



The CITY
of BURLINGTON

Greenways & Bikeways Plan



Prepared for the City of Burlington, North Carolina
Prepared by Alta Planning + Design



Adopted by Burlington City Council
September 19, 2017

Acknowledgments

Thank you to the 600+ local residents that participated in the development of this plan through meetings, events, comment forms, and plan review. Special thanks to those who participated as steering committee members, community leaders, and project advisors, listed below.

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2017

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INTENDED AUDIENCES

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 in Burlington, North Carolina.

Executive Summary

Plan Purpose

The purpose of this plan is to create a connected and comprehensive system of greenways and bikeways that enhances quality of life throughout Burlington.

There is no other single type of investment that can be made on a citywide scale that provides such a wide range of positive impacts. Greenways and bikeways improve quality of life by providing opportunities for transportation, recreation, public health, economic development, and environmental stewardship. This Plan serves as a clear guideline seizing these opportunities, providing a framework for city staff, elected officials, and local and regional project partners to create a connected network of greenways and bikeways in Burlington.

WHAT IS A GREENWAY?

Greenways are defined as linear, natural areas which may be suitable for access. Some greenways benefit the community by remaining as undeveloped open space, protecting water quality, providing valuable buffers, environmental preserves, or wildlife corridors. Some greenways also contain trails. These “greenway trails” enhance existing recreational opportunities, provide routes for active transportation, and improve the overall health and quality of life in an area. They can be paved or unpaved, and can be designed to accommodate a variety of trail users. This particular plan is focused on establishing greenway trails, also known as shared-use paths.

WHAT IS A BIKEWAY?

For the purposes of this plan, the term “bikeway” refers to a number of types of bicycle facilities. This includes signed and marked on-road bicycle routes, bicycle lanes, buffered bicycle lanes, separated bicycle lanes, and shared-use paths along roadways (also known as side paths). There are many types of bicyclists, ranging from the highly experienced, to the “interested, but concerned” to the novice. This plan recognizes that it takes many different types of facilities to accommodate all ages and abilities.

Please see Chapter 3 for more on the differing types of greenway and bikeway facilities and treatments.

Plan Goals



ENHANCE CONNECTIVITY



ENHANCE HEALTH



CREATE A POSITIVE ECONOMIC IMPACT



INCREASE SAFETY



PROTECT THE ENVIRONMENT



INCREASE LIVABILITY



PROMOTE EQUITY

Planning Process Overview

The planning process began in winter 2016-2017 and concluded in summer 2017:





The Steering Committee and City Staff discuss some of the key opportunities and constraints for this plan at the Kick Off Meeting.

BASIS OF RECOMMENDATIONS & METHODOLOGY

The Greenway and Bikeway Network was developed with these key steps:

1. *Collect data.*
2. *Map all existing routes and facilities, plus recommendations from previous plans.*
3. *Identify a proposed overall network of connected greenways and bikeways.*
4. *Prioritize the overall system into sets of recommendations.*

The steps above included input and direction from several key sources:

- *The general public, through comment forms and public input maps;*
- *City staff, through discussion of opportunities and constraints; and*
- *The project Steering Committee, through several meetings and plan review throughout the planning process.*

This system focuses on corridors that offer the best potential for actual construction, given associated opportunities and constraints for each project. It also has a focus on connecting to key destinations such as Downtown Burlington, Elon University, the Haw River, city parks, neighboring towns, Alamance Crossing, and other shopping areas.

Plan recommendations are summarized in the following maps in Chapter 3:

MAP 3.1: TOP PRIORITY PROJECTS (PHASE 1): These projects were the most consistently mentioned in committee meetings and public outreach, and all four ranked high in prioritization (pages 38-39) with strong destination points (Downtown, Elon University, Haw River, and 3 major parks). They are also featured in cutsheets #1-4.

Map 3.2: PHASE 2: These projects were strategically selected to form a cohesive and connected network of greenways and bikeways, serving key destinations from east to west across Burlington. Each of the seven projects ranked well in prioritization. They are featured in cutsheets #5-11.

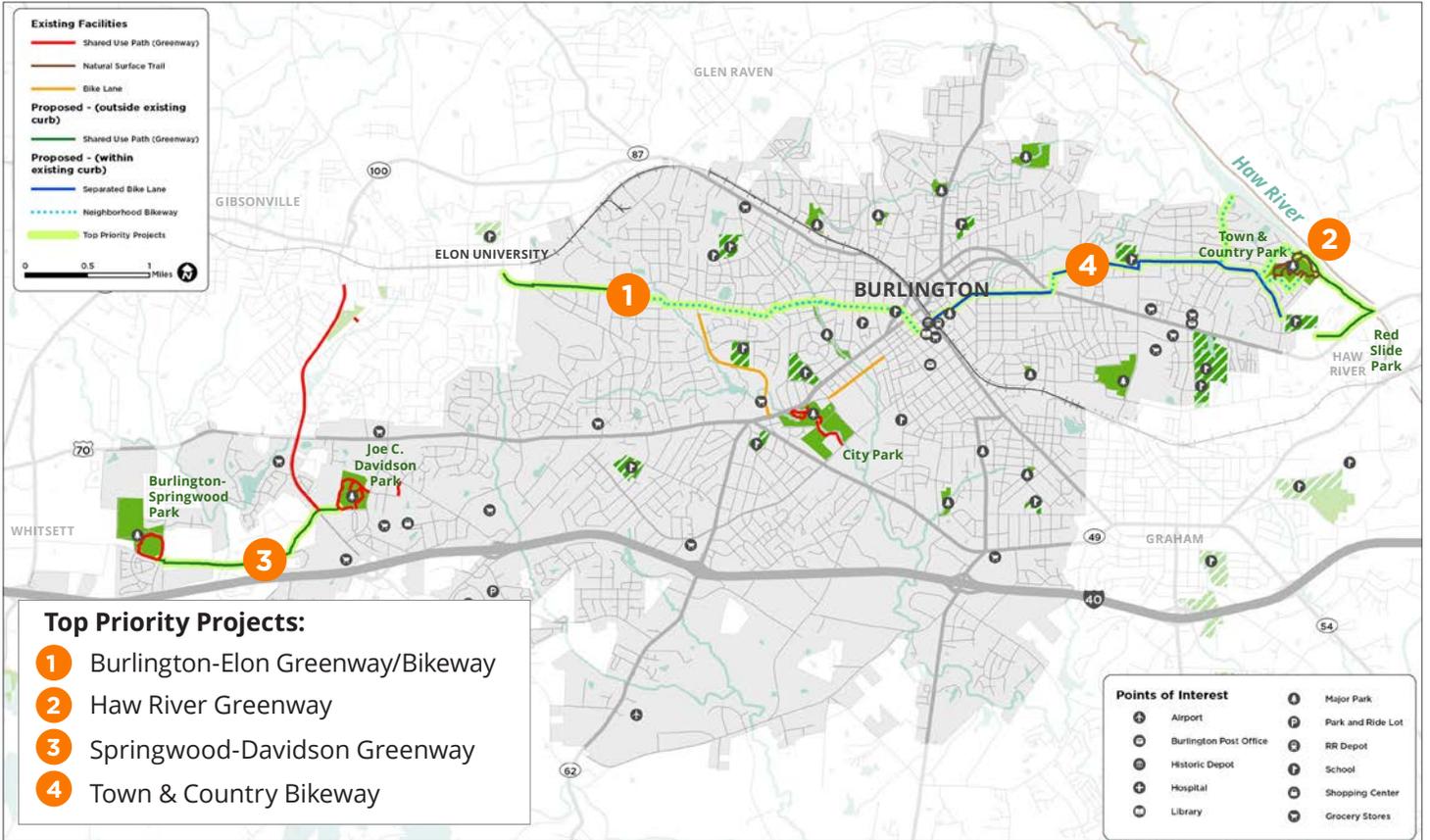
Map 3.3: PHASE 3: These projects build upon the previous phases to strategically fill remaining gaps after previous projects have been completed. Some may be completed at the same time as Phase 2 projects, depending on opportunities for implementation that may arise after this planning process is completed.

Map 3.4: COMPREHENSIVE NETWORK: This map shows all potential greenway and bikeway opportunities in the entire city. It is not expected (or recommended) that all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.

MAP 3.1

TOP PRIORITY PROJECTS

See Chapter 3 for details.



The Haw River represents a huge opportunity for the City of Burlington for recreation and improved quality of life. Greenways can help provide better access to this great natural resource. *Left and below: Photo renderings of trails along the Haw River in Burlington.*



1

Introduction

“Greenways are an AMAZING way to connect parts of the city and beyond....greenways will make Burlington that much more appealing to people and families who want to live close to a larger city and still have access to similar things.” - Public Comment, 2017



Vision

The City of Burlington will offer residents and visitors many options for bicycling and walking, through well-designed and beautifully maintained greenway trails, and through bicycle-friendly streets. People of all ages, abilities, and incomes will be able to safely and conveniently get to where they want to go.



Project Overview

The City of Burlington began developing this Greenways & Bikeways Plan as a follow-up to the 2015 City of Burlington Comprehensive Plan: Destination Burlington, in which one of the top recommendations was to “Improve city-wide and regional connectivity through greenways, trails, bicycle lanes and paths, and sidewalks”. This Greenways & Bikeways Plan also builds upon the recommendations in other past planning efforts, such as:

- Destination Burlington: Comprehensive Land Use Plan
- The Burlington Pedestrian Master Plan
- The Downtown Burlington Master Plan
- The Burlington-Graham MPO Comprehensive Transportation Plan & Bike Routes Map
- The Burlington Park-Way Map
- Burlington Recreation & Parks Comprehensive Master Plan
- Alamance County Trails Plan



This plan builds upon the work and recommendations in past planning efforts.

Opposite: City staff exploring a potential greenway corridor along the Haw River.

Plan Goals

These goals build upon the vision statement and help to inform this plan's analysis and recommendations. They reflect the City of Burlington's project description outlined in this plan's request for proposals, and were adapted from the Federal Highway Administration's *Guidebook for Developing Pedestrian and Bicycle Performance Measures*. Each goal is discussed in more detail on the following pages.



ENHANCE CONNECTIVITY

Create more trails and bicycle-friendly streets that allow people of all ages and abilities to safely and conveniently get where they want to go.



CREATE A POSITIVE ECONOMIC IMPACT

Recognize the economic benefits of walkable, bicycle-friendly communities, and capitalize on trail-based tourism.



PROTECT THE ENVIRONMENT

Increase air quality by replacing a percentage of automobile trips with walking and bicycling trips; Protect waterways, wildlife habitat, and natural areas along greenways.



PROMOTE EQUITY

People who do not own cars should still be able to go places safely and conveniently; Ensure that walking and bicycling infrastructure is provided in places with lower car ownership rates.



ENHANCE HEALTH

Improve access to outdoor recreation and active transportation for health and wellness.



INCREASE SAFETY

Address the safety of the transportation system for all users; Track crashes, injuries, fatalities, and changes in numbers of crashes over time.



INCREASE LIVABILITY

Transportation systems have a direct impact on overall quality of life; Provide active transportation choices within the transportation system that support healthy, safe, and walkable/ bikeable neighborhoods.

Planning Process

The development of this plan was open and participatory, with area residents providing input through public events, workshops, committee meetings, public comment forms, and an online input map. The planning process began in winter 2016-2017 and concluded in summer 2017:



STEERING COMMITTEE

The Steering Committee is made up of representatives from the following agencies and organizations:

- Alamance County Parks Department
- Burlington/Alamance County, Convention & Visitors Bureau
- Burlington-Graham Metropolitan Planning Organization (BGMPO)
- Burlington Planning & Community Development Department
- Burlington Public Works Department
- Burlington Recreation & Parks Commission
- Burlington Recreation & Parks Department
- Burlington City Manager
- City of Graham
- Elon University
- Healthy Alamance
- Impact Alamance
- Local Business Representatives
- Local Walking, Running & Bicycling Club Representatives
- NCDOT Transportation Planning Branch
- Town of Elon
- Town of Gibsonville

KEY FEATURES OF THE PLAN

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

The Value of Greenways & Bikeways for the City of Burlington

Increased rates of bicycling and walking will help to improve people's health and fitness, improve livability of our community, enhance environmental conditions, decrease traffic congestion, and contribute to a greater sense of community.

Scores of studies from the fields of public health, urban planning, urban ecology, real estate, tourism, and transportation have demonstrated the value of supporting bicycling and walking. Communities across the United States and throughout the world are investing in improvements for bicycling, walking, and trails. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits outlined in the sections that follow, which mirror the main themes of this plan's goals: Connectivity, economic impact, environment, equity, health, safety, and livability.

Below: Consultants and local cyclists taking a tour of Burlington by bike.



Connectivity

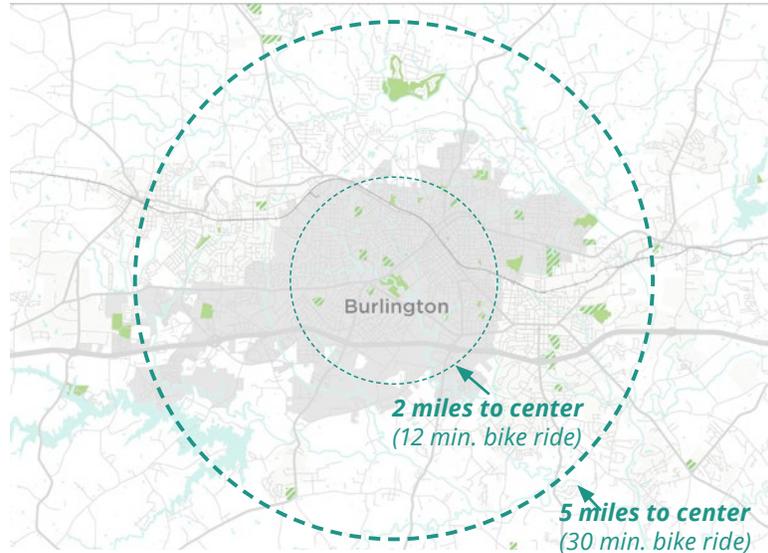
Surveys by the Federal Highway Administration show that Americans are willing to walk as far as two miles to a destination and bicycle as far as five miles.

Almost all of Burlington falls within a five-mile radius of its geographic center (roughly at Burlington City Park), meaning that many of the City’s centers of employment, recreation, education, shopping, and culture are within a reasonable bicycling distance of one another. Similarly, nearby destinations such as Elon University, Graham, Gibsonville, and the Haw River are all within a similar bicycling distance. The challenge becomes making safe, comfortable, and convenient bikeways and greenways across these distances, which is a goal of this plan.

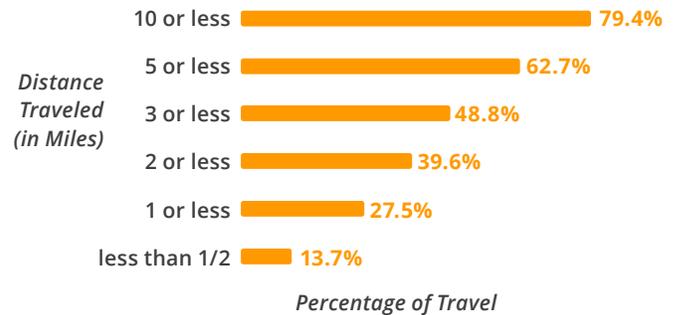
More than 60% of all driving trips made in the U.S. are shorter than five miles (see chart to the right), indicating an opportunity to accommodate those trips by providing the right environment for people to make them by bicycle, rather than in a car. By doing so, citizens can help alleviate overall congestion since each pedestrian or bicyclist means less cars on the road.

Moreover, younger generations (those born between 1981 and 2001) are driving less and wanting more transportation choices. According to the National Household Travel Survey, from 2001 to 2009, the annual number of vehicle miles traveled by young people (16 to 34 year-olds) decreased by 23 percent. Conversely, according to the Federal Highway Administration, the share of that same age group saw a rise in those without driver’s licenses, from 21 percent to 26 percent.

Example Trip Distances & Bicycle Ride Times in the Burlington Area



Daily Trip Distances



Most driving trips in the U.S. are for a distance of five miles or less. Chart from the Bicycle and Pedestrian Information Center, www.pedbikeinfo.org

Economic Impact

The economic benefits of active transportation come in the form of increased property values, tourism, sales, and infrastructure savings.

From a property values standpoint, consider the positive impact of bikeways and greenways. According to research conducted by Headwaters Economics,

“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.”

There are many examples, both nationally and in North Carolina, that affirm the positive connection between trails, active transportation, and property values. For example, consider the economic impact of bicycling on the 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 for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.⁷ Similarly, Damascus, VA, the self-proclaimed ‘Friendliest Trail Town’, features 34-miles of trail where approximately \$2.5 million is spent annually related to recreation visits. Of this amount, non-local visitors spend about \$1.2 million directly into the economies of Washington and Grayson counties⁸

See below for more selected national examples of how walking and bicycling trails positively impact property values.

SELECTED RESEARCH HIGHLIGHTS FROM HEADWATERS ECONOMICS

- *In San Antonio, Texas, neighborhood trails were associated with a two percent house price premium. Trails that were surrounded by greenbelts were associated with a five percent house price premium.¹*
- *In southwestern Ohio, the Little Miami Scenic Trail is associated with higher property value in urban, suburban, and rural settings. Up to a mile away from the trail, for every foot closer to the trail, property values increase by about \$7. A home a half mile from the trail would sell for approximately nine percent less than a home adjacent to the trail.²*
- *In suburban New Castle County, Delaware, homes within 150 feet of bike paths commanded a four percent price premium.³*
- *In rural Methow Valley, Washington, homes within one-quarter mile of trails benefited from a 10 percent price premium.⁴*
- *Along a popular trail in Austin, Texas, the price premium ranged from 6 to 20 percent, depending on whether the neighborhood had views of the greenbelt surrounding the trail and whether it had direct neighborhood access to the trail.⁵ This price premium translated to roughly \$59,000 per year in additional tax revenue or five percent of the annual cost of trail construction and maintenance.⁶*
- *In Indianapolis, researchers found that a high-profile, destination trail was associated with an 11 percent price premium for homes within a half mile of the trail. Other trails had no price premium.⁷*
- *In Seattle, Washington⁸ and upstate New York⁹, adjacent property owners were concerned about trail-related crime before the trail was built. Researchers found no change in crime rate after the trail was built.*

Bicyclists, pedestrians, and trail users can also add real value to local economies. For example, a 2014 study of the American Tobacco Trail Bridge in Durham, NC, found that:

“The completion of the bridge linking the Northern and Southern trail segments resulted in an estimated annual impact of 43 jobs, \$1.3 million in employee compensation, and \$4.9 million in total business gross revenues. As a comparison, the construction of the bridge and connecting trail segments cost approximately \$11.2 million” (Bridging the Gap: Economic, Health, and Transportation Impacts from Completing a Critical Link in a 22-Mile Rail Trail).

Furthermore, 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).

It is also important to consider the individual costs associated with various forms of transportation. Walking is virtually free and the cost of operating a bicycle is far less than operating a car. 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). Bicycling and walking are affordable forms of transportation, and with the relatively low cost and high return on investment for bikeways and greenways, it is hard to argue against developing a regional system that creates value and generates economic activity.



Bicycles and greenway trails mean business in two of Burlington’s neighboring city centers: Downtown Durham (left) and the Downtown Greenway in Greensboro (below - photo by Action Greensboro).

Environment



“The Citizens of Burlington spoke loud and clear, both through the community survey and discussions at public meetings, that stronger environmental protection and improved environmental stewardship were important goals for the future of their city” (City of Burlington Comprehensive Plan, 2015).

As demonstrated by the Southern Resource Center of the Federal Highway Administration, when people get out of their cars and walk or bike, they reduce measurable volumes of pollutants.⁹ Other environmental impacts include a reduction in overall neighborhood noise levels and improvements in local water quality as fewer automobile-related discharges wind up in the local rivers, streams, and lakes.

Trails and greenways protect and link fragmented habitat and providing opportunities for protecting plant and animal species. Aside from connecting places without the use of air-polluting automobiles, trails and greenways also reduce air pollution by protecting large areas of plants that create oxygen and filter air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal.

Greenways improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff. Finally, greenways also prevent losses of life and property from flood damages by dedicating greenway and trail right-of-way in floodplains, rather than development in floodplains.

Environmental Health Benefits of Walkable and Bikeable Communities

CURRENT U.S. HEALTH STATISTICS



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

(CDC, 2015a)



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

(CDC, 2009)



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

(NHTS, 2009)

HEALTH BENEFITS



A minimum of **20 MINUTES OF PHYSICAL ACTIVITY, 3X WEEK, STRENGTHENS THE LUNGS**, including those of individuals living with asthma.

(PubMed Health, 2014)



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, nationally.

(Pedroso, 2008, SRTS)



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)

Equity



A key component of equity for this plan is providing facilities for all ages, abilities and incomes. In Burlington, about 9% of households do not have access to an automobile. Households without access to vehicles are not well-served by auto-oriented transportation solutions and require walking, bicycling, and transit infrastructure.

Similarly, children under 16 and seniors with decreasing driving abilities deserve safe ways to access community destinations without depending on an automobile.

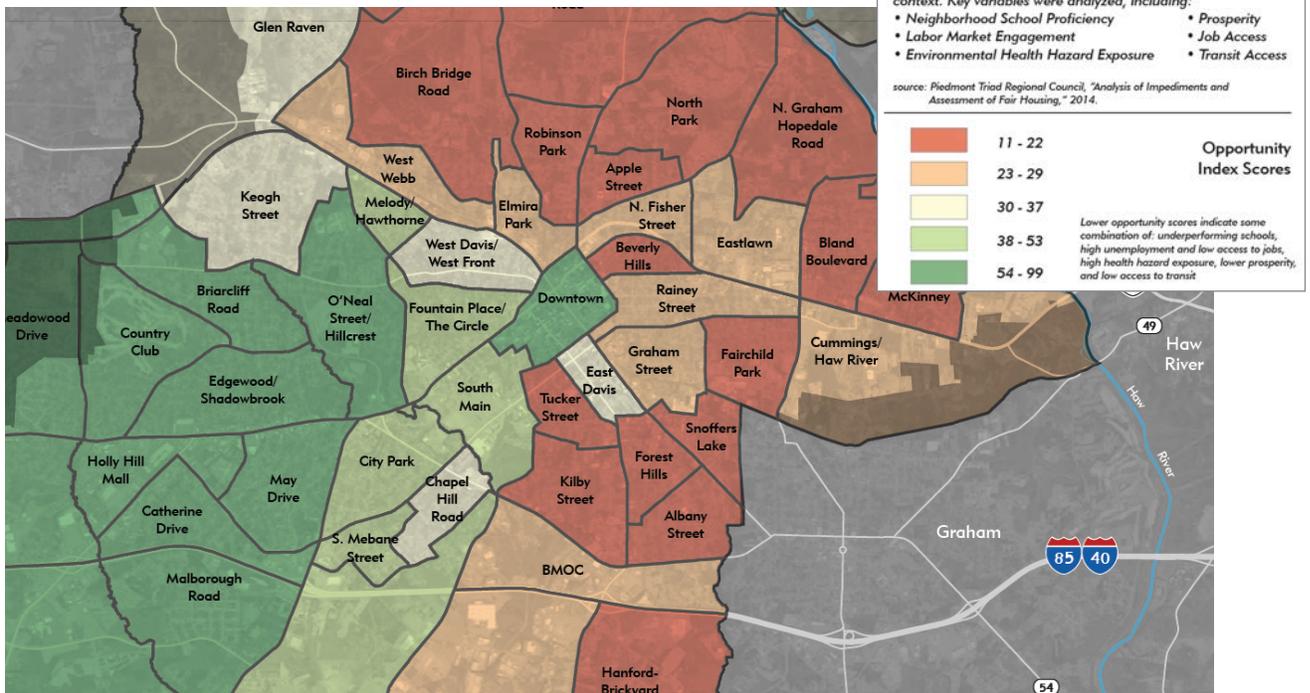
There are disparate costs and impacts of transportation decisions on populations of different

income levels. Owning and maintaining a car can be expensive, whereas walking is virtually free and the cost of operating a bicycle is far less than operating a car.

Bikeways and greenways also provide reliable, safe, and affordable ways to reach jobs, education and other essential services. U.S. DOT's 2016 policy initiative, *Ladders of Opportunity*, notes that:

“The choices we make regarding transportation infrastructure at the Federal, State, and local levels can revitalize communities, create pathways to work, and connect hardworking Americans to a better quality of life.”

Neighborhood Opportunity Index Map



Snapshot of the Neighborhood Opportunity Index map from the 2015 City of Burlington Comprehensive Plan. This Bikeways & Greenways Plan takes a balanced approach to recommending new facilities, including all parts of the community.

Health

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people's ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth).

CURRENT U.S. HEALTH STATISTICS



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

(CDC, 2013)



2/3 of Americans **ARE OVERWEIGHT OR OBESE.***

(CDC, 2016)



CARDIOVASCULAR DISEASES are the **#1 CAUSE OF DEATH** in the United States.

(Mozaffarain, D. et al, 2014)



1,630 Americans **DIE EVERY DAY FROM CANCER**, mainly that of the lung, breast and colon.

(American Cancer Society, 2016)



61% of American adults 65 years or older **HAVE AT LEAST ONE ACTIVITY-BASED LIMITATION.**

(CDC, 2015b)



1 in 5 Americans report their **STRESS LEVELS AS EXTREME.**

(American Psychological Association, 2011)

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, 2009)



PHYSICAL ACTIVITY HELPS PREVENT OR DELAY ARTHRITIS, OSTEOPOROSIS AND DIABETES, while helping to maintain balance, mental cognition, and independence.

(National Institute on Aging, 2015)

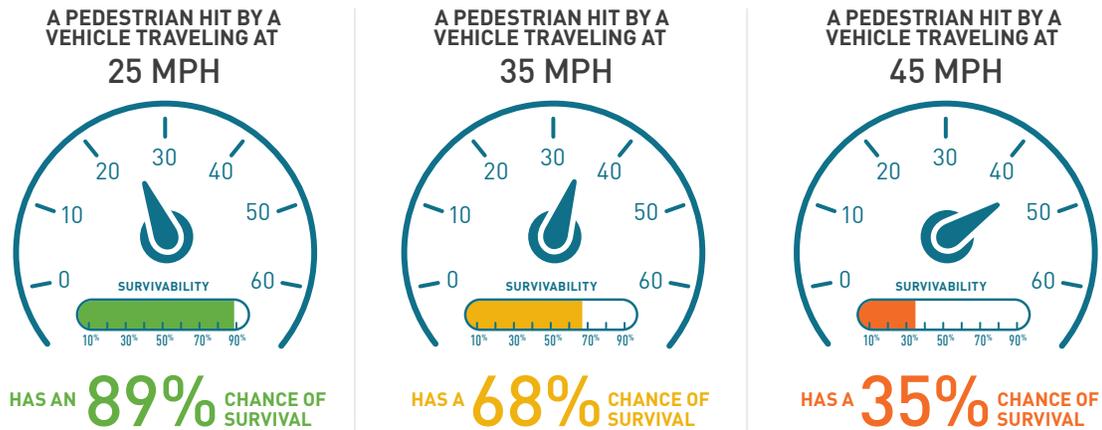


BIKE COMMUTERS REPORT LOWER STRESS LEVELS compared to auto commuters.

(New Economics Foundation, 2011)

Safety

Bicycle facilities can have a significant influence 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) to help transportation engineers identify the most appropriate countermeasure for their 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. Even measures as straightforward as speed reduction can have huge impact on safety, as shown in the graphic below.



Tefft, B. C. *Impact speed and a pedestrian's risk of severe injury or death.* Accident Analysis & Prevention 50 (2013) 871-878.

Livability



Many factors go into determining quality of life for the citizens of a community: the local education system, prevalence of quality employment opportunities, and affordability of housing are all items that are commonly cited. Increasingly though, citizens claim that access to alternative means of transportation and access to quality recreational opportunities such as parks, trails, greenways, and bicycle routes, are important factors for them in determining their overall pleasure within their community.

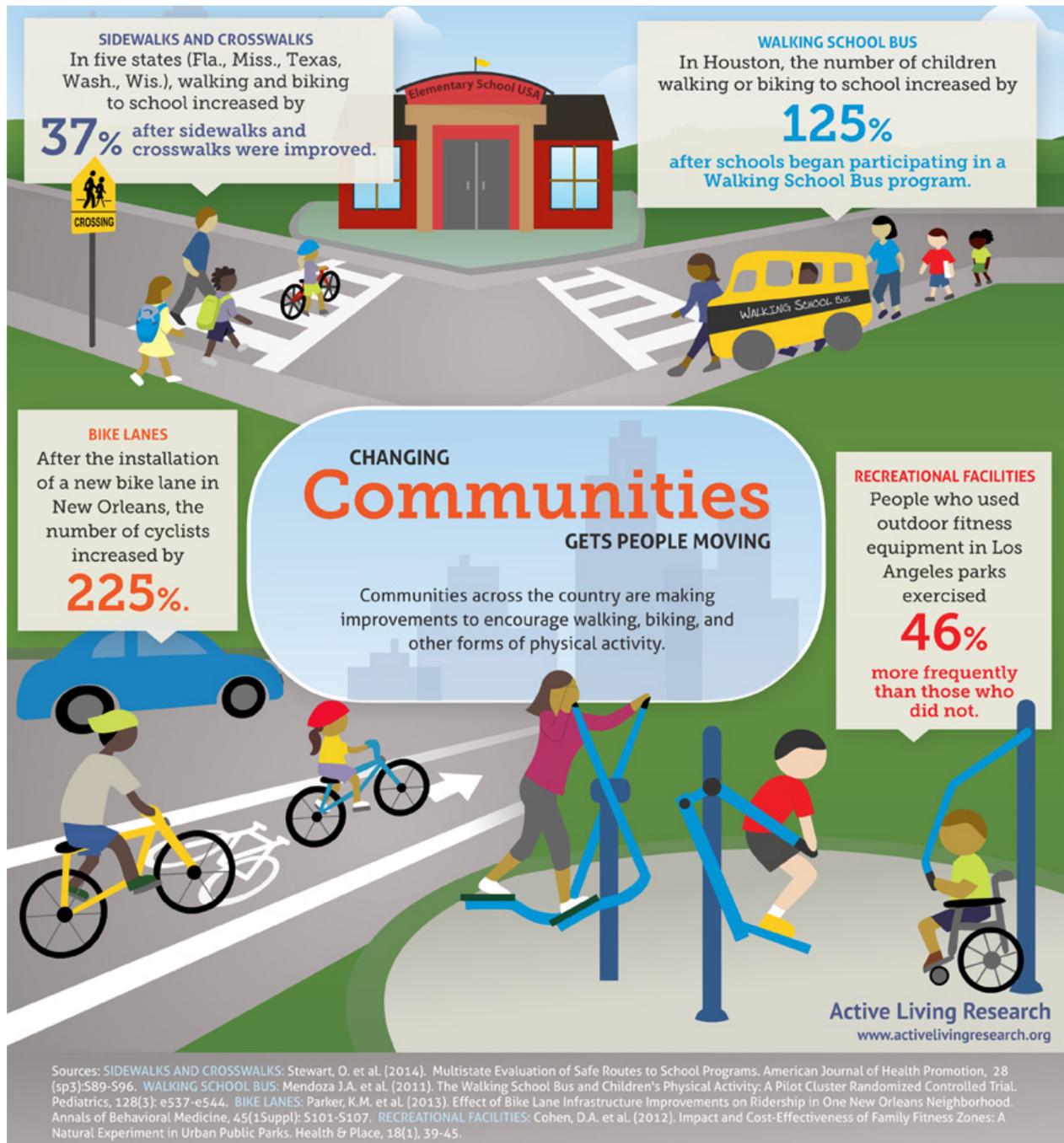
Communities with such amenities can also attract new businesses, industries, and in turn, new residents. Furthermore, quality of life is positively impacted by bicycling and walking through the increased social connections that take place by residents being active, talking to one another and spending more time outdoors and in their communities.



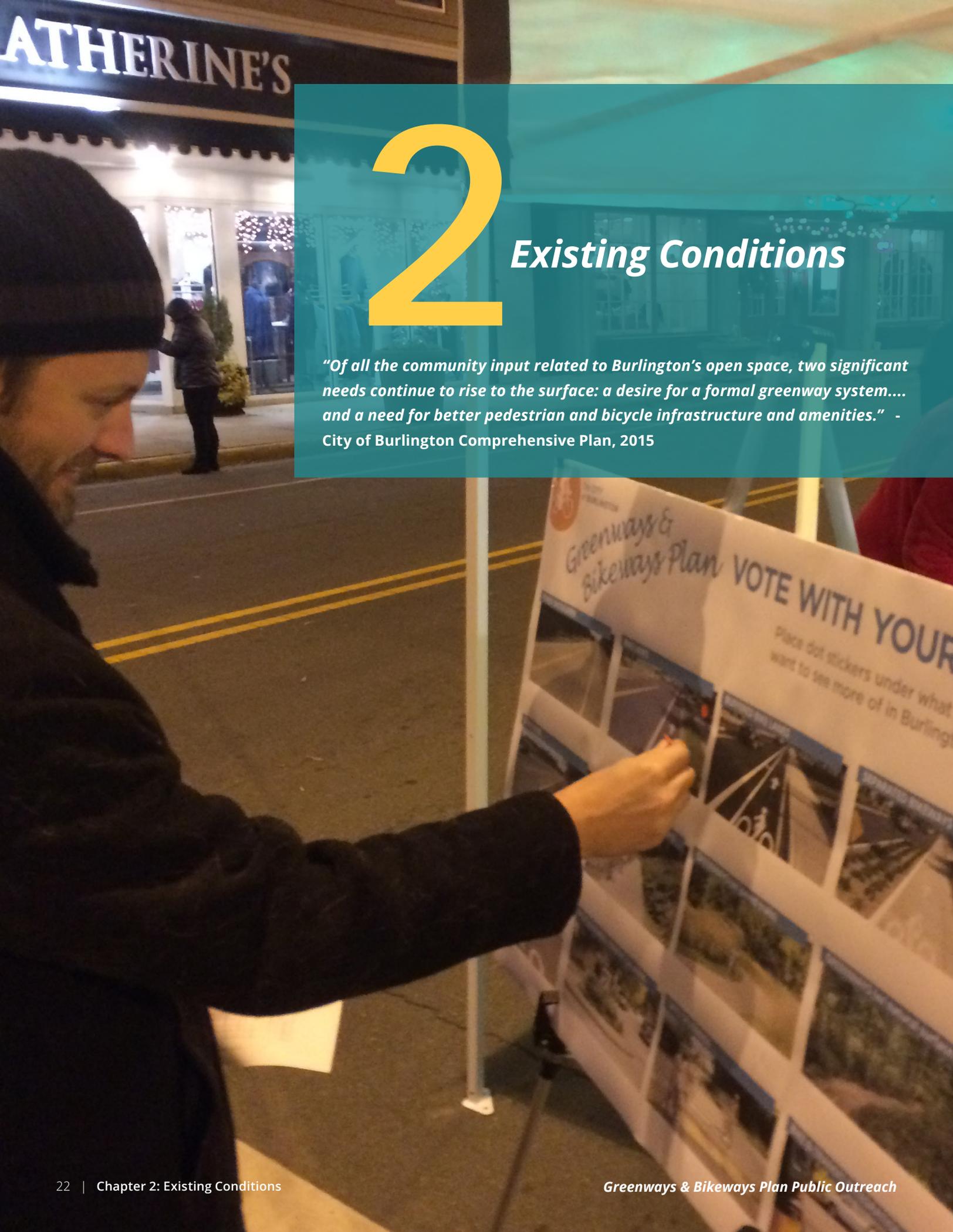
Burlington's parks and trails enhance overall quality of life for residents (left: Joe C. Davidson Park).



Greenway trails can play a huge role in the livability of city. Burlington is fortunate to have the Haw River nearby as an opportunity for further greenway development, with trails that could look like the one pictured here. This is a greenway trail in Northwest Arkansas, where greenways were built specifically to enhance livability, thereby attracting and retaining a high quality work force for the region's Fortune 500 businesses.



Infographic provided by Active Living Research, a program of the University of California, San Diego. Available for download at <http://activelivingresearch.org/changingcommunitiesinfographic>.



2

Existing Conditions

“Of all the community input related to Burlington’s open space, two significant needs continue to rise to the surface: a desire for a formal greenway system... and a need for better pedestrian and bicycle infrastructure and amenities.” - City of Burlington Comprehensive Plan, 2015

Overview

This chapter summarizes the existing conditions for greenways and bikeways in Burlington, through mapping analysis, and through a summary of public comments received during the planing process.

Existing Conditions

Key features of existing greenways and bike-ways in the City of Burlington and immediate surroundings include the following (see Map 2.1 Existing Greenways & Bikeways):

- 2.7 miles of paved greenways in City Park, Davidson Park (including the Westbridge Dr & Peeler St connector), and Springwood Park
- 2 miles of sidepath along University Dr from Rural Retreat Rd to Huntingdon St
- 1.7 miles of striped bicycle lanes (ONeal St and Main St)
- A network of natural surface trails in Town & Country Park
- 2.9 miles of shared use hiking/mountain bike trails at Guilford Mackintosh Park
- 17 of 80 planned miles of the Haw River Trail are completed from Haw River State Park to Jordan Lake State Recreational Area, also serving as a section of the state-wide Mountains-to-Sea Trail. This includes open sections of trail along Burlington's

northeast border along the Haw River, serving as a key opportunity for greenway and bikeway connectivity.

- Several Alamance County Bike Routes that are signed throughout Burlington, utilizing lower traffic volume neighborhood street connections where possible
- Nearly 80 miles of locally proposed greenway corridors as identified in Burlington's Comprehensive Plan.

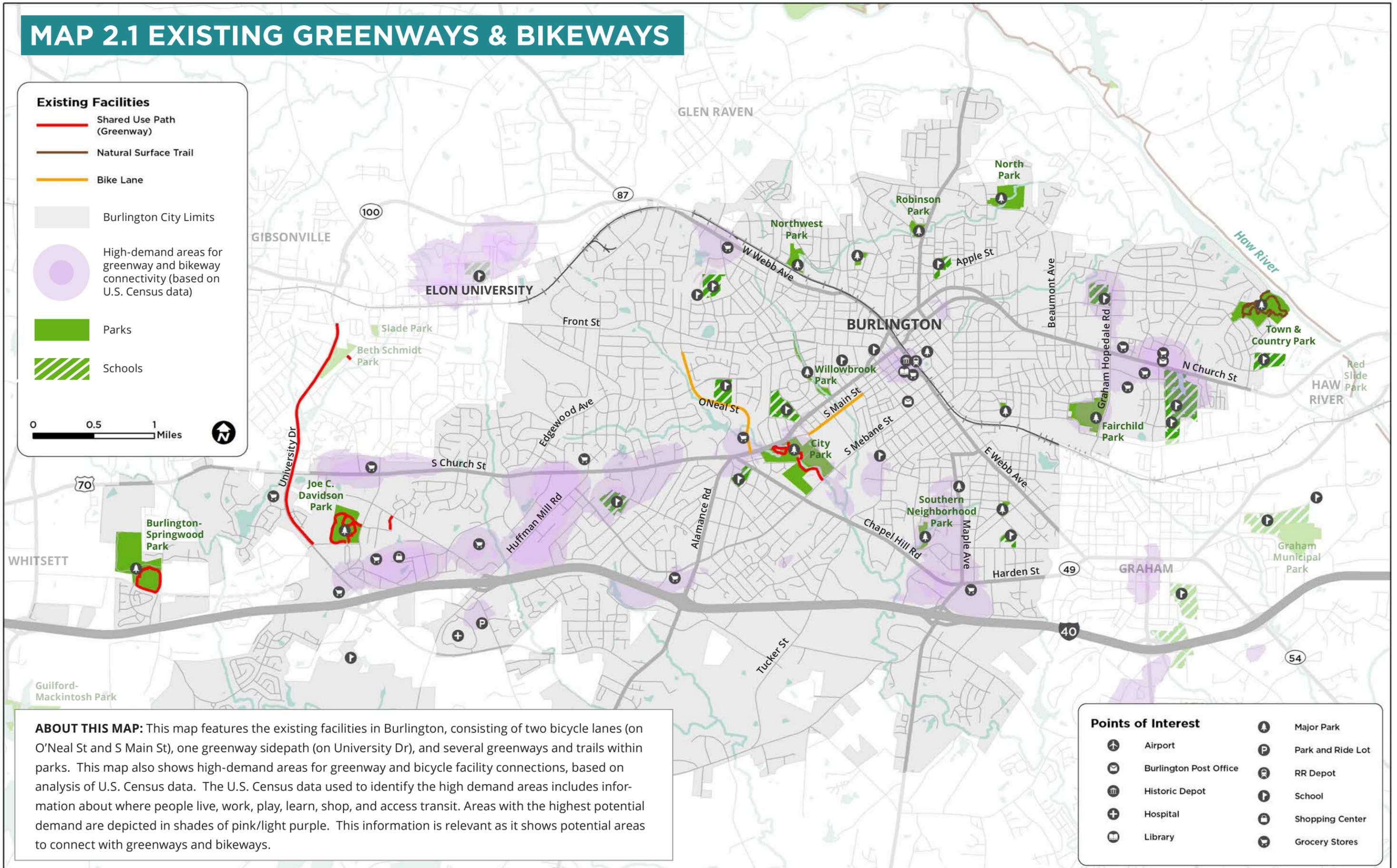
Supporting Maps (Appendix A)

In addition to Map 2.1, three other existing conditions maps are included in the appendix for reference. These include:

- Map A.1 Bicycle & Pedestrian Crash Locations
- Map A.2 Sewer Corridors
- Map A.3 NCDOT Traffic Volume Data
- Map A.4 Upcoming Roadway Projects

Each of these maps may be useful for future greenway and bikeway planning purposes; notes are included on each map, describing the map and its relevance to this plan.

MAP 2.1 EXISTING GREENWAYS & BIKEWAYS

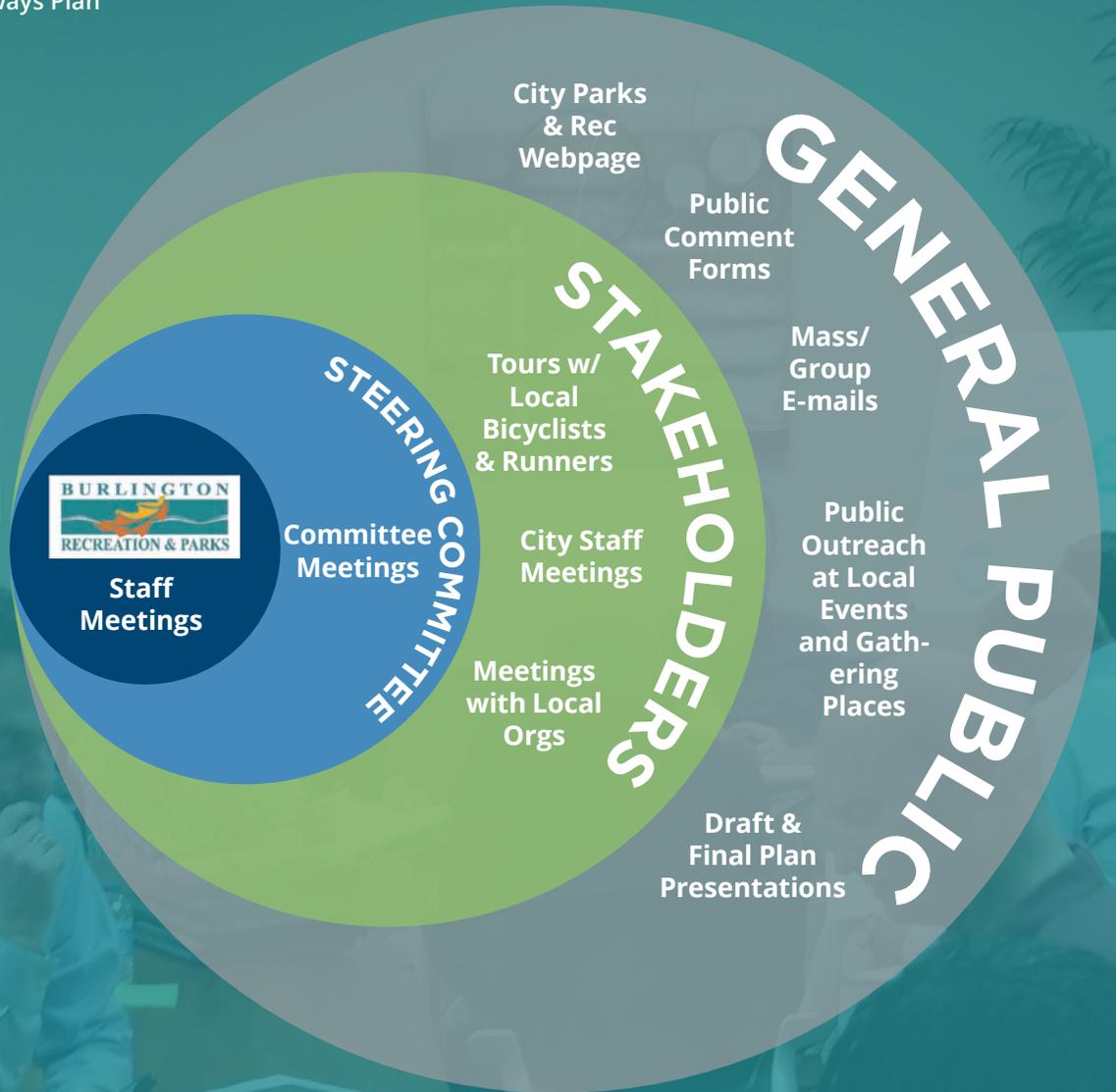


ABOUT THIS MAP: This map features the existing facilities in Burlington, consisting of two bicycle lanes (on O'Neal St and S Main St), one greenway sidepath (on University Dr), and several greenways and trails within parks. This map also shows high-demand areas for greenway and bicycle facility connections, based on analysis of U.S. Census data. The U.S. Census data used to identify the high demand areas includes information about where people live, work, play, learn, shop, and access transit. Areas with the highest potential demand are depicted in shades of pink/light purple. This information is relevant as it shows potential areas to connect with greenways and bikeways.

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Public Process Overview

KEY TYPES OF MEETINGS & PUBLIC INPUT:



- 34** STEERING COMMITTEE MEMBERS, WITH 3 OFFICIAL MEETINGS

- 5** OUTREACH SESSIONS AT LOCAL EVENTS & GATHERING PLACES

- 2** DRAFT AND FINAL PLAN PRESENTATIONS

- 600+** PUBLIC COMMENT FORMS

- 29** DESTINATIONS & BARRIERS MARKED ON THE PUBLIC INTERACTIVE MAP

- 25** ROUTE-SPECIFIC COMMENTS ON THE PUBLIC INTERACTIVE MAP



The CITY of BURLINGTON

Greenways & Bikeways Plan

VOTE WITH YOUR DOTS!

Place dot stickers under what you want to see more of in Burlington.

<p>PAVED SHOULDERS</p>	<p>BIKE LANES</p>	<p>BUFFERED BIKE LANES</p>	<p>SEPARATED BIKEWAYS</p>
<p>SIDE PATHS</p>	<p>Rail-Trails (along railroad corridors)</p>	<p>GREENWAYS (w/ paved trails)</p>	<p>GREENWAYS (w/ natural surface trails)</p>
<p>BICYCLE BLVDS: SIGNS & MARKINGS</p>	<p>BICYCLE BLVDS: TRAFFIC CALMING</p>	<p>SAFE CROSSINGS</p>	<p>BIKE & TRANSIT INTEGRATION</p>

Images from public outreach at a 2016 Downtown Burlington holiday event. The “Vote with Your Dots” board was used as an exercise to get people thinking about the choices in the different types of bikeways and greenways. This small sample of people seemed to indicate a desire for greenways and improved crossings, which was also reflected in the public comment form results.

Public Feedback on Existing Conditions from Mapping Exercises

Feedback from stakeholders and the general public was received through the online input map, and through mapping exercises at committee meetings and public outreach events. An overarching theme from the feedback was a desire to increase greenway and bikeway connectivity to local destinations.

Key Destinations Identified on Input Maps (listed west to east)

- Springwood Park
- Downtown Gibsonville
- Beth Schmidt Park
- Joe C. Davidson Park
- Commercial area: Church St & S. Williamson Ave
- Alamance Crossing
- Elon University
- Holly Hill Mall
- Harris Teeter
- Food Lion
- Williams High School
- City Park & YMCA
- Willowbrook Park, also future arboretum location
- Downtown Burlington
- Company Shops
- Burlington Station
- Historic E. Davis St
- Bell's
- Sharky's
- Commercial area: Maple Ave & Chapel Hill Rd
- Farmers' Market at North Park
- Burlington Royals games/Fairchild Park
- Health Dept, DSS, Open Door Clinic
- Commercial area: Graham Hopedale Rd & N Church St
- Graham Soda Shop
- Downtown Graham
- Mountains-to-Sea Trail
- Goat Island
- Town & Country Park
- Haw River



Some of the key destinations noted through public feedback (from top: Town & Country Park; Davidson Park; Downtown Burlington; and Elon University).

Barrier to Bicycling Identified on Public Input Maps

- Church St as an overall barrier
- Narrow parts of Front St
- Maple Ave as a key gateway, but not comfortable for riding
- Webb Ave as a key connection to Graham, but not comfortable for riding
- E Davis St & S Mebane St
- Grand Oaks Blvd as a good connection, but not good for riding
- Challenging crossing at S Church St and Forestdale Dr
- Challenging crossing at Boone Station Dr and University Dr
- Challenging crossing at Peeler St and Davidson Park



Suggested Greenway and Bikeway Routes Identified on Public Input Maps

- **Linking Town & Country Park toward Goat Island & to Town of Haw River***
- **Springwood Park to Davidson Park***
- **Downtown to Elon University***
- Downtown to the Haw River
- Along Gum Creek
- Along Edgewood Ave
- Along Mebane St
- Connections generally paralleling I-40 to the south (Grand Oaks Blvd)
- Along Graham-Hopedale Rd
- Along Davis St
- Along Vaughn Rd - low traffic volumes, wide
- N. Mebane St - key corridor with relatively low traffic volumes
- Sidepath opportunity on Boone Station Dr
- Little Alamance Creek corridor, south from City Park



Mapping exercises at stakeholder meetings.

**These three greenway and bikeway opportunities were the most consistently mentioned in committee meetings and public outreach.*

Public Comment Form Response Highlights

The public comment form was active from December 2016 to June 2017. It was available online through the project website and in hardcopy form at outreach events and meetings. People throughout Burlington were encouraged to fill-out these forms through the mass-email from project committee members, through Facebook, and through municipal website announcements.

There were **more than 600 respondents**. Although not statistically valid, the results still reflect the voices of hundreds of Burlington residents.

Current Walking and Bicycling Frequency

- **91%** walk or bike **for exercise or recreation** at least once a week.
- **38%** walk or bike **to run errands** at least once a week.
- **16%** walk or bike **to work or school** at least once a week.

Walking and Bicycling Frequency “if you had easy access to a safe network of greenway trails and bikeways”

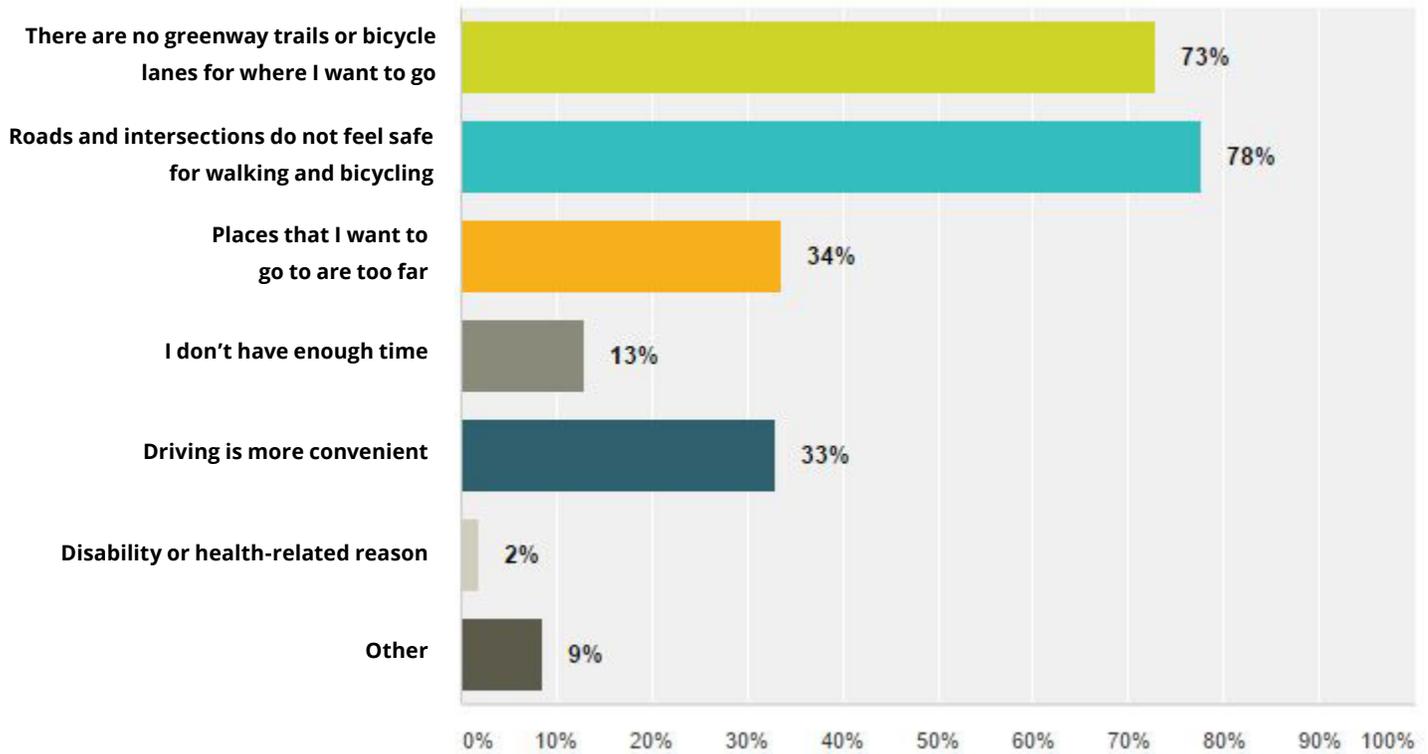
- **98%** would walk or bike **for exercise or recreation** at least once a week.
- **76%** would walk or bike **to run errands** at least once a week.
- **42%** would walk or bike **to work or school** at least once a week.

- **89%** would walk or bike **for exercise or recreation** at least **3x** a week.
- **43%** would walk or bike **to run errands** at least **3x** a week.
- **30%** would walk or bike **to work or school** at least **3x** a week.

Perception of Safety and Access

- **81%** do not feel safe from cars when walking or biking in Burlington.
- **79%** cannot easily access a greenway or trail from their neighborhood.
- **75%** cannot conveniently walk or bike to where they want to go.

What prevents you from walking and bicycling more often?



What types of future projects would you most like to see?

- #1 Connections to greenway trails and more trails in general.
- #2 Safer intersections/crossings at major roads.
- #3 More bicycle lanes, bicycle racks, and bicycle-friendly streets.

Open-Ended Comments

About 20% of survey respondents provided additional comments about the greenways and bikeways plan. Overall, responses were overwhelmingly positive and respondents are eager to see progress towards building more greenways and bikeways in Burlington. A major theme was the emphasis on the current challenge of safely bicycling in Burlington and the importance of education as well as improved infrastructure. Respondents believe that greenways are a safe and accessible option for biking, but indicated that on-road bikeways need to be separated from traffic or busy roads to the greatest extent possible. Another major theme that emerged was the recognition that greenways and bikeways are a major boon for the local economy and overall quality of life.

What We Heard

Below are quotes from the public, collected for this plan in 2016-2017.

Having such a plan sounds great - improving livability of our city with more cycling and walking opportunities will positively impact health and economic development.

I do not feel safe riding a bike on any roadway in Burlington. Streets that have "bike lanes" are not adequate in terms of safety.

I think city accessibility in the form of greenways and safe roads for biking is a driver for economic growth within a community. I look forward to Burlington's forward growth!

We've got to improve quality of life with these initiatives to help lure more economic development.

Moving to the area recently from a much a larger city I can attest adequate bike and green ways are very attractive to residents and potential new comers.

It would simply be nice to have access to a protected space from traffic and to be closer to nature.

I would like to have a safe place to take my children biking more than just a circle at a park. Burlington lacks outdoor recreation in comparison to surrounding city's.



Greensboro/High Point has miles of paved/wooded greenways. I would like to see Burlington/Elon with the same kind of park system. We loved walking in the wooded area after work and sharing about our days. We would walk miles every night.

I think many would bicycle between Elon and downtown if it were safe.

I have extensive urban riding experience in New Orleans. Bike lanes must be physically protected to be useful. Greenways are a lot of fun, but true daily urban cycling takes bike friendly, protected cycling roads.

My wife and I moved from Chicago and rode our bikes to work every day. We rode our bikes more than 100 miles per week for recreation and commute and we don't consider ourselves 'avid cyclists.'...We now live on the outskirts of Burlington, NC and have talked about starting monthly rides around downtown and beyond for anyone with wheels simply to get out on our bikes again.

I think city accessibility in the form of greenways and safe roads for biking is a driver for economic growth within a community. I look forward to Burlington's forward growth!





3 Infrastructure Recommendations

"Principles to consider: Connecting rural areas to city areas to increase access - example: Saxapahaw to Graham. Connecting cities to each other - example: Mebane to Graham, and Graham to Burlington. Connecting parks to each other. Connecting schools to cities. Thank you for considering this!!." - Public Comment

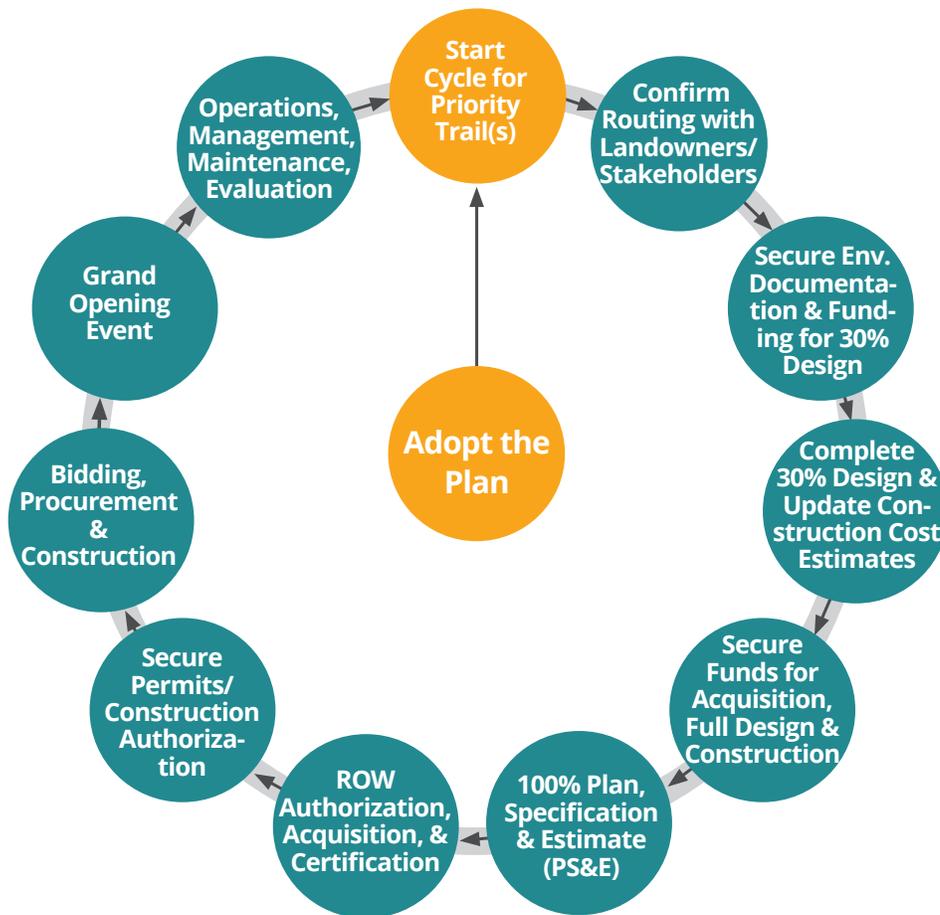
Rendering of retrofitted trail bridge at the Haw River and Goat Island.

Overview

This chapter outlines a phased set of recommendations for greenways and bikeways in Burlington, with individual project pages for top projects.

Typical Greenway Development Process

These are the steps typically involved in greenway development. Certain funding sources may have additional requirements, and some steps may occur simultaneously or in a different order.



How to Use the Costs Estimates in this Chapter:

When reviewing the estimated construction costs in the project cut sheets, please take into account the following important notes and caveats:

The cost estimates represent a planning-level analysis. Costs will likely change as more information becomes available in the design phase.

Costs are listed in the base year of 2017, and should be escalated each year thereafter.

Design costs are not listed per cut-sheet, but they can range between 10-15% of construction costs. Higher ranges will be encountered on projects utilizing federal funds that require a high level of regulatory compliance and on projects that impact FEMA regulated floodways that require detailed flood modeling and permitting. Small projects will also see higher percentages for design cost.

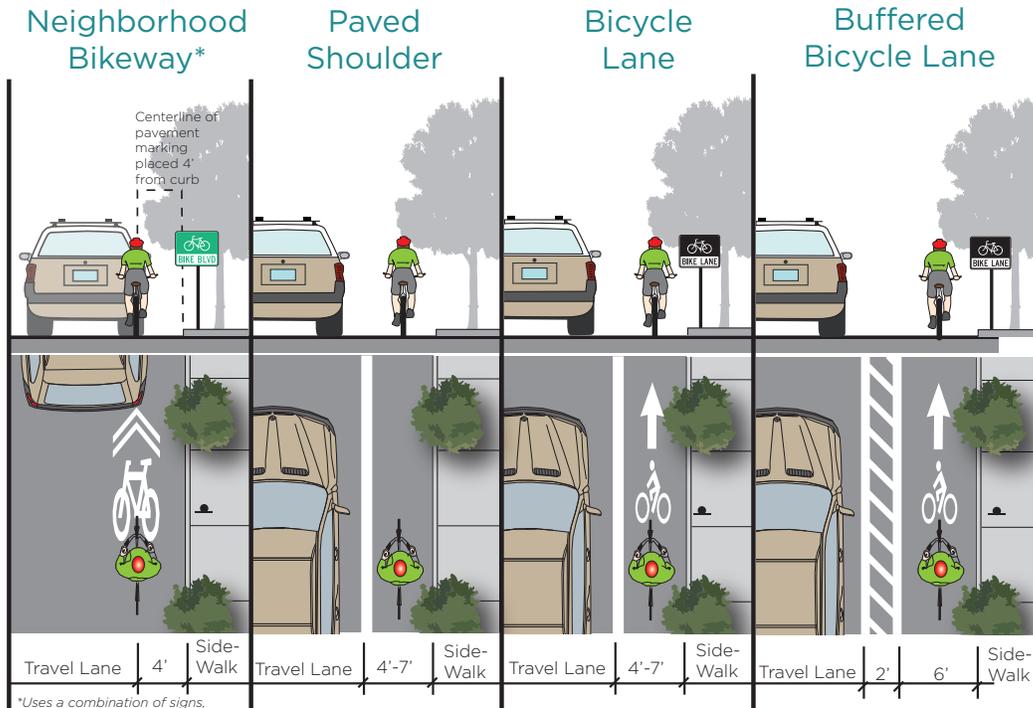
The cost estimates do not include land acquisition, but the data that was collected by the project consultant (and provided to city staff) lists the parcels potentially impacted for each project.

Each project estimate includes a built-in 25% contingency.

Types of Facilities

See the maps (and legends) in Chapter 3 to see where these different types of facilities are recommended in Burlington.

least separated



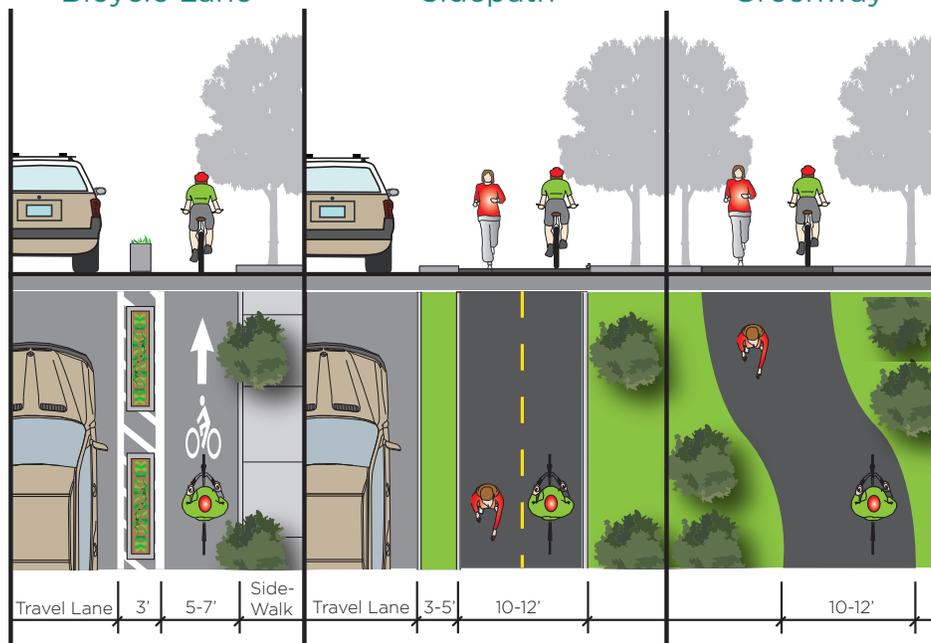
*Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.

most separated

Separated Bicycle Lane

Shared Use Path: Sidepath

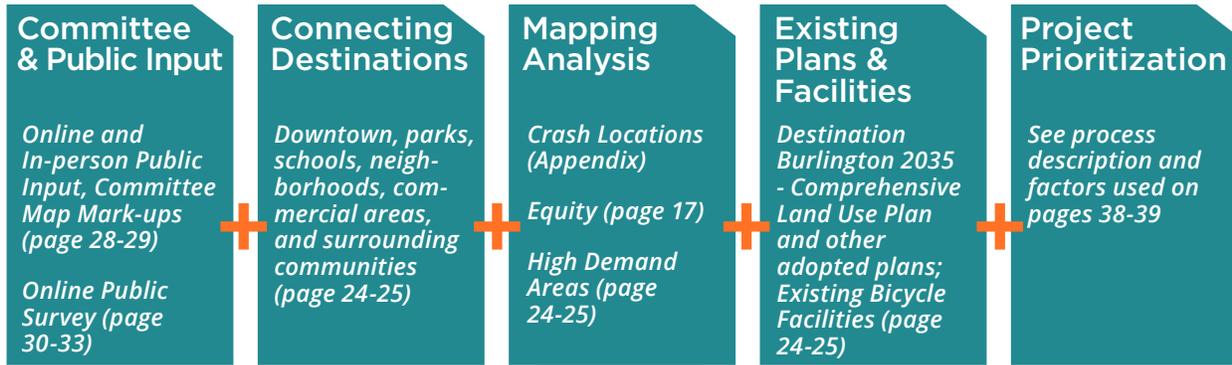
Shared Use Path: Greenway



The Greenways and Bikeways Network

The proposed greenways and bikeways network is a result of a collaborative planning process that involved public engagement, data collection, and technical analysis.

BASIS OF RECOMMENDATIONS



CHAPTER 3 MAPS & CUTSHEETS

Recommendations are organized into the following phases. **The phases should be approached by the City of Burlington and its partners with flexibility, taking into account opportunities that may arise after this planning process is complete.**

- 1 **MAP 3.1 TOP PRIORITY PROJECTS (PHASE 1):** These projects were the most consistently mentioned in committee meetings and public outreach, and all four ranked high in prioritization (pages 38-39) with strong destination points (Downtown, Elon University, Haw River, and 3 major parks). They are featured in cutsheets #1-4.
- 2 **Map 3.2: PHASE 2:** These projects were strategically selected to form a cohesive and connected network of greenways and bikeways, serving key destinations from east to west across Burlington. Each of the seven projects scored well in prioritization. They are featured in cutsheets #5-11.
- 3 **Map 3.3: PHASE 3:** These projects build upon the previous phases to strategically fill remaining gaps after previous projects have been completed. Some may be completed at the same time as Phase 2 projects, depending on opportunities for implementation that may arise after this planning process is completed.
- 4 **Map 3.4: COMPREHENSIVE NETWORK:** This map shows all potential greenway and bikeway opportunities in the entire city. It is not expected (or recommended) all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.

Prioritization Table This table is meant to serve as a general guide for establishing why these projects are important. When deciding the order in which to build out a citywide network of greenways and bikeways, it is just as important to be strategic in considering how new projects build upon previous projects, as it is to build in order of any given list. It is also important to consider opportunities to build facilities as they arise. For example, some of the most cost-effective opportunities to build facilities are during new development and roadway construction, regardless of priority ranking through this process.

	Name	From	To	Facility Types*	Connects to a Park or Rec Center	Connects to a School or Univ.	Connects to a LINK Transit Bus Stop	Connects to an Existing Trail or Bicycle Facility	In An Adopted Plan	Connects to a Commercial Center	Serves Low Opportunity Neighborhood (p. 52 of Comp. Plan)	Reported Bicycle or Pedestrian Crash Along Route	Uses Existing Public Land or ROW	Serves High Demand Area (Map 2.1)	Connects to Mountains-to-Sea Trail	Potential Water Quality Benefit	Stakeholder Feedback	Supported in Online Input Map and Public Comment Form	Connects Existing Trail on Both Ends
1	Burlington-Elon Greenway/Bikeway	Downtown Burlington	N Oak St	SUP, NB, BL	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	
2	Haw River Greenway	Riverside Dr	Ruby Lane	SUP	✓			✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
3	Springwood-Davidson Greenway	Springwood Park	Davidson Park	SUP	✓		✓	✓	✓	✓				✓		✓	✓	✓	✓
4	Town & Country Bikeway	Webb Ave	Town & Country Nature Park & Andrews Elem.	NB, SBL	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	
5	City Park Bikeway	Downtown Burlington	O'Neal St/Woodland Ave intersection	NB, SBL, SUP	✓	✓	✓	✓	✓	✓			✓				✓	✓	✓
6	Fairchild Greenway	Historic Burlington Train Depot	Cummings HS & Broadview MS	NB, SUP	✓	✓	✓		✓	✓	✓	✓		✓			✓	✓	
7	Alamance Crossing Greenway	Edgewood Ave/Church St intersection	Davidson Park	SUP	✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	
8	Mebane Street Bikeway	Cummings HS & Broadview MS	City Park	NB, SBL	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	
9	Little Alamance Creek Greenway	City Park	Southern Neighborhood Park	SUP	✓			✓	✓	✓	✓			✓		✓	✓	✓	
10	Edgewood Ave Bikeway	Davis St	Church St	NB, SBL		✓	✓	✓		✓		✓		✓			✓	✓	
11	Gum Creek Greenway	Trollinger Ave/Oak St intersection	Forestdale Dr/Church St intersection	SUP		✓	✓		✓	✓				✓		✓	✓	✓	
12	Church St/Fisher St Bikeways	W Kitchen St	Stone Quarry Rd	SBL	✓	✓	✓			✓	✓	✓	✓	✓	✓			✓	✓
13	Tarleton Ave Bikeway	City Park	W Webb Ave	SBL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	
14	Huffman Mill Rd/S Mebane St Bikeway	S Church St	Chapel Hill Rd	SBL	✓	✓	✓	✓		✓		✓	✓	✓				✓	
15	Gant Lake Greenway	Woodland Ave	W Webb Ave	SUP		✓	✓	✓	✓	✓	✓			✓		✓		✓	
16	Northwest-Robinson Greenway	W Webb Ave	Rauhut St	SUP	✓		✓		✓	✓	✓	✓		✓		✓			
17	Maple Ave Bikeway	Main St	Chapel Hill Rd	SBL	✓		✓			✓	✓	✓	✓	✓				✓	
18	Sellars Mill Road Bikeway	McKinney St	E Hanover St	SBL		✓	✓			✓	✓	✓	✓	✓				✓	
19	Chapel Hill Rd Bikeway	Kilby St	Maple Ave	SBL or SUP			✓			✓	✓	✓	✓	✓				✓	
20	Staley Creek Greenway	Robinson Park	North Park	SUP	✓		✓		✓	✓	✓					✓		✓	
21	Rauhut/Holt/Ireland St Bikeway	Robinson Park	N Mebane St	NB, SBL	✓		✓			✓	✓	✓	✓	✓					
22	Service Creek Greenway	North Park	Sellars Mill Rd	SUP	✓				✓		✓				✓	✓		✓	
23	Haw River Greenway North	Sellars Mill Rd	Riverside Dr	SUP, NB	✓				✓		✓				✓	✓		✓	
24	Springwood Church Rd Bikeway	Burlington Rd	Bonnar Bridge Pkwy	SBL or SUP	✓			✓	✓	✓		✓	✓					✓	
25	York/Briarcliff/Shadowbrook Dr Bikeway	E Haggard Ave	S Church St	SBL					✓	✓			✓	✓				✓	
26	Bowden Branch Greenway	Graham St	Bidney Dr	SUP					✓	✓	✓	✓				✓		✓	
27	Grand Oaks/Tucker St Bikeway	Alamance Rd	City Park	SBL or SUP					✓	✓	✓			✓				✓	
28	Bonnar Bridge Pkwy Bikeway	Elmdale Rd	University Dr	SB, SUP		✓			✓	✓			✓						
29	University/Grand Oaks Bikeway	Bonnar Bridge Pkwy	Alamance Rd	SBL			✓			✓			✓					✓	

*Facility Types: Neighborhood Bikeway (NB); Paved Shoulder (PS); Bicycle Lane (BL); Separated Bicycle Lane (SBL); and Shared Use Path (SUP).

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MAP 3.1 TOP PRIORITY PROJECTS

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed - (outside existing curb)

- Shared Use Path (Greenway)

Proposed - (within existing curb)

- Separated Bike Lane
- Neighborhood Bikeway
- Top Priority Projects



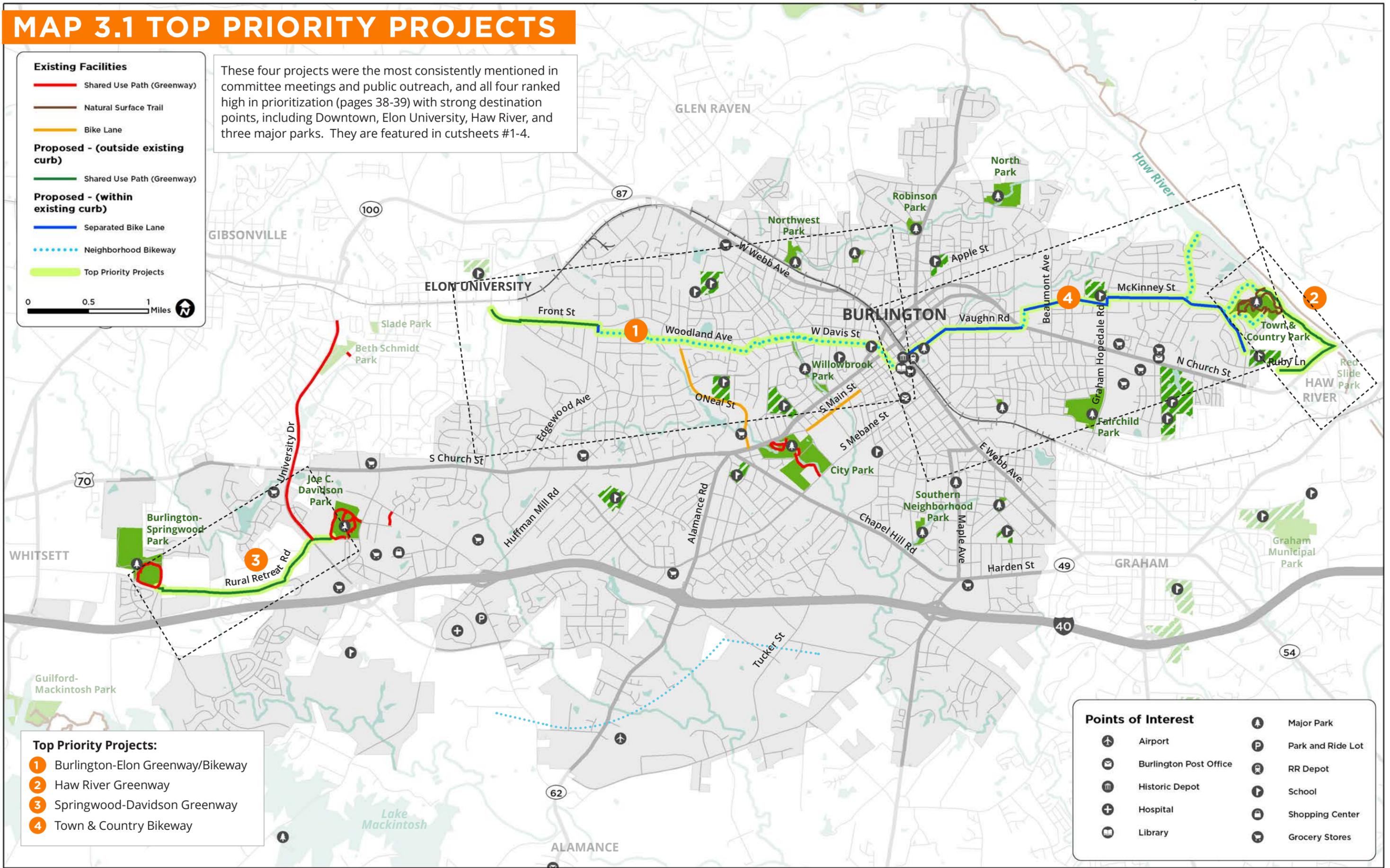
These four projects were the most consistently mentioned in committee meetings and public outreach, and all four ranked high in prioritization (pages 38-39) with strong destination points, including Downtown, Elon University, Haw River, and three major parks. They are featured in cutsheets #1-4.

Top Priority Projects:

- 1 Burlington-Elon Greenway/Bikeway
- 2 Haw River Greenway
- 3 Springwood-Davidson Greenway
- 4 Town & Country Bikeway

Points of Interest

- | | | | |
|--|------------------------|--|-------------------|
| | Airport | | Major Park |
| | Burlington Post Office | | Park and Ride Lot |
| | Historic Depot | | RR Depot |
| | Hospital | | School |
| | Library | | Shopping Center |
| | | | Grocery Stores |



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1 BURLINGTON-ELON GREENWAY/BIKEWAY

Length: 3.6 miles

Jurisdiction: Burlington & Elon

Trip Generators:

- Downtown Burlington, Elon
- Elon University, athletic fields
- Link Transit Transfer Hub (downtown)
- Willowbrook Park
- Serves two high demand areas (see Map A.6)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network; Redevelopment Districts)
- Burlington Pedestrian Transportation Plan
- Burlington-Graham MPO Bicycle Map

- Alamance County Trail Plan
- Elon Bicycle, Pedestrian, and Lighting Plan

Potential ROW Needs:

- 11 impacted parcels (for sidepath section)
- 8 distinct property owners

Potential Partnerships:

- City of Burlington
- Elon University
- Town of Elon
- NCDOT
- Burlington Downtown Corporation

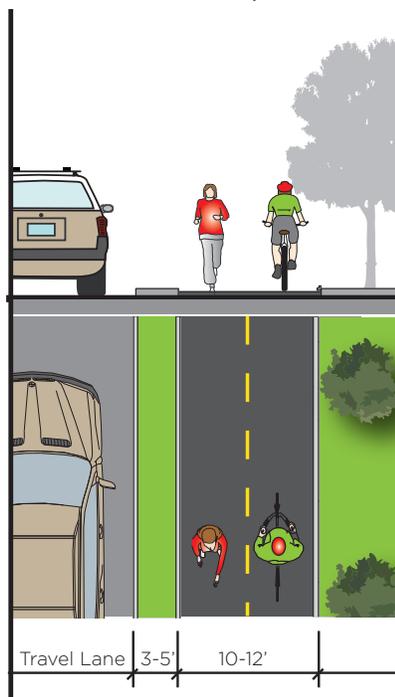
Estimated Construction Costs:

- \$529,571 (\$472,460 for the greenway section and \$57,111 for the bikeway section)

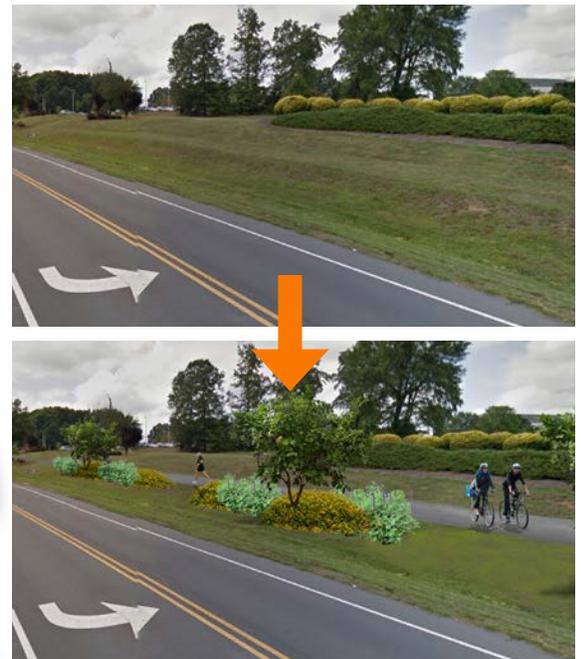
Facility Type:
Neighborhood Bikeway
(Main St to Briarcliff Rd)



Facility Type:
Greenway Sidepath
(Briarcliff Rd to Oak St sidewalks)



Existing Conditions along Front St

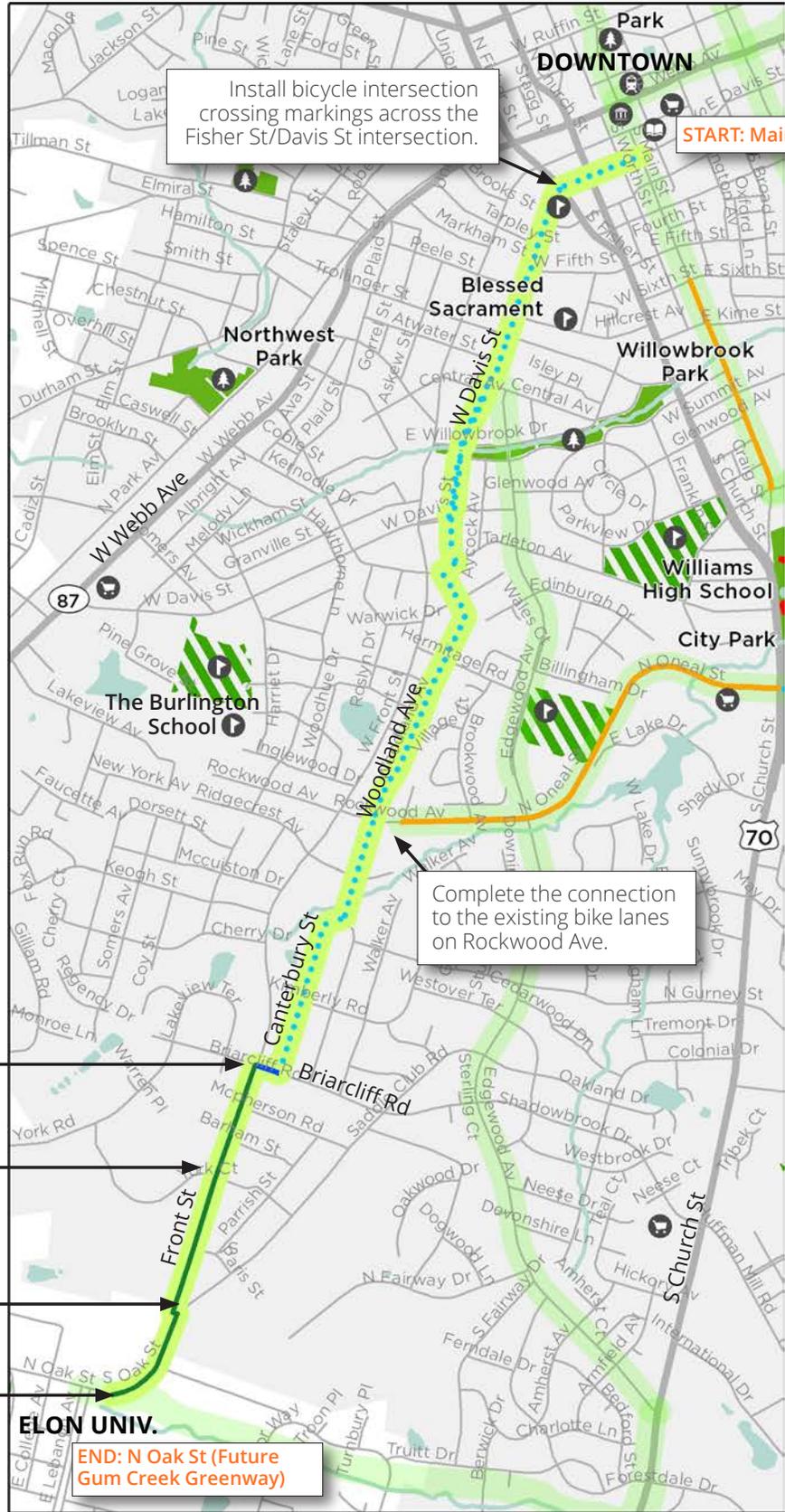


Proposed Greenway Sidepath along Front Street, from Briarcliff Rd to Oak St sidewalks.

1 BURLINGTON-ELON GREENWAY/BIKEWAY

As an alternative to the higher traffic volumes and speeds along Front St, install bicycle shared-land markings and high-quality directional signage along neighborhood streets from Downtown Burlington to Elon University. The route is shown on the map at right, going along Davis St, May Ct, Tarleton Ave, Woodland Ave, Canterbury Dr, and Briarcliff Rd (then it changes to a shared use greenway along Front St). For these segments of the route, bicycle and pedestrian safety would be increased by also lowering the speed limit from 35 to 25 mph. Also, care must be taken to smooth the asphalt-gutter pan transition and install bicycle-friendly drainage gates to ensure safe and comfortable bicycle operating space.

Note: The above recommendations DO NOT require the removal of on-street parking. However, if bicycle lanes are preferred to shared lane markings, there are some portions of Davis St, Woodland Ave, and Canterbury Dr that are 32'-34' wide, leaving space to stripe bicycle lanes. If bicycle lanes are pursued instead of shared-lane markings, a neighborhood-level public input process should be used to show where parking would be replaced by bicycle lanes.



Install bicycle intersection crossing markings across the Fisher St/Davis St intersection.

START: Main St

Complete the connection to the existing bike lanes on Rockwood Ave.

Install bicycle and pedestrian intersection crossing markings across the Front St/ Briarcliff Rd intersection.

Construct a sidepath along the north side of Front St from Briarcliff Rd to Saddle Club Rd.

Sidepath to cross Front St at Saddle Club Rd in order to avoid slope, cemetery, and mature tree conflicts on north side, and to connect to existing sidewalk on south side.

Connect to the existing sidewalks along Oak Ave and the future Gum Creek Greenway corridor. The long-term recommendation is for Elon University to upgrade the existing sidewalk to a 10-ft wide multi-use path (requiring relocation of the existing fence), so that it may safely accommodate both bicyclists and pedestrians.

END: N Oak St (Future Gum Creek Greenway)

Existing	Proposed	This Proposed Project
Greenway	Greenway	Other Proposed Projects
Bike Lane	Separated Bike Lane	
	Neighborhood Bikeway	

0 1,000 2,000 Feet

2 HAW RIVER GREENWAY

Length: 1.25 miles (plus 0.36 miles with section to Red Slide Park)

Jurisdictions: Burlington & Alamance County

Trip Generators:

- Town & Country Nature Park
- Haw River
- Mountains-to-Sea Trail
- Red Slide Park
- Andrews Elementary
- Serves high demand area (see Map 2.1)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network)
- Burlington Pedestrian Transportation Plan
- Alamance County Trail Plan
- Mountains-to-Sea NC State Trail Master Plan

Potential ROW Needs:

- 2 impacted parcels
- 2 distinct property owners

Potential Partnerships:

- City of Burlington
- Alamance County
- Town of Haw River
- NCDOT
- Duke Energy

Estimated Construction Costs (for Haw River Greenway):

- Option 1 (Granite Fine Trails): \$681,000
- Option 2 (Asphalt Trails): \$895,700

Estimated Construction Costs (for section to Red Slide Park):

- Option 1 (Granite Fine Trails): \$104,700
- Option 2 (Asphalt Trails): \$167,903

Facility Type:
Greenway



Similar Existing Greenway:
Yadkin River Greenway in North Wilkesboro, NC



2 HAW RIVER GREENWAY

Connect to Project #4 at Riverside Dr.

Connect to Project #4 at Regent Park Ln, where there is potential for a future trailhead parking area.

Use City of Burlington property between the park and the treatment plant. Consider aligning trail on the cleared utility corridor along the river, but be aware of potential regulatory constraints that may exist next to the river; An alternative could be to shift the trail alignment inward where necessary.

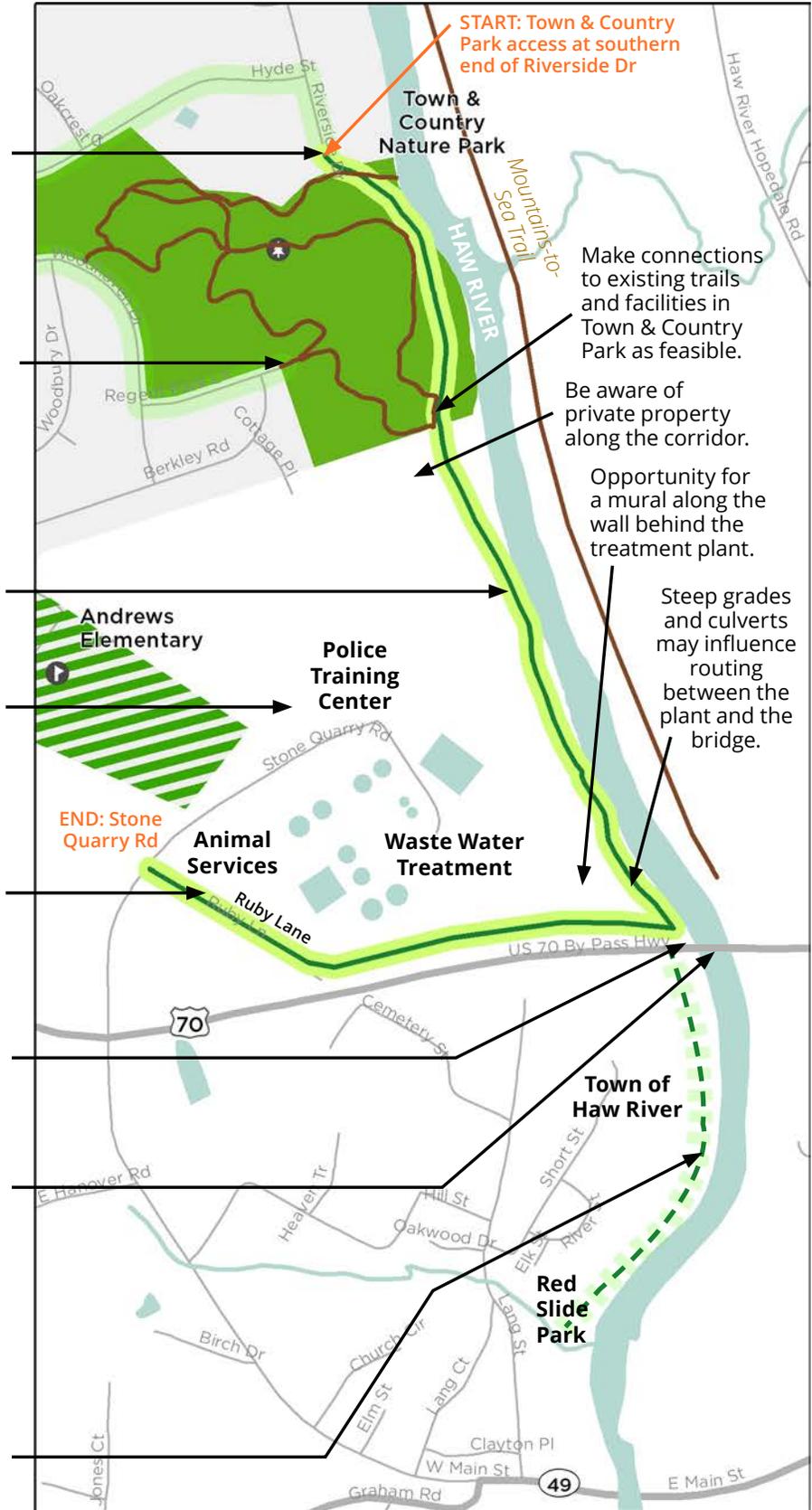
Police training and firing range nearby: Need to coordinate with police department on mitigating potential conflicts with a future trail (see examples in Wake and Johnston counties along the Neuse River Trail).

Connect the trail to Burlington Animal Services and consider a trailhead parking area in this vicinity; Consider a program to allow trail users to walk dogs on the trail.

There is an existing unpaved trail leading to the Town of Haw River and Red Slide Park that connects underneath US 70 along the Haw River. Improvements should be made to formalize the connection under the bridge (see example photo on previous page).

In the longterm, a regional effort should be made to accommodate a trail connection over the river to the Mountains-to-Sea Trail on the east side of the Haw River. All options should be considered, including a cantilevered pedestrian bridge, an independent pedestrian bridge, or reallocating space on the existing bridge deck for trail users.

The existing unpaved trail along the Haw River between US 70 and Red Slide Park is in the Town of Haw River. There is potential to improve the trail with granite fines or asphalt, making a more official and cohesive connection with the proposed/ future Haw River Greenway north of the bridge.



START: Town & Country Park access at southern end of Riverside Dr

Town & Country Nature Park

Make connections to existing trails and facilities in Town & Country Park as feasible.

Be aware of private property along the corridor.

Opportunity for a mural along the wall behind the treatment plant.

Steep grades and culverts may influence routing between the plant and the bridge.

END: Stone Quarry Rd

Animal Services

Waste Water Treatment

Town of Haw River

Red Slide Park

Existing

Proposed

This Proposed Project

Other Proposed Projects

Natural Surface Trail

Greenway

Potential Trail Improvement

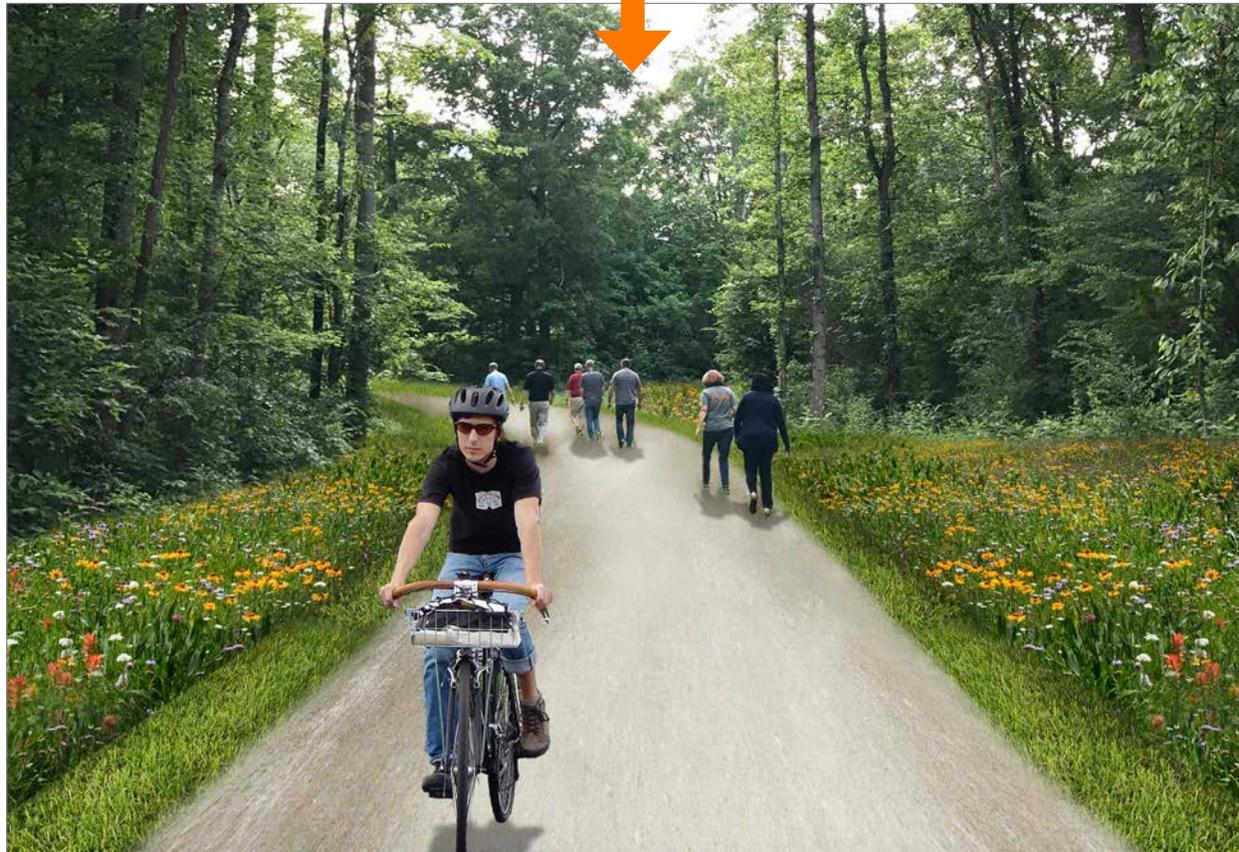
0 1,000 2,000 Feet



HAW RIVER GREENWAY (existing, south of Riverside Dr)



HAW RIVER GREENWAY (Proposed)



HAW RIVER GREENWAY (existing, at the Water Treatment Plant)



HAW RIVER GREENWAY (Proposed)



3 **SPRINGWOOD-DAVIDSON GREENWAY**
Length: 1.7 miles

Jurisdiction: Burlington, Alamance County, Guilford County

Trip Generators:

- Davidson Park
- Alamance Crossing
- Springwood Park
- University Dr sidepath
- Link Transit Red Route
- 1 high demand area (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network; Redevelopment Districts - West End Cinemas Site, just north of proposed greenway)

- Burlington-Graham MPO Bicycle Map
- Burlington Pedestrian Transportation Plan
- Alamance County Trail Plan

Potential ROW Needs:

- 5 impacted parcels (likely enough existing ROW along Williams Mill Rd)
- 5 distinct property owners

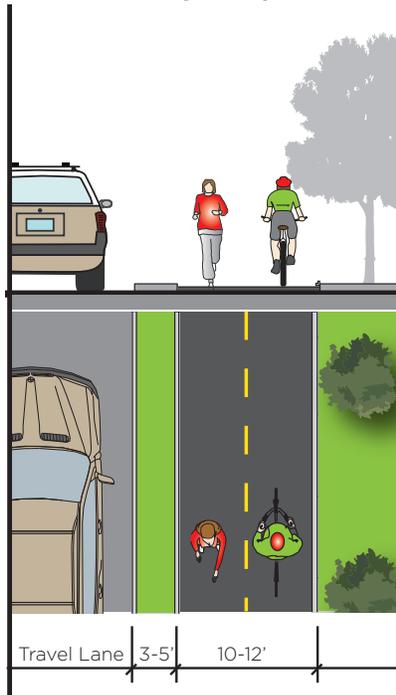
Potential Partnerships:

- City of Burlington
- Town of Gibsonville
- Alamance County
- Guilford County
- NCDOT
- Duke Energy

Estimated Construction Costs:

- \$955,534

Facility Type:
Greenway Sidepath



Existing Conditions along Rural Retreat Rd



Proposed Greenway Sidepath along Rural Retreat Rd

3 **SPRINGWOOD-DAVIDSON GREENWAY**

Tie into the University Dr sidepath at the northeast corner of the Rural Retreat Rd/ University Dr intersection. Also, install high visibility crossing with pedestrian-controlled signal along the north side of the intersection.

Sidepath along the north side of Rural Retreat Rd from Davidson Park to Stonecrest Dr.

Sidepath to cross Rural Retreat at Stonecrest Dr intersection.

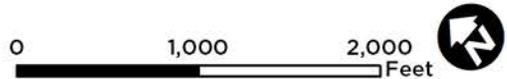
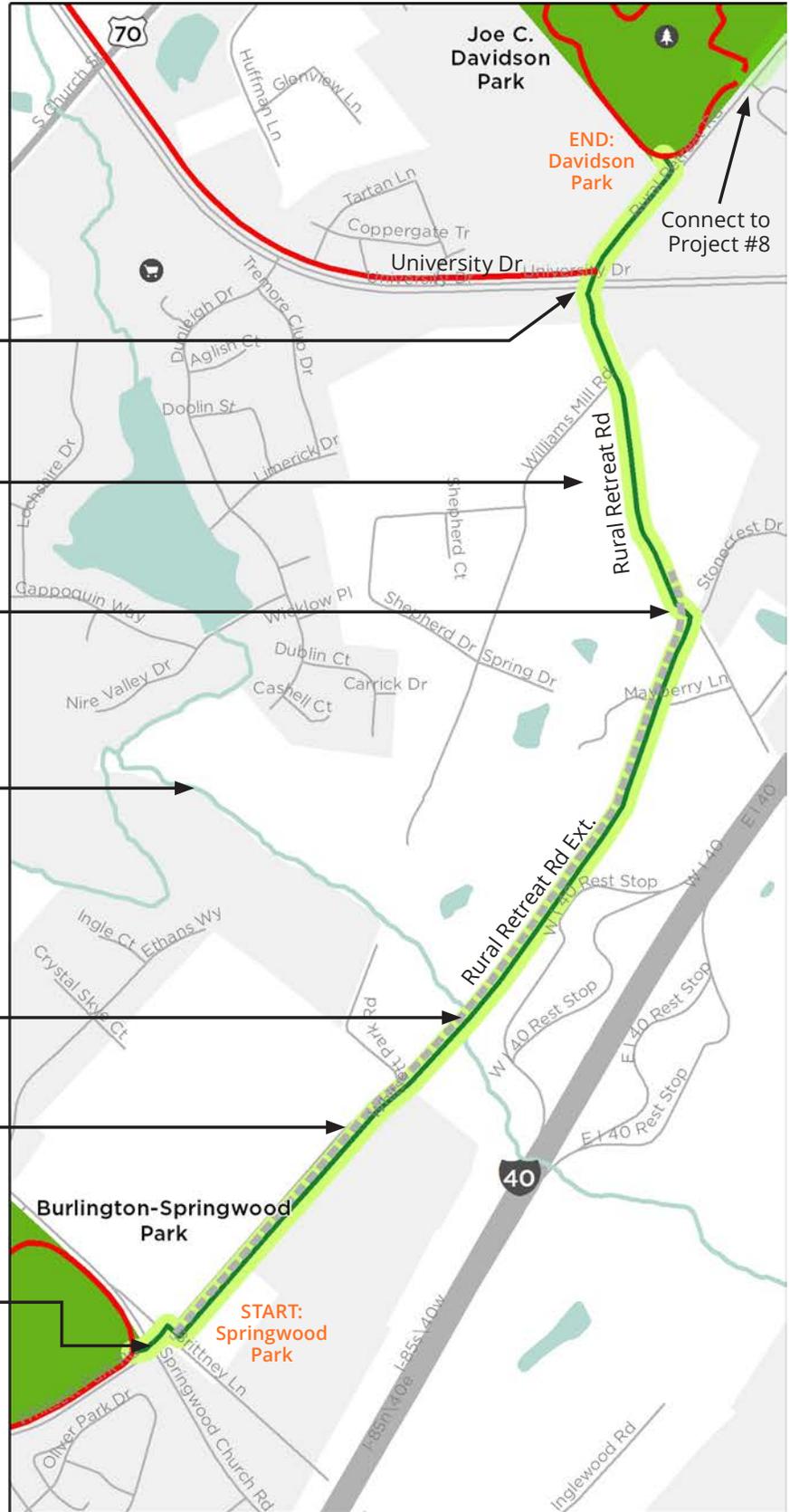
Future greenway links should be considered along Back Creek to connect the Springwood-Davidson greenway to surrounding neighborhoods.

A bridge structure will likely be needed over Back Creek.*

Sidepath along the south side of future Rural Retreat Rd extension, from Stonecrest Dr to Springwood Park.

Install crossing facilities across the north side of the Whitsett Park Rd/Springwood Rd intersection.

**Development along this corridor should be required to incorporate this greenway project; critical link for overall and local connectivity.*



4 TOWN & COUNTRY BIKEWAY

Length: 4.1 miles

Jurisdiction: Burlington

Trip Generators:

- Downtown Burlington
- Link Transit Transfer Hub (downtown)
- Burlington Station
- Eva Barker Park
- Town & Country Nature Park
- Andrews Elementary School
- Eastlawn Elementary School
- Alamance County Health Department, Social Services
- Main St, Church St, and Graham-Hopedale Rd commercial areas
- 2 high demand areas (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Redevelopment Districts/Sites - Downtown, 'NoMa', Western Electric property)
- Burlington Pedestrian Transportation Plan
- Alamance County Trail Plan
- Mountains-to-Sea NC State Trail Master Plan

Potential ROW Needs:

- None

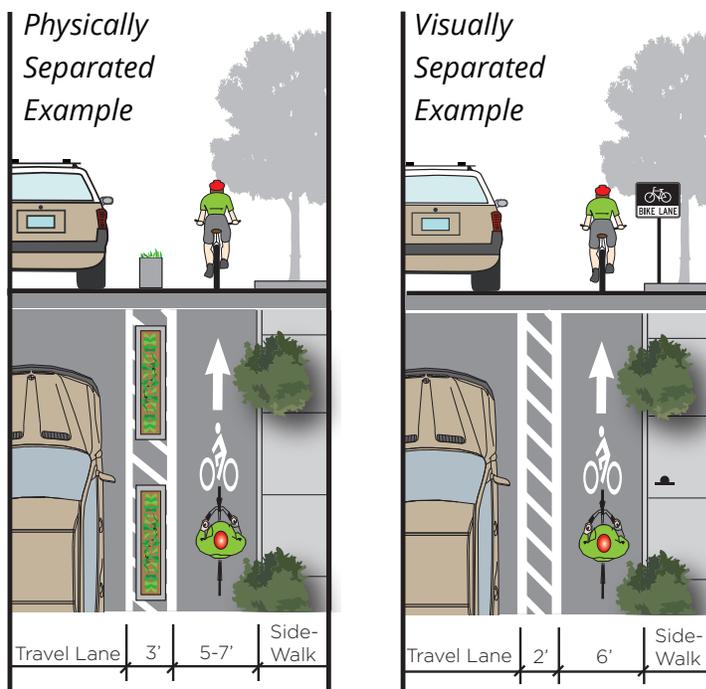
Potential Partnerships:

- City of Burlington
- NCDOT
- Burlington Downtown Corporation
- Businesses along corridor

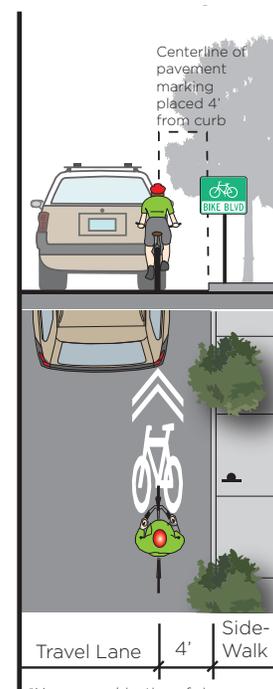
Estimated Construction Costs:

- \$132,438

**Facility Type:
Separated Bikeway**



**Facility Type:
Neighborhood Bikeway**



**Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.*

4 TOWN & COUNTRY BIKEWAY

Install neighborhood bikeways with high-quality directional signage along Sellars Mill Rd, Hyde St, Riverside Dr, Woodhaven Dr, and Regent Park Ln to connect to a potential future park at Goat Island, and to multiple entrances of Town & Country Nature Park.

Construct separated bike lanes along McKinney St from Graham-Hopedale Rd to Andrews Elementary within the existing pavement width* (32'-33'). Narrow the existing travel lanes to 10' or less to allow at least 6' of space for bicycle facilities.**

Construct separated bike lanes along this short stretch of Graham-Hopedale Rd from Vaughn Rd to McKinney St by reconfiguring the travel lanes from five lanes to three 11' lanes. This will allow space to stripe and/or construct separated bike lanes with 10'-11' feet of space on each side of the roadway (53'-55' total pavement width).

Construct separated bike lanes along Vaughn Rd from Holly St to Graham-Hopedale Rd by reconfiguring the travel lanes from four lanes to three 11 ft lanes (one in each direction with center turn lane). This will allow space to stripe and/or construct separated bike lanes with 6-8 ft of space on each side of the roadway* (46'-48' total pavement width).**

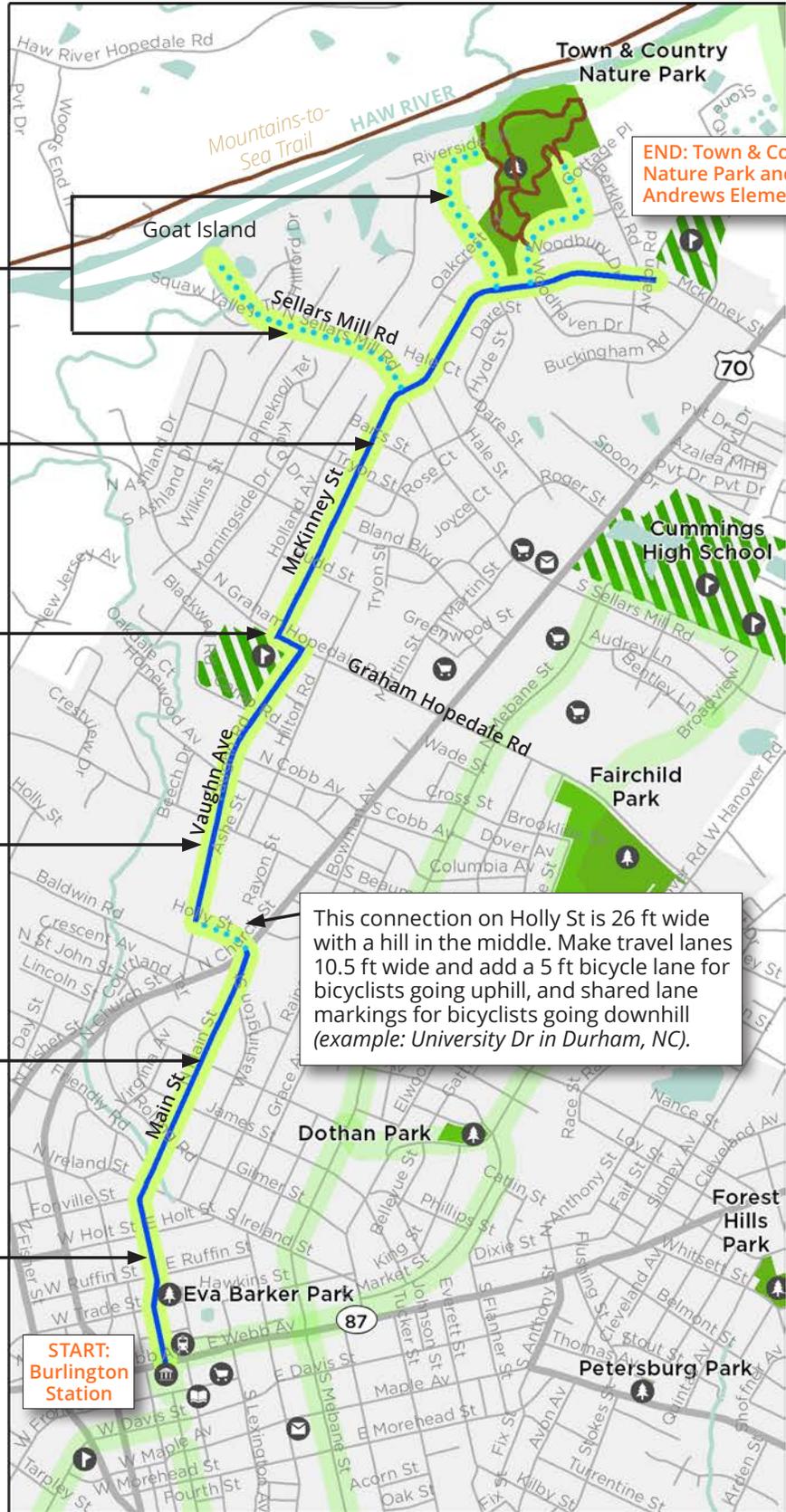
Construct separated bike lanes along Main St from Ireland St to Church St by reconfiguring the travel lanes from four lanes to three 11 ft lanes (one in each direction with center turn lane). This will allow space to stripe and/or construct separated bike lanes with 7-8 ft of space on each side of the roadway* (47'-48' total pavement width).**

Construct separated bike lanes along the very wide section of Main St* (45'-58' total pavement width for two travel lanes) from Webb Ave to Ireland St. On-street parking should be situated between the separated bike lanes and the travel lanes.**

For entire project route: Reduce speed limit from 35 to 25 mph and install bicycle crossing markings at intersections.

**Care must be taken to smooth the asphalt/gutter transition as well as install bicycle friendly drainage gates to ensure comfortable bicycle operating space allotted for the bike lane within the existing curb.*

***Installing separated bicycle lanes will significantly enhance the pedestrian level of service of the existing sidewalk along Main St, McKinney St, and Vaughn Rd by adding to the minimal buffer space that currently exists between pedestrians and automobile traffic.*



END: Town & Country Nature Park and Andrews Elementary

This connection on Holly St is 26 ft wide with a hill in the middle. Make travel lanes 10.5 ft wide and add a 5 ft bicycle lane for bicyclists going uphill, and shared lane markings for bicyclists going downhill (example: University Dr in Durham, NC).

Existing	Proposed	This Proposed Project
Natural Surface	Separated Bike Lane	Other Proposed Projects
	Neighborhood Bikeway	

0 1,000 2,000 Feet

MAP 3.2 PHASE 2 PROJECTS

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed - (outside existing curb)

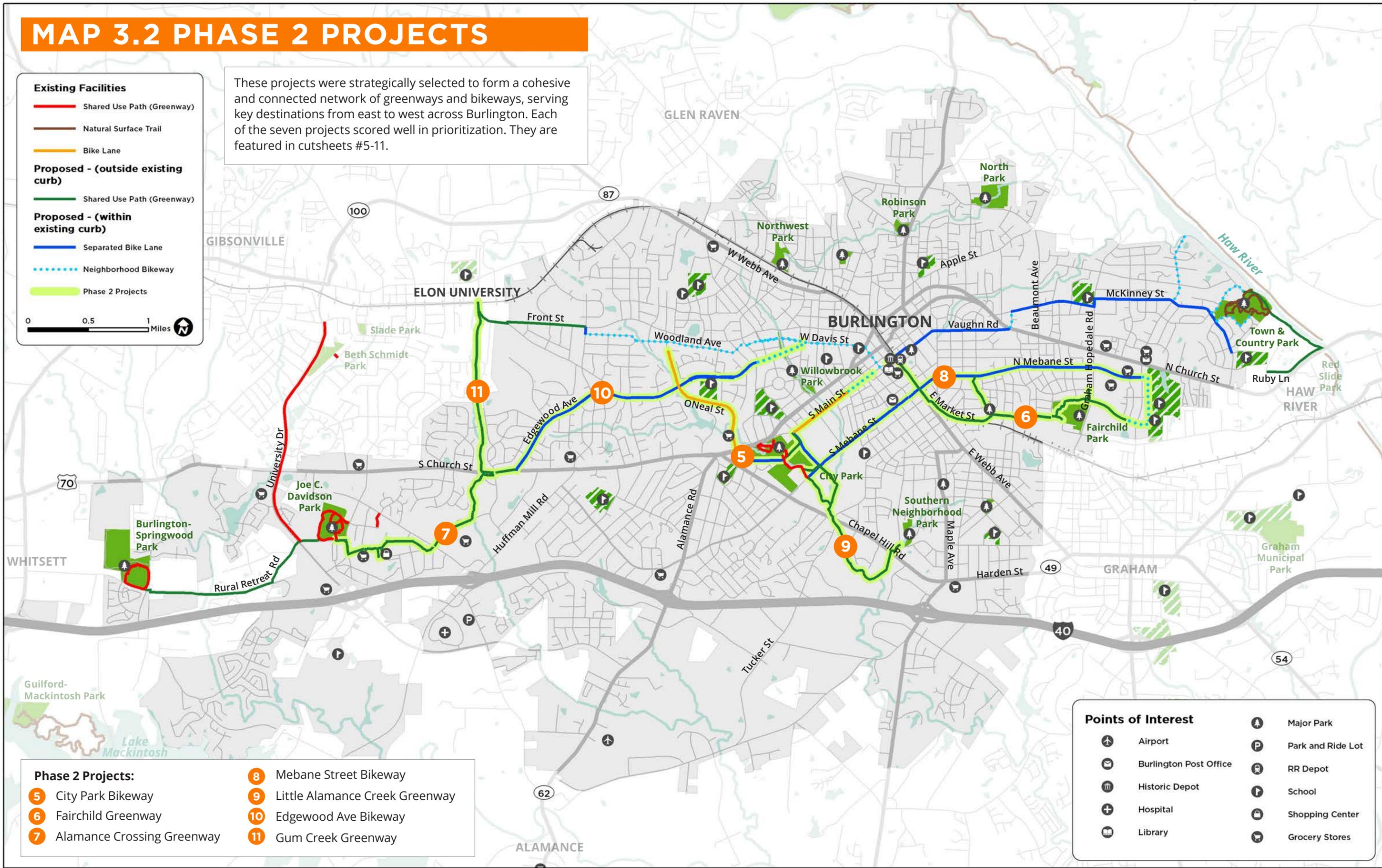
- Shared Use Path (Greenway)

Proposed - (within existing curb)

- Separated Bike Lane
- Neighborhood Bikeway

Phase 2 Projects

These projects were strategically selected to form a cohesive and connected network of greenways and bikeways, serving key destinations from east to west across Burlington. Each of the seven projects scored well in prioritization. They are featured in cutsheets #5-11.



- Phase 2 Projects:**
- 5 City Park Bikeway
 - 6 Fairchild Greenway
 - 7 Alamance Crossing Greenway
 - 8 Mebane Street Bikeway
 - 9 Little Alamance Creek Greenway
 - 10 Edgewood Ave Bikeway
 - 11 Gum Creek Greenway

Points of Interest

Airport	Major Park
Burlington Post Office	Park and Ride Lot
Historic Depot	RR Depot
Hospital	School
Library	Shopping Center
	Grocery Stores

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5 CITY PARK BIKEWAY

Length: 3 miles

Jurisdictions: Burlington & Elon

Trip Generators:

- Downtown Burlington
- Link Transit Transfer Hub (downtown)
- City Park
- Turrentine Middle School
- Church St/O’Neal St commercial area
- Much of this bikeway touches or is near a high demand area (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Redevelopment Districts/Sites - Downtown)

- Burlington Pedestrian Transportation Plan
- Burlington-Graham MPO Bicycle Map

Potential ROW Needs:

- None

Potential Partnerships:

- City of Burlington
- NCDOT
- Burlington Downtown Corporation
- Businesses along corridor

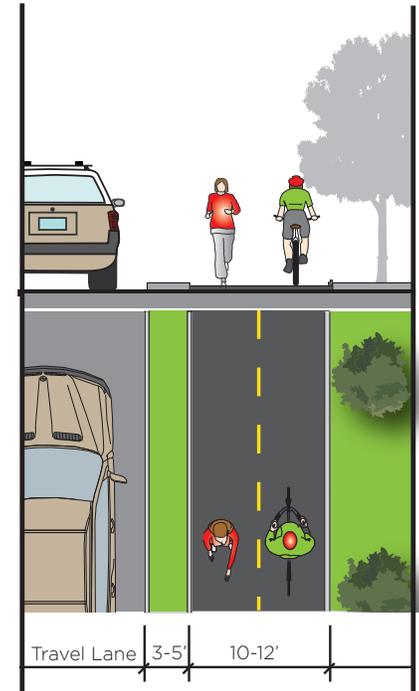
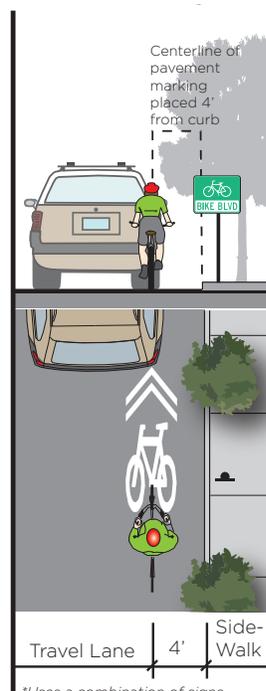
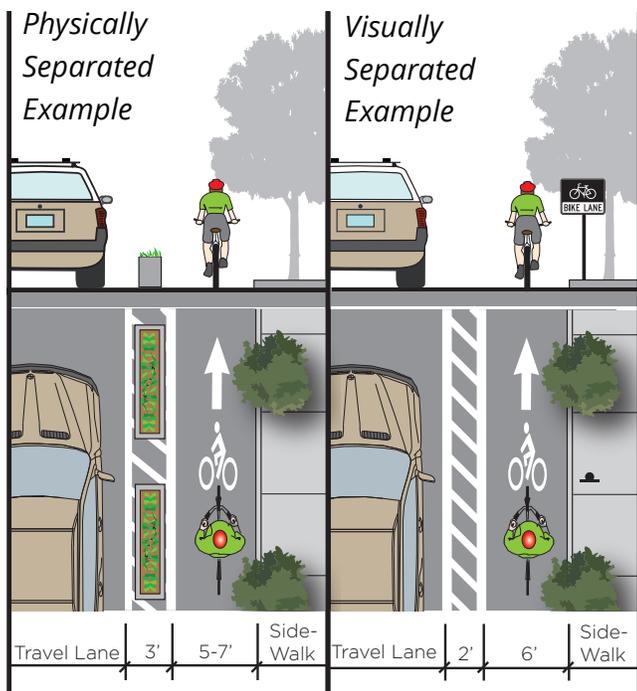
Estimated Construction Costs:

- \$182,850

**Facility Type:
Separated Bikeway**

**Facility Type:
Neighborhood Bikeway**

**Facility Type:
Greenway Sidepath**



*Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.

5 CITY PARK BIKEWAY

Implement neighborhood bikeway treatments along Main St from Maple Ave to the existing bike lane beginning at Sixth St. Reduce speed limit from 35 to 20 mph.

Upgrade the existing bike lanes from Sixth St to Kitchin St on Main St to include a larger buffer space (consider adding physical buffer now or in the future) by narrowing the existing travel lanes and center turn lane to 10'-10.5' (currently 11'-12.5').* Reduce speed limit from 35 to 25 mph.

Construct separated bike lanes (buffered) along Kitchin St (no on-street parking currently, 47'-48' pavement width) from Main St to Mebane St, making the connection to the City Park entrance at Mebane St.

Upgrade the existing sidepath along the west side of Kitchin St leading into the City Park driveway (north side of driveway) and the park center to include curb ramps and high visibility intersection crossings.*

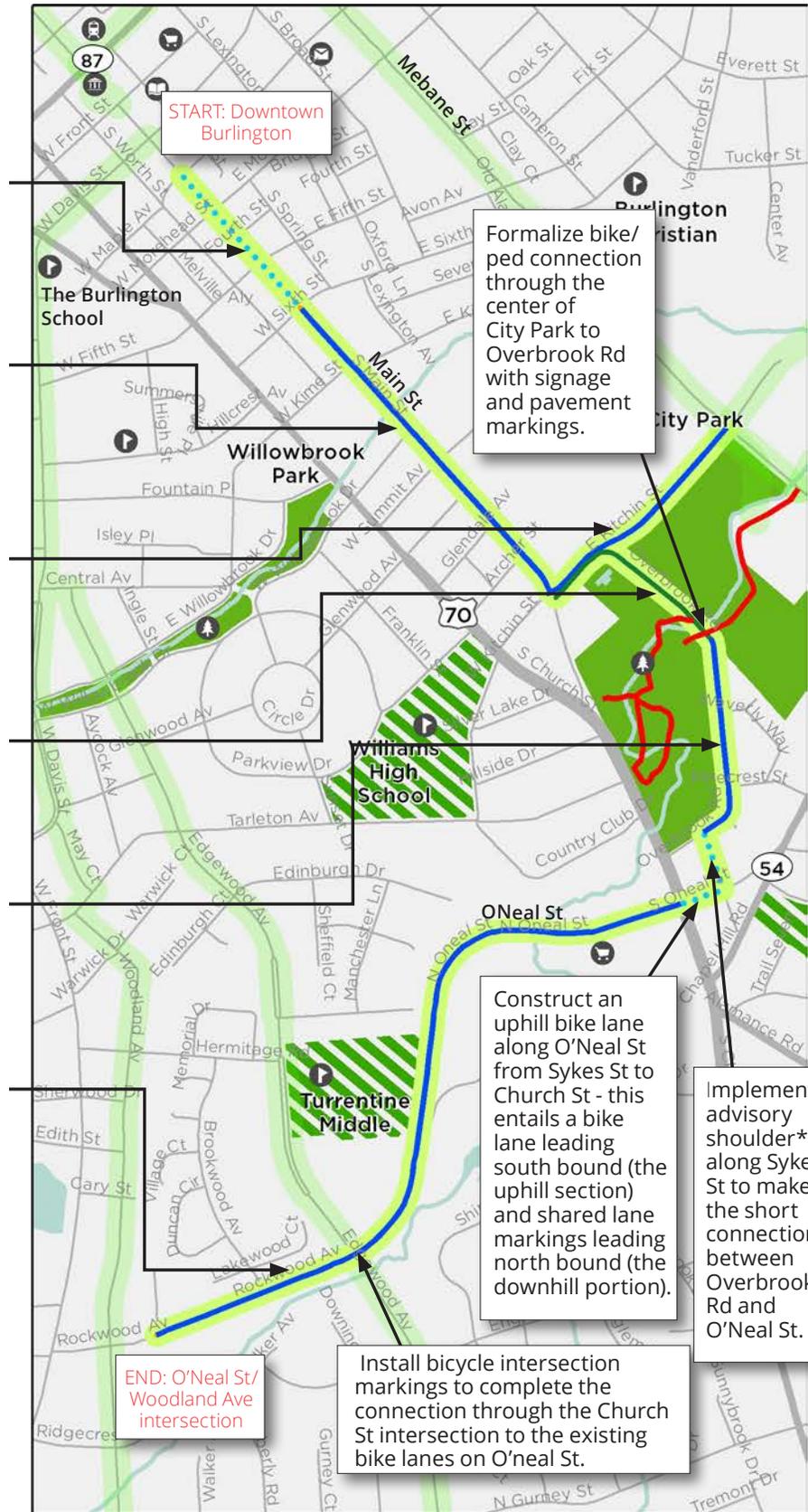
Construct separated bike lanes along Overbrook Rd with parallel parking configured between the separated bike lanes and travel lanes (47'-48' pavement width).*

Upgrade the existing bike lanes from Church St to Woodland Ave on O'Neal St to include a larger buffer space (consider adding physical buffer now or in the future) by narrowing the existing travel lanes to 10'-11' (currently 12'-13').* Reduce speed limit from 35 to 25 mph.

*Care must be taken to smooth the asphalt/gutter transition as well as install bicycle friendly drainage gates to ensure comfortable bicycle operating space allotted for the bike lane within the existing curb.

**Advisory shoulders are considered experimental by the FHWA and require an approval process before implementation can take place.

For existing bike lanes on Main St & O'Neal St, add stop bars on side streets that do not have them.



6 FAIRCHILD GREENWAY

Length: 3.2 miles

Jurisdiction: Burlington

Trip Generators:

- Downtown
- Burlington Station
- Historic Depot, Amphitheater
- Link Transit Worth Street Transfer Hub
- Fairchild Park
- Dothan Park
- Walmart Supercenter
- Cummings HS, Broadview MS
- 2 high demand areas (see Map A.6)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network; Redevelopment Districts/ Sites - NoMa (North Main Street, Southeast Corner Property at Gilmer St & East Market St intersection, South Graham-Hopedale Rd)

- Burlington-Graham MPO Bicycle Map
- Burlington Pedestrian Transportation Plan

Potential ROW Needs:

- 19 impacted parcels (10 for Dothan Park segment)
- 18 distinct property owners
- Railroad ROW (Norfolk Southern)

Potential Partnerships:

- City of Burlington
- NCDOT
- Burlington Downtown Corporation
- North Carolina Railroad
- Burlington BMX
- Burlington Royals

Estimated Construction Costs:

- \$2,828,168

Facility Type:

Rail with Trail

(Between railroad tracks and Webb Ave, from Main St to Gilmer St.)

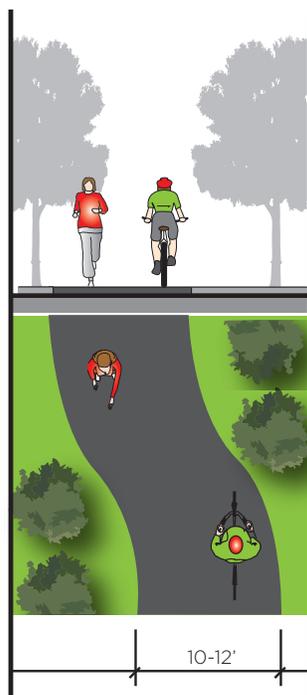
Segment could have a fence as shown here.



Example greenway trail next to an active railroad in Fayetteville, NC.

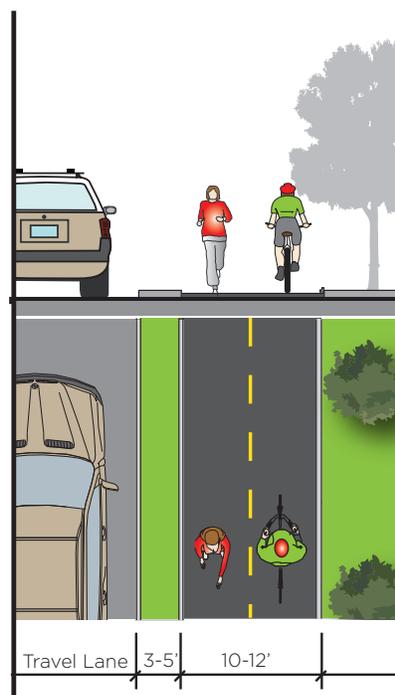
Facility Type:

Greenway



Facility Type:

Greenway Sidepath



Facility Type:

Neighborhood Bikeway



*Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.

6 FAIRCHILD GREENWAY

Implement neighborhood bikeway treatments along Broadview Dr from the greenway link at the western terminus of Broadview Dr to the school campus.

Construct greenway segment from Fairchild Park to the western terminus of Broadway Dr; the path should roughly follow the southern boundary of the Clayton Homes property, leading toward Broadview Dr through a wooded tract.

Construct midblock crossing (install active warning beacon) of Graham-Hopedale Rd to align with the southern boundary of the Clayton Homes property

Construct greenway segment through Fairchild Park, following north of the BMX Track; include a link to the stadium entrance.

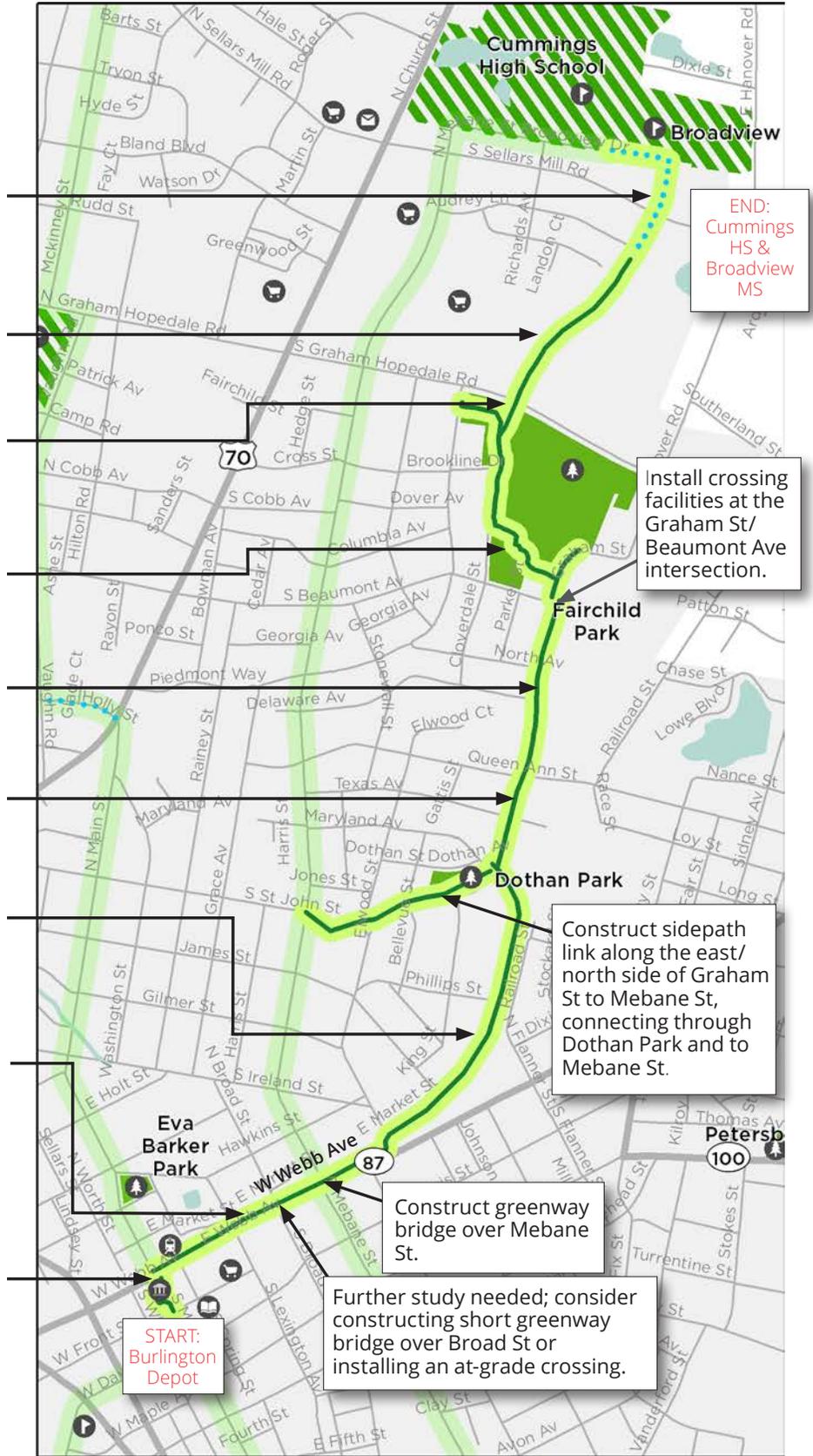
Construct sidepath within the existing pavement (43'-45') of Graham St (on south side of street) from Queen Anne St to Beaumont Ave.

Construct sidepath along the south side of Graham St from Market St to Queen Anne St.

Construct greenway segment between the railroad tracks and Market St from Gilmer St to Graham St.

Construct greenway segment between the railroad tracks and Webb Ave from Main St to Gilmer St. Consider bicycle facilities on Webb Ave as an alternative for this section.

Further study needed; consider installing a traffic light and pedestrian-controlled crossing signal along the south side of the Main St/ Webb Ave intersection, providing an improved link from downtown Burlington to the to this proposed greenway project; include link along the north side of the Historic Burlington Train Depot, connecting to the Link Transfer Hub as well as the amphitheater



END:
Cummings
HS &
Broadview
MS

Install crossing
facilities at the
Graham St/
Beaumont Ave
intersection.

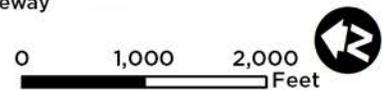
Construct sidepath
link along the east/
north side of Graham
St to Mebane St,
connecting through
Dothan Park and to
Mebane St.

Construct greenway
bridge over Mebane
St.

Further study needed; consider
constructing short greenway
bridge over Broad St or
installing an at-grade crossing.

START:
Burlington
Depot

Proposed
— Greenway
⋯ Neighborhood Bikeway
 This Proposed Project
 Other Proposed Projects



7 ALAMANCE CROSSING GREENWAY

Length: 2.3 miles

Jurisdiction: Burlington

Trip Generators:

- Davidson Park
- Link Transit Red Route & Blue Route
- Alamance Crossing, Edgewood Village Shopping Center, Walmart Supercenter
- Much of this trail touches or is near a high demand area (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network; Redevelopment Districts/Sites - West End Cinemas Site (just north of proposed greenway))
- Burlington-Graham MPO Bicycle Map
- Burlington Pedestrian Transportation Plan

Potential ROW Needs:

- 20 impacted parcels
- 13 distinct property owners

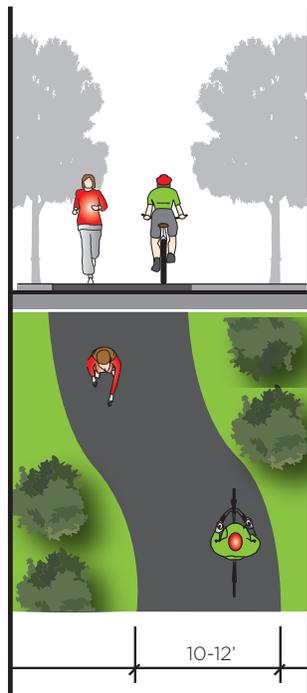
Potential Partnerships:

- City of Burlington
- NCDOT
- Duke Energy
- Alamance Crossing, businesses along corridor

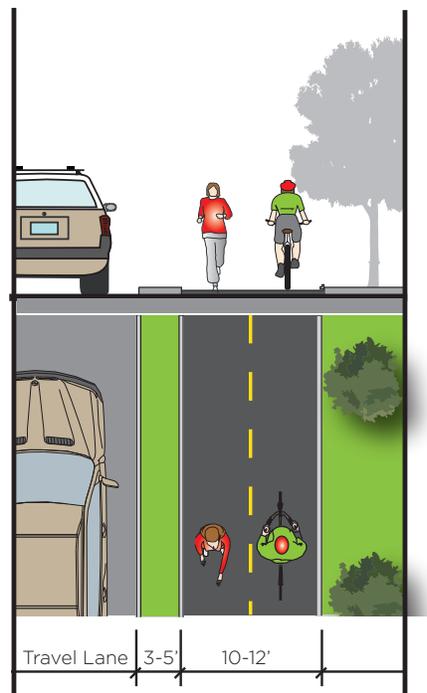
Estimated Construction Costs:

- Option 1 (cross at existing parking lot bridge access north of Alamance Crossing): \$1,034,532
- Option 2 (new greenway bridge north of Alamance Crossing): \$1,284,789

Facility Type:
Greenway



Facility Type:
Greenway Sidepath



7 ALAMANCE CROSSING GREENWAY

Construct sidepath segment along the north side of Church St from the Edgewood Ave intersection to the Forestdale Dr intersection. Continue sidepath segment along the south side of Church St to just east of the Commerce Pl intersection.

Install high visibility crossing of Commerce Pl approximately 150' south of the Church St intersection.

Construct greenway segment along Gum Creek from Church St (crossing Commerce Pl 150' south of Church St) to Boone Station Dr.

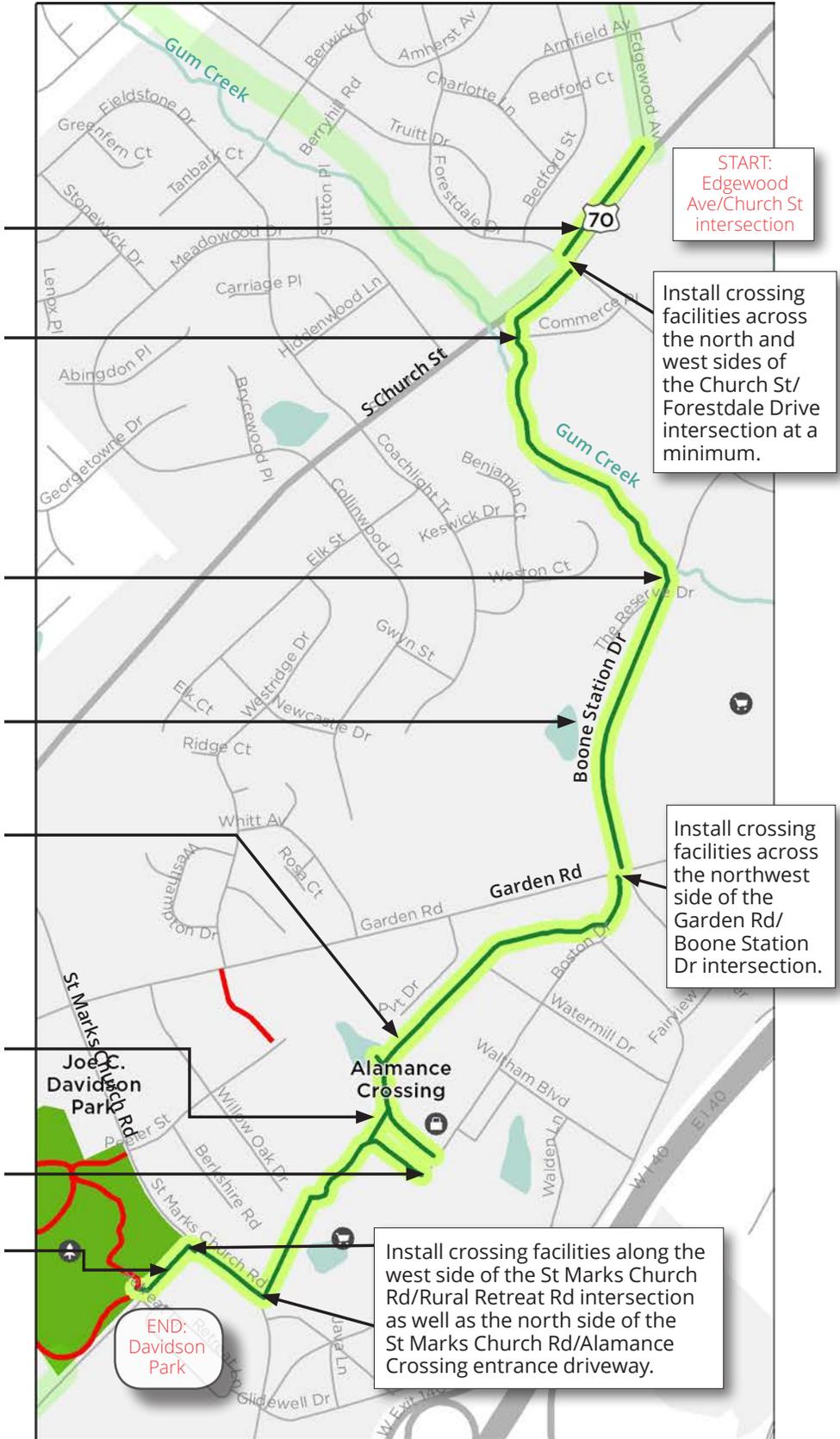
Construct sidepath segment along the north side of Boone Station Dr from the Gum Creek corridor to Alamance Crossing.

Construct greenway segment from the Garden Rd/Boone Station Dr intersection along the northern boundary of Alamance Crossing to St Marks Church Rd. Keep trail above retaining wall and property line fence along the northern boundary of the mall parking area.

Option 2: Construct a greenway bridge over the drainage area.

Option 1: Construct greenway links along both sides of the drainage creek to cross at the existing parking lot access,

Construct sidepath along the west side of St Marks Church Rd from the Alamance Crossing driveway and along the north side of Rural Retreat Rd into Davidson Park.



START:
Edgewood Ave/Church St intersection

Install crossing facilities across the north and west sides of the Church St/ Forestdale Drive intersection at a minimum.

Install crossing facilities across the northwest side of the Garden Rd/ Boone Station Dr intersection.

Install crossing facilities along the west side of the St Marks Church Rd/Rural Retreat Rd intersection as well as the north side of the St Marks Church Rd/Alamance Crossing entrance driveway.

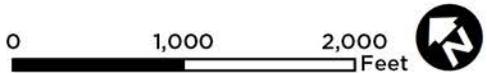
END:
Davidson Park

Existing **Proposed**

— Greenway — Greenway

— This Proposed Project

— Other Proposed Projects



8 **MEBANE ST BIKEWAY**

Length: 3.4 miles

Jurisdiction: Burlington

Trip Generators:

- Downtown Burlington
- Link Transit Transfer Hub (downtown)
- Burlington Station
- Cummings HS & Broadview MS
- Fairchild Park
- City Park
- Walmart Supercenter
- 2 high demand areas (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Redevelopment Districts/Sites - Downtown, South Graham Hopedale Rd, Cum Park Plaza)
- Burlington Pedestrian Transportation Plan

Potential ROW Needs:

- None

Potential Partnerships:

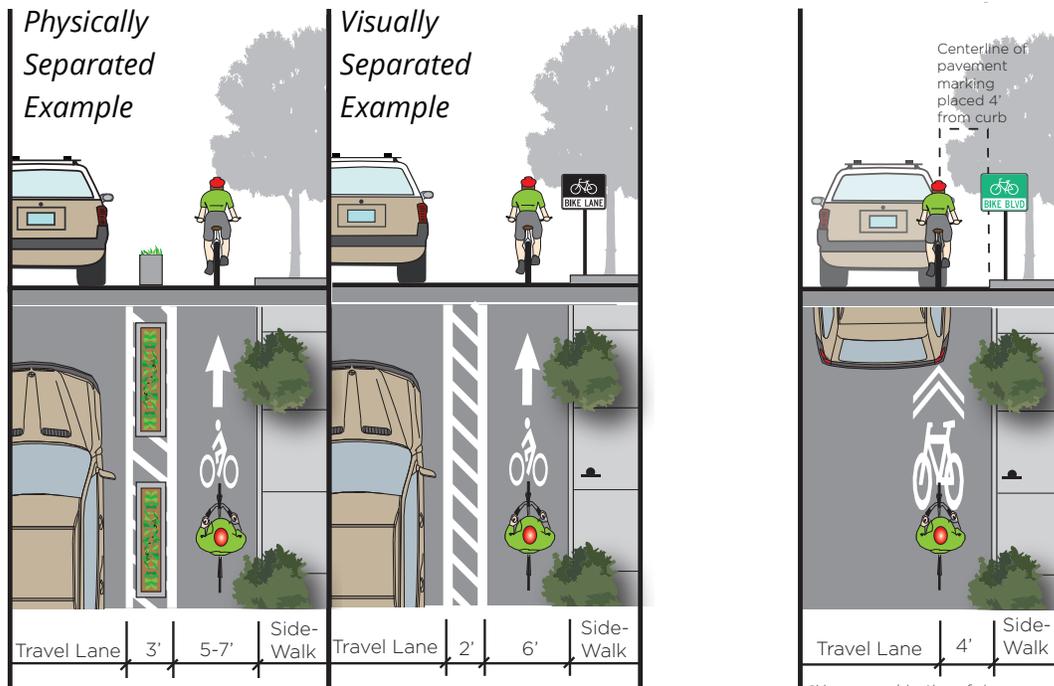
- City of Burlington
- NCDOT
- Burlington Downtown Corporation
- Businesses along corridor

Estimated Construction Costs:

- \$225,054

Facility Type:
Separated Bikeway

Facility Type:
Neighborhood Bikeway



*Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.

8 MEBANE ST BIKEWAY

Implement advisory shoulders*** along Mebane St/Broadview Dr from Sellars Mill Rd to the school entrances.

Construct separated bike lanes along Mebane St from Sellars Mill Rd to Webb Ave by reconfiguring the travel lanes from four lanes to three 10 ft lanes (one in each direction with center turn lane). This will allow space to stripe and/or construct separated bike lanes with 6-7 feet of space on each side of the roadway* (42'-44' total pavement width, up to 52' toward Webb Ave).** Reduce speed limit from 35 to 25 mph.

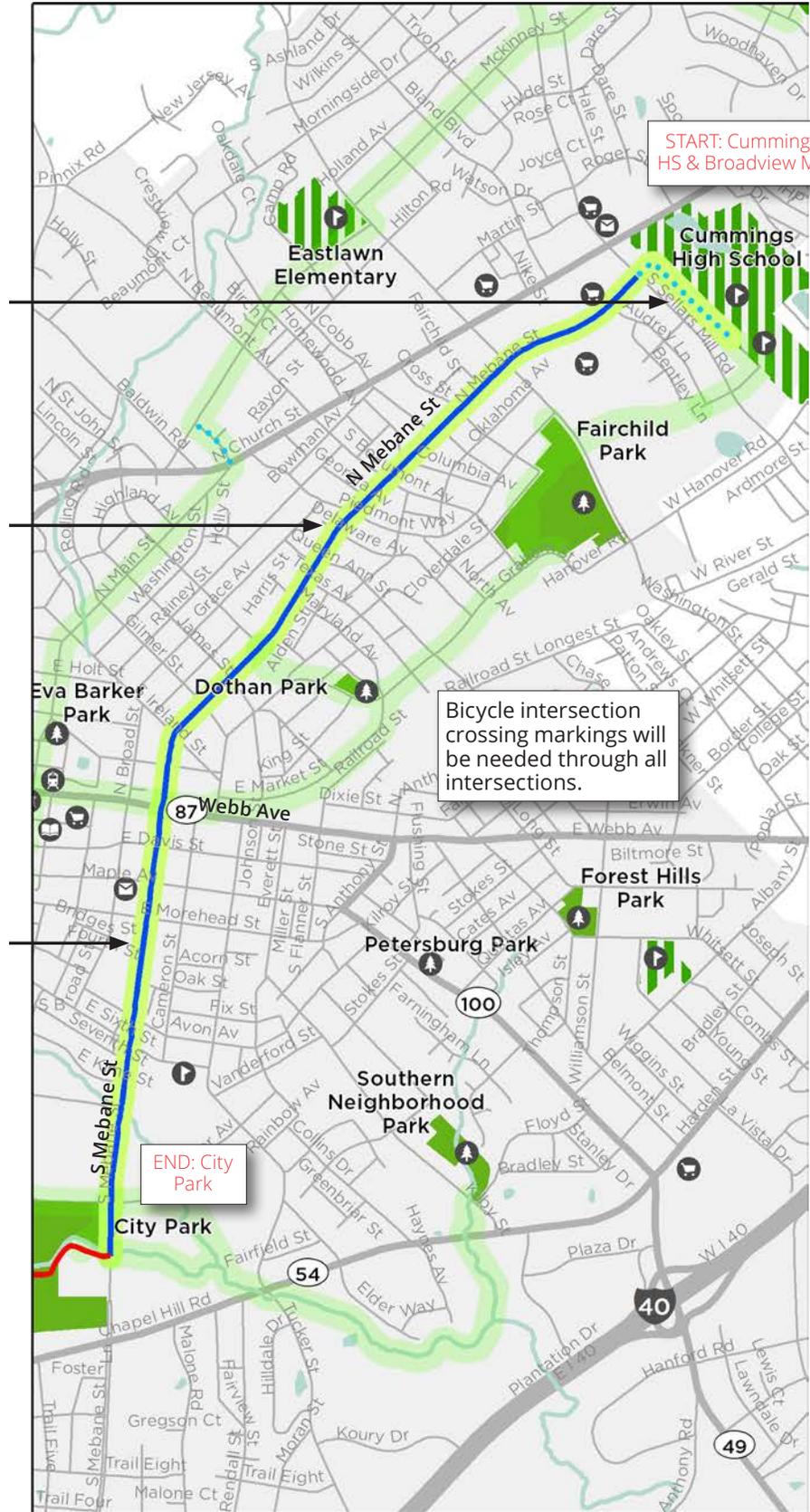
Construct separated bike lanes along Mebane St from Webb Ave to the City Park greenway by reconfiguring the travel lanes from five lanes to three 11 ft lanes (one in each direction with center turn lane). This will allow space to stripe and/or construct separated bike lanes with 7-8 feet of space on each side of the roadway* (47'-48' total pavement width).* Traffic volumes are 11,000-13,000 AADT along this section.

This recommended reconfiguration will provide a high level of service to automobile traffic.** Reduce speed limit from 35 to 25 mph.

*Care must be taken to smooth the asphalt/gutter transition as well as install bicycle friendly drainage gates to ensure comfortable bicycle operating space allotted for the bike lane within the existing curb.

**Installing separated bicycle lanes will significantly enhance the pedestrian level of service of the existing sidewalk along Mebane St by adding to the minimal buffer space that currently exists between pedestrians and automobile traffic.

***Advisory shoulders are considered experimental by the FHWA and require an approval process before implementation can take place.



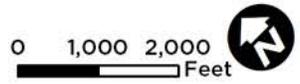
START: Cummings HS & Broadview MS

Bicycle intersection crossing markings will be needed through all intersections.

END: City Park

Existing Greenway **Proposed** Separated Bike Lane Neighborhood Bikeway

This Proposed Project Other Proposed Projects



9 LITTLE ALAMANCE CREEK GREENWAY

Length: 1.5 miles

Jurisdiction: Burlington

Trip Generators:

- City Park, City Park Greenway
- Southern Neighborhood Park
- Link Transit Red Route & Orange Route
- Alamance Community College
- Corporation Pkwy & Chapel Hill Rd businesses
- Much of this trail traverses or is near a medium to high demand area (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network; Redevelopment Districts/ Sites - Burlington Outlet Village)
- Burlington Pedestrian Transportation Plan

Potential ROW Needs:

- 11 impacted parcels
- 10 distinct property owners

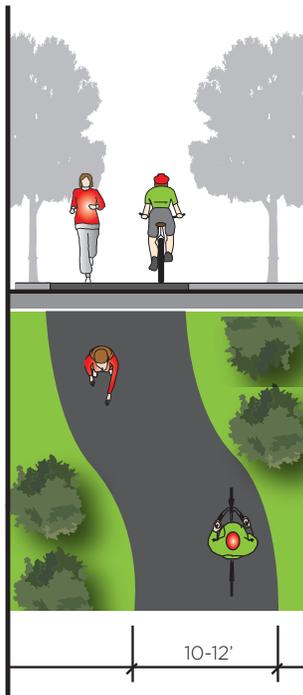
Potential Partnerships:

- City of Burlington
- NCDOT
- Duke Energy
- Businesses along corridor

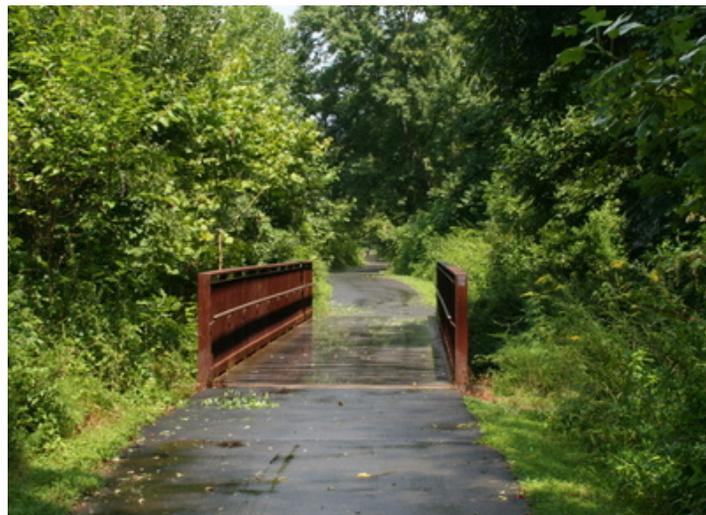
Estimated Construction Costs:

- \$1,100,000

Facility Type:
Greenway



Similar Existing Greenway:
Ellerbe Creek Trail in Durham, NC



9 LITTLE ALAMANCE CREEK GREENWAY

Option 1 for Connecting to City Park: Construct greenway segment along Little Alamance Creek from the southern terminus of the existing greenway in City Park at Mebane St, using a mid-block trail crossing, such as a HAWK signal or a RRFB signal, and a median refuge island.

Option 2 for Connecting to City Park: Construct greenway segment from the existing greenway in City Park by routing it to the existing signalized intersection of Mebane St and Kitchen St.

Further study of Chapel Hill Rd and Tucker St crossings needed; consider under-crossings of the respective roads along Little Alamance Creek, but an at-grade crossing along the west and south sides of the Chapel Hill Rd/Tucker St intersection is likely the best option. If crossing above grade, will need to cross twice, then go over the Tucker Street bridge to get to south side of creek. Recommend adding a 2-way 10' buffered cycle track or bike lanes on east side of Tucker st bridge, with 4 existing lanes narrowed to ~11' lanes

Construct greenway segment along Little Alamance Creek south of the Chapel Hill Rd/Tucker St intersection, turning away from the creek along a tributary to the east to Chapel Hill Rd several hundred feet northwest of Corporation Pkwy.

Construct greenway segment from Chapel Hill Rd to Southern Neighborhood Park along the east side of the Little Alamance Creek tributary.

Construct midblock crossing (install active warning beacon) of Chapel Hill Rd to link toward Southern Neighborhood Park.



Existing

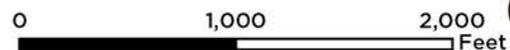


Proposed

Greenway

This Proposed Project

Other Proposed Projects



10 EDGEWOOD AVE BIKEWAY

Length: 2.8 miles

Jurisdiction: Burlington

Trip Generators:

- Downtown Burlington
- Link Transit Transfer Hub (downtown)
- Turrentine Middle School
- Williams High School
- Willowbrook Park
- Edgewood Village Shopping Area
- 1 high demand area (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Redevelopment Districts/Sites - Downtown)

Potential ROW Needs:

- Option 1: None
- Option 2 (without using any of current pavement width): 70 parcels with 70 distinct property owners

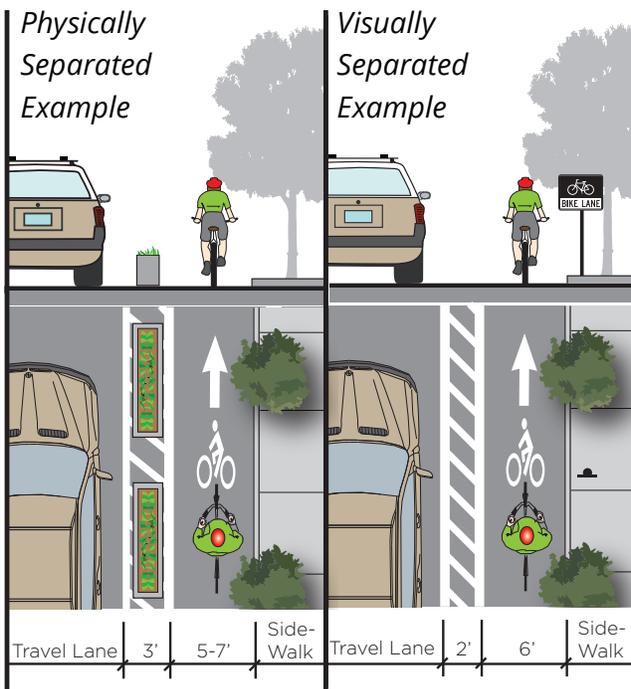
Potential Partnerships:

- City of Burlington
- Burlington Downtown Corporation
- Edgewood Village Shopping Area businesses

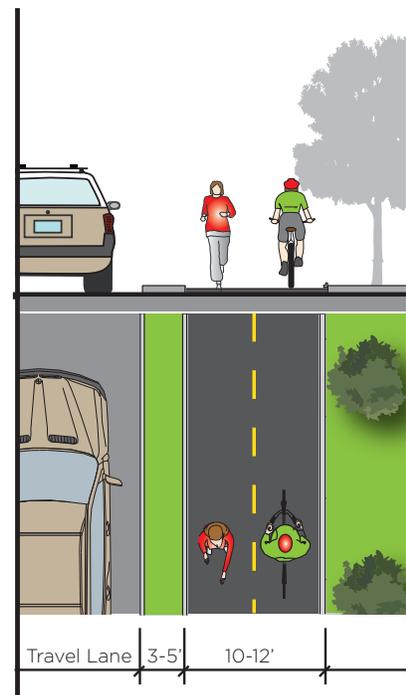
Estimated Construction Costs:

- Option 1 (Separated Bikeway) \$123,454
- Option 2 (Sidepath) \$1,114,070

**Option 1 Facility Type:
Separated Bikeway**



**Option 2 Facility Type:
Greenway Sidepath**



10 EDGEWOOD AVE BIKEWAY

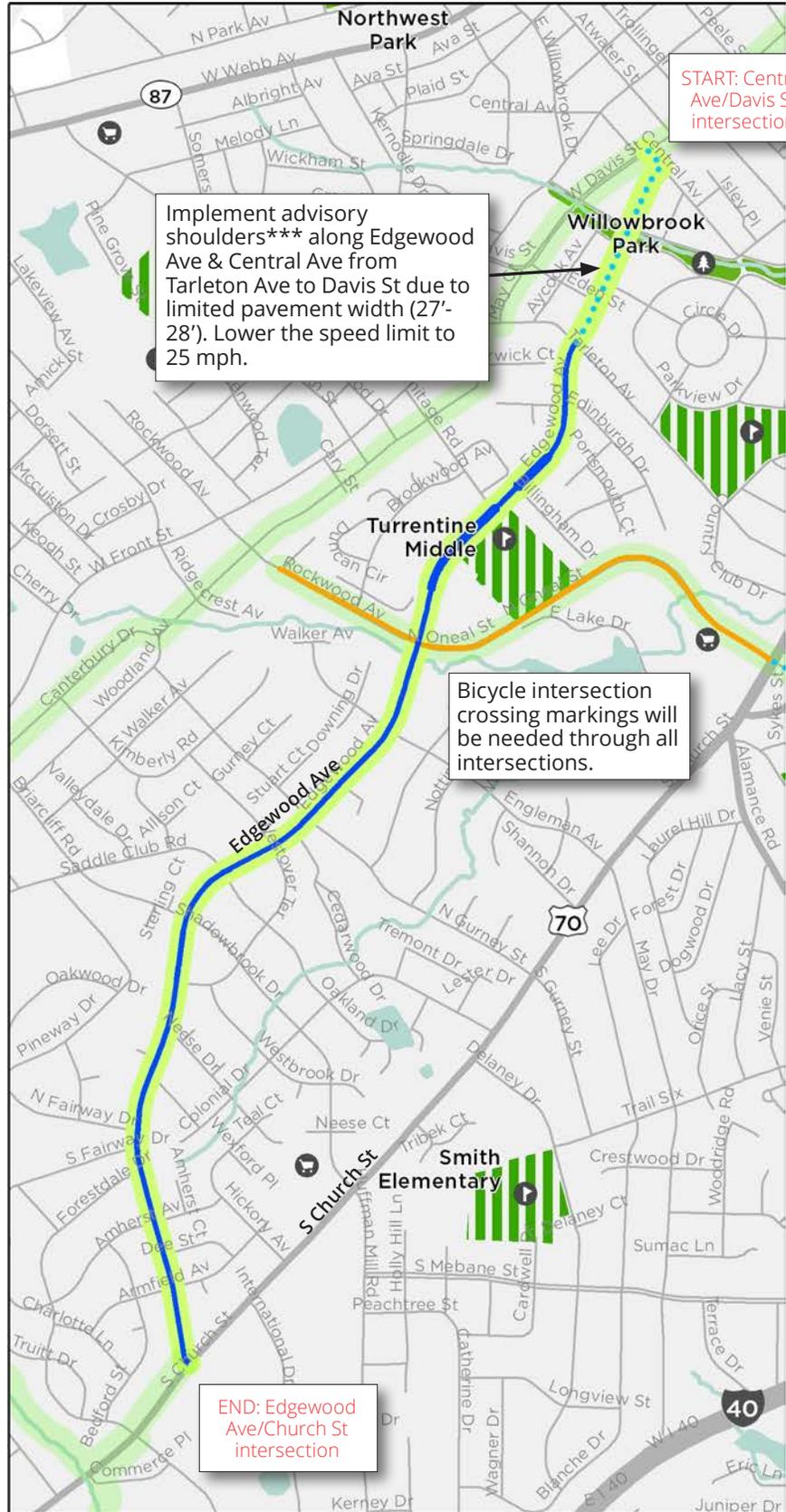
Option 1: Construct separated bike lanes along Edgewood Ave from Tarleton Ave to Church St by reconfiguring the travel lanes from four lanes to three 10.5 ft lanes (one in each direction with center turn lane). This will allow space to stripe and/or construct separated bike lanes with 7-8 feet of space on each side of the roadway (47'-48' pavement width total, up to 55' in width in some sections). For the section in front of Turrentine Middle School and the Village at Brookwood, reconfigure the travel lanes from five to three, leaving the center turn lane and striping/constructing separated bike lanes in the space currently allotted for the outside travel lanes (60'-62' total pavement width for this section).^{*} Traffic volumes are relatively low at 6,000 - 7,000 AADT or lower for the length of this section - this recommended reconfiguration will provide a high level of service to automobile traffic.^{**} Reduce speed limit from 35 to 25 mph.

Option 2: Construct a sidepath along the north side of Edgewood Ave from Tarleton Ave to Church St. This will require the relocation of utilities at numerous locations as well as either property acquisition to expand the public right-of-way space or the use of some of the roadway space for sidepath construction. The latter would require narrowing the travel lanes by several feet and buffer space construction.

^{*}Care must be taken to smooth the asphalt/gutter transition as well as install bicycle friendly drainage gates to ensure comfortable bicycle operating space allotted for the bike lane within the existing curb.

^{**}Installing separated bicycle lanes will significantly enhance the pedestrian level of service of the existing sidewalk along the south side of Edgewood Ave by adding to the minimal buffer space that currently exists between pedestrians and automobile traffic.

^{***}Advisory shoulders are considered experimental by the FHWA and require an approval process before implementation can take place.



11 GUM CREEK GREENWAY

Length: 1.5 miles

Jurisdictions: Burlington & Elon

Trip Generators:

- Edgewood Village Shopping Center and adjacent commercial area
- Link Transit Blue Route
- Elon University, athletic fields
- 2 high demand areas (see Map 2.2)

Support in Other Plans:

- Destination Burlington 2035 (Proposed Greenway Network)
- Burlington Pedestrian Transportation Plan
- Alamance County Trail Plan
- Elon Bicycle, Pedestrian, and Lighting Plan

Potential ROW Needs:

- 14 impacted parcels
- 12 distinct property owners

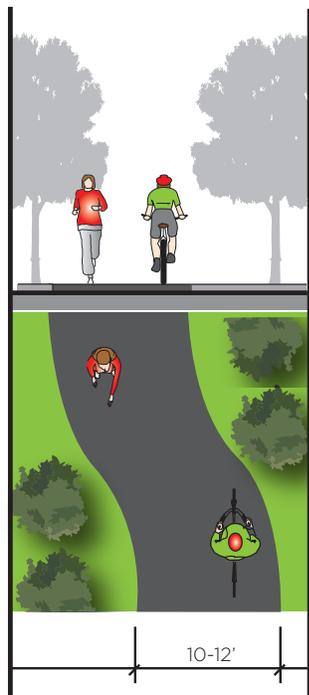
Potential Partnerships:

- City of Burlington
- Elon University
- Town of Elon
- NCDOT
- Duke Energy

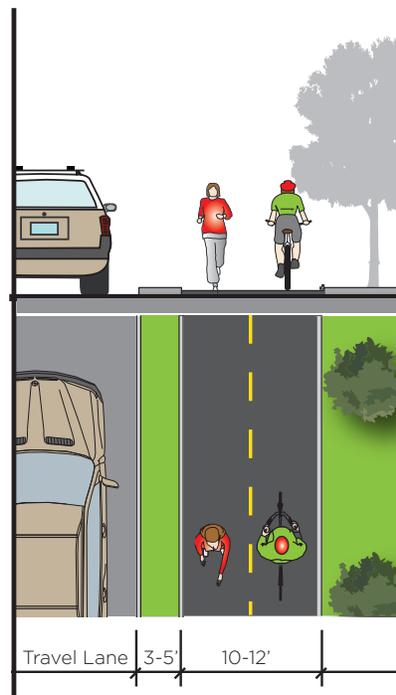
Estimated Construction Costs:

- \$705,124

**Facility Type:
Greenway**



**Facility Type:
Greenway Sidepath**



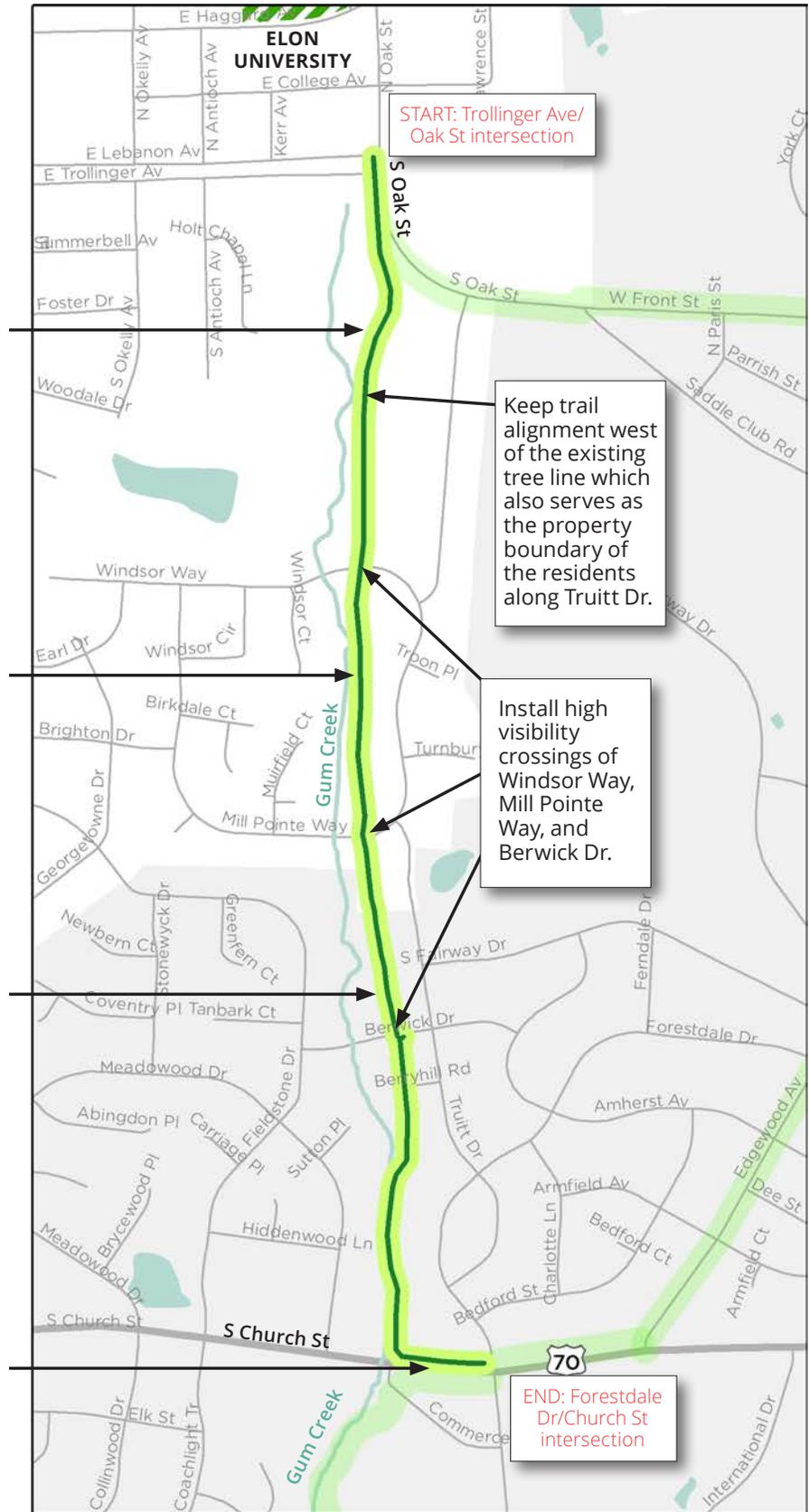
11 GUM CREEK GREENWAY

Construct greenway segment from the Trollinger Ave/Oak St intersection to Windsor Way, staying east of the athletic fields and following the power lines south.

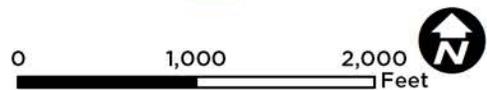
Construct greenway segment from Windsor Way to Mill Pointe Way. Man-made ponds will need to be crossed with bridge (or potentially a culvert if the ponds can handle it hydraulically).

Construct greenway segment from Mill Pointe Way to Church St following along the east side of Gum Creek and along the existing power line corridor.

Construct sidepath segment along the north side of Church St from the Gum Creek corridor to the Forestdale Dr/Church St intersection.



Proposed
— Greenway
 This Proposed Project
 Other Proposed Projects



MAP 3.3 PHASE 3 PROJECTS

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed (Outside Existing Curb)

- Shared Use Path (Greenway)
- Separated Bike Lane (with pedestrian facilities) or Sidepath

Proposed (Within Existing Curb)

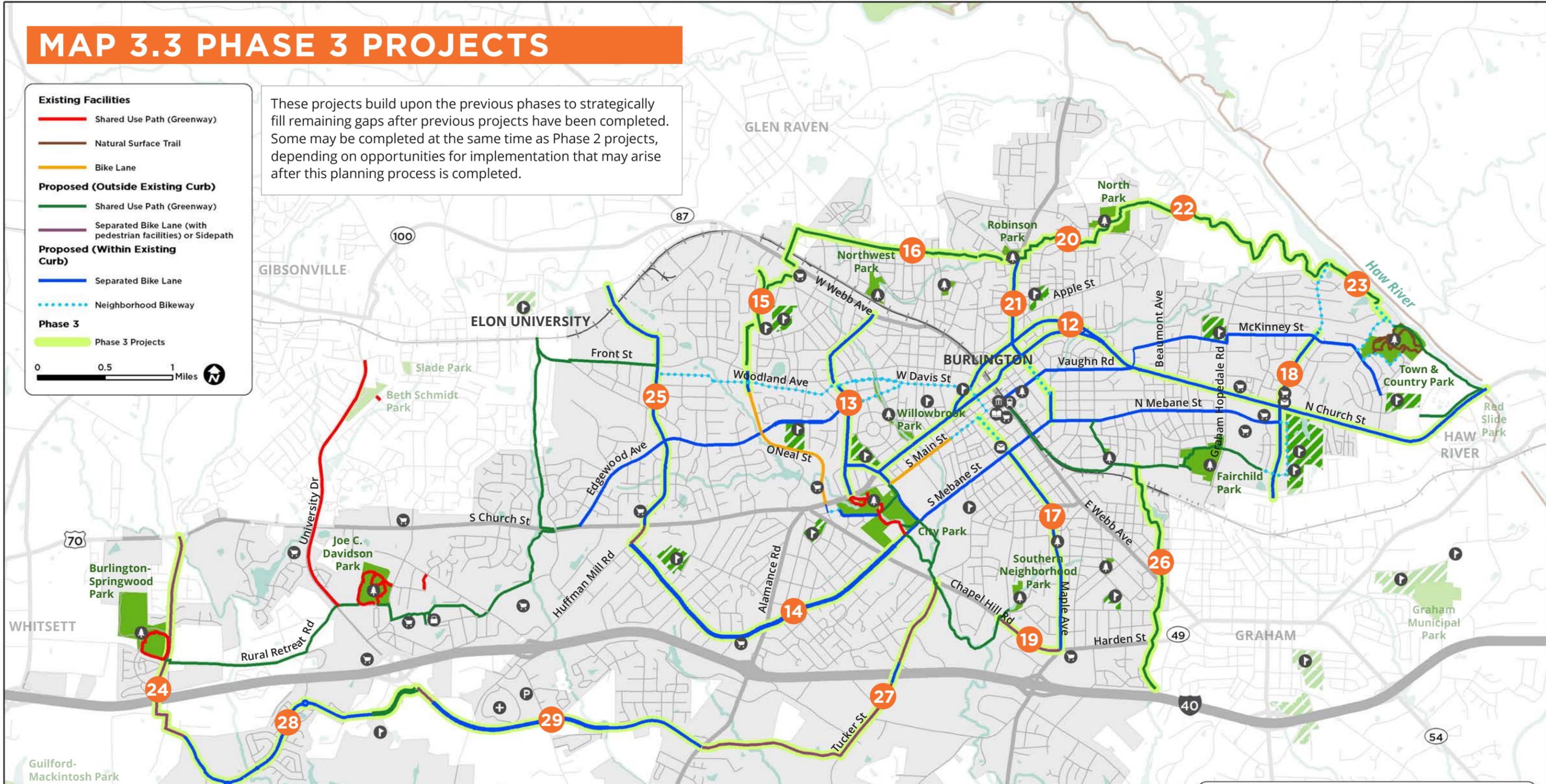
- Separated Bike Lane
- Neighborhood Bikeway

Phase 3

- Phase 3 Projects

0 0.5 1 Miles

These projects build upon the previous phases to strategically fill remaining gaps after previous projects have been completed. Some may be completed at the same time as Phase 2 projects, depending on opportunities for implementation that may arise after this planning process is completed.



- Phase 3 Projects:**
- | | | |
|-----------------------------------|-----------------------------------|--|
| 12 Church St/Fisher St Bikeways | 18 Sellars Mill Road Bikeway | 24 Springwood Church Rd Bikeway |
| 13 Tarleton Ave Bikeway | 19 Chapel Hill Rd Bikeway | 25 York/Briarcliff/Shadowbrook Bikeway |
| 14 Huffman Mill/Mebane St Bikeway | 20 Staley Creek Greenway | 26 Bowden Branch Greenway |
| 15 Gant Lake Greenway | 21 Rauhut/Holt/Ireland St Bikeway | 27 Grand Oaks/Tucker St Bikeway |
| 16 Northwest-Robinson Greenway | 22 Service Creek Greenway | 28 Bonnar Bridge Bikeway |
| 17 Maple Ave Bikeway | 23 Haw River Greenway North | 29 University/Grand Oaks Blvd Bikeway |

Points of Interest

Airport	Major Park
Burlington Post Office	Park and Ride Lot
Historic Depot	RR Depot
Hospital	School
Library	Shopping Center
	Grocery Stores

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MAPLE AVENUE CORRIDOR STUDY

As of July 2017, the City of Burlington was in the beginning stages of a corridor study for Maple Avenue, from downtown towards I-40. This corridor study stems from a high priority recommendation from the *City of Burlington Comprehensive Plan (Destination Burlington 2015-2035)*, due to Maple Avenue's significance as a city gateway. The corridor is currently regarded as:

"...the least preferable gateway to represent the character of Burlington. Unattractive and dingy buildings, traffic congestion, a disorienting intersection geometry, and wide expanses of surface parking combine to create a hostile environment for visitors entering the City"
 - page 26 of *Destination Burlington*

Key bicycle facility considerations for this study should include construction of separated bicycle lanes from Mebane St to the I-40 intersection (continuing south in the future):

- **Mebane St to Anthony St:** With current traffic volumes relatively low (9,000 AADT) and significant pavement width (43'-44'), reconfigure travel lanes from four lanes to three lanes (including a center turn lane or landscaped median where appropriate), creating space for physically separated bicycle lanes (or painted buffer space at a minimum) within the existing pavement. Pavement widening could also be considered. Design considerations/options should include a landscaped median and a landscaped buffer for the physically separated bicycle lanes where possible.
- **Anthony St to Chapel Hill Rd:** With current traffic volumes relatively low (11,000-15,000 AADT) and 64'-65' pavement width, reconfigure travel lanes from five lanes to three lanes (including center turn lane or landscaped median where appropriate), creating space for physically separated bicycle lanes (or painted buffer space at a minimum) within the existing pavement. Design considerations/options should include a landscaped median and landscaped physically separated bicycle lane buffer where possible.
- **Driveway access management** (also see page 25 of the Burlington Pedestrian Plan (2011)) - High frequencies and sizes of driveways and parking lot curb-cuts present hazards to pedestrians (and bicyclists) as automobiles cross pedestrians' (and bicyclists') paths of travel. The Maple Avenue section near the I-40/85 exit should be a key focus area for driveway access management.
- **Connectivity considerations:** This plan calls for future connections to the Maple Ave corridor. See Maps 3.2 and 3.3 for project recommendations that connect at S Mebane St to the north and along Chapel Hill Rd to the south and west.

MAPLE AVENUE CORRIDOR STUDY

Maple Ave between Mebane St to Anthony St (looking north)



Maple Ave between Anthony St and Chapel Hill Rd (looking north)



MAP 3.4A COMPREHENSIVE NETWORK (NORTHWEST BURLINGTON)

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed (Outside Existing Curb)

- Shared Use Path (Greenway)
- Separated Bike Lane (with pedestrian facilities) or Sidepath

Proposed (Within Existing Curb)

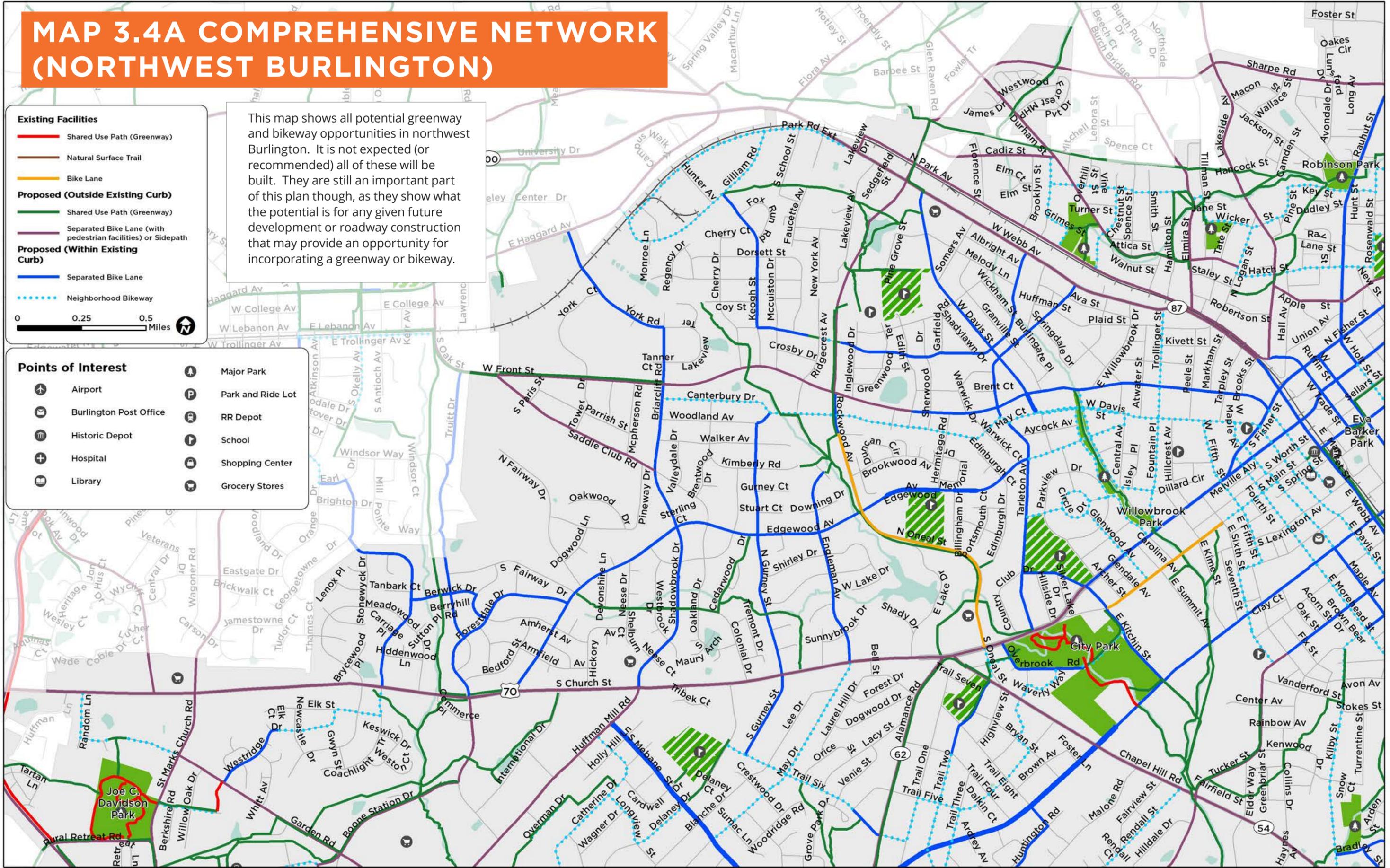
- Separated Bike Lane
- Neighborhood Bikeway

0 0.25 0.5 Miles

This map shows all potential greenway and bikeway opportunities in northwest Burlington. It is not expected (or recommended) all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.

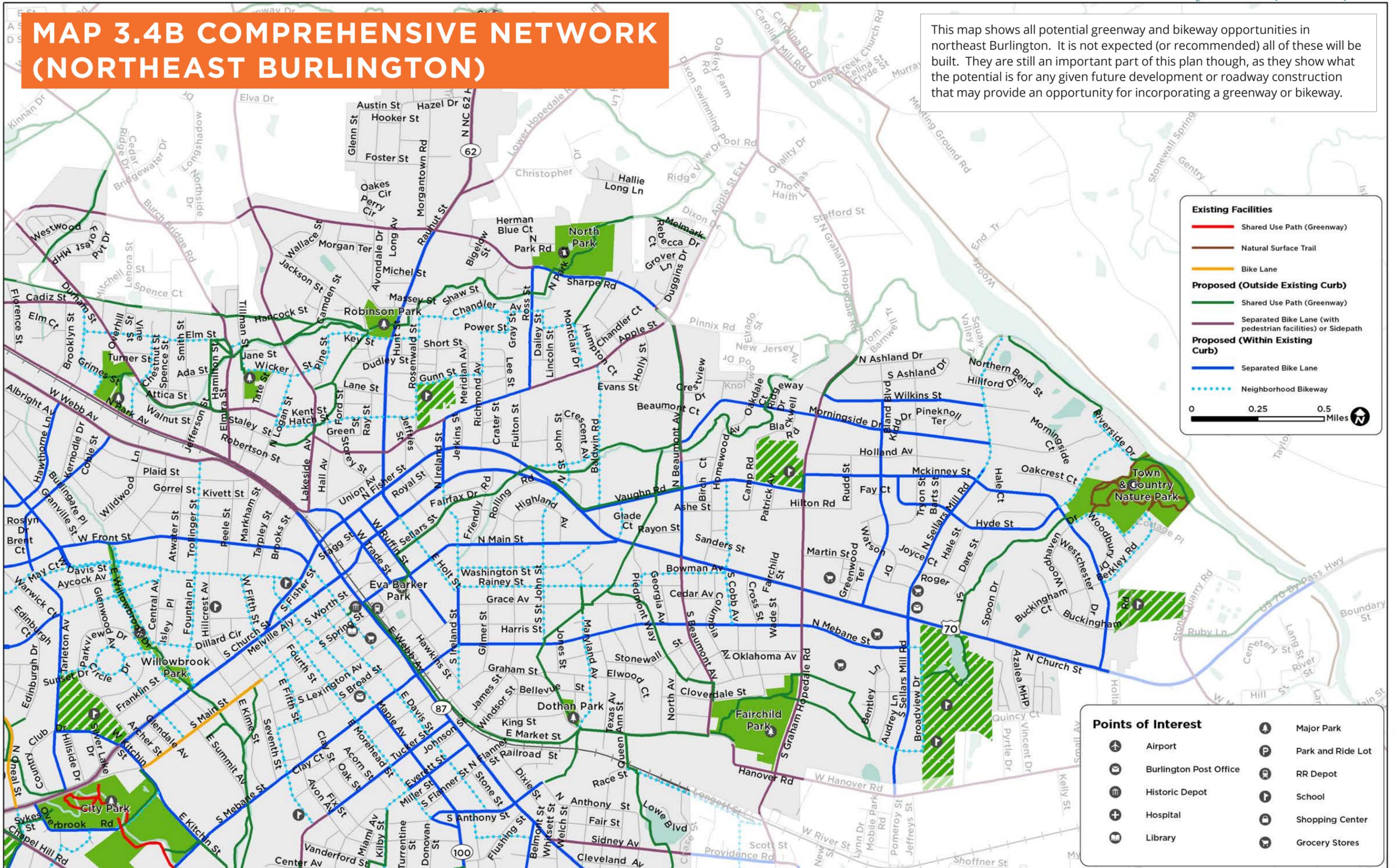
Points of Interest

- Airport
- Burlington Post Office
- Historic Depot
- Hospital
- Library
- Major Park
- Park and Ride Lot
- RR Depot
- School
- Shopping Center
- Grocery Stores



MAP 3.4B COMPREHENSIVE NETWORK (NORTHEAST BURLINGTON)

This map shows all potential greenway and bikeway opportunities in northeast Burlington. It is not expected (or recommended) all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.



Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed (Outside Existing Curb)

- Shared Use Path (Greenway)
- Separated Bike Lane (with pedestrian facilities) or Sidepath

Proposed (Within Existing Curb)

- Separated Bike Lane
- Neighborhood Bikeway

0 0.25 0.5 Miles

Points of Interest

- Airport
- Burlington Post Office
- Historic Depot
- Hospital
- Library
- Major Park
- Park and Ride Lot
- RR Depot
- School
- Shopping Center
- Grocery Stores

MAP 3.4C COMPREHENSIVE NETWORK (SOUTHWEST BURLINGTON)

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

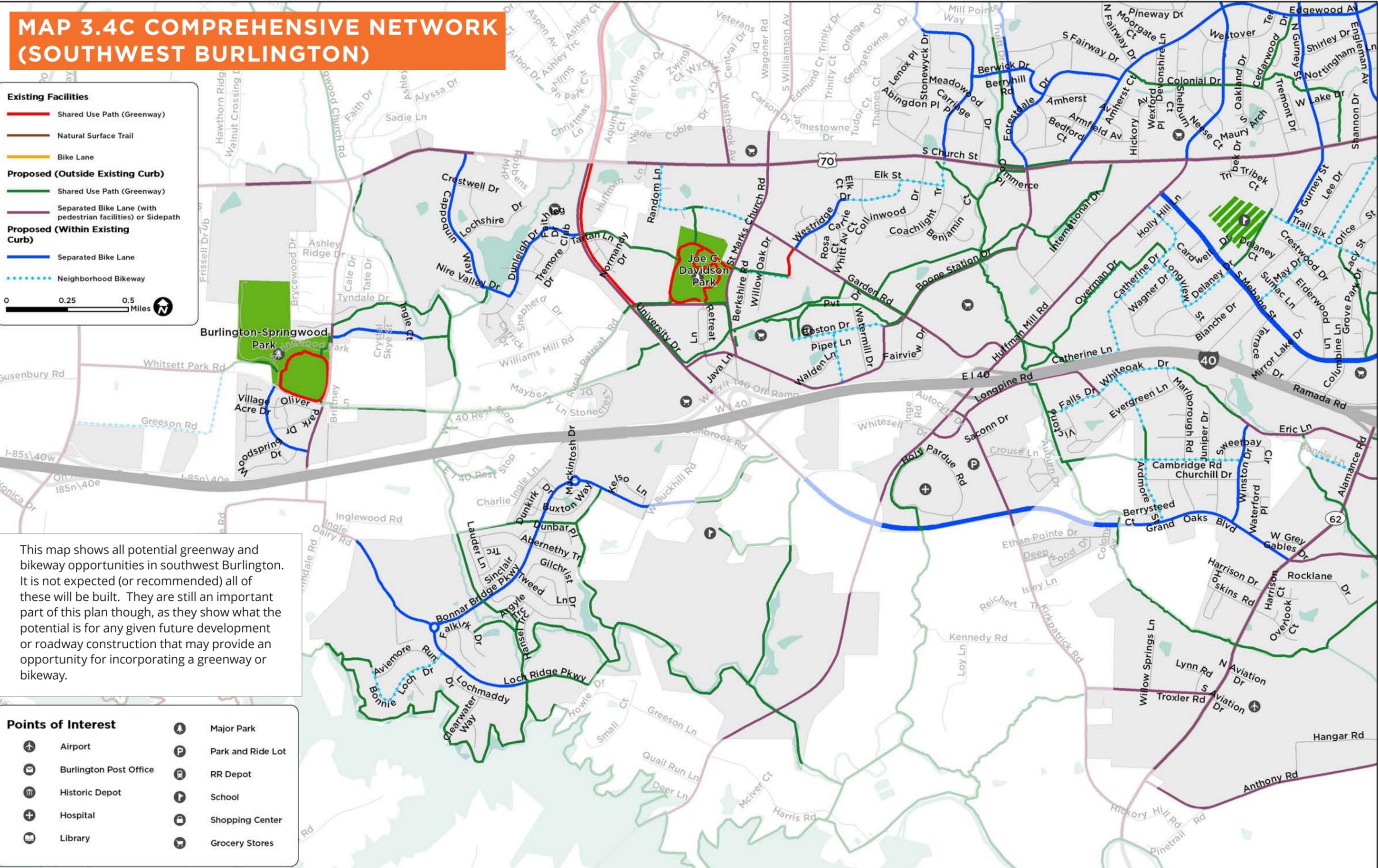
Proposed (Outside Existing Curb)

- Shared Use Path (Greenway)
- Separated Bike Lane (with pedestrian facilities) or Sidepath

Proposed (Within Existing Curb)

- Separated Bike Lane
- Neighborhood Bikeway

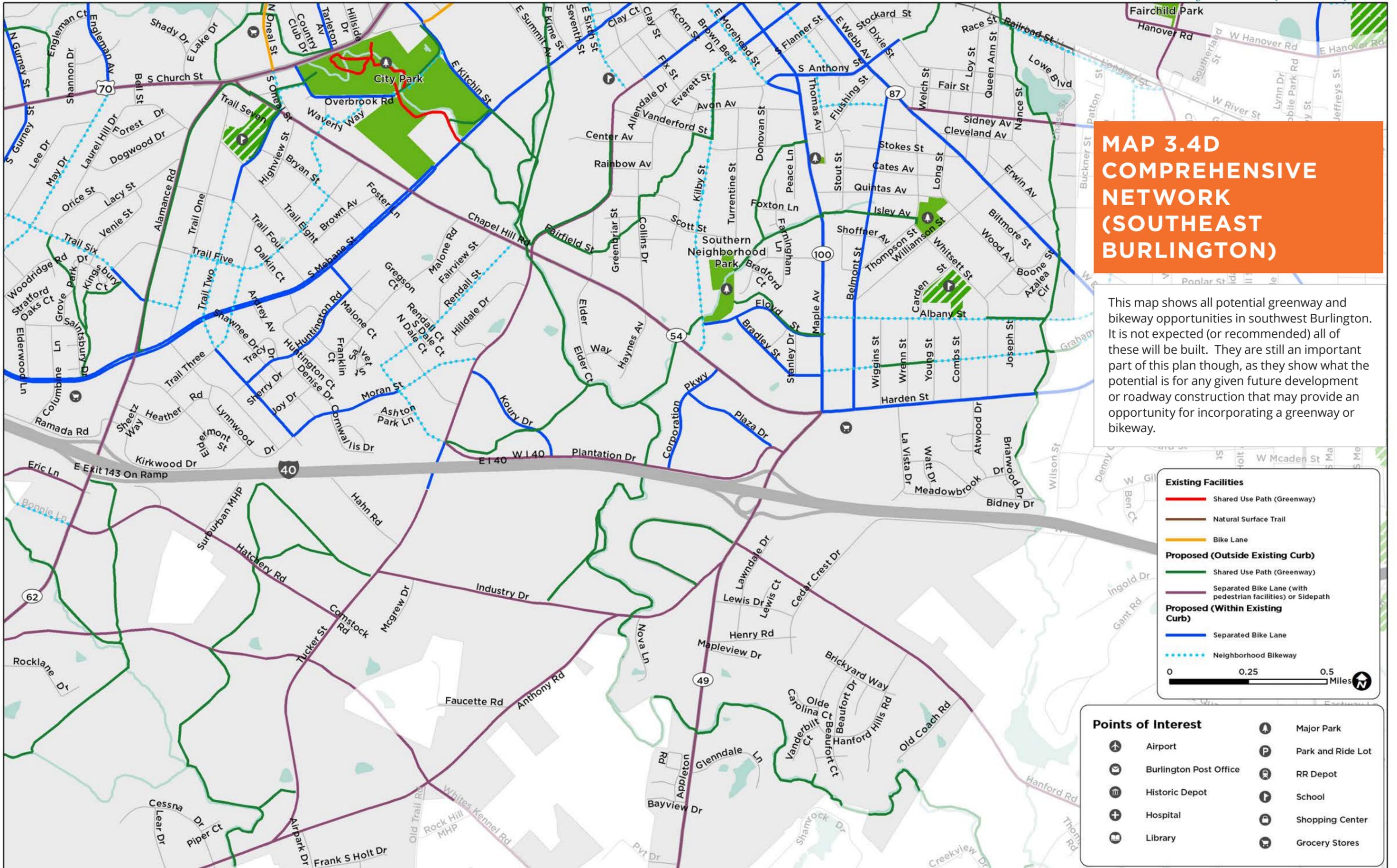
0 0.25 0.5 Miles



This map shows all potential greenway and bikeway opportunities in southwest Burlington. It is not expected (or recommended) all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.

Points of Interest

	Airport		Major Park
	Burlington Post Office		Park and Ride Lot
	Historic Depot		RR Depot
	Hospital		School
	Library		Shopping Center
			Grocery Stores



MAP 3.4D COMPREHENSIVE NETWORK (SOUTHEAST BURLINGTON)

This map shows all potential greenway and bikeway opportunities in southwest Burlington. It is not expected (or recommended) all of these will be built. They are still an important part of this plan though, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating a greenway or bikeway.

Existing Facilities

- Shared Use Path (Greenway)
- Natural Surface Trail
- Bike Lane

Proposed (Outside Existing Curb)

- Shared Use Path (Greenway)
- Separated Bike Lane (with pedestrian facilities) or Sidepath

Proposed (Within Existing Curb)

- Separated Bike Lane
- Neighborhood Bikeway

0 0.25 0.5 Miles

Points of Interest

- Airport
- Burlington Post Office
- Historic Depot
- Hospital
- Library
- Major Park
- Park and Ride Lot
- RR Depot
- School
- Shopping Center
- Grocery Stores

4

IMPLEMENTATION STRATEGY

"Having such a plan sounds great - improving livability of our city with more cycling and walking opportunities will positively impact health and economic development." - Public Comment



Proposed greenway sidepath along Rural Retreat Rd, connecting Springwood and Davidson Parks.

OVERVIEW

The proposed greenways and bikeways system in this plan represents a major investment with enormous positive impacts for Burlington residents, businesses, and visitors. The effort put forth to implement this plan will require a high level of determination, coordination, and leadership on behalf of those who champion the plan.

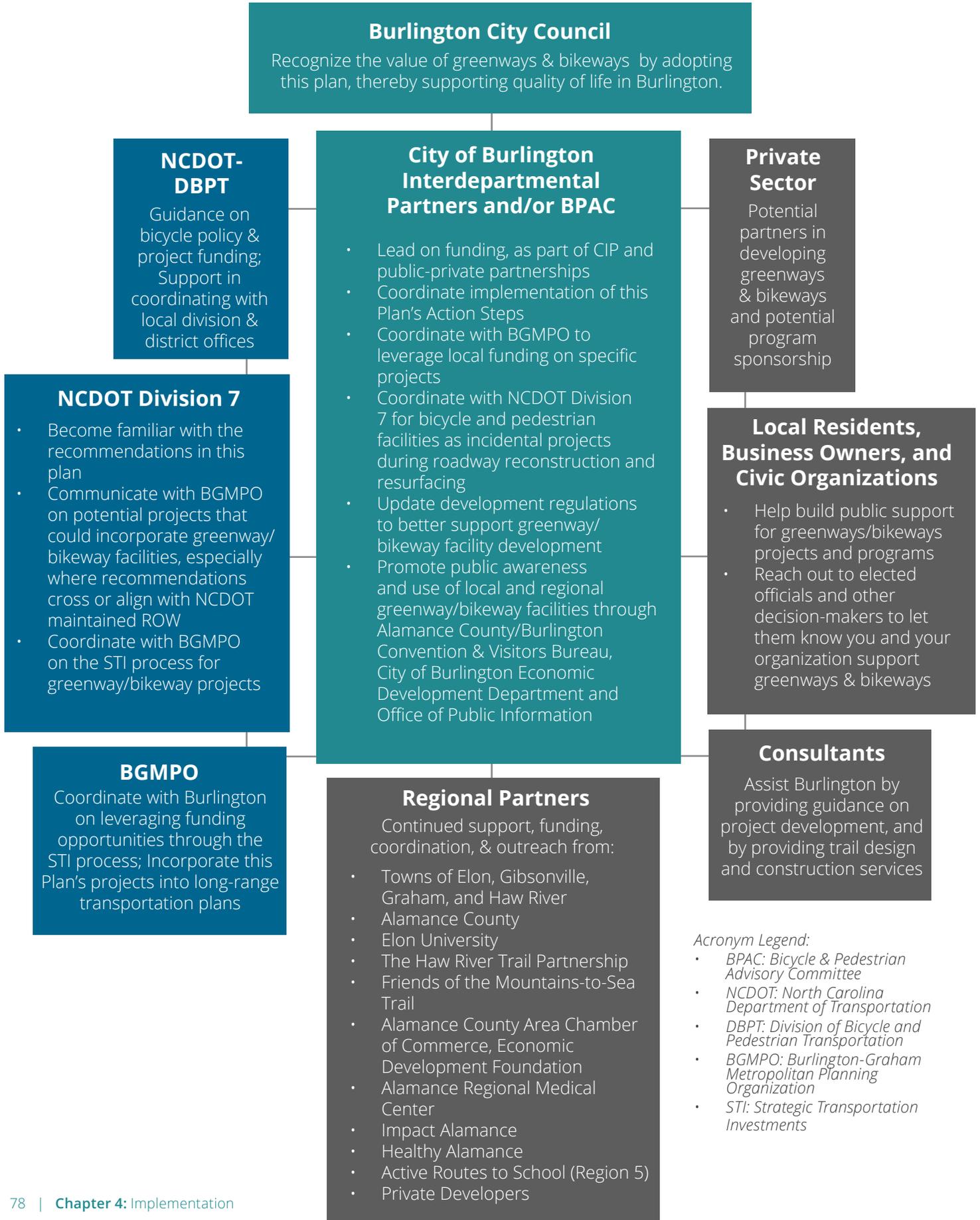
This chapter lays the groundwork for implementation efforts, with a recommended framework and set of action steps for establishing funding and carrying out implementation. The organizational chart on the follow page outlines the suggested key roles for project partners and stakeholders involved in implementation. The actual roles and responsibilities of each group will be more diverse and may vary depending on how this Plan is implemented over time.

The page opposite the organizational chart outlines potential funding sources by project. The basic strategy is to establish a sum of “seed” funding that can then be leveraged through local, state, federal, and private sources.



Members of the Steering Committee for the development of this plan (listed in the acknowledgments section) should continue to work together towards the implementation of this plan.

ORGANIZATIONAL FRAMEWORK FOR IMPLEMENTATION



POTENTIAL FUNDING SOURCES BY PROJECT

FEDERAL FUNDING SOURCES

Several Federal funding sources apply to all projects in this plan. These include Transportation Alternatives, Surface Transportation Block Grants, the Highway Safety Improvement Program, and Partnerships for Sustainable Communities (grant cycle varies). Other Federal sources depend on the project, and are indicated below.

Project Name	Federal Transit Administration Enhanced Mobility of Seniors and Individuals with Disabilities	Federal Land and Water Conservation Fund	Rivers, Trails, and Conservation Assistance Program	National Fish and Wildlife Foundation: Five Star & Urban Waters Restoration Grant Program
1 Haw River Greenway		✓	✓	✓
2 Burlington-Elon Bikeway	✓			
3 Springwood-Davidson Greenway	✓	✓	✓	✓
4 Town & Country Bikeway	✓		✓	✓
5 City Park Bikeway	✓		✓	✓
6 Fairchild Greenway	✓	✓	✓	✓
7 Alamance Crossing Greenway	✓	✓	✓	✓
8 Mebane Street Bikeway	✓			
9 Little Alamance Creek Greenway		✓	✓	✓
10 Edgewood Ave Bikeway	✓			
11 Gum Creek Greenway	✓	✓	✓	✓
12 Church St/Fisher St Bikeways	✓		✓	✓
13 Tarleton Ave Bikeway	✓			
14 Huffman Mill Rd/S Mebane St Bikeway	✓			
15 Gant Lake Greenway	✓	✓	✓	✓
16 Northwest-Robinson Greenway	✓	✓	✓	✓
17 Maple Ave Bikeway	✓			
18 Sellars Mill Road Bikeway	✓			
19 Chapel Hill Rd Bikeway	✓			
20 Staley Creek Greenway	✓	✓	✓	✓
21 Rauhut/Holt/Ireland St Bikeway	✓			
22 Service Creek Greenway		✓	✓	✓
23 Haw River Greenway North		✓	✓	✓
24 Springwood Church Rd Bikeway				
25 York/Briarcliff/Shadowbrook Bikeway				
26 Bowden Branch Greenway		✓	✓	✓
27 Grand Oaks/Tucker Street Bikeway				
28 Bonner Bridge Pkwy Bikeway				
29 University/Grand Oaks Bikeway	✓			

STATE FUNDING SOURCES

The NCDOT Strategic Transportation Investments (STI) (\$100k is minimum cost) and the Urban and Community Forestry Grant apply to all projects in this plan. Other state sources depend on the project, and are indicated below.

Project Name	Incidental Projects	SPOT Safety Program	Highway Hazard Elimination Program (typically \$400k-\$1M projects)	Governor's Highway Safety Program	Safe Routes to School (see federal tab)	Community Development Block Grant Funds	NC Division of Parks and Recreation - Recreational Trails and Adopt-a-Trail Grants	NC Parks and Recreation Trust Fund (PARTF)	Clean Water Management Trust Fund	NC Community Foundation - Duke Energy Water Resources Fund
1 Haw River Greenway			✓			✓			✓	
2 Burlington-Elon Bikeway	✓	✓	✓		✓					
3 Springwood-Davidson Greenway		✓							✓	
4 Town & Country Bikeway	✓	✓	✓		✓	✓				
5 City Park Bikeway	✓	✓			✓					
6 Fairchild Greenway		✓	✓		✓	✓			✓	
7 Alamance Crossing Greenway		✓	✓						✓	
8 Mebane Street Bikeway	✓	✓	✓		✓	✓				
9 Little Alamance Creek Greenway		✓				✓			✓	
10 Edgewood Ave Bikeway	✓	✓	✓		✓					
11 Gum Creek Greenway	✓	✓			✓					
12 Church St/Fisher St Bikeways	✓	✓	✓	✓	✓	✓				
13 Tarleton Ave Bikeway	✓	✓	✓		✓	✓				
14 Huffman Mill Rd/S Mebane St Bikeway	✓	✓	✓		✓					
15 Gant Lake Greenway					✓	✓			✓	
16 Northwest-Robinson Greenway			✓			✓			✓	
17 Maple Ave Bikeway	✓	✓	✓	✓		✓				
18 Sellars Mill Road Bikeway	✓	✓	✓		✓	✓				
19 Chapel Hill Rd Bikeway	✓	✓	✓	✓		✓				
20 Staley Creek Greenway						✓			✓	
21 Rauhut/Holt/Ireland St Bikeway	✓	✓	✓	✓		✓				
22 Service Creek Greenway						✓			✓	
23 Haw River Greenway North						✓			✓	
24 Springwood Church Rd Bikeway	✓	✓	✓							
25 York/Briarcliff/Shadowbrook Bikeway	✓	✓								
26 Bowden Branch Greenway		✓	✓			✓			✓	
27 Grand Oaks/Tucker Street Bikeway	✓	✓				✓				
28 Bonner Bridge Pkwy Bikeway	✓	✓			✓					
29 University/Grand Oaks Bikeway	✓	✓								

LOCAL FUNDING SOURCES

Most local funding sources apply to all projects in this plan. These include Bonds, Capital Reserve Fund, Capital Project Ordinances, Local Improvement District (LID) funding. Other local sources depend on the project, and are indicated below.

	Project Name	Powell Bill Funds	Municipal Service District	Municipal Vehicle Tax
1	Haw River Greenway			
2	Burlington-Elon Bikeway	✓	✓	✓
3	Springwood-Davidson Greenway			
4	Town & Country Bikeway	✓	✓	✓
5	City Park Bikeway	✓	✓	✓
6	Fairchild Greenway	✓	✓	
7	Alamance Crossing Greenway	✓		
8	Mebane Street Bikeway	✓	✓	✓
9	Little Alamance Creek Greenway			
10	Edgewood Ave Bikeway	✓		✓
11	Gum Creek Greenway	✓		
12	Church St/Fisher St Bikeways	✓	✓	
13	Tarleton Ave Bikeway	✓		✓
14	Huffman Mill Rd/S Mebane St Bikeway	✓		✓
15	Gant Lake Greenway			
16	Northwest-Robinson Greenway			
17	Maple Ave Bikeway	✓	✓	
18	Sellars Mill Road Bikeway	✓		✓
19	Chapel Hill Rd Bikeway	✓		
20	Staley Creek Greenway			
21	Rauhut/Holt/Ireland St Bikeway	✓		
22	Service Creek Greenway			
23	Haw River Greenway North			
24	Springwood Church Rd Bikeway	✓		✓
25	York/Briarcliff/Shadowbrook Bikeway	✓		✓
26	Bowden Branch Greenway			
27	Grand Oaks/Tucker Street Bikeway	✓		✓
28	Bonner Bridge Pkwy Bikeway	✓		✓
29	University/Grand Oaks Bikeway	✓		✓

PRIVATE AND NONPROFIT FUNDING SOURCES

Several private and nonprofit funding sources apply to all projects in this plan. These include the Blue Cross Blue Shield of North Carolina Foundation, the North Carolina Community Foundation, the Z. Smith Reynolds Foundation, and the Bank of America Charitable Foundation. Other private and nonprofit sources depend on the project, and are indicated below.

Project Name	Rails-to-Trails Conservancy	National Trails Fund	American Greenways Eastman Kodak Awards	National Fish and Wildlife Foundation	The Trust for Public Land	Land for Tomorrow Campaign	The Conservation Alliance	Duke Energy Foundation
1 Haw River Greenway	✓	✓	✓	✓	✓	✓	✓	✓
2 Burlington-Elon Bikeway								
3 Springwood-Davidson Greenway	✓	✓	✓	✓	✓	✓	✓	✓
4 Town & Country Bikeway								
5 City Park Bikeway								
6 Fairchild Greenway	✓	✓	✓	✓	✓	✓	✓	✓
7 Alamance Crossing Greenway	✓	✓	✓	✓	✓	✓	✓	✓
8 Mebane Street Bikeway								
9 Little Alamance Creek Greenway	✓	✓	✓	✓	✓	✓	✓	✓
10 Edgewood Ave Bikeway								
11 Gum Creek Greenway								
12 Church St/Fisher St Bikeways								
13 Tarleton Ave Bikeway								
14 Huffman Mill Rd/S Mebane St Bikeway								
15 Gant Lake Greenway	✓	✓	✓	✓	✓	✓	✓	✓
16 Northwest-Robinson Greenway	✓	✓	✓	✓	✓	✓	✓	✓
17 Maple Ave Bikeway								
18 Sellars Mill Road Bikeway								
19 Chapel Hill Rd Bikeway								
20 Staley Creek Greenway	✓	✓	✓	✓	✓	✓	✓	✓
21 Rauhut/Holt/Ireland St Bikeway								
22 Service Creek Greenway	✓	✓	✓	✓	✓	✓	✓	✓
23 Haw River Greenway North	✓	✓	✓	✓	✓	✓	✓	✓
24 Springwood Church Rd Bikeway								
25 York/Briarcliff/Shadowbrook Bikeway								
26 Bowden Branch Greenway	✓	✓	✓	✓	✓	✓	✓	✓
27 Grand Oaks/Tucker Street Bikeway								
28 Bonner Bridge Pkwy Bikeway								
29 University/Grand Oaks Bikeway								

GREENWAY TRAIL FUNDING & LAND ACQUISITION CASE STUDY: WILMINGTON, NC

The Gary Shell Cross-City Trail part of a developing city-wide trails and greenways system in Wilmington, NC. Some key lessons from the development of this trail include how the City of Wilmington and the Wilmington Urban Area MPO worked together to assemble more than \$8M in funding from Federal, state, local, and private sources, including the use of multiple easement donations valued at a total of \$768,000. As a general guideline for easements and land acquisition, the City and MPO:

- Located the greenway within the ROW whenever possible;
- Used a “Willing Seller” approach (e.g., no eminent domain);

- Established and maintained relationships with property owners; and
- Negotiated financial/non financial benefits.

Private contributions came from Blue Cross Blue Shield of North Carolina (BCBSNC) and their GO NC! program, which donated funds to complete the final phase greenway. Other donated 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.

Project contact: Amy Beatty, Superintendent, City of Wilmington Recreation & Downtown Services, 302 Willard Street, Wilmington, NC 28401





Grand opening of the Razorback Greenway, a regional trail project that benefited from \$15M in USDOT funding.

INSPIRING INVESTMENT

Adopting this plan is a critical first step in the search for grant dollars from state, federal, and private/non-profit sector organizations. Any supporting entity will have many interests competing for available dollars, and the myriad of elements detailed in this plan are key components of inspiring investment in Burlington, regardless of the source(s).

Engaging Private Funding

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. Why has this occurred? There are many varied 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. Two exemplary projects illustrate how this works:

1. 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 USDOT 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.

2. 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 January 2016, the Conservancy has raised approximately \$45 million in support of facility development, with almost 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.



The Wolf River Greenway in Memphis TN. The Wolf River Conservancy expects to design, permit and build the entire 22 mile Memphis portion of the Greenway by 2019.

These are just two examples of ways in which private sector funding is used to support greenway facility development. There are many more examples just like the ones mentioned above occurring across the United States. What are the important lessons learned from this approach? Assuming that a worthy greenway project has been identified, there are four key steps in the process: 1) develop the “pitch”, 2) make the ask, 3) leverage the lead gift, and 4) invite private sector and public sector groups to participate.

Step One: Develop the “Pitch”

The first step is to finalize the vision and scope of the project, along with its benefits to the community. The “pitch” is typically summarized in the form of marketing materials, such as reports, digital media presentations, and informational handouts that define the important elements of the greenway project.

The Carolina Thread Trail in the Charlotte Metro Region offers an excellent example for “developing the pitch.” The Catawba Land Conservancy (CLC) and the Trust for Public Land (TPL) worked with Greenways Incorporated to prepare a vision statement and economic case statement that together defined the goals and objectives of “The Thread Trail,” a regional greenway project. The “pitch” was carefully crafted so that it could be distilled into simple terms and delivered through a concise presentation. CLC and TPL worked with other Charlotte based firms to develop graphic elements of the pitch, including a logo that defined the “brand” for the project. The combination of these materials constituted “the pitch,” and enabled CLC and TPL to take the next step in the process – making the ask for financial support.

Likewise, both the Razorback Regional Greenway in Northwest Arkansas and the Wolf River Greenway in Memphis, Tennessee, undertook similar efforts in developing the pitch. In Northwest Arkansas, a compressed timeframe, centered around a design charrette, produced the pitch. The Walton Family Foundation funded the design charrette process that resulted in the preparation of a vision, conceptual framework and economic case statement for the Razorback Regional Greenway. In Memphis, the Wolf River Conservancy used a similar approach, and also commissioned Alta Planning + Design to prepare an economic study regarding the benefits of the Greenway to the regional community.

Step Two: Making the Ask

Once the pitch has been prepared, it is time to “make the ask.” For greenway projects, making the ask can occur in different ways. Generally, two different strategies can be employed, one that targets public funding sources and the other that targets private funding sources.

For the Carolina Thread Trail, the major “ask” occurred during a breakfast meeting of philanthropic and corporate groups. The invitation only breakfast generated more than \$15 million in support of the Thread Trail project, and was the catalytic event that launched the project. Both CLC and TPL worked extremely hard in advance of the breakfast to deliver the pitch to participants so that when the time came for the ask, the results were more or less expected.

Other “asks” can be more complicated. The Razorback Regional Greenway went through a protracted ask that involved an application for federal funding. The Northwest Arkansas community applied for and received a TIGER 2 grant of \$15 million to build the project. The federal grant was matched dollar for dollar by the Walton Family Foundation, creating the opportunity for full project development. In Memphis, the Wolf River Conservancy has raised \$24 million in private sector funding to support an additional \$16 million in public sector funding. Sometimes, the “ask” can stretch for months and more than a year. Depending on the size of the greenway project, raising large sums of money to support greenway development takes time.

Step Three: Leverage the Lead Gift

All three of the projects used as examples in this chapter utilized a “lead gift” as leverage for raising additional funds. A lead gift is important for several reasons. First, a lead gift from a prominent and respected local project sponsor signifies the importance of the project throughout the entire community. Second, a lead gift is often used to leverage other private funds. The lead sponsor will often call upon other private funders to support the greenway. Third, a lead gift may be used as a matching source of funding for public sector grants.

To secure a lead gift, it will be necessary to spend time with a potential project sponsor to thoroughly explain the merits and benefits of the greenway project. Most importantly, the greenway benefits must align with the interests and goals of the sponsor, and represent an opportunity to fulfill a specific mission of the sponsor.

Lead gifts typically are significant in order to be effective. Some project sponsors will pledge a lead gift premised on the ability to raise the balance of funds within a defined time period. Some project sponsors will specify that the lead gift must be matched in a defined proportion to the balance of funds raised.

Lead gifts are very important to the success of fund raising as they typically establish credibility for the greenway initiative and provide the first tangible evidence of financial support.

Step Four: The Invite List

Which groups, organizations and entities are on the “short list” of invitees to help fund greenway projects in Burlington? The following is not a complete list, but helps to narrow the field of likely candidates for consideration.

- Impact Alamance
- Foundation for the Carolinas
- Trust for Public Land (TPL)
- The Conservation Fund
- Blue Cross Blue Shield Foundation of North Carolina
- North Carolina Community Foundation
- Duke Energy Foundation

FACILITY DEVELOPMENT METHODS

This section describes types of transportation facility construction and maintenance projects that can be used to create new bikeways. Note that roadway re-construction projects offer excellent opportunities to incorporate facility improvements for bicyclists (and pedestrians). It is much more cost-effective to provide a bicycle facility when these road projects are implemented than to initiate the improvement as a “retrofit.”

In order to take advantage of upcoming opportunities to incorporate facilities into routine transportation projects, the City of Burlington’s Engineering and Transportation Departments should continue to track repaving schedules, and other lists of projects. Additionally, the NCDOT’s district office should be encouraged to use this plan as a ready reference when maintenance projects are being programmed. As recommended in this chapter, a semiannual meeting with project partners will ensure this critical communication.

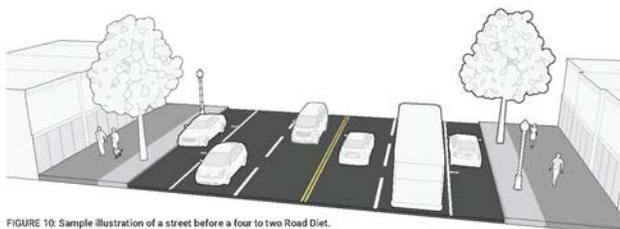
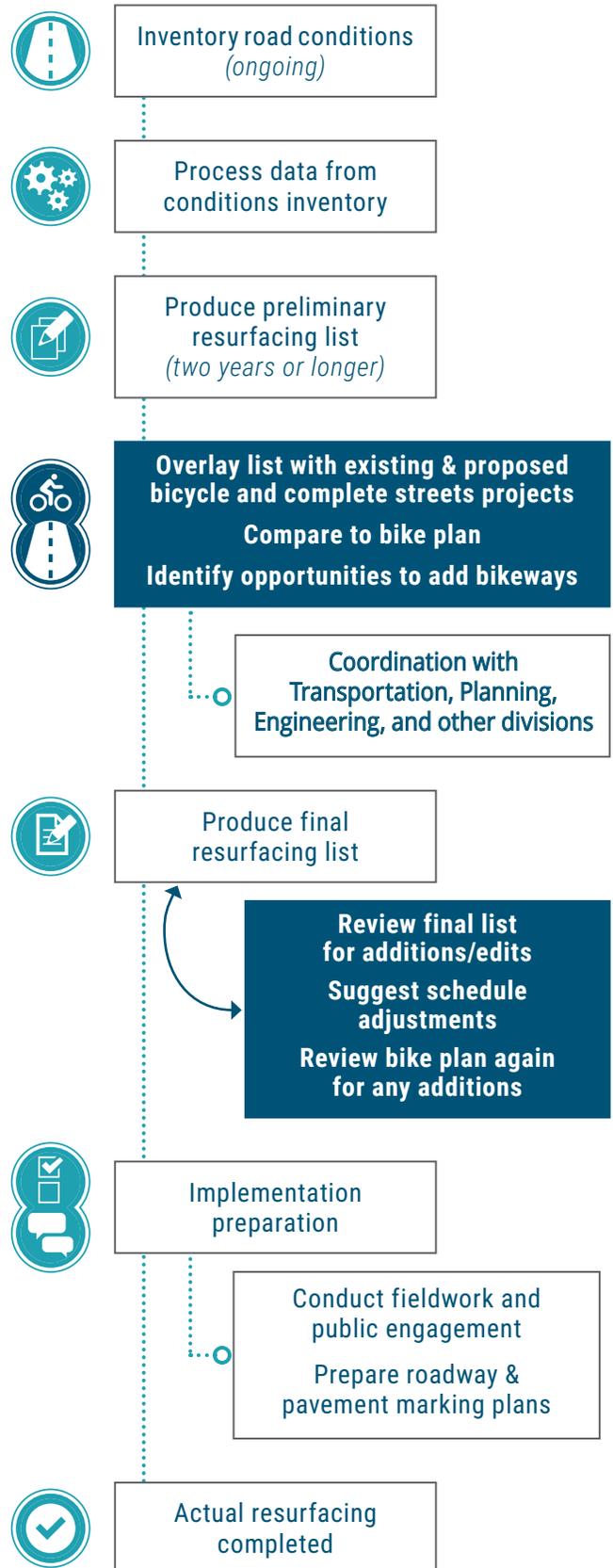


FIGURE 10: Sample illustration of a street before a four to two Road Diet.



FIGURE 11: Sample illustration of a street after a four to two Road Diet and the installation of separated bike lanes.

Sample illustration of a street after a four to two Road Diet and the installation of separated bike lanes from page 27 of FHWA’s *Incorporating On-Road Bicycle networks into Resurfacing Projects*. See https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf for examples of multiple reconfiguration scenarios.



The recommended resurfacing process identifies opportunities to add bicycle facilities early in the process. Graphic from page 13 of FHWA’s *Incorporating On-Road Bicycle networks into Resurfacing Projects*. (https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf)

Greenway Development

With new development often comes expansion of services such as water, sewer, electrical, and gas. Burlington should make it standard practice to allow public access (trails) within those right-of-way corridors. It is much easier to build this into future expansion of systems as opposed to retroactively allowing public access to easements.

Burlington should strive for consistency in respective land use, subdivision, zoning, and/or UDO ordinances related to the requirement to set aside and construct greenways & bikeways. **Note: Consultants for this plan provided a Policy & Regulatory Review to City planning staff for consideration in future UDO updates.**

Restriping

The simplest type of restriping project is the addition of bicycle lanes, edgelines, or shoulder stripes to streets without making any other changes to the roadway. Bicycle lanes, edgelines, and shoulder stripes can also be added by narrowing the existing travel lanes or removing one or more travel lanes. In some locations where the existing lanes are 12- or 13-foot wide, it may be possible to narrow them to 11 feet, especially where medians are present. This requires changing the configuration of the roadway during a resurfacing project. This type of downsizing represents an opportunity for adding bicycle facilities while working within the construct of an existing right-of-way width. Burlington has numerous opportunities to restripe (or construct a physical barrier) wide roadway corridors with dedicated space for bicycles. This is a huge opportunity to create miles of bikeways at a low cost.

Removing Parking

Some neighborhood collector roadways are wide enough to stripe with bike lanes, but they are used by residents for on-street parking, especially in the evening. Parking should not be removed unless there is a great deal of public support for the bike lanes on that particular roadway, and a full public involvement process with adjacent residents and businesses is undertaken prior to removing parking.

If it is not practical to add a bike lane, edgelines and shared lane markings may be considered. On roads where the outside lane and parking area combined are more than 17-foot-wide, 10-foot-wide travel lanes can be striped with an edgeline, leaving the rest of the space on either side for parking. The stripe would help slow motor vehicles and provide extra comfort for bicyclists, especially during the daytime when fewer cars would be parked along the curb. On roads with outside lane and parking areas that are narrower than 17-foot-wide, shared lane markings can be provided every 250 ft (or per engineering judgment) on the right side of the motor vehicle travel lane to increase the visibility of the bike route.

Repaving

Repaving projects provide a clean slate for revising pavement markings. When a road is repaved, the roadway should be restriped to create narrower lanes and provide space for bike lanes and shoulders, where feasible. In addition, if the spaces on the sides of non-curb and gutter streets have relatively level grades and few obstructions, the total pavement width can be widened to include paved shoulders.



Shared lane markings can be installed relatively easily within existing right-of-way.

Installing Shared Lane Markings

Shared lane markings take the place of traditional bicycle lanes where lanes are too narrow for striping, where speeds are 25mph or slower, and/or where there is on-street parking. The intent of the shared lane marking is threefold: 1) they draw attention to the fact that the roadway is accommodating bicycle use and traffic; 2) they clearly define direction of travel for both bicyclists and motorists; and 3) with proper placement, they remind bicyclists to bike further from parked cars to prevent “dooring” collisions. While shared-lane markings are not typically recommended or needed on local, residential streets, they are sometimes used along such streets when part of a signed route or neighborhood bikeway.

Roadway Construction & Reconstruction

Bicyclists should be accommodated any time a new road is constructed or an existing road is reconstructed. In the long-term, all roadways

should provide accommodations for bicyclists. On-road bicycle facilities are preferable, however, sidepaths can be an acceptable solution when a road has few driveways and high-speed, high-volume traffic.

Bridge Replacement

All new or replacement bridges should accommodate bicycles with on-road facilities on both sides of the bridge. If the bridge is in a developed area or an area that may experience development in the future, it should also have wide sidewalks on both sides to accommodate pedestrians and bicyclists.

Retrofit Roadways with New Bicycle Facilities

There may be critical locations in the greenways and bikeways network that have bicycle safety issues or are essential links to destinations. In these locations, it may be justifiable to add new bicycle facilities before a roadway is scheduled to be repaved or reconstructed.

In some places, it may be relatively easy to add extra pavement for shoulders, but others may require removing trees, moving landscaping or fences, or regrading ditches or hills. Retrofitting roadways with sidepaths creates similar challenges. Improvements in these locations are typically recommended in the long-term.

Some roads may require a roadway reconfiguration solution in order to accommodate bicycle facilities. Reconfiguring roadways in this way involves removing vehicle travel lanes and replacing these lanes with on-road bicycle facilities. These are generally recommended only in situations where the vehicular traffic count can be safely and efficiently accommodated with a reduced number of travel lanes.

POLICY & REGULATORY GUIDANCE

Several policy steps are crucial to the success of future facility development. These steps will legitimize the recommendations found in this plan and enable the City to carry out those recommendations. **In addition to the items below, detailed policy and regulatory recommendations specific to the Unified Development Ordinance (UDO) were submitted to City staff (from the planning consultant) as part of this planning process.**

Adopt This Plan

Before any other action takes place, the City of Burlington should adopt this plan. This should be considered the first step in implementation. Through adoption of this plan and its accompanying maps as the City's official bikeways and greenways plan, Burlington will be better able to shape transportation and development decisions so that they fit with the goals of this plan. Most importantly, having an adopted plan is extremely helpful in securing funding from state, federal, and private agencies. Adopting this plan does not commit Burlington to dedicate or allocate funds, but rather indicates intent to implement this plan over time, starting with these steps. The following entities should adopt this plan:

- The City of Burlington
- Burlington-Graham MPO

Adopt a Complete Streets Policy

There is a well-established movement in the field of transportation towards integrating bicycling, walking, and transit as a routine element in highway and transit projects. This movement has developed under the name of "Complete Streets," which is defined by the Complete the Streets Coalition as follows:

"Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street."

The Safe Routes to School National Partnership as well as NCDOT can assist the City's efforts in writing Complete Streets policy. Technical assistance can range from providing resources to assistance in creating marketing campaigns and Complete Streets language.

Smart Growth America details the best Complete Streets policies from the 82 policies adopted nationwide in 2015 (including Little Rock). This document and other resources produced by Smart Growth American can serve as key resource for the City of Burlington in developing its own policy. These resources can be accessed here - https://smartgrowthamerica.org/resources?resource_type=&authors=&audience=&project_type=&category_name=complete-streets&s=.

By adopting a "Complete Streets" policy, the City would be committing to developing new roadways and reconstructing existing roadways to accommodate all users.

Furthermore, information on NCDOT Complete Streets policy, training, and other resources can be found here - <https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx>

NCDOT Complete Streets Policy

This policy was adopted in 2009. This policy created a set of design guidelines called the Complete Streets Planning and Design Guidelines, which was released in 2012. These documents guide NCDOT's consideration for bicyclists and pedestrians as part of the roadway or bridge design process. The policy and sample projects can be found at www.completestreetsnc.org

Establish Land Right-of-Way Acquisition Mechanisms

It is recommended that local zoning and subdivision ordinances be amended to ensure that, as developments are planned and reviewed, the greenway and bikeway facilities and corridors identified in this plan are protected. This would entail amending development regulations to have developers set aside land for trail infrastructure whenever a development proposal overlaps with the proposed routes, as adopted.

The City of Burlington should ensure that an effective review of all greenway and bikeway elements in proposed developments takes place.

City of Burlington Traffic Calming Policy

Speeding vehicles and unnecessary through traffic in residential neighborhoods often create safety hazards and negatively affect factors of livability. This policy (approved in 2009) provides an appropriate and consistent treatment of traffic calming measures on City of Burlington residential streets. Traffic calming measures referenced in the policy include enforcement, speed limit reduction, and speed humps. Property owners on a residential street may request traffic calming measures, and the guidelines in the policy aid city staff in determining appropriate courses of action.

DESIGN REFERENCES AND RESOURCES

The following standards and guidelines may be referred to for details on greenways & bikeways design:

NACTO - Urban Bikeway Design Guide (2014)

<https://nacto.org/publication/urban-bikeway-design-guide/>

FHWA - Achieving Multimodal Networks (2016)

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/

FHWA - Separated Bike Lane Planning and Design Guide (2015)

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm

FHWA - Incorporating On-Road Bicycle networks into Resurfacing Projects (2016)

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/

FHWA - Small Town and Rural Multimodal Networks Design Guide (2017)

<http://ruralsdesignguide.com/>

AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)

https://bookstore.transportation.org/collection_detail.aspx?ID=116

NCDOT - WalkBikeNC (Statewide Bicycle and Pedestrian Plan)

www.ncdot.gov/bikeped/walkbikenc

PROGRAM RESOURCES

The City of Burlington cannot achieve the goals of this plan through infrastructure improvements alone. These program recommendations will help make bicycling, walking and jogging in the area more attractive and accessible to residents, investors, and newcomers.

Programs may be implemented as a campaign, on-going initiative, or one-time event, depending on their purposes. In essence, these different efforts market bicycling, walking and jogging to the general public and ensure the maximum return on investment in bicycle and pedestrian facilities.

These initiatives can be undertaken by local agencies, regional organizations, community organizations, or by any combination of partnerships between such agencies and organizations.

Watch For Me NC: Implement a Watch For Me NC campaign in partnership with NCDOT.

<http://watchformenc.org/>

Active Routes to Schools: Regional Active Routes to School information can be found here: https://connect.ncdot.gov/projects/BikePed/Documents/NCDOT_SRTS_Description.pdf

Traffic Calming and Speed Reduction: Implement traffic calming measures on neighborhood streets and strategic locations, especially along project corridors and as the greenways & bikeways network develops.

NACTO: <https://nacto.org/publication/urban-bikeway-design-guide/bicycle-boulevards/speed-management/>

NACTO: <https://nacto.org/publication/urban-bikeway-design-guide/bicycle-boulevards/volume-management/>

Encouragement Events: Expand upon existing encouragement events such as Active City Streets, Bike Rodeos led by the Police Department, Burlington

Velo Club rides, local running and walking club events, and implement other event opportunities such as Cycle to Farm rides. Representatives from **Burlington Velo Club** asked specifically to be included in this plan as a resource for the City to partner with for future encouragement and promotion events, particularly for leading group rides as new facilities are built, with the rides designed for all ages and abilities.

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/>

Burlington Velo Club: <https://www.facebook.com/groups/BurlingtonVeloClub/>

Greenways & Bikeways Website: Many current and potential bicyclists and pedestrians do not know where to find information on traffic laws, events, maps, tips, and recreation groups. The City of Burlington should continue developing the website used for this plan as a “one-stop” website that houses all greenways- and bikeways-related information and promotions.

Brochure Maps & Pocket Guide: One of the most effective ways of encouraging people to utilize greenways and bikeways is through the use of maps and guides to show where you can bike and walk, and to guide people to enjoyable routes and destinations. A portion of the map should be devoted to bicycle and pedestrian safety education, such as informational graphics that demonstrate bicycle hand signals and how to share the road and the trail safely. The map should be made available online and printed as needed to be actively distributed to residents and visitors. Example: Durham Hike & Bike Map: <http://durhamnc.gov/1031/Durham-Bike-Hike-Map>).

Bicycle Friendly Community Program: After progress is made on initial projects and programs, apply to the League of American Bicyclists’ Bicycle Friendly Community program. See the LAB BFC website for further information - <http://www.bikeleague.org/>.

IMPLEMENTATION ACTION STEPS

During the 2nd steering committee meeting, the project Steering Committee was divided into groups and was asked to brainstorm key aspects of the implementation process. The purpose of this exercise was to focus on the nuts and bolts of what will be necessary to implement this plan successfully, and to hear directly from individual committee members on what they think needs to happen. The action steps table in the following table is structured around the results of this exercise. These action steps should serve as guide for the multiple stakeholders responsible for implementing this plan (see organizational framework at beginning of this chapter).

LEADERSHIP & VISION			
#	Task	Task Lead & Support	Details
1	Present Plan to City Council for adoption	Planning Consultants, Burlington Rec & Parks, BGMPO, Steering Committee	The plan should be presented to elected officials in Summer 2017. Focus on the health and economic benefits of greenways & bikeways (Chapter 1) and top recommendations (Chapter 3). Adoption signals intent to implement the plan over time. Although adoption does not commit the City to funding the plan, funding options should at least be discussed for top projects (see below).
2	Identify and secure specific funding sources for the top priority projects & begin design and construction phases.	Burlington City Council, Rec & Parks, BGMPO and Inter-departmental partners	Burlington City Council should devote a work session to the topic of funding for the top priority projects. The goal should be to identify funds that could be leveraged with outside sources (see funding tables and Private Sector Engagement section of this Chapter). The City Council should also consider potentially funding a full- or part-time staff person to serve as a Bicycle, Pedestrian, and Greenway Planner. This person could be dedicated to grant writing and overseeing project implementation. Finally, annual local funds should be allocated annually to help sustain project implementation over time. Many NC communities are using bonds, for example, to cover costs related to greenway development (Durham, Raleigh, Wilmington, Wake Forest, Holly Springs, Apex, Sanford, and many others). Also, see Action Steps on page 98, under "Inspire Investment".

DEDICATE STAFF RESOURCES			
#	Task	Task Lead & Support	Details
1	Designate Staff	Burlington City Council	Designate staff to oversee the implementation of top projects. Consider hiring a part-time or full-time dedicated position.
2	Form a Bicycle & Pedestrian Advisory Committee (BPAC)	Burlington Rec & Parks, Inter-departmental partners	Consider forming a BPAC, which should focus on the implementation of this plan, including assisting the designated staff person mentioned above. This group could be made up of some members of this plan’s steering committee, for example.
ENSURE QUALITY			
#	Task	Task Lead & Support	Details
1	Follow latest design guidelines	Burlington Public Works, BGMPO, NCDOT	When implementing greenways and bikeways, Burlington should use the design guidelines featured on page 94.
2	Share GIS data with the PBIN as new facilities are built in Burlington	Burlington Rec & Parks, Burlington Planning & Community Development	The Pedestrian and Bicycle Infrastructure Network (PBIN) is a statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking facilities in North Carolina. The PBIN is maintained by the NCDOT Division of Bicycle and Pedestrian Transportation and Institute for Transportation Research and Education (ITRE). More information can be found here: www.itre.ncsu.edu
3	Plan ahead for greenway and bikeway maintenance	Burlington Rec & Parks, Burlington Public Works	Funding for maintenance should be allocated as new trails are built. As a local frame of reference, the Town of Cary, NC, uses about \$6,000/mile for annual mowing and trash pick up, and minor repairs like replacing a fence rail; they budget asphalt and drainage repairs separately on a case by case basis. Similarly, as on-street bike lanes are constructed, lane sweeping may become a need, so that excessive debris does not accumulate in the lanes.
4	Apply to League of American Bicyclists (LAB) Bicycle Friendly Community (BFC) Program	Burlington Rec & Parks, Inter-departmental partners	The high standards of the LAB’s BFC program make receiving an award designation both an achievement and an honor recognizing local progress in bicycling. The program offers clear metrics to aid in monitoring progress, and LAB provides detailed feedback that provides further guidance in working toward measurable success.

LAY THE GROUNDWORK

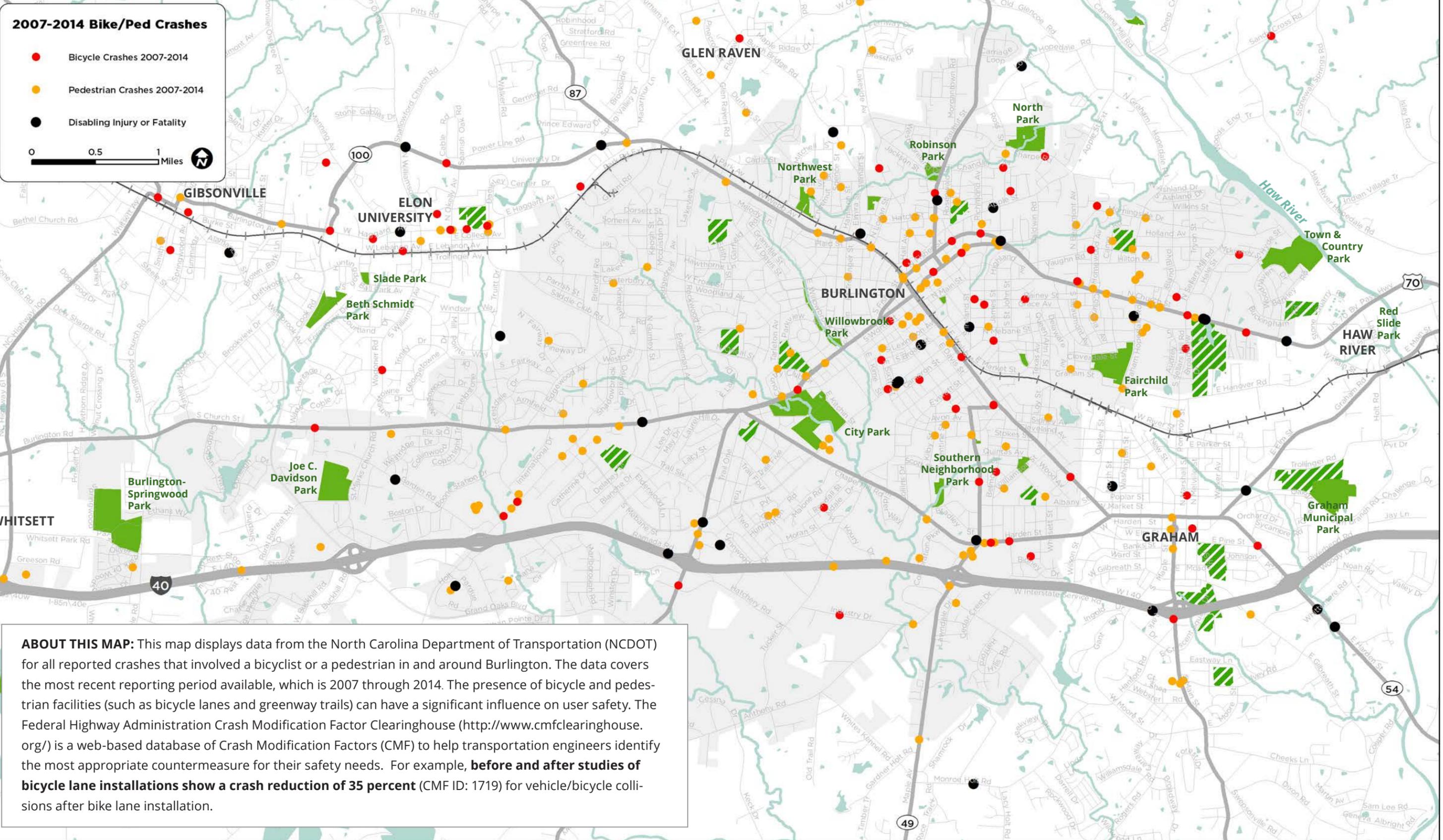
#	Task	Task Lead & Support	Details
1	Meet with NCDOT to introduce the Plan and coordinate on key projects	Burlington Rec & Parks, NCDOT Division 7, NCDOT-DBPT, engineering consultants	NCDOT should refer to this document when assessing the impact of future projects and plans for NCDOT maintained roadways in Burlington. Efforts should be made between state and local partners to include parallel greenways & bikeways facilities on planned future roadways and roadway reconstruction projects, especially where they appear on the adopted plan. Engineering consultants (Alta Planning + Design) are available to meet with NCDOT and the City to discuss design of new facilities.
2	Meet with major landowner stakeholders	City of Burlington City Manager, Duke Energy, Railroad Representatives, Private Sector Partners	The City of Burlington should set up meetings with major landowner stakeholders, such as Duke Energy (project #3) and railroad representatives (project #6). For Duke Energy, contact Project Manager Christy Churchill, who has experience with greenways. For the railroad, set up a walk through of the corridor with the railroad representatives to explore potential win-win trade-offs, such as formalizing pedestrian crossings and blocking informal crossings of the tracks. More info: http://altaplanning.com/wp-content/uploads/railswithtrails-document.pdf
3	Revise local ordinances	Burlington Planning & Community Development, Burlington Planning & Zoning Commission	Recommended updates to the UDO were submitted to City staff during this planning process from the planning consultant. The detailed recommendations clarify some basic policy positions regarding future development and the provision of facilities. These should be considered when updating the UDO. Burlington should also consider adopting a Complete Streets policy to ensure commitment to developing roadways that accommodate all users.
4	Consider speed limit reductions throughout Burlington	City of Burlington, NCDOT	Speed limit reduction should be considered, especially along roadways that are critical to network connectivity. As bikeways are installed on major arterials and collectors, speed limit reduction should be strongly considered.

INSPIRE INVESTMENT

#	Task	Task Lead & Support	Details
1	Develop a corporate sponsorship policy	Burlington Rec & Parks, Local Private Sector Partners	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': http://mtsgreenway.org/events-calendar/greenway-365-sponsorship-brochure . On a related note, also see Burlington's Public Art, Memorial & Honorary Policy (PAMH).
2	Develop a long term funding strategy	Burlington Rec & Parks, BGMPO and Inter-departmental partners	To allow continued development of the overall system, capital funds for greenways and bikeways construction should be set aside every year, even if only a small amount; small amounts of local funding can be matched to outside funding sources, such as state, federal, and private funds.

BUILD COMMUNITY SUPPORT			
#	Task	Task Lead & Support	Details
1	Partner with NCDOT in the 'Watch for Me NC' campaign to educate motorists, bicyclists, & pedestrians	Burlington Rec & Parks and NCDOT	Watch for Me NC is an ongoing statewide grant program administered by the NCDOT Division of Bicycle and Pedestrian Transportation (NCDOT DBPT). Burlington should contact NCDOT DBPT to request materials and guidance. Elon University became a partner with NCDOT in this program in 2017 and Burlington should coordinate with them as well. Visit - http://www.watchformenc.org/ .
2	Coordinate with Burlington/Alamance Schools on NC Safe Routes to School programming	Burlington Schools, Burlington Rec & Parks	Coordinate with Burlington/Alamance Schools, particularly around Safe Routes to School topics including greenway/ bikeway connectivity. The Region 5 Active Routes to School Coordinator can help Burlington Schools engage NC's Safe Routes to School programming.
3	Celebrate and promote encouragement events	Burlington Rec & Parks, Burlington Communications	Awareness days provide an opportunity to encourage new bicyclists in a community setting. Promote Bike Work Day and Month, and continue to expand upon events such as Burlington's Active City Streets, Bike Rodeos led by the Police Department and other encouragement opportunities.
4	Continue and expand bikeways and greenways website	Burlington Rec & Parks, Burlington Communications	Make bicycling information easier to find by providing resources, maps, safety information, events, group listings, and more, in one central place.
5	Establish a greenways & bikeways wayfinding system	Burlington Rec & Parks, Burlington Transportation, Consultant or In-House Design	Once some of the longer-distance projects are completed throughout Burlington, the City should establish a wayfinding system to create a cohesive and easy-to-use platform for navigating the City by bike. The system should be designed so that it is flexible enough to be updated as new projects are completed.
6	Create a "Greenways & Bikeways of Burlington" Pocket Guide and Community Resource booklet	Burlington Rec & Parks, Consultant or In-House Design	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. A portion of the map should be devoted to bicycle and pedestrian safety education. The map should be made available online and printed as needed to be actively distributed to residents and visitors.
7	Gather further public support and input during the design phase for projects.	Burlington Rec & Parks, Local stakeholders	Involve local stakeholders and the general public in the design stage for greenways and bikeways development. Some such groups can help with ideas for implementation as well as building public support from specific neighborhoods.

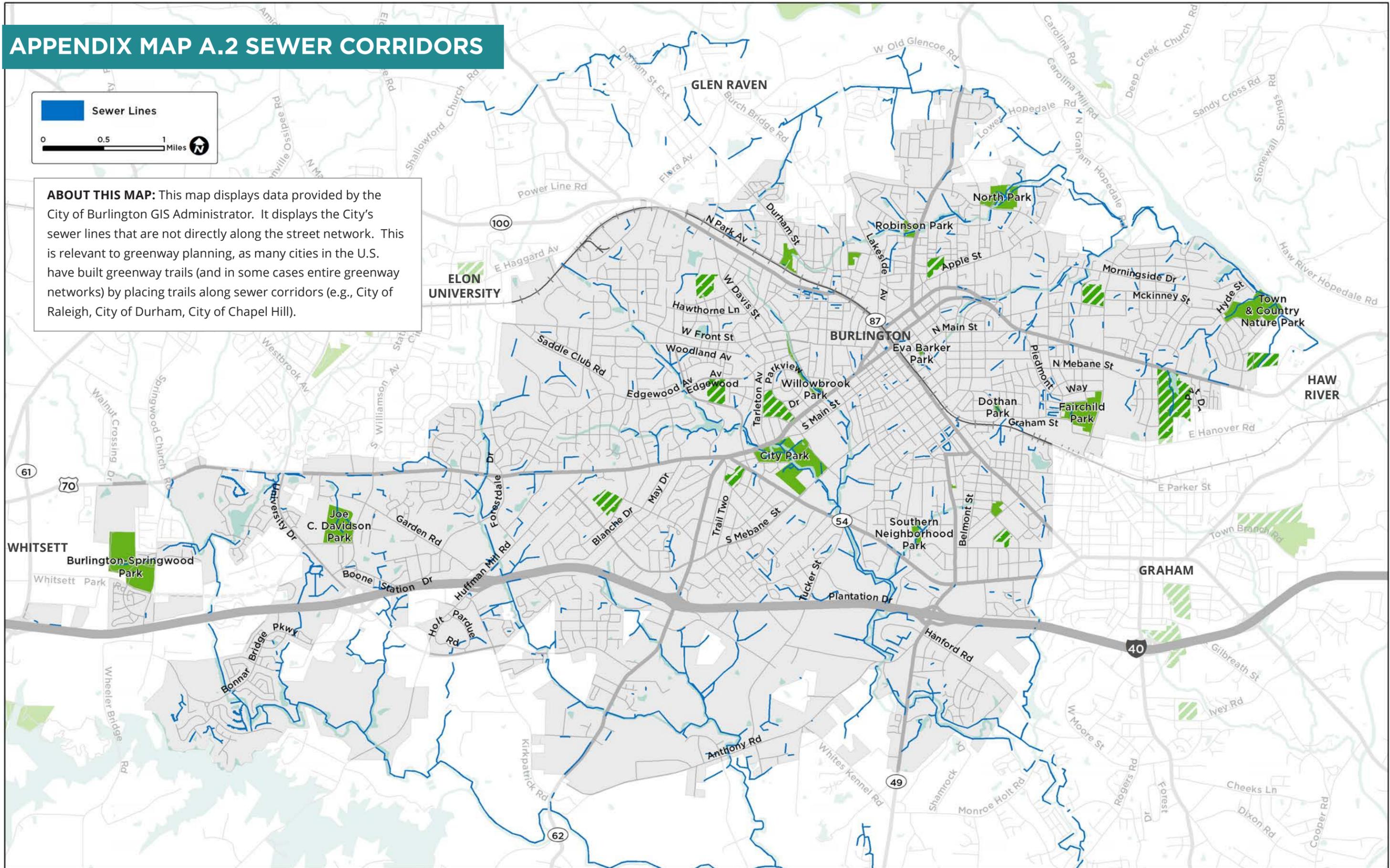
APPENDIX MAP A.1 BICYCLE & PEDESTRIAN CRASHES



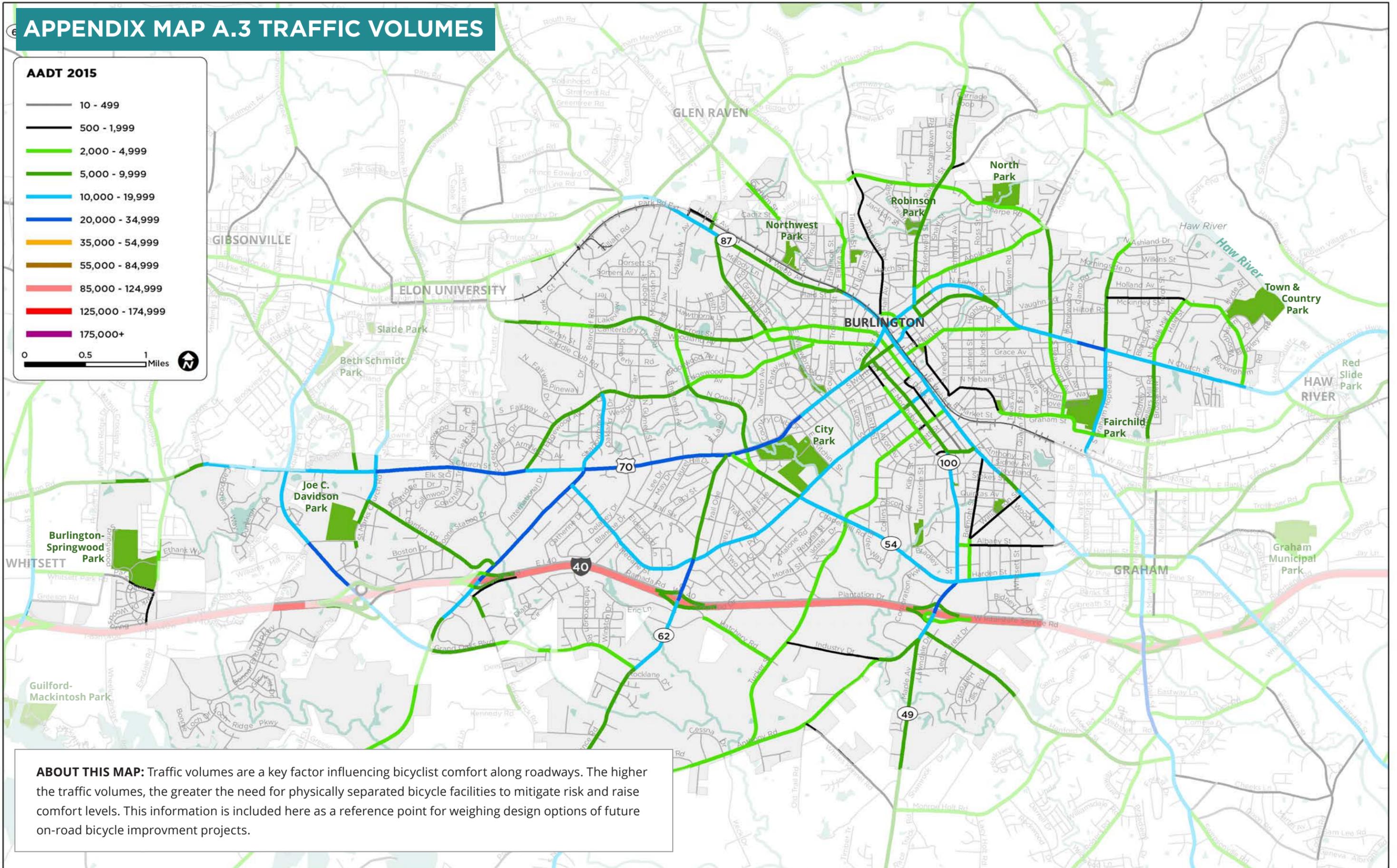
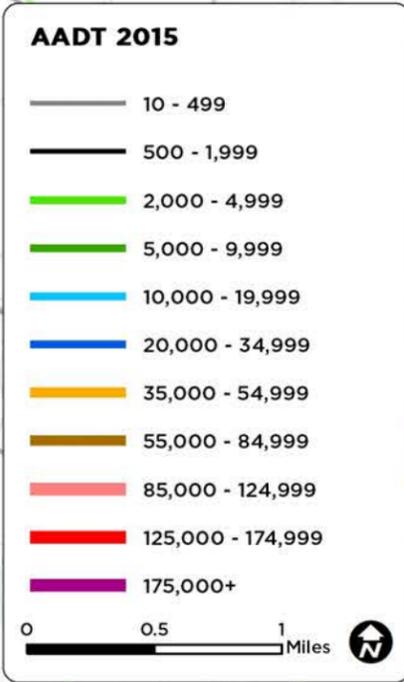
APPENDIX MAP A.2 SEWER CORRIDORS

Sewer Lines

ABOUT THIS MAP: This map displays data provided by the City of Burlington GIS Administrator. It displays the City's sewer lines that are not directly along the street network. This is relevant to greenway planning, as many cities in the U.S. have built greenway trails (and in some cases entire greenway networks) by placing trails along sewer corridors (e.g., City of Raleigh, City of Durham, City of Chapel Hill).



APPENDIX MAP A.3 TRAFFIC VOLUMES



ABOUT THIS MAP: Traffic volumes are a key factor influencing bicyclist comfort along roadways. The higher the traffic volumes, the greater the need for physically separated bicycle facilities to mitigate risk and raise comfort levels. This information is included here as a reference point for weighing design options of future on-road bicycle improvement projects.

APPENDIX MAP A.4 UPCOMING ROADWAY PROJECTS

NCDOT HMIP 2018

- Preservation (dashed green line)
- Resurfacing (solid green line)
- Rehabilitation (dashed blue line)

NCDOT HMIP 2019

- Preservation (dashed blue line)
- Resurfacing (solid blue line)
- Rehabilitation (dashed purple line)

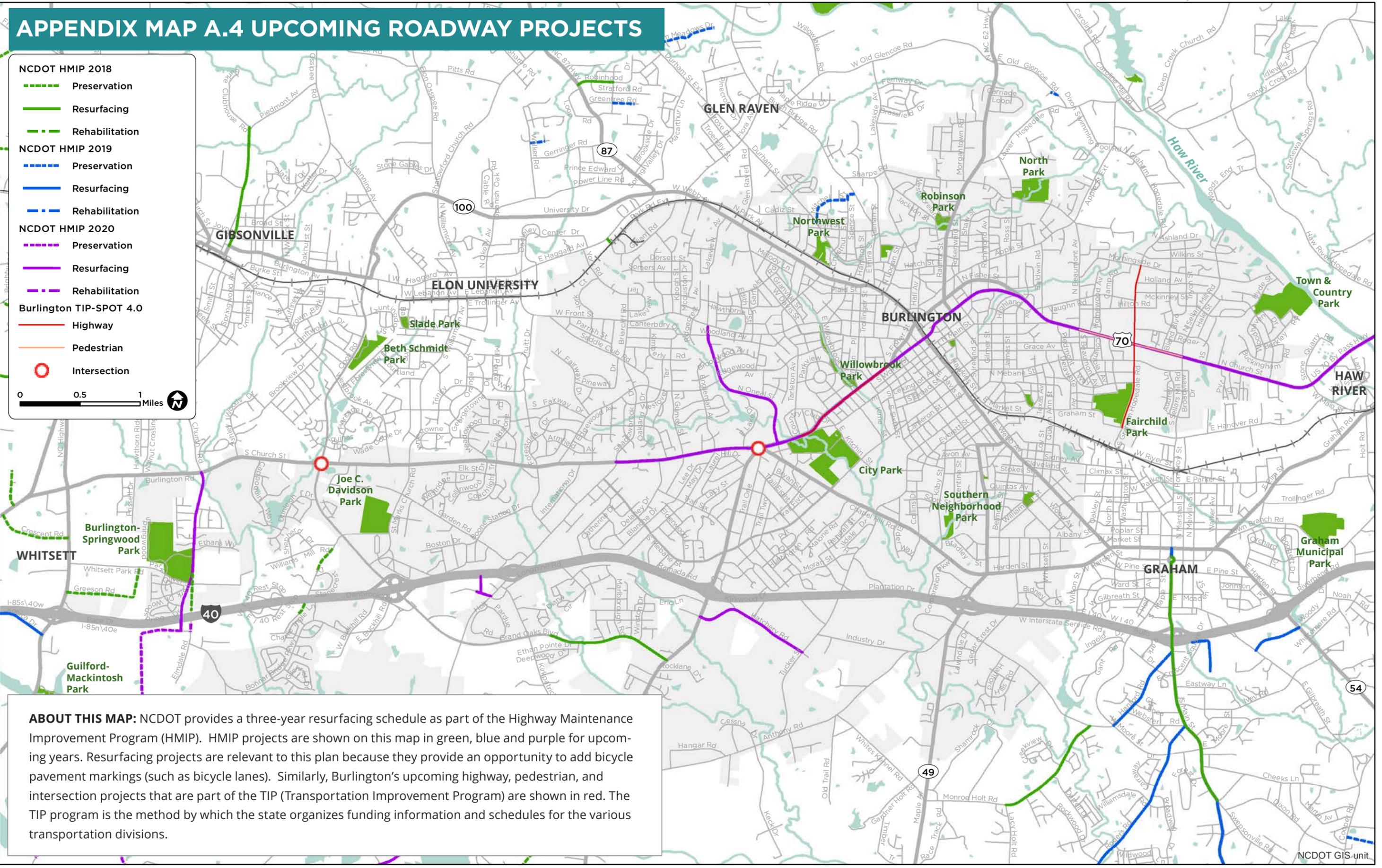
NCDOT HMIP 2020

- Preservation (dashed purple line)
- Resurfacing (solid purple line)
- Rehabilitation (dashed red line)

Burlington TIP-SPOT 4.0

- Highway (solid red line)
- Pedestrian (solid orange line)
- Intersection (red circle)

0 0.5 1 Miles



ABOUT THIS MAP: NCDOT provides a three-year resurfacing schedule as part of the Highway Maintenance Improvement Program (HMIP). HMIP projects are shown on this map in green, blue and purple for upcoming years. Resurfacing projects are relevant to this plan because they provide an opportunity to add bicycle pavement markings (such as bicycle lanes). Similarly, Burlington's upcoming highway, pedestrian, and intersection projects that are part of the TIP (Transportation Improvement Program) are shown in red. The TIP program is the method by which the state organizes funding information and schedules for the various transportation divisions.

Greenways & Bikeways Plan

Prepared for the City of Burlington, North Carolina
Prepared by Alta Planning + Design | 2017

