

4

IMPLEMENTATION STRATEGY

"Greenways throughout Wake County are truly for everyone. I use the greenways almost every single day, and I see every conceivable age group, as many women as men, lots of different uses, every conceivable ethnicity and racial group, every income group. It is probably THE most important recreational/exercise/sports resource in Wake County" - John Pucher, national leader on research for walking, bicycling, and urban transport, and local resident of Wake County.



OVERVIEW

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

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

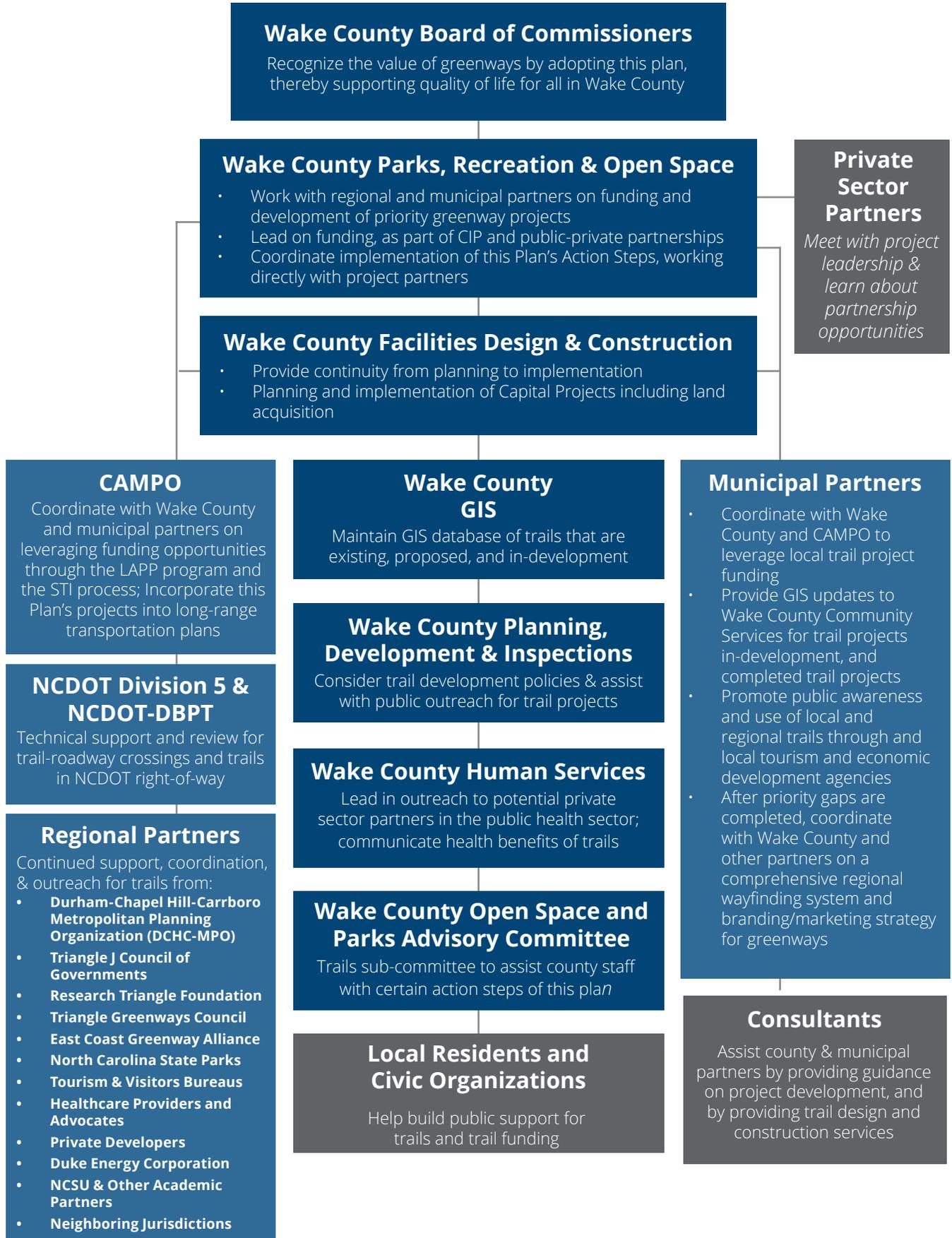
The page opposite the organizational chart outlines an **funding considerations** and includes goals for a project timeline. The basic strategy is to establish a sum of “seed” funding that can then be leveraged through local, state, Federal, and private sources, with a goal of a 2:1 leverage on the original sum.

Several key considerations went into developing the recommended timing of the projects. These include:

- The desire among project stakeholders and the general public to complete these projects in their lifetime, and ideally well-within their lifetimes;
- The constraints involved with funding such a large infrastructure investment (though small relative to highway projects); and the time needed to coordinate the leveraging of funds;
- The ability of local and regional agencies and staff to manage and administer the amount of trail construction; and
- The need to at least maintain the current level of service for trails in Wake County over time.

The last bullet above can be explained further by taking the current amount of existing trails in Wake County (295 miles), and comparing that to the current population (998,691). **With a projected population of 1,203,335 by 2025, Wake County would need to add about 61 miles of new trail over the next nine years.**

ORGANIZATIONAL FRAMEWORK FOR IMPLEMENTATION



PROJECT FUNDING CONSIDERATIONS

These timeline targets are aspirational, reflecting what is needed to meet the vision and goals of this plan, ideally during the lifetime of the residents and visitors that stand to benefit from these projects. **The strategies below are provided as an illustration, for consideration only. During actual implementation, projects will likely be built from any of the four categories below, depending on changing local needs, priorities, and opportunities.**

1

BRIDGE THE GAPS: YEARS 1-5

- 48 miles of trail in 23 project segments
- Cost per project is approximately \$2M/mile based on 2015 dollars
- County funding (through limited obligation bonds, as one option), with a goal of 2:1 leveraging from these sources: Local municipal matching funds, CAMPO/LAPP project funding, and potential funding through private investment.
- *Note: Plan adoption signals intent to complete projects over time, but does not commit the County to funding.*

2

CONNECT TO PARKS & LAKES: YEARS 5-9

- 60 miles of trail in 12 project segments
- Cost per project is approximately \$2M/mile based on 2015 dollars
- Submit projects for CAMPO/STI funding, supplement with local and county funding as available. Consider additional County funding based on performance of initial investment above.
- Align “shovel-ready”, high-impact projects with future U.S. DOT TIGER Grant funding (or similar), if available.

YEAR 10: FULL PLAN UPDATE TO RECONFIRM GOALS AND PRIORITIES

3

CONNECT THE COMMUNITIES: YEARS TBD

- 19 miles of trail in 6 project segments
- Funding Strategy: TBD based on and success of program to-date and plan update in year 10

4

COMPLETE THE SYSTEM: YEARS TBD

- 147 miles of trail in over 30 project segments
- Funding Strategy: TBD based on and success of program to-date and plan update in year 10

FUNDING STRATEGIES

County Funding as Leverage for Federal, State and Local Funding

Traditionally, Wake County has funded greenway facility development using public sector funds, typically County funds matched with municipal, state and federal funds. Below are several opportunities for matching county funds. **See Appendix B for more on Funding Resources.**

- **The Capital Area Metropolitan Planning Organization (CAMPO) Locally Administered Projects Program (LAPP):** LAPP is the process the MPO uses to allocate the federal dollars that are the direct responsibility of the MPO. Each year, MPO members submit project applications to compete for these funds. The Locally Administered Project Program includes the MPO's Surface Transportation Program - Direct Allocation (STP-DA) funds and the Congestion Mitigation for Air Quality (CMAQ) funds. For more information on the LAPP process, contact Danna Widmar of CAMPO.
- **The CAMPO Transportation Improvement Program (TIP):** The TIP outlines ten years of planned capital expenditure on transportation projects in the region. The TIP is adopted by the MPO's Executive Board and is amended as needed to stay consistent with the State Transportation Improvement Program (STIP) adopted by the NCDOT Board of Transportation. For more information on the TIP, contact Alex Rickard of CAMPO.
- **The TIGER VIII Grant:** The U.S. Department of Transportation announced \$500 million for transportation projects across the country under an eighth round of Transportation Investment Generating Economic Recovery (TIGER) competitive grant program. Like the first seven rounds, FY 2016 TIGER

discretionary grants will fund capital investments in surface transportation infrastructure and will be awarded on a competitive basis for projects that will have a significant impact on the nation, a metropolitan area, or a region. The 2016 TIGER grant program will focus on capital projects that generate economic development and improve access to reliable, safe and affordable transportation for communities, both urban and rural. It is likely that the FY 2016 TIGER is out of reach for projects in this Plan as of Spring 2016, but it is noted here as a resource to look out for in future years, should the TIGER program be continued. Other regions have successfully obtained TIGER funding for greenway trails (see opposite page), and Wake County could do the same if a coordinated approach is taken to getting key projects through the design phase, making them more attractive for grants as "shovel-ready" projects.

Engaging Private Funding

Across the United States, one of the fastest emerging funding sources for greenway development is the private sector. Philanthropic organizations, corporate and family foundations, non-profit organizations and corporations have stepped up their involvement in greenway facility development in the form of financial support. Why has this occurred? There are many varied reasons including support for improvements to quality of life, health and wellness, alternative transportation, conservation of natural resources and economic development. Most importantly, private financial support has enabled the greenway development process to move faster, so that facilities can be completed more efficiently. Two exemplary projects illustrate how this works:

1. In Northwest Arkansas, the Razorback Regional Greenway was conceived by the Northwest Arkansas Regional Planning Commission as a network of primarily on-road



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

trails spanning the two-county region (Benton and Washington counties). In 2009, the Walton Family Foundation stepped in and spearheaded a public-private partnership that resulted in the development of a 36-mile, primarily off-road, world class regional greenway. The Razorback Regional Greenway was funded from a combination of public and private funds, including a USDOT TIGER 2 grant of \$15 million, and a dollar for dollar gift from the Walton Family Foundation of \$15 million. Other grant funds were added later bringing the total funding to more than \$40 million. Without the lead gift from the Family Foundation, the project would never have happened. The Foundation based its gift on two community goals: 1) improve the health of local residents, and 2) support economic development throughout the region to keep Northwest Arkansas competitive for years to come. The 36-mile Razorback Regional Greenway was officially completed and opened for use in May 2015.

2. In Memphis, Tennessee, the 36-mile Wolf River Greenway has been the brainchild of the Wolf River Conservancy (a non-profit land trust based in Memphis) for more than 35 years. Using a traditional approach of relying on public sector leadership and funding to build the project, the Conservancy became frustrated with the glacial pace of greenway facility development – in 35 years, approximately 5 miles of trail had been completed. In 2014, the Conservancy decided to fund the development of 22 miles of the trail within the Memphis city limits using private sector funds. As of January 2016, the Conservancy has raised approximately \$45 million in support of facility development, with almost half of that coming from private sector sources. The Conservancy has then leveraged the private sector support to gain public sector support from the City of Memphis and Shelby County. The Conservancy expects to design, permit and build the entire 22 mile Memphis portion of the Greenway by 2019.

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

Step One: Develop the “Pitch”

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

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

Likewise, both the Razorback Regional Greenway in Northwest Arkansas and the Wolf River Greenway in Memphis, Tennessee, undertook similar efforts in developing the pitch. In Northwest Arkansas, a

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

Step Two: Making the Ask

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

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

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

Depending on the size of the greenway project, raising large sums of money to support greenway development takes time.

Step Three: Leverage the Lead Gift

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

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

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

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

Step Four: The Invite List

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

- *Foundation for the Carolinas:* This foundation strengthens regions through innovative community initiatives. Since 1958, Foundation for the Carolinas has served as a catalyst for charitable good, connecting individuals, companies and organizations to needs and philanthropic opportunities across the region and beyond. This community foundation is dedicated to the collective strength of communities, working in close partnership with donors, civic leaders and nonprofits to help achieve a wide variety of charitable goals and to inspire philanthropy that will benefit generations to come. Today, Foundation for the Carolinas is one of the largest community foundations in the United States.
- *City of Oaks Foundation:* The City of Oaks Foundation is a nonprofit conservation and youth development organization closely aligned with Raleigh’s Parks, Recreation and Cultural Resources Department. The Foundation runs two programs: “Raleigh, Naturally” land conservation to work with landowners on a voluntary basis for long-term stewardship of important natural areas; and “Give Play” which underwrites scholarships for children from low-income families to participate in summer camps and nature programs. By focusing on land and water conservation as well as connecting youth to nature, they aim to keep green space in a rapidly-growing Raleigh and instill a love of nature for generations to come.
- *Trust for Public Land (TPL):* TPL’s mission is to create parks and protect land for people, ensuring healthy, livable communities for generations to come. Every park, playground, and public space they create is an open invitation to explore, wonder, discover, and play. TPL has been connecting communities to the outdoors—and to each other—since 1972. Today, millions of Americans live within a 10-minute

walk of a park or natural area they helped create, with more visitors every year.

- ***The Conservation Fund:*** The Conservation Fund practices conservation to achieve environmental and economic outcomes. Their staff throughout the country create and implement innovative, practical ways to benefit the natural world and the well-being of Americans from every walk of life. Conservation takes many forms, and The Fund's programs interpret and practice conservation in a mutually-reinforcing way - working in concert to make sure the value of natural resources in America remain essential to our prosperity. The Fund's focus is on conservation and communities - creating as many pathways possible for people and organizations to protect their natural resources and save the places that matter most - properties with ecological, historic and/or cultural significance. They deliver conservation and economic vitality through strong partnerships with government, business and colleague organizations.
- ***Blue Cross Blue Shield Foundation of North Carolina:*** Their mission is to improve the health and well-being of all North Carolinians. They recognize that a North Carolina with healthy people living in active communities reduces health risks and improves health outcomes. Health is a complex equation that is as much determined by the environment as it is by the individual. Their strategy is to look ahead to get at the core drivers of poor health and to support lasting system-wide changes.
- ***North Carolina Community Foundation:*** The NCCF is the single statewide community foundation serving North Carolina and has made \$101 million in grants since its inception in 1988. With more than \$237 million in assets, the NCCF sustains 1,200 endowments established to provide long-term support of a broad

range of community needs, nonprofit organizations, institutions and scholarships.

- ***Duke Energy Foundation:*** The Duke Energy Foundation provides philanthropic support to address the needs vital to the health of communities. Annually, the Foundation funds more than \$25 million in charitable grants, with a focus on education, environment, economic and workforce development and community impact.

TRAIL POLICY GUIDANCE

The establishment of policy ordinances is essential for the successful development and expansion of the countywide greenway system, especially considering the continued overall growth and development in Wake County. The following are general considerations for Wake County and its municipalities regarding essential policies related to greenway planning and development. These represent best practices, and may vary upon implementation locally, depending on political will and public interest in each of Wake County's 12 municipalities and surrounding communities. Wake County and the 12 municipalities should work with developers when possible to provide incentives and strong partnership. When updating requirements, it will also be important to communicate to developers the many benefits to them to provide greenways for their prospective buyers.

Developer Dedication of ROW and Construction for Trails

Wake County and its municipalities should strive for consistency in their respective land use, subdivision, zoning, and/or UDO ordinances related to the requirement to set aside and construct greenway trails, in addition to sidewalks. A summary of current County and municipal policies is described below with recommended guidance for consideration.

Wake County

Wake County provides requirements for pedestrian, bicycle, and trail facilities but requirements and standards differ between Short-Range Urban Service Areas, Long-Range Urban Services Areas, and Non-Urban Areas in recognition of the different physical and built environments that exist across the County. Also, this requirement is only in place for residential subdivision development.

For the Short-Range Urban Services area, the County requires off-road trail improvements when 1) improvements are shown on a Transportation Plan and/or the Consolidated Open Space Plan, 2) subject subdivision has access to or is adjacent to existing or designated greenway corridors, or 3) the subject subdivision is adjacent to another development that includes off-road trail improvements.

For both the Long-Range Urban Services Area and the Non-Urban Areas, the off-road trail improvements MAY be required, under the same circumstances as described for the Short-Range Urban Services Area, but must be authorized by the Planning Director or Planning Board.

Guidance:

- Wake County should update the requirement to include commercial development.
- Wake County should update the language to include greenway requirements when improvements are shown on this Wake County Greenway Plan (in addition to the Transportation Plan and Consolidated Open Space Plan).
- Wake County should consider a mandatory requirement for development outside the Short-Range Urban Services areas, especially in the circumstance of a recommended greenway corridor through the site.

Municipalities

At the time of this study, the City of Raleigh, Town of Cary, Town of Wake Forest, and Town of Knightdale, as examples, have requirements for residential greenway dedication only. The Town of Morrisville and Town of Holly Springs, as examples, have greenway requirements for both residential and commercial dedication and construction. Example UDO language from the Town of Holly Springs is provided on the following page. The Town of Morrisville, for example, requires all new development, except individual lot development, incorporate into its required open space, any greenway path or multi-use path called for across the development site by a Comprehensive Plan.

Guidance:

- Municipalities should require greenway dedication and construction as part of standard development practice, irregardless of whether a greenway is proposed through the area. In addition, municipalities should require construction of any proposed greenway corridor segments that are part of a local plan or this Wake County Greenway Plan along with providing high-quality pedestrian/bicyclist connections from the development to the main greenway corridor.
- Municipalities should require greenway dedication and construction for all types of development, not just residential. The same requirements as the above bullet would apply.

Utility and Sewer Easements and Provision of Public Access within the Right-of-Way

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

Additional Greenway-Related Policy Considerations for Wake County and Municipalities:

- Use of native plants in greenway landscaping;
- Wildlife-friendly landscaping and maintenance
- Complete Street policies that would address on-street connections, trail crossings, and sidepaths
- Requirement of additional bicycle/pedestrian friendly features in development to encourage more walking and bicycling such as street connectivity, strong bike/ped connectivity from the subdivision/development to surrounding destinations and greenways, minimization of cul-de-sac streets, pedestrian/bicyclist cut-through path connections, and greenway connections to adjacent existing and proposed greenways.

TRAIL MAINTENANCE GUIDANCE

Maintenance Overview

Greenway maintenance is essential to the long-term viability and sustainability of regional greenway trail networks. Construction of greenway trails cannot take place without a maintenance plan and priority in place. Similar to national roadway maintenance issues that have been well-documented, trails constructed over the past twenty years are in varying states of needing maintenance. Monies have poured into new roadways and trails across the United States but maintenance has been a lower priority. This Plan recommends a strong, collaborative approach to maintenance.



Parks and recreation volunteers in Raleigh, NC.

Maintenance Principles

The regional greenway trail system should be viewed and maintained as a public resource, serving generations to come. The following guiding principles will help assure the preservation of a first class system:

- Good maintenance begins with sound planning and design.
- Foremost, protect life, property and the environment.
- Promote and maintain a quality outdoor recreation and transportation experience.
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.
- Maintain quality control and conduct regular inspections.
- Include field crews, police and fire/rescue personnel in both the design review and on-going management process.
- Maintain an effective, responsive public feedback system and promote public participation.
- Be a good neighbor to adjacent properties.
- Operate a cost-effective program with sustainable funding sources.

Maintenance Responsibilities

Recommended greenways in this Plan traverse twelve municipalities and unincorporated Wake County. Most of the greenway trail corridors will be off-road though some portions will be on-road accommodating bicyclists and pedestrians on sidepaths or bicycle lane/sidewalk combinations. Because the network 1) traverses multiple municipal boundaries and unincorporated Wake County, 2) includes a combination of street, stream, parks, utility easements and other properties, and 3) includes both on-road and off-road treatments, multiple agencies within North Carolina, Wake County, and the jurisdictions must play a role, be

engaged, and be coordinated in ongoing trail operations and maintenance.

While each major jurisdiction has its own operations and maintenance departments, a key to sustainable quality greenways will be a consistency of standards, cooperation and coordination amongst the communities and building enduring partnerships engaging both public and private sector leadership. Growing a successful greenway system in Wake County will take capacity building and diversification of skills and resources to meet this challenge in those communities.

In order to meet the challenges, an intergovernmental organization and/or intergovernmental agreement regarding the Wake County greenway system is recommended. An organization or an agreement would be in place to address not just maintenance, but also funding, facilitating cooperation, organizing volunteer groups, adopting/implementing standards, etc. Agencies to be involved would include appropriate Wake County departments, municipalities, CAMPO, and NCDOT.

A comprehensive and cooperative maintenance management program will determine the activities, maintenance levels and maintenance frequency of the trail system based on expected trail use. The program will identify tasks, operational policies and procedures, standards, and routine and remedial maintenance goals. At a minimum, the program must identify cost estimates, funding sources, and the party responsible for performing the work on the trails. This will provide the basis for determining annual funding and assignment of personnel and equipment from trail to trail while providing for necessary adjustments.

At the time of this study, it is recommended that municipalities play the largest maintenance role to expand upon their existing operations and resources. However, Wake County could consider offering financial assistance (on a case-by-case basis) to supplement those municipal maintenance

crews when the trail traverses unincorporated Wake County.

Types of Greenway Maintenance: Routine and Remedial

The remainder of this section focuses on general routine and remedial maintenance responsibilities for all greenway and trail facilities.

Routine Maintenance

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, trail sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacements such as fixing cracks and potholes or repairing a broken hand railing.

Routine Maintenance Tasks

The following tasks should be performed on a regular basis to keep all network facilities in good, usable condition. Maintenance tasks should be conducted more frequently for greenway, bike, and pedestrian facilities where use is the most concentrated. Methods such as pedestrian and bicycle counts, sketch plan analysis methods for estimating pedestrian and bicycle demand, public survey results, and public meeting comments can be used to determine which resources are the most heavily used and may require the most maintenance attention. The frequency of required maintenance tasks should be established as new facilities are implemented and should be reviewed and updated annually to reflect any changes in usage, safety issues, etc.

Facility Maintenance

Basic housekeeping of greenway and trail facilities will ensure that the network is clean and functional and will also improve the life of each facility. Volunteer efforts should be utilized in the performance of sweeping and trash removal.

Vegetation Management

To maintain a high quality network, regular attention should be given to the surrounding landscape, both natural and man-made. This not only improves the aesthetic quality of the network but also improves the users' sense of safety, as well. Vegetation management tasks include the following:

- Tree and shrub trimming and pruning
- Mowing of vegetation
- Mulching and edging
- Invasive species control

Remedial Maintenance

Remedial Maintenance refers to correcting significant defects in the network, as well as repairing, replacing or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a five to ten year cycle such as repainting, seal coating asphalt pavement or replacing signage. Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction remedial maintenance include stabilization of a severely eroded hillside, repaving a trail surface or a street used for biking, or replacing a footbridge. Remedial maintenance should be part of a long-term capital improvement plan.

Remedial Maintenance Tasks

The following tasks should be performed on an as needed basis to keep network facilities in good, usable condition. The table below depicts the average life of each facility type, as well as general ancillary facilities, with normal wear and tear. The repair or replacement of existing facilities should be reflected in a projected budget for future maintenance costs.

Longevity of Facilities

- Mulch 2-3 years
- Granular Stone 7-10 years
- Asphalt 7-15 years
- Concrete 20+ years
- Boardwalk 7-10 years
- Bridge/Underpass 100+ years

Facility Repair or Replacement

All facilities will require repair or replacement at one time or another. The time between observation and repair/replacement will depend on whether the needed repair is deemed a hazard, to what degree the needed repair will affect the safety of the user, and whether the needed repair can be performed by an in-house maintenance crew or if it is so extensive that the needed repair must be done by outside entities or replaced completely. Some repairs are minor, such as repainting or resurfacing bicycle lanes and can be done in conjunction with other capital projects, such as repaving the adjacent street. The following are facility repair or replacement activities:

- Replenish gravel, mulch, or other materials
- Repaint/restripe/stain
- Repave/seal
- Replace asphalt or concrete
- Remove encroaching debris along paved trail/sidewalk edges
- Regrade to prevent or eliminate low spots and drainage issues
- Add culverts, bridges, boardwalks, retaining walls, etc. to prevent or eliminate drainage/erosion issues
- Reroute trail, if necessary, to avoid environmentally sensitive or overused areas and any safety issues

Seasonal Maintenance

Seasonal tasks should be performed as needed. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to facility users. Designated maintenance crews would remove leaf debris, snow, and ice from all network facilities as soon as possible. Leaf debris is potentially hazardous when wet and special attention should be given to facilities with heavier usage. Ice control and removal of ice build-up is a continual factor because of the freeze-thaw cycle. Ice control is most important on grade changes and curves. Ice can be removed or gravel/ice melt applied. After the ice is gone, leftover gravel should be swept as soon as possible.

Habitat Enhancement & Native Species

The presence/absence of vegetation and the type of vegetation present in a greenway affects habitat quality, the greenway's effectiveness as a wildlife corridor, ecological sustainability, and the aesthetic experience for the trail user. Greenways are more effective at providing wildlife habitat and corridors when they have trees and shrubs present. Planting native vegetation along greenways can enhance the trail user's feeling of "getting back to nature." However, planting woody vegetation may not be an option on greenways whose alignments are on sewer or power line rights-of-way based on planting depth requirements. In locations where trees and shrubs are lacking and can be planted, native species are the most ecologically sustainable choice. As a group, native species require less maintenance than horticultural plantings and often provide wildlife with a food source.

The following activities and tasks should be utilized to enhance and control wildlife habitats:

- Plant vegetation, such as trees and shrubs, using native species whenever possible; consider prohibiting the introduction of non-native plants altogether
- Take preventative measures to protect landscape features from wildlife, such as installing fencing around sensitive or newly planted materials
- Use herbicides sparingly, to eliminate problem plant species only when necessary
- Deter interaction between facility users and facility inhabitants, such as feeding the wildlife, etc.
- Consider launching a "pollinator species initiative". By supporting pollinators' need for habitat, we support our own needs for food and support biodiversity in Wake County. See here for more information: www.pollinator.org
- See recommendations for edible plants along greenways, on page 123.

RANGE OF TRAIL MAINTENANCE COSTS

Reported annual maintenance costs from cities and regions for shared-use trails range widely, from just \$500/mile to over \$15,000/mile. As a local example, **the Town of Cary uses \$6,000/mile** for annual mowing and trash pick up, and minor repairs like replacing a fence rail; they budget asphalt and drainage repairs separately on case by case basis. Some key factors affecting these wide ranges include:

- Quality of materials used, and frequency of sealing and reconstruction of the path
- Amount of leaf drop affecting the trail that requires concentrated sweeping
- Amount of flooding of the trail that has to be cleaned up
- Amount of snow removal/grooming needed
- Whether or not mowing, irrigation, and other care of adjacent open space is calculated in the cost
- Presence of waste receptacles

The largest factor affecting the annual maintenance figures of different cities is whether or not the eventual trail reconstruction is accounted for in annual maintenance budgets, as opposed to being considered as separate capital item.

Source: Alta Planning + Design, 2016.

TRAIL DESIGN REFERENCES AND RESOURCES

The following standards and guidelines may be referred to for details on greenway design:

Capital Area Greenway Planning and Design Guide

Raleigh's Capital Area Greenway Planning and Design Guide (adopted in 2015) incorporates existing City procedures with the standards and best practices of public agencies and municipalities nationwide. The document is designed to ensure that the Capital Area Greenway System continues to be a safe and accessible multi-use trail system providing recreation and transportation opportunities, while preserving thousands of acres of natural areas. The document will be reviewed regularly and updated to meet new needs and priorities generated by the area's growth, changing demographics and shifts in development patterns. Wake County should look to this document as a local reference point for greenway design standards from one of the leading municipal greenway systems in the country.

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

Published by the American Association of State Highway and Transportation Officials, this guide provides information on how to accommodate bicycle travel and operations in most riding environments. The guide is intended to present sound planning and design guidelines by referencing a recommended range of design values and describing alternative design approaches. Some flexibility is permitted to encourage designs that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists. The guide contains sections specific to shared-use paths.

The North Carolina Department of Transportation Complete Streets Planning and Design Guidelines

Released in 2012, these guidelines provide NCDOT and municipality staff with a guide to planning and designing streets that meet the needs of all users, including pedestrians, bicyclists, and motor vehicles. The guidelines include detailed information on the processes, street types, and recommendations for creating complete streets in North Carolina, and also includes sections on shared-use paths.

NACTO Urban Bikeway Design Guide

Most relevant to on-road bicycle facility connectors for Wake County's regional greenway system, the NACTO Urban Bikeway Design Guide is based on the experience of the best cycling cities in the world. The designs in the guide were developed specifically for urban settings, since unique urban streets require innovative solutions. Most of these treatments are not directly referenced in the current version of the AASHTO Guide, although they are virtually all permitted under the Manual on Uniform Traffic Control Devices (MUTCD). All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Manual on Uniform Traffic Control Devices (MUTCD)

Most relevant to greenway trail and roadway crossings, the Federal Highway Administration's MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.

Public Rights-of-Way Accessibility Guidelines (PROWAG)

Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle facility project. The United States Access Board's proposed PROWAG and the 2010 ADA Standards for Accessible Design (2010 Standards) contain standards and guidance for the construction of accessible facilities.

IMPLEMENTATION ACTION STEPS TABLE

POLICY ACTION STEPS					
#	Task	Lead Agency	Support	Details	Phase
1	Present Plan to Board of Commissioners for adoption	Planning Consultants	Wake County PROS & FDC	The plan should be presented to elected officials in Spring 2016. Focus on the health and economic benefits of greenways (Chapter 1 & Appx A) and key trail recommendations (Chapter 3). Adoption signals intent to implement the plan over time; it <i>does not</i> commit County to funding the plan.	Short Term (2016)
2	Meet with NCDOT to introduce the Plan and coordinate on key recommendations	Wake County PROS & FDC Staff + NCDOT Division 5	NCDOT-DBPT	This plan and the recommended trail routes should be officially recognized by NCDOT. For example, NCDOT should refer to this document when assessing the impact of future projects and plans, such as future trail crossings needed in relation to the "Complete 540" project (see page 53). Effort should be made between state and local partners to include parallel trail facilities on planned future roadways and roadway reconstruction projects, especially where they appear on adopted plans.	Short Term (2016)
3	Amend county and local development ordinances and technical standards	Wake County Planning, Development & Inspections; Municipal Partners	Wake County Planning Board; Local Planning Boards	County and local development ordinances should be considered for amendment to ensure that, as developments are planned and reviewed, the recommended greenway trail corridors identified in this plan are protected. This would entail amending development regulations to have developers set aside land for trails whenever a development proposal overlaps with the proposed routes, as adopted. Local governments should also consider requirements and tools like dedicating easements, connections to adjacent land uses, issuing credits, and offering some form of recognition to developers who go above and beyond the requirements for trail development.	Short Term (2016)
4	Revise sewer, stormwater and utility easement policies	Wake County Planning, Development & Inspections	Wake County Planning Board	All new sewer, stormwater and utility easements should be considered for allowing public access as a matter of right. Such a consideration should allow for access that does not require landowner approval for each parcel the easement overlaps. As trails are developed, also review applicable existing easements for similar revision considerations.	Short Term (2016)
5	Develop a corporate sponsorship policy	Wake County PROS	Local Private Sector Partners	For a comprehensive sponsorship policy example, see that of Portland Parks and Recreation: www.portlandonline.com/shared/cfm/image.cfm?id=155570 . For a sponsorship brochure example, see that of the 'Mountains to Sound Greenway': http://mtsgreenway.org/events-calendar/greenway-365-sponsorship-brochure	Short Term (2016)
6	Develop a coordinated operations & maintenance plan	Wake County PROS & FDC	Municipal Partners	This plan will help to apportion responsibility between agencies where facilities cross jurisdictional boundaries or where pooled efforts can reduce costs. See the maintenance section of this chapter for more information about best practices for operations and maintenance. See recommendations for use of native plants, pollinator plants, and edible landscaping along greenways on page 137.	Short Term (2016)

PROGRAM ACTION STEPS					
#	Task	Lead Agency	Support	Details	Phase
1	Update and re-release the "Trails & Greenways of Wake County Pocket Guide and Community Resource" booklet	Wake County PROS	Planning Consultant or In-House Design	This popular booklet is one of the most highly requested resource materials by the public. Wake County PROS has distributed all current printed copies and the content is now also in need of an update for accuracy. Note that Raleigh and Cary are currently using a mobile app system for user maps; Wake County should consider providing a similar web-based and/or mobile component.	Short Term (2016)
2	Establish a directory of greenway stakeholder contacts for Wake County	Wake County PROS	All Project Stakeholders	The group could include members from multiple Wake County departments, local municipalities, neighboring jurisdictions, CAMPO, TJCOG, and others listed in the acknowledgments of this plan. Individuals who participated in this planning process at the Stakeholder Workshop, the Steering Committee Meetings, and municipal meetings, should be including in the contact list. This list of contacts could either be maintained privately by those included, or could be made public, on a County-hosted greenways web page.	Short Term (2016)
3	Host a semi-annual Countywide Greenway Trails Workshop	Wake County PROS & FDC	All Project Stakeholders	The purpose of this event is to establish regional coordination for trail development with the members listed above. Meetings should evaluate implementation progress and set goals to be achieved before the following meeting. The group should also make necessary plan updates. Meetings could also feature tours of recently completed sections of trail, and special presentations by stakeholders and invited guests.	Short Term (Fall 2016); Semi-annual meetings thereafter
4	Share GIS data with the PBIN as updates are made to both existing and planned trail facilities in the County	Wake County Community Services	Municipal Partners	The Pedestrian and Bicycle Infrastructure Network (PBIN) is a statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking facilities in North Carolina. The PBIN is maintained by the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation and Institute for Transportation Research and Education (ITRE). More information can be found here: www.itre.ncsu.edu	Ongoing; Consider quarterly updates to match county zoning updates
5	Conduct regular trail user counts	Wake County PROS	Planning Consultant or Using In-House Equipment	Trail usage data is needed to strengthen grant requests and influence policy and funding decisions. A complete picture of trail-user characteristics can be developed and outcomes can help to identify if additional amenities would improve the trail-user experience.	Short Term (2016-2017)
6	Coordinate with school system on greenway issues	Wake County PROS & Municipal Partners	Wake County Schools	Need better coordination with Wake County Schools, particularly around the topics of school siting and greenways as 'essential' versus simply 'bonus'. Greenway connectivity must be considered on the front end of school site development.	Short Term (2016-2017)
7	Continue efforts to reduce crime on greenways	Municipal Partner's Police Departments	Volunteer Groups	Address personal safety concerns on trails. Continue, expand, and emulate programs such as the Raleigh Police Department's Greenway Volunteer Program for personal safety: Any citizen interested in helping keep a watchful eye on greenway trails by reporting back to Parks officials any breach in safety, security or maintenance concerns is invited to apply to become a Greenway Volunteer.	Short Term (2016-2017)

8	Establish a greenway branding and wayfinding system for trails and other points of interest throughout the region	Wake County PROS & Municipal Partners	Planning Consultant or In-House Design	A wayfinding system is recommended to create a cohesive and easy-to-use platform for navigating the regional trail system, once more of the longer-distance trails are connected throughout the County. The system should be designed so that it is flexible enough to be updated as new projects are completed, and should be implemented in conjunction with a statewide and national marketing strategy. See Chapter 3 for more information about signage, wayfinding, and marketing.	Medium Term (2017-2018)
INFRASTRUCTURE ACTION STEPS					
#	Task	Lead Agency	Support	Details	Phase
1	Identify and secure specific funding sources for trail corridors (from “Bridge the Gap” projects OR other projects in this report) & begin design and construction phases as possible.	Wake County PROS	CAMPO and Municipal Partners	Partnerships for joint funding opportunities should be pursued, such as through CAMPO’s LAPP program. Combine financial and management resources for trail development with surrounding municipalities, regional entities (such as CAMPO), and private sector partners (see Private Sector Engagement section of this Chapter). Potential TIGER ready projects should be identified for the 1-5 year time frame. “Shovel-ready” designed projects should be prepared in the event that future federal stimulus funds become available.	Short Term (2016); Ongoing
2	Gather further public support and input during the design phase for trail projects.	Wake County PROS & Municipal Partners	OSAPAC and Local Advisory Committees	Involve the general public and advisory groups, such as OSPAC and Raleigh’s Citizens Advisory Councils (CACs), in the design stage for trail development. Some such groups can help with both trail routing ideas and public support from specific neighborhoods.	Short Term (2016); Ongoing
3	Develop a long term funding strategy; Consider limited obligation bonds to fund Wake County PROS projects, including trails.	Wake County PROS	CAMPO and Municipal Partners	To allow continued development of the overall system, capital funds for trail construction should be set aside every year, even if only a small amount; small amounts of local and county funding can be matched to outside funding sources, such as state, Federal, and private funds. Funding for an ongoing maintenance program should also be included in the local operating budgets. Cross-jurisdictional trail projects lend themselves well to collaboration on funding as coordinated multi-jurisdictional projects are looked upon more favorably by outside funding sources than single-jurisdiction applications.	Short Term (2016); Ongoing
4	Make improvements to existing trails & expand marketing efforts for existing trails	Wake County FDC	Municipal Partners	Make improvements to existing trails that enhance the overall experience for trail users. See the regional branding and trail amenities sections of this Plan in Chapter 3 for recommendations. Other examples include evaluating bicyclist speeds in certain areas, and enforcing trail speed limits for safety (Example: Neuse River Trail between Falls of the Neuse Rd and Capital Blvd, as reported through public input). Centerline striping could also be useful in certain areas, with occasional signage indicating that both walkers and cyclists (and everyone else) should keep to the right except when passing.	Medium Term (2016-2017)
5	Re-evaluate and re-confirm the near-term top priorities	Wake County PROS	CAMPO and Municipal Partners	Every year, reevaluate near-term top priorities based on what has been completed, and reconfirm the agenda of “priority” projects. Consider sticking with earlier projects that were not successful to-date, versus new trail opportunities that may have arisen or become more feasible since 2016.	Medium Term (2017-ongoing)
6	Update this Plan	Wake County PROS & FDC	Project Consultants	In 2021, reassess overall system-wide goals and reevaluate the overall approach to implementation. In 2026, complete a full plan update.	Long Term (2021 & 2026)

Background image, back cover: Bridge over the Neuse River, by Kristy Jackson of the Institute for Transportation Research and Education (ITRE).



WAKE COUNTY
GREENWAY SYSTEM PLAN
2017