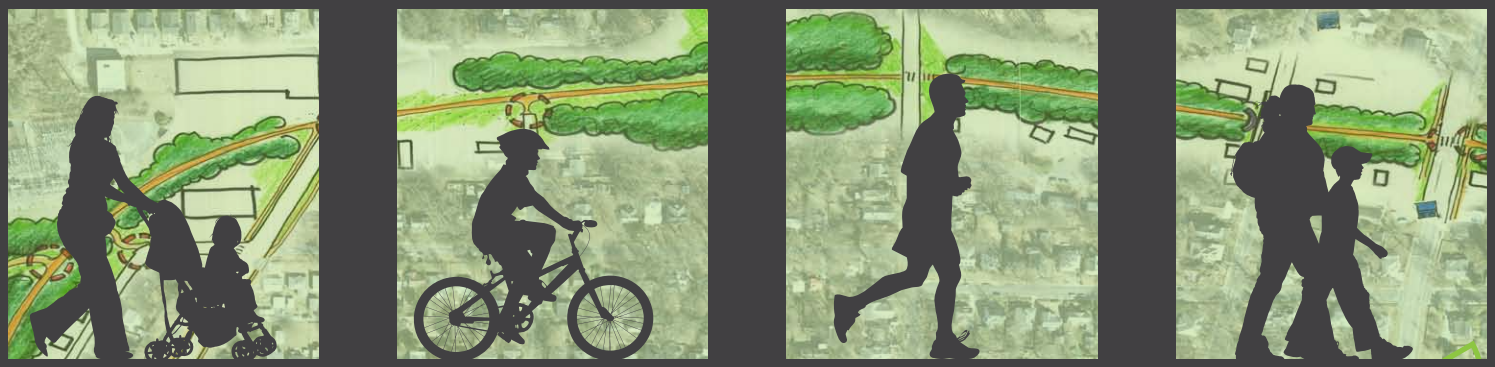
# DUKE BELT LINE TRAIL



## TIGER VI APPLICATION

## CITY OF DURHAM, NC

## APRIL 24, 2014

# DUKE BELT LINE TRAIL















## THE DUKE BELT LINE TRAIL:

The Duke Belt Line Trail is a project that will significantly enhance the overall mobility, livability and economic competitiveness of the City of Durham and Triangle region by:

- Connecting seamlessly to the DATA Durham Station, Durham Amtrak Station and future light rail station. The Duke Belt Line Trail will significantly increase bicycle and pedestrian access to the regional and intercity mass transportation system; linking people to jobs throughout the Triangle region and serving as a “Ladder of Opportunity” for those along the corridor.
- Attracting some of the region’s future housing and commercial growth to areas along and adjacent to the corridor. The Duke Belt Line Trail will help alter the pattern of regional sprawl and disinvestment in urban neighborhoods, while creating more vibrant, walkable and livable communities.

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# 1. DURHAM TRAILS & GREENWAYS OVERVIEW

## THE CONTEXT: OLD URBAN RAIL LINE PROVIDES MULTI-MODAL CONNECTIVITY

The Duke Belt Line Trail corridor, an inactive railroad right-of-way owned by Norfolk Southern, runs from northeast of downtown Durham two miles southwest to the Durham Station Transportation Center and Durham Amtrak Station at West Chapel Hill Street. There it ends two blocks from the beginning of the American Tobacco Trail (ATT), the American Tobacco Campus and the Durham Bulls Athletic Park. The corridor traverses the Duke Park, Old North Durham, and Trinity Park, and Pearl Mill Village neighborhoods and Durham Central Park before passing the former Liggett and Myers headquarters and entering downtown Durham from the west. **Many of these areas contain populations of residents that are transit dependent.**

At West Trinity Avenue, the rail corridor is intersected by the South Ellerbe Creek Trail, also part of the greater North-South Trail. The South Ellerbe Creek Trail travels five miles north to connect to Duke Park, Northgate Park, Glendale Heights Park, Rock Quarry Park, Whippoorwhill Park and on to The West Point on the Eno Park. **Once constructed, the Duke Belt Line Trail will become part of a 28.5-mile-long North-South Trail running from The West Point on The Eno Park in Durham County to just past Beaver Creek in Wake County.** The North-South Trail, now comprised of the Warren Creek Trail, Ellerbe Creek Trail, South Ellerbe Creek Trail, Duke Belt Line Trail (planned) and the ATT, **has continued to be the top priority during the last 25 years**. This backbone trail is nearing completion; with three remaining gaps being a) the section between The West Point on the Eno Park and Horton Road and **b) the Duke Belt Line Trail section** between West Trinity Avenue and West Chapel Hill St, and c) the Downtown Trail between West Chapel Hill St and Blackwell Street.

### THE DUKE BELT LINE TRAIL IS URBAN GREEN SPACE

The Duke Belt Line Trail corridor provides a much needed tree canopy adjacent to downtown Durham and north of downtown. Starting out at-grade the corridor transitions to a forested berm as it crosses West Trinity Avenue by bridge, slowly rising above repurposed steam-generated power plants and warehouses and passing abandoned industrial machinery. The densely wooded corridor is adjacent to large mixture of uses and abuts several historic warehouses, a voting center, oil and gas company, artist studios, residential lofts and a traditional mill village neighborhood (Pearl Mill Village) that has a National Historic Registry designation.

### THE DUKE BELT LINE TRAIL IS A TRANSPORTATION ARTERIAL

The North-South Trail corridor neatly parallels the NC 147 and NC 540 freeways, **provides for bicycle and pedestrian access across the US 70, NC 147, I-40 and US 64 expressways and freeways, and connects three different counties**. Important attractions along or within walking distance of the corridor include the previously mentioned parks, Duke Homestead State Historic Site & Tobacco Museum, Museum of Life & Science, Club Boulevard Elementary School, Durham School of the Arts, West Village redevelopment area, Durham Station Transportation Center, Durham Amtrak Station, American Tobacco Campus mixed-use redevelopment area, Durham Performing Arts Center, Durham Bulls Athletic Park, Forest Hills Park, C.C. Spaulding Elementary School, N.C. Central University, Fayetteville Street Elementary School, Hillside High School, Pearsontown Elementary School, Duke University East Campus, Brightleaf Square, Southwest Elementary School, the Durham Farmer's Market, and many other employment and retail centers. **Recent counts on the ATT have recorded approximately 9,000 trail users over a four-day period. Once complete, it is expected that the entire North-South Trail will perform at or above these levels.**

*Figure 1a: Photo simulation of corridor*


*Figure 1b: Photo simulation of corridor*

## THE DUKE BELT LINE TRAIL IS A PRIORITY

Implementation of the Duke Belt Line Trail has been a priority for the City of Durham and Durham County for over a decade. The Duke Belt Line Trail was identified in the 2001 *Durham Trails and Greenways Master Plan* that was adopted by the Durham County Board of Commissioners and Durham City Council. **The** *Durham Trails and Greenways Master Plan* **is a guide to the development of a comprehensive 188-mile-long trail system in Durham**. The plan contains policies that guide how trails should be developed. It depicts a series of greenways and trails in and around major stream corridors within the city and county. It also illustrates individual trails, how they interconnect with each other and serve important destinations, such as schools and parks. The plan was updated and adopted in 2011 by both governing bodies and **the Duke Belt Line Trail was recognized as a crucial link on the North-South Trail**.

**This same North-South Trail is envisioned as the Durham connection in the interstate East Coast Greenway corridor**. The Ellerbe Creek Trail, South Ellerbe Creek Trail, Downtown Trail, and the ATT are already officially designated as part of this 3,000-mile trail that links Maine and Florida. However, most of the existing Downtown Trail consists of sidewalks and an on-road bicycle route along Washington Street, West Corporation Street, Roney Street, Foster Street, North Corcoran Street, South Corcoran Street and Blackwell Street. The ultimate goal of the East Coast Greenway is to construct a separate shared-use path along the entire corridor, especially within urban areas where heavy motor vehicle traffic and other hazards make shared roadways less appealing.

Even before the 2001 *Durham Trails and Greenways Master Plan*, the 1988 *Durham Urban Trails and Greenways Master Plan* (DUTAG) stated that the priority for the first five years of the trails and greenways program would be a cross-city North-South Trail "from I-40 [at] Third Fork Creek to West Point on the Eno Park. It noted that, "other major trail development opportunities may occur due to railroad abandonment" and recommended monitoring the rail line to Roxboro, the downtown rail corridor, and the line "from downtown to Woodcroft and Jordan Lake," which would later become the American Tobacco Trail. With passage of a 1990 bond initiative, the Durham Open Space and Trails Commission began supporting the building a regional trail system and the city began building the network in earnest. The focus, in order of priority, was the completion of the North-South Trail from the Eno River to NC 54, land acquisition in southwest Durham, and construction of a trail in the eastern part of Durham.

## THE DUKE BELT LINE TRAIL IS VITAL TO LOCAL AND REGIONAL TRANSPORTATION

**The Duke Belt Line Trail will tie directly into the Durham Station Transportation Center and the Triangle's bus and rail system, connecting neighborhoods north of downtown seamlessly to the regional mobility network**. At the southwestern end of the Duke Belt Line Trail corridor lies a multi-modal hub comprised of the Durham Station Transportation Center and Durham Amtrak Station. Combined, these two stations are served by 18 local bus routes, four regional bus routes, two intercity bus operators and six intercity passenger trains. The Durham Area Transportation Authority (DATA) system, with its hub at this station, is used for more than 5.6 million transit trips every year. Based on data collected in 2011, **DATA routes 1 and 4, which service the Duke Belt Line Trail corridor, are two of the most productive in the DATA system**. Recently, voters in both Durham County and Orange County approved a ½-cent sales tax and a $7.00 vehicle registration fee to fund transit investments within the two counties, including major bus system expansions and a proposed light rail line. An alternatives analysis for the light rail line was completed in 2012, and the Triangle Transit Authority received approval to enter the New Starts Program project development phase from the Federal Transit Administration in February 2014. The Durham-Orange Light Rail Transit Project is a 17.1-mile-long rail line planned to connect central Durham to North Carolina Central University, Duke University, and major employment centers along US 15-501 and within the Town of Cha-

pel Hill, including the University of North Carolina and associated medical centers. It is estimated that by 2035 more than 23,000 trips will be made daily on the planned light rail line, with Durham Station Transportation Center, located at the southern terminus of the Duke Belt Line Trail, being one of the primary multi-modal terminals.

### THE DUKE BELT LINE TRAIL CORRIDOR HISTORY MUST BE PRESERVED

The Durham Belt Line Railroad, also shown on some maps as the Tobacco Belt Line, was constructed by the Duke family in 1909 to provide direct rail service to large tobacco processing facilities on the west side of downtown. The line was once home to a Norfolk & Western Railway steam engine terminal located between West Trinity Avenue and Minerva Avenue. Currently, the Duke Belt Line Trail corridor is owned by Norfolk Southern, which is open to discussing the sale of the property at fair market value to the City of Durham or another public entity. These discussions have been ongoing since 2004, and have included both the city and the State of North Carolina. Recently, the Conservation Fund, under its N.C. Urban Program, has entered into negotiations with Norfolk Southern and hopes to purchase the corridor on behalf of the City of Durham. Using in-house real estate and legal support staff, the Fund has committed to assume contract negotiations with the railroad, as well as manage due diligence activity and consultant services related to the acquisition of the corridor. The Conservation Fund has also committed to using its own financial resources to acquire the corridor and work closely with the City of Durham to implement a disposition plan the meets the requirements to transfer the property to public ownership in order to construct a trail. These commitments are outlined in a letter to the City dated April 21, 2014.

## THE CHALLENGES: REGIONAL GROWTH SPURS DEMAND FOR BROADER AND MORE ATTRACTIVE MOBILITY OPTIONS

The Raleigh-Durham-Chapel Hill area, also known as the Triangle, is one of the nation's most sprawling regions and current forecasts project both continued outward growth and infill development in selected locations, most notably in the central parts of Raleigh, Durham, and Chapel Hill. A key challenge for the region's transportation plans is to match the vision for how communities should grow with transportation investments to support this growth. No region has been able to "build its way" out of congestion. An important challenge when making transportation investments is to provide travel choices that allow people to avoid congestion. The region's population is changing. It is aging, more single-person and two-person households without children are expected, more people are interested in living in compact mixed-use neighborhoods and the number of households without cars is increasing. According to the U.S. Census Bureau, over 32,000 households in the Triangle region have no motor vehicle available. This is up from 29,000 in 2000 and 27,000 in 1990. In the City of Durham, approximately 9.5% of households lack access to an automobile.

Smart Growth America's report *City versus Suburban Growth in Small Metro Areas* (December 2012) notes that the Durham-Chapel Hill Metropolitan Statistical Area had a population of 505,862 in 2011 and was the **eighth fastest growing MSA** among cities under 1,000,000 in the country. The three-county Triangle region has grown by 30% in each of the last three decades and is expected to grow another 80% by 2040. The region is a thriving hub of innovation and is home to more than a dozen primary industries, including biotechnology, pharmaceuticals, clean technology, smart grid technology and information technology. In fact, between 2001 and 2009, per capita gross domestic product in the Triangle region grew by 26%, as compared to the nation's growth rate of 3.8%. With that growth, the amount of travel in the region—often measured in vehicle miles traveled—is expected to grow similarly by well over 100% in the next two decades. **Future stress on the regional mobility network is exemplified by the high levels of motor vehicle congestion predicted in 2040 by transportation demand models**.

The characteristics of the Triangle area—with its rapidly growing population and economy and propensity to grow outward, negatively impacting the natural environment—create many transportation challenges. More commuters are traveling longer distances, and the single-occupant automobile continues to dominate how the region's population travels, even for short non-work trips. And although transportation planners tend to focus on commuter travel, trips for school, business, shopping, and social engagements constitute an increasing share of travel. These characteristics have increased demands on the region's transportation network, which in terms of VMT and other demand measures is experiencing a growth rate much greater than that of population. The consequences have been motor vehicle traffic congestion, increasing transportation infrastructure costs, and further pressure on the region's air, water and open space. The quality of life, which attracts the professional and skilled workers and business investment to the region, may ultimately become threatened by the consequences of growth and inadequate transportation infrastructure.

**Given the serious health effects of ozone, the reduction of ozone emissions is an important goal in the region's long-range transportation system**. Air quality is an increasingly important concern and is directly linked with a region's transportation system. Ozone is a strong oxidizer and irritant that has been shown to decrease lung function and trigger asthma attacks among the young, elderly, and adults who work or exercise outdoors. Emissions from cars and trucks account for more than one-half the emissions of nitrogen oxides (NOx)—the controlling pollutant in the formation of ground level ozone—in the Triangle area.

### THE DUKE BELT LINE TRAIL RESPONDS TO LOCAL NEED

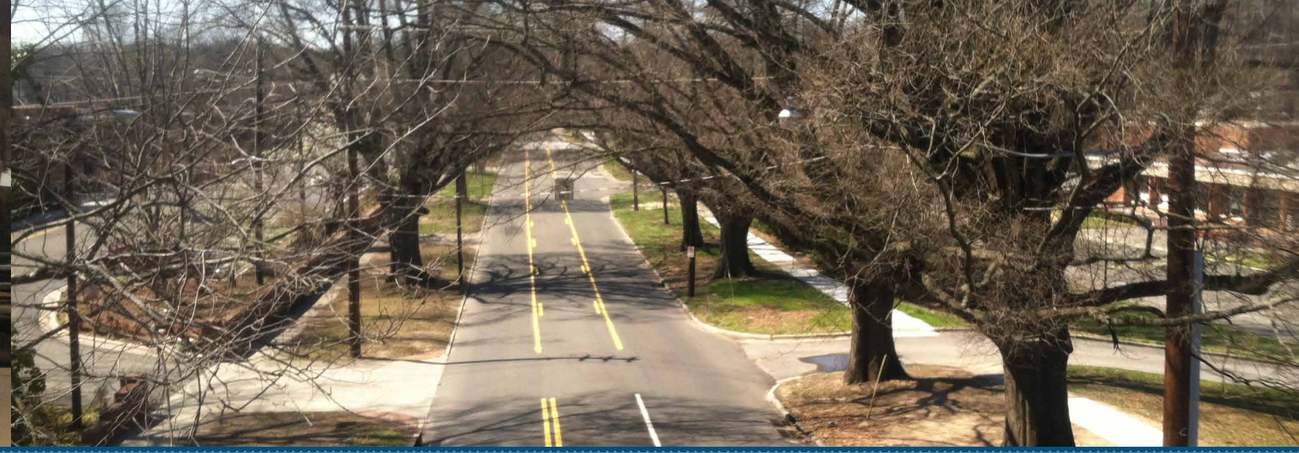
In a 2013 neighborhood survey administered by the city, **walking and bicycling were identified as important issues by Durham residents**. From 907 responses, more than 90% indicated that being able to walk around Durham was very important, and 79% indicated that being able to bike around Durham was very important. **The establishment of a safe and reliable bicycle network in Durham will help Durham retain its label as a "Fit Community,"** a designation awarded to Durham through a partnership between the North Carolina Health & Wellness Trust Fund and Blue Cross Blue Shield of North Carolina.

### RECENT PROJECTS LAY GROUNDWORK FOR REGIONAL BICYCLE AND PEDESTRIAN NETWORK

**In 2000, there were no bicycle lanes in Durham. After making significant investments in bicycle infrastructure, the City has seen its share of bicycle commuters tripled from 0.4% in 2007 to 1.3% in 2012**. The League of American Bicyclists, recognizing this effort, designated the City of Durham a Bicycle Friendly Community in 2010.

Today, the City of Durham has an emerging 33-mile network of on-road bicycle facilities that complement the community's expanding network of trails and greenways. Spurred by the adoption of the 2006 *Comprehensive Bicycle Plan*, the City's bicycle network is steadily growing, and several roadways that intersect the North-South Trail now feature bicycle lanes. These roadways are Juliette Drive, Martin Luther King, Jr. Parkway, Washington Street, Blackwell Street, and Cornwallis Road. In 2014, the City plans to stripe bicycle lanes on a portion of Stadium Drive/Olympic Avenue to connect to the Duke Regional Hospital, located in northern Durham.

Durham has completed five road diets, with another to be completed later in 2014. Two of these road diets improve connections to the Duke Belt Line Trail corridor: Main Street road diet and Chapel Hill Street road diet. In addition, the City plans to implement



a road diet on a portion of Fayetteville Street to connect the ATT to N.C. Central University. Despite the fact that Durham has an incomplete network, the facilities that exist provide efficient and well-used options for Durham cyclists. These existing bicycle facilities provide a foundation to continue the development of a comprehensive network that will serve a variety of users for years to come.

Over the past seven years, the City has also completed streetscape projects in downtown Durham. While these projects did not include new bicycle or pedestrian facilities, they did enhance the pedestrian and cyclist experience through improved amenities (i.e., trees, crosswalks, etc.), added bicycle parking and generally a better street environment that is more comfortable for walking and bicycling. These streetscape projects included improvements to Main Street on both the east and west side of the Duke Belt Line Trail corridor.

## HISTORIC EXPENDITURES ON BICYCLE AND PEDESTRIAN INFRASTRUCTURE

The City of Durham has spent close to $20 million on sidewalk and trail projects since 1992 and, of that, almost $15 million has been spent since 2004. The City has not acted alone. Almost $15 million in federal and state funding has been spent on sidewalks and trails within the city limits, and just under $1 million has been contributed by private donors.

A complete network of bicycle and pedestrian facilities that connect neighborhoods, schools, businesses, and other important destinations is important to the City of Durham and the region. This network consists of sidewalk and on-road and off-road facilities for cyclists such as bicycle lanes, signed routes, and shared-use trails. It also includes ancillary facilities and amenities like bicycle parking, signage, and intersection improvements. The purpose of a complete network is to accommodate and encourage all users. Off-road paths and marked bicycle boulevards on low-traffic streets are more likely to attract the "interested but concerned" population, for example, while paved shoulders and bicycle lanes on higher-traffic roadways are suitable for enthused and confident" and "strong and fearless" cyclists. The Duke Belt Line Trail will offer opportunities for the "interested but concerned" users, families, and children to travel/commute to destinations or enjoy informal recreation close to home.

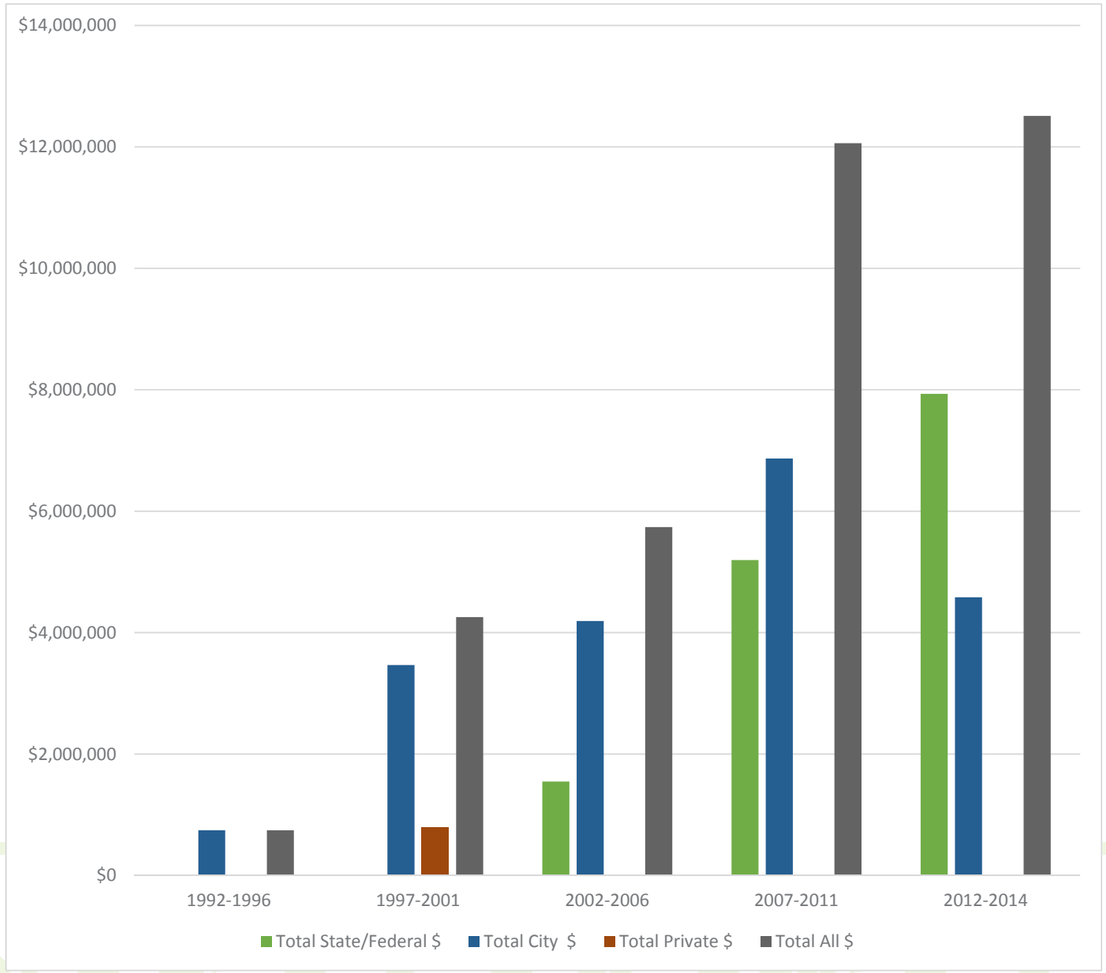
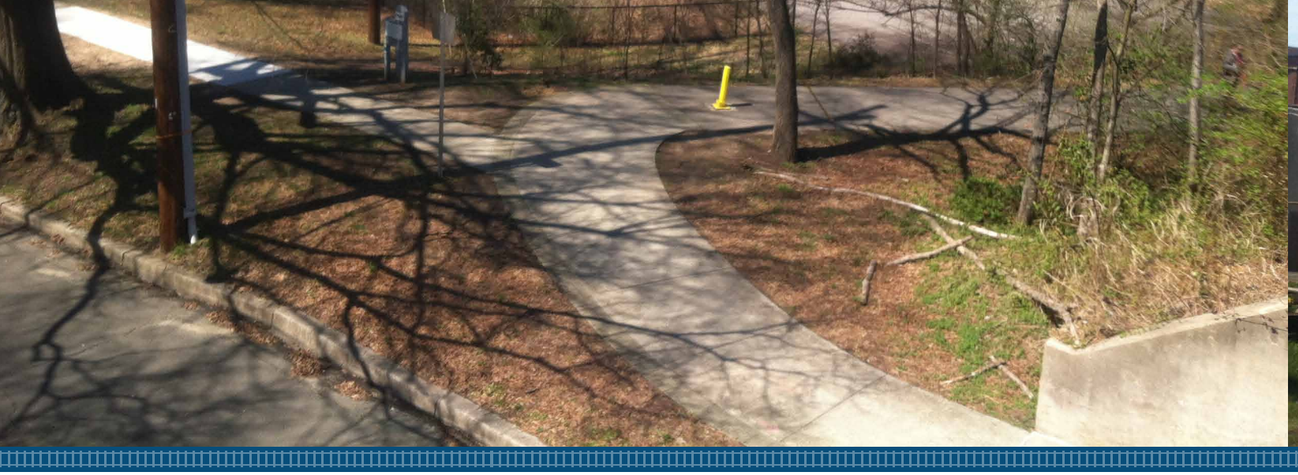
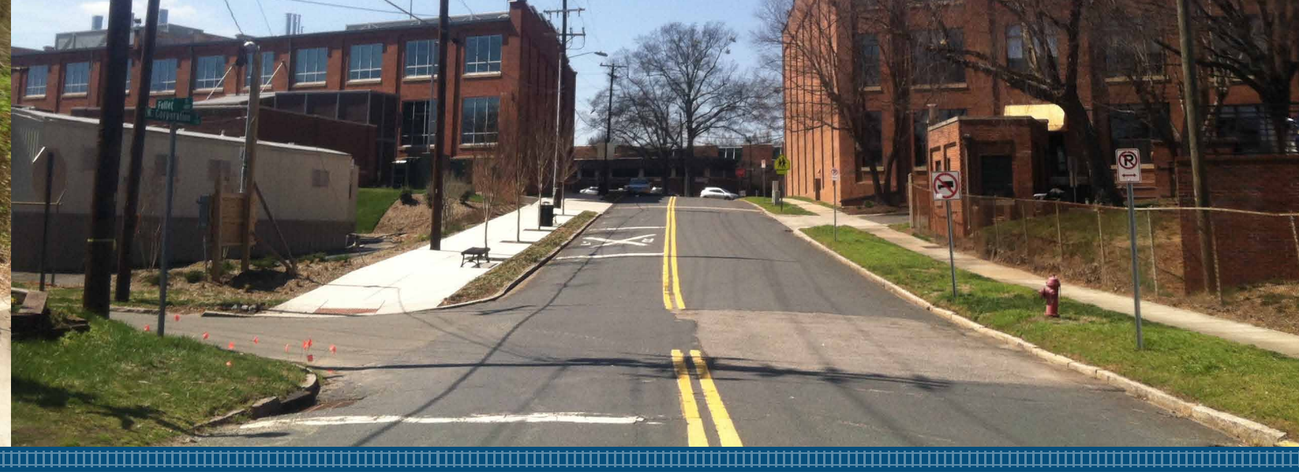



*Figure 1.2: Bicycle and Pedestrian Expenditures in Durham 1992-2014*





| Demographic Data | Walking Distance (0.5 mile) | Bicycling Distance (0.5-3 miles) |
|---|---|---|
| Total Population | 11,793 | 102,046 |
| Employed Population | 5,534 | 42,648 |
| School-Aged Population | 2,782 | 35,166 |
| Population over 65 Years of Age | 885 | 9,182 |
| Number of Zero Car Households | 124 | 1,196 |
| Number of Renters | 3,537 | 21,636 |
| Number of Home Owners | 1,688 | 16,959 |
| Number of College-Aged | 1,382 | 15,125 |
| Number of Bicycle-Commuters | 216 | 533 |
| Number of Pedestrian-Commuters | 422 | 2,428 |
| Number of Single Occupancy Vehicle Commuters | 3,442 | 28,033 |
| Number of High Occupancy Vehicle Commuters | 779 | 7,031 |
| Number of Public Transit Riders | 373 | 2,277 |
| Percent Bicycle Commuters | 3.90% | 1.25% |
| Percent Pedestrian-Commuters | 7.63% | 5.69% |
| Percent Single Occupancy Vehicle Commuters | 62.20% | 65.73% |
| Percent High Occupancy Vehicle Commuters | 14.08% | 16.49% |
| Percent of White Residents | 48.9% | 36.2% |
| Percent of African-American Residents | 38.5% | 48.4% |
| Percent of Indian Residents | 0.1% | 0.6% |
| Percent of Asian Residents | 1.9% | 3.5% |
| Percent of Hawaiian/Pacific Islander Residents | 0.0% | 0.0% |
| Percent of "Other" Residents | 14.8% | 13.9% |

*Table 1.1: Demographic Data Analysis*

## DEMOGRAPHIC ANALYSIS OF PROJECT AREA

The needs and demands of different populations in Durham related to bicycling and walking can be better understood through an analysis of demographic information. 2010 U.S. Census data and 2007-2011 U.S. Census, American Community Survey (ACS) data are used to analyze the populations living adjacent to, or in close proximity to the Duke Belt Line Trail corridor. Demographic analysis was performed in order to identify at-risk communities that may exist within walking or bicycling distance of the Duke Belt Line Trail corridor. Table 1.1 below presents demographic data analysis for areas within walking and bicycling distance of the Duke Belt Line Trail corridor.

## THE IMPACT: THE DUKE BELT LINE ENHANCES AND FURTHERS THE IMPACT OF THE REDEVELOPMENT INVESTMENTS MADE IN THE PAST DECADE

The Duke Belt Line Trail is a project that will significantly enhance the overall mobility, livability, and economic competitiveness of the City of Durham and the Triangle region by:

- Connecting seamlessly to the Durham Station Transportation Center, Durham Amtrak Station and future light rail station. The Duke Belt Line Trail will significantly increase bicycle and pedestrian access to the regional and intercity mass transportation system; linking people to jobs throughout the Triangle region and serving as a "ladder of opportunity" for those along the corridor;
- Attracting some of the region's future housing and commercial growth to areas along and adjacent to the corridor. The Duke Belt Line Trail will help alter the pattern of regional sprawl and disinvestment in urban neighborhoods, while creating more vibrant, walkable and livable communities;
- Providing new mobility options, the Duke Belt Line Trail will create a better integrated and balanced transportation system, reducing congestion, improving circulation and increasing accessibility to communities and job centers; and
- Serving as an economic driver for brownfield redevelopment along the original industrial core of the City of Durham—an area that has been a source of blight and urban decay for decades.

In 2010, there were 8,612 people and 14,320 jobs within ½ mile of the corridor. By 2040, according to the Triangle Regional Model, the population is expected to increase to 12,310 and more than 7,900 additional jobs will be available. The Duke Belt Line Trail, at 2.2 miles long, is well within the commonly-accepted three-mile bicycle shed used by the Federal Transit Administration, making it highly likely that many of the residents of the adjacent neighborhoods will choose to bike to the transit center and/or jobs within downtown Durham.

# 2

# 2. THE TIGER REQUEST PROJECT – DUKE BELT LINE TRAIL MASTER PLAN

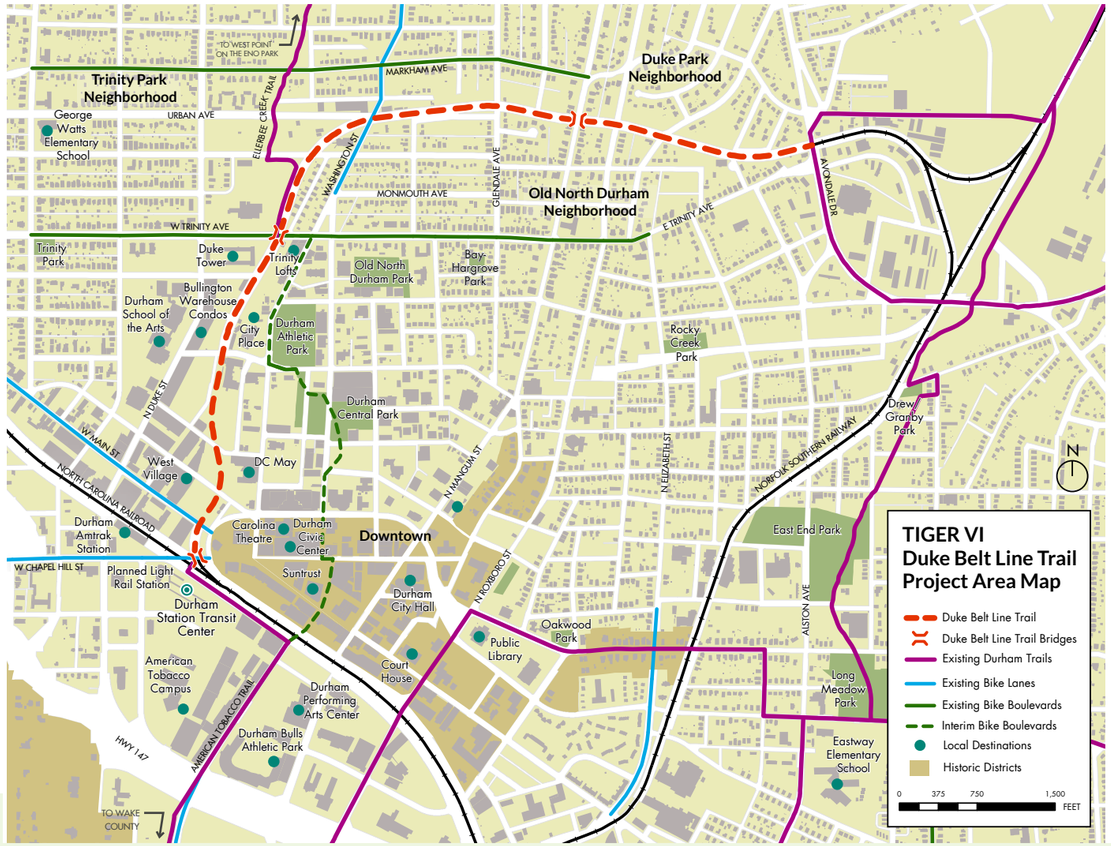



*Figure 2.1: Map of Proposed TIGER Project*

## 2.1 PROJECT PURPOSE AND NEED

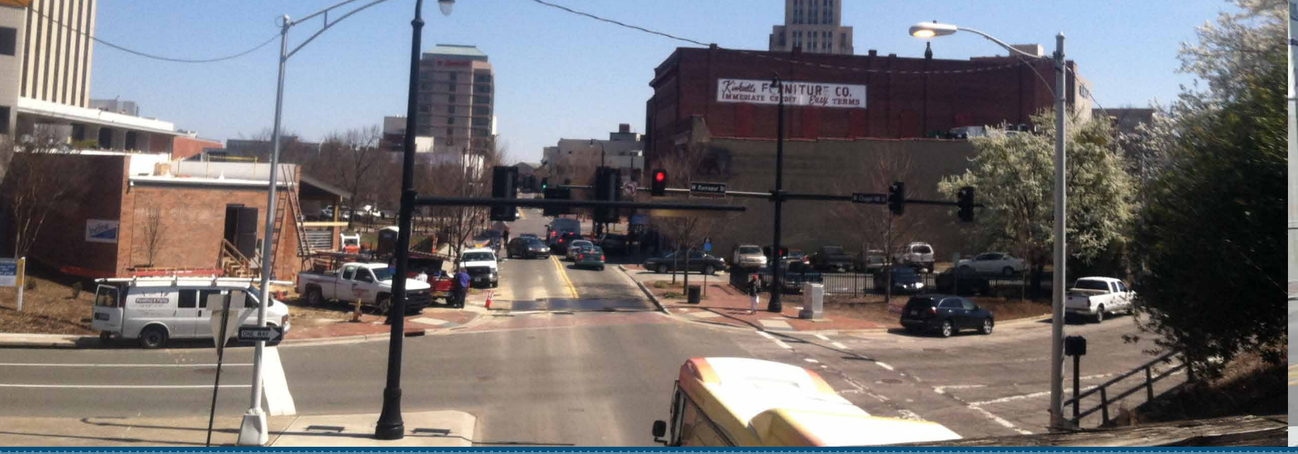
The City of Durham is challenged to meet its transportation goals due to a lack of connectivity, underutilization of existing resources and limited bicycle, pedestrian and transit options to address existing and future travel needs. Individually, each of these issues contributes to reduced mobility and access. Together, they create a severe impediment to moving through the city, especially using active transportation modes.

The Duke Belt Line Trail will address these needs by providing new shared-use paths, transit connections and multi-modal intersection improvements in the core of the city. The trail, which has been planned since the late 1980s, will build off the investments in trails made by the City of Durham and Durham County over the last 25 years by connecting the North-South Trail, which includes the American Tobacco Trail, to the Durham Station Transportation Center, Durham Amtrak Station, downtown Durham and in-town mixed-use communities. Many of these neighborhoods are transit-dependent, with two of the city's busiest bus routes serving the Duke Belt Line Trail corridor area.

## 2.2 DETAILED PROJECT DESCRIPTION

The City of Durham is seeking funding to complete a Project-Level Plan for the Duke Belt Line Trail between Avondale Drive and West Chapel Hill Street. This Duke Belt Line Trail Master Plan will include the following components:

- Public Participation Strategy: The City will prepare a detailed public participation strategy, which will include an outline of specific outreach tasks, the purpose of each task, and a schedule of public engagement activities. The strategy will serve as the blueprint for informing and engaging a diverse group of project stakeholders and area residents. We will seek to involve project stakeholders, including residents, community organizations, neighborhood councils, bicycle, pedestrian and transit advocacy organizations, recreation and activity groups, business leaders, chambers of commerce, elected officials, regional and state agencies, and other interests. Special care will be taken to facilitate the involvement of underrepresented groups and ensure that all outreach activities are Title VI compliant.
- **Project Vision, Goals & Objectives:** The vision, developed through a collaborative public process, will inform how the project will look in the future, what purpose it will serve, and how it will interact with the surrounding environment. The goals for the project will be broad, and will be supported by realistic, achievable and measurable objectives that will guide the project through development.
- **Existing Conditions & Corridor Features:** This task will consist of a comprehensive inventory and analysis and identification of existing natural and physical features along the corridor. The City will identify nearby trails and parks, such as the South Ellerbe Creek Trail and Old North Durham Park, as well as archeological sites, potential historic landmarks and other notable features in the surrounding study area. Bridge structures will be documented and analyzed for structural integrity based on review of existing bridge reports from NC-



DOT and Norfolk Southern, and a high-level visual investigation. We will identify opportunities for preservation or reuse. This task is likely to consist of the following activities:

- Fieldwork
- Data Collection, Mapping & Analysis
- Review of Existing Planning Documents and Ordinances
- Assessment of Opportunities and Constraints

- **Right-of-way, Utility Covenant & Easement Review:** The City will evaluate/review right-of-way, utilities, covenants and other easements that may affect the uses along the corridor. Features that will be identified include easements for underground and overhead utility lines, highways, driveways, other access points and licensed encroachments by buildings and other structures. We will also document any unlicensed encroachments onto the right-of-way from neighboring properties. These can range from a neighbor who innocently mows a portion of the railroad right-of-way, so as to improve the image of his own property, to instances where significant structures, such as barns, garages and even homes, have been built on the railroad property. This task is likely to consist of the following activities:
  - Acquisition from the railroad of not only the valuation maps but other salient records that are available. These would include deeds; agreements of sale; easement and license agreements for utilities crossings, roadway occupations, bridge overcrossings, and building encroachments; plus other real property and engineering records that the railroad company has in their possession. All collected information will be compiled into a central database.
  - A field inspection of the railroad right-of-way to determine exactly the current condition. With copies of the valuation maps in hand, inspectors will walk the railroad and make notations of what is actually located on the property. In addition to looking for the licensed encroachments as described above (or evidence that the encroachment might no longer exist), the team will pay particular attention to identification of unlicensed encroachments that could restrict the City's ability to enjoy full use of the property if not mitigated. This information will be added to the database described in the bullet above.
  - Comparison of the right-of-way limits shown on the valuation maps against tax maps and other graphic public records.
  - Preparation of a comprehensive report documenting the findings of the investigation.
- **Title VI/Environmental Justice Analysis:** The purpose of this task is to assess the potential burdens and benefits of the trail on low income, minority, traditionally-underserved and/or low English proficiency populations. In every transportation planning process, it is important to consider environmental justice early in the planning process and (1) determine benefits to and potential negative impacts on minority populations and low-income populations from proposed investments or actions; (2) quantify expected effects (total, positive and negative) and disproportionately high and adverse effects on minority populations and low-income populations; and (3) determine the appropriate course of action, whether avoidance, minimization, or mitigation. As we conduct this analysis, one of the key areas that will be studied are the locations of Title VI/EJ populations and how the trail may help to connect to areas of shopping, medical centers, or employment centers. In addition, potential adverse impacts such as disruption to residents and businesses during the construction period will need to be evaluated. We will also closely work with existing organizations and agencies that work closely with low-income and minority populations to ensure that they have access to information and are participants in the planning process. Three fundamental environmental justice principles to consider in this process are:
  - To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.
  - To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
  - To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income persons.
- **Analysis of Existing Bridges:** The primary goal of this task is to promote the safety of future trail users and the general public when crossing or travelling under the three existing bridges along the corridor. During the study, the City will collect existing bridge data from the railroad, NCDOT and other sources, perform a visual inspection of the condition of the bridges, identify potential structural issues, and develop conceptual-level cost estimates and rehabilitation/modification schemes to allow the existing structures to continue to serve the community in their new role.
- **Analysis of Economic, Social & Health Impact:** The City will analyze a host of data from local, state and federal sources, such as tourism activity, real estate data from the multiple listing service, and information from the local Chamber of Commerce. We will prepare a technical memorandum that summarizes the economic impact and benefits of the project. We will estimate indirect impacts such as job access and creation, increase in regional sales from earned income, and potential impacts to property values benefits. We will identify existing businesses currently providing goods and services that would be utilized by trail users, and identify trail users needs currently not being met within the local marketplace. We will also identify potential business development opportunities and identify cost-benefit for future residential development. The City will also examine demographics and public health data for the trail corridor study area, and identify the potential service area for the Duke Belt Line Trail and links to surrounding facilities. Our analysis will include a detailed Health Impact Assessment (HIA), which identifies the current health of area residents and assesses the impact of the trail on public health. The analysis will result in recommendations for trail access and programming, such as organized sports, group rides, special events, festivals and other activities associated with the trail.
- **Safety & Security Evaluation:** Personal safety, both real and perceived, heavily influences a trail user's decision to use a trail and a community to embrace a trail system. Proper design must address both the perceived safety issues (e.g. feeling safe or fear of crime) as well as actual safety threats (e.g. physical safety concerns such as infrastructure failure, or safety in terms of criminal acts). There may be a perception that certain areas of the trail corridor are unsafe. These areas will be the focus of particular attention during the Safety & Security Evaluation. This evaluation will contain recommendations to improve overall safety along the trail. It will include an assessment based on the Crime Prevention through Environmental Design (CPTED) principles to reduce opportunities for crime, perception of crime and undesired behavior that may be inherent in the corridor. Specific design recommendations will be customized for the project, but often include clearly defining access points, public walkways and paths; a comprehensive wayfinding system, including identification of cell service areas; improving sight lines; eliminating entrapment areas; implementing barriers such as fencing and hostile vegetation to reduce incidences of trespass and control access; implementing uniform and efficient lighting where needed; pedestrian crossing issues at the trailhead, improvements to the limited sight distance at certain at-grade cross-


ings, improvements to the section that has limited visibility in the ravine areas, and establishing a routine maintenance program. The City will evaluate the capacity of local emergency and public safety agencies to respond to service calls within the trail corridor. The City will develop a draft emergency response services plan, which may include recommendations for additional enforcement and education programs that may include volunteer trail patrols, adopt-a-trail programs, "Share the Trail" education, interpretive walks, and group rides. We will also utilize the recently completed trail safety analysis completed for the American Tobacco Trail in determining design and programming recommendations for the Duke Belt Line project.

- **Trail Development Guidelines:** The Duke Belt Line Trail Master Plan will be created from the strong foundation of technical memorandums developed for each of the tasks outlined above. The plan will also include general design guidelines that will be prepared for pedestrian improvements, including:
  - documentation of ADA standards for sidewalk and shared-use trail intersections and overlaps;
  - documentation of neighborhood greenway/connector path standards to serve as guidelines in future residential development where consistency of facilities is desired;
  - best practices in providing access to transit networks; and
  - best practices in street crossing design.

The master plan will also include a comprehensive inventory and analysis and of existing natural and physical features along the rail corridor. The City will identify nearby trails and key destinations in the surrounding study area, as well as the following:

- trail heads & access points
- trail composition and typical profile
- trail amenities
- trail linkages

- **Phasing & Funding Strategy:** The City will consider phasing from two different perspectives—geographic and financial. Meaning: assuming the funding for construction is initially limited, should the City focus on constructing the higher priority segments of the trail, or should the entire trail be constructed, but with lower cost materials (ex. asphalt instead of concrete) and fewer amenities. The City will work to determine a logical phasing plan that is coordinated with future land development proposals along the corridor, and identify potential funding sources to construct the project. The plan will include a detailed list and description of local, state and federal sources of funding for the future development of the trail, including grants, local government funding, user fees, private sector support and other sources. The City will work to identify non-traditional sources such as advertising revenue (other ideas here) that could be considered.
- **Construction Cost Estimates:** The City will draft a detailed projection of costs for designing, permitting and constructing the trail by segment using different types of materials and the associated amenities and facilities.
- **Maintenance Cost Estimates:** The City will develop a schedule for the tasks needed to complete trail development. The schedule will be designed to specifically meet the needs of the City. The final master plan will include an operations and maintenance plan for the Duke Belt Line trail, identifying responsible parties and a five-year maintenance budget. It will identify trail facility development and operational costs, define sources of revenue to support development and operations, and determine the most appropriate operation and management strategies for the project.

3

# 3. DUKE BELT LINE TRAIL MASTER PLAN FINANCIAL PLAN

| Task | Estimated Cost |
|---|---|
| Public Participation Strategy | $34,000 |
| Project Vision, Goals & Objectives | $16,000 |
| Existing Conditions & Corridor Features | $27,000 |
| ROW, Utility Covenant & Easement Review | $25,000 |
| Title VI/Environmental Justice Analysis | $4,000 |
| Analysis of Existing Bridges | $60,000 |
| Analysis of Economic, Social & Health Impact | $16,200 |
| Safety & Security Evaluation | $12,000 |
| Trail Development Guidelines | $46,000 |
| Phasing & Funding Strategy | $19,500 |
| Construction Cost Estimates | $23,000 |
| Maintenance Cost Estimates | $15,000 |
| **Total** | **$297,700** |

*Table 3.1: Master Plan Scope of Work Financial Plan*

# 4

# 4. SOURCES AND USES OF PROJECT FUNDS

The proposed *Duke Belt Line Trail Master Plan* will be completed using $222,700 in requested TIGER VI discretionary grant funds and $75,000 in local match committed by the City of Durham. This represents a 25.2%/74.8% local/federal split. The total estimated project cost is $297,700.

**>25% LOCAL MATCH**

5

# 5. PROJECT PARTIES

The TIGER Planning Grant will be managed by the City of Durham. Durham was incorporated by the N.C. General Assembly in 1869 and is the fourth largest city in North Carolina, the county seat, and the only municipality in Durham County. Durham covers an area of more than 108 square miles. The 2010 population of 267,587 includes people with a rich diversity in racial and ethnic backgrounds.

The City of Durham operates under a Council–Manager form of government. Durham City Council is comprised of seven members: three members from specific wards, three at-large members, and the Mayor. The Council is responsible for establishing general policies for the City and appoints the City Manager, City Attorney, City Clerk, and members of various boards and commissions.

An agreement will be developed between the City of Durham and the N.C. Department of Transportation to govern the implementation of the planning grant. The agreement will outline the responsibilities of the City of Durham in carrying out the project in compliance with state and federal regulations.

A broad range of stakeholders will be invited to participate in the planning process. These include representatives of regional planning agencies, local government, business interests, community groups, neighborhood associations, representatives of environmental justice areas and the disabled communities, and bicyclist and pedestrian advocacy groups. Appointed advisory boards, including the Open Space and Trails Commission, the Bicycle and Pedestrian Advisory Commission, and the Recreation Advisory Commission, will be important participants.

6

# 6. PRIMARY SELECTION CRITERIA

## 6.1. STATE OF GOOD REPAIR

### 6.1.1 BENEFITS

The Duke Belt Line Trail ("Project") will contribute to a state of good repair by **reusing and upgrading existing transportation infrastructure** including an abandoned railroad corridor, bridges and available right-of-way on existing urban streets. The project will take heavy freight rail infrastructure that has fallen into disrepair and return it to productive use. More than two miles of abandoned and largely blighted rail corridor will be repurposed as a multi-use trail situated within a linear greenway. Much of this rail infrastructure dates back to the early 1900's and is in critical need of significant investment.

Once the Project is constructed the City of Durham Parks and Recreation Department will maintain the greenway to high standards the public has come to expect. The Duke Belt Line Trail is a segment of the North-South Trail; that trail has been a key facility of the *Durham Trails and Greenways Master Plan* since 1988 and has been among the top three priority projects for over two decades. When constructing trails and greenways, the City of Durham follows best practices for environmental protection and does not typically seek exemptions from state and federal regulations.

### 6.1.2 CAPITAL AND MAINTENANCE INVESTMENT

The Duke Belt Line Trail has been a collaborative grassroots community, government, and private stakeholder effort of close to two decades. The Project has support of citizens, community groups, transportation activists, developers and businesses along the length of the corridor, neighborhoods and downtown business interests (see "Partnerships" in Section 7.2 for a complete list). The City of Durham has demonstrated its commitment to a years-long process to negotiate purchase of the corridor. To date **$2.1 million has been dedicated to fund purchase of the rail corridor right-of-way from Norfolk Southern**. An estimated $5.1 million in additional funding is needed to complete the purchase under the railroad's current terms. Opportunities for private funding are being sought, and through the planning process for the Project, a variety of public/private funding alternatives will be explored.

Ongoing maintenance of the trail is estimated at $12,000 per year. Per the 2011 *Durham Trails and Greenways Master Pla*n, the City of Durham will commit maintenance funds after the Duke Belt Line Trail corridor has been approved, funded, purchased, and construction of the shared-use trail is complete.

## 6.2 ECONOMIC COMPETITIVENESS

The proposed trail will **increase the economic competitiveness** by increasing access to jobs and services centers in central Durham, repurposing vacant land and **improving the health – and thus, productivity – of trail-users**.

### 6.2.1 PRODUCTIVITY OF LAND: INCREASED LAND VALUES AND REINVESTMENT

The Duke Belt Line Trail will increase land values in the Project area. In the Shepard's Vineyard residential development in Apex, North Carolina, homes along the regional greenway were priced $5,000 higher than other residences in the development, And, these homes were still the first to sell. A study of home values along the Little Miami Scenic Trail in Ohio found that single-family home values increased by $7.05 for every foot closer a home is to the trail[1]. Similarly, a 2005 study in Austin found that properties in proximity to trails showed increases in value of up to 13% percent above similarly situated properties without trail access[2]. The **increased land values will support the redevelopment of significant tracts of underutilized and abandoned industrial properties** that surround the railroad corridor, increasing the likelihood that they will be converted to a more economically productive uses. The City is already engaged in **active conversations**

*1. Rails to Trails Conservancy. (2005). Economic Benefits of Trails and Greenways*
*2. Gov. Belt Line.org: The Impact of Greenways on Property Values: Evidence from Austin*

*Figure 6.1: Master Plan graphic developed by T. Dawson*

**with several corporations who have expressed a desire to locate businesses in the downtown and specifically along the proposed Duke Belt Line corridor**. These corporations would continue the profound revitalization that has been occurring in downtown Durham during the past decade, leading to enhanced productive use of inner city real estate.

### 6.2.2 CREATION OF JOBS AND OTHER OPPORTUNITIES

The Duke Belt Line Trail will alter the context of downtown, by creating an additional focal point of interest. The Duke Belt Line Trail corridor connects four downtown districts (American Tobacco Campus, City Center, Warehouse, and Central Park), two historic neighborhoods (Old North Durham and Duke Park), and Durham's largest downtown mixed-use development (West Village). Key transit connections along this corridor include the Durham Station Transportation Center, the Durham Amtrak Station, and the Bull City Connector (BCC)—a fare-free bus route with direct connections to major employment centers such as Duke University and Duke Hospital. Other key destinations served by this corridor include the Durham Farmer's Market, the Historic Durham Athletic Park, and many independent businesses and restaurants. In addition to the connections listed above, the Durham Innovation District, which is a vision by local land-owners and developers, also embraces the concept of turning the former railroad corridor into a trail and linear park that serves as a key open space resource for downtown Durham.

Acquisition of the right-of-way, as well as trail design and construction would create jobs for firms and citizens. The Executive Office of the President Council of Economic Advisors estimates that one job-year is created by every $76,923 in transportation infrastructure spending. Design and construction of the Duke Belt Line is estimated at $1.5 to $2 million, after the purchase of right-of-way. This would result in 19 to 26 job years for Durham citizens. Right-of-way acquisition would generate additional employment, but an estimate is not available.

The Project will also make Durham **more competitive for international business investment** by improving the area's livability, helping to make it more attractive to international companies. These improvements are incremental steps towards further increasing the likelihood of attracting international business investment by providing a multitude of livability improvements and amenities that high-tech, creative and bio-medical companies seek out when considering where to locate facilities and headquarters.

### 6.2.3 IMPROVE MULTI-MODAL CONNECTIONS

The Project will measurably improve connectivity between pedestrian, bicycle and transit modes of transportation by increasing the number of persons with bicycle and walking access to the local and regional bus systems, intercity rail and bus connections and the planned regional light rail line. The Project corridor connects to several key DATA routes, including routes 1, 4 and 9, and key destinations such as city and county offices, Durham School of the Arts, Durham Amtrak Station and the Durham Station Transportation Center for connections to Triangle Transit, Greyhound, Megabus and future light rail line. **Per the U.S. Census, 2,650 individuals living in areas adjacent to the Project corridor already use public transit to get to work and access other basic needs**. The improved connectivity will reduce the time and resources invested in commuting, thereby increasing worker productivity. Once the Duke Belt Line Trail is constructed, the Triangle Transportation Demand Management (TDM) Program will work to inform and educate residents and employees in the area of the opportunity to use the trail to access employment and services and to connect to transit. This program was created in 2007 to coordinate and evaluate regional TDM activities, including efforts by numerous partners to reduce traffic and air pollution by promoting commute alternatives such as transit, carpooling, biking, walking, telework, and vanpooling. It is funded by the Durham-Chapel Hill MPO, Capital Area MPO in Raleigh, and the NCDOT Public Transportation Division.

### 6.2.4 IMPROVE PUBLIC HEALTH

The Duke Belt Line Trail will also increase economic competitiveness and worker productivity in the long term by having a significant positive impact on public health. A key concern in North Carolina, and the nation, is the prevalence of obesity and the impacts this has on healthcare costs and the economic productivity of workers. The second highest cause of death for City of Durham residents is heart-disease, just behind cancer[3]. The most recent combined o**besity and overweight rates are: adults 65%; Durham Public School high school students 28.3%; and entering kindergartners 18%**. Diabetes is the fifth leading cause of death in Durham County and 7% of adults have diabetes[4].

At the project level, the Duke Belt Line Trail Master Plan will include a Health Impact Assessment (HIA) to identify obesity and other public health issues in the neighborhoods along the Project corridor. Poor access to recreational facilities and a lack of connectivity to pedestrian and bicycle facilities to community assets such as schools and parks, are recognized as significant contributors to public health issues.

*3. Vital Statistics State Center for Health Statistics - Division of Public Health*

*4. http://www.healthydurham.org/docs/CHApercent20Summary.pdf*

By providing safe routes to transit, job centers, services and recreational facilities, the Project will help to address the identified public health issues, reducing health care costs and the amount of lost work time due to health-related issues. This would benefit the economic competitiveness of the nation in a meaningful way, while improving local neighborhoods in which poor public health is a serious impediment to community vitality.

Together, the improved public health and land values will enhance the social capital and learning environment within these neighborhoods, making it more attractive for businesses to grow in Durham and create a "ladder of opportunity" for the youth in the adjacent communities.

## 6.3 QUALITY OF LIFE

A core objective of the Duke Belt Line Trail is to increase the livability of the City of Durham by creating walkable and bikeable neighborhoods, providing a range of affordable mobility options and connecting people to parks and public spaces that will give them opportunities to improve their health and well-being. The Project will contribute to this objective in significant ways by enhancing connectivity to existing transit services as shown in Figure 6.1, reducing the average cost of user mobility, adding linear parks within the community and improving existing sidewalks and intersections for pedestrians and bicyclists.

The Duke Belt Line Trail will link major greenways and provide access to parks. The trail will link downtown to neighborhoods and reduce the demand for single-occupancy vehicle trips in the adjacent areas. The trail will also link to transit centers and increase transportation choice. The corridor will preserve a swath of urban tree canopy and highlight and preserve some of the City's historic industrial infrastructure.

In addition to transportation and health, the Duke Belt Line Trail has the potential to enhance cultural and historical aspects of the City. Throughout Durham, sculptors and builders have translated the City's industrial legacy into beautiful art and architecture that makes a statement about life in Durham. These places, like the American Tobacco Campus, West Village, and Brightleaf Square, have become destinations and examples of an emerging post-industrial aesthetic. The Duke Belt Line Trail corridor offers the opportunity to add a natural experience into this aesthetic. By using historic steel railroad bridges, borrowing views of historic structures, celebrating industrial artifacts along the route and shaping vegetation, this corridor could provide the user with an important narrative about Durham's urban and natural life.

### 6.3.1 AFFORDABLE TRANSPORTATION OPTIONS

In cities across the United States, housing and transportation costs are increasing at a greater rate than household income. Durham is no exception. According to the Housing + Transportation Affordability Index developed by the Center for Neighborhood Technology, the housing and transportation costs combined is not affordable if it exceeds 30% of annual household income. For transportation alone, the figure is less than 15%. In areas of Durham within one mile of the Duke Belt Line Trail corridor, the transportation affordability gap is significantly higher, with households spending 26% of their income at the eastern terminus of the trail, 25% in the Old North Durham neighborhood, and 24% in the Trinity Park neighborhood.

Many citizens of Durham are entirely dependent on transit, walking, or bicycling for daily transportation. **Per the U.S. Census, 9.5% of Durham households have no access to a car, and 38% have only one car**. While the latter figure includes many single-person households, it also includes families with only one car, resulting in at least one adult and possibly children living without access to private transportation. In the neighborhoods within three miles of the Duke Belt Line Trail corridor there are 1,320 households with no access to a motor vehicle. Many of these areas include a significant African-American population and are the most densely populated neighborhoods in the Triangle region. The Duke Belt Line Trail would balance transportation equity in Durham by providing a significant number of underserved citizens with convenient and affordable transportation linkages to the regional transit system and key destinations.

### 6.3.2 MASTER PLANNING

The Duke Belt Line Trail has not been championed in isolation by a small interest group, but is instead a priority project resulting from a comprehensive planning effort over two decades in the making. The 2013 *City of Durham Comprehensive Plan* stresses the important of bicycling, walking and transit to the overall vitality of the city and the health and quality of life of its citizens. The plan states how Durham's plans for and investments in facilities for walking, bicycling, and transit will affect future mobility and accessibility and that policies should be put in place to make biking and walking more viable alternatives to driving. More than 17 separate policy statements pertain to complete streets and multimodal transportation, both for new developments and in retrofitting roadways. In addition, the comprehensive plan ties development review processes to the *Durham Trails and Greenways Master Plan*, the adopted bicycle and pedestrian master plans, and to other land use and development plans.

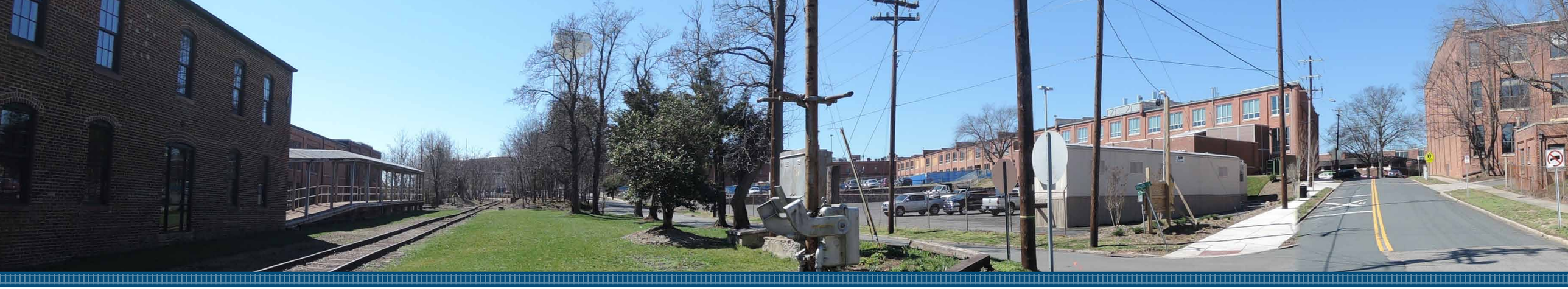
The following plans prioritize or support the Duke Belt Line Trail project:

- *Durham Urban Trails and Greenways Master Plan*, 1988
- *Durham Trails and Greenways Master Plan*, 2001 (updated 2011)
- *Durham Comprehensive Bicycle Transportation Plan*, 2006
- *Durham Walks! Pedestrian Plan*, 2006
- *City of Durham Comprehensive Plan*, 2013
- *Durham Parks and Recreation Master Plan*, 2013
- *Draft Downtown Open Space Master Plan*, 2014

### 6.3.3 GREEN SPACES, PARKS AND PUBLIC SPACES

Greenways, parks, and trails are a top priority of Durham's citizens. The city's 2013 Parks and Recreation Master Plan reported key community concerns as documented in the *Parks and Recreation Community Survey* (PARCS). Those items which received a ranking of 90% or higher from respondents were categorized as "essential priorities" for the Durham Department of Parks and Recreation. These included five items:

1. Provide green and natural spaces within the community with park lands and open spaces;
2. Protect the natural environment and promote environmental sustainability;
3. Provide opportunities for residents to maintain and improve their physical health;
4. Provide positive activities for children and teens; and
5. Provide mobility, with trails and paths for residents to use to exercise and non-motorized transportation.



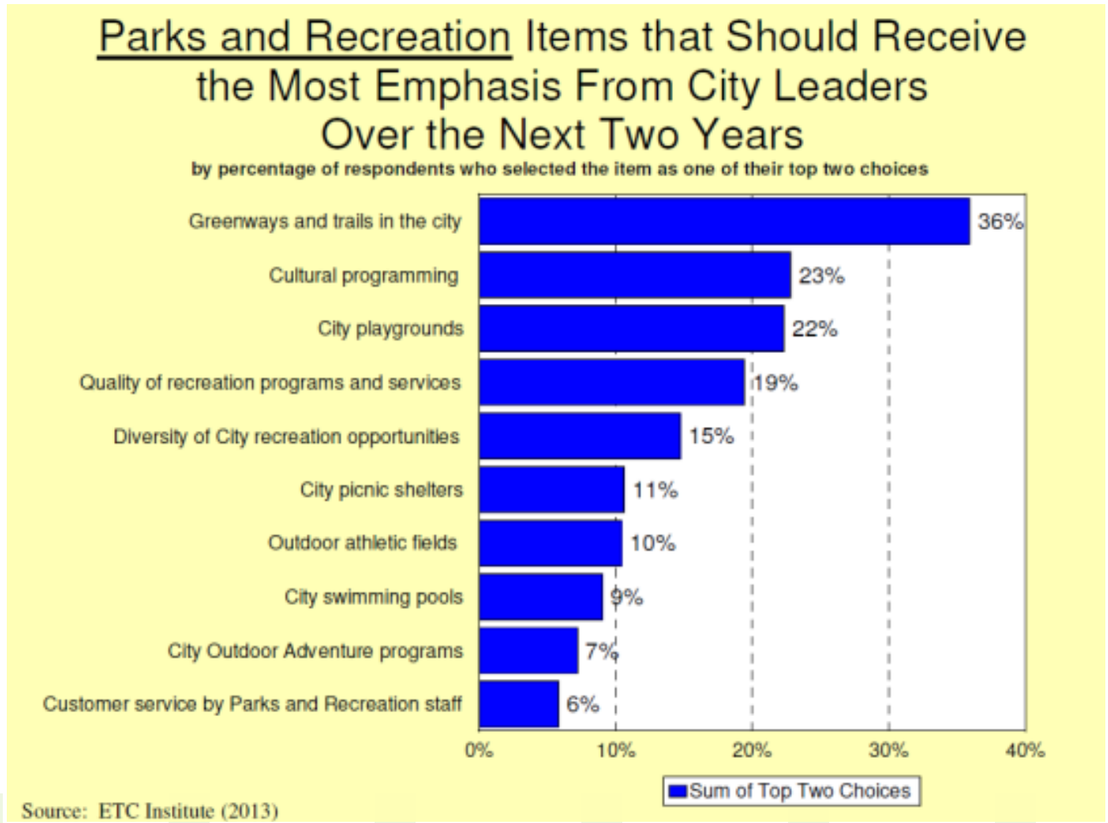



*Figure 6.2: Park and Recreation Community Survey*

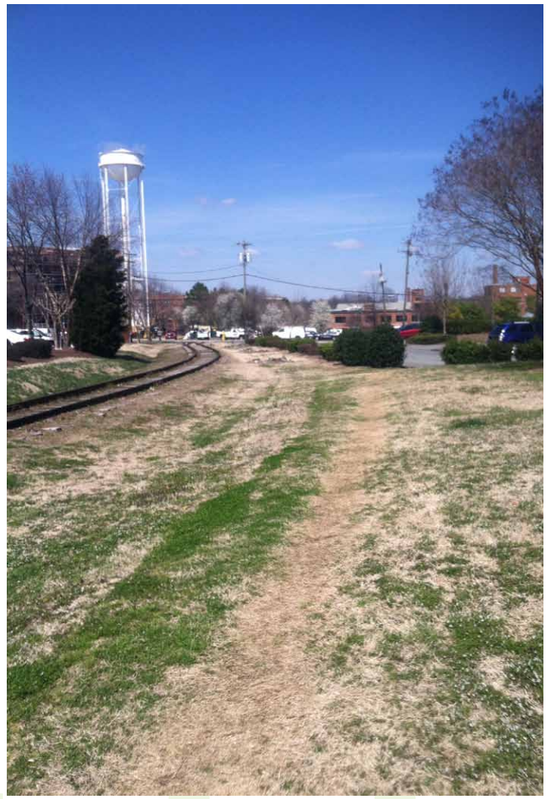
In addition, the PARCS revealed the individual priorities for facilities and programs. **Trails and greenways were ranked as the most important facilities provided by the department and trails and greenways were the most desired new facilities**. A key finding of the survey was the **connection between transportation and recreation for teens**. In their focus group, the teen participants strongly agreed that transportation was a critical barrier for them in accessing many of the department's facilities and activities. An expanded trail system will increase all citizens' access to public facilities and programs offered by the City of Durham.

The Duke Belt Line Trail will not only close an important gap in the North-South Trail but in the regional trail network as well. Serving as an extension of the American Tobacco Trail, it will be part of a three-county, multi-city bicycle and pedestrian network. The American Tobacco Trail is a highly popular trail that begins in downtown Durham at the American Tobacco Campus and extends 23 miles south through Durham County and into Chatham County and Wake County. A major streetscape project has recently been constructed to make the downtown more walkable. The Duke Belt Line Trail will create a more continuous biking and walking route through the downtown. It will connect to the Ellerbe Creek Greenway and its open space system, which includes several land preserves and an urban beaver marsh. T**he Duke Belt Line Trail is a major part of the** *Downtown Open Space Plan* and will link parks, plazas as well as special features like the Historic Durham Athletic Park.

The Project's direct links to parks and greenways provide a critical dimension of livability that will not only beautify the city and demonstrably improve quality of life, but will also improve the environment and human health. The **Project will create approximately 9.8 acres of linear parkland** (based on an average width of 35 feet multiplied by the project's length of 2.2. miles), and **connect to five existing parks within 1/2 mile and four existing and proposed trails** as shown in Table 6.1 below.

| Segment | Linear Park Acreage Along Trail | Existing Park Connections | Proposed Trail Connections | Existing Trail Connections |
|---|---|---|---|---|
| Avondale Drive to West Chapel Hill Street | 9.8 | Old North Durham, Duke, Rocky Creek, Bay-Hargrove, Trinity, Historic Durham Athletic | Roxboro Trail | American Tobacco Trail; Downtown Trail; Ellerbe Creek Trail |

*Table 6.1: Park and Trail Connections*

In total, the Duke Belt Line Trail is expected to create approximately 9.8 acres of greenways, serving as a new public realm and opportunity for recreation and healthier lifestyles. Upon completion, the Project will be an important connection in the North-South Trail, further the reach and impact of the American Tobacco Trail, and serve as an important link in the East Coast Greenway.

## 6.4 ENVIRONMENTAL SUSTAINABILITY

The City of Durham is committed to raising the standard for sustainability in the city, state, region, and nation. To support this initiative, the Duke Belt Line Trail project will develop a sustainability framework identifying best practices for the construction of trails and parks from throughout the country. Where practical, the Project will i**ncorporate alternative energy components** including photovoltaic solar and low-head hydraulic power generation.

The Project will take advantage of existing infrastructure, namely the inactive rail corridor and rights-of-way along urban roads. In doing so, the Project will, as needed, remediate previously contaminated portions of the railroad corridor. In addition to environmental remediation, the rail corridor will undergo a physical transformation into a linear greenway with thriving plant life and ecosystems, as envisioned in the *Durham Trails and Greenways Plan* and *Downtown Open Space Plan*. Green corridors are crucial for wildlife and native plant survival in urban areas. The Project will help reduce the number vehicle miles traveled (VMT) and thereby reduce emissions and reliance on fossil fuels. By adding and improving bicycle and pedestrian facilities and making it easier to commute without the use of cars, the Project is expected to reduce VMTs by approximately XXXX miles daily.

## 6.5 SAFETY

### 6.5.1 SAFE MULTIMODAL CONNECTIONS

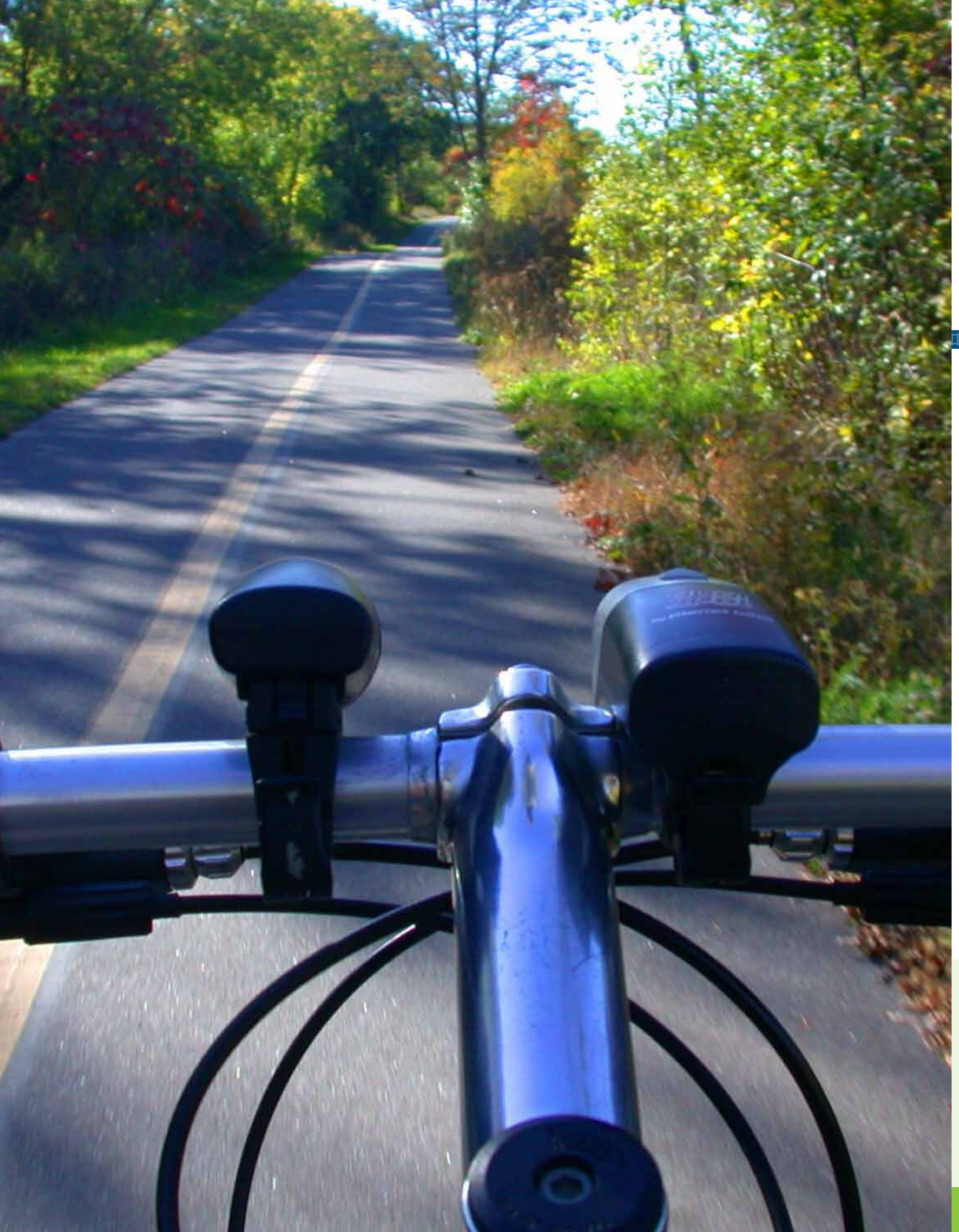
The Duke Belt Line Trail provides an ideal opportunity to provide the areas north and west of Downtown with a safe and direct bicycling and walking network. While many of the streets in the Project area are laid out on a grid, the **rail corridor has long created a barrier in network connectivity by interrupting the street grid and requiring longer bicycle and pedestrian trips to reach destinations on either side of the corridor**. Many of the roads leading into downtown have lengthy gaps in the sidewalk network, evidenced by worn paths in the grass, or "desire lines" showing where pedestrians are walking without a sidewalk. Bicycling along many of these roadway sections is uncomfortable, due to lack of designated bicycle facilities and multiple lanes of motor vehicle traffic. In addition to disruption of the street network, which hinders motorists as well and bicyclists and pedestrians, railroad corridors present barriers that traditionally divide neighborhoods. During the master planning process, the City of Durham will work to identify cross-corridor connections that will provide bicycle and pedestrian access between abutting neighborhoods and from adjacent neighborhoods to the trail. **In its current state, the former railroad corridor is a public safety concern, source of blight, and attractor of unwanted criminal activities**, as a result of having no "eyes on the corridor." **The Duke Belt Line Trail will create safe network connections for bicycling and walking, transforming a former barrier into a community asset.**

Table 6.2 shows the number of pedestrian crashes, injuries and fatalities for key roadway corridors within one-half mile of the Duke Belt Line Trail corridor between 2007 and 2011. According to the table, over 8.2% percent of bicycle crashes and 4.4% percent of pedestrian crashes within the city of Durham occur on roadways within a half-mile of the Project corridor. By improving pedestrian and bicyclist crossings along with a shared-use trail that provide safe connections to transit stops and a number of other community facilities, the Project will reduce the number of pedestrian and cyclist crashes[5].

*5. http://t4america.org/resources/dangerousbydesign/*

| | Pedestrian | | | Cyclist | | |
|---|---|---|---|---|---|---|
| **Geographic Area** | **Crashes** | **Injuries** | **Fatalities** | **Crashes** | **Injuries** | **Fatalities** |
| Within ½ mile of Duke Belt Line Trail | 23 | 18 | 0 | 15 | 12 | 0 |
| City of Durham | 519 | 446 | 12 | 182 | 155 | 0 |
| Percent adjacent to Project Corridor | 4.4% | 4.0% | 0% | 8.2% | 7.7% | 0% |

*Table 6.2: Pedestrian & Cyclist Crashes 2007-2011*



7

# 7. SECONDARY SELECTION CRITERIA

## 7.1 INNOVATION

The Duke Belt Line Trail project demonstrates innovations that can serve as national best practices for organizing, implementing and financing a community-driven, urban mobility, and redevelopment project over a long period of time.

**LONG-RANGE TRANSPORTATION PLANNING** - During the next five to 20 years, the region will see a robust expansion of its transit system, adding a light rail system to the current bus transit network. The Duke Belt Line Trail will access multiple bus routes along its 2.2 mile length, with the termination of the trail interfacing with the Durham Station Transportation Center, which will be served by light rail. Durham has a rare opportunity to build key bicycle and pedestrian network connections in advance of the light rail infrastructure, thereby guaranteeing safe and efficient access will be in place when light rail comes on line. In many cities, bicycle and pedestrian connections are constructed as an afterthought once transit begins operation, and they are often not as direct or safe as they need to be.

**LADDERS OF OPPORTUNITY** - The Duke Belt Line Trail will fulfill the President's goals of creating "ladders of opportunity" to connect people to jobs and economic opportunity. With its multiple connections to transit stops and its terminus at the Durham Station Transportation Center in downtown Durham, the Duke Belt Line Trail will feed several key local and regional transit lines, providing residents access to a wider range of jobs and services throughout the entire Triangle region.

**PUBLIC-PRIVATE PARTNERSHIP** - As documented in Section 7.2, the Duke Belt Line Trail has long been championed by government, businesses, civic groups, neighborhoods, and health community and citizens. The relatively new way of approaching public infrastructure assures projects have a broad range of support as well as diverse funding options, which helps sustain them over the long term as political and economic conditions may change.

**INTEGRATED LAND USE PLANNING** - The master planning process will result in land-use decisions that provide the requisite density, access, and zoning to support the development of a shared-use trail facility.

**INNOVATIVE MULTIMODAL FACILITIES DESIGN** - Recent years have seen more technical advances in trails, bicycle and pedestrian facilities design than ever before. New treatments for pedestrian signals, crossing treatments and signs have greatly increased safety and connectivity, as well as ADA compliance. The National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide* is giving cities tools for importing the most advanced on-street bicycle facilities designs from the most bicycle-friendly cities in Europe. Breakthroughs in trail materials made from recycled materials, as well an energy-efficient lighting are contributing to trail designs that are more sustainable and environmentally sound. The Duke Belt Line Trail will be planned and designed utilizing all these tools to ensure the highest level of transportation mobility, connectivity, and safety while preserving the natural characteristics of greenways.

## 7.2 PARTNERSHIPS

From its grass-roots inception in the 1980's, through the current public-private initiative, the Duke Belt Line Trail was conceived as a collaborative effort to create a new asset for the Downtown area to optimize transportation, recreation, tourism and economic goals. Myriad public, private, non-profit, educational, institutional, and community partners have worked together and voiced support across every component of this comprehensive project to bring the Duke Belt Line Trail vision to reality. In addition to the complete list of supporters below, the following entities are playing key roles in this project:

**THE CITY OF DURHAM** has worked to secure rights to the abandoned Norfolk Southern corridor for nearly 10 years, gaining support from leaders in all sectors of the City as well as Duke University. At the department level, leaders and employees have worked diligently to realize the vision, including from Public Works, Parks and Recreation, Transportation, City Manager, plus the Mayor and Council.

**THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)** has committed to equal ownership of the rail corridor along with the City of Durham after acquisition, stating it will preserve and maintain the corridor for recreational purposes, as well as future light rail transit use.

**DOWNTOWN DURHAM, INC.** has helped the City in its efforts to acquire the rail corridor by corresponding with Norfolk Southern. In addition it has worked to build a network of support among business leaders, developers and civic organizations.

**THE CONSERVATION FUND**, under its N.C. Urban Program, has committed to using its own financial resources to acquire the corridor and work closely with the City of Durham to implement a disposition plan the meets the requirements to transfer the property to public ownership in order to construct a trail.

| Government and Related | Businesses | Non-Profits and Community Organizations |
|---|---|---|
| Durham City Council | American Tobacco Campus | Bike Durham |
| Representative David Price, U.S. Congress | American Underground | Chad Cohoon |
| North Carolina Department of Transportation | Austin Lawrence Partners | Downtown Durham, Inc |
| Durham-Chapel Hill-Carrboro Metropolitan Planning Organization | The Carolina Theatre | Duke-Durham Neighborhood Partnership |
| Triangle Transit | Center Studio Architecture | Duke Park Neighborhood Association |
| Durham Bicycle and Pedestrian Advisory Commission | East West Partners | Duke Park Preservation Initiative |
| Durham Obesity and Chronic Illness Committee, Partnership for a Healthy Durham | Federal Capital Partners | Durham Central Park |
| Durham Open Space and Trails Commission | Fullsteam Brewery | Durham Central Park Cohousing Community |
| Durham School of the Arts | Harrington Bank | Durham Chamber of Commerce |
| PAC5 | InterNeighborhood Council | Durham Convention and Visitors Bureau |
| | Longfellow Real Estate Partners | East Coast Greenway Alliance |
| | Measurement Durham LLC | Ellerbe Creek Watershed Association |
| | Re:Vamp | North Carolina Rail-Trails |
| | Traditional Neighborhood Development Partners, LLC | Old North Durham Neighborhood Association |
| | Zapolski Real Estate Partners, LLC | Preservation Durham |
| | | Triangle Rails to Trails Conservancy |
| | | Trinity Lofts |
| | | Zareen Kapadia |

*Table 7.1: Current Project Supporters*

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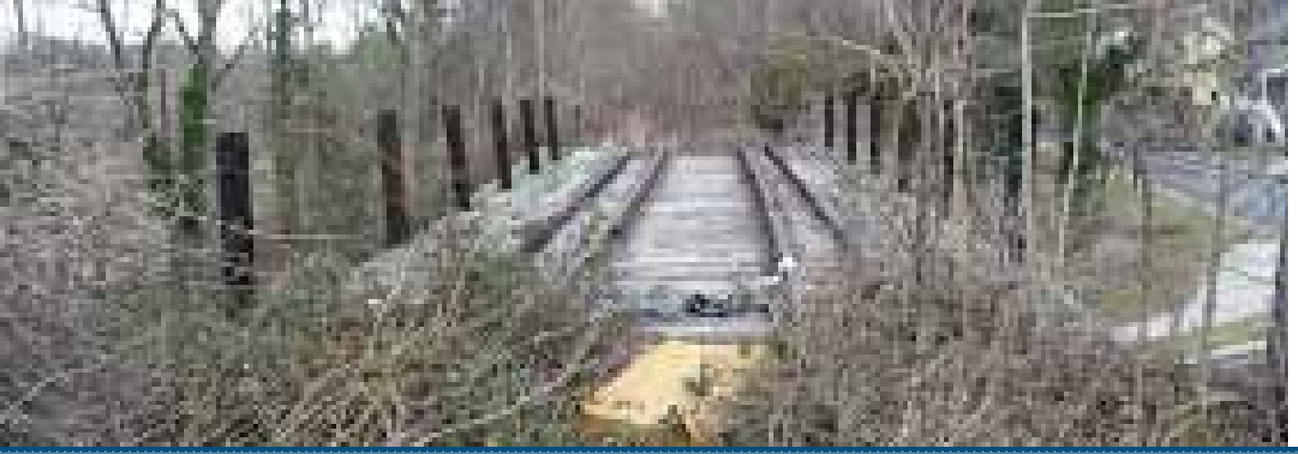
# 8. BENEFIT COST ANALYSIS

The 20-year benefit-cost analysis estimate for the Duke Belt Line Trail reflects an estimated 15.6% internal rate of return (IRR) for the project and a net present value of over $23 million meaning that the estimated benefit to the City of Durham, Durham County, and the Triangle region is more than two and a half times the initial investment.

This estimate is supported by extensive local demographic data and expands greatly on the benefit-cost analysis methodology proposed by NCHRP Report 552: Guidelines for Analysis of Investments in Bicycle Facilities. Capitalizing on research published since the NCHRP Report 552 was released in 2006, this project's benefit-cost analysis considers different impact areas for bicycling and walking activity, and evaluates the impact of utilitarian and school trips in addition to journey to work trips. The calculation also considers local travel patterns, trip distances, and public health data to create a more complete picture of the impacts of mode shift towards bicycling and walking that will result from the TIGER-funded master plan for the Duke Belt Line Trail. While the simpler NCHRP-endorsed methodology includes sizeable recreational benefits that often make up 90% of the calculated value of bicycle projects, the Duke Belt Line Trail benefit-cost analysis has been careful to omit recreational benefits from its calculation, so that the project can be evaluated solely on its merits as a transportation facility in accordance with TIGER 2014 program guidelines.





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# 9. DEMONSTRATED PROJECT READINESS

| Calendar Year | Project Year | Undiscounted Initial Project Costs (1) | 3% Discount Rate | | | | |
|---|---|---|---|---|---|---|---|
| | | | Initial Project Costs (4) | Operations and Maintenance Costs (2) | Benefits (3) | Net Annual Benefits | Cumulative Benefits |
| 2014 | -3 | $0 | $0 | $0 | $0 | $0 | $0 |
| 2015 | -2 | $163,500 | $158,595 | $0 | $0 | -$158,595 | -$158,595 |
| 2016 | -1 | $163,500 | $153,837 | $0 | $0 | -$153,837 | -$312,432 |
| 2017 | 0 | $2,891,667 | $2,639,146 | $0 | $0 | -$2,639,146 | -$2,951,578 |
| 2018 | 1 | $5,783,333 | $5,119,943 | $0 | $0 | -$5,119,943 | -$8,071,522 |
| 2019 | 2 | $0 | $0 | $26,818 | $6,088,207 | $6,061,389 | -$2,010,133 |
| 2020 | 3 | $0 | $0 | $26,014 | $535,523 | $509,509 | -$1,500,623 |
| 2021 | 4 | $0 | $0 | $25,233 | $656,471 | $631,238 | -$869,385 |
| 2022 | 5 | $0 | $0 | $24,476 | $752,505 | $728,029 | -$141,356 |
| 2023 | 6 | $0 | $0 | $23,742 | $828,876 | $805,134 | $663,778 |
| 2024 | 7 | $0 | $0 | $23,030 | $890,902 | $867,872 | $1,531,650 |
| 2025 | 8 | $0 | $0 | $22,339 | $941,845 | $919,506 | $2,451,155 |
| 2026 | 9 | $0 | $0 | $21,669 | $984,036 | $962,367 | $3,413,523 |
| 2027 | 10 | $0 | $0 | $21,019 | $1,019,695 | $998,677 | $4,412,199 |
| 2028 | 11 | $0 | $0 | $20,388 | $1,049,079 | $1,028,691 | $5,440,890 |
| 2029 | 12 | $0 | $0 | $19,776 | $1,073,691 | $1,053,914 | $6,494,804 |
| 2030 | 13 | $0 | $0 | $19,183 | $1,094,297 | $1,075,114 | $7,569,918 |
| 2031 | 14 | $0 | $0 | $18,608 | $1,111,032 | $1,092,424 | $8,662,342 |
| 2032 | 15 | $0 | $0 | $18,049 | $1,125,799 | $1,107,750 | $9,770,092 |
| 2033 | 16 | $0 | $0 | $17,508 | $1,137,577 | $1,120,069 | $10,890,161 |
| 2034 | 17 | $0 | $0 | $16,983 | $1,147,162 | $1,130,179 | $12,020,340 |
| 2035 | 18 | $0 | $0 | $16,473 | $1,154,824 | $1,138,351 | $13,158,691 |
| 2036 | 19 | $0 | $0 | $15,979 | $1,160,789 | $1,144,810 | $14,303,501 |
| 2037 | 20 | $0 | $0 | $15,500 | $1,165,679 | $1,150,179 | $15,453,680 |
| 2038 | 21 | $0 | -$4,333,718 | $15,035 | $1,168,786 | $5,487,470 | $20,941,150 |
| **Total Project Cost:** | | **$9,002,000** | | | | **Net Present Value:** | **$20,941,150** |
| **TIGER VI Ask:** | | | | | | **IRR:** | **18.88%** |

*Table 8.1: Results of the Benefit-Cost Analysis*

## 9.1 TECHNICAL FEASIBILITY

The proposed master plan scope is detailed in Section 2.2 of this application. This scope, which was developed in consultation with city staff, stakeholders, and peer cities is technically feasible and will be completed within the timeframe outlined in the *Notice of Funding Availability for the Department of Transportation's National Infrastructure Investments under the Consolidated Appropriations Act, 2014*. The City of Durham is in good standing with the North Carolina Department of Transportation and expects to enter into an agreement with the department shortly after project award and have all federal funds obligated well before June 30, 2016.

## 9.2 FINANCIAL FEASIBILITY

As discussed in Section 2.2, the proposed Duke Belt Line Trail master plan would be completed using $222,700 in requested TIGER VI discretionary grant funds and $75,000 in local match committed by the City of Durham. This represents a 25.2/74.8 percent local/federal split. The City of Durham will provide the matching funds from the Federal-State Match account. There are more than sufficient funds in this account to cover the local match.

Based on the high level of support for the Belt Line Trail in the community, as discussed in Section 7.2, the City anticipates that a significant amount of the local match will actually be provided from private funding sources; nonetheless, the City is prepared to provide $75,000 in local match to the project.

The City of Durham is fiscally sound, as evidenced by a AAA bond rating from all three bond ratings agencies. The City is experienced with managing federal funds, including federal transportation funding. The City of Durham's Finance Department participates in the Government Finance Officers Association (GFOA) Certificate of Achievement for Excellence in Financial Reporting Program and has been awarded its Certificate of Achievement in Financial Reporting for 29 consecutive years.

| Task | Amount | Percentage |
|---|---|---|
| Public Participation Strategy | $34,000 | 11% |
| Project Vision, Goals, & Objectives | $16,000 | 5% |
| Existing Conditions & Corridor Features | $27,000 | 9% |
| ROW, Utility Covenant & Easement Review | $25,000 | 8% |
| Title VI/Environmental Justice Analysis | $4,000 | 1% |
| Analysis of Existing Bridges | $60,000 | 20% |
| Analysis of Economic & Social Impact | $16,200 | 5% |
| Safety & Security Evaluation | $12,000 | 4% |
| Trail Development Guidelines | $46,000 | 15% |
| Phasing & Funding Strategy | $19,500 | 7% |
| Construction Cost Estimates | $23,000 | 8% |
| Maintenance Cost Estimates | $15,000 | 5% |
| Total | $297,700 | 100% |

*Table 9.1: Detailed Project Budget*




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# 10. FEDERAL WAGE RATE CERTIFICATION

## 9.3. PROJECT SCHEDULE

Once the Notice to Proceed is issued to the selected consultant, the master plan is conservatively estimated to take 12 months from start to finish. Assuming that funding announcements are made before September 30, 2014, the City of Durham expects to have an executed agreement with NCDOT by December 31, 2014 and a consultant under contract by April 30, 2015. Notice to Proceed will be issued immediately and the planning process will occur between May 1, 2015 and May 31, 2016.

## 9.4 RISKS & MITIGATION

As this is a Project-Level Planning project, the risks appear minimal. The only anticipated risk is adhering to the schedule as outlined above. In order to ensure that all project-related agreements, communications, documentation, invoices and other materials are treated in an expedited fashion, the City of Durham will implement a special protocol prioritizing all items related to the TIGER VI project. This protocol, which has been used successfully in other municipalities, will flag all project-related communications with the "TIGER" label. City staff will be given a directive to prioritize all tasks related to the project and ensure that these items receive additional attention.

## 9.5 NEPA

As this is a request for funding to complete the planning phase of a project, the National Environmental Policy Act (NEPA) is not applicable at this time. However, all steps will be taken during the master planning process to anticipate and document any items that may need additional attention when the project moves into the NEPA phase. Based on a preliminary analysis, it is likely that this project will qualify for a Programmatic Categorical Exclusion (PCE), however the master planning process may identify environmental features that necessitate a more substantial level of environmental review. The City of Durham is committed to meeting the requirements of the National Environmental Policy Act.

| | 2014 | | 2015 | | | | 2016 | |
|---|---|---|---|---|---|---|---|---|
| | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 |
| **Funding Announcements** | | | | | | | | |
| **Execute Agreement with NCDOT** | | | | | | | | |
| **Procure Consultant** | | | | | | | | |
| **Issue Notice to Proceed** | | | | | | | | |
| **Develop Master Plan** | | | | | | | | |
| **Adopt Master Plan** | | | | | | | | |

*Table 9.1: Project Schedule*

The City of Durham certifies that it will comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code (Federal wage rate requirements), as required by the FY 2014 Continuing Appropriations Act.