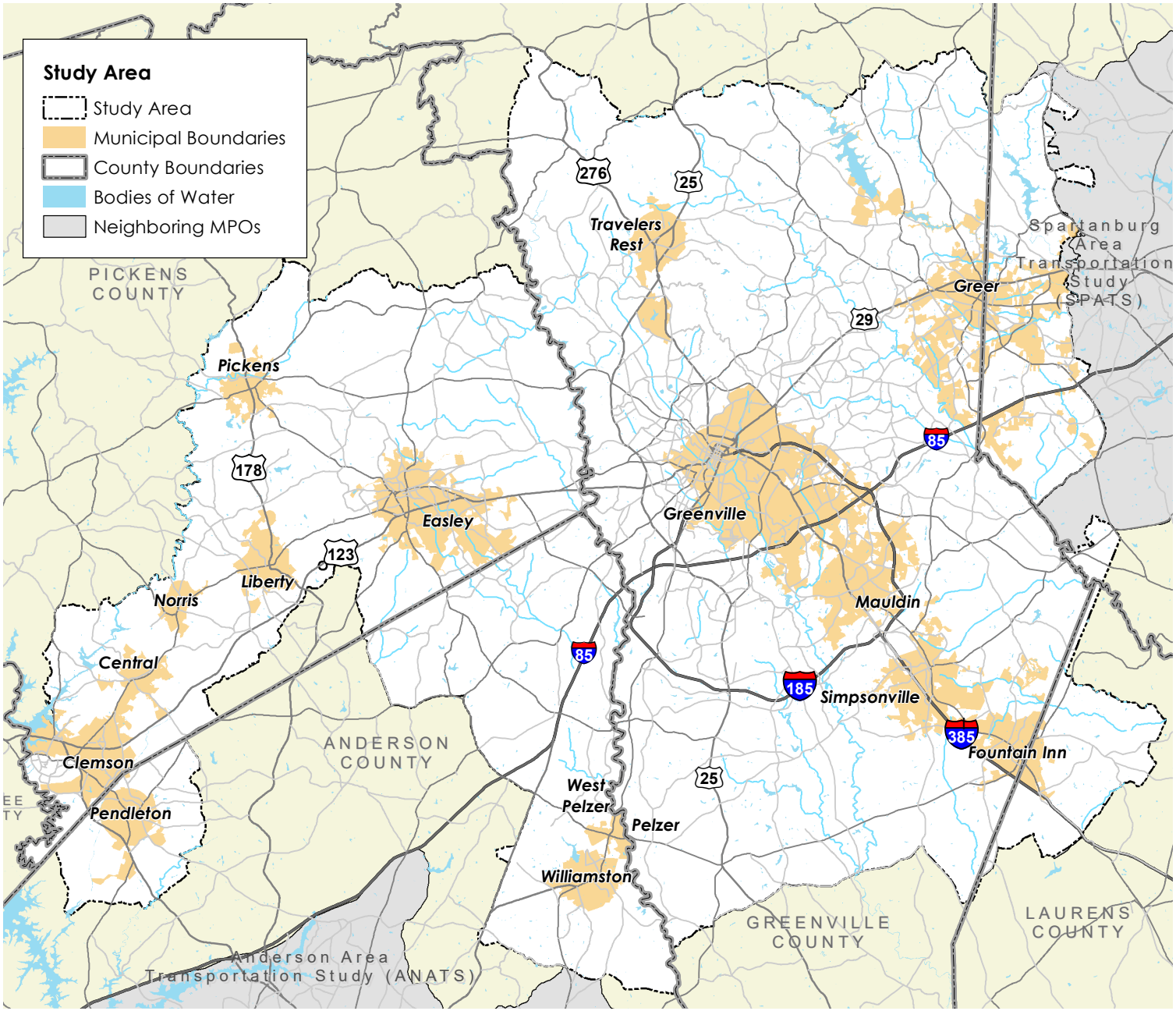
GPATS stands for the Greenville-Pickens Area Transportation Study, the Metropolitan Planning Organization (MPO) for the Greenville area, which includes a significant portion of Greenville and Pickens Counties, and smaller portions of Anderson, Laurens, and Spartanburg Counties. GPATS facilitates a regional, cooperative planning process for a 777- square-mile area that is home to more than 500,000 residents. This process is used to allocate the region's state and federal transportation funds.

Reason for the Plan

GPATS reviews the LRTP every five years and completes a major update every 10 years. *Horizon 2040* is the first major update to the region's LRTP since 2007. The plan fulfills federal requirements and serves as the region's transportation vision. It characterizes current and future transportation needs, outlines the region's long-range transportation goals, identifies multimodal transportation strategies to address needs through the year 2040, and documents long-term opportunities beyond current funding capabilities. Federal funding cannot be allocated to transportation projects unless they are included in the financially-constrained plan. In other words, GPATS cannot plan to spend more money than it reasonably expects to receive.

FAST Act

Horizon 2040 is shaped by several elements, including federal legislation. The plan is governed by the Fixing America's Surface Transportation Act (FAST Act), which was signed into law on December 4, 2015. The goals of the FAST Act include strengthening highways, establishing a performance-based program, creating jobs and supporting economic growth, supporting the United States DOT's (USDOT) safety agenda, streamlining the FHWA's transportation programs, accelerating project delivery, and promoting innovation. Additionally, the FAST Act is the first federal legislation that provides a dedicated source of federal funding for freight projects. This legislation extends through fiscal year 2020.



Study Area

GPATS is responsible for transportation policy development, planning, and programming for 777 square miles of the Upstate, including portions of Greenville, Pickens, Anderson, Laurens, and Spartanburg Counties. The planning area includes locations in which growth is likely to occur through 2040. MPOs are required to evaluate their boundary after each U.S. decennial census to ensure the planning area is inclusive of all future urbanized areas. As of 2017, more than 500,000 people lived in the GPATS region.

GPATS is just one of several regional entities tasked with transportation planning in the Upstate. The Spartanburg Area Transportation Study (SPATS) is the MPO for the Spartanburg urbanized area, which includes Spartanburg and seven other cities and towns as well as portions of unincorporated Spartanburg County. Anderson Area Transportation Study (ANATS) is the MPO for the Anderson urbanized area, which includes the cities of Anderson and Belton along with portions of Anderson County. Areas of the Upstate outside of the three MPOs are assisted by the Appalachian Council of Governments (ACOG).

Planning Process

Horizon 2040 represents a coordinated effort to establish a transportation vision for the region and identify multimodal projects to achieve it. The planning process requires cooperation between multiple jurisdictions, key stakeholders, and citizens to accurately reflect the region's needs. *Horizon 2040* is an important step toward ensuring the region's limited transportation dollars will address the most critical needs.

The *Horizon 2040* process began with a review of socioeconomic and transportation conditions. The project team facilitated the establishment of guiding principles and goals and identified multimodal recommendations. Once the recommendations were developed, a prioritization process was created and available resources through the year 2040 were identified. The financially constrained plan acts as a blueprint for transportation projects through 2040 and will be reevaluated in five years.

Public Engagement

Successful planning projects begin with strong citizen involvement. For *Horizon 2040*, the robust public engagement process was crucial to ensure the project team understood local dynamics and appreciated the region's challenges. As a result, local staff and the project team engaged the community multiple times. More detail on the public engagement activities can be found in Chapter 2.

OUTREACH TARGET SUMMARY

	Public	Elected Officials	Stakeholders	Technical Staff
Policy Committee Meeting		●		○
Study Team Meetings			○	●
Regional Workshops	●	●	●	○
Sub-Regional Community Meetings	●	●	●	○
Stakeholders and Small Group Interviews		○	●	○
Focus Group Work Sessions		○	●	●
Statistically-Valid Survey	●	●	○	○
MetroQuest Survey	●	●	●	○

● Primary Target

○ Secondary Target

What We Heard

The Greenville area includes a diverse collection of communities. To maximize public input, the engagement process included various ways to connect with these communities. Along the way, several overarching issues emerged:

- The region's rapid growth is leading to increased congestion. There is an urgent need for a coordinated response.
- The popularity of active transportation continues to grow and more residents are demanding more and better opportunities to walk, bike, and ride transit.
- Improvements to the region's transportation system enhance broader economic vitality and quality of life initiatives.

The project team considered these major themes and specific comments when creating the guiding statements and choosing the projects presented in the chapters that follow.

PREVIOUS PLANS

Horizon 2040 builds on recommendations from previous land use and transportation plans. The lists to the right show the key plans reviewed when preparing this plan. More information can be found in Appendix B (http://www.gpats.org/plans/horizon2040).

Transportation and Comprehensive Plans

The region's cities, towns, and counties have completed a variety of plans that affect future transportation recommendations, including comprehensive plans, LRTP, corridor studies, and transit plans. Some of the key plans reviewed include:

- Clemson Area Transit Bus Reimagining Study (2017)
- Anderson County Comprehensive Plan (2016)
- GCEDC Multimodal Transit Corridor Study and Personal Rapid Transit Evaluation (2010/2014)
- SCDOT Regional Transit and Coordination Plan: Appalachian Region (2014)
- City of Clemson Comprehensive Plan 2024 (2014)
- South Carolina 2040 Strategic Corridors Plan (2014)
- City of Mauldin Comprehensive Plan (2009/2014)
- Pickens County Comprehensive Plan 2030 (2010)
- Greenlink Transit Vision and Master Plan (2010)
- Plan-it Greenville (2009)
- Imagine Greenville County (2009)
- GPATS 2035 LRTP (2007)
- Woodruff Road Corridor Study (2007)
- Travelers Rest Comprehensive Plan (2006)

Bicycle and Pedestrian Plans

Several municipalities in the region have completed bicycle, pedestrian, and/or trail master plans or studies that offered guidance when developing an initial set of recommendations. These plans include detailed facility recommendations as well as ways to make active transportation more attractive long term. The list below is not all-inclusive, but captures some of the most recent and more major studies.

- Green Crescent Trail Feasibility Study (2016)
- Town of Pendleton Bike/Pedestrian Plan (2016)
- City of Travelers Rest Bike Master Plan (2015)
- Town of Williamston Bike/Pedestrian Master Plan (2015)
- Greenville County Safe Routes to School (2013)
- City of Greenville Bicycle Master Plan (2011)
- Greenville County Greenways Master Plan (2010)
- City of Easley Bike Master Plan (2010)

USING THE PLAN

At a minimum, LRTPs envision transportation enhancements and inventory multimodal projects to achieve that vision. *Horizon 2040* integrates these two tasks in a series of chapters dedicated to specific travel modes, though no element was created in isolation. Instead, the project team analyzed and developed recommendations for the different modes in tandem to ensure an integrated transportation system that efficiently moves people and goods within and beyond the Upstate is created.

The recommendations in this plan represent the collective vision for a safe, multimodal, and interconnected transportation system that supports continued economic development and respects the natural, historic, and social resources vital to the region's sustainability. In addition to this initial chapter, Horizon 2040 includes the following chapters:

Chapter 2 – Public Engagement and Guiding Statements

Provides an overview of public engagement strategies and outcomes and describes the plan's vision and guiding statements.

Chapter 3 – State of the Region

Offers a high-level socioeconomic assessment organized around people (i.e., growth and demographics) and prosperity (i.e., employment and commuting).

Chapter 4 – Roadways

Describes existing and projected roadway conditions as well as the corridor and intersection projects that can address the region's most pressing needs.

Chapter 5 – Bicycle and Pedestrian

Outlines strategies to make it safer and more efficient to travel by bike and on foot.

Chapter 6 – Public Transportation

Summarizes transit, passenger rail, passenger aviation, and shared-ride strategies to make the region's transportation system more accessible.

Chapter 7 – Freight

Focuses on ways to make the movement of goods by highway and rail more efficient and economically sustainable.

Chapter 8 – Transportation Demand and Emerging Technologies

Gives insight on the region's approach to managing transportation demand and accommodating new and emerging transportation technologies.

Chapter 9 – Performance Measures

Discusses the role of performance-based planning as well as new requirements for monitoring and evaluation.

Chapter 10 – Financial Plan and Implementation

Reveals the list of funded projects and an action plan to achieve near- and long-term goals.

Appendices to this report can be found at http://www.gpats.org/plans/horizon2040.

2: Public Engagement and Guiding Statements

INTRODUCTION

Public involvement—whether through direct or indirect contact with citizens, stakeholders, elected officials, and other community representatives—is an important part of successful transportation planning. Fully understanding the community's transportation vision and the dynamics involved in achieving it requires a collaborative approach. As a result, local staff and the project team reached out to the community throughout the planning process and in a variety of ways.

Public engagement was a necessary precursor to developing guiding statements and understanding existing conditions. This visioning process was followed by establishing goals an objectives—an important step in long-range planning. The *Horizon 2040* guiding statements reflect the community's vision for the transportation system and help prioritize recommendations. This is important given the shortage of transportation dollars to fund all identified needs.

More information regarding public engagement can be found in Appendix A (http://www.gpats.org/plans/horizon2040).

Public Engagement

As part of *Horizon 2040*, GPATS staff engaged municipal and county staff, elected officials, SCDOT, FHWA, state and federal agencies, public transportation providers and users, freight operators, public service officials, employers, chambers of commerce, economic development agencies, bicycle and pedestrian advocates, community leaders, minority and low income communities, and the public in a variety of ways. To raise awareness, GPATS used television, internet, radio, and print news media outlets as well as multiple social media platforms. Word of mouth was also instrumental in spreading details about meetings and input opportunities.

The first engagement phase involved asking participants what needs should be addressed in the plan. Throughout the process, the public saw how their input informed plan development and the decision-making process. The project team combined initial feedback with technical data to create the draft multimodal recommendations, which were presented to the public. This second engagement phase led to the final recommendations presented in this document.

Engagement for *Horizon 2040* included two regional workshops, 17 sub-regional community meetings, 25 stakeholder and small group interviews, three focus group work sessions, three surveys, and multiple meetings with the GPATS Study Team and Policy Committee. Along the way, several overarching themes emerged:

- **Safety:** Whether walking, biking, or driving an automobile, safety typically was the most frequent comment or request. The public and stakeholders were more likely to identify roadway needs associated with safety and participants often noted the desire to bike, walk, and take transit safely.
- **Mobility:** At its core, transportation seeks to connect people to the places they need or want to access. It's not a surprise that people wanted easy access to daily needs and the opportunity to travel using a variety of modes.
- **Land Development:** An inherent relationship exists between land use and transportation. As development occurs and more vehicles take to the road, roadway improvements are needed to reduce traffic congestion. These roadway improvements often enhance access, raising land values and attracting more development. This relationship was noted by participants throughout the engagement process.
- **Maintenance:** There was general consensus to fix current infrastructure before considering new roadways. Participants noted that maintenance and maximizing existing transportation capacity was a cost-effective solution.

Transportation in the Upstate today...

Our vision for the future...

Activities and Outcomes

Phase 1 Engagement: Visioning

Policy Committee – Kickoff

The first engagement activity for *Horizon 2040* was facilitated with the Policy Committee at their June 2016 meeting. The committee prioritized transportation planning elements, discussed specific issues, and helped develop initial catch phrases to inform the guiding statements. This meeting allowed local elected officials to compare their thoughts about the region's transportation needs to those of their constituents.

Regional Workshop 1 – Visioning

The first public meeting for *Horizon 2040* was held on the evening of September 7, 2016 at the TD Convention Center in Greenville. It was an interactive open house where attendees received a brief overview presentation and participated at interactive stations. These stations focused on vision and needs assessment and included:

- Information Wall
- One Word
- Priority Pyramid
- Thought Wall
- Exit Questionnaire
- More or Less
- Roadways
- Bike and Pedestrian
- Transit

Together with the sub-regional community meetings, more than 200 people attended the in-person workshops and provided more than 600 mapping data points, 1,000 written comments, and 200 priority pyramid game boards.

Sub-Regional Community Meetings – Round 1

GPATS held eight sub-regional community meetings throughout the study area to give the public easy access to at least one meeting. These meetings, listed below, included the same facilitated activities seen at the first Regional Workshop.

- Easley – October 3, 2016
- Williamston – October 10, 2016
- Mauldin – October 11, 2016
- Fountain Inn – October 12, 2016
- Clemson – October 13, 2016
- Greer – October 17, 2016
- Travelers Rest – October 18, 2016
- Greenville – October 20, 2016

Community Surveys

The first engagement phase included two surveys, which were designed to be similar where possible to ensure results could be cross-tabulated. An online survey, created using MetroQuest, launched at the first Regional Workshop and remained active through February 2017. More than 1,400 surveys were received, generating 33,000+ data points, 12,000+ map markers, and 1,800+ written comments.

The second survey was a statistically-valid survey distributed to a random sample of households. The goal was to obtain completed surveys from at least 400 households; 525 completed the survey. The overall results for the sample have a precision of at least +/- 4.3% with a 95% level of confidence.

Phase 2 Engagement: Recommendations Development and Prioritization

Focus Group Work Sessions

Three meetings, each focusing on a different transportation mode, were held on March 27 and 28, 2017. Technical professionals and advocates for specific modes participated in the work sessions to discuss infrastructure needs in the GPATS region. The meetings helped determine the direction of the LRTP and the best way to present recommendations. The focus groups looked at roadways, bike and pedestrian, and transit infrastructure.

Sub-Regional Community Meetings – Round 2

A second round of sub-regional community meetings was held in May and June 2017 to encourage widespread participation in the review of recommendations and selection of priorities. The meetings gave the public an opportunity to weigh in on draft recommendations for various modes based on input and data gathered in Phase 1. The meetings were held as follows:

- Easley – May 15, 2017
- Greenville – May 16, 2017
- Fountain Inn – May 18, 2017
- Clemson – May 23, 2017
- Williamston – May 30, 2017
- Travelers Rest – June 1, 2017
- Mauldin – June 5, 2017
- Greer – June 6, 2017
- Eastside – June 8, 2017

Regional Workshop 2 – Recommendations

The second regional workshop was held on the evening of August 29, 2017 at the TD Convention Center in Greenville. This open house-style meeting included an overview presentation and several stations where draft recommendations were presented. The stations included infrastructure standards and examples for each improvement method. An exit questionnaire was provided that asked participants to assign $100 to various transportation improvements and to gauge how well the *Horizon 2040* process and outcome addressed the plan's guiding statements.

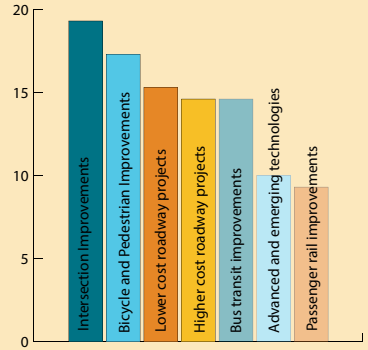
Online Survey

An online survey was distributed to mirror the exit questionnaire collected at the second regional workshop. Combined with responses to the exit questionnaire from the workshop, 125 surveys were received, providing insight on funding priorities and how the plan addressed its guiding statements.

Horizon 2040 Engagement: At a Glance

The two engagement phases were designed to build upon one another and provide data on par with technical information collected throughout the process. Where possible, similar activities were used in various outreach channels so results could be tabulated to show general trends and consensus. In turn, these trends helped GPATS staff better articulate the guiding statements and establish coordinated multimodal recommendations to address those statements.

The second regional workshop and follow up survey asked participants how they would spend $100 on transportation improvements in the region. The results echoed what was heard throughout the process—that the Greenville region needs a more balanced multimodal transportation system that aligns transportation needs with broader initiatives tied to quality of life and economic vibrancy.



GUIDING STATEMENTS

The guiding statements represent six interrelated value statements established in accordance with national, state, and regional long-range planning goals. The guiding statements, which reflect the region's transportation needs and desires, provided direction throughout the planning process and informed the prioritization of recommendations. Each statement consists of a key phrase (i.e., guiding principle) with supporting description. The principles are further clarified by a trio of planning goals.

Culture and Environment

Enhance the region's quality of life by preserving and promoting its valued places and natural assets.

Local, state, and federal planning guidelines have evolved over recent decades to emphasize the role transportation plays in conserving the environment, preserving our neighborhoods, and protecting quality of life. Throughout the Upstate, this process has been aided by land use planning, development controls, environmental planning, and socioeconomic awareness.

- Protect and enhance the natural and social environment by using context sensitive transportation strategies.
- Minimize the transportation system's direct and indirect environmental impacts.
- Promote consistency between transportation improvements, land use decisions, and economic development patterns.

Economic Vitality

Support regional economic vitality by making it easier to move people and freight within and through the region.

Ensuring transportation investments support the region's broader economic vitality goals is critical. Good transportation investments address industry needs, such as shipping goods, encouraging economic growth, and improving access to regional assets. Transportation improvements should position the region and its jurisdictions to be competitive in local, regional, and national markets.

- Highlight transportation recommendations that enable global competitiveness, productivity, and efficiency.
- Increase the accessibility and mobility of people and freight within the region and to other areas.
- Leverage gateways and aesthetics to create an atmosphere that fosters economic investment.

Growth and Development

Make traveling more efficient by coordinating transportation investments with land use decisions.

Over time, the transportation network can influence development patterns, affect property values, and help shape quality of life. In turn, how communities and regions choose to develop impacts the practicality and accessibility of bicycling, walking, and taking public transportation.

- Prepare for continued population growth by coordinating transportation strategies with land use initiatives to foster vibrant and livable communities.
- Connect people to jobs and educational opportunities through coordinated transportation and land use investment decisions.
- Promote mixed-use developments that support bicycle, pedestrian, and transit activity in town centers and along priority corridors.

Mobility and Accessibility

Provide a balanced transportation system that makes it easier to bike, walk, and take transit.

Streets have become increasingly unsafe and inaccessible for non-motorized users during the last several decades as auto-oriented growth influenced street design. Strategic investment in major roadways should be balanced with improvements to the bicycle, pedestrian, transit, and rail networks to keep people and goods moving. Enhanced mobility and accessibility creates transportation options by combining multimodal improvements with most roadway enhancement.

- Provide desirable and user-friendly transportation options for all user groups, regardless of socioeconomic status or physical ability.
- Support a fully integrated multimodal network that advances the concept of complete streets.
- Expand and maintain a network of bicycle, pedestrian, and transit infrastructure that connects homes, activity centers, and complementary amenities.

Safety and Security

Promote a safe and secure transportation system by reducing crashes, making travel reliable and predictable, and improving emergency response.

Reducing transportation fatalities and serious injuries requires an integrated approach to safety in motorized and non-motorized transportation projects. Additionally, encouraging a connected street network improves emergency response times.

- Improve the safety of the transportation system for all user groups, regardless of socioeconomic status or physical ability.
- Increase the reliability, predictability, and efficiency of the transportation experience through system improvements and enhanced communication.
- Improve safety and security by mitigating potential conflicts and delays at high-crash locations and rail crossing sites.

System Preservation and Efficiency

Extend the life of the transportation system and promote fiscal responsibility by emphasizing maintenance and operational efficiency.

A transportation network with high mobility helps sustain and enhance economic development. Local and regional mobility depends on an approach that maximizes the capacity of the transportation system. This systems management approach includes monitoring and addressing pavement quality and ensuring ancillary infrastructure, such as traffic signals and ITS infrastructure, is properly deployed.

- Increase the lifespan of existing infrastructure and ensure the optimal use of transportation infrastructure.
- Identify and prioritize infrastructure preservation and rehabilitation projects, such as pavement management and signal system upgrades.
- Increase use of innovative transportation technology to enhance the efficiency of the existing transportation system and to better prepare for emerging vehicle technologies.

3: State of the Region

2014 POPULATION
710,253

2000 POPULATION
618,489

14.7%
OF THE STATE OF SOUTH CAROLINA'S POPULATION

INTRODUCTION

A crucial step in transportation planning is to understand the forces that will drive regional change over the coming years. The *Horizon 2040* State of the Region assessment highlights demographic and economic trends related to the future growth and transportation of communities in the Upstate. The existing conditions highlighted in this chapter informed the creation of the regional transportation strategy throughout the planning process. The State of the Region Report can be found in Appendix B (http://www.gpats.org/plans/horizon2040).

People

Community members use the transportation system every day to connect to education, jobs, cultural resources, recreational activities, and more. Making sure population trends are reflected in the transportation plan allows the system to adjust to anticipated changes and accommodate future demand and changing lifestyles.

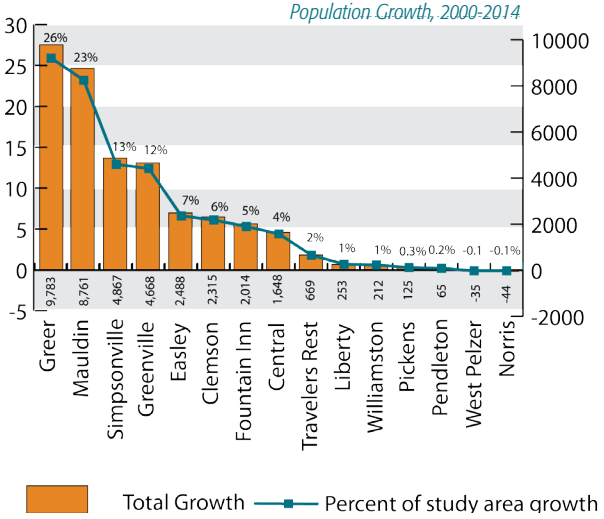
Population Growth

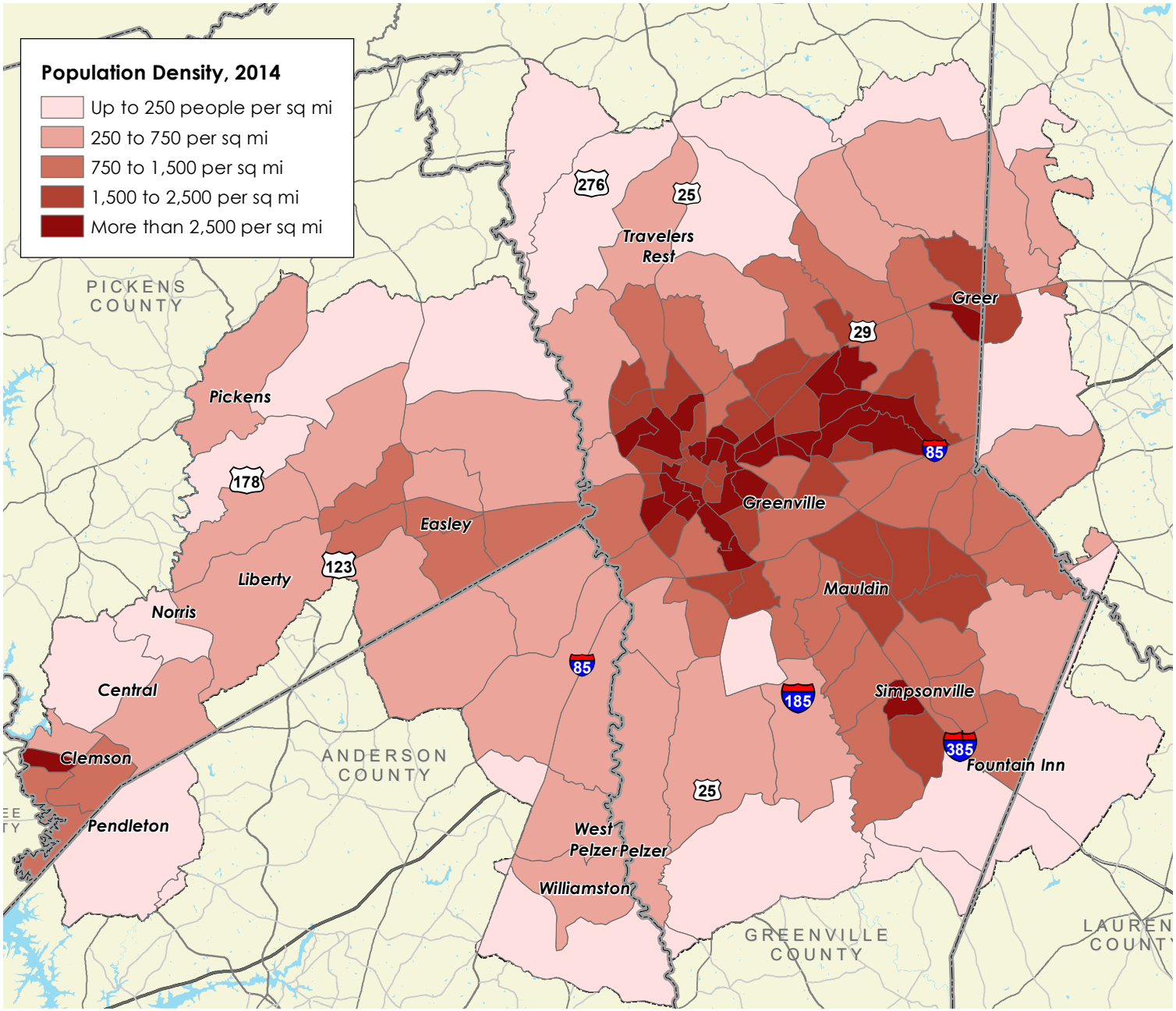
With an increase of nearly 92,000 people, the Upstate grew approximately 15% between 2000 and 2014. While slightly less than the state's growth rate of 20% during that time period, this influx has greatly affected the transportation network. This growth was not evenly distributed across the study area. While the cities of Greer and Mauldin both experienced more than a 50% population increase from 2000 to 2014, West Pelzer and Norris saw their populations decline. Greer added the most people overall, with a total increase of 9,783 (a 58% increase.) In addition, the GPATS area's minority population increased faster than the non-minority population, at 23% growth compared to 13%.

Aging Population

Mirroring state and national trends, the GPATS community is aging. The study area's median age increased from 35.5 in 2000 to 37.8 in 2014, reflecting an increased proportion of the population at retirement age or older. Aging communities always present significant mobility challenges in comparison with younger populations. Nearly 75% of older persons across the nation live in neighborhoods that are designed to be vehicle dependent, which can make it difficult for older residents to "age in place." Maintaining the flexibility and foresight to accommodate a variety of lifestyles and ensuring that viable multimodal options exist for residents will be extremely important moving forward.

Population Growth, 2000-2014



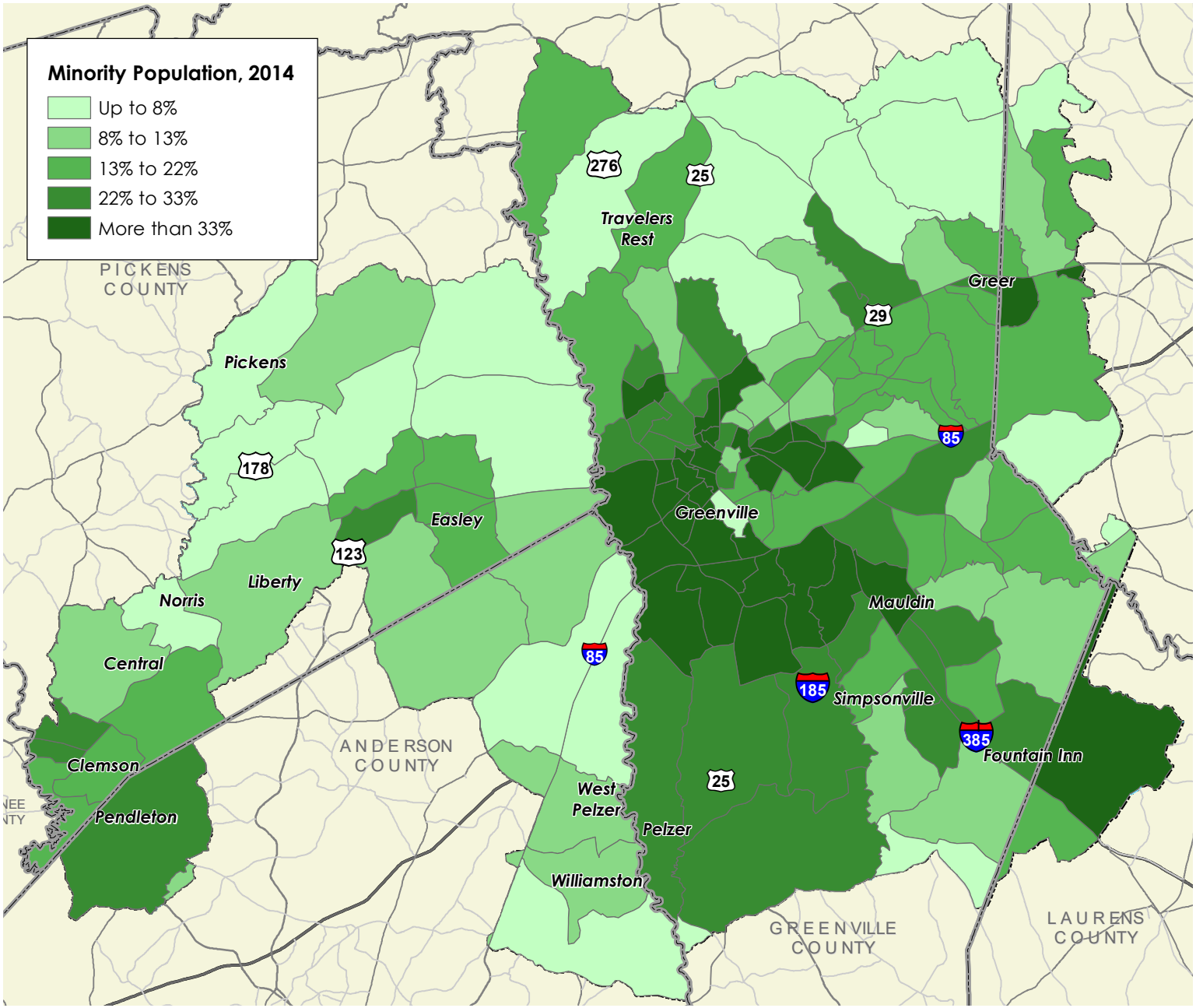


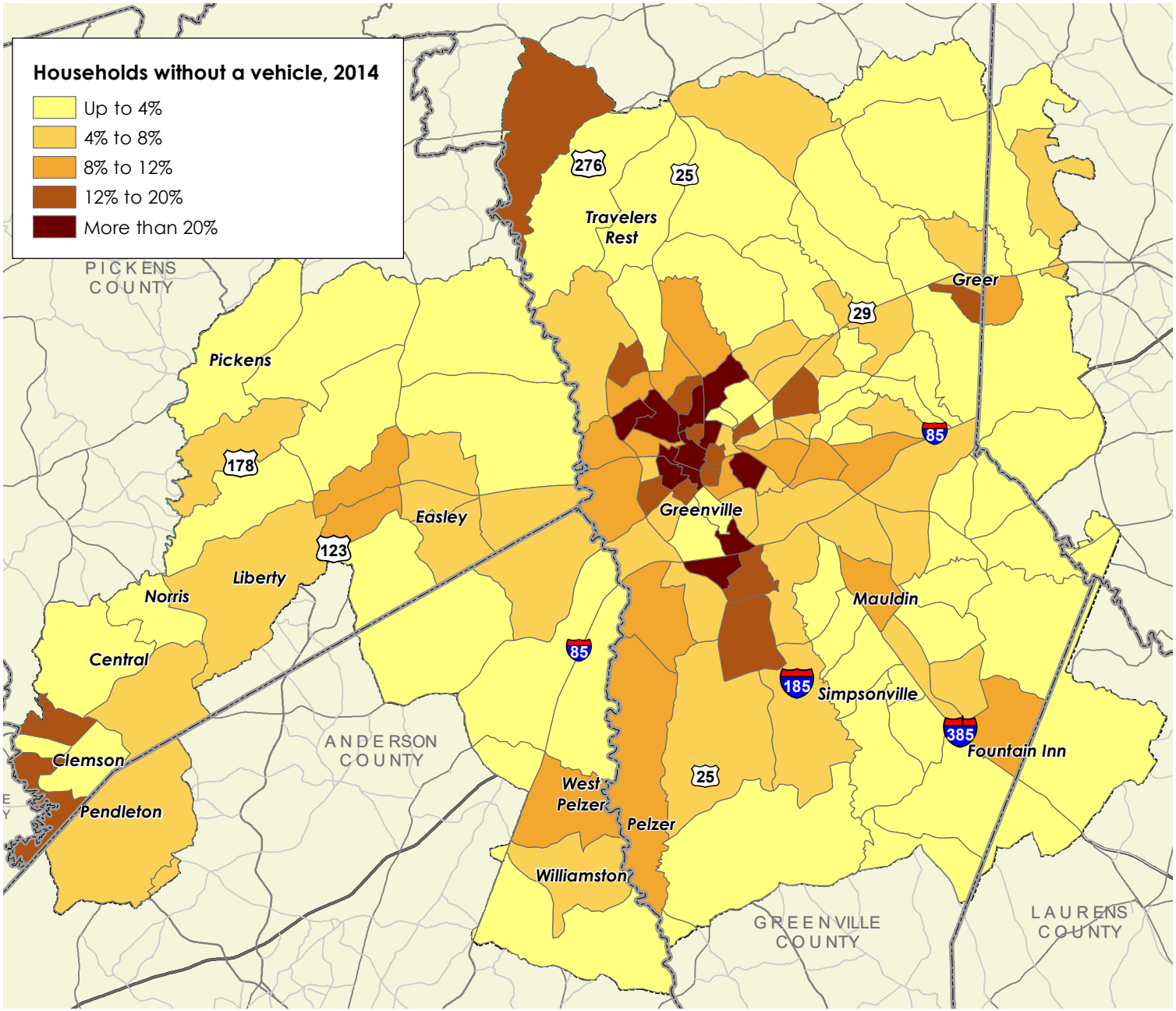
Population Density

Population density varies greatly throughout the study area, with a high of more than 6,200 people per square mile in Greenville near Bob Jones University to just over 17 people per square mile on the northern edge of the GPATS area near Travelers Rest. The densest areas of the region surround downtown Greenville, Greer, and Clemson, where the built environment takes on a more urban development pattern.

Minority Population

The GPATS study area is growing increasingly diverse. In 2014, approximately 23% of the region's population was defined as any race or ethnicity besides "white alone" in the U.S. Census. This represents an increase from 19% in 2000. In addition, GPATS' minority population increased faster than the white population, at 23% growth compared to 13%.





Households without a Vehicle

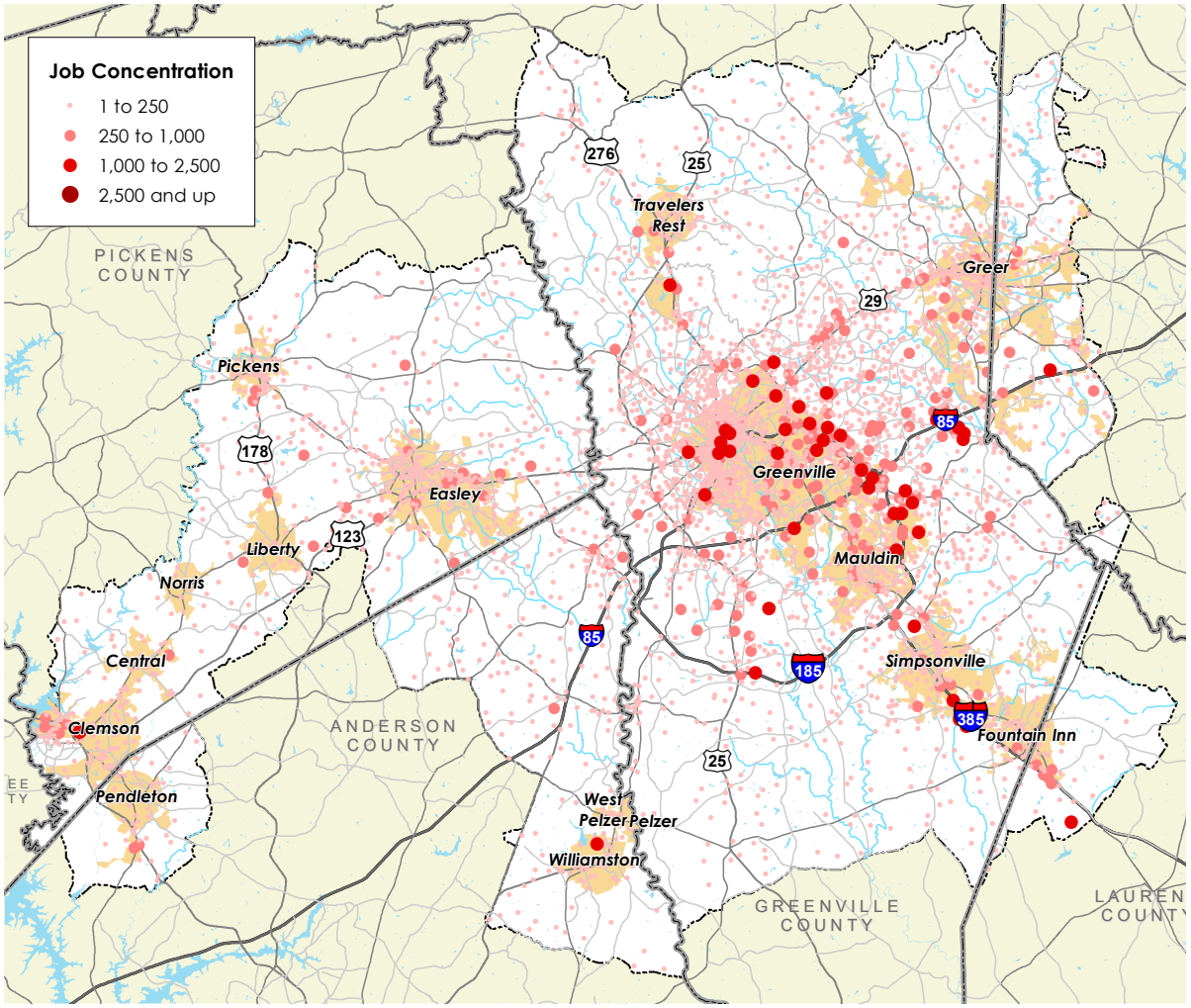
Approximately 20% of households in the GPATS study area do not have access to vehicles. These households tend to be clustered around Greenville, in the center of the metro area, with other concentrations near Clemson University and the far northern edge of the study area. It is important to know the location of these households to provide adequate services, as these households are more likely to rely on walking, biking, and transit as their primary means of transportation.

Prosperity

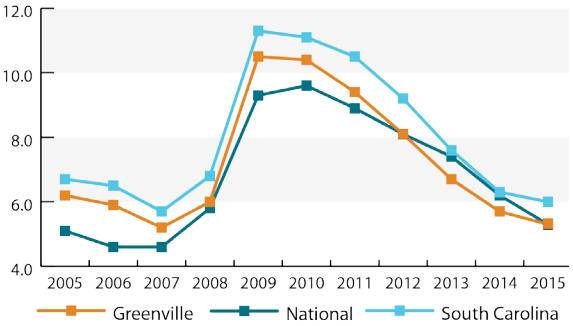
Transportation is foundational to community development as it provides access to employment, thereby acting as a stepping stone for economic growth. Taking a closer look at employment hubs within the region can uncover opportunities for multimodal connections.

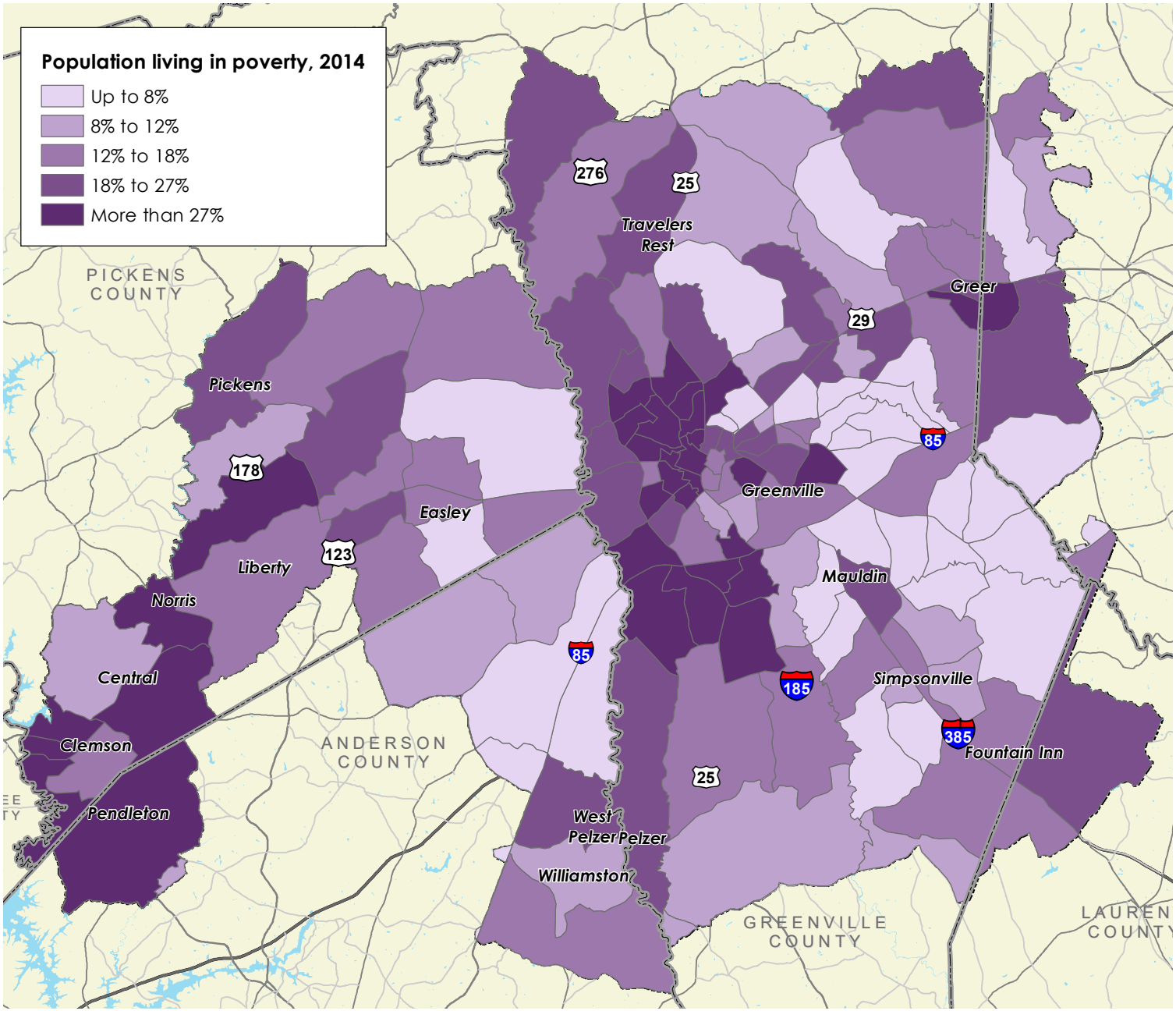
Employment

Though the GPATS study area represents only 14.7% of the state's population, it hosts 16.7% of the state's jobs—a proportion that has increased during the last decade. Employment (and unemployment) in the area has followed national trends throughout the past decade, decreasing during the recession and steadily increasing since 2010. Though jobs are located throughout the study area, the heaviest employment concentration is located near Greenville, surrounding the I-385 corridor. Total employment has also risen during the past decade, from 290,000 in 2005 to more than 316,000 in 2015.



Unemployment Rates, 2005–2015





Poverty

In 2014, 16.6% of the study area's population lived below the poverty line. This represents a 50% increase from 2000, when only 11% of the population was living in poverty. Poverty has increased especially in the areas surrounding Greenville and in the far west in the areas around Norris, Central, and Pendleton.

Persons in Household	2014 Poverty Guideline
1	$11,670
2	$15,730
3	$19,790
4	$23,850
5	$27,910
6	$31,970
7	$36,030
8	$40,090
> 8	add $4,060 for each additional person

Source: U.S. Dept. of Health & Human Services

Economic Drivers

According to U.S. Census Bureau data, the area's top industry sectors are manufacturing, administration and support, health care and social assistance, and retail. Together, these four industries account for 49.6% of the employment in the study area. Of these industries, administration and health care have increased their share of local employment since 2004, while manufacturing and retail have each decreased.

Top 5 Industries	2004 Employees	2014 Employees
Manufacturing	51,036 (18.2%)	44,768 (14.1%)
Administration and Support	25,286 (9.0%)	37,908 (12.0%)
Health Care and Social Assistance	25,959 (9.2%)	37,629 (11.9%)
Retail Trade	35,120 (12.5%)	36,658 (11.6%)
Educational Services	24,877 (8.9%)	28,949 (9.1%)

Major Employers	Location	Employees (2016)
Greenville Health System	Greenville	14,931 (4.5% of total employment)
State of South Carolina	Upstate Combined	11,836 (3.6%)
Greenville County Schools	Greenville	9,550 (2.9%)
BMW Manufacturing Corp.	Greer	8,000 (2.4%)
Michelin North America	Greenville	7,120 (2.2%)
Bi-LO, LLC	Greenville	4,600 (1.4%)
BonSecours St. Francis Health System	Greenville	3,985 (1.2%)
Clemson University	Clemson	3,814 (1.2%)
Duke Energy	Greenville	3,300 (1.0%)
GE Power and Water	Greenville	3,200 (0.9%)
Total		**70,336 (21.3% of total employment)**

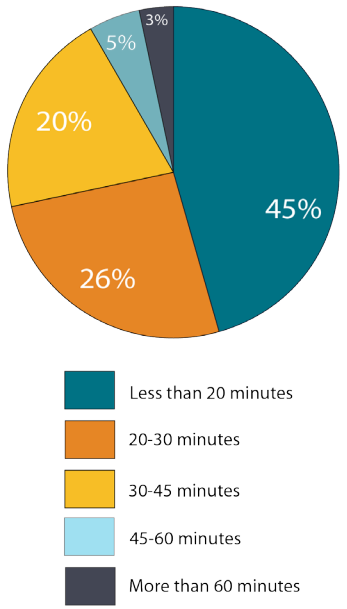
Source: Upstate SC Alliance, 2016

Commuting Patterns

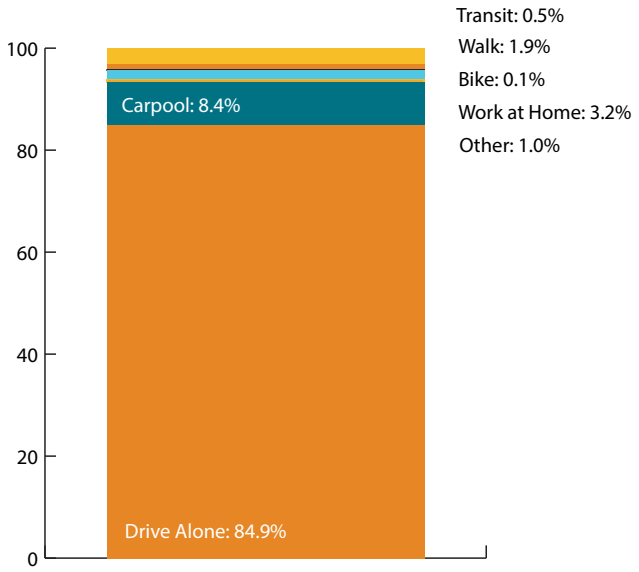
Of the 316,799 jobs available within the study area in 2014, 62% of them were filled by residents who also lived within the study area (196,000). Approximately 120,000 commuters travel from outside the area to work in the region—38% of the daily workforce. These numbers suggest the Upstate is a regional employment center, drawing workers from nearby areas with job opportunities. Future transportation improvements should take into account the commuters who travel daily along the region's main commuting corridors.

Upstate residents typically choose to commute by driving alone, doing so at a higher rate than state or national averages. Currently, very few commuters take advantage of alternative commute options, such as walking, biking, or public transit. However, 45% of Upstate workers currently have less than a 20-minute commute to work, indicating a good balance between home and work locations.

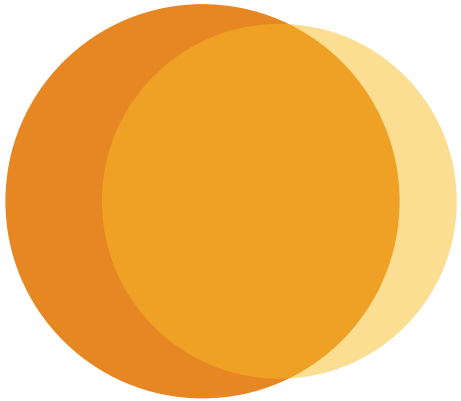
Travel Time to Work



Commute Mode Share



Regional Commuting Inflow and Outflow



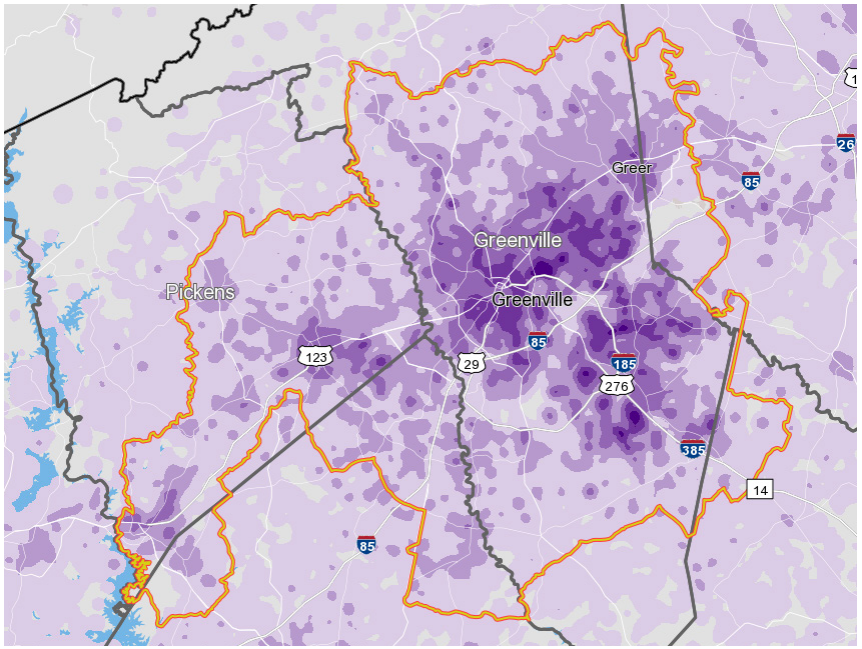
120,619 – Employed in the region, live outside

196,180 – Employed and live within the region

71, 448 – Live in the region, employed outside

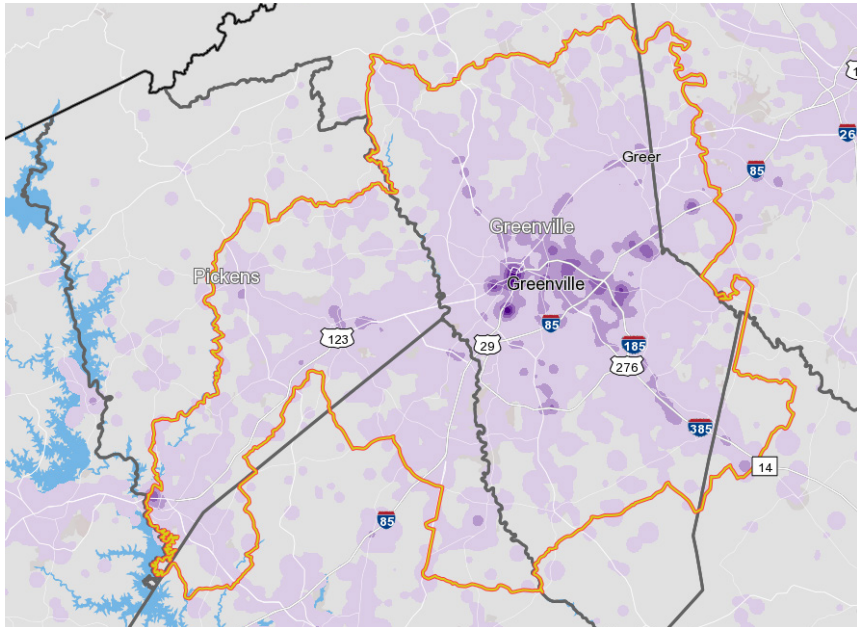
Where Upstate Workers Live

Workers employed in the Upstate largely live within the region, with many also traveling from outside the study area's borders. Though residential development is clustered around Greenville, Mauldin, and Easley, many workers live in a dispersed pattern throughout the area. The greatest number of those who work in the area travel southeast from their job to their home, with 14% traveling farther than 50 miles.



Where Upstate Residents Work

Upstate residents who live and work in the region have the largest concentration of employment opportunities in Downtown Greenville and along the I-385 corridor. These two areas host a wide variety of employment sectors, including manufacturing, retail, and health care. Most residents travel southeast or east from their home to reach their workplace.



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4: Roadway

INTRODUCTION

The Upstate's transportation system must strike a balance between serving the current mobility needs of existing residents, businesses and visitors and planning for the region's growth and economic wellbeing. The GPATS area will face increased travel demand, placing pressure on the roadway network to accommodate more trips each year. The program should plan for the future with capacity improvements, access management, active transportation, and operational improvements that increase safety and travel efficiency for all users.

The *Horizon 2040* roadway recommendations are crucial to building and maintaining a safe, efficient, and accessible transportation network that accommodates all users. The project team completed an existing network assessment to fully understand the region's profile and challenges and be better stewards of limited resources.

This chapter describes the region's existing roadway network, the planning process that led to the prioritized roadway improvement recommendations, and general planning recommendations that can be incorporated into future efforts so GPATS can plan for future growth efficiently.

The Horizon 2040 Roadway Recommendations

- Corridor Improvements
- Intersection and Interchange Improvements
- Safety, Access, and Connectivity Toolkits
- Congestion Management Process

RELEVANCE TO THE GUIDING PRINCIPLES

Throughout the *Horizon 2040* planning process, the guiding principles acted as checks and balances to ensure the resulting recommendations reflected community values and the region's best interests. In particular, the roadway recommendations reflect the following guiding principles:

Culture and Environment

The roadway planning process ensures sustainable growth and environmental preservation. Long-range planning encourages thoughtful consumption of scarce resources and open space.

Economic Vitality

Maintaining and improving efficient connections between regional destinations keeps the region an attractive place to live, work, and do business.

Growth and Development

It is crucial that roadway recommendations follow the region's development goals and guidelines so the transportation network facilitates long-term economic growth for the region.

Mobility and Accessibility

The inclusion of wide shoulders or bike lanes in a roadway cross-section can facilitate multimodal integration where strategically implemented throughout the roadway network.

Safety and Security

Improving safety is an important regional goal and the driving force behind many projects. Certain improvements, such as access management, intersection realignments, and multimodal enhancements, have a major effect on safety at these locations.

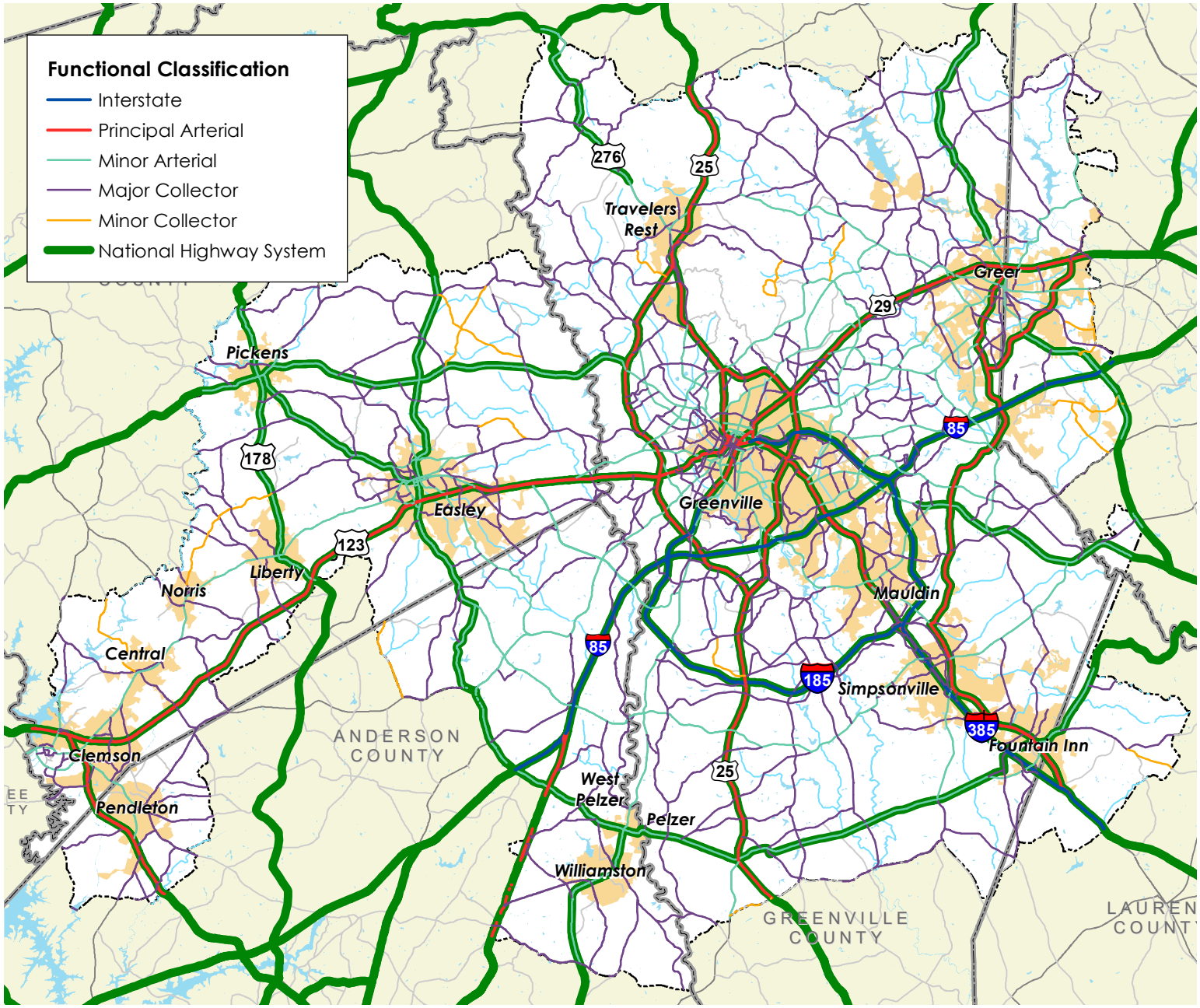
System Preservation and Efficiency

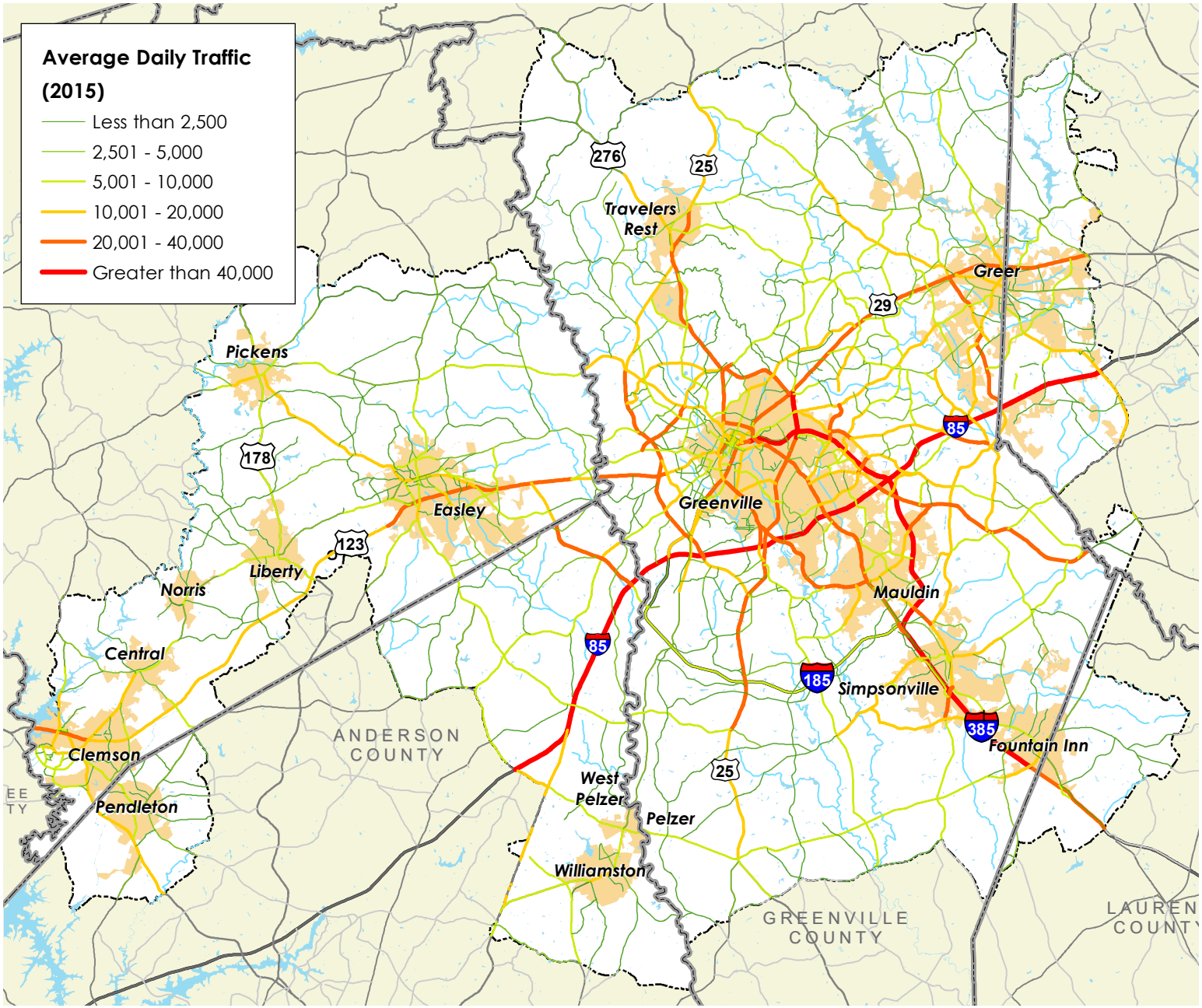
The region's roadway network requires frequent improvement and maintenance as the region grows and travel demand increases. The LRTP plans for these improvements so that the system remains functional and efficient long into the future.

NETWORK ASSESSMENT

Functional Classification

Functional classifications are defined by the FHWA and used by policy makers, planners, engineers, and citizens to designate the characteristics and purposes of a system's roadways. The functional classification system categorizes streets in a general hierarchy to identify each roadway's importance to the overall transportation system for planning purposes. The study area has 5,955 center-line miles of functionally-classified public roads.





Annual Average Daily Traffic

Traffic volumes typically correlate with the purpose and function of each roadway's design and location. The map at the right shows annual average daily traffic (AADT) for each corridor in 2015 based on information provided by SCDOT. AADT is one way to identify the region's most heavily traveled roadways and less congested local thoroughfares.

Safety

According to information provided by SCDOT, South Carolina had the highest fatality rate in the nation at 1.89 per 100 million vehicle miles of travel in 2015, while the GPATS area had a fatality rate of 1.60. Based on this data, it is essential to consider potential solutions to improve the safety of the overall GPATS transportation system.

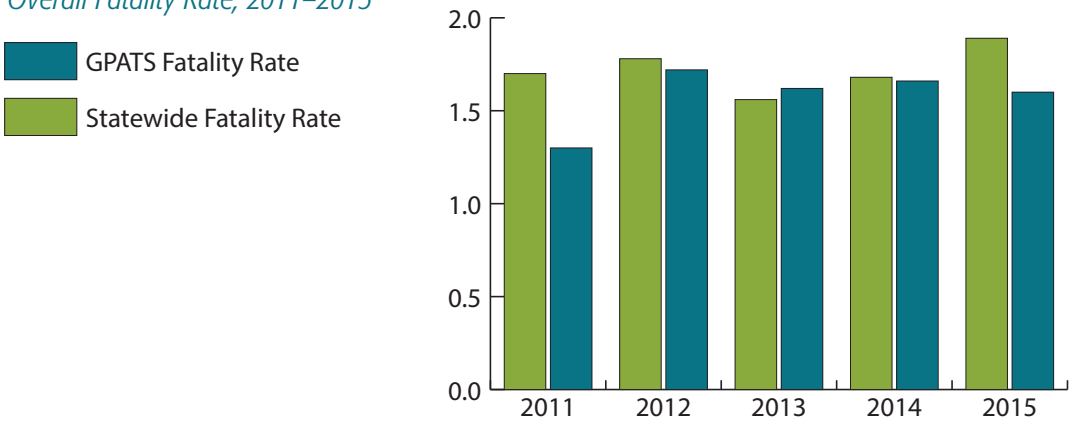
According to SCDOT data, the region's urbanized areas are also the most dangerous. Eighty percent of fatal and severe-injury crashes occur in urban areas, with primary arterials being the most dangerous (47% of crashes occur on primary arterials despite being only 11% of mileage).

The GPATS region performed worse than the South Carolina state average on the rate of fatal and injury crashes related to young drivers (ages 15-24), intersections, motorcyclists, older drivers (age 65+), and moped riders. Overall, however, the region performed better than the statewide average, with fewer fatal and severe injury crashes related to roadway departures, unrestrained occupants, speed, heavy trucks, and bicycles.

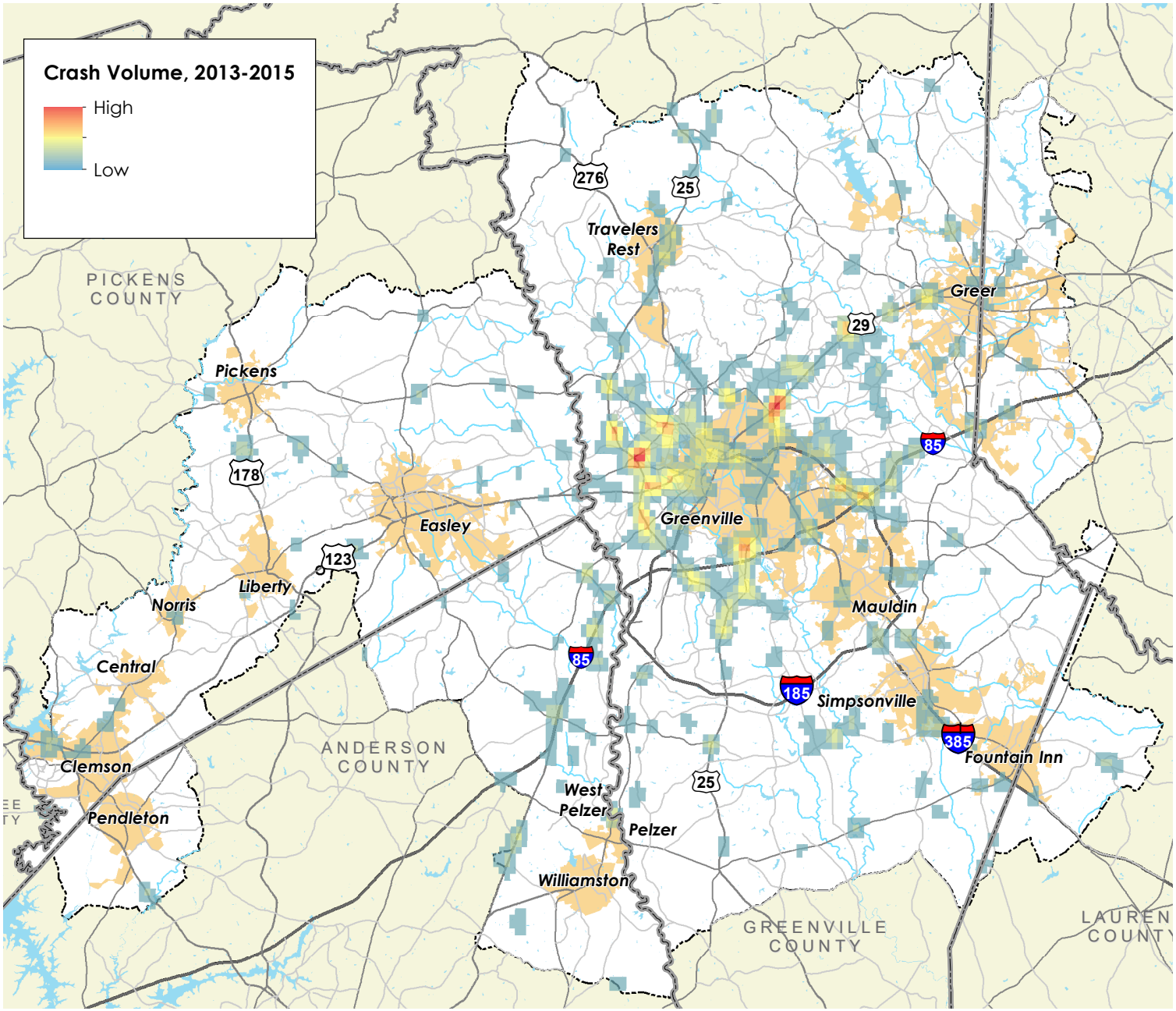
Six corridors comprise 36% of all intersection crashes:

- White Horse Road in Greenville
- Wade Hampton Boulevard/US 29
- Pointsett Highway/Laurens Road
- Farrs Bridge Road
- SC Highway 14
- Pleasantburg Drive

Overall Fatality Rate, 2011–2015



Type of Crash	Percent of Fatal or Severe Injury Crashes (2011–2015)	
	GPATS	Statewide
Roadway Departure	41%	42%
Young Drivers	35%	24%
Unrestrained Occupants	30%	41%
Intersection	27%	25%
Impaired Driving	27%	26%
Speed Related	25%	35%
Motorcyclists	16%	14%
Old Drivers	15%	12%
Pedestrians	10%	7%
Mopeds	7%	4%
Heavy Trucks	3%	6%
Bicyclists	1%	2%

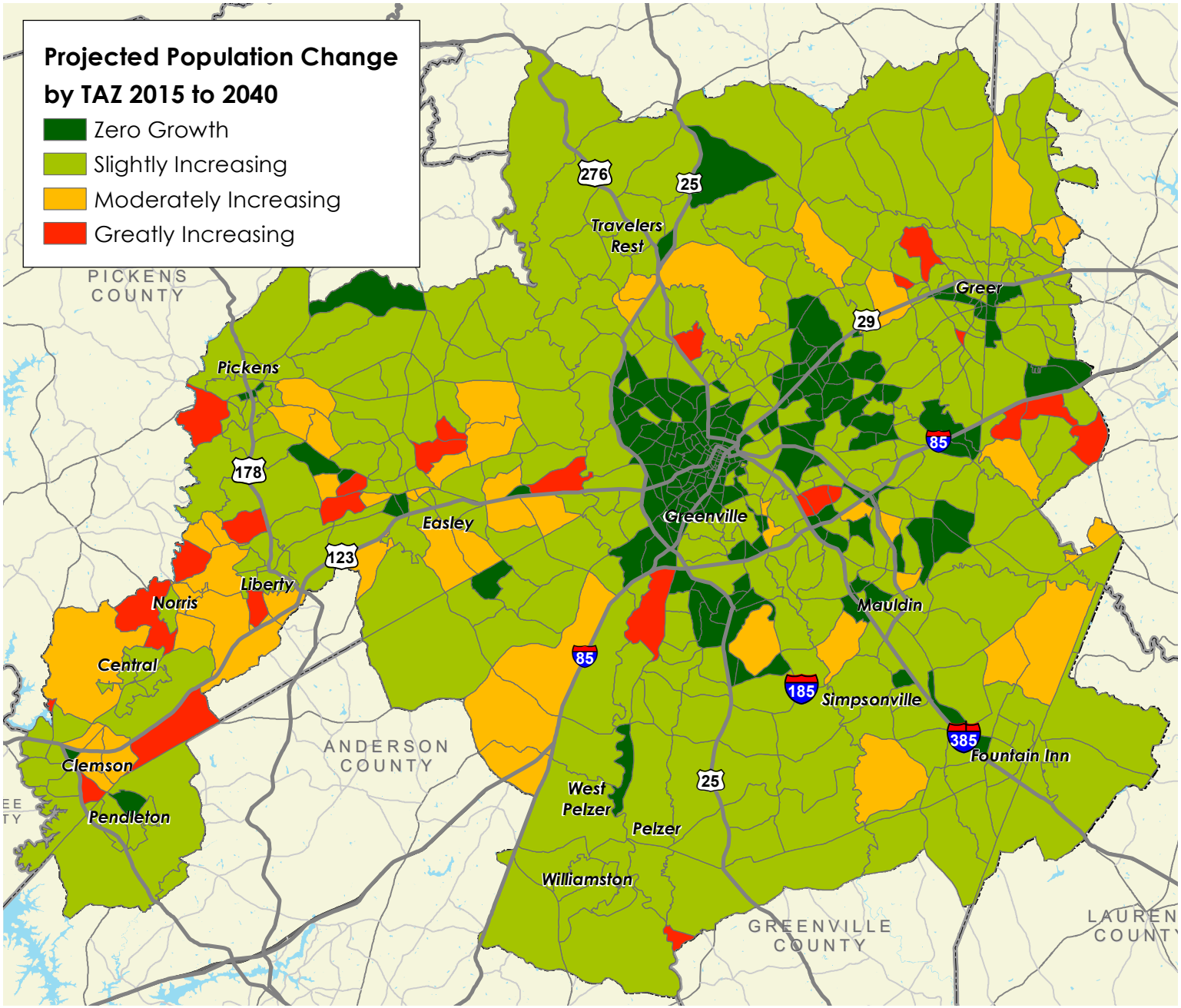


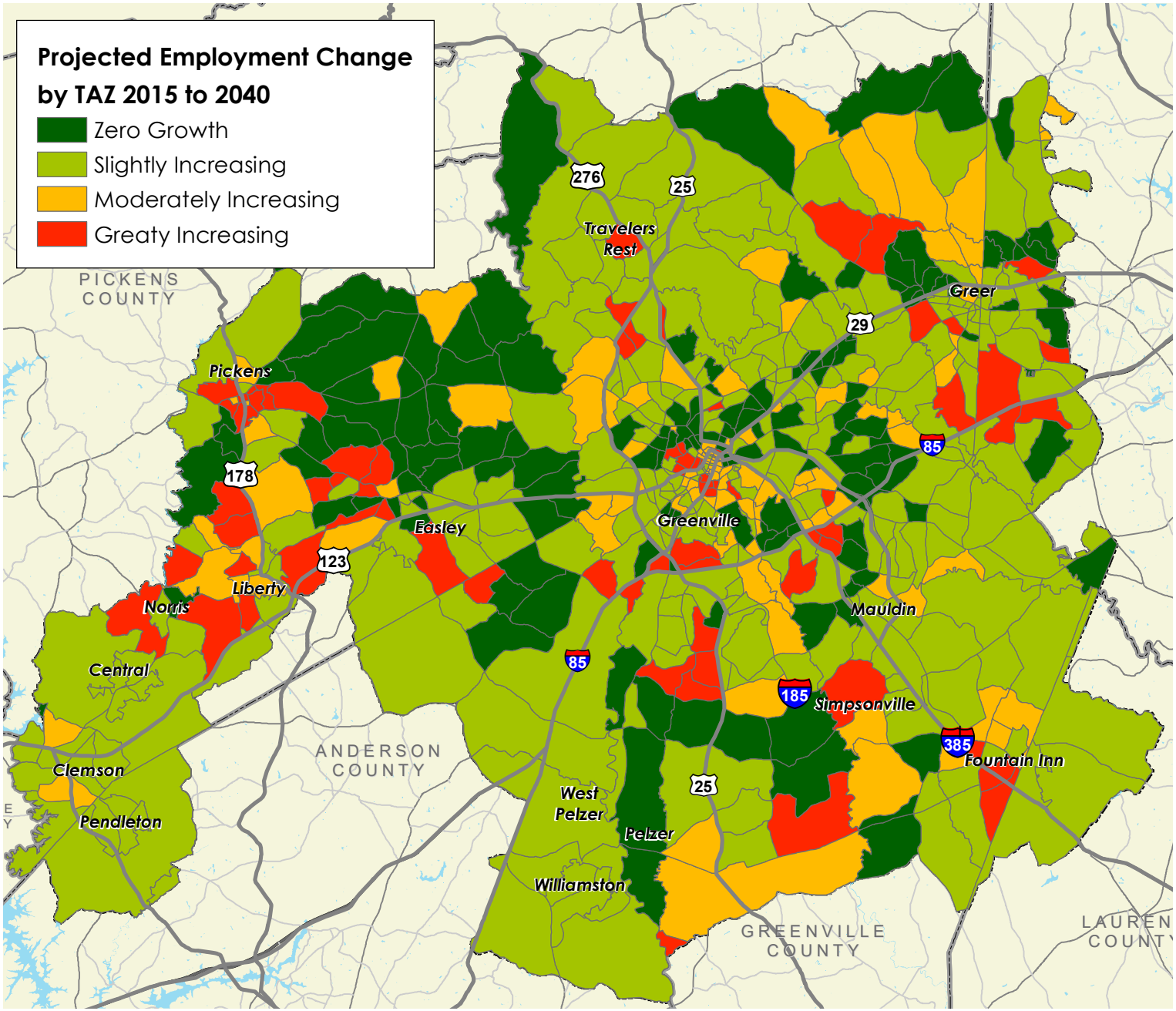
Crash History

The map to the left shows the occurrences of fatal and severe injury crashes from 2013 to 2015. The majority of serious crashes in the region occur on the major roadways near Greenville, with hot spots near the intersections of White Horse Road and Blue Ridge Drive, the intersections of Wade Hampton Boulevard and Pine Knoll Drive, the intersection of Blue Ridge Drive and Cedar Lane Road, and near the intersection of Mauldin Road and Pleasantburg Drive. Other hot spots occur throughout the study area, but the major volume of severe accidents occurs within the Greenville City limits.

Projected Population Growth

The map to the right shows projected population growth by transportation analysis zones (TAZ) from 2015 to 2040. TAZs projected to grow are illustrated as slightly increasing (1-50%), moderately increasing (51-100%), and greatly increasing (>100%). The region's population growth ranges from none to more than 7,000% in areas with existing low population.



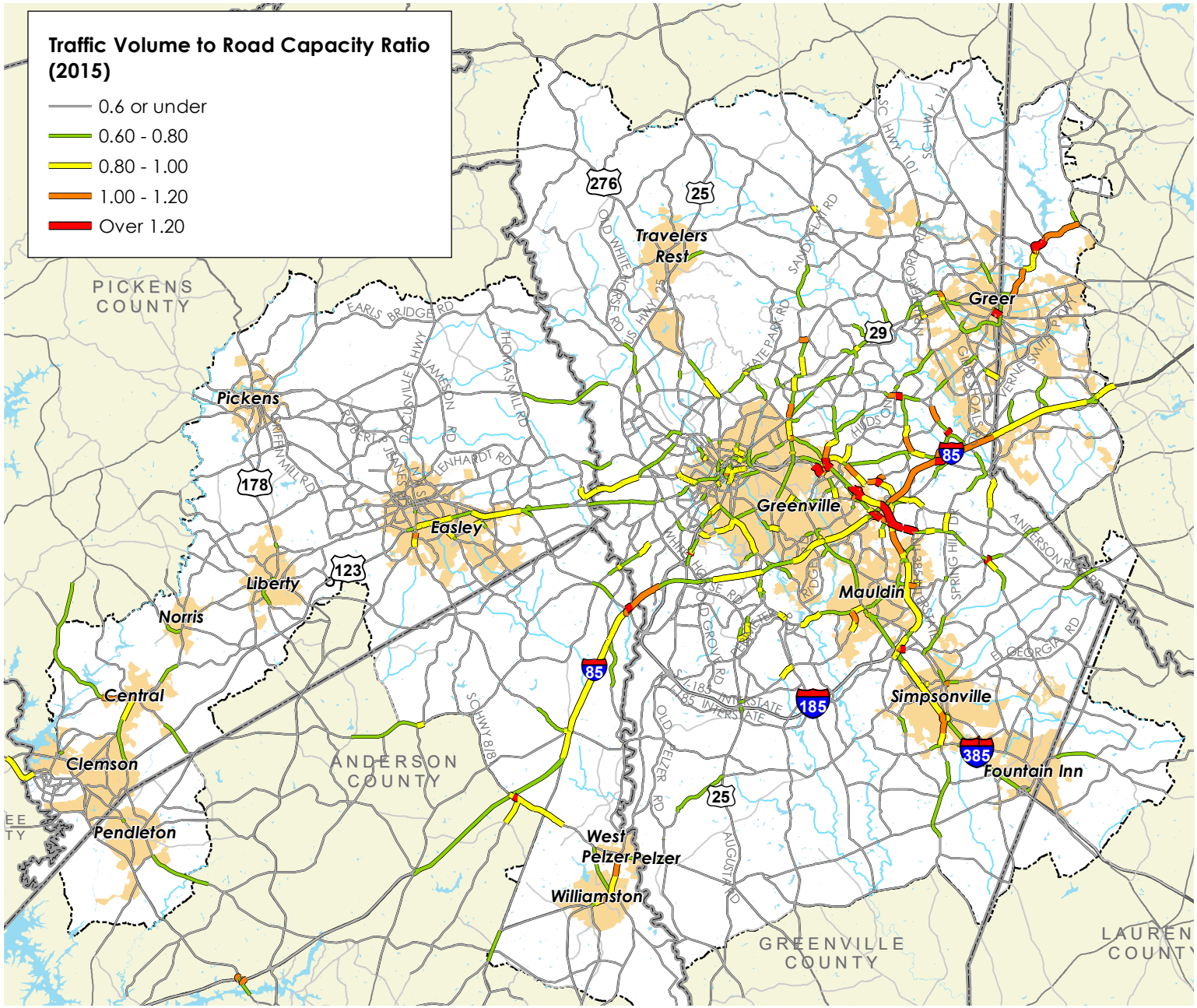


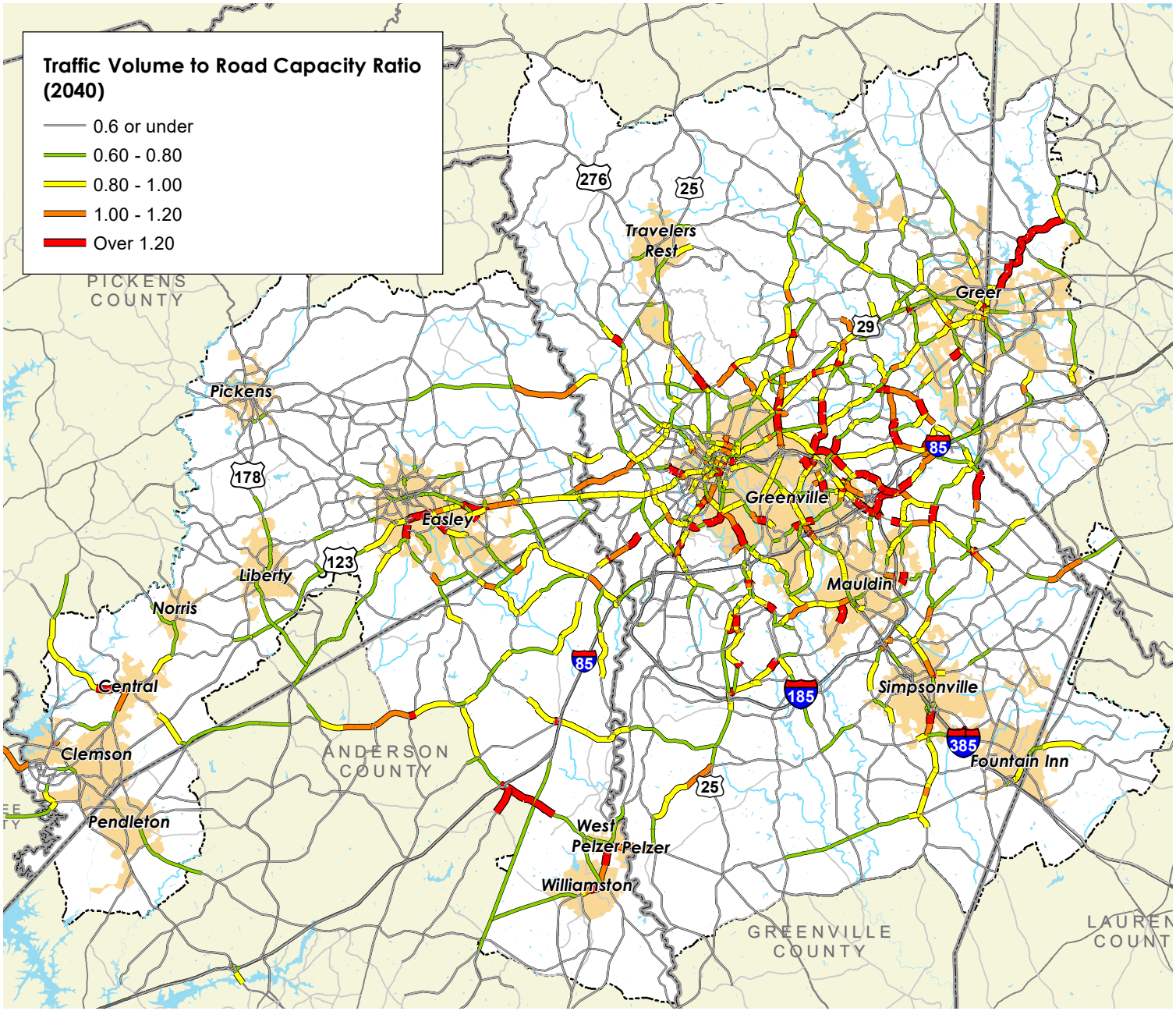
Projected Employment Growth

The map to the left shows projected employment growth in TAZs from 2015 to 2040. TAZs projected to grow are illustrated as slightly increasing (1-50%), moderately increasing (51-100%), and greatly increasing (>100%). Employment growth in the region ranges from none to more than 7,000% in areas with existing low employment.

2015 Congestion Model

The map to the right shows 2015 congestion in the GPATS area, based on current data. This data gives us a good baseline when comparing to future years.





2040 Congestion Model

The map to the left shows how the regional network is expected to perform in the year 2040 if the currently committed and funded roadway improvements are completed. Even with committed and funded projects, regional growth is projected to lead to more congestion.

ROADWAY RECOMMENDATIONS PROCESS

The *Horizon 2040* process brought the public's priorities to the forefront as the project team determined the final set of recommended projects.

The *Horizon 2040* Vision Plan—the full set of unconstrained transportation recommendations—contains input from a diversity of stakeholders, ranging from Upstate residents, technical planning staff, and local leaders, as well as from previous plans. A thorough 15-month process of review, analysis, and community engagement ensured that the full vision plan reflects the community's priorities and goals and the best practices in transportation planning.

1

Public Outreach

Project suggestions were solicited from the public, city and county staff, and elected officials through meetings and online surveys. Over 4,000 project ideas were collected.

2

Analysis and Recommendations

Projects were analyzed and selected based on their feasibility and need, and draft recommendations were created. The list was finalized after a second round of feedback.

3

Prioritization

Projects were scored based on SCDOT's process to determine their relative regional impacts and decide which projects should be made priorities.

4

Final Plan

Ultimately, the final list of funded projects was adopted as the Horizon 2040 plan and will move in order to the GPATS Transportation Improvement Plan (TIP) and finally to the State TIP to be implemented with Guideshare funding.

Corridor Recommendations

The roadway improvement projects recommended in *Horizon 2040* take several forms. The diagrams below explain some of the most common project types. While widenings and new roadways increase capacity, congestion may still worsen over time as travel demand increases.

New Roadway

Constructing new roadways to improve the region's connectivity.

Before

After

Widening

Adding travel lanes to increase capacity.

Before

After

Access Management

Restricting turns and consolidating driveways to improve safety.

Before

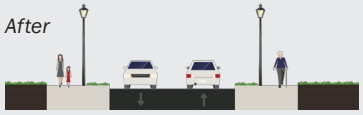
After

Corridor Improvements

Repaving, adding pedestrian infrastructure, improving intersections, and streetscaping.

Before

After



Road Diet

Widening travel lanes, improving safety, and adding bicycle or pedestrian infrastructure where appropriate.

Before

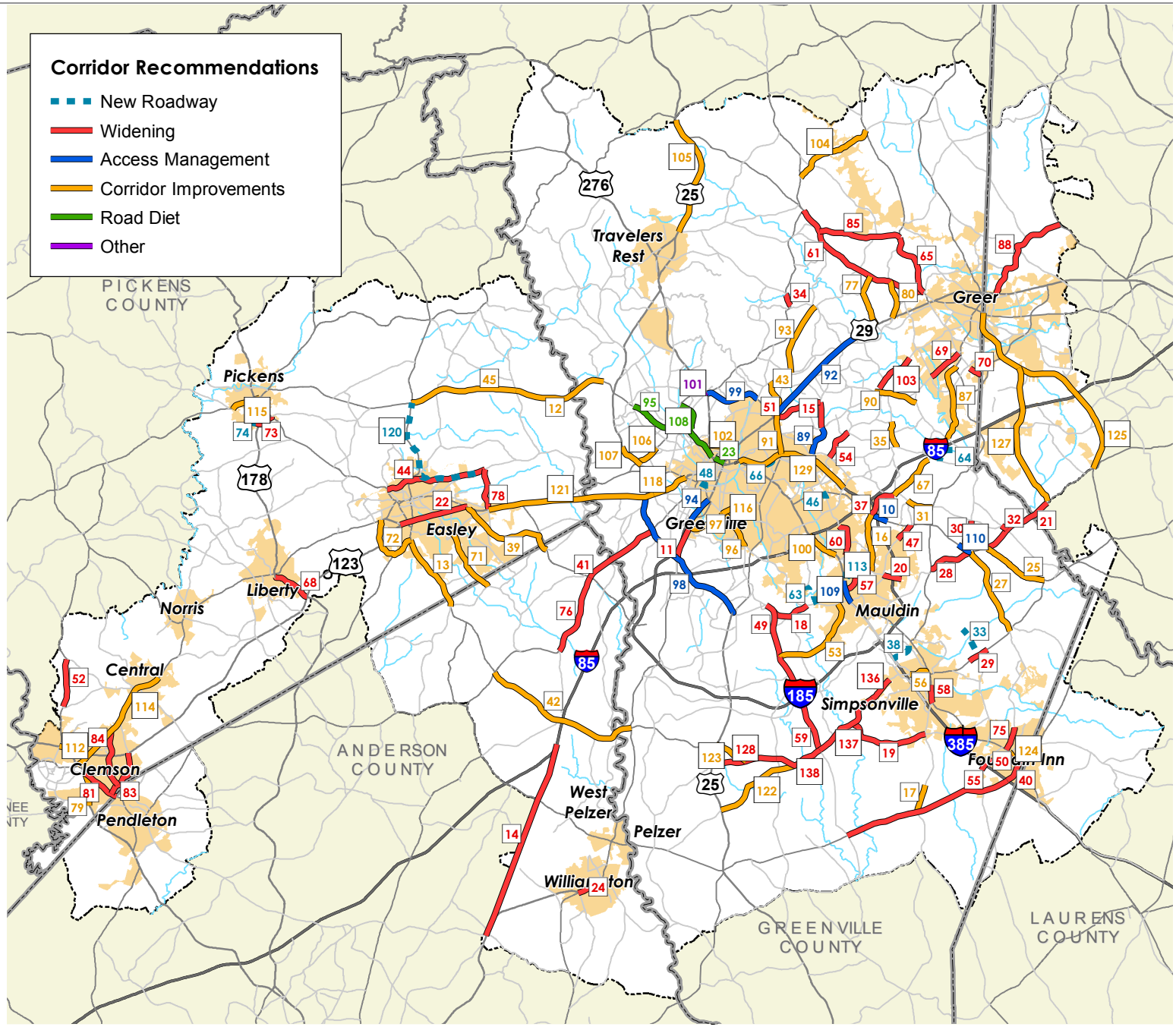
After

Other

- Bridge improvements
- Partial closure

Corridor Recommendations

In total, *Horizon 2040* recommends 123 corridor improvements throughout the region. These are detailed in the map shown to the right, along with their project ID numbers and the improvement type. Further project details are provided in the tables on the following pages and in the project sheets in Appendix G (http://www.gpats.org/plans/horizon2040).



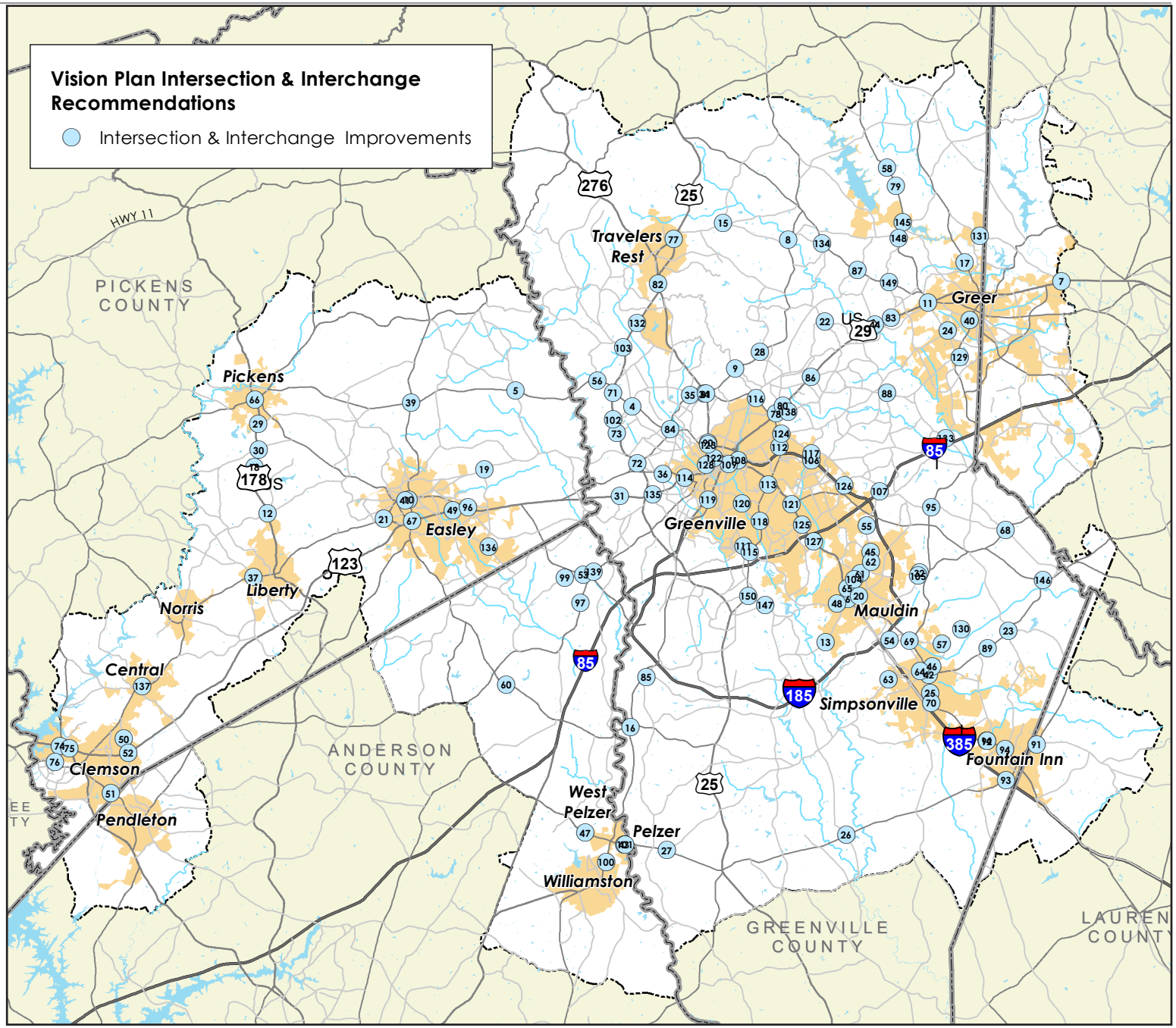
ID	Road Name	From	To
Access Management			
89	Haywood Rd	Pelham Rd	E North St
92	Wade Hampton Blvd	Pine Knoll Dr	Reid School Rd
98	White Horse Rd	US 123	Augusta Rd
99	N Pleasantburg Dr	Poinsett Hwy	Rutherford Rd
109	US 276 (N Main St)	Knollwood Dr	Owens Ln
110	Woodruff Rd	Woodruff Lake Way	Scuffletown Rd
Corridor Improvements			
12	Farrs Bridge Rd	Hamburg Rd	Groce Rd
13	SC-8	St. Paul Rd	Anderson Hwy
16	Miller Rd	Woodruff Rd	Corn Rd
17	Fairview Rd	SC 418	New Harrison Bridge Rd
25	Woodruff Rd	S Bennets Bridge Rd	Lee Vaughn Rd
27	Scuffletown Rd	Woodruff Rd	Lee Vaughn Rd
31	Roper Mountain Rd	SC 14	Feaster Rd
35	Boiling Springs Rd	Philips Road	Pelham Rd
39	Powdersville Rd/Old Pendleton Rd	US 123	SC 153
42	SC-86	SC 81	Piedmont Hwy
43	Pine Knoll	Wade Hampton Blvd	Rutherford Rd
45	Farrs Bridge Rd	SC-135	Hamburg Rd
53	Ashmore Bridge Rd	Fork Shoals Rd	Butler Rd
56	West Georgia Rd	Kemet Way	College St
67	Garlington Rd	Roper Mountain Rd	Pelham Rd
71	Brushy Creek Rd	Crestview Rd	St. Paul Rd
72	Black Snake/Adger/135	Liberty Dr	SC 8
77	St. Mark Rd	Wade Hampton Blvd	Locust Hill Rd
79	US-76	Pendleton Rd	S-39-343
80	N. Rutherford Rd/Fairview Rd	Wade Hampton Blvd	Locust Hill Rd
87	Gibbs Shoals Rd	S Batesville Rd	SC 14
90	Old Spartanburg Rd/Enoree Rd	Brushy Creek Rd	S Batesville Rd
91	N Pleasantburg Dr/Pine Knoll Dr	I-385	Wade Hampton Blvd
93	Stallings Road	Rutherford Rd	Reid School Rd
94	US 29/Mills Ave	Augusta St	Stevens St
96	Augusta St	Mauldin Rd	Faris Rd
97	W Faris Rd	Augusta Rd	Grove Rd
100	Laurens Rd	I-85	Innovation Dr
102	Stone Ave	Rutherford St	N Church St
104	Fews Bridge Rd	Mountain View Rd	N Highway 101
105	US-25	N study area boundary	Tigerville Rd
106	W Blue Ridge Dr	White Horse Rd	Agnew Rd
107	White Horse Rd	Broadway Dr	Pendleton Rd
112	US-123	College Ave	US 76

ID	Road Name	From	To
114	Main St	Clayton St	US 76
115	Main St	Secore Rd	Hampton Ave
116	E Faris Rd	Augusta St	Cleveland St
118	Academy St/US 123	Pendleton St	Washington Ave
121	US-123	Rock Springs Rd/ Prince Perry	Washington Ave
122	Garrison Rd	West Georgia Rd	US-25
123	Sandy Springs Rd	West Georgia Rd	US-25
124	Main Street	Hellam St	Gulliver St
125	SC-101	SC-290	SC-296
127	Brockman McClimon Rd	SC-101	SC-296
129	I-385	Laurens Rd	Roper Mountain Rd
New Roadways			
33	Howard Drive Ext	Jonesville Rd	Johnson Drive
38	Pelham St Extension	Old Stage Rd	Kemet Way
46	Salters Rd (realignment)	Salters Rd	Mall Connector Rd
48	University Ridge Extension	Howe St	Main St
63	Holly Ridge Rd	Ridge Rd	W Butler Rd
64	Ben Hamby Ext	Ben Hamby Dr	S Batesville Rd
66	East Washington St. Ext	Woodlark St	Lowndes Hill Rd
74	LEC Road Ext.	S Catherine Ave	McDaniel Ave
113	Miller Rd Connector	Edgewood Dr	Miller Rd/Oak Park Dr
120	SC-153 Extension Phase 3	SC-183	Saluda Dam Rd
Widenings			
10	Woodruff Rd	Miller Rd	Smith Hines Rd
11	Grove Rd	US 25	W. Faris Rd
14	Us 29	Cheddar Rd	I-85
15	Howell Rd	E North St	Edwards Rd
18	Conestee Rd	Mauldin Rd	Fork Shoals Rd
19	Harrison Bridge Rd/Rocky Creek Rd	W Georgia Rd	Fairview Rd
20	Bridges Rd	E Butler Rd	Holland Rd
21	Bennetts Bridge Rd	Woodruff Rd	Brockman McClimon Rd
22	US 123	Jasper St	Powdersville Rd
24	W. Main St	Academy St	Hamilton St
28	Five Forks Rd	SC 14	Woodruff Rd
29	E. Georgia Rd	Hunter Rd	Lee Vaughn Rd
30	Batesville Rd	Woodruff Rd	Roper Mountain Rd
32	Anderson Ridge Rd	Roper Mountain Rd	S Bennets Bridge Rd
34	SC-253	Reid School Rd	Sandy Flat Rd
37	Garlington Rd	SC-146	Roper Mountain Rd
40	SC-418	Durbin Rd	I-385
41	Anderson Rd	SC-153	White Horse Road
44	Saluda Dam Rd/Olive St/ Fleetwood Dr	W Main St	Prince Perry Dr

ID	Road Name	From	To
47	E. Butler Rd	Woodruff Rd	Verdin Rd
49	Fork Shoals Rd	White Horse Rd Ext	Ashmore Bridge Rd
50	Fairview St	N Nelson Dr	N Main St
51	Edwards Rd	Wade Hampton Blvd	Howell Rd
52	SC-133	Six Mile Hwy	Pike Rd
54	Hudson Rd	Devenger Rd	Pelham Rd
55	SC-418	I-385	Fork Shoals
57	Miller Rd	Corn Rd	Murray Dr
58	SE Main St	W Fernwood Dr	Fairview Rd
59	Fork Shoals Rd	Ashmore Bridge Rd	W Georgia Rd
60	Forrester Dr/Old Sulphur Springs Rd	Bi-Lo Blvd	Millennium Blvd
61	SC-290	Hwy 101	Sandy Flat Rd
65	SC-101	Milford Church Rd	Locust Hill Rd
68	US-178	Carolina Dr	US 123
69	Hammett Bridge Rd	E Suber Rd	S Buncombe Rd
70	S. Buncombe Rd	Pleasant Dr	SC 80
73	David Stone Road	US 178	SC 8
75	Quillen Ave	N Main St	Speedway Dr
76	SC-81	SC-153	Old Williamston Rd
78	Prince Perry Rd	Saluda Dam Rd	Rolling Hill Circle
81	Pendleton Rd	SC 76	Issaqueena Trail
83	Issaqueena Trail	US 123	Pendleton Rd
84	Berkley Dr	W Main St	Issaqueena Trail
85	Milford Church Rd	Locust Hill Rd	N Hwy 101
88	SC 357/Arlington Rd	Study area boundary	E Wade Hampton Blvd
103	Brushy Creek Rd	Hudson Rd	Alexander Rd
128	West Georgia Rd	US 25	Reedy Fork Rd
136	West Georgia Rd	E Standing Springs Rd	Neely Ferry Rd
137	West Georgia Rd	Fork Shoals Road	E. Standing Springs
138	West Georgia Rd	Fork Shoals Road	Reedy Fork Rd
Road Diets			
23	Beattie/College Corridor	N Academy St	Church St
95	Cedar Lane/Pete Hollis Blvd	W Parker Rd	Buncombe St
108	Old Buncombe Rd	E Blue Ridge Dr	Pete Hollis Blvd
Other			
101	E Perry Rd	Poinsett Highway	E Blue Ridge Dr

Intersection and Interchange Recommendations

In total, *Horizon 2040* recommends 137 intersection and interchange improvements throughout the region. Their locations are shown in the map to the right, along with their project ID numbers. Exact locations are shown in the table on the following page. These projects were identified based on safety, operational, or congestion issues. The exact scope of improvements determined here will be identified as projects move forward in the funding cycle.



ID	Road 1	Road 2
Greenville County		
4	Farrs Bridge Rd/ Cedar Lane Rd	Hunts Bridge Rd/ W Parker Rd
6	Butler Rd	Main St
8	Sandy Flat Rd	Jackson Grove Rd
9	State Park Rd	Altamont Rd/Piney Mountain Rd
11	Wade Hampton Blvd	Buncombe Rd
13	Ashmore Bridge Rd	Fowler Cir
14	Main St	Howard Dr
15	Tigerville Rd	Jackson Grove Rd
16	Main St/Bessie Rd	Piedmont Hwy
17	SC 14	Taylor Rd/CCC Camp Rd
20	E Butler Rd	Murray Dr
22	Reid School Rd	Edwards Mill Rd
23	Lee Vaughn Rd	Scuffletown Rd
24	S Buncombe Rd	Brushy Creek Rd
25	SE Main St	Loma St
26	SC 418	Fork Shoals Rd
27	Pelzer Hwy	Garrison Rd
28	State Park Rd	E Mountain Creek
31	New Easley Hwy	Rison Rd
32	Bethel Rd	Tanner Rd
34	E Blue Ridge Dr	Perry Rd
35	Blue Ridge Dr	N Franklin Rd
36	Old Easley Hwy/ Pendleton St	Bryant St
40	S Main St	Brushy Creek Rd/Cannon Ave
42	Main St	Curtis St
44	Wade Hampton Blvd	St Mark Rd
45	Miller Rd	Hamby Dr
46	Jonesville Rd	Academy St
48	W Butler Rd	Ashmore Bridge Rd
54	Old Stage Rd	Old Laurens Rd
55	Miller Rd	S Oak Forest Dr
56	Farrs Bridge Rd	Old Farrs Bridge Rd
57	Jonesville Rd	Stokes Rd
58	SC 101	Pennington Rd
61	Miller Rd	Old Mill Rd
62	Miller Rd	Burning Bush Ln/Burning Bush Rd
63	W Georgia Rd	Neely Ferry
64	W Georgia Rd	N Maple St
65	Miller Rd	Murray Dr
68	S Bennetts Bridge Rd	Anderson Ridge Rd
69	NE Main St	Pelham Rd
70	Fairview Rd	I-385
71	Farrs Bridge Rd	White Horse Rd
72	White Horse Rd	W Blue Ridge Rd
73	White Horse Rd	Lily St
77	US 25	N Poinsett Hwy
78	Wade Hampton Blvd	Pine Knoll Dr
79	SC 101	Berry Mill Rd
80	Wade Hampton Blvd	Rushmore Dr/Balfer Dr
81	E Blue Ridge Dr/State Park Rd	Poinsett Hwy
82	US 276	Poinsett Hwy
84	W Blue Ridge Dr	Cedar Lane Rd
85	Old Pelzer Rd	Piedmont Golf Course Rd
86	Elizabeth Dr	E Lee Rd
87	Old Rutherford Rd/W McElhaney Rd	Locust Hill Rd
88	Old Spartanburg Rd	Boiling Springs Rd
89	E Georgia Rd/Lee Vaughn Rd	E Georgia Rd
90	Rutherford St	James St/W Earle St
92	Valley View Rd	Howard Dr
83	Wade Hampton Blvd	Fairview Rd/Old Rutherford Rd
93	I-385	McCarter Rd
94	Main St	Quillen Ave
95	SC 14	Roper Mountain Rd
102	White Horse Rd	Berea Dr
103	White Horse Rd	Old White Horse Rd
104	Oak Park Dr	Miller Rd
105	Bridges Rd	Bethel Rd
106	Haywood Rd	I-385
107	Roper Mountain Rd	I-385
108	Stone Ave	I-385
109	Academy St	North St
111	Mauldin Rd	Augusta St
112	Pleasantburg Dr	Century Dr/Villa Rd
113	Pleasantburg Dr	Antrim Dr
114	Academy St	Pendleton St
115	Pleasantburg Dr	Mauldin Rd
116	Pleasantburg Dr	Rutherford Rd
117	Haywood Rd	Pelham Rd
118	Pleasantburg Dr	Cleveland St
119	Augusta St	Church st
120	Faris Rd	Cleveland St
121	Laurens Rd	Woodruff Rd
122	Academy St	College St
123	Rutherford St	W Stone Ave
124	Pelham Rd	E North St
125	Laurens Rd	Verdae Blvd
126	Roper Mountain Rd	Independence Blvd
127	Laurens Rd	Millennium Blvd
128	Westfield St	West Broad St
129	SC 14	S Buncombe Rd
130	Harts Ln	Jonesville Rd
131	Gap Creek Rd	Country Club Rd
132	W Duncan Rd	Duncan Chapel Rd
133	Batesville Rd	Dry Pocket Rd
134	Lynn Rd	Waters Rd
135	US 123	Washington Ave
138	Edwards Rd	Rushmore Dr
145	SC-101	S-135
147	White Horse Rd Ext	Fork Shoals Rd
148	SC 101	Milford Church Rd
149	Locust Hill Rd	N. Rutherford Rd
150	Augusta Rd	Old Augusta Rd
Pickens County		
5	Farrs Bridge Rd	Thomas Mill Rd/Hamburg Rd
10	Main St	Pendleton St
12	Moorefield Memorial Hwy	Rices Creek Rd/Breazeale Rd
18	Moorefield Memorial Hwy/Liberty Pickens Rd	Mauldin Lake Rd
19	Saluda Dam Rd	Prince Perry Rd/ Ridgeway Ct
21	Liberty Dr	Ross Ave
29	Moorefield Memorial Hwy	C. David Stone Rd
30	Moorefield Memorial Hwy	Belle Shoals Rd/ Bethlehem Ridge Rd
39	Farrs Bridge Rd	Dacusville Hwy
41	W Main St	S 1st St
49	Calhoun Memorial Hwy	Pilgrim Dr/Dogwood Ln
50	Issaqueena Trail	Cambridge Dr/Old Shirley Rd
51	Issaqueena Trail	Pendleton Rd
52	Issaqueena Trail	US 123
66	Main St	Ann St
67	Calhoun Memorial Hwy	S Pendleton St
74	Tiger Blvd	College Ave
75	Tiger Blvd (US 123)	Anderson Hwy (US 76)
76	Old Greenville Hwy	College Ave
96	Hwy 93	Hwy 123
136	Crestview Rd	Sheffield Rd
137	E Main St	Pepper St
Anderson County		
47	Main St/Easley Hwy	Palmetto Rd
53	Three Bridges Rd/ Hood Rd	SC 153
60	SC 86	Wigington Rd
97	Hwy 81	Circle Rd
99	Powdersville Rd	3 Bridges Rd
100	Hwy 20	Courtney St
101	SC 8	Murray St/Courtney St/ Smythe St
139	SC 81	Old Anderson Rd
Spartanburg County		
7	Wade Hampton Blvd	Gap Creek Rd
Laurens County		
91	Durbin Rd	Hwy 418

Safety, Access, and Connectivity

The region has expressed a growing concern for key corridors experiencing congestion, travel delay, and safety issues. To preserve mobility and protect the overall efficiency of the network, the project team developed a toolbox of "best practices" so the region can respond to changing developmental pressures.

Rather than specific project recommendations, this toolbox allows the region to remain flexible when calling upon evidence-based procedures to make the best planning decisions for the region's future. On the following pages, a set of tools and guidelines for intersection safety improvements, access management, and connectivity provide guidance to and demonstrate examples of how GPATS can apply these strategies moving forward.

In this section, the following are included:

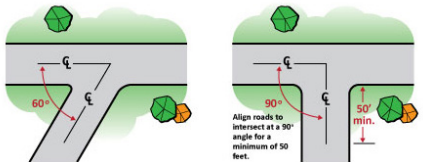
- Safety Improvements Toolbox
- Access Management Toolbox
- Connectivity Best Practices

Safety Improvements Toolbox

An outcome of any LRTP should be enhanced travel safety. Through consultation with local officials, residents, and planning staff, the project team identified dozens of intersections needing safety improvements. Intersection redesigns must be coordinated with SCDOT; however, there are several countermeasures to consider first that can improve safety and intersection operations. These options are listed below. Ten demonstration intersections have been selected to show how these options can be applied in the GPATS region.

Realignment

Roadways are realigned to meet at as close to a 90-degree angle as possible. This improves visibility and turning radius.



Signalization

Based on their traffic counts, some unsignalized intersections may be eligible for a traffic signal. SCDOT must perform a study to determine if an intersection is eligible.

Connectivity

Improving connectivity throughout the area provides alternate routing options to destinations and reduces some of the traffic at key intersections.

Improved Crossings

Often the danger to pedestrians and bicycles can be reduced by providing improved crossing facilities, such as painted crosswalks, median refuges, or flashing beacons.

Roundabouts

Replacing a traditional signalized intersection with a roundabout reduces the number of serious crashes while improving traffic flow.

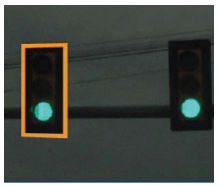
Turn Lanes

Turn lanes allow space for vehicles waiting to turn, and reduces the risk of rear-end crashes.

Driveway Consolidation

Curb cuts that are too close to an intersection are consolidated or relocated, reducing the number of turning movements or potential crashes.

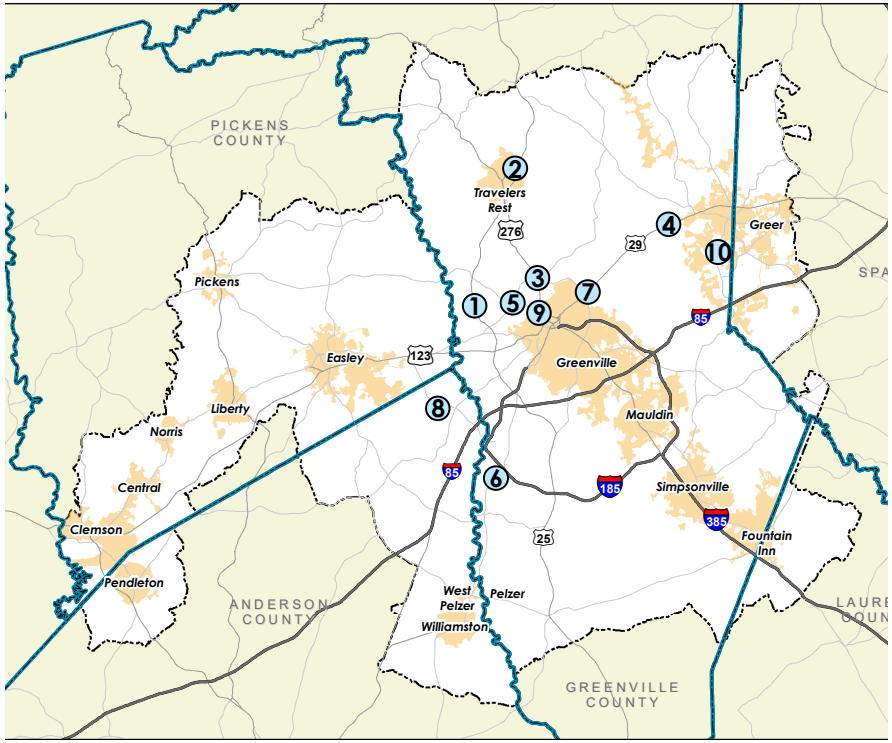
Improved Signage



Providing advanced warning signs or installing reflective backplates on traffic signals can reduce crashes caused by poor visibility.

Demonstration Intersections

Collaborating with local officials, residents, and crash data, the project team identified ten intersections as demonstration intersections to show how safety improvements could be widely applied across the GPATS region. While any intersection improvements ultimately are identified through state safety studies and analysis, some general recommendations have been identified in the table to the right to improve safety conditions at these geographically diverse locations. Though not all improvements are recommended—for example, none of these intersections are recommended to be converted to a roundabout—these are important safety tools to keep in mind as the region improves safety in other locations.



	Safety Improvements							
	Realignment	Signalization	Connectivity	Improved Crossings	Roundabouts	Turn Lanes	Driveway Consolidation	Improved/Advanced Signage
1. White Horse RD at Lily Street			X			X	X	X
2. US 25 at N Poinsett Highway	X						X	
3. E Blue Ridge Dr at Poinsett Highway			X	X			X	
4. Wade Hampton Blvd at Fairview Rd	X						X	
5. W Blue Ridge Dr at Cedar Lane Rd			X	X			X	
6. Old Pelzer Rd at Piedmont Golf Course Rd	X							X
7. Wade Hampton Blvd at Pine Knolls Dr			X	X			X	
8. Powdersville Rd at Three Bridges Rd	X							X
9. Earle St at Rutherford St				X				X
10. SC-14 at S Buncombe Rd	X			X			X	

Access Management Toolbox

As part of a coordinated, system-level plan, access management strategies that make turning movements more predictable can minimize congestion and reduce crashes.

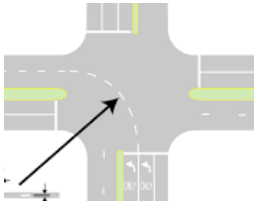
Access management strategies control the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. Areas with poor access management, which can include unprotected left turns and curb cuts within a short distance, often have higher crash rates, greater congestion, and more spillover cut-through traffic on adjacent residential streets.

Recipe for Success

Access management should never be considered a one-size-fits-all solution. Successful implementation will include a diversity of strategies that respond to the specific land use and travel context surrounding the corridor.

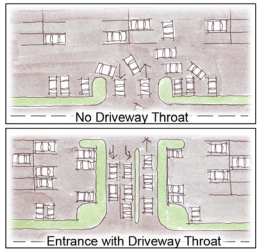
Dotted Line Markings

These pavement markings reduce driver confusion and increase safety by guiding drivers through complex intersections.



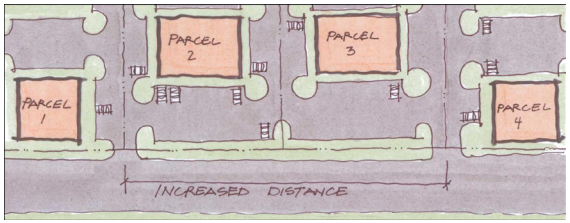
Driveway Length

Increasing the driveway length to commercial development prevents internal site operations from affecting the adjacent street.



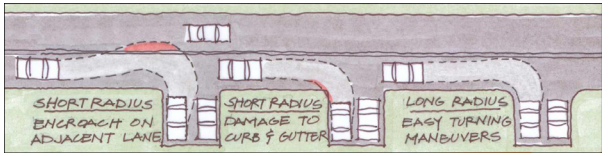
Driveway Consolidation or Relocation

Shared-access driveways minimize curb cuts and reduce traffic conflicts and are particularly effective near intersections.



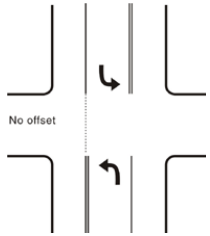
Intersection and Driveway Curb Radii

Curb radii sized for area context and vehicle use limits occurrences of vehicles using opposing travel lanes or mounting the curb when turning, resulting in less damage to infrastructure and enhanced pedestrian safety results.



Left-Turn Storage Lanes

Left-turn lanes reduce vehicle delay when drivers are waiting for vehicles to turn and may decrease the frequency of collisions caused by lane blockages.



Minor Street Approach Improvements

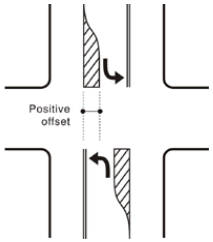
Adding left- and right-turn lanes on minor street approaches allocates more green time to the major street.

Non-Traversable Median

Medians separate opposing vehicle flows and provide refuge for pedestrians. Carefully planned access points and median U-turn access are critical considerations.

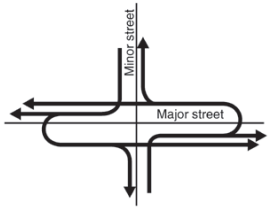
Offset Left-Turn Treatment

Offset turn lanes shift the left-turn lanes to the left, which reduces crossing and exposure time and improves sight distance and gap recognition.



Superstreet

A superstreet, also known as a restricted crossing U-turn or R-CUT, restricts traffic on minor streets from proceeding straight across or turning left onto major streets. Drivers wishing to turn left or go straight must turn right onto the major street, then make a U-turn before turning right on the minor street or continuing straight on the major street.

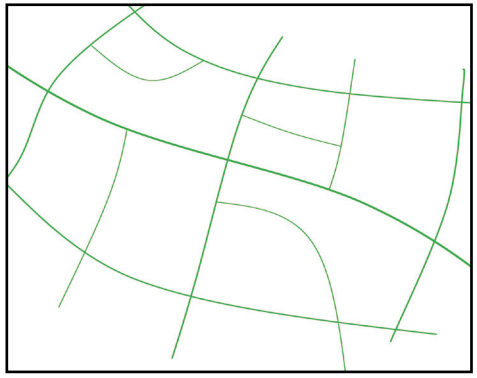


Access Management at Work

In total, *Horizon 2040* recommends access management improvements for six corridors. To show how options in the access management toolbox can be applied, the project team selected four demonstration corridors. These corridors have congestion, safety, access, and land development conditions found on similar corridors throughout the region. The table below shows how the toolkit can be applied to these locations.

	Access Management Strategies								
	Dotted Line Markings	Driveway Length	Driveway Consolidation or Relocation	Intersection and Driveway Curb Radii	Left-Turn Storage Lanes	Minor Street Approach Improvements	Non-Traversable Median	Offset Left-Turn Treatment	Superstreet
West Main St in Williamston (Academy St to Hamilton St)		X	X	X	X				
White Horse Rd in Greenville (Broadway Dr to Pendleton Rd)	X	X	X	X		X	X	X	
US 276 in Mauldin (Knollwood Dr to Owens Rd)		X	X	X			X	X	X
US 123 in Easley (Brushy Creek Rd to Main St)	X	X	X	X		X	X	X	

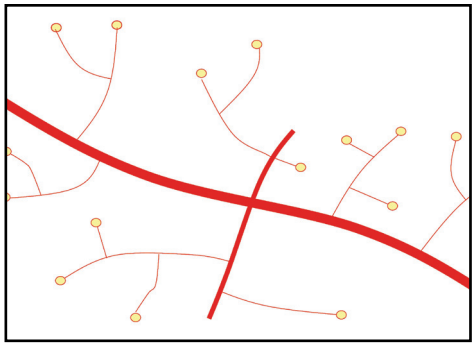
Best Practices: Connectivity



The way a road network is designed can have a tremendous impact on system-wide congestion, travel-delay, and overall travel efficiency. A traditional grid system provides routing options and a resilient network in the face of traffic incidents and congestion. By contrast, a disconnected curvilinear system funnels traffic to a few designated arterial roadways, increasing congestion and travel times by limiting routing options.

To promote a more resilient network, GPATS will promote a policy of connectivity, sponsor local collector street plans, and adopt general connectivity guidelines for local projects.

Case Study: Wilmington, NC



A similar approach has been followed in Wilmington, NC. Wilmington MPO has completed several collector street plans for different geographies within the metro area during the last few years. Each plan includes proposed connections, policy guidelines, and design recommendations that enhance safety, aesthetics, and connectivity. A set of general connectivity guidelines and a regulatory toolbox in each plan guides policy in the region so plans are implemented and best practices are followed as new development puts pressure on the area's transportation network.

Though each plan was intended to serve local goals, they also enhance regional mobility. Each plan has been adopted by the Wilmington MPO upon completion. Therefore, the plans serve as a guidebook for region-wide coordination. A prioritized action plan identifies where specified agencies should take the lead and where various parties and entities need to work together toward success.

Prioritization

After the full list of projects was drafted and vetted, the project team scored each project using SCDOT's prioritization process, which ranks according to relative benefits and effects on the larger region. Each criteria was weighted differently, and the projects' final weighted scores were used to develop the list of improvements in the financially-constrained plan (more information is available in Chapter 9). Projects were scored based on 11 categories that were based on the plan's guiding principles:

Culture and Environment

Environmental Impacts

Based on an assessment of potential impacts to natural, social, and cultural resources.

Growth and Development

Location on a Priority Network

Based on a project's location in relation to defined priority networks, which include freight routes, National Highway System Routes, and SCDOT priority network roadways.

Consistency with Local Land Use Plans

Based on consistency with local land use plans confirmed during the STIP process. During the prioritization process, all projects are assumed to be consistent with local land use plans so their numeric ranking is not affected.

Mobility and Accessibility

Traffic Volume and Congestion

Based on current and future traffic volumes.

Alternative Transportation Solutions

Based on the project's provision of bicycle, pedestrian, and transit infrastructure. This is confirmed during the NEPA process and does not affect the project's numeric ranking.

Economic Vitality

Economic Development Potential

Based on a tool developed to assess the economic development impact of transportation infrastructure projects.

Truck Traffic

Based on current truck percentages.

System Preservation and Efficiency

Financial Viability

Based on the estimated project cost compared to the six-year STIP budget. Additional consideration is given to projects supplemented with local project funding and/or other federal and state funding.

Pavement Quality Index

Based on pavement condition assessments.

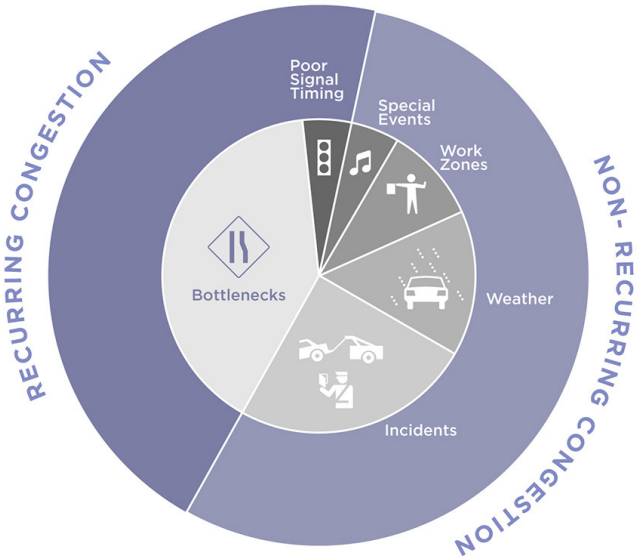
Safety and Security

Safety and Crash Data

Based on an accident rate calculated by the total number of crashes within a given road segment, divided by the traffic volume, and multiplied by the number of years.

Intersection Geometric Alignment

Based on an assessment of the intersection's functionality and operational characteristics.



The causes of congestion (Source: FHWA)

Congestion Management Process

The Congestion Management Process (CMP) is a management system and process conducted by MPOs, such as GPATS, to improve traffic operations and safety through use of either strategies that reduce travel demand, or implementation of operational improvements. As an urbanized area with a population greater than 200,000, GPATS is required by federal law to implement a CMP for its entire planning area; therefore, the MPO has chosen to incorporate a CMP into their planning efforts. The public typically benefits from having a functional CMP in place because it can improve travel conditions through low cost improvements or strategies. The improvements can be implemented in a relatively short timeframe (within 5-10 years) compared to more traditional capacity improvements, such as adding additional travel lanes, which can take more than 10 years to implement and cost significantly more. Projects identified through the CMP may also be added to future updates of the regional transportation plan should they require additional funding or a longer timeframe for implementation.

Causes of Congestion

The process of congestion management begins by understanding the problem's cause. The figure to the left illustrates the results of a national study presented by FHWA on the sources of congestion. Six major causes of congestion are identified:

- Bottlenecks—points where the roadway narrows or regular traffic demands (typically at traffic signals) cause traffic to back up. These are the largest sources of congestion and typically cause a roadway to operate below its adopted level of service standards.
- Traffic Incidents—crashes, stalled vehicles, debris on the road. These incidents cause about one quarter of congestion problems.
- Work Zones—for new road building and maintenance activities, such as filling potholes. While caused by necessary activities, but the amount of congestion caused by these actions can be reduced with various strategies.
- Bad Weather—cannot be controlled, but travelers can be notified of potentially increased congestion and signal systems can adapt to improve safety.
- Poor Traffic Signal Timing—the faulty operation of traffic signals or green/red lights where the time allocation for a road does not match the volume on that road. Poor signal timings are a source of congestion on major and minor streets.
- Special Events—cause "spikes" in traffic volumes and changes in traffic patterns. These irregularities either cause or increase delay on days, times, or locations where there usually is none.

As the CMP is updated in the future, the GPATS Study Team will be engaged in CMP-related matters. This ensures that CMP issues are addressed routinely as an ongoing planning activity. Identifying, tracking, and evaluating potential congestion- or safety-related issues on the CMP roadway network will be key.

The full regional CMP is included in Appendix E (http://www.gpats.org/plans/horizon2040).

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5: Bicycle and Pedestrian

INTRODUCTION

As the GPATS region grows, the role the active transportation infrastructure plays in the regional transportation network has become increasingly important. Bicycle and pedestrian infrastructure provides alternative transportation options for congestion relief, critical community connections and recreation. It also improves the quality of life and vibrancy of the community. Many residents in the Greenville area realize this, and there has been a call to invest in active transportation infrastructure that improves regional mobility.

Throughout the planning process, two major themes emerged from public engagement: first, the importance of making local community connections between neighborhoods, schools, parks, and commercial districts; and second, a desire for a network of multiuse paths to connect cities and towns throughout the region. These themes are reflected in the following *Horizon 2040* bicycle and pedestrian recommendations, which focus on expanding opportunities for residents to bike and walk to their destinations.

Additionally, over the past decade, new infrastructure for biking and walking has emerged in the GPATS region. For example, the advent of shared-use paths, such as the Swamp Rabbit Trail in Greenville County and Doodle Trail in Pickens County, has provided a type of dedicated active transportation infrastructure in the region. Furthermore, this infrastructure has underscored the demand for walking and biking in the region.

Complete Streets

Complete streets are community-oriented streets that safely and conveniently accommodate multiple modes of travel. Common goals for complete streets include economic vitality, business retention and expansion, and public safety, which align with the *Horizon 2040* guiding principles. Creating a complete street requires community support and leadership as well as coordination among planners, urban designers, transportation engineers, and the private sector. Successful complete streets programs are based on the following principles:

- Achieve community objectives for mobility, quality of life, and economic development.
- Blend street design with the character of the area served.
- Capitalize on a public investment to spur private investment in the area.
- Ensure that the rights of pedestrians, bicyclists, and transit riders to use the street safely are not overshadowed by motorists.

Horizon 2040 balances between regional mobility and multimodal accessibility to provide effective transportation facilities for all travelers. This chapter identifies ways in which the region should seek to invest in active transportation, including numerous roadway improvements co-located with bike and pedestrian improvement projects.

RELEVANCE TO THE GUIDING PRINCIPLES

The recommendations in this chapter reflect the *Horizon 2040* guiding principles in the following ways:

Culture and Environment

Places people enjoy walking and biking are those where they can safely engage with the built environment and natural world. Examples of walk- and bike-friendly places include downtowns, neighborhoods, parks and schools, and cultural centers.

Economic Vitality

By offering transportation options, active transportation can foster economic growth by making it easier to move people within and through the region.

Growth and Development

Multimodal connectivity can foster growing, vibrant communities when planned around future and current land uses, efficiently connecting people to destinations like work and school.

Mobility and Accessibility

Active transportation solutions can help balance a regional transportation system by facilitating walking, biking, and transit use. These modes often provide the “last mile benefits” required for an efficient mobility system.

Safety and Security

The safety of the overall transportation system can be dramatically improved by reducing bicycle- and pedestrian-related crashes. Dedicated infrastructure for cyclists and pedestrians should be a priority of future transportation projects.

System Preservation and Efficiency

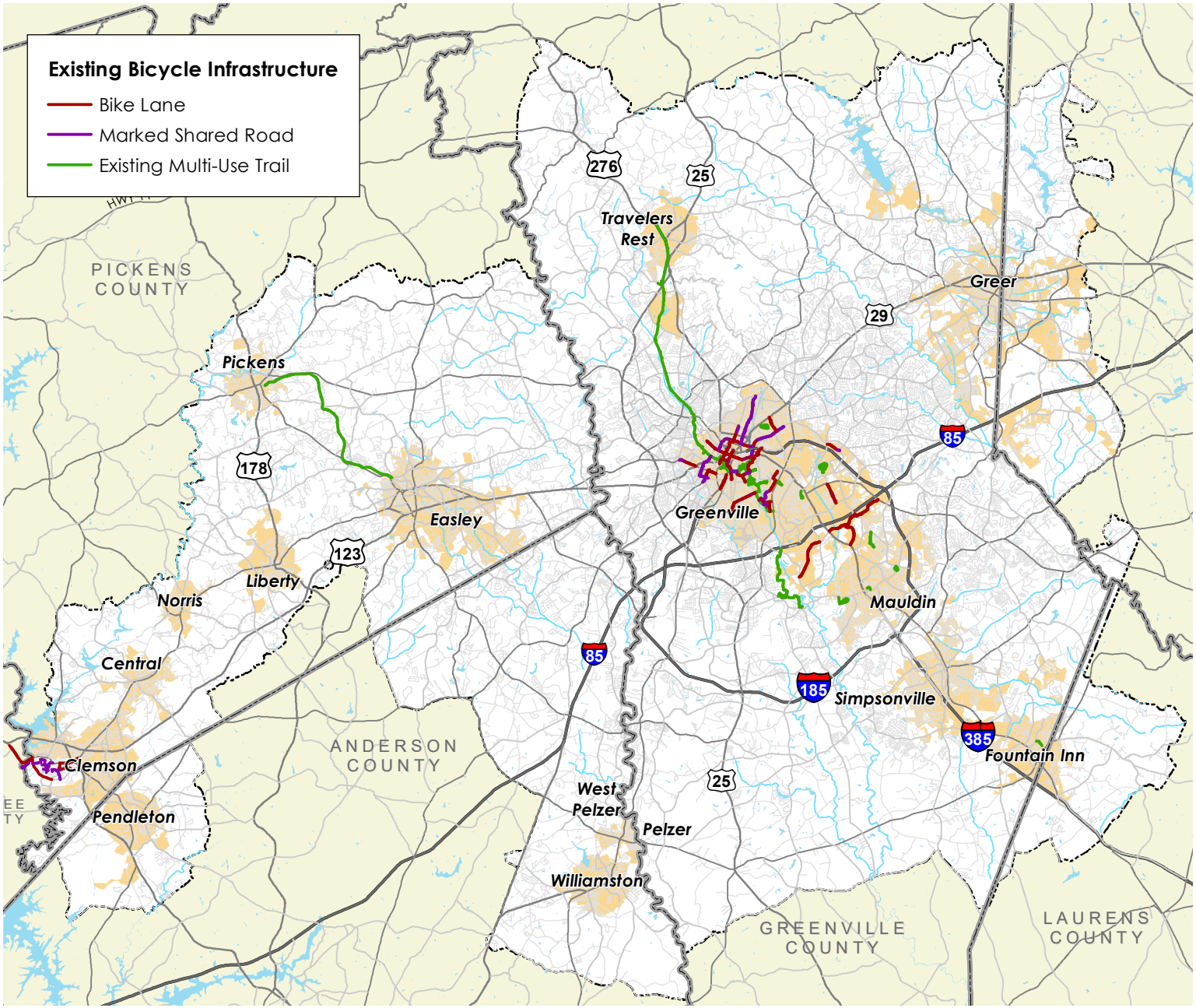
Bicycle and pedestrian infrastructure are relatively low-cost infrastructure that can remove demand from often costlier roadway infrastructure types.

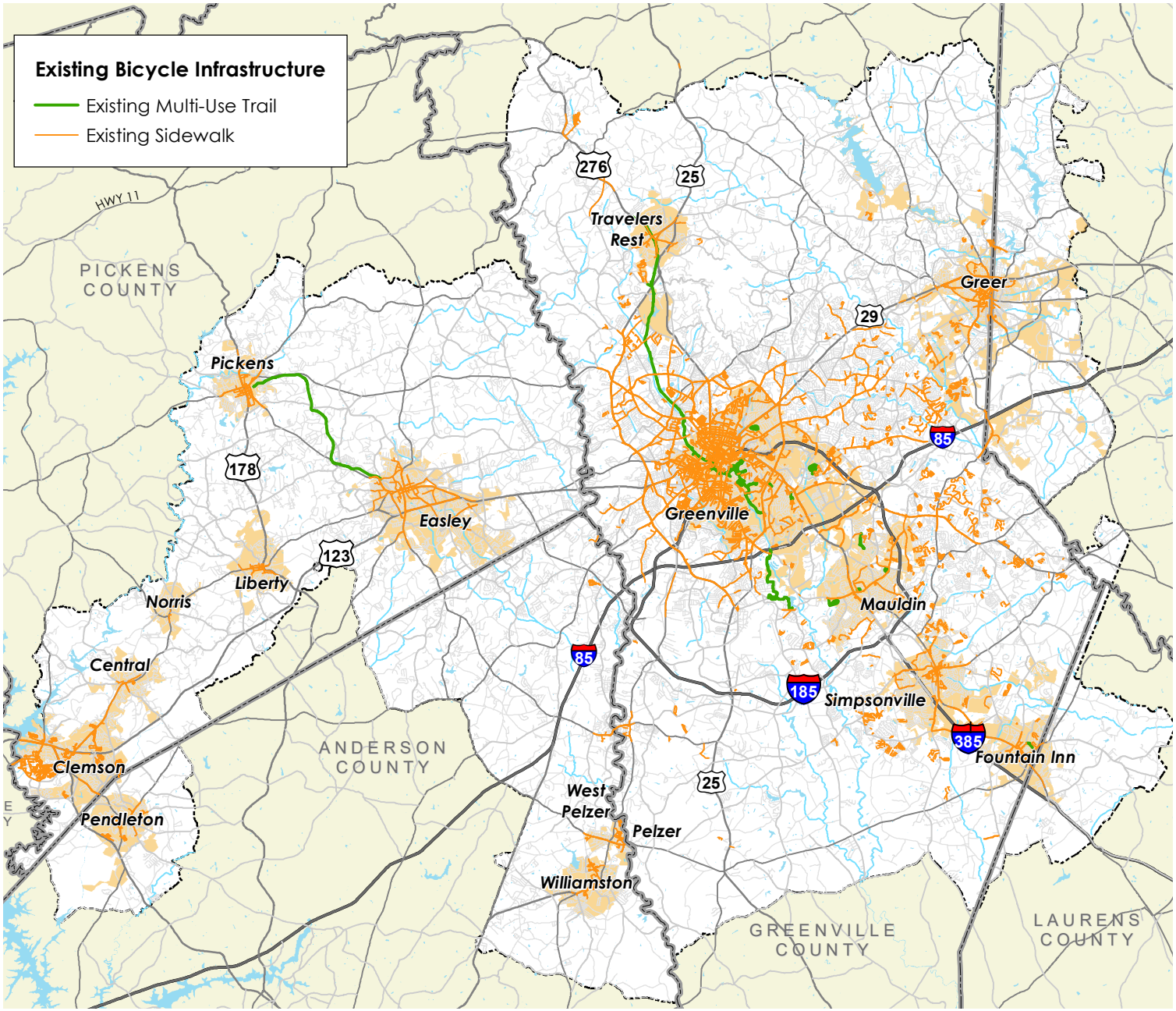
NETWORK ASSESSMENT

Existing Bicycle Infrastructure

The GPATS study area currently contains approximately 1,049 miles of bicycle and pedestrian infrastructure—most of which are sidewalks in the most populated communities.

Bicycle infrastructure accounts for only 2.8% of the region's entire infrastructure network, with a handful of multiuse pathways the most developed. By examining gaps in the existing network now, GPATS can ensure future improvements incorporate multimodal elements to link recreational opportunities, economic nodes, and residential areas.





Existing Pedestrian Infrastructure

The region's sidewalk network is the most comprehensive of all its infrastructure types. These facilities are largely centered in GPATS' most populated areas, especially municipal areas.

RECOMMENDATIONS PROCESS

The *Horizon 2040* bicycle and pedestrian planning process accounts for the region's preference for interconnected bicycle and pedestrian facilities.

The *Horizon 2040* Vision Plan—the full set of unconstrained bicycle and pedestrian recommendations—contains input from stakeholders ranging from Upstate residents, technical planning staff, local leaders, and previous plans. A thorough 15-month process of review, analysis, and community engagement ensured that the full vision plan reflected the priorities and goals of the community as well as transportation planning best practices.

1

Public Outreach

The planning team solicited suggestions from the public, City and County staff, and elected officials through meetings and online surveys. Over 1,500 bicycle projects were suggested.

2

Analysis and Recommendations

The planning team cataloged and analyzed projects from prior planning efforts based on feasibility, need, and relative benefits. The list was finalized after a second round of feedback.

3

Prioritization

The planning team scored projects to determine their relative benefits and eligibility for regional funding sources to identify priority projects.

4

Final Plan

Ultimately, the final list of funded projects was adopted as the Horizon 2040 plan. These projects are eligible to receive funding as part of STIP.

The Five E's Approach to Bicycle and Pedestrian Planning

Research has shown that a comprehensive approach to improving conditions for walking and bicycling is more effective than a singular approach that would address infrastructure issues only. Recognizing this, the national Bicycle Friendly Community program, administered by the League of American Bicyclists, and the Walk Friendly Community program, administered by the National Center for Walking and Bicycling, recommend a multi-faceted approach based on the following five 'E's: Engineering, Education, Encouragement, Enforcement, and Evaluation.

Engineering

- Designing, engineering, operating, and maintaining quality pedestrian and bicycle facilities is a critical component in creating a pedestrian-friendly and bicycle-friendly community. This category includes projects that address and impact the built environment, such as adding new bicycle and pedestrian specific infrastructure, improvements to street crossings, traffic calming, trail design, traffic management, school zones, and other related strategies. Horizon 2040 allocates guideshare funding for several priority investments to expand bicycle and pedestrian infrastructure throughout the region.

Education

- Educational opportunities are critical for bicycle and pedestrian safety. Education should span all age groups and include motorists as well as cyclists and pedestrians. The focus of an educational campaign can range from information about the rights and responsibilities of road users to tips for safe behavior; from awareness of the community wide benefits of bicycling and walking to technical trainings for municipal and agency staff.

Encouragement

- Encouragement programs are critical for promoting and increasing walking and bicycling. These programs should address all ages and user groups from school children, to working adults, to the elderly and also address recreation and transportation users. The goal of encouragement programs is to increase the amount of bicycling and walking that occurs in a community. Programs can range from work-place commuter incentives to a "walking school bus" at an elementary school; and from bicycle- and walk-friendly route maps to a bicycle co-op. Horizon 2040 includes recommendations for programs to improve education and awareness surrounding active transportation, as well as to encourage increased use of these modes.

Enforcement

- Enforcement is critical to ensure that motorists, bicyclists, and pedestrians are obeying common laws. It serves as a means to educate and protect all users. The goal of enforcement is for bicyclists, pedestrians, and motorists to recognize and respect each other's rights on the roadway. In many cases, officers and citizens do not fully understand state and local laws for motorists, bicyclists, and pedestrians, making targeted education an important component of every enforcement effort.

Evaluation

- Evaluation methods can include quarterly meetings, the development of an annual performance report, update of bicycle and pedestrian infrastructure databases, pedestrian and bicycle counts, assessment of new facilities, and plan updates. Monitoring implementation of this Plan on a regular basis and establishing policies that ensure long-term investment in the bike and pedestrian network are critical to effective evaluation. Monitoring progress of implementation will facilitate continued momentum and provide opportunities for updates and changes to process if necessary.

RECOMMENDATIONS

Horizon 2040 envisions an active transportation network that connects communities across the GPATS region, encouraging walking and bicycling as common parts of everyday life. People of all ages and abilities will enjoy access to safe, comfortable, and convenient walking and bicycling infrastructure, reaping the benefits of enhanced quality of life, healthier lifestyles, greater economic opportunities, and a culture of safety and respect for the wellbeing of people traveling on foot or by bike. Refer to Appendix F (http://www.gpats.org/plans/horizon2040) to learn more about the planning process used to generate these recommendations and access to available resources.

Bicycle and Pedestrian Design Best Practices

Proper design of bicycle and pedestrian infrastructure is essential to a safe, efficient, active transportation network.

Design for Pedestrians

The GPATS regional transportation network should accommodate pedestrians with a variety of needs, abilities, and impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception, and should be taken into consideration when designing pedestrian infrastructure.

Sidewalks

Sidewalks should be provided on both sides of major roadways and on at least one side of collectors and minor arterials or residential streets with at least three dwelling units per acre. Sidewalks typically are constructed out of concrete and separated from the roadway by a curb and gutter and, preferably, a landscaped planting strip area.

Intersections

Pedestrian safety must be a priority at intersections, with thoughtful design to increase visibility, accessibility, separation from traffic, and lighting.

Design for Bicyclists

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider the reasonably expected bicycle types, skill levels, and traffic levels on and around the facility and utilize appropriate dimensions.

Refer to Appendix F (http://www.gpats.org/plans/horizon2040) for greater detail about the planning process used to determine the infrastructure types seen in these recommendations.

Bicycle Facility Types

Horizon 2040 recommends implementing the following facility types in the GPATS region:

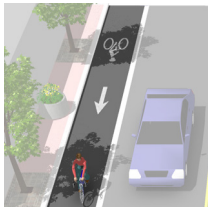
Bike Routes

Marked by bicycle wayfinding signage along roadway networks, these facilities may not exhibit other infrastructure improvements.

Bicycle Boulevards

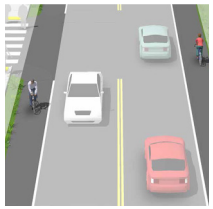
Enhanced bike routes on local street networks, at a minimum, are designated by pavement markings and bicycle wayfinding signage. Traffic calming devices, such as traffic diverters, chicanes, and chokers, may also be used with bicycle boulevards to reduce vehicle speeds and volumes but maintain bicycle access.

Bike Lanes



On-street bike lanes use striping and optional signage to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by bicyclists and motorists.

Paved Shoulders



Typically found in more rural areas, these roadways provide striped shoulders wide enough for bicycle travel (4-foot or more). Shoulder bikeways often, but not always, include signage that alerts motorists to expect bicycle travel along the roadway. In rural areas, shoulders also provide an area for pedestrian travel where traffic volumes or development may not warrant sidewalks or sidepaths.

Buffered Bike Lanes

Conventional bicycle lanes are paired with a designated buffer space to separate the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

Separated Bike Lanes or Cycle Tracks

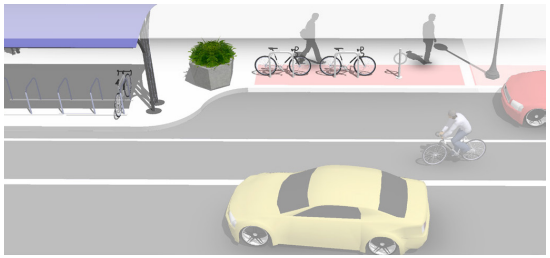
Exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of conventional bike lanes. These are also referred to as protected bicycle lanes. Cycle tracks are either raised or at street level and use a variety of elements for physical protection from passing traffic.

Shared-Use Paths or Multiuse Paths

Facilities separated from roadways for use by bicyclists and pedestrians. Sidepaths usually refer to shared-use paths immediately adjacent to the roadway. Greenways refer to shared-use paths that don't necessarily follow a roadway alignment and typically follow other features such as railroads, utility lines, or streams.

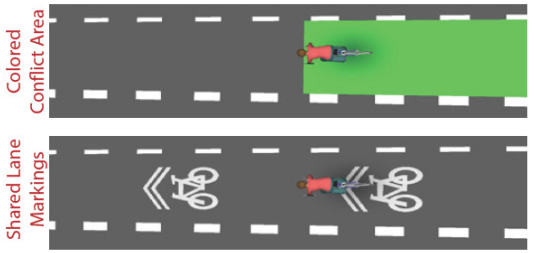
Bicycle Parking

To encourage bicycling, plentiful, convenient, and attractive bicycle parking should be provided. This may be short-term parking of two hours or less or long-term parking for employees, students, residents, and commuters. While specific bicycle parking locations are not identified in this planning effort, ample bicycle parking should be provided at popular bicycling destinations such as parks, schools, retail areas, and other gathering places. The town could better ensure this by including bicycle parking as part of their requirements for new development.



Intersections

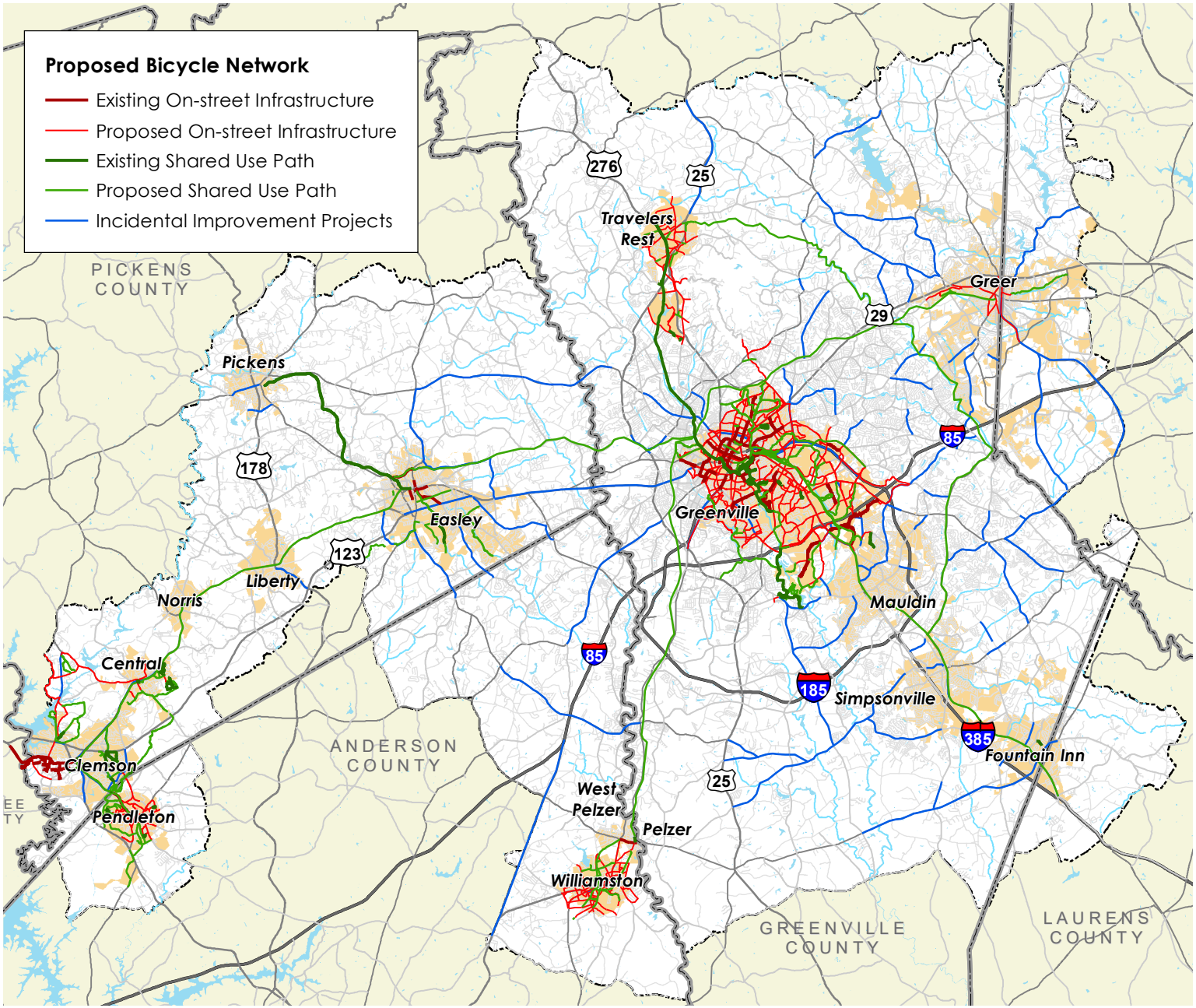
Intersections can either be facilitators of or barriers to bicycle transportation. If a potential bicyclist knows that they have to cross an uncomfortable intersection to get to their destination, they will be less likely to bicycle. Thoughtful design must be used to promote safety through increased visibility, accessibility, separation from traffic, and lighting.

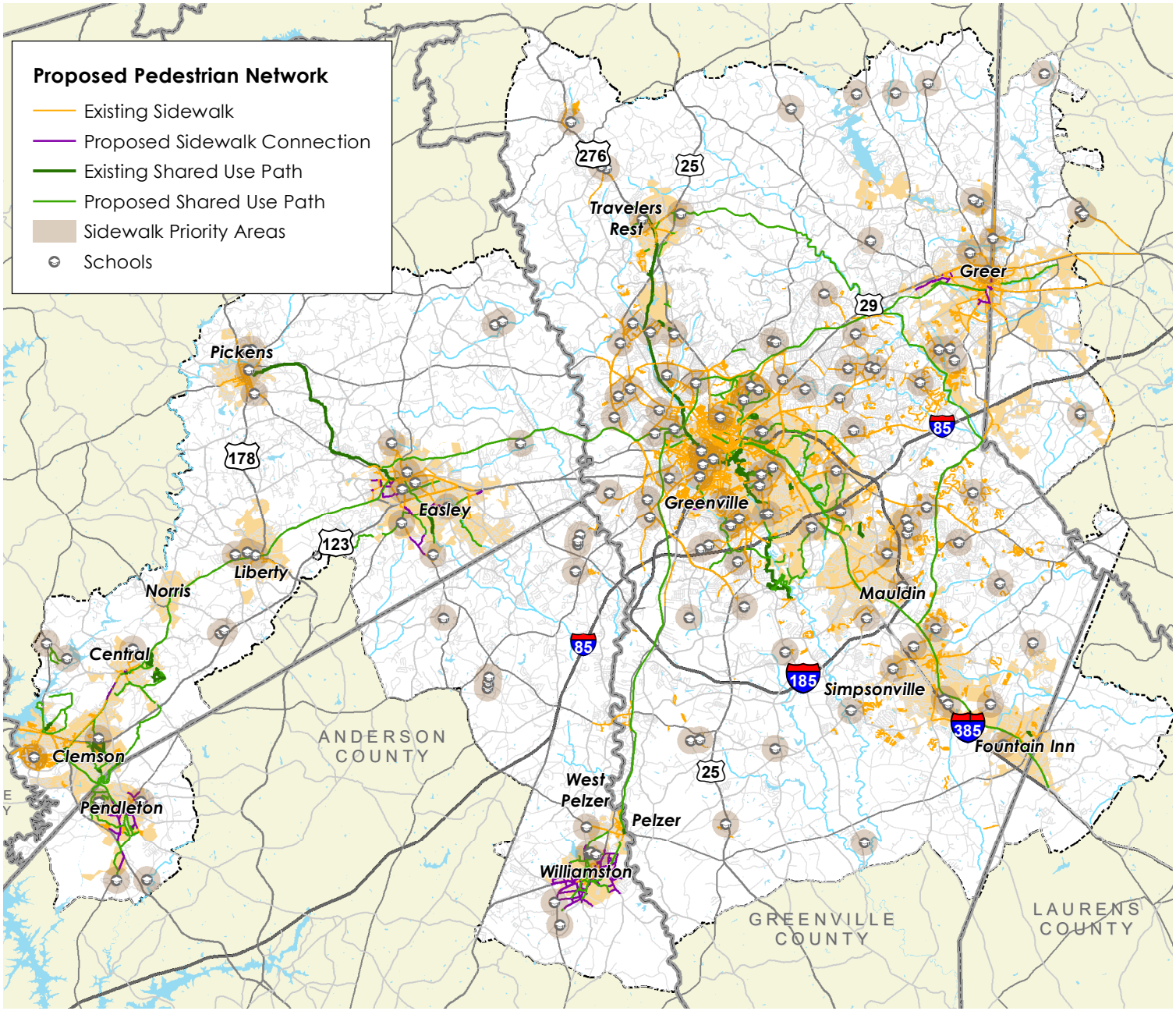


Bicycle Network Recommendations

The GPATS bicycle network recommendations detail a system of facilities that connect all regional communities. The recommendations are divided into two types of facilities: on-street and off-street. Recommended on-street infrastructure may vary depending on the surrounding context and corridor, and include bike routes, on-street markings, paved shoulders, bike lanes, buffered bike lanes, and separated bike lanes/cycle tracks. Off-street infrastructure are shared-use paths that can be used by cyclists and pedestrians.

The map at right shows the locations of potential incidental improvement projects, where recommended roadway widening projects and corridor improvements may be designed to provide additional multimodal accessibility.





Pedestrian Network Recommendations

The pedestrian network recommendations include shared-use paths paired with sidewalk priority areas centered around schools. The shared-use paths double as bicycle infrastructure and connect regional communities to provide recreational and functional transportation benefits.

The school sidewalk priority areas are half-mile buffers surrounding elementary, middle, and high schools, as well as central business districts. All roadways within these areas should be designed to maximize pedestrian accessibility and safety as opportunity and funding allow.

Several priority sidewalk connections are identified on the map at left. These connections are identified in previous planning efforts and connect regional shared-use paths or the local sidewalk network.

Program Recommendations

Bicycle and walking education, encouragement, and enforcement programs are key to building support for infrastructure recommendations. While there are countless programs that could be implemented to support walking and bicycling, a few are very well-established and have proven successful in communities in Upstate South Carolina and throughout the country. A number of resources and funding sources exist for nationally-recognized programs such as:

- Transportation Alternatives Program
- Safe Routes to School (SRTS)
- Park and Walk Campaign
- Safe Routes to Bus Stops
- International Walk to School Day
- Youth bicycle and pedestrian safety education
- National Bike Month
- Bicycle and Walk Friendly Community Programs
- Bicycling and walking maps
- Active Older Adults Walking Programs
- Bicycle and pedestrian advisory committees

Refer to Appendix F (http://www.gpats.org/plans/horizon2040) to learn more about each of these programs and the funding sources available to them.

PRIORITIZATION

With hundreds of recommended bicycle and pedestrian projects throughout the region, selecting a handful to prioritize for funding required the planning team to analyze each project based on its role in the regional network, propensity for success, and cost/benefit ratio.

Considerations for High-Priority Projects

Connectivity

High-priority projects either connect to existing bicycle or pedestrian infrastructure or create new connections between two logical termini (such as roadway intersections or points of interest like parks or schools).

Distance and Cost

To limit project costs and improve implementation feasibility, shared-use path projects have been limited to approximately five miles. Longer projects, such as the Golden Strip Swamp Rabbit Trail extension, have been broken into phases to aid implementation. Striping and signage projects do not have a maximum distance.

Community and Regional Impact

High-priority projects are classified as either "community" or "regional" projects. Community projects are within a single jurisdiction, whereas regional projects are inter-jurisdictional or connect to the larger network to advance regional mobility. Generally, projects with greater regional impact have been prioritized above community-scale projects.

Guideshare Eligibility

SCDOT Guideshare requirements should be applied to all future pedestrian and bicycle projects when applying for state funding. The SCDOT list of criteria to determine eligibility of a state match for Guideshare-funded projects requires eligible projects to meet six of the eight outlined criteria.

- ***Connectivity:*** No adjacent route alternative that includes existing bicycle or pedestrian infrastructure.
- ***Connectivity:*** Provides connection to existing bicycle or pedestrian infrastructure.
- ***Minimum cost:*** Estimated project cost must be $250,000 or higher.
- ***Minimum average daily traffic:*** At least 5,000 vehicles per day along project corridor.
- ***Safety:*** A three-year accident history with one or more reported pedestrian incident correctable with bicycle or pedestrian infrastructure.
- ***Transit benefit:*** Supports linkage with existing or proposed transit service.
- ***School accessibility:*** Within one half-mile of an elementary, middle, high school, or college.
- ***Consistency with local plans:*** Must be detailed in local or regional plan.

It should be noted that failure to meet the threshold required for Guideshare funding does not disqualify a bicycle or pedestrian project from implementation. However, projects that meet the Guideshare eligibility requirements might be elevated above those that don't to maximize the region's use of eligible funding.

The priority projects identified on the following page have been screened for guideshare eligibility and meet at least six of the eight identified criteria.

Summary of High Priority Projects

Facility	Municipality	Type	Road Name
Augusta Street Area Bike Network	Greenville	Bike Lane, Bike Route, Shared Lane Markings	E McBee Ave, McDaniel Ave, Meyers Dr, Long Hill St, W Faris Rd, Waccamaw Dr, Rice St, Pendleton St, Blythe Dr
West Greenville Protected Bike Lane	Greenville	Protected Bike Lane	Pendleton St
City of Easley Brushy Creek Greenway	Easley	Shared-Use Path	Pearson Rd, Pope Field Rd, Brushy Creek Corridor
Rutherford Road Bike Lane	Greenville	Bike Lane	Rutherford Rd, Rutherford St
Washington Street Protected Bike Lane	Greenville	Protected Bike Lane	Washington St
Clemson-Pendleton Green Crescent Connector	Clemson, Pendleton, Pickens County	Shared-Use Path, Bike Lane	S Mechanic St, Eighteen-Mile Creek Corridor
Central-SWU Green Crescent Connector	Central	Shared-Use Path	SC 93, Wesleyan Dr, Mill Ave, Clayton St
Clemson-Central Green Crescent Connector	Clemson, Central	Shared-Use Path	SC 93 Corridor
Mauldin Golden Strip Greenway	Mauldin	Shared-Use Path	US 276 Corridor, SC 417 Corridor
Simpsonville Golden Strip Greenway	Simpsonville	Shared-Use Path	SC 14 Corridor
City of Easley Doodle Trail Extension	Easley	Shared-Use Path	Fleetwood Dr Corridor
Richardson Street Protected Bike Lane	Greenville	Protected Bike Lane	Richardson St
City of Easley School Sidewalk Connector	Easley	Sidewalk	Pope Field Rd
Travelers Rest Area Bike/Ped Network Expansion	Travelers Rest	Shared-Use Path, Bike Lane, Bike Route	US 276 Corridor, Poinsett Hwy, McElhaney Rd
City of Clemson Shared-Use Path	Clemson	Shared-Use Path	Eighteen-Mile Creek Corridor
Palmetto Area Bike/Ped Network Expansion	Williamston	Shared-Use Path, Bike Lane, Shared Lane Markings, Bike Route	SC 20, SC 8, Rail Corridor
Fountain Inn Golden Strip Greenway	Fountain Inn	Shared-Use Path	SC 14 Corridor
Greer-Taylors Greenway	Greer, Greenville County	Shared-Use Path	US 29 Corridor

6: Public Transportation

INTRODUCTION

The transit element of *Horizon 2040* evaluates recent and ongoing transit planning efforts and recommends policy-based strategies and system-level service improvements to enhance access and mobility for area residents.

The transit recommendations build upon previous and ongoing planning efforts and evaluate opportunities to create a system that serves existing and potential needs of the area while satisfying state and federal eligibility requirements for financial assistance. The plan's recommended improvements for Greenlink and Clemson Area Transit's existing service and programs were influenced by the *Horizon 2040* guiding statements and community input.

Transit Overview

Transit operators play an important role in the region's transportation system, which has the goal of providing people choices for how they move through the region. Given the limited resources available for transit, these operators seek to balance ridership (maximizing the amount of riders that can be attracted and served and not necessarily where people feel entitled to transit or where it is badly needed) with geographic coverage (how much service area is covered with the resources available, even if people around the service don't and won't use the service). These objectives often conflict as focusing on increasing ridership may require allocating resources on more densely populated areas, thereby limiting the total area the system can serve.

Transit riders generally fall along a spectrum ranging from captive riders to choice riders:

- **Captive riders** do not have access to or the ability to use a personal vehicle. For them, transit options are essential. These riders include persons too young to drive, the elderly, persons with disabilities, and those without the financial means to own a personal vehicle.
- **Choice riders** could have access to a personal vehicle but instead choose to use transit. These riders include persons who decide not to own a personal automobile and those who decide to use transit for work, social, medical, or personal trips. Choice riders use transit to save money and for convenience, comfort, or environmental principles.

This theory traditionally assumes that the best way to improve transit is to increase the amount of choice riders, thereby increasing revenues and providing improved services to captive riders. However, choice riders usually make up only a small portion of overall ridership and the resources used to attract choice riders can reduce services for captive riders who depend on transit.

Before people become willing choice riders, transit service must be reliable and convenient. There are certain things that even choice riders must do, such as get to work on time. Therefore, a transit system's goal should be to provide service that is useful—service that gets people where they need and want to go in. By focusing on making transit both useful and convenient, it will better accommodate all users—captive, choice, and all others.

As an update to the traditional rider classifications, transit riders fall under the following categories:

- **Occasional riders** use transit infrequently and for diverse reasons; some use transit to go "downtown" or another transit-accessible place, while others use transit as a backup mode.

- **Commuters** take transit regularly but almost exclusively for work trips.
- **All-purpose riders** take transit regularly and for multiple reasons.

This theory recognizes that useful transit is simply a question of whether transit fits a rider's transportation needs.

Growth patterns in the study area make convenient transit service more complex and expensive to operate. To encourage transit use and provide more choice in transportation, a safe, comfortable customer delivery system with attractive and convenient amenities must be developed around bus stops. The customer delivery system requires a network of sidewalks, safe street crossings, and lighting. The efficiency of transit also depends on an interconnected street network suitable for bus traffic and convenient ways for riders to shift between public transportation modes. For these reasons, transit cannot be considered in isolation. The strategies presented in this chapter support improvements to the larger transportation system.

Types of Transit

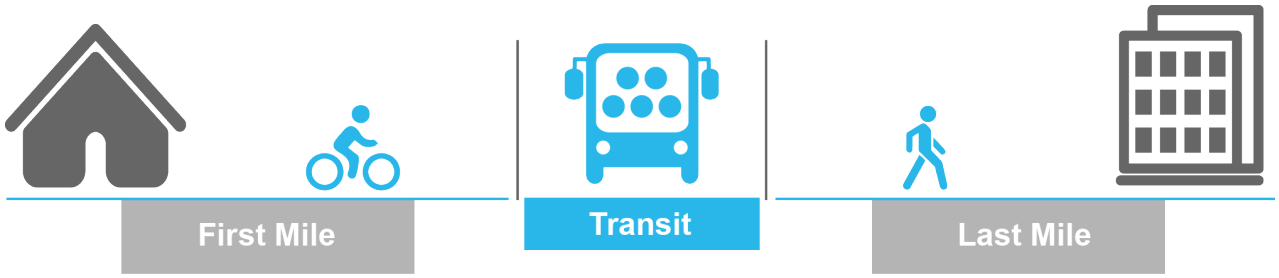
People are more likely to use transit when service is convenient, dependable, and easy to use. While this level of service requires a complete network of roads, sidewalks, and bikeways, it also demands that the type of transit service matches the surrounding development context and ridership types and levels. Numerous types of transit exist, including.

- ***Bus:*** A common frequent-stop transit service using rubber-tired passenger vehicles powered by diesel, gasoline, battery, or alternative fuels within mixed traffic on streets. Service includes standard, circulator, and express (i.e., commuter).
- ***Trolley:*** A variation of bus transit that uses rubber-tired passenger vehicles powered by diesel, gasoline, battery, or alternative fuels within mixed traffic on streets. Vehicle design mimics vintage streetcars.

- ***Light Rail Transit (LRT):*** An electric railway with lighter volumes compared to heavy rail transit and characterized by one- or two-car passenger rail cars on fixed rails in shared or exclusive rights-of-way. Power typically drawn from an overhead electric line.
- ***Heavy Rail Transit (HRT):*** An electric railway characterized by high-speed passenger rail cars operating on fixed rails within separate rights-of-way from all other modes.
- ***Personal Rapid Transit (PRT):*** Small automated vehicles operating on specially-built fixed guideways with vehicles sized for individual or small-group travel.

Last Mile Problem

Unfortunately, transit services usually are unable to drop riders off directly at their destinations, creating something called the “last mile” problem. Transit riders rely on a good network of sidewalks, trails, and bike ways to move between transit services and their final destinations. The sidewalk network in the GPATS region is dilapidated, disjointed, and disconnected. Where sidewalks do exist, there often is adjacent traffic moving so fast it discourages use. Therefore, planning for active transportation infrastructure in tandem with transit routes is critical to the system’s success.



Source: ActiveSwitch.ca

RELEVANCE TO THE GUIDING PRINCIPLES

Early in the process, the *Horizon 2040* team established guiding principles for the development of recommendations. The transit improvements in this chapter were developed using these guiding statements.

Culture and Environment

An efficient transit system with adequate ridership has the potential to reduce congestion and emissions, providing environmental benefits to the entire region.

Growth and Development

Transit should be coordinated with land use decisions to create high quality transit corridors that are economic development tools and support ease of mobility.

Safety and Security

Improvements to the overall transportation system should focus on ensuring that transit riders have a safe way to access the transit system and reach their destination, including context sensitive street design that minimizes travel speeds, accommodates transit vehicles, and coordinates with other modes.

Economic Vitality

A functional and efficient transit system serves many destinations and provides access to jobs, health care, and commercial developments for a healthy regional economy.

Mobility and Accessibility

Transit is an important element of a balanced transportation system that allows residents to move easily through the region without a personal vehicle.

System Preservation and Efficiency

Increasing options for transit allows people to choose how they travel, which can lead to shared rides that minimize traffic, extending the lifespan of infrastructure.

Existing Services

GTA

Greenville Transit Authority (GTA dba Greenlink) primarily serves the Cities of Greenville, Mauldin, and Simpsonville, along with unincorporated Greenville County, with 11 fixed routes. Depending on the route, the frequency of the service ranges from 30–60 minutes. The majority of its services occur on weekdays, with fewer service hours on Saturdays. Besides the downtown trolley, no service is provided on Sundays and holidays. Greenlink recently conducted a Comprehensive Operational Analysis (COA), completed in 2017. One of the biggest challenges Greenlink faces is a lack of funding, while paratransit costs are continually increasing.

Peer Comparison

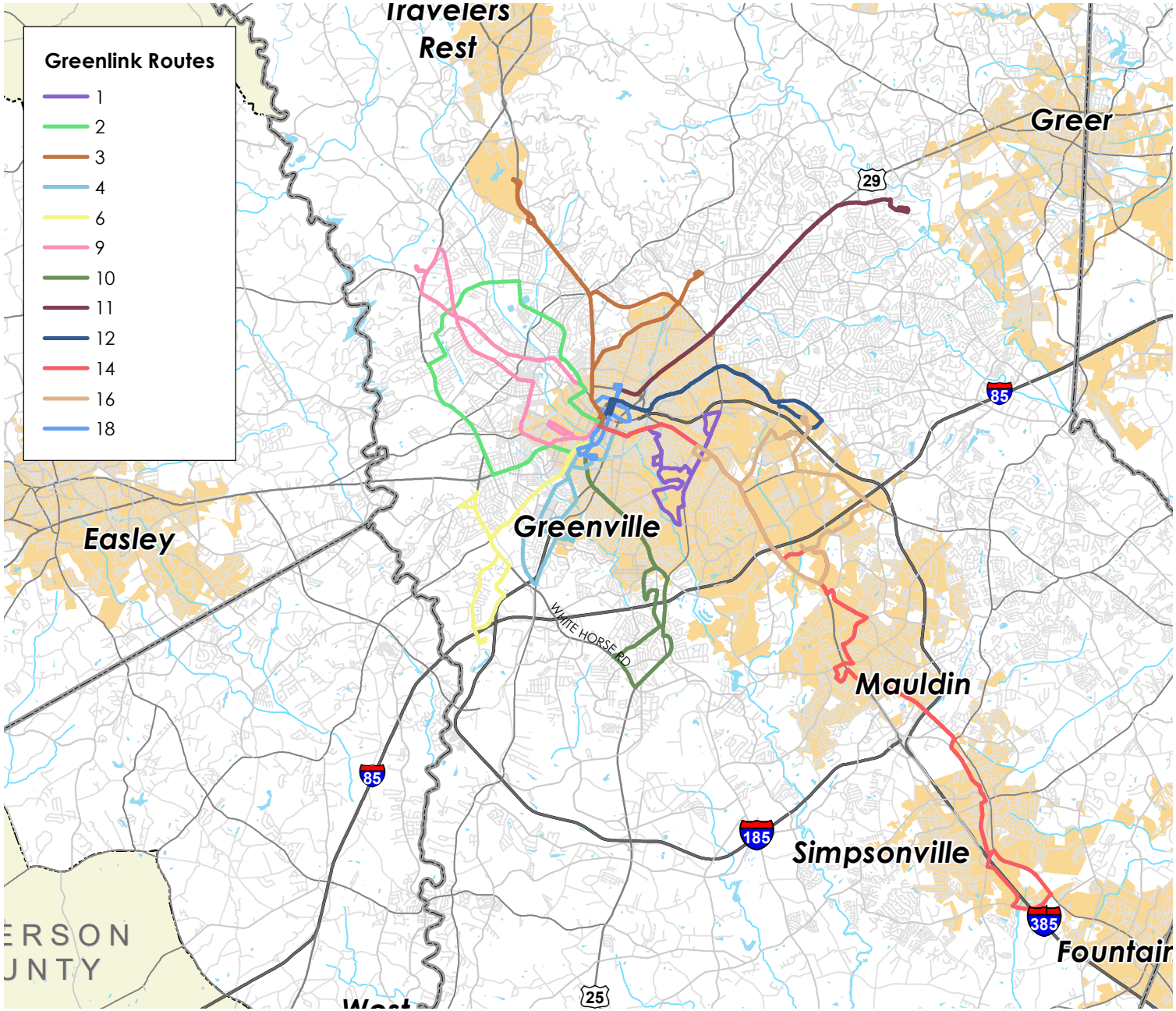
The planning team compared Greenlink's service to five similarly-sized cities throughout the Carolinas, including Columbia, SC; Charleston, SC; Winston-Salem, NC; Greensboro, NC; and Asheville, NC. Compared to the peer average, Greenlink operates far fewer vehicles, provides fewer passenger miles and trips, and covers a much wider service area. However, Greenlink is extremely cost efficient, having the lowest operating expenses per peak vehicle trip, revenue mile, and revenue trip.

CAT

Clemson Area Transit (CAT) primarily serves the City of Clemson and Clemson University with 10 routes. This includes service to Seneca, Central, Southern Wesleyan University, Pendleton, and Tri-County Technical College. Depending on the route, the frequency of the service ranges from 7–60 minutes. The vast majority of its services occur on weekdays, with little service on Saturdays and even less on Sundays and holidays. CAT just concluded a study that examined the state of its current service and ways to improve. One of the biggest challenges CAT faces is local traffic congestion, which causes delays along the routes. The Clemson Commuter route, which runs from the Clemson campus to Greenville, previously was operated by GTA before being taken over by Clemson University, who closed it to the public, allowing only Clemson students and staff to ride the route at this time.

Peer Comparison

A peer analysis of the CAT system recently was performed as part of the 2017 Clemson Reimagining Study, which found that CAT had the second-lowest operating cost per revenue hour of all systems in North Carolina, South Carolina, and Georgia. It also is the fourth most productive of the systems when judged by passenger boardings per revenue hour. CAT's routes vary widely in their per-passenger operating cost due largely to the relative popularity of the campus-area routes compared to the low ridership of the commuter routes. The Red route has the highest weekday ridership at 3,000 daily boardings and has the lowest operating cost at $0.77 per passenger. By contrast, the Seneca Express route has just 196 daily boardings and costs more than $4.00 per passenger.



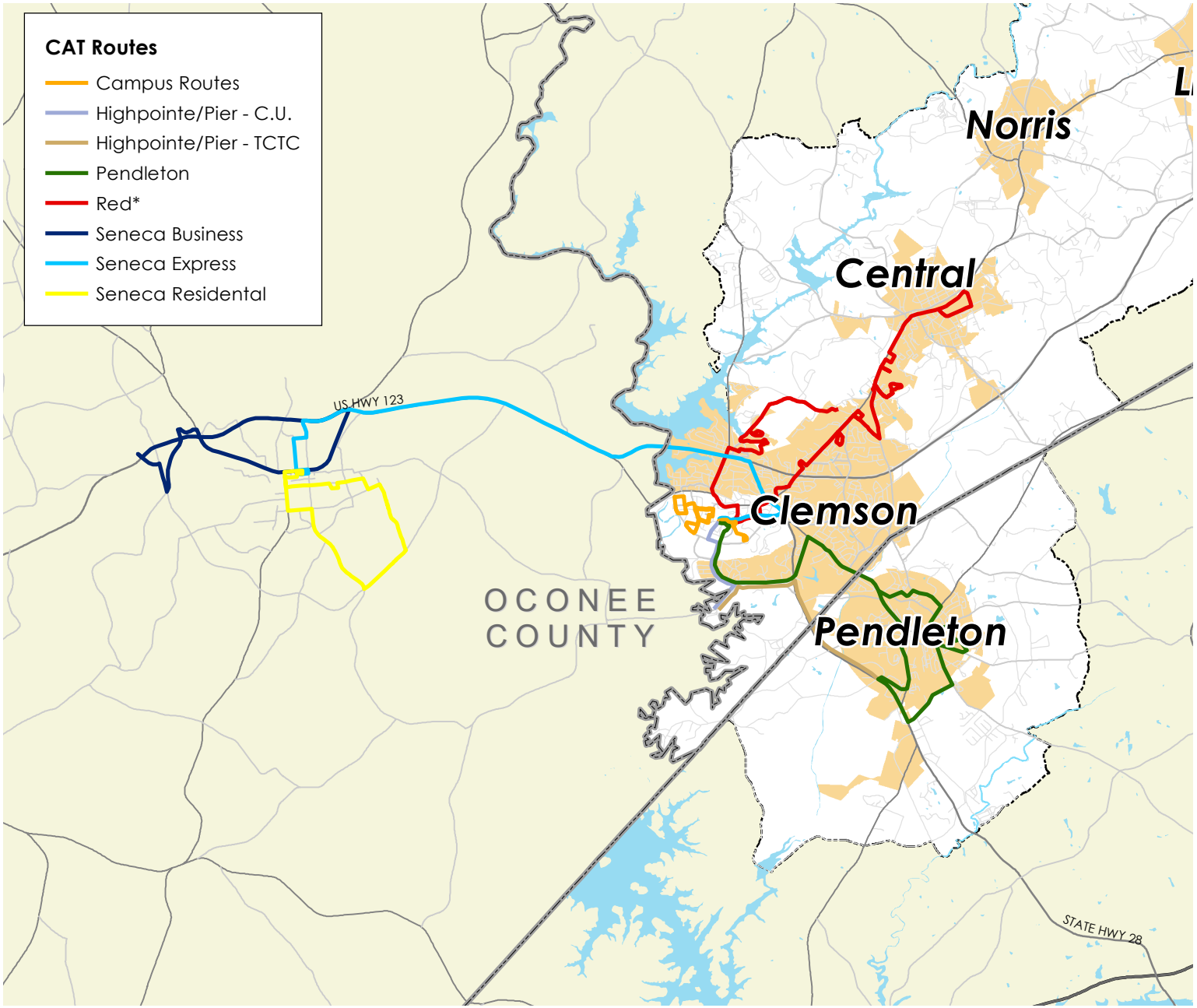
Existing Greenlink Routes

Greenlink currently operates 11 fixed routes and a downtown trolley on a "hub and spoke" system centered around the Downtown Transit Center in Greenville. Routes serve much of Greenville, areas of Mauldin, Simpsonville, and Travelers Rest, and part of the unincorporated area surrounding Greenville.

Existing CAT Routes

CAT operates 10 routes in the area around Clemson University. Three campus circulator routes (the Orange, Purple, and Blue) are consolidated on the map at right into a single line for simplicity.

The Red, Seneca, and Pendleton routes operate all year, while campus routes operate only during the fall and spring academic semesters.



Public Perception

Local residents, business owners, and officials provided input at many points throughout the planning process, such as at open house events, focus group workshops, and in a set of surveys. This constant engagement helped guide development of the *Horizon 2040* recommendations and further the project team's understanding of the region's existing transportation system. These comments generated insight into the region's perception of the public transportation system. Findings include:

- Many support the desire to increase the region's regional transit and transit-oriented development as a way to decrease highway spending and slow urban sprawl
- Many expressed a desire to expand the current transit service areas and service hours
- 63% of respondents to the December 2016 statistically valid survey said the region needs more public transportation
- 51% of respondents said they would like to see rapid transit in the region, while 39% said they would like better local bus service
- In the MetroQuest survey, respondents support "making it easier to travel between homes and jobs" as a top priority, indicating commuting is a major challenge for GPATS residents
- Some stakeholders expressed a need to plan for the long-term future through premium transit options, such as light rail, BRT, and high-speed rail connections to places outside the region

These findings indicate that public transportation in the region is generally thought of to be inadequate and in need of improvements. The most frequently suggested improvements, both through *Horizon 2040* outreach process and Greenlink's COA, include:

- Increased frequency
- Service expansion to reach more destinations
- Expanded service hours
- Updated amenities, including real-time arrival information and on-board Wi-Fi

Challenges

Funding for capital improvements and operations remains one of the biggest constraints for CAT and Greenlink. Aging fleets and the need for vehicle replacement is a continual challenge as each system needs to continue to provide safe and reliable service for the foreseeable future.

Additionally, population in the GPATS region is largely dispersed, making the provision of convenient transit service more complex and expensive to operate. To encourage transit use and increase transportation options, the transit system must develop in tandem with a comprehensive network of sidewalks, safe street crossings, and bicycle infrastructure to allow riders easy travel to and from stops. The efficiency of transit also depends on an interconnected street network suitable for bus traffic and convenient for riders shifting between public transportation modes.

Changing Role

The role of transit has changed in recent years with technological advances and demographic trends. Services, such as Uber and Lyft, allow those without vehicles to call for a ride that takes them from door to door. The popularity of these services may decrease traditional transit ridership over the coming years but it also has the potential to increase the number of urban dwellers who live without vehicles. This would potentially increase the total ridership pool. Additionally, current trends suggest that fewer young people are getting drivers' licenses than in the past, potentially increasing the role of transit in our communities. Future LRTPs will more closely examine this issue as services develop and have a broader effect on transit.

Recommendations and Considerations

Greenlink's current regional mobility planning efforts present a major opportunity to revamp transit beyond the outdated hub and spoke system. Transit can become a viable option that serves the needs of all rider types by connecting more communities, focusing on serving regional activity centers, and developing a comprehensive network that links routes throughout the area.

Priority Corridors

Over the years, there have been multiple transit projects and initiatives in the Upstate. Among these are several TIGER Grants to establish new transit corridors in Greenville County to connect all incorporated cities. These corridors include two primary routes: the Gold Line that would operate along US 276, connecting the municipalities of Travelers Rest, Greenville, Mauldin, Simpsonville and Fountain Inn; and the Blue Line, which would connect Greer to the network via US 29 and SC 291.

Since the expansion of the GPATS region after the 2010 census, another priority corridor has been identified along US 123 and SC 9 to connect Clemson, Central, Norris, Liberty, Easley and Greenville.

Transit in the GPATS area should develop to serve the needs of the local workforce and the transit-dependent community.

The map on the facing page depicts priority transit corridors that link major employment centers, medical services, and educational centers as well as serve the needs of the GPATS population. A system using similar alignments would serve more employees than the region's current routes and provide transit service to more communities within the region.

Policy Recommendations

- Expand service to connect more communities within the metro region.
- Provide extended service hours that better serve the needs of employers and employees.
- Prioritize service to areas that depend on transit as their primary means of mobility and to high-growth corridors as a means of traffic mitigation.
- Dedicate a percentage of Guideshare funding to transit system capital improvements.

Land Use Connection

To support higher transit ridership within the region, land use controls should encourage higher-density, mixed-use development near transit corridors. Among the most important investments will be Transit-Oriented Development (TOD), which is characterized by walkable, mixed-use development focused around transit service. These development types support increased transit ridership and the efficient use of land and also are a tool for economic growth.

In addition, pedestrian and bicycle connections near transit facilities must be prioritized to ensure the success of the overall system. A high quality sidewalk, trail, and bicycle network allows passengers to easily transfer between services or reach their final destination. It also encourages convenient and accessible use of public transportation.

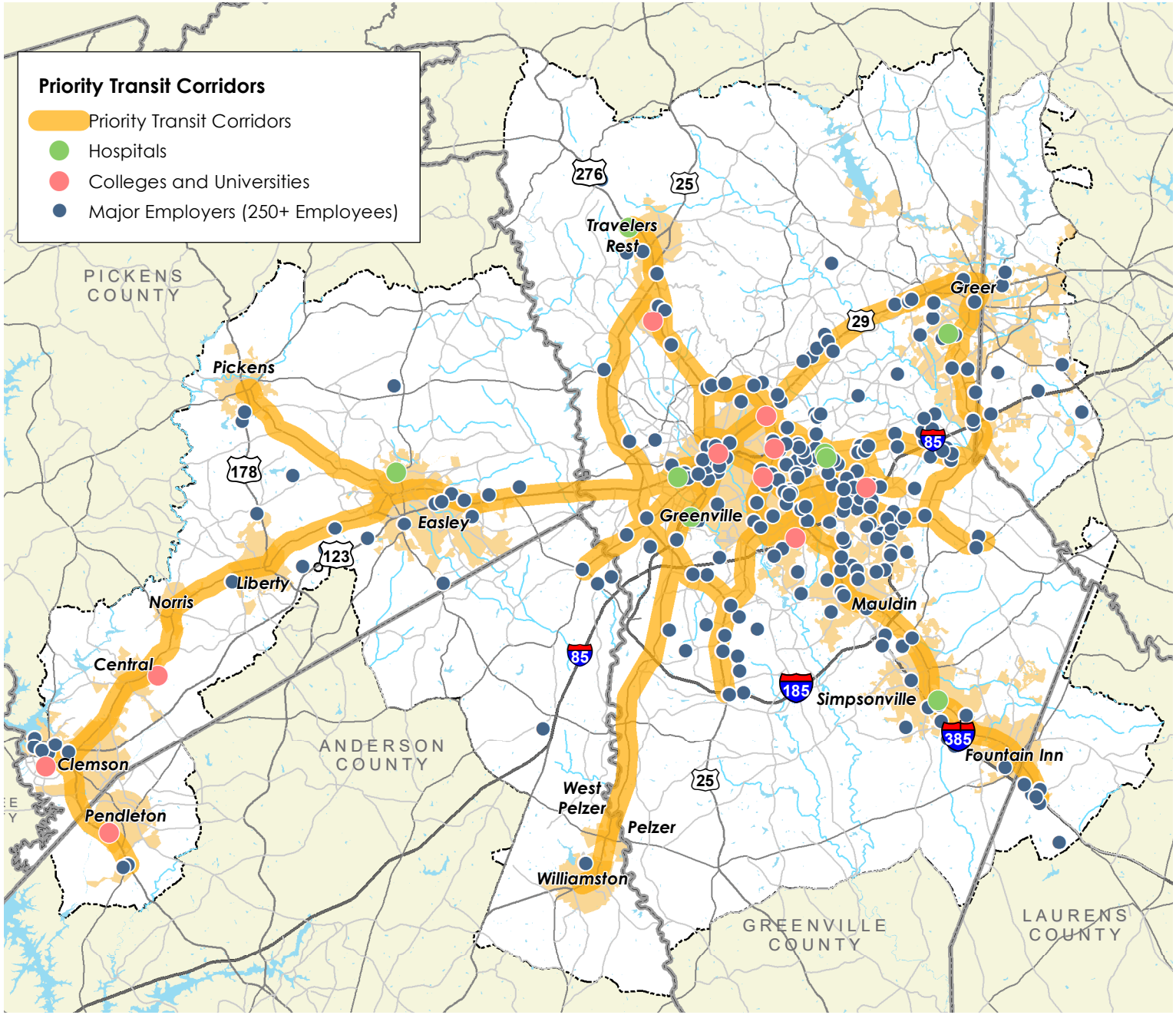
Coordination With Other Planning Efforts

Transit in the GPATS region is currently provided by two independent service providers—Greenlink and CAT. Each conducts its own planning efforts to assess short- and long-term transportation needs, evaluate routing and operations, and plan for capital improvements. GPATS' role in regional transit is to act as an advisor to the transit service providers, assess and plan for long-term mobility needs on a regional scale, and coordinate the region's apportionment of Federal Transit Administration (FTA) funding.

Because each service provider operates and plans improvements independently, the *Horizon 2040* transit recommendations provide policy and program guidance and regional system improvement guidance. However, GPATS depends on the transit providers' detailed planning efforts to carry forward the regional transit vision.

The recommendations in this chapter were guided by many previous plans and planning efforts moving forward should continue to use the regional vision outlined in previous plans to assure the mobility needs of the GPATS region are met. These include:

- Greenlink Transit Vision and Master Plan (2010)
- Greenlink Transportation Development Plan (2011)
- GCEDC Personal Rapid Transit Evaluation Study (2014)
- Clemson Area Transit Reimagining Study (2017)
- Greenlink Comprehensive Operational Analysis (2017)
- Greenlink's TIGER VII and VIII Plans



Priority Corridors

The map to the left shows corridors within the GPATS area that should be prioritized for transit expansion and development of high -quality transit service as the region considers future transportation investments. Together, the priority corridors connect nearly all municipalities within the region and offer connections to many major employment, healthcare, and educational destinations. By highlighting these corridors, the planning team does not intend to suggest specific routes, but rather to draw focus to connections the region should prioritize.

REGIONAL PASSENGER RAIL

Role in the Region

Amtrak currently provides passenger rail service to the GPATS region, using the Norfolk-Southern-owned "Crescent Corridor" that stops in Clemson and Greenville. Currently, service is provided at off-peak times, with the southbound train passing between 5–6AM and the northbound train between 10–11PM.

Current ridership of passenger rail is minimal and so is not modeled or factored into current regional travel patterns. Land uses around the Crescent Corridor have developed independently of the service in the past decades and the Clemson and Greenville stations are isolated from compatible uses, such as higher-density residential and mixed-use commercial development.

Planning for the Future

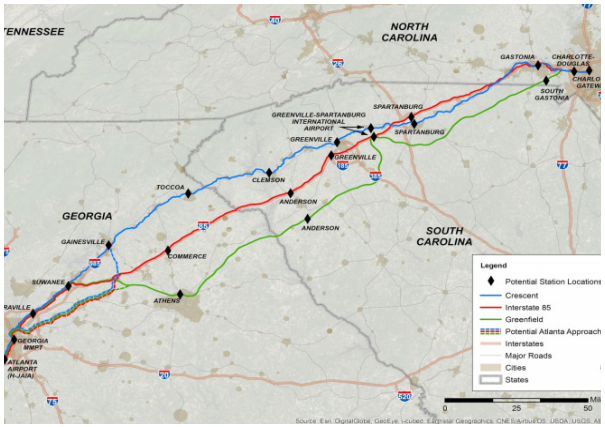
The prospects for improved regional Passenger Rail service have been explored for decades, but most recently, it was the focus of two major planning efforts:

- Georgia Department of Transportation's (GDOT) Passenger Rail Corridor Investment Plan, Tier 1 Environmental Impact Statement (EIS). Initiated in 2013, this environmental study is currently analyzing potential routes for improved passenger rail service between Atlanta, GA and Charlotte, NC. All three of the proposed routes pass through the GPATS region. The analysis is scheduled for completion in 2018, with additional analysis immediately following to analyze alignments and stations. GPATS regional planning for passenger rail will follow suit as the Georgia DOT's (GDOT) efforts progress.
- The Federal Railway Administration (FRA) is developing a nationwide passenger rail network for federal funding prioritization, starting with region-wide planning efforts. Throughout 2017, meetings were held for the Southeast Regional Rail Plan and a report is due in 2018. GPATS has served in a stakeholder capacity for this plan and results will be incorporated into future planning efforts.

As this system will be planned, determined, constructed, and operated by forces outside GPATS and largely beyond its decision-making jurisdiction, no recommendations regarding routes and stations are being made. However, this LRTP fully supports development of improved regional passenger rail systems.

Mobility Options

With potential for improved passenger rail service to connect the GPATS region to Atlanta, Charlotte, and points beyond, GPATS recognizes the need to coordinate transportation systems and land use development to accommodate regional systems. Should improved passenger rail service be implemented throughout GPATS, the intensity of the chosen rail type will have a direct effect on existing infrastructure.



Improved Standard Amtrak Service

Upgrades to the Crescent Corridor, increased service, and shorter travel times could result in passenger rail assuming some intercity commuting traffic, particularly between Greenville, Clemson, and Spartanburg.

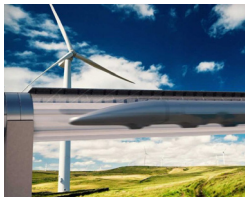
New Amtrak Services

Establishing new lines dedicated to passenger rail service would improve the system and increase ridership. New service should focus on linking commuter sheds, particularly to Columbia, Charleston, and Asheville, NC.

High-Speed Rail Service

Upgrading the Crescent Corridor or establishing new rail lines to accommodate rail speeds in excess of 200 miles per hour (MPH) would have a major impact on the ability to commute beyond existing vehicular travel times. Specifically, the Atlanta and Charlotte regions would become viable commute destinations. The inverse would also be true; commuters outside the region would be able to commute to the region without stressing the roadways.

Hyperloop/Mag-Lev



Exploratory and advanced technologies for passenger rail service are expected to increase competition for intercity, regional, interregional, and even national riders. With speeds in excess of 400 MPH, commuting distances quickly become irrelevant, allowing residents throughout the Southeast and beyond to commute to the GPATS region and GPATS residents to commute wherever they wish to work, regardless of the job's location.

Recommendations

These options all depend on a user's ability to access stations. While regional residents may not need automobiles to reach stations, inbound users might rely on vehicular travel to do so. Space constrains and some users' reluctance to travel by vehicle to catch a train demand the exploration and provision of alternative modes, including transit, bicycle, and pedestrian infrastructure. The region should expect development at higher densities around stations and plan to mitigate these stresses to infrastructure.

GPATS is committed to actively planning for improved passenger rail service and to adapting to the circumstances as improvements are realized. Fortunately, GPATS and its member jurisdictions will have plenty of time to adapt infrastructure and land use policies once improved passenger rail service is announced, as it will take a number of years to implement. In the interim, GPATS is committed to improving the transportation modes that support regional rail stations.

PASSENGER AVIATION

Role in the Region

Air travel in the GPATS area continues to grow at a stable pace. Commercial flights are handled by the Greenville-Spartanburg International Airport (GSP), located at the eastern edge of GPATS, and numerous local airports and private airstrips serve as needed. The existing facilities have sufficient capacity to meet the needs of the region for the foreseeable future, but plans must be in place to accommodate new facilities when they are needed.

Planning for the Future

The GSP Master Plan, which can be found at https://www.gspairport.com/airport-planning-documents/, states that, with their current traffic projections, the "ultimate development of the GSP site" must occur by 2053. However, this will create adequate capacity for the foreseeable future. While this is beyond the horizon of this LRTP, it should be noted that increased air traffic at the region's only commercial airport will result in increased vehicular traffic. As GSP also serves freight operations, increased freight movement will also need to be considered. Additionally, GSP loses traffic to Atlanta and Charlotte, which have larger airports with more direct connections to farther locations. While GSP can provide connections to Atlanta and Charlotte, depending on flight timing and connection costs, fliers may choose to drive to another airport. As GSP's service grows, flights and markets will increase, making GSP a more attractive alternative to other airports.

Recommendations

While airport operations fall outside GPAT's jurisdiction, coordination with airports would yield partnerships that benefit the entire region. GSP should be at the table when discussing any regional or super-regional planning effort and GPATS should consider the local airports as well, particularly the Greenville Downtown Airport and the Pickens County Airport.

As service demands at GSP increase, the road and highway infrastructure will become more stressed, as will the means to connect passengers who do not possess a vehicle or wish to park at GSP, especially incoming passengers who need transport to their final destination. To this end, public transit service needs to be established at GSP, with connections to existing transit services. GPATS should also consider automated transportation network connections should these services be needed in the GPATS region.

As GSP is nearing capacity, it will also be prudent to keep the Greenville Downtown Airport and the Pickens County Airport in mind as possible partners in commercial service to relieve stress loads on GPS operations.

7: Freight

INTRODUCTION

The planning team assessed the existing freight network, trends, and public feedback to develop strategies that enhance the movement of goods within and through the region. As the GPATS region continues to grow and the economy places higher demands on the freight network, the condition and efficiency of freight movement into, out of, and through the Upstate will be a major contributor to the region's economic wellbeing.

The region's major freight corridors include I-85, I-185, I-385, US-25, US-29, US-76, US-123, SC-8, SC-153, and SC-418. These corridors connect commercial and economic hubs to locations within the Upstate and to other regions in the state and beyond. These highways are joined by railroads, airports, and pipelines to complete the region's freight network. The network's performance impacts growth and development as well as economic vitality.

Chapter 7 examines the regional freight network with a focus on truck and rail movement and provides a brief overview of existing trends and general recommendations. ***Improvements to the roadway network introduced in Chapter 4 will positively impact the movement of freight.***

Public Perception

The *Horizon 2040* planning process allowed the public to provide input on what they see, and would like to see, in various elements of the freight network. Based on public comments, the main concern was improving safety and congestion caused by freight traffic.

RELEVANCE TO THE GUIDING PRINCIPLES

Throughout the *Horizon 2040* planning process, the guiding principles provided checks and balances to ensure the recommendations reflected community values and the region's best interests. The freight element reflects the guiding principles in the following ways:

Culture and Environment

LRTPs must acknowledge the unique dynamics of goods movement. For this reason, *Horizon 2040* promotes context sensitive transportation solutions and consistency between transportation improvements, land use decisions, and economic development patterns.

Economic Vitality

Horizon 2040 supports regional economic vibrancy by making it easier to move people and freight within and through the region. This represents one way the LRTP supports broader economic goals in the region and helps position the area to be economically competitive.

Growth and Development

Horizon 2040 recognizes ways the transportation network affects development patterns, property values, and quality of life. Aligning transportation strategies with land use initiatives and promoting a more comprehensive and connected transportation system supports the movement of goods while not detracting from growth.

Mobility and Accessibility

A balanced transportation system that advances mobility and accessibility makes it easier for residents and visitors to move around the region. This type of transportation system helps keep people and goods moving efficiently by addressing the needs of those traveling locally and regionally.

Safety and Security

Increasing the reliability, predictability, and efficiency of the transportation experience with infrastructure projects and enhanced communication is a cornerstone of *Horizon 2040*. Increasing predictability of travel times will have a significant influence on the freight community.

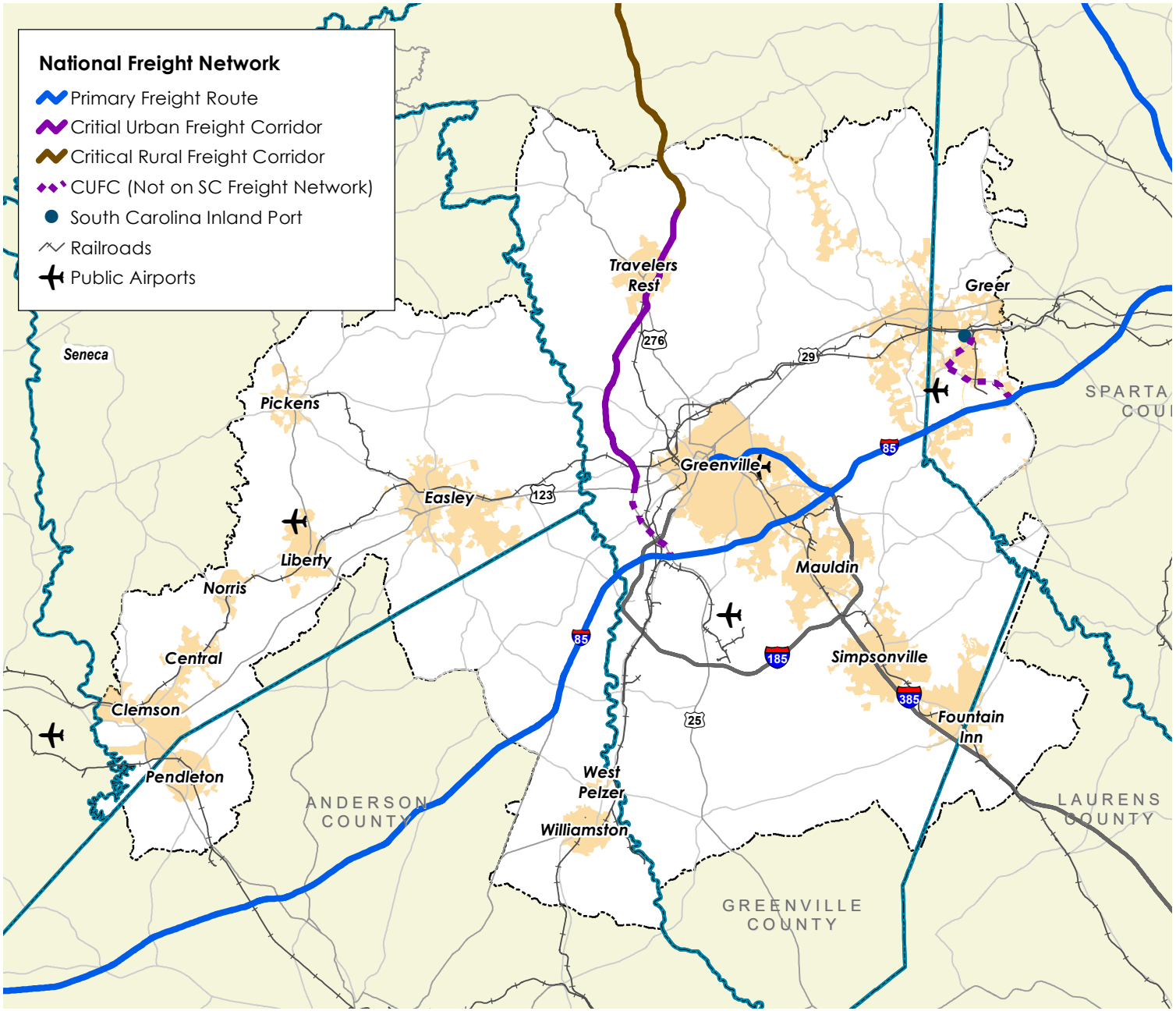
System Preservation and Efficiency

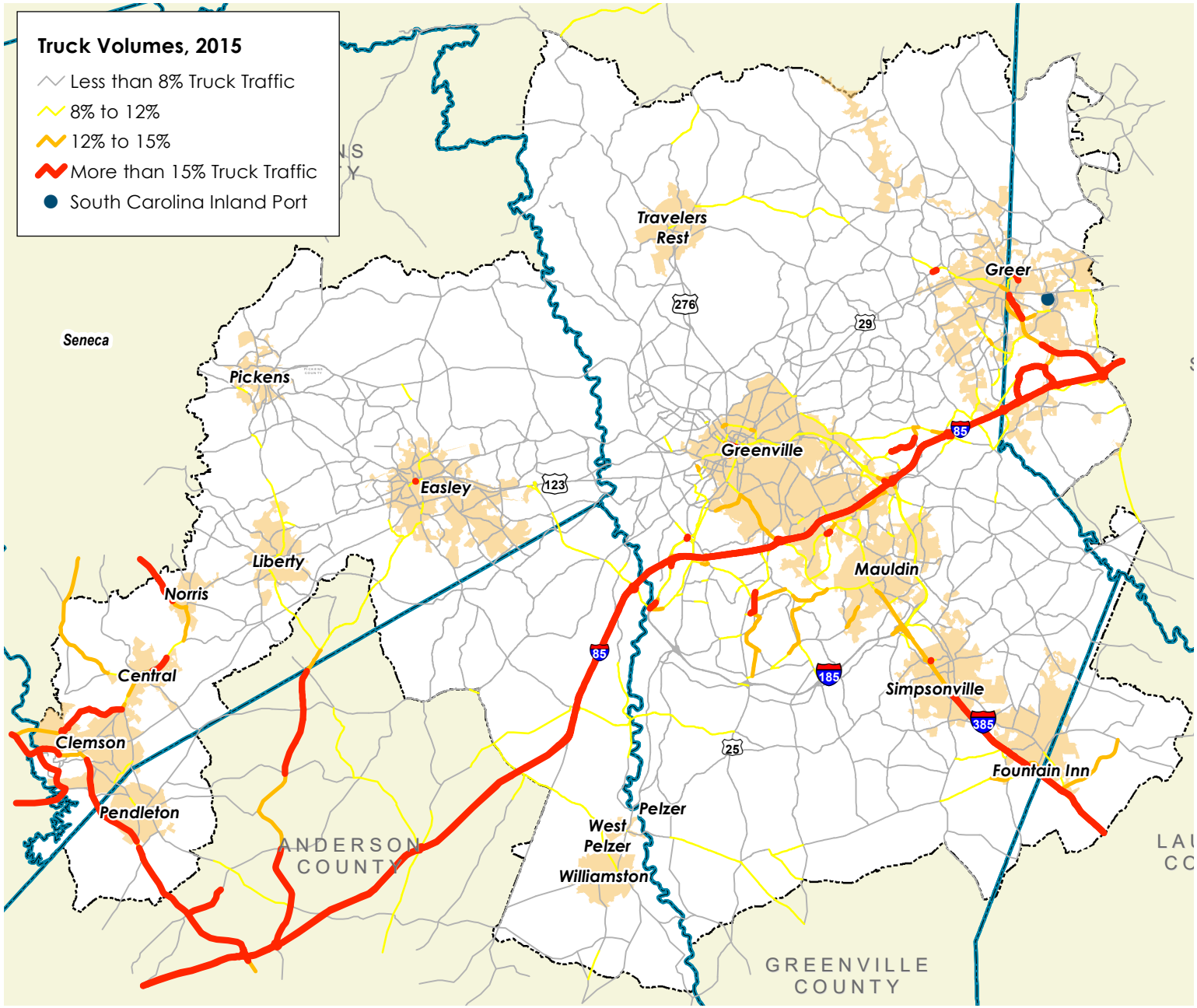
Horizon 2040 envisions a transportation network that prioritizes mobility to sustain and enhance economic goals. The plan's systems management approach maximizes infrastructure investments—those in the past and those to come—to ensure optimal use of the network. The freight community benefits from this focus.

Existing Freight Network

The FHWA-designated freight network in the GPATS region consists of major highways connecting to the South Carolina Inland Port, which opened in 2013, and several commercial airports. It forms the major transportation and logistical connection for South Carolina and the entire Southeast.

Currently, the GPATS area has 135 miles of rail in use, which connects Greenville with Charlotte and Atlanta via Amtrak and serves as a major portion of the Southeast freight network. Rail service at the South Carolina Inland Port in Greer is provided exclusively by Norfolk Southern.





Truck Traffic

As the number of trucks on local roadways grows, it becomes increasingly important to guide them to appropriate routes within the network. The SCDOT Freight Plan included several such routes within the GPATS region in the state's primary freight network, as identified by the map at right. The Freight Plan also identifies two bottlenecks—the I-85/I-385 interchange and the Woodruff Road/I-85 exit. Improvements are being constructed at both exits as part of the I-385 Gateway project so regional freight conditions are expected to improve.

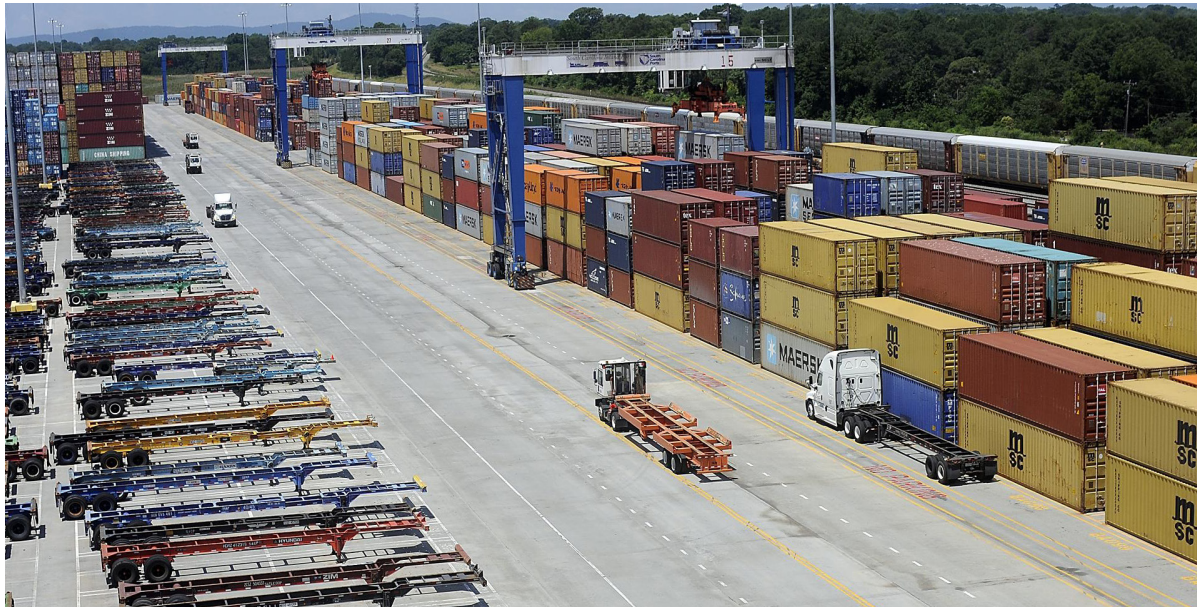
Relevance to the Region

Freight is critical to the regional economy due to the large amount of manufacturing and the region's growing role in state and national logistics. Located between Charlotte and Atlanta and providing easy access to significant interstate highways, the GPATS area continues to attract industry. I-85 is the busiest freight route in the state, with more than 16,000 trucks per day in 2010 (more than twice the volume on I-95, the second busiest route). In addition to trucking, the GPATS region has two Class I railroads, several short-line railroads, and four airports within its boundaries.

South Carolina Inland Port

The GPATS study area is home to the South Carolina Inland Port, which connects to an expansive rail network that allows shipping to and from major cities, such as Atlanta and Charlotte. As a result, decisions concerning the local freight network have impact beyond the Upstate. According to the SCDOT 2014 Statewide Freight Plan, Greenville and Spartanburg Counties were the second and third largest inbound freight destinations in South Carolina—behind only Charleston County. This was caused mainly by port-related traffic and the manufacturing companies headquartered in the Upstate.

According to the South Carolina Ports Authority (SCPA) 2015 Annual Report, SCPA brings $26.8 billion to the Upstate's economy, a large portion of this to the GPATS region.



The South Carolina Inland Port opened in 2013 in Greer, SC.

Future Trends

Truck freight is projected to grow as more businesses with shipping needs move to the Upstate and GPATS study area. Continued expansion of Southeast ports will put pressure on the South Carolina Inland Port and associated infrastructure. The SCDOT Freight Plan expects the total freight tonnage to grow 81% by 2040. According to the most recent data available, the SCPA projected a 23% increase in container volume for the 2016 fiscal year. As a result, the South Carolina Inland Port may increase freight traffic on Upstate roadways as those loads are transferred to trucks to reach final destinations.

General growth in traffic volumes will also increase potential conflicts at rail crossings. GPATS should monitor these trends and target roadways for improvement as necessary.

RECOMMENDATIONS

The movement of goods within and through the Upstate will continue to grow, and freight mobility should remain a high priority of future improvement projects. GPATS should monitor increases in freight activity to ensure infrastructure is in place to efficiently move goods through the region or deliver them to end users. Improvements, such as corridor management, road maintenance, and traffic mitigation, will help priority corridors serve existing and projected freight movements. These improvements also will help prevent freight traffic from spilling over into unsuitable areas, yielding a safer environment for all users.

General Recommendations

Successful freight movement planning efforts incorporate roadway recommendations that increase capacity along select routes. Roadway network improvements should facilitate freight movement; however, GPATS should also consider additional strategies.

State Coordination

The SCDOT Freight Plan identified I-85, which runs through the Upstate, and I-385, located near Greenville, as priority corridors for future freight improvements. GPATS should continue to coordinate with the state as these improvements become necessary and opportunities for these projects become available.

Rail Crossings

The region's numerous active rail lines make railroad crossings more frequent and increases the potential for conflicts. While many crossings have been improved, many remain marked only by signs. GPATS, in partnership with the state and rail providers, will continue to reduce the risk associated with at-grade crossings.

Regional Freight Plan

A super-regional freight plan should evolve through collaboration between policy makers, planners, and stakeholders and a more in-depth review of operations data. The plan, a partnership between metropolitan planning organizations (MPO) and councils of governments (COG), should establish freight needs and strategies for action.

Transportation Technology

The region should continue to invest in Intelligent Transportation Systems (ITS) improvements and find ways to deliver real-time information to freight carriers and the public. Properly designed and executed ITS solutions that provide real-time updates will give all users time to react as traffic conditions change.

Industry Collaboration

Efforts to identify and prioritize improvements based on safety and security should continue to include input from the freight sector. Locations with high truck/automobile conflicts should be monitored to reduce injuries and loss of property.

Freight Security

In addition to safety, stakeholders should continue finding ways to securely move goods within and through the Upstate. Communication with agencies and stakeholders is essential to a proactive approach to security issues. This process requires an effective working relationship with planning officials, law enforcement, emergency response personnel, and freight providers.

8: Transportation Demand and Emerging Technologies

INTRODUCTION

The transportation systems of cities, states, and nations are transforming. As a 2040 plan, *Horizon 2040* must respond not only to the transportation needs as they stand today, but also the potential changes in the future. To do this, we must look beyond the current transportation strategies and technologies being leveraged to better understand what trends are on the way.

This chapter describes strategies and technological applications that could combine with recommendations in previous chapters to change the transportation network in the future. As the plan is updated, the technology and application levels are sure to change. GPATS will do its best to promote the strategies and technologies that affect positive change in the region and set the transportation infrastructure up to incorporate them efficiently.

Elements of the Horizon 2040 Transportation Demand and Emerging Technologies Chapter

- Transportation Demand Management
- Transportation System Management
- Advanced and Emerging Technologies

RELEVANCE TO THE GUIDING PRINCIPLES

Throughout the *Horizon 2040* planning process, the guiding principles provided checks and balances to ensure the recommendations reflected community values and the region's best interests. In particular, the content in the transportation demand and emerging technologies chapter reflects the guiding principles in the following ways:

Culture and Environment

Considering the needs of the future transportation system is vital to the region's long-term success. By planning for emerging technologies, the region will be better able to connect and protect regional destinations and landmarks.

Economic Vitality

The region has the opportunity to leverage emerging technologies that may lead to economic growth and increase regional competitiveness.

Growth and Development

Now and in the future, the region's land use choices need to respond to its transportation options. Changes in transportation technologies may contribute to shifts in how the region grows in the coming years.

Mobility and Accessibility

Providing attractive travel options across a variety of modes is a focal point of transportation demand management strategies and emerging technologies.

Safety and Security

The reduction of single-occupant vehicle trips leads to fewer cars on the road and, as a result, improves overall safety. In the future, emerging technologies will help foster a safer environment for travelers of all modes.

System Preservation and Efficiency

By starting to think now about transportation technologies that may be prevalent in the future, maintenance and preservation efforts can be adapted to better serve these technologies.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

TDM refers to strategies to efficiently use the transportation system without adding additional capacity to the transportation network. TDM strategies are policies or programs that change travel patterns, such as shifting commuters from automobile to non-automobile modes, from single-occupant vehicles to higher occupancy vehicles, and from peak-hour travel to off-peak travel. In other words, TDM refers to attempts to change travel behavior (i.e., how, when, and where people travel) to increase the efficiency of transportation systems and roadways. Strategies of a TDM plan focus on the demand side (i.e., behavior changes) rather than the supply side (i.e., infrastructure improvements).

TDM strategies typically involve employers and public agencies who can influence the travel behavior of employees and citizens. Benefits of TDM include:

- Reduced congestion on area roadways
- Reduced car maintenance and usage costs
- Increased safety and community appeal
- Increased mobility and options for non-drivers
- Energy conservation
- Improved water and air quality

Existing TDM Initiatives

TDM is a concept that has been explored in the Upstate region for a number of years. At this time, a formal carpool/vanpool program does not exist; however, several independent websites are available to encourage participants to share rides with other travelers. With GPATS now serving as the primary coordinator between the Upstate's two major transit providers (Greenlink and CAT), the region can now consider how best to address TDM strategies.

TDM Strategies

TDM strategies can generally be grouped into five categories—rideshare; bicycle and pedestrian; alternate work hours; land use and development; and marketing, education, and implementation. Specific strategies within these categories are detailed in this section.

Rideshare

Ridesharing typically refers to carpooling and vanpooling and is a direct effort to maximize the number of passengers in each vehicle. Ridesharing can be a cost-effective approach to reducing single occupancy vehicles (SOV), particularly in areas like the Upstate that have several major employment centers. Rideshare participation is maximized when it provides flexibility and commuters can choose to rideshare part-time (e.g., 2 or 3 times per week).

Ridesharing options can be categorized into the following alternatives:

- ***Carpools*** typically use vehicles owned by the users themselves.
- ***Vanpools*** are more suitable options for longer commutes and typically use vans supplied by employers, for-profit vanpool companies, non-profit organizations, or government agencies. If riders cover operating expenses, vanpools can be self-supporting.
- ***Transit and shuttle services*** can provide direct transportation from home to work or allow those who carpool or vanpool a way to move between destinations once they arrive at work.

An interesting dynamic of ridesharing, particularly in regard to carpooling and vanpooling, is how greater use of the service provides more opportunities for prospective riders to find someone with similar commuting patterns (e.g., origin, destination, time). This shows how marketing, education, and implementation strategies, described later in this plan, affect the success of rideshare programs.

Rideshare programs typically provide matching services as part of a marketing and implementation strategy. Participation incentives include, but are not limited to, priority lane use for high occupancy vehicles (HOV), preferential parking spaces, and reimbursements. Because the overall effectiveness of ridesharing depends on the number of active users, marketing and customer service is critical.

Bicycle and Pedestrian

The transportation systems of vibrant communities include infrastructure for bicycles and pedestrians as well as methods for travelers to conveniently switch modes. With some momentum for bicycling and walking in the region already, GPATS must pay attention to ancillary infrastructure and programs that encourage bicycling and walking. With respect to TDM implementation, a variety of bicycle and pedestrian issues exist. With a sound understanding of the benefits, safety concerns, planning issues, and infrastructure improvement opportunities related to bicycling and walking, TDM administrators and local officials can more easily secure investments in bicycle and walking infrastructure and programs.

Recommendations for bicycle and pedestrian infrastructure and supporting amenities are explored in detail in Chapter 5.

Alternate Work Schedules

Alternate work schedules balance demand on the transportation system by modifying the time or frequency of travel and include compressed work weeks, flexible work hours, staggered work hours, and telecommuting.

- In a ***compressed work week***, employees work more hours each day so they can reduce the total number of days worked. This process reduces the number trips to the work site. A common compressed work week includes 9-hour work days with one day off every other week. Because most employees choose Monday or Friday as their day off, the cumulative impact to congestion and other benefits is not as significant as compared to other alternate work schedule options.
- ***Flexible work hours (or flex time)*** provide employees options regarding their starting and quitting times. In this alternative, employees must adhere to a range of starting and quitting times and must be at work during core periods (typically 9:30AM to 11:30AM and 1:30PM to 5:30PM). Flex time has the potential to provide significant congestion relief near major employment centers.
- ***Staggered work hours*** are a more rigid approach to flexible work hours in which employee starting and quitting times are spread over a 1- to 3-hour period. Groups of employees report and leave at 15- to 30-minute intervals. Staggered work hours are an option in large facilities that have regular work schedules.
- ***Telecommuting*** (e.g., working from home) allows an employee to work at a remote location, such as their home, one or more days a week rather than commute to the work site. As with the other alternate work schedules, telecommuting employees generally have a fixed schedule negotiated with their employer.

Marketing, Education, and Implementation

Marketing, education, and implementation are continuous needs of an inclusive process—from plan development, through initiation, to evaluation. These strategies further define consumer needs and preferences, refine appropriate products and services, distribute information about these products and services to existing and potential users, and promote their use. Because public knowledge and attitude have such a large impact on travel behavior, marketing, education, and implementation are critical components of implementing TDM strategies and reducing SOVs.

- ***Marketing*** is a dialogue between provider and consumer and extends beyond simply promoting a product, activity, or service. Effective marketing programs for TDM strategies involve numerous partners and stakeholders, including public officials, community organizations, and individuals, who support transportation alternatives. Marketing initiatives must be balanced by the level of service offered. In other words, the adequate level of service must be confirmed prior to marketing the service.
- ***Education programs*** maximize public investment by encouraging the use of TDM programs. A challenge for education programs is delivering different messages to different types of people. For example, the message to encourage regular carpooling is different for those who have tried the program compared to those who have not tried it and perhaps perceive it as inconvenient or unfeasible.
- ***Implementation*** occurs in multiple phases. Initially, implementation refers to actions required to implement and enforce a policy or launch a new service or program. Consideration for marketing and education efforts should be ongoing and provide continued support and refinement. In this way, GPATS and local jurisdictions can adjust to changes in travel behavior and respond to future opportunities. Many implementation strategies are the framework upon which other strategies are built.

TDM Application

The GPATS region has an attractive mix of employment and residential types within the path of growth. As such, the region is well positioned to consider applying one or more TDM strategies. *Horizon 2040* recommends a TDM study to fully vet each strategy's potential within the region and develop an implementation plan.

Land Use and Development

Land use and transportation are intricately linked. Elements of the transportation system—including roads, pedestrian, bicycle, and transit infrastructure—impact the size, shape, density, and mix of land uses. Similarly, where land uses occur and how they are designed can favor one travel mode over others and may influence overall travel behavior. For example, if low-density development is spread across a wide area, employees and residents must rely almost entirely on automobiles to get from one location to another. On the other hand, compact centers that combine complementary land uses near each other enable greater transportation choice.

For decades, much of the GPATS region has developed in a low-density manner and relied almost entirely on automobiles for transportation. In planning for future growth, GPATS will consider how development patterns, along with increased multimodal investments, can combine to create a more efficient system that allows residents greater choice in where they live and how they travel. Connected street grids, infill development, and compact mixed-use centers can help the region manage congestion by encouraging housing development near regional job centers, enabling residents to accomplish short trips on foot or by bike, and shifting long-term travel patterns through smart growth patterns.

TRANSPORTATION SYSTEM MANAGEMENT (TSM)

TSM is the process of optimizing the existing transportation system and infrastructure through less capital-intensive measures. Unlike TDM strategies, which focus on travel times and travel options, TSM strategies focus on physically enhancing the existing transportation infrastructure to increase roadway capacity, increase travel options, and reduce congestion and delay.

The basic premise of TSM is that minor targeted improvements to transportation infrastructure can significantly increase the capacity, efficiency, and usefulness of the transportation system. For example, the signal timings along a corridor can be optimized and intersection improvements, such as turn lanes, pedestrian crosswalks, and vehicle detectors, can be implemented to improve the traffic flow and increase capacity. Some of the commonly implemented TSM strategies include traffic signal optimization, geometric roadway modifications, spot roadway and lane modifications, intersection modifications, access management, and pedestrian and bicycle enhancements.

Horizon 2040 embraces small-scale projects that address targeted needs as applications of the TSM approach. GPATS will continue to prioritize these projects as well as the funding types that best support their implementation.

Intelligent Transportation Systems

One useful TSM strategy that is already being employed in the Upstate region is ITS, which describes various technologies that provide benefits when implemented as part of an overall transportation management strategy. ITS is one way transportation planners manage traffic flow to limit congestion for normal and unexpected delays, reduce crashes, and minimize fuel consumption and emissions. While some people may not be familiar with the term, they should be familiar with the many ITS applications they use or experience each day. These applications include dynamic message signs along highways, coordinated traffic signals, video cameras and special sensors to monitor traffic, and ways to give emergency and transit vehicles priority to proceed safely through signalized intersections.

The GPATS region should continue to leverage its existing ITS resources and improve its capabilities as technology advances. GPATS will continue to partner with SCDOT and its member jurisdictions to identify opportunities for ITS enhancements and seek funding. Since these projects have the ability to make better use of available transportation infrastructure, they are an efficient implementation strategy for the network both now and into the future.

ADVANCED AND EMERGING TECHNOLOGIES

A Changing World

Transportation technology is changing at a faster rate today than perhaps any other time since the invention of the automobile. Advances in transportation technology are likely to change everything about our travel experience, including how we travel, how the things we buy are transported, and whether or not we even own a vehicle. This technology may take the shape of enhancements to existing travel modes or include emerging travel modes, such as personal rapid transit and high speed rail. A range of emerging transportation technologies are identified on this page and introduce some of the transportation technologies currently under development, testing, or use that have the potential for future application in the Upstate.

Connected and Autonomous Vehicles

Connected and autonomous vehicles communicate with their environment and with other vehicles, improving safety and traffic flow, and diminishing the need for a human behind the wheel.

Personal Rapid Transit

Personal rapid transit is a network of small vehicles that operate on a system of designated rails or roadways. These vehicles carry a few people at a time and allow for non-stop travel.

Shared Ride Services

Services, such as Uber and Lyft, are popular in urban areas across the country. They allow people to easily schedule a ride using a mobile application, diminishing the need to own a vehicle or to park in busy areas.

High Speed Rail

Plans for a Southeast High Speed Rail Corridor that links Atlanta and Charlotte may one day include a stop near Greenville. This would improve mobility options for long-range travel and enhance the Upstate's economic connections throughout the Southeast.

Hyperloop

Currently in development as an experimental transportation method, the Hyperloop connects two destinations with a sealed tube that transports passenger pods at high speeds. A hyperloop network would connect regional destinations similar to a rail network.

Delivery Drones

Parcel delivery drones, currently in experimental use by some companies, deliver packages directly to their destination without the need for a delivery truck.

Parcel Delivery E-Bikes

UPS and other delivery companies have been experimenting with performing deliveries in urban areas on electric bicycles to reduce use of heavy trucks in urban centers.

Future Applications

GPATS will continue to stay at the forefront of these and other transportation technologies. To assist with this process, GPATS will identify and capitalize on funding that may become available in the future to expand on these emerging trends, whether through public funding sources or private and commercially-driven initiatives.

As the technology matures, state and federal legislation will likely adjust to keep pace with industry and infrastructure development. GPATS will be an active participant in developing any planning legislation and performance measures. Once automated and advanced transportation technologies become eligible for federal funding, GPATS will appropriately amend the LRTP to suit.

Until such time as these technologies yield feasible and fundable projects, GPATS will be in full support of collaborative efforts and policies which advance the technology levels of the region.

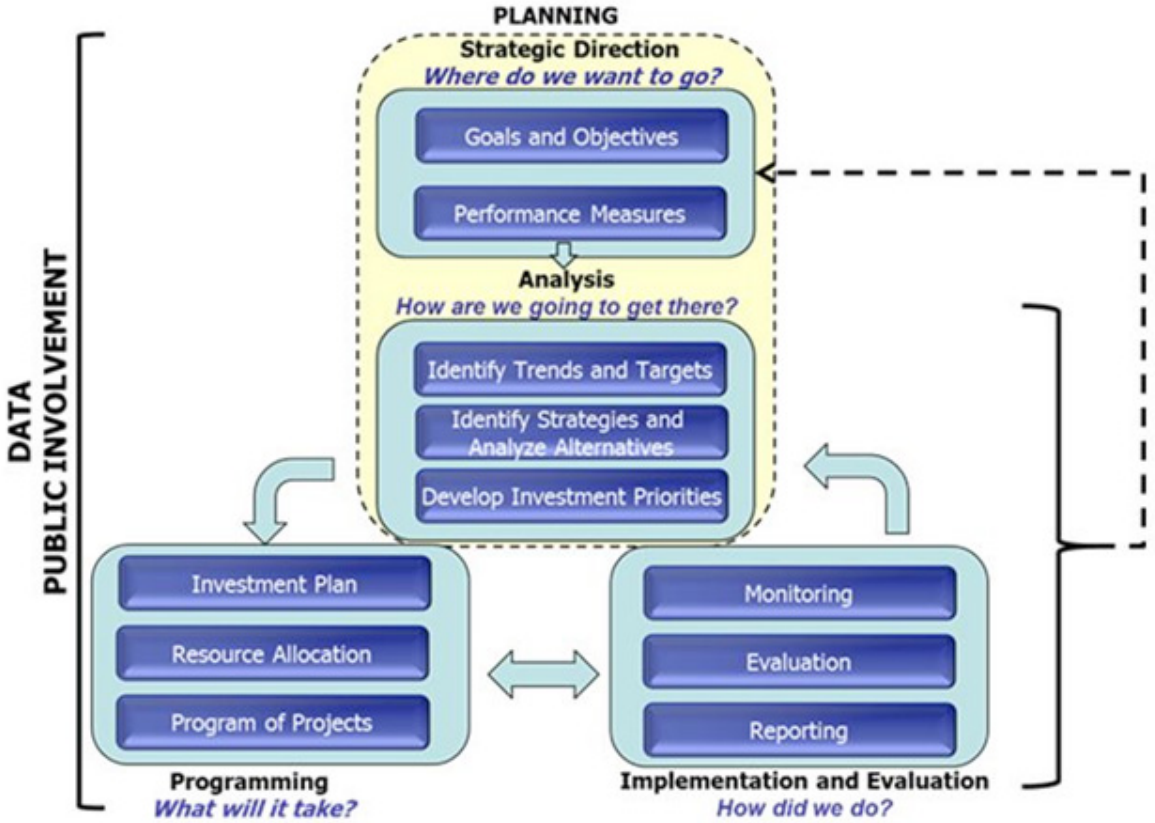
9: Performance Measures

INTRODUCTION

Performance management uses system information to make investment and policy decisions to achieve goals for the multimodal transportation systems in an MPO study area. Performance-Based Planning and Programming (PBPP) refers to the methods transportation agencies use to apply performance management as standard practice in their planning and programming processes.

The goal of PBPP is to ensure that transportation investment decisions—both long-term planning and short-term programming—depend on the ability to meet established goals.

As a federal requirement, states will invest resources in projects to achieve individual targets that make collective progress toward national goals. MPOs are also responsible for developing LRTPs and TIPs through a performance-driven, outcome-based approach to planning.



Flow chart describing the process for Performance Management, provided by the National Highway Institute

GPATS is now developing its PBPP process to meet federal requirements—including requirements to track specific measures and set targets—and to meet the unique planning needs of the region.

This document is meant to serve as a bridge as GPATS transitions to a more strategic PBPP. This document describes:

- National goal areas and measures
- Federal requirements
- Safety goal area and targets
- The region's next steps

National Goal Areas and Measures

Highway Performance

Through the federal rulemaking process, the FHWA requires state DOTs and MPOs to monitor the transportation system using specific performance measures associated with the national goal areas prescribed in MAP-21 and the FAST Act. The following list describes these national goal areas for highway performance as well as performance measures. However, GPATS can take on additional measures beyond what is described.

Safety

- Injuries and Fatalities

Infrastructure Condition

- Pavement Condition
- Bridge Condition

System Reliability

- Performance of National Highway System

Freight Movement and Economic Vitality

- Movement on Interstate System

Congestion Reduction

- Traffic Congestion

Environmental Stability

- On-Road Mobile Source Emissions

Reduced Project Delivery Delay

Note: For GPATS, targets for these measures will be set based on those set by the state and performance reports will be added once data becomes available.

Transit Performance

Public transit fund recipients—which can include states, local authorities, and public transportation operators—are required to establish performance targets for safety and state of good repair, to develop transit asset management and safety plans, and to report their progress toward achieving targets. Public transportation operators must share information with MPOs and states so that all plans and performance reports are coordinated. The list below identifies performance measure goals outlined in the FTA *National Public Safety Transportation Plan* and in the final rule for transit asset management. GPATS will be required to coordinate with public transportation operators to set targets for these measures.

Safety

- Fatalities
- Injuries
- Safety Events
- System Reliability

Infrastructure Condition

- Equipment
- Rolling Stock
- Facilities

Note: For GPATS, targets for these measures will be set based on those set by the state and performance reports will be added once data becomes available.

For more detailed information on any of these performance measures, see Appendix E (http://www.gpats.org/plans/horizon2040).

FEDERAL REQUIREMENTS

Targets

- GPATS is required to establish performance targets no later than 180 days after SCDOT or a public transportation operator sets performance targets.
- For each performance measure, the policy committee will either decide to support a statewide target or establish a quantifiable target specific to the planning area.
- SCDOT, MPOs, and public transit operators must coordinate performance measure targets to ensure consistency to the extent practicable.

Reporting

- *Horizon 2040* must describe the performance measures and targets, evaluate the performance of the transportation system, and report on progress made.
- The TIP must link investment priorities to the targets in the LRTPs and describe, to the extent practicable, the anticipated effect of the program on achieving established targets.
- GPATS must also report to SCDOT the baseline roadway transportation system condition, performance data, and progress toward achieving targets.

Assessments

- FHWA and FTA will not directly evaluate GPATS' progress toward meeting performance measure targets. Instead, GPATS' performance will be assessed as part of regular cyclical transportation planning process reviews, including Transportation Management Area certification reviews, small MPO self-certification reviews, and the Federal Planning Finding, which is associated with approval of the STIP.
- FHWA will determine if SCDOT has met or made significant progress toward selected targets for the highway system.

SAFETY

South Carolina has the highest traffic fatality rate in the nation. It is 67% higher than the national rate and 40% higher than the states in the Southeast. Reducing the number of transportation-related collisions, injuries, and fatalities is SCDOT's highest priority and makes safety everyone's business. In 2011, the Director of the South Carolina Department of Public Safety (SCDPS), who also serves as the Governor's Representative for Highway Safety in South Carolina, announced the Agency's goal of zero traffic-related deaths for the State. This goal, also strongly supported by SCDOT and the South Carolina Department of Motor Vehicles, became the starting point for the State's update of the strategic highway safety plan (SHSP), entitled Target Zero. Target Zero is an aspirational goal for South Carolina and is based on the philosophy that no fatalities are acceptable. The state will set targets advancing this goal during the next 20 years. For more information on statewide efforts to reach this goal, see Appendix E (see http://www.gpats.org/plans/horizon2040).

Safety Needs within the GPATS Region

SCDOT provided a safety workshop for GPATS with data specific to the study area boundary. The workshop examined the crash data within the GPATS region to provide some perspective on what safety problems the region is experiencing. Potential focus areas include:

- Roadway departure
- Intersections
- Access management
- Non-motorized roadway users

These areas could be influenced by GPATS as a project moves through the planning, programming, and delivery process.

More detail on these problem areas and traditional engineering countermeasure techniques can be found in Appendix E (see http://www.gpats.org/plans/horizon2040).

Safety Strategies

The safety of the regional transportation system is a top priority for GPATS. Therefore, additional Guideshare funding has been allocated in the *Horizon 2040* financial plan for safety and intersection improvements. Making these projects a priority should help move the baseline and improve overall safety in the coming years.

Safety Targets

SCDOT evaluated and was required to report its second round of safety targets for the five measures on August 31, 2018. This action started the 180-day clock for GPATS to take action to either set region-specific targets or accept and support the state's targets.

When setting safety performance targets for the state, statisticians performed extensive analysis of the data related to each measure (i.e., traffic fatalities and severe injuries and vehicle miles traveled). South Carolina used a seven-data-point graphical analysis with a five-year rolling average. After the data points were plotted and graphical representations of the data were created, trend lines were added to predict future values. The trend lines were based on linear and non-linear equations with R-squared (i.e., best fit measure) values.

Using the models, statisticians predicted the values for the current year. Examining current and planned education and engineering safety initiatives, they estimated reductions in fatalities and severe injuries to calculate the state's safety performance targets. Staff from the SCDOT Traffic Engineering Office also met with representatives from the MPOs and COGs to deliver a presentation on the state's target-setting methods. The tables below show GPATS, South Carolina, and National baseline information, the state's targets, and previous target performance.

For the 2019 performance period, GPATS has elected to accept and support the state's safety targets for all five safety performance measures. This means GPATS will:

- Address areas of concern for fatalities or serious injuries within the region, coordinating with SCDOT and incorporating safety considerations on all projects
- Integrate safety goals, objectives, performance measures, and targets into the planning process
- Include the anticipated effect on achieving the targets noted above within the TIP, linking investment priorities to safety target achievement

STATEWIDE SAFETY PERFORMANCE (2014-2018 TARGETS)

Performance Measure	5-Year Rolling Averages		
	SC Baseline (2012-2016)	SC Preliminary 2014 - 2018 Performance	2014-2018 Target
Traffic Fatalities	890	964	970
Fatality Rate	1.75	1.80	1.81
Severe Injuries	3194	2952	3067
Severe Injury Rate	6.3	5.54	5.71
Non-Motorized	376	380	371

2015 - 2019 SAFETY TARGETS (2013-2017 BASELINE AVERAGE)

	Traffic Fatalities	Fatality Rate*	Severe Injuries	Severe Injury Rate*	Non-motorized
SC Baseline	915	1.75	3088	5.94	381
SC Targets	988	1.79	2986	5.42	380
GPATS Baseline	93.4	1.72	335.8	6.26	44.8

Next steps

Additional Measures Coming Soon

In the future, GPATS will need to decide whether it will support state targets or set its own targets for other federally-required performance measures related to congestion reduction, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. The performance measures will be added to this document until the next LRTP update. At that point, GPATS will fully integrate a performance-based LRTP, combining the PBPP with LRTP elements and the associated decision-making processes.

TRANSIT ASSET MANAGEMENT (TAM)

Transit Asset Management (TAM) plans have been employed to inform the distribution of transit funds based on the condition of transit assets, with a goal of achieving and maintaining a state of good repair for agency assets. US DOT has found that nationwide an estimated 40% of busses and 23% of rail transit is considered to be in marginal or poor condition, with a $90 billion backlog in deferred maintenance and replacement. TAM plans allow transit agencies to monitor and manage their assets over time. They can help improve safety and increase performance and reliability. South Carolina has created a Group TAM Plan for rural transit agencies in the state, and larger transit agencies have been tasked with creating their own TAM plans to serve their differing needs.

TAM within the GPATS Region

GPATS has two transit agencies within its boundaries: Greenville Transit Authority dba Greenlink and Clemson Area Transit or CATbus. Each agency has its own needs and assets. Due to this, Greenlink and CATbus have created separate TAM plans. GPATS is not required to create a TAM plan of its own, as the MPO is only the designated recipient of FTA funds and not a transit agency.

TAM Process

Transit Asset Management involves setting performance measures for different asset classes. Agency assets are separated into four different asset categories with established performance measures. These asset categories are:

- Rolling stock
- Equipment
- Facilities
- Infrastructure

Agencies then assign each of their assets to one of these categories and begin measuring which ones have met or exceeded their useful life benchmarks. In other words, agencies are determining which assets are not in a state of good repair. This means that transit agencies are striving for low percentages. As assets age and their conditions deteriorate, performance measure values will go up due to the increased percentage of assets that have met or passed their useful life benchmark. Federal regulations require transit agencies to establish and report yearly targets, at least 5 years into the future, as an attempt to inform funding decisions.

Photograph provided by Clemson Area Transit

Transit Asset Management (TAM) Targets

As was mentioned earlier, each transit agency has different types of assets and, therefore, different needs. Generally, each asset category is split into different asset classes. For example, busses can be a general asset class under rolling stock but can also be broken into differing types of busses, such as articulated busses and cutaway busses. The table below summarizes all asset classes, and their associated targets, as listed in Greenlink's TAM Plan and CATbus' TAM plan. The two sets of the TAM targets were adopted by the GPATS Policy Committee on June 3rd, 2019. All funding decisions made in the TIP will consider these targets moving forward. In an effort to aid moving transit capital towards the regional targets, GPATS elected to set aside Guideshare funding specifically for transit capital projects.

Photograph provided by Greenlink

GREENLINK TARGETS

Category	Class	Performance Measure	2020 Target
Rolling Stock	Bus	% met or exceeded ULB	20%
	Trolley Bus	% met or exceeded ULB	0%
	Cutaway Bus	% met or exceeded ULB	25%
Equipment	SUV	% met or exceeded ULB	0%
	Van	% met or exceeded ULB	0%
	Truck	% met or exceeded ULB	0%
	Car	% met or exceeded ULB	0%
Facilities	100 W. McBee (Terminal)	% with condition rating below 3.0 on TERM Scale	0%
	154 Augusta St (Maintenance Garage)	% with condition rating below 3.0 on TERM Scale	0%

CAT TARGETS

Category	Class	Performance Measure	2020 Target
Rolling Stock	Articulated Bus	% met or exceeded ULB	60%
	Bus	% met or exceeded ULB	90%
	Van	% met or exceeded ULB	10%
Equipment	NonRevenue/Service Automobile	% met or exceeded ULB	70%
	Trucks and other Rubber Tire Vehicles	% met or exceeded ULB	40%
	GPS Units	% met or exceeded ULB	5%
Facilities	Administration	% with condition rating below 3.0 on TERM Scale	10%

INFRASTRUCTURE CONDITION

South Carolina has one of the largest state owned roadway systems in the United States of America. South Carolina is also in need of extensive infrastructure repair and replacement. When the State Gas Tax was introduced, 80% of state roads were in need of repairs and 750 bridges in the SCDOT inventory were considered structurally deficient. This is an $11 billion problem that not going to solve itself over night, but rather over the course of years. The state has formed a game plan to address as much infrastructure as possible over the next ten years. The process will work in tandem with infrastructure performance measures and will be monitored over time to assess its success.

Infrastructure Needs within the GPATS Region

The State as a whole has varying needs depending on the region in question. The GPATS region needs extensive repairs to its non-Interstate National Highway System. GPATS' baseline condition for the non-Interstate NHS is much lower than the state's and will need serious repairs to meet the State's 2-year and 4-year targets. The GPATS region's Interstates and bridges are above the State baseline conditions as a whole. GPATS bridge conditions are already well above the State's 2-year and 4-year targets.

Infrastructure Strategies

GPATS Guideshare funding does not typically cover repaving. That is handled by a separate SCDOT program. However, any GPATS project that is programmed and completed will improve the infrastructure in that area.

If coordinated well, GPATS funded projects can help cover more ground than the SCDOT Resurfacing program alone. Opportunities include looking for overlap between areas in need of infrastructure repair and areas in need of improvements consistent with GPATS funding policies, such as:

- Access management projects
- Widening projects
- Intersection and general improvement projects

A need for infrastructure repair, especially if it causes a safety issue, combined with any of the needs sited above will be considered in the GPATS ranking process. Infrastructure repairs completed with GPATS funds will open up SCDOT funding to repave and repair other roadway segments.

Infrastructure Condition Targets

Federal Regulations required state departments of transportations (DOTs) to establish and report quadrennial (4-year) targets for six infrastructure condition performance measures by May, 20th 2018.

- Percent of Interstate pavements in Good condition
- Percent of Interstate pavements in Poor condition
- Percent of non-Interstate National Highway System (NHS) pavements in Good condition
- Percent of non-Interstate NHS pavements in Poor condition
- Percent of NHS bridges by deck area in Good condition
- Percent of NHS bridges by deck area in Poor condition

SCDOT created 4 –year targets for Interstate pavement condition and 2- and 4-year targets for non-Interstate pavement condition and bridge conditions. Like the other National Goal areas, MPOs are required to either adopt the State targets or create their own 180 days after a state announces its targets. GPATS Policy Committee elected to adopt and support the State targets on October 15th, 2018.

Pavement

Pavement condition was calculated using multiple thresholds, including the International Roughness Index (IRI), percent cracking, rutting, and faulting. A determination of good, fair, or poor condition depends on where 0.1 mile road segments fall along the thresholds. If all metrics rated "Good" a segment was considered in good condition. If 2 or more metrics rated "Poor," the segment was considered poor condition. Any combination in between was considered fair condition. These segment rankings were used to calculate the percentage of pavements in good and poor condition across the State and used to generate the State's targets. The targets are the median projected conditions based on the average deterioration rates of the system and planned construction projects that will be finished within the time frame.

Bridges

Bridge condition was calculated using the following thresholds: deck condition, superstructure condition, substructure condition, and culvert condition on a scale of 0 – 9. Scores 4 or below on a bridge feature were considered "Poor." A score of 5 or 6 was considered "Fair," and a score of 7 – 9 was considered "Good." These bridge component scores were then used to determine the percentage of NHS bridges in good and poor condition throughout the system. The State selected its targets using average bridge deterioration rates along with construction projects expected to be finished within the target time frame.

INFRASTRUCTURE CONDITION TARGETS BASELINE (2016 AVERAGE)

	Pavement (Interstate)	Pavement (Non-Interstate NHS)	Bridges
SC Baseline	61.4% Good 1.7% Poor	10% Good 2.6% Poor	41.6% Good 4.2% Poor
SC 2-Year Targets	N/A	14.9% Good 4.3% Poor	42.2% Good 4% Poor
SC 4-Year Targets	71% Good 3% Poor	21.1% Good 4.6% Poor	42.7% Good 6% Poor
GPATS Baseline	68.67% Good 0.36% Poor	2.98% Good 28.75% Poor	95.9% Good 4.1% Poor

Next steps

Monitoring and Analysis

In two years SCDOT will have the opportunity to reevaluate their targets and decide whether to maintain them or change them. Once this has been done, GPATS will have the opportunity to do the same.

This will involve monitoring progress towards the targets over time to determine if the targets were reached, or will be reached, and why or why not. The Long Range Transportation Plan will house these analyses as the monitoring begins. These progress reports will follow the LRTP review schedule unless specified otherwise.

SYSTEM & FREIGHT RELIABILITY

System reliability refers to the amount of time a user spends traveling through a roadway and whether this time is consistent with the travel time the road is expected to facilitate. This directly impacts the daily lives of those living and working within a region and regional economic wellbeing as a whole. System reliability impacts commutes and other trip travel times, as well as freight movement. All three of these impact a business' decision to locate in one region over another. The State of South Carolina and the Upstate are highly involved in manufacturing. The South Carolina Inland Port is situated strategically along I-85 to facilitate both National and International commerce through the State. Due to this, ensuring a reliable transportation network is maintained is a high priority for both South Carolina and GPATS.

System Reliability within the GPATS Region

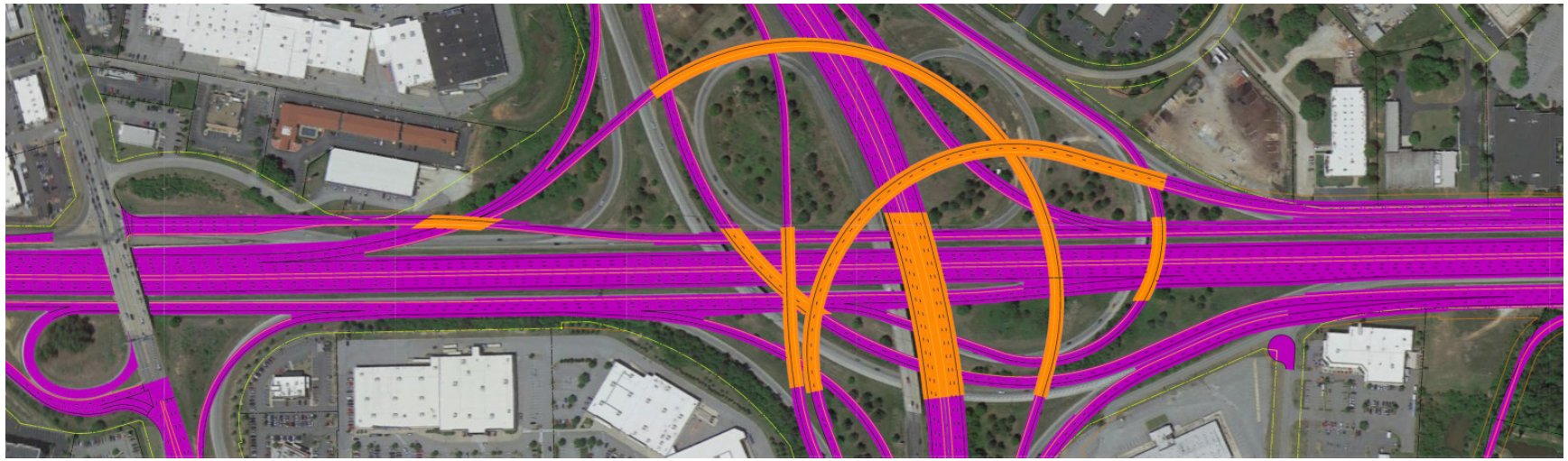
The GPATS region houses a large number of unreliable state and federal roadways, third behind only COATS and CHATS MPOs. GPATS sees most of its unreliability on the Interstate system, largely due to ongoing construction projects and/or capacity deficiencies. Many construction projects are scheduled over the following years to fix the capacity deficiencies, but the construction will have its own adverse effects for its duration as well. GPATS non-Interstate National Highway System (NHS) reliability is above the State's baseline, but similarly as more construction projects come into the region, the reliability of some of these roads could temporarily be impacted.

System Reliability Strategies

There are numerous strategies that can be utilized to improve system reliability. A few examples are:

- Improved emergency response times
- Widenings and other capacity improvements
- Interchange and intersection improvements
- Transportation Demand Management (TDM)
- Transportation System Management (TSM)
- Improved signal timings

GPATS decided to split its Guideshare funding into separate pots with funds allocated specifically to roadway projects, intersection and interchange projects, and signal retimings. The remaining strategies listed above are not in GPATS' control, but when combined with GPATS' efforts, they could help move the baseline and keep GPATS meeting future targets.



Rendering provided by SCDOT

System & Freight Reliability Targets

Federal regulations also required state DOTs to establish and report 4-year targets for three system and truck travel time reliability performance measures by May, 20th 2018.

- Percent of reliable person-miles traveled on the Interstate
- Percent of reliable person-miles traveled on the non-Interstate NHS
- Percent of Interstate system mileage providing for reliable truck travel time

SCDOT created 4 –year targets for non-Interstate NHS travel time reliability and 2- and 4-year targets for Interstate travel time reliability and truck travel time reliability. MPOs are required to either adopt the State targets or create their own 180 days after a state announces its targets. GPATS Policy Committee elected to adopt and support the State targets on October 15th, 2018.

Travel Time Reliability

Road segments were measured based on four different time categories: 6am – 10 am (morning), 10 am – 4 pm (day), 4 pm – 8 pm (evening) on weekdays, and weekends. Travel time measurements were collected and sorted into their corresponding time categories. Once complete, the 80th percentile was divided by the 50th percentile to create a ratio. A value of 1 meant the segment was reliable, while a value of 0 meant the segment was unreliable. The percentage of segments that are reliable was then calculated and split into Interstate and non-Interstate NHS segments. Targets were then selected with careful consideration of ongoing and expected construction projects in the state. The state gas tax will be generating many construction projects over the next ten years, which are expected to reduce travel reliability. This is why the targets get lower vs higher.

Truck Travel Time Reliability

Truck travel time reliability was calculated similarly, but used the Truck Travel Time Reliability (TTTR) Index. After splitting the travel time measurements into their different time categories, travel time ratios were calculated by dividing the 95th percentile by the 50th percentile for each segment. These were sorted to get the maximum TTTR ratio per segment for each time period. This involved taking the largest ratio for each segment and multiplying it by the segment length. The sum of all the length-weighted segments was then divided by the total length of the Interstate to get the TTTR Index number. Future targets were selected with consideration of ongoing and expected construction projects in the state as before.

SYSTEM & FREIGHT RELIABILITY TARGETS BASELINE

	Travel Time Reliability (Interstate)	Travel Time Reliability (Non-Interstate NHS)	Truck Travel Time Reliability
SC Baseline	94.8% person-miles traveled that are reliable	89.8% person-miles traveled that are reliable	1.34 on TTTR Index
SC 2-Year Targets	91% person-miles traveled that are reliable	N/A	1.36 on TTTR Index
SC 4-Year Targets	90% person-miles traveled that are reliable	81% person-miles traveled that are reliable	1.45 on TTTR Index
GPATS Baseline	89% person-miles traveled that are reliable	92% person-miles traveled that are reliable	1.58 on TTTR Index

Next steps

Creating a Monitoring Template

As the monitoring process begins, GPATS will develop a template for what this process will look like and look into multiple strategies for relaying information and data to the public. This will include written documentation and graphics within the LRTP, but can also include other avenues of public outreach. This could include, but is not limited to, including performance measure status updates on GPATS social media and the GPATS website. For the time being, more details on the target setting methodologies can be found at http://www.gpats.org/plans/horizon2040.

10: Financial Plan and Implementation

INTRODUCTION

Transportation planning has historically balanced the technical aspects with engaging the public and elected leaders in the decision-making process. However, there is often a disconnect between public policy and this approach. This can make it difficult to evaluate how well the transportation system addresses the community's needs and how well future transportation projects will improve quality of life. *Horizon 2040* serves as the region's long-range transportation strategy and combines technical data with engagement results.

In accordance with state and federal requirements, this plan is also financially constrained. This process demonstrates how the recommended and prioritized projects can realistically be funded during the life of the plan. Due to limited transportation funding, it is critical that measures be taken to ensure that appropriate projects and programs are prioritized and eventually implemented.

To do this, GPATS must demonstrate a reasonable expectation of future funding levels, estimate project costs, and project the future needs of all travel modes. The financially-constrained plan allows GPATS and supporting agencies to focus on near-term opportunities and identify strategies for implementation.

This chapter discusses the process used to determine financial constraint, including project prioritization and estimated funding levels. The overall condition of the region is also explored through the lens of performance measurement.

Elements of the Horizon 2040 Financial Plan and Implementation Chapter

- Roadway project prioritization
- Financial plan development

ROADWAY PROJECT PRIORITIZATION

Chapter 4 of *Horizon 2040* introduced the plan's proposed roadway recommendations, along with the prioritization method. Using a combination of qualitative and quantitative metrics, the planning team assessed the relative performance of each corridor and intersection project. It should be noted that the prioritized projects shown in Chapter 4 are not financially constrained. Projects are initially grouped into near-, mid-, and long-term improvements—regardless of available funding. The prioritization process allows for flexibility in the order projects are implemented, rather than proceeding in strict rank order so GPATS can most efficiently use their alloted funding.

Finally, although bicycle, pedestrian, and transit projects were independently prioritized, GPATS will attempt to implement these improvements concurrently with roadway enhancements where these projects align. This approach is most cost-effective and minimizes construction impacts to the surrounding network.

The tables on the following pages display, in rank order, the near-, mid-, and long-term corridor and intersection projects that were prioritized. The scoring process is described at right.

Project Scoring

Each project was scored based on an SCDOT-driven process, which is standardized across the state. A project receives an individual score based on its performance in each category, listed below, and is scored on a scale of 1 (worst) to 10 (best). Project types are ranked using the same criteria but each category is weighted differently, giving each project a separate "weighted score" by which it's ranked. For more information on the prioritization process, see Appendix D (see http://www.gpats.org/plans/horizon2040).

- **Environmental Impacts:** based on an assessment of potential impacts to natural, social, and cultural resources.
- **Truck Traffic:** based on current truck percentages.
- **Economic Development:** determined using the Transportation, Distribution, and Logistics (TDL) tool developed by Clemson University, which assesses the economic development impact of transportation infrastructure projects.
- **Located on a priority network:** based on a project's location in relation to defined priority networks.
- **Consistency with Local Land Use Plans:** confirmed during the STIP process.
- **Traffic Volume and Congestion:** based on current and future traffic volumes and the associated level-of-service condition.
- **Alternative Transportation Solutions:** confirmed during the NEPA process.
- **Public Safety:** based on an accident rate that is calculated by the total number of crashes within a given road segment, divided by the traffic volume, and multiplied by the number of years.
- **Geometric Alignment Status:** based on an assessment of the intersection's functionality and operational characteristics.
- **Financial Viability:** based on estimated project cost in comparison to the six-year STIP budget. Additional consideration will be given to projects supplemented with local project funding and/or other federal and state funding,
- **Pavement Quality Index (PQI)**: based on pavement condition assessments.

ID	Road Name	From	To	Type	Cost (Millions)	Weighted Score	Ranking
Near-term Corridor Improvements							
37	Garlington Rd	SC-146	Roper Mountain Rd	Widening	$8.55	8.53	1
94	US 29/Mills Ave	Augusta St	Stevens St	Corridor Improvements	$2.52	8.45	2
11	Grove Rd	US 25	W. Faris Rd	Widening	$9.81	8.45	3
100	Laurens Rd	I-85	Innovation Dr	Corridor Improvements	$6.94	8.4	4
118	Academy St/US 123	Pendleton St	Washington Ave	Corridor Improvements	$7.64	8.25	5
92	Wade Hampton Blvd	Pine Knoll Dr	Reid School Rd	Access Management	$10.45	7.95	6
10	Woodruff Rd	Miller Rd	Smith Hines Rd	Widening	$5.37	7.75	7
88	SC 357/Arlington Rd	Study area boundary	E Wade Hampton Blvd	Widening	$27.03	7.72	8
20	Bridges Rd	E Butler Rd	Holland Rd	Widening	$4.59	7.55	9
91	N Pleasantburg Dr/Pine Knoll Dr	I-385	Wade Hampton Blvd	Corridor Improvements	$4.61	7.55	10
43	Pine Knoll	Wade Hampton Blvd	Rutherford Rd	General Improvements	$3.28	7.48	11
22	US 123	Jasper St	Powdersville Rd	Widening	$22.32	7.25	12
98	White Horse Rd	US 123	Augusta Rd	Access Management	$14.87	7.25	13
41	Anderson Rd	SC-153	White Horse Road	Widening	$19.48	7.15	14
107	White Horse Rd	Broadway Dr	Pendleton Rd	Corridor improvements	$2.52	7.1	15
99	N Pleasantburg Dr	Poinsett Hwy	Rutherford Rd	Access Management	$5.24	6.95	16
109	US 276 (N Main St)	Knollwood Dr	Owens Ln	Access Management	$2.23	6.9	17
42	SC-86	Sc 81	Piedmont Hwy	General Improvements	$15.49	6.82	18
72	Black Snake/Adger/135	Liberty Dr	SC 8	General Improvements	$6.36	6.75	19
95	Cedar Lane/Pete Hollis Blvd	W Parker Rd	Buncombe St	Road Diet	$9.39	6.7	20
128	I-385	Laurens Rd (US 276)	Roper Mountain Rd (S-548)	General Improvements	$11.46	6.68	21
121	US-123	Rock Springs Rd/Prince Perry	Washington Ave	Corridor Improvements	$15.75	6.52	22
114	Main St	Clayton St	US 76	Corridor Improvements	$25.72	6.43	23
40	SC-418	Durbin Rd	I-385	Widening	$12.19	6.35	24
59	Fork Shoals Rd	Ashmore Bridge Rd	W Georgia Rd	Widening	$19.36	6.25	25
58	SE Main St	W Fernwood Dr	Fairview Rd	Widening	$5.14	6.08	26
124	SC-101	SC-290	SC-296	Corridor Improvements	$46.48	6.07	27
97	W Faris Rd	Augusta Rd	Grove Rd	Corridor Improvements	$3.81	6	28
90	Old Spartanburg Rd/Enoree Rd	Brushy Creek Rd	S Batesville Rd	Corridor improvements	$10.88	5.95	29
89	Haywood Rd	Pelham Rd	E North St	Access Management	$2.97	5.9	30
51	Edwards Rd	Wade Hampton Blvd	Howell Rd	Widening	$9.84	5.9	31
112	US-123	College Ave	US 76	Corridor Improvements	$2.22	5.85	32
23	Beattie/College Corridor	N Academy St	Church St	Road Diet	$0.97	5.8	33
102	Stone Ave	Rutherford St	N Church St	Corridor Improvements	$2.66	5.8	34
105	US-25	N study area boundary	Tigerville Rd	Modernization	$11.87	5.75	35
70	S. Buncombe Rd	Pleasant Dr	SC 80	Widening	$2.25	5.73	36
39	Powdersville Rd/Old Pendleton Rd	US 123	SC 153	General Improvements	$9.78	5.68	37
96	Augusta St	Mauldin Rd	Faris Rd	Corridor Improvements	$4.06	5.6	38
35	Boiling Springs Rd	Philips Road	Pelham Rd	General Improvements	$2.56	5.58	39
55	SC-418	I-385	Fork Shoals	Widening	$48.67	5.52	40
46	Salters Rd (realignment)	Salters Rd	Mall Connector Rd	New Roadway	$1.97	5.5	41

ID	Road Name	From	To	Type	Cost (Millions)	Weighted Score	Ranking
Mid-term Corridor Improvements							
129	Mauldin Rd/W Butler Rd (S-107)	Ridge Rd (S-435)	N Main St (US276)	Corridor improvements	$13.29	5.45	42
15	Howell Rd	E North St	Edwards Rd	Widening	$7.28	5.4	43
106	W Blue Ridge Dr	White Horse Rd	Agnew Rd	Corridor improvements	$2.29	5.4	44
79	US-76	Pendleton Rd	S-39-343	General Improvements	$3.26	5.3	45
50	Fairview St	N Nelson Dr	N Main St	Widening	$6.89	5.28	46
14	Us 29	Cheddar Rd	I-85	Widening	$50.28	5.25	47
67	Garlington Rd	Roper Mountain Rd	Pelham Rd	General Improvements	$4.78	5.1	48
78	Prince Perry Rd	Saluda Dam Rd	Rolling Hill Circle	Widening	$7.96	4.98	50
73	David Stone Road	US 178	SC 8	Widening	$3.48	4.98	51
18	Conestee Rd	Mauldin Rd	Fork Shoals Rd	Widening	$7.48	4.97	52
103	Brushy Creek Rd	Hudson Rd	Alexander Rd	Widening	$8.47	4.97	52
116	E Faris Rd	Augusta St	Cleveland St	Corridor Improvements	$4.73	4.95	54
17	Fairview Rd	SC 418	New Harrison Bridge Rd	General Improvements	$2.66	4.93	55
69	Hammett Bridge Rd	E Suber Rd	S Buncombe Rd	Widening	$6.79	4.92	56
83	Issaqueena Trail	US 123	Pendleton Rd	Widening	$9.33	4.88	57
110	Woodruff Rd	Woodruff Lake Way	Scuffletown Rd	Access Management	$1.39	4.85	58
125	Brockman McClimon Rd	SC-101	SC-296	Corridor Improvements	$30.31	4.8	59
68	US-178	Carolina Dr	US 123	Widening	$7.25	4.7	60
57	Miller Rd	Corn Rd	Murray Dr	Widening	$6.60	4.68	62
81	Pendleton Rd	SC 76	Issaqueena Trail	Widening	$7.71	4.68	62
27	Scuffletown Rd	Woodruff Rd	Lee Vaughn Rd	General Improvements	$8.77	4.67	64
47	E. Butler Rd	Woodruff Rd	Verdin Rd	Widening	$3.71	4.65	65
38	Pelham St Extension	Old Stage Rd	Kemet Way	New Roadway	$1.99	4.5	66
66	East Washington St. Ext	Woodlark St	Lowndes Hill Rd	New Roadway	$1.75	4.5	66
49	Fork Shoals Rd	White Horse Rd Ext	Ashmore Bridge Rd	Widening	$16.17	4.45	68
56	West Georgia Rd	Kemet Way	College St	Corridor Improvements	$3.57	4.35	69
84	Berkley Dr	W Main St	Issaqueena Trail	Widening	$10.78	4.28	70
31	Roper Mountain Rd	SC 14	Feaster Rd	General Improvements	$2.53	4.15	71
34	SC-253	Reid School Rd	Sandy Flat Rd	Widening	$3.46	4.07	72
53	Ashmore Bridge Rd	Fork Shoals Rd	Butler Rd	General Improvements	$9.00	4.07	72
16	Miller Rd	Woodruff Rd	Corn Rd	General Improvements	$5.44	4.05	74
127	West Georgia Rd (S-541)	US 25	Reedy Fork Rd (S-50)	Widening	$12.36	4.03	75
13	SC-8	St. Paul Rd	Anderson Hwy	Corridor Improvements	$15.12	4	76
24	W. Main St	Academy St	Hamilton St	Widening	$5.41	3.95	77
30	Batesville Rd	Woodruff Rd	Roper Mountain Rd	Widening	$5.87	3.93	78
54	Hudson Rd	Devenger Rd	Pelham Rd	Widening	$6.30	3.83	79
61	SC-290	Hwy 101	Lynn Road	Widening	$29.40	3.82	80
25	Woodruff Rd	S Bennets Bridge Rd	Lee Vaughn Rd	General Improvements	$6.38	3.8	81
12	Farrs Bridge Rd	Hamburg Rd	Groce Rd	Corridor Improvements	$21.67	3.77	82
76	SC-81	SC-153	Old Williamston Rd	Widening	$23.50	3.75	83

ID	Road Name	From	To	Type	Cost (Millions)	Weighted Score	Ranking
Long-term Improvements							
65	SC-101	Milford Church Rd	Locust Hill Rd	Widening	$12.71	3.72	84
108	Old Buncombe Rd	E Blue Ridge Dr	Pete Hollis Blvd	Road Diet	$3.01	3.63	85
29	E. Georgia Rd	Hunter Rd	Lee Vaughn Rd	Widening	$5.29	3.53	87
74	LEC Road Ext.	S Catherine Ave	McDaniel Ave	New Roadway	$0.76	3.5	88
113	Miller Rd Connector	Edgewood Dr	Miller Rd/Oak Park Dr	New Roadway	$3.52	3.5	88
87	Gibbs Shoals Rd	S Batesville Rd	SC 14	Corridor Improvements	$15.38	3.37	90
93	Stallings Road	Rutherford Rd	Reid School Rd	Corridor Improvements	$7.00	3.35	91
75	Quillen Ave	N Main St	Speedway Dr	Widening	$4.59	3.35	92
123	Sandy Springs Rd	West Georgia Rd	US-25	General Improvements	$3.25	3.3	93
71	Brushy Creek Rd	Crestview Rd	St. Paul Rd	Corridor Improvements	$6.40	3.25	94
138	West Georgia Rd (S-272)	Fork Shoals Road (S-146)	Reedy Fork Rd (S-50)	Widening	$10.34	3.25	94
77	St. Mark Rd	Wade Hampton Blvd	Locust Hill Rd	General Improvements	$4.95	3.15	96
45	Farrs Bridge Rd	SC-135	Hamburg Rd	Corridor Improvements	$10.26	3.12	97
19	Harrison Bridge Rd/Rocky Creek Rd	W Georgia Rd	Fairview Rd	Widening	$22.46	3.1	98
85	Milford Church Rd	Locust Hill Rd	N Hwy 101	Widening	$15.64	3.02	99
21	Bennetts Bridge Rd	Woodruff Rd	Brockman McClimon Rd	Widening	$19.18	3	100
137	West Georgia Rd (S-272)	E Standing Springs Rd (Local)	Fork Shoals Rd (S-146)	General Improvements	$16.34	2.95	101
33	Howard Drive Ext	Jonesville Rd	Johnson Drive	New Roadway	$2.16	2.75	102
48	University Ridge Extension	Howe St	Main St	New Roadway	$3.38	2.75	102
80	N. Rutherford Rd/Fairview Rd	Wade Hampton Blvd	Locust Hill Rd	Corridor Improvements	$3.59	2.75	104
60	Forrester Dr/Old Sulphur Springs Rd	Bi-Lo Blvd	Millennium Blvd	Widening	$8.81	2.63	106
28	Five Forks Rd	SC 14	Woodruff Rd	Widening	$8.51	2.63	107
136	West Georgia Rd (S-272)	Neely Ferry Rd (Local)	E Standing Springs Rd (Local)	Widening	$5.47	2.63	107
101	E Perry Rd	Poinsett Highway	E Blue Ridge Dr	Closure	$0.17	2.55	109
32	Anderson Ridge Rd	Roper Mountain Rd	S Bennets Bridge Rd	Widening	$1.93	2.43	110
115	Main St	Secore Rd	Hampton Ave	Corridor Improvements	$2.82	2.35	111
104	Fews Bridge Rd	Mountain View Rd	N Highway 101	Corridor Improvements	$8.18	2.17	112
63	Holly Ridge Rd	Ridge Rd	W Butler Rd	New Roadway	$3.98	2.15	113
64	Ben Hamby Ext	Ben Hamby Dr	S Batesville Rd	New Roadway	$6.39	2.15	113
120	SC-153 Extension Phase 3	SC-183	Saluda Dam Rd	New Roadway	$12.77	2.15	113
44	Saluda Dam Rd/Olive St/Fleetwood Dr	W Main St	Prince Perry Dr	Corridor Improvements	$19.51	2.12	116
52	SC-133	Six Mile Hwy	Pike Rd	Widening	$9.13	2.12	116
122	Garrison Rd	West Georgia Rd	US-25	General Improvements	$8.55	2.02	118

Intersection Improvements

ID	Road 1	Road 2	Cost (Millions)	Weighted Score	Ranking
Near-term Intersection Improvements					
107	Roper Mountain Rd	I-385	$3.50	7.7	1
117	Haywood Rd	Pelham Rd	$3.00	7.25	2
116	Pleasantburg Dr	Rutherford Rd	$3.50	6.9	3
72	White Horse Rd	W Blue Ridge Rd	$3.50	6.8	4
81	E Blue Ridge Dr/State Park Rd	Poinsett Hwy	$3.50	6.8	4
121	Laurens Rd	Woodruff Rd	$3.50	6.8	4
90	Rutherford St	James St/W Earle St	$3.50	6.7	7
101	SC 8	Murray St	$3.50	6.5	9
124	Pelham Rd	E North St	$3.50	6.5	10
113	Pleasantburg Dr	Antrim Dr	$3.50	6.4	11
114	Academy St	Pendleton St	$3.50	6.4	11
125	Laurens Rd	Verdae Blvd	$3.50	6.4	11
126	Roper Mountain Rd	Independence Blvd	$3.50	6.4	11
106	Haywood Rd	I-385	$3.50	6.3	15
109	Academy St	North St	$3.50	6.3	16
119	Augusta St	Church st	$3.50	6.3	16
112	Pleasantburg Dr	Century Dr/Villa Rd	$3.50	6.25	18
115	Pleasantburg Dr	Mauldin Rd	$3.50	6.2	19
127	Laurens Rd	Millennium Blvd	$3.50	6.2	19
80	Wade Hampton Blvd	Rushmore Dr/Balfer Dr	$3.50	6.1	21
78	Wade Hampton Blvd	Pine Knoll Dr	$3.50	6	22
147	White Horse Rd Ext	Fork Shoals Rd	$3.00	5.9	23
150	Augusta Rd	Old Augusta Rd	$3.50	5.7	24
108	Stone Ave	I-385	$3.50	5.7	25
129	SC 14	S Buncombe Rd	$3.50	5.7	25
149	Locust Hill Rd	N. Rutherford Rd	$3.00	5.7	25
27	Pelzer Hwy	Garrison Rd	$3.50	5.6	28
123	Rutherford St	W Stone Ave	$3.50	5.6	28
9	State Park Rd	Altamont Rd/Piney Mountain Rd	$3.50	5.5	30
83	Wade Hampton Blvd	Fairview Rd/Old Rutherford Rd	$3.50	5.5	30
111	Mauldin Rd	Augusta St	$3.50	5.5	30
118	Pleasantburg Dr	Cleveland St	$3.00	5.5	30
35	Blue Ridge Dr	N Franklin Rd	$3.50	5.4	34
82	US 276	Poinsett Hwy	$3.50	5.4	34
93	I-385	McCarter Rd	$3.50	5.4	34
77	US 25	N Poinsett Hwy	$3.50	5.3	37
103	White Horse Rd	Old White Horse Rd	$3.00	5.2	38
55	Miller Rd	S Oak Forest Dr	$3.50	5.1	39
71	Farrs Bridge Rd	White Horse Rd	$3.50	5.1	39
84	W Blue Ridge Dr	Cedar Lane Rd	$3.50	5.1	39
145	SC-101	S-135	$3.00	5.05	42
16	Main St/Bessie Rd	Piedmont Hwy	$3.50	5	43
42	Main St	Curtis St	$3.50	5	43
48	W Butler Rd	Ashmore Bridge Rd	$3.50	5	43

ID	Road 1	Road 2	Cost (Millions)	Weighted Score	Ranking
Mid-term Intersection Improvements					
100	Hwy 20	Courtney St	$3.50	4.98	46
67	Calhoun Memorial Hwy	S Pendleton St	$3.50	4.9	47
75	Tiger Blvd (US 123)	Anderson Hwy (US 76)	$3.50	4.88	48
122	Academy St	College St	$3.50	4.85	49
43	Lebby St	Courtney St	$3.50	4.8	50
88	Old Spartanburg Rd	Boiling Springs Rd	$3.50	4.8	50
95	SC 14	Roper Mountain Rd	$3.50	4.8	50
11	Wade Hampton Blvd	Buncombe Rd	$3.50	4.75	53
79	SC 101	Berry Mill Rd	$3.50	4.7	54
73	White Horse Rd	Lily St	$3.50	4.65	55
97	Hwy 81	Circle Rd	$3.00	4.6	56
148	SC 101	Milford Church Rd	$3.00	4.55	57
94	Main St	Quillen Ave	$3.50	4.5	58
49	Calhoun Memorial Hwy	Pilgrim Dr/Dogwood Ln	$3.50	4.3	59
53	Three Bridges Rd/Hood Rd	SC 153	$3.00	4.28	61
15	Tigerville Rd	Jackson Grove Rd	$3.50	4.2	62
69	NE Main St	Pelham Rd	$3.50	4.2	62
13	Ashmore Bridge Rd	Fowler Cir	$3.00	4.1	64
34	E Blue Ridge Dr	Perry Rd	$3.50	4.1	64
44	Wade Hampton Blvd	St Mark Rd	$3.50	4.1	64
18	Moorefield Memorial Hwy/Liberty Pickens Rd	Mauldin Lake Rd	$3.50	4.08	67
6	Butler Rd	Main St	$3.50	4.05	68
128	Westfield St	West Broad St	$3.50	4.05	69
24	S Buncombe Rd	Brushy Creek Rd	$3.50	4	70
133	Batesville Rd	Dry Pocket Rd	$3.00	4	70
74	Tiger Blvd	College Ave	$3.50	3.98	72
85	Old Pelzer Rd	Piedmont Golf Course Rd	$3.00	3.95	73
99	Powdersville Rd	3 Bridges Rd	$3.00	3.95	73
135	US 123	Washington Ave	$3.50	3.95	73
47	Main St/Easley Hwy	Palmetto Rd	$3.00	3.9	76
86	Elizabeth Dr	E Lee Rd	$3.50	3.9	76
30	Moorefield Memorial Hwy	Belle Shoals Rd/Bethlehem Ridge Rd	$3.00	3.9	76
56	Farrs Bridge Rd	Old Farrs Bridge Rd	$3.00	3.8	79
39	Farrs Bridge Rd	Dacusville Hwy	$3.00	3.8	80
91	Durbin Rd	Hwy 418	$3.00	3.78	81
4	Farrs Bridge Rd/Cedar Lane Rd	Hunts Bridge Rd/ W Parker Rd	$3.50	3.75	82
22	Reid School Rd	Edwards Mill Rd	$3.50	3.75	82
120	Faris Rd	Cleveland St	$3.50	3.75	82
54	Old Stage Rd	Old Laurens Rd	$3.50	3.7	85
105	Bridges Rd	Bethel Rd	$3.00	3.65	86
31	New Easley Hwy	Rison Rd	$3.00	3.6	87
40	S Main St	Brushy Creek Rd/Cannon Ave	$3.50	3.6	87
7	Wade Hampton Blvd	Gap Creek Rd	$3.50	3.6	89
139	SC 81	Old Anderson Rd	$3.00	3.6	90

ID	Road 1	Road 2	Cost (Millions)	Weighted Score	Ranking
Long-term Intersection Improvements					
58	SC 101	Pennington Rd	$3.50	3.55	91
20	E Butler Rd	Murray Dr	$3.50	3.4	92
70	Fairview Rd	I-385	$3.50	3.4	92
89	E Georgia Rd/Lee Vaughn Rd	E Georgia Rd	$3.00	3.35	94
26	SC 418	Fork Shoals Rd	$3.00	3.3	95
52	Issaqueena Trail	US 123	$3.50	3.28	96
87	Old Rutherford Rd/W McElhaney Rd	Locust Hill Rd	$3.50	3.2	97
8	Sandy Flat Rd	Jackson Grove Rd	$3.00	3.2	98
45	Miller Rd	Hamby Dr	$3.50	3.2	98
102	White Horse Rd	Berea Dr	$3.50	2.85	100
76	Old Greenville Hwy	College Ave	$3.50	2.8	101
14	Main St	Howard Dr	$3.50	2.7	102
36	Old Easley Hwy/Pendleton St	Bryant St	$3.50	2.7	102
92	Valley View Rd	Howard Dr	$3.50	2.7	102
41	W Main St	S 1st St	$3.00	2.7	102
132	W Duncan Rd	Duncan Chapel Rd	$3.50	2.7	102
10	Main St	Pendleton St	$3.50	2.6	107
137	E Main St	Pepper St	$3.50	2.58	108
5	Farrs Bridge Rd	Thomas Mill Rd/Hamburg Rd	$3.00	2.58	109
134	Lynn Rd	Waters Rd	$3.50	2.5	110
23	Lee Vaughn Rd	Scuffletown Rd	$3.50	2.3	111
28	State Park Rd	E Mountain Creek	$3.50	2.3	111
21	Liberty Dr	Ross Ave	$3.50	2.3	111

ID	Road 1	Road 2	Cost (Millions)	Weighted Score	Ranking
12	Moorefield Memorial Hwy	Rices Creek Rd/Breazeale Rd	$3.00	2.28	114
50	Issaqueena Trail	Cambridge Dr/Old Shirley Rd	$3.50	2.28	114
25	SE Main St	Loma St	$3.50	2.25	116
51	Issaqueena Trail	Pendleton Rd	$3.50	2.1	117
17	SC 14	Taylor Rd/CCC Camp Rd	$3.50	2.05	118
46	Jonesville Rd	Academy St	$3.50	1.95	119
138	Edwards Rd	Rushmore Dr	$3.50	1.95	119
62	Miller Rd	Burning Bush Ln/Burning Bush Rd	$3.50	1.8	121
104	Oak Park Dr	Miller Rd	$3.00	1.8	121
66	Main St	Ann St	$3.50	1.8	121
37	W Main St	Summit Dr	$3.50	1.8	121
29	Moorefield Memorial Hwy	C David Stone Rd	$3.50	1.78	125
32	Bethel Rd	Tanner Rd	$3.50	1.55	126
68	S Bennetts Bridge Rd	Anderson Ridge Rd	$3.50	1.55	126
136	Crestview Rd	Sheffield Rd	$3.00	1.55	126
57	Jonesville Rd	Stokes Rd	$3.00	1.35	129
61	Miller Rd	Old Mill Rd	$3.50	1.35	129
63	W Georgia Rd	Neely Ferry Rd	$3.50	1.35	129
64	W Georgia Rd	N Maple St	$3.50	1.35	129
65	Miller Rd	Murray Dr	$3.50	1.35	129
19	Saluda Dam Rd	Prince Perry Rd/Ridgeway Ct	$3.50	1.35	129
130	Harts Ln	Jonesville Rd	$3.00	1.35	129
131	Gap Creek Rd	Country Club Rd	$3.00	1.35	129
60	SC 86	Wigington Rd	$3.00	1.03	137

FINANCIAL PLAN DEVELOPMENT

Financial Plan Overview

The Fixing America's Surface Transportation Act (FAST Act), Public Law 114-94, was signed into law on December 4, 2015. The FAST Act funds transportation programs for fiscal years 2016 through 2020. It is the first long-term surface transportation authorization enacted in a decade that provides funding certainty for surface transportation. The FAST Act supports critical transportation projects to ease congestion and facilitate freight movement on major roads by establishing and funding new policies and programs. The FAST Act builds off the prior federal legislation—Public Law 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21)—and continues that law's emphasis on performance evaluation and addresses national priorities, as identified below.

The financially-constrained plan, required by the FAST Act and MAP-21 for regional LRTPs, shows proposed investments that are realistic based on future funding availability during the life of the plan and a series of funding periods. Meeting this test is referred to as "financial constraint." The funding periods identified for *Horizon 2040* are:

- 2017-2023
- 2024-2030
- 2031-2040

The 2017–2023 funding period includes the committed projects and associated funding from the STIP. Projects and funding levels identified during this time period were identified as priority projects during previous planning efforts and have been discussed in previous chapters of this document. As such, they are not re-evaluated as part of this plan. The 2024–2030 and 2031–2040 funding periods divide the remainder of the projected revenues and projects into time bands less than or equal to ten years. Projects that cannot be funded within the 2040 financially-constrained plan are considered part of the unfunded vision plan.

Projected Revenue

SCDOT allocates funding to its member MPOs through a program known as Guideshare funding. SCDOT provides separate funding sources for items, such as maintenance, safety, and interstates. Funds are allocated and prioritized at a statewide level. SCDOT allocates Guideshare funding through the MPO planning process, including the LRTP and the MPO Transportation Improvement Program (MTIP).

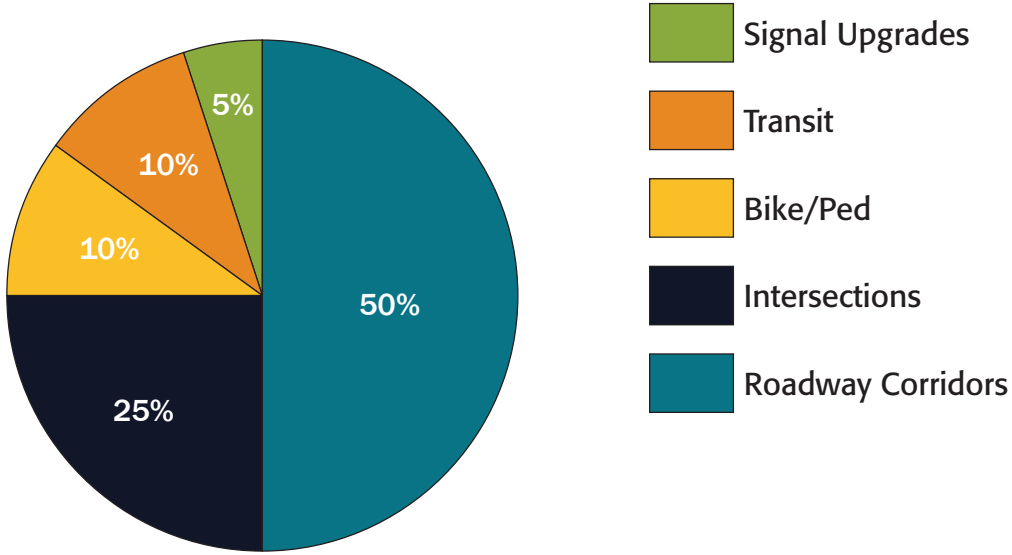
In 2017, the GPATS region received a total of $18.078 million in Guideshare funding, inclusive of a 20% match funded by SCDOT. The 2017 funding amount is expected to stay constant throughout the life of the plan. When inflation is considered, this will lead to a decline in the region's purchasing power.

GPATS has the opportunity to consider how best to allocate these Guideshare funds during the life of the plan and engaged the public at Regional Workshop 2 for community input. The exit questionnaire (discussed in Chapter 2) asked participants to allocate funding to various transportation modes. Combining participants at this workshop and electronic participation when this survey was posted online, 125 members of the public provided their thoughts. These surveys strongly advocated for enhanced multimodal funding—along with funding for safety. These priorities were taken into account when allocating Guideshare funding, as detailed below.

- ***Roadway Corridors – 50% Guideshare funding.*** Projects within the roadway category include widening projects, new location projects, access management projects, and road diets.
- ***Intersections – 25% Guideshare funding.*** Projects within the intersection category include intersection and interchange projects that have been identified to improve safety or capacity. This Guideshare allocation gives the region added flexibility to focus on its own priorities, while the state continues to address safety concerns using their statewide prioritization method.
- ***Bicycle/Pedestrian – 10% Guideshare funding.*** Projects within the bicycle and pedestrian category include on- or off-street projects independent of other roadway improvements. This Guideshare allocation is in addition to potential Transportation Alternatives Program monies that can be applied for by individual jurisdictions. For a bicycle or pedestrian project to be considered for Guideshare funding, the project must satisfy a series of criteria set forth by SCDOT. Projects should be vetted against these criteria prior to consideration.

- ***Transit – 10% Guideshare funding.*** Projects within the transit category consist of capital projects rather than operations and maintenance projects. This funding is in addition to transit capital and operations and maintenance funding received through other statewide sources.
- ***Signal Upgrades – 5% Guideshare funding.*** Currently, $150,000 is allocated annually within the GPATS region for signal upgrades. The increase in funding would accelerate these improvements that include installing signals, improving current signals, retiming signals, or incorporating other ITS improvements (introduced in Chapter 8).

The table below shows the proposed allocation of funds for each category for the two planning horizon-year periods.



Guideshare Funding Allocations

GPATS GUIDESHARE MODAL SPLITS

	Roadway Corridors	Intersections	Bike/Ped	Transit	Signal Upgrades
2024-2030	$63,273,000	$31,636,500	$12,654,600	$12,654,600	$6,327,300
2031-2040	$90,390,000	$45,195,000	$18,078,000	$18,078,000	$9,039,000
Total	$153,663,000	$76,831,500	$30,732,600	$30,732,600	$15,366,300
Notes	50% allocation	25% allocation	10% allocation	10% allocation	5% allocation

This table shows funding availability for those years that are not already programmed in the currently-adopted STIP. Assumptions have been made about modal splits within available Guideshare funds to create more opportunities for bicycle, pedestrian, transit, intersection, and signal retiming projects. These assumptions have been developed based on feedback by the public.

FINANCIALLY-CONSTRAINED PROJECTS

The planning team undertook a financial constraint exercise for the prioritized projects in the roadway corridors, intersections, and bicycle and pedestrian categories. Additional detail is provided in the following section about the methodology applied to each category. Wherever the planning team assessed for financial constraint, they determined it against the total funding available for that category and for the horizon-year periods considered. Any additional funding not allocated in the first horizon-year period was placed in the second horizon-year period.

Roadway Corridors

The capital roadway projects identified as part of the recommendations development, detailed in Chapter 4 and earlier in this chapter, were later prioritized. The capital roadway project prioritization process evaluated recommendations based on qualitative and quantitative measures drawn from the plan's guiding principles. The outcome, a list of prioritized projects, will be considered for incorporation into the financially constrained plan. While it would be ideal to implement every project, only a portion can be funded. As a result, higher ranked projects were considered first for funding. To do this, the priority project list was compared to the available funds determined through the Guideshare modal split.

The planning team also determined planning cost estimates for the roadway corridor projects. These estimates attempt to capture the full cost of a project, including construction, right-of-way, design, contingency, and environmental/utilities cost. While these costs were all initially prepared in 2017 dollars, they must be inflated to the available funding during our horizon-year periods. To maintain a consistent approach, projects considered for the first horizon-year period (2024–2030) were inflated to the midpoint of that period (2027). Projects that were unable to be funded within the first horizon-year period were then considered for the second horizon-year period (2031–2040), with a midpoint of 2035. Once available funds were allocated, the remaining projects were placed in the unfunded vision.

The financially-constrained roadway corridors are all pulled from the LRTP's near-term project list. Given the available funding, many of the near-term projects cannot be funded by 2040 and are part of the unfunded vision.

Funded Corridor Improvements

Horizon Years	Project ID	Facility	From	To	Type	Rank	Project Cost	"Anticipated Year of Expenditure" Costs	Balance
2024-2030	37	Garlington Rd	SC-146	Roper Mountain Rd	Widening	1	$8,550,000	$11,490,000	$51,783,000
	94	US 29/Mills Ave	Augusta St	Stevens St	Corridor Improvements	2	$2,522,793	$3,390,000	$48,393,000
	11	Grove Rd	US 25	W. Faris Rd	Widening	3	$9,813,960	$13,189,000	$35,204,000
	100	Laurens Rd	I-85	Innovation Dr	Corridor Improvements	4	$6,941,330	$9,329,000	$25,875,000
	118	Academy St/US 123	Pendleton St	Washington Ave	Corridor Improvements	5	$7,644,736	$10,274,000	$15,601,000
	92	Wade Hampton Blvd	Pine Knoll Dr	Reid School Rd	Access Management	6	$10,451,625	$14,046,000	$1,555,000
2031-2040	10	Woodruff Rd	Miller Rd	Smith Hines Rd	Widening	7	$1,490,000	$2,537,000	$86,363,000
	88	SC 357/Arlington Rd	Study area boundary	E Wade Hampton Blvd	Widening	8	$27,026,688	$46,011,000	$40,352,000
	20	Bridges Rd	E Butler Rd	Holland Rd	Widening	9	$4,593,622	$7,820,000	$32,532,000
	91	N Pleasantburg Dr/Pine Knoll Dr	I-385	Wade Hampton Blvd	Corridor Improvements	10	$4,614,147	$7,855,000	$24,677,000
	43	Pine Knoll	Wade Hampton Blvd	Rutherford Rd	General Improvements	11	$3,284,783	$5,592,000	$19,085,000
	22	US 123 (Phase 1)	Jasper St	Powdersville Rd	Widening	12	$11,000,000	$18,727,000	$358,000

Intersections

Using a process identical to that used in the roadway corridors section, intersection-level projects were also financially constrained based on available funding. As with the roadway corridor projects, all of the financially-constrained projects are near-term projects, and many are unfunded. If additional funding (such as through the statewide safety program) is secured for a certain intersection, the financially-constrained plan should be adjusted to accommodate another near-term intersection project.

Funded Intersection Improvements

Horizon Years	Project ID	Road 1	Road 2	Rank	Project Cost	"Anticipated Year of Expenditure" Costs	Balance
2024-2030	107, 126	Roper Mountain Rd	I-385, Independence Blvd (address as single interchange)	1, 11	$7,000,000	$9,407,000	$22,229,500
	117	Haywood Rd	Pelham Rd	2	$3,000,000	$4,032,000	$18,197,500
	116	Pleasantburg Dr	Rutherford Rd	3	$3,500,000	$4,704,000	$13,493,500
	72	White Horse Rd	W Blue Ridge Rd	4	$3,500,000	$4,704,000	$8,789,500
	81	E Blue Ridge Dr/State Park Rd	Poinsett Hwy	4	$3,500,000	$4,704,000	$4,085,500
2031-2040	121	Laurens Rd	Woodruff Rd	4	$3,500,000	$5,959,000	$39,236,000
	90	Rutherford St	James St/W Earle St	7	$3,500,000	$5,959,000	$33,277,000
	101	SC 8	Murray St/Courtney St/Smythe St	9	$3,500,000	$5,959,000	$27,318,000
	124	Pelham Rd	E North St	10	$3,500,000	$5,959,000	$21,359,000
	113	Pleasantburg Dr	Antrim Dr	11	$3,500,000	$5,959,000	$15,400,000
	114	Academy St	Pendleton St	11	$3,500,000	$5,959,000	$9,441,000
	125	Laurens Rd	Verdae Blvd	11	$3,500,000	$5,959,000	$3,482,000

Bicycle and Pedestrian

The recommendations development process for bicycle and pedestrian projects detailed in Chapter 5 resulted in more than 800 recommended projects. From those, 63 of the projects were designated as high-priority. Following the process outlined in other modes, these high-priority projects were financially constrained and checked against SCDOT standards for Guideshare eligibility.

Transit

The GPATS region's transportation needs and recommendations were introduced in Chapter 5. Based on feedback from the public, the plan allocates additional Guideshare monies to fund capital improvements. GPATS should coordinate with Greenlink and CAT to determine how to best apply this additional capital funding. This could initially mean funding for replacing buses and expanding the bus system and ultimately could include facility improvements or new facilities.

Signal Upgrades

SCDOT leads efforts within the GPATS region to maintain and enhance signals. As a result, GPATS will work closely with SCDOT to understand how best to allocate these additional funds.

Funded Bicycle and Pedestrian Projects

Horizon Years	Facility	Type	Road Name	Guideshare Points	Rank	Project Cost	"Anticipated Year of Expenditure Costs"	Balance
2024-2030	Mauldin Golden Strip Greenway (Swamp Rabbit Trail Extension)	Shared-Use Path	US 276 Corridor, SC 417 Corridor	7	1	$3,308,753	$4,446,700	$8,207,900
	Clemson-Central Green Crescent Connector	Shared-Use Path	SC 93 Corridor	7	2	$2,676,913	$3,597,500	$4,610,400
	Augusta Street Area Bike Network	Bike Lane, Bicycle Route, Shared Lane Markings	Parallel street network	7	3	$361,379	$485,700	$4,124,700
	Greer-Taylors Greenway	Shared-Use Path	US 29 Corridor	7	4	$3,474,611	$5,915,300	$12,162,700
2031-2040	Travelers Rest Area Bike/Ped Network Expansion	Shared-Use Path, Bike Lane, Bicycle Route	US 276 Corridor, Poinsett Hwy, McElhaney Rd	6	5	$1,733,809	$2,951,700	$9,211,000
	City of Easley Doodle Trail Extension	Shared-Use Path	Fleetwood Dr Corridor	6	6	$682,983	$1,162,700	$8,048,300
	Palmetto Area Bike/Ped Network Expansion	Shared-Use Path, Bike Lane, Shared Lane Markings	SC 20, SC 8, Rail Corridor	6	7	$2,263,830	$3,854,000	$4,194,300
	Simpsonville Golden Strip Greenway (Swamp Rabbit Trail Extension)	Shared-Use Path	SC 14 Corridor	7	8	$2,008,699	$3,419,700	$774,600

Conclusion

The *Horizon 2040* LRTP envisions a region that ensures equitable access to reliable transportation, provides a wide variety of travel options, and promotes a high quality of life throughout. This plan is a regional vision for mobility that supports economic development and a high quality of life and complements the natural qualities that make the Upstate unique.

Included in *Horizon 2040* are transportation recommendations that consider the existing and future multimodal needs of residents, visitors, and industry. The creation of this financially-constrained plan ensures that the identified projects can reasonably be funded and implemented during the life of the LRTP and that the priorities expressed throughout the public involvement process will influence the region's transportation planning decisions.

But *Horizon 2040* is more than just a plan and a funding mechanism. With this document, the leaders and citizens of the Upstate region can set the stage for the region's future and how this quickly-growing region will accommodate its needs in the coming decades.

Among other accomplishments, *Horizon 2040*:

- Funds 12 roadway corridor projects and 12 intersection improvement projects
- Invests a total of $230 million in roadway infrastructure
- Includes 8 funded bicycle and pedestrian investments, for a total of more than $30 million in active transportation invested, more than ever before
- Defines the community's expectations as leaders move forward with major transportation investments
- Sets the stage for smart investing by emphasizing access management, connectivity, and land use planning coordination
- Considers emerging technologies and how the Upstate can become a nationwide leader in transportation technology

Like all growing and dynamic regions, the Upstate has many identified transportation needs, not all of which can be funded using projected revenue streams. However, for the first time, GPATS has, with *Horizon 2040*, a progressive program to move toward a balanced, efficient, and sustainable transportation future.

Horizon 2040 is the first LRTP in South Carolina to directly allocate 10% of the region's Guideshare funding toward bicycle and pedestrian projects and 10% to transit investments. This decision was based on the overwhelming call from residents asking for a greater investment in multimodal transportation options and a growing awareness that the region must shift trajectory in the face of increased growth.

This allocation allows funding for eight major regional bicycle projects that will connect communities across the region. It also allows GPATS to increase assistance to regional transit providers as they expand access throughout the region.

As the region moves forward and projects advance toward funding and implementation, GPATS will continue to work with SCDOT, FHWA, and FTA to determine how best to advance recommended projects and will continue to engage the public to adjust future planning efforts and project lists as necessary.

In addition, the world of transportation planning is rapidly changing and evolving, perhaps faster now than ever before. GPATS will continue to monitor changes in how projects can be funded, such as new public-private initiatives, additional state or federal revenue sources, or other local funding opportunities. GPATS will strive to continue expanding the region's funding capacity through these innovative means. Transportation technology will be a vastly different landscape in 2022 and 2027 and, with this document, GPATS has made a commitment to pursue partnerships that keep the region at the national forefront. These dynamic processes will help the region continue to effectively address its transportation needs—both now and in the future.

GPATS Horizon 2040

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