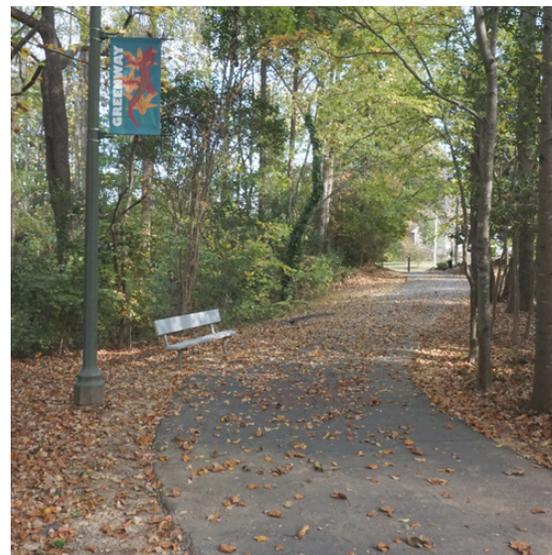


CITY OF CONCORD
Open Space Connectivity Analysis Plan
ADOPTED | 5.09.19



ACKNOWLEDGMENTS

City of Concord

William C. "Bill" Dusch - *Mayor*
Lloyd Payne - *City Manager*
Brian Hiatt - *Previous City Manager*
Merl Hamilton - *Previous Deputy City Manager*
Concord City Council Members
Parks and Recreation Department
Transportation Department
Planning and Community Development Department
Engineering Department
Building and Grounds Department
Water Resources Department
Engineering Department

Connectivity Committee

City of Concord Residents

Consultant Team

McAdams Company, Design Lead

Kristen Mansfield - *Project Manager*
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MCADAMS

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- Process
- Project Advisory Committee + Stakeholders
- Goal + Objectives
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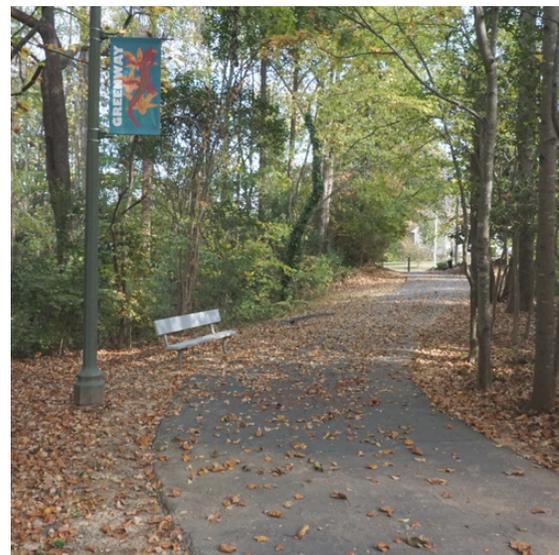
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CHAPTER 1 > EXECUTIVE SUMMARY

VISION

American cities and towns were once planned and designed around a balanced mix of transportation modes – walking, biking, horses and eventually the automobile. Towns that have preserved this balance as they grew are now some of the most desirable places to live, work, and visit. The shift to an auto-centric network was defined by separate areas within a community for living, working, commerce, and recreation that required a car trip to access each. This shift was characterized by roads whose function were judged on the volume and speed of the cars it carried. Cities like Concord are committed to moving back to a more balanced community transportation network that values connectivity, safety, and health as well as serving the needs of businesses and institutions.

This plan is the result of Concord’s desire to make safe, accessible walking and biking part of the City’s identity. There is consistent support across the community to invest biking and walking infrastructure to create a city with a well connected greenway network, multi-use paths along roadways, enhanced sidewalks, and safe roadway crossings. This infrastructure will create an intuitive, safe network that is attractive to users of all ages and abilities. Residents from ages eight to 80 will use the Concord bicycle and pedestrian network as a viable option for short trips, for exercise, to connect with nature, and commuting. Visitors will select Concord because of its vibrant greenway network and walkable downtown and neighborhoods. New businesses and employers will choose to invest in Concord because of a high quality life and sense of place that attracts a wide variety of potential employees.

PURPOSE + PROJECT OVERVIEW

The purpose of this study is to identify feasible, constructible bicycle and pedestrian routes along stream corridors, through open spaces, and along roads to create a more connected Concord. The City of Concord elected to prepare an open space connectivity analysis, expanding upon

the Greenway Master Plan included in the Parks and Recreation Master Plan as adopted by City Council in January 2017. This study is a tool that City Staff can use as a guide to approve, plan, and ultimately build the facilities needed to connect residents and guests of Concord.

PROCESS



listen

- > community vision
- > user experience
- > design aesthetic
- > maintenance
- > budget



data collection

- > parcels
- > land use
- > easements
- > roadway
- > streams
- > floodplain
- > existing plans
- > topography



analysis

- > network analysis
- > property acquisition
- > construction costs
- > schedule
- > maintenance costs
- > constructibility
- > stream project coordination



implementation

- > escalated cost estimates
- > property acquisition strategy
- > permitting strategy
- > funding strategy
- > tourism + operations

Figure 1 - The Planning Process

The Open Space and Connectivity Analysis began with an intensive Listening phase to develop a detailed understanding of how residents want to move and where they want to go. This phase also included specific work across many City Departments to create a coordinated approach to creating a connected, safe network.

The Analysis phase of the project examined the overall network, priority greenway corridors, and small detail areas. The network analysis resulted in a plan that connects desired locations with a mix of greenways along stream corridors, multi-use paths along roadways, and improvements to sidewalks and bike lanes. Corridor studies were completed on priority greenway corridors to support budgeting, land acquisition, and grant seeking. Detailed small plan study areas were established that contained a high number of desired destinations. These recommendations focus on sidewalk and roadway crossings that support biking and walking within these areas of Concord.

The master planning process is one of transparency, community engagement, and data driven recommendations developed through an analytical need-based approach. From the initial inventory and analysis through the implementation plan, the project team engaged the community, stakeholders, and Department staff, while researching pedestrian and bicycle trends and understanding the City's demographics. The project team investigated each proposed corridor and small plan study area to determine ideal alignment of trails, location of supplemental facilities, as well as constraints that will need to be overcome.

Finally, the project team, in conjunction with Department staff, developed and prioritized recommendations to improve the pedestrian and bicycle facility offerings for a fifteen (15) year planning horizon.

The study includes:

- › Existing conditions evaluation
- › Identification of opportunities and constraints
- › Trail alignment, trail surfacing, and access point recommendations
- › Identification of opportunities for new passive open spaces along recommended trail alignments
- › Potential acquisition opportunities
- › Identification of connection opportunities with roads, sidewalks, bicycle routes, and neighborhoods and business hubs
- › Development of preliminary design and cost estimates
- › Creation of an achievable plan with prioritized phasing

The vision is to achieve a connected multi-modal transportation system that provides convenient and safe access to jobs and schools, retail centers and services, and dining and entertainment destinations for pedestrians and bicyclists and to expand the current greenway system to bring further recreational opportunities to residents and guests. Concord's vision is to be bold and impactful; to maximize the City's mobility and connectivity while protecting environmental assets.

PROJECT ADVISORY COMMITTEE AND STAKEHOLDERS

This plan could not have been completed without the assistance and input from the following:

- › Mayor William C. "Bill" Dusch
- › Lloyd Payne – City Manager
- › Brian Hiatt – Previous City Manager
- › Merl Hamilton – Previous Deputy City Manager
- › Concord City Council
- › City Departments
- › Parks and Recreation
- › Transportation
- › Planning and Community Development
- › Engineering
- › Buildings and Grounds
- › Water Resources
- › Connectivity Committee
- › City of Concord Residents

GOALS + OBJECTIVES

GOALS

This plan strives to assist and augment the City's vision by:

- › Enabling the City to achieve their vision of a connected pedestrian and bicycle transportation network by identifying feasible, constructible routes and presenting information that contributes to well-informed development and infrastructure decision making.
- › Establishing specific connectivity recommendations with 5, 10, and 15-year priority.
- › Creating an implementation strategy that aims to reduce vehicular congestion for locals by providing desirable pedestrian and bicycle connections to safely move users to desired destinations.
- › Providing recommendations to construct a multi-modal transportation system that augments tourism efforts, giving visitors more opportunity to explore and experience Concord.
- › Conveying recommendations to aid in communication, coordination, collaboration, and prioritization of planning efforts and initiatives that fill the gaps to avoid transportation silos.
- › Developing standard language recommendations to include in Concord's Development Ordinance that preserves land required to provide pedestrian and bicycle connections.
- › Informing development and infrastructure investment decisions that support the City's vision of an integrated and connected multi-modal transportation system.

OBJECTIVES

In order to achieve the goals, set forth by this connectivity analysis, the design team identified the following objectives:

- › Utilize previous planning efforts and precedent studies to draw inspiration and obtain the history of planning efforts regarding connectivity proposals.
- › Recommend possible trail alignments.
- › Seek opportunities to create small area trail loops, such as the Four Mile Downtown Greenway Loop.
- › Recommend trail surfacing and access points.
- › Identify opportunities for new open spaces along the trail alignments.
- › Identify potential acquisition opportunities.
- › Develop preliminary design and cost estimates.
- › Create an achievable plan with prioritized phasing.
- › Provide recommendations that support desired infrastructure and economic development as well as environmental needs and requests.
- › Foster a healthy community by providing resources that aid in the development of recreational opportunities and access to open space.

WHY GREENWAYS, TRAILS AND BIKE FACILITIES?

Greenways are corridors of land recognized for their ability to connect people and places, working as a tool for transportation, economic development, environmental preservation and leisure activities.¹ Users of greenways vary by location and intended use: pedestrian commuters, cyclists, and even skaters. Typically located in narrow strips of land where other uses are prohibited, greenways are often situated in a flood plain or between developments of differing land uses, being utilized as buffers by separating and protecting the natural environment from the built environment. Fragmentation of open space resulting from land development can be resolved by using greenways to provide buffers and wildlife corridors. As a result, recreational opportunities are presented to a broad range of users who reside in the areas adjacent to greenways due to the often elongated, linear expanses of connections.

Greenways, trails, and bike facilities benefit a community in numerous ways. When created as a system, the impacts on the community become greater due to the expanse of benefits distributed across a large contiguous area.

Benefits achievable from a connected network include:

- › Enhanced health and well-being:
- › Access to facilities for active living and connecting with nature
- › Environmental Stewardship:
- › Support clean air, rivers and preserve habitat; mitigate flooding
- › Catalyst for Economic Impacts:
- › Attract talent and business through public investment
- › Increase Mobility Options:
- › Creates non-vehicular trip options
- › Enhance cultural awareness and define community identity through aesthetic contributions
- › Education Opportunities:
- › Teach children and adults about the natural world



Figure 2 - Greenway Trail Benefits

¹ <https://www.americantrails.org/images/documents/TN-trail-ada.pdf>

PUBLIC PROCESS OVERVIEW

The public process began with interviewing City of Concord Leadership and Staff. These groups are crucial stakeholders in the development of this connectivity analysis, as they will be tasked with making the vision of a more walkable, and interconnected community a reality.

Following the meeting with Parks and Recreation Staff, other City departments were engaged in the process to ascertain each department's relationship and responsibility regarding bicycle and pedestrian facilities. Departments that were interviewed and topics of discussion included:

TRANSPORTATION

- › Pedestrian Improvement Program
- › Road Resurfacing
- › Cabarrus/Rowan Metropolitan Planning Organization (MPO)
- › Current or Planned State Transportation Improvement Program (STIP) Projects
- › Status of Bike Share

PLANNING

- › Concord Development Ordinance (CDO) and Bike/Pedestrian Facilities
- › Opinion of Developer Built/Funded Trails

ENGINEERING

- › Design Oversight Process (regarding greenways)
- › Project Delivery Process
- › Construction Administration Process

BUILDING AND GROUNDS

- › Maintenance
- › Budget
- › Equipment

WATER RESOURCES

- › Planned or Potential Stream Restoration Projects

The team also met with City leadership at the onset of the project. Interacting with the Mayor, City Council and other elected officials was an important moment in the process. They have the best interests of Concord residents in mind and their insight is a valuable contribution to the plan.

Leadership reinforced the vision of being able to get anywhere within the city via foot or bicycle. Connectivity is key and leadership spoke specifically about their desire to connect to neighborhoods, greenways, parks, and retail centers. They also spoke about opportunities Concord has to connect to other municipalities in the Charlotte region. Concord wants to be a walkable city, a progressive city, a city where people want to live.

While connectivity is a priority of Council, we must recognize that Council has multiple priorities. There is much support from City leadership, and they encouraged the team to be bold and impactful in their recommendations.

Bringing the public input to a close, two public input workshops were held to solicit feedback on the needs and wants of the community. The public workshops engaged residents at the beginning of the planning process as a series of drop in open houses with the intention of reaching a wider geographic range of City residents. Both workshops were structured identically to provide a consistent feedback mechanism.

THE CITYWIDE OPEN SPACE CONNECTIVITY NETWORK

The proposed open space connectivity network traverses through differing development densities and connects various destinations City-wide through a series of connected greenway trails, side paths, and expanded bike and sidewalk facilities and intends to:

- › Provide easily accessible connections to destinations.
- › Provide facilities that safely accommodate multiple user types.
- › Provide access to the greenway trail system from the street network.

Within the document, the open space connectivity network has been presented through various scales and levels of detail. First are the detailed greenway corridor studies where cut sheets are provided to set up priority greenway corridors for future implementation. The detailed greenway corridors were selected based on public input priority corridors and Staff recommendations.

Cut Sheets include:

- › Detailed segment map which identifies streams and wetlands, roads, neighborhoods, schools, parks, and existing pedestrian/bicycle facilities as well as adjacent greenway projects.
- › Recommendations for location of physical elements within the segment (e.g. trail alignment, pedestrian bridges and underpasses, crosswalks, and trailhead/parking locations).
- › Routing challenges and opportunities (e.g. topography, stream crossings, floodplain impacts, observed wetlands, and road crossings)
- › General description of segment
- › Key destinations and activity hubs (trail trip generators)
- › Previous planning efforts
- › Potential Right-of-Way Needs
- › Potential Permitting Needs
- › Estimated Project Cost
- › Potential Funding Sources

Second are small plan study areas that explore a finer grained planning analysis of a larger area, highlighting key destinations and activity hubs to clearly show the connectivity thorough the system. The small plan study area boundaries were derived from input received during the public input process. These areas contained the most desired pedestrian/ bicycle travel destinations. During the process, it was determined that diving into smaller scaled planning areas would offer a greater understanding and projection of proposed connections between existing/proposed pedestrian and bicycle facilities

and to existing/proposed destinations (e.g. schools, parks, commercial centers, etc.). The small plan study areas also identify opportunities for key open spaces along trail corridors.

Lastly is the completion of the connectivity network. The existing greenway trails, sidewalks, and bicycle facilities are important to the City’s transportation system and expanding that infrastructure to include additional greenway and multi-use corridors will help satisfy an unmet need by providing a more pedestrian and bicycle opportunities.

IMPLEMENTATION STRATEGY

While the network plan provides an overall framework for development of various types of trails and the approximate routes, it is by no means construction-ready. As a living document, the network plan and priorities may evolve with changing development pressures, funding opportunities, and demographic trends. Further, the County will need to undertake more detailed corridor and feasibility studies to “ground-proof” each trail corridor. This typically includes a detailed evaluation of land / easement acquisition potential, topography, stream or road crossings, grading and drainage patterns, safety,

user experience, long-term maintenance, and regulatory requirements. With this more detailed layer of information, detailed design decisions such as trail surface and profile, width, markings, signage, furnishings, and crossings can be finalized. Only after this detailed assessment can a final trail alignment be determined. The below diagram illustrates a typical greenway planning, design and construction process with key phases and individual tasks. Next steps will be for the City to undertake individual Corridor Studies followed by Feasibility Studies and finally, Project Design.

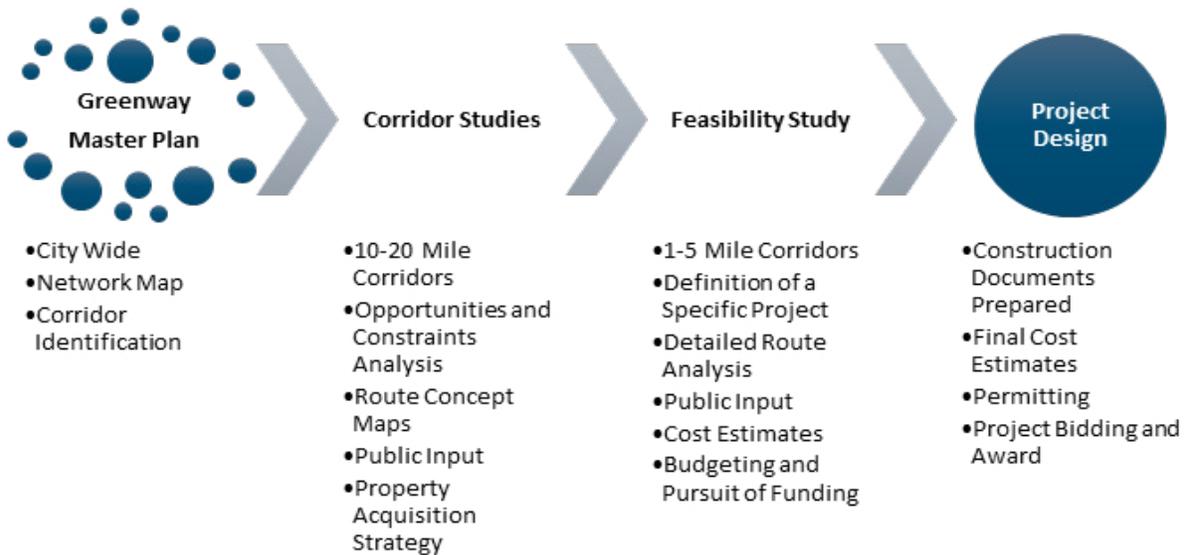


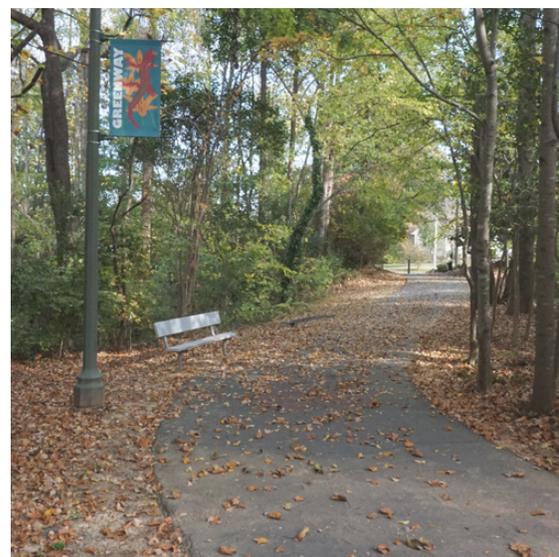
Figure 3 - Greenway trail planning, design and construction process and sequencing.

Successful implementation of the bicycle and pedestrian connectivity plan will require a coordinated effort of many parties working together. These agencies include County and City departments as well as NCDOT and Federal

Affiliations. Private sector organizations may also prove beneficial, as they may have the influence and capacity to garner additional community support for establishment of the bicycle/ pedestrian network.



2 introduction



CHAPTER 2 > INTRODUCTION

American cities and towns were once planned and designed around a balanced mix of transportation modes – walking, biking, horses and eventually the automobile. Towns that have preserved this balance as they grew are now some of the most desirable places to live, work, and visit. The shift to an auto-centric network was defined by separate areas within a community for living, working, commerce, and recreation that required a car trip to access each. This shift was characterized by roads whose function were judged on the volume and speed of the cars it carried. Cities like Concord are committed to moving back to a more balanced community transportation network that values connectivity, safety, and health as well as serving the needs of businesses and institutions.

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PROCESS



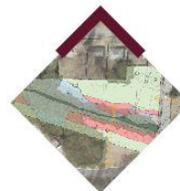
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implementation

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- › Mayor William C. “Bill” Dusch
- › Lloyd Payne – *City Manager*
- › Brian Hiatt – *Previous City Manager*
- › Merl Hamilton – *Previous Deputy City Manager*
- › **Concord City Council**
 - Samuel Leder – District 1
 - W. Brian King – District 2
 - Ella Mae Small – District 3
 - JC McKenzie – District 4
 - Terry Crawford – District 5
 - Jennifer Parsley – District 6
 - John Sweat, Jr. – District 7
- › **Parks and Recreation**
 - Bob Dowless – Director
 - Mark Kincaid – Deputy Director
 - Jason Pauling – Senior Planner
 - Greg Haverlock – Recreation Coordinator
 - Debbie Littlefield – Program Coordinator
 - Sheila Lowry – Executive Assistant
- › **Transportation:** Phillip Graham – Director
- › **Planning and Community Development**
 - Steve Osborne – Planning Director
 - Margaret Pearson – Previous Planning Director
- › **Engineering:** Sue Hyde – Director
- › **Buildings and Grounds:** Susan Sessler – Director
- › **Water Resources:** Jeff Corley – Deputy Director
- › **Connectivity Committee**
 - Steve Osborne – Planning and Community Development – Director
 - Scott Sherrill – Planning and Community Development – Senior Planner
 - Julian Burton – Planning and Community Development – Development Review Administrator
 - Mark Kincaid – Parks and Recreation – Deputy Director
 - Jason Pauling – Parks and Recreation – Senior Planner
 - Phillip Graham – Transportation – Director
 - Devon Huston – Transportation – Deputy Transportation Director
 - Brielle Hartney – Transportation – GIS Coordinator
 - Rick Blat – Engineering – Deputy City Engineer
 - Jeff Corley – Stormwater Services – Deputy Director
 - Andy Christy – Rider Transit – Transit Planner and Technology Coordinator
- › **City of Concord Residents**

GOALS + OBJECTIVES

GOALS

This plan strives to assist and augment the City's vision by:

- › Enabling the City to achieve their vision of a connected pedestrian and bicycle transportation network by identifying feasible, constructible routes and presenting information that contributes to well-informed development and infrastructure decision making.
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- › Create an achievable plan with prioritized phasing.
- › Provide recommendations that support desired infrastructure and economic development as well as environmental needs and requests.
- › Foster a healthy community by providing resources that aid in the development of recreational opportunities and access to open space.

CRITICAL ISSUES

While there is growing support for biking and walking infrastructure there is still a need to clearly articulate the return on investment for these facilities. Some of the critical issues that surround development of these systems are the use of tax dollars to construct facilities and their perceived lack of safety. This plan seeks to provide information that will help City staff and elected officials continue to educate the community with well researched and supported data.

Other critical issues that accompany the development of interconnected pedestrian and bicycle systems include elements that are more site and/or construction related.

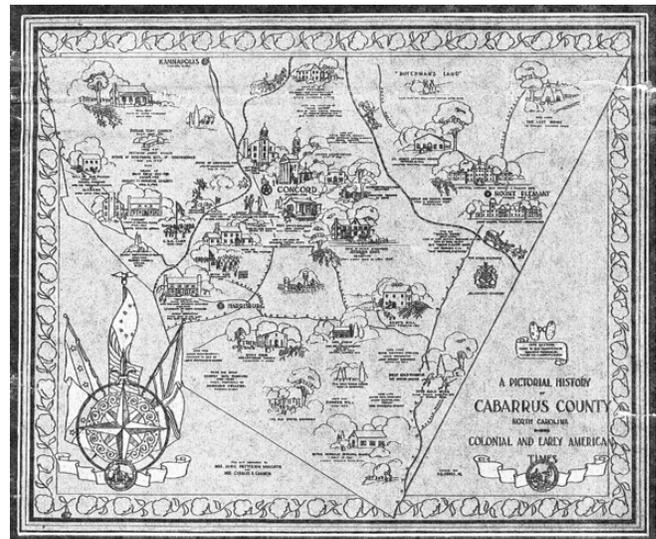
These include environmental, land division/ownership, and trail alignment challenges (and opportunities) such as:

- › Stream crossings
- › Difficult grades
- › At-grade road crossings
- › Crossing beneath bridges
- › Observed wetlands
- › Natural areas to be avoided
- › Opportunities for coordination with stream restoration projects
- › Relationship to adjacent property uses
- › Utility corridors
- › Maintenance of constructed facilities

REGIONAL + LOCAL IDENTITY

HISTORY

Catawba Indians originally inhabited present day Cabarrus County when significant numbers of Dutch, Scotch-Irish, German, and Welsh-English families began traveling the Great Wagon Road to the North Carolina backcountry in the middle of the eighteenth century. Following the County's formation in 1792, location of the new county seat was fervently discussed and debated. To resolve the dispute, Stephen Cabarrus, the County's namesake, pleaded with the citizens to set aside their differences and to have "concord." Consequently, a site was selected, and appropriately named "Concord." And the primary street in Concord was named "Union" to reflect the spirit in which the issue was settled. The Town of Concord was established in February 1796 and was laid out on a 26-acre tract of land lying on a ridge near the old Indian Trading Path and to the west of Three Mile Branch. In 1837, Concord was incorporated with a total land area of one square mile.



Industry began in Concord with the organization of the first cotton mill in 1839 (positioned north of town which is now the site of Locke Mill Plaza). As county seat and with the completion of the North Carolina Railroad on the west side of town, Concord became a center of trade and retail for the cotton-producing region. With cotton as a commodity crop and through textile manufacturing, Concord became a site of industrialization in the late 19th century. In 1877, Concord Cotton Factory was bought by Captain J.M. Odell and by 1890 that mill, along with several others Odell built, made Concord the most successful mill town in North Carolina. Concord's Coleman Manufacturing Company, which operated from 1896 till 1904, was the nation's first textile company owned and operated by African Americans.

With the success of the great mills, no city in North Carolina had more energy and excitement than Concord in 1890. The town's population had more than doubled from 1600 persons in 1880 to 4,000 persons by 1890. By 1900, Concord's population swelled to 8,000 persons. By the turn of the 20th Century, the textile industry had transformed the once agrarian town into a bustling and growing industrial center.

The city continued its steady growth, its population increased to 8,715 in 1910 and then a decade later, to 9,903. By 1936, 13,500 people called Concord home. The greatest period of growth was in 1985 when Concord had a population of about 18,000 persons. At the end of the 20th Century, Concord's economic base began the shift from textiles to a combination of industrial, commercial, governmental and health-related commerce and grew to a population of over 85,000 people as of 2017. Concord is the second largest city in the Charlotte-metro area and the eleventh largest in North Carolina.

Although it enjoys many of the advantages of small-town lifestyle, Concord continues to be a progressive community. The Concord of Today boasts a brilliant mixture of progress and heritage and a wonderful blend of business, industrial, and residential life. With such a balance, one can see that Concord still embodies the original meaning of its name: "harmony."



GEOGRAPHIC PROFILE

Located in western Cabarrus County in the Piedmont region of North Carolina and in the rapidly growing NE quadrant of the Charlotte-metro area, the City of Concord is situated within the fast-growing Charlotte metropolitan area. Concord is near Uptown Charlotte as well as other regional employment, shopping and entertainment centers. Concord's rapid growth is in relation to the increase in commercial and industrial sectors. To meet this growth, the city provides recreational, education, entertainment, and cultural opportunities.

Interstate 85 creates the majority of the City's northern border, making Concord easily accessible. Interstate 485 to the southwest provides links throughout the metropolitan region and improved connection to the I-77 corridor; a key route to northern and mid-west states as well as to central Charlotte, Rock Hill, and Columbia.

DEMOGRAPHICS & GROWTH

This demographic analysis describes the population within the City of Concord, North Carolina. This analysis is reflective of the City's total population and its key characteristics such as age segments, income levels, race, and ethnicity. Existing demographics and projected growth were analyzed to enable the planning team in understanding the local community and recommend desired direction for open space connectivity.

It is important to note that future projections are based on historical patterns and unforeseen circumstances during or after the time of the analysis could have a significant bearing on the validity of projected figures.

METHODOLOGY

Demographic data used for the analysis was acquired from the Environmental Systems Research Institute, Inc. (ESRI), the largest research and development organization dedicated to Geographical Information Systems (GIS) and specializes in population projections and market trends. All data was acquired in December 2018 and reflects actual numbers as reported in the 2010 Census and estimates for 2018 as obtained by ESRI. Straight line linear regression was utilized for 2025, and 2035 projections. Concord city limits as shown below was utilized for the demographic analysis.

TOTAL POPULATION

Concord's population has experienced steady growth between 2010 and 2018. While the total population grew, the average annual growth rate maintained a 2% growth, which is well above the national growth rate of 0.87% annually over the same period. Currently, the population is estimated at 92,952 people living within 34,444 households.

Projecting ahead, the total population and total number of households are both expected to grow. But population growth rate is expected to top out in 2025 at 2.8%. Household growth rate, however, stays consistent at 2.0%. Based on 2035 predictions, the City is expected to have 141,561 residents living within 48,393 households.

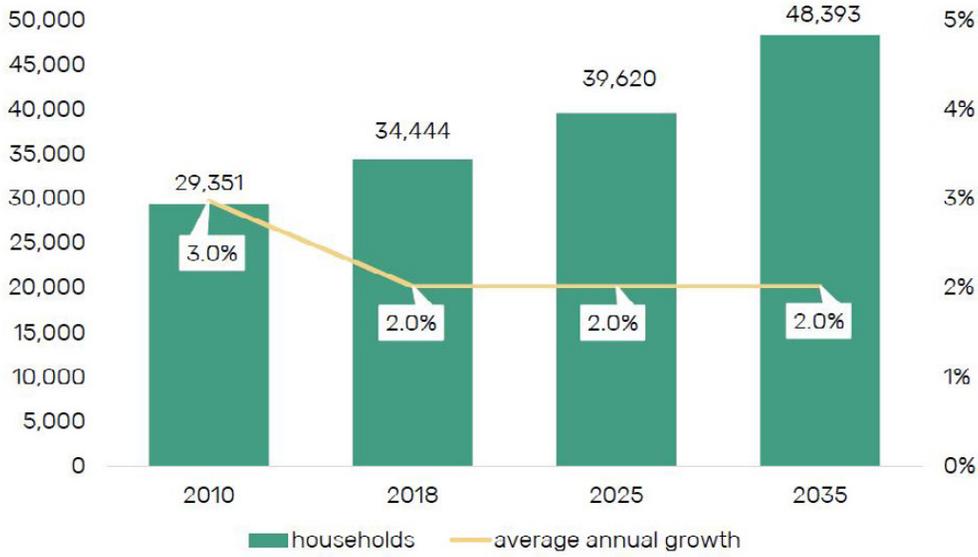


Figure 2 - Total Population and Average Annual Growth Rate for Concord

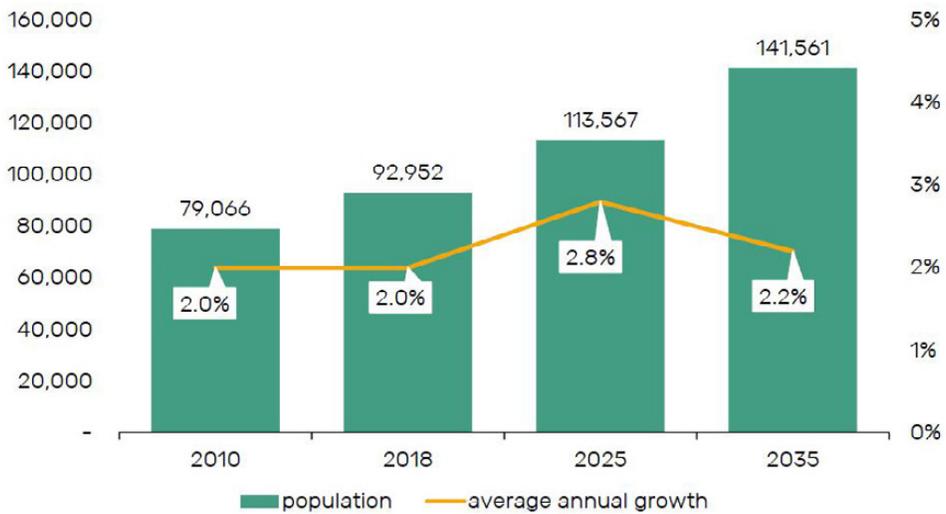


Figure 3 - Total Population and Average Annual Growth Rate for Concord

AGE SEGMENT

The 2018 age distribution of Concord indicates that the largest age group as the 35-54 and the second largest group is 17 years and younger. The bulk of the population age segmentation rests under 55 years, which would suggest that

most residents are comprised of households with children. However, as we move toward 2035, the 54 and under age segments remain relatively the same whereas the senior groups (55-74 and 75+) slightly increase.

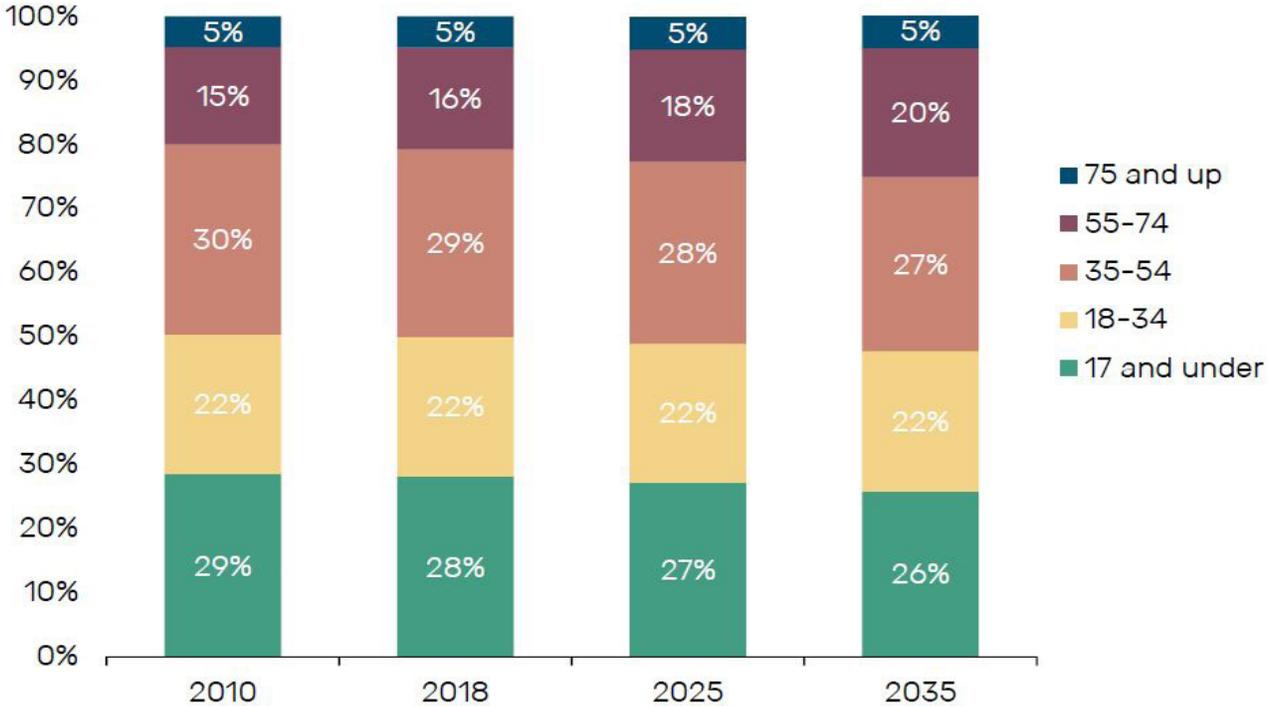


Figure 4 - Population by Age Segment

RACE AND ETHNICITY DEFINITIONS

The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting are defined as below. The Census 2010 data on race are not directly comparable with data from the 2000 Census and earlier censuses; therefore, caution must be used when interpreting changes in the racial composition of the US population over time. The latest (Census 2010) definitions and nomenclature are used within this analysis.

American Indian

- › This includes a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment

Asian

- › This includes a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam

Black

- › This includes a person having origins in any of the black racial groups of Africa

Native Hawaiian or Other Pacific Islander

- › This includes a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands

White

- › This includes a person having origins in any of the original peoples of Europe, the Middle East, or North Africa

Hispanic or Latino

- › This is an ethnic distinction, a subset of a race as defined by the Federal Government; this includes a person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race

PLEASE NOTE: *The Census Bureau defines race as a person's self-identification with one or more of the following social groups: White, Black or African American, Asian, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, some other race, or a combination of these. While ethnicity is defined as whether a person is of Hispanic / Latino origin or not. For this reason, the Hispanic / Latino ethnicity is viewed separate from race throughout this demographic analysis.*

RACE

Analyzing race, the City's current population is moderately diverse. The 2018 estimate shows that 65% of the population falls into the White Alone category, while the Black Alone category (20%) represents the largest minority. The racial diversification of the County is slightly more

diversified than the national population, which is approximately 70% White Alone and 12.8% Black Alone. The predictions for 2035 expect the population to change through 2035, with White Alone decreasing to 51% and all other races increasing from years past.

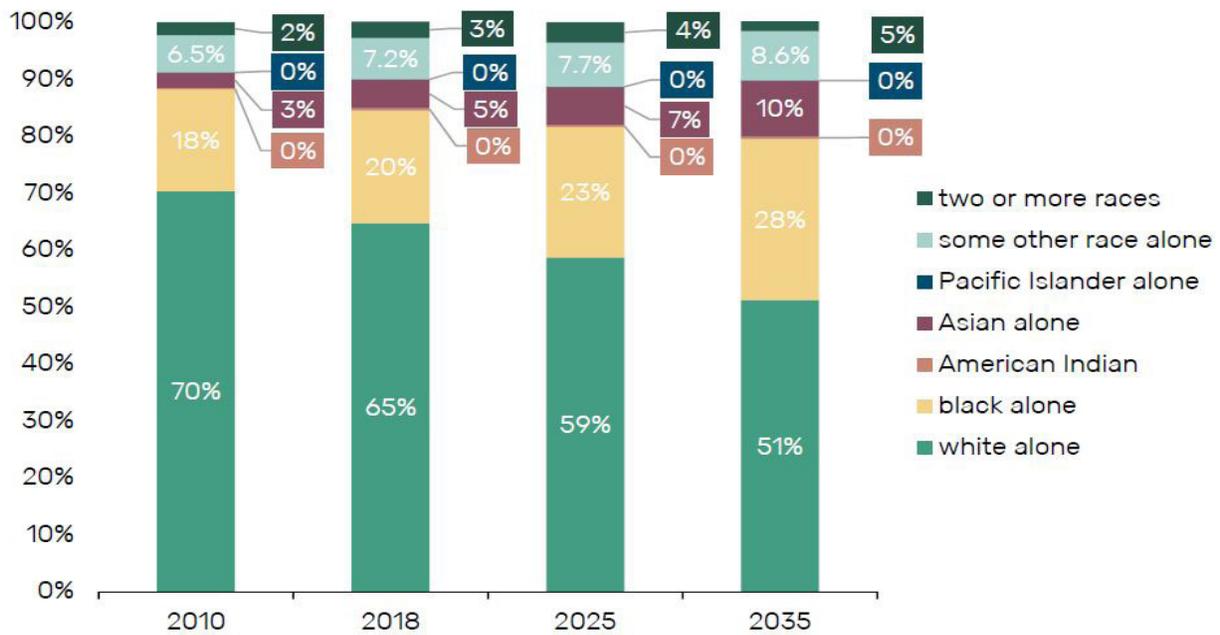


Figure 5 - Population by Race

ETHNICITY

The City’s population was also assessed based on Hispanic / Latino ethnicity, which by the Census Bureau definition is viewed independently from race. It is important to note that individuals who are Hispanic/Latino in ethnicity can also identify with any of the racial categories from above. Based on the 2010 Census, those of Hispanic/ Latino origin represented 12% of the City’s current

population, which was lower than the national average of 16.3%. Current 2018 estimates show the Hispanic/ Latino population representing 14% of the population, which is also lower than national average (18.3%). The Hispanic/Latino population is expected to slightly increase through 2035, with an estimated 16% of the City’s total population.

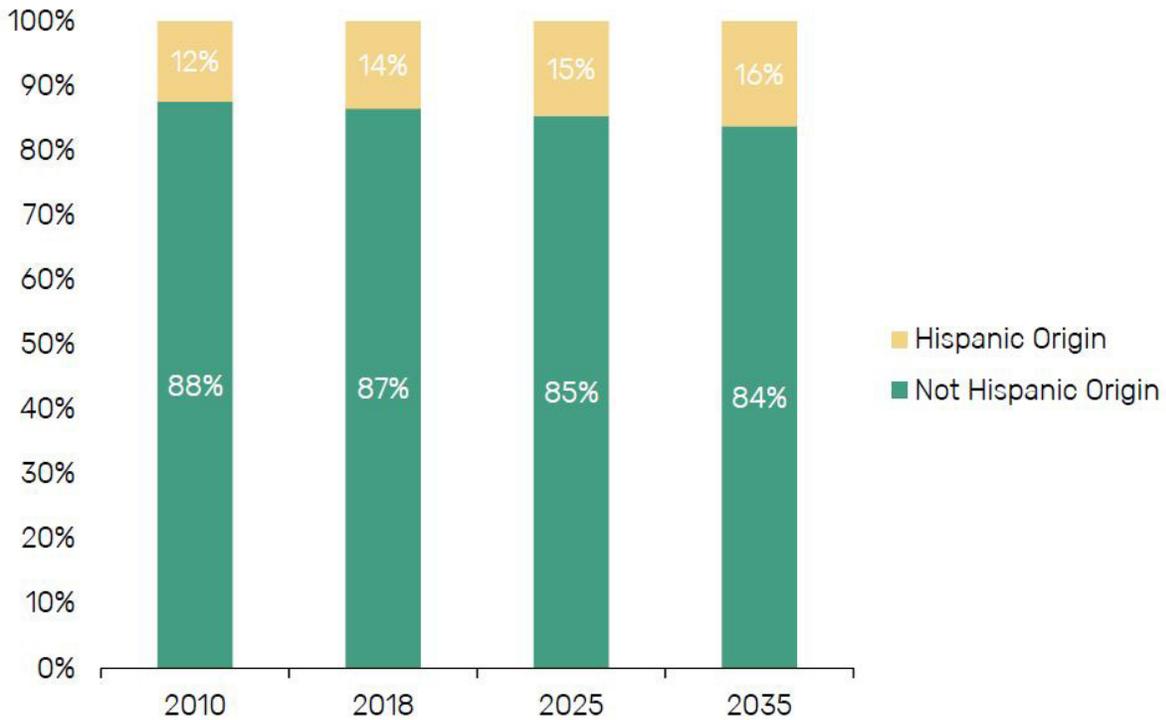


Figure 6 - Population by Hispanic Ethnicity

HOUSEHOLD INCOME

The socioeconomic status of Concord includes assessment of household income. The City’s per capita income (\$30,817) and median household income (\$61,071) are both currently above the State’s averages (\$28,752 and \$51,844) and national averages (\$31,950 and \$58,100).

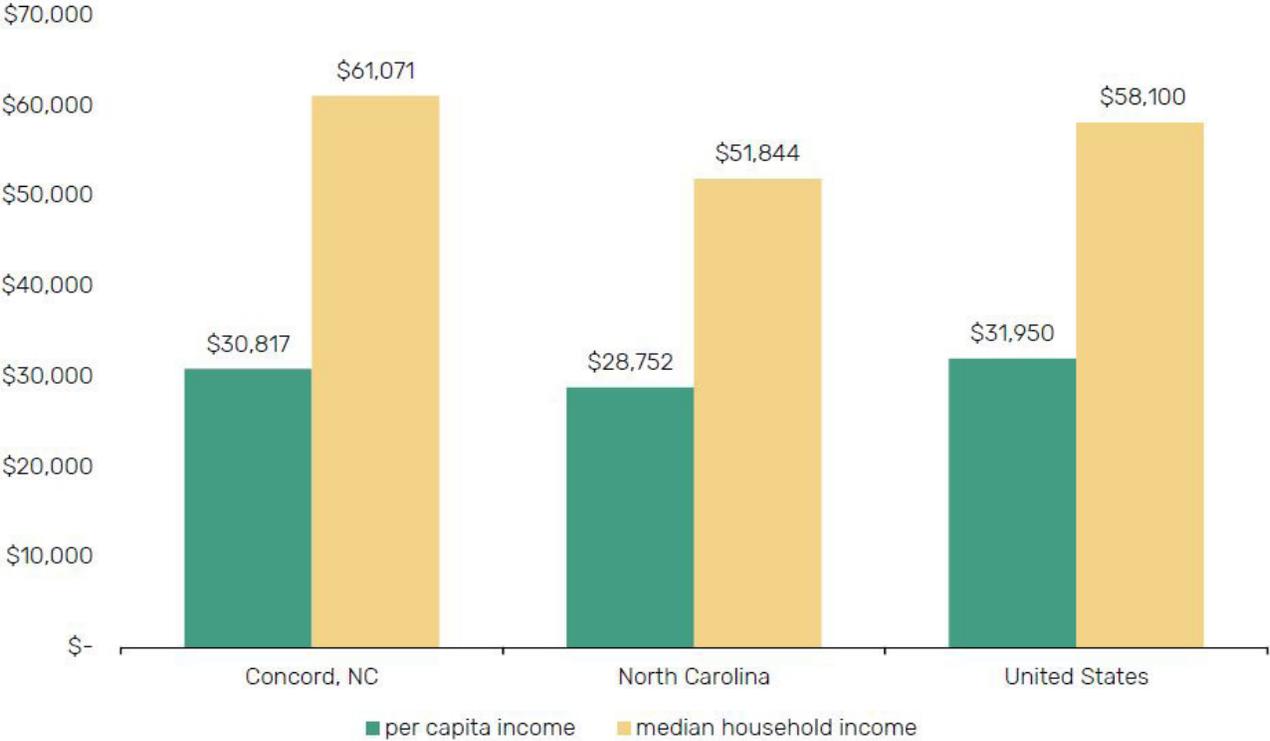


Figure 7 - Income Characteristics

DEMOGRAPHIC COMPARATIVE SUMMARY

The table below summarizes the City's demographic figures. These figures are then compared to North Carolina and the U.S. populations. The highlighted cells represent

key takeaways from the comparison between Concord's demographic makeup and the national population.

2018 DEMOGRAPHIC COMPARISON		CONCORD	NORTH CAROLINA	U.S.A.
POPULATION	Annual Growth Rate (2010-2018)	2%	1.21%	0.86%
HOUSEHOLDS	Annual Growth Rate (2010-2018)	2%	1.14%	0.79%
AGE SEGMENT DISTRIBUTION	Ages 0-17	28%	22%	22%
	Ages 18-34	22%	23%	24%
	Ages 35-54	29%	26%	25%
	Ages 55-74	16%	23%	22%
	Ages 75+	5%	6%	7%
RACE DISTRIBUTION	White Alone	65%	66.4%	69.9%
	Black Alone	20%	21.7%	12.9%
	American Indian	0%	1.3%	1%
	Asian	5%	3%	5.7%
	Pacific Islander	0%	0.1%	0.2%
	Some other Race	7.2%	4.9%	6.9%
	Two or More Races	3%	2.6%	3.4%
HISPANIC/LATINO ETHNICITY	Hispanic / Latino Origin (any race)	14%	10%	18.3%
	All Others	87%	90%	82%
INCOME CHARACTERISTICS	Per Capita Income	\$30,817	\$28,752	\$31,950
	Median Household Income	\$61,071	\$51,844	\$58,100

Significantly higher than the National Average

Significantly lower than the National Average

Figure 8 – Demographic Comparative Summary

KEY DEMOGRAPHIC FINDINGS

- › The City's population annual growth rate (2.0 percent) and household annual growth rate (2.0 percent) are well above the national growth rate (0.86 percent and 0.79 percent, respectively) over the past 8 years (2010-2018). The State's figures, while lower than Concord, are closer to the City's growth percentage.
- › The City's Black Alone race distribution (20 percent) is significantly higher than the national rate (12.9 percent) but only slightly lower than State's figures.
- › The City's per capita income (\$30,817) and the median household income (\$61,071) are both higher than the national averages (\$31,950 and \$58,100). The per capita income is close to State figures, but median household income is significantly higher than that figures for the State.

DEMOGRAPHIC IMPLICATIONS

While it is important not to generalize needs and priorities based solely on demographics, the analysis suggests some potential implications for the City.

Currently the short-term growth rate is increasing, however, in the long-term growth begins to fall. In order to address the fall in growth rate, the City should focus on providing more connectivity measures (greenways, sidewalk, bike lanes, etc.) now to ensure access opportunities for the growing population are considered. Then, as population growth decreases, it is important to focus on updating these facilities if the City is to continue enhancing its quality of life, while attracting new residents.

The City's average age distribution of 54 and under would indicate that growing and maintaining facilities which provide better connectivity is crucial for this demographic. This age group can rely heavily on these facilities to access work and school. It is also important to note that since the 55 and over age group grows over time, these facilities can provide more opportunity to lead a healthy, active, and social life for the senior population.

Lastly, the City's above-average income characteristics reveals presence of disposable income. This data suggests that dollars are available to spend for programs that would be associated with a more robust greenway system, expanding the offerings from what is currently available.

NATURAL RESOURCES & THE ENVIRONMENT

Located in the southern Piedmont region of North Carolina, Concord is positioned between two major river systems: the Catawba River to the west and the Yadkin/Pee Dee River to the east.

The City is in the Rocky River Sub-basin of the Yadkin/Pee Dee River Basin, with Rocky River being the largest tributary.



Figure 9 - Yadkin/Pee Dee River Basin

Rocky River, the largest stream in Concord, flows for almost 100 miles from its headwaters in Iredell County, through Concord, and ultimately to its confluence with the Pee Dee River. Rocky River lies in the western part of Concord, flowing from the northeast to southeast continuously throughout the year.

Five other major streams are part of the Rocky River watershed Coddle Creek, Irish Buffalo Creek, Cold Water Creek, Three Mile Branch, and Clarke Creek.

- ▶ Coddle Creek is a perennial stream fed by Lake Howell and flows in a southeasterly direction, emptying into Rocky River in the southern portion of the City.
- ▶ Irish Buffalo Creek is also a perennial stream, flowing from the western part of Kannapolis to the southeastern edge of Concord, draining into Rocky River near Concord's southern city limits.
- ▶ Cold Water Creek flows north to south from Lake Fisher in Kannapolis along Concord's eastern edge, emptying into Rocky River south of the city limits.

- ▶ A tributary of Cold Water Creek, Three Mile Branch, begins in the heart of Kannapolis where it travels south, entering Concord near the intersection of I-85 and US Highway 29. It then finds its way to NC Highway 3 travelling parallel to the highway until it drains into Cold Water Creek in the southeastern part of the City.
- ▶ Clarke Creek begins at the confluence of several smaller creeks in Huntersville just west of Skybrook Golf Club. It travels southeast, west of Cox Mill High and Elementary Schools and empties into Rocky River on the west side of the City.

Additionally, there are several smaller streams and water bodies such as Afton Run, Wolf Meadow Branch, and Stricker Branch, that feed into these five major water bodies.

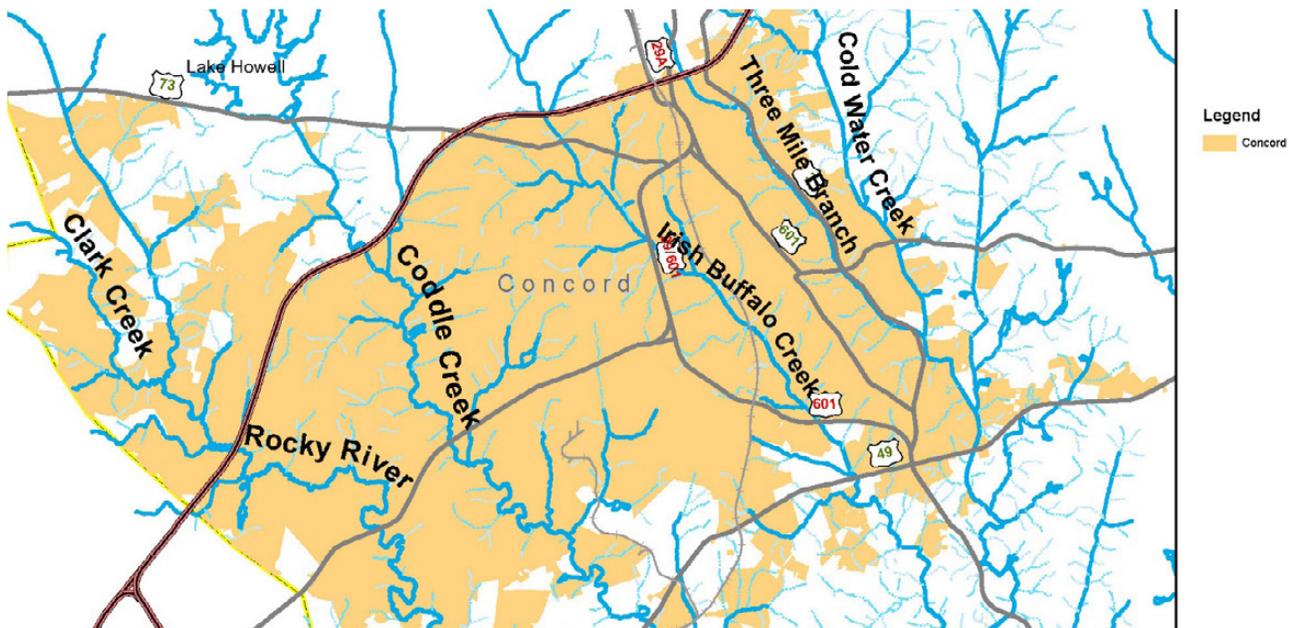


Figure 10 – Major Water Bodies in the Rocky River Watershed

These streams and creeks have carved out distinct upland areas of development, offering a unique opportunity to provide green, pedestrian corridors that traverse north-south through the City, creating a framework for a robust greenway system. With many streams in the watershed impacted or impaired, there is a great opportunity to provide much needed habitat preservation in a city whose development edges continue to expand. Severe bank erosion, channelization, and sedimentation are clear signs of impaired streams resulting in habitat degradation. Causes

of habitat degradation typically originate in upland areas of the watershed by the combination of several stressors such as impervious surfaces, sedimentation, and erosion from construction, agriculture, and other land disturbing activities. With the Rocky River watershed comprised of naturally erodible soils, Concord streams are highly vulnerable to habitat degradation and care must be taken to protect these valuable corridors.

WHY GREENWAYS, TRAILS AND BIKE FACILITIES?

Greenways are corridors of land recognized for their ability to connect people and places, working as a tool for transportation, economic development, environmental preservation and leisure activities.¹ Users of greenways vary by location and intended use: pedestrian commuters, cyclists, and even skaters. Typically located in narrow strips of land where other uses are prohibited, greenways are often situated in a flood plain or between developments of differing land uses, being utilized as buffers by separating and protecting the natural environment from the built environment. Fragmentation of open space resulting from land development can be resolved by using greenways to provide buffers and wildlife corridors. As a result, recreational opportunities are presented to a broad range of users who reside in the areas adjacent to greenways due to the often elongated, linear expanses of connections.

Greenways, trails, and bike facilities benefit a community in numerous ways. When created as a system, the impacts on the community become greater due to the expanse of benefits distributed across a large contiguous area.

Benefits achievable from a connected network include:

- › Enhanced health and well-being:
 - Access to facilities for active living and connecting with nature
- › Environmental Stewardship:
 - Support clean air, rivers and preserve habitat; mitigate flooding
- › Catalyst for Economic Impacts:
 - Attract talent and business through public investment
- › Increase Mobility Options:
 - Creates non-vehicular trip options
- › Enhance cultural awareness and define community identity through aesthetic contributions
- › Education Opportunities:
 - Teach children and adults about the natural world



Figure 11 - Greenway Trail Benefits

¹ <https://www.americantrails.org/images/documents/TN-trail-ada.pdf>

ENHANCED HEALTH + WELL-BEING

Simply being in nature and away from the stress of everyday life such as traffic, work environments, crowds, etc. enhance and promote an improved state of well-being. Greenways and trails promote a healthy, active lifestyle by providing a safe and attractive environment for physical and recreational opportunities such as walking, running, jogging, or biking.

Health benefits range from short to long-term effects in both physical and mental health. Trails and parks provide a safe environment for activity, and with long-term usage can improve cardiovascular health and reduce the chance of being diagnosed with cardiovascular, skeletal, and other potentially life-threatening ailments.² **Every \$1 investment in trails for physical activity led to \$2.94 in direct medical benefit.**³ The sensitivity analyses indicated the ratios ranged from 1.65 to 13.40. Therefore, building trails is cost beneficial from a public health perspective.

In North Carolina 32.1% of adults and 15% of children are considered obese with these trends projected to increase. In 2017 11.4% or roughly 820,000 North Carolinians are considered diabetic. That number is projected to increase to over 1.2 million people by 2030.⁴ At a cost of \$9,601 per person per year, this largely preventable disease will have a profound impact on our economy and workforce.⁵

The American Diabetes Association cites walking as a powerful tool in the battle against diabetes. Walking can be done anywhere, but when communities invest in trail networks, walking becomes easier, safer and more fun and greenway trails do not have usage barriers like fitness center fees and equipment costs. Research has established that a modest 2 hours of walking per week lowers diabetes mortality⁶. Other greenway exercises such as running and cycling provide even greater reductions.

When utilizing greenway trails, users are more likely to interact with other members of the community, improving the social health of the individual and overall social health of the community. This has proven to reduce stress and diminish depression while also promoting overall positive health outcomes.

Greenway trails also provide a critical opportunity to connect children with nature. Studies have shown that regular non-structured play in a natural setting reduced symptoms of ADHD⁷. Connecting with nature allows children and adults alike to release stress, engage in physical problem solving, and find space for contemplation and reflection.

2 https://www.cdc.gov/healthyplaces/parks_trails/default.htm

3 Wang Guijing, et.al, (2005). A Cost-benefit Analysis of Physical Activity Using Bike / Pedestrian Trails. Health Promotion Practice, 6 (2), 174-179. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15855287>.

4 <https://stateofobesity.org/states/nc/>

5 <http://www.diabetes.org/advocacy/news-events/cost-of-diabetes.html>

6 <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/215742>

7 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448497/>

ENVIRONMENTAL IMPACTS

Greenway systems are often located along stream corridors, utility easements, and through natural habitat, and tend to coincide with the protection and enhancement of natural elements such as riparian buffers, wildlife habitats and functional ecosystems. Where development has resulted in fragmentation of habitats, greenways allow for wildlife to traverse the landscape with minimum human interaction and can utilize a broad area for food and water resources.

Greenways also create a “filter” between water bodies and development, filtering toxins and runoff from roads and development and reducing the amount entering the hydrologic system

through biological methods. With the ability to reduce the velocity of water from rain events, greenways mitigate environmental degradation from erosion and sedimentation.

Greenways directly and indirectly purify the air, reducing the amount of fossil fuel exhaust and ozone being released into the atmosphere. Directly, the vegetation located within the greenway absorbs the pollutants and then releases oxygen back into the atmosphere. And indirectly, greenways encourage alternative methods of transportation resulting in a decrease of vehicles in the street infrastructure.

ECONOMIC IMPACTS

Comprehensive trail systems bring new business and economic life to cities, towns, and communities.⁸ Regionally, The East Coast Greenway, an ongoing trail project with a goal to continuously connect Maine with Florida, benefits The Triangle area by bringing in over \$90 million in related revenue and taxes per year and 800 temporary and permanent jobs.⁹

Greenways benefit the surrounding area on a micro-economic scale by increasing adjacent property values and enticing business transactions near trails. Not only does proximity to a greenway trail provide a strong selling-point, but adjacent home and property values statistically are higher than comparable properties further from greenways.

NCDOT recently completed a study on the impact of Shared Use Paths on local economies and concluded that every \$1 invested in trail construction yields \$1.72 annually from local business revenue, sales tax revenue and benefits related to health and transportation.

⁸ <https://www.americantrails.org/resources/the-business-of-trails-a-compilation-of-economic-benefits>

⁹ East Coast Greenway Alliance, The Impact of Greenways in the Triangle, (2017), 7.

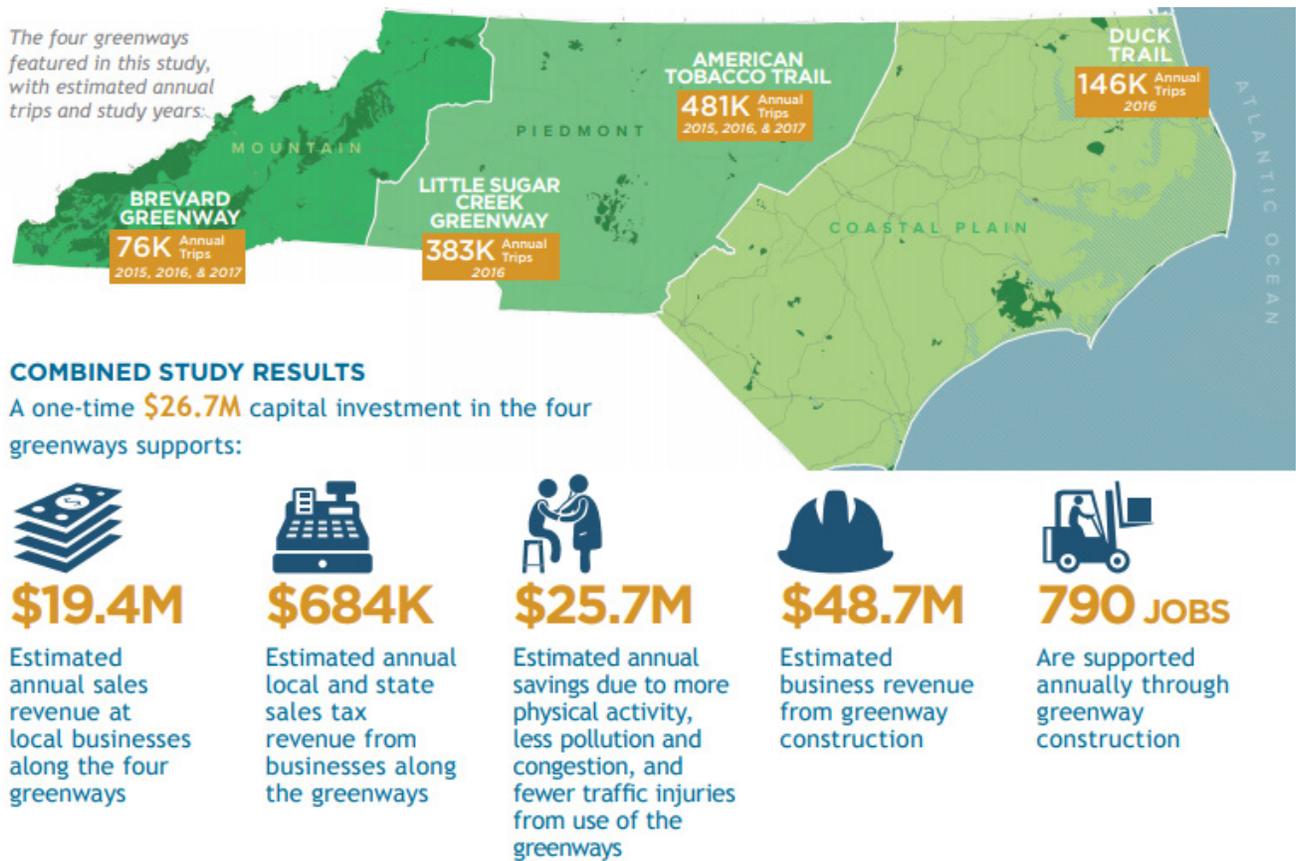


Figure 12 – Economic Impact of Shared Use Paths on Local Economies¹⁰

ALTERNATIVE FORMS OF TRANSPORTATION

Vehicular traffic congestion is often an issue, particularly in areas experiencing growth. Greenways can be used as a modest mitigation tool to remove vehicles from the congested roads. With paved trails requiring design compliance with “American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped,” greenway trails are made accessible for various forms of non-vehicular transportation from walking and running, to cycling and vehicle “disrupters” such as scooters and e-bikes.¹¹ Users of all ability levels and distances from destinations have the opportunity to utilize the greenway trails in ways that best suit their needs and goals.

Nationally, there were approximately 836,569 bike commuters in 2017 – an increase of 43% since 2000.¹² According to the United States Census Bureau, the average commute to work in 2017 required approximately 50 minutes per day. If this time were spent utilizing greenway trails in place of congested roads while being in the presence of the natural environment, the results would not only be revealed on the roads, but also in the overall health and wellness of the community. Trip reduction from biking and walking will come when the greenway network makes meaningful connections to schools, parks, large shopping districts, and employment centers.

¹⁰ <https://itre.ncsu.edu/focus/bike-ped/sup-economic-impacts/>

¹¹ <https://www.americantrails.org/images/documents/TN-trail-ada.pdf>

¹² https://bikeleague.org/sites/default/files/Where_We_Ride_2017_KM_0.pdf

ENHANCE CULTURAL AWARENESS AND DEFINE COMMUNITY IDENTITY + AESTHETIC CONTRIBUTION

People who live in rural areas often desire the space around them to be maintained to ensure a certain quality of life and preserve the historic and cultural perception of the area.¹³ The protection of sacred places with lasting identities set years ago allows a community to maintain a sense of place for not only local residents, but for tourism and economic purposes.

Redevelopment of formerly neglected community resources with walking and biking infrastructure brings a new sense of identity, seen in projects such as at the American Tobacco Campus in Durham, North Carolina, the BeltLine in Atlanta, Georgia, and The High Line in New York City, New York. In all cases, industrial-uses prohibited public use until the installation of trails and active public/private destinations. Greenways are a catalyst for urban revitalization and restoration of economic vitality in derelict industrial centers. The incorporation of historic monumentation, interpretive signage and public art have the potential to capture and celebrate the past, enhancing cultural awareness, and connection to community identity.

Paired with economic benefits and community identity, greenways add and/or protect aesthetically pleasing aspects of a community. Not only is the natural environment portrayed in a raw state accessible to the public, but with the addition of artwork such as commissioned sculptures and murals are additional aesthetic achievements. This improves the experience for patrons and potentially attracts users who would not otherwise utilize a greenway trail system.

Typical Users

Two main user groups utilizing a trail network can be identified – recreational users and commuters. Those who use trails for recreational purposes walk, walk their pet, run and bike for sport / health. Their goals pertain to personal achievement, whether it is exercise or enjoying nature. Commuters use trails to traverse the landscape – they are destination oriented.



Figure 13 – Facility Protection

¹³ <https://www.railstotrails.org/resourcehandler.ashx?id=4618>

Trends in Bicycle & Pedestrian Planning & Design

The most significant trend in bicycle and pedestrian planning is the movement toward separated and protected bikeways vs. conventional bike facilities such as bike lanes. While a conventional bike lane created by a painted line that divides vehicles from

cyclists is acceptable, it does not however, provide the safety and comfort of a separated and protected bike facility. Bike facilities removed from traffic by a curb, or row of parked cars, or a row of flexible posts at minimum, are preferred by most user types. The more physical separation a cycling facility provides, the more overall ridership levels grow, particularly among women, children, and seniors.

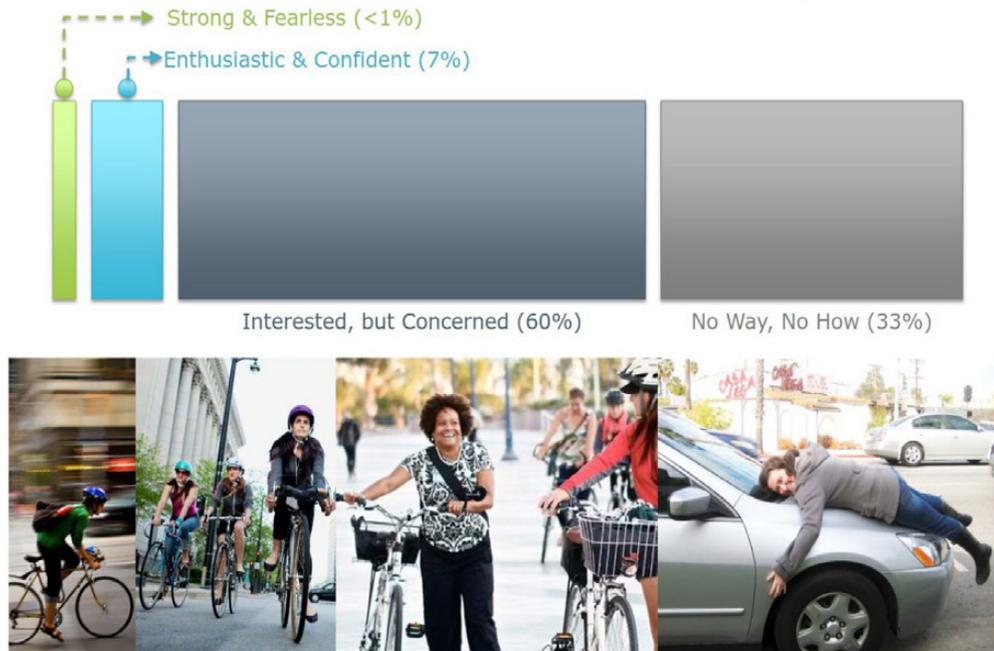


Figure 14 – Four Types of Cyclists

Research on bicycle facilities and ridership over the last several years have focused on the advantages of protected bike lanes, particularly the transformational effects they have on a place. Portland State University conducted a study in 2014 that determined separated bike paths are both undeniably safer for riders and that they attract new and/or out-of-practice riders to mount a bike. And in a paper published in the American Journal of Public Health, the authors of "Safer Cycling Through Improved Infrastructure," establish that cities whom have heavily invested in separated and protected bike paths have realized sizable safety improvements and increased ridership numbers. Safety and ridership increases are not derived by merely expanding bicycle infrastructure but rather the type of infrastructure.¹⁴

Separated bikeways can be implemented by making use of existing pavement and drainage along the roadway network. Separated bike lanes have also been known to encourage a decrease in vehicle speed, leading to fewer serious/fatal collisions, as driver awareness increases thus, creating safer driver behavior.

Separated bikeways are most appropriate on streets with higher speeds and traffic volumes where greater separation is essential. By separating bicyclists from vehicular traffic, physically separated bike lanes can offer a "protected" facility which is attractive to a wider range of users. Dedicated and separated bicycle lanes make an attractive facility for all rider levels and ages and improves perceived safety, attracting new riders. Ten percent of new riders on recently constructed protected lanes switched from other modes.¹⁵

¹⁴ <https://www.citylab.com/transportation/2016/11/why-protected-bike-lanes-save-lives/508436/>

¹⁵ <https://www.citylab.com/transportation/2014/06/protected-bike-lanes-arent-just-safer-they-can-also-increase-cycling/371958/>

Barriers can vary depending on whether the installation of the separated bikeway is a retrofit project on an existing roadway or being implemented with a road reconstruction project. Some barrier types for both conditions are listed below.

Barriers applicable for retrofit projects:

- › Parked cars
- › Flexible delineators or bollards
- › Planters
- › Parking stops
- › Concrete barrier

Barriers applicable for reconstruction projects:

- › Curb separation
- › Landscaped Medians
- › Raised protected bike lane with vertical or mountable curb
- › Pedestrian safety islands

The physical separation measures can range from simple, painted buffers and flexible edges, to more significant efforts like grade separation, raised curbs, parking lanes, and bollards or planters. Factors such as roadway characteristics, available space, and cost may determine what type of separation measures are employed. Separated bikeways do require special attention at intersections and approaches. Both must be carefully designed to ensure safety and ease left-turn conflicts for bicyclists to cross the street.

For one-way separated facilities within street sections that experience high bicycle volumes or uphill conditions, it is recommended to provide a minimum 7-foot wide lane to promote safe passing practices. The physical barriers (bollards, curbs, etc.) should be oriented towards the inside edge of the buffer when possible to provide the maximum amount of space for bicycle use.



In areas that experience high bicycle volumes or uphill conditions, it is recommended to provide a minimum of 12-feet to promote safe passing for a two-way protected bike lane. Two-way lanes on two-way streets are not as desirable as they create challenges for roadway users at intersections and driveways to navigate bicycle expectancy in these locations.

Two-way protected bike lanes are particularly well suited for one-way streets where the bike lane increases the density of the bicycle network and improves the connectivity and efficiency of routes. They can also provide a trail-like experience when connected to a multi-use path or greenway.

Separated bikeway facilities are particularly effective in locations that employ bike-share systems. The bike-share system is likely to encourage less-experienced cyclists to venture into the bicycle network. These bikes are heavier, upright, and slower, and are typically being operated by people less experienced. As these riders are typically not as confident, getting them comfortable with riding in the city is where separated bike lanes are desirable. "As cities look to increase the number of people riding bikes, they're finding that better-designed facilities are the ones that really work."¹⁶

Another recent trend is bike sharing. Bike sharing programs offer innovated transportation solutions to individuals on an interim basis for short, point-to-point trips, allowing users to access a bicycle at any time either at a self-serve bike station or through smart technology for dockless bikes. Individuals may use bike share facilities for one-way trips, round-trips, or both and are often combined with other modes of transportation (e.g. transit) providing a first-and-last mile connector.

As such, bike share differs from traditional bike rental services as the bike share trips are more spontaneous in nature. Bike sharing programs can be a great way to promote transportation choices, offering the opportunity to connect residents to employment, schools, parks, commercial centers, and other destinations.

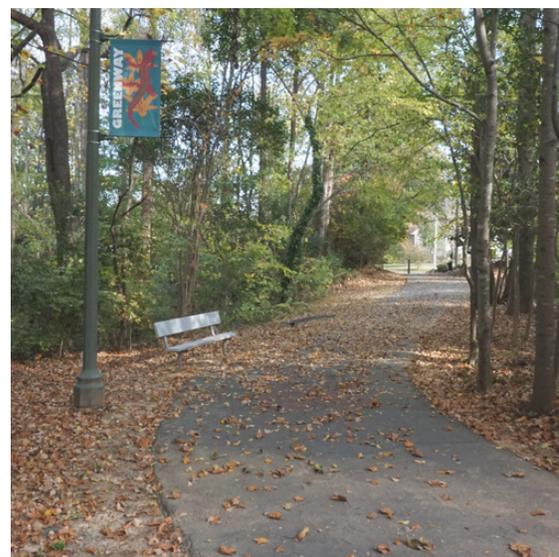


¹⁶ <https://www.citylab.com/transportation/2016/11/why-protected-bike-lanes-save-lives/508436/>



3

existing conditions



CHAPTER 3 > EXISTING CONDITIONS

EXISTING GREENWAYS, TRAILS, SIDEWALKS AND BIKE LANES

GREENWAYS

While Concord continues to increase their greenway offerings, currently residents and visitors have access to the following greenways:

CITY GREENWAY	MILES	SURFACE	DESCRIPTION
VILLAGE GREENWAY	0.5	ASPHALT	THROUGH HISTORIC GIBSON VILLAGE COMMUNITY; ACCESSIBLE TO WALKERS, RUNNERS, AND BICYCLISTS
HAROLD B. MCEACHERN GREENWAY	2.2	ASPHALT/ CONCRETE, BOARDWALK, & PARTS ON ROAD	CONNECTS LES MYERS PARK TO MCGEE PARK & MCEACHERN GREENWAY DOWNTOWN CONNECTOR. ACCESSIBLE TO WALKERS, RUNNERS, AND BICYCLISTS, RUNS ALONG THREE MILE BRANCH CREEK
DOWNTOWN GREENWAY LOOP LAWNDALE AVE, PATTON CT., UNION ST. SOUTH (INCLUDES PART OF MCEACHERN GREENWAY FOR TOTAL 4.0 MILE LOOP)	2.3	ASPHALT / CONCRETE (SIDEWALK)	CONNECTS DOWNTOWN TO MCGEE PARK AND MCEACHERN GREENWAY TO LES MYERS PARK. SIDEWALKS ARE UTILIZED TO COMPLETE THE LOOP ALONG LAWNDALE AVENUE AND UNION STREET SOUTH.
HECTOR HENRY GREENWAY (MOSS CREEK PHASE)	1.5	ASPHALT AND BOARDWALK	SCENIC WETLAND WALK ADJACENT TO ROCKY RIVER, CONNECTING MOSS CREEK VILLAGE TO ODELL PRIMARY SCHOOL.
HECTOR HENRY GREENWAY (WEDDINGTON ROAD PHASE)	1.3	ASPHALT, CONCRETE, & BOARDWALK	SCENIC WETLAND AND FOREST WALK CONNECTING THE WEDDINGTON ROAD BARK PARK WITH THE EMBASSY SUITES.
GEORGE LILES TRAIL	1.3	CONCRETE	CONNECTS FROM WEDDINGTON ROAD TO AREA NEAR HIGHWAY 29
HECTOR HENRY (MILLS @ ROCKY RIVER)	2.4	NATURAL	TRAIL EXTENDS FROM ROCKY RIVER ROAD TO REEDY CREEK CONFLUENCE
TOTAL	12.0		

TRAILS

Walking Trails are also located within the following Parks:

- > Beverly Hills Park
- > J.W. (Mickey) McGee, Jr. Park
- > James L. Dorton Park
- > Marvin Caldwell Park
- > Les Myers Park
- > W.W. Flowe Park
- > Weddington Road Bark Park
 - access to Hector Henry Greenway
- > Frank Liske (County)

SIDEWALKS

Sidewalks in Concord need to be expanded, with several areas of the City lacking necessary pedestrian facilities to serve residents. Per Concord's Development Ordinance, sidewalks are required to be constructed along both sides of all new streets in a subdivision and along any street that provides access to the subdivision. While the ordinance outlines provisions to accommodate pedestrians in new residential development, it does not address existing neighborhoods where sidewalks are deficient.

For example, District 3 would benefit greatly from expansion of its sidewalks. District 3 neighborhoods including: Logan, Silverhill, Brown Mill, and Underwood Park are isolated due to lack of pedestrian infrastructure.

Driving to Caldwell Park in order to access the walking trails is a condition that should be alleviated. Residents within walking distance of Dorton Park also suffer from the same condition. As such, one of the City's goals is to have pedestrian connections to parks to provide residents an easy access to those amenities. It's also unfortunate that residents typically do not have ample opportunity to access retail and commercial services by foot.

And with many sidewalks in disrepair, Concord's Pedestrian Improvement Program (PIP) is overwhelmed. Currently, there are more than 60 requests for sidewalk improvements across the City as part of the PIP.

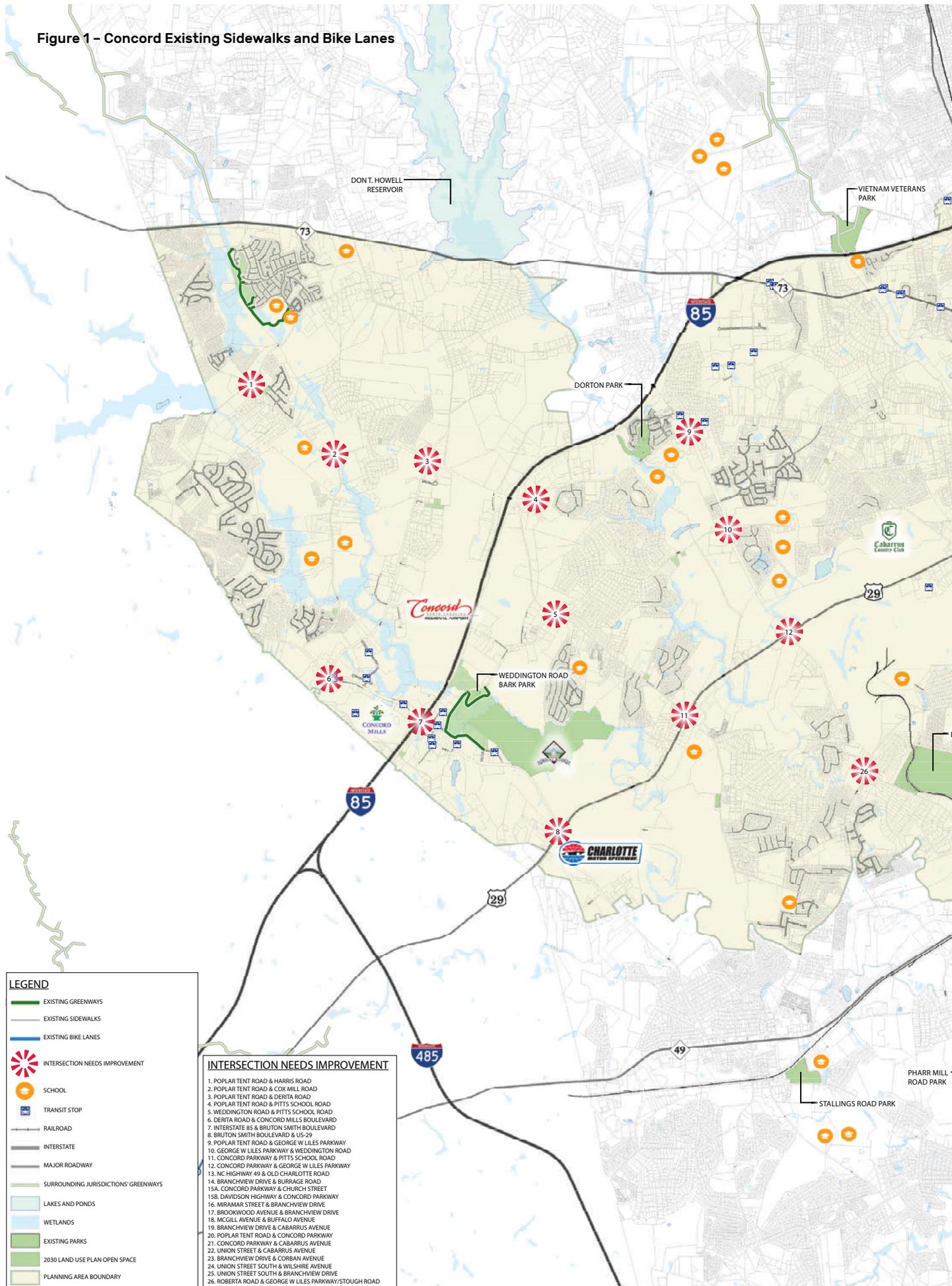
BIKE LANES

In Concord, conventional bike lanes only exist on Cabarrus Ave. (between 601 and the roundabout) and Church Street. During the public input process, the project team gathered several opinions regarding bike lanes in the City.

- › There is no continuity as bike lanes do not connect to other bicycle infrastructure.
- › There are many dangerous obstacles within the bike lanes (e.g. potholes, sewer grates, gravel) forcing cyclists to unsafely encroach into vehicle travel lanes.
- › Bike lanes terminate in awkward locations creating unsafe transitions across turn lanes, into intersections, or merging back into vehicular traffic. This is not only confusing for the cyclists, but also drivers.



Figure 1 - Concord Existing Sidewalks and Bike Lanes

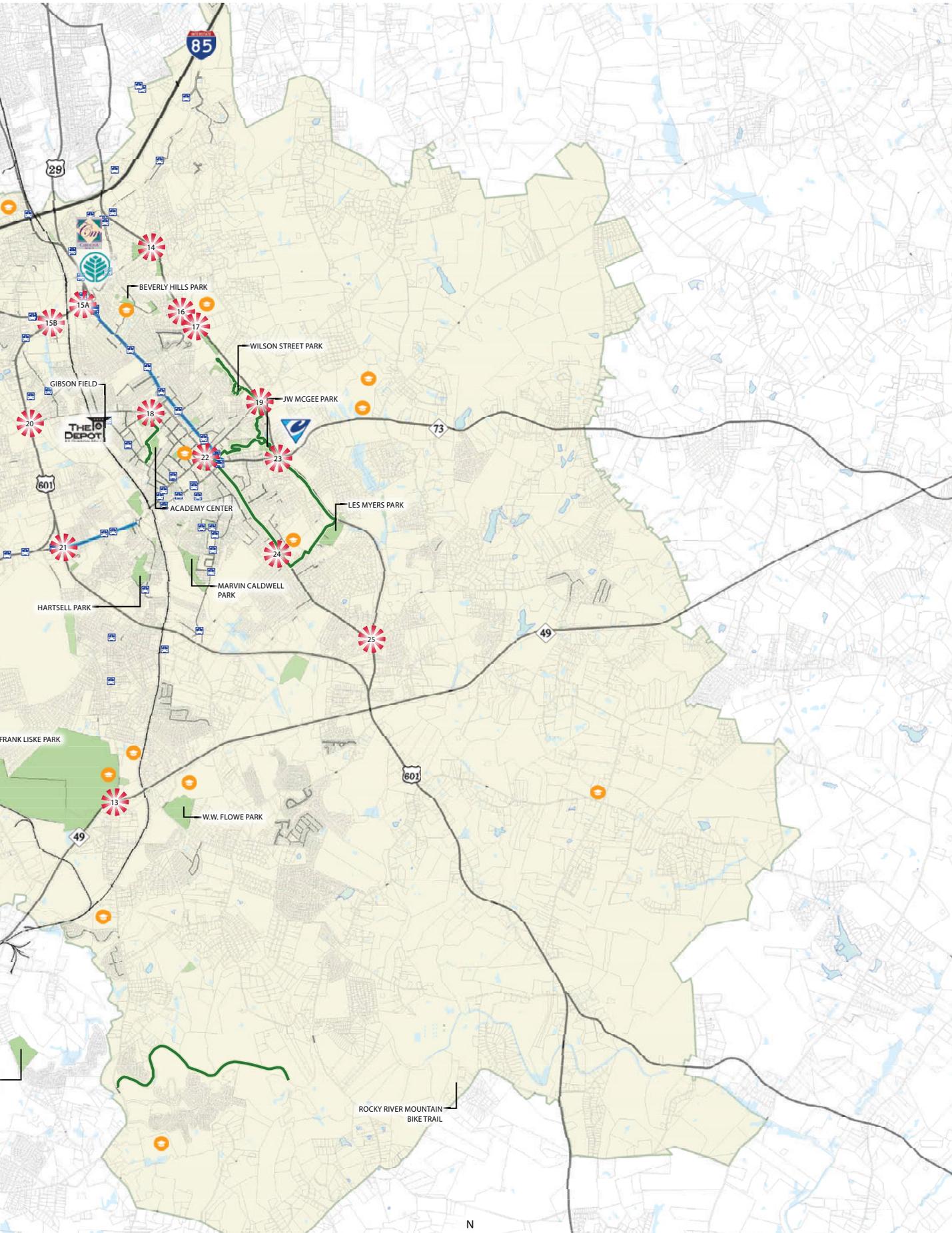


EXISTING
CONDITIONS

LEGEND

- EXISTING GREENWAYS
- EXISTING SIDEWALKS
- EXISTING BIKE LANES
- INTERSECTION NEEDS IMPROVEMENT
- SCHOOL
- TRANSIT STOP
- RAILROAD
- INTERSTATE
- MAJOR ROADWAY
- SURROUNDING JURISDICTIONS' GREENWAYS
- LAKES AND PONDS
- WETLANDS
- EXISTING PARKS
- 2030 LAND USE PLAN OPEN SPACE
- PLANNING AREA BOUNDARY

- INTERSECTION NEEDS IMPROVEMENT**
1. POPLAR TENT ROAD & HARRIS ROAD
 2. POPLAR TENT ROAD & COX HILL ROAD
 3. POPLAR TENT ROAD & DERITA ROAD
 4. POPLAR TENT ROAD & PITTS SCHOOL ROAD
 5. WEDDINGTON ROAD & PITTS SCHOOL ROAD
 6. DERITA ROAD & CONCORD MILLS BOULEVARD
 7. INTERSTATE 85 & BRUTON SMITH BOULEVARD
 8. BRUTON SMITH BOULEVARD & US-29
 9. POPLAR TENT ROAD & GEORGE W LILES PARKWAY
 10. GEORGE W LILES PARKWAY & WEDDINGTON ROAD
 11. CONCORD PARKWAY & PITTS SCHOOL ROAD
 12. CONCORD PARKWAY & GEORGE W LILES PARKWAY
 13. NC HIGHWAY 49 & OLD CHARLOTTE ROAD
 14. BRANCHVIEW DRIVE & BURRAGE ROAD
 - 15A. CONCORD PARKWAY & CHURCH STREET
 - 15B. DAVIDSON HIGHWAY & CONCORD PARKWAY
 16. MIRMAR STREET & BRANCHVIEW DRIVE
 17. BROOKWOOD AVENUE & BRANCHVIEW DRIVE
 18. MCGILL AVENUE & BUFFALO AVENUE
 19. BRANCHVIEW DRIVE & CABARRUS AVENUE
 20. POPLAR TENT ROAD & CONCORD PARKWAY
 21. CONCORD PARKWAY & CABARRUS AVENUE
 22. UNION STREET & CABARRUS AVENUE
 23. BRANCHVIEW DRIVE & CORBAN AVENUE
 24. UNION STREET SOUTH & WILSHIRE AVENUE
 25. UNION STREET SOUTH & BRANCHVIEW DRIVE
 26. ROBERTA ROAD & GEORGE W LILES PARKWAY/STOUGH ROAD



EXISTING
CONDITIONS



CONCORD CONNECTIVITY PLAN

EXISTING SIDEWALKS AND BIKE LANES

STAFF & LEADERSHIP COMMENTS ON EXISTING CONDITIONS —

As previously mentioned, Staff and City Leadership were integral in the development of Concord's Open Space Connectivity Analysis, providing valuable insight into the existing conditions of Concord's pedestrian transportation system and the level of connectivity currently provided. Their first-hand knowledge of favorable existing conditions as well as areas that need improvement were integrated into the overall system recommendations. Some comments obtained from Staff and Leadership include:

General Comments:

- › Leadership loves the existing greenway system. Goal is to expand upon current offerings.
- › The sidewalks at Burrage Rd. (immediately NE of Lake Concord Rd.) are nice
- › Woodlands and riparian corridors within the City are opportunities to enhance connectivity, to educate the public, and to market as a natural amenity for Concord
- › Driving to Dorton Park to utilize the park's walking trails is unfortunate. Goal is to have pedestrian and/or bicycle connections to Parks.
- › Biking within some neighborhoods is dangerous
- › It is unfortunate that residents of Afton Village must get in their cars to access services at Afton Ridge (e.g. Harris Teeter)
- › District 3 is isolated and lacks pedestrian and bicycle infrastructure
 - There are no bike lanes
 - The only walking trail in area is at Caldwell Park
 - Is in dire need of sidewalks

Transportation Comments

- › Currently more than 60 requests for sidewalk improvements across the City as part of the Pedestrian Improvement Program
- › Have not historically worked with NCDOT to integrate bike/pedestrian facilities during resurfacing projects
- › Have not historically integrated bike/pedestrian facilities City resurfacing
- › Resurfacing projects within narrow subdivision and downtown local streets
- › Resurfacing projects on larger streets typically only patch jobs which limit the opportunity to integrate bike/pedestrian facilities
- › Typically, resurfacing projects do not have enough money in their budgets to repave entire streets to accommodate bike and pedestrian facilities
- › Bike Share facilities are a joint project with the Planning Department. Council approved a pilot program in downtown and are interviewing vendors.
- › Currently the City does not have data collection mechanisms to calculate number of patrons that bike or walk.
- › As a general policy, there was a past decision to utilize wide outside lanes for new road construction.

Planning Comments

- › When rezoning, developers commonly lean toward conditional rezoning to maintain development flexibility
- › Rezoning conditions may require bike racks and connectivity for pedestrians, but typically only within the planned community
- › Pedestrian connectivity to Amenity areas within the community is required
- › If a project is a “by right” development, current Concord Development Ordinance only requires sidewalks
- › Need language in the ordinance for developers to dedicate easement, pay a fee-in-lieu, or build connections to assist with creating a City-wide connected system

Engineering Comments

- › No federal money was utilized for the past few projects
- › The Engineering Departments prefers to use City money to fund projects; projects are easier manage and navigate
- › STIP (NCDOT State Transportation Improvement Projects) is a better funding source when constructing a large project
- › Easement acquisition is always the challenge

Building and Grounds Comments

- › Greenway maintenance is tailored - if it is attached to a park, the greenway is bundled into park maintenance
- › Graffiti on pavement is the largest maintenance problem
 - Usually youth related
 - Try to get it off as soon as possible
- › Invasive species are an issue (e.g. kudzu, privet, cat briar, mimosa) - City is proactive about invasive removal, but is not currently a targeted program

Water Resources Comments

- › Currently restoring Stricker Branch
- › There are opportunities for water quality education
- › City not actively funding future stream restoration projects
- › Stormwater master plan identified some water quality projects, but are at a lower priority than infrastructure projects like culvert upsizing

PUBLIC COMMENTS ON EXISTING CONDITIONS

Like Staff and City Leadership, the public provided a treasure trove of insight into Concord's existing pedestrian system conditions. Some public comments obtained from the workshops and the online survey include:

- > **Most residents feel safe while walking, running, or biking on existing facilities:**
 - within their respective neighborhoods
 - when using a bike lane
 - when using trails at the parks
 - when walking along sidewalks
 - when using the Greenways
 - in Downtown
 - when traveling from Highland Creek down Christenbury Pkwy. toward the mall
- > **Residents do not feel safe while walking, running, or biking:**
 - in traffic
 - on most secondary roads
 - the greenway at night
 - to W.W. Flowe Park
 - to Central Cabarrus High School
 - along Roberta Road
 - > has no sidewalk (must share the road with cars who always drive over the speed limit)
 - > has no lights
 - from Laurel Park Subdivision to Publix, Food Lion, or Harris Teeter
 - on US 29
 - on Church Street where Locke Mill Plaza residents try to get across the street to Danny's Place
- > **Obstacles that deter residents from walking as a mode of transportation or recreation include:**
 - lack of sidewalks where they live
 - dangerous traffic conditions that make walking of any type of distance undesirable
 - lack of wheelchair and parking access to greenways
 - general safety concerns trying to traverse a fractured network
- > **Obstacles that deter residents from biking as a mode of transportation or recreation include:**
 - lack of bike routes/paths where they live
 - dangerous traffic conditions that make biking undesirable and unsafe
 - there is no continuity in bike lanes
- > **Residents commented on dangerous biking conditions that include:**
 - On Union Street, approaching the Union Street / Corban Avenue intersection from the south
 - road markings are not adequate to inform drivers about cyclist circulation
 - where the bike lane on Church Street ends as it approaches Buffalo Avenue it is confusing to drivers
 - The bike lanes on Church street are in terrible shape with many dangerous obstacles for cyclists
 - On the Church Street bike lane, there are potholes (one in particular near Brookwood Ave.) and sewer grates (northbound near Auto Bell) that force cyclists out into the road
 - Poplar Tent Road is almost impossible to ride on
- > **On Church Street downtown, the signal lights do not change unless a car comes up the hill from the Post Office/McCachren area.**
- > **At the crosswalk near the jail, vehicles do not stop even when the pedestrian has a "walk" symbol. Drivers continue to illegally turn right on red (not stopping at all).**
- > **NW Concord, near Concord Mills, is really lacking in connectivity**
- > **Lack of sidewalks on Poplar Tent is an issue**
- > **There are not enough wayfinding on trails, including greenway maps**
- > **Paths are not wide enough to allow bikers and walkers to co-exist**
- > **There is no lighting along the greenways**
- > **Southwest quadrant of the City is severely lacking in city parks/trails/community centers/library**

Additional information regarding public input can be found in section 4: Community Engagement.

SUPPORT FOR CONNECTIVITY IN PREVIOUS PLANNING DOCUMENTS

As far back as 2002, Concord (and Cabarrus County) have clearly articulated their commitment to becoming more pedestrian and bicycle friendly communities. This vision of a connected, safe multi-modal transportation system is evident in all planning efforts over the past decade. Review of previous planning documents capitalizes on previous efforts to draw inspiration and analyze the history of planning efforts regarding connectivity proposals. These documents provide insights that may inform recommendations for the creation of a pedestrian and bicycle transportation system.

Documents reviewed include:

Master Plans / Needs Assessments

- › Livable Community Blueprint for Cabarrus County (2001-2010)
- › Carolina Thread Trail Master Plan – For Cabarrus County Communities (2009)
- › City of Concord Recreational Needs Assessment Survey Findings Report (2014)
- › Cabarrus County Comprehensive Master Plan (2015)
- › Concord Comprehensive Parks and Recreation Master Plan (2016)

North Carolina Transportation

- › Rowan-Cabarrus MPO Comprehensive Transportation Plan
- › STIP (NCDOT State Transportation Improvement Projects)
- › NCDOT ‘Typical Highway Cross Sections’ Memo
- › NC 73 Transportation / Land Use Corridor Plan (2004)
- › Evaluating the Economic Impact of Shared Use Paths in North Carolina

Concord Small Area Plans

- › Classic Concord Center City Plan (2003)
- › Concord Parkway / Roberta Church Road Small Area Plan (2005)
- › Concord Parkway / Warren C. Coleman Small Area Plan (2007)
- › Cabarrus County Central Area Plan (2008)

Concord Transportation Plan

Blue Cross / Blue Shield – MUP Economic Impact Study (2005)

City of Concord 2030 Land Use Plan (2018)

Cabarrus County NC – Healthy Community Design Workshop (2018)

MASTER PLANS / NEEDS ASSESSMENTS

LIVABLE COMMUNITY BLUEPRINT FOR CABARRUS COUNTY (2001-2010)



In 2002, Concord participated in the Livable Community Blueprint for Cabarrus County. This plan was prepared as a flexible framework to guide Cabarrus County and its municipalities in the development of parks and recreation facilities and identify demands on bicycle and pedestrian routes.

The study determined providing safe and interesting environments for walking and biking was a high priority for residents. Goals were established to guide future park development, land acquisition, agency partnerships, and capital improvement projects. Those specific to pedestrian and bicycle connectivity include:

1. Pursue avenues available to preserve designated bicycle and pedestrian corridors for public access.
2. Provide safe bicycle and pedestrian access to all parks.
3. Create a transportation plan that will provide for a diverse and safe environment for bicycles and pedestrians to access a variety of destinations and services.
4. Recognize the recreation value of, and public interest in, natural resources such as Irish Buffalo Creek and the Rocky River as a recreation resource.

The Livable Community Blueprint defined close to 200 individual destinations where it was desirable to link with each other and with neighborhoods by bicycle and pedestrian friendly routes. Over 200 miles of on-road and off-road routes were designated as pedestrian and bicycle routes. Another 190 miles of bicycle routes were identified along existing roads.

CAROLINA THREAD TRAIL MASTER PLAN - FOR CABARRUS COUNTY COMMUNITIES (2009)



**CAROLINA
THREAD
TRAIL**

*Weaving
Communities
Together*

The Carolina Thread Trail (CTT) is a regional network of greenways, trails, and conserved lands that will link 15 counties; a portion of which winds its way through Cabarrus County. This offers valuable opportunities for recreation, alternative transportation, and economic development as well as contributes to land and open space conservation efforts. The CTT also promotes the preservation and improvement of residents' quality of life through protection of natural habitats and water and cultural resources.

Adopted in 2009, the CTT Master Plan outlines a 100-year vision, a 20-year master plan, and a 5-year action plan for the development of an interconnected trail system; one that will conserve natural resources and provide public access to some of the most scenic areas of the County. The CTT trail route recommendations built upon past plans to integrate all existing and proposed municipal and County trails with additional segments that together, create a comprehensive multi-use network.

The 100-mile Carolina Thread Trail route within Cabarrus County includes approximately six miles of existing trails and incorporates 77 miles of trails already proposed by local governments within the County (primarily trails proposed via the Livable Community Blueprint). Approximately 77% of the "Thread" in Cabarrus County is planned along streams and river corridors, 13% along existing bike routes and sidewalks, and 4% along road rights-of-way.

The CTT master plan identifies its top priority greenway corridors. These segments were selected as priority projects based on criteria such as proximity to population, available land/right-of-way, functionality, ease of development, and available funding. Based on that criteria, the segments of the Carolina Thread Trail that have been designated as priorities are:

1. Segment E - Irish Buffalo Creek Corridor: Rowan County Line to North Cabarrus Park
2. Segment I - Cabarrus Ave.: Connector to Myers Park Greenway
3. Segment B - Rocky River Corridor: Clarke Creek to Harrisburg

All three priority segments either run through or touch the edge of Concord. With an interconnected greenway/trail system, it is important to link desirable destinations safely, thus, providing opportunities for pedestrians and bicyclists to freely travel between them. Some specific destinations in and around Concord that were most frequently mentioned during the CTT planning process were:

1. Concord Mills Mall
2. Cox Mill Elementary
3. Downtown Concord
4. Frank Liske Park
5. James L. Dorton Park
6. Les Myers Park
7. Lowe's Motor Speedway
8. North Cabarrus Park
9. W. W. Flowe Park

Figure 3 highlights proposed trail connections specifically in Concord. Trails shown in purple are those recommended for the CTT designation while trails shown in green are presented for consideration to supplement the community's trail system and further tie together destinations.

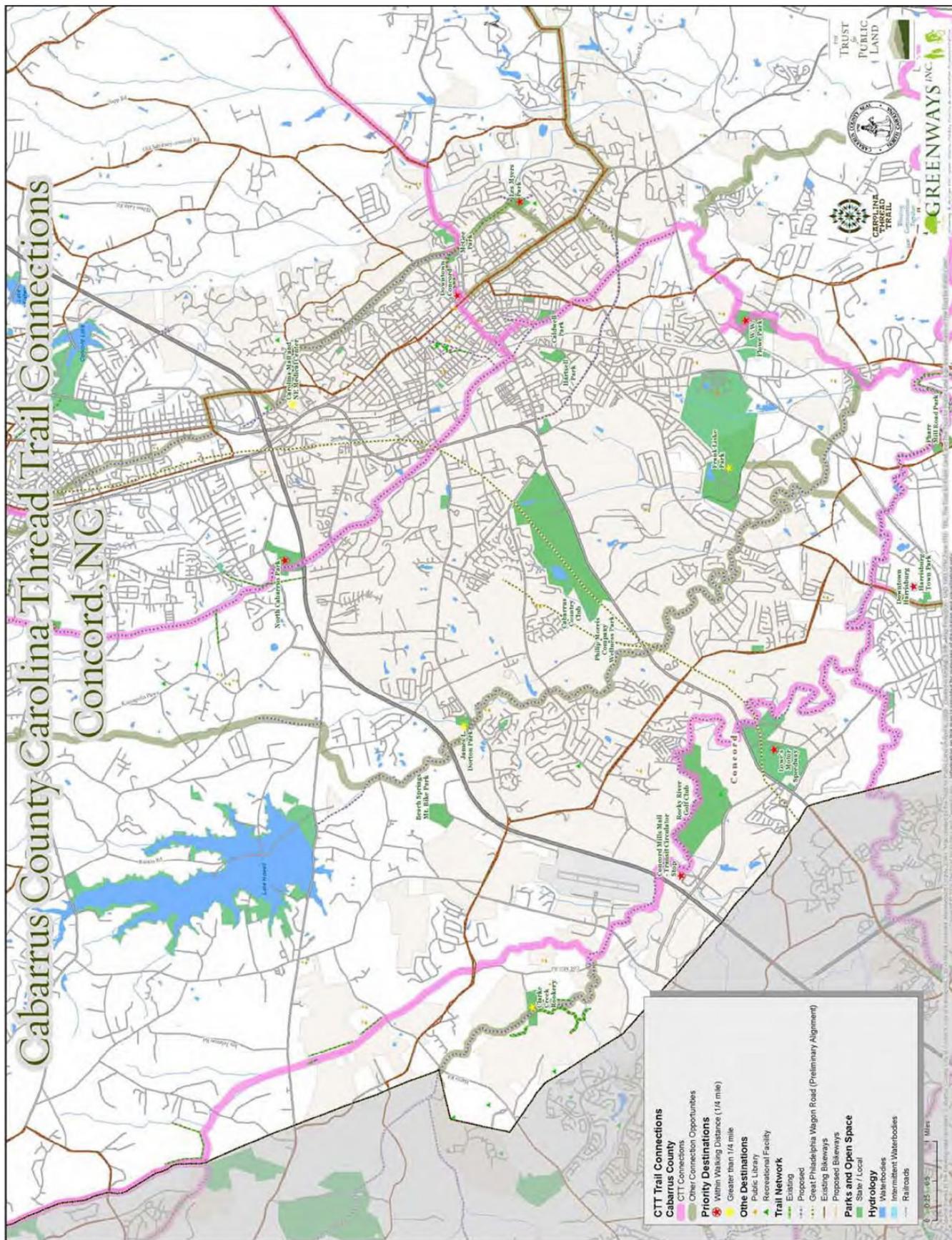


Figure 3 - Carolina Thread Trail Connections in Concord

EXISTING
CONDITIONS

CITY OF CONCORD RECREATIONAL NEEDS ASSESSMENT SURVEY FINDINGS REPORT (2014)



In 2014, the City's Parks and Recreation Department invested in a recreational needs assessment survey to establish needs and priorities for the development of future parks, recreation facilities, cultural offerings, programs, and services.

Having participated in the Livable Community Blueprint and supporting the Carolina Thread Trail, the City of Concord has been diligently working to expand their recreational programs, develop parks, and install greenways to achieve and fulfill the goals and recommendations outlined in those documents.

1. To confirm previously recognized needs and identify current user desires, the City engaged in a recreational needs assessment survey designed to obtain statistically valid results of user preferences. Through a combination of paper surveys and online distribution, the compiled data resulted in the following recommendations and major survey findings specifically related to connectivity:
2. The Parks and Recreation Department should further develop the current greenway system to connect with local neighborhoods and parks. Survey results indicated that if greenways were more easily accessible, they would be used more frequently. Most are located more than 3 miles from survey respondents' residence.
3. The Parks and Recreation Department should investigate greenway connections that can be made with the most popular park facilities: Les Myers Park, Frank Liske Park Soccer Complex, and Academy Recreation Center.
4. Residents would like to see and experience more greenways in the community to primarily use them for recreation, exercise and personal health improvement.
5. There is also a strong interest in mountain bike trails and bike lanes/trails. It was recommended that the Parks and Recreation department provide more natural surface trails through woodlands with varying degrees of difficulty to respond to the strong interest from the mountain biking community.
6. The City should connect the trail system to shopping destinations as a matter of economic interest.
7. To assist cyclist/pedestrian collisions on trails that abut roads, bike lanes should clearly be delineated on roadways with 35 mph or less speeds and nearby greenway paths should be of adequate width to provide pedestrian only requirements. In areas where roadway speeds exceed 35 mph, the greenway path should be wide enough to safely accommodate both cyclists and walkers/joggers.
8. There is concern for personal safety along trails. In areas where the greenway system abuts high traffic roads, a separation device (e.g. planting strip) should be incorporated to provide additional protection and comfort users.
9. To address suspicious activity on the greenways, proposed trails should avoid remote areas, minimize thick underbrush adjacent to the pathway, and provide lighting where possible.
10. It is recommended that the City provide dog parks, playgrounds, and picnic areas along greenways where possible.

CABARRUS COUNTY COMPREHENSIVE MASTER PLAN (2015)



In 2002, Cabarrus County adopted the Livable Community Blueprint, a planning document created to develop a ten-year vision for parks and recreation needs (see previous pages for additional information on the Livable Community Blueprint). The 2002 plan established goals to guide future park development and while some new parks and greenways were developed and some land was preserved in accordance with those goals, most of the proposed recommendations have not been implemented.

Therefore, in 2014, recognizing the need for an updated plan, elected officials funded a new 10-year vision planning study specifically for the Active Living and Parks Department of Cabarrus County.

The following are recommendations extracted from the Cabarrus County Comprehensive Master Plan that specifically relate to connectivity.

1. The facility needs are considered County wide needs and meeting these needs should be a coordinated effort by all parks and recreation providers within the County.
2. Priority should be placed on the development of walking trails in all existing and future parks. The County should look for opportunities to work with other agencies and/or organizations to explore trail development along Rocky River and Irish Buffalo Creek.
3. The County should also work collaboratively with municipal agencies and the Carolina Thread Trail in the development of the CTT network of greenways. Current demand calls for an additional 21 miles of trails with over 30 additional miles to meet 2025 needs.
4. The County should encourage the development of bike routes to connect all County cities, towns, and points of interest. Bike trails should include paths in existing and future parks as well as bike lanes or wider shoulders on roads to accommodate cyclists (work in collaboration with NCDOT). The County should also look for opportunities to develop mountain bike trails in existing or future parks.

CONCORD COMPREHENSIVE PARKS AND RECREATION MASTER PLAN (2016)



In December of 2016, Concord adopted their Comprehensive Parks and Recreation Master Plan. While the plan focused on overall Parks and Recreation offerings, greenways and trails rose to the top of the desired facility list. The study revealed that greenways were one of the most popular and most frequently visited destinations in the community.

However, data collection concluded that Concord ranked near the bottom among peer agencies for total trail miles (8 miles total) and trail miles per 1,000 residents (.098 miles). Best practice agencies typically offer between 0.25-0.5 miles of trail per 1,000 residents.

The existing greenways and trails within the City receive heavy use and are an important asset within the parks system. During the master plan process information was garnered that indicated there was significant interest in greenways and trails with more than two-thirds of the survey respondents suggesting a need for these.

Several miles of planned trails have already been identified through the Carolina Thread Trail master plan as well as planned by the City of Concord Parks and Recreation staff. However, most of these planned trails follow drainage patterns and parallel existing streams and creeks which run primarily north/south. New corridors were identified in the master plan which attempt to bring more connections east/west to create a trail network linking additional communities, urban areas, parks and other destinations.

It should also be noted that "inconvenient location" was cited as a barrier to greenway access and participation. This was consistent with the large proportion of survey respondents who felt there was a need for better geographic distribution of facilities. This notion was also identified in the focus group meetings.

When planning and building an expanded greenway system, geographic distribution should be considered.

It is important to keep in mind that planning and building an ambitious connected network will take time and a concentrated effort. The master plan identified key strategies/recommendations to help advance greenway system growth. Those include:

› **Consider Ordinance Updates & Development of Regulations Which Promote the Success of Parks and Recreation within the City:**

- The Concord Development Ordinance (CDO) outlines land dedication, or fee in lieu, when a residential development is submitted for approval. The policy is written to add recreation acreage to the parks system to meet the needs of increased population caused by new residential community development. The policy should remain in place. However, additions to the policy should be considered to address greenway dedications. Trails and greenways are the highest priority for Concord residents. Therefore, stronger language to the park dedication ordinance should be added to detail how this greenway land may be dedicated in the future. The policy should also address both residential and commercial land uses where future greenways are proposed. As a by-product, this policy would help to strengthen the City's transportation needs. The City should therefore continue to work with state, regional, and local agencies in order to identify corridors and connections that are a part of the City's improvements, while also having an overall City-wide transportation plan and vision.

› **Expansion of the City Greenway System:**

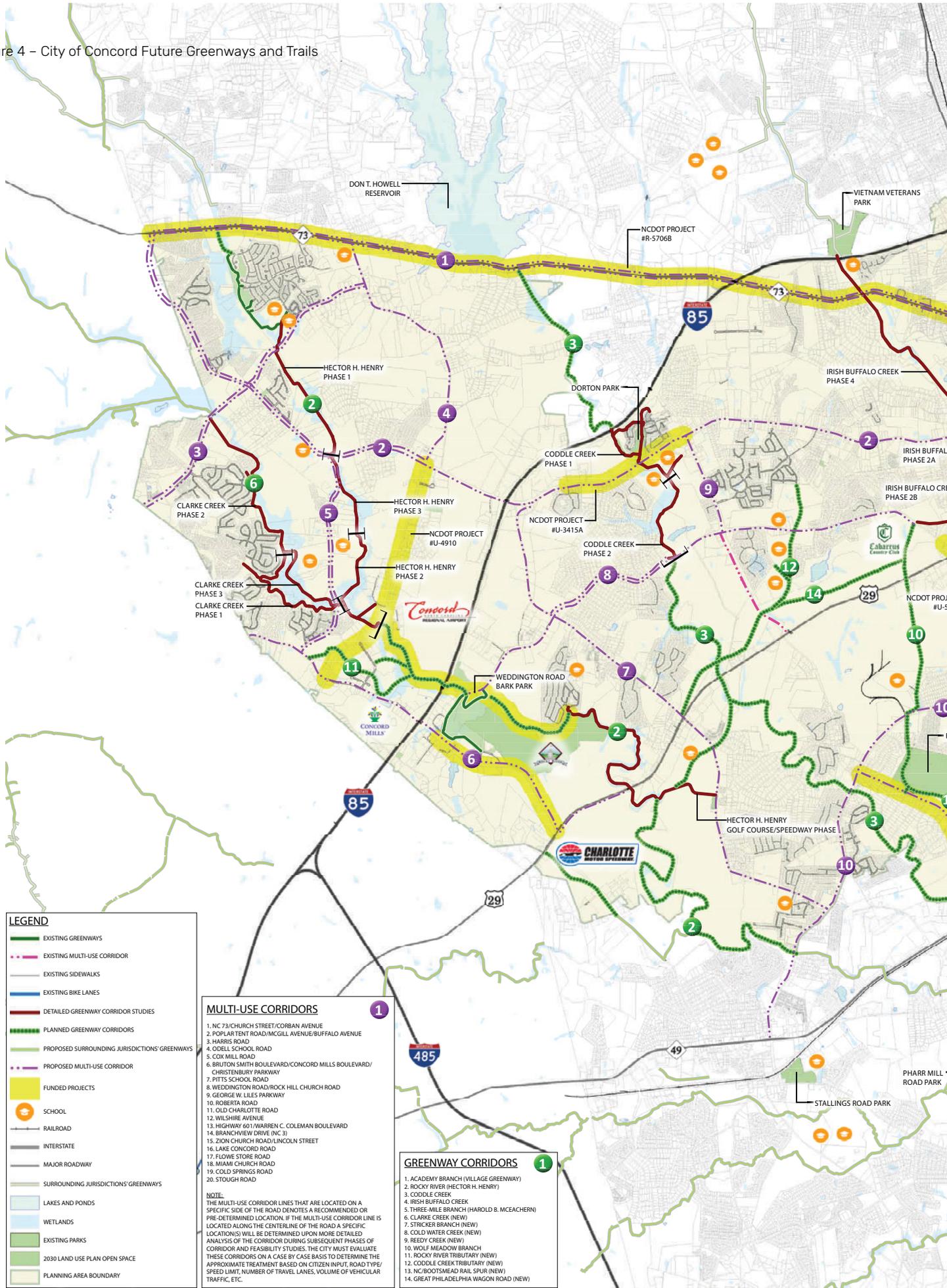
- Create a City of Concord greenway and trails commission to provide input on greenway and trails planning. The group should be made up of volunteers from both the public and private sectors with a passion for making the trails system a success.
- Work to establish greenway corridor priorities which will link key elements within the overall parks system as well as serve a broad population.
- Set a goal for completing +/-15 miles of new greenway trails in the next +/- 15 years. This will create a gain in momentum by breaking the larger goal into achievable smaller segments.
- Consider hiring a dedicated greenway trails planning coordinator. This new staff person would take on the responsibility of identifying and securing the easements required for building the trails as well as assisting with the design, permitting and construction aspects of the new trails.
- Identify key partnerships with land owners, public and private, who are also interested in seeing the expanded City-wide system in place.

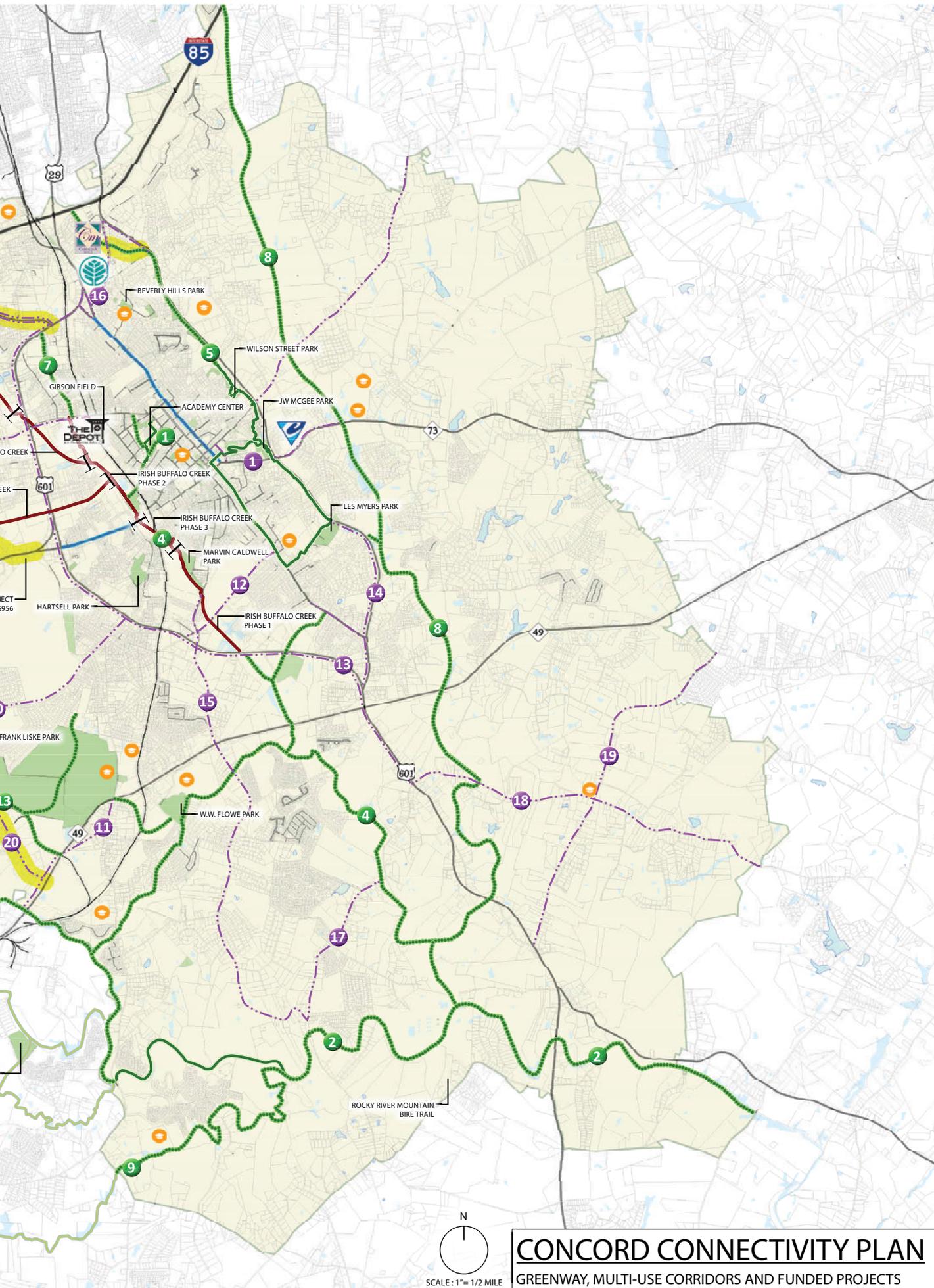
› **Continued Upgrades and Maintenance of Existing Facilities:**

- **Harold B. McEachern Greenway**
 - › Consider incorporating public art along the greenway - sculpture along trail and/or mural in pedestrian tunnel
 - › Consider installing additional rest stops
 - › Continue with proposed plans to extend Greenway
- **The Village Greenway**
 - › Consider installing a few rest stops
 - › Consider installation of environmental education displays to enhance the greenway experience
- **Downtown Greenway Loop**
 - › Consider installing a few rest stops
 - › Consider installation of environmental education displays to enhance the greenway experience
- **Hector Henry Greenway (Moss Creek Phase)**
 - › Consider incorporating public art along the greenway
 - › Consider installing additional rest stops
 - › Continue with proposed plans to extend Greenway
- **Hector Henry Greenway (Weddington Road Phase)**
 - › Consider incorporating public art along the greenway
 - › Consider installing additional rest stops
 - › Consider installation of environmental education displays to enhance the greenway experience
 - › Continue with proposed plans to extend Greenway

Figure 4 – City of Concord Future Greenways and Trails

EXISTING
CONDITIONS





CONCORD CONNECTIVITY PLAN
GREENWAY, MULTI-USE CORRIDORS AND FUNDED PROJECTS

NORTH CAROLINA TRANSPORTATION

CABARRUS-ROWAN MPO COMPREHENSIVE TRANSPORTATION PLAN (2017)



The Cabarrus-Rowan Metropolitan Planning Organization (MPO) Comprehensive Transportation Plan (CTP) is a joint effort between the Cabarrus-Rowan MPO and the NCDOT

– Transportation Planning Branch (TPB). The CTP determines future multimodal transportation needs and provides recommendations for a 25–30-year time frame. As part of the preparation of the CTP, input from local government officials, planning staff, and the public was garnered. The 2017 CTP was approved by the Cabarrus-Rowan MPO Transportation Advisory Committee (TAC) on January 25, 2017 and adopted by the NCDOT Board of Transportation on March 9, 2017.

Under State law (N.C.G.S. § 136-66.2), MPOs and municipalities are required to develop a Comprehensive Transportation Plan (CTP) in collaboration with NCDOT. This document should be utilized by local officials, serving as a guide to provide a well-coordinated, efficient, and economical future transportation system. A CTP is developed to ensure that planned transportation facilities reflect the needs of the public while minimizing disruption to residents, businesses, and the environment. Local governments may use the CTP to usher development and protect recommended project corridors.

The CTP proposes multi-modal project recommendations per the Complete Streets concepts. Complete streets are streets designed to be safe and comfortable for individuals of all ages and capabilities; pedestrians, bicyclists, transit riders, and motorists. Streets that follow the Complete Streets concepts are generally well-integrated with surrounding land uses and include sidewalks, suitable bicycle facilities, transit stops, appropriate street widths, and context-based traffic speeds.

The benefits of utilizing the Complete Streets approach include:

- › Making it easier for travelers to get where they need to go
- › Encouraging the use of alternative forms of transportation
- › Building more sustainable communities
- › Increasing connectivity between neighborhoods, streets, and transit systems
- › Improving safety for pedestrians, cyclists, and motorists

Since the CTP is based on the projected growth for the planning area and actual growth patterns may differ from those anticipated, it may be necessary to accelerate or delay implementation of some recommendations. Some portions of the plan may also require revisions in order to accommodate unexpected changes in development.

Recommended improvements shown on the CTP maps represent identified transportation deficiencies and potential solutions to mitigate those deficiencies. While the CTP does propose recommended solutions, it may not represent the final location or cross section associated with the improvement since all CTP recommendations are based on high level systems analyses. For purposes of this plan, we are including in the following pages the pedestrian and bicycle maps as contained within the CTP. The Inventory and Recommendations table from the CTP can also be found as Appendix A.

Prior to implementing CTP projects, additional analysis is necessary to meet the National Environmental Policy Act (NEPA) or the North Carolina (or State) Environmental Policy Act (SEPA). During the NEPA/SEPA process, the precise project location and cross section will be proposed based on environmental investigation and public input.

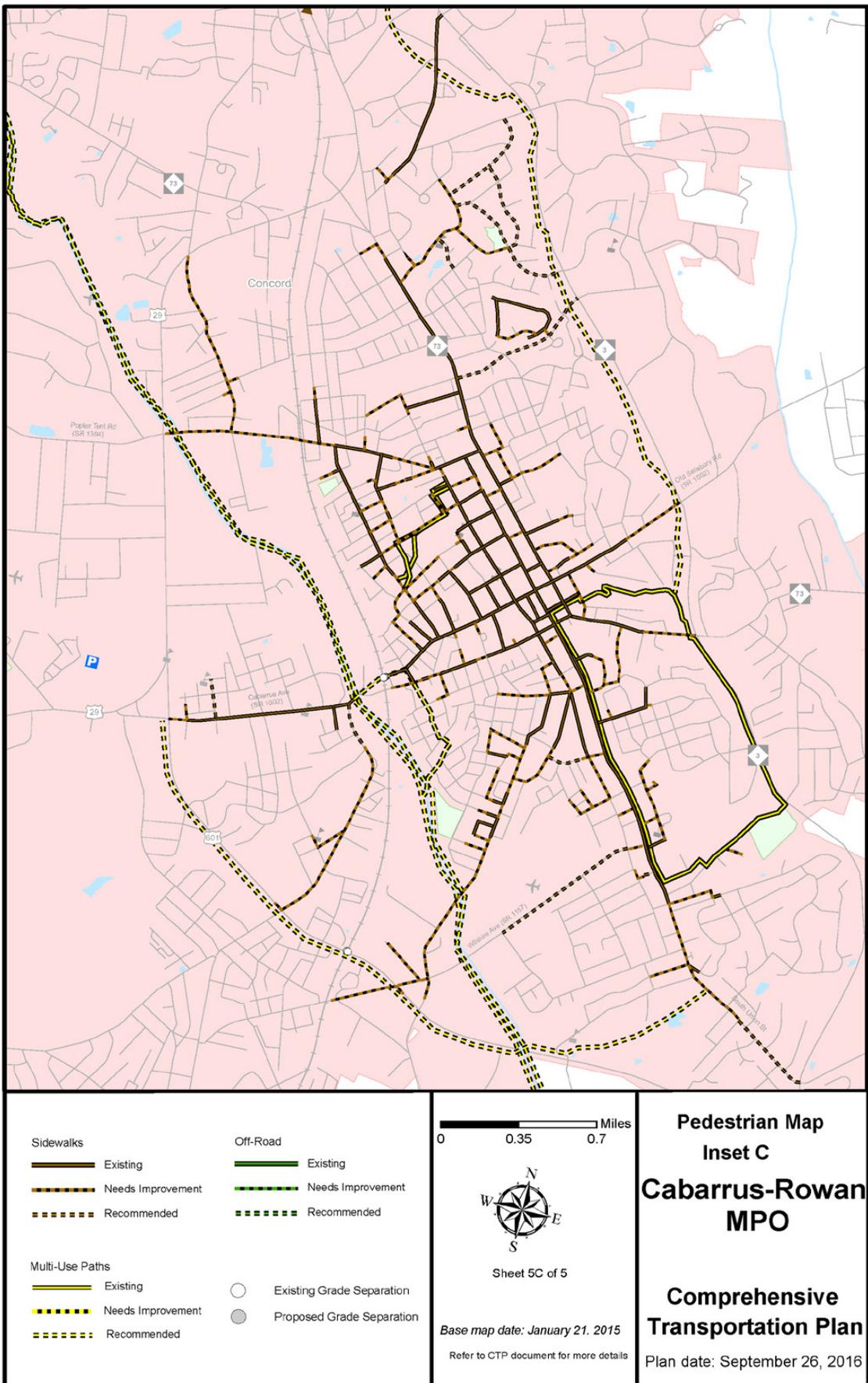


Figure 5 - Cabarrus-Rowan MPO - CTP Pedestrian Map

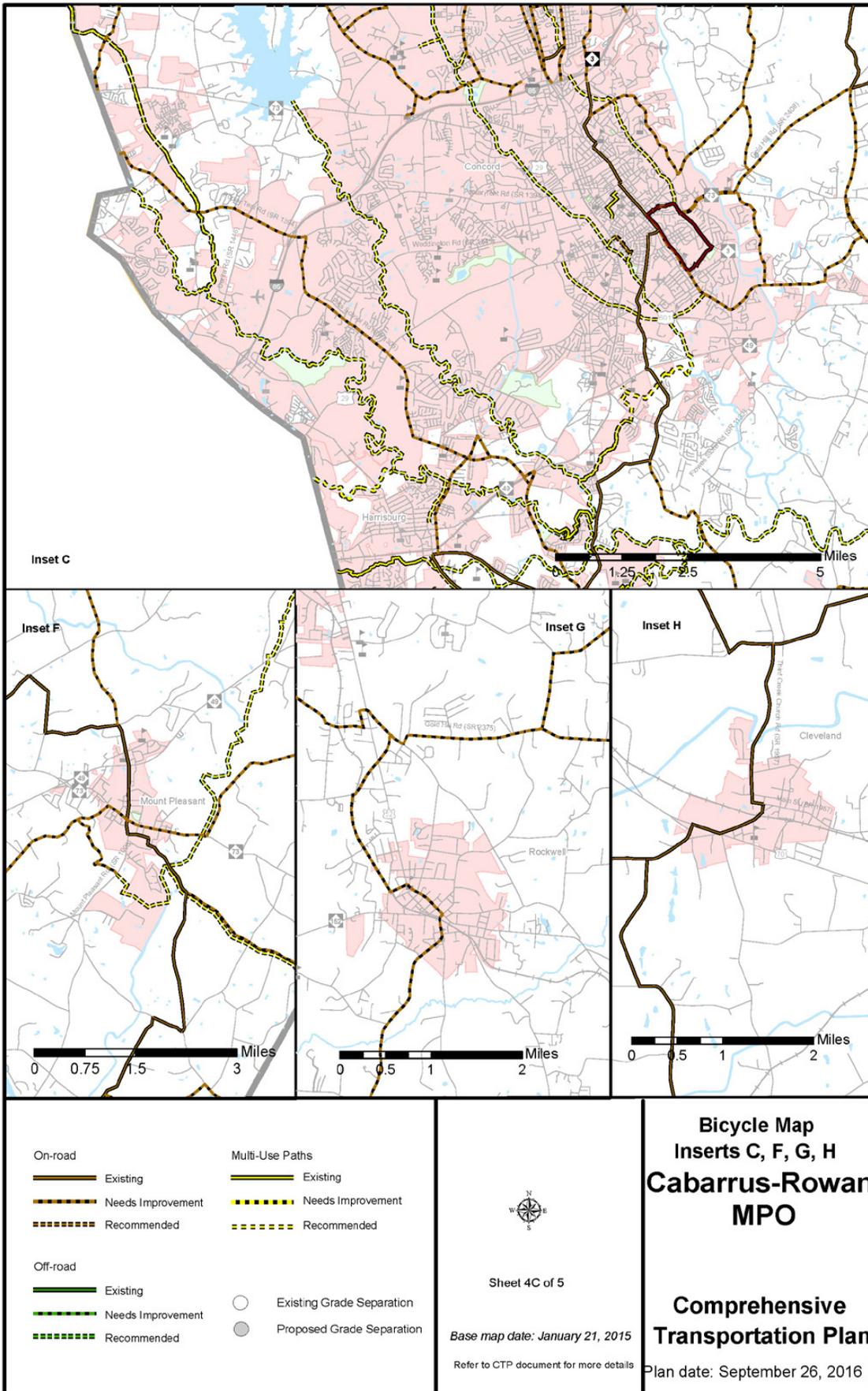


Figure 6 - Cabarrus-Rowan MPO - CTP Bicycle Map

STIP (NCDOT STATE TRANSPORTATION IMPROVEMENT PROJECTS) _____

NCDOT is currently reviewing the Complete Streets Policy and Guidance and it is anticipated that there will be changes to the cost share/betterment policy. Several Divisions across the state have used their discretion to include bicycle and pedestrian elements within the planned and

construction cross sections of their projects. These elements have included sidewalks, multi-use paths, and bike lanes. Division 10 in particular has shown a willingness to apply Complete Streets Design Guides on roadways that are appropriate for the inclusion of biking and walking facilities.

NCDOT 'TYPICAL HIGHWAY CROSS SECTIONS' MEMO _____



In response to the Strategic Transportation Investments Law (House Bill 817), a comprehensive planning and design "typical" highway cross sections were updated. Established in these guidelines are design elements that

emphasize safety, mobility, complete streets, and accessibility for multiple modes of travel. These "typical" highway cross sections should be used as guidelines for comprehensive transportation planning, project planning, and project design activities for State Transportation Improvement Program (STIP) projects and other applicable projects. See Appendix B for "typical" cross section illustrations.

NC 73 TRANSPORTATION / LAND USE CORRIDOR PLAN (2004) _____



The NC 73 Transportation/Land Use Corridor Plan is a coordinated land use and multi-modal transportation plan for a 35-mile corridor along NC 73. The catalyst for the plan was recognizing that development pressures along the Corridor and the resulting vehicular activity, have overwhelmed the road's capacity.

The overall goal of the plan was to design a comprehensive land use, urban design, and transportation plan that incorporates existing and anticipated land use and transportation patterns for the eight jurisdictions along the corridor. Included in the plan are ten (10) road typologies and four (4) intersection typologies, of which accommodations for pedestrians and bicycles are incorporated into most.

Pedestrian and bicycle accommodations within these typologies include hike and bike trails within the right-of-way, sidewalks both adjacent to and separate from the roadway, and bicycle lanes adjacent to travel lanes. Pedestrian crosswalks are also incorporated into several of the typologies.

Throughout the 35-mile corridor, two segments touch Concord, the Coddle Creek Segment and the Rocky River Segment.

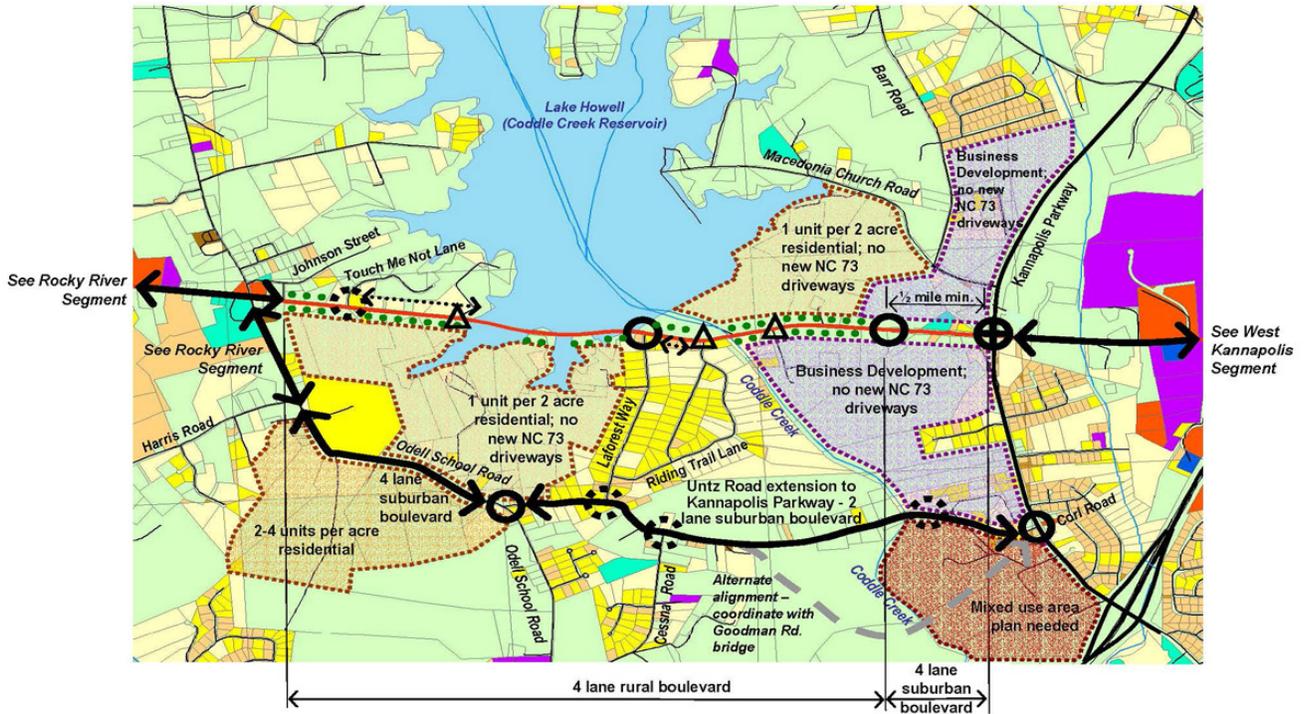


Figure 7 - NC 73 Transportation / Land Use Corridor Plan: Coddle Creek Segment

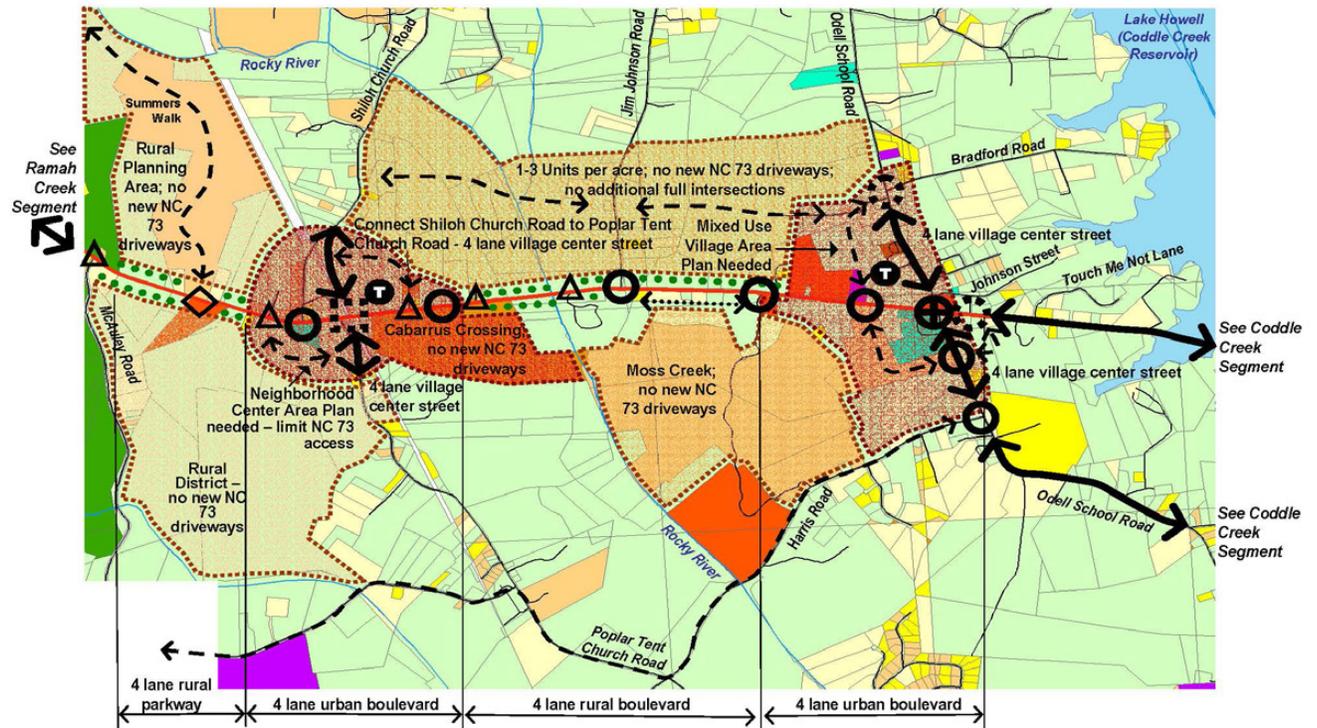
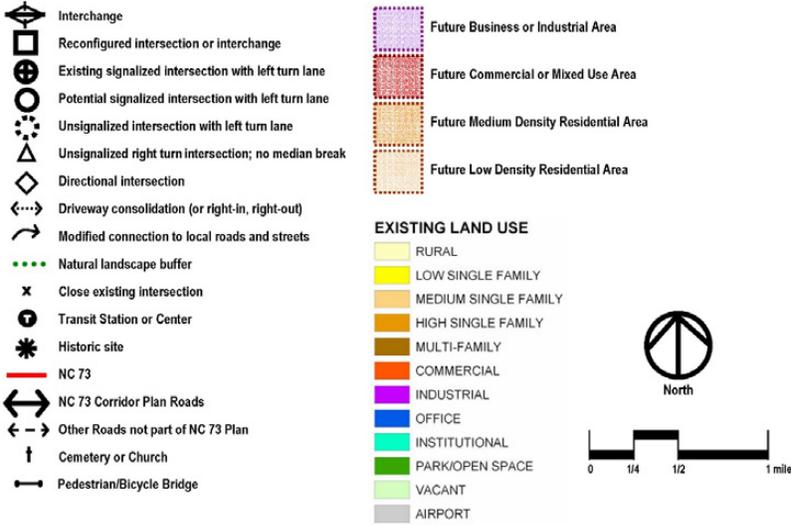


Figure 8 - NC 73 Transportation / Land Use Corridor Plan: Rocky River Segment

Segment Plan - Legend



NC 73 Transportation / Land Use Corridor Plan

96

Segment Plan Legend

EVALUATING THE ECONOMIC IMPACT OF SHARED USE PATHS IN NORTH CAROLINA (2018)



The purpose of this study was to deliver research data that lays the foundation for the North Carolina Department of Transportation (NCDOT) to create new metrics for economic based performance criteria that assists non-motorized transportation projects to compete for NCDOT funding.

NCDOT has supported the construction of Shared Use Paths (SUPs) in coordination with local governments since the 1970's, but with the creation of a data-driven process to prioritize transportation projects, independent bicycle and pedestrian projects (like SUPs) are now evaluated, ranked, and in direct competition with projects from all transportation modes. The current prioritization process only uses travel time savings and safety benefits based on crash history as the economic criteria. But when we evaluate bicycle or pedestrian projects, these two economic metrics fall short in accounting for the wide range of potential economic benefits.

The objective of this study was to design and test a method for assessing economic contributions of SUPs in North Carolina. A variety of economic impacts were explored and were broken down into three distinct benefit categories.

- › Societal benefits (health, congestion reduction, pollution reduction, safety benefits)
- › Business benefits (trip expenditures, retail sales tax benefits)
- › Community benefits (capital expenditures, operational expenditures, property value impacts)

The study sought to quantify economic contributions that SUPs provide through recreation and transportation uses and how these two activities may impact local and state economies. Economic contributions evaluated include:

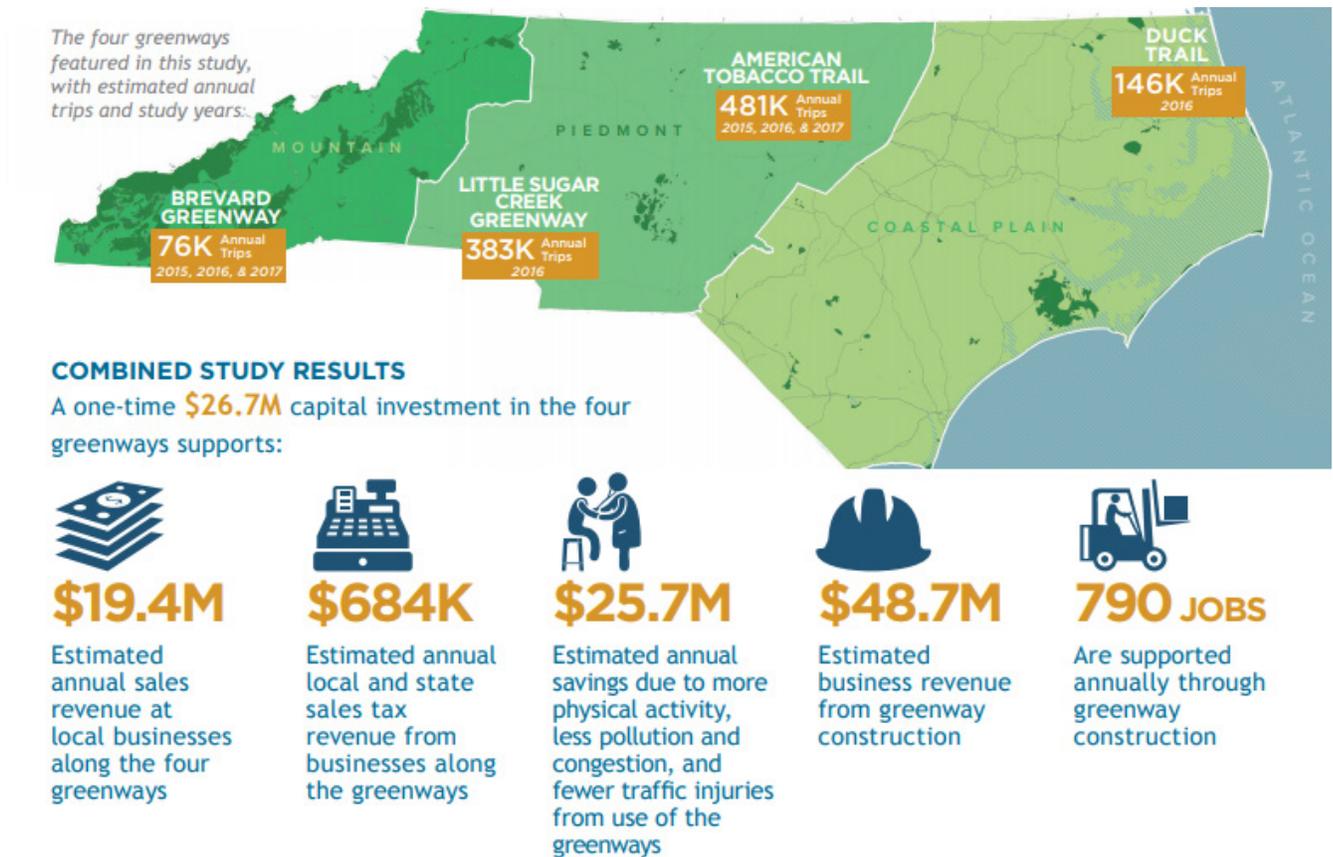
- › Tourism
- › Events
- › Urban redevelopment
- › Community improvement
- › Property values
- › Health care savings
- › Jobs
- › Investment
- › General consumer spending

To test the proposed methodology, four (4) shared use paths across North Carolina were selected.

1. The American Tobacco Trail in Durham
2. Brevard Greenway in Brevard
3. Little Sugar Creek Greenway in Charlotte
4. Duck Trail in Duck

And the findings resulted in five (5) categories of distinct benefits.

1. Business and Employee Benefits
2. Retail Sales Tax Benefits
3. Benefits from Capital Expenditure Investments
4. Property Value Impacts
5. Health, Congestion, and Pollution Reduction Benefits



EXISTING
CONDITIONS

Figure 9 – Economic Impact of Shared Use Paths on Local Economies

CONCORD SMALL AREA PLANS

CLASSIC CONCORD CENTER CITY PLAN (2003)



Adopted by City Council in December 2003, the Center City Plan was a ten-year plan that established a set of strategies for future redevelopment and sustainability of fourteen (14) existing neighborhoods surrounding the City's downtown. Center City is defined as the area bounded by Interstate I-85, US Highway 3 (Branchview Drive), US Highway 601 (Warren C. Coleman Blvd.), and US Highway 29 (Concord Parkway).

The plan includes a Future Land Use Map, Multi-Modal Connections Map, Corridor Improvement Strategies, Neighborhood Improvement Strategies, and Development Incentives.

The strategies contained within the plan, both overall and area/neighborhood specific, were called out to be jointly implemented by public, private, nonprofit, and neighborhood organizations. Overall Center City strategies that directly support connectivity efforts include:

- › Construct new sidewalks as shown on the Multi-Modal Connections Map (Figure X) each year, as feasible, through the City's Pedestrian Improvement Program (PIP).
- › Construct additional greenway connections as shown on the Multi-Modal Connections Map (Figure X) to complete a greenway loop system throughout Center City.

The two corridors called out in the Center City plan are Cabarrus Avenue and Church Street. Strategies for the corridor improvements include: travel lane reductions, sidewalk construction, installation of landscape medians and protected left turn lanes, implementation of bike lanes and transit stops, burying existing utility lines, and installation of decorative street lights.

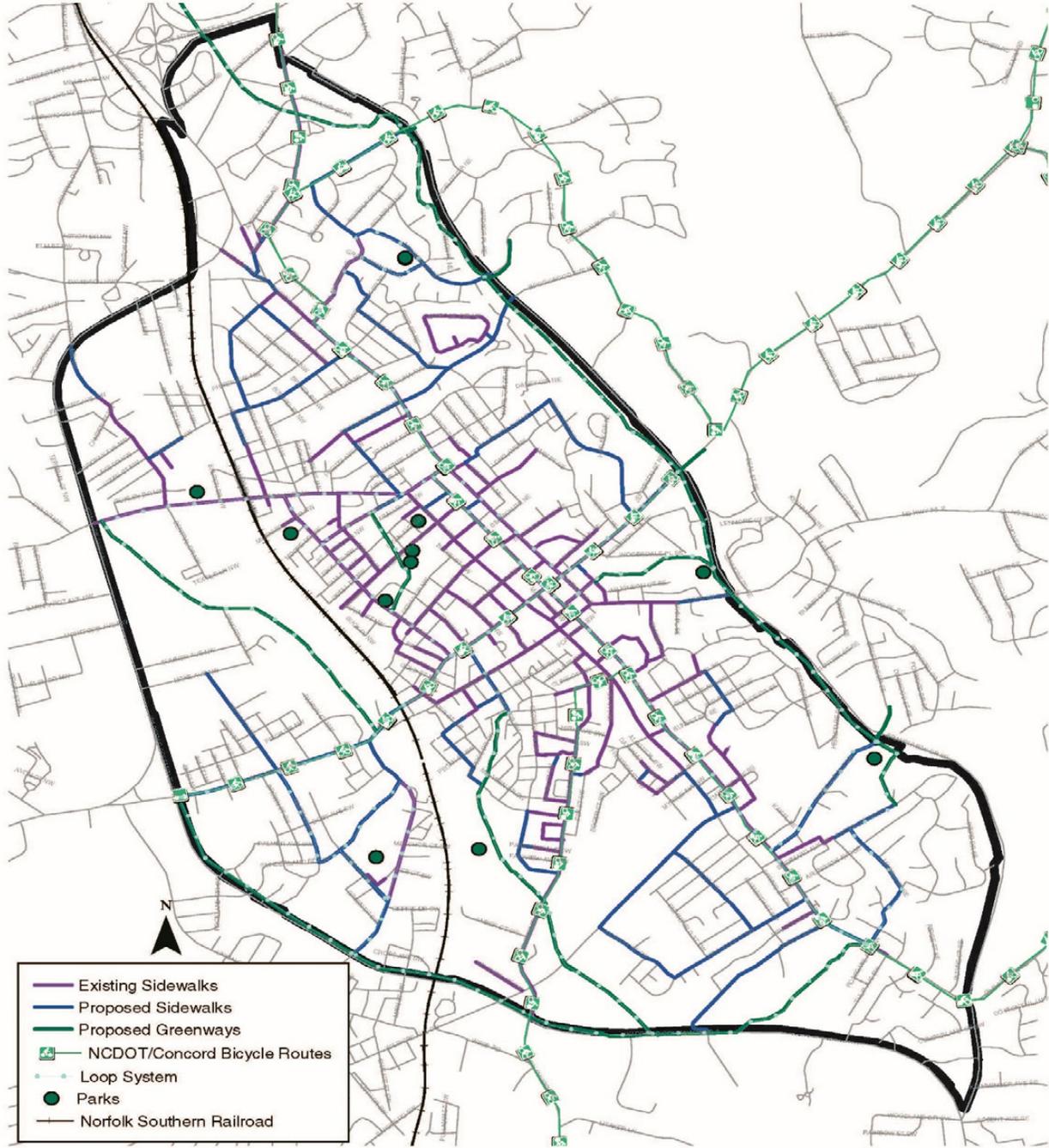
The plan also called out strategies for the 14 neighborhoods that were evaluated. The neighborhoods include:

1. Downtown
2. North Gate
3. Beverly Hills
4. Brookwood
5. Sidestown – Shankletown
6. Logan
7. Gibson Village
8. Historic Concord
9. Wilmar Park / Locke Mill
10. Hillcrest
11. Myers Park
12. Cumberland / Sylvan
13. Silver Hill
14. Hartsell

Within these neighborhoods, strategies that support connectivity efforts include:

- › Install and/or repair sidewalks.
- › Implement streetscape improvements.
- › Construct Greenways (Three Mile Branch, Academy Creek) and promote opportunities for additional greenway connections.
- › Create a main street in the Logan neighborhood with sidewalks, street trees, street lights, and traffic calming measures - connect Lincoln Street to Corban Avenue.
- › Enhance connections of existing public facilities (parks, schools, etc.).
- › Develop connection from R. Brown McAllister Elementary School to Les Myers Park.

MULTI-MODAL CONNECTIONS



EXISTING
CONDITIONS

Figure 10 - Classic Concord Center City Plan - Multi-Modal Connections

CONCORD PARKWAY / ROBERTA CHURCH ROAD SMALL AREA PLAN (2005)

CONCORD PARKWAY / ROBERTA CHURCH ROAD SMALL AREA PLAN

During the latter part of 2004, consultants collaborated with the City of Concord to develop a vision for 780 acres of primarily undeveloped land located between the Coddle Creek floodplain to the west, George W. Liles Parkway to Roberta Church Road to the east, Weddington Road to the north, and encompasses land on the south side Concord Parkway.

Adopted in 2005, much of the plan focused on the development of office, industrial, and retail elements with a portion of the vision outlining transportation and circulation recommendations; of which included pedestrian and bicycle route implementation. Key recommendations regarding these elements included:

- › Adopt the recommended greenways and multi-use paths recommended in the small area plan
- › Install a multi-use path along the Concord Parkway to provide for a regional northeast-southwest bicycle route
- › Promote good street designs that provide enhanced bicycle and pedestrian accommodations

The master plan that was ultimately developed is divided into seven areas (see Figure X): Each of the individual areas have specific recommendations, several of which include and/or impact Connectivity elements, of which are listed below.

Weddington Neighborhood Center

- › Install sidewalks and on-street bicycle lanes along both sides of Weddington Road.
- › Construct a trail head from Weddington Road to the planned Coddle Creek Greenway.

The Neighborhood

- › Preserve key open spaces noted on the plan including the floodplain/greenway and the neighborhood park.

Concord Farms Road South

- › Construct a greenway trail with interpretive signage along the route of the Great Wagon Road.

School Site

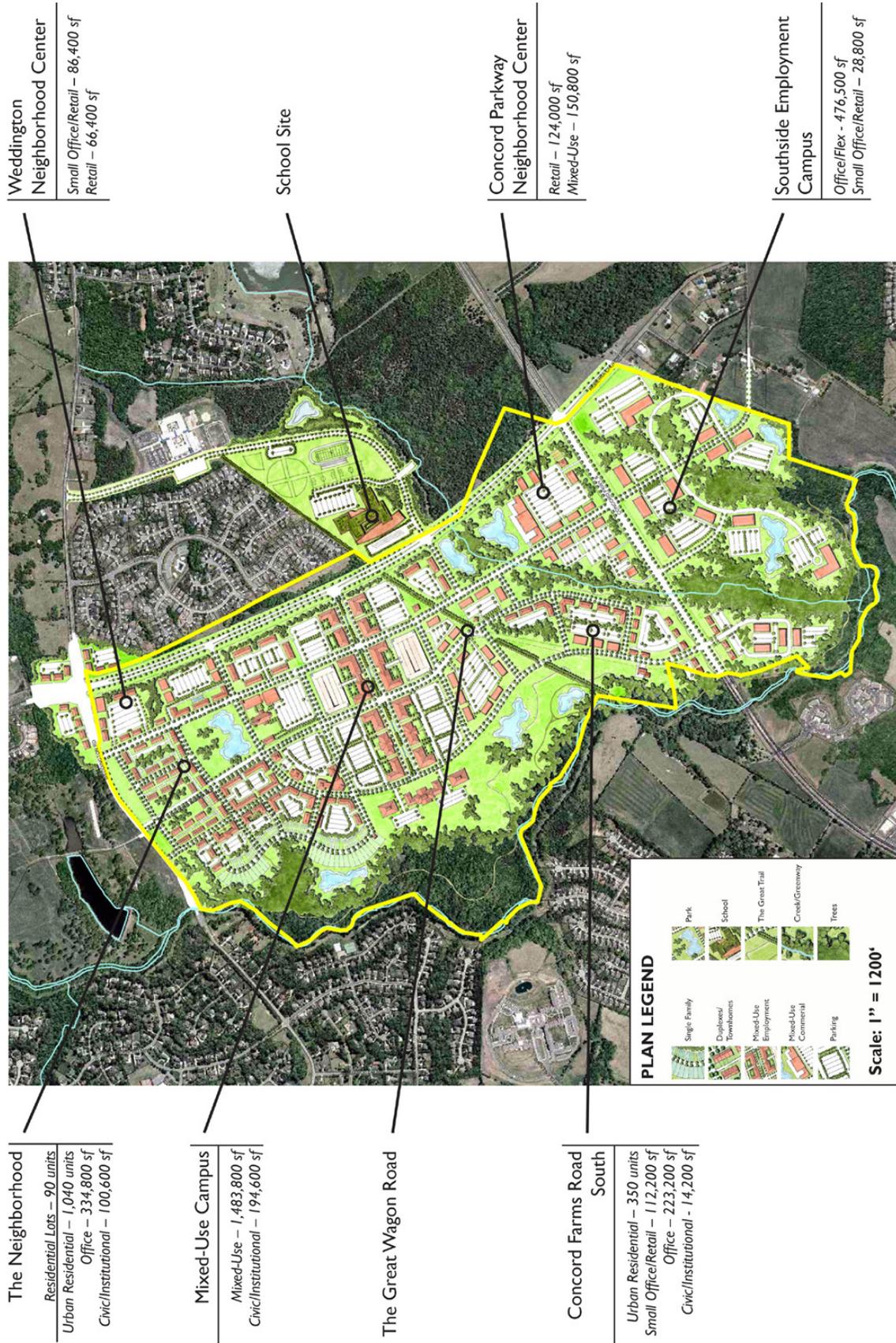
- › Continue the Great Wagon Road path along the northern boundary.

Concord Parkway Neighborhood Center

- › Require a 100-foot informally planted setback with a 10-foot multi-use path along Concord Parkway.

Southside Employment Area

- › Require a 100-foot parkway setback along Concord Parkway with a multi-use path.



CONCORD PARKWAY / ROBERTA CHURCH ROAD SMALL AREA PLAN

CITY OF CONCORD, NORTH CAROLINA

EXISTING CONDITIONS

Figure 11 – Concord Parkway / Roberta Church Road Small Area Plan

CONCORD PARKWAY / WARREN C. COLEMAN SMALL AREA PLAN (2007)



The Concord Parkway (U.S. Hwy 29) / Warren C. Coleman (U.S. Hwy 601) Small Area Plan was adopted by the City Council in May of 2007. This plan addresses the future market demands for retail, commercial, open space, and residential uses within the study area for a twenty-year planning horizon.

The vision of the plan establishes a unique character for the area through architectural, streetscape, and development/redevelopment opportunities as well as promoting a walkable and pedestrian-friendly environment. Strategies contained in the small area plan regarding connectivity opportunities include:

- › The streets within this area will balance pedestrian, bicycle, and vehicular needs through providing sidewalks on both sides of the street as well as constructing new sidewalks in the existing Mill Village by creating easements with the private homeowners.
- › Promote the construction of a variety of parks, plazas, and open space for both active and passive recreation. Such open spaces should include a regional trail system.
- › Promote the connectivity of the different open spaces through improved streetscape, sidewalks, and lighting.
- › Promote the construction of a regional trail system along the existing streams and creeks as a requirement for new development.



Establish Infill Single Family Residential in the Mill Village

- Stabilize and Honor the History of this Area
- Residential Architecture should Complement the Existing Mill Housing in the Neighborhood

C. Proposed Priority Project

- Sidewalks and street improvements in the Brown Mill Village neighborhood

Promote a Walkable, Pedestrian Friendly Environment

- Improvements to the Street Networks, Establish Street Trees, Landscape Setbacks, Architectural Frontages, Plazas, Parks, Road Cross Sections and Connectivity Guidelines

Parkway Connection from Rock Hill Church Road to US 29/ US 601

- Provide Alternative Routes Through the Area
- Relieve Traffic Congestion and Reduce Demands on the Concord Parkway (US29) and Warren C. Coleman (US601) intersection

Provide a Diverse Range of Residential Housing

- Promote Diverse Residential Architectural Types

Redevelop of the Triangular Parcel

- Mixed Use Retail / Office / Residential Development
- Opportunities to Create Visually Prominent Buildings
- Civic / Public Use
- Capitalizes on the Public Investment along Cabarrus Avenue
- Promotes the Redevelopment of the County Property to Future Office Space
- All alignment studies are illustrated within this Small Area Plan document

Provide an Interconnected Street Network

- Provide Alternative Routes Through the Area
- Relieve Traffic Congestion and Reduce Demands on the Warren C. Coleman (US601) and the Concord Parkway (US29) Intersection
- Promote a Safer Environment for the User

Utilize County Owned Property for Redevelopment:

- Mixed Use Office & Neighborhood Retail Development of County Property

A. Proposed Priority Project

- Improvement to Road Intersections

B. Proposed Priority Project

- Parkway Connection from US 29/601 to Union Cemetery Road

D. Proposed Priority Project

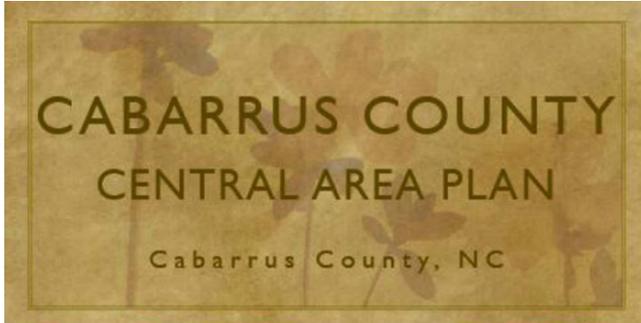
- County Owned Property for Redevelopment to Mixed Use Development

Alignment Alternative studies for this intersection are illustrated within this Small Area Plan document on the reverse side

- Proposed & Redevelopment
- Proposed Residential
- Existing Development

Figure 12 – Concord 2025 – Concord Parkway (US 29) / Warren C. Coleman (US 601) – 20 Year Small Area Plan

CABARRUS COUNTY CENTRAL AREA PLAN (2008)



The Cabarrus County Central Area Plan, adopted in 2008, was created in response to the County's need for a better way to manage growth and its impacts within the central portion of the County. Cabarrus County, located along the growing I-85 corridor northeast of Charlotte, has experienced rapid growth, especially within the I-85 corridor.

However, unlike the I-85 corridor, the central area of the county is less developed. Lying on the east side of Concord and bordered by Rocky River Road and Cold Spring Road, the Central Area study area encompasses County land and land lying within the jurisdictions, ETJs and spheres of influence of Concord and Kannapolis. The plan establishes a vision for future growth and development, sets standards for achieving quality growth, and establishes a framework for consistent land-use planning and growth management.

This plan is intended to guide decisions that prioritize public investment decisions particularly in conjunction with public infrastructure. In doing so, such investments may be made to direct growth in a manner that is consistent with the community's long-range vision. Serving as a policy guide, the plan provides the information required to make informed decisions and to define growth management tools.

Some recommendations provided within the study relating to or specifically addressing pedestrian and bicycle connectivity include:

Developing enhanced standards for all cluster subdivisions including:

- › Sidewalks (both sides of the street)
- › Connectivity

Preparing new Urban Village District(s) (for Mixed-Use Areas) including standards as follows:

- › Wider sidewalks
- › Pedestrian-friendly intersections
- › Multi-modal, pedestrian-friendly streets

Creating collector street connections.

- › The rapid rate of growth within the study area paired with limited transportation alternatives suggests that the study area would benefit from a more robust collector street network. Generally, collector streets have two travel lanes often with dedicated left turn lanes at major intersections. A properly implemented collector street system improves accessibility to higher intensity residential areas and activity centers. They also allow free movement of bicyclists and pedestrians.

Providing greenways and other facilities for enhanced mobility for bicycles and pedestrians.

- › Development of the study area into commercial centers and neighborhoods requires a transportation system that includes opportunities for non-motorized trips, both functional and recreational. Existing large-scale transportation facilities act as barriers to this type of movement. Opportunities do exist that enhance transportation connectivity beyond the typical large-scale street cross sections. As such, the study team developed mobility strategies to accommodate bicycle and pedestrians. By overlapping preferred destinations, existing and planned routes, and stream corridors, a system of greenways, trails, and on-street bicycle routes were identified. These non-motorized routes represent a strategy to connect people with places in a safe and inviting environment.

Supporting transportation improvement projects of regional significance.

- › Eastern Bypass - The Eastern Bypass, proposed in the northern section of the study area, generally follows a path extending from NC 49 along Crestmont Drive, north to Penninger Road, eventually extending to I-85. This proposed roadway appears on the Cabarrus-Rowan Metropolitan Planning Organization's (CRMPO) adopted 2030 Long Range Transportation Plan (LRTP). The location of this roadway has the potential to create access opportunities for much of the northern portion of the study area while enhancing mobility area-wide.
- › However, most residents questioned the need for the bypass. The community may challenge the need for the proposed bypass, and if they do, Cabarrus County as a member of the MPO, may request the corridor be removed during the update to the LRTP.
- › However, should the bypass remain as part of the plan, participants in the planning process widely agreed that the street design should accommodate the rural context through which it passes. Bicycle and pedestrian amenities would be considered as a part of the street concept, with a side path/greenway (rather than sidewalks) to work within the larger greenway strategy and enhance the area's rural character.

Support regional greenway initiatives that provide long-term connectivity.

- › Seek land dedication through the private development process to establish connected greenway system over the long-term.

CONCORD TRANSPORTATION PLAN



The Concord Transportation Plan is the City's authorized long-range transportation document for local transportation improvements (roadways, pedestrian, and bicycle). The City of Concord Transportation Plan Map (for both roadways and pedestrian and bicycle facilities) is a component of the Cabarrus-Rowan MPO Long Range Transportation Plan (LRTP).

As land use plans change and roadway networks expand as development occurs, and as planning documents from adjacent jurisdictions, the State and the MPO are modified, Concord's current Transportation Plan is evaluated to identify potential revisions to street classifications, future roadway alignments, and/or pedestrian and bicycle facilities. As part of this revision process, public comment is essential in providing a complete, comprehensive, and up-to-date Transportation Plan.

BLUE CROSS / BLUE SHIELD – MUP ECONOMIC IMPACT STUDY (2005)¹



This study provides an example of a simple approach to cost-benefit analyses, comparing the medical benefits of physical activity to trail investment. The purpose of this study was to provide

an economic argument for the implementation of trails as a public health measure by comparing the cost of trail construction and maintenance to reduced medical expenses of trail users.

This was a study conducted by staff with the Centers for Disease Control and Prevention and the Nebraska Health and Human Services System in Lincoln, Nebraska. The study compared five cycling and pedestrian trails in Lincoln, ranging in length from 1.6 to 4.6 miles.

Benefits of physical activity was measured as the difference between average medical expenses for active versus inactive persons (using national expenditure data from the National Medical Expenditure Survey). "Active" persons are defined as those who get at least 30 minutes of moderate or strenuous physical activity per week. It was assumed all trail users are on the trail three times

per week, every week of the year. An existing trail study conducted in 1998 was used to extrapolate data regarding average daily trail use and annual construction and maintenance costs. Costs per user were calculated as annualized construction and maintenance costs, divided by the estimated number of people using the trail. However, due to some oversimplified assumptions, the benefits per dollar of trail investment may be overstated.

Findings derived from the study concluded that:

- › Each year, the average trail user has \$564.41 in benefits from reduced medical care due to increased physical activity.
- › Each year, across the five trails studies, trail maintenance costs an average of \$4,314 per mile, ranging from \$3,329 to \$5,692.
- › Initial trail construction cost an average of \$12,555 per mile, ranging from \$708 to \$19,855.
- › Assuming the annualized trail construction and maintenance costs are borne by trail users only, and trail users would otherwise not be physically active; every \$1 investment in trails is associated with \$2.94 in benefits.

¹ Wang Guijing, et.al. (2005). A Cost-benefit Analysis of Physical Activity Using Bike / Pedestrian Trails. Health Promotion Practice, 6 (2), 174-179. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15855287>.

CITY OF CONCORD 2030 LAND USE PLAN (2018)



The 2030 Land Use Plan sets the direction for Concord to proactively manage change over the next 10 to 15 years. One of the key issues that the City will be focusing on is how to address the interface between land use and transportation by providing multimodality and connectivity throughout the City.

Like most growth, there are challenges and opportunities that must be considered. Those that are specific to connectivity are listed below.

Enhancing mobility between residential, employment, commercial, and recreation uses. Improving connections between the places where residents live, work, and play will be a key challenge that can only be met through better integration of land uses and the establishment of connections between uses for all modes of transportation. Narrow rights-of-way constrain opportunities to establish complete streets along many arterial street corridors, which increasing the importance of coordinating land uses and ensuring that their designs facilitate better mobility.

- › Providing adequate recreational facilities for an expanding population. The City of Concord will endeavor to improve its standing among its peer communities in the categories of Trail Miles per 1,000 Residents and Total Park Acres per 1,000 Residents by identifying and acquiring future park sites and encouraging Mixed-Use Activity Centers to include live, work, and play elements during the development review process.
- › Identifying and building multimodal corridors. While Concord's transportation system has been effective at addressing capacity demands of new growth, the roadways themselves are often lacking in multi-modal facilities/amenities that would support use by transportation modes

other than the single occupant vehicle. This lack of facilities/amenities can inhibit desired development types that depend on maintaining access while supporting alternative modes.

- › Developing a safe and effective bicycle/pedestrian network. The transportation system provides connectivity between the unique assets and character areas located throughout the Study Area. This system, now almost entirely designed to support automobile transportation, must evolve to expand and enhance opportunities for bicycle/pedestrian modes. These enhancements will provide a viable transportation option for those who wish do not wish to drive (or may not have access to a car), provide a network that can be utilized by the community to support exercise and public health, increase safety for bicyclists/pedestrians, and support economic development by providing non-automobile connections to retail and cultural centers throughout the Study Area.
- › Reinforcing the Concord Unified Development Ordinance to address the greenway dedication of land or fee in lieu when a residential development is submitted for approval.
- › Preserving open space through greenways and parks.

Within the LUP, there is a growth vision based on distinct Character Areas, Activity Centers, Multimodal Corridors, and Existing/Proposed Greenways. The LUP 2030 Growth Concept Plan illustrates this vision. Definitions of those distinct areas that reach into overall connectivity elements can be seen on the following pages.

Character Areas

Character Areas identify specific areas that, due to existing/expected development pressures, are likely to be focal points for growth and development in Concord through 2030. Each character Area has different qualities and a role to play in the creation of a more connected and livable Concord. Character Areas that deal directly with connectivity issues and solutions include:

- › Downtown Character Area
- › Central Concord Character Area
- › Entertainment Corridor Character Area
- › Medical Center Character Area
- › Airport Industrial Character Area
- › International Drive Industrial Character Area
- › Conservation Residential Character Area
- › Western Gateway Character Area
- › Mixed Use Corridor Character Area

Each Character Area provides recommendations regarding Concord's connectivity. Those recommendations include:

Central Concord Character Area: Extends southwest along Concord Parkway (US 29) from Wolf Meadow Branch (west of the Wal-Mart Super Center) past the corridor's intersection with Pitts School Road

- › Maintain Concord Parkway as an attractive corridor that serves as a primary gateway to Downtown Concord.
- › Serve a mix of travel modes along Concord Parkway, including motorists and transit (both bus and the long-term potential for light rail/commuter rail), bicyclists, and pedestrians (particularly within the activity centers).
- › Provide multi-modal connections between uses within the activity centers.

Downtown Character Area: Encompasses Concord's traditional core as well as easternmost sections of the Center City: approximately from Brookwood Avenue on the north to Lawndale Avenue on the south, and between Union Street and Branchview Drive, to Cold Water Creek along Cabarrus Avenue and Irish Buffalo Creek along Cabarrus Avenue.

- › Add to the inventory of assets such as new public art, wayfinding, the Downtown Greenway Loop, bike lanes, and improved transit service.
 - Continue efforts to complete the development of the Harold B. McEachern Greenway north of the currently planned extension.
- › Step up the completion of multimodal infrastructure, particularly sidewalks and bike lanes, linking the in-town neighborhoods to the City's historic core.
- › Continue implementing relevant strategies of the Center City Master Plan for the corridors and neighborhoods along Church Street, Cabarrus Avenue, and Corban Avenue.
 - Ensure that community amenities, public facilities, and services are equitably distributed within walking distance of everyone in the neighborhoods.

Entertainment Corridor Character Area: Concord Mills/Bruton Smith Boulevard to the east side of I-85 and the Charlotte Motor Speedway.

- › Improve access within the corridor for visitors. While there are many hotels within this corridor (most of which are clustered to the east of I-85), trips to anything other than the abutting restaurants require vehicular travel. While improved bike and pedestrian facilities are needed, transit service connecting the hotels to motorsport facilities to the east and Concord Mills to the west could alleviate congestion.

Medical Center Character Area: extends between I-85 and Davidson Highway (NC 73), east to the junction with Concord Parkway, and beyond along the south side of the Lake Concord Road and Copperfield Boulevard corridor to the City boundaries.

- › Expand the sidewalk network and add bicycle routes, particularly where they can safely connect to the major employers and to the Transit Center, as well as connections to the surrounding residential areas.

Airport Industrial Character Area: adjacent to I-85, Poplar Tent Road and Derita Road.

- › Provide safe, continuous pedestrian and bicycle facility networks to promote direct access to nearby residential, non-residential, public uses, and transit service to jobs.

International Drive Industrial Character Area: located within the proximity of Interstate 85 at the Davidson Highway (NC 73) exit (Exit 55).

- › Provide for continuous pedestrian and bicycle facilities. It is important to provide safe, comfortable, and convenient connections to allow the opportunity for employees to utilize the alternative transportation methods to get to and from work, and between buildings.

Conservation Residential Character Area: generally located between Hwy 49 (northern bound), Flowe's Store Road (eastern bound/southern bound), Rocky River Road (western bound), Pine Grove Church Road (southern bound), and in the vicinity of Zion Church Road.

- › Contiguous open space can be owned by the homeowner association. Depending on the location, subdivision layout, and the topography, the common/contiguous open space may be reserved for natural areas, park amenities, greenways, greenbelts or where sufficient buffers are provided, agricultural uses.

Western Gateway Character Area – extends from Cox Mill Road to Huntersville and encompasses Highland Creek and other suburban residential developments.

- › Encourage interconnectivity. Through the zoning process, the City should encourage connectivity between existing and future single-family neighborhoods. This will allow for improved alternative transportation options and reduce traffic impacts on existing City roads.
- › Complete the greenway system. There are plans for the Western Gateway area to provide major greenway connections heading west and north out of the City of Concord. The City should require properties to set aside for future development and acquire properties as needed to complete this greenway network.

Mixed-Use Corridor Character Area: Mixed-use development typically puts complementary uses, such as housing, commercial, industrial or government uses, within walking distance of each other. Mixed-Use Corridors encompass not only the roadway and the land in the right-of-way, but also areas extending out from anywhere between a block or two, to a quarter of a mile or more, depending on the location and the urban structure and character of the area. Mixed-Use Corridors should have strong pedestrian and bicycle networks and be well connected to the surrounding residential areas and to employment areas.

The Mixed-Use Corridors include:

- › Concord Parkway (US 29)
- › Warren C. Coleman Boulevard (US 601)
- › Bruton Smith Boulevard and Davidson Highway (NC 73)
- › US 49
- › George W. Liles Parkway and Copperfield Boulevards
- › Poplar Tent, Pitts School, Weddington, and Derita Roads

Activity Centers

Activity Centers represent existing major attractors throughout the community whose continued evolution will greatly affect the surrounding areas. These Activity Centers serve as anchors for most of the Character Areas.

Multimodal Corridors

The designated Multi-modal Corridors are identified as existing important automobile-oriented transportation corridors that connect between Character Areas as well as to the larger region. These corridors are identified as either Primary Corridors or Secondary Corridors depending on their size and importance to the transportation system. The 2030 Plan identifies Multi-modal Corridors as opportunities for incorporating multi-modal features (bike lanes, transit service, sidewalks/trails) and more transit supportive land use patterns through corridor planning and zoning changes. Ultimately the development of these corridors consistent with multi-modal principles will help create a more coherent development pattern between Character Areas while encouraging travel using alternative modes.

Existing/Proposed Greenways

Concord has an extensive plan to develop a comprehensive network of greenways. As shown on the Growth Concept, these future greenways will help reinforce connections between Character Areas and Activity Centers which will provide real options for bicyclists and pedestrians to safely travel through the City.

A major component of the LUP was establishing goals, objectives, and policy guidance that will guide Concord as it continues to grow. Below lists the goals, objectives, and policy guidance found within the LUP that directly correlate to a connected transportation system.

Goal 2: Enhance mobility for all modes of transportation between the places where people live, work, shop, and play (refer to Part 7 for additional policy guidance relating to mobility).

- › Objective 2.1: Ensure that new development is designed to provide users with mobility choices, including driving, walking, bicycling, and riding transit.
 - Policy Guidance for Objective 2.1:
 - › Complete Streets: Modify development and street design standards to require complete streets that serve all users.
 - › Transit/Bike/Pedestrian Support: Use a combination of design standards and incentives to ensure that building and site development supports all applicable modes of transportation to and within development sites.
- › Objective 2.2: Ensure that new development includes interconnected road systems and enhances connectivity to existing development where it safely enhances mobility.
 - Policy Guidance for Objective 2.2: Use a combination of design standards and development incentives to achieve site and subdivision designs that improve mobility within and between developments through a combination of streets, bikeways, and multipurpose trails. As part of the bike and pedestrian support referenced under Objective 2.1, the City's action on public and private development initiatives should foster the completion of a continuous greenway and trail system.

Goal 3: Retain Concord's small-town atmosphere and continually enhance the quality of life as the City grows.

- › Objective 3.1: Regulate the scale and design of development to promote walking and biking within residential and mixed-use areas.
- › Objective 3.4: Enhance Concord's quality of life through efforts to support neighborhood vitality. This may include

a combination of complete street improvements, improved access to parks and recreation facilities and community centers, improved transit access, housing rehabilitation efforts, active code/property maintenance enforcement, greenway or greenbelt improvements, and/or improved neighborhood services and amenities.

- Policy Guidance for Objectives 3-1, 3-4: The strategies for neighborhood enhancement should be tailored to the needs of each affected neighborhood and determined with the input of affected residents and business owners. Support adaptive reuse of existing building stock.

Goal 5: Provide for adequate infrastructure and services for residents and businesses.

- › Objective 5.5: Coordinate the expansion and development of greenways that can be used for bicycle and pedestrian corridors with the development review and capital improvements planning processes.
 - Policy Guidance for Objectives 5.5: Secure and improve greenways as vital transportation improvements through the development and capital improvements processes in coordination with the Comprehensive Parks and Recreation Master Plan.

Goal 6: Protect natural resources and retain open spaces for future generations.

- › Objective 6.2: Protect the natural resource base of the City and surrounding areas through a combination of strategic acquisitions, open space preservation requirements within new development and incentives for private land preservation initiatives.
 - Policy Guidance for Objective 6.2:
 - › **Acquisition:** Acquire lands along river corridors and within riverine buffers as corridors to link greenways and open space and provide for their preservation through the development approval process.

- › **Partnerships:** Seek partnerships and funding to develop an inter-connected greenway system throughout the community and region. Support the efforts of land trusts and conservation groups as they acquire parcels of land for conservation.

Goal 10: Encourage and promote multi-modal connectivity between residential, employment, commercial, and recreational uses.

- › Objective 10.3: Increase the provision of sidewalks and other walk/bike infrastructure.
 - Policy Guidance for Objective 10.3:
 - Develop a program and/or material to educate the public and development community about the CDO requirements for sidewalks in new developments and the importance of pedestrian connectivity more generally.
 - Planning and Community Development Department should work with the City's Transportation Department to identify key sidewalk system "gaps" that could be connected to greatly enhance connectivity between residential neighborhoods to recreation, schools, and other amenities.
 - Coordinate with the Parks and Recreation Department to implement the City's Comprehensive Parks and Recreation Master Plan and the findings of the Open Space Connectivity Analysis with a focus on connectivity and regional bicycle/pedestrian corridors.
 - Designate the routes identified in the Livable Community Blueprint as priority routes to pursue in the development of safe and user-friendly pedestrian and bicycle corridors.
 - Encourage new developments to incorporate off-road facilities for bicycles and pedestrians.

- On an on-going basis, seek partnerships and funding to develop an inter-connected greenway system throughout the community and the region.
 - Develop a bikeway system plan (bike lanes, shared lane markings, etc.) with prioritized improvements to coincide with roadway expansions (widening) and repaving
 - › Objective 10.4: Provide a transportation system that efficiently and safely serves the current and future needs of Concord citizens.
 - Policy Guidance for Objective 10.4:
 - › Implement the Concord Transportation Plan for local roadway improvements and multi-modal and pedestrian-friendly corridors.
 - › Implement the Cabarrus-Rowan MPO 2040 Metropolitan Transportation Plan recommendations for bicycle and pedestrian improvements, rail transportation, transit and public transportation and congestion management, and traffic monitoring for facilities in the Concord area.
 - › Support the NC 73 - Transportation/Land Use Corridor Plan to improve the roadway to become a multi modal and pedestrian-friendly corridor.
 - › Accommodate pedestrians and bicycles into most of the road typologies. Trees are located between the roadway pavement and sidewalks wherever possible, to provide a safe and attractive pedestrian environment.
- facilities.
- › Provide parks and recreation facilities in underserved areas.
 - › Focus on building facilities and/or adapting/expanding existing facilities to accommodate users with physical and developmental disabilities.
 - › Develop passive parks including opportunities for trails, picnicking, camping and nature study.
 - › Use the Growth Concept and Future Land Use Map to identify opportunities for future parks and potential greenway connections.
 - › Reinforce the CDO to address the greenway dedications/reservations when a residential development is submitted for approval.
 - › Create greenway design standards to require developer-funded greenway construction on site when consistent with the Comprehensive Parks and Recreation Master Plan.
- › Objective 11.2: Improve access to existing parks, open space and recreation areas.
 - Policy Guidance for Objective 11.2:
 - › Continue to develop the planned city-wide network of pedestrian and bicycle facilities, greenways and trails.
 - › Amend the Concord Development Ordinance to ensure that land is reserved for linking existing and future parks and open space to the greenway system.
 - › Adopt a “whole access” policy for parks and trails to provide recreation for all regardless of physical ability.
 - › Increase transit accessibility to parks by considering stops on existing or new routes within no more than a 10 minute walk of a park.

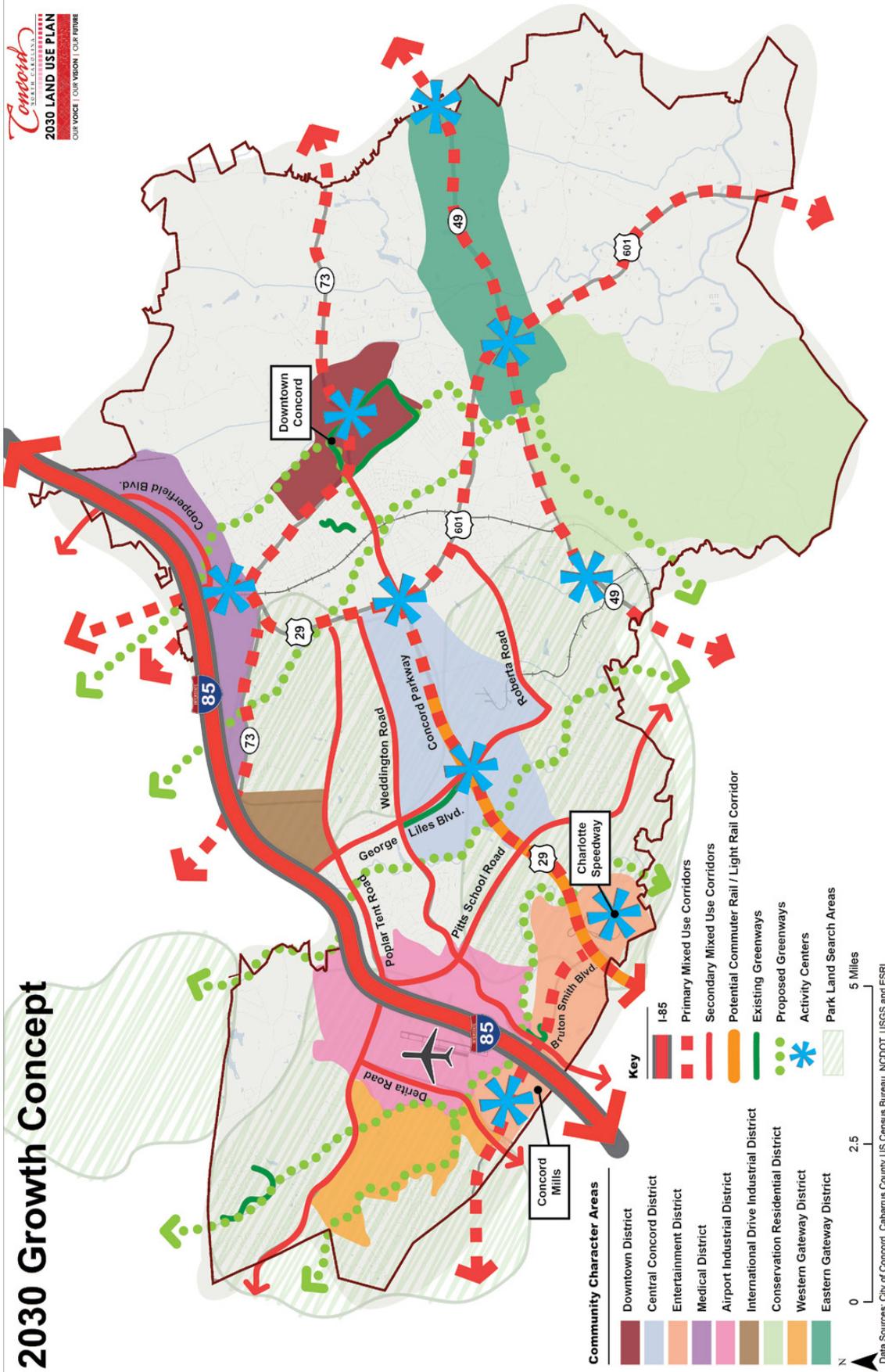
Goal 11: Provide a high quality, diversified parks, recreation and open space system that provides for all age and interest groups.

- › Objective 11.1: Expand and develop parks and recreation facilities to serve the needs of the citizens of Concord.
 - Policy Guidance for Objective 11.1:
 - › Implement the City’s Parks and Recreation Master Plan to improve and expand existing parks and facilities and develop new parks and

Goal 12: Preserve natural resources and open space.

- › Objective 12.1: Promote the preservation of open space throughout the City.
 - Policy Guidance for Objective 12.1:
 - › Acquire lands along river corridors and within riverine buffers as corridors to link greenways and open space.
 - › Seek partnerships and funding to develop an inter-connected greenway system throughout the community and region.
 - › Protecting our abundant natural resources gives us a unique opportunity to rally several goals with the potential to positively impact the quality of life for residents across generations.
 - › The potential financial impacts (often counted in millions of dollars of economic activity) include business and job creation, enhanced community character and demand for housing and lodging as a result of increased tourism; attraction and retention of young talent with a broader array of quality amenities; and increasing property values resulting from proximity and access to parks and open space.
 - › Protecting our natural areas and resources has other significant public benefits. Undeveloped and protected natural areas can reduce costs for public infrastructure, help improve water and air quality, reduce risk and protect people and property from storms, flooding and other natural and man-made disasters.
- › Objective 12.2: Protect the natural resource base of the City and surrounding areas.
 - Policy Guidance for Objectives 12.2:
 - › Work closely with neighboring jurisdictions, local and state agencies, and citizens groups to promote the protection of the community's water resources.
 - › Continue to participate in regional air quality monitoring efforts and encourage compact development and the development and use of alternative transportation.
 - › Objective 12.4: Explore creating a comprehensive green infrastructure plan, combined with Low Impact Development strategies to address stormwater management and integration with the greenways and trails system.
 - › Policy Guidance for Objectives 12.4:
 - › Maintain 20-foot buffer for trails along streams to help prevent erosion from the stream banks.

2030 Growth Concept



Community Character Areas

- Downtown District
- Central Concord District
- Entertainment District
- Medical District
- Airport Industrial District
- International Drive Industrial District
- Conservation Residential District
- Western Gateway District
- Eastern Gateway District

Key

- I-85
- Primary Mixed Use Corridors
- Secondary Mixed Use Corridors
- Potential Commuter Rail / Light Rail Corridor
- Existing Greenways
- Proposed Greenways
- Activity Centers
- Park Land Search Areas

0 2.5 5 Miles

Data Sources: City of Concord, Cabarrus County US Census Bureau, NCDOT, USGS and ESRI

Figure 13 – LUP 2030 Growth Concept Plan

CABARRUS COUNTY NC – HEALTHY COMMUNITY DESIGN WORKSHOP (2018)



In May of 2018, Mark Fenton facilitated a Healthy Community Design Workshop with Cabarrus County. These workshops connect the design of a community to the overall health impact of its residents.

The goal of the workshop is to impart upon participants the connections between urban design and your health, to explore the existing design challenges in the community, and to create strategies that address the issues. Concord's workshop developed both short- and long-term recommendations for programs, projects, and policies.

For this study, we are focusing on select project and policy recommendations.

Project – Short Term:

- › Create wayfinding that connects residential areas to routine destinations. Start with low cost treatments, and partner with a “virtual” wayfinding system through social media. Be sure to include specific wayfinding to parks and schools
- › Support walking to destinations and build the local culture of walking through creating a series of pop-up walking routes (e.g. close a roadway travel lane to create a short-term walkway; temporarily improve a missing crosswalk) to key destinations so that people can get a sense for the ease and proximity of walking destinations.

Project – Long Term:

- › Implement the full infrastructure recommendations of the connectivity analysis; consider innovative funding approaches to make these a reality.
- › Create viable and sustainable active transportation infrastructure funding. Most important is routine Complete Streets accommodation. But also consider specialized funding, such as passing a community referendum (e.g. ½ cent sales tax surcharge) for roadway repairs and improvements.
- › Launch a mini-grant program (e.g. funded by health, transportation, and planning agencies) to support pop-up and demonstration transportation projects.

Policy – Short Term:

- › Assess issues (e.g. through walk audits and community input) with site designs of existing schools, focusing especially on links from pedestrian facilities to and around the building, across parking lots, to playgrounds and fields, bicycle parking, and other elements challenging to pedestrian and bicycle safety and access.
- › Expand developer requirements to put in greenways and pedestrian and bicycle infrastructure as part of the essential elements for subdivision development; this should be part of routine accommodation across the county, as should links to nearby greenway segments and on-street facilities.
- › Institute and require Multi-Modal Transportation Analysis (MMTA) on all projects that would normally require Traffic Impact Analysis (TIA). This requires developers and agencies to estimate not just motor vehicle, but also best-case pedestrian, bicycle, and transit trips associated with new or redevelopment, and to recommend appropriate remediation.

Policy – Long Term:

- › Reflect long-term walk audit recommendations (e.g. major infrastructure improvements, greenway trail segments, etc.) in all planning documents and the associated capital budgets.
- › Complete Streets policy implementation – Include a CS design review for all routine maintenance such as paving and painting programs, as well as for all other utility work that disturbs streets. This should provide many opportunities for low- or no-cost CS improvements.
- › Create a higher prioritization for pedestrian & bicycle accommodations, and therefore the associated funding. Make it a stated policy goal: design bike facilities to accommodate the 60% of users defined as “interested but concerned.”
- › Update zoning requirements to stop creating sprawling malls, but instead create mixed-use, walkable villages & centers.



LOCAL POLICY

Although limited usage of the term “greenway” can be found in the Concord Development Ordinance (CDO), the ordinance does require open space and parks be provided in new residential developments. Article 10 - Development and Design Standards specifically addresses greenways, trails, and sidewalks as well as park and open space lands with regards to development within the City.

Section 10.2 talks specifically to street connectivity ratio requirements (links/nodes=ratio) and allows for one greenway/pedestrian connection per subdivision to be used to substitute one link in the street network to achieve the required connectivity ratio.

Section 10.5 addresses open space standards, indicating that certain developments may be exempt from park and open space requirements if said development includes a proposed connection to a nearby park or school by a sidewalk or greenway trail. Trails, greenways, and sidewalks that meet the intent of the open space standards must provide a reserved, minimum dimension of 15-feet in width.

The Development Ordinance also maintains that the administrator may require that, if the proposed development is adjacent to the boundary of an established community public open space, park, recreation, greenway, or open space adopted by the City Council, the proposed development shall provide connection from their open space network and/or trails system to the adjacent open space.

The ordinance also provides a fee in-lieu option if required open space cannot be reserved. This fee would be paid to a special parks and recreation services area fund, to accrue interest, and expended solely for property acquisition, development, or rehabilitation of recreational lands or related improvements. These fees are then appropriated by the City for a specific project that would serve residents of the development where the fee-in-lieu option was administered.

It is also imperative to recognize that the Concord Development Ordinance references and encourages compliance to the Complete Street Initiative. Section 10.6 of the CDO outlines the

Complete Streets Initiative and helps guide Staff and private developers through designing and implementing safe streets that are convenient for users. By encouraging this initiative, the needs of drivers, public transportation vehicles and patrons, pedestrians and bicyclists of all ages and abilities are provided for in planning, programming, design, construction, and operations and maintenance.

By supporting the Complete Streets Initiative as outlined in section 10.6 of the CDO, the City of Concord strongly encourages all streets to:

- › Accommodate people of all ages and abilities whether they are walking, bicycling, using public transit, or driving
- › Create safe and inviting places by integrating connectivity and traffic calming measures with pedestrian-oriented site and building design
- › Strengthen and enhance neighborhoods without displacing current residents
- › Promote active and healthy lifestyles
- › Integrate environmental stewardship, water management, and energy conservation
- › Vary in character by neighborhood, density, and function

The Complete Streets Initiative applies to all roadway projects within the City of Concord, including those involving operations, maintenance, new construction, reconstruction, retrofits, rehabilitation, or changes in the allocation of pavement space on an existing roadway. For state-controlled roads, the City shall work with the North Carolina Department of Transportation (NCDOT) to apply this policy where applicable and appropriate. Complete streets may be achieved through single projects or incrementally over time through a series of smaller improvements.

The implementation of Complete Streets in the City intends to:

- › Encourage people to walk, bike, and use public transit
- › Provide transportation options for people of all ages, physical abilities, and income levels
- › Enhance the safety and security of streets
- › Improve the health of people
- › Create walkable neighborhoods
- › Reduce paved area, street water runoff into watersheds, greenhouse emissions and other air pollution, and energy consumption
- › Promote the economic well-being of businesses and residents
- › Increase civic space and encourage human interaction
- › Create places with engaging architecture, street furniture, landscaping, and public art that reflect the diversity and cultures of the neighborhood
- › Foster healthy commerce

Design elements that support the Initiative should be considered for all new or modified streets. Since not all projects are the same, design flexibility exists to accommodate unique circumstances and varied context of street projects. At a minimum, the following design elements should be considered:

- › Keep street pavement widths to the minimum necessary
- › Provide well-designed pedestrian accommodations in the form of sidewalks or shared-use paths
- › Provide frequent, convenient and safe street crossings. These may be at intersections or at midblock locations where needed and appropriate
- › Provide bicycle accommodations along streets
- › Provide landscaped buffers between pedestrian and vehicular traffic where physical conditions permit
- › Provide traffic-calming elements in accordance with the City of Concord's Traffic Calming Policy
- › Integrate accommodations for public transit, such as bus pull-outs and transit stops into the sidewalk system

Outside of the Development Ordinance regarding new roadway construction, the City made a past decision to integrate wide outside lanes as a general policy when engineering a new roadway. It is recommended that this general policy be evaluated and modified such that pedestrian and bicycle facilities are factored into the design.



OPPORTUNITIES + CHALLENGES

With varying densities of development, decentralized growth centers, and a system of automobile-oriented roadways, Concord is looking to provide its residents and visitors with opportunities to connect to desired destinations either by foot or bike. Typically, provisions for trails and multi-modal transportation offerings tend to get more traction in densely populated areas that exhibit shorter travel distances to services and civic destinations. As a result, areas connected by high speed vehicular corridors with long distances to destinations often do not get integrated into multi-modal transportation networks. There is an increased need to make multi-modal travel safe and more attractive to these less densely populated and developed centers.

With Concord being traversed by North Carolina state highways that prioritize through truck traffic over local access, opportunities for other types of infrastructure like biking, walking, on-street parking, wayfinding and streetscape enhancements are currently limited. However, the predominance of state roads throughout Concord creates an opportunity to partner with NCDOT on future roadway improvements to integrate these alternative transportation options into a network that supports a more balanced and connected transportation system.

The following are challenges and opportunities that should be identified as Concord moves forward in advancing their multi-modal transportation network.

- › Maintaining the high quality of the existing greenway system, cultural assets, and natural resources.
- › Managing transportation infrastructure demands within new and existing neighborhoods.
- › Connecting public facilities (parks, greenways, civic centers, etc.) to their surrounding communities by creating linkages that reach into those communities.
- › Being flexible in planning for future growth by revisiting priorities as new development trends emerge and demographics evolve.

This analysis plan helps guide the City of Concord to meet their population's growing desire to participate and thrive in an increasingly connected community. Through the planning process, identifying needs, challenges, and opportunities provides the City with valuable information so that they can strategically prioritize and implement sections of the overall connectivity plan.