REPORT | MAY 2022

THE CHARLOTTE, NC-SC URBAN AREA

Coordinated Public Transit-Human Services Transportation Plan

PREPARED FOR:

CRTPO
charlotte regional transportation planning organization

CATS
CHARLOTTE AREA TRANSIT SYSTEM

PREPARED BY:

vhb

With support from SmartMoves Consulting

Table of Contents

SECTION 1 **Study Introduction and Background**

Study Area 1

FTA Section 5310 Funding 3

Coordinated Public Transit Planning Requirements 4

SECTION 2 **Study Process**

Study Process and General Timeline 4

Stakeholder Engagement 6

Public Engagement 8

Survey Participants' Geographic Distribution 10

Short Form Public Survey Results 12

Online Public Survey 13

SECTION 3 **Review of Unmet Needs and Gaps**

Population and Employment within Reach of Transit 16

Population and Employment within Reach of Transit, with Changes Expected by 2045 16

Seniors and Individuals with Disabilities within Reach of Fixed Route and Deviated Fixed Route Transit 17

Housing Affordability 18

Limited Footprint of Regional Transit Network 19

Additional Vehicle and Staff Capacity Needed to Expand Services 20

Regional Transit Information Sharing, Scheduling Software, Fare Interoperability and Transfer Coordination 20

COVID-19 Impacts and Medicaid Brokerage Transition Impacts for Public Transit Agencies 22

SECTION 4 **Recommendations**

Recommendation Key Themes **24**

Mobility Management and Agency Coordination 24

Organizational Assessments 25

Customer Service 25

Facility Improvements and Safety 26

Connectivity 26

Service Expansion 27

Table of Recommendations **27**

Charlotte Urban Area Coordinated Public Transit-Human Services Transportation Plan Recommendations 27

SECTION 5 **Microtransit and First/Last Mile Study Areas**

Follow up Study Areas for Microtransit and First/Last Mile Service for Elderly and Disabled Populations **31**

West Mecklenburg Study Area 34

North Mecklenburg and Iredell County Study Area 35

Mint Hill Study Area 36

Union County Study Area 37

South Mecklenburg Study Area 38

Appendices

Appendix A: Technical Memo 1

Appendix B: Public and Stakeholder Engagement Results

List of Tables

TABLE 1. **Public Transportation Providers serving Charlotte Urban Area** 19

TABLE 2. **Recommendations** 26

List of Figures

FIGURE 1. Study Area Map: The Charlotte NC-SC Urban Area 2

FIGURE 2. CRTPO Project Schedule 5

FIGURE 3. Survey Respondents' Geographic Distribution 11

FIGURE 4. Short Form Survey (Postcard) Transportation Needs and Concerns Noted 12

FIGURE 5. Public Transit Improvements Priorities Ranked by Online Survey Respondents 13

FIGURE 6. Online Survey Responses- Map Markers Locations by Type 15

FIGURE 7. Total Population and Employment 16

FIGURE 8. Transportation Disadvantaged Population Categories 17

FIGURE 9. Housing Affordability Issues 18

FIGURE 10. Medicaid Brokerage Process 23

FIGURE 11. Microtransit Target Areas 32

FIGURE 12. West Mecklenburg Study Area 34

FIGURE 13. North Mecklenburg and Iredell Study Area 35

FIGURE 14. Mint Hill Microtransit Study Area 36

FIGURE 15. Union County Microtransit Study Area 37

FIGURE 16. South Mecklenburg Microtransit Study Area 38

1 Study Introduction and Background

This section provides an overview of the study area, FTA Section 5310 funding and coordinated public transit planning requirements.

A CATS bus and Bird e-scooters in Uptown Charlotte.

The University of North Carolina at Charlotte provides Niner Transit bus service for students, faculty, staff and visitors.

Study Area

The Charlotte NC-SC Urban Area Coordinated Public Transit – Human Services Transportation Plan encompasses the entire Charlotte-NC-SC Urban Area, which includes all or portions of a nine-county region spanning across two states (**Figure 1**). In North Carolina, all of Mecklenburg County and portions of Union County, Cabarrus County, Iredell County, Catawba County, Lincoln County and Gaston counties overlapping with the Charlotte Urban Area are included within the study area. Portions of Lancaster County and York County overlapping the Charlotte Urban Area make up the South Carolina study area.

Although this study included analysis for the entire Charlotte NC-SC urban area, stakeholder engagement, and recommendations for this plan focus on the North Carolina portion of the Charlotte NC-SC urban area. The Rock Hill-Fort Mill Area Transportation Study (RFATS) Metropolitan Planning Organization through a Memorandum of Understanding agreement with the Charlotte Regional Transportation Planning Organization conducts all planning activities for the South Carolina portion of the Charlotte NC-SC urban area. Thus until a separate Coordinated Public Transit-Human Services Transportation Plan is completed by RFATS or their designee for the South Carolina portion of the Charlotte NC-SC urban area and then adopted by the Metropolitan Transit Commission as an amendment to this plan, South Carolina human service providers within the South Carolina portion of the Charlotte NC-SC urban area are ineligible to apply for 5310 funding during the annual call for projects conducted by CATS.

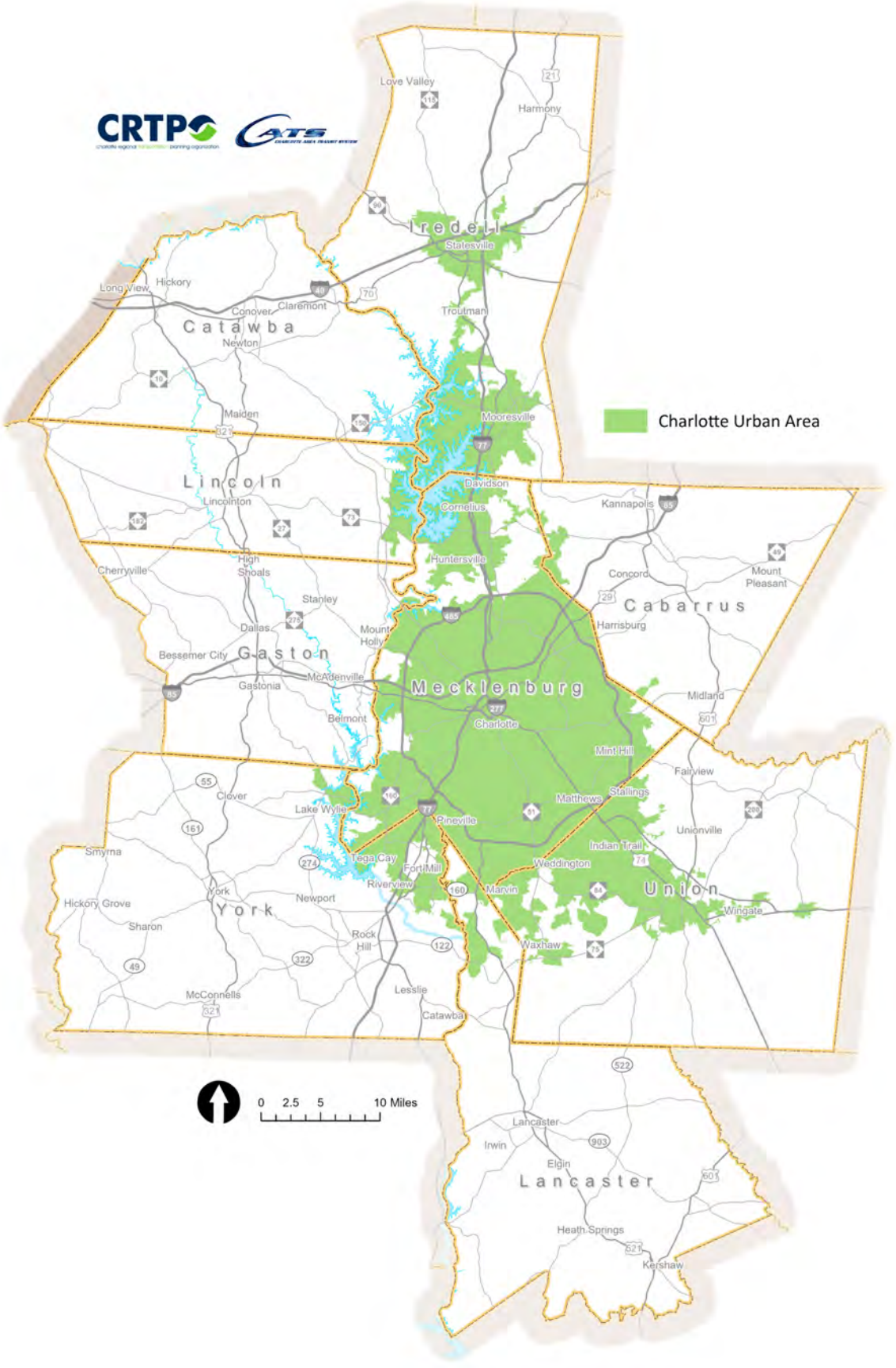


Figure 1. Study Area Map: The Charlotte NC-SC Urban Area

FTA Section 5310 Funding

The Enhanced Mobility of Seniors and Individuals with Disabilities Funding (hereafter referred to as "Section 5310 funding") seeks to provide funding, "for the purpose of assisting private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs." (FTA Circular 9070.1G) The goal is to remove barriers to transportation and expand transportation options across the region. As part of MAP-21, the program was modified to include projects previously eligible under the former Section 5317 New Freedom program. The transit grant funding program for seniors and individuals with disabilities was carried forward under the Fixing America's Surface Transportation Act (or FAST Act, signed into law in December 2015), and as part of the Infrastructure Investment and Jobs Act (IIJA, signed into law November 15, 2021). Eligible projects under Section 5310 funding are divided into "traditional" category and "nontraditional" or "other" category.

The following capital improvements and activities are classified as part of traditional Section 5310 projects:

- transit vehicles: buses and vans
- wheelchair lifts, ramps, and implements needed to secure a wheelchair
- transit-related information technology systems, including scheduling/routing/one-call systems
- mobility management programs
- acquisition of transportation services under a contract, lease, or other arrangement

Nontraditional or "other" Section 5310 projects could include, but are not limited, to the following:

- travel training
- volunteer driver programs
- providing accessible paths to bus stops, including sidewalks, curb cuts, accessible pedestrian signals (APS) or other features
- wayfinding and signage
- incremental cost of providing same day service or door-to-door service
- purchasing vehicles to support new accessible taxi, ride sharing and/or vanpooling programs
- mobility management programs

These funds can be passed through either the state department of transportation or through other designated recipients. The funds can then be allocated to subrecipients which can include private nonprofit organizations, state or local government authority, or operators of public transportation. Funds are available for a total of three years and the amount is based on the state or the urban area proportion of seniors and those with disabilities.

The City of Charlotte is the designated recipient for Section 5310 funds apportioned for the Charlotte Urban Area. The City's public transit department, the Charlotte Area Transit System (CATS), administers the program in accordance with federal law and regulations. For fiscal year 2021, the Charlotte Urban Area apportionment of Section 5310 funds was $983,028.[1]

1 FTA. FY 2021 Apportionments Table 8. https://www.transit.dot.gov/funding/apportionments/table-8-fy-2021-section-5310-enhanced-mobility-seniors-and-people

Coordinated Public Transit Planning Requirements

According to the Federal Transit Administration (FTA), all Coordinated Public Transit Human Services Transportation Plans must be developed and approved by participation of senior individuals, those with disabilities, representatives of public, private, and nonprofit transportation and human services providers and other members of the public and stakeholders within the community that utilize transportation services. The FTA states, "These coordinated plans identify the transportation needs of individuals with disabilities, older adults, and people with low incomes, provide strategies for meeting these needs, and prioritize transportation services for funding and implementation." (FTA Circular 9070.1G). Projects selected for funding under the Enhanced Mobility for Seniors and Individuals with Disabilities (Section 5310) are required to be "included in a locally developed, coordinated public transit-human services transportation plan." (FTA Circular 9070.1G).

A variety of ADA-accessibile transit vehicles are used by transit providers in the region.

2 Study Process

This section reviews the study process, timeline and key elements including public and stakeholder involvement.

Study Process and General Timeline

The plan update was initiated in October 2021. Study oversight and management was provided by the Charlotte Transportation Planning Organization and CATS staff.

Three Steering Committee meetings were held during the study duration (in November 2021, February 2022 and March 2022), with the following organizations represented on the Steering Committee:

- Charlotte Regional Transportation Planning Organization (CRTPO)
- Charlotte Area Transit System (CATS)
- Iredell County Area Transportation Services (ICATS)
- Centralina Regional Council
- Mecklenburg Transportation System (MTS)
- Union County Transportation
- NCDOT Integrated Mobility Division
- Cabarrus-Rowan Metropolitan Planning Organization (CRMPO)
- Greater Hickory Metropolitan Planning Organization (Greater Hickory MPO)
- Gaston-Cleveland-Lincoln MPO (GCLMPO)
- University of North Carolina-Charlotte (UNC Charlotte)
- City of Charlotte Community Relations Department
- INLIVIAN (Charlotte Housing Authority)
- DreamKey Partners

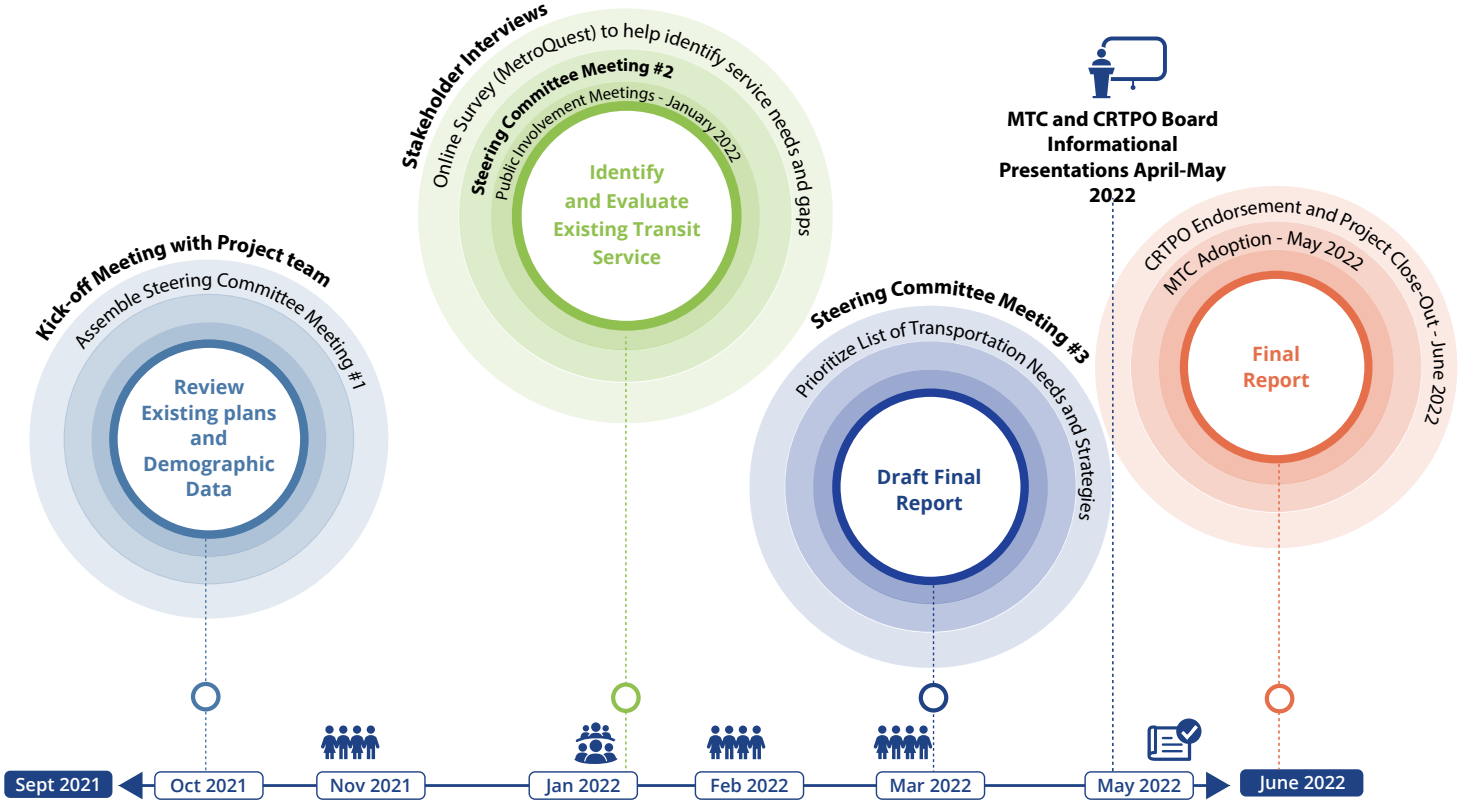


Figure 2. CRTPO Project Schedule

The study team developed a list of target stakeholder agencies, and conducted 11 stakeholder interviews between December 2021 and March 2022 in order to better understand the existing challenges and trends that public transportation agencies and human services providers in the region might be facing.

Development of the plan update included an online survey in MetroQuest format to solicit feedback regarding public transportation needs and gaps in the area. The survey was open from December 15, 2021, through February 6, 2022, and shared via the CATS website and social media. In addition, short form (postcard) surveys were printed out and responses to those were collected during the three in-person public engagement events. A series of three in-person pop-up public engagement events and three virtual public engagement events took place between January 19 and February 3, 2022.

The plan update also included a variety of prior plans and data sources, for the nine-county study area and the transit agencies serving the Charlotte Urban Area, including National Transit Database reports and U.S. Census data. The study team developed a technical memorandum (see Appendix A) documenting the existing conditions including demographic data trends, expected population and employment growth distribution across the region, transit ridership and wheelchair-use trip trends, and key community destinations and their spatial overlap with existing fixed route and deviated fixed route transit services. Recommendations from relevant prior plans were summarized.

The update included a review of five peer regions for paratransit and human services transportation best practices, with the following peer regions identified:

Atlanta, Georgia

Austin, Texas

Indianapolis, Indiana

Orlando, Florida

Raleigh, North Carolina

Appendix A includes the peer agency review results.

Additional coordination with the Envision MyRide study team took place in March 2022. The study team members also made presentations for the following committees and regional groups as part of the study process:

» Centralina Regional Council Mobility Management Group meeting on December 14, 2021-study team members made a brief announcement about the study and upcoming public engagement events.

» Union County Monroe Road / US 74 Corridor Study Stakeholders Meeting on April 8, 2022-draft recommendations and a highlight of microtransit case studies shared with the group.

As a result of prior plans review and sociodemographic and transit agency data review, and after taking into account public and stakeholder feedback, the study team developed a list of recommendations and a draft plan for informational presentation to the Metropolitan Transportation Committee (MTC) in April and the CRTPO TCC and Board presentation in May. MTC adoption is planned for May 2022, with subsequent endorsement by the CRTPO Board in June 2022.

Stakeholder Engagement

The plan update engaged numerous stakeholder agencies as part of participation on the Steering Committee for the study and through stakeholder interviews. These stakeholders included transportation agencies in the Charlotte region, and other organizations that work closely with seniors, veterans, or those with disabilities. In addition to engagement with members of the Steering Committee listed in the section above, follow up interviews were conducted with the following stakeholder agencies:

- Centralina Regional Council
- Charlotte Area Transportation Services (CATS) Bus Operations
- Centralina Regional Council Mobility Management Committee
- Disability Rights and Resources
- Gaston County ACCESS
- Catawba County Medicaid Transportation
- Rider
- Iredell County Area Transportation (ICATS)
- Mecklenburg County Transportation Services
- Union County Transportation Services
- The Department of Veterans Affairs (Salisbury VA Clinic)

The study team interviewed each of these stakeholders, asking a series of questions regarding their transportation systems and services, including opportunities and challenges the agency faces, and the biggest needs they hear from their clients.

A summary of these interviews can be found in Appendix B.

The following needs and gaps were identified based on stakeholder feedback:

- Bus stop access and amenities: bus stop locations might be far from the origin and destination; bus stops often lack a shelter or a bench;
- Long wait times (low frequency of service on existing fixed routes);
- Scheduling of ADA paratransit trips can be onerous or inconvenient to individuals with disabilities (CATS Special Transportation Service (STS) trips-have to schedule two hours prior to the appointment time);
- There is a need for additional staff support to focus on regional Mobility Management (Centralina Regional Council currently hosts quarterly Mobility Managers meetings, which includes both on-demand and fixed route service providers);
- There is a lack of community education around what transportation services are available,
  - Regional Transit Guide currently in development (by Centralina Regional Council) will help,
  - Additional education is needed both for potential riders and also for family members, medical and social workers to explain what transit services might be available;
- Difficult for transit providers to communicate their schedules and routes while using a variety of different scheduling platforms; driver-to-driver communication is difficult so if transferring a passenger between two different providers, drivers have to communicate via two dispatch centers which slows down the response time;

- Lack of funding makes it difficult for community transportation providers/on-demand transportation providers to meet the existing needs and provide a greater variety of trips:
  - In many cases on-demand transportation is limited to seniors, those with disabilities and transportation for medical appointments,
  - Fleet size and driver staffing limitations are a contributing factor,
  - As the region is growing, the disconnect between the transportation needs and the services available is expected to increase,
  - The rate of trips requiring wheelchair assistance is increasing, which makes a difference for the vehicle purchasing choices that transit providers (especially community transportation providers) are likely to make in the future;
- Fixed route and deviated fixed route providers are also facing challenges:
  - General funding challenges,
  - Keeping up with fleet replacement and driver staffing,
  - Hours of service expansion and frequency of service expansion would require additional investment;
- COVID-19 pandemic has disrupted ridership, many routes had to be reduced in terms of frequency of service or cut and service has not yet returned back to pre-pandemic levels;
- Medicaid Brokerage System transition is also having an impact on public transportation providers, especially on-demand/community transportation providers-some have felt it more than others; full impacts not yet known; and,
- Existing transit system set-up in the region makes it difficult for commuters, especially those traveling across county lines, as a lot of transfers are required, even if a connection is available.

Public Engagement

Public engagement efforts consisted of a series of online and in-person pop up public meetings. An online survey was set up in MetroQuest format, and short form survey (postcard) responses were collected during the in-person pop up public engagement events.

Public engagement events were held in the January-February 2022 timeframe to let participants know about the online public survey and to solicit response for short form postcard surveys during in-person events. The long form online survey and the short form (postcard) survey were both asking about the public transportation needs and gaps in the region, and opportunities to improve the existing public transit services.

The following public engagement meetings took place, with approximately 160 participants engaged during the meetings:

Virtual public engagement meeting held on Wednesday, January 19th, from 10 to 11 AM

In-person pop-up public engagement meeting held at the CTC station in Uptown Charlotte on Thursday, January 20th from 4 to 6 PM

Virtual public engagement meeting held on Tuesday, January 25th, from 12 Noon to 1 PM

In-person pop-up public engagement meeting held at the CTC station in Uptown Charlotte on Thursday, January 27th from 10 AM to 12 Noon

Virtual public engagement held on Thursday, January 27th from 5:30 to 6:30 PM

In-person pop-up public engagement meeting held at Scaleybark Light Rail Station on Thursday, February 3rd from 4 to 6 PM

Study Team Collecting Feedback during Pop Up Public Engagement Events at the CTC Station (Left) and at Scaleybark Station (Right)

Survey Participants' Geographic Distribution

A total of 157 survey responses were received (a combination of online long form survey and in-person short form (postcard) survey. Both the online survey and short form (postcard) asked participants to fill in their home zip code. Not all of the participants (especially for the short form in-person survey) chose to share their home zip code. Looking at the geographic distribution of responses received for both the online survey and in-person short form (postcard survey), the following can be observed (**Figure 3**):

Zip code 28208 in Mecklenburg County had **eight responses**, the highest number

Zip code 28206 in Mecklenburg County received **six responses**

Zip codes 28212, 28203, and 28209 in Mecklenburg County received **four responses each**

Zip codes 28216, 28204, 28205, and 28210 located in Mecklenburg County received **three responses each**

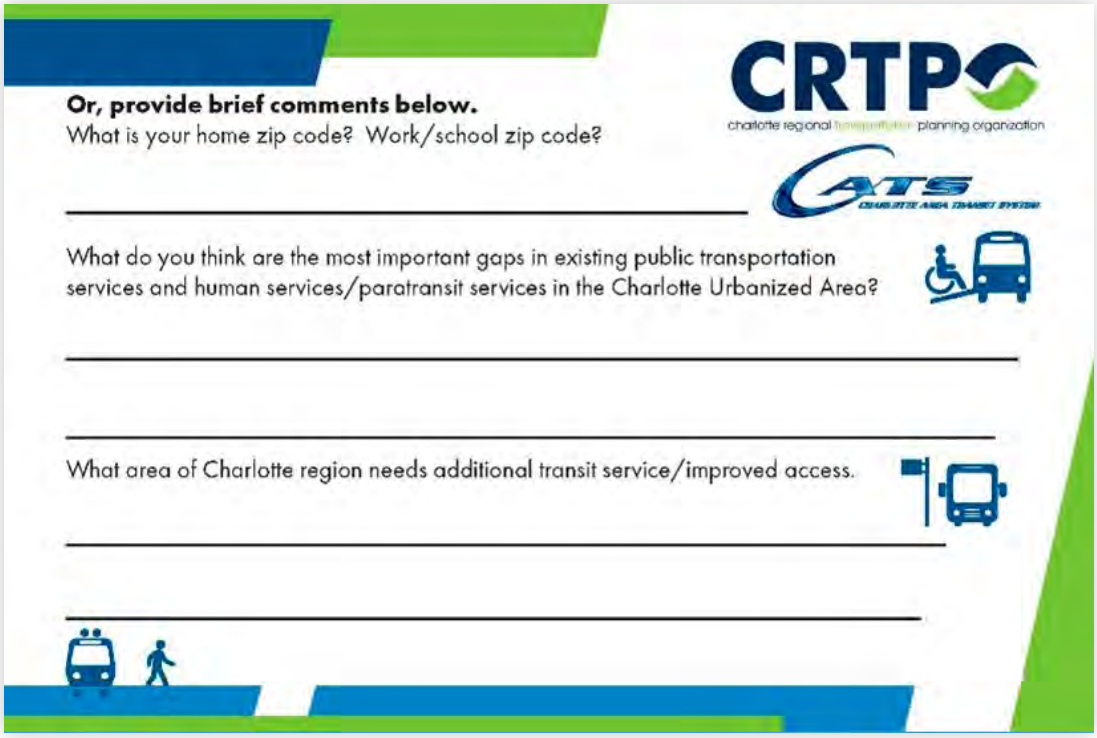
Two responses each received for zip codes 28269, 28202, 28227, 28105, 28277 in Mecklenburg County

One response for zip codes 28078, 28214, 28213, 28215, 28217, and 28226 in Mecklenburg County

One response for zip code 28025 in Cabarrus County

One response for zip code 28092 mostly in Lincoln County (partially in Catawba County)

One response for zip code 28625 in Iredell County



Short Form Survey (Postcard)

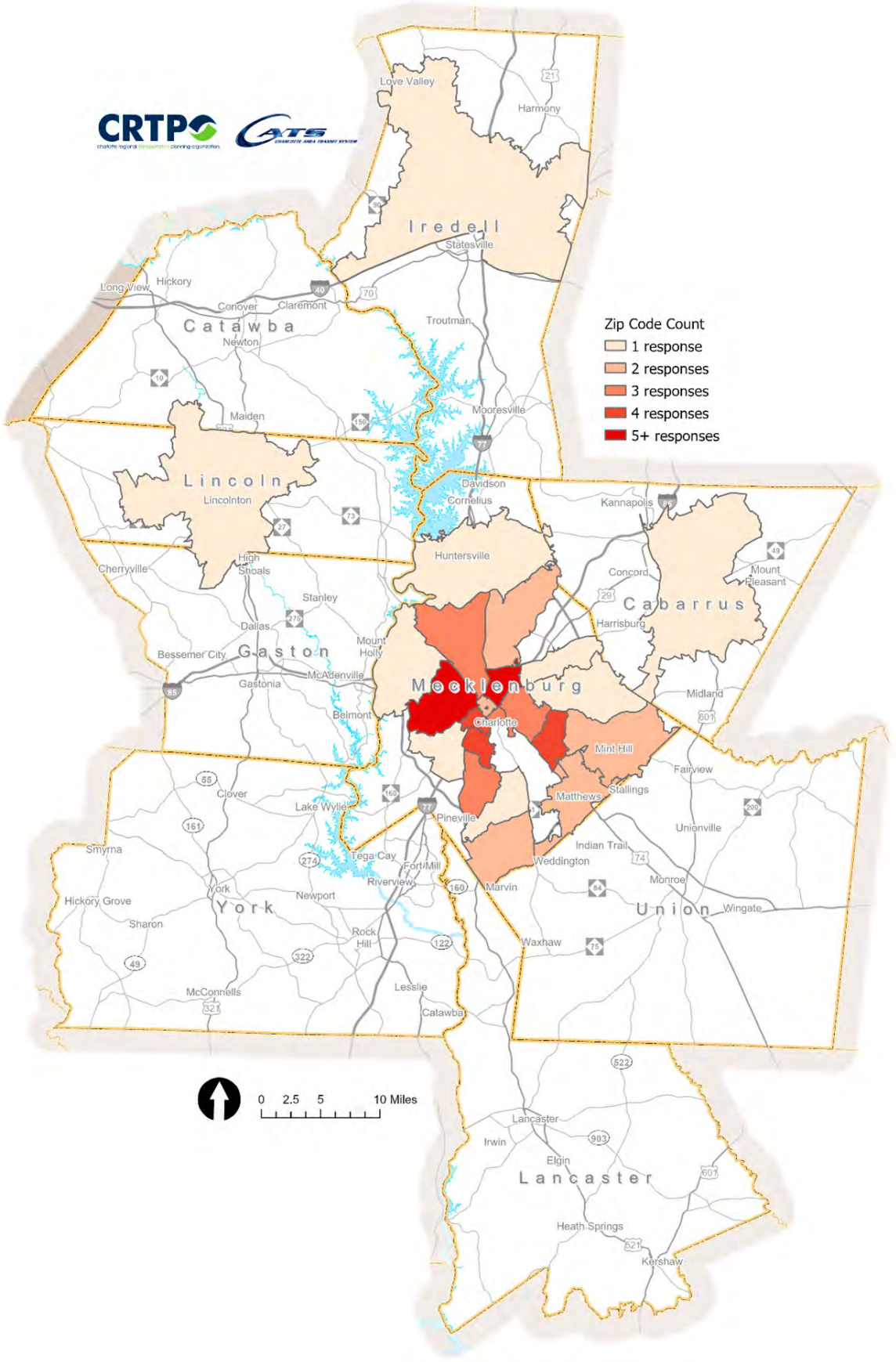


Figure 3. Survey Respondents' Geographic Distribution

Short Form Public Survey Results

The pop-up public engagement events collected a total of **128 short form survey responses**. The majority of the short form survey comments were focused on the frequency and schedule of buses (i.e. long waits, late bus arrival times).

Transportation Needs and Concerns Noted by Short Form Survey Respondents

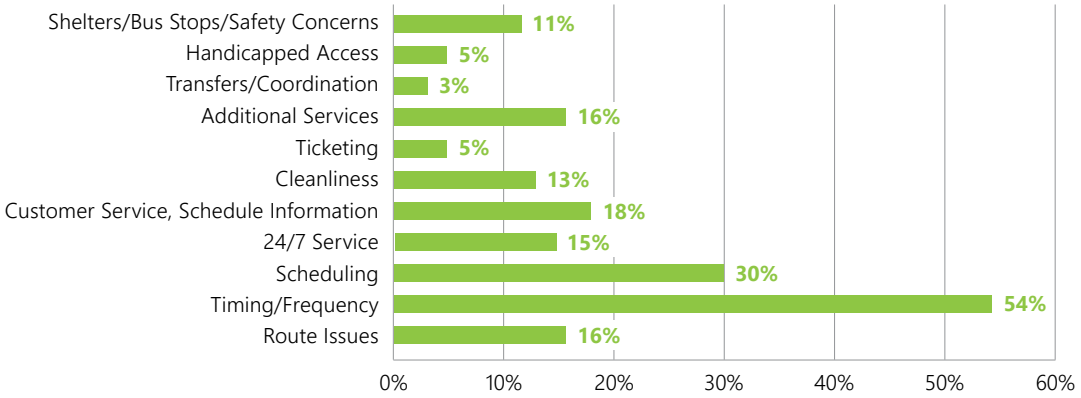


Figure 4. Short Form Survey (Postcard) Transportation Needs and Concerns Noted

When summarizing responses received by type of concern (**see Figure 4**), the following categories emerged as most frequent:

✓ **128 short form survey responses**

Timing and frequency were mentioned in **54 percent** of short form responses received

Scheduling concerns, such as buses running late and missing transfers, was the second most frequent concern noted by participants (mentioned by **30 percent** of short form respondents)

Customer service concerns and the need for better schedule information-sharing through a variety of means was mentioned by **18 percent** of respondents (including paper schedules, real-time information at transit stops, an improved app)

Route issues and request for additional services were tied at **16 percent** of respondents mentioning each of the concerns; Wi-Fi was one of the additional services frequently requested

The need for 24/7 transit service was mentioned by **15 percent** of short form respondents

Of note, respondents surveyed at the Charlotte Transportation Center (CTC) transit station were more likely to mention the need for a 24-hour service and/or additional late routes at night. Respondents at the Scaleybark Station made more comments regarding the cleanliness of trains, buses, and additional elements of stations such as bathrooms and Wi-Fi. A number of respondents made comments about drivers' tone and attitude when responding to riders, or bus drivers leaving the stop even while a passenger might be running to catch the bus (categorized with "customer service" concerns). Some respondents acknowledged that there is a shortage of bus drivers.

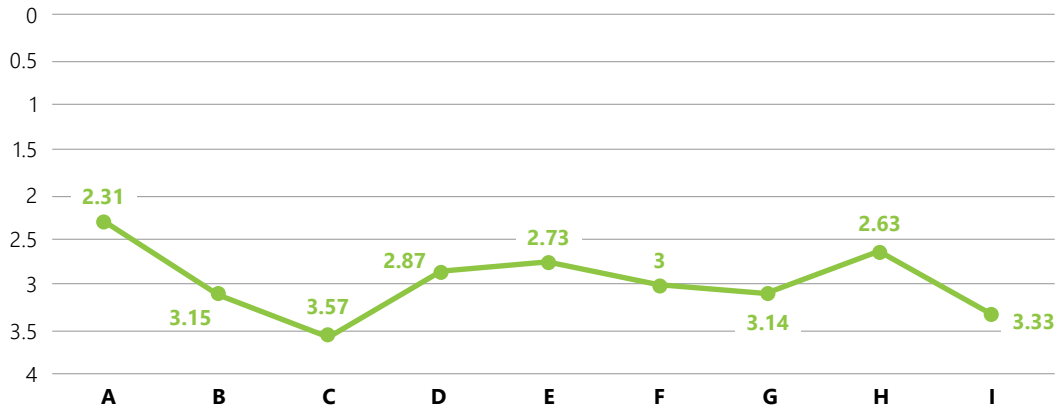
Online Public Survey

The online survey was available beginning on December 15, 2021, through February 6, 2022. The data was collected through an online platform, MetroQuest. Twenty-eight participants responded to the online survey. The online survey asked about participants' preferences for public transportation improvement priorities, specific. Demographic data were also collected for online survey responses; whereas, they were not collected for short form (postcard) survey responses.

The following public transit improvement priorities were ranked the highest by online survey respondents (see **Figure 5**):

- Increase frequency was the highest-ranked priority for transit improvements, at **2.31 average ranking** (on a scale of 1 to 5 where 1 would be the highest priority)
- Same-day reservations was the second highest-ranked priority, at **2.63**
- Connect to more neighborhoods was the third highest-ranked priority, at **2.73**
- Seamless transfer between systems was fourth-highest ranked priority, at **2.87**
- Improved accessibility to bus stops was in fifth place at **3.0**

Online Survey Responses-Priority Rankings (on a Scale of 1 to 5, Where Lower Numbers Mean Higher Priority)



A. Increased frequency

B. Expand hours of operation

C. Better access to information

D. Seamless transfer between systems

E. Connect to more neighborhoods

F. Improved accessibility to bus stops

G. Connect to jobs and services

H. Same day reservations

I. Create or expand local fixed route services

Figure 5. Public Transit Improvements Priorities Ranked by Online Survey Respondents

◄◄◄

Online Survey Included Five Screens asking about Priorities, Strategies, and Locations of Specific Concerns

As part of the online survey, participants were asked to place markers on a map for specific areas where they would like to see additional transit service, improved access to bus stops or other improvements. Survey respondents placed 83 map markers. As part of their map markers, the respondents requested the following improvements:

- **33 percent** of map markers focused on request for additional transit services
- **20 percent** recommended improving transit stops
- **17 percent** asked for increasing frequency/hours
- **13 percent** noted safety and security issues
- **10 percent** requested improved access to transit
- **7 percent** requested a better bike connection to the transit network

Survey respondents placed 83 map markers

Looking at map marker locations by type (**Figure 5**), the following geographic location trends can be observed:

» Map markers placed in northeastern Mecklenburg County near I-485 and US 29 (North Tryon Road) were most frequently focused on improved bike connections, improving access and safety issues, and additional transit stops; those locations might be correlated with proximity to the UNC-Charlotte campus and apartment housing complexes located in the general vicinity

» Map markers in southeastern Mecklenburg County in and around Matthews tended to focus more on additional transit services, as well as safety and security improvements

» Map markers in the core in Charlotte were more focused on accessibility improvements and adding more bus stops

Please refer to Appendix B for additional information about the public survey results.

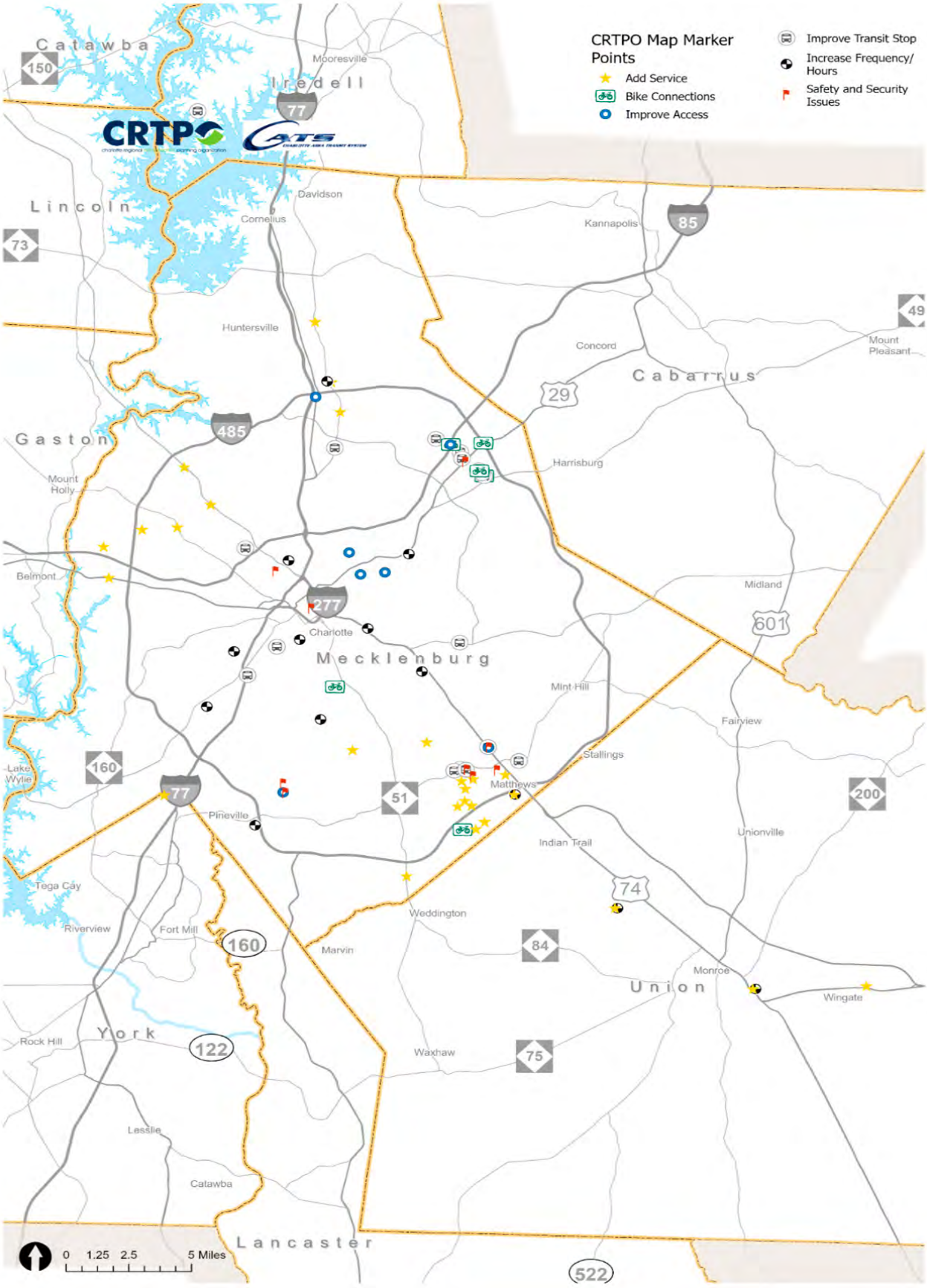


Figure 6. Online Survey Responses- Map Markers Locations by Type

3

Review of Unmet Needs and Gaps

This section provides an analysis of unmet transportation needs and transportation service gaps in the Charlotte Urban Area. The analysis incorporates public and stakeholder feedback received, and builds on the review of the demographic data trends and the existing public transportation providers data.

Population and Employment within Reach of Transit

Based on the review of socio-economic data including senior population, households with disabilities, and existing and future population and employment distribution across the region, existing fixed route and deviated fixed route transit service, as well as ADA Paratransit service, is not available to large portions of the population.

Population and Employment within Reach of Transit, with Changes Expected by 2045

Less than half of the population in the nine-county region today resides within ¾ mile access of fixed route or deviated fixed route transit service. By 2045, it is estimated that the percentage of population residing within ¾ mile access of fixed route or deviated fixed route transit will decrease from 44.1 percent to 42.2 percent in the absence of additional transit routes being implemented (see **Figure 7**).

For jobs in the region, a little over two thirds of jobs in the region today are located within a ¾ mile radius of existing fixed routes or deviated fixed routes. By 2045, it is expected that the percentages of jobs accessible will decrease slightly to 67.3 percent of all jobs within ¾ mile of fixed route or deviated fixed route in the absence of additional transit routes being implemented.

Every county in the region has an existing on-demand or community transportation provider, and those individuals not able to reach fixed route or deviated fixed route can utilize the on-demand transportation services. However, those services are often limited for general purpose or employment trips and prioritize non-emergency medical trips. Advance reservations are required for trips on these services.

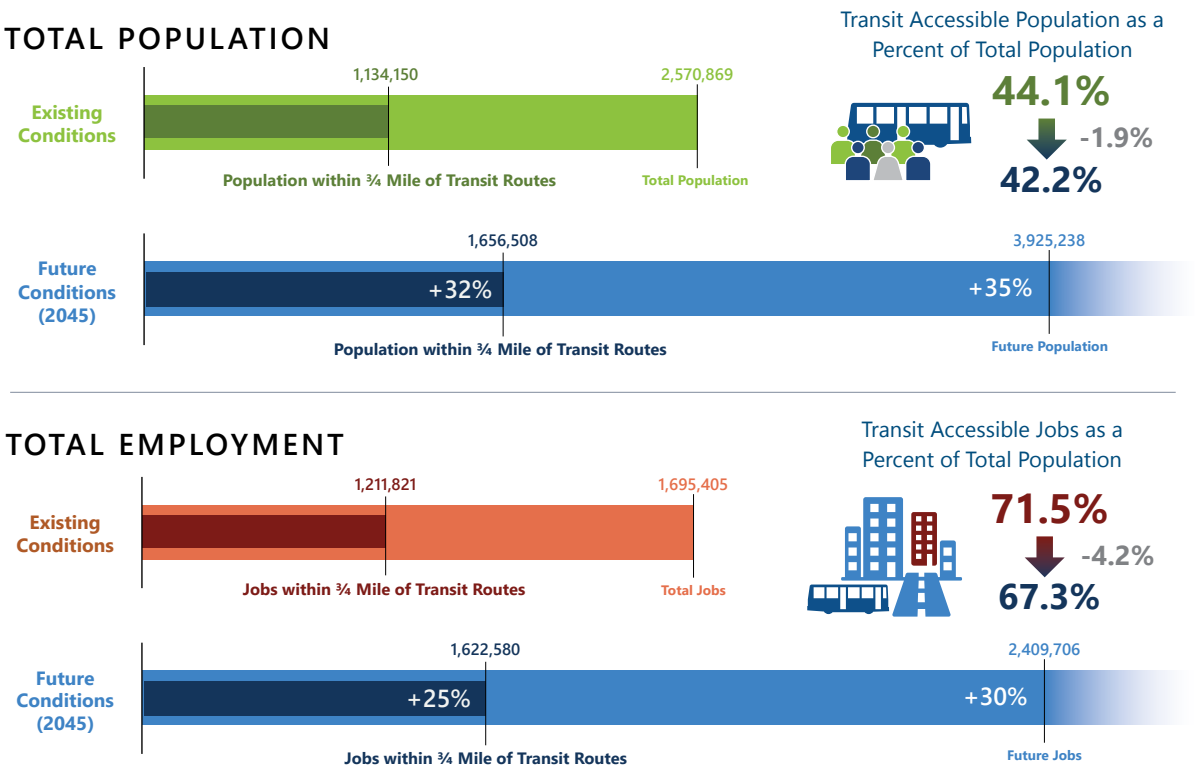


Figure 7. Total Population and Employment

Seniors and Individuals with Disabilities within Reach of Fixed Route and Deviated Fixed Route Transit

Looking at the senior population (65 and older), less than a third of seniors in the nine-county region currently live within ¾ mile of existing fixed route and/or deviated fixed route transit service (see **Figure 8**). This statistic means that for over two-thirds of seniors in the region, their transportation choices might be limited to on-demand /community transportation services if they are no longer able to drive themselves and do not have family members close by. As our region's population is expected to get older over time, the demand for services and pressure on community transportation providers will only increase in the absence of additional public transit investments across the region.

Similarly, when looking at the spatial distribution of households with an individual with a disability, less than a third of those households in the nine-county region currently live within ¾ mile of existing fixed route and/or deviated fixed route transit service (see **Figure 8** below). This data means that those individuals with a disability living outside of existing ADA paratransit and deviated fixed route transit service areas face more limited choices with regards to transportation options available.

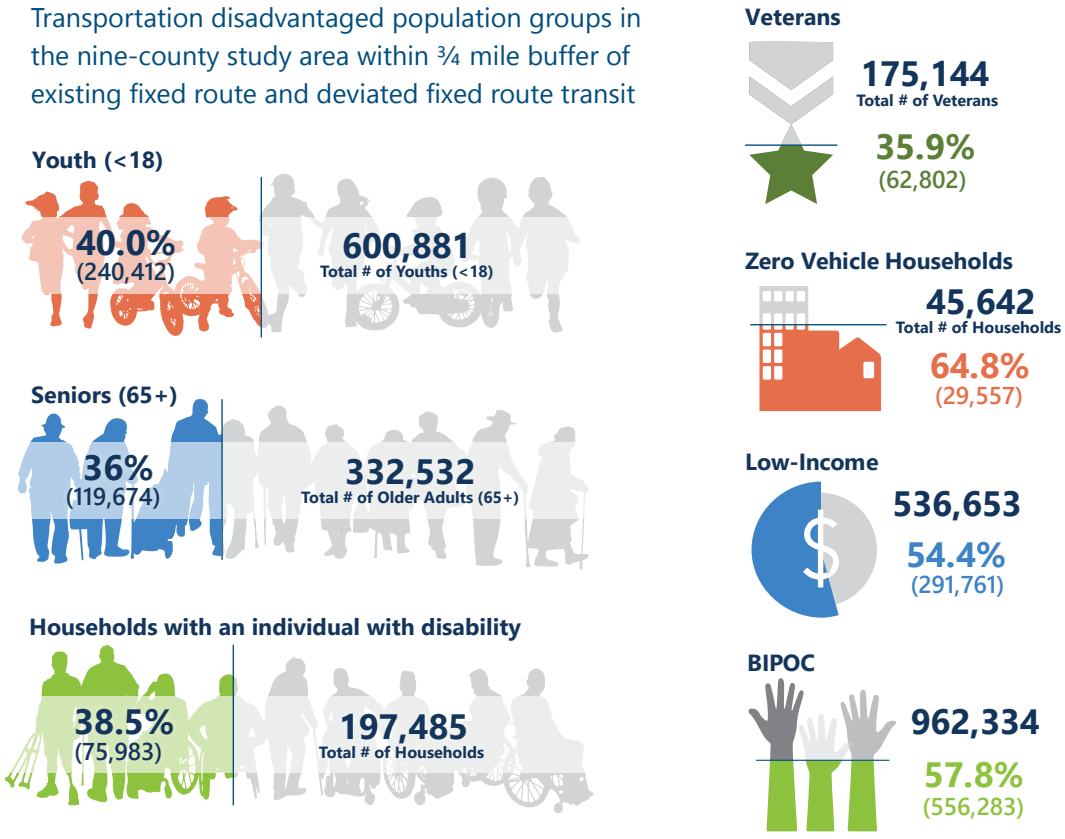


Figure 8. Transportation Disadvantaged Population Categories and Access to Transit

Housing Affordability

The issue of rising housing costs impacts households across the Charlotte region and contributes to the combined burden of transportation and housing costs. As noted in the "2021 State of Housing in Charlotte Report", median home prices in the Charlotte market increased at an annual rate of 16.3 percent between September 2020 to September 2021, while the average effective rent in the region increased by 16.6 percent. The report also indicates that the home price growth rates appear to be accelerating, with 4.98 percent average annual increase from 2010 to 2015, and 7.8 percent average annual increase from 2015 to 2020.[2] The areas surrounding Charlotte have been growing at a faster pace than the core of the region in part due to rising housing costs concerns (Chemtob & Off, 2019 as cited in Delmelle, Nilsson and Adu, 2021[3]). Households on a limited income must look further out to find housing and the Charlotte Metropolitan Statistical Area has experienced a "suburbanization of poverty" between 1990 and 2017, where less dense areas of the MSA have been experiencing higher poverty rates.[4] COVID-19 has exacerbated some of the housing affordability issues that existed in the region prior to the pandemic and in Mecklenburg County. The UNC Charlotte Urban Institute estimated that there is a 23,022-unit gap of rental units for extremely low-income households who are at or below 30 percent of area median income.[5] Those households moving further out to seek more affordable housing are likely to face more limited public transportation options and to live in areas without access to fixed and deviated fixed route transit service.

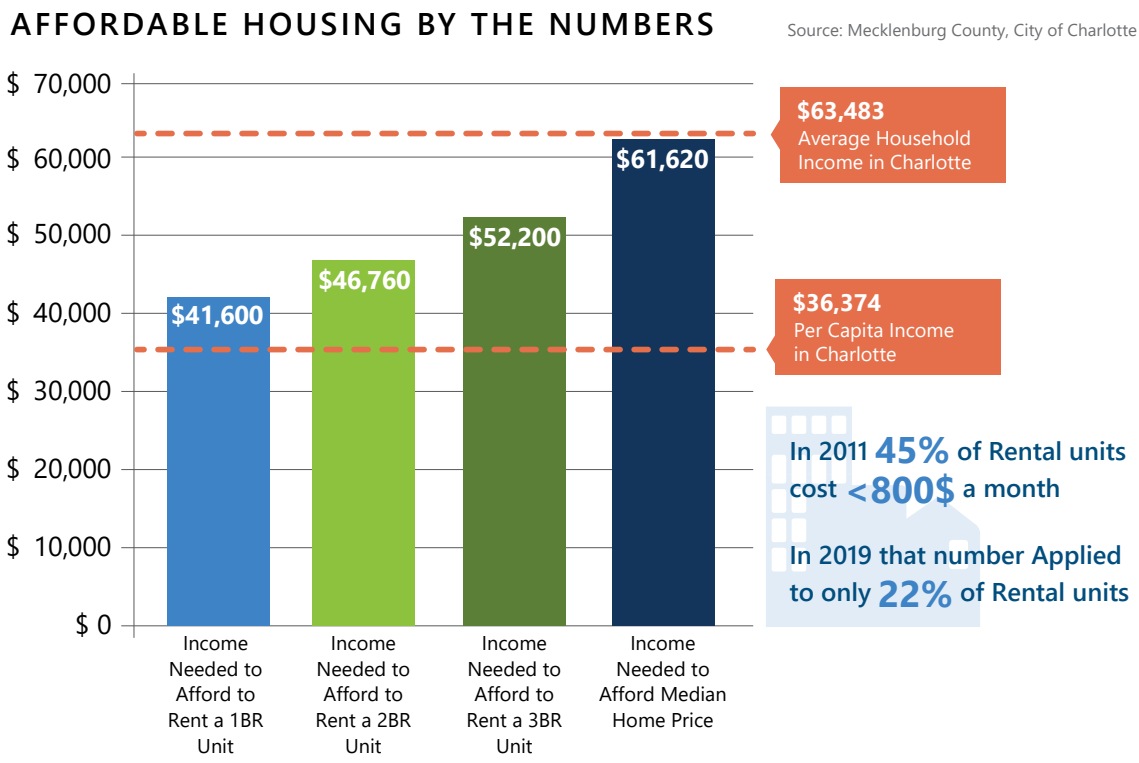


Figure 9. Housing Affordability Issues

2 Childress Klein Center for Real Estate (CKCRE) at the University of North Carolina at Charlotte (2021). State of Housing in Charlotte Report. Retrieved from https://issuu.com/belkcollege/docs/2021_11_11_stateofhousingreport2021.docx

3 Elizabeth Delmelle, Isabelle Nilsson and Providence Adu (2021). Poverty Suburbanization, Job Accessibility and Employment Outcomes. Social Inclusion (ISSN: 2183-2803) 2021, Volume 9, Issue 2.

4 Elizabeth Delmelle, Isabelle Nilsson and Providence Adu (2021). Poverty Suburbanization, Job Accessibility and Employment Outcomes. Social Inclusion (ISSN: 2183-2803) 2021, Volume 9, Issue 2.

5 Bridget Anderson and Emily Jarrett, UNC Charlotte Urban Institute (October 2021). Charlotte-Mecklenburg State of Housing Instability & Homelessness Report.

Limited Footprint of Regional Transit Network

The existing footprint of fixed route and deviated fixed routes services only covers a limited portion of the region. Additional needs for public transportation services exist outside of the established transit networks. While express bus routes connect the CATS network to some of the surrounding communities, those routes operate on a more limited schedule which does not lend itself well to trips for medical appointments and other trip purposes not compatible with the traditional 9 AM – 5 PM work day structure. Additional local and regional transit routes would be needed throughout the region to fill some of the gaps.

Table 1 provides a brief summary of existing public transportation providers in the region.

Provider	Geographic Area Served	Type of Service(s) Provided
Cabarrus County Transportation (CCTS)	Cabarrus County	Demand Response
Catawba County Medicaid Transportation Services	Catawba County	Non-Emergency Medicaid Transportation (NEMT)
Charlotte Area Transportation System (CATS)	City of Charlotte, Express Bus service outside of Mecklenburg County	Fixed Route, Deviated Fixed Route, Express Route, ADA Paratransit, Light Rail, Streetcar
Gaston County Access	Gaston County, Limited Service to the VA in Salisbury	Deviated Fixed Route, Demand Response, Salisbury VA Shuttle, Subscription Routes
Greenway Public Transportation	Catawba County; Alexander, Burke, Caldwell Counties	Fixed Route, ADA Paratransit, Deviated Fixed Route (in Burke and Alexander Counties), Demand Response
Iredell County Area Transportation System (ICATS)	Iredell County, Limited Service to Mecklenburg and to the VA in Salisbury	Deviated Fixed Route, Express Bus, Demand Response, Subscription Routes, Salisbury VA Shuttle
Lancaster Area Ride Service "LARS	Lancaster County (SC)	Demand Response
Mecklenburg County Transportation Services (MTS)	Mecklenburg County	Demand Response and Subscription Routes (focus on NEMT, Seniors (60+), Rural General Public, Veterans, Transportation to Congregate Meal Sites)
Rider (Concord Kannapolis Area Transit)	Concord and Kannapolis areas of Cabarrus County, Express Bus to Mecklenburg County	Fixed Route, ADA Paratransit, Express Bus with connection with CATS light rail via JW Clay station
Transportation Lincoln County (TLC)	Lincoln County; some trips outside the County for medical purpose	Demand Response, Subscription Routes
Union County Transportation Services	Union County, some trips to Mecklenburg County and to the VA in Salisbury	Demand Response; Recently Expanded to Provide a Greater Variety of Trips including General Purpose, Trips for Education and for Employment
York County Access	York County (SC)	Demand Response

Table 1. Public Transportation Providers serving Charlotte Urban Area

Additional Vehicle and Staff Capacity Needed to Expand Services

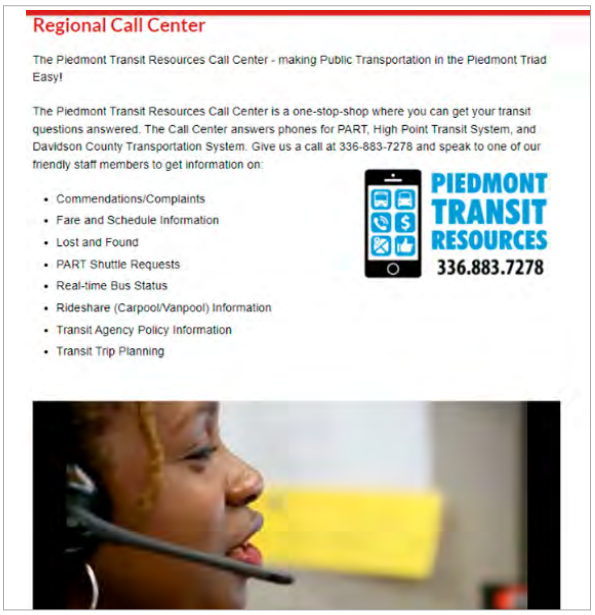
While the region's transit agencies see the need to expand transit services, there is often a shortage of drivers and vehicles to provide additional services. Most transit providers are struggling with recruiting enough drivers, whether full-time or part-time. Many transit providers are reporting an increase in the percentage of trips requested by individuals in a wheelchair over time, so increasing the presence of vehicles outfitted with ADA lifts or ramps is a need for many providers. Other providers who might be ready to test a new type of service may require a different vehicle type than previously used to provide this new service. As part of expanding vehicle fleets, considering the capacity of operations and maintenance facilities comes into play as well.

Regional Transit Information Sharing, Scheduling Software, Fare Interoperability and Transfer Coordination

The region currently lacks a centralized point of public transportation information that would be shared through a website, or a centralized mobile app, with potential support from a customer call center that would allow transit riders to find out information about all the different types of public transportation services available in the nine-county region. New potential riders moving to the area and seniors who give up driving due to healthcare concerns, as well as social services and healthcare workers assisting their clients with planning for accessing care, could benefit from such a resource. The Centralina Regional Council has been working on assembling and disseminating to human services agencies a transit guide with a review of various transportation providers in the region. As an example of a regional call center operating elsewhere in North Carolina, the Piedmont Transit Resources Call Center operated by Piedmont Authority for Regional Transportation (PART) is a one-stop-shop where customers can call Monday through Saturday to get trip planning assistance and obtain information about vanpools, express buses and local bus schedules for PART, High Point Transit System, and Davidson County Transportation System.

For purchase of transit fares, there is not a regionwide interagency agreement that would allow a passenger to transfer for free between agencies. Where mobile ticketing is in use, different mobile applications are not compatible between agencies to allow mobile ticketing across several agencies. For example, a passenger can transfer from a Rider route to a CATS light rail or bus vehicle with a paper transfer pass, but not with an electronic transfer through a mobile app[6]. Transit agencies do not typically sell the tickets for another transit agency in the region at their transit center. Purchasing tickets for different transit agencies in the region currently requires going to multiple physical locations and/or using multiple electronic and mobile ticketing platforms. For example, CATS utilizes CATS-Pass mobile ticketing app and Rider uses Umo mobile app for mobile ticketing paired with Rider Pass smartcard.

6 Rider. Fares, Passes and Transfers. https://ckrider.com/fares-and-passes/#1592232658540-bea690e4-d22d



Left: Piedmont Transit Resources Call Center Overview at https://www.partnc.org/197/Regional-Call-Center; Right: Display with Types of CATS Transit Tickets and Monthly Passes Available for Sale at the CTC Station in Uptown Charlotte

When it comes to transfer coordination, passengers interviewed during the pop-up public engagement meetings expressed a concern that transferring from a CATS bus to light rail or another bus can be challenging when a bus is delayed or has very limited frequency. Transferring to another system is even more challenging due to limited points of connection. For community transportation providers in counties outside of Mecklenburg who have to bring passengers to Charlotte for medical appointments, some are able to coordinate on transferring passengers to maximize efficiency for longer trips. Transit agencies cited a concern with lack of good central transfer locations (especially in Mecklenburg County) and driver-to-driver communication challenges around passenger transfers. When the operator of one agency has to call their dispatch center to relay information to another dispatch center which then communicates with the other operator, there is a communication delay that results in longer wait times for passengers. Existing scheduling software platforms are different from one transit agency to another, which makes it challenging to share and compare schedules to find opportunities to transfer passengers and share the cost of longer trips.

COVID-19 Impacts and Medicaid Brokerage Transition Impacts for Public Transit Agencies

The COVID-19 pandemic has had a profound impact on how individuals, governments and businesses operate on an everyday basis. Public transportation providers in North Carolina saw a dramatic decrease in ridership and fare revenues starting in March 2020, and faced a significant increase in operating costs due to increased cleaning costs, personal protective equipment, protective equipment on fleet vehicles, and other related increases in operating expenses. COVID-19 federal relief funds through several programs (Coronavirus Aid, Relief, and Economic Security (CARES) Act; Coronovirus Response and Relief Supplemental Appropriations Acts 2021 (CRRSAA) and American Rescue Plan Act (ARPA) funds) have allowed transit operators in the region to cover and offset some of the losses. However, as of spring 2022, most transportation agencies in the region are not back to pre-pandemic ridership levels or levels of service. Frequency has been reduced on many routes and some of the routes have been eliminated. CATS proposes to return service to pre-pandemic levels of operations in FY 2023, as measured in revenue hours. CATS ridership numbers are expected to take longer to return to pre-pandemic levels. Apart from ridership trends, COVID-19 has exacerbated an employee shortage and nationwide, nine in ten public transportation agencies are indicating that they have a hard time hiring new employees to fill the bus operator positions and other transit employee vacancies.[7]

In addition to facing COVID-19 impacts, North Carolina has been going through a Medicaid managed care transition over the past several years. As of July 2021, Medicaid Prepaid Health Plans (PHPs) began providing non-emergency medical transportation (NEMT) and non-emergency ambulance transportation (NEAT) services for PHP members; PHPs contract with transportation brokers that work with public and private transportation providers to provide the trips for PHP members. Medicaid Transportation brokers used by PHPs in North Carolina are as follows:

- ModivCare: broker for AmeriHealth Caritas of North Carolina, Carolina Complete Health, Healthy Blue and UnitedHealthcare of North Carolina; and,
- MTP (previously One Call): broker for WellCare of North Carolina.[8] [9]

Passengers Getting Ready to Board the Airport Shuttle at the CTC Station in Uptown Charlotte while Wearing Face Coverings (January 2022).

7 APTA (March 2022). Policy Brief: Workforce Shortages Impacting Public Transportation Recovery. Retrieved from https://www.apta.com/wp-content/uploads/APTA-SURVEY-BRIEF-Workforce-Shortages-March-2022.pdf

8 NCDHHS (July 20, 2021). Non-Emergency Transportation for NC Medicaid Managed Care. Retrieved from https://medicaid.ncdhhs.gov/blog/2021/07/20/non-emergency-transportation-nc-medicaid-managed-care

9 NCDHHS (April 29, 2022). Non-Emergency Medicaid Transportation Updates-Apil 29, 2022. Retrieved from https://medicaid.ncdhhs.gov/blog/2022/04/29/non-emergency-medicaid-transportation-updates-april-29

Some of the Medicaid customers are signed up as NC Medicaid Direct recipients, in which case the local Departments of Social Services (DSS) offices continue to contract and schedule for NEMT and NEAT services.[10] As a result, local community transportation providers often have separate contracts with Medicaid Transportation brokers and county DSS offices to provide trips for subgroups of Medicaid clients. In interviews with transportation agencies in the region, some have seen a significant impact (decrease in trips) from Medicaid brokerage transition; for others the number of NEMT trips remained the same but the amount of administrative paperwork has increased. The full impacts of the Medicaid brokerage transition on community transportation providers in the state are not yet known. The Medicaid brokerage transition is expected to help reduce the per-trip costs for NEMT clients; however, this does not take into account the efficiencies of a coordinated trip model where human services transportation clients whose trips might be covered through various programs are pooled together for travel on the same vehicles for improved overall efficiency and decreased per passenger cost. When NEMT trips are taken out of the coordinated trip equation, the resulting per trip costs for other human services agencies and public transportation providers might increase.

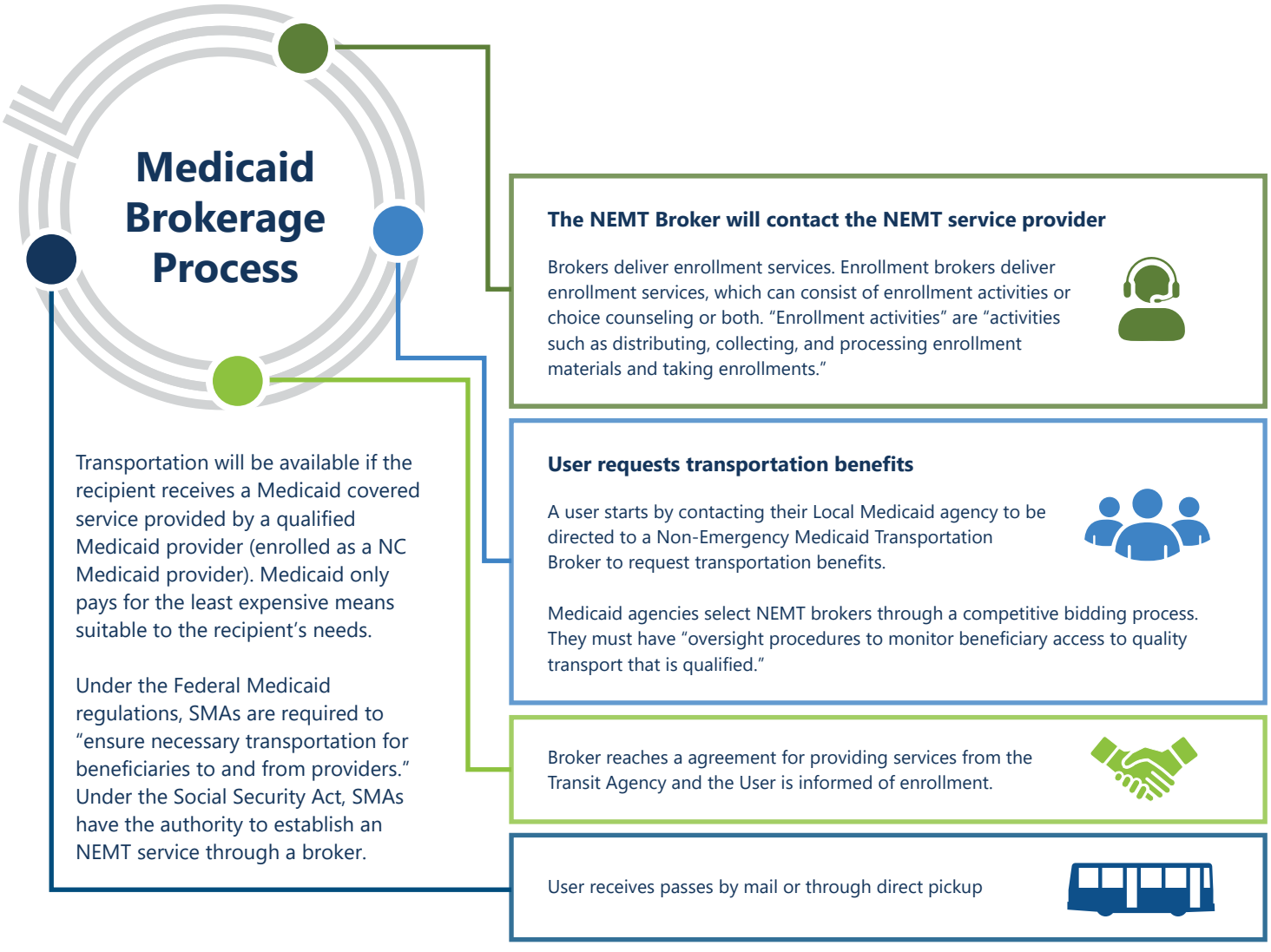


Figure 10. Medicaid Brokerage Process

10 NCDHHS (July 20, 2021). Non-Emergency Transportation for NC Medicaid Managed Care. Retrieved from https://medicaid.ncdhhs.gov/blog/2021/07/20/non-emergency-transportation-nc-medicaid-managed-care

4 Recommendations

This section provides an overview of recommendations developed as part of the Coordinated Public Transit-Human Services Transportation Plan update for Charlotte Urban Area.

Recommendation Key Themes

Recommendations for the Charlotte Urban Area are organized around the following six key themes:

Mobility Management and Agency Coordination

Organizational Assessments

Customer Service

Facility Improvements and Safety

Connectivity

Service Expansion

Mobility Management and Agency Coordination

Mobility Management and Agency Coordination refers to the variety of interagency coordination activities, committees, and technology and communication solutions that would help transit agencies communicate and coordinate with each other while also improving information-sharing with passengers. Establishing a formalized Mobility Manager position within a regional organization (at least one dedicated staff position, and possibly multiple in the future) would be key to being able to implement other mobility management and agency coordination activities. As part of FTA Section 5310 funding requirements, mobility management activities are eligible for an 80/20 federal/local cost share split.

The recommendations that fall under the Mobility Management and Agency Coordination are as follows:

- ☑ Establish and hire a Regional Mobility Manager position(s). The Regional Mobility Manager promotes public transit, working with multiple Community Transportation Providers.
- ☑ Establish a Paratransit Working Group that is made up of representatives from each Community Transportation Provider in the region and is coordinated by the Regional Mobility Manager.
- ☑ Develop and Implement Travel Training Programs in the Region.
- ☑ Improve Marketing and Information Sharing about Existing Services.
- ☑ Expand Mobility Choices: Promote Regional Coordination on Emerging Mobility Technology.
- ☑ Establish a Unified Regional Paratransit Scheduling Software.

Organizational Assessments

Organization assessment recommendations are more internal-facing for the transit agencies, and are intended to support follow-up studies and evaluations for the agencies to continue develop their staff and financial capacity to address the growing transportation needs in the region.

The recommendations that fall under the Organizational Assessments theme are as follows:

- ☑ Review the Impacts of Medicaid Managed Care on Transportation Providers in the Region.
- ☑ Perform a Regional Paratransit and Community Transportation Scheduling Integration Study.
- ☑ Evaluate additional funding options and next steps to generate additional public transportation revenue streams to support future service expansion.

Customer Service

Customer Service recommendations are intended to improve the passenger experience through supporting improved information-sharing, reduced wait times to schedule a trip and a more seamless ticket-purchasing and transfer process across multiple transit agencies.

The recommendations that fall under the Customer Service theme are as follows:

- ☑ Establish a Regional Information Center: this could take many different forms, from a call-in customer service center similar to the Piedmont Transit Resources Call Center, to an interactive website and mobile app platform that would check a passenger's home location and destination and direct them to what transportation services might be available to them for that trip.
- ☑ Improve service times: this is particularly important for seniors and individuals with disabilities who are traveling via on-demand transportation options and might be especially tired from a long trip due to medical concerns that they might have.
- ☑ Reduce reservation wait times for on-demand transportation and ADA Paratransit: while STS (ADA Paratransit) services for CATS allow an ADA Paratransit trip reservation for the following day, many on-demand transportation providers require several days prior notice to schedule a trip.
- ☑ Develop a regional fare strategy which would include fare interoperability agreements and a shared mobile ticketing platform.
- ☑ Adopt a regional platform for demand response trip scheduling and dispatching.
- ☑ Develop a standardized ADA certification process across all agencies and reciprocity agreements.
- ☑ Provide disability sensitivity training for private providers.

Facility Improvements and Safety

Facility Improvements and Safety set of recommendations are focused on upgrading transit stops to make them ADA-accessible and more comfortable to passengers.

The following recommendations are grouped as part of the Facility Improvements and Safety theme:

- ☑ Develop a comprehensive transit safety and convenience program to review issues in proximity to transit stops and address them.
- ☑ Upgrade bus stops with highest ridership with bus shelters, improve ADA compliant bus stop pads and upgrade lighting. Add Braille to fixed-route bus stops signs.
- ☑ Upgrade bus stops with ADA accessible loading pads and walk access routes as part of roadway projects design and construction (NCDOT Complete Streets policy implementation).

Connectivity

Connectivity recommendations are related to first-mile last-mile access to transit stops, and are focused on additional transportation options, such as microtransit, community shuttles and connecting passengers to other transportation options once they arrive at the transit stop closest to their destination.

A mobility hub concept speaks to better connecting transit passengers to first mile-last mile transportation options via improved information sharing and amenities such as e-scooter share and WiFi at key transit stops.

Connectivity recommendations include the following:

- ☑ Develop a Microtransit / Community Shuttle Pilot Program.
- ☑ Develop a Mobility Hub Pilot Program to learn best practices on mobility hubs and identify the highest priority locations for Mobility Hub implementation; identify funding partners.
- ☑ Establish a Volunteer Transportation Services Program in the region to help close the gaps between transportation needs and existing services.
- ☑ Expand mobility choices.
- ☑ Establish connecting service procedures between transit providers, including identifying and establishing additional and improved transfer locations, working through communication protocols for improved communication from operator to operator when possible, and establishing protocols for how the scheduling software reports can help communicate potential shared trip information between multiple agencies.
- ☑ Strengthen rural to urban connections; involve community transportation providers in CONNECT Beyond service planning workgroup.

Service Expansion

Service Expansion recommendations are focused on expanding the number of transit routes in the region, as well as improving their reach, hours of operation and frequency.

The Service Expansion recommendations include the following:

- ☑ Increase service: this recommendation has a particular focus on increasing trips availability for on-demand non-emergency trips through community transportation providers.
- ☑ Expand on-demand /community transportation service hours to provide more evenings and weekends service.
- ☑ Improve existing service:
  - Expand medical appointments transportation including dialysis transportation.
  - Purchase additional ADA-accessible vehicles including larger vehicles to accommodate over-sized mobility aids.
  - Improve transportation options for employment and related needs.
  - Improve access to transportation for veterans and other individuals with disabilities and visual impairment.
  - Upgrade vehicle fleets to include more fuel-efficient, environmentally-friendly options.

Table of Recommendations

The table below includes provides a list of recommendations with suggested timeframe (near-term, mid-term or long-term) for implementation.

Charlotte Urban Area Coordinated Public Transit-Human Services Transportation Plan Recommendations

Type	Recommendation & Recommendation Description
IMPLEMENTATION PERIOD: **NEAR-TERM**	
Mobility Management and Agency Coordination	**Establish Regional Mobility Manager position(s) (CONNECT Beyond C-09).** The Regional Mobility Manager would help coordinate on policies that support public transit, build local partnerships and help coordinate transportation services across service providers and funding agencies in the region. The Regional Mobility Manager would also support the development of information tools and trip planning tools for transit riders.
Mobility Management and Agency Coordination	**Establish a Paratransit Working Group (CONNECT Beyond D-03).** Establish a Paratransit Working Group that is made up of representatives from each Community Transportation Provider in the region and is coordinated by the Regional Mobility Manager. The objective of this Working Group should be to coordinate paratransit policies and operations region-wide and to work together to implement CONNECT Beyond recommendations related to Community Transportation Services.

Table 2. Recommendations

Type	Recommendation & Recommendation Description
Mobility Management and Agency Coordination	**Travel Training.** Establish transportation kiosks in senior / low income housing and social service locations, create a demonstration bus, create a mobile classroom, and provide one-on-one instruction, as well as group instruction, to target populations for "first and last mile" access.
Organizational Assessments	**Review the Impacts of Medicaid Managed Care on Transportation Providers in the Region (CONNECT beyond C-03).** Community Transportation Providers should assess the impact of Medicaid Managed Care by maintaining records for system ridership and financials to determine impacts on system operations.
Customer Service	**Regional Information Center (CONNECT Beyond D-37).** One-Click One-Call Center or Regional Transit Information Website
Customer Service	**Improve service times.** Reduce reservation wait times and expand eligibility and frequency for on-demand trips in areas served by Community Transportation Providers (outside of existing fixed route and deviated fixed route service areas).
Facility Improvements and Safety	**Develop a comprehensive transit safety and convenience program (CONNECT Beyond D-26).** Develop a comprehensive safety and convenience program for transit users, operators, other staff, and the public (a systematic approach to review issues in proximity to transit stops and address them through lighting, access improvements, safety officers, etc.).
Facility Improvements and Safety	**Improve access to existing public transit stops.** Upgrade bus stops with highest ridership with bus shelters, improve ADA compliant bus stop pads and upgrade lighting. Add Braille to fixed-route bus stops signs.
Mobility Management and Agency Coordination	**Improve marketing and information sharing about existing services (short-term).** Help seniors and individuals with disabilities connect with existing transit services, coordinate with travel training for seniors and individuals with disabilities to help them navigate transit services.
IMPLEMENTATION PERIOD: **MID-TERM**	
Connectivity	**Microtransit /Community Shuttle Pilot Program.** Test a pilot and implement microtransit /on-demand community shuttle services with ADA-accessible vehicles and same day reservation capabilities in high demand areas to expand the reach of existing fixed route and deviated fixed route transit
Connectivity	**Mobility Hubs pilot program.** Test a pilot and implement mobility hubs at key station areas to improve transfer and waiting areas with access to a variety of last-mile solutions including pedestrian access, ride sharing, microtransit/shuttles and taxi services.
Customer Service	**Reduce reservation wait times for on-demand transportation and ADA Paratransit.** Provide same-day on-demand transportation services including ADA Paratransit /Special Transportation Service (STS).

Table 2. Recommendations Continued

Type	Recommendation & Recommendation Description
Service Expansion	**Increase Service.** Increase trips for on-demand non-emergency trips.
Service Expansion	**Expand service.** Expand On-Demand and Community Transportation Service Hours (Evenings and Weekends).
Connectivity	**Volunteer Transportation Services Program (CONNECT Beyond C-20).** Launch a redesigned regional Volunteer Transportation Services Program for older adults and people with disabilities. This program is intended as a safety net service for those who do not qualify or cannot access other transit services.
Connectivity	**Expand Mobility Choices (CONNECT Beyond B-21).** Identify small area or station area plans that coincide with mobility hub candidate areas and incorporate hub elements into the area plans. This should be completed after the alternatives analysis study for future HCT and in coordination with existing fixed-route and human services plans.
Connectivity	**Establishing connecting service procedures between transit providers.** Create new and improved transfer locations, improve communication methods, and schedule software, and improve agreements between agencies to be able to transfer passengers for longer trips.
Connectivity	**Strengthen Rural to Urban Connections (CONNECT Beyond C-01).** Involve Community Transportation Providers in CONNECT Beyond Service Planning Working Group to ensure service improvements are coordinated at a regional level (2-3 times/year)
Customer Service	**Regional Fare Strategy (CONNECT Beyond B-19).** Develop fare interoperability agreements between CATS, Rider, ICATS and other connecting agencies. Implement a shared regional mobile ticketing platform that allows for access by under-banked individuals and individuals with disabilities.
Customer Service	**Regional Platform for Demand Response Trip Scheduling and Dispatching (D-53).** Integrate demand response trip scheduling and dispatching systems into a single regional platform.
Customer Service	**Develop a standardized ADA certification process across all agencies and reciprocity agreements (CONNECT Beyond D-19).** A standardized process and reciprocity agreements would greatly improve user experience by eliminating unnecessary transfers.
Customer Service	**Sensitivity Training.** Provide disability sensitivity training to taxi and limousine drivers.

Table 2. Recommendations Continued

Type	Recommendation & Recommendation Description
Mobility Management and Agency Coordination	**Expand Mobility Choices-Promote Regional Coordination on Emerging Mobility Technology (CONNECT Beyond B-06).** In coordination with the existing Connected and Autonomous Vehicle Task Force convened by Centralina Regional Council Regional Council, establish an Emerging Mobility Working Group. The Group will engage transit stakeholders to understand current and future technology needs and set a path for the effective integration of emerging mobility initiatives and programs with current and future transit services, including mobility hubs identified by CONNECT Beyond. The Emerging Mobility Working Group will pilot and implement first-mile/last-mile solutions, ride-share coordination, electric vehicle technologies, innovations for seniors/persons with disabilities, and other relevant mobility recommendations presented by CONNECT Beyond.
Organizational Assessments	**Regional Paratransit and Community Transportation Scheduling Integration (CONNECT Beyond D-09).** Perform a regional Paratransit and Community Transportation Scheduling Integration and Implementation Study.
Service Expansion	**Improve Existing Services-Community Transportation and On-Demand Transportation Services.** 1. Expand medical appointments transportation including dialysis transportation. 2. Purchase ADA-accessible vehicles including larger vehicles to accommodate over-sized mobility aids. 3. Improve transportation options for employment and related needs. 4. Improve access to transportation for veterans and others with disabilities and visual impairments. 5. Upgrade vehicle fleets to include more fuel-efficient, environmentally-friendly options.
IMPLEMENTATION PERIOD: **LONG-TERM**	
Mobility Management and Agency Coordination	**Unified Regional Paratransit Scheduling Software (CONNECT Beyond D-69).** CONNECT Beyond recommends the region Community Transportation Providers adopt a unified regional community transportation and paratransit scheduling software to help better coordinate paratransit services throughout the region.
Organizational Assessments	**Evaluate additional funding options.** Expand additional public transportation funding options in the region. Review next steps to generate additional public transportation revenue streams to support future service expansion.
Facility Improvements and Safety	**Upgrade bus stops with ADA accessible loading pads and walk access routes as part of roadway projects design and construction (Complete Streets implementation).** As part of Complete Streets policy implementation, ensure bus stops in the region are upgraded with ADA accessible loading pads and walk access routes during roadway projects design and construction.

Table 2. Recommendations Continued

5

Microtransit and First/ Last Mile Study Areas

Follow up Study Areas for Microtransit and First/Last Mile Service for Elderly and Disabled Populations

Microtransit or General Public Demand–Response Transit Services: State of the Practice (TCRP Synthesis 141)[11], defines microtransit as, "shared public or private sector transportation services that offer fixed or dynamically allocated routes and schedules in response to individual or aggregate consumer demand, using smaller vehicles and capitalizing on widespread mobile GPS and internet connectivity."

For the purposes of this report, microtransit (or community shuttle) services are assumed to require public support in those areas of the Charlotte Urban Area where they might be most needed to help provide trips for seniors and individuals with disabilities (outside of South End and Uptown Charlotte), with a variety of service models and vehicle types possible. Microtransit is seen as a way to expand the reach of existing fixed route transit services and deviated fixed route services while giving riders the flexibility of requesting a trip the same day, through a phone call or an app, similar to requesting a ride sharing service.

To identify potential microtransit and first/last mile service areas for the elderly and people with disabilities, a GIS analysis was conducted. First, the study team selected all Census block groups that are in the top tier for the following criteria:

- percentage of households with elderly population (65+);
- percentage of households with disabled populations; and,
- percentage of households without a vehicle.

The Census block groups that met all three criteria were identified as "Target Microtransit Areas." As part of the next phase of analysis, the study team incorporated the existing express bus route system and light rail system with stations. CONNECT Beyond CATS Mobility Hubs and other CONNECT Beyond Mobility Hubs were incorporated as well as CONNECT Beyond-planned High-Capacity Transit Corridors. These corridors were identified in CONNECT Beyond as ready for high-capacity transit service today. After reviewing these parameters, five target study areas for potential microtransit, community shuttle service and/or other first/last mile services were identified:

- West Mecklenburg County
- Mint Hill
- North Mecklenburg County with Phase 2 Potential Expansion into Iredell County
- South Mecklenburg County
- Union County

Figure 12 displays the Target Microtransit Areas (based on percentage of elderly, disabled, and zero vehicle households) in relation to the current CATS express routes and light rail locations. Ultimately, this is where a microtransit system or a community shuttle would likely best serve elderly and disabled populations without access to a vehicle.

11 Transit Cooperative Research Program (2019). TCRPO Synthesis 141. The National Academies of Sciences, Engineering and Medicine. Retrieved from https://www.trb.org/Main/Blurbs/178931.aspx

The Census blocks in green are those that have the highest percentage of elderly population (+65) and has the highest percentage of households with disabled people and has the highest percentage of households without vehicles. The map also includes CATS and Regional Mobility Hubs and planned High-Capacity Transit Corridors as described in CONNECT Beyond report.

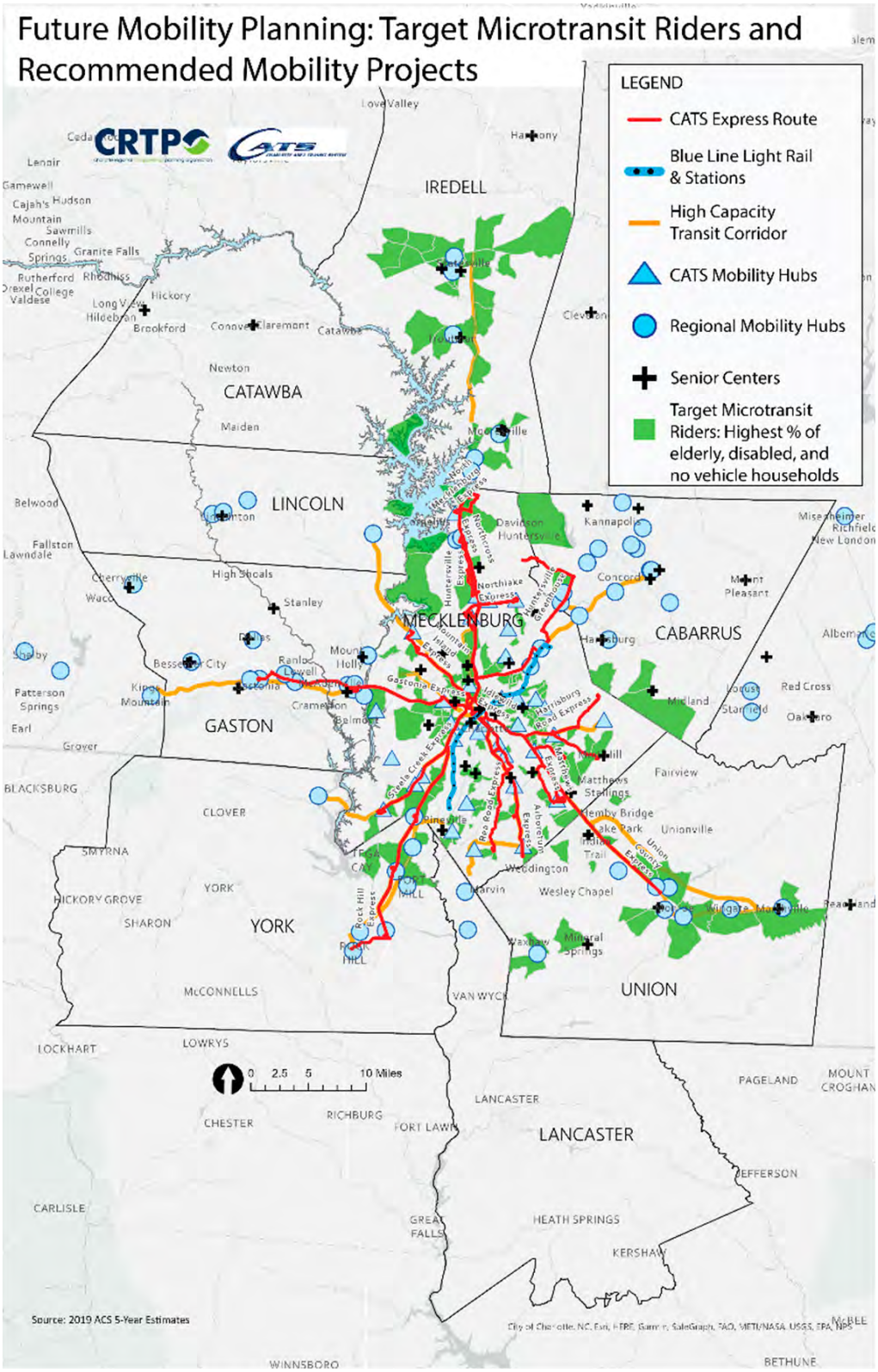


Figure 11. Microtransit Target Areas

Two examples of mictrotransit services operating in North Carolina include Wilson RIDE and Morrisville Smart Shuttle.

For the microtransit study areas identified, additional follow-up studies would be required to review the feasibility, coverage, frequency, vehicle type and operational model that would be most appropriate to provide a microtransit or community shuttle option. A same-day scheduling and trip reservation mobile app paired with a call-in reservation option is expected to be the most convenient way to allow potential riders to schedule a trip. Expected wait times for passengers would be subject to the service area and number of vehicles and drivers dedicated to the service. Additional service and operating details that would need to be developed to include accommodating riders that use a wheelchair or another mobility device. Some of the smaller mictrotransit vehicles (minivans) can be retrofitted to accommodate a passenger in a wheelchair); however, this results in a very limited capacity for only one additional passenger on the same trip where an individual is using a wheelchair. A mixed vehicle fleet with at least some cutaway buses (or LTV vehicles) and/or larger passenger vans in addition to minivan vehicles would likely be the most appropriate to accommodate passengers with a range of mobility limitations. In addition to the vehicle mix, the service model (for example curb-to-curb, corner-to-corner or between designated pick-up and drop-off points only) would need to be explored. Limiting service to designated pick-up and drop-off locations only can reduce the operating costs and the number of drivers required. On the other hand, older riders and riders with mobility limitations might be more comfortable with curb-to-curb service where they do not have to travel to get to a pick-up location. Finally, some of the study areas may be best served by breaking them up into multiple service zones, especially those that offer the potential of including multiple mobility hubs.

West Mecklenburg Study Area

STUDY AREA ▸ **West Mecklenburg First/Last Mile & Microtransit Service**

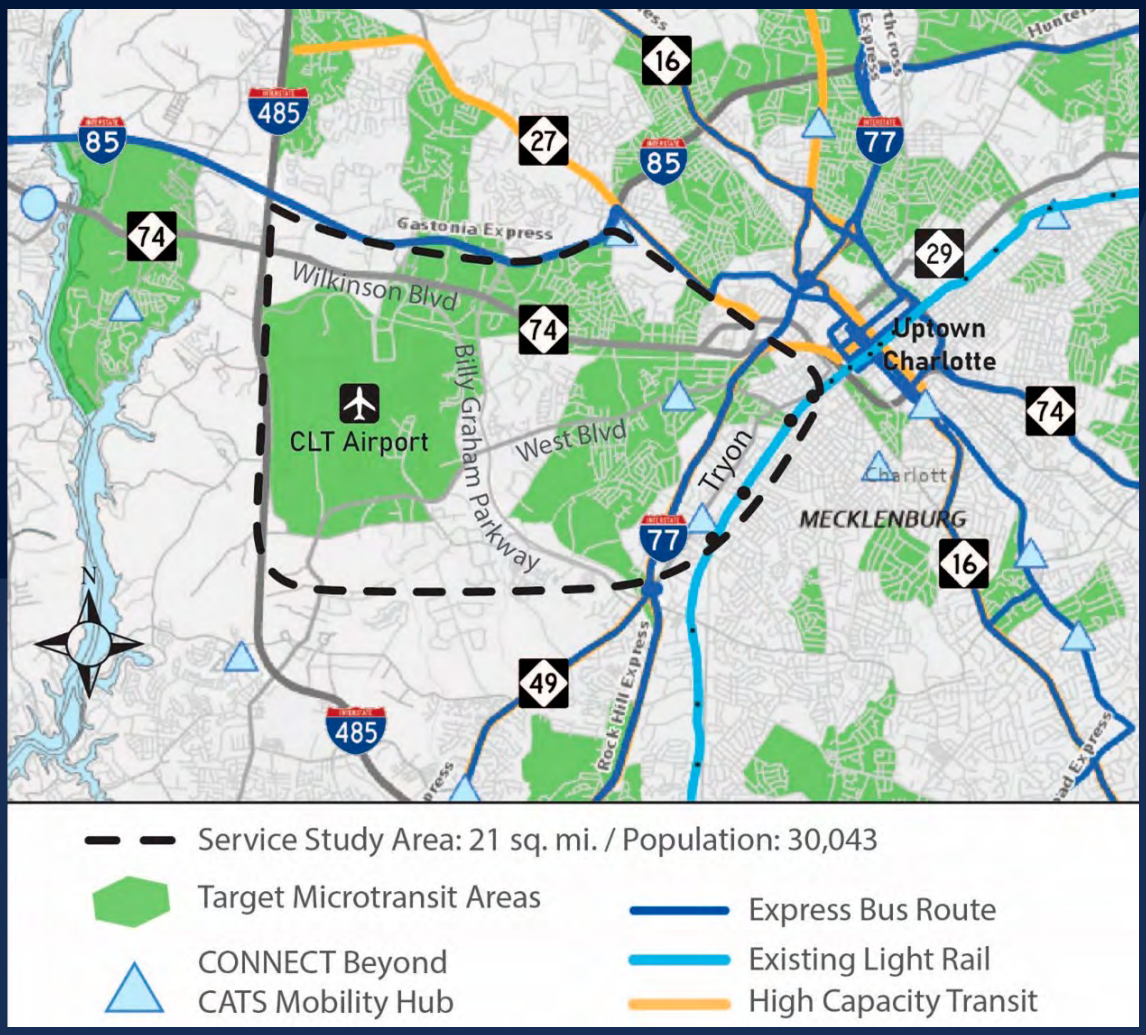


Figure 12. West Mecklenburg Study Area

The West Mecklenburg Study Area is unique in that it includes the Charlotte Douglas International Airport (CLT). Airport. The study area also includes four light rail stations. It is bordered by I-85 to the north and I-485 to the west and includes connections to the Gastonia Express and Rock Hill Express routes. This study area is approximately 21 square miles and includes a population of 30,043. In this potential microtransit service study area, if riders are able to get to a light rail station, they would have the ability to take microtransit from a light rail station to the airport, providing front door service to the airport terminal and eliminating the need for parking, which could also be helpful for elderly and disabled populations. In addition, the area around the airport has a variety of warehouse and logistics jobs clusters where employees tend to work in shifts and microtransit service could accommodate a greater variety of work schedules. For example, Amazon packaging and warehouse facilities on Todd Road and Tuckaseegee Road could potentially be served within this microtransit service area.

North Mecklenburg and Iredell County Study Area

STUDY AREA ▸ **North Mecklenburg & Iredell County First/Last Mile & Microtransit Service**

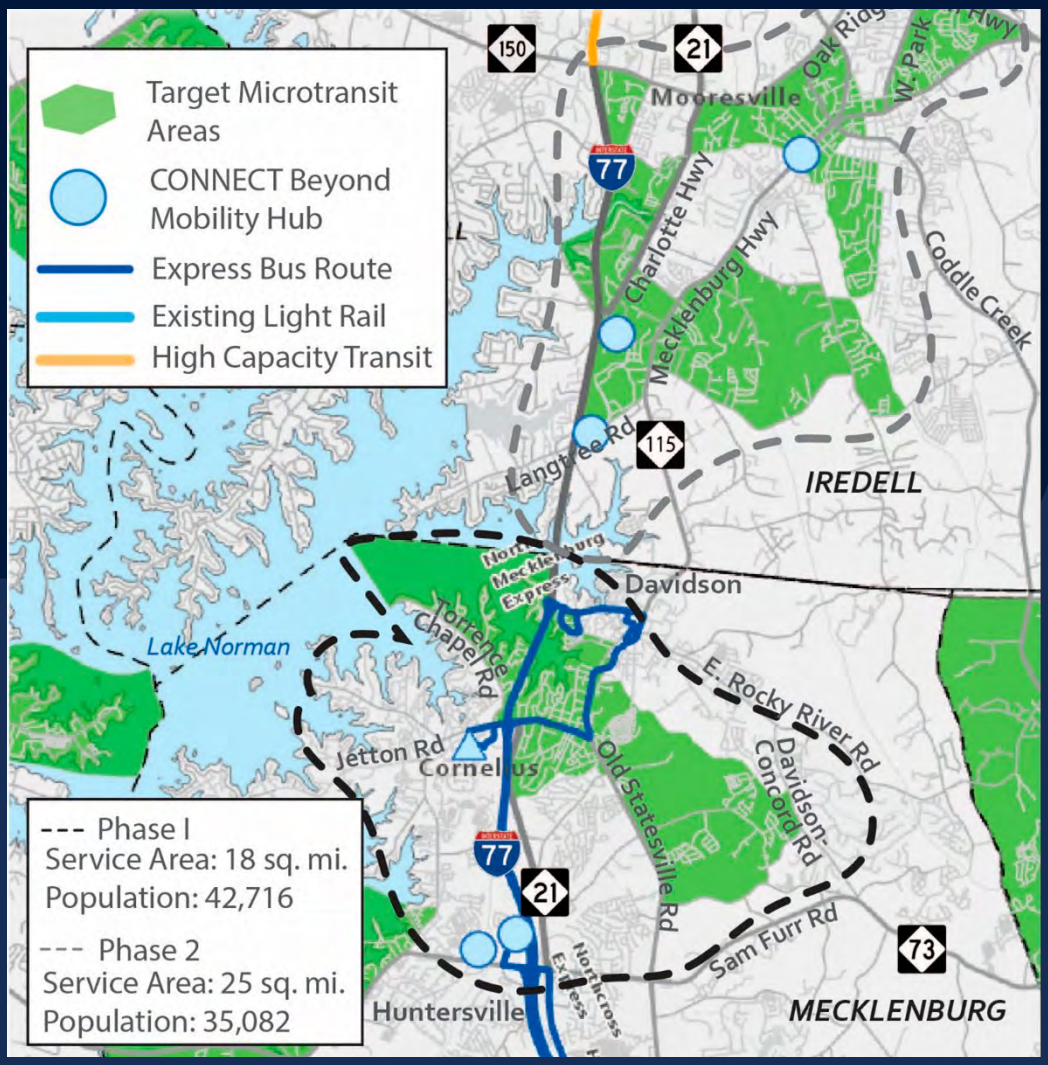


Figure 13. North Mecklenburg and Iredell Study Area

The North Mecklenburg and Iredell County Study Area could be reviewed and implemented in two phases, split at the county line. In terms of administration and operations for a new service, stopping the services at the county line and picking up on the other side would allow two different agencies to provide the oversight and funding for those services. The Phase I Study Area is targeting northern Mecklenburg County, surrounding the I-77 corridor. It would provide service to those living in Davidson and Cornelius and the northern tip of Huntersville and would connect to the North Mecklenburg Express bus route and the Northcross Express bus route. Phase I is approximately 18 square miles and would serve a population of 42,716.

The Phase 2 Study Area is in Iredell County, also following the I-77 corridor. It will provide service to those living in Mooresville. This study area is approximately 25 square miles and includes a population of 35,082.

Mint Hill Study Area

STUDY AREA ▸ **Mint Hill First/Last Mile & Microtransit Service**

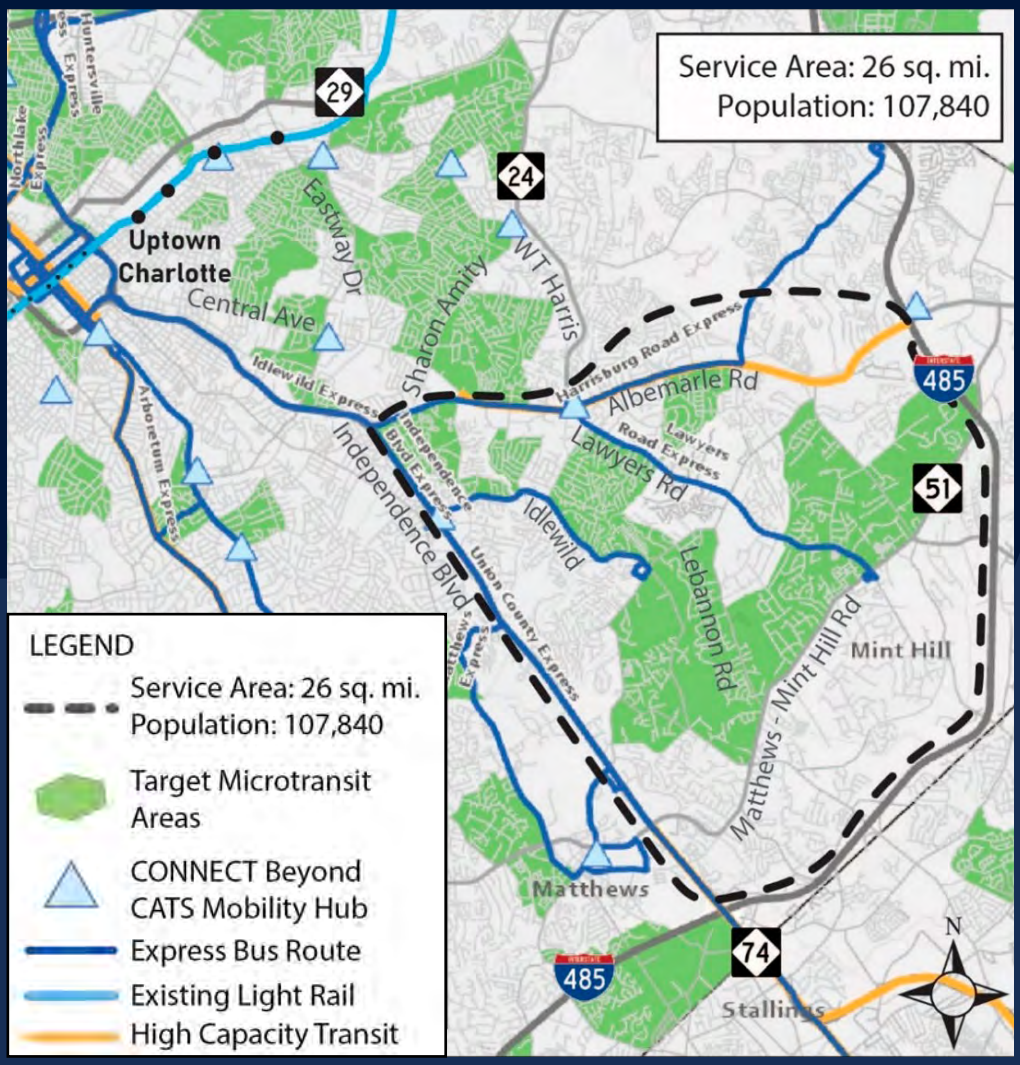


Figure 14. Mint Hill Microtransit Study Area

The Mint Hill Study Area is located in east Mecklenburg County, targeting the wedge bordered by US 74 (Independence Boulevard) to the west, I-485 to the southeast, and Albemarle Road to the north. This potential study area would include connections to the Independence Boulevard Express route, the Union County Express route, the Harrisburg Express route, and the Lawyers Road Express route (40x). The study area would cover a potential service area of 26 square miles and a population of 107,840.

Union County Study Area

STUDY AREA ▸

Union County First/Last Mile & Microtransit Service

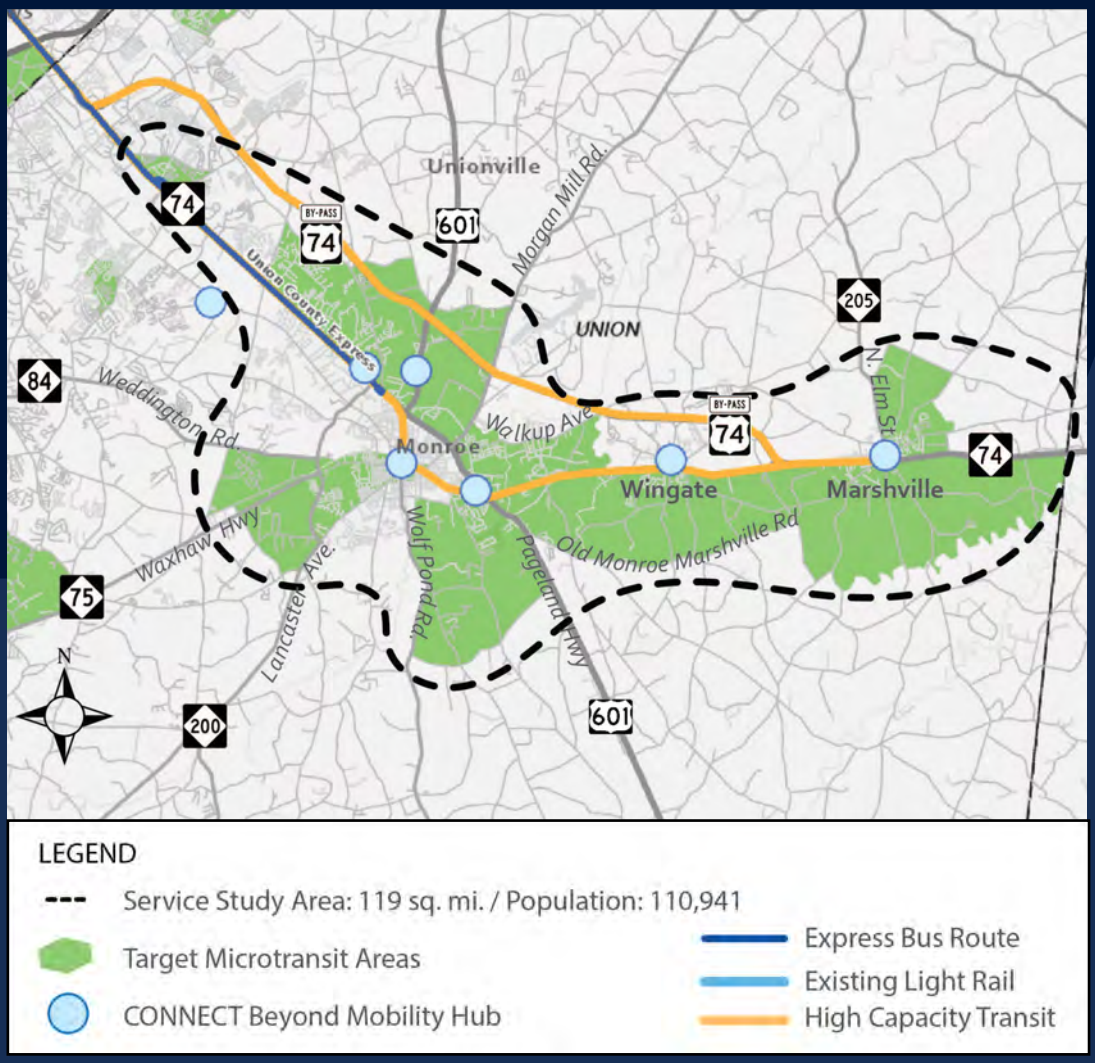


Figure 15. Union County Microtransit Study Area

The Union County Study Area is the largest study are of the five, encompassing 119 square miles. It follows the US 74 corridor from Lake Park south of the bypass through Monroe, Wingate, and Marshville. It includes connections to the Union County Express route. This study area would serve approximately 110,941 people. As the largest study area, options for providing microtransit and first/last mile service include more vehicles operating at once and/or splitting the potential service area (possibly dividing the service area along Highway 601).

South Mecklenburg Study Area

STUDY AREA ▸ **South Mecklenburg First/Last Mile & Microtransit Service**

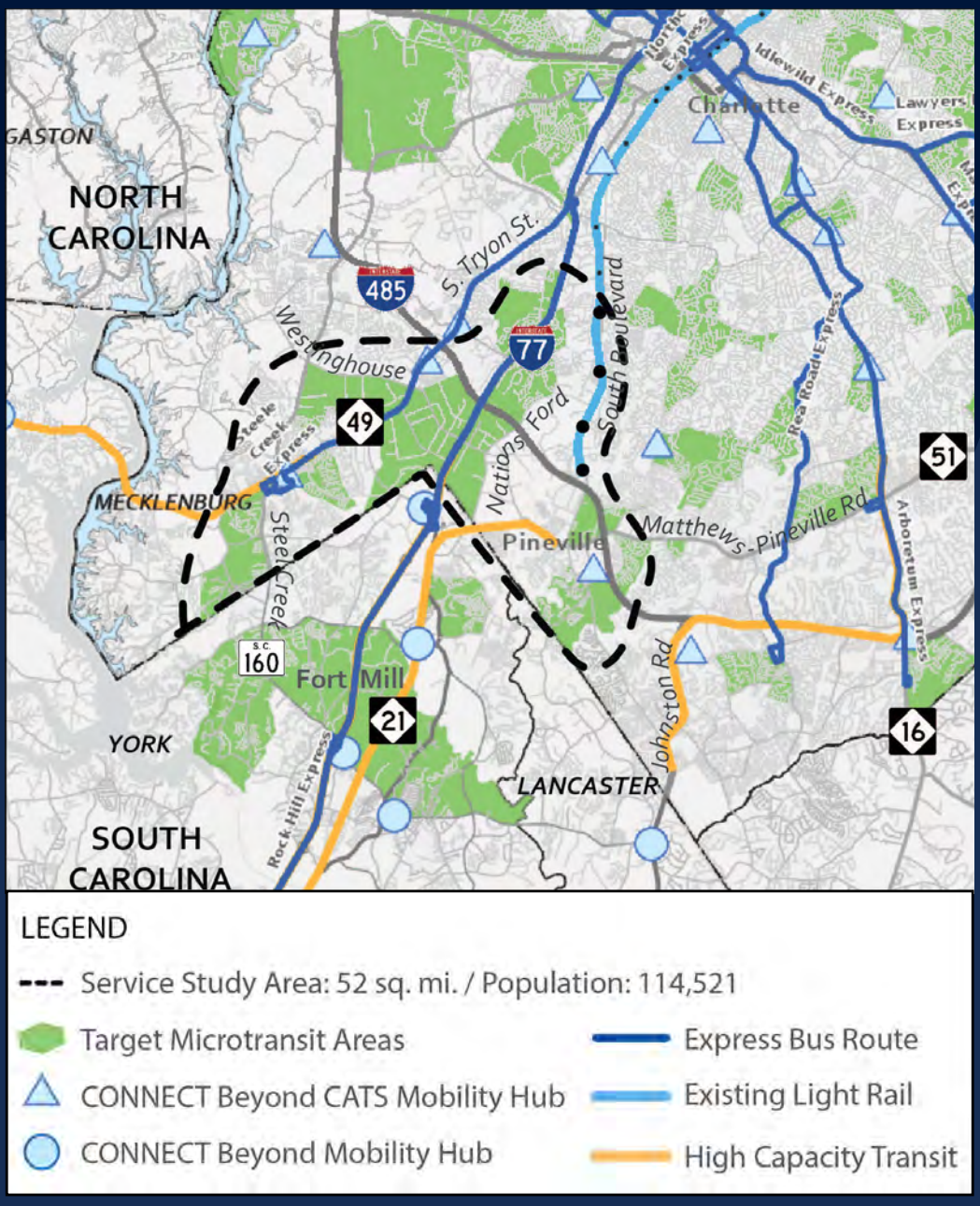


Figure 16. South Mecklenburg Microtransit Study Area

The South Mecklenburg Study Area follows the I-77 corridor encompassing four light rail stations and a portion of I-485. This study area would provide access for residents of Pineville. It provides connections to the Steel Creek Express route and the Rock Hill Express route. This study area is approximately 52 square miles and will serve approximately 114,521 people.