



**Southeast Corridor
Transit Study**

**Opportunity Statement
FINAL**

April 2016

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1 INTRODUCTION

1.1 Purpose of Document

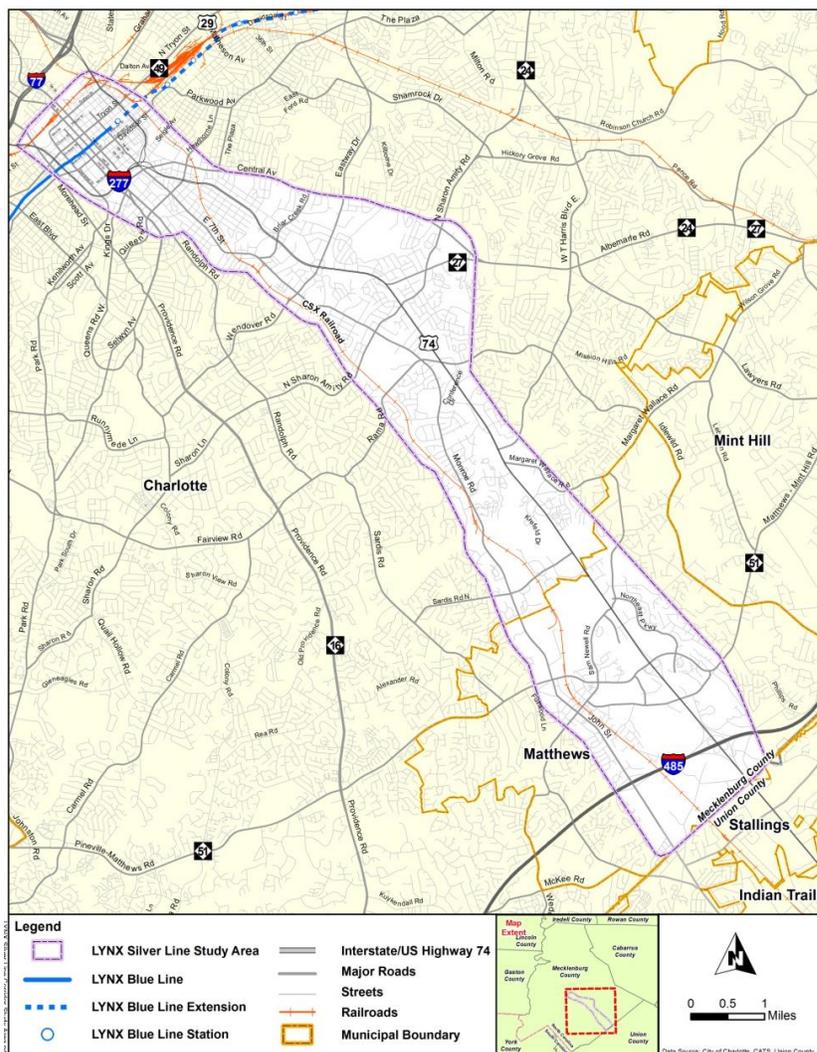
All successful major transit investments must be able to respond to specific opportunities that have been identified in a corridor. Documenting the specific opportunities in a corridor provides a framework through which to ensure that the resulting transit alternatives, and ultimately the final preferred option, effectively address the actual needs. This document describes the concerns, issues, and opportunities in the Southeast Corridor that support the need for a major transit investment. Based on these attributes, goals for the bus and rail components are identified, an initial list of alternatives for evaluation is proposed, and evaluation criteria that will be used to assess the various options are described.

1.2 Project Background

The Metropolitan Transit Commission (MTC) directed the Charlotte Area Transit System (CATS) to conduct an Alternatives Analysis (AA) for the Southeast Corridor (LYNX Silver Line), which is a heavily traveled corridor extending approximately 13.5 miles southeast from Center City Charlotte to the Mecklenburg / Union County border. Approximately 3.5 miles of the corridor near the county line is located within the Town of Matthews; the remainder of the corridor is located within the City of Charlotte.

The primary purpose of the AA is to provide the necessary transportation and land use analysis and public outreach to facilitate the MTC's selection of a rail-based technology and alignment for a Locally Preferred Alternative (LPA). A secondary purpose of the AA is to provide recommendations and an operating and capital plan for bus service within the proposed managed lanes on Independence Boulevard (US 74). The project study area, shown in **Figure 1**, includes Independence Boulevard and is bounded on either side generally by 7th Street/Monroe Road and portions of Central Avenue. A Class I single track main line railroad owned and operated by CSX Transportation also extends through the study area.

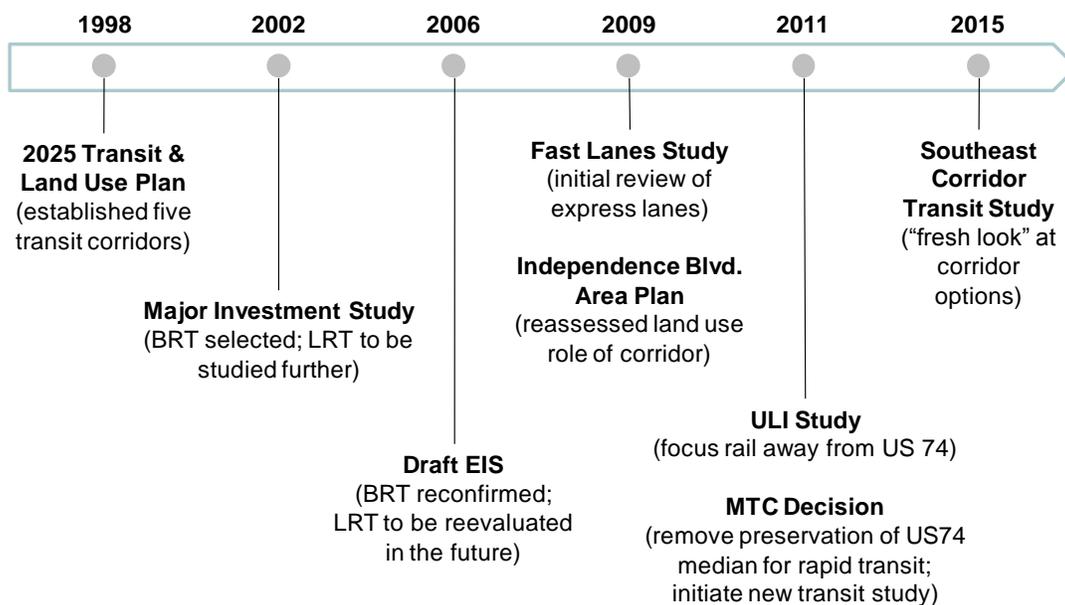
Figure 1: Southeast Corridor Study Area



The need for improvements along the Independence Boulevard corridor has been a top priority among local and state agencies, political leadership, and community advocates for decades. Yet progress to convert US 74 into a freeway has been slow and expensive, while the surrounding community has witnessed significant change along those portions of US 74 that have been converted to a freeway. The neighborhoods closest to Uptown Charlotte have turned their backs to the freeway (i.e. reoriented themselves away from the freeway) and have experienced notable reinvestment. However, disinvestment has occurred along the freeway section farther from Uptown Charlotte where the adjoining parcels remain oriented to US 74.

Fixed guideway transit has been viewed as a major component of numerous plans to reinvigorate the corridor. However, previous studies failed to gain the necessary consensus to move forward with a viable project. Several previous studies recommended the implementation of a Bus Rapid Transit (BRT) project, but additional consideration of Light Rail Transit (LRT) was also directed. Funding limitations have prevented the advancement of either option to date. Major planning milestones in the corridor since the late 1990's are illustrated below in **Figure 2**.

Figure 2: Corridor Planning History



Support for a new approach to transit in the corridor gained momentum as a result of several key initiatives occurring between 2009 and 2011:

- The Independence Boulevard Area Plan was developed.** This plan reconsidered the future role of Independence Blvd. and recommended a long-term reverse-frontage land use vision for the corridor that re-orientes development away from Independence Blvd.
- The Urban Land Institute's Rose Center Fellowship Report** recommended bus service and auto-oriented land uses along Independence Boulevard in conjunction with streetcar and community-focused development along Central Avenue (already planned) and Monroe Road (a new recommendation) within the city of Charlotte. This report acknowledged the auto-oriented nature of Independence Blvd. and suggested to focus transit-oriented development efforts on parallel arterials. This study, along with the Independence Boulevard Area Plan adopted by Charlotte City Council in 2011, has opened up the possibility for a more comprehensive approach that allows for broader consideration of transit alignments and technologies in the corridor.

- **The MTC elected to no longer preserve the median of Independence Blvd. for future exclusive use as a transit fixed guideway**, enabling the existing Independence Busway to be converted to express lanes and extended. This decision effectively eliminated the median of Independence Blvd. as a transit guideway alignment option. The MTC passed specific actions in 2011 that directed CATS to:
 - Remove special provisions in the 2030 Transit System Plan that required preservation of Rapid Transit in the median of Independence Blvd.
 - Work closely with NCDOT and Charlotte Department of Transportation (CDOT) to incorporate bus services into the design of the Independence Blvd. managed (express) lanes.
 - Bring back a process and plan/schedule for an alignment study to evaluate a rail transit alignment on the Southeast Corridor that is not in the median of Independence Blvd.
 - Ensure that the alignment study will review the technologies of light rail, streetcar and commuter rail, and recommend a rail transit alignment, which will involve examining all potential rail alternatives in the corridor, including those previously studied.
 - Study a connection between the CityLYNX Gold Line and the LYNX Silver Line.
 - Study up to the Mecklenburg County line and into Union County.

In response to these initiatives, the focus of transit investment in the corridor is no longer about “rail or bus”, but rather is centered on how a rail transit project on a new alignment can work in a complementary manner with enhanced bus services using the future US74 express lanes. This multi-faceted transit approach, coupled with a broader perspective of the corridor itself, is viewed as the best way to address the many diverse transit needs and land use goals in the corridor. Because the study is focused on a combined rail and bus approach, rather than a single transit alignment, the study is being referred to as the “Southeast Corridor Transit Study” rather than the “Silver Line Alternatives Analysis”.

The focus of transit investment in the corridor is no longer about “rail or bus”; both modes will be included in the corridor solution.

1.3 Corridor Givens

Building upon this background, four guiding principles have been identified that frame the specific areas of focus for the study. These principles are treated as “givens” for this analysis:



The need for transit in the corridor already has been firmly established through previous studies



The transit modes in the corridor will include bus and rail



The bus element will focus on service in the Independence Blvd. express lanes



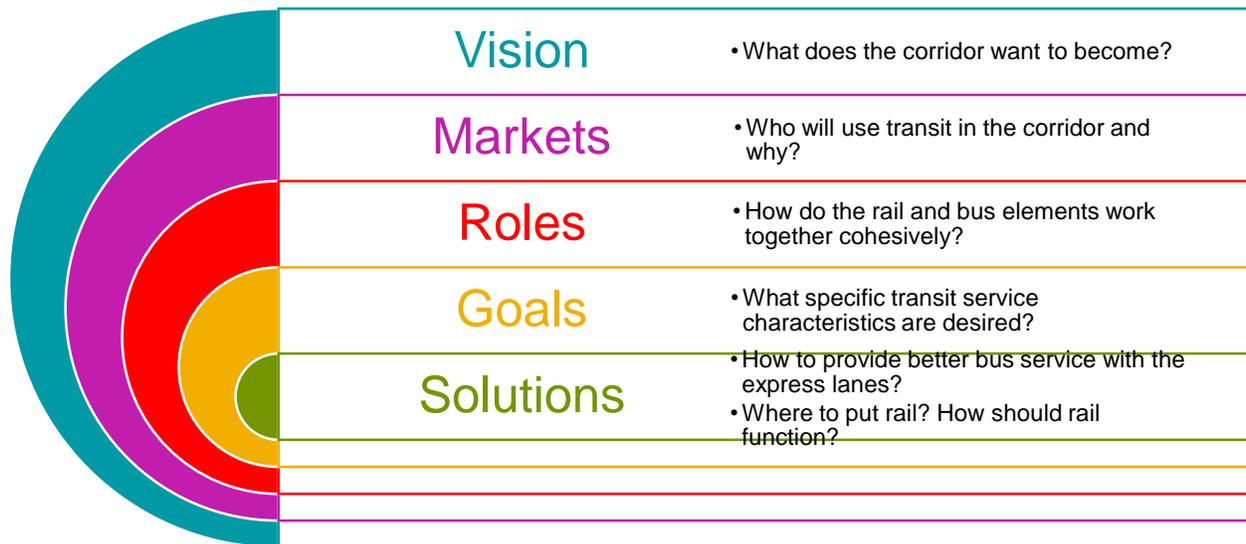
Automobile lane capacity and fixed guideway will need to be carefully balanced

1.4 Key Questions for the Study to Answer

This study will produce a new recommendation for the Southeast Corridor to be included in the 2030 CATS System Plan. To get to this solution, a series of critical questions must be answered, beginning with a high-level assessment of the overall corridor vision and progressing to a detailed assessment of specific transit options for the corridor. The key questions to be answered during this study are highlighted below in **Figure 3**, and subsequently described in more detail. These questions will be answered using technical analysis coupled with extensive public and stakeholder input.

This study will produce a new recommendation for the Southeast Corridor to be included in the 2030 CATS System Plan.

Figure 3: Key Questions to Answer



VISION: What does the corridor want to become?

A major transit investment requires a compelling and concrete vision for the corridor. Developing and communicating such a vision is a prerequisite to being able to define a project with high potential for success.

MARKETS: Who will use transit in the corridor and why?

With a strong vision as a basis, it is critical to understand the various ridership markets in the corridor. Recognizing where and why potential riders travel within the corridor is important to ensure that the transit project envisioned responded to the true mobility needs and opportunities in the corridor.

ROLES: How will rail and bus elements work together cohesively?

The rail and bus elements must be integrated to complement each other rather than compete. Taken together, the bus and rail components provide the opportunity to develop a comprehensive transit solution accomplishing multiple goals. A bus / rail integration plan will be developed as rail options are developed and evaluated.

GOALS: What specific transit service characteristics are desired?

The characteristics of new transit service (bus and rail) in the corridor need to respond to the specific mobility needs in the corridor. Understanding desirable service and operational characteristics such as the relative importance of frequency, speed, reliability, and destinations served is paramount to developing responsive transit options.

SOLUTIONS: How to provide better bus service using the express lanes?

Buses will have access to the express lanes in the median of Independence Blvd. This study will develop a bus service plan as a complement to the rail assessment. Not only will regional express service benefit from the express lanes, but the study will consider how other routes could benefit from accessing the express lanes and the development of associated infrastructure elements to enhance bus service.

SOLUTIONS: Where to put rail?

Defining where to put a rail alignment is a major objective of this study. This question will be answered from the perspectives of understanding the market that will use this new service and the locations within the corridor where people want to go, as well as the physical opportunities for locating an alignment in a corridor that is already highly developed.

Since it has been established that the median of Independence Blvd. is being converted to express lanes, a rail alignment in the median of Independence Blvd. is no longer viable and will not be considered.

SOLUTIONS: How should rail function?

The design function of rail is shaped by the specific transit needs in the corridor. Various rail technologies are geared to serving specific markets, as summarized in **Figure 4**.

Figure 4: Rail Technologies and Markets Served



2 CORRIDOR VISION



The Southeast Corridor has played a major role in the growth of the east side of Charlotte and the entire region. The mobility created by Independence Boulevard has helped to establish the region as a major urban center over the past half century, and has continued to define and redefine the corridor as the nature of the roadway has evolved in more recent decades.

Although Independence Boulevard is the spine of southeast Mecklenburg County, the corridor is much more. It is a collection of diverse neighborhoods and activity centers. The fabric of the corridor changes several times between Uptown Charlotte and Matthews, creating a distinct blend of travel patterns that is both neighborhood-based and regional. Parallel thoroughfares such as Monroe Road and Central Avenue function as neighborhood “main streets”, while Independence Boulevard provides a high-volume connection to Union County and points beyond.

The corridor continues to evolve, with close-in neighborhoods experiencing tremendous growth and other neighborhoods primed for redevelopment. From a transit perspective, this evolution creates a unique opportunity to create mobility solutions that will not only strengthen established neighborhoods, but also shape future growth from Charlotte to Matthews.

Building upon the tremendous success of the original *Transit / Land Use Plan* adopted in 1998, the Southeast Corridor vision focuses on the two-way interaction between transit and land use by connecting existing activity centers as well as influencing land use decisions on future activity centers.

Principles of Vision:

- 

Establish **high-quality transit** to **connect** and **strengthen** existing, emerging, and future activity centers
- 

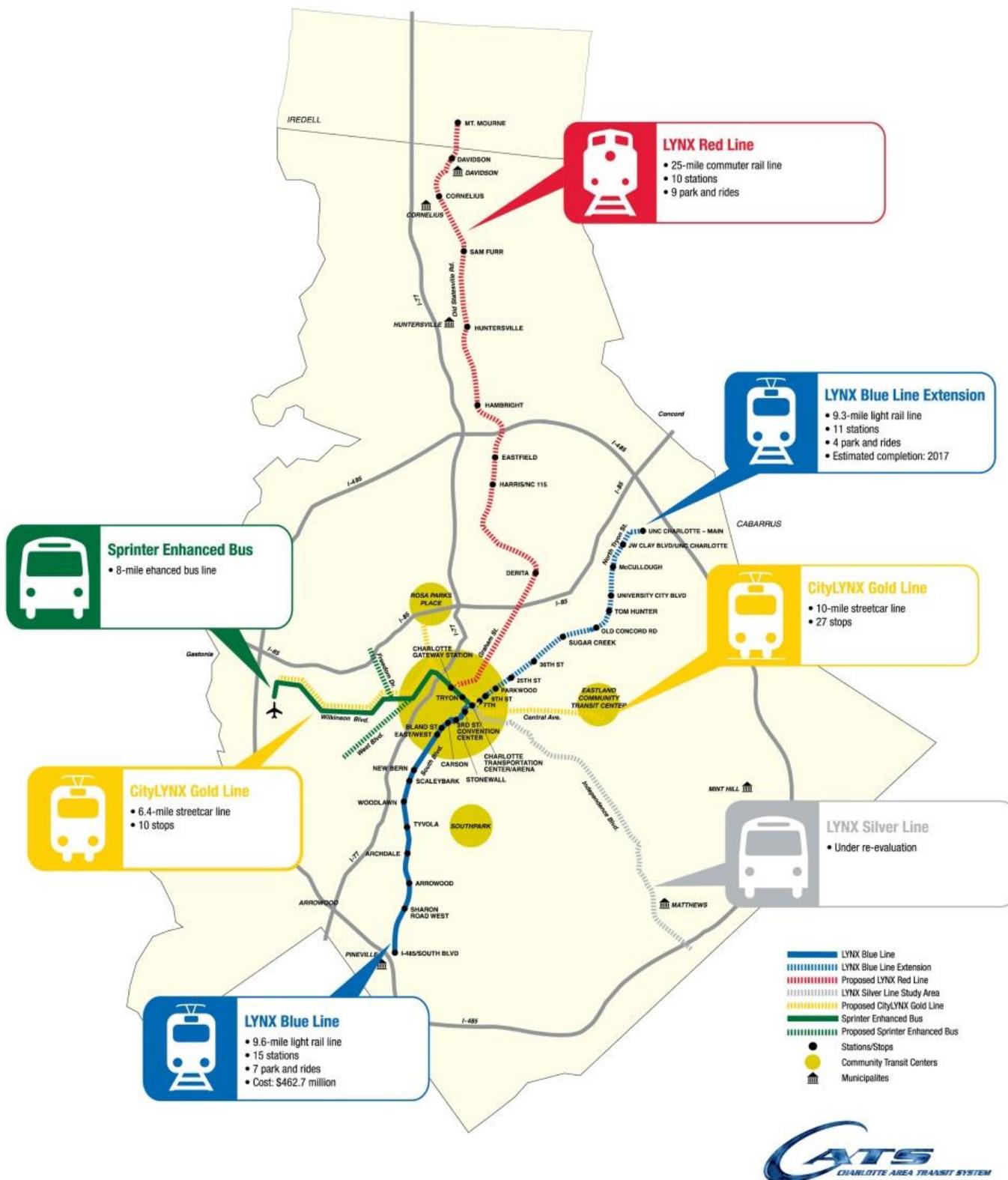
Create more transit options for the large number of people already living in, working in, or visiting the corridor
- 

Use transit to help focus and shape growth at key existing and future nodes along the corridor, while preserving established neighborhoods

Thinking beyond the Southeast Corridor, this opportunity should not be viewed in isolation, but as an integrated component of the region’s transit vision.

Transportation decisions have far-reaching community-shaping impacts at both the local and regional levels. Understanding how all the pieces fit together demonstrates how individual components contribute to the larger goal.

Figure 5: CATS 2030 System Plan

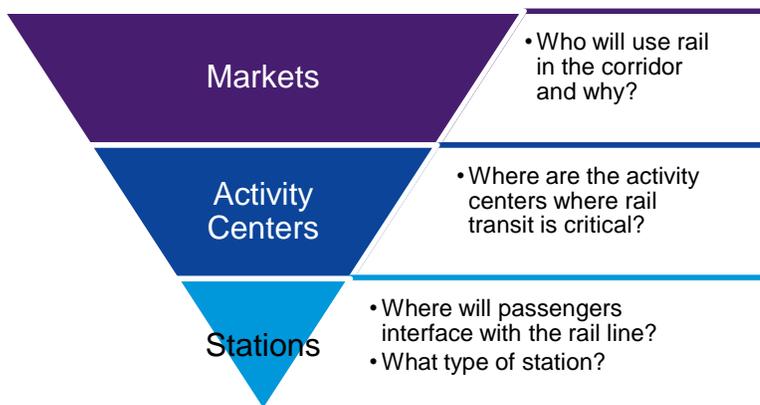


Several opportunities to consider have emerged when viewing the Southeast Corridor from a system level:

- Extending west to the Airport to create a single east-west rail corridor;
- Interlining with the CityLYNX Gold Line to maximize use of existing rail infrastructure;
- Interlining with the LYNX Blue Line to provide additional service in the Uptown core;
- Connecting with the future Charlotte Gateway Station to strengthen its role as a hub; and
- Creating multimodal hubs along the corridor to strengthen local bus connections with surrounding neighborhoods.

3 TRANSIT MARKETS IN CORRIDOR

Public transit must assess existing market strengths while considering how markets may shift or potentially evolve into new opportunities. These questions help determine how new markets can best be served and identify ways to strengthen the role of public transit. Transit markets can be major trip generators (residential areas) or major attractors (employment centers and commercial districts). Often transit markets are a combination, both generating and attracting trips, due to a mix of land uses.



3.1 Who Will Use Transit in the Corridor and Why?

The ridership market can be translated into “who will use rail in the corridor and why?” The LYNX Blue Line serves a wide variety of different markets, including commuters during peak work periods, employees traveling to work in the off-peak, people who are going to entertainment / events, and people traveling for recreation (shopping and dining).

Based on outreach to the public and other stakeholders, people want a major transit investment in the corridor that is able to serve a variety of travel needs.

*The housing density between I-277 and Sardis Road North is more than double that of the county as a whole.**

86% of millennials say that it is important that their city offer a low-cost public transportation system. (PRNewsWire.com)

42% of all Union County workers commute to Mecklenburg County with more than a 55-minute commute.(Census)

*By 2040 nearly 50,000 new jobs are projected to be located in Uptown Charlotte, with nearly 30,000 more new jobs in other areas of the Southeast Corridor.**



Ovens Auditorium hosts 80 events annually and Bojangles Coliseum hosts 65 events annually.



Approximately 37,500 students attend CPCC Central Campus and 28,500 students attend CPCC Levine Campus.



Route #9 Central Avenue has the highest passenger per mile of any bus route in CATS system.



Local residents and visitors can connect to approximately 715 daily flights and 6 daily passenger trains that travel in and out of Charlotte.**

*Source: Metrolina Regional Travel Demand Model Socioeconomic Forecast

** Source: charlottechamber.com

3.2 Activity Centers in the Corridor

Once the “who” has been identified, areas can be targeted where those potential transit riders will come from or go to. These activity centers, also referred to as nodes, are areas that will likely generate transit trips. A focus on identifying activity centers in the corridor enables a major transit investment to maximize access to areas with high levels of potential ridership.

Activity centers can be focused on a variety of different land uses. Many activity centers include a mixture of multiple uses.

Activity centers can also be classified as *existing*, *emerging*, or *future*, based on their current level of development.



Existing Activity Centers	Emerging Activity Centers	Future Activity Centers
<ul style="list-style-type: none"> • Uptown Charlotte • Plaza Midwood • Downtown Matthews • Bojangles Coliseum 	<ul style="list-style-type: none"> • Idlewild Road • CPCC Levine Campus • Midtown • Gateway Station 	<ul style="list-style-type: none"> • Matthews Sportsplex / Family Entertainment District • Sardis Road N./Galleria • John Street/I-485
<p>Bojangles Coliseum and Ovens Auditorium create a strong activity center on Charlotte's east side.</p>	<p>Meridian Place is a new mixed-use development along Idlewild Road between US 74 and Monroe Road.</p>	<p>The area around the Matthews Sportsplex is envisioned for transit-oriented development.</p>

3.3 Travel Patterns

Travel patterns are able to identify how much demand exists for the use and potential improvement to a transportation network. A travel demand model is the ideal method of analyzing such travel patterns.

The Metrolina Regional Travel Demand Model (MRM) is a useful tool which facilitates rigorous analysis of travel patterns. The model contains the geographic distribution of land uses, including the locations of residences, employment, schools, and a variety of community facilities. Also represented in the model are all the roads and transit routes an individual could potentially use to travel between activity locations.

For this analysis, seven market areas were created to evaluate the demand and flow of trips along the corridor. These market areas, shown in **Figure 7**, represent clusters of smaller transportation analysis zones (TAZs) from the MRM. Trips from the MRM were then summarized by origin-destination, trip purpose, and time of day. A summary of the findings follows.

3.3.1 Where and Why are People Traveling in the Corridor?

Nearly 400,000 trips (all modes) per day travel between and within the defined market areas. The distribution of trips is described in **Figure 6**. Roughly $\frac{3}{4}$ of all trips are short distance trips within the corridor.

Figure 6: Trip Distribution

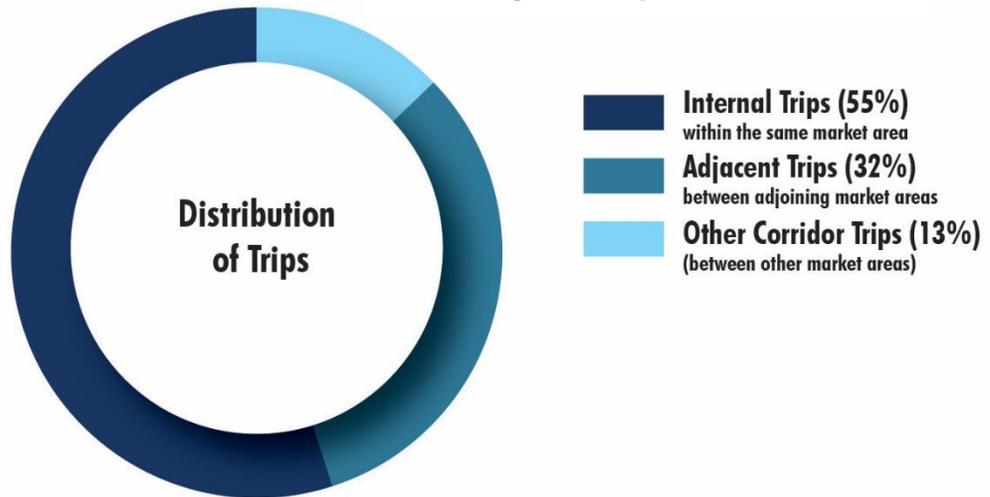


Figure 7: Market Areas for Travel Patterns Analysis

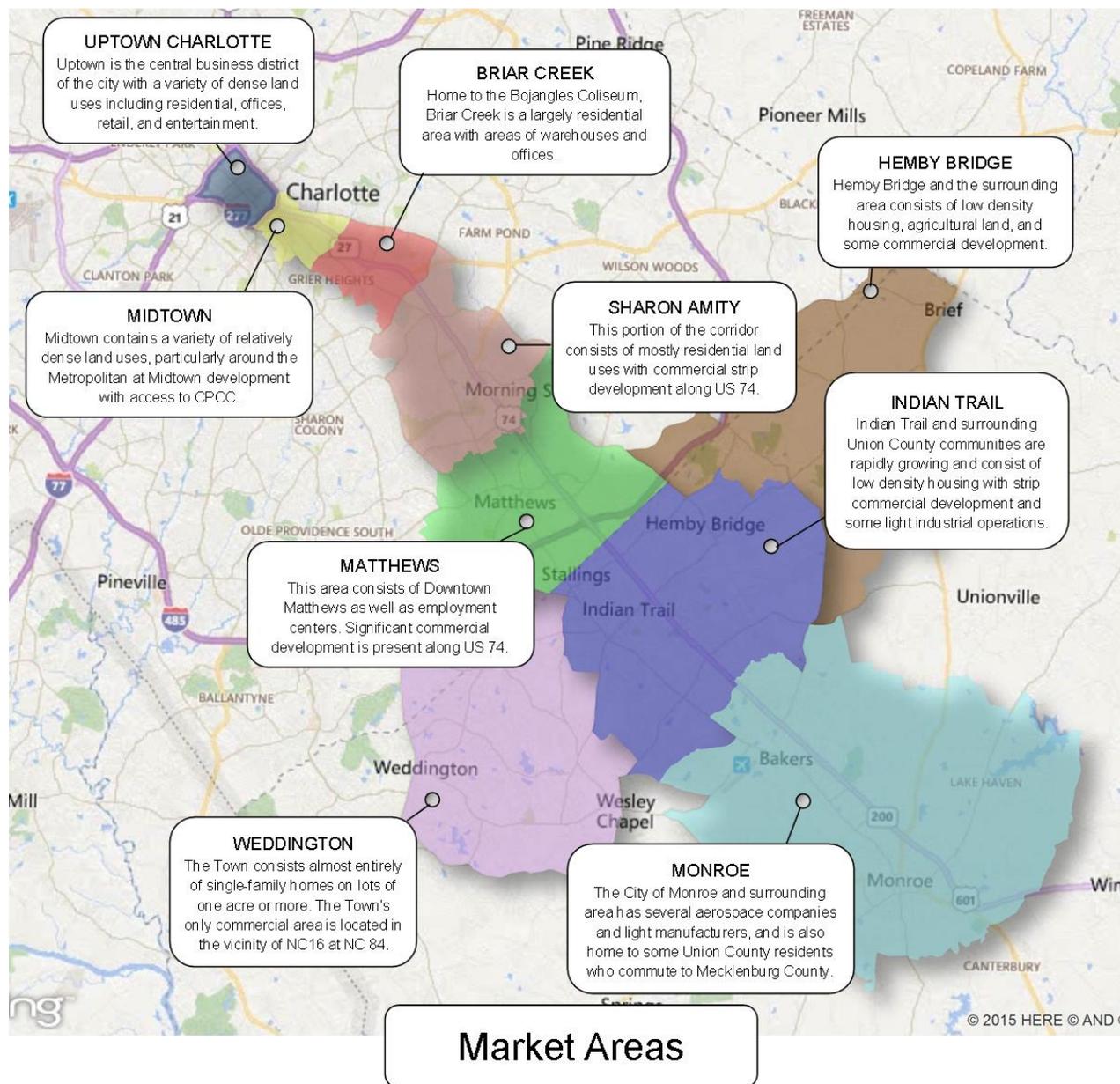


Table 1: Daily Trips Between Market Areas in Southeast Corridor

Market Area	Destination									Total Trips	Total (%)					
	Uptown	Midtown	Briar Creek	Sharon Amity	Matthews	Indian Trail	Monroe	Wedding-ton	Hemby Bridge							
Uptown	22,794 (5%)	4,289 (<1%)	1,826 (<1%)	1,677 (<1%)	379 (<1%)	52 (<1%)	16 (<1%)	21 (<1%)	17 (<1%)	31,071	6%					
Midtown	5,314 (1%)	4,963 (1%)	2,102 (<1%)	2,049 (<1%)	461 (<1%)	62 (<1%)	15 (<1%)	25 (<1%)	18 (<1%)	15,010	3%					
Briar Creek	4,367 (<1%)	3,536 (<1%)	4,382 (<1%)	6,137 (1%)	1,905 (<1%)	245 (<1%)	41 (<1%)	104 (<1%)	88 (<1%)	20,806	4%					
Sharon Amity	6,399 (1%)	4,767 (1%)	7,661 (2%)	32,651 (7%)	18,082 (4%)	3,030 (<1%)	511 (<1%)	1,246 (<1%)	698 (<1%)	75,045	16%					
Matthews	2,100 (<1%)	1,375 (<1%)	2,298 (<1%)	17,111 (4%)	31,408 (7%)	8,640 (2%)	1,807 (<1%)	3,472 (<1%)	1,702 (<1%)	69,912	14%					
Indian Trail	1,273 (<1%)	650 (<1%)	915 (<1%)	7,440 (2%)	19,566 (4%)	36,741 (8%)	17,516 (4%)	7,319 (2%)	3,824 (<1%)	95,244	20%					
Monroe	418 (<1%)	208 (<1%)	205 (<1%)	1,489 (<1%)	5,167 (1%)	16,518 (3%)	*83,236 (17%)	3,863 (<1%)	1,894 (<1%)	112,997	23%					
Wedding-ton	644 (<1%)	374 (<1%)	465 (<1%)	4,129 (<1%)	9,793 (2%)	10,020 (2%)	5,134 (1%)	10,646 (2%)	600 (<1%)	41,805	9%					
Hemby Bridge	520 (<1%)	267 (<1%)	448 (<1%)	2,525 (<1%)	5,610 (1%)	4,832 (1%)	2,489 (<1%)	539 (<1%)	3,980 (<1%)	21,209	4%					
Total	43,830	20,429	20,302	75,207	92,372	80,139	110,765	27,233	12,821	483,098	100%					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td>Internal Trips</td> </tr> <tr> <td></td> <td>Adjacent Trips</td> </tr> <tr> <td></td> <td>Other Corridor Trips</td> </tr> </table>												Internal Trips		Adjacent Trips		Other Corridor Trips
	Internal Trips															
	Adjacent Trips															
	Other Corridor Trips															

* denotes highest number and percentage of trips

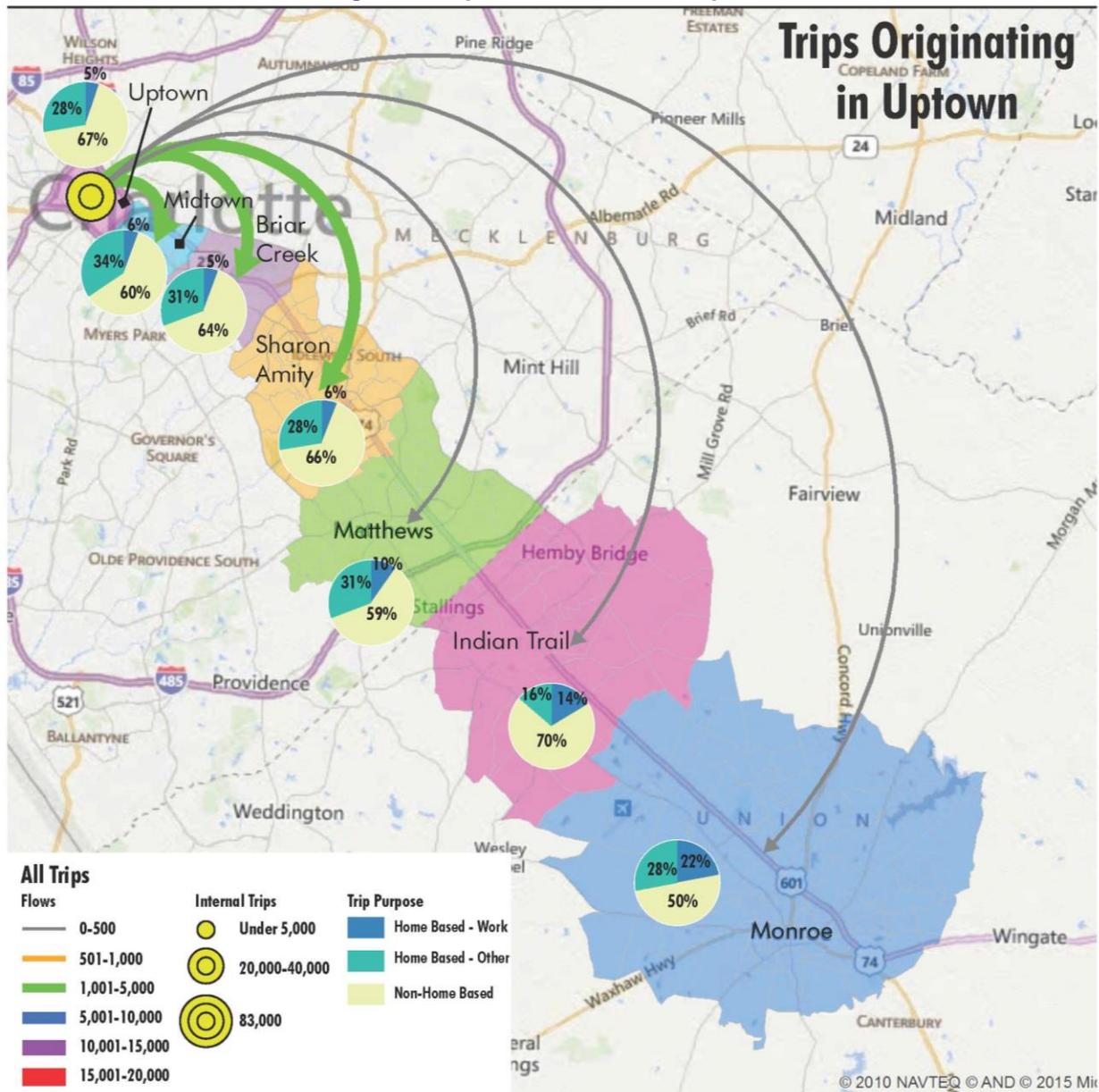
Summary

When analyzing trip purposes to identify why people use transit within the Southeast Corridor, several trends emerge:

- Trips originating from Uptown or adjacent Midtown are primarily for non-home-based (NHB) purposes.
- Trips originating from Union County traveling to Uptown and Midtown are primarily for home-based work (HBW) purposes. Trips from Union County traveling to all other market areas are primarily for home-based other (HBO) purposes.
- Travel purposes for trips originating near the middle of the corridor are more varied; however, HBO trips represent the majority.

Specific details about the travel patterns of trips originating in each of the seven market areas are illustrated in **Figure 8** through **Figure 14** on the following pages.

Figure 8: Trip Destinations from Uptown



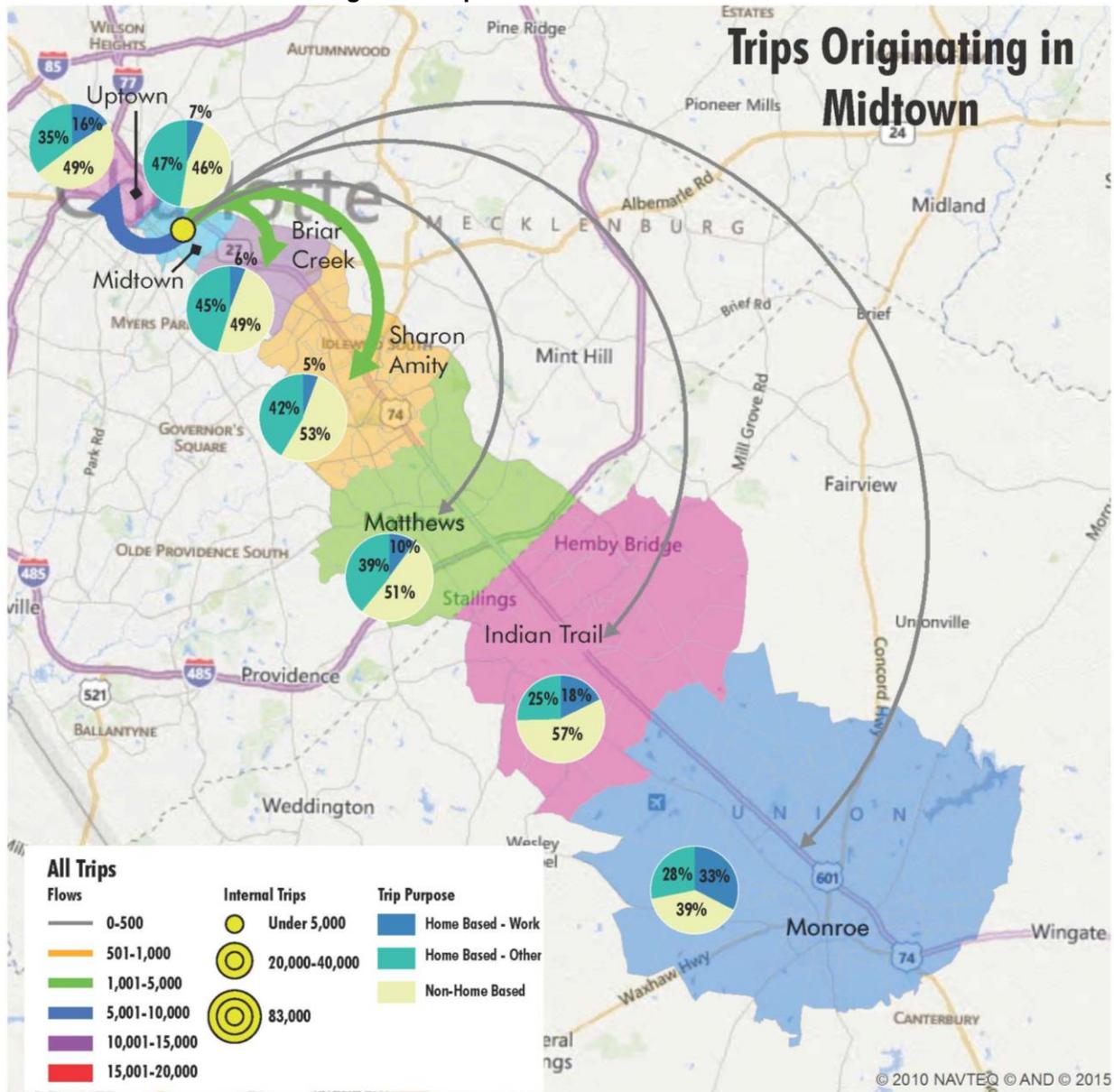
Trip Destinations

- Most trips (73%) are internal (trips staying within Uptown).
- 25% of trips are to middle zones including Midtown, Briar Creek, and Sharon Amity.
- Very few trips (<1%) go to Matthews and beyond.

Trip Purpose

- From Uptown, the majority of trips are taken for a non-home based purpose.
- Home-based work trips are the minority from Uptown to anywhere within the corridor; this reflects Uptown’s primary role as a destination for work trips rather than an origin.
- Higher percentages of home-based work trips from Uptown are observed in the southern part of the study area (Matthews, Indian Trail, and Monroe), but the volume of trips to these zones is low.

Figure 9: Trip Destinations from Midtown



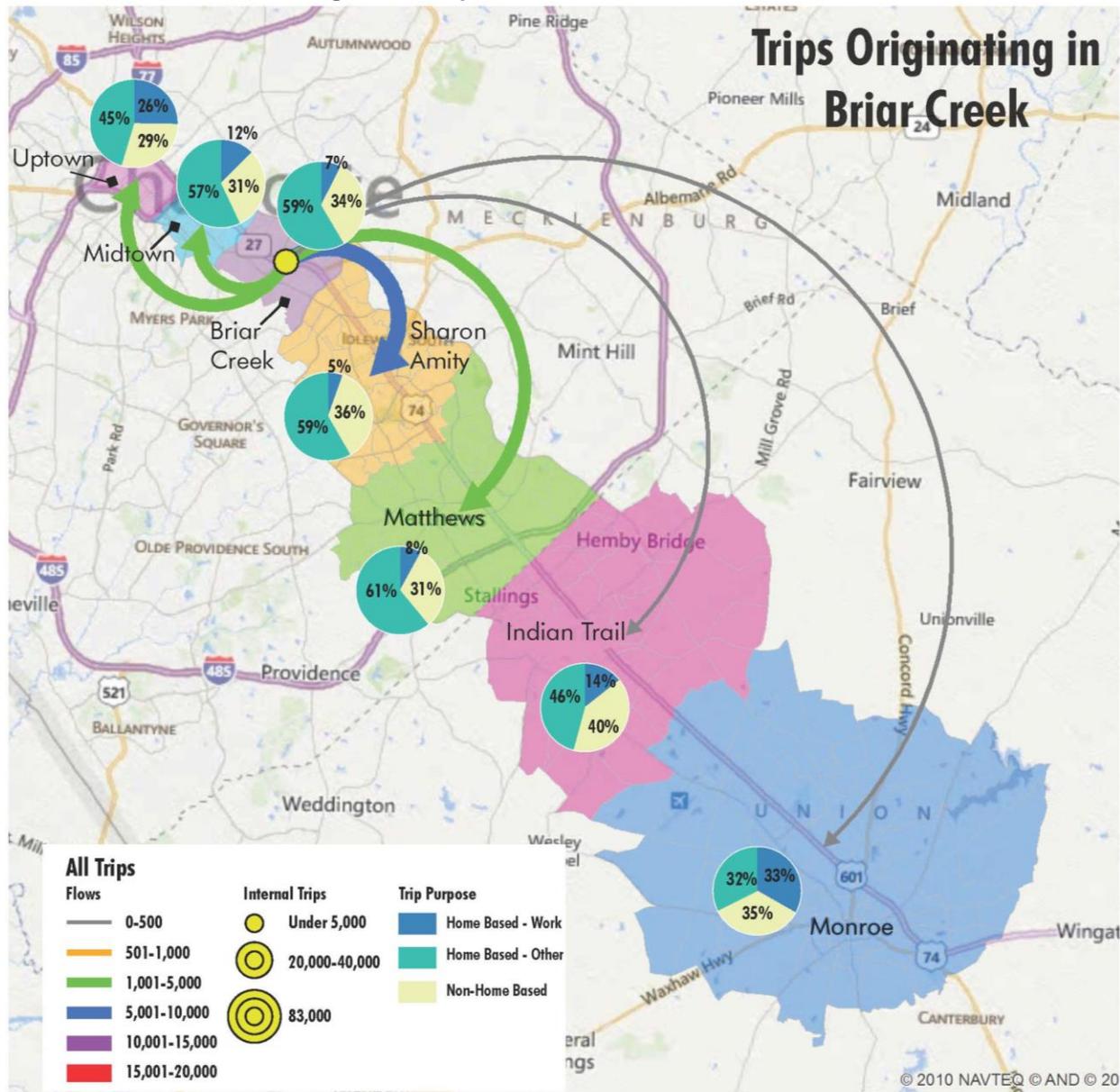
Trip Destinations

- The largest share of trips within the corridor (36%) travel to Uptown.
- One-third of trips are internal (within Midtown).
- Notable shares of trips travel to Briar Creek and Sharon Amity areas; therefore, the vast majority of all trips in the corridor that begin in Midtown are short-distance trips to nearby zones.

Trip Purpose

- From Midtown, the majority of trips are for non-home based purposes.
- Trip purposes from Midtown are more evenly split than from Uptown.
- Trip purposes to Monroe are almost evenly split, but the volume of trips from Midtown to Monroe is very low.

Figure 10: Trip Destinations from Briar Creek



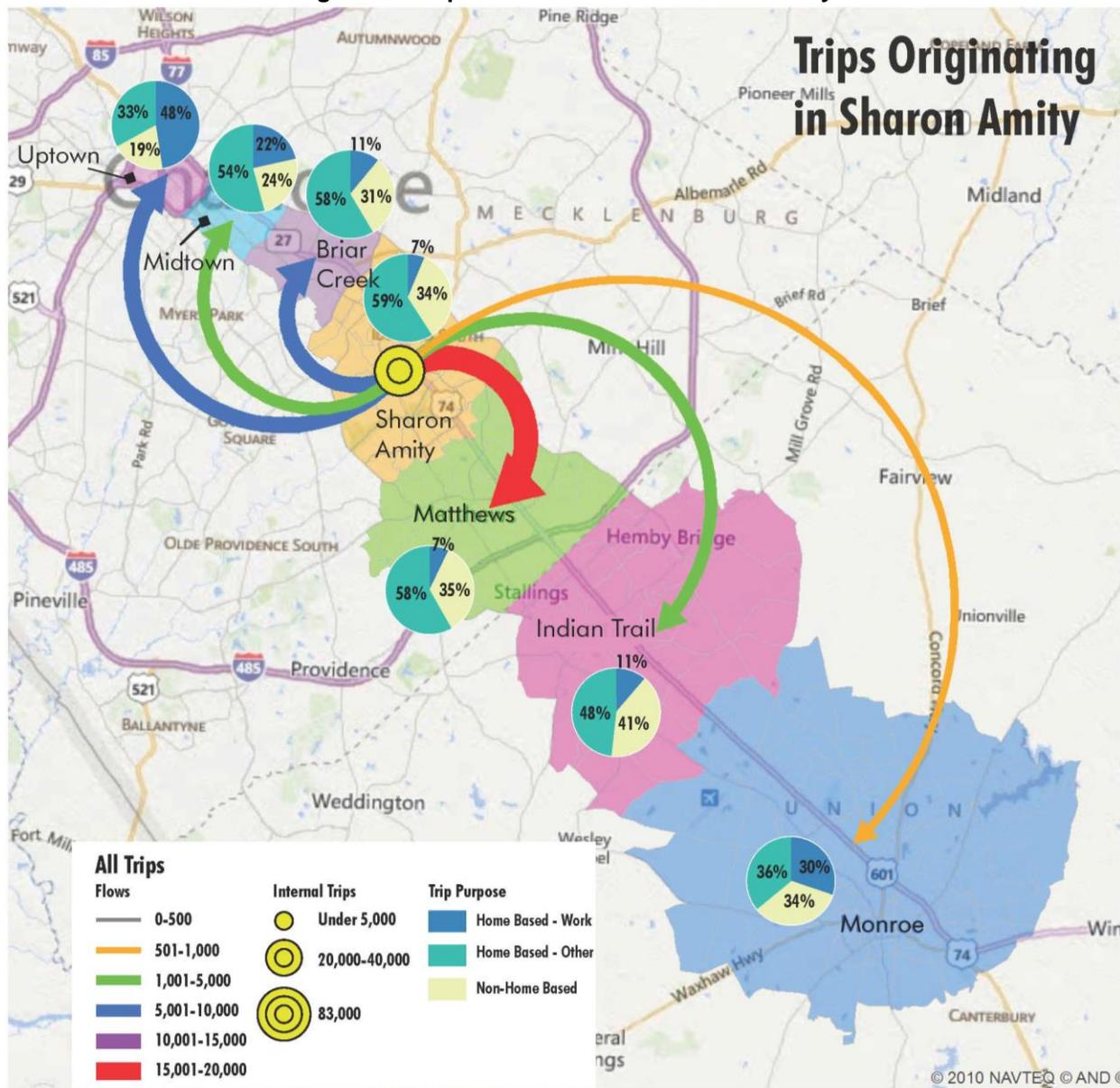
Trip Destinations

- Trips from this area are evenly distributed along the corridor inside I-485.
- Nearly 40% of trips beginning in Briar Creek travel towards Uptown (Midtown and Uptown zones).
- This area has the lowest percentage of internal trips; more trips are destined for the Sharon Amity zone than trips remaining in the Briar Creek zone.

Trip Purpose

- Home-based other trips are the majority of trips taken in the corridor, although there is some variation by zone.
- Trip purposes from Briar Creek to Monroe are almost evenly split, although the volume of trips is low.
- Trip purposes from Briar Creek are more varied than trips from Uptown or Midtown.

Figure 11: Trip Destinations from Sharon Amity



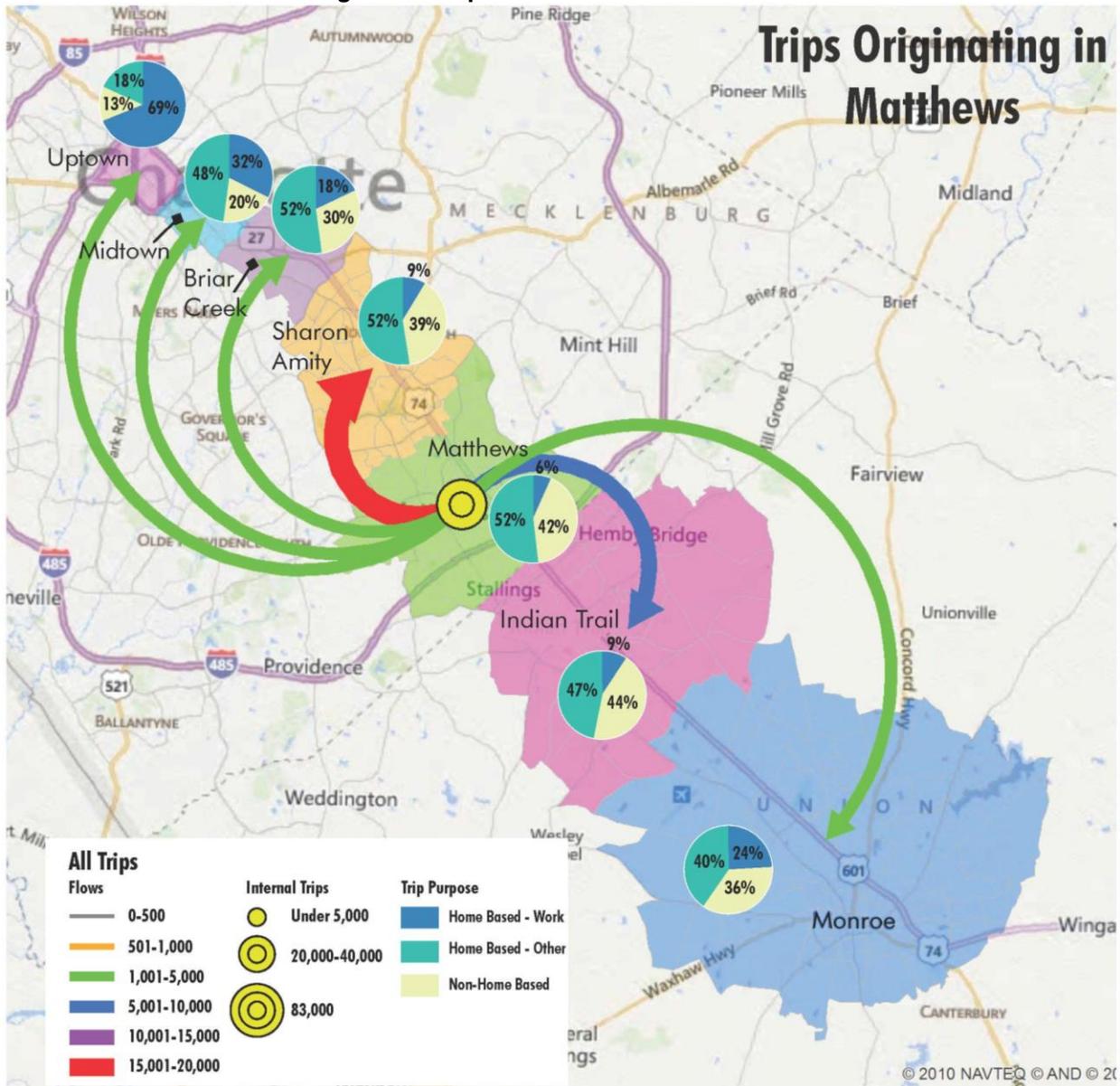
Trip Destinations

- The largest share of trips is internal (within the Sharon Amity zone).
- The second largest share of trips is to Matthews (adjacent zone).
- Trips to Monroe from the Sharon Amity area are the least common in the corridor.

Trip Purpose

- Trips from Sharon Amity to Uptown are primarily for home-based work purposes, reflecting work destinations in Uptown.
- Trip purposes to Monroe are evenly split, although volume is comparatively low.
- The highest percentage of non-home based trips is observed from Sharon Amity to Indian Trail.

Figure 12: Trip Destinations from Matthews



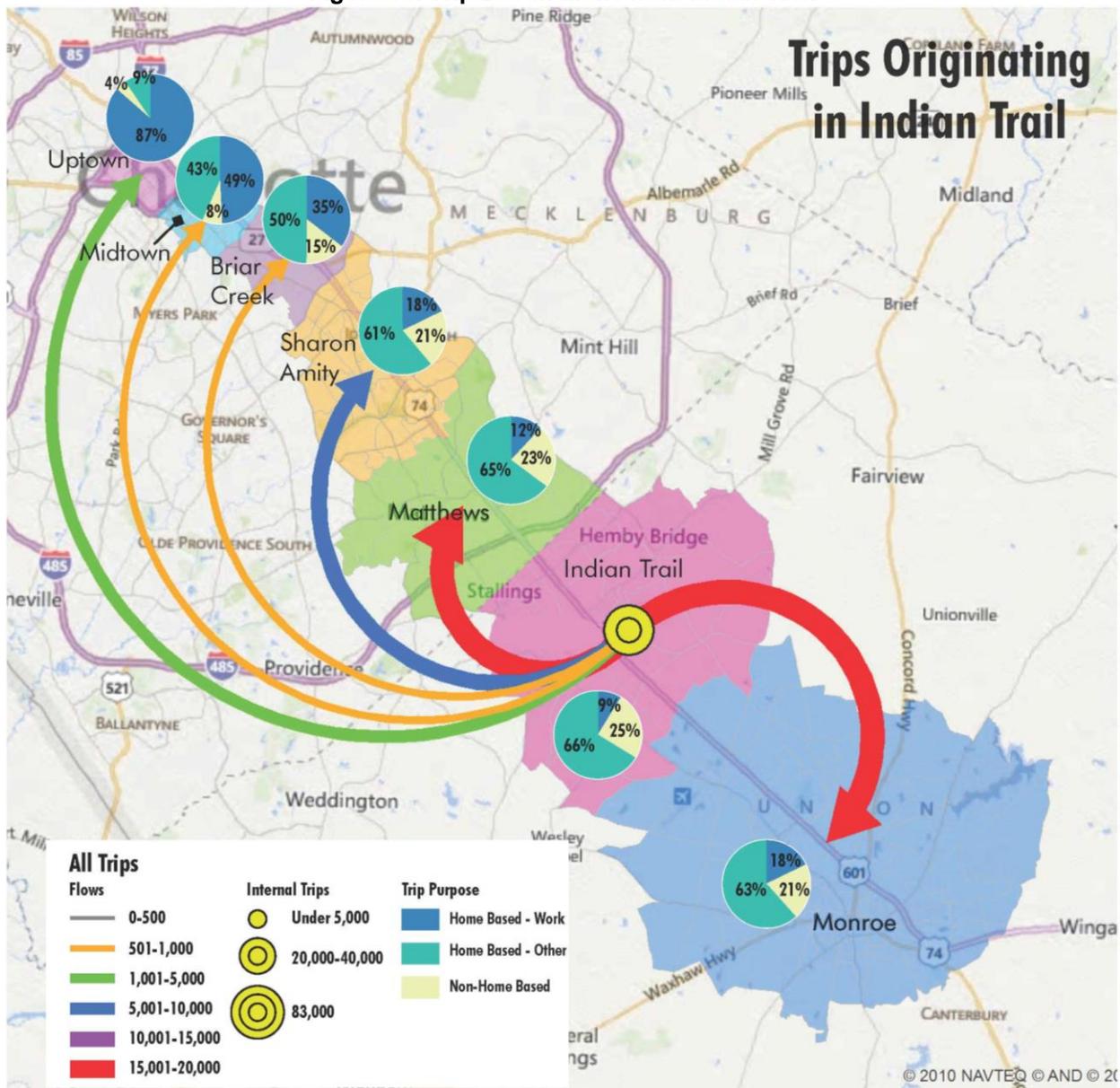
Trip Destinations

- Most trips travel internally (within Matthews) or to one of the adjacent market areas (Sharon Amity or Indian Trail).
- Trips are distributed fairly evenly among the other market areas.

Trip Purpose

- The percentage of home-based work trips to Uptown and Midtown increases as the originating market area moves farther south; nearly 70% of trips to Uptown are work trips.
- Apart from Uptown, home-based other trips are the primary trip purpose within and from Matthews, though by a smaller margin than trips originating in Sharon Amity or Briar Creek.
- Very few internal trips (within Matthews) are home-based work trips.

Figure 13: Trip Destinations from Indian Trail



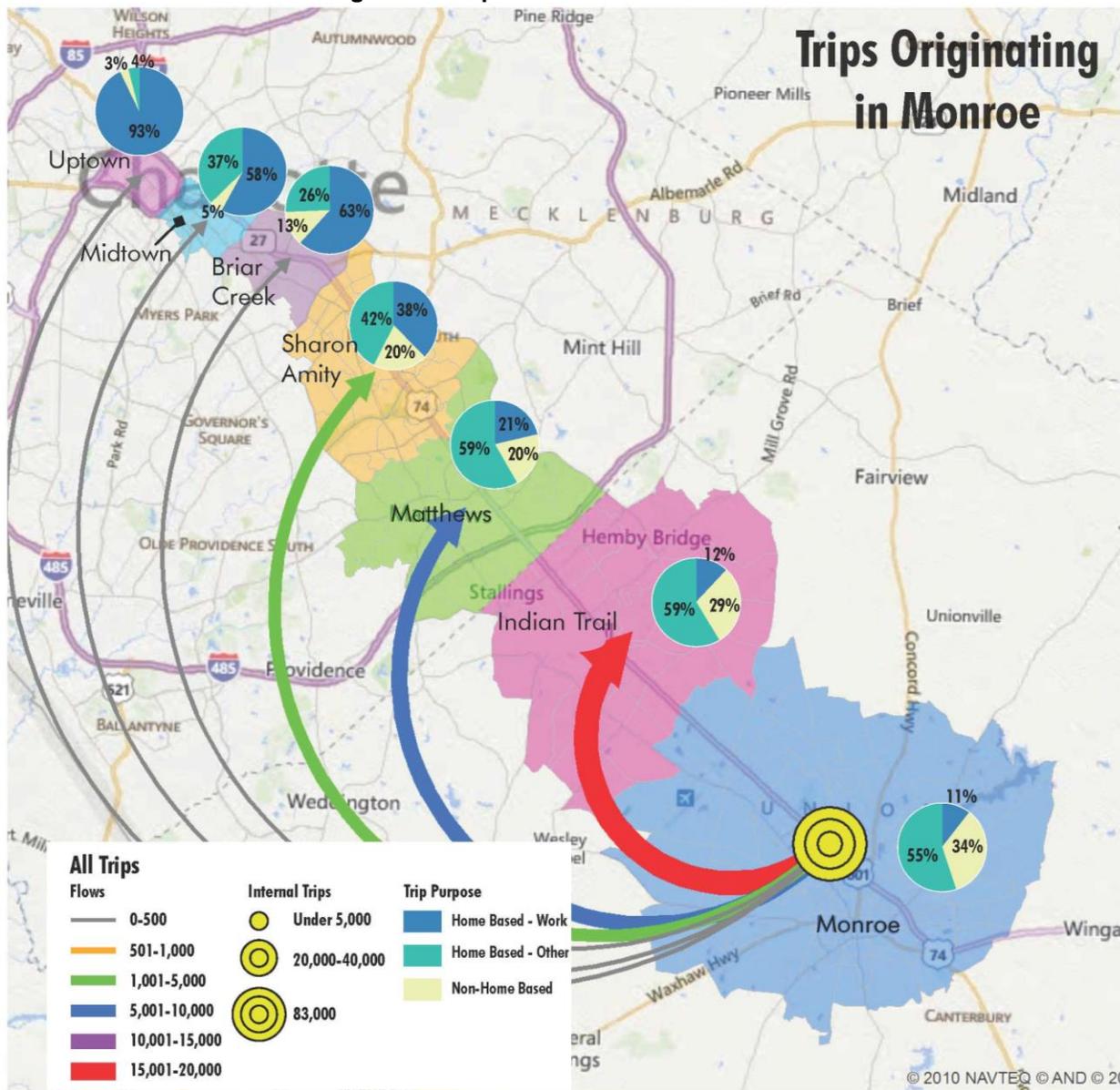
Trip Destinations

- Similar to the characteristics of the Matthews market area, most trips travel internally (within Indian Trail) or to one of the adjacent market areas (Matthews or Monroe).
- Very few trips (4%) originating in Indian Trail travel beyond Sharon Amity towards Uptown.

Trip Purpose

- The majority of trips from Indian Trail to Uptown and Midtown are for home-based work purposes.
- Trips from Indian Trail to the southern portion of the corridor are primarily for home-based other purposes.
- Non-home based trips are the minority in all destination zones within the corridor, reflecting the residential nature of the Indian Trail market area.

Figure 14: Trip Destinations from Monroe



Trip Destinations

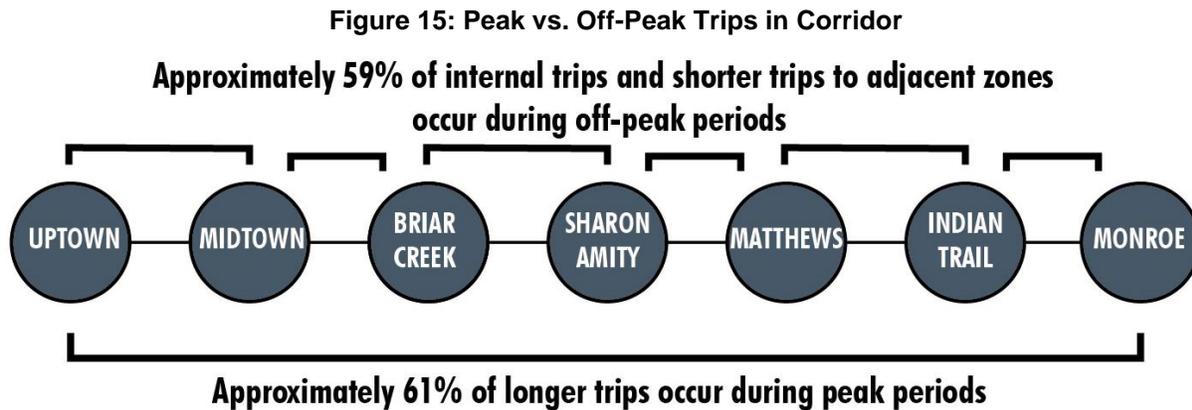
- This market area has the highest percentage of internal trips (within the Monroe market area).
- Relatively speaking, very few trips travel to destinations inside the I-485 loop.

Trip Purpose

- Trips from Monroe to the northern portion of the corridor are primarily for home-based work purposes, though trip volumes are very low.
- Trips within Monroe, to Matthews, and to Indian Trail are very similar in distribution of trip purposes, with a majority of trips being for home-based other purposes.
- Non-home based trips are the minority in all destination zones within the corridor, reflecting the residential nature of the Monroe market area.

3.3.2 When Are People Traveling in the Corridor?

The Metrolina Regional Travel Demand Model also provides estimates of trips occurring during the peak and off-peak periods of the day. The AM peak period is generally considered to be from 7:00 to 9:00 AM and the PM peak period is 4:00 to 6:00 PM. Clear travel patterns emerge when analyzing trip patterns during peak versus off-peak periods. **Figure 15** describes the general pattern of peak versus off-peak trips.



3.3.3 Comparison to South Corridor

The CATS Blue Line along the South Corridor has proven to be a successful transit system attracting more than 16,000 average daily riders. Data has revealed that the South Corridor is very similar to the Southeast Corridor. Both corridors have a major highway extending south from Uptown Charlotte to

South Corridor Comparison Trip Characteristics		
	South Corridor	Southeast Corridor
Total Trips	449,408	395,795*
Trips Inside 485	160,884	190,036
Distribution of Trips (inside 485)		
Internal Trips	82,629 (51%)	96,198 (51%)
Adjacent Trips	54,997 (34%)	64,233 (34%)
Other Corridor Trips	23,257 (14%)	29,604 (16%)
% of Trips to Uptown	4%	5%
% of Trips in Peak Periods	43%	43%

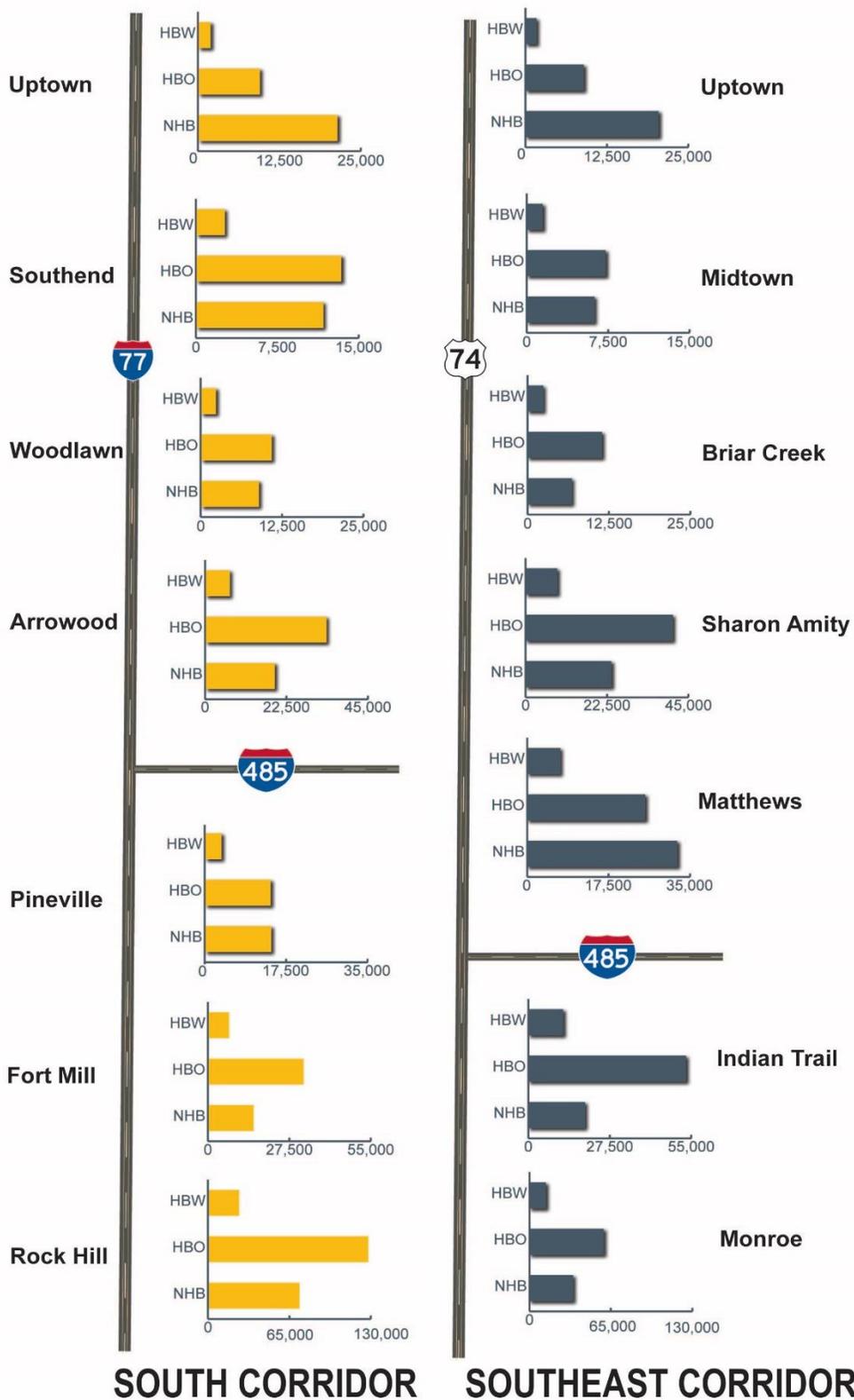
neighboring towns beyond I-485. The mix of land uses and increasing densities leading into Uptown Charlotte is also similar. These similarities suggest conditions in the South Corridor provide a valuable means for comparison, and may help inform future decisions in the Southeast Corridor.

* Does not include Weddington or Hemby Bridge analysis zones

To compare the Southeast Corridor to the South Corridor, market zones of similar size in area and distance from the Uptown Charlotte were created. The Uptown Charlotte

market area is the same for both corridors. Heading south, the market areas become slightly larger with Rock Hill representing the largest market area. Zone to Zone trip purpose comparisons are shown in **Figure 16**.

Figure 16: Comparison of Trip Distribution with South Corridor



4 ROLES OF TRANSIT IN CORRIDOR

While bus and rail service are being proposed in the Southeast Corridor to extend from Center City Charlotte to the Mecklenburg/Union County line, these services should be designed in a way so that they are not duplicative. The bus and rail alternatives will have differing functions to provide complimenting service rather than competing.

Recognizing that Independence Blvd. is primarily regionally-oriented and Monroe Road is more oriented to local access, in addition to its regional role, the roadway network functions to serve both of these roles within the same corridor. Similarly, transit should serve both of these needs as well, and the desire to offer both bus and rail service in the corridor suggest that a similar concept could apply, with bus serving one travel market and rail serving the other.

Given the focus of providing bus service in the Independence Blvd. express lanes, it is logical for bus service to focus on regional commute trips with fewer stops, more peak period trips, and fast travel times. In addition, local bus connections would be made to rapid transit, which would include both the bus service operating in the express lanes and the rail service.

Rail is more oriented around the connections within the corridor, not to say that passengers would not have the option to use rail to get from one end of the corridor to the other. However, it is likely that passengers using rail to get from one end of the corridor to the other would experience a longer trip time because of all the stops that will be made along the way, compared to a comparable express bus with few stops. Passengers would not be precluded from using rail to get from one end of the corridor to the other, but rail would be intended primarily to serve different trip types.

Role of Bus

Regional connections; fewer stops; more commute-oriented; fast travel times; local bus connections to rapid transit



Role of Rail

Connections within the corridor; many trip purposes; access to more corridor destinations balanced with reliability and efficiency



5 TRANSIT GOALS IN CORRIDOR

5.1 Overall Corridor Goals

Within the corridor, it is acknowledged that transit services should accommodate different trip purposes and destinations. Efficient, reliable service is desired because transit riders want to know that if they get on a transit vehicle it will get them to their destination quickly. Charlotte residents who have ridden the LYNX Blue Line have become accustomed to high frequency service and consistent travel times with a vehicles operating in an exclusive right-of-way. This corridor exhibits more than a peak period need and there is interest in service during the midday and evening, in addition to the commute periods. As demonstrated by the public feedback received, there is a desire to connect to other parts of the overall CATS system, and solutions should be developed as part of an interconnected system.

Overall Corridor Goals:

Serve both regional (longer-distance) and local (shorter-distance) destinations

Provide efficient, reliable service (consistent travel time)

Operate at a high frequency

Promote quick trip times

Develop solutions as part of an interconnected system

Building upon the corridor-level goals, more specific bus and rail goals are defined based on the roles of each modal component in the overall corridor transit solution.

5.2 Bus Goals

1. Reduce travel time between Matthews and Uptown Charlotte.
2. Maximize transit opportunity provided through express lanes.
3. Provide frequent and reliable connections from neighborhoods to rapid transit stations.
4. Operate throughout the day.

5.3 Rail Goals

1. Provide reliable and efficient connections within the corridor including the use of dedicated guideway where practical.
2. Build upon efforts to coordinate land use and transportation planning in corridor.
3. Reflect varying land use characteristics through responsive station siting and design elements.
4. Support the vision for the overall CATS system.

6 CORRIDOR CONDITIONS, CHALLENGES, AND OPPORTUNITIES

6.1 Overview of Existing Infrastructure

The existing infrastructure within the study area includes a number of roadways and a Class I single track main line railroad owned and operated by CSX Transportation. The roadways can be classified as those with generally a southeast orientation (in some cases extending from Uptown Charlotte to Matthews) and the roadways that run perpendicular to the corridor.

The primary roadways that run along the corridor in a southeast direction include the following:

- **Independence Boulevard (US 74)** is a major thoroughfare that extends through the corridor. It is the main route from Uptown Charlotte to Matthews and beyond to Union County. The roadway transitions from a 6-lane access-controlled freeway to a 4-lane highway.
- **Monroe Road** parallels Independence Boulevard and during heavy congestion acts as a relief valve. The roadway transitions from 7th Street near Uptown Charlotte to Monroe Road to John Street in Matthews and extends into Union County. Monroe Road transitions from 3 lanes to 4 lanes in the vicinity of Laurel Avenue, and from 4 lanes to 5 lanes in the vicinity of Conference Drive. The railroad alignment has grade separated crossings over Monroe Road in the vicinity of Briar Creek Road and Covedale Drive.
- **Central Avenue** is a major 4-lane roadway that generally parallels Independence Boulevard in the western portion of the corridor. Central Avenue transitions from Kings Drive near Uptown Charlotte and extends to Albemarle Road (NC 27).
- **Commonwealth Avenue / Woodland Drive** is a 2-lane neighborhood roadway that extends from Pecan Avenue to Eastway Drive parallel to Independence Boulevard.

Independence Blvd. bisects the study area and limits the connectivity north and south across the corridor. There are a limited number of roadways that have a grade-separated crossing over or under Independence Blvd. The figures on the following pages identify the main roadways in the study area.

Figure 17: Existing Infrastructure from Center City to Briar Creek

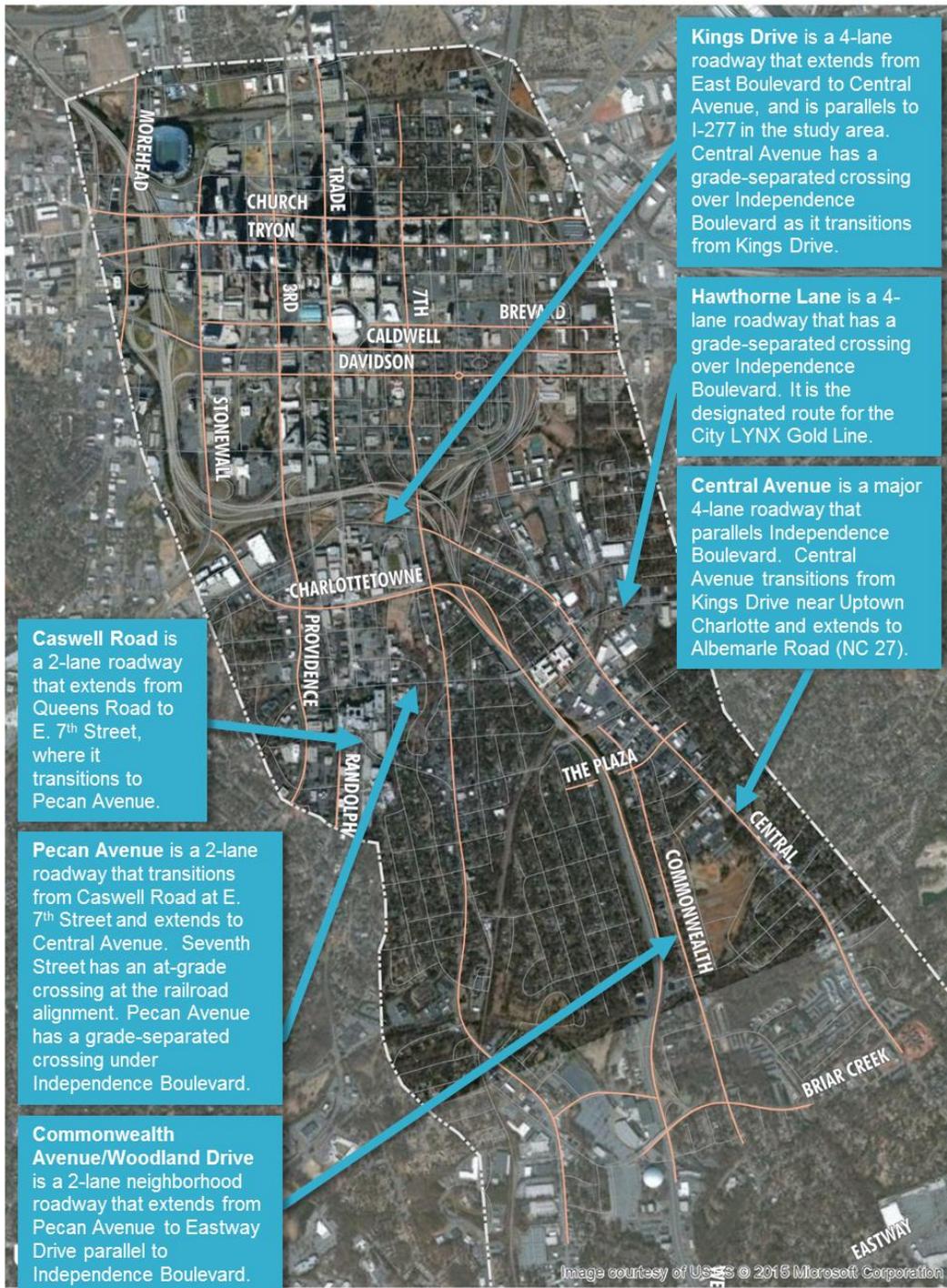


Figure 18: Existing Infrastructure from Briar Creek to Idlewild Road

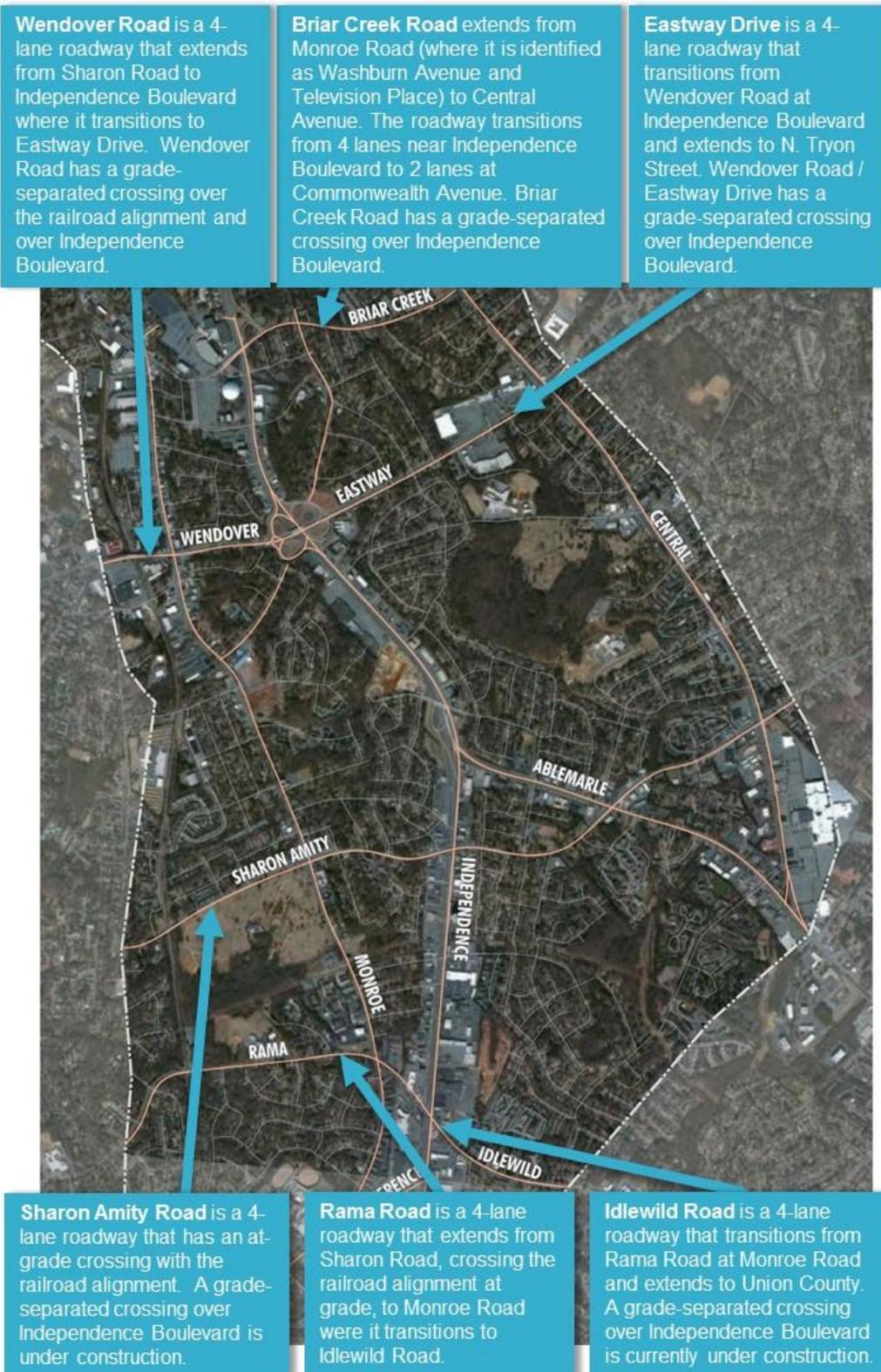


Figure 19: Existing Infrastructure from Idlewild Road to Matthews Town Limits

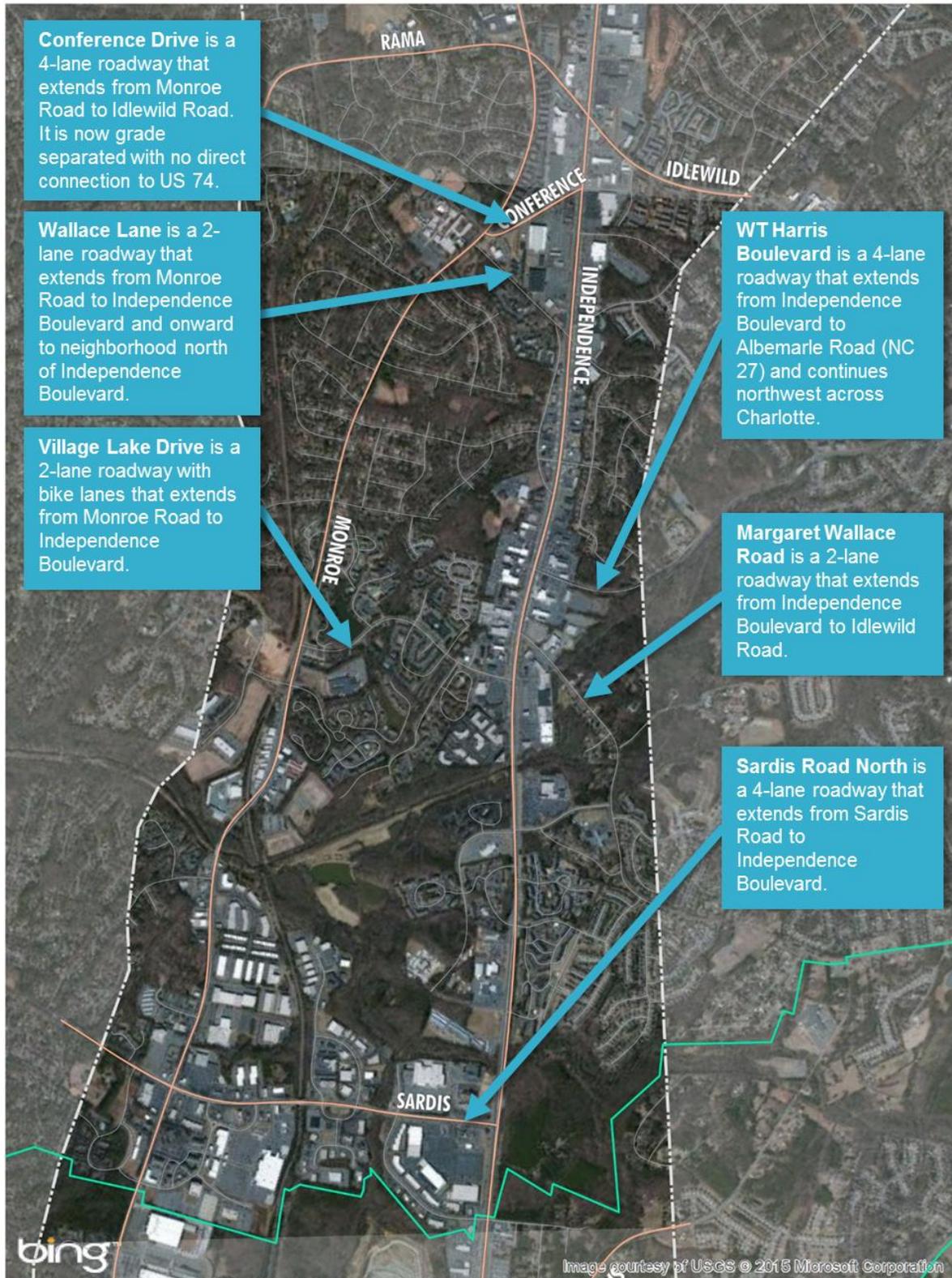


Figure 20: Existing Infrastructure from Matthews Town Limits to Union County Line



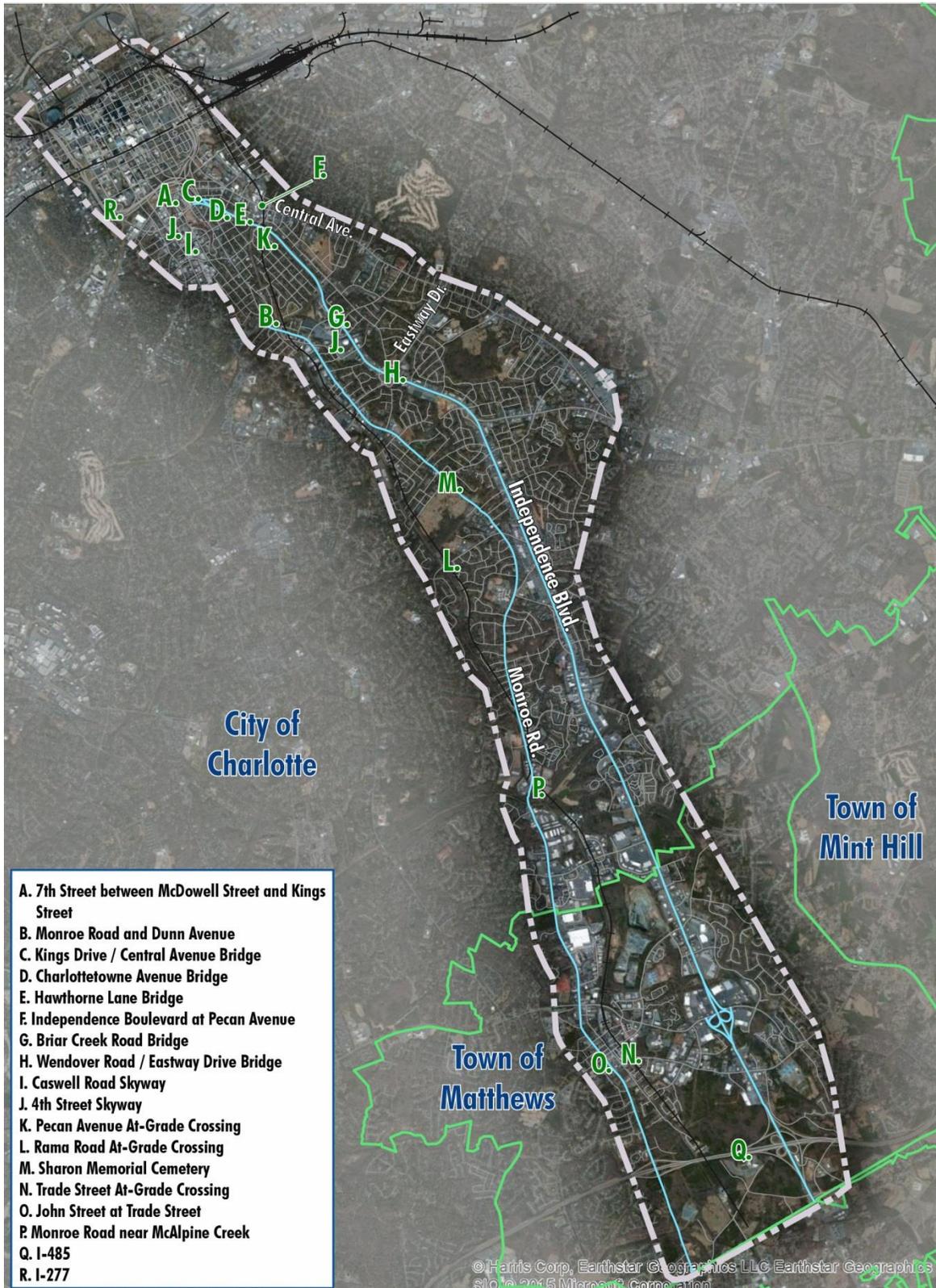
6.2 Physical Challenges and Constraints

There are numerous physical challenges and constraints within the Southeast Corridor ranging from grade-separations to overhead power lines, streams and narrow streets. Additionally, the limited number of street connections within the study area is a key challenge. Independence Boulevard bisects the corridor and severely limits north-south connectivity. For roughly five miles between I-277 and Conference Drive, Independence Boulevard has only the following grade-separated connections over or under the multilane facility:

- Kings Drive / Central Avenue;
- Hawthorne Lane;
- Pecan Avenue;
- Briar Creek Road;
- Wendover Road / Eastway Drive;
- Pierson Drive;
- Sharon Amity (under construction);
- Idlewild Road (under construction); and
- Conference Drive.

Primary physical infrastructure constraints within the study area are identified in **Figure 21** and are discussed on the following pages.

Figure 21: Identified Physical Constraints



A. 7th Street between McDowell Street and Kings Drive

The I-277 ramp over 7th Street constrains vertical clearance and limits the ability to easily widen 7th Street from the existing five-lane section.



B. Monroe Road and Dunn Avenue

The railroad bridge over Monroe Road near Dunn Avenue constrains vertical clearance and limits the ability to easily widen Monroe Road from the existing four-lane section.



C. Kings Drive / Central Avenue Bridge

Kings Drive / Central Avenue bridge over Independence Boulevard is a four-lane bridge with a cross-section of 62 feet. Reconstruction would likely be required to support a rail transit function.



D. Charlottetowne Avenue Bridge

Charlottetowne Avenue / Independence Boulevard Ramp is a two-lane bridge over Independence Boulevard.



E. Hawthorne Lane Bridge

Hawthorne Lane bridge over Independence Boulevard is a four-lane bridge with a cross-section of 58 feet. It will be reconstructed to accommodate streetcar.



F. Independence Boulevard at Pecan Avenue

Independence Boulevard bridge over Pecan Avenue constrains vertical clearance and limits the ability to easily widen Pecan Avenue from the existing two-lane section.



G. Briar Creek Road Bridge

Briar Creek Road bridge over Independence Boulevard is a five-lane bridge with a cross-section of 58 feet. It would be challenging to widen the bridge to accommodate additional lanes; reconstruction would likely be required to support a rail transit function.



H. Wendover Road / Eastway Drive Bridge

Wendover Road / Eastway Drive bridge over Independence Boulevard is a six-lane bridge with a cross-section of 106 feet. Reconstruction would likely be required to support a rail transit function.



I. Caswell Road Skyway

Presbyterian Medical Center has a pedestrian skyway over Caswell Road in the vicinity of 4th Street / Randolph Road. The skyway may limit vertical clearance.



J. 4th Street Skyway

Presbyterian Medical Center has a pedestrian skyway over Caswell Road in the vicinity of 4th Street / Randolph Road. The skyway may limit vertical clearance.



K. Pecan Avenue at Railroad

There is an at-grade railroad crossing at Pecan Avenue near Bay Street.



L. Rama Road near McClintock Middle School

There is an at-grade railroad crossing across Rama Road, next to McClintock Middle School.



M. Monroe Road and Sharon Amity Road

The Sharon Memorial Cemetery is a large cemetery located at 5716 Monroe Road, within the study area.



N. Charles Street and Trade Street

There is an at-grade railroad crossing at Trade Street and Charles Street in Downtown Matthews.



O. John Street at Trade Street

The intersection of John Street and Trade Street in Downtown Matthews is highly congested and any widening would have significant property impacts.



P. Monroe Road near McAlpine Creek

The railroad bridge over Monroe Road constrains vertical clearance and limits the ability to easily widen Monroe Road from the existing 5-lane section.



Q. I-485

A new crossing of I-485 would be required to reach the CPCC Levine Campus.



R. I-277

I-277 has a wide footprint that would need to be negotiated to access Uptown Charlotte.



6.3 Traffic Constraints and Challenges

To provide an overview of existing conditions and “hot spot” locations, information was gathered on existing and future roadway traffic and safety conditions, as well as to identify proposed developments in the study area. The following five corridors were evaluated:

- Independence Boulevard (US 74) – From Uptown Charlotte to I-485;
- 7th Street/Monroe Road – From Uptown Charlotte to I-485;
- 10th Street/Central Avenue – From Uptown Charlotte to Albemarle Road;
- Sharon Amity Road – Between Central Avenue and Monroe Road; and
- Commonwealth Avenue – Between Pecan Avenue and Eastway Drive.

Daily traffic count data from 2014 were obtained from the North Carolina Department of Transportation (NCDOT). To assess existing and anticipated future conditions traffic data was evaluated for the study area roadways and intersections. The City of Charlotte and Town of Matthews were also contacted to identify specific areas along the study area roadways that contribute to current congestion, safety, and operational issues.

6.3.1 Existing (2015) Traffic Conditions

Existing (2015) traffic volumes were assessed for each of the five study corridors. **Figure 23** presents the results of the assessment, which are described as follows:

US 74 (Uptown to I-485)

- Existing annual average daily traffic (AADT) in this corridor is greatest between I-277 and Eastway Drive (104,000), and is the least between Sardis Road North and NC 51 (48,000).
- This corridor performs at level of service (LOS) D approaching/leaving Uptown (where volumes are greatest and US 74 operates as a freeway), and LOS declines in the corridor to LOS F as it transitions to a boulevard with signalized intersections and approaches Sharon Amity Road from Uptown. It then remains consistently poor at LOS F to I-485, with the exception of a very small stretch between NC 27 and Margaret Wallace Road, where it improves slightly to LOS E.

7th Street/Monroe Road/John Street (Uptown to I-485)

- Traffic volumes are greatest along Monroe Road as it approaches Matthews Township Parkway (NC 51). The lowest traffic volumes along this corridor are found on 7th Street between Charlottetowne Avenue and Briar Creek Road.
- 7th Street, from approximately Charlottetowne Avenue to Laurel Avenue, despite lower traffic volumes, performs at LOS F; however, 7th Street both north and south of this section functions adequately at LOS A - C.
- John Street exhibits its best LOS between NC 51 and I-485, at LOS A - C. North of NC 51 and also approaching I-485, the roadway performs at LOS F (where traffic volumes are greatest). LOS fluctuates between LOS D and E along Monroe Road from just south of Sardis Road North to Eastway Drive.

10th Street/Central Avenue (Uptown to Albemarle Road)

- This corridor carries a consistent amount of traffic volume between Hawthorne Lane and Sharon Amity Road, although it increases at the intersection with Sharon Amity Road.
- Level of service is consistent (LOS A - C or D) from Uptown Charlotte through the Eastway Drive intersection. It degrades to LOS E as it approaches the Sharon Amity Road intersection, then improves to LOS A - C east of Sharon Amity Road to Albemarle Road.

Sharon Amity Road (between Monroe Road and Central Avenue)

- Although this is a short segment of Sharon Amity Road within the study area, it carries significant traffic – particularly at its intersection with Central Avenue.
- Level of service at the intersection with Central Avenue is poor (LOS F), but it steadily improves from Central Avenue approaching Monroe Road, until it reaches LOS A - C at the Monroe Road intersection.

Commonwealth Avenue (Pecan Avenue and Eastway Drive)

- This corridor carries very low traffic volumes and performs at LOS A - C.

Of the five street corridors under evaluation, US 74 performs the poorest and carries significantly greater traffic volumes than the other four corridors included in this study. The stretch of Commonwealth Avenue from Pecan Avenue to Eastway Drive exhibits LOS A-C and carries far less traffic than the other four corridors. The intersection of Central Avenue and Sharon Amity Road is fairly congested, with high traffic volumes along those two facilities and an existing LOS of E and F, respectively. Traffic volumes along 7th Street/Monroe Road increase from Eastway Drive heading south to NC 51, at which point they reach their greatest levels within this corridor. South of NC 51, volumes taper off as LOS also changes from LOS F north of NC 51 to LOS A-C south of NC 51 in Matthews.

6.3.2 Future (2040) Traffic Conditions

Future (2040) traffic conditions for the five study corridors was also evaluated to assess potential changing conditions over time. Future traffic demand was estimated using the 2015 AADT and growth rates from the Metrolina Regional Model. The future traffic conditions are shown in **Figure 24**, and described as follows:

US 74 (Uptown to I-485)

- Projected future conditions along this study corridor indicate that AADT will continue to be greatest between I-277 and Eastway Drive, and least between W.T. Harris Boulevard (NC 24) and Sardis Road North.
- Level of service within this corridor will degrade from Uptown to Sharon Amity Road to LOS E (from LOS D in 2015). South of Sharon Amity Road, LOS on US 74 will improve to LOS D. LOS will improve to levels A - C south of W.T. Harris Boulevard to I-485. Although AADT will increase in the corridor, LOS improves due to proposed capacity improvements that will be constructed prior to 2040.

7th Street/Monroe Road/John Street (Uptown to I-485)

- Future conditions suggest that the most pronounced changes within this corridor will consist of significant increases in AADT occurring at both the northern end near Uptown Charlotte (approximately 20,000 vehicles/day), and the southern end approaching I-485 (more than 30,000 vehicles/day in some places).
- Increases in traffic volumes in the southern end of this corridor, south of NC 51, result in a degraded LOS by 2040 (from LOS A - C in 2015 to LOS E in 2040 along some portions of the corridor between NC 51 and I-485). Near Uptown Charlotte, the facility continues to perform at LOS F as well.
- Another noticeable degradation of service within this corridor will occur between Briar Creek and Idlewild Road. Conditions in 2015 are satisfactory near Briar Creek (LOS A - C), then decrease gradually approaching Idlewild Road to LOS D and eventually LOS E. In 2040, this section of the corridor will perform at LOS E or F along this entire segment.

10th Street/Central Avenue (Uptown to Albemarle Road)

- As with the other corridors under evaluation for this study, traffic volumes will increase across the entire length of this study corridor by 2040.
- Level of service will degrade correspondingly by 2040 to LOS E or F throughout this study corridor.

Sharon Amity Road (between Monroe Road and Central Avenue)

- Traffic volumes along Sharon Amity Road will increase in the future, but to a lesser degree than most of the other study corridors.
- Level of service will continue to perform poorly near the Central Avenue intersection (LOS F) and increase slightly approaching US 74 (LOS E).

Commonwealth Avenue (Pecan Avenue and Eastway Drive)

- Future conditions indicate that this corridor will continue to carry very low traffic volumes and perform at LOS A - C.

US 74 will continue to carry significantly greater traffic volumes than the other four roadway corridors in the future, and Commonwealth Avenue will exhibit very similar characteristics in 2040 as it does in 2015. The most dramatic change to future traffic conditions among the study corridors are found on 7th Street / Monroe Road, where AADT will greatly increase along certain segments of this roadway and level of service will degrade substantially.

Table 2 summarizes both the existing and future traffic conditions.

Table 2: Existing (2015) and Future (2040) Traffic Conditions

Corridor	From	To	Existing AADT	Existing V/C	Existing LOS	Future AADT	Future V/C	Future LOS
US 74	Uptown	Wendover Ave	104,000	0.85	D	117,800	0.96	E
	Wendover Ave	Albemarle Rd	93,000	0.76	D	106,500	0.87	E
	Albemarle Rd	E W T Harris Blvd	76,000	1.23	F	96,200	0.78	D
	E W T Harris Blvd	Margaret Wallace Rd	59,000	0.96	E	66,500	0.54	A-C
	Margaret Wallace Rd	Village Lake Dr	57,000	1.38	F	73,000	0.59	A-C
	Village Lake Dr	Sam Newell Rd	53,000	1.29	F	67,900	0.55	A-C
	Sam Newell Rd	NC 51	48,000	1.17	F	72,500	0.59	A-C
	NC 51	I-485	58,000	1.41	F	69,100	0.56	A-C
	I-485	Union County	60,000	1.46	F	72,300	0.59	A-C
Sharon Amity Rd	West of Monroe	Monroe Rd	19,000	0.60	A-C	22,200	0.70	D
	Monroe Rd	US 74	22,000	0.69	A-C	29,300	0.92	E
	US 74	Albemarle Rd	25,000	0.78	D	28,800	0.90	E
	Albemarle Rd	Central Ave	31,000	0.97	E	34,600	1.08	F
	Central Ave	East of Central Ave	36,000	1.13	F	43,600	1.37	F
Central Ave / 10 th St	McDowell St	Seigle Ave	12,000	0.81	D	17,900	1.20	F
	Seigle Ave	Louise Ave	10,000	0.67	A-C	12,900	0.87	E
	Louise Ave	Hawthorne Ln	25,000	0.78	D	32,900	1.03	F
	Hawthorne Ln	The Plaza	25,000	0.78	D	33,600	1.05	F
	The Plaza	Morningside Dr	24,000	0.75	D	32,900	1.03	F
	Morningside Dr	Flynnwood Dr	21,000	0.66	A-C	28,000	0.88	E
	Flynnwood Dr	Eastway Dr	24,000	0.75	D	30,400	0.95	E
	Eastway Dr	Kilborne Dr	24,000	0.75	D	32,600	1.02	F
	Kilborne Dr	Sharon Amity Rd	28,000	0.88	E	36,500	1.14	F
Sharon Amity Rd	Albemarle Rd	21,000	0.66	A-C	27,300	0.86	E	
7 th St / Monroe Rd / John St	Trade St	McDowell St	14,000	0.44	A-C	22,500	0.71	D
	McDowell St	E Independence Blvd	21,000	0.66	A-C	36,600	1.15	F
	E Independence Blvd	Hawthorne Ln	16,000	1.07	F	25,300	1.70	F
	Hawthorne Ln	Laurel Ave	17,000	1.14	F	23,400	1.57	F
	Laurel Ave	Fannie Cr	16,000	0.50	A-C	21,600	0.68	A-C
	Fannie Cr	Fugate Ave	20,000	0.63	A-C	27,700	0.87	E
	Fugate Ave	Wendover Ave	21,000	0.66	A-C	28,300	0.89	E
	Wendover Ave	McAlway Rd	27,000	0.85	D	34,900	1.09	F
	McAlway Rd	Commonwealth Ave	24,000	0.75	D	28,600	0.90	E
	Commonwealth Ave	Sharon Amity Rd	23,000	0.72	D	27,600	0.87	E
	Sharon Amity Rd	Idlewild Rd	28,000	0.88	E	35,900	1.13	F
	Idlewild Rd	Wallace Ln	27,000	0.85	D	33,300	1.04	F
	Wallace Ln	Thermal Rd	26,000	0.82	D	25,100	0.79	D
	Thermal Rd	Village Lake Dr	25,000	0.78	D	24,900	0.78	D
	Village Lake Dr	Delmar Office Dr	29,000	0.91	E	32,300	1.01	F
	Delmar Office Dr	Sardis Rd	31,000	0.97	E	35,700	1.12	F
	Sardis Rd	Gander Cove Ln	27,000	0.85	D	33,800	1.06	F
	Gander Cove Ln	NC 51	34,000	1.07	F	42,300	1.33	F
	NC 51	Trade St	19,000	0.60	A-C	27,900	0.87	E
	Trade St	Clearbrook Rd	20,000	1.45	F	40,000	1.25	F
Clearbrook Rd	I-485	22,000	1.59	F	45,000	1.41	F	
Commonwealth Ave	Briar Creek	Wendover Ave	2,200	0.14	A-C	3,800	0.23	A-C

Source: Metrolina Travel Demand Model

6.3.3 Safety Conditions

In addition to existing and future traffic conditions, a review of safety conditions along the five roadway corridors was also conducted. Two specific resources from the Charlotte Department of Transportation (CDOT) were utilized to identify locations within these corridors where existing safety concerns are present. Each safety analysis tool is described in this section, and existing safety conditions within the study corridors are highlighted.

2015 High Accident Locations (HAL)

A high accident locations (HAL) list is released annually by CDOT to accomplish multiple goals. The first goal of releasing the HAL list is to prioritize and identify locations that can benefit from spot safety improvements that will reduce the number of collisions. It is also used to support the ranking and prioritization needs of many transportation-related programs.

The 2015 HAL information released by CDOT is displayed in **Table 3** and **Figure 4**.

Table 3: 2015 High Accident Locations (HAL) in the Southeast Corridor

Location	Number of Crashes (2012-2014)	Crash Rate (per million entering vehicles)	CDOT Ranking
E 7th St & N College St	38	2.41	5
Central Ave & E 7th St/N Kings Dr	57	1.20	83
Charlottetowne Ave & E 7th St/E Independence Blvd	40	1.23	76
E 7th St & Hawthorne Ln	52	1.58	30
Central Ave & Eastway Dr	90	1.55	36
Central Ave & N Sharon Amity Rd	106	1.53	43
Albemarle Rd & N Sharon Amity Rd	129	1.68	25
Idlewild Rd & Monroe Rd/Rama Rd	54	1.27	73
E Independence Blvd & Idlewild Rd	130	1.50	48
E 12th St & N Davidson St	43	1.76	19
E Stonewall St & S College St	36	1.44	53
Charlottetowne Ave & E John Belk Ramp/Kenilworth Ave	88	1.83	16
E 12th St & N College St	21	2.46	4

Source: Charlotte DOT

2014 Intersection Safety Warrant List

As part of the CDOT's goal of providing a safe transportation system for all road users, the CDOT's Traffic Safety Section has developed a list of locations that are good candidates as sites for safety improvements. Additionally, this list provides a consistent picture of the collision patterns at locations throughout the City to aid in the development of capital projects and programs.

Table 4 and **Figure 25** provide the intersection safety warrant list locations, maintained by CDOT, for the five study corridors.

Table 4: 2014 Intersection Safety Warrant Locations

Location	Number of Crashes (2010-2014)
Albemarle Rd & Central Ave	24
Albemarle Rd & Central Ave	93
Albemarle Rd & N Sharon Amity Rd	179
Ashmore Dr & Monroe Rd	24
Briar Creek Rd & Commonwealth Ave	25
Central Ave & E 7th St/N Kings Dr	77
Central Ave & Eastcrest Dr	22
Central Ave & Eastway Dr	151
Central Ave & Hawthorne Ln	38
Central Ave & N Sharon Amity Rd	154
Central Ave & Pecan Av	38
Central Ave & Rosehaven Dr	51
Central Ave & Wembley Dr	22
Charlottetowne Ave & E 7th St/E Independence Blvd	80
Covedale Dr & Monroe Rd	26
Dunn Ave & Monroe Rd	14
E 7th St & Hawthorne Ln	92
E 7th St & N McDowell St	49
E Independence Blvd & Sharon Forest Dr	49
E Independence Blvd & Wallace Rd	76
Galleria Blvd & Monroe Rd	29
Idlewild Rd & Monroe Rd/Rama Rd	77
Lumarka Dr & Monroe Rd/Thermal Rd	26
Monroe Rd & Washburn Ave	20
N Sharon Amity Rd & Spanish Quarter Cr	26

Source: Charlotte DOT

6.3.4 Proposed Development

As mentioned previously, the City of Charlotte and Town of Matthews were contacted to inquire about particular locations in which development pressures could contribute to current or future traffic conditions within the study corridors identified for this study. Based upon the information received from those inquiries, a listing of the potential contributing locations is included below.

US 74 (Uptown to I-485)

- Matthews Sportsplex (Phase II) to increase fields from 5 to 12, and will include the addition of a new road connection – connecting Brigman Road to Matthews-Mint Hill Road, just west of US 74.
- Apartments (approximately 250 units) at Matthews Township Parkway and Northeast Parkway, in Matthews, just east of US 74.
- Central Piedmont Community College (CPCC)-Levine Campus is adding a third building. Access to the campus is already problematic, plus the new building will require additional parking on site.

7th Street/Monroe Road (Uptown to I-485)

- Meridian Development at Monroe Road and Idlewild Road, in Charlotte.

10th Street/Central Avenue (Uptown to Albemarle Road)

- 1305 Central Avenue Apartments at Central Avenue and Clement Avenue, in Charlotte, which will include both multi-family residential and retail uses.
- 1201 Central Avenue multi-family development, in Charlotte.

Figure 26 also displays the proposed development locations. Note that no specific development locations were identified for the Sharon Amity Road or Commonwealth Avenue study corridors. This list is not intended to be all-inclusive of all potential development activities that may occur.

6.3.5 Miscellaneous Considerations

Other factors that potentially could impact traffic and/or safety within the study corridors, which have not previously been discussed in this memorandum, are as follows:

- US 74 express lanes widening project will create impacts during its construction (TIP #U-209B).
- US 74 express lanes widening project (from Conference Drive to I-485) will create impacts during its construction (TIP #U-2509) – the project also includes a flyover at Sam Newell Road and Matthews-Mint Hill Road.
- US 74 express lanes conversion project (between I-277 and Wallace Lane) will create impacts during its construction (TIP #U-5526).
- US 74/I-485 interchange ramps are dangerous during winter months due to adverse weather conditions, during which time crash rates increase.
- US 74 backs up between Windsor Square Drive and Sam Newell Road due to the location of traffic signals in close proximity to one another. However, NCDOT's TIP #U-2509 project is expected to alleviate this concern.
- The Town of Matthews desires a street connection between Rice Road Extension and Rice Road, where a small gap currently exists, just east of US 74. This would provide a new connection from the neighborhoods off Rice Road to US 74.
- As a part of NCDOT's TIP #U-2509, it is expected that current gaps in the parallel collector street system, Krefeld Drive/Independence Pointe Parkway and Arequipa Drive/Northeast Parkway, will be constructed, which will create new opportunities for local traffic and transit.
- East John Street in Matthews from downtown at Trade Street to beyond the Union County line will be widened to four lanes (TIP #U-4714).

Figure 22: Study Corridors for Traffic Evaluation

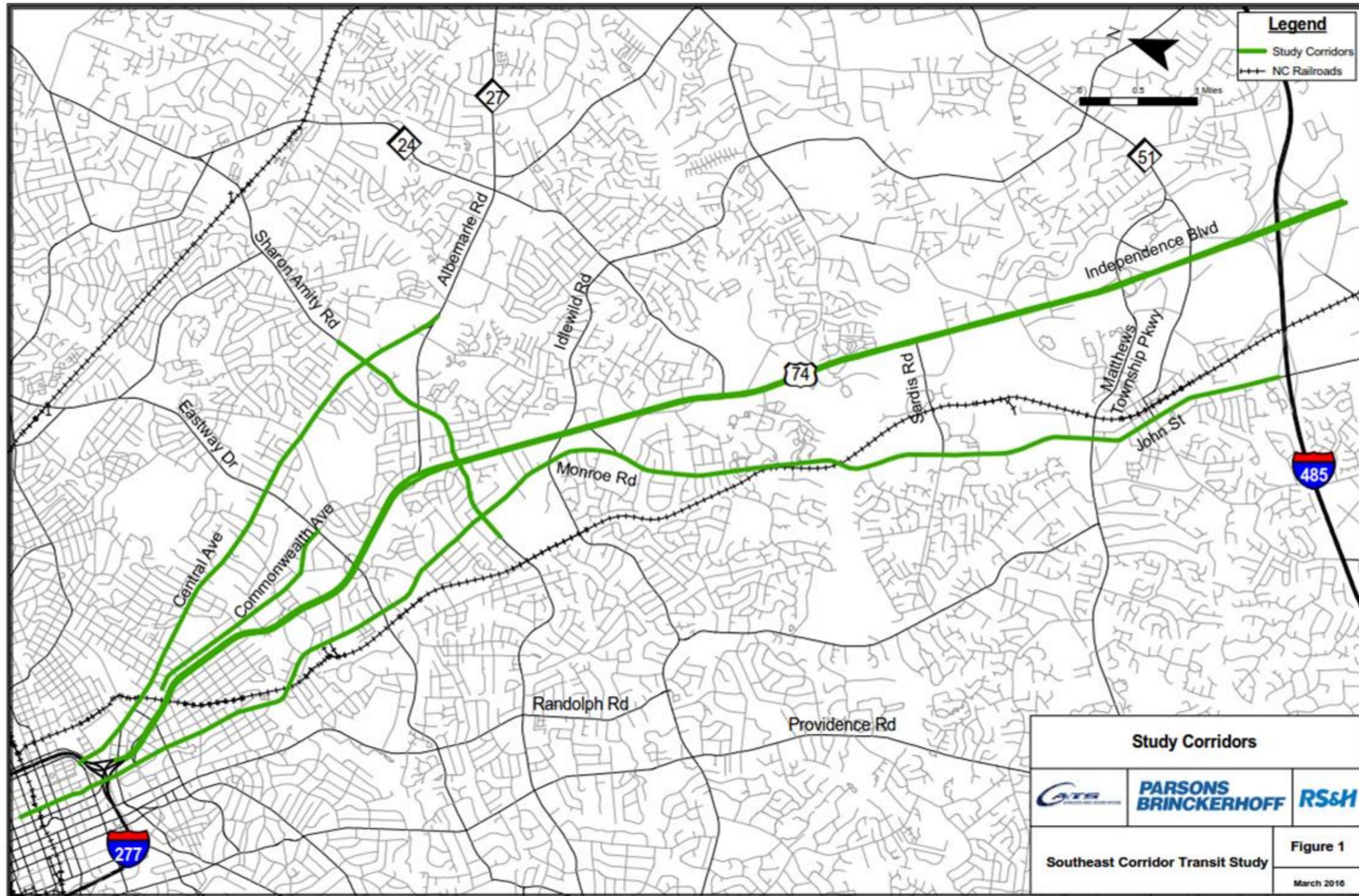


Figure 23: Existing (2015) Traffic Flow Conditions

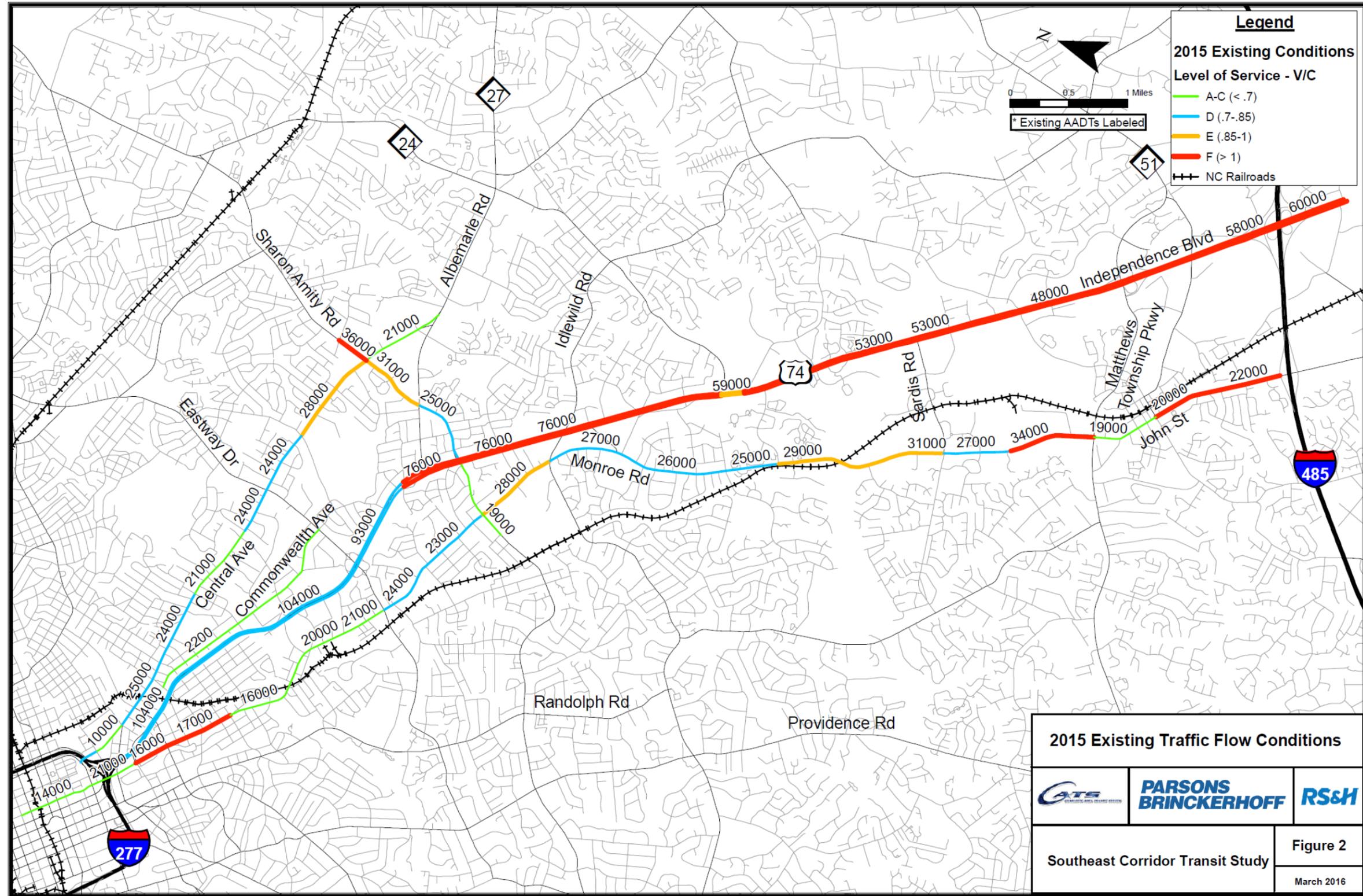


Figure 24: Future (2040) Traffic Flow Conditions

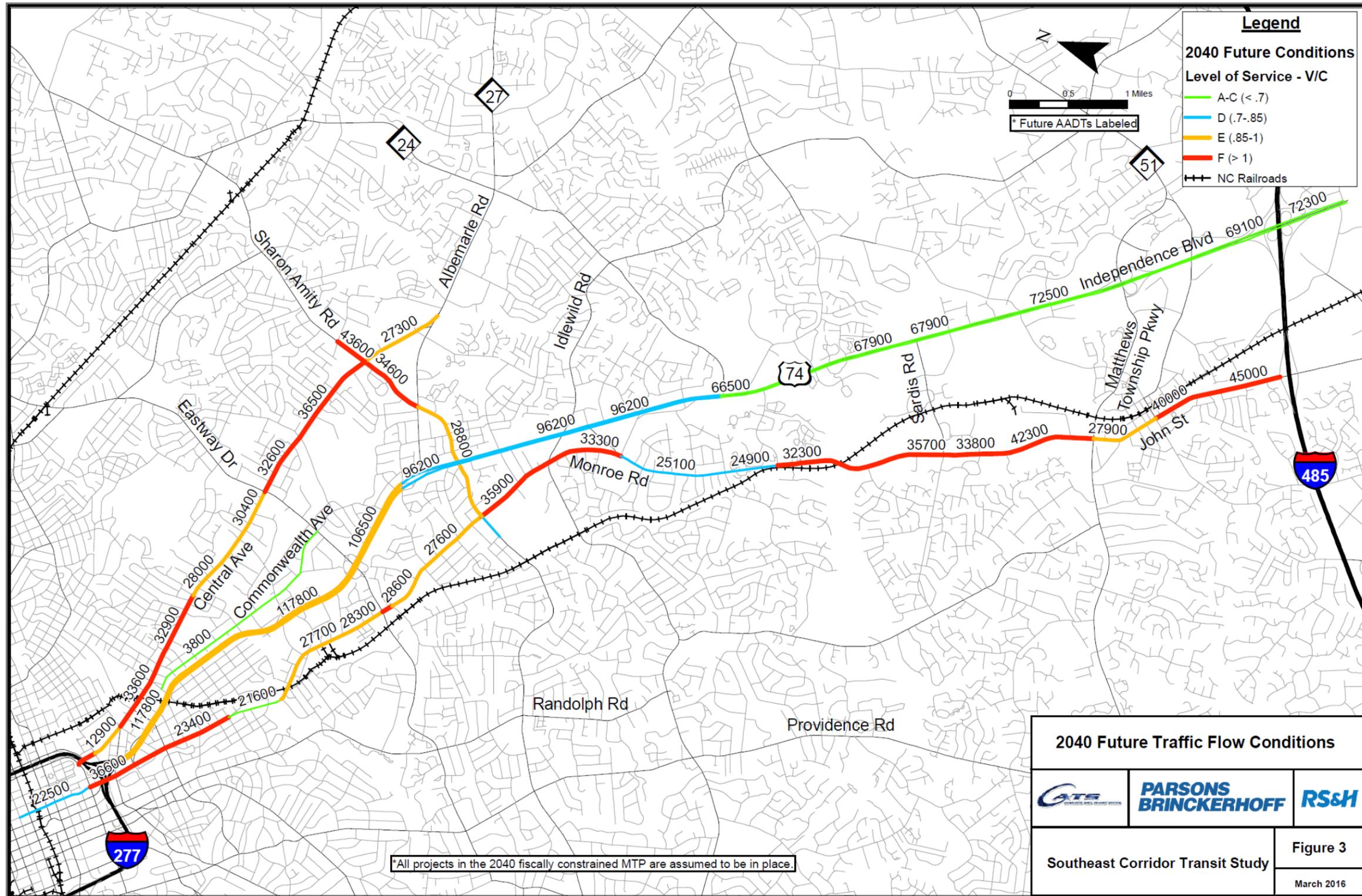


Figure 25: Identified Safety Conditions

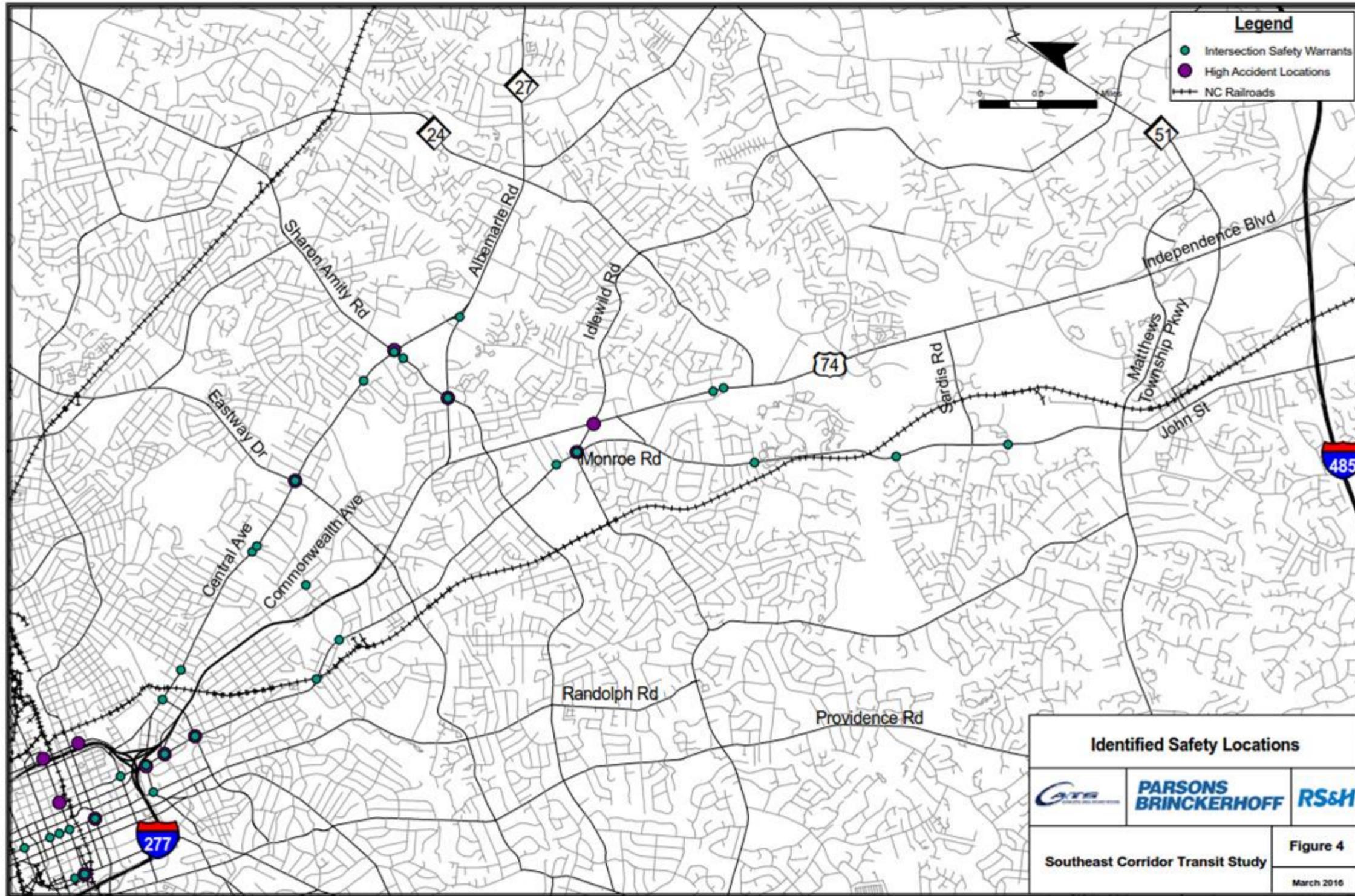
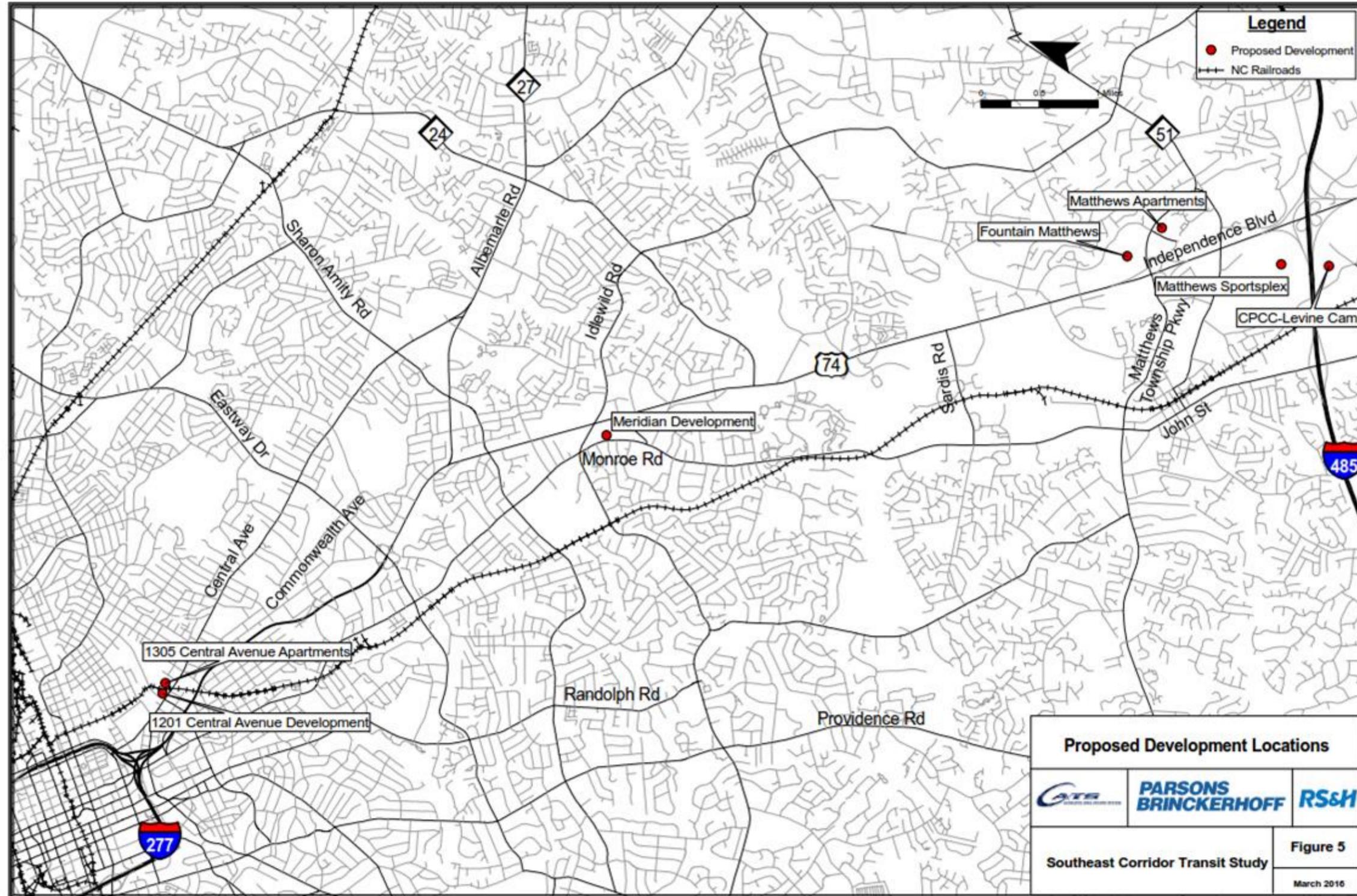


Figure 26: Proposed Development Locations



6.4 Opportunities for Integration with Other Plans and Projects

A series of additional planning efforts in the corridor are being conducted by the City of Charlotte, NCDOT and the Town of Matthews. The bus and rail elements that emerge from this Southeast Corridor study should be designed in a way that fits in with these related planning efforts. Likewise, these related studies and projects offer coordination opportunities that may help to identify a transit solution that supports multiple planning goals and uses opportunities created by other efforts.

The locations of projects in the corridor are depicted in **Figure 27** through **Figure 30**.

Figure 27: Projects and Plans from Center City to Briar Creek

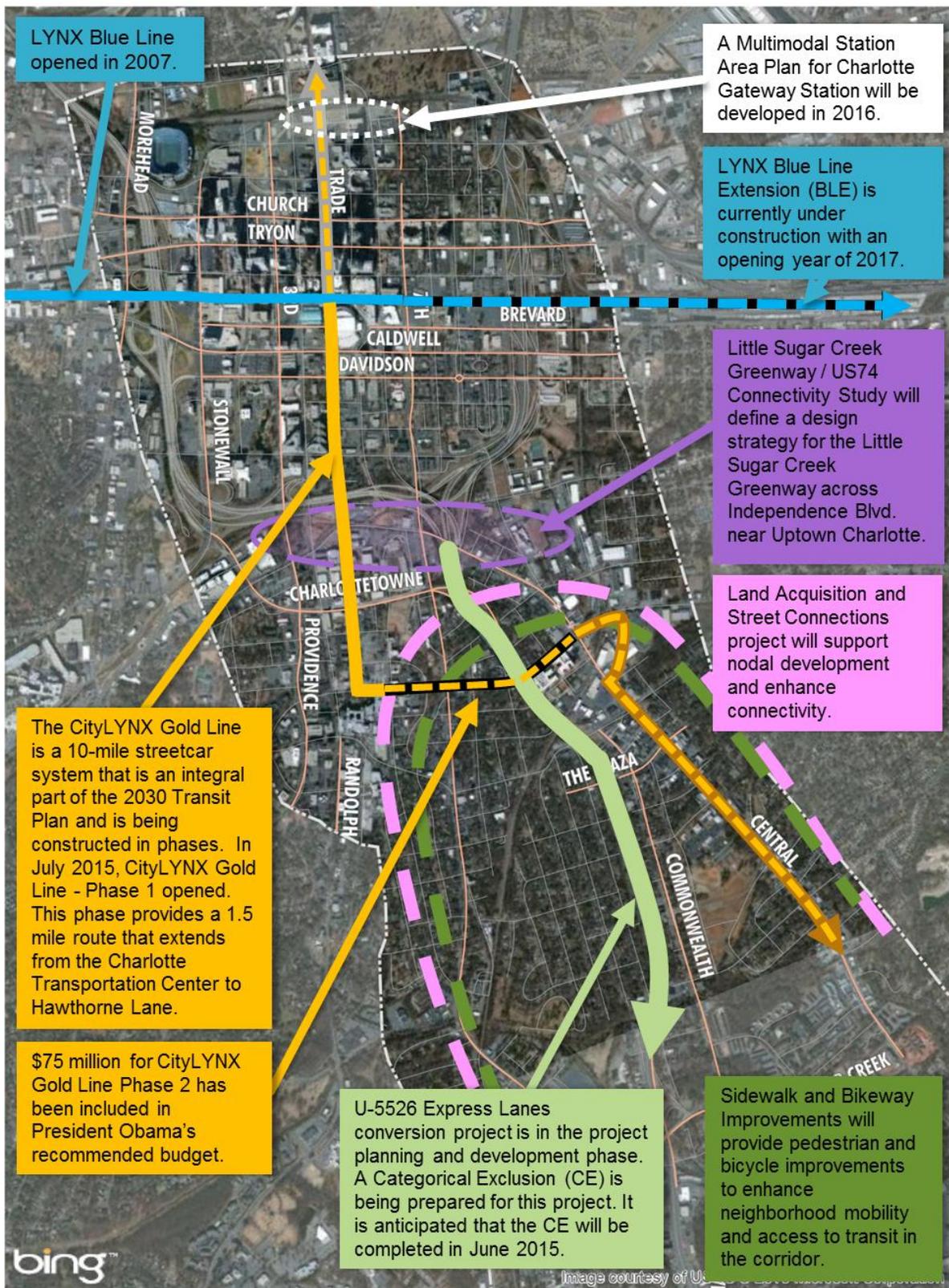


Figure 28: Projects and Plans from Briar Creek to Idlewild Road

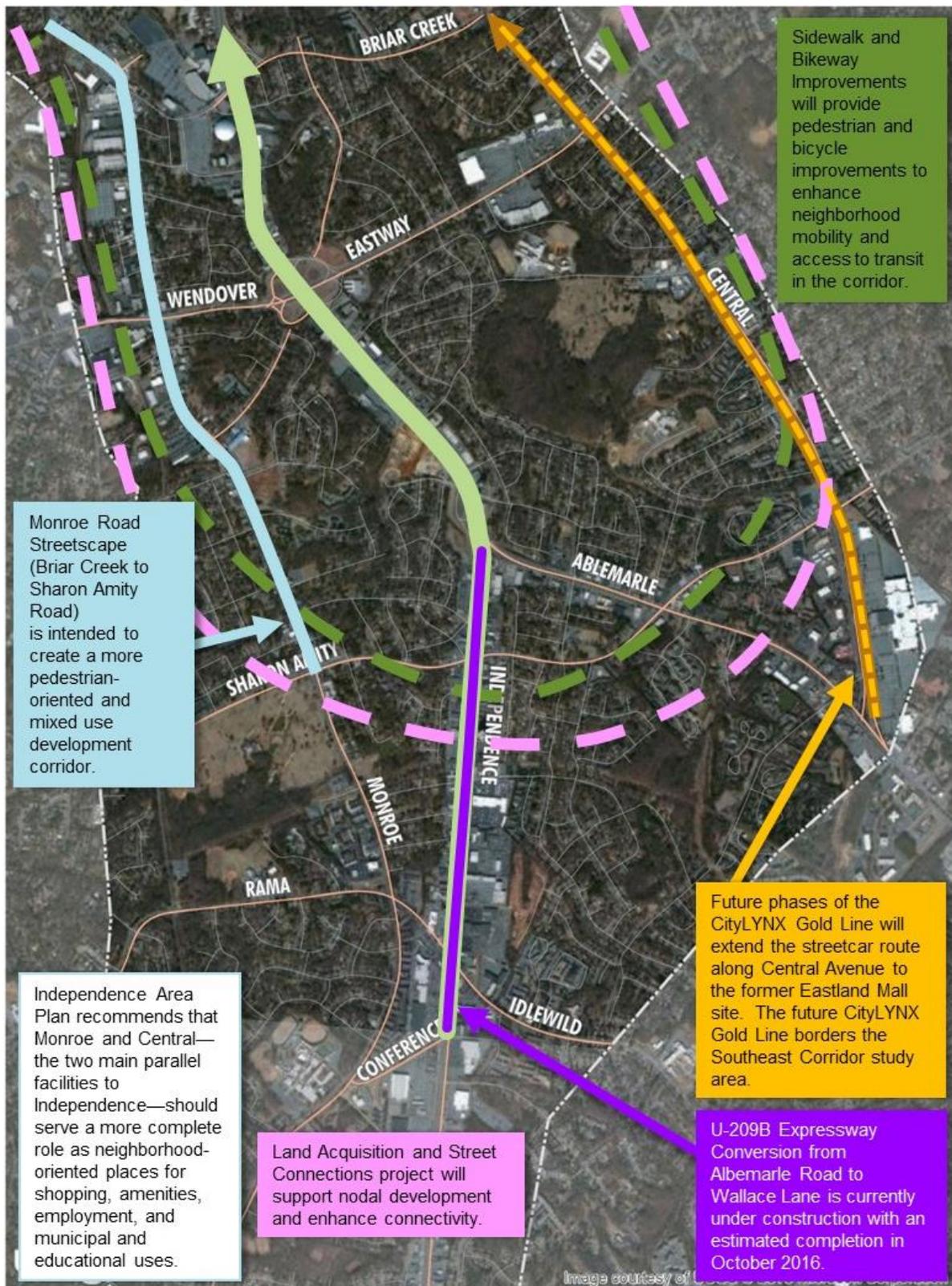
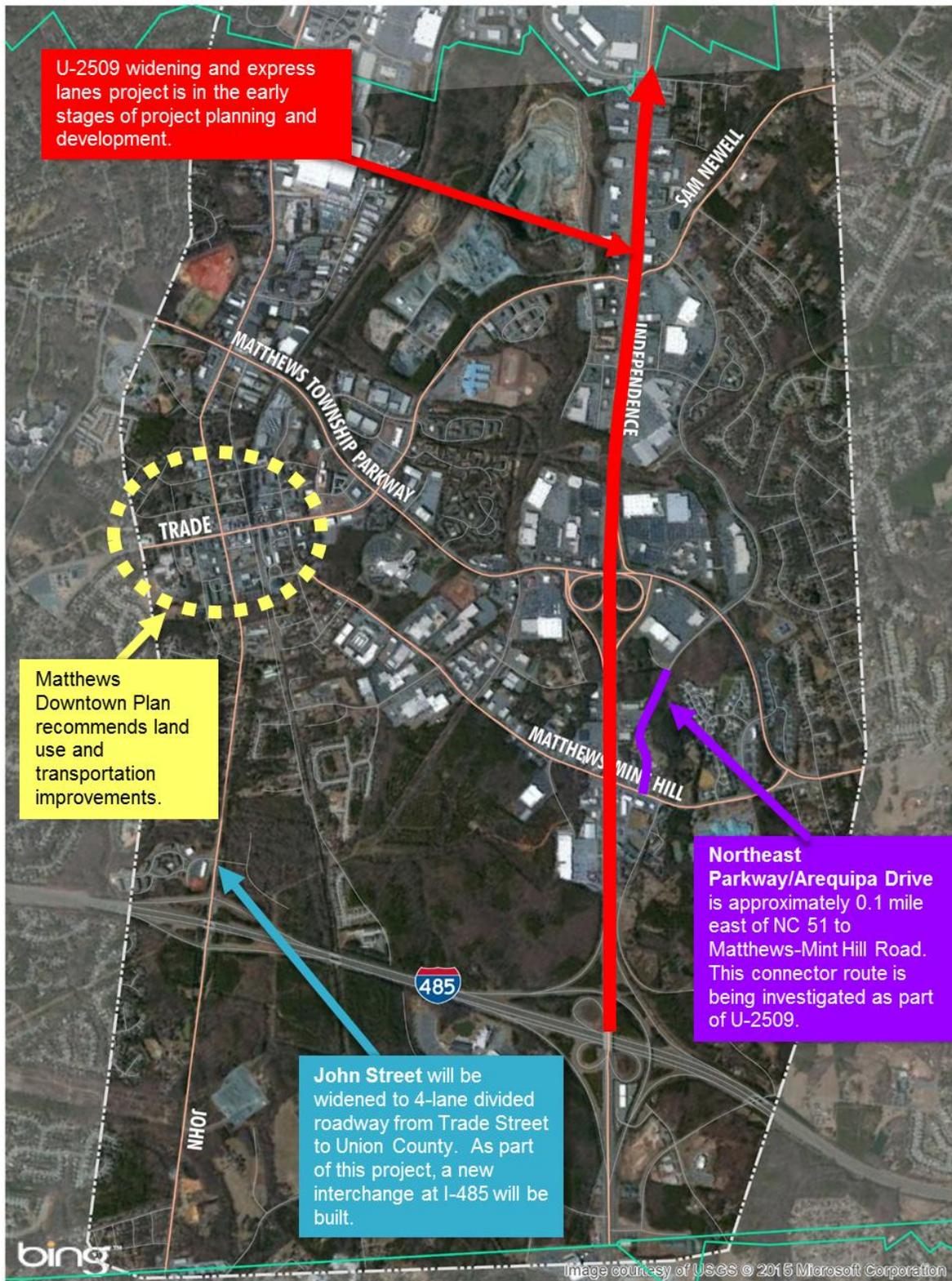


Figure 29: Projects and Plans from Idlewild Road to Matthews Town Limits



Figure 30: Projects and Plans from Matthews Town Limits to Union County Line



7 ALIGNMENT DEFINITION

7.1 Methodology

The universe of potential rail alignment alternatives from Uptown to Matthews was developed during a two-day Alignment Definition Workshop. The workshop was attended by staff from the Charlotte Area Transit System, the City of Charlotte, the Town of Matthews, the North Carolina Department of Transportation, and study team members.

Attendees were split into three teams and given information on the corridor background, travel patterns, corridor constraints, public outreach results, station typography, and other corridor information. With this knowledge, the teams answered a series of topics to determine their goals and then were given the opportunity to draw alignments.

The must-serve locations as identified by the teams included the future Gateway area, Bojangles Coliseum, Ovens Auditorium, Meridian Place, Matthews Sportsplex, downtown Matthews, CPCC Levine Campus in Matthews, and I-485. Initial suggestions for where the alignment should end in Matthews included a concept to go under I-485 and provide a park-n-ride off of John Street or near the CPCC Levine campus, or end at the Sportsplex if you cannot cross I-485.

The most common themes included:

- Exclusive ROW is high priority but could tie into existing infrastructure;
- Operate on the side of US 74/Independence Blvd for a portion of the corridor;
- Operate in mixed traffic on Monroe;
- Tie into the Gold Line or LYNX Blue Line;
- Provide service to the Carson Station and future Gateway Center; and
- Provide service to Independence Pointe Blvd/Sportsplex and Downtown Matthews.

Through the group discussion, primary concerns included how people would get to stations, and if these alignments serve the necessary markets and answer the corridor's need.



The second day of the workshop focused more on the activity nodes with less emphasis on the constraints and where the actual alignment would fit.

The group discussed the land use for the corridor, since rail could help shape the land use and land use could determine how the rail element is used. The Town of Matthews is doing a lot of planning because Matthews is landlocked in terms of outward growth; therefore, Matthews needs to be strategic with their growth. Future opportunities include the McKee Road extension next to CPCC, John Street widening, and possibly building a new road to the Sportsplex.

Teams were asked to identify their preferred nodes throughout the corridor first, and then determine how best to get there. Teams were told to forget about constraints; if they could go anywhere, which alignments would best serve the markets. Below are the concepts that the three workshop teams developed.

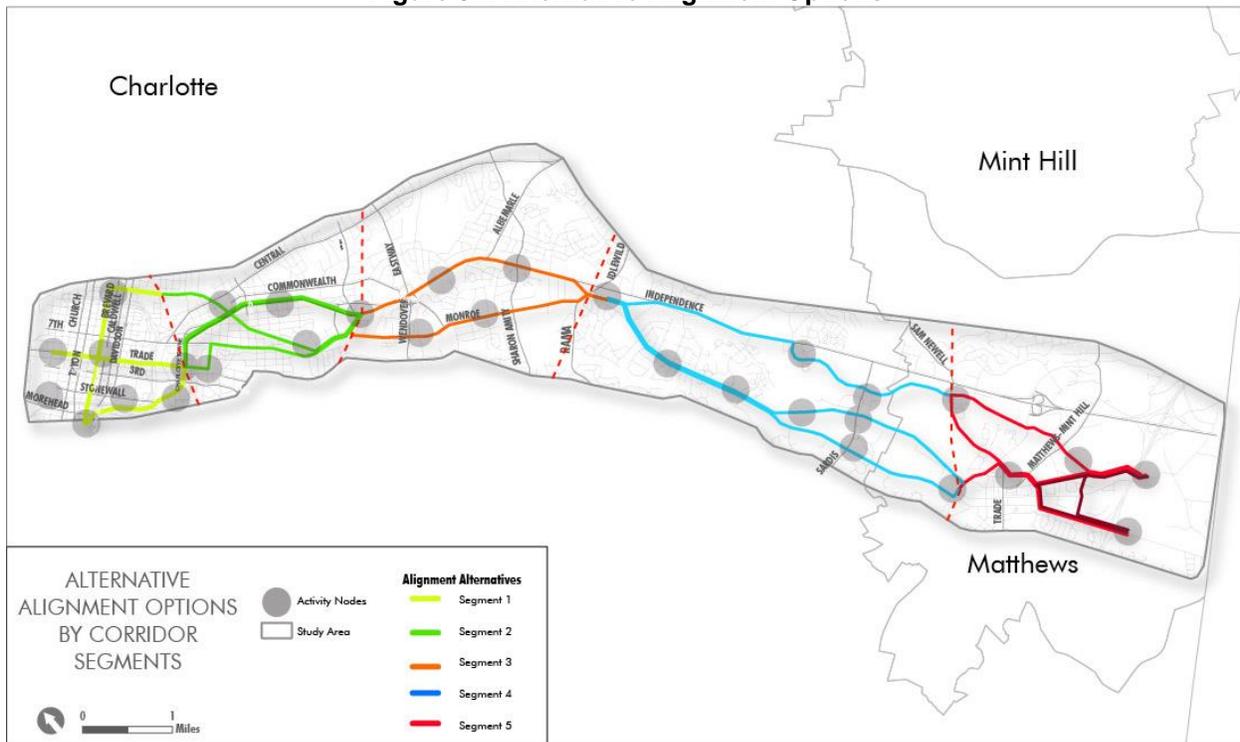
Team Red	Team Yellow	Team Blue
<ul style="list-style-type: none"> • In-street on Charlottetowne Ave. near Midtown. • In-street on Monroe Rd. • Use CSX where it is really close to Monroe Rd. • Meridian Place is an emerging activity center. • Go through Krefeld Dr. or Crown Point to Independence Pointe Parkway, through hospital area and CPCC. • Park-and-ride lot at I-485 / John St. • Approximately 17 stations. 	<ul style="list-style-type: none"> • Serve multiple nodes with one central station, if possible. • Interline with the Gold Line, utilize Stonewall St. • Future option to extend to the airport. • Station spacing closer together near Uptown. • Two alignments by Matthews; one for Sportsplex and one for hospital/ downtown area. • Use Independence Pointe Pkwy. • In-street on Monroe Rd. and utilize a portion of CSX. • Approximately 13 stations. 	<ul style="list-style-type: none"> • In-street on Charlottetowne Ave. near Midtown. • Utilize Stonewall St. to access Carson Station. • Ability to extend to the airport in the future. • Traverse Belmont area. • Idlewild Rd. / Conference Dr. area would be a major station • Meridian Place is an emerging activity center. • Utilize Krefeld Dr. or Sardis Rd. to get to Sam Newell Rd. • Approximately 17 stations.

All of the teams generally identified the same nodes and showed commonalities in how they connected the nodes.

7.2 Alignment Options

From the stakeholder workshop, various rail route options were identified based on the project goals and identified activity centers within the corridor. The rail alignments under initial consideration are depicted in Figure 31.

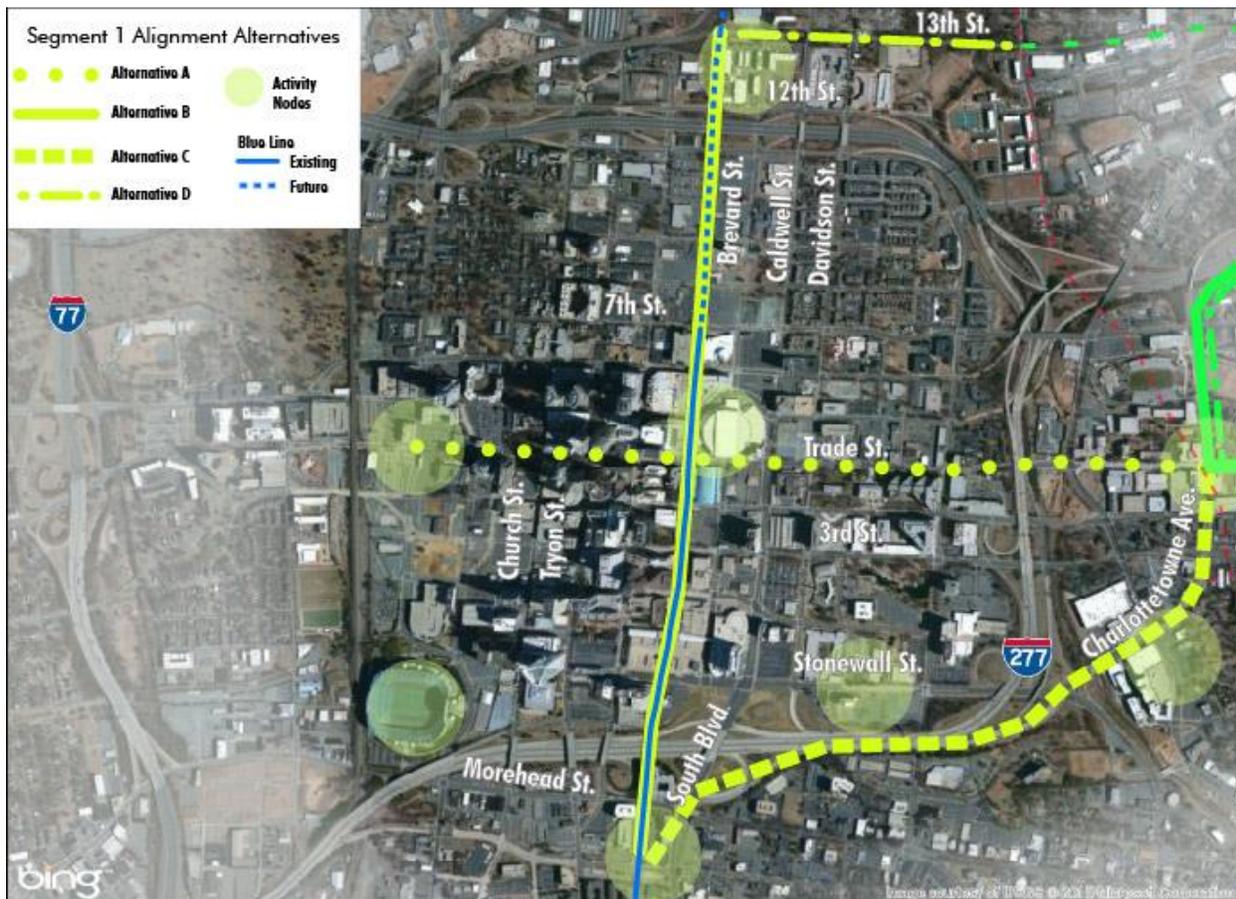
Figure 31: Alternative Alignment Options



The corridor was subdivided into segments to organize the potential alignments into an array of specific route options. This decision-making framework provides for the systematic consideration of various alignments within each segment before considering the route from end to end. Once a general route has been identified, more detailed analysis will be conducted to refine the route. A segment-by-segment overview of options to be analyzed is provided in the following figures.

7.2.1 Segment 1 (Uptown Charlotte)

Figure 32: Segment 1 Alignment Alternatives



Alternative A: Interline with Gold Line on Trade St. with possible transit priority

Alternative B/D: Connection to Blue Line north of I-277

Alternative C: Connection to Blue Line via Stonewall / I-277 corridor

7.2.2 Segment 2 (Elizabeth / Plaza Midwood)

Figure 33: Segment 2 Alignment Alternatives



Alternative A/B: Side-running option along Independence Blvd.

Alternative C: Shared right-of-way option along Monroe Rd. and shared use of CSX right-of-way

Alternative D: Shared right-of-way option along Monroe Rd. / 7th St.

7.2.3 Segment 3 (Briar Creek to Idlewild)

Figure 34: Segment 3 Alignment Alternatives



- Alternative A: Shared or exclusive right-of-way option along Monroe Rd.
- Alternative B: Side-running option along Independence Blvd.

7.2.4 Segment 4 (Idlewild to Sam Newell)

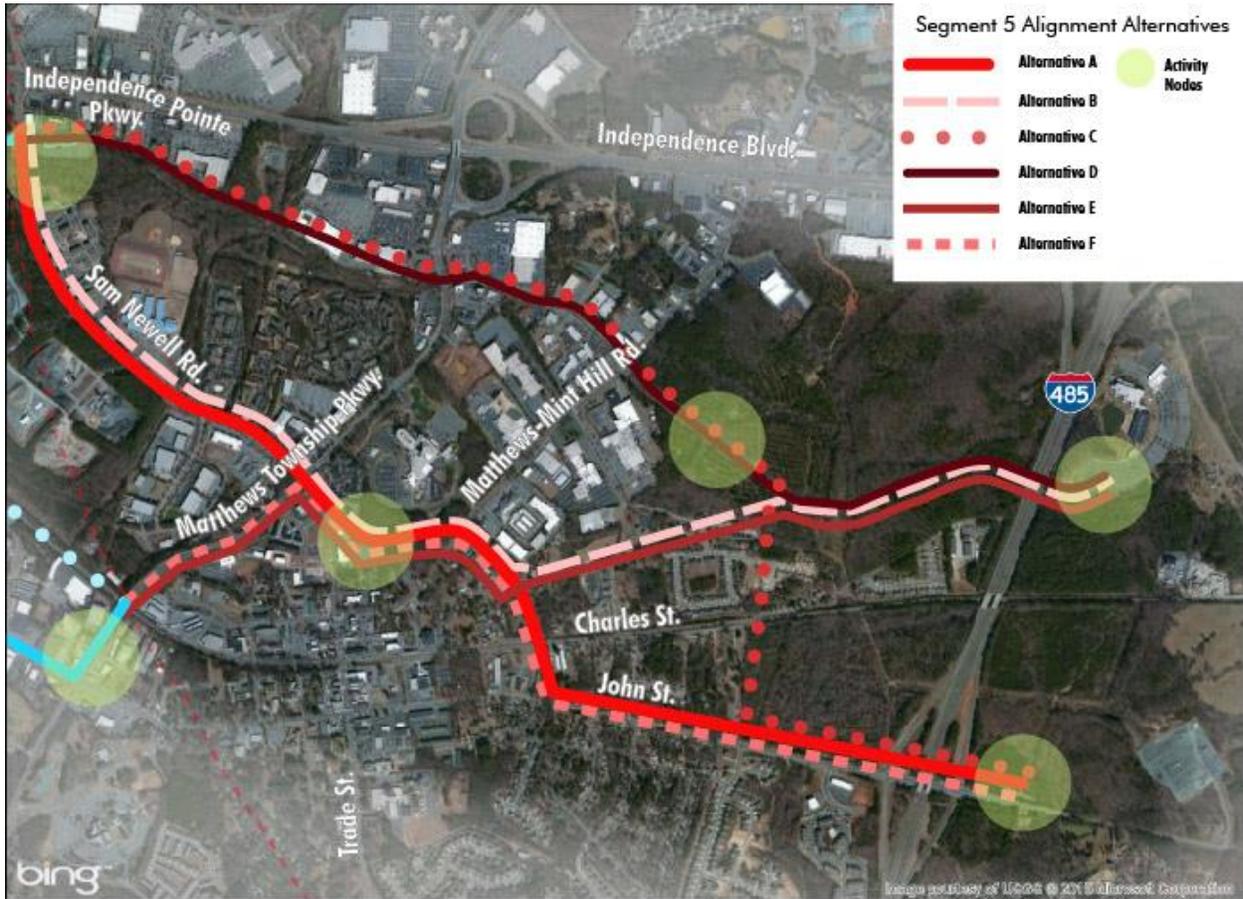
Figure 35: Segment 4 Alignment Alternatives



- Alternative A: Shared or exclusive right-of way option along Monroe Rd.
- Alternative B: Side-running option along Independence Blvd. / Krefield Dr. / Independence Pointe Pkwy.
- Alternative C: Shared or exclusive right-of-way along Monroe Rd. / shared use of CSX right-of way

7.2.5 Segment 5 (Matthews)

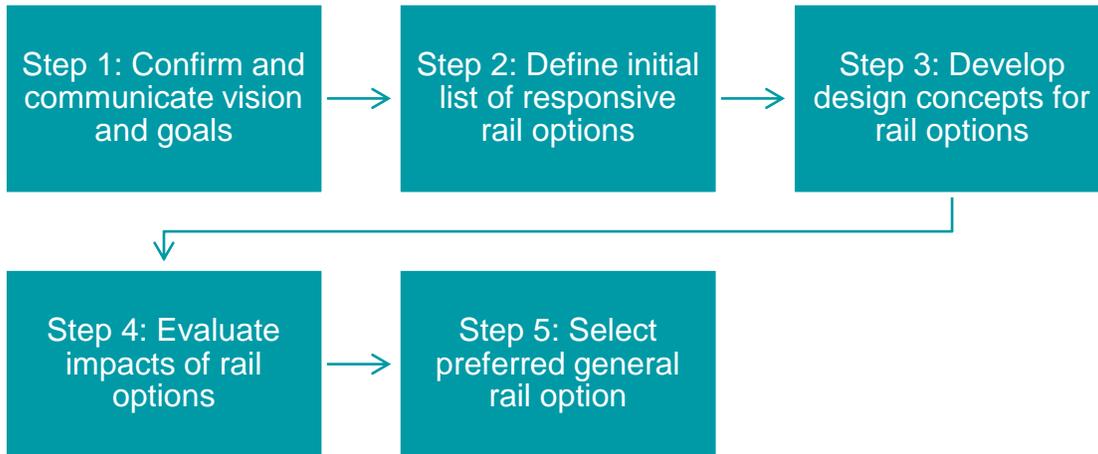
Figure 36: Segment 5 Alignment Alternatives



- Alternative A: Connection to I-485 via Sam Newell Rd. / Downtown area / John St.
- Alternative B: Connection to Sportsplex / CPCC Levine via Sam Newell Rd. / Downtown area
- Alternative C: Connection to I-485 via Independence Pointe Pkwy. / John St.
- Alternative D: Connection to Sportsplex / CPCC Levine via Independence Pointe Pkwy.
- Alternative E: Connection to Sportsplex / CPCC Levine via NC 51 / Downtown area
- Alternative F: Connection to I-485 via NC 51 / Downtown area

7.3 Evaluation Process for Rail Project Definition

Options for the rail element of the Southeast Corridor will be defined based on general design principles that address critical attributes of an effective rail solution. The general alignment options developed through this process then will be evaluated in detail to identify the benefits, impacts, and costs of each option. The definition and evaluation of rail alternatives will follow the framework illustrated below.



Step 1: Confirm and communicate vision and goals

General goals for the rail element of the Southeast Corridor were discussed in Section 5. Any successful rail alternative must achieve these goals. Because these goals are broad in nature, supporting assessment criteria are proposed to offer more guidance regarding how specific rail alternatives can be evaluated against the general goals. The rail goals and associated assessment criteria are described below.

Rail Goals	Assessment Criteria
1. Provide reliable and efficient connections within the corridor including the use of dedicated guideway where practical.	Alignment should be viable without major detrimental impacts to neighborhoods.
	Alignment should provide high-quality service in a cost-effective manner.
2. Build upon efforts to coordinate land use and transportation planning in corridor.	Alignment should support areas with pedestrian-oriented land uses.
	Alignment should balance mobility needs of all users in corridor.
3. Reflect varying land use characteristics through responsive station siting and design elements.	Alignment should enable station spacing that balances quick travel times and access to key destinations.
	Alignment should create opportunities for station designs that are consistent with land use plans.
4. Support the vision for the overall CATS system.	Alignment should enable extensions to the west or north.
	Alignment should consider operational efficiencies to be gained through interlining and/or joint use of maintenance facilities.

Step 2: Develop initial list of responsive rail options

Using the vision and goals established in Step 1, an initial list of rail alignment options will be developed as identified earlier in this section. Recognizing the changing demographic and development characteristics of the corridor between Uptown Charlotte and Matthews, alignment options will be evaluated within individual segments along the corridor.

In addition to the technical review of individual segments, the analysis will also assess the corridor in its entirety, to ensure that the options selected address the specific travel needs along the corridor while providing effective and efficient service when viewed at a corridor-wide level. Therefore, the evaluation criteria will be applied for individual segments within the corridor as well as the entire corridor.

Step 3: Develop design concepts for rail options

Each of the candidate corridor segments identified in Step 2 will be further developed to enable a more robust evaluation of benefits, impacts, and costs consistent with a conceptual planning study. The refinement of the alternatives will include “test fit” conceptual engineering to identify how each potential alignment would interact with its surroundings. More detailed station locations will also be identified, as well as other major infrastructure requirements such as large structures.

Step 4: Evaluate impacts of rail options

The rail options that are more fully defined in Step 3 will undergo a more rigorous analysis comparing the relative strengths, weaknesses, benefits, costs, and impacts of each alternative. A series of evaluation focus areas are tied to the rail goals and assessment criteria identified earlier. Using these criteria provides an objective and thorough means of considering the various rail project options.

Rail Goals	Assessment Criteria	Evaluation Focus Area
1. Provide reliable and efficient connections within the corridor including the use of dedicated guideway where practical.	Alignment should be viable without major detrimental impacts to neighborhoods.	<ul style="list-style-type: none"> Property and neighborhood impacts Environmental considerations
	Alignment should provide high-quality service in a cost-effective manner.	<ul style="list-style-type: none"> Design / engineering constraints Constructability Conceptual cost estimates
2. Build upon efforts to coordinate land use and transportation planning in corridor.	Alignment should support areas with pedestrian-oriented land uses.	<ul style="list-style-type: none"> Service to pedestrian-friendly land uses
	Alignment should balance mobility needs of all users in corridor.	<ul style="list-style-type: none"> Traffic impacts
3. Reflect varying land use characteristics through responsive station siting and design elements.	Alignment should enable station spacing that balances quick travel times and access to key destinations.	<ul style="list-style-type: none"> Directness of alignment
	Alignment should create opportunities for station designs that are consistent with land use plans.	<ul style="list-style-type: none"> Consistency with local land use plans
4. Support the vision for the overall CATS system.	Alignment should enable extensions to the west or north.	<ul style="list-style-type: none"> Location of end point
	Alignment should consider operational efficiencies to be gained through interlining and/or joint use of maintenance facilities.	<ul style="list-style-type: none"> Connection to existing rail infrastructure

Step 5: Select preferred general rail option

A thorough comparative assessment of each of the rail options will be conducted to provide information for purposes of selecting a preferred solution.

The evaluation of impacts will be conducted for options at the sub-area level, enabling the identification of preferred options that work most effectively within each of the sub-areas. However, the “best” options within each sub-area will also be reviewed at the corridor-wide level, to ensure that the preferred option is appropriate when the corridor is considered in its entirety.