



Division of
Bicycle &
Pedestrian
Transportation

PREPARED FOR: THE FAYETTEVILLE AREA MPO AND NCDOT *with*
THE MID-CAROLINA RPO, THE LUMBER RIVER RPO, and THE CAPITAL AREA MPO

PREPARED BY ALTA PLANNING + DESIGN | WWW.SANDHILLSBIKEPLAN.COM



ACKNOWLEDGMENTS

Thank you to the hundreds of local residents, community leaders, and government staff that participated in the development of this Plan through meetings, events, comment forms, and plan review. Special thanks to those who participated as project committee members, listed below.

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*NCDOT = North Carolina Department of Transportation
MPO = Metropolitan Planning Organization
RPO = Rural Planning Organization*

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APPENDIX A: DESIGN GUIDE RESOURCES

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INTENDED AUDIENCE

The intended audience for this document includes residents, elected officials, government planners, developers, and all people interested in active transportation, recreation, health, wellness, environmental stewardship, economic development, tourism, and overall quality of life throughout the Sandhills Region of North Carolina.

ADDITIONAL INFORMATION

Please contact FAMPO for additional information on this plan and the planning process:
130 Gillespie Street, Fayetteville, NC 28301
910-678-7600 | www.fampo.org



CHAPTER 1

INTRODUCTION

"The Sandhills region will improve its bicycle network to create safe, comfortable, and accessible bicycle connections within, and between, communities. These improvements will generate economic opportunity, improve public health, increase safety, help protect the environment, and provide more mobility options to people of all ages, abilities, and incomes."

- Vision Statement, Sandhills Regional Bicycle Plan Steering Committee (2018)

PROJECT OVERVIEW

The purpose of this plan is to identify opportunities and constraints for bicycling in the Sandhills region, and to establish recommendations for improvement. This plan includes both long-term visionary projects that will positively impact multiple communities in the region, and locally-focused projects that aim to improve safety and connectivity in the short-term.

The Fayetteville Area Metropolitan Planning Organization (MPO) led the planning process, with a study area that includes 51 municipalities, seven counties, and three divisions of NCDOT (Divisions 3, 6, & 8). In addition to the Fayetteville Area MPO, the region also includes parts of the Mid-Carolina Rural Transportation Planning Organization (RPO), the Lumber River RPO, and the Capital Area MPO, each of which was represented on the project Steering Committee.

This plan was developed through an open and participatory process that garnered public input through public events, the project Steering Committee, input maps, and surveys. This plan also builds upon the recommendations of past planning efforts, each informed by their own public engagement processes.

KEY FEATURES OF THE PLAN

- An analysis of current conditions and public feedback regarding opportunities and constraints for bicycling and greenway trails in the Sandhills region;
- A comprehensive recommended greenway and bikeway network;
- A strategic list of recommended top projects;
- Recommended strategies for greenway and bikeway policies, programs, design, and implementation.

PLANNING PROCESS

The planning process for the Sandhills Regional Bike Plan was developed around principles of transparency and inclusivity.

The graphic below summarizes the outreach efforts and major milestones. More in depth reporting and analysis of the engagement process can be found in Chapter 2, starting on page 30.





MAP 1.1 - STUDY AREA

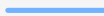
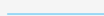
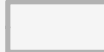

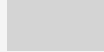
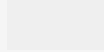
THE SANDHILLS REGION

The Sandhills Bicycle Plan study area covers Cumberland, Harnett, Hoke, Scotland and Robeson counties, parts of Bladen and Sampson counties, and 51 municipalities. The 4,200+ square mile region in southeastern North Carolina is largely composed of rural farmlands, small towns, and protected lands, featuring the City of Fayetteville and Fort Bragg at the center of the region. Fort Bragg is the largest military installation in the world, with more than 50,000 active duty personnel, and Fayetteville is by far the largest city in the region, at 149 square miles and 203,670 people.

Bicycling conditions in the region today are largely perceived as being poor or very poor (see survey results in Chapter 2). Most people riding in the region today do so for recreation, leaving opportunity for increasing rates of bicycling for transportation to work, shopping, and for other utilitarian trips.

There are many opportunities for new bicycle facilities in the Sandhills Region that could get people to ride more often. These include some projects that have been in adopted plans for many years, such as a trail along the Cape Fear River as part of the East Coast Greenway. Other projects, like some of the region's potential rail-trails, have been discussed, but never formally recommended in past plans. Finally, there also are many shorter connections that could be made in this region, including those that offer connections in and out of the region's many historic small towns, connecting bicyclists to the region's many rural roadways that are scenic, relatively flat, and very low in traffic volumes.

LEGEND

-  Cape Fear River
-  River
-  County Boundary
-  Fort Bragg
-  Municipal Boundaries
-  Study Area





Clockwise from top left: Downtown Fayetteville, Cape Fear River Trail/East Coast Greenway, boardwalk trail in Lumber River State Park Princess Ann Access, Downtown Laurinburg, Downtown Raeford, Campbell University, the Riverwalk in Lumberton, and a rural roadway characteristic of much of the region.



PLAN VISION

The Sandhills region will improve its bicycle network to create safe, comfortable, and accessible bicycle connections within, and between, communities. These improvements will generate economic opportunity, improve public health, increase safety, help protect the environment, and provide more mobility options to people of all ages, abilities, and incomes.

GOALS

The following goals were adapted from the Federal Highway Administration's Guidebook for Developing Pedestrian and Bicycle Performance Measures. They were then refined based on input from the project Steering Committee. These goals reflect the benefits of bikable communities discussed later in this chapter. Linking goals and values will help measure outcomes and communicate the intent of the planning process.



INCREASE LIVABILITY

Encourage bicycle-friendly development, including greenways and bikeways as essential infrastructure. Create user-friendly bicycle mapping and wayfinding for people to more easily navigate their community by bike.



ENHANCE CONNECTIVITY

Use this planning process to identify projects that can build upon existing local, regional, and state efforts to create a more convenient and accessible bike network for people of all ages and abilities. Identify the funding sources and strategies that could support such projects.



PRIORITIZE PROJECTS THAT CREATE A POSITIVE ECONOMIC IMPACT

Create projects that support the positive economic effects of bikeable communities, particularly high-impact/low-cost projects; communicate benefits to the public and elected officials.



PROTECT THE ENVIRONMENT

Promote cycling as an environmental good and market the benefits of active transportation on public health. Prioritize linkages to natural areas and develop programs that bring cyclists to nature.



PROMOTE EQUITY

Ensure equitable distribution of infrastructure and programming to low-income and low car-ownership populations. Prioritize connections to employment centers, educational institutions, and places of interest for these communities.



INCREASE AWARENESS TO IMPROVE SAFETY

Develop bicycle-specific education programs, policies and facilities that emphasize safety for all types of cyclists.



ENHANCE HEALTH

Encourage bicycle-friendly policies that improve health and wellness by increasing access to bikeways and encouraging their use. Monitor and report how cycling benefits personal and public health.




LIVABILITY

Bikable communities include many factors that are often associated with concepts of livability and quality of life, such as increasing equity and opportunity, preserving a clean and healthy environment, fostering desirable and connected neighborhoods, increasing safety, contributing to personal and public health, and creating opportunities for positive economic impact. Supporting bicycling facilities, programs, and policies is not a silver-bullet, but with continual effort and an engaged community; a well-designed and connected bike network can help improve the livability of a region.

The American Association of Retired Persons (AARP) has an online tool that draws upon national databases to rank communities on a variety of livability factors, called the "Livability Index" (see table below). Transportation, as factor of livability, is growing in importance as younger generations are showing a preference for more dense car-free lifestyles and older generations are looking for alternative transportation options that increase physical activity, reduce cost, improve community ties, and are more safe.

The table below shows the transportation scoring of the **Livability Index** comparison for three cities. It offers perspective on how the Sandhills Region's largest city (Fayetteville) compares to Raleigh, and to a national model for bicycling infrastructure and livability, Davis, California. <https://livabilityindex.aarp.org/>

	FAYETTEVILLE, NC	RALEIGH, NC	DAVIS, CA
 TRANSPORTATION Safe and convenient options	46	43	68
Metrics			
Convenient transportation options ? Frequency of local transit service	0 buses and trains per hour Median US neighborhood: 0 ●	13 buses and trains per hour Median US neighborhood: 0 ●	27 buses and trains per hour Median US neighborhood: 0 ●
Accessible system design ? ADA-accessible stations and vehicles	93.9% of stations and vehicles are accessible Median US neighborhood: 87.6% ●	46.2% of stations and vehicles are accessible Median US neighborhood: 87.6% ●	94.3% of stations and vehicles are accessible Median US neighborhood: 87.6% ●
Convenient transportation options ? Walk trips	0.71 trips per household per day Median US neighborhood: 0.73 ●	0.76 trips per household per day Median US neighborhood: 0.73 ●	0.87 trips per household per day Median US neighborhood: 0.73 ●
Convenient transportation options ? Congestion	18.9 hours per person per year Median US neighborhood: 25.4 ●	23.9 hours per person per year Median US neighborhood: 25.4 ●	7.6 hours per person per year Median US neighborhood: 25.4 ●
Transportation costs ? Household transportation costs	\$12,424 per year Median US neighborhood: \$13,086 ●	\$12,323 per year Median US neighborhood: \$13,086 ●	\$12,086 per year Median US neighborhood: \$13,086 ●
Safe streets ? Speed limits	29.0 miles per hour Median US neighborhood: 28.0 ●	31.4 miles per hour Median US neighborhood: 28.0 ●	30.1 miles per hour Median US neighborhood: 28.0 ●
Safe streets ? Crash rate	12.9 fatal crashes per 100,000 people per year Median US neighborhood: 6.8 ●	7.4 fatal crashes per 100,000 people per year Median US neighborhood: 6.8 ●	4.8 fatal crashes per 100,000 people per year Median US neighborhood: 6.8 ●



THE VALUE OF GREENWAYS AND BIKEWAYS

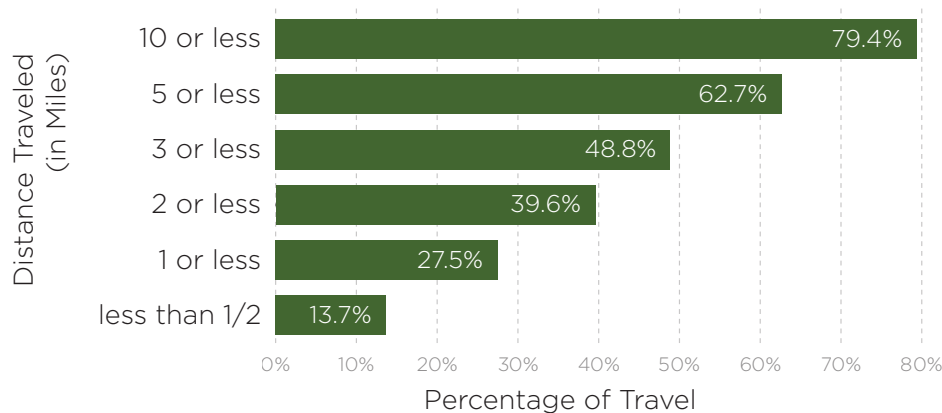


CONNECTIVITY

The Sandhills region is large, encompassing 51 municipalities, seven counties, and three NCDOT divisions. These communities share many resources and amenities that could be accessed via bicycle if conditions were inviting to residents and tourists.

While some communities may choose to seize more localized connectivity issues, there are some inter-municipality trail opportunities. For example, the Atlantic Seaboard Coastal Trail could connect Fayetteville to Wilmington and numerous communities in between. Additionally, projects like the East Coast Greenway connector through Erwin present examples of how contributions to larger networks can also greatly benefit local communities.

More than 60% of all driving trips made in the U.S. are shorter than five miles (see chart below). Additionally, surveys by the Federal Highway Administration show that Americans are willing to walk as far as two miles to a destination and bicycle as far as five miles. This demonstrates an opportunity to shift a larger share of the population to cycling as a utilitarian source of transportation. The challenge is to create routes within communities that are safe, comfortable, and convenient. Although the scope of this plan has a large geographic extent, within a largely rural context, many of the recommendations will be focused on urban routes that balance the level of investment and projected impact.



Source: Bicycle and Pedestrian Information Center,
www.pedbikeinfo.org

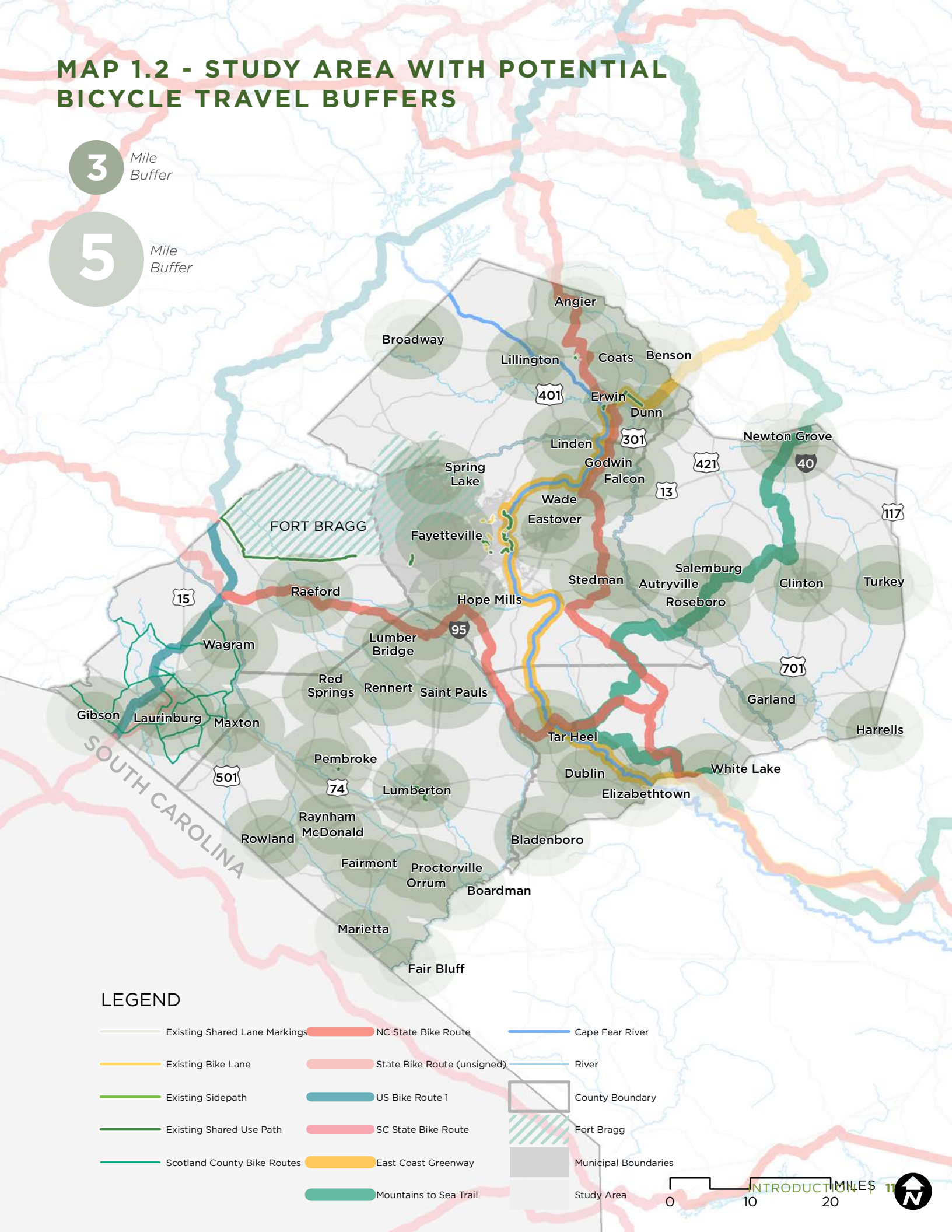
MAP 1.2 - STUDY AREA WITH POTENTIAL BICYCLE TRAVEL BUFFERS

3

Mile Buffer

5

Mile Buffer



LEGEND

- | | | |
|-------------------------------|-----------------------------|----------------------|
| Existing Shared Lane Markings | NC State Bike Route | Cape Fear River |
| Existing Bike Lane | State Bike Route (unsigned) | River |
| Existing Sidepath | US Bike Route 1 | County Boundary |
| Existing Shared Use Path | SC State Bike Route | Fort Bragg |
| Scotland County Bike Routes | East Coast Greenway | Municipal Boundaries |
| Mountains to Sea Trail | | Study Area |

0 10 20 MILES





ECONOMIC IMPACT

Active transportation projects are shown to deliver an array of positive economic benefits in the form of tourism, development and maintenance of facilities, increased property values, commercial activity, and infrastructure savings.

“Trails can be associated with higher property value, especially when a trail is designed to provide neighborhood access and maintain residents’ privacy. Trails, like good schools or low crime, create an amenity that commands a higher price for nearby homes. Trails are valued by those who live nearby as places to recreate, convenient opportunities for physical activity and improving health, and safe corridors for walking or cycling to work or school.”

- Headwaters Economics
(www.headwaterseconomics.org/trail)

An inspiring example of the positive relationship between property values and active transportation can be found in Outer Banks, NC, where bicycling is estimated to have an annual economic impact of \$60 million. 1,407 jobs are supported by the 40,800 visitors who reported that bicycling is an important reason for choosing to vacation in the area. The annual return on bicycle facility development is approximately nine times greater than the initial investment.

Many businesses, residents, and visitors consider quality of life factors like walkability and bikability when choosing locations to settle. For example, consider the following from North Carolina’s most renowned business park:

“Building our network of trails is an essential investment that enables the Research Triangle Park to remain globally competitive by allowing us to attract the type of workers that companies want with amenities professional workers demand”

- (Liz Rooks, Former Executive Vice President of the Research Triangle Foundation).

Bicycling has a low cost for users, high return on investment for the taxpayer, and is increasingly of interest to employers and homebuyers. It is hard to argue against developing a regional system that creates value and generates economic activity on this scale and at this investment level (see opposite page for examples). More detailed information can be found in *Evaluating the Economic Contribution of Shared Use Paths in NC*. The report can be found here: <https://itre.ncsu.edu/focus/bike-ped/sup-economic-impacts/>.

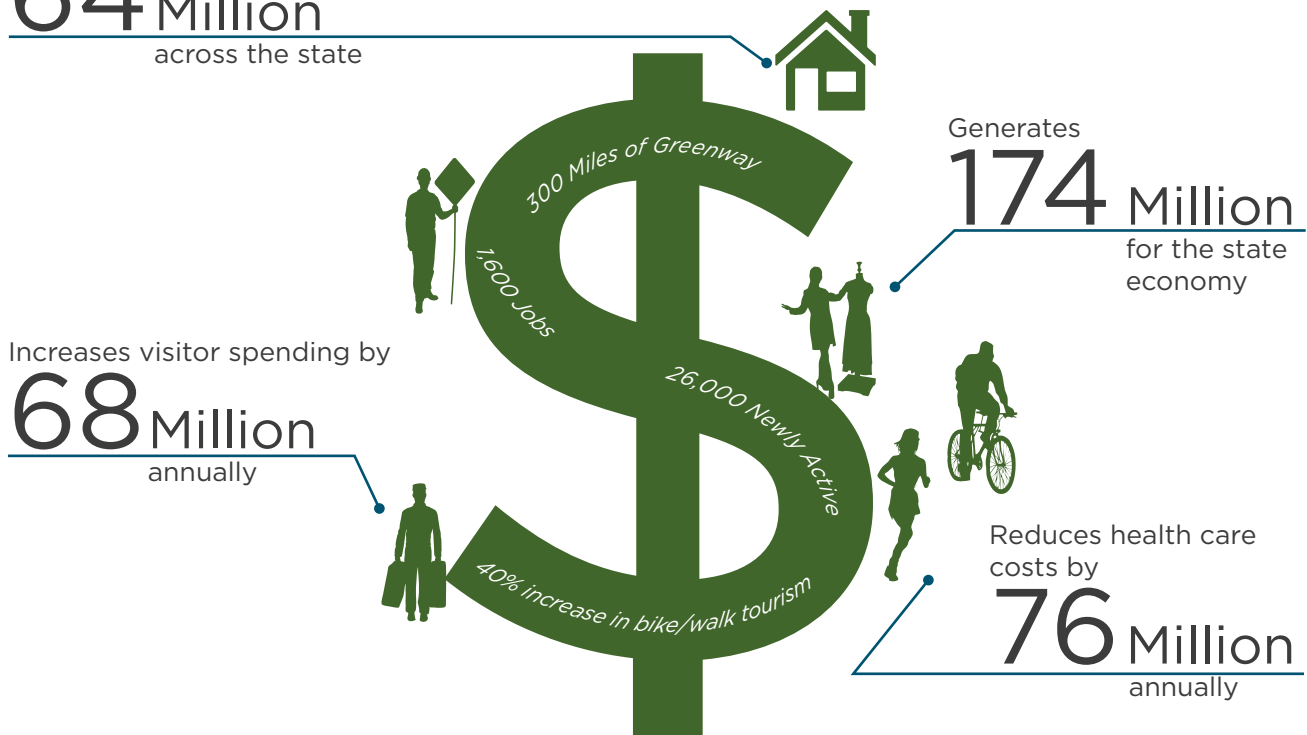


Small towns in the region (like Roseboro, shown here), could benefit from additional tourism associated with bicycling and trails.

An economic impact study, performed as part of the WalkBikeNC Plan, showed significant positive return on investment from the addition of 300 miles of greenways.

Increases residential property values by

64 Million
across the state



A 2018 study looking at the economic impact of four greenways in North Carolina found:

- An impact of \$19.4 million in total estimated revenue for local businesses.
- Benefits from the one-time expenditure of \$26.7 million in trail construction are estimated at \$48.7 million in total business revenue and 790 jobs from construction.
- \$684,000 in total estimated sales tax revenue.
- \$25.7 million impact from savings due to more physical activity, less pollution and fewer traffic injuries.
- For every \$1 spent on trail construction, \$1.72 annually is supported from those benefits.



ENVIRONMENT

Trails and greenways have the potential to link fragmented habitats and restore or create new habitat for plants and animals. Greenways also protect large swaths of natural plant habitat which are beneficial in the production of oxygen and filtering of air pollutants like ozone, sulfur dioxide, carbon monoxide, and heavy metals.

Additionally, greenways act as natural buffer zones that protect streams, rivers, and lakes by filtering agricultural and roadway pollutants and preventing soil erosion. Greenways and trails also utilize floodplain land, preventing development in these potentially hazardous areas.

A strong bicycle community can also act to build resiliency in the face of emergencies like natural disasters. In the immediate aftermath of an emergency, roads can be blocked,

damaged, or constricted and the movement of people and supplies can create dangerous situations. There is a growing movement around the country aimed at training and preparing community members to respond to emergencies using cargo bikes to deliver people and goods. These vehicles are light, small, inexpensive, don't require special infrastructure or fuel, and are capable of hauling large loads (<https://community.fema.gov/story/disaster-relief-trials-pedal-toward-community-resilience>).

Finally, providing the community with safe and appealing opportunities to access the outdoors can spur interest in environmental stewardship and the appreciation of the Sandhills region. Being outdoors in nature is shown to increase well-being and provide health benefits, both physically and mentally.



Bicycle trails and greenways offer access to nature and the outdoors, furthering public awareness and support for the environment. Above: The Dunn-Erwin Trail.



ASTHMA IS THE LEADING CHRONIC DISEASE IN CHILDREN and the number one reason for missed school days
(CDC)



A minimum of **20** MINUTES OF PHYSICAL ACTIVITY, 3X WEEK, **STRENGTHENS THE LUNGS**, including those of individuals living **with asthma**
(US National Lib of Medicine)



Exposure to **TRAFFIC EMISSIONS** is linked to exacerbation of **ASTHMA, REDUCED LUNG FUNCTION, ADVERSE BIRTH OUTCOMES** and childhood **CANCERS**
(CDC)



IF **8%** MORE CHILDREN LIVING WITHIN 2 MILES OF A SCHOOL WERE TO WALK OR BIKE TO SCHOOL, the air pollution reduced from not taking a car would be **EQUIVALENT TO REMOVING 60,000 CARS FROM THE ROAD** for one year (Pedroso, 2008, SRTS)



40% OF ALL TRIPS in the U.S. are **TWO MILES OR LESS**, and two-thirds of them happen in cars (NHTS, 2009)



BIKING 2 MILES, rather than driving, **AVOIDS EMITTING 2 lbs** OF **POLLUTANTS**, which would take 1.5 months for one tree to sequester.
(EPA, 2000 and NC State, 2001)

TABLE 2.1: ALTA BENEFIT IMPACT MODEL OUTPUTS - ESTIMATED ENVIRONMENTAL BENEFITS OF NORTH CAROLINA TRAILS

	BASELINE ESTIMATES		
	BREVARD GREENWAY, BREVARD, NC	LITTLE SUGAR CREEK GREENWAY, CHARLOTTE, NC	DUCK TRAIL, DUCK NC
Annual Reduced CO2 Emissions (lbs)	4,952,000	48,397,000	266,000
Annual Reduced Other Motor Vehicle Emissions (lbs)	99,000	582,000	5,000
Annual Environmental Cost Savings	\$102,000	\$600,000	\$5,000



EQUITY

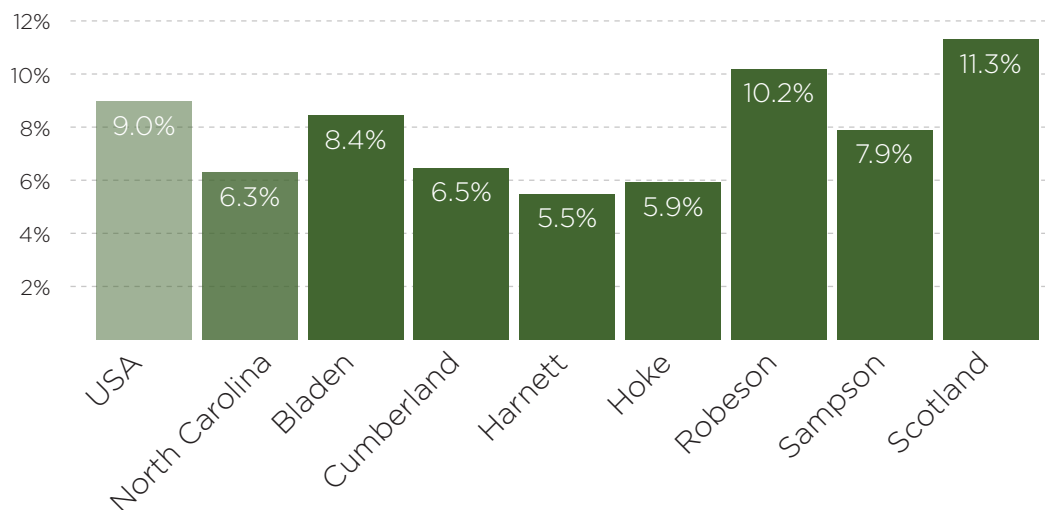
A driving element this plan is improving the safety and accessibility of bicycle facilities for people of all ages, location, abilities, and incomes.

The table below illustrates the share of population without access to a motor vehicle. This population is reliant on safe access to pedestrian, bicycle, and transit facilities to not only access employment and basic services but to also be an engaged member of society. In addition to economic challenges, auto-oriented development restricts populations under 16 and seniors who desire safe ways to access community destinations.

Costs associated with car ownership can be a barrier to mobility in car-centric environments. A study cited by the Victoria Transport Policy Institute found that households in automobile dependent communities devote 50 percent more of their income 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).¹ Reducing this financial burden could have major impacts on a household's ability to partake in the local economy, accrue wealth, and reduce economic hardship.

¹<http://www.vtpi.org/tca/tca0501.pdf>

PERCENT OF HOUSEHOLDS WITH NO MOTOR VEHICLE



Data Source: US Census Bureau, American Community Survey. 2010-14.

SAFETY

There are many factors that influence the safety, both perceived and actual, that cyclists experience. However, it has been shown that the design of bicycle facilities can have a significant impact on user safety. The Federal Highway Administration Crash Modification Factor Clearinghouse (<http://www.cmfclearinghouse.org/>) is a web-based database of Crash Modification Factors (CMF) that helps engineers and planners identify the most appropriate countermeasure for safety needs. For example, before and after studies of bicycle lane installations show a crash reduction of 35 percent (CMF ID: 1719) for vehicle/bicycle collisions after bike lane installation.

Increasing bicycle safety can result from a range of actions, such as safety education programs or the develop of group rides.

Simply getting more people on bicycles is in itself a safety measure. Shifts from driving to active modes tend to reduce total per capita crash rates in an area, thus providing a safety benefit. Additionally, the straightforward reduction of speed limits can have a profound effect on safety, and comfort for cyclists (as seen in the graphic below).

Net safety benefits provided by automobile to active travel shifts are estimated to average 5 cents per urban peak mile, 4 cents per urban off-peak mile, and 3 cents per rural mile.

- Institute for Transportation Research and Education (ITRE), Evaluating the Economic Contribution of Shared Use Paths in NC, pg. 21.

A bicyclist/pedestrian hit by a vehicle traveling at
25 MPH



has a **89%** chance of survival

A bicyclist/pedestrian hit by a vehicle traveling at
35 MPH



has a **68%** chance of survival

A bicyclist/pedestrian hit by a vehicle traveling at
45 MPH



has a **35%** chance of survival

Rosén, E., & Sander, U. (2009). Pedestrian fatality risk as a function of car impact speed. *Accident Analysis & Prevention*, 41(3), 536-542.



HEALTH

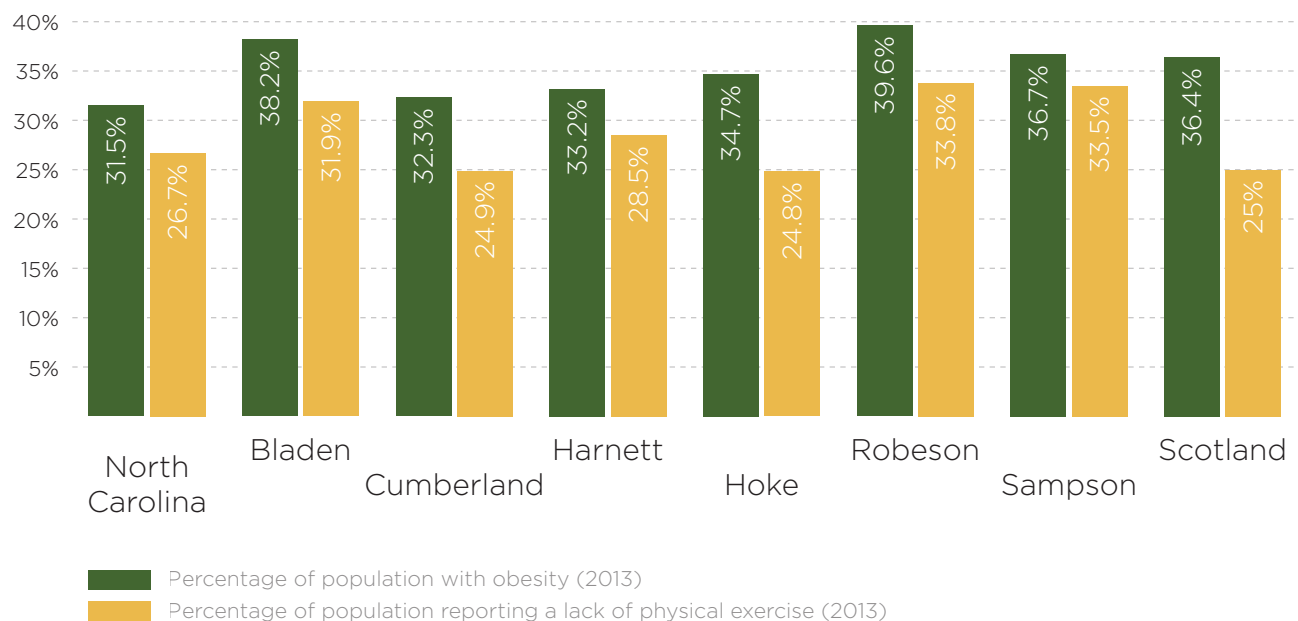
There are a growing number of studies illustrating how our environment—neighborhoods, towns, transportation systems, parks, trails, and other public recreational facilities—contribute to a person’s ability to meet the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth).

According to a 2015 Federal Highway Administration report (*Evaluating the Economic Benefits of Non-Motorized Transportation*), the physical nature of riding a bike leads to decreases in mortality (rate of death) and morbidity (rate of disease) related to obesity and other health conditions.

These benefits are not only advantageous for individuals who may avoid negative health conditions, they also reduce absenteeism in the workplace and overall health care expenditures on a local, state, and national level. More information available at http://ntl.bts.gov/lib/54000/54700/54765/NTPP_Economic_Benefits_White_Paper.pdf

Detailed information on the economic impact of improving public health can be found in *Evaluating the Economic Contribution of Shared Use Paths in NC*: <https://itre.ncsu.edu/focus/bike-ped/sup-economic-impacts/>.

COUNTY HEALTH STATISTICS



Data Source: <https://www.cdc.gov/diabetes/atlas/countydata/atlas.html?detectflash=false>

CURRENT U.S. HEALTH STATISTICS



80% of Americans
DO NOT ACHIEVE the
recommended 150 minutes per
week of **MODERATE EXERCISE**
(CDC)



2/3 of Americans
ARE OVERWEIGHT OR
OBESE (CDC)



CARDIOVASCULAR
DISEASES are the **#1** CAUSE
OF DEATH in the United States
(American Heart Association)



1,630 Americans DIE
EVERY DAY FROM CANCER,
mainly that of the lung, breast
and colon (American Cancer
Society)



61% of American adults 65
years or older HAVE AT LEAST
ONE ACTIVITY-BASED LIMITATION
(CDC)



86% of workers in the United
States DRIVE OR RIDE IN A PRIVATE
VEHICLE TO COMMUTE, sitting on
average for 26 minutes each way
(American Community Survey, 2013)

HEALTH BENEFITS



Residents of **WALKABLE COMMUNITIES** are
2x as **LIKELY TO MEET PHYSICAL
ACTIVITY GUIDELINES**
compared to those who do not live in
walkable neighborhoods
(Frank, 2005)



For every **0.6 MILE WALKED** there is a
5% **REDUCTION IN THE
LIKELIHOOD OF OBESITY**
(Frank, 2004)



20 MINUTES WALKING OR BIKING
each day is associated with
**21% LOWER RISK OF
HEART FAILURE FOR MEN** and
**29% LOWER RISK
FOR WOMEN**
(Rahman, 2014 and 2015)



MODERATE EXERCISE for 30-60
minutes a day **REDUCES THE RISK OF
LUNG, BREAST AND COLON CANCER**
by a minimum of **20%**
(National Cancer Institute)



**PHYSICAL ACTIVITY HELPS PREVENT
OR DELAY ARTHRITIS,
OSTEOPOROSIS AND DIABETES**, while
helping maintain balance, mental
cognition, and independence
(NIH-National Institute on Aging)



PEOPLE WHO BIKE BURN an average of
540 **CALORIES
PER HOUR**
(De Geus, 2007)



TYPES OF BICYCLISTS

This Plan was developed with the understanding that there are different types of bicyclists, with differing needs. Bicyclists can be categorized into four distinct groups based on comfort level and riding skills. Bicyclists' skill levels greatly influence expected speeds and behavior, both in separated bike-ways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separated facilities based on providing a comfortable experience for the greatest number of people. In the US population, people are generally categorized into one of four cyclist types. The characteristics, attitudes, and infrastructure preferences of each type are described below.



STRONG AND FEARLESS (~1% 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 shared use paths.



ENTHUSED AND CONFIDENT (~ 5-10% OF POPULATION)

This group encompasses bicyclists who are fairly comfortable riding on all types of bikeways, but usually choose low traffic streets or multi-use paths when available. They may deviate from more direct routes 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 (~ 60% OF POPULATION)

The bulk of the cycling population falls into this category, representing bicyclists who typically only ride a bicycle on low traffic streets or multi-use trails in favorable weather. These bicyclists perceive significant barriers to bicycling more often, specifically traffic and other safety issues. These people may become "Enthusied & Confident" with encouragement, education and experience.



NO WAY, NO HOW (~ 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.

Source: Four Types of Cyclists. (2009). Roger Geller, City of Portland Bureau of Transportation. Supported by data collected nationally since 2005.



CHAPTER 2

EXISTING CONDITIONS

"A few roads with separated bike lanes and shoulders would be better for cyclists and drivers!"

"We need more paved sidewalks and greenways, and family friendly options to entice residents and visitors to explore our county."

"I would like greenways connecting schools so that my kids can ride."

- Public Comments (2018)



EXISTING CONDITIONS OVERVIEW

This chapter summarizes the existing conditions for bicycling in the Sandhills Region through existing conditions maps, public comments, stakeholder feedback, and a summary of support for bicycling in local and regional past planning efforts.

EXISTING CONDITIONS MAPS

The maps on the following pages (and in Chapter 1) serve to communicate the existing conditions of the region for bicycling. Although it is a large study area, there are relatively few actual miles of bicycle facilities on the ground today. In fact, the main existing mileage is made up of signed on-road routes. (see map 2.1 Existing Conditions).

The existing facilities and routes are few and far between, but they provide a starting point from which to begin building a more complete and connected system. Much more can be done to better connect to a greater number of small towns and regional destinations in the region by bicycling. After all, the key to a successful network is connectivity; as more bicycle facilities are connected to one another, the benefits of any particular segment are greatly enhanced, with positive impacts to transportation, recreation, health, and economy.

MAP 2.1: EXISTING CONDITIONS

Features the region's main existing facilities, designated bicycle routes, municipalities, river corridors, railroad corridors, and protected lands.

MAP 2.2: PAST PLANNING EFFORTS

Highlights the most significant aspects of past and current planning work that is relevant to bicycle planning in the Sandhills Region.

MAP 2.3: OPPORTUNITIES AND CONSTRAINTS

Summarizes the key, over-arching map-based comments from the public, the Steering Committee, and from stakeholder interviews.

MAP 2.4: BICYCLE LEVEL OF SERVICE

Shows estimated level of service for bicycling under current conditions, based on traffic volumes, traffic speeds, roadway widths, and other factors.

MAP 2.5: BICYCLE CRASH ANALYSIS

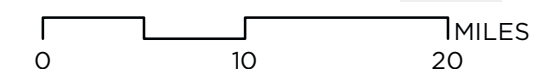
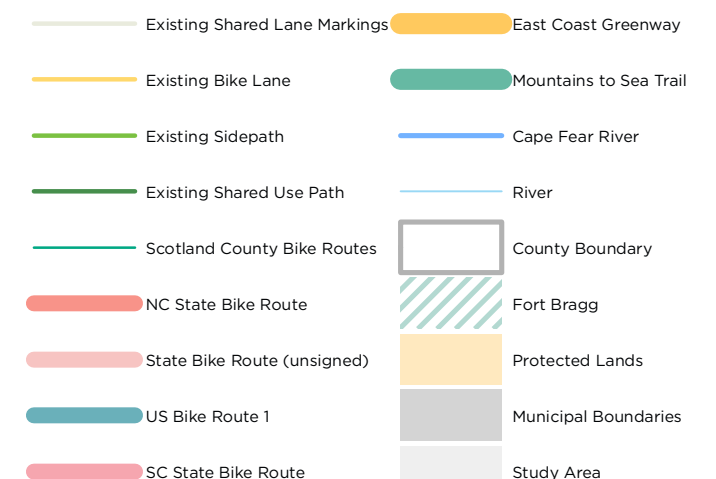
Shows locations and clusters of bicycle crashes, as reported by NCDOT (2007-2015).

MAP 2.1 - EXISTING CONDITIONS

There are very few existing bicycle facilities in the Sandhills Region (about 45 miles total). There are also close to 300 miles of designated bicycle routes, but these are signed only, with no physical facility. The existing facilities and routes within the study area include the following:

- **Shared Use Paths = 40 miles** (examples include the Dunn-Erwin Trail, the Cape Fear River Trail/East Coast Greenway, the All American Trail at Fort Bragg, the Lumberton Riverwalk, and small segments of trail within parks)
- **Bicycle Lanes = 4.3 miles** (limited, and only in the City of Fayetteville and Town of Elizabethtown)
- **Shared-Lane Markings = 1 mile** (limited, only used for wayfinding for short residential section of the Dunn-Erwin Trail to the Cape Fear River Trail Park (also part of the East Coast Greenway))
- **Signed Bicycle Routes (signed only; no designated bicycle facility) = 298 miles** (this includes US 1 Carolina Connection (33 miles), NC 5 Cape Fear Run (80 miles), Scotland County bike routes (109 miles), and the signed interim East Coast Greenway on-road bike route (76 miles). Note - NC 9 Sandhills Sector is unsigned).

EXISTING



MAP 2.2 - PAST PLANNING EFFORTS

See corresponding Table 2.2, which lists and describes more than twenty existing and past plans related to bicycling in the region. As seen in this map, the geographic distribution of past plans is comprehensive, with every county, and most municipalities, having at least one plan that relates to bicycling and/or greenway trail development recommendations. These past planning efforts were used to inform the recommendations of this plan.



Examples of past plans in the Sandhills Region, including WalkBikeNC, the Dunn Comprehensive Bicycle Plan, and the Clinton Comprehensive Bicycle Plan.

EXISTING

- Cape Fear River
- River
- County Boundary
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area

0 10 20 MILES



TABLE 2.2 - PAST PLANNING EFFORTS

ID # FROM MAP 2.2	EXISTING PLAN	KEY PROJECTS/RECOMMENDATIONS RELATED TO THE SANDHILLS REGIONAL BICYCLE PLAN
1	NCDOT 2018-2027 STIP	EB-5907 - Cross Creek parks connector trail, NC 24 (Bragg Boulevard) to Ray Avenue. Construct greenway.
2	NCDOT 2018-2027 STIP	EB-5541 - Big Cross Creek Greenway - Little Cross Creek to Smith Lake in Fort Bragg. Construct multi-use trail
3	NCDOT 2018-2027 STIP	EB-5540 - Little Cross Creek Greenway Ext - Filter Plant Drive to Rowan Street bridge in Fayetteville. Construct multi-use path.
4	NCDOT 2018-2027 STIP	U-6073 - Fisher Road - Widen Fisher Road to four lanes divided with bicycle lanes and sidewalks from Strickland Bridge Road to Bingham Drive (NC 162) with a four leg roundabout at the Lakewood Drive intersection
5	Atlantic-Seaboard Coast Line Concept Plan (Rail-Trail)	82-mile rail-trail concept from Fayetteville to Wilmington. The study maps property ownership and focuses on Sampson and Pender Counties, but the concept includes the old NC 24 corridor in Fayetteville
6	WalkBikeNC	US 1 Carolina Connection - no route changes (other than improving shoulder and separation) through Sandhills Regional Bicycle Plan study area. NC 5 Cape Fear Run - provide clear wayfinding at the connections with the East Coast Greenway indicating that it connects to Fayetteville. Add wayfinding directing cyclists to Fayetteville. NC 9 Sandhills Sector - designate Sandhills Sector as NC 9 (currently unsigned). Split route west of Aberdeen to provide two options - NC Highway 5 to head north to US bike route 1 and Addor Road to head south to US bike route 1. This re-route also avoids using NC Route 211 east of Aberdeen, which offers poor bicycling conditions.
7	CAMPO SW Area Study	Key recommendations include: Cape Fear River Trail, detailed on-road bicycle facilities and greenway connectivity between Wake County and Harnett County , connectivity to the southern terminus of the American Tobacco Trail, improvements to NC Bike Route 5 (Cape Fear Run)
8	Wake County Greenway System Plan	Key recommendations include East Coast Greenway, American Tobacco Trail southern terminus connectivity, Fuquay-Varina to Angier connectivity including priority project recommendation for greenway expansion in southeast Fuquay-Varina toward Angier and Harnett County
9	Elizabethtown Bicycle Plan	Downtown to Torey Hole Park (Cape Fear River), Cape Fear River Trail , East Coast Greenway
10	Dunn Bicycle Plan	East Coast Greenway improvements (Dunn-Erwin Rail Trail connectivity and continuity), Broad St bicycle lanes and sharrows, Orange Ave bicycle boulevard, Dunn Middle School Trail, Betsy Johnson Hospital Trail
11	Clinton Bicycle Plan	Priority recommendations include NC 24/Sunset Ave - Bicycle Lanes, US 701 Bus - Complete Street Redesign, Fayetteville Street - Shared Lanes, Beaman Street - Bicycle Lanes, Downtown Area - Shared Lanes and Signage, Elizabeth Street - Shared Lanes and Sidepath, College Street - Bicycle Lanes
12	Fairmont Bike/Ped Plan	3 priority projects that are all recommended shared lanes along the following streets - Morro St, Leesville Rd, and MLK Dr
13	Robeson County CTP	NC 711 on-road improvements from Pembroke to Lumberton , improvements to NC 9 Sandhills Sector route in northern part of County, references local plans (Map ID #12, 14, and 15)
14	Lumberton CTP	On-road loop route connecting local destinations including the existing Riverwalk , also highlights existing 4' (approximately) paved shoulder on NC 711

15	Pembroke CTP	Several east/west on-road and off-road proposed improvements connecting local destinations and downtown
16	Hoke County CTP	US Bike Route 1 and NC Bike Route 9 identified, NC 211 improvements (on-road) from Moore County toward Raeford
17	Harnett County CTP	Detailed local recommendations for: Angier, Lillington, Dunn (recommendations from Dunn Bicycle Plan), Erwin, Coats; incorporates recommendations from FAMPO in southwestern part of county as well as recommendations from CAMPO in northwest part of the county (CAMPO Southwest Area Study); multi-use path recommended along the length of the Cape Fear River
18	Bladen County CTP	Incorporates Elizabethtown Bicycle Plan; multi-use path recommended along the length of the Cape Fear River; NC Bike Route 5 (Cape Fear Run) and NC Bike Route 9 (Sandhills Sector) identified on map
19	Sampson County CTP	Fayetteville to Wilmington Atlantic-Seaboard Coast Line Trail recommended; Mountains to Sea Trail identified as existing on-road route; Detailed local recommendations for Clinton; Local recommendations also shown for Harrells, Garland, Autryville, Turkey, Salemburg, Roseboro, and Newton Grove
20	Scotland County CTP	US Bike Route 1 improvements, shared use path/sidepath loop around Laurinburg (from Laurinburg Pedestrian Plan (2015)), proposed Old Lumberton Rd and US 74 Bus on-road improvements in Maxton to Robeson County Line
21	Scotland County Bike Map Brochure	Consists of three numbered, signed routes and several unsigned connectors (147 total miles)
22	Additional Rail-Trail Opportunities	Rail-trail projects are often extremely challenging and long-term in nature, but they are worth exploring as part of this regional plan: A) From Laurinburg to Raeford (owned by Gulf & Ohio Railways and operated by Laurinburg & Southern Company); B) From Red Springs to Parkton (owned and operated by Red Springs & Northern RR); and C) From Skibo to Spring Lake (owned by Department of Defense)
23	City of Fayetteville Bicycle Plan (2018)	The City of Fayetteville was awarded a citywide bicycle planning grant from the NCDOT Division of Bicycle and Pedestrian Transportation. The planning process will likely run through mid-2019, and will require coordination with the Sandhills Regional Bike Plan.
24	NCDOT 2020-2029 STIP	STIP: R-3333 - US 401 from Laurinburg, Wagram, and Raeford into Cumberland County is a direct connection through Hoke and Scotland Counties that will be widened over the next decade.
25	NCDOT 2020-2029 STIP	STIP: R-5951 - NC 41 from Lumberton to I-74 will be widened over the next decade, which is an opportunity to incorporate bicycle facilities into design.
26	NCDOT 2020-2029 STIP	STIP: U-5015 - Future Murchison Rd improvements have been funded through the SPOT 5.0 process and is an opportunity for incorporating bicycle facilities.

This map highlights the common themes of comments about opportunities and constraints for bicycling in the region, collected from public input maps, map-based comments from the Steering Committee, and comments collected at stakeholder interviews.

- 1 Part of the Campbell University golf course has closed and includes a significant amount of open space that connects campus to the Cape Fear River. Combined with the bike/ped underpass of US 421 and sidewalk/sidepath development (STIP: EB-6014) to the Campbell University School of Osteopathic Medicine, this is an opportunity for Cape Fear River Trail development.
- 2 Dunn - Trail construction proposed from Fayetteville Ave to Dunn Middle School in SPOT 5.0 (unfunded).
- 3 State Bike Routes - The North Carolina state bike route system connects through the region. NC 5 Cape Fear Run and US 1 Carolina Connection are signed, and NC 9 Sandhills Sector is unsigned. Dedicated bicycle facilities are lacking along each of these routes.
- 4 Lillington to Raven Rock State Park connectivity - an inactive railroad line could be a connection opportunity between downtown Lillington to Raven Rock State Park.
- 5 Existing mountain bike trails in Raven Rock State Park.
- 6 East Coast Greenway - The East Coast Greenway, proposed from Maine to Florida, includes several designated segments in the Sandhills Region. This includes the Dunn-Erwin Rail Trail, Cape Fear River Park Trail in Harnett County (and connection to downtown Erwin), and the Cape Fear River Trail in downtown Fayetteville. A signed, interim on-road bike route connects these segments through the Sandhills Region.

- 7 Downtown Fayetteville - several corridors in the downtown area have relatively low traffic volumes combined with wide pavement widths. Future resurfacing/restriping could include bicycle facilities. Some of these opportunities include Person St, Gillespie St, Russell St, Murchison Rd, Branson St, and Langdon St.
- 8 Inactive rail corridor from Raeford to Wagram (rail trail opportunity).
- 9 Railroad corridor between Parkton and Red Springs is mostly used for recreational railroad events.
- 10 Part of the former railroad corridor right of way from the Dunn-Erwin Rail Trail to Coats is still intact - rail trail connection opportunity.
- 11 Southwest Fayetteville - As Fayetteville continues to grow to the southwest, several roadways have been proposed to be widened through the STI process. These are critical opportunities for local/regional bicycle facility connectivity.
- 12 Downtown Lumberton bridge replacement projects - The 2nd St and 5th St bridges in downtown Lumberton connect directly to the Lumber Riverwalk over the Lumber River. These are key opportunities for Riverwalk/downtown connectivity by potentially incorporating a shared use path as part of new bridge design.
- 13 One of the most recent official designations of the East Coast Greenway includes a two-mile section from the Dunn-Erwin Rail Trail in downtown Erwin to a more direct and comfortable trail connection to the Cape Fear River Trail Park.
- 14 Fayetteville to Vander - ample space exists between the active railroad and Clinton Rd to Vander. A rail with trail project could potentially link to Cape Fear High School in Vander.
- 15 Old railroad bridge over the All-American Freeway could be potential bike/ped bridge opportunity along Skibo Rd.
- 16 Rural, scenic, low traffic volume roads criss-cross the study area and are opportunities for longer-distance connectivity.
- 17 NC 20 from Raeford to St. Pauls is a direct connection through Hoke and Robeson Counties that was proposed to be widened in SPOT 5.0 (unfunded).
- 18 Scotland County's bike route system includes three signed routes as well as unsigned connectors highlighted in the Scotland County Bike Map produced in 2010.
- 19 Recent bridge construction over the Salemburg Hwy as part of the NC 24 bypass north of Roseboro included space for the future Mountains to Sea Trail connection through here.
- 20 Existing mountain biking trails in Elizabethtown (Browns Creek Nature Park).
- 21 North Odom Street at UNC Pembroke is currently undergoing reconstruction that will include bicycle lanes.
- 22 Proposed trail connectivity from UNC Pembroke to downtown Pembroke was considered in SPOT 5.0 (unfunded).
- 23 Existing mountain biking trails at Smith Lake.

MAP 2.3 - OPPORTUNITIES AND CONSTRAINTS

- 15 Old railroad bridge over the All-American Freeway could be potential bike/ped bridge opportunity along Skibo Rd.
- 16 Rural, scenic, low traffic volume roads criss-cross the study area and are opportunities for longer-distance connectivity.
- 17 NC 20 from Raeford to St. Pauls is a direct connection through Hoke and Robeson Counties that was proposed to be widened in SPOT 5.0 (unfunded).
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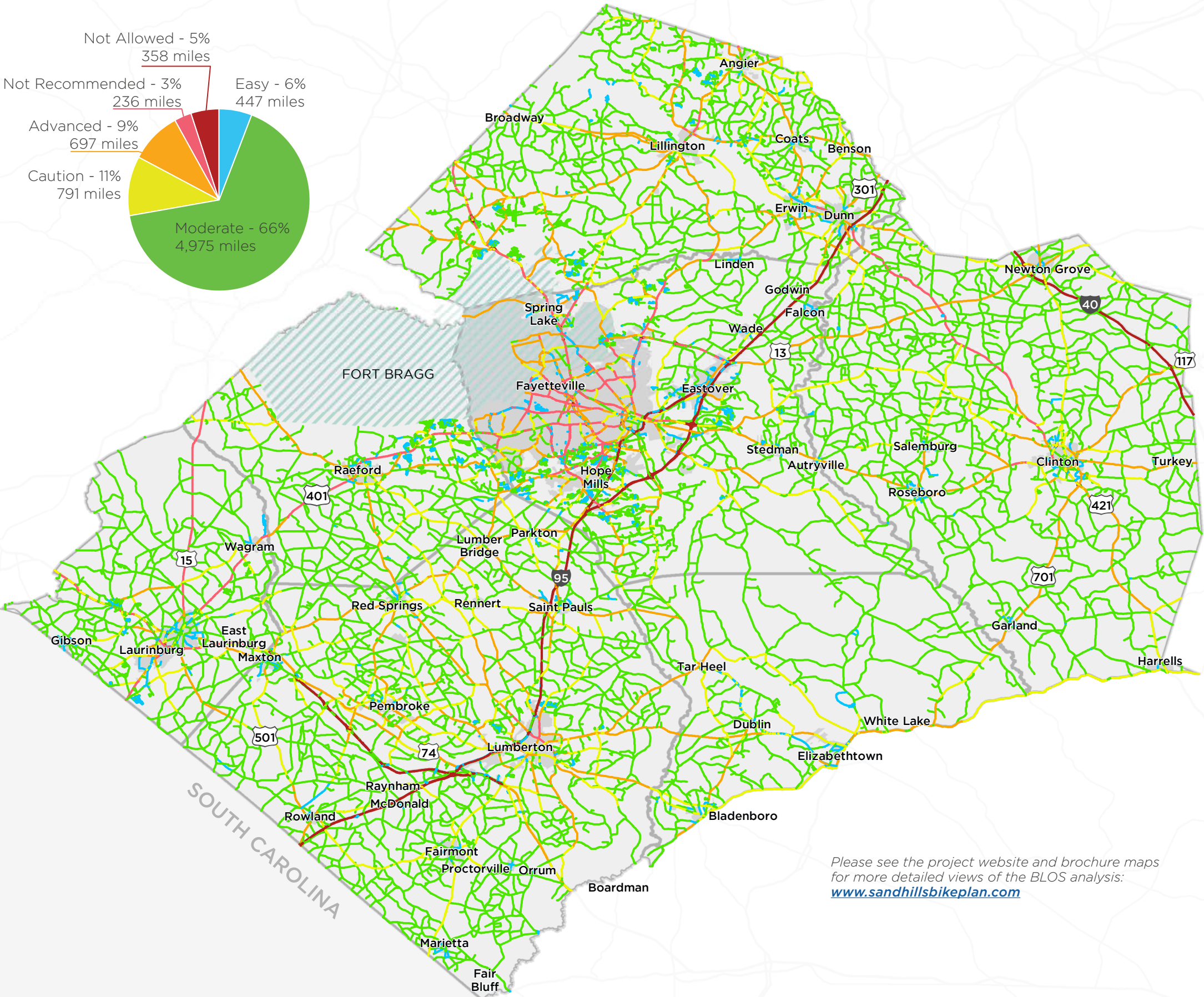
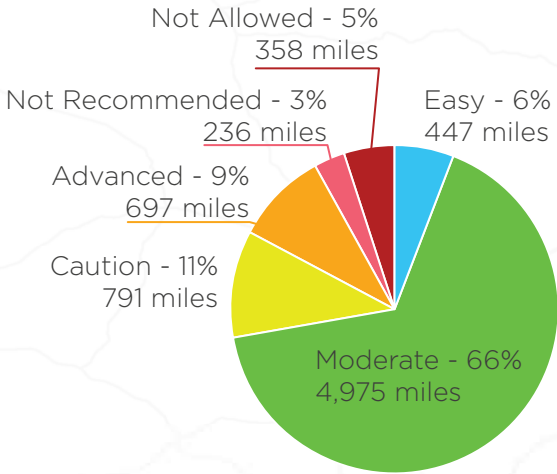
EXISTING

- | | |
|-------------------------------|------------------------|
| Existing Shared Lane Markings | East Coast Greenway |
| Existing Bike Lane | Mountains to Sea Trail |
| Existing Sidepath | Cape Fear River |
| Existing Shared Use Path | River |
| Scotland County Bike Routes | County Boundary |
| NC State Bike Route | Fort Bragg |
| State Bike Route (unsigned) | Protected Lands |
| US Bike Route 1 | Municipal Boundaries |
| SC State Bike Route | Study Area |

0 10 20 MILES



SANDHILLS ROADS BY BLOS CATEGORY



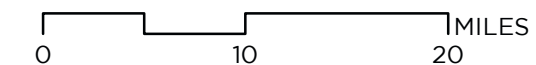
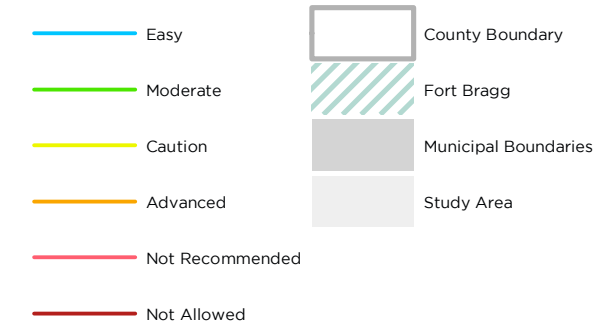
MAP 2.4 BICYCLE LEVEL OF SERVICE (BLOS)

The project team developed a rating system to evaluate existing conditions on roads across the Sandhills region. The data available to classify these roadways includes traffic volumes, speed limits, presence of 4' or wider paved shoulder or bike lane, and designated truck routes. The result is a "bicycle level of service" rating, based on a comfort level for moderately experienced cyclists. Input from the public will be collected to verify the findings of this analysis and make adjustments as needed.

According to the analysis to-date, much of the region is covered by moderate (green) routes - these are generally relatively lower traffic volume/speed rural roads that are found throughout the study area. The majority of the roadways that provide lower comfort levels are found along major highways connecting towns throughout the study area, and in more populated and developed areas, like Fayetteville.

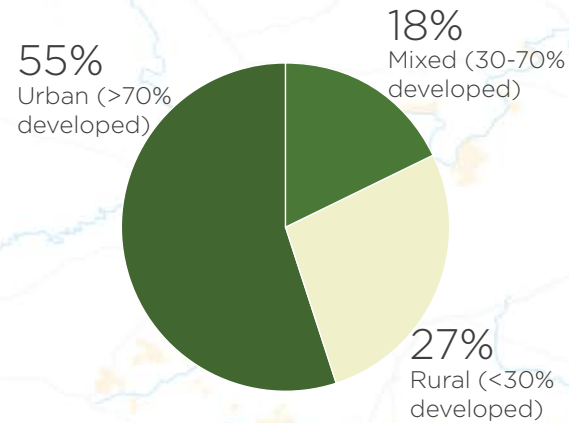
This analysis is helpful in identifying strategic segments of roadway for improvement. For example, when overlaid with state bicycle routes, this analysis reveals segments of the state routes that are not recommended for bicycling, or that are limited to advanced users. Those segments can then be analyzed for ways to enhance them, with dedicated bicycle facilities, or by rerouting, to increase safety and comfort.

EXISTING



Please see the project website and brochure maps for more detailed views of the BLOS analysis:
www.sandhillsbikeplan.com

PERCENT OF CRASHES BY DENSITY



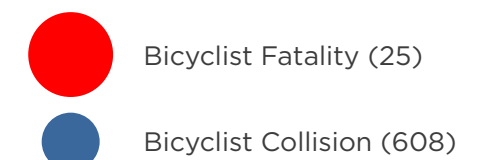
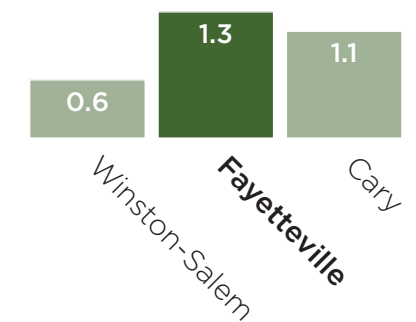
MAP 2.5 BICYCLE CRASH ANALYSIS

This map shows bicycle-motor vehicle crash locations in the Sandhills Region, from 2007 to 2015, which included 608 crashes, 25 of which were fatal.

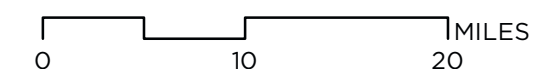
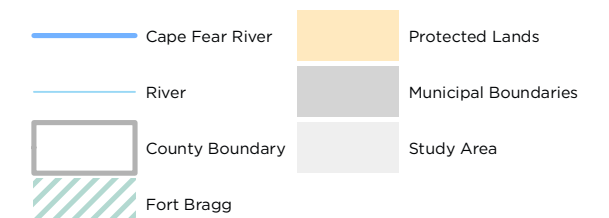
Most of the bicycle crashes were in urban areas (see chart at top left), with Fayetteville recording the large majority of them (242 crashes; see following page).

While it may not be surprising that more crashes occur where there are more people and more cars (urban areas), it is useful to compare rates across different cities of the same size. For example, the North Carolina cities that are closest in population size to Fayetteville are Winston-Salem and Cary, and both cities have lower rates of bicycle crashes than Fayetteville (see below).

URBAN AREA CRASH BICYCLE CRASH RATE COMPARISON (per 10,000 residents), 2007-2015.



EXISTING



HIGHEST CRASH CORRIDORS (2007 TO 2015):

1. US 401, Fayetteville (30 crashes)
2. Person St and Morgantown Rd, Fayetteville (22 crashes)
3. US 401 BUS, Fayetteville (20 crashes)
4. NC 211, Lumberton (19 crashes)
5. HWY 24, Fayetteville (18 crashes)
6. NC 41 (east of 74), Lumberton (10 crashes)
7. Murchison Rd, Fayetteville (12 crashes)
8. US 301, Fayetteville Rd, & Pine St, Lumberton (11 crashes)
9. Cliffdale Rd, Fayetteville (11 crashes)
10. Hope Mills Rd & Glensford Dr, Fayetteville (11 crashes)

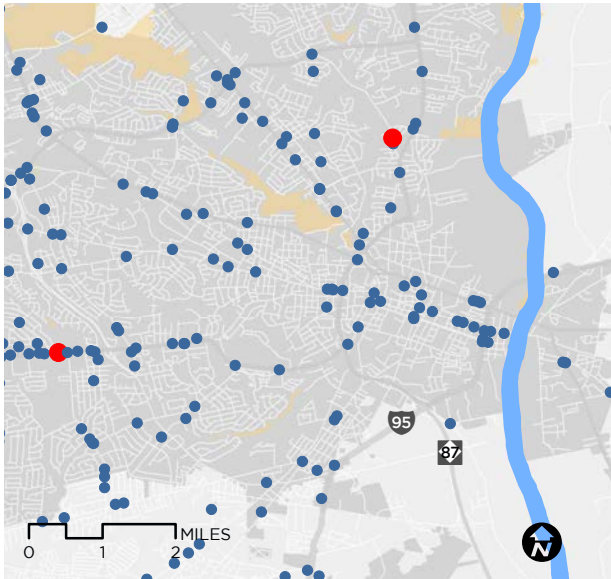
MAP SET 2.6 - URBAN BICYCLE CRASHES (2007-2015)

FAYETTEVILLE

of crashes in city limits: **242**

of disabling injuries: **5**

of fatalities: **4**

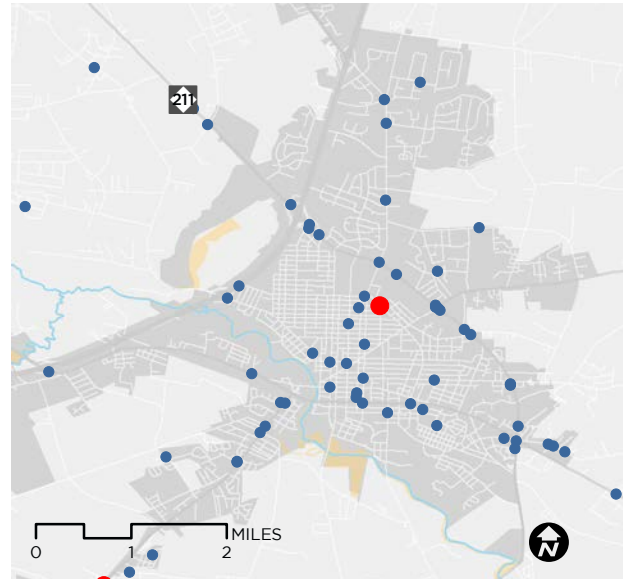


LUMBERTON

of crashes in city limits: **66**

of disabling injuries: **1**

of fatalities: **4**

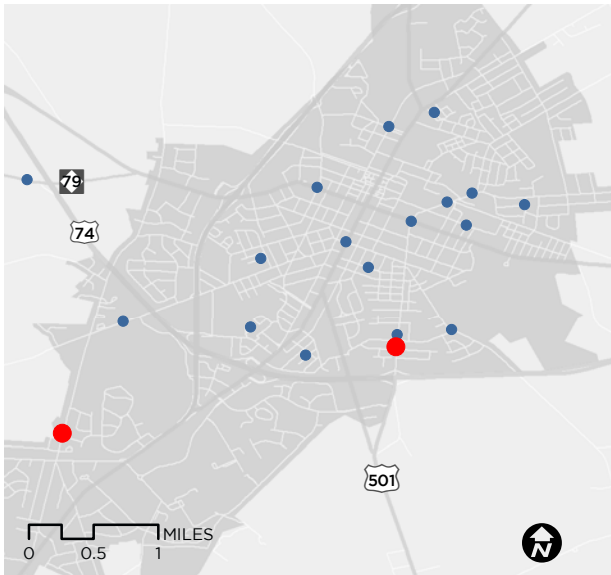


LAURINBURG

of crashes in city limits: **19**

of disabling injuries: **0**

of fatalities: **2**



CLINTON

of crashes in city limits: **9**

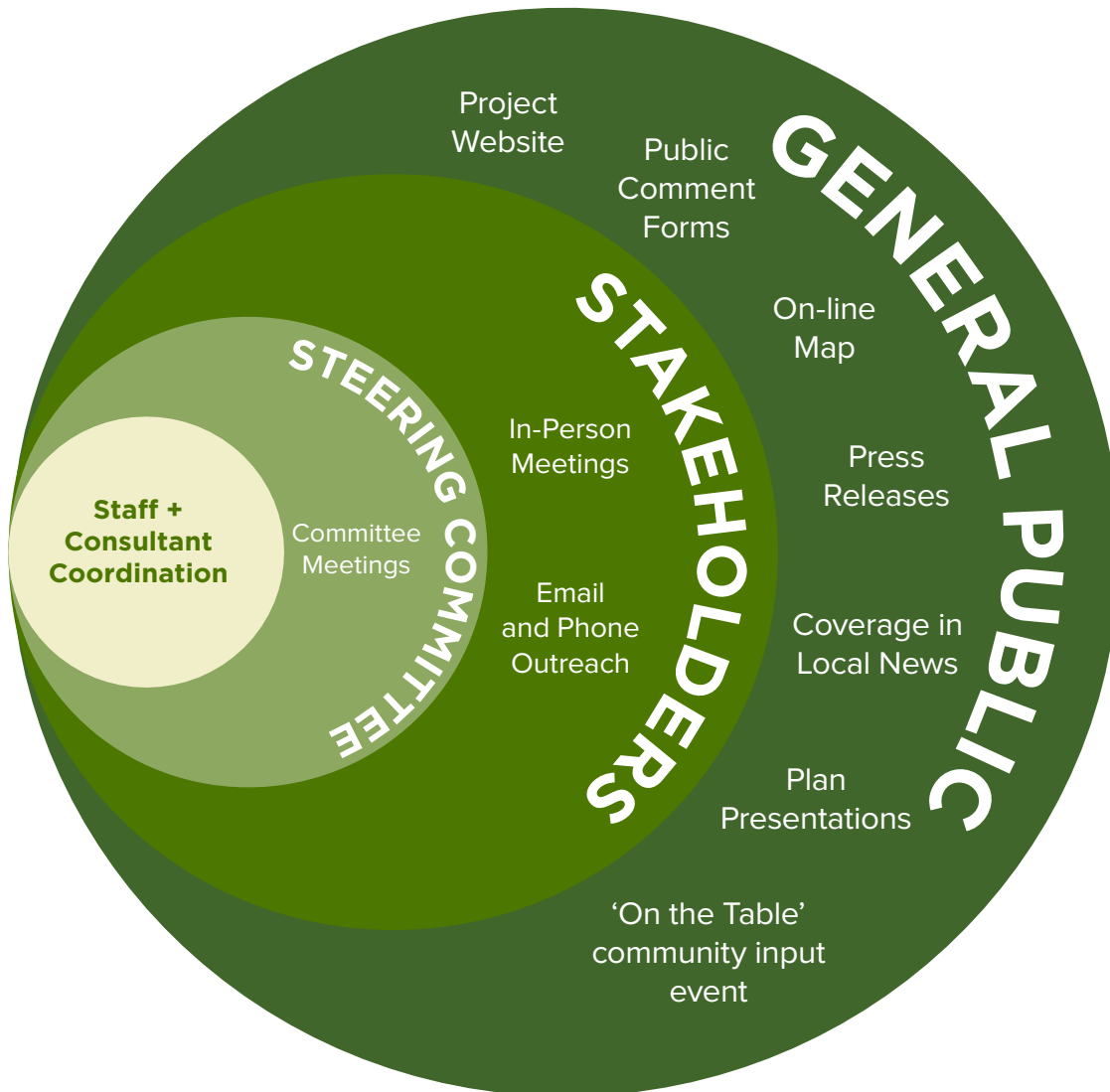
of disabling injuries: **0**

of fatalities: **0**





PUBLIC PROCESS OVERVIEW

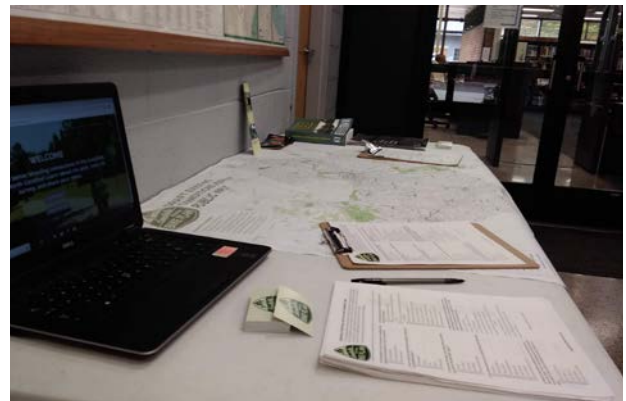


- 5 STEERING COMMITTEE MEETINGS
- 7 OUTREACH SESSIONS AT LOCAL EVENTS IN EACH COUNTY (2018)
- 8 PLAN PRESENTATIONS (2019)
- 10 STAKEHOLDER INTERVIEWS
- 13 STEERING COMMITTEE MEMBERS
- 75+ MAPPING COMMENTS
- 443 PUBLIC COMMENT FORMS
- 1,337 AVERAGE # OF VISITORS TO THE PROJECT WEBSITE PER MONTH

PUBLIC OUTREACH AT COMMUNITY EVENTS

The first round of public outreach included tabling with project information at seven events and festivals, including each county in the study area. Each table included a project banner, project information cards, project surveys, and a public input map where people were encouraged to provide site-specific comments.

The input received is summarized in the survey results on the following pages. The second round of outreach used a public presentation format, with up to eight presentations throughout the study area, focused on the main recommendations of the draft plan.



The photos above show outreach sessions at local events throughout the Sandhills Region. Events included:

- June 2, 2018: Blues N Brews Festival (Cumberland County)
- July 27, 2018: Sampson Farmers' Market (Sampson County)
- August 21, 2018: Campbell University Street Fair (Harnett County)
- October 17, 2018: Hoke County and Scotland County Libraries (Hoke and Scotland Counties)
- October 20, 2018: Fairmont Farmers Festival (Robeson County)
- December 11, 2018: Cape Fear Farmers' Market (Bladen County)

WHAT WE HEARD

I would love to see bike lanes in Fayetteville! I currently ride my bike on the sidewalks to work, when possible. I also think safety campaigns are important, as I have been hit more than once when crossing a crosswalk.

Needs to be safer and more accessible. I have no interest in sharing the roads with the aggressive and crazy drivers in Fayetteville.

I would like greenways connecting schools so that my kids can ride.

More paved sidewalks and greenways. Family friendly options to entice residents and visitors to explore our county.

Areas that are close to schools and shopping need paved bike/walking paths! This is one of the reasons why the Fayetteville area is behind on safe and environmentally friendly options of travel.

County-wide dedicated bicycle lanes on both main and side roads/streets, a sophisticated dockless bike share program, and perhaps historic of city-wide bike tours.

More bike lanes and share the road signs. Most people don't realize bikes have a right to use the road.



Dedicated bike lanes that will enable commuting as well as access to recreational activities such as restaurants and shopping. It would be amazing to be able to ride a bike to the grocery store without having to take your health and safety into consideration.

A few roads with separated bike lanes and shoulders build would be better for cyclists and drivers! Would also like some public awareness about cycling laws...so many drivers...simply don't care about passing safely.

Trails and greenways that allow bicycle and pedestrian travel separate from vehicle traffic.

We need to stress to lawmakers the long term savings that will come from a community that is healthier because they are biking, walking, and generally more physical because of the access bike lanes, sidewalks, and greenways provide.

A rails to trails project, connected to greenways, to allow more to commute by bike to Fort Bragg, Fayetteville, the Mall, Hope Mills, and other outlying areas.

More bike lanes, bike racks, and better lighting.



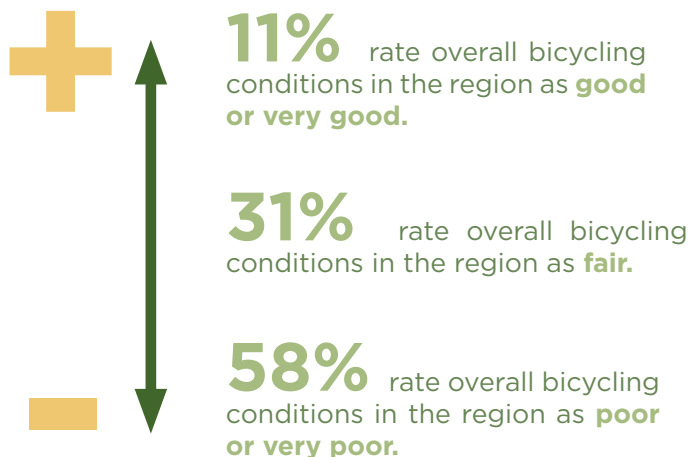


PUBLIC COMMENT FORM RESPONSE HIGHLIGHTS

The public comment form was active between March and December 2018. It was available online through the project website and in hardcopy form at outreach events and meetings. People throughout the Sandhills Region were encouraged to complete these forms through the mass-email lists of project committee members and stakeholders, through social media (Facebook), and through municipal, county, and stakeholder website announcements.

There were more than 440 respondents to the public comment form. Although not statistically valid, the results that follow still reflect the voices of residents across the region who have an interest in the region's bicycle network. Summary responses are displayed below.

440+
Total survey respondents



78% BIKE FOR EXERCISE

56% BIKE TO ENJOY NATURE

45% BIKE FOR SOCIAL/
FAMILY TIME

88% Live
in the Sandhills Region

62% Work
in the Sandhills Region

25% Visit
the Sandhills Region for
shopping, fun, or recreation



57% Have ridden a bike in the last 30 days, and **13%** have ridden more than 10 times in the last 30 days.



43% Have not ridden a bike in the last 30 days

What is the likelihood that the following types of bicycling facilities would influence you to bike more often? (% responding “VERY LIKELY” shown below)



Separated bike lanes (physically separated from traffic)



Greenways



Shared-use side paths



Safer intersections for bicyclists



Buffered bike lanes



Bike lanes



Bike parking



Paved shoulders



Wayfinding signs for bicyclists

70% 
are uncomfortable bicycling in the street with cars.

TOP CORRIDORS IN NEED OF BICYCLING IMPROVEMENTS, ACCORDING TO THE SURVEY:

- | | |
|-------------------------|--------------------------|
| 1 Raeford Road | 6 Cliffdale Road |
| 2 Ramsey Street | 7 Bragg Boulevard |
| 3 Skibo Road | 8 Hope Mills Road |
| 4 Morganton Road | 9 Highway 401 |
| 5 Hay Street | 10 Highway 87 |

Note: This question used an open-ended write-in comment box, which did not specify sections of some streets in question (for example, Highway 401 and Highway 87).

ACCORDING TO RESPONDENTS,



THE TOP **THREE** DESTINATIONS

THAT ARE MOST IMPORTANT TO CONNECT WITH BIKEWAYS ARE:

1. Parks within cities and towns
2. Trails or greenways
3. State parks and natural areas

CHAPTER 3

REGIONAL NETWORK

"Dedicated bike lanes that will enable commuting as well as access to recreational activities such as restaurants and shopping. It would be amazing to be able to ride a bike to the grocery store without having to take your health and safety into consideration."

- Public Comment (2018)

"I would like to see bike lanes added on major roads....those in the city who depend on bikes to get to work and as main transportation need education on bike safety and better lanes to ride."

- Public Comment (2018)



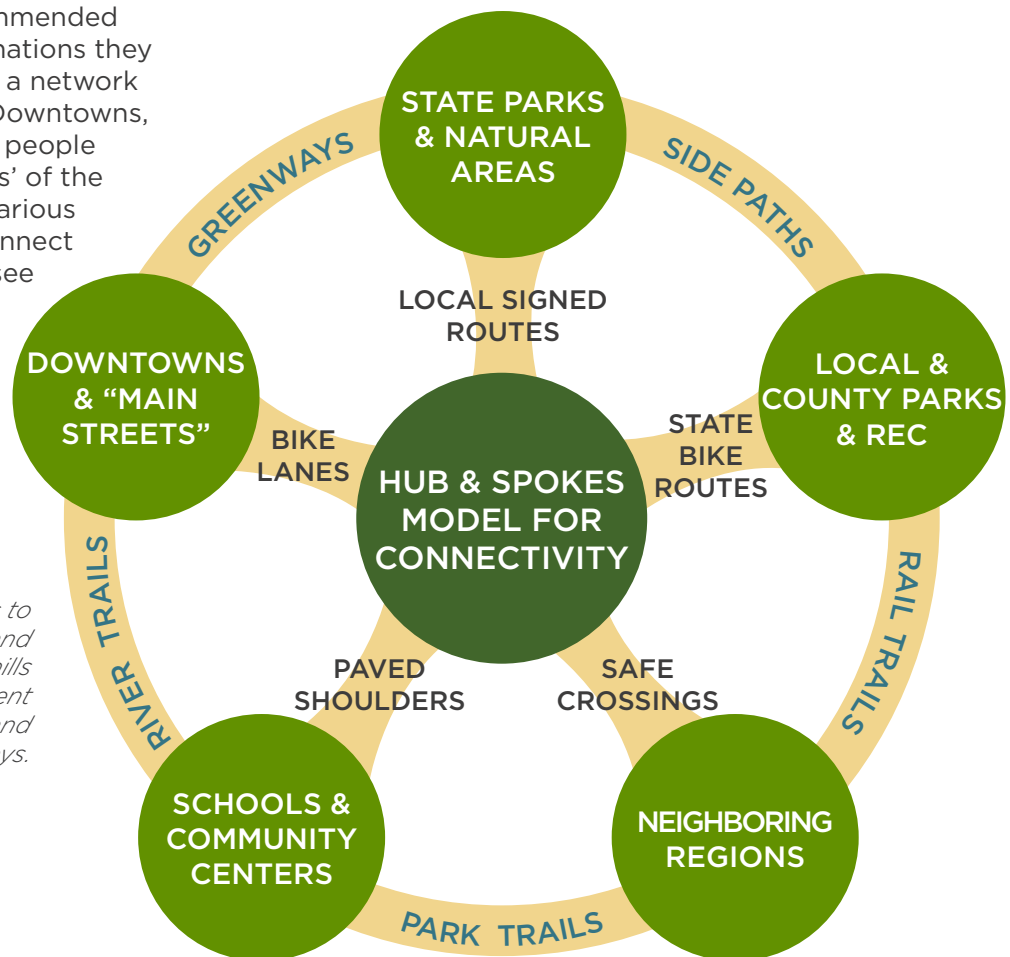
THE REGIONAL BICYCLE NETWORK

This chapter details the recommended Sandhills Regional Bicycle Network. The complete network is broken down into priority projects that begin linking communities and regional destinations, and a comprehensive, long-term network made up of projects that build upon and connect priority projects through regional connectivity and opportunistic development.

THE HUBS AND SPOKES MODEL FOR CONNECTIVITY

Conceptually, the recommended bikeways and the destinations they connect can be seen as a network of ‘hubs’ and ‘spokes’. Downtowns, parks, and other places people like to bike are the ‘hubs’ of the network, whereas the various bicycle facilities that connect them are the ‘spokes’ (see graphic to right). The following pages have more information on these main types of bicycle facilities.

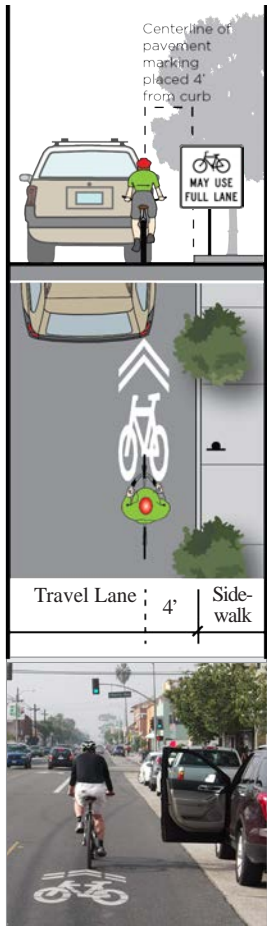
This plan aims to connect people and places in the Sandhills Region using different types of bikeways and greenways.



BICYCLE FACILITY TYPES

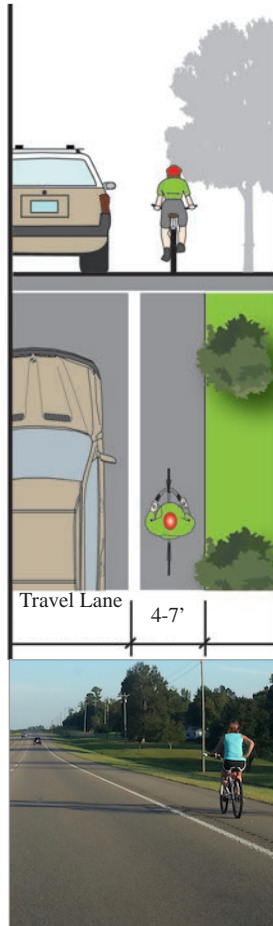
These are the primary facility types recommended in this plan. See the maps (and legends) in Chapter 3 to see where these different types of facilities are recommended. For more information on facility design, please see the list of design resources in Appendix A.

SHARED LANE



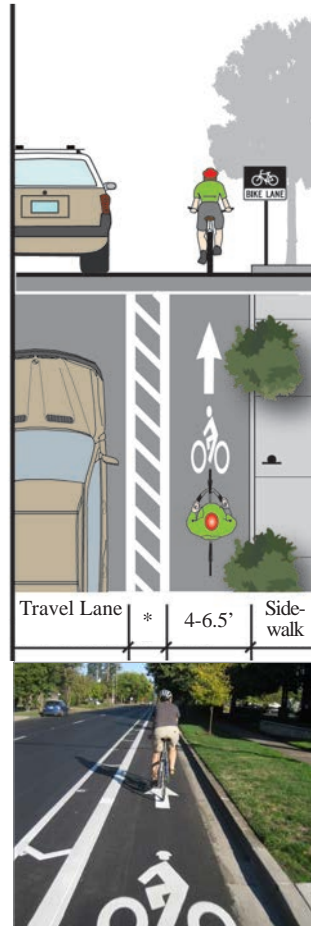
Shared Lane Markings (SLMs), or “sharrows,” are road markings used to indicate a shared lane environment for bicycles and automobiles. Among other benefits, shared lane markings reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance. Shared lane markings are only recommended in areas where there are constraints.

PAVED SHOULDER



Paved shoulders on the edge of roadways can be enhanced to serve as a functional space for bicyclists and pedestrians to travel in the absence of other facilities with more separation. Paved shoulders can reduce “bicyclist struck from behind” crashes, which represent a significant portion of rural road crashes. For preferred rumble strip placement see FHWA’s Achieving Multimodal Networks (2016).

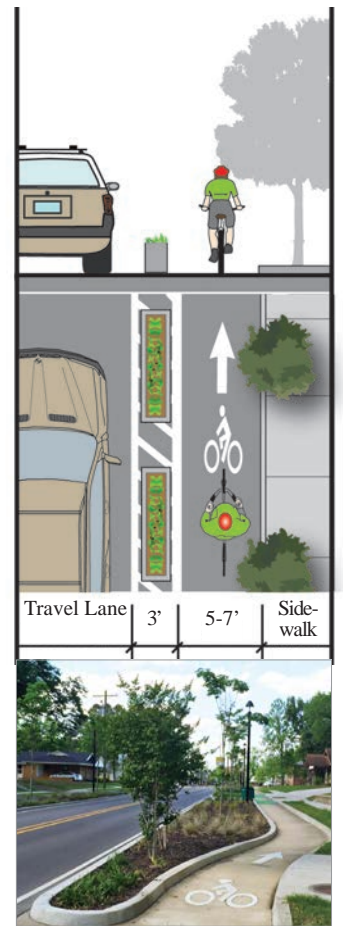
BICYCLE LANE



Bike lanes designate an exclusive space for bicyclists, directly adjacent to motor vehicle travel lanes. The preferred minimum width is 6.5 ft to allow bicyclists to ride side-by-side or pass each other without leaving the bike lane. Absolute minimum bike lane width is 4 ft when no curb and gutter is present or 5 ft when adjacent to a curbface, guardrail, other vertical surface or on-street parking stalls (AASHTO Bike Guide 2012).

*The optional buffer is 1.5-4 ft, or wider. If 4 ft or wider, mark with diagonal or chevron hatching.

SEPARATED BIKE LANE*

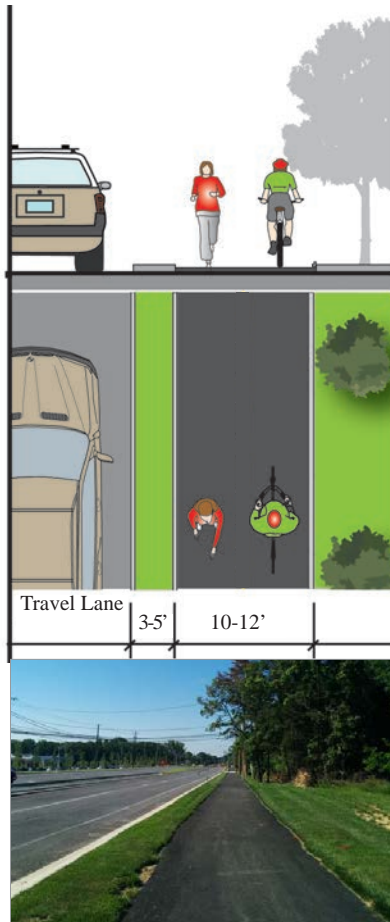


A separated bike lane is a facility for exclusive use by bicyclists that is located within or directly adjacent to the roadway and is physically separated from motor vehicle traffic with a vertical element. Preferred minimum width of a one-way separated bike lane is 7 ft (2.1 m). This width allows for side-by-side riding or passing. Separated bike lanes should be considered as an option in the design process for the bicycle lanes recommended in this plan, especially for inclusion on projects with new roadway construction.

**This facility can also be design for two-way bicycle travel, also known as a two-way cycle track.*

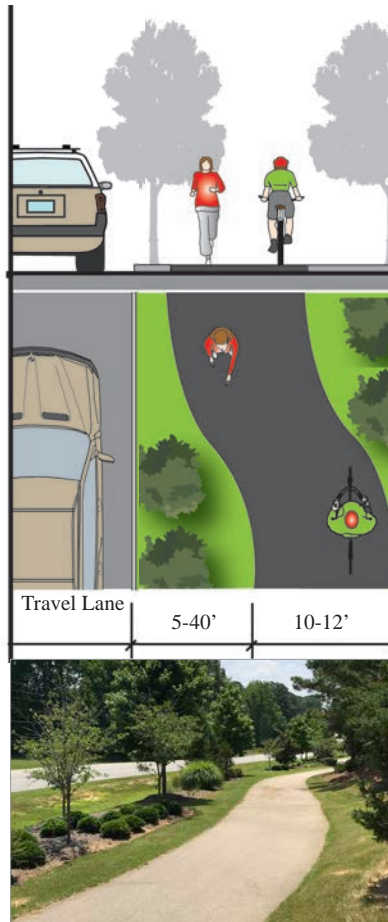
BICYCLE FACILITY TYPES (CONTINUED)

SHARED USE PATH: SIDE PATH



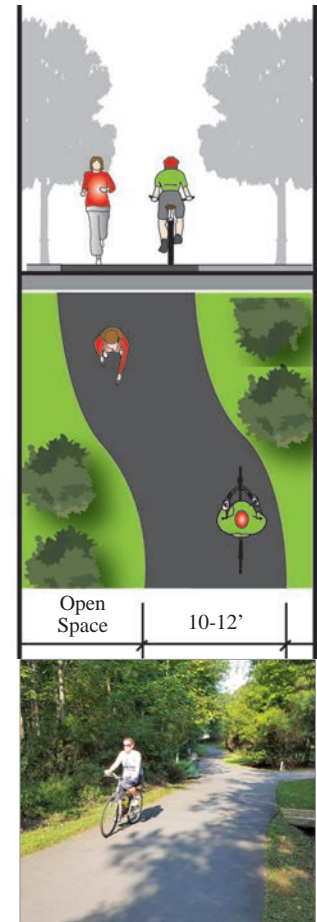
A side path is a bidirectional shared use path located immediately adjacent and parallel to a roadway. Side paths can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances, and maintain rural and small town community character. Widths and design details of side path elements may vary. Minimum recommended pathway width is 10 ft. In low-volume situations and constrained conditions, the absolute minimum side path width is 8 ft.

SHARED USE PATH: STREET-SIDE GREENWAY



'Street-side greenway' is a term used in some communities in North Carolina (in the towns of Cary and Apex, for example) for side paths with a greater landscaped buffer between the roadway and trail, allowing the trail to meander slightly for increased user comfort and a more rural aesthetic. These street-side trails typically do not fit within the roadway right-of-way, but can usually be constructed with a town greenway easement of 20-30'. The easements can overlay streetscape buffers while not affecting setbacks or buffer widths, so long as required planting density can still be achieved. This design should be considered for the more rural side paths that are recommended in this plan.

SHARED USE PATH: GREENWAY

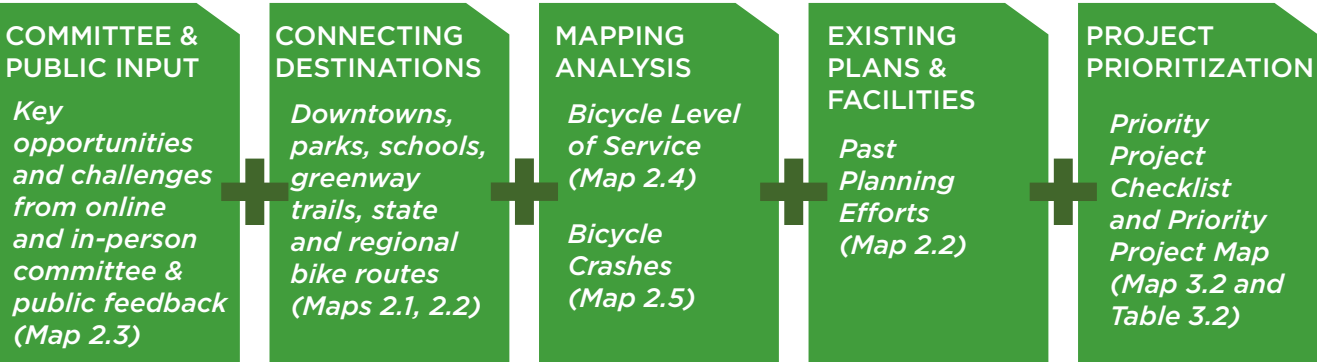


Greenways offer connectivity opportunities beyond that of the roadway network. These facilities are often located in parks, along rivers, and in utility corridors where there are few conflicts with motorized vehicles. They can provide a low-stress experience for a variety of users, including bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users. Faster-moving bicyclists often prefer to use roadways, due to conflicts with other, slower-moving greenway trail users.



BASIS OF RECOMMENDATIONS

The proposed Regional Bicycle Network is a result of a collaborative planning process that involved public engagement, data collection, and technical analysis.



CHAPTER 3 MAPS & CUTSHEETS

Recommendations are organized into the following maps and cutsheets. The priority projects and recommended facilities in the regional bicycle network should be approached by the MPOs, RPOs, and their local partners with flexibility, taking into account opportunities that may arise after this planning process is complete.

- 1

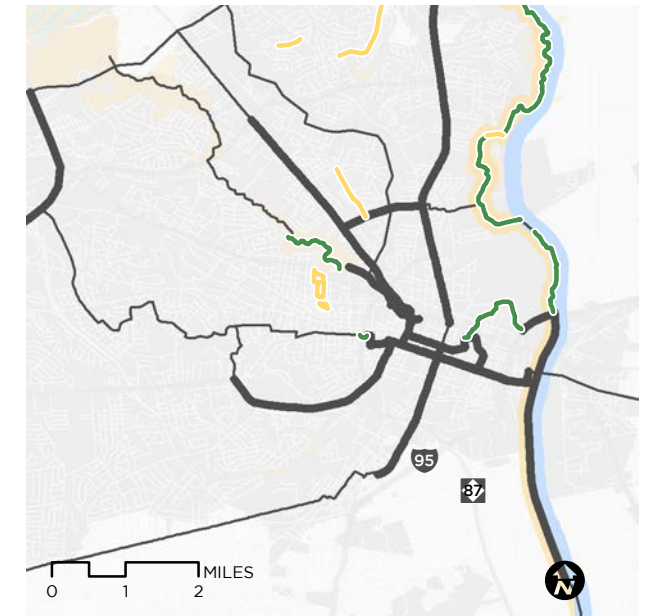
MAPS 3.1 & 3.2 (REGIONAL NETWORK & PRIORITY PROJECTS):
These two maps focus on the priority projects. The priority projects were the most consistently mentioned in committee meetings, stakeholder discussions, and public outreach. They fulfill a variety of critical prioritization criteria that will help them score high in future funding applications, and they provide for a range of project types and users while being geographically distributed across the study area.
- 2

PRIORITY PROJECT CUTSHEETS:
This series of 17 two-page project summaries can be used when applying for future funding, or when communicating the priority project details to potential partners during implementation. These short-term project sheets are followed by brief descriptions of this plan's long-term vision projects.
- 3

MAPS 3.4-3.6 REGIONAL NETWORK & RPO/MPO MAPS
As the top priority projects are completed, this plan should be updated to include new priorities, drawing upon the larger regional network of bicycle facility recommendations. These routes and recommendations strategically connect and build upon the project cutsheets referred to above. While longer term, these are still an important part of this plan, as they show what the potential is for future roadway resurfacing, construction, and development that may provide an opportunity for incorporating a recommended greenway or bikeway facility.

MAP 3.1 REGIONAL NETWORK WITH PRIORITY PROJECTS

FAYETTEVILLE

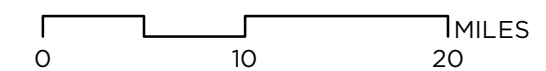


PROPOSED

- Priority Project
- Regional Network

EXISTING

- Existing Shared Lane Markings
- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- Scotland County Bike Routes
- NC State Bike Route
- State Bike Route (unsigned)
- US Bike Route 1
- SC State Bike Route
- East Coast Greenway
- Mountains to Sea Trail
- Cape Fear River
- River
- County Boundary
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area

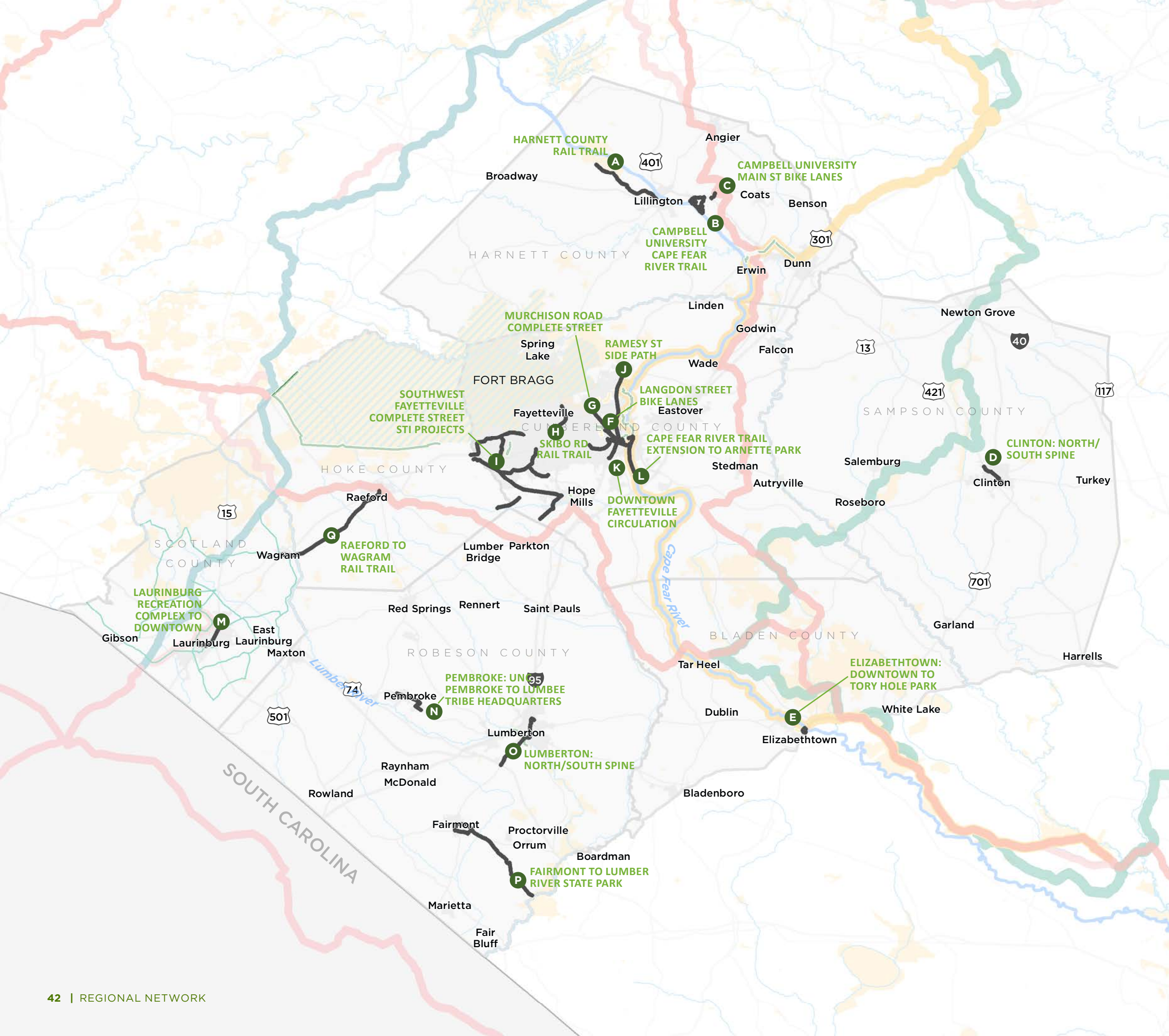


MAP 3.2 PRIORITY PROJECTS

All 17 priority projects meet a variety of important prioritization criteria that are commonly used to rank potential bicycle and greenway projects across the state by NCDOT and other funding agencies. The checklist in Table 3.1 outlines key factors related to connectivity and prioritization for potential future funding.

The projects are not listed in priority order; the actual order in which projects are constructed depends on many factors, such as the availability of funding and the opportunity to build facilities in conjunction with other roadway projects (see more on facility development methods in Chapter 6).

See maps and project descriptions at the end of this chapter for all recommended bicycle facilities in addition to this list of top projects.



PROPOSED

Priority Project

EXISTING

- Existing Shared Lane Markings
- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- Scotland County Bike Routes
- NC State Bike Route
- State Bike Route (unsigned)
- US Bike Route 1
- SC State Bike Route
- East Coast Greenway
- Mountains to Sea Trail
- Cape Fear River
- River
- County Boundary
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area

0 10 20 MILES



TABLE 3.1 PRIORITY FACTORS CHECKLIST

	Facility Types*	Connects to a Park or Rec Center	Connects to a School or Univ.	Connects to a Municipal, Employment, or Mixed-Use Commercial Center	Connects to a Designated State Bike Route or Regional Trail	Connects to an Existing Trail or Bicycle Facility	In An Adopted Plan	Reported Bicycle Crash Along Route (within 500 feet of corridor)	Uses Existing Public Land or ROW	High Speed Corridor (above 40 MPH)	Supported in Stakeholder & Public Feedback
MID-CAROLINIA RPO/CAPITAL AREA MPO											
A	HARNETT COUNTY RAIL TRAIL (Downtown Lillington to Raven Rock State Park)	SUP, SL, BL/PS	✓	✓	✓	✓	✓		✓	✓	✓
B	CAMPBELL UNIVERSITY CAPE FEAR RIVER TRAIL (Powell Ave to Cape Fear River)	SUP, SL	✓	✓		✓	✓		✓	✓	✓
C	CAMPBELL UNIVERSITY MAIN ST BIKE LANES (Campbell University to Bike/Ped US 421 undercrossing)	SBL, SUP, SL	✓	✓	✓	✓	✓	✓	✓		✓
D	CLINTON: NORTH/SOUTH SPINE (Butler Elem. School to North Blvd)	SUP, SBL, SL	✓	✓	✓				✓		✓
E	ELIZABETHTOWN: DOWNTOWN TO TORY HOLE PARK (Downtown Elizabethtown to Tory Hole Park/Cape Fear River)	SUP, BL, SL	✓		✓	✓	✓	✓	✓		✓
FAYETTEVILLE AREA MPO											
F	FAYETTEVILLE: LANGDON ST BIKE LANES (Murchison Rd to Ramsey St)	SBL, SL	✓	✓		✓	✓		✓		✓
G	FAYETTEVILLE: MURCHISON RD COMPLETE STREET (US 401 to Rowan St)	SBL	✓	✓	✓		✓	✓	✓		✓
H	SKIBO RD RAIL TRAIL (Morganton Rd to Shaw Rd)	SUP, SL		✓	✓		✓	✓	✓	✓	✓
I	SOUTHWEST FAYETTEVILLE COMPLETE STREET STI PROJECTS (Cumberland County to Hoke & Robeson Counties)	SBL/SUP	✓	✓	✓	✓	✓	✓	✓	✓	✓
J	FAYETTEVILLE: RAMSEY ST SIDE PATH (Grove St to NC-295)	SUP	✓	✓	✓	✓	✓	✓	✓	✓	✓
K	DOWNTOWN FAYETTEVILLE CIRCULATION (Downtown Fayetteville to Cape Fear River Trail and surrounding neighborhoods and destinations)	SUP, SBL, SL	✓	✓	✓	✓	✓	✓	✓	✓	✓
L	CAPE FEAR RIVER TRAIL EXTENSION TO ARNETTE PARK (Botanical Gardens to Arnette Park)	SUP	✓		✓	✓	✓		✓		✓
LUMBER RIVER RPO											
M	LAURINBURG RECREATION COMPLEX TO DOWNTOWN (James L. Morgan Recreation Complex to Downtown Laurinburg)	SUP, SBL, SL	✓		✓	✓	✓	✓	✓		✓
N	PEMBROKE: UNC PEMBROKE TO LUMBEE TRIBE HEADQUARTERS (UNC Pembroke to Lumbee Tribe Headquarters)	SUP, SBL, SL	✓	✓	✓		✓	✓			✓
O	LUMBERTON: NORTH/SOUTH SPINE (Lumberton High School to I-74)	SUP, SBL, SL	✓	✓	✓		✓	✓			✓
P	FAIRMONT TO LUMBER RIVER STATE PARK (Downtown Fairmont to Lumber River State Park Princess Ann Access)	SUP, SBL	✓	✓	✓				✓	✓	✓
Q	RAEFORD TO WAGRAM RAIL TRAIL (Downtown Raeford to Downtown Wagram)	SUP	✓	✓	✓	✓				✓	✓

*SUP = Shared Use Path; SBL = Separated Bike Lane; BL = Bike Lane; SL = Shared Lane; PS = Paved Shoulder

A HARNETT COUNTY RAIL TRAIL

FROM:

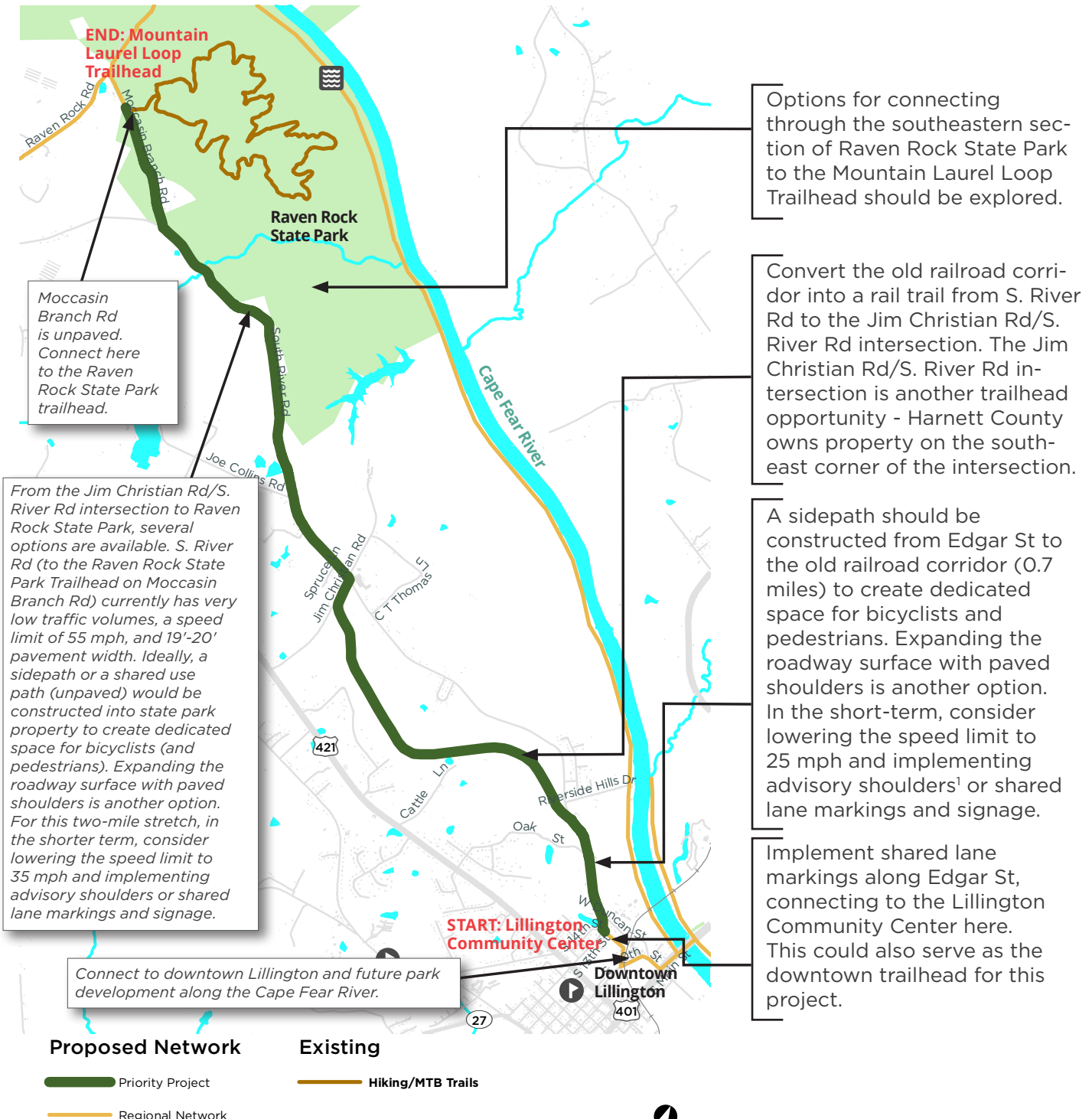
Downtown Lillington

TO:

Raven Rock State Park

LENGTH:

6.7 Miles



A HARNETT COUNTY RAIL TRAIL (CONTINUED)

TRIP GENERATORS:

- Downtown Lillington
- Harnett County Public Library
- Edgewater Medical Center
- Lillington Shawtown Elementary School
- Harnett County Schools Central Office
- Post Office (901 S 8th St)
- Lillington Community Center
- Raven Rock State Park

SUPPORT IN OTHER PLANS:

- Harnett County CTP (2016)
- Harnett County Comprehensive Growth Plan (2015)
- Northwest Harnett County Future Land Use Plan (2019)

POTENTIAL ROW NEEDS:

- The railroad corridor easement is currently held by Lehigh Hanson Cement Group. Other ROW needs will depend on final alignment and facility design.

JURISDICTIONS:

- Town of Lillington
- Harnett County

POTENTIAL PARTNERSHIPS:

- Town of Lillington
- Harnett County
- NCDOT
- NC State Parks
- Lehigh Hanson

ESTIMATED CONSTRUCTION COSTS:

- \$5,019,115

DESIGN OPTIONS AND CONSIDERATIONS:

The proposed Harnett County Rail Trail connecting Lillington and Raven Rock State Park could be modeled after other successful rail trails, such as the American Tobacco Trail (unpaved section in Wake County shown below)..

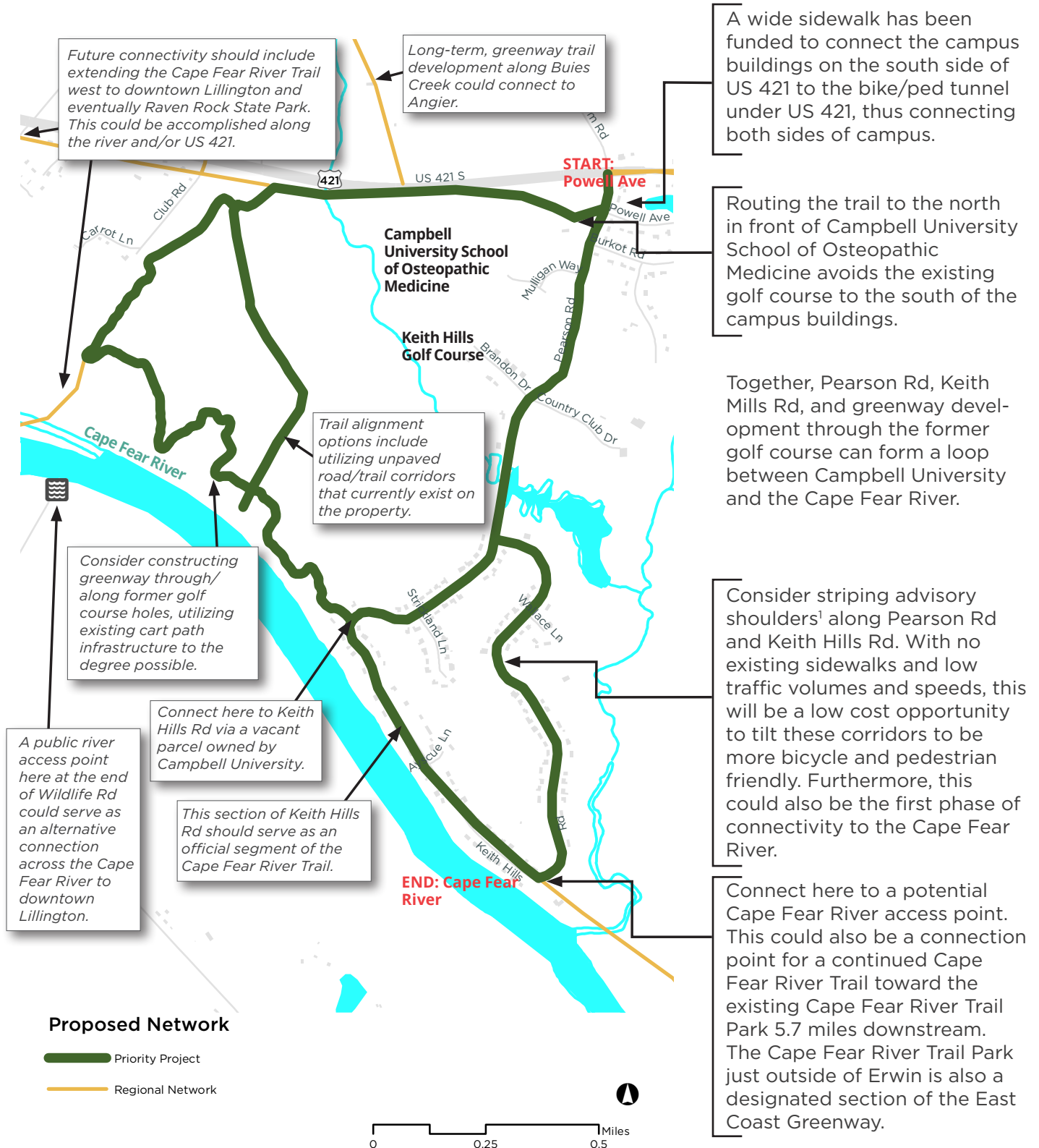


B CAMPBELL UNIVERSITY CAPE FEAR RIVER TRAIL

FROM:
Powell Ave

TO:
Cape Fear River

LENGTH:
6.3 Miles



B

CAMPBELL UNIVERSITY CAPE FEAR RIVER TRAIL (CONTINUED)

TRIP GENERATORS:

- Campbell University
- Cape Fear River
- Keith Hills Golf Course
- Universal Healthcare/Lillington
- Central Carolina Community College Harnett Main Campus
- Adjacent neighborhoods

SUPPORT IN OTHER PLANS:

- Harnett County CTP (2016)
- Harnett County Comprehensive Growth Plan (2015)
- Northwest Harnett County Future Land Use Plan

POTENTIAL ROW NEEDS:

- ROW and project in general will need to be coordinated with Campbell University

JURISDICTIONS:

- Harnett County

POTENTIAL PARTNERSHIPS:

- Campbell University
- Harnett County
- NCDOT

ESTIMATED CONSTRUCTION COSTS:

- Segment 1 (4750 FT ASPHALT SHARED USE PATH PARALLEL TO US 421 S.): \$1,184,040
- Segment 2 (9500 FT 10' ASPHALT SHARED USE PATH REPAVED OVER EXISTING GOLF CART PATHS): \$1,381,380
- Segment 3 (4220 FT 10' ASPHALT SHARED USE PATH PAVED OVER UNPAVED ROAD/TRAIL CORRIDORS): \$598,000
- Segment 4 (14780 FT ADVISORY SHOULDERS ALONG PEARSON RD AND KEITH HILLS RD): \$143,000

DESIGN OPTIONS AND CONSIDERATIONS:

Bike/ped undercrossing of US 421 makes the critical link between campus facilities north and south of US 421.



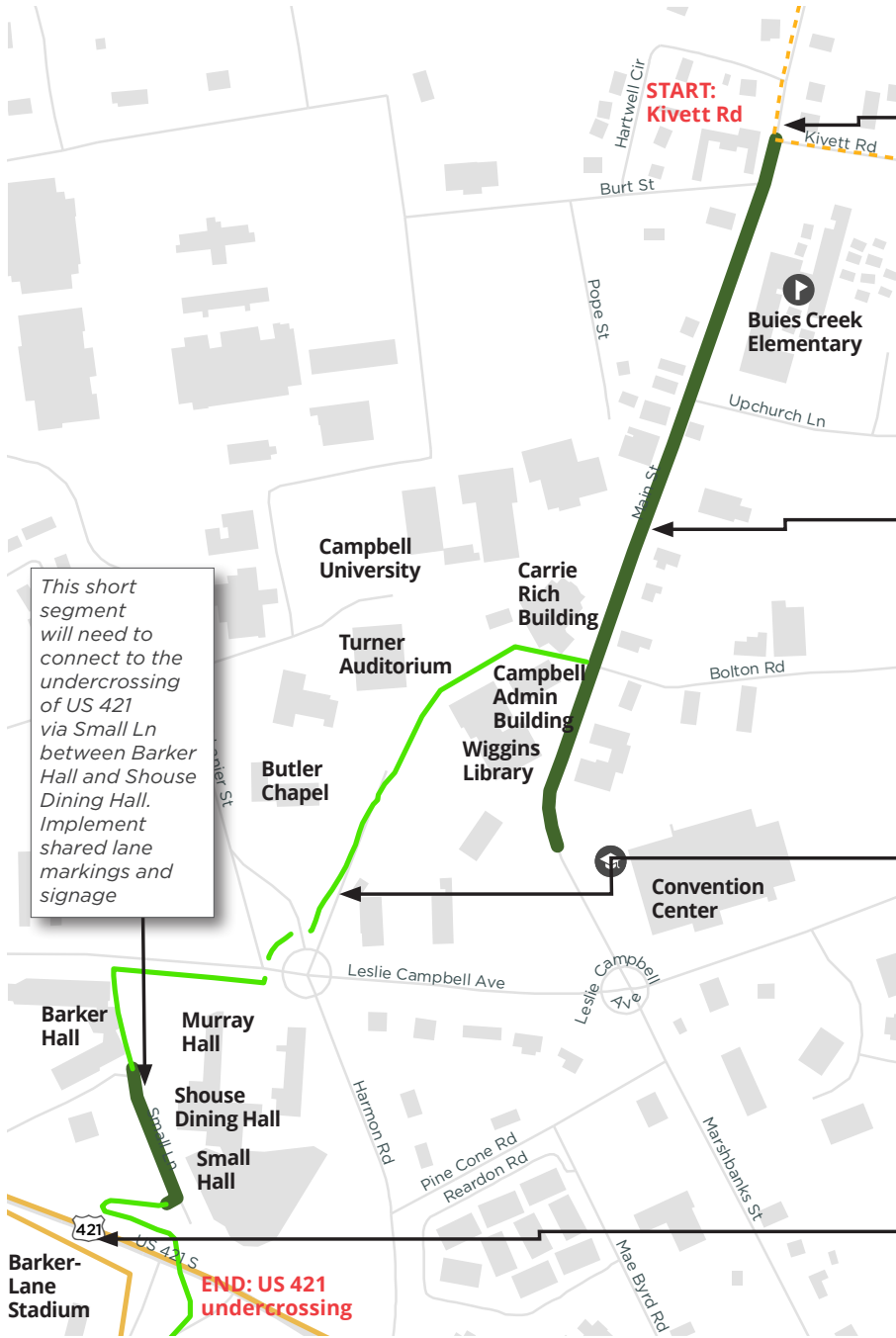
C

CAMPBELL UNIVERSITY MAIN ST BIKE LANES

FROM:
Kivett Rd

TO:
US 421 undercrossing

LENGTH:
0.7 Miles



Connect to NC 5 Cape Fear Run bike route here at Kivett Rd - consider establishing Main St as NC 5 "Business Route" continuing back to NC 5 via Marshbanks St and US 421 through Campbell University.

Main St from Kivett Rd to the Campbell University Bookstore has traffic volumes of 3,300 AADT, a speed limit of 20 mph and a pavement width of 35'. Stripe buffered bike lanes with 10' for the travel lanes, 5'-6' for the bike lanes, and 1.5'-2.5' for the buffer space.¹

Utilize campus shared use paths to make a direct connection from Main St through the heart of campus to the US 421 undercrossing, and eventually to the Cape Fear River (see project #2). Install wayfinding signage to direct bicyclists and pedestrians between campus and the Cape Fear River Trail.

A wide sidewalk has been funded to connect the campus buildings on the south side of US 421 to the bike/ped tunnel under US 421, thus connecting both sides of campus.

Proposed Network

Existing

- Priority Project
- Regional Network
- - - NC Bike Route (Signed)

- Shared Use Path



¹ <http://ruralsdesignguide.com/physically-separated/separated-bike-lane>

C CAMPBELL UNIVERSITY MAIN ST BIKE LANES (CONTINUED)

TRIP GENERATORS:

- Campbell University
- NC 5 Cape Fear Run bike route
- Cape Fear River and campus destinations between
- Buies Creek Elementary
- Barker-Lane Stadium
- Jim Perry Stadium
- Amanda Littlejohn Stadium
- Eakes Athletics Complex
- Buies Creek Volunteer Fire Dept
- Harnett Regional Jetport

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- Harnett County

POTENTIAL PARTNERSHIPS:

- Campbell University
- Harnett County
- NCDOT

ESTIMATED CONSTRUCTION COSTS:

- INTERIM OPTION 1 (CONVENTIONAL BIKE LANES ALONG MAIN ST FROM KIVETT RD TO THE CONVENTION CENTER; WAYFINDING SIGNAGE THROUGH EXISTING CAMPUS SHARED USE PATHS; and SHARED LANE MARKINGS ALONG SMALL LN): \$57,720
- DESIRED OPTION 2 (BUFFERED BIKE LANES ALONG MAIN ST FROM KIVETT RD TO THE CONVENTION CENTER; WAYFINDING SIGNAGE THROUGH EXISTING CAMPUS SHARED USE PATHS; and SHARED LANE MARKINGS ALONG SMALL LN): \$102,960*

**BUFFERED BIKE LANES REQUIRES PAVING OVER GUTTER THROUGH MILL AND OVERLAY OF ROADWAY; ADD. COST - MILL AND OVERLAY: \$489,060*

DESIGN OPTIONS AND CONSIDERATIONS:

Main Street has extra width and could be striped to include buffered bike lanes. A physical buffer would be ideal, but a striped buffer can be implemented in the near term and at lower cost.





D CLINTON: NORTH/SOUTH SPINE

FROM:

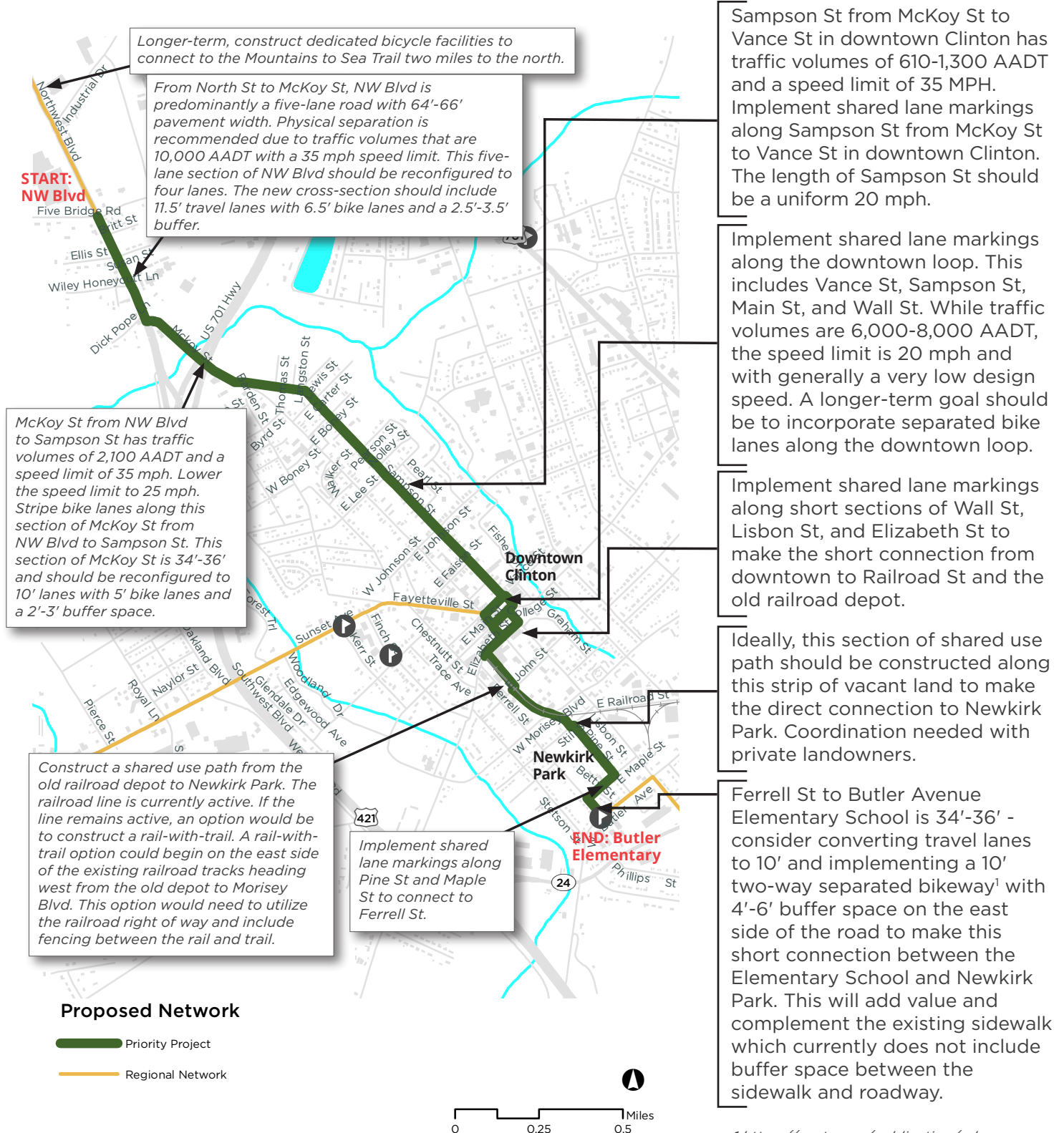
NW Boulevard

TO:

Butler Elementary School

LENGTH:

2.9 Miles



D CLINTON: NORTH/SOUTH SPINE (CONTINUED)

TRIP GENERATORS:

- Downtown Clinton
- Newkirk Park
- Butler Avenue Elementary School
- Sampson County History Museum
- Clinton City Hall
- Sunset Avenue Elementary School
- Fisher Drive Park
- The Center For Health + Wellness
- J.C. Holliday Library
- Sampson County Exposition Center
- Businesses and residences along the corridor

SUPPORT IN OTHER PLANS:

- City of Clinton Bicycle Plan
- Sampson County CTP

DESIGN OPTIONS AND CONSIDERATIONS:

Photo simulation of the proposed two way separated bikeway to make the link between Butler Elementary School and Newkirk Park along Ferrell St.

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- City of Clinton

POTENTIAL PARTNERSHIPS:

- City of Clinton
- NCDOT

ESTIMATED CONSTRUCTION COSTS:

- \$731,360





E ELIZABETHTOWN: DOWNTOWN TO TORY HOLE PARK

FROM:
Downtown Elizabethtown

TO:
Tory Hole Park/Cape Fear River

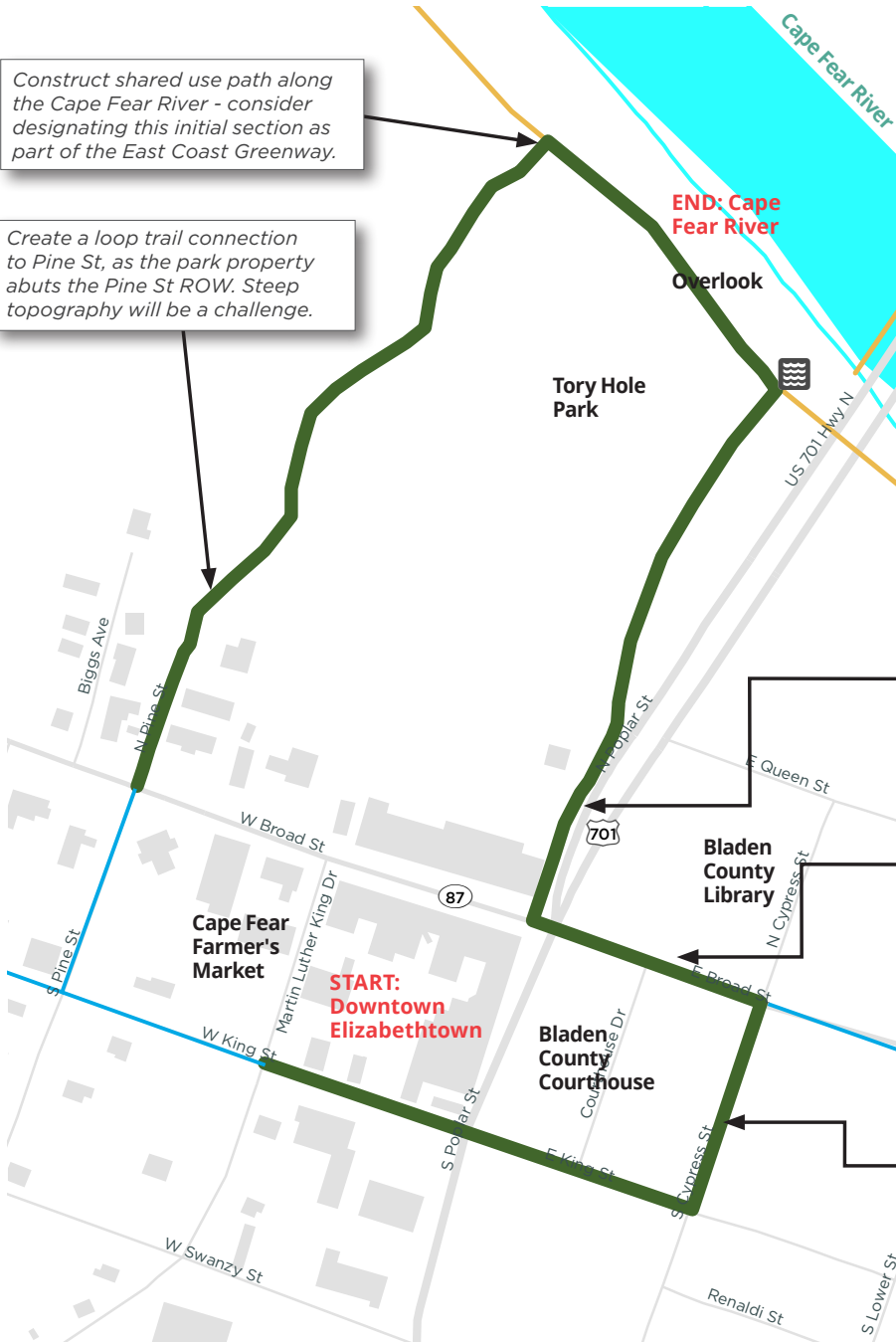
LENGTH:
1.1 Miles

NOTES:

This project sheet highlights continued efforts to connect downtown Elizabethtown to the Cape Fear River via trails that are under development at Tory Hole Park. Potential bicycle circulation improvements and existing bike lanes will enhance the connection between downtown, the park, and the river.

Construct shared use path along the Cape Fear River - consider designating this initial section as part of the East Coast Greenway.

Create a loop trail connection to Pine St, as the park property abuts the Pine St ROW. Steep topography will be a challenge.



Widen existing sidewalk (or replace) to 10' sidepath along the west side of N. Poplar St and into Tory Hole Park

Extend the Broad St bike lane cross section further west from the Cypress St intersection to the Poplar St intersection. Traffic volumes are 4,300 AADT on E. Broad St before the Poplar St intersection.

Implement shared lane markings along King St and Cypress St to connect the existing bike lanes via lower traffic volume roads through downtown.

Proposed Network

Existing

Priority Project

Bike Lane

Regional Network



0 0.05 0.1 Miles

E

ELIZABETHTOWN: DOWNTOWN TO TORY HOLE PARK (CONTINUED)

TRIP GENERATORS:

- Downtown Elizabethtown
- Tory Hole Park
- Cape Fear River
- Bladen County Public Library
- Bladen County Hospital
- Elizabethtown Primary School
- Post Office (209 S Poplar St)

SUPPORT IN OTHER PLANS:

- Elizabethtown Bicycle Plan (2015)
- Bladen County CTP (2015)

POTENTIAL ROW NEEDS:

- None

DESIGN OPTIONS AND CONSIDERATIONS:

To thoroughly connect the trail development along/near the Cape Fear River in Tory Hole Park, a combination of shared use paths, dedicated bike lanes, and shared lane markings are needed. The photo below shows a recently constructed overlook that could be a culminating point for downtown connectivity to the Cape Fear River. (Photo of courtesy of the Town of Elizabethtown).

JURISDICTIONS:

- Town of Elizabethtown

POTENTIAL PARTNERSHIPS:

- Town of Elizabethtown
- East Coast Greenway
- NCDOT
- Downtown businesses
- Cape Fear SORBA

ESTIMATED CONSTRUCTION COSTS:

- \$1,406,795





F FAYETTEVILLE: LANGDON STREET BIKE LANES

FROM:
Murchison Rd

TO:
Ramsey St

LENGTH:
1 Mile

NOTES:

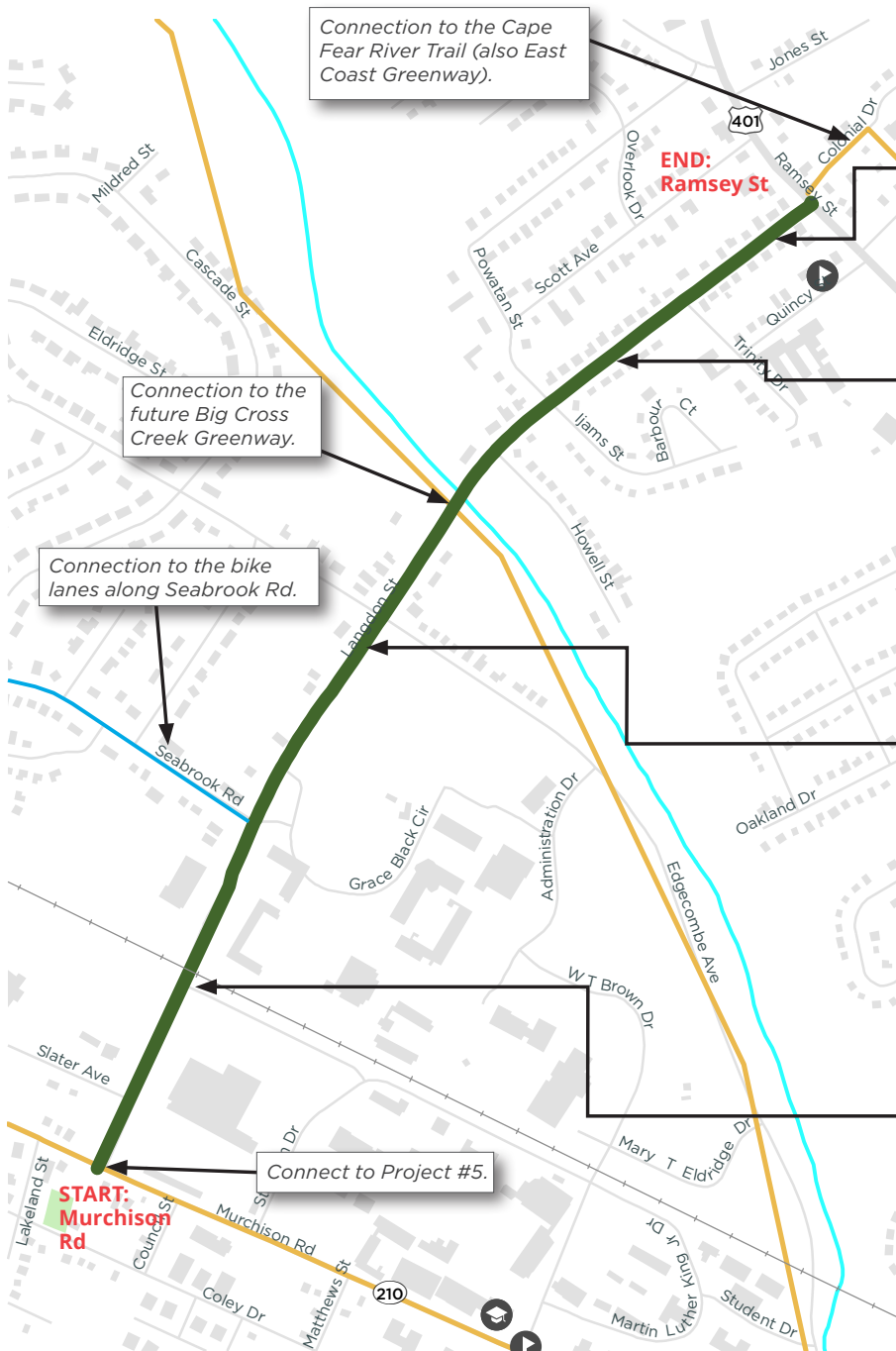
This segment of Langdon St from Trinity Dr to Ramsey St narrows to 26'. Shared lane markings should be implemented along this section.

East of Edgecombe Rd to Trinity Dr, Langdon St is a two-lane section with 36' pavement width. This section should be reconfigured with 10' travel lanes, 5' bike lanes and a 2.5'-3' buffer.

From Murchison Rd to Edgecombe Ave, Langdon St is predominantly a four-lane road with 45'-46' pavement width. Physical separation is recommended¹ due to traffic volumes that are 5,800 AADT and a 35 mph speed limit. This four-lane section of Langdon St should be reconfigured to three lanes. The new cross-section should include 10' travel lanes with 5' bike lanes and a 2.5'-3' buffer.

The cross-section west of here to Murchison Rd has a median. The two-lane, one-way sections of Langdon St are 24' each. Convert the outside lanes to buffered bike lanes (new cross-section = 12' travel lane, 6.5' bike lane, and 5.5' buffer space.)

Lower the speed limit for the length of Langdon St to 25 mph.



0 0.1 0.2 Miles

¹ <http://ruraldesignguide.com/physically-separated/separated-bike-lane>

F

FAYETTEVILLE: LANGDON STREET BIKE LANES (CONTINUED)

TRIP GENERATORS:

- Fayetteville State University
- Smith Recreation Center
- Cape Fear River Trail connection
- Seabrook Park
- Mary McDonald Park
- E. E. Smith High School
- Ferguson Easley Elementary
- Ramsey Street High School
- Adjacent residential areas

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- City of Fayetteville

POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- NCDOT
- Fayetteville State University

ESTIMATED CONSTRUCTION COSTS:

- [project complete]

DESIGN OPTIONS AND CONSIDERATIONS:

This photo simulation facing west on Langdon St shows what the recommended roadway reconfiguration could look like, with buffered bicycle lanes.





FAYETTEVILLE: MURCHISON ROAD COMPLETE STREET

FROM:
Rowan Street

TO:
US 401

LENGTH:
3 Miles

From Rowan St to US 401, Murchison Rd is predominantly a four-lane road with 44'-45' pavement width. Physical separation is recommended¹ due to traffic volumes that increase from 7,300 AADT near Rowan St to 17,000 near US 401 and a 35 mph speed limit.

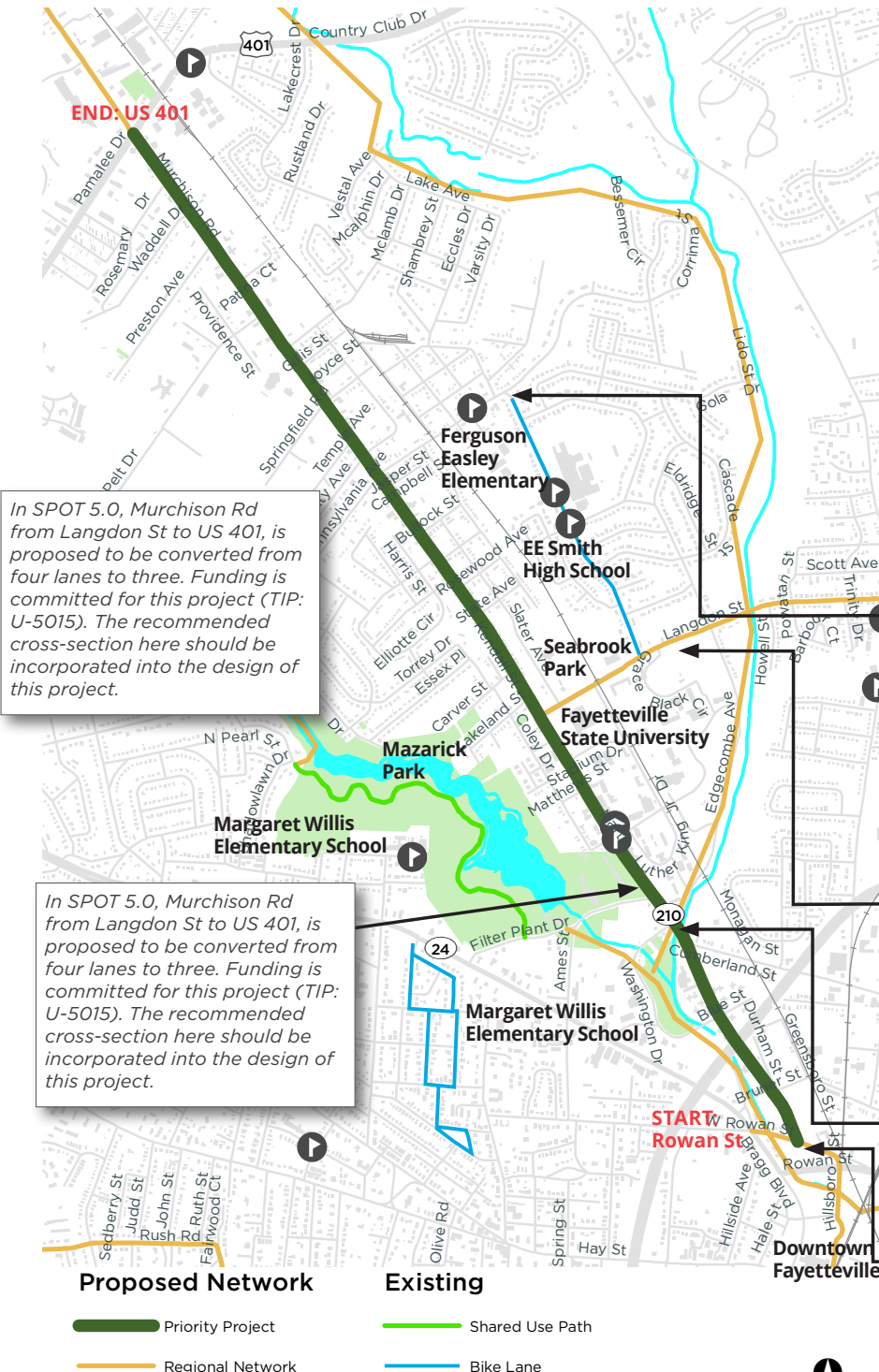
The four lane section of Murchison Rd should be reconfigured to three lanes. The new cross-section should include 10.5' travel lanes with 5' bike lanes and a 1'-2' buffer. A two-way cycle track on the east side of Murchison Rd is also a viable option, and should be considered during the design phase.

Jasper St and Topeka St both have extra pavement width and could be striped with buffered bike lanes. This would connect Murchison Rd to both the existing bike lanes on Seabrook Rd as well as the future Big Cross Creek Greenway.

Langdon St is scheduled to be resurfaced in 2019 and should also be converted from four lanes to three with buffered bike lanes. Langdon St makes a key connection via neighborhood streets to the Cape Fear River Trail further east.

Connect here to future segments of the Big Cross Creek Greenway and Little Cross Creek Greenway

Connect to the future Cross Creek Greenway toward downtown Fayetteville.



¹ <http://ruraldesignguide.com/physically-separated/separated-bike-lane>

G FAYETTEVILLE: MURCHISON ROAD COMPLETE STREET (CONTINUED)

TRIP GENERATORS:

- Downtown Fayetteville
- Fayetteville State University
- Westarea Elementary School
- Ferguson Easley Elementary
- E. E. Smith High School
- Smith Recreational Center
- Seabrook Park
- Seabrook Auditorium
- Mazarick Park
- Adjacent residential and commercial areas

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- City of Fayetteville

POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- NCDOT
- Fayetteville State University

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

ESTIMATED CONSTRUCTION COSTS:

- \$645,840

DESIGN OPTIONS AND CONSIDERATIONS:

This photo simulation facing south on Murchison Rd at the Langdon St intersection shows what the recommended roadway reconfiguration could look like. A two-way cycle track on the east side of Murchison Rd is also a viable option, and should be considered during the design phase.





H SKIBO ROAD RAIL TRAIL

FROM:

Morganton Road

TO:

Shaw Road

LENGTH:

2.5 Miles

Construct shared use path along the inactive railroad that formerly connected Skibo to Spring Lake.

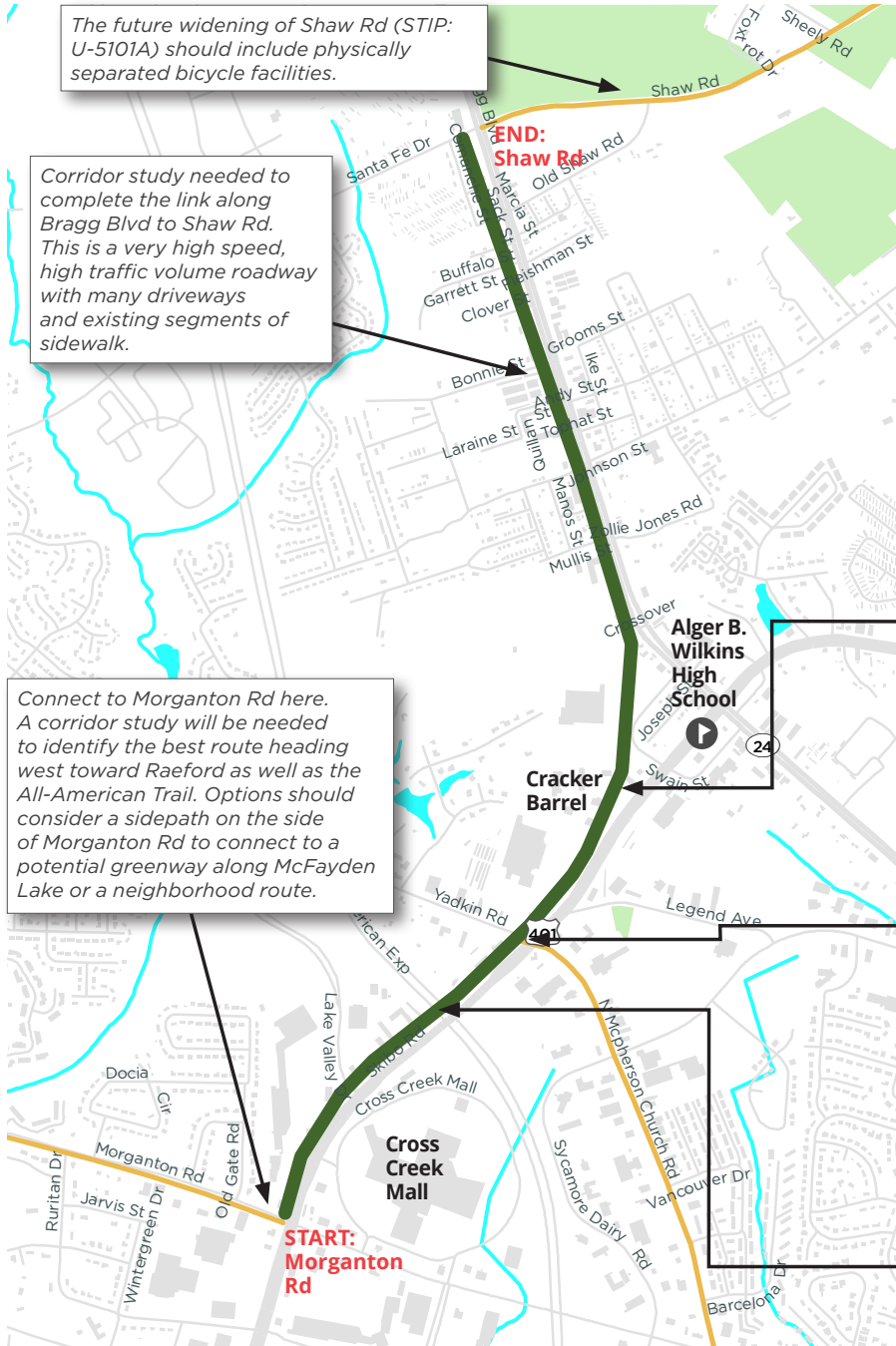
This project provides an option through a heavy commercial area. Skibo Rd/US 401 and Bragg Blvd/NC 24 carry very high traffic volumes (29,000-49,000 AADT) through this section.

Major roadway crossing improvements needed at the Lake Valley Dr, Yadkin Rd, at the Sam's Club entrance, and Swain St.

This short section will need to include shared lane markings, utilizing the short access road in front of the Cracker Barrel.

Connect to N McPherson Church Rd - this links to a network of lower traffic volume streets that lead to downtown. The McPherson Church Rd corridor is a very high traffic volume section. A corridor study is needed to identify the best route possible to connect the Skibo rail trail toward Cliffdale Rd and neighborhood streets toward downtown.

If feasible, restore the old railroad bridge that crossed over the All-American Freeway parallel to the north side of Skibo Rd. Engineering study of the bridge structure needed.



Proposed Network

Priority Project

Regional Network



<http://ruraldesignguide.com/physically-separated/shared-use-path>

H SKIBO ROAD RAIL TRAIL (CONTINUED)

TRIP GENERATORS:

- Alger B. Wilkins High School
- Cross Creek Mall
- Cross Pointe Centre
- Westwood Shopping Center
- AMC Fayetteville 14
- Marketfair Mall
- Glensford Commons Shopping Center
- Walmart Supercenter
- Residential areas adjacent to the corridor

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

POTENTIAL ROW NEEDS:

- There are potential ROW needs for the Bragg Rd section, depending on design.

JURISDICTIONS:

- City of Fayetteville

POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- NCDOT
- Businesses along the corridor

ESTIMATED CONSTRUCTION COSTS:

- SEGMENT 1 (RAIL TO SHARED USE PATH CONVERSION ALONG SKIBO RD FROM MORGANTOWN RD TO BRAGG BLVD): \$1,335,135
- SEGMENT 2 (SIDE PATH ALONG EAST SIDE OF BRAGGS BLVD FROM SHAW RD TO RAILROAD): \$1,267,860

DESIGN OPTIONS AND CONSIDERATIONS:

The old railroad bridge over the All-American Freeway is an important link in itself, potentially providing a potential crossing for bicyclists and pedestrians that is completely separated from the roadway.





SOUTHWEST FAYETTEVILLE COMPLETE STREET STI PROJECTS

FROM:

Cumberland County

TO:

Hoke & Robeson Counties

LENGTH:

16 Miles

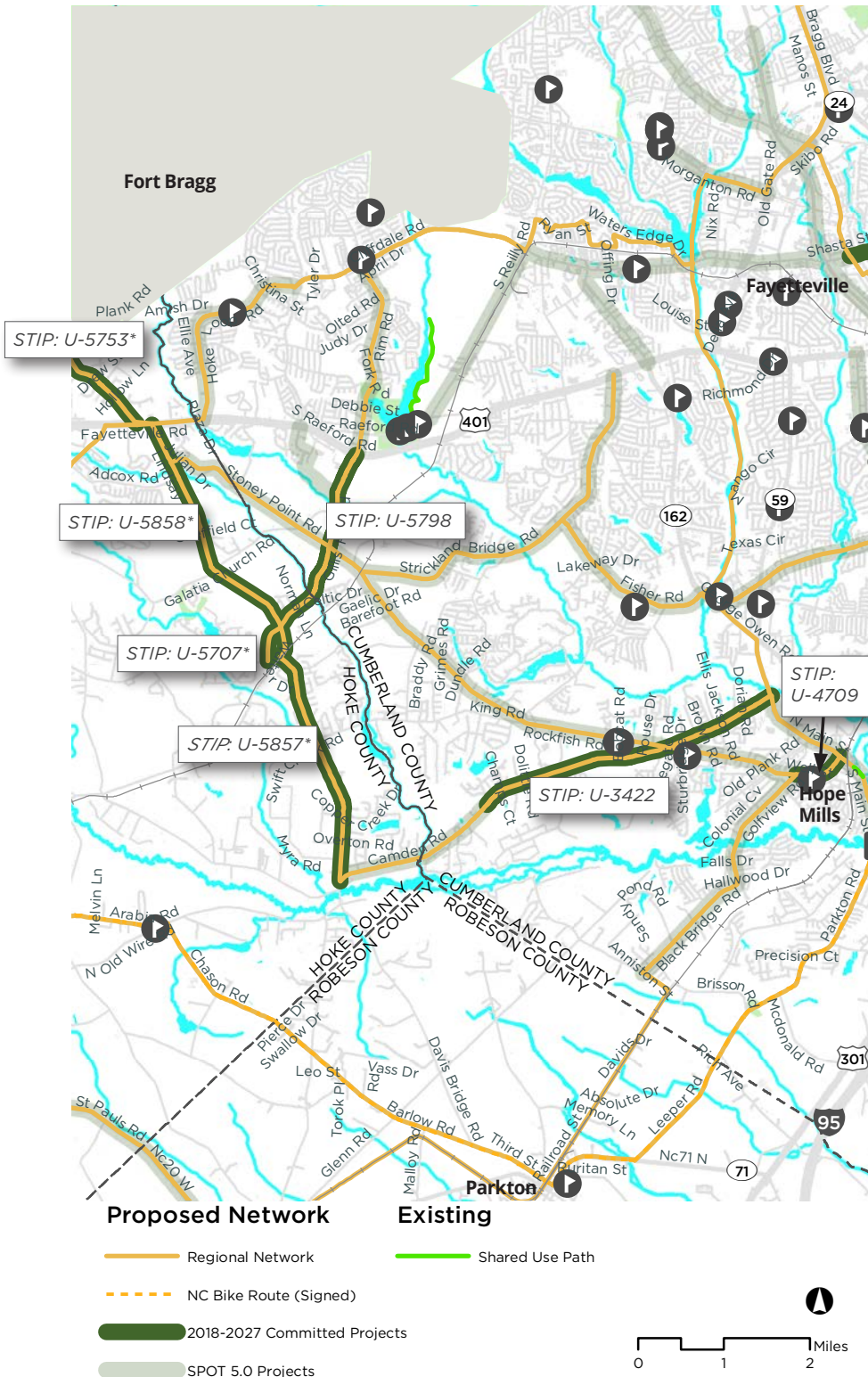
NOTES:

As Fayetteville continues to grow to the southwest, multiple roadway corridors are scheduled to be widened in the coming years. It is critical to incorporate bicycle (and pedestrian) facilities that are physically separated from the roadway, as these are all higher traffic volume/higher speed thoroughfares, as part of the design of these projects.

The corridors highlighted in dark green are committed projects included in the 2018-2027 STIP. Some of these projects may already be far along in the design process.

The lighter green colors were projects submitted in the SPOT 5.0 process for consideration. These projects are likely years away from design and implementation, leaving plenty of time to consider appropriate multimodal design.

**STIP U5753, 5858, 5707, and 5857 were already substantially into the design phase at the time of publication for this plan, and are unlikely to be able to accommodate bicycle facilities as designed.*



I SOUTHWEST FAYETTEVILLE COMPLETE STREET STI PROJECTS (CONTINUED)

TRIP GENERATORS:

- Lake Rim Park
- Fantasy Lake Water Park
- Stoney Point Recreation Center
- Gillis Hill Farm
- West Regional Branch Library
- US Dept of Veterans Affairs
- Gates Four Golf & County Club
- Hoke Hospital
- Fort Bragg
- Stoney Point Elementary School
- Jack Britt High School
- John Griffin Middle School
- New Century International Middle School

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

POTENTIAL ROW NEEDS:

- ROW will need to be acquired for proposed roadway widening projects

JURISDICTIONS:

- City of Fayetteville
- Town of Hope Mills
- Cumberland County
- Hoke County

POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- Cumberland County
- Town of Hope Mills
- NCDOT
- Sandhills Cycling Club
- Fort Bragg

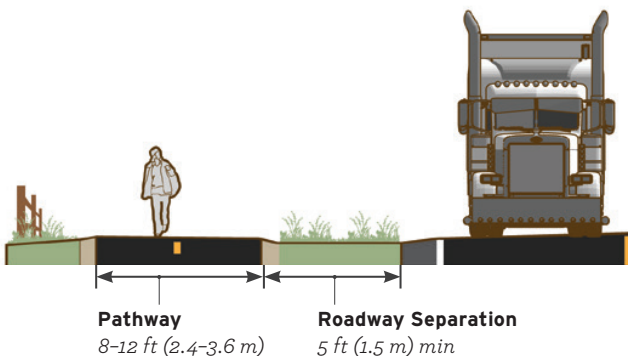
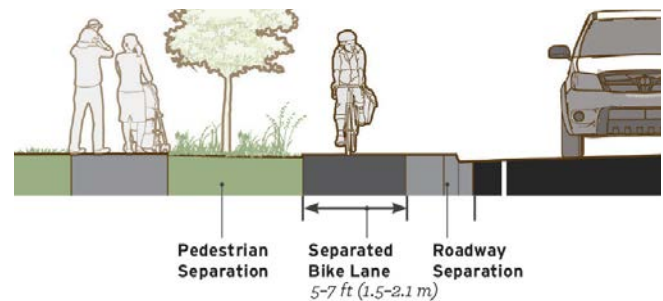
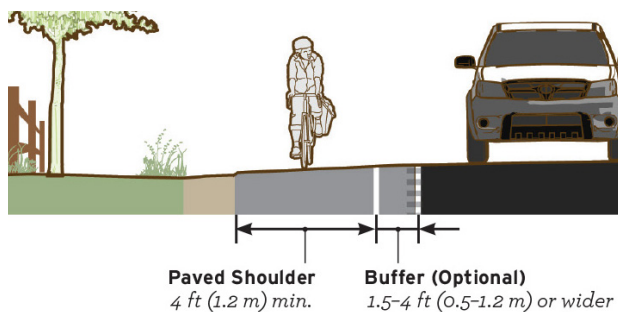
ESTIMATED CONSTRUCTION COSTS:

- [Projects to be completed with roadway reconstruction]

DESIGN OPTIONS AND CONSIDERATIONS:

Several configurations are possible to create physical separation from automobile traffic. These options should be explored during the design phase. See example graphics below from the Small Town and Rural Multimodal Network Design Guide. Further detail can be found at - <http://ruraldesignguide.com/physically-separated>.

While less ideal, construction of paved shoulder can be a significant improvement for bicycle and motorist safety and comfort. Sometimes geographical and/or financial constraints can limit design options. Further detail regarding options for paved shoulder enhancements such as buffer space and bicycle friendly rumble strips can be found in the Small Town and Rural Multimodal Network Design Guide at <http://ruraldesignguide.com/visually-separated/paved-shoulder>.



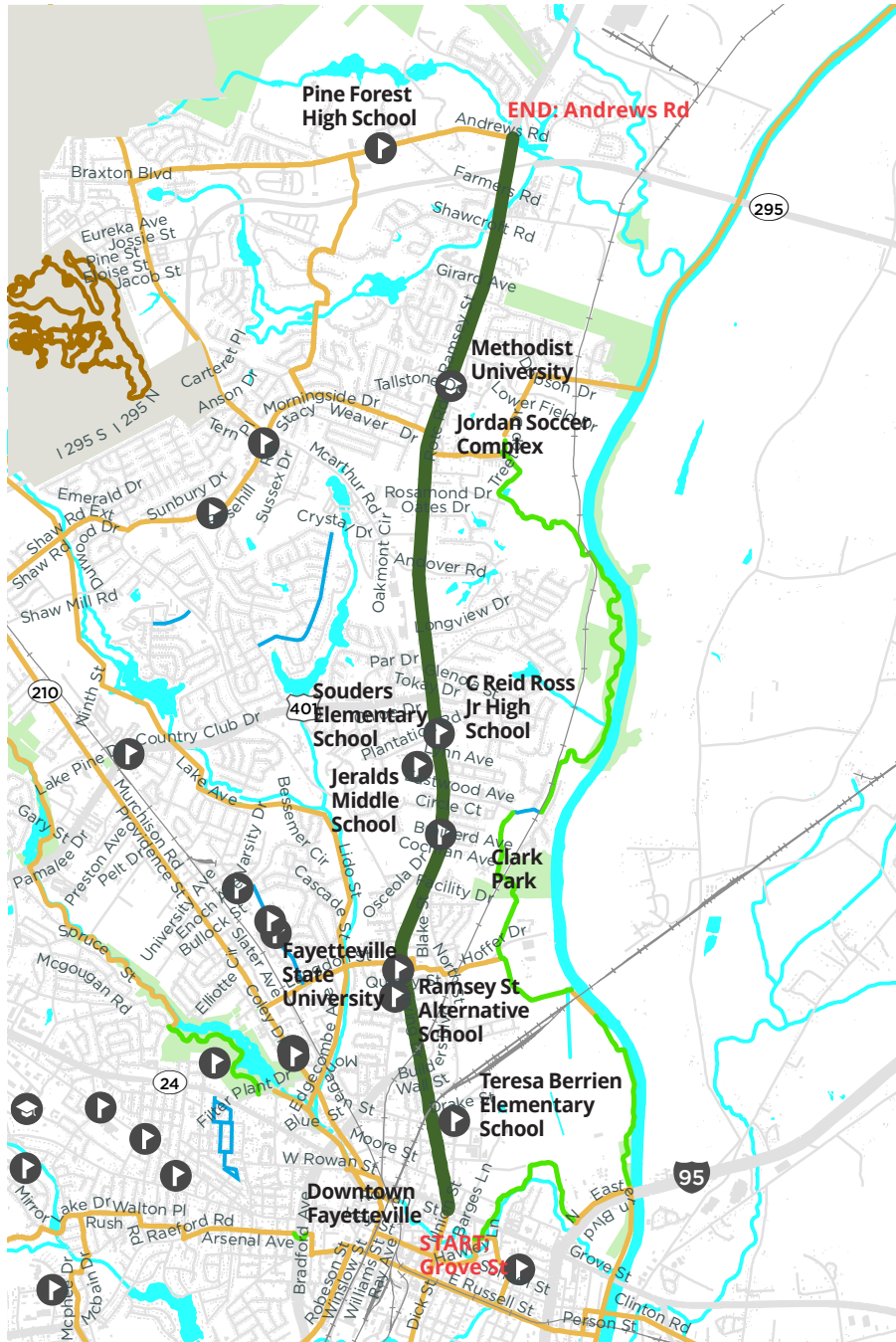


FAYETTEVILLE: RAMSEY STREET COMPLETE STREET

FROM:
Grove Street

TO:
Andrews Road

LENGTH:
7 Miles



Proposed Network

Existing

Priority Project

Shared Use Path

Regional Network

Bike Lane

Hiking/MTB Trails



From Grove St to NC 295, Ramsey St is predominantly a 5-7 lane road with widely ranging pavement width. Physical separation is recommended¹ due to traffic volumes that are 19,000-44,000 AADT and a 35-50 mph speed limit.

Upgrades to this corridor are scheduled (STIP: U-4403C & U-4403B) that will include median construction, access management, and other safety improvements.

As part of this project, construct a sidepath on the east side of the road for the length of the corridor. This will significantly enhance bicycle connectivity to/from the Cape Fear River Trail for multiple schools, residential areas, commercial areas, and downtown Fayetteville.

Crossing improvements at Langdon St and Stacy Weaver Dr/Treetop Dr are needed to enhance regional bicycle connectivity. Further study needed to identify key additional intersection improvements along this corridor, building upon recommendations from the Ramsey Street Corridor Plan.

¹ <http://ruraldesignguide.com/physically-separated/sidepath>

J FAYETTEVILLE: RAMSEY STREET COMPLETE STREET (CONTINUED)

TRIP GENERATORS:

- Downtown Fayetteville
- Fayetteville State University
- Methodist University
- Fayetteville Veterans Park
- Fayetteville YMCA
- C Reid Ross Jr High School
- Teresa Berrien Elementary School
- J. Bayard Clark Park & Nature Center
- Cumberland County Parks & Recreation
- Festival Park
- Adjacent residential and commercial areas

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)
- Ramsey Street Corridor Plan (2009)

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- City of Fayetteville

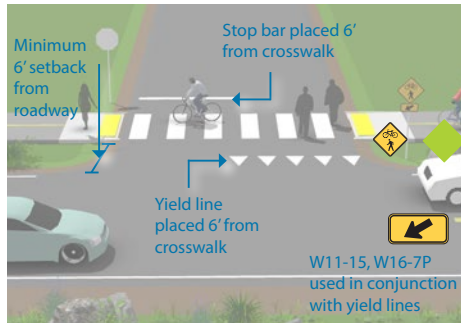
POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- NCDOT
- Fayetteville State University
- Methodist University
- Businesses along corridor

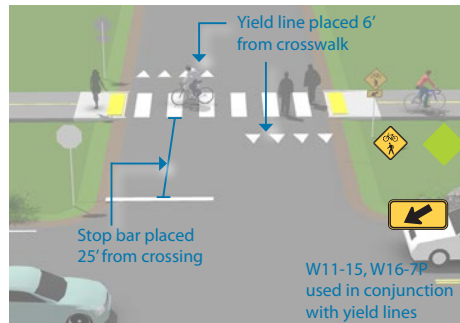
ESTIMATED CONSTRUCTION COSTS:

- \$7,577,595

Adjacent Crossing - A separation of 6 feet emphasizes the conspicuity of riders at the approach to the crossing.



Setback Crossing - A set back of 25 feet separates the path crossing from merging/turning movements that may be competing for a driver's attention.



Appropriate sidepath design through intersections is critical for the safety and comfort of bicyclists, pedestrians, and motorists. See the graphic to the left and Appendix A for further detail on design resources (including sidepath guidance in the Small Town and Rural Multimodal Network Design Guide - <http://ruraldesignguide.com/physically-separated/sidepath>).



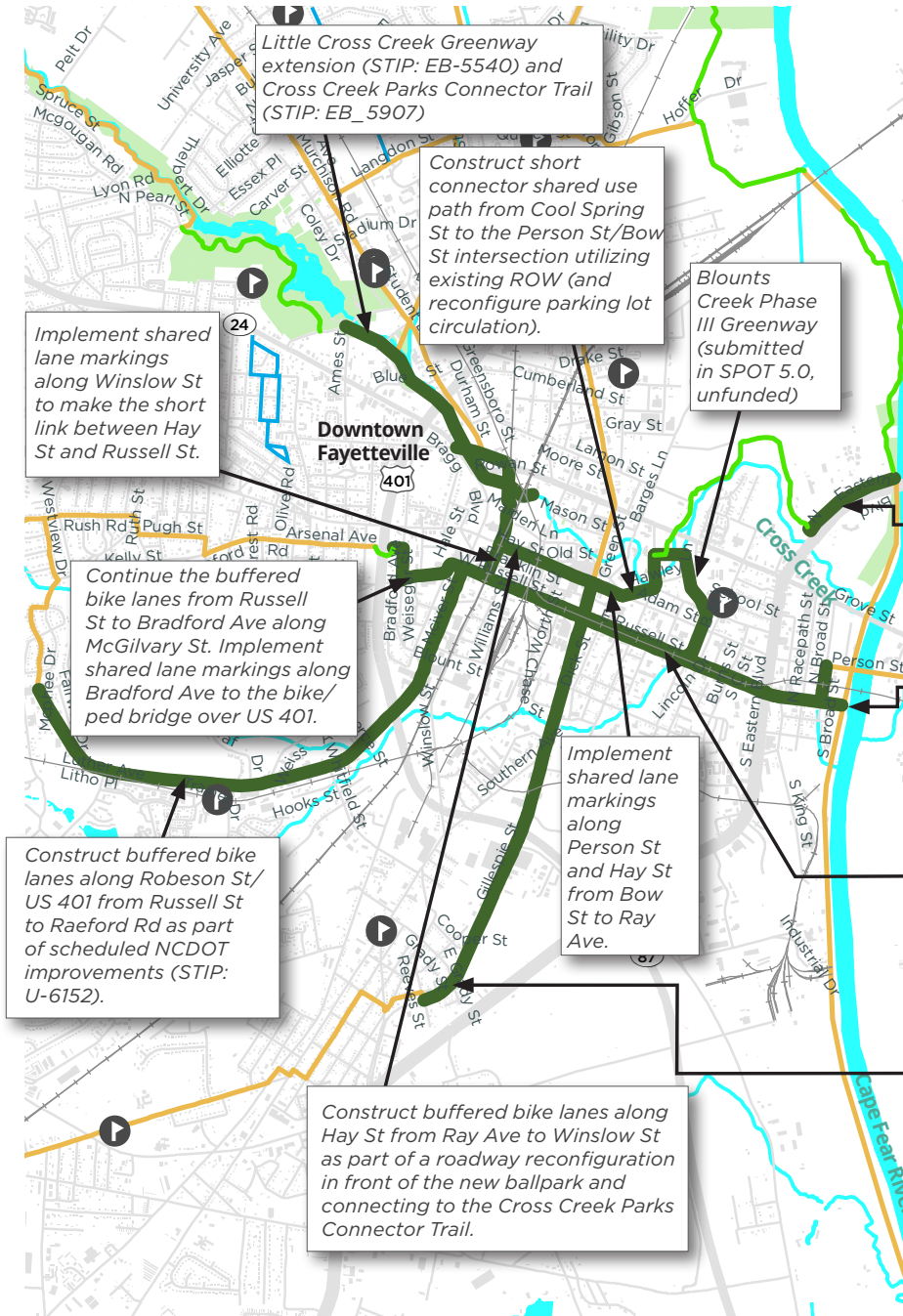
K DOWNTOWN FAYETTEVILLE CIRCULATION

FROM:
Downtown Fayetteville

TO:
Surrounding neighborhoods/
destinations

LENGTH:
11.4 Miles

Several key greenway opportunities have been previously identified in the downtown area, and additional suggestions are included below to improve bicycle circulation and connectivity. Where buffered bike lanes/roadway reconfigurations are suggested, low traffic volumes and wide pavement width are present. Where shared lane markings are recommended, low speeds/traffic volumes are present.



Construct connector greenway along the north side of the N. Eastern Blvd service road, connecting the Cape Fear River Trail and Cross City Trail.

Construct short connector trail from the eastern terminus of Russell St to connect with the proposed Cape Fear River Trail.

Russell St, from Robeson St to the Cape Fear River Trail/Person St - implement roadway reconfiguration within existing pavement to include buffered bike lanes.

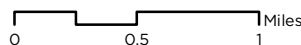
Gillespie St from downtown to Reeves St - implement roadway reconfiguration within existing pavement to include buffered bike lanes.

Proposed Network

- Priority Project
- Regional Network

Existing

- Shared Use Path
- Bike Lane



K DOWNTOWN FAYETTEVILLE CIRCULATION (CONTINUED)

TRIP GENERATORS:

- Cape Fear River Trail
- Fayetteville Area Convention and Visitors Bureau
- Cumberland County Library
- Cumberland County Parks & Recreation
- Lamon Street Park
- Cross Creek Linear Park Fountain
- Freedom Memorial Park
- Airborne and Special Operations Museum
- Fayetteville Independent Light Infantry Armory and Museum
- Fascinate-U Children's Museum
- Fayetteville Area Transportation and Local History Museum
- Teresa Barrien Elementary School
- Arts Council of Fayetteville/Cumberland County
- Post Office (301 Green St)
- SEGRA Stadium
- Fayetteville State University

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- City of Fayetteville

POTENTIAL PARTNERSHIPS:

- City of Fayetteville
- NCDOT
- East Coast Greenway

ESTIMATED CONSTRUCTION COSTS:

- \$4,826,525

DESIGN OPTIONS AND CONSIDERATIONS:

Each side of Russell St is very wide, with 32'-35' pavement width, two-three lanes, and AADT between 6,500 and 8,900. This is an excellent opportunity to remove the third lane where present. Reconfigure the roadway to two travel lanes in each direction that are 11' with 6.5' bike lanes, and 3.5'-6.5' buffer space. Any parking along this corridor would need to be removed (approximately 13 spaces) or drop one travel lane where parking appears.





CAPE FEAR RIVER TRAIL EXTENSION TO ARNETTE PARK

FROM:

Botanical Gardens

TO:

Arnette Park

LENGTH:

3.8 Miles

NOTES:

Extend the Cape Fear River Trail south from the existing southern terminus just north of the Botanical Gardens to Arnette Park. This section should also be designated as part of the East Coast Greenway.

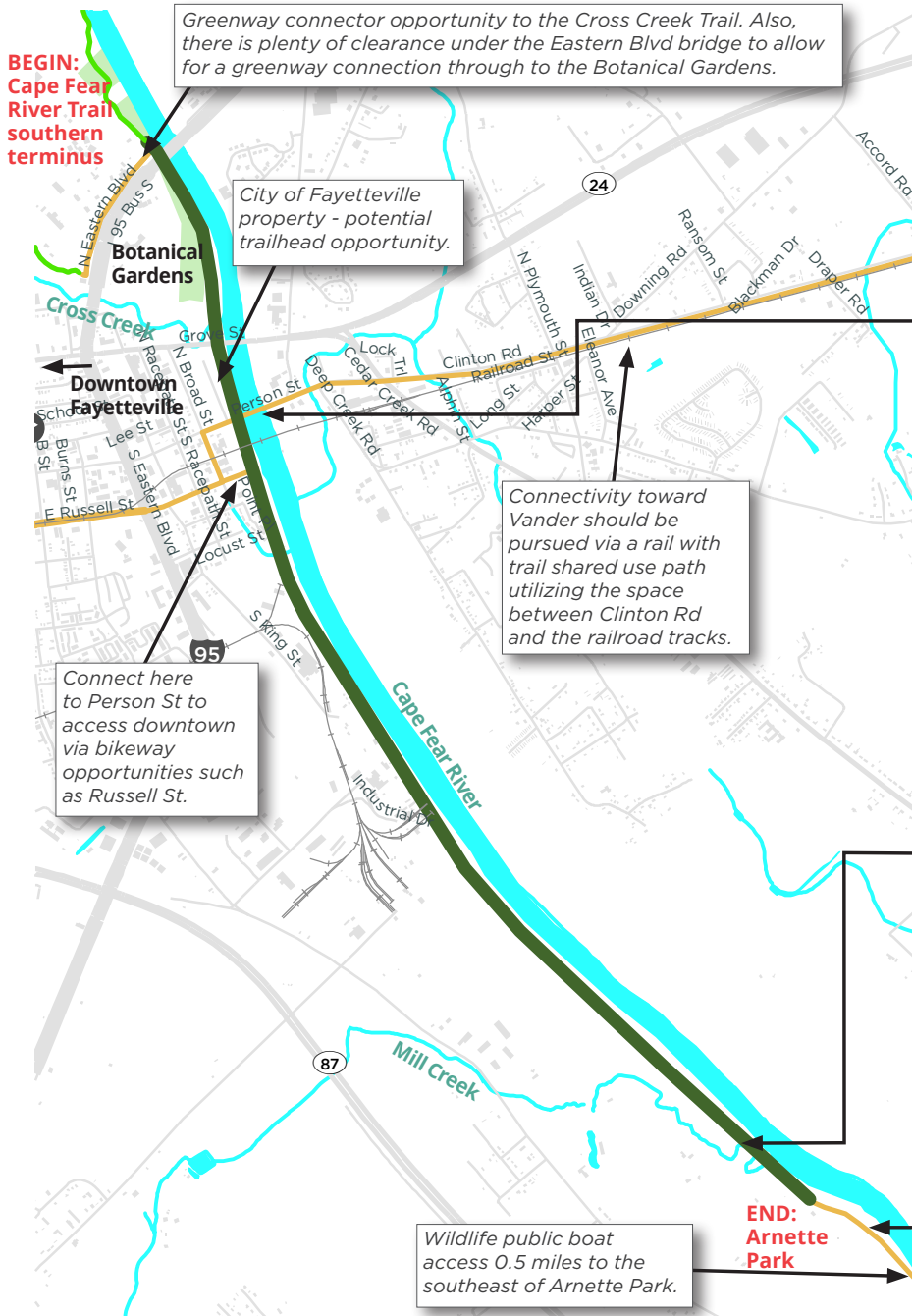
The greenway will need to cross over Cross Creek and under bridges at Grove St, Person St, and the railroad.

While much of the left bank of the Cape Fear River is undeveloped along this section, 14 different citizens/entities own property along the Cape Fear River between the Botanical Gardens and Arnette Park. A feasibility study should be completed to identify alignment options and further detail opportunities and challenges.

Crossing will be needed over Mill Creek just north of Arnette Park.

Longer-term, continue trail south to Tar Heel, Elizabethtown, and eventually Wilmington.

This project was submitted for consideration in SPOT 5.0 (currently unfunded).



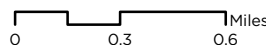
Proposed Network

Priority Project

Regional Network

Existing

Shared Use Path



L CAPE FEAR RIVER TRAIL EXTENSION TO ARNETTE PARK (CONTINUED)

TRIP GENERATORS:

- Downtown Fayetteville
- Botanical Gardens
- Riverside Dog Park
- J.S. Spivey Recreation Center
- Mable C. Smith Park
- MJ Soffee LLC
- Fayetteville's Public Works Commission Customer Service Center
- Arnette Park
- Walker-Spivey Elementary School
- Adjacent residences and businesses

SUPPORT IN OTHER PLANS:

- FAMPO Bicycle & Pedestrian Connectivity Study (2011)
- FAMPO 2040 Comprehensive Transportation Plan (2011)

POTENTIAL ROW NEEDS:

- ROW needed for most of the corridor between the Botanical Gardens and Arnette Park

JURISDICTIONS:

- City of Fayetteville
- Cumberland County

POTENTIAL PARTNERSHIPS:

- East Coast Greenway
- NCDOT
- CSX
- City of Fayetteville
- Cumberland County
- Adjacent property owners and businesses

ESTIMATED CONSTRUCTION COSTS:

- \$7,535,400

DESIGN OPTIONS AND CONSIDERATIONS:

Left: Photo of the current southern terminus of the Cape Fear River Trail just north of the Eastern Blvd bridge and the Botanical Gardens. Below: Example of a popular river trailhead in Maryland (on the Chesapeake and Ohio Canal Towpath).





LAURINBURG RECREATION COMPLEX TO DOWNTOWN

FROM:

Morgan Recreation Complex

TO:

Downtown Laurinburg

LENGTH:

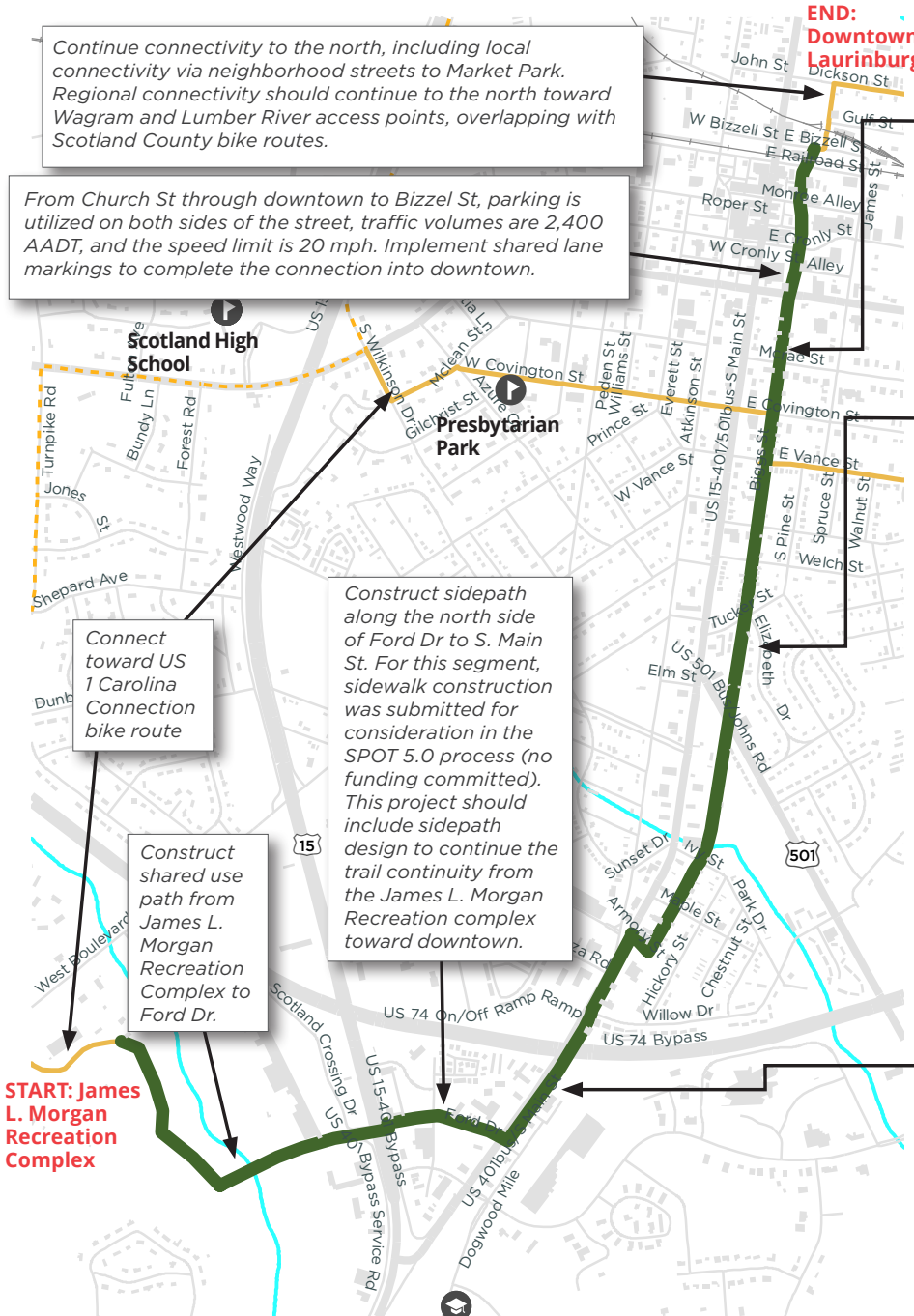
3 Miles

NOTES:

Biggs St from Vance St to Church St narrows to 30'-31'. The buffer space will need to be eliminated along this stretch (see call-out below). Lower the speed limit to 20 mph, connecting into downtown Laurinburg.

Biggs St from Armory St to Vance St carries traffic volumes of 1,500 AADT, a speed limit of 35 mph and a pavement width of 35' (or greater in some locations). Stripe buffered bike lanes with 10' for the travel lanes, 5'-6' for the bike lanes, and 1.5'-2.5' for the buffer space. Lower the speed limit to 20 mph to match the downtown speed limits.

Construct separated bike lanes or sidepath¹ along S. Main St from Ford Dr to Armory St. Traffic volumes are 13,000-14,000 AADT with a speed limit of 35 mph. The cross-section for this stretch of road varies from five lanes with a center turn lane (66' pavement width total) to four lanes with a concrete median (27' pavement width for two lanes on either side of median under US 74). Consider narrowing the travel lanes to accommodate buffered (or physically separated bike lanes) or expand the sidewalk on the east side to 8'-10' with a physical buffer. Note - sidewalk construction was submitted for consideration in the SPOT 5.0 process along this corridor (funding committed). The design phase of this project should consider the above options to continue the trail continuity from the James L. Morgan Recreation complex toward downtown.



Proposed Network

- Priority Project
- Regional Network
- NC Bike Route (Unsigned)



M LAURINBURG RECREATION COMPLEX TO DOWNTOWN (CONTINUED)

TRIP GENERATORS:

- James L. Morgan Recreation Complex
- Downtown Laurinburg
- Holly Square Shopping Center
- Scotland Memorial Hospital
- Legion Park
- Central Elementary School
- A. B. Gibson Education Center
- Adjacent residential and commercial areas

JURISDICTIONS:

- Laurinburg

POTENTIAL PARTNERSHIPS:

- City of Laurinburg
- NCDOT
- Sandhills Cycling Club

SUPPORT IN OTHER PLANS:

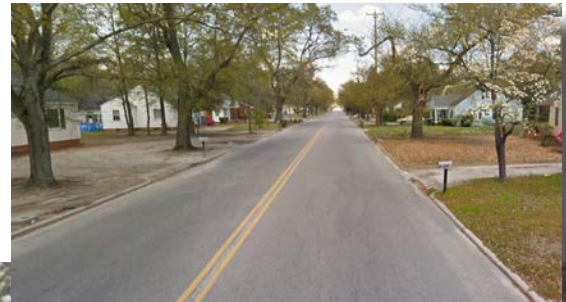
- Laurinburg Pedestrian Plan (2015)
- Scotland County CTP (2016)

POTENTIAL ROW NEEDS:

- ROW needed for part of the shared use path connection from Morgan Recreation Complex to Ford Dr. ROW may be needed along Ford Dr and S. Main St depending on design.

DESIGN OPTIONS AND CONSIDERATIONS:

Photo simulation of the proposed buffered bike lanes along Biggs St. Photo facing north, just north of Tucker St





PEMBROKE: UNC PEMBROKE TO LUMBEE TRIBE HEADQUARTERS

FROM:

UNC Pembroke

TO:

Lumbee Tribe Headquarters

LENGTH:

3.8 Miles

NOTES:

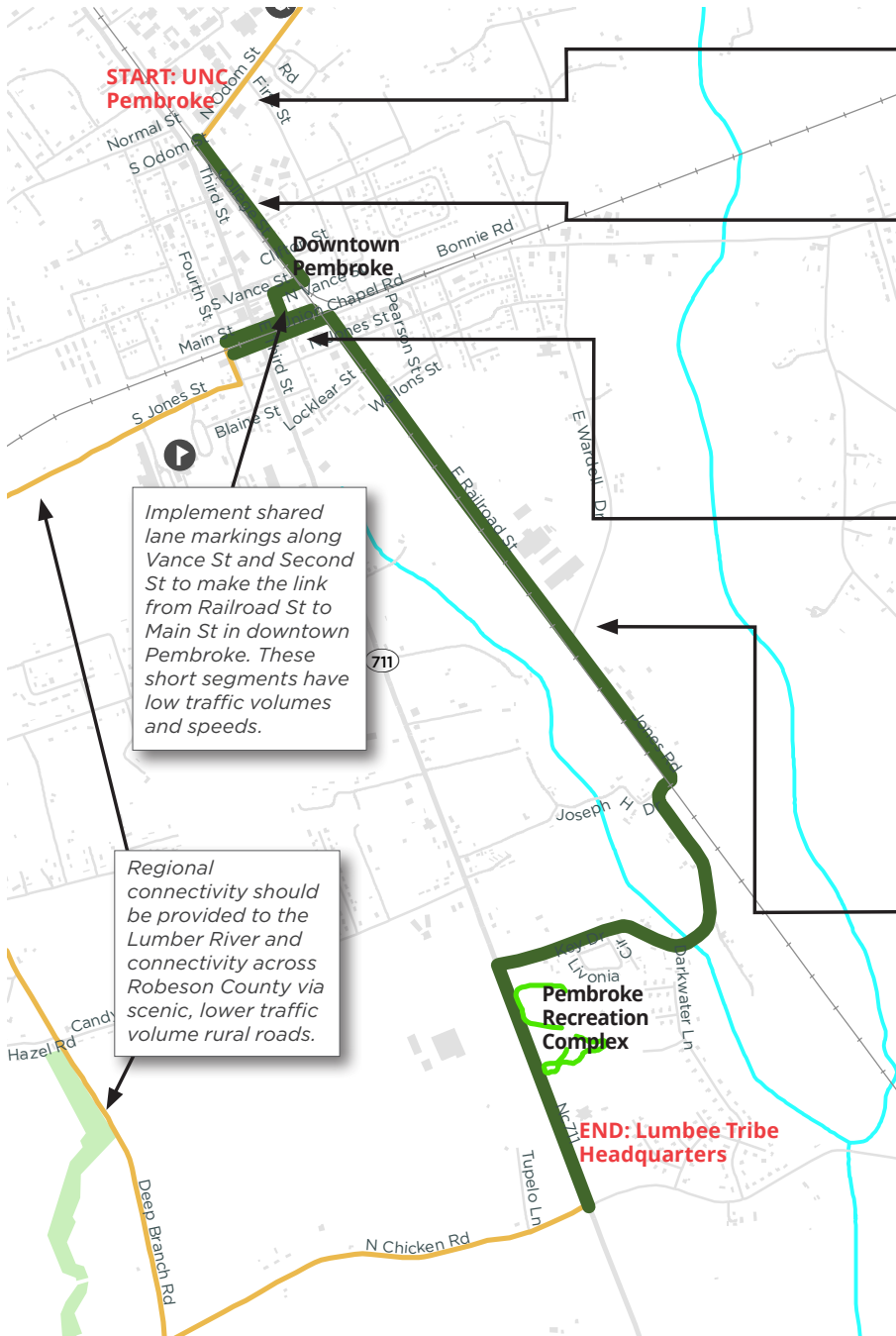
Connect to North Odom St bike lanes (under construction 2019) and UNC Pembroke campus

Construct rail with trail between Railroad St and the active railroad tracks from North Odom St to Vance St.

Union Chapel Rd from Second St to E. Railroad St (and beyond) has traffic volumes of 5,900 AADT, a 35 mph speed limit and a pavement width of 35'. Stripe buffered bike lanes within the existing pavement. The new cross-section should include 10' travel lanes, 5'-6' bike lanes, and 1.5'-2.5' buffer space. The recommended cross-section could be extended north to the Pembroke Courthouse.

Construct rail with trail/sidepath between E Railroad St and the active railroad from Union Chapel Rd to Jones St. Continue the sidepath along Jones Rd to NC 711, connecting to the Pembroke Recreation Complex and Lumbee Tribe Headquarters.

This project was submitted for consideration in SPOT 5.0 (currently unfunded).



Proposed Network

- Priority Project
- Regional Network

Existing

- Shared Use Path

0 0.25 0.5 Miles



N PEMBROKE: UNC PEMBROKE TO LUMBEE TRIBE HEADQUARTERS (CONTINUED)

TRIP GENERATORS:

- UNC Pembroke
- Downtown Pembroke
- Lumbee Tribe Headquarters
- Pembroke Recreation Complex
- Businesses and residences along the corridor

SUPPORT IN OTHER PLANS:

- Robeson County CTP (2012)

POTENTIAL ROW NEEDS:

- ROW may be needed for the shared use path sections

JURISDICTIONS:

- Town of Pembroke
- Robeson County

POTENTIAL PARTNERSHIPS:

- Town of Pembroke
- Robeson County
- Lumbee Tribe
- NCDOT
- UNC Pembroke

ESTIMATED CONSTRUCTION COSTS:

- \$4,042,025

DESIGN OPTIONS AND CONSIDERATIONS:

Photo simulation of the proposed shared use path from North Odom St to Vance St between the railroad tracks and Railroad St. Photo facing east.





LUMBERTON: NORTH/SOUTH SPINE

FROM:
Lumberton High School

TO:
I-74

LENGTH:
6 Miles

NOTES:

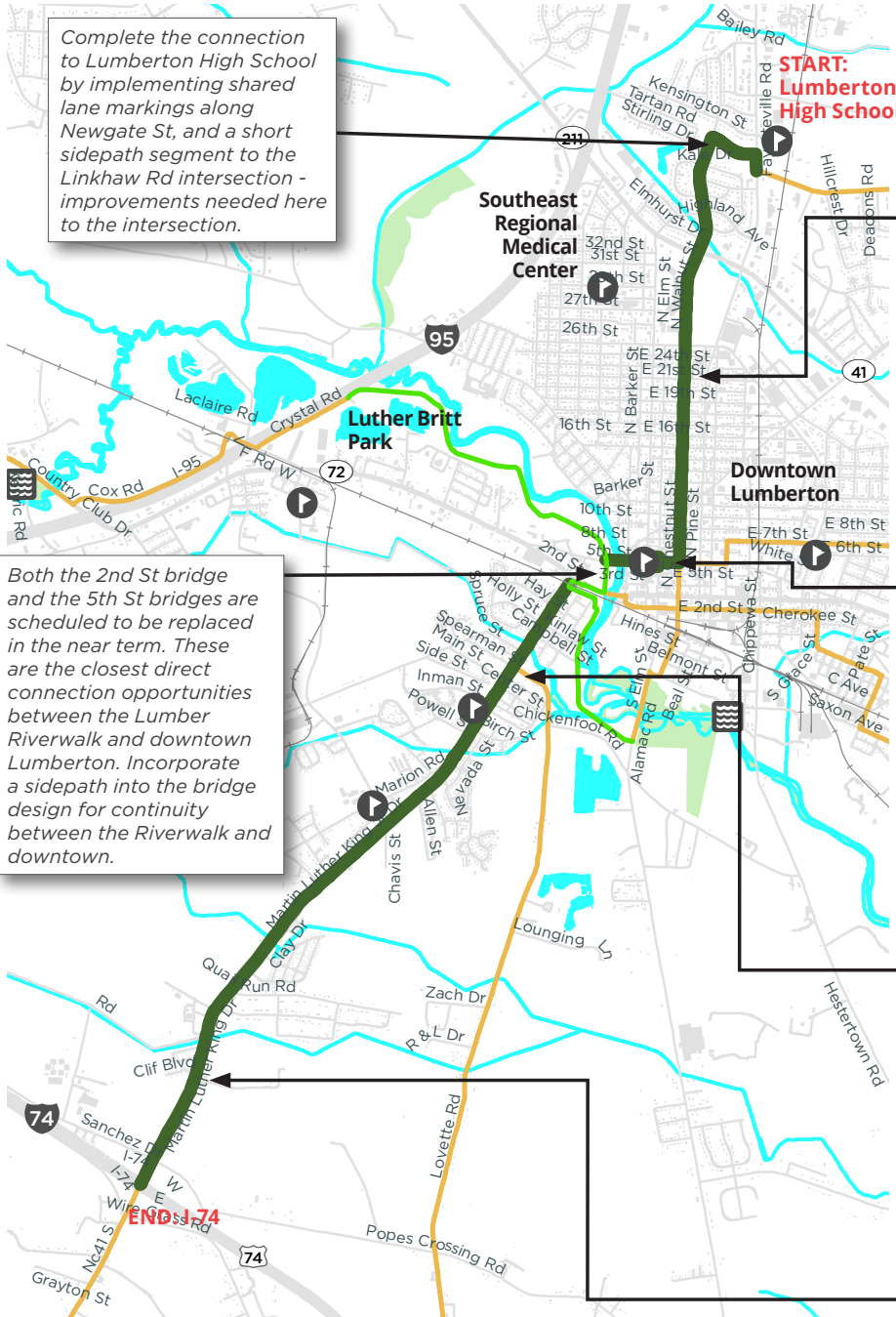
Walnut St is a north/south route that parallels higher traffic volume roads such as Pine St, making a direct, flat connection through Lumberton. Implement bicycle boulevard¹ treatments along the entire length of the Walnut St corridor. This should include shared lane markings, wayfinding signage, lowering the speed limit to 20 mph, and consider installing neighborhood traffic circles periodically along the corridor.

Implement shared lane markings along 5th St and around the Courthouse (N. and S. Court Square/Elm St/Chestnut St) to make the connection between the 5th St bridge and Walnut St.

MLK Jr Dr from 5th St to Marion Rd is predominantly a four-lane road with 44-45' pavement width. Physical separation is recommended¹ due to traffic volumes that are 8,800-13,000 AADT with a 35 mph speed limit.

The four lane section of MLK Jr Dr should be reconfigured to three lanes. The new cross-section should include 10.5' travel lanes with 5' bike lanes and a 1'-2' buffer.

MLK Jr Dr south of Marion Rd is scheduled to be widened (STIP: R-5951). Extend the above recommended cross-section to this section, adding two feet of buffer space.



Complete the connection to Lumberton High School by implementing shared lane markings along Newgate St, and a short sidepath segment to the Linkhaw Rd intersection - improvements needed here to the intersection.

Both the 2nd St bridge and the 5th St bridges are scheduled to be replaced in the near term. These are the closest direct connection opportunities between the Lumber Riverwalk and downtown Lumberton. Incorporate a sidepath into the bridge design for continuity between the Riverwalk and downtown.

Proposed Network

Existing

— Priority Project

— Shared Use Path

— Regional Network



0 0.55 1.1 Miles



LUMBERTON: NORTH/SOUTH SPINE (CONTINUED)

TRIP GENERATORS:

- Downtown Lumberton
- Lumber Riverwalk
- Carolina Civic Center
- Lumberton High School
- Lumberton Junior High School
- Jerry Giles Park
- Southeast Regional Medical Center
- Lumberton Outdoor Flea Market
- Robeson County Fairgrounds
- Robeson County History Museum
- Biggs Park Mall
- Carolina Golf Club
- Businesses and residences along the corridor

POTENTIAL ROW NEEDS:

- ROW may need to be acquired for the MLK Jr Dr section that is scheduled to be widened.

JURISDICTIONS:

- City of Lumberton

POTENTIAL PARTNERSHIPS:

- City of Lumberton
- Robeson County
- NCDOT
- Southeast Regional Medical Center

ESTIMATED CONSTRUCTION COSTS:

- \$985,710* **

**Base cost excludes Martin Luther King Dr mill and overlay and travel lane restriping (\$1,430,000), which may be part of bicycle improvement work or provided with regularly scheduled road maintenance.*

***Excludes bridge expansion to be paid for under separate project.*

DESIGN OPTIONS AND CONSIDERATIONS:

Existing 5th St bridge at right, and an example bridge with sidepath below (example from Apex, NC). The proposed sidepath on the bridge would provide a link between the Lumber Riverwalk and downtown Lumberton.





P FAIRMONT TO LUMBER RIVER STATE PARK

FROM:

Downtown Fairmont

TO:

Lumber River State Park
Princess Ann Access

LENGTH:

12.7 Miles

NOTES:

Old Stage Rd/NC 130 from Golf Course Rd St to NC 130, has traffic volumes of 1,300 AADT, a 55 mph speed limit, and a 22'-23' pavement width. 4' paved shoulders and a 1.5' buffer space with bicycle friendly rumble strips are recommended.

Cottage St/NC 130B, after Powell St heading east to Progressive Farm Rd becomes a two-lane road, with traffic volumes of 2,000-2,700 AADT, a 55 mph speed limit, and a pavement width of 21'. Paved shoulders with bicycle friendly rumble strips are recommended along this section. At a minimum, include a 4' paved shoulder space along with a 1.5' buffer space that includes bicycle friendly rumble strips in the buffer space (see photo simulation on the following page for an example).

Progressive Farm Rd, a short segment of Bloomingdale Rd, and Herring Rd make the connection to Princess Ann Rd. There are very low traffic volumes (90-570 AADT), with a 55 mph speed limit. Ideally, in the long-term, paved shoulders should be constructed. Since traffic volumes are very low, in the short-term, wayfinding signage should direct bicyclists between Fairmont and the Lumber River State Park Princess Ann Access.

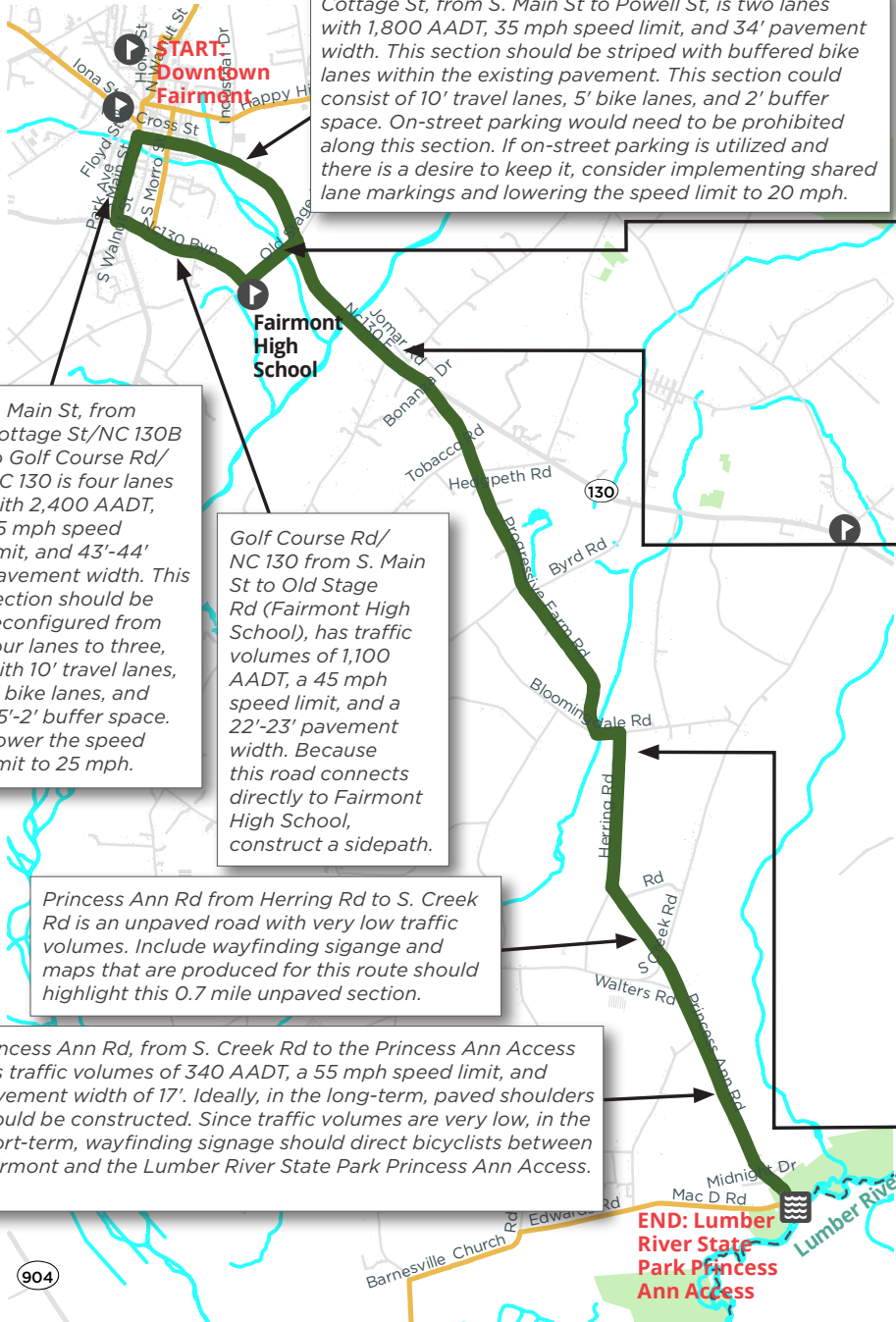
Cottage St, from S. Main St to Powell St, is two lanes with 1,800 AADT, 35 mph speed limit, and 34' pavement width. This section should be striped with buffered bike lanes within the existing pavement. This section could consist of 10' travel lanes, 5' bike lanes, and 2' buffer space. On-street parking would need to be prohibited along this section. If on-street parking is utilized and there is a desire to keep it, consider implementing shared lane markings and lowering the speed limit to 20 mph.

S. Main St, from Cottage St/NC 130B to Golf Course Rd/NC 130 is four lanes with 2,400 AADT, 35 mph speed limit, and 43'-44' pavement width. This section should be reconfigured from four lanes to three, with 10' travel lanes, 5' bike lanes, and 1.5'-2' buffer space. Lower the speed limit to 25 mph.

Golf Course Rd/NC 130 from S. Main St to Old Stage Rd (Fairmont High School), has traffic volumes of 1,100 AADT, a 45 mph speed limit, and a 22'-23' pavement width. Because this road connects directly to Fairmont High School, construct a sidepath.

Princess Ann Rd from Herring Rd to S. Creek Rd is an unpaved road with very low traffic volumes. Include wayfinding signage and maps that are produced for this route should highlight this 0.7 mile unpaved section.

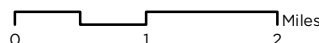
Princess Ann Rd, from S. Creek Rd to the Princess Ann Access has traffic volumes of 340 AADT, a 55 mph speed limit, and pavement width of 17'. Ideally, in the long-term, paved shoulders should be constructed. Since traffic volumes are very low, in the short-term, wayfinding signage should direct bicyclists between Fairmont and the Lumber River State Park Princess Ann Access.



Proposed Network

Priority Project

Regional Network



P

FAIRMONT TO LUMBER RIVER STATE PARK (CONTINUED)

TRIP GENERATORS:

- Downtown Fairmont
- Fairmont High School
- Rosenwald Elementary School
- Fairmont Middle School
- Fairmont Golf Course
- Lumber River State Park Princess Ann Access

SUPPORT IN OTHER PLANS:

- Fairmont Bicycle & Pedestrian Plan (2017)

POTENTIAL ROW NEEDS:

- None

JURISDICTIONS:

- Town of Fairmont
- Robeson County

POTENTIAL PARTNERSHIPS:

- Town of Fairmont
- Robeson County
- NCDOT
- NC State Parks

ESTIMATED CONSTRUCTION COSTS:

- \$12,238,070

DESIGN OPTIONS AND CONSIDERATIONS:

Photo simulation of the proposed paved shoulders with bicycle friendly rumble strip design on the NC 130 section just west of Progressive Farm Rd.





Q RAEFORD TO WAGRAM RAIL TRAIL

FROM:
Raeford

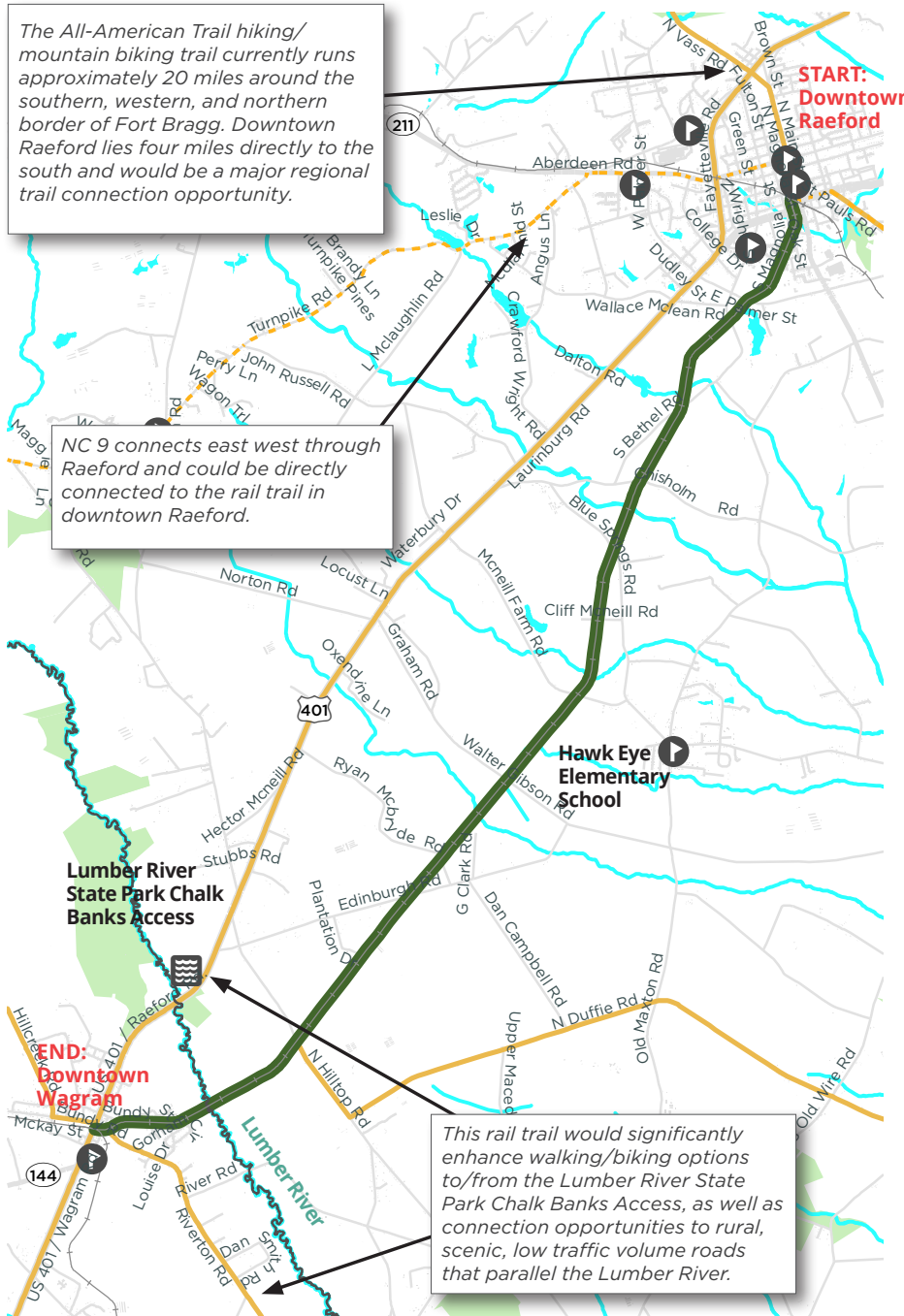
TO:
Wagram

LENGTH:
11 Miles

NOTES:

Rail trails are valuable walking and bicycling corridors for communities. This is due to the fact that they are already graded and typically the flattest walking/biking option, completely separated from motorist traffic and suitable for all ages and abilities, typically connect through community centers as well as stunning countryside, and are generally lower cost due to existing infrastructure related to previous rail use. The 11-mile inactive railroad that makes the direct link between Raeford (Hoke County) and Wagram (Scotland County) is no different, and it is still owned by Laurinburg & Southern Railroad Company. With no dedicated trails between Wagram and Raeford, this is a special opportunity to create a direct spine through Hoke County and into Scotland County. A feasibility study should be completed to identify alignment options and further detail opportunities and challenges in potentially converting this corridor into a trail.

Four former railroad bridge structures will need an engineering assessment, the most significant of these being the Lumber River bridge crossing.



Proposed Network

- Priority Project
- Regional Network
- NC Bike Route (Unsigned)





RAEFORD TO WAGRAM RAIL TRAIL (CONTINUED)

TRIP GENERATORS:

- Downtown Wagram
- Downtown Raeford
- Hawk Eye Elementary School
- Spring Hill Middle School
- Hoke County High School
- Lumber River State Park Chalk Banks Access
- Cypress Bend Vineyards
- Raeford Hoke Museum

POTENTIAL ROW NEEDS:

- ROW owned by Laurinburg & Southern Railroad Company

JURISDICTIONS:

- City of Raeford
- Town of Wagram

- Hoke County
- Scotland County

POTENTIAL PARTNERSHIPS:

- City of Raeford
- Town of Wagram
- Hoke County
- Scotland County
- NCDOT
- Laurinburg & Southern Railroad Company
- Sandhills Cycling Club
- NC State Parks
- Lumber River RPO

ESTIMATED CONSTRUCTION COSTS:

- \$11,597,615

DESIGN OPTIONS AND CONSIDERATIONS:

Photo simulation of the proposed Raeford to Wagram Rail Trail just east of downtown Wagram and just south of the Riverton Rd/Marlboro Rd intersection. This could be an ideal location for a downtown Wagram trailhead, completely inside the inactive railroad right of way and just up Marlboro Rd from the Wagram Town Hall, Police Station, and Recreation Center.

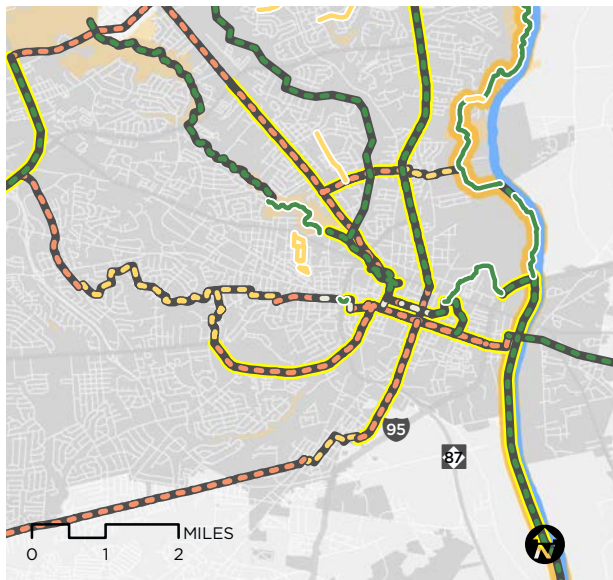




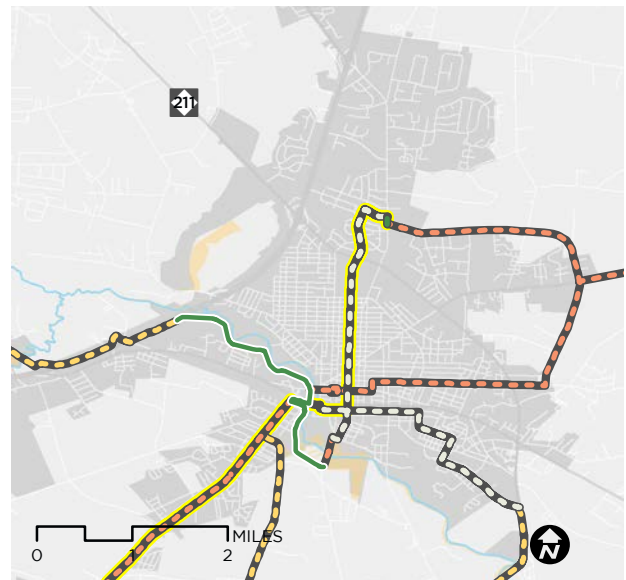
MAP SET 3.3 - STRATEGIC REGIONAL NETWORK: URBAN AREAS

This map shows the complete comprehensive network of potential bikeway and greenway opportunities throughout the region. It is not expected that all of these projects will be built. They are still an important part of this plan though, as they show what the potential is for any given future roadway resurfacing or construction that may provide an opportunity for incorporating a recommended greenway or bikeway facility. See chapters five and six for related policy and implementation considerations, including how these long-term network maps should be referenced during regular roadway design and development processes.

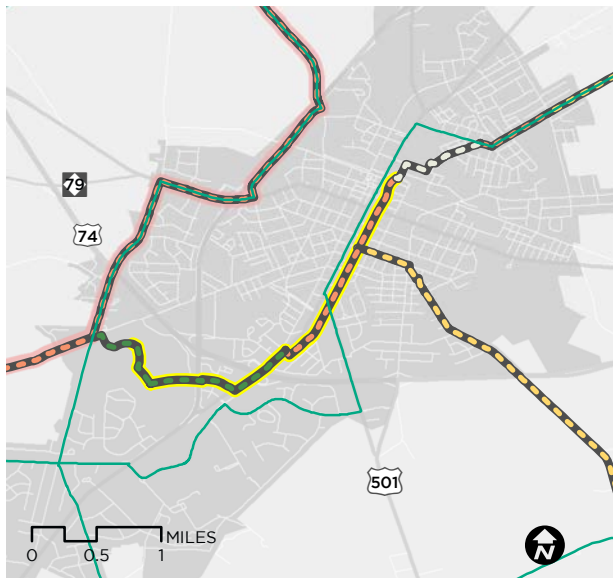
FAYETTEVILLE



LUMBERTON



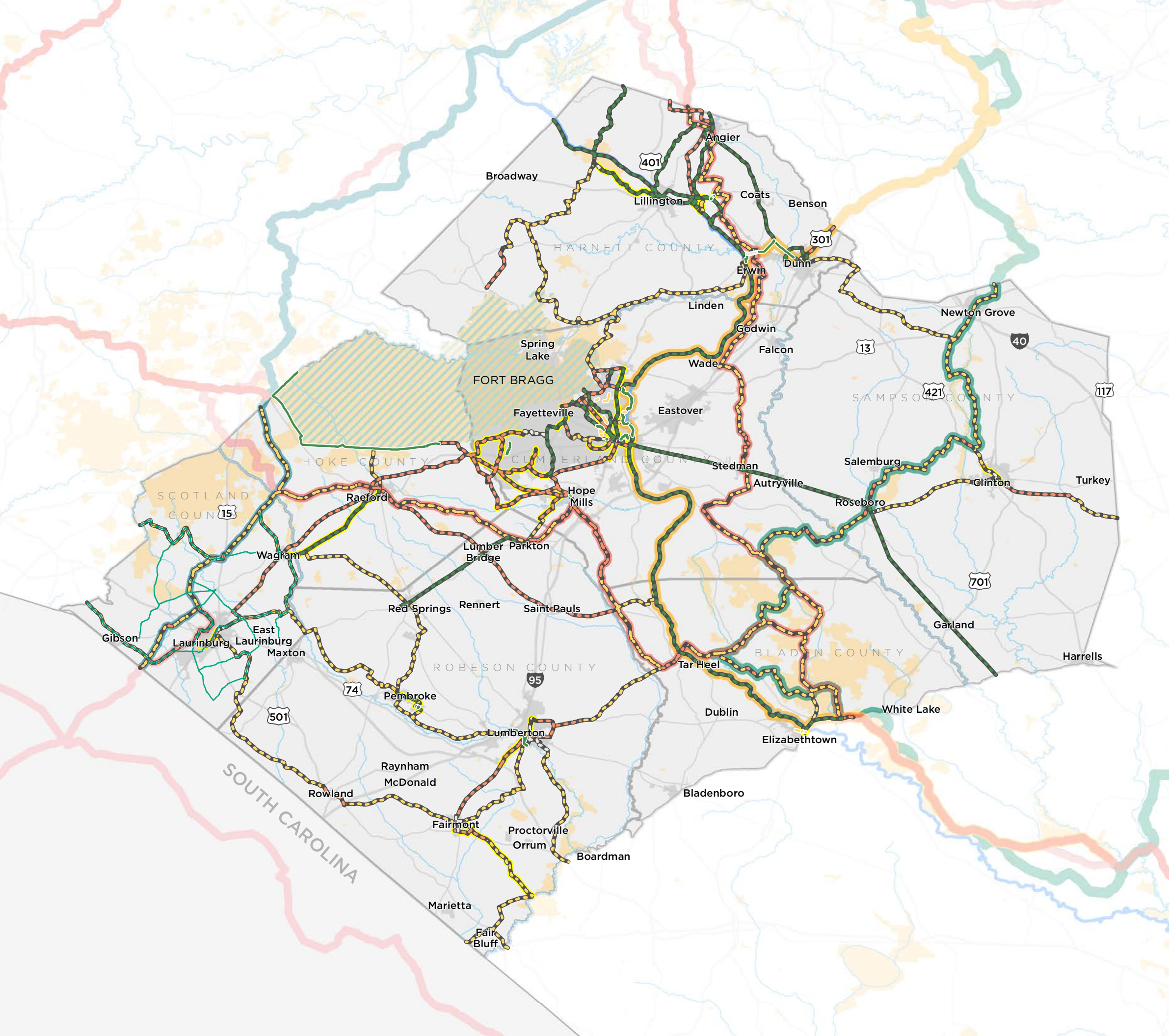
LAURINBURG



CLINTON



MAP 3.3 STRATEGIC REGIONAL NETWORK

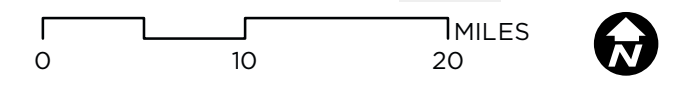


PROPOSED

- Shared Lane
- Bike Lane or Paved Shoulder
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space and/or physical buffer where possible
- Shared Use Path
- Priority Project

EXISTING

- Existing Shared Lane Markings
- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- Scotland County Bike Routes
- NC State Bike Route
- State Bike Route (unsigned)
- US Bike Route 1
- SC State Bike Route
- East Coast Greenway
- Mountains to Sea Trail
- Cape Fear River
- River
- County Boundary
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area



MAP 3.4 LUMBER RIVER RPO PROJECT KEY

- 1 Rural, low traffic volume route from Scotland County to Richmond County that overlaps with Scotland County bike routes.
- 2 US 401 from Laurinburg, Wagram, and Raeford into Cumberland County is a direct connection through Hoke and Scotland Counties that will be widened over the next decade (STIP: R-3333), which is an opportunity to include wider paved shoulders and bicycle friendly rumble strips.
- 3 Rural, scenic, low traffic volume route that parallels the Lumber River and connects Scotland and Robeson Counties.
- 4 Rural, scenic, low traffic volume routes that connect to Fair Bluff and the Cape Fear Regional Bicycle Plan network as well as the South Carolina state bike routes.
- 5 Scenic, rural, low traffic volume route between Red Springs and Pembroke.
- 6 Streetscape project that will include bike lanes at UNC Pembroke.
- 7 Rural, scenic, low traffic volume route from southeast Lumberton that connects to the Lumber River and the Cape Fear Regional Bicycle Plan network.
- 8 NC 41 from Lumberton to I-74 will be widened over the next decade (STIP: R-5951), which is an opportunity to include separated bicycle facilities as recommended in project cutsheet "O". Over time, bicycle facilities should be extended along NC 41 from I-74 to Fairmont.
- 9 Rural, scenic, low traffic volume alternative between Lumberton and Fairmont.
- 10 Wide, buffered bike lanes should be implemented within the existing pavement along 7th St in east Lumberton. East of NC 211, 7th St, Harrill Rd, and NC 41 are narrow and should be improved with wide, dedicated bicycle facilities. These facilities would connect to the scenic, lower traffic volume route that connects to NC 9 Sandhills Sector state bike route at Tar Heel and the Cape Fear River.
- 11 Currently still active and used mostly for recreational train functions, the railroad corridor between Red Springs and Parkton should be considered for rail trail conversion if desired – other options such as rail riding (<http://railriders.net/>) can complement existing railroad use.
- 12 NC 20 from Raeford to St. Pauls is a direct connection through Hoke and Robeson Counties that was proposed to be widened in SPOT 5.0 (unfunded). This could be an opportunity to include wider paved shoulders and bicycle friendly rumble strips at a minimum.
- 13 US 1 Carolina Connection (NC and US bike route) generally follows rural, scenic, lower traffic volume roads through the region. This corridor should be improved with paved shoulders over time. If/when rumble strips are implemented, include bicycle friendly design. Include recommended alternative from Walk/Bike NC to make the connection to the west side of Laurinburg.

MAP 3.4 LUMBER RIVER RPO PROJECTS

PROPOSED

- Shared Lane
- Bike Lane or Paved Shoulder
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space and/or physical buffer where possible
- Shared Use Path
- Priority Project

EXISTING

- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- Scotland County Bike Routes
- NC State Bike Route
- State Bike Route (unsigned)
- US Bike Route 1
- SC State Bike Route
- East Coast Greenway
- Mountains to Sea Trail
- Cape Fear River
- River
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area



MAP 3.5 FAYETTEVILLE AREA MPO PROJECT KEY

- 1

Greenway opportunities should be explored along Beaver Creek to improve connectivity in southwest Fayetteville.
- 2

Neighborhood streets could make part of the connection from the bike/ped bridge at Arsenal Ave between downtown Fayetteville and west Fayetteville.
- 3

Corridor studies needed for the Cliffdale Rd/ McPherson Rd area to identify connection opportunities through this very high traffic volume area.
- 4

Rail with trail opportunity in the space between the active railroad and Clinton Rd from East Fayetteville to Vander.
- 5

Cumberland Rd is currently a three lane road that was submitted in SPOT 5.0 (unfunded) to include sidewalk improvements. This corridor makes a direct connection to the roadway reconfiguration opportunity on S. Gillespie St and other thoroughfares scheduled to be widened through the STI process in southwest Fayetteville. Incorporate sidepath or separated bike lane options into the design process.
- 6

Neighborhood bike route opportunity to link potential opportunities detailed in project sheet #9 to other network opportunities.
- 7

NC 9 Sandhills Sector state bike route generally follows rural, scenic, lower traffic volume roads through the region. This corridor should be improved with paved shoulders over time. If/ when rumble strips are implemented, include bicycle friendly design.
- 8

NC 20 from Raeford to St. Pauls is a direct connection through Hoke and Robeson Counties that was proposed to be widened in SPOT 5.0 (unfunded). This is an opportunity to include wider paved shoulders and bicycle friendly rumble strips at a minimum.
- 9

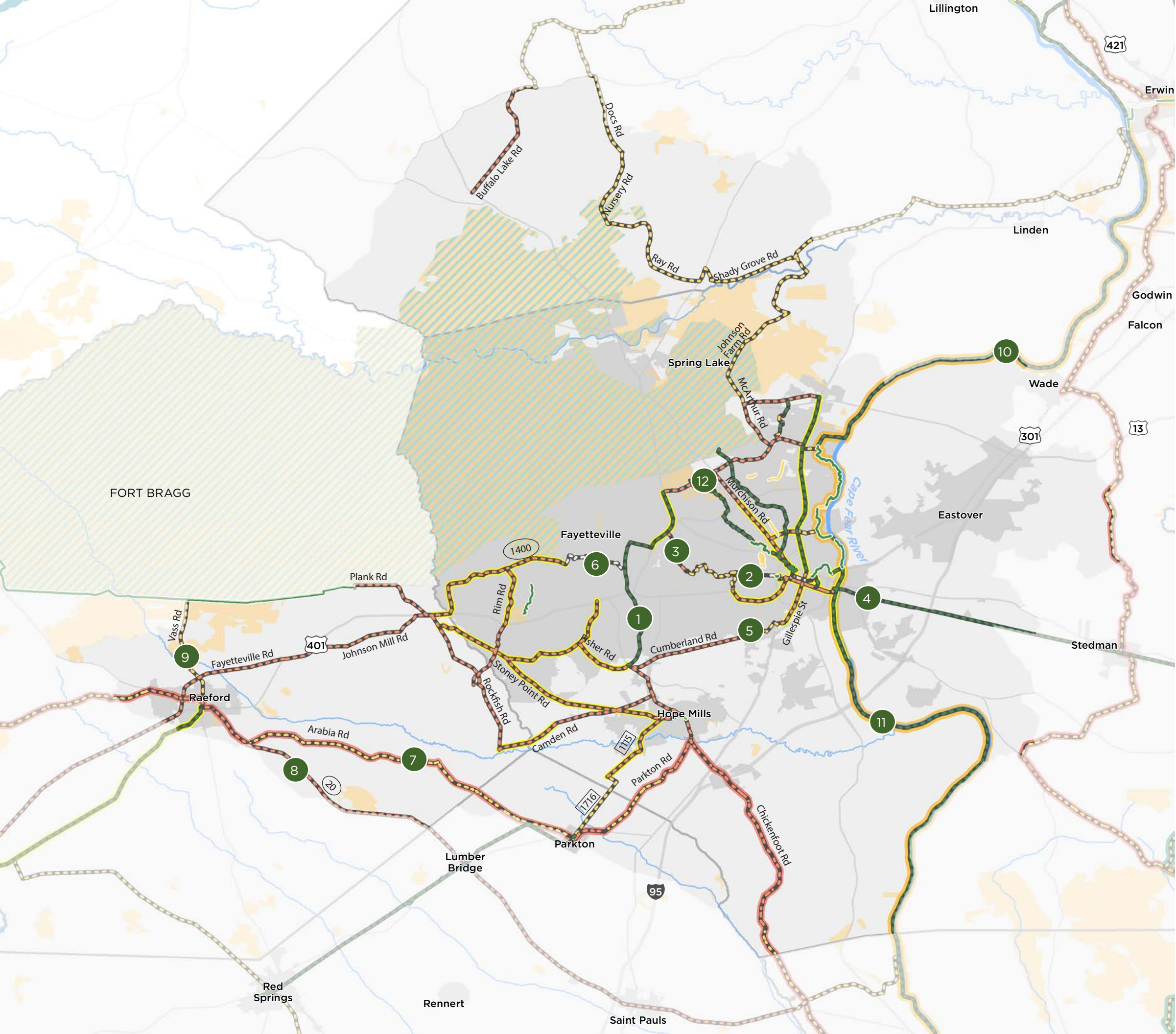
Connection opportunity along Vass Rd from Raeford to the All-American Trail. This could make a major regional connection between the proposed Raeford to Wagram Rail Trail and the existing All-American Trail.
- 10

Corridor study needed for the East Coast Greenway to identify alignment options between the Cape Fear River Trail Park in Erwin to the Cape Fear River Trail in Fayetteville.
- 11

Corridor study needed for the East Coast Greenway to identify alignment options between the Cape Fear River Trail in Fayetteville and Tory Hole Park in Elizabethtown.
- 12

Roadway widening (Shaw Rd)/new construction that could serve as a spine connecting multiple proposed features of the bicycle network in the northern part of Fayetteville, if implemented with separated bicycle facilities. (STIP: U-5101).

MAP 3.5 FAYETTEVILLE AREA MPO PROJECTS

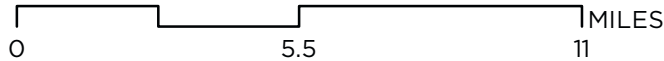


PROPOSED

- Shared Lane
- Bike Lane or Paved Shoulder
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space and/or physical buffer where possible
- Shared Use Path
- Priority Project

EXISTING

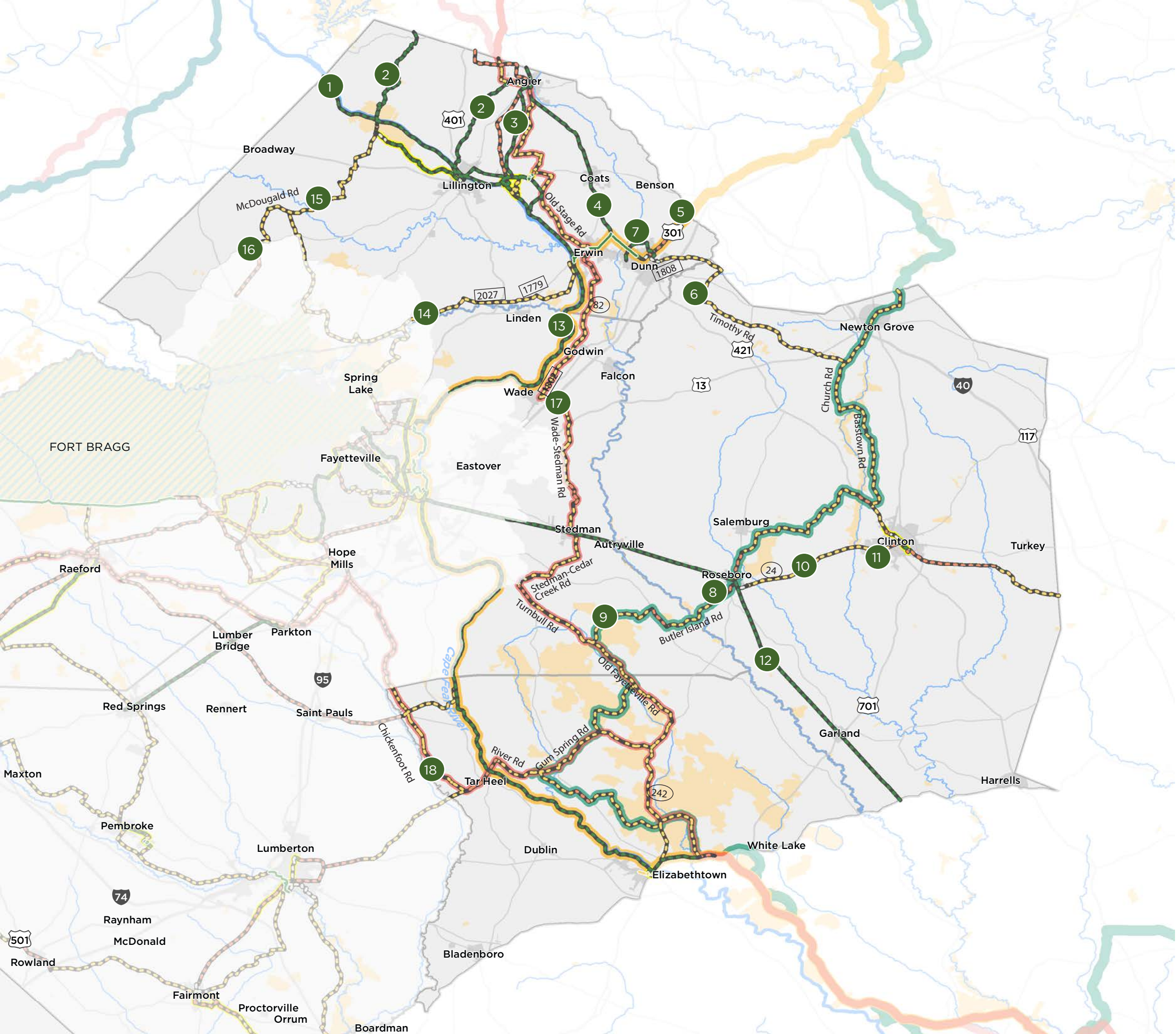
- Existing Shared Lane Markings
- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- NC State Bike Route
- State Bike Route (unsigned)
- East Coast Greenway
- Mountains to Sea Trail
- Cape Fear River
- River
- Fort Bragg
- Protected Lands
- Municipal Boundaries
- Study Area



MAP 3.6 MID-CAROLINA RPO & CAPITAL AREA MPO PROJECT KEY

- 1 The Cape Fear River corridor is a regional trail opportunity through Harnett County and into Chatham and Lee Counties. Connectivity to Harris Lake County Park as well as the southern terminus of the American Tobacco Trail in Wake County into northwest Harnett County should be explored. A corridor study will be needed to detail alignment options.
- 2 The Avents Creek and Neills Creek corridors are longer-term greenway opportunities through Harnett county that connect to the Cape Fear River. These greenway opportunities can happen ove time with development and/or by partnering with local land owners.
- 3 The Buies Creek corridor between Angier and Cambell University is a longer-term greenway opportunity. A parallel opportunity to the west includes proposed roads that could be developed with bike/ped facilities. To the east, NC 5 Cape Fear Run is a lower traffic volume route connecting Angier to Erwin that should be improved with paved shoulders/dedicated bike facilities over time.
- 4 The NC 55 corridor along with existing inactive railroad right of way south of Coats could be an opportunity for shared use path/sidepath connectivity between Angier, Coats and the Dunn-Erwin Rail Trail.
- 5 Corridor study needed to detail East Coast Greenway alignment options from Dunn to Smithfield.
- 6 Rural, scenic, low traffic volume route from Dunn to the Mountains to Sea Trail in Sampson County.
- 7 Greenway opportunity to improve bicycle circulation in and around Dunn, complementing the Dunn-Erwin Rail Trail.
- 8 Mountains to Sea Trail implementation in Roseboro should include bicycle connectivity where possible.
- 9 The Mountains to Sea Trail through Sampson, Cumberland, and Bladen Counties is currently conceptual, following rural, scenic, low traffic volume corridors.
- 10 NC 24 from Clinton to Roseboro has been widened over recent years and includes 4' paved shoulders. If rumble strips are implemented in the future, include bicycle friendly design.
- 11 Sunset Ave from downtown Clinton to US 421 bypass could be reconfigured from four lanes to three with buffered bicycle lanes, connecting into the paved shoulders along NC 24 to Roseboro.
- 12 The proposed Atlantic Seaboard Coastline Rail Trail is a former railroad corridor that has mostly reverted to adjacent property owners. This corridor is still graded and mostly undeveloped, and should be considered for long-term trail development through the region.
- 13 Corridor study needed for the East Coast Greenway to identify alignment options between the Cape Fear River Trail Park in Erwin to the Cape Fear River Trail in Fayetteville.
- 14 Rural, scenic, relatively lower traffic volume alternative from Erwin to north Fayetteville.
- 15 Rural, scenic, lower traffic volume alternatives between Carvers Creek State Park and Raven Rock State Park.
- 16 Roadway widening project along Buffalo Lake Rd that was submitted in SPOT 5.0 (unfunded). This is an opportunity to include bicycle facilities during roadway design, improving connectivity in southwest Harnett County.
- 17 NC 5 Cape Fear Run state bike route generally follows rural, scenic, lower traffic volume roads through the region. This corridor should be improved with paved shoulders over time. If/ when rumble strips are implemented, include bicycle friendly design.
- 18 NC 9 Sandhills Sector state bike route makes the connection from US 1 Carolina Connection bike route across the Sandhills region. The route generally follows rural, scenic, lower traffic volume roads through the region. This corridor should be improved with paved shoulders over time. If/when rumble strips are implemented, include bicycle friendly design.

MAP 3.6 MID-CAROLINA RPO & CAPITAL AREA MPO PROJECTS

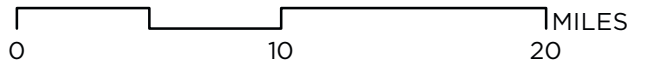


PROPOSED

- Shared Lane
- Bike Lane or Paved Shoulder
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space and/or physical buffer where possible
- Shared Use Path
- Priority Project

EXISTING

- Existing Shared Lane Markings
- Existing Bike Lane
- Existing Sidepath
- Existing Shared Use Path
- NC State Bike Route
- State Bike Route (unsigned)
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- Study Area





CHAPTER 4

PROGRAM STRATEGIES

“Essentially, we are testing future ideas for increasing safety, bringing together the community and boosting the economy. The demand to be able to safely walk and bike in the area is rising....With Fayetteville being such an active and engaged community with so much potential, all we need to do is find a way to showcase that potential then we could make some great things happen here.”

- Build A Better Haymount (2018)

Materials that support bicycle-related programs and initiatives could be distributed at local public events, such as the Fairmont Farmers Festival (this page).

PROGRAMS OVERVIEW

Education, encouragement, and enforcement programs can be just as important as infrastructure, especially in the promotion of bicycling safety and for promoting awareness of bicycling resources throughout the region.

The program recommendations in this chapter are critical to making bicycling more attractive and accessible to new bicyclists within the region, and for drawing new bicycle tourism from outside of the region.

Programs may be implemented as one-time events, temporary campaigns, or as ongoing initiatives, depending on their purposes. In essence, these different efforts use varying degrees of education, encouragement, and

enforcement to market bicycling to the general public and ensure the maximum return on investment in bicycling facilities.

These initiatives can be undertaken by local agencies, regional organizations, community organizations, or by any combination of partnerships between such agencies and organizations. The recommendations were developed based on input from the public and the Steering Committee.



Opportunities for education and encouragement could include regularly scheduled local events, and stand-alone, project-focused events, like Build A Better Haymount in March 2018, above.

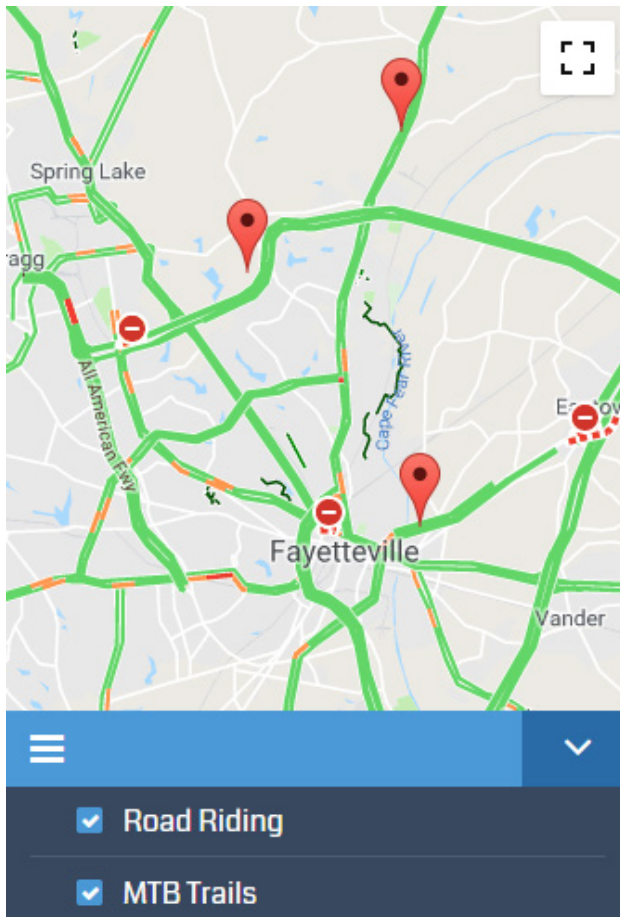


REGIONAL BICYCLING WEBSITE

PURPOSE: Make bicycling information easier to find by providing resources, maps, safety information, events, group listings, and more, in one central place.

AUDIENCE: General public

PARTNERS: Sandhills Regional Bicycle Plan Committee, municipalities and counties, local advisory committees, local advocates, and local bicycle businesses.



The map above is featured on the Hawley's Bicycle World website in the Where to Ride section (<http://www.hawleysbicycleworld.com/Community/Where-to-Ride>).

DESCRIPTION: Many current and potential bicyclists do not know where to turn to find out about bicycling routes, destinations, events, maps, tips, and groups. Currently, Hawley's Bicycle World, a bike shop located in Fayetteville, features an interactive map with bicycle facilities in the region. However, there is not a regional walking and bicycling "one-stop" website. Such a website could include:

- An interactive map of trails for cycling, walking/hiking, running, and mountain biking;
- Information about monthly general meetings and newsletters detailing current projects;
- Information about bicycling and running events and an events calendar;
- Ways to get involved as a member, sponsor, and volunteer as well as specific opportunities;
- A list of links and descriptions to all walking and bicycling groups in the region, including clubs, racing teams, and advocacy groups, such as the Cross Creek Cycling Club;
- A list of local bike shops and bicycle rentals, including phone numbers and addresses; and
- Links to laws and statutes related to bicycling

To be successful, the website should be updated regularly, and all content should be reviewed regularly for accuracy.

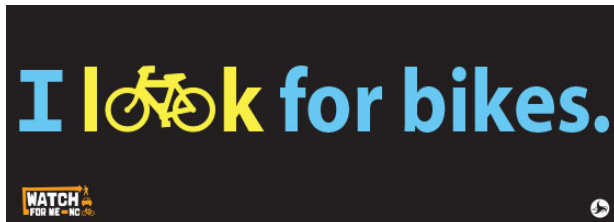
WATCH FOR ME NC

MEDIA CAMPAIGN

PURPOSE: To improve bicyclist and pedestrian safety by influencing the behaviors of drivers, bicyclists and pedestrians through safety messaging and enforcement

AUDIENCE: Pedestrians, cyclists, motorists, law enforcement officers.

PARTNERS: NCDOT, FAMPO, municipalities and counties.



“Watch for Me NC” materials can be placed in strategic places, including at gas stations, where drivers will see them (above).

DESCRIPTION: Watch for Me NC is a comprehensive campaign aimed at reducing the number of bicyclists and pedestrians hit and injured in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police.

Watch for Me NC is a statewide grant program administered by the NCDOT Division of Bicycle and Pedestrian Transportation (NCDOT DBPT). FAMPO should contact NCDOT DBPT to request materials and guidance. As a part of this program, the Sandhills Region’s MPOs and RPOs, in partnership with local agencies, could:

- Distribute the educational materials made available by NCDOT at local festivals and other events, at local bike shops and other businesses, and in renters’ information packets and property owners’ guest information books. Include brochures developed for this plan.
- Work with police officers to hand out bicycle lights along with bicycle and pedestrian safety cards.
- Broadcast program promotions and educational videos on the local government access channels.

SAMPLE PROGRAMS AND RESOURCES:

- Watch for Me NC website: www.watchformenc.org
- Comprehensive list of participants and further information: www.watchformenc.org/about/

SAFE ROUTES TO SCHOOL

PURPOSE: Increase the number of North Carolinians that meet physical activity recommendations by the Centers for Disease Control and Prevention (CDC) by increasing the number of elementary and middle school students who safely walk and bike to or at school.

AUDIENCE: Schools, general public

PARTNERS: NCDOT Division of Bicycle and Pedestrian Transportation, City and County school districts, Fire and Police Departments, and local advocacy groups, such as Safe Kids Coalition. Statewide agencies include the Community and Clinical Connections for Prevention and Health (CCCPH), which is a branch of the Chronic Disease and Injury Section in the North Carolina Division of Public Health.

DESCRIPTION: Safe Routes to School is a national movement that aims to make it safer and easier for students to walk and bike to school. At the local level, these programs include education and encouragement for families and school to support safe walking and bicycling to school. This can include one-time awareness events, such as a Walk to School Day, or ongoing programs and policies to support walking and biking to or at school.

The North Carolina Safe Routes to School Handbook is a resource that is available to all schools and communities across the region.

While many schools and communities across the Sandhills region have already successfully engaged in these types of programs (through the former NCDOT and CCCPH Active Routes to Schools Program), it is recommended that all schools and communities aim to increase the number of elementary and middle school students who safely walk and bike to school.

On the following page are examples of Safe Routes to School success stories in Scotland and Robeson Counties. Existing programs and partnerships like these can function as catalysts, not only for the localities in which they serve, but for neighboring communities that have yet to engage these opportunities.

RESOURCES:

- North Carolina Safe Routes to School Handbook: <https://www.communityclinicalconnections.com/srtshandbook/index.html>
- NCDOT Safe Routes to School non-infrastructure grant opportunity: <https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx>
- Safe Routes to School National Partnership: <https://www.saferoutespartnership.org/safe-routes-school>



Image Source: NCDOT

COVINGTON STREET ELEMENTARY WALK ACROSS AMERICA PROGRAM (SCOTLAND COUNTY):

Through the former Active Routes to School program, Covington Street Elementary School started a Walk Across America Program for students, in which students tracked their steps in pursuit of a goal, such as a walk from Scotland County to Seattle, Washington. Students walked around the perimeter of the playground for 30 minutes each day before the start of school, and a local pediatrician and parent volunteers tracked the distance they walked, which was later posted on a map of the United States inside the school. On average, over 320 students participated daily.

The program also included a bike safety training day with the local fire department. The students practiced their bike safety skills on bikes from the local Safe Kids Coalition.

The school also participated in its first International Walk to School Day, and started a Wednesday remote drop-off program. On these days, students are dropped off at a nearby church, and then walk to school from there. Steps are counted towards the Walk Across America program.



Image Source: North Carolina Active Routes to School

COMMUNITIES IN SCHOOLS (CIS) ACADEMY WALKING WEDNESDAY PROGRAM (ROBESON COUNTY):

Through the former Active Routes to School program, CIS Academy middle school students participated in a quarterly Walking Wednesday Program, where they walked approximately one-half mile to the University of North Carolina at Pembroke (UNCP). Once at UNCP, the students learned about college and higher education. The school also participated in International Walk to School Day.

Other safe routes to schools programs in Robeson County included bicycle and pedestrian safety trainings at after-school programs at Red Springs Middle School and Pembroke Middle School.



Image Source: North Carolina Active Routes to School

BICYCLE RODEO/BICYCLE SKILLS TRAINING

Several schools in the region have held bicycle rodeos (bicycle skills trainings), including Cumberland Road Elementary School, Lucile Souders Elementary School, and Stoney Point Elementary School. The School Health Advisory Council (SHAC) was a key partner in this initiative. The SHAC is an advisory group of health and education sectors of the community:

- <http://healthservices.ccs.k12.nc.us/school-health-advisory-council-shac/>



BICYCLE WAYFINDING SIGNAGE

PURPOSE: Encourage bicycling to and from tourism destinations; help bicyclists navigate along suggested bicycling routes.

AUDIENCE: General public

PARTNERS: NCDOT, MPOs, RPOs, counties, municipalities, and cycling groups.

DESCRIPTION: The Sandhills Region should develop and install standardized, branded wayfinding signs to support the circulation of bicyclists along proposed signed routes.

Wayfinding signage enhances resident and visitor orientation. A clear wayfinding system should support the character of the region and contribute to economic development by indicating key tourism and agritourism destinations.

A regional plan logo was developed during this planning process, reflecting the rolling hills and forests of the region. This logo could be updated for the regional route logo as well (see opposite page). This establishes a brand for bicycling in the Sandhills Region and communicates to current and potential cyclists that they are riding on one piece of a broader network of facilities, while also creating an awareness of the bikeway system to all roadway users.

The jurisdictions of the Sandhills Region have varying levels of bicycle and automobile wayfinding currently in place, and varying branding strategies. The signage details on the following pages present options that follow the Manual on Uniform Traffic Control Devices (MUTCD) guidelines followed by NCDOT, as well as options that allow for local community identification logos. Since all signs carry a cohesive element – the regional logo – the MUTCD-based signs can be applied on state-owned roads and localized signs on locally-owned roads. Upon implementation, local jurisdictions can work with NCDOT to select signage for a particular roadway.

WAYFINDING SIGNAGE CONSIDERATIONS:

- Signs are 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.
- Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution.
- MUTCD guidelines and state law should be followed for wayfinding sign placement, which includes mounting height and lateral placement from edge of path or roadway. It is recommended that these signs be posted at a level most visible to bicyclists.
- 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.
- See **Appendix A: Design Guide Resources** for a listing of documents that provide the most up-to-date detail about wayfinding sign types, wayfinding sign placement, typical applications, and design features.



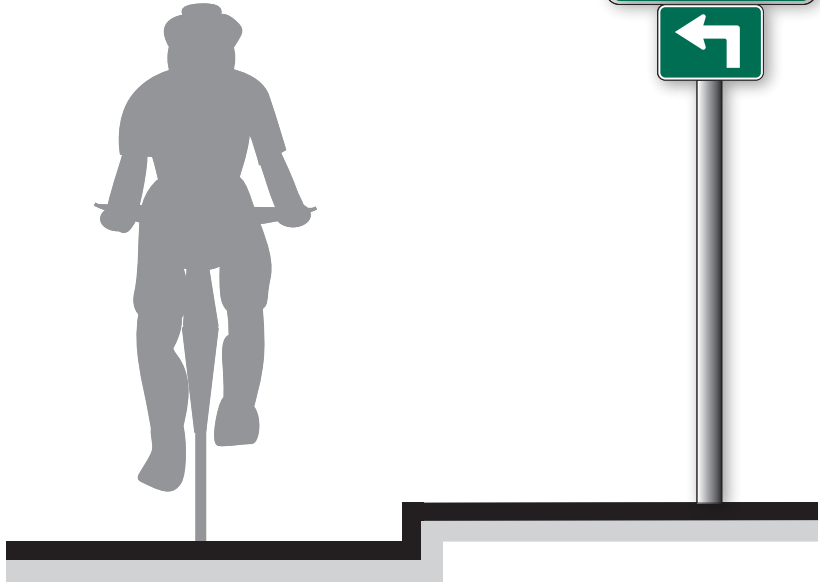
Existing signage in the Town of Erwin (Harnett County)



Wayfinding signs can include local community identification logos.

EXAMPLE SIGNAGE

See Appendix A: Design Guidelines for resources on wayfinding design features.



SANDHILLS REGIONAL BIKE ROUTE LOGO

Versions of the logo are available in .ai and .eps formats with the fonts outlined. CMYK color palette below:



Beige: C6 M12 Y25 K0

Green: C75 M38 Y100 K29

Regional Route Number

A CMYK color palette is provided for the logo (but gray-scale or black and white versions would also be acceptable in approved instances). The font used in the logo is "Wicked Grit" and should not be altered or changed. The logo should not be reproduced or duplicated without the approved vectorized typeface.



BICYCLE RIDES AND RACES

CAPITALIZING ON BICYCLE EVENTS

PURPOSE: Expand and promote opportunities for bicycle-oriented tourism through rides and races; support communities as they seek to define themselves as a good place for bicycle events and tourism.

AUDIENCE: Event bicyclists, long-distance bicyclists

PARTNERS: Local and regional visitor bureaus, bicycle event managers, hospitality industry and local businesses; local advocates, Sandhills Regional Bicycle Committee

DESCRIPTION: Annual bicycle rides and races that utilize the scenic landscape across the Sandhills region are excellent opportunities to promote and celebrate bicycling through the communities in which these events cross. Currently, such events include the Fayetteville-Cumberland Metric Century Bike Ride, which is a 12, 30, or 62-mile ride hosted by Fayetteville-Cumberland Parks and Recreation, benefiting the Special Olympics of Cumberland County.

These events have the potential to bring thousands of bicyclists and tourists to the region each year, presenting an opportunity for communities and businesses to capture tourism dollars and market local destinations and rural amenities.

“Bikes in Beds”, a 2015 report in Haywood County, NC details bicycle tourists and specifically bicyclists that participate in these types of rides and events. Many cyclists that engage in these types of events:

- Ride on 30-, 50-, or 100-mile single-day or multi-day organized events and may do this with a group, a spouse/partner or friends.
- Seek scenic areas or locations that offer some type of “reward” in terms of scenic beauty or historic value.
- May seek these events in places where



Infographic from the 'Bikes in Beds' report completed for Haywood County, NC.

they are also planning a vacation.

- Will identify pre-event ride cue sheets from local bike clubs to scout the route.
- Find events that contribute to a charity that matches their values.

Event Cyclists' needs may include:

- Well-organized events
- Convenient access
- A safe, dry place to store their bike overnight
- Healthy breakfast at lodging
- Camping near event start
- Scenic vistas or routes
- Cool places to eat and drink
- Maps or cue sheets
- Bike shop for repair or rental

Ways in which communities, partner organizations, and businesses across the Sandhills region can expand upon these event-based tourism opportunities include:

- Create a local/regional brand for promotional purposes
- Develop an education campaign for hospitality industry and motorists
- Identify/promote bicycle-friendly businesses
- Cross-market with other outdoor activities

Further incorporating this market opportunity into the local and regional tourism strategies, combined with bicycle infrastructure improvements, is another way in which communities and businesses across the region can efficiently move towards a more bicycle friendly region and diversify economic opportunity.



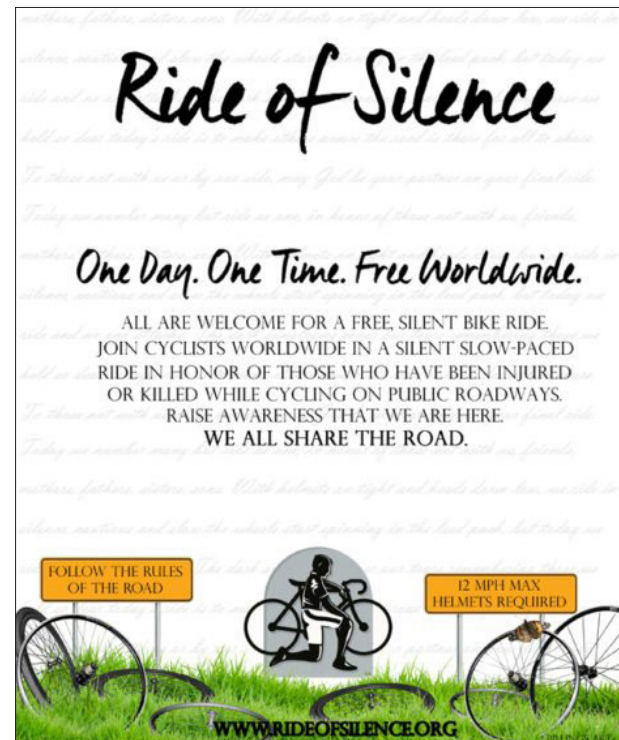
Example Local Ride: The Fayetteville-Cumberland Metric Century Ride (photo from www.active.com).



Example Local Ride: The Robeson Road Runners' Rumba on the Lumbar, in Downtown Lumberton.

FURTHER RESOURCES:

- Cross Creek Cycling Club: <http://www.crosscreekcyclingclub.org>
- Robeson Road Runners: <https://www.robesonroadrunners.com/>
- Bikes in Beds Report: http://www.iso-thermalbikeplan.com/pdf/2015_bikes-in-beds_wncbiketourism.pdf
- Fayetteville-Cumberland Parks and Recreation: <https://fcpr.us/home>



Example Local Ride: The Cross Creek Cycling Club's Ride of Silence (the Ride of Silence is a silent, slow paced bike ride in honor of those who have been injured or killed while cycling on public roadways).



CYCLE TO FARM EVENTS

LEVERAGING BICYCLE TOURISM WITH AGRITOURISM

PURPOSE: Create and promote opportunities for bicycle-oriented tourism and agritourism; support communities as they seek to define themselves as a good place for bicycle tourism.

AUDIENCE: Bicycle tourists; visitors who enjoy recreational cycling, and fresh, local food

PARTNERS: Farm owners and operators, North Carolina Department of Agriculture and Consumer Services (NCDA&CS) Agritourism Office, local and regional visitors bureaus, cycling clubs and trail groups, and private tour managers that specialize in these types of tours (see following page).

DESCRIPTION: Many rural communities throughout the U.S. are looking to tourism as a priority within their economic development plans, and bicycle tourism and agritourism are two popular and growing niche markets. Rural communities often have unique assets to offer visitors as bicyclists seek open spaces, lightly traveled roads, and the intimate experience that only small towns can provide. There are already over 50 agritourism sites, including farms, vineyards, and roadside stands, registered with the NCDA&CS Agritourism Office in the Sandhills region. Efficiently identifying opportunities and creating targeted marketing plans can help the Sandhills Region become a bicycling destination and reap the benefits of this low-impact, sustainable tourism segment.

Interested communities and organizations in the region should convene a working group to complete an opportunity analysis and action plan for fostering bicycle tourism. The working group should start by educating themselves about the market sector (what cycle tourists want; sub-markets within the overall niche

and how they differ; demographics of cycle tourists) and develop a shared understanding of the benefits of bicycle tourism to communities. Next, the group should organize a pilot program event or series of events that includes rides to multiple destinations, such as farms, vineyards, historic sites, and natural areas. The involvement of a group tour manager is recommended, specifically ones that have experience working in rural areas.

The presence of inns, bed and breakfasts, and quality camping areas could be an asset to the development of this program as connections between lodging and destinations would be important to the success of this program. An action plan should be created to prioritize efforts that will make the biggest difference, followed by a media outreach strategy to market the region to potential bicycle tourists.

SAMPLE PROGRAMS AND RESOURCES:

- Cycle to Farm: Cycle. Eat. Repeat. (Black Mountain, NC): <http://cycletofarm.com/>
- North Carolina Department of Agriculture and Consumer Services Agritourism Office: <http://www.ncagr.gov/markets/agritourism/>
- Oregon Bicycle Tourism Partnership <http://industry.traveloregon.com/industry-resources/product-development/bicycle-tourism-development/oregon-bicycle-tourism-partnership/>

cycle to farm[®]



CYCLE. EAT. REPEAT.

created by **velo girl**
RIDES[®]



The Sandhills Region could boost agritourism in its rural landscapes by leveraging it with bicycle tourism.

Images on this page used with permission from Cycle to Farm by Velo Girl Rides. For more information go to cycletofarm.com.



BICYCLE BROCHURE MAPS

PURPOSE: Encourage bicycling by highlighting bicycling routes, destinations, and tips for safe bicycling.

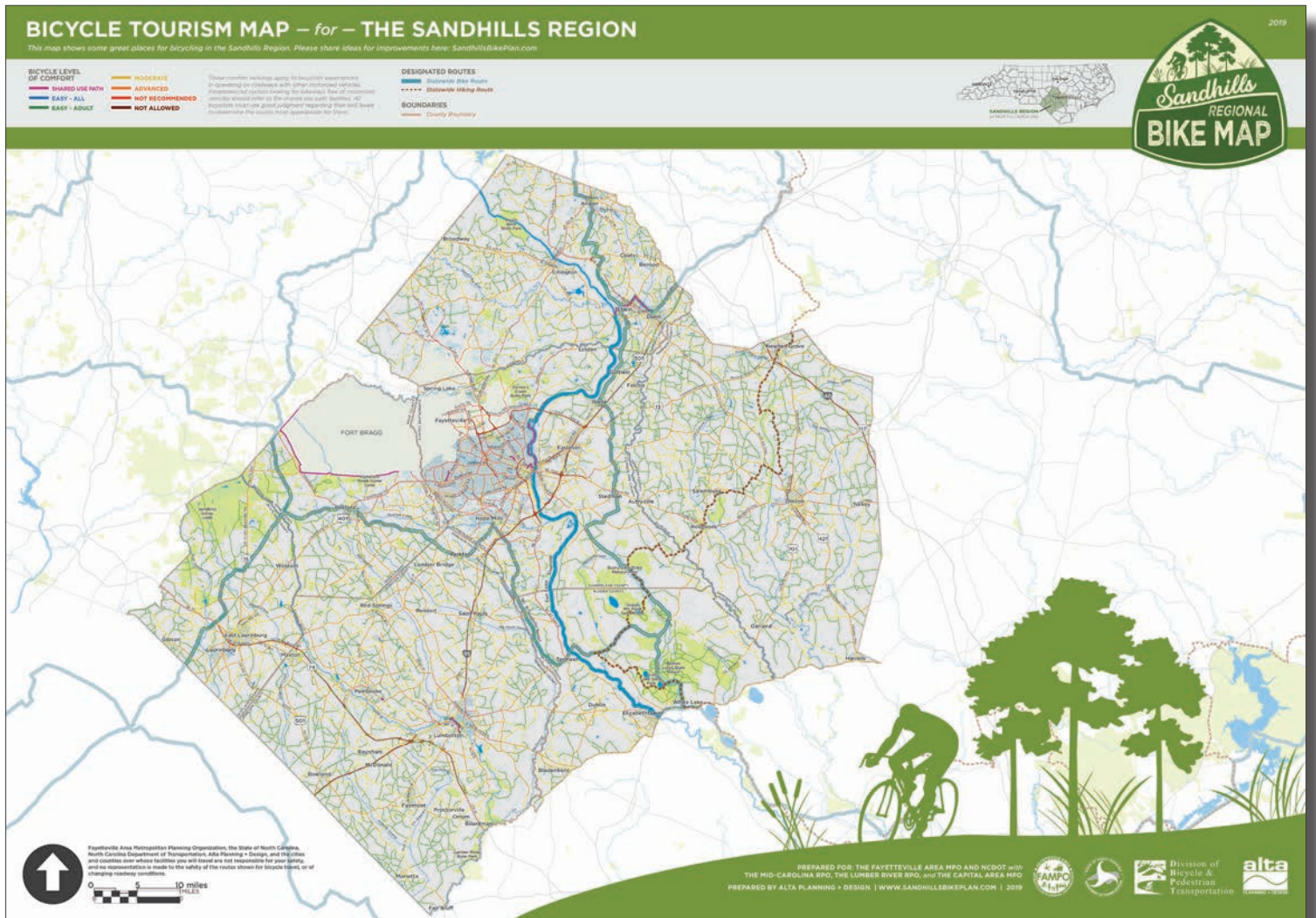
AUDIENCE: General public, tourists

PARTNERS: NCDOT, FAMPO, counties, municipalities, local advocates, cycling groups, tourism agencies, and chambers of commerce.

ONLINE AND PRINT VERSIONS: Contact the Fayetteville Area Metropolitan Planning Organization.

DESCRIPTION: One of the most effective ways of encouraging people to bike is through the use of brochure guides describing enjoyable routes and destinations for bicycling. Four such maps have been developed for the Sandhills Region showing the suitability of existing roadways and routes for bicycling. These maps should be printed as needed and actively distributed to residents and visitors by the partners noted at left; they should also be updated on a regular basis as new facilities are implemented (every five years or less).





Example of one of five bicycle brochure maps produced for this plan.

BUILD A BETTER BLOCK

PURPOSE: Improve conditions for bicycling and walking by temporarily demonstrating how the streetscape could be used differently along a specific block or corridor, ideally leading to a long-term, permanent change.

AUDIENCE: General public, tourists

PARTNERS: Local advocates, cycling groups, FAMPO, NCDOT, counties, municipalities, tourism agencies, and chambers of commerce.

DESCRIPTION: Build A Better Block is a program that aims at demonstrating the potential of an unfriendly bicycle and pedestrian area to advocate for long-term permanent change.

This temporary demonstration of the streetscape is typically represented in the form of an event that lasts a day but demonstration projects can last anywhere from a couple of hours to an entire year. The streetscape is transformed by narrowing traffic lanes, widening sidewalks, and adding bicycle lanes, plazas, greenery, seating, and more. It's also usually conducted in an entertaining way with music, art, and food. In March of 2018, the first Build A Better Block project was hosted in the Haymount Area of Fayetteville. The event lasted for four hours and an estimated 2,400 people showed up."



Opportunities for education and encouragement could include regularly scheduled local events, and stand-alone, project-focused events, like Build A Better Haymount in March 2018, above.

CHAPTER 5

POLICY STRATEGIES

“Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use.”

“... DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities...”

- FHWA Policy Statement (2010)

*This page: Bicycle lanes on King Street
in Elizabethtown, NC*



OVERVIEW

The policy objectives and associated strategies presented in this chapter aim to highlight the land use and transportation conditions that can improve and promote bicycling in the Sandhills region. These are presented as options for consideration by local governments and regional partners to adapt and incorporate into their own policies and regulations, as appropriate for each community.

To improve safety, community character, and transportation choices requires investment in bikeways and greenway infrastructure, but also land use patterns that put a variety of destinations and services within bikeable distances of regional population centers. Through the statewide adoption of Complete Street design guidelines, and by working to advance Context-Sensitive Solutions (CSS), the North Carolina Department of Transportation is a willing partner to those communities desiring a transportation system that reinforces community character for economic development, community health, and livability. With this in mind, the following policy objectives and associated strategies aim to improve the underlying land use and transportation conditions that promote bicycle use at the regional and local level.

- Recognize the interrelationship between land use decisions (planning and development) and transportation decisions.

- Reinforce basic urban, suburban, and rural design principles that result in development of sustainable and attractive districts, neighborhoods, and corridors supportive of bicycling and walking and other modes of travel.
- Improve the balance of protected rural areas and vibrant downtown environments that make the Sandhills region special.
- Provide separation for bicyclists, when possible, even in constrained areas.

One of the most cost-effective implementation strategies for the Sandhills region communities and partners is to establish land use and transportation policies and development regulations that promote bikeable new development, programs, and capital projects. This chapter provides a general set of policy and regulatory recommendations to be considered and applied in different communities throughout the region.

PRIORITY POLICY RECOMMENDATIONS

The project team reviewed regional regulatory standards and policies through the lens of the project vision and goals, specifically, the vision of making the Sandhills Region a place where:

“The Sandhills region will improve its bicycle network to create safe, comfortable, and accessible bicycle connections within, and between, communities. These improvements will generate economic opportunity, improve public health, increase safety, help protect the environment, and provide more mobility options to people of all ages, abilities, and incomes.”

PRIORITY POLICY *and* REGULATORY RECOMMENDATIONS:

1. Develop and adopt local Complete Street Policies for each regional community. Update development regulations and engineering standards to include and reflect best practices for Complete Streets and bikeway design.
2. Include requirements to include bikeways in new development.
3. Require construction, dedication or reservation of adopted greenway alignments in new developments and along major roadways, as appropriate to regional connectivity, adopted plans, and roadway context. Consider application of corridor overlay districts or other regulatory tools that would preserve right-of-way or require dedication or construction of planned greenway alignments and promote other trail-oriented-development.
4. Adopt and/or reference in local codes and design guidance the state and national complete street design guidelines including the NCDOT Complete Streets Planning and Design Guide, NACTO Urban Bikeway Design Guide, the FHWA Separated Bike Lane Guide, and the FHWA Small Town and Rural Multimodal Networks Guide.
5. Adopt bicycle parking requirements and standards in local zoning codes and engineering standards.
6. Revise and update connectivity requirements in county and local ordinances to promote comprehensive bikeway networks and low-stress street and/or bike-ped connections between developments.
7. Assign greenway construction and maintenance to appropriate municipal and county departments, including park and recreation or public works departments.
8. Provide paved shoulders in rural areas where possible and bicycle “pull-outs” or respites along bicycle routes, especially where paved shoulder cannot be provided due to topographical or other constraints.
9. Work with the local NCDOT Division Engineers to implement a bicycle-friendly specific Rumble Strip Policy and application process that enhances the NCDOT R-44 Practice Memo. This could be modeled on the policy developed by NCDOT Division 14 and/or include references to state and national best practices for bicycle-friendly rumble strip application, especially on bike routes and roads with shoulders likely to be used by cyclists:
 - League of American Bicyclists “Bicycling and Rumble Strips”: <https://www.aarp.org/content/dam/aarp/livable-communities/old-learn/transportation/bicycling-and-rumble-strips-problems-for-cyclists-aarp.pdf>
 - NCDOT Division 14 rumble strip guidelines (noted in Appendix A Design Guidelines).
10. Develop a practice to have NCDOT and local and regional agencies review the recommendations of this plan during roadway project planning and design to ensure that NCDOT projects include the recommended bikeways and treatments.



NC MUNICIPALITIES *with* MODEL REGULATORY POLICIES

The following NC communities have model development policies that serve as good examples for communities in the Sandhills Region. These model ordinances support bicycling and the development of bikeways and greenway trails (some sections of these documents are also referenced in the tables on the following pages):

- City of Wilson, North Carolina, Unified Development Ordinance
- Town of Wake Forest, North Carolina, Unified Development Ordinance
- Town of Davidson, North Carolina, Planning Ordinance

STATE POLICIES *and* GUIDELINES

These policies describe how bicycles and pedestrian improvement are to be developed in North Carolina. For full policies, visit: <https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx>

- Complete Streets: N.C. Department of Transportation policy on when and how planners and designers should design streets and roads to accommodate all users, including accommodations for bicyclists and pedestrians, in transportation projects.
- Bicycle Policy & Guidelines: N.C. Department of Transportation policy and guidelines for planning, designing, building, maintaining and operating bicycle facilities and accommodations.
- Greenway Accommodations Memo: Approved in 2015, N.C. Department of Transportation guidelines, approaches and cost-sharing recommendations for proposed greenways under bridges.
- Greenway Accommodations Guidelines: Approved in 2015, N.C. Department of Transportation guidelines, approaches and cost-sharing recommendations for proposed greenways under bridges.
- Administrative Action to Include Greenway Plans: N.C. Department of Transportation administrative guidelines for considering greenways and greenway crossings during the highway planning process to ensure that critical corridors for future greenways are not severed by highway construction.
- Pedestrian Policy & Guidelines: N.C. Department of Transportation policy and guidelines for planning, designing, building, maintaining and operating pedestrian facilities and accommodations.
- Bridge Policy: N.C. Department of Transportation policy establishing design elements for new and reconstructed bridges on the state's road system, including requirements for sidewalks and bicycle facilities on bridges.
- Traffic Engineering Policies, Practices and Legal Authority: N.C. Department of Transportation policies and federal design guidelines for specific pedestrian and bicycle safety accommodations.

The section below is adapted from the NACTO Policy Guidelines for the Regulation and Management of Shared Active Transportation, Version 1: July 2018.

REGULATION AND MANAGEMENT OF SHARED ACTIVE TRANSPORTATION

What is Shared Active Transportation?

Companies rent small, shared-use-specific, vehicles to the public from multiple locations within the right-of-way. As of 2019, these small vehicles include: bikes, e-bikes, scooters, and e-scooters, but other vehicles may be under development. Typically, Shared Active Transportation small vehicles are stored in the public right-of-way. This is a dynamic topic for cities, and best practices are likely to evolve quickly in coming years. The report below offers some of the best guidance to-date on the subject, and there are likely to be updates to the report in the future.



TOPICS COVERED IN THE NACTO POLICY GUIDELINES:

Policy Areas Where All Cities Should Be in Alignment:

- Oversight & Authority (General Provisions, Operations Oversight, Public Communications Oversight)
- Data Standards (Provision & Access, Quality & Accuracy, Privacy)
- Small Vehicle Standards for the Shared-Use Context

Policy Areas Where Issues Should Be Evaluated at a Local Level:

- Small Vehicle Parking (Locking Options; Where in the Right of Way?; How can space be provided or marked?)
- Community Engagement and Equity Programs (Discount Programs; Engagement Programs)

State of Practice:

- Fleet Size and Service Area
- Small Vehicle Distribution
- Fees and Pricing
- Equity Programming
- Permit Overview

FULL REPORT:

<https://nacto.org/wp-content/uploads/2018/07/NACTO-Shared-Active-Transportation-Guidelines.pdf>



Dockless bike share in Fayetteville, NC, and scooters in Raleigh, NC.



POLICY CONSIDERATIONS FOR RIDING BICYCLES ON SIDEWALKS

The following text is from the Bike Law website's RIDE GUIDE for North Carolina Bicycle Laws (www.bikelaw.com):

"Sidewalks can be confusing and another area of great debate. Usually it is safer to ride on the road. But there are times where it would be perfectly reasonable to ride your bicycle on a sidewalk. A sidewalk may provide a convenient or essential route to a multi-use path or bike rack, for example. A sidewalk makes it easy to backtrack a short distance on a one-way street. Some people simply feel more comfortable on a sidewalk if the speed and volume of traffic are heavy.

Sometimes riding on the sidewalk is legal and sometimes it's not. And you won't find the answer in a state statute or DMV driver's manual. You have to look at the municipal code for the city where you're riding. Many cities outlaw riding on sidewalks in center city areas.

North Carolina law does anticipate that there will be bicycles on sidewalks because it provides a small measure of protection for them by requiring drivers leaving driveways and parking lots to look for bicyclists (and pedestrians) before crossing a sidewalk. Reference: N.C. Gen. Stat. § 20-173 (c) The driver of a vehicle emerging from or entering an alley, building entrance, private road, or driveway shall yield the right-of-way to any pedestrian, or person riding a bicycle, approaching on any sidewalk or walkway extending across such alley, building entrance, road, or driveway.

Bicycles on sidewalks also mean bicycles in crosswalks. No law in this state requires bicyclists to dismount their bicycles or stop before entering a crosswalk (unless of course there is a stop sign or light for the path or sidewalk). What is not prohibited is by definition legal. That said, if you choose the sidewalk, do not count on drivers knowing or obeying this law. Ride slowly or slow down and look before crossing driveways and entrances with limited visibility or when entering crosswalks. If you must ride against traffic on the sidewalk, take even more care."

In the City of Fayetteville, bicycles and other nonmotorized objects are permitted on sidewalks, except in the Downtown Historic District. Specifically, the City's ordinance states that:

"Bicycles....and similar devices shall be permitted on sidewalks except in the Downtown Historic District....Any person riding a bicycle....on a sidewalk as permitted....shall yield the right-of-way to any pedestrian on the sidewalk, by slowing down or stopping if need be to so yield."

- City of Fayetteville Code of Ordinances, Ch. 16, Article VIII, Sec. 16-218

In addition to the direction provided above, additional guidelines could help to improve safety and comfort of both bicyclists and pedestrians while sharing sidewalk space. This includes the following Top 5 Rules for Riding on the Sidewalk, from www.bikeshophub.com/blog/2008/07/09/top-5-rules-for-riding-on-the-sidewalk:

1. “Ride slowly - This is the most important rule for riding on the sidewalk. Bicyclists on the sidewalk should never ride faster than a relaxed jog.
2. Yield to pedestrians - If you come up behind people walking, be very polite and wait for a good time to ask them to let you pass. Never come up behind them yelling, ringing a bell or anything else that could startle or scare them. You are trespassing on their terrain so be courteous.
3. Check every cross street and driveway - This is the dangerous part! Drivers are used to pulling all the way up to the road before coming to a stop and turning onto the street you’re following. Make sure when coming up to a driveway or cross street that you slow down and check to make sure a car is not coming. They aren’t looking for fast moving vehicles to be coming off the sidewalk, so you have to be watching for them.
4. Only cross the street at crosswalks - A good way to get hit by a car is to come darting off the sidewalk into the street randomly. Again, remember that drivers aren’t looking for people to jump off the sidewalks into traffic randomly. If you need to cross the street, wait until you get to a cross walk and do it there.
5. Be willing to walk your bike - If you regularly ride on the sidewalk, there are going to be lots of times where the best decision is to get off your bike and walk for a bit. This is usually due to congestion. When there are just too many people around that you risk hitting one of them, it’s time to walk.”

Other considerations for sidewalk riding:

- Setting a speed limit (10 MPH, for example), and encouraging bicyclists to slow to pedestrian speeds when passing them.
- An education campaign may be a helpful, communicating guidelines similar to those above.
- Signage in key areas, such as in downtown areas (e.g, “walk your bike”) may be more effective than depending on enforcement.
- Sidewalks and side paths should be designed and constructed according to national best practices to maximize visibility and safety of bicyclists and pedestrians, especially at driveways and intersections (see design guide resources listed in Appendix A).



PRIORITY POLICIES BY TOPIC AREA

The following policy review tables are organized into these overall categories: 1) Complete Streets and Greenways, 2) Bicycle-oriented Design Elements, 3) Connectivity, and 4) Policy Considerations by Settlement Type. These categories are interrelated, but based on the existing conditions analysis and the goals of this plan, the following key recommendations should be implemented first.

TABLE 5.1 COMPLETE STREETS & GREENWAYS

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
<p>1.1 Implement Complete Streets Policy</p> <p>A Complete Streets policy allows cities and towns to work towards creating a street network that encourages pedestrian and bicycle travel and provides safe and comfortable roadways for all users.</p>	<p>In addition to the very thorough NCDOT Complete Streets Planning and Design Guidelines (https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx), Smart Growth America provides great guidelines for designing streets that cater to all users: https://smartgrowthamerica.org/complete-streets-best-practices/</p>
<p>1.2 Develop Complete Street Design Guidelines for a variety of contexts and all street/roadway user groups</p> <p>The topics below include recommendations for bicycle-related elements of Complete Streets. Designated bikeways and trails and end-of trip facilities such as bicycle parking are some of the most fundamental elements of Complete Streets for bicycle users. Access management, multi-modal level of service assessments, and traffic calming are also critical for developing complete street networks through the development review and capital project implementation process.</p> <p>The NCDOT Complete Street Guidelines and the design guidelines that accompany this plan also include detailed recommendations on complete street design elements for bicycle users.</p>	<p>Sandhills communities could adopt and endorse the NCDOT guidelines and other national guidelines, including the NACTO Urban Street Design Guide: http://nacto.org/publication/urban-street-design-guide/ and the FHWA Small Town and Rural Multimodal Network Guide: http://ruraldesignguide.com/</p> <p>The design guidelines would then need to be integrated into development standards for new development, as was done with the Raleigh Street Design Manual (http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1) and;</p> <p>The Charlotte Urban Street Design Guidelines: http://charlottenc.gov/Transportation/PlansProjects/Documents/USDG%20Full%20Document.pdf</p> <p>See also the excellent Major & Collector Street Plan: Implementing Complete Streets for Nashville/Davidson County, TN. https://www.nashville.gov/Portals/0/SiteContent/Planning/docs/NashvilleNext/PlanVolumes/next-volume5-MCSP.pdf</p>
<p>1.3. Require bike accommodations by roadway type</p>	<p>See Chapter 4 of the NCDOT Complete Streets Planning and Design Guidelines for recommendations of bikeway type by roadway type. Consider including these guidelines by reference in local design guidance or requirements.</p> <p>Also: The design guidelines recommended as part of the Sandhills Regional Bicycle Plan should be considered for incorporation or inclusion by reference in the regional communities' engineering and design standards and subdivision regulations.</p> <p>The NACTO Urban Bikeway Design Guide provides additional design details for various on-street bikeway treatments and could be adopted by reference in regional ordinances and/or engineering standards. Many cities have taken this approach.</p> <p>Resources:</p> <ul style="list-style-type: none"> FHWA Small Town and Rural Multimodal Network Guide: http://ruraldesign-guide.com/ NACTO Urban Bikeway Design Guide http://nacto.org/cities-for-cycling/design-guide/ FHWA Separated Bikeway Planning and Design Guide: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikeway_pdg/page00.cfm

TABLE 5.1 COMPLETE STREETS & GREENWAYS (CONTINUED)

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
1.4. Require designated bikeways (bike lanes, shoulders, greenways, etc) during new development or redevelopment	<p>Multi-lane roads are typically more dangerous for all users because of the increased traffic volume, the potential for higher speeds, and the additional number of conflict locations due to turning vehicles. Generally, as traffic volumes exceed 3,000 vehicles per day and traffic speeds exceed 25mph, facilities to separate bicycle and motor vehicle traffic are recommended.</p> <p>See Chapter 4 of the NCDOT Complete Streets Planning and Design Guidelines for guidance. http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf</p> <p>Also, see:</p> <ul style="list-style-type: none"> • Chapters 6 of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. sections 6.8.2, 6.9, 6.10. http://www.wakeforestnc.gov/udo.aspx • Chapter 7 of the Wilson, NC UDO regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-7-Parks-Open-Space.pdf
1.5. Require dedication, reservation or development of greenways	<p>Consider expanding requirements for greenway reservation, dedication, or provision in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway. Where greenway construction cannot politically be required, consider offering incentives in the form of reduced fees, cost sharing, density bonuses, or reduction in other open space requirements when adopted greenway alignments are constructed through private development. See the incentives offered by the City of Asheville to promote public policy goals. For example: http://www.ashevillenc.gov/departments/sustainability/resources.htm</p> <p>For additional examples of incentives, see also: https://www.law.ufl.edu/_pdf/academics/centers-clinics/clinics/conservation/resources/incentive_strategies.pdf</p> <p>Ideally, development regulations should require the construction and maintenance of greenways to local standards unless a maintenance agreement is established with a local government.</p> <p>See requirements in Wake Forest, NC UDO, Section 6.8.2 Greenways: "When required by Wake Forest Open Space & Greenways Plan or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above]." http://www.wakeforestnc.gov/udo.aspx</p> <p>GOOD MODEL: (New Hanover County Zoning Ordinance): The Riverfront Mixed Use District includes the following provision: "Riverfront facilities shall provide multi-modal transportation opportunities, including public boating, walking, bicycling, and public bus or water taxi uses and the facilities necessary for such uses."</p>
1.6. Require new bike lanes, greenways, etc., to connect to existing facilities	<p>Connectivity of facilities is critical for walking and biking conditions. New development should be required to connect to or extend existing bicycle and pedestrian facilities.</p> <p>See:</p> <p>Chapters 6 of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. sections 6.5.3, 6.8.2, 6.9, 6.10. http://www.wakeforestnc.gov/udo.aspx</p> <p>Chapter 7 of the Wilson, NC UDO regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-7-Parks-Open-Space.pdf</p> <p>GOOD MODEL: (New Hanover County Zoning Ordinance): The EDZD Zoning District provides points for new developments that connect to the existing bikeway network and key destinations and provides a good definition of the bikeway network. (Section 54.1-14 and following.)</p>



TABLE 5.1 COMPLETE STREETS & GREENWAYS (CONTINUED)

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
1.7. Consider bicycle concerns and Level of Service (LOS) in Traffic Impact Analyses and other engineering studies	<p>Sandhills communities should consider adopting multi-modal Level of service standards in urbanized areas where active transportation and transit use are expected to be high. Consideration of bicycle and pedestrian levels of service assure adequate facilities for bicyclists and pedestrians in new development and capital improvements. This also helps promote walking and bicycling as a legitimate means of transportation.</p> <p>The NCDOT Complete Streets Planning and Design Guidelines provides factors of "Quality of Service " and LOS for bicycle, pedestrian, and transit modes (See Chapter 3, page 39 and Chapter 5): http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf</p> <p>The City of Raleigh uses a multimodal level of service approach in determining road improvements and traffic mitigation: http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#71</p> <p>Charlotte, NC uses Pedestrian LOS and Bicycle LOS Methodologies for intersection improvements in their Urban Street Design Guidelines: http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx</p>
1.8. Adopt traffic calming programs, policies, and standards	<p>Traffic calming tools are especially important where bike routes or bike boulevards are proposed on local residential or sub-collector streets.</p> <p>The National Complete Streets Coalition provides good guidelines for traffic calming through their best practices manual: (https://smartgrowthamerica.org/resources/).</p> <p>See also the NACTO Urban Bikeway Design Guide section on Bicycle Boulevards and the FHWA Traffic Calming Primer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm</p> <p>Consider requiring other traffic calming measures that improve the pedestrian and biking environment such as street trees, narrow street width standards, and T intersections.</p>
1.9. Develop an access management program or policy	<p>The NCDOT Complete Streets Planning and Design Guidelines provides recommended "Access Density" guidelines (See Chapter 4, page 61 and following). These guidelines could be the basis for regulatory updates to the county or municipal codes:</p> <p>http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf</p>
1.10. Provide bicycle pull-outs along bicycle routes.	<p>Providing bicycle pull-outs or respites where possible, increases safety and comfort for bicyclists, especially in areas where paved shoulder cannot be provided due to topographic constraints.</p>

TABLE 5.2 BICYCLE-ORIENTED DESIGN ELEMENTS

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
2.1. Adopt bicycle parking requirements	<p>Bicycles should receive equal consideration when calculating parking needs with specific calculations provided for determining the amount of bicycle parking provided by district type or land use type. Design and location standards for bicycle parking should be clearly stated to provide for safe and convenient access to destinations. Different standards of bicycle parking are needed for short-term visitors and customers and for longer term users like employees, residents, and students.</p> <p>See City of Wilson UDO, Chapter 9: Parking & Driveways, Section 9.4 and 9.6: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-9-Parking-Driveways-.pdf</p> <p>Good standards for bicycle parking design can be found through the Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines. (www.apbp.org)</p> <p>Bicycle Parking Model Ordinance, Change Lab Solutions: http://changelabsolutions.org/publications/bike-parking</p> <p>City of San Francisco Zoning Administrator Bulletin for designs/layout/etc. The bulletin is in itself a great document that includes limits on hanging racks, how to park family bikes, and various configurations: http://sf-planning.org/sites/default/files/ZAB_BicycleParking_9-7-13.pdf</p>

TABLE 5.3 CONNECTIVITY

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
3.1. Revise block size requirements <p><i>"[A] Good [street] network provides more direct (shorter) routes for bicyclists and pedestrians to gain access to the thoroughfares and to the land uses along them (or allows them to avoid the thoroughfare altogether). Likewise, good connections can also allow short-range, local [motor] vehicular traffic more direct routes and access, resulting in less traffic and congestion on the thoroughfares. This can, in turn, help make the thoroughfare itself function as a better, more complete street. For all of these reasons, a complete local street network should generally provide for multiple points of access, short block lengths, and as many connections as possible." (NCDOT Complete Streets Planning and Design Guidelines, p 59)</i></p>	<p>Development density should determine the length of a block, with shorter blocks being more appropriate in areas of higher density. Maximum block length in any situation should rarely exceed 800-1000 feet for good connectivity. In areas with highest development density (urbanized, mixed use centers and high density neighborhoods), block lengths can be as little as 200 feet. In areas with blocks as long as 800 feet or greater, a pedestrian and/or bicycle path of 6-8 feet in width should be required, with an easement of 15-20 feet wide.</p> <p>See the example table on page 59 of the NCDOT Complete Streets Planning and Design Guidelines for a context-based approach to block size.</p> <p>Consider allowing larger blocks – up to a maximum, such as 800 feet – where development densities are expected be lower (> 4 du/a). See City of Charlotte Subdivision Ordinance, Section 20-23 for example of connectivity requirements and block standards: http://charlottenc.gov/planning/Subdivision/Pages/Home.aspx</p>



TABLE 5.3 CONNECTIVITY (CONTINUED)

TOPICS/STRATEGIES	GENERAL RECOMMENDATIONS
<p>3.2. Require connectivity/cross-access between adjacent land parcels</p> <p><i>“[A] Good [street] network provides more direct (shorter) routes for bicyclists and pedestrians to gain access to the thoroughfares and to the land uses along them (or allows them to avoid the thoroughfare altogether). Likewise, good connections can also allow short-range, local [motor] vehicular traffic more direct routes and access, resulting in less traffic and congestion on the thoroughfares. This can, in turn, help make the thoroughfare itself function as a better, more complete street. For all of these reasons, a complete local street network should generally provide for multiple points of access, short block lengths, and as many connections as possible.”</i> (NCDOT Complete Streets Planning and Design Guidelines, p 59)</p>	<p>See notes above regarding Block Size. Requiring connectivity or cross-access between adjacent developments is a great tool for reducing the amount of traffic on major roads while increasing connectivity for pedestrians, bicycles, service vehicles, and neighborhood access.</p> <p>For good model language, see City of Wilson, NC UDO, Section 6.4: Connectivity: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf</p> <p>Or City of Wake Forest, NC UDO, Section 6.5, Connectivity: http://www.wakeforestnc.gov/udo.aspx</p> <p>Both codes above also provide requirements for when bicycle/pedestrian connections between parcels, public open space, and between cul-de-sacs is required.</p> <p>See also the excellent Major & Collector Street Plan: Implementing Complete Streets for Nashville/Davidson County, TN: http://www.nashville.gov/Portals/0/SiteContent/Planning/docs/NashvilleNext/PlanVolumes/next-volume5-MCSP.pdf</p>
<p>3.3. Limit dead end streets or cul-de-sacs</p> <p>Dead end streets or Cul-de-sacs, while good at limiting motor vehicular traffic in an area, are a severe hindrance to pedestrian and bicycle connectivity and overall neighborhood accessibility, including for emergency access and other services.</p>	<p>Make the maximum length for Cul-de-sacs 250-300 feet to limit the distance that a person would have to travel along a cul-de-sac.</p> <p>For good model language, see City of Wilson, NC UDO, Section 6.4: Connectivity: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf</p> <p>Or City of Wake Forest, NC UDO, Section 6.5, Connectivity: https://www.wakeforestnc.gov/udo.aspx</p>
<p>The documents to the right were referenced for this policy and regulatory review.</p>	<p>REFERENCED DOCUMENTS AND RESOURCES:</p> <ol style="list-style-type: none"> 1. NCDOT Complete Streets Planning and Design Guidelines (July 2012): http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf 2. NCDOT Traditional Neighborhood Development (TND) Guidelines: https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Traditional Neighborhood Development Manual.pdf 3. City of Wilson, NC UDO: https://www.wilsonnc.org/development-services/unified-development-ordinance/ 4. Town of Wendell, NC UDO: http://www.townofwendell.com/departments/planning/development/zoning/udo-unified-development-ordinance 5. City of Wake Forest, NC UDO: http://www.wakeforestnc.gov/udo.aspx 6. See Town of Davidson, NC Planning Ordinance, https://www.ci.davidson.nc.us/1006/Planning-Ordinance 7. Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines. (www.apbp.org) 8. Making Neighborhoods More Walkable and Bikeable, ChangeLab Solutions: http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf 9. Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities, ChangeLab Solutions http://changelabsolutions.org/bike-policies <p>And other documents noted in this column in the preceding tables.</p>

TABLE 5.4 POLICY CONSIDERATIONS BY SETTLEMENT TYPES

Table 5.4 presents a general set of policy considerations that are organized in tabular form and calibrated to the region's range of settlement types, so that they may be considered and applied in different communities throughout the region.



Natural



Farmland



Hamlet



Village



Town



City

TRANSPORTATION NETWORK

Objective: Accommodate bicyclists through the ongoing development of a context-sensitive regional and local transportation infrastructure network.

Ensure that the region's thoroughfare system is compatible with adjacent land uses and natural/built character.	●	●	●	●	●	●
Promote positive health, recreation, transportation, economic, and environmental benefits of bicycle investments.	●	●	●	●	●	●
Coordinate with NCDOT Context Sensitive Solutions and the Complete Streets Policy along and across state roadways.	●	●	●	●	●	●
Require new development to minimize driveway accesses in order to reduce conflict points.				●	●	●
Partner with State and local entities to explore alternative funding sources that support transportation options throughout the region, including integrating bicycle and pedestrian facilities.	●	●	●	●	●	●
Encourage local jurisdictions to require development to fund proportional share of transportation infrastructure costs.			●	●	●	●
Work with all jurisdictions to reduce motor vehicle speeds by implementing proven traffic-calming measures.				●	●	●
Supplement subdivision regulations with context-appropriate block size and street connectivity standards.			●	●	●	●

TABLE 5.4 POLICY CONSIDERATIONS BY SETTLEMENT TYPES (CONTINUED)



Natural



Farmland



Hamlet



Village



Town



City

BIKEWAY INFRASTRUCTURE

Objective: Accommodate bicyclists through the ongoing development of context-appropriate bikeways, bicycle parking, and bikeway signing and wayfinding.

Ensure that the maintenance/expansion of the regional thoroughfare system serves bicyclists and pedestrians.	●		●		●		●		●		●	
Coordinate planning, design, and implementation of context-sensitive bicycle improvements with the Facility Continuum (Ch 3).	●		●		●		●		●		●	
Use this Regional Bicycle Plan to guide future planning, design, and implementation of bicycle infrastructure in conjunction with other local and regional planning and development projects.	●		●		●		●		●		●	
Encourage county/municipal parking requirements to include bicycle parking at areas of regional and local significance, such as schools, government offices, churches etc.					●		●		●		●	
Encourage county/municipal parking requirements to follow the Association for Pedestrian and Bicycle Professional's (APBP) bicycle parking design and location guidelines, including provisions for short- and long-term parking.					●		●		●		●	
Work with state, county, and local entities to enhance the safety and visibility of the regional bicycle network by implementing appropriate safety and wayfinding signage improvements.	●		●		●		●		●		●	

CHAPTER 6

IMPLEMENTATION ACTION PLAN

“We need bike lanes and larger lanes for cars and signage that indicates that cars must share space with bikes. We also need to stress to lawmakers the long term savings that will come from a community that is healthier because they are biking, walking and generally more physical because of the access bike lanes, sidewalks and green ways provide. We also need to share these benefits with taxpayers so they realize the importance of paying more in taxes to support these initiatives.”

- Public Comment (2018)

This page: Project planners review draft plan vision and goals for the Sandhills Regional Bicycle Plan.



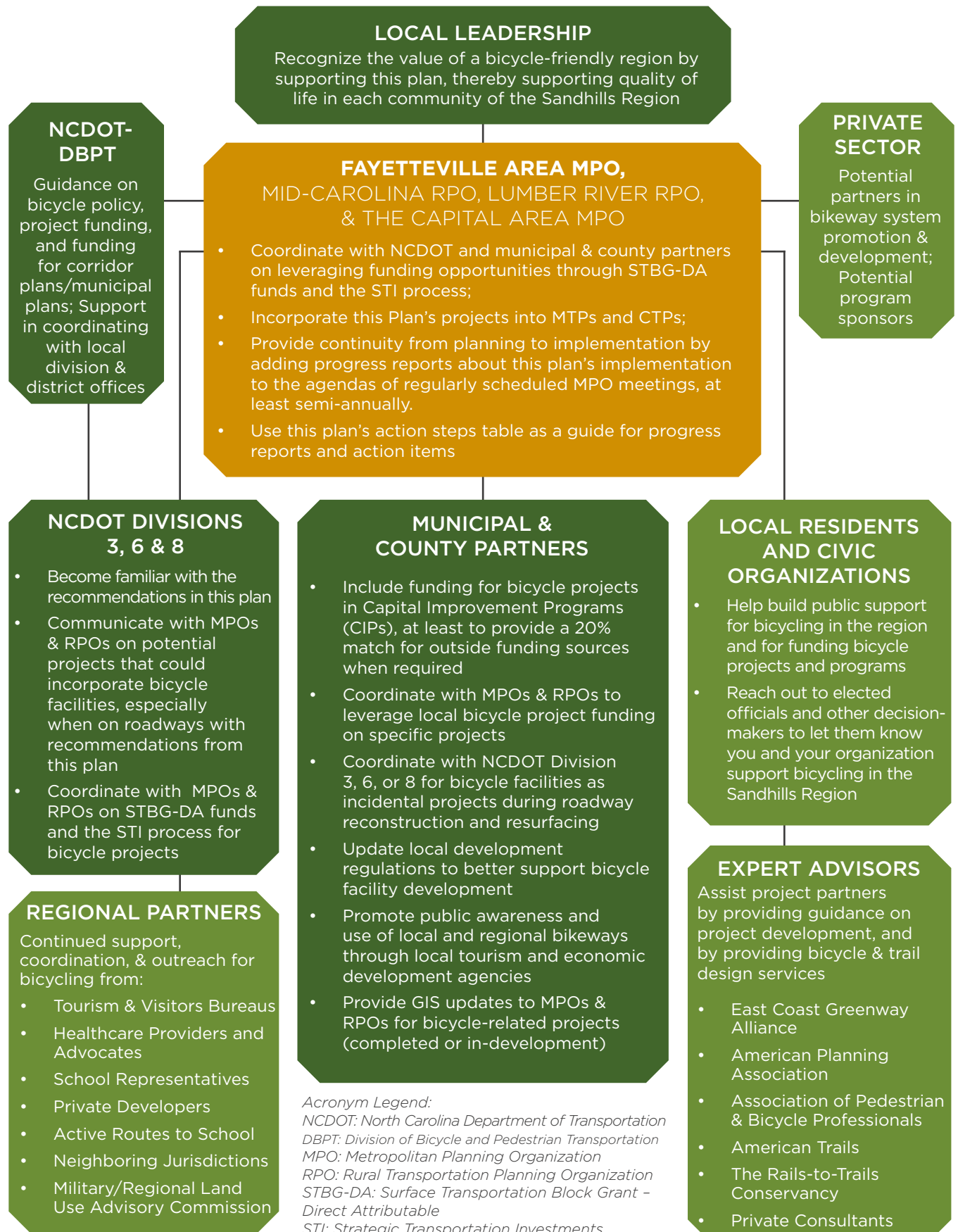
OVERVIEW

Implementation of the Sandhills Regional Bicycle Plan will require dedication and involvement from a wide range of community partners. This chapter outlines how these partners could work together towards implementation, and features resources and action steps to help move projects forward.

STAKEHOLDER COORDINATION FOR IMPLEMENTATION

- As the overall regional champion of this plan, the **FAYETTEVILLE AREA MPO** (FAMPO) serves as the main point of contact for information about the plan's recommendations, cost estimates, mapping data, presentation materials, and other resources. The MID-CAROLINA RPO, LUMBER RIVER RPO, and the CAPITAL AREA MPO are also key players for implementation in their respective parts of the study area.
- **MUNICIPAL & COUNTY PARTNERS** that will implement the plan on the local level, include staff from municipal and county planning, transportation, recreation, and public works departments, among others. This includes town and county managers and administrators, especially in small communities that do not have departmental staff. Staff at **NCDOT DIVISIONS 3, 6, and 8** are also key partners, and are critical to implementation on state roadways and rights-of-way, where many of this plan's recommendations would be physically located.
- Other groups could also support the implementation of this plan, particularly for this plan's program recommendations, listed in Chapter 4. These include **REGIONAL PARTNERS, LOCAL RESIDENTS, AND CIVIC ORGANIZATIONS**, including those related to health, wellness, recreation, tourism, military, public education, and other related areas.
- FAMPO and its implementation partners should reach out for technical assistance when needed. **EXPERT ADVISORS** include staff from the **NCDOT DIVISION OF BICYCLE AND PEDESTRIAN TRANSPORTATION DIVISION** (DBPT), private consultants, the American Planning Association (APA), the Association of Pedestrian and Bicycle Professionals (APBP), American Trails, the Rails-to-Trails Conservancy, and particular to this study area, the East Coast Greenway Alliance.
- Successful implementation is rarely possible without the support of **LOCAL LEADERSHIP**. This includes mayors, council members, city and town managers, county boards, and in cases of large-scale project investments, state representatives. FAMPO and its key partners should be well-versed in the vision, goals, and benefits of this plan (covered in Chapter 1), and well-equipped with presentation materials, so that they are able to successfully communicate the need for this plan to local leaders and the **PRIVATE SECTOR**. This is important for multiple settings, including public presentations, budgeting meetings, and staff retreats, where decisions are often made about funding needs and priorities.

ORGANIZATIONAL FRAMEWORK FOR IMPLEMENTATION



Acronym Legend:

NCDOT: North Carolina Department of Transportation

DBPT: Division of Bicycle and Pedestrian Transportation

MPO: Metropolitan Planning Organization

RPO: Rural Transportation Planning Organization

STBG-DA: Surface Transportation Block Grant - Direct Attributable

STI: Strategic Transportation Investments

MTP: Metropolitan Transportation Plan

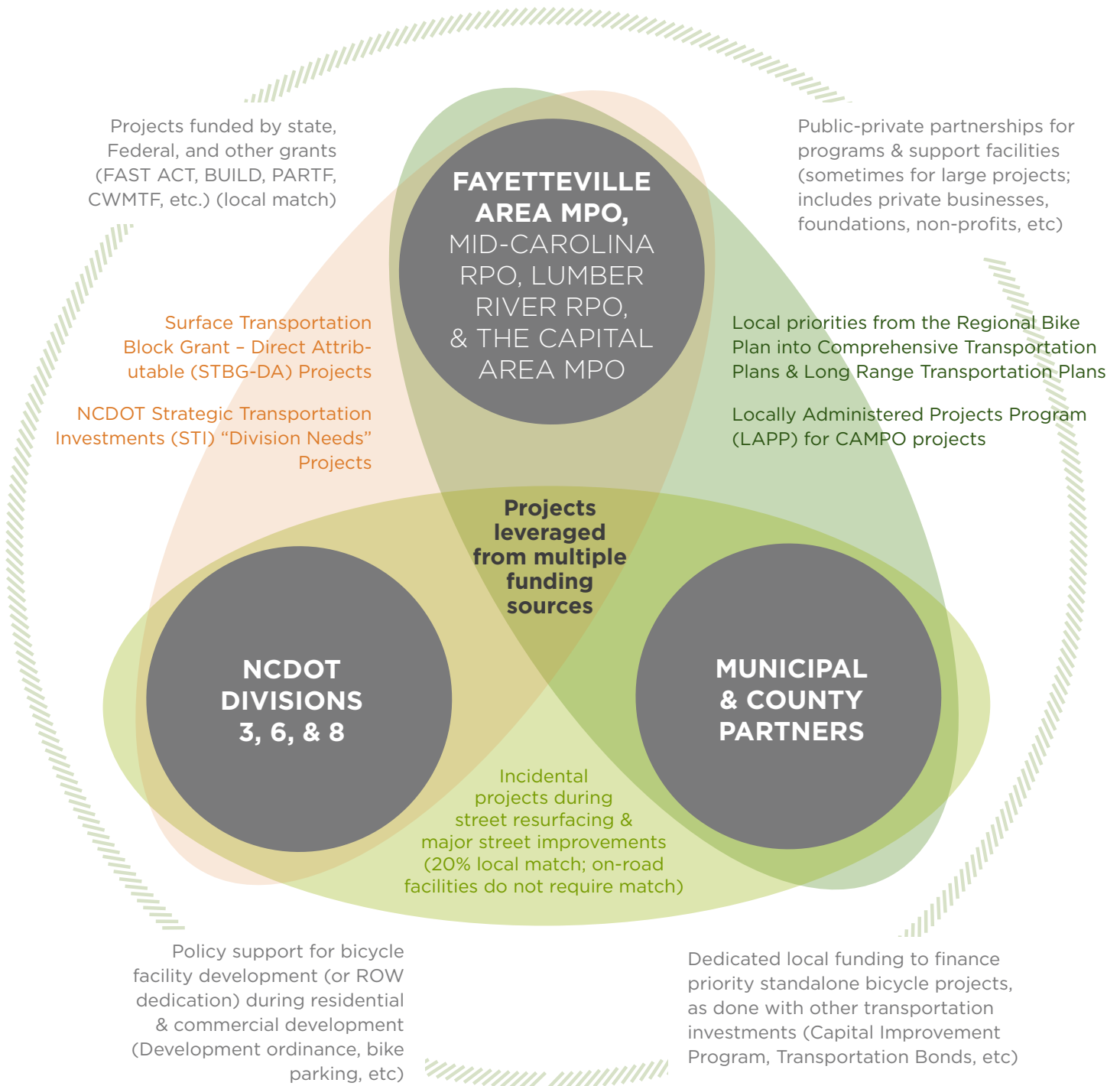
CTP: Comprehensive Transportation Plan

GIS: Geographic Information Systems



PROJECT DEVELOPMENT OPPORTUNITIES for the REGIONAL BICYCLE PLAN RECOMMENDATIONS

Some of the project development opportunities shown below may require involvement from all three of the major groups listed (MPO/RPO, municipal/county partners, and NCDOT), but are placed in rough proximity of the groups that might lead such efforts.



PROJECT DEVELOPMENT TIMELINES

These action steps draw from the opportunities shown on the previous page. These should be the guiding steps for the MPOs, RPOs, and local governments to begin on top projects.

YEARS 1-5: PILOT PROJECTS & STRATEGIC PREPARATION FOR PROJECT DEVELOPMENT

1

1. Adopt/endorse the plan locally and regionally. Adoption signals intent to complete projects over time, but does not commit to funding. Having an adopted/supported plan is helpful in securing funding from federal, state, and private agencies. See example resolution of support at the end of this chapter.
2. Update Comprehensive Transportation Plans (CTPs) & Metropolitan Transportation Plans (MTPs) with recommendations from this Regional Bicycle Plan.
3. Local governments should update their development regulations to better support bicycling, and to ensure dedication of right-of-way (ROW) for bicycle facilities on adopted plans (see Chapter 5). This is a key step to the long-term development of recommended trail corridors, like the East Coast Greenway.
4. Local governments should submit projects for funding through the RPO and MPO, coordinating with NCDOT on STBG-DA funding and STI Division Needs projects.
5. Local governments and MPOs/RPOs should identify 1-3 pilot projects or programs from this plan that can be pursued in partnership with one another.
6. Local governments should consider dedication of regularly recurring local funding for top projects and for incidental projects. A local match may be required for state/federal funding; this can be met through local Capital Improvement Programs (CIPs), local bonds, or similar (see Appendix B).
7. Local governments and MPOs/RPOs should explore program or project funding through public-private partnerships (see section on ‘Engaging Private Funding’ in this chapter).
8. Prepare “shovel-ready”, high-impact projects for potential future U.S. DOT grant funding such as BUILD grants (or similar), by securing project corridor ROW & initiating design.
9. Research & prepare grant applications for bicycle & trail projects (see Appendix B).

YEARS 6-10: CONTINUED PROJECT DEVELOPMENT

2

By this phase, if the many steps above are complete, some of this plan’s projects should be at various stages of funding, design, and development. In year 5 of this plan (2024), reassess overall systemwide goals and reevaluate the overall approach to implementation. Years 6-10 will mainly be a continuation of this process, seeing projects through to completion. Based on similar planning and implementation efforts in North Carolina and nationally, this plan would be a success if the top projects were completed by year 10 (see cutsheets), along with key policy and program recommendations. See Performance Measures listed at the end of this chapter for other ways to measure success.

3

YEAR 10: FULL PLAN UPDATE

In year 10 (2029), complete a full plan update. Evaluate what has worked and what has not for project implementation. Reconfirm regional priorities and long-term projects; update recommendations accordingly.

EXAMPLE TYPES OF PROJECT DEVELOPMENT ON EXISTING ROADWAYS

Three common types of bicycle facility implementation for existing roadways are described below and on the following pages: Roadway widening, lane narrowing, and lane reconfiguration.

ROADWAY WIDENING

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 (they can be added by expanding roads with curb and gutter as well, but at a greater cost).

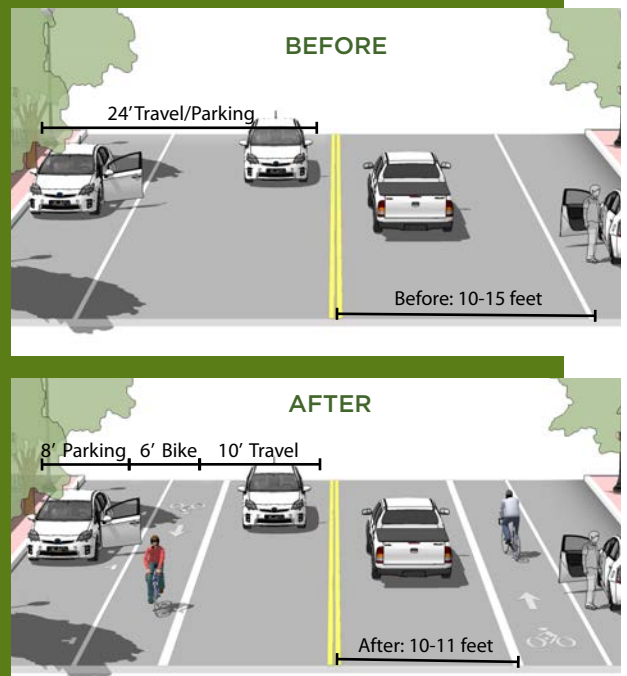
Typical application is on roads lacking curbs, gutters and sidewalks. There should be a four-foot minimum width for the bicycle lane when no curb and gutter is present, with a six-foot width preferred. If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. Overall guidance on bicycle lanes and paved shoulders applies to this treatment; for more information, see Appendix A for a list of Design Guide Resources.



LANE NARROWING

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. Typical application includes:

- On roadways with wide lane widths. Most standards allow for the use of 11 foot and sometimes 10 foot wide travel lanes to create space for bike lanes.
- Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before the decision is made to narrow travel lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.



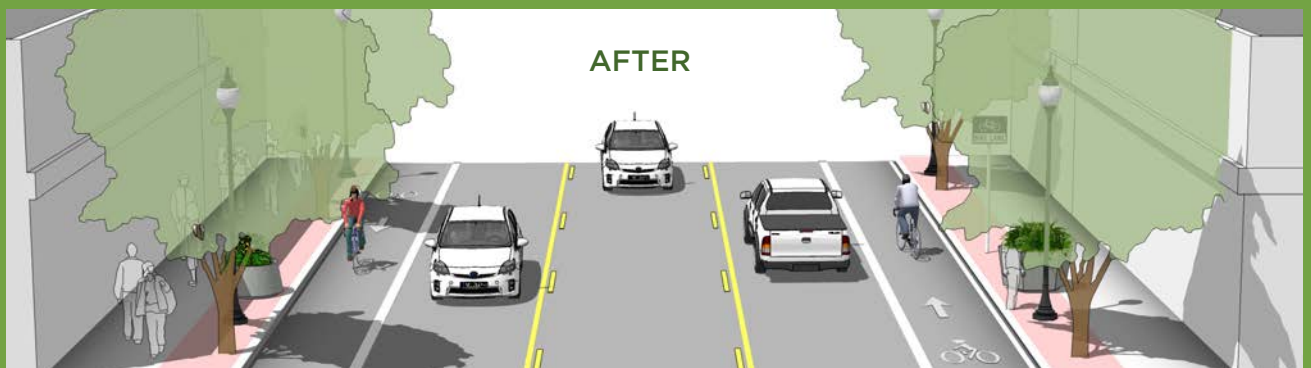
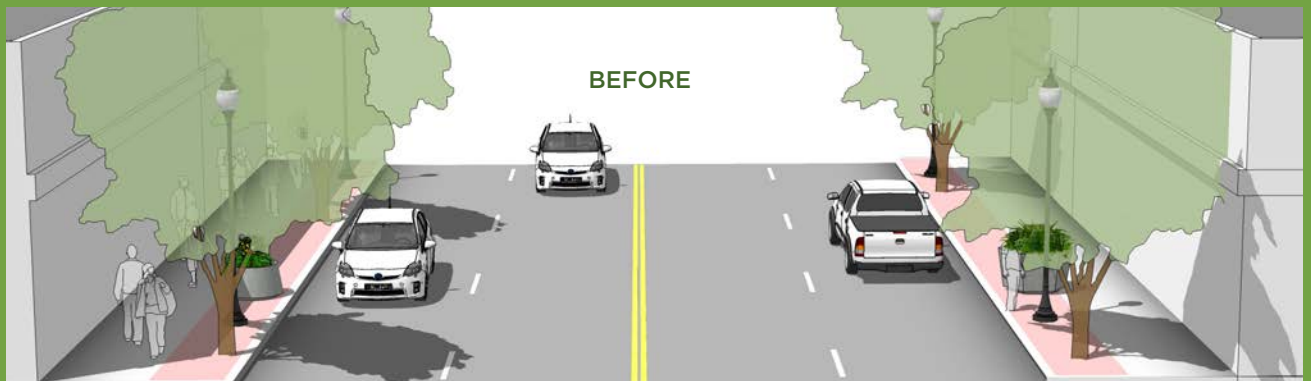
LANE RECONFIGURATION

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. 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. Considerations include:

- Width depends on project. No narrowing may be needed if a lane is removed.
- Guidance on bicycle lanes applies to this treatment; see Appendix A for a list of Design Guide Resources.



Example lane-reconfiguration recommendation: Langdon St, Fayetteville, NC (existing conditions above and photo-rendering of "after" scenario below).





TYPICAL PROJECT DEVELOPMENT PROCESS

These are the steps typically involved in bicycle facility development, when the project is being built independent of other major development or roadway projects. Certain funding sources may have additional requirements, and some steps may occur simultaneously or in a different order.



IMPLEMENTATION ACTION STEPS TABLE

POLICY & COORDINATION				
#	Action Step	Lead Agency	Support	Phase
1	PASS RESOLUTIONS OF SUPPORT IN LOCAL COMMUNITIES & PLAN ADOPTION BY MPOs & RPOs: Focus on the health, safety, and economic benefits of bicycling (Chapter 1) and key recommendations (Chapters 3). Adoption signals intent to implement the plan over time; it does not commit funding. See example resolution of support at end of this chapter. FAMPO can provide a plan summary PPT and plan materials to be used in presentations by local staff.	County and Municipal Partners + MPOs/RPOs	FAMPO & Alta Planning + Design	Short Term (2019)
2	MEET WITH NCDOT TO COORDINATE ON KEY RECOMMENDATIONS: This plan and the recommended bicycle facilities should be officially recognized by NCDOT. For example, NCDOT should refer to this document when assessing the impact of future projects and plans, such as bicycle facilities on future bridge improvements. Effort should be made between state and local partners to include parallel bicycle facilities on planned future roadways and roadway reconstruction projects, especially where they appear on adopted plans.	County and Municipal Partners + MPOs/RPOs	NCDOT Division 3, 6, & 8; NCDOT-DBPT; Alta Planning + Design	Short Term (2019)
3	AMEND DEVELOPMENT ORDINANCES AND TECHNICAL STANDARDS: County and local development ordinances should be amended to ensure that, as residential and commercial development is planned and reviewed, the facility recommendations in this plan are incorporated. This would entail amending development regulations to have developers set aside land for facilities when development proposals overlap with the proposed routes, as adopted. Local governments should also consider requirements such as dedicated easements, connections to adjacent land uses, issuing credits, and offering some form of recognition to developers who go above and beyond the requirements for trail development. See Chapter 5 for more information, including links to model policy language from other communities.	County and Municipal Partners	County & Local Planning Boards; North Carolina Chapter of the American Planning Association	Short Term (2019)
4	REVISE SEWER, STORMWATER AND UTILITY EASEMENT POLICIES: New sewer, stormwater, and utility easements should be considered for allowing public access as a matter of right. Such a consideration should allow for access that does not require landowner approval for each parcel the easement overlaps. As trails are developed, also review applicable existing easements for similar revision considerations.	County and Municipal Partners	County & Local Planning Boards	Short Term (2019)
5	DEVELOP A CORPORATE SPONSORSHIP POLICY: For a comprehensive sponsorship policy example, see that of Portland Parks and Recreation: www.portlandonline.com/shared/cfm/image.cfm?id=155570 . For a sponsorship brochure example, see that of the 'Mountains to Sound Greenway': https://mtsgreenway.org/support/sponsorships/	County and Municipal Partners	Local Private Sector Partners	Short Term (2020)
6	DEVELOP A COORDINATED OPERATIONS & MAINTENANCE PLAN: A maintenance plan (or alternatively, a memorandum of understanding (MOU)), will help to apportion responsibility between agencies where facilities cross jurisdictional boundaries or where pooled efforts can reduce costs. This will become increasingly important as regional trails, such as the East Coast Greenway, continue to grow and expand across jurisdictions.	County and Municipal Partners	NCDOT Division 3, 6, & 8; East Coast Greenway Alliance	Mid-Term (2021)

NCDOT: North Carolina Department of Transportation | DBPT: Division of Bicycle and Pedestrian Transportation
MPO: Metropolitan Planning Organization | RPO: Rural Transportation Planning Organization



PROGRAMS

#	Action Step	Lead Agency	Support	Phase
1	RELEASE THE BROCHURE MAPS PRODUCED FOR THIS PLAN: Provide the brochure maps to local-area tourism agencies and visitors bureaus. Also consider providing a similar web-based and/or mobile component to the brochure maps.	Fayetteville Area MPO	Tourism agencies & visitors bureaus	Short Term (2019)
2	FORMALIZE THE DIRECTORY OF STAKEHOLDER CONTACTS that was developed for this Sandhills Regional Bicycle Plan. The group includes representatives listed in the acknowledgments of this plan, plus others that formed a larger network of area stakeholders. The directory should be shared among those listed within it, as a resource for plan implementation. This will facilitate coordination among various groups going forward. The list should be updated annually.	Fayetteville Area MPO	All Project Stakeholders	Short Term (2019) and ongoing
3	REGULARLY DISCUSS PROGRESS ON ACTION STEPS & THE NEXT STEPS FOR PLAN IMPLEMENTATION. Progress reports about this plan's implementation should be added to the agendas of regularly scheduled MPO and RPO meetings. The purpose is to establish regional coordination for bicycle facility development between the member agencies. Meeting discussions should evaluate implementation progress and set goals to be achieved before the next meeting. These meeting agendas could also feature special presentations by stakeholders and invited guests related to plan progress.	Fayetteville Area MPO, Mid-Carolina RPO, Lumber River RPO, & the Capital Area MPO	All Project Stakeholders	Short Term (2019); Semi-annual meetings thereafter
4	SHARE GEOGRAPHIC INFORMATION SYSTEM (GIS) DATA with the Pedestrian and Bicycle Infrastructure Network (PBIN) as updates are made to both existing and planned bicycle facilities in the region. The PBIN is a statewide GIS inventory of existing and planned bicycling and walking facilities in North Carolina. The PBIN is maintained by the NCDOT-DBPT and the Institute for Transportation Research and Education (ITRE). More information can be found here: https://itre.ncsu.edu/technical-services/geospatial	County and Municipal Partners	MPOs and RPOs	Ongoing; Consider Semi-annual updates (consider same time as workshop)
5	CONDUCT BICYCLE FACILITY RIDERSHIP COUNTS: Bicycle facility usage data is needed to strengthen grant requests and influence policy and funding decisions. A complete picture of bicyclist characteristics can be developed and outcomes can help to identify if additional amenities would improve the bicyclist experience.	Fayetteville Area MPO or City of Fayetteville	Planning Consultant or Using In-House Equipment	Short Term (2019-2020)
6	SAFE ROUTES TO SCHOOL PROGRAMS: While many schools and communities across the Sandhills region have already successfully engaged in these types of programs (through the former NCDOT and CCCPH Active Routes to Schools Program), it is recommended that all schools and communities aim to increase the number of elementary and middle school students who safely walk and bike to school. See pages 88-89 of this plan; the North Carolina Safe Routes to School Handbook: https://www.communityclinicalconnections.com/srtshandbook/index.html and the Safe Routes to School National Partnership: https://www.saferoutespartnership.org/safe-routes-school	County Schools/ Partners	County Planners, Fire and Police Departments	Short Term (2019-2020)
7	LAUNCH PRIORITY PROGRAMS: Stakeholders should coordinate to launch new programs, such as those also described in Chapter 4, including a regional website, bicycling maps/brochures, bicycle rides and races, Cycle to Farm events, and the Watch for Me NC program.	Fayetteville Area MPO and Municipal Partners	All Project Stakeholders	Medium Term (2020 -2021)
8	ESTABLISH A REGIONAL BRANDING AND WAYFINDING SYSTEM for bicycle routes and other points of interest throughout the region. After more of the longer-distance routes are connected throughout the region, a wayfinding system is recommended to create a cohesive and easy-to-use platform for navigating the regional bicycle route system. The system should be designed so that it is flexible enough to be updated as new projects are completed, and should be implemented in conjunction with a statewide and national marketing strategy. See Chapter 4 and Appendix A for more information about wayfinding program and design resources.	Fayetteville Area MPO, Mid-Carolina RPO, Lumber River RPO, & the Capital Area MPO	Planning Consultant or In-House Design	Medium Term (2021 -2022)

NCDOT: North Carolina Department of Transportation | DBPT: Division of Bicycle and Pedestrian Transportation
MPO: Metropolitan Planning Organization | RPO: Rural Transportation Planning Organization

INFRASTRUCTURE				
#	Action Step	Lead Agency	Support	Phase
1	IDENTIFY AND SECURE SPECIFIC FUNDING SOURCES for Priority Projects & begin design and construction phases as soon as possible. Partnerships for joint funding opportunities should be pursued (see organizational framework and related discussion at beginning of this chapter). Combine financial and management resources for bicycle facility development with surrounding municipalities, regional entities, and private sector partners (see 'Engaging Private Funding' section at the end of this Chapter). "Shovel-ready" designed projects should be prepared in the event that future funds become available. Coordinate with NCDOT to incorporate recommendations from this plan into the STIP and other funding sources (see Appendix B).	MPOs/RPOs, County, and Municipal Partners	NCDOT Division 3, 6, & 8 + NCDOT-DBPT	Short Term (2019); Ongoing
2	BUILD FURTHER PUBLIC SUPPORT and input during the design phase for projects. Involve the general public in the design stage for bicycle facility development. Some groups can help with both routing ideas and public support from specific neighborhoods.	County & Municipal Partners	Local Advocates & General Public	Short Term (2019); Ongoing
3	DEVELOP A LONG-TERM FUNDING STRATEGY to allow continued development of the overall system. Capital funds for bicycle facility construction should be set aside every year, even if only a small amount; small amounts of local and county funding can be matched to outside funding sources, such as federal, state and private funds. Funding for an ongoing maintenance program should also be included in local operating budgets. Cross-jurisdictional projects lend themselves well to collaboration on funding, as coordinated multi-jurisdictional projects are often looked upon more favorably by outside funding sources than single-jurisdiction applications.	County & Municipal Partners	MPOs/RPOs	Short Term (2019); Ongoing
4	MAINTAIN PAVED SHOULDERS: When paved shoulders are implemented, especially along sections that carry higher traffic volumes and accumulate excess debris, regular maintenance should include clearing this debris so that bicyclists are not deterred from riding in this space.	NCDOT	County & Municipal Partners	Short Term (2019); Ongoing
5	RE-EVALUATE AND RECONFIRM THE SHORT TERM PRIORITIES: Every year, reevaluate short-term priorities based on what has been completed, and reconfirm the agenda of "priority" projects. Consider sticking with earlier projects that were not successful to-date, versus new opportunities that may have arisen or become more feasible since 2018.	Fayetteville Area MPO, Mid-Carolina RPO, Lumber River RPO, & the Capital Area MPO	Project Consultants	Medium Term (2020-ongoing)
6	UPDATE THIS PLAN: In year 5 of this plan (2024), reassess overall systemwide goals and reevaluate the overall approach to implementation. In year 10 (2029), complete a full plan update.	Fayetteville Area MPO and NCDOT-DBPT	Project Consultants	Long Term (2024 & 2029)
7	MEASURE PERFORMANCE: See the following pages for potential performance measures that can be used to monitor progress of plan implementation over time.	MPOs/RPOs	County & Municipal Partners	Ongoing

NCDOT: North Carolina Department of Transportation | DBPT: Division of Bicycle and Pedestrian Transportation
MPO: Metropolitan Planning Organization | RPO: Rural Transportation Planning Organization



PERFORMANCE MEASURES

Measuring performance over time is essential to implementation. Tracking performance measures within communities and across the region will allow implementing agencies to understand progress, communicate successes and challenges, and motivate leaders to take further actions. The following performance measures were selected to track progress toward the goals of this plan. Implementation progress updates at MPO meetings could be used as an opportunity to evaluate progress against these measures. Individual counties or municipalities may also be interested in tracking and reporting progress independently.

CONNECTIVITY, EQUITY, AND LIVABILITY MEASURES

- Percentage of new projects built as Complete Streets with connectivity to surrounding destinations
- Percentage of roadways that have designated or separated bicycle facilities
- Percentage of signalized intersections that have bike and pedestrian friendly accommodations
- Percentage of bridges with bicycle facilities
- Number of advocacy groups promoting bicycling
- Total funding devoted to the construction of bicycle facilities
- Towns, businesses, and colleges designated as Bicycle Friendly by the League of American Bicyclists
- Number of schools participating in bicycle safety education/encouragement programs

HEALTH & ENVIRONMENTAL MEASURES

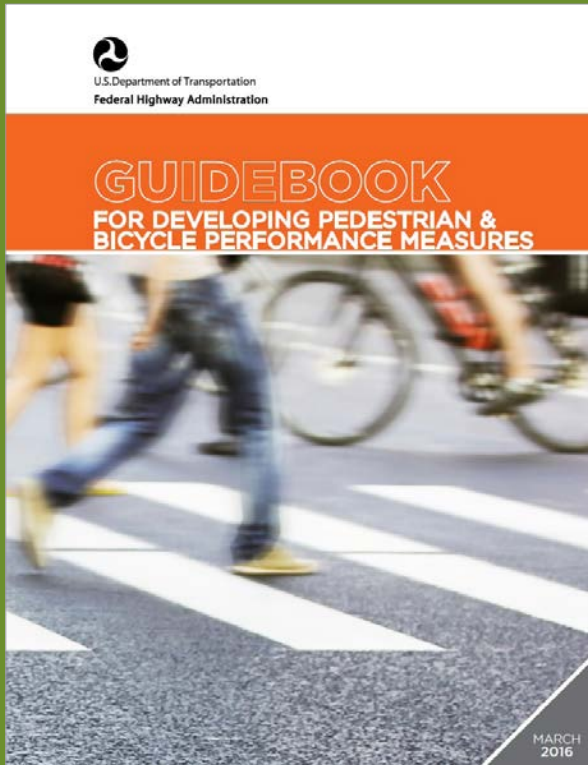
- Mileage of greenways per person (residents and visitors)
- Percentage of trails completed through the region
- Physical inactivity rates & obesity rates
- Bicyclist mode share
- Reduction in transportation-related emissions from increase in bicycling trips

BICYCLING SAFETY MEASURES

- Bicyclist crash and fatality rates per capita
- Percentage of police departments completing bicycle education courses
- Number of citations related to bicycle safety violations to bicyclists and motorists
- Number of "Ride Guides" distributed. See 'Ride Guide: North Carolina Bicycle Laws' https://www.bikelaw.com/wp-content/uploads/2014/11/BIKELAW_RG_NC_Web.pdf

ECONOMIC IMPACT MEASURES

- Return on investment measures such as job creation, small business development, tourism, home prices
- Number of Chambers of Commerce, Visitor Bureaus, and other groups promoting bicycling
- Number of bike events in region and corresponding economic impact
- Number of visitors coming to region partially due to bicycling amenities



The Federal Highway Administration's Guidebook for Developing Pedestrian and Bicycle Performance Measures.

PERFORMANCE MEASURE RESOURCE: *THE GUIDEBOOK FOR DEVELOPING PEDESTRIAN AND BICYCLE PERFORMANCE MEASURES*

The goals of this plan, outlined in Chapter 1, were adapted from the Federal Highway Administration's Guidebook for Developing Pedestrian and Bicycle Performance Measures. This in-depth guidebook outlines 30 performance measures, including information on:

- Goals related to each measure
- Context/performance measure application
- How to track each measure
- Data needs & sources
- Peers tracking each measure
- Additional notes on each measure

Measures covered in the guidebook include:

- Access to Community Destinations
- Access to Jobs
- Adherence to Accessibility Laws
- Adherence to Traffic Laws
- Average Travel Time
- Average Trip Length
- Connectivity Index
- Crashes
- Crossing Opportunities
- Delay
- Density of Destinations
- Facility Maintenance
- Job Creation
- Land Consumption
- Land Value
- Level of Service
- Miles of Pedestrian/Bicycle Facilities
- Mode Split
- Network Completeness
- Pedestrian Space
- Person Throughput
- Physical Activity and Health
- Population Served by Walk/Bike/Transit
- Retail Impacts
- Route Directness
- Street Trees
- Transportation-Disadvantaged Population Served
- User Perceptions
- Vehicle Miles Traveled (VMT) Impacts
- Volume

The full guidebook is available for download through the Transportation Research Board at <http://www.trb.org/Main/Blurbs/174295.aspx>



RESOLUTION OF SUPPORT

Elected officials can support the goals of this plan without immediately dedicating funding to it. This is usually expressed in the form of a resolution of support (see call-out box below for an example). Showing local support will improve a community's chances of drawing outside funding, from state, federal, or private sources. If awarded

funding, counties and municipalities are almost always required to contribute some level of matching funds, the exact amount depending on the funding source, and sometimes on the size of the community receiving funding. In considering how much to set aside for local matches, it's important to note that the higher the local match, the more competitive the application for funding is likely to be.

DRAFT RESOLUTION SUPPORTING THE SANDHILLS REGIONAL BICYCLE PLAN

WHEREAS, cities, towns, and regions around the country are increasingly recognizing the benefits that bicycle-friendly communities offer in terms of quality of life to residents and visitors; and

WHEREAS, representatives from counties, municipalities, transportation agencies, planning agencies, bicycling clubs, trail organizations, and multiple NCDOT divisions in the Sandhills region of North Carolina have worked cooperatively for over a year on the Sandhills Regional Bicycle Plan (the Plan) in order to make bicycling a safe and accessible form of transportation and recreation; and

WHEREAS, there were 608 reported bicycle crashes from 2007-2015 that have resulted in 25 bicyclist fatalities in the region; and

WHEREAS, the Plan will improve the quality and safety of bicycling through new and improved infrastructure, policies and programs, for all types of bicyclists; and

WHEREAS, the Plan will increase transportation choices by improving connectivity of the bicycle network while increasing accessibility to key destinations throughout the region; and

WHEREAS, BlueCross BlueShield North Carolina has stated that every \$1 investment in trails for physical activity can save about \$3 in medical expenses; and

WHEREAS, the Plan will improve health and wellness by increasing access to bikeways, thereby offering more opportunities for recreation, active transportation, and physical activity; and

WHEREAS, a 2018 study that evaluated the economic contribution of shared use paths in North Carolina found that every \$1.00 of trail construction supports \$1.72 annually from local business revenue, sales tax revenue, and benefits related to health and transportation; and...



DRAFT RESOLUTION (CONTINUED)

WHEREAS, an East Coast Greenway Alliance study has demonstrated that the 70-mile segment of the East Coast Greenway in the Triangle region of North Carolina generates a baseline economic impact of approximately \$27 million per year; and

WHEREAS, the Plan promotes bicycle-related tourism and economic development for communities in Cumberland, Harnett, Hoke, Scotland and Robeson counties, and parts of Bladen and Sampson counties; and

WHEREAS, this Plan included an open and participatory process, with over 500 public survey and online mapping comments, with in-person public outreach opportunities in each county; and

WHEREAS, 77% of survey respondents said they would be very likely to bike more often if more greenways and bicycle lanes physically separated from roadways were available; and

WHEREAS, it is envisioned that a more bicycle-friendly Sandhills region would offer multiple quality of life benefits to residents and visitors by increasing public safety, supporting health and the environment, expanding choices for mobility, and growing the economy and tourism in local communities throughout the region, and;

WHEREAS, supporting this resolution does not replace local plans nor dedicate funding, but rather indicates a willingness to support the Plan's recommended bicycle projects and programs.

NOW THEREFORE, BE IT RESOLVED that the _____ hereby supports the Sandhills Regional Bicycle Plan.

This the _____ day of _____, 2019.

BY: _____
Name, Title

ATTEST: _____
Name, Title



ENGAGING PRIVATE FUNDING

In the Sandhills Region, many of the recommended long-term bicycle facility projects are in the form of greenway trails and rail-trails (see projects proposed throughout Chapter 3). According to public comment forms, greenway trails and other types of separated bikeways are the preferred facility type of many current and potential bicyclists, yet they are also the most challenging to develop. This is due to the costs related to trail construction and assembling trail right-of-way (as opposed to many on-road bicycle projects that can be achieved through restriping within existing public right-of-way). With cost as a major deterrent to realizing these long-term, long-distance greenway projects, it is important to look at how other communities are achieving success in this area.

Across the United States, one of the fastest emerging funding sources for greenway development is the private sector. Philanthropic organizations, corporate and family foundations, non-profit organizations and corporations have stepped up their involvement in greenway facility development in the form of financial support. This trend is occurring for various reasons, including support for improvements to quality of life, health and wellness, alternative transportation, conservation of natural resources and economic development. Most importantly, private financial support has enabled the greenway development process to move faster, so that facilities can be completed more efficiently.

FOUR BASIC STEPS FOR ENGAGING PRIVATE FUNDING

1. DEVELOP THE “PITCH.”

For the Sandhills Region, this plan can become part of that pitch, particularly the benefits outlined in Chapter 1, the regional brochure maps, and the reasons for support outlined in the draft resolution of support at the end of this chapter.

2. MAKE THE “ASK.”

The team making the ask should expect to work extremely hard in advance of the ask, delivering the pitch to all participants, so that when the time comes for the ask, the results will be more or less expected.

3. LEVERAGE A “LEAD GIFT.”

A lead gift from a prominent and respected local project sponsor signifies the importance of the project throughout the entire community, and can be used to leverage other private funds, and/or as a match for public sector grants.

4. CREATE AN INVITE LIST

Continue to build momentum by asking additional organizations. Which groups, organizations and entities should be on a “short list” of invitees to help leverage the lead gift? See Appendix B for potential participants.

PRIVATE FUNDING CASE STUDIES

RAZORBACK GREENWAY

In Northwest Arkansas, the Razorback Regional Greenway was conceived by the Northwest Arkansas Regional Planning Commission as a network of primarily on-road trails spanning the two-county region (Benton and Washington counties). In 2009, the Walton Family Foundation stepped in and spearheaded a public-private partnership that resulted in the development of a 36-mile, primarily off-road, world class regional greenway.


The Razorback Regional Greenway was funded from a combination of public and private funds, including a US-DOT TIGER 2 grant of \$15 million, and a dollar for dollar gift from the Walton Family Foundation of \$15 million. Other grant funds were added later bringing the total funding to more than \$40 million. Without the lead gift from the Family Foundation, the project would never have happened. The Foundation based its gift on two community goals: 1) improve the health of local residents, and 2) support economic development throughout the region to keep Northwest Arkansas competitive for years to come. The 36-mile Razorback Regional Greenway was officially completed and opened for use in May 2015.



WOLF RIVER GREENWAY

In Memphis, Tennessee, the 36-mile Wolf River Greenway has been the brainchild of the Wolf River Conservancy (a non-profit land trust based in Memphis) for more than 35 years. Using a traditional approach of relying on public sector leadership and funding to build the project, the Conservancy became frustrated with the glacial pace of greenway facility development – in 35 years, approximately 5 miles of trail had been completed. In 2014, the Conservancy decided to fund the development of 22 miles of the trail within the Memphis city limits using private sector funds. As of 2016, the Conservancy has raised approximately \$40 million in support of facility development, with more than half of that coming from private sector sources. The Conservancy has then leveraged the private sector support to gain public sector support from the City of Memphis and Shelby County. The Conservancy expects to design, permit and build the entire 22 mile Memphis portion of the Greenway by 2019.





APPENDIX A

DESIGN GUIDE RESOURCES

This page: The Dunn-Erwin Trail in Harnett County (photo by Todd Bennett)

OVERVIEW

Planners and project designers should refer to these standards and guidelines in developing the infrastructure projects recommended by this plan. The following resources are from the NCDOT website, for “Bicycle & Pedestrian Project Development & Design Guidance”, located here:

<https://connect.ncdot.gov/projects/BikePed/Pages/Guidance.aspx>

All resources listed below are linked through the web page listed above, retrieved in August 2018.

NATIONAL GUIDELINES

American Association of State Highway and Transportation Officials (AASHTO):

- Guide for the Development of Bicycle Facilities
- Guide for the Planning, Design, and Operation of Pedestrian Facilities

The Federal Highway Administration (FHWA):

- Accessibility Guidance
- Design Guidance
- Facility Design
- Facility Operations

Manual on Uniform Traffic Control Devices (MUTCD):

- 2009 NC Supplement to MUTCD
- Part 4E: Pedestrian Control Features
- Part 7: Traffic Controls for School Areas
- Part 9: Traffic Controls for Bicycle Facilities

National Association of City Transportation Officials (NACTO):

- Urban Bikeway Design Guide
- Urban Street Design Guide

Safe Routes to School (SRTS) Non-Infrastructure:

- National Center for Safe Routes to School
- National Partnership for Safe Routes to School

US Access board:

- ABA Accessibility Standards
- ADA Accessibility Guidelines
- ADA Accessibility Standards
- Public Rights-of-Way, Streets & Sidewalks, and Shared Use Paths

NORTH CAROLINA GUIDELINES

North Carolina Department of Transportation (NCDOT):

- WalkBikeNC: Statewide Pedestrian & Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Complete Streets, including the Complete Streets Planning and Design Guidelines
- Evaluating Temporary Accommodations for Pedestrians
- NC Local Programs Handbook
- Traditional Neighborhood Development Guidelines

Greenway Construction Standards:

- Greenway Standards Summary Memo
- Design Issues Summary
- Greenway Design Guidelines Value Engineering Report
- Summary of Recommendations
- Minimum Pavement Design Recommendations for Greenways
- Steps to Construct a Greenway or Shared-Use Trail

NCDOT Bicycle and Pedestrian Policies

<https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx>

Additional FHWA resources not currently linked through the main NCDOT link above:

- Achieving Multimodal Networks (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/
- Separated Bike Lane Planning and Design Guide (2015)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm
- Incorporating On-Road Bicycle Networks into Resurfacing Projects (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/
- Small Town and Rural Multimodal Networks Design Guide (2017)

Main Guide:

<http://ruraldesignguide.com/>

Section specific to side paths:

<http://ruraldesignguide.com/physically-separated/sidepath>



APPENDIX B FUNDING RESOURCES

*This page: Side path construction
in North Carolina.*

OVERVIEW

When considering possible funding sources for bicycle and pedestrian projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding that together will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors. Note that this reflects the funding available at the time of writing. Funding amounts, cycles, and the programs themselves may change over time.

FEDERAL FUNDING SOURCES

Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations. Federal funding typically requires a local match of five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support construction of pedestrian and bicycle improvements.

FIXING AMERICA'S SURFACE TRANSPORTATION (FAST ACT)

In December 2015, President Obama signed the FAST Act into law, which replaces the previous Moving Ahead for Progress in the Twenty-First Century (MAP-21). The Act provides a long-term funding source of \$305 billion for surface transportation and planning for FY 2016-2020. Overall, the FAST Act retains eligibility for big programs - Transportation Investments Generating Economic Recovery (TIGER), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Highway Safety Improvement Program (HSIP) - and funding levels between highways and transit.

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system. For more information, visit: <https://www.transportation.gov/fastact>.

TRANSPORTATION ALTERNATIVES

Transportation Alternatives (TA) is a funding source under the FAST Act that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, side paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did.

Funding for the Surface Transportation Block Grant Program (STPBG) will grow from the current level of \$819 million per year to \$835 million in 2016 and 2017 and to \$850 million in 2018 through 2020.

The FAST Act provides \$84 million for the Recreational Trails Program. Funding is prorated among the 50 states and Washington D.C. in proportion to the relative amount of off-highway recreational fuel tax that its residents paid. To administer the funding, states hold a statewide competitive process. The legislation stipulates that funds must conform to the distribution formula of 30% for motorized projects, 30% for non-motorized projects, and 40% for mixed used projects. Each state governor is given the opportunity to "opt out" of the RTP.



For the complete list of eligible activities, visit: <http://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm>

For funding levels, visit: <http://trade.railsto-trails.org/index>

SURFACE TRANSPORTATION PROGRAM

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of pedestrian improvements are eligible, including trails, sidewalks, crosswalks, pedestrian signals, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. 50 percent of each state's STP funds are allocated by population to the MPOs; the remaining 50 percent may be spent in any area of the state. For more information, visit <http://www.fhwa.dot.gov/specialfunding/stp/>

HIGHWAY SAFETY IMPROVEMENT PROGRAM

HSIP provides \$2.4 billion for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for non-motorized users in school zones are eligible for these funds. For more information: <http://www.fhwa.dot.gov/fastact/factsheets/hsipfs.cfm>

CONGESTION MITIGATION/AIR QUALITY PROGRAM

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. States with no non-attainment areas may use their CMAQ funds for any CMAQ or STP eligible project. These federal dollars can be used to build bicycle

and pedestrian facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible. Communities located in attainment areas who do not receive CMAQ funding apportionments may apply for CMAQ funding to implement projects that will reduce travel by automobile. For more information: <http://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm>

FEDERAL TRANSIT ADMINISTRATION ENHANCED MOBILITY OF SENIORS AND INDIVIDUALS WITH DISABILITIES

This program can be used for capital expenses that support transportation to meet the special needs of older adults and persons with disabilities, including providing access to an eligible public transportation facility when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs. For more information: <https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310>

SAFE ROUTES TO SCHOOL (SRTS) PROGRAM

SRTS enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. Most of the types of eligible SRTS projects include sidewalks or a shared-use path. However, intersection improvements (i.e. signalization, marking/upgrading crosswalks, etc.), on street bicycle facilities (bike lanes, wide paved shoulders, etc.) or off-street shared-use paths are also eligible for SRTS funds.

The North Carolina Department of Transportation's Safe Routes to School (SRTS) Program was established in 2005 through SAFETEA-LU as a federally-funded program to provide an opportunity for communities to improve conditions for bicycling and walking to school. It is currently supported with Transportation Alternatives federal

funding through the Surface Transportation Block Grant program established under the FAST Act. The SRTS Program has set aside \$1,500,000 per year of Transportation Alternative Program (TAP) funds for non-infrastructure programs and activities. Funding may be requested to support activities for community-wide, regional or state-wide programs. This competitive reimbursement program is 80% federally funded – a 20% local match is required. For more information: <https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx>

Also see: <http://saferoutespartnership.org/healthy-communities/policy-change/federal/FAST-act-background-resources>

OTHER FEDERAL FUNDING SOURCES

FEDERAL LAND AND WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the Department of Environment and Natural Resources as a grant program for states and local governments. Maximum annual grant awards for county governments, incorporated municipalities, public authorities, and federally recognized Indian tribes are \$250,000. The local match may be provided with in-kind services or cash. For more information: http://www.ncparks.gov/About/grants/lwcf_main.php

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS 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 funds available. Projects are prioritized for assistance based on criteria including

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. This program may benefit trail development in North Carolina locales indirectly through technical assistance, particularly for community organizations, but is not a capital funding source. Annual application deadline is August 1st. For more information: <http://www.nps.gov/ncrc/programs/rtca/> or contact the Southeast Region RTCA Program Manager Deirdre “Dee” Hewitt at (404) 507- 5691

FEDERAL LANDS TRANSPORTATION PROGRAM (FLTP)

The FLTP funds projects that improve access within federal lands (including national forests, national parks, national wildlife refuges, national recreation areas, and other Federal public lands) on federally owned and maintained transportation facilities. More than \$300 million per fiscal year has been allocated to the program for 2017 and 2018. For more information: <https://flh.fhwa.dot.gov/programs/fltp/>

ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANTS

The Department of Energy’s Energy Efficiency and Conservation Block Grants (EECBG) may be used to reduce energy consumptions and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. Although the current grant period has passed, more opportunities may arise in the future. For more information: <https://www.energy.gov/eere/wipo/weatherization-and-intergovernmental-programs-office>



BUILD TRANSPORTATION DISCRETIONARY GRANT PROGRAM

The Consolidated Appropriations Act, 2018 appropriated \$1.5 billion, available for obligation through September 30, 2020, for National Infrastructure Investments previously known as TIGER grants, and now renamed BUILD Transportation grants. As with previous rounds of TIGER, funds for the FY2018 BUILD Transportation program are to be awarded on a competitive basis for projects that will have a significant local or regional impact.

Funding provided under National Infrastructure Investments have supported capital projects which repair bridges or improve infrastructure to a state of good repair; projects that implement safety improvements to reduce fatalities and serious injuries, including improving grade crossings or providing shorter or more direct access to critical health services; projects that connect communities and people to jobs, services, and education; and, projects that anchor economic revitalization and job growth in communities. DOT intends to award a greater share of FY2018 BUILD Transportation grants to projects located in rural areas that align well with the selection criteria than to such projects in urban areas.

For more information: <https://www.transportation.gov/BUILDgrants/2019-build-application-faqs>

ECONOMIC DEVELOPMENT ADMINISTRATION

Under Economic Development Administration's (EDA) Public Works and Economic Adjustment Assistance programs, grant applications are accepted for construction, non-construction, technical assistance, and revolving loan fund projects. "Grants and cooperative agreements made under these programs are designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities." Application deadlines are typically in March and June. For more information: <https://www.eda.gov/funding-opportunities/>

ENVIRONMENTAL SOLUTIONS FOR COMMUNITIES GRANT PROGRAM

The National Fish and Wildlife Foundation (NFWF) and Wells Fargo seek to promote sustainable communities through Environmental Solutions for Communities by supporting highly-visible projects that link economic development and community well-being to the stewardship and health of the environment. Priority for grants to projects that successfully address one or more of the following:

- Support innovative, cost-effective programs that enhance stewardship on private agricultural lands to enhance water quality and quantity and/or improve wildlife habitat for species of concern, while maintaining or increasing agricultural productivity.
- Support community-based conservation projects that protect and restore local habitats and natural areas, enhance water quality, promote urban forestry, educate and train community leaders on sustainable practices, promote related job creation and training, and engage diverse partners and volunteers.
- Support visible and accessible demonstration projects that showcase innovative, cost-effective and environmentally-friendly approaches to improve environmental conditions within urban communities by 'greening' traditional infrastructure and public projects such as storm water management and flood control, public park enhancements, and renovations to public facilities.
- Support projects that increase the resiliency of the Nation's coastal communities and ecosystems by restoring coastal habitats, living resources, and water quality to enhance livelihoods and quality of life in these communities.
- In North Carolina, strong preference will be given to projects located in the regions of Charlotte, Raleigh, or Winston Salem.

For more information: <https://www.nfwf.org/environmentalsolutions/Pages/home.aspx>

STATE FUNDING SOURCES

There are multiple sources for state funding of bicycle and pedestrian transportation projects. However, beginning July 1, 2015, state transportation funds cannot be used to match federally-funded transportation projects, according to a law passed by the North Carolina Legislature.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STRATEGIC TRANSPORTATION INVESTMENTS (STI)

Passed in 2013, the Strategic Transportation Investments law (STI) allows NCDOT to use its funding more efficiently and effectively to enhance the state's infrastructure, while supporting economic growth, job creation and a higher quality of life. This process encourages thinking from a statewide and regional perspective while also providing flexibility to address local needs.

STI also establishes a way of allocating available revenues based on data-driven scoring and local input. It is used for the State Transportation Improvement Program (STIP), which identifies the transportation projects that will receive funding during a 10-year period. STIP is a state and federal requirement, which NCDOT updates it every two years.

STI'S QUANTITATIVE SCORING PROCESS

All independent bicycle and pedestrian projects are ranked based on a quantitative scoring process, with the following main steps:

1. Initial Project Review (NCDOT Strategic Prioritization Office (SPOT))
2. Review Projects and Data (NCDOT Division of Bicycle & Pedestrian Transportation (DBPT))
3. Review Data (MPOs, RPOs, Divisions)
4. Review Updates and Calculate Measures (NCDOT DBPT)
5. Score Projects (NCDOT SPOT)

BICYCLE AND PEDESTRIAN PROJECT ELIGIBILITY REQUIREMENTS:

- Minimum total project cost = \$100,000
- Eligible costs include right-of-way, preliminary engineering, and construction
- 20% of total project cost is currently required as non-federal match by local governments. State law prohibits state match for bicycle and pedestrian projects, except for Powell Bill.
- Project must be included in an adopted plan (per Division of Bike/Ped)
- Includes adopted bicycle plans, greenway plans, pedestrian plans, Safe Routes to School action plans, comprehensive transportation plans (CTPs), and long range transportation plans

SPECIFIC IMPROVEMENT TYPES :

1. Grade-Separated Bicycle Facility (Bicycle)
2. Off-Road/Separated Linear Bicycle Facility (Bicycle)
3. On-Road; Designated Bicycle Facility (Bicycle)
4. On-Road Bicycle Facility (Bicycle)
5. Multi-Site Bicycle Facility (Bicycle)
6. Grade-Separated Pedestrian Facility (Pedestrian)
7. Protected Linear Pedestrian Facility (Pedestrian)
8. Multi-Site Pedestrian Facility (Pedestrian)
9. Improved Pedestrian Facility (Pedestrian)

BUNDLING PROJECTS :

- Allow across geographies and across varying project types
- Bundling will be limited by project management requirements rather than geographic limitations
- Any bundled project must be expected to be under one project manager/administrative unit (must be a TAP-eligible entity)
- Makes projects more attractive for LIPs and easier to manage/let



STI BICYCLE & PEDESTRIAN PROJECT SCORING:

Criteria	Measure	Division Needs (50%)
Safety	(Number of crashes x 40%) + (Crash severity x 20%) + (Safety risk x 20%) + (Safety benefit x 20%)	20%
Accessibility/ Connectivity	Points of Interest pts + Connections pts + Route pts	15%
Demand/ Density	# of households and employees per square mile near project	10%
Cost Effectiveness	(Safety + Accessibility/Connectivity + Demand/Density) / Cost to NCDOT	5%

MORE INFO ON PRIORITIZATION 6.0:

NCDOT's Prioritization Data page has training slides that explain the prioritization process:

<https://connect.ncdot.gov/projects/planning/Prioritization%20Data/Forms/AllItems.aspx>

See the "Prioritization Training" folder and the following session information within:

- Session 3: Detailed information on overall scoring components, including local input points.
- Session 4: Features relevant project funding information, and
- Session 7: Detailed slides explaining the bicycle and pedestrian project scoring

HIGH IMPACT/LOW COST FUNDS

Established by NCDOT in 2017 to provide funds to complete low cost projects with high impacts to the transportation system including intersection improvement projects, minor widening projects, and operational improvement projects. Funds are allocated equally to each Division.

PROJECT SELECTION CRITERIA:

- Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program. At a

minimum, Divisions must consider all of the following in developing scoring formulas:

1. The average daily traffic volume of a roadway and whether the proposed project will generate additional traffic.
 2. Any restrictions on a roadway.
 3. Any safety issues with a roadway.
 4. The condition of the lanes, shoulders, and pavement on a roadway.
 5. The site distance and radius of any intersection on a roadway.
- \$1.5M max per project unless otherwise approved by the Secretary of Transportation
 - Projects are expected to be under contract within 12 months of funding approval by BOT

NCDOT TECHNICAL REVIEW & APPROVAL:

- Division Engineer completes project scoring and determines eligibility.
- Division Engineer determines projects to be funded and requests approval of funding from the Chief Engineer. Division Engineer shall supply all necessary project information included funding request forms, project designs and cost estimates.
- The Project Review Committee will make a recommendation for further investigation or to include on the Board Agenda for action by the Secretary, NCDOT.

INCIDENTAL PROJECTS

Bicycle and Pedestrian accommodations such as; bike lanes, wide paved shoulders, sidewalks, intersection improvements, bicycle and pedestrian safe bridge design, etc. are frequently included as “incidental” features of larger highway/roadway projects. This is increasingly common with the adoption of NCDOT’s “Complete Streets” Policy.

In addition, bicycle safe drainage grates and handicapped accessible sidewalk ramps are now a standard feature of all NCDOT highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds, and usually with a local match. On-road bicycle accommodations, if warranted, typically do not require a local match.

“Incidental Projects” are often constructed as part of a larger transportation project, when they are justified by local plans that show these improvements as part of a larger, multi-modal transportation system. Having a local bicycle or pedestrian plan is important, because it allows NCDOT to identify where bike and pedestrian improvements are needed, and can be included as part of highway or street improvement project. It also helps local government identify what their priorities are and how they might be able to pay for these projects. Under “Complete Streets” local governments may be responsible for a portion of the costs for bicycle and pedestrian projects.

DUKE ENERGY WATER RESOURCES FUND

Duke Energy is investing \$10 million in a fund for projects that benefit waterways in the Carolinas. The fund supports science-based, research-supported projects and programs that provide direct benefit to at least one of the following focus areas:

- Improve water quality, quantity and conservation;
- Enhance fish and wildlife habitats;
- Expand public use and access to waterways; and
- Increase citizens’ awareness about their roles in protecting these resources.

This resource could be considered for proposed creekside greenways. For more information: <http://www.duke-energy.com/community/foundation/water-resources-fund.asp>

CLEAN WATER MANAGEMENT TRUST FUND

The Clean Water Management Trust Fund is available to any state agency, local government, or non-profit whose primary purpose is the conservation, preservation, and restoration of North Carolina’s environmental and natural resources. Grant assistance is provided to conservation projects that:

- enhance or restore degraded waters;
- protect unpolluted waters, and/or
- contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits;
- provide buffers around military bases to protect the military mission;
- acquire land that represents the ecological diversity of North Carolina; and
- acquire land that contributes to the development of a balanced State program of historic properties.

The application deadline is typically in February. For more information: <http://www.cwmtf.net/#appmain.htm>

SPOT SAFETY PROGRAM

The Spot Safety Program is a state funded public safety investment and improvement program that provides highly effective low cost safety improvements for intersections, and sections of North Carolina’s 79,000 miles of state maintained roads in all 100 counties of North Carolina. The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$250,000.



The Spot Safety Program targets hazardous locations for expedited low cost safety improvements such as traffic signals, turn lanes, improved shoulders, intersection upgrades, positive guidance enhancements (rumble strips, improved channelization, raised pavement markers, long life highly visible pavement markings), improved warning and regulatory signing, roadside safety improvements, school safety improvements, and safety appurtenances (like guardrail and crash attenuators).

A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest. For more information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

POWELL BILL FUNDS

Annually, State street-aid allocations (Powell Bill Funds) are made to incorporated municipalities which establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.4. Powell Bill funds shall be expended only for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Beginning July 1, 2015 under the Strategic Transportation Investments initiative, Powell Bill funds may no longer be used to provide a match for federal transportation funds such as Transportation Alternatives. Certified Statement, street listing, add/delete sheet and certified map from all municipalities are due between July 1st and July 21st of each year. Additional documentation is due shortly after. More information: <https://connect.ncdot.gov/municipalities/State-Street-Aid/Pages/default.aspx>

HIGHWAY HAZARD ELIMINATION PROGRAM

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90 percent federal funds and 10 percent state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP). For more information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

GOVERNOR'S HIGHWAY SAFETY PROGRAM

The Governor's Highway Safety Program (GHSP) funds safety improvement projects on state highways throughout North Carolina. All funding is performance-based. Substantial progress in reducing crashes, injuries, and fatalities is required as a condition of continued funding. This funding source is considered to be "seed money" to get programs started. The grantee is expected to provide a portion of the project costs and is expected to continue the program after GHSP funding ends. State Highway Applicants must use the web-based grant system to submit applications. For more information: <http://www.ncdot.org/programs/ghsp/>

EAT SMART, MOVE MORE NORTH CAROLINA COMMUNITY GRANTS

The Eat Smart, Move More (ESMM) NC Community Grants program provides funding to local communities to support their efforts to develop community-based interventions that encourage, promote, and facilitate physical activity. The current focus of the funds is for projects addressing youth physical activity. Funds have been used to construct trails and conduct educational programs. For more information: <http://www.eatsmartmovemorenc.com/Funding/Funding.html>

THE NORTH CAROLINA DIVISION OF PARKS AND RECREATION - RECREATIONAL TRAILS AND ADOPT-A-TRAIL GRANTS

The North Carolina Division of Parks and Recreation and the State Trails Program offer funds to help citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking, and horseback riding to river trails and off-highway vehicle trails. "The Adopt-a-Trail Grant Program (AAT) awards \$108,000 annually to government agencies, nonprofit organizations and private trail groups for trail projects. The Recreational Trails Program (RTP) is a \$1.3 million grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. Grant applicants must be able to contribute 20% of the project cost or in-kind contributions. Both grant applications are typically due in January or February. For more information: <https://www.ncparks.gov/more-about-us/grants/trail-grants>

NC PARKS AND RECREATION TRUST FUND (PARTF)

The Parks and Recreation Trust Fund (PARTF) provide dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities, and public authorities, as defined by G.S. 159-7, are eligible applicants. A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. Grant applications are typically due in February. For more information: <https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund>

COMMUNITY DEVELOPMENT BLOCK GRANT FUNDS

Community Development Block Grant (CDBG) funds are available to local municipi-

pal or county governments that qualify for projects to enhance the viability of communities by providing decent housing and suitable living environments and by expanding economic opportunities, principally for persons of low and moderate income. State CDBG funds are provided by the U.S. Department of Housing and Urban Development (HUD) to the state of North Carolina. All North Carolina small cities are eligible to apply for funds except for 23 entitlement cities that receive funds directly from the U.S. Department of Housing and Urban Development (HUD). Each year, CDBG provides funding to local governments for hundreds of critically-needed community improvement projects throughout the state. More information: <https://www.nccommerce.com/ruraldevelopment/state-cdbg/grant-categories>

CLEAN WATER MANAGEMENT TRUST FUND (CWMTF)

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection, eligible for application by a state agency, local government, or non-profit. At the end of each year, a minimum of \$30 million is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies, and conservation non-profits to help finance projects that specifically address water pollution problems. Funds may be used for planning and land acquisition to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. Deadlines are typically in February. For more information: <http://www.cwmtf.net/#appmain.htm>

SAFE ROUTES TO SCHOOL (SRTS)

SRTS is managed by NCDOT, but is federally funded; See Federal Funding Sources above for more information.

URBAN AND COMMUNITY FORESTRY GRANT

The North Carolina Division of Forest Resources Urban and Community Forestry grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. The goal is to improve



public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects which will lead to a more effective and efficient management of urban and community forests. Grant requests should range between \$1,000 and \$15,000 and must be matched equally with non-federal funds. Grant funds may be awarded to any unit of local or state government, public educational institutions, approved non-profit 501(c)(3) organizations, and other tax-exempt organizations. First time municipal applicant and municipalities seeking Tree City USA status are given priority for funding. Grant applications are due by March 31 at 5:00 pm and recipients are notified by mid-July each year.

For more about Tree City USA status, including application instructions, visit: https://www.ncforestservice.gov/Urban/urban_grant_program.htm

LOCAL GOVERNMENT FUNDING SOURCES

Municipalities often plan for the funding of pedestrian and bicycle facilities or improvements through development of Capital Improvement Program (CIP) or occasionally, through their annual Operating Budgets. In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each category is described below. A variety of possible funding options available to North Carolina jurisdictions for implementing pedestrian and bicycle projects are also described below. However, many will require specific local action as a means of establishing a program, if not already in place.

CAPITAL RESERVE FUND

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants, and donations for the specified use.

CAPITAL PROJECT ORDINANCES

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

LOCAL IMPROVEMENT DISTRICT (LID)

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.

MUNICIPAL SERVICE DISTRICT

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the town-wide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts, and can include projects such as street, sidewalk, or bikeway improvements within the downtown taxing district.

TAX INCREMENT FINANCING

Project Development Financing bonds, also known as Tax Increment Financing (TIF) is a relatively new tool in North Carolina, allowing localities to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) 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. Streets, streetscapes, and sidewalk improvements are specifically authorized for TIF funding in North Carolina. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria that are approved by a local governing body. TIF funds are generally spent inside the boundaries of the TIF district, but they can also be spent outside the district if necessary to encourage development within it. Although larger cities use this type of financing more often, Woodfin, NC is an example of another small town that has used this type of financing.

OTHER LOCAL FUNDING OPTIONS

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Installment purchase financing
- In-lieu fees
- Partnerships

PRIVATE AND NON-PROFIT FUNDING SOURCES

Many communities have solicited funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available.

LAND FOR TOMORROW CAMPAIGN

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals, and community groups committed to securing support from the public and General Assembly for protecting land, water, and historic places. The campaign was successful in 2013 in asking the North Carolina General Assembly to continue to support conservation efforts in the state. The state budget bill includes about \$50 million in funds for key conservation efforts in North Carolina. Land for Tomorrow works to enable North

Carolina to reach a goal of ensuring that working farms and forests, sanctuaries for wildlife, land bordering streams, parks, and greenways, land that helps strengthen communities and promotes job growth, and historic downtowns and neighborhoods will be there to enhance the quality of life for generations to come. For more information: <http://www.land4tomorrow.org/>

THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans.

Grant making is concentrated in four areas:

- To ensure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

Projects considered for funding typically are innovative and aim to create meaningful, transformative change. Project examples include: service demonstrations; gathering and monitoring of health-related statistics; public education; training and fellowship programs; policy analysis; health services research; technical assistance; communications activities; and evaluations. For more specific information about what types of projects are funded and how to apply, visit <http://www.rwjf.org/en/how-we-work/grants/what-we-fund.html>

NORTH CAROLINA COMMUNITY FOUNDATION

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for non-profit organizations and institutions throughout the state. Based in Raleigh, the foundation also manages a number of com-



munity affiliates throughout North Carolina, that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. The foundation also manages various scholarship programs statewide. For more information: <http://nccommunityfoundation.org/>

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 to communities in which Rite Aid operates. The Rite Aid Foundation focuses on three core areas for charitable giving: children's health and well-being; special community health and wellness needs; and Ride Aid's own community of associates during times of special need. Online resource: <https://www.riteaid.com/about-us/rite-aid-foundation>

Z. SMITH REYNOLDS FOUNDATION

This Winston-Salem-based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The Foundation focuses its grant making on five focus areas: Community Economic Development; Environment; Public Education; Social Justice and Equity; and Strengthening Democracy. Deadline to apply is typically in August. For more information: www.zsr.org

BANK OF AMERICA CHARITABLE FOUNDATION, INC.

The Bank of America Charitable Foundation is one of the largest in the nation. There are numerous different initiatives and grant programs, yet the ones most relevant to increased recreational opportunities and trails are the Revitalizing Neighborhoods and Environment Programs. Starting in 2013, a new 10-year, \$50 billion goal to be a catalyst for climate change was launched. This initiative aims to spark the "innovation economy and advance a transition to a low-carbon future." For more information: www.bankofamerica.com/foundation

DUKE ENERGY FOUNDATION

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

- An internal Duke Energy business "sponsor"
- A clear business reason for making the contribution

The grant program has several investment priorities: Education; Environment; Economic and Workforce Development; and Community Impact and Cultural Enrichment. Related to this project, the Foundation would support programs that support conservation, training, and research around environmental and energy efficiency initiatives. For more information: <http://www.duke-energy.com/community/foundation.asp>

AMERICAN GREENWAYS EASTMAN KODAK AWARDS

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) to stimulate the planning, design, and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying, or political activities. For more information: <http://www.rlch.org/funding/kodak-american-greenways-grants>

NATIONAL TRAILS FUND

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a \$200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers,

tools and materials to protect America's cherished public trails. To date, American Hiking has granted more than \$588,000 to 192 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

Projects the American Hiking Society will consider include:

- Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.
- Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.
- Constituency building surrounding specific trail projects - including volunteer recruitment and support.

For more information: <http://www.american-hiking.org/national-trails-fund/>

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. Grants are typically about \$35,000 each. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to environmental groups across the nation, saving over 34 million acres of wild lands.

The Conservation Alliance Funding Criteria:

- The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation.
- The Alliance does not look for mainstream education or scientific research projects, but rather for active campaigns.
- 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 (within four years).

For more information: <http://www.conservationalalliance.com/grants>

THE JOHN REX ENDOWMENT

The John Rex Endowment sees environmental, policy, and systems approaches as necessary to achieve long-term, sustainable changes that support healthy weight in children. Learn about their goal to improve policies and implement changes to the built environment that increase children's access to healthy foods and active living opportunities in Wake County municipalities:

<http://www.rexendowment.org/what-we-fund/funding-areas/healthy-weight>

NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, non-profit, 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 provides grants through more than 70 diverse conservation grant programs. A few of the most relevant programs for bicycle and pedestrian projects include Acres for America, Conservation Partners Program, and Environmental Solutions for Communities. 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.

For more information: <http://www.nfwf.org/whatwedo/grants/Pages/home.aspx>



THE TRUST FOR PUBLIC LAND

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the TPL is the only national non-profit working exclusively to protect land for human enjoyment and well-being. TPL helps acquire land and transfer it to public agencies, land trusts, or other groups that have intentions to conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. For more information: <http://www.tpl.org>

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION (BCBS)

Blue Cross Blue Shield (BCBS) focuses on programs that use an outcome approach to improve the health and well-being of residents. Healthy Places grant concentrates on increased physical activity and active play through support of improved built environment such as sidewalks, and safe places to bike. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms and, depending on the size of the non-profit, provide an audit. For more information: <http://www.bcbsncfoundation.org/>

ALLIANCE FOR BIKING & WALKING: ADVOCACY ADVANCE GRANTS

Bicycle and pedestrian advocacy organizations play the most important role in improving and increasing biking and walking in local communities. Rapid Response Grants enable state and local bicycle and pedestrian advocacy organizations to develop, transform, and provide innovative strategies in their communities. Since 2011, Rapid Response grant recipients have won \$100 million in public funding for biking and walking. The Advocacy Advance Partnership with the League of American Bicyclists also provides necessary technical assistance, coaching, and training to supplement the grants. For more information, visit www.peoplepoweredmovement.org

LOCAL TRAIL SPONSORS

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

PRIVATE INDIVIDUAL DONATIONS

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from an individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

FUNDRAISING/CAMPAIGN DRIVES

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

VOLUNTEER WORK

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the

community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.

INNOVATIVE FUNDING OPTIONS

Crowdsourcing “is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.” For some success stories and ideas for innovative fundraising techniques: <http://www.americantrails.org/resources/funding/TipsFund.html>

An example crowdsourcing tool used locally with some success is “ioby”, which offers the ability to organize different forms of capital—cash, social networks, in-kind donations, volunteers, advocacy: <https://www.ioby.org/about>

BICYCLE/TRAIL PARTNERSHIP CASE STUDIES IN THE CAROLINAS

Local communities in the region may be able to partner with the private sector for funding or sponsorship for some aspects of this plan. Some examples of trail partnerships in the Carolinas are provided below.

WILMINGTON/NEW HANOVER COUNTY & BLUE CROSS BLUE SHIELD (BCBS)

BCBSNC and their GO NC! program donated funds to complete the final phase of the 15-mile Gary Shell CrossCity Trail from Wade Park to the drawbridge at Wrightsville Beach. In addition to completing the trail, other enhancements include mile markers along the 15-mile trail and five bicycle fix-it stations along the trail. This partnership came about during development of the WMPO’s Wilmington/New Hanover County Comprehensive Greenway Plan in 2012. <http://www.bcbsnc.com/content/campaigns/gonc/index.htm>

SPARTANBURG, SC & THE MARY BLACK FOUNDATION

The Mary Black Foundation Rail Trail was a collaboration between the Mary Black Foundation, Palmetto Conservation Foundation, City of Spartanburg, Partners for Active Living, SPATS, and local citizens. It extends from downtown Spartanburg at Henry Street, between Union and Pine Streets, and continues 2 miles to Country Club Road. Since its inception there has been buzz about redeveloping the Rail Trail corridor. The commuter and recreational trail brings together all walks of life, and connects neighborhoods, businesses, restaurants, a school, a bike shop, the YMCA, a grocery store, and a skate park. As the Hub City Connector segment of the Palmetto Trail through Spartanburg County, the Rail Trail is an outdoor transportation spine for Spartanburg from which other projects are expected to spin off. One great example is the first phase of B-cycle bicycle-sharing program located at the Henry Street trailhead. Project contact: Lisa Bollinger, Spartanburg Area Transportation Study, Spartanburg, SC.

SWAMP RABBIT TRAIL AND GREENVILLE HEALTH SYSTEM, GREENVILLE, SC

The Greenville Health System Swamp Rabbit Trail is a shared-use-path that runs along the Reedy River through Greenville County, connecting parks, schools, and local businesses. The GHS Swamp Rabbit has become very popular among residents and visitors for recreational and transportation purposes. The Greenville Health System has become a private sponsor because of the health benefits offered by the trail as well as the branding opportunity achieved by having its name and logo on the trail’s signs. The GHS Swamp Rabbit Trail continues to increase in size and popularity, with communities in neighboring counties making plans to extend the trail into their towns. Project contact: Ty Houck, Greenville County Parks, Recreation and Tourism, Taylors, SC.



DRAFT EXISTING CONDITIONS MAP *for* COMMITTEE INPUT

Please help us identify:

- Accuracy of map content
- Key destinations
- Additional existing facilities
- Bicycle facilities that are funded, in design, or under construction
- Upcoming roadway projects with opportunity to add facilities
- Target areas and corridors for recommended improvements

APPENDIX C

BICYCLE FRIENDLY AMERICA PROGRAM



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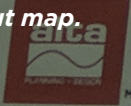
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This page: Sandhills Bike Plan committee meeting input map.



Map Created: May 2018

OVERVIEW

Between 2000 and 2017 nationwide, there was a 43% increase in bicycle commuting. In 2017 alone, there were over 800,000 bicyclists who commuted to work in the United States. Throughout the United States, communities, universities, and businesses have an opportunity to be recognized on the national level for achieving safer roads, stronger communities, and promoting a bicycle-friendly America. In order to achieve this level of recognition, those communities must implement a certain level of plans, policies, programs and infrastructure it takes to provide bikeability for every skill level.

Several years before the advent of the automobile, an organization called The League of American Bicyclists was founded and since their establishment, they have provided the tools and resources needed to achieve that level of national recognition. Their belief is that bicycling brings people together. When more people ride bikes:

*Life is better for everyone;
Communities are safer, stronger and better connected;
Our nation is healthier, economically stronger, environmentally cleaner and more energy independent.*

WHAT IS THE LEAGUE OF AMERICAN BICYCLISTS?



Established in 1880, The League of American Bicyclists is a nonprofit organization that focuses on advocacy and education of bicycling within the United States. The organization

originally known as the League of American Wheelmen, began from the frustration bicyclists faced from horsemen, wagon drivers, and pedestrians dredging up roads.

Modern day technology, primarily focused on the invention of the automobile, have since then changed the focus of frustration but unfortunately automobiles play a much heavier risk than horsemen and wagons.

Ultimately the goal of The League is to shift people's mindset and improve the experience of bicycling throughout the United States. The list of tasks and goals for the organization include:

- Promoting bicycling as a fun, safe, and healthy means of travel for all;
- Protecting the rights of cyclists at the national, state, and local level;
- Advocate for safe, convenient bicycling opportunities throughout the United States; and
- Set the standard for bicyclist-related education and behavior.

As host of the National Bike Summit® that occurs every year in Washington, D.C., The League provides best practices and the technical resources needed to help communities, businesses, universities and states seeking to improve bicycle safety. The organization has been attributed to providing the necessary improvement guidelines of roads and highways for bicyclists since its infancy. The list of their key programs include Bicycle Friendly America (BFAsm), Smart Cycling for education, Promoting Bicycling for promotion, and Making Biking Better for advocacy. Bicycle Friendly America is the program that focuses on all three concepts of advocacy, education and promotion of bicycling. In 1965, The League also established National Bike Month.



The League of American Wheelmen gathering in St. Louis, Missouri in 1892.



Amongst all of those programs, The League also has a partnership with the Alliance for Biking & Walking, called Advocacy Advance, which is able to translate Federal programs into state and local campaigns to invest in better cycling infrastructure and education.

BICYCLE FRIENDLY AMERICA PROGRAM



Established in 1995, the Bicycle Friendly America (BFA) program is the League's flagship advocacy campaign. Sectioned by state, communities, businesses and

universities, each applicant is awarded based on a comprehensive online application, as well as collected data on activities within five areas that include: engineering, education, encouragement, enforcement, and evaluation. The application results provide customized feedback as well as the tools and guidelines needed to improve conditions for cyclists at both the state and local level.

The Bicycle Friendly America program's goals include:

- Sets standards for what constitutes a real bicycling culture and environment
- Affects decisions on how communities, businesses, universities and states grow
- Inspires action, involvement and coordination among people that want to improve conditions for bicyclists
- Guides progress by acting as a roadmap for what communities, businesses, universities and states should do next
- Rewards persistence as people respond to feedback, make changes and come back again and again to get recognition.
- Raises expectations as to what really is expected and involved in making a great place for bicycling

Over the past 10 years, the League has worked with hundreds of engineers, government officials, and bicycle advocates to identify the DNA of bicycle friendliness. Using that expert knowledge, The League has determined the specific projects, policies, programs and plans that make a difference. With the overall goal to improve conditions and advocacy for cyclists, the BFA program has expanded and evolved to serve four distinct areas: Communities, States, Businesses and Universities. Based on the comprehensive online applications, the program collects data on activities based around the five E's and offers the guidance and tools for improvement, while also recognizing each area's unique resources.

Since the beginning of the Bicycle Friendly Community Program in 1995, there have been over 1,500 community applications processed and 464 recognized Bicycle Friendly Communities in the United States.

The Bicycle Friendly Statesm (BFS) program was launched in 2008 in order to better understand state efforts related to bicycling and provide a comparative framework that allows states to easily identify areas of improvement. The primary focus of the Bicycle Friendly State program is on the behavior of state Departments of Transportation and state legislators. These two groups are powerful policymakers who have significant impacts on conditions for bicyclists in each state.

The Bicycle Friendly Business (BFB) program was established in 2008 and as of December 2018 has 1,314 businesses registered and ranked throughout the U.S., with 52 businesses awarded platinum. Since 2008, over 1,600 businesses have received BFB recognition, employing over 800,000 people. Focused on encouragement, engineering, education and evaluation and planning, it excludes the implementation strategy of enforcement.

The Bicycle Friendly University (BFU) program was established in 2011 and currently has 193 colleges and universities that have designation nationwide. The goal is to inspire institutions to develop more sustainable, livable campuses that made biking better for students, staff and visitors.

THE FIVE E'S

Bicycle Friendly Communities, Businesses and Universities come in all shapes and sizes, but there are essential elements that lie within five categories known as the Five E's. Those concepts are consistent in making bicycle-friendly places and the BFA program uses those concepts as a tool to make bicycling a real transportation and recreation option for all people. All based on a voluntary application process, each year The League assesses all 50 states and the voluntary applicants. With those comprehensive online applications, the program collects data on activities within five broad areas:

1. Engineering: Physical infrastructure and hardware to support cycling in order to create safe and convenient places to ride and park
2. Education: Programs that ensure the safety, comfort and convenience of cyclists and fellow road users of all ages and abilities
3. Encouragement: Incentives, promotions and opportunities that inspire and enable people to ride in order to create a strong bike culture that celebrates bicycling
4. Enforcement: Equitable laws and programs that ensure motorists and cyclists are held accountable for their actions
5. Evaluation: Processes that demonstrate a commitment to measuring results and planning for the future of bicycling as a safe and viable transportation option

Aside from the Bicycle Friendly Business program, which does not include an assessment of enforcement, all of the programs have a variation of questions and data points the application takes into account throughout the assessment.

BENEFITS OF BECOMING PART OF THE PROGRAM

The League of American Bicyclists' vision is a nation where everyone recognizes and enjoys the many benefits and opportunities of bicycling. However those benefits go far beyond the positive health impacts

everyone immediately thinks of. Providing safe and convenient bicycle plans and infrastructure in big picture can improve public health, reduce traffic congestion, improve air quality and improve quality of life. Beyond that, the benefits are focused on the people, places, and policy in each location at the local level.

Bicycle Friendly Communities often are great destinations that provide safe and healthy accommodations for its residents and visitors. Simple steps to make bicycling safe and comfortable pay huge dividends in civic, community and economic development. Given the opportunity to ride, residents enjoy dramatic health benefits, reduced congestion, increased property values and more money in their pockets to spend in the local economy. When a community is considered bike-friendly, tourism booms, businesses attract the best and the brightest, and governments save big on parking costs while cutting their carbon emissions.

Additional benefits of becoming apart of the BFA program include:

- Increase morale and quality of life
- Foster a sense of community and camaraderie
- Enhance health and wellness benefits, and reduce costs on healthcare
- Recruitment: attract and retain the best and brightest (BFU, BFB)
- Catalyze a more alert, active, productive workforce (BFB)
- Reduce absenteeism (BFU, BFB)
- Showcase social responsibility, a commitment to sustainability and reducing environmental footprint
- Support and expand reliable, consistent transportation, particularly for residents and visitors in urban areas
- Create a culture of wellness
- Cut transportation spending by company, individual and community
- Support long-term health benefits, both physical and mental



APPLICATION PROCESS

Focusing on several key metrics, the program has recognized that there is not a specific formula for making a successful bikable community. Providing that the bike network is safe and convenient are two of the key elements.

Any municipality, county, Census Designated Place, military base, regional planning agency or Indian Country can apply to the BFC program. A community official responsible for bicycling issues usually completes the application. However, much of the application can be completed by anyone familiar with what a community has done for bicycling as long as the community's governing body approves its final submission.

The BFC award is based on an application developed in 2002 with the help of the Robert Wood Johnson Foundation and the Pedestrian Bicycle Information Center. This application has been periodically updated by League of American Bicyclists staff and a panel of outside experts over in the past fifteen years, most recently in the fall of 2016 when the application system was migrated to a new software platform.

In 2016, The League also changed the local review survey to align with questions from the 2012 National Highway Traffic Safety Administration (NHTSA) Attitudes and Behaviors survey so that local review process can give The League, and applicant communities, an understanding of how their community compares to a nationally representative sample of citizens.

There are two application cycles a year – one in spring and one in fall. A new cycle usually begins the day after an application cycle closes, so applicants have several months to fill out the online application. Tips for completing an application include:

- When the application asks about bicycle amenities, services and other resources in your community, only list what is provided within your jurisdiction's boundaries.
- The application is designed for communities of all sizes. The conditions that make the community unique -- size, type, location, climate -- are important

when determining how to best encourage and support bicycling, and will be taken into consideration when reviewing the application.

- It is not necessary to be able to check every box on this application. The League provides a comprehensive menu of all the ways a community can be bicycle-friendly, and some options are more valuable than others, but they don't expect any community to do everything on the list.
- After a brief review of the general community profile, the applicant will continue to the reporting portion of the application, which asks questions about the community's engineering, education, encouragement, enforcement and evaluation efforts (the five E's). Most questions are multiple choice. This comprehensive questionnaire is designed to yield a holistic picture of an applicant community's work to promote bicycling.
- Unless a question specifically asks about plans for the future, only check boxes for things that are already being done. So if most improvements for bicyclists are still in the planning stage, the applicant can either wait a year or two before you apply to increase your chances to receive an award, or they can apply now to see the community move up in the award levels in the future (which can be a powerful way to show the impact of investments).
- If the community is doing something that isn't listed in the check-boxes, or that goes above and beyond any of the check box options, it is important to tell The League. There is bonus point questions at the end of each 'E' section and the 'Final Overview' section at the end of the application to give them more details. This not only helps the League to better understand the community, it also helps improve the program by identifying new trends and best practices.
- Don't be shy to tell The League about the community's weaknesses. This gives them a more accurate snapshot of the community, and displays that they are

critically evaluating the community's internal efforts, which is an important component of the final 'E', Evaluation & Planning.

Following the BFC deadline, the League distributes public surveys to community residents, League members, bike advocates, and bicyclists who may be familiar with each applicant community. The public survey is distributed in a number of ways:

- Applicant communities are asked to distribute the survey locally through their website, newsletter, or social media. (This step is strongly encouraged, but not required for applicants.)
- The League will send the survey to all local and statewide bike advocates identified on the BFC application, or who are organizational members of the League. Local advocacy organizations are encouraged to complete the survey and to distribute it to their members or local networks.
- All current members of the League who share a zip-code prefix with the applicant community will receive the survey link directly from the League via email.

In the past, the League used a voluntary "Local Reviewer" sign up process to seek local input on BFC applications. They moved to this new method of involving communities, local bike advocates, and current League members in the distribution of the local reviewer survey in 2016, and have seen a great increase in participation as a result.

The BFC public survey is open to anyone familiar with bicycling conditions in the community, including those involved in submitting the BFC application. Applicants are not judged on the number of responses received and public input received does not determine a community's BFC award level.

The public survey is meant to provide local context and perspective for the BFC review team's decision-making process, and is used in combination with the online BFC application submitted by the community. Anonymous aggregate survey results are included in each community's feedback materials following awards announcements.

The Bicycle Friendly State program is structured around a ranking of all 50 states based upon publicly available data and a survey completed by state Departments of Transportation and/or state bicycle advocacy organizations. This data is used to rank and create a report card for each state.

AWARD DETERMINATION

After a deadline the League staff process information provided by a community as follows:

- Point criteria are automatically applied to most data submitted by an applicant. These criteria determine the majority of each community's category scores.
- League staff retrieves census data on the number of estimated bicycle commuters and the percentage of commuters who bike to work.
- Certain data is separated and run through separate point formulas. This is done where our criteria depends upon some relative measure that is produced by comparing different data provided by a community or census data.
- Data is checked for inconsistencies and adjusted if necessary.



Starting in 2016, the League implemented a public input process to provide the opportunity for additional public input on communities. As part of this process the following actions are taken:

- An optional public survey link is sent to all communities to be distributed by the community. This link is also sent to any



bicycle and pedestrian advocates that a community identified and provided contact information for in its application.

- The League of American Bicyclists sends an additional survey that provides space for open-ended responses to bicycle and pedestrian advocates that a community identified and provided contact information for and bicycle and pedestrian advocates who are organizational members of the League.
- These surveys are typically distributed within 2 weeks of the closing of a deadline and are open for about a month.

Award decisions are made based upon:

- Points assigned to the data by formulas;
- Personal review of each application by League staff, including supplemental materials;
- Comparisons to similar communities in our award database, particularly based upon the Building Blocks of a Bicycle Friendly Community and characteristics such as population and type of community; and
- If necessary, review of public and advocate surveys or direct outreach to local advocates.

The League's last ranking was completed in 2017 and in 2018, they created Progress Reports for each state that focus on how states have changed over time and provide updates on current state actions. After that, the BFC awards are valid for four years. When renewal is due, the BFC needs to reapply in either spring or fall of the year the award expires in order to maintain its status.

"BUILDING BLOCKS" DATA ANALYSIS

The League's BFC program has been collecting data since it began in 1995 and in 2013 they summarized the "building blocks" for creating a successful friendly community. Award levels are based upon all data provided by the application. In particular, close attention is paid to the 10 Building Blocks of Bicycle Friendly Communities and other key metrics found

on each community's report card. Those attributes include:

- **High Speed Roads with Bicycle Facilities** - This building block reflects the reported bicycle facilities on roads with posted speed limits of more than 35 mph. It replaced the building block "percentage of arterials and major collectors with bicycle facilities" when our application changed to ask for information on the specific types of bicycle facilities on roads of different posted speed limits. The average Bronze community has bicycle facilities on 19% of its high speed roads.
- **Total Bicycle Network mileage to Total Road Network Mileage** - This building block reflects the entirety of bicycle facilities, located on and off-road, divided by the reported centerline miles of all roadways. The average Bronze community has a ratio of roughly 1 mile of bike network for every 4 miles of road network.
- **Bicycle Education in Schools** - This building block reflects the percentage of elementary, middle, and high schools that offer bicycle education and the type of education offered at each school. Prevalence and type are used to create descriptive categories, with the average Bronze having average Bicycle Education in Schools.
- **Share of Transportation Budget Spent on Bicycling** - This building block reflects the reported percentage of each community's total transportation budget, over the past 5 years, invested in bicycle projects. The average Bronze community reports that 9% of its transportation budget is invested in bicycle projects.
- **Bike Month and Bike to Work Events** - This building block reflects the number of events promoted as part of bike month in each community. The number of events is used to create descriptive categories, with the average Bronze having either average or Good Bike Month and Bike to Work Events.
- **Active Bicycle Advocacy Group** - This building block reflects reported bicycle,

active transportation, and transportation equity advocacy groups. Over 90% of communities that apply report the existence of an advocacy group in their community.

- **Active Bicycle Advisory Committee** - This building block reflects whether a bicycle advisory committee exists and how often it is reported to meet. The average Bronze community has a bicycle advisory committee that meets roughly every two months.
- **Bicycle Friendly Laws & Ordinances** - This building block reflects local ordinances or state laws that are reported to protect or restrict bicyclists in each community. The number of restrictive laws is subtracted from the number of protective laws and that number is used to create descriptive categories. The average Bronze community has between acceptable and average Bicycle Friendly Laws & Ordinances.
- **Bike Plan is Current and is Being Implemented** - This building block reflects reported information on the existence of a bike plan, the age of the bike plan, whether that bike plan has goals, and whether those reported goals are being met. Nearly 70% of communities that apply report having a bike plan that is current and is being implemented.
- **Bike Program Staff to Population** - This building block reflects reported information on the number of full-time equivalent employees in each community and the population of each community. We divide the population of each community by the reported full time equivalent employees, so this statistic can be higher than the population of a community. It is reported in the number of thousands of residents per one full-time staff person. The average Bronze community has 148,000 residents per one staff person.

CATEGORY SCORES

The category scores are based upon the total score in each category based upon the community's application. Each category is assigned 100 points and points are further assigned to individual questions and sub-questions by League staff. The scores reported on the Report Card are simply representations of the total score out of 10 rather than 100.

TOOLS AND RESOURCES

The League provides tools to help local and state efforts through the BFA program, which include:

- **Bicycle commuter data**
- **BFA Guide** - This Guide looks at actions by leading Bicycle Friendly Communities, Businesses and Universities in 2012-13. Use it for inspiration and guidance as your community, business, or university takes action to make biking better.
- **BFA Blueprint** - This blueprint looks specifically at the Bicycle Friendly Community program and describes actions that communities have taken across the five Es.
- **Bicycle Account Guidelines** - This guideline document is meant to help communities, businesses, and universities learn about evaluation tools that they can adapt to their organization to measure bicycle-related improvements, including public surveys.
- **The New Movement: Bike Equity Today** - This report looks at efforts through the United States to make bicycle advocacy and related groups reflect the diverse population of people who bike and address the specific needs of diverse populations through programming and outreach.
- **BFA Brochure** - The BFA Brochure provides a high-level overview of the Bicycle Friendly America programs and the impact they have had. It is an ideal primer for the community, business, or university considering participating in a Bicycle Friendly America program.



HOW DOES NORTH CAROLINA RANK?

North Carolina currently has 13 Bicycle Friendly Communities, 20 businesses, 11 Universities and colleges, and is overall ranked as 20 in the BFA state ranking. The only two communities within the state with silver-ranking are Carrboro and Chapel Hill; the remaining communities are ranked bronze. Carrboro was the first community to win an award in North Carolina back in the Fall of 2014.

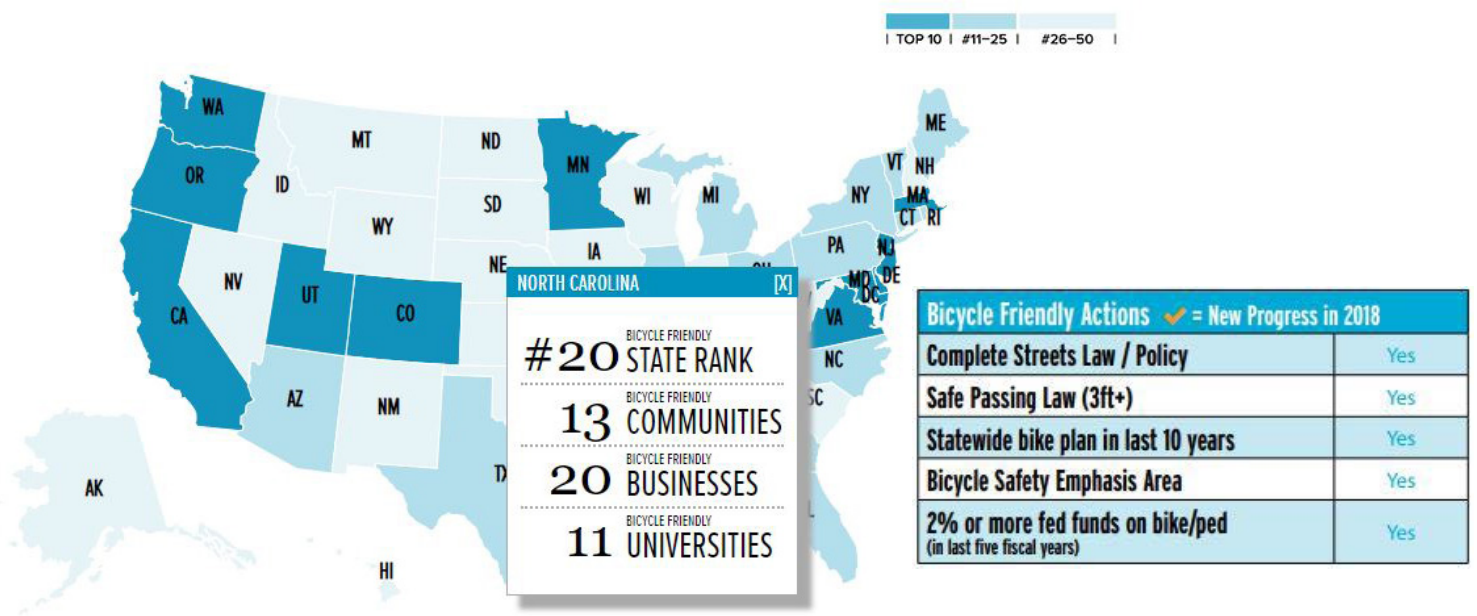
For the Bicycle Friendly State assessment, North Carolina has been ranked amongst the top 20 in the United States for education and encouragement, as well as policies and programs. However, the lack of legislation and enforcement, and infrastructure and funding has placed the state in lower ranking and has been a trend since 2012.

When it comes to crash data, North Carolina is very close to the Southern regional average and that does not help in the statewide assessment. As of 2018, the state has shown 23.7 fatalities per 10,000 bike commuters, with only 0.2 percent of the state's population commuting to work. However, with two percent of Federal Highway Administration (FHWA) funding spent on biking and walking within the state, it ranks higher than over half of the country in that category. North Carolina

has had the most dramatic divergence from other southern states in their use of federal funds for bicycling and walking. Since the state's adoption of the BikeWalk NC plan and the Strategic Transportation Investments law in 2013, North Carolina's federal data shows a pronounced oscillating trend towards a greater use of federal funds for bicycling and walking. Unfortunately, even with the slight increase of spending over the past ten years, North Carolina is still ranked 13th in annual pedestrian fatalities as of 2017.

North Carolina stands alone as the only southern state to take all five of the Bicycle Friendly Actions listed above. BikeWalk NC is a statewide advocacy organization for bicyclists and pedestrians that is focused on education, advocacy, and promotion to make it safer and more accessible to walk and bike for transportation, recreation, and health. In addition to this organization, North Carolina Department of Transportation adopted a comprehensive statewide plan called WalkBike NC in 2013. Focused on five main principles of mobility, safety, health, economics, and the environment, the plan looks at how investments into sidewalks, bike lanes and greenways benefit communities at relatively low costs.

In October of 2016, state law changed so drivers could not pass slower-moving bicycles or mopeds in no-passing zones if

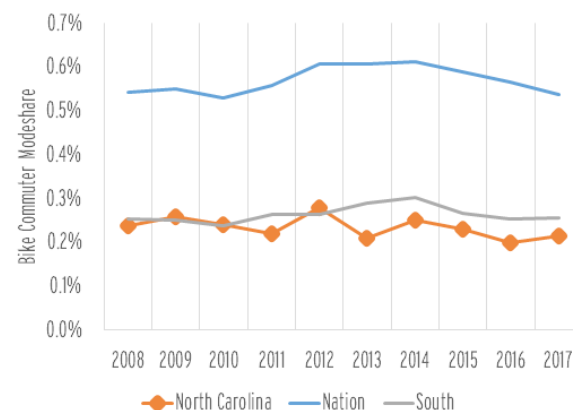
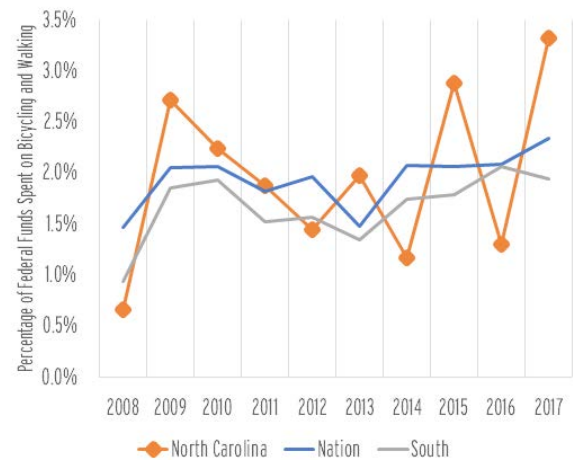
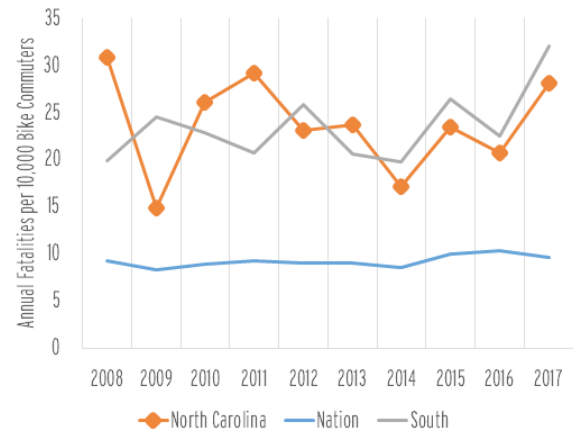


the motorist cannot accommodate at least four feet distance and if the cyclist is not making a left turn. These types of bicycle friendly actions have enabled North Carolina to be competitive in the ranks, but without implementation and enforcement, the state still falls short overall.

The expansion of bike lanes and bike-sharing programs, along with grassroots campaigns and comprehensive plan updates pushing to provide accessibility and connectivity for everyone are becoming trends. Census data alone is showing constant increase in commuting to work on a bicycle in United States, jumping from around 600,000 bike commuters in 2006 to close to 900,000 in 2017. Unfortunately based on U.S. Census data, bike commute decreased in the state of North Carolina by ten percent between 2006 and 2016. Commuting surveys show that a lack of bicycle infrastructure, longer distance commutes, lack of bicycle culture, variation of terrain and accessibility are all contributing factors.

Bicycle Friendly Communities (including award and year) in North Carolina include:

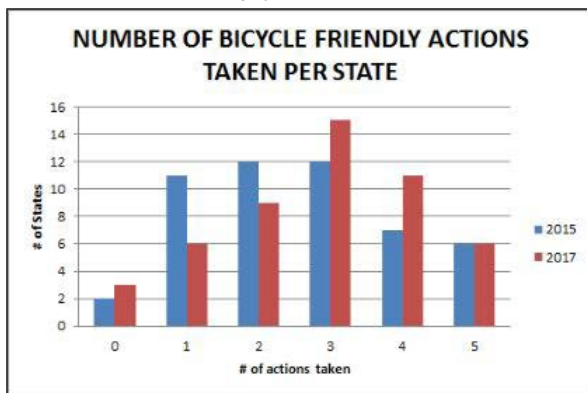
- Asheville (bronze) - Spring 2016
- Boone (bronze) - Spring 2016
- Carrboro (silver) - Fall 2014
- Cary (bronze) - Fall 2016
- Chapel Hill (silver) - Fall 2018
- Charlotte (bronze) - Fall 2016
- Davidson (bronze) - Spring 2015
- Durham (bronze) - Fall 2018
- Greensboro (bronze) - Fall 2017
- Raleigh (bronze) - Fall 2015
- Wake Forest (bronze) - Spring 2018
- Wilmington (bronze) - Spring 2016
- Winston-Salem (bronze)





COMPARING NORTH CAROLINA COMMUNITIES

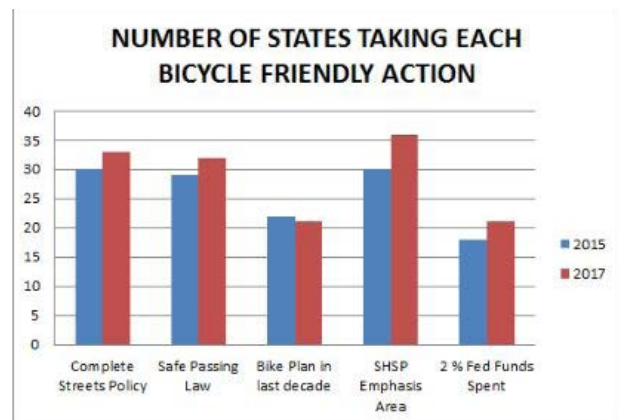
North Carolina has been consistent in their ranking throughout the last several years, but there has been an increase in the number of states taking bicycle friendly actions since The League's last ranking in 2015. The general increase in the number of Bicycle Friendly Actions taken has not been evenly distributed. The greatest increase came from more states including bicyclist safety as an Emphasis Area in their Strategic Highway Safety Plan. This may be a response to federal law, which was recently changed to require states to set a safety performance measure for non-motorized fatalities and serious injuries. Enacting that provision was a major federal advocacy goal of the League of American Bicyclists, beginning in 2012 and resulting in over 10,000 comments to the Federal Highway Administration in support of creating a non-motorized safety performance measure.



On the other hand, there was a small, one state, drop in the number of states that meet The League's Bike Plan Bicycle Friendly Action criteria. The Bicycle Friendly State criteria looks at whether a state has adopted a bike plan within the last 10 years and so states must regularly update and adopt new bike plans in order to continue to be recognized for taking this Bicycle Friendly Action. Bicycle planning has changed dramatically in the last decade with the rise of technologies such as automated bicycle counters, design guidance such as the NACTO Urban Bikeway Design Guide, transit integration such as bike share systems, and other advances that make it necessary for statewide bike plans to be regularly updated in order to reflect current best practices.

North Carolina communities must also

improve on certain levels to not only maintain their current ranks, but to also compete with the trends taking place in other regions within the United States. The report card will be generated using the data collected in correlation to the ten building blocks of a bicycle friendly community. Based on Carrboro and Chapel Hill's report card, elements such as network connectivity, speed limits, and lack of safety educational programs are just a few of the issues facing two of the higher ranked communities in the state. Those same issues seem to resonate within the bronze-ranked communities as well.



Reviewing the North Carolina report card provides the guidance needed to improve in a positive direction. Elements within infrastructure and funding, and legislation and enforcement are in highest demand for improvement. Metrics focused on state transportation funding restrictions and installation of infrastructure has placed North Carolina in 24th out of all 50 states, but the lack of policies and laws protecting bicyclists and restricting dangerous behaviors by drivers has played the biggest negative within the state, ranking them 35th out of the 50 states. Finding a way to improve these federal data points would be key to any future rise in North Carolina's ranking.

Additional feedback points directly from The League include:

- Restore state funding for bike/ped infrastructure that was limited by the Strategic Transportation Investment Act in 2013, effective 2015. This Act has made it more difficult for the state to support infrastructure that improves the safety and mobility of people who bike and walk.

- Adopt a law allowing transportation agencies to post 20 mph or lower speed limits under certain circumstances.
- Adopt a law prohibiting a motorist from opening an automobile's door unless the motorist is able to do so safely. North Carolina is one of only 9 states without a law protecting people who bike from "dooring."
- North Carolina has the 6th worst rate of bicyclist fatalities per bike commuter. This rate shows that bicyclist safety is an issue for current bicyclists and people who may want to bicycle for health or transportation. Addressing bicyclist safety is important for enabling more people to choose to bike.
- In order to address bicyclist safety and implement some of the great bicycle planning that has been done by NCDOT and through NCDOT administered bicycle planning grants, there should be an increase in NCDOT Bike/Ped Division staffing so that projects can move forward according to these plans.
- North Carolina should create a strategic plan for the compilation, evaluation and reporting of bicycle miles traveled or another comparable metric of bicycle use in the state, metro regions, or corridors of significant bicycle travel. This should build off the installation and monitoring of counters that began in 2014 as part of the Non-Motorized Volume Data Program to better understand usage patterns and safety concerns for biking and walking.

STATE ADVOCACY GROUP: BIKEWALK NORTH CAROLINA

Comparison States	
National (Overall)	Southern Region (out of 13)
18. Ohio	2. Florida
19. Georgia	3. Georgia
20. North Carolina	4. North Carolina
21. Arizona	5. Texas
22. Rhode Island	6. Tennessee

Categories	Rank out of 50
Infrastructure & Funding	24
Education & Encouragement	15
Legislation & Enforcement	35
Policies & Programs	19
Evaluation & Planning	9


Bicycle Friendly Actions ✓ = Progress ✓ = New in 2017	
Complete Streets Law / Policy	✓
Safe Passing Law (3ft+)	✓
Statewide bike plan last 10 years	✓
2% or more fed funds on bike/ped	
Bicycle Safety Emphasis Area	✓


Federal Data on Biking		Rank
Ridership	0.2% of commuters biking to work ⁱ	44/50
Safety	21.5 fatalities per 10k bike commuters ⁱⁱ	45/50
Spending	\$1.81 per capita FHWA spending on biking and walking ⁱⁱⁱ	37/50

ⁱ This figure is based upon the Census Bureau's American Community Survey (ACS) 5-year estimate.


ⁱⁱ This figure is based upon fatalities reported over a five-year period according to the National Highway Administration (NHTSA)'s Fatality Analysis Reporting System and the 2015 5-year ACS estimate of the number of bicycle commuters.


ⁱⁱⁱ FHWA spending is based upon projects coded using any of three project types associated with bicycling and walking projects through the Federal Highway Administration (FHWA)'s Fiscal Management Information System. To calculate per capita spending we used a five-year average for fiscal years 2011-2016 and the 2015 5-year ACS state population estimate.

 Infrastructure & Funding Ranked 24 th of 50 States	
Design and Existence of Infrastructure Has the state made it easy to build bicycle infrastructure and installed a variety of infrastructure on state facilities?	23/38 pts
State Transportation Funding Does the state report that funding is allocated to bicycling?	18/28 pts
Use of Federal Transportation Funding Does the state take advantage of available federal funding for biking and walking?	6/16 pts
Planned and Recently Built Bicycle & Pedestrian Facilities How many lane miles of bicycle and pedestrian facilities has the state reportedly planned to build and built?	10/10 pts
State Transportation Funding Restrictions Does the state have any policies that limit the ability to fund bicycling and walking infrastructure?	0/8 pts
Total of Possible 100 Points: 57/100 pts	

 Education & Encouragement Ranked 15 th of 50 States	
State DOT Education & Encouragement Support Does the state DOT support bicycling and walking events and education materials?	35/35 pts
Mode Share Do many people bike to work and is that number increasing relative to other modes?	2/30 pts
Driver Education Requirements Does the state require drivers to answer questions about bicyclist safety as part of the driver's licensing test?	10/20 pts
Advocacy Does the state have a bicycle advocacy group that is a member of the League of American Bicyclists or was identified by the state?	15/15 pts
Total of Possible 100 Points: 62/100 pts	

 Legislation & Enforcement Ranked 35 th of 50 States	
Laws that regulate driver behavior and methods of enforcement Does the state have strong comprehensive distracted driving laws and allow photo enforcement?	23/37 pts
Laws that restrict the behavior of people who bike and walk How does the state unnecessarily restrict the behavior of people who bike and walk? (low points = more restrictions)	16/28 pts
Laws that create protections for people who bike and walk Does the state have laws that provide specific protections for people who bike and walk?	14/25 pts
Laws that influence the built environment Does the state allow speed limits of 20 mph or less?	2/10 pts
Total of Possible 100 Points: 55/100 pts	

 Policies & Programs Ranked 19 th of 50 States	
Complete Streets Does the state have a complete streets policy and processes to support its implementation?	32/56 pts
Design and Access Policies Does the state have policies in place to ensure good design and access for people who bike and walk?	14/25 pts
State of Practice Development Does the state support trainings on bicycle and pedestrian infrastructure and complete streets implementation?	13/13 pts
Sustainable Transportation Policies Does the state work incorporate multi-disciplinary considerations in the development and implementation of transportation projects?	4/6 pts
Total of Possible 100 Points: 63/100 pts	

 Evaluation & Planning Ranked 9 th of 50 States	
State DOT Bicycle & Pedestrian Plans Does the state have a bicycle and/or pedestrian plan and does that plan follow best practices?	45/48 pts
Bicycle and Pedestrian Safety Has the state made bicyclist and pedestrian safety an emphasis and what does data say about safety?	25/34 pts
Understanding People who Bike and Walk Does the state have programs in place to collect data on people who walk and bike?	8/10 pts
Formal User Group Engagement Does the state have an official Bicycle and/or Pedestrian Advisory Committee and does it follow best practices?	0/8 pts
Total of Possible 100 Points: 78/100 pts	

FAYETTEVILLE BICYCLE FRIENDLY COMMUNITY APPLICATION

The application process towards becoming a Bicycle Friendly Community is designed for communities of all sizes and takes into account a multitude of conditions that makes the community unique. Most communities will not be able to check every box in the application, however the comprehensive menu of items provides multiple opportunities for the community to provide necessary information regarding their current bicycle infrastructure and engagement. It is important to only check boxes that are already active.

Based on the application timeline, communities often have to wait a year or two once a plan has been implemented and finalized before they can be qualified to include that information in their BFC application. Another option would be

to apply before projects are completed in order to provide the community a benchmark and guidance from The League that will help improve for the completion of the next application. The ability to show the increase in community ranking, as well as potentially showing an impact of investments, will be beneficial moving forward.

The Sandhills Regional Bike Plan has a vision to improve its bicycle network in order to create safe, comfortable, and accessible bicycle connections within, and between, communities. Taking the existing conditions and implementing recommendations from the plan will provide a guideline for area counties and municipalities, North Carolina Department of Transportation (NCDOT), local non-profits, and other community partners to commit to advancing bicycling throughout the region and continue to make the area recognizably bicycle-friendly. By outlining the application and the essential building blocks of a bicycle-friendly community with the Sandhills Regional Bike Plan, the City of Fayetteville will be able to provide certain credentials and implementation strategies that will enable the qualification as a Bicycle-Friendly Community (BFC).

ENGINEERING OVERVIEW

The League's 10 Building Blocks of a Bicycle Friendly Community includes a few key engineering questions, including high speeds roads with bike facilities, and the comparison of total bicycle network mileage to total road network mileage. Various types of connected bicycle facilities on- and off-street that best fit the context and remain well-maintained are important aspects to application.

In addition to the overall application, there must be local policies and ordinances in place that promotes smart growth and provides implementation guidance that exceed or meet the national standards (i.e. AASHTO or NACTO) that ensure high-quality, safe, and convenient facilities, bike parking and intersections are important aspects of a bicycle-friendly community. Overall the street network must be well connected and encourage bicycling, pedestrian, and transit stops throughout the community.

The Sandhills Regional Bike Plan outlines several engineering-related applications that are taking place or recommended for future growth. These projects are all part of the potential complete bicycle network to improve accessibility throughout the region and City of Fayetteville.

The Regional Bike Plan lists and describes more than twenty existing and past plans related to bicycling in the region. Past planning efforts in the Sandhills region, specifically in and around Fayetteville, included are:

- Atlantic-Seaboard Coast Line Concept Plan (Rail-Trail): 82-mile rail-trail concept from Fayetteville to Wilmington. The study maps property ownership and focuses on Sampson and Pender Counties, but the concept includes the old NC 24 corridor in Fayetteville
- WalkBikeNC: The NC 5 Cape Fear Run to provide clear wayfinding at the connections with the East Coast Greenway indicating that it connects to Fayetteville. Add wayfinding directing cyclists to Fayetteville.
- Sampson County CTP: Fayetteville to Wilmington Atlantic-Seaboard Coast Line Trail recommended; Mountains to Sea Trail identified as existing on-road route.
- City of Fayetteville Bicycle Plan (2018): The City of Fayetteville was awarded a citywide bicycle planning grant from the NCDOT Division of Bicycle and Pedestrian Transportation. The planning process will likely run through mid-2019, and will require coordination with the Sandhills Regional Bike Plan.

There are several opportunities and constraints highlighted within Fayetteville. Downtown Fayetteville has several corridors in the downtown area have relatively low traffic volumes combined with wide pavement widths. Future resurfacing/restriping could include bicycle facilities. Some of these opportunities include Person St, Gillespie St, Russell St, Murchison Rd, Branson St, and Langdon St. Additionally, southwest Fayetteville continues to grow to the southwest, several roadways have been proposed to be widened through the STI



process. These are critical opportunities for local/regional bicycle facility connectivity. The East Coast Greenway is also a viable opportunity Fayetteville can take into account.

Recommended priority projects that the Regional Plan outlines a total of 17 projects based on a variety of important criteria that are commonly used to rank potential bicycle and greenway projects across the state by NCDOT and other funding agencies. These projects outlined in the Regional Bike Plan can be added to the list of on- and off-street projects related to connectivity and prioritization for potential future funding. Those include:

- Fayetteville: Langdon Street Bike Lanes - total of 1-mile in length; connection to the Cape Fear River Trail (also East Coast Greenway), connection to the future Big Cross Creek Greenway, and connection to the bike lanes along Seabrook Road
- Fayetteville: Murchison Road Complete Street - total of 3-mile length; connection to future segments of the Big Cross Creek Greenway and Little Cross Creek Greenway towards downtown Fayetteville
- Skibo Road Rail Trail - total of 2.5-miles; concept of constructing a shared use path along the inactive railroad
- Southwest Fayetteville Complete Street STI Projects - total of 16-miles; based on multiple roadway corridors that are scheduled to be widened in the coming years
- Fayetteville: Ramsey Street Complete Street - total of 7-miles
 - As part of this project, construct a sidepath on the east side of the road for the length of the corridor. This will significantly enhance bicycle connectivity to/from the Cape Fear River Trail for multiple schools, residential areas, commercial areas, and downtown Fayetteville.
- Downtown Fayetteville Circulation - total of 11.4-miles
- Cape Fear River Trail Extension to Arnette Park - 3.8-miles; Extend the

Cape Fear River Trail south from the existing southern terminus just north of the Botanical Gardens to Arnette Park. This section should also be designated as part of the East Coast Greenway.

Total mileage for the priority projects equal around 44.7 miles of bicycle network in and around Fayetteville.

Lastly, there are several policies and regulatory recommendations in the Regional Bike Plan, if implemented, can also be added assistance to the application for Fayetteville. Those recommendations included:

- Implementing a Complete Streets policy
- Designated bike facilities and accommodations
- Level of service (LOS) in traffic impact and other engineering studies
- Access management program or policy
- Require new bike lanes, greenways, etc to add to existing bike facilities total mileage and making sure the street network is well connected
- Adopt bike parking requirements
- Require connectivity between adjacent land parcels

Highlighting all the different aspects of engineering taking place in Fayetteville and Cumberland County are some of the biggest pieces to the bicycle-friendly application. Utilizing policies and design standards that promote the implementation of bicycle facilities in order to increase total network and connectivity is key to becoming bicycle-friendly.

EDUCATION OVERVIEW

Education, encouragement, and enforcement programs are just as important as infrastructure within the Sandhills Regional Plan, especially in the promotion of bicycling safety and for promoting awareness of bicycling resources throughout the region. Education is not just about giving people the skills and confidence they need to get out and ride a bicycle. It is also about equipping local governments with the tools and training

to help make bicycling a part of the transportation system. One specific goal in the Regional Bike Plan includes a strategy for increasing awareness in order to improve safety. It would be important to developing bicycle-friendly education programs, policies, and facilities in order to emphasize safety for all types of cyclists.

This strategy can be developed using tactics from the Bicycle Friendly Community application outline that include offering bike safety classes for children, youth, and adults, as well as developing a way to share that information City- and regional-wide. Sharing safety related information can promote safe riding, commuting tips, traffic laws and family riding within High Point and the surrounding region.

- The Regional Bicycling Website provides bicycling information that is easier to find by providing resources, maps, safety information, events, group listings, and more, in one central place. Having an interactive map of trails for cycling, walking/hiking, running and mountain biking not only promotes the trail system, but also helps educate people on road safety and bike maintenance.
- Walk Bike NC is a statewide program that Fayetteville can utilize by sharing their educational materials, tactics for social media engagement, and public service announcements. Adopted in 2013, the program also includes design guidelines, policies and practices, and implementation and funding strategies that can serve as a gateway to resources.
- Safe Routes to School is an organization whose purpose is to increase the number of North Carolinians that meet physical activity recommendations by the Centers for Disease Control and Prevention (CDC) by increasing the number of elementary and middle school students who safely walk and bike to or at school. The North Carolina Safe Routes to School Handbook is a resource that is available to all schools and communities across the region.
- Let's Go NC! is a pedestrian and bicycle safety skills program, endorsed by North Carolina Department of Transportation (NCDOT), offer special curriculum for

children and adults. Outlined in the first education strategy, there are education materials for elementary, middle and high school children, as well as materials for both bicyclists and motorists.

ENCOURAGEMENT OVERVIEW

The Sandhills Regional Bike Plan provides several encouragement strategies that will be beneficial to the Bicycle-Friendly Community application. If Fayetteville is able to utilize the recommendations outlined, it will help promote the necessary encouragement activities to foster a culture that welcomes and celebrates bicycling. Involvement with local governments, non-profit organizations, bike shops, and community groups across the region will be needed to make the City and region ranked as bicycle-friendly.

One strategy includes bicycle wayfinding signage. Putting signage in place will encourage bicycling to and from tourism destinations; help bicyclists navigate along suggested bicycling routes. The jurisdictions of the Sandhills Region have varying levels of bicycle and automobile wayfinding currently in place, and varying branding strategies, but providing a cohesive identification of bicycle routes will help promote usage.

Another strategy is capitalizing on bicycle events. Expand and promote opportunities for bicycle-oriented tourism through rides and races; support communities as they seek to define themselves as a good place for bicycle events and tourism. Currently, such events include the Fayetteville-Cumberland Metric Century Bike Ride, which is a 12, 30, or 62-mile ride hosted by Fayetteville-Cumberland Parks and Recreation, benefiting the Special Olympics of Cumberland County. These events have the potential to bring thousands of bicyclists and tourists to the region each year, presenting an opportunity for communities and businesses to capture tourism dollars and market local destinations and rural amenities.

The Implementation Action Steps outlined in the Regional Plan also provide support programs for encouragement. Launching priority programs, establishing a regional branding and wayfinding system, and



building public support are just some of the action steps that could help encourage the community in and around Fayetteville to bike and become advocates for the cause.

ENFORCEMENT OVERVIEW

Law enforcement officers play an important role in fostering mutual respect and responsibility among all road users. From police officer bike patrol training to bicycle traffic regulation courses, law enforcement agencies across the region are taking a proactive approach to creating safe streets for people on bike, on foot, and in motor vehicles.

The strategies outlined in the Regional Bike Plan include encouraging everyone to keep bike lanes clear to improve safety for bicyclists and motorists, to encourage motorists and bicyclists to operate safely and obey rules of the road, and to ensure that bicyclists riding at night or in dim light have proper lighting on their bikes. Involvement from local law enforcement and residents in Fayetteville and Cumberland County will help provide the visibility and awareness needed within the City and region.

The Sandhills Regional Bike Plan outlined several additional tactics for funding bicycle and pedestrian safety improvements and enforcement, as well as tools that can be utilized to improve training and knowledge on bicycle safety throughout the community. For example, the Watch for Me NC media campaign works in partnership with local agencies and police officers to hand out bicycle lights along with bicycle and pedestrian safety cards that can be utilized in Fayetteville. Fayetteville Police are already engaged in several driving safety programs, including Bike Safe NC and Crash Analysis Reduction Strategy (CARS). These driving safety programs can be integrated with more bicycle safety information and training as an additional community engagement strategy.

Measuring performance over time is essential to safety and implementation too. Tracking performance measures within communities and across the region will allow implementing agencies to understand progress, communicate successes and challenges, and motivate leaders to take

further actions. Crash and fatality rates per capita and the number of police departments completing bicycle education courses is an important aspect of the bicycle-friendly community application. Individual counties or municipalities like Fayetteville may track and report progress independently in order to highlight where improvements need to be made.

EVALUATION AND PLANNING OVERVIEW

Policies and plans are the foundation on which local governments and organizations base their decisions. Policies that support bicycling, like Complete Streets and bicycle parking ordinances, can have profound impact on the way we design and build our streets and our communities. Comprehensive plans can provide proper implementation strategies needed in order to get projects funded and built. Both are critical aspects of any bicycle-friendly community.

Several plans already in place within Fayetteville and the region can be utilized to outline completed improvements. Fayetteville's Pedestrian Plan from 2018 provides project recommendations that will help improve mobility and connectivity for pedestrians, but also includes bicycle and motorists safety initiatives and an important planning tactic for the City. The Fayetteville Area Metropolitan Planning Organization (FAMPO) Bicycle and Pedestrian Element of the 2040 Metropolitan Transportation Plan is also an important comprehensive plan that provides recommendations and project prioritization for bicycle infrastructure. Adopting the Sandhills Regional Bike Plan will also help to promote the evaluation and planning needs and qualifications for the application.

Using the tools and action items outlined in each plan can help manage bicycle improvements projects, funding, and specific targets for ridership and safety throughout the City and the region. Ensuring there is a mechanism that ensures that bicycle facilities and programs serve the entire community equitably is an important aspect of the application. A Bicycle Advisory Committee or Bicycle and Pedestrian Advisory Committee that meets at least several times a year can be

an important tactic in order to make sure policies and program recommendations are being implemented and the government agency is being held accountable. Designating a City staff member to lead and coordinate bicycle-related activity and projects can also be beneficial for monitoring progress.



PREPARED FOR: THE FAYETTEVILLE AREA MPO AND NCDOT *with*
THE MID-CAROLINA RPO, THE LUMBER RIVER RPO, *and* THE CAPITAL AREA MPO

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