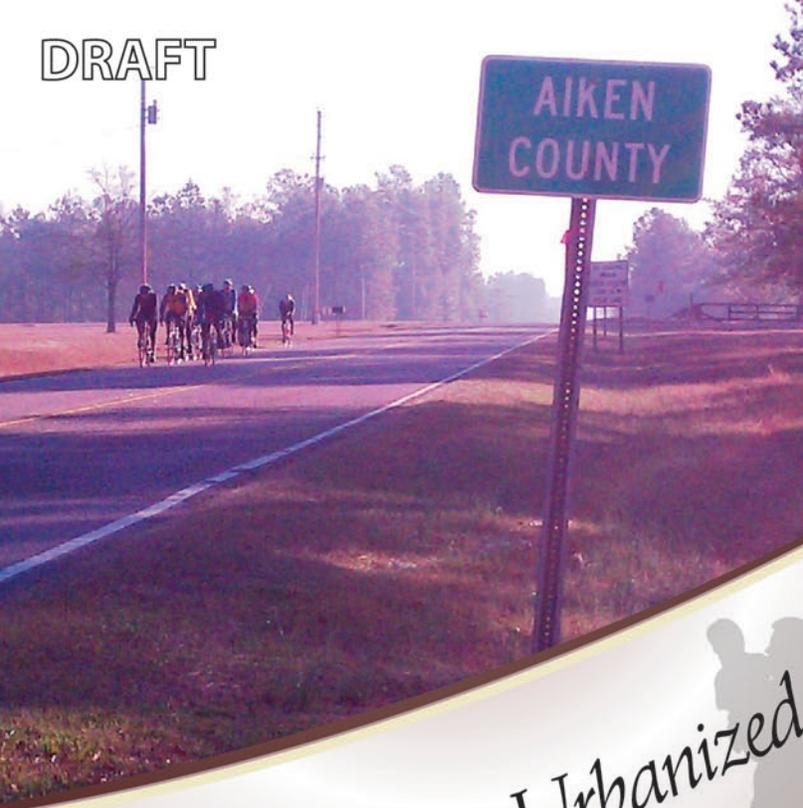


DRAFT



# Aiken County Urbanized Area, SC Bicycle & Pedestrian Plan



JULY 1, 2012

PREPARED FOR:



PREPARED BY:



IN ASSOCIATION WITH:  
Augusta Regional Transportation Study,  
The City of Aiken, and Aiken County

# Acknowledgements

Aiken County appreciates the efforts of the stakeholders who participated in the development of this Plan. Their creativity, energy, and commitment to the future of the Aiken community are the driving force behind this planning effort. ARTS, Aiken County, and the City of Aiken provided funding for this effort, as well as staff time. The following citizens, staff, and other agency and organization members contributed to the development of the Aiken County Urbanized Area Bicycle and Pedestrian Plan.

## Local Project Steering Committee

- Aiken Bicycle Club
- Aiken City Parks, Recreation & Tourism
- Aiken City Planning Department
- Andy Jordan's Bicycle Warehouse
- Lower Savannah Council of Governments
- Outspokin' Bicyclists
- Randonneurs USA
- SC Department of Public Safety
- SC Highway Patrol
- SCDOT
- The Federal Highway Administration
- Wheel Movement
- Consultant Team
- Aiken County Planning & Development
- Aiken County Recreation
- Aiken County Schools
- Aiken City Public Safety
- Aiken Sidewalk Appreciation Society
- Aiken Vocational Rehabilitation
- Aiken's Mom Club

## Consultant Team





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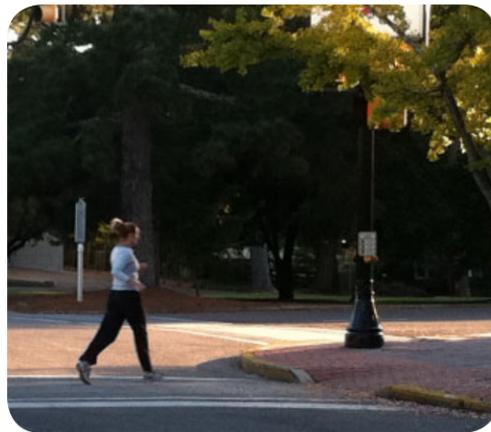
# Executive Summary

## Aiken County, SC Urbanized Area Bicycle and Pedestrian Plan - 2012

"Nationally, such issues as unstable gas prices, environmental concerns, and a growing interest in health and wellness are demonstrating the need for bicycle and pedestrian-friendly communities. On a local level, this Plan represents a strong commitment to take on such issues, transforming them into new opportunities for biking and walking: affordable personal mobility, carbon-free transportation, and healthy, active lifestyles for Aiken County residents."

### Aiken County Bicycle & Pedestrian Plan:

- Sets goals and benchmarks for improving biking and walking in the urbanized area of Aiken County (**chapter 2**)
- Thoroughly examines existing conditions for bicyclists and pedestrians in the Aiken area through studies of existing planning documents, public surveys and outreach, GIS analysis, and field observations (**chapters 3-5**)
- Investigates safety issues, future demand, and potential benefits of increased bicycle and pedestrian use (**chapter 4**)
- Recommends programs, policies, and partners to help support and grow walking and bicycling activity in Aiken (**chapter 6**)
- Presents the plan for a comprehensive bicycling and walking transportation network for the urbanized area of Aiken County (**chapter 7**)
- Identifies potential funding sources and strategies for implementation including prioritization of network projects (**chapter 8 and appendix F**)
- Provides Aiken specific design guidelines for improving bicycle and pedestrian facilities in Aiken County (**appendix E**)



### Project Overview

Aiken County and the City of Aiken, in partnership with the Augusta Regional Transportation Study (ARTS), commissioned this regional Bicycle and Pedestrian Plan with an intent to improve the area's bicycling and pedestrian environment. **The chief outcome of the Plan is an integrated, seamless framework to facilitate walking and biking as viable transportation choices throughout the entire region.** A vision, goals, and objectives were formed for the Aiken County Bicycle and Pedestrian Plan based on goals and objectives of existing local and regional plans, stakeholder input, the project purpose, and relevant project examples in the US. The Plan provides program, policy, and infrastructure recommendations.

### Program Recommendation Examples

- Education and Enforcement:** police training programs, professional driver training, Safe Streets Save Lives Programs
- Encouragement:** Safe Routes to School, car-free street events, weekend walkabouts, bike month activities
- Evaluation:** regional bicycle and pedestrian committee, regional plan for bicycle and pedestrian collision reduction, dedicated funding source, annual bicycle and pedestrian count program

### Policy Recommendations Summary

Policy recommendations of the Aiken County Bicycle and Pedestrian Plan are based on a review and assessment of development requirements related to bicycle and pedestrian facilities within the study area. In evaluating the existing policies, it is evident that Aiken County could provide guidance and direction to its member municipalities to significantly strengthen policy related to **a) complete streets, b) bicycle parking, c) and pedestrian facility requirements and enhancements within the context of development ordinances.** Additional guidance geared toward retrofit of existing facilities is also recommended. The full policy review is provided in Appendix B.

### Engineering Recommendations

The Plan assesses existing conditions for bicyclists and pedestrians and recommends a network of infrastructure improvements, including:

- On-Road Bicycle Facilities (below):** shared lane markings (sharrows), bike lanes, signed bicycle routes, and paved shoulders
- Off-Road Bicycle and Pedestrian Facilities:** multi-use paths, greenways, and sidewalks
- Ancillary Improvements:** bicycle parking, speed limit reductions, access to transit, and intersections



The Plan also prioritizes proposed projects based on numerous factors identified as priorities by local stakeholders. Planning-level cost estimates were calculated for fifty highly ranked projects. High priority areas for pedestrian improvements (right) were identified as well as priority bikeway and greenway projects (shown on map).



Aiken County Walkway Network Priority Zones	
Priority Zone	Identifiers/Boundary Corridors
York Street – Rutland Crossing	York Street Corridor and Rutland Drive Corridor and connecting residential streets near that intersection
Northwest Aiken School Zone	Hampton Avenue from SC 19 to North Carolina Avenue and streets connecting to and between Aiken High School and surrounding neighborhoods
Virginia Acres Park Zone	Residential street east and north of Virginia Acres Park
South Aiken	Full extent of Whiskey Road, Silver Bluff Road, and East Pine Log Road south of Aiken's city center
West Central North Augusta	Residential streets west of Georgia Avenue from Spring Grove Avenue to Bluff Avenue
Burnettown Central	Anthony Drive and connecting streets

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*"Nationally, such issues as unstable gas prices, environmental concerns, and a growing interest in health and wellness are demonstrating the need for bicycle and pedestrian-friendly communities. On a local level, this Plan represents a strong commitment to take on such issues, transforming them into new opportunities for biking and walking"*



## Introduction

### Overview

Aiken County and the City of Aiken, in partnership with the Augusta Regional Transportation Study (ARTS), commissioned this Bicycle and Pedestrian Plan for the urbanized area of Aiken County with an intent to improve bicycle and pedestrian accommodations in the community. The Plan will serve as an update to the 2003 ARTS Regional Bicycle and Pedestrian Plan and will serve as the first bicycle and pedestrian master plan for Aiken County and the City of Aiken. The chief outcome of the Plan will be an integrated, seamless transportation framework to facilitate walking and biking as viable transportation choices throughout the urbanized area of Aiken County. The Plan will integrate bikeway and walkway improvements into the regional planning process; identify gaps in the active transportation network; propose improved connectivity of communities, neighborhoods, and activity centers; identify policies and infrastructure needs for safe routes to transit, schools, and parks; and develop a framework for complete streets policies and standards. The Plan offers recommendations for infrastructure improvements, education and encouragement programs, and policies that will make Aiken County communities more walk- and bike-friendly. The development of this Plan included an open, participatory process, with area residents providing input through public workshops, stakeholder meetings, the project Steering Committee and Aiken project subcommittee, and an online comment form.

Nationally, such issues as unstable gas prices, environmental concerns, and a growing interest in health and wellness are demonstrating the need for bicycle and pedestrian-friendly communities. On a local level, this Plan represents a strong commitment to take on such issues, transforming them into new opportunities for biking and walking: affordable personal mobility, carbon-free

transportation, and healthy, active lifestyles for Aiken County residents.

### Background

The Aiken County Urbanized Area Bicycle & Pedestrian Plan is developed in partnership with ARTS. ARTS functions as a bi-state MPO and is responsible for transportation planning in accordance with the federal metropolitan planning requirements for Richmond County, Georgia and portions of Columbia County, Georgia and Aiken and Edgefield Counties in South Carolina. The Georgia cities of Augusta, Grovetown, Hephzibah and Blythe, the South Carolina cities of Aiken, North Augusta, and Burnetown, and the Fort Gordon Military Reservation are all within the ARTS area.

Like every MPO, ARTS is required to work cooperatively with federal, state, and local governments and local transportation service providers within the context of a well-defined metropolitan transportation planning process. Since ARTS is a bi-state MPO, staff coordinates directly with the Georgia Department of Transportation (GDOT) and the South Carolina Department of Transportation (SCDOT). ARTS does not lead the implementation of transportation projects, but rather serves as the formal agency that plans and programs transportation improvements within the ARTS area, which are eventually implemented by local and state jurisdictions. Furthermore, as required by federal legislation, ARTS must provide the public and interested stakeholders with reasonable and meaningful opportunities to be involved in the transportation planning process.

Aiken County led the development of this Plan, with input from the cities of Aiken, North Augusta, and Burnetown. Each municipality, in coordination with SCDOT and ARTS, may choose to lead implementation of the network recommendations of this Plan for its respective jurisdiction.



## Setting

Aiken County is bordered to the west by the wide and winding Savannah River, which provides a dramatic natural landmark for the entire area and joins the broader ARTS region. The popular Greenways of North Augusta and the equestrian amenities of Aiken serve as regional and national attractions as well. Additionally, in recent years, the region has hosted Ironman Triathlon events, USA Cycling championship races, and the International Mountain Bike Association conference. Offering active transportation opportunities to citizens and tourists in Aiken County and the surrounding region will continue to enhance the area's sense of place and will fuel the local economy.



The North Augusta Greenway along the Savannah River is not only a popular local amenity, but a regional and national attraction as well.

## The Six E's

Research has shown that a comprehensive approach to bicycle- and walk-friendliness is more effective than a singular approach that would address infrastructure issues only.<sup>1</sup> Recognizing this, the national Bicycle Friendly Community program, administered by the League of American Bicyclists, and the Walk Friendly Community program, administered by the National Center for Walking and Bicycling, recommend a multi-faceted approach based on the following five 'E's: Engineering,

Education, Encouragement, Enforcement, and Evaluation. For the purposes of this Plan, a sixth 'E', Equity, is included in order to fulfill the goals and vision of this Plan. This Plan has been developed using the "6 Es" approach with an intent to provide action steps in each arena that each community can take towards becoming more bicycle and pedestrian-friendly.

### Engineering

Designing, engineering, operating, and maintaining quality roadways and pedestrian and bicycle facilities is a critical element in producing a pedestrian-friendly and bicycle-friendly environment. Safe and connected infrastructure for bicyclists and pedestrians is one crucial piece of a comprehensive approach to increasing bicycling and walking activity. This category may include adding new bicycle and pedestrian specific infrastructure, improvements to street crossings, traffic calming, trail design, traffic management, school zones, or other related strategies.

### Education

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

### Encouragement

Encouragement programs are critical for promoting and increasing walking and bicycling. These programs should address all ages and user groups from school children, to working adults, to the elderly and also address recreation and transportation users. The goal of encouragement programs is to increase the amount of bicycling and walking that occurs in a community. Programs can range from

<sup>1</sup> Pucher, J. Dill, J. and Handy, S. (2010). Infrastructure, programs, and policies to increase bicycling: An international review. *Preventative Medicine*, 50. S106-S125; Krizek, K., Forsyth, A., and Baum, L. (2009). *Walking and cycling international literature review*. Melbourne, Victoria: Department of Transport.



work-place commuter incentives to a “walking school bus” at an elementary school; and from bicycle- and walk-friendly route maps to a bicycle co-op.

### Enforcement

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



*The goal of enforcement, one of “the 6 E’s” mentioned here, is for bicyclists, pedestrians, and motorists to recognize and respect each other’s rights on the road.*

### Evaluation

Evaluation methods can include quarterly meetings, the development of an annual

performance report, update of bicycle and pedestrian infrastructure databases, pedestrian and bicycle counts, assessment of new facilities, and plan updates. Aiken County, its partners, and municipalities will monitor implementation of this Plan on a regular basis and establish policies that ensure long-term investment in the bikeway and walkway network. Monitoring progress of implementation will facilitate continued momentum and provide opportunities for updates and changes to process if necessary. Additionally, Aiken County and communities within its urbanized area will adopt policies that promote investment in and improvements to the bicycling and walking environment in accordance with the recommendations of this Plan.

### Equity

Equity in transportation planning refers to the distribution of impacts (benefits and costs) and whether that distribution is considered appropriate. Transportation planning decisions have significant and diverse equity impacts. Equity in bicycle and pedestrian planning decisions should reflect community needs and values. Communities may choose to give special attention to variances in age, income, ability, gender, or other characteristics. Aiken County and its partner implementation agencies will target outreach with a diversity of programs and events, and ensure appropriate geographic distribution of bike facilities, programs and educational programs.

### *The Value of Walkable and Bicycle-Friendly Communities*

Given the commitment of time and resources needed to fulfill the goals of this Plan, it is important to keep in mind the immense value of bicycle and pedestrian transportation. Increased rates of bicycling and walking will help to improve people’s health and fitness, improve livability of our communities, enhance environmental conditions, decrease traffic congestion, and contribute to a greater sense of community.

Scores of studies from experts in the fields of public health, urban planning, urban ecology, real estate, transportation, sociology, and economics have supported such claims and affirm the substantial value of supporting



bicycling and walking as they relate to active living and transportation choices. Communities across the United States and throughout the world are implementing strategies for serving the bicycling and walking needs of their residents, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits outlined in this section.

### Economic Benefits - Community

In a 2011 Community Preference Survey conducted by the National Association of Realtors (NAR), 66 percent of respondents selected being within walking distance of stores and other community amenities as being important. Additionally, the 2011 NAR survey reflected changes in priorities compared to



*Creating attractive, pedestrian friendly places to shop like downtown Aiken are a great way to attract people and promote business.*

2004, the last time the survey was conducted. Interest in walkability increased, with 46 percent saying their community had too few shops and restaurants within easy walking distance, compared to 42 percent in 2004. In the 2011 survey, 40 percent said their community needed more sidewalks, compared to 36 percent in the 2004 survey. A 2010 study by CEOs for Cities looked at data for more than 90,000 recent home sales in 15 different markets around the Nation. While controlling for key characteristics that are known to influence housing value, the study showed a positive

correlation between walkability and housing prices in 13 of the 15 housing markets studied.<sup>2</sup>

Trails can play a part in making communities more walkable, and they too have a positive economic impact. In a survey of homebuyers by the National Association of Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices.<sup>3</sup> Additionally, the study found that 'trail availability' outranked 16 other options including security, ball fields, golf courses, parks, and access to shopping or business centers.

From a tourism perspective, cyclists can add real value to a community's local economy. For example, in the Outer Banks, NC, bicycling is estimated to have a positive annual economic impact of \$60 million; 1,407 jobs are supported by the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment. The quality of bicycling in the Outer Banks region positively impacts vacationers' planning—it is not all about the beaches:

- 12% report staying three to four days longer to bicycle
- 43% report that bicycling is an important factor in their decision to come to the area
- 53% report that bicycling will strongly influence their decision to return to the area in the future<sup>4</sup>

The ARTS and Aiken County region is already achieving positive economic gains through its own attractions. The economic impact of cycling-related sporting events in just the last three years (2009-2011) totals \$15.5 million. The Ironman 70.3 event, which Augusta has hosted since 2009 and will continue to host through 2014, brings \$4.5million in economic impact each year. The USA Cycling championship events (Juniors, U23, Elite & Paralympic Road

2 CEOs for Cities. (2010) Walking the Walk: How Walkability Raises Home Values in U.S. Cities.)

3 National Association of Realtors and National Association of Home Builders. (2002). Consumer's Survey on Smart Choices for Home Buyers.

4 NCDOT and ITRE. (2006). Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities



National Championships) totaled \$1.5 million in economic benefits in 2011 and is expected to have a similar or greater impact in 2012. The ARTS region was also fortunate to host the 2010 International Mountain Bike Association (IMBA) Summit in 2010, which brought nearly \$0.5 million in local economic gains.<sup>5</sup>

As the ARTS and Aiken County region continues its success in creating an attractive network of trails and bicycle routes and events, the bicycle- and active lifestyle- related tourism that it already attracts will grow.

**Economic Benefits - Individual**

Walking is an affordable form of transportation. A walkable community directly benefits a citizen's transportation costs. The Pedestrian and Bicycle Information Center (PBIC), explains "When safe facilities are provided for pedestrians and bicyclists, more people are able to be productive, active members of society. Car ownership is expensive, and consumes a major portion of many Americans' income." A study cited by the Victoria Transport Policy Institute's 2011 "Transportation Affordability" found that households in automobile-dependent communities devote 50% more to transportation (more than \$8,500 annually) than households in communities with more accessible land use and more multi-modal transportation systems (less than \$5,500 annually).

Bicycling is also an affordable form of transportation. According to the PBIC, the cost of operating a bicycle for a year is approximately \$120, compared to \$7,800 for operating a car over the same time period.<sup>6</sup> Bicycling becomes an even more attractive transportation option when the unstable price of gas is factored into the equation.<sup>7</sup> Replacing automobile trips with bicycle trips, even if it is for only one trip a week will reduce overall gas consumption and save money. Transportation is second to housing as a percentage of household budgets, and it is a top expense for many low income families.

5 Augusta Sports Council, phone interview (December 8, 2011)

6 Pedestrian and Bicycle Information Center. (2010). Economic Benefits: Money Facts. Retrieved 1/20/2010 from: <[www.bicyclinginfo.org/why/benefits\\_economic.cfm](http://www.bicyclinginfo.org/why/benefits_economic.cfm)>

7 King, Neil. (2/27/08). The Wall Street Journal: Another Peek at the Plateau

**Transportation Costs by Mode:**

Car	\$0.59/mi.
Transit	\$0.24/mi.
Bike	\$0.05/mi
Walking	\$0.0/mi



*The economic impact of cycling-related sporting events in the region in just the last three years (2009-2011) totals \$15.5 million.*

**Health benefits**

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people's ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth). The increased rate of disease associated with inactivity reduces quality of life for individuals and increases medical costs for families, companies, and local governments. The CDC has determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week.<sup>8</sup> This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits.

8 U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). Guide to Community Preventive Services

The establishment of a safe and reliable transportation network that offers opportunities for bicycling will have a positive impact on the health of nearby residents. The Rails-to-Trails Conservancy puts it simply: “Individuals must choose to exercise, but communities can make that choice easier.”<sup>9</sup>



*“Individuals must choose to exercise, but communities can make that choice easier.” Wayfinding signage is a community amenity that promotes walking and biking.*

Today, 32 percent of American adults are obese, and 67 percent are overweight or

<sup>9</sup> Rails-to-Trails Conservancy. (2006) Health and Wellness Benefits

obese. America’s weight problem doesn’t spare our youth either: 19 percent of all teenagers and 17 percent of all children between ages 6 and 11 are overweight.<sup>10</sup> The childhood obesity rate has almost tripled since 1980 and the adolescent rate has more than quadrupled.<sup>11</sup>

In Aiken County, Centers for Disease Control estimates that 24 percent of adults are physically inactive and nearly 32 percent of adults are obese. Table 1 shows the most recent health statistics for Aiken County and neighboring counties within the ARTS region.

Offering more opportunities for children, adolescents and adults to safely and conveniently bicycle and walk in their community will encourage citizens to exercise more frequently, increasing their levels of physical activity and impacting the obesity epidemic.

### Environmental benefits

As demonstrated by the Southern Resource Center of the Federal Highway Administration, when people get out of their cars and walk, or ride their bicycles, they reduce measurable volumes of pollutants.<sup>12</sup> Bicycles and foot traffic produce absolutely no pollution and to make a bicycle requires only a fraction of the materials and energy needed to make a car.

A bicycle commuter who rides five miles to work, four days a week, avoids 2,000 miles of driving a year—the equivalent of 100 gallons of gasoline saved and 2,000 pounds of CO<sub>2</sub> emissions avoided. CO<sub>2</sub> savings of this

<sup>10</sup> Centers for Disease Control and Prevention, Overweight and Obesity 2008. < <http://www.cdc.gov/nccdphp/dnpa/obesity>>

<sup>11</sup> National Center for Health Statistics, Prevalence of Overweight Among Children and Adolescents: United States, 2003-2004, 2007

<sup>12</sup> Federal Highway Administration, Southern Resource Center. (1999)

**Table 1-1. Centers for Disease Control rates of adult physical inactivity and obesity in the ARTS region.** (Centers for Disease Control, 2008)

	Aiken County	Augusta–Richmond County	Columbia County	Edgefield County
<b>Adult Physical Inactivity</b>	24.0%	28.9%	21.6%	25.4%
<b>Adult Obesity</b>	31.7%	33.1%	26.7%	33.5%



magnitude reduce the average American's carbon footprint by about 5 percent. To achieve equivalent CO<sub>2</sub> reductions by public transportation one would have to shift approximately 30 miles of daily commuting from car to transit. A citizen who lives in a community that allows him or her to run most errands by bicycling or walking can save about 500 gallons of fuel, or 10,000 pounds of CO<sub>2</sub> each year.

Trails and greenways also convey unique environmental benefits. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. Trails and greenways connect places without the use of emission-producing vehicles, while also reducing air pollution by protecting large areas of plants that create oxygen and filter pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal. Greenway corridors can improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff.

Increased levels of walking and bicycling for transportation reduces the need for car infrastructure such as parking lots and roads. A reduction in these facilities equates to a reduction in impervious surfaces: materials such as concrete or asphalt that are impenetrable to water. This can have immense environmental benefits for communities. A reduction in impervious surfaces reduces the amount of stormwater runoff and improves the filtration of stormwater runoff by allowing it to filter and percolate through the soil. A reduction in impervious surfaces also reduces the "heat island effect": a local increase in average temperature due to high concentrations of heat-absorbing materials, such as concrete and asphalt.<sup>13</sup>

### Safety Benefits

Conflicts between bicyclists and motorists and pedestrians and motorists result from poor riding, walking and/or driving behavior as well as insufficient or ineffective facility design. Encouraging development and redevelopment in which bicycle and foot travel are fostered improves the overall safety of the roadway environment for all users. Well-designed bicycle

<sup>13</sup> Environment: *Reducing Impervious Surfaces*. <<http://www.pednet.org/benefits/impervious-surface.asp>>

facilities improve safety and security for current cyclists and also encourage more people to bike, which in turn, can further improve bicycling safety. Studies have shown that the frequency of bicycle collisions has an inverse relationship to bicycling rates – more people on bicycles equates to fewer crashes.<sup>14</sup> Likewise, well-designed walkway facilities improve safety and security for pedestrians. Providing information and educational opportunities



*Conflicts between bicyclists, pedestrians, and motorists result from poor riding, walking and/or driving behavior as well as insufficient or ineffective facility design.*

about safe and lawful interactions between bicyclists, pedestrians and other roadway users also improves safety.

### Community/Quality of Life Benefits

Fostering conditions where bicycling and walking are accepted and encouraged increases a city's livability from a number of different perspectives, that are often difficult to measure but nevertheless important. The design, land use patterns, and transportation systems that comprise the built environment have a profound impact on quality of life issues. Studies have found that people living in communities with built environments that promote bicycling and walking tend to be more socially active, civically engaged, and

<sup>14</sup> Jacobsen, P. "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling". *Injury Prevention*, 9: 205-209. 2003.



are more likely to know their neighbors.<sup>1516</sup> Settings where walking and riding bicycles are viable also offer greater independence to the elderly, the disabled, and people of limited economic means who are unable to drive automobiles for physical or economic reasons. The aesthetic quality of a community also improves when visual and noise pollution caused by automobiles is reduced and when green space is reserved for facilities that enable people of all ages to recreate and commute in pleasant settings.

### Summary of Existing Documents

The documents listed in Table 1-2 were carefully reviewed to ensure that the goals and recommendations developed in this Plan are consistent with the goals and recommendations identified during these previous planning efforts. A thorough review of the documents listed in this section was prepared and is included in Appendix A.

#### The 15 regional and local planning documents reviewed offer overlapping goals relevant to Aiken County and to the entire region.

In particular, the ARTS Long Range Transportation Plan (2010) included a public survey with questions related to transportation priorities and spending for the region. The survey found that when asked “to select two responses as to those elements of the ARTS system they most desired for the future,” nearly 50 percent chose sidewalks and crosswalks (49.2 percent) and bike lanes and multi-use trails (45.8 percent) and only 13 percent chose highways. Additionally, in a hypothetical spending scenario, survey respondents answered that with \$100 available for transportation, nearly 30 percent (or \$30) should be spent on future bike lane, sidewalk, and multi-use path construction.<sup>17</sup>

Bicycle and pedestrian network recommendations and programmed roadway projects included in the plans are addressed in the proposed network of this Plan. The

15 Frumkin, H. 2002. Urban Sprawl and Public Health. Public Health Reports 117: 201–17.

16 Leyden, K. 2003. “Social Capital and the Built Environment: The Importance of Walkable Neighborhoods.” American Journal of Public Health 93: 1546–51.

17 ARTS 2035 Long Range Transportation Plan. 2010. Chapter 3: Public Participation: 67-68. < <http://appweb.augustaga.gov/Transportation/docs/ARTS2035.pdf>>

following themes from existing planning documents are incorporated into in the Vision, Goals, and Objectives of this Plan, as well as the infrastructure and non-infrastructure recommendations:

- Provide and promote transportation mode choices.
- Integrate transportation with land use.
- Provide bicycle and pedestrian connectivity between residential areas to destinations.
- Promote quality growth and protect natural resources.
- Establish interagency and interjurisdictional coordination and planning.
- Leverage the region's tourism and recreation-retirement potential.
- Connect greenways, bikeways and walkways.

**Table 1-2. List of Documents Reviewed for The Aiken County Bicycle and Pedestrian Plan**

<b>National</b>
United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations Press Release Summary March 11, 2010
Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users August 25, 2005
<b>State</b>
SCDOT Complete Streets Resolution 2003
SCDOT Engineering Directive Memorandum 22 (EDM 22) 2003
<b>Regional</b>
ARTS Regional Bicycle and Pedestrian Plan 2003
ARTS 2035 Long Range Transportation Plan 2010
<b>Local</b>
Aiken County SC Comprehensive Plan
The Westobou Vision Master Plan (Augusta and North Augusta Urban Area) 2009
North Augusta Riverfront Redevelopment District Master Plan 1996
North Augusta Community Needs Assessment 2003
North Augusta Parks and Recreation Facilities Master Plan 2003
City of North Augusta Comprehensive Plan 2005
North Augusta Greenway, Pedestrian and Bicycle Master Plan 2011
City of Aiken 2010 Strategic Plan
City of Aiken Greenways Plan 1994

*"The Aiken County Bicycle and Pedestrian Plan envisions a seamless network of safe and inviting bicycling and walking paths, trails, and on-street facilities, between the municipalities of Aiken County and adjacent counties in South Carolina and Georgia, that equitably supports economic development, active transportation, healthy lifestyles and improved quality of life for all citizens and visitors of the region."*





## Vision, Goals, and Objectives

### Overview

Based on goals and objectives of existing local and regional planning documents, the input of the Project's steering committee, the RFP's discussion of project purpose, and relevant examples from around the country, draft vision, goals, and objectives are offered below for review. The goals and objectives are categorized by five of the six E's associated with bicycle- and walk-friendly community designations. The five E's are: Engineering, Education, Encouragement, Enforcement, and Evaluation. Equity is considered a sixth E and is interwoven within the goals and objectives provided. Objectives 1.6, 1.7, and 3.3 give particular attention to equity, though it should be addressed within the implementation of each objective.

### Vision

The Aiken County Bicycle and Pedestrian Plan envisions a seamless network of safe and inviting bicycling and walking paths, trails, and on-street facilities, between the municipalities of Aiken County and adjacent counties in South Carolina and Georgia, that equitably supports economic development, active transportation, healthy lifestyles and improved quality of life for all citizens and visitors of the region.

### Goals & Objectives

Aiken County, its municipalities, and related agencies, including SCDOT, and local transit agencies will work collaboratively to:

### Engineering

**1. Goal: Increase and improve the quality of bicycle and pedestrian access between Augusta and Aiken, within local municipalities, and across Aiken County.**

1.1. Objective: Ensure that accommodations for bicyclists and pedestrians are provided on all appropriate infrastructure projects where pedestrians and bicyclists are permitted to travel.

1.2. Objective: Integrate bicycle and pedestrian facilities in their projects, including, but not limited to, transit, development, public works, infrastructure, and recreation facilities.

1.3. Objective: Improve the level of service for existing bicycle and pedestrian facilities in the member counties.

1.4. Objective: Increase the mileage of bicycle and pedestrian facilities by fifteen percent in Aiken County within the next 5 years.

1.5. Objective: Prioritize bikeway and walkway projects that create connectivity for bicyclists and pedestrians, such as closing gaps in the sidewalk network.

1.6. Objective: Improve integration of public transportation with bicycle and pedestrian facilities by creating safe routes to and from transit stops and convenient means for transporting bicycles via transit.

1.7. Objective: Prioritize bicycle and pedestrian projects and programs that improve access to jobs and services for citizens who walk and bike out of necessity rather than by choice.

1.8. Objective: Prioritize bicycling and walking facilities that provide access to schools.

1.9. Objective: Maintain and improve the network through inventory and assessment of existing pedestrian and bicycle routes.

1.10. Objective: Improve integration of public transportation with bicycle and pedestrian facilities by creating safe routes to and

from transit stops and convenient means for transporting bicycles via transit

**2. Goal: Improve the bicyclist and pedestrian experience within Aiken County.**

2.1. Objective: Promote Aiken County's natural beauty, character and sense of place by connecting bicycle and pedestrian facilities along scenic and inviting corridors.

2.2. Objective: Increase the number and quality of support facilities in Aiken County to complement the bicycle and pedestrian network, including, but not limited to, wayfinding signage, bus shelters, pedestrian lighting and end-of-trip facilities, such as bicycle parking.

2.3. Objective: Establish on-going maintenance programs for bicycle and pedestrian facilities at the county and municipality levels.

2.4. Objective: Promote community stewardship of bicycle and pedestrian facilities, including transit stops, through beautification and public art programs.

2.5. Objective: Develop specific solutions for improving bicyclist and pedestrian safety at bridge underpasses and at-grade railroad crossings.



*Pedestrian and Bike Safety Rodeos are a fun and effective way to teach safe, responsible pedestrian behavior to children.*

*Education*

**3. Goal: Establish a broad base of public engagement in and ongoing dialogue about bicycle, pedestrian and transit facilities, accessibility and activity.**

3.1. Objective: Work with private sector partners to create educational, informative and fun community events as tools for outreach and encouragement.

3.2. Objective: Work with private sector partners to generate frequent and ongoing media attention for both issues and opportunities related to bicycling and walking.

3.3. Objective: Promote the viability of walking and biking as a practical transportation option throughout the county for all potential users, whether a person does so out of necessity or by choice.

3.4. Objective: Promote bicycling and walking as healthy transportation options that improve physical fitness and significantly impact rising rates of childhood obesity.

3.5. Objective: Provide bicyclist and pedestrian safety training and education to children and youth through schools and community programs such as presentations and "bicycle rodeos."

3.6. Objective: Work with local businesses and partners to educate employees about the benefits and ease of bicycling, walking and taking transit to work.

*Encouragement*

**4. Goal: Increase the popularity and number of bicycle and pedestrian trips in Aiken County.**

4.1. Objective: Conduct bicycle and pedestrian counts every two years at a minimum of ten locations throughout the County as part of the National Bicycle and Pedestrian Documentation Program.

4.2. Objective: Participate in the statewide Safe Routes to School program and promote the benefits of bicycling and walking to school.

4.3. Objective: Increase each year the number of events within the county that involve bicycling and walking.



4.4. Objective: Host competitive or fund raising sporting events related to bicycling and running (such as downtown cycling races and Ironman triathlon-related activities) for the purpose of economic development, positive promotion of healthy lifestyles and fitness and to encourage community members to engage in bicycling and walking.

4.5. Objective: Profile individuals who walk or bike and/or describe the benefits of walking and bicycling through utility newsletters, radio, newspaper and other media.

4.6 Objective: Publish and distribute print and digital materials that show the region-wide bicycle and transit network and how both modes can be combined for greater car-free mobility. Google's public transportation and bicycle route mapping services are good examples of digital mapping for bicycle and transit services.

## *Enforcement*

### **5. Goal: Improve bicycle and pedestrian safety in Aiken County**

5.1. Objective: Provide bicyclist and pedestrian safety training and education to all age groups through schools, community programs, and workplaces.

5.2. Objective: Analyze bicycle and pedestrian collision data every two years to identify local trends and locate intersections and corridors needing safer infrastructure.

5.3. Objective: Partner with local law enforcement agencies to develop targeted enforcement programs based on the primary contributing factors of bicycle and pedestrian collisions, as determined by the bi-annual review of collision data completed by Aiken County and its partners.

5.4. Objective: Reduce the percentage of bicycle and pedestrian collisions that result in injuries or fatalities, with a goal of zero fatalities within 10 years.

## *Evaluation*

### **6. Goal: Obtain a Bicycle-Friendly Community designation, from the League of American Bicyclists, and a Walk-Friendly Community designation, from the Pedestrian and Bicycle**



*Evaluation programs allow communities to effectively measure the impact that their facility, policy, and program improvements are having on the community and gauge where additional measures may be needed.*

### **Information Center, for each city within Aiken County.**

6.1. Objective: Implement the recommendations of the Aiken County Bicycle and Pedestrian Plan, including the Bicycle- and Walk-Friendly Community designation action plans.

6.2. Objective: Establish citizen-advisory committees in each city to spearhead the local Bicycle-Friendly and Walk-Friendly Community designation campaigns.

6.3. Objective: Annually review and assess progress in implementing the Bicycle- and Walk-Friendly Community designation action plans and develop recommendations for further action.

6.4. Objective: Apply for Bicycle- and Walk-Friendly Community status of each city in or before the year 2017.

### **7. Goal: Develop bicycle and pedestrian projects that are financially feasible with broad public support.**

7.1. Objective: Identify appropriate and adequate funding for the development and maintenance of local bicycle and pedestrian systems

7.2. Objective: Prioritize bicycle and pedestrian projects for Transportation Enhancement funding.



7.3. Objective: Prioritize multimodal transportation projects that positively impact congestion management and improve air quality.

7.4. Objective: Incorporate sidewalk development into all reconstruction or new construction roadway projects.

7.5. Objective: Require land developers to provide adequate right of way for bicycle and pedestrian facilities as new developments occur along priority multi-modal corridors.

**8. Goal: Establish long-term, institutional support and evaluation criteria for bicycle and pedestrian activity in Aiken County.**

8.1. Objective: Prioritize bicycle and pedestrian planning within the work responsibilities of agency staff to ensure a multi-disciplinary approach to design, safety, and programs.

8.2. Objective: Team with regional transit providers to provide bicycle and pedestrian support facilities at transit centers and transit stops such as secure bicycle parking and benches.

8.3. Objective: Record the use of bicycle racks on busses and ensure that adequate bicycle support facilities and busses with racks are available in high-use areas.

8.4. Objective: Adhere to Federal Highway Administration (FHWA) guidelines and other nationally recognized resources (such as the National Association of City Transportation Officials' Urban Bikeway Design Guide, the American Association of State Highway and Transportation Officials Bicycle and Pedestrian Design Guidelines, and the SCDOT Complete Streets Policy) in the design of the bikeway and walkway network for the purpose of creating an innovative and context-sensitive network and to qualify for federal funding, when appropriate.

8.5. Objective: Identify Aiken County staff persons to serve as the primary points of contact for matters related to bicycle and pedestrian planning and to serve as liaisons for local bicycle and pedestrian matters.

8.6. Objective: Support the establishment of a permanent, regional Bicycle and Pedestrian Advisory Committee charged with facilitating interagency dialogue and collaboration

regarding policies, programs, and projects that impact bicyclists and pedestrians.

8.7. Objective: Pursue bicycling, pedestrian and health related policies for every division within local government.

8.8. Objective: Adopt complete streets policies at the municipal and county levels.

8.9. Objective: Build upon existing bicycle and pedestrian planning efforts, such as the ARTS Long Range Transportation Plan, the South Carolina State Trails Plan, and others.



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*"On any given day, hundreds of pedestrians can be observed in downtown Aiken and in areas of North Augusta. Sidewalks and crosswalks have existed in the downtown areas in many cases since the early history of the cities. Both North Augusta and Aiken have taken steps to preserve and improve the pedestrian friendliness of their central business districts and North Augusta has implemented an impressive network of pedestrian friendly Greeneways."*



## Existing Conditions

### Overview

This chapter provides an overview of the major components of the bicycling and walking environments of the urbanized area of Aiken County. The data required to assess existing conditions was collected primarily by gathering existing regional geographic information systems (GIS) data, requesting local information from Aiken County, conducting field work, and soliciting public input. Provided data was synthesized into regional databases, mapped with GIS, and analyzed through nonspatial and spatial tools, including spatial modeling. Additional analysis of existing conditions is provided in Chapters 4 and 5 which summarize the quantitative and qualitative needs of bicyclists and pedestrians in the region.

An overview of the primary sources for analyzing the existing conditions of the urbanized area of Aiken County is provided below. Figures 3-1 and 3-2 depict the existing bicycling and walking conditions in Aiken County.

### Data Inventory and Background Review

The consulting team requested that ARTS, Aiken County, and its municipalities provide data related to the bicycling and walking environment of Aiken County. Specifically, the consulting team requested that each agency provide specific data related to the following broad categories of existing conditions:

- Transportation (such as streets, bus stops, sidewalks, and traffic signal locations)
- Land use and ownership (such as parcel boundaries, and zoning designations)
- Points of interest (such as schools, parks, airports, and retail centers)

- Physical geography (such as wetlands and topography)
- Administrative and jurisdictional boundaries (such as city and county borders)

Additionally, a review of all relevant plans or planning documents related to bicycle and pedestrian activity in the region supplemented the data inventory. Appendix A provides the full review of documents and other information obtained from local governments across the region.

### Field Investigation

The project team identified priority corridors and locations for field review, totaling more than 100 miles of roadway. Field work allows for roadway characteristics that may present opportunities or constraints for bicycle and pedestrian facilities, such as pavement width, shoulders, right of way, and driveways, to be inventoried and mapped. Areas targeted for field investigation are corridors and locations with:

- high bicycle and/or pedestrian traffic,
- key connectors between areas of high bicycle and/or pedestrian traffic,
- areas of high bicycle and/or pedestrian collisions,
- and primary corridors for accessing destinations, such as commercial land uses, transit centers, parks, trails, and schools or colleges.

Additionally, at the project kick-off meeting, the steering committee noted a strong interest in providing connectivity between Augusta, GA and Aiken, SC. The corridors and locations prioritized for field review addressed the need for establishing regional connectivity between neighboring GA and SC communities, as well

Figure 3-1: ARTS/Aiken Existing Conditions

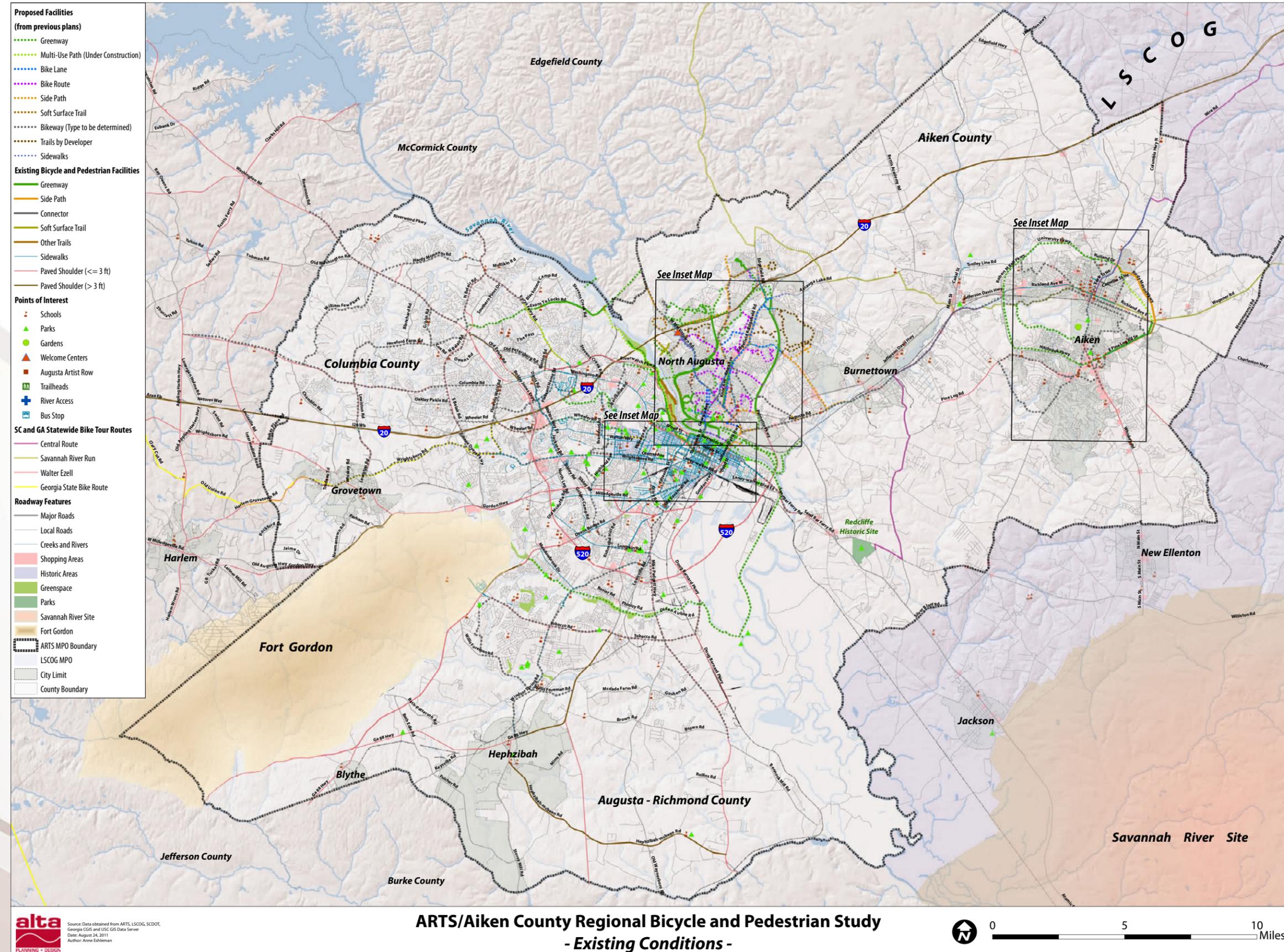
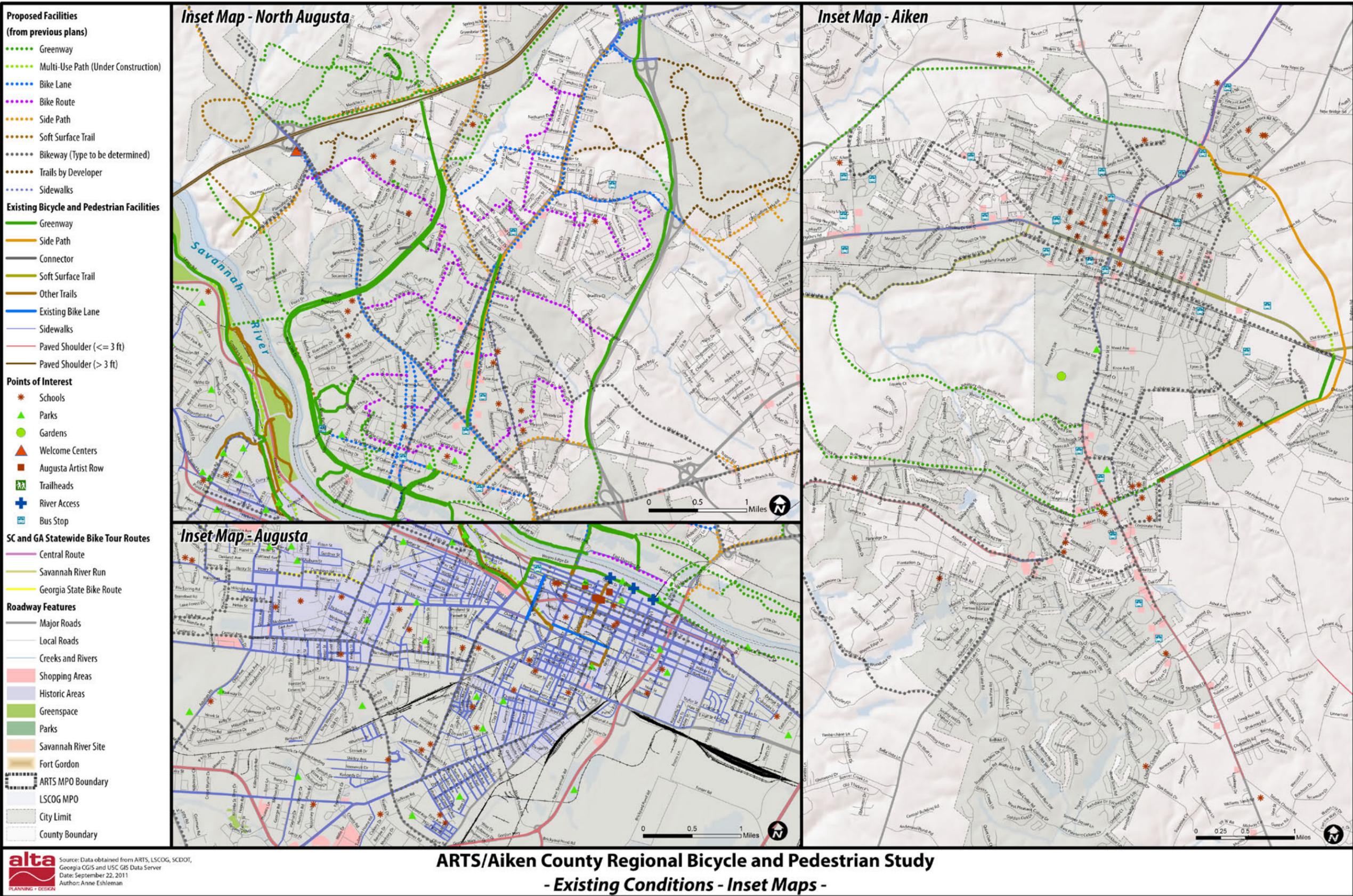


Figure 3-2: ARTS/Aiken County Existing Conditions Inset Maps





as the need for localized connectivity in urban environments.

### Public Outreach

Extensive public outreach is essential to developing a regional bicycle and pedestrian plan that addresses the needs of community members. For this report public input acquired during multiple public workshops, targeted focus groups, booths at community events, and via the project website was analyzed to identify issues and constraints to bicycling walking in the urbanized area of Aiken County. Chapter 5 summarizes the results of the public outreach process.

## Bicycle Infrastructure

### Overview

Multi-use trails, such as the North Augusta Greenway and the path along E. Pine Log Road, have been the primary investment in bicycling facilities in the urbanized area of Aiken County. The “Greenway” is a popular 7 mile regional greenway trail along a former rail line right-of-way in North Augusta. The land for the North Augusta Greenway was purchased by the City under former mayor Thomas W. Greene, for whom the trail is named. These facilities provide a good foundation for a bicycle facility network. However, a majority of the roads in the study area pose numerous dangers to bicyclists as they travel to and from destinations. Some of these hazards include commercial corridors that are designed solely for motorized transportation, multiple lane high-speed roadways, and narrow roadways with little or no shoulders. There is also limited connectivity between existing facilities and some barriers to connectivity exist, notably cul de sacs that do not connect adjacent neighborhoods.

### Strengths of Existing Bicycle Conditions

**Multi-use paths:** Within the urbanized area of Aiken County, 18.4 miles of greenways (including the Greenways of North Augusta) provide bicycling and walking opportunities for both recreation and transportation and have led to increased public support for investment in bicycling and walking infrastructure.

**Paved shoulders:** The portion of Aiken County within the ARTS region bears 8.9 miles of rural

roads with paved shoulders. On many rural roads, paved shoulders are an appropriate tool for improving the safety of bicycling conditions.

### Roadway Network Opportunities

**Downtown grid network:** Streets within the downtown areas of North Augusta and Aiken are on a good grid system for all transportation modes and many have low automobile speeds.

**Roadway/lane widths (Figure 3-3):** Many roadways throughout the region are wide enough to offer bicycle lanes or other bicycle facilities without the need to add additional pavement width.

**Low-volume roads (Figure 3-4):** The urbanized area of Aiken County has numerous residential areas with low-volume streets, low-speed travel, and inviting streetscapes. This type of existing network is suitable for bicycling activity, in particular, and often, walking, as well.

### Deficiencies of Existing Bicycle Conditions

**Lack of connectivity (Figure 3-5):** Though the City of North Augusta continues to develop Greenway segments that improve overall trail connectivity, existing bicycling facilities are currently disconnected, or in some cases, isolated. The development of residential subdivisions that do not have a connected street grid has added further challenges to connectivity.

**Lack of signage:** Limited to no signage is available to direct bicyclists from one existing bicycle facility to another or to identify preferable routes for bicyclists.

### Roadway Network Constraints

**Connectivity issues:** There is a lack of connectivity between existing facilities and destinations.

**High-volume, high-speed roadways (Figure 3-6):** There are several wide high-volume commercial roadways in Aiken County with high speeds and little shoulder where bicyclists are not safe. These roadways are, at times, the only connection to numerous commercial, retail, and office destinations. Whiskey Road is a prime example.



## Photo Inventory of Existing Bicycling Conditions



**Opportunity**

**Figure 3-3:** Many roadways throughout the county are wide enough to offer bicycle lanes or other bicycle facilities without the need to add additional pavement width.



**Constraint**

**Figure 3-4:** There are several wide high-volume commercial roadways in Aiken County with high speeds and little shoulder where bicyclists are not safe. Whiskey Road is a prime example.



**Opportunity**

**Figure 3-5:** Residential areas with low-volume streets, low-speed travel, and inviting streetscapes are suitable for bicycling activity in particular, and often walking as well.



**Constraint**

**Figure 3-6:** There are also many roadways throughout the region that are too narrow for bicyclists to travel safely on them. These roads have little or no shoulder and have relatively high vehicle travel speeds which pose multiple hazards for bicyclists.



**Opportunity**

**Figure 3-7:** Though the City of North Augusta continues to develop Greenway segments that improve overall trail connectivity, existing bicycling facilities are currently disconnected, or in some cases, isolated.



**Narrow roadways and lanes (Figure 3-7):** There are also many roadways throughout the region that are too narrow for bicyclists to travel safely on them. These roads have little or no shoulder and have relatively high vehicle travel speeds which pose multiple hazards for bicyclists. Banks Mill Road in the City of Aiken is one example.

**Driveway access management:** High frequency of driveways and parking lot curb-cuts present repeated hazards to cyclists as the automobile crosses the cyclists' path of travel. Additionally, curb-cuts that stretch beyond standard ingress and egress width add to the hazardous conditions, making it difficult for a bicyclist to predicate motor vehicle turning movements.

**Roadways currently designed for automobile only:** Many roads were designed around the automobile and need to be redesigned or re-stripped to become more bicycle friendly. Narrowing existing lanes and adding planted medians, sidewalks, and shade trees could also help reduce speeding and the hazards that speeding presents to cyclists, pedestrians, and drivers.

## *Pedestrian Infrastructure*

### **Overview**

The urbanized area of Aiken County features some areas that are pedestrian-friendly, and other areas that are not pedestrian-friendly. On any given day, hundreds of pedestrians can be observed in downtown Aiken and in areas of North Augusta. Sidewalks and crosswalks have existed in the downtown areas in many cases since the early history of the cities. Both North Augusta and Aiken have taken steps to preserve and improve the pedestrian friendliness of their central business districts and North Augusta has implemented an impressive network of pedestrian friendly Greenways. Additionally, many intersections in the region have countdown signals and ADA accessible curb ramps. This is not the case for all intersections, however.

### **Strengths of Existing Pedestrian Conditions**

**Sidewalks (Figure 3-8):** Downtown environments have a pedestrian-friendly sidewalk infrastructure and buffered sidewalks exist near some schools.

**Some enhancements in place:** Many intersections already contain functional pedestrian elements including pedestrian-activated countdown signals. Streetscape improvements that affect the pedestrian environment are in place in many areas, as well.

**Downtown (Figure 3-9):** The downtown environment Aiken, in particular, provides very pedestrian-friendly infrastructure. Sidewalks are wide and allow space for streetscape amenities, and pedestrian refuges exist at many downtown street crossings. Moreover, active storefronts and first-floor retail create an inviting ambiance for pedestrians.

**Multi-use paths (Figure 3-10):** Aiken County communities have begun to significantly invest in greenways (and Greenways) to provide transportation and recreation options for areas of existing and future development.

### **Deficiencies of Existing Pedestrian Conditions**

**Lack of overall connectivity (Figure 3-11):** Numerous gaps in the sidewalk system exist, especially extending away from downtown areas. This leaves some neighborhoods and destinations disconnected from other areas. Many school areas are lacking adequate pedestrian infrastructure.

**Inadequate crossing facilities (Figure 3-12):** Incomplete crossing facilities are commonplace lacking high-visibility crosswalks, adequate curb ramps, and countdown signals.

**Sidewalk condition:** Existing sidewalk, in many locations, is cracking, overgrown, or otherwise in need of repair.

**Driveway access management (Figure 3-13):** There are a number of locations along commercial corridors that feature long, wide, and multiple driveway entrances for parking. This creates a situation in which a pedestrian must cross entrances too often.

## *Policy Review*

The existing conditions for bicycling and walking in the urbanized area of Aiken County is impacted by existing codes, ordinances, and regulations. Appendix B of this Plan provides

## Photo Inventory of Existing Pedestrian Conditions



**Opportunity**

**Figure 3-8:** Downtown environments have a pedestrian-friendly sidewalk infrastructure and buffered sidewalks exist near some schools.



**Constraint**

**Figure 3-11:** Numerous gaps in the sidewalk system exist, especially extending away from downtown areas. This leaves some neighborhoods and destinations disconnected from other areas. Many school areas are lacking adequate pedestrian infrastructure.



**Opportunity**

**Figure 3-9:** Downtown Aiken provides very pedestrian-friendly infrastructure. Active storefronts and first-floor retail create an inviting ambiance for pedestrians.



**Constraint**

**Figure 3-12:** Incomplete crossing facilities are commonplace lacking high-visibility crosswalks, adequate curb ramps, and countdown signals (right of image).



**Opportunity**

**Figure 3-10:** Aiken County communities have begun to significantly invest in greenways (and Greenways) to provide transportation and recreation options for areas of existing and future development.



**Constraint**

**Figure 3-13:** Many commercial corridors that feature long, wide, and multiple driveway entrances for parking. This creates a situation in which a pedestrian must cross entrances too often.

a comprehensive review of development requirements related to bicycle and pedestrian facilities for Aiken County, the City of Aiken, and the City of North Augusta. As shown in Appendix B, the review was not limited to land development ordinances of each jurisdiction; some of these jurisdictions also have design guidelines associated with streets and North Augusta has a recently-completed Greenway, Pedestrian, and Bicycle Master Plan, which was reviewed, as well.

Key findings of the review are as follows:

- None of the jurisdictions researched have a Complete Streets Policy nor guidelines specific to Complete Streets, although North Augusta includes Complete Streets principles in its Comprehensive Development Ordinance (CDO)
- Both North Augusta and Aiken incorporate Form Based coding – citywide in North Augusta and in the Downtown District for Aiken
- All communities still seem to have design guidelines geared primarily toward movement of vehicular traffic; however, North Augusta includes Complete Streets principles in text and tables, though has not yet followed through in design details or illustrative sections
- None of the jurisdictions have explicit state-of-the-art guidance on the design and implementation of bicycle and pedestrian facilities in the form of a stand-alone set of design guidelines, although the topic is referenced in several of the documents reviewed
- While the jurisdictions regulate block size and connectivity (motorized and non-motorized), only the guidelines written by North Augusta would consistently result in walkable communities, and only in TND “use

pattern” areas. In the City of Aiken, adding additional pedestrian-scale connectivity within long blocks is left to the discretion of planning and zoning staff rather than being required. The allowable maximum length of dead-end streets is also problematic for all but the City of North Augusta, where it has not been specified. However, Aiken, County and North Augusta do discourage the building of cul-de-sacs wherever possible

- None of the jurisdictions reviewed considered elements such as multi-modal level of service as criteria for development review, although North Augusta does prioritize traffic mitigation measures for new development approvals that includes multi-modal measures
- None of the jurisdictions reviewed included any strategy for sidewalk or bicycle facility retrofits on existing facilities and
- The jurisdictions have variable approaches to regulating automobile and bicycle parking. In no location is bicycle parking required by default, and in all but North Augusta, minimum automobile parking requirements appear to be excessive. Waivers to these minimums, tend to be limited to very small geographies in relation to the overall size of the jurisdictions.

The policy evaluation indicates that Aiken County and its municipalities could benefit from guidance and direction related to strengthening many areas of policy. This concerns, in particular, the areas of complete streets, bicycle, and pedestrian facility requirements and enhancements within the context of development ordinances. Additional guidance geared toward retrofit of existing facilities is also recommended. Policy recommendations to address these opportunities are provided in Chapter 6.

**Table 3-1: Designated communities near Aiken County <sup>1</sup>**

State	Bicycle Friendly Communities	Walk Friendly Communities
South Carolina	Bronze: Charleston, Columbia, Greenville, Spartanburg  Silver: Hilton Head	None

<sup>1</sup> List of designated communities is current, as of January 2012



## Bicycle and Walk Friendly Community Assessment

### Overview of Bicycle and Walk Friendly Community Designations

The Bicycle Friendly Community (BFC) and Walk Friendly Community (WFC) programs are two national initiatives intended to encourage cities and towns across the country to improve the bicycling and pedestrian environments in their community and to recognize communities who are successfully doing this. The programs provide communities with invaluable resources related to bicycle and pedestrian planning and also generate positive media attention at the national and local level for communities who 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 received 490 applications and awarded 190 communities with "bicycle-friendly" status. In 2011, the Pedestrian and Bicycle Information Center, based in Chapel Hill, NC, announced the development of the WFC Program. There are currently 21 "walk-friendly" designated communities around the country (as of November 2011). Table 3-1 lists BFC and WFC designated communities in Georgia and South Carolina.

Both the WFC and BFC program use the five "E's" of bicycle and pedestrian 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. Four levels of award designation are possible: Bronze, Silver, Gold, and Platinum. Both programs offer an Honorable Mention category, as well.

Currently, there are no BFC or WFC designated communities in the ARTS region. Opportunities to apply for designation are shown in Table 3-2.

**Table 3-2: Review cycles and due dates for BFC and WFC programs.**

Review Cycle	Bicycle Friendly Community Due Dates	Walk Friendly Community Due Dates
Spring Awards	February 17, 2012	January 19, 2012
Fall Awards	July 2012 <sup>2</sup>	June 15, 2012

## Achieving Bicycle and Walk Friendly Community Designations

A BFC is described as a community that "welcomes cyclists by providing safe accommodation for cycling and encouraging people to bike for transportation and recreation."<sup>2</sup> In order to achieve Bronze level status as a BFC, a community is expected to show a strong commitment to bicycling, even if that commitment is in its early stages. Bronze communities have "room to grow" and show potential for more successes in bicycle friendliness, but important steps in the right direction are already being taken.

The League of American Bicyclists offers the following summary of characteristics that can be found in a Bronze level BFC:

- *Engineering Community* recently implemented a policy to engineer streets with the consideration of bicyclists and/or is beginning to develop a trail network. Facilities conform to the currently recognized safety standards.
- *Education Community* holds bicycle safety events, provides opportunities for bicycle education.
- *Encouragement Community* hosts a Bike to Work Day or community ride.
- *Enforcement Officers* are familiar with laws relating to bicyclists.
- *Evaluation & Planning* The community is familiar with and responsive to the needs of

<sup>1</sup> A specific application due date for July 2012 is not yet available, as of January 2012.

<sup>2</sup> Source: [http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/bfc\\_about.php](http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/bfc_about.php)

cyclists. A bicycle master plan or chapter in another document has been developed and approved. Bicycle mode share is above average for U.S. communities.<sup>3</sup>

To achieve a designation level higher than Bronze, significant advances within each of the five E's must occur. An honorable mention may be awarded to a community that shows its potential to fit the characterization of a Bronze community in the near future. In particular, a community that has not yet had time to realize the full impact of important recent successes would be a likely candidate for an honorable mention award.

While there is no clear benchmark that identifies communities within the four levels of BFC designation, Table 3-3 outlines the average bicycle mode share found among designated BFCs around the country.

**Table 3-3: Average bicycle mode share among designated Bicycle Friendly Communities<sup>4</sup>**

BFC Award Level	Average Bicycle Mode Share
Platinum	9.71%
Gold	5.20%
Silver	2.82%
Bronze	1.10%

Similarly, a WFC is described as “a city or town that has shown a commitment to improving walkability and pedestrian safety through comprehensive programs, plans and policies.”<sup>5</sup> A community seeking Bronze level status as a WFC should fit a characterization similar to that of a Bronze level BFC, though relevant to pedestrian programs and infrastructure.

## *Assessment of the City of Aiken*

This Plan includes completed applications for the BFC and WFC programs for the City of Aiken. Blank copies of the BFC and WFC applications are included in appendix c. By design, the process of filling-out the detailed questionnaires is an educational tool for communities seeking a national designation. Communities not only learn the variety of

programmatic, policy, and infrastructure initiatives that contribute to becoming bicycle- and walk-friendly, but also learn the areas in which the community excels or needs improvement. Table 3-4 outlines strengths and opportunities for the City of Aiken.

The infrastructure and non-infrastructure recommendations of the Plan, provided in Chapters 6 and 7 respectively, are based on the BFC and WFC assessments, as well as other analysis. Chapter 8 includes prioritized action steps and a timeline for the City of Aiken to pursue the BFC and WFC designations.

<sup>3</sup> Source: League of American Bicyclists, Scoring Guidelines for Local Reviewers, 2010.

<sup>4</sup> Source: League of American Bicyclists, staff report.

<sup>5</sup> Source: [www.walkfriendly.org](http://www.walkfriendly.org).



**Table 3-4: Assessment of three BFC and WFC applications**

Community	Bicycle Friendly Community Application Highlights	Walk Friendly Community Application Highlights
<b>City of Aiken</b>		
<p>Successes</p>	<p>The Aiken Bicycle Club is an asset to the City of Aiken and recreational cycling is a relatively popular form of exercise in the area.</p> <p>Aiken’s Public Safety Office ensures that all officers receive bicycle training and maintains a bike patrol program, which has participated in bicycle rodeos.</p> <p>A local chapter of Eat Smart Move More SC and Safe Routes to School are active programs in the community, and a board member of Palmetto Cycling Coalition also serves as an advocate in Aiken.</p> <p>A League Cycling Instructor lives in Aiken.</p> <p>The local option sales tax provides an important source of funding that is already in place.</p>	<p>The City of Aiken has a base of citizens supportive of walking and pedestrian infrastructure.</p> <p>Additionally, Aiken is successfully engaging the senior citizen and retired populations of the community.</p> <p>A local chapter of Eat Smart Move More SC and Safe Routes to School are active programs in the community.</p> <p>The downtown has a well-designed pedestrian wayfinding signage program.</p> <p>The infrastructure of downtown and nearby neighborhoods is friendly to pedestrians.</p> <p>The municipal code supports a walkable environment in downtown and requires sidewalks in many new road projects.</p> <p>The local option sales tax provides an important source of funding that is already in place.</p>
<p>Opportunities</p>	<p>Improvements are needed within all five E’s.</p> <p>The City of Aiken has the necessary institutional infrastructure needed to excel in each category.</p>	<p>Improvements are needed within all five E’s.</p> <p>The City of Aiken has the necessary institutional infrastructure needed to excel in each category.</p>



*"Bicycling and walking as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems. In addition, more people are willing to cycle more frequently if better bicycle facilities are provided."*



# Quantitative User Needs Analysis

## *Introduction*

To better understand bicyclist and pedestrian needs, the consulting team conducted a detailed analysis investigating the current safety, suitability, and demand for bicycling and walking in Aiken County. This analysis is divided into four parts within this chapter:

- An analysis of current bicyclist and pedestrian suitability in the region.
- A demand and benefit analysis of bicycling and walking in the region.
- Bicyclist and pedestrian count results and their implications.
- A safety analysis which includes an investigation of crashes involving bicyclists and pedestrians in the region.

## *Bike and Pedestrian Suitability*

The BSA and PSA models were developed to evaluate potential bicycle and pedestrian activity levels in Aiken County, South Carolina.

The analyses:

- Quantify factors that impact bicycle and pedestrian activity.
- Locate bicycle and pedestrian network gaps as potential projects.
- Identify potential regional bicycle and pedestrian corridors.
- Guide the development of new pedestrian and bicycle trip generation tools that enhance the user experience and maximize bikability and walkability.

BSA and PSA identify areas where cyclists and pedestrians are most likely to be. The analyses assign weighted values to available mapped data (metrics) based on the data's relative

impact on cycling and walking. Impacts take the form of both trip generators and attractors, collectively approximating network demand, or infrastructure suitability, representing network supply. BSA and PSA demand scores are assigned to areas throughout the region based on the density of generator variables and the proximity to attractors. Demand scores are then overlaid on top of supply to understand roadway quality in areas with high potential demand. Roadway quality incorporates characteristics that make cycling and walking viable, such as traffic speed and volume. The results of this technique can therefore be used to prioritize projects in areas with high demand. Where that demand meets suitable infrastructure, cost-effective investments can help to create a safe and direct network for cyclists and pedestrians. In areas with low suitability, interventions may help to improve conditions, or off-road facilities may provide an alternative for cyclists and pedestrians.

Metrics are divided into five sub categories: live, work, play, transit, and roadway quality. The live, work, and play categories represent the destinations that will generate and attract walking and cycling trips, such as homes, workplaces, and recreational amenities. Transit is also considered an attractor category, since transit stops are destinations in themselves providing wider regional access to cyclists and pedestrians. Roadway quality represents trip supply. It includes characteristics of the road network (like shoulder width, traffic, and connected intersections) that allow cyclists and pedestrians to reach each of the other destinations. Table 4-1 presents the metrics by category.

**Table 4-1: BSA and PSA Metrics Overview**

Category	Metric
Live	Population density, vehicle ownership inventory and journey to work mode
Work	Employment density by job sector and college enrollment density
Play	Proximity to points of interest and schools
Transit	Proximity to bus stops
Roadway Quality	Speed limit, connected/disconnected intersections, slope, etc.

Combining these metrics into one map enables the prioritization of projects that will have the greatest impact on the greatest number of people. Since demand metrics are mapped at different scales, (e.g. points of interest are mapped as nodes and population density is mapped by U.S. Census block group), each metric was converted to a similar scale so that values could be summed. Specifically, a square grid of 100 feet by 100 feet was laid across the Aiken County and each metric was converted to this grid. The composite demand values were then compared to the roadway quality scores. Since every community is different, the inputs and scoring methods used in the BSA and PSA are tailored to local needs and values.

This analysis is based on data obtained from Aiken County and its municipalities, the Lower Savannah Council of Governments, the South Carolina Department of Transportation and the University of South Carolina's GIS Data Server. Data was selected based on its availability and regional significance. Unless otherwise noted, data attributes were assigned values of 1 through 5 based on the geometrical interval classification system. This classification system was developed by ESRI's Geostatistical Analyst Team. Similar to a progression classification, this method works well on continuous data (data that is distributed over an area) and data that is not distributed normally.

The following sections present the inputs and analysis for each category examined, as well as the final composite results.

## Data Inputs

### 1 Bicycle and Pedestrian Generators

The datasets described in this section approximate the potential trip generation of homes and workplaces throughout the region. The data extent covers the entire region, and thus provides a composite score for every space within the region for each category. Scores are assigned based on factors affecting the likelihood of trips to and from home and work. Figure H-1, Figure H-2, Figure H-6, and Figure H-7 in Appendix H at the end of this report summarize these scores.

#### 1.1 Live

BSA and PSA utilize a variety of demographic data to indicate where potential volumes of cycling and pedestrian activity will be generated. Base population density, percentage of households without immediate access to a car, and the percentage of people already biking and walking to work are all contributors to this category. Demographic datasets were derived from the 2000 US Census and synthesized into a spatial database in GIS.

#### 1.2 Work

Another key indicator of trip volume is the density of places of employment and college student populations. Employment density was obtained via the Longitudinal Employment and Household Dynamics (LEHD), a program conducted by the US Census Bureau. This data was broken down into two sub-categories based on the North American Industry Classification System (NAICS). These categories were separated into service and commercial/manufacturing jobs. The service industry was assigned a higher weight than the commercial/manufacturing industry since these locations tend to draw in customers and generate foot traffic and are therefore both a trip generator and attractor. College student body totals were obtained from a variety of sources and were included in this category because students typically spend the same number of hours on campus as workers do in a typical day.



## 2 Bicycle and Pedestrian Attractors

The datasets described in this section approximate the potential of destinations and transit facilities throughout the region to attract cyclists and pedestrians and thus generate trip demand in areas surrounding them. Unlike the generators described previously, each of these datasets does not cover the entire region but is rather represented as point or polygon nodes distributed throughout the region. Like the colleges described above, these nodes are buffered before overlaying the datasets so that areas closer to the attractor receive higher scores than those farther away. Figure H-3, Figure H-4, Figure H-8, and Figure H-9 in Appendix H at the end of this report illustrate attractor scores in Aiken County.

### 2.1 Transit

Transit stops act as attractors to cyclists and pedestrians, because they provide potential access to and from many of the other generators (e.g., workplaces, homes) and attractors (e.g., parks, schools) that might otherwise be too far away to bike or walk. In Aiken County, buses are the only available public transit option, thus bus stops are used as the only data input to the transit map. It is assumed that cyclists will travel up to three miles to access a bus stop, and pedestrians will walk up to one mile. Within these 3-mile and 1-mile areas, scores are assigned, decreasing with increasing distance from the stop, to approximate the decreasing attractiveness of bus stops the farther they lie from a traveler's starting point or destination.

### 2.2 Play

The features in this category represent destinations other than homes and workplaces that are likely to attract cyclists and pedestrians. While cycling and walking are different in nature, the features that attract this activity are quite similar. Varying scores were assigned to each of the features comprising the "play" category, recognizing that some features are more likely to attract cycling and walking than others. Features of regional significance, such as parks, campgrounds, and hotels, are given higher scores, though schools and retail corridors also play a significant role in this category and are scored accordingly.

## 3 Bicycle and Pedestrian Infrastructure Suitability

While all the generator and attractor categories described previously collectively demonstrate potential bicycle and pedestrian trip demand throughout the region, this section describes the potential of road infrastructure to meet that demand. Figure H-5 and Figure H-10 in Appendix H at the end of this report illustrate roadway quality in Aiken County.

### 3.1 Roadway Quality

Various roadway characteristics collectively comprise the "roadway quality" category. This category is used to understand the quality of available infrastructure supporting cyclist and pedestrian travel between destinations within the generator and attractor categories. Roadway quality is defined by looking at connectivity, safety (collision history from 2008 - 2010), bicycle and pedestrian infrastructure, average daily traffic (ADT), vehicular speed and slope. A majority of the categories are broken into five divisions by their respective units and scored 1 to 5 according to those divisions. The divisions used for average daily traffic and traffic speed are both based on the London Cycling Design Standards.

### *BSA and PSA Composite Activity Models*

Development of the Composite Activity Model followed two steps:

1. Combine bicycle and pedestrian attractor and generator composite datasets to produce a composite activity score dataset of the region, approximating demand. Figure 4-2 and Figure 4-3 illustrate this potential activity for the BSA and PSA respectively.
2. Overlay the appropriate composite roadway quality score, approximating supply, to create a Composite Activity Model.

The Composite Activity Model can be used in several ways to identify areas for improvement and to prioritize projects. These are summarized below.

- Areas with high demand for cycling and walking and high supply of suitable infrastructure can benefit from innovative

programs and capital projects that further support cycling and walking, closure of key gaps, and should be considered showcase areas where best practices can be modeled for the region. These areas provide cost-effective opportunities for improvements and should be high priority for investment.

- Areas with high demand for cycling and walking and low supply of suitable infrastructure can benefit from infrastructure improvements to improve cycling and walking conditions. These areas may require off-road facilities for conditions such as high traffic volume or speed. They should also be high priority for investment.
- Areas with low demand for cycling and walking and high supply of suitable infrastructure can benefit from programs to encourage cycling and walking, and land use changes or development to increase the density of attractors and generators.

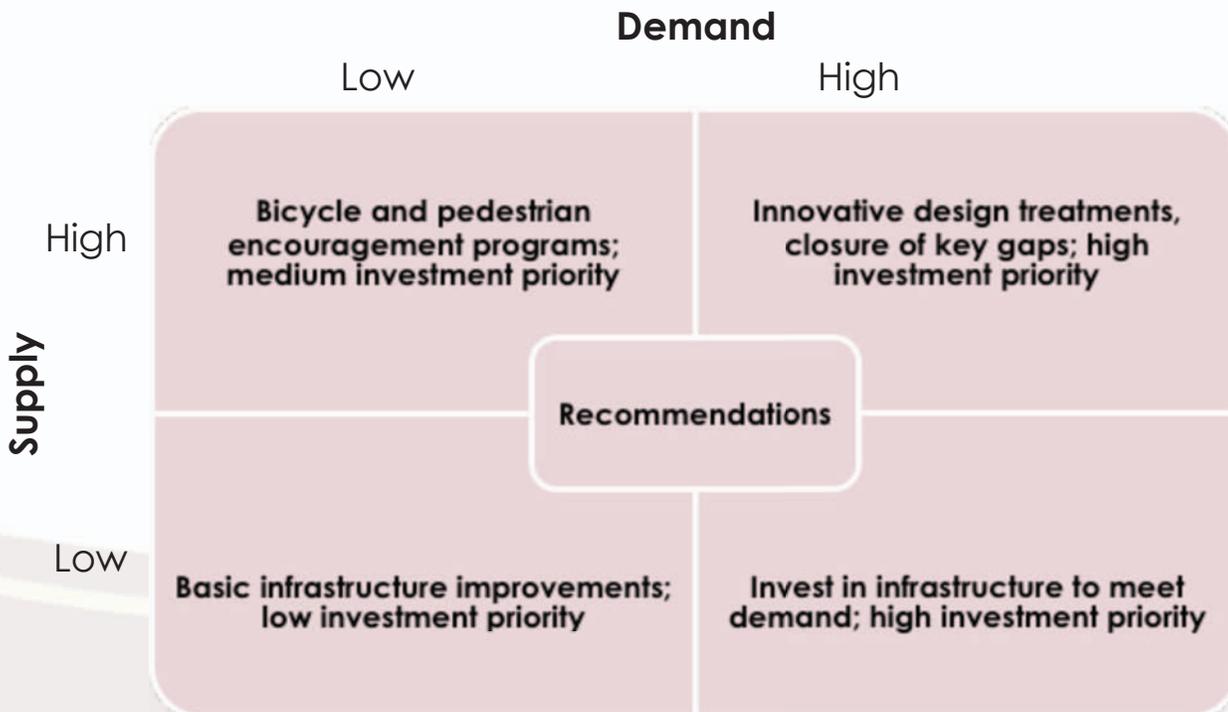
These areas should be medium priority for investment.

- Areas with low demand for cycling and walking and low supply of suitable infrastructure can benefit from basic infrastructure improvements. These areas should be low-priority for investments.

Composite Activity Models were developed for Aiken County. Independent Composite Activity Models were also developed for the ARTS region. Areas of Aiken County that are included in both models have consistent scores but are scaled to the geographic extents of each region (ARTS and Aiken County). This has an effect on only the ranges of values but the streets receive consistent values.

Figure 4-1 describes the recommendation development concept in matrix form. Figure 4-4 and Figure 4-5 on the following pages show the Composite Activity Models for Aiken County.

**Figure 4-1: Composite Activity Model Recommendation Summary**



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Figure 4-2: Aiken County Demand Composite Map – Bicycle

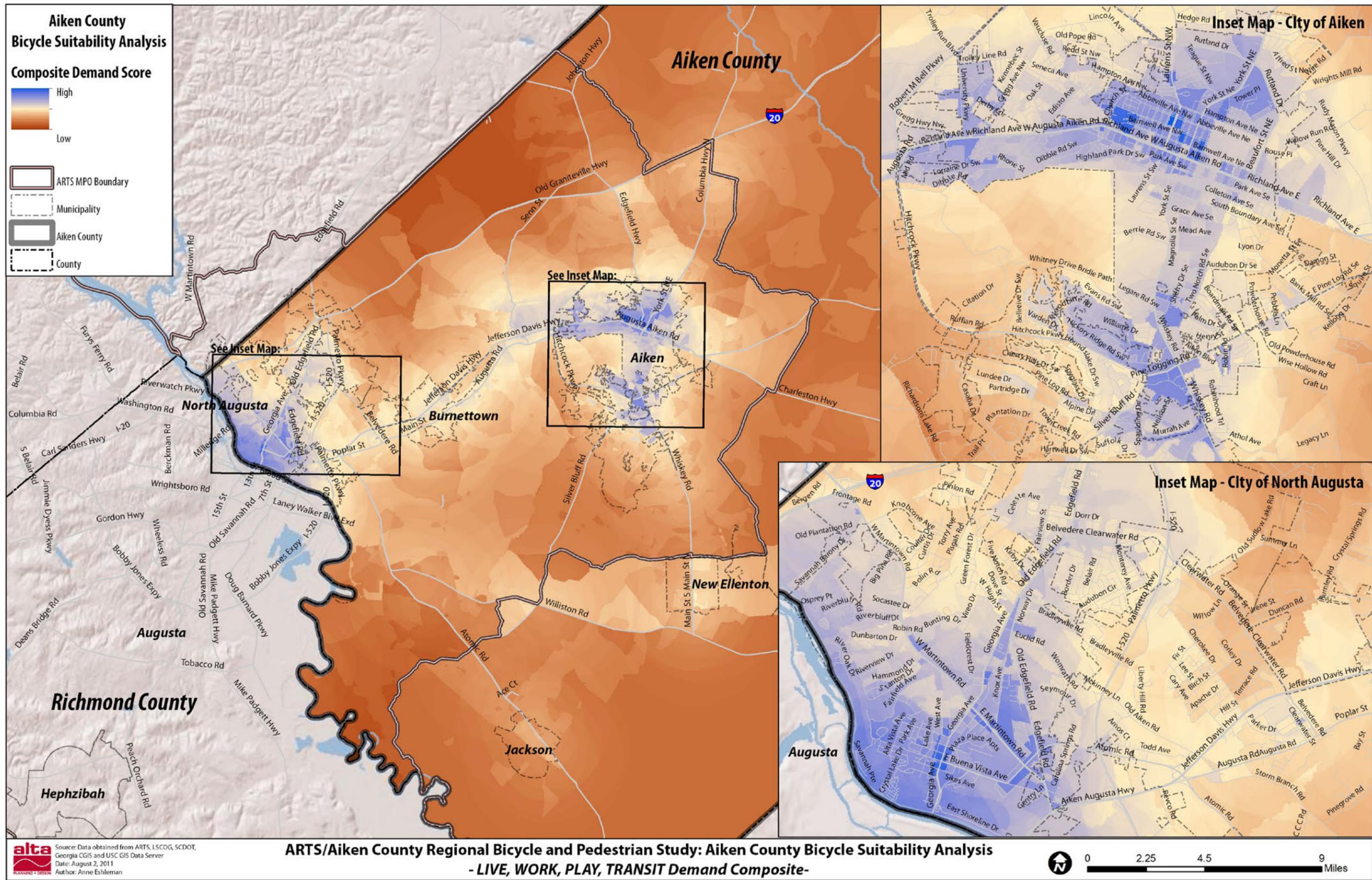


Figure 4-3: Aiken County Demand Composite Map – Pedestrian

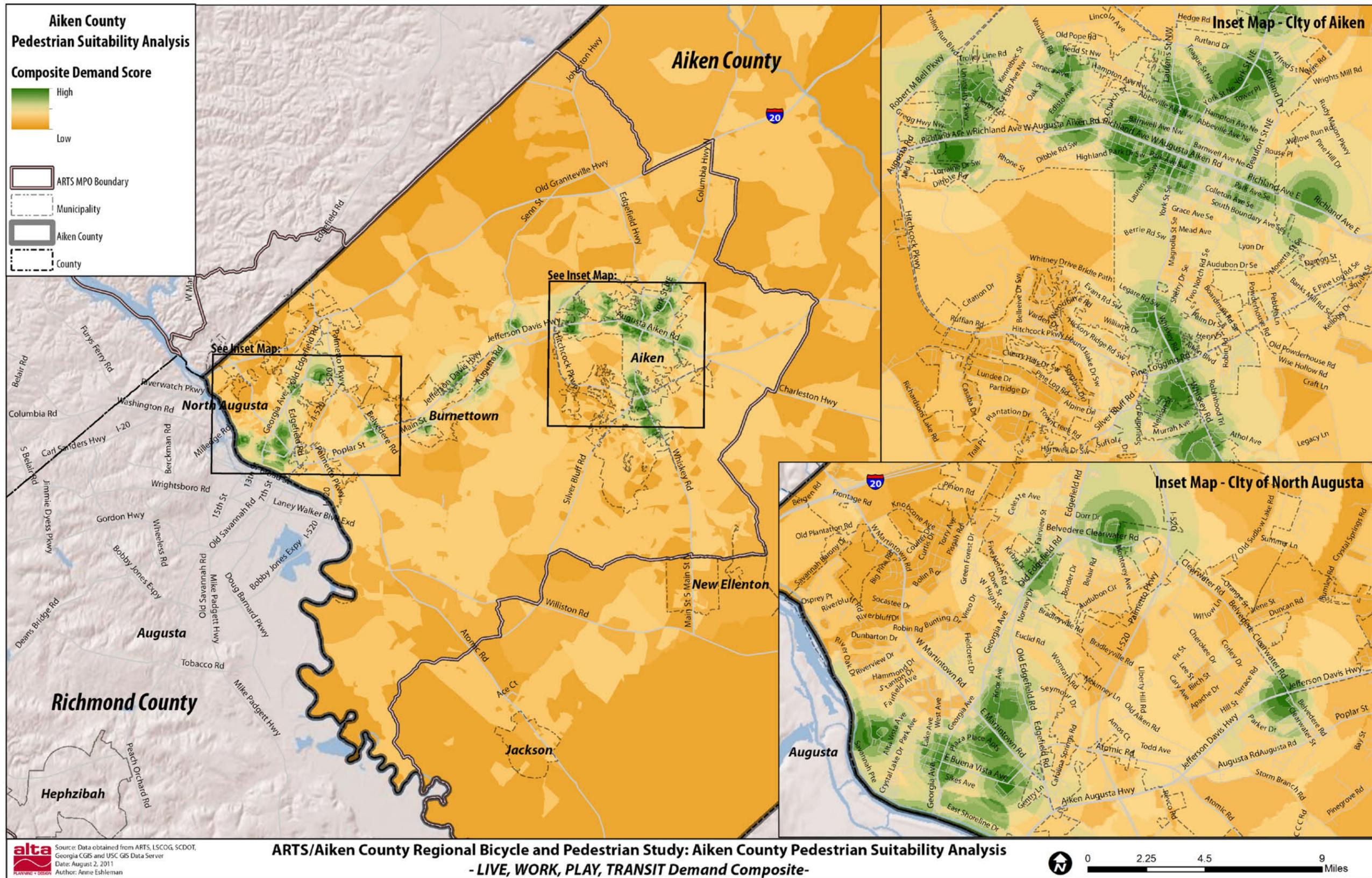


Figure 4-4: Aiken County Composite Activity Model Map – Bicycle

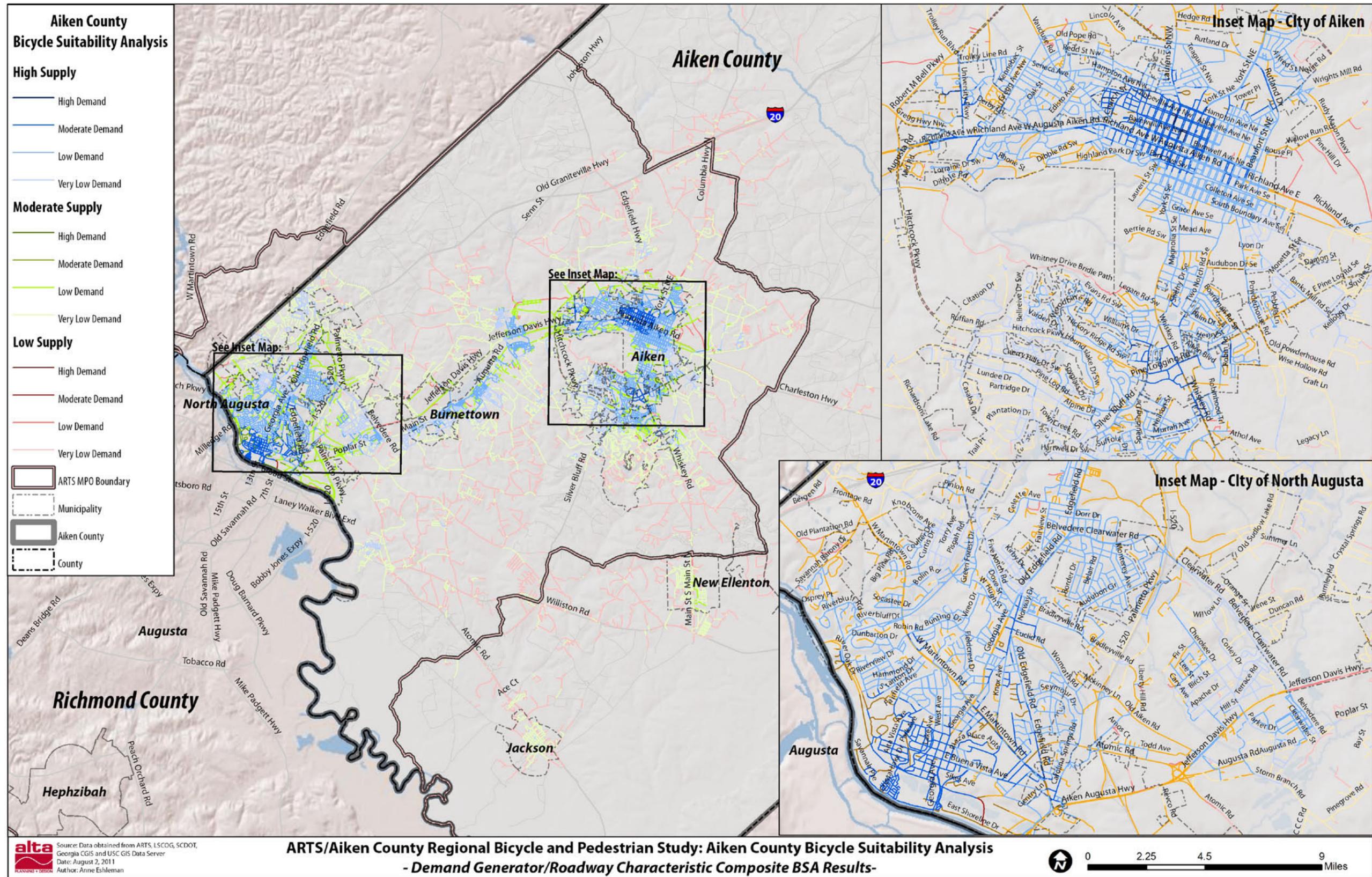
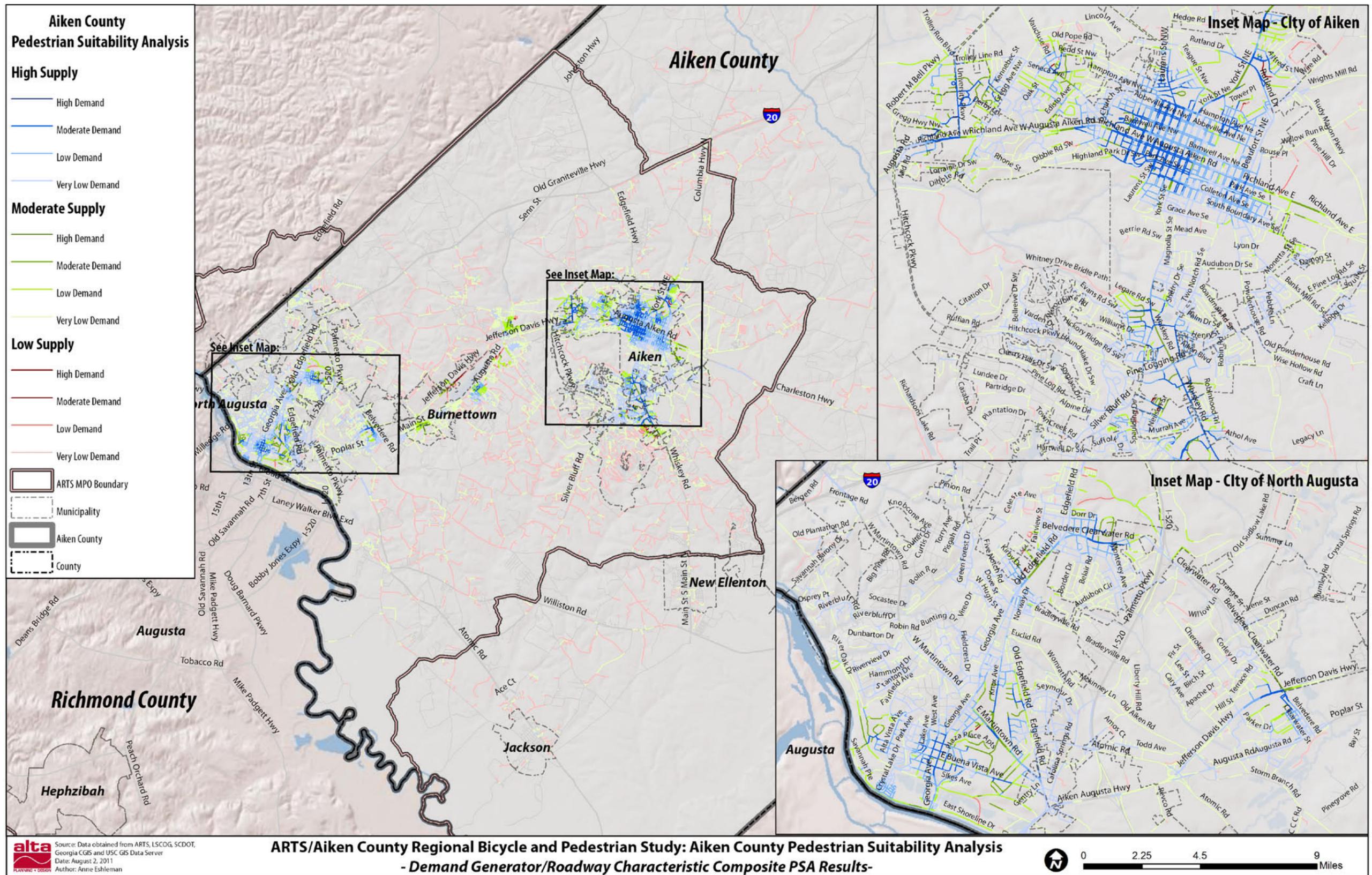


Figure 4-5: Aiken County Composite Activity Model Map – Pedestrian



## Demand and Benefit Analysis

This section identifies the assumptions made in the demand model used to estimate the number of current and future bicycling trips in Aiken County as part of the Augusta Regional Transportation Study (ARTS) Bicycle and Pedestrian Study Demand and Benefit Analysis

The model uses a market segment approach to estimate the number of bicycling or walking trips taken by populations that traditionally have a higher bicycling/walking mode split than work commuters (such as elementary school and college students). National transportation surveys, in particular the National Household Travel Survey (NHTS, 2009), have shown that work commute trips are only a fraction of total trips an individual takes on a given day. The model uses the NHTS findings to estimate the number of non-work, non-school trips taken by commuters to determine the number of walking or bicycling trips that occur in a day.

### Data Used in the Model

Journey-to-work information collected by the US Census Bureau's American Communities Survey (ACS) is the foundation of this analysis. The most recent ACS data available for Aiken County is the 2005-2009 five-year estimate. Because the area of Aiken County within the ARTS region is not divided along the county line, the Census tracts within the boundary were selected. A few of the tracts are only partially within the ARTS jurisdiction. The area south of North Augusta, near the Savannah River Site, is relatively rural and the population was assumed to be evenly distributed (e.g., if 30 percent of a tract is within the ARTS boundary, it was assumed that only 30 percent of the total population for that tract is within the ARTS boundary).

Because it is relatively suburban to the northeast of North Augusta, it was assumed that the population is concentrated within the ARTS boundary, and a multiplier of 1.5 was added to the proportional area within ARTS.

Model variables from the ACS for Aiken County include: total population (119,076 people), employed population (51,602 people), school enrollment (18,997 students grade K-12; 7,092 college/university students), and travel-to-work mode split (see Table 4-2).

**Table 4-2. Aiken County Commute Modeshare**

	Bicycling	Walking	Source
Employed	0.22%	1.38%	ACS, 2005-2009
K-12	0.67%	10.6%	NHTS 2009
College	0.22%	1.38%	ACS, 2005-2009
South Carolina average	0.25%	1.86%	ACS, 2005-2009

Note: analysis excludes areas of counties outside the ARTS boundary.

By comparison, South Carolina's bicycling mode split is 0.25 percent, while the walking mode split is 1.86 percent, showing that Aiken County has fewer bicycling and walking trips than other counties in the state. However, Aiken has a large number of commute pedestrians compared to other counties in the ARTS region. None of the other counties have mode splits higher than the state average of 1.86 percent walking. Richmond County is the only county in the region with a higher rate than the South Carolina average.

The 2009 NHTS provides a substantial national dataset of travel characteristics, particularly for trip characteristics of bicycling and walking trips. Data used from this survey include:

- Student mode split, grades K-12
- Trip distance by mode by trip purpose
- Ratio of walking/bicycling work trips to utilitarian trips
- Ratio of walking/bicycling work trips to social/recreational trips

Several of these variables are trip type multipliers that provide an indirect method of estimating the number of walking and bicycling trips made for other reasons, such as shopping and running errands. NHTS 2009 data indicates that for every bicycle work trip, there are



slightly more than two utilitarian bicycle trips made. Although these trips cannot be directly attached to a certain group of people (not all of the utilitarian bicycling trips are made by people who bicycle to work) these multipliers allow a high percentage of the community's walking and bicycling activity to be captured in an annual estimate.

The Safe Routes to School Baseline Data Report (2010) was used to determine the distance of school trips using parents' estimate of distance as well as the frequency of carpooling for trip replacement.

### **Disclaimer**

As with any modeling projection, the accuracy of the result is dependent on the accuracy of the input data and other assumptions. Effort was made to collect the best data possible for input to the model, but in many cases national data was used where local data points were unavailable. Examples of information that could improve the accuracy of this exercise include the detailed results of local Safe Routes to School parent and student surveys, a regional household travel survey, and a student travel survey of college students.

### **Existing Walking and Bicycling Trips**

Table 4-3 shows the results of the walking and bicycling demand models, which estimate that more than 18,000 walking trips occur in Aiken County each day, while over 2,000 bicycling trips occur each day.

Based on the model assumptions, the majority of trips are social/recreational trips, followed by non-work utilitarian trips, which include trips for medical/dental services, shopping/errands, family personal business, obligations, transporting someone, meals, and other trips.

Figure 4-6 and Figure 4-7 on the following pages show the distribution of mode split for walking and bicycling, respectively. They show the data by Census tract, rather than aggregated by county, and therefore display slightly different mode splits than the average mode split for the county. The dots on the map indicate the trip generation based on the analysis shown in Table 4-3. Several tracts have relatively high rates of walking and/or bicycling, but most of these have low population numbers and therefore do not generate a substantial number of walking or bicycling trips.



**Table 4-3. Model Estimate of Current Walking and Bicycling Trips**

	Walking	Bicycling
<b>Commute Trips</b>		
Walking/bicycling commuters <sup>1</sup>	713	115
Weekday walking/bicycling trips	1,425	230
<b>School Trips</b>		
K-12 walking/bicycling commuters <sup>2</sup>	2,013	128
Weekday K-12 walking/bicycling trips	4,026	256
<b>College Trips</b>		
College walking/bicycling commuters <sup>3</sup>	98	16
Weekday walking/bicycling college trips	196	32
Daily adult walking/bicycling commute trips <sup>4</sup>	1,621	262
<b>Utilitarian Trips</b>		
Daily walking/bicycling utilitarian trips <sup>5</sup>	5,698	410
<b>Social/Recreational Trips</b>		
Daily walking/bicycling social/recreational trips <sup>6</sup>	6,834	1,204
<b>Total Current Daily Walking/Bicycling Trips</b>	<b>18,179</b>	<b>2,132</b>

1 Employed population multiplied by ACS commute mode split.

2 School children population multiplied by NHTS 2009 mode split for school/daycare/religious trips by individuals age 5-18.

3 Assumes same mode split as employed population.

4 Number of walking/bicycling commute trips plus number of walking/bicycling college trips, respectively.

5 Utilitarian walking/bicycling trips multiplied by ratio of utilitarian to work trips from NHTS 2009 (4.92 utilitarian walking trips to walking commute trips and 2.19 utilitarian bicycle trips to bicycle commute trips). Weekly trips distributed over entire week (vs. commute trips over 5 days).

6 Social/recreational walking/bicycling trips multiplied by ratio of social/recreational trips to work trips from NHTS 2009 (5.90 social/recreational walking trips to walking commute trips and 6.45 social/recreational bicycling trips to bicycling commute trips). Weekly trips distributed over entire week (vs. commute trips over 5 days).



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Figure 4-6: Aiken County Pedestrian Demand and Trip Generation

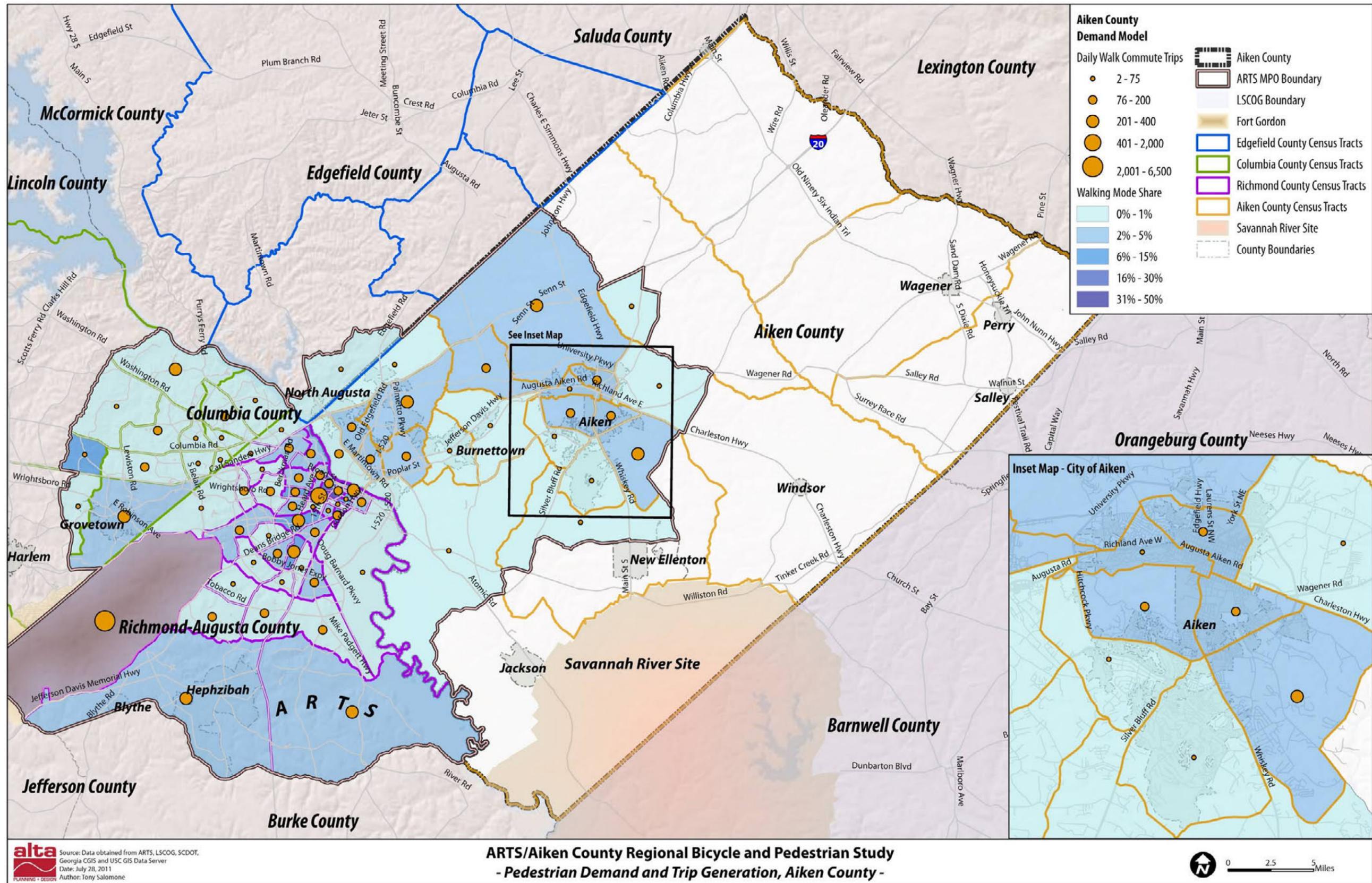
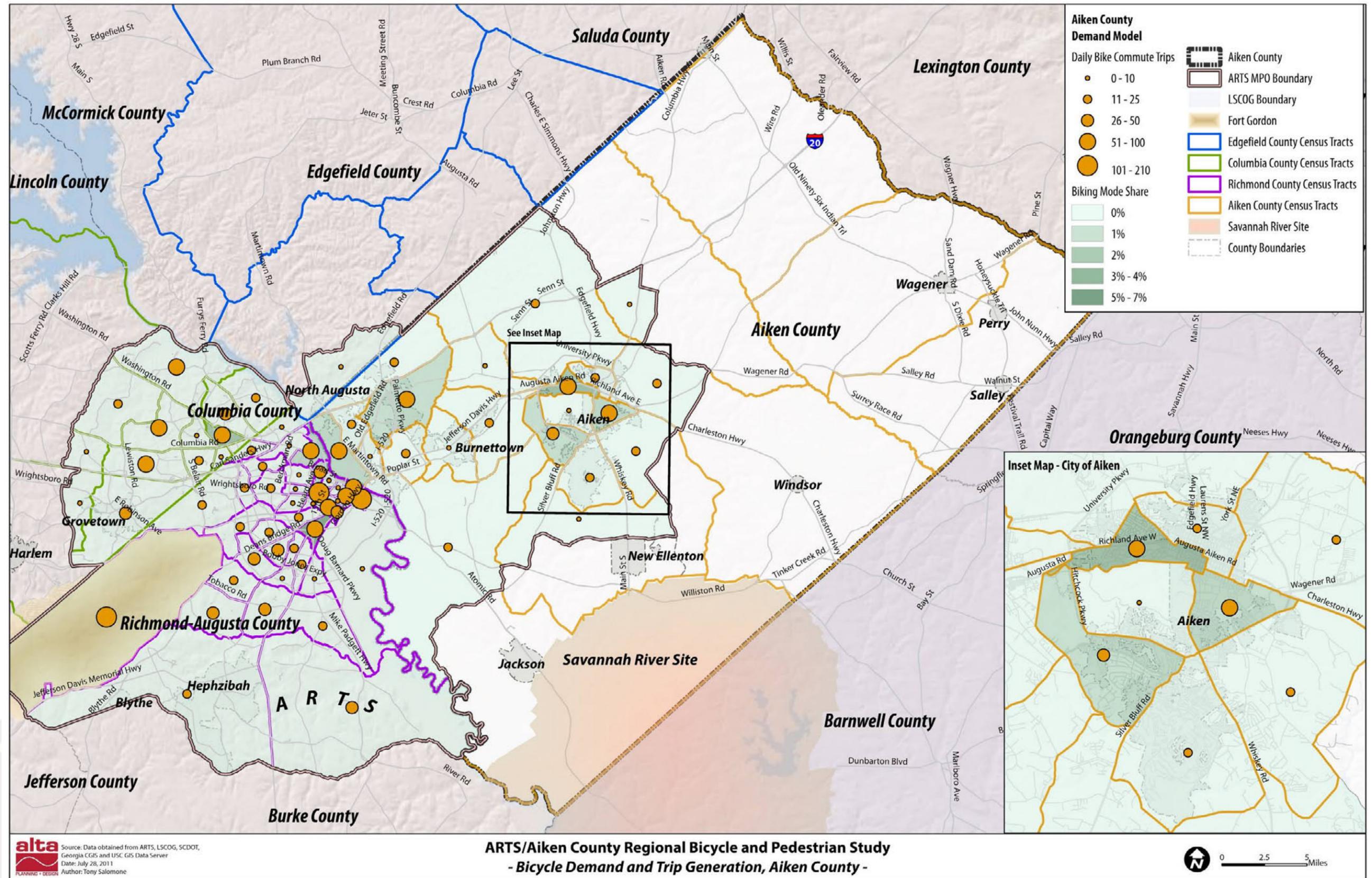


Figure 4-7: Aiken County Pedestrian Demand and Trip Generation





### Trip Replacement

Some of these daily walking and bicycling trips are essential trips that individuals would have to take regardless of whether they can walk or bicycle for the trip. If walking or bicycling had not been an option for commute, school/college, and utilitarian trips, some of these trips would have been made by driving. The model estimates that the proportion of these trips that would have been made by driving is equivalent to the drive alone mode split for each county.

To estimate the total distance walking and bicycling trips taken by Aiken County residents replace vehicular trips, the model applies trip distance information for walking and bicycling trips by trip purpose from NHTS 2009.

Shown in Table 4-4, the model estimates that the estimated that more than 3.5 million commute, school, and other utilitarian walking and bicycling trips each year replace more than 1.1 million vehicle trips, removing more than 1.1 million vehicle miles traveled each year.

**Table 4-4. Current Walking and Bicycling Trip Replacement**

	Walking	Bicycling
<b>Commute Trips</b>		
Weekday vehicle trips replaced <sup>1</sup>	1,179	190
Weekday miles walked/biked <sup>2</sup>	790	674
<b>School Trips</b>		
Weekday vehicle trips reduced <sup>3</sup>	1,166	74
Weekday miles walked/biked <sup>4</sup>	895	57
<b>College Trips</b>		
Weekday vehicle trips reduced <sup>5</sup>	162	26
Weekday miles walked/biked <sup>6</sup>	91	39
<b>Utilitarian Trips</b>		
Daily vehicle trips reduced <sup>7</sup>	1,341	216
Daily miles walked/biked <sup>8</sup>	894	410
<b>Yearly Results</b>		
Yearly walking/bicycling trips	3,279,011	265,913
Yearly vehicle trips reduced	1,057,356	98,672
Yearly miles walked/biked	725,658	344,164

1 Trips multiplied by drive alone commute trip ratio to determine automobile trips replaced by walking/bicycling trips.

2 Number of vehicle trips reduced multiplied by average walking/bicycling work trip length (NHTS 2009).

3 Trips multiplied by school commute drive alone proportion to determine automobile trips replaced by walking/bicycling trips (NHTS 2009).

4 Number of vehicle trips reduced multiplied by average trip length to/from school (SRTS 2010).

5 Trips multiplied by drive alone trips to determine automobile trips replaced by walking/bicycling trips.

6 Number of vehicle trips reduced multiplied by average walking/bicycling school/daycare/religious trip length (NHTS 2009).

7 Number of daily utilitarian trips multiplied by drive alone trips.

8 Number of vehicle trips reduced multiplied by average utilitarian walking/bicycling trip length (NHTS 2009; does not include work or home trips).



## Current Benefits

To the extent that bicycling and walking trips replace single-occupancy vehicle trips, they reduce emissions and have tangible economic impacts by reducing traffic congestion, crashes, and maintenance costs. In addition, the reduced need to own and operate a vehicle saves families money.

The South Carolina Department of Health and Environmental Control and the South Carolina Coalition for Obesity Prevention Efforts estimated that in 2003, South Carolina's obesity-attributable medical expenditures were \$1.06 billion.<sup>1</sup> Development of a bicycle and pedestrian network, as well as support facilities and encouragement programs such as Safe Routes to School will encourage people to become active. Health care benefits are not calculated for the current condition, because people who already walk and bicycle are people who would likely have found an alternative avenue for physical activity. Health benefits are therefore calculated in the future estimate only. Other current benefits are shown in Table 4-5.

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<sup>1</sup> <http://www.scdhec.gov/health/chcdp/obesity/docs/StatePlanComplete.pdf>

**Table 4-5. Benefits of Current Walking and Bicycling Trips**

<b>Benefits from Walking and Bicycling Trips</b>	
Yearly vehicle miles reduced	1,069,821
<b>Air Quality Reduction<sup>2</sup></b>	
Hydro-carbons (lbs/year)	3,208
Particulate Matter (lbs/year)	24
Nitrous Oxides (lbs/year)	2,241
Carbon Monoxide (lbs/year)	29,246
Carbon Dioxide (lbs/year)	870,306
<b>Economic Benefits of Air Quality</b>	
Particulate Matter	\$2,001
Nitrous Oxides	\$4,481
Carbon Dioxide	\$14,922
<b>Reduced External Costs of Vehicle Travel (Thousands)</b>	
Traffic Congestion <sup>1</sup>	\$202,196
Vehicle Crashes	\$1,453,887
Roadway Maintenance Costs <sup>2</sup>	\$150
<b>Household Transportation Savings<sup>3</sup> (Thousands)</b>	
Reduction in Household Transportation Spending	\$535
Total Current Benefits for Walking and Bicycling (Thousands)	\$1,659,789

1 EPA report 420-F-05-022 "Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks." 2005 and NHTSA Corporate Average Fuel Economy for MY 2011 Passenger Cars and Light Trucks, Table VIII-5 (<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55bfbe582f57529cdba046a0/>).

2 Crashes vs. Congestion – What's the Cost to Society?" <http://www.aanewsroom.net/Assets/Files/20083591910.CrashesVsCongestionFullRe>

3 Kitamura, R., Zhao, H., and Gubby, A. R. (1989). Development of a Pavement Maintenance Cost Allocation Model. Institute of Transportation Studies – University of California, Davis ([http://pubs.its.ucdavis.edu/publication\\_detail.php?id=19](http://pubs.its.ucdavis.edu/publication_detail.php?id=19)). \$0.08/mile (1989), adjusted to 2010 dollars using the Bureau of Labor Statistics Inflation Calculator

4 IRS operational standard mileage rates for 2010 <http://www.irs.gov/newsroom/article/0,,id=216048,00.html>



## Potential Future Walking and Bicycling Trips

Estimating future walking and bicycling trips requires additional assumptions regarding ARTS's future population and anticipated commuting patterns in 2025 (the latest year for which estimates are available). Future population predictions were determined by ARTS staff for the 2035 Long Range Transportation Plan (LRTP) and incorporated into the regional demand model by the Georgia Department of Transportation.

The LRTP uses Transportation Analysis Zones (TAZ's) to estimate the 2035 population and employment numbers from 2006 numbers. Because more recent Census (ACS) data were used in the current model, the LRTP estimate was used to determine the change in population and employment in the parts of the counties that make up the ARTS region.

The LRTP estimates that 2006 employment in Aiken County was 36,934 jobs. The Plan

projects that there will be 51,160 jobs in 2035, representing a 38.5 percent increase in regional employment since 2006.

Table 4-6 shows the projected future demographics used in the future analysis. The population of school students (K-12) and college/university students was assumed to be the same proportion of the total population for each county as in the 2004-2009 estimate.

The walking and bicycling mode shares are likely to increase in the future because the addition of new facilities and enhancements to the existing system. The model assumes that Aiken County can increase the walking share above the 1.86 percent state average to four percent. For bicycling, the average bicycling mode share for Bronze-level Bicycle Friendly Communities (BFC's) is 1.1 percent. The analysis assumes that Aiken County can achieve these levels by 2035 (and likely much sooner).

The results of the model for future walking and bicycling trips are shown in Table 4-7.

**Table 4-6. Projected Future (2035) Demographic**

	Number	Change from 2006 Population	Source
Population	177,498	48.7%	2035 Long Range Transportation Plan
Employed Population	51,160	38.5%	2035 Long Range Transportation Plan
School population, K-12	28,317	16.0%	Assumes same percent as from ACS 2009 estimate
College student population	10,553	5.9%	Assumes same as 2009 ACS estimate



**Table 4-7. Model Estimate of Future 2035 Walking and Bicycling Trips**

	Walking	Bicycling
<b>Commute Trips</b>		
Walking/bicycling commuters <sup>1</sup>	2,865	788
Weekday walking/bicycling trips	5,731	1,576
<b>School Trips</b>		
K-12 walking/bicycling commuters <sup>2</sup>	2,994	311
Weekday K-12 walking/bicycling trips	5,988	623
<b>College Trips</b>		
College walking/bicycling commuters <sup>3</sup>	422	116
Weekday walking/bicycling college trips	844	232
Daily adult walking/bicycling commute trips <sup>4</sup>	6,575	1,808
<b>Utilitarian Trips</b>		
Daily walking/bicycling utilitarian trips <sup>5</sup>	23,112	2,832
<b>Social/Recreational Trips</b>		
Daily walking/bicycling social/recreational trips <sup>6</sup>	27,721	8,329
<b>Total Future Daily Walking/Bicycling Trips</b>	<b>63,396</b>	<b>13,589</b>
<b>Total Current Daily Walking/Bicycling Trips</b>	<b>18,197</b>	<b>2,132</b>
<b>Percent Change</b>	<b>248.7%</b>	<b>537.5%</b>

1 Population and employment estimates for 2035 based on ARTS 2035 Long Range Transportation Plan and multiplied by assumed future mode split.

2 School children population multiplied by NHTS 2009 mode split for school/daycare/religious trips.

3 Assumes same mode split as employed population.

4 Number of walking/bicycling commute trips plus number of walking/bicycling college trips.

5 Utilitarian walking/bicycling trips multiplied by ratio of utilitarian to work trips (NHTS). Weekly trips distributed over entire week (vs. commute trips over 5 days).

6 Social/recreational walking/bicycling trips multiplied by ratio of social/recreational to work trips (NHTS). Weekly trips distributed over entire week (vs. commute trips over 5 days).

**Future Benefits**

The trip replacement factors remain the same as in the model of current trips. Since bicycling is among the most popular forms of recreational activity in the U.S.,<sup>1</sup> when bicycling

is available as a daily mode of transportation, substantial health benefits result. The health benefit of bicycling for exercise can reduce the employer cost of spending on health care

1 Almost 80 million people walking and 36 million people bicycling for recreation or

exercise nationally, and 27.3 percent of the population over 16 bicycling at least once over the summer. (National Sporting Goods Association survey, 2003)



by as much as \$514 a year, which provides a financial incentive to businesses that provide health coverage to their employees.<sup>2</sup> Table

4-8 shows the air quality benefits of the future projected walking and bicycling trips in Aiken County.

2 Feifei, W., McDonald, T., Champagne, L.J., and Edington, D.W. (2004). Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees. *Journal of Occupational and Environmental Medicine*. 46(5):428-436

**Table 4-8. Benefits of Future Walking and Bicycling Trips**

Benefits from Walking and Bicycling Trips	
Yearly vehicle miles reduced	8,730,893
<b>Air Quality Reduction <sup>1</sup></b>	
Hydrocarbons (lbs/year)	26,178
Particulate Matter (lbs /year)	194
Nitrous Oxides (lbs /year)	18,286
Carbon Monoxide (lbs /year)	238,679
Carbon Dioxide (lbs /year)	7,102,632
<b>Economic Benefits of Air Quality (Thousands)</b>	
Particulate Matter	\$2.0
Nitrous Oxides	\$11,865,283
Carbon Dioxide	\$122
<b>Reduced External Costs of Vehicle Travel (Thousands)</b>	
Traffic Congestion <sup>2</sup>	\$1,650,139
Vehicle Crashes	\$11,865,283
Roadway Maintenance Costs <sup>3</sup>	\$1,222
<b>Household Transportation Savings (Thousands) <sup>4</sup></b>	
Reduction in HH trans. spending	\$4,365
<b>Reduced Healthcare Costs (Thousands)</b>	
New adult walkers/bikers <sup>5</sup>	3,250
New student walkers/bikers	1,164
Healthcare savings of active adults <sup>6</sup>	\$467
Healthcare savings of active children	\$80
<b>Total (Thousands)</b>	<b>\$25,386,964</b>

1 Population and employment estimates for 2035 based on ARTS 2035 Long Range Transportation Plan and multiplied by assumed future mode split.

2 School children population multiplied by NHTS 2009 mode split for school/daycare/religious trips.

3 Assumes same mode split as employed population.

4 Number of walking/bicycling commute trips plus number of walking/bicycling college trips.

5 Utilitarian walking/bicycling trips multiplied by ratio of utilitarian to work trips (NHTS). Weekly trips distributed over entire week (vs. commute trips over 5 days).

6 Social/recreational walking/bicycling trips multiplied by ratio of social/recreational to work trips (NHTS). Weekly trips distributed over entire week (vs. commute trips over 5 days).



## Additional Benefits of Bicycling and Walking

Bicycling and walking are low-cost and effective means of transportation that are non-polluting, energy-efficient, versatile, healthy, and fun. Everyone is a pedestrian at some point, whether walking to a parked car, taking a lunch break, or accessing transit. In addition, bicycles offer low-cost mobility to the non-driving public. Bicycling and walking as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems. In addition, more people are willing to cycle more frequently if better bicycle facilities are provided.<sup>1</sup>

In addition to the tangible economic benefits estimated in previous sections of this memorandum, bicycling and walking have many other benefits that are challenging to quantify, but some communities or organizations have studied.

- Walking and bicycling support job creation and create economic benefits for a region:
  - o The League of American Bicyclists reports that bicycling makes up \$133 billion of the US economy, funding 1.1 million jobs.<sup>2</sup> The League also estimates bicycle-related trips generate another \$47 billion in tourism activity.
  - o Many communities have enjoyed a high return on their investment in bicycling: the Outer Banks of North Carolina spent \$6.7 million to improve local bicycle facilities, and reaped the benefit of \$60 million of annual economic activity associated with bicycling.<sup>3</sup>

1 Pucher, J., Dill, J. and Handy, S. (2010). Infrastructure, programs, and policies to increase bicycling: An international review. *Preventative Medicine* 50:S106-S125.

2 Flusche, Darren for the League of American Bicyclists. (2009). *The Economic Benefits of Bicycle Infrastructure Investments*.

3 N.C. Department of Transportation, Division of Bicycle and Pedestrian Transportation. (No Date). *The Economic Impact of Investments in Bicycle Facilities*. [atfiles.org/files/pdf/NCbikeinvest.pdf](http://atfiles.org/files/pdf/NCbikeinvest.pdf)

o Multiple studies show that walkable, bikeable neighborhoods are more liveable and attractive, increasing home values,<sup>4</sup> resulting in increased wealth for individuals and additional property tax revenue.

o Walkable, bikeable communities attract the young creative class,<sup>5</sup> which can help cities gain a competitive edge and diversify economic base.

o Patrons who walk and bicycle to local stores have been found to spend more money to visit local businesses than patrons who drive.<sup>6</sup>

- By replacing short car trips, bicycling and walking (especially when combined with transit) can help middle-class families defray rising transportation costs. Families that drive less spend 10 percent of their income on transportation, compared to 19 percent for households with heavy car use,<sup>7</sup> freeing additional income for local goods and services.
- Increased bicycling leads to a reduction in crashes. Concerns about safety have historically been the single greatest reason people do not commute by bicycle; a Safe Routes to School survey in 2004 found that 30 percent of parents consider traffic-related danger to be a barrier to allowing their children to walk or bike to school. In a community where twice as many people walk, an individual walking has a 66 percent reduced risk of being injured by a motorist.<sup>8</sup>

4 Cortright, Joe for CEOs for Cities. (2009). *Walking the Walk: How Walkability Raises Home Values in U.S. Cities*.

5 Cortright, Joe for CEOs for Cities. (2007). *Portland's Green Dividend*.

6 The Clean Air Partnership. (2009). *Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto's Annex Neighborhood*.

7 Center for Neighborhood Technology. (2005). *Driven to Spend: Pumping Dollars out of Our Households and Communities*.

8 barrier to allowing their children to walk or bike to school. In a community where twice as many people walk, an individual walking has a 66 percent reduced risk of being injured by a motorist.



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## Bicycle and Pedestrian Counts

To fully comprehend existing conditions in Aiken County, it is important to understand the number of non-motorized users and the patterns in which they interact with the existing roadway network. To do so, the Bicycle and Pedestrian Plan Project Steering Committee and volunteers performed a comprehensive count of bicyclists and pedestrians at 15<sup>1</sup> locations in Aiken County during September 2011. The effort included:

- Careful identification of count locations
- A bicycle and pedestrian count form
- One training session
- One weekday and one weekend count at each location
- Data synthesis and analysis

Bicycle and pedestrian counting is important for several reasons. The U.S. Census reports that in Aiken County bicycle mode share is less than 1 percent and pedestrian mode share is less than 2 percent, as shown in Table 4-9. While this information can be useful for comparative analysis, the data is very limited. The Census measures commute to work trips only, which account for less than 15 percent of all trips taken in the U.S. By conducting its own bicycle and pedestrian counts, Aiken County can account for trips taken by bicycling and walking that are not commute to work trips, as well as better understand where bicycling and walking is occurring. Counts are also helpful to analyze existing bikeway/walkway facility use and where future facilities may be justified

Aiken County's bicycle and pedestrian counts provide a valuable snapshot for the level of bicycling and walking that occurs. This serves as baseline data for future comparison and evaluation of trends. Analysis of the counts and count location characteristics additionally provides useful information regarding the relationship between bicycle ridership levels and the bicycling environment.

### Process

Weekday and weekend tallies at the 15 locations were conducted during a two week period between September 10, 2011 and September 24, 2011. The weekday morning count was conducted from 7:00 a.m. to 9:00 a.m. and the weekend count from 10:00 a.m. to noon. The morning rather than the evening peak period was chosen as the focus because of the variety of trips, such as school-commutes and morning exercise, as well as work-related commutes.

The count times and overall guidelines were developed in conjunction with the National Bicycle and Pedestrian Documentation Project (NBPDP), a joint collaboration between Alta Planning + Design and the Institute of Transportation Engineers. The NBPDP guidelines will be used for all subsequent counts within Aiken County. All data from the counts will be forwarded to the NBPDP for further analysis and to add to the growing collection of consistent information about people who are bicycling and walking in different parts of the country.

Screenline counting is the methodology that is recommended by NBPDP and was determined to be most appropriate for the ARTS Bicycle and Pedestrian Plan Update.

**Table 4-9: Commute Mode Share in ARTS Counties**

	Aiken	Columbia	Edgefield	Richmond	All Counties	Georgia	South Carolina
Drive Alone	82.8%	85.0%	79.8%	77.3%	80.6%	89.7%	92.2%
Walk	1.4%	0.8%	0.6%	6.0%	3.33%	1.7%	1.9%
Bicycle	0.2%	0.2%	0.0%	0.4%	0.3%	0.2%	0.3%

Source: ACS 2005-2009 Five-Year Estimates

Note: analysis excludes areas of counties outside the ARTS boundary.

<sup>1</sup> Counts were taken at 29 locations, but due to errors, six count locations are excluded from this analysis. See page 29 for details.



Screenline counts are primarily used to identify general trends in volumes, and to see how demographics, land use, and other factors influence walking and bicycling. During screenline counts, one volunteer identifies the number of bicyclists and pedestrians that pass through a single, imaginary line running across the street, thereby capturing all cyclists and pedestrians traveling in either direction along a single corridor. A person who passes by a point more than once is counted each time they pass by the point.

### Count Locations

The National Bicycle and Pedestrian Documentation project recommends one count per 15,000 of population. This is considered a reasonable balance between obtaining representative counts and budget limitations. For Aiken County, NBPD methodology results in a recommendation of 11 count locations. Based on the availability of staff and volunteers, the Aiken County count includes a total of 17 locations (or screenlines), 15 of which resulted in complete count data.

Criteria used to select count locations include:

- Pedestrian and bicycle activity areas or corridors (downtowns, near schools, parks, etc.)
- Representative locations in urban, suburban, and rural locations
- Key corridors that can be used to gauge the impacts of future improvements
- Locations where counts have been conducted historically
- Locations where there are on-going counts being conducted by other agencies through a variety of means, including video taping
- Gaps and pinch points for bicyclists and pedestrians (potential improvement areas)
- Locations where bicycle and pedestrian collision numbers are high
- Select locations that meet as many of the criteria as possible.

For both bicyclists and pedestrians, counters noted if the person was male or female.

Additionally, the Aiken County Bicycle and Pedestrian Count Form recorded the following information:

- Name of Counter
- Corridor
- Date
- Start and end time
- Weather conditions
- Existing facilities

### Results

The combined total count of bicyclists for both count days was 248 (Table 4-10) and the combined total count of pedestrians for both count days was 757 (Table 4-11). While this number provides an important snapshot of non-motorized transportation in Aiken County, it does not provide a comprehensive count of all bicyclists and pedestrians. Instead, the data offers clues as to where and when the community is bicycling and walking. See Appendix G for detailed count results by location.

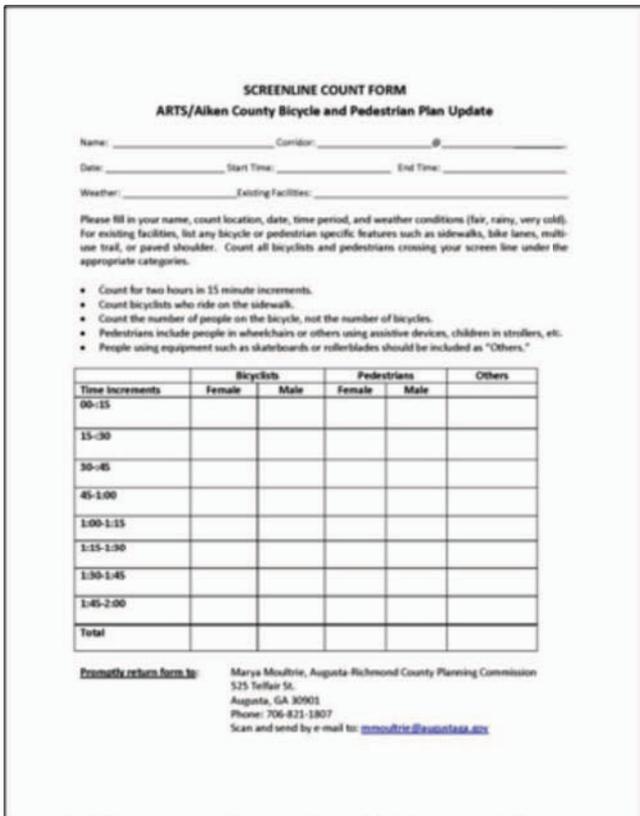
**Table 4-10: Bicycle Count Results**

Characteristic	Total Count
Total Bicyclists Combined	248
Total Bicyclists Weekday	67
Total Bicyclists Weekend Day	181
Total Female Bicyclists (combined)	67
Total Male Bicyclists (combined)	181

**Table 4-11: Pedestrian Count Results**

Characteristic	Total Count
Total Pedestrians Combined	757
Total Pedestrians Weekday	355
Total Pedestrians Weekend Day	402
Total Female Pedestrians (combined)	371
Total Male Pedestrians (combined)	386

- On the weekday count, the highest number of bicyclists recorded at a location was 18 and the highest number of pedestrians recorded was 99.
- On a weekend, the highest number of bicyclists counted at a location was 116 and the highest number of pedestrians counted was 117.
- The average weekday count was 4 bicyclists and 24 pedestrians, and the median weekday count was 1 bicyclist and 11 pedestrians.
- The average weekend count was 12 bicyclists and 27 pedestrians, and the median weekend count was 5 bicyclists and 11 pedestrians.



**SCREENLINE COUNT FORM**  
ARTS/Aiken County Bicycle and Pedestrian Plan Update

Name: \_\_\_\_\_ Corridor: \_\_\_\_\_ @ \_\_\_\_\_  
Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Weather: \_\_\_\_\_ Existing facilities: \_\_\_\_\_

Please fill in your name, count location, date, time period, and weather conditions (fair, rainy, very cold). For existing facilities, list any bicycle or pedestrian specific features such as sidewalks, bike lanes, multi-use trail, or paved shoulder. Count all bicyclists and pedestrians crossing your screen line under the appropriate categories.

- Count for two hours in 15 minute increments.
- Count bicyclists who ride on the sidewalk.
- Count the number of people on the bicycle, not the number of bicycles.
- Pedestrians include people in wheelchairs or others using assistive devices, children in strollers, etc.
- People using equipment such as skateboards or rollerblades should be included as "Others."

Time increments	Bicyclists		Pedestrians		Others
	Female	Male	Female	Male	
00-15					
15-30					
30-45					
45-1:00					
1:00-1:15					
1:15-1:30					
1:30-1:45					
1:45-2:00					
Total					

Download screen form to: Marya Moultrie, Augusta-Richmond County Planning Commission  
525 Telfair St.  
Augusta, GA 30901  
Phone: 706-821-1807  
Scan and send by e-mail to: [mmoultrie@augustasa.gov](mailto:mmoultrie@augustasa.gov)

Figure 4-8 and Figure 4-9 show each of the bicycle and pedestrian count locations and include icons that vertically represent the total number of bicyclists counted at each location on the weekend (yellow) and the weekday (purple). A geographic analysis of count data is discussed in the following section.

### Count Errors

Human error is a common issue in all studies. Two count locations of the Aiken County bicycle and pedestrian count are excluded from the analysis due to errors. Both the Two Notch at Marie Drive and the Marie Drive at Two Notch locations are excluded because volunteers only attended the weekend count. The count results for the excluded count locations are shown in Table 4-12.

**Table 4-12: Exclude Count Location Results**

Location	Period	Total Bicyclists	Total Pedestrians
Two Notch at Marie Drive	Weekend	7	11
Marie Drive at Two Notch	Weekend	8	12

ARTS/Aiken County's Bicycle and Pedestrian Plan Update Count Form captured bicycle and pedestrian gender

On the weekday count, two locations counted zero bicyclists and on the weekend count, three locations counted zero bicyclists. No locations on the weekday or weekend counts had zero pedestrians. The highest numbers of bicycle and pedestrian counts and the count averages are described below.



## Count Recommendations

This Plan recommends that bicycle pedestrian counts occur annually in Aiken County. The data collected during the 2011 count serves as baseline data for understanding trends overtime and allows for comparative analysis in future years. Aiken County should continue to conduct counts at 15 or more locations each year, and provide analysis of the data to determine key findings. Additionally, the number of counts on downtown streets, such as Park Avenue and Laurens Street in Aiken and Georgia Avenue in North Augusta, should be increased. Municipalities can use count data in downtown commercial districts to quantify “foot traffic” and attract retailers.

Though human error is always possible, the potential for errors during counts can be mitigated by:

- Requiring all volunteers to attend a brief training session prior to the counts
- Providing a map to all volunteers that clearly identifies each count location
- Distributing a list of all count locations, the screenline of each location, and volunteer counter assigned to each location
- Communicating with volunteers prior to the counts to ensure all questions are answered

## Key Findings

The results of the Aiken County bicycle and pedestrian count show that:

- The majority of the bicyclists counted were male (73%).
- Bicycling is more common on the weekend than weekdays.
- The most popular areas for bicycling are Greenway at Pisgah (North Augusta) and the intersection of Hampton Avenue and York Street (Aiken).
- There was a relatively equal amount of female pedestrians (49%) and male pedestrians (51%)
- There were slightly more pedestrians walking on the weekend (53%) than during the week (47%).

- The most popular areas for walking are Laurens at Richland Avenue (Aiken), Greenway at Pisgah (North Augusta), and Hampton Avenue at York Street (Aiken).

Based on the count, Aiken County's ratio of male cyclists to female is just under 3:1. This ratio is consistent with count data and anecdotal evidence from cities throughout the country. While bike-friendly cities in Northern Europe have an even split between men and women (in some cases more women cyclists than men), in North American cities with limited bicycling infrastructure, the number of men is higher in all cases. In cities that strive to create a fully-integrated network of bike facilities such as Portland, Oregon or Montreal, the number of female cyclists has inched closer to male cyclists but continues to be approximately half of the gross number of men. The expectation in Aiken County is that the ratio of men to women will, in time, begin to balance out as the number of less traffic-tolerant female cyclists increase as improvements to bicycle infrastructure along important corridors continues.

Aiken County's ratio of male pedestrians to female pedestrians is approximately 1:1, which means about the same number of males as females are walking. This suggests that there is less of a barrier to walking for females than with bicycling.

Figure 4-8: Aiken County Bicycle Counts

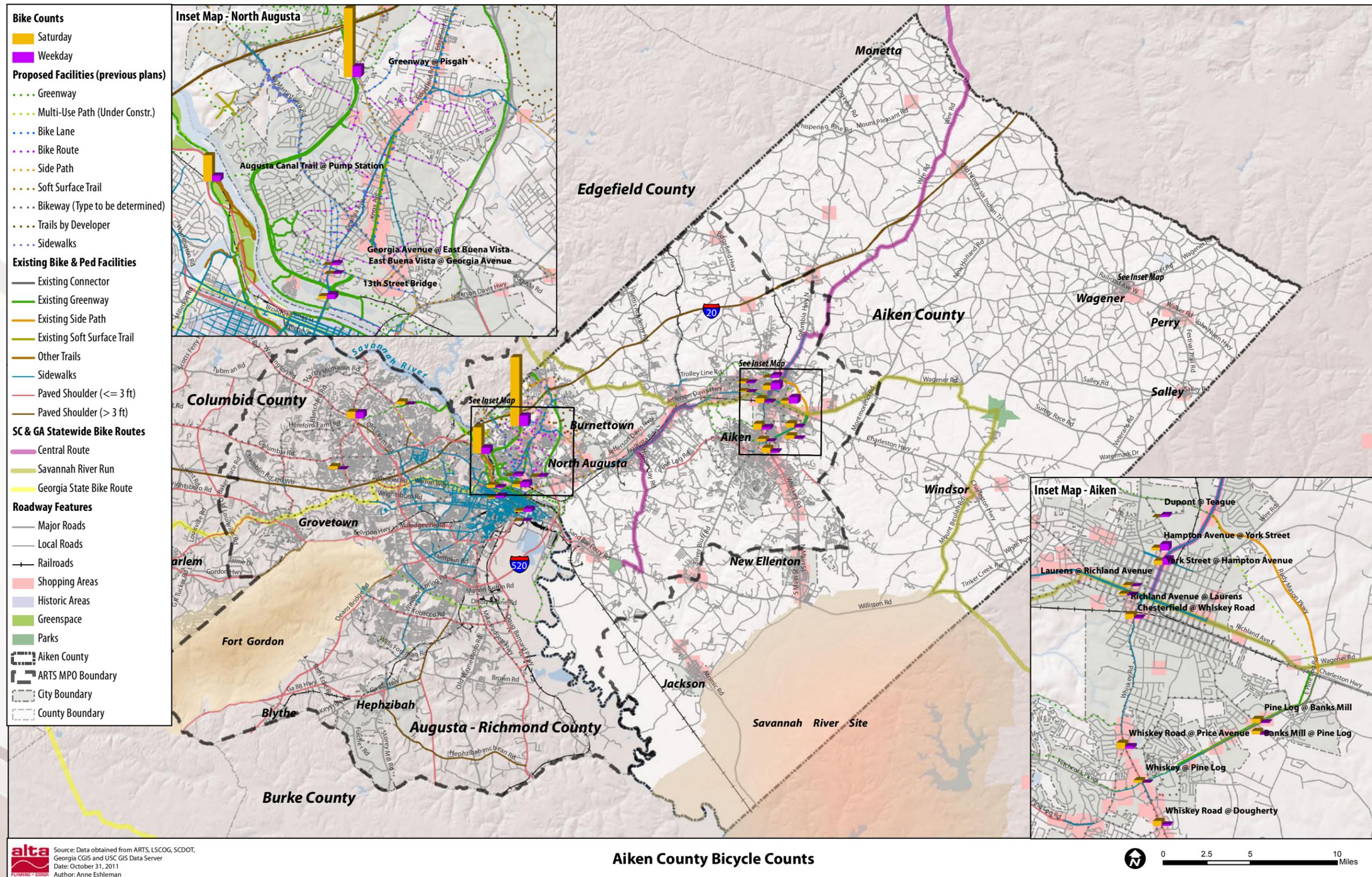
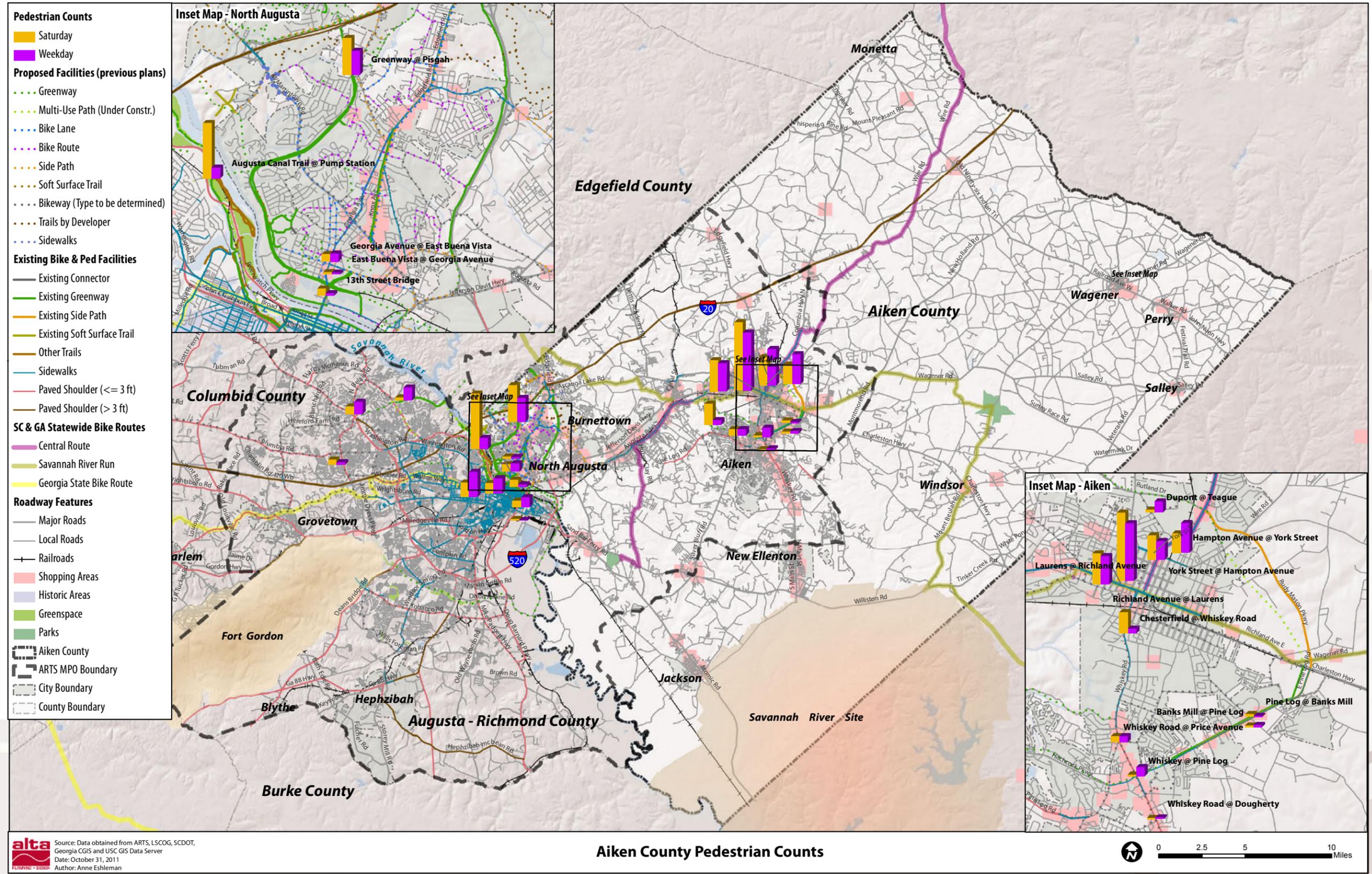


Figure 4-9: Aiken County Pedestrian Counts



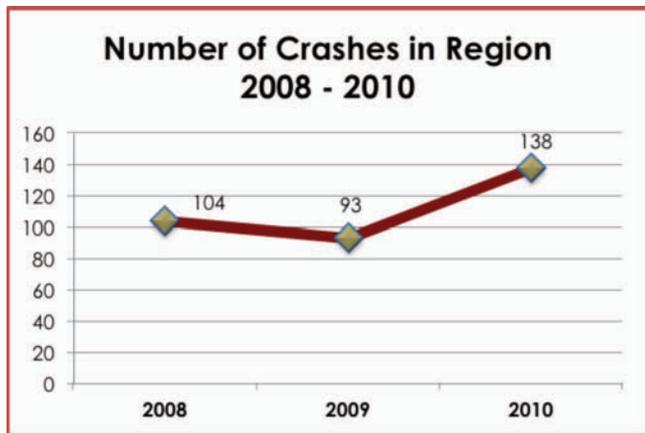
## Bicycle and Pedestrian Crash Analysis

### Overview

Safety for pedestrians and bicyclists is a major concern for citizens of Aiken County and a main priority in developing a successful Bicycle and Pedestrian Master Plan. Just over the last year, the region has witnessed a number of alarming fatalities. These recent events indicate a clear safety problem for the region to address, and a Safety Analysis was undertaken to identify trends for Aiken County so that clear and decisive action can be taken to make Aiken safer for bicyclists and pedestrians alike.

Crash data was collected from the South Carolina Department of Public Safety for 2008, 2009, and 2010 to provide the needed insight into crashes in the region. As shown in Table 4-13, crashes within the region are on the rise after a minor decrease in 2009, with 138 total crashes reported in 2010 alone.

**Table 4-13: Number of Crashes in the ARTS Region, 2008-2010**

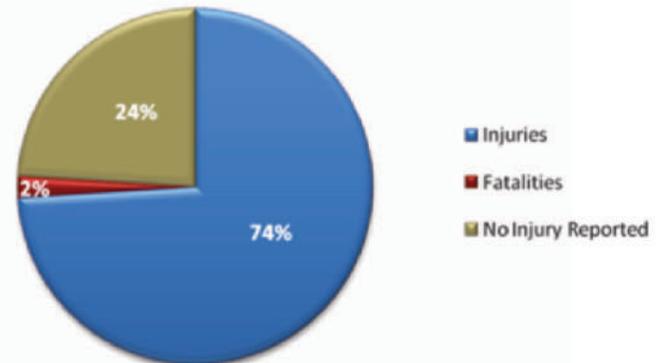


Over this three-year period, there have been 104 bicycle crashes and 231 pedestrian crashes. 38 crashes involving bicyclists and 75 pedestrian crashes have occurred in Aiken County alone, indicating unsafe conditions in need of attention.

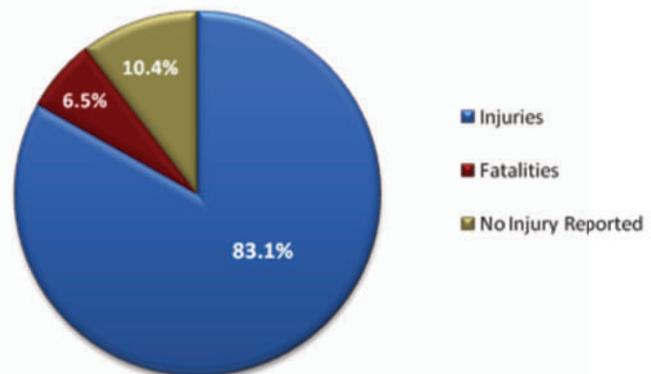
A ratio of bicycle and pedestrian crashes within the region, shown in Figure 4-8, indicates that these crashes are resulting in a number of injuries and fatalities. Over 83 percent of the pedestrian crashes reported in the region have resulted in one or more injuries,

**Figure 4-8: Ratio of Pedestrian and Bicycle Injuries and Fatalities**

### Ratio of Bicycle Injuries and Fatalities to Total Crashes Reported



### Ratio of Pedestrian Injuries and Fatalities to Total Crashes Reported



and approximately 6.5 percent of the total crashes reported have ended in pedestrian fatalities. The outlook for bicyclists is similar, with 74 percent of bicycle crashes resulting in injury and approximately 2 percent of bicycle crashes resulting in fatalities.

### Bicycle and Pedestrian Crash Analysis

The Aiken County crash data provides details on crash types and locations. A few considerations should be noted when reviewing the provided crash data. First, crash data often under-reports the actual occurrence of crashes, especially those crashes that do not result in a serious injury. As such, specific locations identified in the crash analysis may not present all potentially unsafe areas for bicyclists and pedestrians. Local knowledge from bicycle and pedestrian advocacy groups



such as running and cycling clubs should be sought when possible to obtain additional information on unsafe environments.

Secondly, local crash data does not provide details on geographic concentrations of pedestrian or bicycle use and because of this, does not help to comparatively look at safe environments for pedestrians and bicyclists. For instance, although two streets may exhibit the same number of crashes, the level of safety at these two streets may be different depending upon the level of bicycle and pedestrian activity. This can be tested when there is sufficient bicycle and pedestrian count data available. Ironically, areas with greater bike and pedestrian activity are often considered safer than ones without much foot or bike traffic, and crash data does not provide this level of insight. Again, local knowledge should also be sought to supplement crash analyses in order to get a complete picture of the bicycle and pedestrian environment.

Finally, it should be noted that the data provided for this analysis does not contain certain data that can be helpful in identifying recommendations for awareness programs and engineering improvements. Demographic data such as the age of crash victims can be useful in determining how education plays into potential causes of crashes. Younger bicyclists and pedestrians, in particular, are often less observant of safety practices such as looking left, right, left before crossing a roadway, to check for the presence of cars. Detailed information on causes of crashes is also useful determining common types of collisions in a given area that may indicate a need for engineering improvements. As further reporting and analysis is done on bicycle and pedestrian crash data, data needs should be monitored to ensure that measures important within communities in the region are represented in crash data.

### **Aiken County**

Aiken County bicycle and pedestrian crash data from 2008 to 2010 was used for this regional analysis. A summary of crash statistics for Aiken County is provided in Table 4-14. There were a reported 38 bicycle crashes and 75 pedestrian crashes over the three-year period. Crashes were concentrated in the southern portions of the county in the urbanized area.

These crashes resulted in 1 bicycle fatality and 6 pedestrian fatalities. Most crashes for bicyclists and pedestrians occurred during dry conditions (92 and 90 percent, respectively). 71 percent of all bicycle crashes occurred during daylight hours and 45 percent of pedestrian crashes occurred during the day. Approximately 40 percent of the pedestrian crashes occurred at night in areas without adequate lighting, resulting in 3 of the total pedestrian fatalities.

There is an overrepresentation of crashes in dark conditions. Though there is typically less walking occurring then, over 50 percent of all pedestrian crashes occurred during non-daylight hours, which suggests a compelling case for addressing this problem in more detail. The primary factor reported in these night pedestrian crashes is pedestrians illegally in the roadway. The one bicycle fatality was reported in 2008; it occurred at night along Urquhart Drive due to a motorist under the influence. Out of the 6 pedestrian fatalities, 4 occurred during night or at dusk, mostly in unlighted areas. Locations for these pedestrian fatalities included Fairview Avenue, Pine Log Road, Edgefield Road, Seymour Drive, Laurens Street, and Belvedere Clearwater Road. The total number of crashes indicates that the following locations contain concentrations of crashes in the county:

1. East Pine Log Road (9 Crashes)
2. Atomic Road (5 Crashes)
3. Richland Avenue (4 Crashes)
4. Whiskey Road (4 Crashes)
5. Belvedere-Clearwater Road (3 Crashes)
6. Hampton Avenue (3 Crashes)
7. Rutland Drive (3 Crashes)

Other locations where more than one crash was identified include Columbia Highway, Dougherty Road, Edgefield Road, Jefferson Davis Highway, Marion Street, Seymour Drive, and South Aiken Boulevard. Figures 4-10 and Figure 4-11 provide maps of bicycle and pedestrian crash locations in Aiken County.



Table 4-14: Aiken County Crash Characteristics

Crash Characteristics	Bicycle Crashes	Pedestrian Crashes	Bike %	Ped %
Total Crashes Reported	38	75	100%	100%
Fatalities	1	6	3%	8%
Injuries (Possible/Identified)*	35	77	--	--
Not Injured/Unknown Injury	42	90	--	--
Dry Roadway Conditions	35	68	92%	90%
Wet Roadway Conditions	2	7	5%	9%
Unknown Roadway Conditions	1	2	3%	3%
Daytime Crashes	27	34	71%	45%
Nighttime Crashes – Lighted	5	10	13%	13%
Nighttime Crashes – Not Lighted/Unspecified	3	30	8%	40%
Unspecified Lighting Conditions	3	1	8%	1%

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Figure 4-10: Aiken County Bicycle Crash Locations

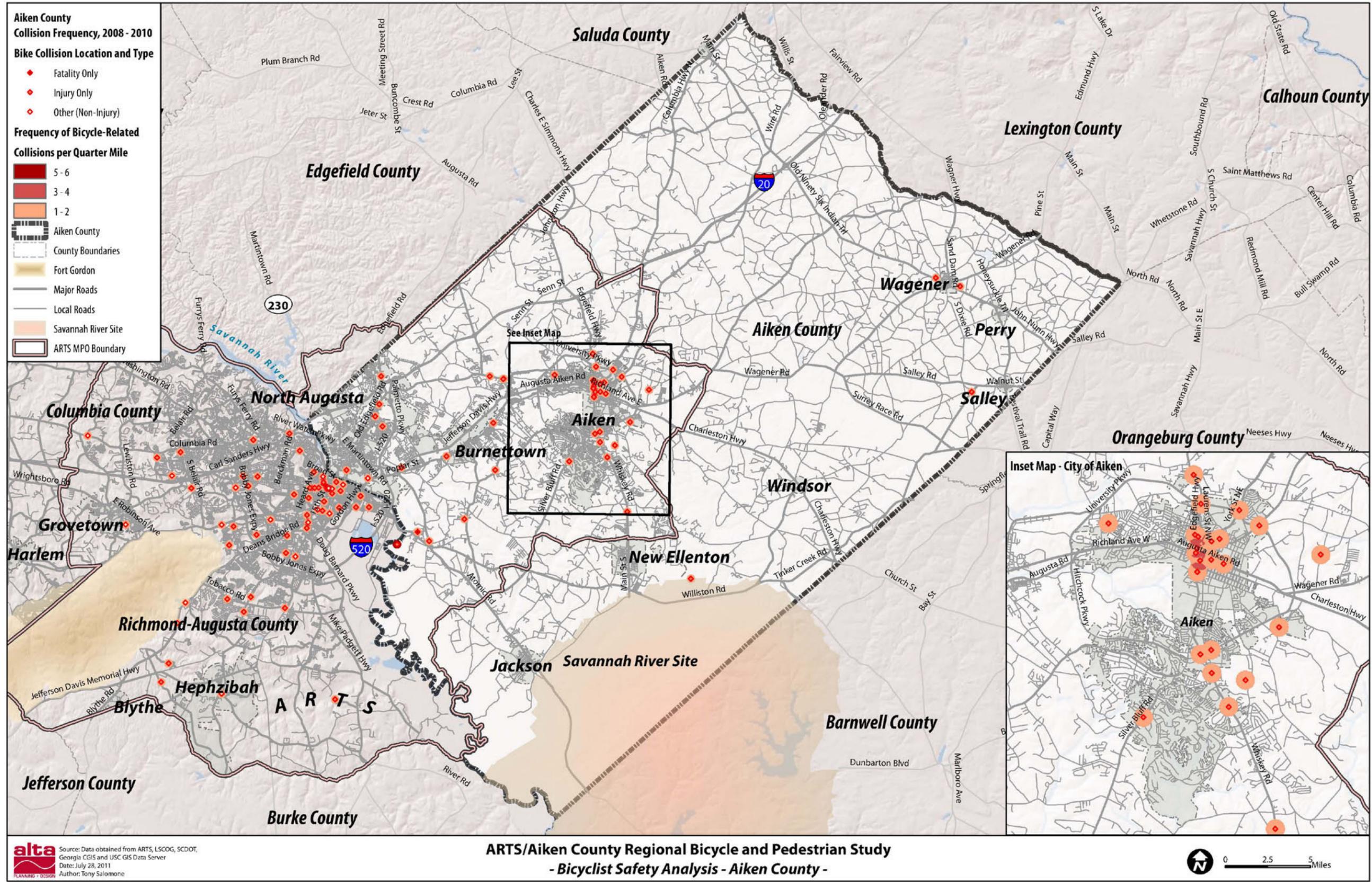


Figure 4-11: Aiken County Pedestrian Crash Locations

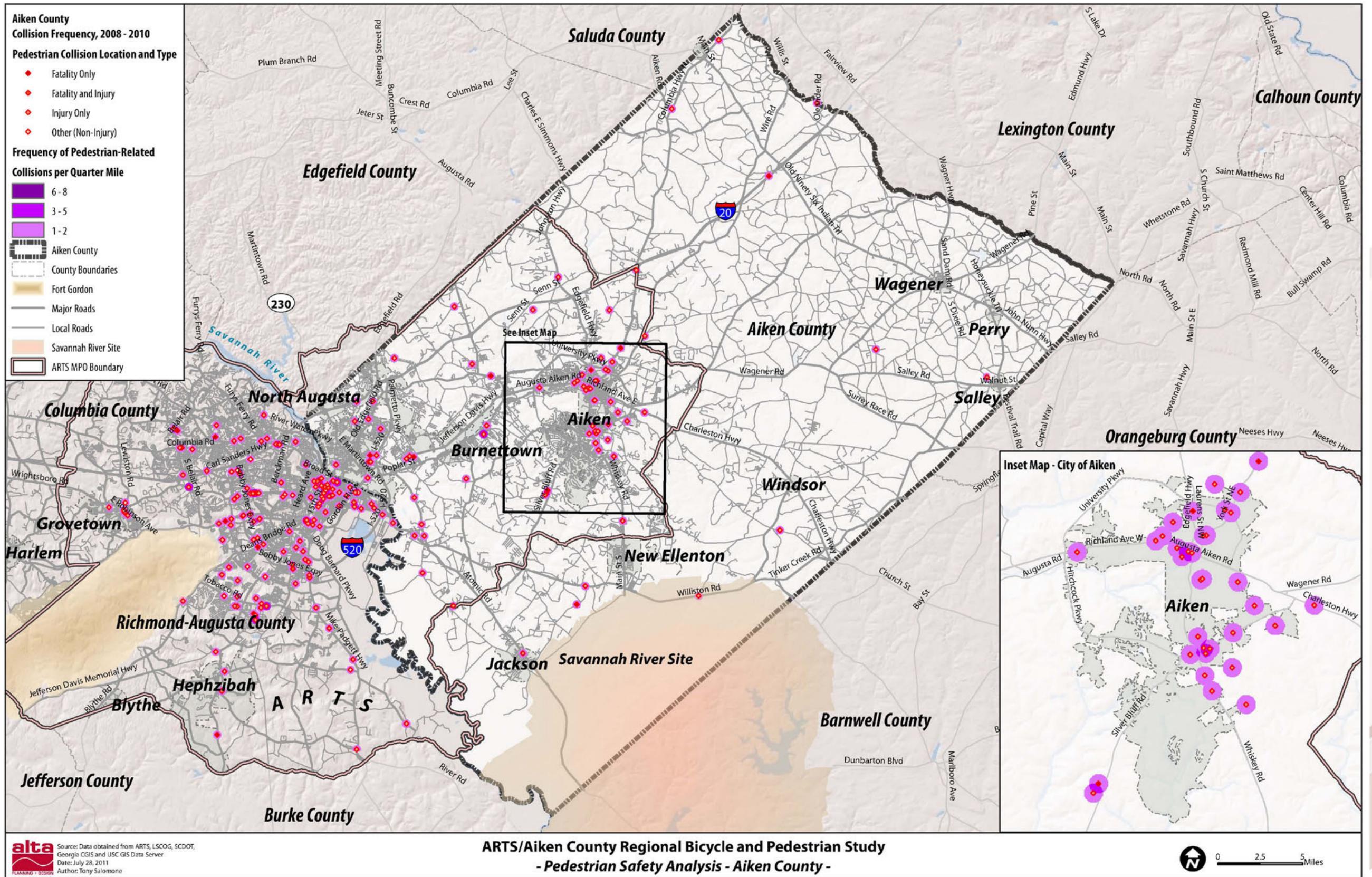
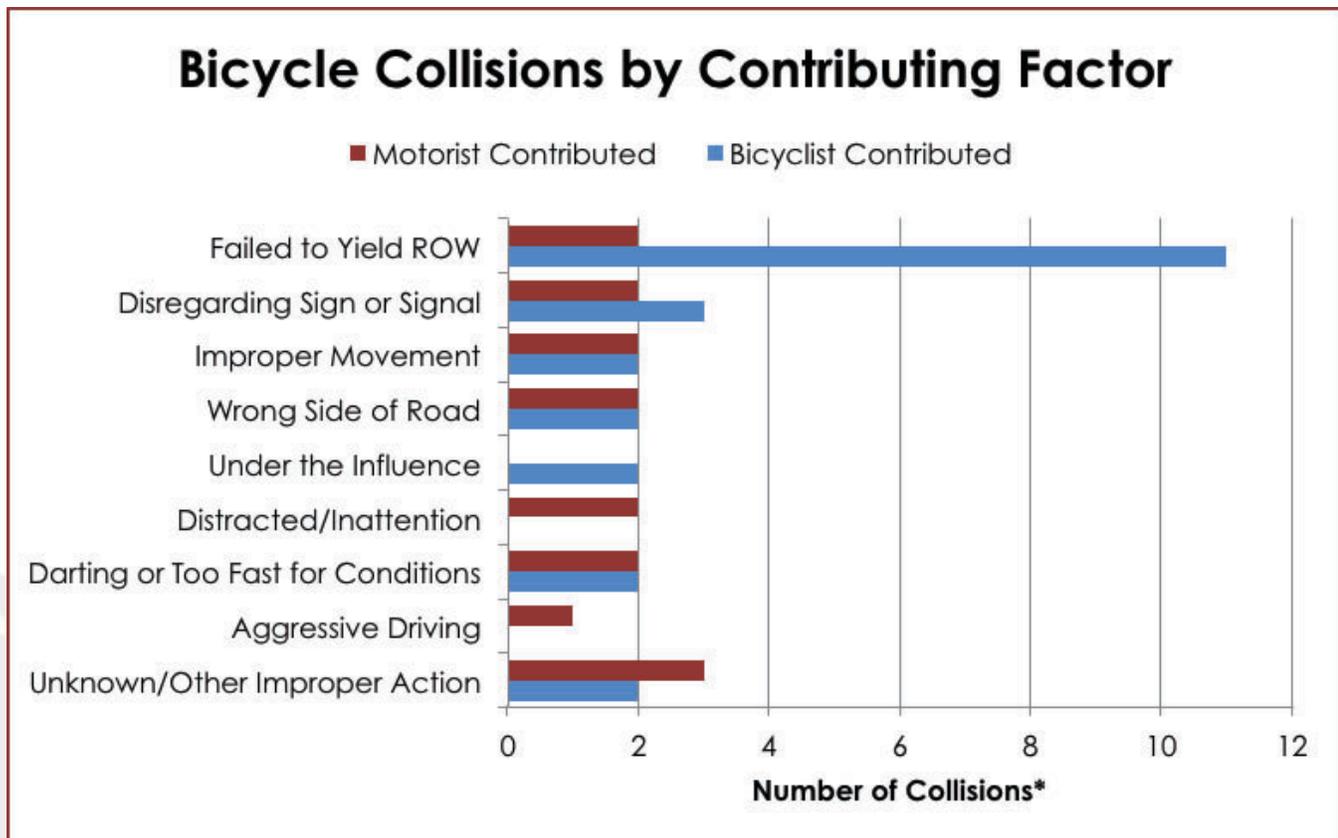


Table 4-15 and Table 4-16 provide details on the primary factors in bicycle and pedestrian crashes. In bicycle crashes, over 80 percent of the automobile contributing factors included improper action or movement by driver (31 percent), driving too fast (13 percent), distracted driving (13 percent), failing to yield to right of way (13 percent), or disregarding a sign or signal (13 percent). Approximately 45 percent of bicyclist contributing factors were from failing to yield right of way and 13 percent resulted from bicyclists disregarding a sign or signal.

For pedestrian collisions, the most prominent automobile contributing factors included improper actions by drivers (30 percent), distracted driving (19 percent), failing to yield right of way to bicyclists (15 percent), and motorists under the influence (11 percent). The most prominent factors in pedestrian collisions where pedestrians contributed to the collision included pedestrians illegally in the roadway (38 percent), improper crossings (12 percent),

or distracted/inattentive actions by pedestrians (12 percent). It should be noted that in many cases, the “pedestrians illegally in roadway” code can be misleading. It technically could apply to a pedestrian crossing midblock to get to a bus stop when the “block” is a half mile long. In such cases, it is misleading to code this as a primary collision factor. Reviewing police reports for these pedestrian crashes may provide further insight into countermeasures that may be provided to enhance safety.

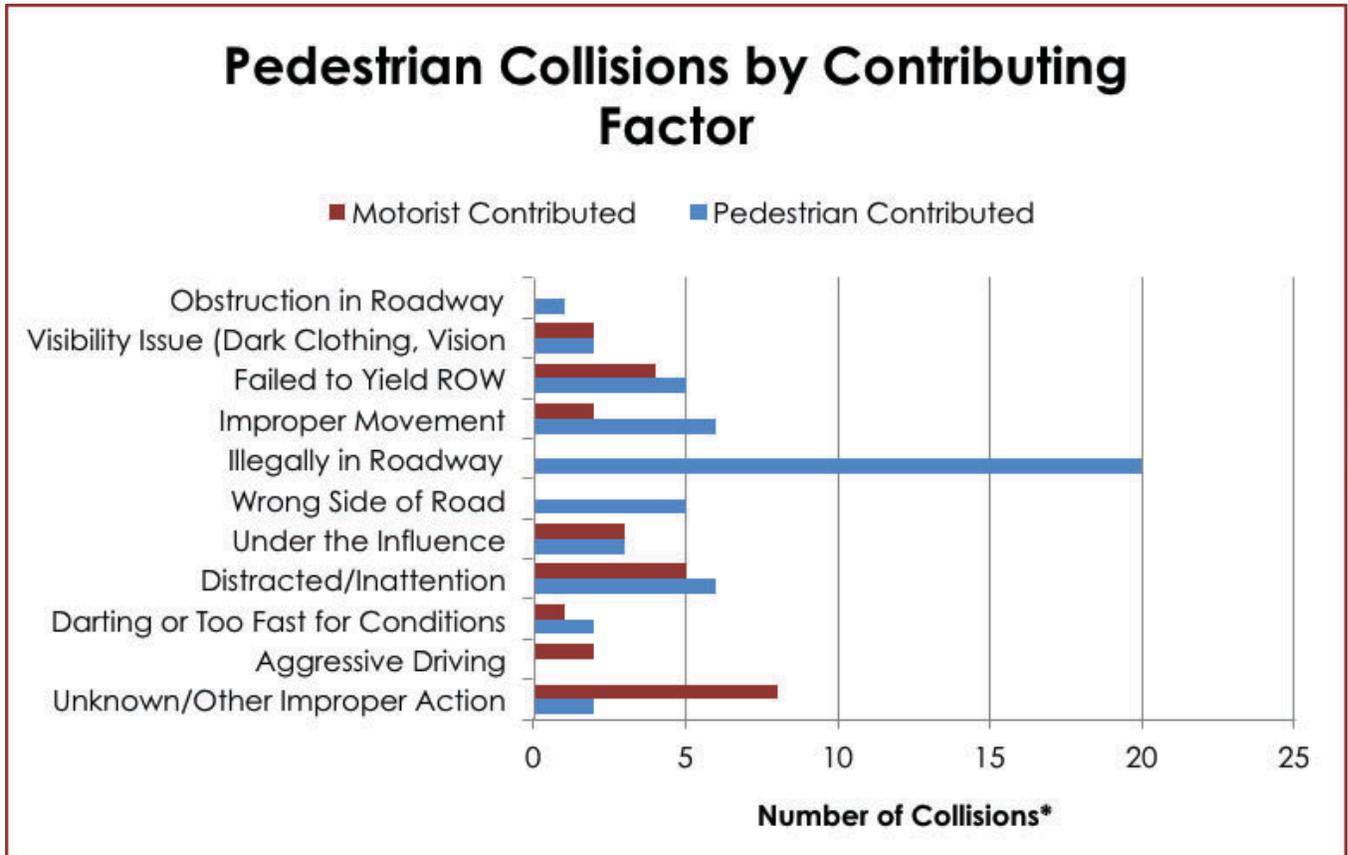
**Table 4-15: Aiken County Bicycle Collisions by Contributing Factor**



\*Please note that totals are in excess of the total number of bicycle crashes reported. This is due to cases where both motorists and bicyclists were determined to have contributed to the crash.



**Table 4-16: Aiken County Pedestrian Collisions by Contributing Factor**



\*Please note that totals are in excess of the total number of crashes reported. This is due to cases where multiple motorists and/or pedestrians were involved in a single crash.

### Crash Analysis Findings

The following streets are locations where at least 5 crashes have been reported during the three-year period in the region:

1. East Pine Log Road, Aiken County ( 9 Crashes)
2. Atomic Road, Aiken County ( 5 Crashes)

These locations, in particular, will deserve attention to improve safety for pedestrians and bicyclists in the county.

There is an overrepresentation of crashes in dark conditions in Aiken County, with 50 percent of all pedestrian crashes occurring during non-daylight hours yet there is typically less walking occurring then. With 100 percent of the pedestrian fatalities also occurring in dark conditions, there is a compelling case for addressing this problem in more detail.



*"Aiken County conducted a pro-active stakeholder and public involvement program for the development of the Aiken County Bicycle and Pedestrian Plan focused on soliciting local government and community interaction throughout the study process. The process was designed to be responsive to citizen participants and was committed to utilizing the knowledge and understanding of citizens to address important issues."*



## Qualitative User Needs Analysis

### Summary of Strategic Public Involvement Plan

Aiken County recognizes that the success of any community improvement plan is dependent upon a meaningful community involvement effort. Aiken County conducted a pro-active stakeholder and public involvement program for the development of the Aiken County Bicycle and Pedestrian Plan focused on soliciting local government and community interaction throughout the study process. The process was designed to be responsive to citizen participants and was committed to utilizing the knowledge and understanding of citizens to address important issues. The ARTS/Aiken County Bicycle and Pedestrian Plan: A Guide for Community Involvement and Consensus (GCIC) was developed at the onset of the study to define how stakeholders, the public, and study team staff involvement roles and opportunities throughout the planning effort. Outreach activities were developed to offer multiple opportunities for engagement at varying levels of involvement. The full GCIC document is included in Appendix G.

The public participation framework included four primary groups to guide the development of the Aiken County Bicycle and Pedestrian Plan. The four groups were: (1) Project Steering Committee; (2) Stakeholder Interview Group (3) Targeted Focus Group; and (4) Community Organizations and General Public. The roles and membership for each of these groups are defined in detail in the GCIC.

The GCIC included an outline for activities including two public workshops; education and information booths at public events; a study website; on on-line survey; a study fact sheet; press releases; study database development and maintenance; media education and advertisement; and advisory and stakeholder meetings. The following sections include results of several of these outreach activities.

### Summary of Survey Results

To engage local residents, a Citizen Survey was widely available and promoted from September 8 to November 15, 2011. The survey included 20 questions related to biking and walking conditions in the ARTS/Aiken County Area. See Appendix D to view the complete survey. To guide the study team, the survey questions were designed to gather citizen input regarding:

Frequency of walking and biking to particular types of destinations
Reasons for not walking or biking more frequently
Types of facilities that would likely influence more frequent biking
Specific destinations desirable for walking or biking connection
Roadway corridors desirable for improved accommodation of walking and biking
Facility types that may influence increased biking in the region
Program concepts to consider to promote safe walking and biking

The following activities were utilized to promote participation in the study survey:

Survey available on City of Aiken and Aiken County websites with user-friendly links to the sites: [www.BikeWalkARTS.com](http://www.BikeWalkARTS.com) and [www.WalkBikeARTS.com](http://www.WalkBikeARTS.com)

Aiken County Steering Committee Member outreach
Press Releases to Local Media
Targeted Aiken County Focus Group Meeting
Targeted outreach to University of South Carolina, Aiken



Targeted outreach to Eat Smart Move More of Aiken County
Targeted outreach to City of Aiken Recreation Committee
Targeted outreach to Silver Sneakers
Targeted outreach to Ashley Cooper Bridge Race Aiken County Participants
Targeted outreach to Aiken City Bike Patrol
Targeted outreach to City of Aiken Seniors Commission
Targeted outreach to City of Aiken Parks, Recreation and Tourism Staff
Targeted outreach to Aiken Bicycle Club
Targeted outreach through City of Aiken Utility Newsletter
September 9 & 10 – Booth at Aiken’s Makin in Aiken
September 17 – Booth at ARTS in the Heart in Augusta
September 24 – Booth at Aiken Bluegrass Festival in Aiken
September 30 – Booth at 5th Friday by Aiken Chamber of Commerce
October 3 - Public Workshop in Aiken, South Carolina
October 29 – Booth at Jack O’ Lantern Jubilee in North Augusta

A total of 361 responses from the South Carolina study area were recorded during the two month survey period. Of the respondents, 47% of the responses were from City of Aiken residents, 34% from Aiken County residents, 14% from North Augusta residents, and 5% from Edgefield County residents. Females comprised 57 percent of the respondents and 43 percent were male. The ages of the respondents ranged from age 10 to over 70 years of age. The respondents reported their daily work commute destinations as approximately:

50 percent commute to the City of Aiken;
10 percent commute to Aiken County;
10 percent commute to Georgia;
8 percent commute to Savannah River Site;
2 percent to commute to North Augusta
2 percent commute to Edgefield County

Approximately 19 percent of the respondents reported that they do not commute or commute outside of the study area to work on a daily basis.

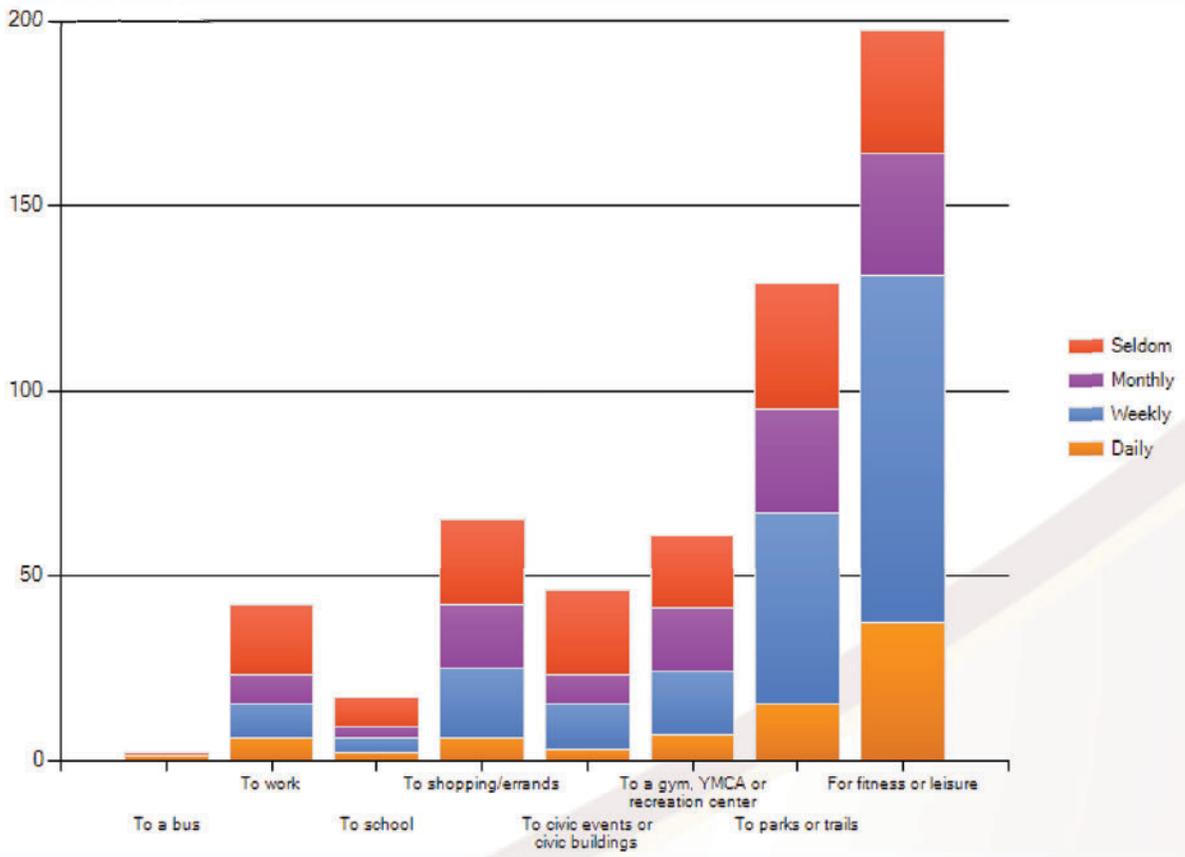
The survey was designed to gather information regarding the frequency of biking and walking in the Aiken County area and further engaged the respondents to identify the reasons they do not currently walk or bike more frequently. Sixty-eight percent of the respondents reported that they do own a bicycle. When asked specifically about biking activities, the most frequent destinations or trip purposes respondents reported for biking on a seldom to daily basis are: for fitness and leisure (60%); to parks and trails (40%); for shopping or errands (20%); and to a gym, YMCA or Recreation center (20%). Thirty percent of the respondents reported never riding a bike at all.

The most common reasons for not biking or biking infrequently were reported as follows: roads do not feel safe; distance from home to work, school or shopping; lack of bicycle parking at destinations; and lack of knowledge of best bicycling routes. Twenty percent of the respondents reported that they do ride frequently while 17 percent of the respondents reported that they do not have an interest in bicycling. Of the survey respondents that do bike to specific destinations in the region, Figure 5-1 illustrates the frequency with which they do so. Figure 5-2 defines the obstacles respondents cited that prevent more frequent biking.

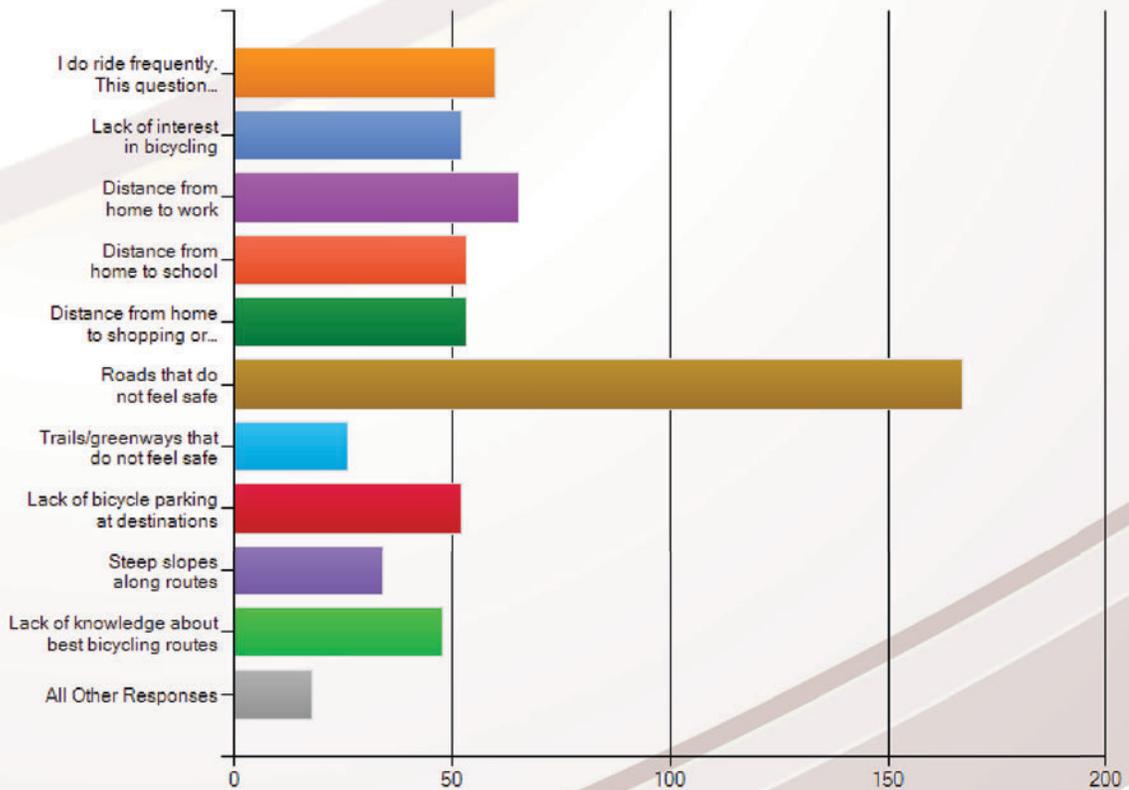
When asked specifically about walking activities that occur on a seldom to daily basis, the most frequent destinations or trip purposes that respondents reported are: for fitness and leisure (82%); to parks and trails (52%); to a gym, YMCA or Recreation center (29%); to shopping or errands (27%); to civic events or civic buildings (26%); and to school (19%). Ten percent of the respondents reported a lack of interest in walking in the Aiken County Region.

The most common reasons for not walking or walking infrequently were reported as follows: roads do not feel safe and distance from home to work, shopping, or school. Thirty-five percent of the respondents reported that they do walk frequently while 10 percent of the respondents reported that they do not have an interest in walking. Of the survey respondents

**Figure 5-1 Frequency of Biking by Destination in the Aiken County Area**



**Figure 5-2 Reasons for Not Biking or for Biking Infrequently in the Aiken County Area**



that do walk to specific destinations, Figure 5-3 illustrates the frequency with which they do so. Figure 5-4 defines the obstacles respondents cited that prevent more frequent walking.

The survey further explored types of bicycle facilities that could have a positive impact on the biking environment in the Aiken County area. Participants were asked to consider several types of bicycle facilities ranging from off-road paths, on-road infrastructure, pavement markings, and signage. The participants ranked each type of facility as "very likely" to "very unlikely" to influence them personally to bike more frequently. The facilities reported as most likely to have a positive impact on biking in the region in order of preference were: off street greenways, striped bicycle lanes, bicycle boulevards, signed bicycle routes, and wide outside travel lanes. It should also be noted that all of the facilities listed in the survey received more positive feedback than negative feedback with the exception of using "sharrow" pavement markings. The majority of respondents reported that "sharrows" would not likely have a positive influence on the frequency of biking. Figure 5-5 illustrates the responses regarding feelings about particular types of biking facilities. The orange and blue portions of the bars indicate the levels a respondent feels that a facility would have a positive influence on them to bike more often.

Respondents were also asked to select the potential program concepts they believed would be effective in promoting safer walking and biking in the Aiken County area. The programs selected as most likely to be effective in order of frequency were:

Media campaign to educate motorists, bicyclists, and pedestrians
Media campaign encouraging residents to bike, walk, and live an active lifestyle
Safe Routes to School Program to engage schools, parents, and local officials
Local Police Enforcement Programs
Workshops for children/youth that teach safe bicycling skills
Safe Routes to Transit program to improve walking and biking access to bus stops

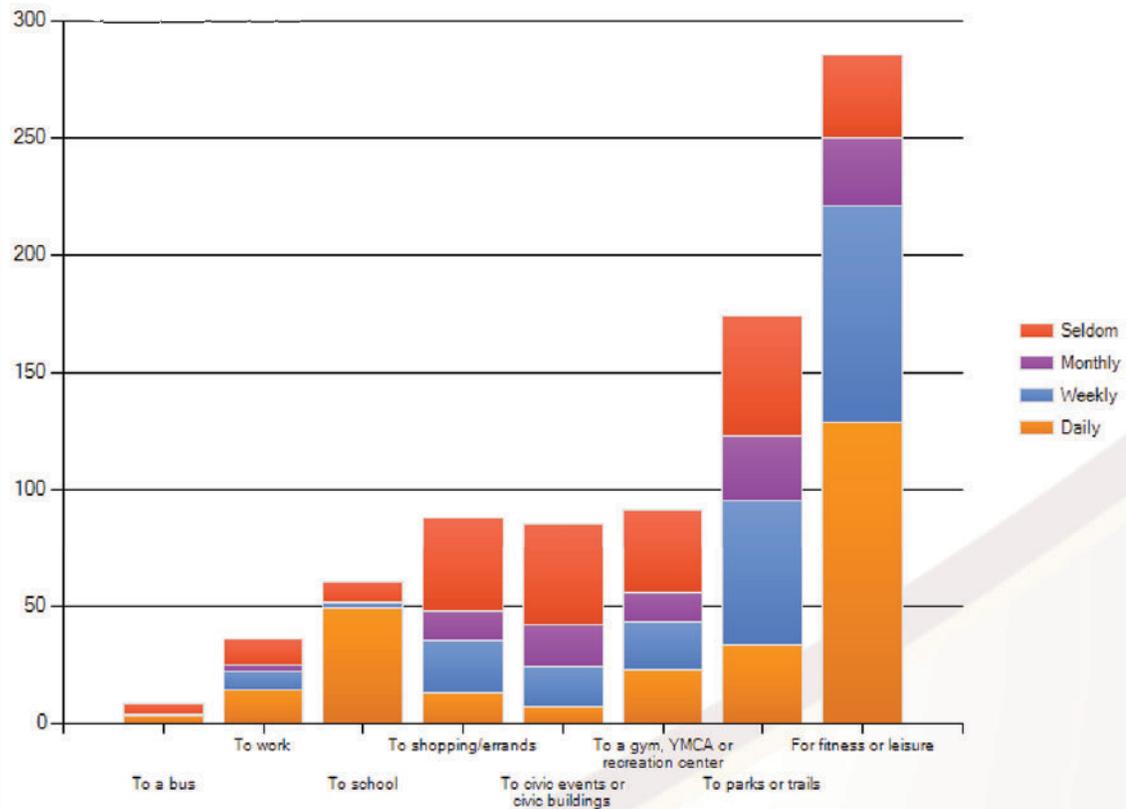
Figure 5-6 illustrates the support of the various program concepts presented in the survey.

The survey also sought to gather information regarding specific destinations, corridors, and intersections respondents feel are important for improved access, connectivity, and facility improvements. The questions used in this portion of the survey allowed the respondent to provide input in their own language and the study team sorted, grouped, and applied uniform language to like responses to the level of accuracy allowable given different levels of detail and specificity. The results generated by these questions served as a guide to ensure that frequently cited responses were considered as priority investment areas during the technical planning evaluation and ultimately in ranking recommended transportation system improvements.

The most commonly cited destinations respondents would like to be able to walk or bike safely to were downtown areas, schools, recreation areas, shopping areas, medical districts, and existing walking or biking facilities. The most frequently cited specific destinations in Aiken County are listed in Table 5-1.



**Figure 5-3 Frequency of Walking by Destination in the Aiken County Area**



**Figure 5-4 Reasons for Not Walking or for Walking Infrequently in the Aiken County Area**

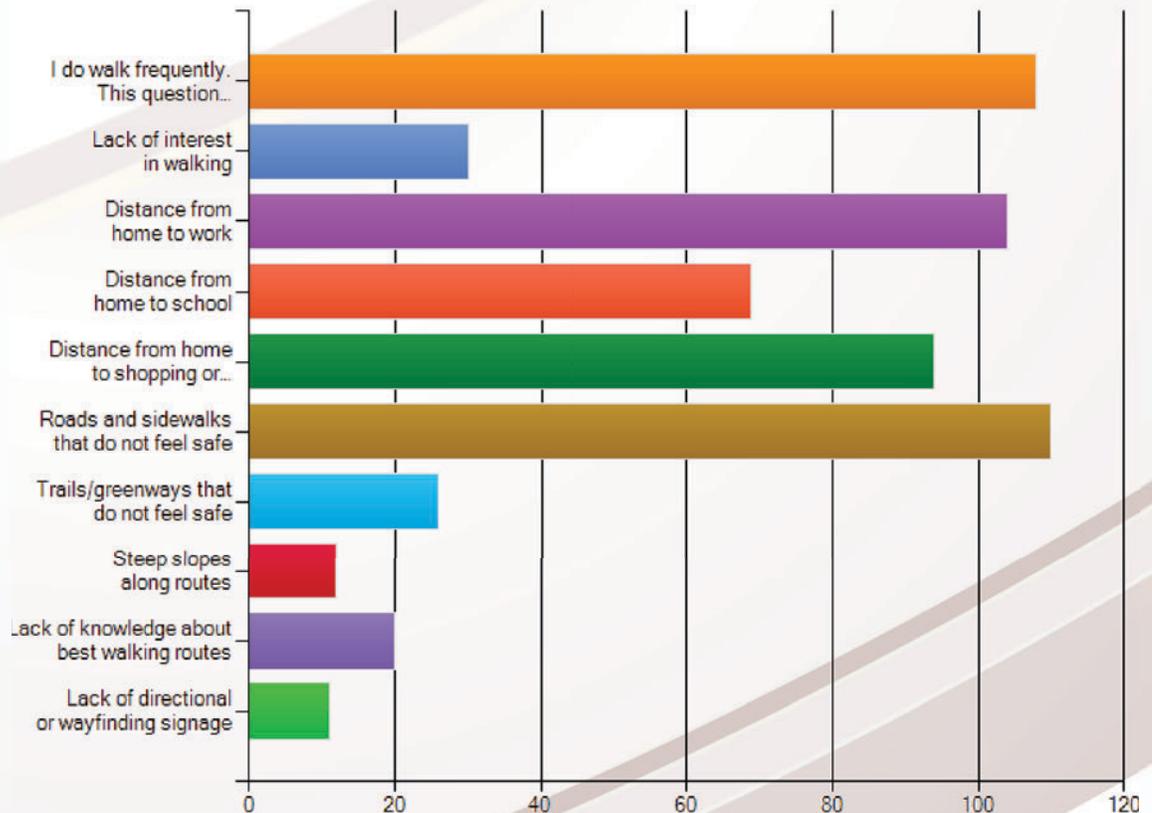




Figure 5-5 Influence of Bicycle Facilities to Bike More Often

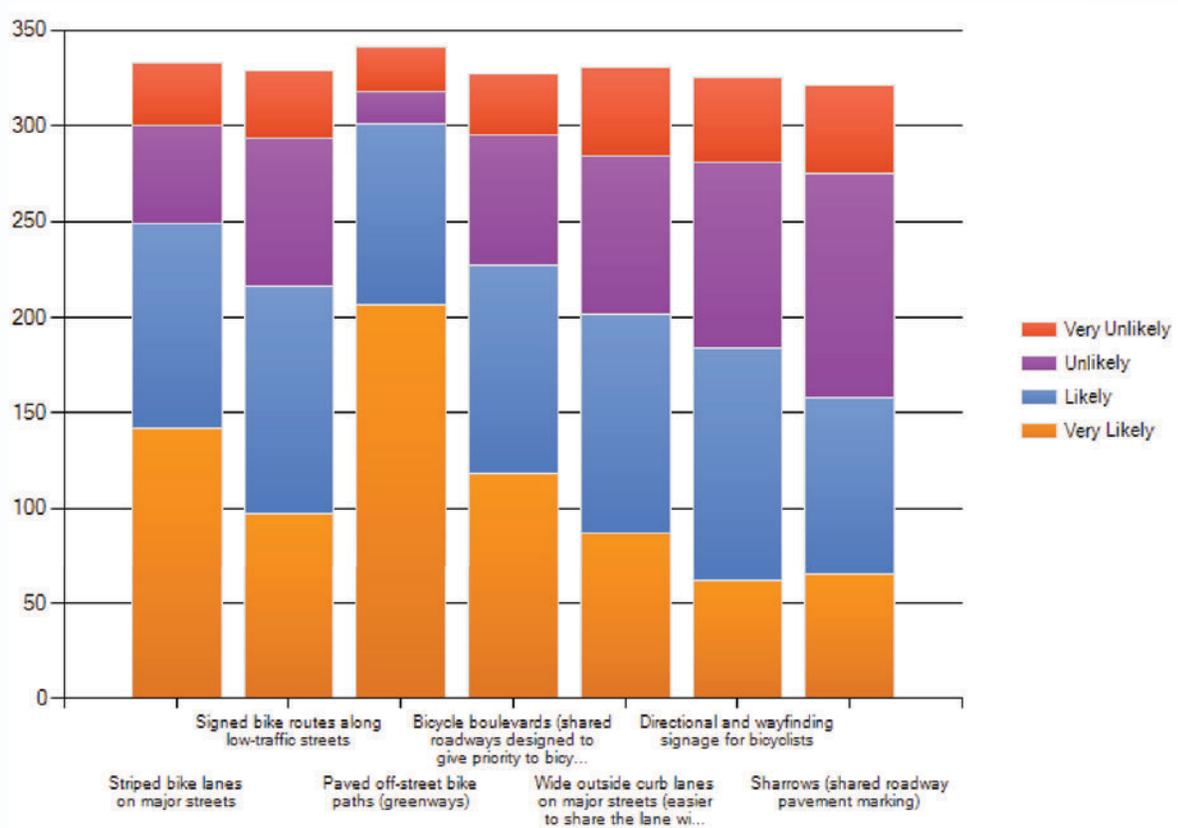
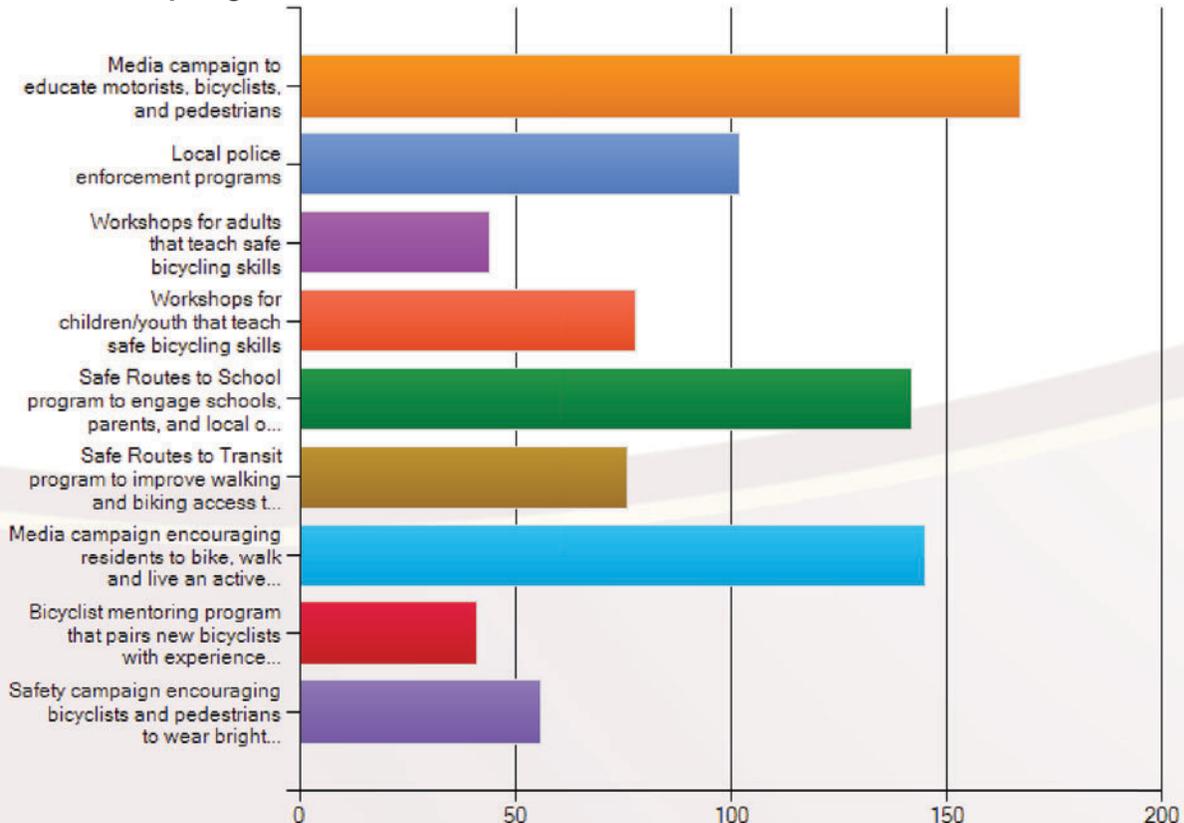


Figure 5-6 Potential Program Concepts to Promote Safer Walking and Biking in the Aiken County Region





**Table 5-1: Destinations Aiken County Area Respondents Would Like to Walk or Cycle Safely To (South Carolina)**

Number of Responses	Destinations
15 or more	Aiken Downtown Aiken Mall Aiken Regional Hospital Richland Ave Wal-Mart Hitchcock Woods O'Dell Weeks Activity Center University of South Carolina-Aiken
11-14	Citizens Park North Augusta Greeneway Whiskey Road
7-10	Aiken High School General shopping/grocery/gyms North Augusta Downtown South Aiken High School Southside of the City of Aiken
4-6	Aiken Bypass Aiken Elementary School Hopeland Gardens Pine Log Road Richland Avenue Riverview Park Savannah Rover Site University Parkway

for bicycle and pedestrian connectivity including: Aiken downtown, Aiken Mall, Aiken Regional Hospital, the Richland Ave. Wal-Mart, Hitchcock Woods, O'Dell Weeks Activity Center, University of South Carolina – Aiken, Citizens Park, North Augusta Greeneway, and Whiskey Road. Table 5-2 lists South Carolina roadway corridors that respondents would like to see improved to accommodate bicycling. South Carolina corridors indicated as desirable for improvement to accommodate walking are listed in Table 5-3.

In comparing the most commonly cited South Carolina corridors desirable for accommodation of biking with those desired for a better walking environment, there was notable overlap in the two priority lists. In South Carolina, 11 of the 13 most cited biking corridors were also noted as desirable for walking: Aiken downtown, Banks Mill Road, Georgia Avenue, Hitchcock Parkway, Pine Log Road, Richland Avenue, Silver Bluff Road, University Parkway, Whiskey Road, Martintown Road, and Powderhouse Road. Each of these corridors provides connectivity to the top ten previously noted destinations desirable

**Table 5-2: Roadway Corridors Respondent Would Like to See Improved to Accommodate Bicycling (South Carolina)**

Number of Responses	Biking Corridors
15 or more	Aiken Bypass Aiken Downtown Banks Mill Road Georgia Avenue Hitchcock Parkway Pine Log Road Richland Avenue Silver Bluff Road University Parkway Whiskey Road
11-14	Highway 1 Martintown Road Powderhouse Road
7-10	Five Notch Road Highway 118 Laurens Street North Augusta Greenway South Boundary Avenue
4-6	Dibble Road Hayne Avenue Highway 19 Highway 25 Highway 302 Highway 421 Park Avenue Trolley Line Road Vacluse Road

**Table 5-3: Roadway Corridors Respondents Would Like to See Improved to Accommodate Walking (South Carolina)**

Number of Responses	Walking Corridors
15 or more	Pine Log Road Richland Avenue Silver Bluff Road Whiskey Road
11-14	Banks Mill Road University Parkway
7-10	Aiken Downtown Hitchcock Parkway Highway 118 Bypass Powderhouse Road
4-6	Dibble Road Georgia Avenue Martintown Road Trolley Line Road York Street

Finally, intersections respondents would like to see improved to accommodate safe pedestrian crossing are listed in Table 5-4. The majority of the intersections in each table overlap with previously identified corridors desirable for walking. The following intersections may indicate key locations desirable for crossing each corridor and will be considered in the improvement prioritization.



**Table 5-4 Roadway Intersections Respondents Would Like to See Improved to Accommodate Safe Pedestrian Crossing (South Carolina)**

Number of Responses	Pedestrian Intersections
11-14	Pine Log Road and Silver Bluff Road Whiskey Road and Pine Log Road Whiskey Road and South Boundary
7-10	Whiskey Road and Dougherty Road Whiskey Road and Silver Bluff Road
4-6	Laurens Street and Richland Avenue Pine Log Road and Banks Mill Road University Parkway and Richland Avenue
3	Aiken Mall and Target/Lowes Georgia Avenue and Martintown Road Knox Avenue and Martintown Road Whiskey Road and East Gate Drive Whiskey Road and O'Dell Weeks Activity Center Whiskey Road and Price Avenue

Conduct activities to promote courtesy between motorists, cyclists, and pedestrians
Focus on involving private sector investment
Capitalize on areas that are already suitable for cycling and walking to promote image of user-friendliness and economic benefits
All planning for new facilities should address walking and biking
Inter-governmental planning and funding of improvements is key
Provide a safe connection between Aiken, North Augusta, and Edgefield
Connect the North Augusta Greenway to the Augusta Canal
Plan for those who walk and bike out of necessity as opposed to simply for recreation
Address sidewalk gaps and opportunities to connect to key destinations
Examine bus routes, sidewalk connectivity to stops, and shelters
Install bicycle racks at public buildings

### *Summary of Public Workshop Activities*

The first public workshop was held during the Needs Assessment phase of the study on October 3, 2011 at the City of Aiken Municipal Building.

A presentation was delivered covering the following material:

- National Bike-friendly, Walk-friendly Trends
- Engineering, Education, Encouragement, Enforcement, Evaluation, and Equity
- Existing Conditions
- Goals and Objectives
- Public Outreach Efforts and Opportunities

Following the presentation, workshop participants engaged with study team staff at four break-out stations focused on: walking programs, walking infrastructure, bicycling programs, and bicycling infrastructure. At the break-out stations, participants marked locations of opportunity and concern on large maps, completed questionnaires related to walking and biking programs, and engaged in discussions of walking and biking needs. All

### *Summary of Focus Group Comments*

During the Needs Assessment Phase of the Aiken County Bicycle and Pedestrian Plan, a focus group panel met for a facilitated discussion of bicycle and pedestrian needs throughout the Aiken County area. The focus group was designed to bring together citizens with diverse interests throughout Aiken County. The complete notes from the focus group meeting are in Appendix D. The key findings emerging from the meeting are:

discussions were documented on flip charts to create a list of needs and opportunities to be incorporated into the planning process. In addition, general comment forms were also distributed to all participants for submittal of additional information relevant to the study process. A summary of the key findings from the public workshop are as follows:

<b>Bicycling Infrastructure:</b>
Bicycle parking is needed
Shoulders needed on rural roads
Recreational trails are preferred over on-road facilities
Connect equestrian trails and expand access
<b>Bicycling Programs:</b>
Targeted law enforcement needed for motorists and cyclists
Chamber of Commerce support to encourage biking and walking and to secure private sector sponsors
Safety education regarding laws, lights, clothing
Incorporate bicycle safety training in schools and through employers
Online tool for planning safe walking and biking routes
<b>Walking Infrastructure:</b>
Ramps and handrails are needed throughout Aiken for wheelchairs and mobility carts
Ensure roadside landscaping does not hinder walking infrastructure or hinder driver visibility
<b>Walking Programs:</b>
Increased public transportation would promote walking as a viable option
Partner with Aiken Downtown Merchants Association to emphasize economic benefits of pedestrian accommodation
Lower or better enforce speed limits in downtown Aiken
Improve pedestrian crossing conditions at key intersections in town and outside of town
Partner with retiree population to encourage senior citizens to walk for health

The complete Needs Assessment Public Workshop Notes are included in Appendix D.

A second public workshop was held during the Recommendations Phase of the study.

## Key Findings

### Needs Assessment Phase

#### Key Survey Findings

The most common reasons for not walking or walking infrequently were reported as follows: roads do not feel safe and distance from home to work, shopping, or school. The most common reasons for not biking or biking infrequently were reported as follows: roads do not feel safe; distance from home to work, school or shopping; lack of bicycle parking at destinations; and lack of knowledge of best bicycling routes.

The facilities reported as most likely to have a positive impact on biking in Aiken County in order of preference were:

- Off street greenways,
- Striped bicycle lanes,
- Bicycle boulevards,
- Signed bicycle routes, and
- Wide outside travel lanes.

The programs selected as most likely to be effective in promoting walking and biking in Aiken County in order of frequency were:

Media campaign to educate motorists, bicyclists, and pedestrians
Media campaign encouraging residents to bike, walk, and live an active lifestyle
Safe Routes to School Program to engage schools, parents, and local officials
Local Police Enforcement Programs
Workshops for children/youth that teach safe bicycling skills
Safe Routes to Transit program to improve walking and biking access to bus stops

The Top Destinations Aiken County area Respondents Would Like to Walk or Cycle Safely to are:



Aiken Downtown
Aiken Mall
Aiken Regional Hospital
Richland Ave. Wal-Mart
Hitchcock Woods
O'Dell Weeks Activity Center
University of South Carolina-Aiken
Citizens Park
North Augusta Greeneway
Whiskey Road

Need for positive promotion of bicycling through activities and media
Plan for those who walk and bike out of necessity as opposed to simply for recreation
Recreational trails are preferred over on-road facilities
Partner with the private sector to match funding for facilities, finance wayfinding signage, designate a bicycle park and ride area

Key Survey Conclusions

In South Carolina, 11 of the 13 most cited biking corridors were also noted as desirable for walking: Aiken downtown, Banks Mill Road, Georgia Avenue, Hitchcock Parkway, Pine Log Road, Richland Avenue, Silver Bluff Road, University Parkway, Whiskey Road, Martintown Road, and Powderhouse Road. Each of these corridors provides connectivity to the top ten identified destinations desirable for bicycle and pedestrian connectivity including: Aiken downtown, Aiken Mall, Aiken Regional Hospital, the Richland Ave. Wal-Mart, Hitchcock Woods, O'Dell Weeks Activity Center, University of South Carolina – Aiken, Citizens Park, North Augusta Greeneway, and Whiskey Road.

Key Focus Group and Public Workshop Findings

The following themes were noted throughout the Focus Group and Public Workshop outreach activities:

Connect the North Augusta Greeneway to the Augusta Canal
More bicycle parking is needed
Shoulders needed on rural roads
Identify "easy opportunities" and implement: fill in short gaps, erect signage, utilize opportunities like alleys and creeksides, add pavement markings
Capitalize on areas that are already suitable for cycling and walking to promote image of user-friendliness and economic benefits
Increased education for cyclists and motorists is needed
Law enforcement awareness and support of cycling community is needed



*"Marketing, education, and evaluation programs are an essential complement to bicycle and pedestrian facilities planning. These activities help to raise the profile and public understanding of facilities investments, increase walking and bicycling mode share and public support, and help to create a local culture that values walking and bicycling."*



## Marketing, Education, and Evaluation

### Overview

Marketing, education, and evaluation programs are an essential complement to bicycle and pedestrian facilities planning. These activities help to raise the profile and public understanding of facilities investments, increase walking and bicycling mode share and public support, and help to create a local culture that values walking and bicycling.

The purpose of this memorandum is to provide a set of programmatic recommendations for the four non-infrastructure "E's" of bicycle and pedestrian planning: Encouragement, Education, Enforcement, and Evaluation. These initiatives can be undertaken by local agencies and community organizations.

Program concepts were developed by the technical team and were based on:

- knowledge about existing programs in the region and states;
- the Vision, Goals and Objectives developed for this planning effort;
- stated community needs and concerns (as communicated through stakeholder interviews, the Aiken County focus group, the Aiken County public meetings, surveys, and discussions with the client team and Aiken County Subcommittee of the Project Steering Committee);
- and the consultant team's knowledge about national model programs and best practices.

Additionally, this memorandum is intended to assist municipalities within the County in their efforts to reach the status of a nationally designated Walk-Friendly and Bicycle-Friendly Community. For each program, we have provided information about the program

purpose, a description of the basic approach and, wherever possible, links to model programs and useful resources.

### Role of the Augusta Regional Transportation Study

The Aiken County Bicycle and Pedestrian Plan was developed in tandem with the ARTS regional Bicycle and Pedestrian Plan and serves as a complementary planning document. Recognizing that, ARTS is committed to the goals of this Plan and is willing to assume the role as a partner in and leader for bicycle and pedestrian efforts within its boundaries. As a regional agency already engaged in transportation demand management, inter-jurisdictional coordination, and regional cooperation, ARTS should play the following roles:

- **Convener:** Bring the right people and organizations together.
- **Coordinator:** Assist interested parties in working in concert.
- **Adviser:** Develop expertise around education, promotion and marketing, and become the repository of institutional memory.
- **Unifier:** Create a regional identity and brand that serves as a rallying point for public involvement in walking and bicycling issues.
- **Monitor:** Develop an evaluation strategy, ensure that evaluation metrics are collected and report back to funders, stakeholders, decision-makers and the general public about the results of education, promotion and marketing efforts.
- **Funder:** Fund education, promotion and marketing efforts directly, when possible,



and indirectly, by leading and participating in efforts to secure additional funding.

- **Implementer:** Where there is no clear existing implementing agency or where ARTS is the uniquely qualified agency to act (such as in the area of train-the-trainer programs), consider directly creating and implementing programs to fill the void.

Aiken County and municipalities within its borders should also play these roles in the geographies over which they have jurisdiction. The Lower Savannah Council of Governments (LSCOG) may also fulfill some of these roles in the South Carolina portion of the ARTS region, especially in unincorporated Aiken County.

### *Existing Statewide Programs*

#### **South Carolina Department of Transportation**

The South Carolina Department of Transportation (SCDOT) Bicycle and Pedestrian Program provides a guide of safety tips for bicyclists and pedestrians as well as state route maps on their website. Links to a number of programs within the state related to bicycle and pedestrian awareness are also provided, including statewide public safety crash data and health related education awareness programs. SCDOT additionally houses the state's Safe Routes to School program. Regional Safe Routes to School offices serve the role of "resource center" and collaborator for communities advancing Safe Routes to School initiatives.

The Bikes Belong Coalition and the League of American Bicyclists advocacy organizations have also awarded a "Complete Streets" grant to SCDOT to implement bicycle and pedestrian policies and to improve conditions for bicycling and walking. The grant supports research, training and evaluation programs for the state. SCDOT, the League of American Bicyclists, the Palmetto Cycling Coalition, and other local advocacy groups work to support implementation of this grant program.

#### **Palmetto Cycling Coalition (PCC)**

The Palmetto Cycling Coalition (PCC) is a non-profit organization dedicated to making South Carolina more bicycle friendly for everyone. PCC offers a number of education and training workshops, including adult bicycle driving

classes, league certified bicycle instructor courses and law officer training education. Previously, PCC also initiated a bike lights program, whereby they are able to partner with organizations and local governments to provide bicycle lights and safety informational brochures to cyclists in need.

A Safe Streets Save Lives Campaign has also recently been initiated by PCC as a public private partnership program to promote bicycle safety and reduce the number of bicycle crashes across the state. Recently, a DVD was developed for the campaign, which has been shown within the state at local community facilities to enhance safety awareness. In May 2011, this DVD was shown in Aiken at the River of Life Church and was advertised through local bicycle advocacy groups.





## Existing Regional and Local Programs

### Safe Routes to School Programs

Safe Routes to School Programs (SRTS) provide funding for school based programs which encourage bicycling and walking to school. This typically involves examining conditions around public schools and providing programs to improve bicycle/pedestrian safety, accessibility and use. Schools in Aiken County that have participated in the program include Aiken Middle School and North Aiken Elementary School. SCDOT offer Safe Routes to School Resource Centers to specific regions throughout the state. Aiken is within the South Carolina Midlands Region.

### Safe Kids Programs

Safe Kids Aiken serves the Aiken County community. The program also promotes legislation geared at child safety, and provides varying information and classes on safety, including the distribution of safety equipment such as bike helmets at little or no cost.



### Eat Smart Move More Aiken

Eat Smart Move More South Carolina (ESMM SC) is a statewide coalition that offers resources about healthy lifestyles and advocacy for active living to local groups. In particular, the "Options for Action" toolkit offered by the organization is a best practices guide for community campaigns that promote bicycling, walking, and access to healthy foods. Aiken County is currently developing a local chapter ESMM SC.

### Other Existing and Potential Partners

Local non-profit organizations, coalitions, and major institutions should play a leading role in developing, implementing and sponsoring bicycling and walking programs. Aiken County already has a network of entities that could partner with local governments to generate community awareness and broad participation in bicycling and walking programs.

- Aiken Bicycle Club
- Aiken Regional Medical Center
- Aiken Running Club
- Aiken Sidewalk Appreciation Society
- Eat Smart Move More SC – Aiken
- Cyclesport Bicycles and Fitness
- Local active-wear and outfitter retailers
- SORBA CSRA (Local Chapter of the Southern Off-Road Bicycle Association)
- Universities and colleges
- YMCA

## Program Recommendations

### Encouragement

#### Safe Routes to School

As referenced earlier, a number of schools within the region have already participated in a Safe Routes to School Program. A major next step in developing a regional approach to this program is to develop a regional Safe Routes to School Plan and set a benchmark that all elementary schools within the region take part in the program over a specified period of time. Communities should contact their regional Safe Routes to School Coordinators to leverage resources as they develop plans for implementation of this program. This coordination would assist the Regional Bicycle and Pedestrian Committee in forming a list of all elementary schools in the region and in determining priorities and funding partnerships for the regional program.



**Action Step:** Integrate Safe Routes to School efforts with the goals of existing partner organizations (i.e. invite the Sidewalk Appreciation Society to identify safe walking routes) and with the efforts of other related programs (such as Bike Month).

**Program Resources:**

National Safe Routes to School Partnership: <http://www.saferoutespartnership.org/>

National Center for Safe Routes to School: <http://www.saferoutesinfo.org/>

SC Safe Routes to School Resource Center: <http://scsaferoutes.org/>

Sample Safe Routes to School Encouragement Program (SC): <http://active-living.org/Walking--Wheeling-Wednesday.html>

Sample Safe Routes to School Travel Plans (GA): <http://www.saferoutesga.org/content/completed-travel-plans>

temporary park that is open to the public for walking, bicycling, dancing, hula hooping, roller-skating, etc. They have been very successful internationally and are rapidly becoming popular in the United States. Car-free street events promote health by creating a safe and attractive space for physical activity and social contact, and are cost-effective compared to the cost of building new parks for the same purpose. Events can be weekly events or one-time occasions, and are generally very popular and well attended.

This Plan recommends that Aiken County and the municipalities within the County consider hosting car-free street events annually. Smaller communities may choose a two-block section of street, while larger population centers may choose a longer corridor.

**Action Step:** Host the first car-free street event in the City of Aiken. Newberry Street in the City of Aiken has a history of being claimed as a “festival street.”<sup>1</sup> Hosting car-free street events on Newberry Street could provide a powerful tool for promoting biking and walking, while also building on the existing character and design of downtown.

**Program Resources:**

Atlanta Streets Alive: <http://www.atlantabike.org/atlantastreetsalive>

Vancouver LiveStreets: <http://www.livestreets.ca/>

San Francisco Sunday Streets: <http://sundaystreetssf.com/>

Oakland's Oaklavia <http://oaklavia.org/media>

Portland Sunday Parkways: <http://portlandsundayparkways.org/>



*Car-free street events are periodic street “openings” that create a temporary park, open to the public. Above is an image from an Atlanta Streets Alive event*

**Car-free Street Events**

Car-free street events have many names: Sunday Parkways, Ciclovias, Summer Streets, and Sunday Streets. The events are periodic street “openings” (i.e., “open” to users besides just cars; usually on Sundays) that create a

**Weekend Walkabouts**

Weekend Walkabouts are regularly occurring events that promote walking while also bringing attention to pedestrian infrastructure. Weekend Walkabouts can be held either monthly from May to October or quarterly to include one walk per season, depending on

<sup>1</sup> Source: City of Aiken staff; [http://chronicle.augusta.com/stories/1997/08/15/met\\_212998.shtml](http://chronicle.augusta.com/stories/1997/08/15/met_212998.shtml)



staff availability and marketing opportunities. The events' walking routes should highlight safe and inviting places to walk in the public realm (rather than private or enclosed facilities such as cemeteries or walking tracks) and should be 3 miles or less in length. These events are ideal for families and seniors.

Weekend Walkabouts may be organized based on themes for each walk, such as an architectural tour, a "Steeple Chase" tour (visiting historic churches), a tour of parks, neighborhood strolls, etc. To generate added marketing potential, community leaders or local celebrities could be chosen to lead each walk. For each event, at least one volunteer or staff member should be positioned at both the front and the rear of the walking group. The pace should remain at 2-2.5 miles per hour or less. A refreshment break with water should be offered at the halfway point for any walk of 2 or more miles.

**Action Step:** Host the first Weekend Walkabout in conjunction with the annual event known as "Jane's Walk." Inspired by the "people's planner" Jane Jacobs, Jane's Walk occurs on May 1st and involves free neighborhood walking tours, developed and delivered by citizens, as a way to help put people in touch with their environment and with each other.

#### Program Resources:

Spartanburg, SC Weekend Walkabouts:  
<http://active-living.org/Walkabouts-and-Rideabouts-3.html>

Jane's Walk: [www.janeswalk.net](http://www.janeswalk.net)

### Bike Month Activities

Cities and towns across the country participate in National Bike Month annually, during May. The League of American Bicyclists (LAB) hosts a website for event organizers. The website contains information on nationwide and local events, an organizing handbook, and promotional materials.

It is recommended that ARTS counties and municipalities host National Bike Month events and activities annually, with the support of local bicycling groups and shops.

Bike Month activities may include:

- Bike to Work Day events: morning-commute energizer stations with food, encouragement, information, and sponsored goodies for participants; rally or celebration with raffles, food, and vendors.



*Inspired by urban planner Jane Jacobs, Jane's walk occurs on May 1st and involves free neighborhood walking tours, developed and delivered by citizens.*

- Group rides to the business center with the mayor and/or local celebrities.
- Discounts at local businesses for bicycle commuters.
- Bike vs. Bus vs. Car challenge. This is a fun competition to determine which transportation mode arrives at the city center in the least amount of time.
- Short, themed community bicycle rides, such as an art tour or restaurant tour.
- Participation in the national Ride of Silence bike ride to bring awareness to cyclist safety
- Mountain biking skills clinic and tour of mountain biking trails
- Bicycle parking valet, hosted by volunteers, to offer free bicycle parking at special events
- Bicycle Commuter Course taught by nationally certified League Cycling Instructors



- A contest for artists to create public art pieces using bicycle materials

**Action Step:** In the first year that Aiken County and its municipalities celebrate Bike Month, ensure that elected bodies endorse the month and host multiple events within May. Geographically disperse the events and involve as many partners as possible to assist in developing and leading the activities. Offer at least one activity that does not involve biking (such as a movie night that features a biking movie or an exhibit of bike-themed art). Collaborate with local and regional Safe Routes to School efforts to incorporate Bike to School Day into Bike Month.

**Program Resources:**

National Bike Month: <http://www.bikeleague.org/programs/bikemonth/>

Greenville, SC Bike Month events: <http://www.greenvillesc.gov/ParksRec/trails/bikemonth.aspx>

Atlanta, GA Bike Month events: <http://www.atlantabike.org/May>

**Action Step:** Aiken County should partner with the City of Aiken and City of North Augusta to identify safe and enjoyable walking and bicycling routes. Groups such as Eat Smart Move More Aiken, the Aiken Bicycle Club, and the Aiken Sidewalk Appreciation Society may provide volunteers to map the routes. The Chamber of Commerce and visitors' centers should assist in promoting the walking and biking routes.

**Sample Guided Walks and Bicycling Route Maps:**

Charleston (SC) Route Book: <http://coastalcyclists.org/maps/routebooksample.pdf> (sample route)

Austin Historic Walking Tours (Austin, TX): [http://www.austintexas.org/visitors/plan\\_your\\_trip/historic\\_walking\\_tours](http://www.austintexas.org/visitors/plan_your_trip/historic_walking_tours)

Spartanburg (SC) Walking and Biking Route Maps: <http://www.active-living.org/Maps.html>

**Walking and Bicycling Maps**

One of the most effective ways of encouraging people to walk and cycle is through the use of maps and guides that show enjoyable routes and destinations for walking and bicycling. One or more maps should be developed for the urbanized area of Aiken County to show the location of existing safe and enjoyable biking and walking routes. Maps should be printed as needed and actively distributed to residents and visitors; they should also be updated on a regular basis as new facilities are implemented (every five years or less). The map should highlight destinations and amenities such as the downtown colleges, and parks.

**Education and Enforcement**

As noted in the review of existing safety programs, there are a number of opportunities to enhance programs already enacted in the region utilizing available statewide resources. The following recommendations are proposed for the region:





### Safe Streets Save Lives Regional Program

The Safe Streets Save Lives Campaign of the Palmetto Cycling Coalition in South Carolina is intended to advance safe practices of both bicyclists and motorists within the state. Using this resource, Aiken County has already conducted some community outreach at a local community center. It is recommended that a regional campaign be developed with assistance from representatives at the Palmetto Cycling Coalition to advance this effort throughout the South Carolina portion of the region.

**Action Step:** Identify a County staff person or community volunteer to lead this program. Contact the Palmetto Cycling Coalition to request campaign materials and to keep the organization informed of this effort. Pursue media outlets, such as a local city access channel, local news station, or programmed televisions (at an airport or similar "lobby" location) to show the campaign video. Promote the campaign through Safe Routes to School, Bike Month events, and other related programs.

#### Program Resource:

Safe Streets Save Lives Program: <http://www.safestreetssavelives.org/>

### Issue Focused Safety Campaign: Nighttime Crashes

The crash analysis conducted as part of Chapter 3 of this Plan revealed that approximately 50 percent of pedestrian crashes in Aiken County are occurring in dark conditions. These night-time crashes are also a major factor in the reported pedestrian fatalities. A focused safety campaign, with active media outreach to providing bike lights and educate citizens on clothing and other safety issues during these times of day is recommended to address this crash analysis finding. A benchmark to reduce night-time crash rates could be set to provide an evaluation measure for how well this safety program works in reducing these crashes. Coordination with local advocacy groups and retailers is recommended in the implementation of this safety program and others that may become relevant over time.

**Action Step:** Identify funds (within staff budget, through a grant, or through a retailer's in-kind donation) to purchase pedestrian lights and reflective wear. Either establish new activities and events or collaborate with existing events to distribute the items to target populations. Use Safe Routes to School contacts to provide pedestrian-safety items to parents, teachers, and children.

#### Program Resource:

Greenville, SC Lights for Life: <http://bikegreenville.blogspot.com/2011/10/lights-for-life.html>

### Police Training Programs

Police training courses provide police officers with safety education related to the rights and responsibilities of bicyclists, pedestrians, and motorists. These educational courses may be provided in coordination with Palmetto Cycling Coalition and other regional programs. The training will explain such matters as: common errors in reporting a bicycle or pedestrian collision; laws related to pedestrian crossings in and out of crosswalks; laws related to a motorist passing a bicyclist; etc. A regional benchmark could be set to provide bicycle and pedestrian training programs for all police officers within the County by 2013.

**Action Step:** Contact the Palmetto Cycling Coalition and SCBikeLaw.com to determine if any upcoming police trainings are scheduled within the state. Identify available trainers within the region (SCBikeLaw.com staff, League Cycling Instructors, or others) who could lead a police training course. Coordinate with ARTS to determine other efforts in the region to offer police trainings. Engage local police agencies in the task of determining training agenda, schedule, and trainers.

#### Program Resource:

Bike Law: <http://www.bikelaw.com/>

### Professional Driver Training

Driver training programs are currently offered for employees of the City of Aiken. Aiken



County should expand driver training courses to County staff and staff of other municipalities and ensure that the courses offer up-to-date and practical information about sharing the road with bicyclists. Additionally, Aiken County should coordinate with ARTS to provide incentives for the agencies to expand their driver training programs to include other commercial drivers in the region, such transit drivers, school bus drivers, and taxi drivers.

**Action Step:** Identify current driver trainer providers within the County and region. Coordinate with ARTS staff to increase staff attendance to driver training programs and to expand agencies that participate.

**Program Resource:**

San Francisco Bicycle Coalition  
Driver Education: <http://www.sfbike.org/?drivertraining>

## Evaluation

### Regional Bicycle and Pedestrian Committee

An advisory committee has already been successfully used to develop an updated bicycle and pedestrian plan for the region and it is recommended that a permanent committee comprised of government staff and local advocacy groups be instituted to oversee bicycle safety programs at a regional level. This will allow a forum for regional interests to coordinate and share successes and lessons learned. Information on actions of this committee and educational materials should be made available through a regional website to make the program visible and transparent to the public. This website may also provide a centralized location for tracking safety awareness and other bicycling and walking events in the area and overall progress towards plan implementation and achievement of goals for bicycling and walking.

**Action Step:** Identify a County staff person to coordinate with and support ARTS' efforts to establish a permanent Regional Bicycle and Pedestrian Committee.

**Program Resources:**

Roanoke Valley Alleghany Regional Commission: <http://www.rvarc.org/bike/home.htm>

Capitol Region Council of Governments: [http://www.crcog.org/Meetings\\_minutes/mm\\_bicycle\\_committee.html](http://www.crcog.org/Meetings_minutes/mm_bicycle_committee.html)

Southwestern Pennsylvania Commission: [http://www.spcregion.org/trans\\_pedbike.shtml](http://www.spcregion.org/trans_pedbike.shtml)

### Regional Plan for Bicycle and Pedestrian Collision Reduction

Based on the findings of the safety analysis provided in Chapter 3 of this Plan, ARTS should develop a regional plan to reduce bicycle and pedestrian crashes and fatalities. The Regional Bicycle and Pedestrian Committee (see 2.3.1) should facilitate the process of developing the plan. The plan should complement the existing Strategic Highway Safety Plans for GA and SC and should be developed in partnership with SCDOT, GDOT, the SC Department of Public Safety Office of Highway Safety, the Georgia Governor's Office of Highway Safety, and local public safety or police departments. Every other year, these partners should complete an analysis of bicycle and pedestrian collision data and reconvene to update the plan.

**Action Step:** Identify a County staff person to coordinate with and support ARTS' efforts to establish a permanent Regional Plan for Bicycle and Pedestrian Collision Reduction.

**Program Resources:**

GA Strategic Highway Safety Plan: <http://www.gahighwaysafety.org/shsp/>

SC Strategic Highway Safety Plan: [http://www.scdot.org/inside/multimodal/pdfs/road\\_map.pdf](http://www.scdot.org/inside/multimodal/pdfs/road_map.pdf)



## Dedicated Funding Source

Nationally, bicycle and pedestrian travel account for 13 percent of all traffic fatalities. In Georgia, it is 10.1 percent and in South Carolina it is 12 percent. Yet, these travel modes account for only 0.6 percent of Federal Safety funds nationally, and only 0.5 percent and 0.0 percent of Georgia and South Carolina's Federal Safety funds, respectively.

Public funding for biking and walking facilities is a crucial component of local policy. ARTS should consider a funding program to increase the portion of funds available for bicycle and pedestrian infrastructure. As an example, Nashville, Tennessee (population 605,473) recently established a model program for determining local funding allotments. By virtue of a policy established by the MPO Executive Board, 15 percent of Surface Transportation Program (STP) funds are set aside annually for active transportation projects. For the current funding cycle (2011 to 2015), that amounts to roughly \$2.5 million that will be used exclusively for bicycle and pedestrian infrastructure and education costs. That figure does not reflect additional funds allotted for bicycle and pedestrian facilities that are incorporated into other, larger projects (such as a road widening project that may include a sidewalk and bike lane).

**Action Step:** Identify a County staff person to coordinate with and support ARTS' efforts to establish a dedicated funding source for bicycle and pedestrian investments. Additionally, Aiken County and its municipalities should develop a dedicated funding source within their own capital budgets. Refer to Appendix F for a summary of local government sidewalk infill programs and other funding mechanisms.

### Program Resource:

Nashville Area Metropolitan Planning Organization, 2035 Regional Transportation Plan: Urban Surface Transportation Program Investment Strategy: [http://www.nashvillempo.org/plans\\_programs/rtp/2035\\_rtp.aspx](http://www.nashvillempo.org/plans_programs/rtp/2035_rtp.aspx)

## Annual Count Program

Evaluation programs measure and evaluate the impact of projects, policies and programs. Typical evaluation programs range from a simple year over year comparison of US Census Journey to Work data to bicycle and pedestrian counts and community surveys. Counts and community surveys act as methods to evaluate not only the impacts of specific bicycle and pedestrian improvement projects but can also function as way to measure progress towards reaching local goals such as increased bicycle and pedestrian travel for trips one mile or less. Through development of the Regional Bicycle and Pedestrian Plan Update, ARTS has already established baseline data and a tested methodology for collecting annual counts.



*Counts act as methods to evaluate not only the impacts of specific bicycle and pedestrian improvement projects but can also function as way to measure progress towards reaching local goals.*

This Plan recommends, at minimum:

- Before and after bicycle, pedestrian and motor vehicle counts on all major roadway, bikeway, or pedestrian infrastructure projects.
- Annual bicycle and pedestrian counts conducted at minimum at the 23 locations counted as part of this regional planning effort. (More count locations, especially in Richmond County, would be worthwhile.)

- Annual analysis of the collected bicycle and pedestrian data.

**Action Step:** Identify a County staff person to coordinate with and support ARTS' efforts to establish an annual bicycle and pedestrian count program, with a minimum of 15 count locations in Aiken County each year.

**Program Resource:**

National Bicycle and Pedestrian Documentation Project: <http://bikepeddocumentation.org/>

**Facilities Inventory**

The existing conditions report in Chapter 3 of this Plan identified a lack of comprehensive inventories of sidewalk facilities and bicycle support facilities. A lack of comprehensive sidewalk data impairs a community's ability to effectively assess pedestrian facility needs and prioritize funding for sidewalk construction and repair.

The process of completing the Bicycle Friendly Community application for the City of Aiken (see Chapter 3, Section 3) revealed a lack of data related to existing bicycle parking. An inventory of bicycle parking and other bicycle support facilities is not only important for achieving Bicycle Friendly Community status, but also for providing information to the public about the location of bicycling parking amenities and for identifying locations in need of parking amenities.

This Plan recommends that, at a minimum, in coordination with ARTS and its municipalities:

- Aiken County develop sidewalk and bicycle parking inventory programs
- Aiken County establish internal processes to update the inventories on an ongoing basis

**Policy Recommendations**

Policy recommendations of the Aiken County Bicycle and Pedestrian Plan are based on a review and assessment of development requirements related to bicycle and pedestrian facilities for three jurisdictions of Aiken County. The full policy review is provided in Appendix

B. The list of jurisdictions evaluated includes City of North Augusta (SC), City of Aiken (SC), and Aiken County (SC). As shown in Appendix B, the review is not limited to the land development ordinances of each jurisdiction; some of these jurisdictions also have design guidelines associated with streets and the recently completed North Augusta Greenway, Pedestrian, and Bicycle Master Plan was reviewed, as well.

In evaluating the existing policies, it is evident that Aiken County and its municipalities could significantly strengthen many areas of policy regarding complete streets, bicycle, and pedestrian facility requirements and enhancements within the context of development ordinances. Additional guidance geared toward retrofit of existing facilities is also recommended. The following provides recommended "next steps" for improving the bicycle- and walk-friendliness of local policies.

**Complete Streets Policy**

A Complete Street is a roadway that, in addition to general purpose vehicular travel lanes, includes items such as sidewalks, bike lanes or shoulders, bus lanes, transit stops, crosswalks, median refuges, curb bulbouts, appropriate landscaping, and other features that add to the usability and livability of the street as determined by context. As of October, 2011, legislation on the subject has been passed in 25 states and almost 300 other jurisdictions throughout the country, and the Safe and Complete Streets Act of 2011 is currently pending in Congress.





This Plan recommends that Aiken County, City of Aiken, and Burnetown adopt a Complete Streets Policy. Currently, the City of North Augusta has policy language that successfully establishes a Complete Streets approach to development. Though not currently packaged as a Complete Streets Policy, current regulations represent the same intent.

It is anticipated that at a national level when the surface transportation bill is reauthorized, projects receiving federal funding will need to demonstrate some level of Complete Streets compliance. SCDOT was one of the first states to adopt a Complete Streets Policy in 2002, but has been lacking in taking the next step in revising state roadway design guidelines to accommodate and implement Complete Streets on a statewide level. For this reason, it is imperative that each municipality not only develop and adopt a Policy, but also review and revise current design guidelines to effectively implement Complete Streets in each community. In addition to adopting overarching Complete Streets Policies, each Aiken community should also adopt street design guidelines as provided in Appendix E of this Plan. Aiken County should coordinate with ARTS to facilitate the tailoring and adoption of the design guidelines in such a way as to maintain consistency across the region consistent with the goals and tenets of the broader bicycle and pedestrian planning effort.

To aid in policy development and provide consistency across the region, ARTS should provide sample language for a Complete Streets Policy to Aiken County. According to the National Complete Streets Coalition ([www.completestreets.org](http://www.completestreets.org)), an ideal Policy should include the following elements:

- Includes a vision for how and why the community wants to complete its streets
- Specifies that 'all users' includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all agencies to cover all roads.
- Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions will complement the context of the community.

ARTS can use the resources associated with the National Complete Streets Coalition (they have sample policies from around the country to draw upon) to develop and tailor a Policy consistent with the area's context and goals. The Policy itself need not be cumbersome in its language; however, the real "teeth" associated with the Policy is the subsequent development of design guidelines such as typical cross sections that can be applied in varied contexts throughout each of the member jurisdictions, as articulated in the next recommendation.

As a complement to a Complete Streets Policy, Aiken County and its municipalities should work with ARTS to expand their respective palettes of street sections to incorporate a more context-based approach similar to other progressive communities. These cross-sections should be represented graphically as well as in table form, to clearly depict ideal street sections while giving flexibility in retrofit situations. North Augusta implies inclusion of Complete Streets principles in roadway design, but falls short in actual availability of design guidelines incorporating those principles. The Aiken County Bicycle & Pedestrian Plan includes a number of street cross-sections that accommodate multimodal users in rural to urban contexts. It is recommended that each municipality adopt the design guidelines provided in Appendix E to encourage regional consistency and predictability in application.

## Development Ordinances

Aiken County and municipalities within its urbanized area should consider revisions to their development ordinances to include more pedestrian-friendly automobile parking ratios and layout guidance, bicycle parking, and amenities geared toward increasing non-motorized utilization for commuters. In order



to promote a vibrant pedestrian-oriented environment, it is important that strict policies and guidelines are put into place to limit the physical and visual impact of automobiles in a place. Limiting automobile parking quantity and requiring that parking lots and garages are somewhat hidden and do not form part of the "street wall" immediately adjacent to sidewalks are items that should be explicitly addressed within design regulations.

### Block Size and Street Connectivity

Development ordinances should include requirements for block size and street connectivity (both motorized and non-motorized) to facilitate multimodal travel choice. Block size regulations should include a provision stipulating that pedestrian facilities including sidewalks, paths, and accessways are spaced no more than 400 feet apart. Ideally, streets and intersections supporting vehicular movement would have the same resolution, but a maximum block length of 600-800 feet (with bisecting pedestrian facilities) would still provide a high level of accessibility for all travel modes. Dead-end streets should be discouraged to the greatest extent possible (North Augusta has good code language with regards to this), with allowable lengths specified as no more than 300 feet. Maximum connectivity indexes for areas of any size can be specified and calculated using a link-node ratio such that given in the most recent LEED-ND guidelines; indexes can be used in addition to or in lieu of the block length specifications proposed above to provide a desired level of walkability. Member communities could use a combination of incentives and disincentives to encourage compliance.

### Sidewalk Ordinance

The existing conditions report in Chapter 3 of this Plan identified not only a need for closing existing gaps within the sidewalk network, but also for establishing policies that prevent the creation of sidewalk gaps through the development process. This Plan recommends that Aiken County develop policy language recommending that new developments be conditioned to include sidewalks.

### Policy Development

Development of a sidewalk ordinance will ensure long-term, cost-effective improvements

to local mobility options and to the overall walkability of Aiken County. The County should adopt a policy recommending code revision to require sidewalks in specified contexts, based on street type, land use, or densities. Recognizing the unique characteristics of Aiken County, this Plan recommends aligning sidewalk requirements with a combination of street type and land use, rather than densities. 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. Requirements for pedestrian access shall be in accordance with the provisions as shown in the following table:

**Table 6-1: Table of pedestrian access requirements in Mt. Pleasant, SC**

Land Use/Road Classification	Minimum Requirement
<b>Commercial and industrial (new streets)</b>	<b>Sidewalk both sides</b>
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
	Pedestrian path/bikeway on one side may be direct access to lots with Planning Commission approval
<b>Local residential streets</b>	
-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

### Policy Enforcement

Even after a sidewalk ordinance is established, assuring implementation can be a challenge. Some counties experience discrepancies between approved plat designs and the construction that follows. Plats adopted with sidewalks are, at times, not constructed per the approved plan. In light of that, this Plan recommends that Aiken County:

- Use land development tracking software to flag parcels that are planned to include a sidewalk, bike lane or other traffic calming improvements;
- Consider rejecting or not approving construction plan sets that omit said improvements to assist in successful inspection of these requirements.

### Bicycle Parking Ordinance

At present, bicycle parking within Aiken County is extremely limited and the community does not have codified bicycle parking requirements (though the City of North Augusta may require bicycle parking at the discretion of the Planning Director). To expand bike parking in the area, the County and each city in the urbanized area should adopt general bicycle requirements that extend to all land uses. The expansion of

bicycle parking will enable more trips to be made by bicycle.

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 2).

**Table 6-2: Criteria for short-term and long-term bicycle parking<sup>2</sup>**

Criteria	Short-term	Long-term
Parking Duration	Less than two hours	More than two hours
Fixture Type	Simple bicycle racks	Lockers, racks in secured area
Weather Protection	Unsheltered	Sheltered or enclosed
Security	Unsecured, passive surveillance	Secured, active surveillance
		<b>Unsupervised</b>
		"Individual-secure" such as bicycle lockers
		"Shared-secure" such as bicycle room or cage
		<b>Supervised</b>
		Valet bicycle parking
Typical land uses	Commercial or retail, medical/healthcare, parks and recreation areas, community centers	Residential, workplace, transit

<sup>2</sup> Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guide, 2010. Page 10.

Providing the options for short-term and long-term bicycle parking is important to bicyclists. Table 3 lists typical bicycle parking recommendations based on land use categories. The figures are derived from the APBP Bicycle Parking Guide, 2nd Edition and other best practices from around the country.

Refer to the Design Guidelines of this Plan, found in Appendix E, for additional guidance related to bicycle parking design, installation, and location.

### Unit of Measurement

Communities use different metrics for assigning appropriate levels of bicycle parking, including:

- Unit count
- Percentage of building square footage
- Building occupancy
- Percentage car parking

The new APBP Guidelines recommend decoupling 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. The APBP Bicycle Parking Guide provides two groups of recommendations, one standard set and a higher level for "Urbanized or High Mode Share Areas." Because of the characteristics of Aiken County, Table 4 does not reflect the higher bicycle parking rates from the Bicycle Parking Guide.

### In-Lieu of Parking

As a complement to development of a bicycle parking ordinance, Aiken County and cities within its urbanized area may also choose to offer an "In-lieu of Parking" program. These programs allow property owners to pay fees to a general City or County Fund established for the development of bicycle support facilities, instead of installing bike parking on their facility. The money collected in this fund can then be used for the development of bicycle facilities elsewhere in the community.

### Funding Assistance

Aiken County should coordinate with ARTS to identify funding avenues on both the Federal and State level to facilitate retrofits of existing facilities to realize Complete Streets. Appendix F is a comprehensive listing of Federal funding opportunities currently available for Complete Streets implementation.



Table 6-3 : Typical Bike Parking Recommendations by Use

Use	Short-Term Bicycle Parking	Long-Term Bicycle Parking
<b>Recreational/Civic</b>		
Non-assembly cultural (library, government buildings, etc.)	1 sp./10K sq. ft. (2 min)	1 sp./10 employees (2 min)
Assembly cultural (church, theater, park, etc.)	Spaces for 2% maximum daily attendance	1 sp./20 employees (2 min)
Hospital	1 sp./20K sq. ft., ( 2 min.)	1 sp./20 employees or 1 sp./70K sq. ft., whichever is greater ( 2 min.)
<b>Schools</b>		
Kindergarten/Elementary Schools	1 sp./20 students (2 min)	1 sp./10 employees (2 min)
Jr. High/High School	1 sp./20 students (2 min)	1 sp./10 employees + 1 sp./20 students (2 min)
Colleges/Universities	1 sp./10 students (2 min)	1 sp./10 employees + 1 sp./10 students; or 1 sp./20K sq. ft., whichever is greater
<b>Residential</b>		
Single Family	No spaces required	No spaces required
Multifamily Residential		
With private garage for each unit	.05 sp./bedroom (2 min)	No spaces required
Without private garage for each unit	.05 sp./bedroom (2 min.)	.5 sp./bedroom (2 min)
Senior Housing	.05 sp./bedroom (2 min.)	.5 sp./bedroom (2 min)
<b>Commercial/Other</b>		
	<b>1 sp./5K sq. ft.</b>	<b>1 sp./12K sq. ft.</b>
Offices	1 sp./20K sq. ft. (2 min)	1 sp./10K sq. ft. (2 min)
Retail (furniture, appliances, hardware, etc.)	1 sp./5K sq. ft. (2 min)	1 sp./12K sq. ft. (2 min)
Retail (grocery, convenience, personal)	1 sp./2K sq. ft. (2 min)	1 sp./12K sq. ft. (2 min.)
Industrial/Manufacturing	Determined at discretion of Planning Director (Suggested 2 min)	1 sp./15K sq. ft. (2 min)
Bus terminals/stations	Spaces for 1.5% of a.m. peak period ridership	Spaces for 5% projected a.m. peak period daily ridership



*"Aiken County has the potential to transform itself into a community where walking and bicycling for transportation and recreation are popular and safe activities. This chapter lays out the recommended pedestrian and bicycle network with a countywide system of walkways, greenways and bikeways connecting key destinations and surrounding areas."*

# Chapter Seven



## Engineering: Bikeway, Walkway, and Trail System Recommendations

### Introduction

Aiken County has the potential to transform itself into a community where walking and bicycling for transportation and recreation are popular and safe activities. This chapter lays out the recommended pedestrian and bicycle network with a countywide system of walkways, greenways and bikeways connecting key destinations and surrounding areas. The network recommendations build upon current and past planning efforts. The recommendations included in this chapter are based on the types of bikeways, walkways, and off-street shared facilities described in the Design Guidelines, found in Appendix E.

This chapter presents proposed bikeways, walkways, and greenways facilities identified through input from the community, the Project Steering Committee, and the needs analysis. The proposed improvements are intended to make bicycling more comfortable and accessible for bicyclist of all skill levels and trip purposes and to create walkable communities through the County. This chapter presents the recommendations to expand the bikeway and walkway network so that the community has a seamless and comprehensive network for active transportation and recreation.

### Recommended Walkway Network

#### Walkway Network Development – Refining the Pedestrian Suitability Analysis

##### Overview

Pedestrian suitability analysis (PSA), as described in Chapter 4, is an important tool for identifying priority pedestrian corridors. The results of the analysis created a picture of where people live, work, play and key roadway connections between these locations as a way to depict both 'demand' for and 'supply' of

pedestrian infrastructure in the region. Beyond identifying regional priority corridors, PSA results can be enhanced based on local priorities and characteristics to reveal crucial areas for investment in sidewalk infrastructure and other pedestrian facilities. The resulting process ranks pedestrian corridors as high-, medium-, or low-priority corridors within Aiken County.

##### Composite Priority Scores

To refine the analysis of priority pedestrian corridors, PSA weighted criteria were adjusted and combined with new feasibility considerations to reflect the weights identified by Aiken County in the project evaluation criteria, shown in Table 7-1. Thus, the criteria for 'Proximity to Attractors/Destinations' were weighted based on the 16 point scale identified by Aiken County to establish an adjusted score for pedestrian 'demand'. The 'roadway quality' criteria of the PSA, which includes both 'Connectivity' and 'Safety', were weighted based on the 28 point scale identified by Aiken County to create a 'supply' score.

The 'Connectivity' category includes an analysis of sidewalk gaps. However, without an existing sidewalk inventory of the region, it was not possible to exhaustively identify sidewalk gaps/presence for the region or for every municipality. This analysis assumes that there are no sidewalks except for those corridors that were verified via field work or existing data. The corridors where a sidewalk is known to exist on one side or both sides of the roadway are identified in Figures 7-1 and 7-2. Corridors with two known sidewalks were excluded from prioritization, though roadways with only one known sidewalk were not.

<sup>1</sup> Improved health and quality of life are important benefits associated with all pedestrian infrastructure projects.



**Table 7-1: Project Evaluation Criteria and Scores**

Criteria	Scoring Weights	Available Points
<b>Proximity to Attractors/Destinations</b>		
Access to public or private school (K-12)	Yes = 2; No = 0	16 pts.
Direct access to existing/planned transit route or stop	Yes = 2; No = 0	
Direct access to major employment centers	Yes = 2; No = 0	
Direct access to mixed-use areas or shopping centers	Yes = 2; No = 0	
Direct access to University/College	Yes = 2; No = 0	
Direct access to Central Business District	Yes = 2; No = 0	
Access to public places (parks, libraries, civic uses)	Yes = 2; No = 0	
Transit Stop within 1/2 mile radius	Yes = 1; No = 0	
Direct access to higher density residential areas	Yes = 1; No = 0	
<b>Connectivity</b>		
Completes gap in existing bicycle or pedestrian facility	Yes = 4; No = 0	14 pts.
Removes barrier in route	Yes = 3; No = 0	
Regional connection and/or major roadway/river Xing	Yes = 3; No = 0	
Connects 2 or more communities	Yes = 2; No = 0	
Connects residential area to business/commercial area	Yes = 1; No = 0	
Project supports economic development/tourism	Yes = 1; No = 0	
<b>Safety / Health / Quality of Life</b>		
Improves locations where bicycle or pedestrian crashes/fatalities have occurred	Yes = 4; No = 0	14 pts.
Is the improvement on a high volume road	Yes = 2; No = 0	
Is the improvement separated from vehicular traffic	Yes = 2; No = 0	
Provides speed reduction or traffic calming benefits	Yes = 2; No = 0	
Improves physical activity	Yes = 2; No = 0	
Improves air quality/offers environmental benefits	Yes = 2; No = 0	
<b>Feasibility</b>		
Improvement is on or adjacent to roadway project contained in the ARTS 2035 LRTP.	Yes = 5; No = 0	10 pts.
Improvement has full or partial funding, or is likely to be funded	Yes = 3; No = 0	
Improvement was recommended during the public outreach process/or is contained and supported in a local plan	Yes = 2; No = 0	



The adjusted PSA results were then combined with local feasibility data, which provided weighted scoring for projects included within the ARTS Long Range Transportation Plan, recommended by the public process, and allotted partial or full funding. 'Feasibility' criteria allow a maximum score of 10. This process results in a composite 'Priority Score' based on the 'Demand Score,' 'Supply Score,' and 'Feasibility Score'. The composite score has a maximum potential value of 54. In all cases, a higher number means that the corridor should be prioritized for pedestrian infrastructure.

The composite score reveals where Aiken County should consider short, medium and long-term pedestrian improvement projects. Since these score ranges are based on the distribution of scores across the entire County, where population density and the density of attractors and destinations vary greatly, adjusted score ranges were used in several areas outside of the major urban centers of North Augusta, and Aiken. These adjusted ranges account for the fact that the scores are lower across the board in certain areas, such as Burnetown, but recommendations are desired in these areas along with the urban centers, and should be prioritized independently of higher scoring areas. Adjusted ranges and their geographic application are provided in Table 7-2.

**Table 7-2 Composite Project Evaluation Scores**

Geographic Area	Score Range		
	Low	Medium	High
Aiken Metro Area	18-22	23-32	33-52
North Augusta Metro Area	22-29	30-39	40-52
Burnetown	15-18	19-26	27-41

## Results

The results of the refined pedestrian network analysis provide a closer look as to where new sidewalks or enhanced pedestrian infrastructure are most needed. Figures 7-1 and 7-2 depict color-coded corridor segments that identify the three-tiered priority network.

A majority of the County's destinations are along arterial roads with high traffic volumes and speeds. It is important to provide safe, comfortable access to these destinations from the surrounding residential areas. Additionally, creating walkable neighborhoods that are accessible to pedestrians ensures that residents can safely access sidewalks along major arterials and collectors.

Across the County, thoroughfares and collectors are the highest priority corridors, along with connections to schools. Communities will need to do additional study to identify gaps in the existing network and quality of existing sidewalks to determine actual projects in these corridors. Chapter 8 identifies recommended areas for near-term investment in pedestrian infrastructure based on the results of this pedestrian network refinement analysis. It is important to note, however, that well-maintained sidewalks meeting ADA requirements are recommended on all collectors and arterials in Aiken County, as well as local roads that provide important pedestrian connections. This Plan recommends that Aiken County and its municipalities adopt a sidewalk ordinance (as described in Chapter 6), invest in high priority pedestrian areas (as described in Chapter 8), and incorporate sidewalks into all new collector and arterial road construction projects to meet the needs of current and future pedestrian activity.

Figure 7-1: North Augusta and Burnettown

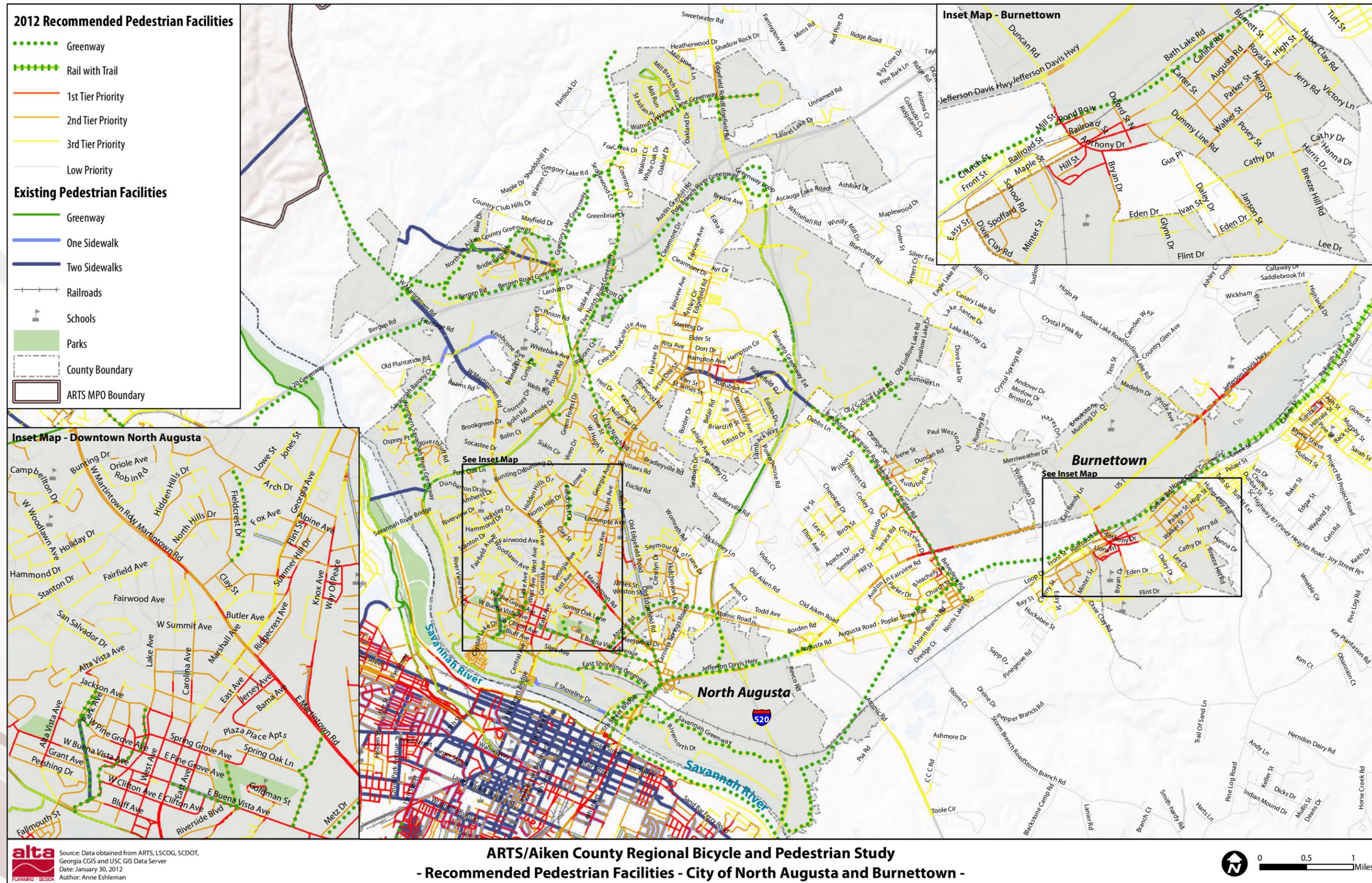
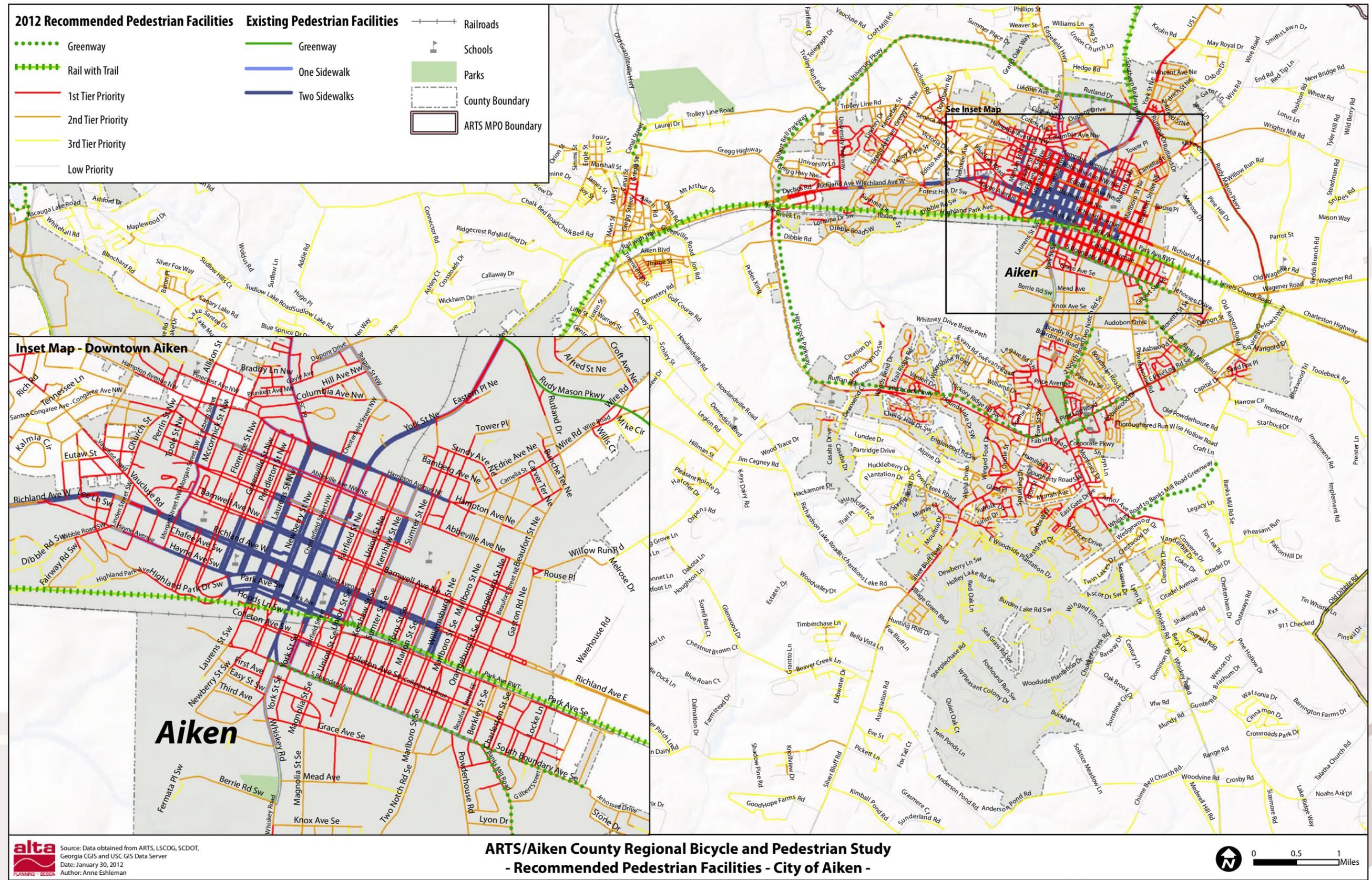


Figure 7-2: City of Aiken



alta Source: Data obtained from ARTS, LSCOG, SCDOT, Georgia CGIS and USC GIS Data Server Date: January 30, 2012 Author: Anne Eshleman



## Recommended Bikeway Network

The recommended bikeway network for the urbanized area of Aiken County represents a comprehensive set of existing and proposed bicycle transportation facilities. In total, there are approximately 378.92 miles of recommended bicycle facilities, as shown in Table 7-3, that range from signed bicycle routes to separated greenways. The proposed improvements are intended to make bicycling more comfortable and accessible for bicyclist of all skill levels and trip purposes.

The following sections of this chapter include 1) how the network was designed; 2) network maps of the urbanized area of Aiken County; and 3) projects recommended for further review. Priority projects are identified in Chapter 8, as part of the regional implementation plan.

### Bikeway Network Development

The bicycle facility network was designed by first assembling all existing bicycle-related recommendations and information from current plans and studies. Secondly, a thorough analysis with geographic information systems (GIS) and fieldwork was conducted to examine roadways for recommendations. The assembled information was then presented to the public, local government staff, the Steering Committee, and various project stakeholders. Together, the input from these groups helped to inform the overall network design; through writing and drawing on input maps, filling-out comment forms, direct dialogue, and e-mailed comments.

A variety of bicycle facilities are recommended due to 1) the range of skill and comfort levels involved in bicycling; 2) the range of conditions for bicycling on different roadway environments; and 3) local preferences identified through the public input process. These recommendations are at a planning level only and will require further analysis before implementation.

The recommended bicycle network is made up of five core types of bicycle facilities: **paved shoulders, shared lane markings, bicycle lanes** (including buffered bicycle lanes), **bicycle routes, and greenways** (including

multi-use paths). The recommended strategies for implementing the proposed facilities include road widening, lane narrowing, lane reconfiguration, parking reduction, adding markings/signage, and new construction. Descriptions and standards for each facility type and implementation strategy are described in detail in the Design Guidelines provided in Appendix E.

Figures 7-3 through 7-5 shows the existing and proposed bikeway network and Table 7-4 through Table 7-9 list the bikeways by type and mileage. The proposed bikeways were developed with consideration for roadway widths, traffic volumes and speeds, and connections to destinations.

**Table 7-3: Recommended Projects Summary**

Facility Type	Total Mileage of Recommended Projects
Bicycle Lanes & Buffered Bicycle Lanes	30.44
Roadways with Shared-Lane Markings	5.97
Bicycle Routes	48.04
Paved Shoulders	198.16
Greenways, Multi-use Paths, & Rails with Trails	72.76
<b>Total Recommended Greenway and Bikeway Network</b>	<b>355.37</b>



## Bikeway Network Facility Types



**Paved Shoulders**

Roadways with **Paved Shoulders** (4' or greater) are wide enough for safe and comfortable bicycle travel.



**Buffered Bicycle Lanes**

Cape Coral, FL  
Photo: www.pedbikeimages.org - Dan Moser

**Bicycle Lanes** are separate lanes within the right of way and travel way of a road designated exclusively for bicycles.



**Shared Lane Markings**

**Shared Lane Markings** indicate to motorists that bicycles have an equal right to the roadway and can designate where bicyclists should ride in the roadway.



**Bicycle Routes**

**Bicycle Routes** are usually designated by strategic signage and can include traffic calming measures and other treatments on low-speed and residential streets.



**Bicycle Lanes**

**Bicycle Lanes** are separate lanes within the right of way and travel way of a road designated exclusively for bicycles.



**Greenways**

**Greenways** (including multi-use paths) are paths designated for pedestrian and bicycle travel with an exclusive right of way.

Figure 7-3: Aiken County Proposed and Existing Bicycle Network

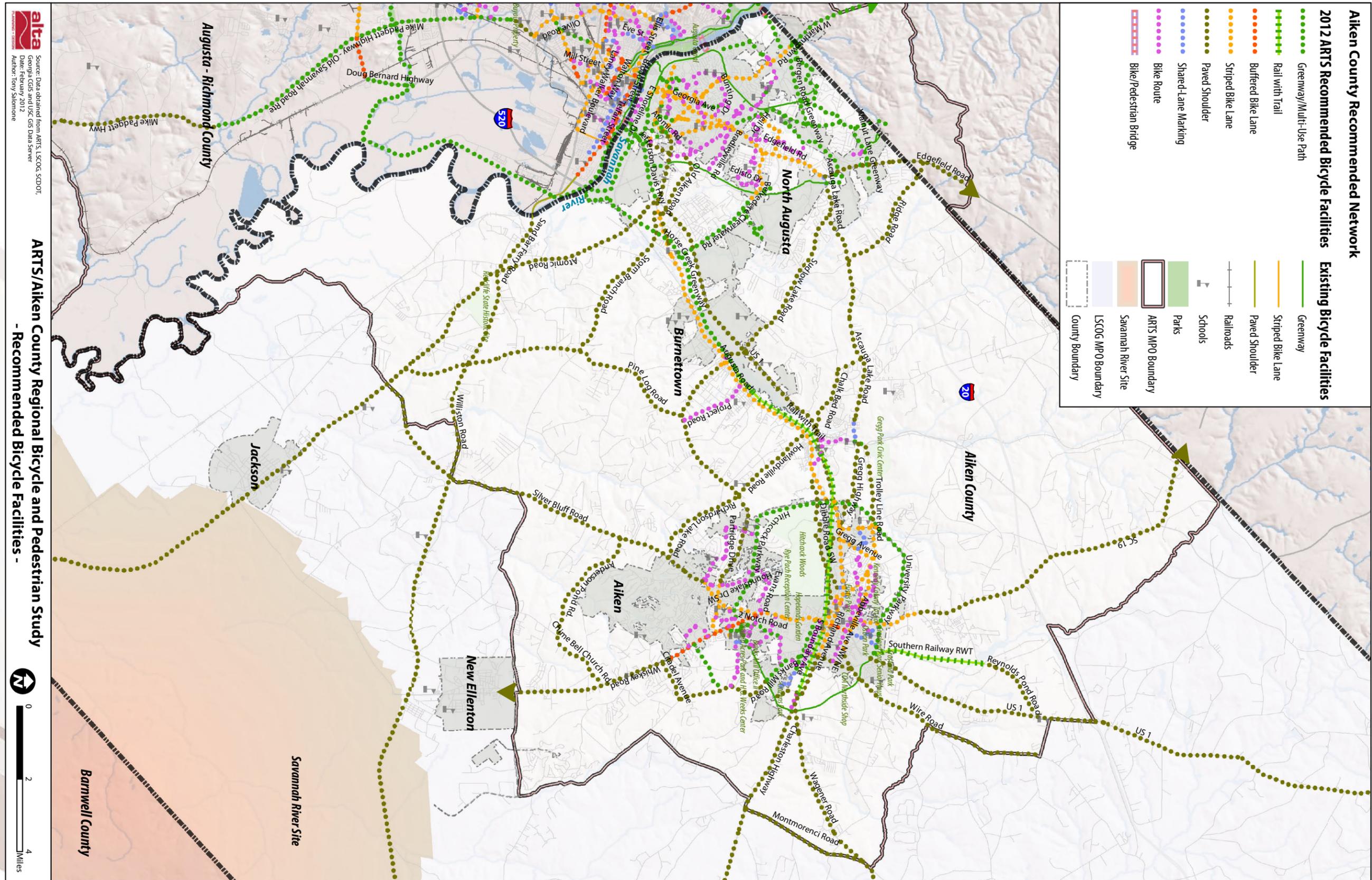
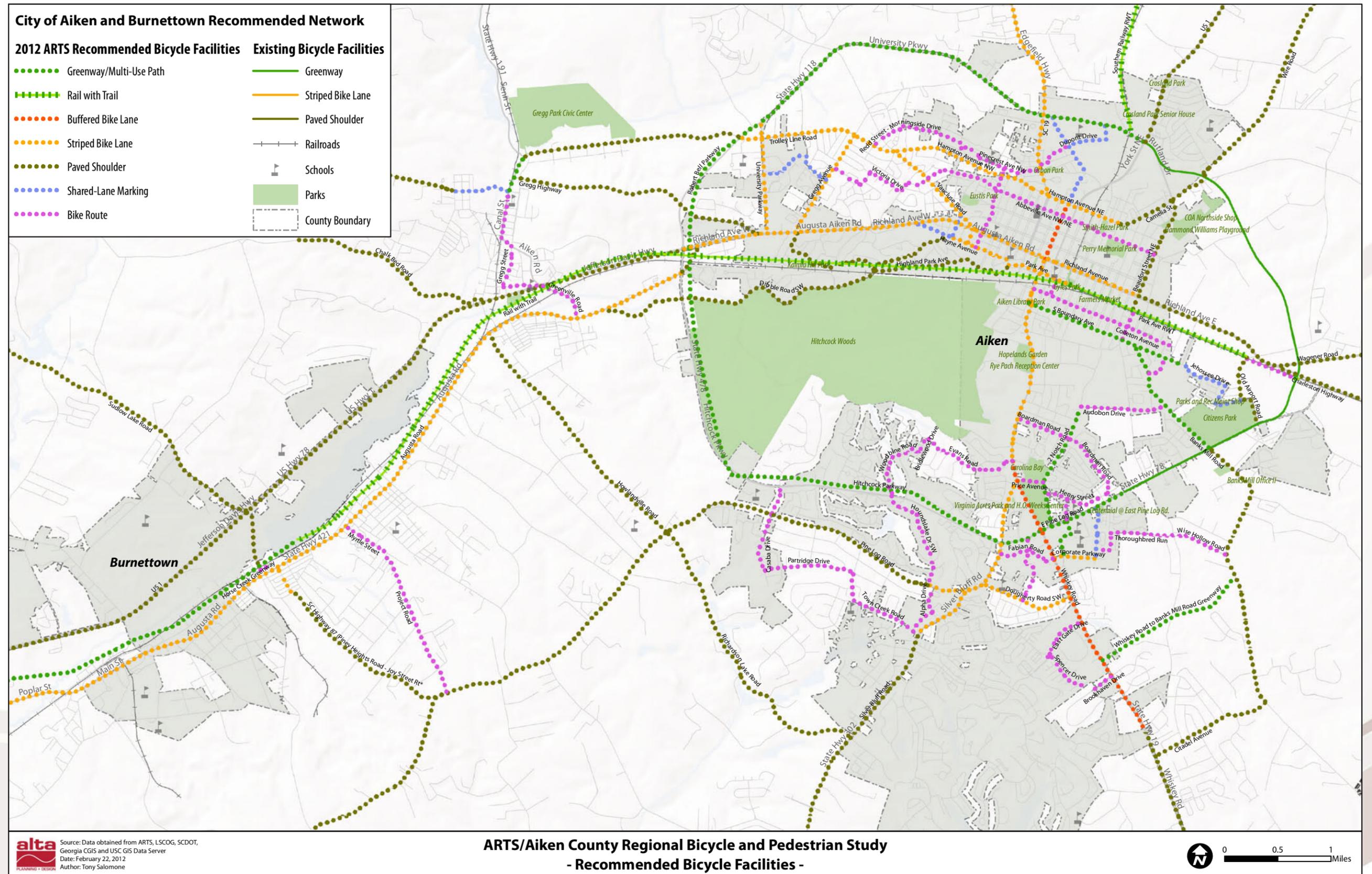


Figure 7-4: Aiken and Burnettown Proposed and Existing Bicycle Network







## Recommended Bicycle Lanes

Bicycle lanes provide a signed, striped, and stenciled lane for one-way travel on both sides of a roadway. Bicycle lanes are often used by commuters, bicycle enthusiasts, and casual riders (if on lower volume and lower speed roadways). Bicycle lanes are often recommended on roadways with moderate traffic volumes and speeds and where separation of users facilitates safer operation.

On higher volume roadways that serve as important connections in the bikeway network, this Plan recommends Buffered Bicycle Lanes, as shown in Table 7-4. Buffered Bicycle Lanes provide additional separation between the bicyclist and motor vehicle traffic.

A total of 30.44 miles of Bicycle Lanes and Buffered Bicycle Lanes are recommended for the urbanized area of Aiken County. Further detail regarding the application of Bicycle Lanes and Buffered Bicycle Lanes is provided in the Design Guidelines of this Plan, found in Appendix E.

**Table 7-4: Recommended Bicycle Lanes**

Corridor	From	To	Facility Type	Implementation Strategy	Length (mi)
Chesterfield Street NW	Hampton Avenue NW	Richland Avenue	Buffered Bike Lane	Lane Narrowing	0.58
Whiskey Road	Kings Grant Drive	Powderhouse Road	Buffered Bike Lane	Road Widening	2.82
Piney Heights Road - Joy Street (SC Highway 87)	Nettie Lane	Highway 421	Bike Lane	Lane Narrowing	0.27
Augusta Road	Stadium Circle	Storm Branch Road	Bike Lane	Lane Narrowing	7.28
Carolina Ave	Georgia Avenue	W Marintown Road	Bike Lane	Lane Narrowing	0.79
Chesterfield Street NW	Richland Avenue	Whiskey Road	Bike Lane	Lane Narrowing	0.55
Corporate Parkway	Whiskey Road	Centennial Avenue	Bike Lane	Lane Narrowing	0.40
Hampton Avenue NE	Camille Street	Greenville Street NW	Bike Lane	Lane Narrowing	0.42
Hayne Avenue	Park Avenue	Linden Street SW	Bike Lane	Lane Narrowing	0.62
Pine Log Road	Houndslake Drive	Silver Bluff Road	Bike Lane	Lane Narrowing	0.41
Richland Avenue	Vaucluse Drive	Beaufort Street NE	Bike Lane	Lane Narrowing	1.65
Silver Bluff Road	Pine Log Road	Indian Creek Trail	Bike Lane	Lane Narrowing	1.19
Vaucluse Road	Trolley Line Road	Richland Ave	Bike Lane	Lane Narrowing	1.06
E Buena Vista Ave	Riverside Blvd	Georgia Ave	Bike Lane	Lane Narrowing	0.35
W Buena Vista Ave	Georgia Avenue	Georgetwon Drive	Bike Lane	Lane Narrowing	0.81
W Martintown Rd	I-20 On Ramps (South)	I-20 On Ramps (North)	Bike Lane	Lane Narrowing	0.52
Waterloo Street	Hayne Avenue	Richland Avenue	Bike Lane	Lane Narrowing	0.14
West Ave	W Marintown Road	End of West Ave	Bike Lane	Lane Narrowing	1.38
Whiskey Road	Boardman Road	Kings Grant Drive	Bike Lane	Lane Narrowing	1.52

Corridor	From	To	Facility Type	Implementation Strategy	Length (mi)
Park Ave	Union Street	Highland Park Avenue	Bike Lane	Parking Reduction	0.58
Augusta Road	Hitchcock Parkway	Stadium Circle	Bike Lane	Road Diet	1.38
Atomic Rd	E Buena Vista Avenue	Martintown Road	Bike Lane	Road Widening	0.30
Belvedere Clearwater Rd	Edgefield Road	Palmetto Parkway	Bike Lane	Road Widening	1.70
Celeste Ave	Five Notch Road	Edgefield Road	Bike Lane	Road Widening	1.36
Dougherty Road SW	Whiskey Road	Silver Bluff Road	Bike Lane	Road Widening	0.90
E Buena Vista Ave	Atomic Road	Riverside Blvd	Bike Lane	Road Widening	0.50
E Martintown Rd	Georgia Avenue	Atomic Road	Bike Lane	Road Widening	0.96

### Recommended Roadways with Shared-Lane Markings

Roadways with Shared Lane Markings (SLMs), or Sharrows, are bicycle routes with stencils in the travel lane for bicycle accommodation. This plan recommends Sharrows be used on bikeway corridors where there are narrow travel lanes, high parking turn over, when bicyclists may need assistance with lane positioning, and where drivers may need additional notice to expect bicyclists regardless of the auto parking configuration. Sharrows will improve bicyclist mobility and access while increasing driver and bicyclist awareness. For all Roadways with Shared-Lane Markings, the implementation strategy is to add pavement markings.

As shown in Table 7-5, a total of 5.97 miles of roadways with Shared-Lane Markings are recommended for the urbanized area of Aiken County. Further detail regarding the purpose and application of Sharrows is provided in the Design Guidelines of this Plan, found in Appendix E.

**Table 7-5: Recommended Roadways with Shared Lane Markings**

Corridor	From	To	Length (mi)
13th Street Bridge	Georgia Ave. (SC)	Broad Street (GA)	0.38
Aiken Street - 2nd Street	Canal Street	Ergle Street	0.53
Ascauga Lake Road	100 yards east of Whitehall Road	Edgefield Road	0.13
Ascauga Lake Road	100 yards east of Whitehall Road	Edgefield Road	0.25
Centennial Avenue	Corporate Parkway	E Pine Log Road	0.50
Chesterfield Street NW	Columbia Avenue	Hampton Avenue NW	0.32
Damon Street	Jehossee Dr.	Old Airport Rd.	0.66
Dupont Drive	Rutland Drive	Teague St NW	0.49
Hayne Avenue	Linden Street SW	Richland Avenue	0.35
Hudson Road	Medical Park Drive	Gregg Avenue	0.32
Jehossee Drive	Cherokee St SE	Damon St.	0.26
Linden Street SW	Hayne Ave SW	Vaucluse Road	0.23
Medical Park Drive	Hudson Road	University Parkway	0.47
S Boundary Ave	Cherokee St SE	Old Airport Road	0.46
Teague St NW	Rutland Drive	Columbia Avenue NW	0.62



## Recommended Bicycle Routes

Bicycle Routes provide for shared roadway use and are generally only identified with signing. Bicycle Routes may have a wide travel lane or shoulder that allow for parallel travel with automobiles, or they may be a typical residential street with very low traffic volumes and speeds.

The recommended Bicycle Routes provide connections through residential areas connecting residents to schools, retail districts, and other community destinations, typically without having to travel on main arterial roadways. Table 7-6 lists the recommended Bicycle Routes of this Plan. For all routes, the implementation strategy is adding signage.

The Bicycle Route network recommended for the urbanized area of Aiken County totals 48.04 miles. Further detail regarding the purpose and application of a Bicycle Route network is provided in the Design Guidelines of this Plan, found in Appendix E.

**Table 7-6: Recommended Bicycle Routes**

Corridor	From	To	Length (mi)
Abbeville Ave NW/NE	Congaree Ave NW	Beaufort Street NE	2.15
Aiken Road - Canal Street	Gregg Street	2nd Street	0.57
Alpha Drive	Pine Log Road	Seven Oaks Drive	0.25
Alta Vista Ave	Mokateen Avenue	W Woodlawn Avenue	0.21
Amherst Drive	W Woodlawn Avenue	Bunting Drive	0.18
AP Nivens St	Aiken Road	Gregg Street	0.35
Assembly Street	Washington Circle	Congress Drive	0.06
Audobon Drive	Banks Mill Road	Two Notch Road	0.81
Austin St	Weston Street	Crestlyn Drive	0.19
Baker Street	Project Road	Myrtle Street	0.05
Beaufort Street SE	Park Ave SE	S Boundary Street	0.28
Boardman Road	Henry Street	Whiskey Road	1.19
Bradleyville Rd	Knox Avenue	Palmetto Parkway	1.42
Bridlewood Drive	Evans Road	Woodbine Road	0.16
Brookhaven Drive	Whiskey Road	Spencer Drive	0.24
Bunting Dr	Amherst Drive	End of Bunting Drive	1.37
Carolina Springs Rd	Atomic Road	Lorraine Drive	0.39
Casaba Drive	Partridge Drive	Pine Log Road	0.56
Cascade Dr	Cadada Court	Green Forest Drive	0.08
Cherry Laurel Dr	Walnut Drive	Oakland Drive	0.17
Clay St	Hampton Avenue	Observatory Avenue	0.15
Clearmont Dr	Wooden Ave	Edgefield Road	0.53
Colleton Avenue	Timberlane Road	Chesterfield Street NW	1.44
Collier Street	Henry Street	E Pine Log Road	0.21
Concord Ave	Observatory Ave	Sidereal Ave	0.09
Congress Drive	Assembly Street	Tennessee Ave NW	0.22
Crestlyn Dr	Austin Street	Seymour Drive	0.43
Depot Road - Carline Road	Hwy 421	Langley Dam Road	0.12
Dove Ave	Vireo Drive	W Hugh Street	0.11
Dupont Drive	Teague Street	Gayle Ave	0.26



Corridor	From	To	Length (mi)
E Hugh St	Georgia Avenue	Knox Drive	0.09
E Pine Grove Ave	Georgia Avenue	East Avenue	0.09
E Shoreline Drive	Landing Drive	End of Shoreline Drive	0.88
E Town Drive	Spring Grove Avenue	Spring Oak Lane	0.05
East Ave	E Pine Grove Ave	Spring Grove Lane	0.10
East Gate Drive	Spencer Drive	Whiskey Road	0.55
Edisto Ave	Victoria Drive	Santee Congaree Ave	0.11
Edisto Drive	Monterey Avenue	Ridgefield Drive	0.55
Evans Road	Hitchcock Drive SW	Bridlewood Drive	0.91
Evelyn Lane	Edgefield Road	Fairview Street	0.15
Fabian Road	Ola Hitt Lane	Silver Bluff Road	0.49
Fairfield Street	Colleton Avenue	Park Avenue	0.16
Fairlane Drive	Pinewood Road	Proposed Pressley Avenue Extension	0.05
Fairview Ave	Johnson Road	Clearmont Drive	0.44
Fairview St	Evelyn Lane	Celeste Avenue	0.57
Fairwood Ave	W Woodlawn Avenue	West Ave	0.49
Future Roadway	Old Plantation Road	W Marintown Road	0.13
Gayle Ave	Dupont Drive	Laurens Street NW	0.11
Gilbert Street	Banks Mill Road	S Boundary Avenue	0.25
Green Forest Drive	Cascade Drive	Knotty Pine Drive	0.29
Greenville Road	Jefferson Davis Hwy	Augusta Road	0.50
Gregg Street	AP Nivens Street	Aiken Road	0.40
Hampton Ave	W Marintown Road	Clay Street	0.08
Haskell Rd	Lehigh Avenue	Palmetto Avenue	0.09
Heil Dr	Five Notch Road	Pressley Avenue	0.29
Henry Street	Collier Street	Boardman Road	0.63
Hitchcock Drive SW	Whiskey Road	Evans Road	0.08
Holly Lane	Floyd Ave	Carolina Springs Road	0.11
Houndslake Dr SW	Varden Dr	Pine Log Road	1.03
Huntsman Drive SW	Hitchcock Parkway	Pine Log Road	0.28
Johnson Rd	Celeste Avenue	Fairview Avenue	0.38
Knobcone Ave	W Marintown Road	Pisgah Road	1.29
Knollwood Blvd	Pisgah Road	White Pine Drive	0.17
Knotty Pine Drive	Green Forest Drive	White Pine Drive	0.17
Lamar Lane - Kalmia Forest Drive	Wildwood Drive	Valley Road	0.11
Laurens St	E Marintown Road	Yardley Drive	0.25
Lecompte Ave	Georgia Avenue	Old Edgefield Road	0.43
Lehigh Ave	Haskell Road	Kerr Street	0.15
Levels Church Road	Old Airport Road	120' NW of Pine Log Road	0.48



Corridor	From	To	Length (mi)
Lorraine Drive	Seymour Drive	Womrath Road	0.31
Mokateen Ave	Jackson Avenue	Alta Vista Avenue	0.13
Monterey Ave	Edisto Drive	Rhomboid Place	0.45
Morgan Street NW-Morgan Street SW - Fauberg Street	Pinecrest Avenue	Hayne Avenue	0.80
Myrtle Street	Baker Street	Hwy 421	0.47
Neilson Street	Pawnee Connector	Dougherty Road	0.27
Oak Street	Valley Road	Victoria Drive	0.16
Oakland Dr	Redbud Drive	Cherry Laurel Drive	0.24
Observatory Ave	W Marintown Road	Concord Avenue	0.18
Ola Hitt Lane	Whiskey Road	Fabian Road	0.09
Old Plantation Road	Plantation Drive	W Marintown Road	0.21
Palmetto Ave	Haskell Road	Rhomboid Place	0.14
Partridge Drive	Town Creek Road	Casaba Drive	0.86
Pawnee Connector	Pawnee Road	Neilson Street	0.20
Pawnee Road	E Pine Log Road	Pawnee Connector	0.22
Photinia Drive	Thoroughbred Run	Centennial Avenue	0.30
Pinecrest Ave NW	Plunkett Ave NW	Washington Circle	0.41
Pinewood Rd	Edgefield Road	Fairlane Drive	0.25
Pisgah Rd	Knollwood Blvd	Knobcone Avenue	0.05
Plunkett Ave NW	Laurens Street NW	Pinecrest Ave NW	0.21
Possible Road	Clay Street	555 Feet North of Clay Street	0.11
Pressley Avenue - Pressley Avenue Ext	Heil Drive	Fairlane Drive	0.46
Price Avenue	Two Notch Road	Whiskey Road	0.25
Project Road	E Pine Log Road	Baker Street	1.41
Redd Street - Morningside Drive	Tennessee Ave NW	Trolley Line Road	0.73
Rhomboid Place	Monterey Avenue	Palmetto Avenue	0.22
Ridgefield Dr	Belvedere Clearwater Road	Edisto Drive	0.48
Santee Congaree Ave - Congaree Ave NW	Edisto Ave	Abbeville Ave NW	0.38
Seven Oaks Drive	Alpha Drive	Town Creek Road	0.26
Seymour Drive	Crestlyn Drive	Lorraine Drive	0.23
Sidereal Ave	Concord Avenue	Georgia Avenue	0.11
Spencer Drive	Brookhaven Drive	East Gate Drive	0.48
Spring Grove Ave	E Town Drive	East Avenue	0.21
Spring Oak Lane	End of Spring Oak Lane	E Town Drive	0.27
St James St	Edgefield Road	Lehigh Avenue	0.35
Thoroughbred Run	Powderhouse Road	Photinia Drive	0.59
Towhee Ave	Bunting Drive	Vireo Drive	0.17
Town Creek Road	Seven Oaks Drive	Partridge Drive	0.95



Corridor	From	To	Length (mi)
Valley Road	Kalmia Forest Drive	Oak Street	0.05
Varden Road	Woodbine Road	Houndslake Drive	0.10
Victoria Drive	Oak Street	Edisto Ave	0.34
Vireo Drive	Towhee Avenue	Dove Avenue	0.34
W Hugh St	Green Forest Dr	Georgia Avenue	0.68
W Pine Grove Ave	Park Avenue	Carolina Avenue	0.47
W Woodlawn Ave	Amherst Drive	Georgia Avenue	1.37
Washington Circle	Pincrest Ave NW	Assembly Street (northside of W. Circle)	0.22
Weston St	Yardley Drive	Austin Street	0.13
White Pine Dr	Knollwood Blvd	Knotty Pine Drive	0.12
Whitlows Rd	Knox Ave	Womrath Road	0.27
Wildwood Drive	Gregg Ave	Lamar Lane	0.20
Wise Hollow Road	Banks Mill Road	Powderhouse Road	0.54
Womrath Rd	Bradleyville Road	Lorraine Drive	1.38
Woodbine Road	Bridlewood Drive	Varden Road	0.59
Yardley Dr	Laurens Street	Weston Street	0.07

### Recommended Paved Shoulders

Paved shoulders are a type of separated bikeway, which uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Typically found in less dense areas, paved shoulders are paved roadways with striped shoulders wide enough for bicycle travel (generally four to six feet wide). The implementation strategies applicable to the paved shoulder facilities recommended in this Plan are roadway widening, lane narrowing, and parking reduction.

This Plan recommends 198.16 miles of paved shoulders for the urbanized area of Aiken County, as shown in Table 7-7. Further detail regarding the development of a greenway network is provided in the Design Guidelines of this Plan, found in Appendix E.

**Table 7-7: Recommended Paved Shoulders**

Corridor	From	To	Length (mi)
Storm Branch Road	Pine Log Road	Augusta Road	4.73
Anderson Pond Road	Silver Bluff Road	Chime Bell Church Road	3.50
Ascauga Lake Road	Ergle Street	100 yards east of Whitehall Road	6.93
Atomic Road	Martintown Road	ARTS Boundary	11.47
Augusta Road	Hitchcock Parkway	Richland Avenue	1.32
Augusta Road - Poplar Street	Stadium Circle	Atomic Road	1.20
Banks Mill Road	E Pine Log Road	Citadel Drive	2.67
Beaufort Street NE	Camillia Street	Park Ave SE	1.12
Breezy Hill Road	Ascauga Lake Road	Chalk Bed Road	0.73
Camelia St	Beaufort Street NE	Hampton Avenue NE	0.57
Carolina Springs Road	Atomic Road	E Buena Vista Avenue	0.63
Chalk Bed Road	Breezy Hill Road	Main Street	1.95



Corridor	From	To	Length (mi)
Charleston Highway	Old Wagener Road	Montmerenci Road	3.19
Chime Bell Church Road	Anderson Pond Road	Whiskey Road	2.59
Citadel Avenue	Banks Mill Road	Whiskey Road	1.18
Dibble Road SW	Hayne Ave SW	Augusta Road	3.62
Gregg Highway	Richland Avenue W	Canal Street	2.46
Highland Park Ave	Park Avenue SW	Laurel Drive	3.87
Howlandville Road	Pine Log Road	Augusta Road	2.52
Jefferson Davis Hwy	Hitchcock Pkwy	GA/SC Line	12.26
Langley Dam Road	Carline Road	Sudlow Lake Road	0.58
Laurel Drive - Summit Drive - Spring Drive – Meadow Drive	Highland Park Avenue	Richland Ave	0.70
Montmorenci Road	Wagener Road	Charleston Highway	3.59
Old Aiken Road	Augusta Road	Carolina Springs Road	2.01
Old Airport Road	Park Ave SE	E Pine Log Road	0.74
Pine Log Road	Atomic Road	Houndslake Drive	14.22
Piney Heights Road - Joy Street (SC Highway 87)	Pine Log Road	Nettie Lane	1.74
Reynolds Pond Road	Southern Railway RWT (Proposed)	US 1	2.10
Richardson Lake Road	Silver Bluff Road	Pine Log Road	2.85
Richland Avenue	Beaufort Street NE	Old Wagener Road	1.27
Ridge Road	Ascauga Lake Road	Edgefield Road	3.61
Sand Bar Ferry Road	SC/GA border	Easternmost ARTS boundary	1.82
SC 19	Shilo Heights Road	Aiken/Edgefield County Line	9.17
Silver Bluff Road	Indian Creek Trail	Atomic Road	12.13
Sudlow Lake Road	Langley Dam Road	Ascauga Lake Road	4.60
Trolley Line Road	University Parkway	Canal Street	2.07
US 1	Abbeville Avenue	Aiken County Line	24.35
US 1	Old Aiken Rd	Augusta Road	9.68
US 1	Rutland Drive	ARTS Boundary	6.80
Wagener Road	Richland Avenue E	Montmorenci Road	5.07
Whiskey Road	Powderhouse Road	ARTS Boundary (South)	4.33
Williston Road	Sand Bar Ferry Road	ARTS Bondary	5.97
Wire Road	Beaufort Street NE	ARTS boundary	6.09
Edgefield Road	Ascauga Lake Road	ARTS Boundary (Edgefield County)	4.17

## Recommended Greenways

Greenways are facilities separated from roadways for use by bicyclists and pedestrians. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills. As identified in Table 7-8, the greenways recommended in this Plan may be constructed outside of a roadway right-of-way, such as along greenbelts, rivers, utility corridors, or in parks. Other types of greenways may be constructed within a roadway corridor (listed as “Multi Use Path”), along a new or existing bridge (listed as “Greenway Bridge”), or within the right-of-way of an active rail line (listed as “Rail with Trail”). This category includes the facilities termed “Greenways” in North Augusta, which are greenways named in honor of former Mayor Thomas Greene.

A total of 73.39 miles of greenways are recommended for the urbanized area of Aiken County. Further detail regarding the development of a greenway network is provided in the Design Guidelines of this Plan, found in Appendix E.

**Table 7-8: Recommended Greenways**

Corridor	From	To	Greenway Type	Length (mi)
Amy Circle Greenway	Amy Circle	376' North of Amy Circle	Greenway	0.07
East Shoreline Greenway	River Club Lane	Jefferson Davis Hwy	Greenway	0.98
Fox Creek Greenway	Fox Creek	Northern Aiken County Greenway	Greenway	0.33
Greenway Loop	Edgefield Road	Ascauga Lake Road	Greenway	1.15
Gregory Lake Greenway	Gregory Lake Road	Approx 1 Mile S of Gregory Lake Road	Greenway	1.06
Horse Creek Greenway	Langley Dam Road	Savannah River	Greenway	3.29
Knobcone Greenway Loop	Curtis Drive	Lodgepole Avenue	Greenway	0.22
Northern Savannah River Greenway	Existing Greenway (River Oak Drive)	Savannah Barony Drive	Greenway	0.96
Palmetto Greenway	Atomic Road	Jefferson Davis Hwy	Greenway	0.60
Palmetto Greenway Ext	Existing Palmetto Greenway	1659' N of Palmetto Greenway	Greenway	0.31
Savannah Greenway	Goodrich Street	Horse Creek	Greenway	2.89
Savannah River Greenway	Gordon Highway	East Shoreline Drive	Greenway	0.25
Whiskey Road to Banks Mill Road Greenway	Whiskey Road	Banks Mill Road	Greenway	1.52
E Martintown Road	Atomic Road	E Buena Vista Avenue	Multi Use Path	0.42
S Aiken Lane	E Pine Log Road	Corporate Parkway	Multi Use Path	0.41
Atomic Rd	Buena Vista Ave	Old Edgefield Rd.	Multi Use Path	0.53
Belvedere Clearwater Road	Palmetto Parkway	US 1	Multi Use Path	2.11
Belvedere Road	US 1	Augusta Road	Multi Use Path	0.63
Bergen Road Greenway	1000 Feet West of I-20 on ramp	Five Notch Road	Multi Use Path	2.11



Corridor	From	To	Greenway Type	Length (mi)
Brookside Avenue Greenway	E Buena Vista Avenue	Spring Grove Avenue	Multi Use Path	0.23
Cascade Drive Greenway	Cascade Drive	Springwood Drive	Multi Use Path	0.10
Crystal Lake Drive/ Mokateen Avenue Greenway	Bluff Avenue	Jackson Avenue	Multi Use Path	0.76
E Buena Vista Avenue	Floyd Ave	Atomic Road	Multi Use Path	0.42
E Martintown Rd	E Buena Vista Avenue	US 1	Multi Use Path	0.10
E Pine Log Road	Silver Bluff Road	Trailwood Avenue	Multi Use Path	1.27
Edgefield Road Greenway	Walnut Lane	Austin Graybill Road	Multi Use Path	0.31
Five Notch Road Greenway	Knox Road	End of Five Notch Road	Multi Use Path	4.60
Gregory Lake Road Greenway	Sedgewood Court	Five Notch Road	Multi Use Path	0.16
Hitchcock Parkway	US 1	Whiskey Road	Multi Use Path	4.85
I-20 Greenway	Riverwatch Parkway	W. Marintown Road	Multi Use Path	2.05
Jefferson Davis Hwy	E. Marintown Road	Revco Road	Multi Use Path	1.86
Lake Avenue Greenway	Terrace Avenue	Jackson Avenue	Multi Use Path	0.73
E. Martintown Rd	E Buena Vista Avenue	US 1	Multi Use Path	0.26
Nims Branch River Greenway	1500' N of Old Sudlow Lake Rd	790' S of Old Sudlow Lake Rd	Multi Use Path	0.46
Northern Aiken County Greenway	Bergen Road	Edgefield County	Multi Use Path	2.75
Old Sudlow Lake Rd	Belvedere Clearwater Road	750 Feet North of Summer Lane	Multi Use Path	1.08
Plantation Dr	Savannah Barcony Drive	Old Plantation Road	Multi Use Path	0.14
Pole Branch River Greenway	Ponderosa Drive	Edgefield Road	Multi Use Path	2.46
Possible Road Greenway	Hampton Avenue	Fieldcrest Drive	Multi Use Path	0.48
Rivernorth Drive Greenway	Proposed Bobby Jones Greenway	End of Rivernorth Drive	Multi Use Path	0.64
Robert Bell Parkway	University Parkway	US 1	Multi Use Path	1.46
S Boundary Ave	Chesterfield St NW	Cherokee St SE	Multi Use Path	1.59
Savannah Barony Dr	Wildmeade Court	Plantation Drive	Multi Use Path	0.58
Scott Drive Greenway	Madison Road	Five Notch Road	Multi Use Path	0.21
Spring Oak Greenway	Buena Vista Avenue	Marintown Road	Multi Use Path	0.55
University Parkway	Robert M Bell Parkway	SC 19	Multi Use Path	4.11
Walnut Lane Greenway	Five Notch Road	Edgefield Road	Multi Use Path	1.56
Canal Street	Trolley Line Road	2nd Street	Multi Use Path	0.35



Corridor	From	To	Greenway Type	Length (mi)
Two Notch Road	Audobon Road	E Pine Log Road	Multi Use Path	1.21
Banks Mill Road	S Boundary Ave	E Pine Log Road	Multi Use Path	1.24
Active Rail Line	Greenville Road	Park Avenue	Rail with Trail	4.97
Levels Church Road RWT	120' NW of E Pine Log Road	Levels Church Road	Rail with Trail	0.05
Park Ave RWT	Old Airport Road	Union Street	Rail with Trail	1.87
Langley Pond RWT	State Highway 70	Langley Dam Road	Rail with Trail	3.42
Southern Railway RWT	Rutland Drive	Reynolds Pond Road	Rail with Trail	3.08
Greenway Bridge			Greenway Bridge	0.19
I-20 Greenway	Riverwatch Parkway	W. Marintown Road	Multi Use Path Bridge	0.26
Savannah River Bridge Near Riverwatch	Riverwatch Parkway	Riveroak Drive	Greenway Bridge	0.51

### Bikeway Projects Recommended for Further Study

The urbanized area of Aiken County is delineated by a number of high-volume, relatively high-speed commercial arterials, which provide challenging conditions for cyclists attempting to move along or across these corridors. The corridors are characterized by 5- to 7-lane cross-sections and traffic volumes on these roadways tend to be high. These corridors also are the location of many primary local and regional destinations and provide critical north-south and east-west connectivity. These corridors were also named as priority locations for bicycling improvements by participants in the public input process of this plan (see Chapter 5 for further information). Table 7-9 lists corridors recommended for further study.

**Table 7-9: Corridors Recommended for Further Study**

Corridor	From	To	Recommended Facility Type	Length (mi)	ADT
Richland Avenue	Vaucluse Drive	Hitchcock Parkway	Striped Bike Lane	3.79	12400-19600
Whiskey Road	Boardman Road	Kings Grant Drive	Striped Bike Lane	1.51	15400-19300
Whiskey Road	Kings Grant Drive	Powderhouse Road	Buffered Bike Lane	2.82	15400-36000

At a minimum, this plan recommends that bicycle lanes be implemented on these roadways. However, bike lanes alone will provide very little comfort for most cyclists on roadways of this nature. Higher order bicycle facilities that provide greater separation between bicyclists and motor vehicles would be more appropriate (such as buffered bike lanes). Planning and design for these corridors could include access management approaches to limit the number and spacing of driveways and turning locations; land use policies to facilitate more bicycle- and pedestrian-friendly development patterns; connectivity improvements to provide additional parallel route options; travelway designs that are more appropriate to an urban context; and speed reduction measures for motor vehicle travel.



Additionally, a number of corridors identified for bikeway facilities in this Plan present an opportunity for implementation through lane reconfiguration, which is also commonly known as a “road diet” (see page 67 of Appendix E: Design Guidelines). Road diets typically involve reducing the number of travel lanes (from a four-lane road to a two-lane road with center turn lane, for example) allowing adequate space for bicycle lanes. Road diets also have traffic calming and safety benefits. A report by the Federal Highway Administration documents lower pedestrian crash risk when crossing two- or three-lane roads, as compared to roads with four or more lanes.<sup>2</sup> Additionally, a reduction in travel lanes does not necessarily result in a reduction in motor vehicle traffic volumes and in some cases leads to an increase in ADT (East Boulevard in Charlotte, NC, as one example). Research shows that roadways with an ADT under 18,000 are prime candidates for road diets. A recent FHWA study of road diet streets in California, Iowa, and Washington found that increased congestion might occur for streets over 20,000 ADT.

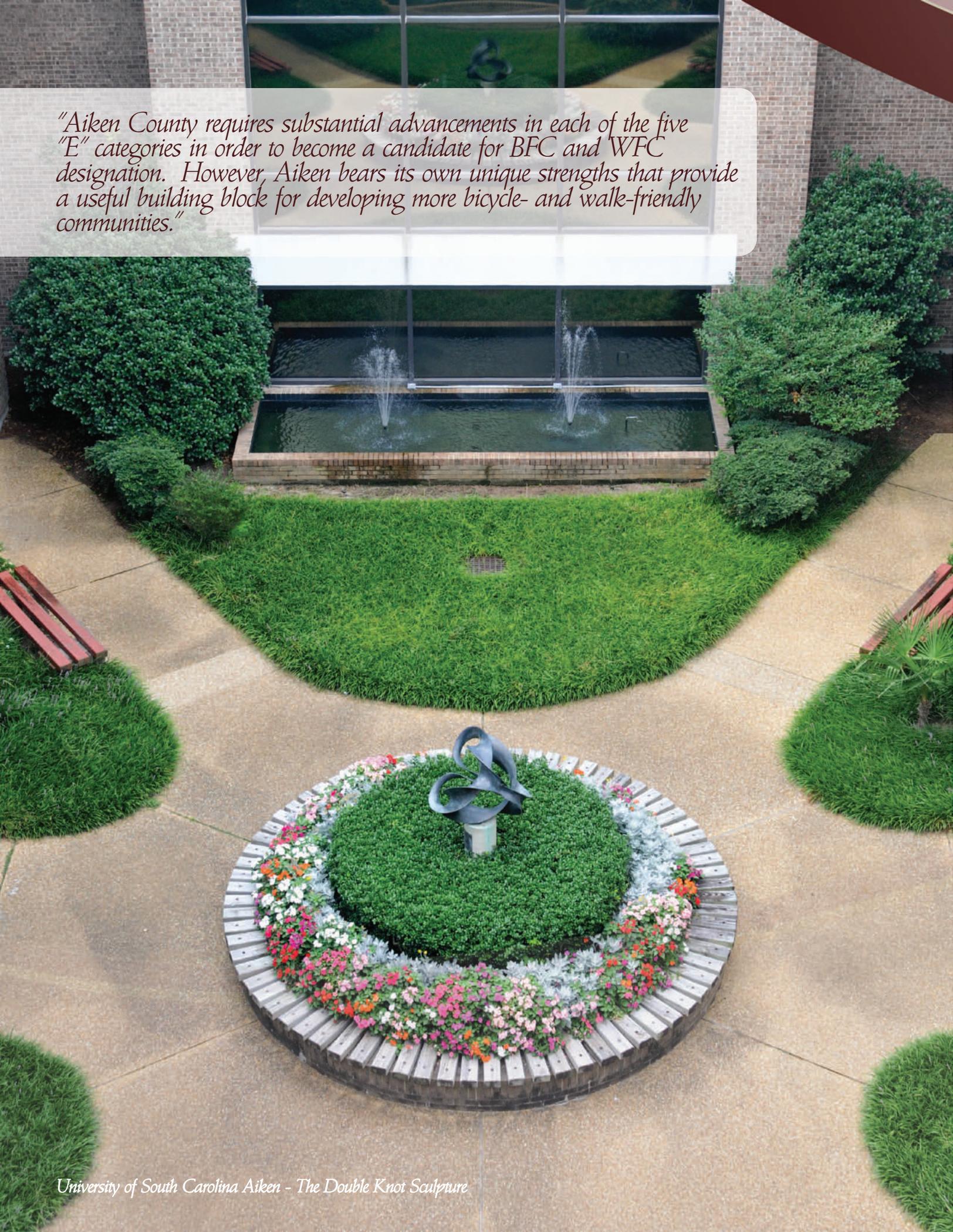
This Plan recommends that Aiken County and the City of Aiken coordinate with ARTS and SCDOT to consider reconfiguring lane widths on Augusta Road (Highway 421) from Hitchcock Parkway to Stadium Circle. The current lane configuration includes three travel lanes and no bicycle lanes with an estimated traffic volume of 5300 ADT. As a key bikeway corridor connecting the City of Aiken to North Augusta, SC and Augusta, GA, this roadway segment should be considered for reconfiguration to two travel lanes and two striped bicycle lanes.



*Before and after images of a road reconfiguration show the benefits of slowing traffic speeds in this residential, school zone, while also providing space for bicyclists on the roadway, providing a buffer for pedestrians on the sidewalk, and accommodating similar traffic volumes.*

<sup>2</sup> Federal Highway Administration: Safety Effects of Marked vs Unmarked Crosswalks at Uncontrolled Locations.

*"Aiken County requires substantial advancements in each of the five "E" categories in order to become a candidate for BFC and WFC designation. However, Aiken bears its own unique strengths that provide a useful building block for developing more bicycle- and walk-friendly communities."*



# Chapter Eight



## Prioritization and Implementation

### *Introduction*

This chapter presents implementation strategies for achieving a Bicycle- and Walk-Friendly Community (BFC and WFC) designation for the City of Aiken, as well as recommended infrastructure projects for the urbanized area of Aiken County. Proposed projects are also prioritized based on criteria identified by the Project Steering Committee, the Aiken County Project Subcommittee, and the Project Team. Plans of this size are typically implemented over decades using a combination of private, local, state, and federal funding and participation. A deliberate phasing and prioritization strategy is required to effectively focus available funding, maximize funding and implementation, and meet the needs of the region, while also allowing flexibility to maximize completed projects. It is important to note, however, that all recommended projects of the Plan are important for the comprehensive bikeway and walkway network and should be implemented when funding and political conditions warrant

### *BFC and WFC Action Plan*

As discussed in Chapter 3, the BFC and WFC assessment process revealed that the City of Aiken bears its own unique strengths towards improving its bicycle- and walk-friendliness. In particular, the City has substantial potential to be considered as a candidate for WFC designation in the near-term. The City requires substantial advancements in each of the five "E" categories in order to become a candidate for BFC designation. The strengths identified for the City provide a useful building block for developing a more bicycle- and walk-friendly community. The community assessment was conducted using the full applications for designation of the BFC and WFC programs, which are provided in Appendix C of this Plan. Based on the answers provided for the application questions, the following is a list of

near-term steps that the City of Aiken can take to begin the process of improving its BFC and WFC applications:

- Adopt the regional Bicycle & Pedestrian Plan Update as the County's/City's Plan
- Appoint a bicycle coordinator and pedestrian coordinator within the County's/City's existing staff
- Participate in the Regional Bicycle and Pedestrian Committee (recommended in Chapter 5 of this Plan) as a collaborative body supporting regional progress as bike-friendly and walk-friendly communities.
- Adopt a bicycle parking ordinance
- Adopt a "complete streets" policy
- Inventory bike parking spaces in the community, including those at civic buildings and public places
- Inventory ADA curb ramps on sidewalks
- Track investment in bicycling and walking facilities
- Identify sources of funding for bicycle and pedestrian projects and programs
- Include community groups and private sector partners in the BFC and WFC discussions

The non-infrastructure recommendations of this Plan provide relatively inexpensive means of improving and raising public awareness and adding to the safety and enjoyment of bicycling and walking in the City of Aiken. Because of their minimal expense and importance to supporting bicycle and pedestrian travel and thereby increasing activity, all of the recommended programs and policies should be considered short- or medium-term priorities. The non-infrastructure



recommendations of this Plan are designed for implementation within two years of adoption of the Plan.

While the vast majority of infrastructure and policy recommendations fall within the exclusive jurisdiction of the City of Aiken and Aiken County, many program recommendations can, and should, fall under the banner of outside agencies, private sector partners, and nonprofit organizations.

Nonprofit organizations that may want a role in implementing community programs in the City of Aiken are identified in Chapter 6 as existing and potential partners. A collaborative approach to implementing and sustaining bicycling and walking programs contributes to the broader vision of fostering a strong advocacy community and culture. 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 and walk friendly community campaigns.

The following timeline provides a framework for the City of Aiken to achieve BFC and WFC status:

<b>August 2012:</b> Adopt the Aiken County Bicycle & Pedestrian Plan. (SC ARTS Subcommittee)
<b>Summer 2012:</b> Assemble and organize the regional bicycle and pedestrian committee.
<b>August 2012:</b> In coordination with start of school year and fall weather, launch at least one new program based on the recommendations of the Aiken County Bicycle & Pedestrian Plan.
<b>September 2012:</b> Coordinate and host annual bicycle and pedestrian counts.
<b>October 2012:</b> Map and analyze count data to determine key findings.
<b>January 2013:</b> Review priority network and policy recommendations of the Aiken County Bicycle & Pedestrian Plan and develop a strategy for implementing new facilities and improved policies during the 2013 calendar year.
<b>Early Spring 2013:</b> Develop, plan and promote Bike Month activities for May.

<b>April 2013:</b> Use springtime weather as a launching point to introduce at least one new program based on the recommendations of the Aiken County Bicycle & Pedestrian Plan.
<b>May 2013:</b> Promote Bike Month events.
<b>June 2013:</b> Apply for Walk Friendly Community designation.
<b>Summer 2013:</b> Develop a Safe Routes to School Plan that involves citywide collaboration and local support.
<b>August 2013:</b> In coordination with start of school year and fall weather, launch new programs based on Aiken County Bicycle & Pedestrian Plan recommendations and the goals of the Safe Routes to School Plan.
<b>September 2013:</b> Coordinate and host annual bicycle and pedestrian counts.
<b>January 2014:</b> Review priority network and policy recommendations of the Aiken County Bicycle & Pedestrian Plan and develop a strategy for implementing new facilities and improved policies during the 2014 calendar year.
<b>Early Spring 2014:</b> Develop, plan and promote Bike Month activities for May.
<b>March 2014:</b> Assess progress by reviewing Bicycle Friendly and Walk Friendly Community application and citing changes to the answers for each application question. Create a strategy for making further BFC and WFC improvements that will bolster the applications.
<b>May 2014:</b> Promote Bike Month events.
<b>July 2014:</b> Apply for Bicycle Friendly Community designation.

### *Infrastructure Improvement Prioritization*

The infrastructure recommendations of this Plan include 378.92 miles of new greenways and bikeways to increase the network connectivity of the urbanized area of Aiken County and to create a comprehensive, safe, and logical network for bicyclists and pedestrians. To gauge the relative importance of recommended improvement projects, the Project Steering Committee and Aiken County Subcommittee developed evaluation criteria to identify and prioritize each proposed project. The criteria highlight the features of a bicycle and pedestrian network most important to Aiken County residents and rank projects



against each other as an indication of their relative importance. Through this approach, the best possible future bicycling and walking network is determined.

### Project Evaluation Criteria

Table 8-1 shows the evaluation criteria used to prioritize potential projects, as well as the possible scores (0 – 5) and the total potential values. While all of the projects are important to the development of Aiken County's bicycling and walking network, focusing on the most viable and publicly supported projects can build momentum and set the groundwork for future investments. The ratings within each category were considered together to prioritize projects. Projects fulfilling the greatest number of evaluation criteria received higher scores, correspondingly leading to higher rankings within the overall list. Any of these projects can proceed when funding and political conditions warrant.

**Table 8-1: Project Evaluation Criteria**

Criteria	Scoring Weights	Available Points
<b>Proximity to Attractors/Destinations</b>		
Access to public or private school (K-12)	Yes = 2; No = 0	16 pts.
Direct access to existing/planned transit route or stop	Yes = 2; No = 0	
Direct access to major employment centers	Yes = 2; No = 0	
Direct access to mixed-use areas or shopping centers	Yes = 2; No = 0	
Direct access to University/College	Yes = 2; No = 0	
Direct access to Central Business District	Yes = 2; No = 0	
Access to public places (parks, libraries, civic uses)	Yes = 2; No = 0	
Transit Stop within 1/2 mile radius	Yes = 1; No = 0	
Direct access to higher density residential areas	Yes = 1; No = 0	
<b>Connectivity</b>		
Completes gap in existing bicycle or pedestrian facility	Yes = 4; No = 0	14 pts.
Removes barrier in route	Yes = 3; No = 0	
Regional connection and/or major roadway/river Xing	Yes = 3; No = 0	
Connects 2 or more communities	Yes = 2; No = 0	
Connects residential area to business/commercial area	Yes = 1; No = 0	
Project supports economic development/tourism	Yes = 1; No = 0	
<b>Safety / Health / Quality of Life</b>		
Improves locations where bicycle or pedestrian crashes/fatalities have occurred	Yes = 4; No = 0	14 pts.
Is the improvement on a high volume road	Yes = 2; No = 0	
Is the improvement separated from vehicular traffic	Yes = 2; No = 0	
Provides speed reduction or traffic calming benefits	Yes = 2; No = 0	
Improves physical activity	Yes = 2; No = 0	
Improves air quality/offers environmental benefits	Yes = 2; No = 0	
<b>Feasibility</b>		
Improvement is on or adjacent to roadway project contained in the ARTS 2035 LRTP.	Yes = 5; No = 0	10 pts.
Improvement has full or partial funding, or is likely to be funded	Yes = 3; No = 0	
Improvement was recommended during the public outreach process/or is contained and supported in a local plan	Yes = 2; No = 0	

## Priority Projects and Cost Opinions

This section identifies the highest priority areas for pedestrian improvements, the top 20 ranked bikeway and greenway projects throughout Aiken County, and priority bicycle parking locations. First- and second-tier projects are described in Tables 8-2 through 8-6. The top 50 ranked bikeway and greenway projects were determined based on the evaluation criteria and prioritization matrix described in the previous section. All remaining proposed projects not listed in Table 8-6 are within the third-tier. Based on extensive research, analysis, and public input in the preparation of this plan, the entire list of projects proposed within this Plan have evidenced merit. Third-tier projects play an important role in completing the vision of the bicycling and pedestrian network, but should be considered long-term projects based on their limited ranking within the prioritization matrix.

SCDOT, Aiken County, and the municipalities of Aiken County will be the implementing agencies for on-street facilities. Aiken should coordinate with SCDOT on the design and implementation of these facilities. In most cases, implementation of bike lanes on

SCDOT roadways will be completed through scheduled resurfacing projects. SCDOT will incur most of the street resurfacing costs. The added incremental costs for bike lane symbols and signage will be borne locally.

## Walkway Network Priority Zones

Chapter 7 describes the pedestrian network prioritization method used to identify a hierarchy of pedestrian infrastructure needs throughout the urbanized area of Aiken County. The results of the refined pedestrian suitability analysis provide County priorities for pedestrian infrastructure. Table 8-2 provides pedestrian priority zones, based on the analysis of the urbanized area of Aiken County.

This Plan recommends that Aiken County and its municipalities prioritize improvements to the pedestrian infrastructure in the zones listed in Table 8-2. The results of the refined pedestrian suitability analysis reflects a composite ranking score of both supply (existing infrastructure) and demand (pedestrian activity), thus priority investments in these areas could range from intersection safety upgrades to new sidewalk construction, and from improved sidewalk maintenance to enhanced pedestrian amenities (such as lighting, street furniture, etc).

**Table 8-2 Walkway Network Priority Zones**

Priority Zone	Identifiers/Boundary Corridors
<b>York Street – Rutland Crossing</b>	York Street Corridor and Rutland Drive Corridor and connecting residential streets near that intersection
<b>Northwest Aiken School Zone</b>	Hampton Avenue from SC 19 to North Carolina Avenue and streets connecting to and between Aiken High School and surrounding neighborhoods
<b>Virginia Acres Park Zone</b>	Residential street east and north of Virginia Acres Park
<b>South Aiken</b>	Full extent of Whiskey Road, Silver Bluff Road, and East Pine Log Road south of Aiken's city center
<b>West Central North Augusta</b>	Residential streets west of Georgia Avenue from Spring Grove Avenue to Bluff Avenue
<b>Burnettown Central</b>	Anthony Drive and connecting streets



### Bicycle Parking Priorities

Beyond priority bikeway projects, increasing bicycle parking is an area-wide priority project. Bicycle parking should be expanded as the bikeway network is expanded. This Plan recommends three priority action steps to achieve this and to ensure a wide network of bicycling parking locations that will serve the broad population of bicyclists.

- As described in the Policy Recommendations of Chapter 6, this Plan recommends that Aiken County and its municipalities adopt local policies to ensure long-term investment in bicycle parking throughout the region.
- Secondly, this Plan recommends that Aiken County and its municipalities ensure that bicycle parking is provided at all publicly owned buildings and facilities. This includes all public schools, civic buildings (such as libraries), government offices, recreation facilities, and others.
- Thirdly, Aiken County and its municipalities should partner with local landowners to prioritize bicycle parking at locations cited as priority destinations for bicyclists

through the public outreach process of this Plan. Requests by the general public provide an appropriate gauge of bicycle parking needs and unmet demand. Priority locations for bicycle parking identified in the public outreach process are shown in Table 8-3.

**Table 8-3: High Priority Bicycle Parking Locations**

Rank	Citizen Priorities for Bicycle Parking Locations
1	<ul style="list-style-type: none"> <li>• Aiken Downtown</li> <li>• Aiken Mall</li> <li>• Aiken Regional Hospital</li> <li>• Richland Ave Wal-Mart</li> <li>• Hitchcock Woods</li> <li>• O'Dell Weeks Activity Center</li> <li>• University of South Carolina-Aiken</li> </ul>
2	<ul style="list-style-type: none"> <li>• Citizens Park</li> <li>• North Augusta Greenway</li> <li>• Whiskey Road</li> </ul>

## Planning Level Cost Opinions

This section provides general planning-level cost opinions for a variety of facility types, as well as the specific planning-level cost estimates of the top 20 ranked projects of the regional greenways and bikeways network recommended in this Plan. The following is a summary of the fully burdened costs of sidewalks and different bikeway facility types. All costs are total installed costs that include: planning and engineering, environmental, and contingency.

**Table 8-4: Pedestrian Facility Type Planning Level Cost Estimates**

<b>Sidewalk, Drainage, C&amp;G - one side of roadway</b>					
Item Description	Unit	Quantity	Unit Price	Total	Notes
Standard Concrete Curb and Gutter	LF	5,280	\$18.00	\$95,040.00	
Sidewalk	SF	31,680	\$5.00	\$158,400.00	6' Wide
12 Inch Storm Sewer Pipe, 10' deep	LF	2,640	\$70.00	\$184,800.00	Storm System Pipe, Including Trenching/ Backfill, half total costs
Storm Manhole	EA	9	\$2,800.00	\$24,640.00	Every 300', half total costs
Standard Catch Basin	EA	18	\$1,500.00	\$26,400.00	Every 300'
Construction cost per mile				\$489,280.00	
Fully burdened cost per mile (25% contingency)				\$831,776.00	
Fully burdened cost per LF				\$157.53	
<b>Sidewalk Widening - one side of roadway</b>					
Item Description	Unit	Quantity	Unit Price	Total	Notes
Sidewalk	SF	10,560	\$5.00	\$52,800.00	2'
Construction cost per mile				\$52,800.00	
Fully burdened cost per mile (25% contingency)				\$89,760.00	
Fully burdened cost per LF				\$17.00	

**Table 8-5: Bicycle, Greenway, and Traffic Calming Planning Level Cost Estimates**

<b>Bikeway/Traffic Calming Facility</b>	<b>Cost</b>	<b>Materials</b>	<b>Additional Costs*</b>
Greenway/Multi-use path (per mile)	\$800,000.00	Construction, signing	30%
Bike lane: restriping as retrofit (per mile)	\$15,000.00	Striping and signing	20%
Bike lane: restriping w/ resurfacing project (per mile)	\$ 8,000.00	Striping and signing	20%
Bike lane: widening on street with curb & gutter (per mile; minimum)	\$250,000.00	Roadway widening	40%
Bike lane: add pavement; no curb (per mile with resurfacing)	\$28,000.00	Asphalt, striping, signing	20%
Buffered bike lane: restriping w/resurfacing project (per mile)	\$12,000.00	Striping and signing	20%
Buffered bike lane: widening on street with curb & gutter (per mile; minimum)	\$254,000.00	Roadway widening	40%
Buffered bike lane: add pavement; no curb (per mile with resurfacing)	\$32,000.00	Asphalt, striping, signing	20%
Bike route (per mile)	\$2 ,000.00	Signing	15%
Shared lane marking (per mile)	\$6,500.00	Signing, markings	15%
Inverted 'U' bicycle rack (ea)	\$200.00	Rack	15%
"Share the Road" signs (ea)	\$100.00	Signs, posts	15%
Shared lane marking (ea)	\$200.00	Stencils (20 per mile)	15%
Wayfinding/destination sign (ea)	\$150.00	Signs, posts	15%
Loop detectors (two)	\$1,500.00	Detector, stencil, labor	\$300 for calibration only
Colored bike lane ( square foot thermoplastic)	\$4.50		
Traffic circle (ea)	\$40,000.00	Concrete curb, landscaping	15%
Diverter (ea)	\$15,600.00 - \$40,000.00	Concrete curb, landscaping	15%
Bike box (ea)	\$5,000.00	Thermoplastic, signs	15%
Advanced stop line (ea)	\$225.00		15%
Bicycle/pedestrian bridge (linear foot)	\$150.00		15%



## Priority Project Cost Opinions

The cost of greenway and bikeway facilities significantly varies by facility type, as shown in Table 8-5. For example, the addition of shared lane markings (sharrows) to an existing roadway requires few changes to the existing roadway, but provides no exclusive space for bicycle use. By contrast, a separated multi-use path provides a far greater level of separation from the roadway, but at a greater fiscal burden. Table 8-6 is a summary of the fully burdened costs of the 50 highest ranked bikeway and greenway projects recommended in this Plan. It is important to note that all recommended projects of the Plan are important for the comprehensive bikeway network. Aiken County and municipalities within the County should be opportunistic in implementing bikeway and greenway projects as opportunities arise, rather than focusing exclusively on implementation of highly ranked projects.

## Priority Project Description Sheets

This section provides project description sheets for the eight highest priority projects within Aiken County. The eight highest priority projects were identified through evaluation criteria and prioritization process already described. These 1-page project description sheets provide an excellent tool for future implementation funding applications.

**Table 8-6: Aiken County Priority Project Cost Estimates**

<b>Summary Of Projects – Aiken County</b>				
No.	Project Name	Project Cost	Corridor Segment	Project Type
1	E Pine Log Road Greenway	\$1,320,800	Silver Bluff Road to Trailwood Ave	Multi-Use Path
2	University Parkway Greenway	\$4,264,000	From Robert M Bell Pkwy to SC 19	Multi Use Path
3	East Buena Vista Ave	\$12,096	From Riverside Blvd to Georgia Ave	Bike Lane
4	US 1 Paved Shoulders	\$325,248	Old Aiken Rd. to Augusta Rd.	Paved shoulders
5	Atomic Rd. Greenway	\$551,200	From Buena Vista Ave to Old Edgefield Road	Multi Use Path
6	S Aiken Lane	\$416,000	E Pine Log Road to Corporate Parkway	Multi Use Path
7	SC 19	\$700,000	Hampton Avenue to Shiloh Heights Road	Striped Bike Lane
8	West Aiken Greenway	\$5,158,400	Greenville Road to Highland Park Avenue	Rail with Trail
9	Jefferson Davis Hwy	\$1,934,400	E. Martintown Road to Revco Road	Greenway
10	Collier Street	\$400	Henry Street to E Pine Log Road	Bike Route
11	13th Street Bridge	\$1,346	Georgia Ave (SC) to Broad Street (GA)	Shared-lane marking
12	Belvedere Clearwater Rd	\$16,320	Edgefield Road to Palmetto Parkway	Striped Bike Lane
13	Belvedere Clearwater Rd	\$2,194,000	Palmetto Parkway to US 1	Multi Use Path
14	E Buena Vista Avenue	\$436,800	Floyd Ave to Atomic Rd	Multi Use Path
15	Georgia Ave	\$27,456	13th Street Bridge to Knox Ave	Striped Bike Lane
16	Knox Ave	\$770,000	E Martintown Road to Edgefield Road	Striped Bike Lane
17	US 1	\$228,480	Rutland Dr. to ARTS Boundary	Paved Shoulder
18	E. Martintown Rd	\$270,400	E Buena Vista Avenue to US1	Multi Use Path
19	University Parkway	\$367,500	Richland Avenue W to Robert M Bell Parkway	Striped Bike Lane
20	Belvedere Road	\$655,200	US 1 to Augusta Road	Multi Use Path
<b>Total Cost for Projects</b>		<b>\$19,650,046</b>		

## East Pine Log Road

### Project Limits:

Silver Bluff Road to Trailwood Ave

**Project Length:** 1.27 miles

### Improvement Type:

Greenway

### Implementation Type:

Off-Street

### Average Daily Traffic:

**Current:** 24,600 **2035 est:** 26,918

**Prioritization Score:** 28

**Estimated Cost:** \$1,320,800

## Project Description

### Existing Issues:

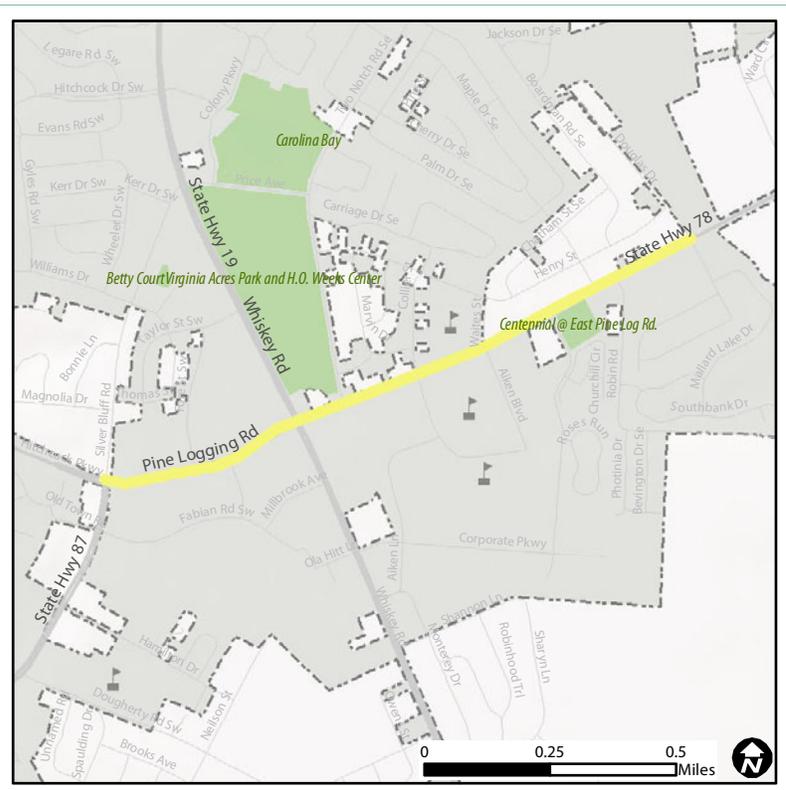
- Without physical separations, safety issues may arise between bicyclists and motorized vehicles.
- Extremely high number of crashes along this route
- Schools along corridor do not have good bicycle/ pedestrian access

### Project Benefits:

- Enhances safety by providing bicyclists with separated path, allowing children to access destinations
- Provides access to multiple schools and Virginia Acres Park



Greenway



Reference Map



## University Parkway

### Project Limits:

Robert M Bell Parkway to SC 19

**Project Length:** 4.1 miles

### Improvement Type:

Greenway

### Average Daily Traffic:

**2035 est:** 11,612

**Prioritization Score:** 26

**Estimated Cost:** \$4,264,000

## Project Description

### Existing Issues:

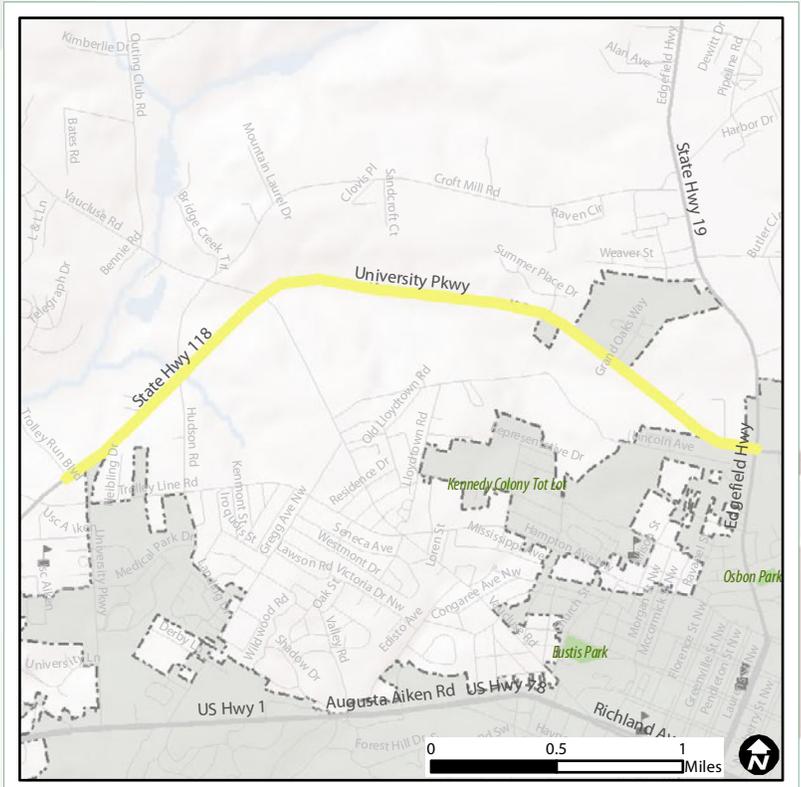
- No bicycle facilities currently exist to get from S. Carolina State Univ. to Aiken's greenway to the east.
- Without physical separations, safety issues may arise between bicyclists and motorized vehicles

### Project Benefits:

- Enhances safety by providing bicyclists with separated path
- Provides access to multiple schools and South Carolina State University
- Extends the Aiken greenway System
- Creating a greenway loop around Aiken can provide an economic benefit as it would become a bicycle touring destination.



Greenway



Reference Map

## East Buena Vista Avenue

### Project Limits:

Riverside Boulevard to Georgia Avenue

**Project Length:** 0.4 miles

### Improvement Type:

Striped Bike Lane

### Average Daily Traffic:

**2035 est:** 3,702

**Prioritization Score:** 26

**Estimated Cost:** \$12,096

## Project Description

### Existing Issues:

- Buena Vista Ave is a major east west route connecting desired cycling routes.
- The safety analysis conducted determined that Buena Vista Ave was a concentrated location for bicycle crashes in the region.

### Project Benefits:

- Provides access to school and N. Augusta Recreation Facilities and Waterworks Park
- Enhances safety by providing bicyclists with separated path, allowing children to access destinations
- Key connector in planned greenway and bicycle network



**Striped Bike Lane**



**Reference Map**



## US Highway 1

### Project Limits:

Old Aiken Road to Augusta Road

**Project Length:** 9.7 miles

### Improvement Type:

Paved Shoulder

### Implementation Type:

Road Widening

### Average Daily Traffic:

**2035 est:** 30,578

**Prioritization Score:** 25

**Estimated Cost:** \$325,248

## Project Description

### Existing Issues:

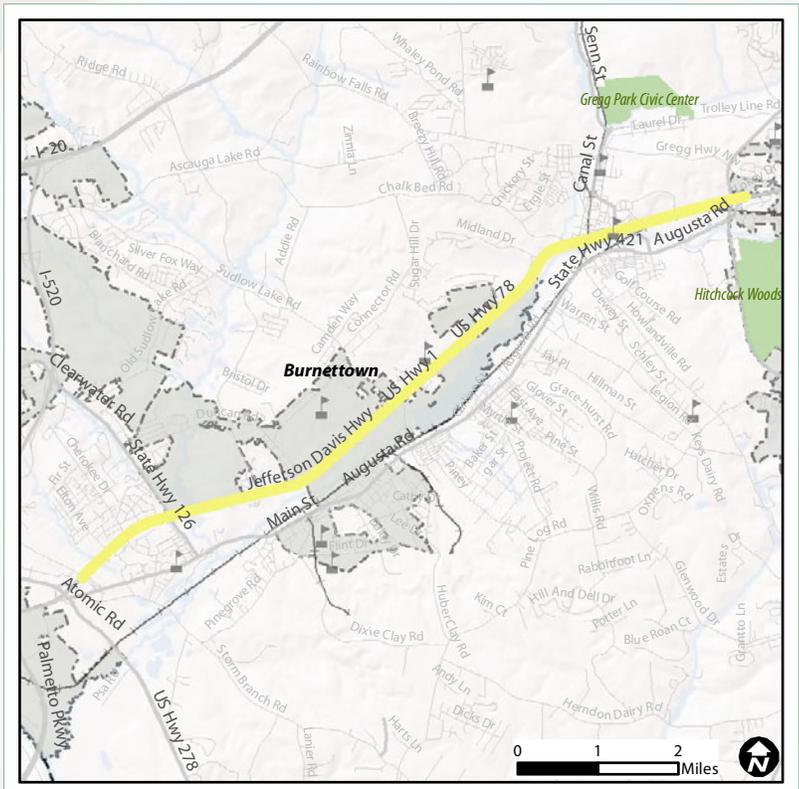
- US 1 is the main route between Aiken and North Augusta and has many destinations which bicyclists wish to access.
- Currently safety issues may arise between bicyclists and motorized vehicles without a separate space to ride.

### Project Benefits:

- Provides direct access to many destinations
- Enhances safety by providing bicyclists with a space to ride separated from motorized vehicles
- Ability to implement quickly and cost effectively
- Paved shoulders improves safety for all road users, lengthens pavement life and reduces maintenance costs



Paved Shoulder



Reference Map

## Atomic Road

### Project Limits:

Buena Vista Avenue to Old Edgefield Rd.

**Project Length:** 1.3 miles

### Improvement Type:

Greenway

### Average Daily Traffic:

**2035 est:** 12,154

**Prioritization Score:** 25

**Estimated Cost:** \$551,200

## Project Description

### Existing Issues:

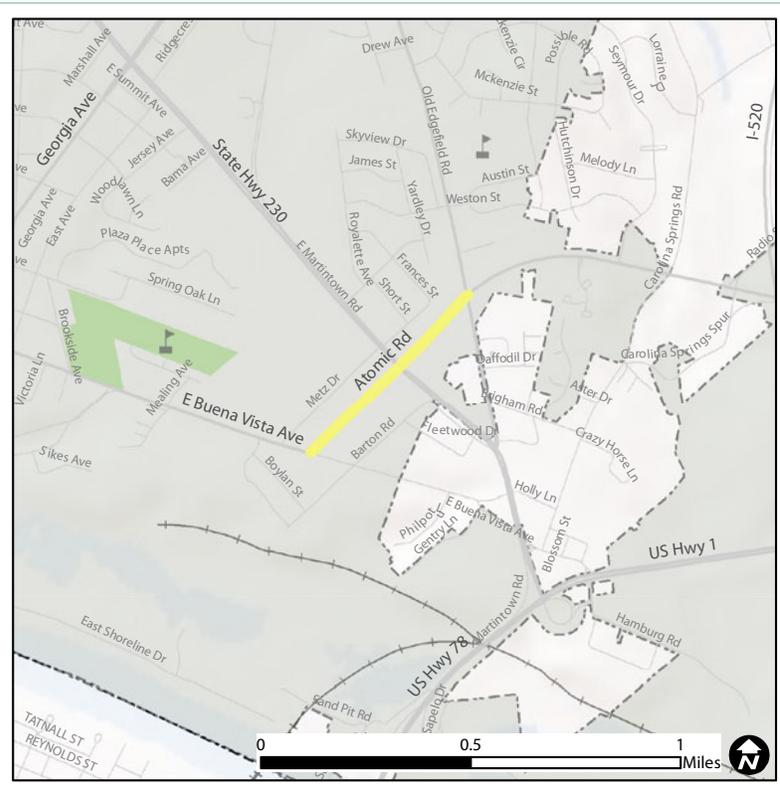
- Without physical separations, safety issues may arise between bicyclists and motorized vehicles.
- High number of crashes on the surrounding roads

### Project Benefits:

- Provides direct access to Vorhees College
- Connects residential to commercial activities
- Enhances safety by providing bicyclists with separated path, allowing students to access destinations without encountering motorized vehicles
- Fills a key gap in the bikeway network



Greenway



Reference Map



## South Aiken Lane

### Project Limits:

East Pine Log Road to Corporate Parkway

**Project Length:** 0.4 miles

### Improvement Type:

Greenway

### Implementation Type:

School Right of Way

### Average Daily Traffic:

No Data

**Prioritization Score:** 25

**Estimated Cost:** \$416,000

## Project Description

### Existing Issues:

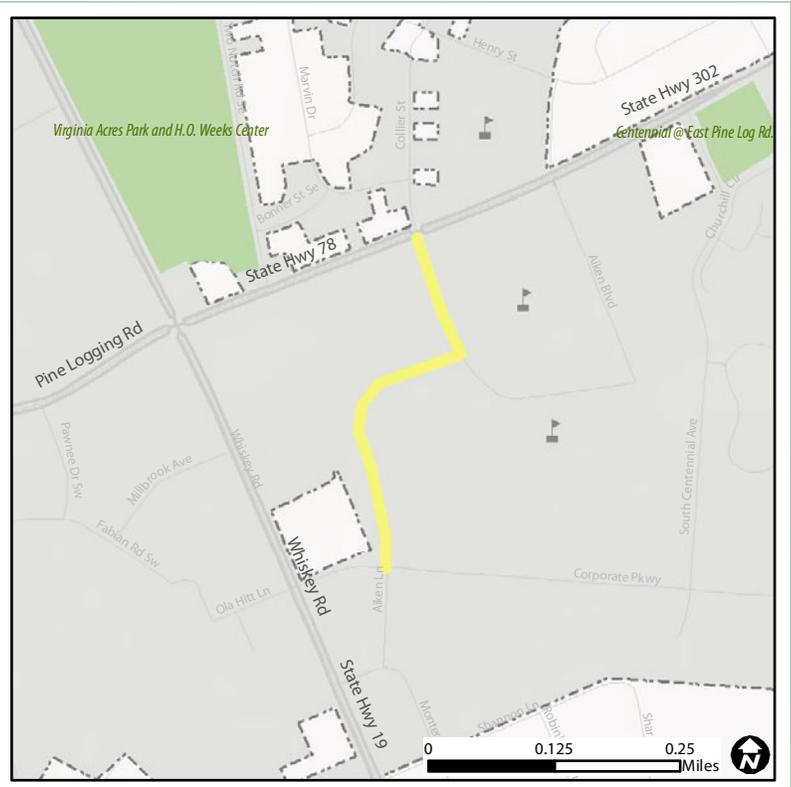
- Without physical separations, safety issues may arise between bicyclists and motorized vehicles.
- The safety analysis conducted determined that this area was a concentrated location for bicycle crashes in the region.

### Project Benefits:

- Provides direct access to South Aiken HS and other schools.
- Enhances safety by providing bicyclists with separated path, allowing students to access destinations without encountering motorized vehicles
- Ability to implement quickly and cost effectively as it is on school property



Greenway



Reference Map

## SC Highway 19

### Project Limits:

Hampton Avenue to Shilo Heights Road

**Project Length:** 2.0 miles

### Improvement Type:

Striped Bike Lane

### Implementation Strategy:

Road Widening

### Average Daily Traffic:

**2035 est:** 14,218

**Prioritization Score:** 24

**Estimated Cost:** \$700,000

## Project Description

### Existing Issues:

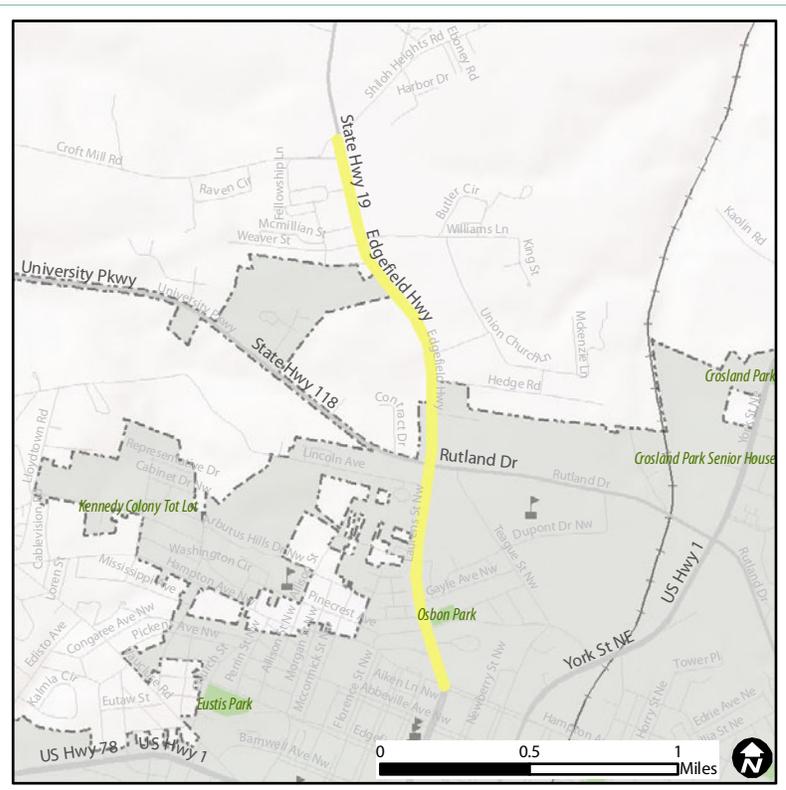
- Without physical separations, safety issues may arise between bicyclists and motorized vehicles.
- The safety analysis conducted determined that SC 19 was a concentrated location for bicycle crashes in the region.

### Project Benefits:

- Provides direct access to Aiken center
- Enhances safety by providing bicyclists with a dedicated space to ride separated from motorized vehicles
- Ability to implement quickly and cost effectively
- Bike lane improves safety for all road users.



Striped Bike Lane



Reference Map



## West Aiken Greenway

### Project Limits:

Greenville Road to Highland Park Avenue

**Project Length:** 4.9 miles

### Improvement Type:

Rail with Trail\*

### Average Daily Traffic:

**Current:** 11,150 **2035 est:** 25,122

**Prioritization Score:** 23

**Estimated Cost:** \$5,158,400

## Project Description

### Existing Issues:

- Without physical separations, safety issues may arise between bicyclists and motorized vehicles.
- No exclusive bicycle facilities currently exist to get from Burnetown. to Aiken's proposed greenway to the east or do Aiken directly.

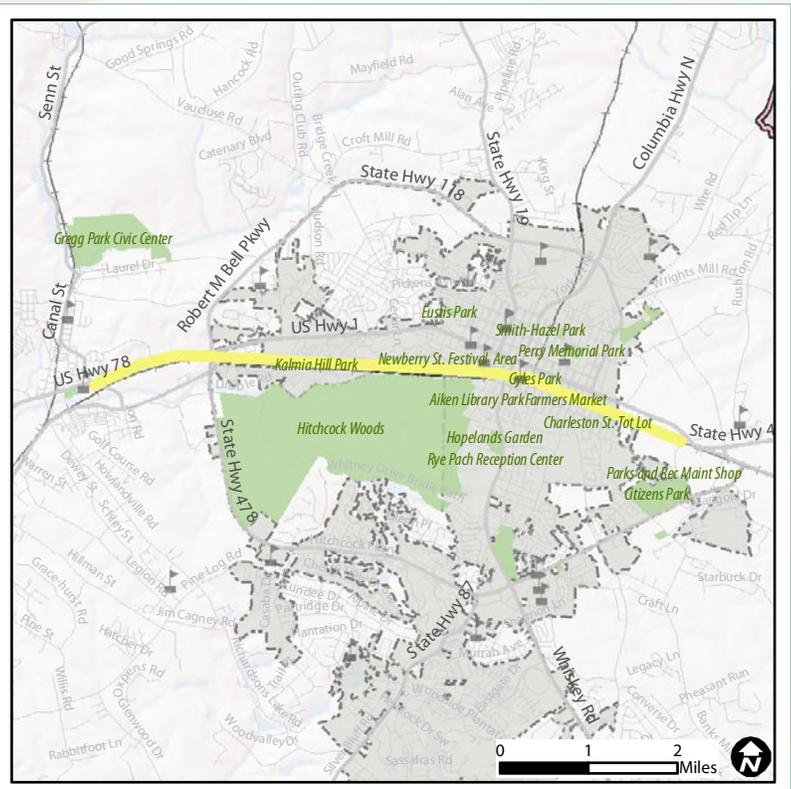
### Project Benefits:

- Connects Burnetown directly to Aiken along rail corridor
- Connecting a greenway loop around Aiken to the Savannah River greenways can provide an economic benefit as entire region would become a bicycle touring destination.
- Connects Aiken to Augusta by rail trail by connecting with Horse Creek Greenway
- Enhances safety by providing bicyclists with dedicated travel lanes, separated from motorized vehicles



### Rail with Trail

*\*A feasibility study is needed to determine rail with trail opportunities along this corridor. The physical constraints of the rail embankment may require the trail to extend outside the rail corridor in some sections."*



Reference Map



## Funding Options

### Federal Funding Programs

There is no dedicated federal funding source for just bicycle and pedestrian improvements. However, there are several federal funding programs that can be used to finance bicycle and pedestrian facilities. The following provides a list of federal funding programs that could be used to fund the bicycle and pedestrian improvements in Aiken County:

- **Transportation Enhancement Funds** - This program provides funding for a range of enhancement-related activities including facilities for pedestrians and bicycles. Nationally, this program has been the largest federal source that funds bicycle and pedestrian projects.
- **Congestion Mitigation and Air Quality Improvement Program (CMAQ) Funds** – This program funds transportation projects to improve air quality and reduce traffic congestion in areas that do not meet air quality standards. The ARTS area is currently in attainment, however if new rules are implemented by the Obama Administration it is anticipated that the ARTS area would be designed a nonattainment area. As with other federal funding sources, MPOs that have made cycling and walking priorities in their planning will have an easier time using CMAQ funds on bike/ped projects. A large share of federal bike/ped funding comes from CMAQ. According to FHWA, the program accounted for nearly 10 percent of all Federal-Aid Highway Program funding obligated to bicycle and pedestrian projects between 1992 and 2008, making it the second largest federal source for bicycle and pedestrian funds after Transportation Enhancements (TE).
- **Surface Transportation Program Funds** - This program provides funding for bicycle and pedestrian facilities. STP funds can be used on any roadway classified higher than a local road or a rural minor collector. Q23 funds are specifically for urbanized areas and are allocated based on population.

- **Highway Safety Improvement Programs (HSIP)** – This Program was created under the 2006 transportation authorization law, SAFETEA-LU, as one of the core Federal-Aid funding sources. HSIP funds safety projects aimed at reducing traffic fatalities and serious injuries. Bike and pedestrian safety projects are eligible for HSIP funding. All public roads – including state, county and local roads – are eligible for HSIP funding. Examples of eligible projects include bike lanes, roadway shoulders, crosswalks, other intersection improvements and signage.
- **Section 402 State and Community Highway Safety Grants** – This federal grant program provides funds for education, enforcement and research programs designed to reduce traffic crashes, deaths, injuries, and property damage. Under Section 402, bike and pedestrian safety programs are eligible to receive funding. In many areas, Section 402 is overlooked as a funding source and is rarely used for bike and pedestrian projects.
- **Safe Routes to School Program** – This program was established by Congress in July 2005. The Federal Highway Administration administers the Safe Routes to School program funds and provides guidance and regulations about SRTS programs. Federal SRTS funds are distributed to states based on student enrollment, with no state receiving less than \$1 million per year. SRTS funds can be used for both infrastructure projects and non-infrastructure activities.
- **Transit Funds (5309, 5307, 5311, and 5310)** – These funds can be used for bicycle and pedestrian transit amenities such as shelters, bicycle racks on vehicles, and bicycle storage at stations or transfer centers.

### State Funding Programs

State funding programs for bicycle and pedestrian improvements are limited. The South Carolina DOT does not provide dedicated funds for physical bicycle or pedestrian improvements. SCDOT incorporates bicycle and pedestrian friendly elements into planned or programmed improvement projects as they move through the design and construction stages. There are several of these types of projects in the Aiken County that will benefit from this policy and it is crucial that bicycle and



pedestrian facilities be reviewed during the planning and programming process to ensure these improvements are identified early in the process.

### Local Funding Sources

There are limited local funding programs that provide financing opportunities for bicycle and pedestrian enhancements. Generally, local funds are utilized to satisfy local match requirements of using federal funding sources listed earlier. However, South Carolina law provides counties a local tax option to fund a variety of improvements, including transportation.

In South Carolina, the referendum on Round 3 of the Aiken County Capital Projects Sales Tax was passed in November 2010. The ballot included funding for Greenway related projects by both the City and Aiken County.

### Financial Plan

During the development of the ARTS 2035 Long Range Transportation Plan, MPO staff coordinated with SCDOT, and other local jurisdictions to identify transportation revenue that are reasonably expected over the next 25 years, which govern how and when projects will be financed. Actual funding availability over the next 25 years will depend largely upon future actions and public policy directives initiated at the federal and state levels. Today, most roadway, bicycle, and pedestrian projects in the Aiken County are financed through federal, state, and local funds which are mostly derived from taxes on fuel, fees from vehicle registration, and local option sales taxes. To bring the Aiken County Bicycle and Pedestrian Study to reality, a thorough plan for funding a number of needed bike and pedestrian improvements is required. The purpose of this section is to address this issue by identifying funding sources to implement a five-year bicycle and pedestrian plan.

The ARTS 2035 LRTP, which includes the urbanized area of Aiken County, was approved in September 2010 and is a financially

constrained document that includes funding for bicycle and pedestrian improvements over the next 25-years. As discussed in the previous prioritization section, the Aiken County Bicycle and Pedestrian Study has identified and prioritized numerous projects throughout the study area. In total, these projects exceed the amount of anticipated available funding to implement these projects. Similar to the ARTS 2035 LRTP, the Bicycle and Pedestrian Five-Year Financial Plan is based upon realistic assumptions. Table 8-7 provides a summary of the bicycle and pedestrian constrained funds listed in the ARTS 2035 LRTP, annual funding, and the five-year constrained plan for the South Carolina portion of the MPO. The amounts are in 2012 dollars, not Year-of-Expenditure dollars.

**Thus, the Short-Term Implementation Plan for South Carolina (Aiken County) totals \$1.9 million to implement top priority projects.**

### Five-Year Implementation Plan

Getting bicycle and pedestrian projects funded opens the door programming future multimodal projects. Thus, identifying the best project candidates that have the greatest positive impact on improving bicycle and pedestrian safety, connectivity, and mobility is crucial to the success implementing this plan. There is adequate federal funding available to support the priority projects identified in this plan. However, when trying to access federal funds it is crucial to work with local funding decision makers. During the development of this plan, local county and city planners were involved throughout the planning process. This will be helpful because ARTS cannot program federal funds unless local agencies are willing to sponsor projects and provide a 20 percent local match. To improve the chances of leveraging federal funds to construct and implement the Five-Year Program highlighted in this Plan, the following must occur:

- Secure the support of local elected officials, such as mayors, commissioners, and council members;

**Table 8-7: Bicycle and Pedestrian Funding**

State	2035 LRTP Total Bicycle and Pedestrian Funding	Annual Funding	Five-Year Constrained Plan
South Carolina	\$9,809,124	\$392,365	\$1,961,825

Source: ARTS 2035 LRTP



- Make the case to implement bicycle and pedestrian projects to agency leadership, such as labor, economic development, parks and recreation, etc.;
- Identify sources of local funds for the required 20 percent match to access federal formula funds, such as the local option sales tax;
- Research if in-kind donations are allowed to be used for local match and if so maximize it to its fullest; and
- Find allies, including transportation, health, and environmental partners in your community to lobby on enhancing the bicycle and pedestrian system in the ARTS area.

In the short term, the approach to implementing an expanded bicycle and pedestrian network must consider what is achievable and realistic given foreseeable funding. The implementation plan is based on the goals and objectives developed during the beginning of this study. The general priority of projects in South Carolina, as shown in Table 8-8, and Table 8-9, should be followed, except in cases where there are opportunities to combine bike and pedestrian improvements with other capital improvement projects, such as resurfacing, roadway widening, or new location roadway projects.

Table 8-8 provides the list of prioritized projects included in the Five-Year Implementation Plan for Aiken County. The estimated cost to construct and implement this Five-Year Plan totals \$1.7 million. While this total is below the projected \$1.9 in the 2035 ARTS LRTP, additional funds should be allocated to developing the bicycle route network, such as extending the Collier Street bike route to Henry Street and Boardman Road (see Table 7-6 Recommended Bicycle Routes, in Chapter 7), and/or toward the total cost of high priority projects identified in the Extended Implementation Plan, shown in Table 8-9. The Extended Implementation Plan lists high priority projects in order of the preferred sequencing for implementation.

As noted earlier, there are potential funding sources available, which the County can request and apply for to construct priority projects. As funding is identified, the County will construct as many projects as possible over the

next five years that improve connectivity and encourage increased bicycle and pedestrian activity. Specifically, this Plan recommends that the County pursue additional funding for implementation of projects shown in Table 8-9. Where possible, the County will capitalize on cost efficiencies by implementing proposed bike and pedestrian improvements (as identified in Chapter 7) in conjunction with other capital improvement projects, such as resurfacing, roadway widening, or new location roadway projects.

**Table 8-8: Five-Year Implementation Plan – South Carolina**

Priority	Project Name	Project Cost	Corridor Segment	Project Type
1	E Pine Log Road Greenway	\$1,320,800	Silver Bluff Road to Trailwood Ave	Multi-Use Path
3	East Buena Vista Ave	\$12,096 (funded)	From Riverside Blvd to Georgia Ave	Bike Lane
5	Atomic Rd. Greenway	\$551,200 (funded)	From Buena Vista Ave to Old Edgefield Road	Multi Use Path
10	Collier Street	\$400	Henry Street to E Pine Log Road	Bike Route
11	13th Street Bridge	\$1,346	Georgia Ave (SC ) to Broad Street (GA)	Shared-lane marking
12	Belvedere Clearwater Rd	\$16,320	Edgefield Road to Palmetto Parkway	Striped Bike Lane
15	Georgia Ave	\$27,456	13th Street Bridge to Knox Ave	Striped Bike Lane
19	University Parkway	\$367,500	Richland Avenue W to Robert M Bell Parkway	Striped Bike Lane
<b>Total Cost for Projects</b>		<b>\$1,733,822</b>	<b>(Does not included funded projects)</b>	

**Table 8-9: Extended Implementation Plan – South Carolina**

Priority	Project Name	Project Cost	Corridor Segment	Project Type
2	University Parkway Greenway	\$4,264,000	From Robert M Bell Pkwy to SC 19	Multi Use Path
4	US 1	\$325,248	Old Aiken Rd. to Augusta Rd.	Paved Shoulders
6	S Aiken Lane	\$416,000	E Pine Log Road to Corporate Parkway	Multi Use Path
7	SC 19	\$700,000	Hampton Avenue to Shiloh Heights Road	Striped Bike Lane
8	West Aiken Greenway	\$5,158,400	Greenville Road to Highland Park Avenue	Rail with Trail
9	Jefferson Davis Hwy	\$1,934,400	E. Martintown Road to Revco Road	Greenway
12	Belvedere Clearwater Rd	\$2,194,000	Palmetto Parkway to US 1	Multi Use Path
14	E Buena Vista Avenue	\$436,800	Floyd Ave to Atomic Rd	Multi Use Path
16	Knox Ave	\$770,000	E Martintown Road to Edgefield Road	Striped Bike Lane
17	US 1	\$228,480	Rutland Dr. to ARTS Boundary	Paved Shoulders
18	E. Martintown Rd	\$270,400	E Buena Vista Avenue to US1	Multi Use Path
20	Belvedere Road	\$655,200	US 1 to Augusta Road	Multi Use Path
<b>Total Cost for Projects</b>		<b>\$17,352,928</b>		



## *Non-infrastructure Improvement Prioritization*

The programs recommended in this Plan are a relatively inexpensive method for improving and raising public awareness and adding to the safety and enjoyment of bicycling and walking in Aiken County. Because of their minimal expense and importance to supporting the bicycle travel and thereby increase usage, all of the recommended programs and policies are designated for short- or medium-term implementation, shown below as first- and second-tier priorities. A comprehensive and diversified approach to programs and policies is essential to growing the community and culture of bicyclists and pedestrian in Aiken County. Thus, both first-tier and second-tier lists include an appropriate combination of mutually reinforcing strategies that reach diverse audiences.

### **First-tier Programs, Policies, and Evaluation**

First-tier non-infrastructure recommendations are programs and policies that have the highest impact for the lowest cost. Short-term priority projects are listed below, distinguished by those programs that offer immediate opportunities through continuation and expansion of existing programs and those that will be strategies new to the ARTS region.

Continued and expanded efforts:

- Safe Routes to School
- Safe Streets Save Lives
- Annual Count Program

New efforts:

- Issue Focused Safety Campaign
- Regional Bicycle and Pedestrian Committee
- Car Free Street Events
- Weekend Walkabouts
- Facilities Inventory Program
- Police Training Program

This Plan recommends implementing first-tier programs, policies, and evaluation within nine months of adoption of the Plan.

### **Second-tier Programs, Policies and Evaluation**

Second-tier non-infrastructure recommendations are programs and policies that may take time to plan and implement, due to cost, political will or other factors, or particularly benefit from building upon first-tier successes. Medium-term priority projects include:

- Bike Month Activities
- Professional Driver Training
- Regional Plan for Bicycle and Pedestrian Collision Reduction
- Dedicated Funding Source

This Plan recommends implementing second-tier programs, policies, and evaluation within 18 months of adoption of the Plan.

## *Non-infrastructure Improvement Implementation*

The non-infrastructure recommendations of this Plan are designed for implementation within three years of adoption of the Plan. While the vast majority of infrastructure and policy recommendations fall within the exclusive authority of Aiken County and its member jurisdictions, many program recommendations can, and should, fall under the banner of outside agencies, private sector partners, and nonprofit organizations. In Aiken County, nonprofit organizations that may want a role in implementing community programs include: Aiken Bicycle Club, YMCA, Eat Smart Move More Aiken, and Palmetto Cycling Coalition, among others.

A collaborative approach to implementing and sustaining bicycling and walking programs contributes to the broader vision of fostering a strong bicycling and walking advocacy community and culture. 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.



For each non-infrastructure recommendation of the Plan, Table 8-10 outlines the timeline for implementation and the frequency of the program's occurrence. The fourth column provides a scaled estimation of potential cost for implementing the program. Programs such as Safe Streets Save Lives, the Regional Bicycle and Pedestrian Committee, and the Regional Plan for Bicycle and Pedestrian Collision Reduction, primarily require a commitment of staff or volunteer time and build on existing resources. Those programs are identified as low-cost programs that require minimal initial investment. Other programs require staff and/or volunteer time as well as funding for marketing materials, special events, or other components.

With adoption of this Plan, Aiken County will use the timeline provided in Table 8-10 to begin implementing new programs and policies. As part of that process, Aiken County will recruit partner agencies and organizations to assist in the implementation of (and future maintenance and expansion of) recommended programs.

**Table 8-10: Implementation plan for non-infrastructure recommendations**

Strategy	Commencement	Duration; Occurrence	Cost Range
Safe Routes to School	Immediate	Ongoing	\$\$
Safe Streets Save Lives	Immediate	Ongoing	\$
Issue Focused Safety Campaign	August 2012	1-2 months; Every Two Years	\$\$
Regional Bicycle and Pedestrian Committee	August 2012	Ongoing	\$
Car Free Street Events	September 2012	Monthly during Spring or Fall; Occurring Annually	\$\$\$
Weekend Walkabouts	September 2012	Monthly during Spring or Fall; Occurring Annually	\$\$
Annual Count Program	September 2012	Annual	\$\$-\$
Facilities Inventory Program	January 2013	Ongoing	\$\$-\$
Police Training Program	January 2013	Every Three Years	\$\$\$
Bike Month Activities	May 2013	Annual	\$\$-\$\$\$
Professional Driver Training	June 2013	Every Three Years	\$\$\$
Regional Plan for Bicycle and Pedestrian Collision Reduction	June 2013	Ongoing	\$
Dedicated Funding Source	October 2013	Ongoing	\$\$\$

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# Planning Review

## Overview

Existing policies, plans and ordinances that apply to bicycle and pedestrian planning were collected and reviewed as they pertain to the vision of the 2003 ARTS Regional Bicycle and Pedestrian Plan, which includes the urbanized area of Aiken County.

The vision of the 2003 ARTS Regional Bicycle and Pedestrian Plan is “to seek to develop a Bicycle and Pedestrian Plan that not only identifies projects, but also develops the

framework for a dynamic multi-modal program that can be embraced by the public and easily re-evaluated on a regular basis.”

This appendix provides a review of the goals and objectives of current plans that may affect the goals and issues relevant to the Aiken County Bicycle and Pedestrian Plan. Not all local and regional planning documents were reviewed for this chapter; the focus of this review was on existing, locally adopted plans, as well as documents that are of regional significance to Aiken County, South Carolina. Table A-1 summarizes the plans reviewed.

**Table A-1. Existing Plans/Policies and Adoption Dates**

Jurisdiction	Document Name	Date Adopted
US DOT	Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations Press Release	March 11, 2010
US DOT FHWA	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users	August 25, 2005
SCDOT	Complete Streets Resolution	February 2003
SCDOT	Engineering Directive Memorandum 22, Consideration of Bicycle Facilities	February 2003
ARTS, SC	Regional Bicycle and Pedestrian Plan	2003
ARTS, SC	ARTS 2035 Long Range Transportation Plan	September 2010
Aiken County, SC	Comprehensive Plan	2004-2014
Aiken County, SC	Aiken County US 1/US 78 Corridor Study	2012
Augusta, GA and North Augusta, SC	Master Plan for a Sustainable Future: The Westobou Vision	2009
North Augusta, SC	Riverfront Redevelopment District Master Plan	1996

North Augusta, SC	Parks and Recreation Facilities Master Plan	2003
North Augusta, SC	Community Needs Assessment	2003
North Augusta, SC	Comprehensive Plan	2005
North Augusta, SC	North Augusta Greenway, Pedestrian and Bicycle Master Plan	May 2011
Aiken, SC	Strategic Plan	2010

## National Plans/Policies

### United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations Press Release Summary March 11, 2010

The following quotes and excerpts from the U.S. Department of Transportation policy statement on Bicycle and Pedestrian Accommodation summarize elements related to bicycle and pedestrian planning in the ARTS region:

“The United States Department of Transportation (DOT) is providing this Policy Statement to reflect the Department’s support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments.”....

“The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems.”....

“This policy is based on various sections in the United States Code (U.S.C) and the Code of Federal Regulations (CFR) in Title 23 – Highways, Title 49 – Transportation, and Title 42 – The Public Health and Welfare. “....

#### Recommended Actions:

“The DOT encourages States, local governments,...and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to

accommodating bicyclist and pedestrians as an integral element of the transportation system. “...Transportation agencies and local communities should go beyond minimum design standards.....Such action should include:

- Consider walking and bicycling as equals with other transportation modes...
- Ensuring that there are transportation choices for people of all ages and abilities, especially children...
- Going beyond minimum design standards...
- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges...
- Collecting data on walking and biking trips...
- Setting mode share targets for walking and bicycling and tracking them over time...
- Removing snow (and ice) from sidewalks and shared-use paths.
- Improving nonmotorized facilities during maintenance projects...

Increased commitment to and investment in bicycle facilities and walking networks can

help meet goals for cleaner, healthier air; less congested roadways; and more livable, safe, cost-efficient communities”....

### Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users August 25, 2005

The following quotes and excerpts from the U.S. Transportation Bill known as “SAFETEA-LU” summarize elements related to bicycle and pedestrian planning in the ARTS region:



"On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation...., SAFETEA-LU represents the largest surface transportation investment in our Nation's history." (Overview, Page 2)

"SAFETEA-LU addresses the many challenges facing our transportation system today – challenges such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment..." (Overview, Page 2)

SAFETEA-LU contains targeted investment features with a focus on Safety, Equity, Innovative Finance, Congestion Relief, Mobility and Productivity, Efficiency, Environmental Stewardship, and Environmental Streamlining. (Overview, Page 2) In two of these targeted investment areas, Safety and Environmental Stewardship, funding is provided for programs that emphasize bicycle and pedestrian modes of travel. Under the Safety investment focus the Safe Routes to School program is created to "enable and encourage primary and secondary school children to walk and bicycle to school. Both infrastructure- related and behavioral projects will be geared toward providing a safe, appealing environment for walking and biking that will improve the quality of our children's lives and support national health objectives by reducing traffic, fuel consumption, and air pollution in the vicinity of schools." (Safe Routes to School, Page 9) Additionally, more funding is provided under the Environmental Stewardship investment focus that is geared toward bicycle and pedestrian infrastructure development. This focus area includes funding for recreational trails (Recreation Trails, Page, 16) and funding for a Nonmotorized Transportation Pilot program "to fund pilot projects to construct a network of nonmotorized transportation infrastructure facilities in four designated communities. The purpose is to demonstrate the extent to which walking and bicycling can represent a major portion of the transportation solution in certain communities." (Nonmotorized Transportation Pilot, Page 17)

## State Plans/Polices

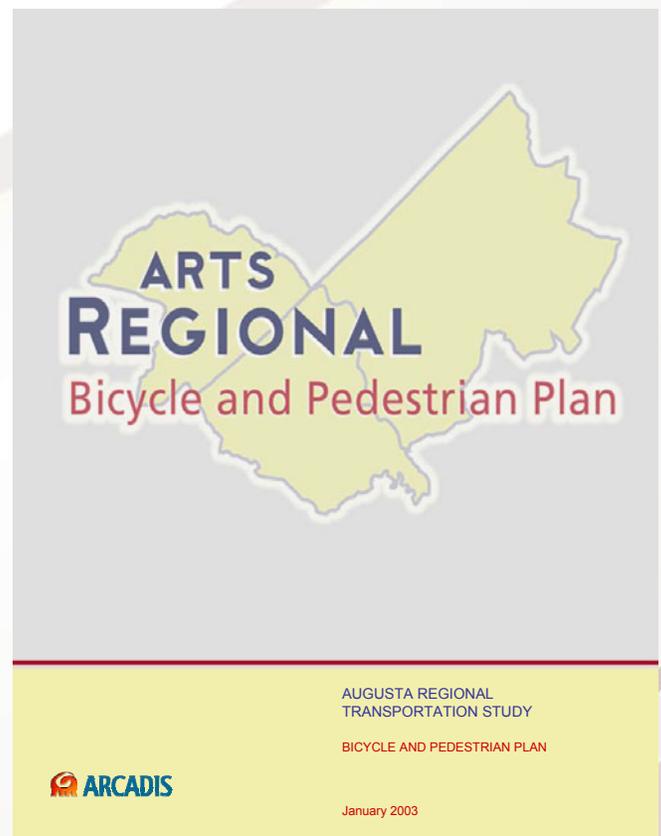
### SC DOT Complete Streets Resolution 2003

The SC DOT Complete Streets Resolution states that "bicycling and walking accommodations are a routine part of the department's planning and design, construction and operating activities, and will be included in everyday operations" of the statewide transportation system.

### SC DOT Engineering Directive Memorandum 22, Consideration for Bicycle Facilities 2003

This important document provides design guidelines for bicycle facilities within South Carolina Department of Transportation right of way. These guidelines are already referenced in plans reviewed for this background summary.

## Regional Plans



### ARTS Regional Bicycle and Pedestrian Plan 2003

The 2003 ARTS Regional Bicycle and Pedestrian Plan was developed to provide policy guidance at the regional level. Three goals



were pursued as part of the study:

- Provide for a bicycle and pedestrian transportation network to serve local, community, and regional needs
- Promote the viability of walking and biking as a safe and healthy transportation option throughout the region for all potential users
- Identify appropriate and adequate funding for the development and maintenance of regional and local bicycle and pedestrian systems

The first goal implies coordination and connectivity with other planning agencies, such as the Lower Savannah COG.

### ARTS 2035 Long Range Transportation Plan 2010

Augusta Regional Transportation Study (ARTS) functions as bi-state MPO and is responsible for transportation planning in accordance with the federal metropolitan planning requirements for Augusta-Richmond County and portions of Columbia County in Georgia, and portions of Aiken and Edgefield Counties in South Carolina. The cities in the Augusta Regional Transportation Study (ARTS) area include Augusta, Grovetown, Hephzibah, and Blythe in Georgia, and Aiken, North Augusta, and Burnetown in South Carolina.

The ARTS Long Range Transportation Plan is the long-range, financially-constrained transportation plan for the region that covers a planning horizon of 25 years. According to federal law, all LRTPs must be updated every four or five years depending on their MPOs air quality status: maintenance, nonattainment, or attainment. The ARTS LRTP must be updated every five years because it is currently considered in attainment for federal air quality standards.

The Goals and Objectives relevant to the ARTS/Aiken County Bicycle and Pedestrian plan are as follows;

**Table A-2: ARTS 2035 Long Range Transportation Plan**

Goal 3: Develop a transportation system that will allow effective mobility throughout the region and provide efficient movement of persons and goods

Objective 1: Provide a plan that works to relieve congestion and prevent it in the future.
Objective 4: Provide a plan which addresses consideration of non-motorized modes such as bicycles and pedestrians.
Goal 4: Develop a transportation system that will enhance the economic, social, and environmental fabric of the area, using resources wisely while minimizing adverse impacts
Objective 5: Provide a plan that reduces mobile emissions and meets air quality standards.
Goal 5: Promote efficient land use and development patterns to improve safety and economic vitality to meet existing and future multimodal transportation needs
Objective 2: Protect adequate rights-of-way in newly developing and redeveloping areas for pedestrian, bicycle, transit and roadways.
Objective 3: Promote new developments that provide efficient, balanced movement of pedestrians, bicyclists, buses and motor vehicles within, to and through the area.
Goal 6: Increase the safety and security of the transportation system for motorized and non-motorized users
Objective 1: Identify policies, plans and transportation improvements that address unsafe designs and conditions to increase safety for users.
Objective 2: Develop and maintain a transportation system that provides increased security of all of its users.
Goal 7: Continue to develop a multimodal transportation network that utilizes strategies for addressing congestion management and air quality issues in the ARTS region.
Objective 2: Encourage strategies that reduce mobile source emissions in an effort to improve air quality.
Objective 3: Continue to implement and promote strategies and policies such as system preservation, access management, managed lanes, travel demand management, mass transit, complete streets, and alternative transportation to improve congestion conditions.



## County Plans

### Aiken County SC Comprehensive Plan

The South Carolina Local Government Comprehensive Planning Enabling Act of 1994 requires all units of local government utilizing zoning or land use controls to complete and adopt a comprehensive plan. The law requires that an independent board of local citizens called a Planning Commission act as an advisory committee to the governing body on constructing and adopting the plan. The objectives of the planning process are to develop an inventory of the community's historical and existing conditions and trends and to develop goals and objectives regarding community growth and development.

These goals and objectives communicate the suggested policy directions for the local government. The goals and policies element of the Aiken Comprehensive Plan were developed through an extensive citizen participation program intended to accurately reflect the desires of county residents. Goals related to this bicycle and pedestrian plan include safe, pedestrian friendly neighborhoods, with facilities, transportation, and activities accessible to all; high quality streets, parking and pedestrian facilities; excellent public facilities including police, fire and schools; and intergovernmental cooperation.

The 2005 Comprehensive Plan became effective in June. The Goals and Policies of the plan elements relevant to bicycle and pedestrian planning are listed in Table A-3 below. The goals and policies of the Comprehensive Plan are consistent with a sustainable Bicycle and Pedestrian Plan that uses a coordinated approach to address safety, design, maintenance and coordinated planning issues.

**Table A-3: Aiken County Comprehensive Plan Goals and Policies Relevant to Bicycle and Pedestrian Planning**

Part 1 Population Element Goal: Control Urban Sprawl and development of rural and natural resource areas
Part 1 Population Element Goal: Promote an "age sensitive" environment – meet and accommodate changes in age and gender composition of county residents.
Recommendation 2: Provide pedestrian and/or public transportation linkages.
Part 3 Economic Element Goal: Create new economic markets to benefit from South Carolina's emerging Recreation – Retirement image.
Recommendation: To capitalize on state initiatives, the development of a more aggressive tourism promotion program is recommended, together with educational programs for individuals involved in tourism, and the integration of infrastructure development in support of tourism.
Part 5 Community Facilities Element Goal 2: Develop a transportation system that is financially feasible, with broad public support
Recommendation: Provide a plan which addresses bicycle and pedestrian needs.

## Local Municipality Plans

### The Westobou Vision Master Plan (Augusta and North Augusta Urban Area) 2009

The Westobou Vision 2009 Master Plan was created "to develop and realize a shared vision, for both Augusta and North Augusta, of what this location...can become and what it can provide...whether they want to enjoy it as a place to work, live or play." (Page 3)

The plan suggests the development of several market creation projects within the urban areas, but suggestions were also made for initiatives that should be pursue within the broader framework of the urban area. Some of these improvements include the following:

Integrated Green Corridors and Nodes – The Westobou Plan states that "Public open space is the loom upon which Westobou's urban design plan is woven." With a critical component being the "connection via



greenways, bike routes and streetscaping." It recommends not only the renovation of existing parks, but the creation of new parks and plazas. (Page 21)

Relocation/Modification/Removal of Problematic Public Infrastructure – The Westobou Plan highlights the need to address issues of problematic public infrastructure such as "highway interchanges, the eastern end of the J.C. Calhoun Expressway, and the railroad rights-of-way." (Page 21)

Comprehensive Transportation Planning Review – The plan recommends adjustments and improvements to the existing roadway networks, review of public infrastructure, as well as development of Bicycle and other alternative means of transportation in the urban area. (Page 21)

### **North Augusta Riverfront Redevelopment District Master Plan 1996**

This plan proposed a Greenway network, using new and existing streets, comprised of dedicated bicycle and pedestrian routes. The plan identified regional connections, including those from South Carolina to Georgia via the Savannah River, including a connection to the canal bikeway system on or under the Georgia Avenue Bridge. One other potential connection recommended was the former rail bridge between Hamburg and Augusta near the Fifth Street Bridge. Several of these segments have since been implemented.

North Augusta Parks and Recreation Facilities Master Plan 2003

Recommendations related to walking and bicycling include:

- Develop approximately 6-8 miles of new Greenway and 6-8 miles of bikeway trails
- Expand the width of the Greenway Trail
- Increase the number of connections with schools and other public use areas (all parks should be connected via the Greenway)
- Develop paths along the river for viewing and interacting with the water

### **North Augusta Community Needs Assessment 2003**

This assessment was performed in conjunction

with a Parks and Recreation Facilities Master Plan. Residents were surveyed regarding their bicycling and walking priorities. The top four park or facility types cited as being used most often were:

- Walking/biking trails/parks
- Riverview Park Activities Center
- Playgrounds
- Access to water bodies such as creeks and rivers

The top four additional facilities requested included:

- Walking and biking trails
- Recreation/activity center
- Playgrounds
- Water access

The top five facility improvements that survey respondents would support with tax dollars were:

- Continuing the northern Greenway expansion
- Increasing visibility of law enforcement in parks
- Addition of swimming pools
- Creating walking, jogging and biking trails
- Lighting of facilities

### **City of North Augusta Comprehensive Plan 2005**

The following excerpts are relevant to the Aiken County Bicycle and Pedestrian Plan.

Greenway: Greenway extensions are major tributaries to the main Greenway Trail. Extensions will be developed to tie substantial pedestrian and bicycle neighborhoods and parks that include their own internal pedestrian circulation systems to the citywide system. Greenway connectors are shorter and generally narrower segments of trail that tie existing neighborhoods to the Greenway Trail. Both Greenway extensions and Greenway connectors will utilize drainage ways include the Boeckh Ravine system.

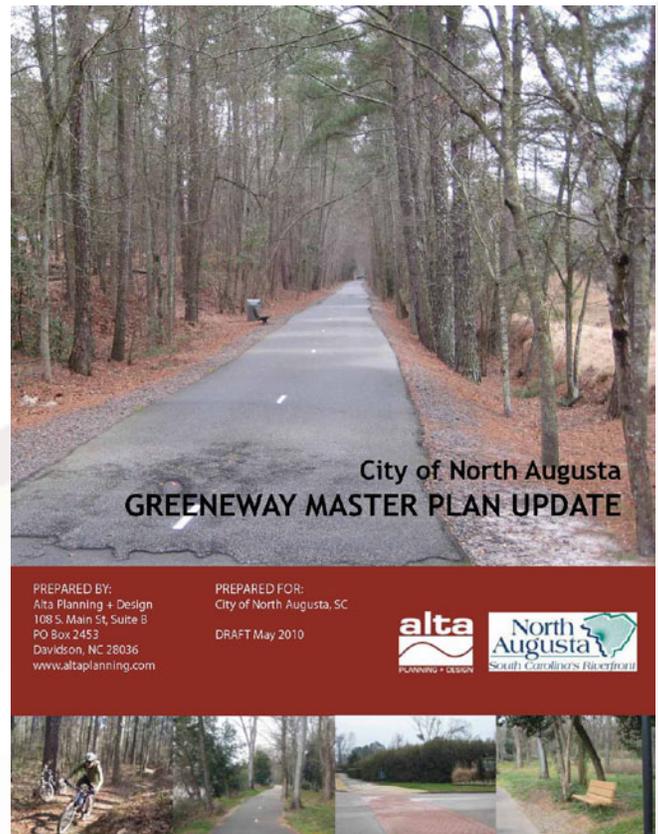


Sidewalks: a relatively extensive network of sidewalks is present with the older areas of the City, but there are very few in newer neighborhoods and commercial centers. Sidewalks are located along some sections of arterial and collector roads but do not complete a network that pedestrians can utilize. Sidewalks are noticeably absent in the vicinity of public schools.

Goals and Objectives: these goals and objectives are relevant to the Aiken County Bicycle and Pedestrian Master Plan.

1. Consider development regulations that require all new residential and commercial developments to install sidewalks and Greenway extensions and connectors and to provide for adequate internal vehicular and pedestrian circulation, and external vehicular and pedestrian connectivity to adjacent developments, subdivisions and the Greenway (5.14.9)
2. Implement the citywide Greenway Bicycle and Pedestrian Master Plan that included the primary Greenway system, Greenway extensions and connectors, multi-purpose trails adjacent to arterials highways, sidewalks and share-the-road bicycle lanes. The plan will emphasize and prioritize connections to parks, school, commercial areas, churches and other public facilities and is designed to ultimately connect every neighborhood and commercial area in the City. (5.14.10)
3. Continue the program of retrofitting existing streets to provide a citywide sidewalk network where reasonable, economically feasible and regular use will occur. (5.14.12)
4. Evaluate "downsizing" or narrowing existing streets, including some collectors and arterials, to calm traffic and make them more pedestrian friendly where road and lane width is not necessary to carry current and projected traffic volumes (5.14.20)
5. Cooperate with Augusta-Richmond County, Columbia County, Aiken County and the Augusta Canal Authority to provide interstate connections between the North Augusta Greenway system, Augusta Riverwalk, the Augusta Canal Bikeway system and the Columbia County Bikeway System. (5.14.22)

6. Modify the subdivision and street design and construction standards to include minimum standards for street widths, block lengths, cul-de-sac lengths, street connectivity, trees, Greenway and other pedestrian connections, sidewalks (a minimum of 5 feet wide) and driveways. (6.13.9)
7. Develop design standards and regulations for sidewalks and street to ensure safety and mobility for pedestrians and bicycles. (9.13.12)



### North Augusta Greenway, Pedestrian and Bicycle Master Plan 2011

This Plan proposes improvement projects that will create a comprehensive system of on-street and off-street bicycle and pedestrian improvements, including Greenway trails, multi-purpose trails, bike lanes and bike routes.

The North Augusta Greenway is a public multi-use trail, 13 miles in length and initially developed as a "Rails-to-Trails" project. Its unique name honors former North Augusta Mayor Thomas Greene, who was instrumental in the trail's creation. The current Greenway



network includes a number of extensions and connections to public facilities and neighborhoods and a five mile section that parallels the recently completed Palmetto Parkway (I-520).

Residents of North Augusta and the region who utilize the Greenway speak highly of the City's trail system. While the Greenway does provide excellent recreational opportunities, it is not directly connected to many desirable destinations in the community. Pedestrian and bicycle connectivity creates a more walkable community and can provide for alternative means of transportation as well as reduce dependency on automobiles. Improved connectivity will provide a circulation system that is more functional and safer.

City objectives for the Greenway, Pedestrian and Bicycle Master Plan are continued expansion of the trail with additional connections to neighborhoods, parks, schools, the new Palmetto Parkway segment, and further out into Aiken County, the City of Aiken and Richmond and Columbia Counties in Georgia.

### **City of Aiken 2010 Strategic Plan**

This booklet contains action items based on the premise of the first strategic plan, created in 1992 "How would we survive a major reduction in the work force at the Savannah River Site?" Since 1992, the Strategic Plan has been continually updated, with the last version created in 2010. The short term action items listed within the plan are those that were perceived to be most immediately important to the citizens of Aiken. The plan establishes long term goals by phasing in larger projects over multiple budget years. The following short and long term goals are in line with the goals and objectives of the Bicycle and Pedestrian Plan:



Key Concern	Short Term Activities	Long Term Activities
Support Families and Family-Related Activities		Build more bicycle paths to connect with those already constructed
		Continue to install lighting, curbing, sidewalks and landscaping in appropriate areas of the city
Promote Environmental Stewardship	Re-establish the City Arboretum Trail	
	Interconnect our parkways with pedestrian friendly walkways	
	Promote alternative modes of transportation	
Connect Our Parkway with Pathways	Use results of our pilot Green Infrastructure Project to identify opportunities to interconnect our parkways	Support a feasibility study for most efficient means to connect our parkways
	Study communities' efforts to establish pedestrian-friendly infrastructure for city green spaces and pathways	Phase in, over several cycles, amenities that make our parkways pedestrian friendly
		Build additional bike paths
Transportation Opportunities	Find alternative transportation choices and promote them	Find alternatives to merely widening roads that are more cost effective

### City of Aiken Greenways Plan 1994

Major corridors recommended for greenways/separate paths include a ring around the city comprised of SC HWY 118 and East Pine Log Road. Additional greenway recommendations are as follows:

Road Name	From	To
Audubon Drive	Two Notch Road	Powder House Road
Park Avenue	Hayne Avenue	Union Street
South Boundary Avenue	York Street	Fairfield Street
Gregg Avenue	Hudson Road	Seneca Road
University Parkway	Medical Park Drive	SC HWY 118
Silver Bluff Road	Sirius Drive	Hitchcock Parkway
Dougherty Road	Silver Bluff Road	Spaulding Drive
Whiskey Road	Eastgate Drive	Hillbrook Avenue
South Aiken Lane	Whiskey Road	East Pine Log Road

Please note that this plan has not been updated in 17 years and was not adopted by Council.

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# Policy Review

TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
<b>1. DEFINITION</b>			
1.1. Does "Street" definition include pedestrian and cyclist reference?	<p>No, not in the official definition section, but elsewhere pedestrians and cyclists are recognized as street users.</p> <p>"Street - Any street including Local, Subcollector, Collector Street or Arterial Street as defined in Article 14." (CDO) <i>β</i> Each classification has its own definition, primarily defined via ADT. "Local" streets are the only ones that mention pedestrians.</p> <p>"Road, Street or Thoroughfare - The full width between property lines bounding every public way of whatever nature, with a part thereof to be used for vehicular traffic" (CDO)</p> <p>"The road system shall respect the function of streets as the shared domain of drivers, pedestrians and bicyclists. Street widths shall be adequate to accommodate vehicles and emergency services, but not excessively wide so as to encourage speeding. To the extent possible the street system shall incorporate pedestrian amenities including sidewalks, center medians, landscaping strips between the curb and sidewalk, street trees and narrow intersection radii so as to improve the walkability of the streetscape." (CDO, Section 14.2.1.)</p>	<p>No. Street types are described primarily in terms of their vehicular function or in relation to edges.</p> <p>"Road, Street, or Thoroughfare: A public or private right-of-way located on an approved plat used primarily for vehicular traffic" (Land Development Regulations)</p> <p>"HIGHWAY; STREET; ROAD: The entire width between right-of-way or boundary lines of a public way open for vehicular travel" (Zoning Regulations)</p>	<p>No.</p> <p>"Any publicly- or privately-maintained thoroughfare (drive, avenue, circle, or boulevard) or space more than 18 feet in right-of-way width which has been dedicated, deeded or designated for vehicular traffic. The term is synonymous with 'road'. The term does not include drive-ways." (Aiken County Land Management Regulations (LMR))</p>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
1.2 Definition of Sidewalk	None	"SIDEWALK: A paved or surfaced area, paralleling and usually separated from a public or private street, used as a pedestrian walkway." – (Zoning Regulations)	None
1.3 Definition of Bicycle	None	None	None
<b>ASSESSMENT</b>	<b>Needs improvement</b>	<b>Needs improvement</b>	<b>Needs improvement</b>
<b>2. STREET ELEMENTS AND CONFIGURATION</b>			
2.1. Pedestrian accommodations (sidewalks, crosswalks, etc) required during new development or redevelopment	<p>Yes.</p> <p>Conservation Subdivision and TND "Use Patterns" require a sidewalk &amp; pedestrian circulation system.</p> <p>All new streets (except alleys, lanes, and rural streets) must have sidewalks on both sides.</p> <p>Arterials under the purview of the SCDOT (subject to "Conventional Street Design") may or may not have sidewalks, depending on the specifications of the SCDOT.</p>	<p>Yes, on both sides of new arterial or collector roads.</p> <p>Not required on new local streets, unless within 1.5 miles of a school or park.</p>	<p>"Sidewalks shall be required on one side of each street in all subdivisions with 50 lots or more with an average lot size of one half acre or less. Sidewalks also may be required by the Planning Commission to continue an existing walk in an adjacent subdivision or along an existing street to access nearby schools and/or public recreation areas."</p> <p>In regards to Multifamily Housing, Residential Care Facilities, Group-occupied Dwellings, Townhouses, Duplexes, Triplexes, and Quadruplexes: "pedestrian facilities such as sidewalks shall be provided to connect structures and amenities. Connections must be provided to any existing adjoining pedestrian facilities. Sidewalks shall meet the construction standards specified by Section 7.15." (Sections 3.11 and 3.12, 2011 LMR).</p>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
2.2. Bike accommodations (bike lanes, shoulders, racks, etc) required during new or redevelopment	Yes. All collectors and arterial street classifications plus rural streets have bike lanes specified. Other streets are expected to operate in a shared condition. "Applicants may also provide separate routes for bicyclists in lieu of a bike lane. Bike lanes shall connect with segments of the Greenway system that are within the proposed development. Bike lanes shall conform to the minimum widths specified in Table 14-5, Bikeway Design Width" (SOURCE)	No, not required via guideline or regulation.	No, not required via guideline or regulation.
2.3. Sidewalks or bike accommodations required by roadway type	Yes, see above.	Yes (sidewalks only), though roadway types are insufficient and are oriented entirely towards motorized vehicle mobility ("arterial", "collector", local", etc)	No.
2.4. New sidewalks, bike lanes, greenways, etc., connect to existing facilities	Yes. "Subdivisions adjoining the Greenway or a bikeway shall provide sidewalks with a minimum right of way of twenty (20) feet that connect the lots internal to the subdivision to the Greenway or bikeway"	No, not required via guideline or regulation.	No.



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
2.5. Cross-Access between adjacent land parcels	<p>Yes. "Stubouts for future road connections to adjoining vacant parcels shall be provided where practicable". In commercial re/development areas, parking areas shall connect to each other. Also, provision of cross-access is the highest-ranked mitigation measure in response to Traffic Impact Analyses (CDO 8.7.2)</p>	<p>Land development regulations include the following provisions which may discourage walkability and easy access:</p> <ul style="list-style-type: none"> <li>- Curvilinear roads shall be used in residential subdivisions to the maximum extent feasible.</li> <li>- Local roads shall be designed to discourage through traffic. (LDR 5.6.2)</li> </ul>	<p>Yes "Proposed streets shall be coordinated with the existing street system in the surrounding area and, where possible, shall provide for the continuation of existing streets abutting the development. Existing roads shall be continued at the same or greater width, but in no case shall be less than the width required by the provisions of this Chapter." (7.3.2, 2011 LMR)</p> <p>In reference to the Traffic-Impact Study required by new, large developments: "The traffic-impact analysis also shall assess the connection of the property to adjoining properties. Where the use, scale of development, or size of adjoining properties is such that trips would be anticipated between the proposed uses and the other properties, the analysis shall make recommendations on interconnections. The analysis shall recommend interconnections to provide a smooth flow of traffic between uses along arterials and collector roads to ensure that as much traffic as possible uses secondary roads and other interconnections rather than major roads for short trips." (10.10.7 2011 LMR)</p>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
2.6. Block size	TND: Average length of 400', maximum length of 700'. A link/node connectivity ratio is also used.	Block sizes are too large for walkability. Access management would be better addressed through specifying intersection control spacing.  From Zoning Ordinances, 5.2.1 Residential areas: 600-2000' Along "Major Arterials": minimum of 1000' For blocks longer than 600', easements may be required for utilities or walkways (min 4' in width)	"(A) Block lengths shall be appropriate to topographic conditions and density to be served, but shall not exceed 1,200 feet in length, or be less than 300 feet in length. (B) Blocks should be of sufficient width to allow for two tiers of lots of appropriate depth, except where reverse-frontage lots are required along a major street, or where prevented by size, topographical conditions, or other inherent conditions of the property." (7.10.1, 2011 LMR)
2.7. Dead end streets	"The street system shall balance the public goal of connectivity with market demands for privacy. While this Article does not ban cul-de-sacs, cul-de-sacs and dead-end streets shall be reserved for situations involving unique topography, environmental restrictions or similar considerations. Wherever possible, cul-de-sacs should be designed as closes" (14.2.3, CDO)	Allowed, up to 1000' feet in length.	"Dead-end streets designed to be permanently closed at one end shall not exceed 2,500 feet in length." "A turn-around shall be provided at the closed end of a street and shall have a minimum diameter of 80 feet to the outside edge of the pavement and 100 feet to the legal right-of-way line. Cul-de-sacs shall be avoided wherever possible by connecting new subdivision roads with nearby or adjacent existing roads. The Planning Commission shall determine whenever such connections are required. In all subdivisions, whether single-phase or multi-phased, all reasonable efforts shall be made to provide current or future connections with existing nearby roads and/or with proposed future roads in an attempt to eliminate excessively long cul-de-sacs." (7.3.4, 2011 LMR)
<b>ASSESSMENT</b>	<b>Exceptional</b>	<b>Needs improvement</b>	<b>Needs improvement</b>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
<b>3. PEDESTRIAN FRIENDLY BUILDING AND SITE DESIGN STANDARDS</b>			
3.1. Off-street motorized vehicle parking is behind or to side of buildings	In the TND use pattern, "parking is not allowed forward any portion of the front plane of the building". For other patterns, it may be desirable but does not appear to be required.	Downtown – Yes.	No, however for "Highway Corridor Overlay Districts": "No more than one bay of parking shall be allowed between a structure and the right-of-way of the primary street fronting the site." (2.12.8, 2011 LMR)
3.2. Maximum automobile parking requirements defined	Yes. Further, minimum parking requirements are waived for three of four "use patterns" (TND, Conservation Subdivision, and Commercial Redevelopment).	No. Only minimum values are specified and they are excessive for most uses. However, developers may submit alternative parking amount requests from accepted sources, subject to approval from the Planning Director.	Yes. "The maximum number of off-street parking spaces to be provided shall not exceed one hundred and ten (110%) percent of the minimum number required." (4.1, 2011 LMR)
3.3. Bicycle parking requirements	"Bicycle parking may be required where the Director finds that there is a sufficient need in a particular case" (CDO 12.4.2)	Not specified.	Not Specified.



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
3.4. Other place-supportive parking regulations (On-street parking, shared parking, pricing, employer incentives/programs, etc)	<p>Shared parking calculations are allowed, with reductions up to 50% of required parking in the downtown district.</p> <p>On-street parking may not be counted towards the minimum requirements in any ratio.</p>	<p>ULI's "Shared Parking" manual is explicitly recognized as a source of alternative parking quantity calculations.</p>	<p>Yes. "The number of off-street parking spaces for uses requiring 100 or more spaces may be reduced by the Development Official up to twenty (20%) percent on the basis of such data as shared parking, ride-sharing programs, provision of public transit, or other acceptable provisions or standards. Up to fifty (50) percent of the parking spaces required for a proposed non-residential use may be provided and used jointly with an adjoining non-residential use not normally open, used, or operated during the same hours as the proposed use." (4.1, 2011 LMR)</p> <p>In "Highway Corridor Overlay Districts": "The Development Official at his discretion may accept a higher or lower number of parking spaces than required in 2.12.8(A) above (or a specific number of spaces for a use not listed) based on developer-submitted parking data such as a shared parking analysis or appropriate standards from another accepted source." (2.12.8, 2011 LMR)</p>
3.5. Form-based or design-based codes are used	<p>Yes. Four "use patterns" are anticipated to comprise the bulk of new development and redevelopment within zoning districts: Conservation Subdivision, TND, Neighborhood Center, and Commercial Redevelopment. Each of these patterns is governed by dimensions for lots, landscaping, streets, parking, and other elements.</p>	<p>Downtown – Yes. Elsewhere there is some guidance on form, but not much.</p>	<p>No. However, in Planned Unit Developments: "Variety in building types, heights, facades, setbacks, and size of open spaces shall be encouraged." (2.7.3, 2011 LMR)</p>
3.6. Pedestrian entrances required on street frontage (regardless of parking location)	<p>Yes.</p>	<p>Downtown – Yes. Elsewhere, no.</p>	<p>No.</p>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
3.7. Setback or build-to requirements	0' setbacks are acceptable for use patterns. Build-to lines may exist.	Downtown – Build-to is used instead of setback.	No.
3.8. Buffer requirement between adjacent buildings or uses	No buffer requirements in areas covered by "use patterns". Elsewhere, large buffers (40'+) are required to separate industrial from other uses while small buffers separate various residential and commercial uses.	Downtown – No, urban design standards and dimensions are used instead. However, outside of downtown, minimum 10' landscape buffers must be placed between anything abutting a single-family residential area.	Yes, buffer requirements for all land-use types except single and two-family residential development. (5.1.3, 2011 LMR)
3.9. Mixed use buildings and blocks	Yes, commercially-oriented use patterns allow and encourage mixed use buildings and blocks	Downtown – Yes.	Yes, in "Residential Limited Mixed Use" and "Urban Development Districts" (2.2, 2011 LMR)
3.10. Active ground floor uses with engaging architecture	Yes, commercial ground floors are required in TND, Neighborhood center, and Commercial Redevelopment area.	Downtown – Yes.	Not required.
3.11. Site Amenities for Cyclists and others (Showers, Changing areas, etc)	No guidelines found.	No guidelines found.	No guidelines found.
3.12. Human-scale lighting (< 15' tall) required along paths and in parking areas	No standards found for height of street lighting. For exterior building lighting, 25' is listed as the maximum height.	Downtown – Yes.	No. "Maximum 20' at primary access points" (5.5, 2011 LMR) "The maximum height of streetlights shall be 25 feet." (7.7.2, 2011 LMR)
<b>ASSESSMENT</b>	<b>Exceptional</b>	<b>Adequate</b>	<b>Needs improvement</b>
<b>4. PEDESTRIAN FACILITY DESIGN</b>			
4.1. ADA Standards	5' Sidewalks meet ADA minimum width.	A ramp shall be provided at intersections in accordance with SC State law. However, specified sidewalk widths (4') do not meet ADA standards.	No guidelines found
4.2. Minimum sidewalk width by context	5' minimum per ADA requirements.	Specified as 4' (not as minimum). This is insufficient.	"Within subdivisions, sidewalks shall be at least 4 feet wide; when providing access to public facilities, sidewalks shall be not less than five feet wide." (7.15, 2011 LMR)
4.3. Street Trees	Landscaping based on street typology.	5' minimum landscape buffer required, with larger planting strips (up to 25') according to lot depth.	Not required, except as part of "Large Retail Projects" (2.12.11, 2011 LMR) and bufferyards (5.1.4, 2011 LMR).



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
4.4. Mid-Block Crossings	No guidelines found in CDO or details.	No Guidelines.	Crosswalks are required to be at least 10-feet-wide and to be located in areas where deemed necessary to provide adequate pedestrian circulation or access to schools, shopping areas, recreation areas, or destination facilities. (4.1.1.1, 2003 ARTS Bicycle and Pedestrian MP)
<b>ASSESSMENT</b>	<b>Adequate</b>	<b>Needs improvement</b>	<b>Needs improvement</b>
<b>5. BICYCLE FACILITY DESIGN</b>			
5.1. Types of Facilities Specified or Allowed	In CDO: Sidewalks, Bike Lanes, Greenways In Greenway Plan: Greenway (MUT), Side Path, Connectors, Bike Lanes, Wide Lanes, Shared Lanes, Bike Routes, Bike Boulevards.	Only facility mentioned is "bikeway" which is specified as six feet wide.	Greenways are linear green belts linking residential areas with other open-space areas. These greenways may contain bicycle paths, footpaths, and bridle paths. (5.3.5, 2011 LMR)
5.2. Minimum Shoulder Width	Depends on street type.	No guidelines beyond SC-DOT (state roads only).	Only under construction standards for Subdivisions: 10' min for lots < 1 acre 6' min for lots > 1 acre. (7.3.9, 2011 LMR)
5.3. Bicycle accommodations at intersections	The Greenway Plan discusses various bicycle facilities at intersections.	Not specified.	Not Specified.
<b>ASSESSMENT</b>	<b>Exceptional</b>	<b>Needs improvement</b>	<b>Needs improvement</b>
<b>6. SUPPORTING POLICIES AND MANUALS</b>			
6.1. Complete Streets Policy	Not known as such, but Complete Streets are part of guiding principles for Streets chapter in CDO.	No.	No.
6.2. Design Manual for Pedestrian and/or Bicycle Facilities	Guidance on width and inclusion within CDO, but standard construction details do not yet include bike facilities. A single (5') sidewalk detail is provided.	No.	No.
6.3. Complete Street Design Guidelines for a variety of contexts	Yes, in text and intent, but no standard details for road types are available.	No.	No.
6.4. General and Pedestrian Connectivity Requirements	Yes, both block size and connectivity ratio.	Minimal, larger than ideal pedestrian scale.	Minimal.



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
6.5. Existence of street hierarchy plan by context	No. A functional classification map is contained in the Comprehensive Plan, but organizes streets but vehicular mobility ("arterial", "collector", etc)	The transportation plan was under development at the time of this review.	No. Streets are defined as having a vehicular hierarchy.
6.6. Existence of bicycle and pedestrian plan(s)	Yes, a detailed master plan has been prepared for both bicycle and pedestrian facilities.	Jurisdiction relies on the current regional ARTS Bicycle and Pedestrian Plan for inventory and guidance.	Relies on 2003 regional ARTS Bicycle and Pedestrian Plan.
6.7. Consideration of pedestrian and bicycle concerns in Site Planning	Yes.	Yes, "bike and pedestrian ways" are specifically mentioned in site plan requirements, though there is little additional guidance on appropriateness.	No, only considers vehicular traffic.
6.8. Consideration of pedestrian and bicycle concerns and Level of Service (LOS) in Traffic Impact Analyses and other engineering studies	No, however, traffic mitigation measures are ranked as follows:  1. Improvements in connectivity internal to the site or between sites including cross-access improvements and cross-access easements; 2. New road connections to improve connectivity; 3. Access controls; 4. Median islands; 5. Intersection signalization; 6. The addition of turn lanes; 7. Pedestrian and transit infrastructure such as sidewalks and bus stops or passenger shelters; 8. Pavement widening; and 9. New road construction, either off site or internal to the site that provides connectivity in the impact area.	No guidance found.	No guidance found.
6.9. Traffic Calming programs, policies, and/or manuals	No guidance found, though street design guidelines (including pavement width, corner radii, street trees, and other urban design items) should keep vehicle speeds relatively low and appropriate to context.	No guidance found.	No guidance found.
6.10. Access management program or policy	Detailed parcel access requirements are included within the development code.	Yes, access management guidelines are part of the zoning ordinance.	No guidance found.
6.11. Sidewalk retrofit program or policy	Not found in ordinances, but bike/ped plans reference this goal.	No guidance found.	No guidance found.
<b>ASSESSMENT</b>	<b>Adequate</b>	<b>Needs improvement</b>	<b>Needs improvement</b>



TOPIC	Jurisdiction		
	City of North Augusta	City of Aiken	Aiken County
<b>7. ITEMS REVIEWED</b>			
7.1. Names of Resources	<p>GUIDELINES AND REGULATIONS</p> <ol style="list-style-type: none"> <li>1. North Augusta Development Code (Jan 2008)</li> <li>2. North Augusta Code of Ordinances , ch. 19 (Online, Current as of June 2010, Accessed Aug 2011)</li> <li>3. Construction Specifications, Road Details (Accessed Aug 2011)</li> </ol> <p>ADDITIONAL PLANS</p> <ol style="list-style-type: none"> <li>4. Draft Greenway, Pedestrian and Bicycle Master Plan (May 2011)</li> <li>5. Comprehensive Plan (2005)</li> </ol>	<p>GUIDELINES AND REGULATIONS</p> <ol style="list-style-type: none"> <li>1. Old Aiken Design Guidelines (Oct 2008)</li> <li>2. City Code of Ordinances (Current as of Oct 25, 2010, Accessed Aug 2011)</li> <li>3. Land Development Regulations (Sept 2008)</li> <li>4. Zoning Ordinance (June 2009)</li> <li>5. Landscaping Manual and Tree Protection (Aug 2005)</li> </ol> <p>ADDITIONAL PLANS</p> <ol style="list-style-type: none"> <li>6. Old Aiken Master Plan (Apr 2005)</li> </ol>	<p>GUIDELINES AND REGULATIONS</p> <ol style="list-style-type: none"> <li>1. Aiken County Land Management Regulations. (Online, Current as of Jan 2011, Accessed September 2011)</li> <li>2. Aiken County Code of Ordinances (Online, Current as of May 2011, Accessed September 2011)</li> </ol> <p>ADDITIONAL PLANS</p> <ol style="list-style-type: none"> <li>3. ARTS Bicycle and Pedestrian Plan (2003)</li> <li>4. ARTS 2035 Long Range Transportation Plan (September 2005)</li> </ol>

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Appendix C



*Bike and Walk Friendly Community Applications*



# LEAGUE OF AMERICAN BICYCLISTS

Bicycle Friendly Community Application

## Name of Community

\* Name of Community

\* State

\* Mayor or top elected official  
*include title*

\* Phone

\* Email

\* Address

\* Website

## Applicant Profile

\* Applicant Name

\* Title

\* Employer

\* Address

\* City

\* State

\* Zip

\* Phone

\* Email

## Community Profile

The data in this section is gathered by the U.S. census. Click [here](#) to find the most recent information on your community.



\* 1. Type of Jurisdiction

Check One

- Town/City/Municipality**
- County**
- Metropolitan Planning Organization or Council of Governments**
- Regional Planning Organization**
- Rural Planning Organization**
- Indian Nation**
- Other**

If other, describe  
(50 word limit)

\* 2. Population

Enter a positive whole number, 1 or larger

3. Square milage of community

\* Total area  
(sq. mi.)

\* Water area  
(sq. mi.)

\* Land area  
(sq. mi.)

\* 4. Population Density

(Person per sq. mi.)

5. Climate

\* Average temperature for January  
in °F

\* Average temperature for April  
in °F

\* Average temperature for July  
in °F

\* Average temperature for October  
in °F

\* Average precipitation for January  
in inches

\* Average precipitation for April  
in inches

\* Average precipitation for July  
in inches



\* Average precipitation for October  
in inches

\* 6. Median Household Income  
Enter a whole number, 0 or larger

7. Age distribution

\* % under 5

\* % age 6-17

\* % age 18-64

\* % age 65+

\* Totals  
Total should equal 100

8. Race

\* % White

\* % Black or African American

\* % American Indian and Alask Native

\* % Asian

\* % Native Hawaiian and Other Pacific Islander

\* % Some other race

\* % One race

\* % Two or more races

\* Totals  
Total should equal 100

\* % Hispanic or Latino (of any race)



[Redacted]

\* 9. What is the name of your community's bicycle program manager?

[Redacted]

\* 10. In which department does your bicycle program manager work?

- Engineering/public works**
- Planning**
- Parks and Recreation**
- Transportation**
- Other**

If other, describe  
(50 word limit)

\* 11. Are you the Bicycle Program Manager?

- Yes**
- No**

\* Bicycle Program Manager Phone

[Redacted]

\* Bicycle Program Manager Email

[Redacted]

\* 12. What percentage of the community's Bicycle Program Manager's time is spent on bicycling issues?

- 10% or less**
- 10-25%**
- 25-50%**
- 50-75%**
- 75-100%**

\* 13. How many government employees, expressed in full-time equivalents, work on bicycle issues in your community?  
*Enter a positive whole number, 1 or larger*

[Redacted]

\* 14. Do you have a [Bicycle Advisory Committee](#)

- Yes**
- No**

\* 14a. How often does it meet?

- Monthly**
- Every two months**
- Quarterly**
- Annually**
- Other (describe)**

If other, describe  
(250 word limit)

\* 14b. How many members serve on the committee?  
*Enter a positive whole number, 1 or larger*

[Redacted]



\* 14c. Which of the following groups are represented or regularly attend the Bicycle Advisory Committee?  
Check all that apply

- User group**
- Law enforcement**
- Chamber of commerce**
- Public health**
- Planning department**
- Transportation department**
- School board**
- Parks department**
- Recreation department**
- Transit agency**
- Other (describe)**

If other, describe  
(250 word limit)

\* 14d. Name of Bicycle Advisory Committee Chair

\* Email of Bicycle Advisory Committee Chair  
e.g. myname@example.com

\* 15. Is there a bicycle advocacy group(s) in your community?

- Yes**
- No**

15a. What is the name of the advocacy group(s) (if more than one, list them all)  
(250 word limit)

\* 15b. Are any of them working with you on this application?

- Yes**
- No**

\* 15c. List the name of the primary group:

\* 15d. Does this group have paid staff?

- Yes**
- No**

\* 15e. Do you contract with this group for any services or programs?

- Yes**



**No**

\* 15f. Who is the primary contact for them?

\* 15g. Email of primary contact of advocacy group  
e.g. *myname@example.com*

\* 16. What are the primary reasons your community has invested in bicycling?  
*check all that apply*

- Improved quality of life**
- Improving public health**
- Community connectivity**
- Transportation options**
- Climate change concerns**
- Decrease traffic congestion**
- Increase tourism**
- Increase property values**
- Cooperation with adjacent communities**
- Public demand**
- Economic development**
- Traffic safety**
- Other (describe)**

If other, describe  
(250 word limit)

17. What was your community's most significant investment for bicycling in the past year?  
(100 word limit)

18. What specific improvements do you have planned for bicycling in the following year?  
(100 word limit)

**Engineering**



19. Does your community have

- a [complete streets policy](#)?
- a **bicycle accomodation policy (a policy that requires the accommodation of cyclists in all new road construction and reconstruction and resurfacing)?**
- Neither**

19a. When was it adopted

19b. Provide a link or attach a copy of this legislation or policy.  
(250 word limit)

19c. How was it adopted?

- Legislation**
- Resolution**
- Internal Policy**
- Other**

If other, describe  
(250 word limit)

19d. What tools are in place to ensure implementation?  
*Check all that apply*

- Implementation Guidance**
- Design**
- Manual**
- Training**
- Other**

If other, describe  
(500 word limit)

20. How do you ensure your engineers and planners accommodate cyclists according to [AASHTO](#) and [MUTCD](#) standards?  
*Check all that apply*

- Training**
- Offer [FHWA/NHI Training Course](#)**
- Hire Outside consultants to train staff**
- Send staff to [bicycle-specific conferences/training](#)**
- Require project consultants to have bike/ped qualifications**



**Internal training or [design manual](#)**

20a. Describe each checked  
(200 word limit)

\* 21. What percentage of bridges and tunnels in your community are accessible to bicyclists?  
Enter a whole number, 0 or larger

21a. What are the exceptions?  
(500 word limit)

\* 22. How do you ensure there are end-of-trip facilities for bicyclists?  
Check all that apply

- Bike parking ordinance**
- Bike parking ordinance for all new developments**
- Ordinance requiring showers and lockers**
- Building accessibility ordinance**
- On street bike parking**
- [Ordinance that allows bike parking to substitute for car parking](#)**
- Standards for bicycle parking that conform to [APBP guidelines](#)**
- Other**

If other, describe  
(500 word limit)

23. How many bike parking spaces are there in your community?  
Answer all that apply

23a. Bike racks  
Enter a whole number, 0 or larger

23b. Bike lockers  
Enter a whole number, 0 or larger

23c. Bike depot (i.e. [Bikestation](#))  
Enter a whole number, 0 or larger

23d. In-street bike parking  
Enter a whole number, 0 or larger



24. Approximately what percentage of these locations have bike racks or storage units?

24a. Schools

24b. Libraries

24c. Transit Stations

24d. Parks & Recreation Centers

24e. Government buildings

24f. Office buildings

24g. Shops

24h. Public Housing

\* 25. Does your community have transit service?

- Yes
- No

\* 25a. Are buses equipped with [bike racks](#)?

- Yes
- No

25b. What percentage?

25c. Are bikes allowed inside transit vehicles?

- Yes
- Sometimes
- No

If yes or sometimes, describe  
(100 word limit)

\* 26. What is the mileage of your total road network?  
Enter a whole number, 0 or larger

\* 27. What is the mileage of your total shared-use path network?  
Enter a whole number, 0 or larger

28. List your current and planned bicycle accommodations?



Complete all that apply

a. [Bike lanes](#)

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

b. [Shared lane markings](#)

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

c. [Bike boulevards](#)

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

d. Signed bike routes

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

e. Paved shared use paths

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

f. Natural surface shared use paths

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

g. [Singletrack](#)

Current

Enter a whole number, 0 or larger

Planned

Enter a whole number, 0 or larger

\* 29. What other innovative ways have you improved on-road conditions for bicyclists?

Check all that apply

[Road diets](#)



- [Area wide traffic calming](#)
- [Cycle tracks](#)
- [Contra-flow bike lanes](#)
- Speed limits 20 mph or less on residential streets**
- Bike cut thru**
- [Way-finding signage with distance and/or time information](#)
- None**
- Other**

If other, describe  
(500 word limit)

\* 30. What percentage of arterial streets have bike lanes or paved shoulders?  
Enter a whole number, 0 or larger

\* 31. What percentage of natural surface, trails and singletrack are open to bicyclists?  
Enter a whole number, 0 or larger

31a. What are the exceptions?  
(500 word limit)

32. What maintenance policies or programs ensure *bike lanes* and *shoulders* remain usable and safe?  
Answer all that apply

- \* 32a. Street sweeping
- Before other travel lanes**
  - Same time as other travel lanes**
  - Weekly**
  - Monthly**
  - Quarterly**
  - Annually**
  - Never**
  - Other**

If other, describe  
(250 word limit)

- \* 32b. Snow clearance
- Before other travel lanes**



- Same time as other travel lanes
- Within 48 hours of storm
- Never
- Other
- Not applicable

If other, describe  
(500 word limit)

\* 32c. Pothole maintenance

- Within 24 hours of complaint
- Within one week of complaint
- Within one month of complaint
- Never
- Other

If other, describe  
(500 word limit)

32d. Other Maintenance policies or programs for bike lanes and shoulders (describe)  
(500 word limit)

33. What maintenance policies or programs ensure *shared-use paths* remain safe and usable?  
*Answer all that apply*

\* 33a. Path sweeping

- Weekly
- Monthly
- Quarterly
- Annually
- Never
- Other

If other, describe  
(250 word limit)

\* 33b. Vegetation maintenance

- Weekly
- Monthly
- Quarterly
- Annually



- Never**
- Other**

If other, describe  
(250 word limit)

\* 33c. Snow clearance

- Before roadways**
- Same time as roadways**
- Within 48 hours of storm**
- Never**
- Other**
- Not applicable**

If other, describe  
(250 word limit)

\* 33d. Surface repair

- Within 24 hours of complaint**
- Within one week of complaint**
- Within one month of complaint**
- Never**
- Other**

If other, describe  
(500 word limit)

33e. Other Maintenance policies or programs for shared-use paths (describe)  
(500 word limit)

\* 34. How do you accommodate cyclists at intersections in your community?  
Check all that apply

- All /Most signals are timed for bicyclists**
- All /Most signals are timed**
- [Loop detector markings](#)
- [Video detection](#)
- [Advance stop line or Bike Box](#)



[Bicycle signal heads](#)

**Other**

**None of the above**

If other, describe  
(500 word limit)

\* 35. Are there other infrastructure improvements in your community to promote bicycling?

**Yes**

**No**

If yes, describe  
(500 word limit)

### Education

\* 36. Do schools in your community offer a [Safe Routes to School](#) (or comparable) program that includes bicycling education?

**Yes**

**No**

What percentage of schools in your jurisdiction participates?

a. Elementary (percentage)

Enter a whole number, 0 or larger

b. Middle School (percentage)

Enter a whole number, 0 or larger

c. High School (percentage)

Enter a whole number, 0 or larger

\* 37. Outside of schools, how are children taught safe bicycling skills?

Check all that apply

**Youth bike clubs**

[Bike clinics or rodeos](#)

**Youth recreation programs**

**Helmet fit seminars**

[Safety town](#)

**Trail riding classes**

**Other**

**None of the above**



If other, describe  
(500 word limit)

\* 38. Do you have a [diversion program](#) for cyclists or motorists?

- Yes
- No

If yes, describe  
(500 word limit)

\* 39. What have you done in the last 18 months to educate motorists and bicyclists on sharing the road safely?  
*Check all that apply*

- Public service announcements**
- Community newsletter article**
- New resident packet**
- Utility bill insert**
- Bicycle ambassador program**
- Newspaper column/blog on bicycling**
- Dedicated bike page on community Web site**
- Billboards**
- Share the Road Signs**
- Share the road information in driver's education**
- Other**
- None of the above**

If other, describe  
(500 word limit)

40. What of the following options are available on a regular basis to your community?

\* 40a. [Traffic Skills 101](#) (or equivalent) classes -- including classroom and on-bike instruction.

- Weekly**
- Monthly**
- Quarterly**
- Annually**
- Never**
- Other**



If other, describe  
(250 word limit)

\* 40b. Cycling Skills classes -- three to four hour classroom training courses

- Weekly**
- Monthly**
- Quarterly**
- Annually**
- Never**
- Other**

If other, describe  
(250 word limit)

\* 40c. Commuter classes - one/two hour classes

- Weekly**
- Monthly**
- Quarterly**
- Annually**
- Never**
- Other**

If other, describe  
(250 word limit)

\* 41. Has your community hosted a [League Cycling Instructor seminar](#) in the past two years?

- Yes**
- No**

\* 42. How many [League Cycling Instructors](#) are there in your community?  
Enter a whole number, 0 or larger

43. List active League Cycling Instructors (active means they have taught at least one class during the past 12 months).  
(500 word limit)

44. Does your community have driver training for any of the following professional drivers that include information on sharing the road with cyclists?  
Check all that apply

- City staff**



- Taxi drivers**
- Transit operators**
- School bus operators**
- Delivery drivers**
- Other**

\* If other, describe  
(250 word limit)

\* 44a. If yes to any of the above, describe the program.  
(500 word limit)

\* 45. Describe any efforts your community has made to ensure your education programs reach traditionally underserved populations.  
(500 word limit)

\* 46. Are there other education efforts in your community to promote bicycling?

- Yes**
- No**

\* 46a. If yes, describe  
(1000 word limit)

**Encouragement**

\* 47. How do you promote [National Bike Month](#)?  
Check all that apply

- City Proclamation**
- Community Ride**
- Mayor-led Ride**
- Public Service Announcements**
- Publish a guide to Bike Month Events**
- Bike Month Web site**



- Commuter Challenge**
- Commuter Breakfasts**
- Trail construction or maintenance day**
- Other**
- No promotion**

\* If other, describe  
(1000 word limit)

\* 48. How many people participate in [Bike Month](#) events?  
Enter a whole number, 0 or larger

\* 49. How do you promote bicycling outside of [National Bike Month](#)?  
Check all that apply

- Community Ride**
- Mayor-led Ride**
- Public Service Announcements**
- Trail construction or maintenance day**
- [Summer Streets/Ciclovía/Sunday Parkways](#)
- Commuter Challenge**
- Commuter Breakfasts**
- Other**
- No promotion**

\* If other, describe  
(500 word limit)

\* 50. Do you actively promote Bike to Work Day or other bicycle commuting incentive programs?

- Yes**
- No**

\* 50a. If yes, describe  
(500 word limit)

\* 50b. Approximately what percentage of the community workforce do you reach?



\* 51. List the signature cycling events in your community?  
(500 word limit)

\* 52. Does the municipality sponsor or actively support any of these rides?

- Yes**
- No**

\* 52a. If yes, how?  
(500 word limit)

\* 53. Does your local tourism board promote bicycling in your area?

- Yes**
- No**

\* 53a. If yes, how?  
(500 word limit)

\* 54. Are there cycling organizations in your area?  
Check all that apply

- Recreational Bike Clubs**
- Mountain Bike Clubs**
- Friends of the Trail Groups**
- National Mountain Bike Patrol**
- Racing Clubs or Teams**
- Bicycle Co-ops**
- Other**
- None**

\* If other, describe.  
(500 word limit)

\* 54a. For each type of club checked, list names of the organizations.  
(500 word limit)



\* 55. How many [specialty bicycle retailers](#) ( i.e shops dedicated primarily to selling bikes and bike-related equipment) are there in your community?  
*Enter a whole number, 0 or larger*

\* 55a. List their names.  
*(500 word limit)*

\* 56. Which of these bicycling areas or facilities do you have in your community?  
*Check all that apply*

- BMX track**
- Velodrome**
- Cyclocross course**
- Mountain bike park**
- Pump Tracks**
- Other**
- None**

\* If other, describe.  
*(500 word limit)*

\* 57. Is there a skatepark in your community?

- Yes**
- No**

\* 57a. If yes, do bikes have access to the skatepark?

- Always**
- Sometimes**
- Never**

\* 58. Are there opportunities to rent bicycles in your community?

- Yes**
- No**

\* 59. Does your community have a bike sharing program?

- Yes**
- No**

59a. If yes, of what use is it?  
*Check all that apply*

- Public use**



**Other**

\* If other, describe  
(500 word limit)

\* 60. Do you have any current [Bicycle Friendly Businesses](#) in your community?

**Yes**

**No**

\* 60a. If yes, list the names of the businesses.  
(500 word limit)

\* 61. Does your community have youth recreation and/or intervention programs centered around bicycling?  
Check all that apply

[Recycle a Bicycle](#)

[Trips for Kids chapter](#)

[Earn a Bike program](#)

**Co-op or Community Cycling Center**

**Other**

**None**

\* If other, describe  
(500 word limit)

\* 62. What mapping and route finding information is available for your community which has been updated in the last 18 months?

Check all that apply

**Online route finding service**

**Online map**

**Printed on-road bike-routes map**

**Printed mountain bike trails map**

**Other**

**None available**

\* If other, describe  
(500 word limit)



\* 63. Does your community have other programs or policies to encourage cycling?

- Yes**
- No**

\* 63a. If yes, describe  
(500 word limit)

### Enforcement

\* 64. How does your police department interact with the local cycling community?  
*Check all that apply*

- A police officer is an active member of bicycle advisory committee**
- Identified law-enforcement point person to interact with cyclists**
- No current formal interaction**
- Other**

\* If other, describe  
(500 word limit)

\* 65. What kind of training is offered to police officers regarding traffic law as it applies to bicyclists?  
*Check all that apply*

- Basic academy training**
- [International Police Mountain Bike Association](#) or **Law Enforcement Bicycle Association** training**
- [National Highway Traffic Safety Administration Law Enforcement Training](#)**
- Completion of [Smart Cycling course](#) by Police**
- Presentation by League Cycling Instructor or local cyclist**
- Institute for Police Training and Development bicycle training**
- Other**
- No training currently offered**

\* If other, describe  
(500 word limit)



\* 66. What enforcement campaigns are targeted at improving cyclist safety?  
*Check all that apply*

- Helmet/light giveaways**
- Targeting motorist infractions**
- Targeting cyclist infractions**
- Share the road campaigns**
- Other**
- None of the above**

\* If other, describe  
*(500 word limit)*

\* 67. Do you have police department employees on bikes?

- Yes**
- No**

\* 67a. If yes, what percentage of police department employees is on bike?  
*Enter a whole number, 0 or larger*

\* 68. Are there any other public safety (e.g. fire department or EMS) employees on bikes?

- Yes**
- No**

\* 68a. If yes, what percentage of police department employees is on bike?  
*Enter a whole number, 0 or larger*

\* 69. Do your local ordinances treat bicyclists [equitably](#)? (examples can be found on the [BFC resources page](#)).  
*Check all that apply*

- There are specific penalties for failing to yield to a cyclist when turning. It is illegal to park or drive in a bike lane (intersections excepted)**
- There are penalties for motor vehicle users that 'door' cyclists**
- There is a ban on cell phone use while driving.**
- There is a ban on texting while driving.**
- The community uses photo enforcement for red lights and/or speed**
- There is a state or local law that requires cyclists to use sidepaths regardless of their usability.**
- There is a state or local law that requires cyclists to use bike lanes where they are provided.**
- Cyclists are required to ride as far to the right of the road as practicable without exceptions listed in [Uniform Vehicle Code](#).**
- There is a general restriction on bicyclists riding on the sidewalk.**



- There are local or school policies that restrict youths from riding to school.**
- None of the above**
- Additional information on any of the above mentioned ordinances as it pertains to your community.**

\* If Additional Information, describe  
(500 word limit)

\* 70. Are there any additional prohibitions or restrictions on cyclists in your community?

- Yes**
- No**

\* 70a. If yes, describe  
(500 word limit)

\* 71. Does your community have other programs or policies to enforce safe cycling?

- Yes**
- No**

\* 71a. If yes, describe  
(100 word limit)

### Evaluation and Planning

\* 72. What is the most current journey-to-work data for your community? (this percentage can be found in the [U.S. Census or the American Community Survey](#))  
Enter a whole number, 0 or larger

\* 73. What additional information do you have on bicycle use for your community?  
(500 word limit)

\* 74. How many cyclist/motor vehicle fatalities have occurred in your community in the past five years?  
Enter a whole number, 0 or larger

\* 75. How many cyclist/motor vehicle crashes have occurred in your community in the past five years?  
Enter a whole number, 0 or larger

\* 76. Do you have a specific plan or program to reduce these numbers?

- Yes**



**No**

\* 76a. If yes, provide the link to the plan or describe.  
(500 word limit)

\* 77. Does your community have a bicycle plan?

**Yes**

**No**

\* 77a. When was it passed or most recently updated?

▼

\* 77b. Is there a dedicated funding source for implementation?

**Yes**

**No**

\* 77c. If yes, describe.  
(500 word limit)

\* 77d. What percentage of the plan has been implemented?

▼

\* 77e. Are you meeting annual target goals for implementation?

**Yes**

**No**

\* 77f. Provide a link to the plan or describe.  
(250 word limit)

\* 78. Do you have a trails master plan that addresses mountain bike access?

**Yes**

**No**

\* 78a. If yes, provide the link to the plan or describe.  
(500 word limit)

\* 79. Is there [formal cooperation](#) between the mountain biking community and the community recreation and planning staff?

**Yes**

**No**

\* 79a. If yes, describe.  
(500 word limit)



\* 80. Do you have [trip reduction ordinances, policies or programs](#)?

- Yes**
- No**

\* 80a. If yes, describe.  
(500 word limit)

\* 81. Have you done an [economic impact study](#) on bicycling in your community?

- Yes**
- No**

\* 81a. If yes, describe.  
(500 word limit)

\* 82. Do you have a mechanism to ensure facilities, programs and encouragement efforts are implemented in traditionally underserved communities?

- Yes**
- No**

\* 82a. If yes, describe.  
(500 word limit)

\* 83. Does your community have other programs or policies to evaluate and/or plan bicycling conditions, programs, and facilities in your community?

- Yes**
- No**

\* 83a. If yes, describe.  
(500 word limit)

**Final Overview**

84. What are the three primary reasons your community deserves to be designated a Bicycle Friendly Community?

\* 84a.  
(100 word limit)



\* 84b.  
(100 word limit)

\* 84c.  
(100 word limit)

85. What are the three aspects of your community most in need of improvement in order to accommodate bicyclists?

\* 85a.  
(100 word limit)

\* 85b.  
(100 word limit)

\* 85c.  
(100 word limit)

\* 86. Are you planning any new projects based on your completion of the Bicycle Friendly Community application?

- Yes**
- No**

\* 86a. If yes, describe.  
(500 word limit)

\* 87. Has completing this application made you more aware of what your community needs to do to be bicycle friendly?

- Yes**

**No**

\* 87a. If yes, describe.  
(500 word limit)



# Community Assessment Tool

UPDATED September 1, 2010



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# INSTRUCTIONS

## ***Purpose of the WFC Assessment Tool***

The purpose of this tool is twofold; it serves to both recognize existing walkable communities and to provide a framework for communities seeking to improve their walkability. This tool recognizes communities which have achieved high levels of walking and low rates of pedestrian crashes while also recognizing communities which are making progress in achieving these two goals through policies, projects and programs. Recognizing that there are many ways to achieve these outcomes, the range of questions in this tool attempts to capture the variety of factors that affect walkability.

There are several benefits of completing this form. First, the WFC assessment tool contains information and resources to assist agencies in improving walking conditions for your community. Through the questions and resources in this form, communities will be able to identify areas of needed improvement and use the tools to develop specific solutions. Completing this form also requires collaboration between government agencies, private not-for-profits, and the private sector, thus building stronger relationships in your community. Another advantage of this tool is that it creates a great internal resource for communities by documenting all walking-related programs, projects, and policies in one place. Most communities will be surprised by the amount they are already doing for walkability. Finally, submitting the assessment to the PBIC for scoring provides the opportunity for your community to be recognized with a designation of bronze, silver, gold, or platinum, in terms of conditions for increased and safer walking. This designation has many benefits of promoting walkability both within your community and through friendly competition with other cities.

## ***Completing the WFC Assessment Tool***

Most of the information requested for completion of this assessment tool can be soundly estimated or is relatively easy to find. The information needed to complete this assessment will likely come from a variety of municipal, county, and school district agencies and departments including the police, planning, public works, and engineering departments, and the local transit service provider. Additionally, other information that is requested may be most easily provided by local nonprofit organizations, advocacy groups, elected officials, or even a simple internet search. It is likely that the transportation agency will take the lead in this effort, but it will be important to coordinate across agencies when filling out this application. In some cases one department, such as the city or town's engineering department, will be able to complete an entire section. In other cases, it will make the most sense to have agencies or individuals, like a local Safe Routes to School task force or coordinator, answer certain questions.

## ***How to Answer Questions***

There are several different types of questions included in this assessment tool. We have described them here to clarify how each one should be answered.

For some questions, this assessment tool asks about your municipality's plans, policies, projects, and programs. In those cases, please include a link (web address) or attachment to those documents if possible. If the question requests a brief description, please summarize the policy, activity, or process in your own words. If a concise summary already exists, you may link to that summary or use that description. Include in your summary a description of the nature, scope, and results of the policy, program, or project in question.

Several questions request a substantial amount of information. Frequently, the checklists and examples are meant to act as a prompt or jog the applicant's memory, rather than to indicate that any municipality should be implementing all the measures listed. Please answer the questions to the best of your ability.

Some questions are simple yes/no or checkbox questions. In those cases, please check the appropriate box and include a hyperlink or attachment to the most up-to-date version of any requested ordinance, policy, plan, or relevant document.

Though this assessment tool is meant to be comprehensive, we recognize that each community is unique. Every city and town will have its own unique set of challenges and opportunities, so each will have a different approach to pedestrian issues. Accordingly, each section concludes with a question that offers applicants the opportunity to describe or elaborate on anything that your community is doing that may not have been addressed in the other questions.

### ***What to Look For***

When answering these questions please think broadly. Does any state or national programs (not directly implemented by you) have a positive impact in your community? Are there policies administered by other local departments that may affect the walking environment? Are there private organizations or advocacy groups doing work in your community?

When completing this assessment tool please be certain to mention any evidence-based programs or approaches your community is using, any in-depth or ongoing programs or activities, and any specific efforts to create a community-wide culture of walking. This assessment tool seeks to learn how communities are supporting walking and pedestrian safety and how well those efforts are working. Therefore, please describe both the nature of your policies, programs, and projects as well as any outcome or evaluation of those approaches.

### ***Criteria and Scoring***

This assessment tool is divided into eight sections:

- Community Profile
- Status of Walking
- Planning
- Education & Encouragement
- Engineering
- Enforcement
- Evaluation
- Additional Questions

All sections will be scored, including bonus points from the additional questions. The scoring system will be based on percent and scores are assigned based on the number of questions in the section, the depth of information required in those questions, and the potential impact on walkability of the content addressed in each question. Some cities may be at an advantage for certain questions, however these same cities will be negatively impacted by other questions. For example, an older city like Cambridge, MA has very narrow streets thus impacting sidewalk width and buffers but it has a high connectivity index and land use mix.

# COMMUNITY PROFILE

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This section is intended to provide applicants with a chance to describe their communities. Having an understanding of the geographic, demographic, and economic make up of the community can help explain the challenges and opportunities that the community faces when planning for walking.

---

## 1 Contact Information

_____ Name of Community		
_____ Mayor or top official (include title)	_____ Mayor's Phone	
_____ Community Contact Name		_____ Position/Employer
_____ Contact Address		_____ Address (line 2)
_____ City	_____ State	_____ Zip
_____ Phone/Fax	_____ Email	_____ Website

## 2 Pedestrian Coordinator & Government Staff

List your official pedestrian coordinator or pedestrian issues contact person on government staff, and identify his/her department:

Contact Person: \_\_\_\_\_

Contact Person Department: \_\_\_\_\_

How many hours are spent per year in this capacity? \_\_\_\_\_

Is this person also the bicycle coordinator?  Yes  No

List all other government staff or contractors whose primary duties are devoted to walkability and pedestrian safety issues: \_\_\_\_\_  
\_\_\_\_\_

Do you have a Pedestrian Advisory Committee, Ped/Bike Council or other venue for citizen input?  
 Yes  No

If yes, please provide the name of the Chair and their contact information:

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Do you have an independent pedestrian advocacy organization?  Yes  No

If yes, please provide the name and contact information:

---

### 3 Community Profile

Population\* \_\_\_\_\_

Area of municipality (sq mi): \_\_\_\_\_ Population Density: \_\_\_\_\_

Total area: \_\_\_\_\_ Park land: \_\_\_\_\_ Land Area: \_\_\_\_\_

Climate:                      January                      April                      July                      October

Avg. Temperature				
Avg. Precipitation				

Median Household Income\*: \$ \_\_\_\_\_

Age Distribution\*

% under 20: \_\_\_\_\_ % age 20-64: \_\_\_\_\_ % age 65-84: \_\_\_\_\_ % over 85: \_\_\_\_\_

Race/Ethnicity (categories based on the U.S. Census)\*

% Hispanic or Latino (of any race): \_\_\_\_\_ % Not Hispanic or Latino: \_\_\_\_\_

% White: \_\_\_\_\_ % Black or African-American: \_\_\_\_\_ % Asian: \_\_\_\_\_

% American Indian/Alaska Native: \_\_\_\_\_ % Pacific Islander: \_\_\_\_\_

% Other: \_\_\_\_\_ % One race: \_\_\_\_\_ % Two or more races: \_\_\_\_\_

\*Use [U.S. Census data](http://factfinder.census.gov/)<sup>1</sup> to find demographic and socioeconomic information.

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<sup>1</sup> <http://factfinder.census.gov/>

# STATUS OF WALKING

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This assessment tool seeks to learn how *much* people are walking and how *safe* they are when they are doing so. Therefore, the outcomes that are most significant for the purposes of this tool are the numbers of walkers and the number of pedestrian crashes. Walk Friendly Communities is looking for communities that have created environments in which many people walk *and* pedestrian crash rates are low, or those communities that are making significant progress towards those ends. These two questions focus on these specific outcomes, while other questions in this survey address what measures are used by communities to facilitate walking and improve safety.

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**1 According to the 1990 and 2000 Census, what percentage of residents used the following modes for their commute to work?**

	1990	2000
Walking		
Bicycling		
Public transit		
Single-occupant vehicles		
Carpool		

**Please also provide the latest walking percentage of commuting to work from the most recent 3-year estimates of the American Community Survey. \_\_\_\_%**

**If your community conducts its own travel counts, please include a link, attachment, or description of those count results:**

Web Link: \_\_\_\_\_

Count Results Description: \_\_\_\_\_

---

**Rationale:**

Census journey to work data and National Household Travel Survey (NHTS) data can help communities determine how people in their region are traveling. Census data can help provide information about the prevalence of walking. This data, as well as locally collected walking counts and NHTS data can be used in conjunction with crash data to provide justification for pedestrian safety improvements.

**Resources:**

Find Census and American Community Survey data [here](#)<sup>2</sup> or specific journey to work data [here](#)<sup>3</sup>.

Other useful travel data comes from the [National Household Travel Survey](#)<sup>4</sup> and the [National Survey of Pedestrian and Bicyclist Attitudes and Behaviors](#)<sup>5</sup>.

See how [Cambridge, Massachusetts](#)<sup>6</sup> used Census data to better understand the role of walking in the city.

**2 How many pedestrian/motor vehicle crashes were reported in each of the last five years; and how many of these crashes resulted in injuries and fatalities?**

	2005	2006	2007	2008	2009
<b>Number of Pedestrian Motor Vehicle Crashes</b>					
<b>Number of Pedestrian Injuries</b>					
<b>Number of Pedestrian Fatalities</b>					

**Rationale:**

Knowing how many pedestrians were reported is essential when planning for pedestrian safety. Understanding common accident types and locations can help communities determine the best countermeasures for improving the safety of pedestrians. However, since the number of fatalities alone can often be quite low, especially for small towns, agencies should also have a way of counting and tracking pedestrian-motor vehicle crashes that do not result in fatalities.

**Resources:**

For more information on finding pedestrian data and statistics, click [here](#).

The National Highway Traffic Safety Administration hosts the [Fatality Analysis Reporting System](#), a database of fatal motor vehicle crashes where users can find specific information about crashes, including those involving pedestrians.

**3 What trends, major changes, or significant progress in walking volumes and pedestrian/motor vehicle crashes has your community witnessed over the past 20 years or since it has begun addressing pedestrian issues and concerns in a comprehensive way?**

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**Resources:**

See the 15-year status [report](#)<sup>7</sup> for trends and changes in bicycling and walking since the 1994 National Bicycling and Walking Study.

<sup>2</sup> <http://factfinder.census.gov/>

<sup>3</sup> <http://www.census.gov/population/www/socdemo/journey.html>

<sup>4</sup> <http://nhts.orl.gov/>

<sup>5</sup>

[http://www.bts.gov/programs/omnibus\\_surveys/targeted\\_survey/2002\\_national\\_survey\\_of\\_pedestrian\\_and\\_bicyclist\\_attitudes\\_and\\_behaviors/](http://www.bts.gov/programs/omnibus_surveys/targeted_survey/2002_national_survey_of_pedestrian_and_bicyclist_attitudes_and_behaviors/)

<sup>6</sup> *Link to pg 34 of PSAP*

# PLANNING

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Pedestrian issues are addressed at many different levels of planning, ranging from neighborhood plans to city, county, state, and federal policies and plans. A comprehensive pedestrian plan should address all five Es (education, encouragement, enforcement, engineering and evaluation) along with public involvement. With thorough planning, a community can become proactive rather than reactive in addressing issues of pedestrian accessibility, safety, and aesthetics. Planning involves soliciting public input, collecting information about current and future conditions, and considering what policies, plans, programs and resources a municipality will require to meet your community's needs.

---

- 1 Has your community adopted a pedestrian plan or pedestrian safety action plan?** Yes No

**Please provide a link or attachment of the plan.**

Link to action plan: \_\_\_\_\_

**If yes...**

- **What year was the plan adopted?** \_\_\_\_\_
- **What performance indicators or other techniques does your community use to monitor completion?**

\_\_\_\_\_  
\_\_\_\_\_

- **Does your community's pedestrian plan or other adopted plan or policy establish a target mode share for walking?** Yes No

**If yes, what is the target walking share?** \_\_\_\_\_

- **Does the plan have a safety goal (such as the reduction in pedestrian crashes)?** Yes No

- **What elements of the plan are complete? (Indicate what percent of the plan is complete, if possible.)** \_\_\_\_\_

**Rationale:**

Communities can address pedestrian issues using a variety of plan types, such as comprehensive plans, capital improvement plans, or long-range transportation plans. Indeed, it is essential that pedestrian planning be included in all such plans. However, dedicated pedestrian plans indicate a community's commitment to pedestrian issues and may help assure that these issues are given sufficient attention in the

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<sup>7</sup> [http://drusilla.hsrb.unc.edu/cms/downloads/15-year\\_report.pdf](http://drusilla.hsrb.unc.edu/cms/downloads/15-year_report.pdf)

planning process. Pedestrian plans can also focus attention on implementation, especially if the plan specifies responsibilities, creates accountability, and designates funding sources for projects and programs. In addition, having a documented pedestrian plan with specific priorities can help agencies plan to use limited resources, such as staff time and money, more efficiently.

By creating target mode shares, communities have specific goals and benchmarks by which they can measure their progress. Including (and making progress towards achieving) a goal to increase walking as a form of transportation indicates a community's commitment to supporting pedestrian issues and its ability to do so.

**Resources:**

High quality pedestrian plans will draw on public participation, comprehensive baseline data, safety concerns, and anticipated demand to prioritize projects and improvements. Plans should also include a community-driven vision and SMART (Specific, Measurable, Attainable, Relevant, and Time-bound) goals. For more information on specific pedestrian planning activities, click [here](#)<sup>8</sup>.

An international scan team gathered information on European bicycle and pedestrian safety to provide [ten recommendations](#)<sup>9</sup> for effective approaches in the U.S.

Click [here](#)<sup>10</sup> for examples of local pedestrian plans or [here](#)<sup>11</sup> for more about the cost of developing a plan.

For guidelines on creating a safety-focused pedestrian plan, see [How to Develop a Pedestrian Safety Action Plan](#)<sup>12</sup>. To learn more about what policies can promote non-motorized transportation, refer to this [guide](#).<sup>13</sup>

The cities of [Bellevue, Washington](#)<sup>14</sup> and [Portland, Oregon](#)<sup>15</sup> have established mode share targets.

New York City addressed specific demographic groups in the creation of the [Safe Streets for Seniors](#)<sup>16</sup> plan.

Florida's [Guide for the Review and Assessment of Local Mobility Plans](#)<sup>17</sup> provides goals and criteria for evaluating plans.

**2 Has your community adopted an ADA Transition Plan for the public right of way?** Yes No

If so, please provide a link or attachment of the plan: \_\_\_\_\_

If yes...

• What year was it adopted? \_\_\_\_\_

• Has the ADA Transition Plan been updated? Yes No

If yes, what year? \_\_\_\_\_

• Does the ADA Transition Plan address curb ramps and sidewalks? Yes No Explain:

\_\_\_\_\_  
\_\_\_\_\_

<sup>8</sup> <http://www.walkinginfo.org/develop/activities.cfm>

<sup>9</sup> <http://www.international.fhwa.dot.gov/pubs/pl10010/pl10010.pdf>

<sup>10</sup> <http://www.walkinginfo.org/develop/sample-plans.cfm>

<sup>11</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=20>

<sup>12</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/howtoguide2006.pdf>

<sup>13</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4199>

<sup>14</sup> [http://www.ci.bellevue.wa.us/pdf/BELL-05-150\\_ModeShare\\_MMA\\_Report\\_FINAL\\_7\\_28\\_06.pdf](http://www.ci.bellevue.wa.us/pdf/BELL-05-150_ModeShare_MMA_Report_FINAL_7_28_06.pdf)

<sup>15</sup> [http://www.altaplanning.com/metro+non\\_sov+mode+share+targets+\\_portland+\\_or+\\_+.aspx](http://www.altaplanning.com/metro+non_sov+mode+share+targets+_portland+_or+_+.aspx)

<sup>16</sup> <http://www.walkinginfo.org/library/details.cfm?id=4553>

<sup>17</sup> [http://drusilla.hsrc.unc.edu/cms/downloads/FDOT\\_BDK84\\_GuideforReviewAssessmentofLocalMobilityPlans.pdf](http://drusilla.hsrc.unc.edu/cms/downloads/FDOT_BDK84_GuideforReviewAssessmentofLocalMobilityPlans.pdf)

- Does the ADA Transition Plan address street crossings and signals? Yes No

Explain:

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- Who is responsible for the implementation of ADA Transition Plan? \_\_\_\_\_

- Is your transition plan being implemented? Yes No

Explain:

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- How is the ADA Transition Plan work funded?

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- There are state roads in most communities. Has your state DOT adopted an ADA Transition Plan? Yes No

Is it being implemented? Yes No

Explain:

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### Rationale:

The Americans with Disabilities Act of 1990 requires public agencies with more than 50 employees to develop and implement an ADA transition plan. The purpose of a transition plan is to make the agency’s facilities and programs universally accessible. The improvements identified in agency transition plans should have been completed by January, 1995, and the plans should be regularly updated so that communities continue to ensure the accessibility of publicly maintained facilities.

Communities that are truly dedicated to creating safe, walkable communities will plan comprehensively for all types of pedestrians. The status of a municipality’s transition plan and the means by which it is funded can indicate how a community prioritizes universal accessibility.

### Resources:

See [A Checklist for Accessible Sidewalks and Street Crossings](#)<sup>18</sup> for a summary of ADA guidelines for curb ramps, sidewalks, and other pedestrian features or click [here](#)<sup>19</sup> for the full United States Access Board guidelines. Frequently asked questions about ADA requirements for transportation planners and other public agencies are available [here](#)<sup>20</sup>.

<sup>18</sup> [http://drusilla.hsra.unc.edu/cms/downloads/Checklist\\_Accessible\\_Sidewalks\\_Crossings.pdf](http://drusilla.hsra.unc.edu/cms/downloads/Checklist_Accessible_Sidewalks_Crossings.pdf)

<sup>19</sup> <http://www.access-board.gov/prowac/>

<sup>20</sup> [http://www.fhwa.dot.gov/civilrights/ada\\_qa.htm#q11](http://www.fhwa.dot.gov/civilrights/ada_qa.htm#q11)

The Department of Justice guidance [ADA Best Practices Tool Kit for State and Local Governments](#)<sup>21</sup> provides technical assistance to with ADA compliance.

For an example of an ADA Transition plan and compliance evaluation, see this [report](#)<sup>22</sup> from the City of Bellevue.

For guidance on designing facilities for accessibility see the U.S. Access Board's guide for trails [here](#),<sup>23</sup> the Draft Guidelines for Accessible Public Rights-of-way [here](#),<sup>24</sup> or a special report from the Public Rights of Way Access Advisory Committee called [Accessible Public Rights of Way: Planning and Designing for Alterations](#)<sup>25</sup>.

**3 Has your community adopted a Complete Streets policy or ordinance? Yes No If yes, please provide a link or attachment of the document.**

Link to document: \_\_\_\_\_

- **Is the Complete Streets Ordinance being implemented and to what degree?**

Yes No Percent completed: \_\_\_\_\_

- **Who is responsible for the implementation of the Complete Streets Ordinance?**

\_\_\_\_\_

- **How is Complete Streets work funded? (i.e., is it routinely funded as part of the project, funded with other set-aside funds, etc.?)**

\_\_\_\_\_

\_\_\_\_\_

**Rationale:**

Complete Streets are designed and operate to enable safe and convenient access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities are able to safely move along and across a complete street. Complete Streets policies indicate a municipality's commitment to planning for all modes, all ages, and all abilities. By adopting an official Complete Streets policy, some communities have been able to leverage more funding for pedestrian infrastructure and improvements from transportation budgets.

**Resources:**

Click [here](#),<sup>26</sup> [here](#),<sup>27</sup> or [here](#)<sup>28</sup> for more information on the Complete Streets movement. See the [Seattle Complete Streets Ordinance](#)<sup>29</sup> for a model ordinance or the [New York City Complete Streets Design Guidance](#)<sup>30</sup> for information about design guidelines.

<sup>21</sup> <http://www.ada.gov/pcatoolkit/toolkitmain.htm>

<sup>22</sup> [http://www.bellevuewa.gov/pdf/Transportation/ada\\_plan\\_report.pdf](http://www.bellevuewa.gov/pdf/Transportation/ada_plan_report.pdf)

<sup>23</sup> <http://www.access-board.gov/outdoor/>

<sup>24</sup> <http://www.access-board.gov/rowdraft.htm>

<sup>25</sup> <http://www.access-board.gov/PROWAC/alterations/guide.pdf>

<sup>26</sup> <http://www.completestreets.org/>

<sup>27</sup> <http://www.walkinginfo.org/library/details.cfm?id=3968>

<sup>28</sup> <http://www.fhwa.dot.gov/publications/publicroads/10julaug/03.cfm>

<sup>29</sup> <http://clerk.ci.seattle.wa.us/~scripts/nph->

[brs.exe?d=CBOR&s1=115861.cbn.&Sect6=HITOFF&l=20&p=1&u=/~public/cbor2.htm&r=1&f=G](http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?d=CBOR&s1=115861.cbn.&Sect6=HITOFF&l=20&p=1&u=/~public/cbor2.htm&r=1&f=G)

<sup>30</sup> <http://www.walkinginfo.org/library/details.cfm?id=4585>

- 4 Please briefly describe how public input is used in the municipality’s planning process. Mention the role that citizen participation, advisory board review, and/or the municipality’s pedestrian/bicycle advisory council play in the process. How do you assure that individuals with disabilities are included in the public input process?**
- 
- 

**Provide any relevant links or attachments that indicate the formal and informal public participation and advocacy efforts in your community (i.e., a link to the pedestrian and bicycle advisory board website, if it exists, or documented guidelines for public participation in the planning process).**

Website Link: \_\_\_\_\_

**Rationale:**

Citizen participation is a critical component of any local government and public input should be included in the planning and decision making processes. Including pedestrian stakeholders in the planning review process can help secure citizen support for projects and can help a municipality identify safety concerns that it may not have been aware of. Techniques to assure that individuals with disabilities are included in the public input process include providing announcements to agencies serving individuals with disabilities, holding meetings in accessible facilities, providing interpreters if requested, ensuring that web sites are accessible to people using screen reading or screen enlargement software, and providing Braille or large print documents on request. Public participation is integral to the success of transportation planning and should be considered at every stage of the planning process, from collecting baseline data to conducting post-implementation evaluation.

**Resources:**

Learn about a Pedestrian Safety Planning Group in Bethlehem, New York in this [case study](#).<sup>31</sup>  
Read about [facilitating public participation](#)<sup>32</sup> and the importance of [pedestrian advisory councils](#).<sup>33</sup>  
The Pedestrian and Bicycle Information Center’s [FAQ](#)<sup>34</sup> provides further information and resources for collecting public input.

- 5 Does the city have a policy requiring sidewalks on both sides of arterial streets?**

Yes No

**On both sides of collector streets?** Yes No

**Sidewalk funding and installation: (if applicable, please provide a link or attachment of the relevant ordinance or policy)**

Sidewalk funds link: \_\_\_\_\_

- **Does the city require sidewalks to be constructed or upgraded with all (or the vast majority of) new private development?** Yes No

---

<sup>31</sup> <http://drusilla.hsrb.unc.edu/cms/downloads/PLA.PedestrianSafetyPlanningGroup.pdf>

<sup>32</sup> <http://www.walkinginfo.org/develop/activities-participation.cfm>

<sup>33</sup> <http://www.walkinginfo.org/funding/institutionalization-building.cfm>

<sup>34</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4121>

- **Does the city have a sidewalk retrofit policy to fill gaps, repair sidewalks, and provide new sidewalks as needed?** Yes No

**Rationale:**

The presence of sidewalks in a community is associated with higher levels of walking and physical activity (Bureau of Transportation Statistics, 2004; Fulton, Shisler, Yore & Casperson, 2005; Institute of Medicine, 2005; Saelens & Handy, 2008). Requiring developers to build sidewalks in conjunction with new construction is an effective and efficient way to create a comprehensive sidewalk network. A stringently enforced sidewalk construction policy can help municipalities fill in gaps in their sidewalk system and prevent gaps from occurring in the future. Constructing sidewalks along with other development can also be less expensive than retrofitting the right-of-way.

**Resources:**

See [this summary](#)<sup>35</sup> of Greensboro, North Carolina’s sidewalk ordinance, which was amended in 2002 to support the city’s walkability policy.

**6 Has your community established a connectivity policy, pedestrian-friendly block length standards and connectivity standards for new developments, or convenient pedestrian access requirements? If yes, please provide a link or attachment of the policy or ordinance.**

Yes No

Link to document: \_\_\_\_\_

**Rationale:**

Street connectivity is associated with higher levels of physical activity (Frank., Andresen & Schmid, 2004; Frank, Sallis, Conway, Chapman, Saelens & Bachman, 2006; Saelens, Sallis, Black, & Chen, 2003; Smith, Brown, Yamada, Kowaleski-Jones, Zick & Fan, 2008). Grid networks and short block lengths (less than 800 feet) help make cities more walkable by creating multiple direct routes that can decrease walking distance compared to longer blocks or curvilinear street systems (Dill, 2004). In addition, higher numbers of intersections reduce unmarked mid-block crossings and create street crossings that are typically shorter than those on arterial streets, thus providing more areas for pedestrians to cross the street safely (Ewing, nd; Zegeer, Sandt, Scully, Ronkin, Cynecki & Lagerwey, 2008). Communities may increase pedestrian connectivity by creating easements and paths connecting cul-de-sacs or across blocks longer than 800-1000 feet.

**Resources:**

Connectivity can be measured many different ways. These include block length, block size, intersection density, street density, the Connected Node Ratio (a measure that factors in the number of cul-de-sacs an area has), and more. Click [here](#)<sup>36</sup> for more information on using these indices.

Another great resource for the background and supporting research of connection between walkability and connectivity is found [here](#)<sup>37</sup>.

The [Victoria Transport Policy Institute](#)<sup>38</sup> has more information on creating roadway and pathway connectivity.

<sup>35</sup> [http://www.greensboro-nc.gov/NR/rdonlyres/31F4744C-7F8B-4055-957A-C6A065BB8021/0/Sidewalk\\_Ordinance\\_Summary\\_Adopted\\_12302.pdf](http://www.greensboro-nc.gov/NR/rdonlyres/31F4744C-7F8B-4055-957A-C6A065BB8021/0/Sidewalk_Ordinance_Summary_Adopted_12302.pdf)

<sup>36</sup> <http://www.enhancements.org/download/trb/trb2004/TRB2004-001550.pdf>

<sup>37</sup> <http://pedshed.net/?p=71>

<sup>38</sup> <http://www.vtpi.org/tdm/tdm116.htm>

7 Do you have a trails plan? Yes No

Is it routine policy to preserve rail corridors no longer needed for railroad purposes? Yes No

How many miles of trails (paved/hard surface/natural) currently exist in your community?  
\_\_\_\_\_ How many miles  
of trails are included in your current planning documents?

Please provide a link or attachment of relevant plan, if available.

Link to document: \_\_\_\_\_

Briefly describe trails and paths that are provided around the following locations. Include any relevant internet links that illustrate trail networks.

- Lakes and waterways \_\_\_\_\_
- Utility corridors \_\_\_\_\_
- Municipal golf courses \_\_\_\_\_
- Private development (e.g. office parks, hospitals, residential developments)  
\_\_\_\_\_
- Other open space \_\_\_\_\_

Is it routine policy to build trails and paths with all new and major re-developments?

Yes No

Is it required through zoning regulations? Yes No

Are incentives provided to encourage trail construction? Yes No

If so, please provide a link or attachment of the policy or ordinance.

Link to trail incentive: \_\_\_\_\_

#### Rationale:

High quality trail networks (including rail trails and greenways) form the facility network backbone of many walkable communities. Not only do they help complete nonmotorized transportation networks, they also attract recreational walkers. Recreational trips make up approximately one-fifth of all walking trips in the United States. Well-designed trails can support economic development and tourism, encourage physical activity, and even raise property values. Access to trails is associated with higher levels of physical activity, particularly for low-income populations (Brownson, Baker, Housemann, & Bacak, 2001; Parks, Houseman, & Brownson, 2003). Constructing trails and paths near waterways or along utility corridors is a great way to use land that is unsuitable for development to create pedestrian facilities.

#### Resources:

The American Association of State Highway and Transportation Officials' [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#)<sup>39</sup> and the Federal Highway Administration's [Designing Sidewalks and Trails for Access, Part II of II: Best Practices Design Guide](#)<sup>40</sup> provide guidance on planning and designing trails.

<sup>39</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

Click [here](#)<sup>41</sup> for information on the benefits of trails, trail design, and types of trails or see the Rails-to-Trails Conservancy report [Active Transportation for America: A Case for Increased Federal Investment in Bicycling and Walking](#)<sup>42</sup> to learn about the importance of federal funding for pedestrian infrastructure like trails.

See [Rails-to-Trails Conservancy](#)<sup>43</sup> and [American Trails](#)<sup>44</sup> for information and resources on trails.

To learn how other communities are constructing trails, see these case studies:

- [Irondequoit Lakeside Multi-Use Trail](#)<sup>45</sup>, Rochester, New York
- [Ke Ala Hele Makalae Trail](#)<sup>46</sup>, Kauai, Hawaii
- [Tempe Crosscut Canal Multi-Use Path](#)<sup>47</sup>, Tempe, Arizona
- [Saranac Lake River Walk](#)<sup>48</sup>, Saranac Lake, New York
- [Philip A. Rayhill Memorial Trail](#)<sup>49</sup>, New Hartford, New York
- [Linear Shared Use Path](#)<sup>50</sup>, Piqua, Ohio
- [Atlanta Beltline](#)<sup>51</sup>, Atlanta, Georgia

**8 Is your community served by public transportation? If so, please list the agencies and whether they are city, regional, or both.**

**Please provide the following performance indicators and details to indicate how well your community is served by public transportation.**

- **Percent of population living within a quarter mile of a bus stop or ½ mile of a rail station:**  
\_\_\_\_\_
- **Service miles per capita:** \_\_\_\_\_
- **Hours of operation for transit service:**  
**Weekday:** \_\_\_\_\_ **Weekend:** \_\_\_\_\_
- **Average headway on bus routes:** \_\_\_\_\_  
**Average headway on train routes:** \_\_\_\_\_
- **Average peak period bus headway:** \_\_\_\_\_
- **On time performance (%):** \_\_\_\_\_
- **Percent of bus stops that have wheelchair accessible shelters:** \_\_\_\_\_
- **What route planning software and trip information is provided?** \_\_\_\_\_

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<sup>40</sup> <http://www.fhwa.dot.gov/environment/sidewalk2/>

<sup>41</sup> <http://www.walkinginfo.org/engineering/trails.cfm>

<sup>42</sup> <http://www.railstotrails.org/ourWork/advocacy/activeTransportation/makingTheCase/index.html>

<sup>43</sup> <http://www.railstotrails.org/index.html>

<sup>44</sup> <http://www.americantrails.org/>

<sup>45</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.IrondequoitLakesideMulti-UseTrail.pdf>

<sup>46</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.KeAlaHeleMakalaeTrail.pdf>

<sup>47</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.TempeCrosscutCanalMulti-UsePath.pdf>

<sup>48</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/OTH.SaranacLakeRiverWalk.pdf>

<sup>49</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.PhilipA.RayhillMemorialTrail.pdf>

<sup>50</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.LinearSharedUsePath.pdf>

<sup>51</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/OTH.HealthImpactAssessmentofProposedAtlantaBeltline.pdf>

- **Sidewalk, curb ramps, and street crossings around the majority of bus stops are ADA compliant (check one):**

None
  Few
  Some
  Most
  All

**Rationale:**

Every transit trip includes walking at some point. In fact, transit riders are more likely to walk for 30 minutes or more daily than non-transit riders (Besser & Dannenberg, 2005) and transit-oriented areas may encourage walking (Institute of Medicine, 2005). Therefore, it is important to consider public transportation when planning for pedestrians and vice versa. Cities that are well served by transit can reduce automobile dependency and increase both walking (the number and frequency of pedestrian trips) and walkability (the human-scale land use and design elements that attract pedestrians).

**Resources:**

Click [here](#)<sup>52</sup> to learn more about planning for transit and walking or see how [Washington, D.C.](#)<sup>53</sup>, [New Jersey](#)<sup>54</sup>, and [New York City](#)<sup>55</sup> are improving walking and bicycling conditions for transit users. This [case study](#)<sup>56</sup> describes how Cleveland, Ohio prioritized bus shelter improvements.

See this [study](#)<sup>57</sup> to learn more about factors affecting pedestrian route choices to transit.

This Federal Highway Administration’s [Pedestrian Safety Guide for Transit Agencies](#)<sup>58</sup> provides information on identifying and improving pedestrian safety and access issues.

**9 Which of the following approaches does your community use when planning for parking? Please provide a link or attachment of relevant ordinance or policy and describe when and where these strategies are used.**

- Maximum parking standards or absence of minimum parking standards**

Link to standard: \_\_\_\_\_

Description of standards: \_\_\_\_\_

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- Parking location requirements (i.e., parking below, beside, or behind a building; allowing on-street parking to meet minimum parking requirements)**

Link to location requirements: \_\_\_\_\_

Description of requirements: \_\_\_\_\_

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- Surface lot size and design requirements, including pedestrian and vehicle separation, locating lots to the side or behind businesses, alternative use of parking lot, landscaping, etc.**

Link to size/design requirements: \_\_\_\_\_

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<sup>52</sup> <http://www.walkinginfo.org/transit/>

<sup>53</sup> <http://www.tooledesign.com/metro/>

<sup>54</sup> <http://www.state.nj.us/transportation/business/localaid/documents/ssstHandbook2.pdf>

<sup>55</sup> <http://www.nyc.gov/html/dot/html/sidewalks/safertstransit.shtml>

<sup>56</sup> <http://drusilla.hsra.unc.edu/cms/downloads/OTH.TransitWaitingEnvironments.pdf>

<sup>57</sup> <http://transweb.sjsu.edu/mtiportal/research/publications/documents/06-06/MTI-06-06.pdf>

<sup>58</sup> [http://safety.fhwa.dot.gov/ped\\_bike/ped\\_transit/ped\\_transguide/transit\\_guide.pdf](http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/transit_guide.pdf)

Description of requirements: \_\_\_\_\_

**Shared parking allowances**

*Definition: Shared parking lots can reduce the total number of parking spaces needed in a particular area by coordinating peak parking demand times between different buildings and different uses. For instance, an office building might be able to share a parking lot with a restaurant that operates only in the evenings, as the former would use the lot during the day and the latter would use it at night.*

Link to allowances: \_\_\_\_\_

Description of allowances: \_\_\_\_\_

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**Priced public parking**

Link to prices: \_\_\_\_\_

Description of priced parking: \_\_\_\_\_

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**Parking cashout incentives**

*Definition: Parking cashout is a financial incentive in which employees who do not drive and park at work receive a subsidy that approximates the cost employers bear to provide free parking to employees.*

Link to incentives: \_\_\_\_\_

Description of incentives: \_\_\_\_\_

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**Remote parking and/or park and ride**

Link to remote parking: \_\_\_\_\_

Description of remote parking: \_\_\_\_\_

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**Other**

Link to other approach: \_\_\_\_\_

Description of other approach: \_\_\_\_\_

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**Rationale:**

The design, price, and amount of parking in a community affect an area's walkability. Surface parking lots reduce density, create conflict points between pedestrians and vehicles at driveways, and are visually unappealing. There are indications that minimum parking requirements result in surplus parking, increased automobile use, and decreased density (Wilson, 1995). In addition, a driver's use of parking tends to be quite price sensitive, indicating that an abundance of free parking may encourage automobile use and, consequently, discourage alternate modes like transit and walking (Richard, 2000). Careful attention to the quality of parking provided, rather than the quantity, can help create walk-friendly environments (Mukhija & Shoup, 2006).

**Resources:**

The San Francisco Metropolitan Transportation Commission has created a guideline for [parking best practices](#)<sup>59</sup>, Alexandria, VA has a helpful [fact sheet](#)<sup>60</sup> on shared parking, or see the Environmental Protection Agency’s [Parking Spaces/Community Places: Finding the Balance through Smart Growth Solutions](#)<sup>61</sup> for innovative parking solutions.

Donald Shoup and Douglas Kolozsvari discuss a [policy in Pasadena, California](#)<sup>62</sup> that used parking meter revenue for sidewalk amenities and other improvements for pedestrians.

Todd Litman has developed a number of helpful resources and articles. His article, [Parking Management: Strategies, Evaluation, and Planning](#)<sup>63</sup>, gives an excellent overview of parking strategies, policies, and costs.

**10 Approximately what percentage of development in the last five years has been infill? \_\_\_\_\_%**

**What measures does your community use to encourage dense, mixed-use development? (check all that apply)**

**Secondary or accessory dwelling units are permitted**

*Definition: These units are self-contained apartments on an owner occupied single-family lots.*

Link to measure: \_\_\_\_\_

Description of measure: \_\_\_\_\_

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**Retail/commercial uses are required on the ground floor of residential buildings in mixed use corridors or districts**

Link to measure: \_\_\_\_\_

Description of measure: \_\_\_\_\_

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**Density bonuses to developers are provided for providing amenities that enhance walkability and liveability**

*Definition: Density bonuses are used by local governments to allow a developer to build at a higher density than zoning permits in exchange for providing affordable residences or walk-friendly amenities.*

Link to measure: \_\_\_\_\_

Description of measure: \_\_\_\_\_

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**Form-based or design-based codes are used**

*Definition: These codes are an alternative to conventional zoning that can be used to ensure a walk friendly environment by regulating the form, scale and massing of buildings rather than the use. They are typically presented with both diagrams and words.*

Link to measure: \_\_\_\_\_

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<sup>59</sup> [http://www.mtc.ca.gov/planning/smart\\_growth/parking\\_seminar/BestPractices.pdf](http://www.mtc.ca.gov/planning/smart_growth/parking_seminar/BestPractices.pdf)

<sup>60</sup> <http://alexandriava.gov/uploadedFiles/planning/info/SharedParkingFactSheet.pdf>

<sup>61</sup> <http://www.epa.gov/smartgrowth/pdf/EPAParkingSpaces06.pdf>

<sup>62</sup> <http://shoup.bol.ucla.edu/SmallChange.pdf>

<sup>63</sup> [http://www.vtpi.org/park\\_man.pdf](http://www.vtpi.org/park_man.pdf)

Description of measure: \_\_\_\_\_

**Neighborhood school siting policies**

Link to measure: \_\_\_\_\_

Description of measure: \_\_\_\_\_

**Other (please describe):** \_\_\_\_\_

**Rationale:**

Dense development is associated with higher levels of walking and transit use and reduced automobile dependency (Ewing, nd). Compact , mixed-use development is fundamental to making communities walkable because more origins and destinations will be within walking distance of one another (Leinberger, 2007; Saelens & Handy, 2008). Proximity to schools and retail, commercial, and municipal uses can encourage walking. Additionally, large numbers of pedestrians tend to attract more walkers because they indicate the vitality of an area and can create a secure walking environment with more eyes on the street. High densities, walking, and transit use reinforce one another: higher residential and employment densities mean that more riders will live or work within a quarter mile of a transit stop; high ridership levels can improve transit service; and transit riders typically start their trip on foot, so high ridership levels likely indicate high pedestrian levels.

**Resources:**

This Environmental Protection Agency [document](#)<sup>64</sup> describes the many benefits of density and [this one](#)<sup>65</sup> describes the effects of school siting policies.

Vancouver, British Columbia, recently adopted an [EcoDensity Charter](#)<sup>66</sup>, in which it explains how density can support sustainable, livable communities.

Reid Ewing and others review the [relationship between urban development and climate change](#)<sup>67</sup>, and recommend high-density, mixed use urban development as a strategy for mitigating the effects of climate change.

- 11 Please briefly describe any urban design features or pedestrian amenities that your community uses or requires to create a comfortable and attractive walking environment. Include features such as sidewalk furniture, landscaping, art, and lighting; building and façade design requirements; and amenities like public restrooms, water fountains, and signs or wayfinding systems.**

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**Please provide a link or attachment of the ordinance or policy that addresses these features.**

Link: \_\_\_\_\_

<sup>64</sup> <http://www.epa.gov/smartgrowth/pdf/density.pdf>

<sup>65</sup> [http://www.epa.gov/smartgrowth/pdf/school\\_travel.pdf](http://www.epa.gov/smartgrowth/pdf/school_travel.pdf)

<sup>66</sup> <http://www.vancouver-ecodensity.ca/webupload/File/ecodensity-charter-low.pdf>

<sup>67</sup> <http://postcarboncities.net/node/1466>

**Rationale:**

While having pedestrian infrastructure in place is essential in making places safe for walking, pedestrian amenities and urban design elements are also important for making walking comfortable and enjoyable. A variety of elements can help create a walk friendly environment; though they may not amount to much in isolation, the combination of pedestrian friendly urban design features may increase walking in a particular area.

**Resources:**

The idea that design features and pedestrian amenities can affect the walking experience, while quite intuitive, is difficult to show empirically. This [study](#)<sup>68</sup> creates a framework for measuring the effect of urban design features on walkability.

The American Institute of Architects’ document, [Livability 101](#)<sup>69</sup>, describes the features that enhance pedestrian environments and, consequently, make communities more livable. Likewise, this [guide](#)<sup>70</sup> provides suggestions for creating places for people to walk and bike.

See an [example](#)<sup>71</sup> of a pedestrian-oriented overlay district from Greensboro, North Carolina.

Check out Seattle, Washington’s [municipal code](#)<sup>72</sup> specifying design standards along streets with high pedestrian traffic. This ordinance specifies allowable street level uses, maximum building setback distances, sidewalk design requirements, and building and façade standards, such as transparency requirements and overhead weather protection.

**12 Please briefly describe any other planning policies related to promoting or enhancing walking in your community.**

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<sup>68</sup> [http://www.smartgrowth.umd.edu/research/pdf/EwingClementeHandyEtAl\\_WalkableUrbanDesign\\_093005.pdf](http://www.smartgrowth.umd.edu/research/pdf/EwingClementeHandyEtAl_WalkableUrbanDesign_093005.pdf)

<sup>69</sup> <http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aias077944.pdf>

<sup>70</sup> [http://www.activelivingresources.org/assets/2010IPA\\_full.pdf](http://www.activelivingresources.org/assets/2010IPA_full.pdf)

<sup>71</sup> <http://www.greensboro-nc.gov/NR/rdonlyres/BD9D5EC8-893B-4CC0-BC05-9DD33855230F/0/springgardenoverlay.pdf>

<sup>72</sup> <http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?d=CODE&s1=23.71.008.snum.&Sect5=CODE1&Sect6=HITOFF&l=20&p=1&u=/~public/code1.htm&r=1&f=G>



# EDUCATION & ENCOURAGEMENT

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Education and encouragement are primary components in creating a successful walk friendly community. This section seeks information about the programs, policies and strategies your community uses to inform, inspire, motivate or reward walkers and other users of the public right of way. It also asks the question “Do your efforts result in a safe walking environment?” Effective pedestrian safety education begins at an early age, is age-specific, and continues through the years across all modes (i.e., motorists educated about pedestrian safety contribute to a safer, more pleasant walking environment for pedestrians; this environment enables and encourages more people to walk).

Encouragement programs can be fun and inclusive in seeking to establish good habits or change unhealthy or unsafe habits. The education and encouragement strategies listed below are common to many walkable communities. If your community uses other strategies to educate the public and encourage walking, please describe them as well.

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**1 Please describe any Safe Routes to School (SRTS) programming being implemented in your community in the space provided below. Check any of the following activities that are part of your SRTS programs and include information about the nature, scope, and results of these activities (as well as any others not listed below) in your description.**

**Walk to School Day/Week**

*Definition: Walk to School Day is an international event that takes place annually in October. Schools from all over the country plan special activities to encourage students to walk to school. This special event can be a great way to start a Safe Routes to School program.*

Description: \_\_\_\_\_

**Walking Wednesdays or other walking events**

*Definition: Some schools and communities promote walking to school by having regular Walking Wednesday events in which parents, teachers, and students may meet up near the school campus and walk to school together.*

Description: \_\_\_\_\_

**Walkability audits or SRTS maps**

*Definition: By auditing and assessing walking routes and creating maps indicating the safest routes to school, communities can help educate students and families about the best routes to take.*

Description: \_\_\_\_\_

**Walking School Bus**

*Definition: From saferoutesinfo.org : A group of children that walk or bicycle to school together accompanied by one or more adults.*

Description: \_\_\_\_\_

**Student safety patrol**

*Definition: From saferoutesinfo.org: Student safety patrols enhance enforcement of drop-off and pick-up procedures at school by increasing safety for students and traffic flow efficiency for parents. Such efforts allow students to participate in promoting traffic safety where they learn skills they can use in their everyday lives.*

Description: \_\_\_\_\_

**Tracking system to count the number of children walking to school**

Description: \_\_\_\_\_

**Other (please describe):** \_\_\_\_\_

Description: \_\_\_\_\_

**Please estimate what percent of schools in your communities participate in the following:**

- **Ongoing SRTS program:** \_\_\_\_\_
- **Special walk to school events only:** \_\_\_\_\_
- **No walk to school or SRTS activities:** \_\_\_\_\_

**Rationale:**

Federal transportation law includes a Safe Routes to School program. Program goals include more children walking and bicycling to school; encouragement of safe, healthy, active lifestyles; improved safety; reduced traffic, fuel consumption, and air pollution; and inclusion of children with disabilities in the program. The SRTS program exists because of policy concerns that fewer children are walking and bicycling to school today and about rising rates of childhood obesity and the attendant long-term health risks and impact on the nation’s health care system. SRTS programs typically employ a multi-faceted approach to improving walking and bicycling to school that include education and encouragement activities like those listed above.

**Resources:**

The U.S. Department of Transportation offers a clearinghouse of [SRTS information](#)<sup>73</sup>. The National Center for Safe Routes to School provides resources for specific SRTS activities, such as [Walk to School Day](#)<sup>74</sup>, [Walking School Bus](#)<sup>75</sup> programs, [Walkability Checklists](#)<sup>76</sup>, [SRTS maps](#)<sup>77</sup>, and [student travel tally sheets](#)<sup>78</sup> for tracking the number of students walking to school.

Click [here](#)<sup>79</sup> for SRTS case studies focusing on encouragement programs and [here](#)<sup>80</sup> for case studies on education activities.

In addition, each state department of transportation has a full-time SRTS coordinator who is available to provide information and funding to local communities. Such information may be provided in the form of SRTS-specific pages on the state DOT’s Web site, a toolkit, educational sessions, and grant workshops.

The SRTS National Partnership also includes resources on its [Website](#)<sup>81</sup> for individuals, schools, and advocacy groups to help build support for and capacity of SRTS programs.

<sup>73</sup> [www.saferoutesinfo.org](http://www.saferoutesinfo.org)

<sup>74</sup> <http://www.walktoschool.org/>

<sup>75</sup> [http://www.saferoutesinfo.org/guide/walking\\_school\\_bus/pdf/wsb\\_guide.pdf](http://www.saferoutesinfo.org/guide/walking_school_bus/pdf/wsb_guide.pdf)

<sup>76</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/walkabilitychecklist.pdf>

<sup>77</sup> <http://www.saferoutesinfo.org/resources/collateral/walkbikeroutetipsheet.pdf>

<sup>78</sup> [http://www.saferoutesinfo.org/resources/collateral/SRTS\\_Two\\_Day\\_Tally\\_Scan2009.pdf](http://www.saferoutesinfo.org/resources/collateral/SRTS_Two_Day_Tally_Scan2009.pdf)

<sup>79</sup> [http://www.saferoutesinfo.org/guide/case\\_studies/case\\_studies\\_list.cfm?CHAPTER\\_ID=C386](http://www.saferoutesinfo.org/guide/case_studies/case_studies_list.cfm?CHAPTER_ID=C386)

<sup>80</sup> [http://www.saferoutesinfo.org/guide/case\\_studies/case\\_studies\\_list.cfm?CHAPTER\\_ID=C522](http://www.saferoutesinfo.org/guide/case_studies/case_studies_list.cfm?CHAPTER_ID=C522)

- 2 Please describe any education and training programs related to pedestrian education, safety, or design for staff in your municipality. Staff may include transportation officials, law enforcement officers, school staff and teachers, and advocates and public health professionals. Please include in this description the nature, frequency, scope, and results of these programs.**
- 
- 

**Rationale:**

Ongoing education for professional staff underscores the priority a community places upon the importance of walking, walkability, and pedestrian safety. By educating public officials communities can help ensure that ordinances and policies that support walking are actually implemented. Education and training activities offer an opportunity to refresh current practices and learn new strategies. Such training can reduce or eliminate potential miscommunication between different professions such as judges and police officers.

**Resources:**

The Pedestrian and Bicycle Information Center offers [training courses](#)<sup>82</sup> on pedestrian safety, many of which are aimed at engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers.

See this [case study](#)<sup>83</sup> to learn more about efforts in Madison, WI, to train police officers on pedestrian safety laws.

- 3 Please check and briefly describe any education or encouragement campaigns that are implemented in your community regarding the following topics. Include information about the target audience, techniques used (e.g., posters, workshops, etc.), frequency, scope, and results of the programs. Please mention what measures your community has taken to make sure that education and encouragement campaigns are inclusive of all populations. Also mention your community partnerships (such as Public Health & Planning partnerships) that collaborate on these efforts. Provide any relevant links and attachments to help illustrate these descriptions, if available.**

- Walking safety training (e.g., targeted walking education or encouragement programs for children, older adults, college students, transit riders, etc.)**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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- Driving safety with respect to pedestrians (e.g., pedestrian safety included in drivers education curriculum, test, manual or bus driver training)**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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<sup>81</sup> <http://www.saferoutespartnership.org/>

<sup>82</sup> <http://www.walkinginfo.org/training/pdps/descriptions.cfm>

<sup>83</sup> <http://drusilla.hsrb.unc.edu/cms/downloads/EDU.PedestrianSafetyEnforcementDVDs.pdf>

**Public service announcements**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Public health campaigns related to walking**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Environmental campaigns related to walking**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Walk to work events**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Prescription walking or prescribed trails**

*Definition: Prescription walking or prescribed trails are when doctors prescribe walking time/distance and location*

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Other (please describe):** \_\_\_\_\_

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Rationale:**

Education and encouragement programs can communicate the benefits of walking, as well as the rights and responsibilities of pedestrians and motorists, to school children, residents and visitors. Walkable communities can be cultivated by educating all roadway users to interact safely. There are major differences in the walking abilities, behavioral patterns, and learning capacities of different groups of pedestrians and other road users. Because of this, educational programs succeed when tailored to specific audiences and to the behaviors they seek to modify. For example, children have different physical and psychological abilities than adult pedestrians, a younger or new driver may exhibit different behaviors and driving skills than an older driver, and college-age pedestrians may respond to different educational outlets that might not be as effective in reaching other groups.

**Resources:**

See [these resources](#)<sup>84</sup> for more information on education programs.

Communities are also beginning to use social marketing techniques to change behavior. Learn more about social marketing strategies [here](#)<sup>85</sup> or read about a particularly successful example in Portland, Oregon called [SmartTrips](#)<sup>86</sup>. Between 2002 and 2006, the Centers for Disease Control and Prevention ran a social marketing campaign called [VERB](#)<sup>87</sup> that aimed to increase physical activity among preadolescents.

Check out the American Heart Association’s public health campaign, [Start](#)<sup>88</sup>, which aims to encourage walking as a form of physical activity or Montgomery County, Maryland’s [Drive Safe](#)<sup>89</sup> program, which teaches new drivers pedestrian safety concepts.

Also see this [NHTSA guide](#)<sup>90</sup> on education children on safe street-crossing behaviors.

**4 Please check and briefly describe any walking tours, guides, or maps that are available (on-line or printed) in your community. If available, please provide a link, attachment, or pictures of wayfinding devices and/or plans, maps, or brochures for these walking tours.**

**Walking maps (e.g., neighborhoods maps, school route maps, city-wide maps, etc.)**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

**Wayfinding and route signs for pedestrians**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

**History, historic district, architectural, or other themed walks**

**Guided by a person**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

**Unguided using books and brochures, audio tours, or signs and wayfinding**

Link to relevant material: \_\_\_\_\_

<sup>84</sup> <http://www.walkinginfo.org/education/>

<sup>85</sup> <http://www.pednet.org/programs/social-marketing.asp>

<sup>86</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/ENC.PortlandSmartTrips.pdf>

<sup>87</sup> <http://www.cdc.gov/YouthCampaign/>

<sup>88</sup> <http://startwalkingnow.org/home.jsp>

<sup>89</sup> <http://www.montgomerycountymd.gov/dirtmpl.asp?url=/Content/dot/dir/pedsafety/resource.asp>

<sup>90</sup> <http://www.walkinginfo.org/library/details.cfm?id=4479>

Description:

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**Greenways and trail maps**

Link to relevant material: \_\_\_\_\_

Description: \_\_\_\_\_

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**Rationale:**

Communities that provide information about places to walk may enjoy higher rates of walking. Walking maps and tours may be especially useful to tourists, residents who are new to your community or residents who do not yet walk frequently as they can highlight important destinations and indicate which routes are best for pedestrians. Signs, maps, and tours indicate a community's support for walking culture and are a good way for municipalities to encourage and facilitate walking for many different purposes, including recreational, utilitarian, and fitness walking trips.

**Resources:**

Feet First, a pedestrian advocacy group in Seattle, Washington, produces neighborhood walking maps that highlight destinations like restaurants and grocery stores, transit stops, and schools. See examples of those maps [here](#)<sup>91</sup>. Learn how to create a walking map [here](#)<sup>92</sup>.

See the variety of guided walking tours offered in [San Francisco](#)<sup>93</sup>, [Washington, DC](#)<sup>94</sup>, and [Atlanta](#)<sup>95</sup>. Or, see this [downloadable map and audio tour](#)<sup>96</sup> for the New Amsterdam trail in New York or these [audio guided tours](#)<sup>97</sup> of New York City.

- 5 Please briefly describe any events and activities in your community that promote walking. Include information about the target audience, nature, frequency, scope, and results of these events. Provide any relevant links and attachments, if available. Please mention any street closures (e.g., festivals, farmers markets, or Sunday Parkways), Walk to Work events, Main Street programs, or art or culture walks.**
- 
- 

**Rationale:**

Walking-focused events or activities offer opportunity, incentive, and support for individual behavioral change. Special events and ongoing activities, such as Sunday Parkways or art walks, can make walking exciting, fun, and social and can create a critical mass of walkers that can attract more walkers.

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<sup>91</sup> [http://www.feetfirst.info/mapping/index\\_html](http://www.feetfirst.info/mapping/index_html)

<sup>92</sup> [http://www.eatsmartmovemorenc.com/WalkingMapGuide/Texts/WalkingMapGuide\\_lowrez.pdf](http://www.eatsmartmovemorenc.com/WalkingMapGuide/Texts/WalkingMapGuide_lowrez.pdf)

<sup>93</sup> <http://www.sfcityguides.org/>

<sup>94</sup> <http://www.washingtonwalks.com/>

<sup>95</sup> <http://www.preserveatlanta.com/walkingtours.htm>

<sup>96</sup> <http://nyharborparks.org/visit/tour-new-amsterdam.html>

<sup>97</sup> <http://www.nytimes.com/ref/arts/tour-instructions.html>

**Resources:**

Sunday Parkways programs involve closing the street to automobile traffic and creating a welcoming environment for all types of walkers and bicyclists. Learn more about Sunday Parkways programs in [Chicago, Illinois](#)<sup>98</sup>, [Portland, Oregon](#)<sup>99</sup>, and [San Francisco, California](#)<sup>100</sup>.

Learn about Main Street programs [here](#).<sup>101</sup>

**6 Please briefly describe any other education or encouragement programs affecting walking in your community.**

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<sup>98</sup> <http://www.walkinginfo.org/library/details.cfm?id=4349>

<sup>99</sup> <http://www.portlandonline.com/Transportation/index.cfm?c=46103>

<sup>100</sup> <http://sundaystreetsf.com/>

<sup>101</sup> <http://www.preservationnation.org/main-street/about-main-street/the-programs/>



# ENGINEERING

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Designing, engineering, operating, and maintaining quality roadways and pedestrian facilities is a critical element in producing a Walk Friendly Community. Designers and engineers have a diverse array of design elements and ever-developing technologies at their disposal that provide a safer, inviting, and more accessible street for pedestrians. These benefits aren't limited to pedestrians. By accommodating pedestrians in all roadway designs, roads become safer for all users. Therefore, it should be essential that pedestrian engineering and design tools are used throughout your community, including sidewalk accommodations and standards, crossings and intersections, traffic calming, trail design, and newer, innovative treatments.

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**1 Which of the following standards, if any, are included in your municipality's sidewalk design specifications? Please provide a link or attachment of the municipality's sidewalk design standard specifications.**

- Sidewalks at least 5' wide in residential areas, 10'-30' in commercial zones
- Required buffer zone between sidewalk and street
- Level and continuous sidewalks at driveways so that driveways do not look like roadways

Sidewalk design link: \_\_\_\_\_

## Rationale:

Both FHWA and the Institute of Transportation Engineers (ITE) recommend a minimum width of 5 ft for a sidewalk or walkway, which allows two people to pass comfortably or to walk side-by-side. Wider sidewalks should be installed near schools, at transit stops, in downtown areas, or anywhere with high concentrations of pedestrians. Sidewalks should be continuous along both sides of a street and sidewalks should be fully accessible to all pedestrians, including those in wheelchairs.

A buffer zone of 4 to 8 ft is should be provided to separate pedestrians from the street. Buffer zones also allow for the planting of trees which provide shade and comfort for the pedestrian realm. The buffer zone will vary according to the street type. In downtown or commercial districts, a street furniture zone is usually appropriate. Parked cars and/or bicycle lanes can provide an acceptable buffer zone. In suburban or rural areas, a landscape strip is generally most suitable. Careful planning of sidewalks and walkways is important in an area in order to provide adequate safety and mobility. The maximum cross-slope should be 2 percent to prevent wheelchair tilting and other difficulties. Providing a level sidewalk across driveways tells motorists they are crossing a sidewalk and that the pedestrian has the right-of-way.

## Resources:

Learn more about sidewalk planning and design with the American Association of State Highway and Transportation Officials' [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#)<sup>102</sup> or see the

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<sup>102</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

**2 Estimate the percent of arterial and non-arterial streets that have sidewalks on both sides of the road, one side of the road, or have paved shoulders (minimum of 4 ft) in your community.**

	Arterial	Non-Arterial
<b>Sidewalks on both sides</b>		
<b>Sidewalks on one side</b>		
<b>Paved shoulders ≥ 4'</b>		

Please enter the following information about your road network:

- What is the mileage of your total road network? \_\_\_\_\_
- How many miles of sidewalks are in your pedestrian master plan? \_\_\_\_\_
- How many miles of new sidewalk did you construct last year? \_\_\_\_\_
- How many miles of sidewalk did you construct in the last three years? \_\_\_\_\_
- How many miles of sidewalk do you plan to construct in the next three years? \_\_\_\_\_

**Rationale:**

The presence of sidewalks in a community is associated with higher levels of walking and physical activity (Bureau of Transportation Statistics, 2004; Fulton et al., 2005; Institute of Medicine, 2005; Saelens & Handy, 2008). Sidewalks also have tremendous safety benefits as they have been found to reduce “walking along the roadway” type crashes by 86 percent (McMahon et al., 2002); paved shoulders reduce this type of crash by 71 percent (Gan et al., 2005). Walkways should be part of every new and renovated facility and every effort should be made to retrofit streets that currently do not have sidewalks. While sidewalks are typically made of concrete, less expensive walkways may be constructed of asphalt, crushed stone, or other materials if they are properly maintained and accessible (firm, stable, and slip-resistant).

**Resources:**

Click [here](#)<sup>104</sup> for more information on constructing sidewalks.

**3 Does your community have a sidewalk condition and curb ramp inventory process?**

Description: \_\_\_\_\_

**Does your community use government funds to repair broken sidewalks?**

Yes  No

<sup>103</sup> <http://www.fhwa.dot.gov/environment/sidewalk2/>

<sup>104</sup> <http://www.walkinginfo.org/engineering/roadway-sidewalks.cfm>

**What is the annual line item for sidewalk maintenance in your community's budget?** \_\_\_\_\_

**Estimate the percent of intersections that have ADA accessible ramps on all four corners.** \_\_\_\_%

**Estimate the percent of sidewalks that need to be repaired or replaced.** \_\_\_\_\_%

**Does your community have a program to install curb ramps?** Yes No

**How many ramps are installed per year?** \_\_\_\_\_ **How many ramp installations are planned for next year?** \_\_\_\_\_

**Does your community have a program to repair and replace broken sidewalks?**

Yes No

**How many locations (or linear feet) were fixed last year?** \_\_\_\_\_

**How many repairs are planned for next year?** \_\_\_\_\_

**Is there a method for residents to report missing or broken sidewalks and curb ramps?** Yes

No

**Please explain the process (e.g. on-line complaint form)?** \_\_\_\_\_

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### **Rationale:**

A complete sidewalk network that includes continuous, well maintained, ADA-compliant sidewalks and curb ramps is one of the most important elements in making a community accessible to pedestrians of all abilities. In order to create a complete sidewalk network, communities need to determine the location and condition of existing sidewalks. There are many different ways to inventory a city's curb ramps and sidewalks. Some communities use aerial photographs to begin their inventories. Agencies are increasingly using personal digital assistant tools (PDAs), geographic information system (GIS) software, online data entry, and other newer technologies to complete their inventory (Quiroga & Turner, 2008).

Having an inventory of the sidewalk system can then help identify and prioritize areas for improvement. Funding the completion and maintenance of the sidewalk system can be challenging. Cities that have comprehensive sidewalk networks don't always have more money, but they frequently prioritize pedestrian projects differently than others.

Curb ramp design is especially important for wheelchair users. Corners should typically have two curb ramps, one for each street that is to be crossed. Curb ramps should also be designed to include level landings, without which the sidewalk can be quite difficult to navigate in a wheelchair. Additionally, detectable warnings, a distinctive surface pattern of domes detectable by cane or underfoot, are used to alert people with vision impairments of their approach to streets and hazardous drop-offs. The ADA Accessibility Guidelines (ADAAG) require these warnings on the surface of curb ramps (which remove a tactile cue otherwise provided by curb faces) and at other areas where pedestrian ways transition to vehicular ways.

### **Resources:**

#### *Sidewalk Inventories*

These case studies describe how some communities have inventoried their sidewalk network:

- [Creating a Pedestrian Facility Inventory](#)<sup>105</sup>, New Castle County, Delaware
- [Sidewalk Construction Program](#)<sup>106</sup>, Alameda, California
- [Sidewalk Planning: A GIS-Based Approach](#)<sup>107</sup>, Austin, Texas
- [Tucson Regional Sidewalk Inventory](#)<sup>108</sup>, Tucson, Arizona

See this [article](#)<sup>109</sup> to learn how Seattle, Washington inventoried and assessed the quality of approximately 850 crosswalks in the city.

#### Funding

Funding for pedestrian facilities can come from a variety of sources and may sometimes require some ingenuity. (For some creative solutions, click [here](#)<sup>110</sup>.) Click on the links below for more information on infrastructure funding mechanisms or see Chapter 6 of [How to Develop a Pedestrian Safety Action Plan](#)<sup>111</sup>.

[Routine accommodation](#)<sup>112</sup> refers to the construction of good pedestrian infrastructure as part of normal public and private development. When pedestrian accommodation is institutionalized, it is automatically included in funding.

[SAFETEA-LU](#)<sup>113</sup> (Safe Accountable Flexible Efficient Transportation Equity Act) set up funding through programs such as [Congestion Mitigation and Air Quality](#)<sup>114</sup>, [Safe Routes to School](#)<sup>115</sup>, and [Transportation Enhancements](#)<sup>116</sup>.

[American Recovery and Reinvestment Act](#)<sup>117</sup>

Funding can come from both [State and local government sources](#)<sup>118</sup> and [private sources](#)<sup>119</sup>.

[Point of sale requirements](#)<sup>120</sup> (See “Putting Cities Back on Their Feet.”) Point of sale requirements stipulate that property owners ensure that elements of their property (in this case, adjacent sidewalks) meet certain predetermined standards at the time that the property is sold.

#### Reporting of hazards

The pedestrian advocacy organization, PEDS, in Atlanta, GA has partnered with the City of Atlanta to develop an [online tool](#)<sup>121</sup> for reporting pedestrian safety hazards.

### 4 Please indicate the number of bridges or overpasses in your community and how many of those provide for pedestrians through shoulders, sidewalks, or multiuse paths.

	Number
<b>Bridges (excluding freeways)</b>	<input type="text"/>
<b>Bridges with pedestrian provisions on at least one side</b>	<input type="text"/>

<sup>105</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/PLA.CreatingaPedestrianFacilityInventory.pdf>

<sup>106</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/ENG.SidewalkConstructionProgram.pdf>

<sup>107</sup> <http://www.walkinginfo.org/library/details.cfm?id=4408>

<sup>108</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/PLA.TucsonRegionSidewalkInventory.pdf>

<sup>109</sup> [http://findarticles.com/p/articles/mi\\_qa3734/is\\_200401/ai\\_n9388855/](http://findarticles.com/p/articles/mi_qa3734/is_200401/ai_n9388855/)

<sup>110</sup> <http://www.walkinginfo.org/funding/sources-community.cfm>

<sup>111</sup> <http://drusilla.hsrc.unc.edu/cms/downloads/howtoguide2006.pdf>

<sup>112</sup> <http://www.walkinginfo.org/funding/institutionalization.cfm>

<sup>113</sup> <http://www.fhwa.dot.gov/safetealu/index.htm>

<sup>114</sup> <http://www.fhwa.dot.gov/safetealu/factsheets/cmaq.htm>

<sup>115</sup> <http://www.fhwa.dot.gov/safetealu/factsheets/saferoutes.htm>

<sup>116</sup> <http://www.fhwa.dot.gov/environment/te/1999guidance.htm>

<sup>117</sup> <http://www.enhancements.org/recovery.asp>

<sup>118</sup> <http://www.walkinginfo.org/funding/sources-government.cfm>

<sup>119</sup> <http://www.walkinginfo.org/funding/sources-private.cfm>

<sup>120</sup> <http://shoup.bol.ucla.edu/>

<sup>121</sup> [http://atlantaga.gov/government/publicworks/sidewalkmain\\_091604.aspx](http://atlantaga.gov/government/publicworks/sidewalkmain_091604.aspx)

Pedestrian overpasses (or bridges)

Pedestrian underpasses

Identify the last three bridges built (or major reconstruction) in your community. Do the bridges provide pedestrian provisions on at least one side?

Bridge #1 \_\_\_\_\_

Bridge #2 \_\_\_\_\_

Bridge #3 \_\_\_\_\_

Identify bridges currently under design. Do the bridges provide pedestrian provisions on at least one side? \_\_\_\_\_

**Rationale:**

Bridges often provide the only safe pedestrian route across certain barriers in a community (freeways, railroad tracks, and natural barriers). Therefore, pedestrians should have access and safe facilities on all bridges in a community. Barriers between the pedestrian facility and vehicle travel lanes increase the comfort and safety for pedestrians. Pedestrian overpasses and underpasses should be built when there are no other convenient crossing options with proper consideration given to lighting, drainage, graffiti removal, security, and ADA requirements.

**Resources:**

For more information, see the American Association of State Highway and Transportation Officials' [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#)<sup>122</sup>.

This PBIC [guide](#)<sup>123</sup> has information and resources on design considerations and best practices.

**5 Does your community maintain a pedestrian signaling system?** Yes No

Please briefly describe initiatives your community has taken to ensure or improve pedestrian access, safety and convenience at signalized intersections. In your description please address the following questions. Provide a link or attachment of the relevant policy or ordinance, if available.

Link: \_\_\_\_\_

Description: \_\_\_\_\_

- Do you provide pedestrian recall (pedestrians receiving a walk signal during every phase without using a push button) in high pedestrian corridors?  
Yes No
- At locations where pedestrian push buttons are used, are the push buttons reachable from a level landing and located in line with the crosswalk line furthest from the intersection?  
Yes No

<sup>122</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

<sup>123</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4126>

- Approximately what percentage of intersections have accessible pedestrian signals with audible walk indications? \_\_\_\_\_%
- Approximately what percentage of intersection have pushbutton-integrated accessible pedestrians signals with audible and vibrotactile indications?  
\_\_\_\_\_ %
- What is the average walk speed used to determine signal timing? \_\_\_\_\_ ft/s
- Do you operate your signals that have dedicated left turn arrows with a protected only phase or with protective permissive phases?  
Explain: \_\_\_\_\_  
\_\_\_\_\_
- Do you use right-turn-on-red restrictions? If yes, when and where? \_\_\_\_\_  
\_\_\_\_\_
- What percentage of intersections have countdown signals? \_\_\_\_\_%

**Rationale:**

Pedestrian signal indications should be used at all traffic signals, unless the signal is located on a highway where walking is prohibited. In general, shorter cycle lengths and longer walk intervals provide better service to pedestrians and encourage better signal compliance. For optimal pedestrian service, fixed-time signal operation usually works best. Pedestrian pushbuttons may be installed at locations where pedestrians are expected intermittently and should be located close to the crosswalk they serve. Signals may be supplemented with audible or other messages to make crossing information accessible for all pedestrians, including those with vision impairments. Accessible pedestrian signals provide information to pedestrians who are unable to see the visual walk indication and have also been found to help all pedestrians. Many older pedestrians may have poor visual contrast sensitivity and may be unable to see the visual walk indication reliably, particularly in bright sunlight.

Countdown signals are required for all pedestrian signals by the MUTCD and all existing pedestrian signal indicators must be replaced within 10 years. They may be designed to begin counting down at the beginning of the clearance (flashing DON'T WALK) interval and can be on fixed-time or pushbutton operation. A 25 percent reduction in pedestrian crashes when compared to ordinary pedestrian signals has been found with countdown signals (Markowitz et al. 2006).

Prohibiting RTOR should be considered where and/or when there are high pedestrian volumes, or where there is a proven problem with motorists conflicting with pedestrians. This is due to motorists being so intent on looking for traffic approaching on their left that they may not be alert to pedestrians approaching on their right. A similar scenario exists with permissive left turns, which can be rectified with protected left turn phasing only.

**Resources:**

For more information on engineering treatments for pedestrian safety consult the Federal Highway Administration’s [Manual on Uniform Traffic Control Devices](#),<sup>124</sup> the American Association of State Highway and Transportation Officials’ [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#),<sup>125</sup> accessibility guidelines [here](#)<sup>126</sup>, or see Chapter 5 of [How to Develop a Pedestrian Safety Action Plan](#)<sup>127</sup>.

<sup>124</sup> <http://mutcd.fhwa.dot.gov/>

<sup>125</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

<sup>126</sup> <http://www.access-board.gov/prowac/>

<sup>127</sup> <http://drusilla.hsrb.unc.edu/cms/downloads/howtoguide2006.pdf>

Click [here](#)<sup>128</sup> for guidance on using accessible pedestrian signals (APS) or [here](#)<sup>129</sup> for more signal information. St. Petersburg, Florida provides an [evaluation](#)<sup>130</sup> of the implementation of a new pedestrian signal. The PedSafe [Web site](#)<sup>131</sup> and [manual](#)<sup>132</sup> provide the latest information available for improving the safety and mobility of those who walk. These online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve pedestrian safety and/or mobility based on user input about a specific location.

**6 Please briefly describe initiatives your community has taken to ensure or improve pedestrian access, safety and convenience at crosswalks. In your description please address the following questions. Provide a link or attachment of the relevant policy or ordinance, if available.**

Link to policy or ordinance: \_\_\_\_\_

- **How are marked crosswalk locations selected?** \_\_\_\_\_  
\_\_\_\_\_
- **What is your standard crosswalk marking type (e.g., parallel lines, ladder style, high visibility, etc.)?** \_\_\_\_\_
- **Are crosswalk markings regularly maintained?** Yes No
- **Are in-road stop/yield signs<sup>133</sup> used?** Yes No  
**How are these locations selected?** \_\_\_\_\_
- **Are advance stop/yield lines placed at multilane uncontrolled marked crosswalks in order to reduce multiple threat crashes?** Yes No
- **Are there other pedestrian safety practices being used at crosswalks?**  
\_\_\_\_\_  
\_\_\_\_\_

**Rationale:**

Marked crosswalks serve to highlight the right-of-way where motorists can expect pedestrians to cross. Various crosswalk marking patterns are given in the Manual on Uniform Traffic Control Devices; however, the international (also known as "ladder" or "zebra") markings are strongly preferred, particularly at uncontrolled locations, because they are far more visible, which is particularly important at night or in low light conditions (e.g., rain).

At midblock marked crosswalks, an advance stop/yield line can help prevent multiple threat crashes at crosswalks on multilane roads. This type of crash occurs when a driver stops too close to the crosswalk to let a pedestrian cross, masking visibility of the adjacent travel lane. An advance stop/yield line placed 6 to 15 m (20 to 50 ft) ahead of the crosswalk can greatly reduce the likelihood of a multiple-threat crash, as this

<sup>128</sup> <http://www.apsguide.org/>

<sup>129</sup> <http://www.walkinginfo.org/engineering/crossings-signals.cfm>

<sup>130</sup> [http://drusilla.hsrb.unc.edu/cms/downloads/FDOT\\_BA784%20EvaluationRectangularRapidFlashBeaconStPetersburgFlorida.pdf](http://drusilla.hsrb.unc.edu/cms/downloads/FDOT_BA784%20EvaluationRectangularRapidFlashBeaconStPetersburgFlorida.pdf)

<sup>131</sup> <http://www.walkinginfo.org/pedsafe/>

<sup>132</sup> [http://www.walkinginfo.org/pedsafe/pedsafe\\_downloads.cfm](http://www.walkinginfo.org/pedsafe/pedsafe_downloads.cfm)

<sup>133</sup> [http://mutcd.fhwa.dot.gov/hdm/2009/part2/fig2b\\_02\\_longdesc.htm](http://mutcd.fhwa.dot.gov/hdm/2009/part2/fig2b_02_longdesc.htm)

encourages drivers to stop back far enough so a pedestrian can see if a second motor vehicle is not stopping and take evasive action. The advance yield/stop line should be supplemented with "Stop Here For Pedestrians" signs (R1-5 or R1-5a) to alert drivers where to stop to let a pedestrian cross.

**Resources:**

For best practices for crosswalk installation, see the FHWA's [Manual on Uniform Traffic Control Devices](#),<sup>134</sup> the American Association of State Highway and Transportation Officials' [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#),<sup>135</sup> or see Chapter 5 of [How to Develop a Pedestrian Safety Action Plan](#)<sup>136</sup>.

Click [here](#)<sup>137</sup> for guidance on using accessible pedestrian signals (APS) or [here](#)<sup>138</sup> for more general information on pedestrian signs and signals.

Columbia, MO has [helpful policy and standards for pedestrian crossings](#)<sup>139</sup>.

Recommended guidelines and priorities for crosswalk installation at uncontrolled locations are given in the FHWA document, [Safety Effect of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines](#)<sup>140</sup>.

Find information about model snow removal policies for city sidewalks [here](#).<sup>141</sup>

You can also find more information on crosswalk installation and crossing enhancements [here](#)<sup>142</sup>, [here](#)<sup>143</sup>, or [here](#)<sup>144</sup>.

**7 Does your community design and build its own roadways? Yes No**

**What geometric features are being used to ensure or improve pedestrian access, safety and convenience? In your description please address the following questions. Provide a link or attachment of the relevant policy or ordinance, if available.**

- **Are median crossing/refuge islands used? Is there a standard or typical roadway that these are used on? How many have been installed in the last three years? Are any more planned?**

Link to island policy: \_\_\_\_\_

Description: \_\_\_\_\_

- **Do you routinely install curb extensions? How many have been installed in the last three years? Are any more planned?**

Link to curb extension policy: \_\_\_\_\_

Description: \_\_\_\_\_

<sup>134</sup> <http://mutcd.fhwa.dot.gov/>

<sup>135</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

<sup>136</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>

<sup>137</sup> <http://www.walkinginfo.org/aps/>

<sup>138</sup> <http://www.walkinginfo.org/engineering/crossings-signals.cfm>

<sup>139</sup> <http://www.gocolumbiamo.com/PublicWorks/Documents/Engineering/cwpolicy.pdf>

<sup>140</sup> <http://www.tfsrc.gov/safety/pubs/04100/index.htm>

<sup>141</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4125>

<sup>142</sup> <http://www.walkinginfo.org/engineering/crossings-crosswalks.cfm>

<sup>143</sup> <http://www.walkinginfo.org/engineering/crossings-enhancements.cfm>

<sup>144</sup> <http://www.walkinginfo.org/pedsafe/>

- **What is the standard curb radius (10', 15', 20', 25' 30', 35') for local, collector, and arterial streets?**

Link to curb radius policy: \_\_\_\_\_

Description: \_\_\_\_\_

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- **What other geometric design features are implemented for pedestrian safety?**

Link to other design features: \_\_\_\_\_

Description: \_\_\_\_\_

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- **Has your community taken initiatives to increase safety for people crossing the street at bus stops that are not located at signalized intersections or crosswalks?**

Link to bus stop policy: \_\_\_\_\_

Description: \_\_\_\_\_

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#### **Rationale:**

Crossing islands—also known as center islands, refuge islands, pedestrian islands, or median slow points—are raised islands placed in the center of the street at intersections or midblock to help protect crossing pedestrians from motor vehicles. Center crossing islands let pedestrians to deal with only one direction of traffic at a time: they allow pedestrians to stop partway across the street and wait for an adequate gap in traffic before crossing the second half of the street. This kind of facility has been demonstrated to significantly decrease the percentage of pedestrian crashes by 25-50 percent (Zegeer et al. 2002, ITE 2004) and reduce all crashes by 30-35 percent (Bahar et al. 2007), thus making the roadway safer for all users.

Curb extensions—also known as bulb-outs or neckdowns—extend the sidewalk or curb line out into the parking lane, which reduces the effective street width. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb extensions are only appropriate where there is an on-street parking lane. The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design. Bicycle lanes (or shoulders, or whatever space is being used for bicycle travel) must not be eliminated or squeezed in order to create the curb extensions or islands.

One common pedestrian crash type involves a pedestrian who is struck by a right-turning vehicle at an intersection. A wide curb radius typically results in high-speed turning movements by motorists. Reconstructing the turning radius to a tighter turn will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists. Curb radii can, in fact, be tighter than any modern guide would allow: older and some neo-traditional cities frequently have radii of 10 to 15 ft (3 to 4.6 m) without suffering any detrimental effects. More typically, in new construction, the appropriate turning radius is about 15 ft (4.6 m) for residential streets and about 25 ft (7.6 m) for arterial streets with a substantial volume of turning buses and/or trucks.

The Bureau of Transportation Statistics 2000 report [Freedom to Travel](#)<sup>145</sup> discusses the barrier effect of roadways included problems due to wide roadways and complex signals.

One of the significant variables identified in the development of [Intersection Safety Indices \(ISI\)](#)<sup>146</sup> for pedestrians was the number of through lanes. More lanes mean wider roadways, creating a longer crossing distance which is less safe for pedestrians.

**Resources:**

For more information on geometric design, see the Federal Highway Administration’s [Manual on Uniform Traffic Control Devices](#),<sup>147</sup> the American Association of State Highway and Transportation Officials’ [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#)<sup>148</sup> or its [A Policy on Geometric Design of Highways and Streets](#)<sup>149</sup>. Also see Chapter 5 of [How to Develop a Pedestrian Safety Action Plan](#).<sup>150</sup>

The Federal Highway Administration’s [Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures](#)<sup>151</sup> provides guidance for sidewalks and pedestrian refuges.

**8 Please briefly describe any innovative pedestrian treatments installed in your community? Treatments may include special pedestrian phasing such as a leading pedestrian interval or scramble timing, crossing aids such as a HAWK beacon or rapid flash beacon, or passive pedestrian detection. Include any relevant links or attachments, if available.**

Link to special treatment document: \_\_\_\_\_

Description of treatments: \_\_\_\_\_

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**Rationale:**

A simple, useful change at signalized intersections is the leading pedestrian interval (LPI). An LPI gives pedestrians an advance walk signal before the motorists get a green light, giving the pedestrian several seconds to start in the crosswalk where there is a concurrent signal. Pedestrians are more visible to motorists and motorists are more likely to yield to them. This advance crossing phase approach has been used successfully for two decades in places such as New York City; studies have demonstrated reduced conflicts for pedestrians. The LPI is particularly effective where there is a two-lane turning movement. To be useful to pedestrians with vision impairments, an LPI needs to be accompanied by an audible signal to indicate the walk interval.

The HAWK (High-intensity Activated crosswalk) beacon is an effective traffic control device that uses traditional traffic and pedestrian signal heads but in a different configuration. These beacons are named Pedestrian Hybrid Beacons in the MUTCD and can be used to aid pedestrians and bicyclists at unsignalized crossings, particularly at high speed or volume locations.

Another effective traffic control device is the rectangular rapid flash beacon. Studies have found motorist yield rates of over 80 percent with these devices on roadways with medians (Van Houten, 2004). These beacons are yellow, rectangular, and have a rapid “wig-wag” flash activated through active or passive detection.

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<sup>145</sup> [http://www.bts.gov/publications/freedom\\_to\\_travel/](http://www.bts.gov/publications/freedom_to_travel/)  
<sup>146</sup> <http://www.tfhrc.gov/safety/pedbike/pubs/06125/06125.pdf>  
<sup>147</sup> <http://mutcd.fhwa.dot.gov/>  
<sup>148</sup> <http://www.walkinginfo.org/library/details.cfm?id=2067>  
<sup>149</sup> [https://bookstore.transportation.org/Item\\_details.aspx?id=110](https://bookstore.transportation.org/Item_details.aspx?id=110)  
<sup>150</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/howtoguide2006.pdf>  
<sup>151</sup> <http://safety.fhwa.dot.gov/policy/memo071008/>

Since pedestrian pushbutton devices are not activated by about one-half of pedestrians (even fewer activate them where there are sufficient motor vehicle gaps), new "intelligent" microwave or infrared pedestrian detectors are now being installed and tested in some U.S. cities. These automatically detect pedestrians and activate the red traffic and walk signals when pedestrians are present. Detectors can also be used to extend the crossing time for slower moving pedestrians in the crosswalk.

**Resources:**

See this [case study](#)<sup>152</sup> from Phoenix, Arizona or this [report](#)<sup>153</sup> from the FHWA, to learn more about HAWK beacons.

This [analysis](#)<sup>154</sup> describes St. Petersburg, Florida’s experience with rapid flash LED beacons at crosswalks.

See [here](#)<sup>155</sup> or [here](#)<sup>156</sup> for information on crosswalk treatments or read this case study of innovative crosswalk treatments in [Arlington, Virginia](#)<sup>157</sup>.

The [Manual on Uniform Traffic Control Devices](#)<sup>158</sup> also provides information on a variety of signaling, signage, and other engineering techniques.

**9 Please briefly describe your community’s traffic calming practices and/or policies and cite any relevant examples. Traffic calming practices may include road diets, lane diets (reduction in lane width) or streets with a pedestrian focus. Provide any relevant links or attachments, if available.**

Link to calming practices document: \_\_\_\_\_

Description of practices: \_\_\_\_\_

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**Rationale:**

Traffic calming is a way to design streets that uses physical and visual cues to encourage motorists to drive more slowly. If done correctly, traffic calming reduces traffic speeds, the number and severity of crashes, and noise levels. It can also encourage walking because reduced speeds and improved aesthetics improve pedestrian comfort. Types of traffic calming techniques include horizontal shifts, vertical deflection, and closures.

A road diet typically reduces the number of travel lanes on a road, reallocating this space for other needs (pedestrian paths, bicycle lanes, transit facilities, etc.). Road diets provide many benefits to pedestrians, including reduced crossing distance, room for median islands to break the crossing into two simpler crossings, and a buffer zone for the sidewalk through the addition of wider sidewalks, parking, or bicycle lanes. As many roadways have been overbuilt, most communities have many road diet candidates. A typical road diet reduces a four lane road to a three lane road; this can often be done on roads with less than 15,000 ADT. Road diets also make roads safer. One study found that a traditional 4-to-3 road diet resulted in a 29 percent crash reduction for all users (Harkey et al. 2008).

**Resources:**

Click [here](#)<sup>159</sup> for more information on traffic calming solutions.

Pima County, AZ provides an example of a [Neighborhood Traffic Management Program](#)<sup>160</sup>.

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<sup>152</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/ENG.BringingLifeToTransportation.pdf>

<sup>153</sup> <http://www.fhwa.dot.gov/publications/research/safety/10042/10042.pdf>

<sup>154</sup> [http://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia11/stpetersburgprpt/stpetersburgprpt.pdf](http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/stpetersburgprpt/stpetersburgprpt.pdf)

<sup>155</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=46>

<sup>156</sup> <http://www.walkinginfo.org/engineering/crossings-signals.cfm>

<sup>157</sup> <http://www.walkinginfo.org/library/details.cfm?id=2880>

<sup>158</sup> <http://mutcd.fhwa.dot.gov/>

<sup>159</sup> <http://www.walkinginfo.org/engineering/calming.cfm>

Chapter 5 of [How to Develop a Pedestrian Safety Action Plan](#)<sup>161</sup> provides information on traffic calming techniques.

Learn more about road diets in [Road Diets: Fixing the Big Roads](#)<sup>162</sup> and [Evaluation of Lane Reduction "Road Diet" Measures and Their Effects on Crashes and Injuries](#)<sup>163</sup>.

**10 Please briefly describe any other engineering projects or policies affecting walking in your community.**

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<sup>160</sup> <http://www.dot.co.pima.az.us/trafeng/NTMP/>  
<sup>161</sup> <http://drusilla.hsre.unc.edu/cms/downloads/howtoguide2006.pdf>  
<sup>162</sup> <http://www.walkable.org/assets/downloads/roaddiets.pdf>  
<sup>163</sup> <http://www.tfhrc.gov/safety/hsis/pubs/04082/index.htm>

# ENFORCEMENT

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In many communities, enforcement is often neglected as a technique for making communities safer for walking. Communities that have created comfortable walking environments through engineering improvements or urban design features may still have safety concerns if traffic laws are not properly understood or adequately enforced. Enforcement activities work best when implemented in conjunction with education and awareness activities. Therefore, well-implemented enforcement campaigns will include public education campaigns, law enforcement officer training, and strategic law enforcement and ticketing strategies. A successful enforcement program will usually require the involvement of community members, law enforcement officials, city council members, and the media.

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**1 How many officers does your community have? \_\_\_\_\_**

**How many of these are involved in enforcement and what is the average amount of work time per officer devoted to enforcement?**

- **Number in enforcement:** \_\_\_\_\_
- **Average hours (officers/month) of enforcement:** \_\_\_\_\_

**Does your community have a traffic safety officer?** Yes No

**If so, please estimate the amount of work time that is devoted to responsibilities concerning pedestrian laws and safety.** \_\_\_\_\_

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**Rationale:**

Demands on a police department and the level of support departments can offer vary from community to community. Law enforcement agencies are stretched thin in most communities, and the typical response to requests for pedestrian enforcement support is "we don't have enough officers." By designating a traffic safety officer, communities can prioritize traffic safety enforcement.

**Resources:**

Some states and communities, like [South Carolina](#)<sup>164</sup>, have Traffic Safety Officer Training Programs.

**2 Does your community use targeted enforcement programs to promote pedestrian safety in crosswalks? Indicate which of these elements, if any, are part of the enforcement program.**

**Pedestrian decoys (aka crosswalk stings)**

*Definition: From walkinginfo.org: These are well-prepared and coordinated operations designed to warn motorists that the yield-to-pedestrian laws will be enforced at target locations. Officers prepare a site by establishing the safe stopping distance to a crosswalk, with a 10 mi/h over the speed limit leeway. Cones are set out in that location. An*

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<sup>164</sup> [http://www.nhtsa.dot.gov/people/outreach/safedige/spring2003/spr03\\_w13\\_SC.htm](http://www.nhtsa.dot.gov/people/outreach/safedige/spring2003/spr03_w13_SC.htm)

officer in plain clothes steps into the crosswalk just before a vehicle passes the cone. If the motorist doesn't yield, either a warning or a citation is given, based on the severity of the incident.

**Media campaigns regarding enforcement**

**Speed feedback signs**

**Progressive ticketing**

*Definition: From walkinginfo.org: Progressive ticketing is a method for introducing ticketing through a three-staged process: educating, warning, and ticketing.*

**Other (please describe):** \_\_\_\_\_

### **Rationale:**

Enforcement may be the most important element in getting drivers to yield to pedestrians in crosswalks. Enforcement programs should be coupled with an education component to ensure that drivers and pedestrians understand traffic rules. The awareness and education messages should tell people about the problem and why enforcement action is necessary. This will help generate public support and offset any complaints from those who are caught breaking the law. The public also needs to know what the enforcement activities will be and when they will start. Get the word out by mailing materials to residents living within a certain distance of the program area and using local television stations and newspapers to spread the message. For some drivers, raising that awareness may be enough to cause them to alter their unsafe actions; for others, seeing that traffic laws are being regularly enforced may change their behavior.

### **Resources:**

For more information on improving yield-to-pedestrian compliance, look [here](#)<sup>165</sup> or read case studies about a successful education and enforcement programs in [Amherst, Massachusetts](#)<sup>166</sup> and [Missoula, Montana](#)<sup>167</sup>. This [case study](#)<sup>168</sup> describes a successful pedestrian decoy operation.

More general information on law enforcement approaches can be found [here](#)<sup>169</sup>.

For more information on the impact of crosswalk signs, click [here](#)<sup>170</sup>.

Click [here](#)<sup>171</sup> to learn more about relaying important messages to target audiences, including child and college-age pedestrians, alcohol consumers, and older adults. The Federal Highway Administration has created [education materials](#)<sup>172</sup> for Spanish speaking bicyclists and pedestrians and the National Highway Traffic Safety Administration has created [Guidelines for Developing Traffic Safety Materials for Spanish-Speaking Audiences](#)<sup>173</sup>.

See these case studies to learn about how law enforcement officers have helped implement targeted education campaigns.

- [Comprehensive School-Age Pedestrian Safety Program](#),<sup>174</sup> Orange County, Florida
- [Bicycle and Pedestrian Safety Campaign](#),<sup>175</sup> Burlington, Vermont

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<sup>165</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=3921>

<sup>166</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/EDU.CrossSafelyDriveSafely.pdf>

<sup>167</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/COM.MissoulaPedestrianSafetyCampaign.pdf>

<sup>168</sup> Link to pg. 101 in PSAP

<sup>169</sup> <http://www.walkinginfo.org/enforcement/programs-enforcement.cfm>

<sup>170</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=3455>

<sup>171</sup> <http://www.walkinginfo.org/education/messages.cfm>

<sup>172</sup> <http://www.walkinginfo.org/library/details.cfm?id=3467>

<sup>173</sup> <http://www.walkinginfo.org/library/details.cfm?id=2321>

<sup>174</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/EDU.ComprehensiveSchool-AgePedestrianSafetyProgram.pdf>

<sup>175</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/COM.BicycleandPedestrianSafetyCampaign.pdf>

**3 How many citations does your local police department give annually for traffic infractions that relate to road safety? \_\_\_\_\_**

Is this up or down from previous years? Up Down

Please list the number of citations given for the following infractions:

- **Speeding:** \_\_\_\_\_
- **Failure to yield:** \_\_\_\_\_
- **Parking on sidewalks or too close to intersections or crosswalk:**  
\_\_\_\_\_

**Does your community use photo enforcement technology that targets speeding and/or red light running? Explain.** \_\_\_\_\_

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**Rationale:**

It is important for law enforcement agencies to regularly enforce traffic violations, and those that relate to pedestrian safety should be enforced with the same rigor as others. Tracking traffic citations can help communities better understand what types of traffic safety problems exist. Note that it is important to have cooperation with the court system to ensure conviction of these violations.

Police departments may choose to use a progressive ticketing approach or a combined enforcement and education approach, as these tend to be better received and more effective than unexplained ticketing. Studies by Van Houten (2004) and others have found that enforcement aimed at motorists is more effective than enforcement aimed at pedestrians.

Speed photo-radar enforcement (SPE) has also been shown to be effective in reducing automobile speeds. One study by Medina et al. (2009) showed that SPE significantly reduced downstream speeds among both cars and trucks.

Photo enforcement is also helpful in reducing the rate of red light running. Two 1999 studies by Retting et al. showed 42 and 40 percent reductions in red-light violators after a publicized photo enforcement system was introduced.

**Resources:**

See the National Highway Traffic Safety Administration [Resource Guide on Laws Related to Pedestrian and Bicycle Safety](#)<sup>176</sup>, a downloadable, interactive program, for more information pedestrian safety focused legislation from around the country. For more information on pedestrian crossing ordinances, refer to this [guide](#).<sup>177</sup>

See Chapter 8 in [Countermeasures That Work](#)<sup>178</sup> for more information on effective enforcement techniques to improve pedestrian safety.

This [guide](#)<sup>179</sup> provides information and other resources on the effectiveness of citations.

Communities may use [red light cameras](#)<sup>180</sup> or [photo speed enforcement](#)<sup>181</sup> in addition to citations given by law enforcement officers.

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<sup>176</sup> <http://www.walkinginfo.org/library/details.cfm?id=842>

<sup>177</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4127>

<sup>178</sup> [http://ntl.bts.gov/lib/32000/32300/32356/6626\\_Countermeasures\\_01-06-10-v1.pdf](http://ntl.bts.gov/lib/32000/32300/32356/6626_Countermeasures_01-06-10-v1.pdf)

<sup>179</sup> <http://www.walkinginfo.org/faqs/answer.cfm?id=4119>

<sup>180</sup> [http://www.walkinginfo.org/pedsafe/casestudy.cfm?CS\\_NUM=68](http://www.walkinginfo.org/pedsafe/casestudy.cfm?CS_NUM=68)

<sup>181</sup> Link to pg. 101 in PSAP

**4 Which, if any, of the following approaches does your community take to ensure the safety and security of pedestrians and runners on city streets, trails, and walkways?**

- Emergency call boxes. Describe: \_\_\_\_\_
- Police patrols on foot or bike. Describe (include the number of officers that are bike patrol certified): \_\_\_\_\_
- Neighborhood watch programs. Describe: \_\_\_\_\_
- Drunk driving and drunk walking enforcement. Describe: \_\_\_\_\_
- Street lighting. Estimate the number of streets with lighting on one or both sides: arterial \_\_\_\_\_% non-arterial \_\_\_\_\_%
- Other (please describe): \_\_\_\_\_

**Rationale:**

There are a variety of ways that law enforcement officers, community members, city planners, and public works departments can increase the safety of pedestrians from traffic dangers as well as crime. Lighting, eyes on the street, and police presence can be important elements in creating a safe and secure walking environment.

**Resources:**

See this [case study](#)<sup>182</sup> to learn more about a neighborhood speed watch program in Phoenix, Arizona or see Chapter 8 in [Countermeasures That Work](#)<sup>183</sup> for more information on effective techniques to improve pedestrian safety.

This [case study](#)<sup>184</sup> documents the use of specially-created DVDs for training traffic officers.

Click [here](#)<sup>185</sup> to learn what steps your community can take if crime is preventing people from walking.

**5 Please briefly describe your community's policies and practices regarding the use of adult crossing guards at elementary and middle schools. Include any information about the criteria for placement of adult crossing guards, training programs, crossing procedures, crossing guard signs and equipment, and law enforcement strategies at crossing guard locations.**

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**Provide a link or attachment of any relevant policies, if available.**

Link: \_\_\_\_\_

**Rationale:**

Adult school crossing guards play an important role in the lives of children who walk or bicycle to school. They help children safely cross the street at key locations. They also remind drivers of the presence of pedestrians. The presence of adult crossing guards can lead to more parents feeling comfortable about their children walking or bicycling to school. While the primary role of an adult school crossing guard is to guide

<sup>182</sup> [http://www.walkinginfo.org/pedsafe/casestudy.cfm?CS\\_NUM=71](http://www.walkinginfo.org/pedsafe/casestudy.cfm?CS_NUM=71)

<sup>183</sup> [http://ntl.bts.gov/lib/32000/32300/32356/6626\\_Countermeasures\\_01-06-10-v1.pdf](http://ntl.bts.gov/lib/32000/32300/32356/6626_Countermeasures_01-06-10-v1.pdf)

<sup>184</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/EDU.PedestrianSafetyEnforcementDVDs.pdf>

<sup>185</sup> <http://www.walkinginfo.org/problems/problems-crime.cfm>

children safely across the street, children also remain responsible for their own safety. In this respect, a guard plays another key function—a role model who helps children develop the skills necessary to cross streets safely at all times.

The design and implementation of an adult school crossing guard program is largely the decision of local communities. Some federal guidance exists and there are some state and local requirements pertaining to the operation of guard programs, but these vary across the country. Ideally, the development of an adult school crossing guard program involves a community partnership that includes the expertise of law enforcement agencies, traffic engineering or planning departments, and school systems. Working together with parents, this community group identifies the locations where adult school crossing guards are needed and the appropriate number of guards for each location. The group establishes crossing procedures for a variety of traffic situations, hires, trains and equips the guards, and secures long-term funding for the program.

**Resources:**

For guidance on implementing a school crossing guard program, see the [Adult Crossing Guard Guidelines](#)<sup>186</sup>, developed by the National Center for Safe Routes to School.

**6 Does your community’s police department have a systematic strategy for selecting locations and countermeasures for traffic and pedestrian safety?**

Describe: \_\_\_\_\_

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**Rationale:**

Some communities target enforcement in areas where there is a known safety problem. This can be an effective strategy if the safety problem is caused by pedestrian or driver behavior. Unlike vehicle crashes, crash rates for pedestrians are typically not used, since pedestrian volumes are usually not known. Instead, high pedestrian crash locations, corridors, and targeted areas should be initially identified by comparing the total number of pedestrian crashes.

**Resources:**

See Chapter 4 in [How to Develop a Pedestrian Safety Action Plan](#)<sup>187</sup> or Chapter 8 in [Countermeasures that Work](#)<sup>188</sup> for more information on selecting areas for targeted enforcement and other safety countermeasures.

This [case study](#)<sup>189</sup> from San Jose, California describes how the Department of Transportation and Police Department worked together and used crash and citation data to guide a comprehensive education and enforcement campaign.

See how communities in [Oakland, California](#)<sup>190</sup> and [Miami Dade, Florida](#)<sup>191</sup> are using crash data to identify potential traffic improvements.

Sweden compiles national traffic crash data using both police crash reports and traffic related hospital admissions. This [report](#)<sup>192</sup> uses the Swedish Traffic Accident Data Acquisition (STRADA) Database to analyze nonmotorized crashes.

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<sup>186</sup> [http://www.saferoutesinfo.org/guide/crossing\\_guard/pdf/crossing\\_guard\\_guidelines\\_web.pdf](http://www.saferoutesinfo.org/guide/crossing_guard/pdf/crossing_guard_guidelines_web.pdf)

<sup>187</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/howtoguide2006.pdf>

<sup>188</sup> [http://ntl.bts.gov/lib/32000/32300/32356/6626\\_Countermeasures\\_01-06-10-v1.pdf](http://ntl.bts.gov/lib/32000/32300/32356/6626_Countermeasures_01-06-10-v1.pdf)

<sup>189</sup> <http://drusilla.hsrrc.unc.edu/cms/downloads/EDU.StreetSmarts.pdf>

<sup>190</sup> Pg. 27 of PSAP

<sup>191</sup> Pg. 29 of PSAP

<sup>192</sup> [http://www.vti.se/templates/Report\\_\\_\\_2797.aspx?reportid=11753](http://www.vti.se/templates/Report___2797.aspx?reportid=11753)

**7 Do police work regularly with traffic engineers and planners to review sites in need of safety improvement for motorists and pedestrians?** Yes No

Describe: \_\_\_\_\_

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**Does your community use crash and/or fatality data to identify problem areas and potential solutions?** Yes No

**Please describe any other ways that your community's police department addresses the pedestrian concerns in your community.** \_\_\_\_\_

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**Rationale:**

Improving pedestrian safety in a community or region is typically the result of implementing different safety treatments and changing agency design policies. Crash countermeasures, or treatments intended to address pedestrian safety concerns, can take several forms: operational and construction projects intended to fix specific problems; changes in design guidelines to help improve streets and intersections in future projects; and education and enforcement programs aimed at achieving changes in motorist and pedestrian behavior or attitude. By partnering with engineers, law enforcement officers can help identify and improve pedestrian safety problems. Addressing pedestrian safety is an interdisciplinary undertaking that will require communication among agencies.

**Resources:**

See [here](#)<sup>193</sup> and [here](#)<sup>194</sup> to learn more about developing diverse partnerships to address pedestrian safety issues.

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<sup>193</sup> <http://www.walkinginfo.org/problems/help.cfm>

<sup>194</sup> <http://www.walkinginfo.org/enforcement/partnerships.cfm>

# EVALUATION

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By incorporating planning, education, encouragement, engineering, and enforcement countermeasures, a community can have a direct impact on pedestrian safety and walkability. Evaluation of the pedestrian environment and behavior plays a crucial role in problem identification and countermeasure selection. In order to truly understand local pedestrian needs and safety issues, a community should utilize effective evaluation strategies.

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## 1 Does your community have an ongoing pedestrian counting and/or survey program that allows for long-term trend analysis of walking trips?

Please describe:

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### Rationale:

While surveys such as the Census, the National Household Travel Survey, and the National Survey of Pedestrian and Bicyclist Attitudes and Behaviors can shed some light on national mode share and travel behavior, they do not necessarily reflect local trends. The best way to estimate the numbers of people who walk in a particular city or town is to conduct frequent, comprehensive pedestrian counts. Local counts allow municipalities to understand where, when, and how often people are walking in a community. This can help when determining how to prioritize walking improvements; walk counts can also help communities evaluate if infrastructure treatments or other programs have affected walking volumes.

### Resources:

The Federal Highway Administration document [Pedestrian and Bicycle Data Collection Systems in United States Communities](#)<sup>195</sup> describes how communities across the country are conducting walking counts. Arizona's use of pedestrian surveys to gather information is described [here](#)<sup>196</sup>.

[The National Bicycle and Pedestrian Documentation Project](#)<sup>197</sup>, co-sponsored by Alta Planning and Design and the Institute of Transportation Engineers Bicycle and Pedestrian Documentation Committee, has created a model for collecting bicycle and pedestrian data in the hopes of collecting more accurate measures of use and demand of pedestrian and bicycle facilities.

## 2 Has your community used any of the following tools to evaluate major pedestrian areas (town centers, major activity areas, routes to school, etc.) in order to identify problem areas and potential solutions?

- Walkability Checklists
- Pedestrian Intersection Safety Index

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<sup>195</sup> [http://drusilla.hsra.unc.edu/cms/downloads/PBIC\\_Data\\_Collection\\_Case\\_Studies2005.pdf](http://drusilla.hsra.unc.edu/cms/downloads/PBIC_Data_Collection_Case_Studies2005.pdf)

<sup>196</sup> Pg. 33 of PSAP

<sup>197</sup> <http://www.walkinginfo.org/library/details.cfm?id=4313>

- Pedestrian Level of Service (LOS)**
  - Pedestrian Road Safety Audit Guidelines and Prompt Lists**
  - Health Impact Assessment**
  - Other Evaluation Tools (Please describe)**
- 

**Rationale:**

Audits can help with pre/post evaluation of a particular roadway or traffic calming project. They should be conducted on a regular basis by a team of agency representatives to identify pedestrian problems and countermeasures/solutions. It is very important that the audit team is comprised of individuals with diverse backgrounds (such as engineering, planning, health, and law enforcement) to ensure that the audit will be comprehensive in nature and that the necessary solutions can be implemented.

**Resources:**

[Walkability checklists](#)<sup>198</sup> are a quick way to determine if your neighborhood has any major safety concerns for pedestrians. This educational [video](#)<sup>199</sup> details how to begin assessing your community’s sidewalks.

[The Pedestrian and Bicyclist Intersection Safety Indices](#)<sup>200</sup> can help users identify the intersections that most merit pedestrian safety improvements.

The [Pedestrian Road Safety Audit Guidelines and Prompt Lists](#)<sup>201</sup> are intended to provide guidance for independent audit teams that are assessing pedestrian safety on particular roadways.

[Health Impact Assessments](#)<sup>202</sup> predict the health effects that a project will have prior to implementation.

Read about Florida’s use a level of service (LOS) model for signalized intersections for pedestrians [here](#)<sup>203</sup>.

**3 Does your community routinely conduct pre/post evaluations of road projects and traffic calming with respect to pedestrian crashes, volumes and motor vehicle speeds? Yes No**

**Rationale:**

While agencies often evaluate the impact of a project or development on auto traffic with a traffic impact assessment, other modes may not be considered. Road projects of any size can have serious implications for pedestrians; your community should include them in any assessment.

**Resources:**

The Federal Highway Administration’s [Pedestrian Road Safety Audit Guidelines and Prompt Lists](#)<sup>204</sup> can help plan for and evaluate pedestrian safety of particular infrastructure projects.

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<sup>198</sup> <http://www.walkinginfo.org/library/details.cfm?id=12>  
<sup>199</sup> <http://www.walkinginfo.org/videos/pubdetail.cfm?picid=55>  
<sup>200</sup> <http://www.walkinginfo.org/library/details.cfm?id=2802>  
<sup>201</sup> <http://www.walkinginfo.org/library/details.cfm?id=3955>  
<sup>202</sup> <http://www.who.int/hia/en/>  
<sup>203</sup> Pg. 37 of PSAP  
<sup>204</sup> <http://www.walkinginfo.org/library/details.cfm?id=3955>

4 Using [Walk Score](#)<sup>205</sup>, what is the average (mean) walk score of the following locations in your community?

	Walk Score
<b>Geographic center</b>	
<b>Northernmost point</b> (City boundary directly north of geog. center)	
<b>Easternmost point</b> (City boundary directly east of geog. center)	
<b>Southernmost point</b> (City boundary directly south of geog. center)	
<b>Westernmost point</b> (City boundary directly west of geog. center)	
<b>Midpoint of geographic center and northernmost point</b>	
<b>Midpoint of geographic center and easternmost point</b>	
<b>Midpoint of geographic center and southernmost point</b>	
<b>Midpoint of geographic center and westernmost point</b>	
<b>Urban school location</b>	
<b>Suburban school location</b>	

Please describe any other ways that your community evaluates pedestrian accommodation, walking rates, and pedestrian safety. \_\_\_\_\_

**Rationale:**

Walk score will give a community a sense of its development density and the diversity of land uses, which can roughly translate into walkability. While Walk Score analysis does not include pedestrian infrastructure or pedestrian safety in its analysis, the scores from places around town can indicate whether development and land use patterns in a community support walking.

**Resources:**

[Walk Score](#)<sup>206</sup> is a website that calculates how walkable a geographic area is based on the variety and number of destinations, such as grocery stores, schools, and parks that are within walking distance.

<sup>205</sup> <http://www.walkscore.com/>

<sup>206</sup> <http://www.walkscore.com>

# ADDITIONAL QUESTIONS

**1** What are the three primary reasons your city deserves to be designated as a Walk Friendly Community? \_\_\_\_\_

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**2** What are the three aspects of your community most in need of improvement in order to accommodate pedestrians? \_\_\_\_\_

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**3** How can your community leverage its designation as a Walk Friendly Community to increase the number of people walking and make walking safer? \_\_\_\_\_

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# Detailed Results of Public Workshops

## *ARTS/Aiken County Bicycle and Pedestrian Plan: A Guide for Community Involvement and Consensus*

The Augusta Regional Transportation Study (ARTS) and Aiken County recognize that the success of any community improvement plan is dependent upon a meaningful community involvement effort. ARTS/Aiken County is committed to conducting a pro-active stakeholder and public involvement program for the development of the ARTS/Aiken County Bicycle and Pedestrian Plan focused on soliciting local government and community interaction throughout the study process. The value of implementing a strong stakeholder and public involvement effort is to ensure that the needs of the community are identified and to develop public awareness of and support for the study.

The ARTS/Aiken County Bicycle and Pedestrian Plan team is committed to providing broad based and continuous opportunities for stakeholder and public involvement throughout the plan development process. The process is designed to be responsive to citizen participants and is committed to utilizing the knowledge and understanding of citizens to address important issues. The outreach plan offers multiple opportunities for engagement – at varying levels of involvement. All public input and the responses to the input will be included as an appendix to the ARTS/Aiken County Bicycle and Pedestrian Plan.

### **Public Participation Committee Structure**

The public participation framework includes four primary groups that will guide the development of the ARTS/Aiken County Bicycle and Pedestrian Plan. The four groups are: (1) Project Steering Committee; (2) Stakeholder Interviews (3) Targeted Focus Groups; and (4) Community

Organizations and General Public. The roles and membership for each of these groups is outlined below.

### **(1) Project Steering Committee**

The Project Steering Committee will be comprised of government agencies responsible for developing and implementing the ARTS/Aiken County Bicycle and Pedestrian Plan plus representatives from interested bicycle and pedestrian community organizations. The committee will review and comment on materials to be presented to the public, help advertise the plan process, and distribute information to the larger community. The committee will meet during the study to establish study goals, identify needs and opportunities, review preliminary improvement alternatives, and select preferred improvement alternatives. A subcommittee for Aiken County will be formed to address Aiken County specific plan elements. The Project Steering Committee will meet up to five times (3 ARTS regional committee meetings and 2 Aiken County subcommittee meetings) during the course of the study. One joint meeting of the Project Steering Committee and the general community will be held at the close of the study process. To conserve costs, the ARTS and Aiken County steering committee meetings will be scheduled to occur on the same day with public outreach events or field investigations, when possible. ARTS staff will be responsible for meeting logistics, meeting notification, and assistance with meeting summaries for the regional committee meetings. The consultant staff will attend, facilitate, and provide meeting materials and presentations. The Project Steering Committee will participate in a walking and bicycling tour to gain first hand knowledge of the study area and to identify potential system improvements. The ARTS/Aiken County staff will select an area to be examined and provide tour arrangements and notification.



Consultant staff will facilitate the tour activities and discussion. Anticipated meeting times are illustrated on the study schedule in Appendix A.

A preliminary membership list for the Project Steering Committee is included in Appendix B.

### **(2) Stakeholder Interviews**

Together with the Steering Committee, the Alta/Greenways Team will identify appropriate interviews with key local agencies and stakeholder groups. Interviews will be conducted regarding local needs, goals, desires, attitudes and concerns for the ARTS/Aiken County area's bicycle/pedestrian network and related facilities and programs. The interviews will be conducted in-person or via telephone. Some stakeholder interviews will be conducted with agencies/organizations represented on the Steering Committee. Up to five stakeholder interviews will be conducted for the regional plan including one in Aiken County. ARTS staff will contact the stakeholders and arrange for the interviews. Two additional interviews will be conducted for the Aiken County plan.

### **(3) Targeted Focus Groups**

To assist ARTS/Aiken County and the Study Team in identifying specific needs throughout the study area, the consultant team will conduct up to four targeted focus group meetings during the needs assessment phase of the study. Three focus groups will be conducted for the regional plan (2 in Georgia and 1 in South Carolina) and one focus group will be specifically targeted towards Aiken County. ARTS Staff will identify potential participants, make logistical arrangements and send notifications for the focus group meetings. The consultant staff will provide focus group meeting materials, facilitate the meetings, and document the meetings. Based on guidance from the Project Steering Committee and the study team regarding the need for additional focused input, the focus group targets may include:

- Transit Users
- Special Needs Citizens such as the elderly and sight and hearing-impaired
- Employment, Education, and Housing Providers

- Recreation and Equestrian Users
- Safe Routes to Schools

Focus Group participants will be recommended by ARTS/Aiken County staff, consultant team staff, and the Project Steering Committee. Focus group membership will be approved by ARTS/Aiken County Staff.

### **(4) Community Organizations and General Public**

The Community Organizations and General Public group will be comprised of representatives from civic organizations with a general interest in the betterment of the ARTS community. Initial groups identified for inclusion are predominantly neighborhood associations and economic development organizations. Other organizations will be added as they are identified during the study process. Individual citizens will be added to the list as they express interest in the study. Additionally, all public involvement activities will be advertised using free media outreach engaged through the release of meaningful press releases and paid display advertisements as needed. Database membership will be maintained by ARTS/Aiken County staff utilizing input from the consultant team.

### **Public Workshops**

The Community Organizations and General Public database will serve as a basis for organizing public workshops during the study period. Two rounds (each round consisting of two locations) of public workshops will be held. Each round will consist of two meetings conducted in two locations in the ARTS area. Two regionally focused meetings will be held in Georgia and one regionally focused meeting plus one Aiken County specific meeting will be held in South Carolina. The first round of public workshops will take place during the needs assessment phase and the second round of public workshops will occur when draft recommendations are available. The public will also be invited to attend the final Project Steering Committee Meeting which will serve as an additional opportunity for the public to participate in the plan development process.

Notification will be issued to the Community Organizations and General Public Database maintained by ARTS Staff. The meetings will



be advertised using both meaningful press releases to generate community interest and display advertisements as needed. Display advertisements will be paid for by ARTS if they are deemed necessary to effectively notify the public of involvement opportunities. One very important method of generating community interest will be reliance on e-mail distribution lists maintained by members of the Project Steering Committee, Targeted Focus Group Participants, and Community Organizations and General Public groups. Prior to each public meeting, a flyer will be developed by the consultant team and distributed electronically by the ARTS/Aiken County staff to the membership of the study committee organizations. Each member will be requested to share the information with their members or associates. A Facebook Group could also be established for distribution of notification materials.

### **Public Event Booths**

The consultant team will host up to two education and information booths at public events during the plan development process (1 event in Georgia and 1 event in Aiken County). The booths will offer educational materials about bicycling and walking in the ARTS/Aiken County area, give citizens an opportunity to speak with the study team members about local issues, and a survey of citizens to gather information about needs and visions for bicycling and walking in the ARTS/Aiken County area. ARTS staff will assist with logistical arrangements for the booth events and staffing of the booth in Georgia.

### **Public Participation & Involvement Plan Tools**

The tools outlined in this section are designed to aid in public and media education regarding the ARTS/Aiken County Bicycle and Pedestrian Plan. They are also designed to encourage involvement in the planning process through participation and by providing feedback. The following tools will be utilized during the course of the study.

#### **Stakeholder and Public Involvement Plan (SPIP)**

The Stakeholder and Public Involvement Plan (SPIP) will be updated and amended throughout the study process. The SPIP outlines the public involvement approach to be taken during the plan development and includes lists

of all plan development committee members. Collection of public input will occur throughout the duration of the study. The purpose of the SPIP is to define how all stakeholders, public, and study team staff will be involved throughout the planning effort and how the community will be provided opportunities to participate in and comment on the plan development.

### **Study Website**

The consultant team will provide materials to be placed on the ARTS/Aiken County websites during the course of the study. The website materials will include a downloadable study factsheet, an on-line survey, and information about opportunities to participate in the study process. The study website will provide a portal for the Steering Committee, through password protected access, to view documents under review, exchange comments, view scheduled events, and post links. The website will also provide the general public with the opportunity to gain knowledge and share comments. ARTS/Aiken County staff will be responsible for updating and maintaining the websites. Consultant staff will provide regularly updated materials for inclusion on the websites.

The consultant team recommends establishing a website devoted to bicycling and walking in the study area, providing a one-stop location for maps, documents, news stories, event calendars, and links to related websites. This website can serve as the basis for a permanent on-line forum available to citizens after the completion of the plan.

### **On-line Survey**

The consultant will provide information for development of an on-line survey allowing citizens to provide input regarding the area's needs surrounding bicycling and walking in the region. The consultant will also provide survey materials to be included in local electric bills or other region-wide mailings. The team will make the survey available for posting on websites, at public workshops, in press releases, and other public avenues. ARTS/Aiken County staff will assist by including survey materials on the study websites. ARTS staff will assist in data entry for hard copy surveys. The consultant team will provide survey data compilation assistance for Aiken County specific survey results.

## Fact Sheet

A study fact sheet will be developed to provide background information regarding the study. An overview of the study process and study schedule will be included. Contact information for the study team will be included to ensure that stakeholders and the public are able to obtain information about the progress, findings, and recommendations resulting from the study process. The fact sheet will be distributed at all meetings and will be available as community members request information about the study.

## Press Releases

Press releases will be prepared by the consultant team and distributed by the ARTS/Aiken County staff for release during the study period just prior to each round of public involvement. The press releases will cover the study process, status, and key findings. The press release will be issued by ARTS/Aiken County staff to local newspapers, television, and radio media.

## Database Development and Maintenance

Three databases will be developed and maintained by ARTS staff with input from the consultant team during the course of the study. The study team will develop Project Steering Committee, Targeted Focus Groups, and Community Organizations and General Public databases. Throughout the study, the databases will be used to contact people for meeting announcements, to distribute deliverables for review, and to request input into the planning process.

## Media Education and Advertisement

Print, radio, and television media will be used to promote the ARTS/Aiken County Bicycle and Pedestrian Plan. Paid advertising as well as press releases and feature articles or coverage may be pursued.

The Augusta Chronicle and Aiken Standard (daily publication) and the Augusta Focus, Metro Spirit, and North Augusta Star (Thursdays only) will be used to promote the ARTS/Aiken County Bicycle and Pedestrian Plan. Public meetings related to the study process will be advertised using both display advertisements and meaningful press releases to generate community interest. Should the ARTS/Aiken

County staff feel additional coverage is necessary, display advertisements will be run one time prior to each public meeting. The consultant team will prepare display advertisements to be released by ARTS/Aiken County. The display advertisement will be funded using ARTS Special Study funds and/or Aiken County funds.

Press releases will be sent to the newspapers, television stations, and radio stations at least one week prior to the desired publication date. The study team will prepare the press releases and the ARTS/Aiken County staff will send the press releases to the media as the media is more comfortable receiving information directly from the government entity as opposed to requiring time for verification of the source of the information.

The following media will receive announcements of upcoming meetings:

Adam Folk	adam.folk@augustachronicle.com
Allen Cooke	Acooke@aug.edu
Comcast - Bill Botham	bill_botham@cable.comcast.com
Deborah Moody	rnorris@augustafocus.com
Lynn Hola Augusta	Lynnhola@bellsouth.net
Spirit - Joe White	joe.white@metrospirit.com
Michael @ WAGT	michaelb@wagt.com
Aiken Standard	MGibbons@aikenstandard.com
Michelle Bostic	mbostic@wagt.com
The North Augusta Star	editor@northaugustastar.com
WAFJ	info@wafj.com
WAGT Channel 26	producers@nbc26news.com
WAGT News	producers@wagt.com
WAKB WGAC WAEG	Augustaproduction@radio-one.com
WCHZ WGAC WGOR	MaryLiz@WGAC.com
WFAM News	wfam@wilkinsradio.com



WGAC Radio	news@wgac.com
WJBF Channel 6	mrosen@wjbf.com and Yarnell@wjbf.com
WKZK	wkzk1600@bellsouth.net
WRDW Channel 12	mark.cowan@rdw.com
WSLT	chuckw@wslt.com
WSLT WKXC Steve WKXC	SteveS@kicks99.com

**Comment Forms**

Comment forms will be distributed at each public meeting and will be available for distribution as interested parties inquire about the study. ARTS/Aiken County staff will compile the comments and submit them to the study team for use in guiding the development of the ARTS/Aiken County Bicycle and Pedestrian Plan.

**Advisory, Stakeholder, and Public Meetings**

Each of the three groups identified to assist in guiding the development of the study will meet periodically during the study development. Anticipated meeting times are illustrated on the study schedule in Appendix A.

**Evaluation of Public Involvement Efforts**

Evaluation of the effectiveness of public involvement efforts is a key aspect of developing a public involvement plan. Spurred by federal interest, regional planning organizations and other agencies have started evaluating all public involvement efforts in order to determine which public involvement tools are effective for specific situations and under what circumstances they are not effective. Evaluation measures are also important in documenting the level of public involvement achieved. Table 1 outlines the major tasks and key performance measures.

**Table D-1: Public Involvement Plan Performance Measures**

Technique	Performance Measures
Stakeholder and Public Involvement Plan	Successful implementation of strategies and techniques
	Participant feedback
	Comprehensiveness of the identification of stakeholders
Project Steering Committee	Number of members that attend meetings
	Usefulness of feedback received
Targeted Focus Groups	Number of participants that attend meetings
	Number of completed surveys received
	Usefulness of feedback received
Public Workshops	Number of attendees
	Number of comments received
	Types of comments received
	Participant Feedback on meeting process
Media Partnerships	Amount of media coverage
	Accurate information was delivered to citizens
	Accessibility of public to the variety of media outlets
On-line survey	Number of surveys completed
	Usefulness of input received
Fact Sheets	Number of fact sheets distributed
	Reader feedback
	Number of avenues used to reach the public
Meeting Notification & Flyers	Number of notifications/flyers distributed
	Timeliness of distribution
	Number of avenues used to reach the public

Based on plan performance, existing communication and outreach techniques will be modified and new techniques will be added to ensure plan success. In order to evaluate the effectiveness of the outreach efforts, a debriefing will be held with the study team after each meeting and input will be solicited from appropriate ARTS/Aiken County staff regarding the outreach effort outcomes. A brief summary of each activity will also be developed. An overview of the success of the public involvement program will be presented in the final public involvement report, in addition to supporting documentation.

Evaluation surveys will be provided at each of the public outreach activities to gather input regarding the quality of each activity (an example of the evaluation form is included in Appendix C). These surveys will ask participants to evaluate the Stakeholder and Public Involvement process and will ask for feedback on how to better reach the community. This is an internal tool used to measure the effectiveness of the public involvement activities and will be separate from the comment sheets which will ask for public input on the plan development.

### Study Schedule

PROJECT SCHEDULE												
ARTS Regional Bicycle and Pedestrian Plan Update												
ALTA/GREENWAYS TEAM												
Task	2011					2012						
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Project Management	•	•	•	•	•	•	•	•	•	•	•	•
Task 1 – Project Initiation	•											
Task 2 – Existing Conditions Inventory and Mapping												
Task 3 – Steering Committee Meetings	▲		▲		▲		▲		▲			
Task 4 - Public Involvement				▲				▲				
Task 5 – User Needs Assessment												
Task 6 – Recommended Bikeway, Walkway, and Trail Network												
Task 7 – Education, Encouragement, Enforcement and Evaluation												
Task 8 – Plan Implementation												
Task 9 – Draft and Final Bicycle and Pedestrian Plan Update												▲
• Staff Coordination Meeting (in-person or teleconference)												
▲ Steering Committee/Public Workshop												



### Project Steering Committee

Matt Aitken, Augusta-Richmond County Commissioner
Stacie Adkins, Recreation and Events Manager, Columbia County Recreation Department
Aiken Running Club Representative
Brett Ardrey or German Chavarria, Outspokin' Bicycles
Officer Rick Brown, Aiken Public Safety
Glen Bollinger, Columbia County Traffic Engineering
Joe Bowles, Augusta-Richmond County Commission
Brad Barnes, Aiken County Recreation.
Bob Brooks, City of NA, Park and Recreation
David Caver, Deputy Superintendent-Aiken County
Beverly Clyburn, Aiken City Council Member
Corporal C.M. Coats, South Carolina Highway Patrol, Emergency Traffic Management (ESF-16)
Steve Cassell, Richmond County Traffic Engineering
Martin D. (Gator) Cochran, Randonneurs USA (RUSA)
John Cock, Alta Planning
Kedrick Collins, GDOT
Deke Copenhaver, Mayor
Tom Dodds, SCDOT Pedestrian and Bicycle Engineer
Paul DeCamp, Augusta Richmond County Planning Commission
Randy DuTeau, Event Manager, Augusta Sports Council
Steve Exley, Road Construction Manager, Columbia County Road Construction Department
Rebecca Gallos, Aiken Mom's Club Representative, or Melissa Devine
Kathy B. Hamrick, Augusta State University
Ron Houk, Planning Manager, Richmond County Recreation, Parks, and Facilities
Gerald Jefferson, Transportation Planner, Aiken County
Drew Jordan, Andy Jordan's Bicycle Warehouse
Susanna King, Aiken Sidewalk Appreciation Society
David Kjellquist, Member Aiken Bicycle Club
Sandra Korbelik, Planner, City of Aiken
Christian Lentz, Special Projects Manager, CSRA Regional Commission
Juriah Lewis, APT
Tom Lex, Aiken Bicycle Club
Mrs. Toni Marshall
Honorable LaWana McKenzie, Aiken City Council
John T. Manley, South Carolina Department of Public Safety
Amanda McDougal, Healthy Augusta
Helen Minchew, Richmond County Board of Education
Nayna Mistry, Columbia County Planning and Engineering Division Manger, Development Services
Marya Moultrie, Transportation Planner, ARCPC
Jenette Murray, Aiken Vocational Rehab



### Project Steering Committee

Charles Nagle, Columbia County Superintendent of Schools
David Nance, President, Augusta Striders
Glenn Parker, Director, Aiken City Parks, Recreation and Tourism
Richard L. Pearce, City Manager, City of Aiken
Byron Rushing, Bicycle and Pedestrian Coordinator, GDOT
Matt Schelachter, Director, Columbia County Board of Commissioners, Construction & Maintenance
Jimmy Smith, GDOT
Stephen Strohming, Director Aiken County P & D
Dennis Stroud, Augusta Public Services, Maintenance
Jennifer Tinsley, LSCOG
Wheel Movement Representative

### Public Outreach Evaluation Form

Let Us Know What You Think!

We don't want to miss an opportunity to hear your opinion! Please take a few minutes to let us know any last thoughts, and how our public involvement efforts are working for you.

#### Public Involvement Process

How would you rate this event overall?

Very Good      Good      Average      Poor      Very Poor

Are the presentations and display boards informative and easy to understand? If not, please explain.

Has project staff been helpful in answering your questions? If not, please explain.

What did you like most about the event?

In what areas do you feel the event could have been improved?

What do you think this project is trying to accomplish? Do you agree?

Regarding what you have learned, how would you rate the following statements?

(1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree)

\_\_\_ I learned new information.

\_\_\_ I was given an opportunity to provide input.

How did you find out about today/tonight's meeting?

Please provide any additional comments on any aspect of the ARTS/Aiken County Bicycle and Pedestrian Plan. \_\_\_\_\_

Please provide your contact information if you would like to be added to the study mailing list.

Name:			
Address:	Street:		
	City:	State:	Zip:
Phone:		Email:	



## ARTS/Aiken County Bicycle and Pedestrian Plan

### Focus Group: Aiken County

Conducted at City of Aiken Municipal Building

October 3, 2011

#### Focus Group Participants:

- **Liz Lewis;** [liz4jesus@gmail.com](mailto:liz4jesus@gmail.com); (803) 642-9940 (Visually impaired, local chapter of National Federation of the Blind)
- **Renee Staggs;** [rstaggs@aikenydc.org](mailto:rstaggs@aikenydc.org); (803) 642-8832 (Tri Development Learning Center (involved in Eat Smart Move More) and many patrons of the center have disabilities that prevent them from driving)
- **John McMurtrie;** [jmcmurtrie@scvrd.state.sc.us](mailto:jmcmurtrie@scvrd.state.sc.us); (803) 641-7730 (Aiken Vocational Rehabilitation Center, and many patrons do not drive and rely on alternate transportation – where they live is where they have to work)
- **Glenn Parker;** [gparker@cityofaikensc.gov](mailto:gparker@cityofaikensc.gov); (803) 642-7632 (City of Aiken Parks, Recreation & Tourism, which includes senior commission)
- **LaWana McKenzie;** [lmckenz7@gmail.com](mailto:lmckenz7@gmail.com); (803) 593-5532 (Aiken County Council)
- **Will Williams;** [wwilliams@edpsc.org](mailto:wwilliams@edpsc.org); (803) 641-3300 (Director of Economic Development Partnership for Aiken County – supports existing industry and also tries to bring in new business (also personally a cyclist and triathlete))
- **Scott Sterling;** [ssterling@northaugusta.net](mailto:ssterling@northaugusta.net); (803) 441-4225 (City of North Augusta Planning Department)

#### Staff Attending:

- **Gerald Jefferson,** Aiken County
- **Stephen Strohming,** Aiken County
- **Sandra Korbelik,** City of Aiken
- **Mary Huffstetler,** MPH and Associates, Inc.
- **Jean Crowther,** Alta Planning + Design

#### **Let's talk about what we have in the region that is already good.**

- The changes in downtown Aiken have really improved wheelchair access
- The new signalized systems with a pedestrian countdown for crossing
- Increased amount of two foot shoulders along roads in the area is beneficial
- City of Aiken adopted a strategic plan that includes biking and walking language which has a long-term effect on mindset of local leadership
- Senior commission that has newly formed is helpful
- Greater awareness of health impacts for residents in the area

#### **Who would be the best partners for programs and initiatives?**

- Aiken ESMM was chartered 2 months ago – Aiken County is one of the fattest counties in one of the fattest states
- SCDHEC helped to initiate the effort
- Aiken Bicycle Club is very active in these types of efforts.

#### **Where are the ideal places to bike and walk, right now?**

- Hitchcock Woods – though it needs a bike trail surrounding it
- North Augusta Greenway
- Citizens' Park and Odell Weeks Park



- Harrison Caver Park has facilities that are well-used, though not necessarily ideal

### **What are the barriers to people biking and walking?**

- The Rudy Mason Parkway (SR 118) is not maintained which prevents people from wanting to use it.
- Also, if something were to happen along the Rudy Mason Parkway there is no way for others to see/respond.
- Banks Mill is a physical barrier to get to Citizens' Park which would connect to the grocery store (from Hopeland)
- Inconsistencies to where there is a sidewalk and where there isn't – sidewalk gaps
- Bike trails end also
- Being connected to what is already available would be an improvement

### **What are the key destinations that should be connected?**

- McKenzie would like a trail to follow Horse Creek from Aiken to Augusta
- Most populated area is Graniteville (whole Valley area) but not very well connected
- As a cyclist, SR 421 is where I feel most comfortable.
- Millbrook, Kennedy, South Aiken Schools (and other schools), North Aiken has a Safe Routes to School grant.
- Aiken Tech has no walkable neighborhoods around it – sidewalks extended to USC Aiken (but on wrong side of street)
- Certain schools are not allowed to walk or ride bikes to school – talk to bus transportation office
- Aiken Elementary on Pine Log Road serves a huge neighborhood and no safe access

- School siting is an issue
- Create a staging area to schools and industrial parks where people can get to that point, and then walk or bike from there
- Citizens Park is a transit stop for Best Friend Express – access to the fixed route bus stops is difficult
- Where each bus route starts, there are no sidewalks
- Stop at Odell Weeks Activity Center is not safe
- Need bus shelters – all that is present now is a sign on a telephone pole
- Best Friends Express has bicycle racks on all buses, APT does also
- North Augusta now requires bicycle parking in all new development – this has been in effect since 2008 for all commercial development
- Bicycle racks need to be installed at public buildings

### **What programs would be most helpful?**

- There is no way to identify bicyclists or pedestrians that are breaking the law (but a drivers license plate number is available for cars).
- Safety is a major concern
- Need to promote the economic development aspect of biking and walking
- There is a real concern in Aiken that the municipalities will go into neighborhoods and take pieces of their property and build a trail – protecting private property is an issue.
- Provide examples of neighborhoods that improved through new biking/walking infrastructure and the benefits that they gained from that.
- Use the North Augusta Greenway as an example – the biggest complaint now is that it isn't being built fast enough and that it is crowded.



- Educational workshop with elected officials discussing the benefits of biking and walking
- Start with the low-hanging fruit so that you do not set yourself up for failure
- Share the road signs.... Needs to be more clear exactly what share the road means.
- Whiskey Road South... open ditches, no sidewalks – have some money to add that, but public works department does not want to include buffer
- Belvedere Clearwater Road (back to I-520 is in LRTP)
- Clearwater needs better pedestrian crossing

### **What is the low-hanging fruit? What projects are those?**

- Within the cities
- Safe crossing across Whiskey Road
- Wayfinding signage
- Educating citizens about the places where it is safe to walk (with safe parking)
- Expand North Augusta Greenway paths out into the county... beyond the North Augusta city boundaries... need intergovernmental coordination to connect those dots
- Whiskey Road is dangerous for bicycling
- Target groups – people using alternative transportation and leisure bicyclists
- Graniteville Recreation Center – children crossing US 1 (near Greenville-Aiken Road) – possibly need a mid-block crossing there
- Cherokee Drive and US 1 – trying to get to retail businesses (motels, fast food restaurants, etc)
- UPS call center on Clifford – sidewalk from Whiskey to the corporate center
- Aiken Tech – shopping center is planned across the street (long-term, in future), but how would students access that center – how would they cross the street
- USC Aiken is going to build multi-million-dollar elevated bridge across University Parkway from Convocation Center to the campus
- Gregg Park across Trolley Line Road

### **Where are the challenging intersections or corridors?**

- Dixie Clay Road is very challenging, but beautiful/scenic. Trucks use the corridor and are driving too fast. (Major concern of McKenzie) Road is part of state bike route
- Five Notch Road
- SR 118 Bypass
- Pine Log Road
- Intersection of Hampton Ave NW and York Street in City of Aiken – 90% of pedestrians do not cross at either of the crosswalks.
- Shiloh Heights Area – come to town along SR 19



### **What are the preferred facility types?**

- Educational and philosophical difference in addressing bicyclists on the road
- Cyclists want to have the same right of way as vehicles but a separated area which creates a design issue
- The cycling clubs want to ride in the road
- Aiken wants to look at routes – however the facility falls out during design
- Need to not forget the “necessity” bicyclists and walkers

### **What are the maintenance needs?**

- Whiskey Road sidewalk is narrow
- Cobblestones downtown are not very wheelchair friendly
- Mailboxes hang over sidewalks on Pine Log Road

### **Final Thoughts – Important Focus Points of the Plan**

- Philosophically we want to move in this direction but how do we get to implementation on the private side – need to incorporate into regulations
- Safety is the selling point
- Newspaper is the best way to get the word out
- Capitalize on the areas that are already easy and nice to bike
- Courtesy among drivers, bicyclists and pedestrians have equal value; maybe hold a summit between each of these groups in the communities that would focus on increasing awareness/respect for each other
- Bike paths
- All planning for new facilities should address walking and biking
- Encourage people to use alternative transportation

- Combined City and County funding source for the long-term plan
- Connection between cities of North Augusta and Aiken
- Connectivity to the great “pockets” available in the region
- Route between Aiken up to Edgefield – Northwest connectivity (create a triangle)
- Implement it! Don't put it on a shelf!
- North Augusta Greenway to Augusta Canal – connecting those is a positive regional resource.
- Be mindful of the fact that in the more economically, depressed neighborhoods, the only way for some people to get from Point A to point B is to walk or bike. Therefore, using bikes for recreational purposes may not be a higher priority with most people in those neighborhoods.



*ARTS/Aiken County Bicycle and Pedestrian Plan  
Public Workshop – City of Aiken Municipal Building  
October 3, 2011*

## **Meeting Agenda**

### **Welcome/Introductions (Gerald Jefferson)**

- Welcome
- Introduce/recognize elected officials (Mayor Fred Cavanaugh welcomed the meeting participants and spoke several minutes regarding his support for creating a friendly community for biking and walking. He thanked everyone for their interest and support and encouraged them to remain involved in the planning and implementation process.)
- Introduce local staff
- Introduce consultant team
- Describe agenda

### **Presentation (John Cock, Jean Crowther, Mary Huffstetler)**

- National Bike-friendly, Walk-friendly Trends
- The 6 E's: intro and local accomplishments
- Existing Conditions – recognize recent local tragedies
- Goals and Objectives Discussion
- Public Outreach efforts and opportunities

### **Break-out Groups: 4 stations (John Cock, Jean Crowther, Martin Guttenplan, and Mary Huffstetler)**

- Bicycling Infrastructure – identification of areas of need and opportunity, gaps in network
- Bicycling Education, Encouragement, Enforcement, Evaluation - issues, opportunities, priorities
- Walking Infrastructure – identification of areas of need and opportunity, gaps in network
- Walking Education, Encouragement, Enforcement, Evaluation - issues, opportunities, priorities

### **Break-out Groups Report Back (John Cock)**

### **General Questions and Closing Comments (John Cock)**

- Plan schedule
- Next steps
- Ways to get involved

### **Meeting Summary:**

About two dozen citizens attended the ARTS/Aiken County Bicycle and Pedestrian



Plan Public Workshop on October 3<sup>rd</sup> at the City of Aiken Municipal Building. By a show of hands, the audience showed itself to be primarily City of Aiken residents. Three attendees indicated they were residents of Aiken County. Most attendees expressed interest in both bicycling and walking infrastructure and about six persons identified themselves as members of the Aiken Bicycle Club.

Workshop participants marked locations for infrastructure improvements on the maps provided. In addition, the following comments represent the preferences and priorities of local residents who attended the meeting regarding bicycling and walking in the Aiken County community.

## **Bicycle Infrastructure**

- Avoid impacting emergency vehicles
- Bicycle parking is needed
- Shoulders should be provided on all rural roads
- Rudy Mason Parkway multi-use path is not well maintained
- In the past, a survey of senior residents showed that bike paths are preferred for the benefit of motorist comfort
- Recreational trails are preferred because they are more scenic (“pretty”) than walk/bikeways along roads
- Abandoned rails should be used to create rail-trails – there is a 4-mile stretch of rail available outside of the City of Aiken
- Motorist speed limits should be lowered
- The new road at the Cracker Barrel should be bicycle and pedestrian friendly
- Infrastructure convenient for running errands and accessing shopping areas is important.
- Actuated signals in Aiken will trigger with bicyclists if the cyclist positions in the center of the lane; better signal actuation should be provided
- Shoulders on rural roads would provide adequate facilities for bicycling club members
- Protected bikeways close to town would provide adequate facilities for families and others
- Connect equestrian trails and expand access

## **Walking Infrastructure**

- More ramps are needed throughout the city for wheelchairs and mobility carts
- Handrails along sidewalks and steps would assist senior citizens
- Signage is needed to warn that the sidewalk ends on the 13th street bridge

## **Bicycle Programs**

- Targeted enforcement is needed to ensure both motorists and bicyclists understand the rights and responsibilities of the road
- Educate law enforcement officers in regards to the law and reporting bicycle and pedestrian collisions (partner with Bikelaw.com)



- Partner with the Chamber of Commerce – the Chamber is supportive of bicycling and walking and could sponsor a bike ride, an encouragement program, or help to secure private sector sponsors of bikeways and trails
- Bicyclists should wear reflective clothing, use lights, and ride on the right side of the road
- Safety education for adult bicyclists is needed.
- Neighborhood outreach would be beneficial to explain the benefits of walking and biking for residential communities
- Retirees wanting to live active lifestyles could be reached through the hospital
- Partner with public safety officers to teach safe bicycling practices (through on-bike outreach, a pamphlet, brochure, or other means)
- Ensure proper maintenance of roadside landscaping to allow for sufficient motorist sight lines
- Ensure that signs are visible
- Include bicycle safety as a part of school curriculum, or as a school assembly
- Promote Safe Routes to School
- Partner with employers to provide bike safety materials to their employees (regarding commuting to work safely and how to identify bike-friendly routes)
- Create an online tool for planning bicycling and walking routes

## **Walking Programs**

- Walking infrastructure (sidewalks) is needed outside of downtown
- Public transportation needs to be improved to make walking a more viable option
- Downtown Merchants Association and merchants in other parts of town could be tapped as partners
- Speed of traffic in downtown should be lowered or better controlled
- Signals outside of downtown are not timed to allow pedestrians to cross safely
- Signs could be placed in crosswalks reminding drivers to slow down and respect pedestrians
- Homeowners' Associations – creating direct access through walking (Riverbluff to East Gate)
- Suzanne King hosts a webpage for a walking group in Aiken
- The “Mom’s” groups in Aiken could be a partner for walking programs
- Real time speeds (speed trailers) could help to slow speeds
- Pedestrians should be given blinking lights
- Emphasize economic development and target merchants and the Chamber of Commerce as partners
- Sidewalks should be required (More handrails and ramps at sidewalks throughout the city. In other words, more ADA compliant.)
- Retirees are a large, growing segment of the population; Tie retiree community to walking programs and heart health
- Partner with the senior citizens/aging council (Lynda Bassham at the City of Aiken)



- Tie walking programs to health and wellness – currently you have to drive to Odell Weeks to walk/exercise
- Change the focus from nutrition/diet to exercise/active living
- Connect the YMCA to the University and to residential neighborhoods
- Ensure roadside landscaping is maintained to ensure driver visibility
- Pedestrians and bicyclists should wear visible, bright clothing

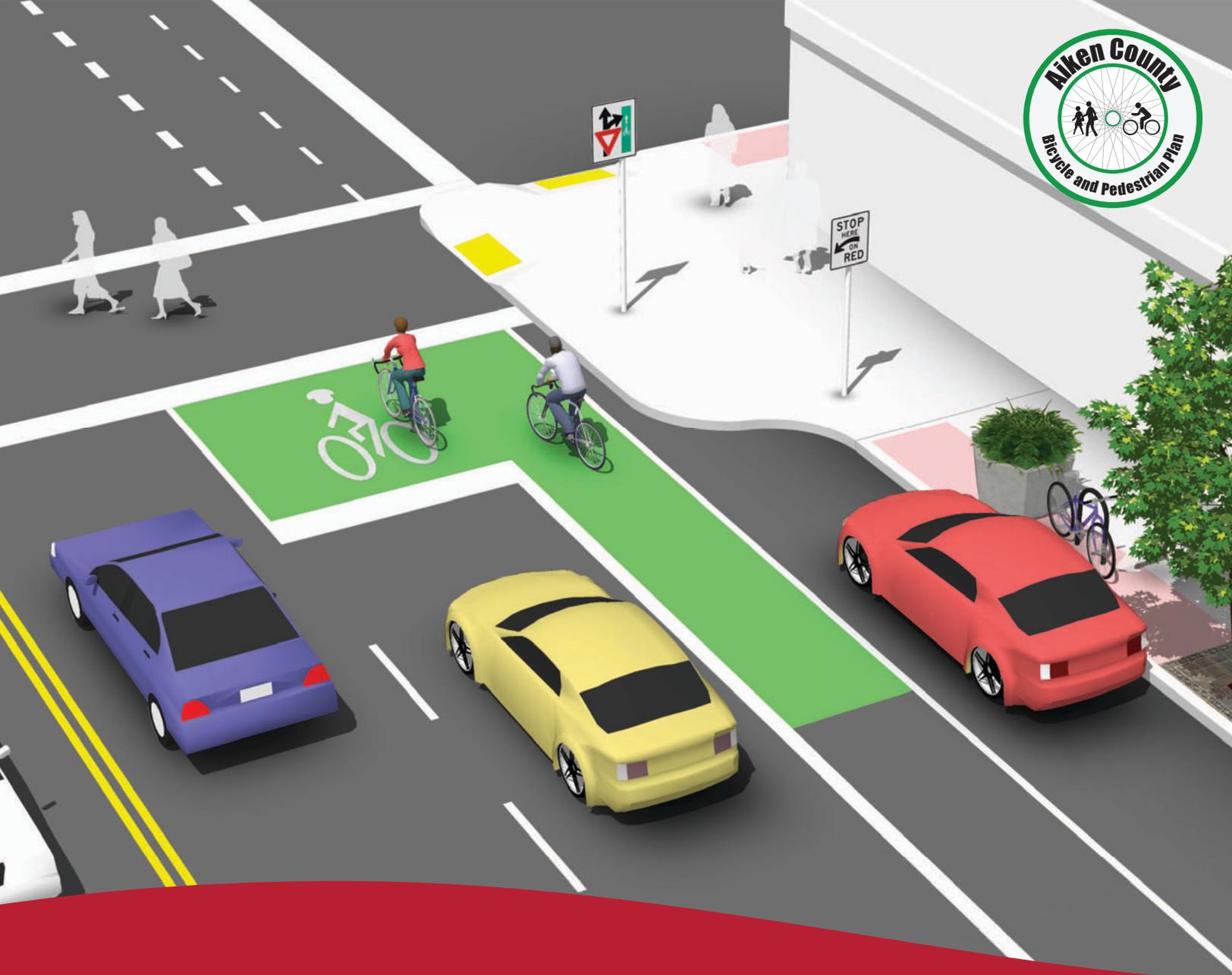
### **Comment Forms:**

- The silent majority is a barrier to walking – i.e. the “good ole boys.” They tell you that bicycling and walking access has never been an issue before... until the “out-of-towners” moved in.
- Sidewalks are needed south of the Mitchell Shopping Center
- The Odell Weeks Recreation Center would be a partner/lead agency for walking programs
- Retirees that move to the area need to maintain good health and walking is a free and easy way to do that
- Selecting from a list of potential ideas presented by the study team, participants expressed support for the implementation of the following programs:
  - o Media campaign to educate motorists, bicyclists, and pedestrians (if required for drivers license) (2 responses)
  - o Senior citizens walking programs
  - o Safety campaign encouraging pedestrians to wear bright clothing
  - o Local police enforcement programs targeting motorists
  - o Media campaign encouraging active lifestyle
  - o Safe Route to Schools (2 responses)
  - o Safe Routes to Transit
  - o Walking School Bus program



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# Aiken County Bicycle and Pedestrian Plan

## Appendix E: Design Guidelines

February 2012

PREPARED BY:  
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DRAFT February 07, 2012



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## Introduction

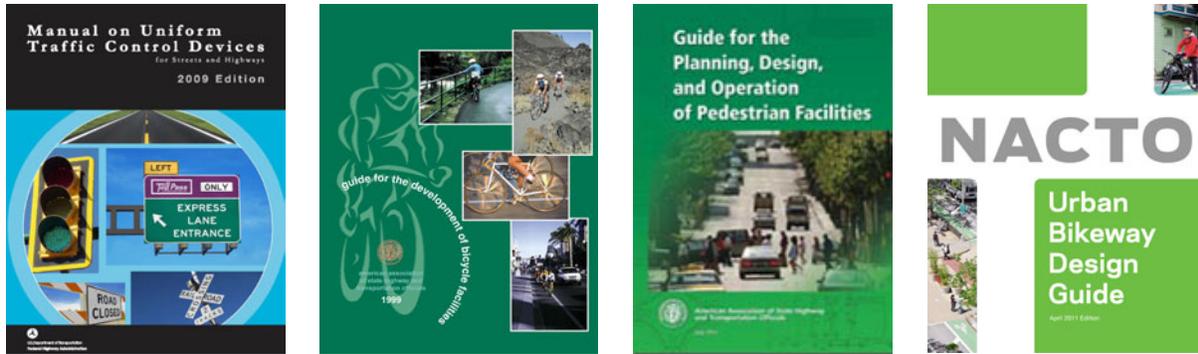
This technical handbook is intended to assist Aiken County in the selection and design of pedestrian and bicycle facilities. The following chapters pull together best practices by facility type from public agencies and municipalities nationwide. Within the design chapters, treatments are covered within a single sheet tabular format relaying important design information and discussion, example photos, schematics (if applicable), and existing summary guidance from current or upcoming draft standards. Existing standards are referenced throughout and should be the first source of information when seeking to implement any of the treatments featured here.

## Guiding Principles

The following are guiding principles for these bicycle and pedestrian design guidelines:

- **The walking and bicycling environment should be safe.** All bicycling and walking routes should be physically safe and perceived as safe by all users. Safe means minimal conflicts with external factors, such as noise, vehicular traffic and protruding architectural elements. Safe also means routes are clear and well marked with appropriate pavement markings and directional signage.
- **The pedestrian and bicycle network should be accessible.** Sidewalks, Shared-use paths, bike routes and crosswalks should permit the mobility of residents of all ages and abilities. The pedestrian and bicycle network should employ principles of universal design. Bicyclists have a range of skill levels, and facilities should be designed with a goal of providing for inexperienced/recreational bicyclists (especially children and seniors) to the greatest extent possible.
- **Pedestrian and bicycle network improvements should be economical.** Bicycle improvements should achieve the maximum benefit for their cost, including initial cost and maintenance cost, as well as a reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce and connect with adjacent private improvements.
- **The pedestrian and bicycle network should connect to places people want to go.** The pedestrian and bicycle network should provide continuous direct routes and convenient connections between destinations such as homes, schools, shopping areas, public services, recreational opportunities and transit. A complete network of on-street bicycling facilities should connect seamlessly to existing and proposed multi-use trails to complete recreational and commuting routes.
- **The walking and bicycling environment should be clear and easy to use.** **Sidewalks** Shared-use paths and crossings should allow all people to easily find a direct route to a destination with minimal delays, regardless of whether these persons have mobility, sensory, or cognitive disability impairments. All roads are legal for the use of bicyclists (except those roads designated as limited access facilities, which prohibit bicyclists). This means that most streets are bicycle facilities and should be designed, marked and maintained accordingly.
- **The walking and bicycling environment should be attractive enhance community livability.** Good design should integrate with and support the development of complementary uses and should encourage preservation and construction of art, landscaping and other items that add value to communities. These components might include open spaces such as plazas, courtyards and squares, and amenities like street furniture, banners, art, plantings and special paving. These along with historical elements and cultural references, should promote a sense of place. Public activities should be encouraged and the municipal code should permit commercial activities such as dining, vending and advertising when they do not interfere with safety and accessibility.
- **Design guidelines are flexible and should be applied using professional judgment.** This document references specific national guidelines for bicycle and pedestrian facility design, as well as a number of design treatments not specifically covered under current guidelines. Statutory and regulatory guidance may change. For this reason, the guidance and recommendations in this document function to complement other resources considered during a design process, and in all cases sound engineering judgment should be used.

## National Standards



The Federal Highway Administration’s **Manual of Uniform Traffic Control Devices** (MUTCD) defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.

To further clarify the MUTCD, the FHWA created a table of contemporary bicycle facilities that lists various bicycle-related signs, markings, signals, and other treatments and identifies their official status (e.g., can be implemented, currently experimental). See **Bicycle Facilities and the Manual on Uniform Traffic Control Devices**.<sup>1</sup>

Bikeway treatments not explicitly covered by the MUTCD are often subject to experiments, interpretations and official rulings by the FHWA. The **MUTCD Official Rulings** is a resource that allows website visitors to obtain information these supplementary materials. Copies of various documents (such as incoming request letters, response letters from the FHWA, progress reports, and final reports) are available on this website.<sup>2</sup>

American Association of State Highway and Transportation Officials (AASHTO) **Guide for the Development of Bicycle Facilities** last updated in 1999 provides detailed guidance on dimensions, use, and layout of specific facilities.

The standards and guidelines presented by AASHTO provide basic information about the design of bicycle and pedestrian facilities, such as minimum sidewalk widths, bicycle lane dimensions, more detailed striping requirements and recommended signage and pavement markings. An update to this guide is in progress, and is likely to provide revised guidance on standard facilities and new information on more contemporary bikeway designs.

Offering similar guidance for pedestrian design, the 2004 AASHTO **Guide for the Planning, Design and Operation of Pedestrian Facilities** provides comprehensive guidance on planning and designing for people on foot.

The National Association of City Transportation Officials’ (NACTO) 2011 **Urban Bikeway Design Guide**<sup>3</sup> is the newest publication of nationally recognized bikeway design standards, and offers guidance on the current state of the practice designs. The NACTO Urban Bikeway Design Guide is based on current practices in the best cycling cities in the world. The intent of the guide is to offer substantive guidance for cities seeking to improve bicycle transportation in places where competing demands for the use of the right of way present unique challenges. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle and pedestrian facility project. The United States Access Board’s proposed **Public Rights-of-Way Accessibility Guidelines**<sup>4</sup> (PROWAG) and **ADA Accessibility Guidelines**<sup>5</sup> (ADAAG) contain standards and guidance for the construction of accessible facilities. This includes requirements for sidewalk curb ramps, slope requirements, and pedestrian railings along stairs.

Some of these treatments are not directly referenced in the current versions of the AASHTO Guide to Bikeway Facilities or the Manual on Uniform Traffic Control Devices (MUTCD), although many of the elements of these treatments are found within these documents. In all cases, engineering judgment is recommended to ensure that the application makes sense for the context of each treatment, given the many complexities of urban streets.

1 *Bicycle Facilities and the Manual on Uniform Traffic Control Devices*. (2011). FHWA. [http://www.fhwa.dot.gov/environment/bikeped/mutcd\\_bike.htm](http://www.fhwa.dot.gov/environment/bikeped/mutcd_bike.htm)

2 *MUTCD Official Rulings*. FHWA. <http://mutcd.fhwa.dot.gov/orsearch.asp>

3 <http://nacto.org/cities-for-cycling/design-guide/>

4 <http://www.access-board.gov/prowac/>

5 <http://www.access-board.gov/adaag/html/adaag.htm>

## Local Standards

The South Carolina Department of Transportation (SCDOT) offers additional local guidance regarding the design of non-motorized transportation facilities. The primary source of state level guidance is the **SCDOT Highway Design Manual**, which provides department criteria and practices for roadway construction. This guidance includes information on sidewalks and on-street bike lanes. Engineering level guidance can be found in the **SCDOT Standard Drawings**. These documents contain typical striping and construction plans for bike lanes and curb ramps.

Additional guidance can be found in SCDOT Engineering Directive Memorandums (EDM) covering specific topics. The EDMs most relevant to the content in this guide are listed below:

**SCDOT EDM 22: Considerations for Bicycle Facilities** addresses shared roadways and bike lanes/paved shoulders and provides guidance on design requirements for new projects. In addition, typical sections for both the design of bicycle facilities on new projects and restriping of existing five-lane sections to accommodate bicycle facilities are included. Other design considerations for bicycle accommodations are also discussed.

**SCDOT EDM 53: Installation of Rumble Strips** provides guidance on the installation of rumble strips on SCDOT's state highway system. They are used to alert drivers of lane departures by providing an audible and vibratory warning. On bicycle touring routes with a high percentage of road departure crashes, rumble strips may be considered for use. In these cases the Traffic Safety Office shall coordinate with the Office of the Pedestrian and Bicycle Engineer and applicable shareholders for input on designated bike routes where paved shoulders are less than 4 feet in width.

## Additional References

In addition to the previously described national standards, the basic bicycle and pedestrian design principals outlined in this chapter are derived from the documents listed below. Many of these documents are available online and provide a wealth of public information and resources.

### Additional U.S. Federal Guidelines

- American Association of State Highway and Transportation Officials. (2001). *AASHTO Policy on Geometric Design of Streets and Highways*. Washington, DC. [www.transportation.org](http://www.transportation.org)
- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines (PROWAG)*. Washington, D.C. <http://www.access-board.gov/PROWAG/alterations/guide.htm>
- United States Access Board. (2002). *Accessibility Guidelines for Buildings and Facilities*. Washington, D.C. <http://www.access-board.gov/adaag/html/adaag.htm>

### Best Practice Documents

- Association of Pedestrian and Bicycle Professionals (APBP). (2010). *Bicycle Parking Design Guidelines, 2nd Edition*.
- City of Portland Bureau of Transportation. (2010). *Portland Bicycle Master Plan for 2030*. <http://www.portlandonline.com/transportation/index.cfm?c=44597>
- Federal Highway Administration. (2005). *BIKESAFE: Bicycle Countermeasure Selection System*. <http://www.bicyclinginfo.org/bikesafe/index.cfm>
- Federal Highway Administration. (2005). *PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System*. <http://www.walkinginfo.org/pedsafe/>
- Federal Highway Administration. (2005). *Report HRT-04-100, Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*. <http://www.tfhr.gov/safety/pubs/04100/>
- Federal Highway Administration. (2001). *Designing Sidewalks and Trails for Access*. <http://www.fhwa.dot.gov/environment/sidewalk2/contents.htm>
- Oregon Department of Transportation. (1995). *Oregon Bicycle and Pedestrian Plan*. <http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml>
- Rosales, Jennifer. (2006). *Road Diet Handbook: Setting Trends for Livable Streets*.

## Glossary

The following list is comprised of common terms, acronyms and concepts used in bicycle transportation planning, design and operation.

**AASHTO** – American Association of State Highway and Transportation Officials

**Accessible route** – in the ADA, a continuous route on private property that is accessible to persons with disabilities. There must be at least one accessible route linking the public sidewalk to each accessible building.

**Actuated signal** – a signal where the length of the phases for different traffic movements is adjusted for demand by a signal controller using information from detectors.

**ADA** – Americans with Disabilities Act of 1990; broad legislation mandating provision of access to employment, services, and the built environment to those with disabilities.

**At-grade crossing** – A junction where bicycle path or sidewalk users cross a roadway over the same surface as motor vehicle traffic, as opposed to a grade-separated crossing where users cross over or under the roadway using a bridge or tunnel.

**Audible pedestrian signals** – pedestrian signal indicators that provide an audible signal to assist visually impaired pedestrians in crossing the street.

**BAFUL** - Bicycles Allowed Full Use of Lane

**Bicycle boulevard** - See neighborhood greenway. Streets designed to give bicyclists priority by limiting or prohibiting motor vehicle through traffic by using barriers or other design elements, in order to enhance bicycle safety and enjoyment.

**Bicycle facilities** - A general term used to describe all types of bicycle-related infrastructure including linear bikeways and other provisions to accommodate or encourage bicycling, including bike racks and lockers, bikeways, and showers at employment destinations.

**Bike lane** - A striped lane for one-way bike travel on a street or highway.

**Bicycle level of service (BLOS)** – Indication of bicyclist comfort level for specific roadway geometries and traffic conditions. Roadways with a better (lower) score are more attractive (and usually safer) for bicyclists.

**Bike path** – A paved pathway separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent alignment. Bike paths may be used by pedestrians, bicyclists, skaters, wheelchair users, runners, and other non-motorized users.

**Bike route** - A shared roadway specifically identified for use by bicyclists, providing a superior route based on traffic volumes and speeds, street width, directness, and/or cross-street priority; designated by signs only.

**Bikeway** – A generic term for any road, street, path or way that in some manner is specifically designed for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

**Bollard** – Post used to restrict motor vehicle use of bicycle paths.

**Clearance interval** – the length of time that the DON'T WALK indication is flashing on a pedestrian signal indication. **Clearance, lateral** – Width required for safe passage of bicycle path users as measured on a horizontal plane.

**Clearance, vertical** – Height required for safe passage of bicycle path users as measured on a vertical plane.

**Crosswalk** – any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing. Where there are no pavement markings, there is a crosswalk at each leg of every intersection, defined by law as the prolongation or connection of the lateral lines of the sidewalks.

**Curb extension** – an area where the sidewalk and curb are extended into the parking lane, usually in order to shorten pedestrian crossing distance. Also called “bulb-out” or “curb bulb.”

**Curb ramp** – a combined ramp and landing to accomplish a change of level at a curb in order to provide access to pedestrians using wheelchairs.

**Directional signs** – Signs typically placed at road and bicycle path junctions (decision points) to guide bicycle path users toward a destination or experience.

**Geometry** - The vertical and horizontal characteristics of a transportation facility, typically defined in terms of gradient, degrees,

and super elevation.

**Grade separation** - Vertical separation of travelways through use of a bridge or tunnel so that traffic conflicts are minimized.

**Grade-separated crossing** – A bridge or tunnel allowing bicycle path users to cross a major roadway without conflict.

**HCM** - Highway Capacity Manual

**HDM** – Highway Design Manual

**Level of service (LOS)** - Term for the measurement of how well traffic “flows” on a roadway system or how well an intersection functions.

**Loop detector** - A device placed under the pavement at intersections to detect a vehicle or bicycle and subsequently trigger a signal to turn green.

**Medians** – Area in the center of the roadway that separates directional traffic; may provide a striped crossing and halfway point for pedestrians (also can be effective traffic calming design). Medians may be level with the surrounding roadway or “raised” using curb and gutter. Medians may include landscaping, concrete, paint/stripping or any combination thereof.

**Multi-use path** – A trail that permits more than one type of user, such as a trail designated for use by both pedestrians and bicyclists.

**MUTCD** – Federal Manual of Uniform Traffic Control Devices

**Neighborhood Greenways** – Streets designed to give bicyclists priority by limiting or prohibiting motor vehicle through traffic by using barriers or other design elements, in order to enhance bicycle safety and enjoyment. See bicycle boulevard.

**Paved shoulder** – The edge of the roadway beyond the outer stripe edge that provides a place for bicyclists; functions as this only when it is wide enough (4-5 feet), free of debris, and does not contain rumble strips or other obstructions.

**Pavement marking** – An assortment of markings on the surface of the pavement that provide directions to motorists and other road users as to the proper use of the road (the “Manual on Uniform Traffic Control Devices” determines these standard markings).

**Pedestrian** – a person afoot; a person operating a pushcart; a person riding on, or pulling a coaster wagon, sled, scooter, tricycle, bicycle with wheels less than 14 inches in diameter, or a similar conveyance, or on roller skates, skateboard, wheelchair or a baby in a carriage.

**Pedestrian signal indication** – the lighted WALK/DON’T WALK (or walking man/hand) signal that indicates the pedestrian phase.

**Refuge islands** – Corner raised triangles or medians, used by pedestrians and bicyclists at intersections or mid-block crossings for assistance with crossing wide streets, especially where motor vehicle right turn lanes exist.

**Right-of-way (ROW)** - The right of one vehicle, bicycle or pedestrian to proceed in a lawful manner in preference to another vehicle, bicycle, or pedestrian. Also the strip of property in which a transportation facility or other facility is built.

**Shared lane marking (SLM) or Sharrow** – Shared Lane Pavement Marking

**Shared roadway** - A roadway where bicyclists and motor vehicles share the same space with no striped bike lane. Any roadway where bicycles are not prohibited by law (i.e. interstate highways or freeways) is a shared roadway.

**Sidewalk** – an improved facility intended to provide for pedestrian movement; usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete.

**Sight distance** - The distance a person can see along an unobstructed line of sight.

**Traffic calming** - Changes in street alignment, installation of barrier, and other physical measures to reduce traffic speeds and/or cut-through traffic volume in the interest of street safety, livability, and other public purposes.

**Traffic control devices** - Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

**Traffic volume** - The number of vehicles that pass a specific point in a specific amount of time (hour, day, year).

**Wide curb lane** – A 14 foot (or greater) wide outside lane adjacent to the curb of a roadway that provides space for bicyclists to ride next to (to the right of) motor vehicles. Also referred to as a “wide outside lane”. If adjacent to parking, 22 foot wide pavement may also be considered a wide curb lane.

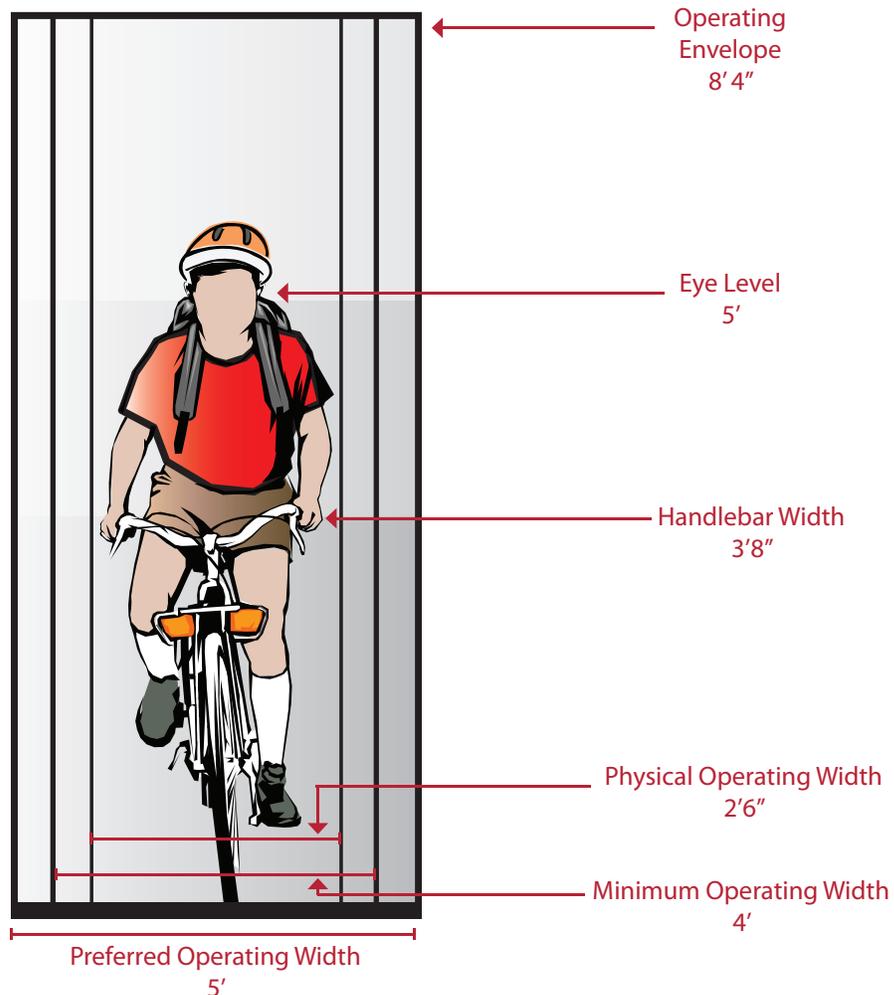
## Design Needs of Bicyclists

The purpose of this section is to provide the facility designer with an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide the highest quality facilities and minimize risk to their users.

### Bicycle as a Design Vehicle

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

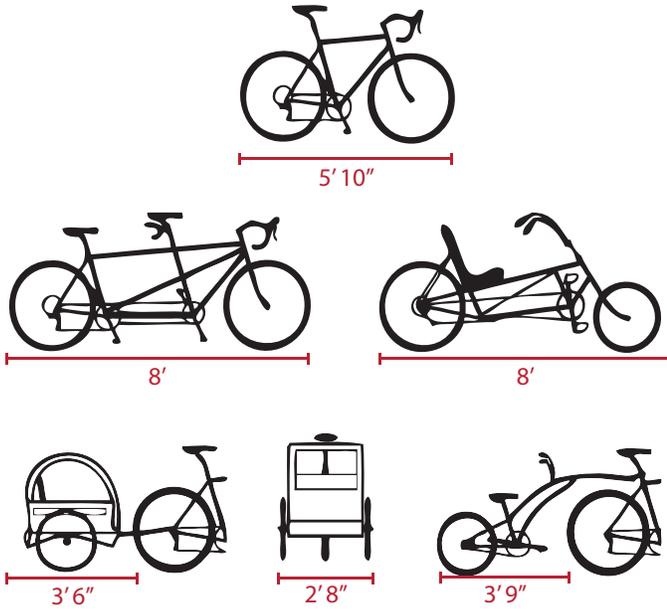
Figure 2-1 illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. The bicyclist requires clear space to operate within a facility; this is why the minimum operating width is greater than the physical dimensions of the bicyclist. Bicyclists prefer five feet or more operating width, although four feet is minimally acceptable.



**Figure 2-1 Standard Bicycle Rider Dimensions**

Source: AASHTO Guide for the Development of Bicycle Facilities, 3rd Edition

In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories. Figure 2-2 and Table 2-1 summarize the typical dimensions for bicycle types.



**Figure 2-2 Bicycle as Design Vehicle - Typical Dimensions**

Source: AASHTO Guide for the Development of Bicycle Facilities, 3rd Edition \*AASHTO does not provide typical dimensions for tricycles.

## Design Speed Expectations

The expected speed that different types of bicyclists can maintain under various conditions also influences the design of facilities such as shared use paths. Table 2-2 provides typical bicyclist speeds for a variety of conditions.

The skill level of the bicyclist also provides dramatic variance in expected speeds and behavior. There are several systems of classification currently used within the bicycle planning and engineering professions. These classifications can be helpful in understanding the characteristics and infrastructure preferences of different bicyclists.

It should be noted that these classifications may change in type or proportion over time as infrastructure and culture evolve. Often times an instructional course can change a less confident bicyclist into one that can comfortably and safely share the roadway with vehicular traffic. Bicycle infrastructure should be planned and designed to accommodate as many user types as possible with the consideration of separate or parallel facilities to provide a comfortable experience for the greatest number of bicyclists.

**Table 2-1 Bicycle as Design Vehicle - Typical Dimensions**

Bicycle Type	Feature	Typical Dimensions
<b>Upright Adult Bicyclist</b>	Physical width	2 ft 6 in
	Operating width (Minimum)	4 ft
	Operating width (Preferred)	5 ft
	Physical length	5 ft 10 in
	Physical height of handlebars	3 ft 8 in
	Operating height	8 ft 4 in
	Eye height	5 ft
	Vertical clearance to obstructions (tunnel height, lighting, etc)	10 ft
	Approximate center of gravity	2 ft 9 in - 3 ft 4 in
	<b>Recumbent Bicyclist</b>	Physical length
	Eye height	3 ft 10 in
<b>Tandem Bicyclist</b>	Physical length	8 ft
<b>Bicyclist with child trailer</b>	Physical length	10 ft
	Physical width	2 ft 6 in

**Table 2-2 Bicycle as Design Vehicle - Design Speed Expectations**

Bicycle Type	Feature	Typical Speed
<b>Upright Adult Bicyclist</b>	Paved level surfacing	15 mph
	Crossing Intersections	10 mph
	Downhill	30 mph
	Uphill	5-12 mph
<b>Recumbent Bicyclist</b>	Paved level surfacing	18 mph

\*Tandem bicycles and bicyclists with trailers have typical speeds equal to or less than upright adult bicyclists.

## Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of bicyclists.

The bicycle planning and engineering professions currently use several systems to classify the population, which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The most conventional framework classifies the “design cyclist” as *Advanced, Basic, or Child*<sup>1</sup>. A more detailed understanding of the US population as a whole is illustrated in Figure 2-3. Developed by planners in the City of Portland, OR<sup>2</sup> and supported by data collected nationally since 2005, this classification provides the following alternative categories to address ‘varying attitudes’ towards bicycling in the US:

- **Strong and Fearless** (Very low percentage of population) – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections -- even if shared with vehicles -- over separate bicycle facilities such as greenways.
- **Enthusied and Confident** (5-10% of population) -This user group encompasses ‘intermediate’ bicyclists who are fairly comfortable riding on all types of bicycle facilities but usually choose low traffic streets or greenways when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.
- **Interested but Concerned** (approximately 60% of population) – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or greenways under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These bicyclists may become “Enthusied & Confident” with encouragement, education and experience.
- **No Way, No How** (approximately 30% of population) – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.

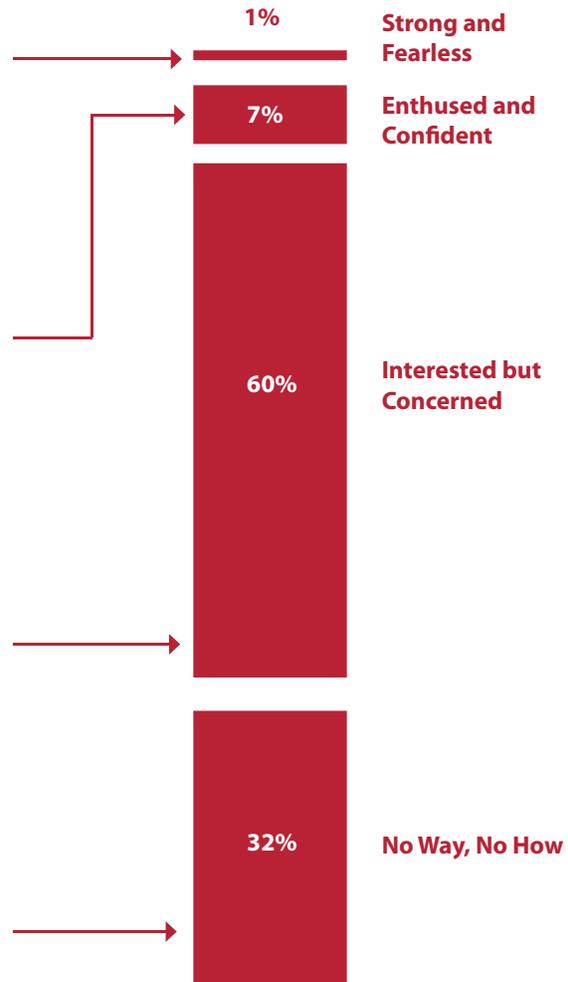


Figure 2-3 Typical distribution of bicyclist types

1 *Selecting Roadway Design Treatments to Accommodate Bicycles. (1994). Publication No. FHWA-RD-92-073*  
 2 *Four Types of Cyclists. (2009). Roger Geller, City of Portland Bureau of Transportation. <http://www.portlandonline.com/transportation/index.cfm?&a=237507>*

## Planned Bikeway Facilities

These design guidelines describe a wide range of bicycle facilities, including some that are not specifically called for in the Aiken County Bicycle and Pedestrian Plan. The facilities listed below are included in the Plan and are the foundation of the bicycle network. Follow the references below for full guidance on each treatment.

**Bike routes** without any specific bicycle facilities are **shared roadways** (page 31) where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. This facility provides continuity with other bicycle facilities (usually bike lanes), or designates preferred routes through high-demand corridors.



**Shared lane markings** may be used to enhance bike routes by providing clear direction to motorists and bicyclists about riding position and route.



**Paved shoulders**, striped bike lanes and buffered bike lanes are all types of **separated bikeways** (page 43). Separated Bikeways use signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists.



**Greenways** (page 79) are facilities separated from roadways for use by bicyclists and pedestrians. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills. Greenways are frequently located in railroad or utility corridors.



**Multi-use paths along roadways** (page 86) offer separation from parallel motor vehicle traffic. These facilities are most appropriate along roads with infrequent intersections or driveways.



## Design Needs of Pedestrians

### Types of Pedestrians

Similar to bicyclists, pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians’ physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults walk. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing. Table 3-1 summarizes common pedestrian characteristics for various age groups.

The MUTCD recommends a normal walking speed of three and a half feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to three feet per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

**Table 3-1 Pedestrian Characteristics by Age**

Age	Characteristics
<b>0-4</b>	Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception
<b>5-8</b>	Increasing independence, but still requires supervision Poor depth perception
<b>9-13</b>	Susceptible to “dart out” intersection dash Poor judgment Sense of invulnerability
<b>14-18</b>	Improved awareness of traffic environment Poor judgment
<b>19-40</b>	Active, fully aware of traffic environment
<b>41-65</b>	Slowing of reflexes
<b>65+</b>	Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind

Source: AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (July 2004), Exhibit 2-1.

Table 3 2 summarizes common physical and cognitive impairments, how they affect personal mobility, and recommendations for improved pedestrian-friendly design.

**Table 3-2 Disabled Pedestrian Design Considerations**

<b>Impairment</b>	<b>Effect on Mobility</b>	<b>Design Solution</b>
<b>Wheelchair and Scooter Users</b>	Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
	Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes to less than two percent.
	Require wider path of travel.	Sufficient width and maneuvering space
<b>Walking Aid Users</b>	Difficulty negotiating steep grades and cross slopes; decreased stability.	Smooth, non-slippery travel surface.
	Slower walking speed and reduced endurance; reduced ability to react.	Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture.
<b>Hearing Impairment</b>	Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, right-turn slip lanes) and complex intersections.	Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings.
<b>Vision Impairment</b>	Limited perception of path ahead and obstacles	Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting.
	Reliance on memory	
	Reliance on non-visual indicators (e.g. sound and texture)	
<b>Cognitive Impairment</b>	Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information.	Signs with pictures, universal symbols, and colors, rather than text.

## 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.

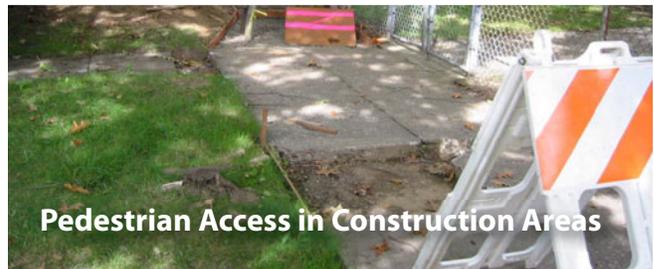
**Drainage:** Sidewalks should be well graded to minimize standing water.

**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.

### This Section Includes:

- Zones in the Sidewalk Corridor
- Sidewalk Widths
- Sidewalk Obstructions and Driveway Ramps
- Pedestrian Access in Construction Areas

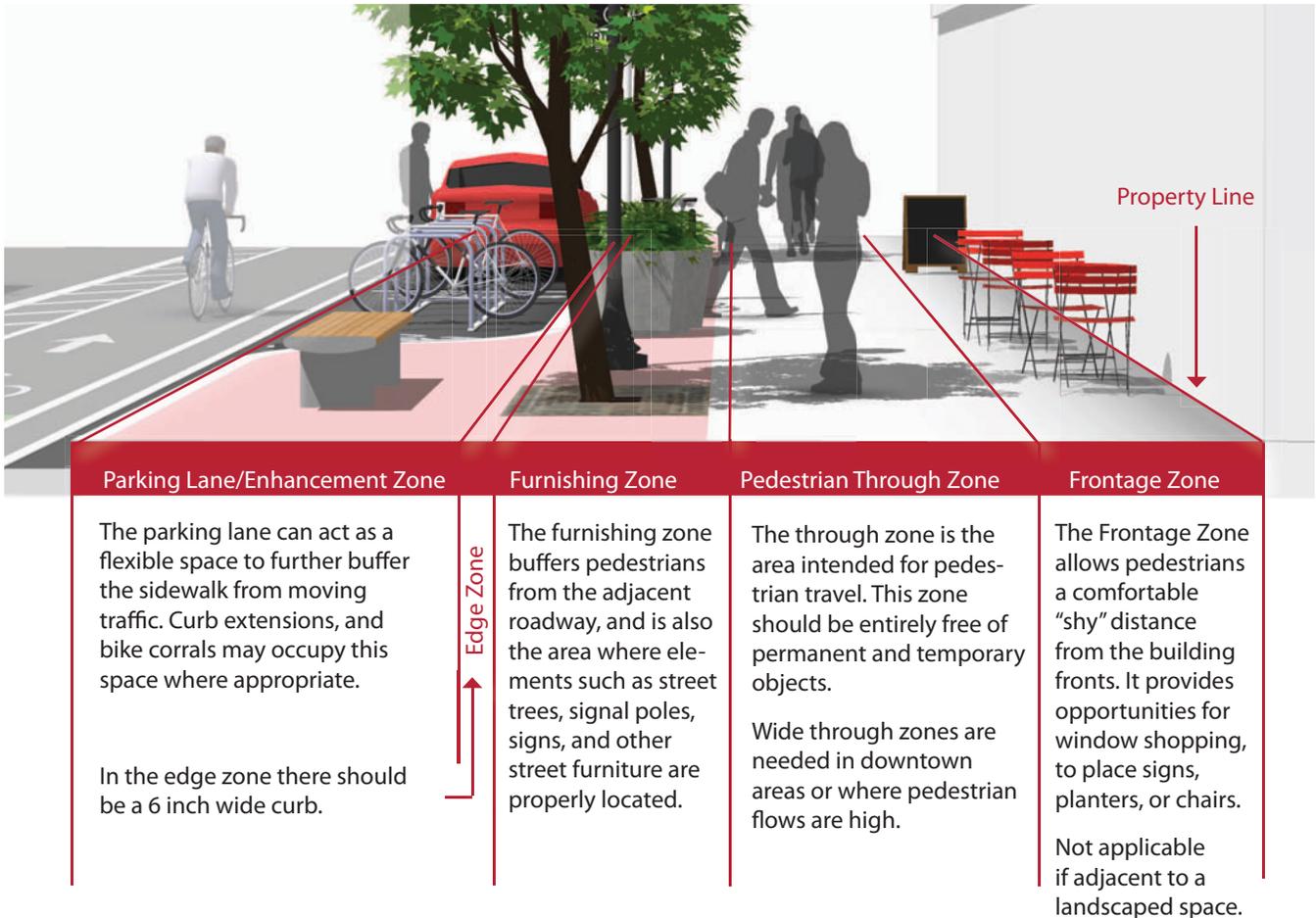


## Sidewalks

### Zones in the Sidewalk Corridor

#### Description

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.



#### Discussion

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

#### Additional References and Guidelines

United States Access Board. (2002). Accessibility Guidelines for Buildings and Facilities.  
 United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).  
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Colored, patterned, or stamped concrete can add distinctive visual appeal.

## Sidewalks

### Sidewalk Widths

#### Description

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of each sidewalk zone according to general street type. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.



Street Classification	Parking Lane/ Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone	Total
Local Streets	Varies	2 - 5 feet	4 - 6 feet	N/A	6.5 - 10 feet
Commercial Areas	Varies	4 - 6 feet	6 - 12 feet	2.5 - 10 feet	11 - 28 feet
Arterials and Collectors	Varies	2 - 6 feet	4 - 8 feet	2.5 - 5 feet	10 - 19 feet

SCDOT's minimum sidewalk width is five feet, when no furnishing zone is present. The SCDOT Highway Design Manual says that buffers are desirable, and should be 2 foot wide at a minimum.

Six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably.

#### Discussion

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The Americans with Disabilities Act requires a 4 foot clear width in the pedestrian zone plus 5 foot passing areas every 200 feet.

#### Additional References and Guidelines

SCDOT. (2003). Highway Design Manual.  
 United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).  
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Surfaces must be firm, stable, and slip resistant. Colored, patterned, or stamped concrete can add distinctive visual appeal.

## Sidewalks

### Sidewalk Obstructions and Driveway Ramps

#### Description

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal poles, mailboxes, fire hydrants and street furniture.

#### Guidance

Reducing the number of accesses reduces the need for special provisions. This strategy should be pursued first.

Obstructions should be placed between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

Dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. (The least preferred driveway option)

Where constraints preclude a planter strip, wrapping the sidewalk around the driveway provides adequate driveway ramp space.

When sidewalks abut hedges, fences, or buildings, an additional two feet of lateral clearance should be added to provide appropriate shy distance.



Planter strips allow sidewalks to remain level, with the driveway grade change occurring within the planter strip.

When sidewalks abut angled on-street parking, wheel stops should be used to prevent vehicles from overhanging in the sidewalk.

#### Discussion

Driveways are a common sidewalk obstruction, especially for wheelchair users. When constraints only allow curb-tight sidewalks, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.

#### Additional References and Guidelines

United States Access Board. (2002). Accessibility Guidelines for Buildings and Facilities.  
 United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).  
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Surfaces must be firm, stable, and slip resistant.

## Construction and Repair Zones

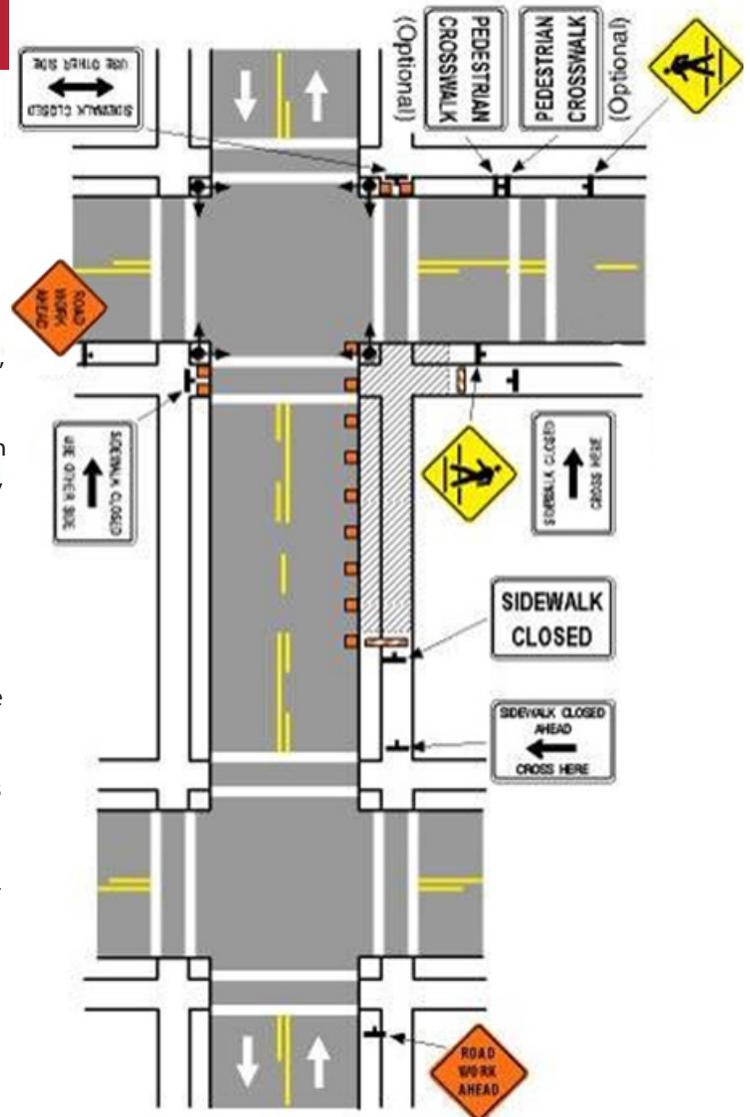
### Pedestrian Access Through Construction Areas

#### Description

Measures should be taken to provide for the continuity of a pedestrian's trip through a construction closure. Only in rare cases should pedestrians be detoured to another street when travel lanes remain open.

#### Guidance

- Pedestrians should be provided with a safe, accessible, convenient path that replicates as nearly as practical the most desirable characteristics of the existing sidewalks or a footpaths. The alternate circulation path shall be parallel the disrupted pedestrian access route, be located on the same side of the street, and accommodate the disabled.
- The alternate route should have a width of 5 feet minimum, and an additional foot of width for each vertical element along the route.
- In rare cases where access is not available on the same side of the street, the alternate pedestrian route may be located on the opposite side of the street as long as the distance of the disrupted pedestrian route does not exceed 300 feet.
- Signage related to construction activities shall be placed in a location that does not obstruct the path of bicycles or pedestrians, including bicycle lanes, wide curb lanes, or sidewalks.



#### Discussion

The removal of a pedestrian access route, curb ramp, or pedestrian street crossing, even for a short time, may severely limit or totally preclude pedestrians, especially those with a disability, from navigating in the public right-of-way. It might also preclude access to buildings, facilities, or sites on adjacent properties.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

The alternate route should include sidewalks and pedestrian access routes, curb ramps, pedestrian crossings, lighting, and all other elements included in these standards.

# Pedestrians at Intersections

Attributes of pedestrian-friendly intersection design include:

**Clear Space:** Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.

**Visibility:** It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.

**Legibility:** Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.

**Accessibility:** All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.

**Separation from Traffic:** Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.

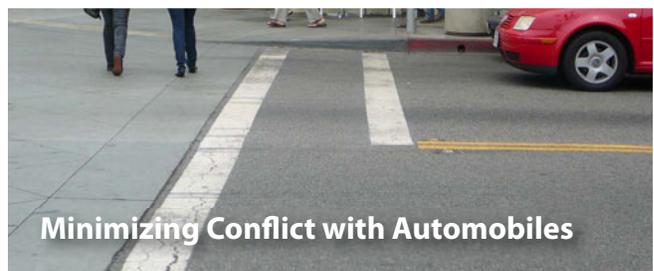
**Lighting:** Adequate lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, suburban and rural intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.

See **Crossing Beacons and Signals** for a discussion of signalization in support of pedestrians.

**This Section Includes:**

- Marked Crosswalks
- Raised Crosswalks
- Reducing Crossing Distance
  - Median Refuge Islands
  - Curb Extensions
  - Minimizing Curb Radii
- Minimizing Conflict with Automobiles
  - Advance Stop Bars
  - Parking Control
- ADA Compliant Curb Ramps



## Marked Crosswalks

### Marked Crosswalks

#### Guidance

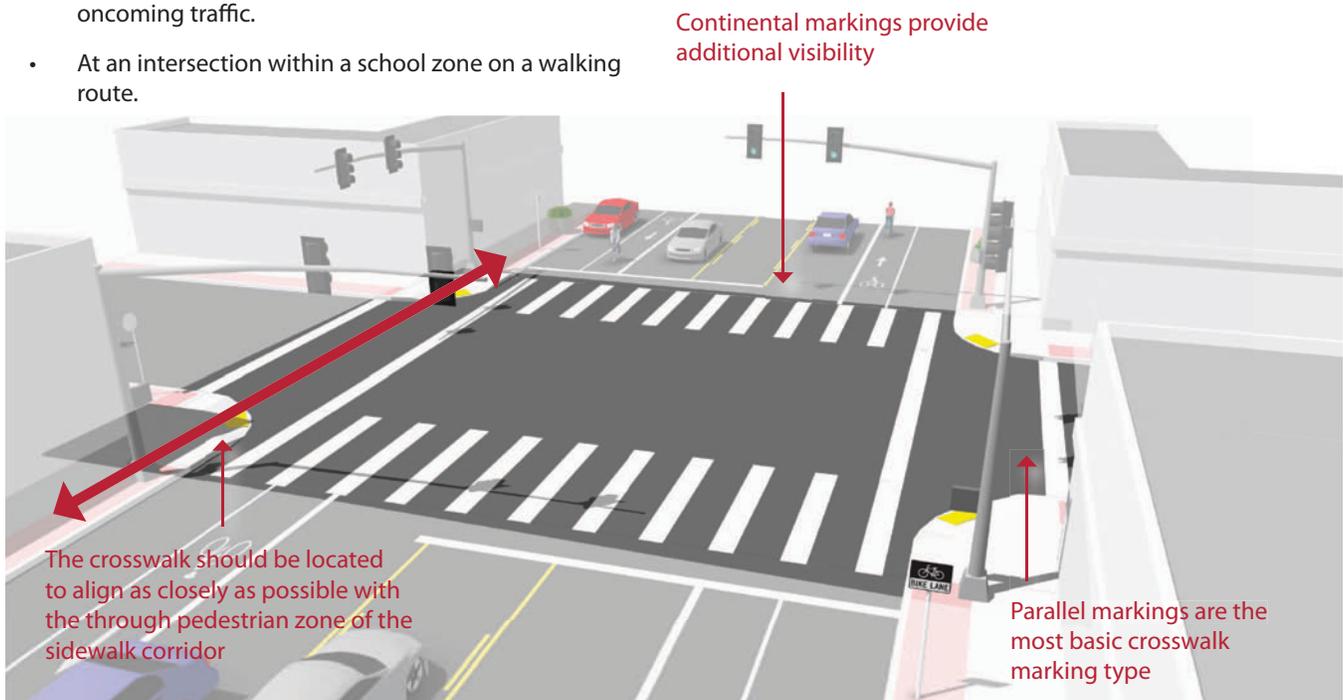
At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks may be marked under the following conditions:

- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.

#### Description

A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.



#### Discussion

Continental crosswalk markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: School crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

See **Crossing Beacons and Signals** for a discussion of enhancing pedestrian crossings.

#### Additional References and Guidelines

- FHWA. (2009). Manual of Uniform Traffic Control Devices. (3B.18)
- AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
- FHWA. (2005). Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations.
- FHWA. (2010). Crosswalk Marking Field Visibility Study.

#### Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability than conventional paint.

## Marked Crosswalks

### Raised Crosswalks

#### Guidance

- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.
- Approaches to the raised crosswalk may be designed to be similar to speed humps.
- Raised crosswalks can also be used as a traffic calming treatment.

#### Description

A raised crosswalk or intersection can eliminate grade changes from the pedestrian path and give pedestrians greater prominence as they cross the street. Raised crosswalks should be used only in very limited cases where a special emphasis on pedestrians is desired; review on case-by-case basis.



#### Discussion

Like a speed hump, raised crosswalks have a traffic slowing effect which may be unsuitable on emergency response routes.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices. (3B.18)  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
USDOJ. (2010). ADA Standards for Accessible Design.

#### Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority.

## Reducing Crossing Distance

### Median Refuge Islands

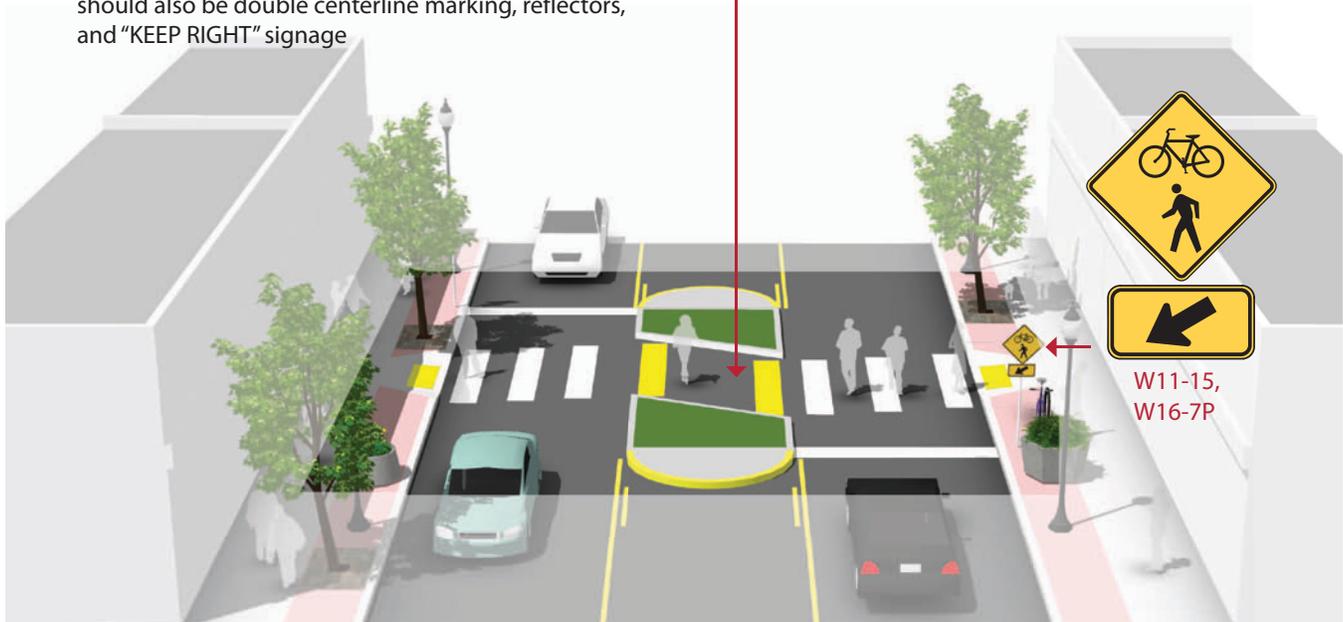
#### Guidance

- Can be applied on any roadway with more than two lanes of traffic.
- Appropriate at signalized or unsignalized crosswalks
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6' wide between travel lanes and at least 20' long
- The refuge area should be wide enough (> 6') to accommodate bikes with trailers and wheelchair users
- On streets with speeds higher than 25 mph there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage

#### Description

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian safety by allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure by shortening crossing distance and increasing the number of available gaps for crossing.

Cur through median islands are preferred over curb ramps, to better accommodate bicyclists.



#### Discussion

If a refuge island is landscaped, the landscaping should not compromise the visibility of pedestrians crossing in the crosswalk. Shrubs and ground plantings should be no higher than 1 ft 6 in.

On multi-lane roadways, consider configuration with **active warning beacons** for improved yielding compliance.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Refuge islands may collect road debris and may require somewhat frequent maintenance. Refuge islands should be visible to snow plow crews and should be kept free of snow berms that block access.

## Reducing Crossing Distance

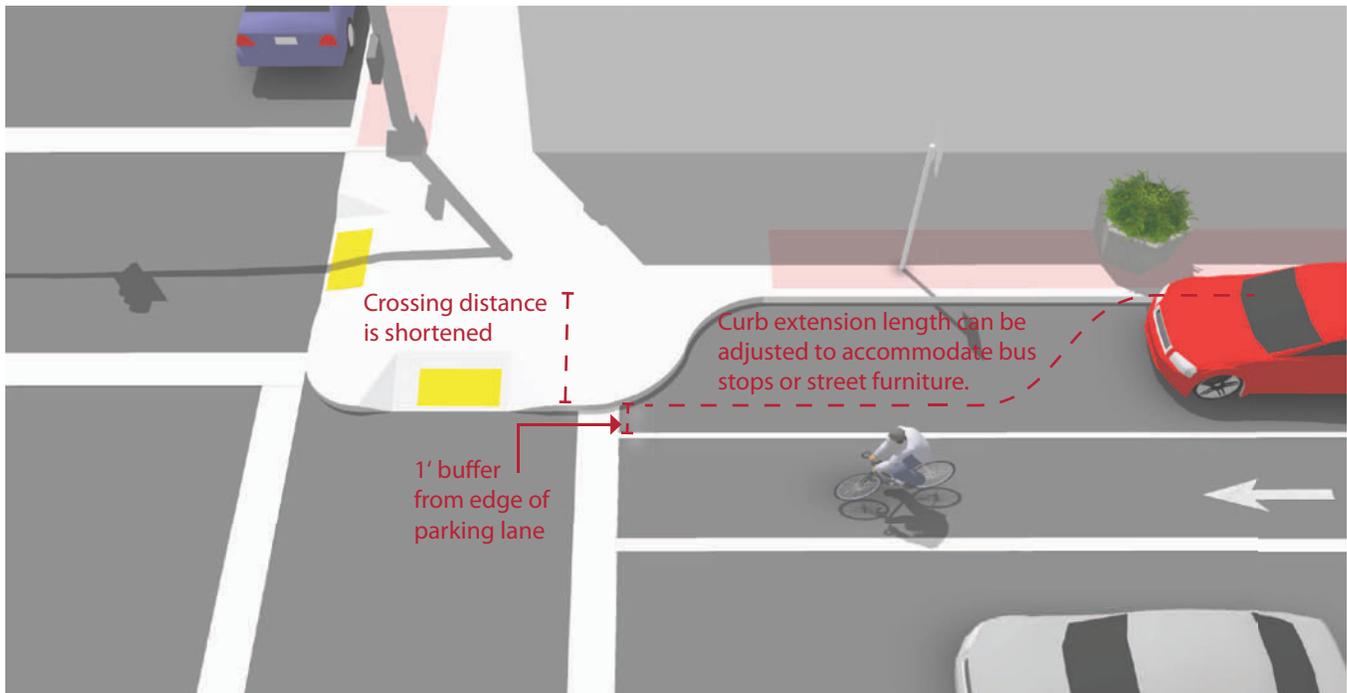
### Curb Extensions

#### Guidance

- In most cases, the curb extensions should be designed to transition between the extended curb and the running curb in the shortest practicable distance.
- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal
- Curb extensions should terminate one foot short of the parking lane to maximize bicyclist safety.

#### Description

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and give pedestrians a better chance to see and be seen before committing to crossing. They are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.



#### Discussion

If there is no parking lane, adding curb extensions may be a problem for bicycle travel and truck or bus turning movements.

If a refuge island is landscaped, the landscaping should not compromise the visibility of pedestrians crossing in the crosswalk. Shrubs and ground plantings should be no higher than 1 ft 6 in.

#### Additional References and Guidelines

AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
 AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.

#### Materials and Maintenance

Planted curb extensions may be designed as a bioswale, a vegetated system for stormwater management.

## Reducing Crossing Distance

### Minimizing Curb Radii

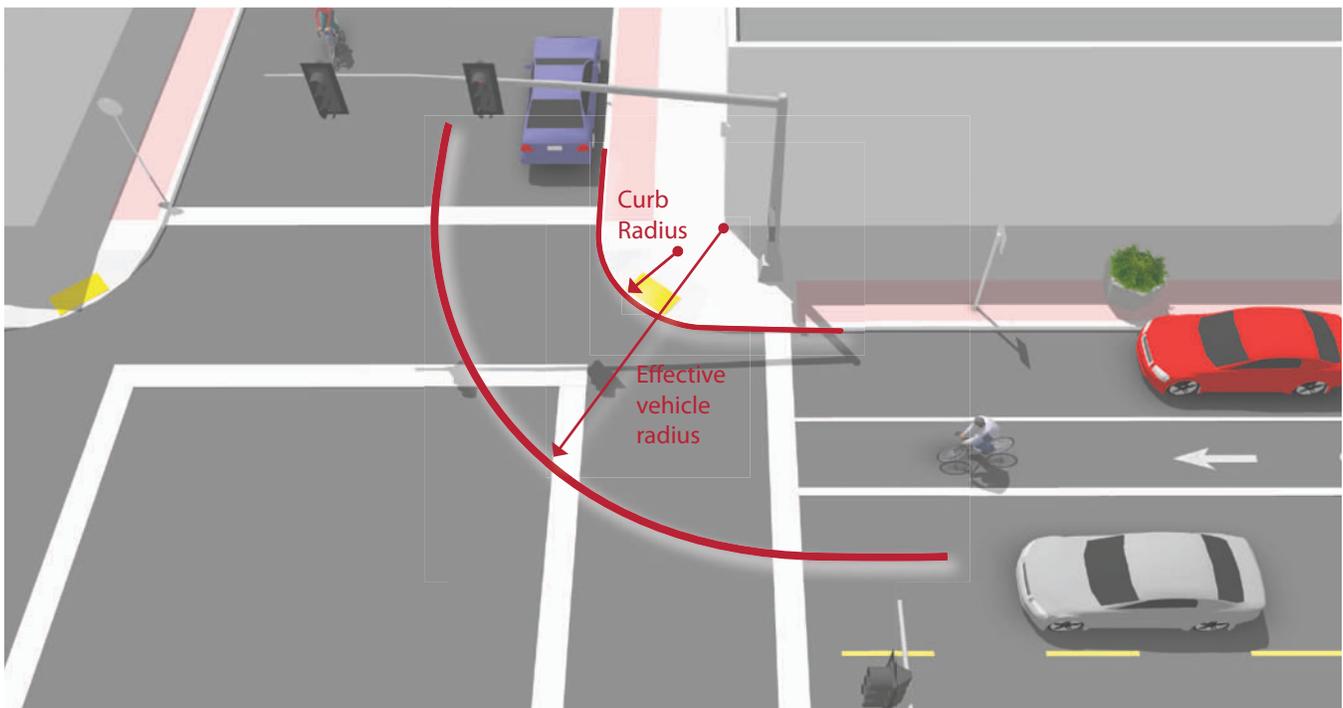
#### Guidance

The radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements and there is adequate street width and a larger effective curb radius created by parking or bike lanes.

#### Description

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances.

A small curb radius is also beneficial for street sweeping operations.



#### Discussion

Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, traffic turning movements, the turning radius of the design vehicle (including school buses), the geometry of the intersection, the street classifications, and whether there is parking or a bike lane (or both) between the travel lane and the curb.

#### Additional References and Guidelines

AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.

#### Materials and Maintenance

A small curb radius is also beneficial for street sweeping operations.

## Minimizing Conflict with Automobiles

### Advance Stop Bar

#### Description

Advance stop bars increase pedestrian comfort and safety by stopping motor vehicles well in advance of marked crosswalks, allowing vehicle operators a better line of sight of pedestrians and giving inner lane motor vehicle traffic time to stop for pedestrians.

#### Guidance

- On streets with at least two travel lanes in each direction.
- Prior to a marked crosswalk
- In one or both directions of motor vehicle travel
- Recommended 30 feet in advance of the crosswalk
- A "Stop Here for Pedestrians" sign should accompany the advance stop bar



#### Discussion

If a bicycle lane is present, mark the advance stop bar to permit bicyclists to stop at the crosswalk ahead of the stop bar.

If the State law requires drivers to YIELD to pedestrians in crosswalks, a Yield Line marking must be used rather than a stop line in these cases.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.

#### Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

## Minimizing Conflict with Automobiles

### Parking Control

#### Guidance

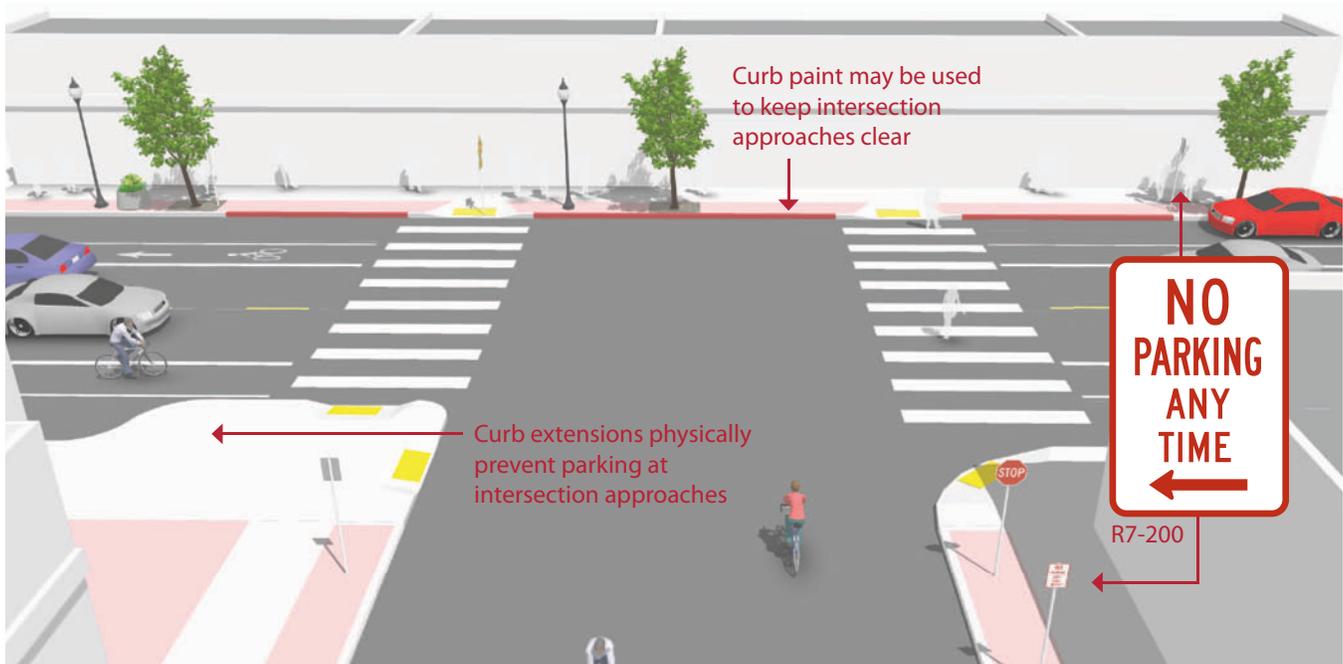
**Curb extensions**, 'No Parking' signage, or curb paint can be used to keep the approach to intersections clear of parked vehicles.

At "T" and offset intersections, where the boundaries of the intersection may not be obvious, this prohibition should be made clear with signage.

Parking shall not be allowed within any type of intersection adjacent to schools, school crosswalks, and parks. This includes "T" and offset intersections.

#### Description

Parking control involves restricting or reducing on-street parking near intersections with high pedestrian activity. Locating parking away from the intersection improves motorist's visibility on the approach to the intersection and crosswalk. Improved sight lines at intersections reduces conflicts between motorists and pedestrians.



#### Discussion

In areas where there is high parking demand parking compact vehicles may be allowed within "T" or offset intersections and on either side of the crosswalk. At these locations, signs will be placed to prohibit parking within the designated crosswalk areas, and additional enforcement should be provided, particularly when the treatment is new.

#### Additional References and Guidelines

AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.

#### Materials and Maintenance

Signage and striping require routine maintenance.

## ADA Compliant Curb Ramps

### ADA Compliant Curb Ramps

#### Guidance

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.
- The ramp shall slope no more than 1:50 (2.0%) in any direction.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long and at least as wide as the ramp, although a width of 5'-0" is preferred.

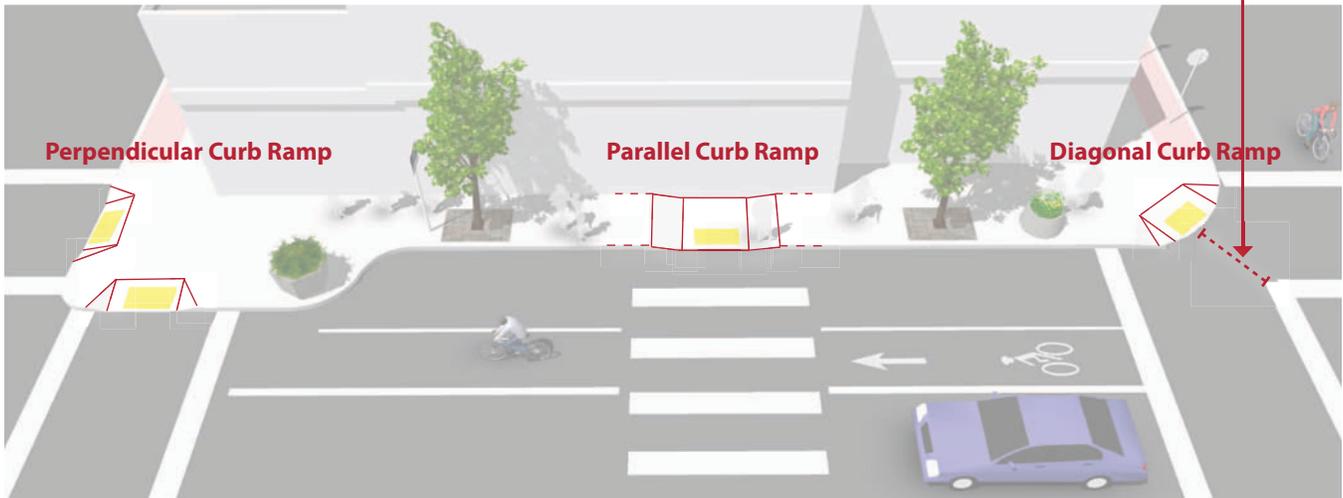
Curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Three configurations are illustrated below.

#### Description

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes. Diagonal curb ramp configurations are the least preferred of all options.

Diagonal ramps shall include a clear space of at least 48" within the crosswalk for user maneuverability



Crosswalk spacing not to scale. For illustration purposes only.

#### Discussion

The edge of an ADA compliant curb ramp will be marked with a tactile warning device (also known as truncated domes) to alert people with visual impairments to changes in the pedestrian environment. Contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident.

#### Additional References and Guidelines

- United States Access Board. (2002). Accessibility Guidelines for Buildings and Facilities.
- United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
- USDOJ. (2010). ADA Standards for Accessible Design.

#### Materials and Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop potholes in the at the foot of the ramp, which can catch the front wheels of a wheelchair.

## Crossing Beacons and Signals

Crossing beacons and signals facilitate crossings of roadways for pedestrians and bicyclists. Beacons make crossing intersections safer by clarifying when to enter an intersection and by alerting motorists to the presence of pedestrians in the crosswalk.

Flashing amber warning beacons can be utilized at unsignalized intersection crossings. Push buttons, signage, and pavement markings may be used to highlight these facilities for pedestrians, bicyclists and motorists.

Determining which type of signal or beacon to use for a particular intersection depends on a variety of factors. These include speed limits, Average Daily Traffic (ADT), and the anticipated levels of pedestrian and bicycle crossing traffic.

An intersection with crossing beacons may reduce stress and delays for a crossing users, and discourage illegal and unsafe crossing maneuvers.



### This Section Includes:

- Accommodating Pedestrians at Signalized Crossings
- Bicycle Detection and Actuation
- Active Warning Beacons
- Hybrid Beacon for Mid-Block Crossing

## Crossing Beacons and Signals

### Accommodating Pedestrians at Signalized Crossings

#### Description

##### Pedestrian Signal Head

Pedestrian signal indicators demonstrate to pedestrians when to cross at a signalized crosswalk. All traffic signals should be equipped with pedestrian signal indications except where pedestrian crossing is prohibited by signage.

Countdown pedestrian signals are particularly valuable for pedestrians, as they indicate whether a pedestrian has time to cross the street before the signal phase ends. Countdown signals should be used at all signalized intersections.

##### Signal Timing

Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The MUTCD recommends traffic signal timing to assume a pedestrian walking speed of 4' per second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3' per second may be assumed. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections.

In busy pedestrian areas such as downtowns, the pedestrian signal indication should be built into each signal phase, eliminating the requirement for a pedestrian to actuate the signal by pushing a button.

Audible pedestrian traffic signals provide crossing assistance to pedestrians with vision impairment at signalized intersections



Consider the use of a Leading Pedestrian Indication (LPI) to provide additional traffic protected crossing time to pedestrians

#### Discussion

When push buttons are used, they should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk, and marked (for example, with arrows) so that it is clear which signal is affected.

In areas with very heavy pedestrian traffic, consider an all-pedestrian signal phase to give pedestrians free passage in the intersection when all motor vehicle traffic movements are stopped.

#### Additional References and Guidelines

United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

Depending on power supply, maintenance can be minimal. If solar power is used, RRFBs should run for years without issue.

## Crossing Beacons and Signals

### Bicycle Detection and Actuation

#### Description

##### Push Button Actuation

User-activated button mounted on a pole facing the street.

##### Loop Detectors

Bicycle-activated loop detectors are installed within the roadway to allow the presence of a bicycle to trigger a change in the traffic signal. This allows the bicyclist to stay within the lane of travel without having to maneuver to the side of the road to trigger a push button.

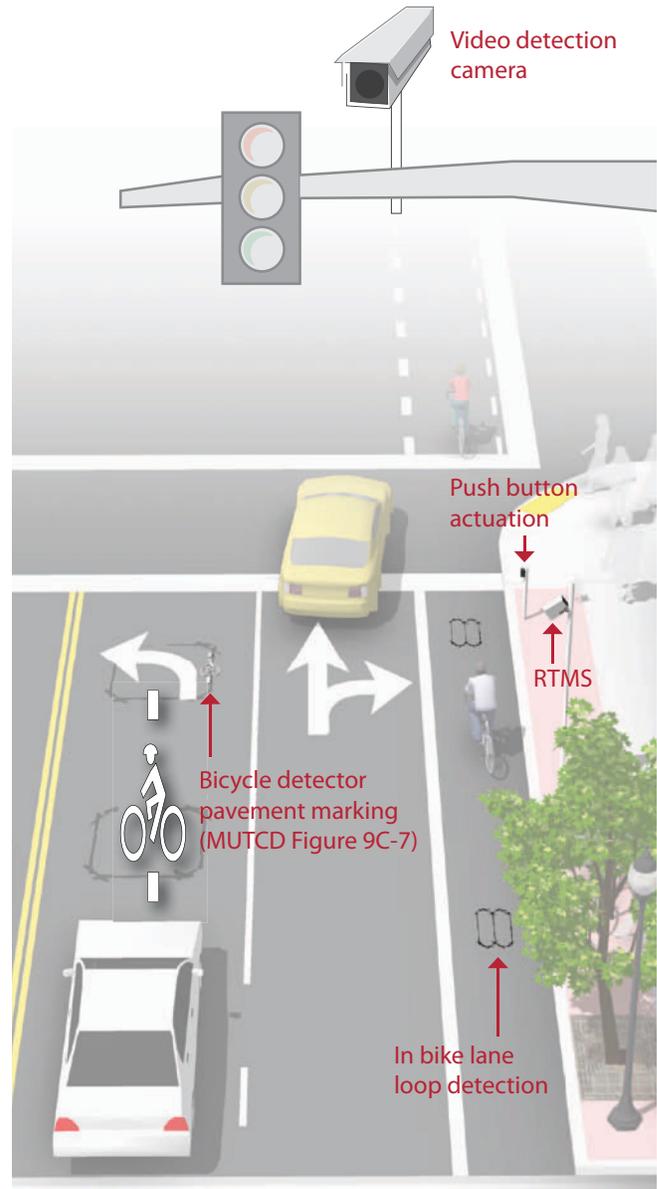
Loops that are sensitive enough to detect bicycles should be supplemented with pavement markings to instruct bicyclists how to trip them, as well as signage.

##### Video Detection Cameras

Video detection cameras can also be used to determine when a vehicle is waiting for a signal. These systems use digital image processing to detect a change in the image at a location. Video detection can be calibrated for bikes, bike lanes, and bike pockets. Video camera system costs range from \$20,000 to \$25,000 per intersection.

##### Remote Traffic Microwave Sensor Detection (RTMS)

RTMS is a system which uses frequency modulated continuous wave radio signals to detect objects in the roadway. This method marks the detected object with a time code to determine its distance from the sensor. The RTMS system is unaffected by temperature and lighting, which can affect standard video detection.



#### Discussion

Proper bicycle detection should meet two primary criteria: 1) accurately detects bicyclists and 2) provides clear guidance to bicyclists on how to actuate detection (e.g., what button to push, where to stand).

Bicycle loops and other detection mechanisms can also provide bicyclists with an extended green time before the light turns yellow so that bicyclists of all abilities can reach the far side of the intersection.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
FHWA. (2009). Manual of Uniform Traffic Control Devices.  
NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Signal detection and actuation for bicyclists should be maintained with other traffic signal detection and roadway pavement markings.

## Crossing Beacons and Signals

### Active Warning Beacons

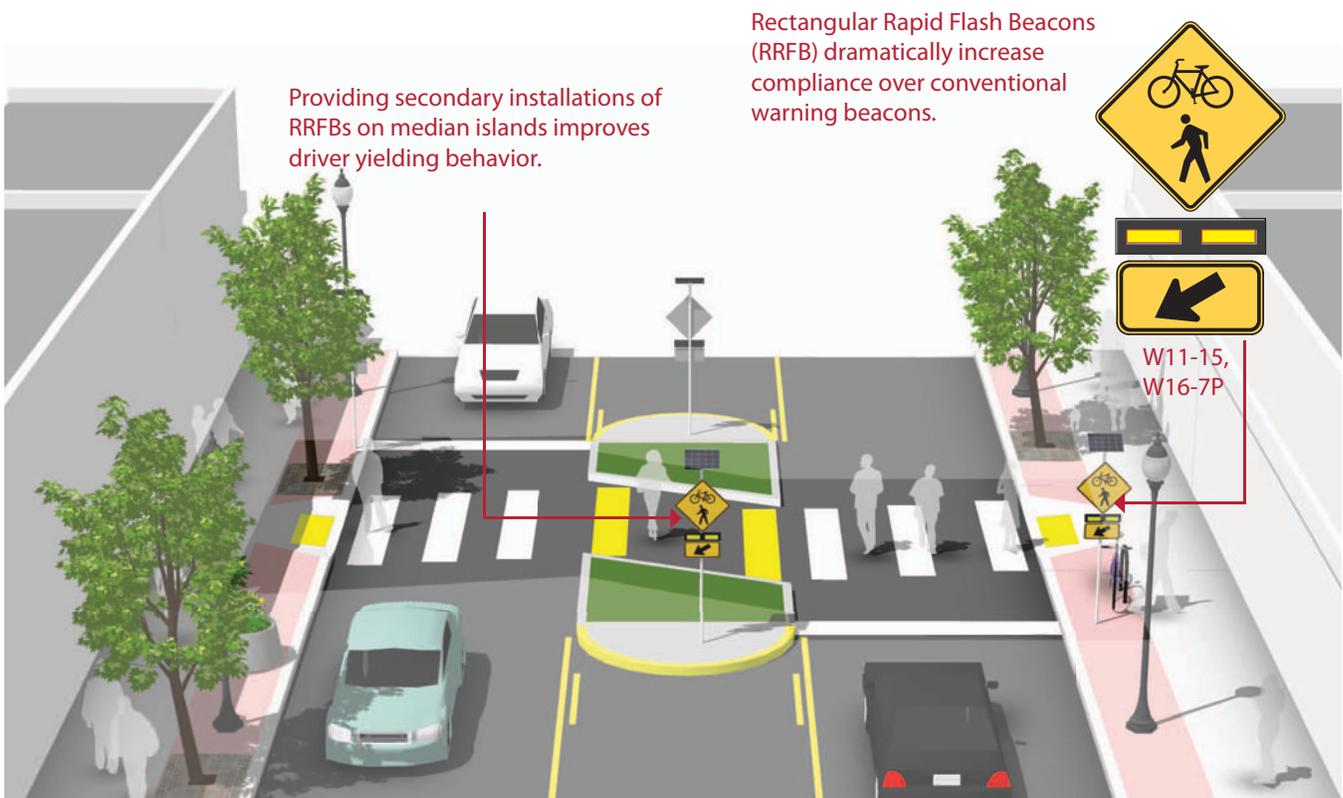
#### Guidance

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic signals.
- Warning beacons shall initiate operation based on pedestrian or bicyclist actuation and shall cease operation at a predetermined time after actuation or, with passive detection, after the pedestrian or bicyclist clears the crosswalk.

#### Description

Active warning beacons are user actuated illuminated devices designed to increase motor vehicle yielding compliance at crossings of multi lane or high volume roadways.

Types of active warning beacons include conventional circular yellow flashing beacons, in-roadway warning lights, or Rectangular Rapid Flash Beacons (RRFB).



#### Discussion

Rectangular rapid flash beacons have the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88 percent. Additional studies over long term installations show little to no decrease in yielding behavior over time.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 FHWA. (2008). MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)

#### Materials and Maintenance

Depending on power supply, maintenance can be minimal. If solar power is used, RRFBs should run for years without issue.

## Crossing Beacons and Signals

### Hybrid Beacon for Mid-Block Crossing

#### Guidance

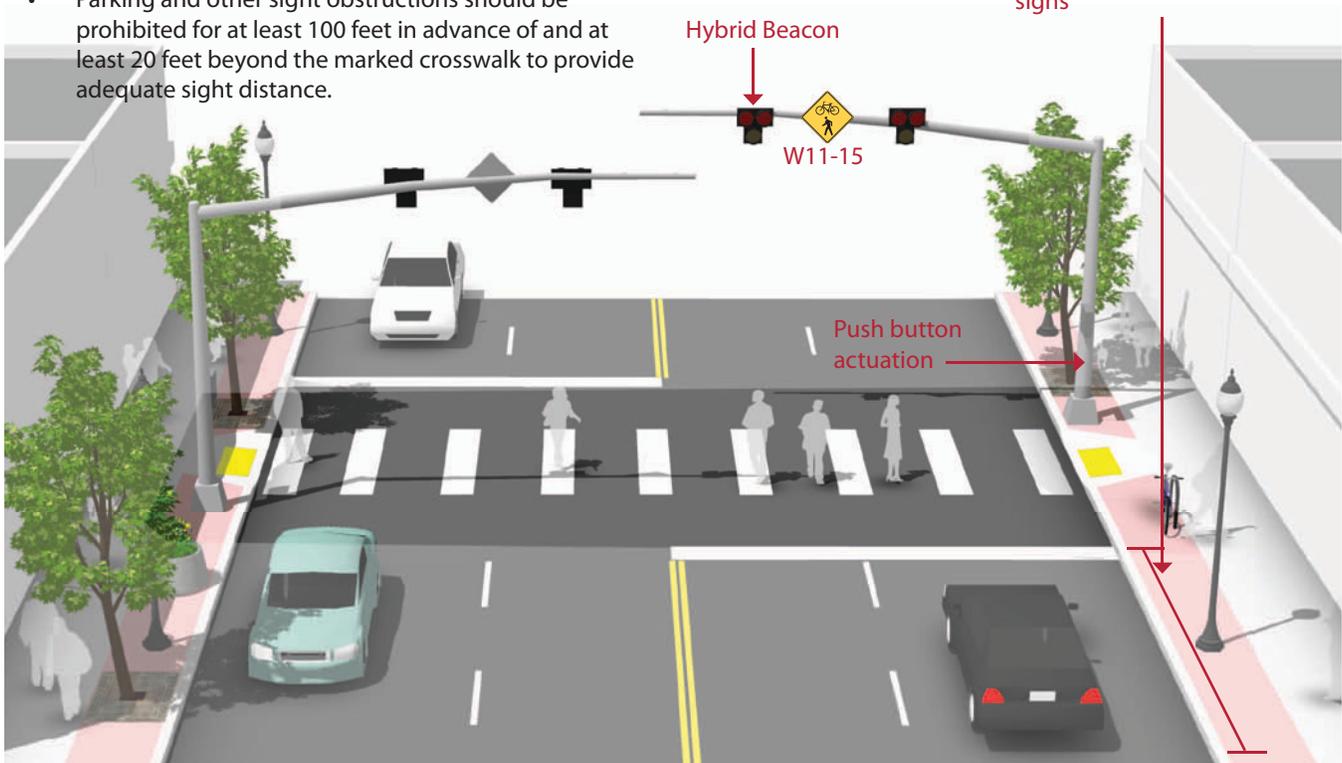
Hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable pedestrian crossings.

- If installed within a signal system, signal engineers should evaluate the need for the hybrid signal to be coordinated with other signals.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.

#### Description

Hybrid beacons are used to improve non-motorized crossings of major streets. A hybrid beacon consists of a signal-head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk

Should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs



#### Discussion

Hybrid beacon signals are normally activated by push buttons, but may also be triggered by infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Hybrid beacons are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

## Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Shared roadways employ a large variety of treatments from simple signage and shared lane markings to more complex treatments including directional signage, traffic diverters, chicanes, chokers, and /or other traffic calming devices to reduce vehicle speeds or volumes.

### Bicycle boulevards

Bicycle boulevards are a special class of shared roadways designed for a broad spectrum of bicyclists. They are low-volume local streets where motorists and bicyclists share the same travel lane. Treatments for bicycle boulevards are selected as necessary to create appropriate automobile volumes and speeds, and to provide safe crossing opportunities of busy streets.



#### This section includes:

- Bike Routes
- Shared Lane Markings
- Bicycle Boulevards

## Shared Roadways

## Bike Routes

### Bike Routes

#### Guidance

Lane width varies depending on roadway configuration.

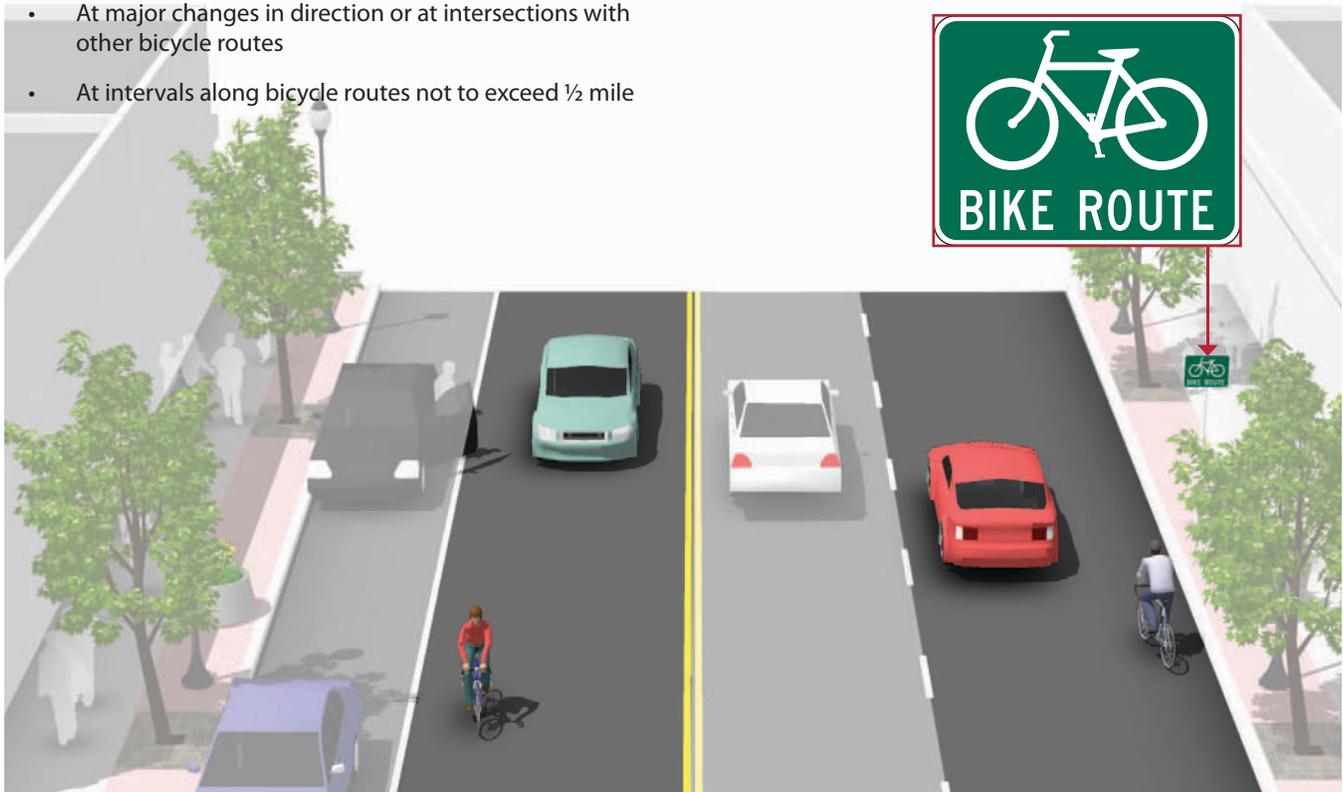
Bicycle Route signage (D11-1) should be applied at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists. Commonly, this includes placement at:

- Beginning or end of Bicycle Route
- At major changes in direction or at intersections with other bicycle routes
- At intervals along bicycle routes not to exceed ½ mile

#### Description

Bike routes are regular streets shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

MUTCD D11-1  
(optional)



#### Discussion

Bike routes serve either to provide continuity with other bicycle facilities (usually bike lanes) or to designate preferred routes through high-demand corridors.

This configuration differs from a **bicycle boulevard** due to a lack of traffic calming, wayfinding, pavement markings and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
FHWA. (2009). Manual of Uniform Traffic Control Devices.

#### Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs, and will need periodic replacement due to wear.

## Shared Roadways

## Shared Lane Markings

### Shared Lane Markings

#### Guidance

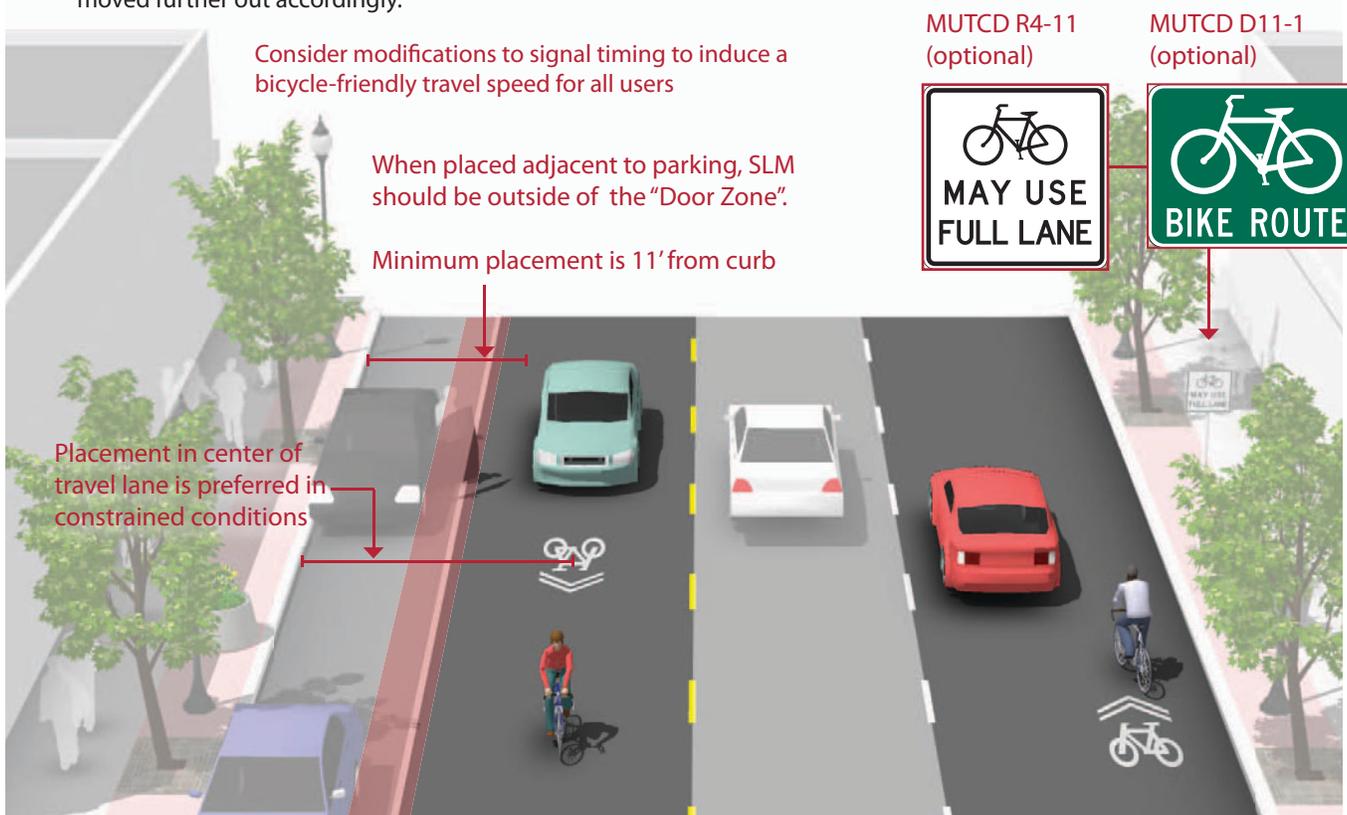
- In constrained conditions, preferred placement is in the center of the travel lane to minimize wear and promote single file travel.
- Minimum placement of SLM marking centerline is 11 feet from edge of curb where on-street parking is present, 4 feet from edge of curb with no parking. If parking lane is wider than 7.5 feet, the SLM should be moved further out accordingly.

#### Description

Shared lane markings (SLM) are used in a shared roadway environment to encourage bicycle travel and proper positioning within the lane.

In constrained conditions, the SLMs are placed to discourage unsafe passing by motor vehicles. On a wide outside lane, the SLMs can be used to promote bicycle travel next to (to the right of) motor vehicles.

In all conditions, SLMs should be placed outside of the door zone of parked cars.



#### Discussion

**Bike lanes** should be considered on roadways with outside travel lanes wider than 15 feet, or where other lane narrowing or removal strategies may provide adequate road space. Shared Lane Markings shall not be used on shoulders, in designated **bicycle lanes**, or to designate **bicycle detection** at signalized intersections. (MUTCD 9C.07 03)

This configuration differs from a **bicycle boulevard** due to a lack of traffic calming, wayfinding, and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Placing the SLM markings between vehicle tire tracks will increase the life of the markings and minimize the long-term cost of the treatment.

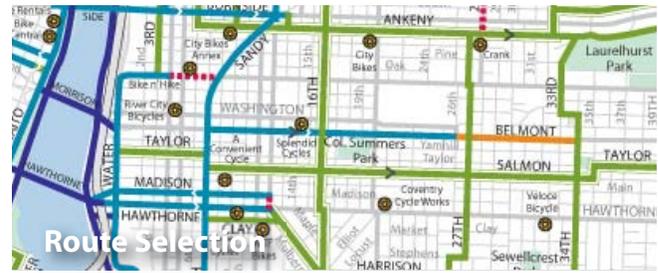
## Bicycle Boulevards

Bicycle Boulevards are a special class of shared roadway designed to accommodate a broad spectrum of bicyclists.

Also known as neighborhood greenways, bicycle boulevards are low-volume, low-speed streets that have been optimized for bicycle travel using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through-movements of bicyclists while discouraging similar through-trips by non-local motorized 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 for the development of bicycle boulevards. At a minimum, bicycle boulevards 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 bicycle boulevards 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 bicycle boulevard.



### This section includes:

- Route Selection
- Basic Treatments
- Traffic Calming
- Traffic Diversion
- Intersection Treatments

# Bicycle Boulevards

## Route Selection

### Guidance

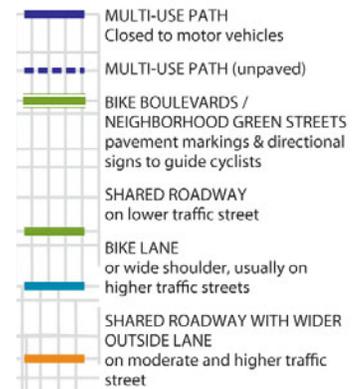
- Streets are signed at 25 mph or less to improve the bicycling environment and decrease risk and severity of crashes.
- Traffic volumes are limited to 3,000 vehicles per day (ideally less than 1,500) to minimize passing events and potential conflicts with motor vehicles.
- Use of streets that parallel major streets can discourage non-local motor vehicle traffic without significantly impacting motorists.
- Use of streets where a relatively continuous route for bicyclists exists and/or where treatments can provide wayfinding and improve crossing opportunities at offset intersections.
- Use of streets where bicyclists have right-of-way at intersections or where right-of-way is possible to assign to bicyclists.

### Description

Bicycle boulevards should be developed on streets that improve connectivity to key destinations and provide a direct route for bicyclists. Local streets with existing traffic calming, traffic diversions, or signalized crossings of major streets are good candidates, as they tend to be existing bicycle routes and have low motor vehicle speeds and volumes. Other streets where residents have expressed a desire for traffic calming are also good options.

Bicycle boulevards parallel to commercial streets improve access for 'interested but concerned' bicyclists and complement bike lanes on major roadways.

In Portland, OR, the bicycle network includes a high density of neighborhood greenways parallel to streets with bike lanes.



### Discussion

Bicycle boulevards should form a continuous network of streets or off-street facilities that accommodate bicyclists who are less willing to ride on streets with motorized traffic. Most bicycle boulevards are located on residential streets, though they can also be on commercial or industrial streets. Due to the presence of trucks and commercial vehicles, as well as the need to maintain good traffic flow and retain motor vehicle parking, bicycle boulevards on commercial or industrial streets can tolerate higher automobile speeds and volumes than would be desired on neighborhood streets. Vertical traffic calming can minimize impacts to large vehicles and parking.

### Additional References and Guidelines

- Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.
- City of Berkeley. (2000). Bicycle Boulevard Design Tools and Guidelines.
- City of Emeryville. (2011). Bicycle Boulevard Treatments.

### Materials and Maintenance

Repaving, street sweeping and other maintenance should occur with higher frequency than on other local streets.

## Bicycle Boulevards

### Basic Treatments

#### Description

Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard. Together, they visibly designate a roadway to both bicyclists and motorists. Signs, and in some cases pavement markings, provide wayfinding to help bicyclists remain on the designated route.

#### Guidance

##### Pavement Markings

Place symbols every 250-800 feet along a linear corridor, as well as after every intersection.

On narrow streets where a motor vehicle cannot pass a bicyclist within one lane of traffic, place stencils in the center of the travel lane.

See **marked shared roadway** guidance for additional information on the use of shared lane markings.

A bicycle symbol can be placed on a standard road sign, along with distinctive coloration.

##### Signs

See **bikeway signing** for guidance on developing bicycle wayfinding signage. Some cities have developed unique logos or colors for wayfinding signs that help brand their bicycle boulevards.

Be consistent in content, design, and intent; colors reserved by the Manual on Uniform Traffic Devices (MUTCD) for regulatory and warning road signs are not recommended.

Signs can include information about intersecting bikeways and distance/time information to key destinations.



#### Discussion

Wayfinding signs displaying destinations, distances, and “riding time” can dispel common misperceptions about time and distance while increasing users’ comfort and accessibility to the bicycle boulevard network. Bicycle boulevards frequently include offset intersections or ‘jog’ onto another street. Signs and pavement markings can help bicyclists remain on the route. In addition, fewer businesses or services are located along local streets, and signs inform bicyclists of the direction to key destinations, including commercial districts, transit hubs, schools and universities, and other bikeways.

#### Additional References and Guidelines

- City of Milwaukie. (2009). Milwaukie Bicycle Wayfinding Signage Plan
- City of Oakland (2009). Design Guidelines for Bicycle Wayfinding Signage
- NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Pavement markings should be repainted and signs replaced as needed. Wayfinding signs should be regularly updated with new major destination and bicycle facilities.

## Bicycle Boulevards

## Vertical Traffic Calming

### Vertical Traffic Calming

#### Description

Motor vehicle speeds affect the frequency at which automobiles pass bicyclists as well as the severity of crashes that can occur. Maintaining motor vehicle speeds closer to those of bicyclists' greatly improves bicyclists' comfort on a street. Slower vehicular speeds also improve motorists' ability to see and react to bicyclists and minimize conflicts at driveways and other turning locations.

Vertical speed control measures are composed of slight rises in the pavement, on which motorists and bicyclists must reduce speed to cross.

#### Guidance

- Bicycle boulevards should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Speed humps are raised areas usually placed in a series across both travel lanes. A 14' long hump reduces impacts to emergency vehicles. Speed humps can be challenging for bicyclists, gaps can be provided in the center or by the curb for bicyclists and to improve drainage. Speed humps can also be offset to accommodate emergency vehicles.
- Speed lumps or cushions have gaps to accommodate the wheel tracks of emergency vehicles.
- Speed tables are longer than speed humps and flat-topped. Raised crosswalks are speed tables that are marked and signed for a pedestrian crossing.
- For all vertical traffic calming, slopes should not exceed 1:10 or be less steep than 1:25. Tapers should be no greater than 1:6 to reduce the risk of bicyclists losing their balance. The vertical lip should be no more than a 1/4" high.



Speed Hump



Offset Speed Hump



Temporary Speed Cushion



Raised Crosswalk

#### Discussion

Emergency vehicle response times should be considered where vertical deflection is used. Because emergency vehicles have a wider wheel base than passenger cars, speed lumps/cushions allow them to pass unimpeded while slowing most other traffic. Alternatively, speed tables are recommended because they cannot be straddled by a truck, decreasing the risk of bottoming out.

Traffic calming can also deter motorists from driving on a street. Monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

#### Additional References and Guidelines

Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.  
 BikeSafe. (No Date). Bicycle countermeasure selection system.  
 Ewing, Reid. (1999). Traffic Calming: State of the Practice.  
 Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming Manual.

#### Materials and Maintenance

Traffic calming should be designed to minimize impacts to snowplows. Vegetation should be regularly trimmed to maintain visibility and attractiveness.

## Bicycle Boulevards

## Traffic Calming

### Horizontal Traffic Calming

#### Description

Horizontal speed control measures are obstacles on the side of the travel lane, which cause motorists to slow down to either navigate the travel feature or because the roadway narrows.

Horizontal speed control measures may reduce the design speed of a street, and they can be used in conjunction with reduced speed limits to reinforce the expectation that motorists lower their speeds.

#### Guidance

- Maintain a minimum clear width of 20 feet or 28 feet with parking on both sides, with a constricted length of at least 20 feet in the direction of travel.
- Chicanes are a series of raised or delineated curb extensions, edge islands, or parking bays on alternating sides of a street forming an "S"-shaped curb, which reduce vehicle speeds by requiring motorists to shift laterally through narrowed travel lanes.
- Pinchpoints are curb extensions placed on both sides of the street, narrowing the travel lane and encouraging all road users to slow down. When placed at intersections, pinchpoints are known as chokers or neckdowns, and reduce curb radii and further reducing motor vehicle speeds.
- Traffic circles are raised or delineated islands placed at intersections that reduce vehicle speeds by narrowing turning radii and the travel lane. Traffic circles can also include a paved apron to accommodate the turning radii of larger vehicles like fire trucks or school buses.



Temporary Curb Extension



Chicane



Choker or Neckdown



Pinchpoint with Bicycle Access

#### Discussion

Horizontal speed control measures should not infringe on bicycle space. Where possible, provide a bicycle route outside of the element so bicyclists can avoid having to merge into traffic at a narrow pinch point. This technique can also improve drainage flow and reduce construction and maintenance costs.

Traffic calming can also deter motorists from driving on a street. Monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

#### Additional References and Guidelines

Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.  
 BikeSafe. (No Date). Bicycle countermeasure selection system.  
 Ewing, Reid. (1999). Traffic Calming: State of the Practice.  
 Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming Manual.

#### Materials and Maintenance

Traffic calming should be designed to minimize impacts to snowplows. Vegetation should be regularly trimmed to maintain visibility and attractiveness.

## Bicycle Boulevards

## Traffic Calming

### Traffic Diversion

#### Description

Motor vehicle traffic volumes also affect the operation of a bicycle boulevard. Higher vehicle volumes reduce bicyclists' comfort and can result in more potential conflicts.

Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day, above which the route should be striped as a **bike lane** or considered a **signed shared roadway**.

#### Guidance

- Traffic diversion treatments reduce motor vehicle volumes by completely or partially restricting through traffic on a bicycle boulevard.
- Partial closures allow full bicycle passage while restricting vehicle access to one way traffic at that point.
- Diagonal diverters require all motor vehicle traffic to turn.
- Median diverters (see **major intersections**) restrict through motor vehicle movements while providing a refuge for bicyclists to cross in two stages.
- Street closures create a "T" that blocks motor vehicles from continuing on a bicycle boulevard, while bicycle travel can continue unimpeded. Full closures can accommodate emergency vehicles with the use of mountable curbs (maximum of six inches high).



Partial Closure



Diagonal Diverter



Median Diverter



Full Closure

#### Discussion

Bicycle boulevards on streets with volumes higher than 3,000 vehicles per day are not recommended, although a segment of a bicycle boulevard may accommodate more traffic for a short distance if necessary to complete the corridor. Providing additional separation with a **bike lane**, **cycle track** or other treatment is recommended where traffic calming or diversion cannot reduce volumes below this threshold.

#### Additional References and Guidelines

Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.  
 Ewing, Reid. (1999). Traffic Calming: State of the Practice.  
 Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming Manual.  
 Oregon Department of Transportation. (1998). Right-In Right-Out Channelization.

#### Materials and Maintenance

Depending on the diverter type, these treatments can be challenging to keep clear of snow and debris. Vegetation should be regularly trimmed to maintain visibility and attractiveness.

## Bicycle Boulevards

## Intersection Treatments

### Minor Intersection Treatments

#### Description

Treatments at minor roadway intersections are designed to improve the visibility of a bicycle boulevard, raise awareness of motorists on the cross-street that they are likely to encounter bicyclists, and enhance safety for all road users.

#### Guidance

- On the bicycle boulevard, the majority of intersections with minor roadways should stop-control cross traffic to minimize bicyclist delay. This will maximize through-bicycle connectivity and preserve bicyclist momentum.
- Traffic circles are a type of **horizontal traffic calming** that can be used at minor street intersections. Traffic circles reduce conflict potential and severity while providing traffic calming to the corridor.
- If a stop sign is present on the bicycle boulevard, a second stop bar for bicyclists can be placed closer to the centerline of the cross street than the motorists' stop bar to increase the visibility of bicyclists waiting to cross the street.
- Curb extensions can be used to move bicyclists closer to the centerline to improve visibility and encourage motorists to let them cross.



Stop Signs on Cross-Street



Traffic Circles



Bicycle Forward Stop Bar



Curb Extension

#### Discussion

Stop signs increase bicycling time and energy expenditure, frequently leading to non-compliance by bicyclists and motorists, and/or use of other less desirable routes. Bicycle boulevards should have fewer stops or delays than other local streets; a typical bicycle trip of 30 minutes can increase to 40 minutes if there is a STOP sign at every block (*Berkeley Bicycle Boulevard Design Tools and Guidelines*). If several stop signs are turned along a corridor, speeds should be monitored and traffic-calming treatments used to reduce excessive vehicle speeds on the bicycle boulevard.

#### Additional References and Guidelines

City of Berkeley. (2000). *Bicycle Boulevard Design Tools and Guidelines*.  
 City of London Transport for London. *Advanced stop lines (ASLS) background and research studies*.  
 Transportation Research Board. (2006). *Improving Pedestrian Safety at Unsignalized Crossings*. NCHRP Report # 562.

#### Materials and Maintenance

Vegetation in traffic circles and curb extensions should be regularly trimmed to maintain visibility and attractiveness. Repaint bicycle stop bars as needed.

## Bicycle Boulevards

## Intersection Treatments

### Major Intersection Treatments

#### Description

The quality of treatments at major street crossings can significantly affect a bicyclist's choice to use a bicycle boulevard, as opposed to another road that provides a crossing treatment.

#### Guidance

- **Bike boxes** increase bicyclist visibility to motorists and reduce the danger of right "hooks" by providing a space for bicyclists to wait at signalized intersections.
- Median islands provided at uncontrolled intersections of bicycle boulevards and major streets allow bicyclists to cross one direction of traffic at a time as gaps in traffic occur.
- **Hybrid Beacons, active warning beacons** and **bicycle signals** can facilitate bicyclists crossing a busy street on which cross-traffic does not stop.
- Select treatments based on engineering judgment; see National Cooperative Highway Research Program (NCHRP) Report # 562 *Improving Pedestrian Safety at Unsignalized Crossings* (2006) for guidance on appropriate use of crossing treatments. Treatments are designed to improve visibility and encourage motorists to stop for pedestrians; with engineering judgement many of the same treatments are appropriate for use along bicycle boulevards.



Bike Box



Median Island



Hybrid Beacon (HAWK)



Rectangular Rapid Flash Beacon (RRFB)

#### Discussion

Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard and compromise safety.

#### Additional References and Guidelines

Transportation Research Board. (2006). *Improving Pedestrian Safety at Unsignalized Crossings*. NCHRP Report # 562.  
Federal Highway Administration. (2004). *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*. FHWA-RD-04-100

#### Materials and Maintenance

Maintain signs, markings, and other treatments and replace as needed. Monitor intersections for bicyclist delay to determine if additional treatments are warranted.

## Bicycle Boulevards

## Intersection Treatments

### Offset Intersection Treatments

#### Description

Offset intersections can be challenging for bicyclists who are required to briefly travel along the busier cross street in order to continue along the bicycle boulevard.

#### Guidance

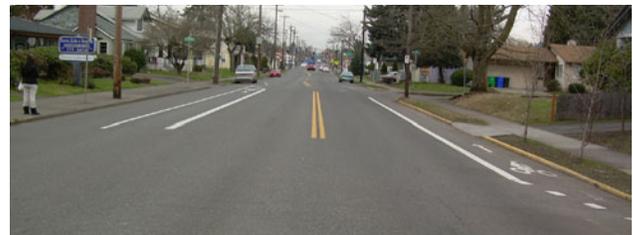
- Appropriate treatments depend on volume of traffic including turning volumes, the speed limit or 85th percentile speed of the main street and the type of bicyclist using the crossing.
- **Contraflow bike lanes** allow bicyclists to travel against the flow of traffic on a one-way street and can improve bicycle boulevard connectivity.
- Bicycle left-turn lanes can be painted where a bicycle boulevard is offset to the right on a street that has sufficient traffic gaps. Bicyclists cross one direction of traffic and wait in a protected space for a gap in the other direction. The bike turn pockets should be at least 4 feet wide, with a total of 11 feet for both turn pockets and center striping.
- Short **bike lanes** on the cross street assist with accessing a bicycle boulevard that jogs to the left. Crossing treatments should be provided on both sides to minimize wrong-way riding.
- A **cycle track** can be provided on one side of a busy street. Bicyclists enter the cycle track from the bicycle boulevard to reach the connecting segment of the bicycle boulevard. This maneuver may be signaled on one side.



Contraflow Bike Lane



Left Turn Bike Lanes



Short Bike Lanes on the Cross Street



Cycle Track Connection

#### Discussion

Because bicycle boulevards are located on local streets, the route is often discontinuous. Wayfinding and pavement markings assist bicyclists with remaining on the route.

#### Additional References and Guidelines

Hendrix, Michael. (2007). *Responding to the Challenges of Bicycle Crossings at Offset Intersections*. Third Urban Street Symposium.

#### Materials and Maintenance

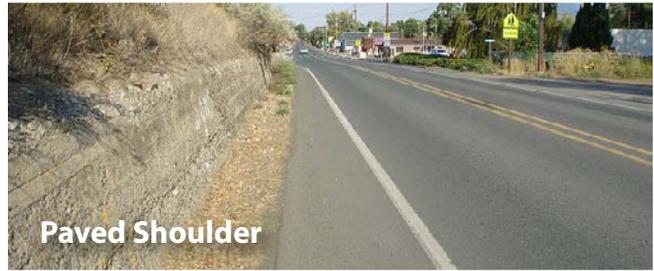
Paint can wear more quickly in high traffic areas or in winter climates. Facilities should be cleared of snow through routine snow removal operations.

## Separated Bikeways

Designated exclusively for bicycle travel, separated bikeways are segregated from vehicle travel lanes by striping, and can include pavement stencils and other treatments. Separated bikeways are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

Separated bikeways can increase safety and promote proper riding by:

- Defining road space for bicyclists and motorists, reducing the possibility that motorists will stray into the bicyclists' path.
- Discouraging bicyclists from riding on the sidewalk.
- Reducing the incidence of wrong way riding.
- Reminding motorists that bicyclists have a right to the road.



Paved Shoulder



Conventional Bicycle Lanes



Buffered Bike Lanes

### This section includes:

Paved Shoulder

Conventional Bike Lanes

- Bike Lane With No On-Street Parking
- Bike Lane Next to Parallel Parking
- Bike Lane Next to Diagonal Parking

Additional Bike Lane Configurations

- Buffered Bike Lanes

## Separated Bikeways

### Paved Shoulder

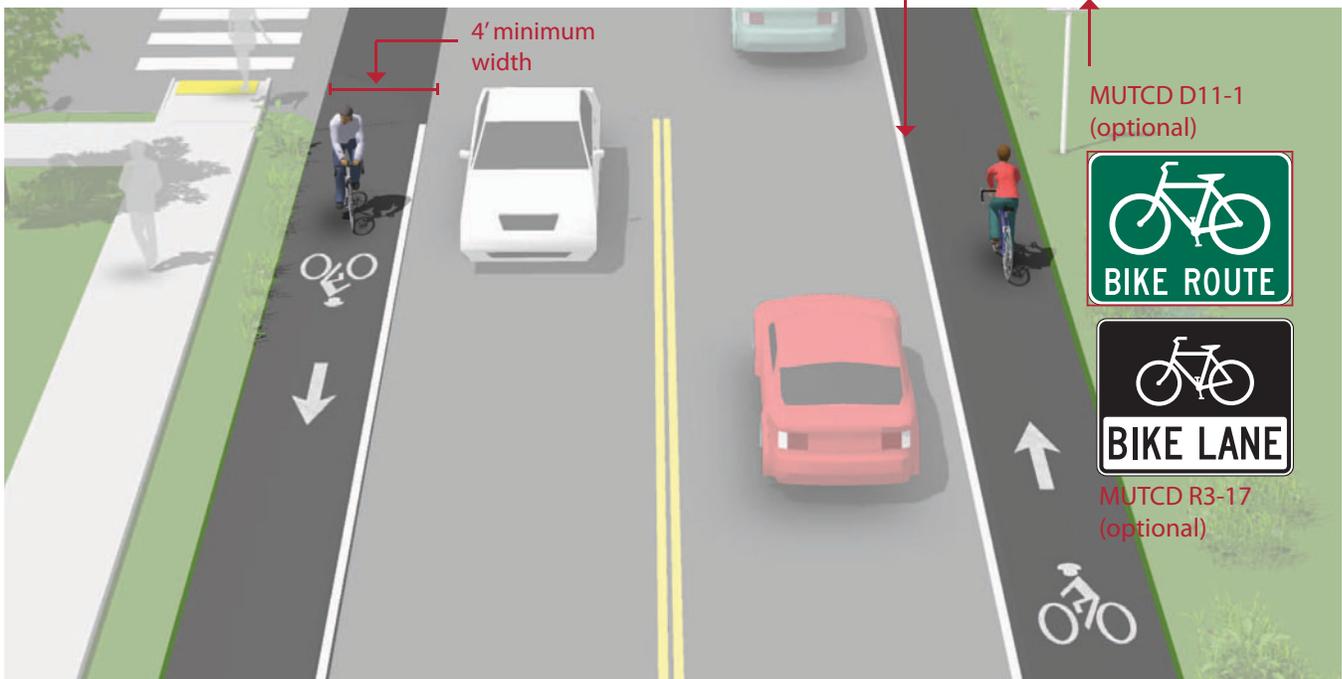
#### Guidance

- On rural sections (shoulder) with ADT greater than 500, bike lanes/paved shoulders should be a minimum of 4 feet wide in each direction to accommodate bicycle travel.
- Where motor vehicle speeds exceed 50 mph or the percentage of trucks, buses, and recreational vehicles is greater than 5 percent consider providing a 6 foot minimum width.
- If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists.

#### Description

Typically found in less-dense areas, paved shoulders are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Paved shoulders often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Paved shoulders should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter. This type of treatment is not typical in urban areas and should only be used where constraints exist.

SCDOT may require installation of rumble strips. See SCDOT EDM 53 for considerations for bicyclists.



#### Discussion

A wide outside lane may be sufficient accommodation for bicyclists on streets with insufficient width for bike lanes but which do have space available to provide a wider (14'-16') outside travel lane. Consider configuring as a **marked shared roadway** in these locations.

Where feasible, **roadway widening** should be performed with pavement resurfacing jobs, but not exceeding desirable bike lane widths.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 SCDOT. (2011). EDM 53: Installation of Rumble Strips

#### Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Shoulder bikeways should be cleared of snow through routine snow removal operations.

## Separated Bikeways

## Conventional Bike Lane Configurations

### Bike Lane with No On-Street Parking

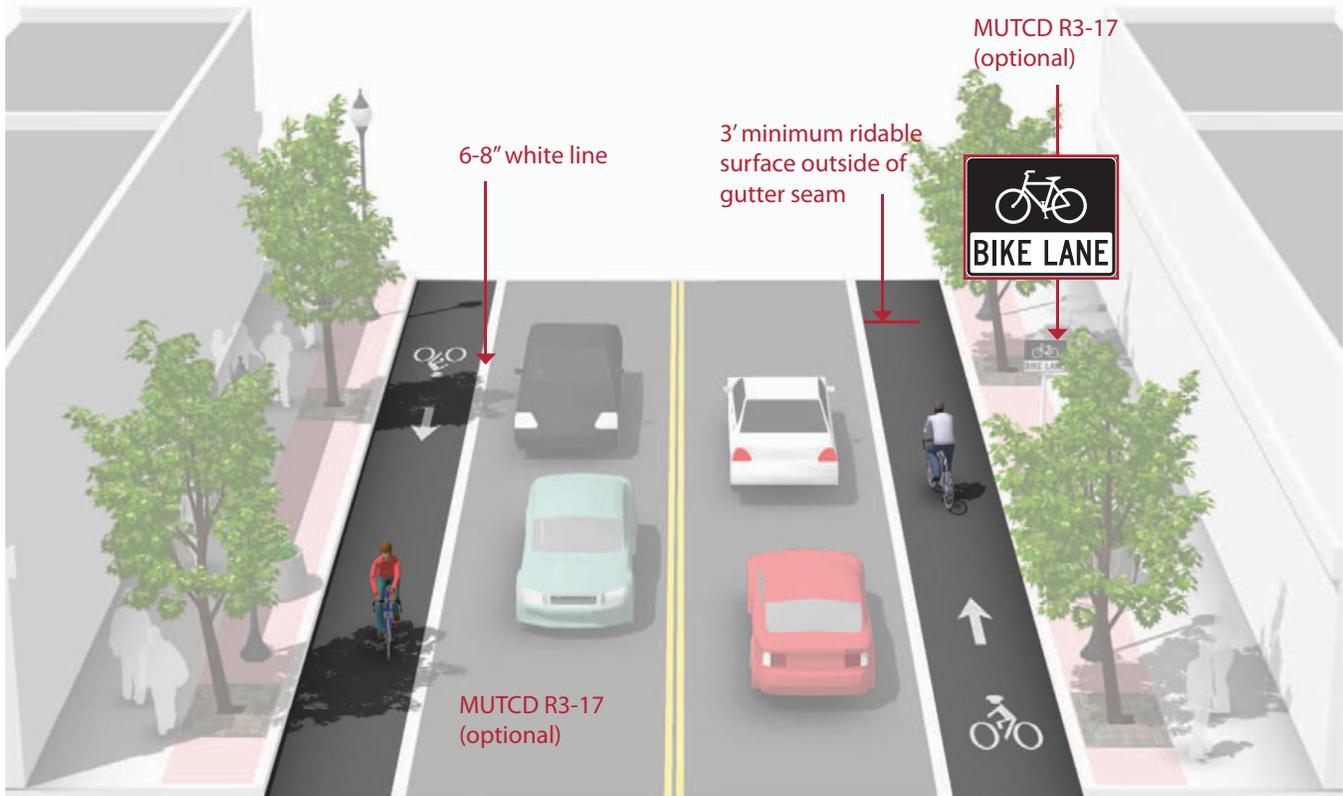
#### Guidance

- 4 foot minimum width. The gutter pan is not to be included in the width of the bike lane.
- 7 foot maximum width for use adjacent to arterials with high travel speeds. Greater widths may encourage motor vehicle use of bike lane. See **buffered bicycle lanes** when a wider facility is desired.

#### Description

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is typically located on the right side of the street, between the adjacent travel lane and curb, and is used in the same direction as motor vehicle traffic.

A bike lane width of 7 feet makes it possible for bicyclists to ride side-by-side or pass each other without leaving the bike lane, thereby increasing the capacity of the lane.



#### Discussion

Wider bicycle lanes are desirable in certain situations such as on higher speed arterials (45 mph+) where use of a wider bicycle lane would increase separation between passing vehicles and bicyclists. Appropriate signing and stenciling is important with wide bicycle lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane. Consider **Buffered Bicycle Lanes** when further separation is desired.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

## Separated Bikeways

## Conventional Bike Lane Configurations

### Bike Lane Adjacent to On-Street Parallel Parking

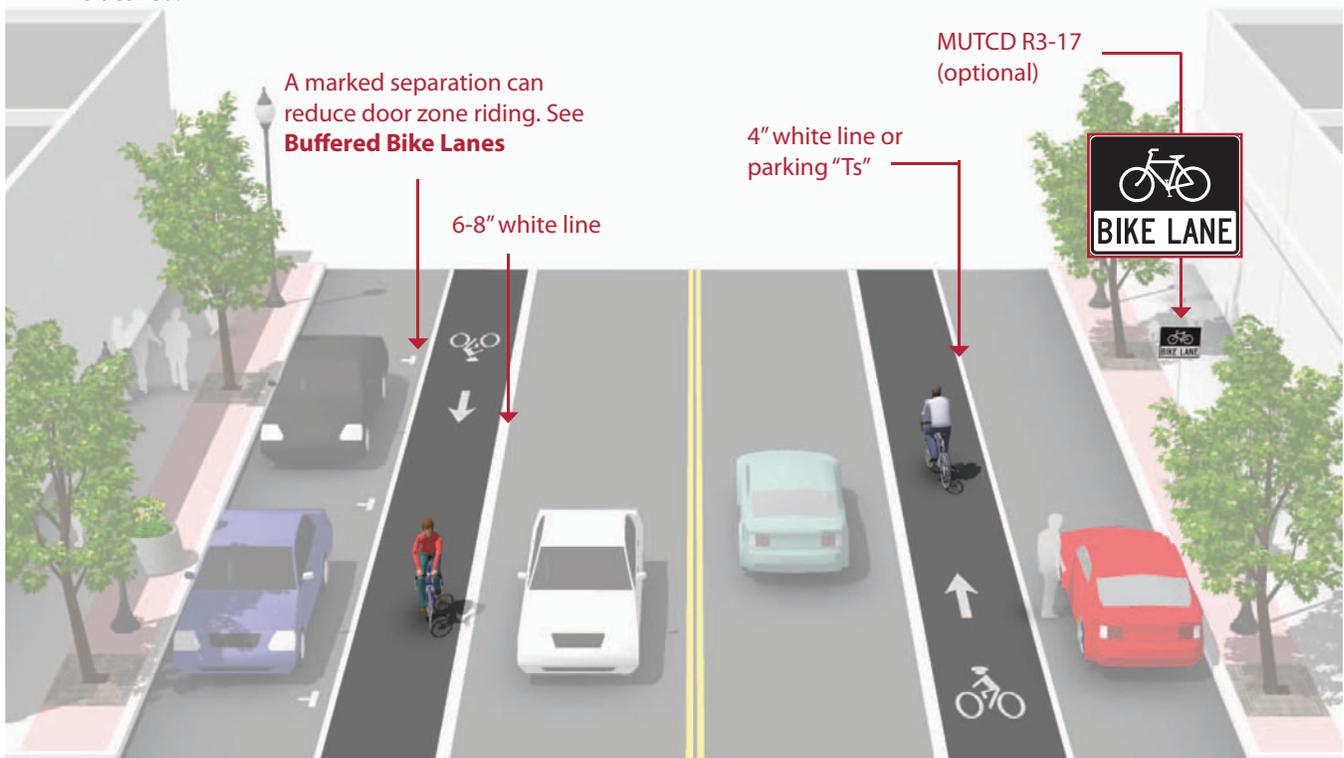
#### Guidance

- 12 foot minimum from curb face to edge of bike lane.
- 14.5 foot preferred from curb face to edge of bike lane.
- 7 foot maximum for marked width of bike lane. Greater widths may encourage vehicle loading in bike lane. See **buffered bicycle lanes** when a wider facility is desired.

#### Description

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.

Many bicyclists, particularly less experienced riders, are more comfortable riding on a busy street if it has a striped and signed bikeway than if they are expected to share a lane with vehicles.



#### Discussion

Bike lanes adjacent to on-street parallel parking require special treatment in order to avoid crashes caused by an open vehicle door. The bike lane should have sufficient width to allow bicyclists to stay out of the door zone while not encroaching into the adjacent vehicular lane. Parking stall markings, such as parking “Ts” and double white lines create a parking side buffer that encourages bicyclists to ride farther away from the door zone.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

## Separated Bikeways

## Conventional Bike Lane Configurations

### Bike Lane Adjacent to On-Street Back-in Diagonal Parking

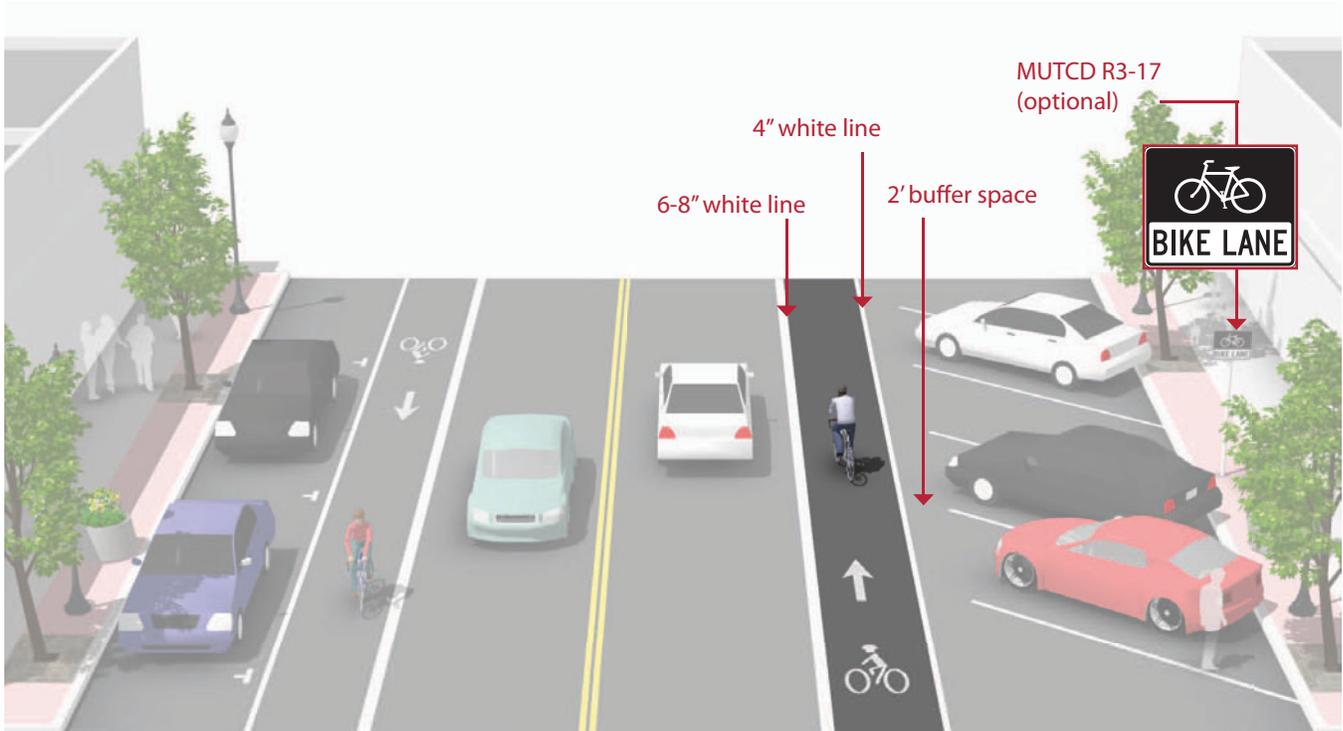
#### Guidance

- 5 foot minimum marked width of bike lane.
- Parking bays are sufficiently long to accommodate most vehicles (so vehicles do not block bike lane).

#### Description

In certain areas with high parking demand such as urban commercial areas, diagonal parking can be used to increase parking supply.

Back-in diagonal parking improves sight distances between drivers and bicyclists when compared to conventional head-in diagonal parking. Back-in diagonal parking provides other benefits including loading and unloading of the trunk at the curb rather than in the street, passengers (including children) are directed by open doors towards the curb and there is no door conflict with bicyclists. While there may be a learning curve for some drivers, back-in diagonal parking is typically an easier maneuver than conventional parallel parking.



#### Discussion

Conventional front-in diagonal parking is not compatible or recommended in conjunction with high levels of bicycle traffic or with the provision of bike lanes, as drivers backing out of conventional diagonal parking have limited visibility of approaching bicyclists.

#### Additional References and Guidelines

There is no currently adopted Federal or State guidance for this treatment.

#### Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

## Separated Bikeways

## Enhanced Bikeways

### Buffered Bike Lane

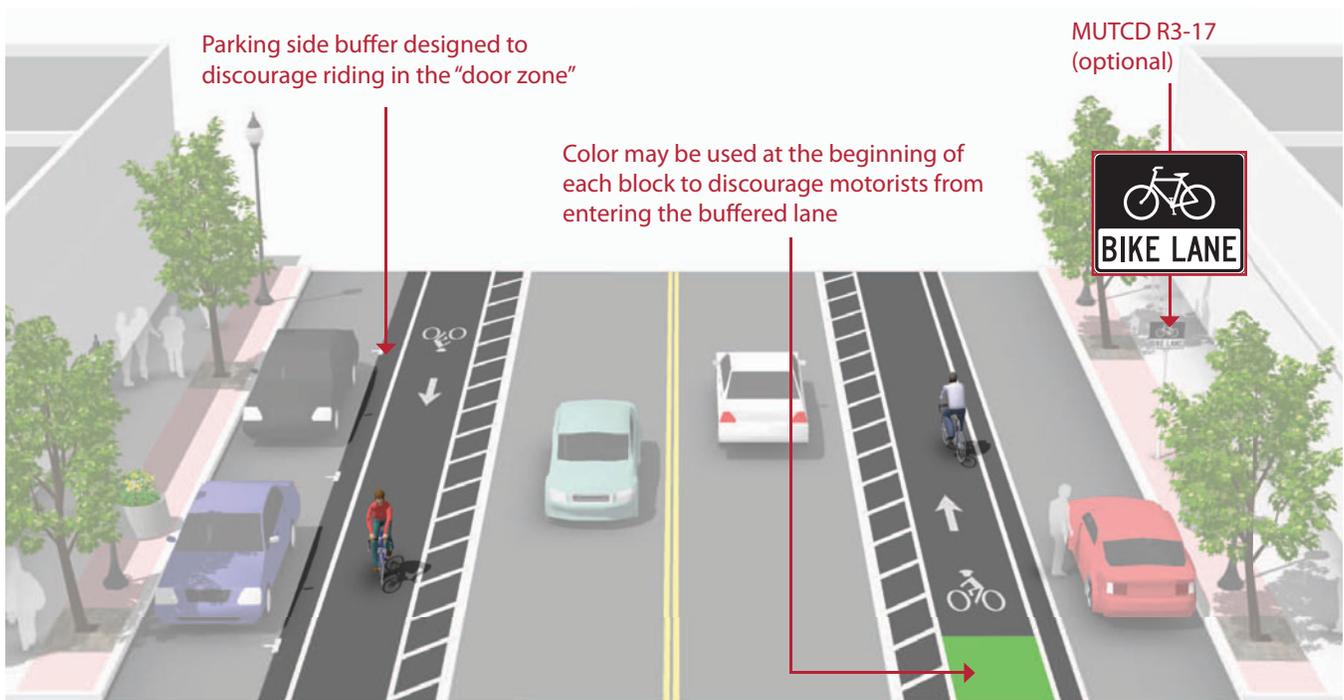
#### Guidance

- Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is 7 feet.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.

#### Description

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 are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. 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.



#### Discussion

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the 'door zone' of parked cars.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices. (3D-01)  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

## 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.

A two-way cycle track is desirable when more destinations are on one side of a street (therefore preventing additional crossings), if the facility connects to a path or other bicycle facility on one side of the street, or if there is not enough room for a cycle track on both sides of the road.

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. See **separated bikeways at intersections** for more information.



### This section includes:

#### Cycle Tracks

- Cycle Track Separation and Placement
- One-Way Cycle Tracks
- Two-Way Cycle Tracks

## Cycle Tracks

### Cycle Track Separation and Placement

#### Guidance

- Cycle tracks should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles. Cycle tracks located on one-way streets have fewer potential conflict areas than those on two-way streets.
- In situations where on-street parking is allowed, cycle tracks shall be located between the parking lane and the sidewalk (in contrast to bike lanes).

#### Description

Protection is provided through physical barriers and can include bollards, parking, a planter strip, an extruded curb, or on-street parking. Cycle tracks using these protection elements typically share the same elevation as adjacent travel lanes.

Raised cycle tracks may be at the level of the adjacent sidewalk or set at an intermediate level between the roadway and sidewalk to separate the cycle track from the pedestrian area.



#### Discussion

Sidewalks or other pedestrian facilities should not be narrowed to accommodate the cycle track as pedestrians will likely walk on the cycle track if sidewalk capacity is reduced. Visual and physical cues (e.g., pavement markings & signage) should be used to make it clear where bicyclists and pedestrians should be travelling. If possible, separate the cycle track and pedestrian zone with a furnishing zone.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

In cities with winter climates barrier separated and raised cycle tracks may require special equipment for snow removal.

## Cycle Tracks

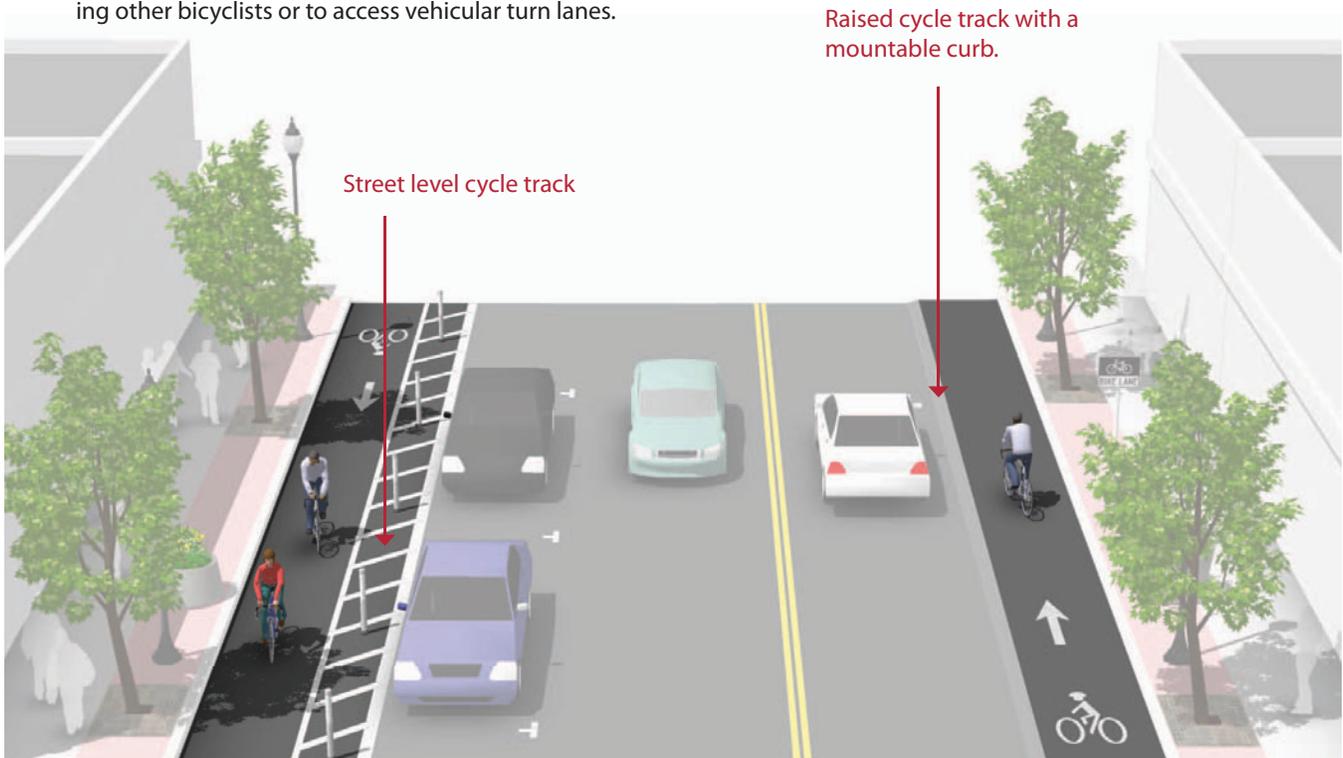
### One-Way Cycle Tracks

#### Guidance

- 7 foot recommended minimum to allow passing.
- 5 foot minimum width in constrained locations.
- When placed adjacent to parking, the parking buffer should be three feet wide to allow for passenger loading and to prevent door collisions.
- When placed adjacent to a travel lane, one-way raised cycle tracks may be configured with a mountable curb to allow entry and exit from the bicycle lane for passing other bicyclists or to access vehicular turn lanes.

#### Description

One-way cycle tracks are physically separated from motor traffic and distinct from the sidewalk. Cycle tracks are either raised or at street level and use a variety of elements for physical protection from passing traffic.



#### Discussion

Special consideration should be given at transit stops to manage bicycle and pedestrian interactions. Driveways and minor street crossings are unique challenges to cycle track design. Parking should be prohibited within 30 feet of the intersection to improve visibility. Color, yield markings and “Yield to Bikes” signage should be used to identify the conflict area and make it clear that the cycle track has priority over entering and exiting traffic. If configured as a raised cycle track, the crossing should be raised so that the sidewalk and cycle track maintain their elevation through the crossing.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

In cities with winter climates barrier separated and raised cycle tracks may require special equipment for snow removal.

## Cycle Tracks

### Two-Way Cycle Tracks

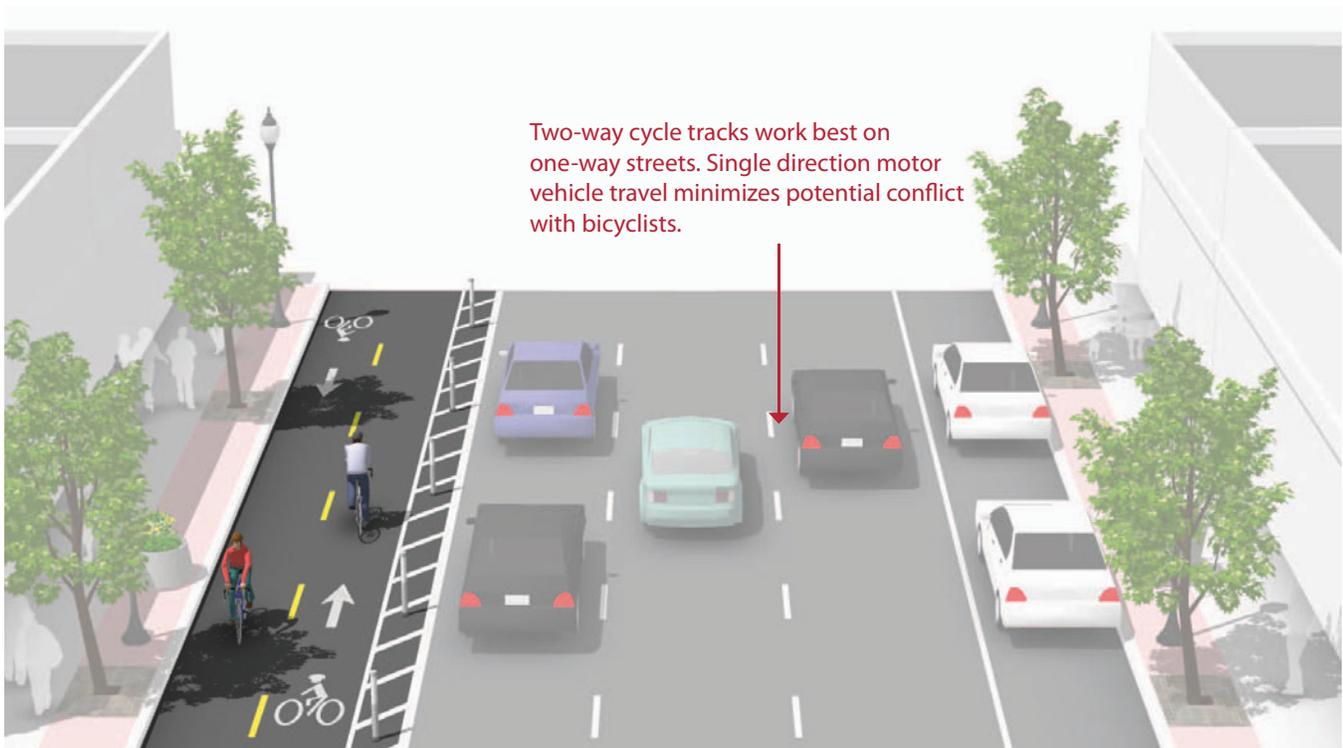
#### Guidance

- 12 foot recommended minimum for two-way facility
- 8 foot minimum in constrained locations
- When placed adjacent to parking, the parking buffer should be three feet wide to allow for passenger loading and to prevent door collisions.

#### Description

Two-way cycle tracks are physically separated cycle tracks that allow bicycle movement in both directions on one side of the road. Two-way cycle tracks share some of the same design characteristics as **one-way cycle tracks**, but may require additional considerations at driveway and side-street crossings.

A two-way cycle track may be configured as a protected cycle track at street level with a parking lane or other barrier between the cycle track and the motor vehicle travel lane and/or as a raised cycle track to provide vertical separation from the adjacent motor vehicle lane.



#### Discussion

Two-way cycle tracks require a higher level of control at intersections to allow for a variety of turning movements. These movements should be guided by separated signals for bicycles and motor vehicles. Transitions into and out of two-way cycle tracks should be simple and easy to use to deter bicyclists from continuing to ride against the flow of traffic.

At driveways and minor intersections, bicyclists riding against roadway traffic in two-way cycle tracks may surprise pedestrians and drivers not expecting bidirectional travel. Appropriate signage is recommended.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

In cities with winter climates barrier separated and raised cycle tracks may require special equipment for snow removal.

## Separated Bikeways at Intersections

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle facilities should reduce conflict between bicyclists (and other vulnerable road users) and vehicles by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes. Intersection treatments can improve both queuing and merging maneuvers for bicyclists, and are often coordinated with timed or specialized signals.

The configuration of a safe intersection for bicyclists may include elements such as color, signage, medians, signal detection and pavement markings. Intersection design should take into consideration existing and anticipated bicyclist, pedestrian and motorist movements. In all cases, the degree of mixing or separation between bicyclists and other modes is intended to reduce the risk of crashes and increase bicyclist comfort. The level of treatment required for bicyclists at an intersection will depend on the bicycle facility type used, whether bicycle facilities are intersecting, and the adjacent street function and land use.

### This section includes:

- Bike Boxes
- Bike Lanes at Right Turn Only Lanes
- Colored Bike Lanes in Conflict Areas
- Shared Bicycle/Right Turn Lanes
- Intersection Crossing Markings
- Bicycles at Single Lane Roundabouts
- Bicycles at High Speed Interchanges



## Separated Bikeways at Intersections

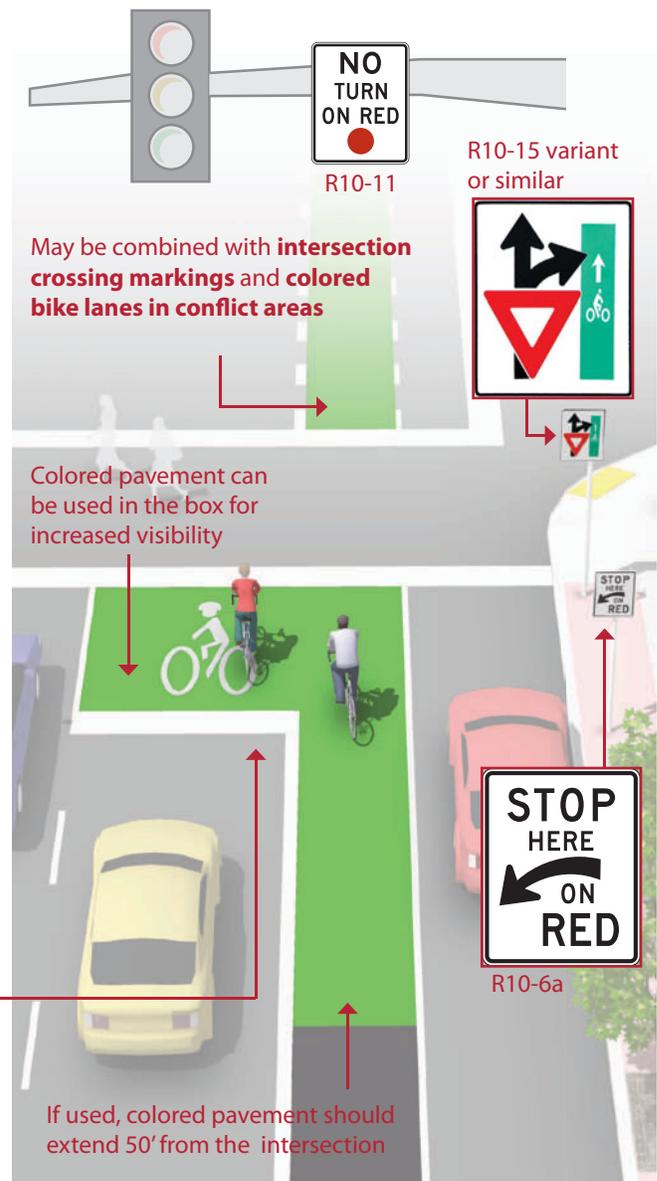
### Bike Box

#### Description

A bike box is a designated area located at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible space to get in front of queuing motorized traffic during the red signal phase. Motor vehicles must queue behind the white stop line at the rear of the bike box.

#### Guidance

- 14' minimum depth
- A "No Turn on Red" (MUTCD R10-11) sign shall be installed overhead to prevent vehicles from entering the Bike Box.
- A "Stop Here on Red" sign should be post-mounted at the stop line to reinforce observance of the stop line.
- A "Yield to Bikes" sign should be post-mounted in advance of and in conjunction with an egress lane to reinforce that bicyclists have the right-of-way going through the intersection.
- An ingress lane should be used to provide access to the box.
- A supplemental "Wait Here" legend can be provided in advance of the stop bar to increase clarity to motorists.



#### Discussion

Bike boxes should be placed only at signalized intersections, and right turns on red shall be prohibited for motor vehicles. Bike boxes should be used in locations that have a large volume of bicyclists and are best utilized in central areas where traffic is usually moving more slowly. Prohibiting right turns on red improves safety for bicyclists yet does not significantly impede motor vehicle travel.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.  
 FHWA. (2011). Interim Approval (IA-14) has been granted. Requests to use green colored pavement need to comply with the provisions of Paragraphs 14 through 22 of Section 1A.10

#### Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

## Separated Bikeways at Intersections

### Bike Lanes at Right Turn Only Lanes

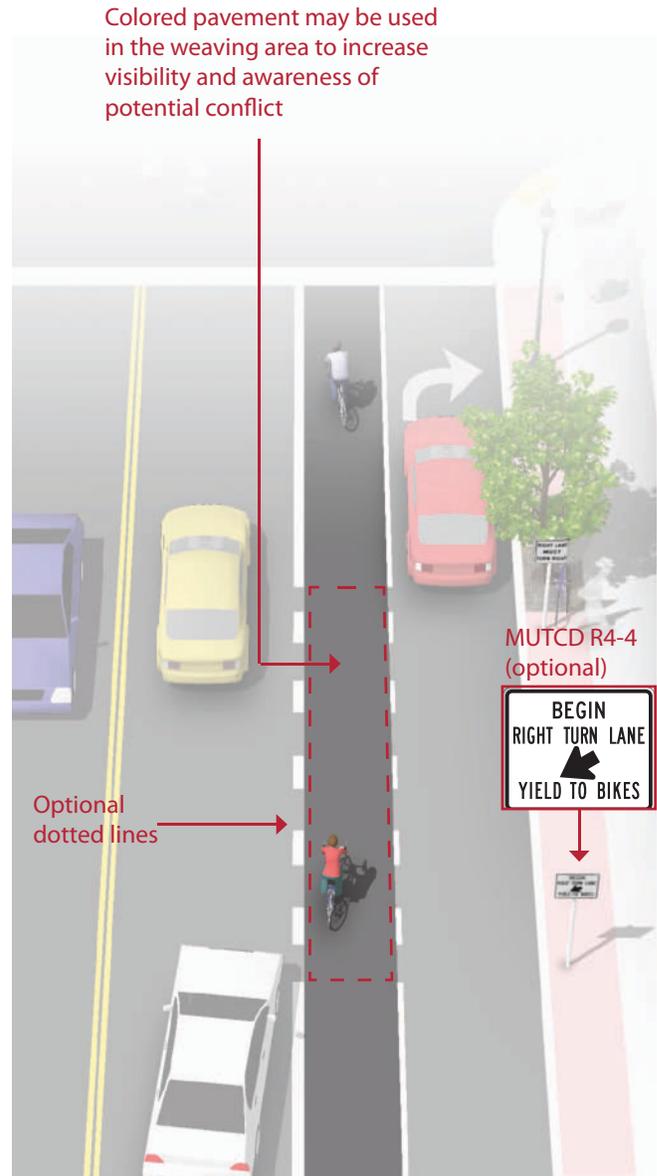
#### Description

The appropriate treatment at right-turn lanes is to place the bike lane between the right-turn lane and the right-most through lane or, where right-of-way is insufficient, to use a **shared bike lane/turn lane**.

The design (right) illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the conflict area.

#### Guidance

- Continue existing bike lane width; standard width of 5 to 6 feet or 4 feet in constrained locations.
- Use signage to indicate that motorists should yield to bicyclists through the conflict area.
- Consider using **colored conflict areas** to promote visibility of the mixing zone.



#### Discussion

For other potential approaches to providing accommodations for bicyclists at intersections with turn lanes, please see **shared bike lane/turn lane**, bicycle signals, and **colored bike facilities**.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

## Separated Bikeways at Intersections

### Colored Bike Lanes in Conflict Areas

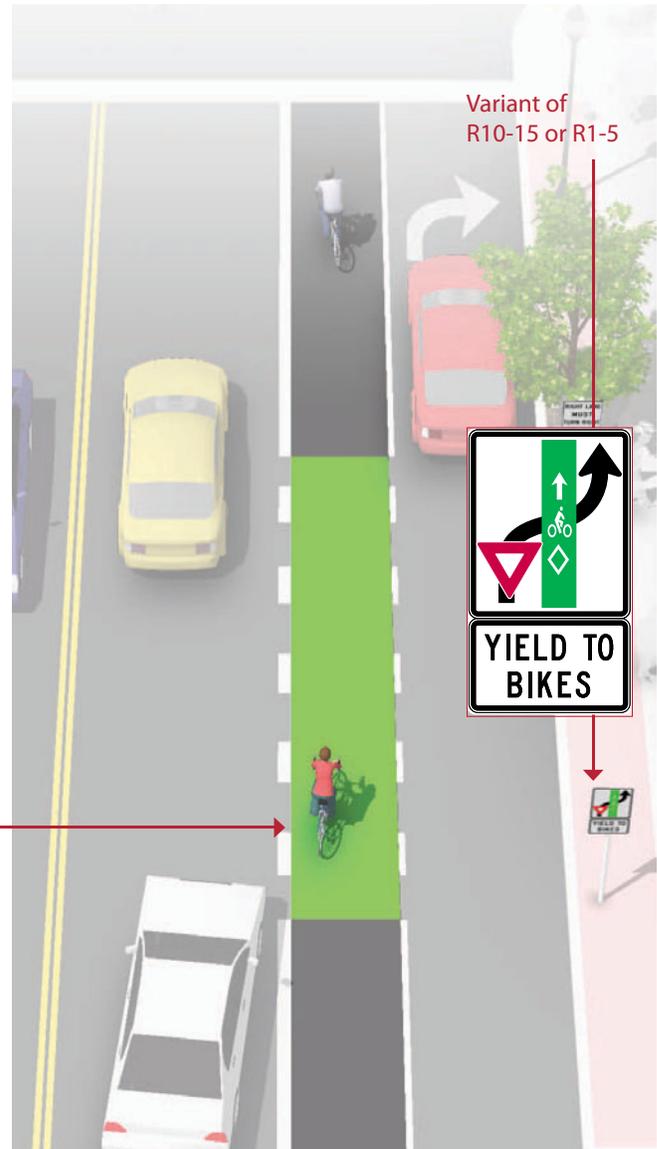
#### Description

Colored pavement within a bicycle lane increases the visibility of the facility and reinforces priority of bicyclists in conflict areas.

#### Guidance

- Green colored pavement was given interim approval by the Federal Highways Administration in March 2011. See interim approval for specific color standards.
- The colored surface should be skid resistant and retro-reflective.
- A "Yield to Bikes" sign should be used at intersections or driveway crossings to reinforce that bicyclists have the right-of-way in colored bike lane areas.

Normal white dotted edge lines should define colored space



#### Discussion

Evaluations performed in Portland, OR, St. Petersburg, FL and Austin, TX found that significantly more motorists yielded to bicyclists and slowed or stopped before entering the conflict area after the application of the colored pavement when compared with an uncolored treatment.

#### Additional References and Guidelines

FHWA. (2011). Interim Approval (IA-14) has been granted. Requests to use green colored pavement need to comply with the provisions of Paragraphs 14 through 22 of Section 1A.10  
NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

## Separated Bikeways at Intersections

### Shared Bike Lane / Turn Lane

#### Description

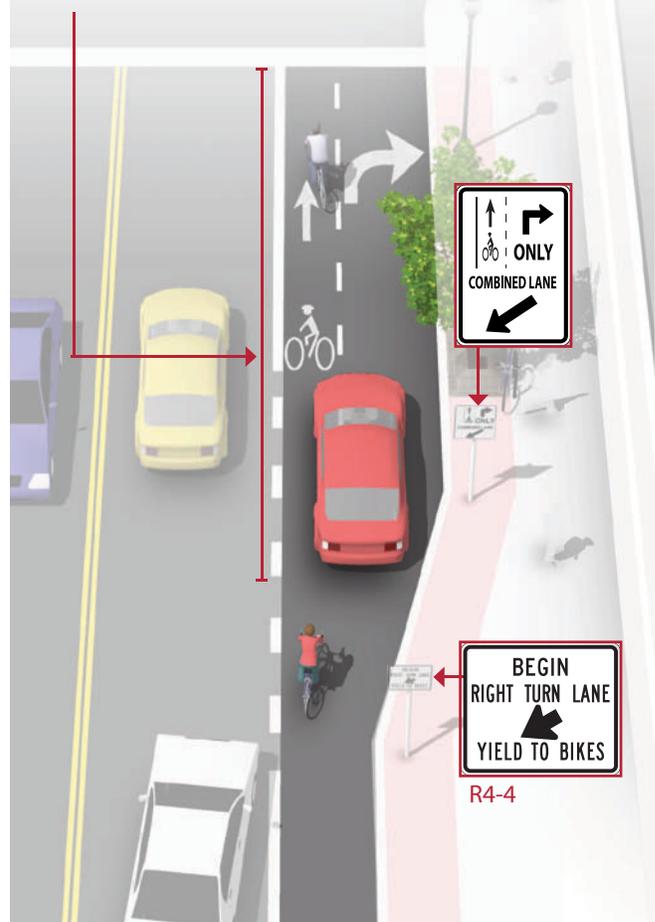
The shared bicycle/right turn lane places a standard-width bike lane on the left side of a dedicated right turn lane. A dotted line delineates the space for bicyclists and motorists within the shared lane. This treatment includes signage advising motorists and bicyclists of proper positioning within the lane.

This treatment is recommended at intersections lacking sufficient space to accommodate both a standard **through bike lane** and right turn lane.

#### Guidance

- Maximum shared turn lane width is 13 feet.
- Bike Lane pocket should have a minimum width of 4 feet with 5 feet preferred.
- A dotted 4 inch line and bicycle lane marking should be used to clarify bicyclist positioning within the combined lane, without excluding cars from the suggested bicycle area.
- A "Right Turn Only" sign with an "Except Bicycles" plaque may be needed to make it legal for through bicyclists to use a right turn lane.

Short length turn pockets encourage slower motor vehicle speeds



#### Discussion

Case studies cited by the Pedestrian and Bicycle Information Center indicate that this treatment works best on streets with lower posted speeds (30 MPH or less) and with lower traffic volumes (10,000 ADT or less). May not be appropriate for high-speed arterials or intersections with long right turn lanes. May not be appropriate for intersections with large percentages of right-turning heavy vehicles.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide. This treatment is currently slated for inclusion in the next edition of the AASHTO Guide for the Development of Bicycle Facilities

#### Materials and Maintenance

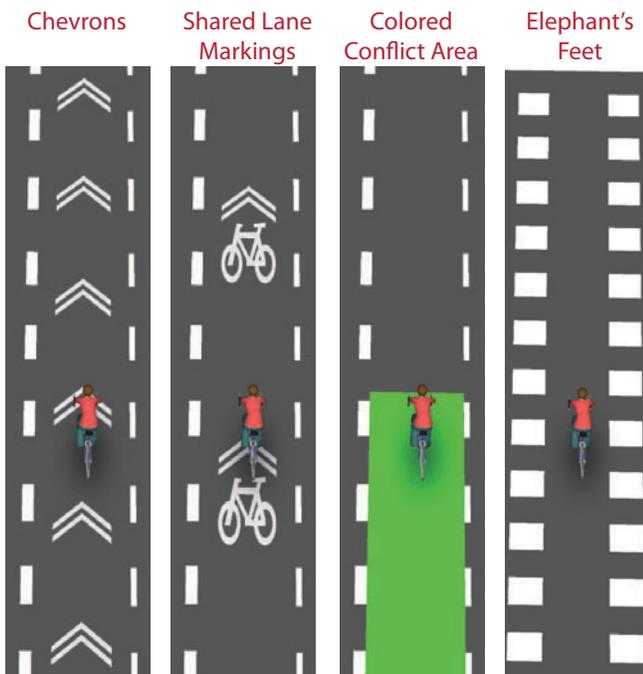
Locate markings out of tire tread to minimize wear. Because the effectiveness of markings depends on their visibility, maintaining markings should be a high priority.

## Separated Bikeways at Intersections

### Intersection Crossing Markings

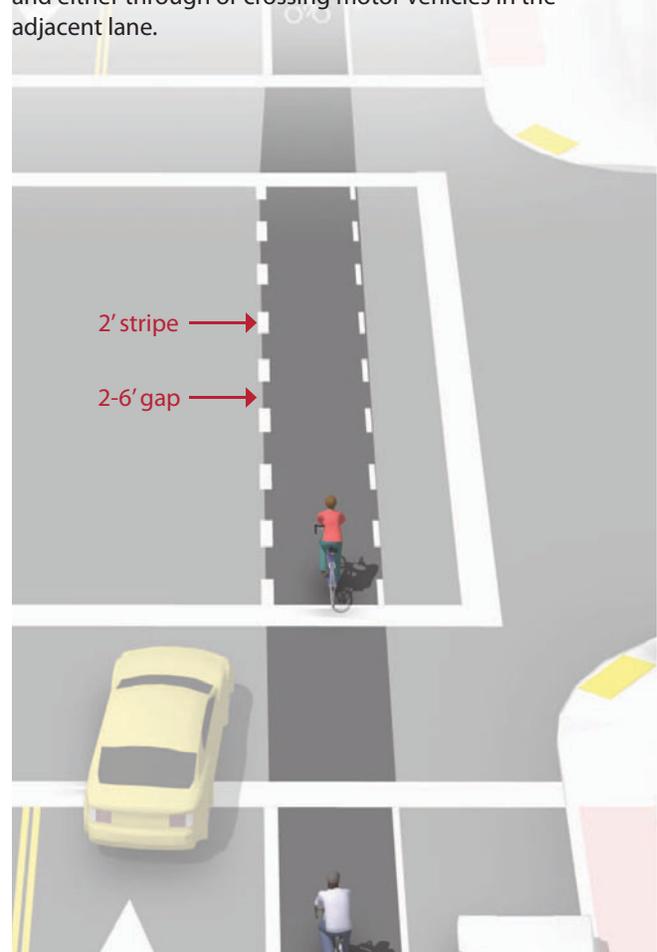
#### Guidance

- See MUTCD Section 3B.08: “dotted line extensions”
- Crossing striping shall be at least six inches wide when adjacent to motor vehicle travel lanes. Dotted lines should be two-foot lines spaced two to six feet apart.
- Chevrons, shared lane markings, or **colored bike lanes in conflict areas** may be used to increase visibility within conflict areas or across entire intersections. Elephant’s Feet markings are common in Europe and Canada.



#### Description

Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection and provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.



#### Discussion

Additional markings such as chevrons, shared lane markings, or **colored bike lanes in conflict areas** are strategies currently in use in the United States and Canada. Cities considering the implementation of markings through intersections should standardize future designs to avoid confusion.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices. (3A.06)  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority.

## Separated Bikeways at Intersections

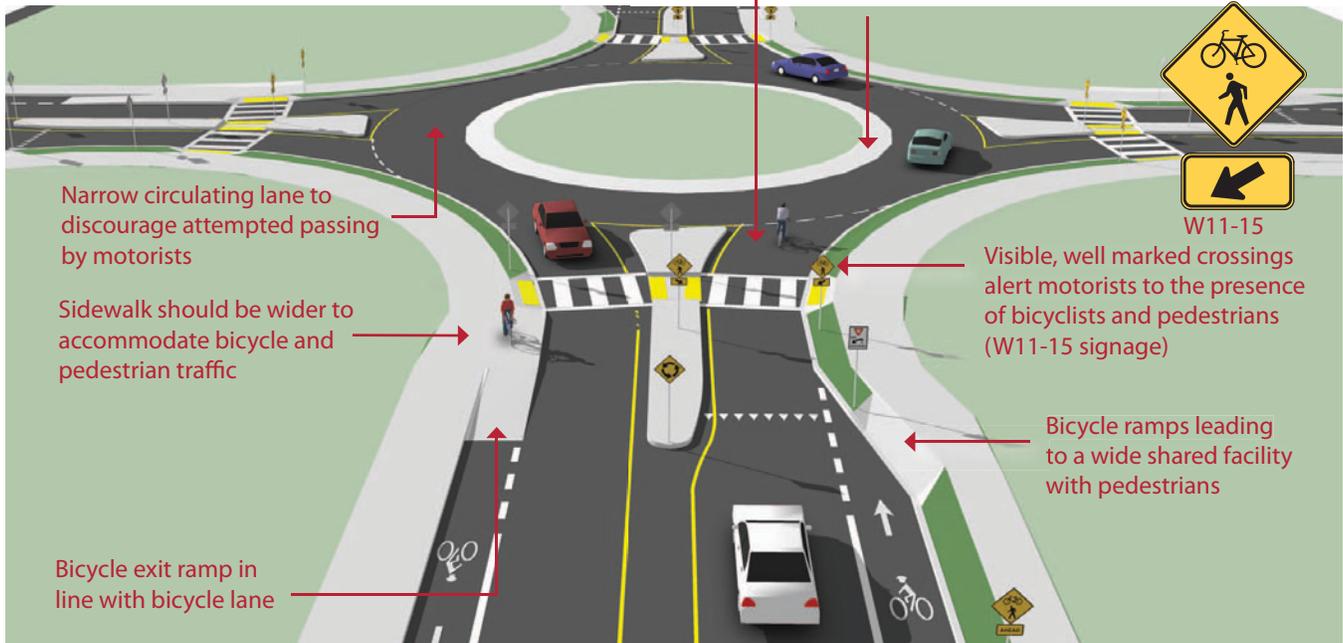
### Bicyclists at Single Lane Roundabouts

#### Guidelines

- 25 mph maximum circulating design speed.
- Design approaches/exits to the lowest speeds possible.
- Encourage bicyclists navigating the roundabout like motor vehicles to “take the lane.”
- Maximize yielding rate of motorists to pedestrians and bicyclists at crosswalks.
- Provide separated facilities for bicyclists who prefer not to navigate the roundabout on the roadway.

#### Description

In single lane roundabouts it is important to indicate to motorists, bicyclists and pedestrians the right-of-way rules and correct way for them to circulate, using appropriately designed signage, pavement markings, and geometric design elements.



#### Discussion

Research indicates that while single-lane roundabouts may benefit bicyclists and pedestrians by slowing traffic, multi-lane roundabouts may present greater challenges and significantly increase safety problems for these users.

#### Additional References and Guidelines

FHWA. (2000). Roundabouts: An Informational Guide  
 FHWA. (2010). Roundabouts: An Informational Guide, Second Edition. NCHRP 672

#### Materials and Maintenance

Signage and striping require routine maintenance.

## Separated Bikeways at Intersections

### Bike Lanes at High Speed Interchanges

#### Guidance

##### Entrance Ramps:

Angle the bike lane to increase the approach angle with entering traffic. Position crossing before drivers' attention is focused on the upcoming merge.

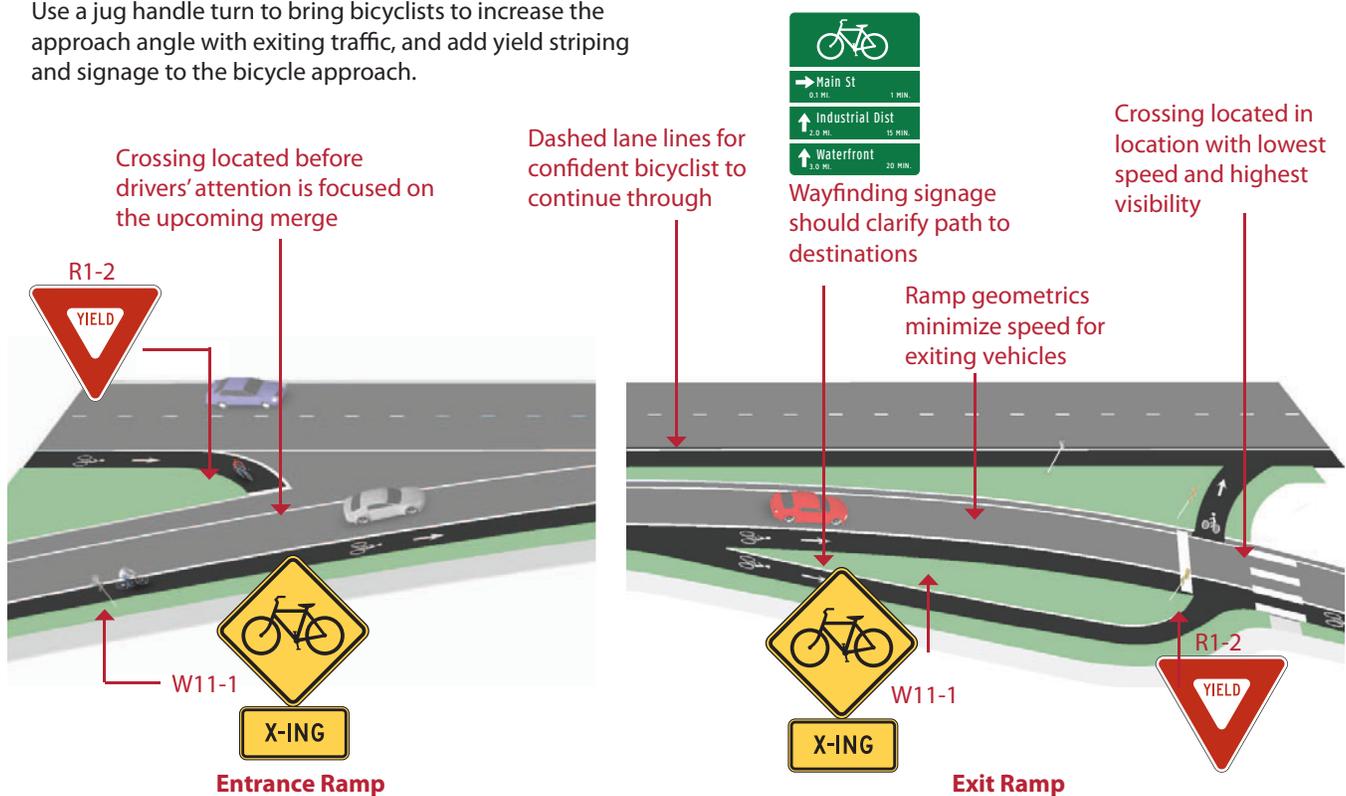
##### Exit Ramps:

Use a jug handle turn to bring bicyclists to increase the approach angle with exiting traffic, and add yield striping and signage to the bicycle approach.

#### Description

Some arterials may contain high speed freeway-style designs such as merge lanes and exit ramps, which can create difficulties for bicyclists. The entrance and exit lanes typically have intrinsic visibility problems because of low approach angles and feature high speed differentials between bicyclists and motor vehicles.

Strategies to improve safety focus on increasing sight distances, creating formal crossings, and minimizing crossing distances.



#### Discussion

While the jug-handle approach is the preferred configuration at exit ramps, provide the option for through bicyclists to perform a vehicular merge and proceed straight through under safe conditions.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices. Bicycle and Pedestrian Transportation. Lesson 15: Bicycle Lanes

#### Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs.

## Bikeway Signing

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Signs throughout the city should indicate to bicyclists:

- Direction of travel
- Location of destinations
- Travel time/distance to those destinations

These signs will increase users' comfort and accessibility to the bicycle systems.

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bicycle network
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)

A community-wide bicycle wayfinding signage plan would identify:

- Sign locations
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- Approximate distance and travel time to each destination

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

### This section includes:

- Wayfinding Sign Types
- Wayfinding Sign Placement



Wayfinding Sign Types



Wayfinding Sign Placement

## Bikeway Signing

### Wayfinding Sign Types

#### Description

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. There are three general types of wayfinding signs:

#### Confirmation Signs

Indicate to bicyclists that they are on a designated bikeway. Make motorists aware of the bicycle route.

Can include destinations and distance/time. Do not include arrows.

#### Turn Signs

Indicate where a bikeway turns from one street onto another street. Can be used with pavement markings.

Include destinations and arrows.

#### Decisions Signs

Mark the junction of two or more bikeways.

Inform bicyclists of the designated bike route to access key destinations.

Destinations and arrows, distances and travel times are optional but recommended.



#### Discussion

There is no standard color for bicycle wayfinding signage. Section 1A.12 of the MUTCD establishes the general meaning for signage colors. Green is the color used for directional guidance and is the most common color of bicycle wayfinding signage in the US, including those in the MUTCD.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

## Bikeway Signing

# Wayfinding Sign Placement

### Guidance

Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

### Decisions Signs

Near-side of intersections in advance of a junction with another bicycle route.

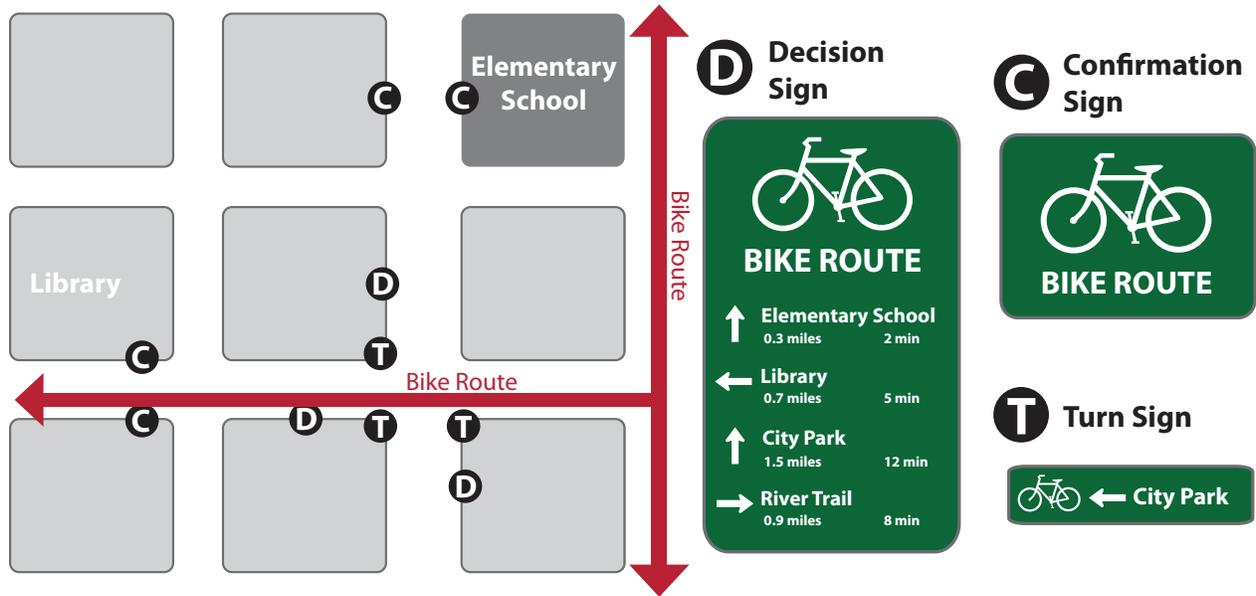
Along a route to indicate a nearby destination.

### Confirmation Signs

Every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along on-street bicycle facilities, unless another type of sign is used (e.g., within 150 ft of a turn or decision sign). Should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

### Turn Signs

Near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through). Pavement markings can also indicate the need to turn to the bicyclist.



### Discussion

It can be useful to classify a list of destinations for inclusion on the signs based on their relative importance to users throughout the area. A particular destination's ranking in the hierarchy can be used to determine the physical distance from which the locations are signed. For example, primary destinations (such as the downtown area) may be included on signage up to five miles away. Secondary destinations (such as a transit station) may be included on signage up to two miles away. Tertiary destinations (such as a park) may be included on signage up to one mile away.

### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

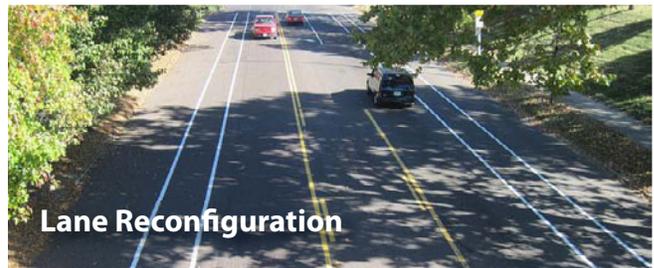
### Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

## Retrofitting Existing Streets to add Bikeways

Most major streets are characterized by conditions (e.g., high vehicle speeds and/or volumes) for which dedicated bike lanes are the most appropriate facility to accommodate safe and comfortable riding. Although opportunities to add bike lanes through roadway widening may exist in some locations, many major streets have physical and other constraints that would require street retrofit measures within existing curb-to-curb widths. As a result, much of the guidance provided in this section focuses on effectively reallocating existing street width through striping modifications to accommodate dedicated bike lanes.

Although largely intended for major streets, these measures may be appropriate for any roadway where bike lanes would be the best accommodation for bicyclists.



### This section includes:

- Roadway Widening
- Lane Narrowing
- Lane Reconfiguration
- Parking Reduction

## Retrofitting Existing Streets

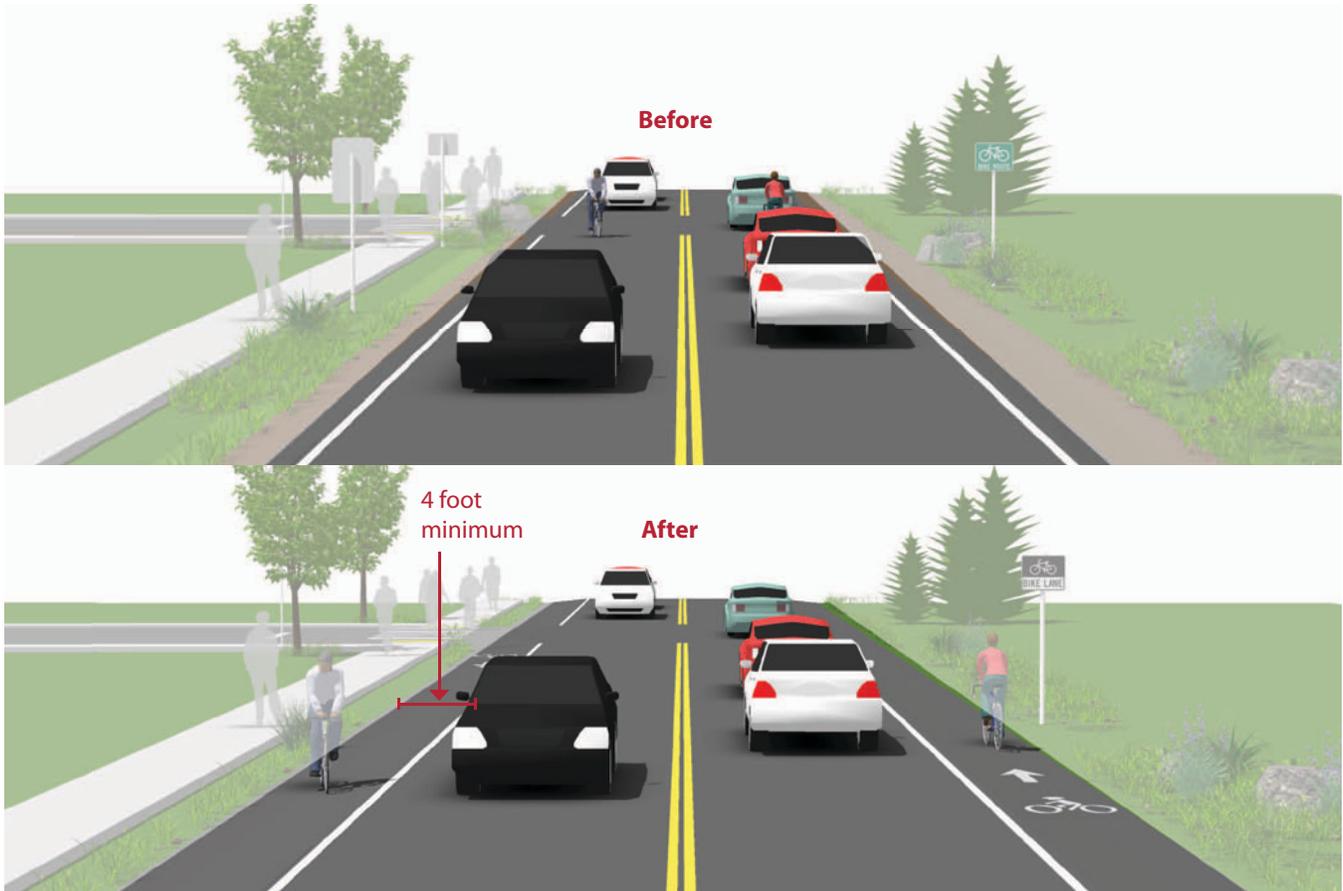
### Roadway Widening

#### Guidance

- Guidance on **bicycle lanes** applies to this treatment.
- 4 foot minimum width when no curb and gutter is present.
- 6 foot width preferred.

#### Description

Bike lanes can be accommodated on streets with excess right-of-way through shoulder widening. Although roadway widening incurs higher expenses compared with re-striping projects, bike lanes can be added to streets currently lacking curbs, gutters and sidewalks without the high costs of major infrastructure reconstruction.



#### Discussion

Roadway widening is most appropriate on roads lacking curbs, gutters and sidewalks.

If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. In these situations, a minimum of 3 feet of operating space should be provided.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.

#### Materials and Maintenance

The extended bicycle area should not contain any rough joints where bicyclists ride. Saw or grind a clean cut at the edge of the travel lane, or feather with a fine mix in a non-ridable area of the roadway.

## Retrofitting Existing Streets

### Lane Narrowing

#### Guidance

##### Vehicle lane width:

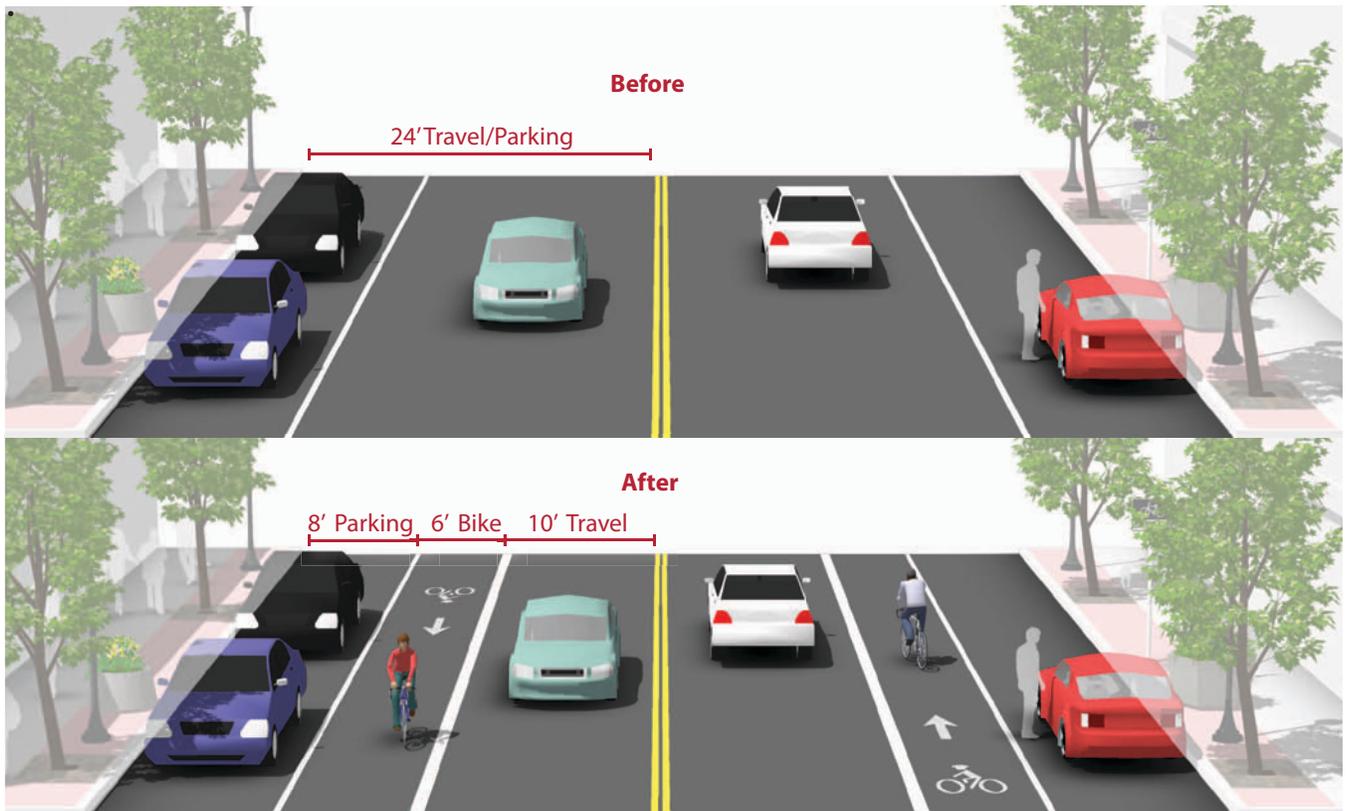
- Before: 10-15 feet
- After: 10-11 feet

##### Bicycle lane width:

- Guidance on **Bicycle Lanes** applies to this treatment.

#### Description

Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in local and national roadway design standards, or which are not marked. Most standards allow for the use of 11 foot and sometimes 10 foot wide travel lanes to create space for bike lanes.



#### Discussion

Roadways designated as being on the National Truck Network or South Carolina Truck Network or roadways where the percentage of trucks, buses, and recreational vehicles is greater than 5 percent of the ADT should have lane widths of 12 feet. Guidance on selecting the proper lane width for a roadway can be found in Chapters 19 through 22 of the SCDOT Highway Design Manual. AASHTO supports reduced width lanes in *A Policy on Geometric Design of Highways and Streets*: "On interrupted-flow operation conditions at low speeds (45 mph or less), narrow lane widths are normally adequate and have some advantages."

#### Additional References and Guidelines

AASHTO. (2004). *A Policy on Geometric Design of Highways and Streets*.

#### Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement.

## Retrofitting Existing Streets

### Lane Reconfiguration

#### Guidance

##### Vehicle lane width:

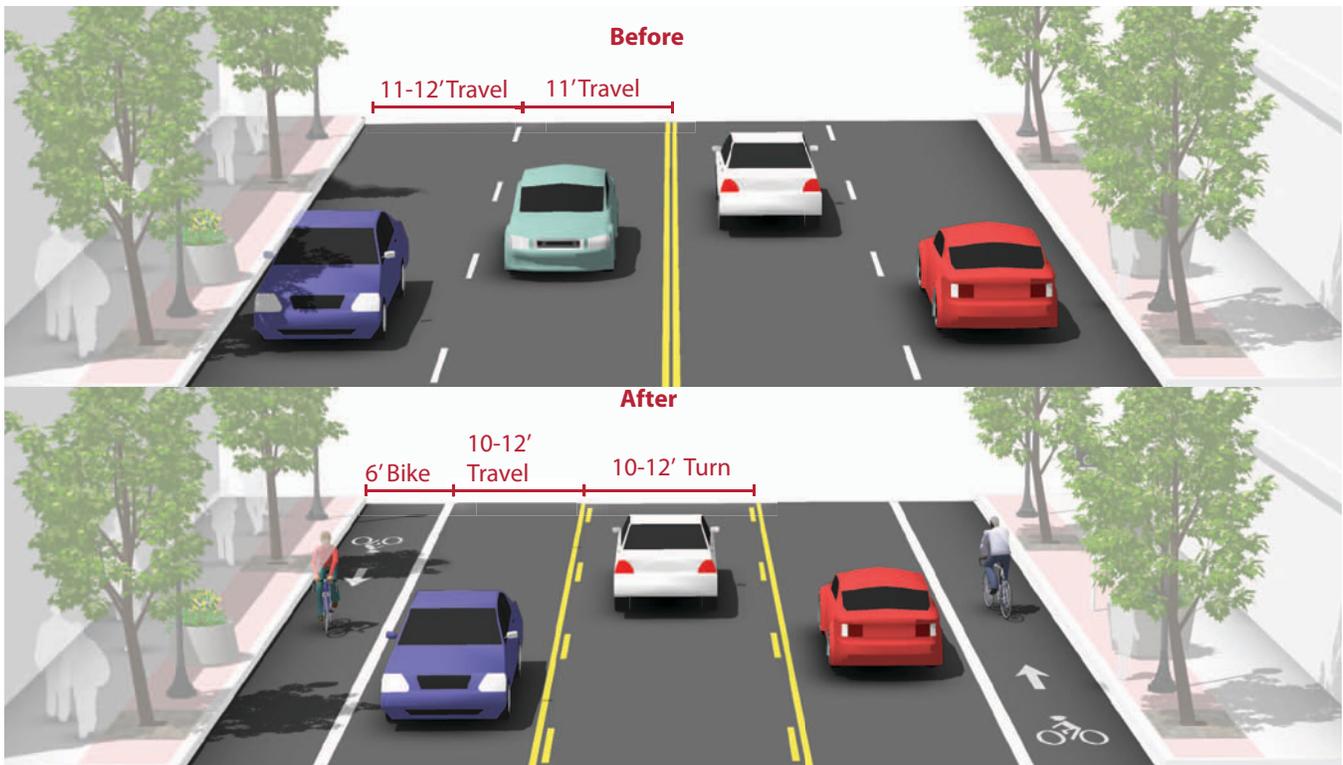
- Width depends on project. No narrowing may be needed if a lane is removed.

##### Bicycle lane width:

- Guidance on **Bicycle Lanes** applies to this treatment.

#### Description

The removal of a single travel lane will generally provide sufficient space for bike lanes on both sides of a street. Streets with excess vehicle capacity provide opportunities for bike lane retrofit projects.



#### Discussion

Depending on a street's existing configuration, traffic operations, user needs and safety concerns, various lane reduction configurations may apply. For instance, a four-lane street (with two travel lanes in each direction) could be modified to provide one travel lane in each direction, a center turn lane, and bike lanes. Prior to implementing this measure, a traffic analysis should identify potential impacts.

#### Additional References and Guidelines

FHWA. (2010). Evaluation of Lane Reduction "Road Diet" Measures on Crashes. Publication Number: FHWA-HRT-10-053

#### Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement.

## Retrofitting Existing Streets

### Parking Reduction

#### Guidance

##### Vehicle lane width:

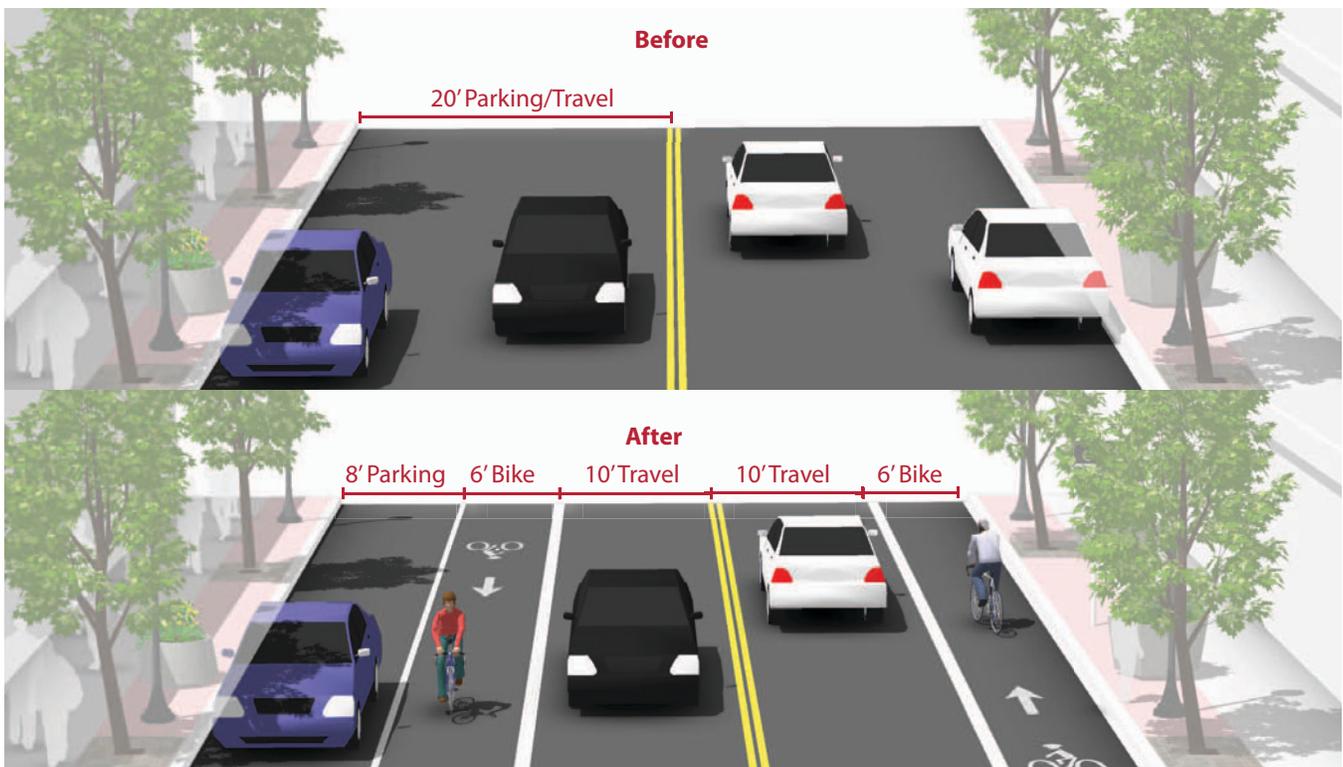
- Parking lane width depends on project. No travel lane narrowing may be required depending on the width of the parking lanes.

##### Bicycle lane width:

- Guidance on **Bicycle Lanes** applies to this treatment.

#### Description

Bike lanes can replace one or more on-street parking lanes on streets where excess parking exists and/or the importance of bike lanes outweighs parking needs. For example, parking may be needed on only one side of a street. Eliminating or reducing on-street parking also improves sight distance for bicyclists in bike lanes and for motorists on approaching side streets and driveways.



#### Discussion

Removing or reducing on-street parking to install bike lanes requires comprehensive outreach to the affected businesses and residents. Prior to reallocating on-street parking for other uses, a parking study should be performed to gauge demand and to evaluate impacts to people with disabilities.

#### Additional References and Guidelines

AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.

There is no currently adopted Federal or State guidance for this treatment.

#### Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement

## Bicycle Support Facilities

### Bicycle Parking

Bicyclists expect a safe, convenient place to secure their bicycle when they reach their destination. This may be short term parking of 2 hours or less, or long-term parking for employees, students, residents, and commuters.

### Access to Transit

Safe and easy access to bicycle parking facilities is necessary to encourage commuters to access transit via bicycle. Providing bicycle access to transit and space for bicycles on buses can increase the feasibility of transit in lower-density areas, where transit stops are beyond walking distance of many residences. People are often willing to walk only a quarter- to half-mile to a bus stop, while they might bike as much as two or more miles to reach a transit station.

### Roadway Construction and Repair

Safety of all roadway users should be considered during road construction and repair. Wherever bicycles are allowed, measures should be taken to provide for the continuity of a bicyclist's trip through a work zone area.

Only in rare cases should pedestrians and bicyclists be detoured to another street when travel vehicle lanes remain open. Contractors performing work should be made aware of the needs of bicyclists and be properly trained in how to safely route bicyclists through or around work zones.



### This Section Includes:

- Bicycle Parking
  - Bicycle Racks
  - On-Street Bicycle Corral
  - Bicycle Lockers
- Bicycle Access through Construction Areas
- Bicycle Access to Transit

## Short Term Bicycle Parking

### Bicycle Racks

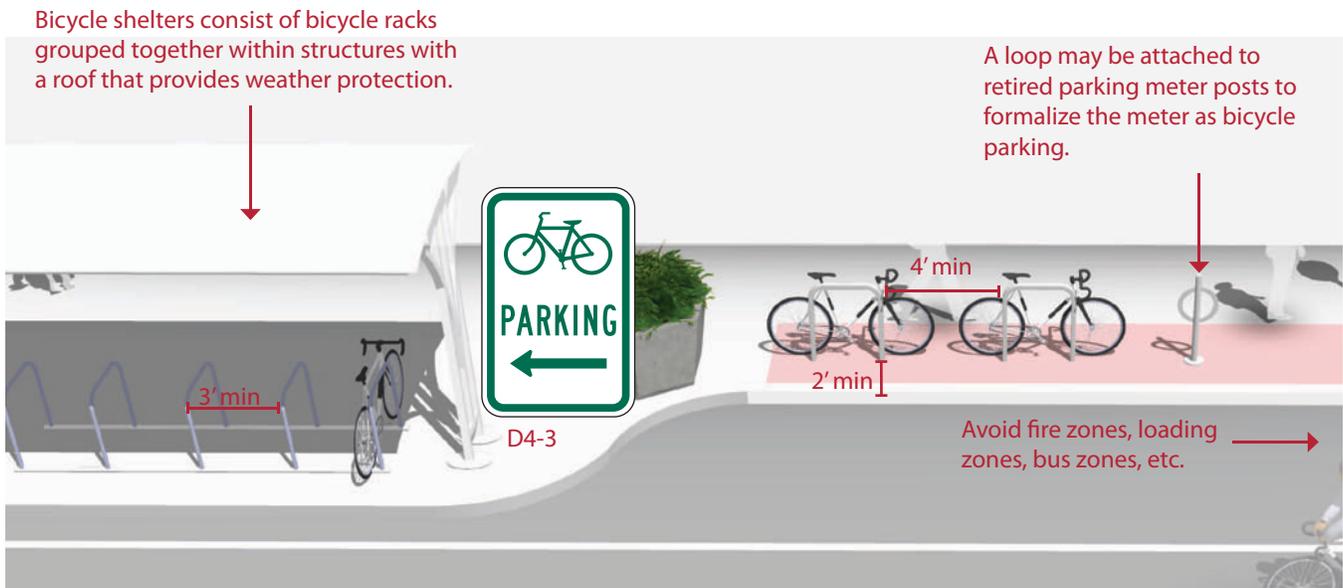
#### Guidance

- 2' minimum from the curb face to avoid 'dooring.'
- Close to destinations; 50' maximum distance from main building entrance.
- Minimum clear distance of 6' should be provided between the bicycle rack and the property line.
- Should be highly visible from adjacent bicycle routes and pedestrian traffic.
- Locate racks in areas that cyclists are most likely to travel.

#### Description

Short-term bicycle parking is meant to accommodate visitors, customers, and others expected to depart within two hours. It should have an approved standard rack, appropriate location and placement, and weather protection. The Association for Pedestrian and Bicycle Professionals (APBP) recommends selecting a bicycle rack that:

- Supports the bicycle in at least two places, preventing it from falling over.
- Allows locking of the frame and one or both wheels with a U-lock.
- Is securely anchored to ground.
- Resists cutting, rusting and bending or deformation.



#### Discussion

Where the placement of racks on sidewalks is not possible (due to narrow sidewalk width, sidewalk obstructions, street trees, etc.), bicycle parking can be provided in the street where on-street vehicle parking is allowed in the form of **on-street bicycle corrals**.

Some types of bicycle racks may meet design criteria, but are discouraged except in limited situations. This includes undulating "wave" racks, schoolyard "wheel bender" racks, and spiral racks.

#### Additional References and Guidelines

APBP. (2010). Bicycle Parking Guide 2nd Edition.

#### Materials and Maintenance

Use of proper anchors will prevent vandalism and theft. Racks and anchors should be regularly inspected for damage. Educate snow removal crews to avoid burying racks during winter months.

## Short Term Bicycle Parking

### On-Street Bicycle Corral

#### Guidance

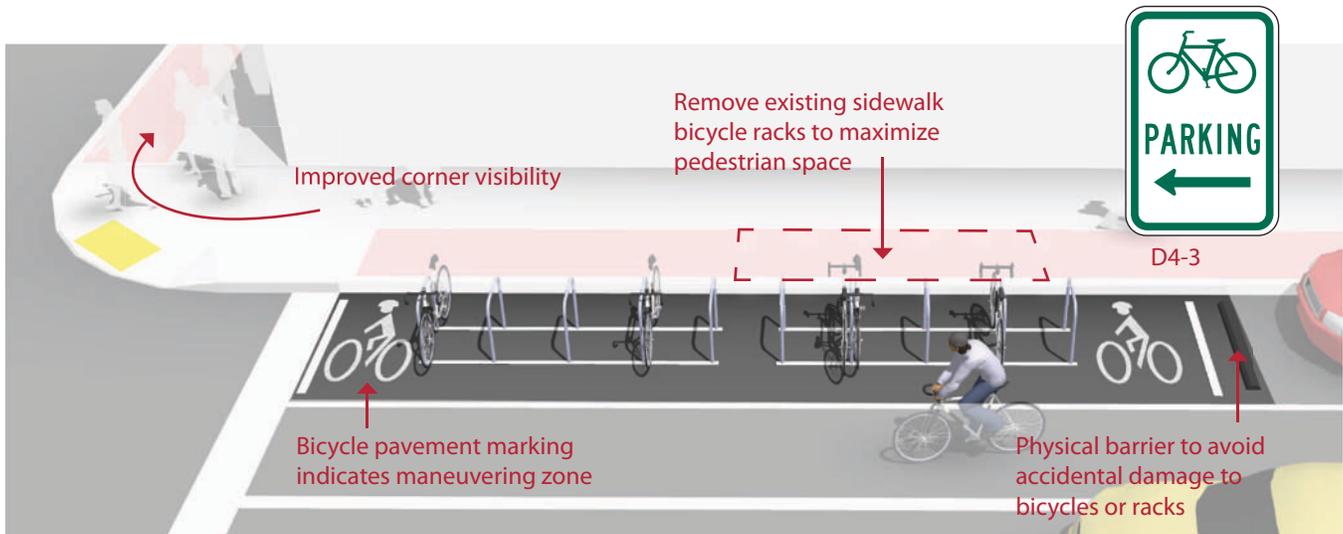
See guidelines for sidewalk **bicycle rack** placement and clear zones.

- Bicyclists should have an entrance width from the roadway of 5' – 6'.
- Can be used with parallel or angled parking.
- Parking stalls adjacent to curb extensions are good candidates for bicycle corrals since the concrete extension serves as delimitation on one side.

#### Description

Bicycle corrals (also known as “on-street” bicycle parking) 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. Bicycle corrals can be implemented by converting one or two on-street motor vehicle parking spaces into on-street bicycle parking. Each motor vehicle parking space can be replaced with approximately 6-10 bicycle parking spaces.

Bicycle corrals move bicycles off the sidewalks, leaving more space for pedestrians, sidewalk café tables, etc. Because bicycle parking does not block sightlines (as large motor vehicles would do), it may be possible to locate bicycle parking in ‘no-parking’ zones near intersections and crosswalks.



#### Discussion

In many communities, the installation of bicycle corrals is driven by requests from adjacent businesses, and is not a city-driven initiative. In such cases, the city does not remove motor vehicle parking unless it is explicitly requested. In other areas, the city provides the facility and business associations take responsibility for the maintenance of the facility. Communities can establish maintenance agreements with the requesting business. Bicycle corrals can be especially effective in areas with high bicycle parking demand or along street frontages with narrow sidewalks where parked bicycles would be detrimental to the pedestrian environment.

#### Additional References and Guidelines

APBP. (2010). Bicycle Parking Guide 2nd Edition.

#### Materials and Maintenance

Physical barriers may obstruct drainage and collect debris. Establish a maintenance agreement with neighboring businesses. In snowy climates the bicycle corral may need to be removed during the winter months.

## Long Term Bicycle Parking

### Bicycle Lockers

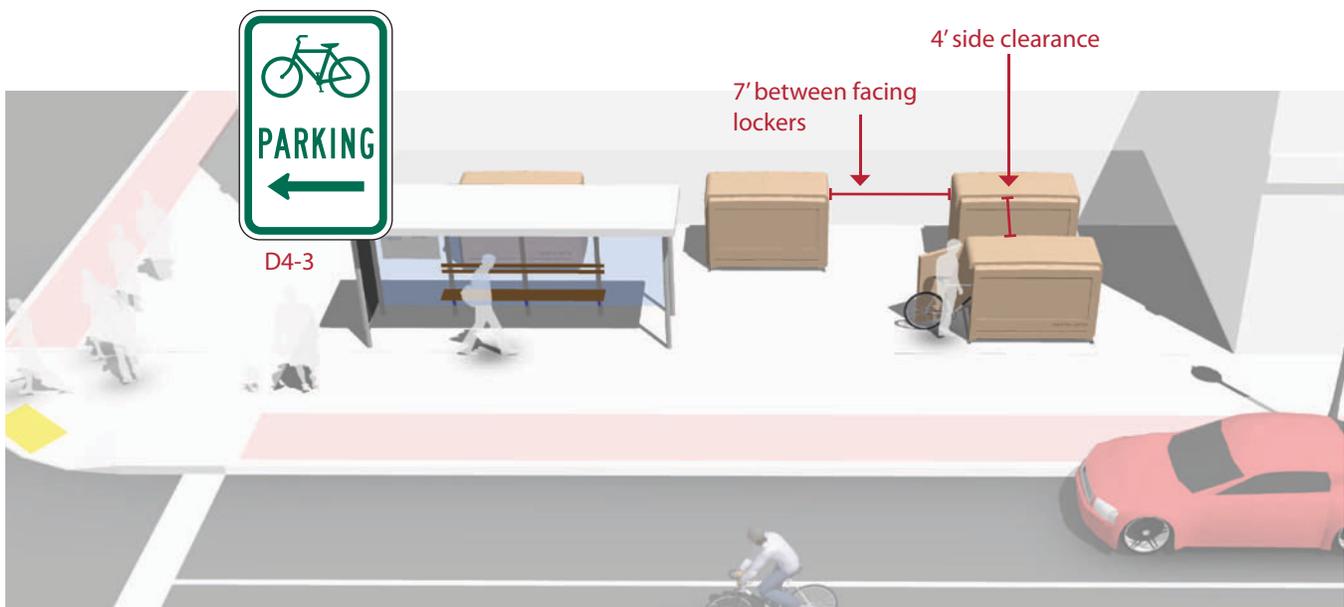
#### Guidance

- Minimum dimensions: width (opening) 2.5'; height 4'; depth 6'.
- 4 foot side clearance and 6 foot end clearance
- 7 foot minimum distance between facing lockers
- Locker designs that allow visibility and inspection of contents are recommended for increased security.
- Access is controlled by a key or access code.

#### Description

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. Some lockers allow access to two users - a partition separating the two bicycles can help users feel their bike is secure. Lockers can also be stacked, reducing the footprint of the area, although that makes them more difficult to use.



#### Discussion

Long-term parking facilities are more expensive to provide than short-term facilities, but are also significantly more secure. Although many bicycle commuters would be willing to pay a nominal fee to guarantee the safety of their bicycle, long-term bicycle parking should be free wherever automobile parking is free. Potential locations for long-term bicycle parking include transit stations, large employers, and institutions where people use their bikes for commuting and not consistently throughout the day.

#### Additional References and Guidelines

APBP. (2010). Bicycle Parking Guide 2nd Edition.

#### Materials and Maintenance

Regularly inspect the functioning of moving parts and enclosures. Change keys and access codes periodically to prevent access to unapproved users.

## Street Construction and Repair

### Bicycle Access Through Construction Areas

#### Description

Wherever bicycles are allowed, measures should be taken to provide for the continuity of a bicyclist's trip through a work zone area. Bicyclists should not be led into conflicts with work site vehicles, equipment, moving vehicles, open trenches, or temporary construction signage.

Efforts should be made to re-create a bike lane (if one exists) to the left of the construction zone. If this is impossible, then a standard-width travel lane should be considered.

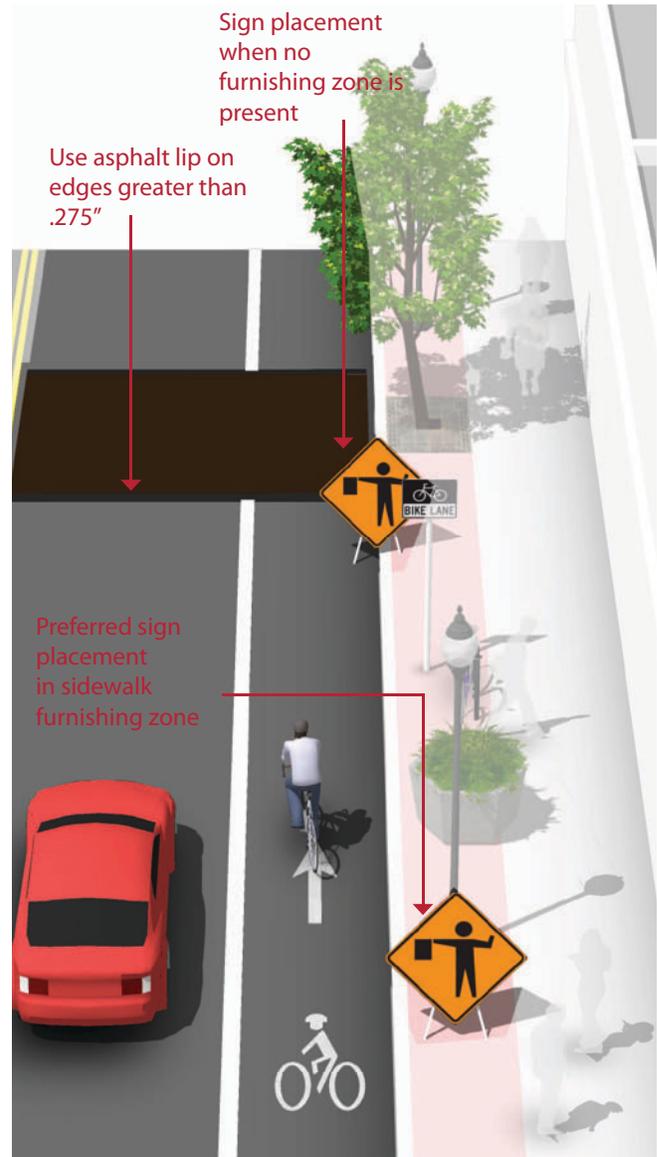
#### Guidance

##### Construction Signage

- Place in a location that does not obstruct the path of bicyclists or pedestrians.
- Detour and closure signs related to bicycle travel may be included on all bikeways where construction activities occur. Signage should also be provided on all other roadways.

##### Bicycle Travel around Steel Grates

- Require temporary asphalt (cold mix) around plates to create a smooth transition.
- Use steel plates only as a temporary measure during construction, not for extended periods.
- Use warning signs where steel plates are in use.
- Require both temporary and final repaving to provide a smooth surface without abrupt edges.



#### Discussion

Plates used to cover trenches tend to not be flush with pavement and have a 1"-2" vertical transition on the edges. This can puncture a hole in a bicycle tire and cause a bicyclist to lose control. Although it is common to use steel plates during non-construction hours, these plates can be dangerously slippery, particularly when wet.

Contractors performing work should be made aware of the needs of bicyclists and be properly trained in how to safely route bicyclists through or around work zones.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 FHWA. (2006). Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Lesson 21: Bicycle and Pedestrian Accommodation in Work Zones

#### Materials and Maintenance

Debris should be swept to maintain a reasonably clean riding surface in the outer 5 - 6 ft of roadway.

## Support Facilities

### Bicycle Access to Transit

#### Description

Safe and easy access transit stations and secure bicycle parking facilities is necessary to encourage commuters to access transit via bicycle. Bicycling to transit reduces the need to provide expensive and space consuming car parking spaces.

Many people who ride to a transit stop will want to bring their bicycle with them on the transit portion of their trip, so buses and other transit vehicles should be equipped accordingly.

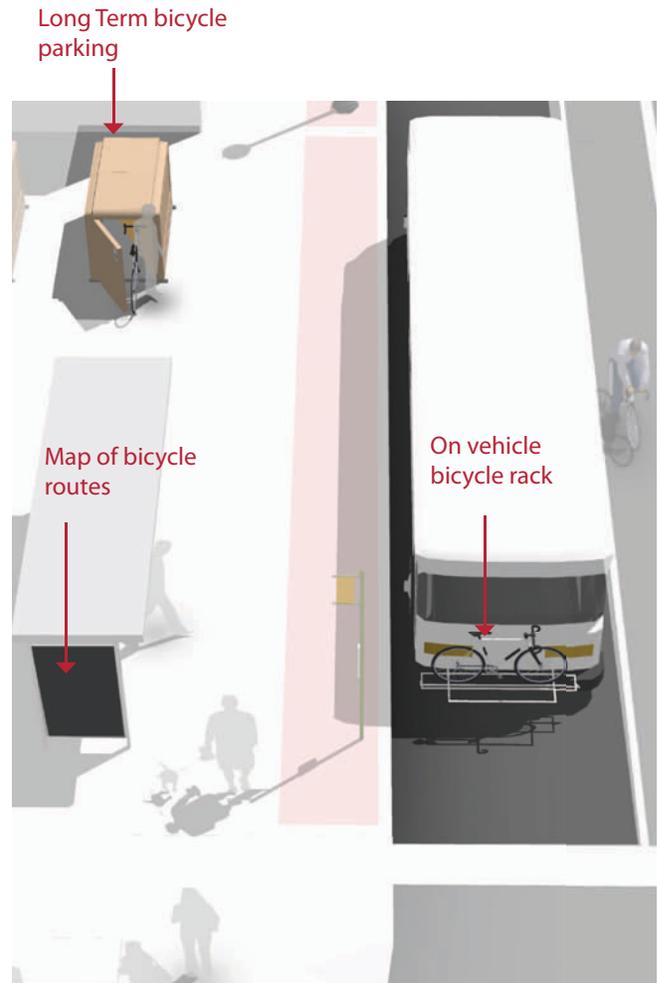
#### Guidance

##### Access

- Provide direct and convenient access to transit stations and stops from the bicycle and pedestrian networks.
- Provide maps at major stops and stations showing nearby bicycle routes.
- Provide wayfinding signage and pavement markings from the bicycle network to transit stations.
- Ensure that connecting bikeways offer proper **bicycle actuation and detection**.

##### Bicycle Parking

- The route from bicycle parking locations to station/ stop platforms should be well-lit and visible.
- Signing should note the location of bicycle parking, rules for use, and instructions as needed.
- Provide safe and secure long term parking such as **bicycle lockers** at transit hubs. Parking should be easy to use and well maintained.



#### Discussion

Providing bicycle routes to transit helps combine the long-distance coverage of bus travel with the door-to-door service of bicycle riding. Transit use can overcome large obstacles to bicycling, including distance, hills, riding on busy streets, night riding, inclement weather, and breakdowns. High-visibility crosswalks and mid-block crossings are often appropriate treatments to provide safer bicycle and pedestrian access to bus stops, particularly at high-usage transit stops. If a bus stop is located mid-block, adequate crossing treatments should be provided, based on the level of traffic on the roadway. All transit riders will need to cross the street to access or leave the bus stop.

#### Additional References and Guidelines

APBP. (2010). Bicycle Parking Guide 2nd Edition.  
FHWA. (2006). Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Lesson 18: Bicycle and Pedestrian Connections to Transit

#### Materials and Maintenance

Regularly inspect the functioning of long-term parking moving parts and enclosures. Change keys and access codes periodically to prevent access to unapproved users.

# Bikeway Maintenance

Regular bicycle facility maintenance includes sweeping, maintaining a smooth roadway, ensuring that the gutter-to-pavement transition remains relatively flat, and installing bicycle-friendly drainage grates. Pavement overlays are a good opportunity to improve bicycle facilities. The following recommendations provide a menu of options to consider to enhance a maintenance regimen.

## Recommended Walkway and Bikeway Maintenance Activities

Maintenance Activity	Frequency
<b>Inspections</b>	Seasonal – at beginning and end of Summer
<b>Pavement sweeping/blowing</b>	As needed, with higher frequency in the early Spring and Fall
<b>Pavement sealing</b>	5 - 15 years
<b>Pothole repair</b>	1 week – 1 month after report
<b>Culvert and drainage grate inspection</b>	Before Winter and after major storms
<b>Pavement markings replacement</b>	As needed
<b>Signage replacement</b>	As needed
<b>Shoulder plant trimming (weeds, trees, brambles)</b>	Twice a year; middle of growing season and early Fall
<b>Tree and shrub plantings, trimming</b>	1 – 3 years
<b>Major damage response (washouts, fallen trees, flooding)</b>	As soon as possible

### This Section Includes:

- Sweeping
- Roadway Surface
- Pavement Overlays
- Drainage Grates
- Gutter to Pavement Transition
- Maintenance Management Plan



Sweeping



Roadway Surface



Gutter to Pavement Transition



Drainage Grates



Maintenance Management Plan

## Bikeway Maintenance

### Sweeping

#### Guidance

- Establish a seasonal sweeping schedule that prioritizes roadways with major bicycle routes.
- Sweep walkways and bikeways whenever there is an accumulation of debris on the facility.
- In curbed sections, sweepers should pick up debris; on open shoulders, debris can be swept onto gravel shoulders.
- Pave gravel driveway approaches to minimize loose gravel on paved roadway shoulders.
- Perform additional sweeping in the Spring to remove debris from the Winter.
- Perform additional sweeping in the Fall in areas where leaves accumulate .

#### Description

Bicyclists often avoid shoulders and bike lanes filled with gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, potentially causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface), nor should debris be swept from the sidewalk onto the roadway. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept.



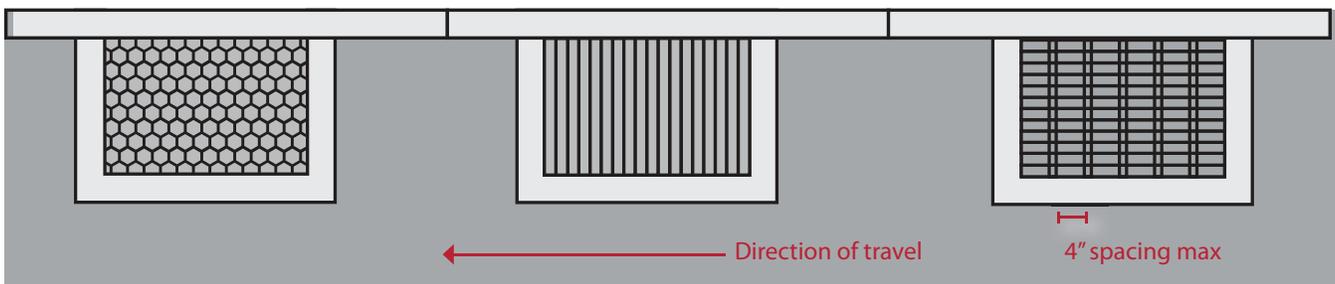
### Drainage Grates

#### Guidance

- Where practical, drainage inlets should be placed outside of the bicycle facility. Where this is not practical, hydraulically efficient, bicycle-safe grates should be utilized and should be placed or adjusted to be flush with the adjacent pavement surface. On bridges, a minimum of 4 feet from the edge of the travel lane should be clear of drainage inlets.
- Create a program to inventory all existing drainage grates, and replace hazardous grates as necessary.

#### Description

Drainage grates are typically located in the gutter area near the curb of a roadway. Drainage grates typically have slots through which water drains into the municipal storm sewer system. Many older grates were designed with linear parallel bars spread wide enough for a tire to become caught so that if a bicyclist were to ride on them, the front tire could become caught in the slot. This would cause the bicyclist to tumble over the handlebars and sustain potentially serious injuries.



## Bikeway Maintenance

### Roadway Surface

#### Guidance

- Maintain a smooth surface on all bikeways that is free of potholes
- Ensure that on new roadway construction, the finished surface on bikeways does not vary more than ¼".
- Maintain pavement so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- If chip sealing is to be performed, use the smallest possible chip on bike lanes and shoulders. Sweep loose chip regularly following application.
- During chip seal maintenance projects, if the pavement condition of the bike lane is satisfactory, it may be appropriate to chip seal the travel lanes only.

#### Description

Bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Various materials are used to pave roadways, and some are smoother than others. Compaction is also an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway surface nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks. When resurfacing streets, use the smallest chip size and ensure that the surface is as smooth as possible to improve safety and comfort for bicyclists.



### Pavement Overlays

#### Guidance

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge.
- If the shoulder or bike lane pavement is of good quality, it may be appropriate to end the overlay at the shoulder or bike lane stripe provided no abrupt ridge remains.
- Ensure that inlet grates, manhole and valve covers are within ¼ inch of the finished pavement surface and are made or treated with slip resistant materials.
- Pave gravel driveways to property line to prevent gravel from being tracked onto shoulders or bike lanes.

#### Description

Pavement overlays represent good opportunities to improve conditions for bicyclists if done carefully. A ridge should not be left in the area where bicyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects also offer opportunities to widen a roadway, or to re-stripe a roadway with bike lanes.



## Bikeway Maintenance

### Gutter to Pavement Transition

#### Guidance

- Ensure that gutter-to-pavement transitions have no more than a ¼" vertical transition.
- Examine pavement transitions during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- Provide at least 3 feet of pavement outside of the gutter seam.

#### Description

On streets with concrete curbs and gutters, 1 to 2 feet of the curbside area is typically devoted to the gutter pan, where water collects and drains into catch basins. On many streets, the bikeway is situated near the transition between the gutter pan and the pavement edge. This transition can be susceptible to erosion, creating potholes and a rough surface for travel.

The pavement on many streets is not flush with the gutter, creating a vertical transition between these segments. This area can buckle over time, creating a hazardous condition for bicyclists.



### Maintenance Management Plan

#### Guidance

- Provide fire and police departments with map of system, along with access points to gates/bollards
- Enforce speed limits and other rules of the road
- Enforce all trespassing laws for people attempting to enter adjacent private properties

#### Description

Bikeway users need accommodation during construction and maintenance activities when bikeways may be closed or unavailable. Users must be warned of bikeway closures and given adequate detour information to bypass the closed section. Users should be warned through the use of standard signing approaching each affected section (e.g., "Bike Lane Closed," "Trail Closed"), including information on alternate routes and dates of closure. Alternate routes should provide reasonable directness, equivalent traffic characteristics, and be signed.



## Greenways and Off-Street Facilities

A greenway (also known as a multi-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 greenways include:

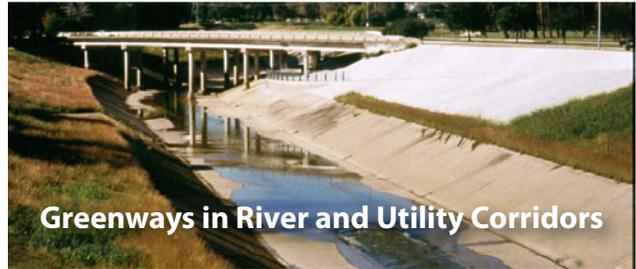
- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and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

### This Section Includes:

- General Design Practices
- Greenways in River and Utility Corridors
- Greenways in Abandoned Rail Corridors
- Greenways in Existing Active Rail Corridors
- Trailheads
- Local Neighborhood Accessways
- Multi-Use Paths Along Roadways



General Design Practices



Greenways in River and Utility Corridors



Greenways in Abandoned Rail Corridors



Greenways in Active Rail Corridors



Local Neighborhood Accessways



Multi-Use Paths Along Roadways

## Greenways and Off-Street Facilities

### General Design Practices

#### Description

Greenways can provide a desirable facility for users of all skill levels preferring separation from traffic. Greenways should generally provide directional travel opportunities not provided by existing roadways.

#### Guidance

##### Width

- 8 feet is the minimum allowed for a two-way and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

##### Lateral Clearance

- A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.

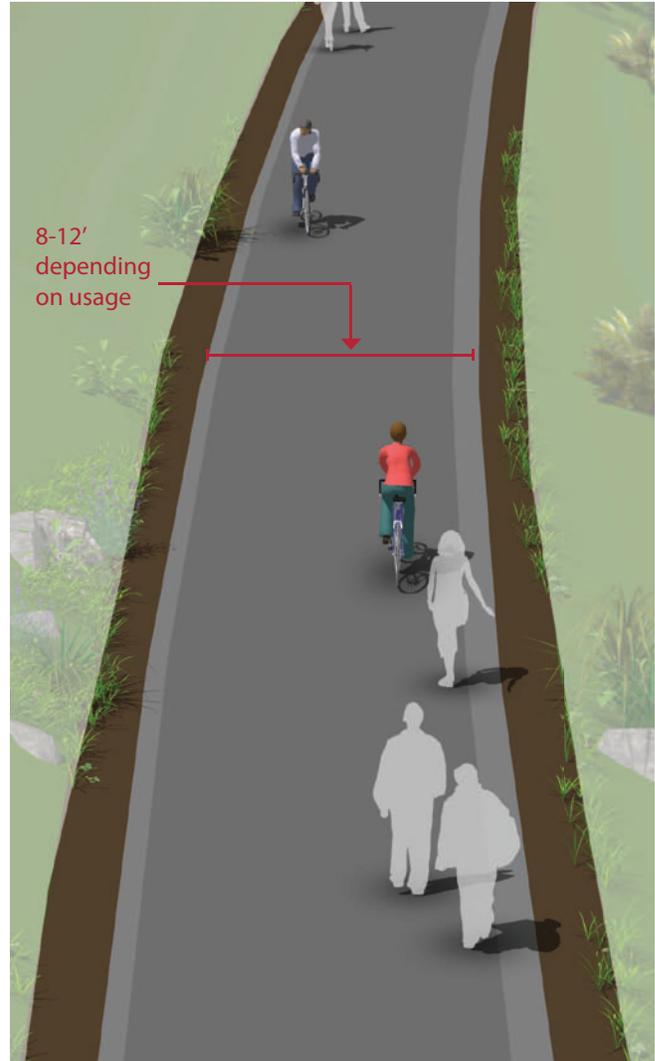
##### Overhead Clearance

- Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

##### Striping

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Terminate the path where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.



#### Discussion

The AASHTO Guide for the Development of Bicycle Facilities generally recommend against the development of **shared use paths along roadways**. Also known as “sidepaths”, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding when either entering or exiting the path.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
FHWA. (2009). Manual of Uniform Traffic Control Devices.  
Flink, C. (1993). Greenways: A Guide To Planning Design And Development.

#### Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

## Greenways and Off-Street Facilities

### Greenways in River and Utility Corridors

#### Guidance

Greenways in utility corridors should meet or exceed **general design practices**. If additional width allows, wider paths, and landscaping are desirable.

#### Access Points

Any access point to the path should be well-defined with appropriate signage designating the pathway as a bicycle facility and prohibiting motor vehicles.

#### Path Closure

Public access to the greenway may be prohibited during the following events:

- Canal/Flood control channel or other utility maintenance activities
- Inclement weather or the prediction of storm conditions

#### Description

Utility and waterway corridors often offer excellent greenway development and bikeway gap closure opportunities. Utility corridors typically include powerline and sewer corridors, while waterway corridors include canals, drainage ditches, rivers, and beaches. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills.



#### Discussion

Similar to railroads, public access to flood control channels or canals is undesirable by all parties. Hazardous materials, deep water or swift current, steep, slippery slopes, and debris all constitute risks for public access. Appropriate fencing may be required to keep path users within the designated travel way. Creative design of fencing is encouraged to make the path facility feel welcoming to the user.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 Flink, C. (1993). Greenways: A Guide To Planning Design And Development.

#### Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

## Greenways and Off-Street Facilities

### Greenways in Abandoned Rail Corridors

#### Guidance

Greenways in abandoned rail corridors should meet or exceed **general design practices**. If additional width allows, wider paths, and landscaping are desirable.

In full conversions of abandoned rail corridors, the sub-base, superstructure, drainage, bridges, and crossings are already established. Design becomes a matter of working with the existing infrastructure to meet the needs of a rail-trail.

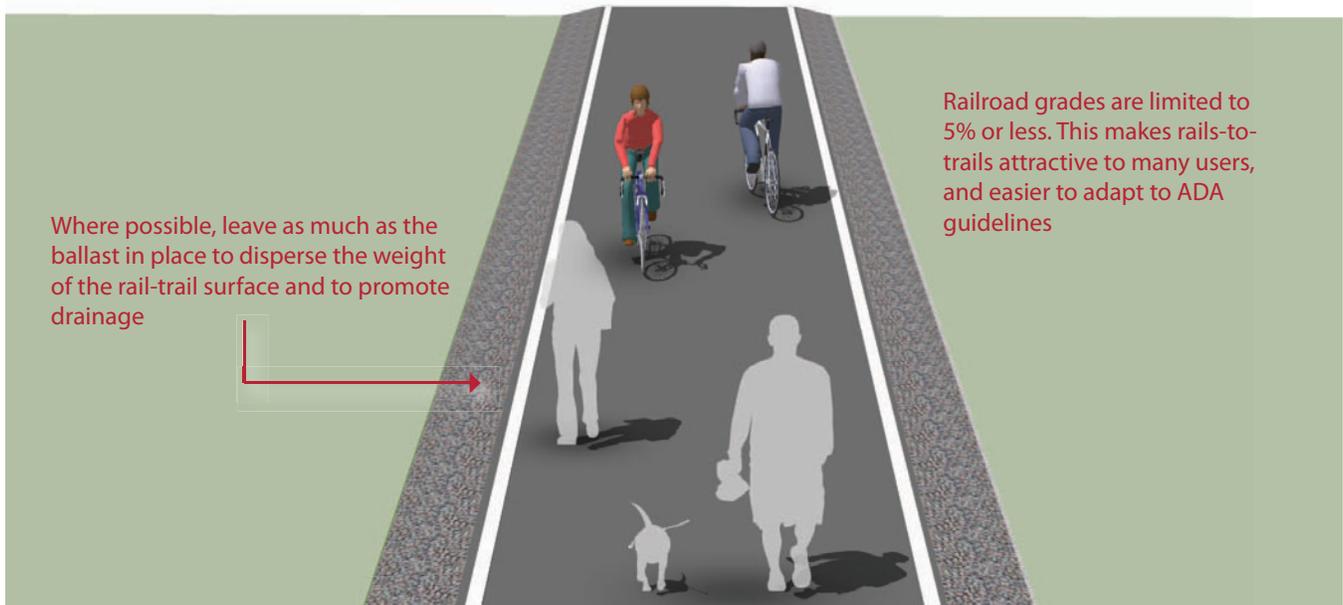
If converting a rail bed adjacent to an active rail line, see **Greenways in Existing Active Rail Corridors**.

#### Description

Commonly referred to as Rails-to-Trails or Rail-Trails, these projects convert vacated rail corridors into off-street paths. Rail corridors offer several advantages, including relatively direct routes between major destinations, and following generally flat terrain that typically does not exceed 2 percent grade.

In some cases, rail owners may rail-bank their corridors as an alternative to a complete abandonment of the line, thus preserving the rail corridor for possible future use.

The railroad may form an agreement with any person, public or private, who would like to use the banked rail line as a greenway or linear park until it is again needed for rail use. Municipalities should acquire abandoned rail rights-of-way whenever possible to preserve the opportunity for greenway development.



#### Discussion

It is often impractical and costly to add material to existing railroad bed fill slopes. This results in greenways that meet minimum path widths, but often lack preferred shoulder and lateral clearance widths.

Rail-trails can involve many challenges including the acquisition of the right of way, cleanup and removal of toxic substances, and rehabilitation of tunnels, trestles and culverts. A structural engineer should evaluate existing railroad bridges for structural integrity to ensure they are capable of carrying the appropriate design loads.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
FHWA. (2009). Manual of Uniform Traffic Control Devices.  
Flink, C. (1993). Greenways: A Guide To Planning Design And Development.

#### Materials and Maintenance

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## Greenways and Off-Street Facilities

### Greenways in Existing Active Rail Corridors

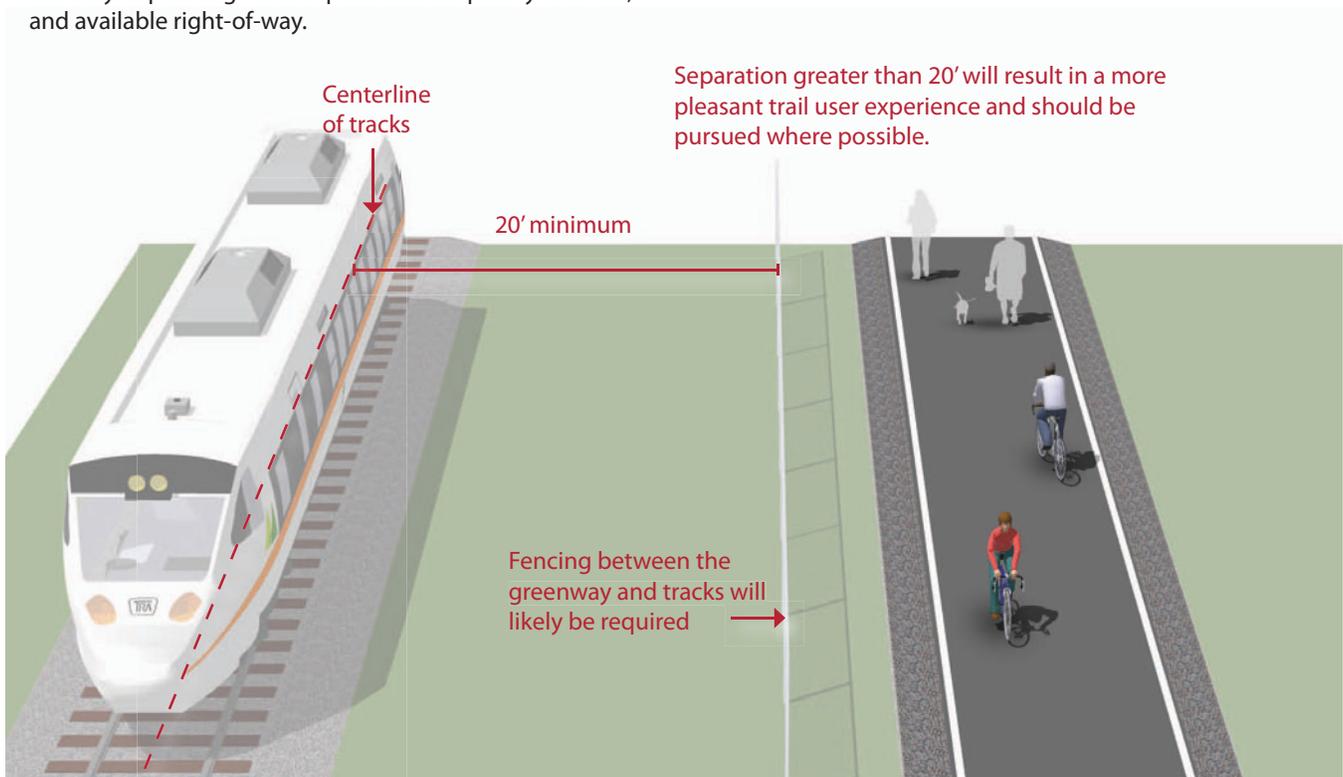
#### Guidance

Greenways in active rail corridors should meet or exceed **general design practices**. If additional width allows, wider paths, and landscaping are desirable.

If required, fencing should be a minimum of 5 feet in height with higher fencing usual next to sensitive areas such as switching yards. Setbacks from the active rail line will vary depending on the speed and frequency of trains, and available right-of-way.

#### Description

Rails-with-Trails projects typically consist of paths adjacent to active railroads. It should be noted that some constraints could impact the feasibility of rail-with-trail projects. In some cases, space needs to be preserved for future planned freight, transit or commuter rail service. In other cases, limited right-of-way width, inadequate setbacks, concerns about safety/trespassing, and numerous mid-block crossings may affect a project's feasibility.



#### Discussion

Railroads typically require fencing with all rail-with-trail projects. Concerns with trespassing and security can vary with the amount of train traffic on the adjacent rail line and the setting of the bicycle path, i.e. whether the section of track is in an urban or rural setting.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 FHWA. (2002). Rails-with-Trails: Lessons Learned.

#### Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

## Greenways and Off-Street Facilities

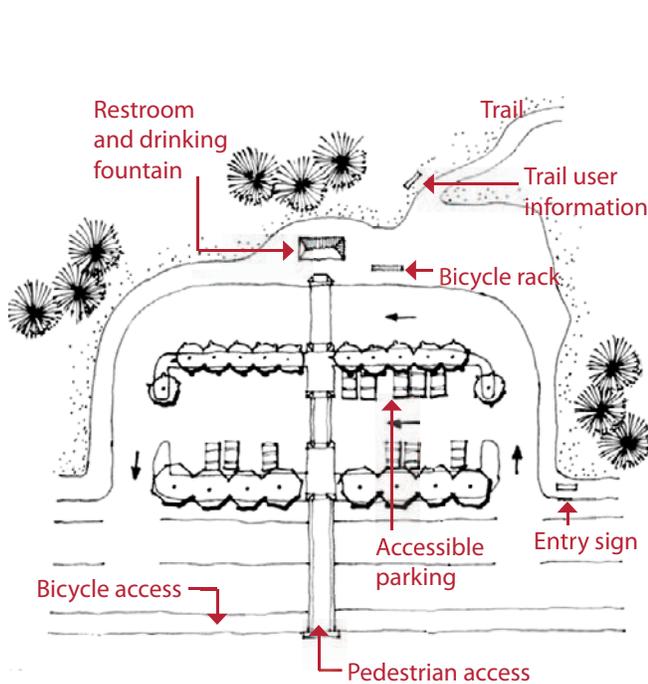
### Trailheads

#### Guidance

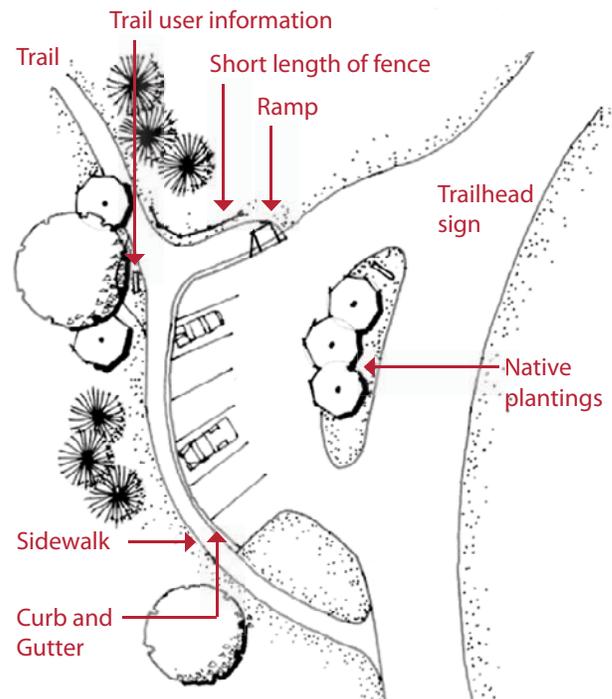
- Major trailheads should include automobile and bicycle parking, trail information (maps, user guidelines, wildlife information, etc.), garbage receptacles and restrooms.
- Minor trailheads can provide a subset of these amenities.

#### Description

Good access to a path system is a key element for its success. Trailheads serve the local and regional population arriving to the path system by car, transit, bicycle or other modes. Trailheads provide essential access to the shared-use path system and include amenities like parking for vehicles and bicycles, restrooms (at major trailheads), and posted maps.



**Major Trailhead**



**Minor Trailhead**

#### Discussion

Trailheads with a small motor vehicle parking area should additionally include bicycle parking and accessible parking.

Neighborhood access should be achieved from all local streets crossing the path. No parking needs to be provided, and in some situations "No Parking" signs will be desirable to minimize impact on the neighborhood. See **Local Neighborhood Accessways** for neighborhood connection guidance.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.

#### Materials and Maintenance

Trailhead signage and lighting will require regular maintenance. Major trailheads will require regular servicing.

## Greenways and Off-Street Facilities

### Local Neighborhood Accessways

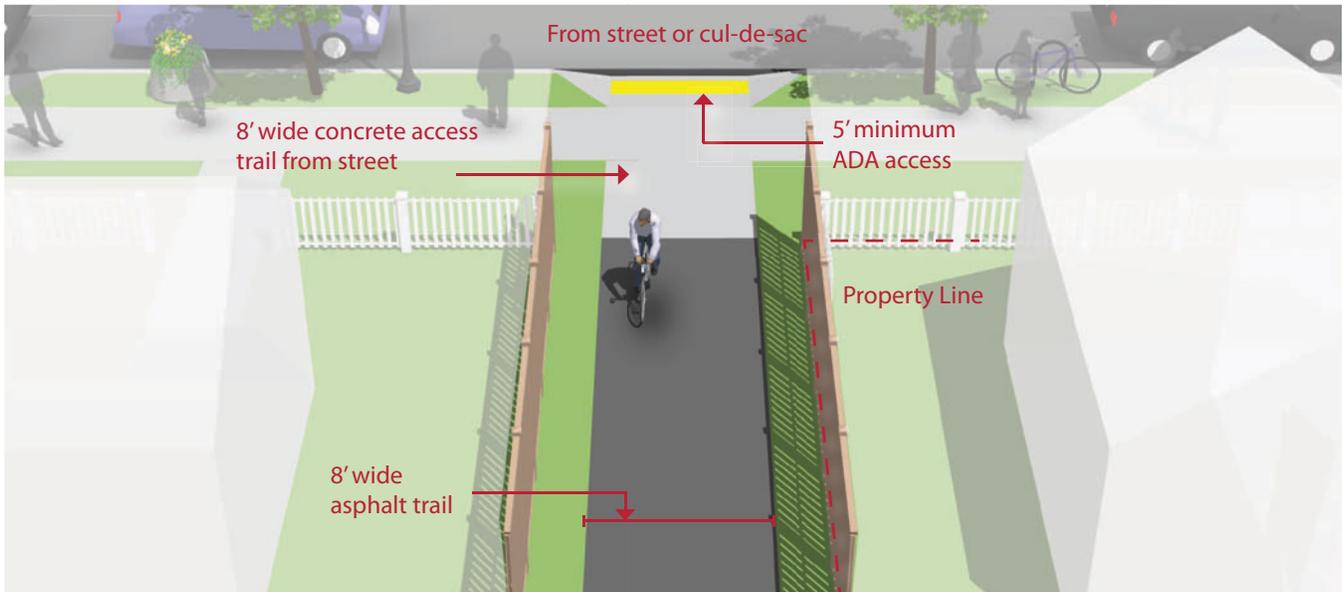
#### Guidance

- Neighborhood accessways should remain open to the public.
- Trail pavement shall be at least 8' wide to accommodate emergency and maintenance vehicles, meet ADA requirements and be considered suitable for multi-use.
- Trail widths should be designed to be less than 8' wide only when necessary to protect large mature native trees over 18" in caliper, wetlands or other ecologically sensitive areas.
- Accessways should slightly meander whenever possible.

#### Description

Neighborhood accessways provide residential areas with direct bicycle and pedestrian access to parks, trails, greenspaces, and other recreational areas. They most often serve as small trail connections to and from the larger greenway network, typically having their own rights-of-way and easements.

Additionally, these smaller trails can be used to provide bicycle and pedestrian connections between dead-end streets, cul-de-sacs, and access to nearby destinations not provided by the street network.



#### Discussion

Neighborhood accessways should be designed into new subdivisions at every opportunity and should be required by City/County subdivision regulations.

For existing subdivisions, Neighborhood and homeowner association groups are encouraged to identify locations where such connects would be desirable. Nearby residents and adjacent property owners should be invited to provide landscape design input.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 FHWA. (2006). Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Lesson 19: Greenways and Shared Use Paths.

#### Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

## Greenways and Off-Street Facilities

### Multi-Use Paths Along Roadways

#### Description

A multi-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.

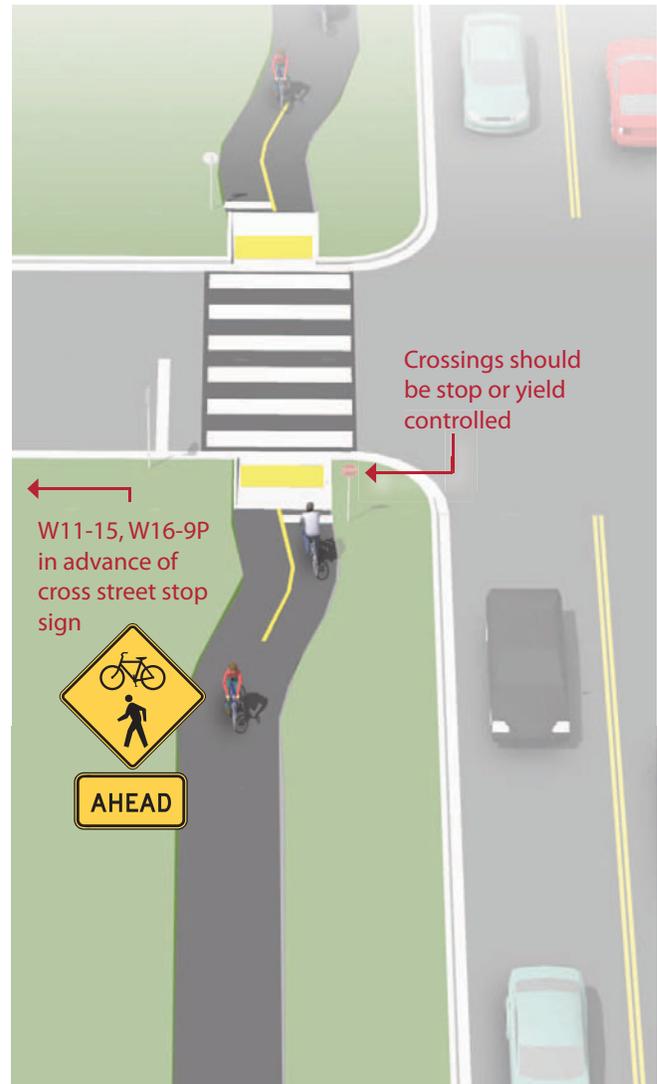
Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.

The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of shared-use paths directly adjacent to roadways.

#### Guidance

- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers and pedestrians. A separate track (5' minimum) can be provided for pedestrian use.
- Bicycle lanes should be provided as an alternate (more transportation-oriented) facility whenever possible.

Pay special attention to the entrance/exit of the path as bicyclists may continue to travel on the wrong side of the street.



#### Discussion

When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bicycle lane width on the roadway, as the on-street bicycle facility will generally be superior to the "sidepath" for experienced bicyclists and those who are cycling for transportation purposes.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
NACTO. (2011). Urban Bikeway Design Guide. See entry on Raised Cycle Tracks.

#### Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

## Greenway/Roadway Crossings

At-grade roadway crossings can create potential conflicts between greenway users and motorists, however, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. This is evidenced by the thousands of successful facilities around the United States with at-grade crossings. In most cases, at-grade greenway crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Greenways that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians.

Consideration must be given to adequate warning distance based on vehicle speeds and line of sight, with the visibility of any signs absolutely critical. Directing the active attention of motorists to roadway signs may require additional alerting devices such as a flashing beacon, roadway striping or changes in pavement texture. Signing for path users may include a standard "STOP" or "YIELD" sign and pavement markings, possibly combined with other features such as bollards or a bend in the greenway to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.

A number of striping patterns have emerged over the years to delineate greenway crossings. A median stripe on the path approach will help to organize and warn path users. Crosswalk striping is typically a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically yield to crosswalk users, additional measures may be required to increase compliance.

### This section includes:

- Marked/Unsignalized Crossings
- Active Warning Beacons
- Route Users to Existing Signalized Intersections
- Signalized/Controlled Crossings
- Undercrossings
- Overcrossings



Marked/Unsignalized Crossings



Active Warning Beacons



Route Users to Existing Signals



Signalized/Controlled Crossings



Undercrossings



Overcrossings

## Greenway/Roadway Crossings

### Marked/Unsignalized Crossings

#### Guidance

Maximum traffic volumes

- ≤9,000-12,000 Average Daily Traffic (ADT) volume
- Up to 15,000 ADT on two-lane roads, preferably with a median
- Up to 12,000 ADT on four-lane roads with median

Maximum travel speed

- 35 MPH

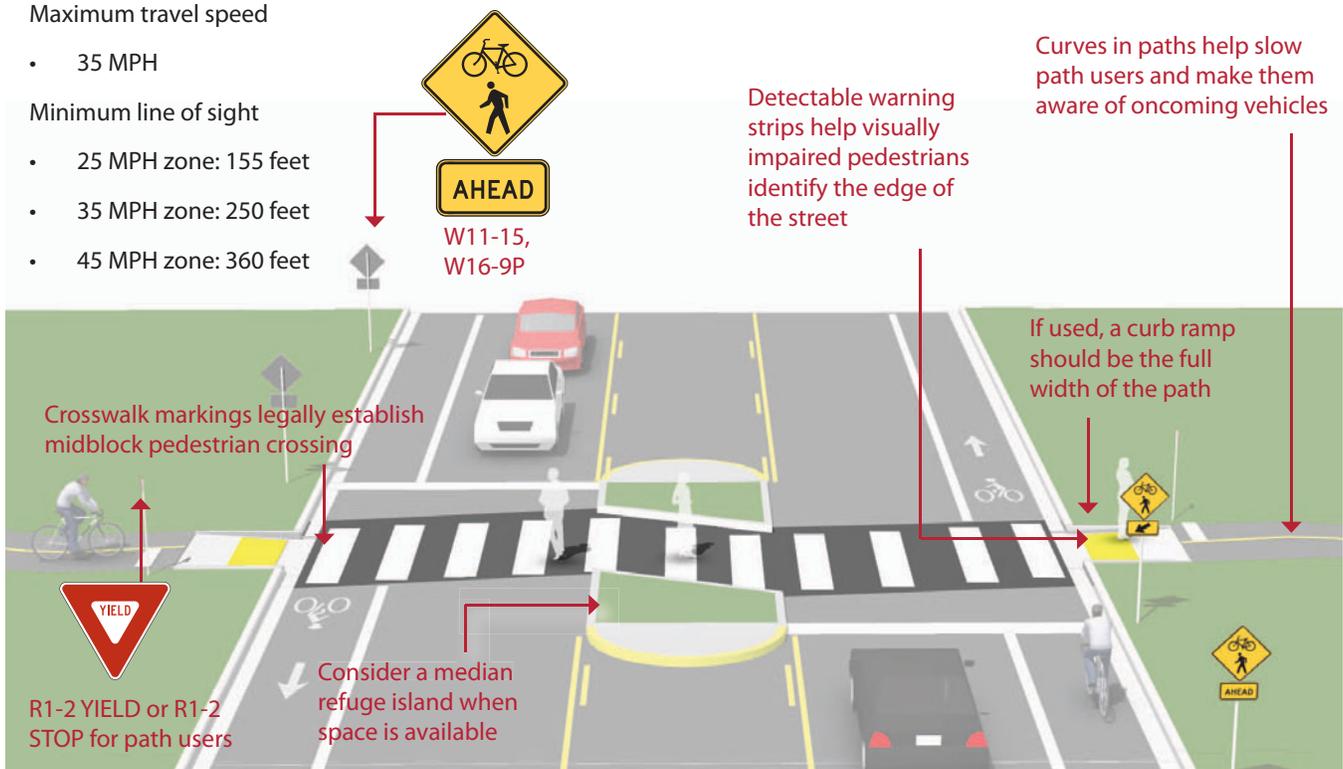
Minimum line of sight

- 25 MPH zone: 155 feet
- 35 MPH zone: 250 feet
- 45 MPH zone: 360 feet

#### Description

A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block 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.



#### Discussion

Unsignalized crossings of multi-lane arterials over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons or in-pavement flashers, and excellent sight distance. For more information see the discussion of **active warning beacons**.

On roadways with low to moderate traffic volumes (<12,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
FHWA. (2009). Manual of Uniform Traffic Control Devices.

#### Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs.

## Greenway/Roadway Crossings

### Active Warning Beacons

#### Guidance

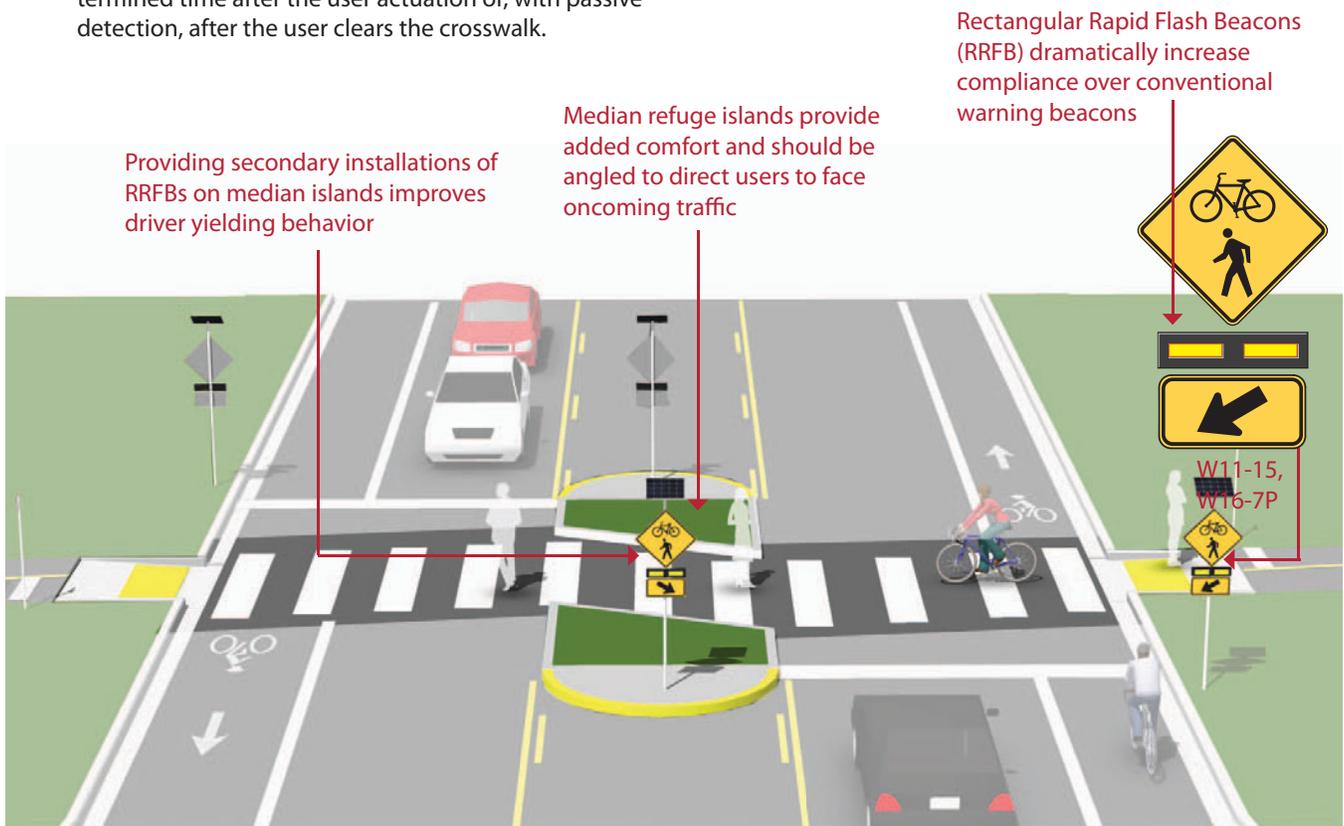
Guidance for **Marked/Unsignalized Crossings** applies.

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- Warning beacons shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.

#### Description

Enhanced marked crossings are unsignalized crossings with additional treatments designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways.

These enhancements include pathway user or sensor actuated warning beacons, Rectangular Rapid Flash Beacons (RRFB) shown below, or in-roadway warning lights.



#### Discussion

Rectangular rapid flash beacons show the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.

#### Additional References and Guidelines

NACTO. (2011). Urban Bikeway Design Guide.  
 FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 FHWA. (2008). MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)

#### Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

## Greenway/Roadway Crossings

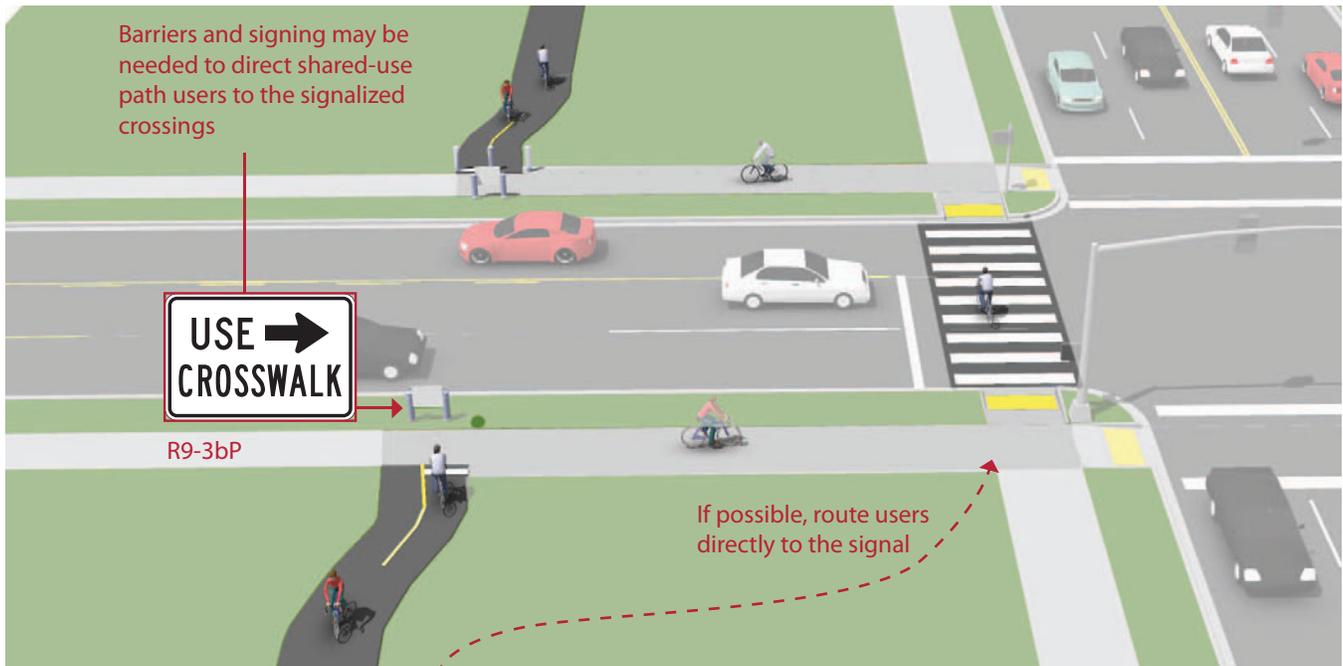
### Route Users to Signalized Crossings

#### Guidance

Greenway crossings should not be provided within approximately 400 feet of an existing signalized intersection. If possible, route path directly to the signal.

#### Description

Greenway crossings within approximately 400 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal. For this restriction to be effective, barriers and signing may be needed to direct greenway users to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.



#### Discussion

In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 feet. Engineering judgement and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and jaywalking may become prevalent if the distance is too great.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

If a sidewalk is used for crossing access, it should be kept clear of snow and debris and the surface should be level for wheeled users.

## Greenway/Roadway Crossings

### Signalized/Controlled Crossings

#### Guidance

Traffic signal installations must meet MUTCD pedestrian, school or modified warrants.

Hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable path crossings.

Additional guidance for signalized crossings:

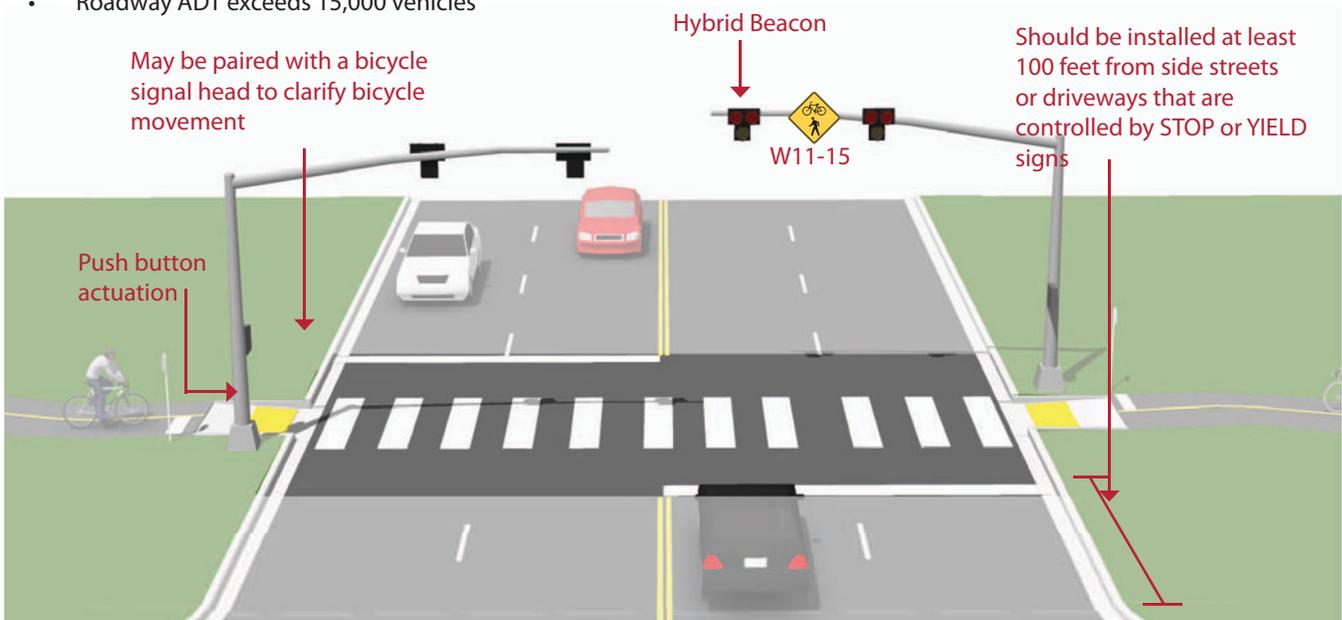
- Located more than 300 feet from an existing signalized intersection
- Roadway travel speeds of 40 MPH and above
- Roadway ADT exceeds 15,000 vehicles

#### Description

Signalized crossings provide the most protection for crossing greenway users through the use of a red-signal indication to stop conflicting motor vehicle traffic. The two types of path signalization are full traffic signal control and hybrid signals.

A full traffic signal installation treats the greenway crossing as a conventional 4-way intersection and provides standard red-yellow-green traffic signal heads for all legs of the intersection.

Hybrid beacon installation (shown below) faces only cross motor vehicle traffic, stays dark when inactive, and uses a unique 'wig-wag' signal phase to indicate activation. Vehicles have the option to proceed after stopping during the final flashing red phase, which can reduce motor vehicle delay when compared to a full signal installation.



#### Discussion

Shared-use path signals are normally activated by push buttons but may also be triggered by embedded loop, infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety.

#### Additional References and Guidelines

FHWA. (2009). Manual of Uniform Traffic Control Devices.  
 NACTO. (2011). Urban Bikeway Design Guide.

#### Materials and Maintenance

Hybrid beacons are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

## Greenway/Roadway Crossings

### Undercrossings

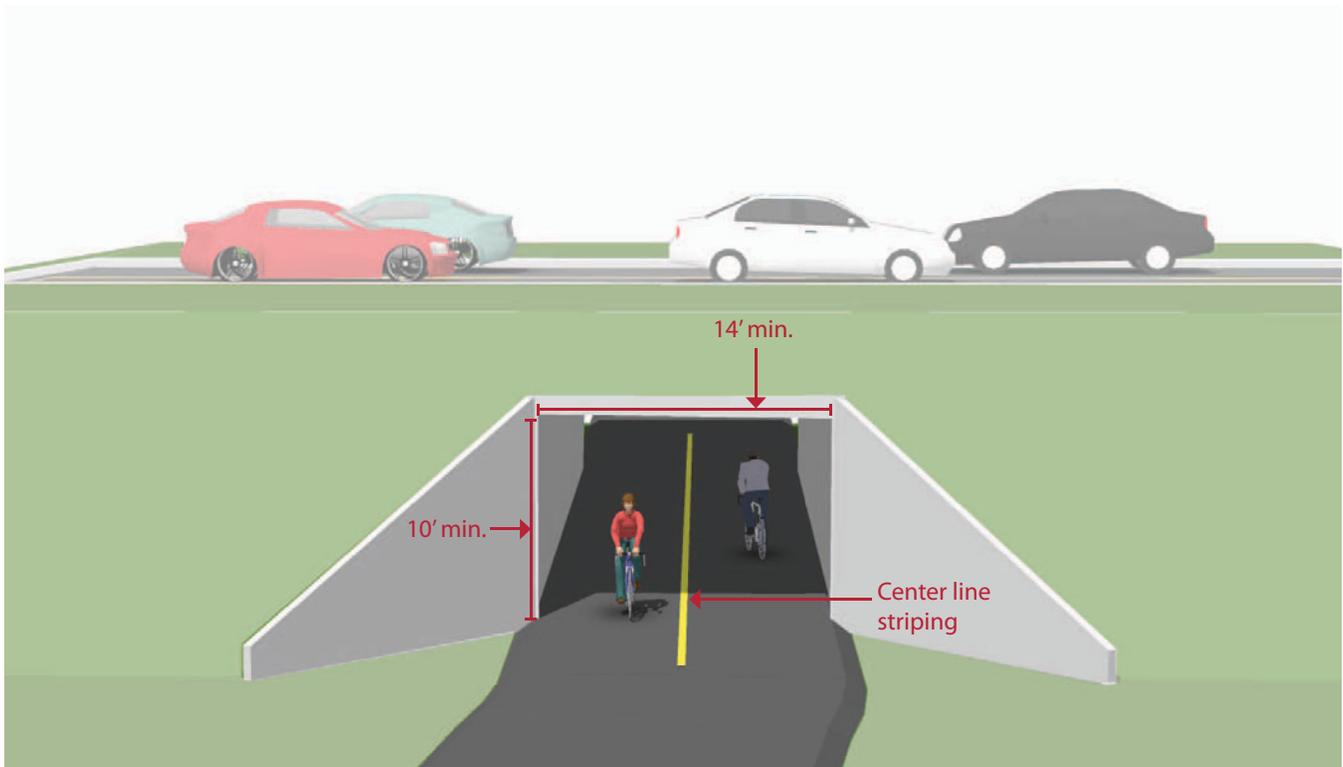
#### Guidance

- 14 foot minimum width, greater widths preferred for lengths over 60 feet.
- 10 foot minimum height.
- The undercrossing should have a centerline stripe even if the rest of the path does not have one.
- Lighting should be considered during the design process for any undercrossing with high anticipated use or in culverts and tunnels.

#### Description

Bicycle/pedestrian undercrossings provide critical non-motorized system links by joining areas separated by barriers such as railroads and highway corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.

Grade-separated crossings are advisable where existing bicycle/pedestrian crossings do not exist, where ADT exceeds 25,000 vehicles and where 85th percentile speeds exceed 45 miles per hour.



#### Discussion

Safety is a major concern with undercrossings. Shared-use path users may be temporarily out of sight from public view and may experience poor visibility themselves. To mitigate safety concerns, an undercrossing should be designed to be spacious, well-lit, equipped with emergency cell phones at each end and completely visible for its entire length from end to end.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

14 foot width allows for maintenance vehicle access.

Potential problems include conflicts with utilities, drainage, flood control and vandalism.

## Greenway/Roadway Crossings

### Overcrossings

#### Guidance

8 foot minimum width, 14 feet preferred. If overcrossing has any scenic vistas additional width should be provided to allow for stopping. A separate 5 foot pedestrian area may be provided for facilities with high bicycle and pedestrian use.

10 foot headroom on overcrossing; clearance below will vary depending on feature being crossed.

Roadway: 17 feet  
 Freeway: 18.5 feet  
 Heavy Rail Line: 23 feet

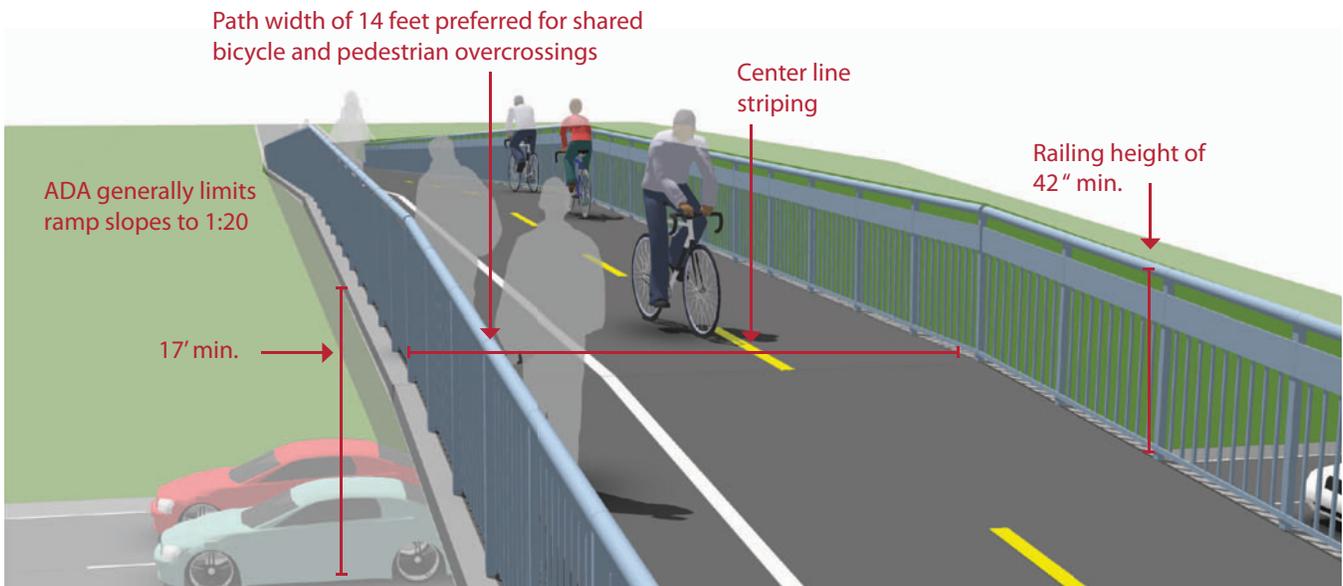
The overcrossing should have a centerline stripe even if the rest of the path does not have one.

#### Description

Bicycle/pedestrian overcrossings provide critical non-motorized system links by joining areas separated by barriers such as deep canyons, waterways or major transportation corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.

Grade-separated crossings may be needed where existing bicycle/pedestrian crossings do not exist, where ADT exceeds 25,000 vehicles, and where 85th percentile speeds exceed 45 miles per hour.

Overcrossings require a minimum of 17 feet of vertical clearance to the roadway below versus a minimum elevation differential of around 12 feet for an undercrossing. This results in potentially greater elevation differences and much longer ramps for bicycles and pedestrians to negotiate.



#### Discussion

Overcrossings for bicycles and pedestrians typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet.

Overcrossings pose potential concerns about visual impact and functional appeal, as well as space requirements necessary to meet ADA guidelines for slope.

#### Additional References and Guidelines

AASHTO. (1999). Guide for the Development of Bicycle Facilities.  
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

#### Materials and Maintenance

Potential issues with vandalism.

Overcrossings can be more difficult to clear of snow than undercrossings.

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# Potential Funding Sources

## *Introduction*

Bicycle and pedestrian funding is administered at all levels of government. This chapter begins with explaining the current state of federally-administered funding and the anticipated new transportation bill, which influences State, regional and local funding and is followed by a description of funding sources that may be pursued to implement facilities and programs in this Plan.

## *Federally-Administered Funding*

SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, is the primary federal funding source for bicycle and pedestrian projects. SAFETEA-LU is the fourth iteration of the transportation vision established by the Intermodal Surface Transportation Efficiency Act (1991). Also known as the federal transportation bill, Congress passed the \$286.5 billion SAFETEA-LU bill in 2005. SAFETEA-LU expired in 2009, and since that time Congress has approved extending funds through 2012. When the next multi-year federal transportation bill is reauthorized, funding available for bicycle and pedestrian projects is likely to change. Historically, these modes have received larger allocations with each new multi-year transportation bill.<sup>1</sup>

State Departments of Transportation and regional planning agencies administer SAFETEA-LU funding. Most, but not all of these funding programs emphasize transportation modes and purposes that reduce auto trips and provide inter-modal connections. SAFETEA-LU programs require a local match of between zero percent and 20 percent. SAFETEA-LU funds primarily capital improvements and safety and education programs that relate to the surface transportation system.

<sup>1</sup> Information related to the federal transportation bill is current at the time of writing.

To be eligible for Federal transportation funds, States are required to develop a State Transportation Improvement Program (STIP) and update it at least every four years. A STIP is a multi-year capital improvement program of transportation projects that coordinates transportation-related capital improvements planned by metropolitan planning organizations and the state. Bicycle and pedestrian projects are eligible for inclusion.

The following programs are administered by the Federal government.

### **TIGER Discretionary Grants**

The TIGER, or Transportation Investment Generating Economic Recovery, grants are administered by the United States Department of Transportation (USDOT). The program offers federal funding for local surface transportation initiatives. The TIGER grants are awarded based on primary and secondary criteria. The primary criteria consist of a) long-term outcomes, such as livability and sustainability, and b) job creation and economic stimulus. Innovation and partnership are also evaluated, but are given less weight than other criteria.

The TIGER IV grant, announced in January 2012, includes about \$500 million. Some of those funds are set aside for rural grants, and other funds set aside for TIFIA (Transportation Infrastructure Finance and Innovation ACT) assistance. The pre-application process closed on February 20, 2012. Future funding cycles of the TIGER grant program are currently unknown.

### **Transportation, Community and System Preservation (TCSP) Program**

The Transportation, Community and System Preservation (TCSP) Program provides federal funding for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce



the impact on the environment, and provide efficient access to jobs, services and trade centers. The program provides communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. TCSP Program funds require a 20 percent match. SAFETEA-LU authorized an extension of TCSP Program funds through FY 2012.

Online resource: <http://www.fhwa.dot.gov/tcsp/>

### **Rivers, Trails and Conservation Assistance Program**

The Rivers, Trails and Conservation Assistance Program (RTCA) is a National Parks Service program that provides technical assistance via direct staff involvement, to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation monies available. Projects are prioritized for assistance based upon criteria that include conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation and focusing on lasting accomplishments.

Online resource: [http://www.nps.gov/nrcr/programs/rtca/contactus/cu\\_apply.html](http://www.nps.gov/nrcr/programs/rtca/contactus/cu_apply.html)

### **Community Challenge Planning Grants**

The program provides grants (~\$30M) to enable communities to foster reform and reduce barriers to achieving affordable, economically vital, and sustainable communities. Such efforts may include amending or replacing local master plans, zoning codes, and building codes, with the goal of promoting sustainability at the local or neighborhood level. This Program's funds can be used for regulations to support community-wide complete streets. The program is administered by the United States Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD).

Further Information: <http://www.hud.gov/sustainability>

### **Sustainable Communities Regional Planning Grant**

The Regional Planning Grant program is sponsored by the United States Department of Transportation (USDOT), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) and encourages grantees to support regional planning efforts that integrate housing, land-use, economic and workforce development, transportation, and infrastructure developments in a manner that empowers regions to consider how all of these factors work together to bring economic competitiveness and revitalization to a community. The program places a priority on partnerships, including the collaboration of arts and culture, philanthropy, and innovative ideas to the regional planning process.

Funds can be used to support the preparation of Regional Plans for sustainable development, to support efforts to modify existing regional plans so that they are in accordance with the Partnership for Sustainable Communities' six Livability Principles, and to prepare more detailed execution plans for an adopted regional plan for sustainable development. The program funded projects in 2010 and 2011. Available funding for 2012 is currently uncertain.

Further Information: <http://www.hud.gov/sustainability>

### **New Freedom Program**

The New Freedom formula grant program is a USDOT program that aims to provide additional tools to overcome existing barriers facing Americans with disabilities seeking integration into the work force and full participation in society. Lack of adequate transportation is a primary barrier to work for individuals with disabilities. The 2000 Census showed that only 60 percent of people between the ages of 16 and 64 with disabilities are employed. The New Freedom formula grant program seeks to reduce barriers to transportation services and expand the transportation mobility options available to people with disabilities beyond the requirements of the Americans with Disabilities Act (ADA) of 1990.

Funds may be used for capital and operating expenses for new public transportation services and new public transportation alternatives beyond those required by the American with



Disabilities Act of 1990 (ADA), that are designed to assist individuals with disabilities.

Additional Information: [http://www.fta.dot.gov/funding/grants/grants\\_financing\\_3549.html](http://www.fta.dot.gov/funding/grants/grants_financing_3549.html)

### Clean Water Act Grants

The Clean Water Act Grants program is a United States Environmental Protection Agency (USEPA) program. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects. Green infrastructure aspects of complete streets are eligible for grant funding.

Additional Information: <http://www.epa.gov/owow/keep/NPS/cwact.html>

### State and Regional-Administered Funding

The State of South Carolina uses both federal sources and its own budget to fund the following bicycle and pedestrian projects and programs.

#### Safe Routes to School (SRTS)

The purpose of the Safe Routes to Schools program is to provide children a safe, healthy alternative to riding the bus or being driven to school. The SRTS Grants were established in 2005, as part of the SAFETEA-LU bill, to address pedestrian and bicycle mobility and safety near schools. In South Carolina, SCDOT is responsible for administration of SRTS funding. Agencies providing a funding match will be given preference. Application for these funds is open to any public agency.

Eligible projects may include three elements:

- **Engineering Improvements.** These physical improvements are designed to reduce potential bicycle and pedestrian conflicts with motor vehicles. Physical improvements may also reduce motor vehicle traffic volumes around schools, establish safer and more accessible crossings, or construct walkways, trails or bikeways. Eligible improvements include sidewalk

improvements, traffic calming/speed reduction, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, and secure bicycle parking facilities.

- **Enforcement Efforts.** These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian sting operations.
- **Education and Encouragement efforts:** These programs are designed to teach children safe bicycling and walking skills while educating them about the health benefits, and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive bicycle/pedestrian safety video games; and promotional events and activities (e.g., assemblies, bicycle rodeos, walking school buses).

The Federal Safe Routes to School Program has been extended through FY 2011, and may be included in the future federal transportation bill. The timeframe for the next SRTS funding cycle has not been established as SRTS is pending federal reauthorization.

Online resource: <http://scsaferoutes.org/index.php>

#### Recreational Trails Program

The Recreational Trails Program (RTP) of SAFETEA-LU allocates funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. The RTP funds are administered in South Carolina by the South Carolina Department of Parks, Recreation, and Tourism. In FY2011, South Carolina received an apportionment of \$1.32 million<sup>2</sup>. A minimum 20 percent local match (in-kind is eligible) is <sup>2</sup> A full list of state-by-state apportionments can be found through the FHWA website: [http://www.fhwa.dot.gov/environment/recreational\\_trails/funding/apportionments\\_obligations/recfunds\\_2011.cfm](http://www.fhwa.dot.gov/environment/recreational_trails/funding/apportionments_obligations/recfunds_2011.cfm)



required and grants are awarded annually. State and local agencies are permitted to apply for funds. RTP projects must be ADA-compliant and may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition of easements or property for trails
- State-administrative costs related to this program (limited to seven percent of a State's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

In South Carolina, applicants must submit a Letter of Intent in order to be eligible to apply for a grant. The LOI is due in December, applications are due in March and grants are awarded in July of each year. The minimum grant amount is \$10,000 with a maximum amount of \$100,000.

Applicants can be municipal, state, or federal government, or for- or non-profit organizations. The South Carolina Recreational Trails Program grants must be used for construction (no more than 5% for planning or engineering in South Carolina).

Online resource: <http://www.scprt.com/our-partners/grants/trails.aspx>

## Highway Safety Improvement Program

The Highway Safety Improvement Program funds are allocated to States as part of SAFETEA-LU. The goal of HSIP funds is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. This program includes the Railway-Highway Crossings Program and the High Risk Rural Roads Program. As required under the Highway Safety Improvement Program (HSIP), The South Carolina Department of Transportation has developed and is in the process of implementing a Strategic Highway Safety Plan

(SHSP). A portion of the HSIP funds allocated to each state is set aside for construction and operational improvements on high-risk rural roads. If the state has a Strategic Highway Safety Plan, the remainder of the funds may be allocated to other programs, including projects on bicycle and pedestrian pathways or trails and education and enforcement. A local match of 10% is required.<sup>3</sup>

South Carolina has steadily improved its ratio of obligated HSIP funds to apportioned HSIP funds. In 2006, the state obligated 11.2% of apportioned funds and in 2010, the state obligated 77.2% of funds.<sup>4</sup>

Federal HSIP online resource: <http://www.fhwa.dot.gov/safetealu/factsheets/hsip.htm>

## Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) is a federally funded program, run through the National Park Service that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. In South Carolina, the fund is administered by the South Carolina Department of Parks, Recreation and Tourism (SC PRT). The fund has been reauthorized until 2015.

Cities, counties, and districts authorized to acquire, develop, operate, and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50 percent of costs. In South Carolina the minimum amount of project reimbursement is \$100,000 and the maximum is \$250,000. However, if the project is determined as having regional or statewide significance, up to \$500,000 may be awarded. Property acquired or developed under the program must be retained in perpetuity for public recreational use.

In 2011, SC PRT announced that the grant cycle will operate on a bi-annual basis rather than an annual basis. The next funding cycle is expected to begin in the spring of 2012.

National Park Service website: <http://www.nps.gov/lwcf/>

<sup>3</sup> Additional online resources can be found at: <http://www.bikeleague.org/resources/reports/>

<sup>4</sup> Source: [http://safety.fhwa.dot.gov/hsip/gen\\_info/slorhsip/](http://safety.fhwa.dot.gov/hsip/gen_info/slorhsip/)



SC PRT online resource: <http://www.scprrt.com/our-partners/grants/lwcf.aspx>

### Community Development Block Grants

The CDBG program funds projects and programs that develop viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities, principally for persons of low and moderate income. Federal Community Development Block Grant Grantees may use CDBG funds for activities that include (but are not limited to) acquiring real property; building public facilities and improvements, such as streets, sidewalks, and recreational facilities; and planning and administrative expenses, such as costs related to developing a consolidated plan and managing CDBG funds. The state makes funds available to eligible agencies (cities and counties) through a variety of different grant types. Grantees enter into a contract with the state. Eligible agencies are determined based on a formula, and are listed on the HUD website.

Online resource: <http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm>

Eligible CDBG Agencies by State: <http://portal.hud.gov/hudportal/HUD?src=/states>

### South Carolina Department of Transportation

The City of Aiken and SCDOT can benefit from a close working relationship. Through open communication and collaboration, these agencies can more efficiently identify and implement bicycle and pedestrian improvements as part of major projects. The SCDOT carries out a number of road resurfacing projects annually that target maintenance issues. There may be opportunities for road re-stripping as part of pedestrian and bicycle improvement projects to be completed in conjunction with regular roadway maintenance. This will require coordination between the municipality, the SCDOT District Traffic Engineer, and the local maintenance office to ensure that the pavement marking design is safe for cyclists or drivers. It is recommended that the organizations continue to liaise with one another on an ongoing basis to identify

opportunities for implementation of the Aiken Bicycle and Pedestrian Master Plan.

### SCDOT Guideshare Program

Since the mid-1990's the SCDOT Guideshare program has been responsible for the allocation of urban and rural federal-aid funds for MPO's and COG's in the State of South Carolina. Transportation Management Areas (TMA's), MPO's with urbanized area populations greater than 200,000, are entitled to federal Urban Attributable Funds. The ARTS MPO qualifies as a TMA and projects within the South Carolina portion of the MPO (Aiken County) qualify for guideshare money through SCDOT.<sup>5</sup> The distribution of funds to State TMA's depends on what proportion of the State's population and vehicle miles of travel (VMT) the individual TMA comprises. In FY 2012 Aiken County expects to receive \$8 million for roadway improvement projects within the county.<sup>6</sup>

Guideshare funds are primarily intended for street and highway improvements, but also may fund intersection upgrades, sidewalks and bike lanes, and safety improvements.<sup>7</sup>

### Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) is SCDOT's short-term capital improvement program, providing project funding and scheduling information for the department and South Carolina's metropolitan planning organizations. The program provides guidance for the next six years and is updated every three years. The South Carolina Department of Transportation Commission, as well as the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approve the STIP.

In developing this funding program, SCDOT must verify that the identified projects comply with existing transportation and comprehensive plans and SAFETEA-LU planning requirements. The STIP must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of

<sup>5</sup> Source SCDOT: [http://www.scdot.org/inside/planning\\_faq.shtml](http://www.scdot.org/inside/planning_faq.shtml)

<sup>6</sup> ARTS TIP: <http://appweb.augustaga.gov/Transportation/docs/FINALFY11-14TIP.pdf>

<sup>7</sup> Source GPATS LRTP: [http://www.greenvillecounty.org/gpcp/transportation\\_planning/gpats/](http://www.greenvillecounty.org/gpcp/transportation_planning/gpats/)



transportation projects. Specific transportation projects are prioritized based on Federal planning requirements and the specific State plans.<sup>8</sup>

### **ARTS Transportation Improvement Program**

“The ARTS Transportation Improvement Program (TIP) is a staged, multi-year intermodal program of transportation projects consistent with the Augusta Regional Transportation Study (ARTS) area long range transportation plan. The TIP is the link between planning for transportation needs and addressing those needs.”<sup>9</sup> All MPO’s in Georgia have MPO-specific Transportation Improvement Programs (TIP).

The ARTS TIP is a four year plan, five years for the Aiken County portion of the MPO, and includes all projects in the MPO that are proposed for implementation using federal funding. The current TIP is approved for Fiscal Years 2011-2014. Proposed improvements are prioritized by the calculated need and potential benefit of the project. The ARTS Citizens Advisory Committee and the ARTS Policy Coordinating Committee give the final approval for the TIP.

ARTS Transportation Improvement Program:  
<http://appweb.augustaga.gov/Transportation/docs/FINALFY11-14TIP.pdf>

### **State Transportation Infrastructure Bank**

The South Carolina Transportation Infrastructure Bank (SCTIB) is a statewide revolving loan fund designed in 1997 to assist major transportation projects in excess of \$100 million in value. The SCTIB has since approved more than \$4.5 billion in financial assistance and is arguably the largest and most active State Infrastructure Bank in the country.<sup>10</sup>

### *Locally-Administered Funding*

Local funding sources are generally administered by Metropolitan Planning Organizations or other regional agencies. Counties or cities may administer some funding

<sup>8</sup> Additional information is available at: <http://www.scdot.org/inside/stip.shtml>

<sup>9</sup> Source: <http://appweb.augustaga.gov/Transportation/docs/FINALFY11-14TIP.pdf>

<sup>10</sup> Additional information is available at: <http://www.chiplimehouse.net/whisper/graphics/60565Connector%20Fall%202007%2012.pdf>

sources. These funding sources are supported by federal, state, or local revenue streams.

### **Transportation Enhancements Program**

The Transportation Enhancements Program (TE) is a locally-administered source of funding that is drawn from federal gas tax revenues. TE funds can be applied to bicycle and pedestrian projects, as well as a number of other types of transportation-related projects. Bicycling activities approved for TE funds include: the development of bicycle and pedestrian facilities, including support facilities; and bicycle safety education.

### **General Fund**

The General Fund is often used to pay for maintenance expenses and limited capital improvement projects. Projects identified for reconstruction or re-pavement as part of the Capital Improvements list should also implement recommendations for bicycle or pedestrian improvements in order to reduce additional costs.

### **Local Improvement Districts (LIDs)**

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation.

Several cities have successfully used LID funds to make improvements on residential streets and for large scale arterial projects. LID formed to finance commercial street development can be “full cost,” in which the property assessments are entirely borne by the property owners.

### **Business Improvement Area (BIA)**

Pedestrian and bicycle improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Areas collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers. These districts may include provisions for pedestrian and bicycle improvements, such



as wider sidewalks, landscaping, and ADA compliance.

### Transportation User Fees

Transportation user fees are any group of additional fees that could be used to fund maintenance and improvement projects for non-motorized uses. Properties would be assessed fees based on the traffic generation by land use or business activity as published in the Institute of Transportation Engineers (ITE) Trip Generation Manual.

The fee could be a Street Maintenance Fee, to fund maintenance of the existing roadway system to free up dollars from the state gasoline tax for capital projects.

### Local Bond Measures

Counties or municipalities within the region could issue bonds to fund bicycle and/or pedestrian improvements. This would spread the cost of the improvements over the life of the bonds. Certain types of bonds would require voter approval. The debt would have to be retired, so funding for repayment on the bond and the interest would be required.

A bond issued in Denver, Colorado funded \$5 million for trail development and also funded the city's bike planner for several years. The City of Albuquerque, New Mexico and Bernalillo County have a 5 percent set-aside of street bond funds for trails and bikeways. This has amounted to approximately \$1.2 million for the City every two years.

### Tax Increment Financing/Urban Renewal Funds

Tax Increment Financing (TIF) is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., shared-use path) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Tax Increment Financing typically occurs within designated Urban Renewal Areas (URA) that meet certain economic criteria and approved by a local governing body. To be eligible for this financing, a project (or a portion of it) must be located within the URA.

### Street User/Street Utility Fees

Counties or municipalities within the region could administer street user fees through residents' monthly water or other utility bills. The revenue generated by the street user fee is used for operations and maintenance of the street system, and priorities are established by the Public Works Department. Revenue from this fund could be used to maintain on-street bicycle and pedestrian facilities, including routine sweeping of bicycle lanes and other designated bicycle routes. Additionally, this type of fee may free up more general fund money for off-street projects. Implementation of street user fees would require a public vote.

### Sales Taxes

Bicycle and pedestrian projects can be funded by a portion of local sales tax revenue or from a voter-approved sales tax increase. The local option sales tax (LOST) enacted by Aiken County already allows for a wide variety of capital improvement projects to receive funding. The City of Colorado Springs implemented a TOPS tax (Trails, Open Space and Parks) to administer the ordinance passed by voters in April of 1997. The sales tax, 1/10th of one percent, generates about \$6 million annually for trails, open space and parks.

### Property Tax Levy

Approved property taxes can be an important source of funding for bicycle and pedestrian projects. Seattle, Washington is receiving \$5 million a year for nine years for bicycle and pedestrian projects as a result of a levy (property tax) approved by voters in 2006.

### Bike Tax

Bike taxes can provide funding for bicycle infrastructure projects. The City of Colorado Springs has a \$4.00 per bike tax to provide funding for bikeway improvements. The tax generates nearly \$100,000 annually and has been used for both on- and off-street projects. It is used primarily to provide a local match for other grants such as the Colorado State Trails Program or SAFETEA-LU grants. A bike tax is an annual fee; implementation would require a public vote.



## Developer Impact Fees

Another potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site bikeway improvements that will encourage residents to bicycle or walk rather than drive. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

## Latecomer Fees

Latecomer fees are a mechanism that allows cities to recover pro-rata costs of a duly authorized public improvement from future developers, which receive benefit from the public improvement.

## Other Sources

### Community Action for a Renewed Environment (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between \$75,000 and \$300,000.

Online resource: <http://www.epa.gov/care/>

### Bikes Belong Grant

Bikes Belong is an organization sponsored by bicycle manufacturers with the intent to increase bicycle riding in the United States. Bikes Belong provides grant opportunities up to \$10,000 with a minimum 50 percent match to organizations and agencies seeking to support facility and advocacy efforts. Eligible projects include bike paths, trails, and bridges, mountain bike facilities, bike parks, and BMX facilities.

Online resource: <http://www.bikesbelong.org/grants>

## Robert Wood Johnson Foundation Grants

Robert Wood Johnson Foundation Grants are awarded to promote healthy communities and lifestyles. Most grants are awarded through Calls for Proposals for the seven program areas of the RWJ Foundation. In recent years, Spartanburg and Greenville Counties in SC have received grants from the RWJ Foundation through the Healthy Kids Healthy Communities grant program.

## American Greenways Program

Administered by The Conservation Fund, the American Greenways Program provides funding for the planning and design of greenways. Applications for funds can be made by local regional or state-wide non-profit organizations and public agencies. The maximum award is \$2,500, but most range from \$500 to \$1,500. American Greenways Program monies may be used to fund unpaved trail development.

Online resource: <http://www.conservationfund.org/node/245>

## Volunteer and Public-Private Partnerships

Local schools or community groups may use the bikeway projects as a project for the year, possibly working with a local designer or engineer. Work parties may be formed to help clear the right-of-way where needed. A local construction company may donate or discount services. A challenge grant program with local businesses may be a good source of local funding, where corporations 'adopt' a bikeway and help construct and maintain the facility.

## Walmart State Giving Program

The Walmart Foundation financially supports projects that create opportunities for better living. Grants are awarded for projects that support and promote education, workforce development/economic opportunity, health and wellness, and environmental sustainability. Both programmatic and infrastructural projects are eligible for funding. State Giving Program grants start at \$25,000, and there is no maximum award amount. The program accepts grant applications on an annual, state by state basis January 2nd through March 2nd.

Online resource: <http://walmartstores.com/CommunityGiving/8168.aspx?p=8979>



## Coca-Cola Foundation Community Support Grants

The Coca-Cola Foundation awards grants for projects that promote and support water stewardship, active, healthy living, community recycling, and education. The award amount for projects varies and the application process is rolling. Programmatic, planning, and educational projects are eligible to apply. The Foundation does not support construction projects or projects that involve land acquisition. In addition, schools are not eligible to apply for Community Support funding.

Online Resource: [http://www.thecoca-colacompany.com/citizenship/application/guidelines\\_faq.html](http://www.thecoca-colacompany.com/citizenship/application/guidelines_faq.html)

## The Rite Aid Foundation Grants

The Rite Aid Foundation is a foundation that supports projects that promote health and wellness in the communities that Rite Aid serves. Award amounts vary and grants are awarded on a one year basis. A wide array of activities are eligible for funding, including infrastructural and programmatic projects.

Online resource: <http://www.riteaid.com/company/community/foundation.jsf>

## Local Businesses

There is increasing corporate and business involvement in trail and conservation projects. Employers recognize that creating places to bike and walk is one way to build community and attract a quality work force. Bicycling and outdoor recreation businesses often support local projects and programs. Some examples include:

- In Evansville, Indiana, a boardwalk is being built with corporate donations from Indiana Power and Light Co. and the Wal-Mart Foundation.
- In Arizona, trail directional and interpretive signs are being provided by the Salt River Project — a local utility. Other corporate sponsors of the Arizona Trail are the Hughes Missile Systems, BHP Cooper, and Pace American, Inc.

- Recreational Equipment, Inc. has long been a financial supporter of local trail and conservation projects.
- The Kodak Company now supports the American Greenways Awards program of The Conservation Fund, which was started in partnership with the DuPont Company. This annual awards program provides grants of up to \$2500 to local greenway projects for any activities related to greenway advocacy, planning, design or development.

## Land Trusts

Many environmental land trust organizations have raised funds to purchase land where trails are built, especially rail-trails. The Palmetto Conservation Foundation is a statewide nonprofit in South Carolina with a history of establishing conservation easements and building trail networks, including the cross-state Palmetto Trail.

## The Conservation Alliance

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. One hundred percent of its member companies' dues go directly to diverse, local community groups across the nation - groups like Southern Utah Wilderness Alliance, Alliance for the Wild Rockies, The Greater Yellowstone Coalition, the South Yuba River Citizens' League, RESTORE: The North Woods and the Sinkyone Wilderness Council (a Native American-owned/operated wilderness park). For these groups, who seek to protect the last great wild lands and waterways from resource extraction and commercial development, the Alliance's grants are substantial in size (about \$35,000 each), and have often made the difference between success and defeat. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to grassroots environmental groups across the nation, and its member companies are proud of the results: To date the groups funded have saved over 34 million acres of wild lands and 14 dams have been either prevented or removed-all through grassroots community efforts.



The Conservation Alliance is a unique funding source for grassroots environmental groups. It is the only environmental grant maker whose funds come from a potent yet largely untapped constituency for protection of ecosystems - the non-motorized outdoor recreation industry and its customers. This industry has great incentive to protect the places in which people use the clothing, hiking boots, tents and backpacks it sells. The industry is also uniquely positioned to educate outdoor enthusiasts about threats to wild places, and engage them to take action. Finally, when it comes to decision-makers - especially those in the Forest Service, National Park Service, and Bureau of Land Management, this industry has clout - an important tool that small advocacy groups can wield.

The Conservation Alliance Funding Criteria: The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation. All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success. The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years). Funding emphasis may not be on general operating expenses or staff payroll.

Additional Information: <http://www.conservationalliance.com/index.m>.

### **National Fish and Wildlife Foundation (NFWF)**

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable outcomes in the conservation of fish, wildlife, plants and the habitats on which they depend. Awards are made on a competitive

basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal match.

Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals.

Additional Information: <http://www.nfwf.org/AM/Template.cfm?Section=Grants>

### **The Trust for Public Land**

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

Additional Information: <http://www.tpl.org>

### **Funding for Sidewalk Infill Programs**

Recent research has shown the substantial individual and community-wide benefits of walking. An increase in people walking improves environmental health and alleviates traffic congestion by reducing dependence on the automobile.<sup>11</sup> Walking promotes an active lifestyle and has health and psychological benefits for individuals.<sup>12</sup> As the number of people who walk increase, communities can see economic benefits such as savings on health care costs and the costs of vehicular operation and infrastructure.<sup>13</sup> Lastly, community promotion of walking and other forms of alternative transportation increases transportation options for users of varied ages, income levels, and abilities.<sup>14</sup>

11-14 <http://www.walkinginfo.org/why/>



Many communities around the country have sidewalk networks that are fragmented, disconnected, and poorly maintained. This is due in large part to historically minimal sidewalk requirements in new development. One of the ways in which communities can promote walking is through infrastructure improvements that complete the pedestrian network – often referred to as sidewalk infill. The goal of sidewalk infill programs is to connect fragmented segments of a community's existing sidewalk network through the construction of new sidewalks as a means of improving the network's continuity and connectivity. Strategic sidewalk infill consists of inventory and analysis of the community's existing sidewalk network to identify network gaps, prioritizing gaps based on community needs and funding requirements, and filling in these gaps as funding becomes available.<sup>15</sup> Gaps are typically prioritized based on criteria such as: surrounding density, surrounding income level, connection to transit, proximity to grade schools, proximity to parks, traffic volumes on adjacent roadways, the presence of sight line limitations, and to what extent resolution of a gap would complete the overall sidewalk network.<sup>16</sup>

Often the biggest hurdle for communities is coming up with ways to fund sidewalk infill projects. Typically, available funding for sidewalk construction and maintenance in operational budgets is scarce. In many communities this is because sidewalk construction and maintenance is considered the responsibility of the adjacent property owner (in the case of existing development) or the developer (in the case of new development).<sup>17</sup>

<sup>15</sup> Chapter 7 of the Greensboro, NC BiPed is a good example of how sidewalk infill projects can be prioritized: <http://www.greensboro-nc.gov/index.aspx?page=2121>

<sup>16</sup> A Streamlined Approach to Prioritize Sidewalk Investments. <http://www.ite.org/annualmeeting/compendium10/pdf/AB10H0703.pdf>

<sup>17</sup> Sidewalks: The City's Problem, and Greenwood's Solution. <http://www.worldchanging.com/local/seattle/archives/008386.html>

The most common mechanisms for funding sidewalk infill programs include assessment of adjacent property owners, developer assessments, Capital Improvement Programs (CIP), and/or the creation of Local Improvement Districts (LID).

Communities have been able to find other creative ways of funding sidewalk improvement programs as well. These include state and federal grant programs, voter approved tax increases, utilizing funds from the gasoline tax, and using funds collected from parking tolls.

This following section explains and compares the many ways in which communities have funded sidewalk infill.

### *Primary Municipal Mechanisms for Sidewalk Infill*

The primary method for sidewalk development in new development or redevelopment is through requiring property developer to provide sidewalks that conform to the municipal code. Because the Americans With Disabilities Act (ADA) requires that non-single family development addresses accessibility needs, there is particular precedent for requiring properly-constructed sidewalk infill when a property is improved.<sup>18</sup> While developer requirements are an important mechanism for constructing sidewalks, this mechanism alone is generally inadequate for addressing sidewalk infill needs as there is no correlation between important gaps in the sidewalk network and the likelihood of a property redeveloping. Most communities will find that additional measures will be needed that allow for greater control over where and how sidewalk infill happens.

To that end, many communities have a mechanism in place for sidewalk infill funded through the assessment of adjacent property owners and developers. This stems from the fact that in most communities, the adjacent property owner is responsible for sidewalk provision and maintenance. Property assessments are a way to fund sidewalk infill at low or no cost to the municipality; unsurprisingly, however, they are often quite unpopular

<sup>18</sup> A list of ADA sidewalk design standards can be found here: <http://www.fhwa.dot.gov/environment/sidewalks/chap4b.htm>



with property owners, who may oppose the project because of the cost to them. Numerous communities have programs in place that modify the property assessment process to lower the costs to property owners:

- Chatham-Kent, CA has a 50/50 program that splits the cost of sidewalk assessment with the property owner if that particular sidewalk link is identified as a high priority in their sidewalk infill program or if a valid petition is submitted. CitySidewalk costs and design have been standardized by the City and are installed by approved contractors at a rate of \$85/meter, which helps reduce inconsistencies between sections of sidewalk. More information on this program can be found through the City's website: <http://www.chatham-kent.ca/NR/rdonlyres/D07AA51A-1E2A-4911-B3CE-FB064073D157/10996/15b.pdf>.
- Syracuse, NY has a sidewalk assessment program that provides property owners financing for sidewalk installation and maintenance. Financing is at an annual rate of 7% over a period of 10 years. More information can be found through the City's website: [http://www.syracuse.ny.us/Sidewalk\\_Maintenance.aspx](http://www.syracuse.ny.us/Sidewalk_Maintenance.aspx).
- Tumwater, WA has an 80/20 cost sharing program for the construction of sidewalks for residential infill lots where a gap in the existing sidewalk network currently exists. Sidewalk design and construction is conducted by the City with the City covering 80% of the costs. Funding for the program is allocated through the City's annual budget. More information can be found through the City's website: <http://www.ci.tumwater.wa.us/sidewalkinfill.htm>.
- The Greenwood district in Seattle, WA initiated a pilot program that implements sidewalk infill based on a low-impact sidewalk design standards manual developed by the district planner. The program offers zero-interest monthly loans to homeowners, as well as an option where the City pays for sidewalk construction up front and the homeowner pays construction costs back when they sell their house. More information can be found through the City's website: <http://www.worldchanging.com/local/seattle/archives/008386.html>.

Developer assessments are another way communities can implement sidewalk infill:

- Downers Grove, IL requires that developers and builders install sidewalks along the roadway adjacent to the properties they are developing and that sidewalks are constructed on both sides of new roads in developments. If the municipal engineer determines that new sidewalks are not necessary in a proposed development, the developer may pay a fee in lieu of constructing new sidewalks. These fees are added to the Community Investment Program and used to fund sidewalk infill construction in other areas of the village. This program is outlined in Section 20.602 of their municipal code: <http://www.downers.us/public/docs/code/Chapter20.pdf>.

Capital Improvement Programs are plans created by municipalities that organize, prioritize, and allocate funding for improvement projects that require significant investment. Projects included in Capital Improvement Programs usually include infrastructure improvements, building improvements, and land acquisition. CIPs are funded through a variety of means such as utilities revenue, tax revenue, bonds, and grants. Sidewalk infill programs can be included as a stand-alone program in the CIPs list to provide a means of ongoing funding and implementation.

- Greensboro, NC funds their priority sidewalk program through a combination of funds from the City's CIP, funds from STP and CMAQ grants (obtained through the MPO), and voter approved bonds. The City prioritizes gaps along major thoroughfares in their bike and pedestrian plan. In addition, there is a petition process to request sidewalk construction along residential streets that requires 51% approval by affected owners. Sidewalks in residential areas are completely funded by public means and no property owner assessments are made. (Peggy Holland, City of Greensboro Bicycle and Pedestrian Coordinator).

Local Improvement Districts (LIDs) and Business Improvement Districts (BIDs) are special assessment districts within a municipality, formed by property and/or business owners as a means of funding and implementing



local improvement projects. Establishment of a LID/BID offers low-interest financing, funded through the sale of bonds, for district-wide improvement projects. Incremental assessments are collected over several years for the collective costs of projects in the district. Projects are typically infrastructural and can include construction and maintenance of sidewalks, street lighting, roads, and utility lines. The benefits of LIDs/BIDs are that they provide a means of funding public projects that the City can't fund, they offer project financing for property owners, they spread the costs of projects over all affected property owners, and the owner assessments directly reflect the costs of the projects. The drawbacks of LIDs/BIDs are that they take a significant amount of time to establish and the project approval process can be tedious. LIDs and BIDs are typically established independently of strategic sidewalk infill plans, but could be considered in these plans as a way of leveraging funds and support. Some examples of cities that support the establishment of LIDs are: Nampa, Idaho ([http://www.nampa.id.us/engineering/local-improvement-districts-\(lids\)/sidewalk.aspx](http://www.nampa.id.us/engineering/local-improvement-districts-(lids)/sidewalk.aspx)), Portland, Oregon (<http://www.portlandonline.com/transportation/index.cfm?c=35715>), and Everett, WA (<http://www.ci.everett.wa.us/default.aspx?ID=862>).

### Toolbox of Additional Sidewalk Infill Strategies

There are also other strategies of funding sidewalk infill programs. The following strategies rely more on obtaining funding from large, public revenue sources rather than individual assessments. Funding sidewalks from broad sources such as taxes and grants supports the idea that sidewalks are part of the public transportation network, and their implementation is the responsibility of all citizens. However, many municipalities are understandably concerned about funding sidewalks through public funds in some areas and through individual assessments in other areas, so careful consideration of the long-term implications of a policy change is recommended.<sup>19</sup>

There are several federally-sponsored grants that offer assistance in funding sidewalk construction or maintenance projects. Table 1

19 Paul H.Klassen, P.E. Coastland Civil Engineering

provides an overview of these sources and links to additional information.

Another successful means of funding sidewalk construction is through voter approved tax increases. These usually come in the form of a tax increment attached to a local sales tax or utilities tax. Although the process of approval can be long and political, the primary advantage of this measure is that it only requires 51% of the voter approval to pass. Some municipalities that have had success with this funding method include:

- Olympia, WA residents have voted in a 2% increase on their telecom, gas, and electric tax to fund sidewalk improvements. A concerned group of citizens supported and promoted the cause, and gained support by voters. Funds generated from taxes have increased the annual budget for sidewalks by over one million dollars, providing a substantial financial base for their sidewalk infill program. More information can be found on pages 233-235 of the Pedestrian and Bicycle Information Center Case Study Compendium: [http://katana.hsrb.unc.edu/cms/downloads/pbic\\_case\\_study\\_compendium.pdf](http://katana.hsrb.unc.edu/cms/downloads/pbic_case_study_compendium.pdf).
- San Diego Region, CA has a local half-cent sales tax increase program called TransNet. The fund is inclusive of all areas in the SANDAG MPO and individual municipalities apply for sidewalk funds through the MPO. More information on TransNet can be found here: <http://www.sandag.org/index.asp?classid=30&fuseaction=home.classhome>.

Some municipalities have been able to use funds collected from state fuel taxes to fund sidewalk maintenance and construction programs:

- Charlotte, NC now funds its sidewalk construction and replacement program through funds collected from the fuel tax as part of the Powell Bill.<sup>20</sup> Their annual budget for sidewalk construction and maintenance is around \$555,000. Before the Powell Bill was passed into legislation, Charlotte filled sidewalk gaps through individual property assessments. Now, they have eliminated assessments for sidewalks,

<sup>20</sup> Information on the NC Powell Bill: [http://www.ncdot.org/programs/Powell\\_Bill/](http://www.ncdot.org/programs/Powell_Bill/)



which has allowed them to standardize and streamline design and construction. More information about the program can be found here: <http://peds.org/wp-content/uploads/2010/09/Charlotte-Sidewalk-Maintenance.pdf>.

- Downers Grove, IL funds their CIP partly through revenue generated from the state motor vehicle fuel tax. Additional information on their CIP can be found on the City's website: [http://www.downers.us/public/docs/vlg\\_budget/2011/CIP.pdf](http://www.downers.us/public/docs/vlg_budget/2011/CIP.pdf).

Lastly, parking tolls have been used in some areas as a means of funding local sidewalk and streetscaping projects in Business Improvement Districts. In some cases, collections from parking tolls have been added to CIP funds specifically to construct sidewalk and streetscape improvement projects in all areas of a municipality:

- Pasadena, CA has used parking meters as a means of revitalizing a declining, historic business district in the city known as Old Pasadena. The streetscape improvements, funded by revenue generated from the meters, have proven successful in drawing people to the area and improving business throughout the district. A full overview of the program's history and success is located here: <http://shoup.bol.ucla.edu/SmallChange.pdf>.
- Downers Grove, IL partly funds the roadway and sidewalk improvement projects in their CIP through revenue generated from parking tolls. An overview of their CIP, including a breakdown of funding sources, can be found on the City's website: ([http://www.downers.us/public/docs/vlg\\_budget/2011/CIP.pdf](http://www.downers.us/public/docs/vlg_budget/2011/CIP.pdf)).

## Sidewalk Infill Program Funding Conclusions

A well-connected sidewalk network is an essential part of a pedestrian-friendly community. Sidewalk connectivity encourages walking by improving safety, accessibility, and comfort for pedestrians. Strategic sidewalk infill programs are a means for communities to increase their sidewalk connectivity in a cost-effective manner that prioritizes filling highest-value gaps.

Securing funding for sidewalk construction can often be difficult; municipal budgets for new sidewalks are usually small in comparison to the funding allocated for other infrastructure improvements such as roads. However, many communities, like the ones listed in this section, have found creative ways to fund sidewalk improvement programs. The purpose of this information is to outline proven ways of funding sidewalk construction and maintenance as part of a strategic sidewalk infill plan. However, this section should not be taken as a comprehensive list of funding solutions for sidewalks—resourcefulness, creativity, and persistence can produce additional sources of funding not mentioned here.



Table F-1: Sidewalk Infill Grant Funding Sources

Grant Program	Funding Sources	Project Requirements	Additional Funding Info	Project Examples
<b>Surface Transportation Program (STP) Transportation Enhancements (TE)</b>	Federal Funds, allocated through state DOTs	Project meets all applicable required design standards and is financially feasible.	80% of costs covered by the grant with a 20% local match	Many examples of sidewalk projects using TE funds can be found on the TE website: <a href="http://www.enhancements.org/TE_news.asp">http://www.enhancements.org/TE_news.asp</a>
<b>Congestion Mitigation and Air Quality Improvement Program (CMAQ)</b>	Federal Funds, allocated through state DOTs	An air quality report including projected cost/benefit analysis is required for the application. Project progress reports are required for reimbursement. Proposals must be consistent with the local transportation plan.	80% of costs covered by the grant with a 20% local match	Walkinginfo.org provides helpful resources on CMAQ funding and project examples: <a href="http://www.walkinginfo.org/faqs/answer.cfm?id=4274">http://www.walkinginfo.org/faqs/answer.cfm?id=4274</a>
<b>Community Development Block Grant (CDBG)</b>	Federal Funds, allocated through State HUD office	Municipality must conduct a study of block conditions and develop an action plan to describe how funds will be used for improvement. After funds are granted, the HUD requires an annual progress report called CAPER.	Two categories of eligible areas: Entitlement Communities (large counties and municipalities) and Non-Entitlement Communities (small counties and municipalities)	The City of Sandy Springs, GA has a detailed overview of a sidewalk project funded through CDBG dollars: <a href="http://www.sandyspringsga.org/City-Departments/Community-Development/Community-Development-Block-Grant">www.sandyspringsga.org/City-Departments/Community-Development/Community-Development-Block-Grant</a>
<b>Federal Safe Routes to School Program (SRTS)</b>	Federal Funds, allocated through State DOT	Eligible schools apply through their municipality for funds. New sidewalk construction is eligible if it is within one mile of a primary or middle school.	100% of costs covered by the grant	Multiple examples by state can be found on the National Center for Safe Routes to School's website: <a href="http://www.saferoutesinfo.org/funding-portal">www.saferoutesinfo.org/funding-portal</a>

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Appendix G



*Detailed Bicycle and Pedestrian Count Results*

## Appendix G: Detailed Count Results

**Table G-1: Weekday Count Results**

Count Location	Bicyclists			Pedestrians		
	Female	Male	Total	Female	Male	Total
Chesterfield @ Whiskey Road (Aiken)	0	2	2	3	5	8
Whiskey Road @ Price Avenue (Aiken)	0	4	4	7	4	11
Pine Log @ Banks Mill (Aiken)	0	1	1	0	2	2
Banks Mill @ Pine Log (Aiken)	0	1	1	2	2	4
Dupont @ Teague (Aiken)	0	4	4	7	12	19
Whiskey Road @ Dougherty (Aiken)	0	2	2	0	3	3
Richland Avenue @ Laurens (Aiken)	0	1	1	24	24	48
Laurens @ Richland Avenue (Aiken)	0	0	0	63	36	99
Whiskey @ Pine Log (Aiken)	0	0	0	9	7	16
Georgia Avenue @ East Buena Vista (North Augusta)	0	3	3	9	5	14
East Buena Vista @ Georgia Avenue (North Augusta)	0	1	1	0	3	3
Greenway @ Pisgah (North Augusta)	7	11	18	25	16	41
13th Street Bridge (North Augusta Side)	3	5	8	4	0	4
Hampton Avenue @ York Street (Aiken)	0	11	11	12	39	51
York Street @ Hampton Avenue (Aiken)	0	11	11	7	25	32
Totals	10	57	67	172	183	355

**Table G-2: Weekday Count Results**

Count Location	Bicyclists			Pedestrians		
	Female	Male	Total	Female	Male	Total
Chesterfield @ Whiskey Road (Aiken)	1	7	8	25	11	36
Whiskey Road @ Price Avenue (Aiken)	0	10	10	3	8	11
Pine Log @ Banks Mill (Aiken)	2	5	7	2	3	5
Banks Mill @ Pine Log (Aiken)	1	5	6	0	3	3
Dupont @ Teague (Aiken)	0	0	0	0	5	5
Whiskey Road @ Dougherty (Aiken)	0	8	8	1	1	2
Richland Avenue @ Laurens (Aiken)	0	3	3	24	29	53
Laurens @ Richland Avenue (Aiken)	0	2	2	64	53	117
Whiskey @ Pine Log (Aiken)	0	4	4	0	3	3
Georgia Avenue @ East Buena Vista (North Augusta)	0	0	0	9	4	13
East Buena Vista @ Georgia Avenue (North Augusta)	0	0	0	0	4	4
Greenway @ Pisgah (North Augusta)	52	64	116	39	24	63
13th Street Bridge (North Augusta Side)	1	4	5	8	4	12
Hampton Avenue @ York Street (Aiken)	0	5	5	12	21	33
York Street @ Hampton Avenue (Aiken)	0	7	7	12	30	42
Totals	57	124	181	199	203	402

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Appendix *H*



*Bicycle and Pedestrian Suitability Maps*

Appendix H: Trip Generator, Trip Attractor, and Roadway Quality Maps Figure H-1: Aiken County Live Map – Bicycle

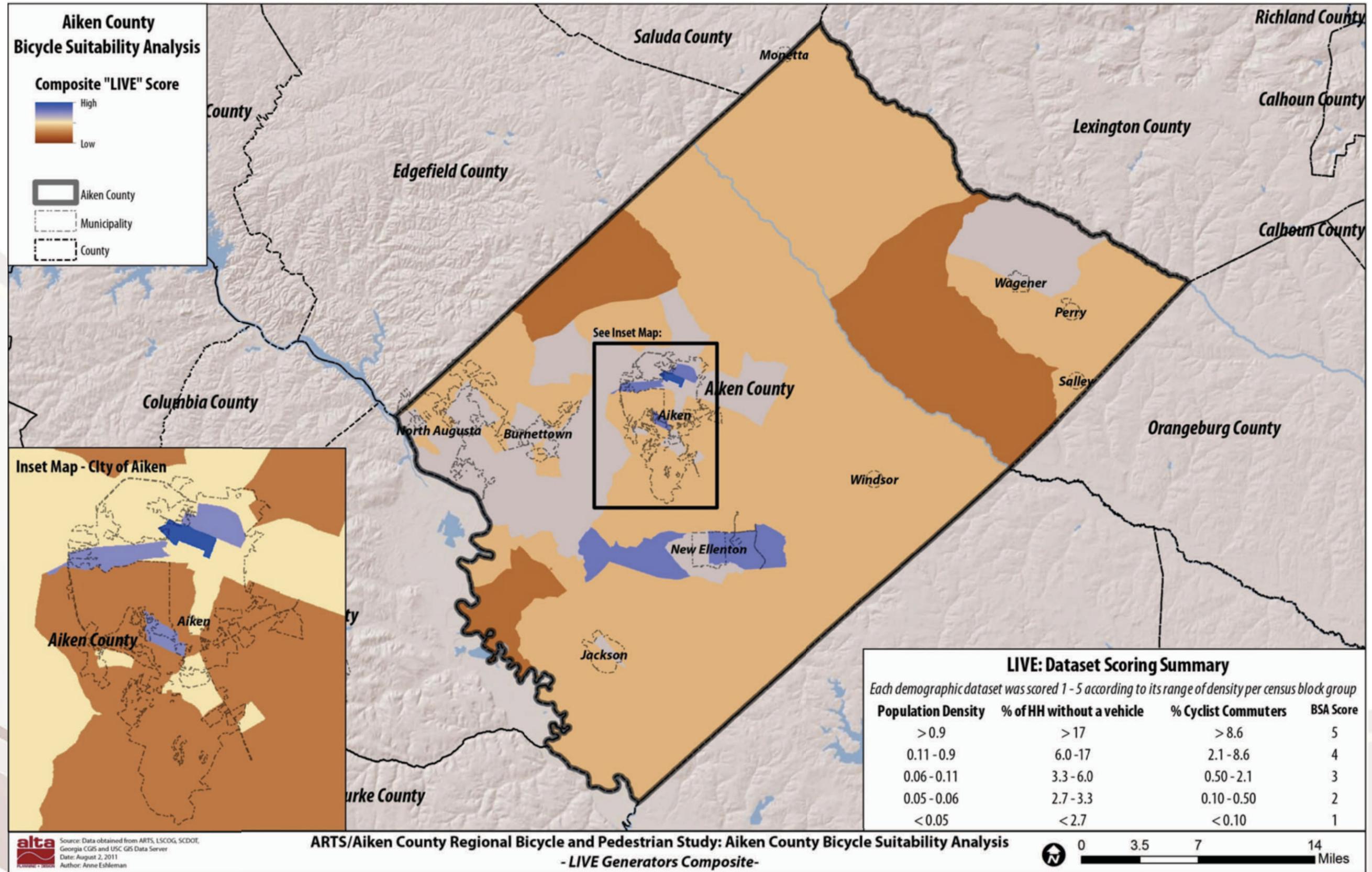


Figure H-2: Aiken County Work Map – Bicycle

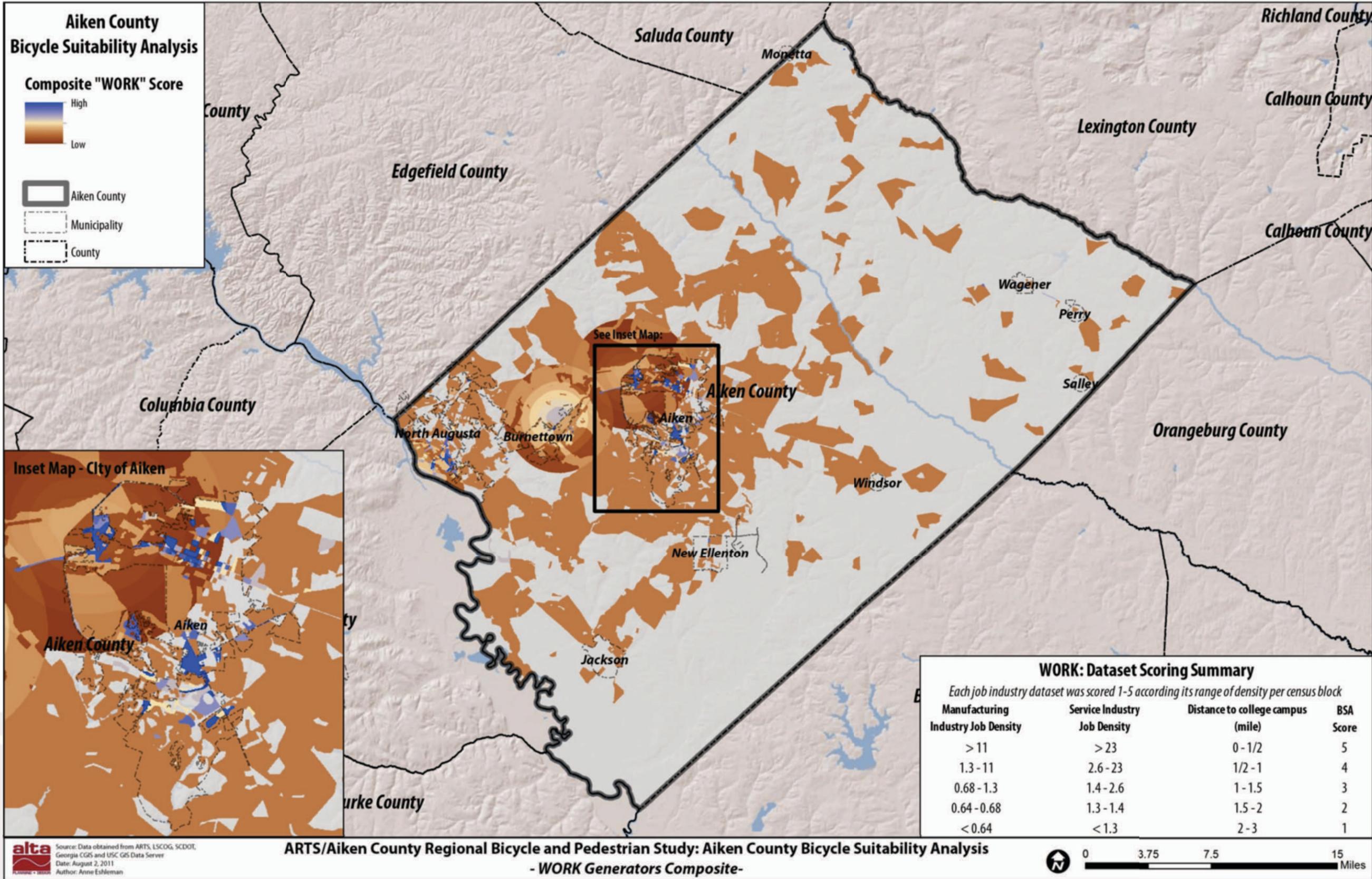


Figure H-3: Aiken County Transit Map – Bicycle

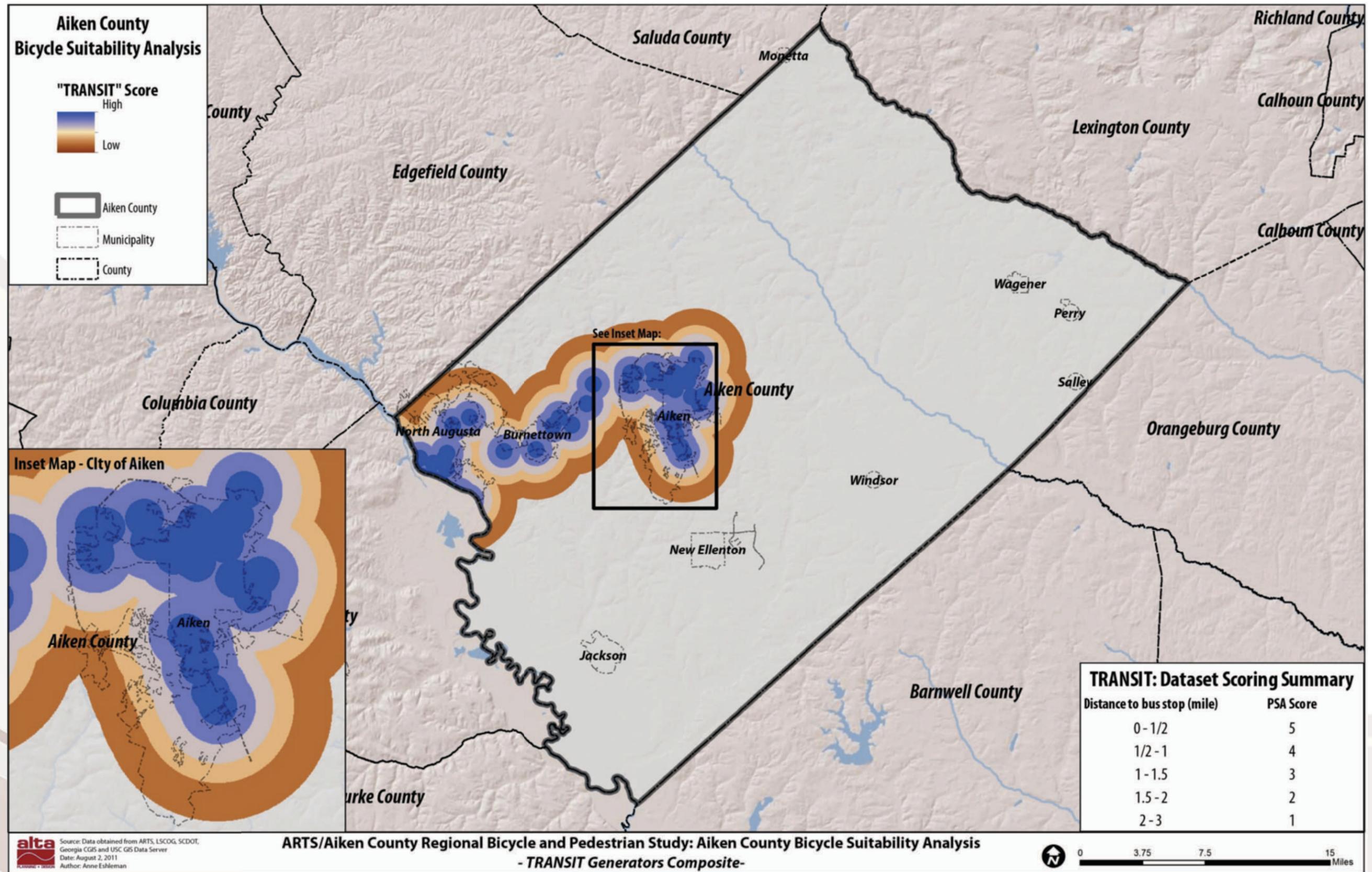


Figure H-4: Aiken County Play Map – Bicycle

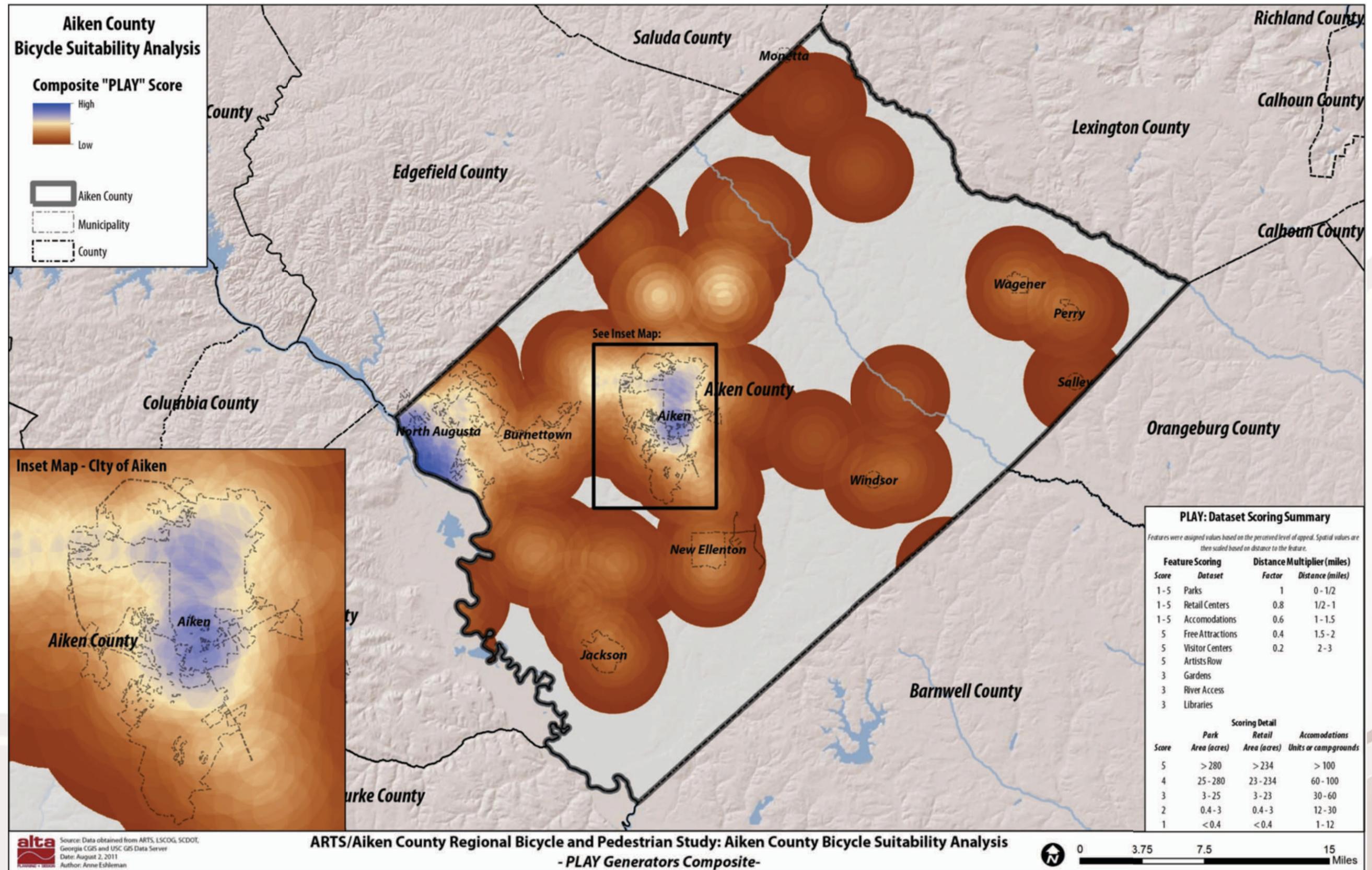


Figure H-5: Aiken County Roadway Quality Map – Bicycle

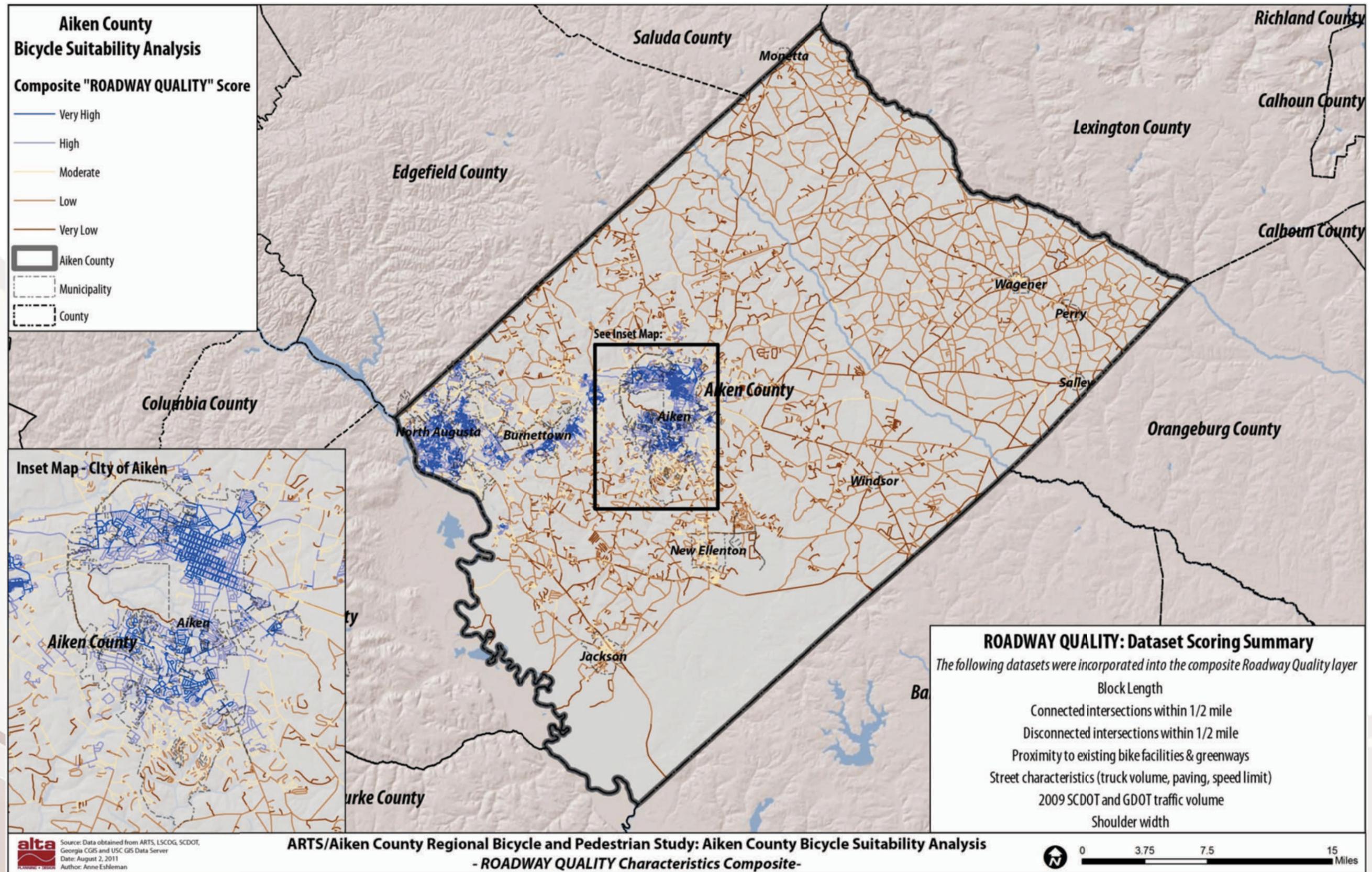


Figure H-6: Aiken County Live Map – Pedestrian

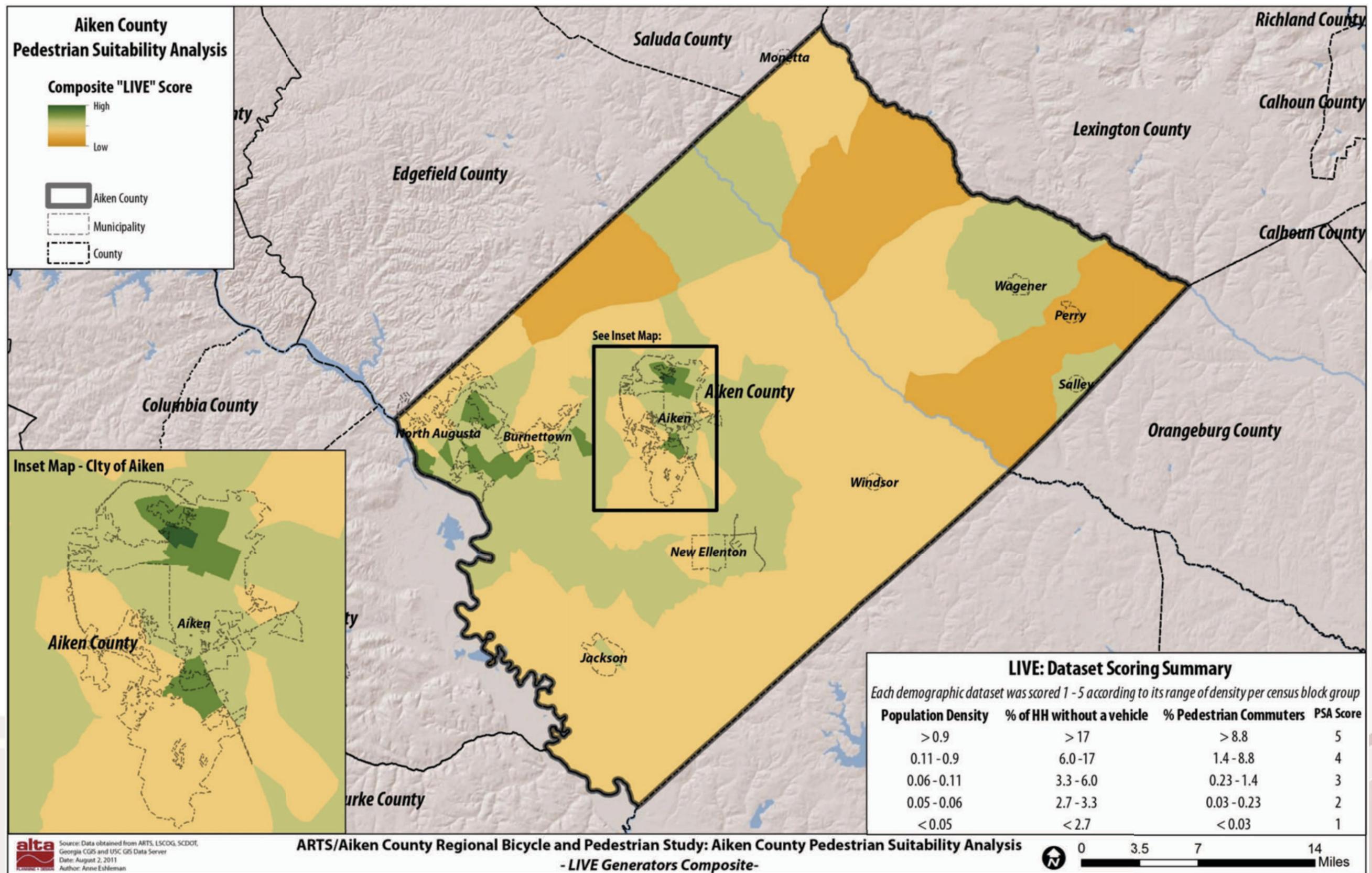


Figure H-7: Aiken County Work Map – Pedestrian

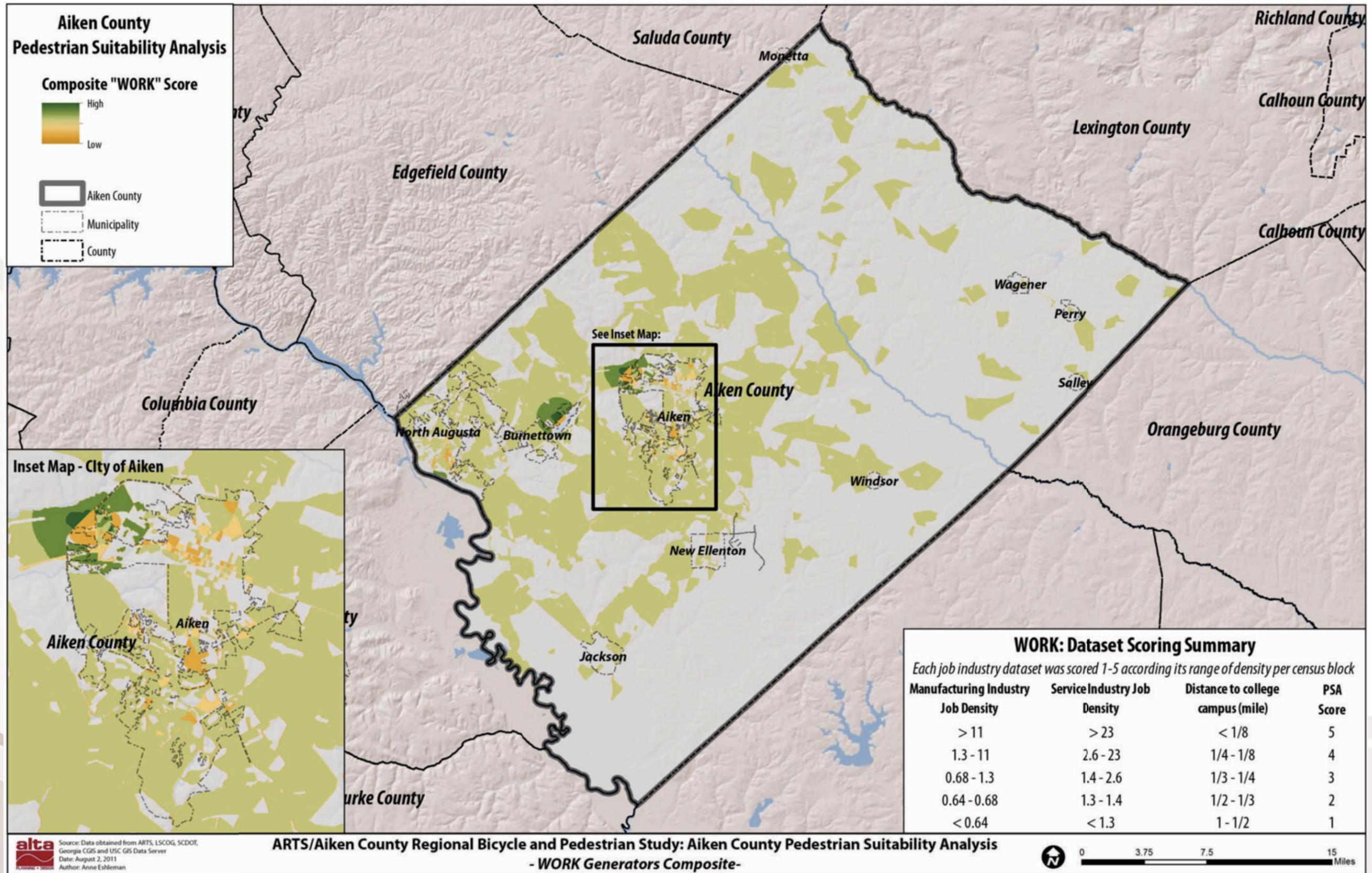


Figure H-8: Aiken County Transit Map – Pedestrian

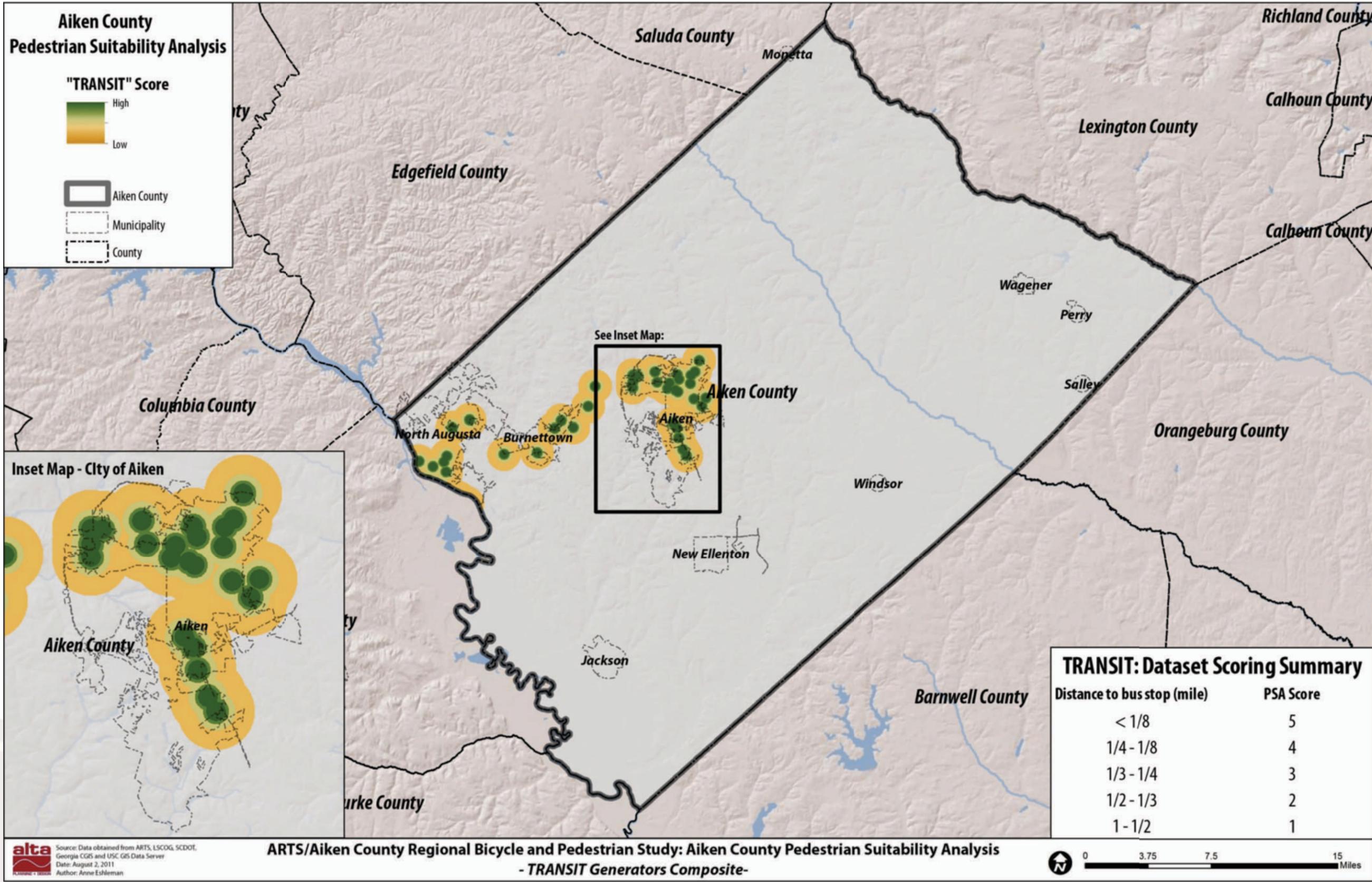


Figure H-9: Aiken County Play Map – Pedestrian

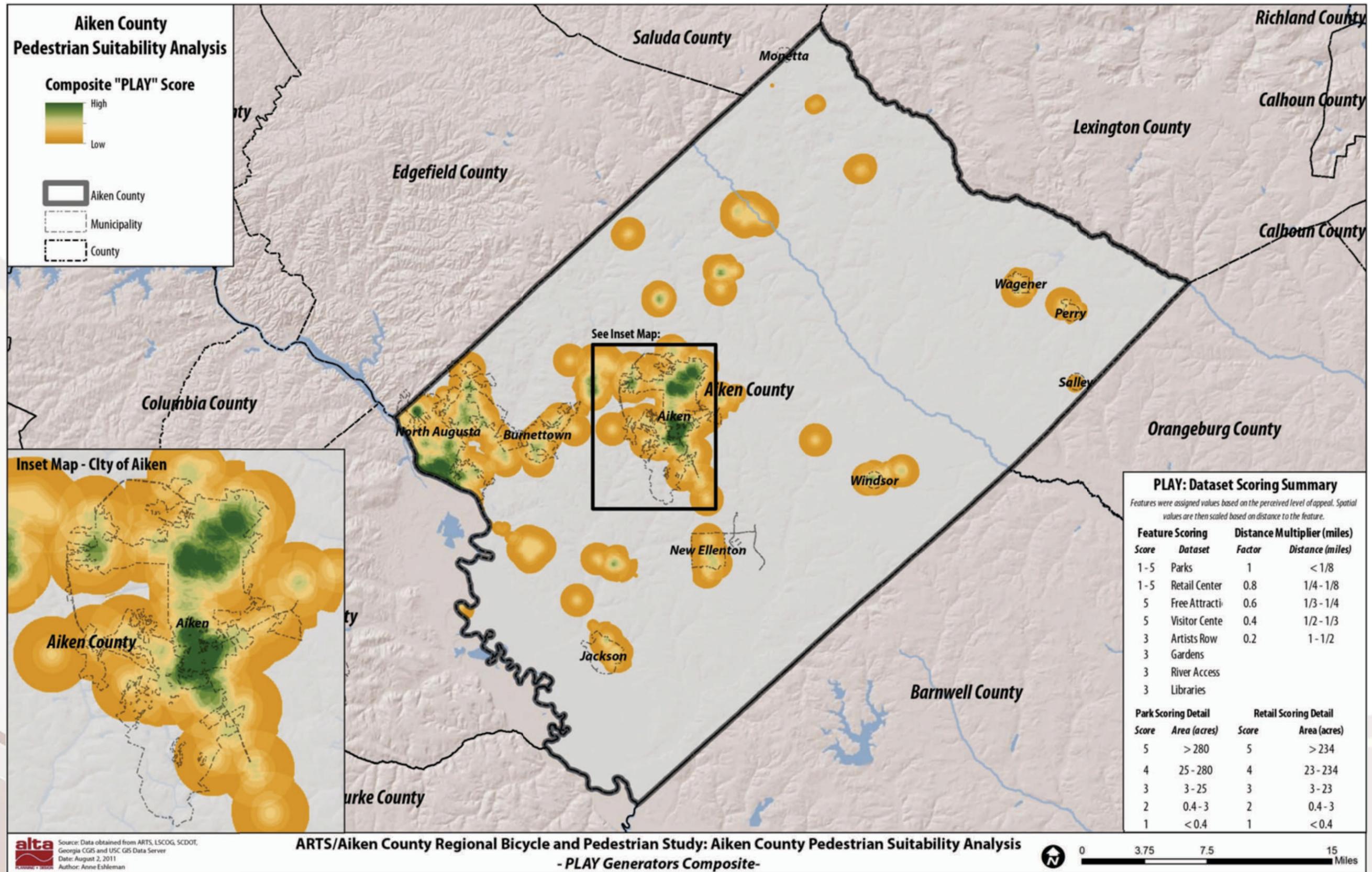


Figure H-10: Aiken County Roadway Quality Map – Pedestrian

