

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

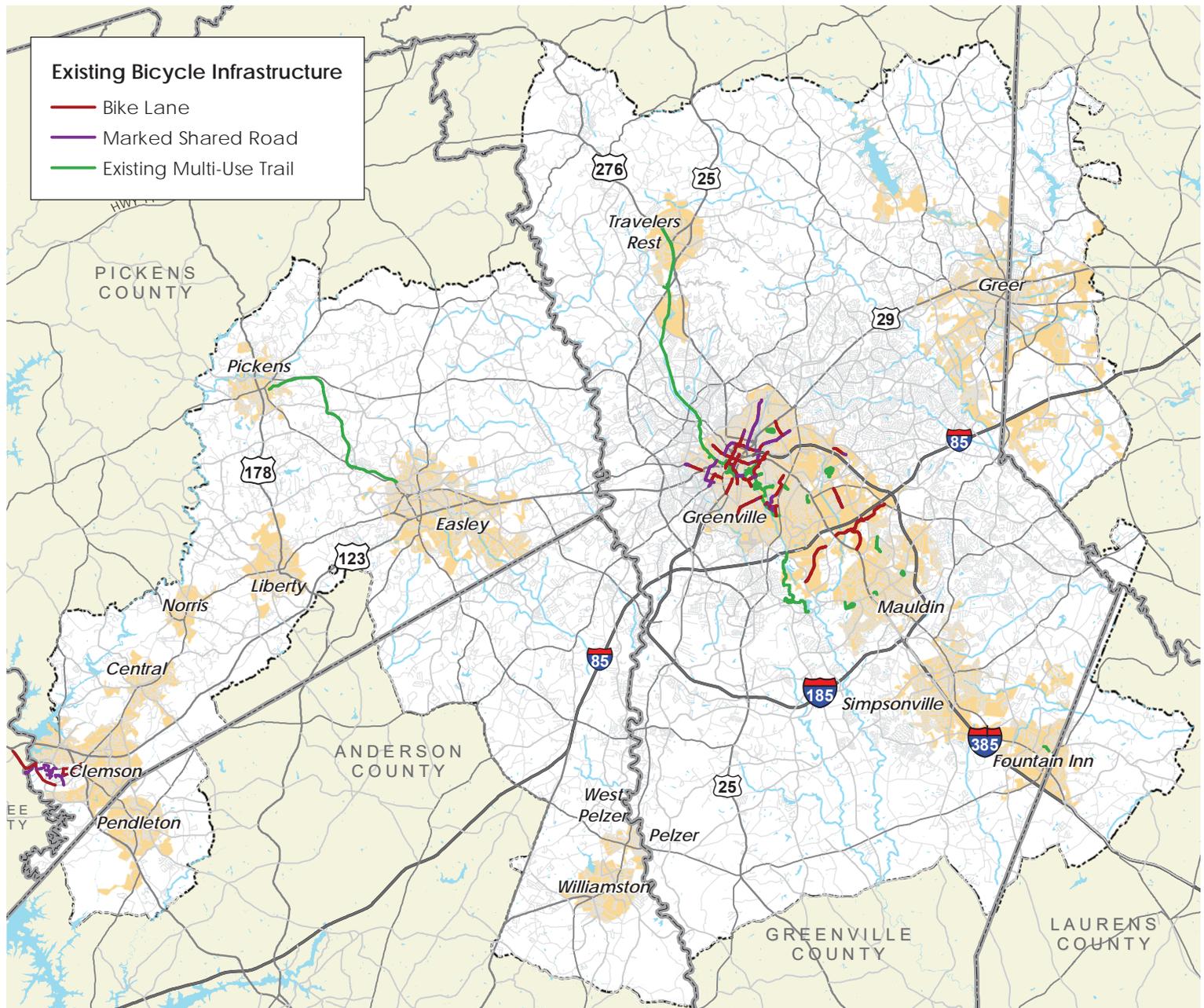
Bicycle and pedestrian infrastructure are relatively low-cost infrastructure that can remove demand from often costlier roadway infrastructure types.

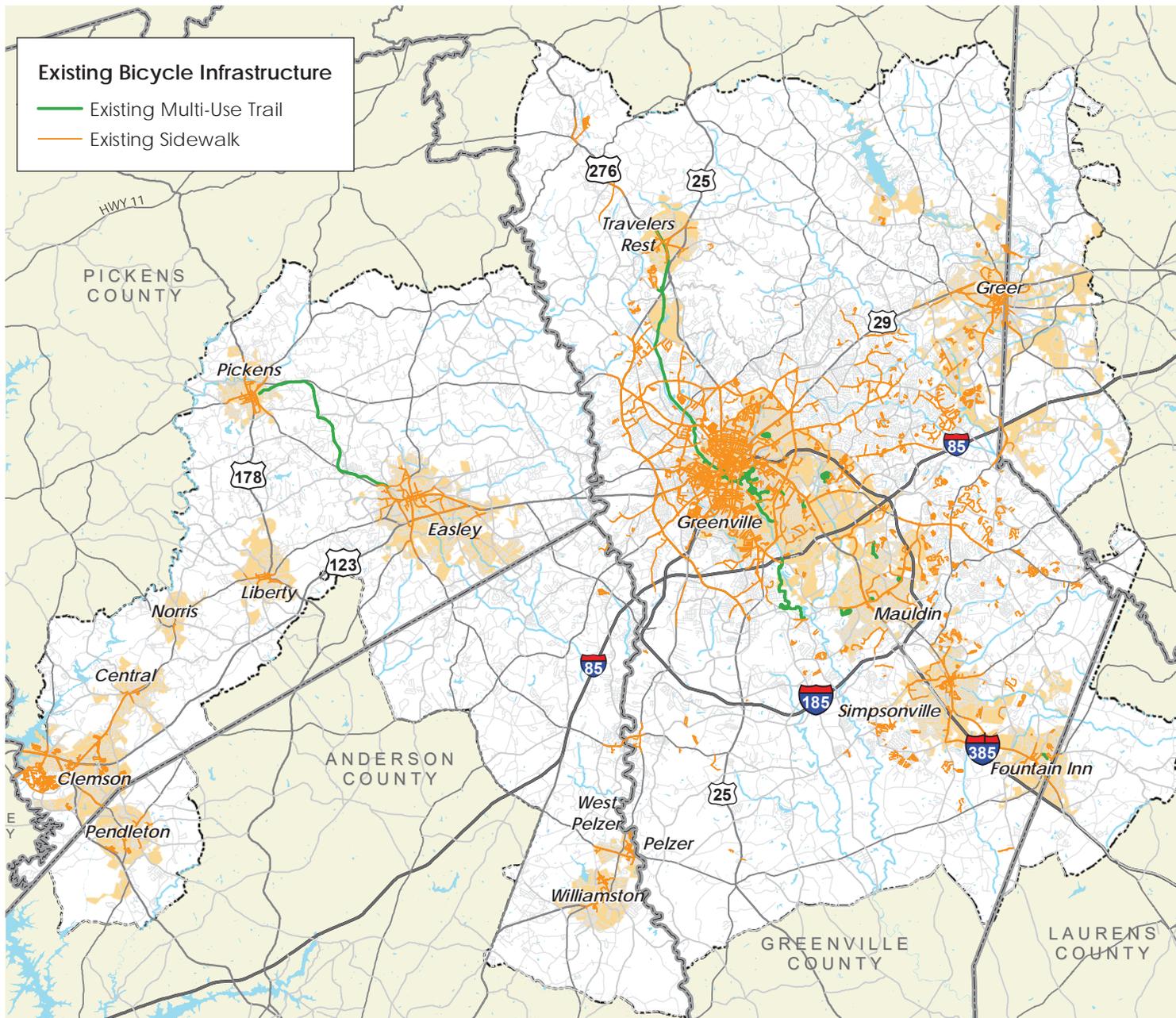
NETWORK ASSESSMENT

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.

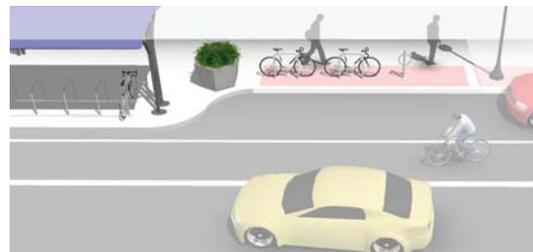
Shared-Use Paths or Multiuse Paths



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.

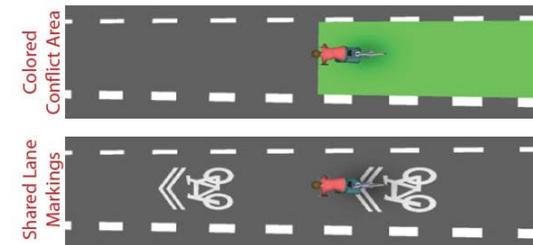
Bicycle Parking

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

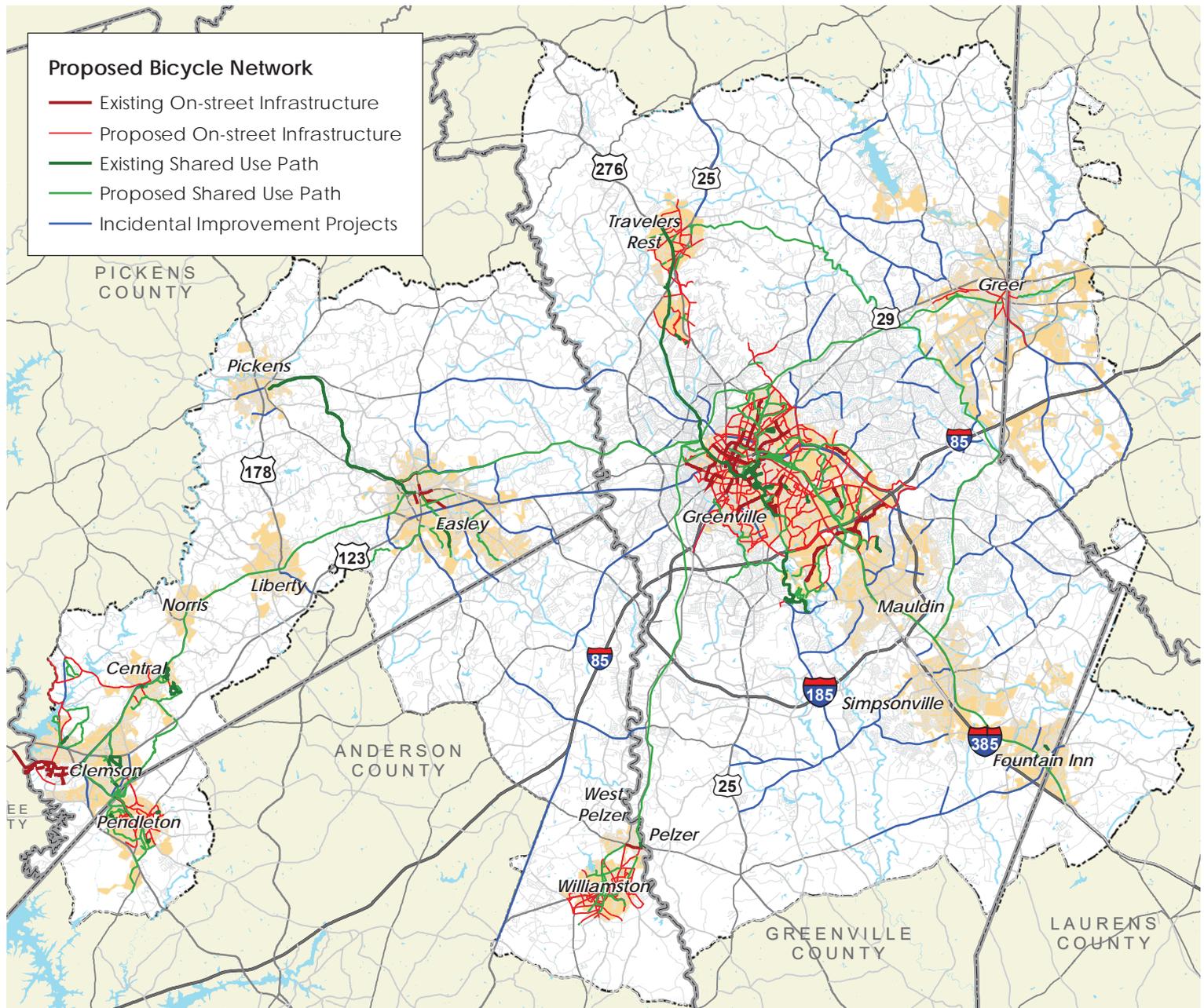
Intersections can either be facilitators of or barriers to bicycle transportation. If a potential bicyclist knows that they have to cross an uncomfortable intersection to get to their destination, they will be less likely to bicycle. Thoughtful design must be used to promote safety through increased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

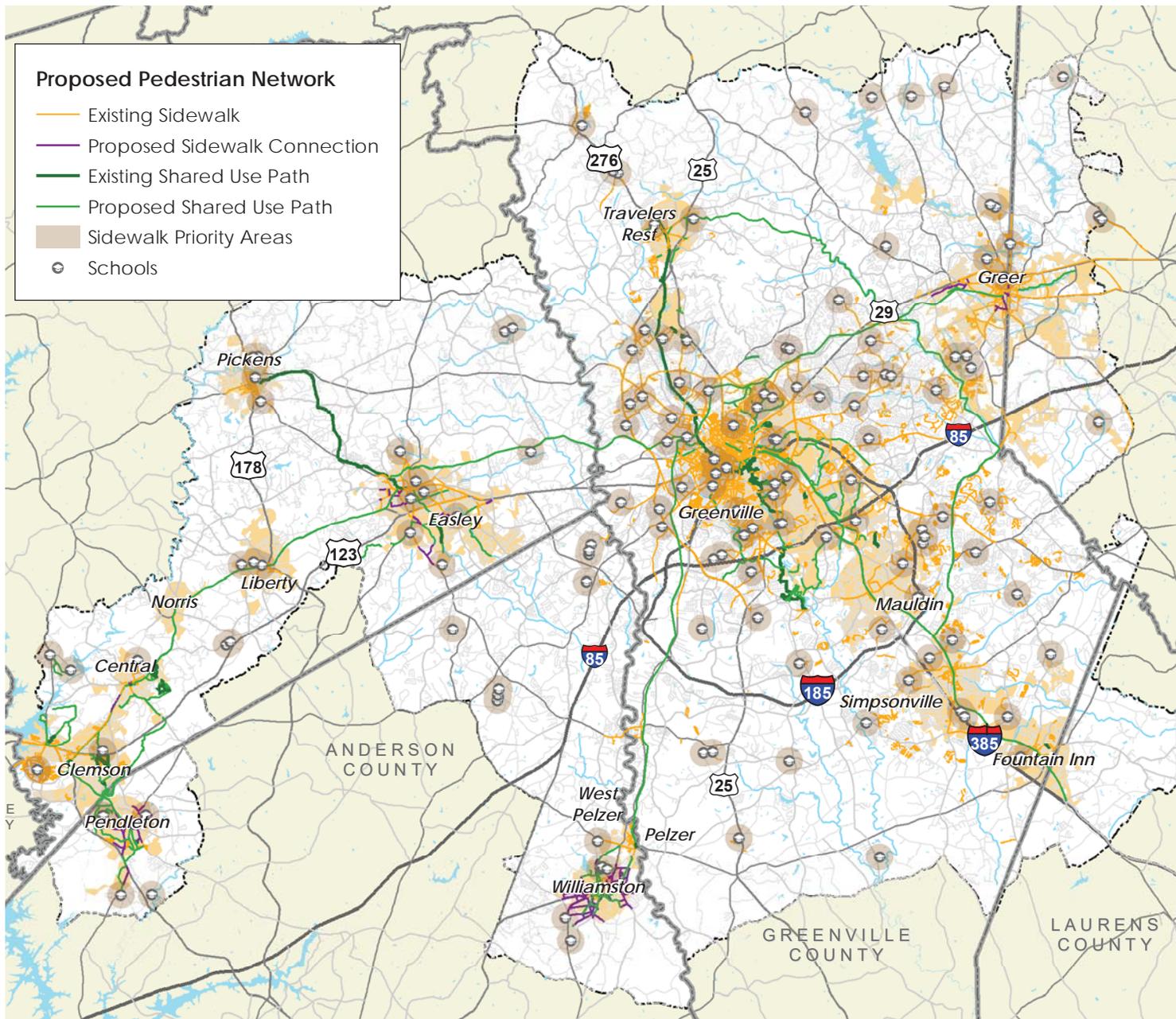


Bicycle Network Recommendations

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