TOWN OF CHAPEL HILL
MOBILITY AND CONNECTIVITY PLAN

OCTOBER 2017
Updated October 2020

STEWART

TOWN OF CHAPEL HILL

Acknowledgements

Special thanks to those involved in the making of the Mobility and Connectivity Plan for the Town of Chapel Hill, North Carolina. These individuals and organizations include but are not limited to:

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Chapel Hill Cycling
Chapel Hill Downtown Partnership
Chapel Hill Parks and Recreation
Chapel Hill Police Department
Chapel Hill Transit
Fleet Feet Running Club
Go Chapel Hill
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Executive Summary

The Chapel Hill Mobility and Connectivity Plan expands the vision for the transportation and recreation system in Chapel Hill, NC as it relates to transit and non-motorized travel. It identifies the next phase of priorities for making bicycle and pedestrian connections within Chapel Hill and to key destinations in Orange County and the greater Triangle area. This effort combines existing planning efforts, resident input, and a fresh look at issues and opportunities. It focuses on leveraging the Town's growing greenway system with an updated design toolkit for on-street networks to create safe and comfortable corridors that link neighborhoods, parks, employment centers, business districts, transit stops, and other destinations.

This plan presents a toolbox of pedestrian, shared-use, and bicycle facility types and their consideration for use in Chapel Hill's transportation network. It examines the feasibility of these facilities, incorporates them into a comprehensive network and develops an implementation strategy for the future. The resulting network is aimed at increasing the combined bicycle, pedestrian, and transit modeshare. It serves as a guide for town staff, stakeholders, and the public interested in the pursuit of creating (1) an integrated transportation system with (2) improved comfort and (3) convenient choices for all citizens and visitors of Chapel Hill, NC. For simplification, the Chapel Hill Mobility and Connectivity Plan is hereinafter referred to as the Mobility Plan.

goal

The goal of the Mobility Plan is to achieve a 35% bicycling, walking, and transit commute combined modeshare in Chapel Hill by 2025.

This plan builds on the vision and previous planning efforts with a fresh look at safely getting pedestrians and cyclists to key places in town.

The Mobility Plan extends existing planning work by building on outcomes and recommendations from the 2013 Chapel Hill Greenways Master Plan, the 2014 Chapel Hill Bike Plan, and the 2020 Comprehensive Plan (2012). It integrates bicycle and pedestrian access to transit and considers how to build on recommendations from recent planning efforts. In addition, this plan gives a fresh look at pedestrian-specific mobility, identifying ways to get people of all ages and abilities to key destinations in the town.

23% → 27%

Meeting the 35% goal by 2025 is in line with 4% increase in bike/ped/transit modeshare from 2011 to 2015.

Mobility on Major Street Corridors

The Chapel Hill 2020 Plan calls for "a comprehensive transportation system that provides everyone safe and reasonable access to all that the community offers." Five street corridors—Martin Luther King Jr. Boulevard, E Franklin Street, US 15-501/Fordham Boulevard, US 15/501 South, and Raleigh Road—facilitate most of the Town's existing auto travel, but none of those corridors are "Complete Streets" that provide better accommodations for pedestrians, cyclists, and transit users.

The five main street corridors all have four lanes or more of traffic and typically lack continuous pedestrian and bike facilities. Each corridor has gaps in the existing network that must be filled in order to achieve Complete Streets. The Mobility Plan recommends short-term improvements to help fill those gaps, to establish bike facilities with some separation from traffic, and to create safe crossing options at major intersections. Long-term recommendations include major road widenings in conjunction with the implementation of bus rapid transit on Martin Luther King Jr. Blvd and US 15-501 South, US 15-501/Fordham Blvd.

Bicycle improvements in the corridors include multi-use paths, buffered bicycle lanes, bike boxes, two-stage left-turn queue boxes, green pavement markings, marked bike lanes through intersections, and improved detection at signals.


Bus Rapid Transit
Multi-Use Paths
Lane Reallocation
Buffered Bike Lanes/
Bike Lanes
MARTIN LUTHER KING JR DR
US 15-501
E FRANKLIN ST
FORDHAM BLVD
US 15-501
RALEIGH RD
HWY 54
FORDHAM BLVD
US 15-501 - NC HWY 54
Multi-Use Path /CycleTrack
Intersection Improvements
Regional Greenway Connection

Developing Priority Non-Motorized Corridors

Presently, the Town of Chapel Hill lacks a comprehensive network for non-motorized transportation. Now is the opportune time to knit together the Town's numerous greenways, multi-use paths, neighborhood sidewalks, and bikeways to create a network of priority pedestrian and bicycle corridors that serve as a parallel system to on-street facilities. The six priority bike/ped corridors shown below link the key focus areas of the town and will aim to attract users of all ages and abilities who seek alternatives to driving but want to stay away from major street corridors and their traffic. By connecting neighborhoods to destinations, residents will be able to use local street and trail connections to access these priority corridors and travel to the places they live, shop, work, and play.

Other Major Recommendations

New Facilities and Types

- Utilize **on-street greenway connectors** to link greenway trails through priority corridors.
- Construct new **grade-separated crossings** at key locations to facilitate connectivity across busy roadways.
- Require and identify opportunities for **paved connectors/paths** to neighborhoods.
- Develop greenway and multiuse **connections to the regional greenway system** to link Chapel Hill to the extensive network across Triangle.

Programs and Policies

- **Update Sidewalk Priority Ranking criteria** to account for priority corridors, focus areas, and constructability.
- Implement and fund a **sidewalk microgap program** in Town annual capital budget.
- Develop and fund a **bike parking program** to encourage installation of bike racks at existing developments where demand is high.
- Increase **bike parking requirements for transit** stations and stops.
- Investigate regional coordination opportunities with potential implementation of a Town bike share program.

Culture and Mindset

- Develop **mobility performance measures & annual reporting** to track progress on bike/ped mobility and connectivity.
- Establish a **continuous bike/ped count program** to track cycling and pedestrian usage of facilities.
- Become an **affiliate community of National Association of City Transportation Officials (NACTO)** to help with the development of urban street, bike, and transit design standards.
- Employ a **mobility coordinator** to focus on the coordination between bicycle, pedestrian, greenway, and transit accessibility issues.
- Create a **wayfinding and signage** package to raise awareness of routes and orient people to destinations
- **Support and expand 'Active Routes to School' programming** to make walking and biking to schools safer and increase the number of children who do.

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The four objectives established for Chapel Hill's Mobility Plan are to integrate the system, remove barriers, reduce stress, and offer attractive transportation choices.

Introduction

Vision, Objectives and Goal

The vision and objectives of the plan guided the technical planning and selection of recommendations. These objectives were set based on the recognition that to achieve overall mobility goals, Chapel Hill needs to grow and integrate the multi-modal infrastructure that it has with an eye toward the future using the best tools available.

Through policies, prioritization and implementation, the Mobility Plan lays the groundwork for building out Chapel Hill's non-motorized transportation system in a way that achieves the plan's vision and objectives.

The plan uses the current 27% combined ped/bike/transit mode share as a starting point to track progress over time through a set of defined performance measures.

Integrate System

Expand and link walking, bicycling, and shared-use networks, and enhance connections to transit.

Reduce Stress

Create an environment where people of all ages and abilities feel safe and independently mobile.

Chapel Hill is a community where bicycling, walking, and taking transit are safe and convenient, everyday choices.

Remove Barriers

Improve crossings between networks and to destinations, and integrate land use development.

Offer Attractive Choices

Foster options that are comfortable, affordable and efficient for residents and visitors.

Vision and Objectives for Chapel Hill Mobility Plan based on Public Input

Comprehensive Inputs to the 2017 Chapel Hill Mobility Plan

Biking and Walking Benefits

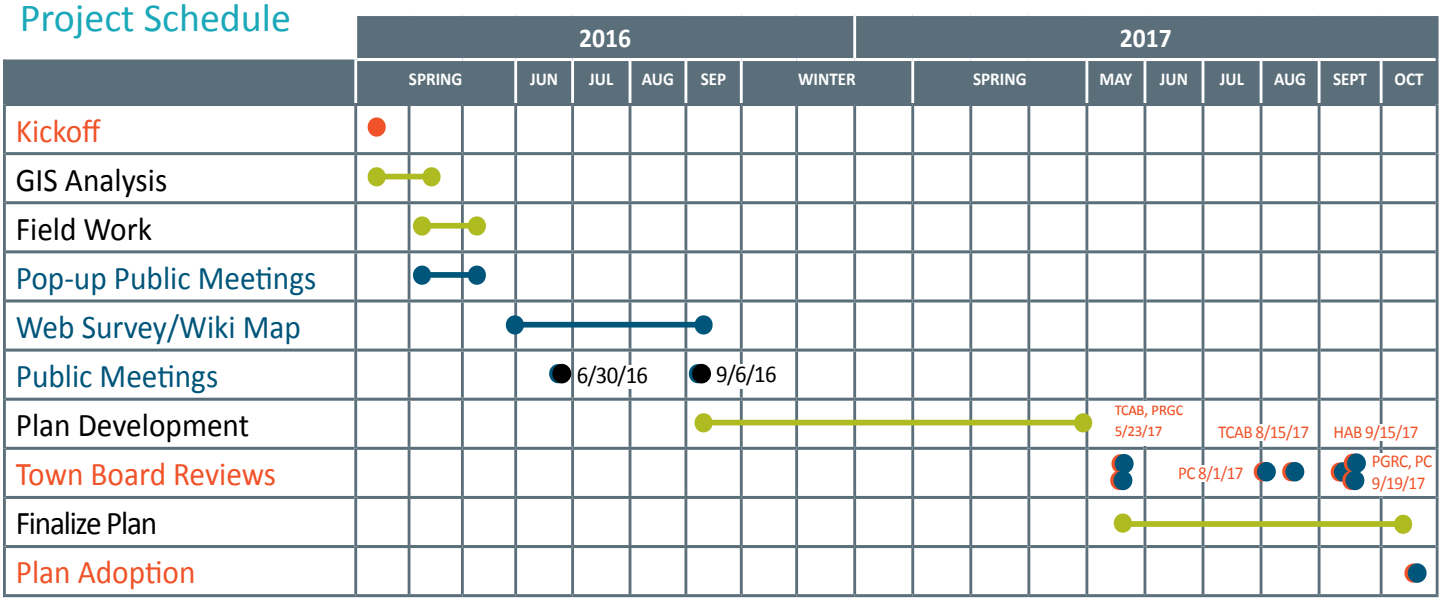
Biking and walking interest is growing because these modes provide distinct economic, health, and environmental benefits to people and communities. Active transportation options and facilities can:

- Attract and retain residents, including families who want accessible, fun, friendly activities, and Millennials who are increasingly choosing not to drive.
- Save people money by providing less expensive options to driving
- Offer people flexibility and consistency, since walking and bicycling often have more reliable travel time than driving.
- Lure businesses who are interested in attracting a skilled workforce that is drawn to bikeable, walkable, and amenity rich areas. Many major businesses are choosing areas with more transportation choices than suburban office parks.
- Provide physical activity opportunities for North Carolinians, where more than 65% of the population is overweight or obese.
- Give people access to places where they can be active near their homes.
- Ensure youth have a wide range of options for physical activity so that they may perform better on tasks that demand concentration and avoid childhood obesity.
- Decrease the amount of emissions in urban areas, especially for short trips.

Developing the Mobility Plan

The Town of Chapel Hill maintains an ongoing goal to improve infrastructure for bicyclists and pedestrians. Development of the Mobility Plan focused on this goal through the 18-month plan process. The team evaluated the existing plans, policies, and programs to develop an overarching and binding set of recommendations that are not specific to any one mode, but a comprehensive approach to promoting improved mobility throughout the community.

Project Schedule



Plan Process

The Mobility Plan builds on the existing Town Bike and Greenway Plans to develop a true multimodal network and increase the use of alternate transportation modes. The initial phases of the project involved data collection through both researching existing plans and budgets as well as field work. Those efforts, highlighted in the Existing Conditions chapter, were supplemented by public involvement efforts where residents were able to help identify mobility needs and issues they experience in the everyday lives. Planners then used the facility data and public input to evaluate the existing ped/bike network to identify key corridors and network gaps.

That analysis led to a series of recommendations for both physical improvements and policy changes throughout Chapel Hill and a plan of action to implement those recommendations in the near- and long-term future. With successful implementation, the Town should continue to see increases in non-motorized and transit trips as its neighborhoods, businesses, and institutions become better connected for pedestrians and cyclists.

Public Outreach Methods

The Mobility Plan process offered many opportunities for citizens to provide input and to inform the recommendations. Activities conducted during the study creatively connected with the community and attempted to help gain input from a broader cross-section of the residents.

Steering Committee - Initially, the Town convened a Steering Committee with representatives from UNC, various Town departments, NCDOT, GoTriangle, Town of Carrboro, City of Durham, & DCHC MPO to help inform and review the findings on the plan. After an initial kick-off meeting, the group's duties were transitioned to the Town's Transportation and Connectivity Advisory Board. The TCAB reviewed the project's progress and recommendation throughout the process.

Pop-Up Outreach - The project team developed three pop-up public involvement opportunities to go Chapel Hill residents to get survey input in locations where they typically travel.

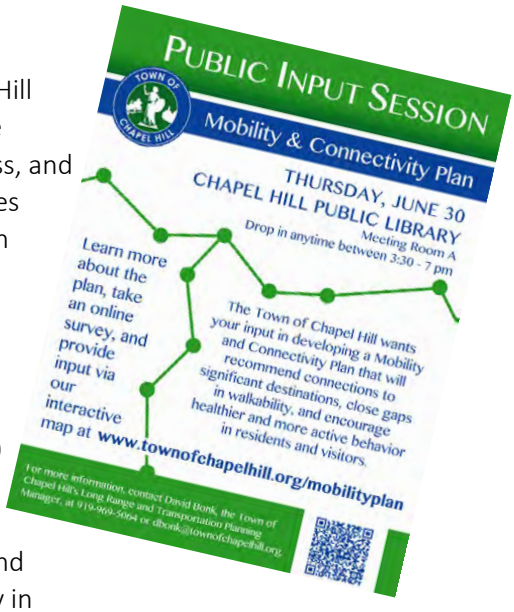
- Tuesday, June 21, 2016- Active outreach at Plaza 140 to collect survey input
- Wednesday, June 22, 2016 - Team rides various transit routes throughout the day in Chapel Hill to collect survey input; followed by event at Performance Bike
- Thursday, June 23, 2016- Active outreach at East Gate Shopping Center and Chapel Hill Main Library to collect survey input
- Friday August 26th, 2016- Active outreach at Cyclicious event at UNC-Chapel Hill

Public Outreach Methods

Bicycling enthusiasts at the Cyclicious event at UNC-Chapel Hill

In-Person Surveys and Pop Up Events

These outreach activities expanded the reach of the Mobility Plan to get input from people where they were.



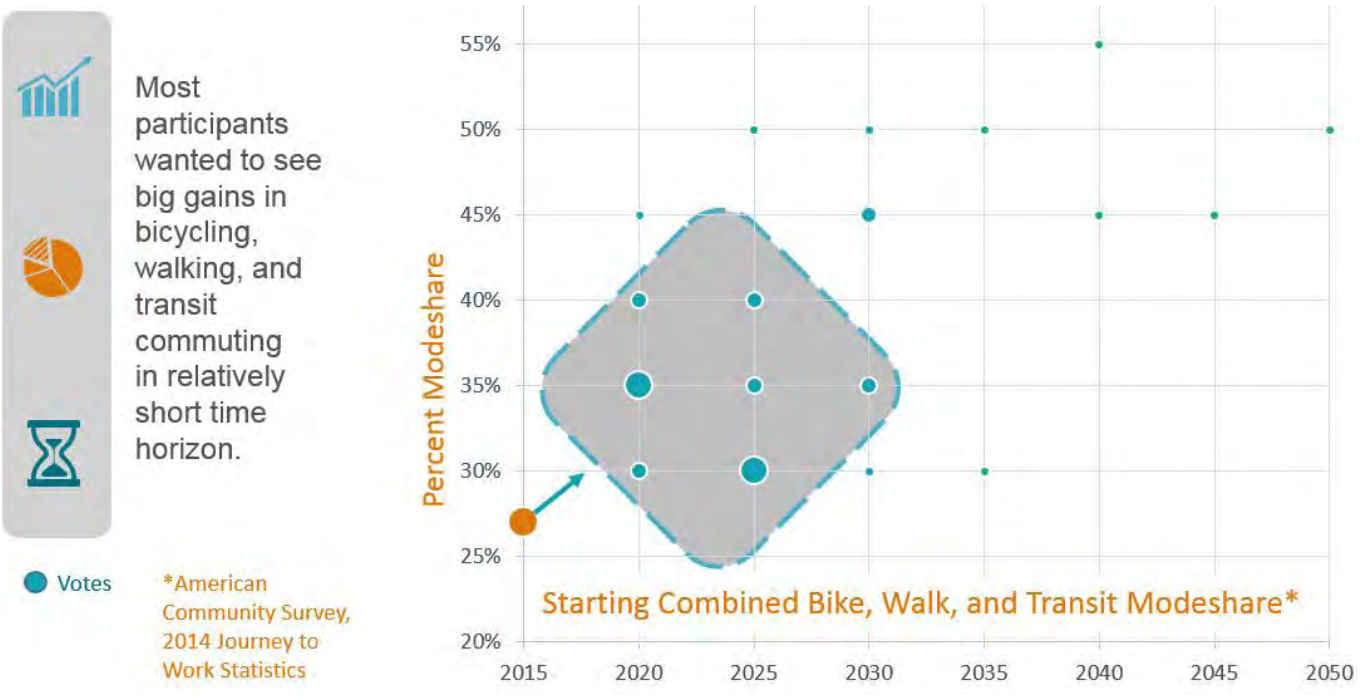
Public Open Houses - Two public open houses were held at the Chapel Hill Public Library. The drop-in style open houses had a variety of interactive boards and a presentation to introduce residents to the planning process, and get feedback on the following: vision and goals of the plan; current issues with bicycling, walking, and access to transit; and voting on prioritization of projects. Both open houses also took open-ended feedback for consideration in the plan.

- Thursday, June 30, 2016- Drop-in session between 3:30 and 7:00 PM at the Chapel Hill Public Library: **39 attendees**
- Tuesday, September 6, 2016- Drop-in session between 4 and 7:00 PM at the Chapel Hill Public Library: **43 attendees**

Comments and inputs based on existing conditions and opportunities and project prioritization were worked into the public involvement summary in Chapter 4 and **Appendix A**.

Survey - With guidance from Town staff, the project team developed a survey intended to gain insights from a variety of users about current pedestrian, cycling, and transit destinations; connectivity issues; and suggestions for improvements. The survey was open from mid-June until mid-September 2016.

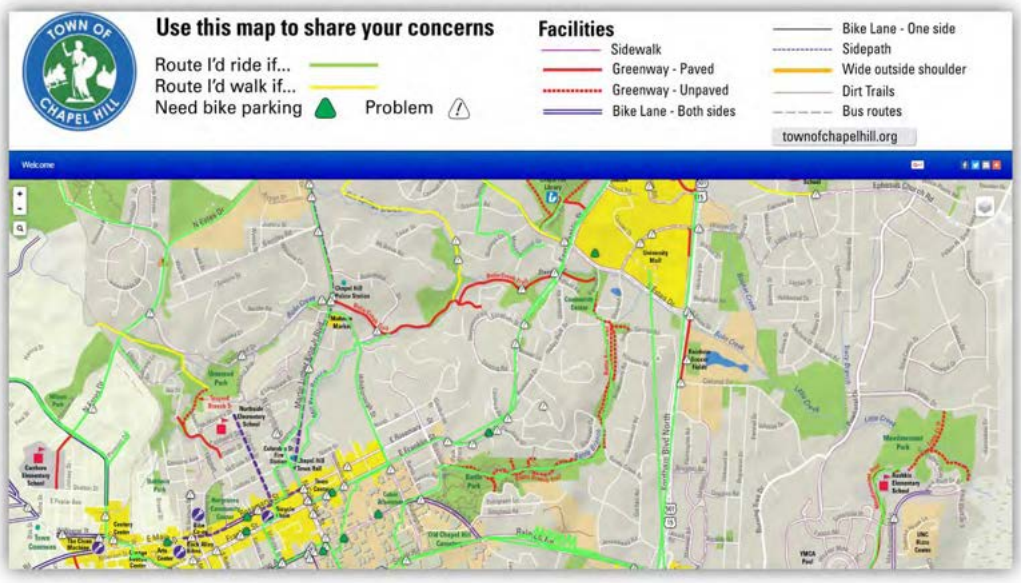
Commute Modeshare



Setting Goals for Future Modeshift to Bicycling, Walking and Taking Transit.

Map-Based Online Input - The Town of Chapel Hill used an online tool called WikiMaps to complement to the survey. This tool allowed community members to provide visual, map-based input about desired walking and bicycling corridors and network problem areas, as well as comments about various subjects such as transit stops, intersections, maintenance, and destinations currently difficult or impossible to access using alternative modes of transportation.

Wiki-Mapping
Citizens input concerns, identified locations and indicated desired routes using an online map tool.



Map-based reporting for bicycle and pedestrian issues in the Town was available to citizens online throughout the public input period for the Mobility Plan

Public Outreach Methods

Summary of Public Involvement Activities

Pop-Up Outreach
Three targeted pop-up events to get survey input in locations where residents travel – Chapel Hill Transit, Eastgate Shopping Center, and UNC Chapel Hill

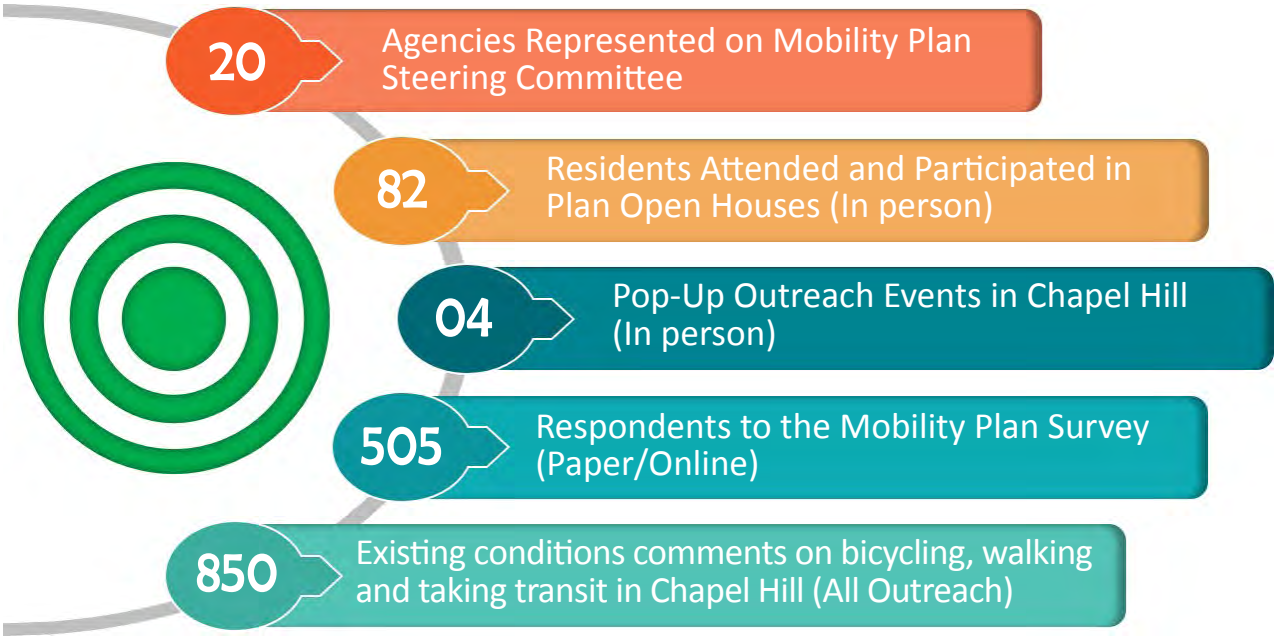
Public Open Houses
Two public open houses at Chapel Hill Public Library with opportunities to evaluate existing conditions and prioritize projects.

Survey
Question emphasis on pedestrian mobility, walkability, and accessibility to address pedestrian planning inputs. Questions also targeted specifically at Ephesus Fordham District.

Steering Committee
Kick off meeting and updates given to steering committee throughout the project. Committee assisted with outreach on Public Input.

Wiki-Mapping
Visual online map-based input on town-wide bicycle, pedestrian, and transit mobility issues.

Opportunities for stakeholder and public input to provide guidance to Chapel Hill Mobility Plan



Breakdown of the key inputs to the Mobility Plan

Evaluating Existing Conditions

Demographics

Community Growth

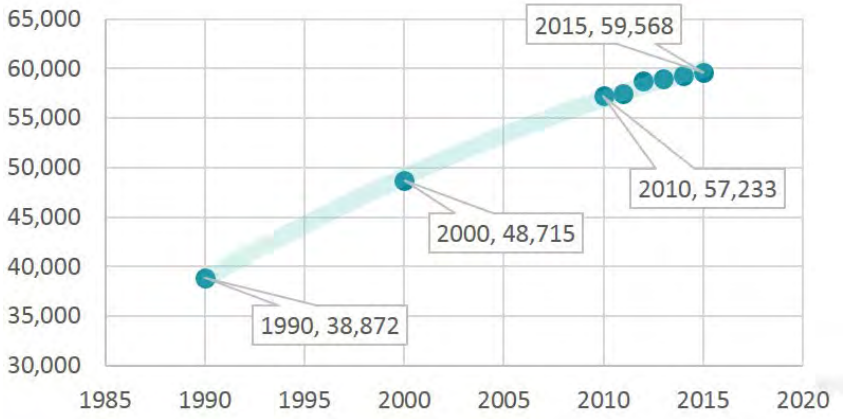
The Town of Chapel Hill's population, like that of the entire Triangle region, continues to grow, increasing by more than 50% over the 25-year period from 1990 to 2015. Orange County's population is expected to increase by 13% between the 2010 and 2020 Censuses, while its neighboring counties to the east are all expected to grow by 20% in the same period.

While its population is growing, the Town limits are not. Chapel Hill's "Urban Services Boundary" is comprised of 20.9 square miles where water, sewer, and other municipal services are provided. A Rural Buffer exists on the edges of Chapel Hill and Carrboro to maintain rural character and low-density uses without urban services outside of the towns. Most of the land in Chapel Hill is already developed or spoken for so community growth in Chapel Hill will occur primarily in the redevelopment of existing areas.

Preparing for Community Growth

Planning for and managing growth will be prominent issues for our community, and region. In order to adapt to and embrace these changes and the growth that is predicted, the Town needs to plan for transportation now and into the future.

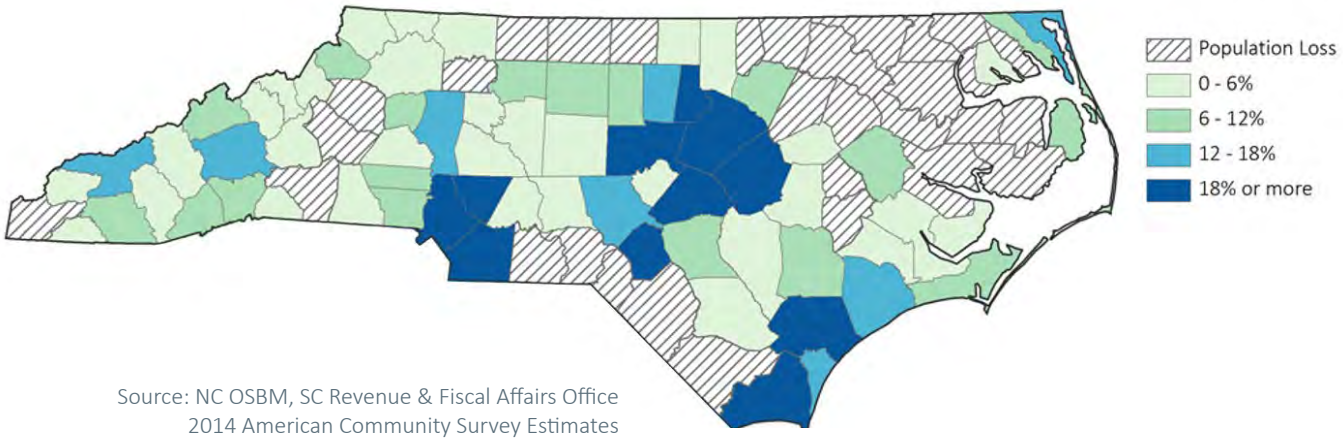
Population Growth - Chapel Hill, NC



Source: US Census Bureau, Census Data

Population Growth Areas in North Carolina

Projected growth and losses in population, 2010-2020



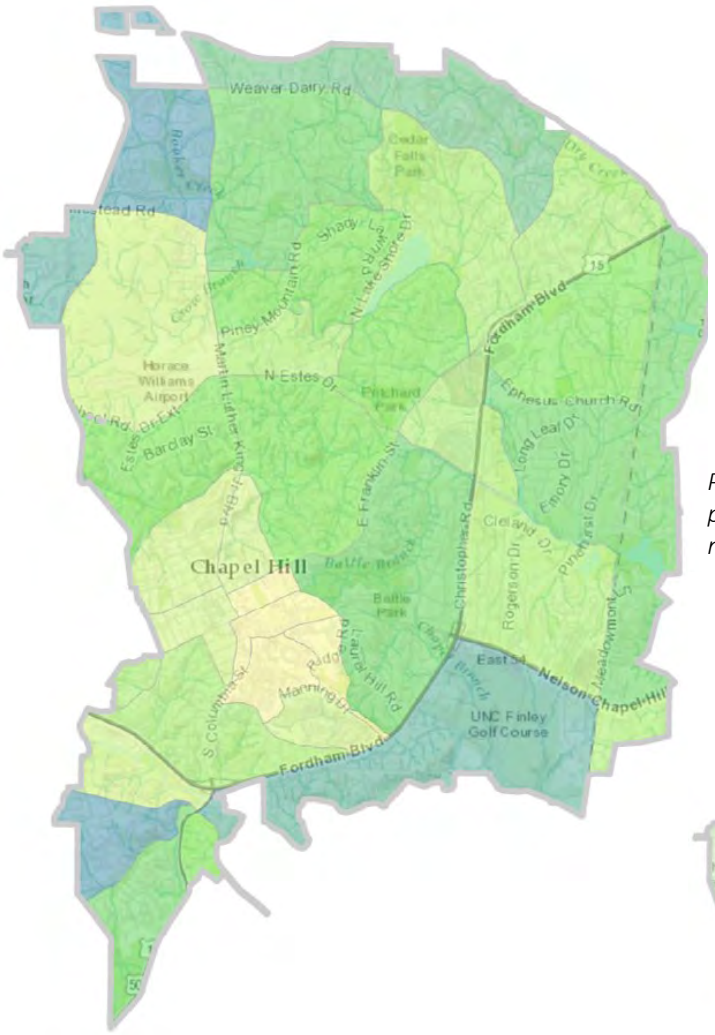
Source: NC OSBM, SC Revenue & Fiscal Affairs Office
2014 American Community Survey Estimates

Populations with Needs or Preferences for Bicycling and Walking

Census data can help planners identify areas where there may be a need or desire for transportation alternatives. Areas where a large number of households have low rates of vehicle ownership and lower incomes may need more transit service to link residents to jobs and services, as well as bike and pedestrian connections to transit.

2014 American Community survey data shows the following trends in Chapel Hill and may predict where some residents will most benefit from improvements to bicycling and walking mobility.

- A greater percentage of households with lower incomes, zero vehicle ownership, and non-family status are found in the central part of Chapel Hill adjacent to UNC. This pattern is typical for areas with both multifamily residential uses and large university student population.
- A greater percentage of zero-vehicle households occurs in areas to the northeast of downtown.
- Non-family households have an significantly lower average income than that of family households, and make up 48% of the total households in Chapel Hill. Much of this population is located along the MLK Jr Blvd. corridor and may be helped with frequent transit service.

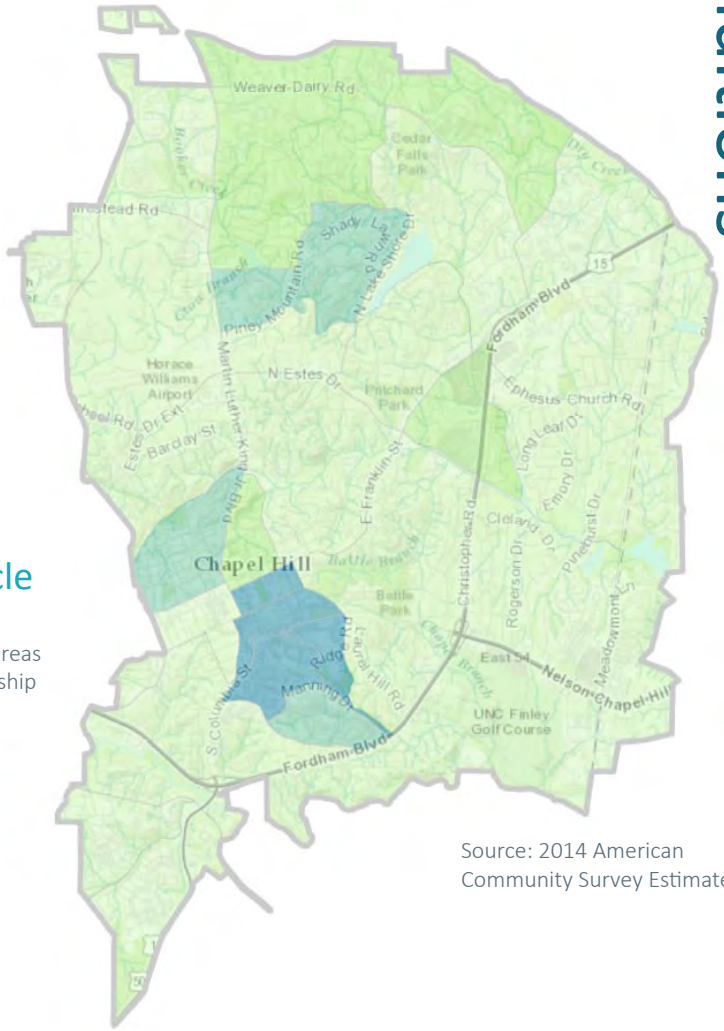


Lower Household Incomes

The lighter shaded areas indicate areas of the Town with lower median household incomes.

1 - 20,000	80,001 - 100,000
20,001 - 40,000	100,001 - 120,000
40,001 - 60,000	120,001 - 140,000
60,001 - 80,000	140,001 - 160,000

Populations in Chapel Hill with greater needs or preferences for bicycling and walking, including "last mile" trips to access transit.



Lower Rates of Vehicle Ownership

The darker shaded areas indicate areas that have lower rates of car ownership in the Town.

Percent of Occupied Units with Zero Vehicles	
	0-10%
	10-20%
	20-30%
	30-40%
	40% +

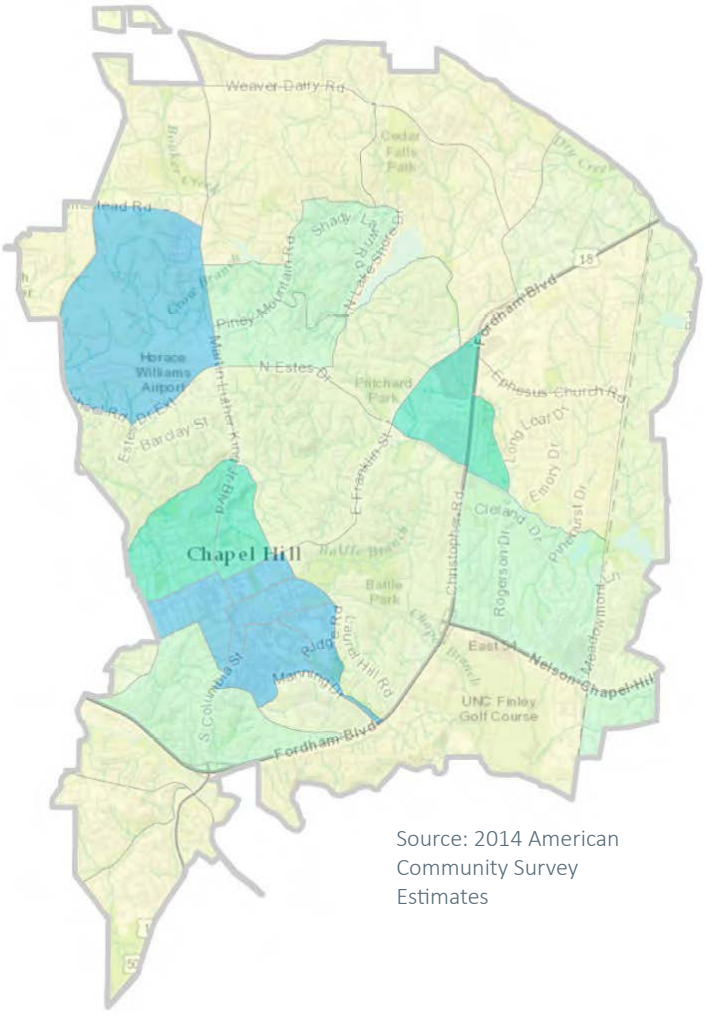
Source: 2014 American Community Survey Estimates

Demographics

Percent of Non-Family Households

A household includes all the persons who occupy a housing unit, whether living alone or with others. The average household size in Chapel Hill is 2.35 persons.

The darker shaded areas indicate places in the Town that have higher percentages of Non-Family Households.



Source: 2014 American Community Survey Estimates

Household Income in Chapel Hill

Transportation Demand Management (TDM)

The Town's TDM Employee and Citizen Outreach includes year round campaigns, programming and special events to promote commute alternatives to and from work as well as getting out and about in the Chapel Hill community.

Outreach includes:

- Go Chapel Hill Transportation Management Plan (TMP) Program:
  - Outreach to local businesses
  - Commute Club
  - Annual TMP Champion Conference, trainings & workshops
- Bicycle Month special events
- Partnership & Collaboration with UNC-CH, Town of Carrboro, regional transit agencies, organizations, local businesses, bicycle stores and advocacy groups
- Social media including Instagram, Facebook, Twitter, Newsletter, E-Blasts and Go Chapel Hill website

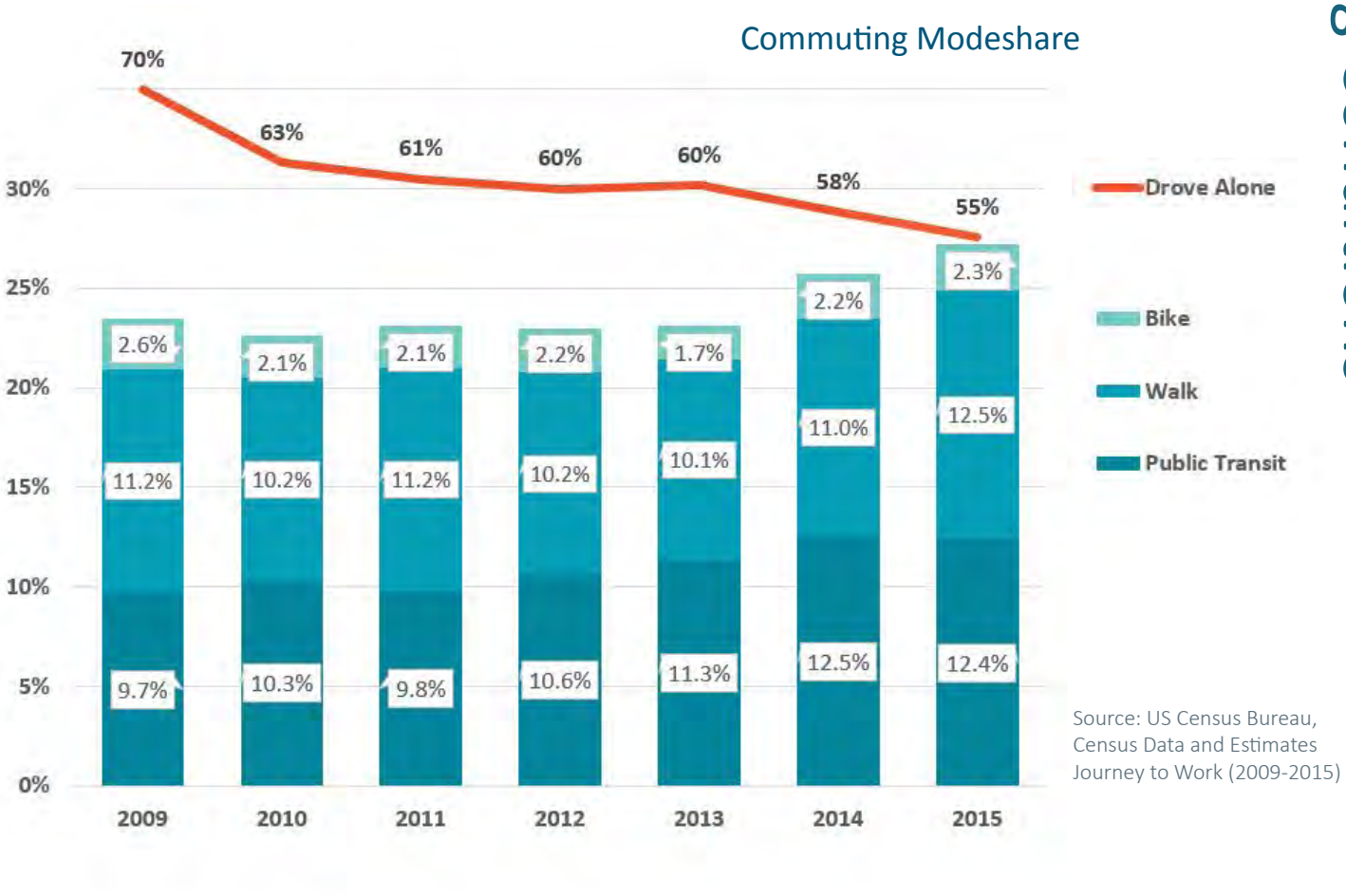
Go Chapel Hill .org
Bike
Bus
Walk

Statistics

Changing Behaviors

There is already a culture of taking transit, walking, and bicycling to work in Chapel Hill. Journey to work data from 2015 shows residents commuting by alternative modes rose to over 27% of total trips while single occupancy vehicles decreased to 55%.

However, commuting does not represent the majority of transportation usage. It does not include travel such as running errands, trips to school, or business meetings. Nationally, commuting only accounts for 16% of trips.



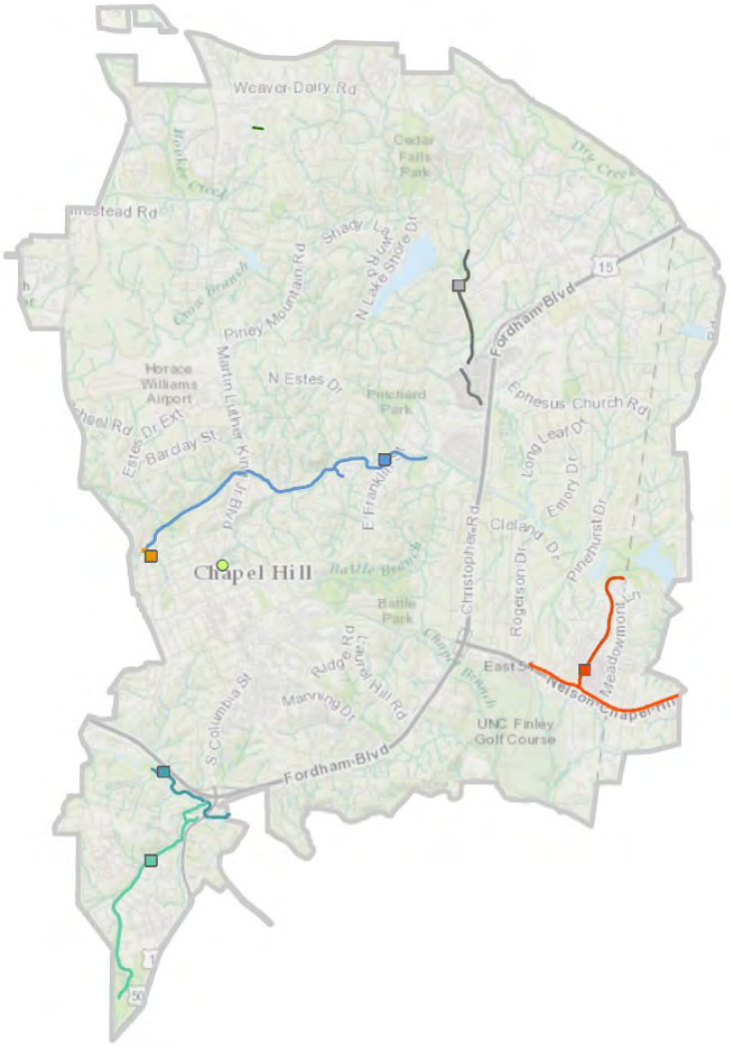
Source: US Census Bureau, Census Data and Estimates Journey to Work (2009-2015)

On the right trajectory! Trends indicate a decrease in the number of individuals commuting to work in a single occupancy vehicle. Enhancing "last mile" connections is key to increasing numbers of individuals using other modes.

User Counts

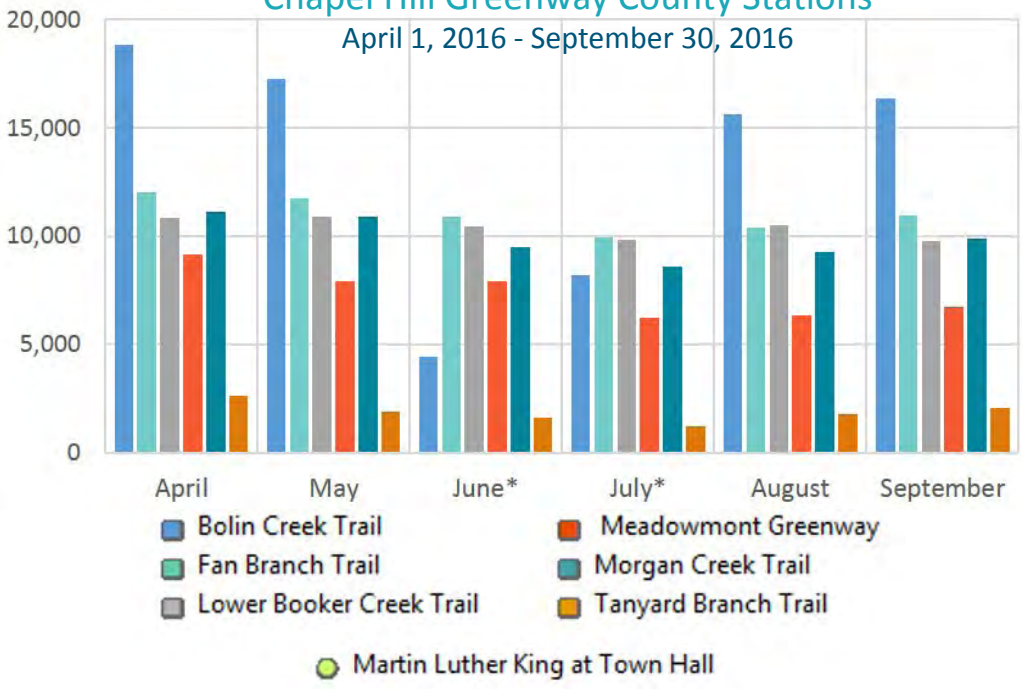
The Town of Chapel Hill used to publish bicyclist and pedestrian counts through its Mobility Report Cards. The reports detailed user counts for as many as 117 locations but were discontinued in 2005. In 2015, the Mobility Report Card was reinstated by the DCHC-MPO.

In 2014, the Town partnered with NCDOT to install a permanent bicycle and pedestrian count location on Martin Luther King Jr Blvd. near Town Hall. This station is part of a bike/ped count program by NCDOT to analyze bicycling and walking in the state and institutionalize a non-motorized volume data program. The Town expanded the number of permanent count stations in 2016, focusing stations on longer segments of greenways in the town. Three more stations were installed in various locations by the end of 2017.



Chapel Hill has seven stations continuously collecting bicycle and pedestrian counts. User counts on most town greenways regularly meet or exceed 10,000 per month.

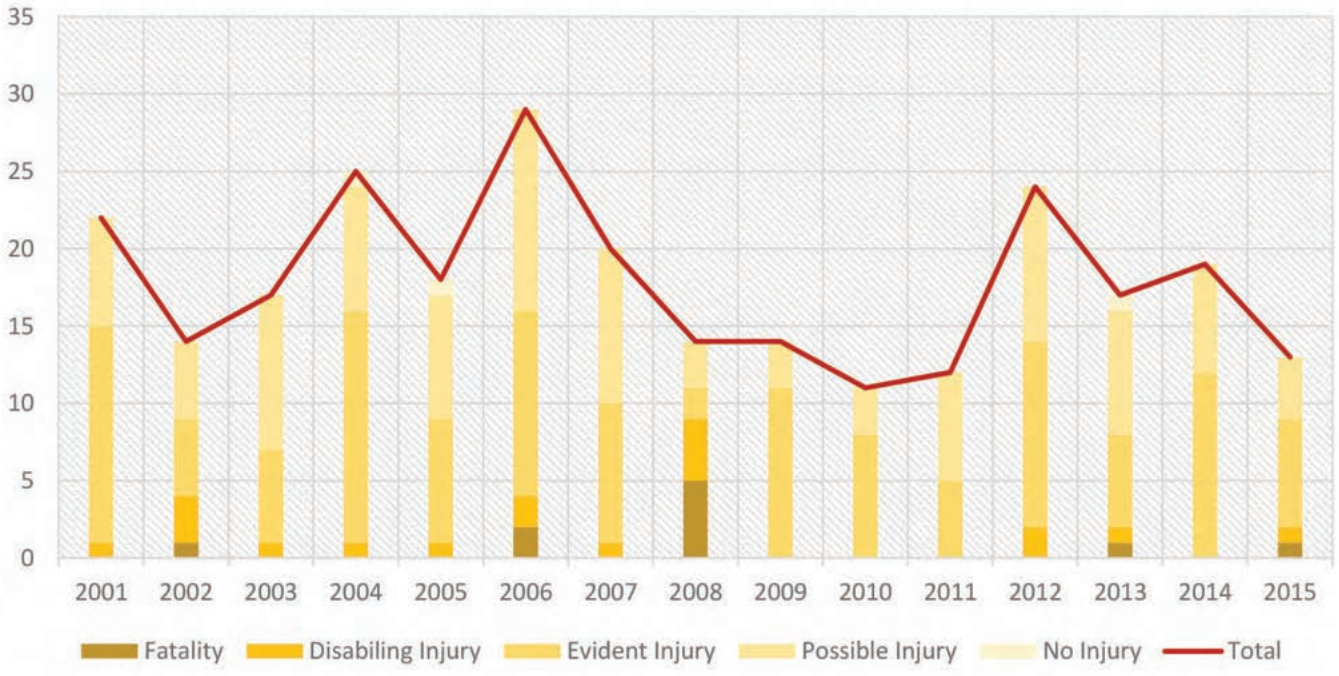
Count of Bicyclists and Pedestrians
Chapel Hill Greenway County Stations
April 1, 2016 - September 30, 2016



Crashes

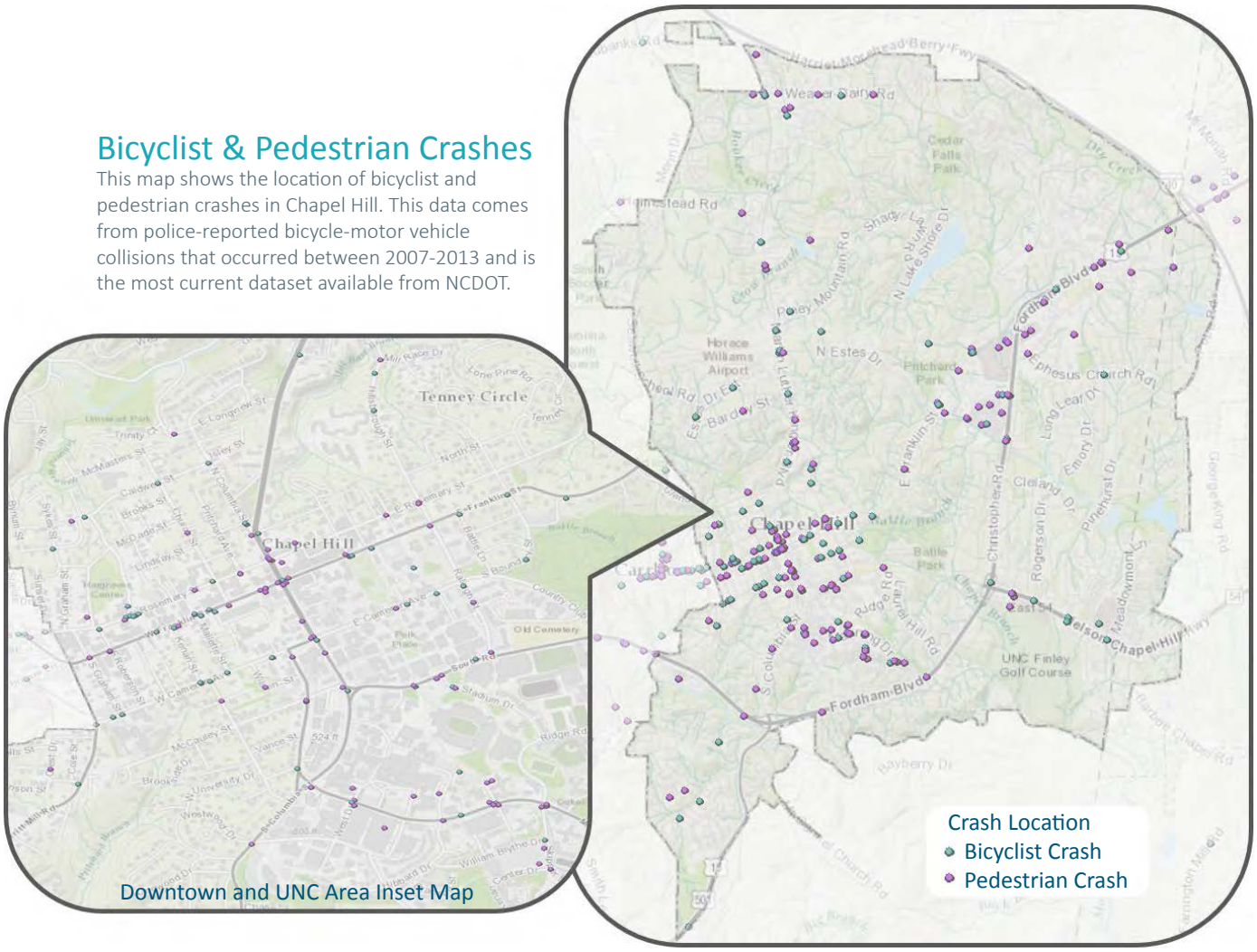
Pedestrians and cyclists are at an inherent disadvantage when involved in traffic crashes. Between 2001 and 2015, there were 269 pedestrian crashes reported in the Town, an average of approximately 18 crashes per year, including a small number of fatal or disabling injuries occurring nearly every year. A 2005 survey by NHTSA found that nearly half of all crashes resulting in pedestrian injury go unreported. While there is no discernible pattern to suggest if pedestrian crashes are on the decline permanently, since 2012 there has been a steady decrease in the overall number of crashes reported. Fewer bicycle crashes were reported during the same period, making it difficult to look at trends.

Pedestrian Crashes in Chapel Hill (2001-2015)



Bicyclist & Pedestrian Crashes

This map shows the location of bicyclist and pedestrian crashes in Chapel Hill. This data comes from police-reported bicycle-motor vehicle collisions that occurred between 2007-2013 and is the most current dataset available from NCDOT.



Source: NCDOT Bicyclist and Pedestrian Crash Data 2007-2013

Areas of Concern for Bike/Ped Crashes

Crash Frequency

Downtown/UNC Campus
- Franklin Street
- Columbia Street
- Cameron Avenue
- South Road
- Manning Drive

Ephesus-Fordham District
Martin Luther King Jr. Boulevard
Weaver Dairy Road
NC 54 Raleigh Road

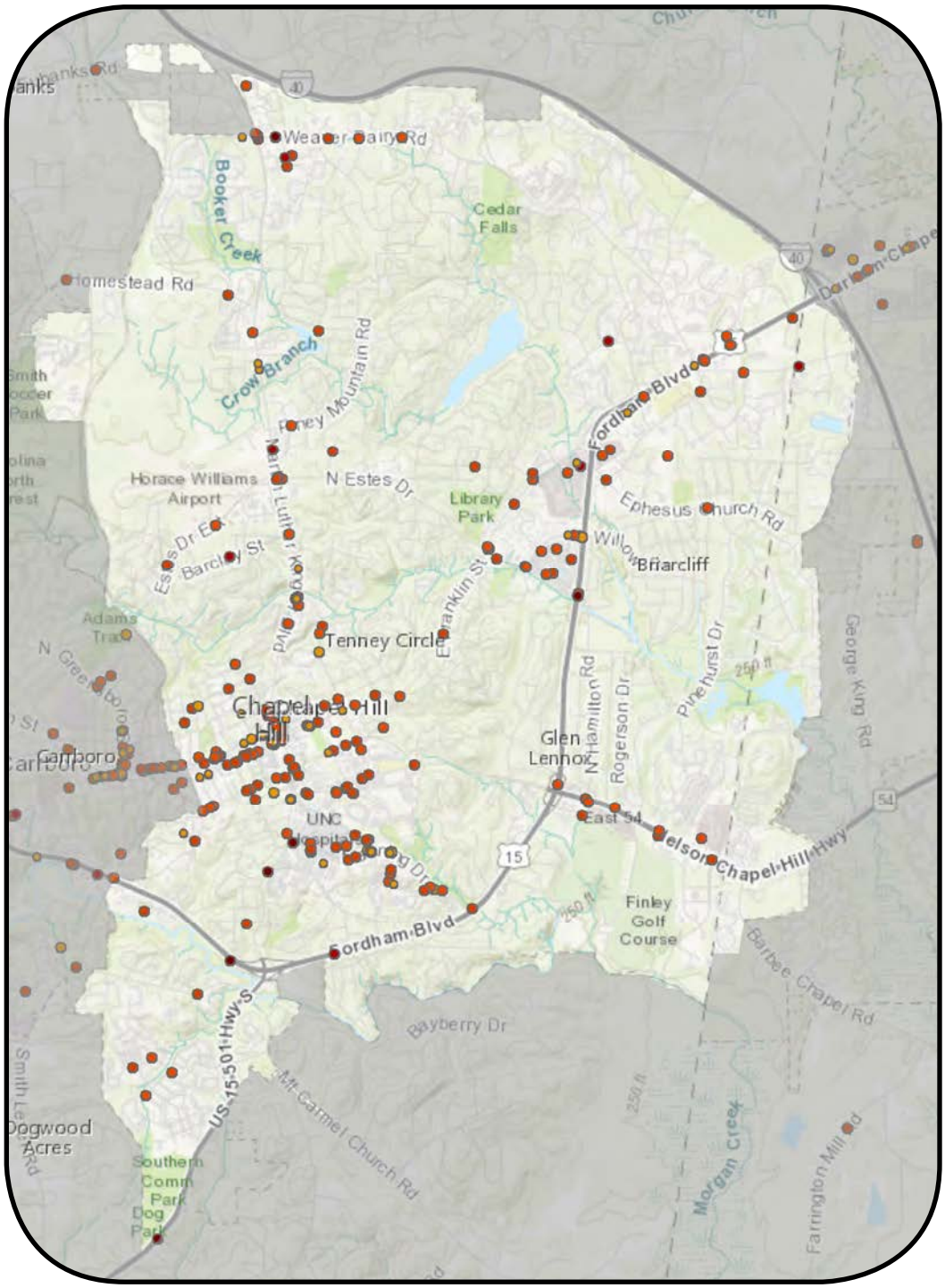
Crash Severity

S. Columbia Street
US 15-501/Fordham Blvd
Martin Luther King Jr. Blvd
Weaver Dairy Road

Crash Severity

This map focuses on the severity of crashes by location. Darker colored circles indicate more severe injury with crashes that resulted in death depicted using a dark red.

Both bicyclist and pedestrian crashes are depicted.

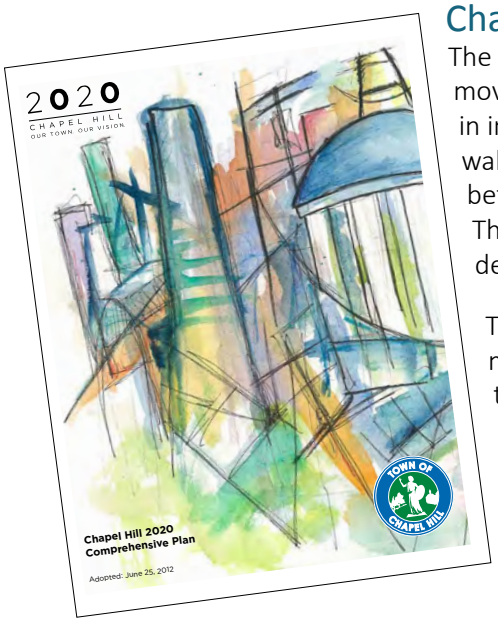


Crash Severity

- Killed
- Disabling Injury
- Evident Injury
- Possible Injury
- Unknown/No Injury

Existing Plans and Policies

Development of the Mobility Plan grew from the need to look at mobility issues from more than just a modal perspective. The 2020 Comprehensive Plan paints a big picture of the Town's transportation vision, while the Greenways Master Plan and the Bike Plan focus on pieces of that vision. The Mobility Plan seeks to identify gaps as well as opportunities to better link the Town's bike, ped, greenway, and transit systems.

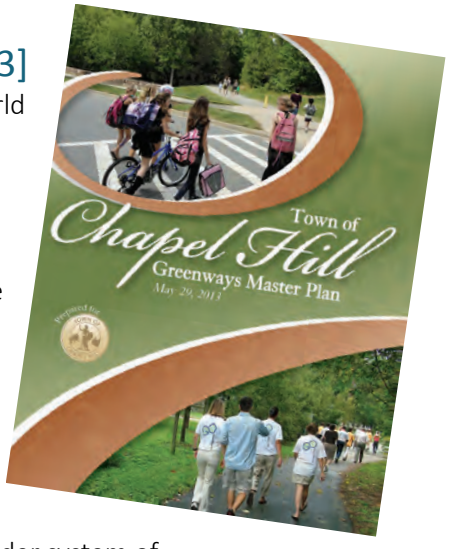


Chapel Hill 2020 Comprehensive Plan [2012]

The Chapel Hill 2020 Comprehensive Plan is a vision for the community of Chapel Hill moving forward and outlines different areas in which the community is interested in improving. One of the key "Big Ideas" outlined in the plan is to create a bikable, walkable, green communities plan that provides safe connections between neighborhoods, schools, commercial destinations, and recreational areas. The plan lays out strategies to encourage changes in growth, land use, economic development, and continued university collaboration.

The plan calls for a holistic transportation system that integrates the modes and minimizes the congestion that comes with a growing community. is key to this theme, recognizing the benefits from the enhanced mobility that multimodal connections can provide.

The Plan identifies six Focus Areas in Town and provides general recommendations for desired connectivity and improvements. The Mobility Plan expands upon the general principles outlined in the plan, giving details to the discussion.



Chapel Hill Greenways Master Plan [2013]

Integrating the urban environment with the natural world is a key tenet of the Greenways Master Plan. The Town of Chapel Hill maintains a popular and growing system for integrating citizens with nature. A thoughtfully developed greenway system can serve the backbone of a non-motorized transportation network, providing safe crossings and access to key destinations and transit for people of all ages and abilities.

In carrying out the Mobility Plan, goals of the Greenway Program should not be overlooked. This plan looks at the opportunities for synchronizing the existing and planned greenway network to the broader system of non-motorized travel. Prioritization elements in this plan that involve greenway projects need to strive to maintain a balance between resource protection, recreational use, and transportation opportunities. Goals and objectives related to the preservation of open

space, the implementation of park trails, and other elements of the plan that are not intended as a transportation function for the Town are outlined and maintained by the Greenways Master Plan.

Chapel Hill Bike Plan [2014]

Many Chapel Hill residents desire safer, more convenient, bicycling options. The town undertook a process in 2014 to identify priority projects that would encourage the "Interested but Concerned" group of bicyclists to ride bicycles more frequently and reduce bicyclist's "traffic stress" in the existing network.

Projects were selected to build a short-term priority network to establish connectivity near the center of Town and recommendations given for long term improvements using separated bicycle facilities such as "cycle tracks." Further, the Town worked with UNC-Chapel Hill to coordinate their bike plan in tandem with this effort to have consistent recommendations in each network plan.

The Mobility Plan builds on this planning effort, recognizing new design tools and bicycle facility types that have quickly entered the planning toolbox since the Bike Plan was developed. Furthermore, it gives a more comprehensive approach, looking at integration with greenways and transit.

Projects in Development

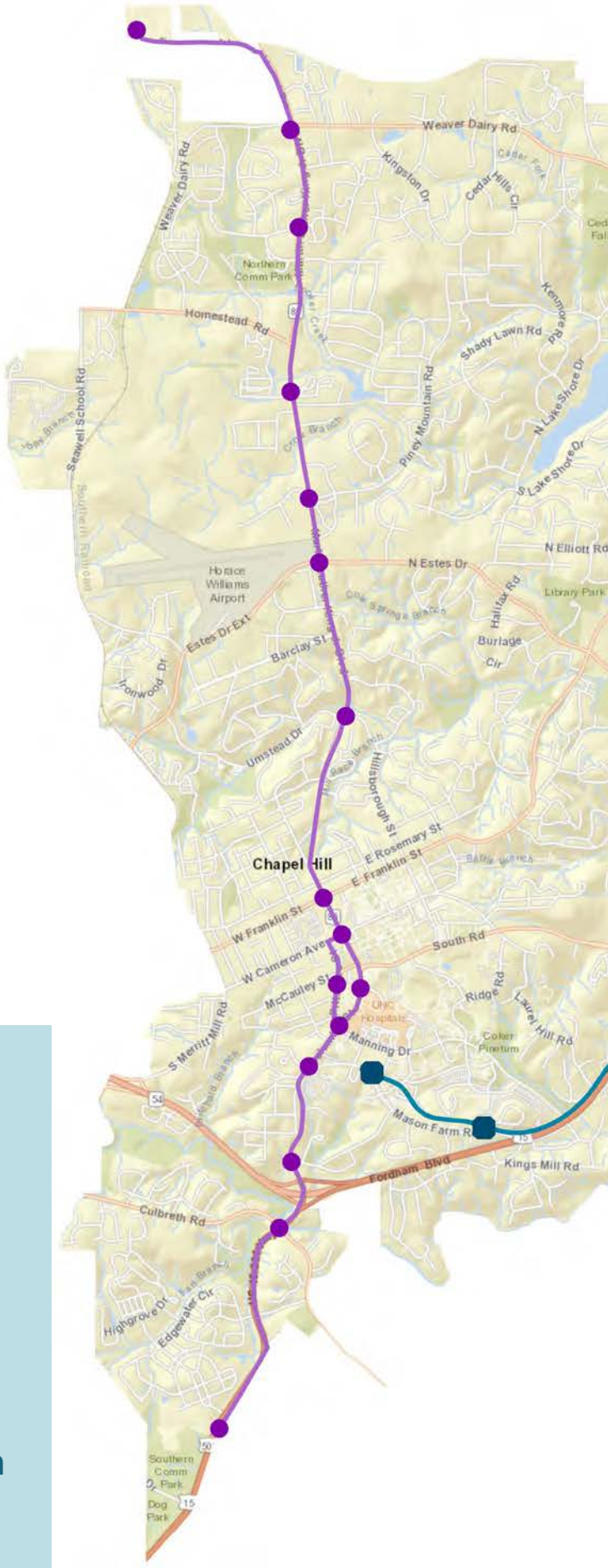
Long Range Transit Planning

One of the challenges to an effective transit system is the first and last mile connections. The Mobility Plan considers bicycle and pedestrian travel to these future bus rapid transit station areas in the context of a long-term network build out for sidewalk, greenway, and bicycle projects.

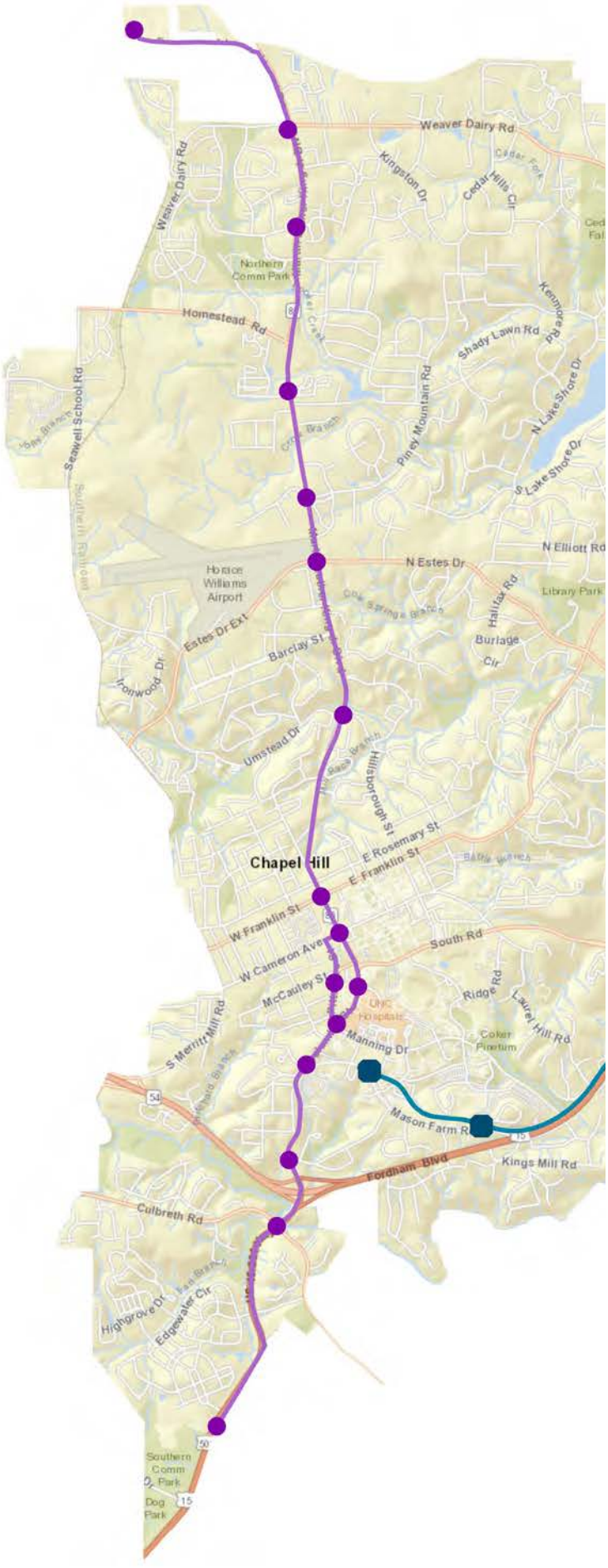
Bus Rapid Transit

A Bus Rapid Transit system along the North-South Corridor is currently being designed to improve travel capacity and mobility; provide reliable transit; and create positive opportunities for economic development at stations. The proposed route includes 16 stations along a 7.3-mile route connecting the Eubanks Road Park-and-Ride with the Southern Village Park-and-Ride. One of the challenges to an effective transit system is the first and last mile connections.

The plan considers gaps in the existing pedestrian network and considers bicycle and greenway network linkages to create direct routes to the stations proposed in the Mobility Plan.



Evaluating Existing Conditions

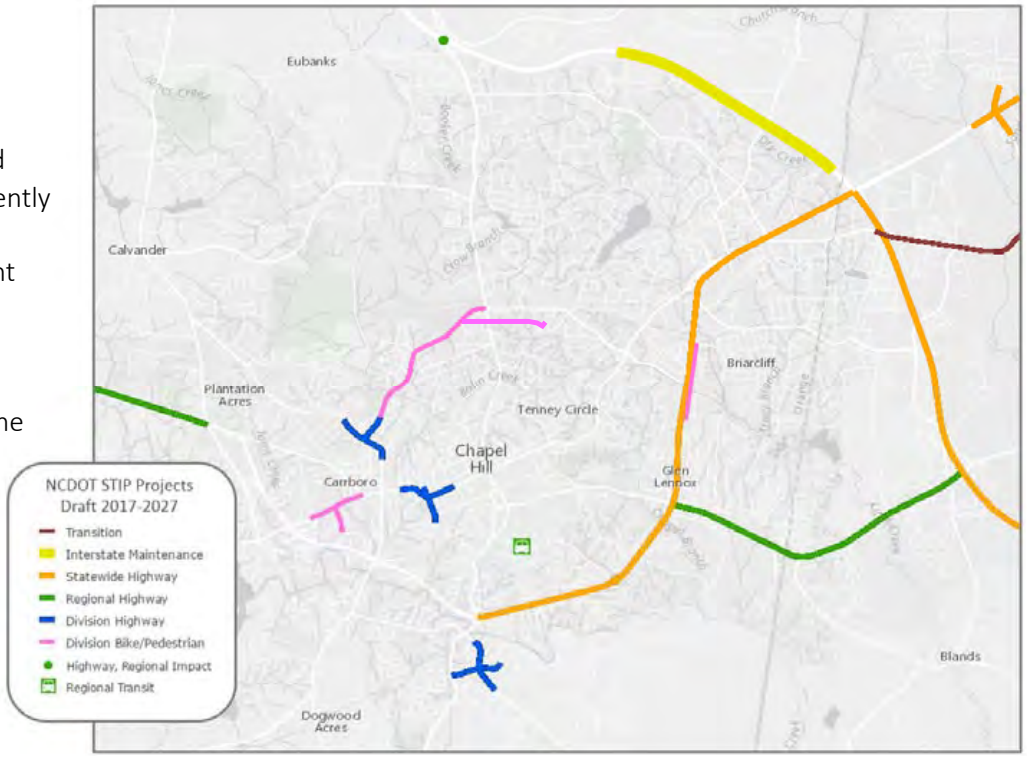


The current plans interact with the proposed North-South BRT (NBRT) project as it stands in Fall 2020. If plans for NSBRT are shifted, the bike/ped connections will need to change accordingly to support a multi-modal corridor.

Projects in Development

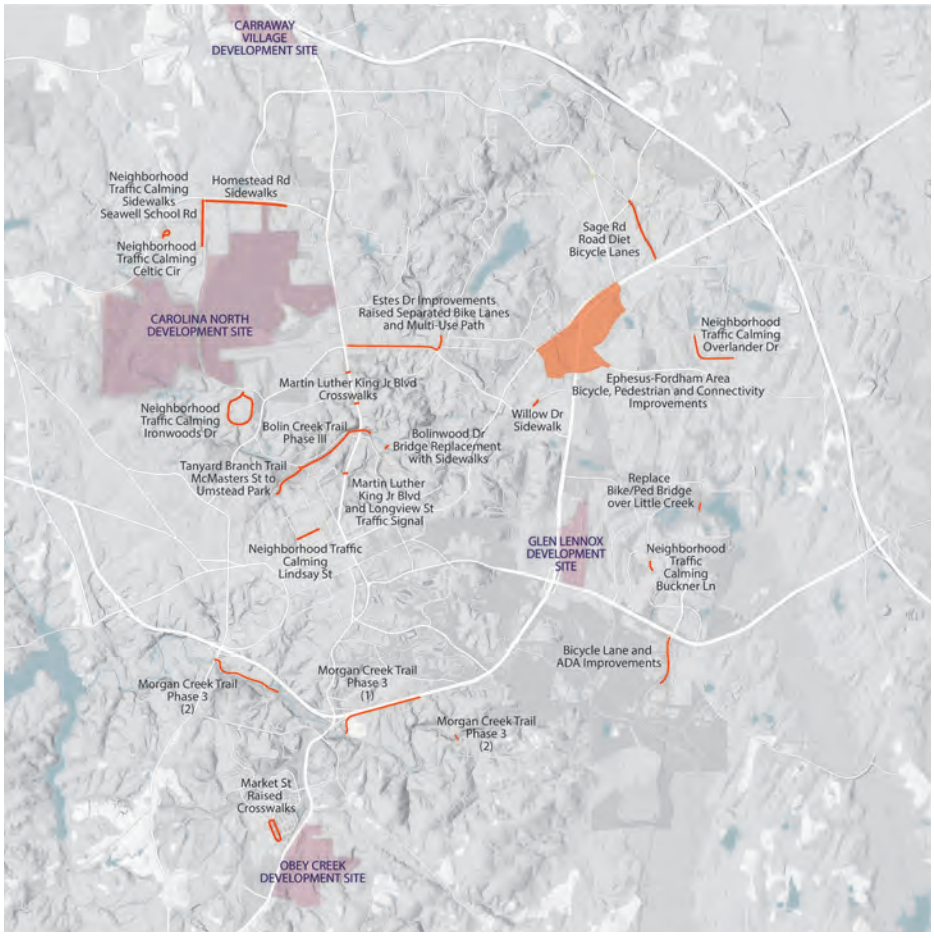
NCDOT Projects

A number of projects in and around Chapel Hill are currently in NCDOT's ten-year State Transportation Improvement Program (STIP). The STIP identifies the construction, funding, and scheduling for transportation projects at the state level over a 10-year period and projects. A list of the projects can be found in **Appendix B**.



Town Capital Projects

Numerous projects for bicycling and walking are included in the Town's Capital Improvement Plan (CIP). These all relate to the goal "Facilitate Getting Around" in the Chapel Hill 2020 Plan. Programmatic funding for traffic calming, ADA & curb ramps, and greenways totals approximately $1.2 million through 2025. More details on projects and funding can be found in **Appendix B**.



In November 2015, voters approved a bond referendum which included funding for improvements throughout the community. The bond contained over $21M in allocations for mobility improvements to biking and walking including $16.2M for Streets and Sidewalks and $5M for Trails and Greenways. Projects funded by the bond are identified from previous planning efforts, studies, and evaluations including the Bike Plan and Greenway Plan. Town staff reviews and prioritizes the Town's capital improvement needs on annual basis for the Capital Improvement Program (CIP) which is how these funds are obligated to projects. A previous bond referendum was conducted in 2003 which allocated $5.6M for Sidewalks and Streets and $5M for overall Parks and Recreation.

2015 Bond Referendum

Streets & Sidewalks $16.2M	Trails & Greenways $5M
Bike and Pedestrian Safety	Greenway System Expansion
Sidewalk Construction	Morgan Creek Trail
Streets Infrastructure	Bolin Creek Trail/Tanyard Branch Trail
Downtown Streetscape	

Development Agreements

Development agreements are contracts entered into by the Town and a developer to expressly define a project's rules, regulations and commitments. These agreements help to meet the Town's transportation needs and comprehensive planning goals in the future. Several bicycle and pedestrian improvements have been incorporated into mixed-use development agreements because of anticipated impacts as a result of the proposed development. More information on the four current development agreements and their associated improvements are available in **Appendix B**.

Needs Assessment

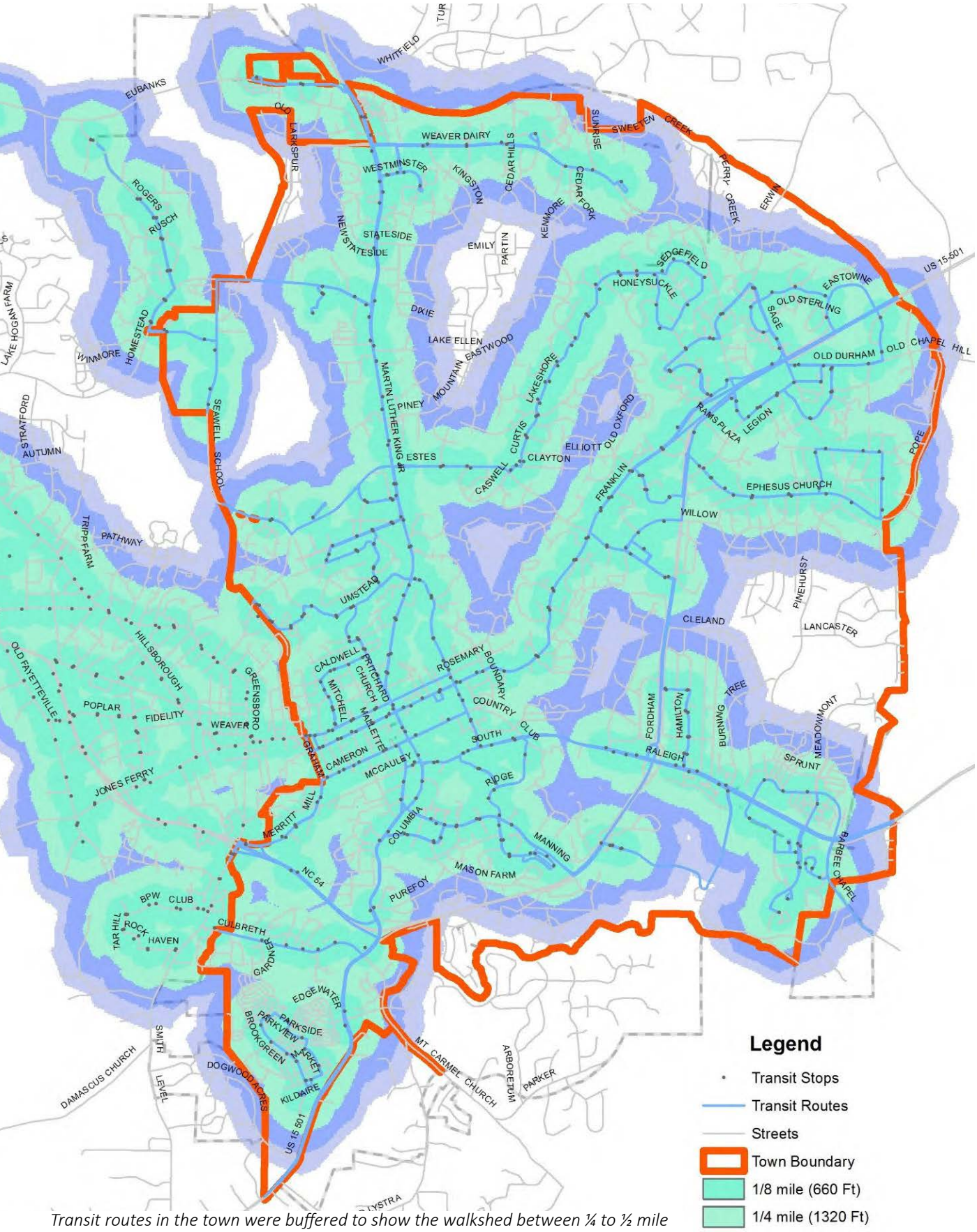
Transit Connectivity

In reviewing the Chapel Hill pedestrian network, sidewalk coverage near transit lines and stops was highlighted to identify gaps where missing sidewalks may hinder residents' access to transit. People are typically willing to walk a quarter mile to a half mile to access transit when conditions for walking are good. Creating and improving safe and comfortable routes for the pedestrian and cyclist is crucial. The routes, with frequent connections to the proposed priority ped/bike network, will act to enable alternate commute habits by residents and help the Town in meeting the goal of 35% alternative commute share by 2025 .

The Town already accounts for this need in their sidewalk prioritization ranking criteria, with points given to projects within ¼- and ½-mile buffers around transit stops. The map on the facing page shows the area in which sidewalks receive those extra points and are prioritized according to proximity to transit.

With the bus rapid transit service planned in the coming years, the effective walk- and bikesheds for these higher-level transit services need to reconsidered in light of Town bike/ped projects. Users may walk further for these premium transit routes, and distances may vary based on the surrounding land uses (Downtown vs. suburban) and the context (tree cover, perceived safety, etc.). Research suggests that buffer distances for sidewalk planning and prioritization around future transit stations may remain at one quarter-mile for Downtown but double to one half-mile for suburban locations.

Evaluating sidewalk gaps in proximity to transit and providing high quality pedestrian environments along transit routes will help the Town meet the goal of increasing non-motorized modeshare.



Transit routes in the town were buffered to show the walkshed between ¼ to ½ mile in Chapel Hill. Gradations in between are included to assist with visualizing walk distances. These buffers are recommended to use as a tool for assigning additional points to the sidewalk prioritization score.

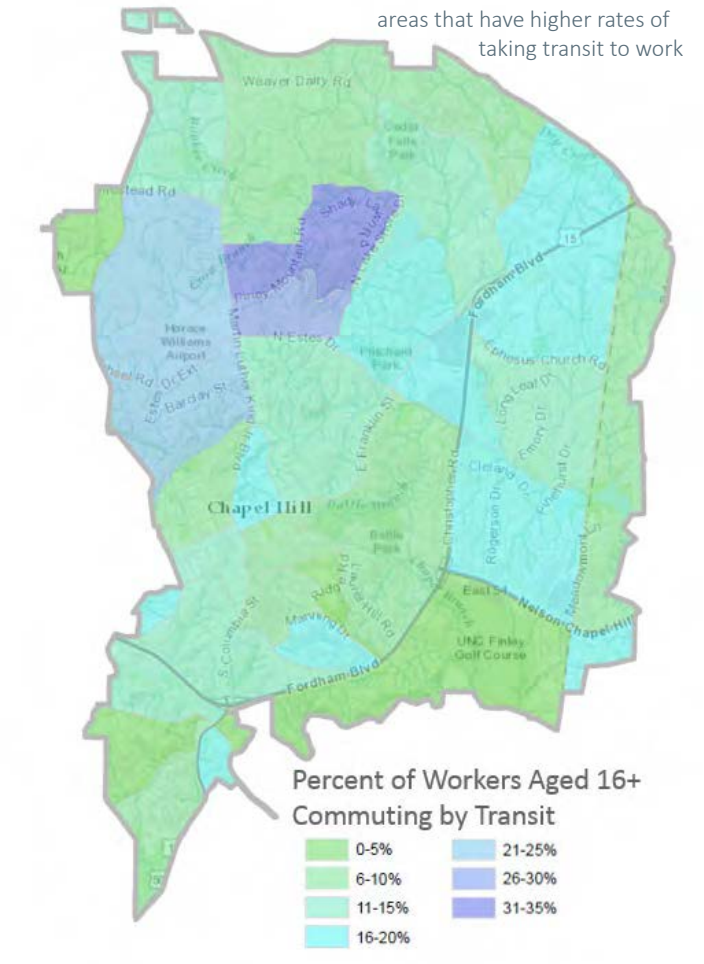
Enhancing First and Last-Mile Connections to Transit

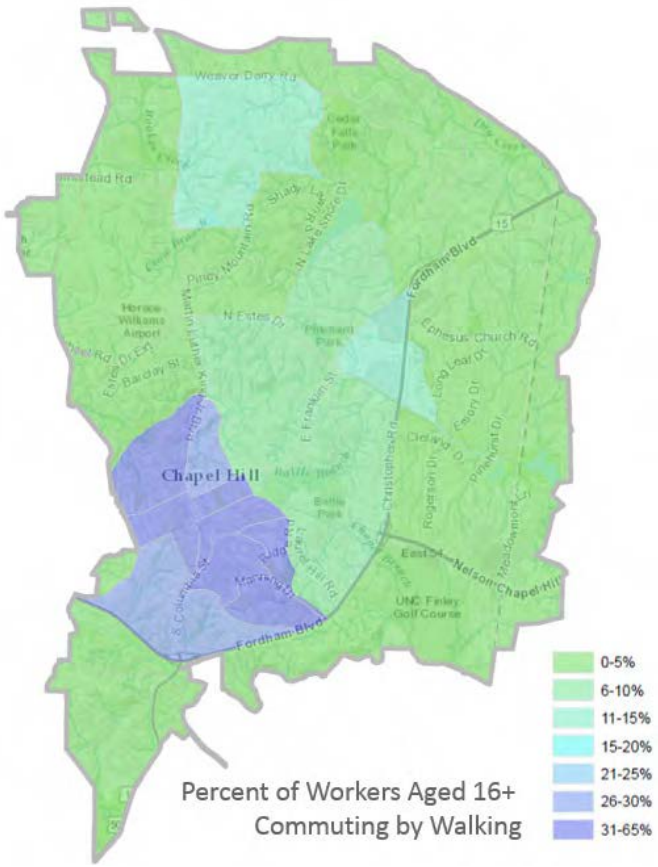
Residents of Chapel Hill have already developed habits around using alternative modes such as walking, bicycling and transit. While the Town's population is increasing overall, there is an overall decrease in the number of people commuting to work in a single occupancy vehicle. The rate of driving alone decreased from 70% in 2009 to 55% in 2015 while commuting to work by bike, foot, and transit rose to over 27%. Many of the those transit trips depend on the "first and last-mile" connections to get to and from the transit corridor. Working to meet the Plan goal to increase the bike/ped/transit modeshare to 35% by 2025 means focusing on these connections to existing and proposed transit stations.

Transit users come from both inside and outside of Chapel Hill. It should be noted that the two maps below do not include workers who reside in communities outside of Chapel Hill and commute into the Town. Looking at boarding/alighting data for 2016, the primary concentrations of transit usage in the town are in the vicinity of UNC-Chapel Hill and in the downtown core. Outside of these areas, riders are using area park-and-ride lots, indicating a propensity for individuals to drive into the area and change modes. Other areas of higher transit use include the Martin Luther King Jr Blvd. corridor, Franklin St., University Place, Ephesus Fordham area, and Meadowmont. Focusing on last-mile connection and intersection improvements in these areas will assist with safety and access for Chapel Hill residents.

Transit Commuters

The darker shaded areas indicate areas that have higher rates of taking transit to work





Walk Commuters

The darker shaded areas indicate areas of the Town with higher rates of walking to work.

Source: 2014 American Community Survey Estimates
Bicycle to work data not available at this geography.

Transit Riders

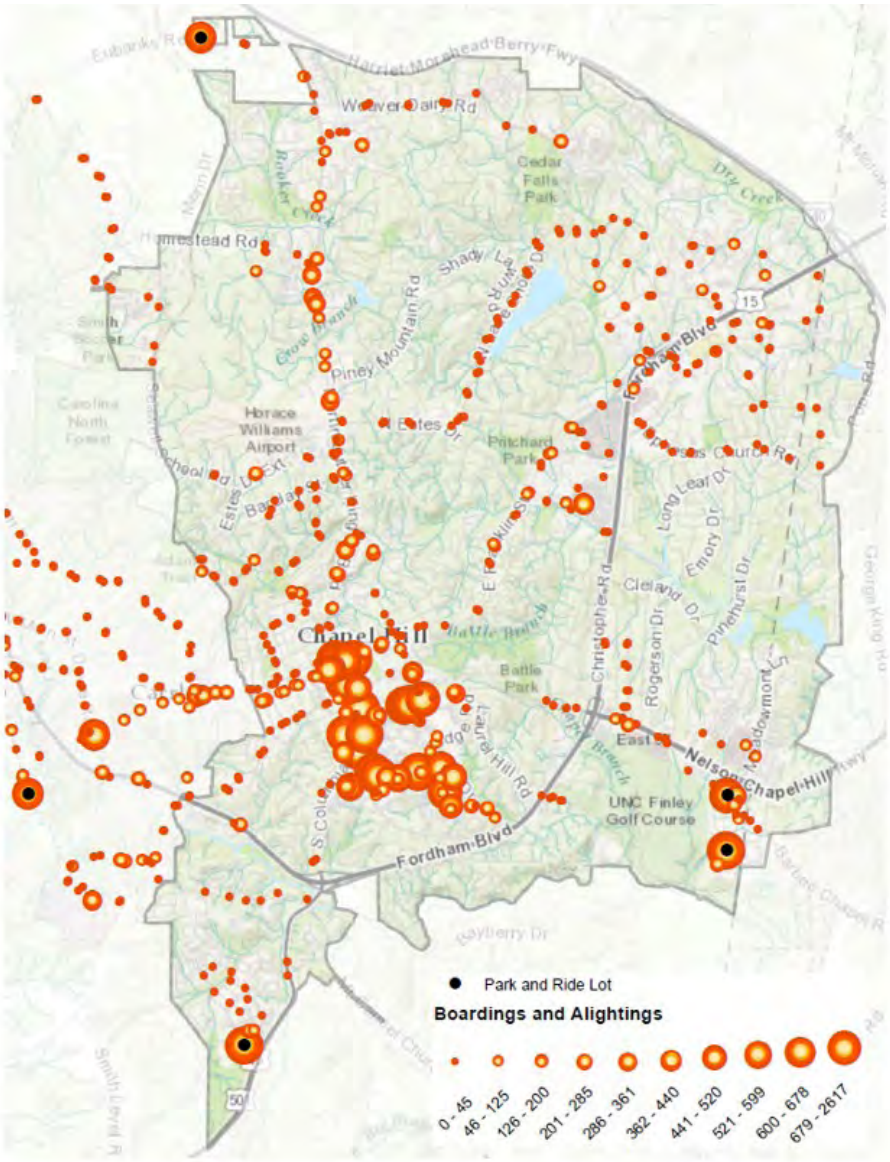
The highest transit usage in Chapel Hill typically occurs at UNC Chapel Hill and downtown stops.

High numbers of boardings and alightings also occur at Park and Ride locations:

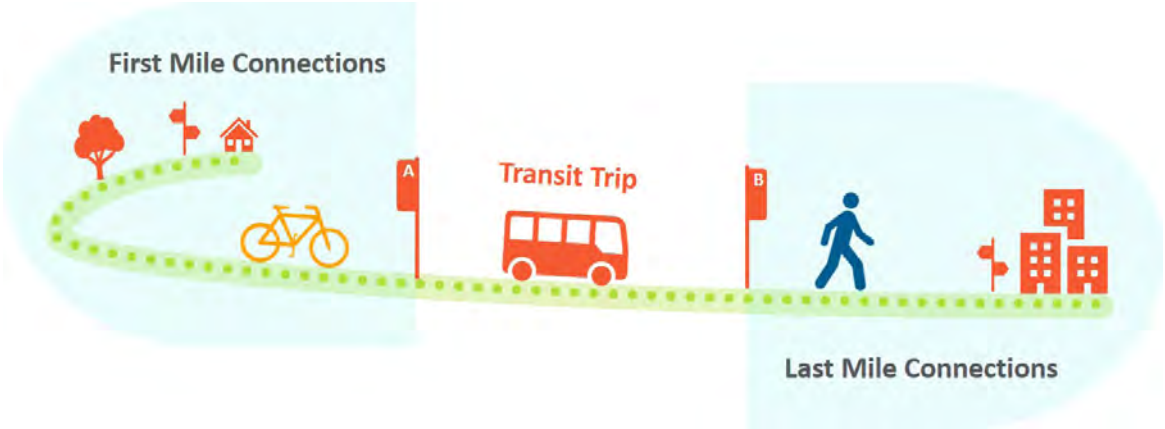
- NC 54 Park and Ride Lot
- Southern Village Park and Ride Lot
- Friday Center Park and Ride
- Jones Ferry Park and Ride
- Eubanks Road Park and Ride
- Chatham County Park and Ride

Transit usage also occurs in high frequency on:

- Martin Luther King Jr. Boulevard
- Ephesus-Fordham District
- University Place
- Highway 54



Source: GoTriangle Developer Resources, Nov. 2016



Regional Connections

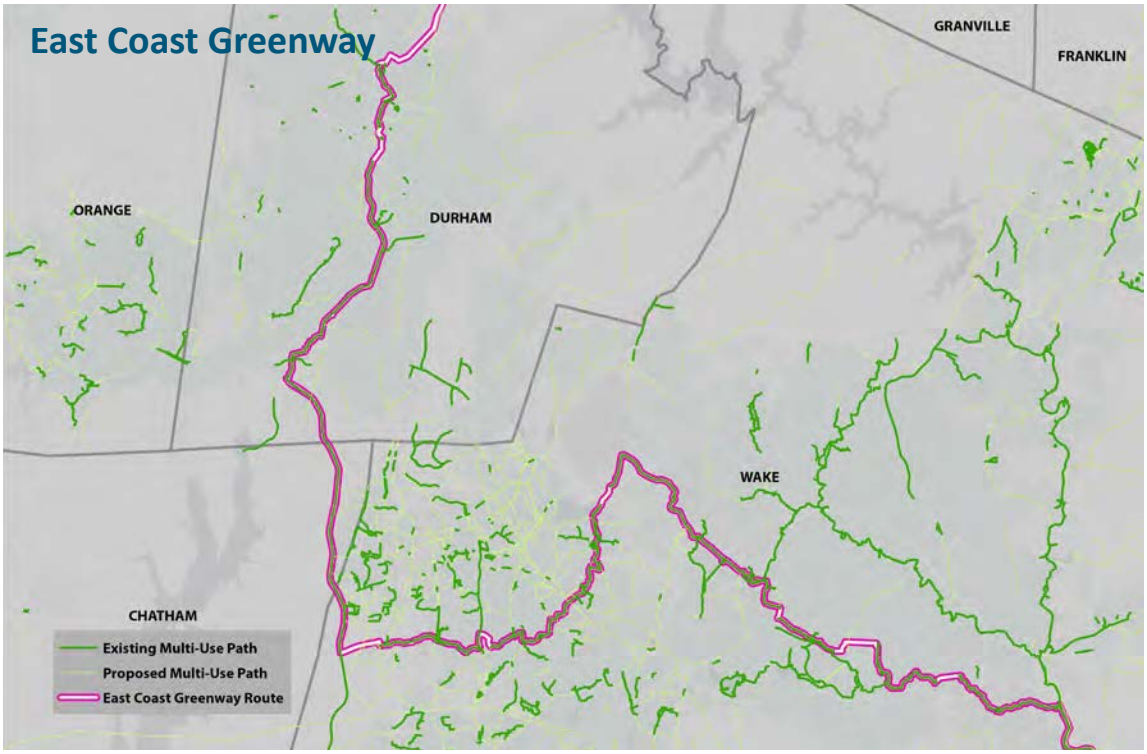
The region is amidst a greenway boom. In 2015, the Raleigh-Durham-Chapel Hill metropolitan area had nearly **300 miles of paved multi-use trails**. In Wake County alone, 250 miles of shared use paths are proposed and the County has more miles of greenway built than any county in the state. In Durham County, 186 miles are proposed. Orange County has not developed a cross-county, regionally significant greenway network but greenways are among the highest interest for future facility needs per the 2030 Orange County Parks and Recreation Master Plan.

Widespread support for greenways in the Triangle region is reflected in voter approval of virtually all bond referenda to fund more greenways.

The two Triangle area metropolitan planning organizations have dedicated increasing amounts of their capital budgets for pedestrian and bike projects, including greenways. In Cary, Knightdale, and Chapel Hill, developers have been required to build greenways as part of new developments. Virtually all communities require the dedication of easements along waterways and lakes to allow for construction of multi-use paths.

Additionally, there is growing public support for the development of on-road cycling facilities, including a leap from traditional facility types. In 2000, there were less than 10 miles of on-road bike lanes in the Triangle, but by 2015, total mileage of bike lanes (centerline) had grown to over 100 miles: Raleigh (39 miles), Durham (36 miles), Chapel Hill-Carrboro (32 miles), and Cary (20 miles). Facilities that go beyond bicycle lanes are being implemented and the “wide outside lane” is being phased out. The first cycle track in the Triangle is being constructed in Raleigh to connect a section of the East Coast Greenway, several municipalities are installing green paint at intersections to increase visibility, and towns including Chapel Hill are starting to implement buffered bike lanes.

Lastly, sidewalks are being built along both busy thoroughfares and rural roads to fill gaps in communities throughout the Triangle. Chapel Hill now has over 130 miles of sidewalk and has achieved a 4% increase in sidewalk mileage since 2005.



Extensive planning and build out has occurred in the Triangle region with existing (dark green) and planned (light green) facilities shown. The East Coast Greenway route is highlighted.

Source: NCDOT Pedestrian and Bicycle Infrastructure Network, March 2016

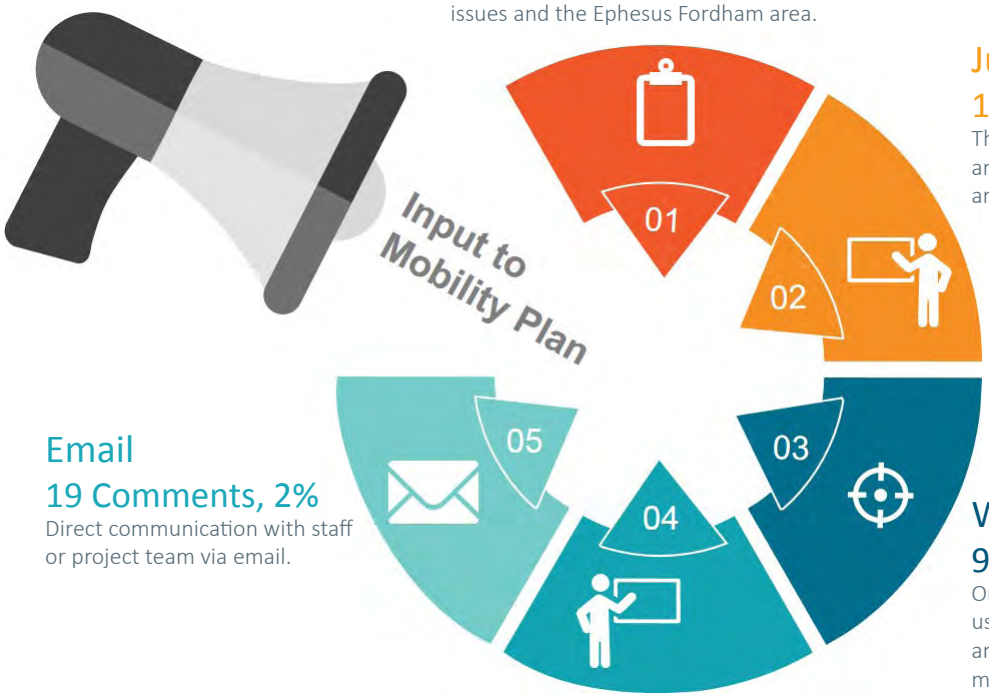
Removing large barriers to active transportation increases commute trips, duration of physical activity, and trail-related spending

Various multi-use trails in Chapel Hill

Public Demand

Through the outreach opportunities discussed in Chapter 2, a wide cross-section of Chapel Hill residents were able to participate in the planning process through a variety of formats. The public input conducted for the plan resulted in **more than 850 comments** regarding mobility as it relates bicycling, walking, and access to transit in the town. In many cases, it was necessary to divide a single comment with multiple ideas/issues into several topics to create the summary and overall themes.

Survey
523 Comments, 61%
In-person and online surveys targeted at gaining more insight into pedestrian needs, accessibility issues and the Ephesus Fordham area.



June 30th Open House
135 Comments, 16%
This public meeting focused on issues and existing conditions in the five focus areas within the Town.

Email
19 Comments, 2%
Direct communication with staff or project team via email.

Wiki-Mapping
98 Comments, 12%
Online web-based mapping tool for users to indicate key intersections and corridors where they experience mobility issues.

September 6th Open House
80 Comments, 9%
This public meeting focused on plan goals, objectives, existing conditions, project types, and prioritization.

With a goal of increasing mobility for bicycling, walking, and transit, the survey asked respondents to identify what improvements would be needed to increase neighborhood walkability, connectivity, and safety. Lack of adequate sidewalks, paths, bike lanes were the most cited responses. Another highly cited improvement was to provide safe crossing facilities.

Location-based comments were further categorized to establish which main corridors and intersections posed the greatest challenges in the Town for walking, bicycling and accessing transit. These locations do not include greenways, which are further discussed in the Greenway and multi-use highlights of the summary. The problem corridors that appeared most often in public input were the high volume/high speed roadways in Town.

The following table highlights the issues and facilities most commented on for intersection, pedestrian, bike, and greenway improvements. Detailed information pertaining to specific issues and projects can be found in **Appendix A**.

Chapel Hill residents have a desire for expanding local greenways into a network and making regional connections.

Respondents' Top 5 most requested locations for improvements...

	...at intersections	...for bike facilities	...for pedestrian facilities	..on greenways
1	Fordham Blvd at Ephesus Church Rd	Martin Luther King Jr Blvd	Lake Forest Neighborhood	Booker Creek Trail
2	Fordham Blvd at Willow Rd	E Franklin St	Homestead Rd	Bolin Creek Trail
3	Fordam Blvd at Raleigh Rd	US 15-501	US 15-501	Grade Separation across US 15-501
4	Fordham Blvd at S Columbia St	Estes Dr Extension	Martin Luther King Jr Blvd	Morgan Creek Trail
5	MLK Jr Blvd at Stateside Dr	Homestead Rd	Numerous minor thoroughfares	Connection for Booker & Bolin Creek Trails

850 Comments

Safety, Especially at Intersections

More than one third of the comments were related to safe crossing of busy streets. The majority of these comments were recommendations for crosswalks and safety improvements related to crossing busy intersections both on bicycle and on foot. Of these, 20 comments gave specifics regarding improvements to intersection signalization including pedestrian timing and bicycle detection.

More than one quarter of comments were related to specific locations for bicycling and walking facilities to improve mobility and access to destinations in the town. Top locations and issue areas were grouped and ranked by street and intersection in the public input summary.

Better Facilities

Increased Connectivity

Residents want to see bicycle and pedestrian facilities link neighborhoods, schools, and commercial centers. Nearly 20% of comments were related to generalized connections in the Town, especially expanding and making connections with a greenway network followed by comments related to making connections between residential neighborhoods.

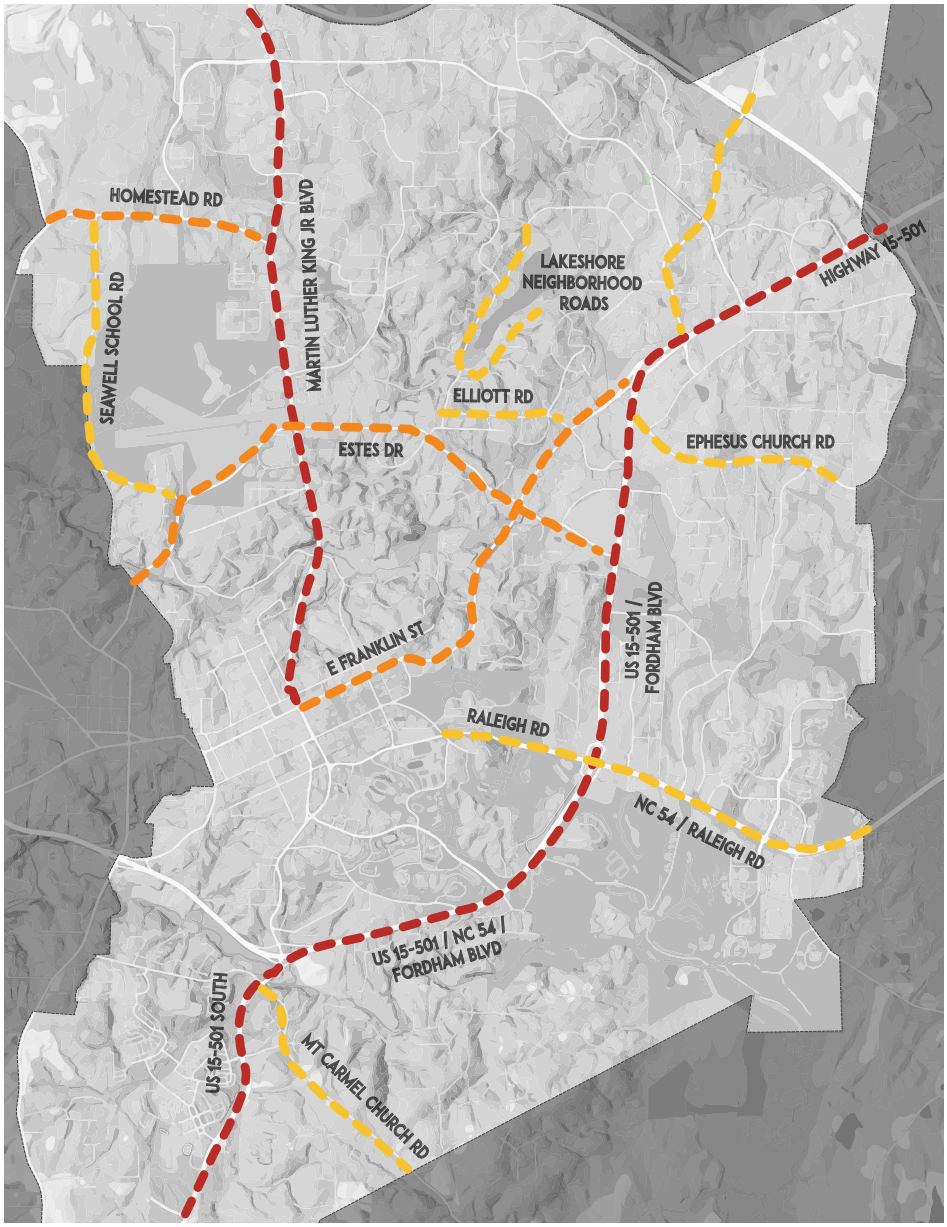
While streets were identified through public input across the entire Town, several corridors were repeatedly identified as being problematic for walking and bicycling.

US 15-501 received more than 150 comments. Martin Luther King Jr Blvd was referenced nearly 100 times. Franklin St received over 50 comments, with the clear majority of these being on the eastern portion of the corridor. Homestead Rd, Estes Dr, Ephesus Church Rd, and Lakeshore Dr were the subject of over 20 comments each.

Residents' comments highlighted frustration and challenges with the corridors listed below.

Corridor Comments By Frequency

More Comments
US 15-501
Martin Luther King Jr. Blvd
Franklin Street
Homestead Road
Estes Drive
Ephesus-Church Road
Lakeshore Neighborhood Roads
Elliot Road
Erwin Road
Raleigh Road
Seawell School Road
Mt Carmel Church Road
Fewer Comments



System Recommendations

During the public involvement process, citizens repeatedly stressed a desire to see better facilities for biking and walking, both in specific locations and Townwide. The Chapel Hill 2020 Plan echoes their desire, calling for "a comprehensive transportation system that provides everyone safe and reasonable access to all that the community offers."

On-Road Facilities - Several street corridors facilitate most of the Town's existing auto travel, but "Complete Street" improvements could provide better accommodations for pedestrians, cyclists, and transit users. The Town adopted a Complete Streets Policy in 2011 to enable users of all ages and abilities to safely move along and across streets. In addition to adopting this policy, the Town has taken efforts to implement the Complete Streets policy in the Engineering Design Manual.

The five major roadways highlighted in the recommendations beginning on page 35 are maintained by NCDOT, therefore comprehensive improvements are most likely to come in the form of major TIP or regional transit projects. With no near-term funding identified for large-scale improvements, the focus for these corridors should be to implement short-term projects that can improve mobility for pedestrians and bicyclists, particularly through sidewalks, shared-use paths and improved crossings. Recommendations include innovative bike treatments and pedestrian enhancements that can be applied through lane reallocations or small, lower-cost projects at key locations. Long-term recommendations represent a multimodal approach to designing an ultimate cross-section for each corridor.

"When you have Complete Streets implemented in Chapel Hill, everyone wants to come to the road."

Kumar Neppalli
Traffic Engineering Manager

Off-Road Facilities - Simply improving these heavily-traveled corridors to accommodate cyclists and pedestrians does not provide the type of low-stress facilities that many residents seek. For a percentage of the population that are "interested but concerned" about riding their bike or walking for daily travel, heavy traffic and its associated speeds and noise are deterrents to getting out of their cars. The Mobility Plan recommends developing a priority network of routes that use neighborhood streets, greenways, and multi-use paths that connect neighborhoods and the Town's focus areas. These six corridors would provide users the option of short linkages to the transit or separated bike facilities on Complete Street corridors, as well as longer but comfortable connections to the Town's commercial centers and ultimately the regional greenway network.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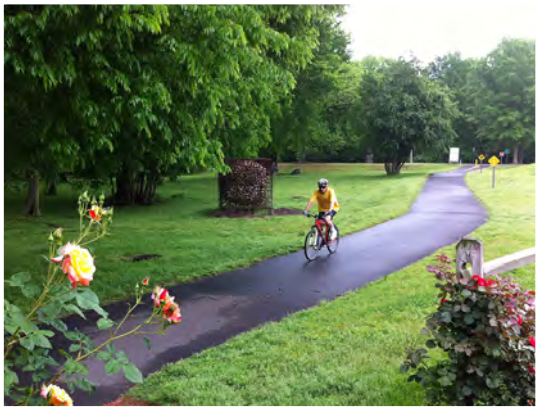



FCX EXPRESS

Facility Types

The Complete Street and Priority Corridors recommendations in this plan include a number of innovative facility types. They are being used across the State and country provide a higher level of protection, separation, and/or visibility for pedestrians and cyclists. The facilities shown below are a range of applications that are appropriate from suburban neighborhood streets to urban thoroughfares.

Buffered Bike Lanes

6-8' standard bike lane buffered from traffic with striping and sometimes bollards

Desirable on roadways with 10,000+ daily vehicle trips

Advisory Bike Lanes

4-6' bike lane dashed on low-volume streets too narrow for dedicated lanes

Signals to drivers that they may drive in bike lane space when a cyclist is not present

Multi-Use Trails

12-14' shared use path with mixed bicycle and pedestrian traffic parallel to a roadway

Very comfortable for most pedestrians & cyclists when volumes are low to moderate

Cycle Tracks

One- or two-way bike-only facility separated from traffic by physical barrier and pedestrians by curb or buffer

Appropriate for heavily-traveled bike routes; special accommodations should be made at intersections

Uphill Climbing Lane

4-6' standard bike lane marked on uphill portion of road with shared lane marking on downhill side

Cyclists have separate space to ride while moving relatively slow compared to motorists; no downhill separation

Two-Stage Turn Queue & Bicycle Boxes

Designated area positioning cyclists ahead of vehicles in traffic lane at signalized intersection during the red signal phase

Increases visibility and reduces signal delay for cyclists

Bike Signal Faces

Bike-specific signal providing priority to cyclists where vehicle or pedestrian movements conflict

Can provide cyclists head start and can simplify bicycle movements through complex intersections

Rapid Rectangular Flashing Beacons

Pedestrian-actuated, flashing signals supplementing signage at unsignalized intersections or mid-block crosswalks

Can increase driver yielding behavior at crosswalks significantly

Intersection Crossing Markings

Pavement markings indicating intended path of cyclists; typically include dashed edge lines with green pavement or sharrows

Provide clear boundary between paths of cyclists and vehicles in adjacent lane and conflict areas

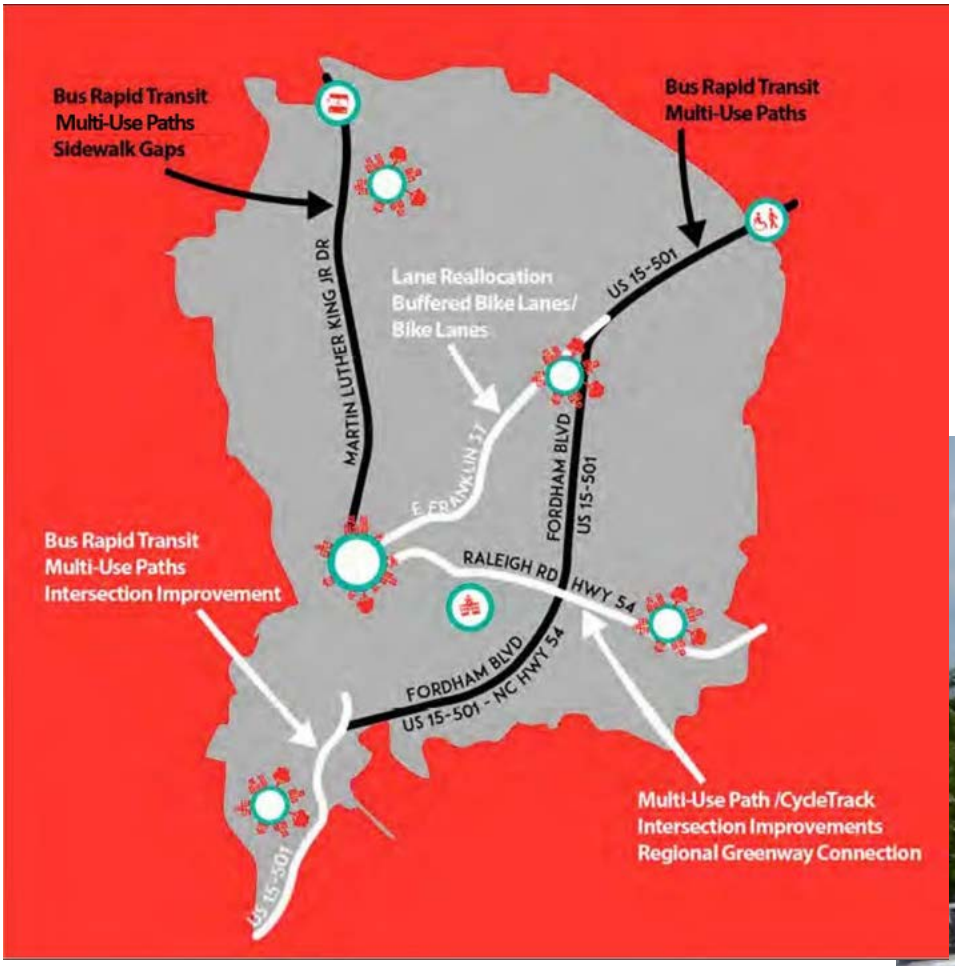
Hybrid/HAWK Signals

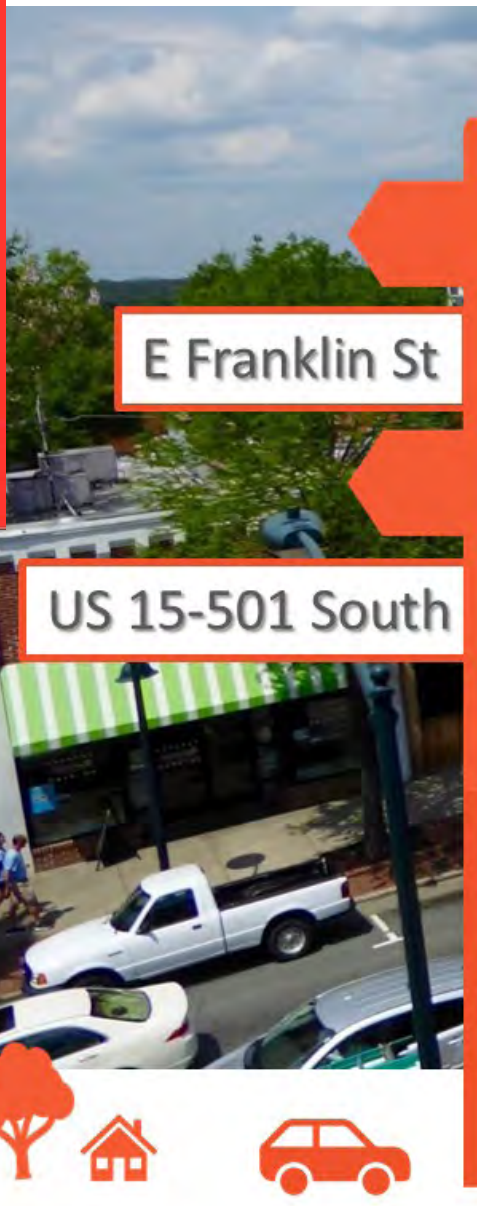
Special signals used for crosswalks/bike crossings on major streets where side streets do not warrant full signal

Improves crossing safety by creating gaps for pedestrians/ cyclists to cross busy streets

What is a Greenway Connector?

A greenway connector is a combination of signing, marking, traffic calming measures, and facilities that allow bicyclists and pedestrians to get safely from point A to point B in a priority corridor.





mobility

the ability to move freely and easily from one place to another

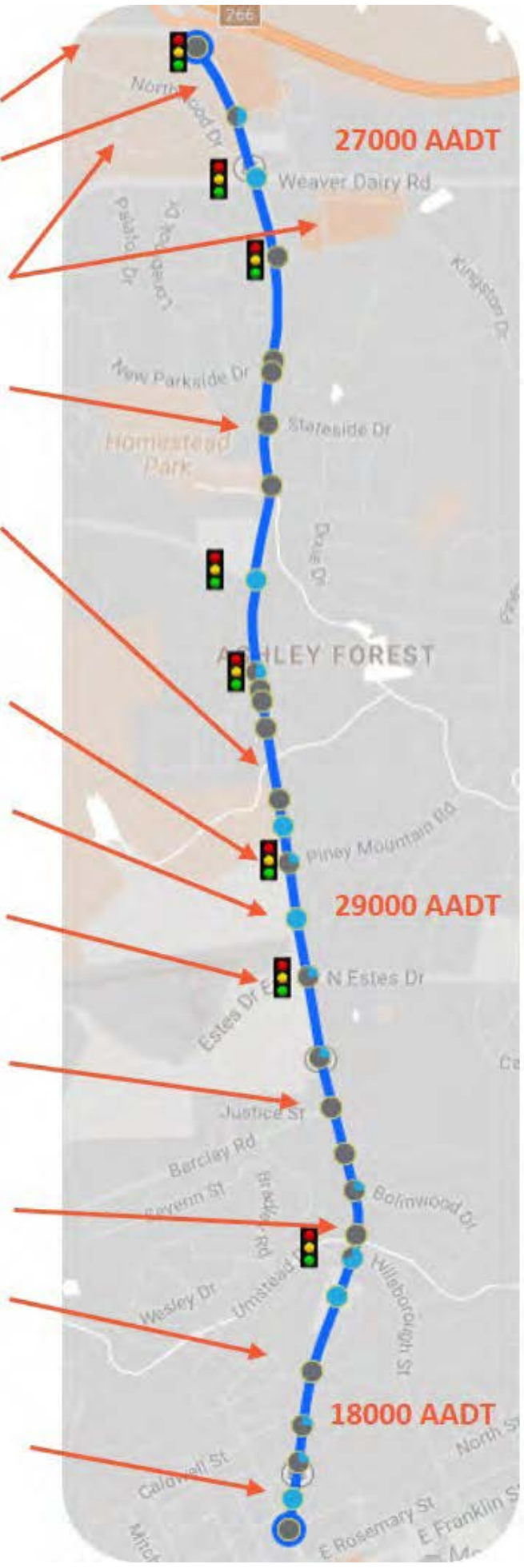
Developing Corridor Mobility

Chapel Hill's five main street corridors—Martin Luther King Jr. Boulevard, E Franklin Street, US 15-501/Fordham Blvd, US 15/501 South, and NC 54/Raleigh Road—all have four lanes or more of traffic. They primarily serve vehicles traveling in and through Town, with some transit accommodation. But they commonly lack continuous pedestrian and bike facilities. Each corridor has gaps in the existing network and filling those gaps should increase ped/bike mobility.

Developing Corridor Mobility
Martin Luther King Jr. Boulevard

As many as 25% of the bicyclists are riding on the sidewalk in order to avoid traffic.

Source: Bicycle Counter, Martin Luther King Jr Blvd at Town Hall (2015)



Crossing Opportunities

- No Crossings
- No Crossing of Minor Road
- Two Crossing Legs
- Three Crossing Legs
- All Crossing Legs (or Midblock)

Complete Street Corridors

Martin Luther King Jr Boulevard

Existing Conditions: Martin Luther King Jr Blvd is the most heavily traveled corridor for Chapel Hill Transit, with up to 13 buses per hour for 7 routes (5 regular service, 1 peak-hour, and 1 GoTriangle regional route). Yet, some pedestrian connections to bus stops are hindered by sidewalk gaps and only key bus stops have shelters and mid-block pedestrian crossings with median refuges. Sidewalks along the road are currently 5-feet wide with little or no buffer to fast-moving traffic and many signalized intersections lack crosswalks. In some cases, long distances between marked crossings mean residents cross the five-lane roadway and using the center two-way left-turn lane as a refuge between lanes of traffic.

There are no separated cycling facilities south of Homestead Drive and, with average daily vehicle volumes between 18,000 and 31,000, cyclists may not feel comfortable riding in traffic with sharrows. Counts in 2014-2015 near Town Hall showed that as many as 25% of the bicyclists are riding on the sidewalk in order to avoid traffic. This creates bike and pedestrian conflicts and highlights the need for safe and separated bicycle facilities.

short-term recommendations

Pedestrian facilities should be the short-term focus for improvements since providing separated bike faciilities will require major, long-term projects like road widening. Sidewalk work will create safe and convenient pathways to local destinations and to transit stops.

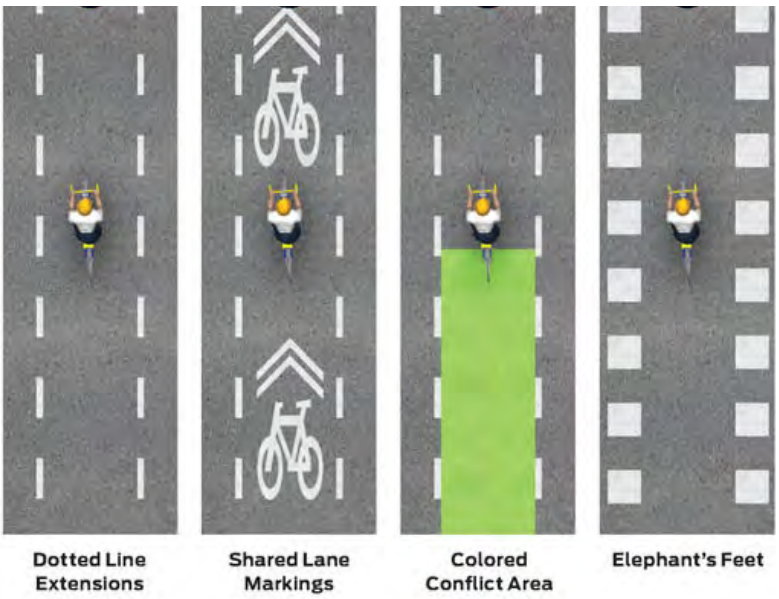
1 Fill **sidewalk gaps** and increase sidewalk width and buffers, most importantly from south of Ashley Forest Road to Northfield Road. Development and Town projects can aim to systematically reconstruct older sidewalk to the Town's required 6-foot width with 8-foot buffer.

3 Construct **Northwood/Perkins sidewalk connector** to replace a worn path along the Duke power easement used by locals that frequent the Chapel Hill North shopping center and adjacent bus stop.

2 Add pedestrian crossings to key intersections:

- **Barclay Road** to provide connections to Chapel Hill Transit
- **New Stateside Drive** to link Homestead Park to existing sidewalks and transit
- **Piney Mountain Road** to link to Carolina North Forest
- **Westminster Drive on the South side of the roadway**

4 Improve bike lanes and markings at major intersections to provide delineation for cyclists and motorists, encourage safe positioning, and increase visibility and awareness of cyclists in the intersection. North of Homestead Road, there are no accommodations at major intersections and bike lanes sometimes end before intersections to make room for turn lanes or medians. Pavement widths are usually adequate to provide bike lanes through the intersections marked by skips, bike lane symbols, and/or green paint. The markings could be combined with bike boxes for the side streets to create two-stage left turn options, aiding with difficult left turns identified in public comments.



Examples of various bike intersection markings
Source: NACTO Intersection Crossing Markings Design Guidance

5 Improve bicycle signal actuation at major intersections by installing detectors or fine-tuning loop sensitivity, in particular for the bike lane approaches at the Weaver Dairy Road intersection.

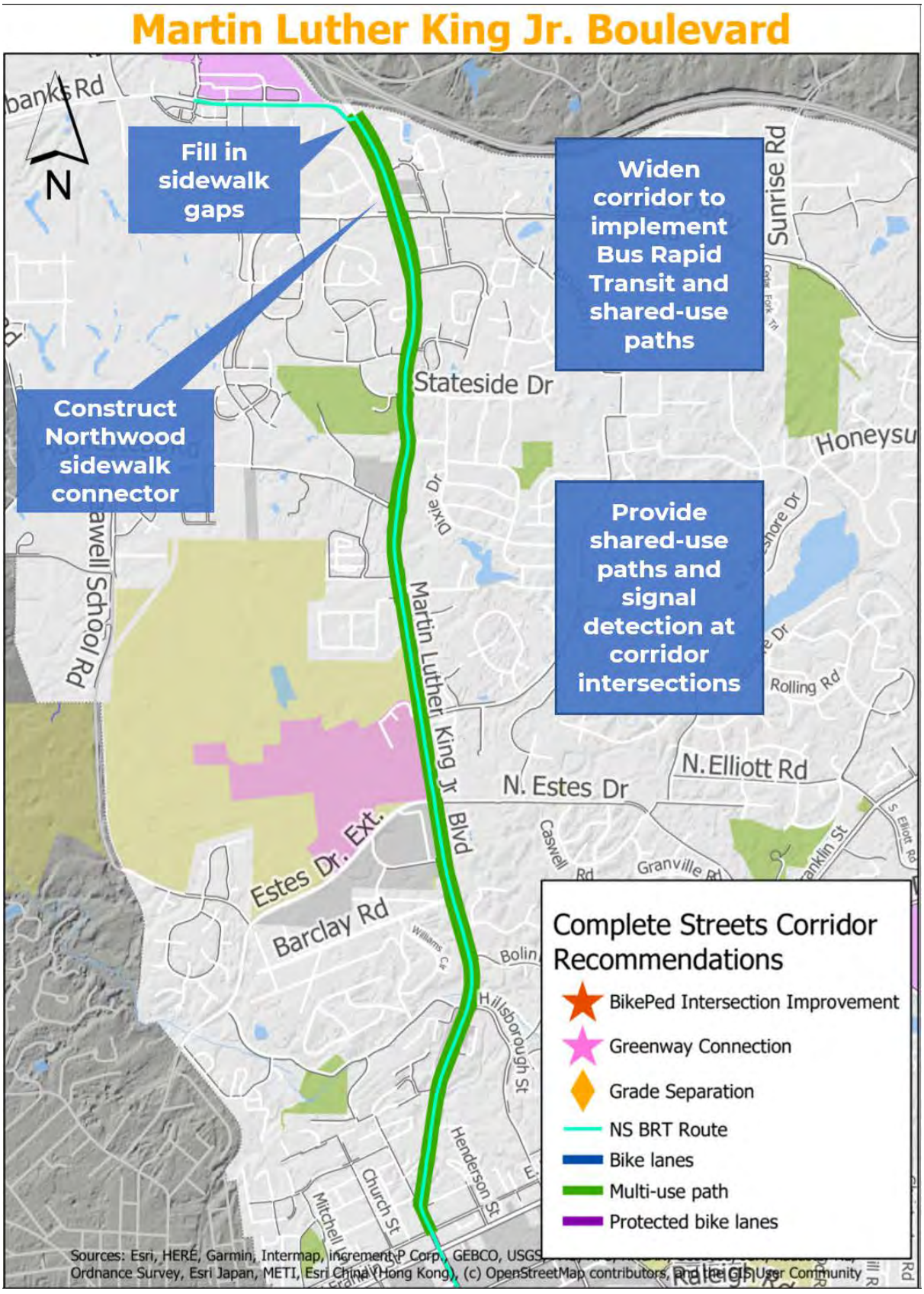
6 Improve connections with Bolin Creek and Carolina North Trails by providing paved paths linking to sidewalks on both sides of the street and curb cuts for cyclists to exit from existing travel and future bike lanes.

long-term recommendations

While the Martin Luther King Jr Blvd corridor is presently a multimodal corridor, long-term recommendations aim to improve all modes. This corridor is part of a future Bus Rapid Transit (BRT route that will go between the Eubanks Park-and-Ride and the Southern Village Park-and-Ride). With BRT implementation, an opportunity exists to transform the corridor into a true Complete Street in the future.

The recommended cross-section includes multi-use paths to increase riders' comfort and upgraded sidewalks to fill in corridor gaps and connect to destinations. The image below shows a 122-foot cross section for the corridor with bus rapid transit, widening to a maximum of 154 feet at key intersections where stops and turn lanes are needed.

Bus Rapid Transit typical concept for Martin Luther King Blvd



Complete Street Corridor Recommendation for Martin Luther King Blvd

East Franklin Street

Existing Conditions: Franklin Street connects Downtown Chapel Hill to the Ephesus-Fordham District and US 15-501 as a four-lane undivided or divided street. It intersects the Bolin Creek and Booker Creek Trails. Improved connections along this corridor would link Downtown and UNC, commercial and retail centers, and the access points to the greenway system. Existing sidewalks along E Franklin St are of minimum width (4 to 5 feet) and have little or no buffer to traffic. There are two regular and two peak hour transit routes serving the corridor.

what we heard

Difficult pedestrian crossing at Elliot Road due to high volumes and right-turn-on-red violators.

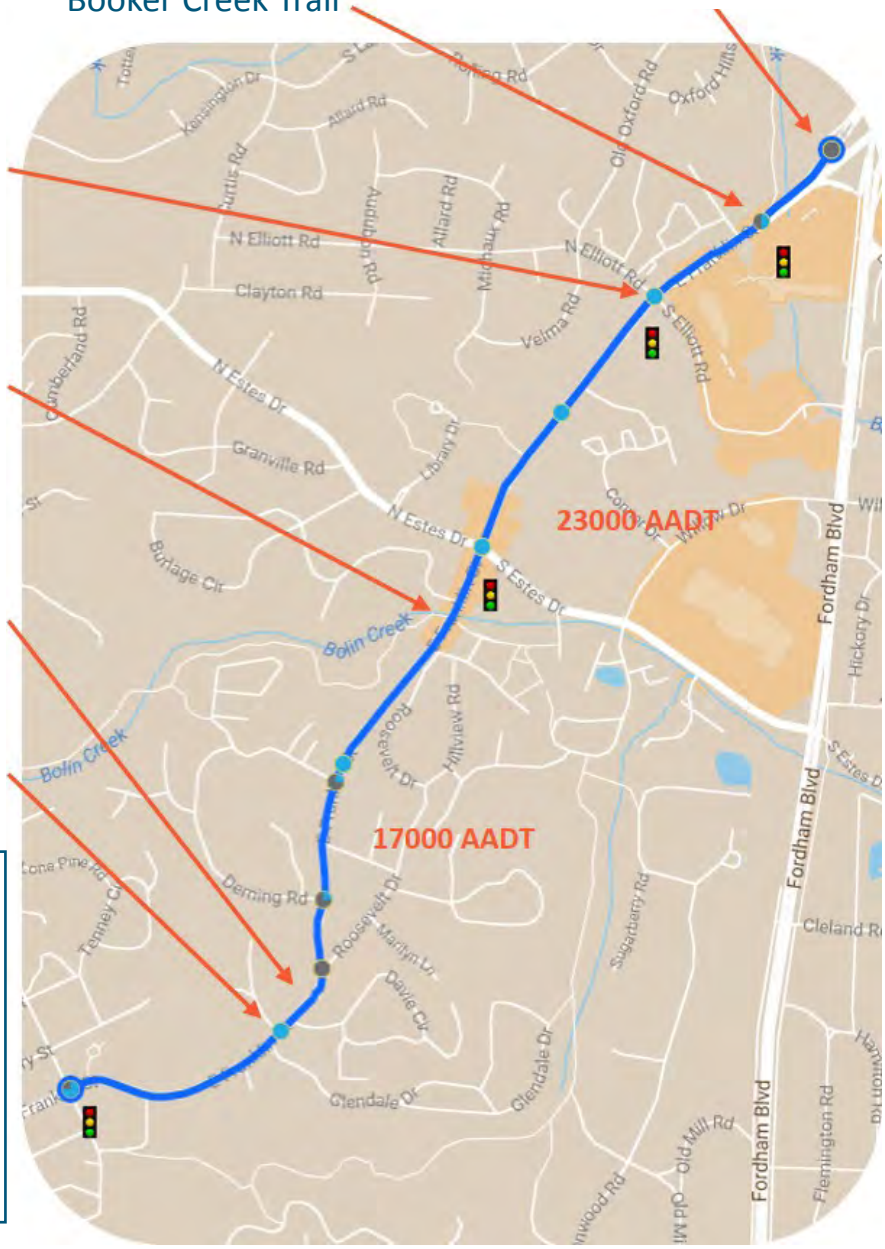
Bolin Creek Trail Connection to Franklin Street via stairs and side roads

Bicyclists often ride on the sidewalk

Four-lane mid-block crossing with no pedestrian refuge

Booker Creek Trail

Desired bicycle and pedestrian connection with Dobbins Drive



Crossing Opportunities

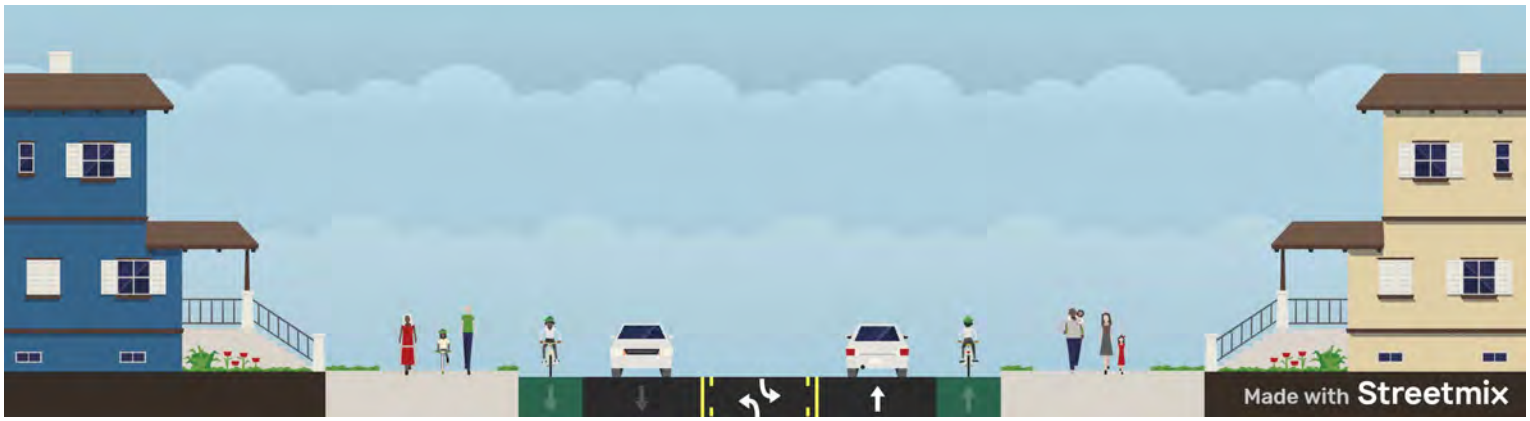
- No Crossings
- No Crossing of Minor Road
- Two Crossing Legs
- Three Crossing Legs
- All Crossing Legs (or Midblock)

short-term recommendations

A large number of residents requested separated bike facilities along this route.

1 Current traffic volumes west of Estes Drive have been level at 17,000 vehicles per day for roughly the past five years. While this is near the upper limit of capacity for a three-lane roadway, it presents the opportunity to reallocate space from one of the four travel lanes and convert the cross-section to three lanes with buffered bike lanes and multi-use paths along the steep, mostly residential section from Downtown to the Bolin Creek Greenway. A center-turn lane allows space for pedestrian refuge islands to be added at mid-block cross-ings near transit stops. Streetscape and sidewalk enhancements can be implemented with redevelopment or as Town-initiated projects.

E Franklin St from Boundary St to Deming Rd
3-lane Conversion with Bike Lanes and Multi-use Paths

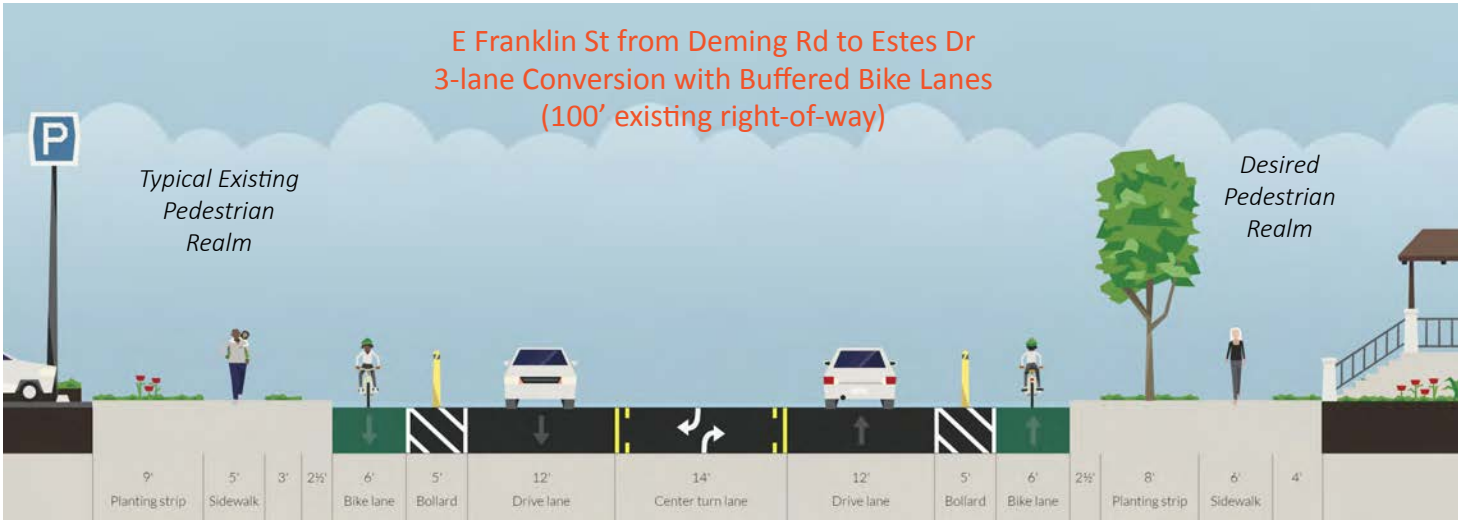


East Franklin Street lane reallocation east of Boundary Street to Deming Road

Traffic volumes east of Estes Drive are too high to eliminate travel lanes for bike facilities. Immediate improvements can be made by implementing the 5-lane concept, which would reduce travel lanes to 10 feet and add 5-foot bike lanes.

2 The roadway widens to five lanes and the right-of-way to 100 feet east Deming Road. Intermediate improvements for this segment include both 3- and 5-lane options, listed below:

- Converting to a 3-lane segment by reallocating the outside lanes to buffered bike lanes and widening center turn lanes to 14 feet (recommended).
- Maintaining the 5-lane segment and adding 5-foot bike lanes by reducing the travel lane widths to 10-feet, as called for in the Chapel Hill Bike Plan.

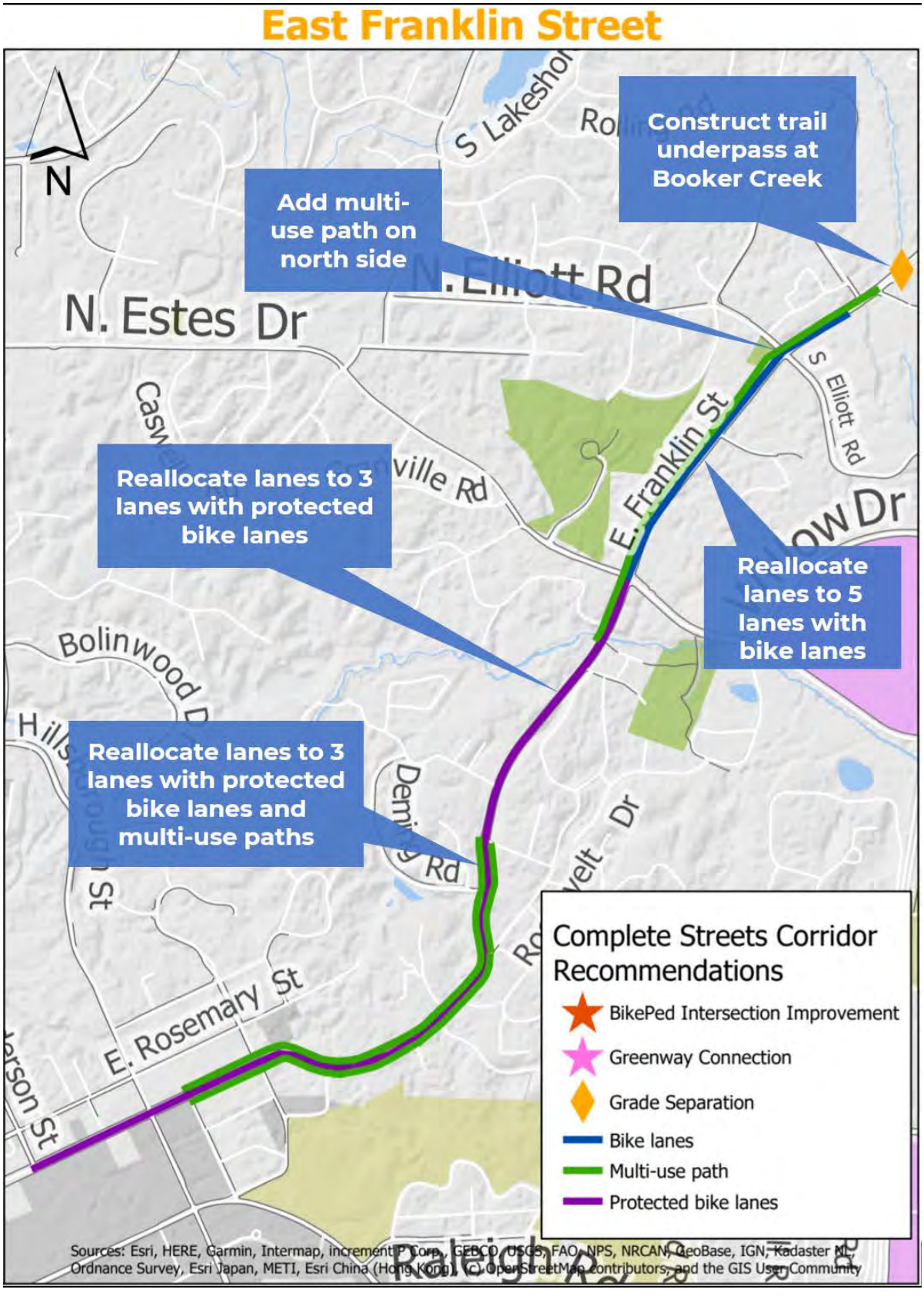


East Franklin Street lane reallocation east of Deming Road to Estes Drive

long-term recommendations

Since E Franklin St varies significantly along its length, the proposed cross-sections will need to be context sensitive in order to minimize impacts to abutting properties. The short-term recommendations establish the recommended bike facilities within the existing curblines, so the main additions in the long-term are to provide proposed shared multi-use trails on north side of the street to link the Bolin and Booker Creek Trails and on both sides of the street from Boundary Street to Deming Road. As transit service increases on the corridor, special consideration should be made to relocate the bike lanes behind bus stops to eliminate bus/bike conflicts.

Ultimate cross section east of Estes Drive



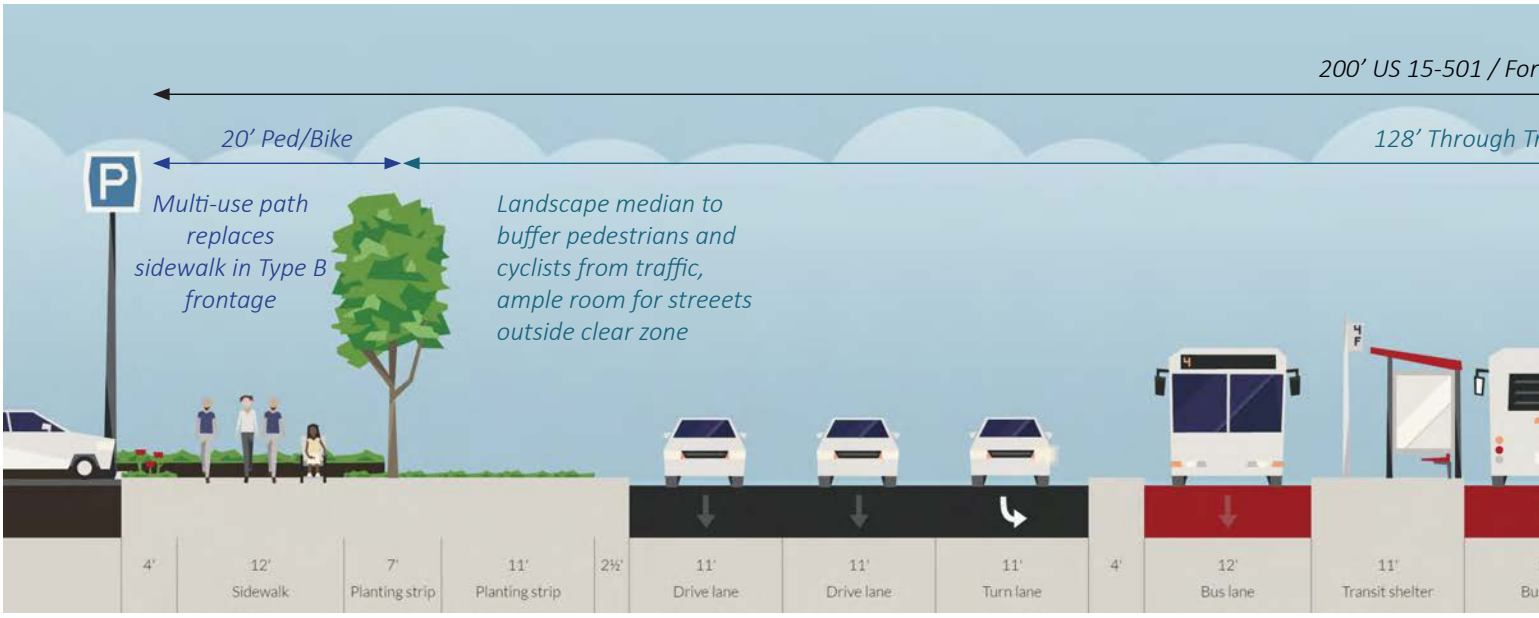
Complete Street Corridor recommendations for E Franklin Street

US 15-501 Fordham Boulevard

Existing Conditions: Comments from the public input show that US 15-501 is perceived as being difficult to navigate as a bicyclist or pedestrian. Any connection between Ram's Plaza and Eastgate Shopping Center requires crossing US 15-501 and heavy traffic, whether on foot or in a car. Sidewalk gaps make it difficult for pedestrians to access bus stops at Ram's Plaza, with residents noting gaps on the south side of Elliott Road, on Europa Dr, along US 15-501, and on Ephesus Church Road.

short-term recommendations

NCDOT and the Town continue to plan and construct intersection improvements to help resolve congestion on the corridor. NCDOT is conducting a feasibility study looking at future widening and improvements, with funding for construction slated to begin around 2025. That study will hopefully indicate that the future of Fordham Boulevard must include all modes to meet the vision of a revitalized District supportive of transit, bicycling, and walking. To create an effective bike and pedestrian network through the Ephesus-Fordham District, there has to be a shared focus on internal and external connections between neighborhoods and the area shopping centers, schools and libraries.

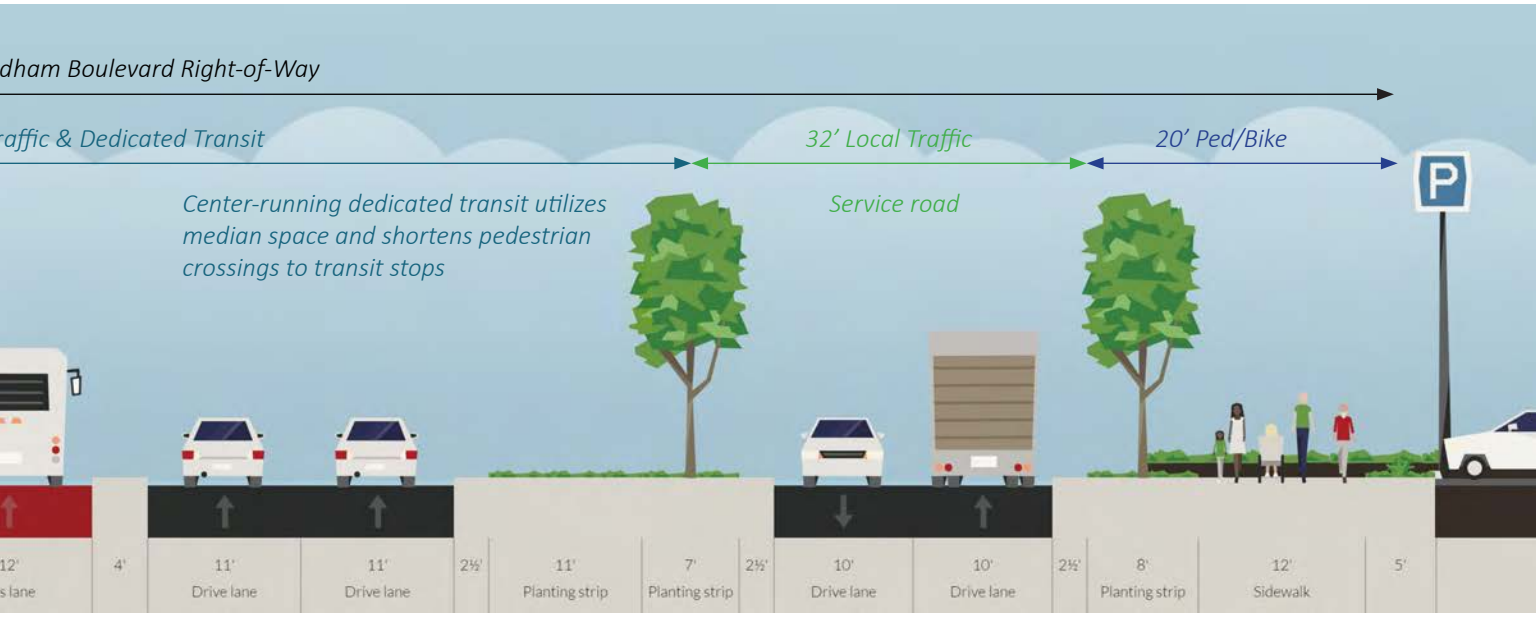


Recommended Fordham Boulevard Complete Street Cross Section

1 US 15-501 connects with major bike facilities along Sage (existing) and Old Durham Roads (proposed) to the north and the Lower Booker Creek and Bolin Creek Trail to the south. To facilitate the low-stress connections that were emphasized in public input, the corridor is recommended to include multi-use pathways along both sides of the roadway. The multi-use paths would replace the six-foot sidewalks required on certain frontages within the District and accompany any redevelopment in the area. The paths would connect to the Booker Creek Trail near Franklin Street and Bolin Creek Trail near Elliot Road. Future bike accommodations to connect to these paths should include buffered bike lanes for Elliott Road as well as bike lanes for Ephesus Church Road, Legion Road, and Erwin Road.

2 Intersection enhancements at US 15-501 with Willow Drive and Elliott Rd in the short term can include signal actuation for bicyclists, repositioned stop bars, pedestrian refuge islands, and crossings to all four corners with ADA-compliant curb ramps.

3 A HAWK signal to allow pedestrians and bicyclists to safely cross US 15-501 at Oteys Rd providing accessibility for neighborhoods to the south, the Morgan Creek Trail, and Fan Branch Trail.



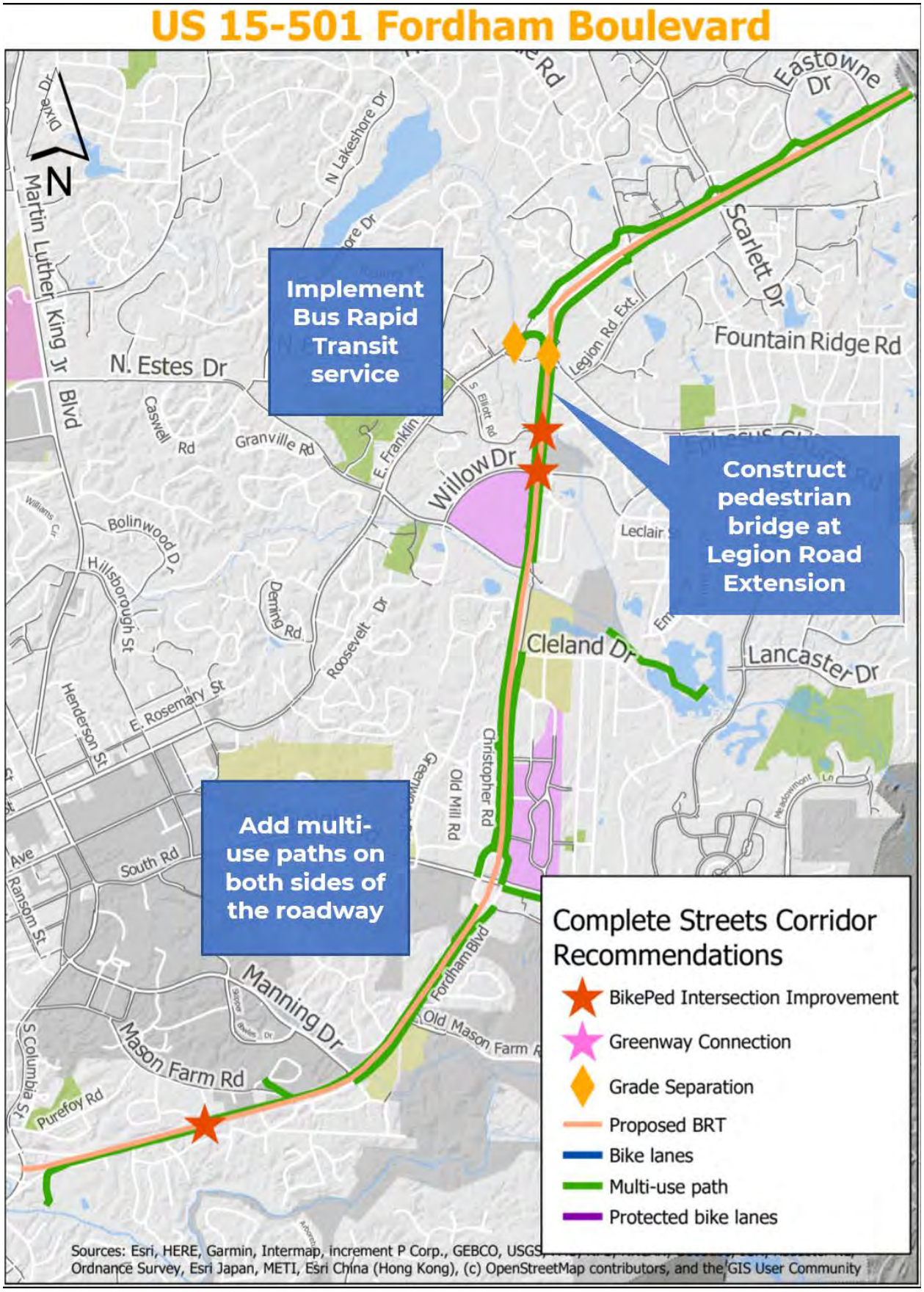
long-term recommendations

While US 15-501 is currently not planned for dedicated transit infrastructure such as light rail or bus rapid transit (BRT) in the Orange County Transit Plan, the ultimate cross-section shown in Figure 40 has been developed with a Complete Streets concept to preserve the option for dedicated transit lanes in the center median. Center-running BRT has several advantages over curb-running alternatives including eliminating conflicts with right-turning vehicles and bicycles, allowing exclusive signal phasing for transit. It also reduces the length of pedestrian crossings and provides a refuge. Because transit stops can serve both directions between the bus lanes, a center-running option also reduces the right-of-way width needed for operations.

The public input showed that there was considerable need for safe, low-stress pedestrian crossings of US 15-501.

Options for crossings developed in 2015 include bridge alternatives for US 15-501 and E Franklin Street. In evaluating the options, a bridge crossing at the future Legion Road extension offers the best potential to incorporate a multi-use path as part of future redevelopment. While a pedestrian overpass at that location will not provide the most direct connection to the Lower Booker Creek Trail, the facility could extend over the open space behind Village Plaza along Booker Creek recommended for stormwater control. The bridge cost is estimated at $3.0 million (2017 $), not including ramps accessing transit in the median. Approximately $1.9 million of that cost is associated with the section that would span the Booker Creek open space.

For information on the Ephesus-Fordham District Plan, see **Appendix D**



Complete Street Corridor recommendations for US 15-501 Fordham Boulevard

US Highway 15-501 South

Existing Conditions: US 15-501 south of Chapel Hill continues to see tremendous growth, with large developments such as Obey Creek. The roadway itself is four-lane divided and provides sidewalks and bike lanes for most of its length south of the NC 54 interchange. There are bicyclist and pedestrian concerns about crossing US 15-501 at Mt. Carmel and Culbreth Roads, navigating the US 15-501/NC 86 interchange, and accessing the greenway system along Morgan Creek and Merritt's Pasture.

what we heard

Transit stop not accessible by residents on Mt Carmel Church east of US 15-501.

No pedestrian crossing of US 15-501. Pedestrian signal needed.

Bicyclists making turns are not detected, requests for bicycle facility striping and signal improvements on approaches to US 15-501.

Intersection improvements needed for pedestrians to cross US 15-501. Transit stops not accessible.

Southern Village Park and Ride and Proposed Bus Rapid Transit Station

Morgan Creek Trail

Sidewalk Gap, No safe access to Morgan Creek Trail

Bicycle facility and traffic calming requests from public

Sidewalk gaps

Obey Creek Development Area

Southern Community Park and Playground

Crossing Opportunities

- No Crossings
- No Crossing of Minor Road
- Two Crossing Legs
- Three Crossing Legs
- All Crossing Legs (or Midblock)

short-term recommendations

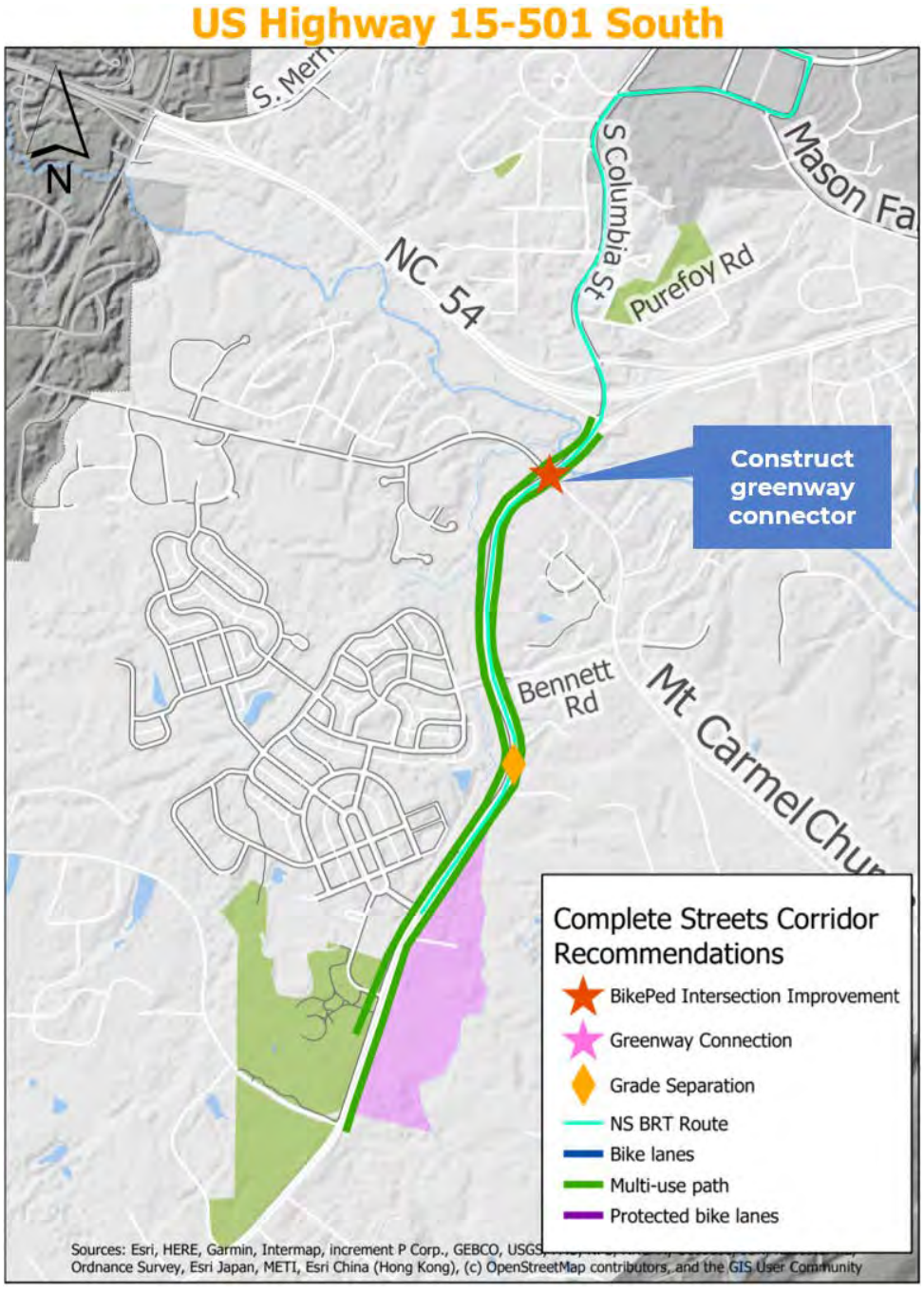
Many of the concerns and issues identified are being addressed by the Obey Creek development a ped-bike bridge across US 15-501 connecting Obey Creek and Southern Village, and a multi-use path parallel to US 15-501 along the property frontage. Beyond the Obey Creek improvements and the presence of multi-use paths and greenway connectors in Southern Village, the short-term focus for the corridor includes:

1. Improve bike lanes and markings at the Mt. Carmel Church/Culbreth intersection: Providing marked bike lanes with skips and bike lane symbols or green paint will provide delineation of space for cyclists and motorists, encourage safe positioning, and increase visibility and awareness of cyclists in the intersection. The markings could be combined with bike boxes for the side streets to create two-stage left turn options.

2. Construct a greenway connector from Mt. Carmel Church Road to Fan Branch Trail: The Fan Branch Trail provides a great link from Southern Village to the Morgan Creek Trail south of US 15-501, but no such connection exists for residents east of US 15-501. The developer of the parcel in the northeast quadrant of the Mt. Carmel intersection has offered to provide greenway easements as part of the development approval process, so the key hurdle will be designing an ADA-compliant grade across steep topography to link under the US 15/501 bridge to Fan Branch Trail.

long-term recommendations

With the provision of a multi-use path along the frontage of Obey Creek and a bike/ped network in Southern Village, the Town may consider eliminating the recommendation for buffered bike lanes along US 15/501 south of Fordham Boulevard. The existing cross-section of US 15-501 therefore is the ultimate cross-section and no widening is needed.

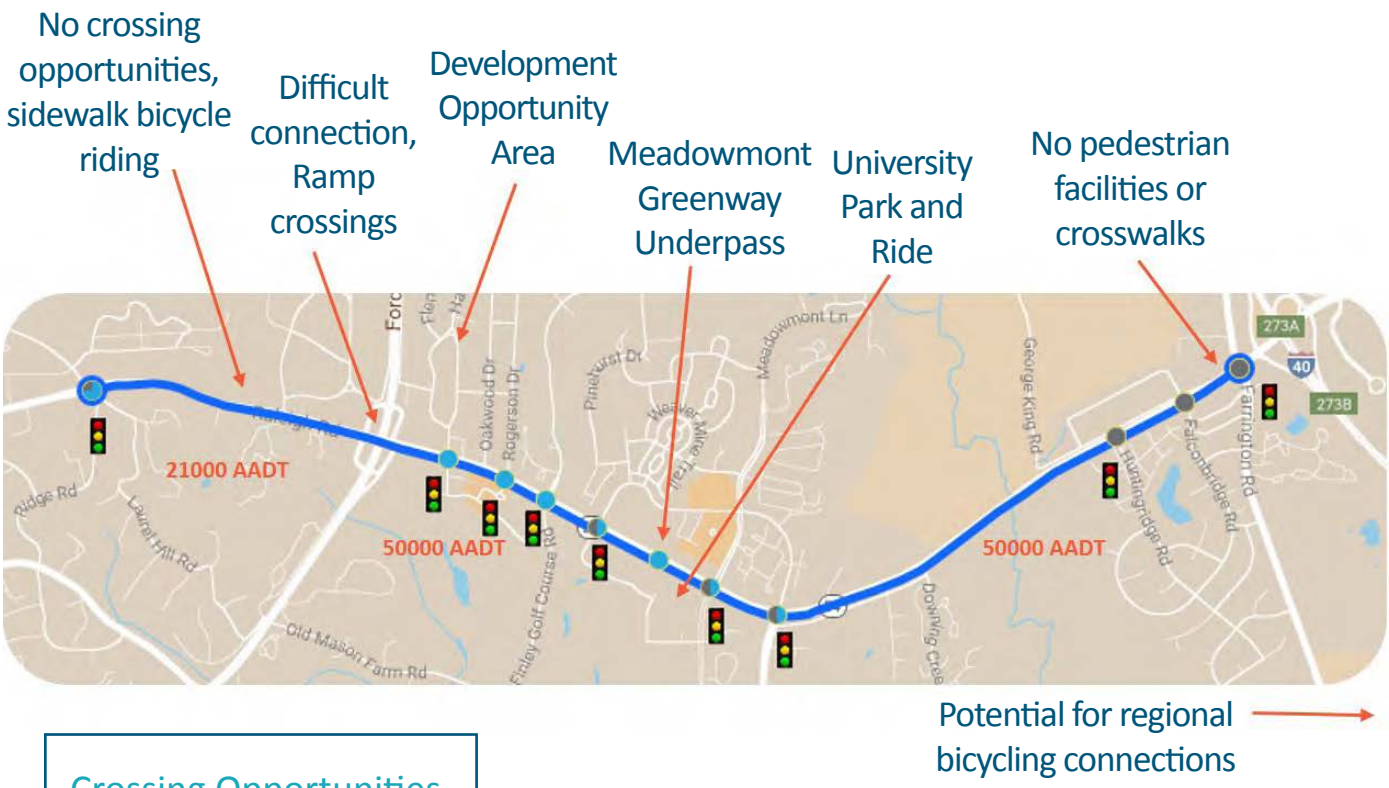


Complete Street Corridor recommendations for US 15-501 South

NC 54 Raleigh Road

Existing Conditions: NC 54 Raleigh Road shuttles travelers in and out of town as a four-lane divided highway, with the segment near Meadowmont Village expanding out to six-lane divided. While there are multi-use paths on both sides of the street between Barbee Chapel Road and Hamilton Road/ Burning Tree Drive, no additional facilities are present beyond standard sidewalks. Traffic volumes are considerably higher east of the US 15-501 interchange (50,000 vehicles per day to the east vs. 21,000 to the west) and the interchange with its ramps represents a significant barrier to cycling and walking. Raleigh Road follows a significant grade from Greenwood Road west to Ridge Road at the edge of campus.

what we heard



Crossing Opportunities

- No Crossings
- No Crossing of Minor Road
- Two Crossing Legs
- Three Crossing Legs
- All Crossing Legs (or Midblock)

short-term recommendations

Multi-use paths are in place east of the US 15-501 but they do not connect through the interchange. The key short-term recommendations focus on intersection crossings at the interchange of US 15-501, near Meadowmont and the continuation of bike facilities west of the interchange to UNC Campus:

1. Installing signalized pedestrian crossings at:
   - the US 15-501 ramps at Highway 54.
   - the intersection with Meadowmont Lane/ Friday Center Drive, and
   - both intersections with Barbee Chapel Roads

2. Developing an uphill climbing lane from Fordham Boulevard to Ridge Road.

Residents feel safe using this signalized pedestrian crossing

long-term recommendations

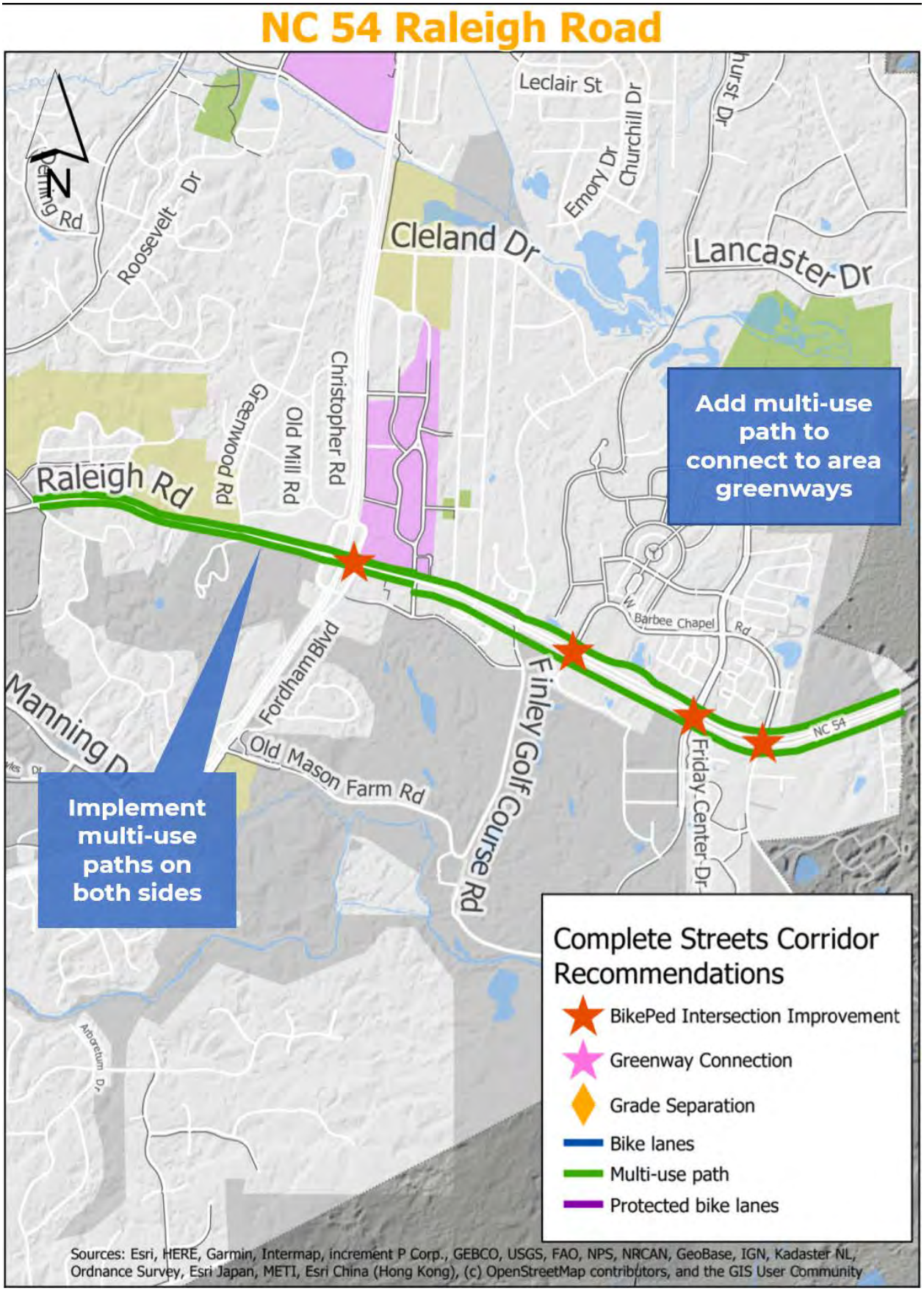
With existing development and topography, it is unlikely a cost-effective bike facility will be built on the north side of the street west of Hamilton Road without major right-of-way impacts. Such an improvement may be best left to implementation with redevelopment of the adjacent commercial sites. Therefore, feasible options for adding a pedestrian and bike link across US 15-501 could be (1) a coordinated multi-use path improvement to connect with a potential signalized mid-block crossing of US 15-501 (to be constructed as part of the Glen Lennox development) or (2) the addition of facilities through the interchange if it is replaced as part of a NCDOT project.

Battle Branch Trail could offer traffic-weary pedestrians and cyclists a parallel option to Raleigh Road. But with a reluctance by residents to improve the single track natural surface trail, two options are possible on the Raleigh Road corridor itself:

1. Construct a multi-use trail on both sides of Raleigh Road from Hamilton Road to Country Club Road: A single shared used path may not be sufficient due to the speed differentials between cyclists traveling downhill (eastbound) and with cyclists climbing uphill (westbound) sharing the space with pedestrians and transit users.

2. Reallocate lane space to provide a separated cycle track on the north side of Raleigh Road: The segment of Raleigh Road west of Greenwood is wider than 50 feet curb-to-curb. This provides the opportunity to add either full bike lanes (if width is 50 feet) or a protected cycle track (if width is 52 feet or greater). Either of these facilities will provide space for cyclists within the existing roadway by reducing the travel lanes to 10 feet to encourage slower vehicle speeds. If a separated facility is selected, the bikeway will buffer pedestrians from vehicular traffic as well and foot traffic will likely increase with more comfortable space for pedestrians and transit users.

The Town should coordinate with the City of Durham and the Durham-Chapel Hill-Carrboro MPO to plan the extension of multi-use paths east as part of the Triangle Bikeway study. There is a 3-mile gap separating the multi-use paths on Highway 54 from a regional network. Filling the gap would provide access for Chapel Hill residents to the American Tobacco Trail and the East Coast Greenway.



Complete Street Corridor recommendations for NC-54 Raleigh Road

Priority Bicycle/Pedestrian Corridors

While the five roads described in the previous section serve as the Town's major vehicular corridors, no similar system exists for non-motorized transportation in Town. Understanding the public's desire to have low-stress transportation options, six priority bike/ped corridors have been developed to connect the key focus areas of the town—Downtown, MLK/I-40, South MLK, Highway 54, North US 15-501, and South US 15-501. By connecting these destinations, residents of the Town will be able to use local street and trail connections to travel throughout Chapel Hill and ultimately access the greater Triangle greenway and bike network.

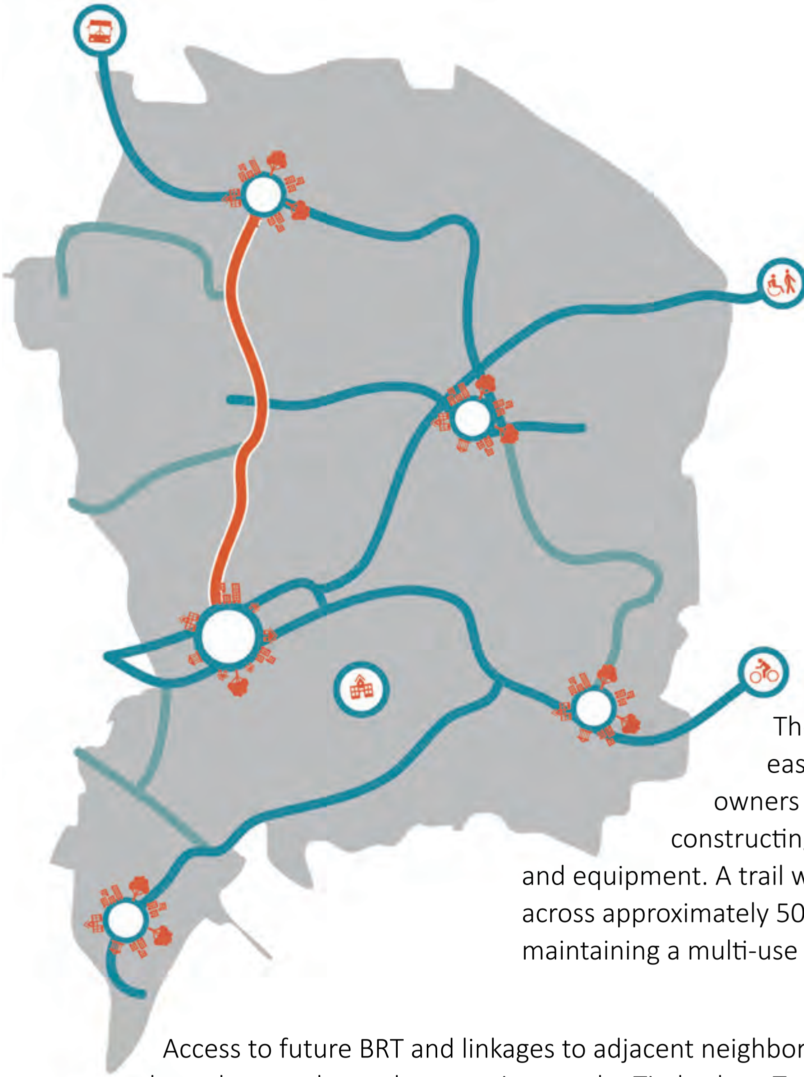
As priority corridors, projects along these six routes would be given favored status for funding.

Priority Non-Motorized Corridors recommended to complement Major Complete Street Corridors

connectivity

the quality of having the parts or elements logically linked together

Timberlyne Trail



This priority corridor connects the northwestern redevelopment zone along I-40 to downtown Chapel Hill. In the northern portion, it utilizes a low-stress trail option for bicyclists and pedestrians via an existing utility corridor and parallels the proposed Bus Rapid Transit along Martin Luther King Jr. Blvd where there are higher traffic volumes and speeds.

The majority of the trail is proposed in a utility easement, which is land granted by property owners to the utility company for the purpose of constructing, operating, and maintaining powerlines and equipment. A trail would require an additional access easement across approximately 50 properties for purposes of building and maintaining a multi-use path.

Access to future BRT and linkages to adjacent neighborhoods are made possible through several paved connections to the Timberlyne Trail. In the southern portion, the corridor joins Martin Luther King Jr Blvd south of Estes Drive. At this location, protected bike lanes are recommended alongside the Bus Rapid Transit corridor into downtown Chapel Hill.

Improvement Type

1. **Timberlyne Trail** — **2.52 miles**
   Duke Utility Easement
   from Weaver Dairy Road to
   Martin Luther King, Jr. Blvd

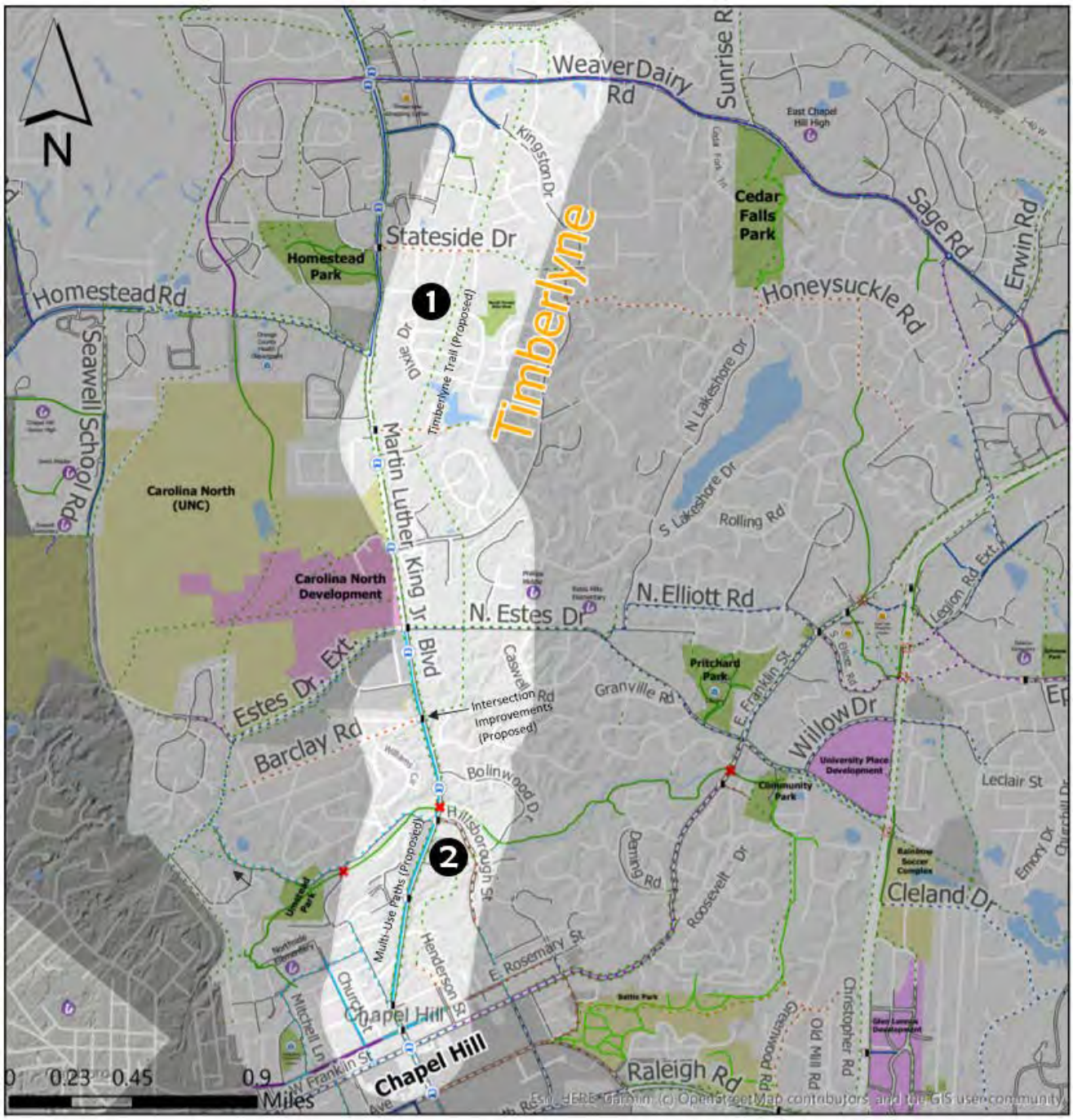
2. **a dzťűΛπ ¦ăŜ tl-űKă** — **1.24 miles**
   Martin Luther King, Jr. Blvd

Total Length — 3.86 miles

Key destinations

along and near the corridor include:

- Downtown Chapel Hill/UNC
- Umstead Park/Bolin Creek Trail
- Estes Hill ES/Phillips MS/Estes Drive Multi-use Trail
- Homestead Park/Chapel Hill Aquatic Center
- Timberlyne Shopping Center
- Town Hall
- Chapel Hill/Carrboro YMCA
- Carolina North
- North Forest Hills Park
- Timberlyne Shopping Center



Town park | UNC campus | Major development | Other park

Future BRT | Crosswalk improvement | Existing underpass | Proposed underpass/overpass

	EXISTING	PROPOSED
BICYCLE	Bike Lane	
	Buffered/Protected Bike Lane	
	Sharrows	
	Signed Bike Route	
	On-Street Greenway Connector	
	Cycle Track	
	Bike Climbing Lane	
MULTI-USE	Multi-Use Path/Greenway	
	Unpaved Greenway	
	ADA Trail	
PEDESTRIAN	Sidewalk	

Priority Bicycle/Pedestrian Corridors

TOWN OF CHAPEL HILL

Mobility Plan 2020 Complete Streets Update

Treelyne Trail

Taking advantage of existing greenways, planned greenways, and a network of low-stress on-street connectors, the Treelyne Trail priority corridor links northern neighborhoods, central neighborhoods, and two parks to the Ephesus-Fordham District. A future underpass will replace the existing Franklin Street at-grade crossing to connect the Lower Booker Creek Trail to the Ephesus-Fordham District.

Key destinations

along and near the corridor include:

- Carraway Village Development
- Eubanks Park and Ride
- Homestead Park/Chapel Hill Aquatic Center
- Upper Booker Creek Trail
- North Forest Hills Park
- Cedar Falls Park/East Chapel Hill High School
- Lower Booker Creek Trail
- Ephesus-Fordham District

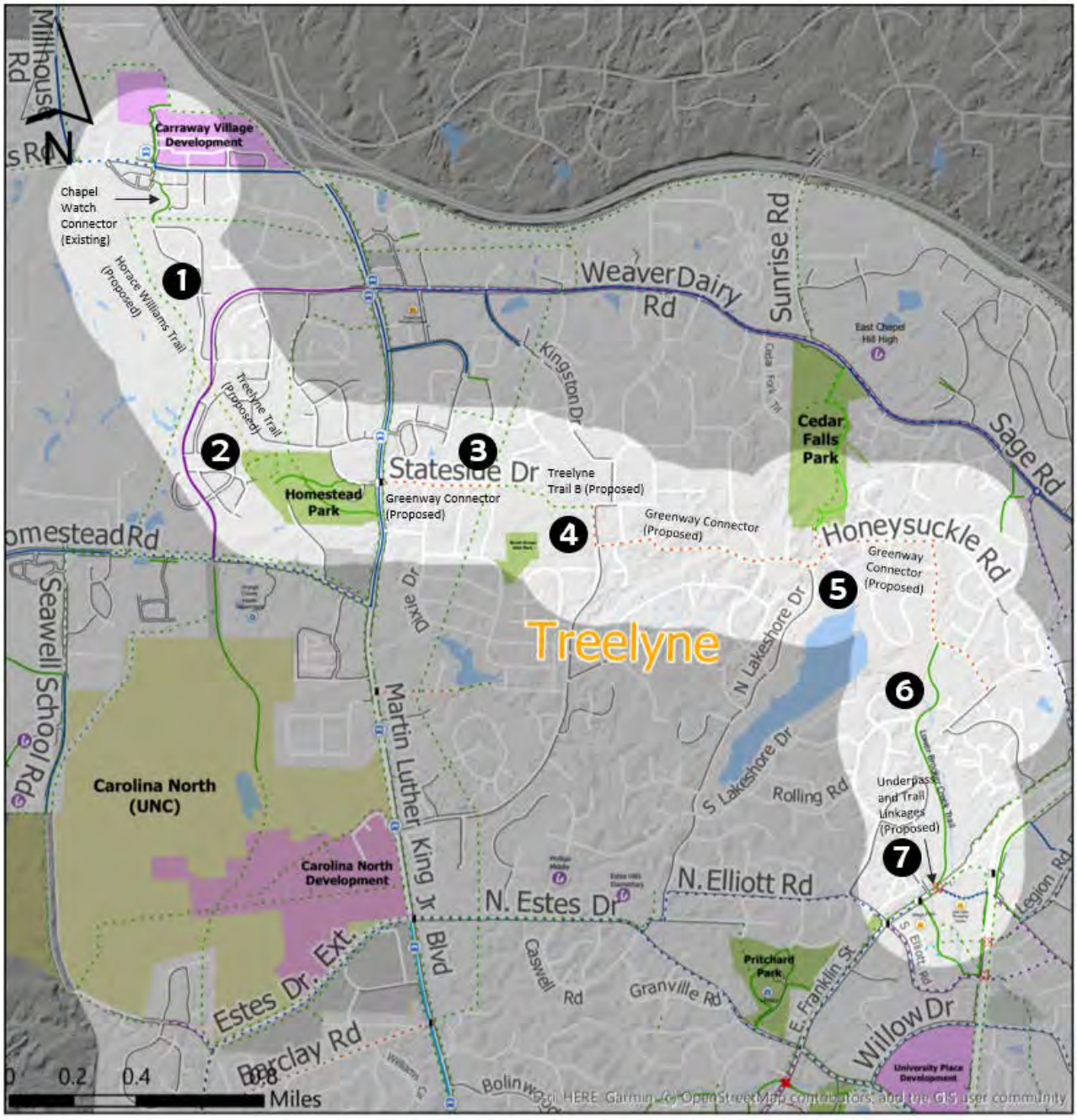
Improvement Type

1. **Horace Williams Trail**- Trail from Carraway Village to connection with Homestead Trail at Weaver Dairy Rd (16% Complete) — **0.95 mile**
2. **Treelyne Trail A** - Homestead Park to Chapel Hill Aquatic Center and Vineyard Square neighborhood — **0.75 mile**
3. **On-Street Greenway Connector** - Bicycle markings, wayfinding, and sidewalks along Stateside Drive from Homestead Park to North Forest Hills Park — **0.53 mile**
4. **Treelyne Trail B** - Stateside Dr through North Forest Hills Park to Piney Mountain Rd — **0.31 mile**

Improvement Type

5. **On-Street Greenway Connector** - Bicycle markings, wayfinding, and sidewalks along Piney Mountain Rd to Booker Creek Rd via Riggsbee Rd, Brookview Dr and Honeysuckle Rd. Uphill portions recommend min. bicycle climbing lane. — **1.57 miles**
6. **Little Booker Creek Trail** - Honeysuckle Road to E. Franklin Street (100% Complete) — **0.80 mile**
7. **Underpass and Trail Linkages** - Underpass of Franklin St; Greenway and sidewalk linkages in Ephesus-Fordham and Dobbins Dr — **0.46 mile**

Total Length 17% Complete — **5.37 miles**



Town park | UNC campus | Major development | Other park

Future BRT | Crosswalk improvement | Existing underpass | Proposed underpass/overpass

	EXISTING	PROPOSED
BICYCLE	Bike Lane	
	Buffered/Protected Bike Lane	
	Sharrows	
	Signed Bike Route	
	On-Street Greenway Connector	
	Cycle Track	
	Bike Climbing Lane	
MULTI-USE	Multi-Use Path/Greenway	
	Unpaved Greenway	
	ADA Trail	
PEDESTRIAN	Sidewalk	

Priority Bicycle/Pedestrian Corridors

TOWN OF CHAPEL HILL

Mobility Plan 2020 Complete Streets Update

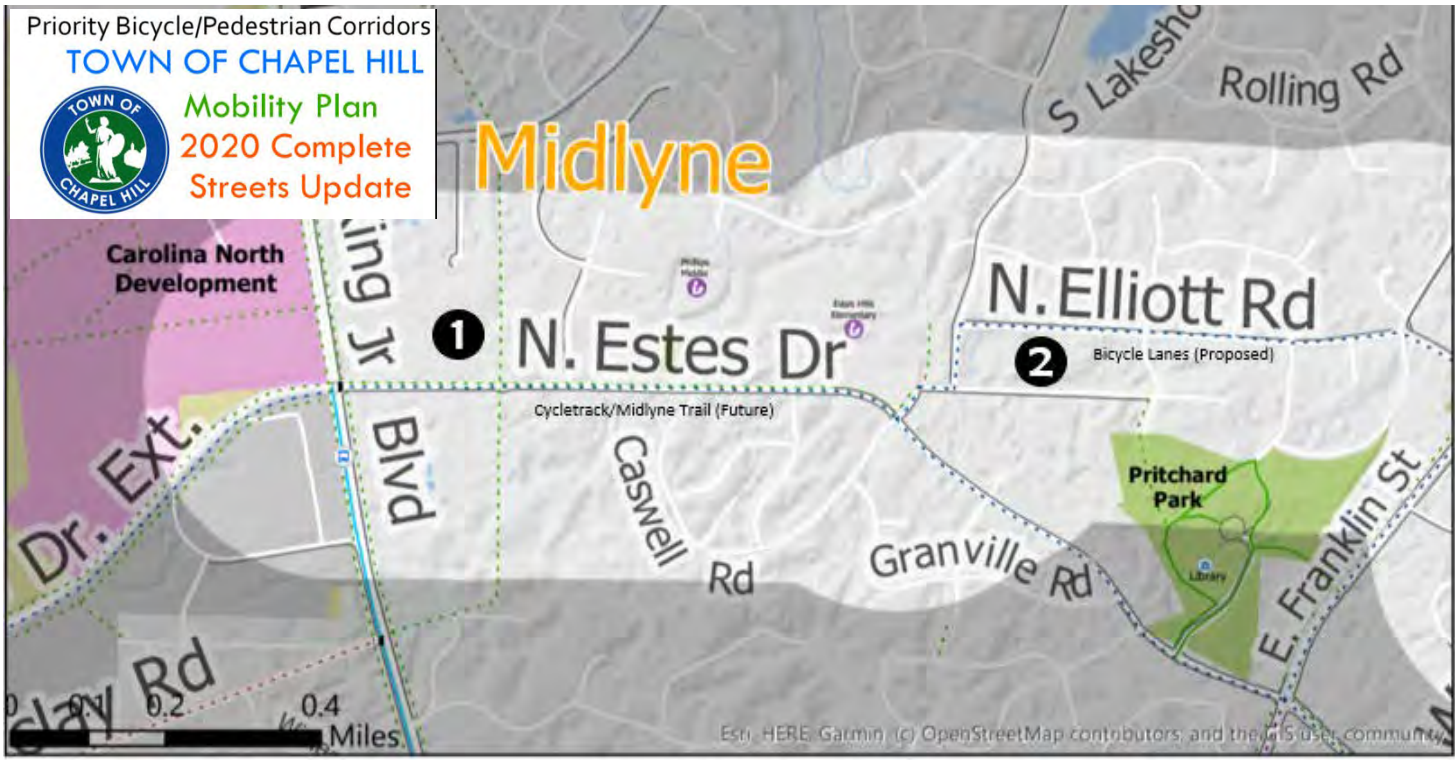
Midlyne Trail

This east-west connector links neighborhoods off Ephesus Church Road through the Ephesus-Fordham commercial district. The route continues west along Elliott Road and Estes Drive past Phillips Middle and Estes Hills Elementary schools to Martin Luther King Jr Boulevard. In the long term, the trail will connect through the Carolina North property to the schools on Seawell School Road.

Key destinations

along and near the corridor include:

- Carolina North future development
- Estes Hill Elementary School
- Phillips Middle School
- Estes Drive Multi-use Trail
- Chapel Hill Public Library
- Lower Booker Creek Trail
- Ephesus-Fordham District
- Ephesus Elementary School



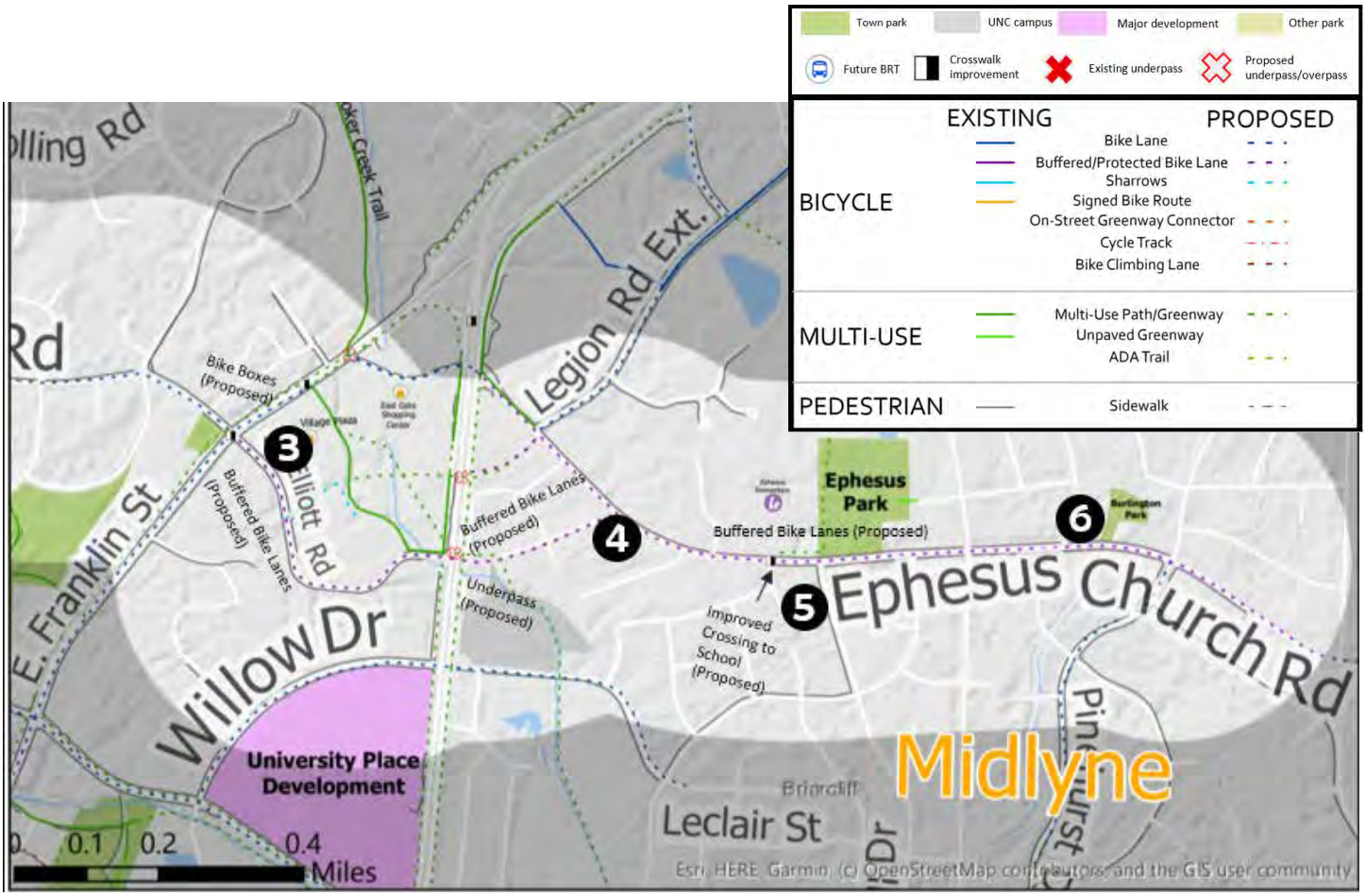
Improvement Type

1. **Cycle Track and Midlyne Trail** - Cycle Track and multi-use path along Estes Dr. from Martin Luther King Jr Blvd to Estes Hills Elementary/Caswell Rd (In Design) — **0.87 mile**
2. **Bicycle Lanes and Sidewalk** - Bicycle Lanes on Elliott Rd from Curtis Rd to Franklin St. Sidewalk south side of roadway. — **0.73 mile**
3. **Buffered Bicycle Lanes and Sidewalk** - Bicycle Lanes with buffer on Elliott Rd from Franklin St to Fordham Blvd. Fill sidewalk gaps. — **0.44 mile**

Improvement Type

4. **Elliott Rd Extension Complete Street** - Complete Street with protected bike lanes and sidewalk from Fordham Blvd to Ephesus Church Rd — **0.21 mile**
5. **Mid-block Crossing and Sidewalk Gap** - Pedestrian crossing at Ephesus Elementary School. Sidewalk gap between Elliott Rd Ext and Cypress Rd — **-**
6. **Protected Bicycle Lanes** - Ephesus Church Rd from Elliott Rd Extension to Durham — **0.73 mile**

Total Length — **2.98 miles**
28% Complete



Cross Cities Connector

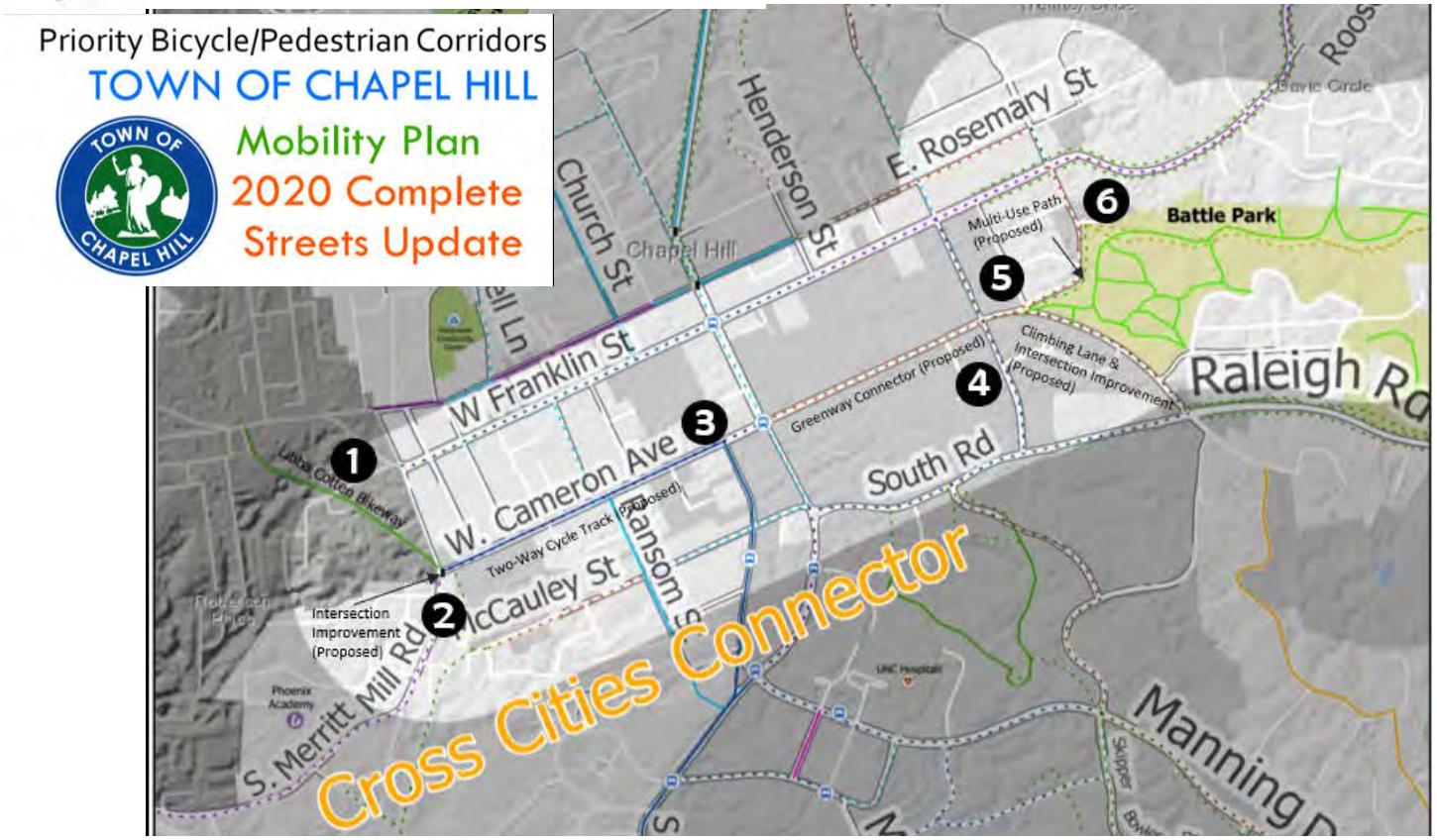
The Cross Cities Connector links Carrboro through downtown Chapel Hill on Cameron Avenue, running through UNC-Chapel Hill before continuing east through Battle Park and the Greenwood neighborhood to Meadowmont via the existing Highway 54 trails. It utilizes the future at-grade 15-501 crossing at the Glen Lennox redevelopment. When completed, this route will link Chapel Hill and UNC to the expansive regional greenway system in Durham, Cary, and Raleigh as well as the East Coast Greenway.

Unpaved options exist for an accessible trail through Battle Park and should be weighed with long-term maintenance and OWASA access needs.

Key destinations

along and near the corridor include:

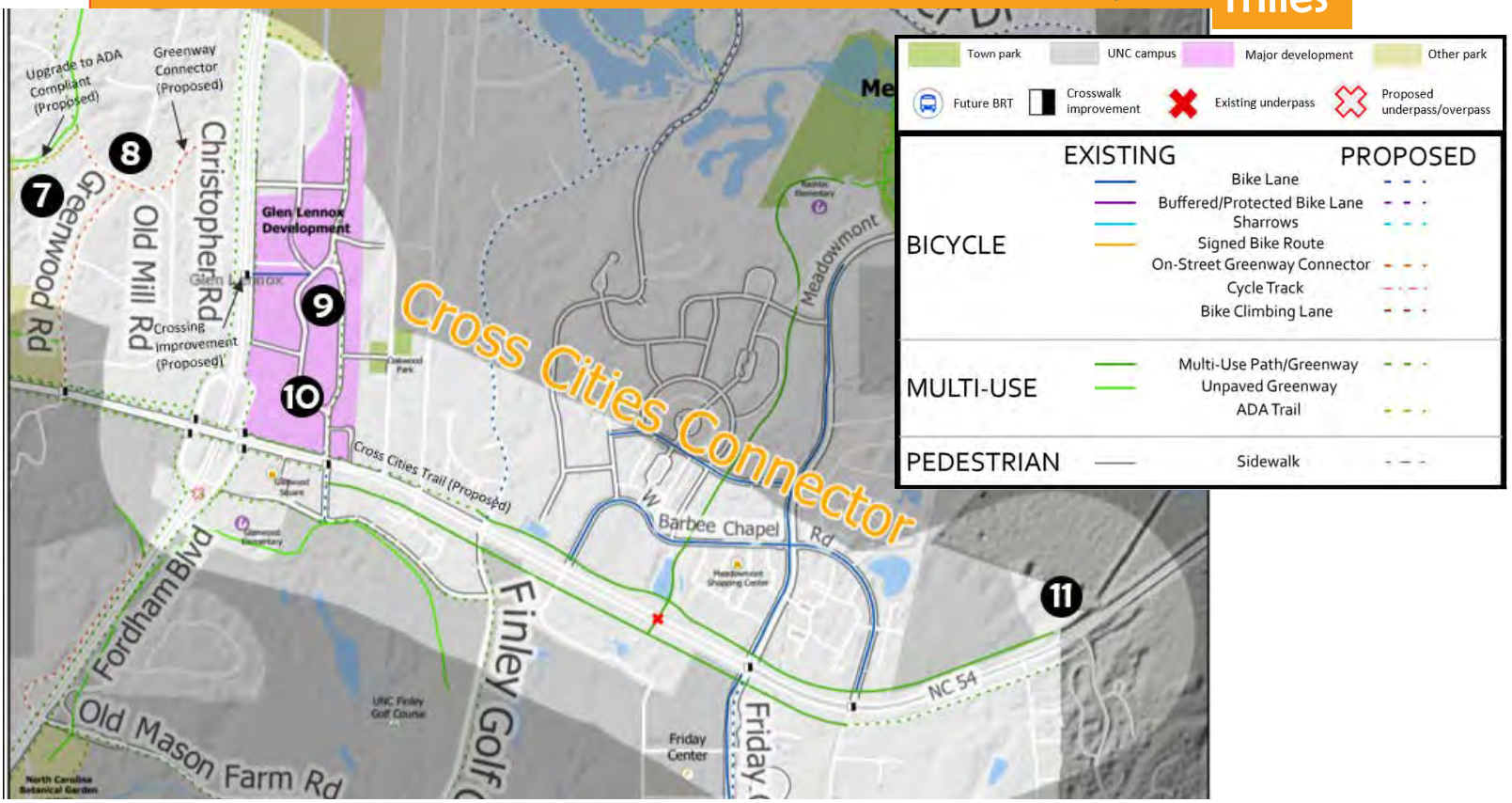
- UNC Campus
- Battle Park
- Glenwood Elementary School
- Finley Golf Course
- Friday Center
- Downtown Carrboro and Chapel Hill
- Glen Lennox, Glenwood and East 54 Retail/Mixed-Use Centers
- Meadowmont Village and Trail
- Links to the regional greenway network



	Improvement Type	
1	**Libba Cotten Bikeway*** - Multi-use connection (Carrboro- 100% Complete)	0.38 mile
2	**Intersection Improvement - Improve** Bicycle and pedestrian transition from Libba Cotten Bikeway at Merritt Mill Rd and railroad crossing at W Cameron Ave	-
3	**Protected Bicycle Lanes - From** Merritt Mill Rd to S. Columbia St.	0.53 mile
4	**On-Street Greenway Connector* - Bicycle markings, and wayfinding on** E Cameron Ave from Pittsboro St to Raleigh St (UNC Campus)	0.47 mile
5	**Climbing Lane and Intersection Improvements** - Bike/ped connections on Boundary St from Battle Park to E Cameron Ave; bicycle boxes and markings between Boundary St, Battle Ln, and Country Club Rd	0.07 mile
6	**On-Street Greenway Connector and Trail** Multi-use path along Boundary St; Bicycle pavement markings and wayfinding signage from E Cameron Ave to Franklin St	0.24 mile
7	**Battle Park Trail** - ADA compliant trail through Battle Park along OWASA easement	0.88 mile
8	**On-Street Greenway Connector - Bicycle pavement markings and wayfinding on** Sandy Creek Trail, Greenwood Rd, and Christopher Rd	0.40 mile
9	**Crossing Improvement at US 15-501** At-grade crossing of US 15-501 north of NC 54 (Glen Lennox Development Agreement)	-
10	**Cross Cities Trail - Multi-use path** from US 15-501 crossing improvement to existing trail on NC 54 (61% complete)	1.80 miles
11	**Cross Cities Trail Regional Greenway Connection*** - Joint design project with Durham Co for multi-use path between NC 54 trail terminus and American Tobacco Trail	3.25 miles

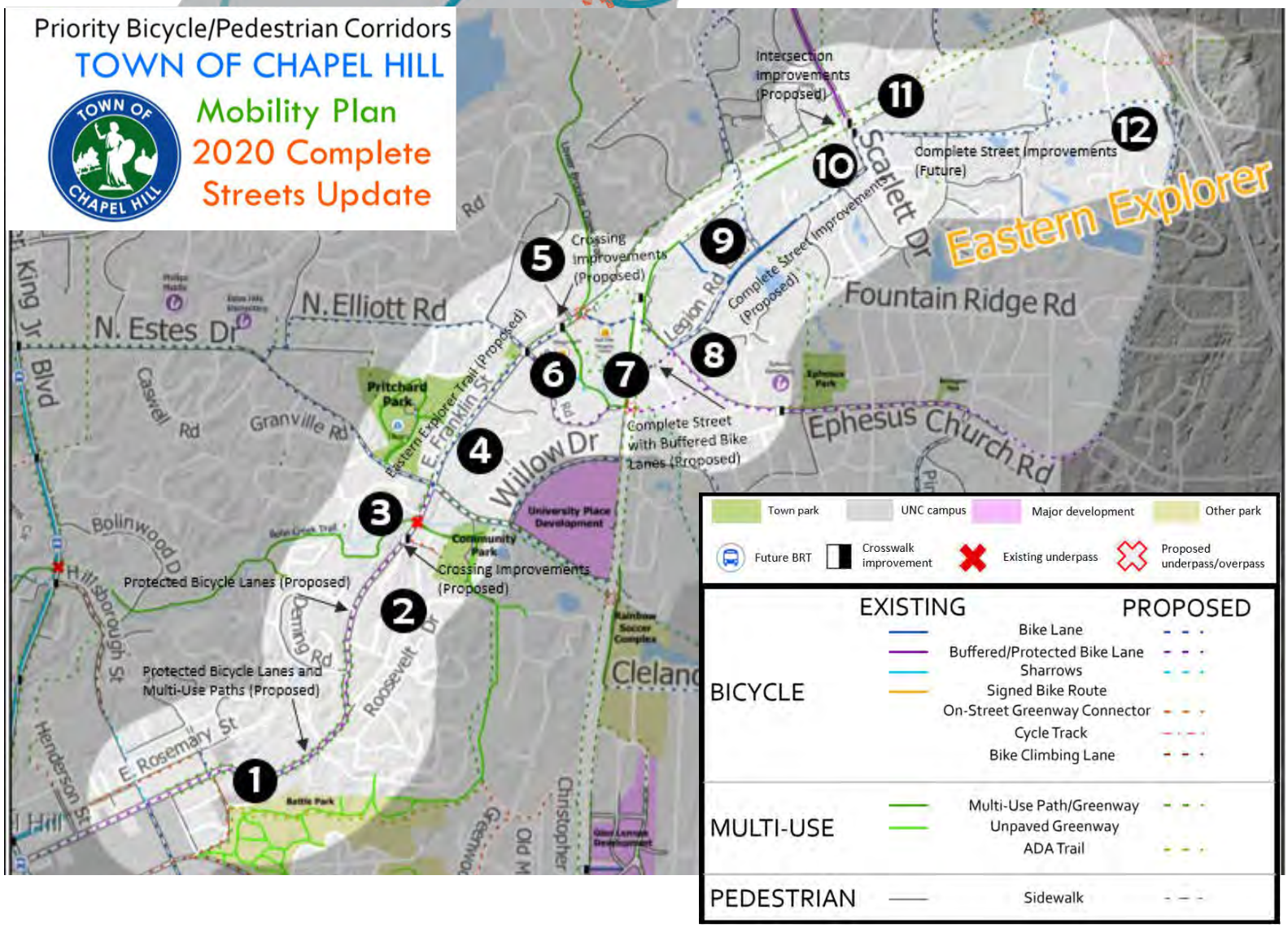
*Connection outside jurisdiction

Total Length 5.08 miles
18% Complete



Eastern Explorer

This priority corridor connects through the Ephesus-Fordham District to Downtown. It uses Complete Streets proposed for Old Durham Rd, Legion Rd, Legion Rd Extension and a multi-use overpass of the proposed Booker Creek open space. It uses off-road multi-use paths through the Ephesus-Fordham District, the northern portion of E Franklin St. The route continues into downtown on E Franklin St. Ultimately, the Eastern Explorer creates a low-stress connection from the east to Downtown Chapel Hill.



Key destinations

along and near the corridor include:

- Downtown Chapel Hill
- Battle Park
- Community Park/Bolin Creek Trail
- Chapel Hill Library
- Lower Booker Creek Trail
- Multi-Family Residential Areas
- Ephesus-Fordham District
- East Gate and Village Plaza Shopping Centers
- Rams Plaza

	Improvement Type	
1	**Bicycle Lanes** - Lane reallocation on E Franklin St from Boundary St to Deming Dr to 3 Lane with protected bicycle lanes and multi-use paths	0.61 mile
2	**Buffered Bicycle Lanes** - Lane reallocation on E Franklin St from Deming Dr to Estes Dr to 3 Lane section with buffered bicycle lanes	0.63 mile
3	**Intersection Improvements and Sidewalk Gap** - Crosswalk to Plant Rd for Booker Creek Trail Access; Sidewalk Gap on Plant Rd and Improved crossing of Plant Rd at Roosevelt Dr	-
4	**Eastern Explorer Trail** - Multi-use trail along north side of E Franklin St linking Bolin Creek Trail to Lower Booker Creek Trail with bridge across Bolin Creek	0.81 mile
5	**Franklin St Crossing Improvement** - Improved crossing and pedestrian refuge from Eastern Explorer trail to Booker Creek Trail through Village Plaza	-
6	**Lower Booker Creek Trail** - Urban section of Lower Booker Creek Trail between Eastgate Shopping Center and Village Plaza (100% Complete)	0.13 mile

	Improvement Type	
7	**US 15-501 Multi-Use Overpass** - Overpass of Booker Creek Passive Open Space connecting Lower Booker Creek Trail with Legion Rd Extension (Ephesus-Fordham Subarea Plan)	0.20 mile
8	**Legion Rd Extension Complete Street** - Complete Street with Buffered Bike Lanes from US 15-501 to Ephesus Church Rd	0.10 mile
9	**Bicycle Lanes and Sidewalk** - Legion Rd Bicycle Lanes and Sidewalks from Ephesus Church Rd to Scarlett Dr	0.80 mile
10	**Bicycle Lanes and Sidewalk** - Scarlett Dr Bicycle Lanes and Sidewalks from Legion Rd to Old Durham Rd	0.11 mile
11	**Sage/US 15-501 Intersection Improvements** - Sage Rd/US 15-501 intersection improvements (Project is part of NCDOT EB 4707A)	-
12	**Complete Street Improvements** - Old Durham Rd Complete Street from Scarlett Dr to Pope Rd with Bicycle Lanes and Sidewalk (NCDOT Project EB-4707A)	0.95 mile

Total Length 4.34 miles
27% Complete

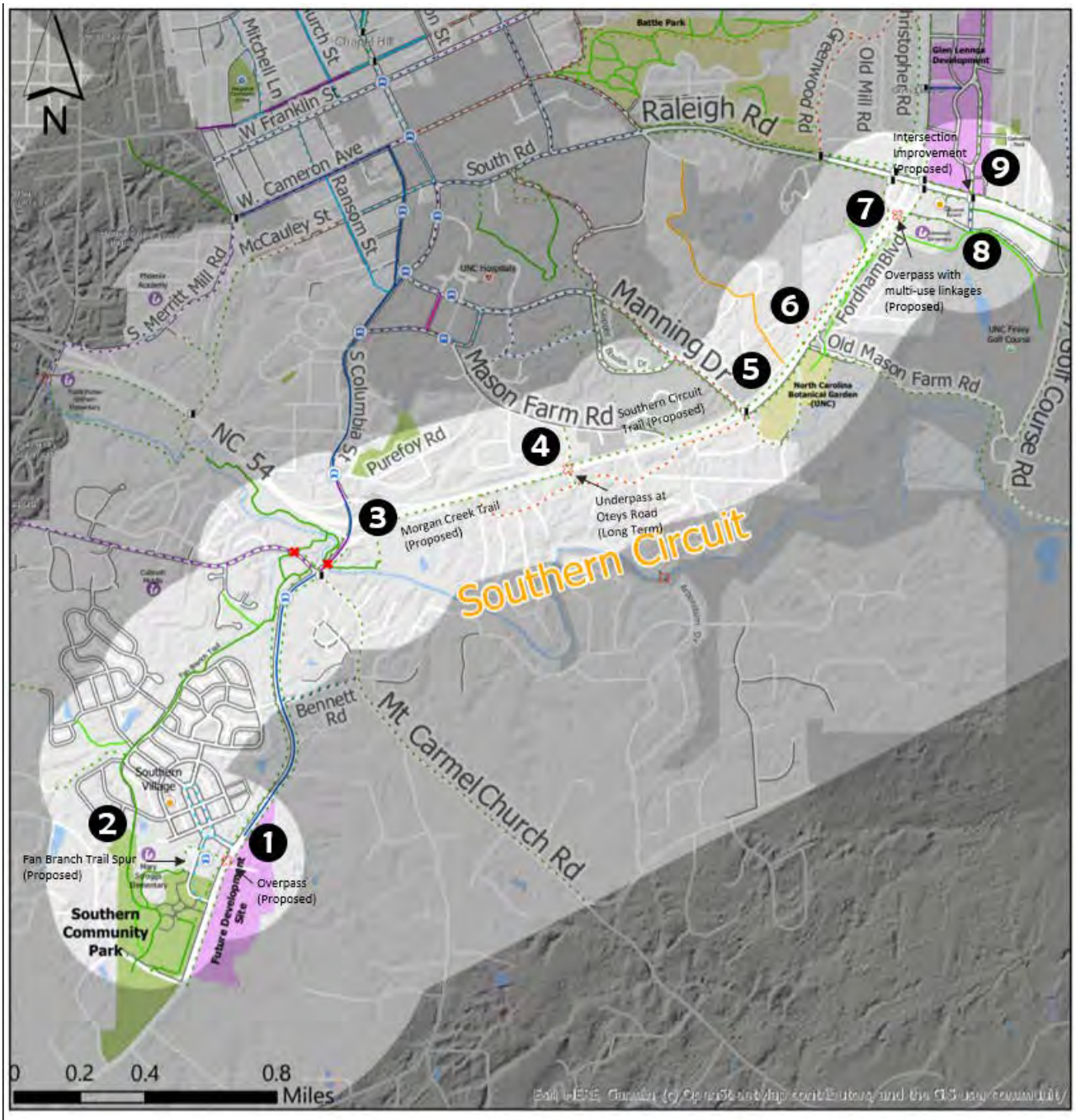
Southern Circuit

The Southern Circuit corridor begins at the Obey Creek Development on US 15-501 and terminates in the east at Hamilton Road. It links two proposed BRT stations with the Fan Branch Greenway and takes advantage of the lower elevations around Morgan Creek to pass under bridges and knit together key nodes and neighborhoods in the southern portion of Chapel Hill. In the short term, trail segments along US 15-501 with at-grade trail crossings are utilized to connect the Morgan Creek Trail to NC 54 along Raleigh Rd. In many cases the proposed multi-use paths connect with the existing trail system along NC 54, utilizing a future bike/ped bridge across US 15-501. Another bike/ped bridge will be built across US 15-501 with the Obey Creek Development to link to the Southern Community Park and the future BRT station at Southern Village Park and Ride.

	Improvement Type	
1	**Overpass of US 15-501** - Multi-use connection between Obey Creek Development and Southern Village (Obey Creek Development Agreement)	0.03 mile
2	**Fan Branch Trail and Spur** - Fan Branch Trail with spur to connect with BRT station area (89% Complete)	2.07 miles
3	**Morgan Creek Trail and Extension** - Trail from Fan Branch to Merritt's Pasture, and planned trail extension between Merritt's Pasture and Oteys Rd (31% Complete)	1.02 miles
4	**US15-501 Underpass - Multi-use** underpass at Oteys Rd	-

	Improvement Type	
5	**Southern Circuit Trail** - Trail section along north side of US 15-501 from Oteys Rd to Christopher Rd	0.85 mile
6	**On-Street Greenway Connector** - Bicycle markings and wayfinding on Christopher Rd	0.50 mile
7	**Trail Overpass and links** - Trail overpass of US 15-501 with connections to Raleigh Rd, Christopher Rd, and Hamilton Rd	0.42 mile
8	**Bicycle Lanes** - Hamilton Rd from Prestwick Rd to NC 54	0.10 mile
9	**Crossing Improvements at NC 54 and Hamilton Rd** connecting Glenwood Square to Glen Lennox Development Site	-

Total Length 4.99 miles
44% Complete



Town park | UNC campus | Major development | Other park

Future BRT | Crosswalk improvement | Existing underpass | Proposed underpass/overpass

	EXISTING	PROPOSED
BICYCLE	Bike Lane	
	Buffered/Protected Bike Lane	
	Sharrows	
	Signed Bike Route	
	On-Street Greenway Connector	
	Cycle Track	
	Bike Climbing Lane	
MULTI-USE	Multi-Use Path/Greenway	
	Unpaved Greenway	
	ADA Trail	
PEDESTRIAN	Sidewalk	

Priority Bicycle/Pedestrian Corridors

TOWN OF CHAPEL HILL

Mobility Plan 2020 Complete Streets Update

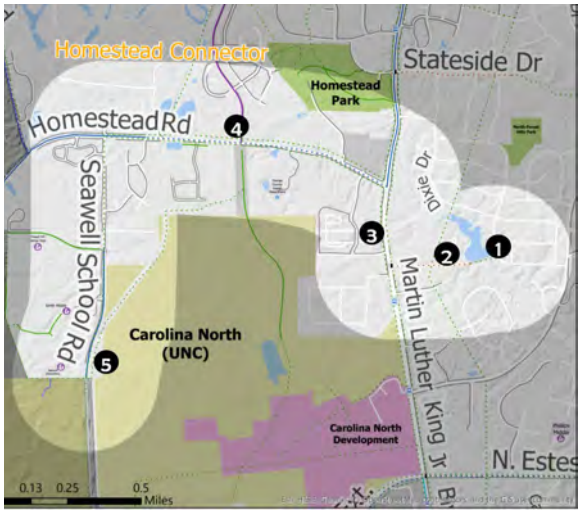
Other Key Linkages

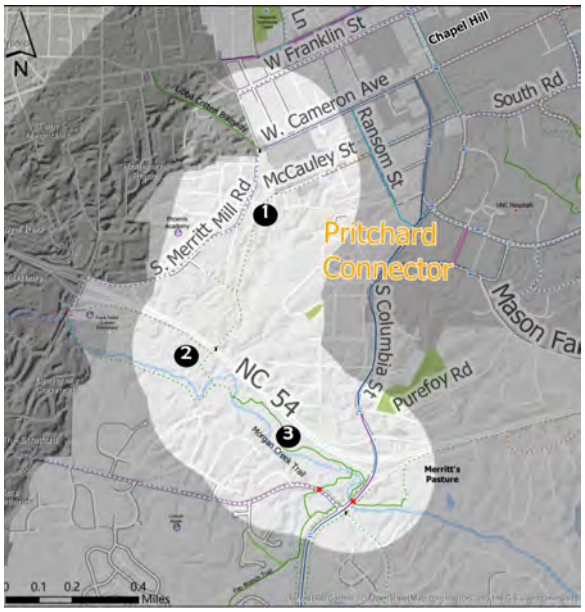
Beyond the six key pedestrian/bike priority corridors, four additional segments supplement the network by providing key connections to neighborhoods, destinations, and transit.

Improvement Type	Description	Total Length
Homestead Connector	Link between Timberlyne Trail and MLK Bus Rapid Transit to schools on Seawell School Rd	**2.78 miles** 11% Complete
1 Multi-Use Path	Greenway connecting Lake Ellen Dr and Taylor St	0.08 mile
2 On-Street Greenway Connector	Bicycle marking, wayfinding, and sidewalk on Taylor St between Lake Ellen Dr and Martin Luther King Jr Blvd	0.26 mile
3 Buffered Bike Lanes and Sidewalk Gap	Multi-use paths on Martin Luther King, Jr. Blvd between Taylor St and Homestead Rd. Sidewalk gap between Taylor St and Homestead Rd (See Complete Street Project on Martin Luther King Jr Blvd)	0.27 mile
4 Homestead Trail	Multi-use path along Homestead Rd between MLK Jr Blvd and Seawell School Rd	1.37 miles
5 Multi-use Paths	Complete multi-use path on Seawell School Rd from Homestead Rd to Seawell Elementary.	0.80 mile
Barclay Connector	Link between Midlyne and Timberlyne to Carrboro	**1.24 miles** 0% Complete
1 On-Street Greenway Connector	Bicycle marking, wayfinding, and sidewalk on Barclay Rd from MLK Jr Blvd to Barclay Trail	0.70 mile
2 Barclay Trail	Multi-use path along Estes Dr Extension from Barclay Rd to Bolin Creek	0.31 mile
3 Bolin Creek Trail Extension	Extension of Bolin Creek Trail from Barclay Trail with a bridge over the creek and at-grade crossing of Estes Dr Ext to connect to Carrboro trail	0.23 mile
BB Little Connector	Link between Ephesus-Fordham District, Meadowmont, and Highway 54	**3.15 miles** 31% Complete
1 Crossing Improvement	Improved Trail Crossing of Elliott Rd to connect with Lower Booker Creek Trail	-
2 US 15-501 Underpass	Lower Booker Creek Trail Underpass of US 15-501	-
3 Lower Booker Creek Trail	Multi-use path between Elliott Rd and Little Creek Trail	0.85 mile
4 Little Creek Trail A & Trail Connection	Multi-use path between Lower Booker Creek Trail and Lancaster Dr	0.55 mile
5 Bike Lanes	Bicycle Lanes and wayfinding on Lancaster Dr (Sidewalks complete)	0.43 mile
6 Little Creek Trail Upgrade	ADA compliant trail between Lancaster Dr and Meadowmont Trail	0.34 mile
7 Meadowmont Trail	Multi-use path between Rashkis Elementary and Underpass of Highway 54 through Meadowmont (complete)	0.98 mile

Improvement Type	Description	Total Length
Pritchard Connector	Low-stress link between Morgan Creek Trail and Downtown	**1.50 miles** 35% Complete
1 Tower Trail	Multi-use path on west side of UNC cogeneration facility, past water tower and through power easement to NC 54	0.66 mile
2 Crossing and Greenway Linkages	Improved crossing of NC 54 between Laurel Ridge and Kingswood Apartments with connection between Tower Trail and Morgan Creek Trail	0.12 mile
3 Morgan Creek	Morgan Creek Trail to Smith Level Rd (in design) and connection with Fan Branch Trail (complete)	0.72 mile

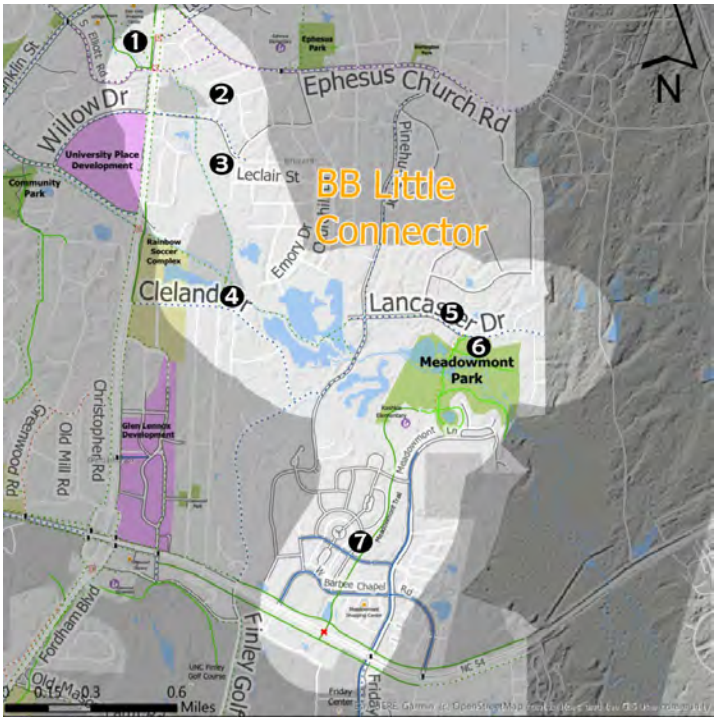
Homestead Connector

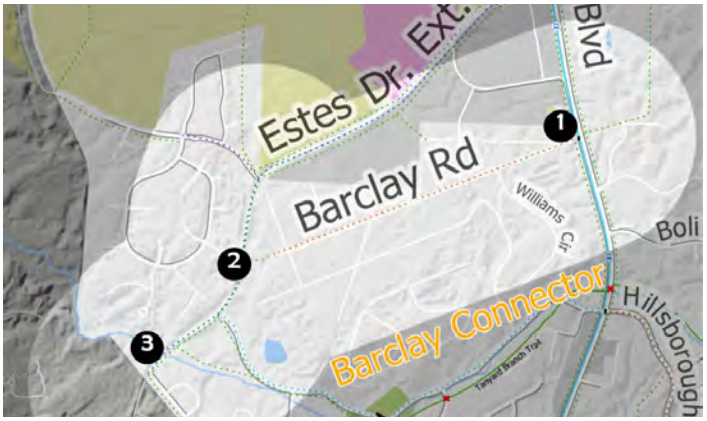




Pritchard Connector

BB Little Connector





Barclay Connector

To realize the vision of the Mobility Plan, the Town will need to implement these recommendations in cooperation with developers, NCDOT, local property owners, and others.

Project Implementation

To realize the vision and fundamental principles of the Mobility Plan, the Town will need to put its plans into action. Implementation is dependent on the cooperation and coordination with developers, NCDOT, GoTriangle, environmental agencies, and local property/business owners.

The following tables provide guidance on moving the Mobility Plan's projects and policies forward with next steps and potential funding options. The projects are broken up into categories for short-, mid-, and long-term implementation.

- The short-term projects represent policies that can be easily implemented with the approval of the Mobility Plan, or shortly thereafter, and projects that can be constructed as parts of redevelopment or small capital improvement projects with some engineering and through existing levels of funding.
- Mid-term projects may include more involved engineering and design, and require funding identification and planning.
- Long-term projects require significant design work and depend on strategic planning amongst Town staff, project approval by outside agencies and significant legwork to identify and secure funding.

Funding

Projects can be funded in many ways, including private and public options. Several mechanisms shown in the implementation tables are given as potential funding options:

- **Developer requirements and exactions:** The form-based code, Land Use Management Ordinance (LUMO), and Comprehensive Plan outline the requirements for developers to construct the infrastructure needed to support the new residents and users. Where facilities are in adopted plans, developers are required to install sidewalks, bicycle facilities, and greenways.
- **Private/public partnerships:** It may be advantageous at times for the Town to enter into agreements with developers to accept payments-in-lieu to help fund larger projects in the future, or to provide developers funding to build more than they are required. These types of case-by-case agreements help complete key connections or incentivize future developments.
- **Capital Improvement Program (CIP) budget/funding:** The Town's CIP is a 15-year financial plan for its major infrastructure needs, establishing priorities and potential funding sources. The CIP is approved annually as part of the Town's budget and allocates tax revenues to, amongst other things, transportation and parks/greenway projects. Revenues for CIP funding include property tax and town fees, but may also receive monies from traditional and innovative sources such as:
    - Bonds: Municipal bonds are financial bonds issued by the Town to fund numerous projects, typically by tax increases outlined in a referendum voted on by residents. For example, Chapel Hill residents approved a $40M general obligation bond in 2015 which included streets, sidewalk, and greenway projects.

  - Municipal Services District: Under North Carolina Law, the Town aids property owners in forming a Municipal Service District to provide specific services to a defined geographic area through special property tax. The tax is approved by and levied on the property owners within that area.
  - Tax Increment Financing (TIF) District: TIF districts are established to fund projects within the District and repay those costs through the incremental increase in tax revenues resulting from redevelopment. TIF districts can be formally established by the Town or "synthetically" administered by monitoring and accounting for the increases in Town financial records.
- **Durham-Chapel Hill-Carrboro MPO (DCHC) funding:** The DCHC Metropolitan Planning Organization receives federal transportation funds for the region that are intended for municipalities to program for local projects. In FY2015-16, approximately $13 million was awarded to localities in the region, including Chapel Hill.
- **NCDOT State Transportation Improvement Program (STIP) funding:** Based on current prioritization formulas, it is a competitive process to receive NCDOT funds. While there is stiff competition for ped/bike projects statewide, the Town has had success in getting bike/ped projects into the STIP.
- **NCDOT Complete Streets Policy:** The Town can use NCDOT's 2019 Complete Streets Policy to fully fund bike/ped upgrades when major highway projects occur.
- **Special federal or non-profit grants:** Examples include the USDOT's TIGER grant program for major infrastructure projects that support job growth and People For Bikes' Big Jump project to cycling in cites.

Complete Street Corridor Improvements

Recommended Improvement	Potential Funding Sources	Estimated Project Cost
Short-term Implementation		
Martin Luther King Jr Blvd		
Sidewalk gaps	CIP funding; with development	$ 510,000
Barclay Rd pedestrian crossing	CIP, NCDOT funding	$ 100,000
Stateside Dr/Piney Mountain Rd/ Westminster Dr ped crossings	CIP, NCDOT funding	$ 305,000
Northwood/Perkins Sidewalk Connector	CIP, DCHC funding	$ 60,000
Bike intersection improvements N of Homestead Dr. (markings, bike boxes, signal actuation)	CIP, DCHC funding	$ 45,000
Bike signal actuation at major intersections at bike lane approaches, including Weaver Dairy Road	CIP, DCHC funding	$ 10,000
Bolin Creek Greenway/Carolina North sidewalk connectors	CIP funding	$ 780,000
E Franklin St		
Lane reallocation for bike lane/buffered bike lane from Boundary St to Estes Dr	CIP, NCDOT funding	$ 985,000
Sidewalk and streetscape improvements (Boundary St to Estes Dr)	CIP, NCDOT funding; with development	$ 660,000
US 15-501 Fordham Blvd		
Multi-use paths (both sides) from I-40 to US 15-501 South	CIP, NCDOT funding; with development	$ 2,200,000
Willow Dr intersection improvements (crosswalks, pedestrian refuge islands, signal actuation)	CIP, DCHC, NCDOT funding	$ 60,000
US 15-501 South		
Bike intersection improvements at Mt Carmel Ch Rd/Culbreth Rd (markings, bike boxes, signal actuation)	CIP, NCDOT funding	$ 175,000
Mt Carmel Ch Rd/Fan Branch greenway connector	CIP funding	$ 350,000

Complete Street Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Cost
Short-term Implementation		
NC 54 Raleigh Rd		
US 15-501 Interchange ped crossings	CIP, NCDOT funding	$ 215,000
Meadowmont Ln/Friday Center Dr/ Barbee Chapel Rd ped crossings	CIP, NCDOT funding	$ 105,000
Lane reallocation for uphill climbing lane (Fordham Blvd to Ridge Rd)	CIP, NCDOT funding	$ 225,000
Long-term Implementation		
Martin Luther King Jr Blvd		
Corridor widening to include curb-running bus rapid transit, multi-use paths, 6' sidewalks, street trees	NCDOT, Federal Transit, Orange County Transit Sales Tax	$ ----- (I-40 to Southern Village)
E Franklin St		
Lane reallocation for bike lane from Estes to Fordham Blvd	CIP, NCDOT funding	$ 985,000
North side multi-use path and multi-use paths from Boundary to Deming	CIP, NCDOT funding; with development	$ ------
US 15-501 Fordham Blvd		
Corridor widening to include center-run bus rapid transit	NCDOT, Federal Transit, Orange County Transit Sales Tax	Feasibility study underway
Grade-separated pedestrian bridge at Legion Rd extension	CIP, NCDOT funding	$ 3.1 million
US 15-501 South		
Change Bike Plan recommendation for buffered bike lanes to planned multi-use paths	N/A	--
NC 54 Raleigh Rd		
Multi-use paths on both sides of the street	CIP, NCDOT funding	$ -------
Bike lanes from Country Club Rd. to 15-501	CIP, NCDOT funding	$ ------

Priority Ped/Bike Corridor Improvements

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
Timberlyne Trail		
Timberlyne Trail - Duke Utility easement from Weaver Dairy Road to MLK Jr Blvd	CIP, NCDOT funding; parks grants	$ 3,100,000
Multi-use paths on MLK Jr Blvd	NCDOT, Federal Transit, Orange County Transit Sales Tax	Part of NSBRT
Treelyne Trail		
Horace Williams Trail - Carraway Village at Weaver Dairy Rd	CIP funding; parks grants	$ 985,000
Treelyne Trail A - Homestead Park to Chapel Hill Aquatic Center and Vineyard Square	CIP funding; parks grants	$ 825,000
On-Street Greenway Connector - Bicycle markings, wayfinding, & sidewalks along Stateside Dr from Homestead Park to North Forest Hills Park	CIP funding	Sidewalk $550,000 Markings $40,000
Treelyne Trail B - Stateside Dr through North Forest Hills Park to Piney Mountain Rd	CIP funding; parks grants	$ 350,000
On-Street Greenway Connector - Bicycle markings, wayfinding, & sidewalks along Piney Mountain Rd to Booker Creek Rd, Brookview Dr & Honeysuckle Rd	CIP funding	Sidewalk $1,620,000 Markings $55,000
Underpass of Franklin St and greenway and sidewalk linkages in Ephesus-Fordham and to Dobbins Dr	CIP, NCDOT funding; with development	$ 905,000

Priority Ped/Bike Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
Midlyne Trail		
Bicycle lanes on Elliott Rd from Curtis Rd to Franklin St; sidewalk south side of roadway	CIP funding; with development	$ 375,000
Elliott Rd widening with buffered bike lanes and sidewalks from Franklin St to Fordham Blvd	CIP funding; with development	$ 3,500,000
Elliott Rd Extension - Complete Street with raised bike lanes and sidewalk from Fordham Blvd to Ephesus Church Rd	CIP, NCDOT funding; with development	$ 4,200,000
Pedestrian crossing at Ephesus Elementary School; sidewalk gap between Elliott Rd Extension and Cypress Rd	CIP, DCHC funding	$ 50,000
Protected bicycle lanes - Ephesus Church Rd from Elliott Rd Extension to Pinehurst Dr	CIP, NCDOT funding	$ ------
Cross Cities Connector		
Intersection/bike-ped improvements from Cotten Bikeway at Merritt Mill Rd and railroad crossing at W Cameron Ave	CIP funding	Dependent on preferred alternative
Two-way cycle track from Merritt Mill Rd to Pittsboro Rd	CIP funding	$ 375,000
On-Street Greenway Connector - Bicycle markings & wayfinding on E Cameron Ave from Pittsboro St to Raleigh St	CIP, DCHC funding	$ 35,000
Bike/ped connections on Boundary St from Battle Park to E Cameron Ave; bike boxes & markings bw Boundary St, Battle Ln, and Country Club Rd	CIP, DCHC funding	$ 20,000
Multi-use path along Boundary St; bicycle pavement markings and wayfinding signage from E Cameron Ave to Franklin St	CIP funding; parks grants	$ 50,000

Priority Ped/Bike Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
Cross Cities Connector (continued)		
Battle Park Trail - ADA-compliant trail through Battle Park along OWASA easement	CIP funding; parks grants	$ 640,000
On-Street Greenway Connector - Bicycle pavement markings and wayfinding on Sandy Creek Trail, Greenwood Rd, & Christopher Rd	CIP funding	$25,000
Cross Cities Trail - Multi-use path gaps between from US15-501 crossing improvement to existing trail on NC 54	CIP, NCDOT funding; parks grants	$ 725,000
Eastern Explorer		
Lane reallocation for bike lane/buffered bike lane from Boundary St to Estes Dr	CIP, NCDOT funding	$ 985,000
Intersection improvements and sidewalk gap - Crosswalk to Plant Rd for Booker Creek Trail Access; sidewalk gap on Plant Rd and improved crossing of Plant Rd at Roosevelt Dr	CIP, NCDOT funding	$ 135,000
Eastern Explorer Trail - Multi-use trail along Franklin St linking Bolin Creek Trail to Lower Booker Creek Trail; Bridge across Bolin Creek	CIP, NCDOT funding; parks grants; with development	$ 840,000
Franklin St Crossing Improvement - improved crossing and pedestrian refuge from Eastern Explorer trail to Booker Creek Trail through Village Plaza	CIP, NCDOT funding; with development	$ 130,000
Grade-separated pedestrian bridge at Legion Rd extension	CIP, NCDOT funding	$ 2,020,000

Priority Ped/Bike Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
Eastern Explorer (continued)		
Legion Rd Extension Complete Street - Complete Street with buffered bike lanes between Fordham Blvd and US 15-501	CIP funding; with development	$ 1,600,000
Bicycle Lanes and Sidewalk - Legion Rd bicycle lanes and sidewalks from Ephesus Church Rd to Scarlett Dr	CIP funding; with development	$ 875,000
Bicycle Lanes and Sidewalk - Scarlett Dr bicycle lanes and sidewalks from Legion Rd to Old Durham Rd	CIP funding	$ 120,000
Southern Circuit		
Overpass of US 15-501 between Obey Creek Development and proposed BRT	Developer Agreement	--
Fan Branch Trail and Spur - Fan Branch Trail with spur to connect with BRT station area	CIP, NCDOT funding; parks grants	$ 260,000
Morgan Creek Trail and Extension - Trail from Fan Branch to Merritt's Pasture, and planned trail extension between Merritt's Pasture and Oteys Rd	CIP, NCDOT funding; parks grants	$ 640,000
US 15-501 Underpass - Multi-use underpass at Oteys Rd	CIP, NCDOT funding	$ 1,000,000
Southern Circuit Trail - Trail section along north side of US 15-501 to Christopher Rd	CIP, NCDOT funding; parks grants	$ 885,000
On-Street Greenway Connector - Bicycle marking and wayfinding on Christopher Rd	CIP funding	$ 30,000
Trail Overpass and links - Trail overpass of US 15-501 near NC 54 with links to Christopher Rd, Raleigh Rd, and Hamilton Rd	CIP, NCDOT funding	$ 1,300,000
Bicycle Lanes - Hamilton Rd to NC 54	CIP funding	$ 25,000
Crossing Improvements at NC 54 and Hamilton Rd connecting Glenwood Square to Glen Lennox Development Site	CIP, NCDOT funding; with development	$ 150,000

Priority Ped/Bike Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
Homestead Connector		
Greenway from Lake Ellen Dr to Taylor St	CIP funding; parks grants	$ 85,000
On-Street Greenway Connector - Bicycle marking, wayfinding, & sidewalk on Taylor St bw Lake Ellen Dr and MLK Jr Blvd	CIP, DCHC funding	Sidewalk $270,000 Markings $20,000
Buffered bike lanes on Martin Luther King, Jr. Blvd between Taylor St and Homestead Rd.	NCDOT, Federal Transit, Orange County Transit Sales Tax	Part of NCDOT corridor widening
Sidewalk gap between Taylor St and Homestead Rd	CIP funding; with development	$ 50,000
Multi-use path along Homestead Rd between MLK Jr Blvd and Seawell School Rd	CIP, NCDOT funding; parks grants	$ 1,415,000
Multi-use path on Seawell School Rd from Homestead Rd to Seawell Elementary School	CIP, NCDOT funding	$ ------
Barclay Connector		
On-Street Greenway Connector - Bicycle marking, wayfinding, and sidewalks on Barclay Rd from MLK Jr Dr to Barclay Trail	CIP funding	Sidewalk $725,000 Markings $45,000
Multi-use path along Estes Dr Extension from Barclay Rd to Bolin Creek	CIP, NCDOT funding; parks grants	$ 325,000
Extension of Bolin Creek Trail from Barclay Trail with a bridge over the creek and at-grade crossing of Estes Dr Ext	CIP, NCDOT funding; parks grants	$ 525,000

Priority Ped/Bike Corridor Improvements (continued)

Recommended Improvement	Potential Funding Sources	Estimated Project Costs
BB Little Connector		
Improved Trail Crossing of Elliott Rd to connect with Lower Booker Creek Trail	CIP, DCHC funding	$ 55,000
Lower Booker Creek Trail Underpass of US 15-501	CIP, NCDOT funding; parks grants	$ 550,000
Multi-use path between Elliott Rd and Little Creek Trail	CIP, NCDOT funding; parks grants	$ 880,000
Multi-use path between Lower Booker Creek Trail and Lancaster Dr	CIP, NCDOT funding; parks grants	$ 570,000
Bicycle lanes and wayfinding on Lancaster Dr	CIP, DCHC funding	$ 25,000
ADA compliant trail between Lancaster Dr and Meadowmont Trail	CIP, NCDOT funding; parks grants	$ 355,000
Pritchard Connector		
Multi-use path on west side of UNC cogeneration facility, past water tower and through power easement to NC 54	CIP, NCDOT funding; parks grants	$ 750,000
Crossing of NC 54 and trail connections between Morgan Creek Greenway and Tower Trail	CIP, NCDOT funding	$ 360,000

Priority Projects

Through the development of the Complete Street Corridors and Priority Ped/Bike Corridors, 20 projects are identified as key projects for the Town to evaluate in detail and to pursue as capital improvements. These key projects represent those requested or mentioned most often by citizens, key linkages in the ped/bike network, or facilities ripe for improvements to provide protected/separated bike facilities.

Selection Criteria - Many plans will develop a prioritization methodology and process for selecting projects for implementation. That prioritization then becomes adopted with the plan and becomes set, with little flexibility to react to specific funding opportunities or shifts in policy priorities.

The top 20 project identified here were selected by considering a number of factors and criteria that should be reevaluated by Town staff year-to-year as they look at funding projects through annual budgets, bonds, grant proposals, and NCDOT/DCHC project submissions.

The road to success is always under construction.

Project Selection Criteria

Partnerships/Cost Share - Is there an opportunity to work with another party (developer, NCDOT, Go Triangle) to share project costs or combine projects?

Are other Town departments completing projects within right-of-way where Complete Street elements can be included?

Safety Impacts - Will the project resolve a proven concern or crash location?

Pending Development - Will the project help serve demand from new development and be funded all or in-part by the developer of the project?

Citizen Requests - Is the project constantly requested by residents?

Connectivity to:

- Pedestrian/Bike Network - Is the project a part of the priority network? Does it provide a connection from a key destination/activity center to the network?
- Transit/Schools/Activity Centers - Does the project connect residents to schools, transit, or activity centers? Does it expand bike-/walksheds to these?

Momentum - Will the project encourage and excite residents to bike or walk more? Can the project serve as a pilot installation to test new ideas or facility types?

Topography - Does topography contribute to a need for a facility that will increase safety and/or potential use?

20 Key Projects + 5 Priority Programs/Policies - These were the most requested in the public input sessions or represent important missing links. When completed and paired with the key policy/program recommendations, these select improvements will help encourage even more residents to walk and bike in their Town.

Recommended Improvement	Network Importance	Corridor	Cost Est.
Complete Street Corridors			
Barclay Rd Pedestrian Crossing	Improves and facilitates safe crossings for residential near Chapel Hill Transit bus stops and Bolin Creek greenway	MLK Jr. Blvd	$ 100,000
Northwood/Perkins Sidewalk Connector	Serve demonstrated pedestrian demand between area neighborhood. shopping centers, and transit stop	MLK Jr. Blvd	$ 60,000
Multi-use paths (both sides) in Ephesus-Fordham District	Establish key linkage between Booker and Bolin Creek Greenways, as well as area shopping centers and redevelopment	US 15-501 Fordham Blvd	$ 2,200,000
Raleigh Road Uphill Climbing Lane	Reallocate lanes from Country Club Ln to median before Quali Hill Ct. to add uphill climbing lane; resurfacing	NC 54 Raleigh Rd	$ 225,000
Meadowmont Ln/Friday Center Dr/ Barbee Chapel Rd ped crossings	Improves and facilitates safe crossings between medium density residential and office nodes in E Chapel Hill	NC 54 Raleigh Rd	$ 105,000
Bike intersection improvements at Mt Carmel Ch Rd/Culbreth Rd	Improves bike wayfinding and safe crossings at large intersection	US 15-501 South	$ 175,000
Priority Bike/Ped Corridors			
E Franklin St Lane Bike Lanes	Improve bike/ped environment on E Franklin St from Boundary St to Estes Dr by converting existing roadway to three-lane roadway; resurfacing	Eastern Explorer/ E Franklin St	$ 985,000
US 15-501 Underpass at Oteys Rd	Create safe, low-stress connection for bicyclists and pedestrians south of US 15-501 to UNC and downtown Chapel Hill	Southern Circuit	$ 1,000,000
Protected Bicycle Lanes and Sidewalk on Ephesus Church Rd	Provide facilities for residents east of US 15-501 to access shopping centers and for families with children to access Ephesus Church Elem	Eastern Explorer	$ ------
Greenway Connectors Marking Package	Sign and mark advisory lanes, bicycle lanes, or uphill climbing lanes to create 3.7 miles of low stress connections for bicyclists in existing ROW Treeline 3, Treeline 5, Cross Cities 4, Cross Cities 8, Barclay 1	Treelyne Cross Cities Barclay	$ 195,000
Greenway Connectors Sidewalk Package	Provide 2.8 miles of sidewalk on both sides to enhance/ supplement longer-term Priority Corridor projects Treeline 3, Treeline 5, Barclay 1	Treelyne Barclay	$ 2,895,000
N Elliott Rd Complete Street	Provide facilities for residents west of E Franklin St to access shopping and for families with children to access Estes Elem & Phillips Middle Schools	Midlyne	$ 375,000
Multi-Use Path: Piney Mountain Rd to Martin Luther King Jr Blvd	Complete Treelyne Trail B multi-use connection between Weaver Dairy Rd and Estes Dr to establish East-West bicycle and pedestrian corridor	Treelyne	$ 350,000
Underpass of Franklin St	Create a safe, low-stress connection east of E Franklin St and users of Lower Booker Creek Trail to access Ephesus-Fordham district	Eastern Explorer/ E Franklin St	$ 905,000
Battle Park Trail	Improve access for users with disabilities by creating an ADA-compliant multi-use trail along OWASA easement and create alternate low-stress route to the Chapel Hill CBD from the East	Cross Cities Connector	$ 640,000
Morgan Creek Trail Extension	Fill missing link to proposed Oteys Rd Underpass for safe, low-stress access along US 15-501	Southern Circuit	$ 640,000
Barclay Trail & Bolin Creek Extension	Provide low-stress alternate to Estes Dr Extension	Barclay Connector	$ 850,000
Cross Cities Connector	Joint Design Study for corridor in partnership with Durham County	Cross Cities Connector	$350,000
W Cameron Ave Protected Bike Lanes	Improve bicycling conditions into UNC Campus on Cameron Ave	Cross Cities Connector	$ 375,000
Multi-Use Path: Piney Mountain Rd and Barclay Rd	Complete Piney Mountain Rd to Barclay Rd portion of Timberlyne Trail to provide safe, low-stress route	Timberlyne	$ 750,000

One of the project criteria listed for consideration is momentum. Certain projects can excite the community, help shift the mindset of residents, and spur the interest of those that may not walk and bike frequently. Therefore developing a select number of signature projects for early implementation can help jump start increased ped/bike/transit commuting and travel and keep the Town's progress moving towards the 2025 35% modeshare goal.

Implementing a high-impact and high-visibility project will engage a wide number of citizens and can potentially provide significant safety and modeshift benefits relative to other projects. Evaluation is an important part of the project to demonstrate the intended goals are met.

Franklin Street Protected Bike Lanes - The conversion of E Franklin Street from Estes Drive west to E Boundary Street will provide a new bike-friendly corridor between Downtown and the UNC Campus and popular business at and along the way to University Mall and Ephesus-Fordham district. The facility also connects bicyclists to the Bolin Creek Greenway and would make it safer for pedestrians who currently share the sidewalk with less confident bicyclists.

Creation of such a visible project with the potential for high ridership could encourage future lane reallocation eastward for Estes Drive to Ephesus-Fordham, establishing a key corridor for bicycling.

Timberlyne Trail from Piney Mountain Rd to Barclay Rd - This trail represents one of the most ambitious concepts in the plan, with the transformation of a power easement through neighborhoods into a potential greenway corridor.

The greenway would provide a proof of concept of creating a low-stress alternative to bike lanes and sidewalks along a major road corridor, and combined with a new crossing at Barclay Rd, would link to neighborhood streets for cyclists and pedestrians trying to get to Downtown or Carrboro. It also links the planned Estes Drive multi-use path and cycletrack to the south towards Downtown.

Beginning planning for this project will help determine both the willingness of Duke Energy to partner on expanding the Town's greenway system and grow the system in the north Chapel Hill.

Policy/Program Recommendations

Infrastructure projects help create a more walkable and bikeable transportation network by working to improve and retrofit existing street corridors and linking off-road connections. By updating the current policies and programs, the Town can encourage growth and development patterns that create a true multi-modal transportation system.

The following sections summarize a few of the programs and policies affecting walking facilities and activities in the Town and provide recommendations for how to improve the pedestrian environment. It also adds to the toolbox by recommending an additional connectivity enhancement to the development ordinance.

NCDOT Complete Streets Policy Update

The 2020 update to the Mobility and Connectivity Plan was spurred by major updates to NCDOT's Complete Streets Policy. The policy, updated significantly in 2019, applies to NCDOT-maintained roads and places the burden on NCDOT to explain why multimodal facilities are not included in major highway projects. All facilities included in an adopted plan will be paid for if NCDOT undertakes a major highway project. This provides a key source of funding for projects on NCDOT corridors, and prompted the Town to include higher-quality facilities.

Below is the cost share formula for both projects included in an adopted plan (left) and not included in an adopted plan (right).

NCDOT Complete Streets Policy (2019)

"This policy requires NCDOT planners and designers consider and incorporate multimodal facilities in the design and improvement of all appropriate transportation projects in North Carolina ... Consideration of multimodal elements will begin at the inception of the transportation planning process and the decisions made will be documented."

COST SHARE AND BETTERMENT

- Pedestrian Facility
- Bicycle Facility
- Side Path
- Greenway Crossing
- Bus Pull Out
- Bus Stop (pad only)

In Plan	• NCDOT pays full cost
Not in Plan, but Need Identified	• Cost Share*
Betterment	• Local pays full cost

*Exception – NCDOT pays full cost for on-road bicycle facility

Cost Share Formula

Population	NCDOT / Local Share
• > 100,000	80% / 20%
• 50,000 to 100,000	85% / 15%
• 10,000 to 50,000	90% / 10%
• < 10,000	95% / 5%

Betterment

- A requested improvement that exceeds the recommendations from a plan and/or exceeds need identified in the project development process
- Aesthetic materials and treatments
- Landscaping in excess of standard treatments
- Lighting in excess of standard treatments

Town of Chapel Hill Design Manual (2017)

"All development must provide access to publicly maintained vehicular, bicycle, and pedestrian facilities..."

"Pedestrian access - access to a street or dedicated recreation area/space containing a pedestrian way..."

"The provision of sidewalks on both sides of the street is required..."

Pedestrian Policies, Guidelines, and Standards

Chapel Hill's Land Use Management Ordinance (LUMO) requires "streets, public alleys, bicycle circulation systems and bike lanes, pedestrian circulation systems and sidewalks, and bus stop amenities shall be provided and designed in accordance with the design manual." The Town's 2017 update of Design Manual requires developers to provide pedestrian access and sidewalks on both sides of all streets. With these two documents, Chapel Hill establishes what many pedestrian plans across the State and country do not- pedestrian access to all sites and buildings and sidewalks on both sides of every street.

While the Town does not have an official pedestrian plan, Chapel Hill staff carry out many of the programs and initiatives common as recommendations in most pedestrian plans. The Mobility Plan is intended to serve as the Town's primary planning document for pedestrian accommodations, and is accompanied the Sidewalk Prioritization list as well as the standards and policies detailed in the Design Manual and area plans.

Design Manual

The 2017 Chapel Hill *Design Manual* calls for typical sidewalks of minimum 5' width on Local Streets, 6' width on Arterials, up to 10' width on Main Streets based on new typologies outlined in the document. The *Streets and Sidewalks Standard Details* should be updated to reflect these recommendations, to include updated accessible ramp details per NCDOT, and to provide details for new bike facilities including buffered bike lanes and intersection striping.

Intersection Safety

The Town will ensure that all bicycle-pedestrian facilities are designed to the highest safety standards feasible at intersection crossings.

Neighborhood Connectors

In order to increase connectivity for non-motorized transportation, the LUMO should be amended to include a requirement for short ped/bike connections between cul-de-sacs and streets with limited connectivity.

Where street interconnectivity is not provided within new site plans (cul-de-sacs, stubs, dead end streets, etc.), the developer would be required to construct paved paths according to the following:

- The developer shall provide a ten-foot (10') wide public access and maintenance easement along these paths, with the paths in the center of the easements;
- The open space shall be provided between lots (not within lots) to maintain connectivity;
- In low-lying areas, the Planning Director may require that the developer construct a boardwalk;
- Where necessary to cross a stream or creek, the developer shall construct a bridge with a minimum path width of eight feet (8') across the bridge;
- The Planning Director may recommend exceptions within a subdivision that are not reasonably expected to draw a significant amount of pedestrian traffic, such as areas where topographic or natural features would make construction of a sidewalk impractical or a practical alternative is available within 1/8 mile.

Chapel Hill can reduce barriers to connectivity by requiring easements to maintain access for non-motorized travelers on cul-de-sacs and limited connectivity streets. The above photos show developments examples in Apex, NC.

Policies and Procedures for Traffic Calming Measures

The Town's *Engineering Design Manual* was revised in 2017 to include criteria for the application of the following traffic calming measures: stop signs, speed tables, pavement treatments, semi-diverters, mid-block closure, forced turn channelization, traffic circles, chicanes, and chokers. The manual does not include a variety of tools often used to improve pedestrian safety, comfort and reduce exposure. Many of these are highlighted in *WalkBikeNC, North Carolina's Statewide Bicycle and Pedestrian Plan*.

The Town should consider amending the Manual to include additional pedestrian-focused treatments including mid-block crossings and associated crossing beacons, in-street pedestrian crossing assemblies, and raised crosswalks. Design criteria for new treatments should be consistent with standards referenced in the state's plan. In addition, the Town should consider adding policies for fixed signal actuation (vs. pedestrian-actuated signals) and leading pedestrian intervals.

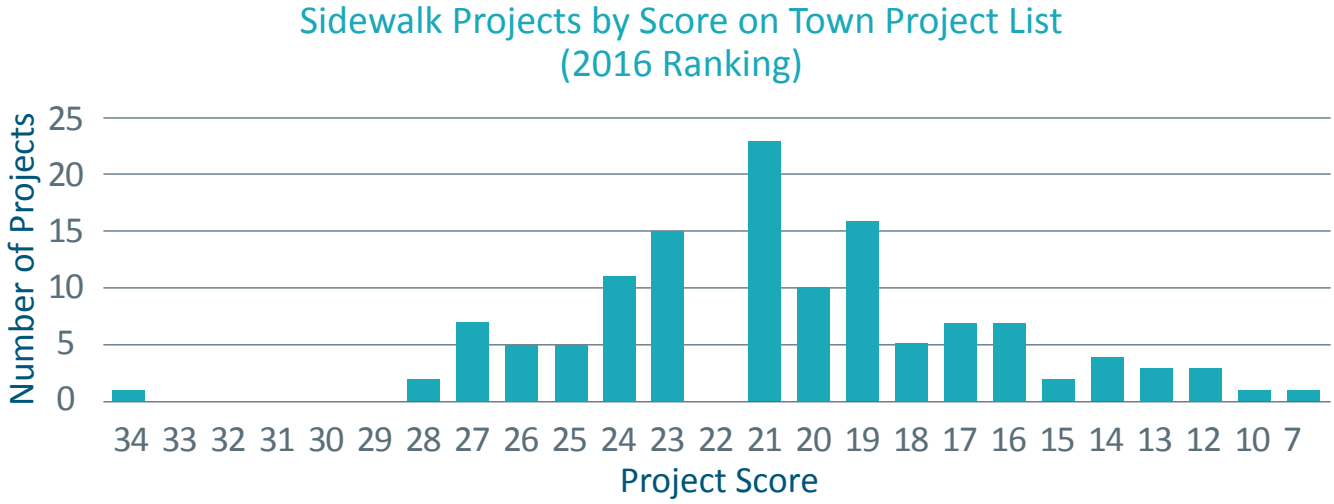
Sidewalk Programs

Reprioritize Sidewalk List

The Town has an existing sidewalk priority list that identifies 92 potential sidewalk projects and ranks them based on a prioritization score. The Town's system develops an overall score out of 36 based on safety, pedestrian, and other criteria in order to determine priorities with limited capital funding options. Typically, sidewalks in the system with high scores fall between 19-27 points, with little room to discern between higher-priority projects.

92 → 158

Increase in Projects on Sidewalk Prioritization List Based on Mobility Plan Evaluation



Sidewalks on the Town project list are clustered making it difficult to discern high priority projects. Additional scoring factors and points related to Focus Areas and Priority Corridors will elevate projects to consider for design and construction.

Additional points are added to the ranking system to bolster projects identified along the Priority Corridors, particularly those in the Town Focus Areas and that can be easily constructed.

New Sidewalk Prioritization Criteria

- Focus Area (3 pts)
  - Within Town Focus Area – 3 points
- Priority Corridors (5 pts)
  - Segment of Priority Corridor—5 points
  - Within Priority Corridor ¼-mile Buffer – 3 points
  - Extends Existing Link to Priority Corridor—1 point
- Constructability (5 pts)
  - In ROW, no/minor physical constraint – 5 points
  - May require ROW/easement, moderate physical constraint – 3 points
  - Requires ROW, major physical constraint – 1 points

Microgap Program and Funding

In some cases, gaps in the sidewalk network may be only short segments, less than 500 feet in length. Whether sidewalks were not built on both streets for a corner lot or individual lots in a subdivision were never developed, these small gaps are often easier to fill by Town field staff in the Public Works Department, without need for design or major site preparation. The Town is recommended to establish a line of funding in the annual operating budget, with initial funding of $50,000 to $100,000, to fund microgap sidewalk projects and sites identified for easy/quick installation of small sidewalk gaps.

ADA Accessibility

To meet accessibility requirements and goals of the Americans with Disabilities Act (ADA) and better serve the nearly 14% of the population estimated to have a disability (U.S. Disability Statistics 2015), an ADA Transition Plan is currently being conducted by the Town. By inventorying curb ramps at over 80 intersections in Downtown Chapel Hill, recommendations for annual funding and implementation strategies are being developed for improving curb ramps, crosswalks, and sidewalk segments. The Town has allocated $50,000 annually for several years to improve ramps and curbs across the Town's network. Based on needs, the Town should:

- Maintain the annual budget item to address the improvements identified in Downtown;
- Continue data collection for other portion of the town using the GPS/GIS application developed for the Mobility Plan and
- Designate an ADA Coordinator in the Town
- Initiate a method for citizens to make ADA improvement request
- Plan upgrades for the spot improvements and projects to create accessible routes recommended in the plan
- Continue to monitor, assess and repair deficient facilities and reexamine progress to determine the need for less or more funding.

In addition, strategies are woven throughout the Mobility Plan including upgrading several ADA compliant greenway paths in key areas, filling sidewalk gaps, decreasing bicycle sidewalk riding, and providing accessibility to transit stops.

Bicycle Policy and Programs

While the Chapel Hill Bike Plan was adopted less than 3 years ago, the level of dialogue over bike facilities has been raised across the nation with numerous cities across North America planning, implementing, or piloting more visible or protected bikeways and treatments, including cycle tracks, protected bike lakes, and green paint applications in conflict areas. Residents who would consider cycling more, commonly referred to as "interested but concerned," are more likely to use protected facilities and the types of facilities where riders of all ages and abilities can feel comfortable because of physical separation from traffic.

The new and improved bikeways come with greater cost than the bike lanes or sharrows that were commonplace in most of NC communities' first bike plans. Some communities are choosing to roll out new facility types through pilot projects to get citizen input. There have been mixed results, ranging from excitement and praise to "bikelash" from drivers where vehicular lanes are reallocated. With citizens requesting bike share programs, bike parking, and additional amenities, elected officials are asking how these investments will benefit their communities beyond providing recreational facilities and quality of life.

These items were not addressed in detail in the Bike Plan and therefore are discussed here to help update the 2014 document in terms on policies, programs, and facility types.

Chapel Hill Bike Plan Vision:

"Chapel Hill is a community where biking is a safe and convenient everyday choice."

Recommended Steps to Start a Bike Parking Program

Step 1

Set up online mechanism for bicycle rack request and advertise to property owners. Identify areas of need for new bike parking and supplemental parking for existing properties. Determine rack type and design. Create a mechanism for funding racks such as a crowdfunding campaign or allocation from the Town budget.

Step 2

In the first year, target a minimum installation of 50 racks through a bulk purchase and 1 additional bike corral by request. Upon installations, advertise and promote rack installations to the public and encourage private entities to submit online requests. Geolocate parking and add to GIS mapping on Town website.

Step 3

Perform review of bicycle parking through parking counts, recorded by locations in GIS file. Quantify additional parking needs through program review and private requests.

Bike Parking Program

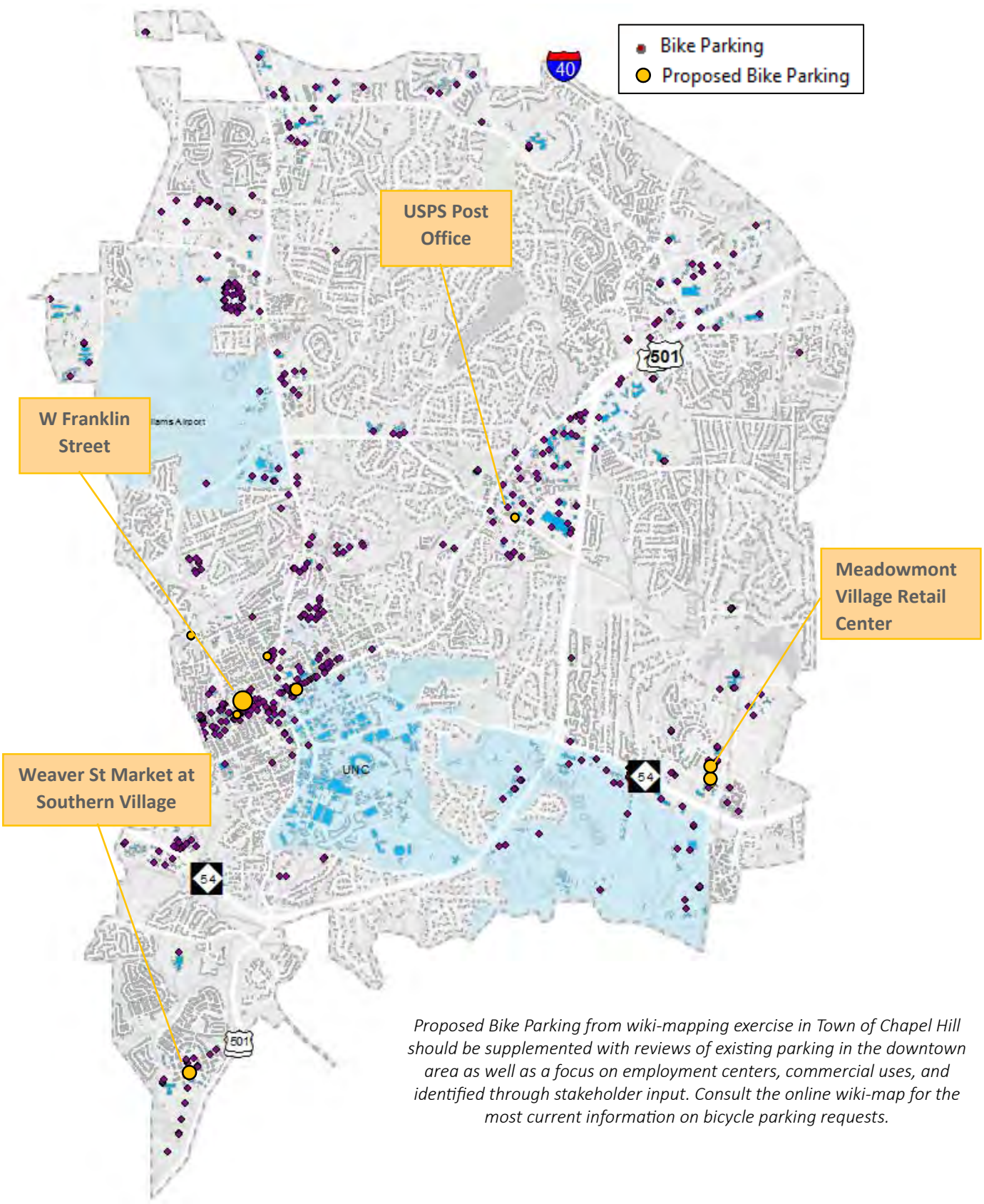
Program Development - To increase parking and create a more bike-friendly town, Chapel Hill should implement a program to provide and expand bicycle parking at existing destinations. In the short term, additional bicycle parking can be provided by assessment of needs and direct outreach, such as:

- Visual observation – Utilize the Town's Meter Parking Patrol to assess the number and location of bikes parked due to lack of legal parking on racks.
- Land use – Review employment centers, commercial uses, high density residential housing, and transit stops to determine needs in those areas.
- User input – Ask cyclists (through clubs, advocacy groups, or online surveys) to identify the most-needed locations. Residents identified numerous locations through the wiki-mapping exercise.

In the long-term, a public-private partnership is recommended for meeting the bicycle parking need at existing locations in Chapel Hill. Individuals attending the Transportation Management Plan trainings can receive information about requesting racks. The requester performs the installations, but suitable racks and siting assistance are provided by the Town through the program. This can be paired with a Bicycle-Friendly Business incentive program. Inverted U-Racks or Bicycle Corrals are recommended and branded versions are available from vendors.

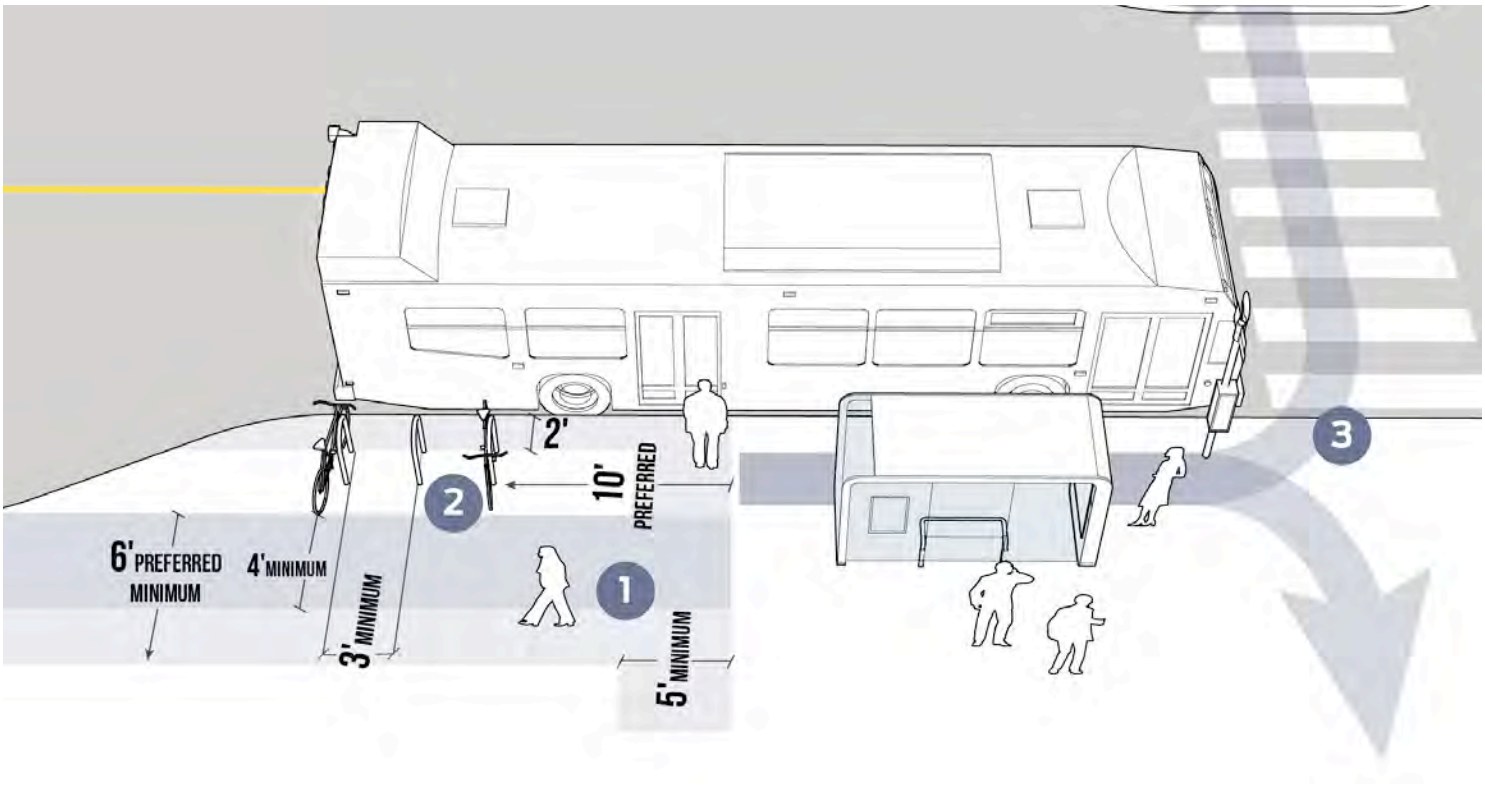
Typically, rack installations can be challenging and are limited by siting constraints, not by the number of racks. If the program is popular and a competitive process for siting racks is required, Town staff should prioritize installations where there are large numbers of illegally parked bikes and places that have received high numbers of citizen requests.

Bicycle Corrals expand downtown and business district parking. This corral in Raleigh, NC is regularly full on weekends and during special events.



Proposed Bike Parking from wiki-mapping exercise in Town of Chapel Hill should be supplemented with reviews of existing parking in the downtown area as well as a focus on employment centers, commercial uses, and identified through stakeholder input. Consult the online wiki-map for the most current information on bicycle parking requests.

Bike Parking at Transit - Bicycling is a great way to complete the first and last mile connection to transit. Transit users are often faced with two options: leave the bike at their station or bring it aboard with them. Providing welcoming, secure bicycle parking facilities helps transit riders feel at ease leaving their bicycle, gives them a designated place to securely lock their bicycle, and expands the catchment area for transit station use. The figure below shows guidance for placement of short-term bicycle parking at a typical transit stop.



Guidance for placement of bicycle parking at a typical transit stop. (Source: NACTO Transit Street Design Guide)

With the planned implementation of Bus Rapid Transit (BRT), the Town can update their design guidelines to require increased bicycle parking at major transit stations, park-n-rides and transit stops. In addition to requirements for covered short-term racks (Type I), cyclists using could be better accommodated with provisions for long-term storage (Type II) at park-n-ride locations. Bike stations provide secure, weather-protected bike storage. Access to bike stations can be integrated with transit fares, online apps, or other types of subscription cards.

Example of Bike Parking Station which provides secure, sheltered long-term bicycle storage for transit users.

Type of Facility	Example	Long Term	Short Term
Major transit facility/ BRT/LRT Station	Proposed expansions of Southern Village & Eubanks Road	5% of auto parking, min of 8	Minimum of 6 covered spaces
Auxiliary Park-n-Ride (300-500 spaces)	Southern Village (390) Eubanks Road (395) Jones Ferry (443)	4% of auto spaces for lots <400 or min of 8 3% of auto spaces of lots >400	Minimum of 14 covered spaces
Standard Park-n-Ride (100-300 spaces)	Carrboro Plaza (145)		Minimum of 8 covered spaces
Transit Stops		N/A	Minimum of 6 spaces

Proposed Revisions to Development Code - The following changes are proposed to existing bike parking ordinance:

- Include parking minimum requirements for transit stations, transit stops, and park & rides
- Increase multi-family residential bike parking to 1 per 2 units (previously 4) based on recent experience with new development
- Specify minimum required spacing between short-term bike parking racks at 24/36" and clear space between racks an any adjacent wall to 36" to add clarity.

Bike Share

With the expansion of bike share programs around the world and in the Triangle area, Chapel Hill aspires to bring a bicycle share system to the community. Bike sharing is a public transportation system which allows users to pick up a bicycle for use and drop it off at any other bike station within the system's service area.

The benefits of an effective bike share systems include:

- Encouraging active transportation and health through physical activity
- Increase in equitable and affordable access to transportation by eliminating an initial barrier of purchasing a bicycle
- Serving the "first and last mile" of a transit trip as an extension to bus or rail services
- Reducing the share of single occupancy vehicles
- Reducing physical space needs for parking facilities

Chapel Hill has already issued a request for information from bike share vendors to help determine the feasibility of such a system in the Town.

Other systems though, are launching or already operating in the Triangle, so the Town will need to consider the potential for coordination and interoperability. The decision should take into account payment methods, system boundaries, station location and sizes, and transit connections.

Coordination with the City of Raleigh or UNC-Chapel Hill could encourage a regional bike share system and provide cost savings with a shared vendor.

These rental bikes in Gainesville, Florida, are similar to the bike share program bikes used by Duke University. (Lauren Johnson/WUFT.org)

System	Vendor	Size	Status	Subscription	Fare
Local					
UNC-Chapel Hill	Social Bicycles	100 bikes	Launch pending	TBA	TBA
City of Raleigh	Beweegen	300 bikes 30 stations	Spring 2018	Annual: $80 Students: $50 Daily : $8	First 30 minutes free $4/half hr additional Reduced rates to students
Others					
Charlotte	B-Cycle	200 bikes 25 stations	Existing	Annual: $65 Students: $15 Daily : $8	First hour is free $4/half hr additional
UNC Wilmington	Gotcha Bike	70 bikes 7 stations	Existing	$25	First hour is free $2/half hr additional
Atlanta, GA	Social Bicycles	500 bikes 50 stations	Existing	$15-20/month students: $25/semester	First 60-90 free (based on subscription) $8/hr additional
Greenville, SC	B-Cycle	40 bikes 10 stations	Existing	Annual: $60 Students: $15 Daily : $5	First hour is free $4/half hr additional

Broadening the Culture and Mindset

As important as the engineering and planning is in creating a multimodal community, so is cultivating the culture and mindset where residents want transportation options and expect the Town to provide them. Commitment to all modes and all users must also be embraced by municipal staff and officials. Chapel Hill possesses that spirit already which can be seen through vision and objectives of the Chapel Hill 2020 Plan, the Bike Plan, regional transit planning efforts, and development standards. The question now is how to further grow the commitment to walking, biking and transit.

Chapel Hill's peers are making strides to become safer and more accommodating for walking and biking. General trends and overarching themes include dedicated bicycle and pedestrian staffing and funding, bikeshare, and a signature project that generates energy within the community.

These initiatives would not only help encourage residents to try different commute and travel patterns, but also educate officials and staff and inspire community action in the Town to participate in events, and even garner support for local projects.

	Chapel Hill NC	Iowa City IA	Charlottesville VA	Corvallis OR	Bellingham WA
Population	58,000	69,000	44,000	53,000	81,000
Bike Commute Modeshare	2.3%	3.7%	3.2%	12.1%	4.3%
Walk Commute Modeshare	12.5%	15.6%	12.6%	9.6%	7.4%
Transit Commute Modeshare	12.4%	9.9%	8.6%	3.0%	5.7%
Total Modeshare	27.2%	29.2%	24.4%	24.7%	17.4%
Staffing Level (FTE)	--	0.75	1.0	1.5	1.0
Bicycle Friendly Community Rank	Bronze	Silver	Silver	Platinum	Silver
Walkscore	35	43	58	48	48
Spending Target for Bicycling and Walking Infrastructure	--	--	Proposed at 20% of CIP in 2015 Bicycle and Pedestrian Master Plan Update	20% of transportation budget	1/3 of total revenue from Transportation Benefit District (contiguous with city limits) funded from two tenths of 1% sales tax
Bikeshare	--	Joint RFP Issued, City and University, 2016	University Bikeshare Vendor: SoBi	City Bikeshare Vendor: Zagster	University Bikeshare Vendor: BIXI

Snapshot Comparison of Key Indicators for Bike & Pedestrian Modes for Chapel Hill and Peer Cities

Performance Measures

Developing metrics and tracking progress is a part of fully integrating pedestrian and bicycle planning into broader, ongoing performance management efforts. With limited resources, it is critical to identify the projects and investments, track progress, develop effective solutions, and prioritize investments. They should promote informed decision-making by relating community goals to measurable effects.

Recommended Performance Measures for Chapel Hill Community Mobility

The Town should begin to track performance measures to measure the outcomes of the Mobility Plan:

Infrastructure Spending - Chapel Hill should quantify and report on infrastructure spending by mode as compared to targets for bicycle, pedestrian, & transit improvements based on the Town's Capital Improvement Plan and Bond projects for transportation infrastructure. Approximately 70% of the FY2017 infrastructure capital program is dedicated to bike/ped improvements, as is a similar percentage of bond programs for transportation. With a bicycling and walking mode share totaling around 15% and transit users who also depend on pedestrian infrastructure, the current spending is well-above **a reasonable target of 30%**

Public comments indicated that street crossings are a large issue for residents.

Miles of Bicycle and Pedestrian Facilities - Reporting miles added annually allows for tracking progress over time. In conjunction with Powell Bill inventories, the Town should continue to track miles of existing sidewalk, greenway, and bicycle infrastructure and update this information on an annual basis.

Crossing Opportunities - Public outreach for the Mobility Plan indicated that street crossings are a large issue for the Town, especially on higher volume state-maintained arterials where there are limited opportunities. Tracking this metric show annual progress on reducing the average distance between improved crossing locations of roadways of 4 or greater lanes. Improved crossings are defined as two-stage or signalized, and can include Rapid Rectangular Flashing Beacons or HAWK Signals.

It is recommended that Chapel Hill track crossing improvements and set the minimum desired distance between improved crossings on 4+ lane arterials at ¼ mile.

Mode Split - The mode split relates to the overall goal of the Mobility Plan to increase trips by walking, bicycling, and taking transit. When evaluating projects, this metric can be used to determine how a project alternative might impact mode choice to reach the goals set by the Town.

The Town should continue to monitor American Community Survey data and document percent increase in combined bicycling, walking and transit mode share of total commute trips, aiming for the plan goal of 35% commuting by bike, walk or transit in 2025.

Bicycle and Pedestrian Counts - Counting volumes of non-motorized transportation users offers useful information on an agency's performance. Chapel Hill conducts location counts for cycling and walking and has existing data on transit usage. These counts are a better gauge of walking and bicycling usage trends than journey to work data available through the American Community Survey since it includes people who are not traveling solely for work purposes on weekdays. Though counts are highly seasonal in nature, and weather dependent, continuous counts provide a good source for looking at change over time.

The Town should provide an annual report of bicycle and pedestrian counts from the stations and, if possible, allow real-time reporting of data to Town open source data locations.

Wayfinding and Signage

Within the low-stress priority network of bicycle and pedestrian infrastructure within the Town of Chapel Hill, there are connections to many destinations. Therefore it will be important to employ a unified wayfinding package at a human-scale. The concept should be implemented through on-street and sidewalk markings, signage, posts, and sidewalk/greenway kiosks to guide people to destinations and draw awareness to the Greenway Connectors.

Every place in a navigable space has a unique perceptible identity. It functions as point of reference in the larger area.

The key types of wayfinding are:

Turn Signs - The intention of this type of signage is to ensure users stay on the designated corridor. These signs should be added before key decision points, so that there is time to make the decision of where to go next.

Confirmational Signage/Marking - Signs or markings that are actually not used to direct people, but act to verify that the user is on the right path. To create a positive experience, these signs ensure that people have comfort in the fact that they are going in the right direction. Conveying the right mood is a key part of what signage can achieve when implemented correctly. Often these are placed after key decision points to confirm a route.

Decision Signage - These mark the junction of multiple routes. They orient users within the local context and provide directions to one or more key destinations.

Awareness Signage - These signs are intended to draw awareness to a route and encourage new users. These signs build awareness of the system by creating a presence for the priority routes outside of the system.

Decision Sign (top) that would be placed at key points in the network as part of an example signing package.

Confirmational Markings (bottom) can be placed at regular intervals on the pavement or sidewalk to verify that the user is on the right path after the decision is made.

Active Routes Coalition Members

School

- Principal and other administrators
- Parents and students
- Teachers
- PTA/PTO representative
- School nurse
- School district transportation director
- School improvement team or site council member
- Adult school crossing guards

Community

- Community members
- Neighborhood or community association members
- Local businesses
- Local pedestrian, bicycle and safety advocates

Town Government

- Mayor's office or council member
- Transportation or traffic engineer
- Local planner
- Public health professional.
- Public Works representative
- Law enforcement officer
- Mobility coordinator

Active Routes to School

North Carolina's support for Safe Routes to School (SRTS) education and encouragement programs is delivered through the Active Routes to School project which is supported by a partnership between the N.C. Department of Transportation and the N.C. Division of Public Health. The Town has support through the Region 5 coordinator. The project is federally funded and will span through June 2019. The project will focus on providing safe, appealing environment for walking and biking, improve the quality of our children's lives and support national health objectives by increasing physical activity, reducing traffic, fuel consumption, and air pollution in the vicinity of schools.

The Active Routes to School program is an opportunity to make walking and bicycling to Town schools safer for children and to increase the number of children who choose to walk and bicycle. **The Town should continue to support and expand 'Active Schools.' It is recommended that the Town work to ensure an active and broad coalition which has representative members from schools, the community, and local government. It should to grow its representative schools, curriculum, and events to support the next generation in healthy active lifestyles.**

Infrastructure Projects - In North Carolina, the Strategic Mobility Formula aligns bicycle and pedestrian projects with SRTS, Transportation Alternatives Program, or Surface Transportation Program funds. The NCDOT Transportation Planning Branch and eligible MPOs direct the use of Congestion Mitigation and AIr Quality funds for bicycle and pedestrian projects. Highway Safety Improvement Program (HSIP) funds are directed by the NCDOT Transportation Safety and Mobility Unit. New requirements under HSIP require better data-gathering on bicycling and walking crashes and safety.

The NCDOT SRTS office asks that the Town and schools work with its Division office to develop a list of priorities. Proposed projects will be scored based on specific criteria for bicycle and pedestrian projects and will need to score well in order to move forward in the prioritization process. The NCDOT Division staff and/or MPO/RPO offices can assist with this process, as well as the Active Routes to School Regional Coordinator.

Bike and Pedestrian Count Program

There is a difference between counting bicycling and walking volumes for short-term, project specific purposes versus having a count program. Since a permanent count cannot be installed in all locations due to lack of funding, an effective program is composed of two elements – continuous counts and spatial coverage counts. Chapel Hill has experience carrying out a data collection plan through collecting coverage counts for the Mobility Report Cards. It is recommended that the Town of Chapel Hill formalize the continuous and coverage counts in order to implement an Non-Motorized Volume Program.

Why Count?

Nationwide communities collect data on vehicle movements, but rarely is data collected on bicycle and pedestrian use. Due to the lack of basic metrics, this means that what is not counted is not funded. Collecting more data can help to increase funding for and put in place better bicycle and pedestrian infrastructure. This is especially important in identifying areas of the highest need, which are often under-represented in public input.

Applications of count data are numerous:

- Performance Measures
- Project Prioritization
- Evaluating the effects of new infrastructure on bicycle and pedestrian activity
- Conducting risk/exposure analysis
- Estimating annual volumes
- Justifying maintenance expenditures

What doesn't get counted, doesn't count.

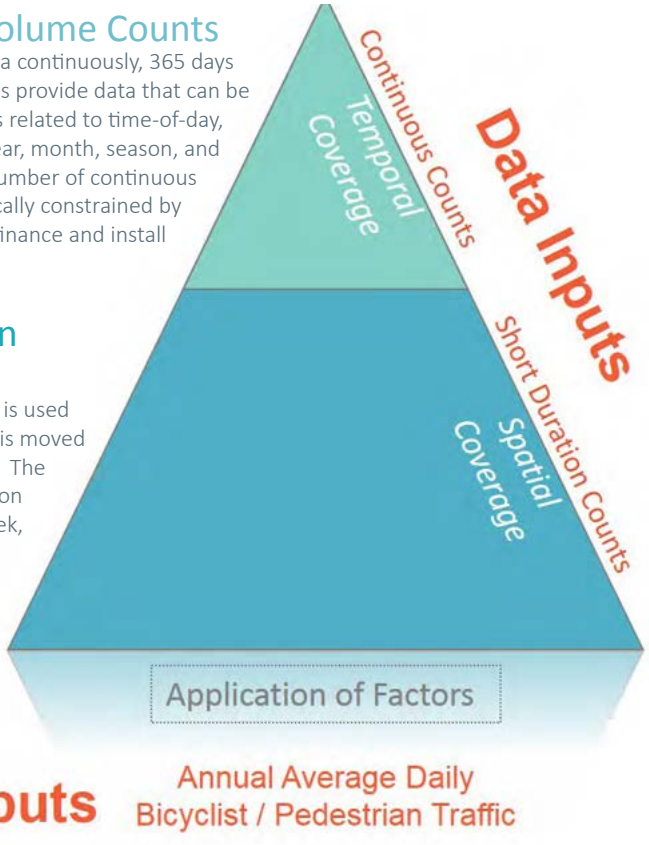
Data gives justification. It allows you to make a case.

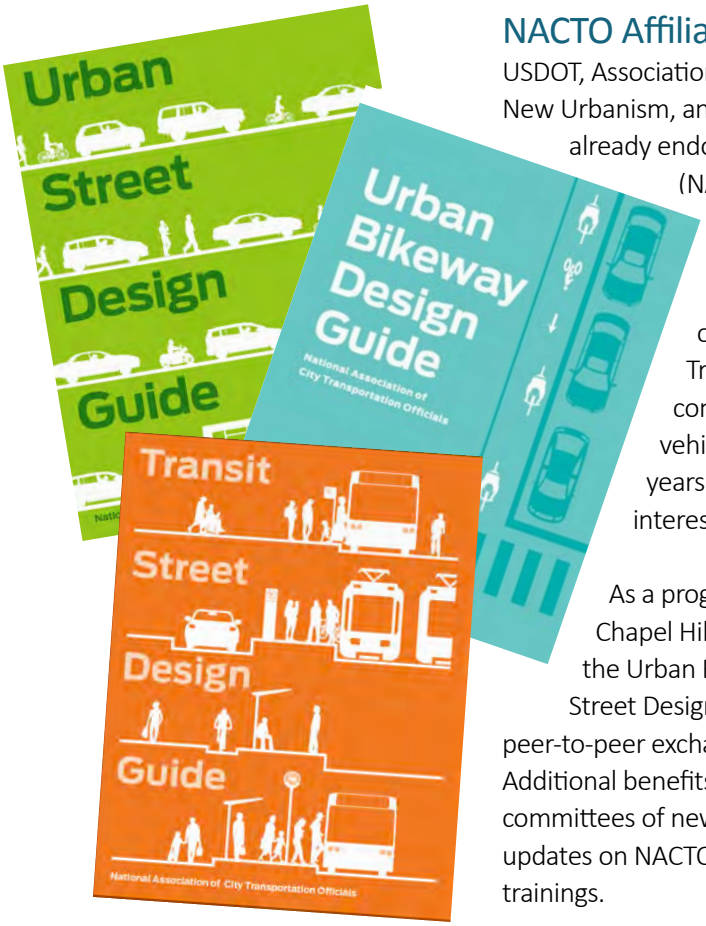
Continuous Volume Counts

Permanent provide data continuously, 365 days per year. These stations provide data that can be used to develop factors related to time-of-day, day-of-year, week-of-year, month, season, and annual volumes. The number of continuous count stations are typically constrained by resources available to finance and install them.

Short Duration Counts

Automated equipment is used for data collection and is moved from station to station. The data is adjusted based on time-of-day, day-of-week, and/or monthly factors that are derived from the continuous count portion of the program.





NACTO Affiliation

USDOT, Association of Bicycling and Pedestrian Professionals, Congress for the New Urbanism, and the Urban Land Institute along with 9 States and 48 cities have already endorsed the National Association of City Transportation Officials (NACTO) Urban Street Design Guide.

Street design standards and practices have long been developed and dictated by state departments of transportation and organizations such as the American Association of State Highway Transportation Officials (AASHTO), and reflect standards more conducive to a rural context where right-of-way is cheap and average vehicular speeds are in excess of 45 mph. It is only in the past few years that we have seen cities and organizations representing their interest as they push for and gain acceptance of urban design standards.

As a progressive town that commonly supports innovative design practices, Chapel Hill could endorse NACTO and incorporate design elements from the Urban Bikeway Design Guide, the Urban Street Design Guide and Transit Street Design Guide into projects. NACTO member and affiliate cities have a peer-to-peer exchange for valuable communication between cities on best practices. Additional benefits of becoming a NACTO Affiliate City are membership on review committees of new and updated guides, travel support for NACTO events, regular updates on NACTO projects, and NACTO staff leadership at Design Guide-based trainings.

Mobility Coordinator

Employing a bicycle and pedestrian staff person as a Mobility Coordinator shows that a community is committed to a comprehensive transportation system; they are critical to integrating and coordinating the Town's plans, projects, and development agreements. Having at least one staff-member focusing on the coordination between bicycle, pedestrian, greenway, and transit accessibility issues is an important step in carrying out the recommendations in the plan. The need for coordination is anticipated to increase over time.

Policy and Program Implementation

While infrastructure improvements take considerable time to design and construct, policy changes and new programs can often take shape shortly after the adoption of a new plan and influence the organizational culture and operations. The table below outlines the implementation schedule for these recommendations that need to be made upon adoption of the plan, with continual ongoing town operations, or within the next two fiscal years.

	Policy/Program	Responsibility
After adoption	Update Design Manual Streets and Sidewalks Standard Details	Public Works Department
	☆Amend LUMO for bike parking requirements	Planning Department
	Reprioritize sidewalk list	
Ongoing/ immediate	Continue to develop a bike/ped count program	Planning Department
	Expand 'Active Schools' Program	
Within year (by or for FY19 budget)	Create a wayfinding and signage package	Planning Department
	☆Update Complete Streets Policy	
	☆Designate an ADA Coordinator	
	Start a bike parking program	
	Track and report performance measures annually	
	Become a NACTO Affiliate	
	Add pedestrian elements to Traffic Calming Policy and Procedures	Public Works Department
	☆Establish sidewalk microgap program	
	☆Initiate an ADA improvement request process	
FY19-20 Fiscal Year	Hire a Mobility Coordinator	Planning Department
	Initiate a Town bikeshare program	
	Plan upgrades for the spot improvements and projects to create accessible routes in the ADA Transition Plan	Public Works Department

5 Priority Programs/Policies + 20 Key Projects - Five priority policy/ program recommendations are starred based on their effect to best incorporate and instill a ped-/bike-focused mentality into the Town's standard operating procedures for development review and capital projects, as well as setting up smaller-scale programs to address access needs across the community. When completed and paired with the 20 key capital projects, residents will find the Town's network and developments easier to walk and bike.

A. Public Involvement Detail Summary

B. Planned Improvement Projects

C. Facility Guidelines

D. Ephesus-Fordham District Plan

Glossary

Americans with Disabilities Act (ADA)	Civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life and all public and private places that are open to the public.
Accessible Pedestrian Signal (APS)	Devices that communicate information about the "walk" and "don't walk" intervals at signalized intersections in nonvisual formats to pedestrians who are blind or have low vision.
Advisory Bike Lanes	Dashed bike lanes on low-volume streets too narrow for dedicated lanes.
Bicycle Signal Actuation	A device at a traffic signal that detects bicyclists and alerts the signal control box of a bicyclist's presence and need to cross.
Bike Box	Designated area positioning cyclists ahead of vehicles in traffic lane at signalized intersection during the red signal phase.
Bike Signal Faces	Bike-specific signal providing priority to cyclists where vehicle or pedestrian movements conflict.
Buffered Bike Lanes	Bike lane buffered from traffic with striping. When bollards or physical separation is used, the facility is often called a Protected Bike Lane.
Bus Rapid Transit (BRT)	Bus rapid transit (BRT, BRTS, busway, transitway) is a bus-based public transport system designed to improve capacity and reliability relative to a conventional bus system. BRT often incorporates dedicated bus lanes and traffic signal priority.
Capital Improvement Plan (CIP)	The Capital Improvement Plan (Program) is a short-range plan which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for financing the plan. It is the principal planning tool designed to advance the priorities of the Town.
Complete Street	A transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Complete Streets allow for safe travel by those walking, cycling, driving automobiles, riding public transportation, or delivering goods.
Curb Ramp	A combined ramp and landing to accomplish a change in level at a curb between the sidewalk and the street. This element provides a transitional access between elevations for pedestrians using wheelchairs, strollers, or other devices with wheels, and must comply with ADA Standards.

Glossary

Cycle Track	One- or two-way bike-only facility separated from traffic by physical barrier and pedestrians by curb or buffer.
Detectable Warning	Standardized surface feature built in, or applied to, walking surfaces to warn pedestrians with vision impairments of their approach to street crossings by delineating the boundary between pedestrian and vehicular routes, and to hazardous drop-offs such as the edge of boarding platforms at transit stations. Detectable warnings must meet ADA Standards. Truncated domes are a type of detectable warning.
Durham-Chapel Hill-Carrboro MPO (DCHC)	See MPOs.
East Coast Greenway	A bicycling and walking route that connects 15 states, 450 cities and towns, and 3,000 miles of people-powered trails from Maine to Florida.
Grade-Separated Crossing	A facility, such as an overpass, underpass, skywalk, or tunnel that allows pedestrians, bicyclists, and motor vehicles to cross each other at different levels to avoid conflicts and improve free flow of each mode.
Greenway Connector	A combination of signing, marking, traffic calming measures, and facilities that allow bicyclists and pedestrians to get safely from point A to point B in a priority corridor.
Hybrid/HAWK Signals	Special signals used for crosswalks/bike crossings on major streets where side streets do not warrant full signal. Photo on page 34.
Intersection Crossing Markings	Pavement markings indicating intended path of cyclists; typically include dashed edge lines with green pavement or sharrows.
Lane Reallocation	A technique to modify the number or width of travel lanes to achieve systemic improvements. Variants of the term reallocation include 4-to-3 lane conversion, lane reduction, and road diet.
Light Rail Transit (LRT)	A transit technology that is lighter than other traditional passenger rail systems like subways or commuter rail. Light rail operates in dedicated tracks with electrical power supplied from an overhead catenary system. The light rail vehicles are designed to operate in mixed traffic or in an exclusive right-of-way, either at grade or on an elevated structure.
Land Use Management Ordinance (LUMO)	Chapel Hill's set of development regulations.

Metropolitan Planning Organization (MPO)	A federally mandated and federally funded transportation policy-making organization in the United States that is made up of representatives from local government and governmental transportation authorities. Chapel Hill is within in the Durham-Chapel Hill-Carrboro MPO.
Midblock Crossing	A marked crosswalk that occurs in a location other than an intersection.
Modeshare	The percentage of commuters who travel to and from work by a certain mode (car, bike, walk, transit, work from home)
Multimodal	A transportation term which refers to planning that considers various modes (walking, cycling, automobile, public transit, etc.) and connections among modes. Multimodal transportation includes the mixing of different modes and supports the needs of all users whether they choose to walk, bike, use transit or drive. It means more connections and more choices.
Multi-Use Path	A facility, which should be designed to meet ADA Standards, that can be used by bicyclists, pedestrians, and other non-motorized users. They are separated from the roadway by an open space or a physical barrier or within an independent-right-of-way. Also known as a “shared use path” or “greenway.”
Non-Motorized	Active transportation which includes walking and bicycling and variants such as small-wheeled transport (skates, skateboards, push scooters and hand carts) and transport by wheelchair. Also known as Human Powered Transport.
NCDOT	North Carolina Department of Transportation
Overpass	A structure or bridge that crosses over a roadway, barrier, or natural feature. Also called a "grade separation."
Pedestrian Refuge Island	A raised island at intersection or mid-block crossing location that helps protect crossing pedestrians from motor vehicles and provides a place of refuge. Also known as a crossing island.
Priority Corridor	A low-stress route prioritized for bicyclist and pedestrian use connecting key destinations in the Town.
Protected Bike Lanes	A bike lane protected from traffic by being raised or physically seperated by a permanent barrier.
Rapid Rectangular Flashing Beacon (RRFB)	A warning beacon activated by a pedestrian at an uncontrolled crossing location which uses an irregular flash pattern to signal drivers of a pedestrian’s presence and desire to cross.
Right-of-Way	A right to make a way over a piece of land, usually to and from another piece of land. It is a type of easement granted or reserved over the land for transportation purposes, this can be for a highway, sidewalk, bike paths, rail transport, canal, as well as electrical transmission lines, oil and gas pipelines.

Glossary

Separated Facility	A bicycle and/or pedestrian facility that is physically separated from motor vehicles and is on, adjacent to the roadway, or in an independent right-of-way. Separated facilities include cycle tracks, protected bike lanes, and multi-use paths.
Shared Lane Markings	A pavement marking symbol used to indicate a shared lane environment for bicycles and motor vehicles. These markings are also called "sharrows."
Traffic Calming	A traffic management approach that is intended to slow cars to speeds that are safer and more compatible to bicycling and walking as they move through commercial and residential neighborhoods. The traffic calming toolbox includes, but is not limited to: diagonal parking, neighborhood traffic circles, narrowing travel lanes, tightening curb radii, median islands, traffic diverters, and speed tables.
Transportation Demand Management (TDM)	The application of strategies and policies to reduce travel demand, or to redistribute this demand in space or in time to result in more efficient use of transportation resources.
Two-Stage Turn Queue Box	A designated area at an intersection intended to provide bicyclists a place to wait for traffic to clear before proceeding in a different direction of travel.
Uphill Climbing Lane	Bike lane marked on uphill portion of road with shared lane marking on downhill side.
Vehicles per Day	A measure of traffic volume and used as the unit for Average Annual Daily Traffic.
Wiki-Mapping	An online engagement tool for planners to identify barriers, problems, or safety concerns and simultaneously collect location information from the public.