

## 1.0 PURPOSE AND NEED

The Charlotte Area Transit System (CATS), in cooperation with the Federal Transit Administration (FTA), is preparing this Draft Environmental Impact Statement (EIS) to evaluate potential transit improvements in the Northeast Corridor of the Charlotte-Mecklenburg region. This chapter focuses on the purpose of the LYNX Blue Line Extension Northeast Corridor Light Rail Project (LYNX BLE) and the need for transportation improvements in the Northeast Corridor. In addition, this chapter explains the goals and objectives of the corridor improvements.

### 1.1 Introduction

#### 1.1.1 Project Description

The Northeast Corridor is located within the City of Charlotte and Mecklenburg County, North Carolina, as shown in Figure 1-1. The proposed LYNX BLE would be an extension of the LYNX Blue Line (formerly called the South Corridor Light Rail Project) light rail service that opened in November 2007. The proposed project would extend approximately 10.7 miles and provide 13 transit stations, including six walk-up stations and seven stations with park-and-ride facilities, as well as a feeder bus system to support the light rail system. The alignment would travel within existing railroad rights-of-way from Center City Charlotte to the middle of the alignment, near Old Concord Road, where it would then transition to the median of North Tryon Street/US-29. The line would remain in the median until approximately 1,000 feet north of the existing entrance to the University of North Carolina at Charlotte's (UNC Charlotte) Charlotte Research Institute, where it would turn southeast and enter the campus. The line would then return to North Tryon Street/US-29 to a terminus just south of Interstate 485 (I-485). The proposed project would include bus services to connect the light rail service with the CATS regional bus system. Figure 1-2 shows the proposed Light Rail Alternative alignment, station locations and design option under study.

#### 1.1.2 Project Purpose

The purpose of the proposed LYNX BLE is to ensure future mobility by providing a transportation alternative in a highly congested travel corridor and to support the region's land use policies and goals for a sustainable growth and development pattern. The proposed project would provide high-capacity, fixed guideway transit service in the corridor. This new service would offer a convenient, time-competitive travel alternative and reduce dependence on single-occupant automobiles. As an extension of the LYNX Blue Line, the proposed project would enhance the operating effectiveness of CATS' light rail service and leverage the public investment already made in the South Corridor.

The proposed project would also support the *Centers, Corridors and Wedges Growth Framework*, Draft 2010, for the Charlotte-Mecklenburg region, as shown in Figure 1-3. As envisioned in the region's combined transit and land use plans, future development would be focused into areas that can support new development or are in need of redevelopment and away from areas that cannot support new growth. The highest density development would be encouraged around light rail stations. By focusing future growth in corridors with multiple travel alternatives, the region would be able to grow in a manner that promotes continued access and mobility and that enhances the quality of life for residents and employees.

#### 1.1.3 Project Need

The City of Charlotte, North Carolina is at the heart of the rapidly growing Charlotte-Mecklenburg region, which boasts one of the most robust economies in the United States. Charlotte serves as the commercial capital of the Carolinas and has become one of the nation's largest banking centers. With its reputation as an excellent place to live and do business, the region is thriving, and the last several decades have seen record increases in population and employment, both in Center City Charlotte and in outlying activity centers.

A large amount of growth is anticipated for the Charlotte-Mecklenburg region in the next 25 years. Much of the past growth has occurred in a dispersed pattern of jobs and residences with limited connectivity between uses. If future growth follows past development trends, area residents will continue to be

dependent on the automobile for their travel needs, and peak period congestion will worsen. This congestion presents a significant threat to mobility, air quality, public safety, economic vitality and the overall quality of life in the Charlotte-Mecklenburg region.

Several major roadways and intersections in the Northeast Corridor currently experience peak hour volumes that exceed capacity, including North Tryon Street/US-29, W.T. Harris Boulevard, Sugar Creek Road, Mallard Creek Church Road and University City Blvd./NC-49. Despite widening projects and intersection improvements that are planned or programmed for most of these roadways, peak period congestion is projected to increase to significant levels by 2030.

The Northeast Corridor is a heavily traveled transit route, as it provides a vital connection between Center City Charlotte and the University City area. The route along North Tryon Street/US-29 also provides an alternative to travel on Interstate 85 (I-85) between these two activity centers. As of January 2009, there were 14 bus routes operating in the Northeast Corridor, including local bus routes, UNC Charlotte shuttle routes, neighborhood circulator routes and express bus routes. However, existing transit services must operate in mixed traffic on congested roads. This congestion often causes delays to transit service and results in longer transit travel times that cannot provide a time-competitive alternative to auto use. As such, these conditions limit the probability that people with a choice would use transit rather than driving alone.

Recognizing the consequences of uncontrolled growth to the region's attractiveness as a place to live and do business, decision-makers initiated efforts to coordinate land use and transportation planning, and encourage growth in a way that will enhance regional mobility. The City of Charlotte and Mecklenburg County adopted the *Centers and Corridors Concept Plan* and updated *Centers, Corridors and Wedges Growth Framework*, Draft 2010, to build on the region's existing framework of centers and corridors, focusing future development in these areas and preserving lower density development and open space between corridors.

## 1.2 Corridor Description

The Northeast Corridor extends approximately 14 miles from Center City Charlotte to the Concord Mills Mall area near the Mecklenburg-Cabarrus County line. The corridor runs in a northeasterly direction from Center City Charlotte, generally following I-85, and encompasses the major arterials that parallel I-85, including North Tryon Street/US-29 and University City Blvd./NC-49. The Northeast Corridor begins in Center City Charlotte, the City's central business district, and the region's largest employment concentration. The Northeast Corridor also includes University City, one of the largest suburban edge cities in the region. University City is a major regional employment center that includes the Wells Fargo and IBM complexes at University Research Park, the Teachers Insurance and Annuity Association-College Retirement Equities Fund financial services complex, and Carolinas Medical Center–University. University City also is the location of the main campus of UNC Charlotte. The Northeast Corridor Major Activity Centers are shown in Figure 1-4.

### 1.2.1 Population and Employment

The Charlotte-Mecklenburg area represents the largest concentration of population and employment in North Carolina. Since 1980, the region has experienced significant growth, resulting in a doubling of population between 1980 and 2000. According to U.S. Census Bureau data, between 1990 and 2000 Mecklenburg County's population increased from 511,400 residents to 695,000 residents (a 36 percent increase). This trend of adding nearly 200,000 persons per decade is projected to continue through 2030.

The latest estimates by the U.S. Census Bureau indicate that the County population has been increasing significantly within this decade. The population was approximately 895,567 in 2008, representing a 75 percent increase from the 1990 population of 511,400. Projected corridor population trends are summarized in Table 1-1. As seen in Table 1-1, the Northeast Corridor in 2008 was home to about 89,300 persons, which is approximately 10 percent of the County's population. By 2030, population in the corridor is projected to increase by 41 percent. Center City Charlotte is projected to have an increase in population of approximately 20,108 persons or about 208 percent between 2008 and 2030. With the

population increase, population densities within Mecklenburg County are expected to increase within the 20-year horizon period for this Draft EIS.

**Table 1-1  
Population and Employment, 2008 and 2030**

Category	Population			Employment		
	2008	2030	Percent Change	2008	2030	Percent Change
<b>Mecklenburg County</b>	895,567	1,271,039	42%	647,180	985,769	52%
Persons/Sq. Mile	1,640	2,328		1,185	6,805	
<b>Northeast Corridor (excluding Center City Charlotte)</b>	89,360	126,373	41%	79,736	127,317	60%
Persons/Sq. Mile	2,198	3,108		1,961	3,131	
<b>Center City Charlotte</b>	9,687	29,795	208%	68,630	111,069	62%

Source: Charlotte-Mecklenburg Planning Department Land Use Projections (LUSAM Model), 2009.

The Northeast Corridor is comprised of a large number of residents that are transit-dependent, so access to travel is also a major concern for area households. Ten percent of the housing units in the corridor have no vehicles available to travel to and from work or for any other purpose. Forty-one percent of the population belongs to a minority defined population group and the median-income for most of the area census tracts is below the level defined as low-income (See Chapter 6.0: Neighborhoods, Community Services and Environmental Justice).

Substantial employment growth has also occurred in the County and Northeast Corridor, with additional growth projected to continue through 2030. According to the Employment Commission of North Carolina, employment within Mecklenburg County grew by approximately 57 percent between 1990 and 2008. As seen in Table 1-1, employment growth in the Northeast Corridor (60 percent) is projected to be slightly higher than projected for the County (52 percent) in 2030.

**1.2.2 Existing Land Use**

The Northeast Corridor has a diverse mix of existing land uses that are anchored between two of the most popular regional travel destinations and activity centers: Center City Charlotte and the University City area. Center City Charlotte is characterized by the City's highest density office and commercial developments, as well as numerous entertainment venues, shops, restaurants, hotels and government facilities. Center City Charlotte has approximately 68,630 employees, 14.4 million square feet of office space (Charlotte Center City Partners, 2008), 2.7 million square feet of office space in construction (Charlotte Center City Partners, 2008), and another 1.1 million square feet of office space proposed. This total square footage of office space represents approximately 34 percent of the total office space in Mecklenburg County, a share that is among the highest of mid-sized cities in the nation (Charlotte Center City Partners, 2008). Major employers include Bank of America, Wells Fargo, Bell South, Duke Energy, Hearst Corporation and City and County governments.

Development within Center City Charlotte has occurred at a rapid pace in the last five years. Numerous development projects are currently proposed or are under construction. With these projects, an additional 1.1 million square feet of office space, representing six billion dollars in construction costs, will be added to the core of Center City Charlotte within the next decade (Charlotte Center City Partners, 2008).

In addition, Center City Charlotte has experienced dramatic growth in housing in the last five years. With more than 4,500 housing units added since 1997 (Charlotte Center City Partners, 2007), Center City Charlotte now has over 6,000 housing units (Charlotte Center City Partners, 2009) and 9,687 residents. Center City Charlotte also has over 1.67 million square feet of retail space and numerous entertainment destinations, including an NFL football stadium, an NBA arena, 48 cultural facilities and the NASCAR Hall of Fame (Charlotte Center City Partners, 2009). Charlotte has a robust tourism industry. Center City Charlotte has approximately 4,214 hotel rooms in 15 hotels, and the Charlotte Convention Center attracts

about 500,000 people annually to its conventions, trade shows, and other events (Charlotte Center City Partners, 2009).

Center City Charlotte is also home to major institutional uses, including City and County government, federal and state offices, a Federal Reserve Bank branch, the Central Post Office, Main Library, and the Mecklenburg County Courthouse. A number of secondary schools, Johnson and Wales University (3,000 students), and the UNC Charlotte Uptown campus are also located in Center City Charlotte. In addition, Center City Charlotte is home to a number of visitor attractions and entertainment venues including the Time Warner Cable Arena, the Levine Museum of the New South and the ImaginOn Children's Learning Center. There are over 2 million annual visits to Center City Charlotte sports venues (Charlotte Center City Partners, 2009). Center City Charlotte also hosts special events throughout the year.

To the north of Center City Charlotte, the character shifts from the rapidly growing Center City to light industrial uses, warehouses, and established urban neighborhoods where Charlotte's historic textile mills and self-contained villages just outside the City were once located. This area, known as North Charlotte neighborhood, is a National Register Historic District (North Charlotte Historic District) and has been undergoing major redevelopment efforts since the early 1980s. This redevelopment has retained the small village character for which the area was originally known and has included the adaptive re-use of the area's historic mills.

In particular, the NoDa Arts District near the intersection of North Davidson and 36th streets has seen new investments in shops, restaurants, small arts and crafts businesses, art galleries and multi-family residences. Given its historic development patterns that pre-date the expansive use of the automobile, NoDa offers nearby residents a pedestrian-oriented atmosphere where shops and entertainment venues are easily accessible by neighborhood residents. The NoDa area is also bordered by the planned Little Sugar Creek Greenway, which will provide a bicycle and pedestrian connection from North Davidson into Center City Charlotte and to the north.

North of the NoDa area, the corridor shifts to the City's first ring of suburbs that date to the mid-1940s. The area is characterized by commercial development along the main arterials with established residential neighborhoods behind the commercial areas, including the Hidden Valley neighborhood. Many of these neighborhoods are low-income transit-dependent populations. Some businesses along North Tryon Street/US-29, which is the main strip commercial artery in this portion of the corridor, have closed and some of the larger shopping centers have lost their major commercial anchor tenants.

North of the convergence of North Tryon Street/US-29 and University City Blvd./NC-49 (locally called "the weave"), land use in the corridor shifts from older development to newer and emerging suburban development on undeveloped (greenfield) land. Improvements to the roadway network in this area have led to the new construction of two major retail sites including an IKEA that opened in February of 2009 (as part of the planned Belgate development) and a Wal-Mart.

To encourage and support the growth and development of University City, a Municipal Service District (MSD) was created in 2003 and shortly thereafter, University City Partners was formed to guide policies and plan development within the MSD. University City Partners, along with the City of Charlotte, completed the *University City Area Plan* in 2007 for the MSD. The MSD is generally bound by North Tryon Street/US-29, I-85, University City Blvd./NC-49 and Mallard Creek Church Road. University City is estimated to contain over 150,000 residents and provides approximate 74,000 jobs (University City Partners, 2009). The central goal of the *University City Area Plan* is to promote the Northeast Corridor and encourage development that would support and benefit from the development of light rail in the Northeast Area, of which the University City area serves as the core. This plan calls for improvements to existing land use patterns and connectivity; identifies opportunities for transit-oriented development; and introduces a boulevard concept for North Tryon Street/US-29. The central goal of the plan is to design and promote the corridor as a premier public space and gateway into the University City area.

The University City area includes the University Research Park, which is home to over 198 companies that employ over 20,000 workers (University City Partners, 2008). University City is also the location of the main campus of UNC Charlotte. UNC Charlotte comprises a 1,000-acre campus, with over 2,200

faculty and staff and over 23,300 students (UNC Charlotte, 2009). UNC Charlotte projects enrollment to be 35,000 by 2030. The area also has a large presence of higher-density, multi-family housing due to the presence of the UNC Charlotte. The University City area “town center” includes major retailers, hotels, and restaurants, including a 500,000 square foot regional retail center, University Place, which is located adjacent to UNC Charlotte.

Land uses on the UNC Charlotte campus include research facilities, administration buildings, classrooms and laboratories, student housing and recreational facilities. Development on the campus has, in the past, been limited by the topography of the campus that is subject to rock-outcrops and steep slopes. The heart of the campus is located between North Tryon Street/US-29 and University City Blvd./NC-49. The University has constructed several new buildings in the last few years, including the Charlotte Research Institute, with a new entrance on North Tryon Street/US-29. The latest *UNC Charlotte Facilities Master Plan* (2000) identifies the need to add 3.1 million square feet of academic building space and 2,400 beds on campus over the next 20 years. The University is currently in the process of updating the master plan.

Beyond University City, the corridor includes large areas of vacant and under-utilized properties with pockets of low-density development, including single and multi-family residential areas. With the completion of I-485 to I-85, the northeast end of the corridor is quickly developing in ways similar to the University City area. Just past the corridor are Verizon Wireless Amphitheatre, Concord Mills Mall (North Carolina’s largest tourist attraction) and Lowe’s Motor Speedway, which holds over 380 events a year.

### 1.2.3 Travel Patterns and Markets

Travel patterns in the Northeast Corridor are strongly influenced by the presence of Center City Charlotte at the southern end of the corridor and University City at the northern end of the corridor. Both Center City Charlotte and University City are major employment centers for the region and attract trips from within the corridor as well as adjacent areas, such as Concord/Kannapolis (in Cabarrus County), the Southeast Corridor, the South Corridor, the wedge between the Northeast and Southeast corridors called the East Wedge, and the North/Northeast Wedge. The Northeast Corridor also contains major activity centers that attract trips that are not work-related, including UNC Charlotte, Carolinas Medical Center–University, and regional shopping destinations in University City, as well as just north of the Mecklenburg-Cabarrus County line at Concord Mills Mall.

The Northeast Corridor is a major generator of trips from throughout the region, as well as a significant number of intra-corridor trips. The Northeast Corridor is a major employment, shopping and educational destination from all across the region. Based on adopted land use policies, the travel markets between corridors will strengthen. Connections between the center city campus and the main campus of UNC Charlotte will be important. In addition, special events and tourism are another travel market in the corridor. The proposed LYNX BLE project would serve the following travel markets:

- Inbound and reverse commute work trips (Center City Charlotte had 68,630 employees in 2008 and that number is expected to grow to 111,069 by 2030);
- Trips to the UNC Charlotte main campus;
- Trips between the UNC Charlotte main campus and its new downtown campus;
- Trips to University City, including University Place, Carolinas Medical Center–University;
- Trips to the “NoDa” area;
- Trips from the Hidden Valley neighborhood, an existing high transit use and transit-dependent area;
- Trips to the Center City Charlotte entertainment district (theaters, museums, NASCAR Hall of Fame and Convention Center);
- Trips to major sporting venues and other special events (Bank of America Stadium - NFL games; Time Warner Cable Arena - NBA games, hockey games, concerts; and the planned AAA baseball stadium); and
- Trips to and from other transit corridors.

The following section describes the major travel patterns within the Northeast Corridor:

### All Trips

The Northeast Corridor is projected to experience increased travel demand for both peak period and daily trips from 2009 to 2030 for trips occurring within the Northeast Corridor and those occurring between the Northeast Corridor and other parts of town. Between 2009 and 2030, the total number of trips that either begin or end in the Northeast Corridor is expected to increase 46 percent from 646,734 trips in 2009 to 944,098 trips in 2030. Similar to 2009, the percent of trips by purpose in 2030 is expected to be 17 percent work trips, 41 percent other home-based trips, 40 percent non-home based trips, and two percent university trips.

### Home-based Work Trips

Home based-work trips are typically the largest transit market, since trips to major employment centers are usually well served by transit services, are made on a predictable schedule, and have the potential for attracting non-transit dependent travelers.

Daily home-based work trips to and from the Northeast Corridor are expected to increase 39 percent from 47,642 in 2009 to 66,116 trips in 2030. In 2030, 39 percent of these work trips stay within the Northeast Corridor, while 20 percent of work trips are between the Northeast Corridor and Center City Charlotte.

Home-based work trips to Center City Charlotte are particularly transit-competitive. In 2030, about 6.5 percent of all regional home-based work trips to Center City Charlotte will originate in the Northeast Corridor and would be the strongest market for rapid transit service.

### Trips within the Northeast Corridor

Twenty-three percent of all Northeast Corridor trips stay within the Northeast Corridor in 2009 and 25 percent in 2030. Within the Northeast Corridor, most trips are associated with either travel to Center City Charlotte or to the University City area, University Research Park, and the UNC Charlotte campus. The highest number of trips to Center City Charlotte occurs in the southern portions of the alignment closest to Center City Charlotte. Likewise, the trips associated with the outermost portion of the corridor, north of W.T. Harris Boulevard, also occur in the outermost portion of the corridor near the University area.

Given the presence of UNC Charlotte and other employment centers in University City, reverse commuting from inner portions of the corridor to the outer portions is a strong market. In addition to work trips to Center City Charlotte, work trips within the Northeast corridor are a strong market. The University Research Park and the UNC Charlotte / University City areas represent about 12 percent of the work trips projected to stay within the Northeast Corridor in 2030.

### Special Events

Another significant travel market for the Northeast Corridor are trips associated with activities that do not occur on a regular basis, such as travel to special events and travel by visitors to the area. Charlotte has a large number of major sporting and special events venues in Center City Charlotte, including, but not limited to: Bank of America Stadium, Time Warner Cable Arena, Discovery Place, Blumenthal Performing Arts Center and various museums. The outer part of the corridor contains several special generators including UNC Charlotte, Charlotte Motor Speedway, Verizon Wireless Amphitheatre and Concord Mills Mall. The existing LYNX Blue Line light rail service has a high volume of special event riders.

## **1.2.4 Transportation Facilities and Service**

The transportation system in the Northeast Corridor consists of the street and highway network; transit services and facilities; freight and passenger railroads; and bicycle and pedestrian facilities. A brief overview of the various components of the transportation network is provided in the following sections. A more detailed discussion of the corridor's transportation facilities is included in Chapter 3.0: Transportation and representative figures.

### **1.2.4.1 Highway Facilities**

The roadway network in the Northeast Corridor ranges from Center City Charlotte's urban street grid to facilities that provide suburban and neighborhood access in the central and northern portions of the corridor. The major roadways in the study corridor form part of the region's dominant radial pattern,

extending northeast from Center City Charlotte to the Mecklenburg-Cabarrus County line. Overall, the network is discontinuous, particularly in the outer suburban portion, as few routes provide access across the corridor or into and out of the corridor.

The Northeast Corridor is centered along two major roadways. I-85 is a 6- to 8-lane limited-access freeway that is the primary carrier of traffic in the project corridor. The recent expansion of the facility to eight lanes at the outer end of the corridor has helped to alleviate heavily congested conditions in this area during peak commuting times. However, the interstate itself remains congested from W.T. Harris Boulevard northward in the evening peak hours due to reduced interstate lanes in Cabarrus County.

North Tryon Street/US-29 is primarily a 4-lane divided arterial where light rail is planned to run within the median and contains numerous traffic signals and turn lanes that provide connectivity to adjacent street networks. North Tryon Street/US-29 is also a heavily-traveled arterial route in the corridor. The facility provides access to most of the major activity centers in the corridor and congestion levels can be high in the northern end of the corridor during peak periods.

Other major radial routes in the Northeast Corridor include Graham Street, Mallard Creek Church Road, and University City Blvd./NC-49. These roadways provide access to activity centers at the edges of the corridor. The Northeast Corridor has limited east-west connections across the corridor, especially in the inner and mid-portions of the corridor. Major cross-corridor routes include Sugar Creek Road, W.T. Harris Boulevard, Mallard Creek Church Road and I-485. Detailed descriptions of these routes are included in Chapter 3.0: Transportation.

#### **1.2.4.2 Transit Services and Facilities**

Public transit facilities and services in the Charlotte-Mecklenburg area are provided by CATS. Currently, CATS operates a variety of services, including fixed-route local, express, demand response and circulator bus services; paratransit services for eligible individuals with disabilities; and vanpool services. In November 2007, CATS began operation of its first light rail service, the LYNX Blue Line, in the South Corridor. This line connects Center City Charlotte to activity centers and communities to the south. The line extends 9.6 miles with 15 stations. The light rail service operates with 10-minute peak and 15-minute off-peak headways.

CATS operates a fleet of 403 buses and 20 light rail vehicles. Service is provided for a total of 54 bus routes and one light rail corridor within Mecklenburg County. In addition, 13 express routes serve Mecklenburg County and the surrounding counties. Regular bus stops as well as 45 park-and-ride lots are located throughout the region. The CATS system also includes the Charlotte Transportation Center (CTC), a major bus transfer facility located in Center City Charlotte, as well as three community transit centers.

As of January 2009, 16 bus routes operate within the Northeast Corridor study area, with eight local bus routes, three University of North Carolina at Charlotte (UNC Charlotte) shuttles, two neighborhood circulator routes and three express routes. These routes primarily provide connections between activity centers in the outer suburbs, inner urban neighborhoods and Center City Charlotte. One route provides cross-town service to the southern portion of the region. In the University City area, two park-and-ride lots provide access to the bus system and three shuttle buses circulate in the vicinity. An additional park-and-ride lot is located at Charlotte Motor Speedway, just beyond the Mecklenburg-Cabarrus County line.

#### **1.2.4.3 Railroad Facilities**

Four existing rail lines traverse the Northeast Corridor. The North Carolina Railroad (NCRR) is the primary railroad in the corridor, extending the full length of the corridor and forming the eastern boundary of the corridor at its northern end. The Norfolk Southern (NS) "O" Line and the CSX Corporation line pass through the southern end of the corridor. The Aberdeen Carolina and Western Railroad (AC&W) diverges east from the NCRR in the vicinity of 36th Street in NoDa. All four lines support freight operations. The NCRR also supports passenger service. Railroad facilities in the corridor are discussed in more detail in Chapter 3.0: Transportation.

#### 1.2.4.4 Bicycle and Pedestrian Facilities

The Charlotte Department of Transportation (CDOT), the Charlotte-Mecklenburg Planning Department, Mecklenburg County Park and Recreation Department and the Center City and the University City MSDs have committed to providing a more walkable living environment through the development and implementation of various smart growth principles, street design guidelines, and transit-oriented design principles. Many programmed roadway improvement projects include bicycle facilities such as bike lanes and widened outside lanes. Additional detail about programmed bicycle improvements and planned bicycle and pedestrian connections is included in Chapter 3.0: Transportation and shown in Figure 3-4.

### 1.3 Travel Demand and Transportation Deficiencies

The section summarizes the problems of the corridor and need for transportation improvements. Chapter 3.0: Transportation provides more detailed information on travel demand, roadway capacity and transit performance.

#### 1.3.1 Increasing Travel Demand

The Northeast Corridor, which has few arterials and minimal cross-town connections, has several major roadways and intersections currently experiencing peak hour volumes that exceed capacity. Approximately 23 percent of the total miles on roadways within the Northeast Corridor operate at or above capacity (Level of Service E and F), including portions of several key roadways such as I-85, North Tryon Street/US-29, W.T. Harris Boulevard and University City Blvd./NC-49. Other major area routes, including Sugar Creek Road and Mallard Creek Church Road, are moderately congested. In general, traffic volumes and levels of congestion are worse at the outer ends of the corridor, where levels of activity are higher and fewer route options are available. Although widening projects are planned for these roadways in the future, peak period congestion is still expected to remain at severe to gridlock conditions.

Much of the growth in the Charlotte-Mecklenburg region in the 1980's and 1990's occurred quickly in a dispersed pattern of jobs and residences with limited connectivity between uses. These land use patterns have resulted in people driving more and making longer trips, leading to traffic volumes that exceed roadway capacity and result in unacceptable levels of service (LOS) in many locations throughout the region.

According to the Texas Transportation Institute's Annual *Urban Mobility Report* (2007), between 1982 and 2005, the amount of travel and travel delay in the Charlotte region has grown at a much faster rate than that in comparable urban areas. The amount of daily travel (as measured by vehicle miles traveled (VMT) for freeways and arterial streets combined) over the last 23 years has increased at a rate (325 percent) more than double the population growth rate (145 percent). Growth in freeway travel, in particular, has increased dramatically (679 percent). Currently, the amount of travel delay experienced in Charlotte is one of the highest amounts experienced in medium-sized urban areas.

Charlotte continues to be ranked as one of the most livable cities and projections show that these high growth rates will continue, further burdening the regional transportation system. The regional model indicates that the region is expected to experience a projected 57 percent increase in regional person trips, a 59 percent increase in daily VMT, and a 70 percent increase in daily Vehicle Hours Traveled (VHT) from 2008 to 2030.

Continued population and employment growth are expected to increase travel demand, resulting in deteriorating conditions on area roadways, despite planned roadway widening and intersection improvements. Traffic volumes are expected to increase on nearly all area roadways, especially along Mallard Creek Church Road and at the outer end of North Tryon Street/US-29, where volumes are expected to roughly double by 2030.

#### 1.3.2 Roadway Network Deficiencies

The LOS for North Tryon Street/US-29, W.T. Harris Boulevard and University City Blvd./NC-49 are expected to remain at or above capacity. Conditions on Sugar Creek Road and Mallard Creek Church

Roads are projected to deteriorate to these levels as well. Chapter 3.0: Transportation includes tables that illustrate the LOS conditions for corridor roadways in 2030. By 2030, two-thirds of all corridor routes (66 percent) are projected to be operating at unacceptable levels.

The City of Charlotte identified the most congested intersections in Charlotte as part of their *Transportation Action Plan* in 2005. A total of 65 intersections with “high congestion” were identified in Charlotte with ten of those intersections located within the Northeast Corridor. These include 3rd ranked W.T. Harris Boulevard/Tryon Street (US-29 North) and 8th ranked I-85 Service Road/Sugar Creek Road.

High traffic volumes not only result in increased delay but higher accident occurrences as well. CDOT ranked 203 of the Highest Accident Intersections from across the city. Forty-six of these intersections are located within the Northeast Corridor. Most of these locations occur within Center City Charlotte, along North Tryon Street/US-29 and along W.T. Harris Boulevard.

### 1.3.3 Transit System Demand and Conditions

CATS fixed route services provided transit service to over 22 million passengers in fiscal year (FY) 2008 (actual 22,615,456) and over 25 million passengers in FY 2009 (actual 25,443,337), a ridership increase of 12.5 percent. The average monthly ridership during FY 2008 was 1,646,723 and during FY 2009 was 1,700,397, an average annual transit ridership increase of 3.3 percent. The success of the LYNX Blue Line light rail (estimated November 26, 2007) contributed to this ridership increase. Between November 26, 2007 and June 30, 2008 the LYNX Blue Line carried 2,851,717 passengers, and during FY 2009 the line carried over 5 million passengers (actual 5,024,055).

At a time when CATS’ system ridership increased with light rail, the Northeast Corridor experienced growth and maintained its share of the total CATS system ridership. In FY 2008, routes in the Northeast Corridor served 4,322,388 passengers, which increased to 4,506,263 passengers in FY 2009. Average monthly ridership also increased, as Northeast Corridor routes carried an average of 360,199 passengers a month in FY 2008 and 375,522 passengers a month in FY 2009. Approximately 25 percent of system-wide average monthly ridership is from routes that provide service in the Northeast Corridor.

The Northeast Corridor additionally maintained its market-share of CATS’ system ridership. In FY 2008, routes in the Northeast Corridor comprised roughly 19 percent (actual 19.11 percent) of the total CATS system fixed route ridership; and the corridor maintained this share in FY 2009, with approximately 18 percent (actual 17.71 percent) of the total 25 million CATS’ fixed route passengers system-wide. When isolated for fixed bus services alone (i.e. excluding fixed route rail ridership), the Northeast Corridor actually experienced a slight increase in the ridership market-share between FY 2008 and FY 2009, with 21.87 percent of the CATS system bus ridership in FY 2008 and 22.08 percent in FY 2009 coming from bus routes in the Northeast Corridor.

Transit ridership in the corridor is relatively strong, with several local, express, and neighborhood routes attracting large numbers of average monthly riders. Presently, the most direct service through the corridor is provided by Routes 11 (North Tryon) and 80x (Concord Express). Route 11 is ranked in the top ten of CATS system-wide route ridership. In addition, Route 23 (Shamrock Drive) is also ranked in the top 10. The 2009 average monthly ridership for Routes 11 and 23 are 119,000 and 50,500, respectively. Other successful corridor routes include Route 3, a local route serving The Plaza Road, and Route 39, that provides service between UNC Charlotte and Center City Charlotte.

Despite the positive ridership performance of routes in the Northeast Corridor, the transit services in the Northeast Corridor currently operate in mixed-traffic on congested roadways. Therefore, the ability for CATS’ bus operators to complete their routes as scheduled, as well as the reliability of the service for the customer, is subject to local street conditions. During FY 2009, Route 11 ranked 64th of 79 fixed bus routes for on-time performance, with 14.65 percent late trips; performing below the system average for schedule adherence of 10.43 percent late trips.

Table 1-2 identifies the estimated travel times through the corridor for automobiles and buses for the a.m. peak hour. Travel times via bus is more than by automobile, particularly for the trips that are Center City Charlotte to/from UNC Charlotte and Center City Charlotte to/from University Research Park, which are

approximately 20 minutes longer than by automobile. These times are also based on the best available route run time and do not account for delays related to congestion or incidents on the roadways.

**Table 1-2  
Corridor Travel Times (minutes), AM Peak, 2009**

Trip	Inbound	Outbound
<b>Center City Charlotte to/from Cabarrus County</b>		
Automobile <sup>1</sup>	32.8	18.6
Transit In-Vehicle	90.4	76.7
<b>Center City Charlotte to/from UNC Charlotte</b>		
Automobile	32.3	22.1
Transit In-Vehicle	51.8	49.1
<b>Center City Charlotte to/from University Research Park</b>		
Automobile	27.1	17.9
Transit In-Vehicle	47.9	23.1

Note: <sup>1</sup> = Auto time to Cabarrus County, travel times only in-vehicle times and do not include wait time, walk time, transfer time, etc.

Source: 2007 and 2030 Metrolina TC5 Calib6 MHYBRID Model Run from 12/2008

An important goal of the *2030 Transit Corridor System Plan* is to provide system linkages that maximize the efficiency of the overall transit system. Over 30 percent of work trips from the Northeast Corridor occur between the transit corridors. The *2025 Integrated Transit/Land Use Plan* calls for concentrating future growth in these corridors. Developing improvements that provide through-service and connections to other corridors is critical to supporting the land use vision.

### 1.3.4 Land Use and Transportation Integration

Recognizing the environmental and economic consequences of uncontrolled growth, decision-makers in the Charlotte-Mecklenburg region adopted a coordinated growth strategy that combines land use and transportation planning efforts. Joint planning of development activities and transportation improvements is intended to provide future travel choices; improve access and connectivity; reduce auto dependence; and promote regional mobility over time.

The adopted *Centers and Corridors Concept Plan* (1994) presented a vision of how the region should grow over the long-term. The plan concept builds on the region’s existing infrastructure framework, focusing growth along five major transportation corridors and supporting this development with a regional rapid transit system in these five corridors, including the Northeast Corridor. To advance the *Centers and Corridors Concept Plan* vision, the *2025 Integrated Transit/Land Use Plan* (1998) and the subsequent *2030 Transit Corridor System Plan* (Figure 1-5) were developed. The *Centers and Corridors Concept Plan* has been updated and is now called the *Centers, Corridors and Wedges Growth Framework*, Draft 2010. These plans define a regional rapid transit system with specific mode and alignment combinations for each of the five transportation corridors. The primary purpose of the transit system is to support the region’s preferred land use strategy; therefore, the alternatives proposed for each corridor are those that were determined to best encourage future transit-oriented development in the corridor.

The Charlotte-Mecklenburg General Development Policies (GDP) are planning principles that provide direction on development and redevelopment within the City of Charlotte and Mecklenburg County. The GDP also revises previous policies that allow the dispersal of multi-family development and redirects much of the denser development to major activity centers and transit corridors. The GDP also outlines Transit Station Area Principles to encourage transit-supportive development along the transit corridors by focusing on creating high-density, mixed-use development within ½-mile of transit stations. This type of development is intended to create livable communities where people can travel without the use of a car and focuses on land use, mobility and community design to achieve this goal.

Transit-oriented development is occurring in the Charlotte-Mecklenburg region. This development is resulting in a mix of more intense land uses, specifically in station areas for the LYNX Blue Line. Existing development near transit stations illustrates how the local land use policies are successfully redirecting

development into the region’s travel and transit corridors. A blend of residential, office, service-oriented and civic uses encourage walking, biking and transit use. Key features of future station area developments include a variety of housing options, pedestrian-friendly streetscape elements (such as street trees and lighting) and limited surface parking.

The Northeast Corridor is one of the five corridors identified in the *Centers, Corridors and Wedges Growth Framework*, Draft 2010. Future rapid transit development in this corridor is an integral part of the region’s coordinated growth strategy and is needed to support the desired concentrations of development in the corridor and meet the regional integrated transportation and land use strategy.

**1.3.5 Quality of Life**

In addition to its negative effects on mobility, continued reliance on single-occupant vehicles presents a significant threat to air quality. The region is currently designated as a non-attainment area for ozone levels. Reduced auto dependence is necessary to help decrease pollutant emissions and maintain or reduce ozone levels. Auto dependence also impacts public safety, economic vitality and the overall quality of life in the Charlotte-Mecklenburg region. Additional transportation choices ensure access to jobs and vital services in the community.

Moreover, the costs of congestion can reduce economic opportunities and make a metropolitan area less livable, primarily because travel during the peak period becomes time-consuming and stressful. As Charlotte grows, competitive alternatives to auto travel are needed to sustain the region’s appeal as a place to live, work and do business.

**1.4 Goals and Objectives**

To determine how well the alternatives under consideration in this Draft EIS address regional and corridor needs, a set of goals, objectives and evaluation measures were developed for the proposed project. The goals and objectives outlined in Table 1-3 reflect the regional and corridor needs and are based on the system plan principles developed for the *Northeast Corridor Major Investment Study (MIS)*. These principles were used to guide the selection of the preferred alternatives for the *2025 Corridor System Plan* and the *revised 2030 Transit Corridor System Plan* adopted by the Metropolitan Transit Commission (MTC) on November 15, 2006. The system plan principles stem from the transit goals established for the earlier *Centers and Corridors Concept Plan (1994)*, updated *Centers, Corridors and Wedges Growth Framework*, Draft 2010 and the *2025 Integrated Transit/Land Use Plan* and demonstrate the community emphasis on integrated land use and transportation planning.

**Table 1-3  
Goals and Objectives for the LYNX BLE**

Goals	Objectives
<p><b>Land Use</b> <i>Support the region’s Centers, Corridors and Wedges Growth Framework</i></p>	<ul style="list-style-type: none"> <li>• Provide improvements that are consistent with land use plans and policies.</li> <li>• Provide improvements that are compatible with existing or desired community character as well as neighborhood preservation.</li> <li>• Provide connections to transit-supportive areas.</li> <li>• Support existing and planned land use patterns.</li> <li>• Promote transit-supportive development within station areas.</li> <li>• Provide a strong link to integrating land use and transportation.</li> <li>• Promote growth in an area that can support new development and away from areas that cannot support new growth.</li> </ul>

**Table 1-3 (continued)**  
**Goals and Objectives for the LYNX BLE**

Goals	Objectives
<p><b>Mobility</b> <i>Improve access and mobility in the corridor and throughout the region; Increase transit ridership; Improve quality of transportation service</i></p>	<ul style="list-style-type: none"> <li>• Offer people a choice in meeting mobility needs.</li> <li>• Reduce dependence on grid-locked roadways.</li> <li>• Increase transit ridership.</li> <li>• Increase transit mode share.</li> <li>• Provide travel time savings.</li> <li>• Provide service for transit dependent populations.</li> <li>• Provide connections to activity centers, special event venues, and cultural sites.</li> <li>• Improve convenience and reliability of transit service.</li> </ul>
<p><b>Environment</b> <i>Preserve and protect the environment</i></p>	<ul style="list-style-type: none"> <li>• Minimize disruptions to communities.</li> <li>• Minimize negative effects on natural resources.</li> <li>• Minimize negative effects on cultural resources.</li> <li>• Support air quality improvements.</li> <li>• Support sustainable growth in the region.</li> </ul>
<p><b>Financial</b> <i>Develop affordable, cost-effective transportation solutions</i></p>	<ul style="list-style-type: none"> <li>• Ensure capital and operating and maintenance costs are consistent with funding levels.</li> <li>• Minimize operating and maintenance costs.</li> <li>• Optimize cost-effectiveness.</li> </ul>
<p><b>System Integration</b> <i>Develop transportation improvements that function as part of the larger transportation system</i></p>	<ul style="list-style-type: none"> <li>• Develop improvements that provide through-service and connections to other corridors.</li> <li>• Ensure operating efficiency.</li> <li>• Balance use of system capacity.</li> </ul>

**1.4.1 Evaluation Criteria**

During the MIS phase, a set of evaluation criteria for the transit element of the proposed project was developed based on the system-wide and corridor-specific goals and objectives. The evaluation criteria helped determine the degree to which various transit improvement alternatives would address the purpose and need for the Northeast Corridor. For the Draft EIS study phase, CATS has developed a corridor evaluation framework as part of a set of common technical methods and guidance to be followed in all the corridors. System-wide principles were used in the development of specific measures to evaluate transportation improvement and station area alternatives as part of the corridor environmental evaluations. The corridor evaluation framework defines specific means to measure the performance of the various alternatives in relation to the problems and goals of the corridor. The evaluation criteria include both quantitative measures and qualitative assessments.

The general evaluation framework involves the following:

- Effectiveness - the extent to which an alternative accomplishes both the land use and mobility purposes that the transportation improvements are intended to address.
- Cost Effectiveness - the extent to which an alternative provides a level of benefits that is commensurate with its costs (and relative to other alternatives).
- Financial Feasibility - the extent to which sufficient funding is available or can be developed, to support the construction, operation and maintenance of an alternative.
- Equity - the extent to which each alternative provides fair distribution of benefits, costs and impacts across various sub-groups in the corridor.
- Compatibility - the extent to which an alternative fits within its existing context and promotes development patterns consistent with adopted transit supportive principles.

**1.4.2 FTA New Starts Criteria**

The proposed project is following the FTA planning and project development process for projects that are considered new start fixed guideway or rail projects, called “New Starts” (see Figure P-1 in Preface). New

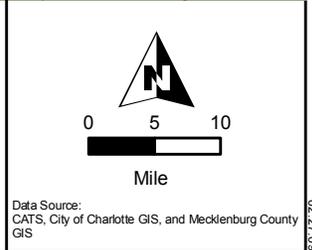
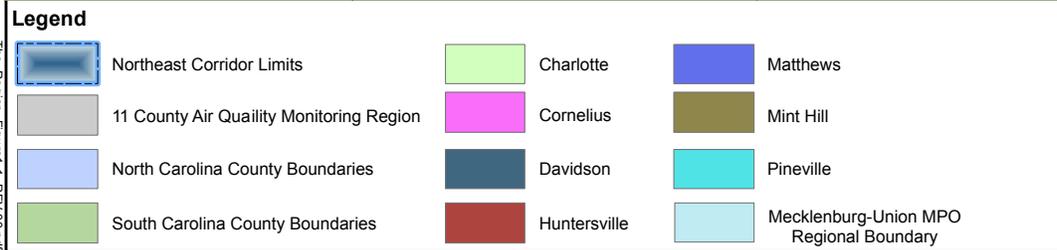
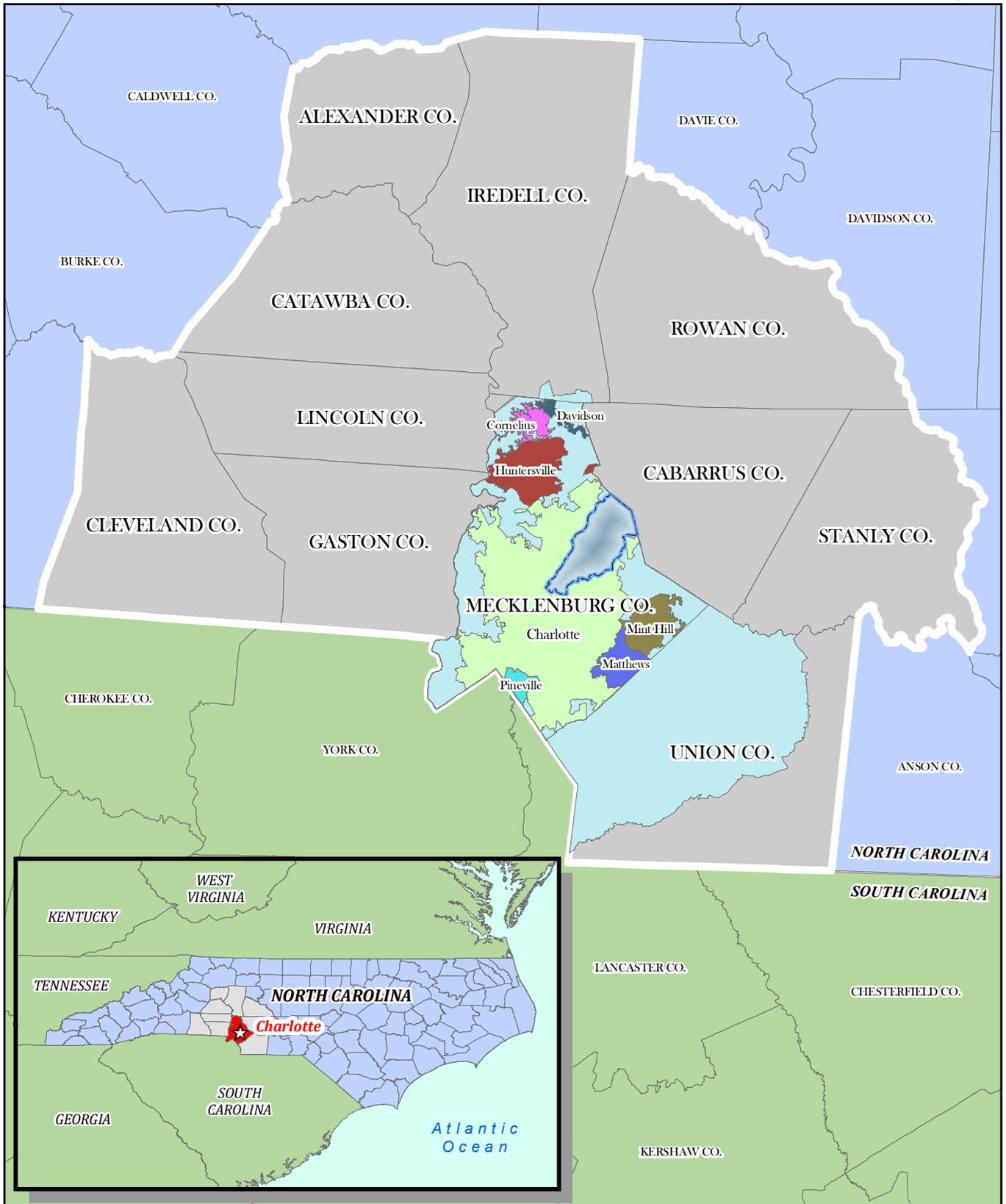
Starts projects, such as the proposed LYNX BLE, are those for which the local transit agency (i.e. CATS) is seeking discretionary federal funding from the Section 5309 New Starts Program. In accordance with federal transportation law, called the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU), FTA has developed and uses the New Starts Criteria to decide whether projects may advance into preliminary engineering or final design, and to evaluate and rate projects in support of funding recommendations.

A project that does not meet the minimum ratings cannot advance into the next phase of FTA’s project development process. Projects must receive a medium, medium-high, or high rating to be eligible to receive Section 5309 funding. The *Annual Report on Funding Recommendations* allows FTA to brief Congress on the proposed New Starts projects and their current status or rating. The New Starts Criteria for evaluating New Starts Projects are shown in Table 1-4. FTA published the final policy guidance on July 29, 2009, that the project justification rating be based on ratings for the following criteria: mobility improvements, cost effectiveness, operating efficiencies, public transportation supportive land use policies and future patterns, environmental benefits and economic development effects.

**Table 1-4  
FTA New Starts Criteria**

<b>Project Justification Criteria</b>	<b>Measure(s)</b>
<i>Mobility Improvements</i>	Measured by: <ul style="list-style-type: none"> <li>• Number of transit trips using the project.</li> <li>• User benefits per project passenger mile.</li> <li>• Number of transit trips by dependent riders using the proposed New Starts project.</li> <li>• Transit dependent user benefits per passenger mile on the project.</li> <li>• The share of user benefits received by transit dependents compared to the share of transit dependents in the region.</li> </ul>
<i>Cost Effectiveness</i>	Two measures of cost effectiveness are required. <ul style="list-style-type: none"> <li>• Incremental cost per hour of user benefits.</li> <li>• Incremental cost per incremental passenger in the forecast year.</li> </ul>
<i>Operating Efficiencies</i>	Measured by the difference between the ratios of system-wide operating and maintenance costs and system-wide passenger miles.
<i>Land Use and Economic Development</i>	Measured by existing land use; transit supportive plans and policies, performance and impacts of policies; and future patterns.
<i>Environmental Benefits</i>	Measured by change in regional pollutant emissions, change in regional energy consumption, and EPA Air Quality Designation.
<i>Other Factors</i>	<ul style="list-style-type: none"> <li>• Environmental justice considerations and equity issues.</li> <li>• Opportunities for increased access to employment for low-income persons, and welfare to work initiatives.</li> <li>• Evidence that the proposed project is a principle element of a congestion management strategy.</li> <li>• Any other factor which the New Starts project sponsor believes articulates the benefits of the proposed major transit capital investment, but which is not captured within the other project justification criteria.</li> <li>• Reliability of the data supporting the evaluation criteria.</li> </ul>
<b>Local Financial Commitment Criteria</b>	<b>Measure(s)</b>
<i>Local Financial Commitment</i>	Measured by the proposed share of total project costs from sources other than 49 USC Section 5309 New Starts, including federal formula and flexible funds, the local match required by federal law, and any capital funding. <ul style="list-style-type: none"> <li>• Proposed share of total project costs from sources other than Section 5309 New Starts funding.</li> <li>• The strength of the proposed capital funding plan.</li> <li>• The strength of the proposed operating funding plan.</li> </ul>

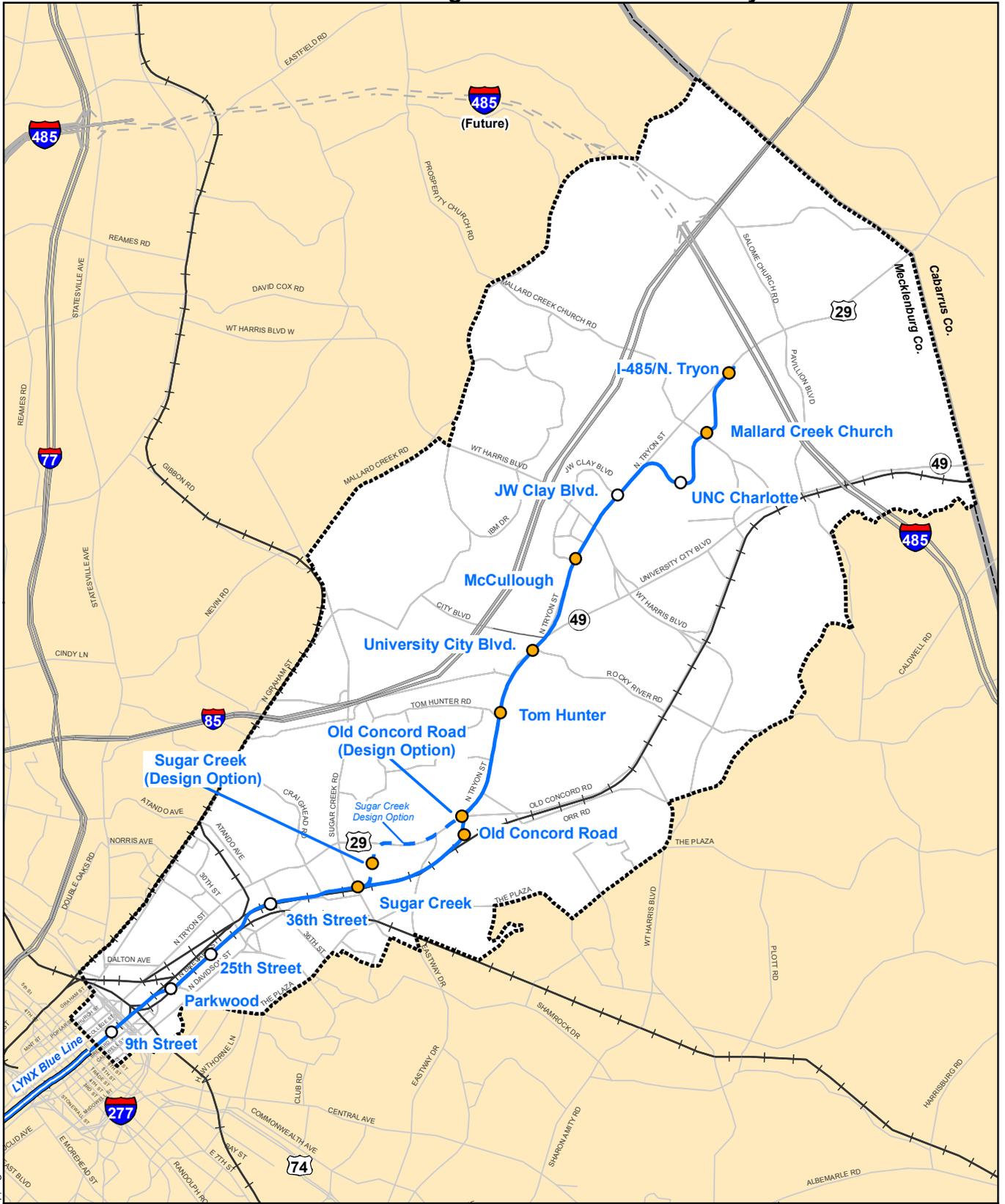
Source: Federal Transit Administration, *Final Policy Guidance on 5309 New Starts Criteria*, July 2009.



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Light Rail Alternative - Locally Preferred Alternative



**Legend**

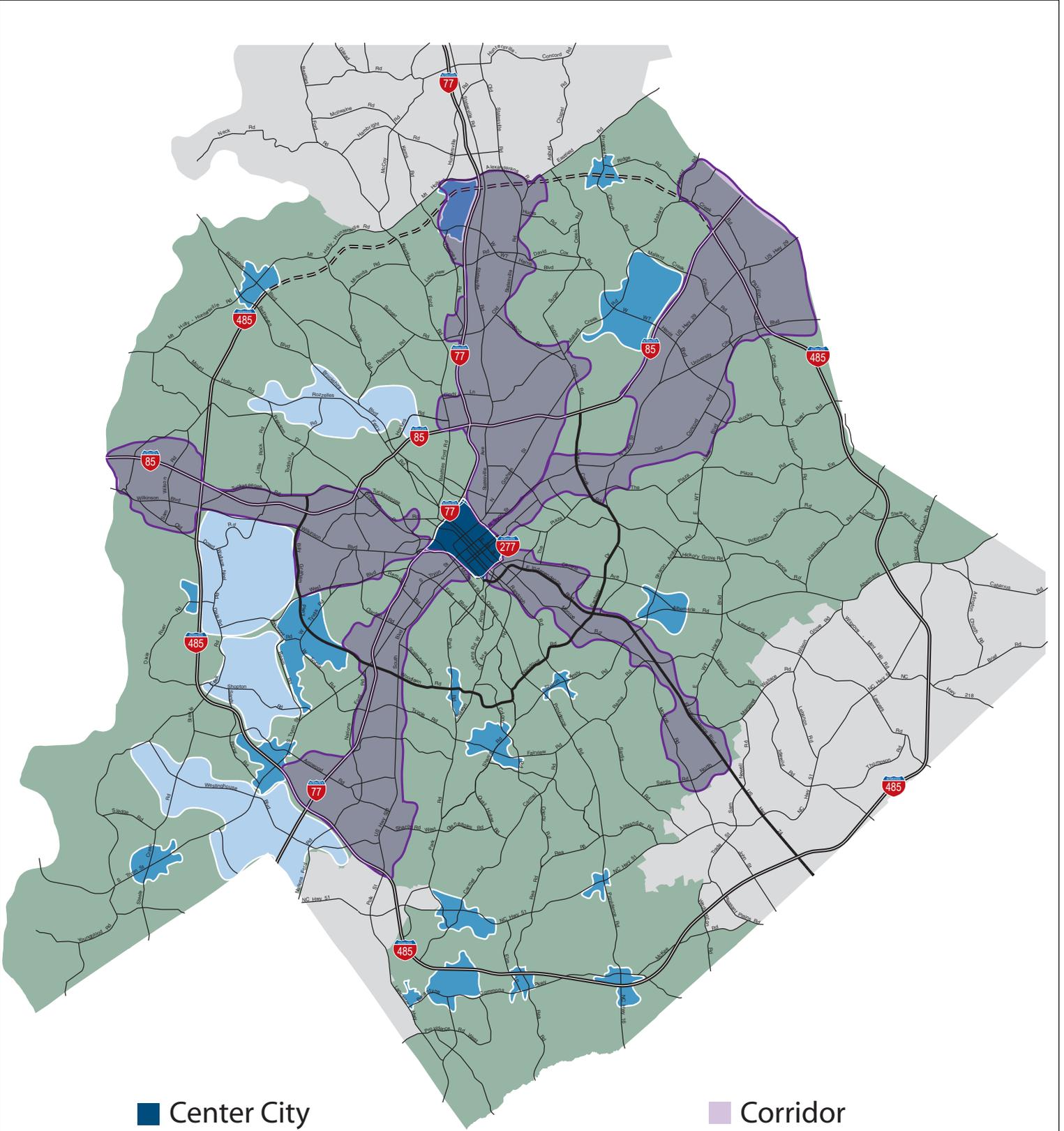
Northeast Corridor Limits	LYNX Blue Line	Railroads
Proposed Light Rail Alternative	Highway	
Design Option	Major Roads	
Proposed Stations	Highway (Future)	
Proposed Stations with Park-and-Ride	County Line	

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Data Source:  
 CATS, City of Charlotte GIS, and Mecklenburg County GIS

Corridor\_Base\_Map\_Figure\_1-2\_CB\_120909.mxd

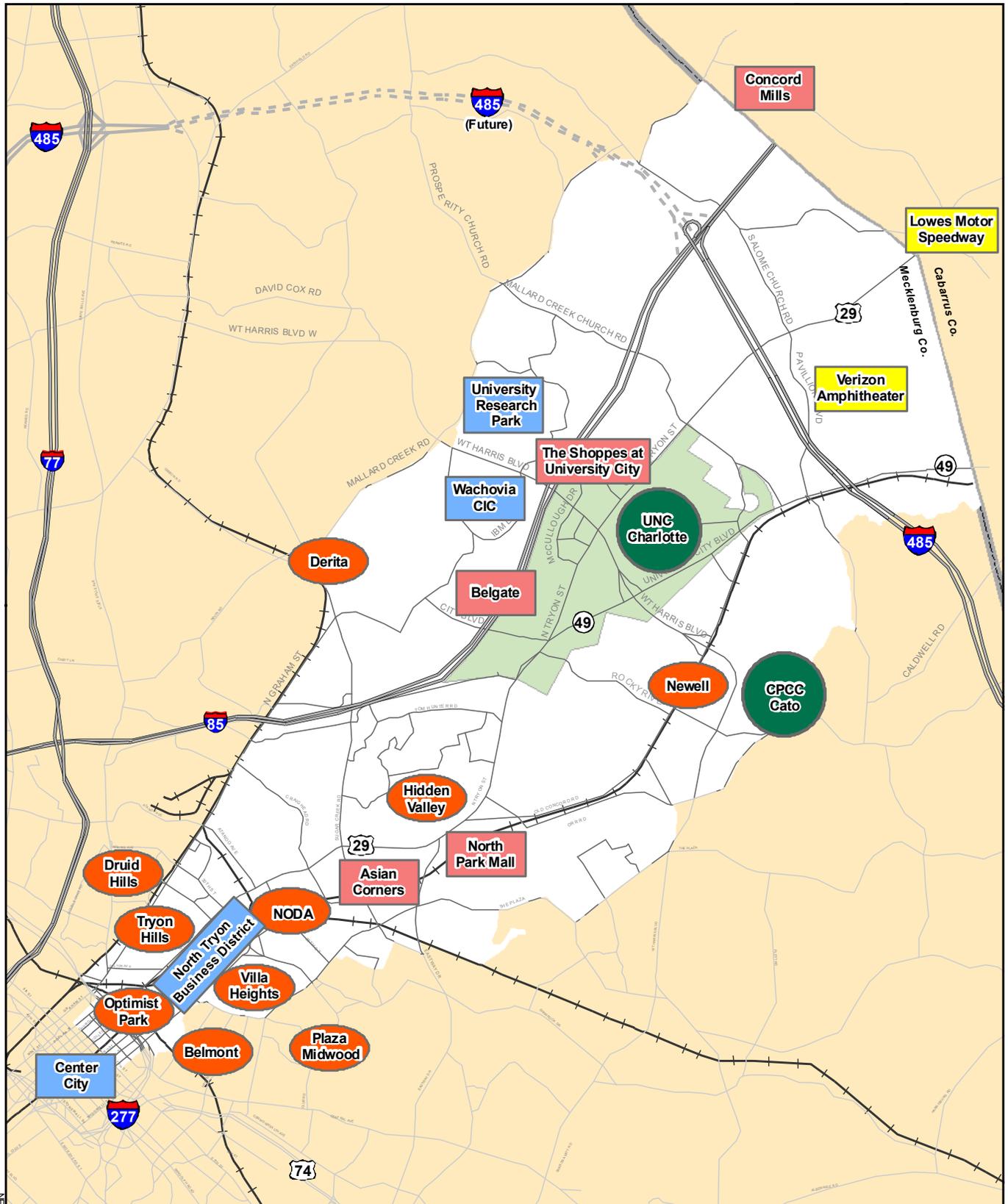
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- Center City
- Mixed Use Center
- Industrial Center

- Corridor
- Wedge
- Other Jurisdiction





NE\_Corridor\_Study\_Area\_Fig 1-4\_REV01.pdf

- Legend**
- Northeast Corridor Limits
  - Highway
  - Major Roads
  - Highway (Future)
  - County Line
  - Railroads

- Activity Centers**
- Employment Center
  - Commercial Center
  - Neighborhood
  - Institutional Center
  - University City Municipal Services District
  - Entertainment Centers

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Data Source:  
CATS, City of Charlotte GIS, and Mecklenburg County  
GIS, RWA/STV

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