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WALK BIKE COLUMBIA

COLUMBIA, SOUTH CAROLINA | PEDESTRIAN & BICYCLE MASTER PLAN



INTRODUCTION FROM MAYOR STEPHEN K BENJAMIN

JANUARY 21, 2015

My fellow Columbians,

From creating our Bicycle Pedestrian Advisory Committee (BPAC) and completing Phase I of the Vista Greenway to installing new bicycle corrals and the first HAWK pedestrian signal in South Carolina, we've made great strides towards making Columbia a truly bicycle and pedestrian friendly city because we recognize that bicycling is not only a safe, fun and convenient way to travel, but also holds a unique potential to connect our diverse communities and make our city more livable, economically vibrant and environmentally sustainable.

Because of those efforts including our groundbreaking City Employee Bike Share Program and spectacular events like the Main Street Crit, our Annual Famously Hot Mayor's Bike Ride, Bike and Walk to School Day and our first Youth and Teen Bike Ride and Bike-A-Thon, today we are a nationally designated Bicycle Friendly Community and the University of South Carolina is the first Bicycle Friendly University in the state and one of only a few dozen around the country.

Today we see students riding their bikes to campus and young professionals jogging on Main Street every day but rather than sitting back and celebrating, we're pushing harder moving forward with developing our combined Pedestrian and Bicycle Master Plan and Bike Share Plan – Walk Bike Columbia – because we're not satisfied with more bicycle lanes and wider sidewalks.

We want to be the most bicycle and pedestrian friendly city in the Southeast and, with your help, we can make it happen.

Sincerely,

A handwritten signature in cursive script that reads "Steve Benji".

Stephen K. Benjamin

Mayor

City of Columbia, SC



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**PEOPLE OF ALL AGES
AND ABILITIES ENJOY
WALKING AND BIKING
AND BENEFIT FROM
ENHANCED QUALITY
OF LIFE, PUBLIC HEALTH,
AND ECONOMIC
OPPORTUNITY.**





WALK BIKE COLUMBIA: INTRODUCTION

Columbia, SC is a thriving community and hub of South Carolina. It is the hub geographically, with great access to the mountains and sea, as well as other major cities and centers of commerce and trade such as Charlotte, Atlanta, Charleston and Greenville. As the State capital, it is the hub of government and a center of culture and history. Finally it is the hub of education; being home to the most colleges and universities in the State, as well as other centers of learning.

The City's position as the face of the State, its relatively mild year-round climate and relatively flat terrain, its compact downtown core, and high concentration of young people all make it an ideal setting for a future where walking, bicycling, and transit are a safe, enjoyable and normal part of daily life. As such, this Plan is a collaborative effort to to capitalize on these positive characteristics and establish a path towards making Columbia the State hub for healthy and sustainable transportation.





Project Partners

The Walk Bike Columbia Pedestrian and Bicycle Master Plan and Bike Share Plan was commissioned by The Central Midlands Council of Governments (CMCOG) in partnership with the City of Columbia in 2014 with major funding granted by the Federal Transit Administration, and additional support provided by Palmetto Health and Abacus Planning.

Key partners that have been integral to this planning effort include the Central Midlands Regional Transit Authority (The

COMET), the City of Columbia Bicycle and Pedestrian Advisory Committee, South Carolina Department of Transportation, and The University of South Carolina. Collaboration with numerous other communities, agencies and local partners has also been integral to the development of this plan. Other key partners have included surrounding municipalities within the Columbia region; other State agencies such as the South Carolina Department of Health and Environmental Control; Allen University and other institutions of higher education; business

district associations; and , bicycle and transit advocacy groups such as Palmetto Conservation Foundation and Palmetto Cycling Coalition.

Finally, substantial and valuable input and feedback was gathered throughout the planning process from engaged and concerned citizens, and the Walk Bike Columbia Project Advisory Committee.

Advisory Committee Members

- Jim Love, AARP
- Erin Letts, Abacus Planning
- Kimberly Tissot, Able SC
- Dana Higgins, City of Columbia
- John Fellows, City of Columbia
- Lucinda Statler, City of Columbia
- Jeff Caton, City of Columbia
- Robert Anderson, City of Columbia
- Gregory Sprouse, CMCOG
- Reginald Simmons, CMCOG
- Paige Tyler, Coldwell Banker United
- Samuel Scheib, COMET
- Natalie Britt, Palmetto Conservation Foundation, Chairperson Bike and Pedestrian Advisory Committee
- Mary Roe, Palmetto Conservation Foundation, Vice Chairperson Bike and Pedestrian Advisory Committee
- Amy Johnson, Palmetto Cycling Coalition
- Candace Knox, Palmetto Health
- Hope Hasty, Richland County
- Tom Dodds, SCDOT
- Ed Sawyer, SCDOT
- Mike Sullivan, SCDOT
- Mark Pleasant, SCDOT
- Rob Bedenbaugh, SCDOT
- Catherine Graham, SC Interagency Office of Disability & Health
- Lauren Angelo, United Way of the Midlands
- Jenny Rooney, University of South Carolina
- Gene Bell, Watson Tate Savory, Bike and Pedestrian Advisory Committee Representative

Partnering Organizations





Why Plan for Pedestrians, Bicyclists, and Transit?

Imagine Columbia in 20 years as a place where people choose to walk, bike and/or take transit for some trips – not out of necessity, but because it is a convenient and enjoyable transportation choice. Development is dense and well-designed so that people have many of their everyday needs available by a short walk, bike ride or transit trip. Programs such as walking school busses and bike safety rodeos are commonplace in schools, and walk, bike and transit-friendly streets are prevalent so that parents feel perfectly safe letting their children walk or bike to and from school (freeing up valuable time in their daily lives as well). Transit is as reliable and convenient as driving a car and is easily accessible by anyone. As a result, it is utilized by people of all ages, backgrounds and abilities; providing better access for families without cars to get to jobs, retail and school; creating additional viable transportation options for elderly citizens; and allowing more college students and families to live car-free.

An increasing number of communities and their leadership are seeing the potential of a future like this one; a future where better walking, bicycling and transit are critical parts of transforming and revitalizing our communities, making them more desirable places to live and visit. This movement is a direct result of the nationwide demand for more livable communities and transportation options. In 2010, Transportation for America conducted a nationwide survey that showed 59% of Americans in rural and urban areas preferred a transportation future that “[improves] public transportation and making it easier to walk and bike over building more roads and expanding existing roads.” In addition, “66% [of respondents said] that they ‘would like more transportation options so they have the freedom to choose how to get where they need to go.’ And 73% [of respondents felt] they ‘have no choice but to drive as much as they do’, with 57% desiring to spend less time in the car.”

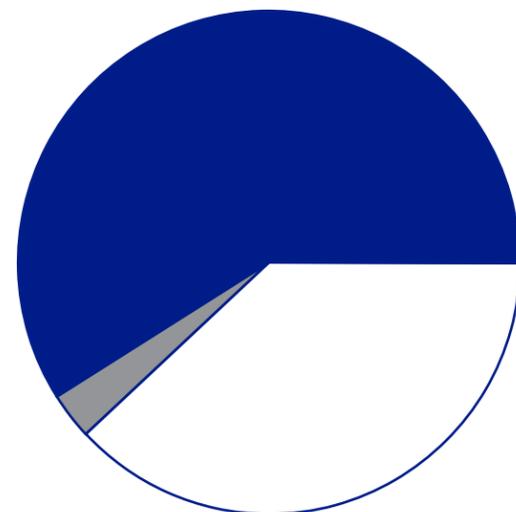
If Americans themselves were crafting the transportation bill, we would see a doubling of the share for public transportation; an ironclad system of accountability for restoring existing roads and bridges before simply building more of them, and a strong commitment to making all our streets safe enough for kids to bicycle to school or so seniors can walk to nearby restaurants or the drug store.”

- Geoff Anderson, T4 America

Preference to Reduce Traffic Congestion

Transportation for America - Future of Transportation National Survey

*Source: Transportation For America: <http://t4america.org/maps-tools/polling/2010survey/>



59% - We need to improve public transportation, including trains and buses, to make it easier to walk and bike to reduce traffic congestion

38% - We need to build more roads and expand existing roads to help reduce traffic congestion

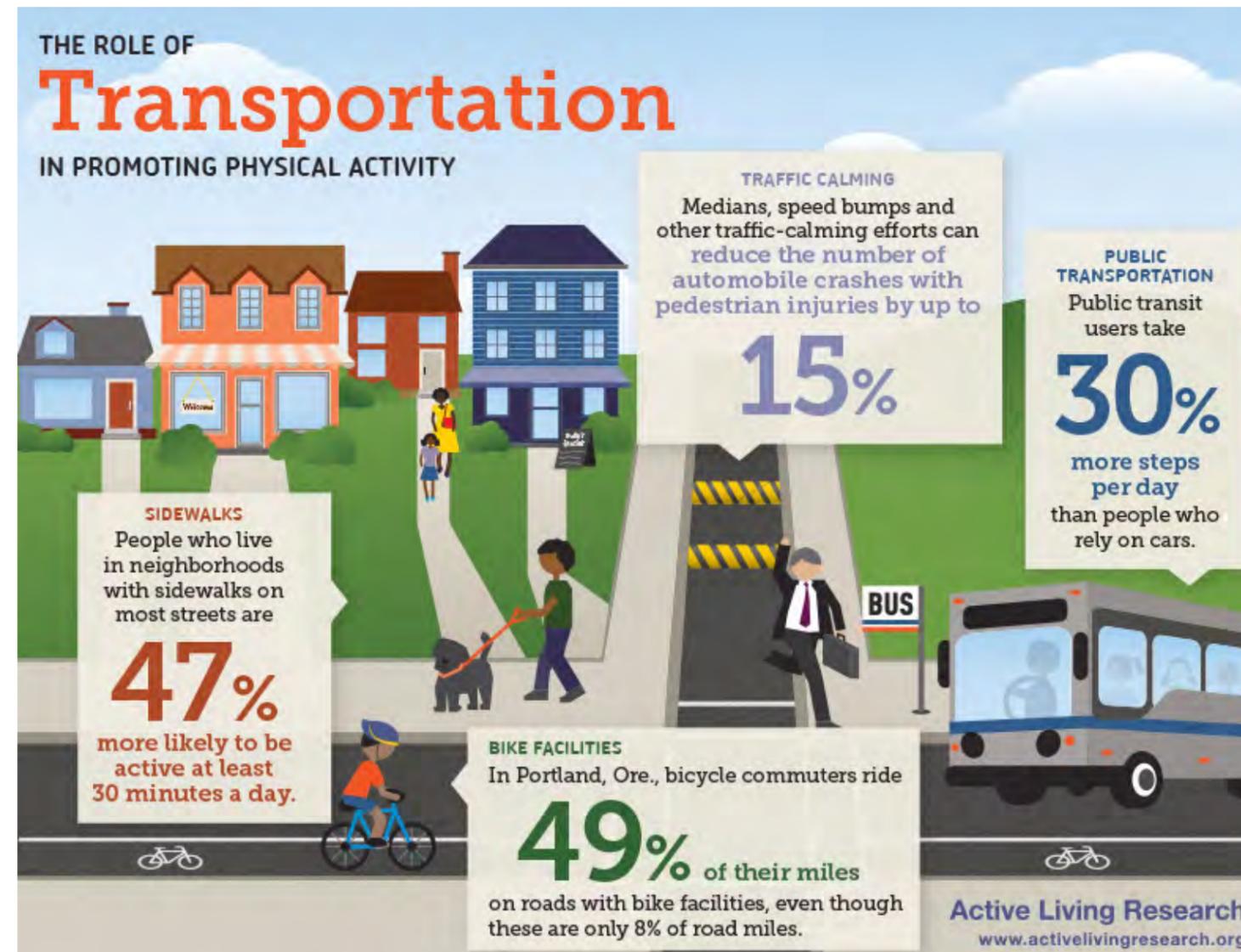


Benefits of Walking and Bicycling Summary

The “Facts on Active Transportation” shared on the following page present some of the acute health, safety and economic issues many cities today face and the ways in which improved active transportation and recreation can have a positive impact on these. In the following section, a summary of the estimated, quantified benefits that would result from increasing walking and bicycling rates and safety in Columbia is presented. These benefits offer a powerful statement regarding Columbia’s return on investment for implementing the recommendations in this Plan.

Active transportation can play a major role in building healthier and wealthier communities. The infographic to the right depicts some of the data collected showing just how much of a positive impact it can have.

(infographic source: Active Living Research)





The Facts on Active Transportation

ECONOMY

Issues

- **Traffic congestion in 2011 caused Americans in cities to travel an additional 5.5 billion hours, purchase an additional 2.9 billion gallons of fuel, and spend an additional \$121 billion in gas.** This means, on average, each car commuter spends roughly 40 hours and over \$800 per year waiting in traffic.

Opportunities

- Reducing the number of vehicular lane-miles through road-diets and other methods decreases wear and tear from motor vehicles. Replacing these with pedestrian facilities, bicycling facilities or transit capacity increases transportation capacity with less investment.
- Reducing the dependence on personal motor vehicles decreases personal and family expenditures on autos, potentially saving thousands of dollars per family annually.
- Reports have shown that pedestrians and bicyclists spend more, on average, than motorists.
- Bikeways and trails across many regions and cities have been shown to have a major economic impact. For example, following the opening of the Greenville, SC Swamp Rabbit Trail in 2011, **most businesses along the trail saw a 30%-50% increase in sales after the trail opened, and businesses that relocated to the trail observed a 30% to 90% increase in sales.**
- **Pedestrian and bicycle infrastructure projects create 8–12 jobs per \$1 million of spending.** Road infrastructure projects create 7 jobs per \$1 million of expenditures (Garrett-Peltier, 2011)
- Focusing investment in Pedestrian and Bicycle Infrastructure Improvements has proven to be more cost effective than vehicular infrastructure across the board.

SAFETY

Issues

- Higher traffic speeds result in reduced driver response times and increased accident severity. **A chance a pedestrian would survive if hit by a car travelling at 20 mph is 95%. This percentage is reduced to 60% at 30mph and 20% at 40mph.**
- Nationally, there were over 33,500 traffic fatalities reported in 2012. **The Alliance for Bicycling and Walking reports that 14.9% of traffic fatalities are pedestrians or bicyclists, while only 11.4% of all trips are made either walking or bicycling.**

Opportunities

- Increasing the number of pedestrians and bicyclists along a corridor, and network-wide, by itself creates a safer environment for these users. Motorists expect the presence of these users and drive more cautiously as a result.
- Complete Streets Improvements that reduce crossing distances for pedestrians and bicyclists, highlight conflict zones, create dedicated roadway space for non-motorized users, reinforce safe roadway behavior, increase visual stimulation or a sense of enclosure, and/or actively reduce speeds through geometric roadway changes foster safer speeds and behavior among all roadway users.

HEALTH

Issues

- **“Obesity costs American companies \$225.8 billion per year in health-related productivity losses.”**
- **“The estimated annual health care costs of obesity-related illness are a staggering \$190.2 billion or nearly 21% of annual medical spending in the United States.** Childhood obesity alone is responsible for \$14 billion in direct medical costs.”

Opportunities

- A recent study shows that people who live within 0.6 miles of a pedestrian and bicycle path get 45 minutes more of exercise a week, on average.
- “A 5% increase in walkability [has been found] to be associated with a per capita 32.1% increase in time spent in physically active travel, a 0.23-point reduction in body mass index, 6.5% fewer vehicle miles traveled, 5.6% fewer grams of oxides of nitrogen (NOx) emitted, and 5.5% fewer grams of volatile organic compounds (VOC) emitted.”
- Studies have shown that increased amounts of physical exercise, including walking and bicycling, improves mental well-being.



Columbia Active Transportation Demand and Benefits

The project team conducted a demand and benefits analysis to estimate the potential benefits that Columbia could realize by becoming a more walk and bicycle-friendly City. The analysis calculated these benefits based on existing data gathered from sources such as the US Census combined with economic impact assumptions, health assumptions, and environmental/air quality impact assumptions gathered from nationally-accepted studies. A detailed breakdown of this analysis and the results can be found in **Appendix A**.

In summary, the demand analysis revealed that Columbia residents are already walking, biking, and accessing transit with a combined total of **40 million trips annually. This equates to a total of 30 million miles traveled by bike or on foot each year and about 9 million hours of moderate intensity physical activity.**

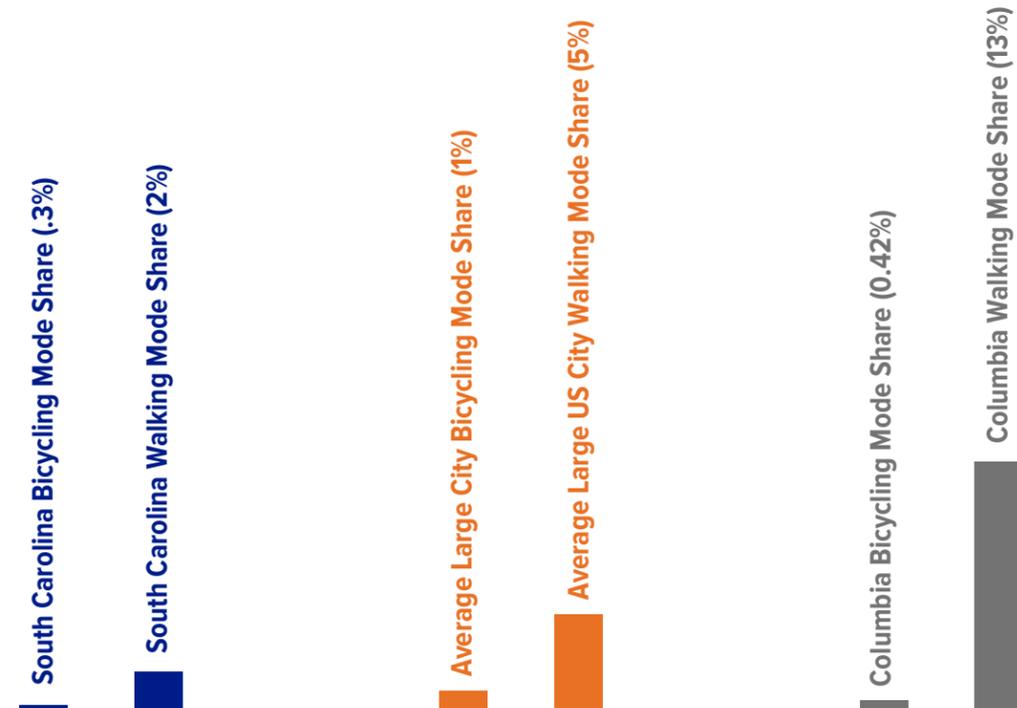
When translating existing demand into measurable benefits to the Columbia community, the analysis revealed that **Columbia**

is already realizing over \$14 million in community-wide benefits from existing walking activity, and over \$1 million in community-wide benefits from existing bicycling activity.

With incremental increases in mode share for walking and bicycling, those monetary benefits will grow exponentially, equating to a significant return on investment when it comes to walking and bicycling infrastructure, policies, and programs.

By increasing walking rates by two percentage points and doubling the current bicycle mode share, Columbia could increase those benefits to more than \$19 million in community-wide impact. By increasing walking mode share by a total of four percentage points and reaching the bicycling mode share of a peer Silver-level Bicycle Friendly Community (see text box for more info on the Bicycle Friendly America Program) [insert text box], **Columbia could realize an estimated \$27.7 million in economic benefits resulting from walking and bicycling activity, nearly doubling the current estimated benefits.**

The following page presents a snapshot of the benefits of increasing walking and bicycling in Columbia. Increasing walking and bicycling rates not only have positive qualitative impacts on resident health, livability and the environment, but can have substantial economic benefits as well.

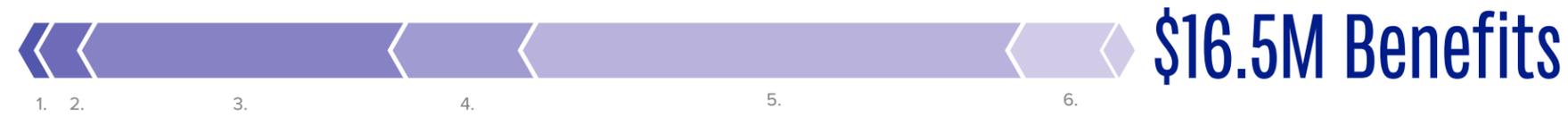


The graphics to the left show how Columbia compares with averages for walking and bicycling and national large city averages. While Columbia ranks high in the Country for existing walking rates, there is ample room to improve in terms of walking and bicycling rates and safety.



BENEFITS SNAPSHOT

Columbia Current Walking Mode Share (13%) and Current Bicycling Mode Share (0.42%)



2% Walking Mode Share Increase (15%) and Double Bicycling Mode Share (0.84%)



Example 4% Walking Mode Share Increase (17%) and Silver-Level Bicycle Friendly Community Bicycling Mode Share



1. Reduced Vehicle Emissions Costs
 2. Reduced Traffic Congestion Costs

3. Reduced Vehicle Crash Costs

4. Reduced Road Maintenance Costs

5. Household Vehicle Cost Savings

6. Health Care Cost Savings

ACCESS TO TRANSIT

EVERY TRANSIT-USER IS A PEDESTRIAN AND/OR BICYCLIST

Pedestrian and bicycle access to transit stops is critical to the safety and convenience of transit users in Columbia. Share your thoughts on how to create more transit stops in Columbia that provide safe and comfortable access for pedestrians and bicyclists.



WA
A Project of
WW

A LACK OF SIDEWALKS, ADA-ACCESSIBLE FEATURES, OR OTHER KEY ELEMENTS OF PEDESTRIAN CONVENIENCE, AND OVERALL



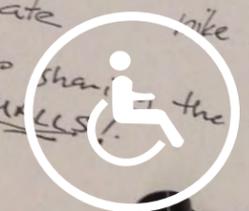
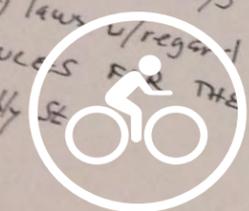
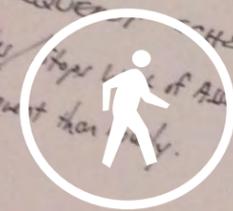
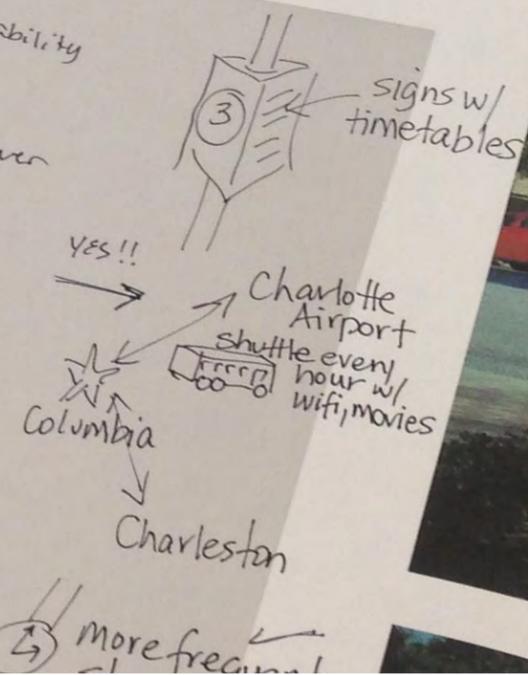
TRANSIT STOPS/ROUTES IN NEED OF BETTER AND BICYCLE ACCESS?

WHAT WOULD MAKE TRANSIT IN COLUMBIA MORE CONVENIENT AND PRACTICAL FOR YOU?

BICYCLE RACKS ON BUSES, VEHICLE FEATURES ARE CRITICAL TO PEDESTRIAN PRACTICAL, AND INVITING C

How do I connect residential?
to connect our urban core... these
lines are more core streets should
be/bike intersections
nearby. Could create
it. Fix it, please!

Cheaper non-stop buses to Charlotte's Charleston
Better communication of bus/shuttle times & ensure reliability
Bus shelters
More frequent stops
Cues that come more frequently so you don't wait forever for the next bus.
Shade - @ Stops and sidewalks to stops
Many stops don't feel safe -- sketchy areas
Smart streets - sidewalks + protected bike lanes
Neighborhood connections to Greenway + major East West North South bike routes
Timeliness! #8 is always late
Enforcing existing laws w/regard to sharing the road.
FREQUENT SCHEDULES FOR THE MALLS!
Routings for bus of Assembly SE
More frequent than...





WALK BIKE COLUMBIA: PROJECT VISION, GOALS AND OBJECTIVES

Introduction

The infrastructure improvements, policies, and programs recommended in Walk Bike Columbia are shaped by the Plan's vision, goals and objectives. The vision, goals, and objectives are developed by the Project Advisory Committee with input from agency staff and based, in part, on:

- stakeholder focus groups and broad public outreach
- existing vision and goal statements of prior city and regional planning efforts,
- nationally-recognized performance measures for pedestrian and bicycle planning, and
- the League of American Bicyclists' (LAB) feedback for Columbia's 2013 Bicycle Friendly Community application.

The following is a unique vision statement and related goals and objectives for Walk Bike Columbia. The objectives serve as performance measures, allowing Columbia and its partners to evaluate its progress towards and the impact of implementing the Plan's recommendations:

Transit is an important component of this planning effort . To increase the use of transit, and effectively increase the range of pedestrians, transit stops must be accessible by sidewalks. In addition, bicycles and bike share are both effective at extending the effective range of transit.

Vision Statement

Walk Bike Columbia envisions an expanded and ADA-accessible network of transit, sidewalks, greenways, trails, and on-street bicycle connections linking people to jobs, schools, destinations, adjacent communities, and one another. The network serves residents, commuters, students, and visitors alike. Walking, biking and transit are an integral part of City projects, policies, and programs and are perceived as routine, efficient, safe, and comfortable options for both transportation and recreation. People of all ages and abilities enjoy walking and biking and benefit from enhanced quality of life, public health, and economic opportunity.





Goals and Objectives

GOAL 01

Choice - Provide a range of transportation options to advance Columbia’s multimodal linkages and transportation culture.

Objective 1-1: Expand the range of ways to move throughout the city.

Objective 1-2: Implement a phased bike share system that complements and expands the transit and pedestrian networks.

Objective 1-3: Connect walking and bicycling infrastructure improvements with transit stops for **last-mile linkages**.

Objective 1-4: Increase the number of bike-on-bus trips by 50% by 2018, and 100% by 2020.

GOAL 03

Connectivity and Convenience – Biking, walking, and using transit for transportation will be easy, efficient, and routine activities.

Objective 3-1: Connect residents and visitors with on- and off-street pedestrian and bicycle facilities to destinations and activity centers throughout the city.

Objective 3-2: Integrate transportation and land use policies to encourage sustainable growth that encourages walking, bicycling and transit.

Objective 3-3: Prioritize pedestrian and bicycle routes between the Three Rivers Greenway, the Statehouse, USC campus, and each of the major business districts in downtown.

Objective 3-4: Prioritize pedestrian and bicycle routes from neighborhoods to transit stops, and from neighborhood to neighborhood.

GOAL 02

Accessibility – Institutionalize universal design principals to meet the needs of all modes and all users, including children, families, the aging, and those with disabilities.

Objective 2-1: Update design guidelines to meet current best practices of ADA-accessibility, transit access, and safe and innovative pedestrian and bicycle facilities.

Objective 2-2: Upgrade streets of all typologies, including transit corridors, based on improved accessibility guidelines to meet the needs of all users.

Objective 2-3: Expand development standards to require bicycle parking at retail, commercial, civic, and employment uses and multi-family housing.

Objective 2-4: Establish short-term and long-term bicycle parking at all major transit stops.

Objective 2-5: Establish form-based codes or similar development standards to ensure setbacks, parking lots, and other street-level design elements prioritize pedestrian and bicycle access.

Objective 2-6: Reduce the demand for costly paratransit trips as result of infrastructure improvements aimed towards pedestrians with mobility or visual impairments.

GOAL 04

Safety and Comfort – Improve pedestrian and bicyclist safety while designing attractive, welcoming, and comfortable streets, trails, and greenways for all users.

Objective 4-1: Reduce the number of bicyclist injuries and fatalities by 20% by 2018 and by 40% by 2020.

Objective 4-2: Reduce the number of pedestrian injuries and fatalities by 20% by 2018, and by 40% by 2020.

Objective 4-3: As a long-term goal, strive to eliminate all traffic fatalities, across all transportation modes.

Objective 4-4: Continue Columbia’s tradition of tree-lined streets while incorporating low-stress facilities such as wider sidewalks and innovative bike treatments.

Objective 4-5: Incorporate intersection safety and accessibility improvements for pedestrians and bicyclists within corridor improvement projects.

Objective 4-6: Develop off-street facilities to meet national best practices in design, providing a safe and inviting environment for all ages and ability levels.



GOAL
05

Awareness - Education, encouragement, and enforcement related to biking and walking will ensure all residents and visitors feel confident biking and walking throughout Columbia.

Objective 5-1: Generate awareness among motorists, pedestrians, and bicyclists of their rights related to safe and courteous use of roadways.

Objective 5-2: Provide educational opportunities and encouragement programs specifically targeted to the “interested but concerned” group of existing and potential bicyclists, including families and children.

Objective 5-3: Ensure that education and encouragement programs for transit, walking, and biking reach all socioeconomic groups, geographic locations, genders, races, and walks of life.

Objective 5-4: Utilize targeted enforcement to discourage unsafe behaviors of motorists, Licensed Commercial Drivers, pedestrians, bicyclists, and transit users.

Objective 5-5: Develop and promote an easy-to-read User Map & Guide, supported by wayfinding signage, for the combined transit, pedestrian, and bicycle network.

GOAL
07

Implementation – Local leadership, coordination, and funding will allow the continued growth of the pedestrian and bicycle network as well as opportunities for bike sharing.

Objective 7-1: Work across jurisdictions, departments, and organizations to achieve coordination on short-, medium-, and long-term transportation-related goals and plans.

Objective 7-2: Establish dedicated funding amounts and fundraising goals for implementation of the Plan.

Objective 7-3: Implement at least six recommendations of the Plan within six months of adoption with a goal of implementing at least one recommendation in each of the 5 E categories within 1 year of adoption.

Objective 7-4: Establish an annual work plan of programmatic, policy, and infrastructure recommendations ready for implementation, for pedestrians, bicyclists, and transit users.

Objective 7-5: Closely follow the Implementation Plan included as a component of this planning effort to **build 50 miles of on-street bike facilities by 2017.**

Objective 7-6: 30 miles of greenway are currently programmed with penny sales tax funds within the Columbia urban services area. The city should **build 20 miles of off-street, paved shared-use paths or greenways by 2020.**

Objective 7-7: Identify non-profit and private sector partners to lead community-based education and encouragement programs.

Objective 7-8: Designate a staff member and/or **establish a new staff position dedicating at least 50% of time to implementation of the Plan.**

GOAL
06

Usage – The transit-, walking-, and biking-environment will inspire movement in everyday life.

Objective 6-1: Maintain a walking mode share at or above current levels, remaining one of the highest in the country.

Objective 6-2: Double transit mode share by 2020, establishing a level of usage comparable to the national average.

Objective 6-3: Double bicycle mode share by 2020, establishing a level of usage comparable to peer BFC-designated cities.

Objective 6-4: Establish and maintain an annual counts program, documenting trends in pedestrian and bicycle activity.

Objective 6-5: Document an annual increase in physical activity levels among Columbia residents, ultimately reducing rates of obesity and related chronic diseases.

GOAL
08

Evaluation – The City will measure progress towards advancing the vision and goals of Walk Bike Columbia.

Objective 8-1: Develop and publish a bi-annual report summarizing progress in implementing the transit, walking, and bicycling recommendations of the Plan.

Objective 8-2: Coordinate annual pedestrian and bicycle counts with planned infrastructure investments to measure impacts.

Objective 8-3: Conduct bi-annual analysis of pedestrian and bicycle collision data to measure progress towards safety goals and objectives.

Objective 8-4: Maintain up-to-date GIS inventory of pedestrian, bicycling, and transit facilities including ADA improvements.

Objective 8-5: Achieve Silver-level BFC by 2018 and Gold-level BFC by 2020.

Objective 8-6: Achieve WFC status by 2015, Gold-level by 2018, and Platinum-level by 2020.

TRANSPORTATION IS ABOUT MORE THAN ASPHALT, CONCRETE AND STEEL. ULTIMATELY IT IS ABOUT PEOPLE. IT IS ABOUT PROVIDING PEOPLE WITH THE OPPORTUNITY FOR A SAFER, HAPPIER AND MORE FULFILLING LIFE.



-- RODNEY SLATER,
FORMER US SECRETARY OF TRANSPORTATION



EXISTING CONDITIONS: PLANS, POLICIES, AND DESIGN

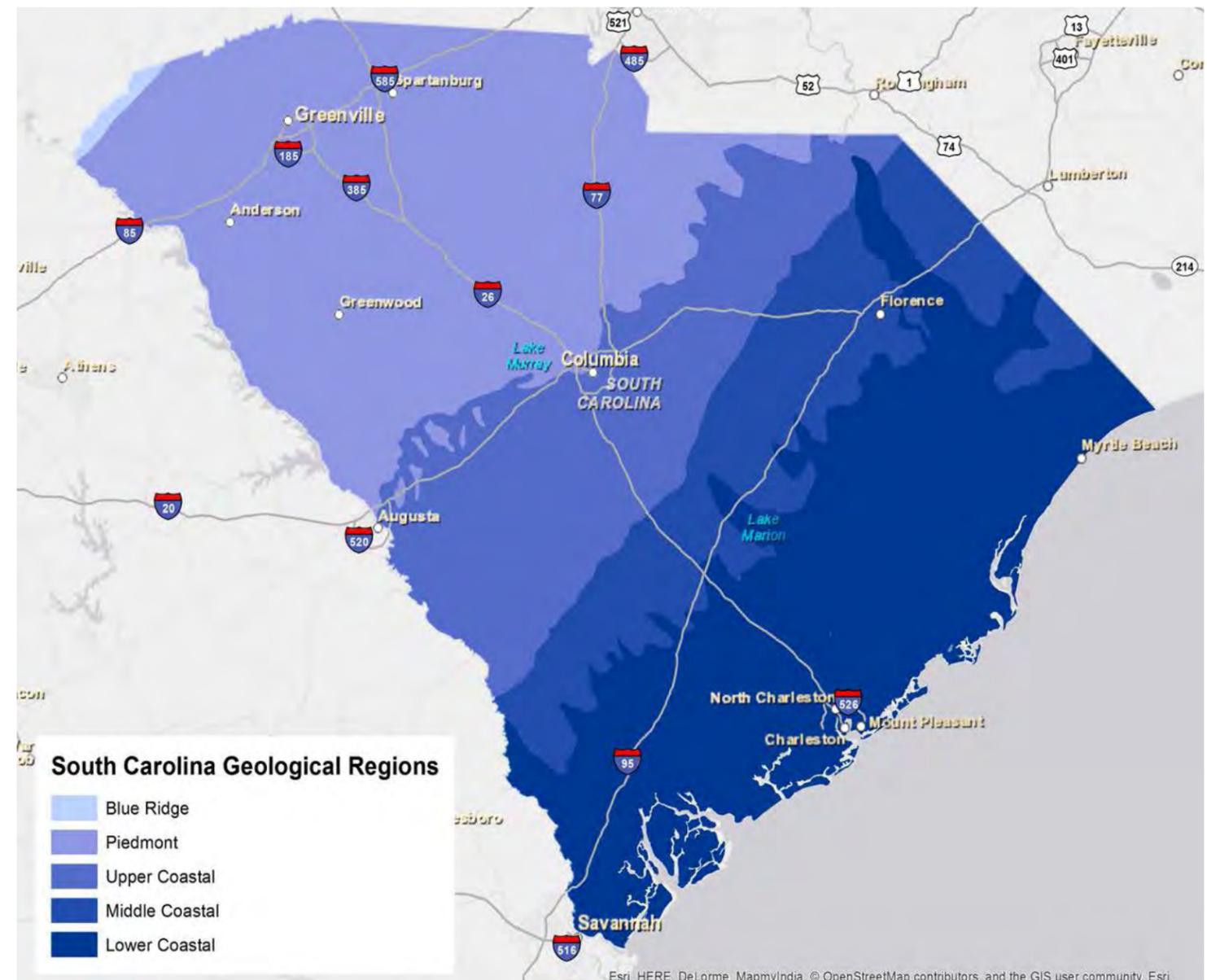
The scope of this planning effort encompasses pedestrian, bicycle and transit activity within the Columbia, SC city limits. However, this plan acknowledges that the City of Columbia's transportation patterns are affected by several surrounding jurisdictions such as Cayce, West Columbia, Irmo, Forest Acres, Arcadia Lakes, Lexington, and Springdale. It also considers several areas around the Columbia city limits that are priority areas for annexation into the city limits.

Columbia is a mid-sized city in the Midlands region of South Carolina. The City is within the Upper Coastal or Sandhills landform region, which is characterized by flat terrain and rolling hills. However, the rivers and creeks that transect the city - such as The Broad/Saluda/Congaree Rivers to the west and Gills Creek to the east - are the cause of a substantial amount of grade change in areas such as south of downtown Columbia. Columbia's climate is characterized by hot summers and mild falls, winters and springs, with an average of 217 sunny days a year. All of these conditions make Columbia an ideal city for active transportation most of the year.

Walk Bike Columbia is a master plan for the pedestrian and bicycle network, with a focus on walking and bicycling as "feeder modes" for Columbia's larger transit network. A safe and accessible pedestrian network is key to an effective transit network and vice versa. Without accessible pedestrian connectivity to stops, the effective transit network is greatly reduced; and a strong transit network can greatly expand the effective range of someone heading to a destination by foot.

Likewise, an accessible bike network can expand the range of transit significantly. If a transit station is a 20 minute walk from someone's origin, but only a 5 minute bike ride, this may be the difference in choosing to take a car or take transit. The key to encouraging people to bike to transit is to make it convenient,

comfortable and safe. For example, installing separated bike facilities to the transit stop, providing end-of-trip facilities such as secure bike parking at the stop, or planning bike share station placement around transit lines.





Going for Gold! Walk-Friendly and Bike-Friendly Community Assessment



Introduction

The Walk Friendly Community (WFC) and Bicycle Friendly Community (BFC) programs are two national initiatives designed to encourage cities and towns across the country to improve the walking and bicycling environments in their communities and to recognize communities that are successfully doing so. The programs provide communities with invaluable resources related to pedestrian and bicycle planning, help communities identify projects and programs to improve the walking and bicycling environment, and also generate positive media attention at the national and local level for communities that earn a designation.

The BFC program is administered by the League of American Bicyclists, a national bicycling advocacy organization based in Washington, D.C. Since the program began, the League has awarded over 300 communities with “bicycle-friendly” status. There are currently 6 BFCs in South Carolina. In 2011, the Pedestrian and Bicycle Information Center, based in Chapel Hill, North Carolina, announced the development of the WFC Program. There are currently 47 “walk-friendly” designated communities around the country, but none yet in South Carolina.

Both the WFC and BFC program use the five “E’s” of pedestrian and bicycle planning as the framework for identifying successful biking and walking communities. The five “E’s” are: Engineering, Encouragement, Education, Enforcement, and Evaluation. Each program has its own detailed questionnaire that a city or town must complete online in order to apply for recognition. Five levels of award

designation are possible in the BFC program: Bronze, Silver, Gold, Platinum, and Diamond. The WFC program offers four award levels: Bronze, Silver, Gold, and Platinum. Both programs offer an Honorable Mention category, as well.

In 2008, Columbia applied for BFC designation and received a Bronze level award in 2008 and 2013. **Columbia is one of five Bronze level communities in South Carolina**, alongside Charleston, Greenville, Spartanburg, and Rock Hill. Hilton Head is the only Silver level community in the state; no South Carolina communities have reached Gold, Platinum, or Diamond BFC designation. There are two opportunities each year to apply to both the BFC and WFC programs: BFC deadlines are in the spring and fall of each year, and WFC deadlines are in the summer and winter of each year.

Appendix B of Walk Bike Columbia provides a BFC Action Plan setting clear action steps for Columbia to reach Gold level BFC status. This project also includes a completed WFC application for Columbia to be submitted in the spring of 2015, along with a WFC Action Plan for Columbia to become the first Walk Friendly Community in the state.

The following sections show the team’s initial walk-friendly and bicycle-friendly community assessment of Columbia. This evaluation provides a baseline for the BFC and WFC Action Plans as well as the City’s WFC application.





WFC Assessment

The WFC application involves a detailed list of questions organized around the 5 “E’s”. For the purposes of Walk Bike Columbia, the project team developed a BFC scorecard, which uses the WFC application framework to evaluate the current walking environment in Columbia. This scorecard is not intended to be a complete picture of WFC-readiness, but rather a useful snapshot of Columbia’s strengths and weaknesses based on our understanding of the selection criteria.

Based on the WFC scorecard:

- Columbia has been **successful at implementing a variety of Education & Encouragement programs** related to walking.
- Some Engineering and Enforcement practices and policies are positively influencing the walking environment, while others currently limit pedestrian activity and safety.
- **Evaluation & Planning for pedestrians is the area most in need of improvement.** The City currently lacks a dedicated pedestrian coordinator position, a full range of planning initiatives and policies related to pedestrian safety and accessibility, and long-term tracking of valuable pedestrian-related data such as crashes, motor vehicle traffic volumes and speeds, and pedestrian counts to target improvements and track progress.

With a total score of 15 out of 32 possible points, the City of Columbia is identified as a candidate for Bronze level WFC status. A higher range of points are needed to evidence a likelihood of attaining Silver (19-25) or Gold (26-32) level status.

Table 1 gives an overview of how Columbia scored in the 5 “E” categories for walking, and the complete results of the review can be found in **Appendix B**.

BFC Assessment

The BFC application involves a detailed list of questions organized around the 5 “E’s”. For the purposes of Walk Bike Columbia, the project team developed a BFC scorecard, which uses the BFC application framework to evaluate the current bicycling environment in Columbia. This scorecard is not intended to be a complete picture of BFC-readiness, but rather a useful snapshot of Columbia’s strengths and weaknesses based on our understanding of the selection criteria.

The BFC scorecard shows that:

- Columbia has a **strong collection of Education and Encouragement efforts** to develop a safer and more welcoming bicycling environment.
- Some Engineering and Enforcement initiatives promote bicycle safety, convenience, and comfort, but several policies and programs are lacking in these categories that could further improve Columbia’s bicycling environment.
- **Columbia scores weakest on Evaluation & Planning;** this planning process, the Bicycle and Pedestrian Advisory Committee, and the Safe Streets Save Lives Campaign provide a good foundation, but there is room for improvement. In particular, the City currently lacks a dedicated bicycle coordinator position and long-term tracking of valuable bicycle-related data, such as crashes, motor vehicle traffic volumes and speeds, and bicycle counts to target improvements and track progress.

With a total score of 18.5 out of 29 possible points, the City of Columbia shows its commitment to maintaining its BFC status and potential for a Silver level designation within the near-term. A higher range of points are needed to evidence a likelihood of attaining Silver (20-24) or Gold (25-29) level status.

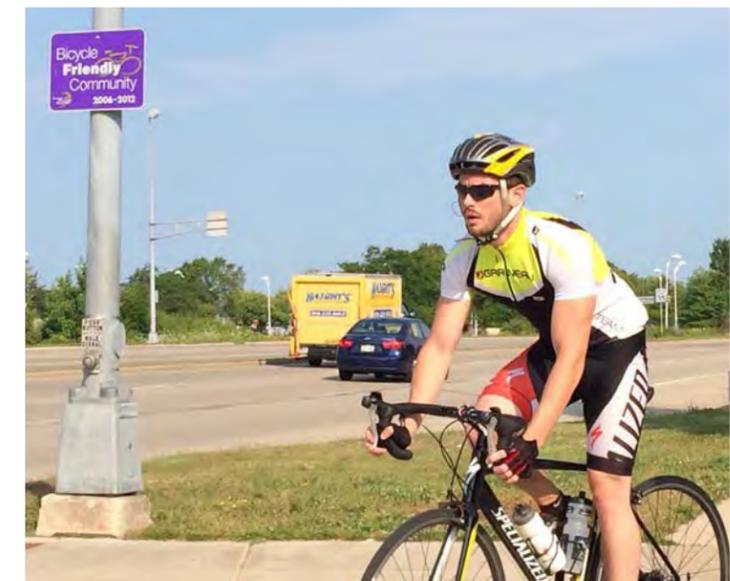
Tables 2 gives an overview of how Columbia scored in the 5 “E” categories for bicycling, and the complete results of the review can be found in **Appendix B**.

TABLE 1 – WALK-FRIENDLY COMMUNITY ASSESSMENT

Evaluation Category	Columbia Score	Total Points Possible
Engineering	4.5	8
Education and Encouragement	5.5	9
Enforcement	1.5	4
Evaluation and Planning	3.5	11
Total Score	15	32

TABLE 2 – BICYCLE FRIENDLY COMMUNITY ASSESSMENT

Evaluation Category	Columbia Score	Total Points Possible
Engineering	5.5	8
Education and Encouragement	8.5	11
Enforcement	2	4
Evaluation and Planning	2.5	6
Total Score	18.5	29





Planning and Policy Review

Introduction

This section provides a summary of pedestrian, bicycle, and transit planning-related efforts in Columbia. Twenty relevant plans were reviewed for information and recommendations relevant to walking and bicycling. The documents reviewed for this Plan are listed in **Table 3**, and detailed reviews of the documents listed here can be found in **Appendix C**.

Figures 1 and 2 on the following pages show existing conditions and planned pedestrian and bicycle projects within the City of Columbia.

Key Findings

These plans, studies, and reports help to identify the gaps that exist in the current pedestrian and bicycle network and underscore the demand for investment in improved facilities for walking and bicycling. **Several of the plans repeatedly stress the importance of developing complete streets that make the transportation network and local and regional destinations accessible not just by automobile, but also by foot, bike, and transit.** Key themes from previous planning efforts include:

- Improve pedestrian and bicycle connections to schools, parks, and employment centers; along major corridors; within commercial nodes; and within and between neighborhoods.
- Provide multi-use trails to link destinations throughout Columbia and the surrounding region.
- Improve pedestrian and bicycle access to transit with more sidewalks, bikeways, and amenities.
- Integrate complete streets design on new and existing roadways.

TABLE 3 – DOCUMENTS INCLUDED IN WALK BIKE COLUMBIA! BACKGROUND REVIEW

Plan	Agency	Year
<i>Columbia Owens Master Plan</i>	South Columbia Development Corporation and Columbia Empowerment Zone	2002
<i>A Plan for the Redevelopment of East Central City</i>	East Central City Consortium, City of Columbia	2004
<i>The Master Plan for The Villages of North Columbia</i>	City of Columbia	2005
<i>Five Points “FutureFive” Redevelopment and Master Plan</i>	The Five Points Association	2006
<i>Lower Waverly Catalyst Redevelopment Plan</i>	City of Columbia Planning Department	2006
<i>Bike and Pedestrian Pathways Plan</i>	CMCOG	2006
<i>Central Midlands Commuter Rail Feasibility Study</i>	CMCOG	2006
<i>Innovista Master Plan</i>	University of South Carolina, City of Columbia	2007
<i>Midlands Tomorrow Household Travel Survey Report</i>	CMCOG	2007
<i>Midlands Tomorrow – 2035 Long Range Transportation Plan</i>	CMCOG	2008
<i>South Carolina Statewide Multimodal Transportation Plan – At a Crossroads</i>	South Carolina Department of Transportation (SCDOT)	2008
<i>The Columbia Plan: The Comprehensive Plan for Columbia, South Carolina, 2008-2018</i>	City of Columbia Planning Department	2008
<i>Southeast Lower Richland Sub-Area Transportation Study</i>	Central Midlands Council of Governments (CMCOG)	2008
<i>Columbia Area Transportation Study Transportation Improvement Program</i>	CMCOG	2009
<i>Regional Pathways Plan</i>	CMCOG	2010
<i>University of South Carolina Vision for a Sustainable Future: 2010 Master Plan</i>	University of South Carolina	2010
<i>Broad River Road Corridor and Community Master Plan</i>	CMCOG and Richland County	2010
<i>Irmo/Dutch Fork Sub-Area Transportation Study</i>	CMCOG	2010
<i>Central Midlands Regional Transportation Authority Comprehensive Operational Analysis Report</i>	Central Midlands Regional Transit Authority (CMRTA)	2010
<i>Central Midlands Regional Transportation Authority Park-and-Ride Study</i>	CMRTA	2010
<i>Columbia Connectivity: Linking Main Street and the Vista</i>	Urban Land Institute - South Carolina	2011
<i>COMET Vision: 2020</i>	CMRTA	2012
<i>Rosewood Plan: A Corridor & Neighborhood Plan</i>	City of Columbia Planning & Development Department	2012
<i>Joint Land Use Study Implementation for Fort Jackson – McGrady Training Center – McEntire JNGB</i>	CMCOG	2013
<i>City of Columbia Parks and Recreation Master Plan</i>	City of Columbia	2013
<i>Newberry-Columbia Alternatives Analysis</i>	CMCOG	2014
<i>Devine Street/Fort Jackson Boulevard Commercial Node Plan</i>	CMCOG	2014



Municipal Code Review

Introduction

The consultant team reviewed existing development policy and regulatory documents for the City of Columbia. This task included a review of available policies and standards directly related to pedestrian and/or bicyclist safety within the City. The review focused on the City’s Code of Ordinances (CO), but also included a review of the City of Columbia 2010 Complete Streets Resolution.

The full policy and regulatory review is provided in the Policy Matrix found in **Appendix C**.

Planning and development regulations provide guidelines and requirements for most of what is developed in the City and as such are fundamental to the area’s walk- and bike-friendliness. **Since most new development in Columbia is provided through private investment or investment by non-City agencies, the provision of walk- and bike-friendly development policies and ordinances are one of the most cost-effective means that the City has to establish walkable and bikeable infrastructure for its neighborhoods and districts.**

Key Findings

The City of Columbia has a number of very positive policies and regulations that support walkable and bikeable environments. However, it is also evident that the City could significantly strengthen many areas of policy regarding complete streets (including transit access), bicycle parking, and pedestrian and bicycle facility requirements and enhancements within the context of development ordinances. Policies and standards geared toward retrofit of existing facilities are also recommended and discussed within the attached policy matrix. below describes key strengths identified within the existing ordinances and policies of the City, as well as priority areas for improvement.

Conclusion

What is evident is that a more holistic approach to facilitating walkable and bikeable new development is required. The City development standards are very much oriented towards automobile access first and foremost. Walkability begins with access to destinations and to the extent politically feasible, the City and its partners at County and State agencies should promote development that is proximate to existing infrastructure, residential development, and existing destinations for education, employment, commerce, and civic activities. This begins with allowing and promoting a mixture of land uses and density of land uses that support walking and bicycle access in the built up areas of the city. For current residents who do not drive or have access to a car and for future residents and visitors who are looking to visit or invest in a place where walking and biking are part of the transportation options, walkable land use patterns are critical to quality of life.

Second, promoting “complete” infrastructure and transportation linkages between land uses is what is required to make sure that places that are proximate in distance are indeed comfortable and safe to walk or bike to and from. This will require a thorough review and refinement of existing development standards to ensure that pedestrian and bicycle access and access to transit is considered in every requirement from the development of sidewalks to provision of bicycle parking and street trees and pedestrian-scaled lighting. Development standards should also consider whether or not buildings and lots are oriented for pedestrian and bicycle access. **The City of Columbia recently adopted a Complete Streets resolution and endorsed the NACTO Urban Bikeway Design Guide, which are great first steps in this direction.**

The comments in the **Appendix C** tables outline many opportunities for making local development standards more pedestrian and bicycle friendly. This plan suggests that City staff and appropriate appointed committees develop proposed text amendments for any “low hanging fruit” amendments noted.

For more holistic changes, staff, committees, and the Plan committee members should incorporate changes into the upcoming comprehensive audit and rewrite of development standards over the next 12-18 months. The outcome of such an effort will be development standards that are predictable and sustainable for investors and developers, but that also promote active living, aging in place, quality of life, and transportation and recreation choices; and respect the local character of the City.

TABLE 4 – KEY STRENGTHS AND AREAS FOR IMPROVEMENT IN COLUMBIA ORDINANCES.

City of Columbia Ordinances and Policies	
Strengths	Priority Areas for Improvement
Complete Streets Resolution	Development of comprehensive Complete Streets design guidance for new development and public investment
Adoption of NACTO Urban Bikeway Design Guide	Require pedestrian improvements with new development and redevelopment (sidewalks, lighting, street trees, etc.)
Good base of ordinances supporting pedestrian and bike safety (including prohibition on using mobile devices while driving, etc.)	Develop bicycle parking requirements
Good ordinance language requiring property owner participation in sidewalk maintenance	Update very suburban, auto-oriented development standards to be more context-based and pedestrian-friendly
Clear language prohibiting obstructions to sidewalks	Develop policy and ordinances for improved access to transit and improved safety requirements for heavy commercial vehicle operation within the City



FIGURE 1 - EXISTING AND PLANNED PEDESTRIAN INFRASTRUCTURE

Existing and Planned Pedestrian Infrastructure

Existing Infrastructure

- Existing Paved Trail
- - - Planned/Committed Trail
- Existing Unpaved Trail
- Existing Sidewalk

Penny Sales Tax Priority Projects

- Intersection Enhancement
- - - Sidewalk

Other Planned Infrastructure

- Planned Sidewalk

Palmetto Trail Master Plan Recommendations

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options

Legend

- COMET Route
- USC Shuttle Route
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body

0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

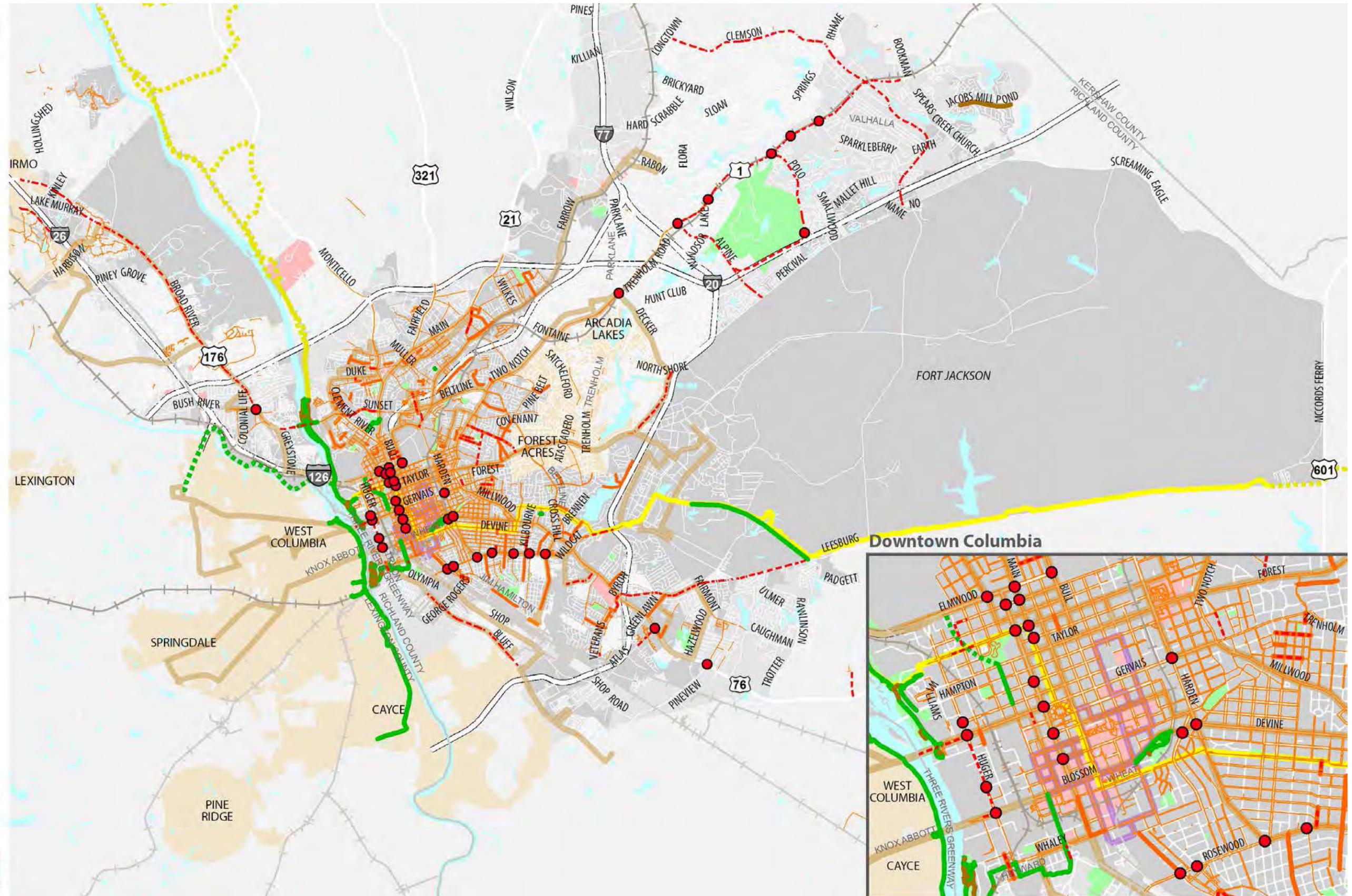


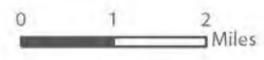


FIGURE 2 – EXISTING AND PLANNED BICYCLE INFRASTRUCTURE

Existing and Planned Bicycle Infrastructure

- Existing Infrastructure**
- Existing Bike Lane
 - Existing Sharrows
 - Existing Paved Trail
 - Planned/Committed Trail
 - Existing Unpaved Trail
- Penny Sales Tax Priority Projects**
- Intersection Enhancement
 - Bikeway
- Palmetto Trail Master Plan Recommendations**
- Existing Palmetto Trail
 - Palmetto Trail Gap Options

- Legend**
- COMET Route
 - USC Shuttle Route
 - Commuter Rail Line (Proposed)
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 - College
 - City of Columbia Limits
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 - Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

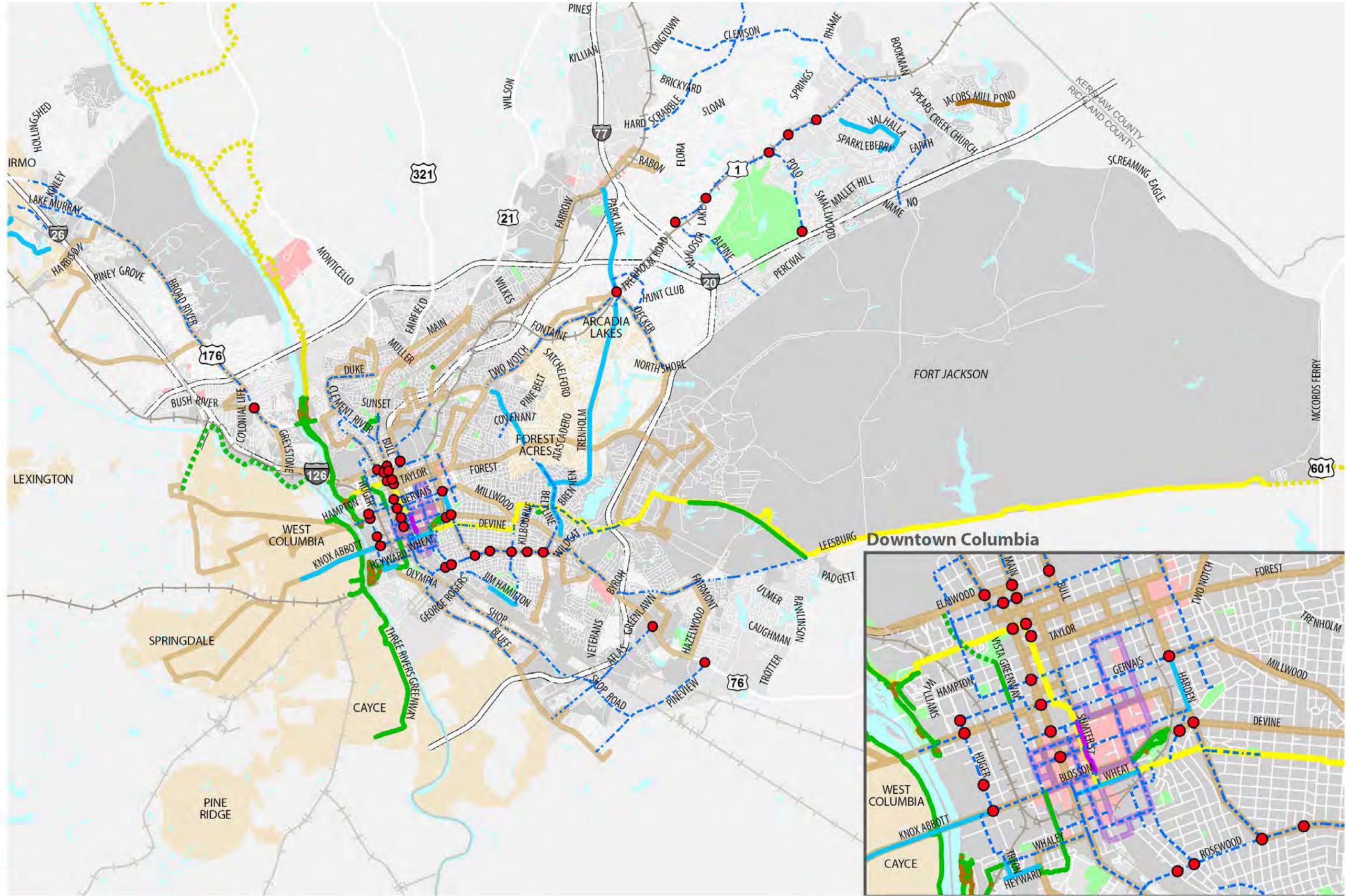




FIGURE 3 - COLUMBIA TRANSIT NETWORK

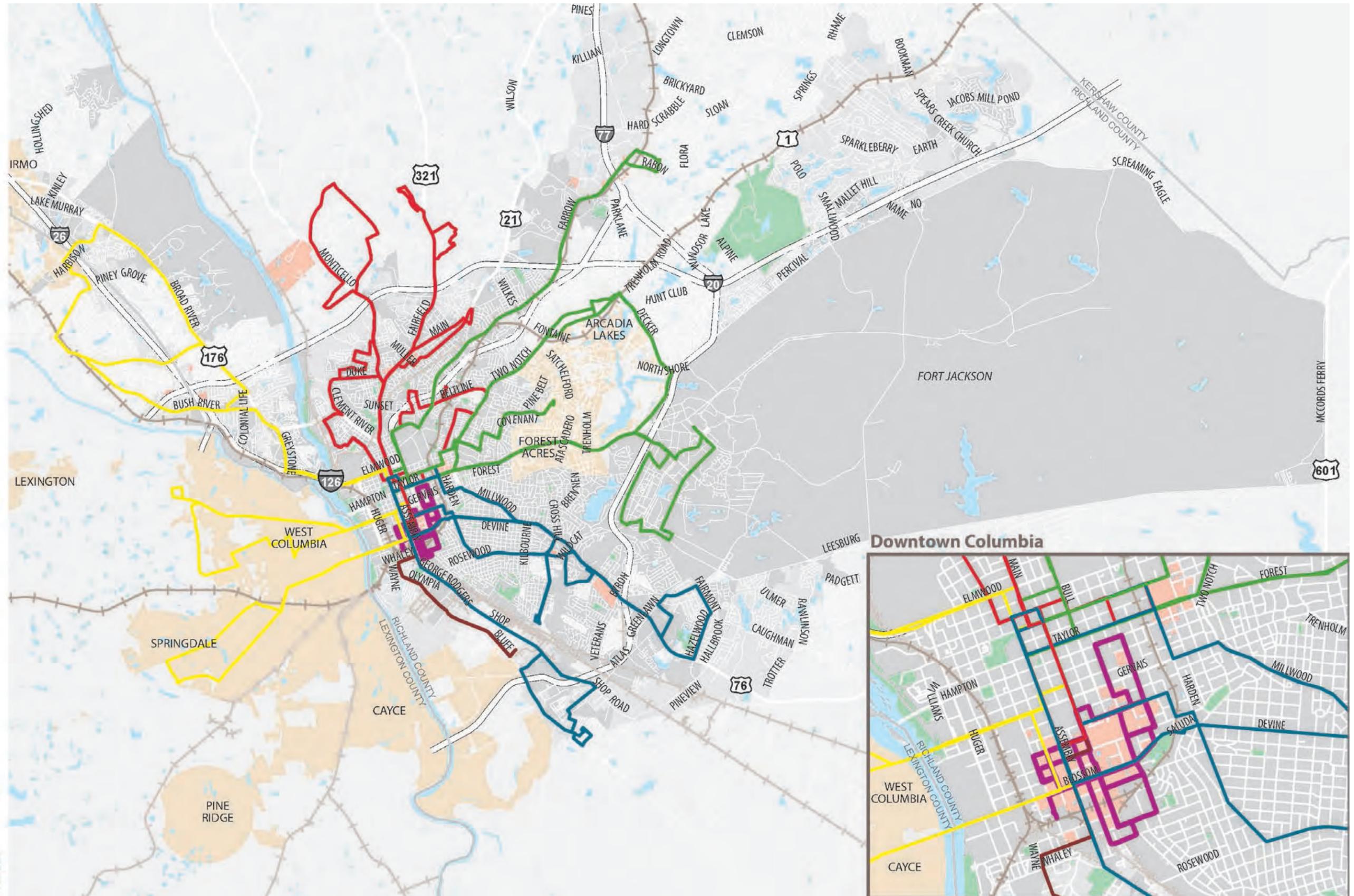
Columbia, SC Transit Routes

City of Columbia Transit Routes

- North Routes (6, 11/12, 30, 31, 101)
- South Routes (42, 201, 401, 601)
- Garnet Route
- East Routes (5, 15, 16, 17, 23)
- West Routes (26, 28, 34, 348)
- USC Shuttle Routes

Legend

- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created December, 2014.



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EXISTING CONDITIONS: USER NEEDS ANALYSIS

Public Involvement

The consultant team conducted a multifaceted public outreach effort over a period of four months, from May 2014 to August 2014. The purpose of the effort was to gather local knowledge and community input to guide the plan's development. The project team's public engagement events and efforts included the following:

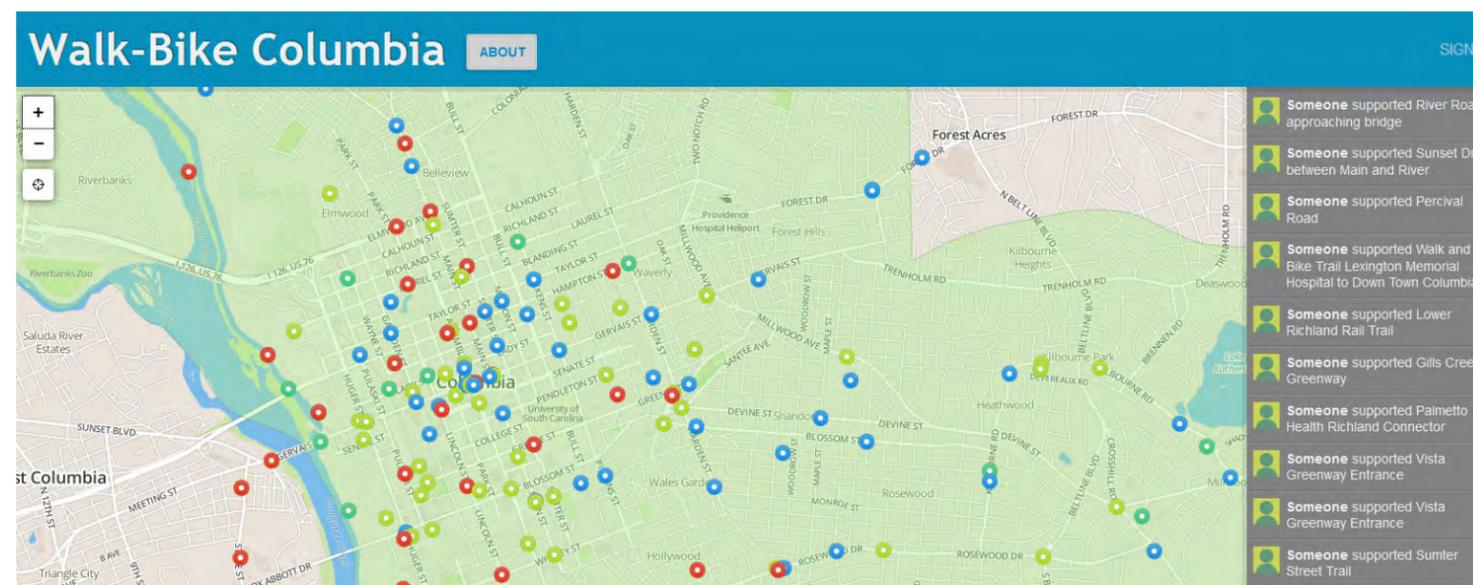
- 4 Steering Committee meetings: 25 committee members
- 4 public workshops with interactive project boards and maps: over 120 attendees

- 8 stakeholder focus groups: 90 invited stakeholders
- Citizen survey (available both online and in hard copy): 825 respondents
- Project website with project information, videos, and relevant links: 3,300 unique viewers
- Online interactive map and input tool: 282 points on the map and comments
- Staffed information booth on multiple days at the downtown transit center and Main Street Farmer's Market

The project team promoted these public involvement opportunities through broad distribution of flyers, posters, and postcards, social media, press releases, and TV ads on the City access channel. Spanish language interpreters attended public events and The COMET bus with bike rack was available for public meeting attendees to explore.

Public outreach efforts were offered across the city and through a variety of media in order to provide the representatives and residents of Columbia with many opportunities and different mechanisms for contributing to the Plan's development.

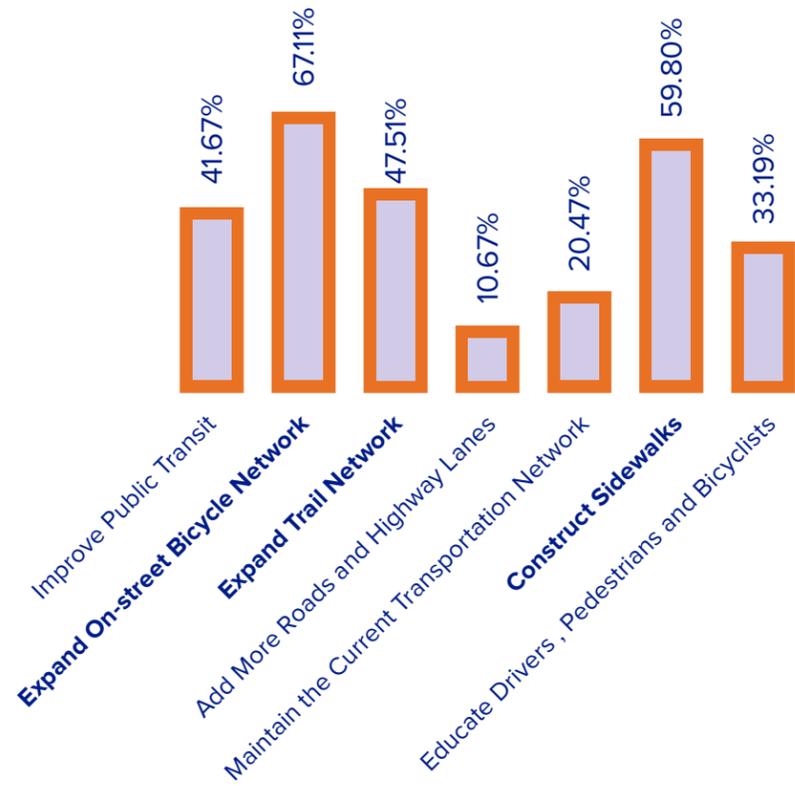
The Walk Bike Columbia public outreach process confirmed that Columbia citizens value access to active transportation and public transit. This is reflected in the low marks given to Columbia's existing pedestrian and bicycle network and its transit operations, as well as in the fact that 81 % of survey respondents said walking and bicycling improvements are "very important" and 61% of respondents said that transit improvements are "very important." Comments received through the public meetings and focus group meetings underscored this.



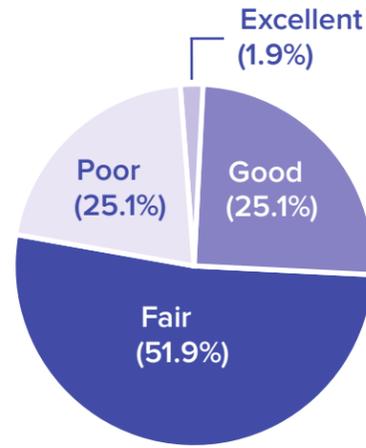
The image to the right shows a screenshot from the public online interactive mapping tool that allowed Columbia residents to input specific challenges and opportunities for walking, bicycling and transit access. The full report summarizing the public input process and results can be found in **Appendix D**.



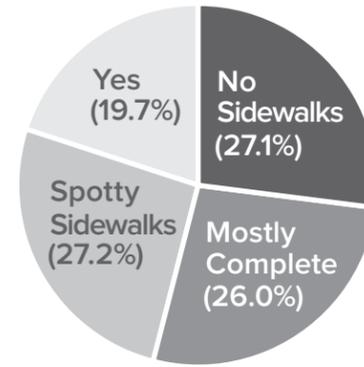
PLEASE SELECT YOUR TOP THREE TRANSPORTATION PRIORITIES FOR SPENDING OF TAXPAYER MONEY (WEB SURVEY QUESTION)



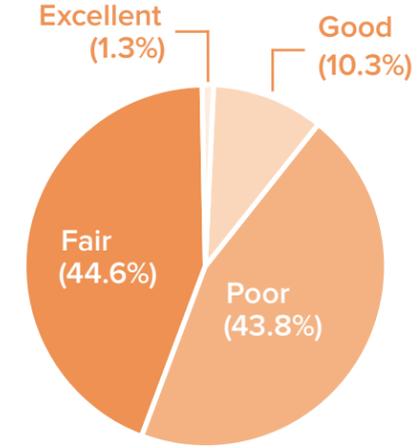
WALKING AND BICYCLING CONDITIONS QUESTIONS (WEB SURVEY QUESTIONS)



HOW DO YOU RATE OVERALL WALKING CONDITIONS IN COLUMBIA?

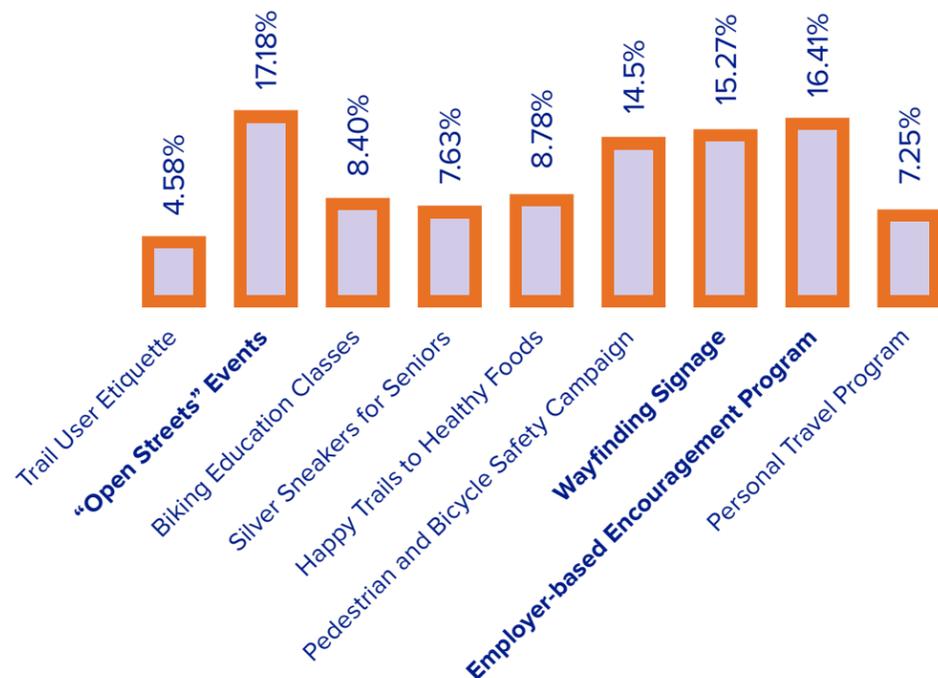


IS THE SIDEWALK NETWORK NEAR YOUR HOME COMPLETE?

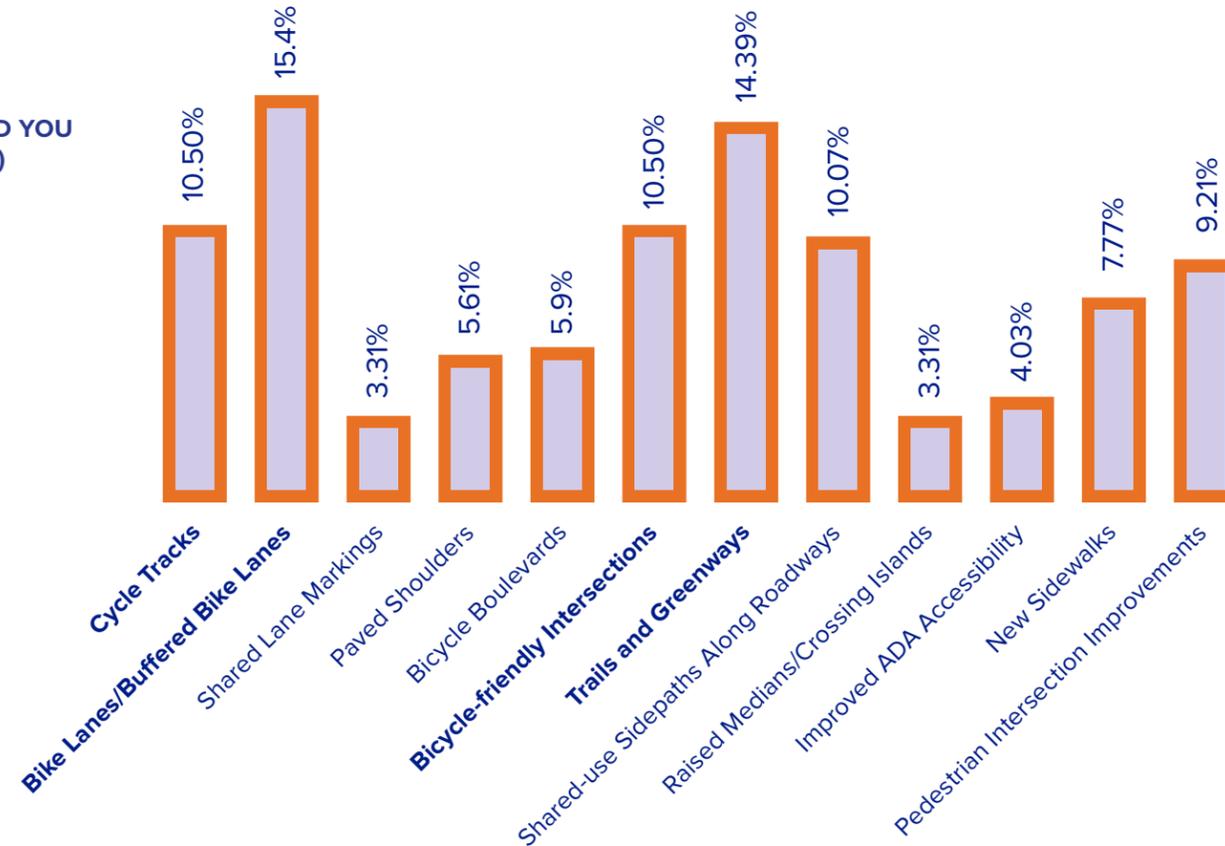


HOW DO YOU RATE OVERALL BICYCLING CONDITIONS IN COLUMBIA?

WHAT EDUCATION, ENCOURAGEMENT AND ENFORCEMENT PROGRAMS WOULD YOU LIKE TO SEE AROUND COLUMBIA? (PUBLIC WORKSHOP QUESTION - 262 VOTES)



WHAT PEDESTRIAN AND BICYCLE INFRASTRUCTURE IMPROVEMENTS WOULD YOU MOST LIKE TO SEE IN COLUMBIA? (PUBLIC WORKSHOP QUESTION - 695 VOTES)





Infrastructure and Transit Priorities

The primary concerns of residents when it comes to both walking and biking are the lack of safe roads and/or sidewalks, the need for improved design and/or maintenance of existing facilities, and the distance between destinations. The latter item points to a critical link between land use planning/land development and transportation planning/network development. The current efforts by the City and County to work collaboratively to update their land use plans and policies present a unique opportunity to address that important element. In addition to these priority concerns, citizens also noted lack of bicycle parking as a key deterrent to bicycling activity and transit users stressed the need to improve and enhance transit operations (route network, headways, and reliability) while improving walking and biking access to transit.

Regarding infrastructure improvements, Columbia citizens expressed a preference for sidewalks, trails, and shared-use paths and intersection improvements for both pedestrians and bicyclists. For on-street bicycle facilities, buffered bicycle lanes and cycle tracks are preferable to standard bicycle lanes or shared roadways. **Citizens also clearly stated neighborhood connectivity and access to parks and trails as city-wide priorities.**

Non-infrastructure Priorities

Based on the public input, the key non-infrastructure strategies for encouraging safe walking, bicycling, and transit usage that are likely to have an impact in Columbia fall into the following categories:

EDUCATION & ENFORCEMENT PRIORITIES:

- Safety education media campaigns
- Law enforcement stings targeted to motorists, pedestrians, and bicyclists
- Awareness campaign regarding the benefits and availability of walking, bicycling, and transit usage

ENCOURAGEMENT PRIORITIES:

- Employer-based incentives
- Wayfinding signage for the complete multi-modal network
- Informal, family-friendly events like 'Open Streets' (also known as Ciclovía)

EVALUATION PRIORITIES:

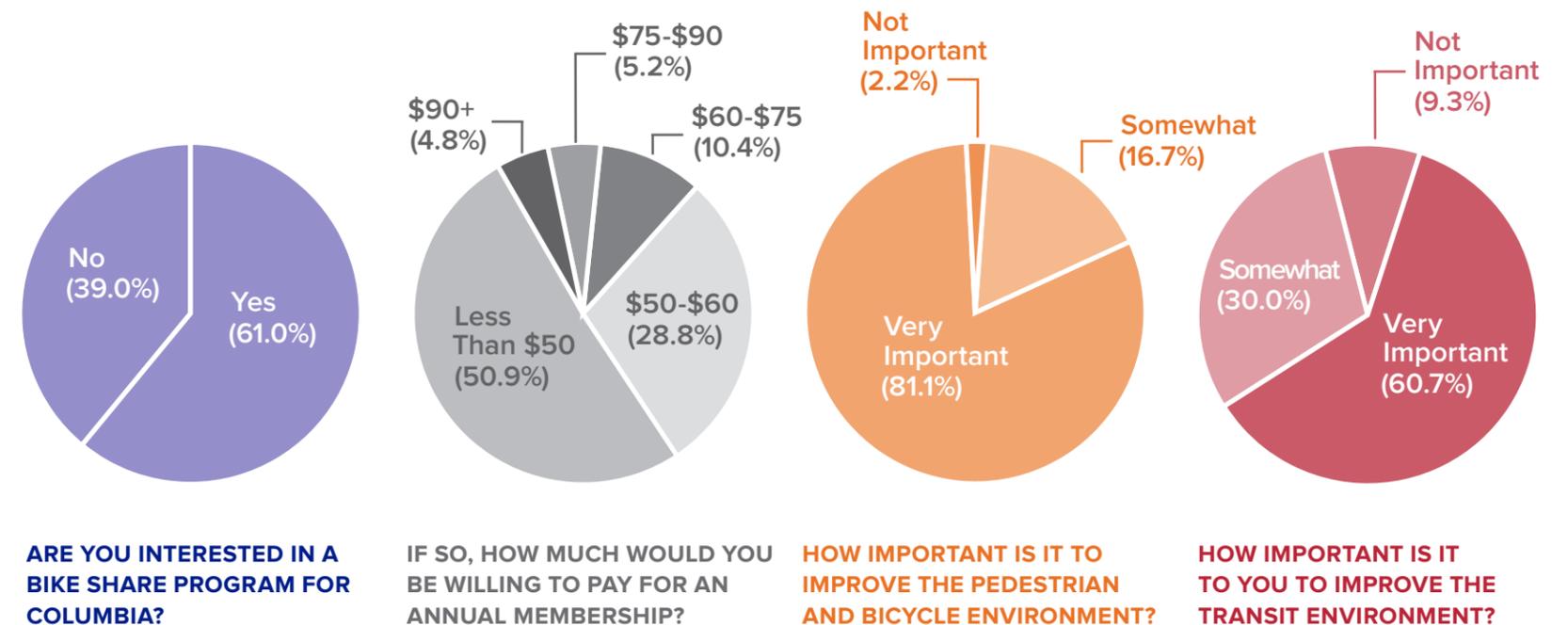
- Policies, plans, programs, and funding that prioritizes Safe Routes to Schools
- Policies, plans, programs, and funding that prioritizes Safe Routes to Transit
- Coordination of land use planning and transportation planning
- Updated and improved design standards and design guidance for pedestrian and bicycle infrastructure, transit stop infrastructure, bicycle parking, and ADA accessibility

Bike Share Priorities

A majority of public outreach responses support the concept of bike share in Columbia. Concerns regarding the distance between destinations in Columbia and the low levels of bicycling for transportation that currently exist were expressed in terms of potential bike share usage. For a local bike share program to be deemed successful, citizens and stakeholders identified the following as the primary outcomes:

- Improve transportation options and access to healthy living and active transportation.
- Reduce the number of cars on the road.
- Reduce the number of car trips and vehicle miles traveled in private vehicles.

BICYCLE SHARE AND TRANSIT PRIORITIES (WEB SURVEY QUESTIONS)





Pedestrian and Bicycle Counts

Overview

Annual counts conducted in a systematic manner provide strong benchmarking information on walking and bicycling activity and related benefits. Count data adds to Columbia’s understanding of existing pedestrian and bicycling patterns and needs, allows for more strategic planning of future bikeway and walkway investments, and provides a means of evaluating the impact of programs and facilities. **While count data will not provide comprehensive mode share data, it offers a snapshot of peak pedestrian and bicycle activity on a typical day.** It can also provide important baseline data for before-after studies where new investments are planned and provide insight into overall trends in Columbia’s walking and bicycling environment over time.

As a component of this Planning effort, the **consultant team developed a recommended yearly, manual counts program for the City of Columbia** based off of the National Bike and



Pedestrian Documentation Project. The project team also implemented the recommended program in September 2014. The program collected data at 28 sites around Columbia based on access to transit, proximity to main entrances for shopping or employment areas, and high density downtown or residential areas. Locations with recently completed or planned pedestrian or bicycle projects were also considered.

Counts Summary

As seen from both the weekday and the weekend counts, Columbia has a substantial amount of pedestrian and bicycle traffic occurring throughout the City. **Much of this traffic observed during the counts implementation is occurring around popular destinations for walking and bicycling such as recreation centers, civic buildings, college and university campuses and downtown.**

Pedestrian levels are indicative of the City’s census-reported high rates of walking commuting. Anecdotally, many surveyors noted unsafe jaywalking occurring at several of the count locations. Weekend events such as the Soda-City Market, South Carolina Pride Festival and Greek Festival also likely increased walking rates.

The count results suggest that many people in Columbia are bicycling for commuting purposes to work and/or school as higher numbers of these users are bicycling during typical weekday commute times. The counts also show a high instance of sidewalk bicycle riding, even occurring on streets with existing bike lanes. This is typically an indicator that users don’t feel comfortable riding in the roadway due to inadequate bicycle facilities for roadway conditions.

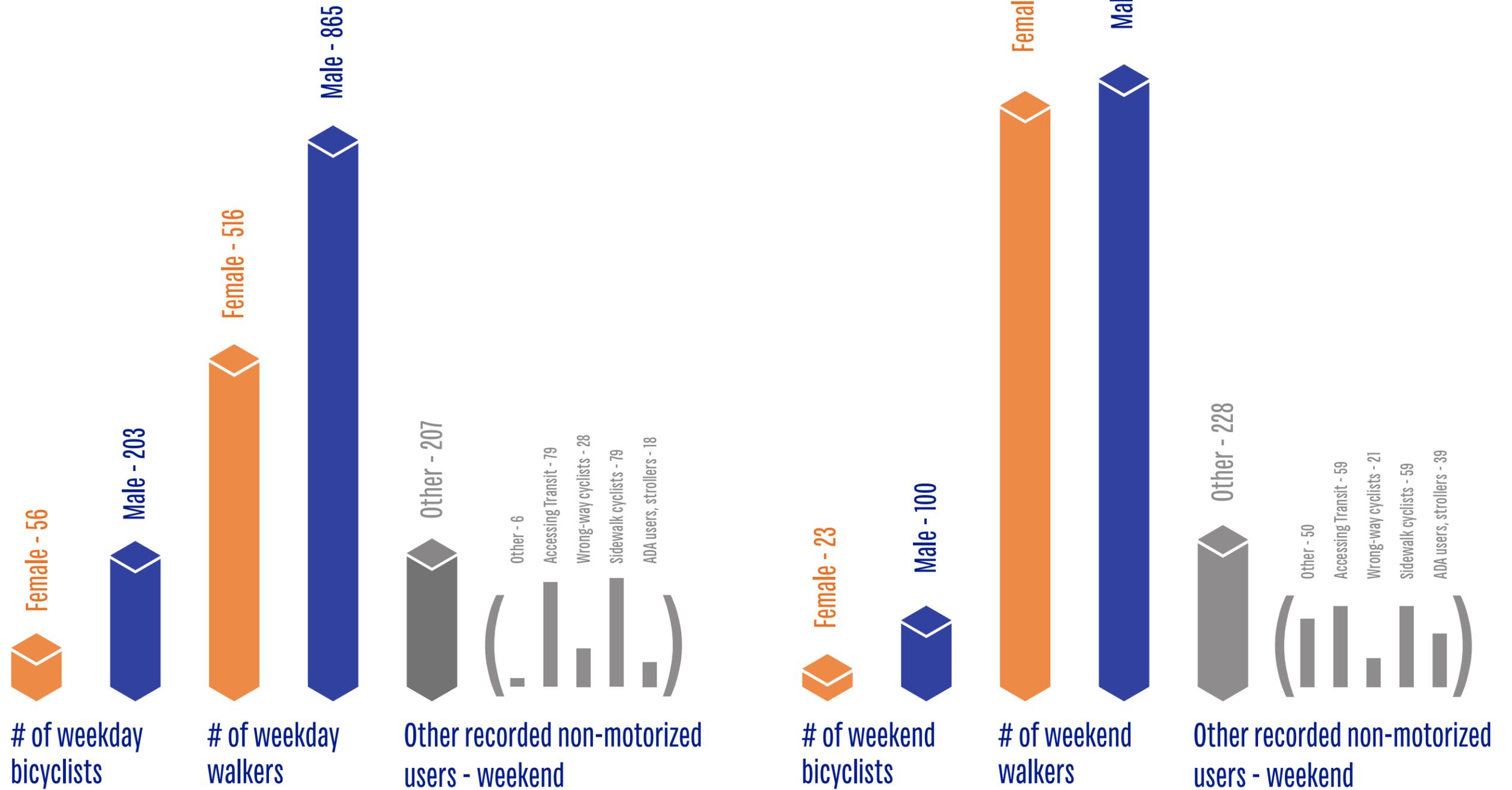
A comparison of the weekday and weekend count numbers are provided below as well as the top count locations. Full count methodology and the results can be found in **Appendix D.**

TABLE 5 – TOP PEDESTRIAN AND BICYCLE COUNT LOCATIONS

Top 3 Locations for Bicyclists from Weekday Counts:	
Wheat Street between Pickens Street and Sumter Street	47 bicyclists
Greene Street between Laurens Street and Saluda Ave	45 bicyclists
Harden Street between Greene Street and Devine Street	29 bicyclists
Top 3 Locations for Pedestrians from Weekday Counts	
Blossom St between Park St and Lincoln St	185 pedestrians
Harden St between Greene St and Devine St	121 pedestrians
Laurel St between Sumter St and Main St	128 pedestrians
Top 3 Locations for Bicyclists from Weekend Counts:	
Broad River Rd between St. Andrews Pkwy and Farrington Way	18 bicyclists
Sumter St between Greene St and Pendleton St – 11 bicyclists	11 bicyclists
Wheat St between William St and Huger St – 9 bicyclists	9 bicyclists
Top 3 Locations for Pedestrians from Weekend Counts	
Hampton St between Assembly and Park St	462 pedestrians
Sumter St between Greene St and Pendleton St	329 pedestrians
Gervais St between Lincoln St and Park St	279 pedestrians



PEDESTRIAN AND BICYCLE COUNTS DATA SUMMARY







EXISTING CONDITIONS: MULTI-MODAL NETWORK ANALYSIS

Introduction

Columbia has the foundation to become a premiere walking and bicycling-friendly City. However, as indicated in the public outreach, bike and walk-friendly community audit, network analysis and safety analysis there are many significant safety concerns, physical barriers and gaps in network connectivity that must be addressed in order to reach these goals.

The overall multi-modal network analysis is based on the following quantitative and qualitative assessments:

- Equity and Natural Resource Mapping
- Summary of Field Conditions
- Safety Analysis
- Pedestrian and Bicycle Level of Service Analysis
- Intermodal Transit Analysis

The picture to the right shows the project stakeholder team in the field analyzing existing conditions. The presence of a bus stop and worn turf indicate heavy pedestrian use in this area. Considerations like these were incorporated into the prioritization of the network.

The following sections discuss the current strengths and barriers of the transportation network for walking and bicycling and present a map of existing and proposed network conditions.

Figures 9 and 10 present maps depicting an equity analysis and natural resources overview including street tree coverage in Columbia. Considerations for equity ensure that the proposed improvements of this Plan reach populations that

may need or use pedestrian and bicycle facilities the most. Since shade is a major determinant of comfortable walking and bicycling conditions in a city like Columbia throughout the warmer months, and the City would like to preserve and expand upon its street tree network wherever possible, the project team also considered connecting these and other natural resources when developing pedestrian and bicycle recommendations.





Pedestrian Network

The existing and proposed pedestrian network has many strengths and opportunities:

- **The street and sidewalk network is well connected** in the downtown core and surrounding older neighborhoods of Columbia. There are many existing streets in this area that are walk friendly and easy to cross.
- **Recent crossing improvements along Assembly Street** make this roadway easier for pedestrians of multiple abilities to cross.
- **The existing greenways, downtown business district, Five Points and Congaree Vista offer walk-friendly environments** that many residents and students currently utilize.
- **Planned pedestrian improvements at key intersections** along many of Columbia’s major corridors such as Huger Street, Rosewood Drive and Elmwood Avenue will improve pedestrian safety and encourage people to walk.
- **Many civic destinations such as schools, libraries and parks are accessible by walking**, especially in older areas of Columbia where street networks are well connected and sidewalk coverage is good.
- **Many bus stops in Columbia have amenities** such as benches and shelters for pedestrians.
- The City utilizes **high-visibility crosswalk markings in some highly-trafficked pedestrian areas** such as near schools and in business or retail centers.
- Several **ADA accessibility improvements at curb ramps have been made** throughout Columbia in recent years.

However, there are many physical barriers currently present for pedestrians as well:

- **Large vehicular corridors** such as (but not limited to) Garners Ferry Road, Fort Jackson Boulevard, Two Notch

Road, Broad River Road and North Main Street are **barriers for pedestrians trying to cross** or traverse these roads due to large distances between safe crossings, long distances across roadways and long wait times for traffic signals to change. Also, some of the major corridors in Columbia don’t currently have sidewalks.

- **Many of the City’s busiest retail, employment, recreation and learning centers are difficult to access by foot due to their location along high-traffic, high-speed and wide roadways.** Also, the low density of development, high-frequency of curb-cuts and large parking lots in front of businesses along these corridors decreases walking comfort and increases walking distances and potential safety issues.
- **Access to significant City parks and green spaces along the river is limited by foot** which discourages the use of these areas. The area adjacent to Columbia’s riverfront has the potential to be a rich pedestrian-oriented work/live/play destination – one key to realizing this potential will be improving connectivity to the riverfront from adjacent neighborhoods.
- **As one moves away from the City core, presence of sidewalks, sidewalk connectivity and street connectivity worsens**, rendering many areas of town virtually un-walkable.
- **Some existing sidewalks are narrow or constrained by obstructions** such as utility poles or maintenance issues. This forces pedestrians with assisted mobility devices to ride within the roadway in some areas.
- **Several bus stops lack sidewalk connectivity**, especially as one moves away from the City core.
- **Many crosswalks lack curb ramps or do not meet ADA requirements** for accessibility. In some areas, median islands at pedestrian crossings do not have cut-throughs necessary for pedestrians with mobility impairments.



The photo above shows a substantial barrier for pedestrians. Not only is the sidewalk narrow and uninviting, it may be inaccessible by some with physical impairments.



Bicycling Network

The existing and proposed bicycling network has many strengths and opportunities:

- **Much of the City, especially around the downtown core, offers good street connectivity** which provides alternate routes for bicyclists wanting to travel off of heavily trafficked streets.
- **Many roadways in Columbia have more capacity than their traffic volumes warrant.** This creates an opportunity to reutilize this space for other uses that are more human-scaled. For example, road diets can be implemented to add space for on-street parking, landscaping, pedestrian crossing improvements, and/or bike facilities.
- **Most Columbia primary schools are located in walkable or bikeable areas.** Relatively minor improvements can be made to make walking and bicycling to school a more attractive and safe activity.
- **The City's growing greenway network, and the presence of the Palmetto Trail provide many opportunities for recreational riding.** These facilities can help prospective bicycle commuters hone their skills as grow confidence towards a goal of bicycling for transportation needs. As these facilities become more connected with the on-street bicycling network, they can become the backbone of a strong citywide bicycling system.
- **The City and SCDOT have made on-street bicycling improvements** to many corridors in recent years, including Beltline Blvd, Wheat St and Hardin Street.
- **Recent intersection improvements that will make crossing conditions safer for pedestrians and bicyclists** have been made on Assembly Street.
- **The pathway across the Broad River Road Bridge** will provide an important and high-quality pedestrian and

bicycle connection across the Broad River and to the Three Rivers Greenway.

- **The future Gills Creek Trail** will provide an important connection both along and across Gills Creek.

However, there are many physical barriers currently present for bicyclists as well:

- **Large vehicular corridors** such as (but not limited to) Assembly Street, Elmwood Avenue, Bull Street, Gervais Street, Blossom Street, Huger, Two-Notch Road and Garners Ferry Road **pose a barrier** for many prospective cyclists, primarily due to their width, traffic speed and volumes, and lack of separated bicycle facilities.
- **Many of the City's busiest retail, employment, recreation and learning centers are difficult to access by bike** due to their location along high-traffic, high-speed and wide roadways. Also, the low density of development, high-frequency of curb-cuts and large parking lots in front of businesses along these corridors decreases bicycling comfort and increases bicycling distances and potential safety issues.
- **As one moves away from the City center, street network connectivity and development density decreases.** This makes bicycling more difficult as prospective riders are typically forced onto major roadways and must travel longer distances to reach their destinations. Strategic improvements in street network connectivity and policy affecting new development can help to improve this.
- **Bike connectivity across the Congaree River is limited** due to a lack of separated bicycle facilities across many of the bridges.
- **Separated bike facilities, such as bike lanes or off-street paths are limited.** These are important as they create a

more comfortable environment for bicyclists of multiple ages and abilities.

- **Design of some existing bikeways are uncomfortable and/or dangerous for bicyclists.** Harden Street is an example of this (see Existing Conditions photo inventory in following sections).
- **Surface condition and debris on some roadways make it difficult for bicyclists,** who are more susceptible to poor maintenance conditions.
- **Short and long-term bicycle parking is limited throughout town,** especially as one moves away from central business districts.



Many roadways exist in Columbia with under utilized space or parking. These are great opportunities for adding bicycle facilities, sometimes by simply re-striping the existing roadway.

Existing Conditions Photo Inventory



1. Columbia has a high existing demand for walking and bicycling due to the high and dense populations of college students and downtown businesses and amenities. The relatively mild climate and flat terrain also make the environment very amenable to walking and bicycling. An abundance of wide roadways with relatively low-volumes in Columbia can easily be retrofitted to include bicycle and walking. (Blossom Street and Sumter Street)



2. Sidewalks like this not only discourage walking by making it an uncomfortable activity, but they are an accessibility and safety issue to those with visual or mobility impairments. The lack of a curb ramp and narrow functional width of the sidewalk make this a difficult environment for users with mobility impairments, as well as pedestrians walking side by side or passing each other. (photo: Forest Drive)



5. Bicycle improvements on Pickens Street would provide a comfortable, low-volume connection to major destinations such as the USC campus, future development on the former State hospital property, and downtown. The gate shown above is an opportunity to provide a pedestrian and bicycle cut through to the future development on the State hospital property.



6. Additional bike parking is needed throughout Columbia, especially at key work and shopping destinations. Secured short and long-term bike parking shows the community that Columbia is supportive of bicycling for transportation. (photo: Five Points business district)



9. Some corridors throughout Columbia have existing on-road infrastructure for bicycling. While bike lanes such as the ones shown above on Beltline Boulevard offer designated space for bicyclists, only the most confident bicyclists would likely feel comfortable on such a facility due to the bike lane's narrow width, higher traffic volumes and speeds, and little separation from traffic. Bike lanes like this could be enhanced by adding buffers, bollards and/or green pavement to improve visibility and comfort for users.



10. Some corridors throughout Columbia are sub-standard facilities for bicycling such as the bike lanes on Harden Street. Bike lanes adjacent to parking should be at minimum 5', and preferably wider or with added buffers, to give bicyclists adequate space to ride safely outside of the "door zone" of parked vehicles.



3. There have been some traffic calming efforts made in the Cottontown neighborhood that can help to make the streets safer for pedestrians and bicyclists. Traffic calming tools such as diverters and restricted turns should have cut throughs or exceptions for bicyclists to encourage the use of these low-volume streets. (photo: Bull Street and Franklin Street)



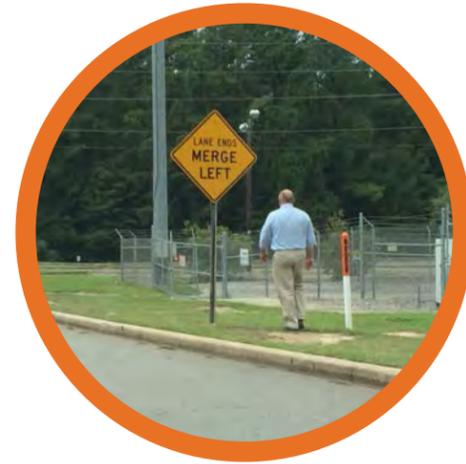
4. Many corridors throughout Columbia have some existing well-placed marked mid-block crossings such as the one pictured above. These should be enhanced with high-visibility markings, mid-block refuges, and actuated pedestrian beacons where feasible. Additional mid-block crossings should be considered where warranted, and all arterial and collector roadways should have mid-block crossings at minimum every 1/4 mile. (Rosewood Drive at the Rosewood School)



7. Several roadways throughout Columbia have more vehicular capacity than warranted by traffic volumes. These roadways are good opportunities for reducing the number of vehicular lanes to improve overall roadway safety and add bicycle facilities. (photo: Farrow Road)



8. Columbia has a substantial number of residents who bike for recreation. Fort Jackson is a popular destination for both on-road recreational bicyclists and users of the Palmetto Trail system. Improving bicycle connectivity to this area would improve safety and access for these users, as well as residents who reside in Fort Jackson. (photo credit: <http://www.army.mil/article/46896/wheel-power-wtu-soldiers-ride-on-road-to-recovery/>)



11. Sidewalks are needed on many corridors throughout Columbia, especially outside the downtown and core neighborhoods. Colonial Drive (pictured) is an example of a corridor that connects job centers but isn't currently served by pedestrian facilities.



12. Many bus stops have amenities such as benches and shelters, but many stops outside of the downtown core lack sidewalk connectivity. The bus stop and pedestrian crossing pictured above poses a serious obstacle for pedestrians with mobility impairments due to the improperly designed ramp. In addition, bicycle connectivity to transit could be further enhanced by providing secure bicycle parking at bus stops.



FIGURE 9 - COLUMBIA EQUITY ANALYSIS

Equity Analysis

The Composite Social Equity Tiers reflect the average of four social groups with higher concentrations of:

- 1) Families living below or near the poverty line
- 2) Households with no vehicle available
- 3) Non-White populations
- 3) Households with a limitation on English speaking ability

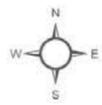
A higher tier represents a higher relative concentration of these groups.

Equity Tier



Legend

- Intersection Improvement
- Recommended Sidewalk
- Recommended Greenway
- Recommended Bikeway
- Water Body
- Study Area



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created November, 2014.

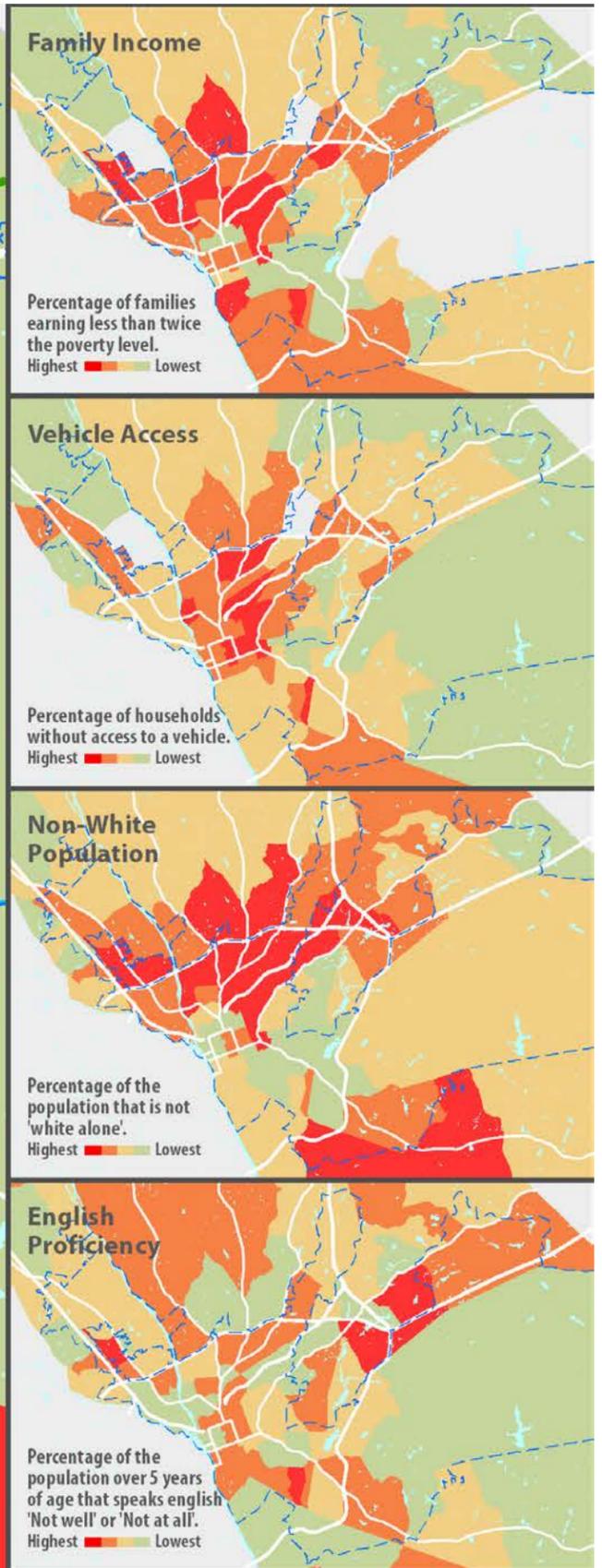
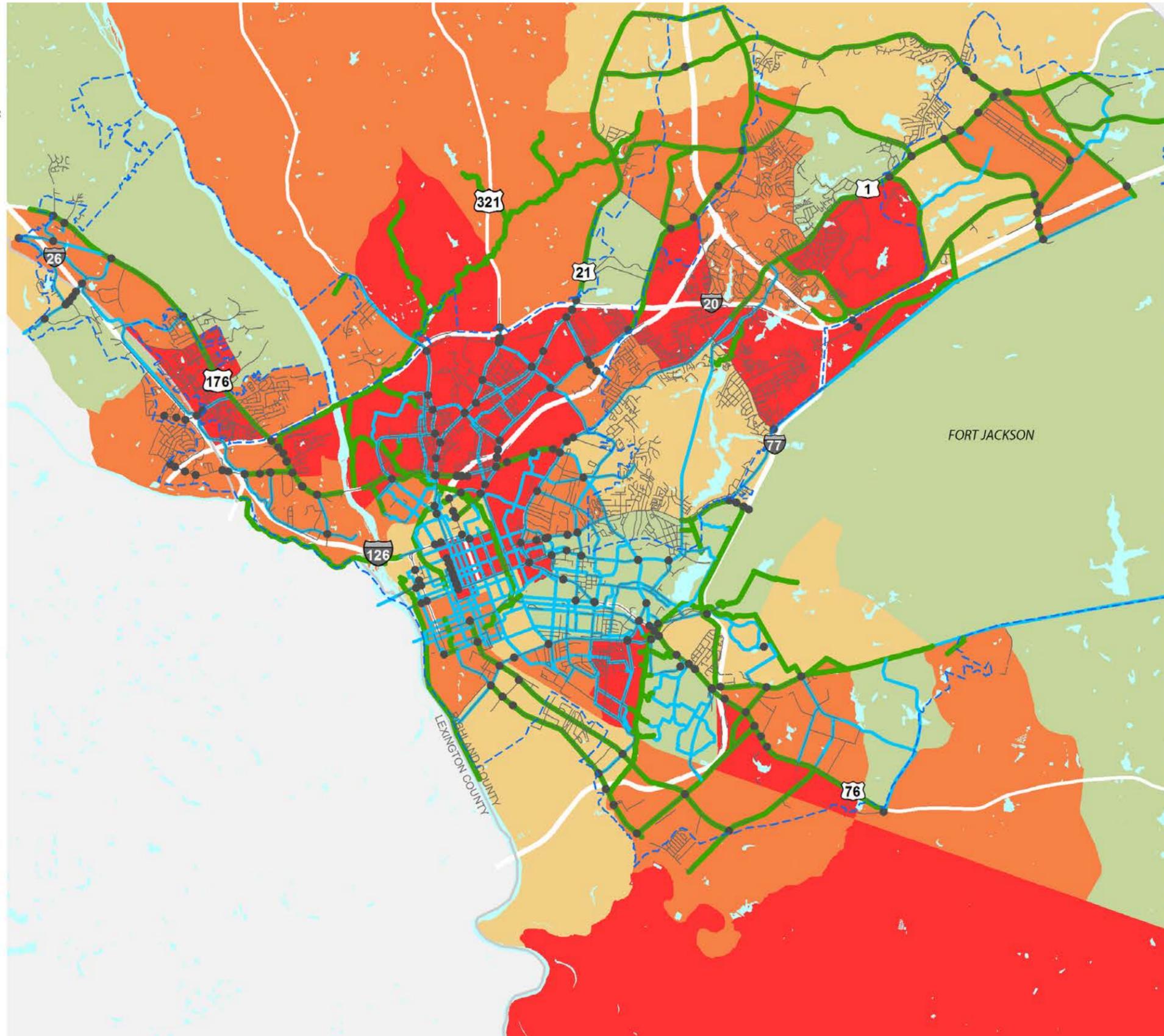


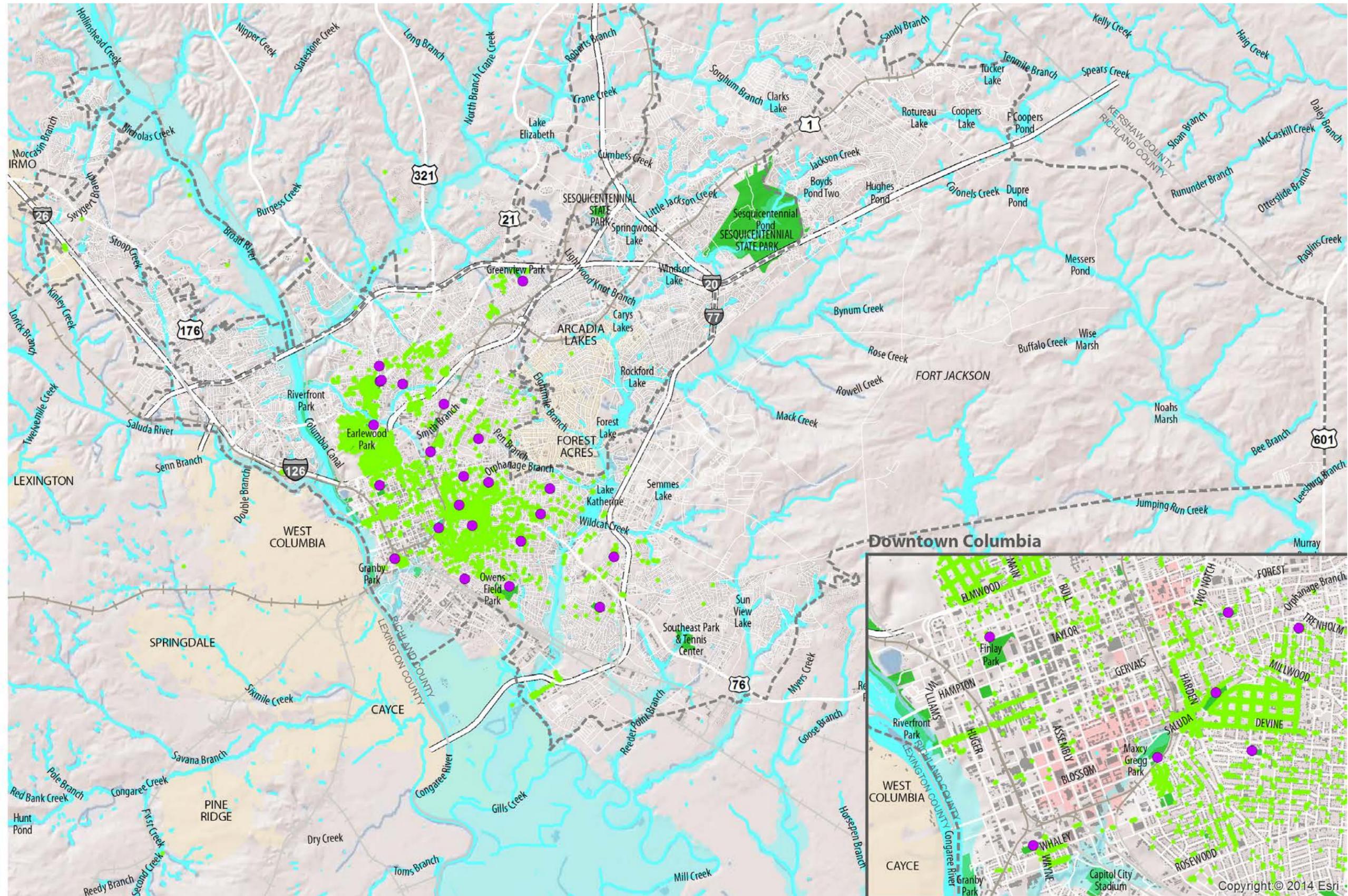


FIGURE 10 – EXISTING COLUMBIA NATURAL RESOURCES

Natural Resources

Legend

- Park Community Center
- Public Works Tree Inventory
- Park
- Stream, Canal, or Artificial Path
- Water Body
- Floodplain
- Commuter Rail Line (Proposed)
- Other Rail Line
- Building Footprint
- Other Jurisdiction
- Study Area



0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.



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SAFETY ANALYSIS

Overview

Analysis of crash data can provide insight as to the major areas of concern for safety within the existing pedestrian and bicycle network. While this information is helpful in determining both infrastructure and non-infrastructure priorities, it should always be utilized in conjunction with other sources of information such as walking and bicycling counts and demographic information. For instance, an absence of crashes does not necessarily denote safe conditions for walking and bicycling – it could also imply that the corridor is lacking the key elements that make it an inviting and safe place to bike and walk, and therefore is not being utilized.

The safety analysis shows that while pedestrian and bicycle crashes are distributed fairly evenly throughout Columbia, the majority of pedestrian and bicycle crashes have occurred on major roadways. **Broad River Road, Two Notch Road and Bluff Road are among the corridors which have seen the greatest number of pedestrian and bicycle accidents in Columbia.** The highest concentration of pedestrian collisions occurred in the central part of town – west of Main/N. Main Street and east of US 1 and US 76.

The figures on the following pages provide an overview of where the majority of pedestrian and bicycle crashes occurred in Columbia.

FIGURE 3 – RICHLAND COUNTY TOTAL PEDESTRIAN AND BICYCLE COLLISIONS REPORTED (JANUARY 2010 – DECEMBER 2013)

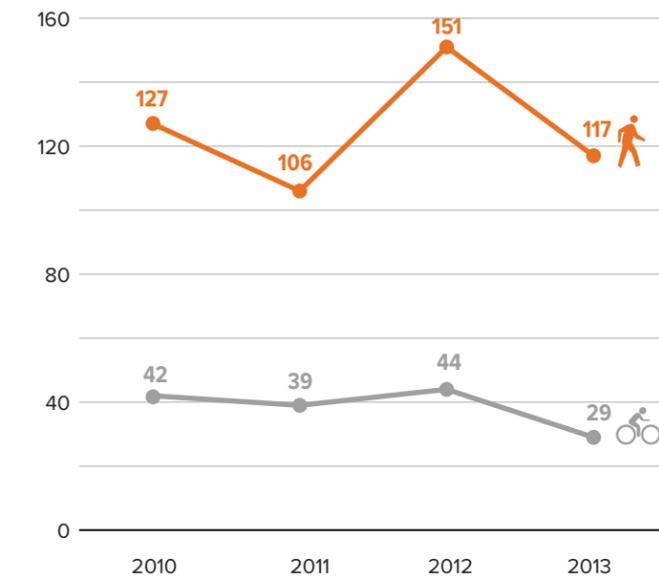


TABLE 6 – PEDESTRIAN AND BICYCLE COLLISION DATA FOR CITIES WITH CHARACTERISTICS SIMILAR TO COLUMBIA

City	Population	Average Annual Pedestrian Collisions	Average Annual Bicycle Collision	University/College Presence
Columbia, SC	133,000	132	41	USC
Cary	136,278	29	19	N/A
Fayetteville	208,615	96	28	N/A
Durham	229,014	114	39	Duke
Winston-Salem	229,986	55	16	Wake Forest University
Greensboro	269,696	150	48	UNC-G and others
Raleigh	406,056	195	86	NC State



Improvements such as high-visibility crosswalks and mid-block crossings make pedestrians more visible and encourage safe pedestrian behavior.



TABLE 7 – TOP PEDESTRIAN CRASH INTERSECTIONS AND CORRIDORS IN COLUMBIA

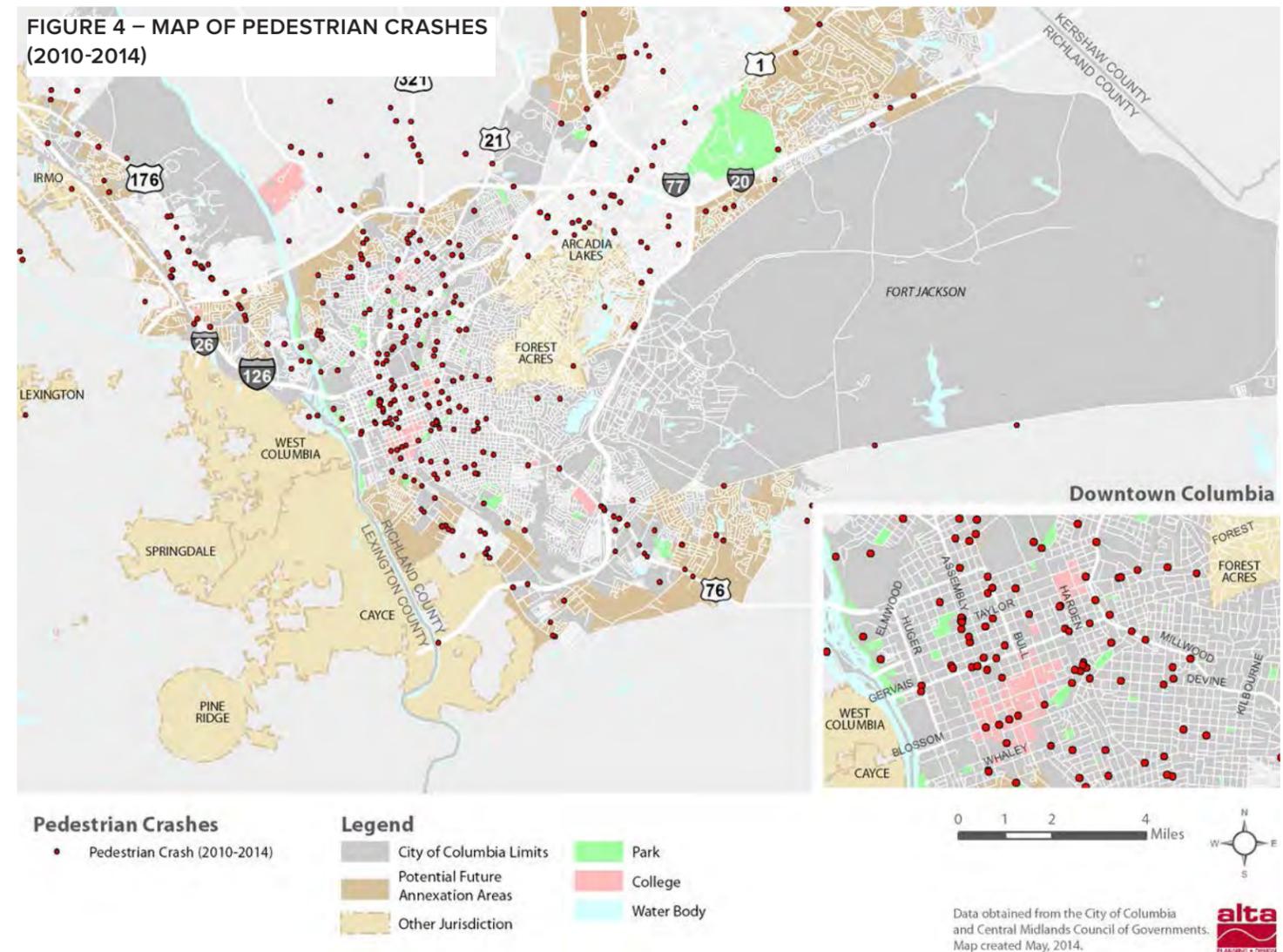
Top Intersections	Number of Collisions
Bull & Whaley	3
Forest & McDuffie	3
Devine & Santee	3
Devine & Harden	3
Greenlawn & Garners Ferry	3
Top Corridors	Number of Collisions
Broad River Rd	27
Two Notch Rd	17
Bluff Rd	12
Garners Ferry Rd	11
Farrow Rd	9
Harden St	9
Blossom St	8
Devine St	8

Distribution of Pedestrian Crashes

Pedestrian crashes are relatively evenly distributed in Columbia and the surrounding areas (see **Figure 4**). **The highest concentration exists in the central Columbia area, immediately west of Main/N. Main Street and east of US 1 and US 76.** Additionally, several arterials present long stretches of high levels of pedestrian collisions and pedestrian collisions are clustered at several key intersections. **Table 7** shows the top intersections and corridors for pedestrian collisions in the study area.

Distribution of Bicycle Crashes

Bicycle crashes are evenly distributed in Columbia and the surrounding areas (see **Figure 5**). The majority of crashes are along streets with no dedicated bikeway facility, however three occurred on the Beltline Boulevard bike lane, one on the Wheat Street bike lane, and four along the Trenholm Road bike lane (outside of the project study area). Collisions occur on arterials, collector roads, and neighborhood streets alike. Collisions occurred on both the Hampton Street and Gervais Street bridges across the Broad River. **Broad River Road and Bluff Road bear the highest numbers of bicycle collisions.**





Crash Analysis Summary

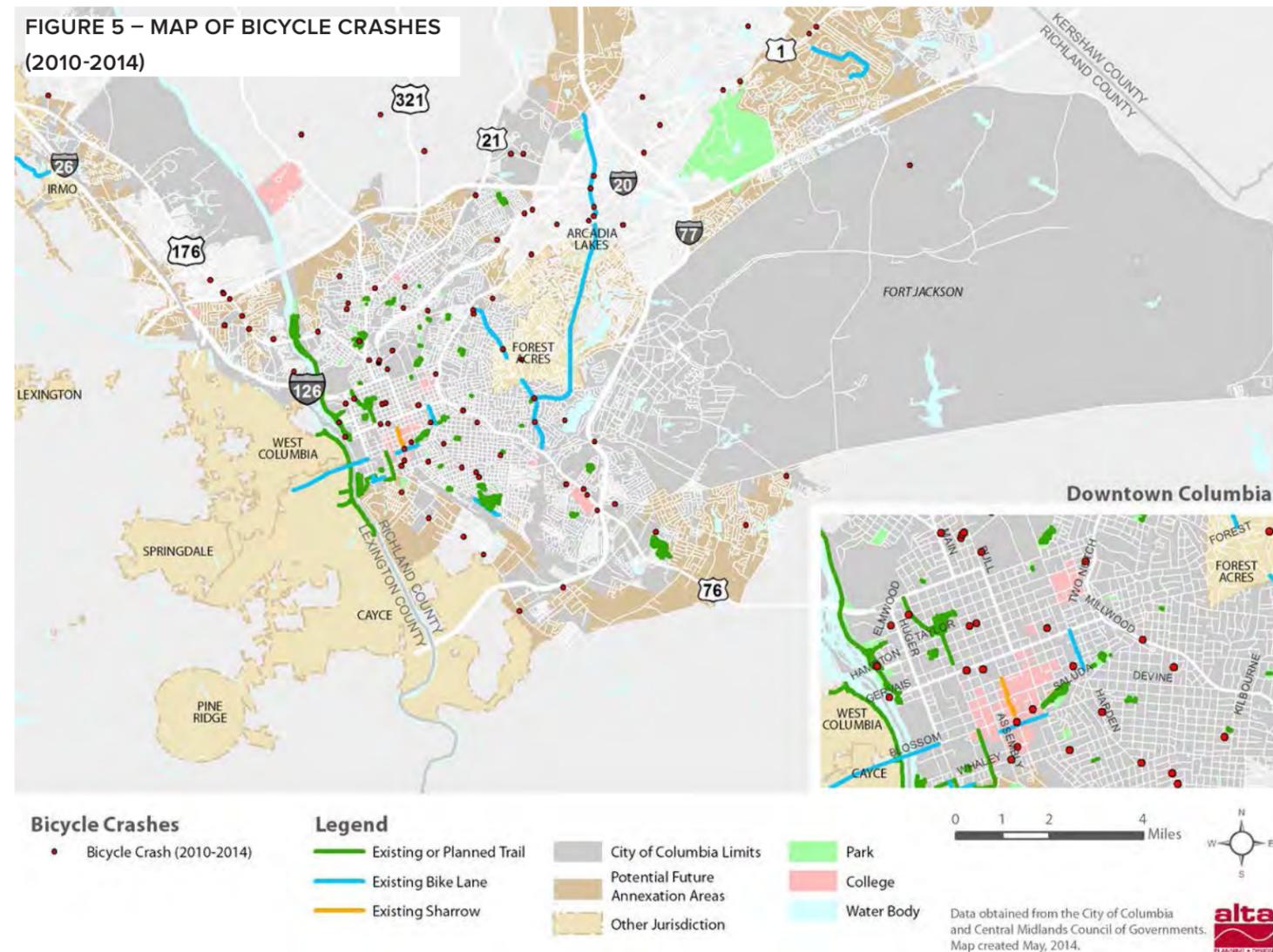
Analysis of reported contributing factors to pedestrian and bicycle accidents provides some insight as to what may be needed as priority infrastructure and non-infrastructure improvements. **For pedestrians:** motorists failing to yield the right of way, pedestrian improper crossing, and pedestrian lying and/or illegally in the roadway are all recorded as primary contributing factors of collisions involving pedestrians.

Potential solutions to address these issues include:

- **Motorists failing to yield the right of way could be improved through both educational and infrastructure improvements** such as signs that highlight the State law to yield to pedestrians, improvements to the visibility of pedestrian crossings through enhanced pavement markings or actuated signals, and general traffic calming improvements that slow down traffic and improve stopping sight distances for motorists.
- **Improper pedestrian crossing is primarily caused by an infrequency of designated crosswalks** along a roadway. Crosswalk infill along corridors could help improve this safety issue.
- **Pedestrians illegally in the roadway may be linked to a lack of adequate pedestrian facilities.** For example, many users, especially those who depend on assisted mobility devices, often have no choice but to travel in the roadway in areas where sidewalks are absent or don't meet ADA requirements. This can be addressed through infrastructure improvements.

For bicyclists: bicyclists disregarding signals, bicyclists failing to yield the right of way, motorists failing to yield the right of way and bicycling wrong side/way riding were all listed as major contributing factors to bicycle collisions. **Potential solutions to address these issues include:**

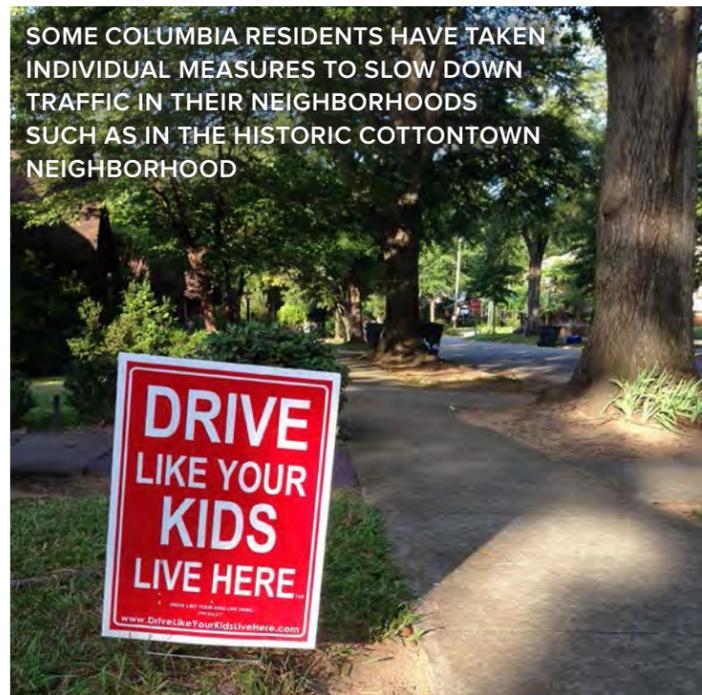
- **Bicyclists disregarding signals could potentially be addressed through programs which encourage good bicycling behavior,** or bicycle-specific traffic signals or signs in key areas.
- **Motorists failing to yield the right of way may be addressed through better educational programs for motorists and clearer delineation of a bicyclist's path of travel** through pavement marking improvements along roadways and at intersections.
- **Bicycling wrong side/way riding can be improved through educational programs and bicycle infrastructure** that clearly delineates the expected direction of travel such as bike lanes and shared-lane markings.





Collisions, Injuries and Fatalities

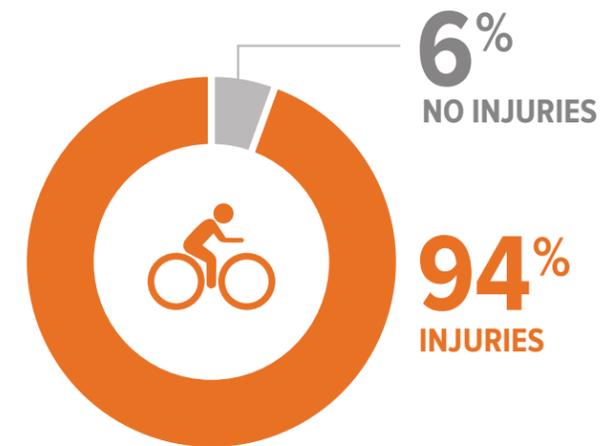
Figure 6 shows the percent of total collision fatalities attributable to each transportation mode. As shown, between 11.8% (in 2013) and up to 18.8% (in 2014 to-date) of reported collision fatalities in Richland County are pedestrian fatalities, with an annual average (excluding 2014) of 13.0%. No bicyclist fatalities are shown in this time period, however, the Columbia community has suffered the loss of several bicyclists over the last few years. The tragic deaths of 19 year old Jesse Gamble in 2008 and 45 year old Mandy Kennedy, a mother of two, in March of 2014 rattled the community. Each was commuting to/from work at the time of their motor vehicle collision. The March 2014 fatality is not included in this data because the incident is under investigation at the time of this study.



Bicycle Injuries and Fatalities

Figure 7 shows the ratio of bicyclist injuries and of fatalities to the total collisions reported in Richland County that involved a bicycle from 2010 through May 9, 2014. As shown, there have been no bicyclist fatalities as a result of reported collisions in Richland County over the time period. However, the majority of bicycle collisions (94.4%) result in an injury.

FIGURE 7: RATIO OF BICYCLIST INJURIES AND FATALITIES TO TOTAL COLLISIONS REPORTED (2010-2014)



Pedestrian Injuries and Fatalities

Figure 8 shows the ratio of pedestrian injuries and of fatalities to the total collisions reported in Richland County that involved a pedestrian during the data time period. As shown, 86.6% of the pedestrian collisions resulted in one or more injuries, and 9.1% resulted in a fatality. Only 4.3% of pedestrian collisions during the data time period did not result in an injury or fatality.

FIGURE 8: RATIO OF PEDESTRIAN INJURIES AND FATALITIES TO TOTAL COLLISIONS REPORTED (2010-2014)

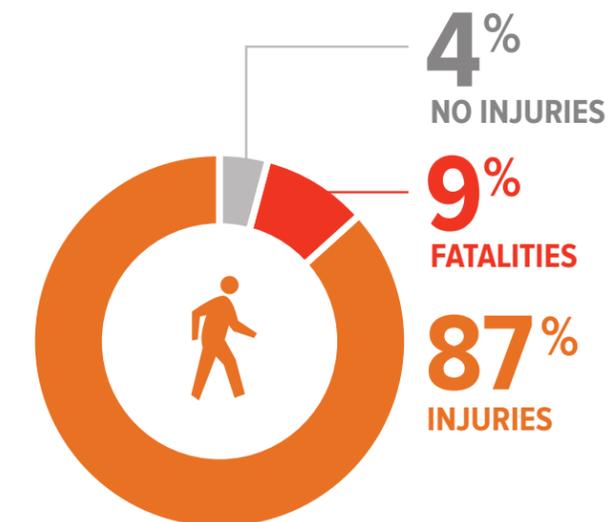
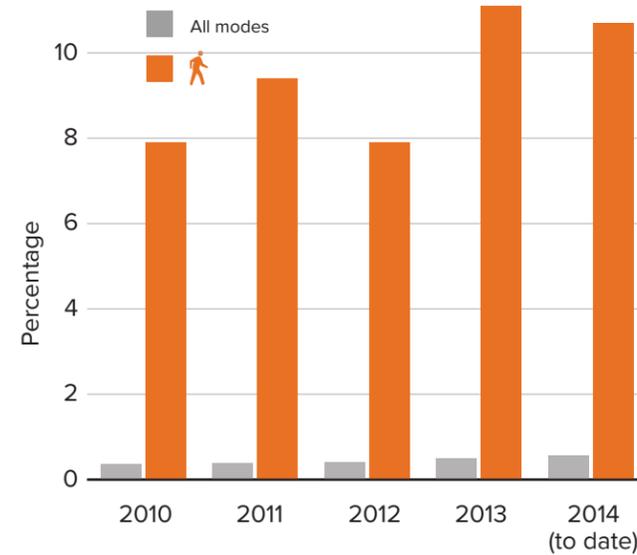


FIGURE 6: FATALITY RATES PER MODE CHOICE 2010-2014





In South Carolina, 11.5% of all traffic fatalities are pedestrians and 1.6% are bicyclists. While there have been no documented bicyclist fatalities in the last four years, Columbia’s pedestrian fatality rate is significantly higher than the State’s average (as high as 18%).

Currently in Columbia, nearly one in ten pedestrian collisions results in a fatality. One of the most effective means of increasing safety across all modes is through reducing vehicular speeds. The chances of a pedestrian fatality are reduced from 85% to 45% to 5% when the speed of the vehicle is reduced from 40 mph to 30 mph to 20 mph, respectively. System-wide vehicular speed reduction can be accomplished through a combination of education, enforcement and design.

Collision Conditions

A total of 529 pedestrian collisions and 162 bicycle collisions were reported in Richland County from January 1, 2010 through May 9, 2014. **Table 8** presents the characteristics of these collisions, such as the road surface conditions, lighting conditions, weather conditions, and where the collision occurred.

As shown in **Table 8**, most crashes for pedestrians and bicyclists occurred during dry road surface conditions (96% and 87%, respectively) and on clear days (89% and 83%, respectively). The majority of bicycle collisions occurred during daylight hours (70%), but only 43% of pedestrian collisions occurred during daylight. In addition, most collisions occurred on the roadway (89% for bicyclists and 87% for pedestrians).

TABLE 8 – RICHLAND COUNTY COLLISION CHARACTERISTICS

	Bicycle		Pedestrian	
	Total	% of Total	Total	% of Total
Total Collisions Reported	162	100%	529	100%
Road Surface Conditions				
Wet	6	4%	65	12%
Dry	155	96%	461	87%
Lighting Conditions				
Daylight	114	70%	230	43%
Dawn / Dusk	9	6%	29	5%
Dark (Street Lamp Lit)	20	12%	121	23%
Dark (Lighting Unspecified)	7	4%	53	10%
Dark (Unlit)	12	7%	96	18%
Weather Conditions				
Clear	144	89%	440	83%
Cloudy	10	6%	38	7%
Fog,Smog,Smoke	2	1%	3	1%
Rain	4	2%	45	9%
Snow	1	0.6%	2	0.4%
Unknown	1	0.6%	1	0.2%
First Harmful Event Location				
On Roadway	144	89%	458	87%
Median/Shoulder	3	2%	18	3%
Off Roadway	15	9%	45	9%
Unknown	0	0%	8	2%

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Pedestrian and Bicycle Level of Service Analyses

Analysis Summary

The consultant team conducted several different analyses for the Walk Bike Columbia Master Plan. This includes the following analyses which sequentially build upon each other to provide a comprehensive look at pedestrian and bicycle levels of comfort and safety overlaid with areas of pedestrian and bicycle supply and demand.

Pedestrian Level of Service and Bicycle Level of Traffic Stress Analyses (PLOS and BLTS)

The Pedestrian Level of Service Analysis (PLOS) and Bicycle Level of Traffic Stress (BLTS) analyses provide objective, data-driven scores of roadway comfort for pedestrian and bicycle travel. The results of these models are incorporated into Alta's Pedestrian and Bicycle Suitability Analyses (PSA and BSA) to identify pedestrian and bicycle network gaps and potential projects and aid in system-wide prioritization.

Each analysis incorporates the recent research on factors that impact pedestrian and bicycle comfort and safety, and was tailored to the City of Columbia using the data available. Each model analyzed the full roadway network within Columbia's Urban Service Area (and adjacent areas where they border the urban service area on both sides), excluding limited access highways, to provide a full picture of connectivity around the city.

A full explanation of the methodology and results can be found in **Appendix E**.

Pedestrian and Bicycle Suitability Analyses (PSA and BSA)

To build upon the Level of service analyses presented in the previous section, the consultant team conducted a Pedestrian Suitability Analysis (PSA) and Bicycle Suitability Analysis (BSA) for Walk Bike Columbia. The PSA and BSA build on the Pedestrian Level of Service and Bicycle Level of Traffic Stress models completed previously. These models identify areas of demand for pedestrian and bicycle travel, and then overlay supply (Pedestrian Level of Service and Bicycle Level of Traffic Stress) and demand. The results can be used to identify areas in need of improvement and to prioritize pedestrian and bicycle projects where infrastructure need meets trip demand.

The Pedestrian and Bicycle Suitability Analysis an objective, data-driven process to identify network gaps as potential projects in areas of high pedestrian and bicycle activity. In the first step, the quality of the user experience along and across the existing network of roadways and trails was measured and termed Supply. Next, the potential for walking trips was measured based on the proximity and density of trip generators (such as homes and workplaces) and trip attractors (such as shopping centers and parks) and termed Demand. Supply and demand were then overlaid to identify priority areas for infrastructure improvements.

A summary of the findings from this analysis are presented in the following section. A detailed report explaining the suitability analysis methodology and full results can be found in **Appendix E**.

Pedestrian Composite Results

Figure 11 displays demand and supply results in **downtown Columbia** and the adjacent areas. The majority of downtown and the University of South Carolina have high demand for walking, with a good supply of facilities. Several other locations indicate a need for improved crossings or facilities, including the following:

- The cluster of schools along US 321 north of downtown, including Lutheran Theological Southern Seminary and Columbia College, are in need of improved crossings, along with sidewalk improvements on local roads.
- The medical district around Palmetto Health Richland and Providence Hospital are in need of improved crossings, and may need midblock crossings along long stretches of Harden Street, Forest Drive, and Two Notch Road.
- Improvements are needed along Colonial Drive from Harden Street to English Avenue.
- Improved crossings are needed in the commercial cluster and area around Midlands Technical College southeast of downtown.

Figure 12 displays demand and supply results in **southeast Columbia**. In addition to the area between Garners Ferry Road, Rosewood Drive, and Beltline Boulevard, the following areas should be priorities for improvement:

- Garners Ferry Road is in need of linear improvements, intersection improvements, and may need midblock crossings. The segment near the University of South Carolina's School of Medicine and the segment between Greenlawn Drive and Patterson Road have the highest need.
- The neighborhood roads north of Hampton Memorial Park are in need of linear improvements in the form of sidewalks or traffic calming.



Figure 13 displays demand and supply results in **northwest Columbia**. The following areas need improvement:

- Linear improvements are needed on Dutch Square Boulevard and crossing improvements are needed along Bush River Road to serve the Dutch Square shopping center.
- Crossing improvements are needed on Broad River Road and Greystone Boulevard near their intersection.
- Linear improvements are needed on Stoneridge Drive.
- Crossing improvements are needed on Bush River Road near the Outlet Pointe Shopping Center.
- Linear improvements are needed on Harbison Boulevard near Columbiana Drive.

Figure 14 displays demand and supply results in **northeast Columbia**. The following areas need improvement:

- Linear and crossing improvements are needed on Farrow Road near Providence Hospital Northeast.
- Linear and crossing improvements are needed along Two Notch Road south of Clemson Road to serve the Village at Sandhill shopping center. Midblock crossings may also be warranted to serve the neighborhoods east of Two Notch Road.
- Linear improvements are needed on Polo Road near Two Notch Road, and linear and crossing improvements are needed along Two Notch Road near this intersection.
- Linear and crossing improvements are needed along Sparkleberry Lane near Spring Valley High School and near the intersection with Clemson Road.

Bicycle Composite Results

Figure 15 displays demand and supply results in **greater downtown Columbia**. The following areas need improvement:

- A few key low-stress corridors in the north-south and east-west direction are needed in downtown to improve mobility and provide better access to the University of South Carolina from the northern half of downtown and adjacent northern neighborhoods.
- Crossing opportunities are needed across Beltline Boulevard near Palmetto Health Richard to link the high demand neighborhood north of Route 277. Linear improvements along US 321 would link this neighborhood to downtown, and additional crossing opportunities of Main Street and Monticello Road would improve mobility around this neighborhood.
- Crossing opportunities are needed along Beltline Boulevard between Two Notch Road and Craig Road.

Figure 16 displays demand and supply results in **southeast Columbia**. The following areas need improvement:

- Garners Ferry Road provides the only connection between downtown and the University of South Carolina School of Medicine, along with its adjacent neighborhoods. Connectivity could be greatly improved by low-stress greenway links across Gills Creek to these neighborhoods.
- Leesburg Road and Garners Ferry Road east of Interstate 77 need additional crossing opportunities to serve the neighborhood around Annie Burnside Elementary School.

Figure 17 displays demand and supply results in **northwest Columbia**. The following areas need improvement:

- Short greenway connections between low-stress neighborhood roadways could increase the low-stress

connected network in the area south of Interstate 20 and west of the river.

- Crossing opportunities are needed along Broad River Road.
- Improvements are needed along Bush River Road to connect neighborhoods to shopping destinations in Dutch Square.

Figure 18 displays demand and supply results in **northeast Columbia**. The following areas need improvement:

- Bicycle travel increasingly requires travel on collector and arterial roadways in the northeast area as roadway connectivity decreases. Improvements are needed along Parklane Road and Farrow Road to connect neighborhoods to schools, stores, and health services along Farrow Road.
- Short greenway connections are needed in the neighborhood east of Two Notch Road near Clemson Road.
- Crossing opportunities are needed along Sparkleberry Lane and additional connectivity is needed in the neighborhood to its south.

Conclusion

The Walk Bike Columbia Pedestrian and Bicycle Suitability Analyses provide a data-driven illustration of the quality of infrastructure serving pedestrians and bicyclists in the study area and the demand for infrastructure. **The results demonstrate the need to improve pedestrian facilities around schools, medical districts, and shopping centers, and focus on improving crossings of collector and arterial roadways for pedestrians and cyclists.** Together, the supply and demand models will guide prioritization of infrastructure investments where they will be most useful to residents and visitors and have the greatest impact on safety.

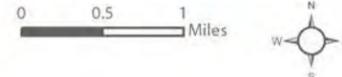


FIGURE 11: PEDESTRIAN SUPPLY AND DEMAND RESULTS FOR GREATER DOWNTOWN



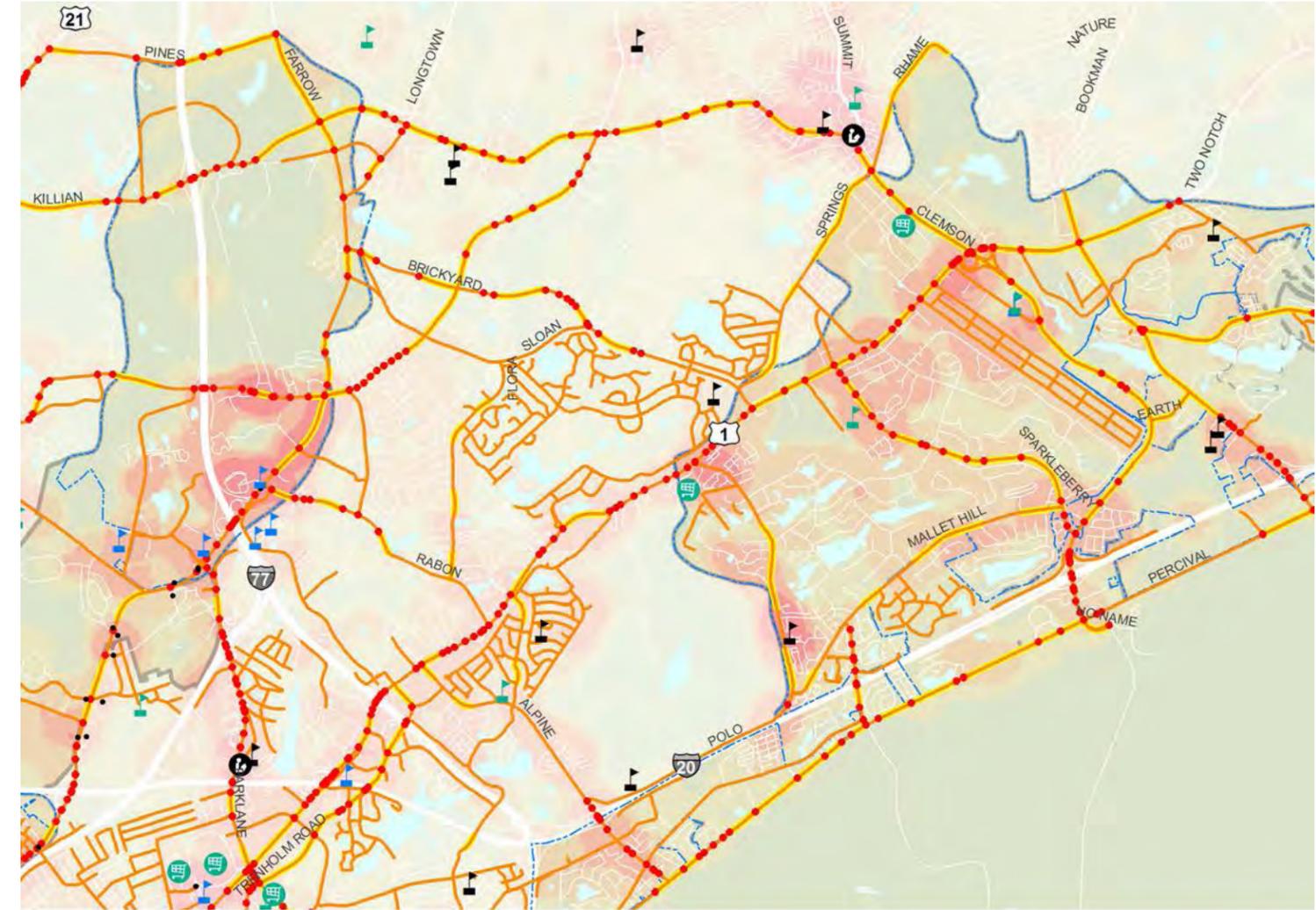
Greater Downtown Supply and Demand Results

Supply	Demand	Destinations	Shopping Center
Low Crossing PLOS (6-8)	Highest	Elementary School	Library
Low Segment PLOS (4-5)	Medium	High School/Middle School	Bus Stop - May 2013
Low Midblock Crossing PLOS (4-5)	Lowest	College/Higher Education	City Limits
		Hospital	Potential Future Annexation Area



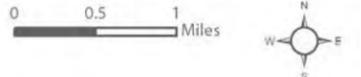
Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.

FIGURE 12: PEDESTRIAN SUPPLY AND DEMAND RESULTS FOR NORTHEAST COLUMBIA



Northeast Supply and Demand Results

Supply	Demand	Destinations	Shopping Center
Low Crossing PLOS (6-8)	Highest	Elementary School	Library
Low Segment PLOS (4-5)	Medium	High School/Middle School	Bus Stop - May 2013
Low Midblock Crossing PLOS (4-5)	Lowest	College/Higher Education	City Limits
		Hospital	Potential Future Annexation Area



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.



FIGURE 13: PEDESTRIAN SUPPLY AND DEMAND RESULTS FOR SOUTHEAST COLUMBIA



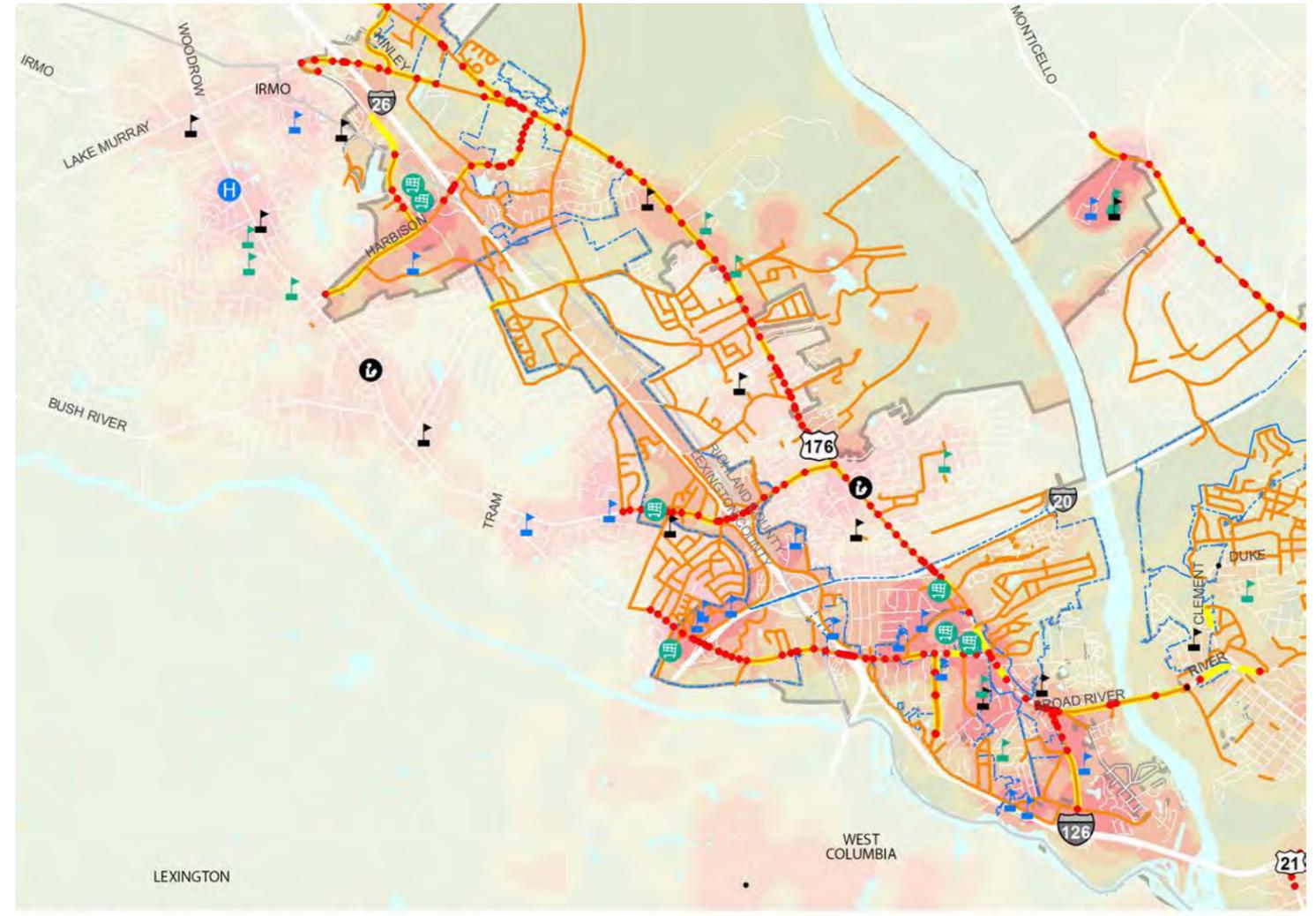
Southeast Supply and Demand Results

Supply	Demand	Destinations	Shopping Center
● Low Crossing PLOS (6-8)	■ Highest	▲ Elementary School	🛒 Shopping Center
— Low Segment PLOS (4-5)	■ Medium-High	▲ High School/Middle School	📖 Library
— Low Midblock Crossing PLOS (4-5)	■ Medium-Low	▲ College/Higher Education	● Bus Stop - May 2013
	■ Lowest	▲ Hospital	▭ City Limits
			▭ Potential Future Annexation Area

0 0.5 1 Miles

Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.

FIGURE 14: PEDESTRIAN SUPPLY AND DEMAND RESULTS FOR NORTHWEST COLUMBIA



Northwest Supply and Demand Results

Supply	Demand	Destinations	Shopping Center
● Low Crossing PLOS (6-8)	■ Highest	▲ Elementary School	🛒 Shopping Center
— Low Segment PLOS (4-5)	■ Medium-High	▲ High School/Middle School	📖 Library
— Low Midblock Crossing PLOS (4-5)	■ Medium-Low	▲ College/Higher Education	● Bus Stop - May 2013
	■ Lowest	▲ Hospital	▭ City Limits
			▭ Potential Future Annexation Area

0 0.5 1 Miles

Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.

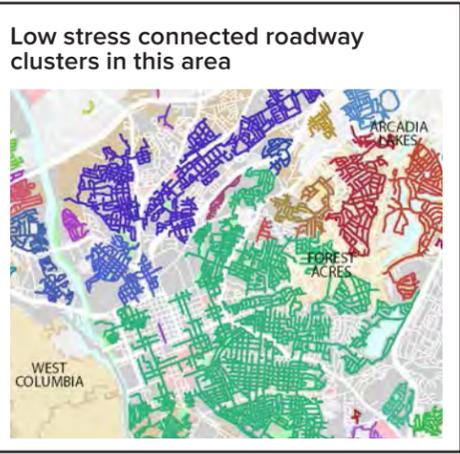
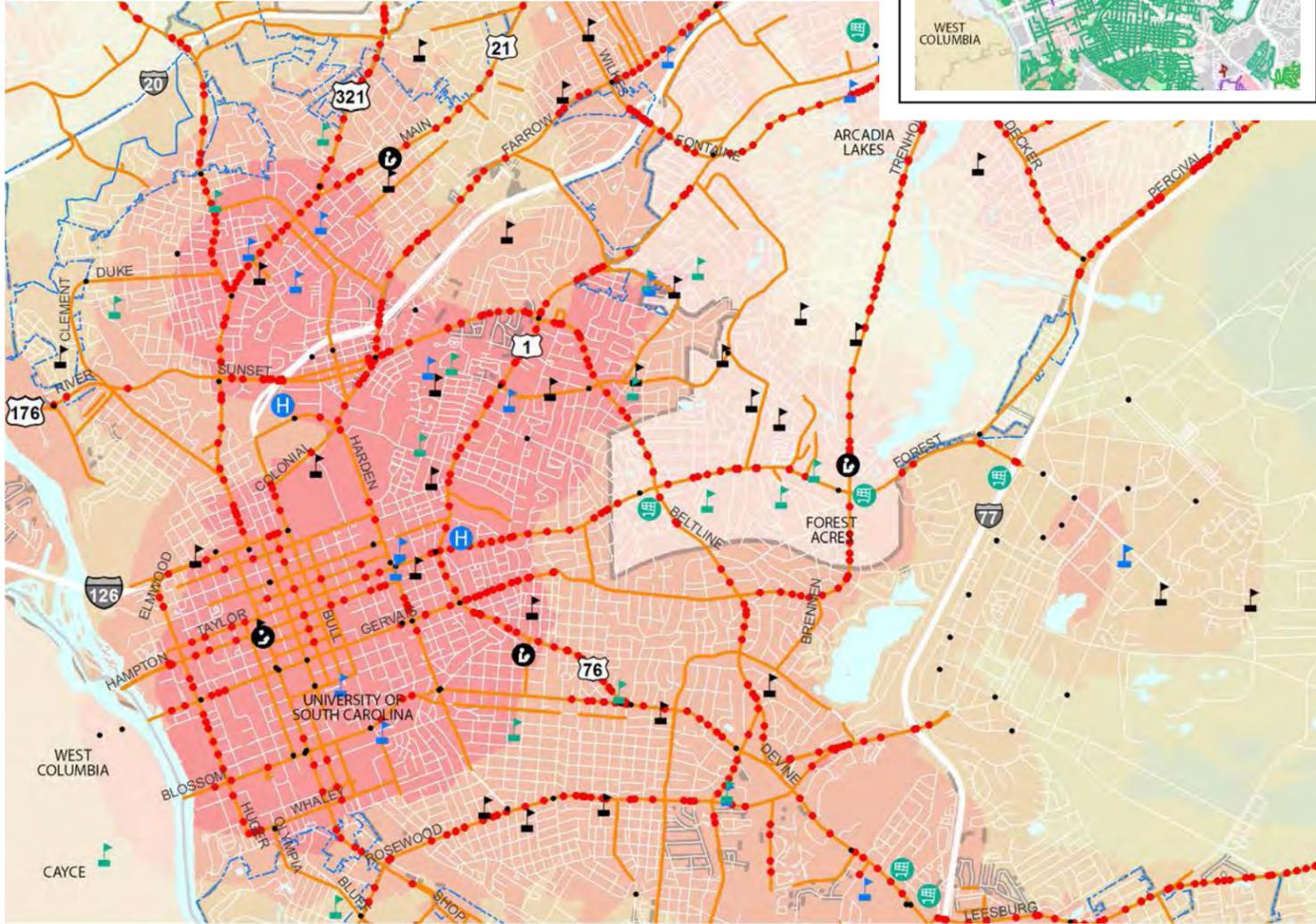
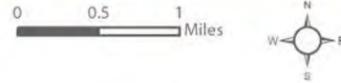


FIGURE 15: BICYCLE SUPPLY AND DEMAND RESULTS FOR GREATER DOWNTOWN COLUMBIA



Greater Downtown Supply and Demand Results

- | | | | |
|----------------------------|---------------|---------------------------|----------------------------------|
| Supply | Demand | Destinations | Shopping Center |
| High Stress Crossing (3-4) | Highest | Elementary School | Library |
| High Stress Segment (3-4) | Medium | High School/Middle School | Bus Stop - May 2013 |
| | Low | College/Higher Education | City Limits |
| | Lowest | Hospital | Potential Future Annexation Area |



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.

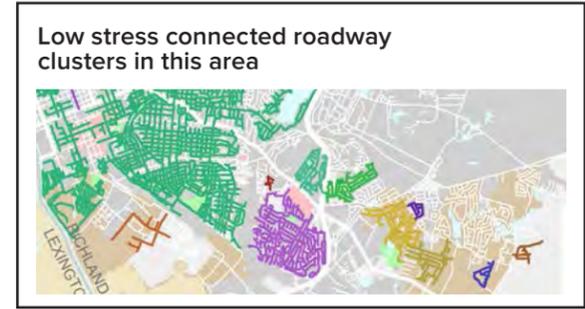
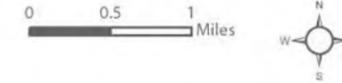


FIGURE 16: BICYCLE SUPPLY AND DEMAND RESULTS FOR SOUTHEAST COLUMBIA



Southeast Supply and Demand Results

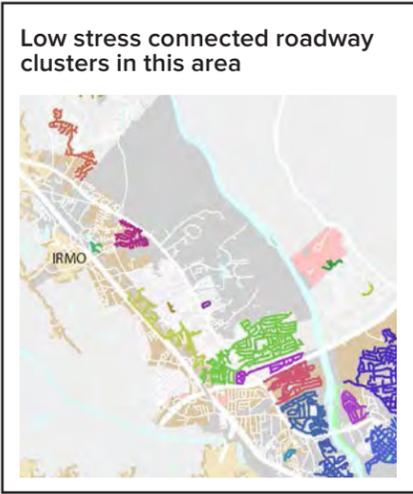
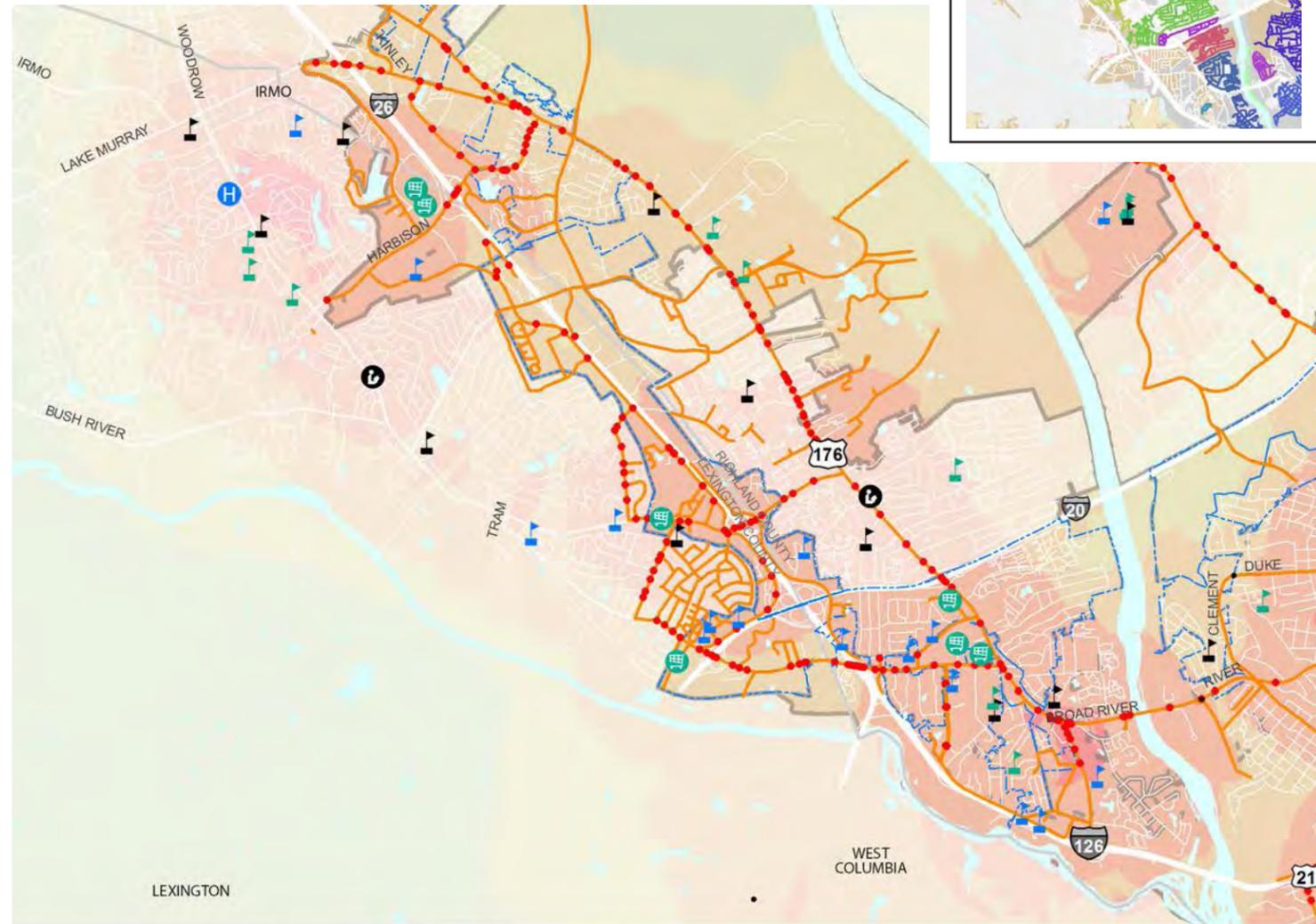
- | | | | |
|----------------------------|---------------|---------------------------|----------------------------------|
| Supply | Demand | Destinations | Shopping Center |
| High Stress Crossing (3-4) | Highest | Elementary School | Library |
| High Stress Segment (3-4) | Medium | High School/Middle School | Bus Stop - May 2013 |
| | Low | College/Higher Education | City Limits |
| | Lowest | Hospital | Potential Future Annexation Area |



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.



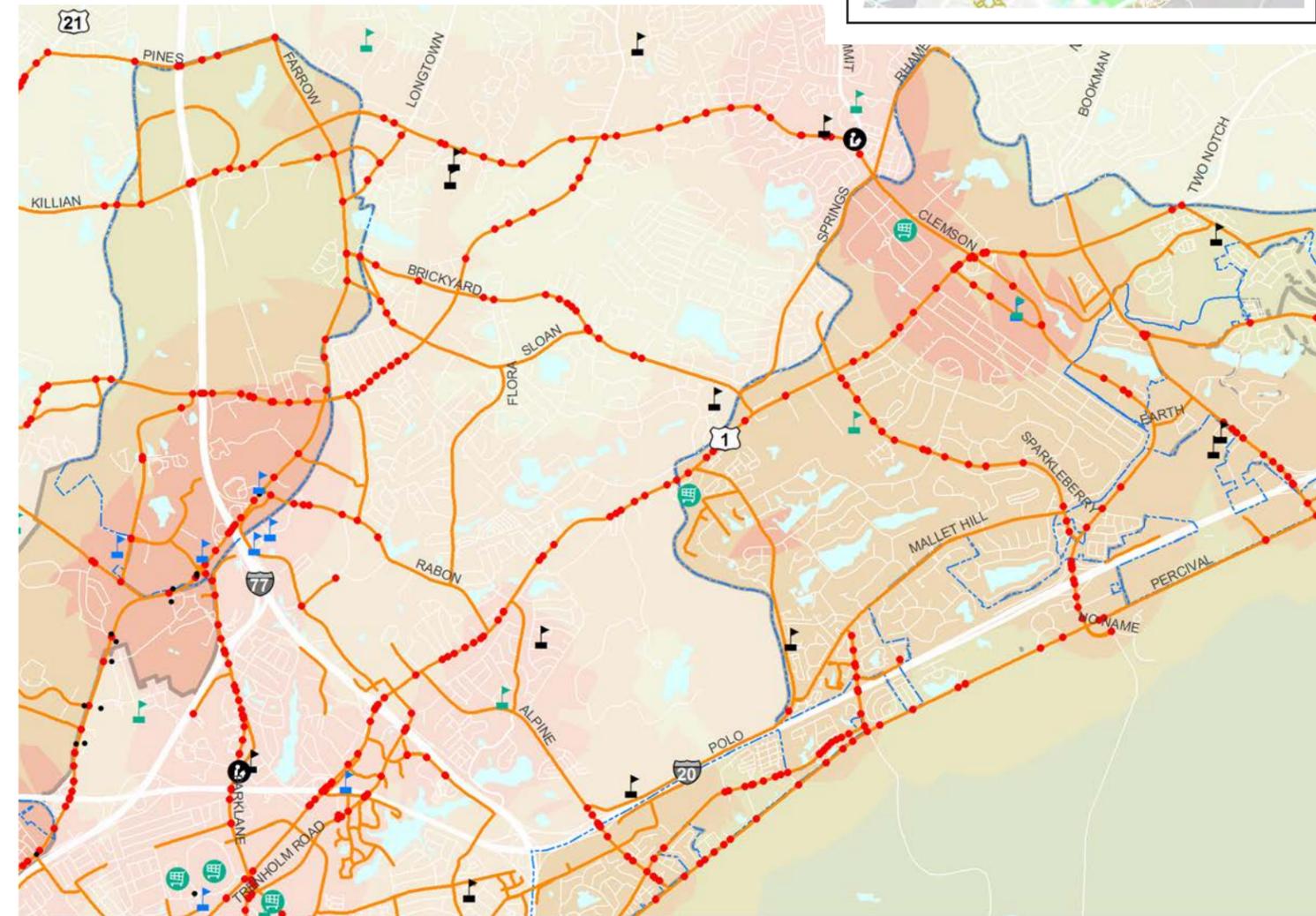
FIGURE 17: BICYCLE SUPPLY AND DEMAND RESULTS FOR NORTHWEST COLUMBIA



Northwest Supply and Demand Results

<p>Supply</p> <ul style="list-style-type: none"> High Stress Crossing (3-4) High Stress Segment (3-4) 	<p>Demand</p> <ul style="list-style-type: none"> Highest Medium Lowest 	<p>Destinations</p> <ul style="list-style-type: none"> Elementary School High School/Middle School College/Higher Education Hospital 	<ul style="list-style-type: none"> Shopping Center Library Bus Stop - May 2013 City Limits Potential Future Annexation Area 	<p>0 0.5 1 Miles</p>	<p>Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.</p>
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FIGURE 18: BICYCLE SUPPLY AND DEMAND RESULTS FOR NORTHEAST COLUMBIA



Northeast Supply and Demand Results

<p>Supply</p> <ul style="list-style-type: none"> High Stress Crossing (3-4) High Stress Segment (3-4) 	<p>Demand</p> <ul style="list-style-type: none"> Highest Medium Lowest 	<p>Destinations</p> <ul style="list-style-type: none"> Elementary School High School/Middle School College/Higher Education Hospital 	<ul style="list-style-type: none"> Shopping Center Library Bus Stop - May 2013 City Limits Potential Future Annexation Area 	<p>0 0.5 1 Miles</p>	<p>Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created June, 2014.</p>
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Intermodal Transit Analysis: Safe Routes to Transit

Existing Columbia Area Public Transportation Options:

- *The COMET, a public transit agency operated by the Central Midlands Regional Transit Authority (CMRTA)*
 - *University of South Carolina Transportation Services, private student transportation*
 - *The Santee Wateree Regional Transit Authority serving Elgin, Lugoff, Sumter, Hopkins, Camden, and Columbia*
 - *Newberry Express from Newberry*
 - *Intercity services, Greyhound Lines and Southeastern Stages, Megabus*
 - *Private taxi, limousine, and shuttle providers*
-

Introduction

A major theme emerging from the Bike Walk Columbia Plan and the long-range vision for the Columbia area is that the region must develop a transportation system that creates and encourages the use of more travel choices, such as transit, biking, walking and ridesharing, and begin to reduce the degree of reliance on the single-occupant automobile for vehicle travel.

Well-designed, strategically located pedestrian and bicycle facilities can increase ridership on public transit by providing people with safe, pleasant access to these transit options. With geographically strategic investments in pedestrian and bicycle system improvements, together with the implementation of smart land use strategies and better education and incentive programs, many short auto trips could be shifted to walking, biking or transit trips to help reduce vehicles miles traveled (VMT) and emissions for a relatively low cost.

Summary of Regional Transit Strengths

Over the past 10 years, there has been a strong national emphasis for livable communities that provide a range of transportation choices available to all residents within the community, including transit, walking and bicycling. The transit services within Columbia and surrounding areas (shown at left) offer some transportation options to residents. Building upon these existing systems is a goal for many agencies in the area. The state of coordination among the transit providers is present, but limited within the community.

- The COMET has bicycle racks on all buses, which has been a priority for the agency for several years. New buses ordered by The COMET buses will have racks for three bikes.

- USC does not have bike racks on buses, but does have many bicycle racks located on campus to accommodate student and faculty bike riders. Future buses should include bicycle racks on the front of the vehicles to accommodate the high usage of bicycles on campus. USC should continue to provide bicycle racks around campus to accommodate the bicycle mode share.
- The COMET, in coordination with USC, began in August 2014 the Garnet route, which provides service every 20 minutes from the student complexes on Bluff Road to the USC campus. Currently the apartment complexes on Bluff Road provide small shuttle vans for USC students to/from campus. Over the next year, The COMET and USC will continue to work together for future funding of this route.
- The COMET began in August 2014 more frequent service in the core downtown from the Downtown Transit Center to the USC campus. The goal of the reconfiguration of routes is to provide convenient and frequent service to downtown employees, students, and staff.
- Local government agencies involved in the High Speed Rail initiatives continue to recognize the necessary link between bus and rail services for the future.
- The COMET has approximately 900 bus stops located across Columbia. One goal of the agency is to have accessibility at all bus stops. This goal will improve accessibility to pedestrian facilities within the community.



Best Practices

The following provide examples of effective policies supporting coordination of transit, pedestrian and bicycle modes.

- **Promote convenient intermodal connections between all elements of the Columbia transportation network,** including a transit system that incorporates easy pedestrian and bike access.
- **Promote transportation improvements that support the redevelopment of lower-density, auto-dominated arterials** to become more pedestrian and transit compatible urban transportation corridors.
- **Promote the development of local street patterns and pedestrian routes that provide access to transit services** within convenient walking distance of homes, jobs, schools, stores, and other activity areas.
- **Develop a coordinated network of facilities for pedestrians and bicycles which provides effective local mobility,** accessibility to transit services and connections to and between centers.
- **Support opportunities to redevelop the road system as multimodal public facilities** which accommodate the needs of pedestrians, bicycles, transit, automobiles, and trucks.
- **Provide opportunities for creation of town centers in urban areas** that: (1) serve as focal points for neighborhoods and major activity areas; (2) include a mix of land uses, such as pedestrian-oriented commercial, transit stops, recreation and housing; and (3) encourage transit use, biking and walking through design and land use density.
- **Support the transformation of low-density auto-oriented transportation corridors to higher-density mixed-use urban transportation corridors** when redevelopment

would not detract from centers or compact communities. Corridors that offer potential include those that are located near significant concentrations of residences or employment, and have the potential to support frequent transit service and increased pedestrian activity. Encourage the redevelopment of these arterials through:

- Addition of transit facilities, pedestrian-oriented retail, offices, housing, and public amenities,
- Building design and placement, street improvements, parking standards, and other measures that encourage pedestrian and transit travel, and
- Provision of pedestrian and bicycle connections between transportation corridors and nearby neighborhoods.

As the Midlands region continues to grow over the next decade, providing a viable transportation network for all modes becomes critical. The data included in this summary, and the full report in **Appendix F** provide guidance for policy and decision makers to improve transportation for all modes, including pedestrian, transit and bicycle connections.

The COMET (above, right) offers bus service throughout Columbia. USC also offers localized bus service (below, right) connecting the campus to local destinations.



**EVERY TIME I SEE AN
ADULT ON A BICYCLE,
I NO LONGER DESPAIR
FOR THE FUTURE OF THE
HUMAN RACE.**



-- H.G. WELLS



RECOMMENDATIONS: PROGRAMS AND POLICY

Introduction

While engineering improvements are important to improving walking and bicycling conditions in Columbia, non-infrastructure improvements are equally important for developing a culture where walking and bicycling for transportation are normal and celebrated activities, and support for these modes is institutionalized.

Based on a thorough review of existing municipal codes, City policies, enforcement practices, encouragement activities and walking and bicycle program evaluation, the team developed a number of non-infrastructure recommendations, presented in the following chapter, that should be implemented as the City continues working towards its walking and bicycling goals.

Many neighborhoods, like Earlewood, are already fairly friendly to pedestrians and bicyclists and could be enhanced through relatively minor improvements.

Along with engineering improvements, these recommendations follow the nationally successful six “E’s” strategy for better walking and bicycling accommodation. This approach considers engineering, encouragement, enforcement, education and evaluation/planning activities implemented in an equitable fashion as part of a holistic approach to walk and

bicycle-friendly community planning. The six “E’s” approach is consistent with the criteria of the Walk- and Bicycle-Friendly Community programs, as discussed in the WFC and BFC Assessment of this Plan.





Program Recommendations

Introduction

While improving pedestrian and bicycle infrastructure is critical to increasing walking and bicycling rates and safety, program efforts play an equally important role in developing a more bike- and walk-friendly culture. **Programs are generally categorized by five of the Six “E”s of pedestrian and bicycle planning (Education, Encouragement, Enforcement, Evaluation, and Equity), with engineering recommendations playing a complementary role.** Program recommendations are categorized by the first four of these “E”s, with the fifth “E,” Equity, considered an essential element throughout. These programs raise awareness of pedestrian and bicycle safety, help residents access opportunities to walk and bike, and provide guidance on why and how to integrate walking and bicycling into their everyday lives. **In essence, these efforts market active transportation to the general public and ensure the maximum “return on investment” in the form of more residents walking and bicycling and a higher degree of safety and awareness.**

The following sections contain information on existing programs and partners and new program concepts for Columbia to pursue. The recommended program concepts include a description of the basic approach and links to model programs and resources. Recommendations were informed by input from public outreach and local stakeholders, feedback from the League of American Bicyclists on the City of Columbia’s Bicycle Friendly Community application, the objectives of the City’s Bicycle and Pedestrian Advisory Committee, and the results of the Columbia BFC/WFC Assessment and Safety Analysis included in this plan, as well as best practices for successful programs gleaned from around the Southeast and the country. The Walk Bike Columbia Implementation Plan and BFC and WFC Action Plans provide further detail regarding next steps for program development, potential funding sources, and a timeline for phased implementation.

Existing Programs and Partners

Columbia has several existing walking and bicycling programs, particularly education and encouragement programs that are helping to make the city a more bike- and walk-friendly place. Below is a description of some of the major program efforts that are helping to improve the walking and bicycling culture and environment of Columbia. Beyond the major partners and programs, bike and walk related activities are continually being introduced or reinvented – often under the radar or on a small scale – and are an important complement to the broader, more formal programs for walking and biking culture. **Richland County Library system’s bicycle-powered mobile library and the University of South Carolina’s Outdoor Recreation Program are examples of supportive efforts.**

Existing and Potential Partners

Columbia’s existing programs are a reflection of the many partners that are already creating a more walk- and bicycle-friendly Columbia. While the vast majority of infrastructure and policy recommendations of Walk Bike Columbia fall within the exclusive authority of CMCOG, COATS, or the City, many program recommendations can, and should, fall under the banner of outside agencies, private sector partners, and nonprofit organizations. A collaborative approach to implementing and sustaining bicycling and walking programs contributes to the broader vision of fostering a strong community and culture for advocating transit, walking, and bicycling. Additionally, the minimal expense associated with most programs offers the unique opportunity for multiple, varied sectors of the community to contribute to the larger bicycle friendly community campaign.

Beyond the CMCOG, COATS, and City of Columbia, organizations that already act as partners in program

implementation or who may want a role in implementing community programs include:

Agencies, Institutions, and Commissions
City of Columbia Planning Commission
City of Columbia Bicycle and Pedestrian Advisory Committee
City of Columbia Police Department
City of Columbia Parks & Recreation Department
Richland County Recreation Commission
Richland County School District
Richland Library
Local colleges and universities
South Carolina Department of Transportation
South Carolina Department of Health and Environmental Control
Nonprofits and Community Coalitions
Palmetto Cycling Coalition
Eat Smart Move More SC (and the Richland County Chapter)
Carolina Cyclers
Midlands SORBA
Healthy Columbia
Palmetto Conservation Foundation
Friends of Harbison State Forest
American Diabetes Association
Sustainable Midlands
The River Alliance
Lexington Greenways Alliance (Community Open Land Trust)
CMRTA Advocacy Coalition
AARP
ABLE SC

Private sector and business support for program development and implementation is already evidenced through the contributions of Palmetto Health and Abacus Planning to the Walk Bike Columbia project and the participation of local bicycle shops. The broad participation of business-owners,



Education programs for practitioners such as the Columbia innovative bikeway design training workshop that was conducted in the fall of 2014 are also an important program consideration. The City should continue these training efforts for employees involved in project relevant to walking and biking modes.

property-owners, and major employers in the stakeholder focus group outreach phase of the Plan is further evidence. These groups and others will serve as important partners when implementing employer/employee incentive programs, seeking sponsorship funds, recruiting volunteers for activities, or advocating for the role of walking, bicycling, and transit within the City's and the region's larger economic development vision.

Safe Streets Save Lives Campaign

The Safe Streets Save Lives Campaign is a long-term strategic bicycle safety campaign that was launched statewide in 2010. This program is a joint effort of two South Carolina bicycle advocacy organizations: the Palmetto Cycling Coalition and Bike Law. The Safe Streets Save Lives Campaign provides a series of educational materials and events to improve bicycle safety in Columbia and South Carolina as a whole:

- Information on bicyclists' and motorists' rights and responsibilities on the road
- Educational videos on bicycle safety topics, such as how to ride in traffic, proper signaling, and how to drive around bicyclists as a motorist
- The Rolling Bike Summit: a bicycle education and networking event series for advocates, planners, engineers, elected officials, and others in Columbia and throughout the state who are interested in improving bicycling and walking in their communities
- Safe Streets Ambassadors Training Tour: Educational workshops held to train local staff, advocates, and citizens to promote bicycle safety and education within their communities
- Active Facebook page with safety education tips, videos, and bicycle laws and guidance

Bike Month Events

The City of Columbia has been actively involved in Bike Month each May. The Bicycle and Pedestrian Advisory Committee (www.columbiasc.net/bikefriendly) and other partners have

led a variety of activities to promote Bike Month, including the following:

- Bicycle Skills Clinic
- Tour de Cure Mayor's Bike Ride, Family Fun Ride, and Bike Rodeo
- Bike to Work Day with pit-stops for bicyclists throughout Columbia
- Bike to School Day
- Ride of Silence

Local Rides, Walks, and Bicycling and Walking Related Events

Several weekly, annual, and special events provide opportunities for Columbia residents to walk and bike, including recreational bike rides, family rides, fun runs and races, charity rides and walks, parades, and guided trail rides. Some highlights include the following:

- Carolina Cyclers weekly rides and events (<http://www.carolinacyclers.org/>)
- Handlebar Happy Hour
- Palmetto Half Marathon, 5K, and Fun Run
- Snowman Run 8K Road Race and Youth Fun Run
- National Walk @ Lunch Day
- Self-guided walking tours, historic tours, and guided neighborhood tours
- Tour de Cure and similar charity road bicycling events



Physical Activity and Healthy Lifestyle Programs

The goal of increased physical activity and healthier lifestyles in Columbia is being propelled locally by a number of agency and community initiatives, such as:

- Healthy Columbia's Step Forward Columbia (walking program) and the Healthy Richland Initiative
- Eat Smart Move More Richland County
- Palmetto Health's 29203 LiveWell Columbia Community Assessment and Healthy Palmetto program
- Carolina Cyclers promotion of biking and biking-related activities
- Girls on the Run of Columbia running programs that empower girls from 3rd to 8th grade for a lifetime of healthy living
- City of Columbia's Bicycle and Pedestrian Advisory Committee, which encourages active transportation and leads numerous annual community events to promote walking and biking

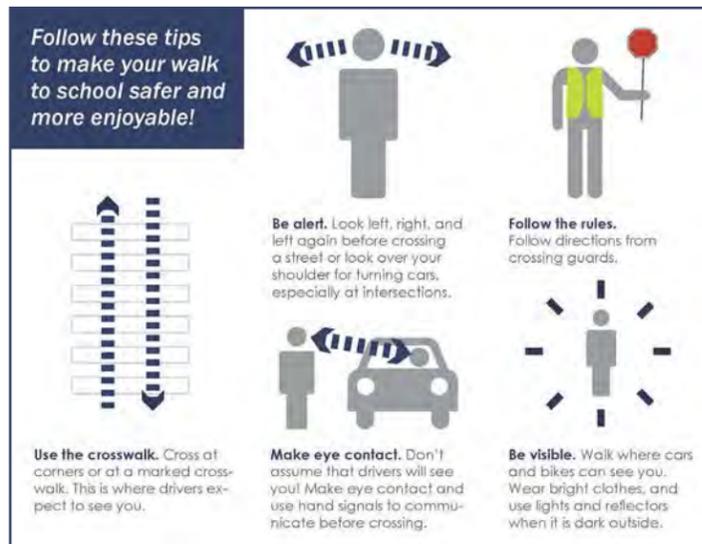
The Step Forward Columbia walking program is one example of many initiatives that are encouraging people to walk and bike more in their daily lives. Step Forward Columbia promotes the physical and mental health benefits of walking and encourages Columbia residents to walk more for exercise. The 6-week encouragement program helps participants create a walking team, set individual and team goals, schedule group walking activities, and awards participants with prizes. The program website (<http://www.healthycolumbia.org/exercising>) provides information on local walking events and fitness classes, and participants receive a free walking booklet and access to tools to track their progress.

Safe Routes to School Efforts

More than half of all elementary and middle schools in Columbia are participating in Safe Routes to School programs. School program efforts include developing and sending flyers with safety information to students' homes, classroom pedestrian and bicycle safety education, a Walking Fridays encouragement program, and school public address announcements that educate students on walking and bicycling safety. Teachers conduct periodic in-class tallies to record how students are traveling to and from school, which

can help to track trends in student walking and bicycling rates over time. Columbia police officers have also increased their patrol presence around schools during morning arrival and afternoon dismissal times to enforce school zone speed limits.

The frames below show images from an Elmhurst, IL Safe Routes to School safety education campaign. The school district developed a set of tri-fold brochures to educate pedestrians, bicyclists and motorists on safe operation when traveling to and from school.





New Programs

In order to build upon the success of existing programs and improve the safety, comfort, and enjoyment of walking and bicycling in Columbia, this section provides an overview of programs that have shown success across the country and are recommended for the City of Columbia to pursue. A full, detailed list of these recommendations including links to additional resources and identified project partners can be found in **Appendix G**.

Education Programs

Education programs come in a variety of scopes and sizes and unique offerings should be developed and targeted towards users of all modes, ages and abilities. The most successful education programs target specifically identified safety or awareness deficiencies. For example, programs that educate motorists on safe bicycle passing buffers, educate bicyclists on the importance of utilizing bike lights, educate pedestrians on how to use pedestrian-oriented traffic signals and provide wayfinding information to potential transit users are among common programs. The City of Columbia should work with local partners to implement the programs recommended here. Recommendations are based on observations collected by the team through public input, data analysis and field work.

- **Expand Media Campaign to Educate Motorists, Pedestrians, and Bicyclists**
- **Walk Bike Ambassador Program and Classes**
- **Traffic Ticket Diversion Program**
- **Expand Safe Routes to School Efforts**

Encouragement Programs

Encouragement programs seek to target people who are “interested but concerned” to try walking, bicycling and transit for transportation by providing them with the resources to make them feel more comfortable doing so. They also can have a secondary function to normalize walking and bicycling, especially as a form of transportation, for all roadway users. The following programs reflect encouragement needs identified

in the existing conditions analysis. The City of Columbia should work with local partners to implement the following recommendations:

- **Commute Trip Reduction and Employer Incentives Program**
- **Walking and Bicycling Programs for Underrepresented Groups**
- **Bicycle Friendly Business Districts**
- **Open Streets Events**
- **Walking and Bicycling Map with Online Route Planning Tool**
- **Bicycle Co-op**
- **Walk, Bike, and Take Transit to Special Events**

Enforcement Programs

One of the specific gaps identified in the Columbia BFC/WFC Assessment and the League of American Bicyclists’ BFC Application feedback is a lack of pedestrian- and bicycle-specific enforcement programs. **39% of Columbia Walk Bike Columbia survey respondents believe that law enforcement programs targeting drivers, pedestrians, and bicyclists would have the greatest impact on improving walking and biking in Columbia.** These programs can help to raise awareness of pedestrians and bicyclists, enforce road user rights and responsibilities, and reduce unsafe traffic behavior.

The Columbia Safety Analysis performed for this plan found that traffic enforcement for motorists should focus on speeding enforcement and ticketing drivers who fail to yield the right of way to pedestrians and bicyclists. Traffic enforcement for bicyclists should focus on enforcement for failing to follow traffic signs and signals, improper operations on the road, and wrong way riding on the road. These issues present the greatest crash risks to road users and could be reduced through targeted

enforcement programs, as well as improved education and roadway engineering.

- **Crosswalk Enforcement Action Program**
- **Targeted Enforcement & Speed Feedback Signs**

Evaluation and Planning Programs

In the Columbia BFC/WFC Assessment conducted for this plan, Evaluation and Planning program efforts were identified as the most in need of enhancement. Establishing this plan and tracking its implementation is an important first step in the evaluation and planning arena. Creating a dedicated pedestrian and bicycle coordinator position or selecting an outside consultant to perform the duties of coordinator at the City will be a critical implementation step in developing and maintaining long-term evaluation and planning initiatives within Columbia. A series of evaluation programs are described below that can help Columbia identify pedestrian and bicycle needs, track successes, and make the case for further bicycling and walking investments.

- **Citywide Pedestrian and Bicycle Counts Program**
- **“Measuring the Street” Pre- and Post-Project Evaluation Program**
- **Walking, Bicycling, and Greenways Report Card**



Policy Recommendations

Introduction

Planning and development regulations provide guidelines and requirements for most of what is developed in the City and as such are fundamental to the area's walk- and bike-friendliness and access to transit. Since most new development in Columbia is provided through private investment or investment by non-City agencies, **the provision of walk-, bike-, and transit-friendly development policies and ordinances are one of the most cost-effective means that the City has to establish walkable and bikeable infrastructure for its neighborhoods and districts.**

Policy recommendations of Walk Bike Columbia are based on a review and assessment of development requirements related to pedestrian and bicycle facilities for the City and on policy best practices from around the Southeast and the country. The review focused on the City's Code of Ordinances (CO), Engineering Regulations, but also included a review of the City of Columbia 2010 Complete Streets Resolution.

Appendix H includes matrices of the full policy review and item by item policy recommendations. The following provides recommended "next steps" for priority improvements to the bicycle- and walk-friendliness of local policies.

The provision of walk-, bike-, and transit-friendly development policies and ordinances are one of the most cost-effective means that the City has to establish walkable and bikeable infrastructure for its neighborhoods and districts.

Design Standards

Develop and Codify Complete Streets Design Standards

Key strengths of Columbia's current policy environment is the adoption of a Complete Streets Resolution in 2010, the inclusion of SCDOT's EDM-22 (bicycle facility memo) in the City's Engineering Regulations, and the endorsement of the NACTO Urban Bikeway Design Guide in 2013. While these are critical first steps, the City must further codify these policy measures to ensure that the design principles within each are seamlessly integrated within the City's Code of Ordinances and Engineering Regulations. This City must ensure that all land use regulations, development requirements, or engineering standards reflect the NACTO Urban Bikeway Design Guide and also further develop standards/guidelines for pedestrian facilities to complement those endorsed for bicyclists.

The Design Guidelines developed for this Plan (**Appendix XX**) provide the necessary standards for integrating best practices in pedestrian and bicycle facility design (including integration with transit and ADA accessibility) into the City's Engineering Regulations. This Plan recommends formally adopting the Design Guidelines. Beyond adoption, these standards will be further institutionalized by developing Complete Streets Context-Sensitive Street Typology Guide as part of the Engineering Regulations and complementary Complete Streets Ordinance (complete streets development standards codified through the Code of Ordinances). This recommendation is already reflected in the City's existing Complete Streets Policy, which states that the City will prepare draft regulations to implement the policy.

The Complete Streets Ordinance will provide a "package" of code improvements related to bicycling, walking, and access to transit as well as standards for context-appropriate street design for all modes of transport. This "package" will include policy recommendations included within the attached

matrix and will ensure that design guidance is integrated into development standards for new development. The Complete Streets Local Policy Workbook – by the National Complete Streets Coalition and Smart Growth America (<http://www.smartgrowthamerica.org/documents/cs-local-policy-workbook.pdf>) is an important resource for developing an effective complete streets ordinance.

The Complete Streets Context Sensitive Street Typology will serve as a complement to the design guidelines included in this Plan. As one example, the Cleveland (OH) Complete and Green Streets Typology Manual reclassifies the City's streets into typologies based on transportation function, width, land-use, and other considerations. Developed in conjunction with the passage of a Complete and Green Streets Ordinance, the initiative requires implementation of sustainable policies and guidelines in all construction projects within the public right of way. The City adopted the manual for the explicit purpose of creating a walking, biking and public transportation-friendly city while reducing environmental impact by incorporating green infrastructure. Examples and resources for typology-based design manuals include:

- *Cleveland Complete and Green Streets Typology Manual:* <http://www.city.cleveland.oh.us/CityofCleveland/Home/Government/CityAgencies/OfficeOfSustainability/SustainableMobility>
- *Charlotte Urban Street Design Guidelines and related development standards:* <http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx>
- *Raleigh Street Design Manual:* <http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1>
- *NACTO Urban Street Design Guidelines:* <http://nacto.org/usdg/>



Develop and Adopt an ADA Transition Plan

Through adoption of Title II of the federal Americans with Disabilities Act (ADA) in 1990, all city governments are required to complete a self-evaluation of their facilities, programs, policies, and practices. As described by the U.S. Department of Justice, Civil Rights Division, “the self-evaluation identifies and corrects those policies and practices that are inconsistent with Title II’s requirements. Self-evaluations should consider all of a city’s programs, activities, and services, as well as the policies and practices that a city has put in place to implement its various programs and services.” (Source: U.S. Department of Justice, Civil Rights Division, Disability Rights Section. (October 2008). The ADA and City Governments: Common Problems. Retrieved from: <http://www.ada.gov/comprob.htm>) This is a required step and an essential tool for advancing ADA accessibility locally that Columbia has not yet taken.

An ADA Transition Plan adopted by the City of Columbia is a policy document intended to meet the accessibility needs identified as part of the required self-evaluation. For all public facilities within the City of Columbia’s jurisdiction, the ADA Transition Plan will identify infrastructure or other physical obstacles that limit accessibility, establish a strategy for making the facility accessible, adopt a timeline for achieving ADA compliance, and assign an agency, department, or staff position responsible for implementing each of the Plan’s identified improvements. Other elements of an ADA Transition Plan, as identified in the Federal Highway Administration’s best management practices guide, that are essential to an effective Plan are as follows:

- Ensure that ADA requirements and standards are fully integrated into all of the agency’s policy, planning, and design handbooks or manuals.
- Ensure that all district planning and engineering staff (and not just an ADA coordinator) have the required training. Because of evolving ADA standards and employee turnover, periodic offerings of training will be necessary.

- Ensure that ADA improvements can be funded through a variety of funding programs/sources. For example, nearly all agencies surveyed made ADA improvements through standard construction/reconstruction projects. For relatively small improvement needs, most agencies used a maintenance budget.
- In other cases, if an improvement need could not be included in a maintenance budget and there was an active construction project, several agencies budgeted a separate and distinct funding category specifically for ADA improvements.

(Source: The National Academies, National Academy of Sciences, National Cooperative Highway Research Program. (May 2009). ADA Transition Plans: A Guide to Best Management Practices. NCHRP Project Number 20-7 (232). Retrieved from: http://www.fhwa.dot.gov/indiv/docs/ada_transition_plans_report.pdf)

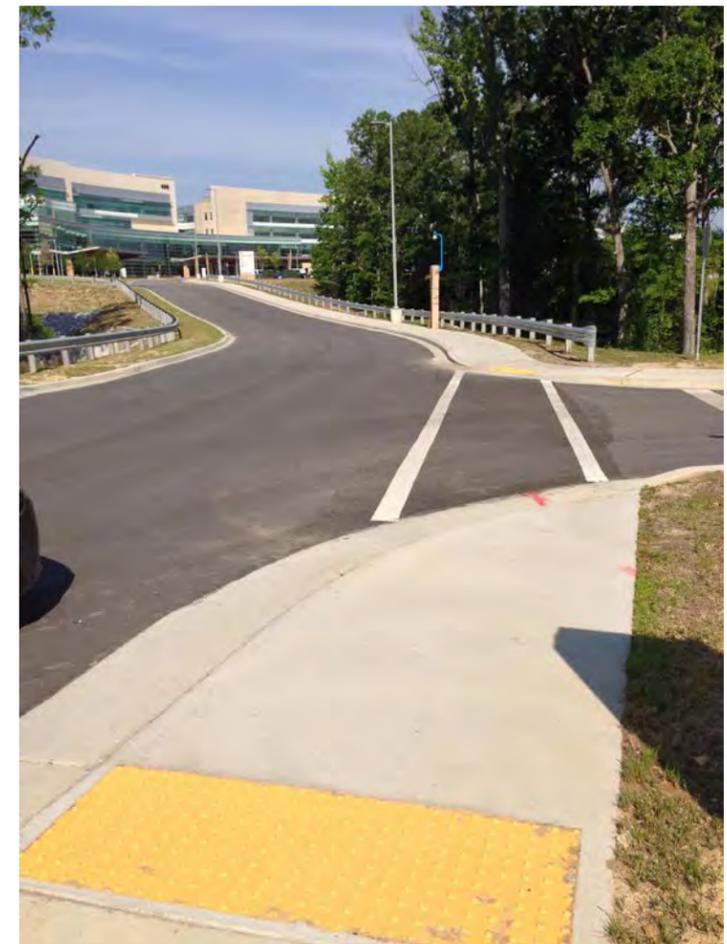
Development Ordinances

Bicycle Facilities within New and Redevelopment

Adopting the Design Guidelines developed for this Plan, as well as a Complete Streets Ordinance, and Context Sensitive Street Typology Guide will provide the basis for advancing the pedestrian and bicycle network in future roadway new construction and reconstruction. New policies must ensure that the network recommendations of Walk Bike Columbia are implemented as part of new development and roadway maintenance. Additionally, updates to the City’s code should include requirements for greenway corridor reservation, dedication, or construction in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway.

Sidewalks within New and Redevelopment

The existing conditions report identified not only a need for closing existing gaps within the sidewalk network, but also for establishing policies that require the provision of sidewalks



ADA transition plans, required by the Civil Rights Act of 1990, provide a systematic tool to ensure that existing facilities are accessible to all potential pedestrians and transit users, regardless of age and ability. The City of Columbia should look to develop an ADA transition plan in the near-term.



through the development process. This Plan recommends that Columbia include and refine regulatory standards in the Zoning Ordinance and/or Subdivision Regulations requiring new developments to include sidewalks.

Refinement of existing sidewalk requirements in the Engineering Regulations will ensure long-term, cost-effective improvements to local mobility options and to the overall walkability of Columbia. The City should adopt standards requiring sidewalks in specified contexts, based on street type, land use, or densities. This should be incorporated into the Complete Streets Ordinance and Engineering Regulations. Examples can be found in nearby Dekalb County, GA, and the City of Mount Pleasant, SC., as cited below:

Dekalb County Code of Ordinances sec. 14-383 (Streets)

(a) Sidewalks shall be required on all sides of street frontage on all new and improved local residential streets in all subdivisions and along the street frontage of all new and improved non-residential developments and as set forth in section 14-190 of this article, unless determined by the planning commission to be infeasible only due to severe cross-slopes, shallow rock, soil or topographic conditions. At a minimum, however, continuous

sidewalks shall be required on at least one (1) side of all new and improved local residential streets in all new and improved. No other variances or exceptions are allowed.

(b) The development director or planning commission may require that sidewalks required pursuant to 14-383(a) be continued to the nearest major or minor arterial or collector street.

Mt. Pleasant, South Carolina Code of Ordinances sec. 156-108 (Curb Cuts and Pedestrian Access)

(1) New developments, subdivisions, and remodeling. Appropriate pedestrian access shall be provided for all new developments, subdivisions, and renovation or remodeling equaling 50% of the existing building's value, either through the construction of concrete sidewalks or pedestrian path/bikeway systems, or a combination of both.

(2) Table of pedestrian access requirements. (see **Table 9** on the following page)

Bicycle Parking Ordinance

Bicycle parking options in downtown Columbia have increased dramatically in the last five years. As referenced in the Bicycle Parking Plan, Columbia has installed bicycle corrals, custom-designed bicycle racks, and standard racks in highly visible locations within downtown districts. While the current approach has been successful at increasing bicycle parking options, it has not met demand or provided the level of geographic coverage needed to serve necessity, as well as choice, cyclists. The most effective means of addressing this is through a combination of City-installed bicycle racks and codified bicycle parking requirements. This Plan recommends that the City adopt general bicycle parking requirements that extend to all land uses.

Just as car trips vary in purpose and duration, so too do bicycle trips. Because of the varied nature of bicycle trips, different types of bicycle parking should be provided to accommodate these needs. These needs can be met by providing both short-term and long-term parking. The Association of Pedestrian and Bicycle Professionals addresses the distinction between Short/Long-Term parking in the Bicycle Parking Guide, 2nd Edition, 2010) (**Table 10**).

Codified bicycle parking ordinances and guidelines ensure the systematic and uniform accommodation of short-term and long-term bicycle parking throughout a community. Bicycle parking can also be designed to reflect local aesthetics or cultures as the image to the right from Columbus, OH depicts.





TABLE 9 – MT. PLEASANT TABLE OF PEDESTRIAN ACCESS REQUIREMENTS

Land Use/Road Classification	Minimum Requirement
Commercial and industrial (new streets)	Sidewalk both sides
Commercial and industrial (new development on existing street)	Sidewalk one side if specified on Road Improvement/Transportation Plan
Major arterial	Sidewalk both sides
Residential collector (including boulevards, parkways, and spine roads)	Sidewalk one side on streets having direct access to lots
Local residential streets	
Greater than 3.5 units per acre	Sidewalk both sides
Between 3.5 and 1.1 units per acre	Sidewalk one side
Less than or equal to 1.0 units per acre	Pedestrian path/bikeway
Between neighborhoods, commercial developments, schools, parks, community areas and the like	Whenever possible, a pedestrian access path, bike trail, or crosswalk shall be provided between existing and proposed new subdivisions and other pedestrian-oriented destinations

TABLE 10 – APBP SHORT AND LONG-TERM PARKING BEST PRACTICES

Criteria	Short-term	Long-term
Parking Duration	Less than two hours (shoppers and other short term visitors)	More than two hours (e.g., students, employees, residents)
Fixture Type	Simple bicycle racks	Lockers, racks in secured area or room
Weather Protection	Unsheltered (but can also be sheltered for protection from sun and rain)	Sheltered or enclosed Secured, active surveillance
Security	Unsecured, passive surveillance	Unsupervised “Individual-secure” such as bicycle lockers “Shared-secure” such as bicycle room or cage Supervised Valet bicycle parking Paid area of transit station
Typical land uses	Commercial or retail, medical/healthcare, parks and recreation areas, community centers, and public buildings	Residential, workplace, schools, transit centers

For short-term bicycle parking, as referenced in the policy recommendations matrix, the minimum number of parking spaces for bicycles will be based on land use, with at least two bicycle parking spaces provided for all sites. For long-term bicycle parking, the policy must incentivize or require either bike lockers or secure parking areas (SPAs), indoor or in a gated outdoor area, specifically designated for bicycle parking.

Bicycle parking design, installation, and location are critical elements of a bicycle parking policy, as well. The policy will need to reference to the bicycle parking guidelines included within the Design Guidelines of this Plan. Additional resources related to the design, installation and location of bicycle parking standards include:

Unit of Measurement for Bicycle Parking

The new APBP Bicycle Parking Guidelines recommend uncoupling bike parking supply from car parking supply. The reason for this is that a percentage of car parking supply is not necessarily a good measure of the number of cyclists who would be expected to travel to a particular destination, especially in densely urbanized areas or where multiple travel options exist. We recommend a land use-based approach with location-specific measures of supply such as parking spaces per square footage of retail or percentage of transit boardings. See the resources below for model ordinance examples:

- *Association of Bicycle and Pedestrian Professionals Bicycle Parking Guidelines (2nd Edition)*: <http://www.apbp.org/?page=publications>
- *Bicycle Parking Model Ordinance, Change Lab Solutions*: <http://changelabsolutions.org/publications/bike-parking>



PHOTO CREDIT - COLUMBIA METROPOLITAN CONVENTION & VISITORS BUREAU



RECOMMENDATIONS: PEDESTRIAN AND BICYCLE NETWORK

Introduction

*A growing concept in the non-motorized transportation field is the idea of “8 to 80” cities – where the vast majority of the population has a safe option of either walking or biking safely and comfortably for their transportation needs. 8 to 80 cities are resilient, safer and more livable cities; where not only the most strong and resilient, or those who do it out of need walk and bike, but rather people of **all ages and abilities** do so by choice – because it’s a safe, convenient and pleasant transportation option.*

A Columbia resident, likely a college student, bicycles to the ATM in the Five Points area. An 8-80’s walking, bicycling and transit network would support users of all ages and abilities in easily accomplishing daily errands like going to the bank or ATM car-free.

Among other things, 8 to 80 cities give children the option of walking or biking to school, relieving traffic congestion at peak hours and giving parents extra time for other activities. They also provide seniors with options to live independently without the use of a car, saving them money and making roadways safer. A comprehensive 8 to 80’s approach to pedestrian and bicycle planning includes strong development policy, infrastructure and non-infrastructure support programs that work in tandem to create an urban environment where

walking and bicycling are appealing to a wide variety of users. This section looks specifically at the transportation network in Columbia and how systematic infrastructure improvements can be made that support the goal of Columbia becoming an 8 to 80 city. A resilient city is one that balances the needs of different transportation users and offers multiple transportation options - network recommendations presented in this section reflect this concept.





“8-80” is a term coined by Gil Penalosa, the former Commissioner of Parks for the City of Bogota, Colombia and head of the Canadian-based non-profit “8-80 Cities.” To learn more about the organization, and access the walking, bicycling and transit-support resources that they offer, visit their website: www.8-80cities.org/

In order to create this balance in the transportation network, roadways will have varying priorities. For example, roadways that serve important motor-vehicle or freight connections will prioritize motor-vehicle and freight users. Corridors that provide connections to important walking, biking or transit destinations such as schools, job centers, retail centers and neighborhoods will prioritize walking, biking, and transit users. Some corridors provide important connectivity for all roadway users, therefore designing the roadway to balance user considerations or providing an equal, parallel connection while maintaining good walking and biking access along the main corridor is recommended.

The following sections discuss the needs of pedestrian and bicycle users of all ages and abilities, and present comprehensive network recommendations that address these needs. Network recommendations are intended to be implementable and meet user needs by reflecting best practices for walking and bicycling. The Team considered several factors in the development of these recommendations including (but not limited to):

- Existing roadway design and pedestrian/bicycle accommodations
- Roadway jurisdiction and applicable design policies and practices
- Existing and projected traffic volumes
- Traffic speed
- Public and stakeholder input
- Transit connectivity
- Trip origins and destinations and likely user types
- Freight traffic
- Accident reports
- National best practices in roadway design for pedestrians, bicyclists and transit users

All recommendations are feasible based on the information the team had available during Plan development and reflect national best practices in urban roadway design. These recommended practices have been proven in numerous cities across the US and should be followed to create a roadway network that best fulfills multiple user needs. However, due to a host of possible constraints, it may not be possible for these recommendations to be followed in all instances. If a facility cannot be implemented as recommended, the City of Columbia should strive to implement the next best facility type for the roadway. For example, if cycle tracks are not possible at present on a roadway, buffered bike lanes should be considered as the next best alternative, with cycle tracks being the long-term desired facility-type. Also, network recommendations should be applied in tandem with other improvements for pedestrian and bicycle users such as enacting policies that support more walk and bike-friendly development city-wide and implementing programs that educate citizens on how to use these facilities and encourage them to do so safely. This, and other implementation considerations will be discussed in later sections of the Plan.



Pedestrian and Bicycle Infrastructure Types

Introduction

A variety of on and off-street pedestrian and bicycle facilities are recommended due to 1) the range of abilities and comfort levels of pedestrians and bicyclists; 2) the range of conditions for walking and bicycling on different roadway environments; and 3) local preferences identified through the public input process. This section presents an overview of these facility types in order to orient the reader to the network recommendations presented in the following sections. In addition, the project team is developed a set of Complete Street design guidelines specific to the policies and roadway conditions unique to the City of Columbia. This Guide, found in **Appendix XX** will present specific information on the design of the facility types presented here, as well as guidelines on other spot improvements such as traffic calming, intersection treatments, bicycle parking, transit stops, and other bicycle and walking appurtenances.

The recommended pedestrian and bicycle network substantially increases access to transit and is made up of the following core types of pedestrian and bicycle facilities:

On-road facilities
Cycle tracks
Buffered Bicycle Lanes
Bicycle lanes
Paved shoulders
Neighborhood Greenways/Bicycle Boulevards
Shared lane markings
Signed Bicycle routes
Off-road facilities
Shared use paths (also known as greenways and multi-use paths)
Sidepaths
Pedestrian facilities
Sidewalks
Signalized Intersection Improvements
Un-signalized Mid-block Crossing Improvements

The recommended strategies for implementing the proposed facilities include road widening, lane narrowing, lane reconfiguration, parking reduction, adding markings/signage, and new construction. In addition, strategic speed limit reductions and intersection improvements should be considered for improved pedestrian and bicycle safety and comfort throughout the City.

Pedestrian Facility Types

Pedestrian facility types recommended as a part of this planning effort fall into four categories: sidewalk improvements, signalized intersection improvements, unsignalized/mid-block crossing improvements, and off-road trails or paths. The first three of the four occur as part of the street network. An overview of what these improvement categories entail is provided below.

Sidewalks



Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments.

Attributes of well-designed sidewalks include the following:

- **Accessibility:** A network of sidewalks should be accessible to all users.
- **Adequate width:** Two people should be able to walk side-by-side and pass a third comfortably. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate the high volume of walkers.
- **Safety:** Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.
- **Continuity:** Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- **Landscaping:** Plantings and street trees should contribute to the overall psychological and visual comfort of sidewalk users, and be designed in a manner that contributes to the safety of people.
- **Drainage:** Sidewalks should be well graded to minimize standing water.
- **Social space:** There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.
- **Quality of place:** Sidewalks should contribute to the character of neighborhoods and business districts.

While South Carolina laws do not dictate whether cyclists are allowed on sidewalks, Columbia disallows sidewalk riding in the central business district. In most cases, adult bicycle use on sidewalks is considered unsafe, and the use of bicycles should be limited to roadways and shared use paths.



Signalized Intersection Improvements



Signalized intersections are typically preferred crossing locations for pedestrians since traffic is typically stopped in one direction and motorists generally expect pedestrian crossing. However, vehicular turning speed, visibility, crossing distance and signal timing can be great barriers for pedestrians on roadways that are designed to primarily accommodate vehicular traffic.

Treatments such as high-visibility crosswalks, bulb-outs/curb extensions, roadway geometry improvements, adding pedestrian signals, lengthened/leading pedestrian crossing intervals and pedestrian median refuges can improve new or existing intersections for pedestrian users.

Unsignalized & Midblock Crossings



A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. This can occur at an unsignalized intersection or mid-block, where no intersection exists. The approach to designing crossings at unsignalized locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.

Active Warning Beacons (RRFB) and Hybrid Warning Beacons (HAWK) can also be used to enhance visibility at unsignalized crossings locations.

On-road Bicycle Facilities

On-road bikeway types are used typically on arterial, collector, and subcollector roadways where motor vehicle traffic volumes or speeds are relatively high. They are ordered hierarchically from greatest degree of bicycle/motor vehicle separation to lowest. In general, higher order facilities are preferable on higher-order roadway streets and vice versa.

Intersection Treatments



There are a variety of intersection treatments that can be applied to make a safer and more comfortable crossing environment for bicyclists. As seen in the example above, green paint delineates the preferred path of travel for the bicyclist through the intersection and indicates a potential conflict to motorists. A full set of potential intersection improvements can be viewed in the Design Guidelines found in **Appendix XX**.

Cycle tracks



A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk. Cycle tracks have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used by bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. In situations where on-street parking is allowed, cycle tracks are located to the curb-side of the parking (in contrast to bike lanes).

Cycle tracks may be one-way or two-way, and may be at street level, sidewalk level or at an intermediate level. If at sidewalk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the cycle track from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking or bollards.

By separating bicyclists from motor traffic, cycle tracks can offer a higher level of comfort than bike lanes and are attractive to a wider spectrum of the public. Intersections and approaches must be carefully designed to promote safety and facilitate left-turns from the right side of the street.

Buffered Bicycle Lanes



Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes follow general guidance for buffered preferential vehicle lanes as per MUTCD guidelines.

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane and/or parked cars, providing more comfortable conditions for bicyclists. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

Bicycle Lanes



A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is four feet; five- and six-foot bike lanes are typical for collector and arterial roads.

Where bicycle lanes are recommended in this plan, speed limit reduction should be strongly considered.



Paved Shoulders



Typically found in less dense areas, shoulder bikeways are roadways with paved, striped shoulders. While there is no minimum width for paved shoulders, 4' or greater is preferred for cyclists. In addition to the safety and comfort benefits for cyclists, paved shoulders also reduce roadway maintenance, improve roadway drainage, provide a stable walking surface for pedestrians when sidewalks cannot be provided, reduce vehicular crashes, and provide emergency stopping space for broken-down vehicles.

Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways should be considered a temporary or rural treatment, with full bike lanes planned for construction if the roadway is widened or completed with curb and gutter.

Because some rural and neighborhood streets feature lower traffic volume and lower speeds, they travel. Bicycle travel on these roads is typically not separated from motor vehicle traffic.

Neighborhood Greenways/Bicycle Boulevards



Neighborhood greenways are low-volume, low-speed streets modified to enhance bicyclist comfort and safety by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. Pedestrian and bicycle cut-throughs (recommended in the following section) can also be integrated into the neighborhood greenways network to allow for continuous bike travel off of major corridors. These treatments allow through bicycle movements while discouraging motorized through-traffic.

Jurisdictions throughout the country use a wide variety of strategies to determine where specific treatments are applied. While no federal guidelines exist, several best practices have emerged. At a minimum, neighborhood greenways should include distinctive pavement markings and wayfinding signs. They can also use combinations of traffic calming, traffic diversion, and intersection treatments to improve the bicycling environment. The appropriate level of treatment to apply is dependent on roadway conditions, particularly motor vehicle speeds and volumes.

Traffic conditions on neighborhood greenways should be monitored to provide guidance on when and where treatments should be implemented. When motor vehicle speeds and volumes or bicyclist delay exceed the preferred limits, additional treatments should be considered for the neighborhood greenway.

Marked, Shared Roadways



A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane. Placed in a linear pattern along a corridor (typically every 100-250 feet), shared lane markings make motorists more aware of the potential presence of cyclists; direct cyclists to ride in the proper direction; and remind cyclists to ride further from parked cars to avoid “dooring” collisions.

In constrained conditions, the SLMs are placed in the middle of the lane. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles. In all conditions, SLMs should be placed outside of the door zone of parked cars and used on roadways with speed limits of 35 mph or less (below 30 mph preferred).



Signed Bike Routes or “Bike Friendly Roadways”



These routes are recommended on existing low-volume, bike-friendly roadways where bikeway signage and markings are used to guide bicyclists to popular destinations. Typically, these routes are recommended in locations that serve as alternate routes for roadways that are less comfortable for cycling due to higher motor vehicle volumes and/or speeds. They were chosen as part of the network because of the importance of overall system connectivity and connectivity to destinations such as parks and schools, but offer shorter connections than do neighborhood greenways or bicycle boulevards. Shared lane markings may be utilized to supplement wayfinding signage.

Off-Road Pedestrian & Bicycle Facilities

Off-road bikeways are intended to create completely separated spaces for pedestrians and bicyclists. These are the preferred facility for novice and average bicyclists. Special consideration must be given to environmental conditions and for all roadway crossings.

Shared Use Paths



A shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate). Key features of shared use paths include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

Sidepaths



Shared Use Paths along roadways, also called Sidepaths, are a type of path that run adjacent to a street. Because of operational concerns it is generally preferable to place paths within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available. When designed correctly, these facilities have the ability to provide a high level of comfort for pedestrians and bicyclists. However, the AASHTO Guide for the Development of Bicycle Facilities cautions practitioners of the use of two-way sidepaths on urban or suburban streets with many driveways and street crossings. Where implemented, sidepaths should be coupled with strict access management regulations or improvements.



Pedestrian and Bicycle Network Recommendations

Introduction

The following sections present the pedestrian and bicycle network recommendations for the City of Columbia. The intent of these recommendations is to present a long-term vision for the walking and bicycling network, ensuring accessibility for potential pedestrians, bicyclists, and transit users in communities across the City and potential future areas of growth around Columbia.

The recommendations presented in the maps on the following pages directly reflect the information collected and presented in the Existing Conditions Analysis related to existing planning efforts, demand, equity, safety, public input, best practices and the City of Columbia’s high aspirations for becoming a premiere walk and bike-friendly community.

Pedestrian and Bicycle Project Development

Two distinct approaches are used in Walk Bike Columbia to develop the pedestrian and bicycle recommendations. The pedestrian recommendations reflect a more localized analysis of block-by-block infrastructure gaps and deficiencies along with specific generators of pedestrian travel demand, like transit stops. The bicycle recommendations reflect a city-wide and regional perspective of throughways and access routes.

Pedestrian Project Development

Sidewalk Project List Methodology

The universe of potential pedestrian sidewalk projects begins with the full roadway network, except limited access highways. This universe is first filtered by the following criteria:

- Demand – Any segment with a maximum demand score in the lowest two categories is removed (as shown in the Pedestrian Suitability Analysis).
- Supply – Any segment with a Level of Service of 1 or 2 (high comfort) is removed. In addition, roadways with a

higher posted speed (over 40 mph) and more than 2 lanes is removed where they meet a level of service of 3, since this is the best possible score for these roads. The best possible level of service is higher (indicating lower comfort) for higher-speed, multi-lane roads since those roads will never be as comfortable as local roads with well-designed pedestrian infrastructure.

In some cases, pedestrian improvements are recommended along roadways that already contain sidewalks on both sides. In these cases, a buffer is recommended.

Signalized Intersection Project List Methodology

The universe of potential signalized intersection improvement projects begins with all signalized intersections along major roadways. This universe is first filtered by the following criteria:

- Demand – Any intersection with a demand score in the lowest two categories is removed (as shown in the Pedestrian Suitability Analysis).
- Supply – Any intersection with a Level of Service of 1, 2 or 3 as shown on the Pedestrian Intersection Level of Service map is removed. In addition, any intersection with a higher posted speed (over 40 mph) and more than 2 lanes is removed where it meets a level of service of 4, since this is the best possible score for these intersections. The best possible level of service is higher (indicating lower comfort) for intersections on higher-speed, multi-lane roads since these roads are never as comfortable to cross as local roads with well-designed crossing infrastructure.

The resulting intersections are recommended for a variety of improvements. These may include installation of curb ramps, additional marked crosswalks, high-visibility marked crosswalks, or curb line adjustments to reduce crossing distances for pedestrians.

Unsignalized/Midblock Crossing Project List Methodology

The universe of possible unsignalized/mid-block crossings begins with all arterials and collectors. While these major roadways are difficult for pedestrians to cross safely between signalized intersections, the mobility needs of all modes along these roadways must be balanced with the desire to create safe crossings regularly for pedestrian travel. The following selection of roadways for possible unsignalized/mid-block



Recommended pedestrian and bicycle connections will comfortably and safely link Columbia neighborhoods to important local destinations such as schools, workplaces, food centers, retail destinations and recreation centers



crossings was chosen to balance those needs. The universe of arterials and collectors will be filtered by the following criteria:

- Demand – Any segment with a maximum demand score in the lowest three categories is removed (as shown in the Pedestrian Suitability Analysis).
- Supply – Any segment with a midblock crossing Level of Service of 1 or 2, as shown on the Midblock Crossing Analysis Map, is removed.
- Destinations – Any segment without a mapped destination (hospital, shopping center, school, or library) within a quarter mile is removed.

The resulting list of segments should be examined for possible crossing needs midblock or at unsignalized intersections. A crossing may not be appropriate for all of these segments.

Project Identification

The final step in the pedestrian project development methodology requires filtering each the three project lists based on a set of ranking criteria shown in **Table 11** on the next page. Through this final weighted scoring process, the pedestrian projects most suited to meet the goals and needs of the City of Columbia in the near term rise to the top as a targeted list of citywide priority projects.

Bikeway Project Development

Bikeway network development utilized a number of different analyses, described in the Existing Conditions section of this plan, and planning judgement to determine what project types are warranted along roadways throughout Columbia. These recommendations also include some new off-street bicycle accommodation recommendations where they serve a major connectivity function in the network. The ultimate goal of the bikeway network is providing connectivity to destinations such as retail centers, job centers, schools and recreation opportunities for all residents.

Nature of Recommendations

Recommended facilities for pedestrians and bicyclists strive to create a safe and comfortable walking or bicycling environment for users of all ages and abilities and reflect national best practices in considering conditions such as traffic volumes, traffic speeds, available roadway rights-of-way, and distances between crossing locations. Recommendations are considered planning-level, meaning that they should be used as a guide when implementing recommendations. In many cases, more detailed design studies will be required to examine specific site conditions and develop specific designs that reflect local conditions and constraints. In addition, these maps reflect the long-term vision for the network and implementation will not happen overnight. However, this Plan also contains an Implementation Plan, seen in the following sections, that provide a roadmap for implementing recommendations in a logical manner. The Implementation Plan prioritizes the most feasible projects that provide the greatest return in terms of need, safety improvement, and costs. The Implementation Plan also projects costs, develops a timeline for implementation and provides resources for project funding.

TABLE 11 - PEDESTRIAN PRIORITIZATION CRITERIA AND WEIGHTS

Criteria	Definition	Input	Score
Demand	Does the project promote walking by providing facilities in an area with high demand?	Pedestrian Suitability Analysis demand category: includes where people live, work, learn, play, and access transit	2 – 4 points (Higher points for higher demand score)
Supply	Does the project improve conditions on a segment with low quality pedestrian infrastructure?	Pedestrian level of service	1 – 4 points (Higher points for lower supply score)
Equity	Does the project benefit underserved communities?	Equity composite measure : includes 1) families living near or below the poverty line, 2) households with no vehicle available, 3) non-white populations, and 4) households with a limitation on English speaking ability	1 – 4 points (Higher points for higher equity score)
Previously Proposed Projects	Does the project have direct support expressed by inclusion in an adopted planning document?	2006 CMCOG Bicycle & Pedestrian Plan, Penny sales tax pedestrian project, 25 miles of planned sidewalks	3 points
Promote Safety	Does the project improve a location with a recorded safety concern?	Pedestrian collisions, 2010-2014	3 points
Public Input	Does the public support this project as a priority?	Online public input map	2 point



Recommendations Overview

Tables 12-18 below provide a summary of improvements shown in Figures 19-33 on the following pages broken down by miles for linear facilities, or number of locations for spot improvements. Refer to the previous section for an overview of the different recommended improvement types.

Existing Facilities

TABLE 12 – EXISTING MILES OF COLUMBIA SIDEWALKS AND TRAILS

Type	Miles
Total Roadway Miles	740
Sidewalks	391
Paved Shared Use Path	20
Natural Surface Path	30
Singletrack trail	25

TABLE 13 – EXISTING MILES OF COLUMBIA BIKEWAYS

Type	Miles
Total Roadway Miles	740
Bike Lanes	19
Shared Lane Markings	0.5
Bike Routes	20

Recommended Pedestrian Facilities

TABLE 14 – SUMMARY OF PEDESTRIAN INTERSECTION IMPROVEMENTS BY PRIORITY SCORE

Category	Priority Score	Count
High	15 - 18	3
Medium High	13 - 14	4
Medium	11 - 12	8
Medium Low	9 - 10	11
Low	6 - 8	6

TABLE 15 – SUMMARY OF MILEAGES FOR RECOMMENDED SIDEWALKS BY PRIORITY LEVEL

Category	Priority Score	Miles
High	15 - 19	10
Medium High	13 - 14	38
Medium	11 - 12	69
Medium Low	9 - 10	221
Low	4 - 8	301

TABLE 16 – SUMMARY OF PEDESTRIAN INTERSECTION IMPROVEMENTS BY PRIORITY SCORE

Category	Priority Score	Number
High	13 - 17	11
Medium High	11 - 12	34
Medium	9 - 10	84
Medium Low	7 - 8	161
Low	4 - 6	99

Recommended Bicycle Facilities

TABLE 17 – SUMMARY OF MILEAGES FOR RECOMMENDED BIKEWAY FACILITIES

Type	Miles
Greenway	53
Sidepath	101
Cycle Track (1-way)	28
Cycle Track (2-way)	9
Buffered Bike Lanes	26
Bike Lanes	68
Paved Shoulders	11
Bike Boulevard	64
Shared Lane Markings	5
Signed Route	2
Infill Street	3

TABLE 18 – SUMMARY OF BICYCLE SPOT IMPROVEMENTS

Type	Number
Pedestrian/Bicycle Cut-through	6
Intersection Improvements	12



FIGURE 19 - COLUMBIA SIDEWALK RECOMMENDATIONS AND PRIORITIES (OVERVIEW)

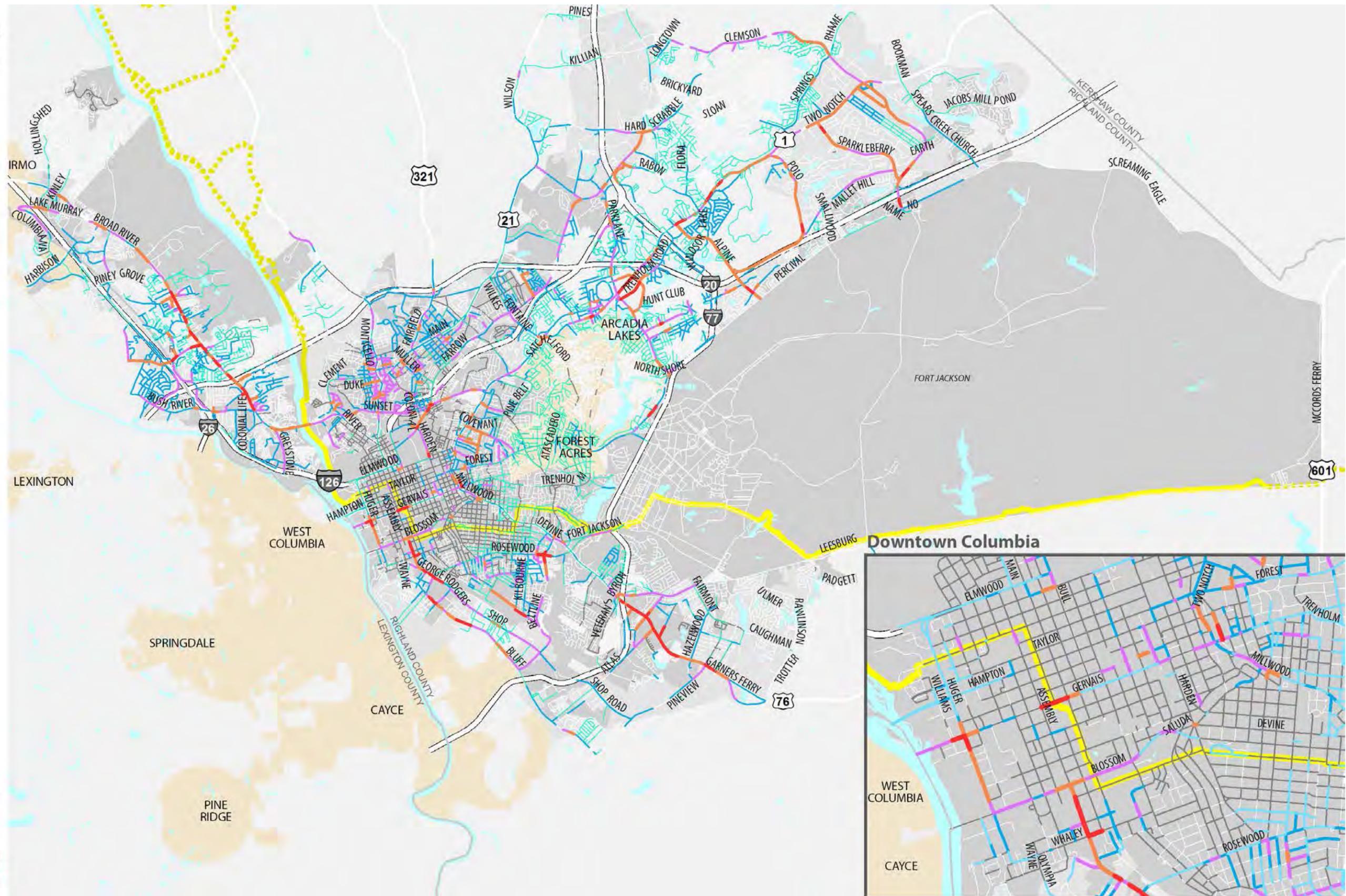
Preliminary Sidewalk Project Prioritization

Sidewalk Priority Score

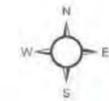
- 15 - 19
- 13 - 14
- 11 - 12
- 9 - 10
- 5 - 8
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- Limited Access Highway
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.





FIGURE 20 – COLUMBIA RECOMMENDED SIGNALIZED INTERSECTION AND MID-BLOCK CROSSING IMPROVEMENTS (OVERVIEW)

Major Crossing Improvement Prioritization

Signalized Intersection Priority Score

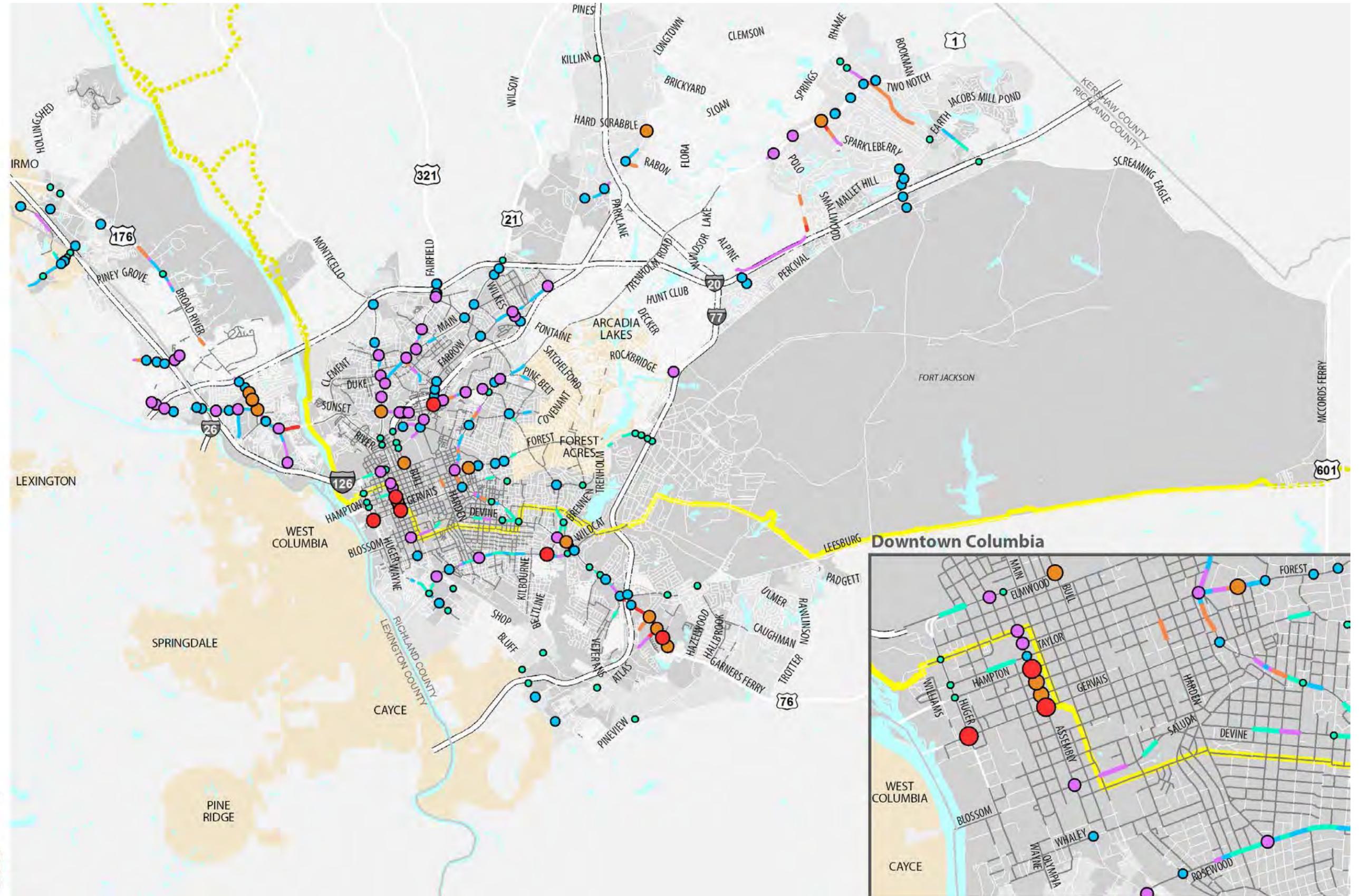
- 13 - 17
- 11 - 12
- 9 - 10
- 7 - 8
- 4 - 6
- Street with Sidewalk(s)
- Street (white)

Uncontrolled/Midblock Crossing Priority Score

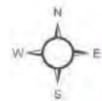
- 15 - 18
- 13 - 14
- 11 - 12
- 9 - 10
- 6 - 8

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- Limited Access Highway
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.



FIGURE 21 - COLUMBIA SIDEWALK RECOMMENDATIONS AND PRIORITIES (CITY CENTER)

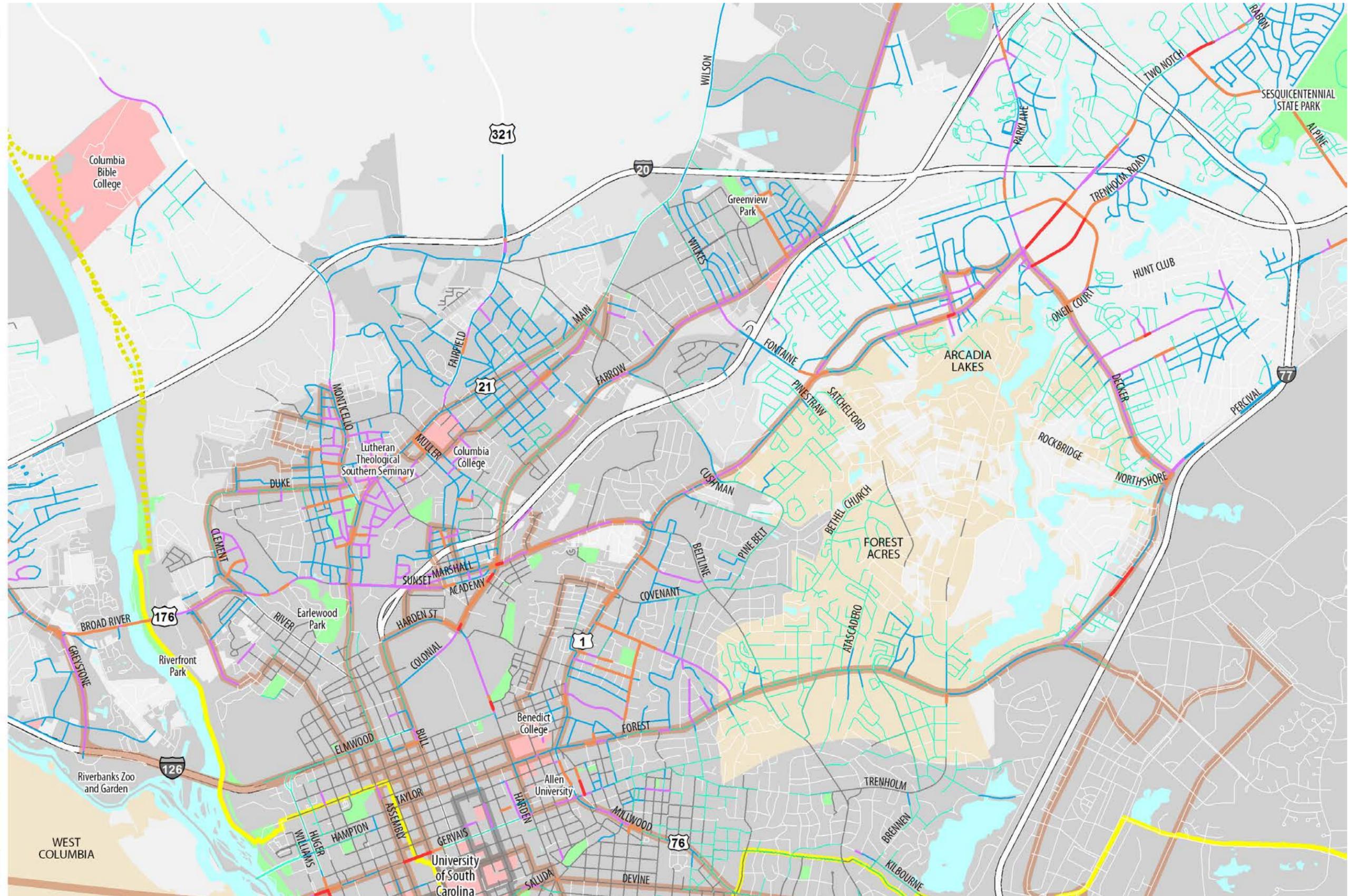
Preliminary Sidewalk Project Prioritization ~Central~

Sidewalk Priority Score

- 15 - 19
- 13 - 14
- 11 - 12
- 9 - 10
- 5 - 8
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.





FIGURE 22 – COLUMBIA RECOMMENDED SIGNALIZED INTERSECTION AND MID-BLOCK CROSSING IMPROVEMENTS (CITY CENTER)

Major Crossing Improvement Prioritization ~Central~

Signalized Intersection Priority Score

- 13 - 17
- 11 - 12
- 9 - 10
- 7 - 8
- 4 - 6

— Street with Sidewalk(s)
— Street (white)

Uncontrolled/Midblock Crossing Priority Score

- 15 - 18
- 13 - 14
- 11 - 12
- 9 - 10
- 6 - 8

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

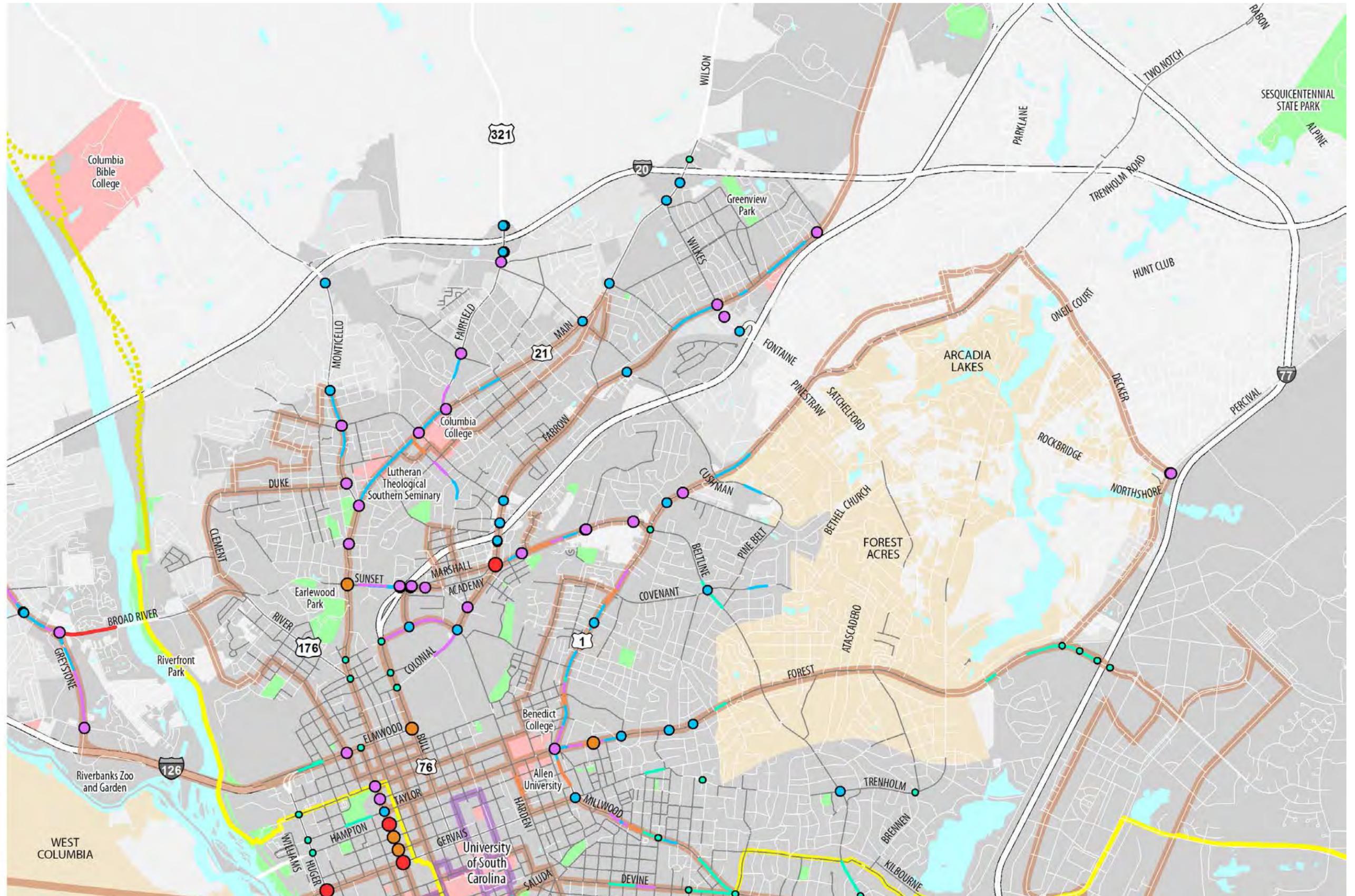




FIGURE 23 - COLUMBIA SIDEWALK RECOMMENDATIONS AND PRIORITIES (NORTHEAST)

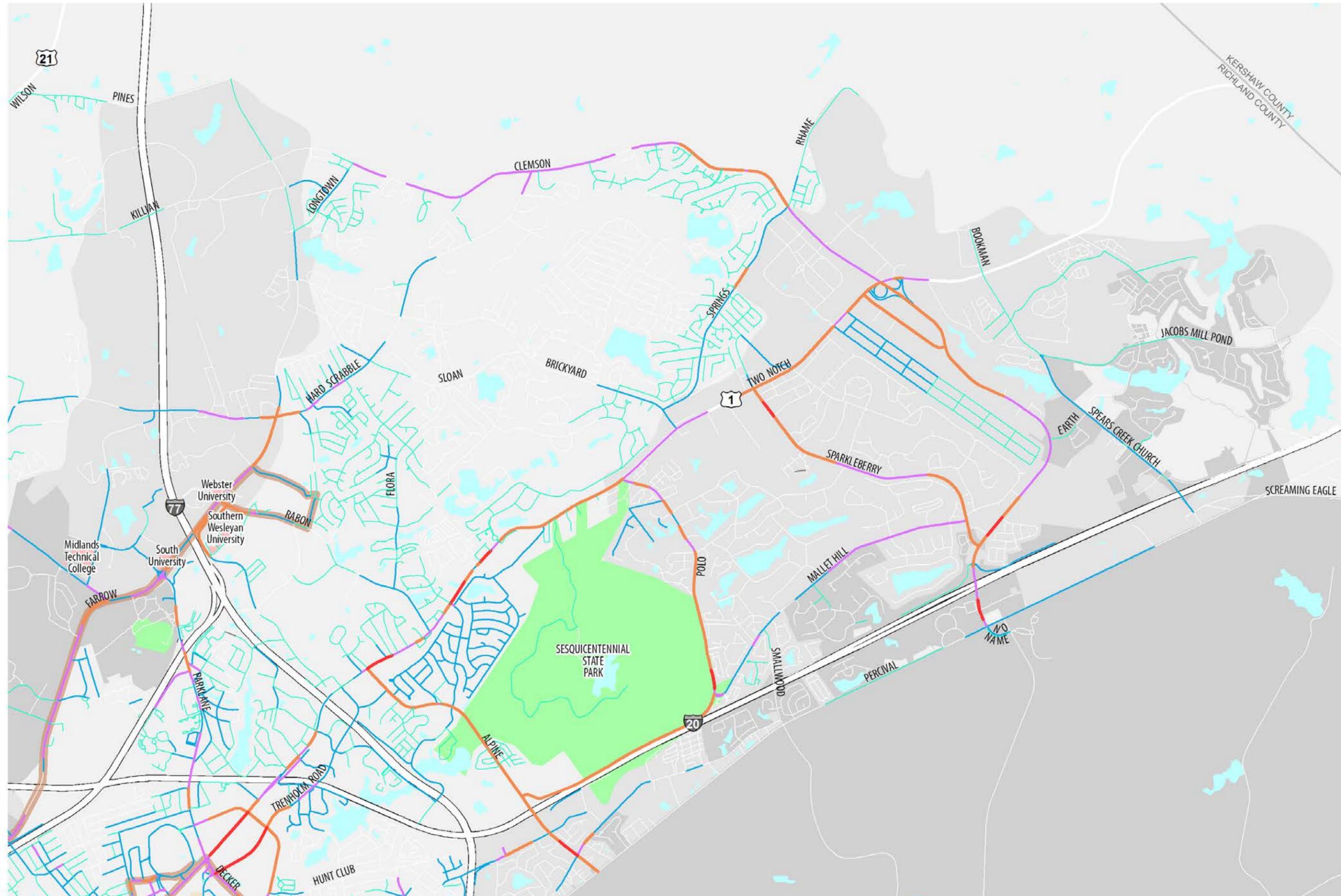
Preliminary Sidewalk Project Prioritization ~Northeast~

Sidewalk Priority Score

- 15 - 19
- 13 - 14
- 11 - 12
- 9 - 10
- 5 - 8
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.





FIGURE 24 – COLUMBIA RECOMMENDED SIGNALIZED INTERSECTION AND MID-BLOCK CROSSING IMPROVEMENTS (NORTHEAST)

Major Crossing Improvement Prioritization ~Northeast~

Signalized Intersection Priority Score

- 13 - 17
- 11 - 12
- 9 - 10
- 7 - 8
- 4 - 6

- Street with Sidewalk(s)
- Street (white)

Uncontrolled/Midblock Crossing Priority Score

- 15 - 18
- 13 - 14
- 11 - 12
- 9 - 10
- 6 - 8

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created November, 2014.

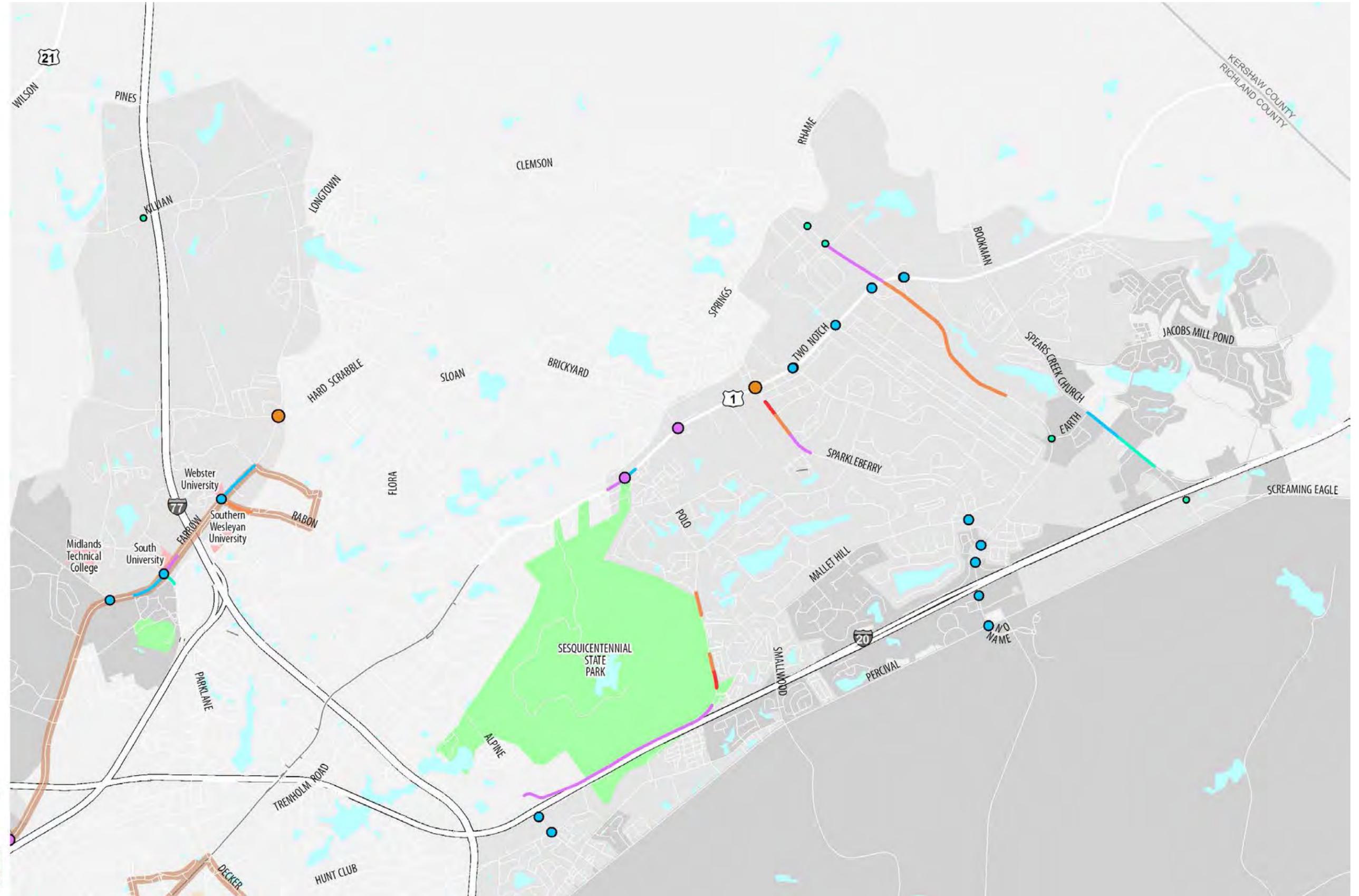




FIGURE 25 - COLUMBIA SIDEWALK RECOMMENDATIONS AND PRIORITIES (NORTHWEST)

Preliminary Sidewalk Project Prioritization ~Northwest~

Sidewalk Priority Score

- 15 - 19
- 13 - 14
- 11 - 12
- 9 - 10
- 5 - 8
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created November, 2014.

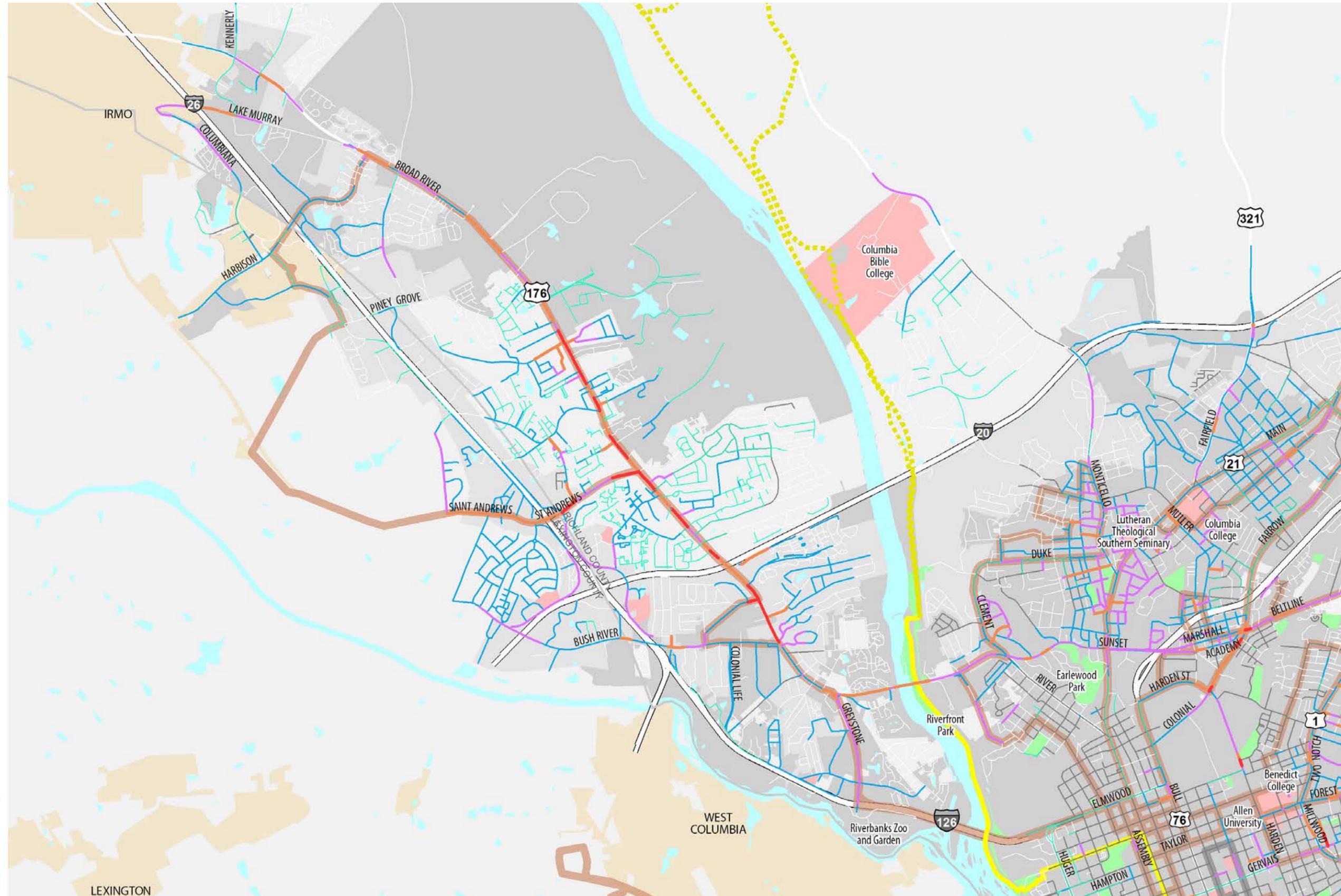




FIGURE 26 – COLUMBIA RECOMMENDED SIGNALIZED INTERSECTION AND MID-BLOCK CROSSING IMPROVEMENTS (NORTHWEST)

Major Crossing Improvement Prioritization ~Northwest~

Signalized Intersection Priority Score

- 13 - 17
- 11 - 12
- 9 - 10
- 7 - 8
- 4 - 6

— Street with Sidewalk(s)
— Street (white)

Uncontrolled/Midblock Crossing Priority Score

- 15 - 18
- 13 - 14
- 11 - 12
- 9 - 10
- 6 - 8

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

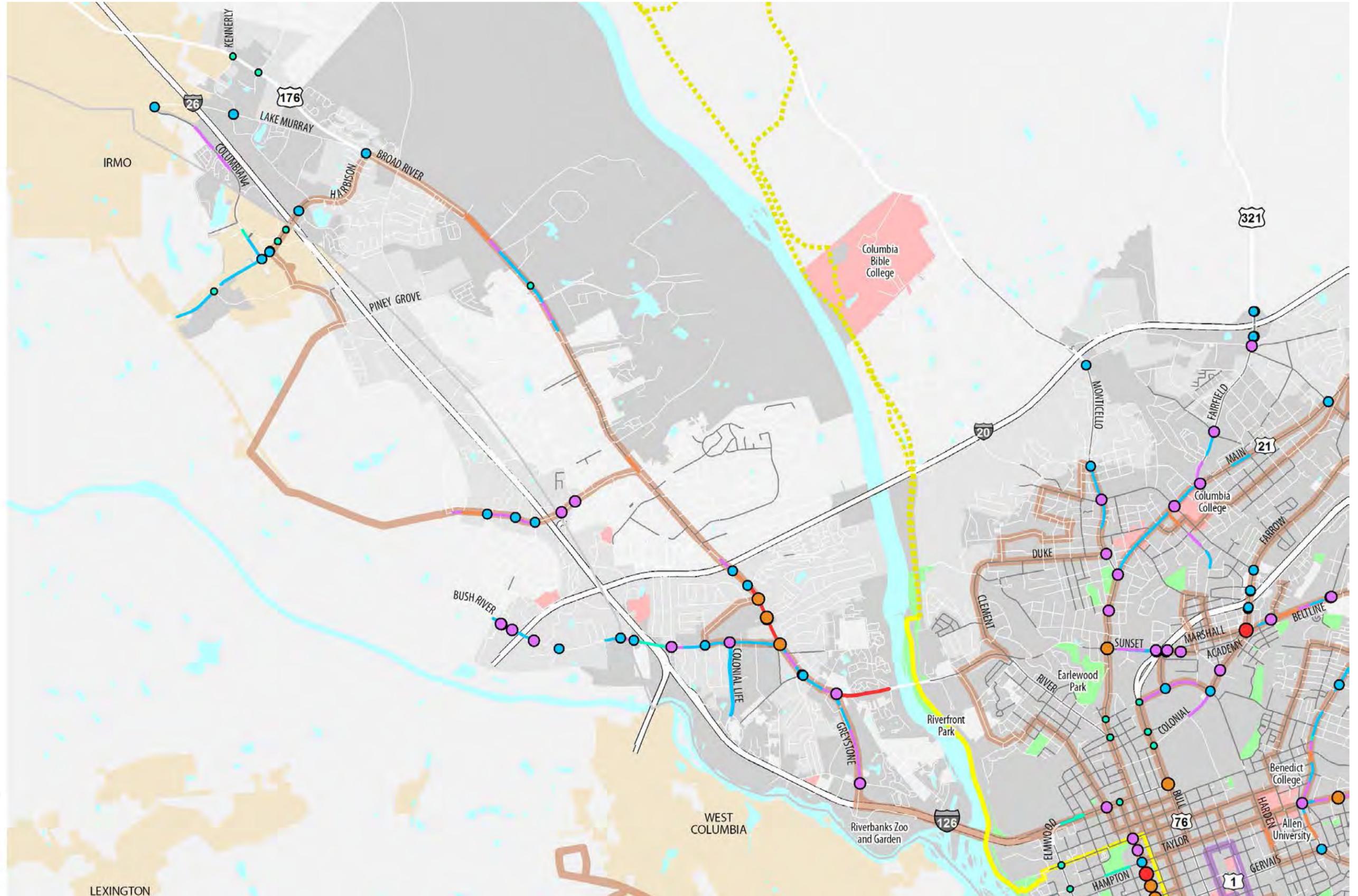




FIGURE 27 - COLUMBIA SIDEWALK RECOMMENDATIONS AND PRIORITIES (SOUTHWEST)

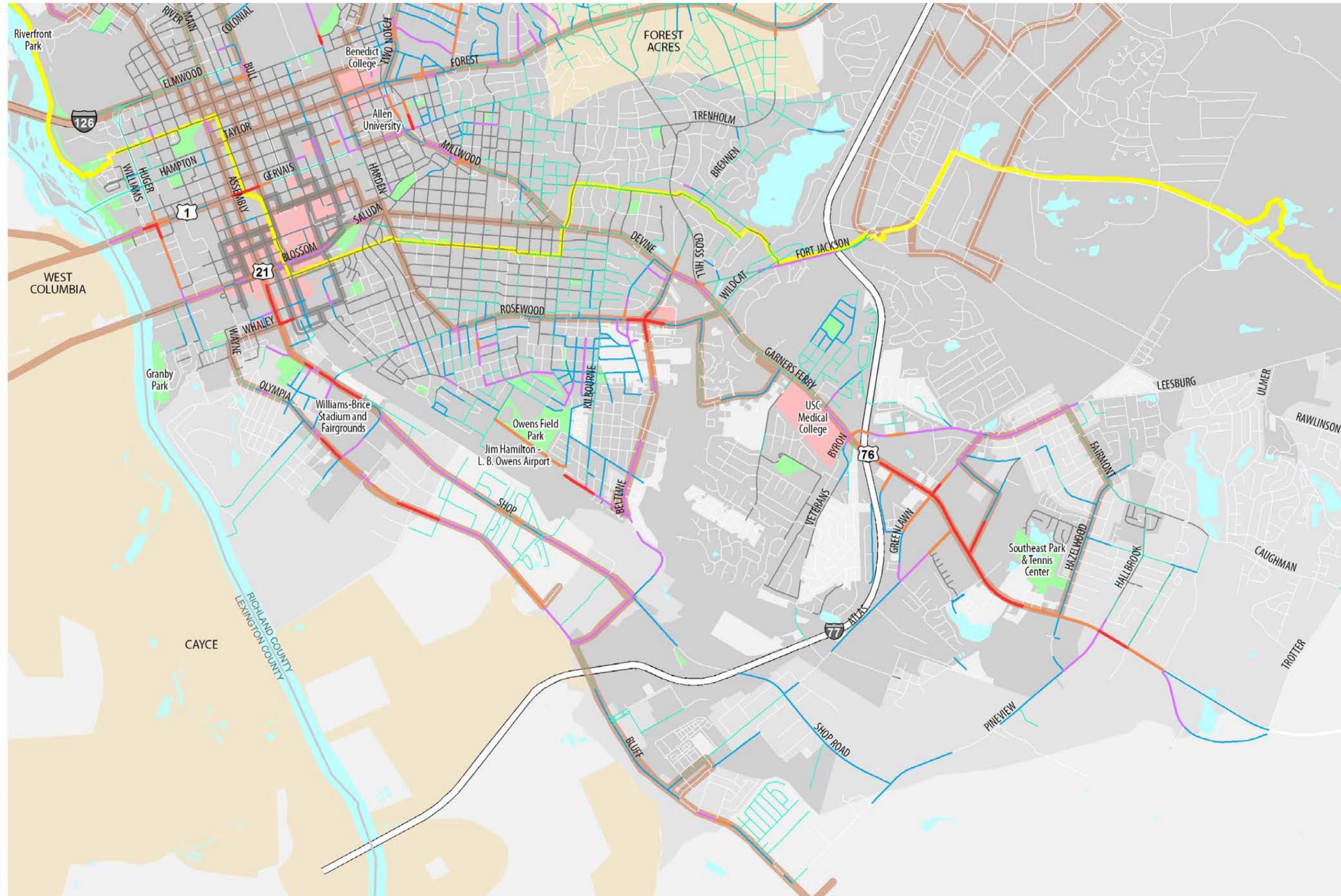
Preliminary Sidewalk Project Prioritization ~Southwest~

Sidewalk Priority Score

- 15 - 19
- 13 - 14
- 11 - 12
- 9 - 10
- 5 - 8
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created November, 2014.





FIGURE 28 – COLUMBIA RECOMMENDED SIGNALIZED INTERSECTION AND MID-BLOCK CROSSING IMPROVEMENTS (SOUTHWEST)

Major Crossing Improvement Prioritization ~Southwest~

Signalized Intersection Priority Score

- 13 - 17
- 11 - 12
- 9 - 10
- 7 - 8
- 4 - 6

— Street with Sidewalk(s)
— Street (white)

Uncontrolled/Midblock Crossing Priority Score

- 15 - 18
- 13 - 14
- 11 - 12
- 9 - 10
- 6 - 8

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

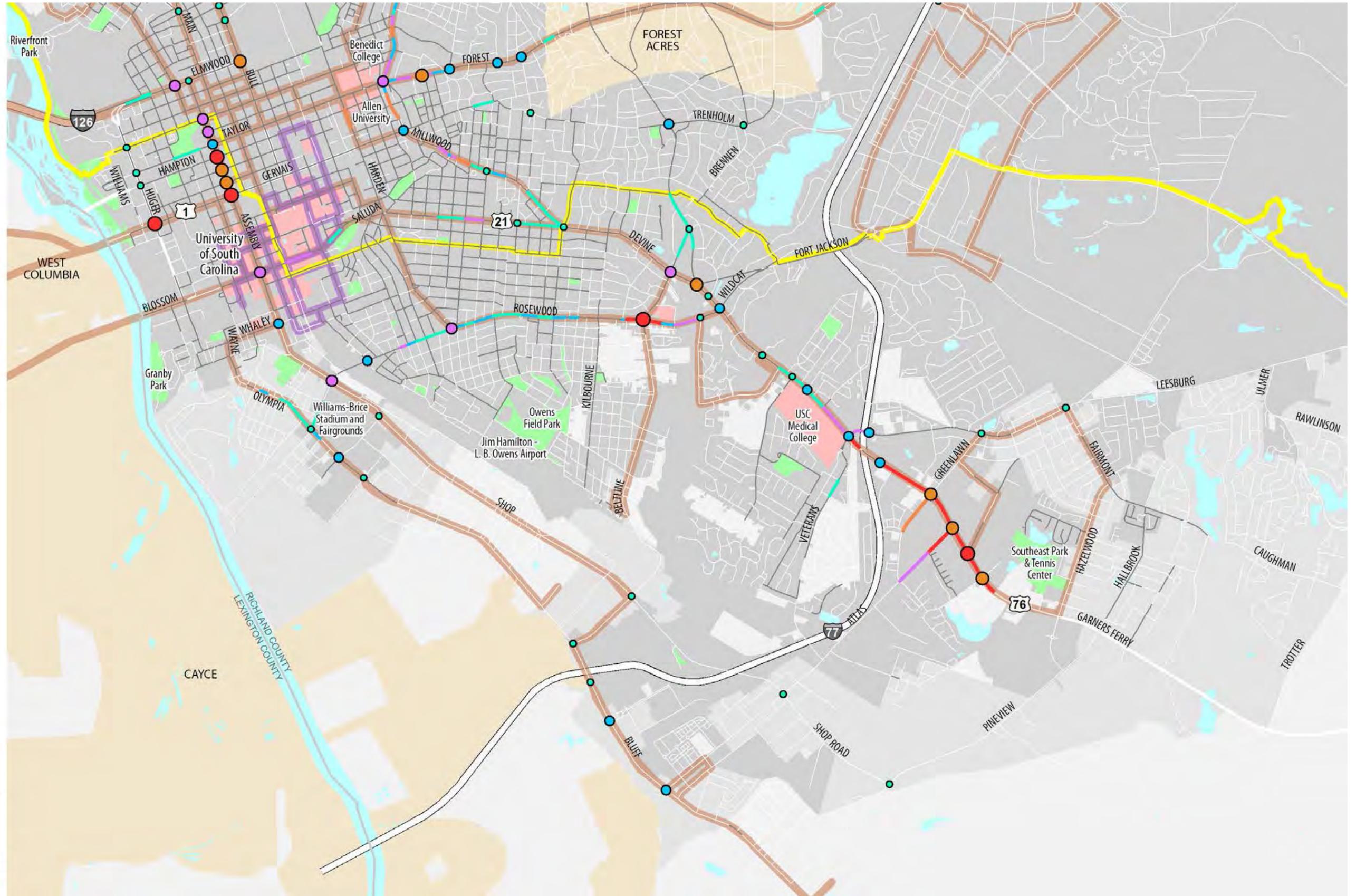


FIGURE 29 - COLUMBIA BICYCLE NETWORK AND SPOT RECOMMENDATIONS (OVERVIEW)



Proposed Bicycle Infrastructure

- Proposed Bikeways**
- Sidepath or Greenway
 - Cycle Track(s)
 - Buffered Bike Lanes
 - Bike Lanes/ Paved Shoulders
 - Bike Boulevard/ Bike Route/ Shared Lane Markings
 - Primary All Ages and Abilities Routes
- Existing Bikeways**
- IRMO

Other Proposed Improvements

- + Bicycle/Pedestrian Cut-through
- + Intersection Improvements
- Infill Street
- Proposed On-Road Bikeway (Other Jurisdiction)
- Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body

0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

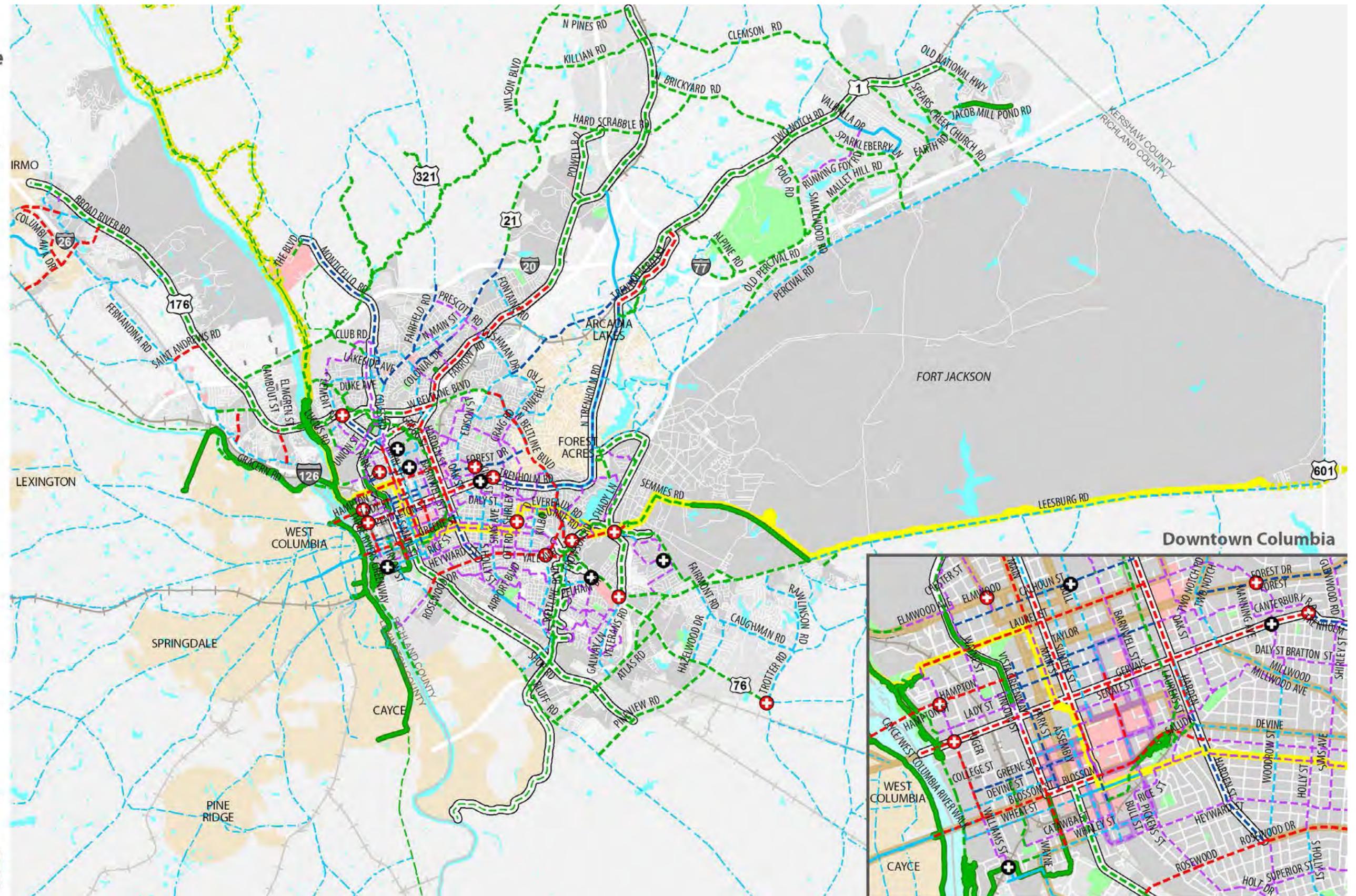




FIGURE 30 – COLUMBIA BICYCLE NETWORK AND SPOT RECOMMENDATIONS (CITY CENTER)

Proposed Bicycle Infrastructure ~Central~

Proposed Bikeways

- - - Sidepath or Greenway
- - - Cycle Track(s)
- - - Buffered Bike Lanes
- - - Bike Lanes/Paved Shoulders
- - - Bike Boulevard/Bike Route/Shared Lane Markings
- - - Primary All Ages and Abilities Routes

Existing Bikeways

- - - Existing Bikeways

Other Proposed Improvements

- + Bicycle/Pedestrian Cut-through
- + Intersection Improvements
- - - Infill Street
- - - Proposed On-Road Bikeway (Other Jurisdiction)
- - - Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- - - Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- - - COMET Route
- - - USC Shuttle Route
- + Commuter Rail Line (Proposed)
- + Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

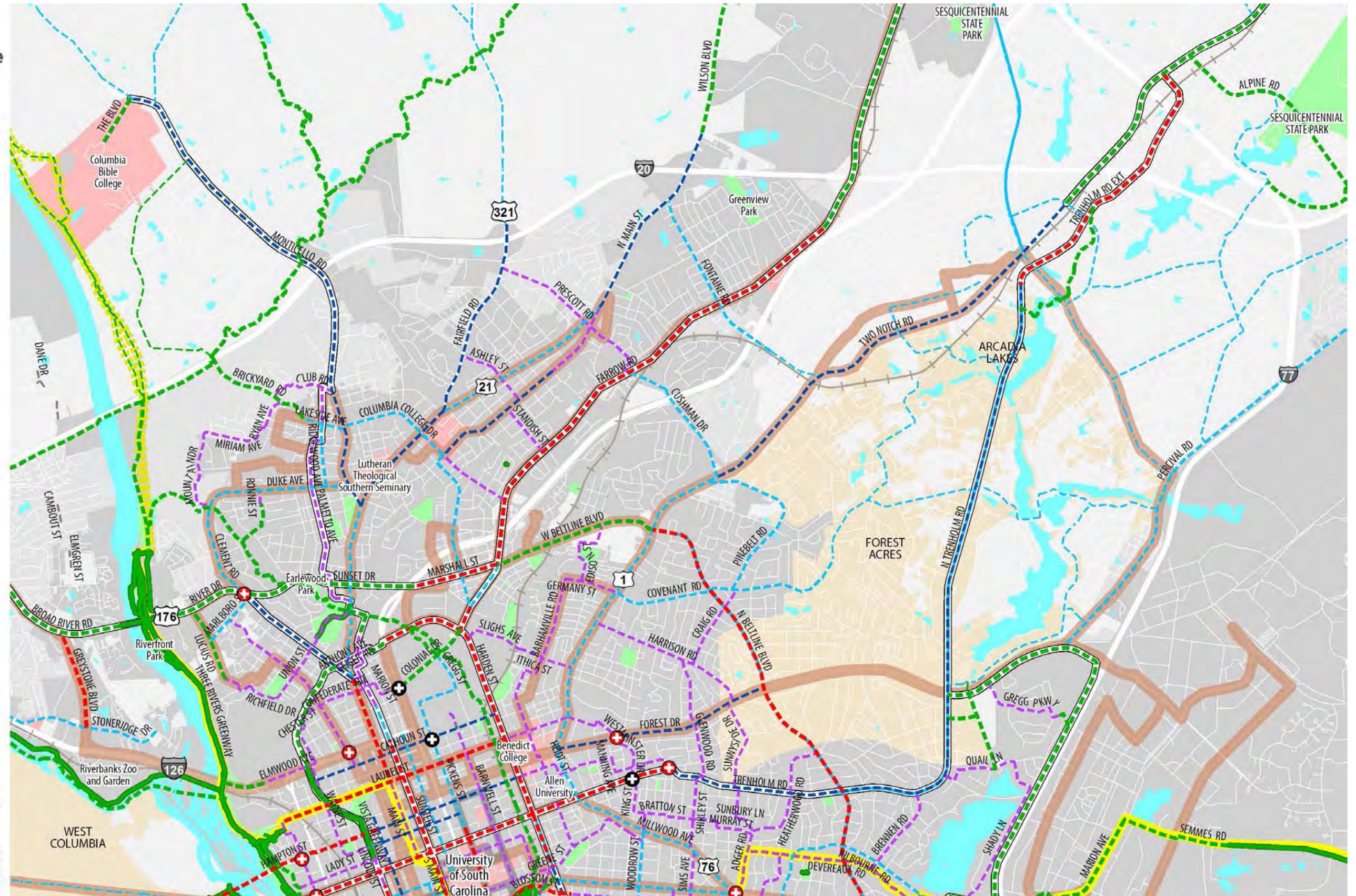
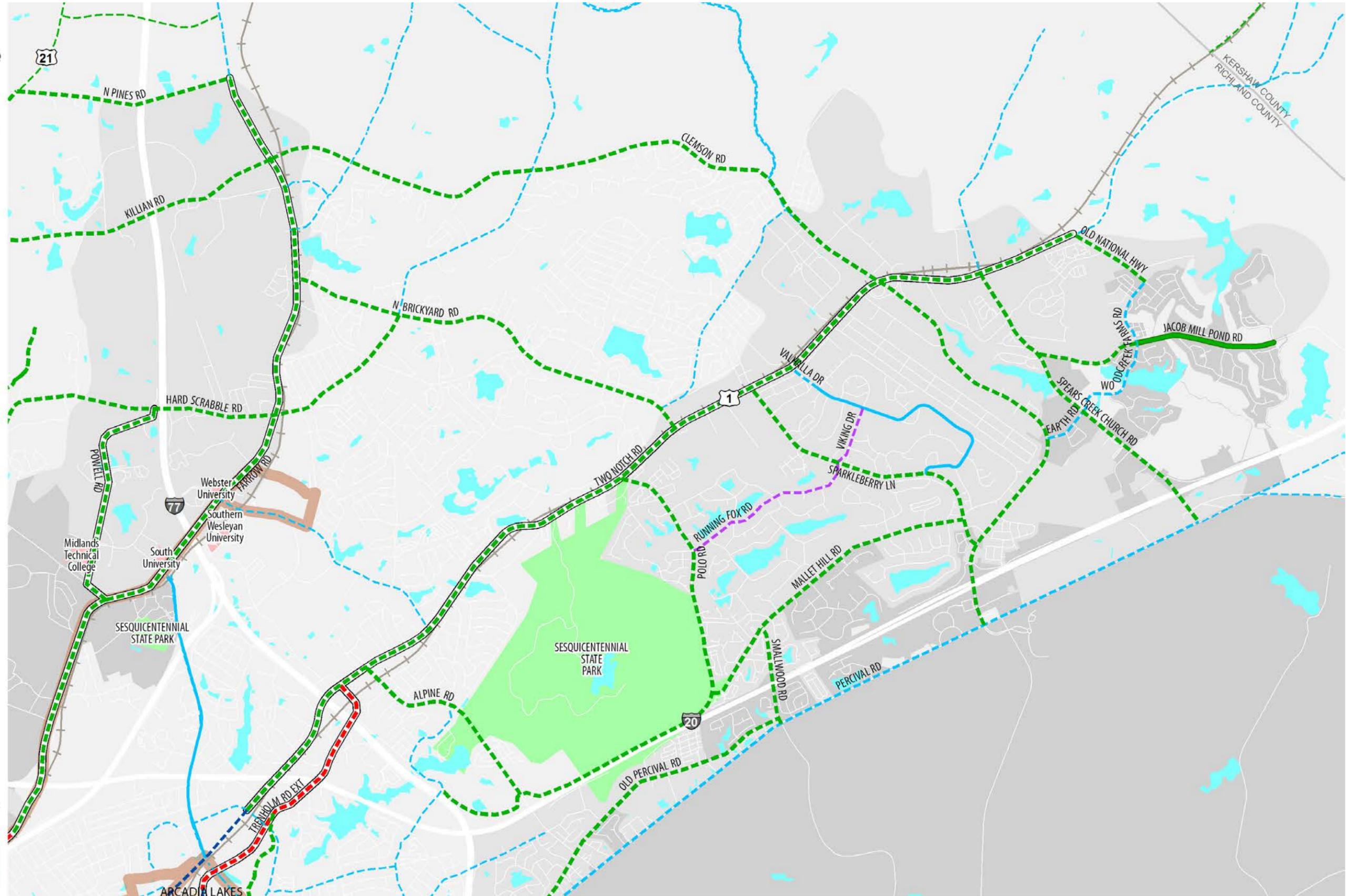




FIGURE 31 - COLUMBIA BICYCLE NETWORK AND SPOT RECOMMENDATIONS (NORTHEAST)

Proposed Bicycle Infrastructure ~Northeast~

- Proposed Bikeways**
- - - Sidepath or Greenway
 - - - Cycle Track(s)
 - - - Buffered Bike Lanes
 - - - Bike Lanes/ Paved Shoulders
 - - - Bike Boulevard/ Bike Route/ Shared Lane Markings
 - Primary All Ages and Abilities Routes
- Existing Bikeways**
- -
 -
- Other Proposed Improvements**
- - - Infill Street
 - - - Proposed On-Road Bikeway (Other Jurisdiction)
 - - - Proposed Sidepath or Greenway (Other Jurisdiction)
- Legend**
- Existing Palmetto Trail
 - Palmetto Trail Gap Options
 - COMET Route
 - Commuter Rail Line (Proposed)
 - College
 - City of Columbia Limits
 - Potential Future Annexation Areas
 - Other Jurisdiction
 - Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.





FIGURE 32 – COLUMBIA BICYCLE NETWORK AND SPOT RECOMMENDATIONS (NORTHWEST)

Proposed Bicycle Infrastructure ~Northwest~

Proposed Bikeways

- Sidepath or Greenway
- Cycle Track(s)
- Buffered Bike Lanes
- Bike Lanes/Paved Shoulders
- Bike Boulevard/Bike Route/Shared Lane Markings
- Existing Bikeways
- Primary All Ages and Abilities Routes

Other Proposed Improvements

- Bicycle/Pedestrian Cut-through
- Intersection Improvements
- Infill Street
- Proposed On-Road Bikeway (Other Jurisdiction)
- Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.

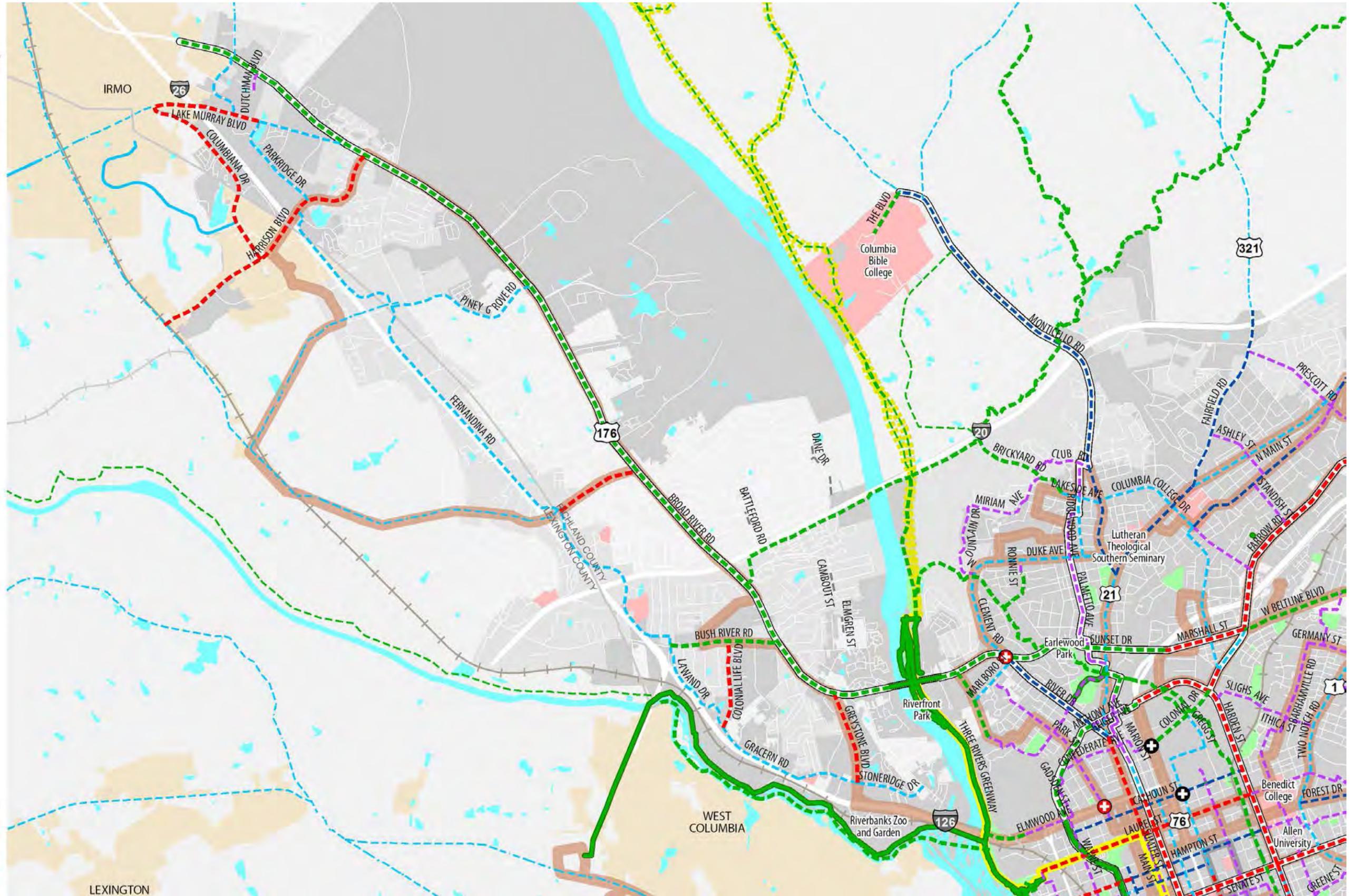




FIGURE 33 - COLUMBIA BICYCLE NETWORK AND SPOT RECOMMENDATIONS (SOUTHWEST)

Proposed Bicycle Infrastructure ~Southwest~

Proposed Bikeways

- Sidepath or Greenway
- Cycle Track(s)
- Buffered Bike Lanes
- Bike Lanes/ Paved Shoulders
- Bike Boulevard/ Bike Route/ Shared Lane Markings
- Primary All Ages and Abilities Routes

Existing Bikeways

-

Other Proposed Improvements

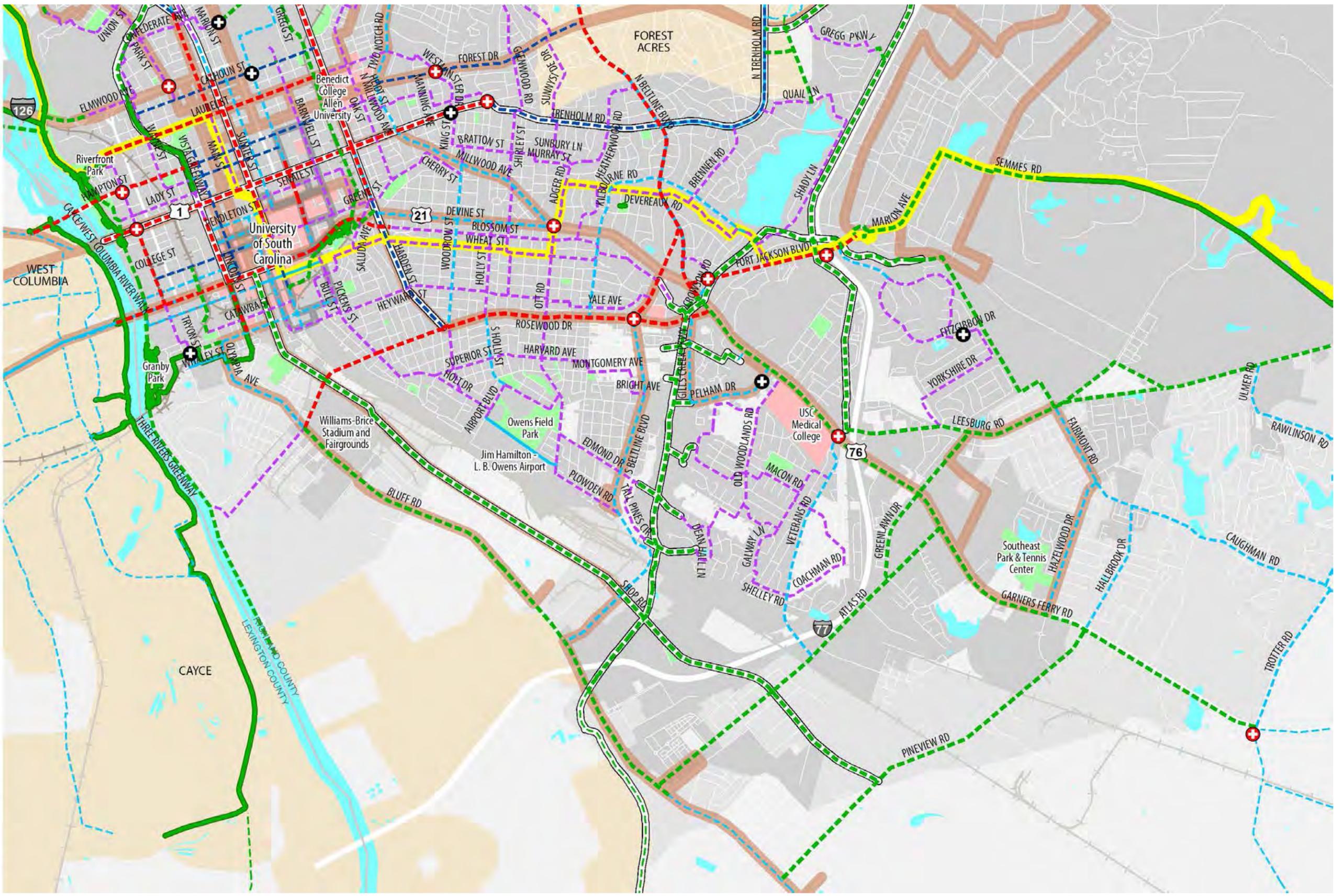
- Bicycle/Pedestrian Cut-through
- Intersection Improvements
- Infill Street
- Proposed On-Road Bikeway (Other Jurisdiction)
- Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created November, 2014.





Bicycle Parking Assessment and Recommendations

Introduction

This section provides an assessment of current bicycle parking conditions in the City of Columbia followed by recommendations. Bicyclists expect a safe, convenient place to secure their bicycle when they reach their destination. This may be short-term parking of two hours or less, or long-term parking for employees, students, residents, and commuters. By providing a variety of convenient bicycle parking options that meet the needs of everyday bicyclists, Columbia will send the message that bicyclists are welcome throughout the City and improve the viability of bicycling for transportation.

The following is a brief summary of bicycle parking facilities that are referenced throughout this section. Note that the Design Guidelines appendix of this master plan provide further detail of facility types.

Short-Term Bicycle Parking

Bicycle Racks: This generally refers to short-term bicycle parking meant to accommodate visitors, customers, and others expected to depart within two hours.

On-Street Bicycle Corral: These consist of bicycle racks grouped together in a common area within the street traditionally used for automobile parking. Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing high-volume bicycle parking.

Long-Term Bicycle Parking

Bicycle Lockers: Bicycle lockers are intended to provide long-term bicycle storage for employees, students, residents, commuters, and others expected to park more than two hours. Long-term facilities protect the entire bicycle, its components

and accessories against theft and against inclement weather, including snow and wind-driven rain. Bicycle lockers provide space to store a few accessories or rain gear in addition to containing the bicycle.

Secure Parking Areas (SPA): A Secure Parking Area for bicycles, also known as a Bike SPA or Bike & Ride (when located at transit stations), is a semi-enclosed space that offers a higher level of security than ordinary bike racks. Accessible via key-card, combination locks, or keys, Bike SPAs provide high capacity parking for 10 to 100 or more bicycles. Increased security measures create an additional transportation option for those whose biggest concern is theft and vulnerability. Bike SPAs may occur as one component of a larger Bike Station or Bike Hub that provides multiple amenities for commuting cyclists, such as lockers, showers, bike maintenance services, and retail.





Bicycle Parking Assessment

Overview

Bicycle parking is abundant on the campus of the University of South Carolina, and the current bicycle parking initiative by the City of Columbia is improving city-wide availability. It is understood that some existing bicycle racks pre-date the current City of Columbia bicycle parking initiative and may not be reflected within the map and data shown below. Future data collection efforts should identify all bicycle rack locations and provide an assessment of upgrades need to the type or placement of older bicycle racks.

This assessment and subsequent recommendations focus on recently created data as part of the city-wide bicycle parking initiative as well as bicycle parking locations found on the University of South Carolina campus bicycle parking map. This section provides an assessment of current bicycle parking conditions, including the following:

- Existing Bicycle Rack Data
- Types and Locations
- Public Input
- Summary

TABLE 19 - EXISTING RACK COUNTS IN COLUMBIA

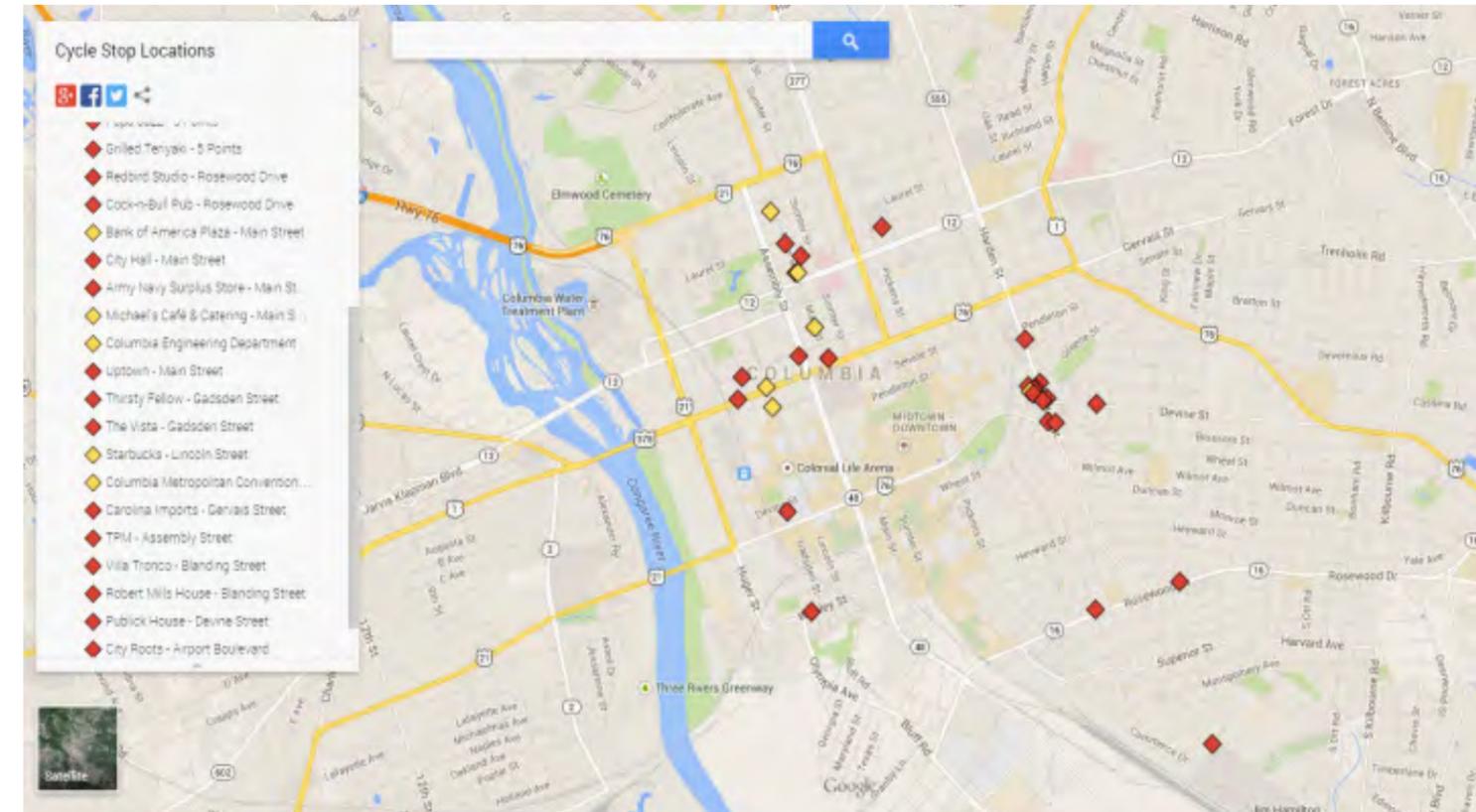
Managing Entity	Count - Rack Locations	Data Link
City of Columbia	34	Cycle Stops Bicycle Rack Locations
University of South Carolina	53	USC Bicycle Parking Information
Total	87	

Types and Locations

City of Columbia bicycle parking initiative: Bicycle racks and several on-street bicycle corrals are found in the City of Columbia. A bicycle parking initiative launched by the City of Columbia's BikeColumbia Task Force, the Bicycle and Pedestrian Advisory Committee (BPAC), independent bicycle groups, and advocacy groups in 2013 has led to the installation of 34 bicycle racks (as of October 2014) and counting. Most of these locations include two-capacity bicycle racks. Four of these locations consist of on-street bicycle corrals with a capacity of 12 bicycles. Local bicycle rack manufacturer, Cycle Stops, has produced the custom-made racks which include a palmetto tree and bicycle within the diamond-shaped frame. The racks can be sponsored for as little as \$225 for one bike rack. Below is a map from the Cycle Stops website showing specific locations for most of the recent installations.



City of Columbia bicycle racks: Image from Cycle Stops website: <https://www.cyclestops.com/locations.html>



City of Columbia bicycle rack locations: Image from Cycle Stops website: - https://mapsengine.google.com/map/u/0/viewer?mid=zw0BlmTe7Uxg.kz_4-lu03TUw



Bicycle racks are generally found in the following types of locations in Columbia:

Commercial/Entertainment areas:

- Five Points area
 - Abundant in the center of Five Points
 - Several along Devine Street
- Rosewood Drive

Downtown Central Business District

- Main Street north of the statehouse
- Gervais Street west of the statehouse

Other tourist areas

- Robert Mills historic neighborhood northeast of downtown

University of South Carolina campus bicycle parking: Bicycle racks are found frequently across the campus of the University of South Carolina. A total of 53 locations throughout campus have bicycle racks. Most of these consist of multi-capacity wave racks, which do not meet basic standards for bike rack design and often result in unstable bikes, as shown in the image below:

A map from the University of South Carolina’s website shows the location of all bicycle racks on campus (represented by yellow circles) at bottom right.

The COMET buses (City of Columbia) and Carolina Shuttle (University of South Carolina): All of the COMET buses in the City of Columbia bus system have bicycle racks that accommodate two bicycles on a first-come first-serve basis. Future upgrades will include bus racks that can accommodate three bicycles.

The University of South Carolina’s campus bus system, Carolina Shuttle, does not have bus racks, but future procurements are

recommended to include racks that can accommodate three bicycles.

Beyond the provision of on-bus bicycle racks, however, the COMET system offers little to no bicycle parking at transit stops. In the image below, a bicycle is parked along a fence at the downtown transit center.

Public Input

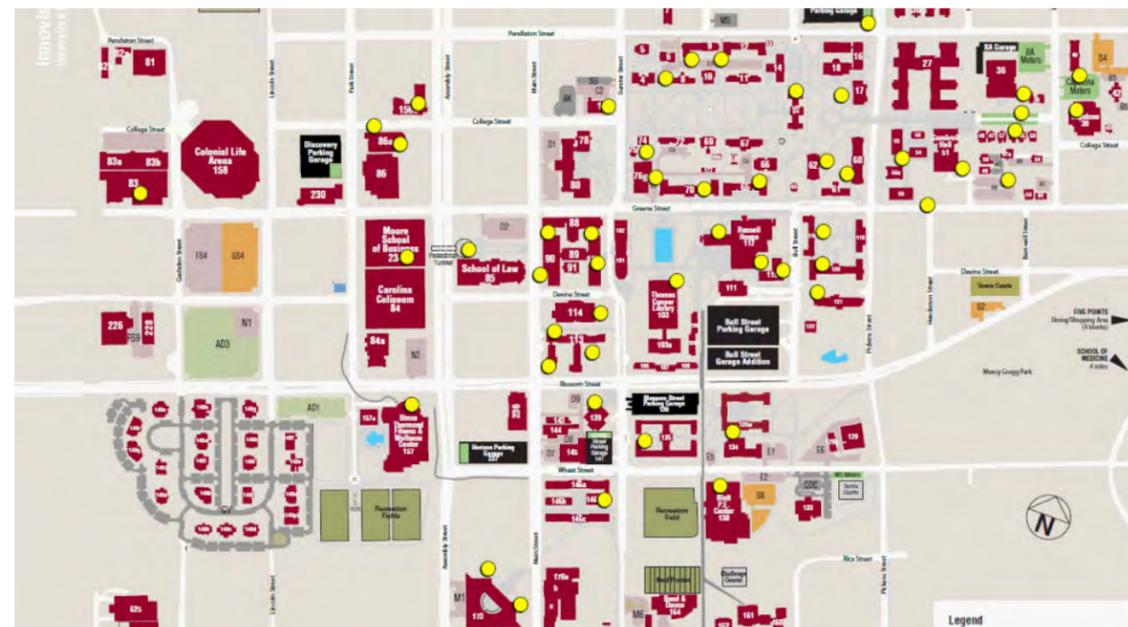
The public input process included several steering committee meetings, public workshops, stakeholder focus groups, and an online project website, survey (and hardcopy survey) and interactive map. Bicycle parking was highlighted several times through public comment, touching on the following general needs and desires:

Bus system

- Install or increase the number of bicycles that can be accommodated by the city and campus buses.



Bicycle rack in front of the Russell House University Union: Image from Google Street View



University of South Carolina bicycle racks: Image from a link on the USC Vehicle Management & Parking Services website: - <http://www.sc.edu/vmps/cycle.html>

further in the following 'Bicycle Parking Recommendations' section.

- Program recommendation – Organize bike-on-bus demonstration at the downtown transit center to teach riders how to use a bus bike rack.

City-wide standards and policies – Develop city-wide bicycle parking standards and placement policies to ensure the addition of functional bicycle parking in downtown, neighborhoods, and at popular destinations around the city.

Wayfinding – Develop wayfinding signage that directs bicyclists around town and to bicycle parking areas.

Locations in need of bicycle parking – Survey participants were asked to list up to three locations where they would like to have bicycle parking. The most common locations cited were:

- Gervais Street
- The Vista
- Parks
- Trenholm Plaza
- Five Points
- Main Street
- Rosewood Drive
- Downtown
- Grocery stores and shopping centers

Summary

While the existing data shows extensive efforts in providing bicycle parking across USC campus and the City of Columbia, there is much room for improvement. The City currently lacks a bicycle parking ordinance that would complement existing bicycle parking initiatives. The City has done well to implement several on-street bicycle parking corrals to increase the volume of bicycle parking availability, but currently, no long-term bicycle parking exists in the City (in the form of bicycle lockers or SPAs). Specific locations and improvements are discussed



Above: parking garages often provide the space and user demand to bike parking SPAs.

Below: Increasing bicycle parking at transit hubs was also identified as a priority in Columbia. This topic is discussed on the following page.



Bicycle Parking Recommendations

While bicycle parking on the University of South Carolina campus is widely available and the recent bicycle parking initiative by the City of Columbia has increased bicycle parking city-wide, several improvements are needed to the system. This section includes recommendations for priority action steps to strengthen bicycle parking throughout Columbia.

Priority Action Steps

The following action steps specific to bicycle parking are key near-term and on-going efforts in which the City and local partners can lead. These recommendations include long- and short-term facility development along with formal requirements to serve as a multi-faceted approach serving bicycle parking needs more effectively and efficiently.

Bicycle Parking Requirements: Codify

Policy recommendations in this plan include that the City adopt general bicycle parking requirements that extend to all land uses and accommodate short-term and long-term bicycle parking. Combining codified bicycle parking requirements and

Formalizing temporary bike parking for city events is a great encouragement tool, especially if it is a free offering.



the City's bicycle rack initiative with local partners will serve bicycle parking needs most efficiently and should serve as a high priority. Please reference the policy recommendations of this plan for further detail.

Security Parking Area (SPA): Implement long-term bicycle parking in highest demand areas

Security Parking Areas or 'SPA's are a version of long-term bicycle parking most suitable for major employers and highly centralized areas of activity such as transit bike 'n' ride areas or downtown commuter parking garages. The City of Columbia should assess downtown parking garage opportunities and work with landlords of high-occupancy downtown buildings to implement up to three Bike SPAs that offer access-controlled, long-term bicycle storage.

about \$50,000. Though no universal formula exists, Bike Hub operators can often cover 40 percent of annual operating costs with revenues from fees services.

Transit: Expand Bicycle Parking

Currently all of the COMET buses have two-capacity bicycle racks mounted on the front of the bus with plans to upgrade to three. Bicycle parking is needed at transfer stations and stops. While USC buses (Carolina Shuttle) do not carry bicycle racks, future procurements are recommended to include three-bike racks. USC should continue to include bicycle parking at all bus stops. Central transfer stations should also include long-term parking. A bike-on bus demonstration should be incorporated into other encouragement/education programs (such as open streets events) to teach riders how to use a bus bike rack.

Providing bicycle storage at transit stops and stations allows commuters to combine their trips with greater convenience. The COMET's Downtown Transit Center (and Greyhound stop) and the Amtrak passenger rail should include both short-term and long-term parking facilities located near loading zones and, when possible, in view of station attendants. Additionally, short-term bicycle parking should be available at key high-demand transit stops along the COMET routes. Future commuter and intercity rail systems should include bicycle carry-ons and long-term parking. These recommendations are based on the Intermodal Transit Analysis of this Plan.

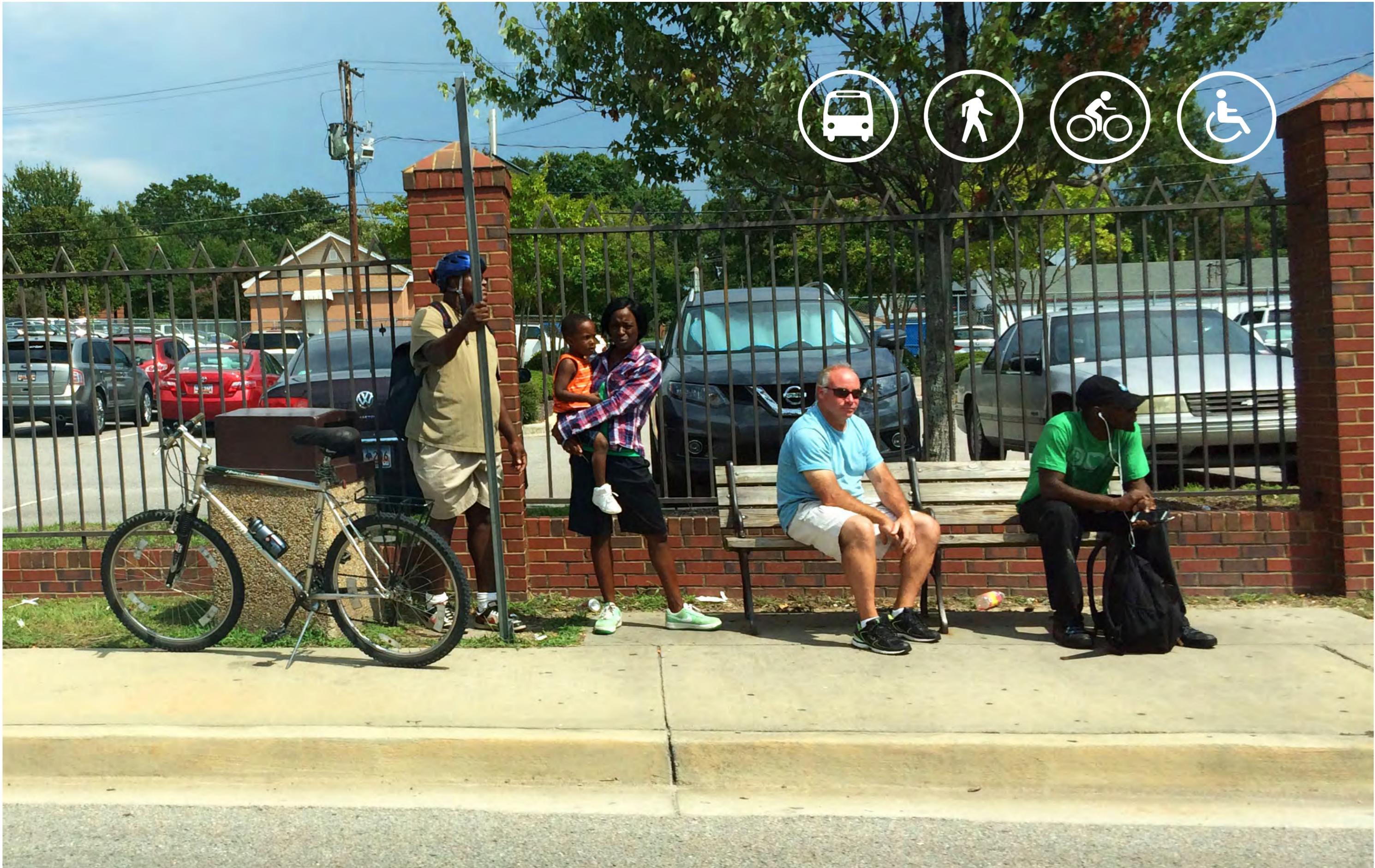
Bike Hub: Implement long-term bicycle parking in highest demand areas

A growing number of cities across the United States are incorporating Bike SPAs into a larger Bike Hub operation. Columbia has the opportunity to implement the first of this type of bicycle parking in the southeast region of the United States. The nearest example is the BikeStation® in Washington, DC that houses over 100 bicycles in 1,600 sq. ft. of free-standing ultra-modern glass and steel design. A variety of business models can be used to develop this type of facility, such as the Indy Bike Hub in Indianapolis, which is operated in partnership with the local YMCA.

Existing research suggests that capital costs of Bike Hubs total \$3,000 to \$5,000 per bicycle parking space, though costs differ significantly based on the breadth of services provided at the facility and design features. Annual operating costs can range from \$30,000 to \$200,000, but often total

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RECOMMENDATIONS: IMPLEMENTATION PLAN

Introduction

The long-term vision for walking, bicycling, and transit in Columbia has been set. Now the City and its partners must begin to implement the vision - but where do we start?

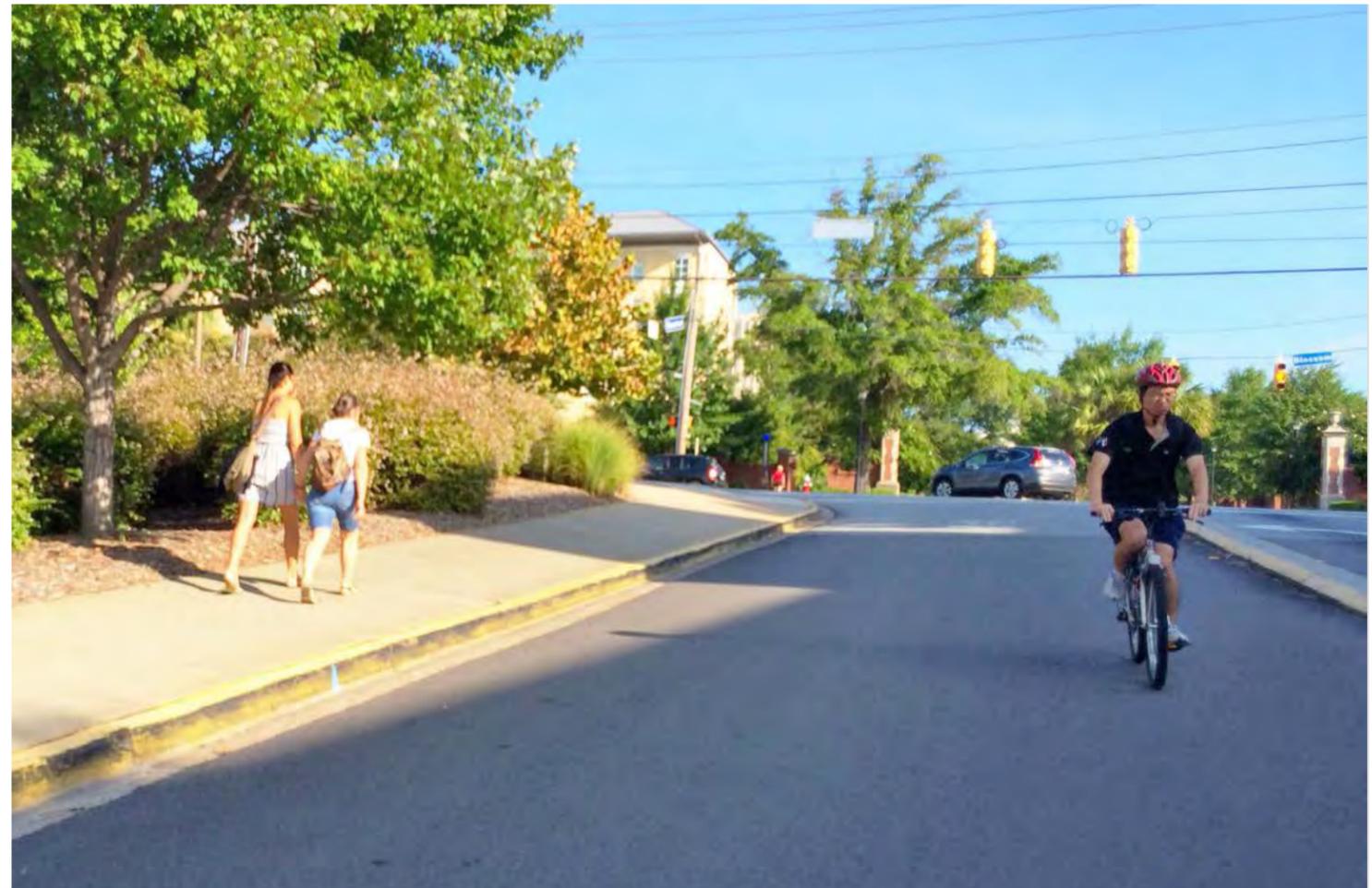
The following section answers this question and presents project prioritization, project funding needs, and programs projects into a digestible capital improvements plan. Also, select top-priority projects are discussed in more detail to help communicate potential needs and results of the first Plan projects implemented. Finally, a WFC and BFC Community Action Plan provides guidance towards advancing Walk and Bicycle-friendly Community recognition.

University of South Carolina is a substantial generator of pedestrian, bicycle and transit trips due to the high concentration of young people.

Recommendations in areas of high demand like these, among other factors, receive a higher project ranking priority.

The City and its partners should use this section as a guide for achieving the vision and goals established in the beginning of the Plan. As a general strategy, the City and its partners should regularly evaluate how well recommendations are being met and whether these recommendations still meet the needs of Columbia's residents and visitors. The goals presented in the introduction of this plan also serve as an evaluative tool with specific benchmarks defined for the all of the six "E's." **Implementation progress should be regularly tracked on at**

least an annual basis - an annual "state of walking, bicycling and transit" report is a good means of accomplishing this in a format that can be easily shared with the public to inform them on Plan progress. In addition, as best practices in pedestrian, bicycle and transit accommodation is a rapidly-evolving field, **the recommendations in this plan should be re-evaluated at least every five years** to ensure that these still constitute best-practices and still reflect Columbia's vision for walking, bicycling and transit.





Capital Improvements Plan

Introduction

The network recommendations presented in the previous section show the long-term vision for the walking and bicycling network. Achieving this vision will require: political support; local advocacy; coordination with project partners such as SC DOT; and adequate, and preferably dedicated, funding to cover installation and long-term maintenance of facilities.

To help obtain the highest value on investment, meet Plan goals and build support for improvements over time, both the pedestrian and bicycling network have been prioritized and divided into phases with the highest-priority projects being targeted for implementation first. The goal of prioritization is to ensure that improvements are distributed equitably, and that projects generating the greatest benefit while expending the least amount of resources are implemented first. Prioritization factors and weights are based upon feedback the project team received from the public and other key project stakeholders.

Prioritization Process

Pedestrian and bicycle projects recommended within this Plan are prioritized through two complementary, but distinct prioritization methods described in the following section. Because trail and greenway projects (those recommended outside of a road's rights-of-way) are conceptual in nature, involve a variety of landowners, and require further study to determine feasibility, a prioritization score is not provided for these facilities. They are, however, valuable components of the overall pedestrian and bicycle network and should be evaluated on an on-going basis, and in conjunction with adjacent or nearby on-street projects under development.

Pedestrian Prioritization

The Recommendations Chapter of this Plan describes the preliminary prioritization process used to identify important pedestrian improvements across the city. The project team took this process one step further by using the project's

priority score (based on the criteria shown in **Table 11**) to rank all improvements and identify those available for federal aid network funding, those increasing access to transit, and those already funded.

Bicycle Prioritization Methodology

Bikeway network development utilized a number of different analyses, described in the Existing Conditions section of this plan, and planning judgement to determine what project types are warranted along roadways throughout Columbia. These recommendations also include some new off-street bicycle accommodation recommendations where they serve a major connectivity function in the network. The ultimate goal of the bikeway network is providing connectivity to destinations such as retail centers, job centers, schools and recreation opportunities for all residents.

Prioritization looked at similar considerations to determine the need, cost and feasibility of implementing all on street and adjacent-to-street recommendations. The project team developed prioritization criteria and collectively determined the importance of each consideration by assigning each category an appropriate weight. These weights can be seen in **Table 21**.

Project Phasing and Cost Estimates

Cost Estimate Methodology

Cost estimates for projects were generated from a variety of sources including national datasets such as the *2013 Costs for Pedestrian and Bicyclist Infrastructure Improvements*, Conducted by the University of North Carolina, average costs for buffered bikeways and cycle tracks in the *2040 Hennepin County Transportation Plan* and recent, regional implementation experience. While these costs represent averages for pedestrian and bicycle projects in **2014 dollars**,

note that individual project costs can vary widely based on a number of conditions including, but not limited to:

- Facility design (width, frequency of material placement, demolition)
- Temporary traffic control requirements
- Environmental requirements
- Utility relocation
- Required right of way acquisition
- Contractor experience and material availability
- Project length or grouping (projects of longer length are typically less expensive than short projects)

Cost estimates and assumptions are presented in **Table 22**. These do not include additional considerations such as project design or contingency costs.

Columbia Pedestrian and Bicycle Projects

Following scoring, projects were divided into phases with the highest scoring projects being included in earlier phases. Phase breaks follow breaks in prioritization score for sidewalk and bicycle projects, and are generally 50 mile phases for bicycle and shared-use path projects. This is reflective of the Plan implementation goal: to build 50 miles of on-street bikeways by 2017. Recommended infill roads were also included in bikeways prioritization, although cost estimates were not generated for these improvements due to the wide potential variance in cost. **Figures 34 - 43** show Columbia pedestrian and bicycle projects broken down by phase. Summaries of sidewalk and bikeway projects are provided in **Tables 23 - 25**, including cost estimates and those projects which could be included as part of Richland County Penny Sales Tax funded projects. Because of their size, the



TABLE 21 - BICYCLE PRIORITIZATION CRITERIA AND WEIGHTS

Criteria	Definition	Input	Score
Demand	Does the project promote bicycling by providing facilities in an area with high demand?	Bicycle Suitability Analysis demand category: includes where people live, work, learn, play, and access transit	2 – 4 points (Higher points for higher demand score)
Supply	Does the project improve conditions on a segment with low quality bicycle infrastructure?	Bicycle level of traffic stress	1 – 4 points (Higher points for lower supply score)
Equity	Does the project benefit underserved communities?	Equity composite measure : includes 1) families living near or below the poverty line, 2) households with no vehicle available, 3) non-white populations, and 4) households with a limitation on English speaking ability	1 – 4 points (Higher points for higher equity score)
Previously Proposed	Does the project have direct support expressed by inclusion in an adopted planning document?	2006 CMCOG Bicycle & Pedestrian Plan, Penny sales tax bicycle projects	3 points
Promote Safety	Does the project improve a location with a recorded safety concern?	Bicycle collisions, 2010-2014	3 points
Public Input	Does the public support this project as a priority?	Online public input map	2 point
Ease of Implementation	Does the project require new construction or right of way acquisition?	BikeSpace Analysis	1-4 points (Higher points for lower implementation score)
Connectivity to Funded Project	Does the project connect to a proposed bikeway that is already funded?	Penny sales tax bicycle projects, others as identified by client	3 point
Added Pedestrian Benefit	Does the project provide a buffer to corridors where a pedestrian buffer is recommended?	Pedestrian Prioritization Sidewalk Results	1 point

pedestrian and bicycle master tables were left out of this planning document and rather provided to the City of Columbia as an internal working document.

In addition, there are a number of bicycle spot intersection improvements and cut-throughs recommended in this Plan as seen in the bicycle recommendations maps. These should be implemented in conjunction with linear bikeway improvements they correspond to. Due to the wide variation in improvement types and subsequent costs, this Plan does not include cost estimates for these improvement types.

TABLE 22 - COLUMBIA COST ESTIMATES

Facility Type	Cost per unit of measurement	Assumptions
Sidewalks w/o curb construction	\$ 70 per linear foot	No ROW purchase required
Sidewalks w/ curb construction	\$350 per linear foot (costs can typically range from \$300-\$400/ln.ft.)	No ROW purchase required; includes the installation of storm sewers.
Bicycle Boulevards and Bicycle Routes	\$45,000 per mile	Includes signage and pavement markings only
Bike Lanes	\$75,000 per mile	Pavement restriping costs only
Buffered Bike Lanes	\$130,000 per mile	Pavement restriping costs only
Cycle Tracks	\$160,000 per mile	Pavement restriping costs only
Greenway or Sidepath	\$600,000 per mile (costs typically range from \$500,000 to \$700,000. Can be higher if significant constraints are present).	10' asphalt path and no ROW purchase required.
4' Paved Shoulders	\$600,000 per mile	No ROW purchase required
6' Paved Shoulders	\$700,000 per mile	No ROW purchase required



Narrow parking along Devine Street could potentially be repurposed to add bicycle facilities.

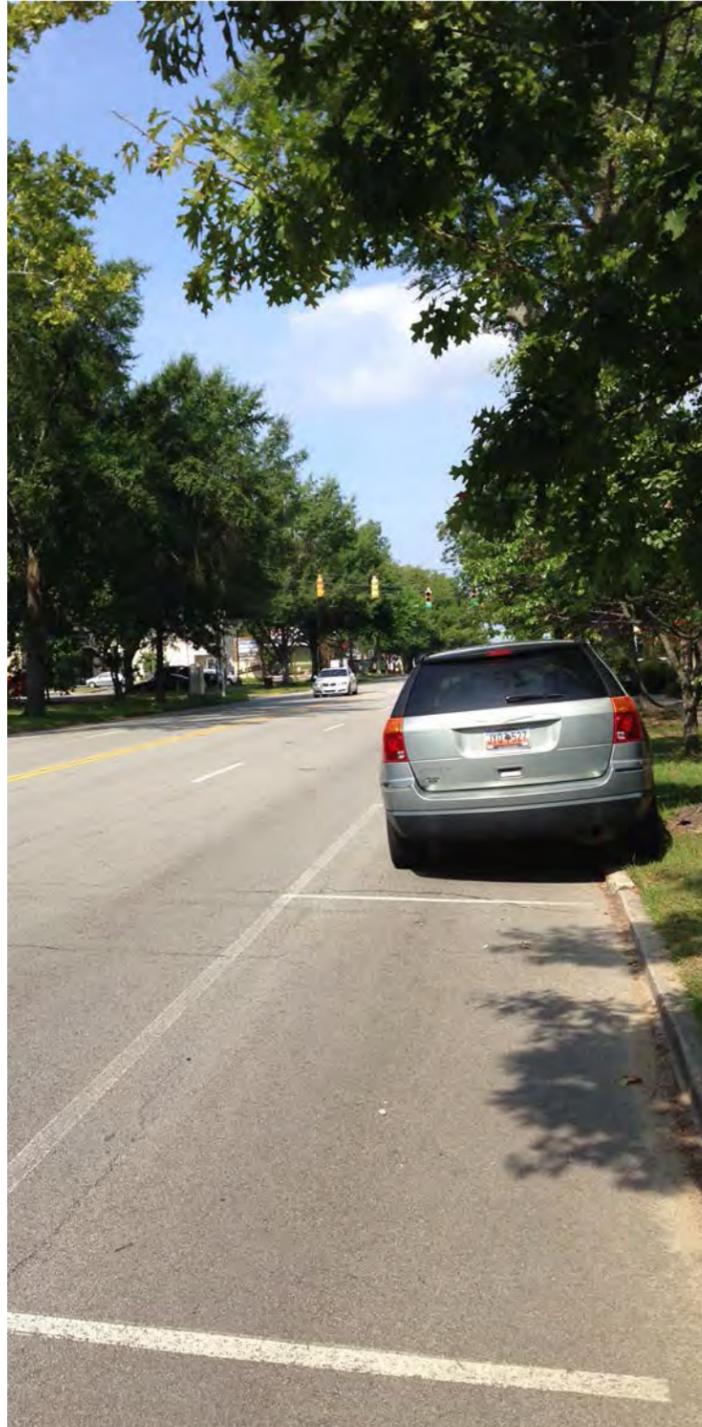


TABLE 23 - COLUMBIA SIDEWALK PROJECT SUMMARY TABLE (PST = Penny Sales Tax funded projects)

Row Labels	Sum of MILES	Sum of Cost Estimate w/o curb construction (Assu. \$70/lf)	Sum of w/o curb construction + 10% contingency	Sum of Cost estimate w/curb construction (Assu. \$350/lf)	Sum of w/ curb construction + 10% contingency
PHASE I	10.03	\$6,615,000	\$7,277,000	\$33,075,000	\$36,383,000
Unfunded	7.25	\$4,677,000	\$5,145,000	\$23,386,000	\$25,725,000
PST	2.77	\$1,938,000	\$2,132,000	\$9,689,000	\$10,658,000
PHASE II	13.65	\$9,548,000	\$10,503,000	\$47,741,000	\$52,515,000
Unfunded	8.70	\$6,140,000	\$6,754,000	\$30,699,000	\$33,769,000
PST	4.94	\$3,408,000	\$3,749,000	\$17,042,000	\$18,746,000
PHASE III	22.08	\$15,666,000	\$17,232,000	\$78,329,000	\$86,162,000
Unfunded	14.74	\$10,505,000	\$11,556,000	\$52,526,000	\$57,779,000
PST	7.34	\$5,161,000	\$5,677,000	\$25,803,000	\$28,383,000
PHASE IV	25.85	\$18,023,000	\$19,825,000	\$90,113,000	\$99,124,000
Unfunded	18.75	\$13,276,000	\$14,603,000	\$66,379,000	\$73,016,000
PST	7.09	\$4,747,000	\$5,222,000	\$23,734,000	\$26,108,000
PHASE V	35.00	\$23,691,000	\$26,060,000	\$118,456,000	\$130,301,000
Unfunded	30.94	\$21,123,000	\$23,235,000	\$105,614,000	\$116,175,000
PST	4.06	\$2,568,000	\$2,825,000	\$12,842,000	\$14,126,000
PHASE VI	58.13	\$41,258,000	\$45,384,000	\$206,291,000	\$226,920,000
Unfunded	55.13	\$39,199,000	\$43,119,000	\$195,996,000	\$215,596,000
PST	3.00	\$2,059,000	\$2,265,000	\$10,295,000	\$11,325,000
LONG-TERM	172.23	\$116,883,000	\$128,571,000	\$584,416,000	\$642,857,000
Unfunded	171.93	\$116,705,000	\$128,375,000	\$583,523,000	\$641,876,000
PST	0.31	\$178,000	\$196,000	\$892,000	\$982,000
Unfunded Projects		\$211,625,000	\$232,787,000	\$1,058,124,000	\$1,163,936,000
Penny Sales Tax Projects		\$20,059,000	\$22,065,000	\$100,297,000	\$110,326,000
Grand Total	336.97	\$231,684,000	\$254,853,000	\$1,158,421,000	\$1,274,263,000



TABLE 24 - COLUMBIA BICYCLE PROJECT SUMMARY TABLE

PROJECT PHASE	PROPOSED IMPROVEMENT	Sum of MILES	Sum of COST ESTIMATE	Sum of COST + 10% CONTINGENCY
PHASE I	Bike Boulevard	18.6	\$838,000	\$922,000
	Bike Lanes	11.3	\$846,000	\$931,000
	Buffered Bike Lanes	9.1	\$1,181,000	\$1,299,000
	Cycle Track (1-way)	12.2	\$1,948,000	\$2,142,000
	Cycle Track (2-way)	3.0	\$482,000	\$531,000
	Sidepath	6.5	\$3,888,000	\$4,277,000
PHASE I Total		60.7	\$9,183,000	\$10,101,000
PHASE II	Bike Boulevard	6.8	\$307,000	\$338,000
	Bike Lanes	4.1	\$307,000	\$338,000
	Buffered Bike Lanes	9.1	\$1,185,000	\$1,304,000
	Cycle Track (1-way)	6.1	\$971,000	\$1,068,000
	Cycle Track (2-way)	1.9	\$296,000	\$326,000
	Shared Lane Markings	0.6	\$27,000	\$30,000
	Sidepath	12.4	\$7,449,000	\$8,194,000
PHASE II Total		41.0	\$10,544,000	\$11,598,000
PHASE III	Bike Boulevard	16.2	\$730,000	\$803,000
	Bike Lanes	14.9	\$1,115,000	\$1,226,000
	Buffered Bike Lanes	3.4	\$439,000	\$483,000
	Cycle Track (1-way)	5.8	\$930,000	\$1,023,000
	Cycle Track (2-way)	0.6	\$94,000	\$104,000
	Sidepath	19.1	\$11,474,000	\$12,622,000
	Signed Route	1.9	\$29,000	\$32,000
PHASE III Total		61.9	\$14,812,000	\$16,293,000
PHASE IV	Bike Boulevard	13.6	\$521,000	\$573,000
	Bike Lanes	13.8	\$1,032,000	\$1,135,000
	Buffered Bike Lanes	4.0	\$525,000	\$577,000
	Cycle Track (1-way)	1.6	\$258,000	\$284,000
	Cycle Track (2-way)	1.5	\$239,000	\$263,000
	Shared Lane Markings	4.3	\$194,000	\$213,000
	Sidepath	28.3	\$16,957,000	\$18,653,000
	Infill Street	0.3	-	-
PHASE IV Total		67.3	\$19,727,000	\$21,699,000

PROJECT PHASE	PROPOSED IMPROVEMENT	Sum of MILES	Sum of COST ESTIMATE	Sum of COST + 10% CONTINGENCY
PHASE V	Bike Boulevard	5.9	\$264,000	\$291,000
	Bike Lanes	20.2	\$1,479,000	\$1,627,000
	Buffered Bike Lanes	3.4	\$437,000	\$480,000
	Cycle Track (1-way)	1.4	\$222,000	\$244,000
	Cycle Track (2-way)	0.4	\$63,000	\$69,000
	Paved Shoulders	4.5	\$715,000	\$786,000
	Shared Lane Markings	2.3	\$102,000	\$112,000
	Sidepath	21.5	\$12,889,000	\$14,178,000
	Signed Route	0.5	\$8,000	\$9,000
	Infill Street	1.0	-	-
PHASE V Total		61.0	\$16,178,000	\$17,796,000
PHASE VI	Bike Boulevard	1.6	\$73,000	\$80,000
	Bike Lanes	4.1	\$311,000	\$342,000
	Cycle Track (2-way)	0.8	\$121,000	\$133,000
	Paved Shoulders	6.3	\$1,002,000	\$1,103,000
	Sidepath	10.7	\$6,395,000	\$7,035,000
	Infill Street	1.5	-	-
PHASE VI Total		24.9	\$7,902,000	\$8,692,000
Grand Total		316.8	\$78,345,000	\$86,179,000



Columbia Mid-block Crossing and Signalized Intersection Improvements

The Plan identifies and prioritizes several intersection improvements and midblock pedestrian crossings throughout Columbia. Due to the wide range of designs that these projects may require and the varying costs that these projects may incur, specific design concepts and cost estimates were not generated for these recommendations. While a particular phasing plan was not developed for these improvement types, the City should strive to implement **5 mid-block crossing**

and 5 signalized intersection improvements a year with highest-priority projects targeted for implementation first. Implementation of these improvements should be coordinated with other programmed improvements such as Richland County Penny Sales Tax-funded projects or roadway restriping wherever possible. A summary of these projects by priority ranking is provided in **Tables 26 and 27**.

TABLE 25 - COLUMBIA BICYCLE PROJECT PENNY SALES TAX FUNDING BY PHASE

PROJECT PHASE	PROPOSED IMPROVEMENT	Sum of MILES	Sum of COST ESTIMATE	Sum of COST + 10% CONTINGENCY
PHASE I	Partial Penny Sales Tax Funded	10.5	\$665,000	\$731,000
	Penny Sales Tax Funded	13.1	\$3,096,000	\$3,406,000
	Not Penny Sales Tax Funded	37.1	\$5,422,000	\$5,964,000
PHASE II	Partial Penny Sales Tax Funded	5.8	\$2,452,000	\$2,697,000
	Penny Sales Tax Funded	9.6	\$3,069,000	\$3,376,000
	Not Penny Sales Tax Funded	25.5	\$5,023,000	\$5,525,000
PHASE III	Partial Penny Sales Tax Funded	1.0	\$14,000	\$16,000
	Penny Sales Tax Funded	27.5	\$9,888,000	\$10,877,000
	Not Penny Sales Tax Funded	33.5	\$4,909,000	\$5,400,000
PHASE IV	Partial Penny Sales Tax Funded	1.4	\$61,000	\$67,000
	Penny Sales Tax Funded	17.6	\$8,888,000	\$9,777,000
	Not Penny Sales Tax Funded	48.4	\$10,777,000	\$11,855,000
PHASE V	Penny Sales Tax Funded	1.7	\$163,000	\$179,000
	Not Penny Sales Tax Funded	59.3	\$16,015,000	\$17,617,000
PHASE VI	Penny Sales Tax Funded	24.9	\$7,902,000	\$8,692,000
	Not Penny Sales Tax Funded	18.7	\$3,192,000	\$3,511,000
TOTALS	Partial Penny Sales Tax Funded	18.7	\$3,192,000	\$3,511,000
	Penny Sales Tax Funded	69.5	\$25,105,000	\$27,615,000
	Not Penny Sales Tax Funded	228.7	\$50,048,000	\$55,053,000
Grand Total		316.8	\$78,345,000	\$86,179,000

TABLE 26 - PEDESTRIAN INTERSECTION IMPROVEMENTS

Priority Ranking	Number of Projects
17	1 (1 Penny Sales Tax Funded)
16	2 (2 Penny Sales Tax Funded)
15	1
14	4
13	1
12	10 (3 Penny Sales Tax Funded)
11	17 (1 Penny Sales Tax Funded)
10	23 (5 Penny Sales Tax Funded)
9	38 (1 Penny Sales Tax Funded)
8	20 (1 Penny Sales Tax Funded)
7	26
6	17
5	8
4	2
Grand Total	170

TABLE 27 - MID-BLOCK CROSSING IMPROVEMENTS

Priority Ranking	Number of Projects
19	2
18	6
17	5
16	3
15	1
14	33
13	47
12	24
11	66
10	55
9	33
8	16
7	7
6	13
5	2
0	18
Grand Total	331



Implementation Strategies

The pedestrian and bicycle facility types presented in the network recommendations are considered the most appropriate facility types for the conditions observed. Considerations when selecting facility types included feasibility of implementation, intended user groups, current traffic and physical conditions, past safety incidents, public input and extensive site observations. While the City of Columbia and its implementation partners should strive to implement the network as it is presented herein, other unforeseen constraints may prevent this from being possible in all cases. **If unforeseen constraints prevent the recommended facility type from being feasible, the implementing agency should strive to implement the next best facility type in terms of user separation and safety.** For example, if cycle tracks are not feasible on a section of roadway, buffered bike lanes should be installed as the next best alternative.

In addition, many bikeway and sidewalk improvement recommendations in the Plan are located on South Carolina Department of Transportation jurisdiction roadways. While project phasing is representative of the identified project need and benefit and should be followed when possible, **the implementing agency should also look for opportunities to coordinate bikeways construction with SCDOT regularly-programmed maintenance activities**, even if this results in projects being implemented outside of their scheduled phasing. Coordinating with resurfacing and re-engineering projects that are already programmed will greatly reduce the costs of implementing recommended facilities in most cases.

Project prioritization targets high-impact, low-cost opportunities like sidewalk gaps in the pedestrian and bicycle network.

Project Funding

Above all else, engineering projects require adequate funding sources to ensure their implementation. As noted in the previous tables, projects funded with the Richland County One-Cent Sales Tax offer a near-term opportunity to get many pedestrian and bicycle recommendations implemented. However, additional funding sources must be secured to take recommendations in this Plan to implementation, and it is important to consider that not all construction activities will be accomplished with a single funding source.

This Plan recommends that the City investigate budgeting additional dedicated roadway funding for pedestrian and bicycle projects to ensure the regular implementation of these recommendations. Columbia should also pursue public and private grant sources that could be used to fund project implementation or support programs. **Appendix L** provides an extensive summary of potential federal, state, local private sources of funding for pedestrian and bicycle projects in Columbia, SC.



FIGURE 34 – COLUMBIA SIDEWALK RECOMMENDATIONS PHASING (OVERVIEW)

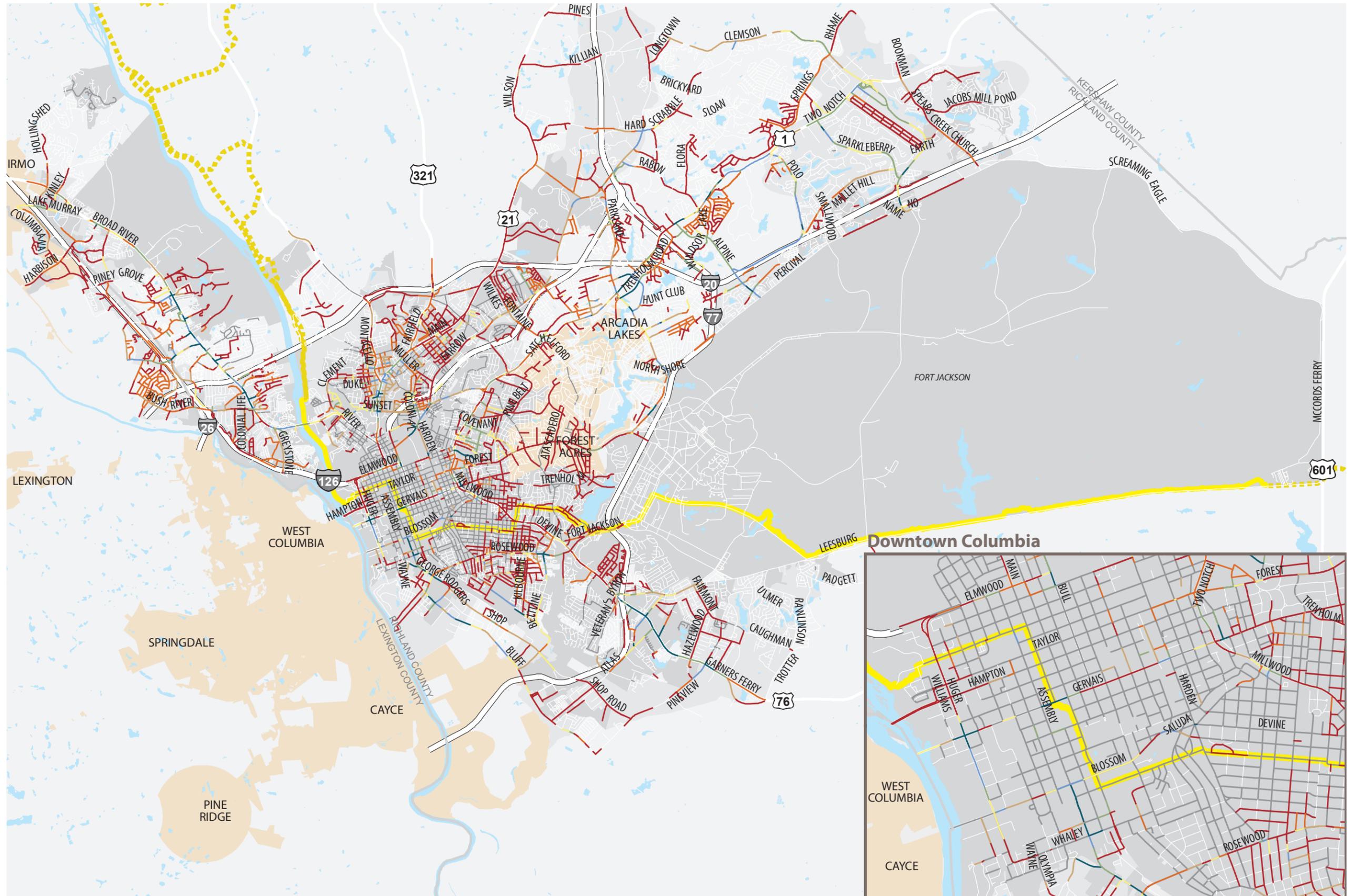
Sidewalk Project Phasing

PriorityScore_Ped

- Phase I
- Phase II
- Phase III
- Phase IV
- Phase V
- Phase VI
- Long-Term
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- Limited Access Highway
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



0 1 2 Miles



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created December, 2014.



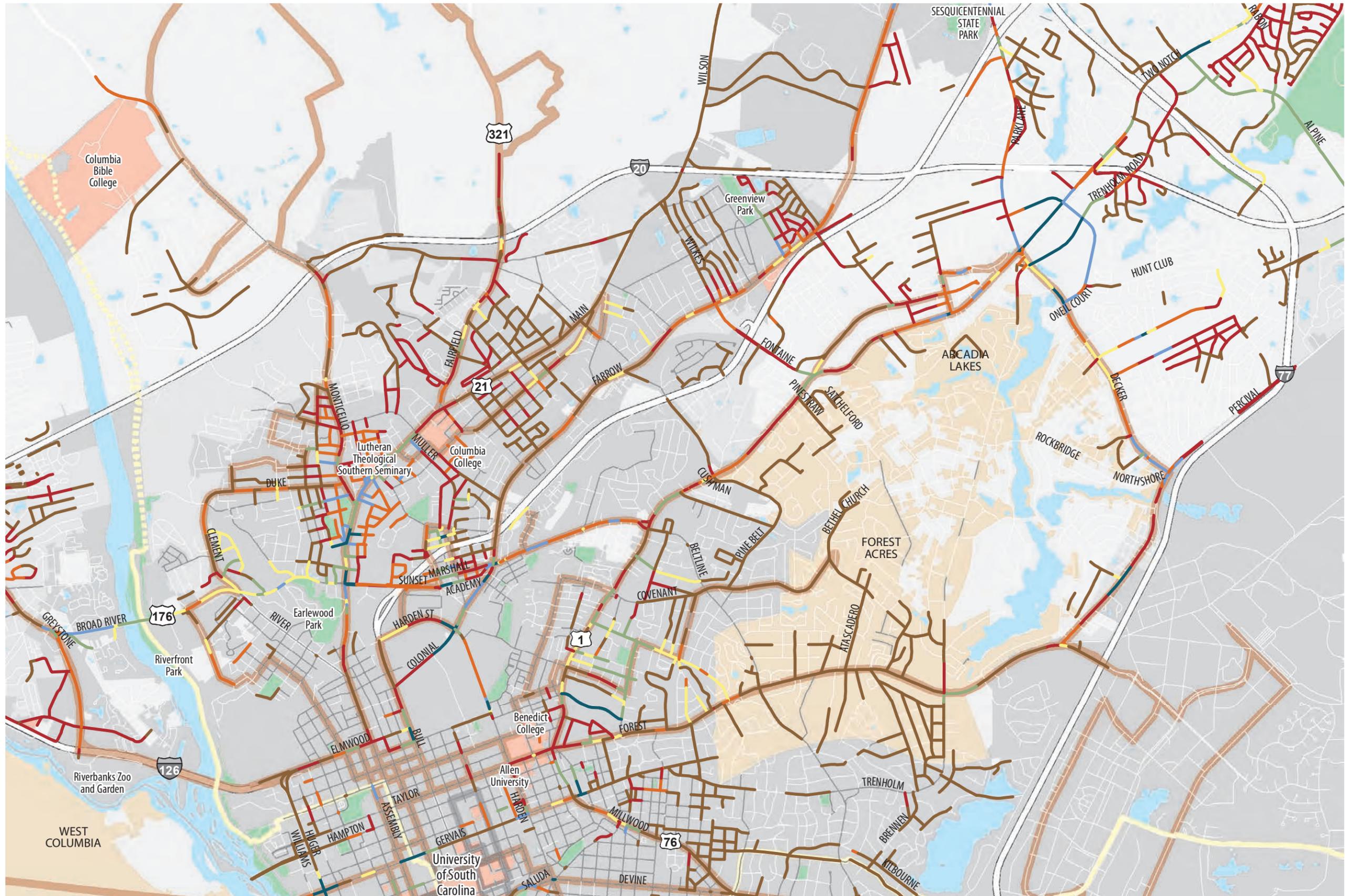
FIGURE 35 - COLUMBIA SIDEWALK RECOMMENDATIONS PHASING (CITY CENTER)



Sidewalk Project Phasing ~Central~

Sidewalk Phasing

- Phase I
 - Phase II
 - Phase III
 - Phase IV
 - Phase V
 - Phase VI
 - Long-Term
 - Street with Sidewalk(s)
 - Street (white)
- Legend**
- Existing Palmetto Trail
 - - - Palmetto Trail Gap Options
 - COMET Route
 - USC Shuttle Route
 - Limited Access Highway
 - Park
 - College
 - City of Columbia Limits
 - Potential Future Annexation Areas
 - Other Jurisdiction
 - Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.





FIGURE 36 – COLUMBIA SIDEWALK RECOMMENDATIONS PHASING (NORTHWEST)

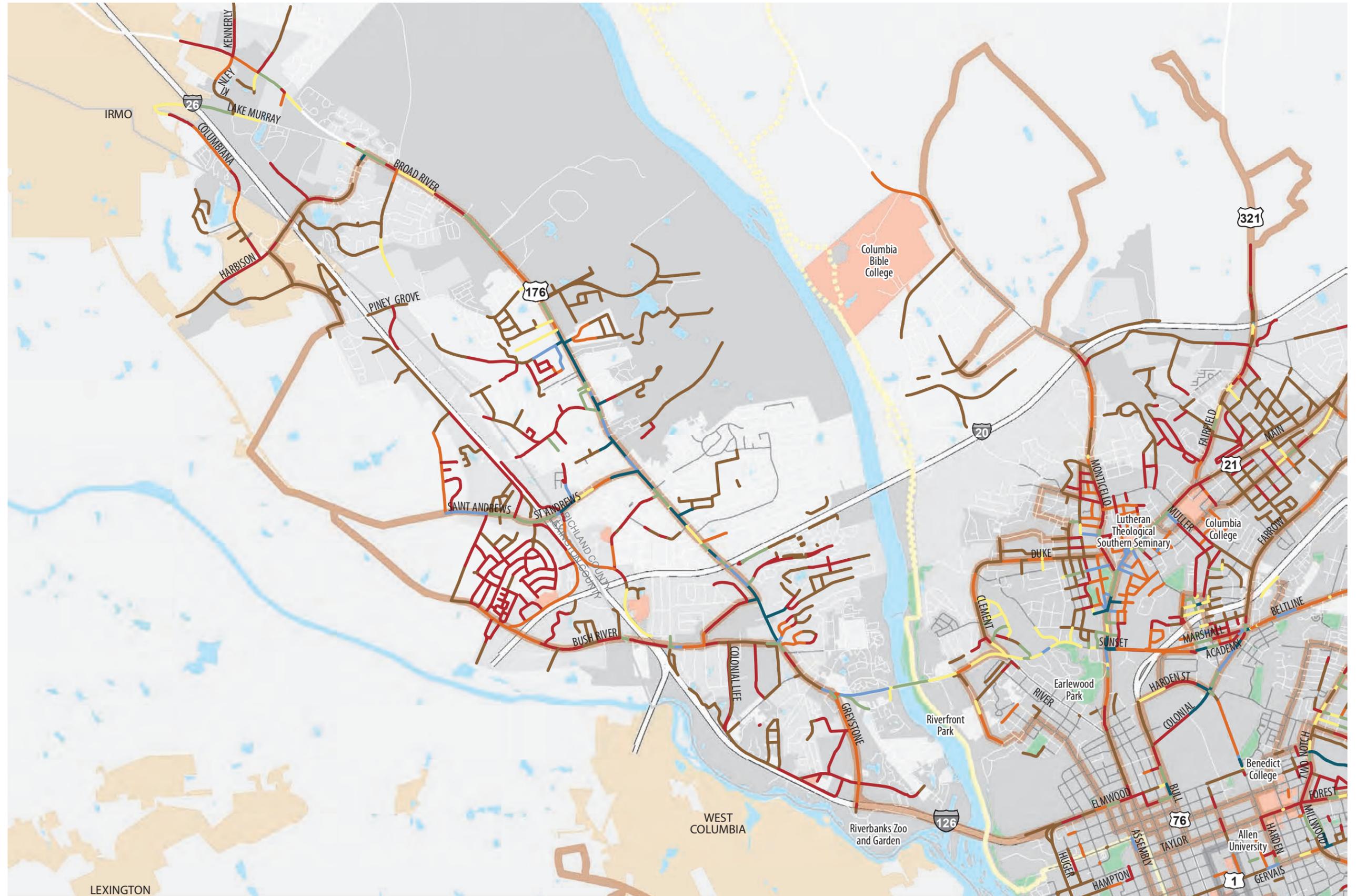
Sidewalk Project Phasing ~Northwest~

Sidewalk Phasing

- Phase I
- Phase II
- Phase III
- Phase IV
- Phase V
- Phase VI
- Long-Term
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.



FIGURE 37 - COLUMBIA SIDEWALK RECOMMENDATIONS PHASING (NORTHEAST)

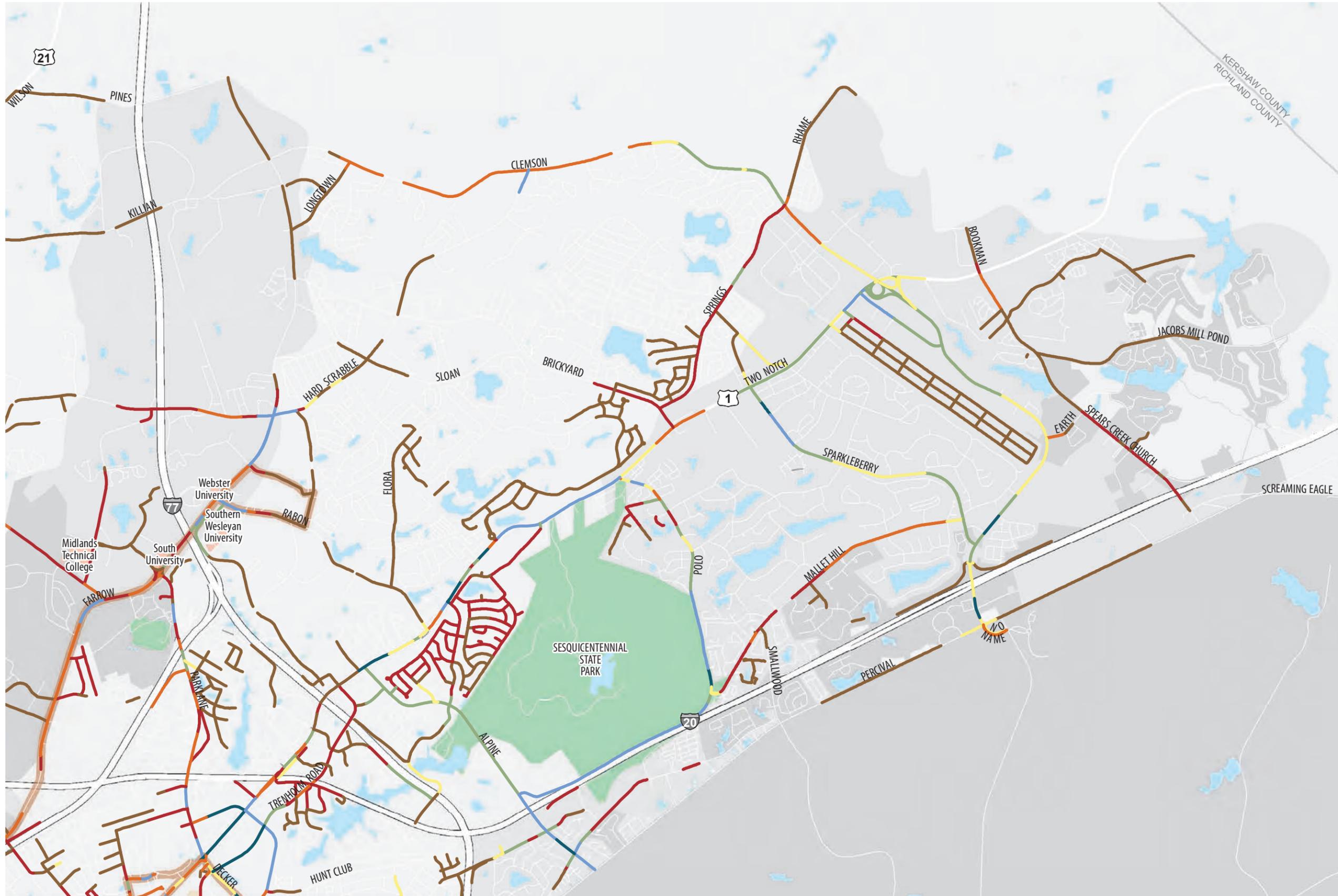
Sidewalk Project Phasing ~Northeast~

Sidewalk Phasing

- Phase I
- Phase II
- Phase III
- Phase IV
- Phase V
- Phase VI
- Long-Term
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created December, 2014.





FIGURE 38 - COLUMBIA SIDEWALK RECOMMENDATION PROJECT PHASING (SOUTHWEST)

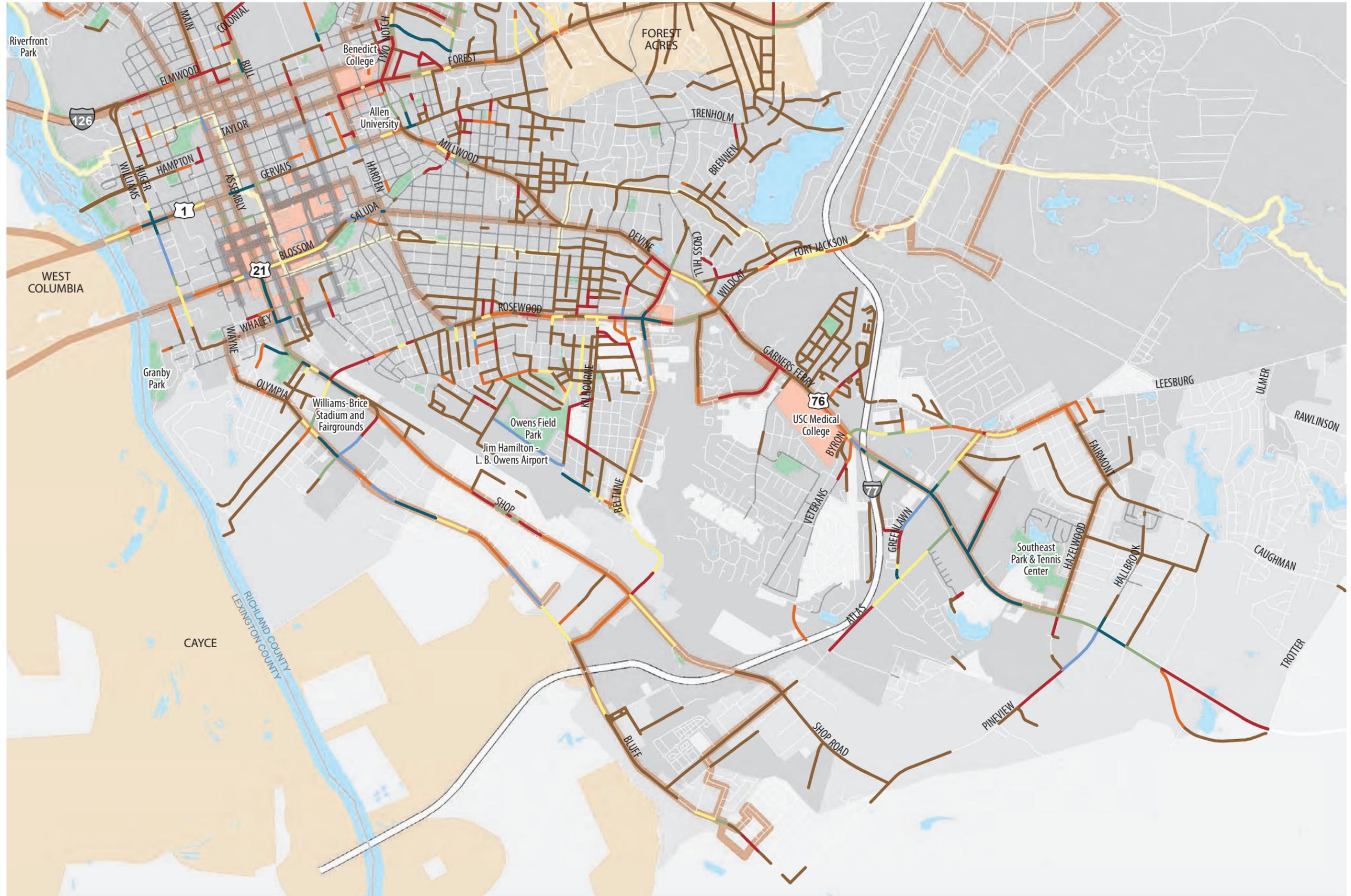
Sidewalk Project Phasing ~Southwest~

Sidewalk Phasing

- Phase I
- Phase II
- Phase III
- Phase IV
- Phase V
- Phase VI
- Long-Term
- Street with Sidewalk(s)
- Street (white)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- COMET Route
- USC Shuttle Route
- Limited Access Highway
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments.
Map created December, 2014.



FIGURE 39 - COLUMBIA BICYCLE RECOMMENDATION PROJECT PHASING (OVERVIEW)



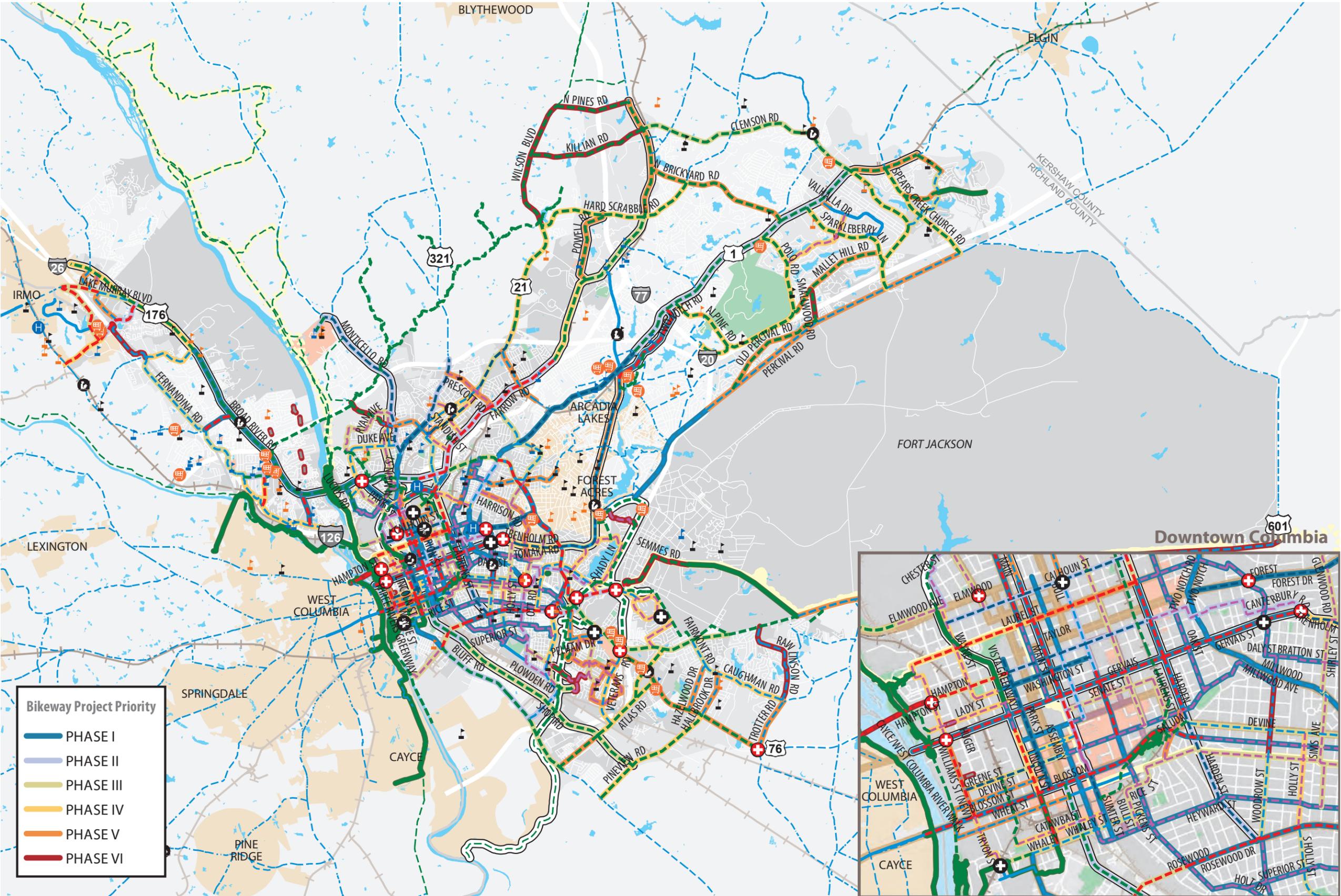
Proposed Bicycle Infrastructure Prioritization

- Proposed Bikeways**
- Sidepath or Greenway
 - Cycle Track(s)
 - Buffered Bike Lanes
 - Bike Lanes/ Paved Shoulders
 - Bike Boulevard/ Bike Route/ Shared Lane Markings
 - Primary All Ages and Abilities Routes
- Existing Bikeways**
- Existing Sidepath or Greenway
 - Existing Bike Lanes/ Paved Shoulders
 - Existing Bike Boulevard/ Bike Route/ Shared Lane Markings

- Other Proposed Improvements**
- + Bicycle/Pedestrian Cut-through
 - + Intersection Improvements
 - Infill Street
 - Proposed On-Road Bikeway (Other Jurisdiction)
 - Proposed Sidepath or Greenway (Other Jurisdiction)

- Legend**
- Existing Palmetto Trail
 - Palmetto Trail Gap Options
 - Commuter Rail Line (Proposed)
 - Other Rail Line
 - Park
 - College
 - City of Columbia Limits
 - Potential Future Annexation Areas
 - Other Jurisdiction
 - Water Body

- Bikeway Project Priority**
- PHASE I
 - PHASE II
 - PHASE III
 - PHASE IV
 - PHASE V
 - PHASE VI



0 1 2 Miles

Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.



FIGURE 40 – COLUMBIA BICYCLE RECOMMENDATION PROJECT PHASING (CITY CENTER)

Proposed Bicycle Project Prioritization ~Central~

Proposed Bikeways

- Sidepath or Greenway
- Cycle Track(s)
- Buffered Bike Lanes
- Bike Lanes/ Paved Shoulders
- Bike Boulevard/ Bike Route/ Shared Lane Markings
- Primary All Ages and Abilities Routes

Existing Bikeways

-

Other Proposed Improvements

- Bicycle/Pedestrian Cut-through
- Intersection Improvements
- Infill Street
- Proposed On-Road Bikeway (Other Jurisdiction)
- Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.

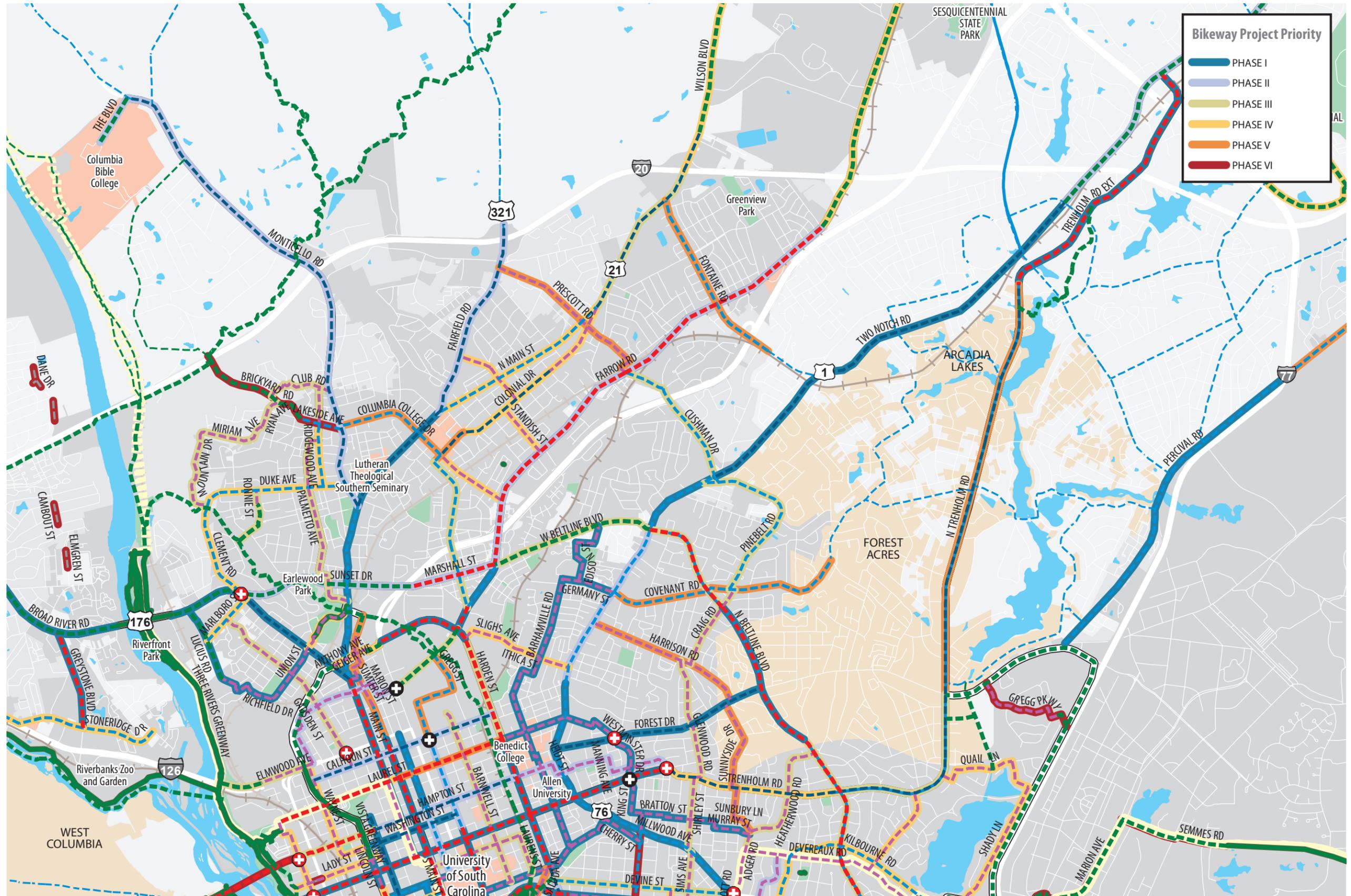


FIGURE 41 - COLUMBIA BICYCLE RECOMMENDATION PROJECT PHASING (NORTHWEST)



Proposed Bicycle Project Prioritization ~Northwest~

Proposed Bikeways

- Sidepath or Greenway
- Cycle Track(s)
- Buffered Bike Lanes
- - - Bike Lanes/ Paved Shoulders
- Bike Boulevard/ Bike Route/ Shared Lane Markings
- Existing Bikeways
- Primary All Ages and Abilities Routes

Other Proposed Improvements

- + Bicycle/Pedestrian Cut-through
- + Intersection Improvements
- - - Infill Street
- - - Proposed On-Road Bikeway (Other Jurisdiction)
- - - Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- Palmetto Trail Gap Options
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.

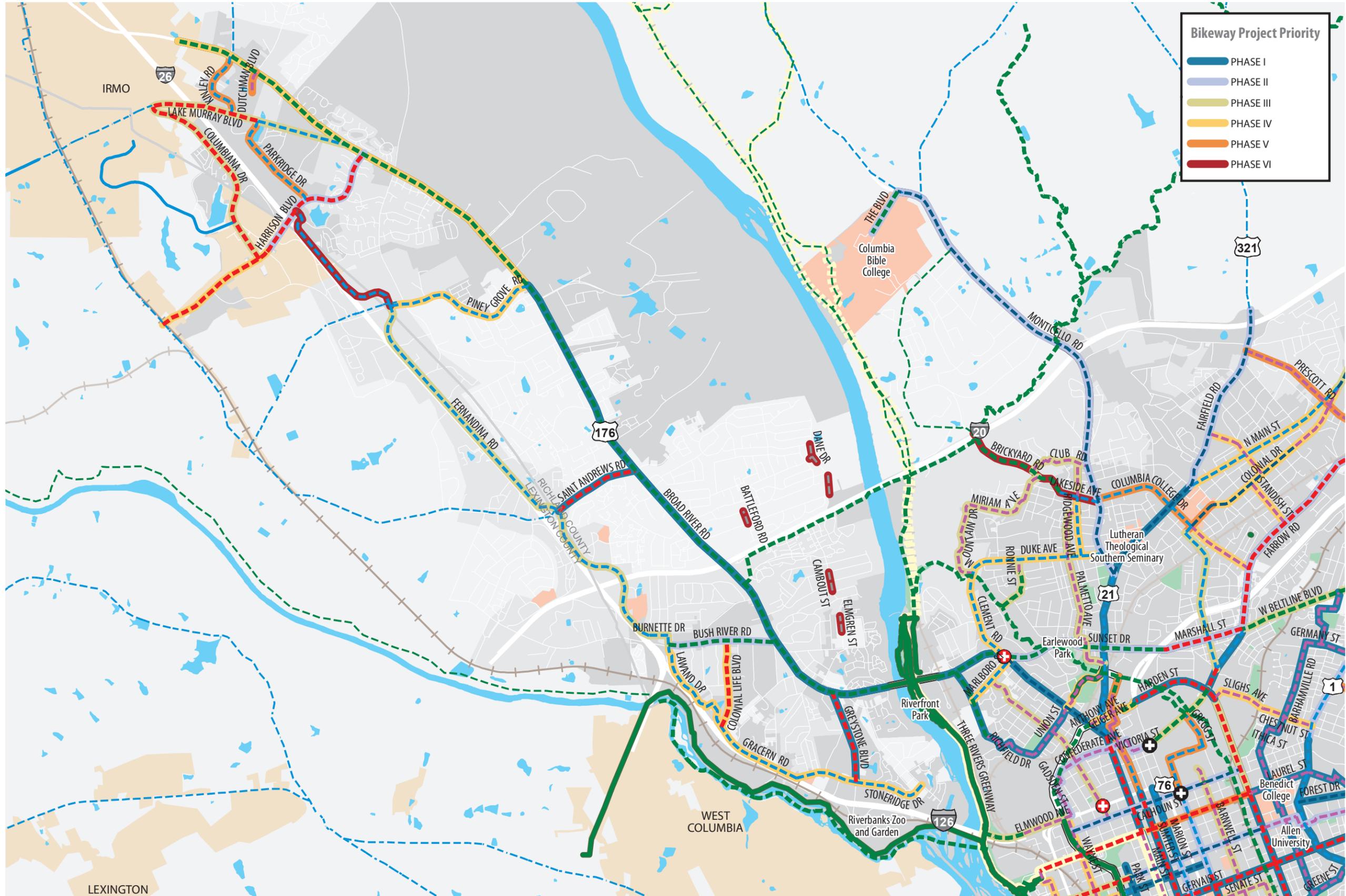




FIGURE 42 – COLUMBIA BICYCLE RECOMMENDATION PROJECT PHASING (NORTHEAST)

Proposed Bicycle Project Prioritization ~Northeast~

Proposed Bikeways

- Sidepath or Greenway
- Cycle Track(s)
- - - Buffered Bike Lanes
- - - Bike Lanes/ Paved Shoulders
- - - Bike Boulevard/ Bike Route/ Shared Lane Markings

Existing Bikeways

- Existing Bikeway

Other Proposed Improvements

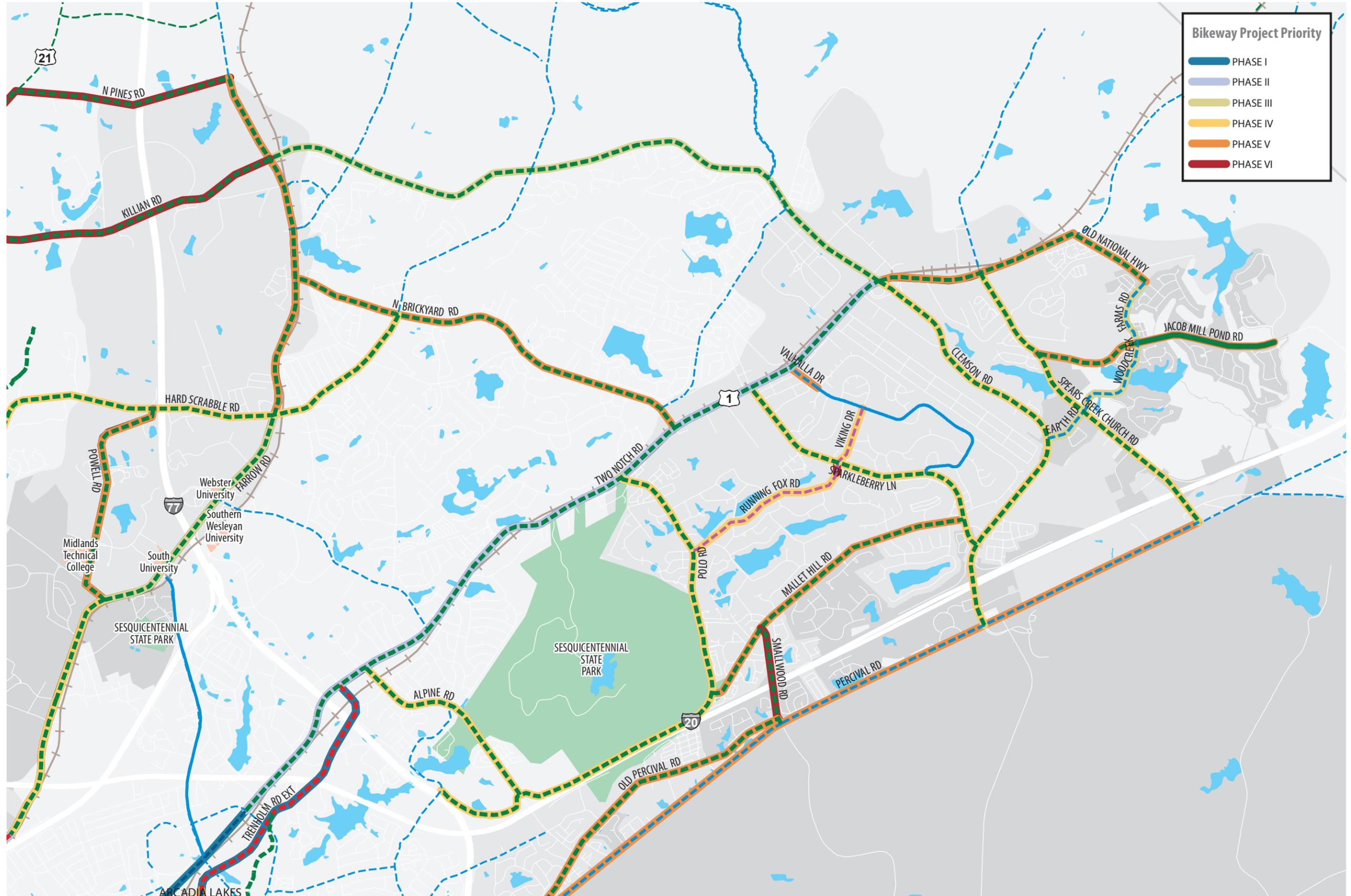
- - - Infill Street
- - - Proposed On-Road Bikeway (Other Jurisdiction)
- - - Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- + Commuter Rail Line (Proposed)
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body

Bikeway Project Priority

- PHASE I
- PHASE II
- PHASE III
- PHASE IV
- PHASE V
- PHASE VI



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.



FIGURE 43 - COLUMBIA BICYCLE RECOMMENDATION PROJECT PHASING (SOUTHWEST)



Proposed Bicycle Project Prioritization ~Southwest~

Proposed Bikeways

- Sidepath or Greenway
- - - Cycle Track(s)
- - - Buffered Bike Lanes
- - - Bike Lanes/ Paved Shoulders
- - - Bike Boulevard/ Bike Route/ Shared Lane Markings
- Existing Bikeways
- Primary All Ages and Abilities Routes

Other Proposed Improvements

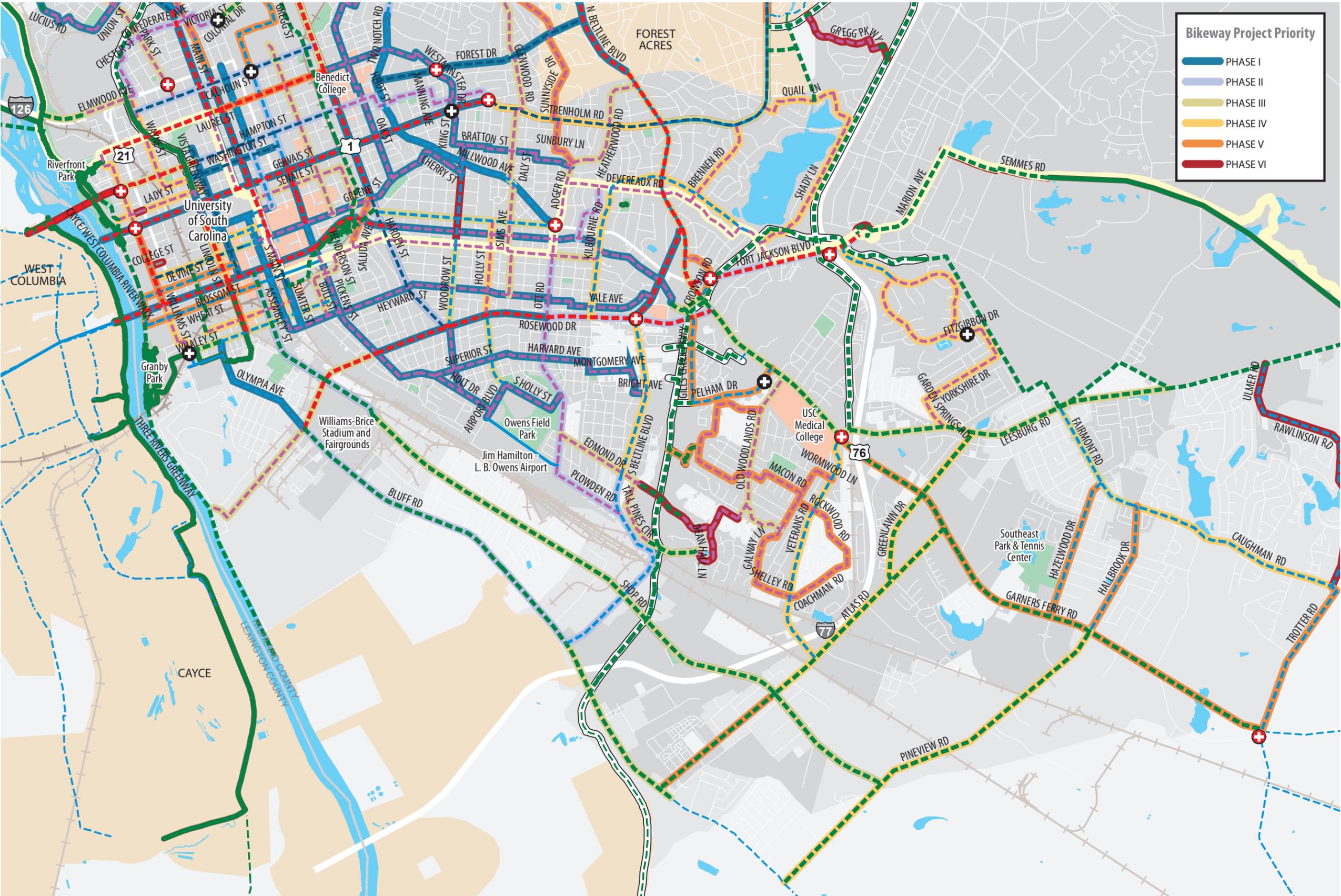
- + Bicycle/Pedestrian Cut-through
- + Intersection Improvements
- - - Infill Street
- - - Proposed On-Road Bikeway (Other Jurisdiction)
- - - Proposed Sidepath or Greenway (Other Jurisdiction)

Legend

- Existing Palmetto Trail
- - - Palmetto Trail Gap Options
- Commuter Rail Line (Proposed)
- Other Rail Line
- Park
- College
- City of Columbia Limits
- Potential Future Annexation Areas
- Other Jurisdiction
- Water Body



Data obtained from the City of Columbia and Central Midlands Council of Governments. Map created December, 2014.



Bikeway Project Priority

- PHASE I
- PHASE II
- PHASE III
- PHASE IV
- PHASE V
- PHASE VI



Catalyst Projects to Build Momentum

Introduction

The initial projects implemented from this Plan will be crucial to the long-term realization of the Plan's vision. It is key that the City of Columbia focus on projects that have a high latent demand for use, are high-profile corridors that many Columbians will see, and are relatively low impact/low-hanging fruit projects that will be easy to implement and are less controversial. The success of these initial projects will be an important catalyst for future projects - raising awareness on the types of improvements taking place and building excitement for walking, bicycling, and transit throughout Columbia.

The project team worked together to select four projects that fit these criteria for Columbia, while also providing design guidance for two projects already in progress. In addition to being high-impact low-cost/effort projects, the team made a conscious effort to ensure that these projects were spread equitably across the City and were located primarily on transit corridors to benefit multiple user groups. These projects are as follows:

North Main Street - Anthony Ave. to Fuller Ave.

Greene Street - Assembly St. to Gadsen St.

Garners Ferry Road - Atlas Rd. to Daphne Rd.

Farrow Road - Columbia College Dr. to Fontaine St.

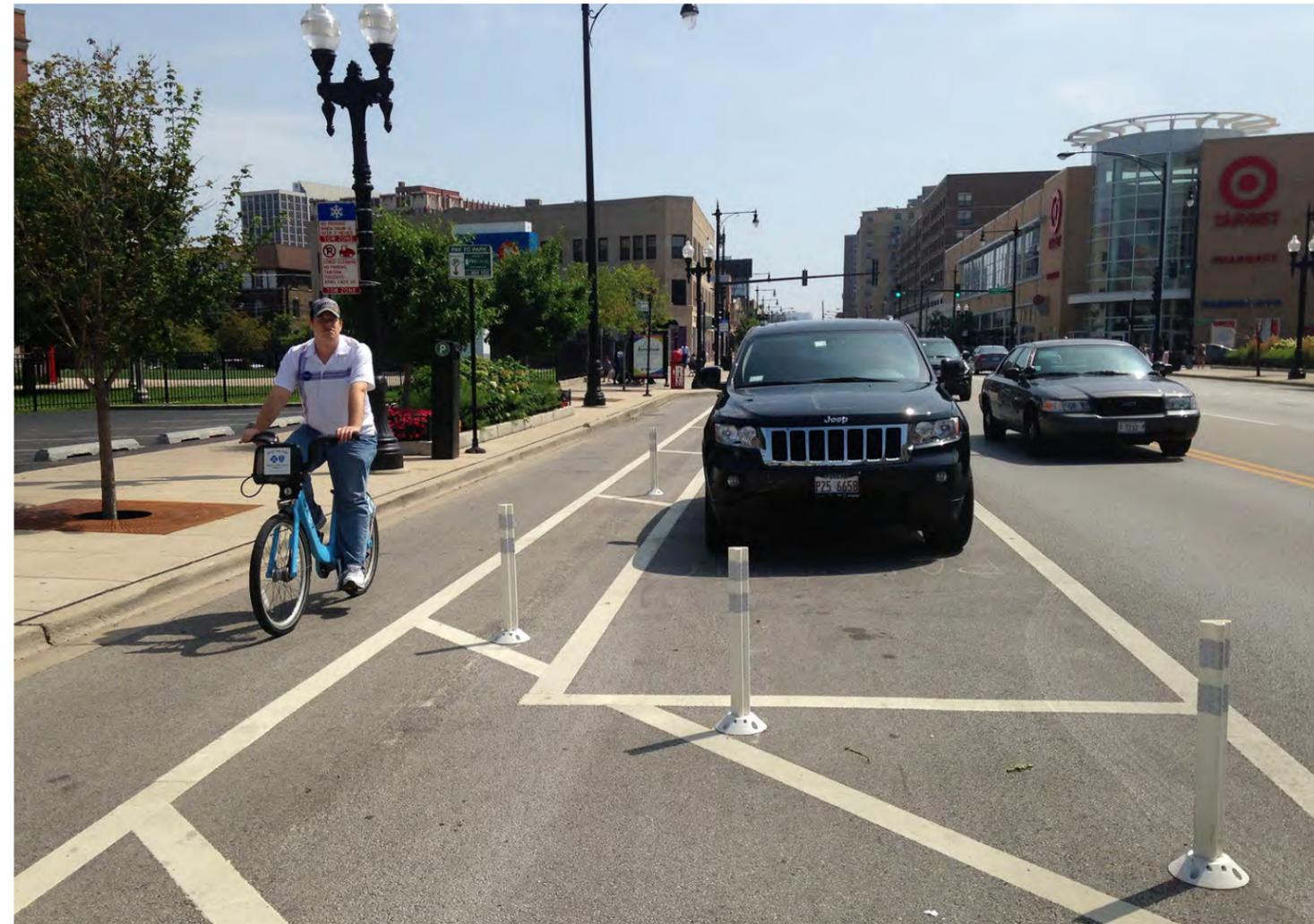
Laurel Street - Bull St. to Harden St.

Sumter Street - Elmwood Ave. to Taylor St.

During the planning process, the City became the recipient of a \$10 million USDOT TIGER grant for rehabilitation of 16 blocks of North Main Street and also worked with the University of South Carolina, SCDOT, and other stakeholders to implement improvements along Greene Street at Innovista. For the remaining four projects, the team has developed priority project cutsheets to help communicate what these

improvements will potentially look like and what will be required to implement them. In addition, the team developed detailed traffic impact analyses for these four corridors to assist the City as they move forward with project development and implementation. These four project cutsheets are presented on the following pages. The results of the traffic impact analyses can be found in the Plan's appendix.

N Broadway St. in Chicago (shown below) is an example of a 5 lane to 3 lane road diet, much like the improvements proposed for Farrow Rd. and Sumter St. in Columbia.





Garners Ferry Rd

Pedestrian, Bicycle, and Transit Improvements

To/From: Atlas Rd. to Daphne Rd.

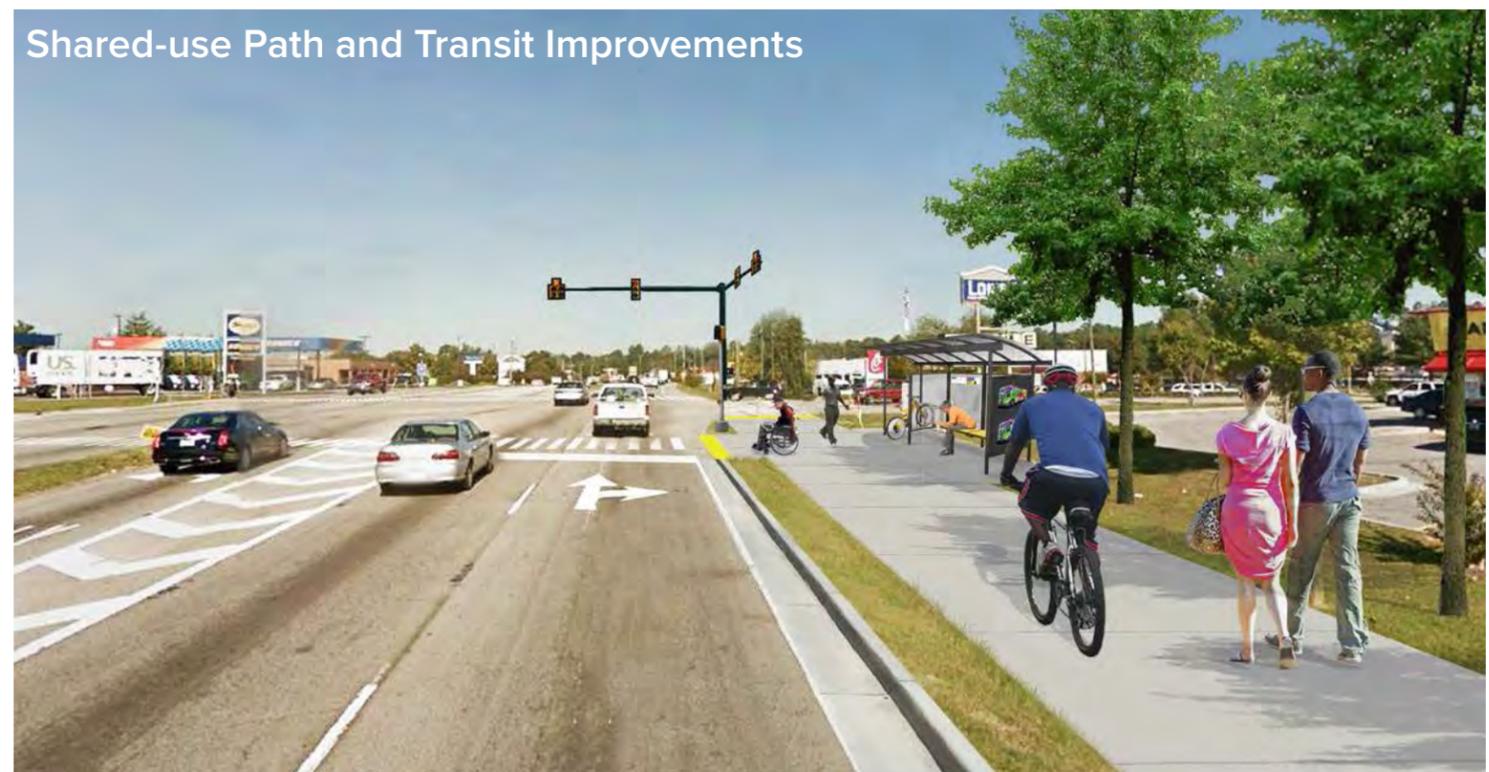
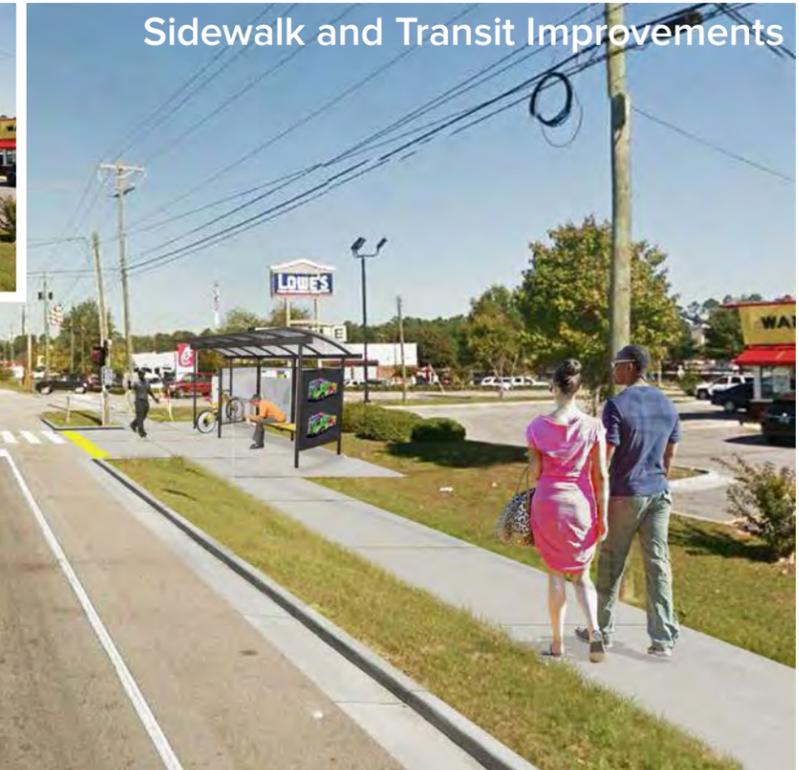
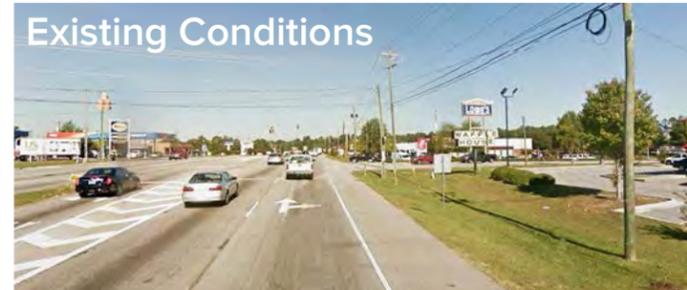
Project Highlights: Transit route, highest ranking pedestrian improvement, provides access to employment and commercial centers

Richland County Sales Tax Project: No

Roadway Jurisdiction: SCDOT

Proposed Improvements: Sidewalks or Shared-use Paths. Transit stop improvements along corridor.

Implementation Strategy: Sidewalks and transit stop improvements are a near-term priority for the corridor. A minimum 8' shared-use path with 5' roadway buffer is the recommended bikeway and could substitute for sidewalk improvements on one, or both sides of road. These improvements could be coupled with additional streetscape improvements such as overhead line burial and street trees.





Farrow Rd

Bicycle and Transit Improvements

To/From: Columbia College Dr. to Fontaine St.

Project Highlights: Transit route, parallel route to Highway 277

Richland County Sales Tax Project: No

Roadway Jurisdiction: SCDOT

Proposed Improvements: One-way cycle tracks on both sides of roadway, bicycle wayfinding signage and intersection improvements, transit stop upgrades.

Implementation Strategy: Outside lanes of existing 5 lane road would be restriped to add 9' minimum cycle tracks. Bicycle wayfinding signage directing bicyclists to nearby destinations should also be installed. Also include bicycle intersection improvements at intersections with side streets and signals. Pavement markings and signage will be used to indicate “mixing zones” at transit stops.

Existing Conditions



Proposed Improvements





Laurel St

Bicycle and Transit Improvements

To/From: Bull St. to Harden St.

Project Highlights: Transit route, east-west downtown connection, links to existing bicycle route.

Richland County Sales Tax Project: No

Roadway Jurisdiction: SCDOT

Proposed Improvements: One-way cycle tracks on both sides of roadway, bicycle wayfinding signage and intersection improvements, transit stop upgrades.

Implementation Strategy: 4 to 3 lane road diet (with removal of parking on one side of street as needed) to install 8'-9' one-way cycle tracks. Some parking could be relocated to side streets. Bicycle wayfinding signage directing bicyclists to nearby destinations should also be installed. Also include bicycle intersection improvements at intersections with side streets and signals. Pavement markings and signage will be used to indicate "mixing zones" at transit stops.

Existing Conditions



Proposed Improvements





Sumter St

Pedestrian, Bicycle and Transit Improvements

To/From: Elmwood Ave. to Taylor St.

Project Highlights: Transit route, north/south downtown connection, links University of South Carolina campus with student housing

Richland County Sales Tax Project: Yes

Roadway Jurisdiction: SCDOT

Proposed Improvements: One-way cycle tracks on both sides of roadway, transit stop improvements, streetscaping improvements including street trees.

Implementation Strategy: 5 to 3 lane road diet would provide space to add minimum 9' one-way cycle tracks. Bus stops could be "floated" between cycle track and traffic to provide safe boarding and alighting area. Streetscape improvements could include median planters, planter boxes along sidewalks, and intermittent street trees along sidewalks.

Existing Conditions



Proposed Improvements



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Walk-Friendly/Bike-Friendly Community Action Plans

Introduction

This Action Plan outlines a strategy for the City of Columbia to implement the programs and projects laid out in the Walk Bike Columbia Plan with the goal of achieving Silver and ultimately higher levels of Bicycle Friendly Community (BFC) and Walk Friendly Community (WFC) recognition. Columbia already completed the BFC application process in 2008 and 2013, and was awarded a Bronze level designation. This action plan serves as a guide for Columbia to build on that success to seek higher BFC award levels and to become the first Walk Friendly Community in the state.

The Columbia BFC and WFC Assessment, completed as part of this plan, evaluates the existing bicycling and walking environment in Columbia and identifies the City's strengths and weaknesses based on BFC and WFC application criteria. This action plan is informed by the results of the BFC and WFC Assessment, Columbia's 2008 BFC Application, and the League of American Bicyclists BFC Feedback for Columbia to identify how the City can further improve its pedestrian and bicycle environment and culture.

The key recommendations from the League of American Bicyclists BFC Feedback for Columbia included the following:

- Expand the Bicycle Coordinator's time focused on bicycle projects to help in scaling up your BFC efforts.
- Adopt the comprehensive bike master plan that is currently being prepared.
- Increase the amount of high quality bicycle parking at popular destinations such as major transit stops, schools, universities, recreational and entertainment facilities, retail stores, office buildings, and churches throughout the community.
- Continue to expand the bike network to increase network connectivity through the use of different types of bike

lanes, cycle tracks, and shared lane markings. Ensure smooth transitions for bicyclists between the trail network and the street network.

- Launch a bike share system that is open to the public.
- Encourage local public agencies, businesses, and organizations to promote cycling to the workplace and to seek recognition through the free Bicycle Friendly Business program.
- Design and publish a local bike map in paper and online, addressing diverse needs and skill levels (Commuter, recreational cyclist, sport cyclist, mountain biker, etc.).
- Ask police officers to target both motorist and cyclist infractions to ensure that laws are being followed by all road users. Ensure that bicycle/car crashes are investigated thoroughly and that citations are given fairly.

These recommendations were incorporated into the BFC/WFC Action Plan to present a clear picture of the expectations that the League of American Bicyclists has for Columbia as it pursues higher level BFC designations.

Applying for BFC/WFC Designation

There are two steps to apply for Bicycle Friendly Community status:

1. Complete and submit Part 1 of the application online. After a review of your general community profile, the League will inform you if you have met some of the basic criteria required.
2. Part 2 is a detailed audit of the engineering, education, encouragement, enforcement and evaluation efforts in your municipality. This comprehensive inquiry is designed to yield a holistic picture of a community's work to promote



Increasing the miles of sidewalks and on-street bikeways, especially delineated facilities like bike lanes and cycletracks, are a key to becoming recognized as a walk or bicycle-friendly community.



bicycling. Communities must reapply every four years to keep their status in good standing or to achieve a higher status.

The steps to apply for Walk Friendly Community status are similar to those for the BFC application:

1. The individual leading the WFC application effort will create a community profile that can be shared with the application team.
2. The team will then be required to address in detail the engineering, education, encouragement, enforcement, and evaluation and planning efforts related to walking in Columbia.

As of 2014, there are no designated Walk Friendly Communities in South Carolina. Columbia has the opportunity to be the first in the state. A WFC application will be completed as part of this planning effort and a high level WFC assessment was completed in the existing conditions portion of the plan.

The Five E's

The BFC evaluation and WFC evaluation are both structured based on the 5 "E's": Engineering, Education, Encouragement, Enforcement and Evaluation. A sixth "E", Equity, is addressed throughout each application and in the BFC and WFC Action Plan. Each of the 5 categories is scored in the application through a series of detailed questions. A community must demonstrate success in each of these areas in order to be considered eligible for an award. Communities with significant achievements in these areas receive awards, which are given at Bronze, Silver, Gold and Platinum levels. The BFC program recently added a Diamond designation, the highest possible BFC award. Both programs also have an honorable mention category for communities that do not qualify for a higher level

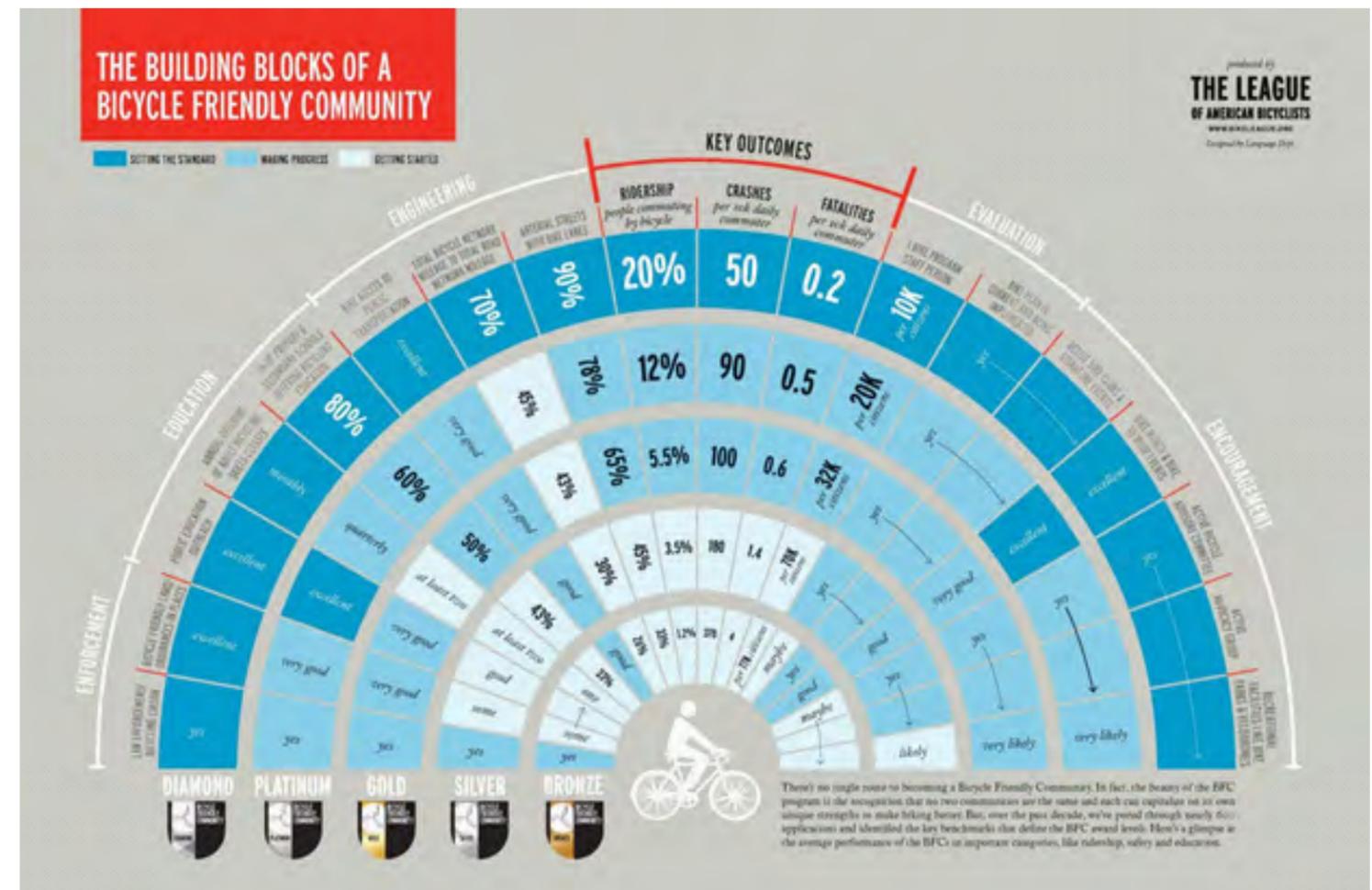
of award but have demonstrated progress towards future success.

Urban, rural and suburban communities throughout the U.S. have participated in the BFC and WFC programs. There is a growing interest in using the application process as a benchmarking tool for communities to enhance, develop, and manage their local programs. Filling out the BFC and WFC applications is an education in itself, as communities identify

their strengths and opportunities for improvement in each of these categories. The Five "E's" are summarized below.

Figure 44: The League of American Bicyclists has created this summary table of factors for various levels of Bike Friendly Communities in each of the 5 E categories.

FIGURE 44 – THE BUILDING BLOCKS OF A BICYCLE-FRIENDLY COMMUNITY



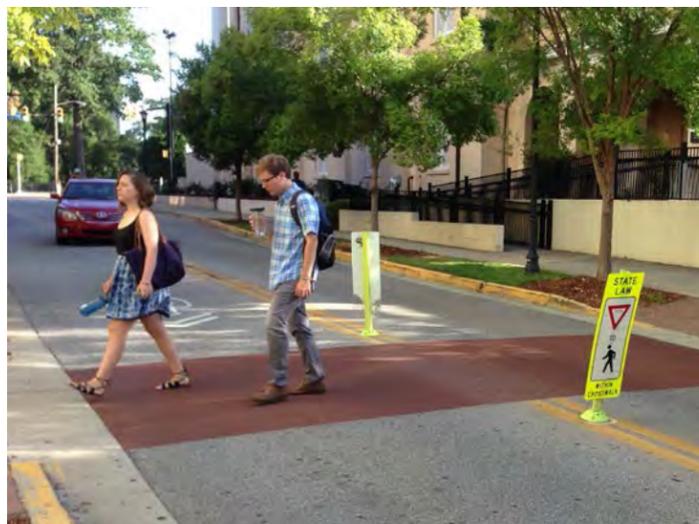


Engineering

Communities are asked about features of the built environment that promote bicycling or walking in the community. Included in this category are questions about the accommodation of pedestrians and bicyclists on public roads, pedestrian- and bicycle-friendly policies in place, and the existence of well-designed on-street bicycle facilities, sidewalks, crossings, and multi-use paths in the community. Reviewers also look at the availability of secure bike parking and the condition and connectivity of both the off-road and on-road networks.

Education

The questions in this category are designed to determine the amount of education that is available for pedestrians, bicyclists, and motorists. Education includes teaching bicyclists of all ages how to ride safely, teaching children pedestrian safety and how to safely cross the street, as well as educating motorists on how to share the road safely with pedestrians and bicyclists. Some things that reviewers look for are the availability of bicycling education for adults and children, the number of



Mid-block crossings are effective at making a safer and more comfortable pedestrian environment - by reducing distances between crossing locations.

League Cycling Instructors in the community, the presence of Safe Routes to School programs, and other ways that safety information is distributed to both pedestrians, bicyclists, and motorists in the community, including bike maps, tip sheets, and as a part of driver's education manuals and courses.

Encouragement

This category concentrates on how the community promotes and encourages bicycling and walking. This can be done through Bike Month and Bike to Work Week events, bike and walk maps, wayfinding signage, community bike rides and walks, commuter incentive programs, and having a Safe Routes to School program. In addition, some questions focus on infrastructure that has been built to promote a bicycling and walking culture, such as off-road facilities, BMX parks, velodromes, and the existence of both road and mountain bicycling clubs.

Enforcement

The enforcement category contains questions that evaluate the connections between pedestrians, bicyclists, and law enforcement. Questions address whether or not the law enforcement community has a liaison with the bicycling community, if there are bicycle and on-foot divisions of the law enforcement or public safety communities, if the community uses targeted enforcement to encourage pedestrians, bicyclists, and motorists to share the road safely, and the existence of pedestrian and bicycle related laws.

Evaluation & Planning

In this section, the community is judged on the systems that they have in place to plan for bicycling and walking and to evaluate the progress of plans, projects, and policies. Questions are focused on measuring the amount of bicycling and walking taking place in the community, city crash and fatality rates, and ways that the community works to track and improve these numbers. Communities are asked about whether or not they have a pedestrian or bicycle plan, how much of the plan has been implemented, and what the next steps are for improvement.

BFC and WFC Action Plan

The action plan provided in the table on the following pages is organized by the 5 "E's" to correspond with the organization of the BFC and WFC applications. The Engineering action steps presented here are intended to be coupled with the infrastructure recommendations presented in this plan. Infrastructure improvements will be an essential component to achieve higher levels of BFC and WFC recognition. The action steps presented for Education, Encouragement, Enforcement, and Evaluation and Planning are intended to be coupled with the program recommendations made in the Programs Chapter of the plan. Action steps in these sections are organized by program title for reference.

Each action step is described in detail with a suggested lead agency, supporting partners, the expected deliverables or outcome, and the timeframe for when an action step should begin. These steps will help to guide the implementation of projects, programs, and policies over the next several years to improve pedestrian and bicycle conditions and awareness in Columbia. As plan implementation progresses, lead agencies and partners should track action steps that are underway or completed so that these can be reported in Columbia's next rounds of BFC and WFC applications.



TABLE 28 - WFC AND BFC ACTION STEPS

Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
EDUCATION							
Expand Media Campaign to Educate Motorists, Pedestrians, and Bicyclists	Further promote the Safe Streets Save Lives Campaign within Columbia	Advertise the campaign via social media, public access channel, local TV and radio outlets, and on public transit	City of Columbia	Palmetto Cycling Coalition, Columbia BPAC, COMET, USC, CMCOG, COC Public Relations	Links to campaign website online, educational videos on public access channel, short TV and radio ads, bus placards and posters	Spring 2015 and ongoing	Per year: Number of media spots; number of web hits; follow up recognition survey
	Work with local organizations, businesses, and schools to promote the campaign	Provide neighborhood groups, local businesses such as bike shops, and schools with Safe Streets Save Lives materials to display and distribute in the community and at events	City of Columbia	Palmetto Cycling Coalition, Columbia BPAC, COMET, USC, neighborhood groups, health care community	Brochures, flyers, bumper stickers, and other branded informational materials	Spring 2015 and ongoing	Per year: Number of community partners and sponsors/supporters
Professional Training Opportunities	Provide pedestrian and bicycle related professional development courses for public staff	Local agencies should host APBP webinars and other online trainings via a membership cost sharing strategy, with a consistent meeting location and time	City of Columbia Planning and Development Services Department	CMCOG, Richland County, USC depts.	Monthly to quarterly training opportunities on pedestrian and bicycle related topics	Spring 2015 and ongoing	Number of trainings per year; number of participants
Walk Bike Ambassador Program and Classes	Train a group of staff and volunteers to serve as educators and mentors of walking and bicycling safety throughout Columbia	Bring together individuals with experience or interest in education, fitness, health, traffic safety, or community activism to serve as ambassadors that will empower, train, and lead community volunteers	Columbia BPAC	City of Columbia, Palmetto Cycling Coalition, CMCOG, Healthy Columbia, local bike clubs, universities/colleges, City of Columbia Engineering Serviced Department	Trained Walk Bike Ambassadors who can lead events, coordinate volunteers, and spread bicycling and walking safety and awareness throughout Columbia	Summer 2015 and ongoing	Number of ambassadors trained. Goal: 12 trained by 2016; 36 by 2017
	Develop Walk Bike Ambassador courses such as bike rodeos for children, adult bicycling classes, workplace education, and school education	Develop and host walking and bicycling classes that reach youth, adults, workers, students, and traditionally underserved populations	Columbia BPAC	City of Columbia, Palmetto Cycling Coalition, CMCOG, Healthy Columbia, local bike clubs, colleges/universities, City of Columbia Engineering Serviced Department	Monthly presentations, classes, and course materials that teach safe walking and bicycling, such as Traffic Skills 101 classes	Summer 2015 and ongoing	Number of programs held. Goals: Two Traffic Skills courses by 2016; Quarterly courses by 2017. Monthly presentations on walking, biking, or SRTS by 2016.
	Build League of American Bicyclists League Cycling Instructor (LCI) Program	Increase the number of LCIs in Columbia to contribute to the Walk Bike Ambassador program and provide more bicycling mentors and educators within the community	Columbia BPAC	Local volunteers, current LCIs	LCI training courses	Summer 2015 and ongoing	Number of LCIs. Goal: 6 by 2016; 12 by 2017



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
Traffic Ticket Diversion Program	Collaborate with Columbia Police Department, USC, and local colleges to explore the feasibility of a traffic ticket diversion program	Add an educational component to enforcement by allowing first-time traffic offenders to take a diversion course in lieu of a fine or for reduced driver's license points	Columbia Police Department	USC, local colleges, City of Columbia staff	Traffic Ticket Diversion course, course materials	Summer 2015 and ongoing	Number of diversion courses/ participants
Expand Safe Routes to School Efforts	Launch a youth pedestrian and bicycle skills and safety program in all elementary and middle schools in Columbia	Dedicate in-class instruction, PE time, and/or an afterschool program to teaching biking and walking safety, riding skills, and bike maintenance	SRTS Planning Committees, Walk Bike Ambassadors	Local LCIs, City of Columbia staff, local volunteers, school administration and faculty, SCDOT	Classroom and on-bike education course, annual bike rodeo, in-school or after-school bike classes or camps	Fall 2015 and ongoing	Number of courses; numbers of students trained
	Provide walking education and encouragement programs in all elementary and middle schools in Columbia	Develop a Walking Wednesdays program, walking school buses to school, or similar program	SRTS Planning Committees, Walk Bike Ambassadors	Local volunteers, School administration and faculty, City of Columbia staff, SCDOT	Regularly scheduled walking opportunities to school, walking school bus groups, and in-school or after-school walking events	Fall 2015 and ongoing	Number of schools participating
ENCOURAGEMENT							
Open Streets Events	Work with health groups to organize an annual or semi-annual open streets event in Downtown Columbia	Choose a street to close to motor traffic and open to the public. Sundays are ideal days for open streets events. Activities could include a bike rodeo, fitness activities, field day-style events, and bicycle maintenance education.	Columbia Parks and Recreation Department	Healthy Columbia, Columbia BPAC, health care providers, local health and fitness groups, PCC, USC	Temporary street closure, education and encouragement materials, increased number of people visiting downtown by foot or by bike	Spring 2015 and annually/ semi-annually	Number of participants per year and per event
Commute Trip Reduction and Employer Incentives Program	Establish partnerships with 1-2 major employers within Columbia to encourage workers to walk, bike, and take transit to work	Work with local employers to offer commuter information and incentives to workers	COMET, CMCOG, City of Columbia Planning	City of Columbia, Walk Bike Ambassadors, USC, major employers, Chamber	Commuter information packets for workers, discounted bus passes or free trials, presentations on commuter transportation options	Spring 2015 and ongoing	Number of employers involved in program, total number of employees participating in program
	Develop a Bike Month (May) and Walk Month (October) commuter challenge for local employers	During May & October, coordinate with employers to encourage workers to bike and walk to work. Resources can be found on the League of American Bicyclists website: http://bikeleague.org/bikemonth	Columbia BPAC	City of Columbia, Walk Bike Ambassadors, CMCOG, PCC	Bike to Work groups, Walk to Work groups, Walk at Lunch challenge, commuter challenge with prizes for winning employer/workers, workplace posters, brochures	Spring (May) and Fall (October) 2015	Number of participants per year



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
Walking and Bicycling Programs for Underrepresented Groups	Develop walking and bicycling programs that cater to women, minorities, seniors, persons with disabilities, and other traditionally underrepresented groups	Provide classes, rides, walks, and other events that reach out to underrepresented groups and encourage them to participate in walking and bicycling activities (such as GirlTrek, bicycle maintenance classes for women, senior strolls, etc.)	Healthy Columbia, Local community leaders	Health care providers, local health organizations, faith groups, colleges/ universities	Walking and bicycling programs, events, and materials; increased participation of underrepresented groups in bicycling and walking activities	Fall 2015 and ongoing	Number of groups and people reached
Bicycle Friendly Business Districts	Create a BFBD within Columbia to reduce motor vehicle trips and encourage walking and bicycling to, from, and within the district	Gather support from local businesses for the creation of a formal BFBD	Columbia Planning and Development Department, City of Columbia Economic Development Department	Business Districts, neighborhood organizations, local businesses	Formal designation of the BFBD by the City of Columbia and local business district	Winter 2015	Number of BFBDs
	Improve bicycle infrastructure and bicycle parking within the district	Foster a bike-friendly environment and culture within the BFBD with more convenient and visible facilities and parking	City of Columbia Planning Development Services, City of Columbia Parking Services	City of Columbia Planning and Development Department, business district	Additional bike racks, bike facilities, and signage within and connecting to the BFBD	Spring 2016 and ongoing	Number of bike racks, increases in bike counts and bike access of district
	Increase the number of LAB-certified Bicycle Friendly Businesses (BFBs) in Columbia	Encourage and advise local businesses on applying for BFB status with the LAB	BPAC	Local businesses, PCC, local business groups	Marketing materials on BFB program, increased participation in Bike to Work Day, increased number of BFBs within Columbia	Spring 2016 and ongoing	Number of BFBs
Walking and Bicycling Map with Online Route Planning Tool	Develop a walk and bike map for Columbia with both hard copy and online versions	Show existing facilities, low-traffic routes, difficult connections, and key destinations	Columbia Planning and Development, GIS Departments	City of Columbia IT staff, Parks and Recreation Department, USC, COMET	Walk and bike map available both in hard copy and online	Spring 2016	Number of users; number of maps distributed
	Create an online route planning tool or app for pedestrians, bicyclists, and transit users	A route planning tool would provide a convenient resource for Columbia residents to plan trips by foot, bike, or transit	Columbia Planning and Development, GIS Departments, COMET	City of Columbia IT staff	Online and/or mobile map app	Fall 2016	Number of users
ENFORCEMENT							
Targeted Enforcement and Speed Feedback Signs	Target speed enforcement near schools, parks, in downtown, and along major pedestrian and bicycle corridors and crossing points	Identify locations with high pedestrian and bicycle volumes, a high pedestrian or bicycle crash risk, or frequent speeding problems to reduce motor vehicle speeding offenses	Columbia Police Department	City of Columbia IT staff, Traffic Engineering Department, local schools, USC police	“Back to School Blitz” program targeting speed enforcement near schools, increased police presence and ticketing in areas that are a safety risk to pedestrians and bicyclists	Spring 2015 and ongoing	Number of citations; percent increase in compliance



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
	Deploy temporary speed feedback signs in problem areas, along new pedestrian and bicycle facilities, and as part of a citizen request program	This program will help to raise awareness of speeding and traffic safety in at-risk areas, such as corridors with high pedestrian and bicyclist volumes, along new pedestrian and bicycle facilities, and near schools and parks	Columbia Traffic Engineering Division	City of Columbia Planning and Development Services Department, City of Columbia Utilities and Engineering Department	Phone hotline and online request form for citizens and neighborhood associations to request a temporary (e.g., 2-week) speed feedback sign	Summer 2015 and ongoing	Percent increase in compliance
Crosswalk Enforcement Action Program	Train police officers in crosswalk enforcement actions.	This program will help to address pedestrian safety issues at high crash risk locations. The Pedestrian and Bicycle Information Center offers webinars and in-person training courses for law enforcement on implementing crosswalk enforcement actions (http://www.pedbikeinfo.org/training/gettraining.cfm).	Columbia Police Department	City of Columbia Traffic Engineering Department, Planning and Development Department, USC police	Increased number of police officers who are trained in pedestrian safety, laws, and crosswalk enforcement action protocol.	Summer 2015 and ongoing	Number of officers trained
	Deploy the program in target locations throughout Columbia, based on community feedback, crash and traffic data, and officer input.	Potential locations include crossings near schools, colleges and universities, parks, commercial centers, bus stops, and in downtown. Prominent community leaders could participate in the program to help raise awareness of pedestrian safety.	Columbia Police Department	City of Columbia Traffic Engineering Department, Planning and Development Department, USC police	Increased ticketing for drivers who do not yield to pedestrians in crosswalks, pedestrian safety brochures to give to motorists	Fall 2015 and ongoing	Number of warnings and citations; percent increase in compliance
EVALUATION & PLANNING							
Improve Pedestrian and Bicycle Related Policies	City Council and city staff should work together to improve existing policies and develop new policies that address the needs of pedestrians and bicyclists, as outlined in this plan	Examples include a policy requiring sidewalks on both side of arterial streets, a connectivity policy, connectivity standards for development, etc.	City of Columbia City Council, City of Columbia Planning and Development Services Department, City of Columbia Utilities and Engineering Department	City of Columbia Planning and Development Department, City of Columbia Public Works Department	New and updated policies	Spring 2015	Number of pedestrian- and bicycle-friendly policies
Citywide Pedestrian and Bicycle Counts Program	Deploy volunteers and install automated counters at locations throughout Columbia to collect data on walking and bicycling activity	Use a collection of counters to track walking and bicycling activity over time, particularly at pinch points, along major corridors or trails, and near schools and other key destinations	City of Columbia Traffic Engineering Department	City of Columbia Planning and Development Department, BPAC, USC	Hand counts, intercept surveys, and Automated pedestrian and bicycle count system, data reports	Fall 2015 and ongoing	Year-round and bi-annual counts; % change per year
	Produce and present semi-annual count reports of walking and bicycling activity to City Council and the Columbia BPAC	Reports should describe count results, both at individual facilities and citywide, with biannual and annual count totals to compare over time	City of Columbia Traffic Engineering Department	City of Columbia Planning and Development Department, BPAC	Biannual count reports and presentations made available to the public	Fall 2016 and semi-annually	Year-round and semi-annual counts, compared over time



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
Walking, Bicycling, and Greenways Report Card	Develop a report of existing walking and bicycling conditions, recent successes, and ongoing progress	A bicycling and walking report card will track improvements over time to evaluate the effectiveness of efforts and Columbia's progress toward becoming a more bike- and walk-friendly community	City of Columbia Planning and Development Services Department, City of Columbia Parks and Recreation Department	Traffic Engineering, and Police Departments, BPAC	Annual report documenting the progress of bicycling and walking in Columbia	Winter 2015 and annually	Annual report card
"Measuring the Street" Pre- and Post-Evaluation Program	For upcoming projects, track pedestrian and bicycle conditions before and after the new facility or improvement is constructed	Maintain a database for evaluation data. Traffic counts and speeds, user surveys, and crash analyses will help the city track the effectiveness of pedestrian and bicycle improvements	City of Columbia Traffic Engineering Department	City of Columbia Planning and Development Department, BPAC	Before and after data on infrastructure improvements	Fall 2016 and ongoing	Traffic counts, traffic speeds, public survey questions about the effectiveness of a facility, number of crashes before and after treatment
	Gather and analyze pre- and post-evaluation data and produce an annual report to present to City Council	Report on changes in bicycling and walking conditions before and after project construction, as well as any realized side benefits such as increased sales revenues, property values, and feedback from citizens and local businesses	City of Columbia Traffic Engineering Department, Planning and Development Department	BPAC	Annual reports to City Council on the progress and effectiveness of bicycling and walking improvements	Winter 2016 and annually	Traffic counts, traffic speeds, public survey questions about the effectiveness of a facility, number of crashes before and after treatment; also compare these data to citywide data and over time as more projects are implemented
Assign full-time pedestrian/bicycle coordinators	Identify duties, funding, and location for a full-time equivalent (FTE) staffer to oversee pedestrian and bicycle issues.	This could be a shared position funded by multiple agencies/partners.	City of Columbia	USC, PCF, BPAC, CMCOG	FTE Equivalent bike/ped staff. For Silver level BFC designation, the LAB recommends 1 FTE for bike related issues per 70,000 citizens.	Winter 2016	Number of FTE per 10,000 population (2015 population in City of Columbia is estimated to reach 136,511. By 2018 the estimated population increase will exceed 140,00. This estimate is anticipated to occur earlier with the development of over 3,000 student units.
Develop, adopt, and implement an ADA Transition Plan for the public right of way	Designate an ADA Coordinator to lead the planning process, implementation of the plan, and monitor progress and/or could fall under the duties of the full time pedestrian bicycle coordinator.	This could be a shared position funded by multiple agencies/partners, and/or could fall under the duties of the full-time pedestrian/bicycle coordinator	City of Columbia	USC, BPAC, CMCOG	ADA Coordinator staff person	Winter 2016 and ongoing	Designation of an ADA coordinator



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
	Develop an ADA Transition Plan	This plan will guide the City of Columbia through the process of updating its policies, design standards, and practices to meet the requirements of the 1990 Americans with Disabilities Act. The planning and adoption process should establish a grievance procedure for persons with disabilities to report issues, update design standards and policies to meet ADA requirements, and include a schedule and budget for the Transition Plan	City of Columbia Planning and Development Department	City of Columbia Traffic Engineering Department, BPAC	Adopted ADA Transition Plan	Spring 2017	Adopted ADA Transition Plan
ENGINEERING							
Increase Pedestrian Facility Mileage	Increase the pedestrian facility mileage in Columbia by implementing the priority sidewalk and trail projects identified in this plan	A larger, more connected pedestrian network will create more opportunities for walking in the community and support Columbia's application for WFC designation	City of Columbia Utilities and Engineering Department, City of Columbia Public Works Department	City of Columbia Planning and Development Department	Greater pedestrian network mileage to support WFC designation	Spring 2015 and ongoing	Number of new miles per year, percent increase per year
	Maintain an up-to-date inventory for sidewalks, curb ramps, and crosswalks	Using the City's existing prioritization process, fund new pedestrian infrastructure and maintenance projects over time	City of Columbia Traffic Engineering Department, City of Columbia Public Works	City of Columbia GIS	List of completed, funded, and unaddressed projects each year	Spring 2015 and ongoing	Number of new and maintained curb ramps, crosswalks, and miles of sidewalk per year
Increase Bicycle Facility Mileage	Increase the ratio of total bicycle network mileage to total road network mileage to 30%	Increase the centerline mileage of bicycle facilities to equal 30% or more of the total centerline mileage of the road network. 30% is the target ratio for Bicycle Friendly Communities seeking a Silver level designation from the LAB.	City of Columbia Utilities and Engineering Department	City of Columbia Planning and Development Department, City of Columbia Traffic Engineering, BPAC	Greater bicycle network mileage to support Silver level BFC designation	Spring 2015 and ongoing	Number of new miles per year, percent increase per year
	Increase the ratio of total bicycle network mileage to total road network mileage to 43%	Increase the centerline mileage of bicycle facilities to equal 43% or more of the total centerline mileage of the road network. 43% is the target ratio for Bicycle Friendly Communities seeking a Gold level designation from the LAB.	City of Columbia Utilities and Engineering Department	City of Columbia Planning and Development Department, City of Columbia Traffic Engineering, BPAC	Greater bicycle network mileage to support Gold level BFC designation	Spring 2017 and ongoing	Number of new miles per year, percent increase per year
Increase the Number of Arterial Streets with Bike Lanes	Increase the percentage of arterial streets that have bike lanes to 45%	Add bike lanes to arterial streets throughout Columbia. 45% is the target percentage for Bicycle Friendly Communities seeking a Silver level designation from the LAB.	City of Columbia Utilities and Engineering Department	City of Columbia Planning and Development Department, City of Columbia Traffic Engineering, BPAC	Greater percentage of arterial streets with bike lanes to support Silver level BFC designation	Spring 2015 and ongoing	Percent increase per year



Strategy/Program Title	Action Step	Description	Lead Agency	Supporting Partners	Deliverables/Outcome	Timeframe	Evaluation Metrics
	Increase the percentage of arterial streets that have bike lanes to 65%	Add bike lanes to arterial streets throughout Columbia. 65% is the target percentage for Bicycle Friendly Communities seeking a Gold level designation from the LAB.	City of Columbia Utilities and Engineering Department	City of Columbia Planning and Development Department, City of Columbia Traffic Engineering, BPAC	Greater percentage of arterial streets with bike lanes to support Gold level BFC designation	Spring 2017 and ongoing	Percent increase per year
Improve the Quantity and Quality of Bicycle Parking	Provide an option on the city website for citizens to request bike parking at a specific location.	Evaluate and respond to requests for new or improved bicycle parking.	City of Columbia IT Staff, City of Columbia Parking Services, City of Columbia GIS	City of Columbia Public Works Department	Functional, easy-to-use online form for requesting bicycle parking	Spring 2015 and ongoing	Updated, operational citizen request form
	Map bicycle parking locations throughout the city to identify areas where more bicycle parking is needed.	Identify destinations such as schools, parks, downtown, business districts, shopping centers, community centers, libraries, transit stops, trailheads, and other key locations that lack bicycle parking and track progress as new bicycle parking is installed.	City of Columbia Planning and Development Department, City of Columbia Parking Services	City of Columbia Traffic Engineering Department, City of Columbia Public Works Department	Up-to-date map of bicycle parking locations, list of locations in need of bicycling parking and the number/type of bike racks recommended	Fall 2015 and ongoing	Total number of bicycle parking spots within Columbia, number of new bicycle parking spots installed each year
	Install new bicycle parking and improve policies as described throughout this plan, including both short- and long-term bicycle parking options.	Evaluate the needs of bicyclists at each location to determine if short-term parking, long-term parking, or a combination of the two is most appropriate. Follow the bicycle parking design guidelines found in the Design Guidelines Appendix of this plan.	City of Columbia Planning and Development Department, City of Columbia Parking Services	City of Columbia Traffic Engineering Department, City of Columbia Public Works	New and improved bicycle parking for public use	Winter 2015 and ongoing	Improved policies for bicycle parking, accommodation of both short- and long-term bicycle parking options, number of new bicycle parking spots installed each year, total number of bicycle parking spots in Columbia over time
Implement a Citywide Bike Share System	Install and operate bike share stations at key locations throughout Columbia	Provide bike share stations to increase local bike trips and raise awareness of bicycling in Columbia	City of Columbia, CMOG, USC	City of Columbia, CMOG, USC	Operational bike share system with dedicated stations, bikes, and staff; designated bike share webpage for registration and information	Spring 2016 and ongoing	Number of bikes; number of trips; number of members
Develop a Citywide Pedestrian and Bicycle Wayfinding System	Plan and implement a pedestrian and bicycle wayfinding system that will direct users to popular destinations, on-street walking and bicycling routes, and trails.	Use directional signage, maps, kiosks, pavement markings, and other useful tools to create a comprehensive wayfinding package. This package should be implemented citywide so that pedestrians and bicyclists throughout town will benefit from clear markers and directional routing.	City of Columbia Planning and Development Department	City of Columbia Traffic Engineering Department, Parks & Recreation Department, City of Columbia GIS	Comprehensive wayfinding package with directional signs to destinations (with walking and bicycling times), maps, informational kiosks, and pavement markings.	Summer 2018 and ongoing	Number of signed/marked miles; number of informational kiosks/maps