FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

FINAL PLAN

December 2025

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Introduction

The FAST 2.0 study focused on ways to advance the implementation of transit priority infrastructure throughout the Triangle area, including identifying a regional network and priority corridors that may be best suited for that transit priority infrastructure. The FAST 2.0 study created specific project recommendations, including concept designs, that identified transit priority infrastructure solutions for the priority corridors.

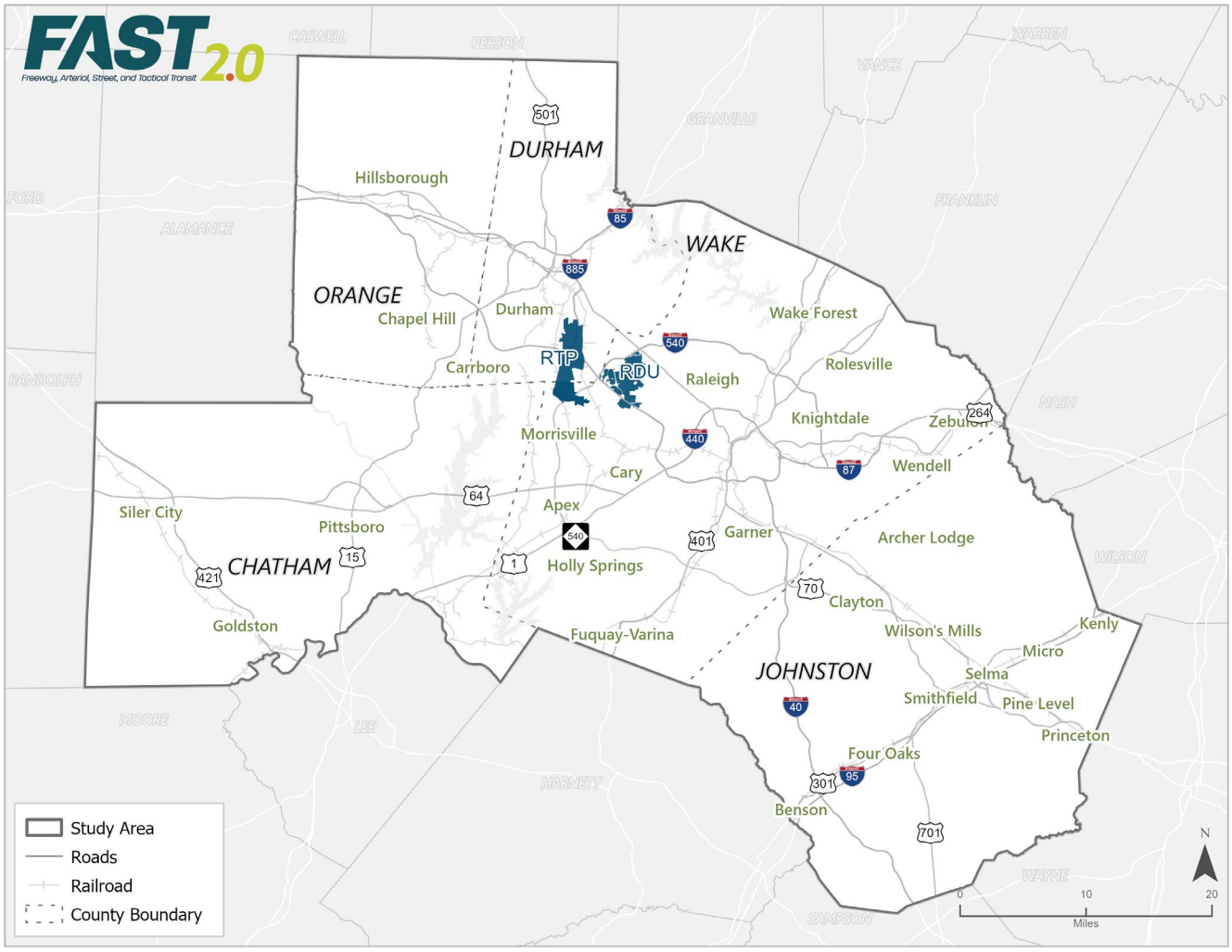


Figure 1: FAST 2.0 Study Area Map

Vision and Goals

The FAST 2.0 study project was led by North Carolina Department of Transportation (NCDOT) Integrated Mobility Division (IMD), with participation by other NCDOT Divisions, including:

- Highway Division 4
- Highway Division 5
- Highway Division 7
- Highway Division 8

- Safety and Mobility Division
- Roadway Design Unit

Other stakeholders included in the FAST 2.0 study included:

- **Transit Operators**
  - GoTriangle
  - GoDurham (City of Durham)
  - GoRaleigh (City of Raleigh)
  - GoCary (Town of Cary)
  - Chapel Hill Transit (Town of Chapel Hill)
- **Metropolitan Planning Organizations (MPO)**
  - Triangle West Transportation Planning Organization (TWTPO)
  - Capital Area Metropolitan Planning Organization (CAMPO)
  - Central Pines Regional Council
- **Counties**
  - Durham County
  - Wake County
  - Orange County
  - Johnston County
  - Chatham County
- **Regional Partners**
  - Research Triangle Foundation
  - Regional Transportation Alliance
  - Raleigh-Durham International Airport

At the start of the project, one-on-one interviews were held with all of the identified project stakeholders to better understand the challenges, opportunities, and gaps in the current transportation system. From those interviews with agencies, several priorities stood out including:

- **Regional Connections**
- **Local Bus Service**
  - Improve service and benefit local riders
- **Investing in High Ridership Corridors**
  - Focus on productive routes
- **Transit Project Implementation**
  - Successful implementation
  - Coordination of road and transit networks
- **Mobility Hubs**
  - Desire to have multiple transfer points
- **Infrastructure and Service Improvements**
  - Build frequent service network and bus stop improvements
  - Importance of pedestrian infrastructure
  - Need for dedicated bus lanes on key corridors
- **Bus on Shoulder System (BOSS)**

    - Look to expand
- **Roadway Design Process**
    - Incorporate transit early on in design

Stakeholder input also framed the vision and goals for the FAST 2.0 study, which included themes that helped further inform the selection of corridors for the FAST 2.0 study. Some of the vision themes that speak to the desires for regional connectivity include:

- **Boost Bus Mobility and Access:** Enhance bus-based mobility and ensure equitable access to regional transit.
- **Address Local and Regional Connectivity:** Cater to both local needs and regional connectivity.
- **Prioritize Buses and BRT:** Evaluate opportunities to prioritize buses and Bus Rapid Transit (BRT) regionally.

In addition, there were several goals that highlighted the importance of regional connections:

- **Coordinate Regional Transit Projects:** Improve connectivity across the region by coordinating transit projects.
- **Assess Transportation Network:** Assess the regional transportation network for efficiency and effectiveness.
- **Develop Direct BRT Linkages:** Create direct Bus Rapid Transit (BRT) connections to RDU from Triangle downtowns.
- **Identify Freeway and Arterial Corridors for Transit Priority:** Choose one freeway and five arterial corridors for transit priority infrastructure enhancements.

The full Vision and Goals can be found in Appendix A: Vision and Goals.

Corridor Identification

To further understand the transportation challenges, opportunities, and gaps in study area, the project reviewed a variety of existing transportation data, planning documents, and existing/planned projects in the region. That information was then used to frame out the Regional Network and then Priority Corridors.

Regional Network

Using information from the existing conditions work and input from Stakeholders about key regional corridors and the vision and goals for study, the regional network was identified. The FAST 2.0 regional network frames out a larger, long-term network for transit in the study area, by including many of the major thoroughfares within the study area.

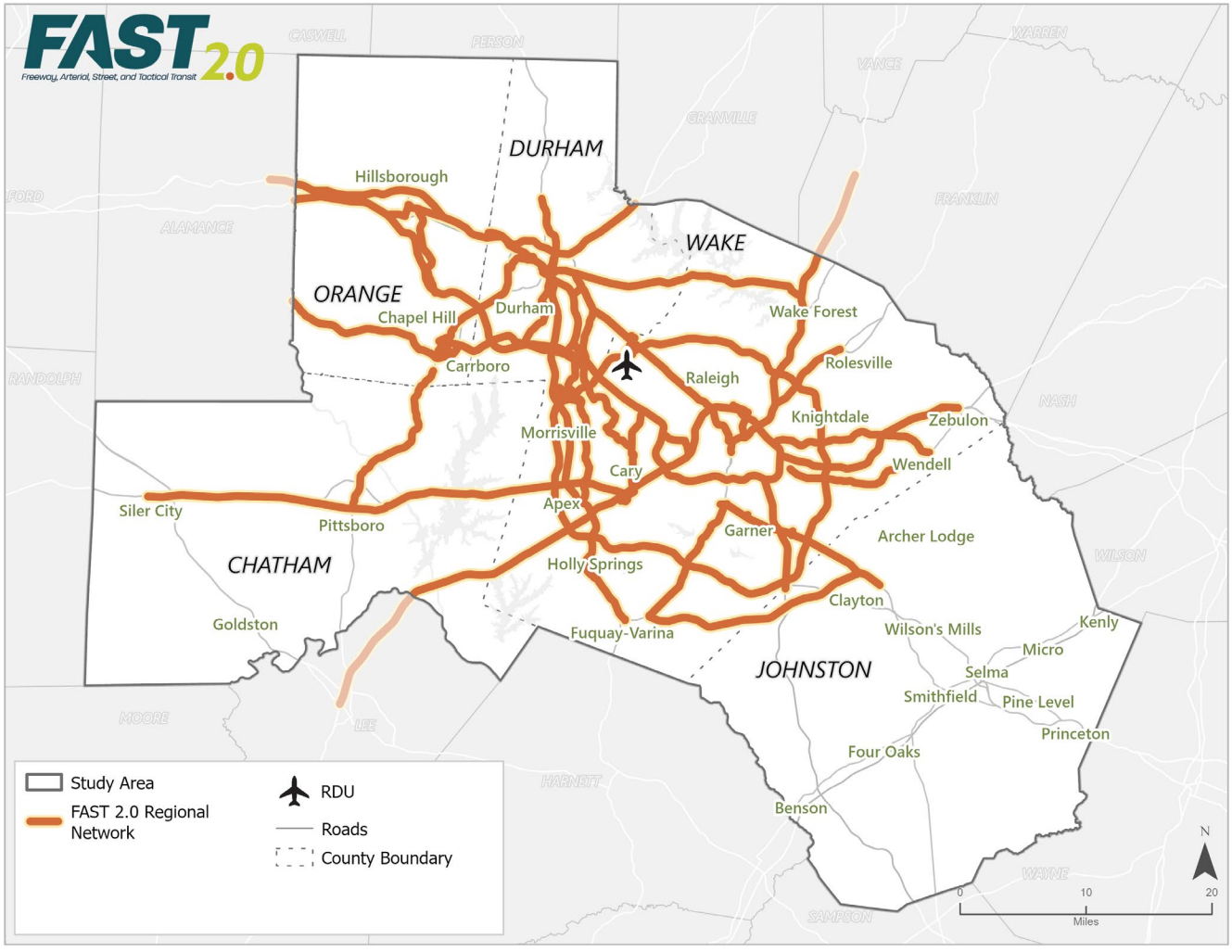


Figure 2: FAST 2.0 Regional Network

Priority Corridors

After identifying the regional network, priority corridors within the regional network were identified with more detailed planning and design as part of the project. This included identifying both freeway and arterial priority corridors. The priority corridors included:

- I-40
- I 885 / NC 147
- Harrison Avenue / Kildaire Farm Road
- Duke University / Holloway Street
- Trinity Road / Blue Ridge Road
- NC 54

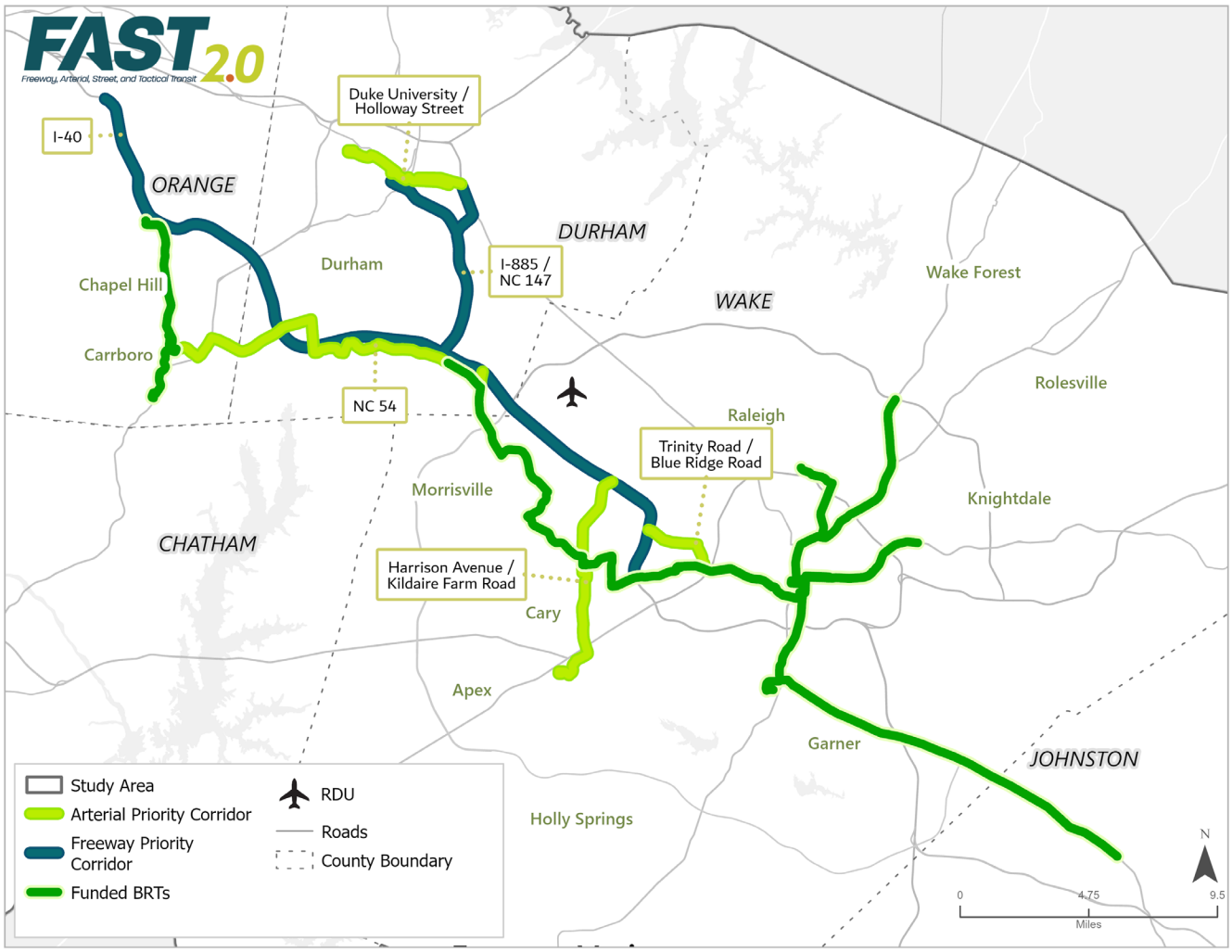


Figure 3: FAST 2.0 Priority Corridors

To avoid planning and design effort duplication, the priority corridors that were selected were not identified in active or upcoming studies. Some of the identified projects and studies at the time of corridor identification included:

- Hillsborough Mobility Hub
- Triangle Mobility Hub
- Chapel Hill Transit High-Capacity Transit Corridor Feasibility Study
- US 15-501 Corridor Study
- Durham Bus Rapid Transit Vision Plan

- GoTriangle Regional Bus Blueprint
- US 70 Phase II Analysis
- Capital Boulevard Tolling Study

The full review of existing transportation data, planning documents, and existing/planned projects can be found:

- *Appendix B: Existing Plans Memo*
- *Appendix C: Equity Plan Memo*
- *Appendix D: Needs Assessment Memo*
- *Appendix E: Regional Network and Primary Identification Memo*

Improvement Evaluation and Recommendations

Suite of Options

In the Suite of Options memorandum, an array of transit infrastructure improvements that could be considered along the priority corridors and regional network were explored. A general overview and examples of each type of transit infrastructure was provided. In addition, design and implementation considerations, such as level of transit advantage and physical suitability, were explored for each option.

The options were separated between freeways and arterials, then further grouped by application along the mainline of a facility or as a way to improve access or reliability. In addition, there is a grouping for different types of bus stops. All the options explored, and how they were grouped together, include:

- Multimodal Infrastructure
  - Bicycle and Pedestrian Access Improvements
  - Bus Stop / Station Design
- Freeways (Facility)
  - Dedicated Freeway Transit Lanes
  - Dynamic Median Shoulder System (DMSS)
  - Bus-on-Shoulder System (BOSS)
  - Transit Use of Express Lanes
- Freeways (Access)
  - Freeway Ramp Signals
  - Direct Access Ramps (DAR)
- Arterials (Facility)
  - Fully Dedicated Transit Lanes
  - Semi-Dedicated Transit Lanes
- Arterials (Signals and/or Access)
  - Queue Jump Lanes
  - Transit Signal Priority
- Types of Bus Stops/Stations

- Enhanced Stop
- Super Stop
- Mobility Hub

The Suite of Options memo is found in Appendix F: Suite of Options Memo.

Airport Exchange Platform

The study investigated the conceptual siting and design of a new regional transit airport exchange platform (APE), directly on top of I-40, to directly connect the Triangle region's transit service to RDU, located in the approximate center of the Triangle region. By facilitating seamless travel for passengers between RDU and regional transit systems, the APE will improve accessibility, reduce travel times, and support the Triangle region's broader transportation goals of enhancing transit infrastructure and supporting service. The project aims to create a modern, efficient, and user-friendly APE that is strategically located to maximize convenience and accessibility.

It will serve as a vital link between the regional transit system and RDU, providing a direct link for passengers from municipal downtowns, regional mobility hubs, and arterial BRT service to RDU. The design of the station will prioritize ease of use, with clear signage, comfortable waiting areas, and an efficient transfer point with RDU. By enhancing access to RDU, the APE will support regional tourism and business travel.

The full Airport Exchange Platform Memo is found in Appendix G: Airport Exchange Platform Memo.

Priority Corridor Concept Designs

Using the suite of transit infrastructure options, improvement recommendations and a concept design were created for each priority corridor. The recommendations were based on the type of corridor (freeway or arterial), along with the physical environment of the roadway, such as number of general purpose lanes, right-of-way (ROW) width, and traffic operations. Pedestrian and bicycle improvement recommendations were also created for each corridor. The recommendations for each priority corridor are highlighted below.

Freeway Priority Corridors

I-40

The I-40 freeway priority corridor would be a regional transit backbone that provides frequent and reliable transit connections between Raleigh, Cary, Research Triangle Park (RTP), Durham, and Chapel Hill. The I-40 corridor would include dedicated transit infrastructure, BOSS, and DMSS, to allow transit vehicles to reliably move along I-40 and connect to priority arterial corridors in each jurisdiction, along with the Triangle Mobility Hub, through a series of DARs.

Limits	I-40 from Old NC 86 in Orange County to Cary Towne Boulevard in Wake County
Length	***Orange County***: 9.0 Miles ***Durham County:*** 11.4 Miles ***Wake County:*** 7.0 Miles
Length by Runningway Type	***Orange County:*** 9.0 Miles (BOSS) ***Durham County***: 8.8 Miles (DMSS); 2.6 Miles (BOSS) ***Wake County:*** 7.0 Miles (DMSS)
Anticipated Number of BRT Stations	N/A
Anticipated Number of BRT Buses	N/A
Assumed Service Type	Freeway Bus Rapid Transit
Location	Orange, Durham, and Wake Counties
MPO	Triangle West Transportation Planning Organization (TWTPO); Capital Area Metropolitan Planning Organization (CAMPO)
NCDOT Division	Division 5; Division 7

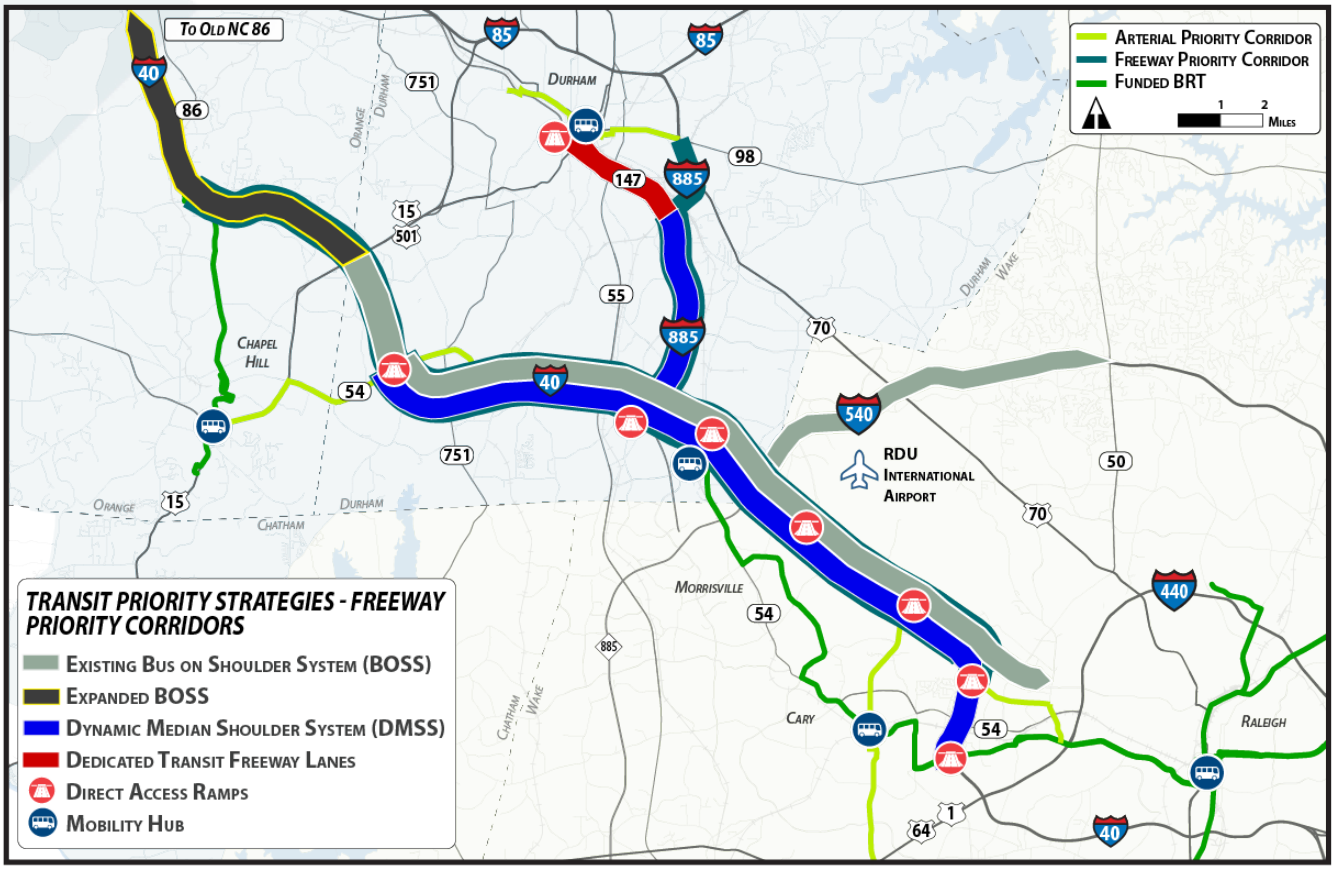


Figure 4: I-40 Concept Design

I-885 / NC 147

The I-885 / NC 147 freeway priority corridor provides another piece to the regional freeway transit backbone that, with transit priority improvements, such as DMSS, would provide frequent and reliable transit connections between I-40, RTP, and Durham. The NC 147 portion would provide dedicated transit infrastructure to allow transit vehicles to reliably connect to Downtown Durham.

Limits	• I-885 from NC 98 to I-40 • NC 147 from I-885 to Duke Street
Length	***I-885:*** 5.8 Miles ***NC 147:*** 3.7 Miles
Length by Runningway Type	***I-885:*** • 0.1 Miles (Fully Dedicated) • 3.9 (DMSS) • 1.8 (Mixed Flow) ***NC 147:*** • 3.1 Miles (Fully Dedicated) • 0.1 (DMSS) • 0.5 (Mixed Flow)
Anticipated Number of BRT Stations	N/A
Anticipated Number of BRT Buses	N/A
Assumed Service Type	Freeway Bus Rapid Transit
Location	Durham County
MPO	TWTPO
NCDOT Division	Division 5

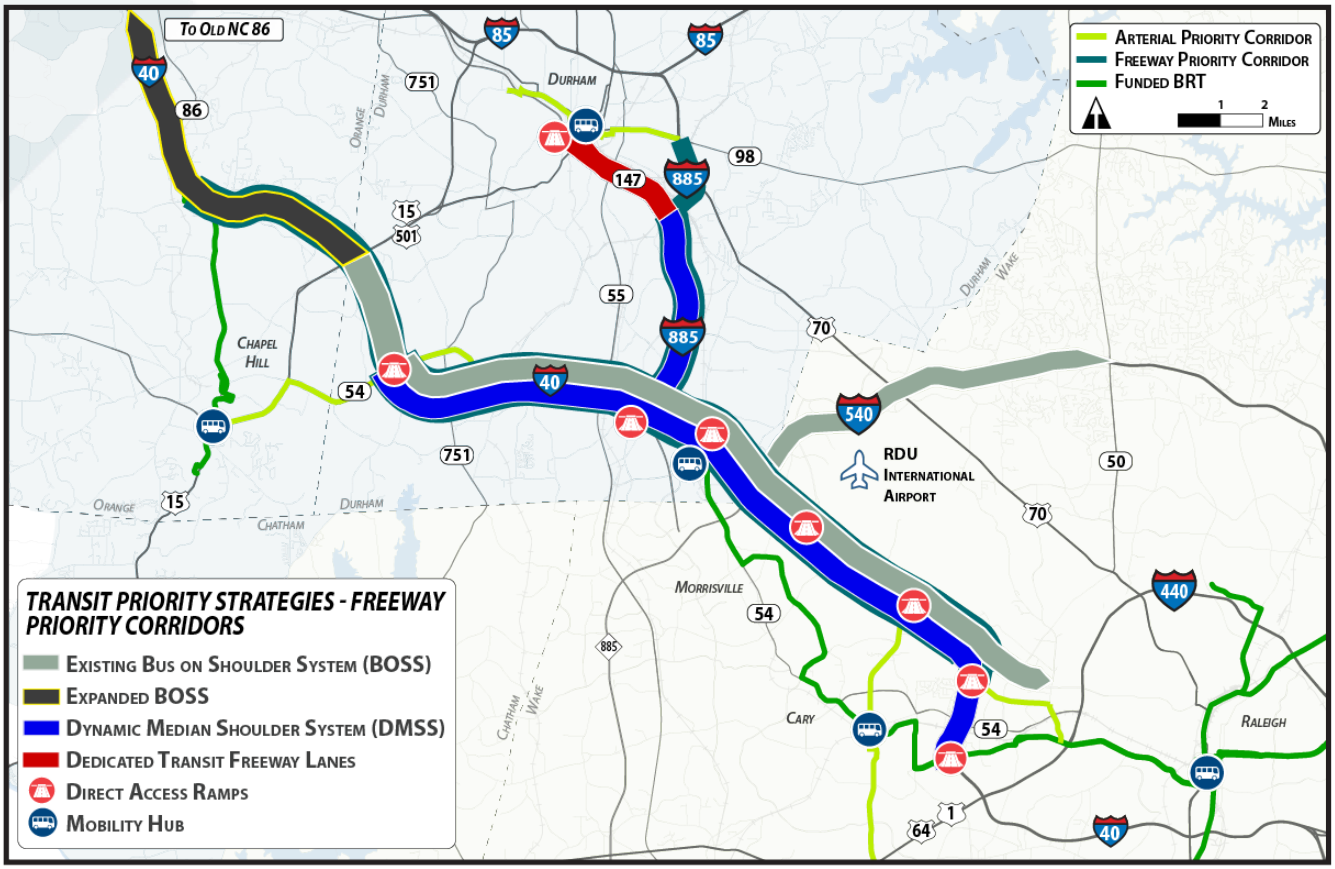


Figure 5: I-885 / NC 147 Concept Design

Arterial Priority Corridors

Harrison Avenue/Kildaire Farm Road

The Harrison Avenue / Kildaire Farm Road arterial priority corridor would provide quick and reliable north/south transit connections in Cary, connecting I-40, SAS campus, Downtown Cary, including the Cary Depot, WakeMed Cary, US 1, and Koka Booth Amphitheatre. The corridor provides the opportunity for a potential park and ride lot at the southern terminus, includes a direct access ramp to I-40 at the existing Harrison Avenue interchange, and would connect to the Wake BRT: Western Corridor.

Limits	• Harrison Avenue from I-40 to Dry Avenue • Dry Avenue from South Harrison Avenue to Kildaire Farm Road • Kildaire Farm Road from Dry Ave to Tryon Road • Tryon Road from Kildaire Farm Road to Regency Parkway • Regency Parkway from Tryon Road to Koka Booth Amphitheatre
Length	8.3 Miles
Length by Runningway Type	• 2.99 Miles (Fully Dedicated) • 2.45 Miles (BAT) • 2.86 (Mixed Flow)
Anticipated Number of BRT Stations	11
Anticipated Number of BRT Buses	10 Total (8 peak; 2 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Wake County
MPO	CAMPO
NCDOT Division	Division 5

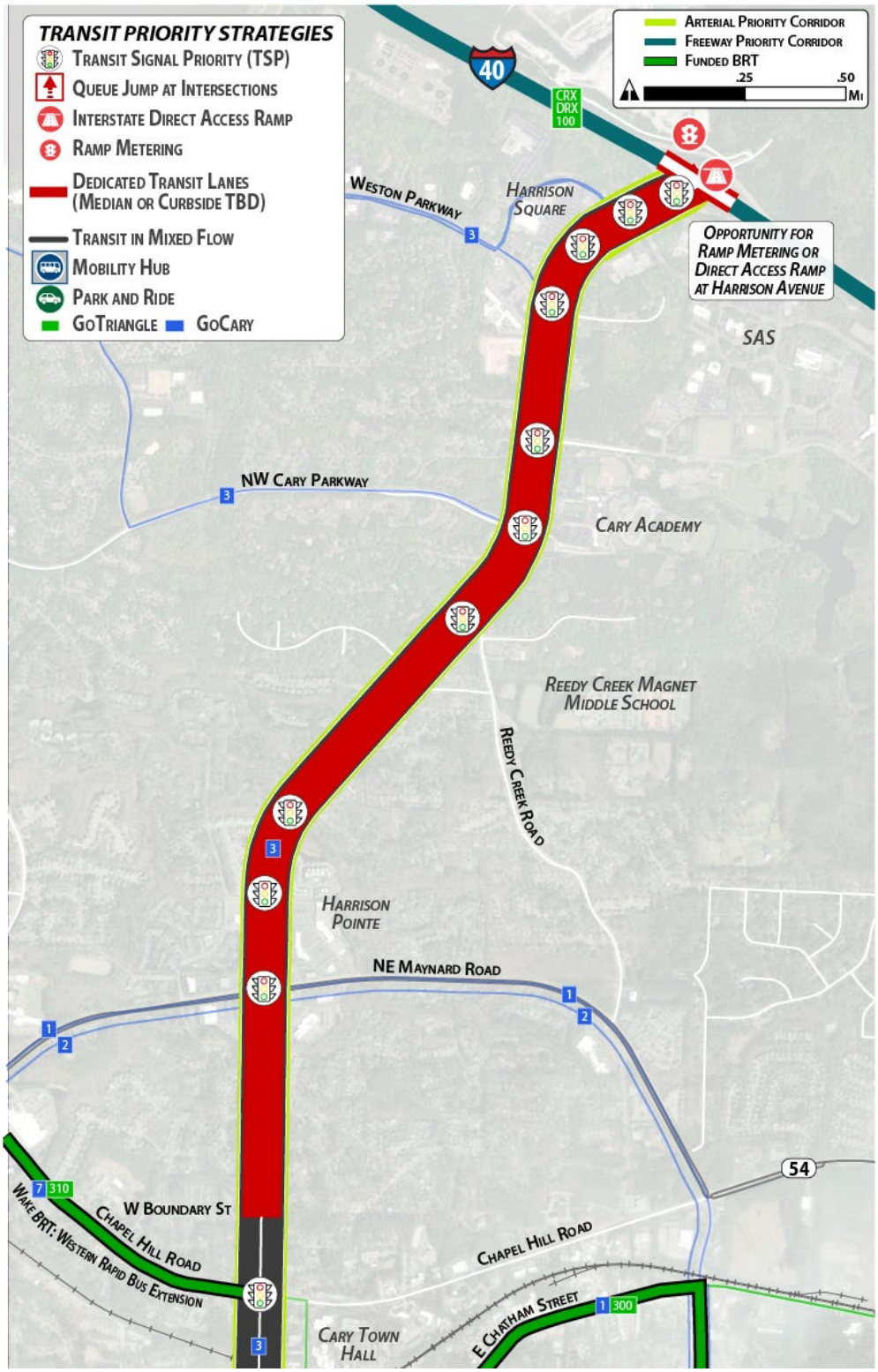


Figure 6: Harrison Avenue / Kildaire Farm Road Concept Design North of Downtown Cary

Figure 7: Harrison Avenue / Kildaire Farm Road Concept Design in Downtown Cary

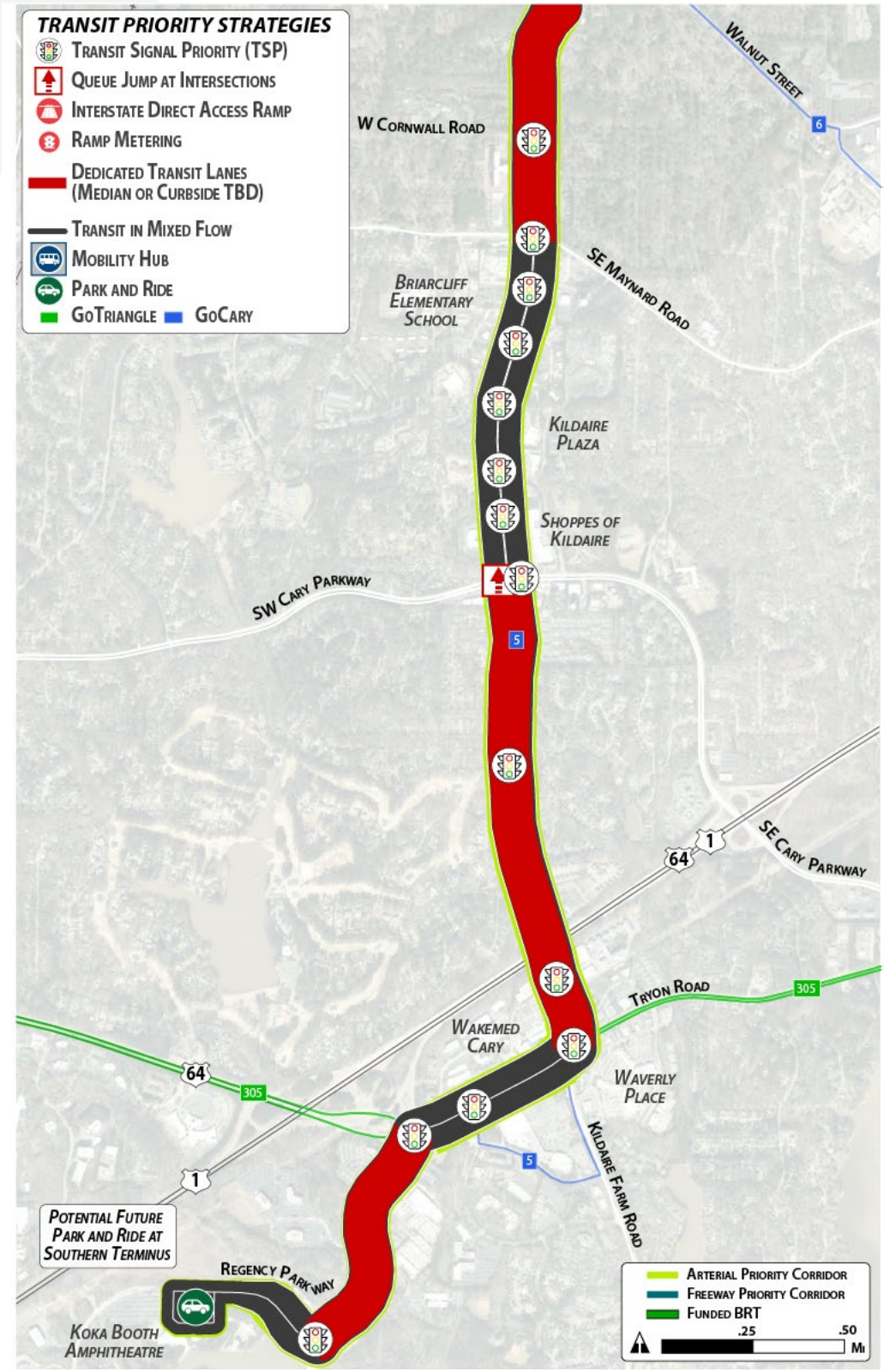


Figure 8: Harrison Avenue / Kildaire Farm Road Concept Design South of Downtown Cary

Duke University / Holloway Street

The Duke University / Holloway Street arterial priority corridor would provide quick and reliable transit connections between Duke University, Duke University Hospital, Durham VA Health Care System, and Downtown Durham, including Durham Station, the Village Shopping Center, and GoDurham's Route 3 family (3/3B/3C), which is both the City's highest ridership and most productive route family in the GoDurham system.

Limits	• Erwin Road from Duke University Hospital to West Main St • West Main Street (US 70 Business) from Erwin Rd to North Gregson St (Southbound) / North Duke St (Northbound) • North Gregson Street (Southbound) from West Main St (US 70 Business) to West Chapel Hill St • North Duke Street (Northbound) from West Main St (US 70 Business) to West Chapel Hill St • West Chapel Hill from North Gregson St (Southbound) / North Duke St (Northbound) to West Pettigrew St (Eastbound) / Ramseur St (Westbound) • West Pettigrew Street (Eastbound) from West Chapel Hill St to North Roxboro St (US 15 Business) • Ramseur Street (Westbound) from West Chapel Hill St North to Roxboro St (US 15 Business) • North Roxboro Street (US 15 Business) from West Pettigrew St (Eastbound) / Ramseur St (Westbound) to Liberty St • Liberty Street (Bidirectional) from North Roxboro St (US 15 Business) to Elizabeth St • Elizabeth Street (Westbound) from Liberty St to Holloway St (Westbound) • Liberty Street (Eastbound) from Elizabeth St to North Miami Blvd • Holloway Street (Westbound) from Elizabeth St to Raynor St • Raynor Street (Westbound) from Holloway St to North Miami Blvd • North Miami Boulevard from Raynor St to Liberty St • Holloway Street from North Miami Boulevard to I-885
Length	4.8 Miles
Length by Runningway Type	• 0.4 Miles Fully Dedicated • 0.4 Miles BAT • 4.0 Miles Mixed Flow
Anticipated Number of BRT Stations	8
Anticipated Number of BRT Buses	6 Total (5 peak; 1 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Durham County
MPO	TWTPO
NCDOT Division	Division 5

Figure 9: Duke University / Holloway Steet Concept Design near Duke University

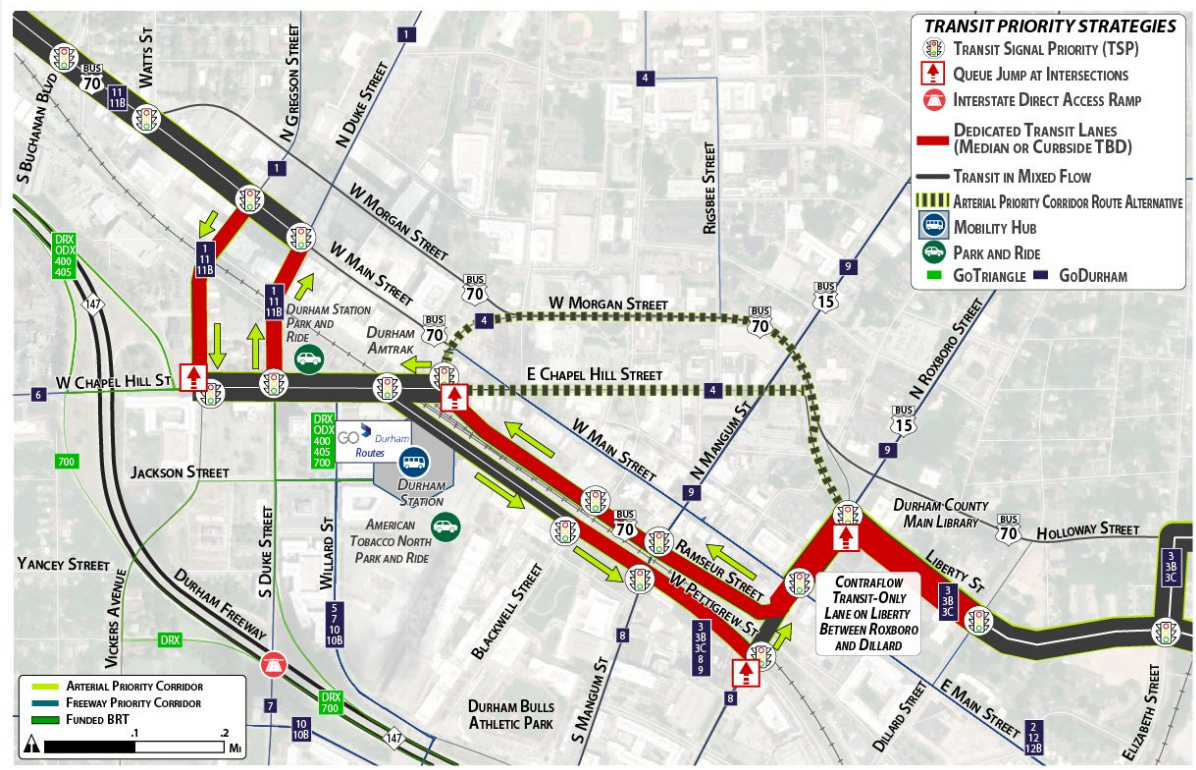


Figure 10: Duke University / Holloway Steet Concept Design in Downtown Durham

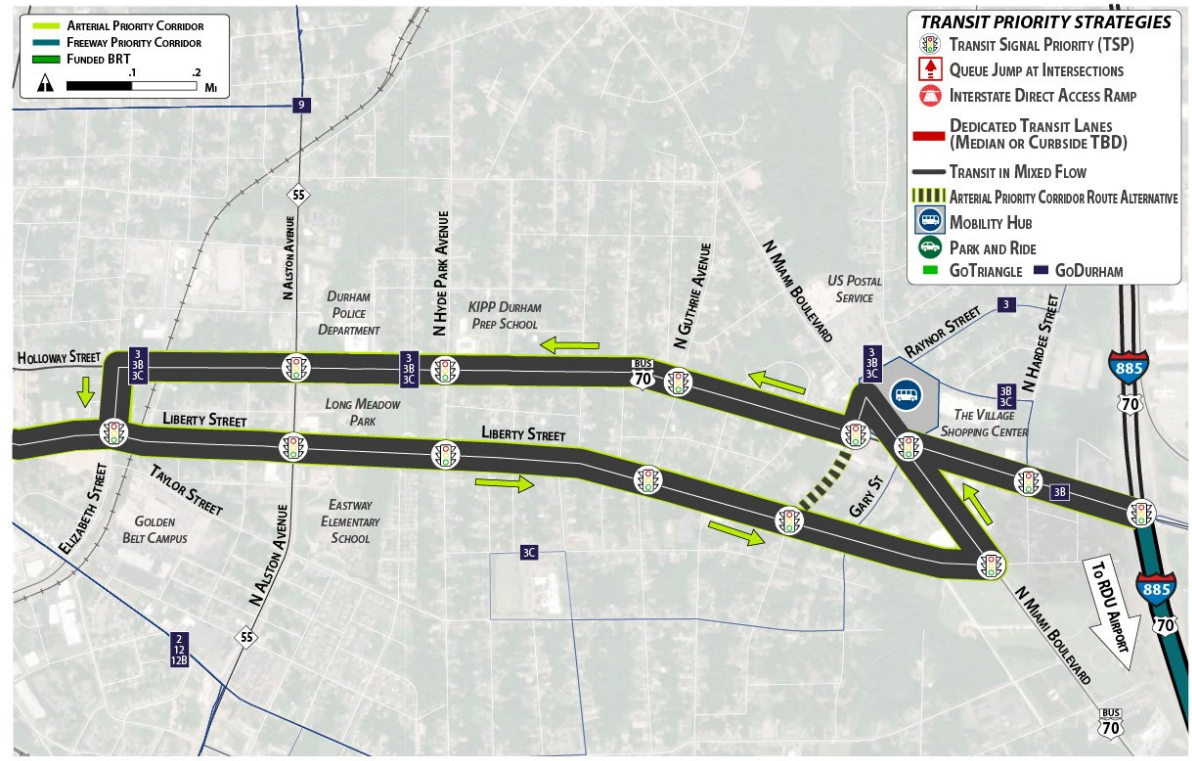


Figure 11: Duke University / Holloway Steet Concept Design along Holloway Street and Liberty Street

Trinity Road / Blue Ridge Road

The Trinity Road / Blue Ridge Road arterial priority corridor would provide quick and reliable transit connections between Downtown Raleigh, North Carolina State University (NCSU), NC State Fairgrounds, Carter Finley Stadium, and Lenovo Center, which is planning to redevelop into an 80-acre mixed-use entertainment district along Trinity Road between Blue Ridge Road and I-40. The corridor includes a DAR to I-40 at the existing Trinity Road overpass. BRT service would traverse Western Boulevard from Blue Ridge Road to connect to GoRaleigh Station and GoTriangle RUSBUS in Downtown Raleigh.

The concept design utilizes the existing capacity of the roadways that is available outside of large events or NC State Fair traffic. During large events, police/traffic control could temporarily allow general purpose traffic in the dedicated transit lanes. The regional transit agencies would coordinate with police/traffic control to ensure priority is given to BRT at locations traffic flow is manually controlled.

Limits	• Trinity Road from I-40 to Blue Ridge Road • Blue Ridge Road from Trinity Road to Western Boulevard
Length	2.9 Miles
Length by Runningway Type	• 1.55 Miles (BAT) • 1.34 Miles (Mixed Flow)
Anticipated Number of BRT Stations	4
Anticipated Number of BRT Buses	10 Total (8 peak; 2 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Wake
MPO	CAMPO
NCDOT Division	Division 5

Figure 12: Trinity Road / Blue Ridge Road Concept Design

NC 54

The NC 54 arterial priority corridor would provide quick and reliable transit connections between Chapel Hill and south Durham, connecting UNC, UNC Hospitals, Southpoint Mall, RTP, and the Triangle Mobility Hub. The corridor includes a DAR to I-40 at the existing NC 54 interchange and another providing access to I-885. The portion of the corridor in Chapel Hill serves similar markets to the previously planned Durham-Orange Light Rail alignment and connects to the North-South BRT project at UNC Hospitals.

Limits	• NC 54 from Triangle Mobility Hub to Fayetteville Road • Fayetteville Road from NC 54 to Renaissance Pkwy • Renaissance Pkwy from Fayetteville Rd to NC 751 • NC 751 from Renaissance Pkwy to NC 54 • NC 54 from NC 751 to Fordham Blvd (US 15-501) • Fordham Boulevard (US 15-501) from NC 54 to Manning Drive • Manning Drive from Fordham Blvd (US 15-501) to East Dr/Jackson Cir/Mason Farm Rd • East Drive/Jackson Circle/Mason Farm Road from Manning Drive to S Columbia St (NC 86) • South Columbia Street (NC 86) from Mason Farm Road to Manning Drive • Manning Drive (Eastbound) from S Columbia St (NC 86) to East Dr/Jackson Cir/Mason Farm Rd
Length	***Orange County***: 3.4 Miles ***Durham County:*** 11.3 Miles
Length by Runningway Type	***Orange County:*** • 0.9 Miles (Fully Dedicated) • 1.3 Miles (BAT) • 1.2 (Mixed Flow) ***Durham County***: • 3.8 Miles (Fully Dedicated) • 2.0 Miles (BAT) • 5.5 (Mixed Flow)
Anticipated Number of BRT Stations	13
Anticipated Number of BRT Buses	16 Total (13 peak; 3 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Orange and Durham Counties
MPO	TWTPO
NCDOT Division	Division 5; Division 7

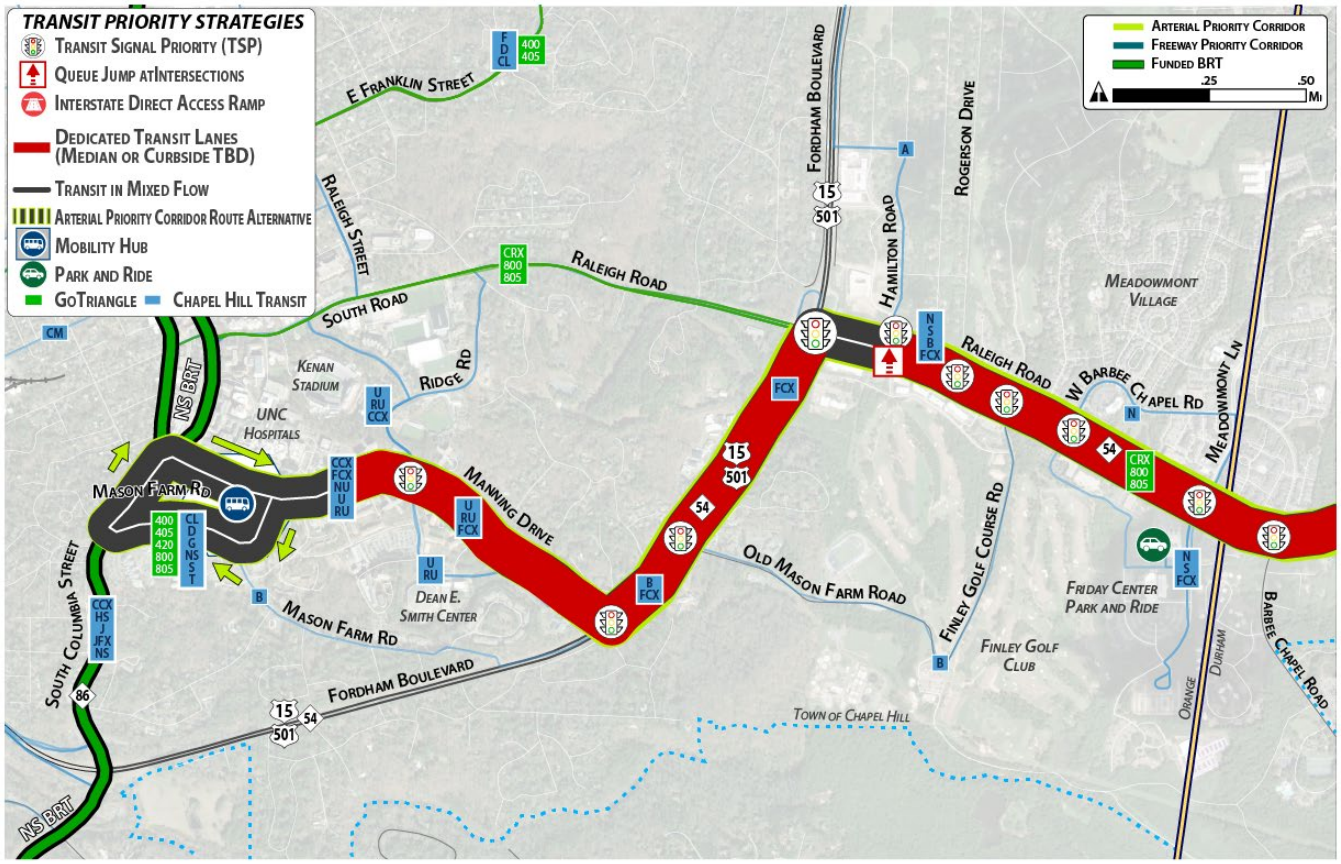


Figure 13: NC 54 Concept Design in Orange County

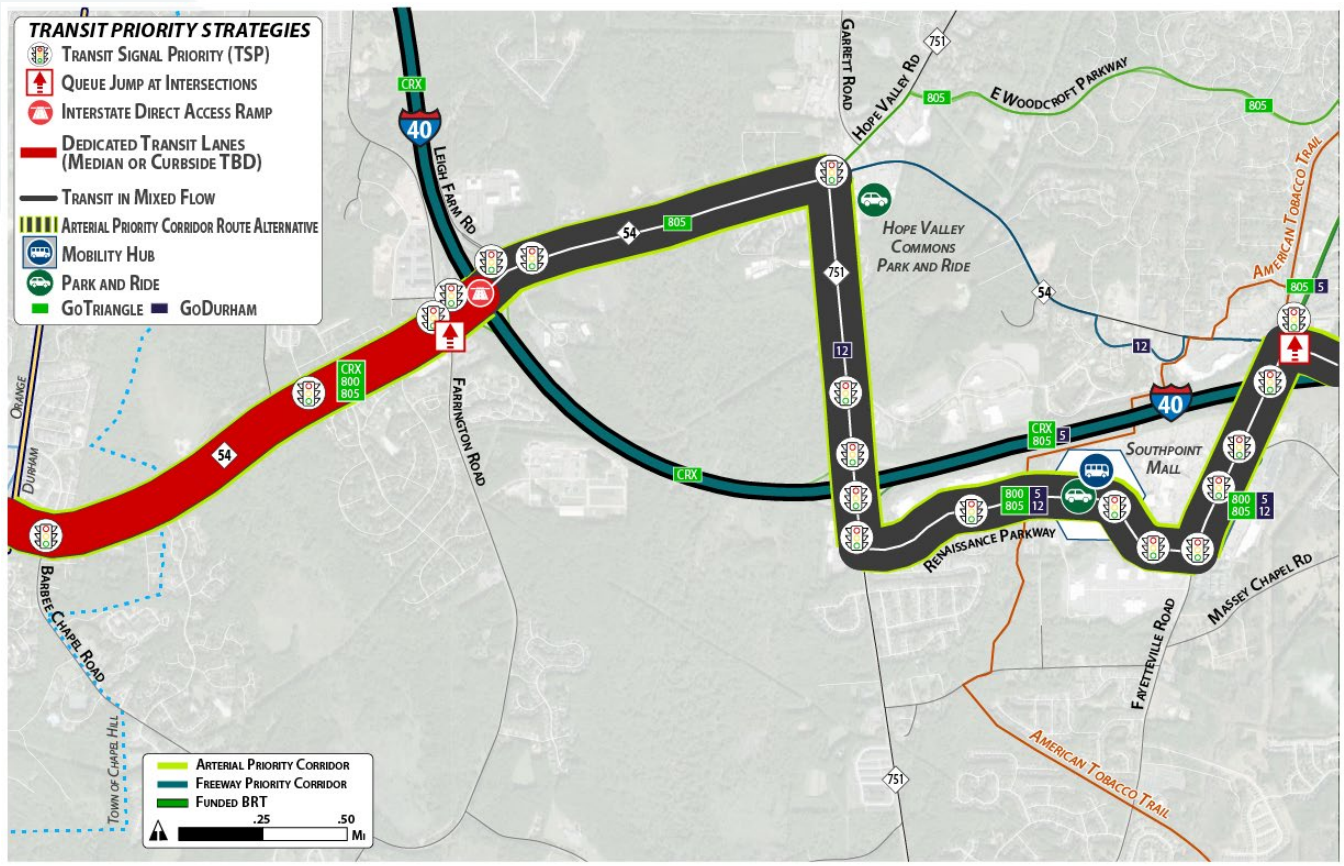


Figure 14: NC 54 Concept Design in Durham County

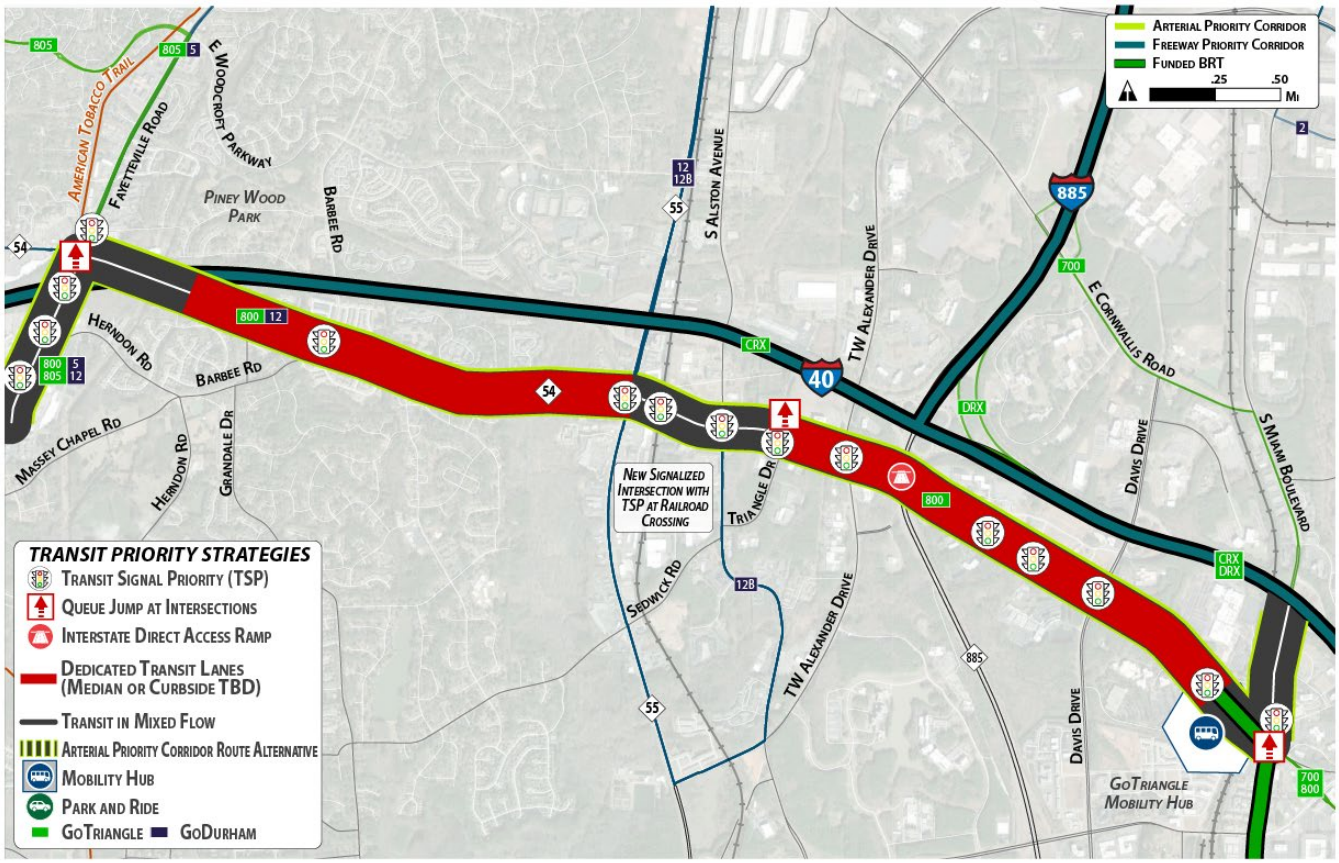


Figure 15: NC 54 Concept Design in RTP

The full Concept Design Memo is found in Appendix H: Concept Design Memo.

Implementation

The region is on the cusp of premium transit services with the construction of the first of four Bus Rapid Transit (BRT) corridors in Wake County and one BRT corridor in Orange County. Moving towards a truly regional transit network will take commitment and working together to advance the projects recommended under FAST 2.0 - this implementation plan lays out the roadmap for how to get there. The roadmap consists of two elements:

- Element 1: Implement Six Priority Corridors
- Element 2: Recommended changes to NCDOT Transit Planning and Design

Element 1

The first element of the implementation roadmap is implementing the six priority corridors that have conceptual designs by:

- Presenting planning level cost estimates;
- Outlining steps to continue advancing the planning and design of the corridors; and
- Providing funding considerations.

Cost Estimates

Planning level cost estimates were developed for the priority corridors are shown in 2025 dollars and broken out by county and MPO boundaries, in order to aid in adding the corridors to local transportation plans. The cost estimates used the latest Federal Transit Administration (FTA) Standard Cost Categories (SCC) workbook along with bid tabs from NCDOT and other BRT project estimates. The cost estimates included: construction cost, right-of-way (ROW), vehicles (arterial priority corridors only), professional services, and contingency. Design considerations for the cost estimates may change and will need to be updated as further local planning and design efforts occur.

Table 1 shows the costs for the four arterial priority corridors. The cost for the arterial priority corridors were broken out by segments that were between county boundaries.

Table 1: Arterial Priority Corridor Cost Estimates

Location	County	MPO	Cost	Miles	Cost/Mile
Total Arterial Priority Corridor Costs					
Duke University / Holloway Street	**Durham**	**TWTPO**	**$81,800,000**	**4.8**	**$17,000,000**
NC 54 Total		**TWTPO**	**$254,700,000**	**14.8**	**$17,300,000**
NC 54 (Orange County)	*Orange*	*TWTPO*	*$65,400,000*	*3.3*	*$20,100,000*
NC 54 (Durham County)	*Durham*	*TWTPO*	*$189,300,000*	*11.5*	*$16,500,000*
Harrison Avenue / Kildaire Farm Road	**Wake**	**CAMPO**	**$155,000,000**	**8.3**	**$18,700,000**
Trinity Road / Blue Ridge Road	**Wake**	**CAMPO**	**$49,600,000**	**2.9**	**$17,100,000**
Arterial Priority Corridor Total			**$541,100,000**	**30.8**	**$17,600,000**
Arterial Priority Corridor Costs within TWTPO					
Orange County			*$65,400,000*	*3.3*	*$20,100,000*
Durham County			*$271,100,000*	*16.3*	*$16,600,000*
TWTPO			**$336,500,000**	**19.6**	**$17,200,000**
Arterial Priority Corridor Costs within CAMPO					
Wake County			*$204,600,000*	*11.2*	*$18,300,000*
CAMPO			**$204,600,000**	**11.2**	**$18,300,000**

Table 2 shows the cost for the two freeway priority corridors. The cost for the freeway priority corridors were broken out by segments that were between major roadways, county boundaries or Direct Access Ramps (DARs).

Table 2: Freeway Priority Corridors Costs

Location	From	To	County	MPO	Cost	Miles	Cost/Mile
Total Freeway Priority Corridor Costs							
I-885 / NC 147					**$129,400,000**	**7.2**	**$18,000,000**
NC 147	*Duke DAR*	*I-885 Interchange (Western Edge)*	*Durham*	*TWTPO*	*$104,100,000*	*2.6*	*$40,100,000*
NC 147	*I-885 Interchange (Western Edge)*	*I-885 Interchange (Eastern Edge)*	*Durham*	*TWTPO*	*$2,700,000*	*0.6*	*$4,600,000*
I-885	*NC 147 Interchange*	*NC 54 DAR (Eastern)*	*Durham*	*TWTPO*	*$22,600,000*	*4.0*	*$5,600,000*
I-40					**$207,700,000**	**27.3**	**$7,600,000**
I-40	*Old NC 86*	*Orange/Durham County Line*	*Orange*	*TWTPO*	*$-*	*9.0*	*$-*
I-40	*Orange/Durham County Line*	*NC 54 DAR (Western)*	*Durham*	*TWTPO*	*$11,100,000*	*2.6*	*$4,300,000*
I-40	*NC 54 DAR (Western)*	*GoTriangle Mobility Hub DAR*	*Durham*	*TWTPO*	*$78,800,000*	*7.0*	*$11,300,000*
I-40	*GoTriangle Mobility Hub DAR*	*Durham/Wake County Line*	*Durham*	*TWTPO*	*$17,900,000*	*1.8*	*$9,900,000*
I-40	*Durham/Wake County Line*	*RDU APE DAR*	*Wake*	*CAMPO*	*$17,400,000*	*2.5*	*$6,900,000*
I-40	*RDU APE DAR*	*Harrison DAR*	*Wake*	*CAMPO*	*$51,600,000*	*1.0*	*$53,700,000*
I-40	*Harrison DAR*	*Trinity DAR*	*Wake*	*CAMPO*	*$23,200,000*	*2.0*	*$11,800,000*
I-40	*Trinity DAR*	*Cary Towne DAR*	*Wake*	*CAMPO*	*$7,700,000*	*1.5*	*$5,000,000*
Freeway Segment Total					***$ 337,100,000***	***34.5***	***$9,800,000***
Freeway Priority Corridor Costs within TWTPO							
Orange County					*$ -*	*9.0*	*$ -*
Durham County					*$ 237,200,000*	*18.6*	*$75,800,000*
TWTPO					**$237,200,000**	**27.5**	**$8,600,000**
Freeway Priority Corridor Costs within CAMPO							
Wake County					*$99,900,000*	*7.0*	*$14,300,000*
CAMPO					***$ 99,900,000***	***7.0***	***$14,300,000***

Advancing Priority Corridors Locally

Steps to continue advancing the planning and design of the corridors were identified and include:

- Incorporate priority corridors into ongoing planning efforts:
- Incorporate into Local Transit Plans / MTPs / CTPs
- Advance Planning and Design on Priority Corridors with Locally Funded Plans and Studies
- Potential Sequencing of Priority Corridors
- Continue to Build Momentum for Transit Infrastructure with Implementation of Funded BRT projects in Orange and Wake Counties
- Identify BRT Project in Durham County

Element 2

Another element of the implementation roadmap is to consider ways that NCDOT could help accelerate the implementation of transit infrastructure in the region. Some of the recommendations that could help to do that include:

- Evaluate and modify the current process for review and approval of transit infrastructure projects through IMD coordination with other planning/design departments and divisions; and
- Identify and evaluate potential changes to the NCDOT Roadway Design Manual, through IMD coordination with other planning/design departments and divisions.

The full Implementation Plan Memo is found in Appendix I: Implementation Plan.

Conclusion

The work of the FAST 2.0 study, including identifying a regional network and priority corridors that may be best suited for that transit priority infrastructure, has helped to advance the implementation of transit priority infrastructure throughout the study area. The specific project recommendations, including concept designs, created a connected network of BRT linkages throughout the region that aim to build on both local and regional transit connections, helping connect residents and visitors to opportunities across the region.

Appendix A: Vision and Goals

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

VISION AND GOALS

December 2024

Introduction

This memorandum outlines the vision and goals for the Freeway, Arterial, Street, and Tactical (FAST) 2.0 Transit Study, developed through a collaborative visioning exercise with fifteen (15) key Triangle region transit stakeholders at Steering Committee meeting #1, held on May 3, 2024. The vision and goals were also informed through review of existing regional planning documents.

Vision

The FAST 2.0 Transit Study vision was captured in the following themes:

- **Enhance Quality of Life**: Improve the quality of life for all residents in the Triangle Region
- **Ensure Safe and Reliable Transit**: Provide safe, reliable, and high-quality transit services
- **Boost Bus Mobility and Access**: Enhance bus-based mobility and ensure equitable access to regional transit
- **Offer Competitive Transit Options**: Provide competitive transit choices to connect the community and economic opportunities
- **Meet Diverse Needs**: Address the diverse needs of residents
- **Address Local and Regional Connectivity**: Cater to both local needs and regional connectivity
- **Prioritize Buses and BRT**: Evaluate opportunities to prioritize buses and Bus Rapid Transit (BRT) regionally

These vision statements were included in a survey sent to Steering Committee members for participation prior to Steering Committee Meeting #2, held on December 4, 2024. Participants were asked whether the vision statements align with their organizations' regional transit mission, vision and goals. Respondents were also asked if there was a missing vision statement theme that should be included. Of the 15 survey respondents, 13 agreed or strongly agreed with the themes as stated. One respondent disagreed with the vision to "Offer Competitive Transit Options" and one disagreed with the vision to "Prioritize Buses and BRT", but no clarifying comments or alternatives were offered. The vision statements were reviewed at the December 4, 2024, Steering Committee Meeting #2, at which general consensus and agreement was reached that the FAST 2.0 Vision Statement should remain as stated.

Goals

The FAST 2.0 Transit Study goals are captured in nine statements:

- **Coordinate Regional Transit Projects**: Improve connectivity across the region by coordinating transit projects.
- **Conduct Equity and Needs Assessment**: Assess the regional transportation network for efficiency and effectiveness
- **Assess Transportation Network**: Assess the regional transportation network for efficiency and effectiveness.
- **Develop Direct BRT Linkages**: Create direct Bus Rapid Transit (BRT) connections to RDU from Triangle downtowns.
- **Identify Freeway and Arterial Corridors for Transit Priority**: Choose one freeway and five arterial corridors for transit priority infrastructure enhancements
- **Evaluate Transit Priority Improvements**: Evaluate the application of various transit priority infrastructure improvements for the selected corridors.

- **Recommend Transit Infrastructure Projects**: Propose transit infrastructure projects and develop a sequenced implementation plan.
- **Recommend Institutional Practice Changes**: Suggest changes to local, regional, and NCDOT practices for integrating transit within highway planning and design
- **Set Up Regional Transit Working Group**: Establish a working group to continue coordinating regional transit planning with NCDOT.

The FAST 2.0 goals were similarly included in the survey for feedback and discussed with stakeholders at the December 4, 2024, Steering Committee Meeting #2. Most respondents agreed or strongly agreed with the stated goals, and one participant strongly disagreed with the goal of standing up a regional transit working group. The comment received via the survey and discussed at the meeting was: '*Central Pines already facilitates regional transit working groups. New groups do not need to be established. The region needs to recognize, legitimize, and give authority to existing groups, not create new ones'*.

After discussion and agreement, this study goal will be revised as follows:

- **Regional Transit Working Group**: Leverage existing regional transit working groups to continue coordinating regional transit planning with NCDOT.

Other discussion points around FAST 2.0 goals included:

- For the goal to 'Develop Direct BRT Linkages to RDU', it was noted direct airport service to RDU is currently provided by GoTriangle, and the goal seeks to enhance and expand existing airport connections.
- For the goal to 'Recommend Institutional Practice Changes', the desire to make this goal action-oriented was noted with an expectation that the recommendations are ready to be approved by NCDOT.
- Stakeholders discussed the need to have long-term planning for future connections to Lee and Franklin Counties, as the region continues to experience growth. The study team will consider these connections as recommendations are developed for the Regional Network, which will include longer-term planning for additional regional transit connections (included in the stated goal to 'Coordinate Regional Transit Projects').

With the overwhelming agreement to the stated Vision themes and Goals for FAST 2.0, these will be carried forward into subsequent study tasks to identify and select priority corridors and to develop final recommendations for implementation of projects.

Appendix B: Existing Plans Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

EXISTING PLANS MEMO

January 2025

Introduction

This memorandum presents a comprehensive review of existing transportation data, planning documents, and relevant policies within the Triangle region of North Carolina. The analysis focuses on key studies and plans that inform the region's transportation future, including:

- **Phase I Freeway, Arterial, Street, and Tactical (FAST) Study:** This study provides a foundational understanding of transportation needs and opportunities in the Triangle Region of North Carolina.
- **Capital Area Metropolitan Planning Organization (CAMPO) Studies:** CAMPO has conducted several studies related to Bus on Shoulder (BOSS) systems, Reversible Express Lanes (RED lanes), and bus rapid transit (BRT) systems, which are relevant to the region's transportation planning.
- **Local Transit Plans:** Local transit plans, including those for Wake County, Raleigh, Chapel Hill, Durham, and Orange County, offer insights into local transportation priorities and strategies.
- **NCDOT 2024-2033 State Transportation Improvement Program (STIP):** The STIP outlines planned transportation projects and investments in the region.
- **Connect 2050 Metropolitan Transportation Plan (MTP):** The Connect 2050 MTP includes plans for the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO), addressing regional transportation needs.

The following summaries provide an overview of each of these key studies and plans, highlighting areas where equity considerations were used; applicable areas of implementation; and where overlapping corridors and routes occur with the 2024 FAST 2.0 study.

As part of the 2024 FAST 2.0, stakeholder engagement with CAMPO, Central Pines COG, Town of Chapel Hill, Chatham County, City of Durham, DCHC MPO, Durham County, GoRaleigh, GoTriangle, Johnston County, Orange County, Regional Transportation Alliance (RTA), Research Triangle Foundation (RTF), Town of Cary, and Wake County was conducted to gauge priorities and interests on corridors and routes in the Triangle region. These stakeholders identified the following 13 potential corridors:

I. **US 70**
   a) Between Durham and Raleigh
   b) Between Durham and Orange County
II. **CHAPEL HILL TO RTP:** Emphasizing the importance of this connection for the region.
III. **US 15-501 CORRIDOR**
   a) Chapel Hill to Durham
   b) Chapel Hill to Chatham County
IV. **FAYETTEVILLE ROAD CORRIDOR** in Durham
V. **NC 98 CORRIDOR:** Between Durham and Wake County
VI. **VINFAST SITE IN CHATHAM COUNTY**
VII. **NC 54**
   a) Chapel Hill to Durham
   b) Within Durham, through RTP
VIII. **I-40** throughout the region
IX. **I-540:** Northern and Southern
X. **CAPITAL BOULEVARD**

XI. **US 64:** Raleigh west to Pittsboro
XII. **US 1**
    a) Raleigh/Cary to Holly Springs/Fuquay Varina
    b) Long term US 1 to towards Sanford and Pinehurst
XIII. **S-LINE RAIL CORRIDOR:** For multimodal connections

A summary of how these corridors overlap with the 2024 FAST 2.0 study is provided for each study or plan. This will ensure regional network coordination and emphasize areas where FAST 2.0 investments may be leveraged.

Phase I Freeway and Street-based Transit (FAST) Network Study

The Phase I FAST network study aims to improve transportation in the Triangle region by creating multimodal corridors that can accommodate high-capacity transit. It envisions a connected network linking major communities, activity centers, the Raleigh-Durham (RDU) Airport, and the Research Triangle Park. Funded by the RTA, GoTriangle, and the North Carolina Department of Transportation (NCDOT), the study proposes transforming existing roadways into efficient transit corridors. The study identifies key corridors and routes with potential demand for transit, including:

- US 15-501 Corridor
- NC 751
- NC 147
- NC 147 and I-40
- NC 55
- NC 540 (Western Boulevard)
- NC 540 (Northern Section)
- US 64 to Pittsboro
- Harrison Boulevard
- US 1 from east Raleigh to Regency Park
- Beltline (I-440) corridor
- Capital Boulevard
- US 70
- Six Forks Road
- US 401 S to Fuquay Varina
- Holly Springs Road
- NC 50/Creedmoor Road

Potential corridors are evaluated using a multi-faceted approach, considering both mobility and accessibility factors. Mobility factors include travel demand, transit performance, traffic conditions, and contextual factors. Accessibility factors focus on equity, existing projects, and identify gaps in the transportation network. By combining this analysis with spatial analysis of travel demand and existing regional transit service, illustrative FAST corridors are developed. The 10 proposed Triangle FAST corridors shown in Table 1 are interconnected corridors that directly serve Raleigh, Durham, Cary, Chapel Hill, RDU Airport, and Research Triangle Park.

Table 1: Proposed High Priority and 0-5 Years FAST Freeway and Street Corridors, with Future BRT linkages underlined.

Corridor	From	To
1. I-40	future South Wilmington Street BRT	NC 54 / Raleigh Road in South Durham
2. I-885 / NC 147	I-40 in RTP	Duke University
3. US 15-501 freeway	Erwin Road area	US 15-501 arterial
4. US 15-501	future MLK / NC 86 BRT	15-501 freeway
5. Raleigh Rd / NC 54	future MLK / NC 86 BRT	I-40
6. Main / Erwin / Holloway	US 15-501 freeway near Erwin Rd	Holloway Street / future I-885
7. US 70	future Downtown Raleigh BRT	Brier Creek/I-540
8. Six Forks Road	future Capital Boulevard BRT	I-540
9. Capital Boulevard	future Capital Boulevard BRT	I-540
10. Poole Road	future New Bern Avenue BRT	New Hope Road

Source: FAST Network Concept for North Carolina's Research Triangle Region and Triangle FAST Implementation Playbook, Table 2.

Figure 1 shows the type of projects proposed for the 10 corridors and whether they are included in the 2021-2028 STIP/Capital Improvement program (CIP) or 2029 & Beyond. Projects that are funded for implementation in 2029 or in the longer-term include the following:

- 2. Future I-885 / NC 147 (U-5937)
- 3. US 15-501 Freeway (not included in the STIP/CIP)
- 4. US 15-501 (U-5304D/F)
- 5. Raleigh Rd / NC 54 (U-5774B/C)
- 7. US 70 (U-2823)
- 8. Six Forks Road (Wake BRT: Northern Corridor)
- 9. Capital Boulevard (Wake BRT: Northern Corridor)

Figure 1: Proposed STIP and CIP Roadway and Transit Projects (Note: Refer to Table 1 for numbers)

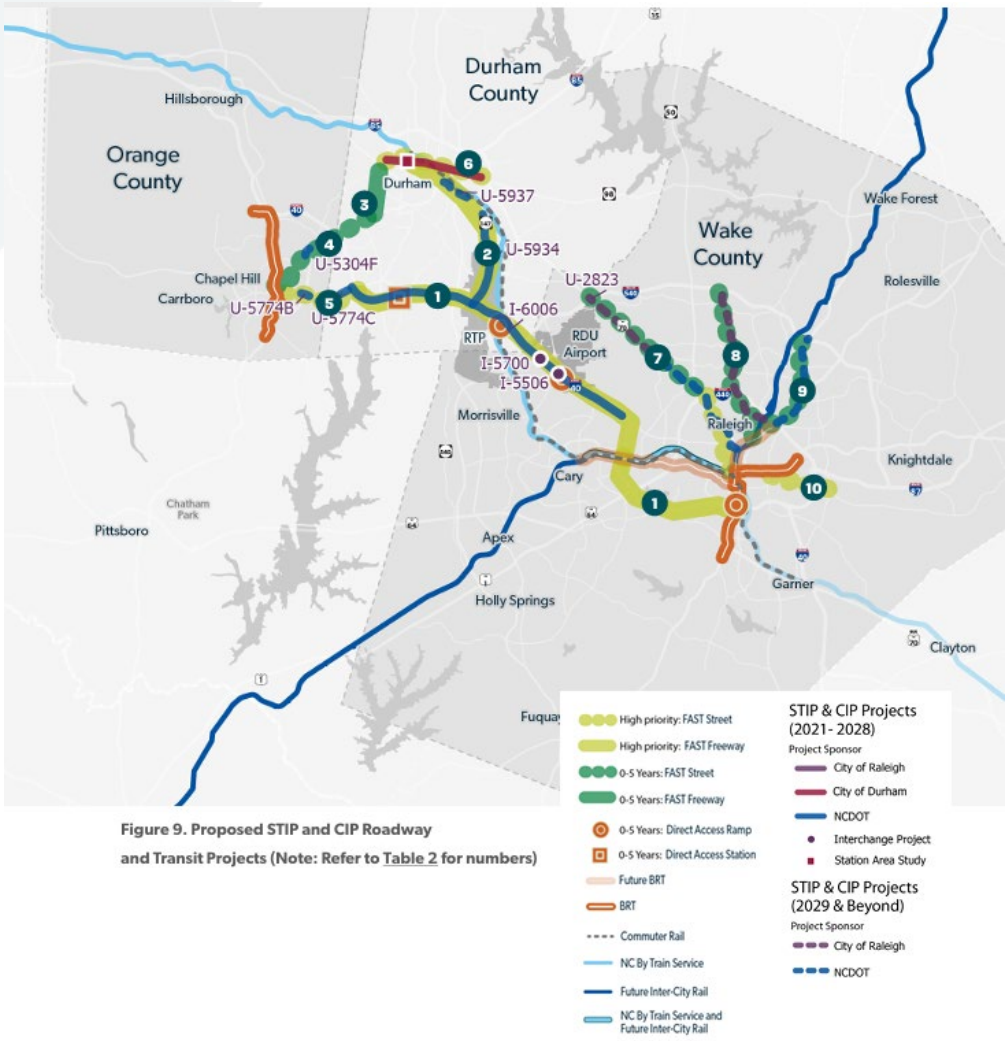


Figure 9. Proposed STIP and CIP Roadway and Transit Projects (Note: Refer to Table 2 for numbers)

Source: FAST Network Concept for North Carolina's Research Triangle Region and Triangle FAST Implementation Playbook, Figure 9.

The FAST study emphasizes the importance of regional coordination, funding, and implementation challenges. Additionally, the study suggests potential BRT extensions in several areas, including Western Wake County and Southern Wake County.

Equity

Accessibility criteria, including equity considerations, are used to screen potential FAST corridors. Benefits are analyzed to assess the equitable distribution of benefits (and costs) across different market types, with a particular focus on underserved communities and disadvantaged populations. The analysis is further disaggregated by socio-economic characteristics of communities served to evaluate equity impacts and ensure an equitable distribution of opportunities.

By prioritizing accessibility and focusing on scalable, cost-effective solutions, the FAST approach aims to maximize benefits and improve mobility for a wider range of people. This strategy can help optimize public transit investments and enhance accessibility for all.

Implementation

The 2021 FAST network study provides a comprehensive framework for advancing regional transit service. This study can inform local and regional transportation planning efforts by:

- **Guiding Transit Planning:** The study identifies priority corridors and recommendations can be used to develop detailed transit plans and corridor studies.
- **Integrating Transit into State-Funded Projects**: State-funded transportation projects can be designed and implemented to accommodate future transit infrastructure, such as BRT or light rail, by incorporating dedicated lanes, stations, and other necessary features.
- **Promoting Regional Collaboration**: The study emphasizes the importance of regional collaboration to coordinate planning and implementation efforts, ensuring a seamless and efficient transit network.

Beyond the Triangle region, the FAST approach can be applied statewide to:

- **Incorporate Transit into Roadway Design**: Roadway projects can be designed to include transit elements, such as bus lanes, transit signal priority, and pedestrian and bicycle facilities.
- **Enhance Regional Transit**: Opportunities to improve existing transit services, expand service areas, and connect regional transit systems can be identified and prioritized.
- **Prioritize Equity**: The FAST approach can be used to identify and address equity gaps in transit access and service, ensuring that all communities have access to reliable and affordable transportation options.

The FAST framework allows transportation agencies to determine where transit investments may be most effective to improve mobility and enhance the quality of life for residents across the state.

Bicycle and Pedestrian Considerations

The Phase 1 FAST study acknowledges the need to provide pedestrian and bicycle connections to express transit service at stops and stations in the report. Pedestrian connections were a key determinant for deciding which interventions to recommend in each priority corridor, including:

- Direct Access Stations, which provide a connection to a freeway-based transit station from another mode of transportation.
- Level Boarding, which makes it easier and faster for people to board with mobility devices such as wheelchairs or strollers.
- Floating Bus Stops, which separate the boarding area from the sidewalk and bike lane and reduces conflicts between modes.

The report provided a more detailed look at the US-70 corridor in Raleigh and identified the lack of pedestrian and bicycle facilities as both a limitation (north of I-440) and the presence of those facilities as an opportunity to implementing high-quality transit (between downtown and I-440).

Overlap with Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 2 highlights which of the 13 corridor and routes identified by the 2024 FAST 2.0 stakeholders are also included in the 2021 FAST study. Please refer to Figure 1 for the location of the 2021 FAST study projects listed in Table 2.

Table 2: 2024 FAST Study Corridors that Overlap with 2021 FAST Study

2024 FAST 2.0 Corridor/Routes	2021 FAST STUDY	Notes from Triangle FAST Network Implementation Playbook
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓	Two projects: 1. I-40: From future South Wilmington Street BRT to NC 54 / Raleigh Road in South Durham. And 5. Raleigh Rd / NC 54 from Future MLK / NC 86 BRT to I-40
3. US 15-501 Corridor		
a. Chapel Hill to Durham	✓	Two projects: 3. US 15-501 Freeway from Erwin Road area to US 15-501 arterial and 4. US 15-501 from Future MLK / NC 86 BRT to 15-501 freeway.
8. I-40 throughout the region	✓	1. I-40: From future South Wilmington Street BRT to NC 54 / Raleigh Road in South Durham.

North Carolina Capital Area Metropolitan Planning Organization (CAMPO) Studies

CAMPO Bus on Shoulder System (BOSS) Implementation Blueprint

The BOSS systems are dedicated bus lanes designated along the shoulder of freeway lanes. They are striped to be only used by buses to improve travel time reliability and safety. The current North Carolina BOSS system operating on I-40 in Raleigh is highly utilized by buses operating in the corridor and has improved travel time reliability. As such, the state is planning to expand the use of BOSS and incorporate it into their plans and policies as a transit improvement strategy for other corridors. The 2021 CAMPO BOSS Implementation Blueprint provides a comprehensive guide for implementing BOSS systems in the Triangle region of North Carolina. It outlines the necessary steps, best practices, and considerations for agencies looking to implement BOSS projects. The minimum criteria for BOSS are:

- Limited access facility such as interstates and expressways
- Existing paved shoulders which meet the minimum width of 10 ft. and are in good or fair condition, or require minimal upgrades
- Buses are utilizing the facility or if not, there is evidence of a transit market present
- Corridor experiences recurring congestion

Equity

The CAMPO BOSS Blueprint suggests using several equity prisms to gauge how BOSS can contribute to a more equitable transit network:

- **Consider BOSS Trips in the Broader Universe of Transit Trips:** BOSS facilities are likely to be used by bus riders with a range of incomes, and not primarily transit-dependent riders. The study states that there is an economic motivation to travel further for high-paying jobs, which means that longer-haul routes are likely to contain a higher proportion of higher-income earners than the overall transit system in a given region.
- **Bus Service Planning May Play the Greatest Role in Determining Who Uses BOSS:** The demographics of who rides on BOSS facilities will be significantly determined by the locations served by the bus before and after it enters the BOSS lane, and not by any attribute of the BOSS facility itself.
- **With Inline Stations, Traditional Title VI Analysis Is Recommended:** Current BOSS facilities are located along limited access freeways where pedestrians are discouraged from walking, and there are no plans to add inline stations to any BOSS facilities in North Carolina. If that changes, quantitative methods used for Title VI bus service change analysis would be appropriate tools for this work.
- **Equitable Engagement and Transit Onboard Surveys Can Help with Prioritization**: Equitable engagement and transit onboard surveys can also help prioritize BOSS investments in areas that have high concentrations of environmental justice populations. By understanding the on-time performance challenges experienced by transit dependent passengers and demographics of bus riders on different routes, agencies can make more informed decisions about where to prioritize BOSS facilities.
- **BOSS Investment Is One Component of a Larger Transit Plan:** BOSS can often be deployed for $1 million per mile or less, and sometimes for less than $25,000 per mile, which is significantly less than BRT, which frequently approaches $10 million per mile when using dedicated lanes. In a program that was also investing in existing stops, sidewalk access to bus stops, frequent service networks, and BRT, BOSS investment would likely be a relatively small portion of the overall transit investment package in the community.

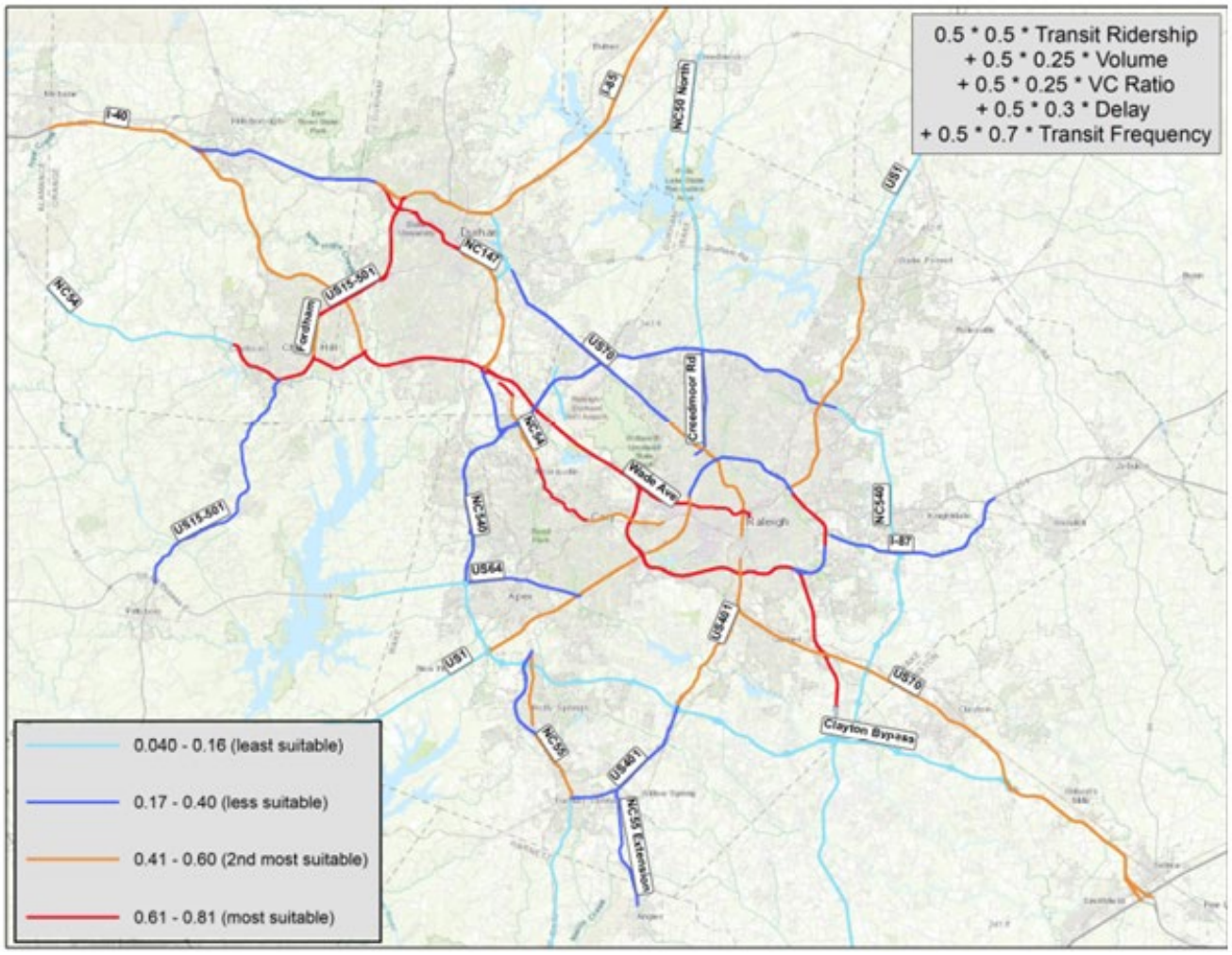
Implementation

The BOSS Blueprint provides guidance on various aspects of BOSS implementation, including:

- **Planning and Feasibility:** This includes identifying suitable corridors, conducting traffic and safety analyses, and assessing the feasibility of BOSS implementation. Figure 2 shows the corridors in the region that are suitable for BOSS.
- **Design and Engineering:** This involves developing detailed design plans for BOSS lanes, including lane markings, signage, and other infrastructure elements.
- **Operations and Maintenance:** This addresses operational considerations such as bus stop locations, frequency of service, and maintenance requirements.
- **Public Outreach and Engagement:** This outlines strategies for engaging with stakeholders and the public to build support for BOSS projects. Each outreach program should utilize multiple communication channels well in advance of the implementation as well as upon commencement of BOSS operation or expansion.
- **Funding and Grants:** This provides information on potential funding sources and grant opportunities for BOSS projects such as reviewing existing or the upcoming STIP is one example of a potential funding opportunity.

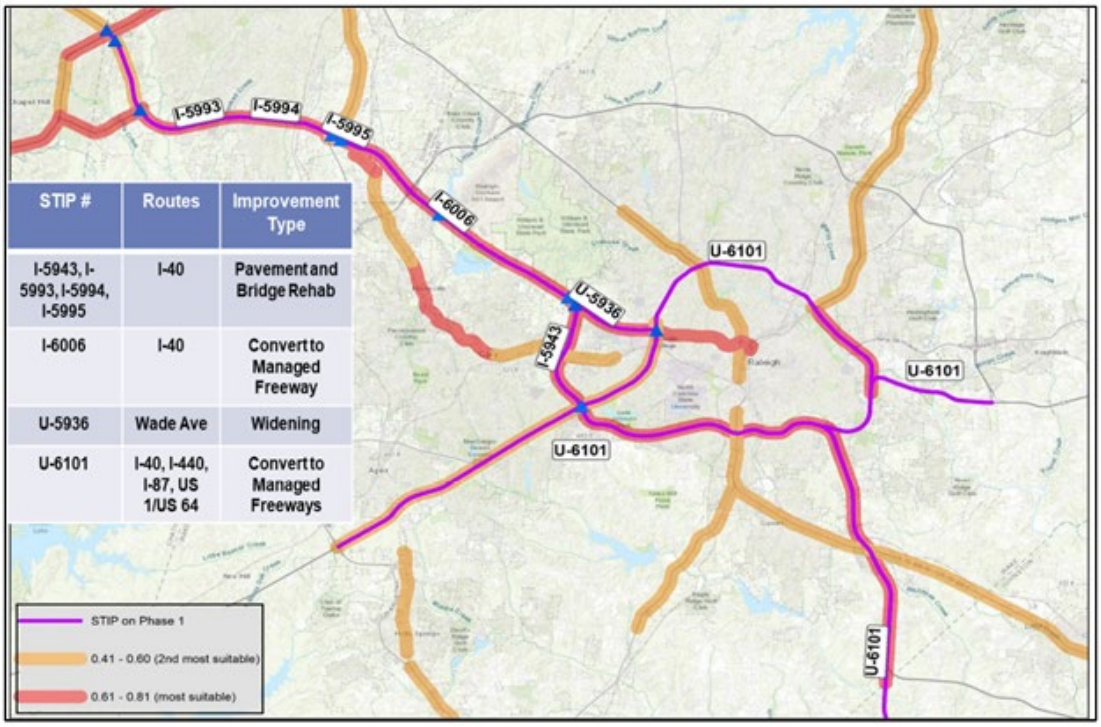
STIP Projects within the suitability corridors are shown in Figure 3. These projects are located on I-40, Wade Avenue, I-440, I-87, and US 1/US 64. Cost/mile for implementation and service as shown in Figure 4 and Figure 5.

Figure 2: BOSS Corridor Suitability Map



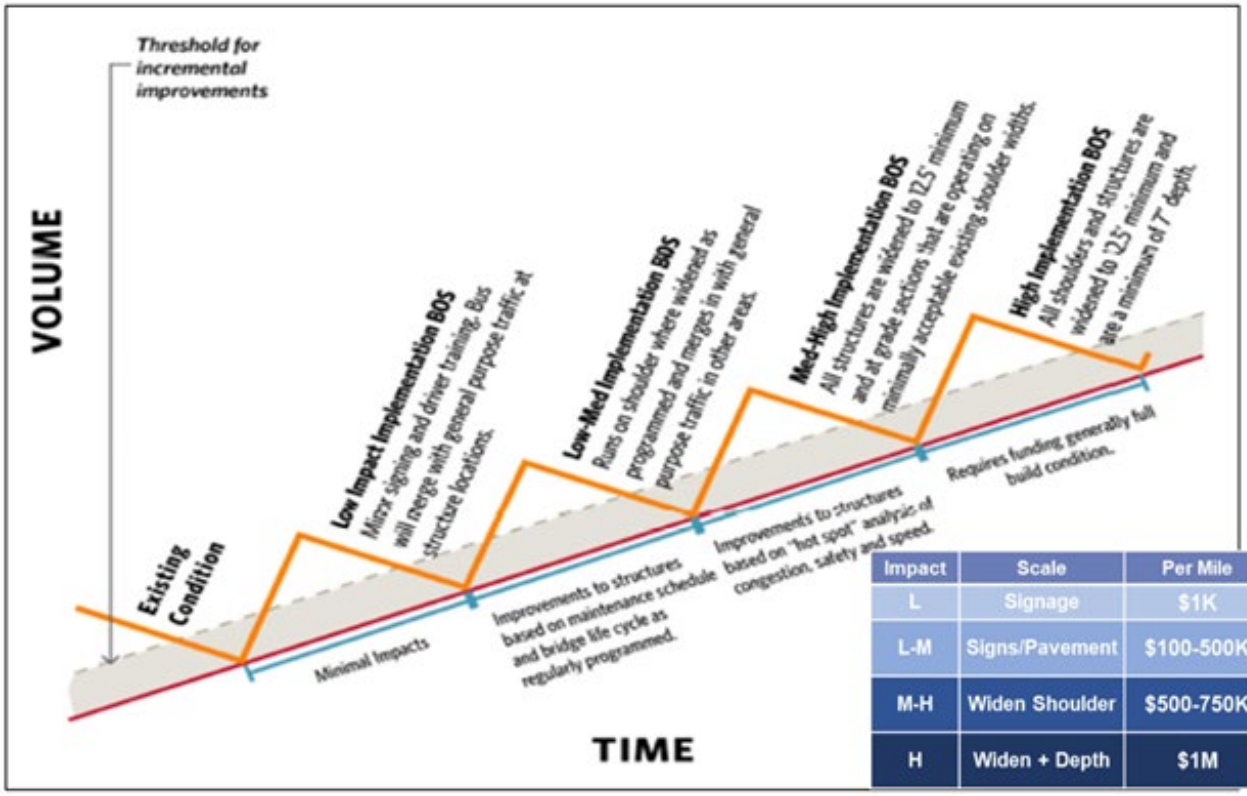
Source: CAMPO Bus on Shoulder System (BOSS) Implementation Blueprint, Figure 2.

Figure 3: STIP Projects within Suitability and Managed Motorways



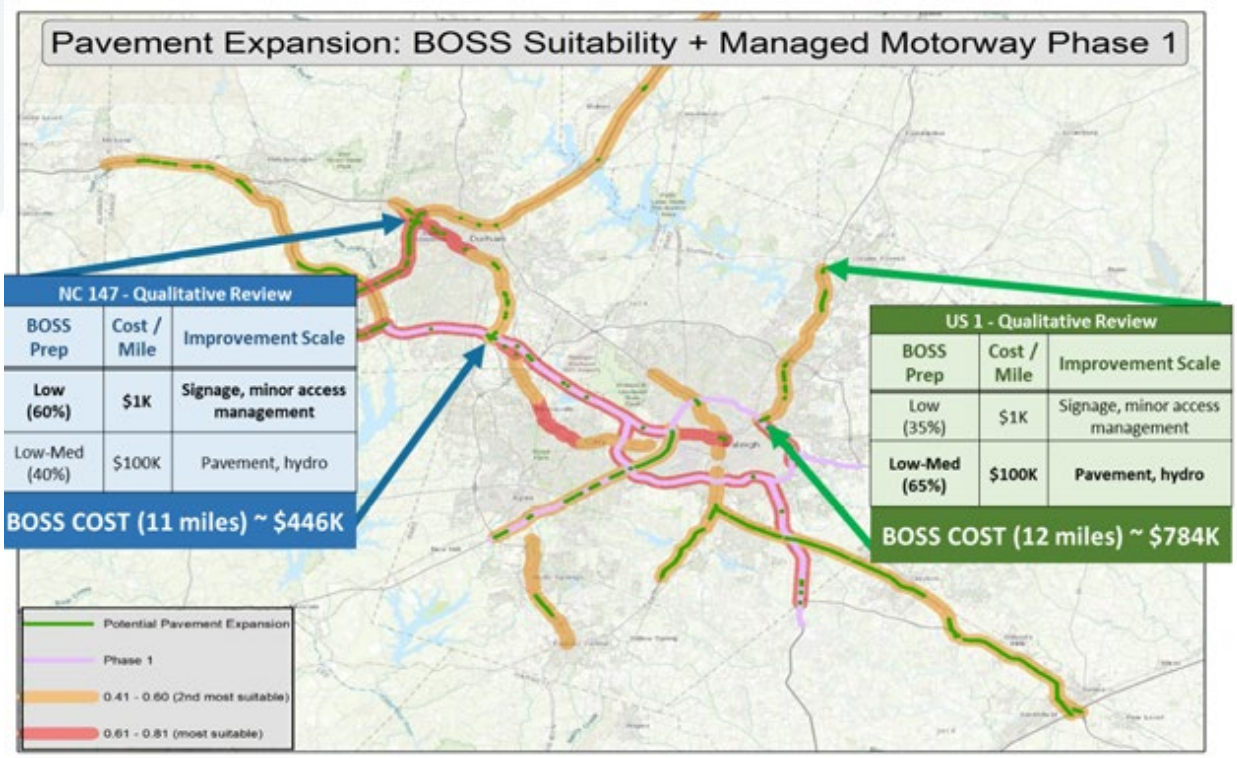
STIP #	Routes	Improvement Type
I-5943, I-5993, I-5994, I-5995	I-40	Pavement and Bridge Rehab
I-6006	I-40	Convert to Managed Freeway
U-5936	Wade Ave	Widening
U-6101	I-40, I-440, I-87, US 1/US 64	Convert to Managed Freeways

Figure 4: Incremental BOSS Implementation – Average Costs / Mile



Impact	Scale	Per Mile
L	Signage	$1K
L-M	Signs/Pavement	$100-500K
M-H	Widen Shoulder	$500-750K
H	Widen + Depth	$1M

Figure 5: Incremental Service Costs – Capital Boulevard and Durham Freeway



Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 3 shows the 2024 FAST 2.0 corridors and routes that are also included in the CAMPO BOSS Blueprint.

Table 3: FAST 2.0 Study Corridors that Overlap with BOSS Study

2024 FAST 2.0 CORRIDOR/ROUTES	BOSS STUDY	NOTES FROM THE BOSS STUDY
8. I-40 throughout the region	✓	I-40: SR 1728 (WADE AVENUE) TO I-440 / US 1 IN RALEIGH. PAVEMENT AND BRIDGE REHABILITATION (I-5943); US 15 / US 501 TO EAST OF NC 147. PAVEMENT REHABILITATION (I-5993 and I-5994); EAST OF NC 147 TO SR 1728 (WADE AVENUE). PAVEMENT REHABILITATION (I-5995); NC 54 (EXIT 273) TO SR 1728 (WADE AVENUE), I-40 TO SR 1664 (BLUE RIDGE ROAD) CONVERT FACILITY TO A MANAGED FREEWAY WITH RAMP METERING AND OTHER ATM / ITS COMPONENTS (I-6006); SR 1728 (WADE AVENUE) TO NC 42 (U-6101).
11. US 64: Raleigh west to Pittsboro	✓	US 1 FROM NC 540 TO I-40 (U-6101).
12. US 1	✓	US 1 FROM NC 540 TO I-40 (U-6101).

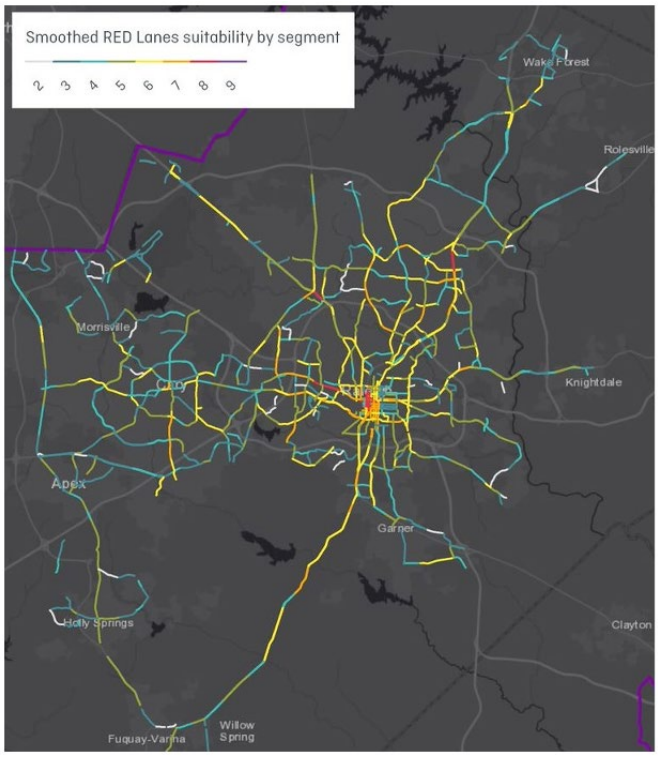
RED Lanes Study: Key Projects and Priorities Summary

The 2020 RED Lanes Study, conducted by CAMPO, identifies and prioritizes corridors suitable for reversible transit priority express lanes within the Triangle region of North Carolina. A RED Lane is a dedicated lane for buses with restrictions for other modes. The lanes are usually restricted for five days per week during the peak periods (six hours per day) for fifty weeks. It is designed to prioritize transit and improve bus operations. While buses typically share RED lanes with right-turning vehicles and emergency vehicles, the purpose of the lanes are to minimize traffic conflicts and congestion while maximizing transit efficiency and encouraging ridership.

The RED Lanes Study provides guidance and resources to help implement RED Lanes for other cities and regional agencies. It includes a toolkit for assessing the potential effectiveness of RED lanes in their communities and has identified several suitable segments throughout the region. Areas with higher development density and those located in more urbanized parts of Raleigh and Cary tend to have higher suitability scores. Additionally, corridors connecting urban centers to more distant communities, such as Wake Forest and Fuquay-Varina, also have higher suitability scores. See Figure 6.

The study notes that RED Lanes are part of a suite of cost-effective strategies available to the Triangle area to efficiently enhance the multimodal transportation system with the aim of increasing multimodal utilization and maintaining or improving travel conditions on major corridors.

Figure 6: RED Lanes Suitability Scores



Source: RED Lanes Study Final Report, Figure iii.

The following candidate corridors are identified in the study as best suited for RED lanes based on travel demand, transit operations, highway operations, and local context and design characteristics (see Figure 7):

1. Martin Luther King Jr. Blvd. – State St. to Raleigh Blvd.
2. Wake Forest Rd. – St. Albans Dr to Colby Dr.
3. Kildaire Farm Rd. – Maynard Rd. to Glasgow Rd.
4. Millbrook Rd. – Departure Dr. to Capital Blvd.
5. Main Street – Capcom Ave. to Selsey Dr.
6. Six Forks Rd. – Wake Forest Rd. to Anderson Dr.
7. Glenwood Ave. – Creedmoor Rd. to Lead Mine Rd.
8. Fayetteville Rd. – Manor Ridge Rd. to Caddy Rd.
9. Hillsborough St. – Glenwood Ave to Dan Allen Dr.
10. NC 55 – Morrisville Pkwy. to Carpenter Fire Station Rd.

Figure 7: Ten RED Lanes Candidate Segments

1. **Martin Luther King Jr. Blvd.** – State St. to Raleigh Blvd.
2. **Wake Forest Rd.** – St. Albans Dr to Colby Dr.
3. **Kildaire Farm Rd.** – Maynard Rd. to Glasgow Rd.
4. **Millbrook Rd.** – Departure Dr. to Capital Blvd.
5. **Main Street** – Capcom Ave. to Selsey Dr.
6. **Six Forks Rd.** – Wake Forest Rd. to Anderson Dr.
7. **Glenwood Ave.** – Creedmoor Rd. to Lead Mine Rd.
8. **Fayetteville Rd.** – Manor Ridge Rd. to Caddy Rd.
9. **Hillsborough St.** – Glenwood Ave to Dan Allen Dr.
10. **NC 55** – Morrisville Pkwy. to Carpenter Fire Station Rd.

Figure iv Ten RED Lanes Candidate Segments

Source: RED Lanes Study Final Report, Figure iv.

Equity

The RED Lanes Study considers various factors when identifying suitable corridors for RED Lanes, including the context of the surrounding area. The study found that the region has diverse development patterns and concluded that RED Lanes are more appropriate in "transit-supportive" contexts, for which activity density (jobs per acre plus

housing units per acre) and intersection density are proxy measures. Transit-dependent populations were found to be dispersed throughout the region, mostly with a southeasterly focus in cities.

The study used communities of concern as a key metric of the Detailed Differentiator and Implementation Guidance analyses, noting that RED Lanes have a more positive impact if they provide mobility benefits to disadvantaged populations. By using a similar communities of concern metric, FAST 2.0 can incorporate an equity layer to demonstrate potential mobility benefits to disadvantages populations.

Implementation

The RED Lanes Toolkit provides guidance for implementing RED lanes, including a tool to assess corridor suitability and potential design, operations, and enforcement elements. Source information is provided citing typical costs for various RED lane elements, offering guidance on which elements are appropriate based on specific corridor characteristics. The Toolkit also helps identify opportunities for strategic investment highlighting RED lanes' role in enhancing transit mobility and visibility throughout the CAMPO region.

Table 4 provides high-level guidance for interpretation of several Implementation Guidance Metrics, while Table 5 outlines typical costs for various RED lane elements.

Table 4: RED Lanes Elements to Consider Based on Implementation Guidance

Code	Cost Element	Candidate Corridor Attributes
LANE TYPE		
L1	Standard Bus Lane – White Pavement Striping	**Full-time suitability** is Low or Medium
L2	Red Paint Bus Lane	**Full-time suitability** is Medium or High
ENFORCEMENT		
E1	Police enforcement	**Full time suitability** is Low
E2	Bus mounted Camera	**Full time suitability** is Medium or High
E3	Stationary Camera	**Full time suitability** is High
TRANSIT SIGNAL PRIORITY		
T1	Center to Center systems	**TSP suitability** is Medium or High
T2	GPS based System	

Source: RED Lanes Study Final Report, Scoping and Developing RED Lanes Projects, Table 8

Table 5: Cost Considerations for RED lanes

Code	Cost Element	Capital Cost		Maintenance cost	
LANE TYPE					
L1	Standard Bus Lane – White Pavement Striping	$200,000	per mile	$10,000	per mile per year
L2	Red Paint Bus Lane	$580,000	per mile	$10,000	per mile per year (to be repainted every 5 years)
ENFORCEMENT					
E1	Police enforcement			$75,000	1500 hours of enforcement per year per mile
E2	Bus mounted Camera	$95,000	for 10 buses running on a route at 15-minute headway	$7,500	for 10 buses per year
E3	Stationary Camera	$130,000	4 cameras per mile	$40,000	per mile per year
TRANSIT SIGNAL PRIORITY					
T1	Center to Center systems	$200,000 to $600,000	Depending on the total number of TSP intersections		
T2	GPS based System	$ 5,000	per bus		
		$ 10,000	per intersection		

Source: RED Lanes Study Final Report, Scoping and Developing RED Lanes Projects, Table 9

Bicycle and Pedestrian Considerations

Pedestrian and bicycle travel, captured in the RED Lanes Study as non-motorized propensity, are considered key factors in how to design RED Lanes. In some cases, bicycles can use RED Lanes. In others, separated bicycle and pedestrian facilities are recommended.

Kildaire Farm Rd from Maynard Rd to Glasgow Rd, one of the potential priority corridors, is listed as a candidate for RED Lanes and is given a medium non-motorized propensity, indicating a possibility of including bicycle and pedestrian elements in the design.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

As shown in Figure 7, the RED Lanes Study identifies a number of corridors in the Triangle region that could benefit from the implementation of RED lanes. As shown in Table 6, one FAST 2.0 Study corridor (US 70) is included in the RED Study.

Table 6: FAST 2.0 Study Corridors that Overlap with RED Study Corridor/Routes

2024 FAST 2.0 Corridor/Routes	RED Study	RED Study Notes
1. US 70		

2024 FAST 2.0 Corridor/Routes	RED Study	RED Study Notes
a. Between Durham and Raleigh	✓	Segment #7: Glenwood Ave. – Creedmoor Rd. to Lead Mine Rd.

CAMPO BRT Extension Major Investment Study (MIS)

Completed in 2022, the CAMPO BRT Extension Major Investment Study (MIS) Evaluation of Alternatives Report examines potential extensions to the Wake BRT system in Raleigh. The report evaluates various routes and alignments for extending the BRT service to Research Triangle Park (RTP) and Clayton.

The study analyzed alternative routes for two corridors, considering factors such as ridership potential, construction costs, and environmental impacts. The BRT corridors would connect Cary to RTP in the west (Western Extension) and the Towns of Garner to Clayton in the south (Southern Extension), see Figure 8 and Figure 9. Both corridors were identified in CAMPO' 2045 Metropolitan Transportation Plan (MTP) and the 2020 – 2029 Transportation Improvement Program (TIP) as a regional project connecting Clayton to RTP.

The report assessed the feasibility of each extension through a Phase I screening and a more refined study of preferred routes for each extension. Phase I considered current roadway conditions, network opportunities, and socioeconomics. The study then identified a preferred route for each extension, based on access, productive and sustainable service, safety and compatibility with the surrounding environment. The report concluded by providing recommendations for the implementation of the BRT extensions, including potential funding sources and next steps.

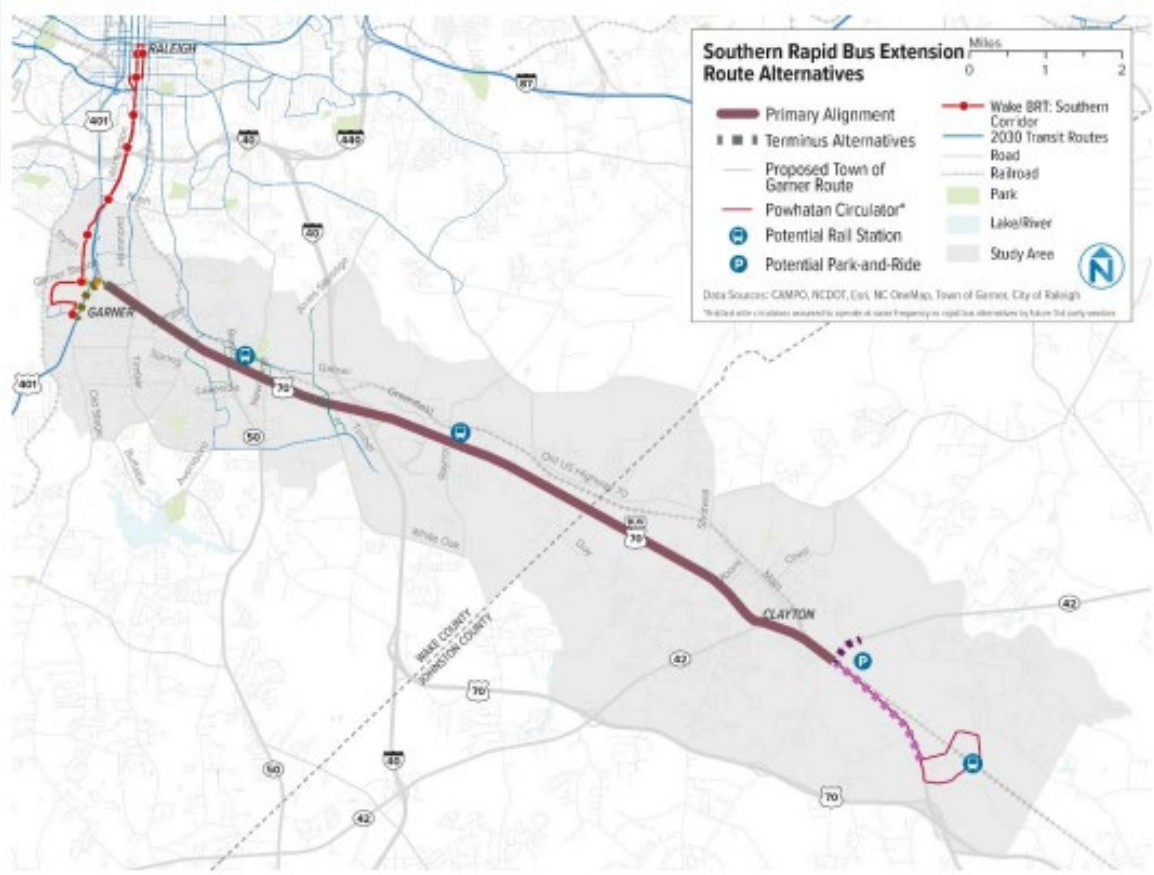
Equity

The study outlines a method to estimate future transit demand involving population density adjustments to account for a "transit propensity factor" (TPF). This factor is calculated based on socioeconomic indicators like low-income households and carless households to identify areas with higher potential transit use. The adjusted population density is then analyzed spatially within a ¾-mile radius of proposed BRT stations to estimate potential ridership. This innovative approach combines population growth projections with socioeconomic factors to predict future transit demand for specific station areas.

Implementation

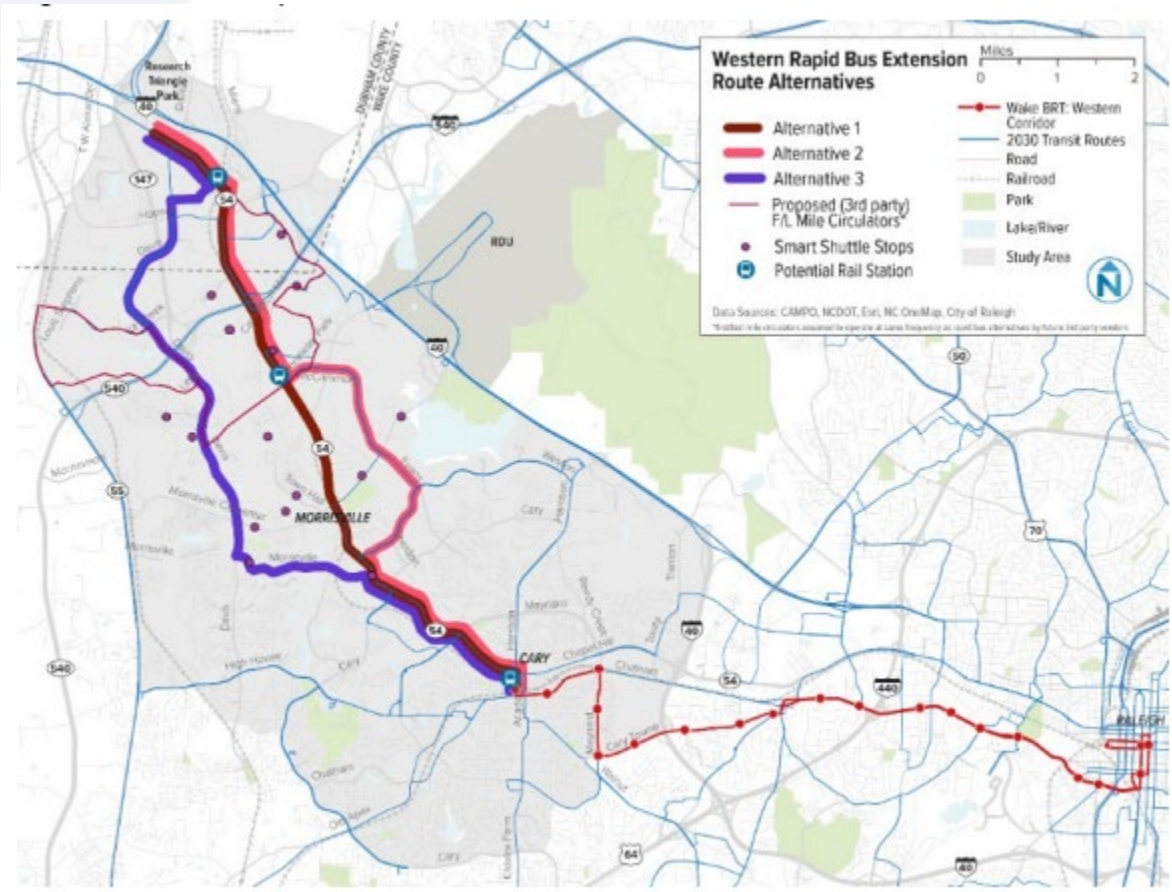
At the conclusion of this study, evaluation results supported the need for more detailed study and additional stakeholder coordination to determine implementation of a BRT extension in Garner that would most appropriately support a core Southern BRT service. Using the CAMPO BRT Extension MIS as an example, key criteria for FAST 2.0 can be refined as alternatives/options are screened and a more refined evaluation is warranted. For example, when analyzed for independent utility, Garner Station Blvd (G2) was the top performing candidate for Southern Extension due to its more direct routing, better transit travel time reliability, and connectivity / accessibility benefits over the Fayetteville Road option. The top performing alternative for Western Extension (from Cary to RTP) was due to better long-term redevelopment opportunity and potential for transit speed and reliability investments.

Figure 8: Southern Rapid Bus Extension Route Alternatives



Source: CAMPO BRT Extension MIS, Figure 5

Figure 9: Western Rapid Bus Route Alternatives



Source: CAMPO BRT Extension MIS, Figure 8

Bicycle and Pedestrian Considerations

The CAMPO BRT Extension MIS recommends that accessible pedestrian connections be a key aspect of station location and design. It also notes that choosing corridors that have planned road widenings may be beneficial to transit operation but may limit opportunities to improve the pedestrian environment around station areas if the available right-of-way has been consumed by the widening. Multimodal connections, including density of sidewalks, trails and bike lanes, was a key evaluation criterion in selecting the preferred alternative for each extension.

Connections between the Western Extension in the study and the potential priority corridors in the FAST 2.0 study would be made at the Cary Train Station and a relocated Regional Transit Center.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

See Table 7 for the FAST 2.0 Study corridor (NC 54) that is included in the CAMPO BRT Extension MIS.

Table 7: FAST 2.0 Study Corridors that Overlap with Corridor/Routes with the BRT Extension MIS

2024 FAST 2.0 CORRIDOR/ROUTES	BRT EXTENSION MIS	BRT EXTENSION MIS NOTES
7. NC 54		
b. Within Durham, through RTP	✓	Alternative 2: Cary to RTP via Chapel Hill Road and Evans Road

Local Transit Plans

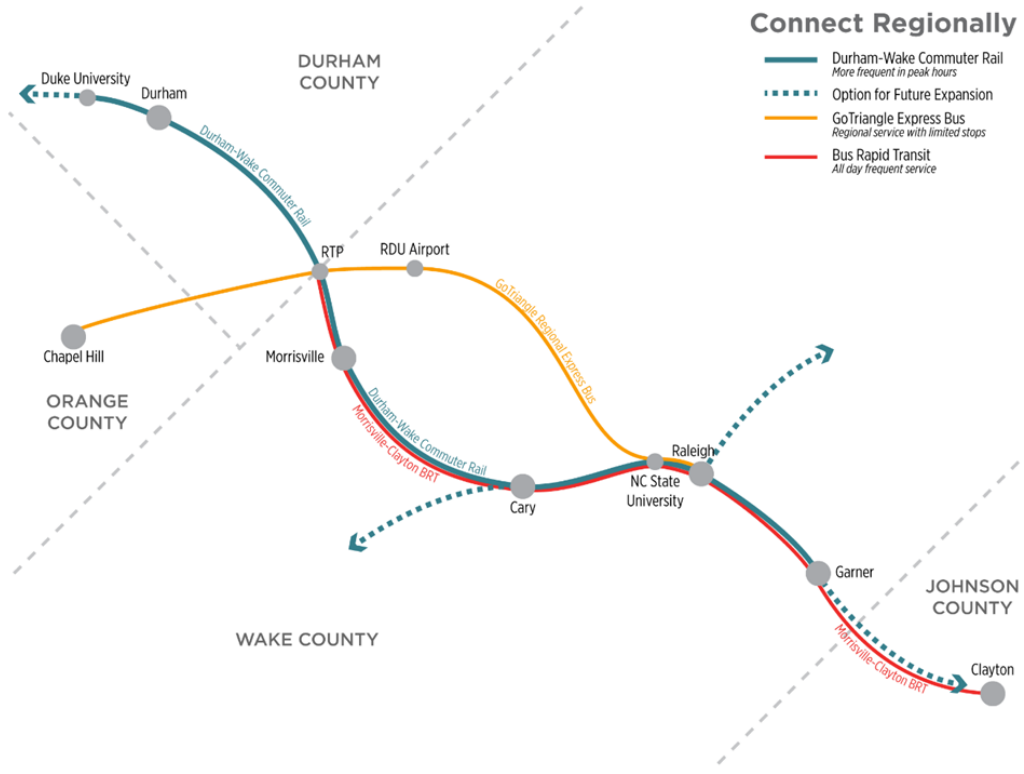
Wake County Transit Plan Update

The Wake County Transit Plan Update (2021-2030) outlines a strategy to expand transit options and improve mobility in the county. The plan focuses on four key areas:

- **Cross-county connections:** Strengthening connections between Wake County and neighboring counties through bus and rail investments. See Figure 10 for the major elements of each regional connection that are proposed to be implemented through 2030.
- **Community connections:** Linking Wake County communities to the transit network, ensuring access to jobs, education, and services, see Figure 11.
- **Urban mobility:** Providing frequent, reliable transit service to densely populated areas, see Figure 12.
- **Accessibility:** Enhancing access to transit throughout Wake County, see Figure 13.

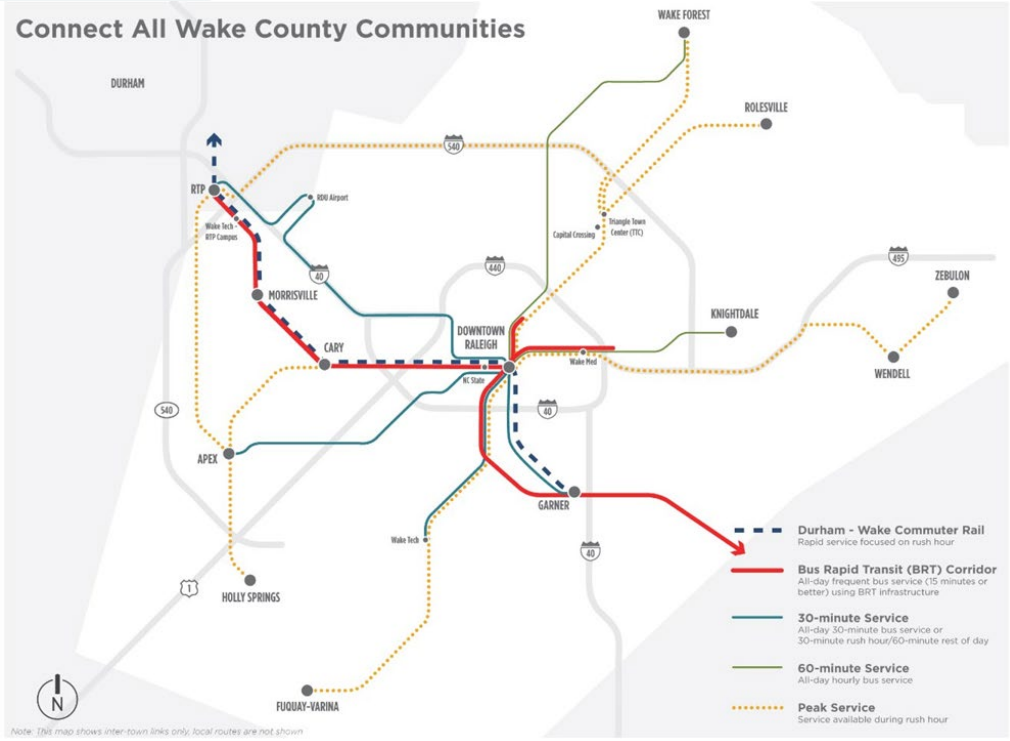
The plan acknowledges that due to funding constraints and community priorities, some planned bus routes may not reach their full originally planned levels of service by 2030.

Figure 10: Major Elements of Regional Connections Proposed Through 2030



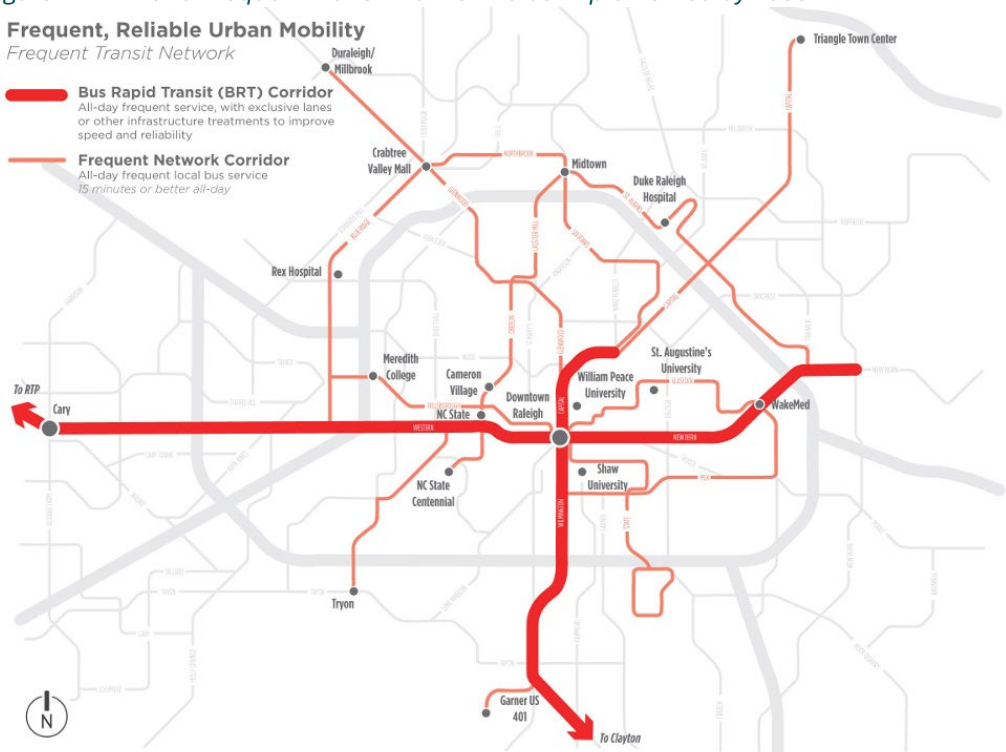
Source: Wake County Transit Plan Update, Figure 5.

Figure 11: Wake County Connections



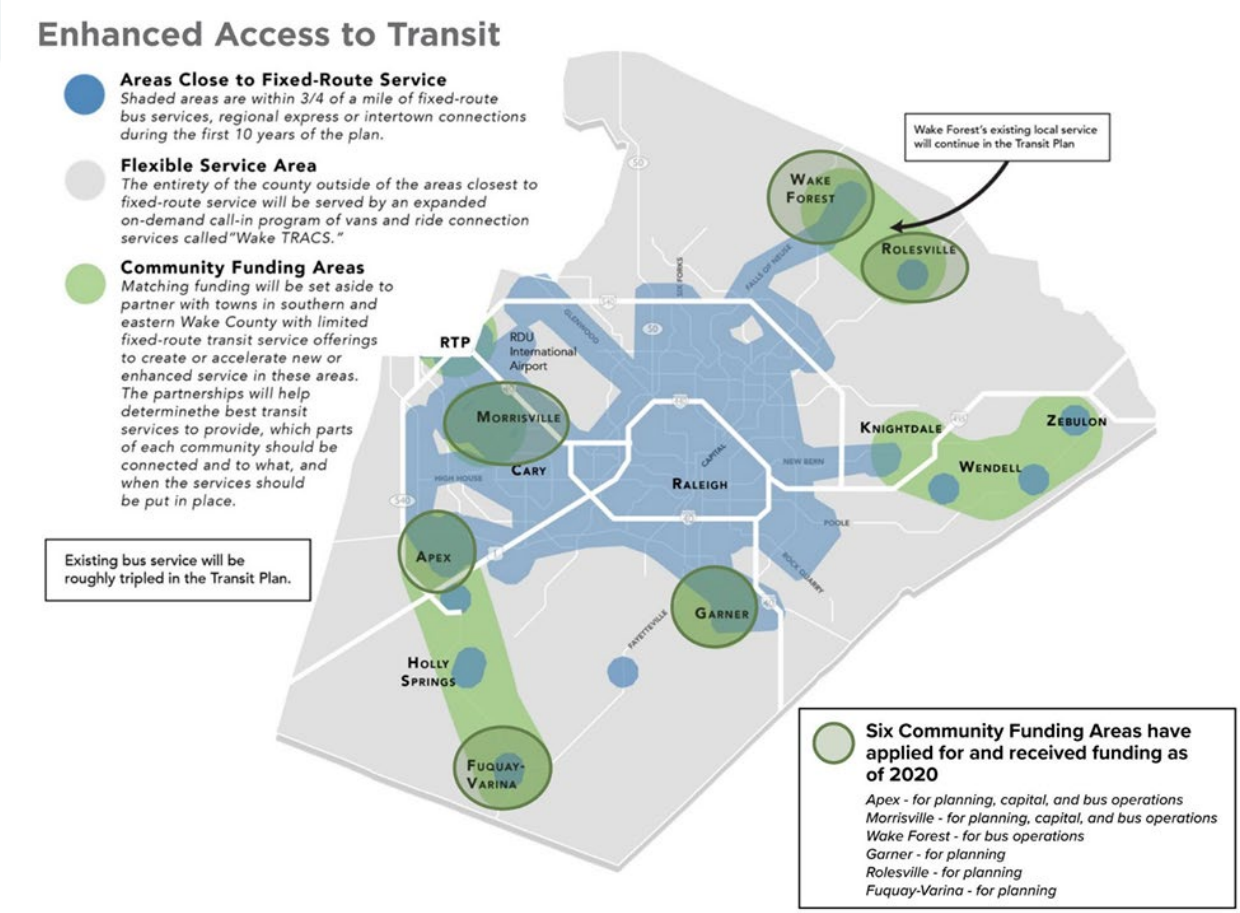
Source: Wake County Transit Plan Update, Figure 6.

Figure 12: BRT and Frequent Transit Network to be Implemented by 2030



Source: Wake County Transit Plan Update, Figure 8.

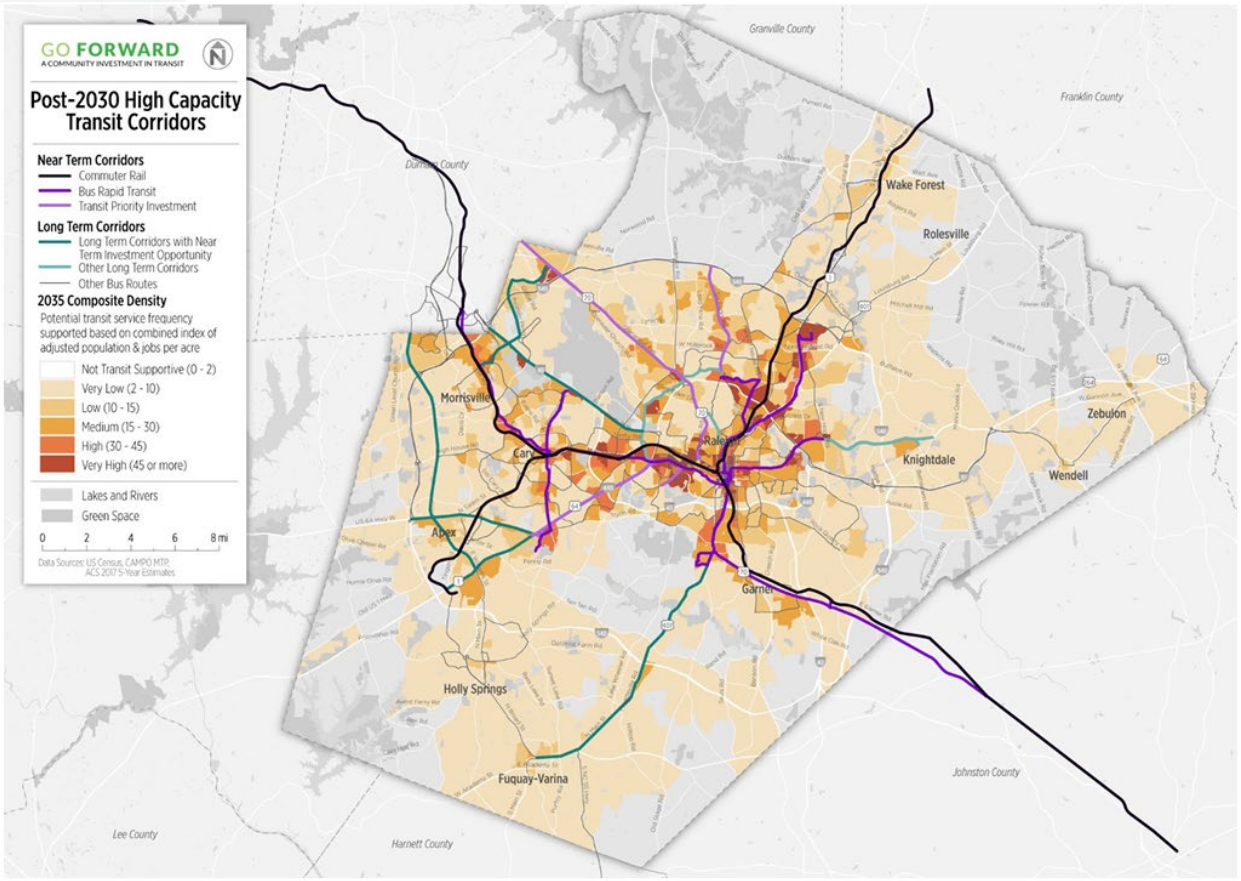
Figure 13: Enhanced Access to Transit



Source: Wake County Transit Plan Update, Figure 10.

The plan identifies specific corridors for potential high-capacity transit services or improvements. These corridors are chosen based on stakeholder input, reviews of other regional plans, and analysis of population and job growth (see Figure 14).

Figure 14: Potential Post-2030 High-Capacity Transit Corridors



Source: Wake County Transit Plan Update, Figure 15.

Equity

The plan considers how socioeconomic characteristics influence people's use of transit. The plan recognizes groups like communities of color, foreign-born residents, low-income families, and those without vehicles often have a higher propensity for transit use. A TPF is used in this plan to show the areas where people are more likely to use transit for work. For example, people below the poverty level are 4.2 times more likely, and those without cars are 15.8 times more likely to use transit for work compared to the average resident. These TPFs can be applied to population density maps to get a more accurate picture of transit demand in different areas. Raleigh has the highest transit propensity, followed by corridors like Highway 1 to Wake Forest and the Highway 264 corridor to Zebulon. However, most of Wake County outside of town centers typically has low transit propensity. This is another example of how TPF can be a useful tool to determine key transit markets.

Implementation

The plan was a comprehensive review of the original plan, incorporating feedback from stakeholders and reassessing key factors such as community priorities, funding, and project feasibility. The update extended the plan's horizon to 2030, reassessed the transit market analysis, updated capital project costs, schedules, and anticipated revenues,

revisited stakeholder priorities, and reprioritized investments. The process involved collaboration between CAMPO, local governments, transit agencies, NCDOT, and other stakeholders, with public engagement playing a crucial role.

Bicycle and Pedestrian Considerations

One of the community goals identified in the Wake Transit Plan is to provide safe and comfortable pedestrians connections to bus stops and transit stations. The plan notes that the pedestrian environment is a key factor affecting transit demand, and thus frequency of service. The plan includes capital expenditures for sidewalk access. In the FY 2025 Wake Transit Work Plan, there is $2.7M allocated to the City of Raleigh, $680,000 to the Town of Cary, $1.2M to GoTriangle, and $100,000 to NC State University for bus stop improvements, which can include sidewalk improvements, curb ramps and bike racks at or near bus stops. Wake Transit funds can also be used to construct sidewalks along Bus Rapid Transit (BRT) lines.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 8 shows the FAST 2.0 Study corridors and routes that are included in the Wake County Transit Plan Update.

Table 8: FAST 2.0 Study Corridors that Overlap with Wake Transit Plan

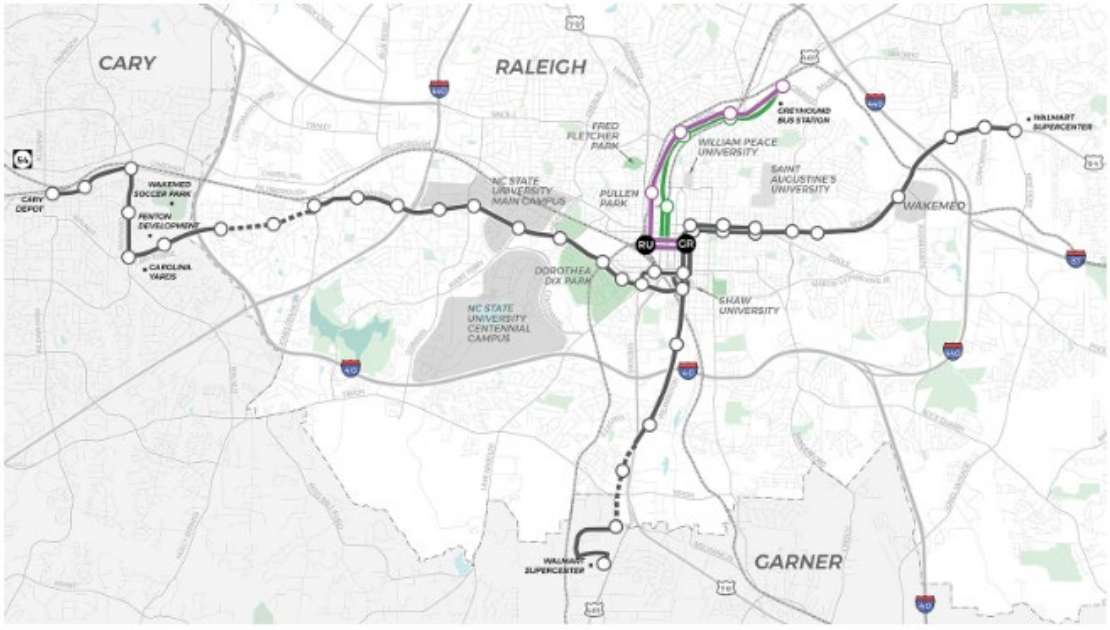
2024 FAST 2.0 Corridor/Routes	Wake Transit Plan	Wake Transit Plan Notes
1. US 70		
a. Between Durham and Raleigh	✓	Transit priority investment between Durham and Raleigh and BRT to Garner and beyond.
8. I-40 throughout the region	✓	Post-2030 high-capacity transit corridor: I-40 from Blue Ridge Road to US 540 is a Long Term Corridor.
12. US 1		
a. Raleigh/Cary to Holly Springs/Fuquay Varina	✓	Transit priority investment from Raleigh to US 64 and then a long term corridor with near term opportunity to the commuter rail in Apex.
13. S-Line Rail Corridor: for multimodal connections	✓	Classified as a near term corridor.

City of Raleigh BRT Study

The Wake County BRT system is a planned network of rapid bus transit corridors in Raleigh. The goal is to provide fast, reliable, and frequent service between downtown Raleigh and key destinations across the region, see Figure 15.

Once completed, the BRT system will feature dedicated bus lanes, frequent service, and modern, accessible stations. This is expected to alleviate traffic congestion and improve overall mobility in the region. The development of these BRT corridors aligns with the Wake County Transit Plan, which calls for approximately 20 miles of dedicated transit lanes across four key corridors.

Figure 15:Wake BRT Four Corridors



Source: City of Raleigh, BRT Projects - Bus Rapid Transit (BRT) Projects | Raleighnc.gov

The northern corridor, currently in the planning phase is proposed to connect Midtown Raleigh and Triangle Town Center, see Figure 16 and Figure 17.

Equity

Raleigh is implementing an Equitable Transit-Oriented Development (EDAT) initiative to create sustainable and equitable communities around its BRT system. The EDAT Guidebook, adopted in early 2021, provides a framework for this transformative approach.

Key Components of EDAT:

- Transit Overlay Districts (TOD): New zoning regulations have been developed to encourage mixed-use development, including affordable housing and employment opportunities, around BRT stations.
- Station Area Planning: Detailed plans are being created for each BRT corridor to identify specific development opportunities and strategies. The New Bern Avenue Corridor was the initial focus, with the Western and Southern corridors to follow.

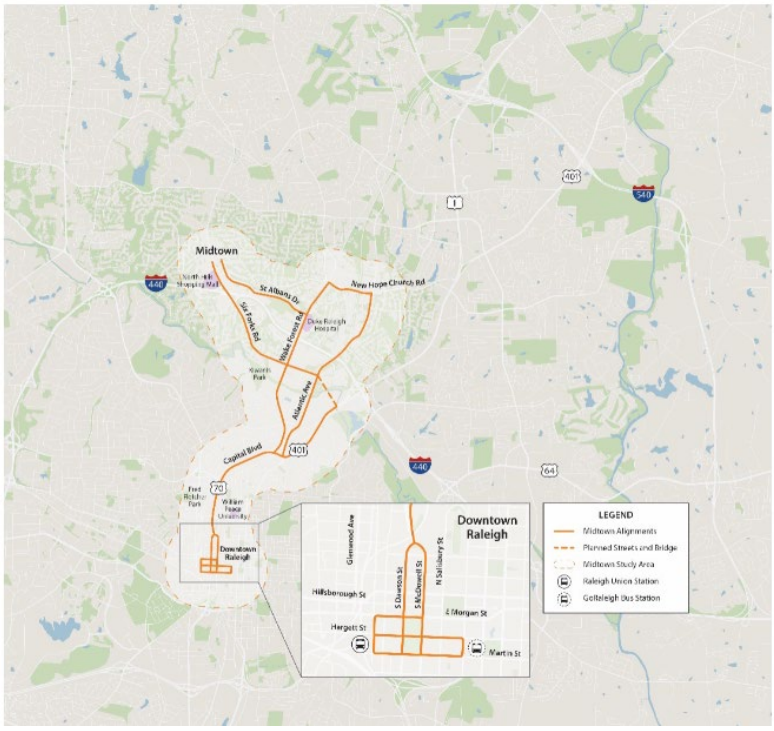
Equity Goals:

- Preserving affordability: Maintaining and enhancing housing affordability.
- Accessibility: Ensuring that existing residential areas have easy access to the BRT service.
- Minimizing displacement: Minimizing displacement caused by rising property values.
- Increasing ridership: Promoting BRT usage through convenient and attractive station areas.
- Economic development: Creating jobs and economic opportunities in BRT corridors.

Outreach

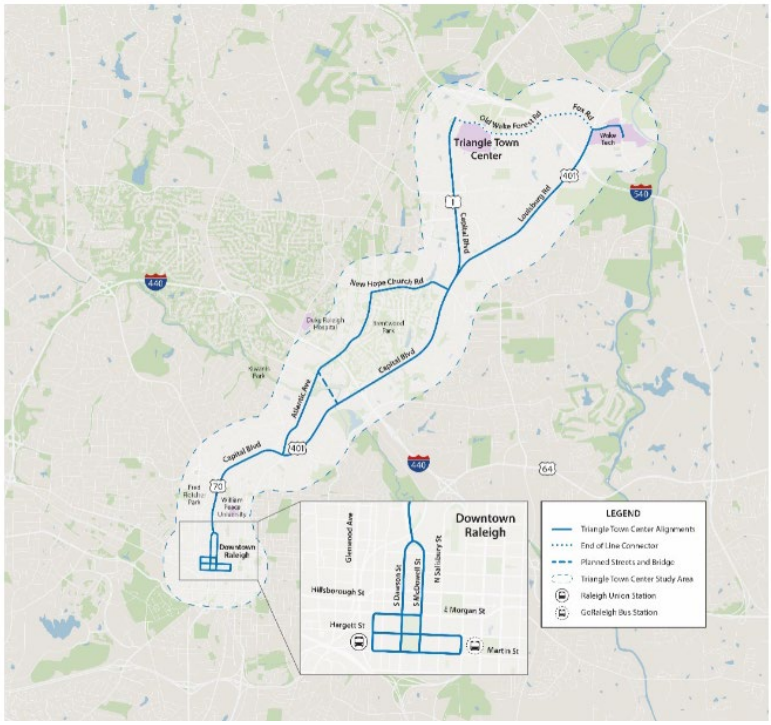
City staff actively engaged with the community to gather input on the official plan. They attended both formal and informal community discussions, recognizing that important conversations about displacement and community change were happening at the grassroots level. By monitoring social media and building relationships with community members, staff ensured that a wide range of perspectives were considered in the planning process.

Figure 16: Northen Corridor Downtown Raleigh to Midtown Study Area



Source: City of Raleigh, Wake BRT Northern Design and Construction - Wake BRT: Northern Design and Construction | Raleighnc.gov

Figure 17: Northen Corridor Downtown Raleigh to Triangle Town Center Study Area

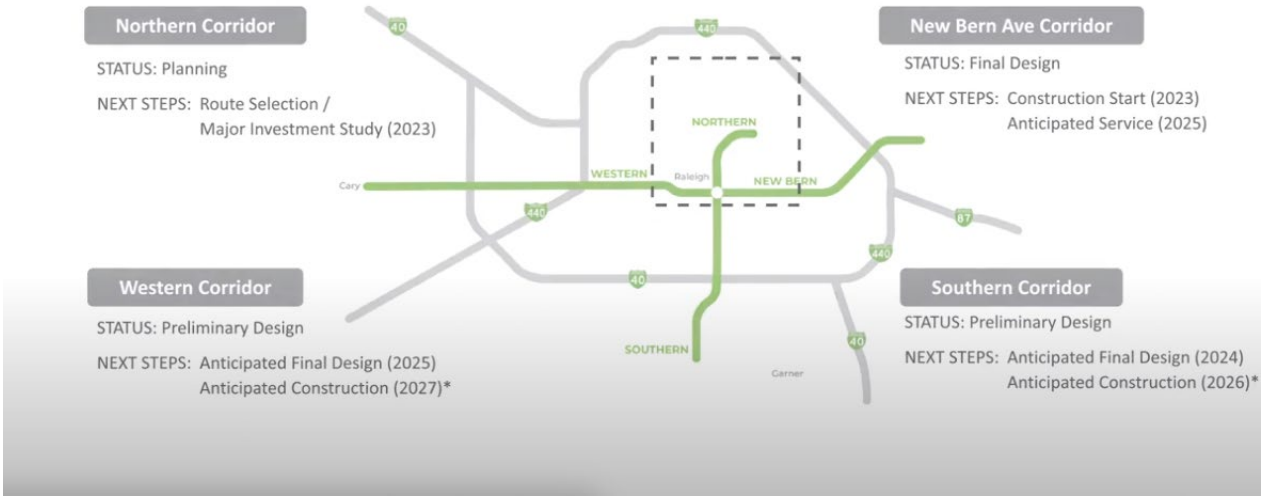


Source: City of Raleigh, Wake BRT Northern Design and Construction - Wake BRT: Northern Design and Construction | Raleighnc.gov

Implementation

Currently, the western and southern Wake corridors are in preliminary design, while the New Bern Avenue Corridor is in final design. The northern corridor, connecting Midtown Raleigh and Triangle Town Center, is in the planning phase (see Figure 18).

Figure 18: Wake BRT Program Status



Source: Wake BRT: Northern Corridor Update – Fall 2022 (Wake BRT: Northern Corridor Update – Fall 2022)

Bicycle and Pedestrian Considerations

There are currently four BRT lines planned in Raleigh in various stages of the planning, design, and construction process. Pedestrian and bicycle connections will be built along each BRT line. Station area land use planning is also taking place along the BRT corridors, which provides more details on potential pedestrian and bicycle connections to each line from the surrounding neighborhoods.

The potential priority corridors along Blue Ridge Road and Harrison Avenue would both connect with the Western BRT. The connection from Blue Ridge Road is at Western Boulevard, while the connection from Harrison Avenue is at the Cary Train Station. It will be important for these connections to be safe and inviting for people walking and biking. First mile, last mile connections were a key component of the station area planning for the Western BRT shown to the public in February 2024.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 9 shows the FAST 2.0 Study corridors and routes that are included in the City of Raleigh BRT Study Update.

Table 9: FAST 2.0 Study Corridor that Overlaps with the City of Raleigh BRT Study

2024 FAST 2.0 corridor/routes	City of Raleigh BRT study	City of Raleigh BRT study notes
8. I-40 throughout the region	✓	Southern corridor

Chapel Hill Transit Locally Preferred Alternative Report – North-South Bus Rapid Transit (NSRBT)

The Chapel Hill Transit BRT project aims to improve transit service along Martin Luther King Jr. Boulevard, South Columbia Street, and US 15-501 South. Key features of the project include:

- **Dedicated bus lanes:** 5.7 miles of exclusive bus lanes
- **New buses:** Purchase of 14 new buses
- **Transit signal priority:** Improved traffic signal timing for buses
- **Near-level boarding platforms:** Easier access for passengers
- **Bicycle and pedestrian path:** Enhanced multimodal connectivity
- **Fare-free service:** No fares will be charged for riders
- **Frequent service:** Every 7.5 minutes during peak hours, every 15 minutes off-peak, and every 20 minutes on weekends

The project will provide faster, more reliable service, connecting to key destinations like UNC-Chapel Hill, UNC Hospitals, and Downtown Chapel Hill. It is also designed to improve mobility and accessibility in low-income communities and accommodate future growth in transit demand.

Equity

Since the 2019 evaluation, the project has added a station near Downtown Chapel Hill to improve access for underserved communities. This change increased the overall project cost from $141.39 million to $183.00 million. The amount of capital investment grants (CIG) funds being requested increased from $100.00 million to $146.40 million, changing the federal share request from 70.7 to 80.0 percent.

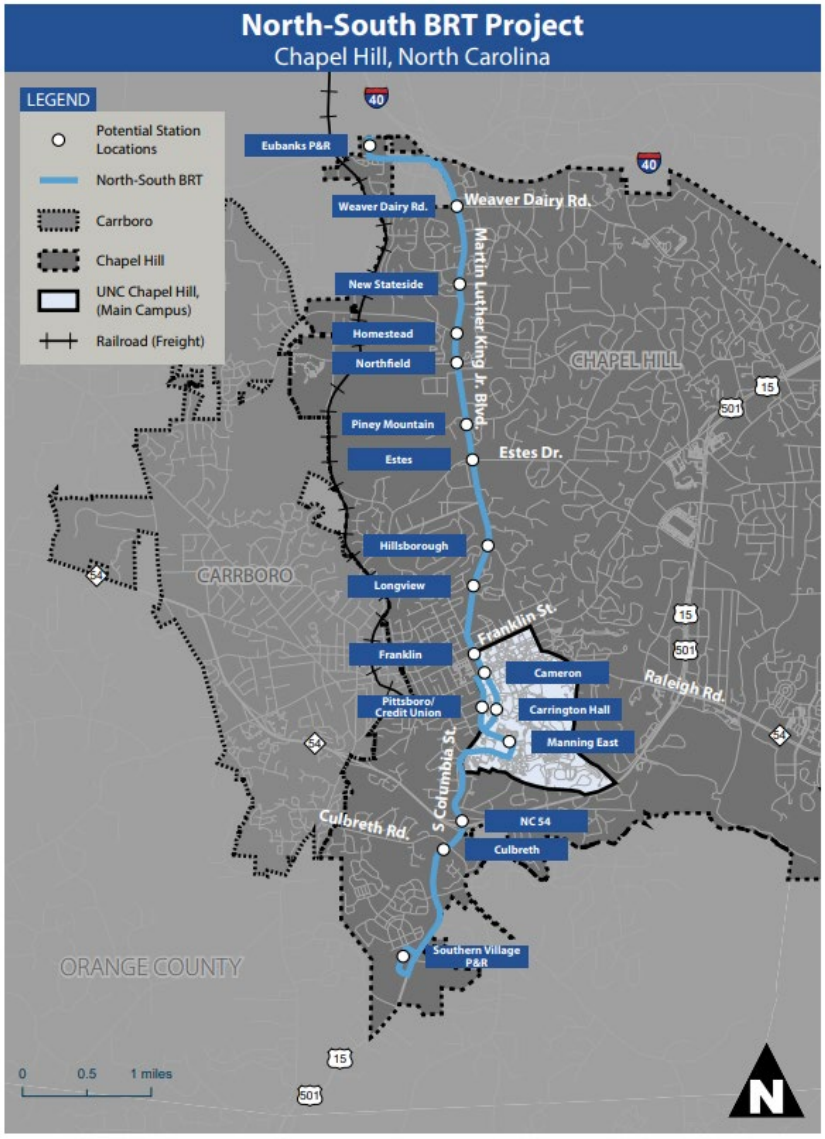
Implementation

The Chapel Hill Transit BRT project has been in development since 2016. Key milestones include:

- **LPA Selection:** In April 2016, CHT selected the preferred alternative for the project.
- **Project Development:** The project entered the development phase in November 2016.
- **Long-Range Plan Adoption:** The LPA was incorporated into the long-range transportation plan in March 2018.
- **Environmental Review:** The environmental review process was completed in March 2023.
- **Funding and Construction:** A Small Starts Grant Agreement is anticipated in 2026, with revenue service expected to begin in 2029.

Given the timeline from planning to design, to funding and construction, this BRT Project can provide an example for some local FAST 2.0 projects.

Figure 19: Chapel Hill North-South BRT Project



Source: North-South Bus Rapid Transit (NSBRT - https://www.transit.dot.gov/sites/fta.dot.gov/files/2024-03/NC-Chapel-Hill-North-South-BRT-Profile-AR25_0.pdf

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Based on outreach conducted for the FAST 2.0 Study, stakeholders identified 13 corridors and routes for consideration. The Chapel Hill North-South BRT project is proposed along Martin Luther King Jr. Boulevard. This is not one of the 13 corridors identified by the FAST 2.0 Study, stakeholders.

Durham BRT studies

City of Durham Strategic Plan

The City of Durham's Strategic Plan for FY 2024-2026 provides an understanding of the planned initiatives for the city, and the overall goals to support sustainable transportation and transit initiatives. This plan will serve as the guiding vision and action plan for the City of Durham.

The plan outlines five key goals:

- **Shared Economic Prosperity:** Promote a diverse and equitable economy benefiting all Durham residents.
- **Creating a Safer Community Together:** Foster safe neighborhoods and build trust within communities.
- **Connected, Engaged, and Inclusive Communities:** Strengthen community connections and inclusivity.
- **Innovative and High-Performing Organization:** Improve city operations and service delivery.
- **Thriving and Vibrant Environment:** Protect the environment and promote sustainability.

This plan serves as a roadmap for the city's future, guiding its efforts to create a thriving, equitable, and sustainable community for all.

Equity

Equity related objectives within the Plan highlight the need to have more inclusive involvement with local communities. These include:

- Elevate community voices in local government planning and decision making
- Make housing more affordable
- Expand resident access to digital resources & community programs & services.
- Embed Equitable Considerations in Programs, Policies, and Culture

Implementation

The plan states that transitioning the City’s vehicle and transit fleets to electric is critical to achieving the goals of the City’s Carbon Neutrality and Renewable Energy Action Plan (CNRE). This plan commits the City to achieving 50% carbon neutrality by 2030 and 100% by 2040. In addition to an electrified fleet, other planned initiatives include powering City facilities and operations with 80% renewable energy sources by 2030 and 100% by 2050.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Based on outreach conducted for the FAST 2.0 Study, stakeholders identified 13 corridors and routes for consideration. The Durham Strategic Plan does not mention any specific corridor projects.

Durham Transit Plan and Updates

The 2023 Durham County Transit Plan outlines a vision for the future of public transportation in Durham County. It prioritizes projects and improvements funded by local sales tax revenue, focusing on expanding service, improving accessibility, and enhancing the overall rider experience. The plan was developed through public input and analysis of existing conditions, aiming to create a more sustainable and equitable transportation system for the county.

The plan considers future population and employment trends to ensure that the identified transit solutions remain relevant as the county grows. The analysis highlights areas with significant future growth, including the US 15-501 corridor, downtown Durham, south Durham, northern Durham, and specific neighborhoods like Erwin Road, east Durham, South Square, Patterson Place, and areas near North Carolina Central University (NCCU). These areas are projected to have increased demand for transit services in the future.

In addition, the plan identified a need for improved pedestrian infrastructure, particularly at bus stops. A survey review of 1,324 bus stops found that only 260 had paved landings, highlighting a significant gap in accessibility for pedestrians (see Figure 17). This information will be used to prioritize improvements to pedestrian facilities and enhance the overall transit experience.

Equity

The plan prioritizes equity in both the planning process and the delivery of transit services. The plan incorporates input from historically disadvantaged communities and aims to provide accessible transit to low-income, environmental justice, and affordable housing areas. A transit propensity analysis was conducted to identify areas with higher demand for transit based on demographic factors such as race, nativity, income, and vehicle ownership. This analysis informs decisions about service expansion and improvements to ensure equitable access to transportation opportunities. The areas with the highest demand and need for transit services include the VA Hospital, Duke Hospital, Duke University's east campus, Downtown Durham, North Carolina Central University, Wellons Village, and South Square.

The plan prioritized equitable community engagement. The Engagement Ambassador program, consisting of residents from marginalized communities, played a crucial role in reaching out to diverse populations. Ambassadors conducted in-person and virtual events, distributed surveys in English and Spanish, and provided feedback on outreach strategies. Demographic data was collected to measure engagement and ensure that the plan addressed the needs of all community members. Tools like the Engagement Ambassador program can be good examples of how to engage transit dependent communities through the planning process.

Implementation

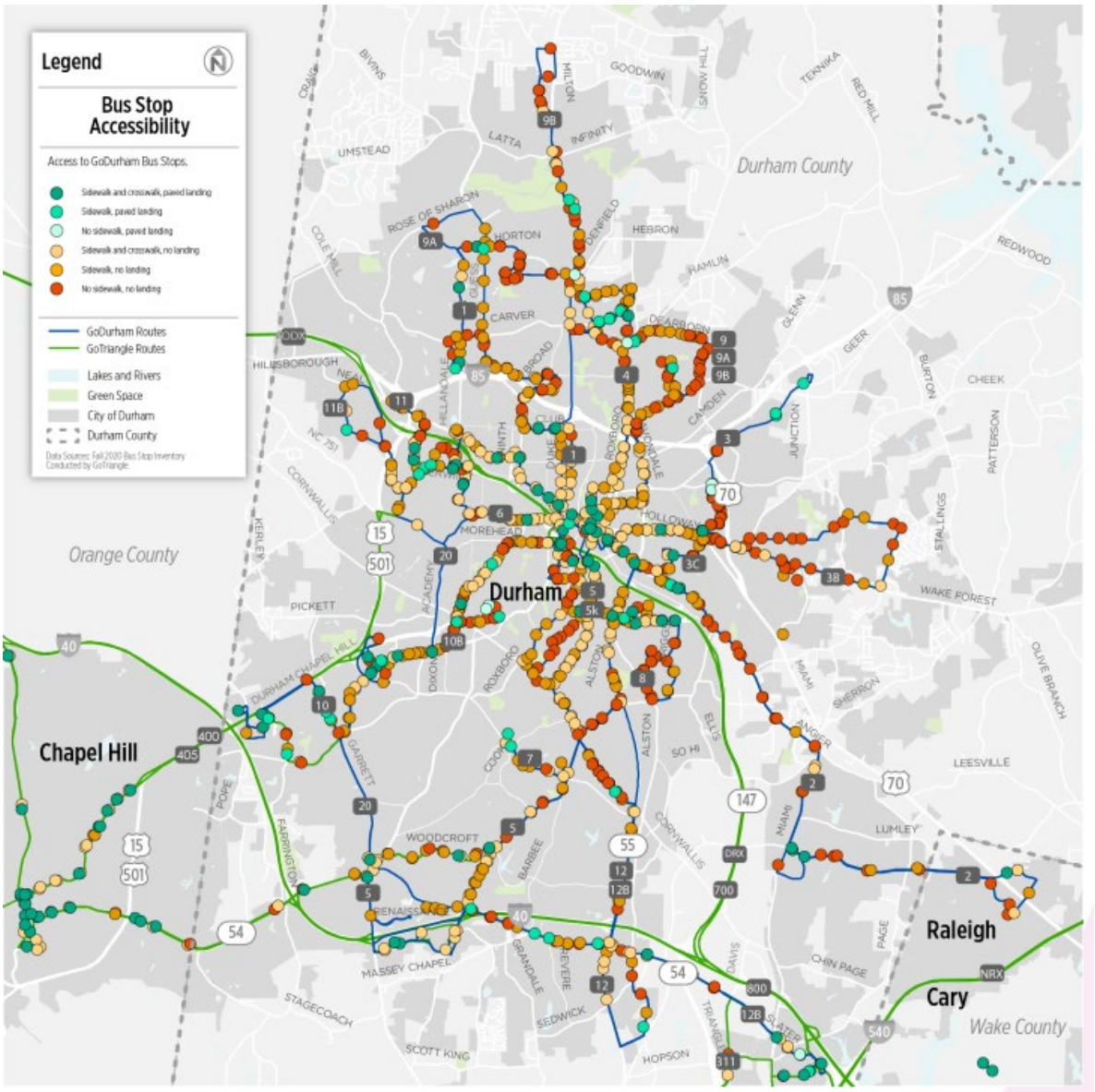
The community identified several key priorities for transit improvements in Durham County:

- **Enhanced and extended bus service:** This was the top priority for all respondents.
- **More routes and faster, more reliable bus service:** This was also a highly supported priority.
- **Bus stop improvements:** Respondents emphasized the need for better bus stops.
- **Additional funding:** If more funding becomes available, the top priority is to increase service frequency on existing routes.
- **New local bus services:** Creating new local bus services was identified as a secondary priority.

While passenger train service received some support, it was not the top priority for any group.

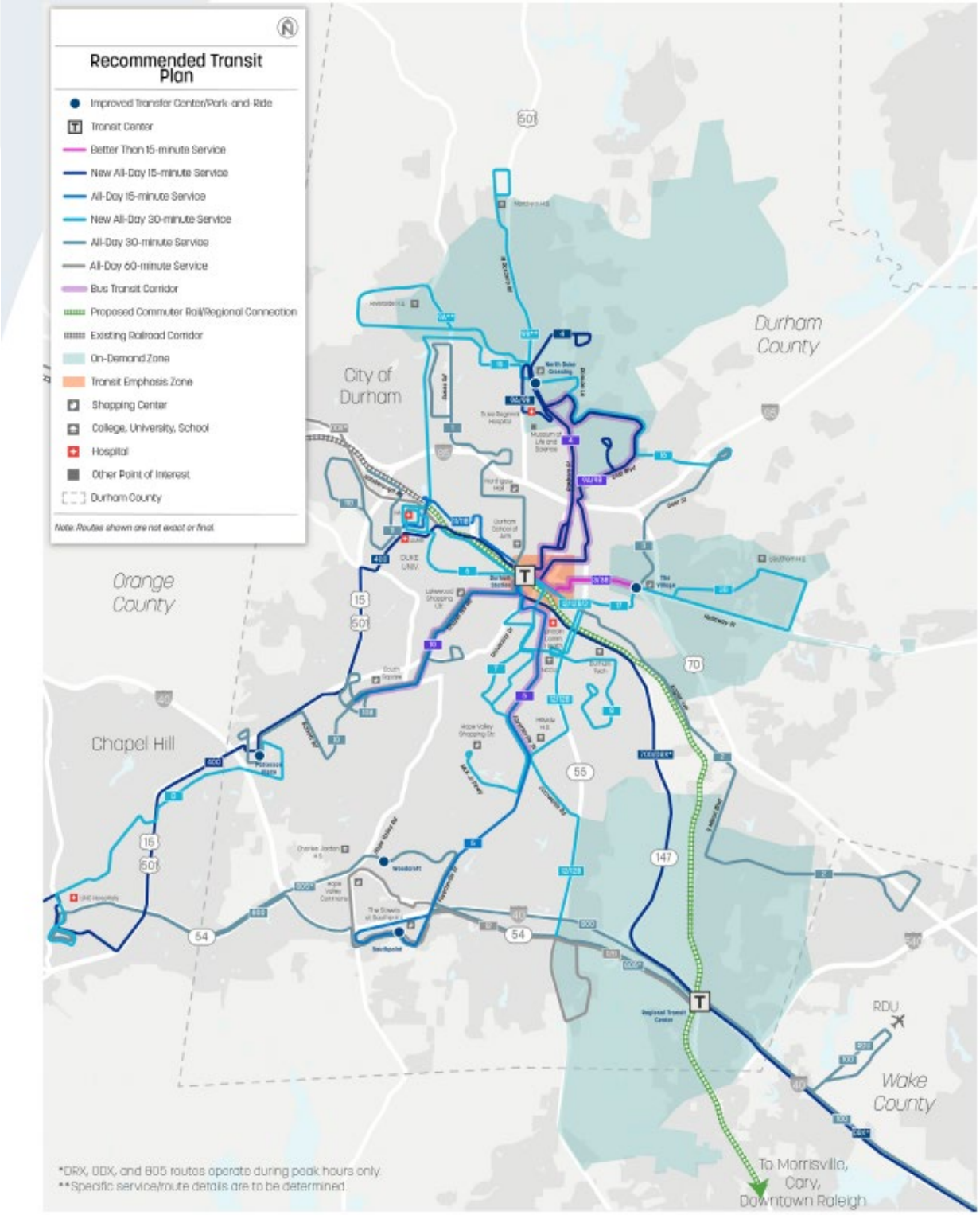
The plan outlines a vision for the county's transit system through 2040. The plan prioritizes immediate improvements, such as increased service frequency, extended Sunday service, and a new crosstown route, which are expected to be implemented within the first five years. Additionally, the plan includes funding for regional transit connections, such as commuter rail. Existing transit services will continue to be funded, except for Route 20, which is recommended for elimination due to low ridership (see Figure 21). Unfunded projects are shown in Figure 22.

Figure 20: Bus Stop Accessibility



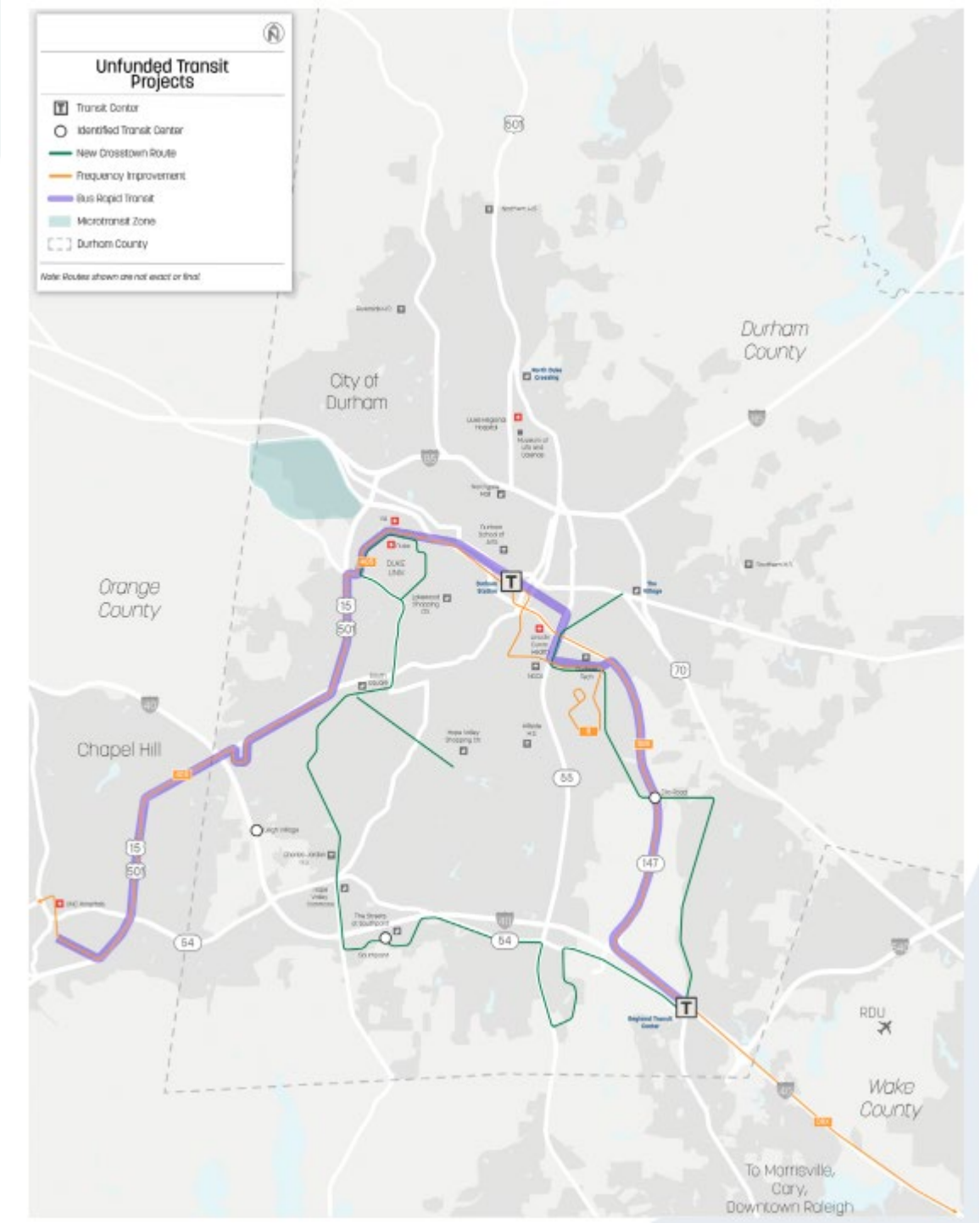
Source: 2023 Durham County Transit Plan, Figure 8.

Figure 21: Recommended Transit Plan



Source: 2023 Durham County Transit Plan, Figure 16.

Figure 22: Unfunded Transit Projects



Source: 2023 Durham County Transit Plan, Figure 18.

Bicycle and Pedestrian Considerations

The Durham County Transit Plan did an inventory of pedestrian safety and bus stop accessibility, which found that about 27% of bus stops in Durham County do not have a sidewalk. The inventory also showed which stops do not have a landing pad at the stop and which are not located near a crosswalk. Pedestrian safety and sidewalk access were consistent themes in public outreach.

The Plan contains funding for pedestrian crossing improvements at bus stops along frequent bus routes. ADA-accessible landing pads at each bus stop and sidewalk improvements to the nearest corner are also included in the Plan. The FY25 Transit Work Program includes several segments of new sidewalk construction in conjunction with bus stop improvements. There are also a few pedestrian projects that align with the potential FAST 2.0 priority corridors:

- Sidewalks and crossing improvements are programmed with the Holloway Street Transit Emphasis Corridor.
- The Village Mobility Hub (Miami/Holloway) may include accessibility improvements.
- New sidewalks and crossing treatments will be constructed to access two GoTriangle bus stops along NC-54 at Huntingridge Rd and Falconbridge Rd.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 10 shows the FAST 2.0 Study corridors and routes that are included in the Durham County Transit Plan.

Table 10: FAST 2.0 Study Corridors that Overlap with Durham County Transit Plan

2024 FAST 2.0 Corridor/Routes	Durham County Transit Plan	Durham County Transit Plan Notes
3. US 15-501 Corridor		
b. Chapel Hill to Chatham County	✓	New All-Day 15-minute Service (funded), BRT is unfunded.
4. Fayetteville Road Corridor in Durham	✓	Enhanced and new transit service. Bus transit corridor.
7. NC 54		
b. Within Durham, through RTP	✓	
8. I-40 throughout the region	✓	Enhanced and new transit service.

2022 Orange County Transit Plan Update

The 2022 Orange County Transit Plan Update allocates Orange County's Transit Tax District expenditures over the next 20 years. It includes new projects funded with the remaining revenue after accounting for existing projects. The plan prioritizes equitable distribution of transit services to support community members who rely on transit. The plan also ensures that investments support sustainable development.

Equity

The plan promotes equity in the distribution of transit services. The plan considers the diversity of residents to create equitable access for reliable and affordable transportation. This is achieved through several strategies:

- **Identifying underserved areas:** The plan identifies areas with high transit need, particularly low-income and minority communities.
- **Expanding service:** Increasing service frequency and hours on existing routes and adding new routes to underserved areas.
- **Improving accessibility:** Upgrading bus stops with amenities like shelters, benches, and real-time information displays, and ensuring accessibility for people with disabilities.
- **Encouraging transit-oriented development:** Promoting development of housing, jobs, and amenities near transit stations to create walkable, transit-friendly communities.
- **Engaging with the community:** Involving community members in the planning process to ensure their needs and priorities are reflected in the plan.

By implementing these strategies, the plan aims to create a more equitable and sustainable transportation system for all residents.

Implementation

The recommendation of transit projects was based on various factors including:

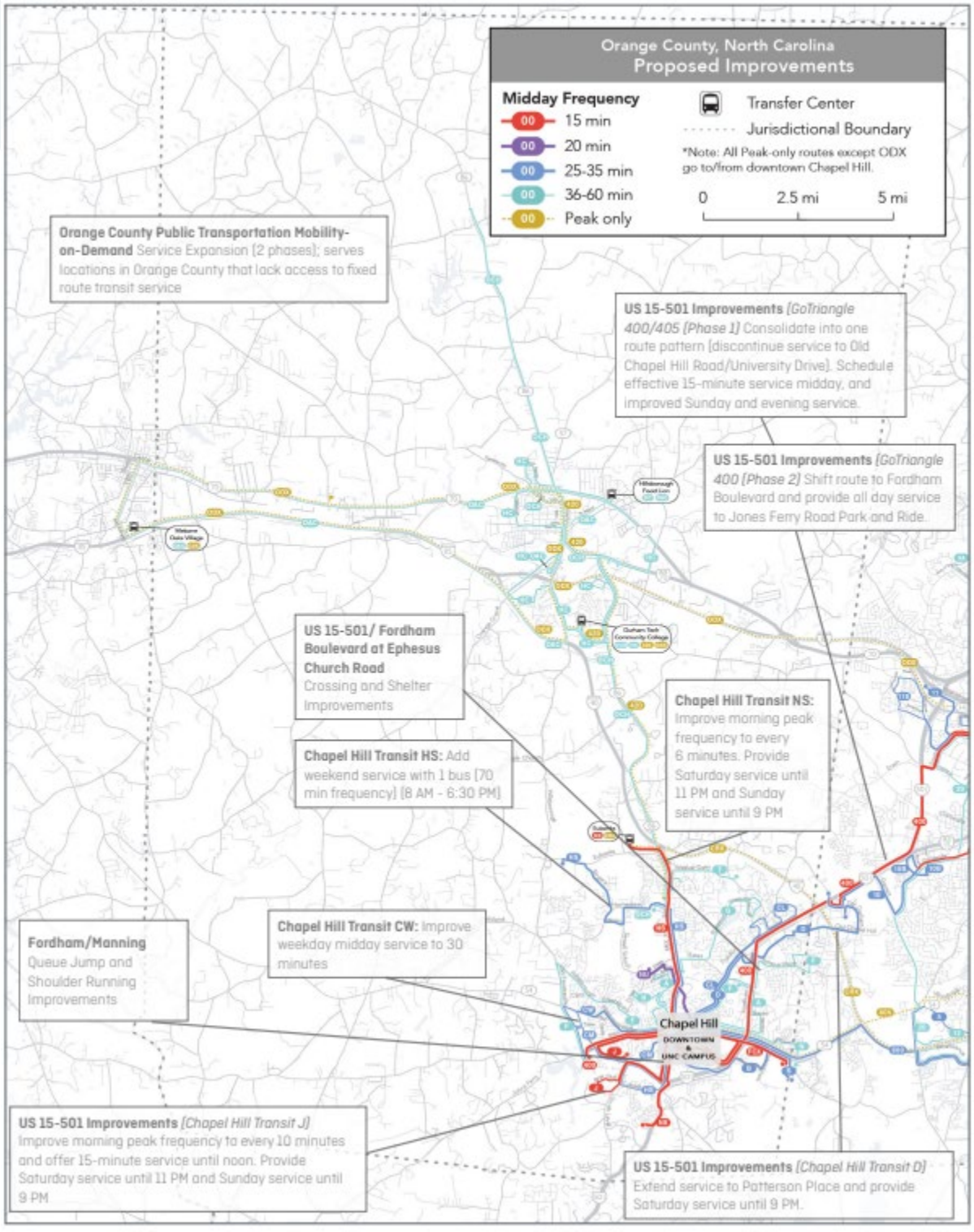
- **Transit service provider priorities:** Projects identified as important by transit operators.
- **Public need:** Projects addressing the needs and demands of the community.
- **Community values:** Projects aligning with community values such as equity, sustainability, economic prosperity, and accessibility.
- **Regional connectivity:** Projects enhancing connections between different regions.
- **Long-term vision:** Projects contributing to the long-term vision for transit in the area.

By considering these factors, the selected projects addressed the overall transit system to meet the diverse needs of the community.

Proposed projects include:

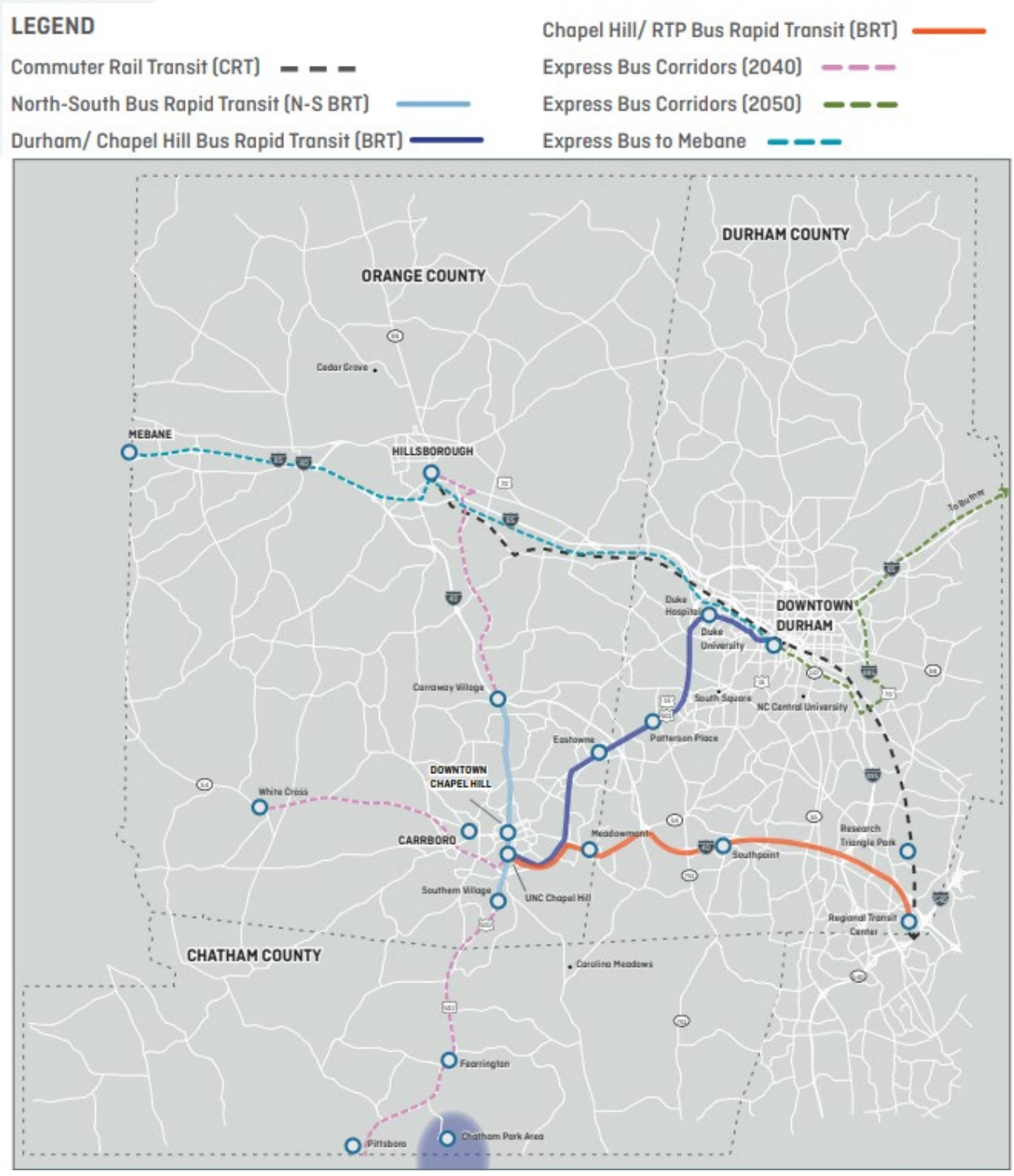
- **Expanding bus service:** Increasing frequency and service hours on existing routes, adding new routes, and improving connections to regional transit.
- **Improving bus stops and facilities:** Upgrading bus stops with shelters, benches, real-time information displays, and better lighting.
- **Enhancing accessibility:** Improving accessibility for people with disabilities, including accessible curb cuts, ramps, and level boarding buses.
- **Exploring new technologies:** Investigating the potential of emerging technologies like autonomous vehicles and micro-transit to improve mobility options.
- **Supporting transit-oriented development:** Encouraging development of housing, jobs, and amenities near transit stations to create walkable, transit-friendly communities.

Figure 23: Orange County Proposed Transit Improvements



Source: 2022 Orange County Transit Plan Update

Figure 24:Orange County Long-term investments



Source: 2022 Orange County Transit Plan Update

Bicycle and Pedestrian Considerations

The Orange Transit Plan funds several pedestrian improvements, including:

- Crossing treatments on US 15-501/Fordham Boulevard at Ephesus Church Road
- ADA upgrades at Chapel Hill Transit bus stops
- Estes Drive transit access/corridor study and bike-ped improvements in Carrboro
- Morgan Creek Greenway in Carrboro
- Sidewalks along S. Greensboro Street and W. Main Street in Carrboro
- Signalized pedestrian crossings along NC-54

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 11 shows the FAST 2.0 Study corridors and routes that are included in the Orange Transit Plan.

Table 11: FAST 2.0 Study Corridors that Overlap with Orange Transit Plan

2024 FAST 2.0 Corridor/Routes	Orange Transit Plan	Orange Transit Plan Notes
1. US 70		
b. Between Durham and Orange County	✓	36-60 midway frequency and peak only service.
3. US 15-501 Corridor		
a. Chapel Hill to Durham	✓	(GoTriangle 400/405 (Phase 1) Consolidate into one route pattern (discontinue service to Old Chapel Hill Road/University Drive). Schedule effective 15-minute service midday, and improved Sunday and evening service. (GoTriangle 400 (Phase 2) Shift route to Fordham Boulevard and provide all day service to Jones Ferry Road Park and Ride. Durham/ Chapel Hill Bus Rapid Transit (BRT) [Long-term vision]
b. Chapel Hill to Chatham County	✓	Express Bus Corridors (2040)
b. Within Durham, through RTP	✓	
8. I-40 throughout the region	✓	Chapel Hill/ RTP Bus Rapid Transit (BRT)

Central Pines COG Connected Region

NCDOT STIP

The STIP is a multi-year capital improvement document that outlines the scheduling and funding of construction projects across North Carolina, as required by federal law. The 2024-2033 STIP covers a ten-year period, with the first

five years (2024-2028) referred to as the delivery STIP and the latter five years (2029-2033) as the developmental STIP. Due to funding constraints, the STIP focuses on existing projects from the previous plan.

Equity

The program requires transportation investments to benefit all communities, including underserved and disadvantaged populations. The scoring process accounts for regional equity by evaluating how projects benefit different areas of the state. Projects that address disparities and serve underserved communities receive attention. Local input points are assigned based on community feedback, ensuring that local priorities and equity concerns are factored into the decision-making process.

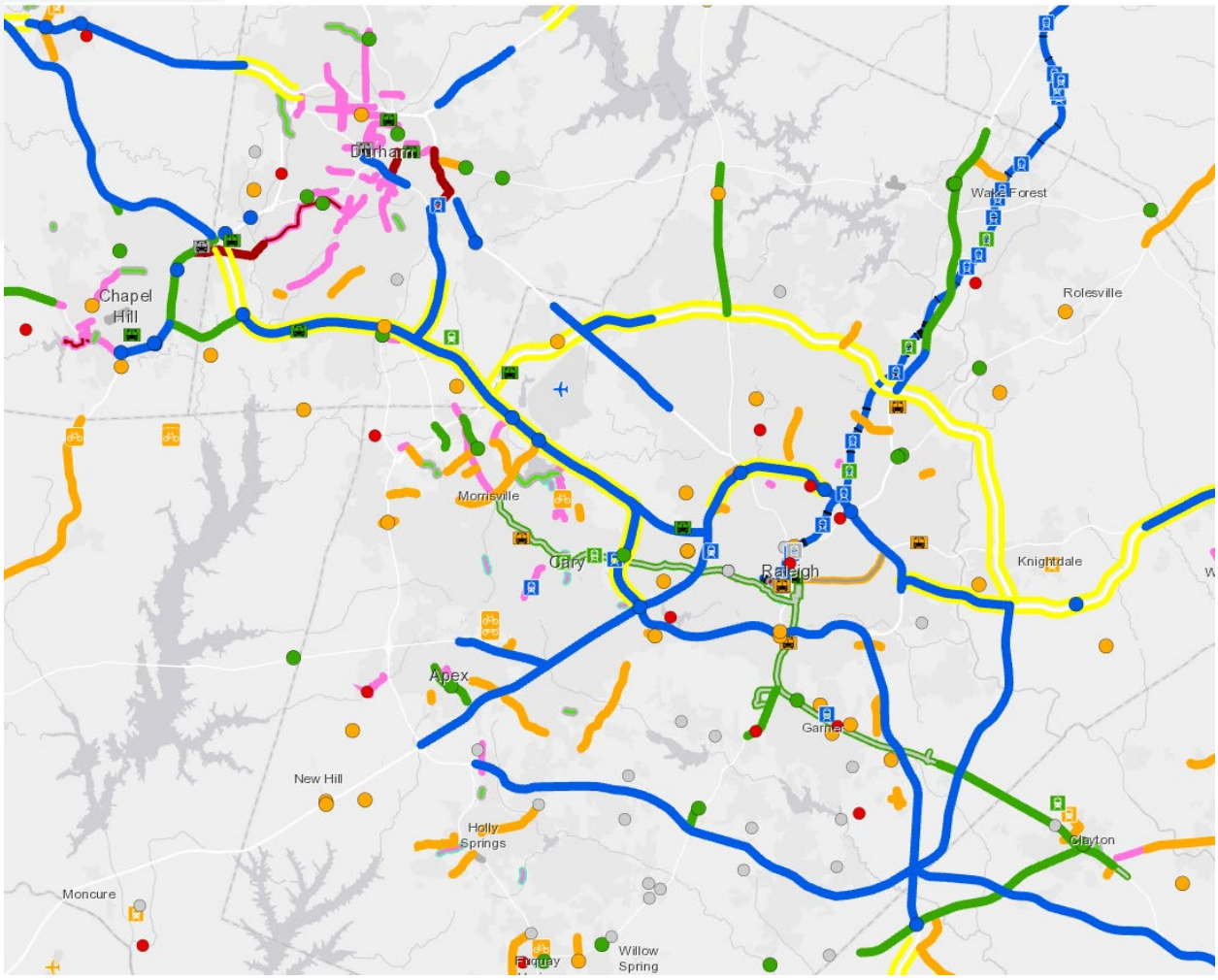
Implementation

Transit projects are prioritized using a process called Strategic Prioritization. This process involves:

- **Transportation data**: Analyzing various metrics related to transportation needs. Projects are assessed in terms of their impact on current and future transportation needs. Consideration of various transportation modes, including highways, ferries, rail, public transportation, bicycles, pedestrians, and aviation.
- **Input from local government partners and the public**: Gathering feedback to ensure community needs are met.
- **Scoring and ranking:** Projects are scored and ranked based on criteria such as congestion, benefit-cost ratio, safety, and local priorities.

The STIP projects for the region are shown in Figure 25 and the overlapping corridors and descriptions are shown in Table 12. The draft 2026-2035 STIP, is currently out for public comment, and is expected to be adopted in Summer 2025, so the status of projects shown in Table 12 are updated to reflect what is shown in the draft 2026-2035 STIP.

Figure 25: 2024-2033 STIP Exert



Source: 2024-2033 STIP - NCDOT: 2024-2033 STIP Projects Map (see link for legend and details)

Bicycle and Pedestrian Considerations

The following projects in the STIP relate to pedestrian and bicycle improvements for potential priority projects:

- Trinity Rd at Edwards Mill Rd: Upgrade traffic signal to provide pedestrian accommodations and crosswalks (HS-2405D)
- US-15/501/NC-54 from NC-86 to I-40 (U-5304): Upgrade corridor. U-5304B is just the portion of US-15/501/NC-54 between NC-86 and Raleigh Rd and is described as capacity improvements, with sidewalks, wide outside lanes, and transit accommodations. It is currently unfunded.
- NC-54 between US-15/501 and NC-55 (U-5774) is programmed for an extensive roadway upgrade, including pedestrian, bicycle, and transit improvements.
- I-885 from I-40 to NC-147 (U-5934): Add lanes, rehabilitate pavement, and prioritize the addition of transit accommodations.
- NC-54 from NC-55 to RTP limit (EB-5708): Construct sections of sidewalk on south side.
- There are several projects along I-40 from NC-86 in Chapel Hill to Trinity Rd in Raleigh. The most significant of these are I-3306, a highway widening currently under construction between NC-86 and the Durham County line, and I-6006 and I-5943 between NC-54 in Durham and Trinity Rd in Raleigh, which would convert I-40 to a

managed freeway with ramp metering and other ATM/ITS components. I-6006 is currently funded for preliminary engineering only. I-5943 is currently unfunded.

- In the Draft 2026-2035 STIP, I-6006 is removed. I-5943 remains and is noted as pavement and bridge rehabilitation along I-40 from SR 1728 (Wade Avenue) to I-440 / US 1 in Raleigh.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 12 shows the FAST 2.0 Study corridors and routes that are included in the STIP.

Table 12: FAST 2.0 Study Corridors that Overlap with the STIP

2024 FAST 2.0 Corridor/Routes	STIP	STIP Notes
1. US 70		
a. Between Durham and Raleigh	✓	U-5720: LYNN ROAD TO EAST OF SR 2095 (PAGE ROAD EXTENSION). UPGRADE TO CONTROLLED-ACCESS FACILITY AND CONVERT SR 1811 AT-GRADE INTERSECTION TO INTERCHANGE. U-5518: WEST OF SR 3067 (T.W. ALEXANDER DRIVE) TO I-540 IN RALEIGH. UPGRADE ROADWAY TO IMPROVE CAPACITY, SAFETY AND TRAFFIC OPERATIONS INCLUDING INTERCHANGES AT VARIOUS LOCATIONS. [Construction 2030].
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓	I-5993: I-40, US 15 / US 501 TO EAST OF NC 147. PAVEMENT REHABILITATION.
3. US 15-501 Corridor		
a. Chapel Hill to Durham	✓	U-5717: SR 1116 (GARRETT ROAD) IN DURHAM. CONVERT AT-GRADE INTERSECTION TO INTERCHANGE. B-5674: REPLACE BRIDGE 310080 OVER SR 1308 (CORNWALLIS ROAD) IN DURHAM.
b. Chapel Hill to Chatham County		
4. Fayetteville Road Corridor in Durham		
7. NC 54		
a. Chapel Hill to Durham	✓	U-5774B: WEST OF US 15 / US 501 IN ORANGE COUNTY TO EAST OF SR 1110 (BARBEE CHAPEL ROAD) IN DURHAM COUNTY. UPGRADE ROADWAY CORRIDOR. [Not funded]
b. Within Durham, through RTP	✓	EB-5708: NC 55 TO RESEARCH TRIANGLE PARK WESTERN LIMIT IN DURHAM. CONSTRUCT SECTIONS OF SIDEWALK ON SOUTH SIDE. (Construction Year 2025)
8. I-40 throughout the region	✓	I-5966: SR 1002 (AVIATION PARKWAY) TO SR 1652 (HARRISON AVENUE) IN CARY. CONSTRUCT AUXILIARY LANES IN BOTH DIRECTIONS. [Construction year 2032]

2024 FAST 2.0 Corridor/Routes	STIP	STIP Notes
9. I-540: Northern and Southern	✓	Northern (I-40 to I-495 / US 64 / US 264 IN KNIGHTDALE): Pavement Rehabilitation [Construction Year: I-5998, 2026; I-5999, 2024; I-5945, 2031.] Southern (NC 55 BYPASS to I-87 / US 64 / US 264 BYPASS): CONSTRUCT FREEWAY ON NEW LOCATION. [Construction Year: R-2721A, 2019; R-2721B, 2019; R-2829A, 2025; R-2829B, 2025).
10. Capital Boulevard	✓	U-5307A: I-540 TO NORTH OF SR 2006 (DURANT ROAD) IN RALEIGH. [Construction Year: 2031] U-5307B: NORTH OF SR 2006 (DURANT ROAD) IN RALEIGH TO NORTH OF SR 2045 (BURLINGTON MILLS ROAD) IN WAKE FOREST. U-5307C: NORTH OF SR 2045 (BURLINGTON MILLS ROAD) TO SOUTH OF NC 98 BUSINESS IN WAKE FOREST. U-5307D: SOUTH OF NC 98 BUSINESS TO SR1909 (PURNELL ROAD) / SR 1931 (HARRIS ROAD) IN WAKE FOREST.
11. US 64: Raleigh west to Pittsboro		
13. S-Line Rail Corridor: for multimodal connections	✓	P-5753AA: RALEIGH UNION STATION TO NC 98 - S-LINE RAIL IMPROVEMENTS

DCHC /CAMPO MTP

The Connect 2050 Metropolitan Transportation Plan is a long-range plan for the Research Triangle Region. It outlines transportation projects and strategies for the next 30 years, focusing on improving mobility, reducing congestion, and enhancing air quality. The plan prioritizes a variety of transportation modes, including roads, public transit, bicycles, and pedestrians, with the goal of creating a sustainable and equitable transportation system for the region. It aims to address challenges like population growth, changing travel patterns, and climate change, and ensure that the region's transportation system can meet future needs.

The plan contains the MTPs for the two organizations charged with transportation decision-making in the Research Triangle Region: CAMPO and the DCHC MPO. These organizations, and the areas for which they are responsible, are commonly called “MPOs.”

Equity

The plan commits the region to transportation services and development patterns that contribute to a more equitable and sustainable place, where people can successfully pursue their daily activities. The plan includes Ensure Equity and Participation as a goal with the following objectives:

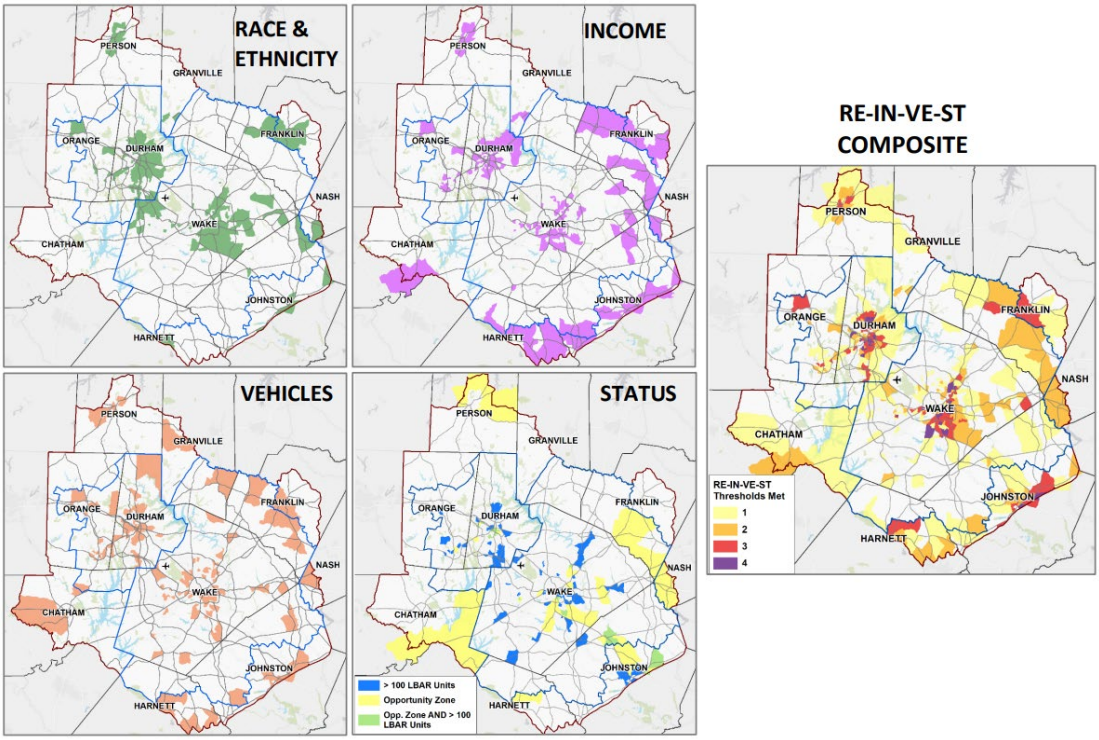
- Ensure that transportation investments do not create a disproportionate burden for any community.
- Enhance public participation among all communities. Ensure equitable public participation among communities of concern.

The MPOs use a similar set of criteria to identify neighborhoods that would benefit most from transit investments. These neighborhoods, termed "REINVEST Neighborhoods," are selected based on four factors:

- **Race/Ethnicity:** Areas with a significant population of BIPOC individuals.
- **Income:** Neighborhoods with low-income households.
- **Vehicle Ownership:** Areas with a high proportion of households without vehicles.
- **Status:** Neighborhoods designated as Opportunity Zones or having a high number of affordable housing units.

By identifying these REINVEST neighborhoods, the MPOs can target transit investments in areas with the greatest need and potential impact. See Figure 26.

Figure 26: REINVEST neighborhoods



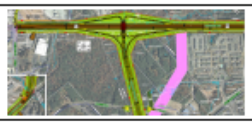
Implementation

The plan anticipates that the region will match its historic focus on roads with a sustained commitment to high quality transit service as well, emphasizing five critical components:

- Connecting the region's main centers with fast, frequent, reliable rail or bus services;
- Offering transit service to all communities that have implemented local transit revenue sources;
- Providing frequent transit service in urban travel markets;
- Launching on-demand “microtransit” services where they can provide superior service, and
- Supplying better transit access, from "first mile/last mile" circulator services within key centers to safe and convenient cycling and walk access to transit routes.

The multimodal projects proposed by the plan are shown in Figure 27.

Figure 27: DCHC /CAMPO MTP Multimodal Projects

North Carolina Railroad Corridor Passenger Rail (1st phase from Durham to Garner or Clayton)		Regional Transit Center Relocation (serving regional buses, future BRT and future passenger rail)	
Triangle Bikeway along I-40 (NC 54 in Chapel Hill to I-440 in Raleigh)		Wake-Durham Bus Rapid Transit (extension of Wake Western Corridor BRT from Cary to RTP HUB)	
US 70 Durham: modernization Wake: freeway conversion	70	I-40 Durham: modernization Wake: managed freeway	INTERSTATE 40
Aviation Parkway Durham: modernization Wake: new alignment		Triangle Transportation Demand Management Program	TRIANGLE TRANSPORTATION CHOICES

Source: Connect 2050 Metropolitan Transportation Plan

The plan includes a new emphasis on transit investment, but it envisions significant additional roadway investment as well, focusing on “complete corridors” that incorporate provisions for transit and active transportation travel as part of roadway improvements. See Figure 28 and Figure 29 for roadway projects list.

Figure 28: DCHC MPO Major Highway Projects

DCHC MPO Major Roadway Projects List (estimated cost > $100 million) and All Projects Map

Durham Chapel Hill-Carrboro MPO		
2021-30	**2031-40**	**2041-50**
East End Connector linking US 70 to NC 147 (Durham Freeway) to form I-885*	US 15-501 modernization (South Columbia in Chapel Hill to Cameron Blvd. in Durham)	
I-40 widening in Orange County (US 15-501 to I-85)	I-40/NC 54 Interchange and NC 54 modernization (TIP# U-5774)	
	US 70 modernization in Durham County (Lynn Road to Wake County)	
	I-85 widening in Orange County (Orange Grove Rd. to Sparger Road.)	
	US 15-501 Synchronized Street (Smith Level Road to US 64 in Chatham Co.)	
	I-40 managed roadway modernization (NC 54 to Wake County; links to CAMPO I-40 project)	
	NC147 modernization (I-40 to Swift Ave.)	

* funded in prior years but open to traffic in indicated time period

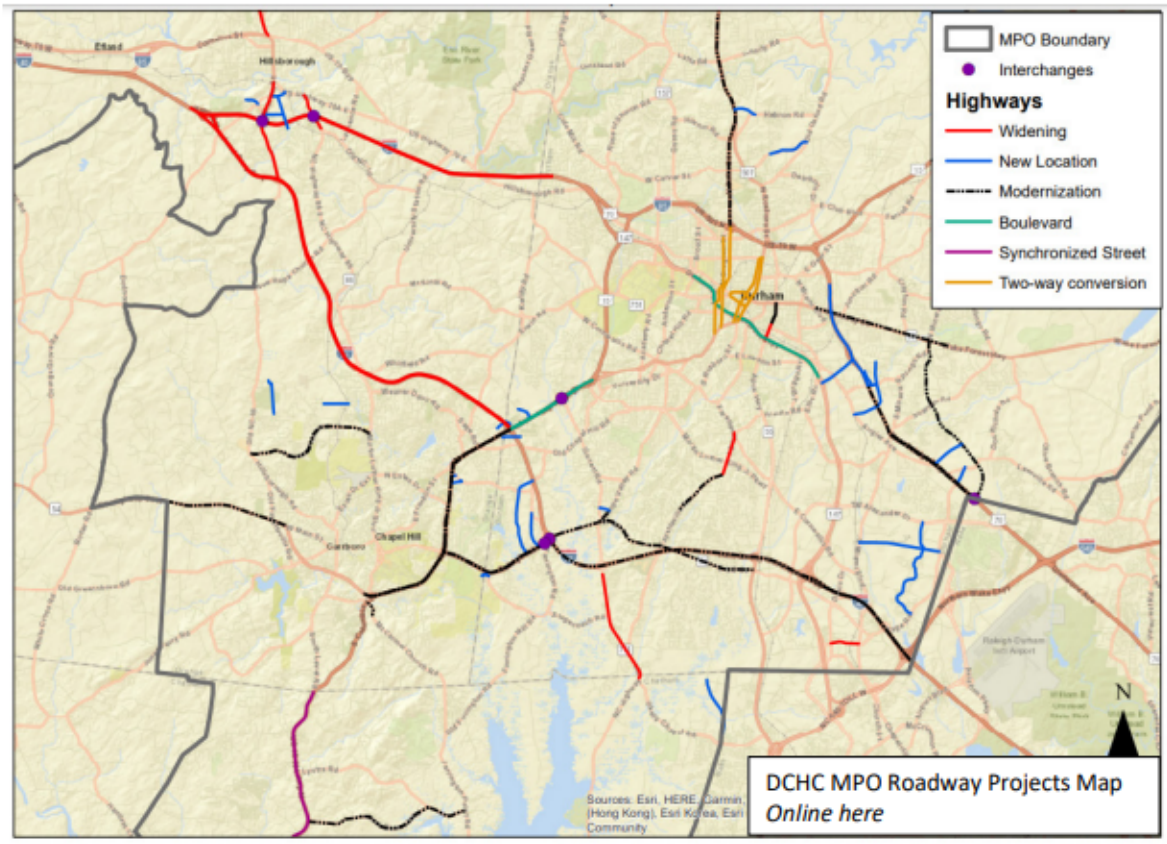
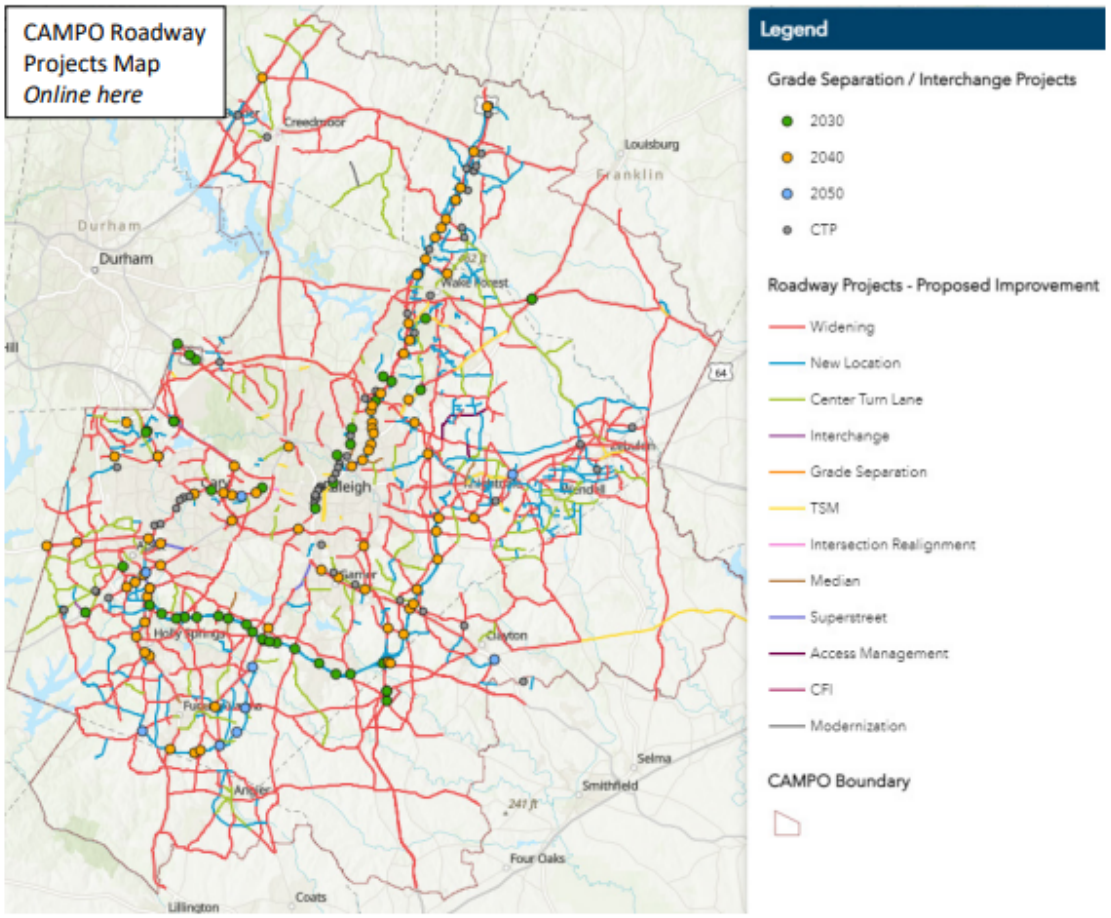


Figure 29: CAMPO Major Roadway Projects

CAMPO Major Roadway Projects List and All Projects Map

Capital Area MPO		
2021-30	**2031-40**	**2041-50**
I-40 widened from Wade Ave. to Lake Wheeler Road	I-40 widened from I-440 to NC 42 in Johnston County	I-87 widened from US 64 Bus to US 264
I-440 widened from Wade Avenue to Crossroads	I-87 widened from I-440 to US 264	NC 210 widened from Angier to Lassiter Pond Rd.
I-40 widened from I-440 to NC 42 in Johnston County	US 1 widened south from US 64 to NC 540	NC 50 widened from NC 98 to Creedmoor
US 64 W corridor improvements from US 1 to Laura Duncan Rd.	Managed lanes added to I-540 (Northern Wake Expressway) from I-40 to US 1	US 401 widened from Fuquay-Varina to MPO boundary in Harnett County
NC 540 toll road extended from Holly Springs to I-40 south of Garner	NC 540 completed as a toll road from Holly Springs to I-87/US 64 bypass	NC 96 widened from US 1 to NC 98
US 70 widened and access management from I-540 to Durham/Wake Co. Line	I-40 Managed lanes added to I-40 from Durham County line to MPO boundary in Johnston County	NC 56 widened from I-85 to MPO boundary in Franklin County



Bicycle and Pedestrian Considerations

The following projects in the Connect 2050 Plan (that are not listed in the STIP) may relate to pedestrian and bicycle improvements for the potential priority projects:

- Trinity Rd from Edwards Mill Rd to Wade Park Blvd: Road widening. It is not clear if pedestrian and bicycle improvements will be made. The Horizon Year is 2030.
- Blue Ridge Connector, a project to construct a protected bike lane along Blue Ridge Road. It is not clear which segment of Blue Ridge Rd this project refers to. The Horizon Year is 2050.
- Trinity Road: Construct a multi-use path. It is not clear which segment of Trinity Rd this project refers to. The Horizon Year is 2040.
- Blue Ridge Rd grade separation under the railroad tracks. This project is currently under construction and includes pedestrian and bicycle improvements.
- North Harrison Ave from Reedy Creek Rd and I-40: Road widening. It is not clear if pedestrian and bicycle improvements will be made. The Horizon Year is 2050.
- Holloway St (NC-98) from Miami Blvd to Nichols Farm Dr: Modernization. It is not clear if pedestrian and bicycle improvements will be made beyond what was constructed for the East End Connector project. The Horizon Year is 2050.
- Ramseur St from Chapel Hill St to Roxboro St, Roxboro St from Lakewood Ave to Markham Ave, and Duke St from Lakewood Ave to I-85: Two-way street conversion. It is not clear if pedestrian and bicycle improvements will be made. The Horizon Year is 2040.
- NC-54 bridge over NC-147: Widen and buffer bicycle/pedestrian side path on NC-54 bridge over NC-147 (now NC-885). The Horizon Year is 2030.
- Chapel Hill St from Ramseur St to Swift Ave: Construct buffered bicycle lanes. Horizon Year: 2030
- Liberty St from Dillard St to Miami Blvd: Construct bicycle lanes. The Horizon Year is 2030.
- Holloway St from Gary Ave to Guthrie Ave: Construct sidewalk. The Horizon Year is 2030.

Overlap Corridors and Routes Identified by Stakeholders for FAST 2.0

Table 13 shows the FAST 2.0 Study corridors and routes that are in Connect 2050.

Table 13: FAST 2.0 Study Corridors that Overlap with Connect 2050

2024 FAST 2.0 Corridor/Routes	CONNECT 2050	CONNECT 2050 Notes
1. US 70		
a. Between Durham and Raleigh	✓	DCHC MPO: US 70 modernization in Durham County (Lynn Road to Wake County) [2031-40]
b. Between Durham and Orange County	✓	DCHC MPO: East End Connector linking US 70 to NC 147 (Durham Freeway) to form I-885. [Funded in prior years but open to traffic in 2021-30]
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓	DCHC MPO: I-40 managed roadway modernization (NC 54 to Wake County; links to CAMPO I-40 project) [2031-40]
3. US 15-501 Corridor		

2024 FAST 2.0 Corridor/Routes	CONNECT 2050	CONNECT 2050 Notes
a. Chapel Hill to Durham	✓	DCHC MPO: US 15-501 modernization (South Columbia in Chapel Hill to Cameron Blvd. in Durham) [2031-40]
b. Chapel Hill to Chatham County	✓	DCHC MPO: US 15-501 Synchronized Street (Smith Level Road to US 64 in Chatham Co.) [2031-40]
8. I-40 throughout the region	✓	DCHC MPO: I-40/NC 54 Interchange and NC 54 modernization (TIP# U-5774) and I-40 managed roadway modernization (NC 54 to Wake County; links to CAMPO I-40 project) [2031-40] CAMPO: I-40 widened from Wade Ave. to Lake Wheeler Road and I-40 widened from I-440 to NC 42 in Johnston County [2021-30] CAMPO: I-40 widened from I-440 to NC 42 in Johnston County and I-40 Managed lanes added to I-40 from Durham County line to MPO boundary in Johnston County [2031-40]
9. I-540: Northern and Southern	✓	CAMPO: NC 540 toll road extended from Holly Springs to I-40 south of Garner [2021-30] CAMPO: NC 540 completed as a toll road from Holly Springs to I-87/US 64 bypass [2031-40]
10. Capital Boulevard		
11. US 64: Raleigh west to Pittsboro	✓	US 64 W corridor improvements from US 1 to Laura Duncan Rd [2021-30]
12. US 1		
a. Raleigh/Cary to Holly Springs/Fuquay Varina	✓	CAMPO: US 1 widened south from US 64 to NC 540 [2031-40]

Summary

Based on the review of relevant documents, plans, and projects for FAST 2.0, there are several common themes which overlapped in their planning, equity approach, and implementation of transit and transportation initiatives. Overall, all plans and reports primarily revolved around improving transportation infrastructure and addressing mobility challenges from a community as well as regional perspective within the Research Triangle region of North Carolina.

Here are key themes that emerged from the plans and reports:

- **Enhanced Public Transit:** Emphasize the importance of improving public transit systems, including BRT, BOSS systems, and RED lanes.
- **Accessibility and Equity:** Highlight the need to improve accessibility for all residents, particularly those in disadvantaged communities. This includes addressing equity in the planning and implementation of transportation projects.

- **Regional Connectivity:** Recognize the importance of improving regional connectivity through investments in transportation infrastructure. This includes expanding and enhancing highway networks, as well as improving intermodal connections between different modes of transportation.
- **Sustainable Transportation:** Promote sustainable transportation solutions, such as reducing reliance on single-occupancy vehicles, encouraging the use of public transit, and promoting active transportation (walking and biking).
- **Data-Driven Decision Making:** Utilize data-driven approaches to identify transportation needs, evaluate alternative solutions, and prioritize investments. This includes using transit priority tools like TPF, travel demand modeling, geographic information systems (GIS), and other advanced analytical tools.

By addressing these themes, FAST 2.0 can create a more efficient, equitable, and sustainable transportation system for the Research Triangle region.

Given the extensive planning efforts conducted by cities and agencies within the Research Triangle region, it is important to recognize any connection or overlap, particularly at a regional or corridor level. To recognize where the 13 potential corridor and routes identified by FAST 2.0 stakeholders overlaps with previous established projects/plans, Table 14 highlights the areas where these occur. As shown in the table, there are several areas of alignment between these projects/corridors.

Table 14: FAST 2.0 Study Corridors that Overlap with the Reviewed Plans and Studies

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
1. US 70										
a. Between Durham and Raleigh			✓		✓				✓	✓
b. Between Durham and Orange County								✓		✓
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓								✓	✓
3. US 15-501 Corridor										
a. Chapel Hill to Durham	✓							✓	✓	✓
b. Chapel Hill to Chatham County							✓	✓		✓
4. Fayetteville Road Corridor in Durham							✓		✓	

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
5. NC 98 Corridor: Between Durham and Wake County										
6. VinFast Site in Chatham County										
7. NC 54										
a. Chapel Hill to Durham									✓	
b. Within Durham, through RTP				✓			✓	✓	✓	
8. I-40 throughout the region	✓	✓			✓	✓	✓	✓	✓	✓
9. I-540: Northern and Southern									✓	✓
10. Capital Boulevard									✓	
11. US 64: Raleigh west to Pittsboro		✓							✓	✓
12. US 1										
a. Raleigh/Cary to Holly Springs/Fuquay Varina					✓					✓
b. Long term US 1 to towards Sanford and Pinehurst										
13. S-Line Rail Corridor: for multimodal connections					✓				✓	

Following additional outreach efforts in December 2024, FAST 2.0 stakeholders identified new corridors. To comprehensively analyze these new corridors, Table 14 has been expanded to include them. Additionally, FAST 2.0 priority corridors are highlighted within the table. The amended table, presented in Appendix A, reveals several areas of alignment and overlap between these new corridors and previously identified projects/plans.

Appendix A

FAST 2.0 Study Corridors that Overlap with the Reviewed Plans and Studies

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
1. US 70										
a. Between Durham and Raleigh			✓		✓				✓	✓
b. Between Durham and Orange County								✓		✓
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓								✓	✓
3. US 15-501 Corridor										
a. Chapel Hill to Durham	✓							✓	✓	✓
b. Chapel Hill to Chatham County							✓	✓		✓
4. Fayetteville Road Corridor in Durham							✓		✓	
5. NC 98 Corridor: Between Durham and Wake County										
6. VinFast Site in Chatham County										
7. NC 54										
a. Chapel Hill to Durham									✓	
b. Within Durham, through RTP				✓			✓	✓	✓	
8. I-40 throughout the region	✓	✓			✓	✓	✓	✓	✓	✓
9. I-540: Northern and Southern									✓	✓
10. Capital Boulevard									✓	
11. US 64: Raleigh west to Pittsboro		✓							✓	✓

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
12. US 1										
a. Raleigh/Cary to Holly Springs/Fuquay Varina	✓	✓			✓					✓
b. Long term US 1 to towards Sanford and Pinehurst	✓	✓								
13. S-Line Rail Corridor: for multimodal connections					✓				✓	
13. I-85 in Durham County	✓	✓							✓	
14. I-440	✓	✓			✓				✓	✓
15. I-40: From I-87 to Johnston County line		✓							✓	✓
16. I-40: From NC 54 to MLK in Chapel Hill		✓							✓	✓
17. I-40: From I-85 to Alamance County line	✓	✓						✓	✓	
18. US 1: From I-540 to Sanford	✓*	✓								
19. US 64: Pittsboro to Siler City										
20. I-87: N Ardendell Ave to I-440		✓							✓	✓
21. I-540: From I-40 to I-87		✓							✓	
22. US 1: Raleigh to Franklinton		✓			✓				✓*	✓*
23. US 70: **B**etween Mebane and Hillsborough							✓	✓		✓
24. NC 86: From Eubanks Road to Hillsborough	✓							✓		

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
25. Miami Blvd: Between US 70 and NC 54	✓						✓			
26. NC 55: From NC 147 to Fuquay Varina		✓	✓*							✓*
27. NC 42: From Clayton to Fuquay Varina		✓								
28. NC 54: To Orange / Alamance County line starting at NC 86									✓*	
FAST 2.0 Priority Corridors										
30. Trinity Road: Blue Ridge Rd to I-40										
31. I-885: NC 98 to I-40										
32. Harrison Avenue/Kildare Farm: I-40 to US 64					✓					✓
33. NC 54: Miami Blvd to I-40	✓	✓								
34. NC 54: I-40 to US 15-501	✓	✓*			✓*			✓*	✓*	✓*
35. I-40: Trinity Rd to NC 86	✓*	✓			✓*		✓*	✓*	✓	✓*
36. Miami Boulevard: NC 54 to I-40	✓						✓*			
37. Blue Ridge Road: Western Blvd to Trinity Rd										
38. Concept Corridor BRT: RDU Airport to US 70										

Note: * Only a portion of the corridor segments are included in the noted plans or studies.

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Appendix C: Equity Plan Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

EQUITY PLAN MEMO

February 2025

CONTENTS

Introduction

The purpose of this memo is to demonstrate how the regional network and priority corridors, part of the Phase 2 Freeway, Arterial, Street and Tactile (FAST) Study, considered equity when choosing corridors that are a part of the unique networks. Understanding the distribution of social economic markers such as vehicles per household, age, English proficiency, disability status, income, and race helps to identify where transit can be beneficial in providing essential connections.

Part of this analysis looked at tools and indices developed by North Carolina Department of Transportation (NCDOT) and the Metropolitan Planning Organizations (MPOs) to determine which populations or areas can benefit the most from transit investments. This included two indices, the Transportation Disadvantaged Index (TDI) scores, and the Environmental Justice (EJ) Index, developed by NCDOT to "illustrate the disproportionate impact transportation barriers have on communities of color". The analysis used NCDOT's new source data for these indices, the U.S. Census 2016-2020 5-Year American Community Survey (ACS) at the block group level, to visualize individual equity indicators.

The Equity Indicators evaluate the concentrations of the following populations throughout the study area:

- **BIPOC (Black, Indigenous, Persons of Color)** – the composite of racial and ethnic minorities combined, and includes Black, Hispanic, Asian, Pacific Islander, American Indian, and Multi-race populations.
- **Low-Income** – individuals having incomes below 150% of the federal poverty line.
- **Zero Car Households** - households without access to a personal vehicle for travel.
- **Senior** – individuals who are at least 65 years of age.
- **LEP (Limited English Proficiency)** – populations who do not speak English as their primary language, including those who have a limited ability in reading, writing, speaking, and understanding English.
- **Persons with Mobility Impairment**) – a mobility impairment is considered a physical, mental, or self-care disability and applies to those over the age of 18 years.
- **Transportation Disadvantaged (TDI)** – focuses on race (Black, Indigenous, and Persons of Color), income, personal vehicle access, people with mobility impairments, the elderly, youth, and populations with Limited English Proficiency. The composite score is based on seven indicators of potential transportation disadvantage.
- **Environmental Justice (EJ)** - focuses on low-income and racial and ethnic minorities, with the EJ Index score being based on the relative concentration of the population groups in each block group.

The study area is comprised of five counties in central North Carolina (Chatham, Durham, Johnston, Orange, and Wake), each with a unique demographic makeup. Table 1 identifies the percentages of equity indicators in each county, along with percentages in North Carolina. While some indicators stand out, like the percentage of the BIPOC population in Durham County or the percentage of the senior population in Chatham County, many of the equity indicators are similar between the study area counties and North Carolina. The differences among the indicators are seen more at a block group level and discussed more in the sections below.

Table 1: Equity Indicators by Geography

Geography	BIPOC	Low-Income	Zero Car	Senior	LEP	Persons with Mobility Impairments
Chatham	28%	20%	4%	24%	5%	17%
Durham	57%	21%	7%	13%	8%	12%
Johnston	33%	22%	5%	13%	5%	17%
Orange	31%	17%	5%	14%	5%	10%
Wake	41%	14%	4%	12%	6%	10%
North Carolina	37%	23%	6%	16%	4%	16%

Equity Indicators

BIPOC Population

Figure 1 illustrates the BIPOC (Black, Indigenous, Persons of Color) population percentages, at a block group level, within the study area and along the regional network which is a composite of racial and ethnic minorities combined, and includes Black, Hispanic, Asian, Pacific Islander, American Indian, and Multi-race populations. In this figure, higher percentages of BIPOC populations are observed in east and northeast Raleigh, as well as north, east, and south of Downtown Durham. Other places with block groups with higher percentages of BIPOC populations in the study area include Selma, Siler City, and along I-40 in Durham and Wake counties. In Figure 2, the priority corridors can serve and connect areas with the greatest concentration of BIPOC populations, such as in central Durham and north Chapel Hill, along the North-South BRT (NSBRT). The priority corridors also connect to funded and planned Wake Bus Rapid Transit (BRT) lines, like New Bern Avenue, Southern Corridor, and Northern Corridors.

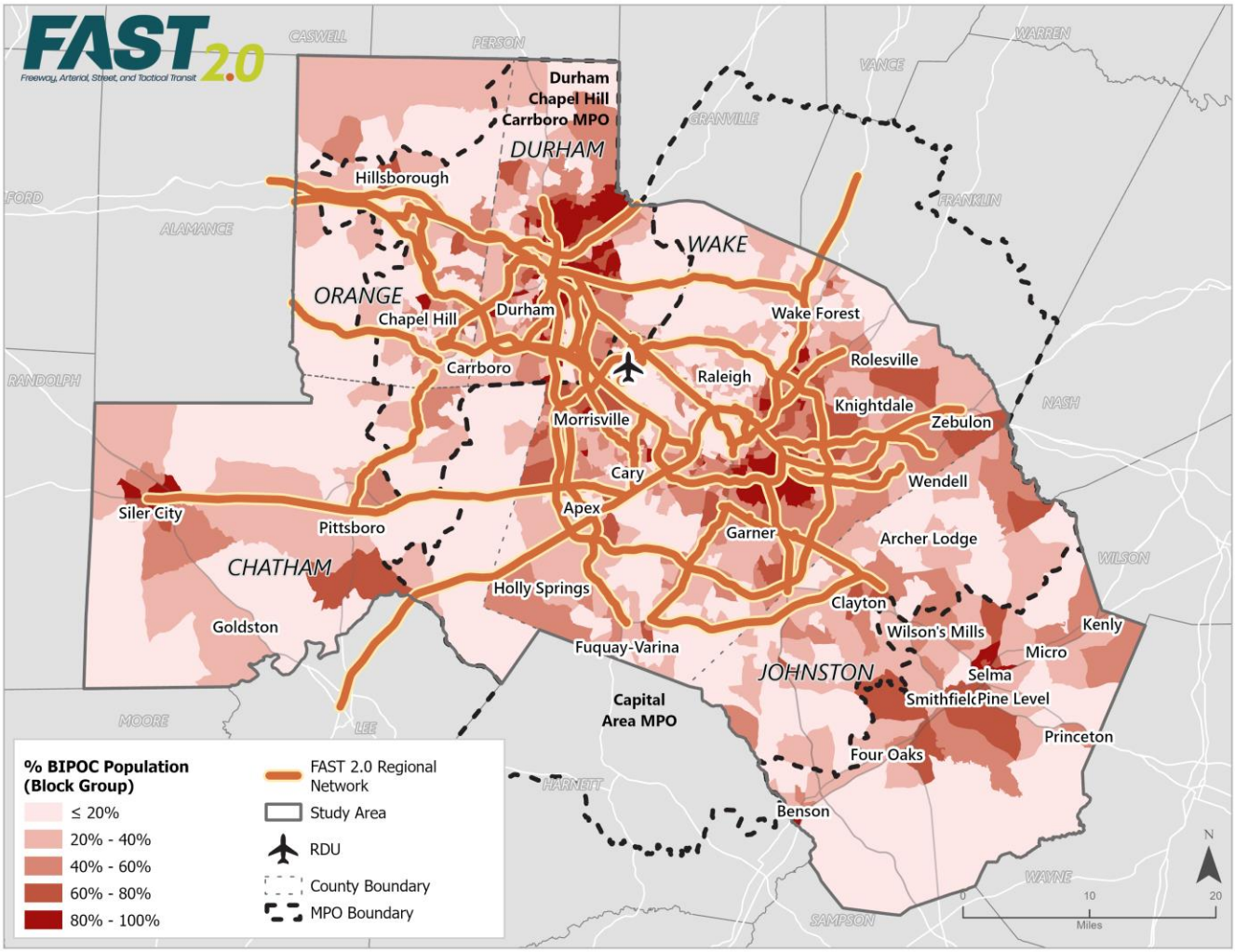


Figure 1: BIPOC Populations along the Regional Network

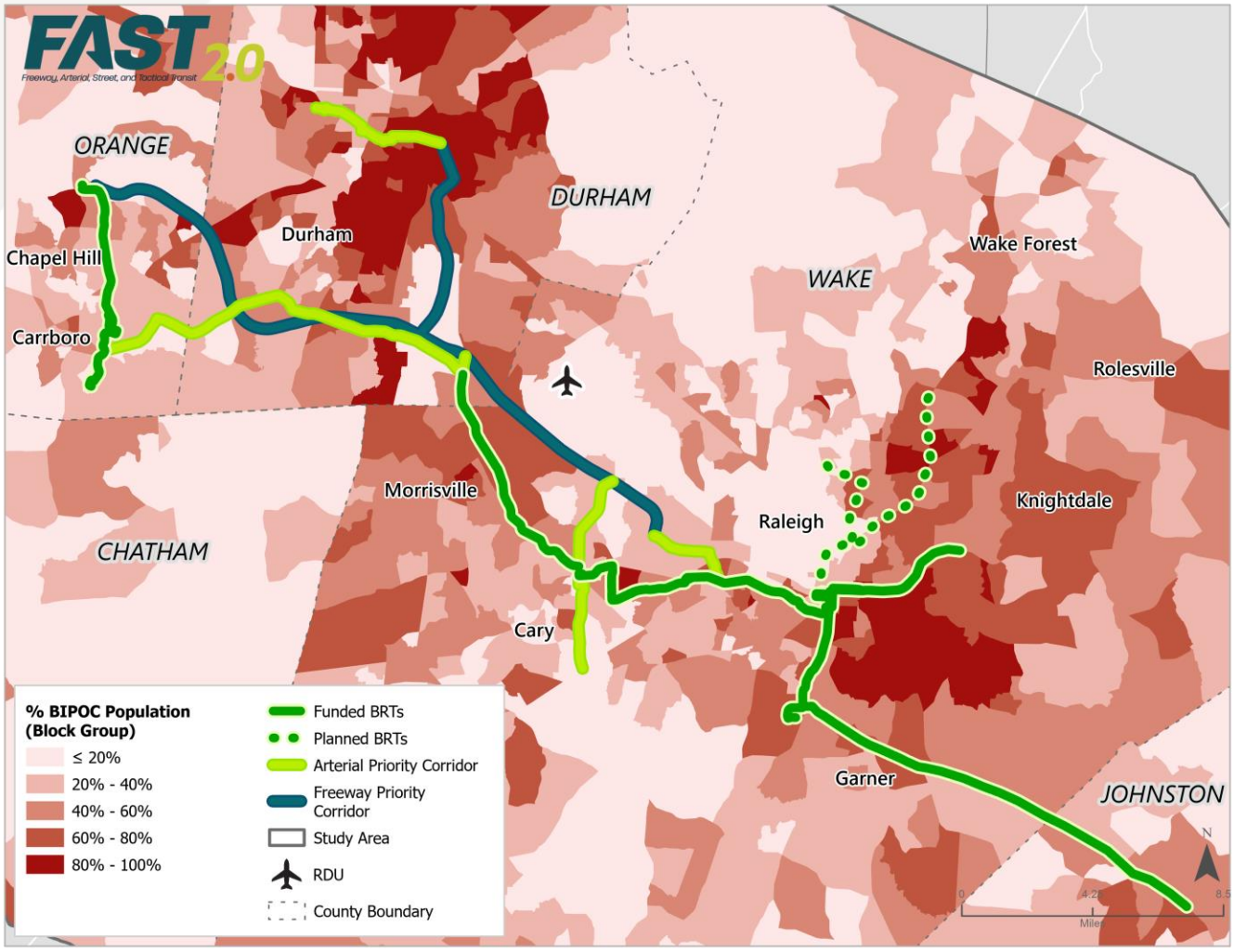


Figure 2: BIPOC Populations along Priority and BRT Corridors

Low-Income Population

Figure 3 shows block groups with a higher percentage of low-income individuals as it pertains to the regional network. Clusters of low-income populations are located throughout municipalities served by the regional network, such as central and north Durham along US 501, Roxboro Rd, Fayetteville St, and NC 55. The regional network expands to connect other areas with notable low-income populations, such as south and east Raleigh following the south and east I-440 loop, Carrboro, Hillsborough, Pittsboro, and Siler City. Figure 4 highlights the connections to and between these areas that are made with the priority corridors, including along NC-147 in Durham, along the funded NSBRT in Chapel Hill, and along the Western and Southern BRT corridors in Raleigh.

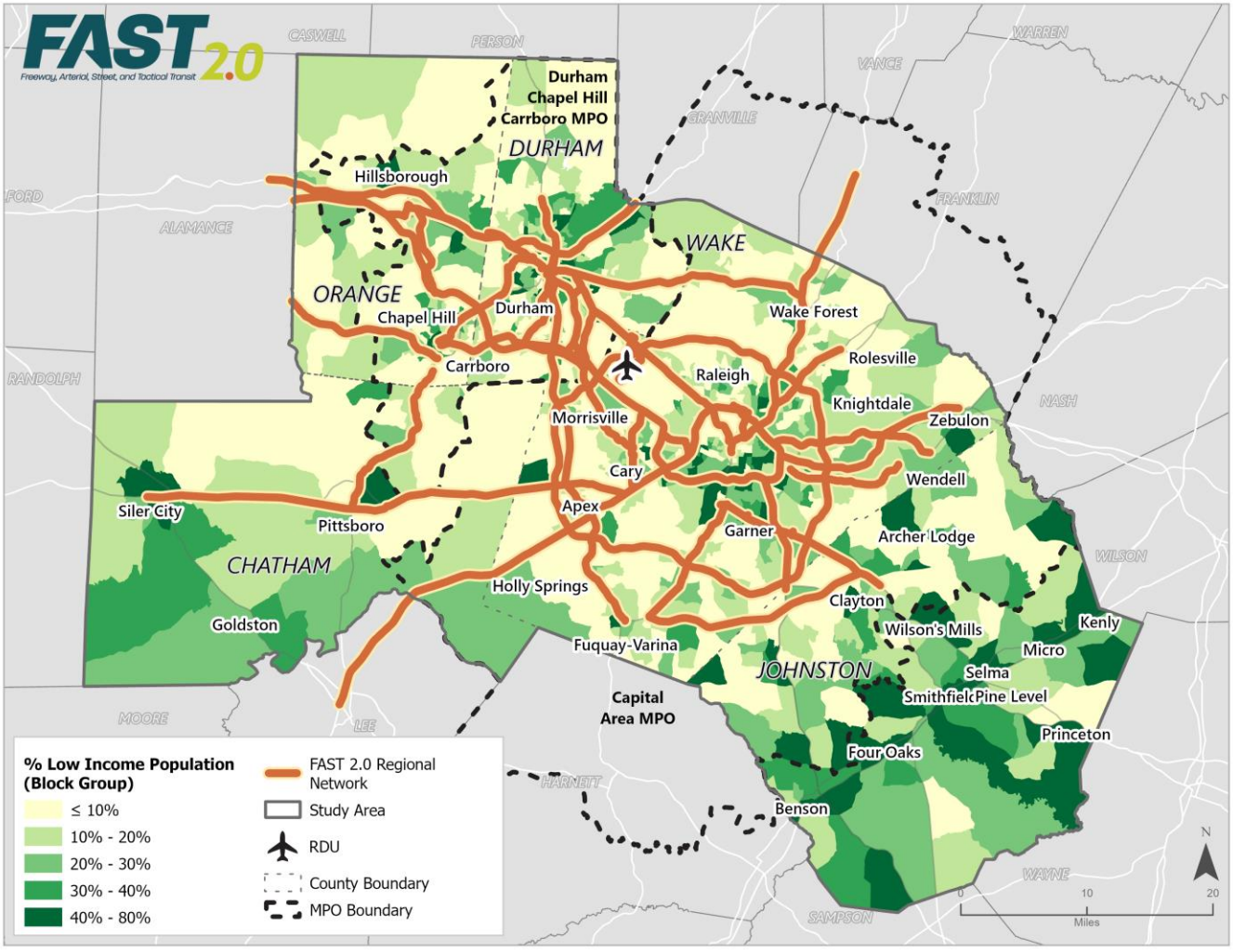


Figure 3: Low-Income Populations along the Regional Network

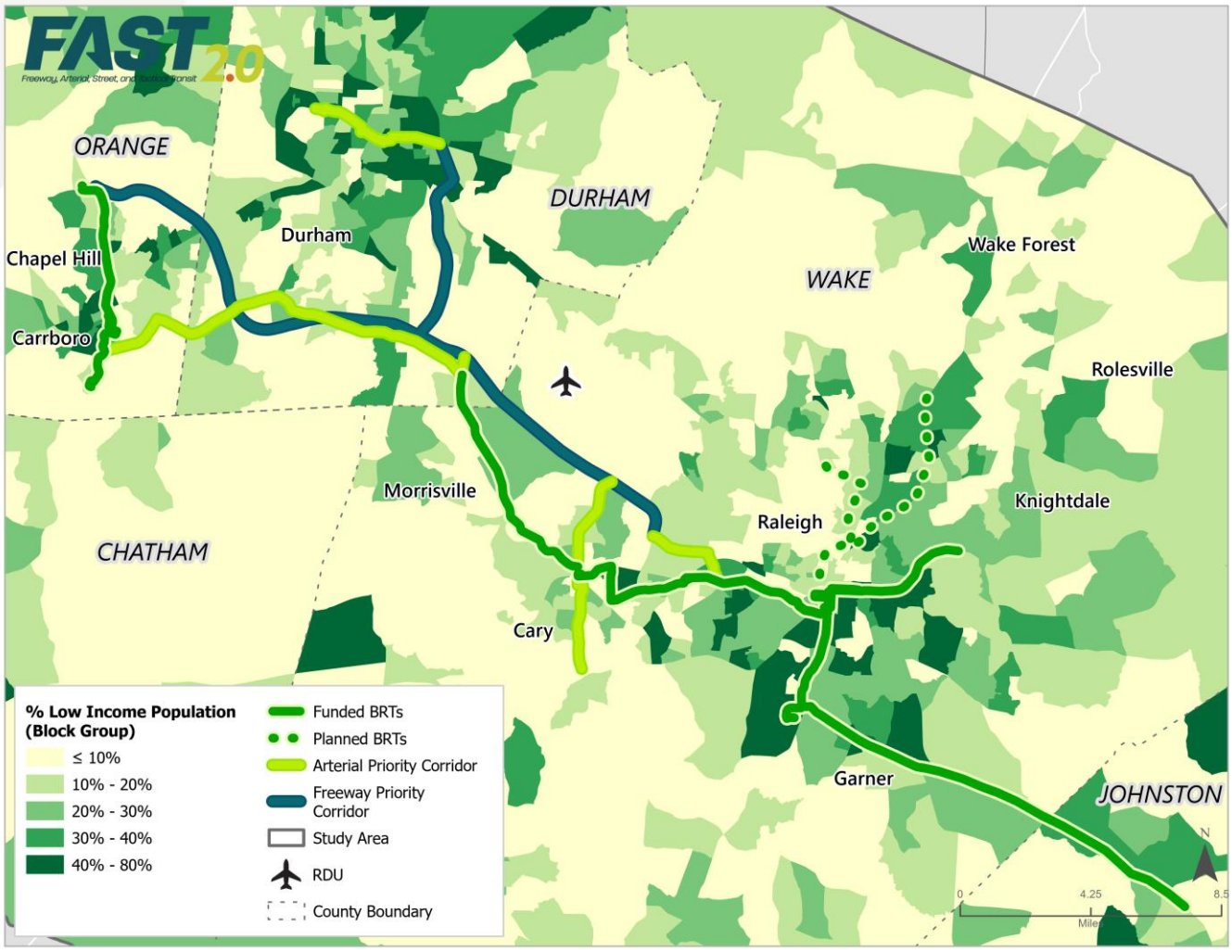


Figure 4: Low-Income Populations along Priority and BRT Corridors

Zero Car Households

Figure 5 illustrates the distribution of zero car households and their proximity to the regional network. Block groups where 20% or more of households without access to a vehicle are located throughout the regional network, but concentrations can be found in southeast Raleigh along I-440, along the portions of the network that travel within and between Chapel Hill and Durham, along US-64 between Siler City and Pittsboro, east of I-95, and near universities. Along priority and BRT corridors, notable concentrations of zero car households can be found in central Durham and along Western and Southern BRT lines as shown in Figure 6.

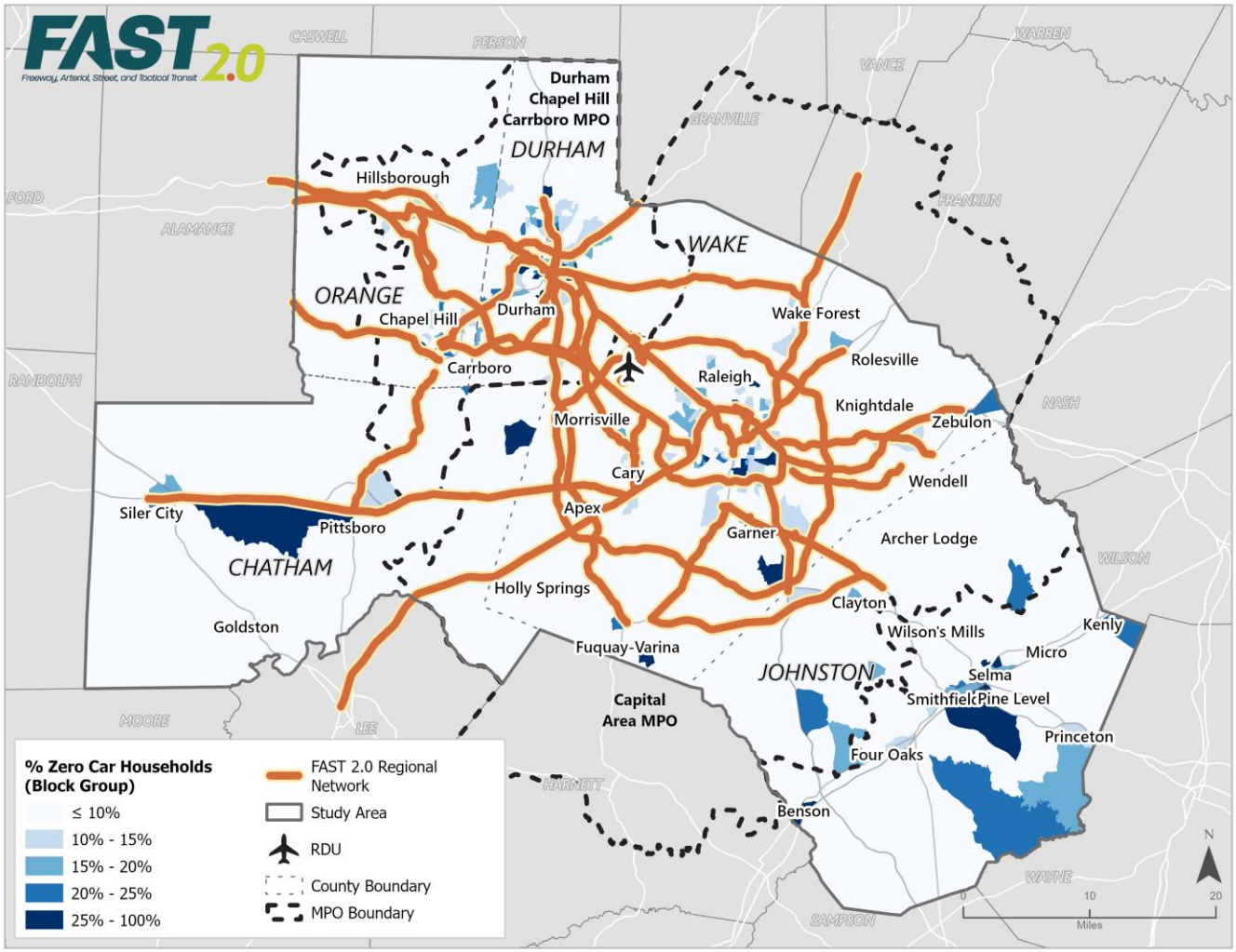


Figure 5: Zero Car Households along the Regional Network

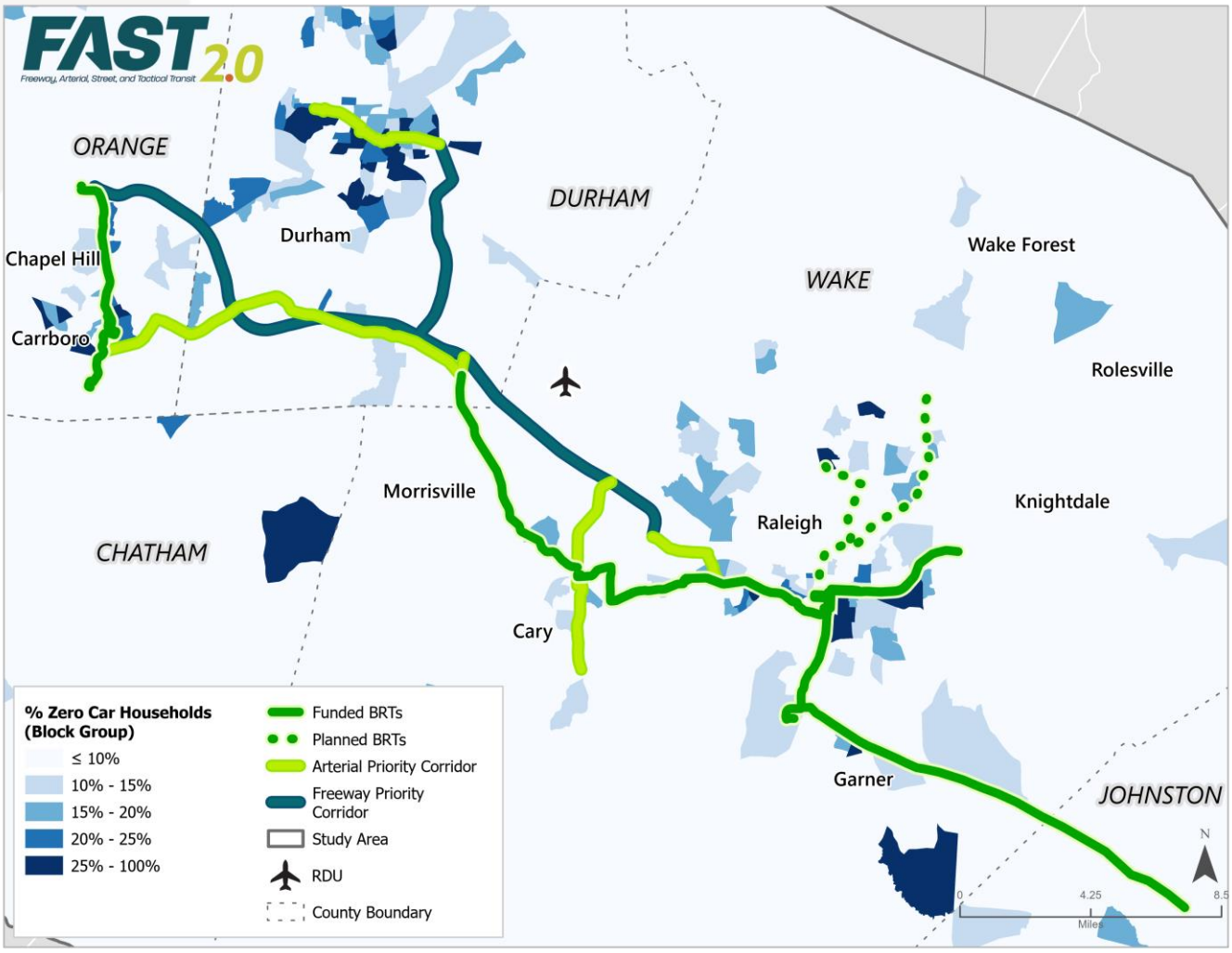


Figure 6: Zero Car Households along Priority and BRT Corridors

Senior Population

Figure 13 captures the distribution of senior populations throughout the regional network. Significant populations of block groups with senior populations greater than 20% are found throughout the regional network while the greatest concentration can be found in Siler City, southern Chatham County, and northeastern Chatham County near US 15-501 and US-64. Larger populations can also be found in eastern Durham County and western Durham County, along NC-98. Orange County has notable senior populations along the regional network corridors. Figure 8, illustrates senior populations along the priority corridors within the study area. Notable populations exist along priority corridors such as Harrison Avenue, I-40 in Orange and Durham Counties, and NC-54.

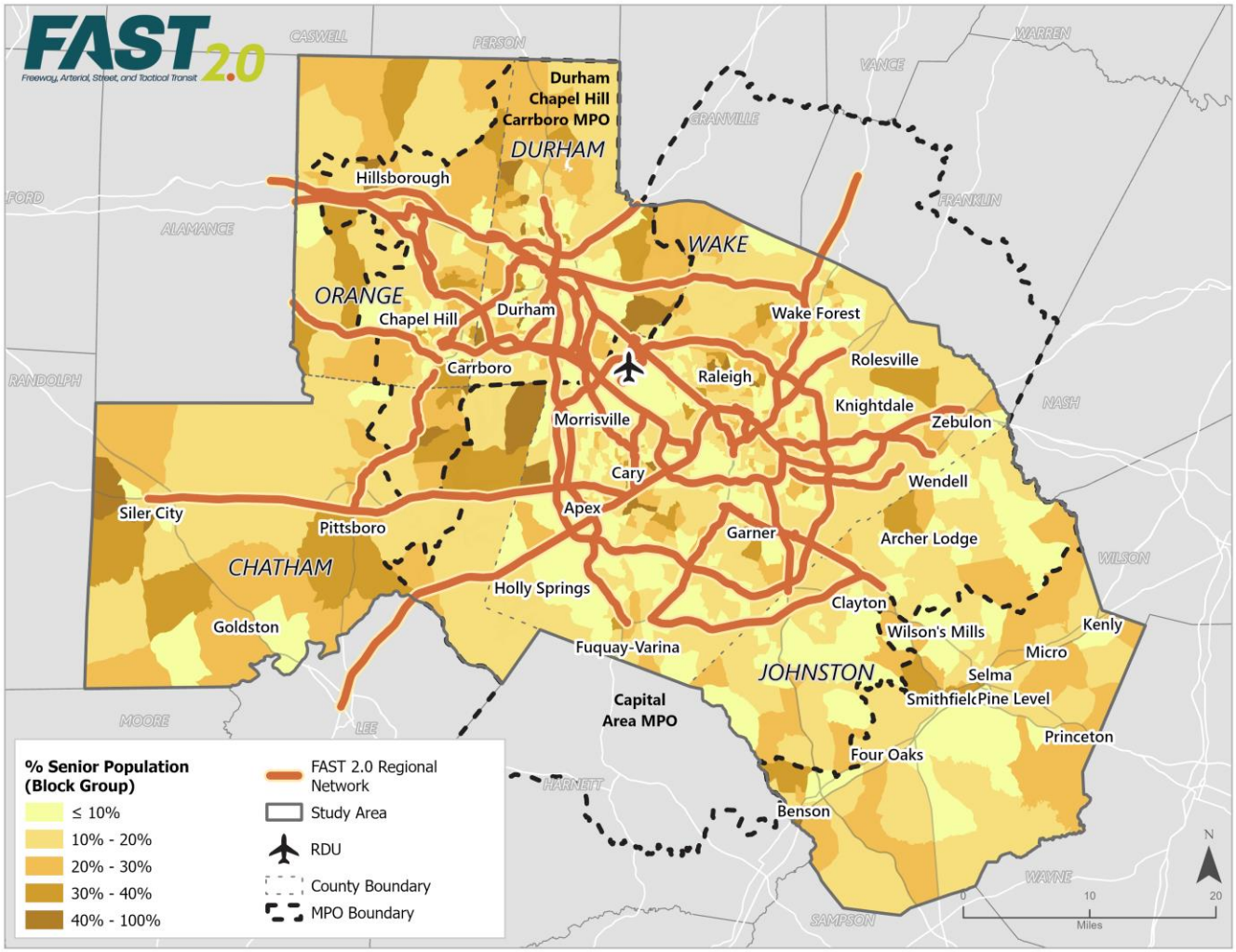


Figure 7: Senior Population along the Regional Network

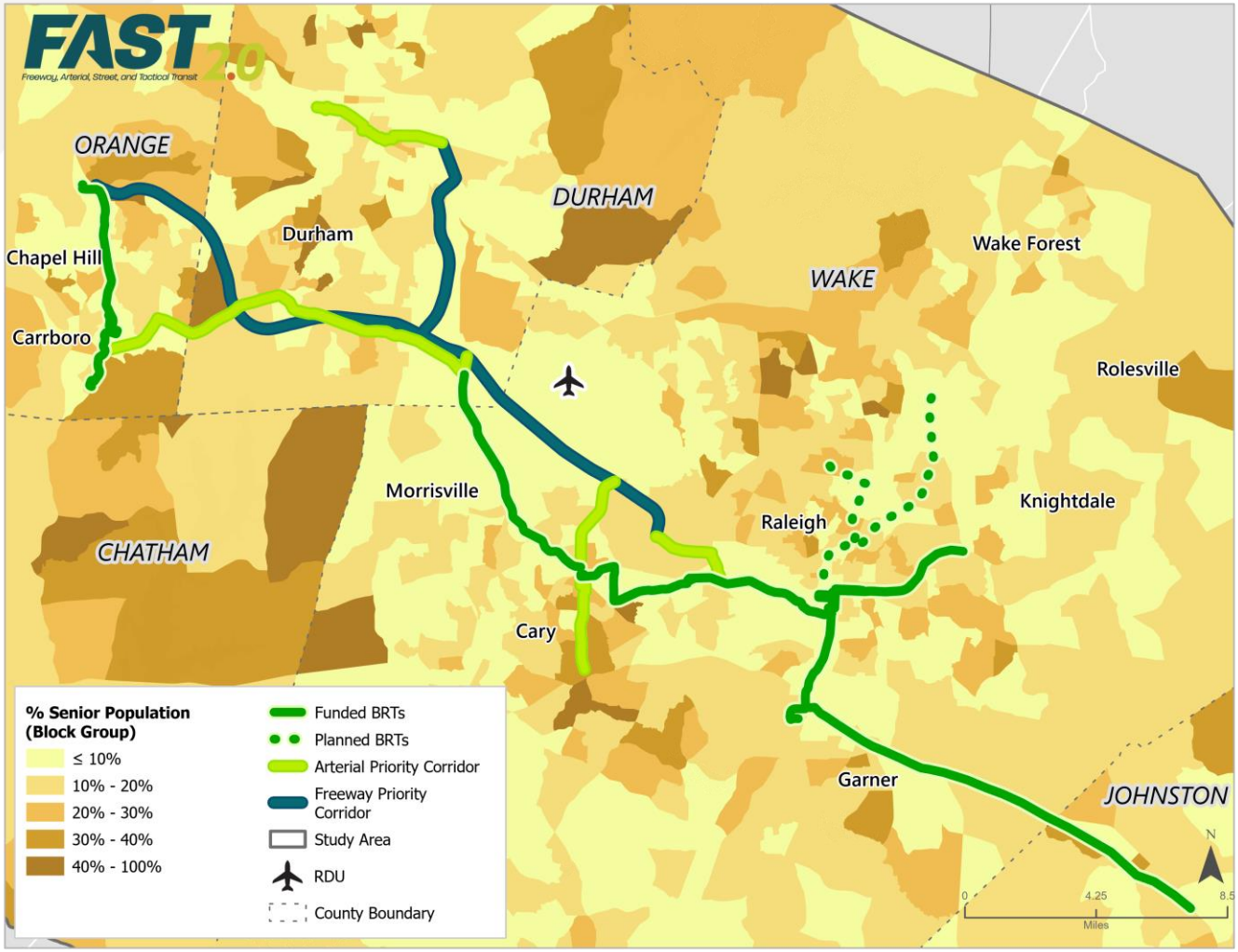


Figure 8: Senior Populations along Priority and BRT Corridors

Limited English Proficiency Populations

Figure 9 illustrates the concentrations of Limited English Proficiency (LEP) populations throughout the study area and along the regional network at a block group level. Higher percentages of LEP populations are dispersed throughout the study area, but notable clusters can be found within and around Downtown Durham. Other clusters can be found in eastern Wake County along the portions of US-401 and Capital Boulevard in the regional network. Other places with higher LEP populations are Smithfield, Selma, Siler City, and Zebulon. In Figure 10, the priority corridors are able to connect the areas with the greatest percentage of LEP populations following along corridors such as I-885, I-40, and NC-54 from Durham and Chapel Hill to Raleigh.

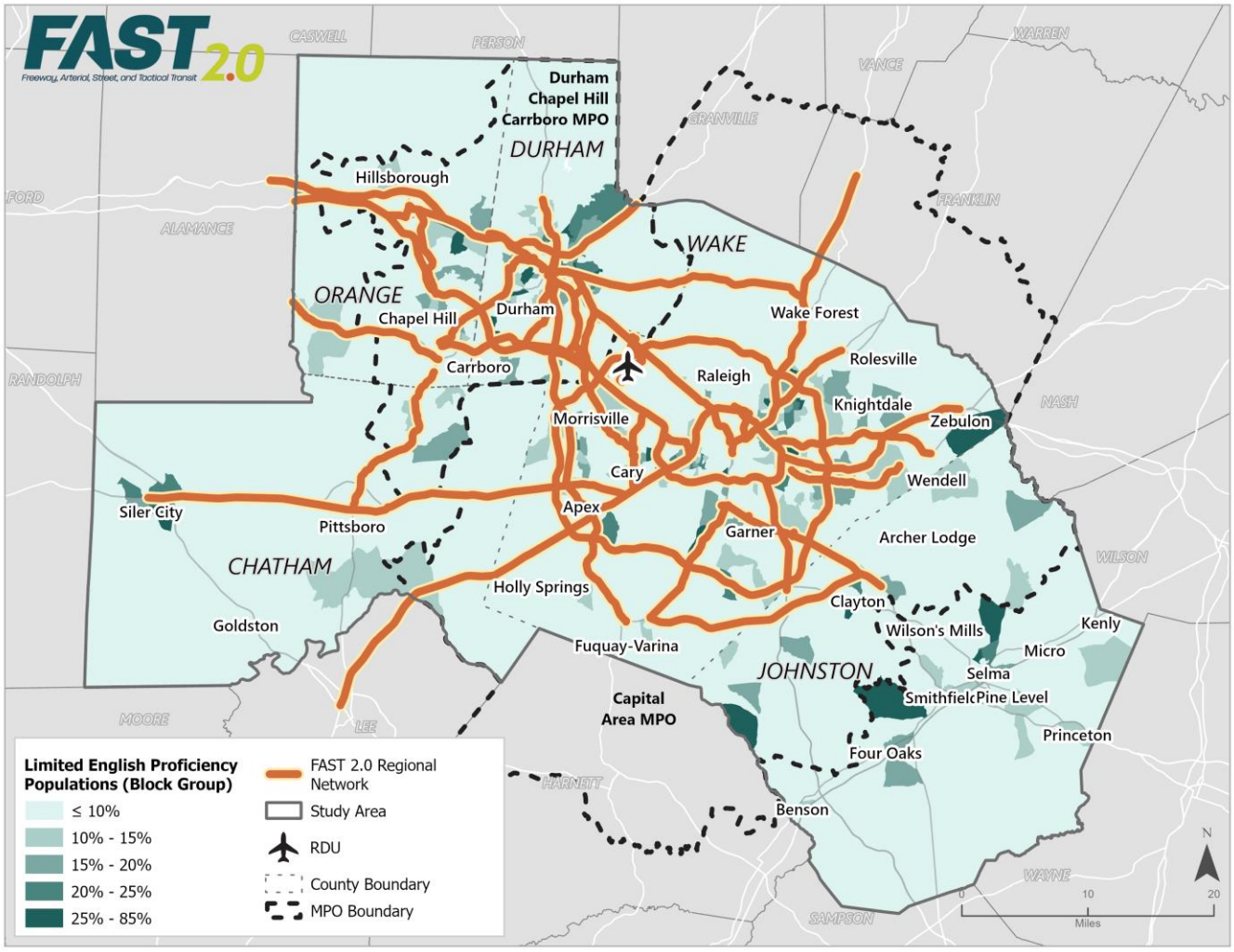


Figure 9: LEP Populations along the Regional Network

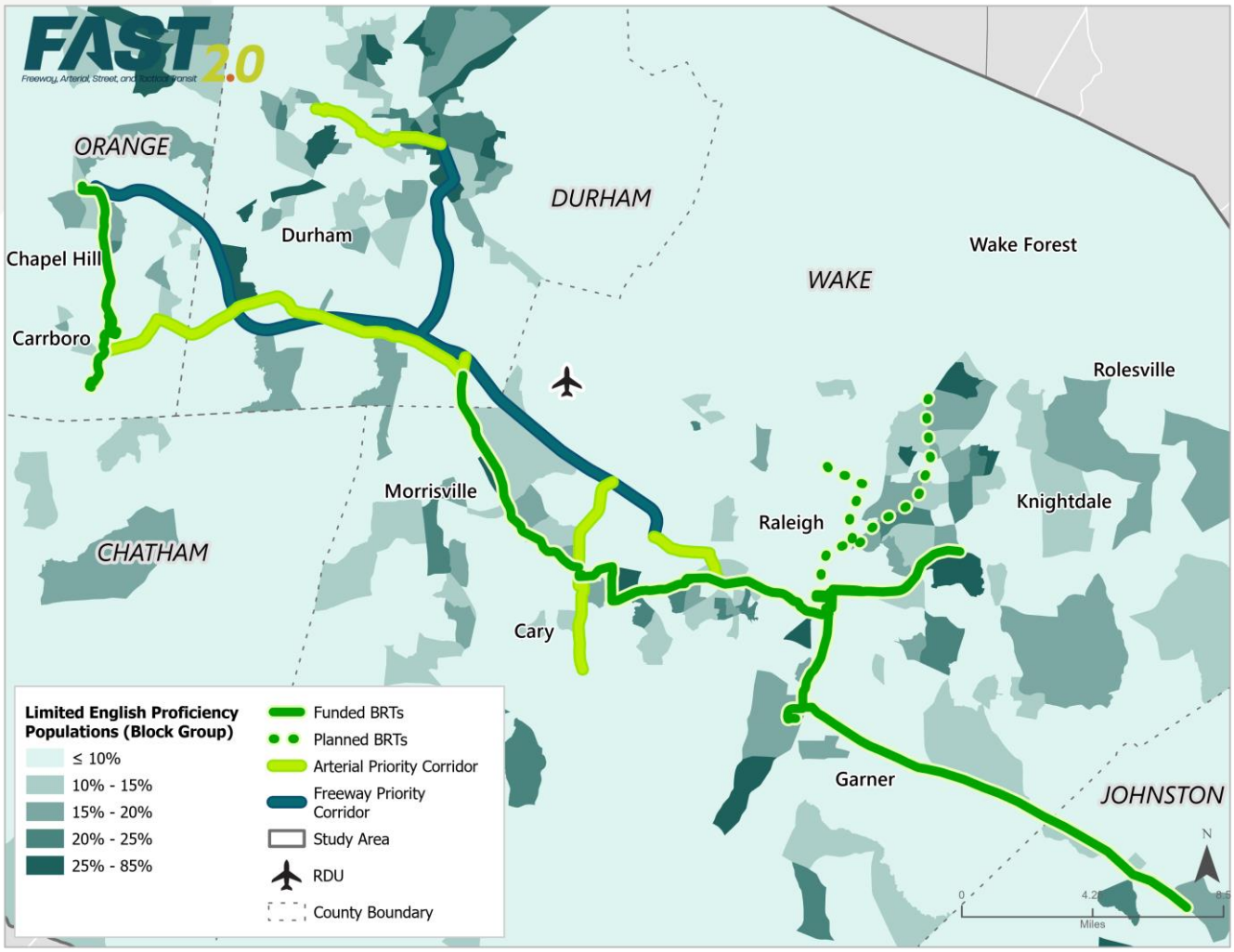


Figure 10: LEP Populations along Priority and BRT Corridors

Persons with a Mobility Impairment

Figure 11 illustrates the concentrations of individuals with mobility impairments and their proximity to the regional network, at a block group level. Clusters of mobility impaired populations are present outside of Wake County, such as in Siler City, Pittsboro, and southern Johnston County. Notable populations along the regional network include US-64 in Chatham County, US-15-501 between Pittsboro and Carrboro, and southern I-440 in Raleigh. Figure 12 shows the concentrations of individuals with mobility impairments along the priority network and BRT corridors such as US 70, the Southern Corridor, and New Bern Avenue, that provide connections from Wake County into Johnston County.

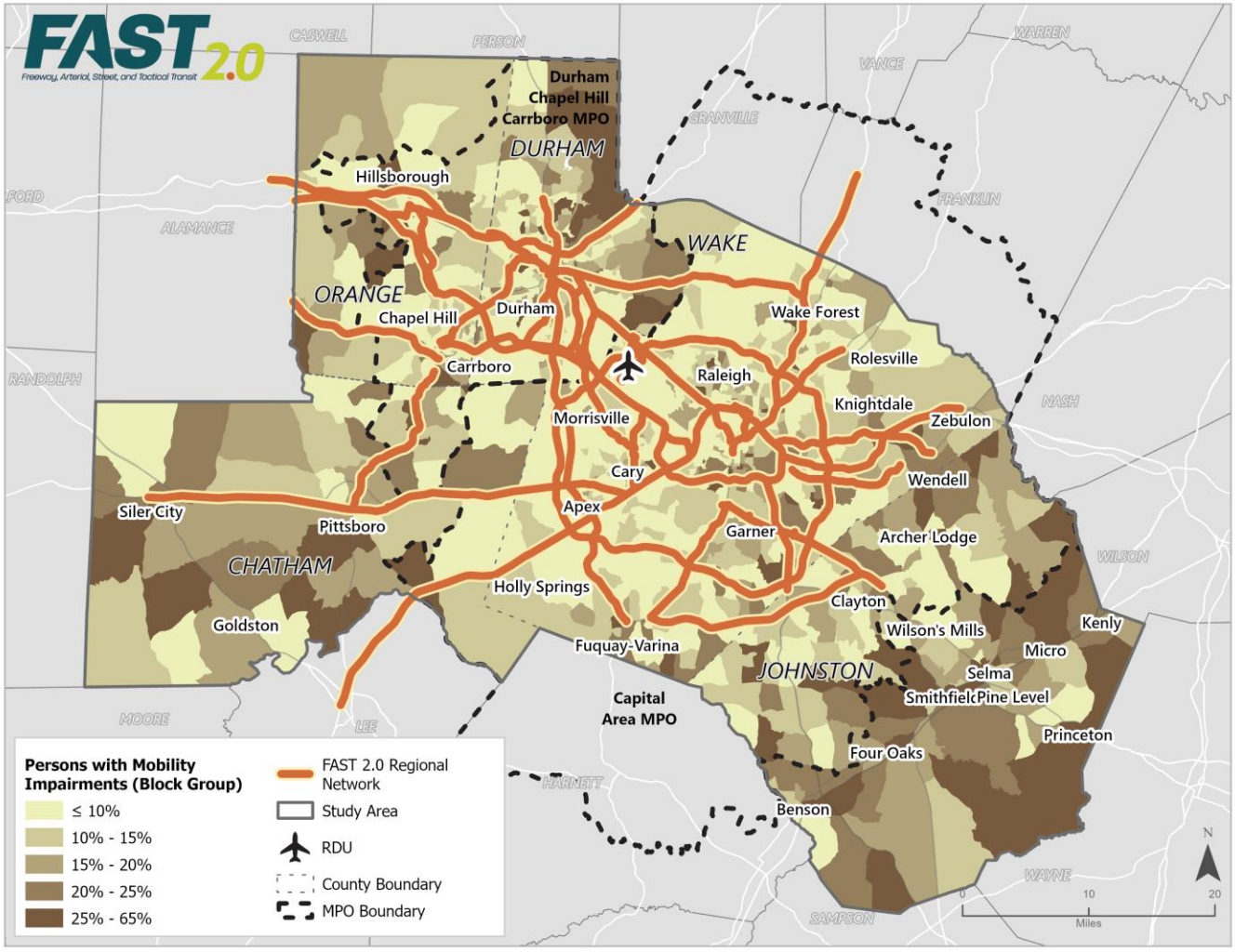


Figure 11: Populations with a Mobility Impairment along the Regional Network

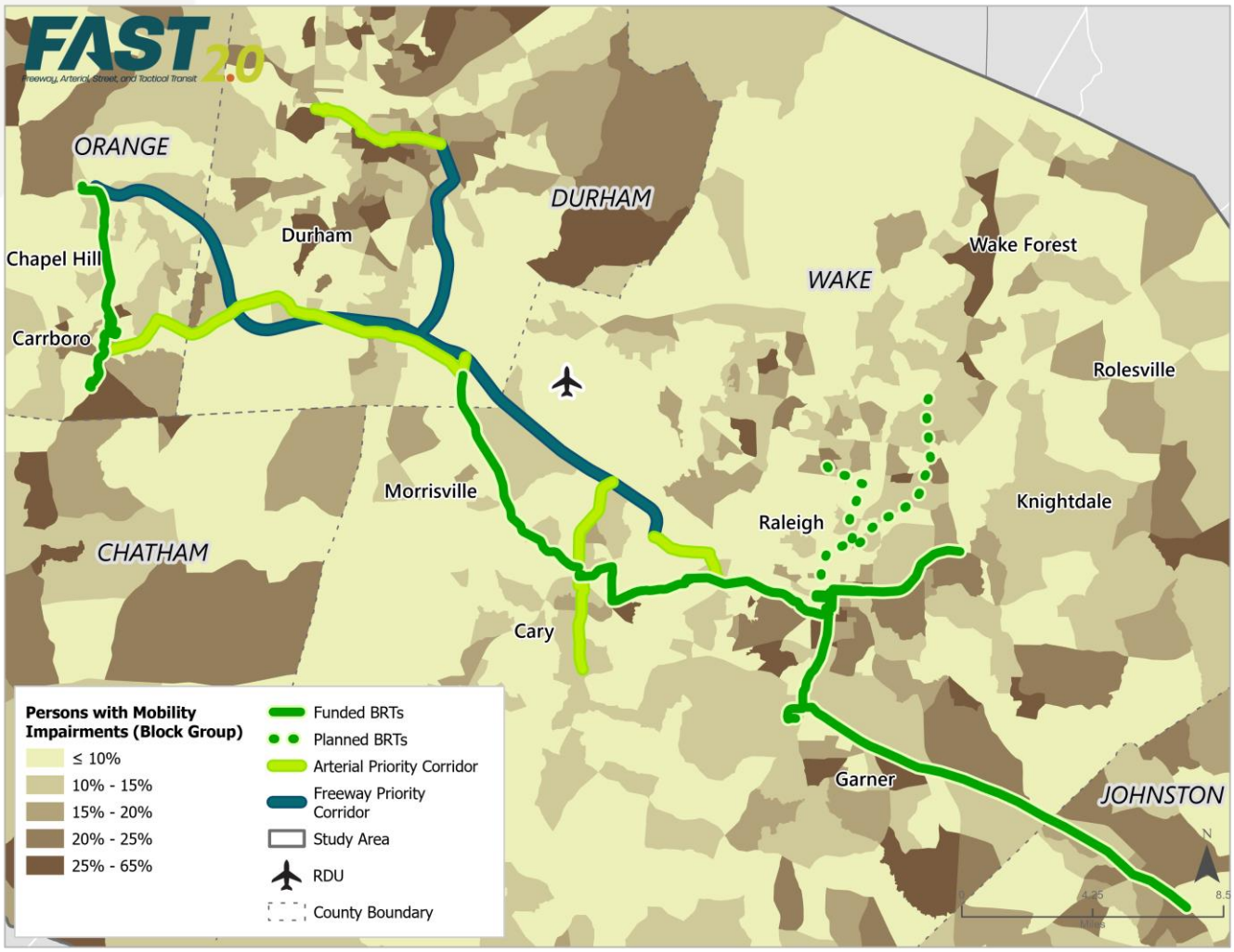


Figure 12: Populations with a Mobility Impairment along Priority and BRT Corridors

Transportation Disadvantaged Index (TDI)

The NCDOT Transportation Disadvantage Index (TDI) tool focuses on race (Black, Indigenous, and Persons of Color), income, personal vehicle access, people with mobility impairments, the elderly, youth, and populations with Limited English Proficiency. The TDI is a composite score based on seven indicators of potential transportation disadvantage where higher scores convey a greater level of potential disadvantage compared to other areas in the state.

Figure 13 explains how TDI scores were calculated and Figure 14 details the resulting TDI scores across the regional network. Figure 14 highlights that the block groups with the highest TDI scores are in similar areas to those highlighted on the individual equity indicator maps. Areas with high TDI scores are present in north and east Durham along US-501, Holloway St, and NC-147, southeast Raleigh along I-440, and along I-95 in Johnston County. In addition, there are concentrations of block groups with high TDI scores in other areas, such as Siler City along US-64 and Hillsborough along US-70.

Shown in Figure 15, the priority and BRT corridors travel in many of the areas with the highest TDI scores, including in central and east Durham and in Raleigh along BRT routes including the Western and Southern Corridors, and also along both of the planned Northern Corridor alignments. The priority corridor along the I-40 corridor also serves areas with higher TDI scores.

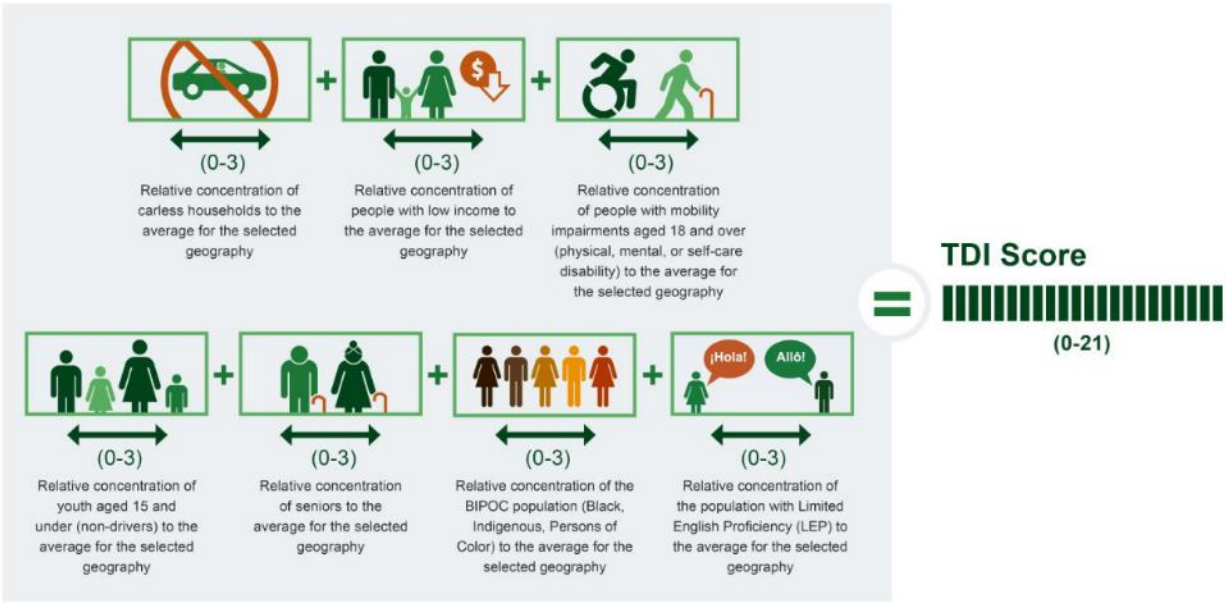


Figure 13: NCDOT's Transportation Disadvantage Index (TDI) Tool and Scoring Guide

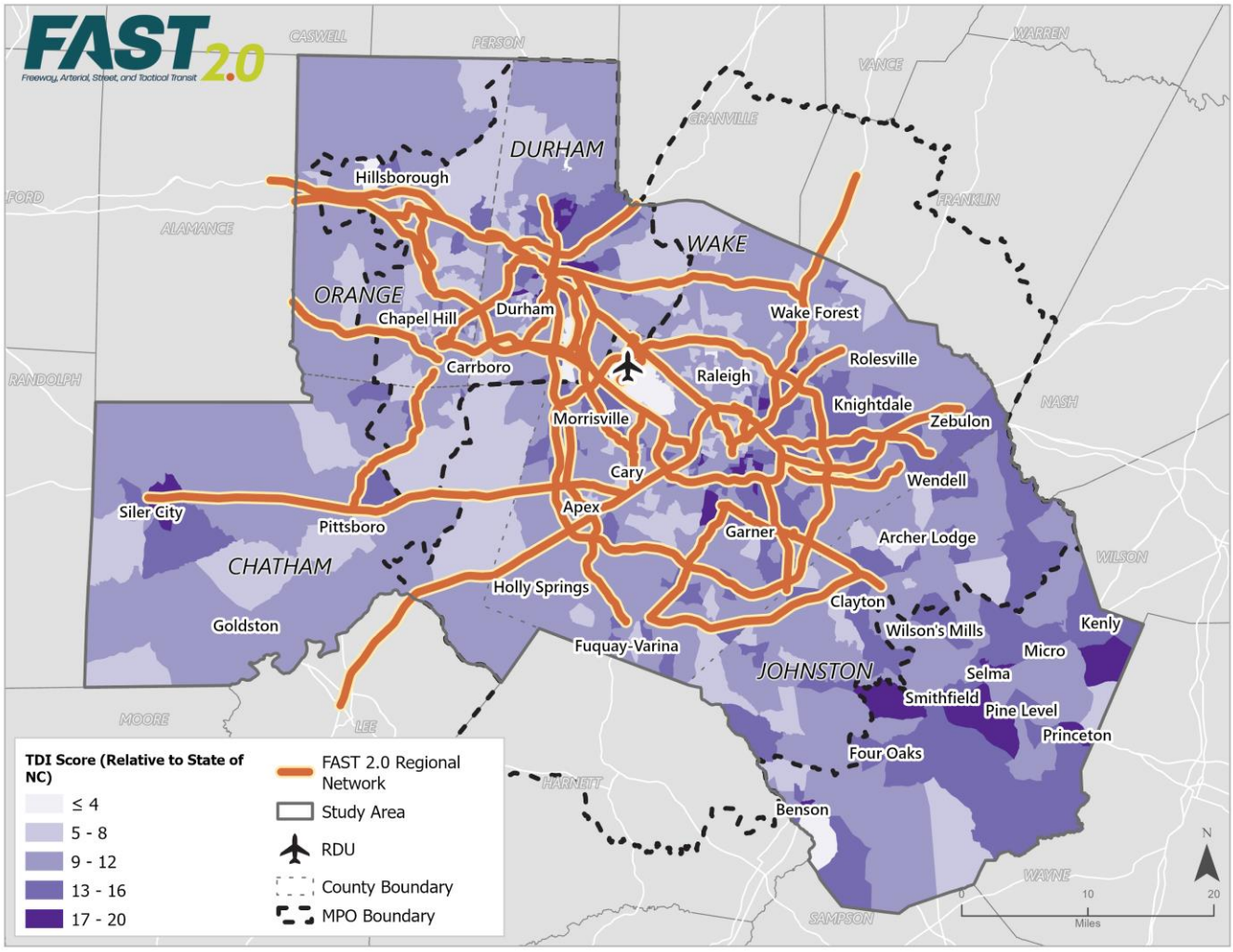


Figure 14: TDI Score along the Regional Network

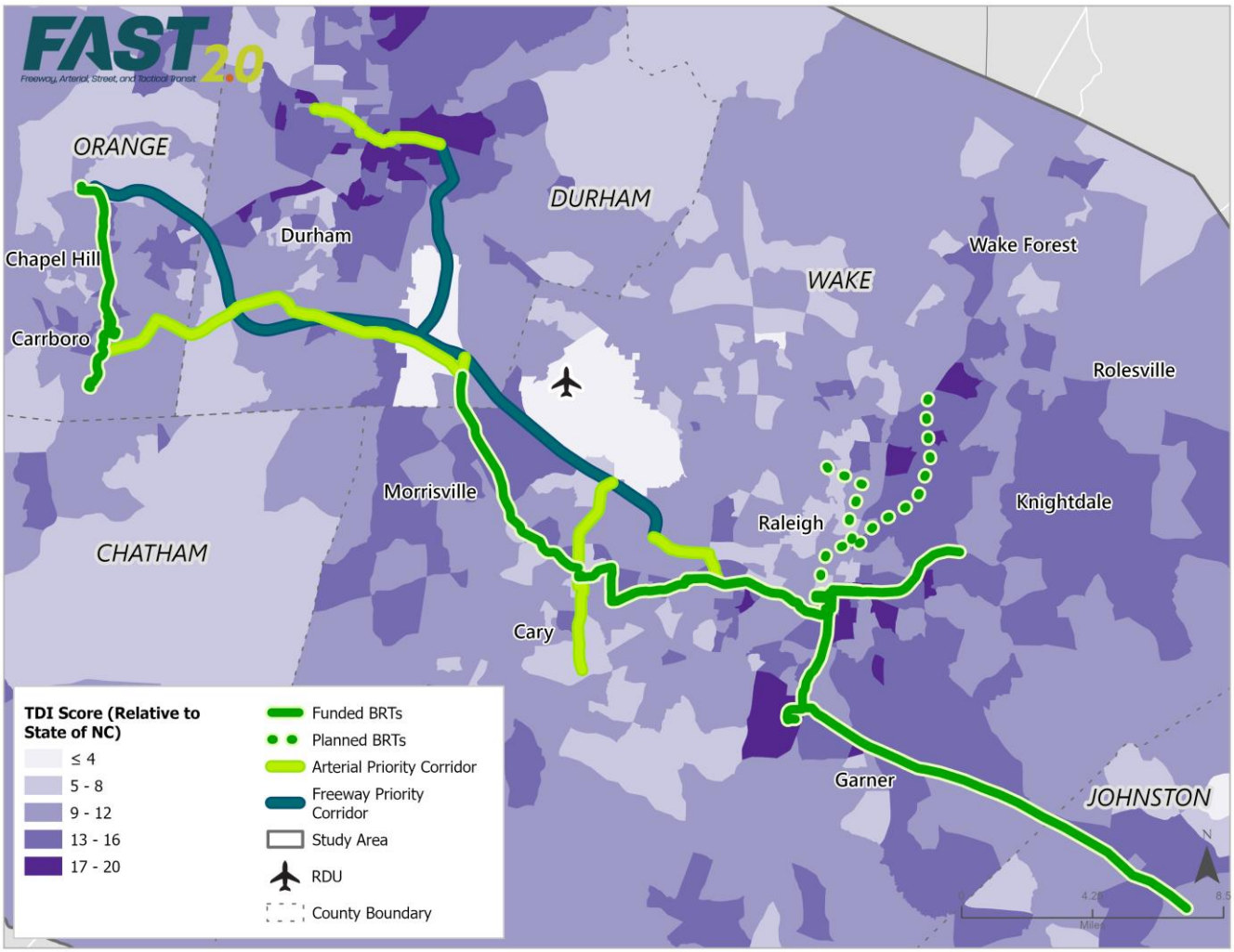


Figure 15: TDI Score along Priority and BRT Corridors

Environmental Justice (EJ) Index

The NCDOT Environmental Justice (EJ) Index tool focuses on low-income and racial and ethnic minorities, with the EJ Index score being based on the relative concentration of the population groups in each block group. Figure 16 shows how the EJ Index score is calculated and Figure 17 shows the resulting EJ scores across the regional network. Figure 17 presents that the block groups with the highest EJ Index scores are in similar areas to the areas highlighted on individual equity indicator maps and the TDI map. Places with the highest concentrations of Environmental Justice populations are in north and east Durham along US-501, Holloway Street, and NC-147, southeast Raleigh along I-440, and along I-95 in Johnston County. In addition, there are concentrations of block groups with high EJ Index scores in other areas, such as Siler City along US-64 and Hillsborough along US-70.

Shown in Figure 18, priority and BRT corridors are within many of the areas with the highest EJ Index scores, including in central and east Durham and Raleigh along BRT routes including Western, Southern, and Northern Corridors. The priority corridor along I-40 also serves areas with higher EJ Index scores.

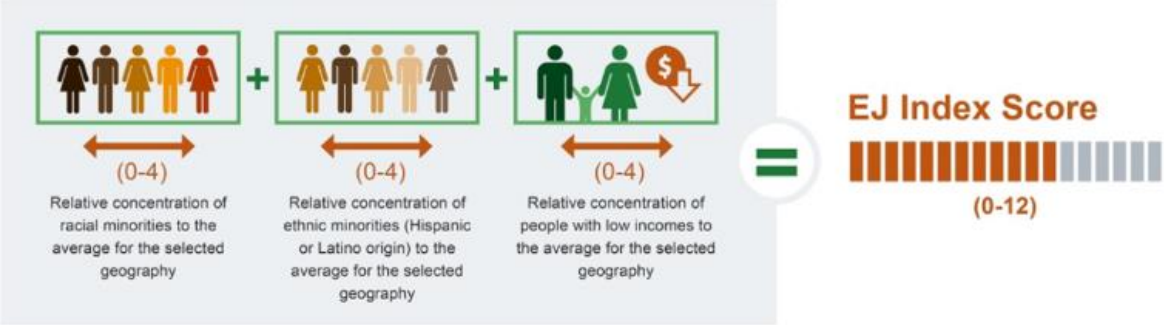


Figure 16: NCDOT's Environmental Justice (EJ) Index and Scoring Guide

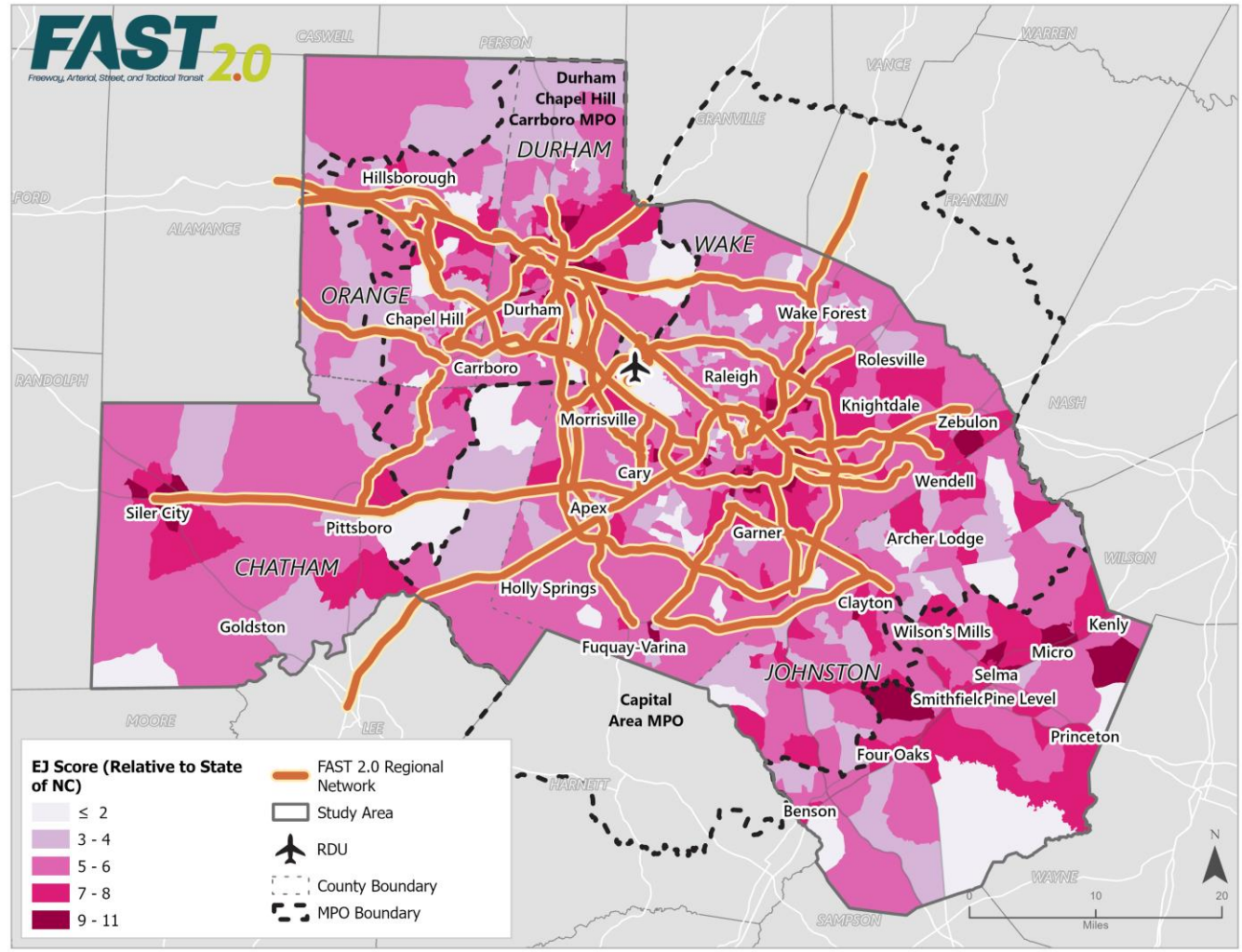


Figure 17: EJ Index Score along the Regional Network

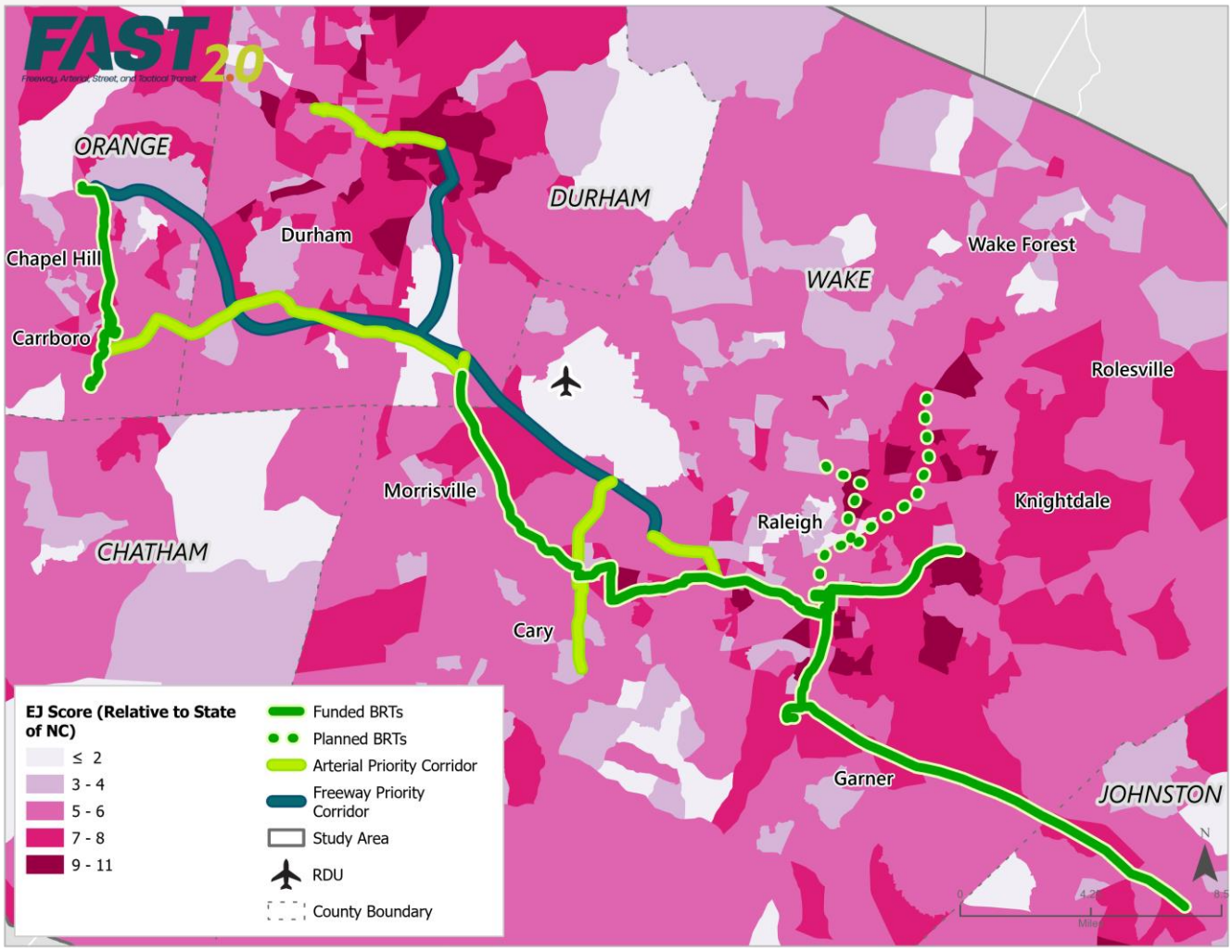


Figure 18: EJ Index Score along Priority and BRT Corridors

Conclusion

Mapping the demographics of the study area highlights how transit investments along the priority corridors and the regional network can help increase connectivity across the region for transit-dependent populations. While the priority corridors are able to capture areas that were highlighted among several different equity indicators, such as in central and east Durham or throughout Raleigh, the regional network is also able to capture smaller geographic areas that can also benefit from transit connections, such as Carrboro, Selma, and Hillsborough. The regional network and priority and BRT corridors are within the boundaries of the Capital Area Metropolitan Organization (CAMPO) and Durham-Chapel Hill-Carrboro (DCHC) MPO, but the maps begin to show how future considerations can be given to transit connections beyond the immediate region, such as to Siler City or eastern Johnston County, along I-95.

The priority corridors can serve and provide enhanced transit connections between regional key job hubs. Even for job hubs that are not directly connected to I-40, like Chapel Hill, Durham, and Cary, the priority corridors are able to build upon a core transit network that allows for enhanced service between these top destinations. As highlighted more in

the *Needs Assessment Memo*, the MPOs have identified neighborhoods that may benefit most from transit investments, called REINVEST Neighborhoods, using similar demographic criteria highlighted in this memo, such as having a significant population of BIPOC individuals, a high proportion of households without vehicles, low-income households, and being designated as Opportunity Zones or having a high number of affordable housing units. Figure 19 highlights how the priority corridors are able to serve many of the neighborhoods that meet several of the thresholds noted and that may benefit from transit investments the most. Once the FAST 2.0 network is fully implemented, these neighborhoods will be able to access the majority of key job, educational, and medical hubs in the region using high-frequency transit.

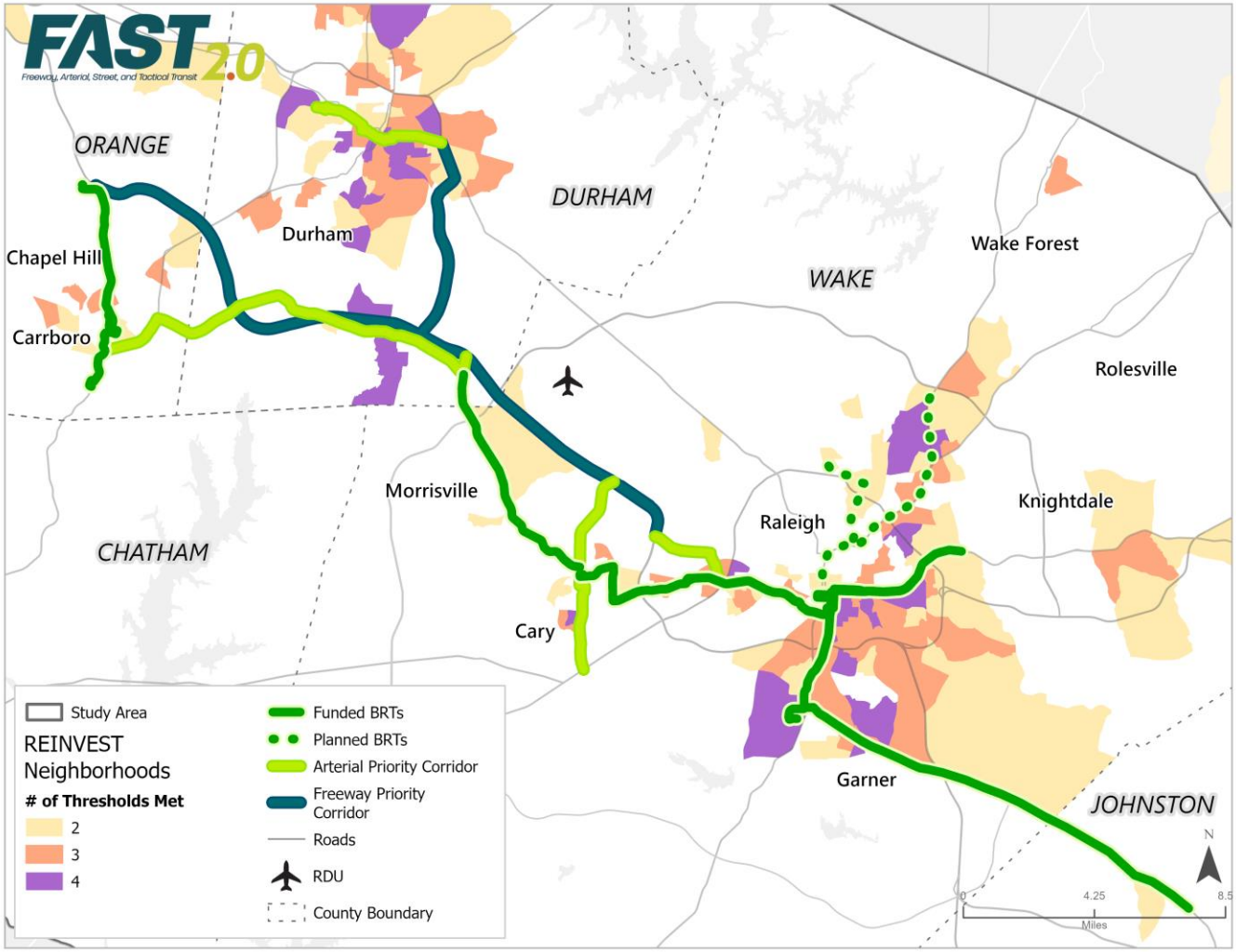


Figure 19: REINVEST Neighborhoods along Priority and BRT Corridors

Being able to meet the diverse needs of residents was a theme of the FAST 2.0 vision and special consideration was given when selecting the priority corridors to how those priorities corridors are able to increase connectivity for transit-dependent populations. Furthermore, the *Implementation Plan* will use equity as a top factor in determining how to prioritize the implementation of the FAST 2.0 recommendations.

Appendix D: Needs Assessment Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

NEEDS ASSESSMENT MEMO

January 2025

CONTENTS

Introduction

The purpose of this memo is to identify new transportation challenges, opportunities, and gaps in the current transportation system, in particular since the Phase I Freeway, Arterial, Street, and Tactical Transit (FAST) Study, by reviewing existing transportation data, planning documents, and relevant policies. Identifying the challenges, opportunities, and gaps in the current transportation system will help in creating the regional network and priority corridors that will be studied further as part of FAST 2.0. Understanding what is happening in the region can also help facilitate regional network coordination, and to identify where project investments may be leveraged.

Stakeholder Meetings

At the start of the project, one-on-one interviews were held with all of the identified project stakeholders. This in-depth feedback from the agencies involved in implementing transit and transportation projects within the study area provided valuable insight that served as a starting point for understanding the challenges, opportunities, and gaps in the current transportation system. From those interviews with agencies, several priorities stood out including:

- **Regional Connections**
- **Local Bus Service**
    - Improve service and benefit local riders
- **Investing in High Ridership Corridors**
    - Focus on productive routes
- **Transit Project Implementation**
    - Successful implementation
    - Coordination of road and transit networks
- **Mobility Hubs**
    - Desire to have multiple transfer points
- **Infrastructure and Service Improvements**
    - Build frequent service network and bus stop improvements
    - Importance of pedestrian infrastructure
    - Need for dedicated bus lanes on key corridors
- **Bus on Shoulder System (BOSS)**
    - Look to expand
- **Roadway Design Process**
    - Incorporate transit early on in design

In addition to the priorities noted above, some other points that emerged included:

- **Regional Coordination**
    - Thinking holistically about travel in the region
    - Opportunity for standardization
- **Funding and Implementation**
    - Importance of identifying priority areas for transit infrastructure
- **NCDOT Process**
    - Need for standardization
    - Earlier integration of transit in planning and design

These discussions highlight opportunities for additional regional coordination and how greater collaboration can address challenges with implementing transit infrastructure projects, such as standardization of transit infrastructure in NCDOT roadway guidelines. Gaps, like the small number of transfer hubs throughout the region, provide opportunities to identify projects that allow for use by multiple agencies. As a growing region, numerous ongoing projects and planning efforts may present the opportunity for multimodal collaboration and the ability to incorporate transit elements into the design.

Existing Plan Review

The *Existing Plan Memo* highlighted a comprehensive review of existing transportation data, planning documents, and relevant policies within the Triangle region of North Carolina, focusing on key studies and plans that inform the region's transportation future. Table 1 shows how the different corridors and routes studied in the FAST 2.0 study overlap with the various plans and studies, showing that many of the key corridors in the region have ongoing infrastructure projects. Depending on the project's phase, it can provide an opportunity for collaboration to include transit infrastructure projects, preventing the need to go back and add on transit infrastructure. The ongoing projects may also pose challenges if a major infrastructure project, such as a road widening, is far along in the design process and/or close to construction, creating the need for new construction or increased design fee costs to include transit infrastructure.

Table 1: FAST 2.0 Study Corridors that Overlap with Reviewed Plans and Studies

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
1. US 70										
a. Between Durham and Raleigh			✓		✓				✓	✓
b. Between Durham and Orange County								✓		✓
2. Chapel Hill to RTP: Emphasizing the importance of this connection for the region.	✓								✓	✓
3. US 15-501 Corridor										
a. Chapel Hill to Durham	✓							✓	✓	✓
b. Chapel Hill to Chatham County							✓	✓		✓
4. Fayetteville Road Corridor in Durham							✓		✓	
5. NC 98 Corridor: Between Durham and Wake County										
6. VinFast Site in Chatham County										
7. NC 54										
a. Chapel Hill to Durham									✓	
b. Within Durham, through RTP				✓			✓	✓	✓	
8. I-40 throughout the region	✓	✓			✓	✓	✓	✓	✓	✓
9. I-540: Northern and Southern									✓	✓
10. Capital Boulevard									✓	
11. US 64: Raleigh west to Pittsboro		✓							✓	✓
12. US 1										
a. Raleigh/Cary to Holly Springs/Fuquay Varina	✓	✓			✓					✓

2024 FAST 2.0 Corridor/Routes	2021 Fast Study	BOSS Study	RED Study	BRT Ext MIS	Wake Transit Plan	Raleigh BRT Study	Durham County Transit Plan	Orange Transit Plan	NCDOT STIP	Connect 2050
b. Long term US 1 to towards Sanford and Pinehurst	✓	✓								
13. S-Line Rail Corridor: for multimodal connections					✓				✓	
13. I-85 in Durham County	✓	✓							✓	
14. I-440	✓	✓			✓				✓	✓
15. I-40: From I-87 to Johnston County line		✓							✓	✓
16. I-40: From NC 54 to MLK in Chapel Hill		✓							✓	✓
17. I-40: From I-85 to Alamance County line	✓	✓						✓	✓	
18. US 1: From I-540 to Sanford	✓*	✓								
19. US 64: Pittsboro to Siler City										
20. I-87: N Arendell Ave to I-440		✓							✓	✓
21. I-540: From I-40 to I-87		✓							✓	
22. US 1: Raleigh to Franklinton		✓			✓				✓*	✓*
23. US 70: Between Mebane and Hillsborough							✓	✓		✓
24. NC 86: From Eubanks Road to Hillsborough	✓							✓		
25. Miami Blvd: Between US 70 and NC 54	✓						✓			
26. NC 55: From NC 147 to Fuquay Varina		✓	✓*							✓*
27. NC 42: From Clayton to Fuquay Varina		✓								
28. NC 54: To Orange / Alamance County line starting at NC 86									✓*	
FAST 2.0 Priority Corridors										
30. Trinity Road: Blue Ridge Rd to I-40										
31. I-885: NC 98 to I-40										
32. Harrison Avenue/Kildare Farm: I-40 to US 64					✓					✓
33. NC 54: Miami Blvd to I-40	✓	✓								
34. NC 54: I-40 to US 15-501	✓	✓*			✓*			✓*	✓*	✓*
35. I-40: Trinity Rd to NC 86	✓*	✓			✓*		✓*	✓*	✓	✓*
36. Miami Boulevard: NC 54 to I-40	✓						✓*			
37. Blue Ridge Road: Western Blvd to Trinity Rd										
38. Concept Corridor BRT: RDU Airport to US 70										

Note: * Only a portion of the corridor segments are included in the noted plans or studies.

A few of the individual plans also provide insight into specific ongoing projects that can better inform the FAST 2.0 Study.

CAMPO Bus on Shoulder System (BOSS) Implementation Blueprint

The 2021 CAMPO *BOSS Implementation Blueprint* provides a comprehensive guide for implementing BOSS systems in the Triangle region of North Carolina. It outlines the necessary steps, best practices, and considerations for agencies looking to implement BOSS projects. Figure 1 from the *BOSS Implementation Blueprint* shows the corridors in the region that are suitable for BOSS. These corridors might also offer opportunities for collaboration with the FAST 2.0 corridors and can be ones to take a deeper look at as part of the FAST 2.0 work. In addition, Figure 2 shows the STIP projects that overlap with the suitable BOSS corridors, which are located on I-40, Wade Avenue, I-440, I-87, and US 1/US 64. Any infrastructure projects on these major thoroughfares can offer the opportunity to think about integrating transit infrastructure at the same time, which can aid in the implementation of transit infrastructure by simultaneously constructing both investments.

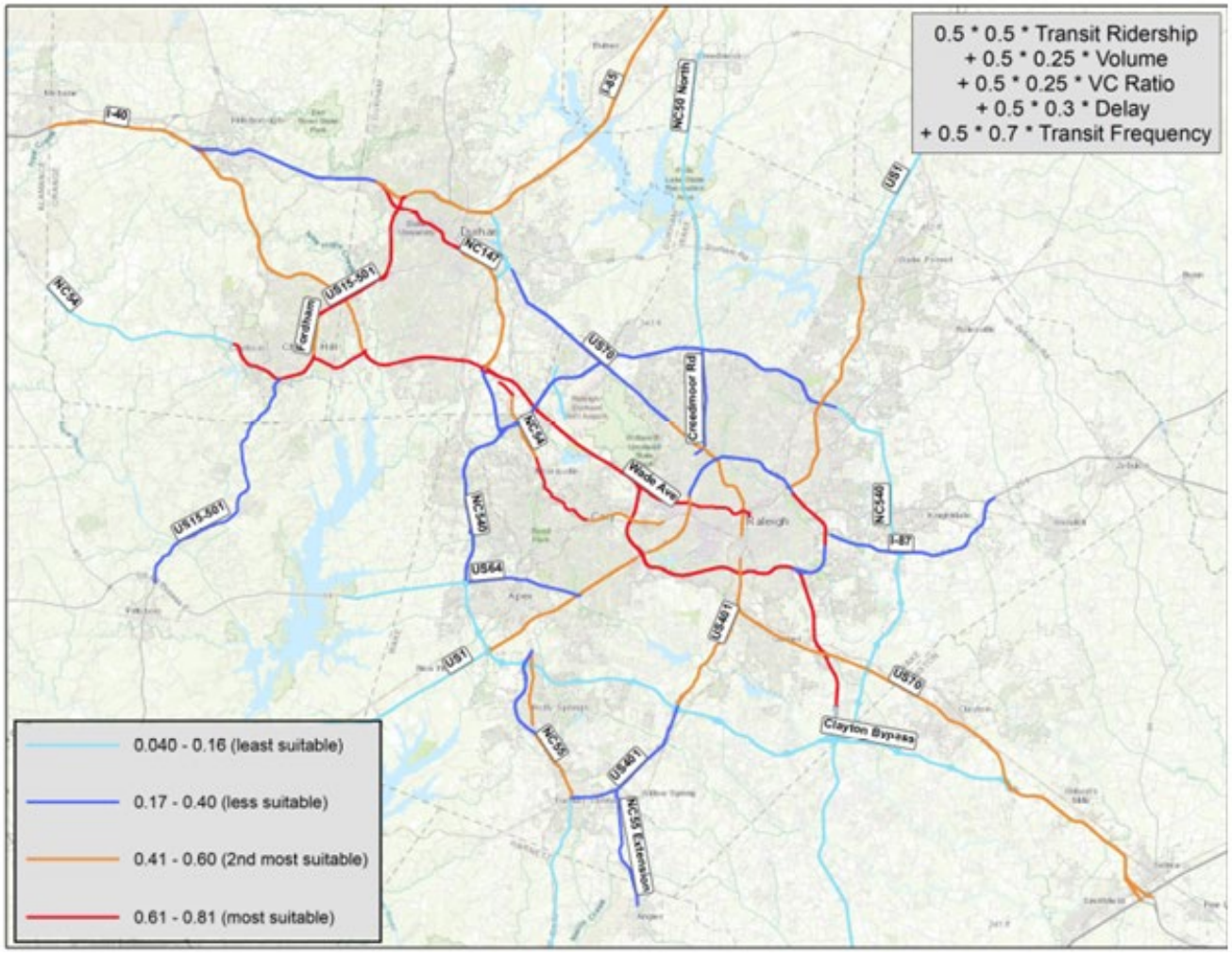
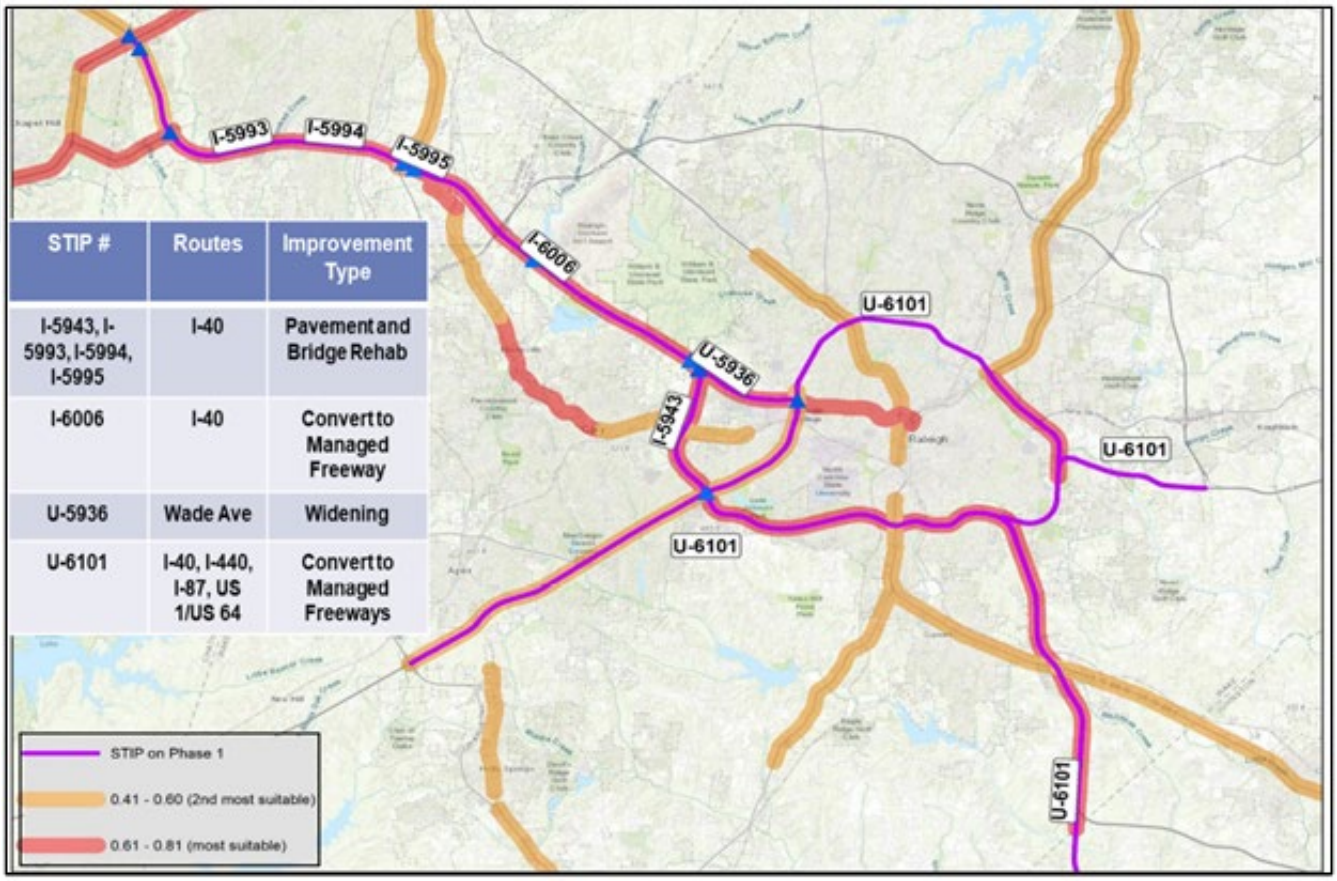


Figure 1: Suitable Corridors for BOSS



STIP #	Routes	Improvement Type
I-5943, I-5993, I-5994, I-5995	I-40	Pavement and Bridge Rehab
I-6006	I-40	Convert to Managed Freeway
U-5936	Wade Ave	Widening
U-6101	I-40, I-440, I-87, US 1/US 64	Convert to Managed Freeways

Figure 2: STIP Overlap with Suitable BOSS Corridors

Connect 2050 Metropolitan Transportation Plan (MTP)

The *Connect 2050 MTP* includes plans for the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO), addressing regional transportation needs. It also features an analysis of land use plans and population and employment growth forecasts, providing insight into future development patterns that can help inform the FAST 2.0 Study on regional development patterns. Figure 3 shows key job hubs, which already have concentrated areas of employment and are planned for more dense types of land uses. These key job hubs include:

- Chapel Hill, Carrboro, and the University of North Carolina at Chapel Hill (including UNC Hospitals)
- Duke University and Hospitals, and the Veterans Administration medical campus
- Central Durham and North Carolina Central University (NCCU)
- Research Triangle Park
- Downtown Cary
- North Carolina State University (NCSU)
- Downtown Raleigh
- North Raleigh

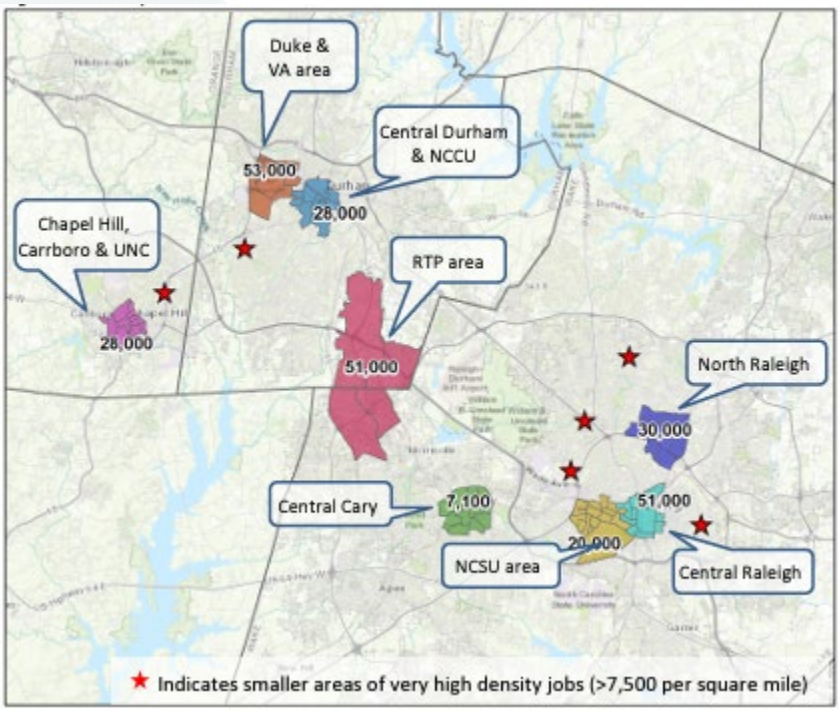


Figure 3: Key Job Hubs

Figure 4 shows the growth in households and employment in the region between 2020 and 2050. Most anticipated employment growth occurs along the I-40 corridor, as well as along some major thoroughfares. Household growth in the region is less concentrated than employment growth. There is a band of concentrated growth between Cary, Raleigh, and Johnston County, but otherwise, observed household growth is dispersed throughout the region.

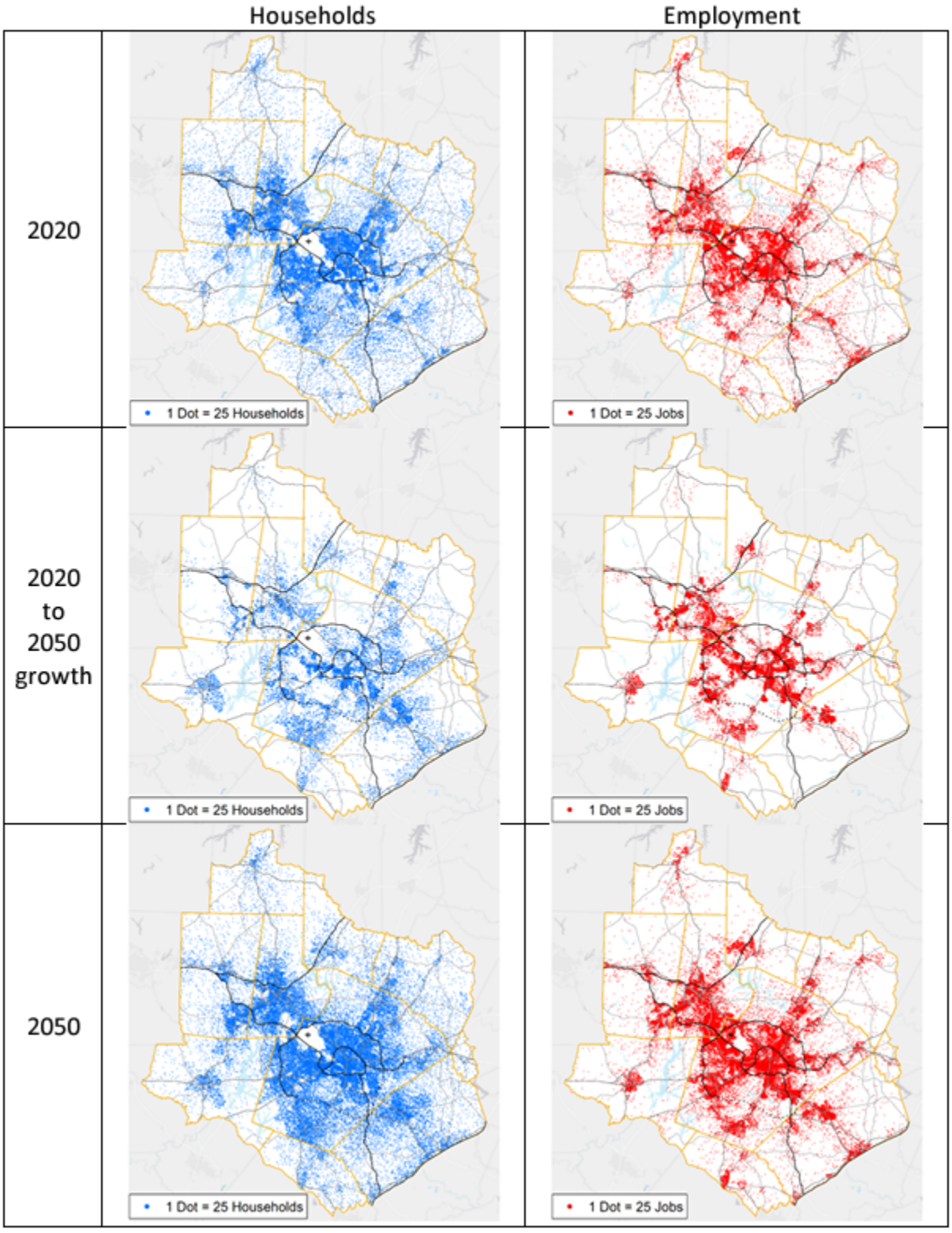
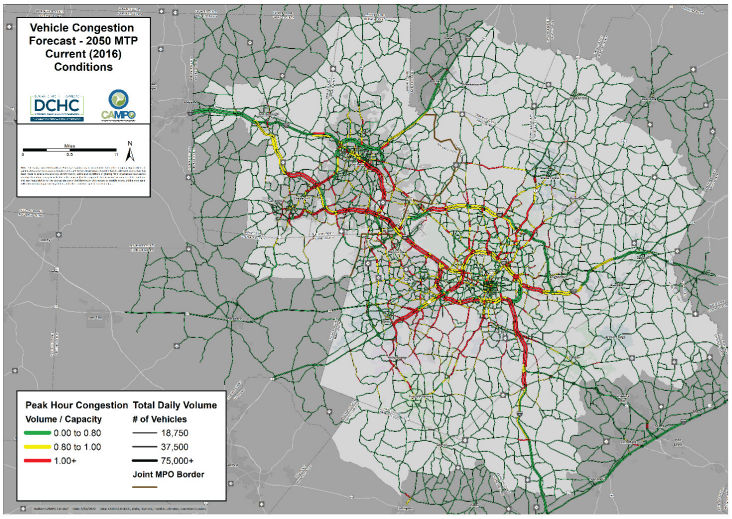


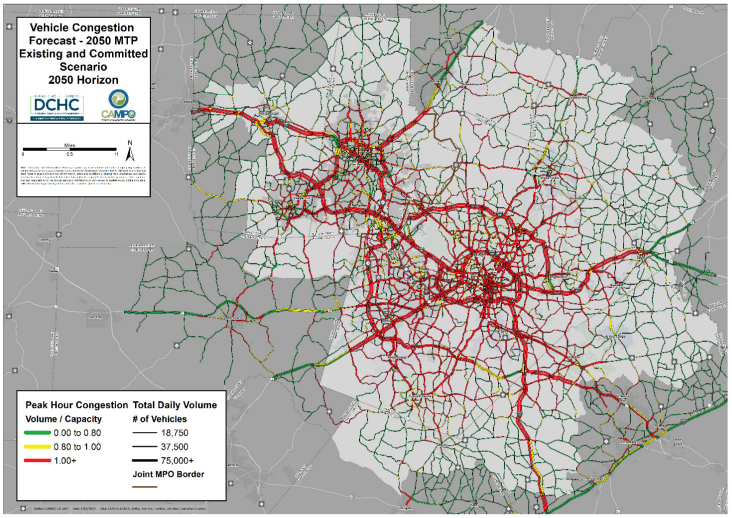
Figure 4: Growth in Households and Employment

The *Connect 2050 MTP* also shows existing trip volumes and roadway capacity in 2016, along with forecasted conditions if the projects within the MTP are built and operated (Figure 5). It also shows forecasted volumes and roadway capacity in 2050, without significant new investments, highlighting future levels of congestion that can occur. In Figure 5, the thicker lines depict roadways with higher traffic volumes and thinner lines show segments of the roadways carrying lesser volumes. The colors of the roadways correspond to Volume/Capacity (V/C) ratios, where greater V/C ratios correspond to more congestion. The *MTP* notes "Volume/Capacity ratio below 0.8 (in **green**) is indicative of a relatively free flowing roadway with little or no congestion. Once the Volume/Capacity, or V/C ratio, rises towards 1.0, motorists will experience more periods of congestion. Volume/Capacity ratios greater than 1.0 (in **red**) represent roadways which are consistently congested throughout and beyond the peak hours of travel."

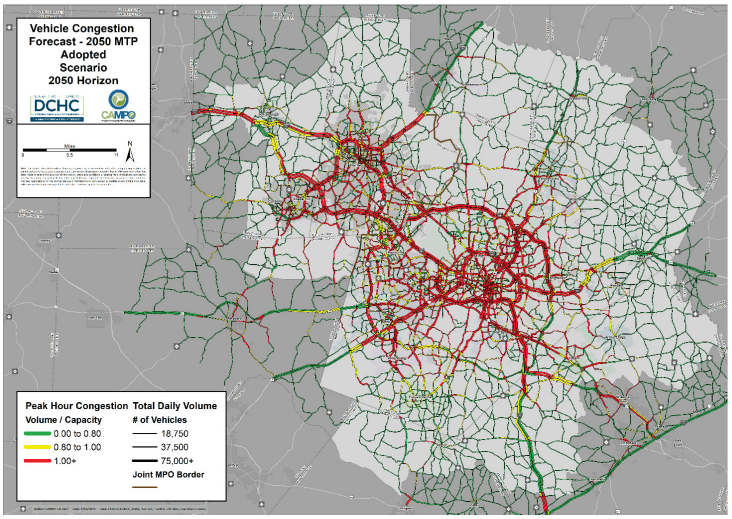
It is critical to note that the *Connect 2050 MTP* included Commuter Rail as a transit fixed guideway project, assuming service from West Durham to Clayton by 2030 and then extended service to Hillsborough and Selma by 2050. Since the publication of *MTP*, GoTriangle completed the Greater Triangle Commuter Rail study, which identified significant feasibility challenges to implementing regional rail within the budget and timeline established in the current *Wake and Durham Transit Plans*. An update is underway for the *Wake Transit Plan* that does not include Commuter Rail, noting it is no longer affordable as part of the 2026 to 2035 *Wake Transit Plan Update*. While the *Wake Transit Plan Update* is proposing to leverage existing intercity rail service and planned rail projects, it will not provide the same levels of service that were proposed with Commuter Rail. This provides an opportunity to introduce more enhanced transit services between Durham and Raleigh, providing similar levels of service that would have been provided by Commuter Rail and that were accounted for in the volumes and roadway capacity maps shown in Figure 5.



Roadway congestion in the 2016 Transportation Model Calibration Year



Estimated roadway congestion in 2050 if we only had the road and transit networks in place or under construction today



Estimated roadway congestion in 2050 if we build all the projects contained in this 2050 Metropolitan Transportation Plan

Figure 5: Trip Volume and Roadway Capacity

2035 Wake Transit Plan Update

Coinciding with the FAST 2.0 Study, the *2035 Wake Transit Plan Update* is underway to identify the priorities of Wake Transit Plan funding over the next ten years. As part of public engagement being completed between December 2024 and January 2025, a concept of BRT along I-40 between Raleigh and Durham was introduced to the public. Figure 6 shows the engagement material for this concept and asks for input from the public about whether or not this service can be a good way to connect Raleigh and Durham and intermediate destinations between the cities. A service like this can support the regional connections that stakeholders noted as a priority, and is also along a FAST corridor (I-40).

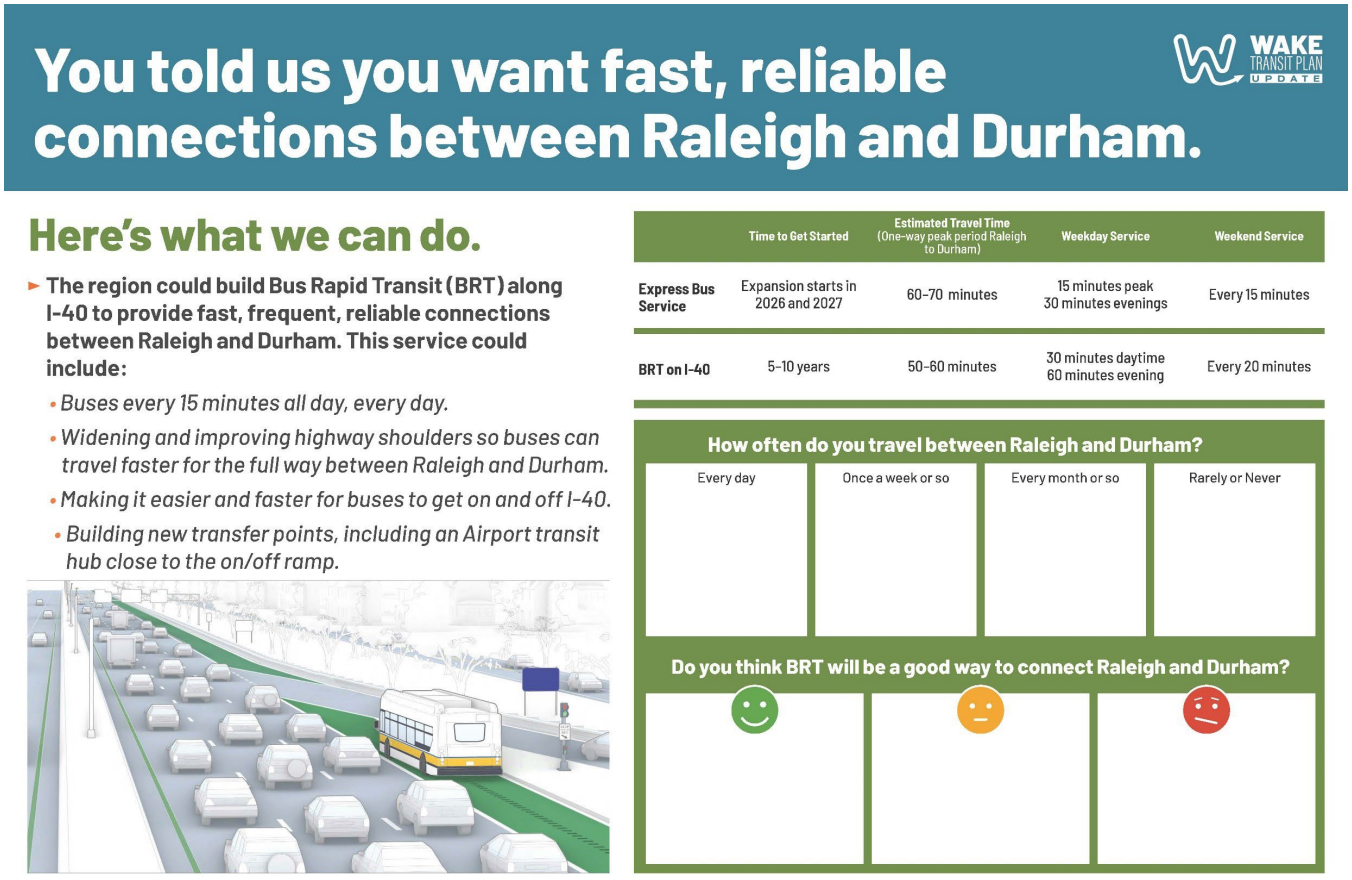


Figure 6: Engagement Materials from 2035 Wake Transit Plan Update

Adjacent Projects

In addition to recent work and planned projects in the region, highlighted in the *Existing Plan Memo*, numerous ongoing or upcoming projects are underway or just starting the planning process. Figure 7 shows the active local and STIP projects adjacent to the FAST 2.0 Regional Network. The adjacent projects and studies being undertaken by project stakeholders include:

- Hillsborough Mobility Hub
- Triangle Mobility Hub
- Chapel Hill Transit High-Capacity Transit Corridor Feasibility Study
- US 15-501 Corridor Study
- Durham Bus Rapid Transit Vision Plan
- GoTriangle Regional Bus Blueprint
- US 70 Phase II Analysis
- Capital Boulevard Tolling Study

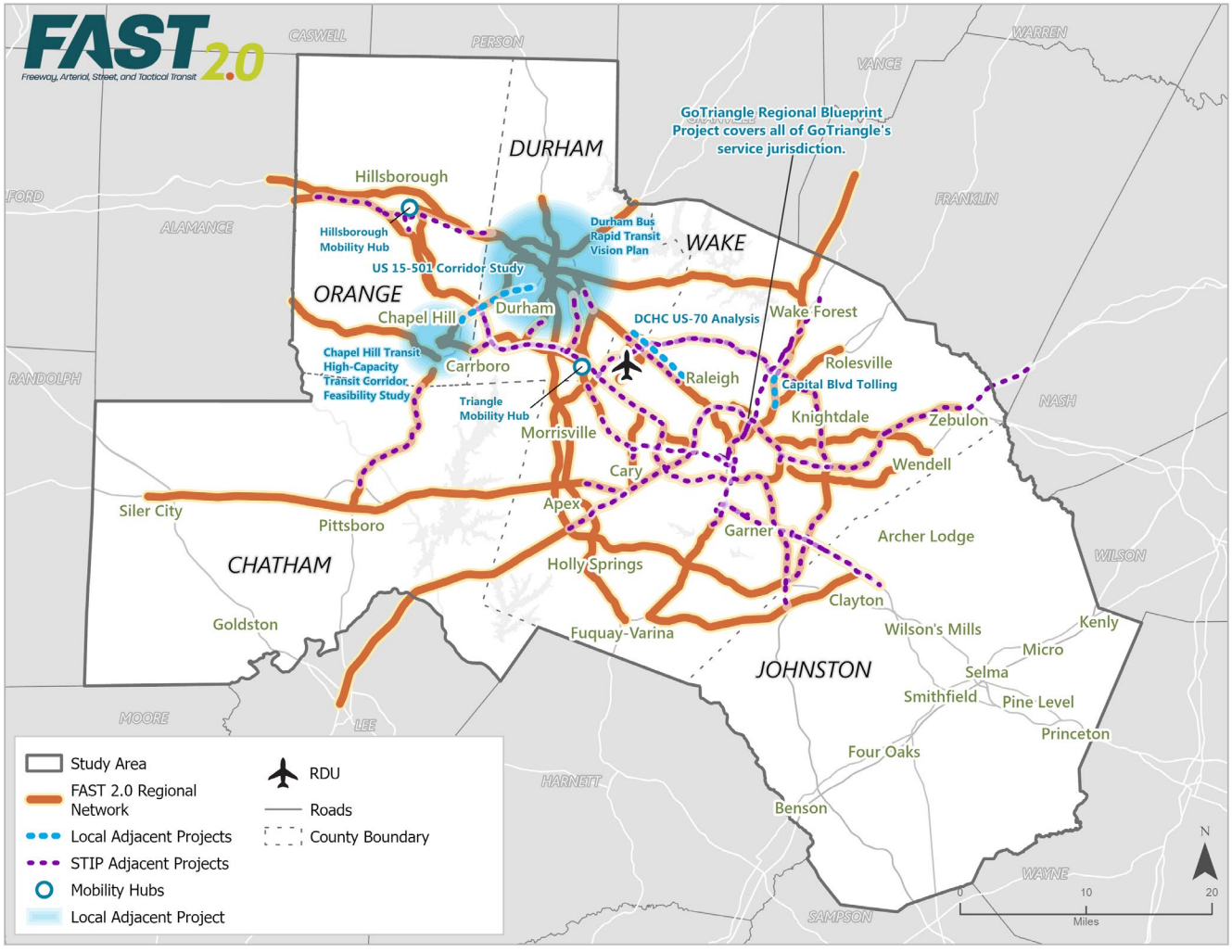


Figure 7: Adjacent Projects to FAST 2.0 Regional Network

The STIP projects that are shown on Figure 7 are listed in Table 2. The draft 2026-2035 STIP, is currently out for public comment, and is expected to be adopted in Summer 2025, so the status of projects shown in Table 2 are updated to reflect what is shown in the draft 2026-2035 STIP.

Table 2: Adjacent STIP Projects

TIP	Route	Description	Mode	Construction
BL-0091	HIGGINS GREENWAY	SHIRLEY DRIVE TO NORTH OF INTERSECTION OF WALNUT STREET AND SR 1300 (KILDAIRE FARM ROAD) IN CARY. COMPLETE A GAP OF GREENWAY TRAIL.	Bicycle and pedestrian	2025
I-0305	I-85	WEST OF SR 1006 (ORANGE GROVE ROAD) IN ORANGE COUNTY TO WEST OF SR 1400 (SPARGER ROAD) IN DURHAM COUNTY. ADD LANES.	Highway	Funded for preliminary engineering only
I-5701	I-40 / US 64	I-440 / US 1 / US 64 TO SR 1370 (LAKE WHEELER ROAD) IN RALEIGH. ADD LANES.	Highway	2027
I-5944	I-87 / US 64 / US 264	I-440 IN RALEIGH TO SR 1003 (ROLESVILLE ROAD). PAVEMENT REHABILITATION.	Highway	2031
I-5945	I-540	TRIANGLE TOWNE CENTER BOULEVARD IN RALEIGH TO I-495 / US 64 / US 264 IN KNIGHTDALE. PAVEMENT REHABILITATION.	Highway	2031
I-5958	I-40 / I-85	WEST OF SR 1114 (BUCKHORN ROAD) TO WEST OF SR 1006 (ORANGE GROVE ROAD). PAVEMENT REHABILITATION.	Highway	2027
I-5968	I-540	US 70 TO SR 1829 (LEESVILLE ROAD) IN RALEIGH. CONSTRUCT EASTBOUND AUXILIARY LANE.	Highway	2031
I-5993	I-40	US 15 / US 501 TO EAST OF NC 147. PAVEMENT REHABILITATION.	Highway	2026
I-5995	I-40	EAST OF NC 147 TO SR 1728 (WADE AVENUE). PAVEMENT REHABILITATION.	Highway	2026
I-5997	I-440 / US 1	SR 1728 (WADE AVENUE) TO SR 2000 (WAKE FOREST ROAD) IN RALEIGH. PAVEMENT REHABILITATION.	Highway	2024
I-5998	I-540	I-40 IN DURHAM TO US 70 IN RALEIGH. PAVEMENT REHABILITATION.	Highway	2026
I-5999	I-540	US 70 (GLENWOOD AVENUE) TO EAST OF TRIANGLE TOWN BOULEVARD IN RALEIGH. PAVEMENT REHABILITATION.	Highway	2024
I-6000	I-540	I-40 IN DURHAM TO US 1 IN RALEIGH. BRIDGE PRESERVATION / REHABILITATION.	Highway	2029
I-6001	I-87 / FUTURE I-87 / US 64 / US 264	SR 1003 (ROLESVILLE ROAD) TO NASH COUNTY LINE. PAVEMENT REHABILITATION.	Highway	2025
P-5753AA	CSX S-LINE	RALEIGH UNION STATION TO NC 98 - S-LINE RAIL IMPROVEMENTS.	Rail	
R-2829A	NEW ROUTE (FUTURE NC 540)	I-40 TO SOUTH OF ROCK QUARRY ROAD. CONSTRUCT FREEWAY ON NEW LOCATION.	Highway	2025
TO-6166	VARIOUS	BUS RAPID TRANSIT SERVICE, MORRISVILLE TO CLAYTON. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE.	Public transit	
TO-6166A	VARIOUS	BUS RAPID TRANSIT SERVICE, MORRISVILLE TO CARY. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE.	Public transit	2033
TO-6166B	VARIOUS	BUS RAPID TRANSIT SERVICE, CARY TO RALEIGH. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE.	Public transit	
TO-6166C	VARIOUS	BUS RAPID TRANSIT SERVICE, RALEIGH TO GARNER. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE.	Public transit	

TO-6166D	VARIOUS	BUS RAPID TRANSIT SERVICE, GARNER TO CLAYTON. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE.	Public transit	2033
U-5301	US 64	WEST OF SR 1308 (LAURA DUNCAN ROAD) TO US 1 IN APEX AND CARY. CORRIDOR UPGRADE AND IMPROVEMENTS.	Highway	2032
U-5304F	US 15 / US 501	SR 1742 (EPHESUS CHURCH ROAD) TO I-40. CORRIDOR CAPACITY IMPROVEMENTS.	Highway	2030
U-5307A	US 1	I-540 TO NORTH OF SR 2006 (DURANT ROAD) IN RALEIGH.	Highway	2031
U-5518	US 70 (GLENWOOD AVENUE)	WEST OF SR 3067 (T.W. ALEXANDER DRIVE) TO I-540 IN RALEIGH. UPGRADE ROADWAY TO IMPROVE CAPACITY, SAFETY AND TRAFFIC OPERATIONS INCLUDING INTERCHANGES AT VARIOUS LOCATIONS.	Highway	2030
U-5720	US 70 (MIAMI BOULEVARD)	LYNN ROAD TO SR 1959 (SOUTH MIAMI BOULEVARD) / SR 1811 (SHERRON ROAD).	Highway	
U-5750	NC 54	NC 540 TO PERIMETER PARK DRIVE IN MORRISVILLE. ADD LANES.	Highway	2026
U-5774C	NC 54	EAST OF SR1110 (BARBEE CHAPEL ROAD) TO EAST OF LITTLE CREEK. UPGRADE ROADWAY CORRIDOR.	Highway	Not funded.
U-5845	SR 1009 (SOUTH CHURTON STREET)	I-40 TO ENO RIVER IN HILLSBOROUGH. WIDEN TO MULTI-LANES.	Highway	2033
U-5934	I-885	I-40 TO NC 147 IN DURHAM. ADD LANES AND REHABILITATE PAVEMENT.	Highway	2030
U-6192	US 15 / US 501	US 64 BYPASS TO SR 1919 (SMITH LEVEL ROAD). CONVERT REMAINING NON-SYNCHRONIZED SECTIONS OF FACILITY TO SYNCHRONIZED STREET.	Highway	Funded for preliminary engineering only.

The list of ongoing projects presents opportunities to include transit within the planning and design of projects, which may lead to more transit infrastructure being built at a faster rate. However, the number of projects on this list highlights the constantly changing transportation planning landscape in the region, which can make it difficult for agencies to be fully knowledgeable about which projects are underway. These points highlight the need and opportunities for increased regional transit coordination, focused on holistic transit infrastructure.

Existing Transit

It is important to consider the existing transit operators that service the study area. Figure 8 shows the existing fixed-route local and regional transit operators. It highlights how most local transit service providers serve a core area within their jurisdictions, with few routes connecting to other municipalities or regional destinations. GoTriangle provides regional connections with limited coverage throughout the study area, perhaps indicating a gap in connections between the local transit services and key regional destinations like RDU airport or RTP. The existing local and regional transit coverage also highlights gaps in service to areas outside of Orange, Durham, and Wake counties. During the stakeholder meetings, it was noted that planning for transit connections to other counties, such as Chatham or Johnston counties, is now a key part of future land use planning to allow transit to be a part of determining future development patterns.

Within the study area, additional transit service coverage is provided in some locations by microtransit services. In Northeast Wake County, GoWake SmartRide NE provides same-day service within a designated area that includes the towns of Zebulon, Rolesville, Wendell and the surrounding unincorporated areas of Riley Hill, Hopkins, Lizard Lick

and Eagle Rock. In Durham, GoDurham's Microtransit Program provides service within two designated service zones: East Durham and North Durham. These existing services aim to provide service to areas lacking existing fixed route service or in underserved areas.

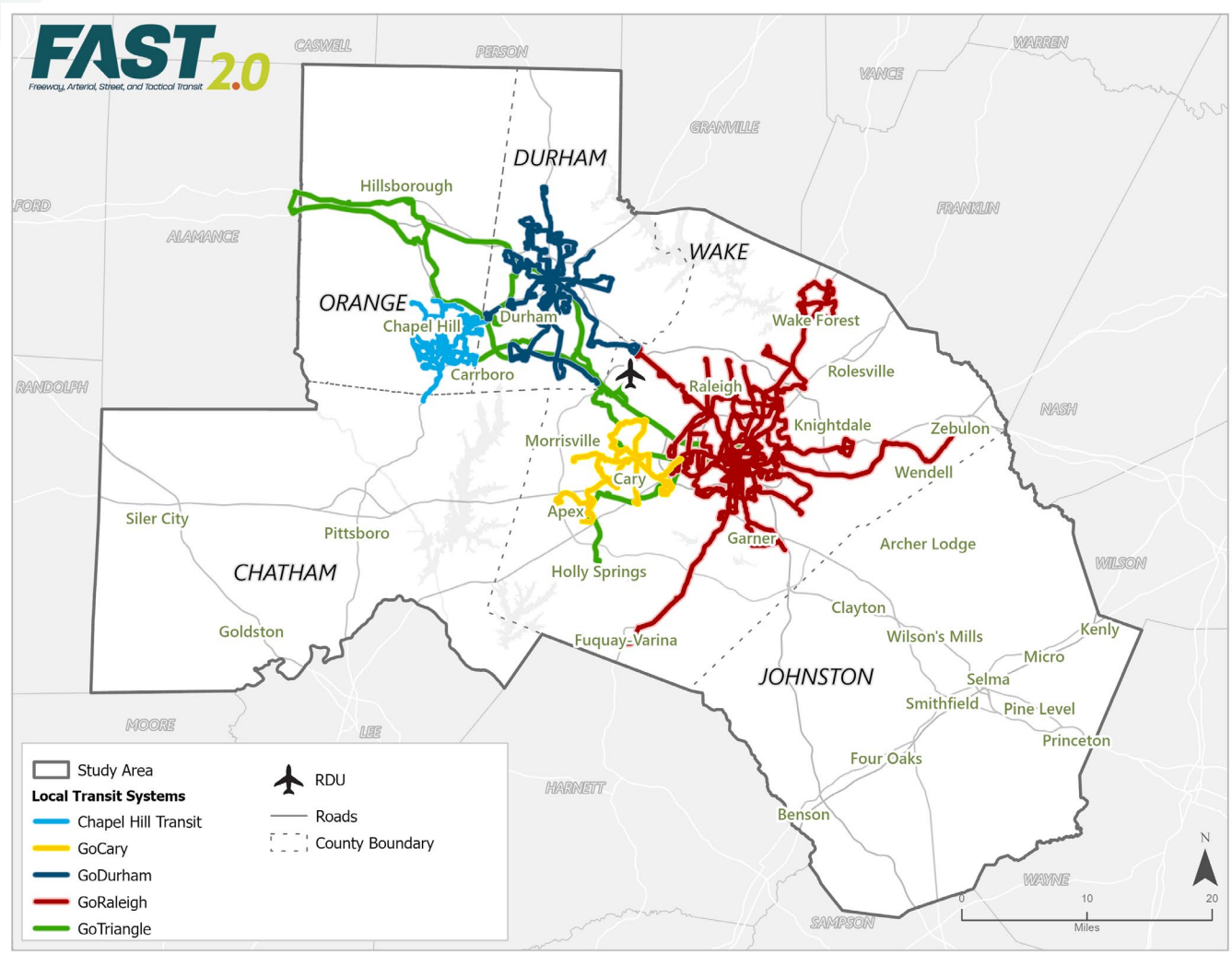


Figure 8: Local Transit Systems in Study Area

Demographic Indices

Demographic data for the study area was gathered and mapped to recognize where transit-dependent populations are in the region. The analysis used NCDOT's new Equity and Transportation Disadvantage Screening Tool and its source data, the U.S. Census 2016-2020 5-Year American Community Survey (ACS) at the block group level, to visualize the data.

BIPOC Population

Figure 9 shows the BIPOC (Black, Indigenous, Persons of Color) population percentages within the study area, which is a composite of racial and ethnic minorities combined, and includes Black, Hispanic, Asian, Pacific Islander, American Indian, and Multi-race populations. In Figure 9, higher percentages of BIPOC populations are observed in east and northeast Raleigh and north, east, and south of Downtown Durham. Other places with block groups with higher percentages of BIPOC populations in the study area include Selma, Siler City, and along I-40 in Durham and Wake counties.

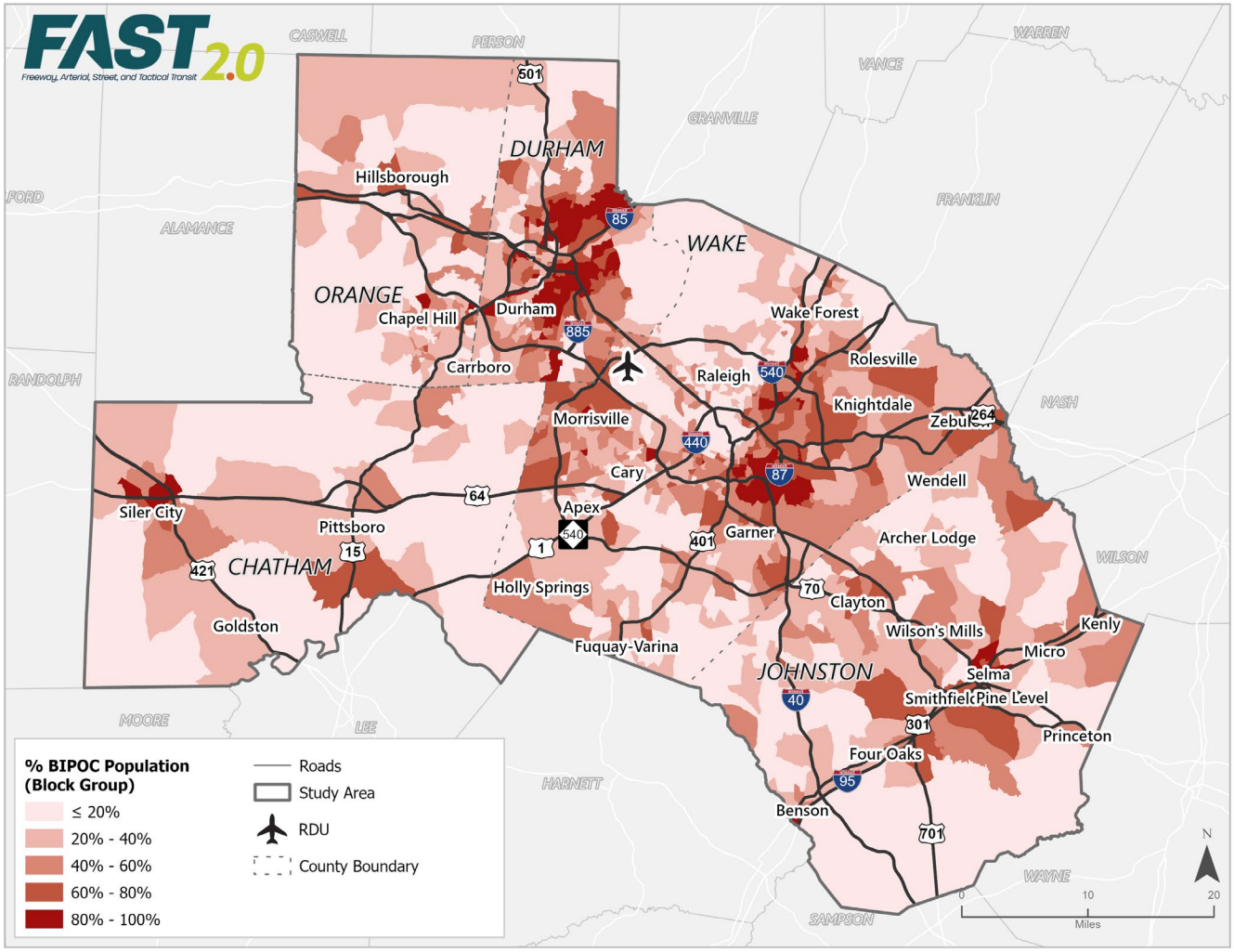


Figure 9: BIPOC Population within the Study Area

Low-Income Population

Figure 10 shows block groups with a higher percentage of low-income individuals dispersed across the study area, with clusters located in municipalities throughout the study area, such as south and east Raleigh, central and north Durham, Carrboro, Hillsborough, Pittsboro, and Siler City. There is also a notable area of block groups with a higher percentage of low-income individuals along I-95 in Johnston County.

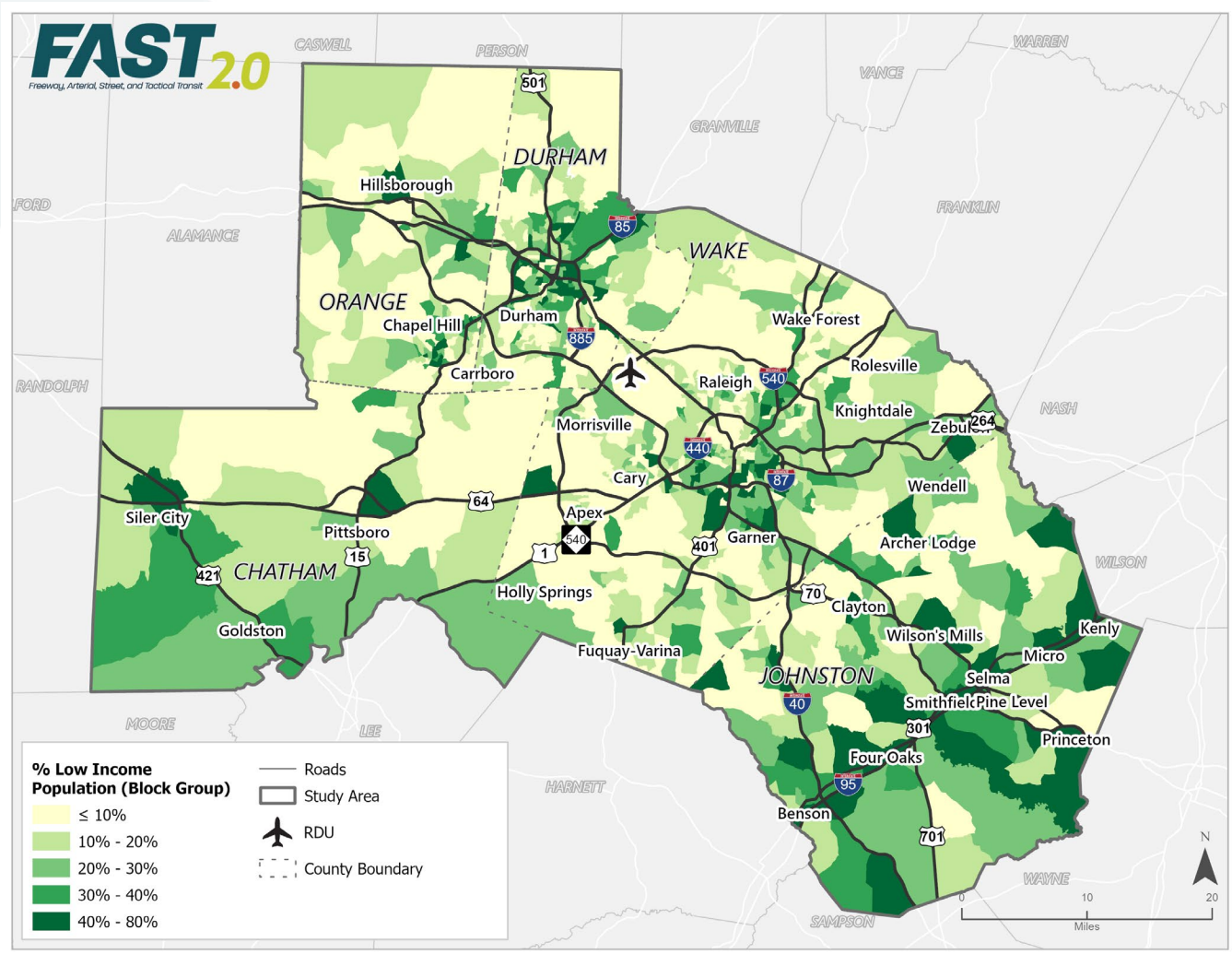


Figure 10: Low Income Population within the Study Area

Zero-Car Households

Figure 11 shows the percentage of zero-car households within the study area's block groups. While block groups with a higher percentage of zero-car households are present throughout the study area, concentrations of block groups where 20% or more of households without access to a vehicle are located in southeast Raleigh, within and between Chapel Hill and Durham, between Siler City and Pittsboro, east of I-95, and near universities.

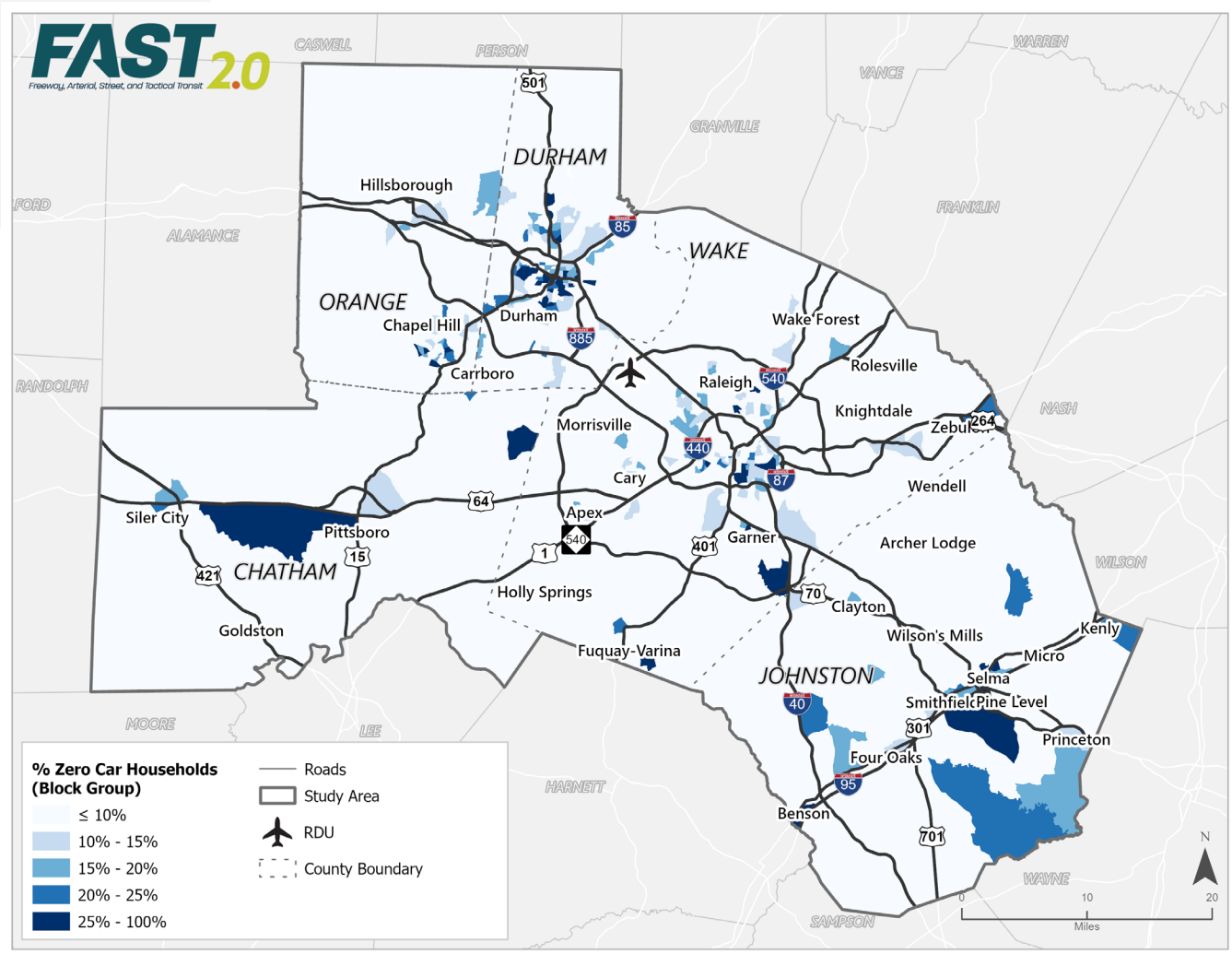


Figure 11: Zero-Car Households within the Study Area

Agency Demographic Indices

NCDOT and the MPOs also have tools and indices that they can use to determine which populations or areas can benefit the most from transit investments. The two indices developed by NCDOT "illustrate the disproportionate impact transportation barriers have on communities of color." These three agency-specific indices were also mapped as part of this assessment to analyze the demographics of the study area.

Transportation Disadvantage Index (TDI)

The NCDOT Transportation Disadvantage Index (TDI) tool focuses on race (Black, Indigenous, and persons of color), income, personal vehicle access, people with mobility impairments, the elderly, youth, and populations with Limited English Proficiency. The TDI is a composite score based on seven indicators of potential transportation disadvantage where higher scores convey a greater level of transportation disadvantage compared to other areas in the state. Figure 12 shows how the TDI score is calculated, while Figure 13 shows the TDI throughout the study area. Figure 13 highlights that the block groups with the highest TDI scores are in similar areas to areas highlighted on the individual

population variable maps. Areas with high TDI scores are present in north and east Durham, southeast Raleigh, and along I-95. In addition, there are concentrations of block groups with high TDI scores in other areas, such as Siler City and Hillsborough.

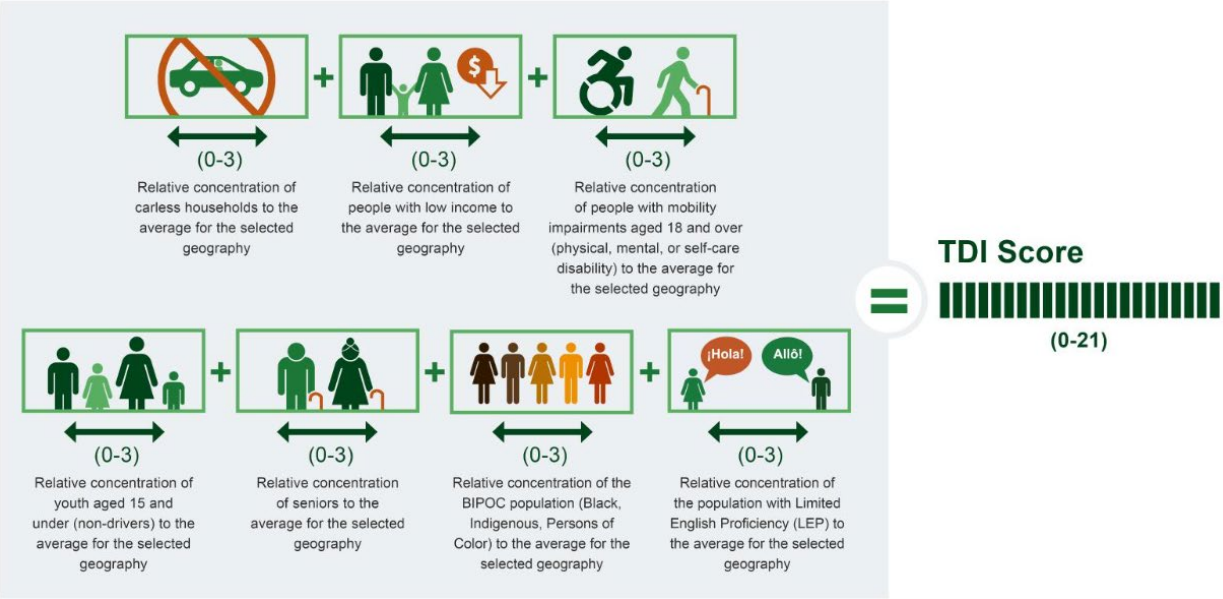


Figure 12: NCDOT's Transportation Disadvantage Index (TDI)

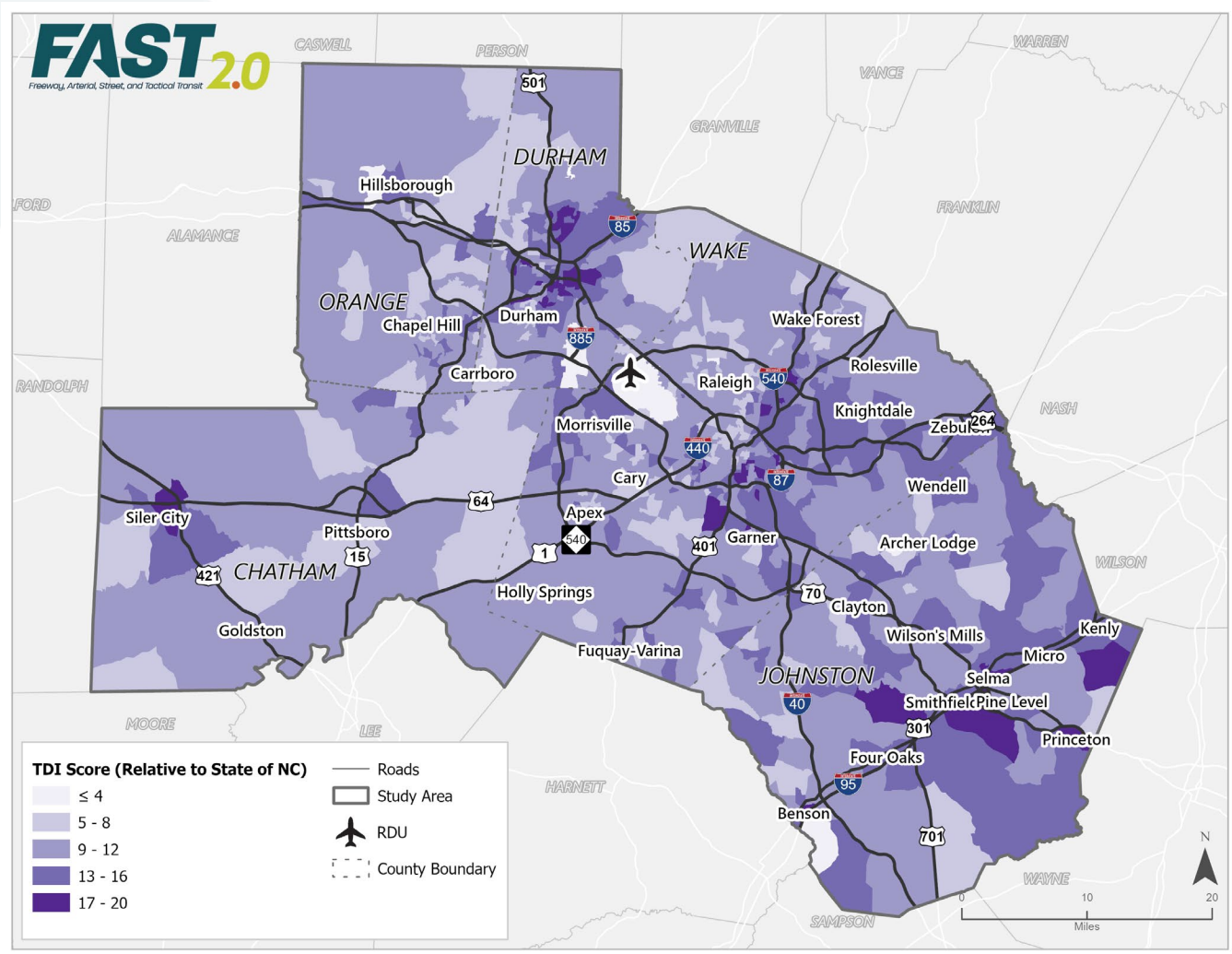


Figure 13: TDI Score within the Study Area

Environmental Justice (EJ) Index

The NCDOT Environmental Justice (EJ) Index tool focuses on low-income and racial/ethnic minorities, with the EJ index score being based on the relative concentration of the population groups in each block group. Figure 14 shows how the EJ index score is calculated, and Figure 15 shows the EJ index score throughout the study area. Figure 15 highlights that the block groups with the highest EJ index scores are in similar areas to areas highlighted on the individual population variable maps and the TDI map. Places with the highest concentrations of Environmental Justice Populations are in north and east Durham, southeast Raleigh, and along I-95. In addition, there is a presence of block groups with high EJ index scores in other areas, such as Siler City and Zebulon.

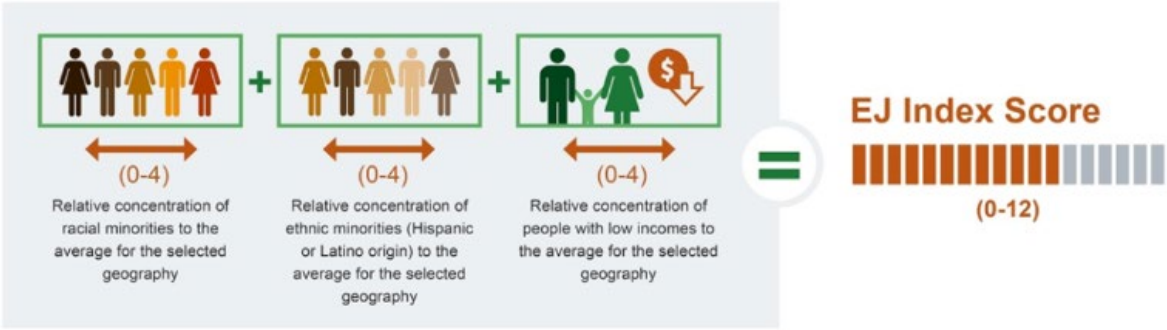


Figure 14: NCDOT's Environmental Justice (EJ) Index

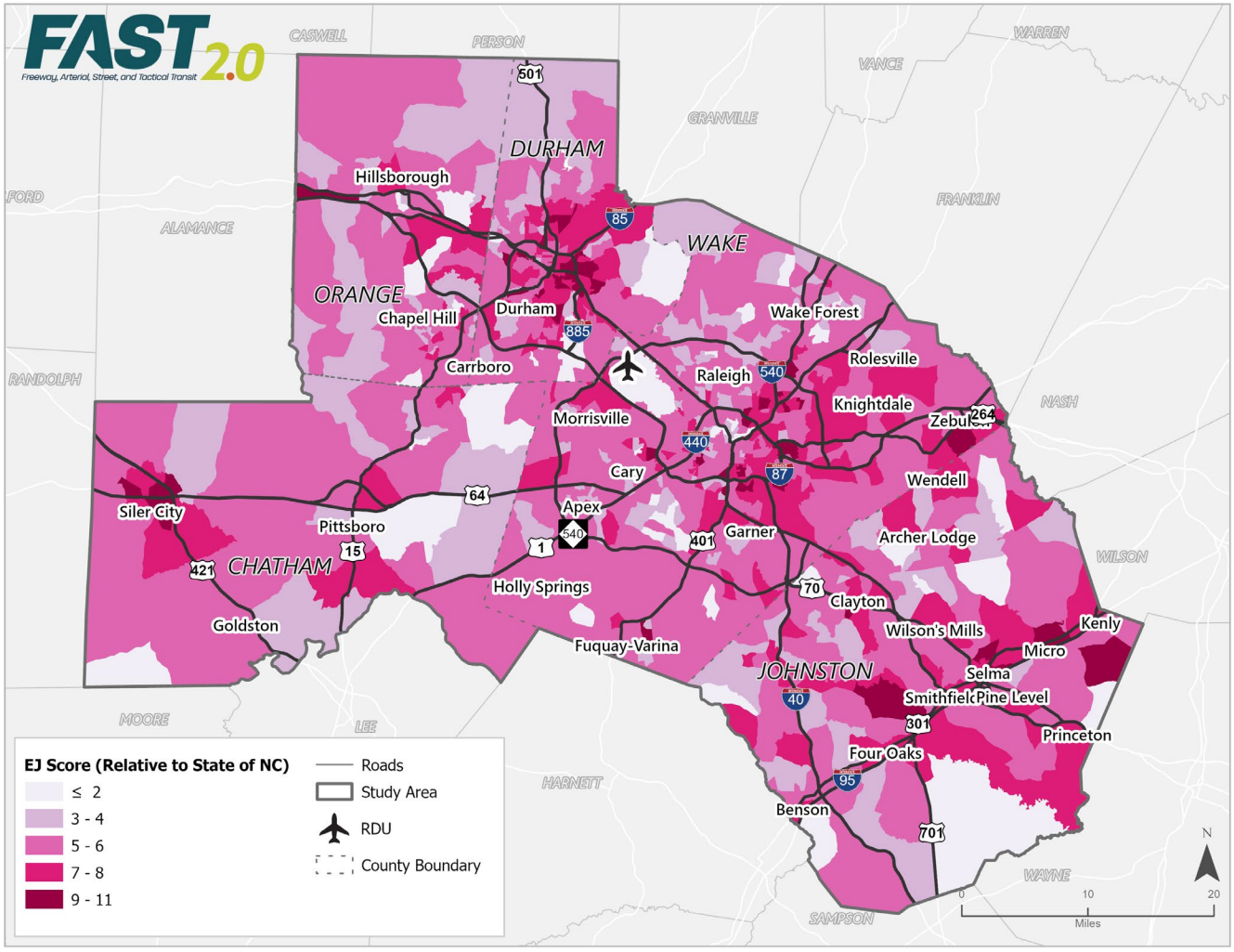


Figure 15: EJ Score within the Study Area

REINVEST Neighborhoods

The MPOs utilize demographic criteria to identify neighborhoods that may benefit most from transit investments. These neighborhoods, termed "REINVEST Neighborhoods," are selected based on four factors:

- **Race/Ethnicity:** Areas with a significant population of BIPOC individuals.
- **Income:** Neighborhoods with low-income households.
- **Vehicle Ownership:** Areas with a high proportion of households without vehicles.
- **Status:** Neighborhoods designated as Opportunity Zones or having a high number of affordable housing units.

By identifying these REINVEST neighborhoods, the MPOs can target transit investments in areas with the greatest need and potential impact. Figure 16, from the *Connect 2050 MTP*, shows each of the factors separately and also as a composite of the four factors.

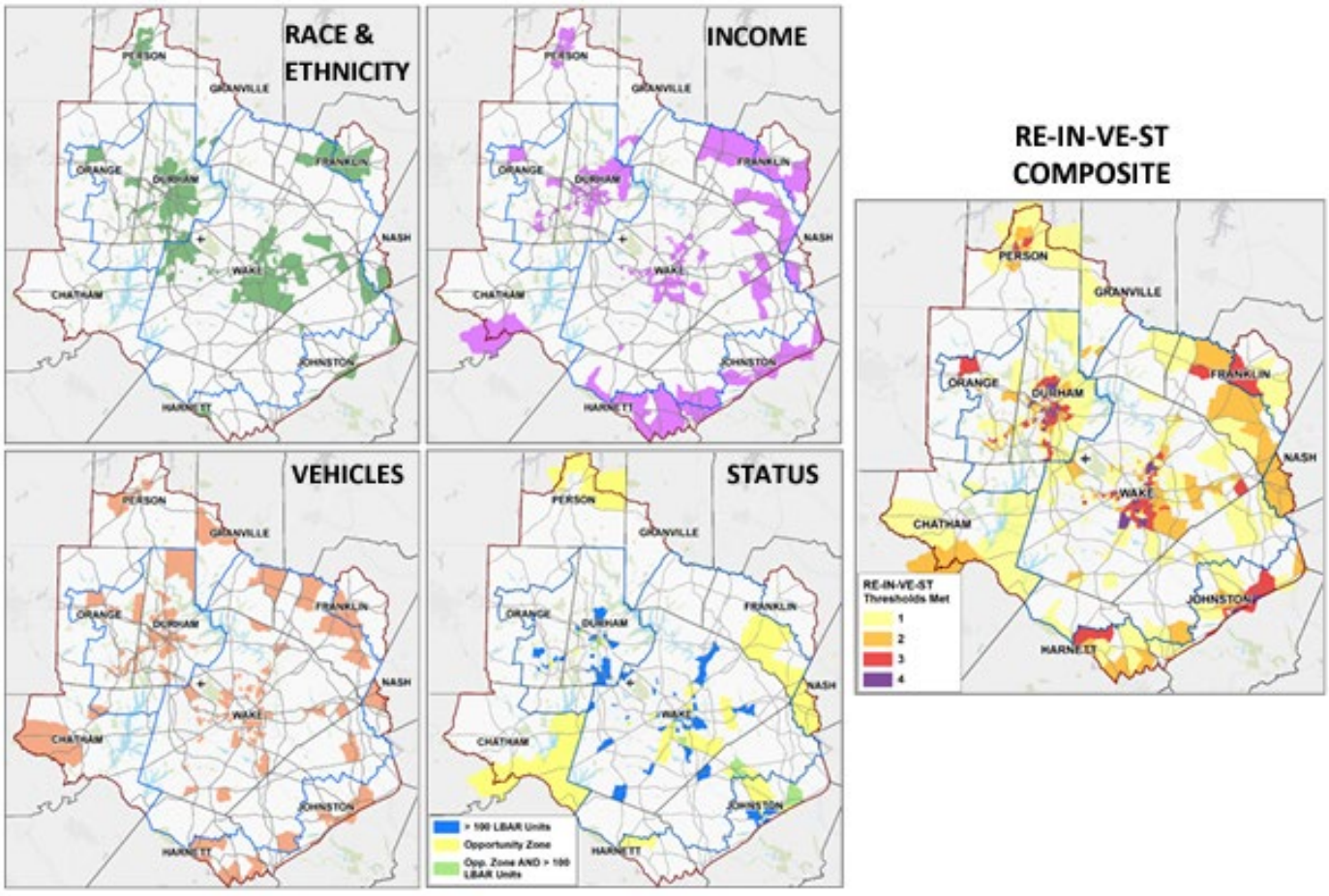


Figure 16: REINVEST Neighborhoods

Conclusion

The review of existing data and policies paired with discussions with Stakeholders highlights the regional nature of the study area. From key job hubs located throughout the Triangle to the growth of households and jobs being dispersed throughout both MPO boundaries, the reach of where people are living and working shows how the current and future transportation system needs to consider the reach of the region and how transportation needs may be spread throughout. In particular, it is critical for future transit infrastructure to connect destinations throughout the region and target investments with high potential benefits to existing and future populations. For example, the REINVEST neighborhoods from the Connect 2050 MTP, show areas where there may be the greatest need for transit investments, but also where those might have a greater potential effect on the region's residents who rely on transit.

As noted in some of the stakeholder discussions, the regional nature of transportation in the study area highlights opportunities for additional regional coordination and how greater collaboration can address challenges with the implementation of transit infrastructure projects. With transit spread across multiple counties and systems, gaps exist in how those systems connect and how easily people can travel between the service areas. These existing gaps can provide opportunities to identify projects that can be used by multiple agencies, whether that be dedicated bus lanes or multimodal transfer hubs. The number of ongoing projects and planning efforts also presents the opportunity for multimodal collaboration and the ability to incorporate transit elements into the design.

Appendix E: Regional Network and Primary Identification Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

REGIONAL NETWORK AND PRIORITY CORRIDOR IDENTIFICATION MEMO

February 2025

Introduction

The FAST 2.0 study will focus on ways to advance the implementation of transit priority infrastructure throughout the study area and the purpose of this memo is to identify the regional network and priority corridors that may be best suited for that transit priority infrastructure. The regional network builds off the Existing Conditions work and input from Stakeholders, identifying where transit infrastructure should be considered in the future. The priority corridors are part of the regional network but will be looked at more in-depth as part of the project.

Regional Network Development

FAST 1.0

The FAST 1.0 study corridors were used as a starting point to begin dialogue with Stakeholders about the FAST 2.0 study. Figure 1 shows the FAST 1.0 network, including near-term and long-term corridors. Since the FAST 1.0 study finished, much of the advancement of transit infrastructure in the region has occurred with the planning and design of BRT corridors in Raleigh and Chapel Hill. In addition, ongoing planning work since the FAST 1.0 study has identified new BRT corridors that have since been incorporated into the *Connect 2050 MTP*, including extensions to Clayton and Morrisville and new proposed BRT corridors connecting to Midtown and Triangle Town Center in North Raleigh.

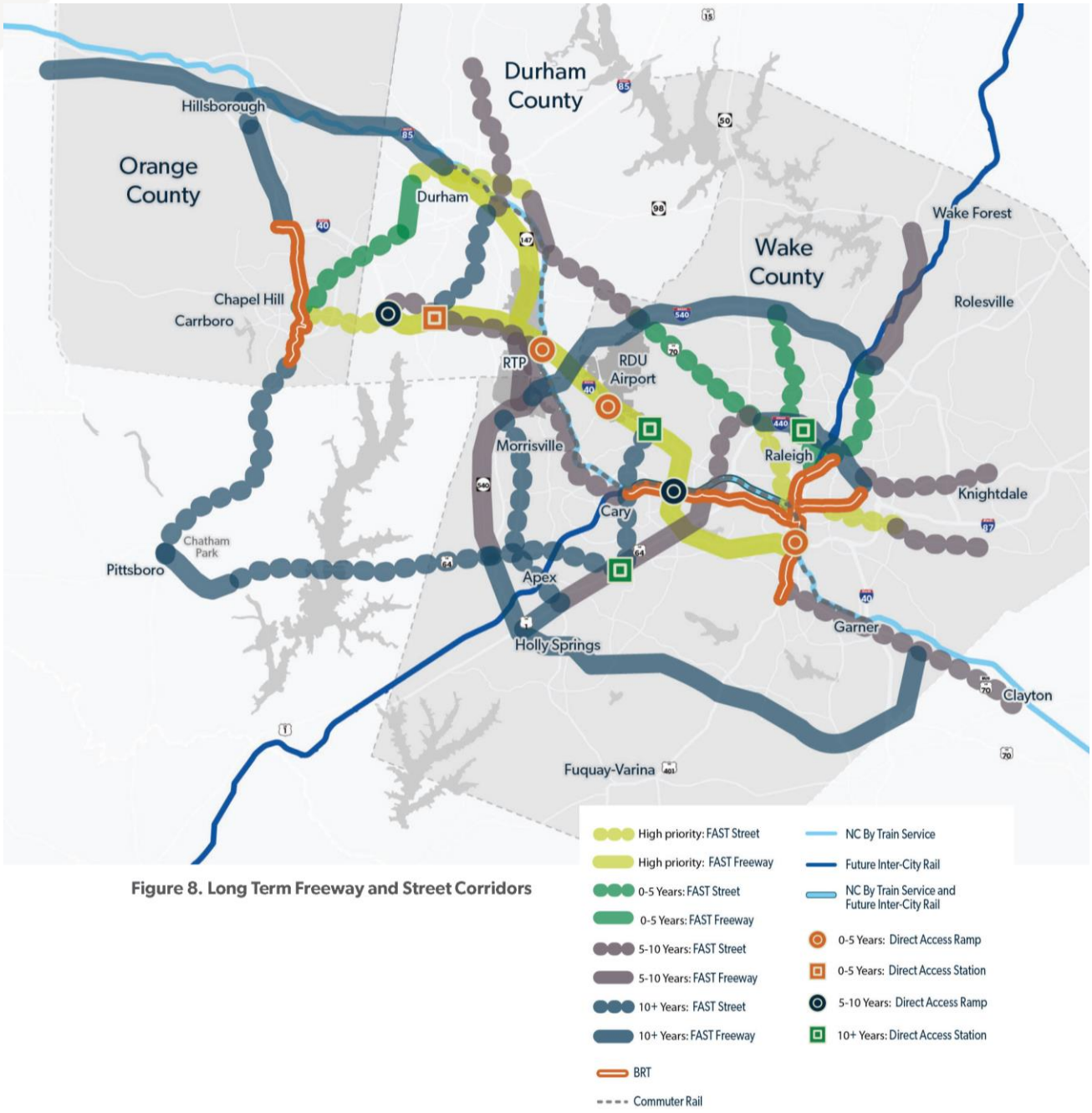


Figure 8. Long Term Freeway and Street Corridors

Figure 1: FAST 1.0 Corridors

Stakeholder Meetings

At the start of the project, one-on-one interviews were held with all the identified project Stakeholders:

- **Transit Operators**
  - GoTriangle
  - GoDurham (City of Durham)
  - GoRaleigh (City of Raleigh)
  - GoCary (Town of Cary)
  - Chapel Hill Transit (Town of Chapel Hill)
- **Metropolitan Planning Organizations (MPO)**
  - Durham-Chapel Hill-Carrboro MPO (DCHC)
  - Capital Area MPO (CAMPO)
  - Central Pines Regional Council (provides technical assistance to MPOs)
- **Counties**
  - Durham County
  - Wake County
  - Orange County
  - Johnston County
  - Chatham County
- **Regional Partners**
  - Research Triangle Foundation
  - Regional Transportation Alliance

These meetings provided a better understanding of the challenges, opportunities, and gaps in the current transit system, and gave insight on additional regional corridors that Stakeholders would like to see included and/or prioritized as part of the project. As noted above, the FAST 1.0 network was used as a starting point to identify which corridors are important to focus on in the FAST 2.0 study. From those interviews, broader regional connections and specific corridors and routes were identified by Stakeholders, including:

- **Conceptual Regional Connections:**
  - **Connectivity throughout Wake County:**
    - **Eastern Wake County**: Focus on areas like New Hope Road, Knightdale, and Wendell.
    - **Northern Wake County**: Connections to northern areas like Rolesville and Wake Forest.
    - **Western Wake County**: BRT Extensions; potential new BRT corridors.
    - **Southern Wake County**: BRT Extensions; connections to Fuquay Varina via US 1
    - **Revamp of Wake Transit Plan**: Emphasis on connecting all communities and integrating local services with high-capacity transit spines.
  - **US 70 Corridor**: Connecting Durham/Wake Counties; also connecting Durham/Orange Counties
  - **US 15-501**: Connecting Durham/Orange Counties
  - **Connections from Durham/Durham County to Raleigh/RTP/Wake County**
  - **Connections to RDU airport**: from downtown Chapel Hill, Durham, Cary and Raleigh
  - **Connections from Orange County/Chapel Hill to RTP/RTC and beyond**
  - **Connections from Cary to RTP**
  - **Outside the Triangle**: Think about surrounding areas to the Triangle and prepare for the growth now that will be seen in 30 years, i.e. think now about US 1 and US 401 corridors.

- **Specific Corridors and Routes Identified by Stakeholders:**
  - **US 70**
    - Between Durham and Raleigh
    - Between Durham and Orange Counties
  - **Chapel Hill to RTP**: Emphasizing the importance of this connection for the region.
  - **US 15-501 Corridor**
    - Chapel Hill to Durham
    - Chapel Hill to Chatham County
  - **Fayetteville Road Corridor** in Durham
  - **NC 98 Corridor**: Between Durham and Wake County
  - **Connections to VinFast Site in Chatham County**
  - **NC 54**
    - Chapel Hill to Durham
    - Within Durham, through RTP
  - **I-40** throughout the region
  - **I-540**: Northern and Southern
  - **Capital Boulevard**
  - **US 64**: Raleigh west to Pittsboro
  - **US 1**
    - Raleigh/Cary to Holly Springs/Fuquay Varina
    - Long term US 1 to towards Sanford and Pinehurst
  - **S-Line Rail Corridor**: for multimodal connections

Vision and Goals

Stakeholder input also framed the vision and goals for the FAST 2.0 study, which included themes that helped further inform the selection of corridors for the FAST 2.0 study. Some of the vision themes that speak to the desires for regional connectivity include:

- **Boost Bus Mobility and Access:** Enhance bus-based mobility and ensure equitable access to regional transit.
- **Address Local and Regional Connectivity:** Cater to both local needs and regional connectivity.
- **Prioritize Buses and BRT:** Evaluate opportunities to prioritize buses and Bus Rapid Transit (BRT) regionally.

In addition, there were several goals that highlighted the importance of regional connections:

- **Coordinate Regional Transit Projects:** Improve connectivity across the region by coordinating transit projects.
- **Assess Transportation Network:** Assess the regional transportation network for efficiency and effectiveness.
- **Develop Direct BRT Linkages:** Create direct Bus Rapid Transit (BRT) connections to RDU from Triangle downtowns.
- **Identify Freeway and Arterial Corridors for Transit Priority:** Choose one freeway and five arterial corridors for transit priority infrastructure enhancements.

Existing Transit Service

The location of existing transit service in the study area (Figure 2) highlights the extent of current transit service in the study area, showing where regional connections exist, but also where gaps in the coverage exist. The map highlights how most local transit service providers serve a core area within their jurisdictions, with few routes connecting to

other municipalities or regional destinations. While GoTriangle provides regional connections with limited frequency throughout the study area, the map shows limited connections in the core area between the local agencies.

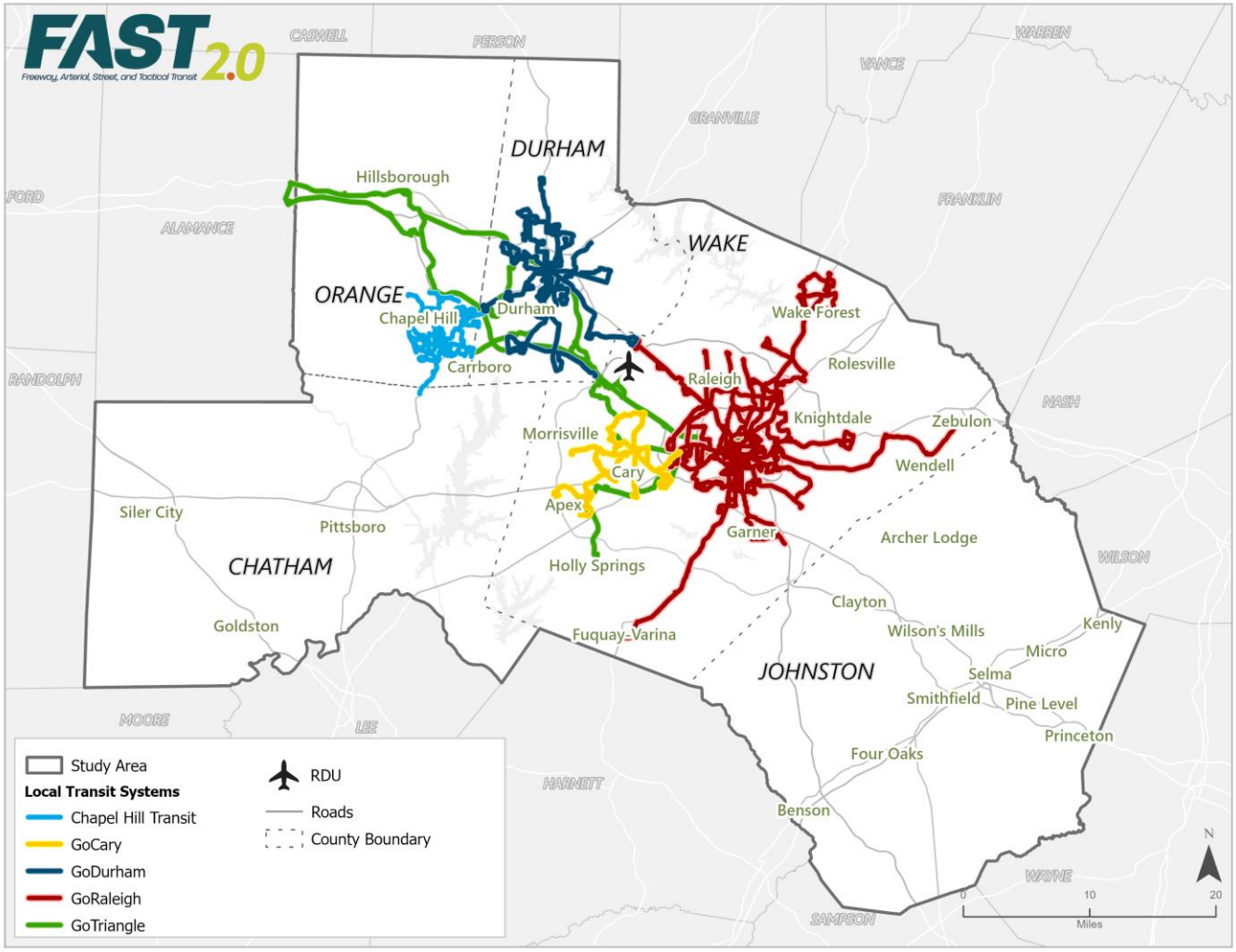


Figure 2: Local Transit Systems in Study Area

Regional Network

Using input from Stakeholders about key regional corridors and the vision and goals for study, the regional network was identified, as shown in Figure 3 and listed in Table 1. The FAST 2.0 regional network frames out a larger, long-term network for transit in the study area, by including many of the major thoroughfares within the study area.

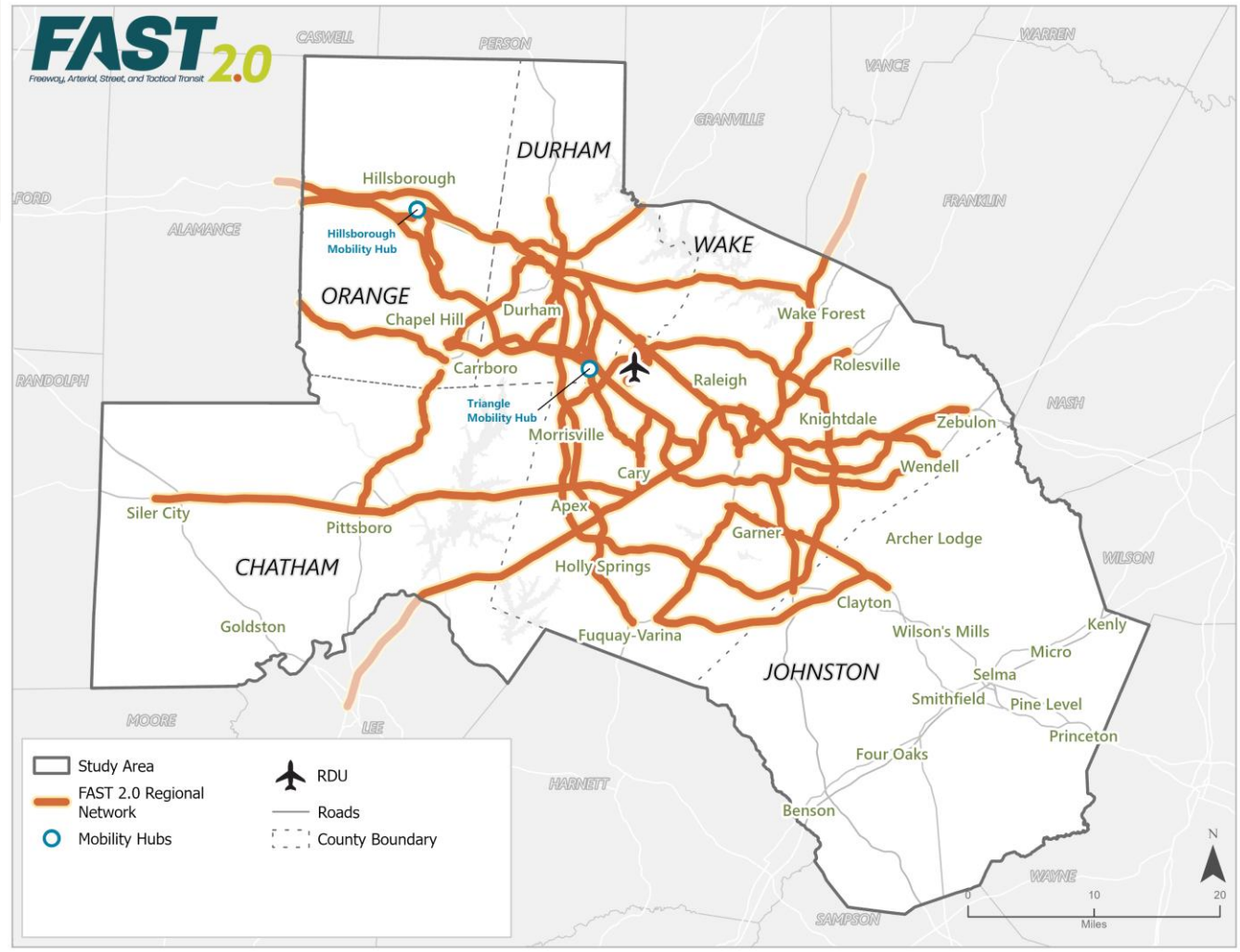


Figure 3: FAST 2.0 Regional Network

Table 1: FAST 2.0 Regional Network

Corridor Name	From	To
Trinity Road	Blue Ridge Rd	I-40
US 501 N	Latta Rd	US 70 Bus
NC 147	I-885	Mangum St
I-885	NC 98	I-40
Holloway Street / Liberty Street	Roxboro St	I-885
Roxboro Rd	Infinity Rd	Holloway St
Harrison Ave/Kildare Farm	I-40	US 64
Poole Rd	S New Hope Rd	Bethlehem Rd
Capital Boulevard	W Green St	Lane St
Morrisville to Downtown Cary BRT	Slater Rd	N Harrison Ave
NC 54	NC 55	S Miami Blvd
NC 54	US 15-501	MLK
US 70	I-885	I-540

US 70	I-540	Capital Blvd
Fayetteville Street	NC 147	I-40
I-540	I-87	I-87
I-40	Trinity Rd	NC 54
US 1	Western Blvd	I-540
US 64	US 1	US 64
US 15-501	Fulton St	Franklin St
US 15-501	Market St	US 64
Holloway Street	US 1	I-885
Garner Station - Clayton BRT	Hardee Ln	Garner Station Blvd
RTP - Morrisville BRT	Triangle Mobility Hub	Aviation Pkwy
Morrisville to Downtown Cary BRT	Wilkinson Ave	Aviation Pkwy
US 401	Louisburg Rd	US 1
US 64 Business	NC 231	I-440
Poole Road	Wendell Falls Pkwy	Bethlehem Rd
I-87	N Arendell Ave	I-440
US 401	NC 42	Garner Station Blvd
US 1	I-540	N Horner Blvd
I-440	I-87	I-40
Miami Blvd	I-40	NC 54
Cornwallis Road	Davis Dr	I-885
Davis Drive	Cornwallis Rd	NC 54
Blue Ridge Road	Trinity Rd	Western Blvd
Duke/Holloway/RDU - Inbound	RDU Airport	Duke University
Duke/Holloway/RDU - Outbound	Duke University	RDU Airport
I-40	NC 54	NC 86
I-40	I-87	Trinity Rd
US 70 / US 70 Business	9th St	I-40
Franklin Street	Fordham Blvd	N Columbia St
I-40	I-85	Alamance County
Wake Forest Road	St. Albans Dr	US-401
St. Albans Drive	Wake Forest Rd	Dartmouth Rd
I-85	Orange County	Granville County
I-440	Western Blvd	I-87
I-40	I-87	US-70/Johnston County
US 64	Hillsboro St	N 2nd St
US 70	US 70 Bus	NC 119
NC 86	US 70	Eubanks Rd
NC 54	NC 86	Alamance County
NC 54	US 70	NC 55
NC 55	NC 147	N Main St
S Miami Blvd	US 70	NC 54

Priority Corridor Development

Needs Assessment Memo

The *Needs Assessment Memo* identified new transportation challenges, opportunities, and gaps in the current transportation system by reviewing existing transportation data, planning documents, and relevant policies to help frame out the priority corridors.

A key piece of the *Needs Assessment Memo* highlighted the number of ongoing projects throughout the region, noting opportunities to include transit within the planning and design of roadway improvement projects, which may lead to more transit infrastructure being built at a faster rate. Figure 4 shows the active local and State Transportation Improvement Program (STIP) projects adjacent to the FAST 2.0 regional network. The adjacent projects and studies being undertaken by Stakeholders include:

- Hillsborough Mobility Hub
- Triangle Mobility Hub
- Chapel Hill Transit High-Capacity Transit Corridor Feasibility Study
- US 15-501 Corridor Study
- Durham Bus Rapid Transit Vision Plan
- GoTriangle Regional Bus Blueprint
- US 70 Phase II Analysis
- Capital Boulevard Tolling Study

Some studies, like the US 15-501 Corridor Study, will be creating detailed multimodal recommendations as part of the study, so creating concept designs for those corridors as part of FAST 2.0 would be duplicative in nature. Other projects, like STIP projects for pavement rehabilitation or the introduction of ramp metering along I-40, are several years out and may provide the opportunity to advance complementary transit infrastructure at the same time.

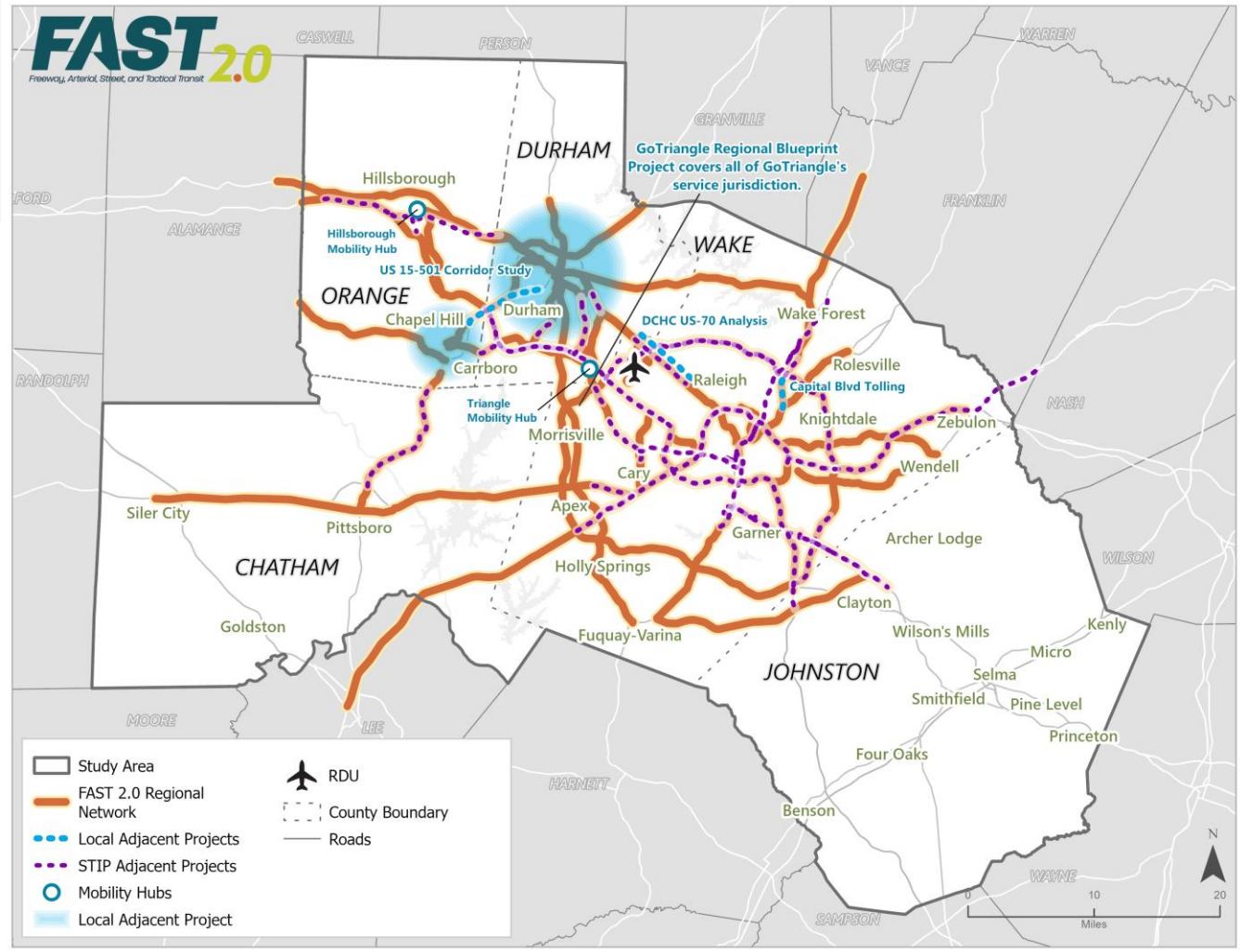


Figure 4: Adjacent Projects to FAST 2.0 Regional Network

Connect 2050 MTP

The *Needs Assessment Memo* also notes that at the time that the FAST 2.0 study was starting, the *Connect 2050 MTP* included the Greater Triangle Commuter Rail project as a transit fixed guideway project, assuming service from West Durham to Clayton by 2030 and then extended service to Hillsborough and Selma by 2050, as shown in Figure 5. Since the publication of the *Connect 2050 MTP*, GoTriangle completed the Greater Triangle Commuter Rail study, which identified significant feasibility challenges to implementing regional rail within the budget and timeline established in the current Wake and Durham Transit Plans. An update is underway for the *Wake Transit Plan* that does not include Commuter Rail, noting it is no longer affordable as part of the 2026 to 2035 Wake Transit Plan Update. While the Wake Transit Plan Update is proposing to leverage existing intercity rail service and planned rail projects, it will not provide the same levels of service proposed with the Greater Triangle Commuter Rail project. This development provides the opportunity for the FAST 2.0 study to consider how regional transit infrastructure improvements could provide similar regional connections to Commuter Rail and it provides a good opportunity to look at I-40 as a regional transit backbone.

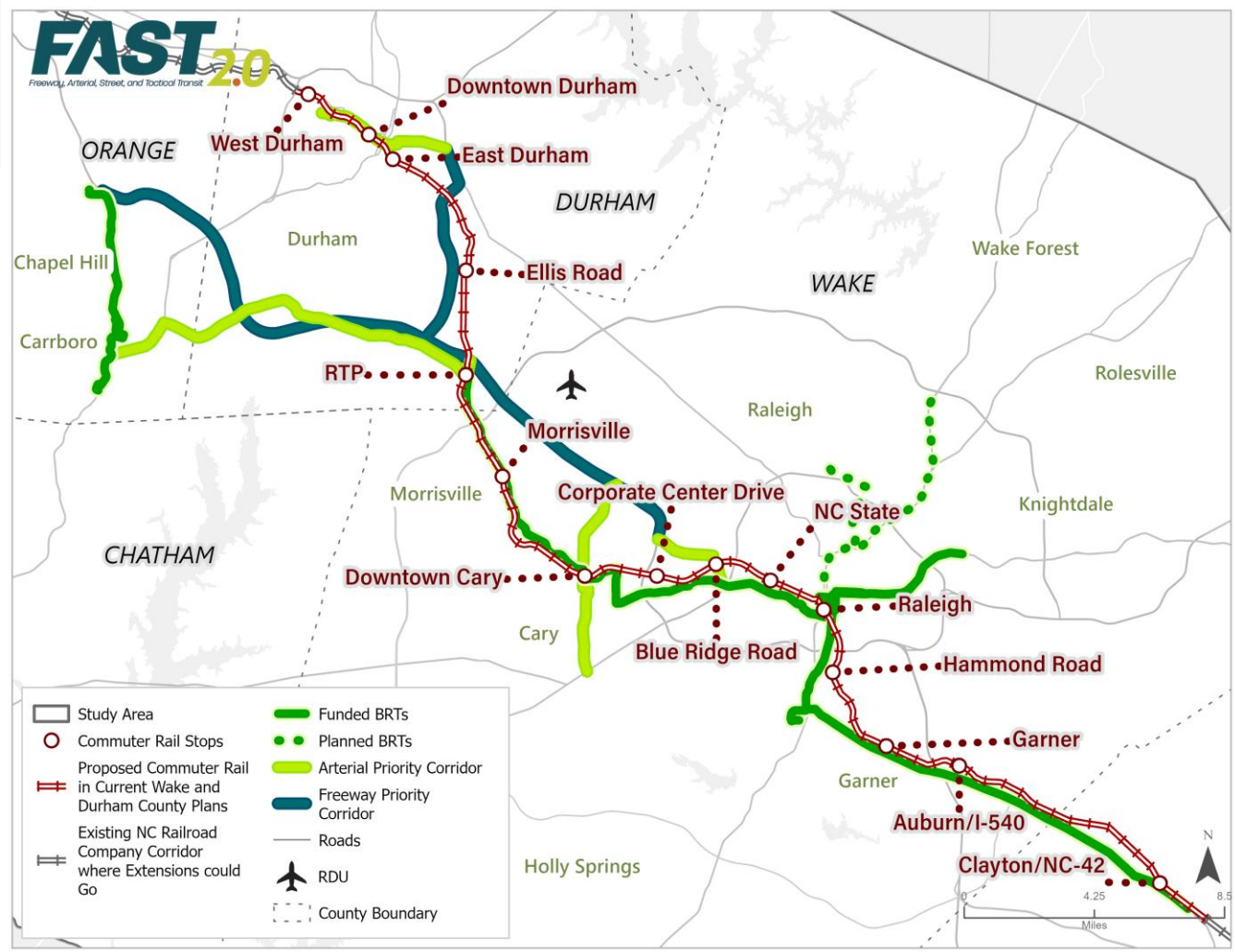


Figure 5: Proposed Greater Triangle Commuter Rail Alignment

Part of the *Connect 2050 MTP* also features an analysis of land use plans and population and employment growth forecasts, providing insight into future development patterns. Figure 6 shows key job hubs, which already have concentrated areas of employment and are planned for more dense types of land uses. These key job hubs include:

- Chapel Hill, Carrboro, and the University of North Carolina at Chapel Hill (including UNC Hospitals)
- Duke University and Hospitals, and the Veterans Administration medical campus
- Central Durham and North Carolina Central University (NCCU)
- Research Triangle Park
- Downtown Cary
- North Carolina State University (NCSU)
- Downtown Raleigh
- North Raleigh

Figure 6 shows how I-40 is the key connection between most of the job hubs, which again provides a good opportunity to look at I-40 as a regional transit backbone. Similarly, I-885 provides a north/south connection between the RTP area and Central Durham / NCCU. Additionally thinking about spurs or connections to some of these job hubs that are not directly connected to I-40, like Chapel Hill, Durham, and Cary, could build upon a core transit network that allows for enhanced service between these top destinations.

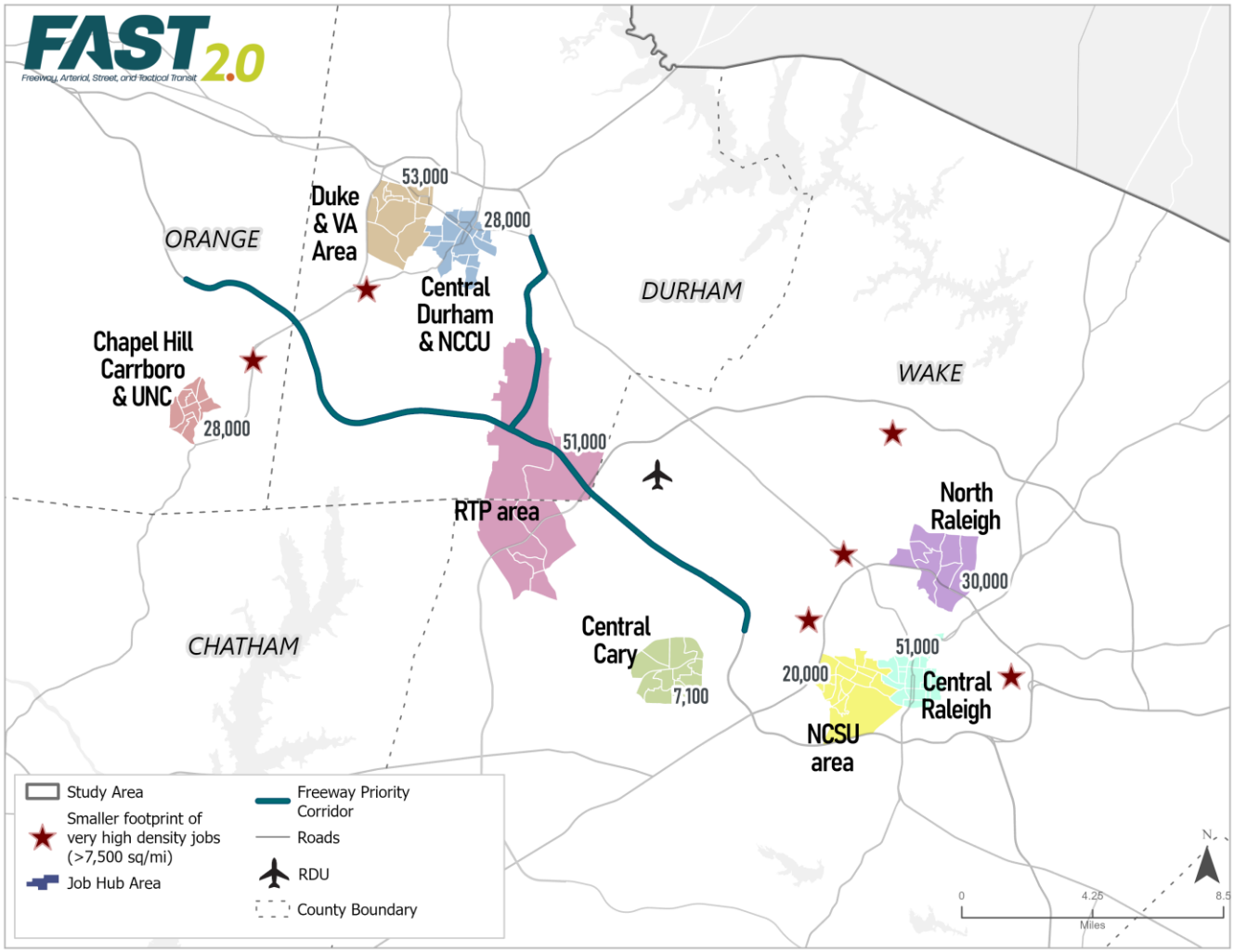


Figure 6: Key Job Hubs

Priority Corridors

The intention of selecting priority corridors for FAST 2.0 is to select corridors that could foster enhanced transit infrastructure in the near term and begin developing recommended infrastructure projects by creating concept designs along each of the priority corridors. As noted above in the study goals, the FAST 2.0 study was tasked with selecting one freeway and five arterial corridors for transit priority infrastructure enhancements.

I-40 as was selected as the freeway priority corridor, as it provides a regional backbone for enhanced transit infrastructure in the area. It was a corridor specifically noted by stakeholders and is one of the regions' most

important thoroughfares in its ability to connect to key destinations and based on the existing volume of traffic. Once I-40 was selected, arterial roadways were considered in how they would build upon a regional transit 'spine' along I-40, connecting to existing and planned transit networks and increasing access throughout the region. It was also important to factor in how the chosen arterial corridors would align with the vision and goals of the project, including vision themes noted earlier:

- **Boost Bus Mobility and Access**: Enhance bus-based mobility and ensure equitable access to regional transit.
- **Address Local and Regional Connectivity**: Cater to both local needs and regional connectivity.
- **Prioritize Buses and BRT**: Evaluate opportunities to prioritize buses and Bus Rapid Transit (BRT) regionally.

Figure 7 shows the priority corridors and

Table 2 lists each corridor and their limits, which were discussed and agreed upon by Stakeholders. Bus operation plans for direct access service to Raleigh–Durham International Airport (RDU) is being explored as part of the FAST 2.0 work and will be detailed in a future memo. In addition, BRT connections from Chapel Hill, Cary, Durham and Raleigh to RDU will also be explored in that memo.

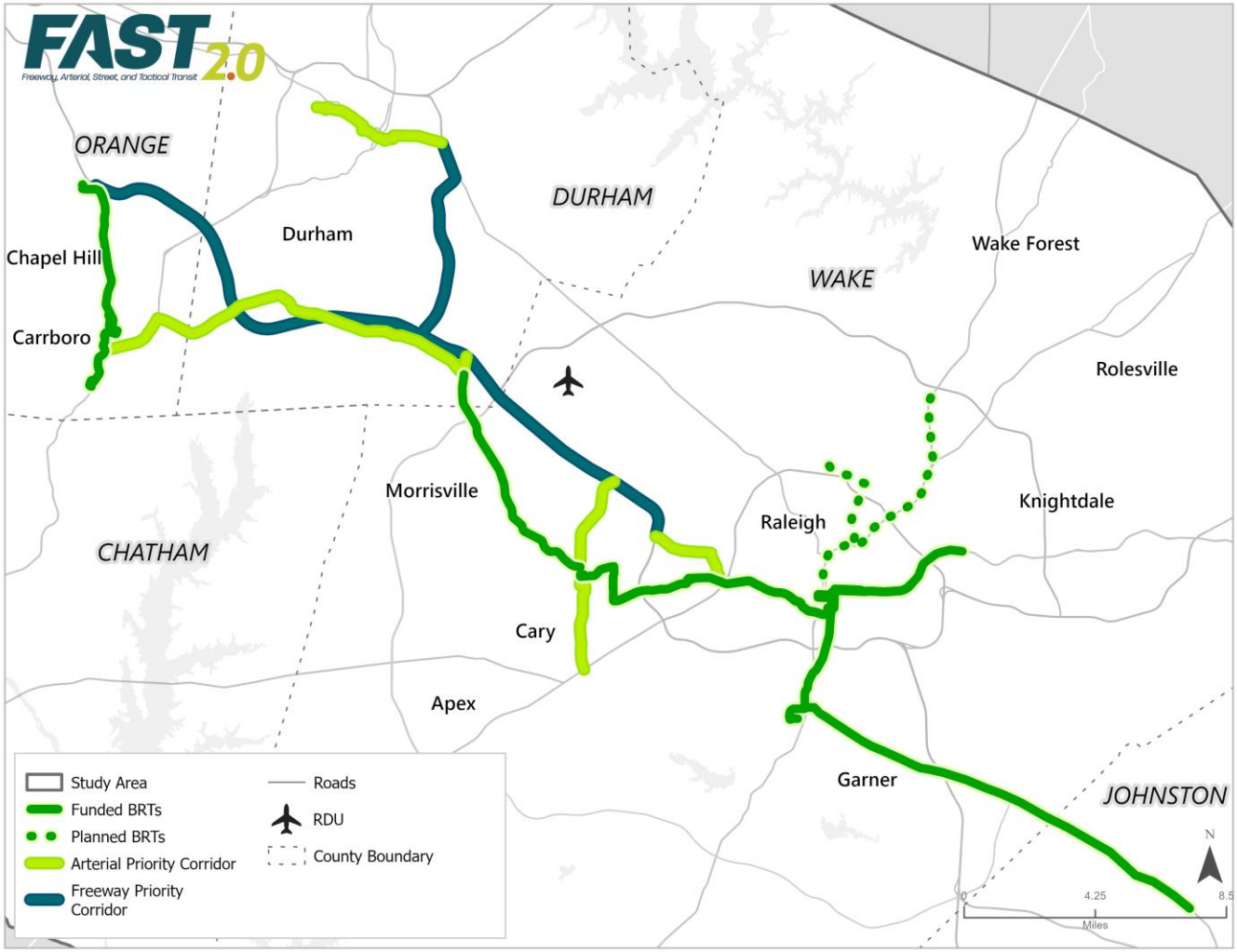


Figure 7: FAST 2.0 Priority Corridors

Table 2: Priority Corridors

Corridor Name	From	To	Corridor Type
I-40	Trinity Rd	NC 86	Freeway Priority Corridor
I-885	NC 98	I-40	Freeway Priority Corridor*
Harrison Avenue/Kildare Farm Road	I-40	US 64	Arterial Priority Corridor
Duke University / Holloway Street	Duke University	I-885	Arterial Priority Corridor
Trinity Road / Blue Ridge Road	Blue Ridge Rd	I-40	Arterial Priority Corridor
	Western Blvd	Trinity Rd	
NC 54 / Miami Boulevard	Miami Blvd	US 15-501	Arterial Priority Corridor
	NC 54	I-40	

**Based on additional stakeholder feedback, an additional freeway priority corridor was warranted to provide a connected network to Durham and was swapped with an arterial corridor.*

Some specific reasons why each corridor is well suited as a priority corridor and has the potential to quickly advance transit infrastructure is noted below.

- **I-40**
  - There are several 2024-2033 STIP projects along I-40 in the study area that provide an opportunity to advance planning of transit infrastructure along I-40 based on their current schedules.
    - Projects in the 2024-2033 STIP include:
      - I-5993, which will rehabilitate pavement, from US 15 / US 501 to east of NC 147. Construction is currently slated to begin in 2026 but will be let with I-5994.
      - I-6006, which will convert I-40 and SR 1728 (Wade Avenue) to a managed freeway with ramp metering and other ATM / ITS components from NC 54 (Exit 273) to SR 1728 (Wade Avenue) on I-40 and from I-40 to SR 1664 (Blue Ridge Road) on SR 1728 (Wade Avenue). This project is currently only funded for preliminary engineering.
      - U-6101, which will convert I-40 to a managed freeway, including ramp metering, from SR 1728 (Wade Avenue) to NC 42. The project is currently not funded.
      - I-5995, which will rehabilitate pavement on I-40 from east of NC 147 to SR 1728 (Wade Avenue). This project is combined with I-5996.
      - I-5966, which will construct auxiliary lanes in both directions, along I-40 from SR 1002 (Aviation Parkway) to SR 1652 (Harrison Avenue). ROW is slated to begin in 2028 and construction beginning in 2031.
      - I-5707, which will construct a westbound auxiliary lane on I-40 from NC 55 (Alston Avenue) to I-885 (Durham Freeway). ROW is scheduled to begin in 2025 and construction in 2027.
      - I-5701, which will add lanes on I-40 from I-440 / US 1 / US 64 to SR 1370 (Lake Wheeler Road). Construction is scheduled to being in 2027.
    - Projects in the draft 2026-2035 STIP, which is expected to be adopted in Summer 2025, include:

- I-5995, which will rehabilitate pavement on I-40 from east of NC 147 to SR 1728 (Wade Avenue). Construction is currently slated to begin in 2026 but will be combined with I-5996.
- I-5966, which will construct auxiliary lanes in both directions, along I-40 from SR 1002 (Aviation Parkway) to SR 1652 (Harrison Avenue). ROW is slated to begin in 2029 and construction beginning in 2032.
- I-5701, which will add lanes on I-40 from I-440 / US 1 / US 64 to SR 1370 (Lake Wheeler Road). Construction is scheduled to begin in 2027.
- I-5993, which will rehabilitate pavement, from US 15 / US 501 to east of NC 147. Construction is currently slated to begin in 2026 but will be let with I-5994.
- I-5707, which will construct a westbound auxiliary lane on I-40 from NC 55 (Alston Avenue) to I-885 (Durham Freeway). ROW is scheduled to begin in 2025 and construction in 2027.

  - The *2035 Wake Transit Plan Update* is underway to identify the priorities of Wake Transit Plan funding over the next ten years. As part of public engagement being completed between December 2024 and January 2025, a concept of BRT along I-40 between Raleigh and Durham was introduced to the public.

- **I-885**
  - There is a 2024-2033 STIP project (U-5934) on I-885 between I-40 and NC 147, that will add lanes, rehabilitate pavement, and prioritize the addition of transit accommodations. The current timing of the project, which is currently slated to begin ROW in 2028 and begin construction in 2029, provides a great opportunity to advance the planning of transit accommodations along I-885.
    - The draft 2026-2035 STIP, which is expected to be adopted in Summer 2025, includes U-5934, but the construction year is shown as 2030.
  - *Connect 2050 MTP* has a BRT project along this corridor, named “Durham NS BRT” and listed as Project ID 187.
- **Harrison Avenue / Kildare Farm Road**
  - *Connect 2050 MTP* has a BRT project along this corridor listed as T152b.
  - This corridor provides a connection from the funded Wake BRT: Western Corridor project, which is currently in the final design phase, to the freeway I-40 corridor.
- **NC 54 / Miami Boulevard**
  - This corridor provides connection to GoTriangle’s Triangle Mobility Hub on NC 54, which received a 25 million federal RAISE grant to support the design and construction of the facility and is slated to open in 2028.
  - This corridor provides connection with the RTP - Morrisville BRT, listed in *Connect 2050 MTP* (T156), and will help increase connectivity between the eastern and western parts of the FAST 2.0 study area.
- **Trinity Road / Blue Ridge Road**
  - *Connect 2050 MTP* lists a roadway widening along Trinity Road from Edwards Mill Road Extension to Wake Park Boulevard in the 2030 Horizon Year (A231a). The timing of this roadway project presents the opportunity to consider how enhanced transit infrastructure may be incorporated into the roadway project.
  - This corridor would connect to the Lenovo Center property, formerly PNC arena, which is currently requesting a rezoning with the City of Raleigh and has plans for future development on the existing surface parking lots surrounding the Lenovo Center arena. The proposed rezoning covers roughly 80 acres and would provide the ability to build more than 4,000 dwelling units and approximately 3 million square feet of non-residential space.

- **Duke University / Holloway Street**
  - This corridor aligns with a portion of Durham NS BRT, which is noted in *Connect 2050 MTP* (Project ID 187), between Duke University and Downtown Durham.
  - The other half of this corridor aligns with the City of Durham's Holloway Street Transit Emphasis Corridor, which received federal funding for pedestrian and bus stop improvements along Holloway Street.

Furthermore, Figure 8 and Figure 9 reiterate the ability of the priority corridors to connect key destinations across the Triangle and increase access throughout the region. Figure 8 overlays the priority corridors with the earlier map of key job hubs showing that priority corridors can serve and provide enhanced transit connections between all of the regional key job hubs. The priority corridors, in conjunction with the funded BRTs, are also able to provide transit priority infrastructure along the previous Commuter Rail route, serving almost all the same Commuter Rail stations and following a similar alignment, as shown in Figure 9.

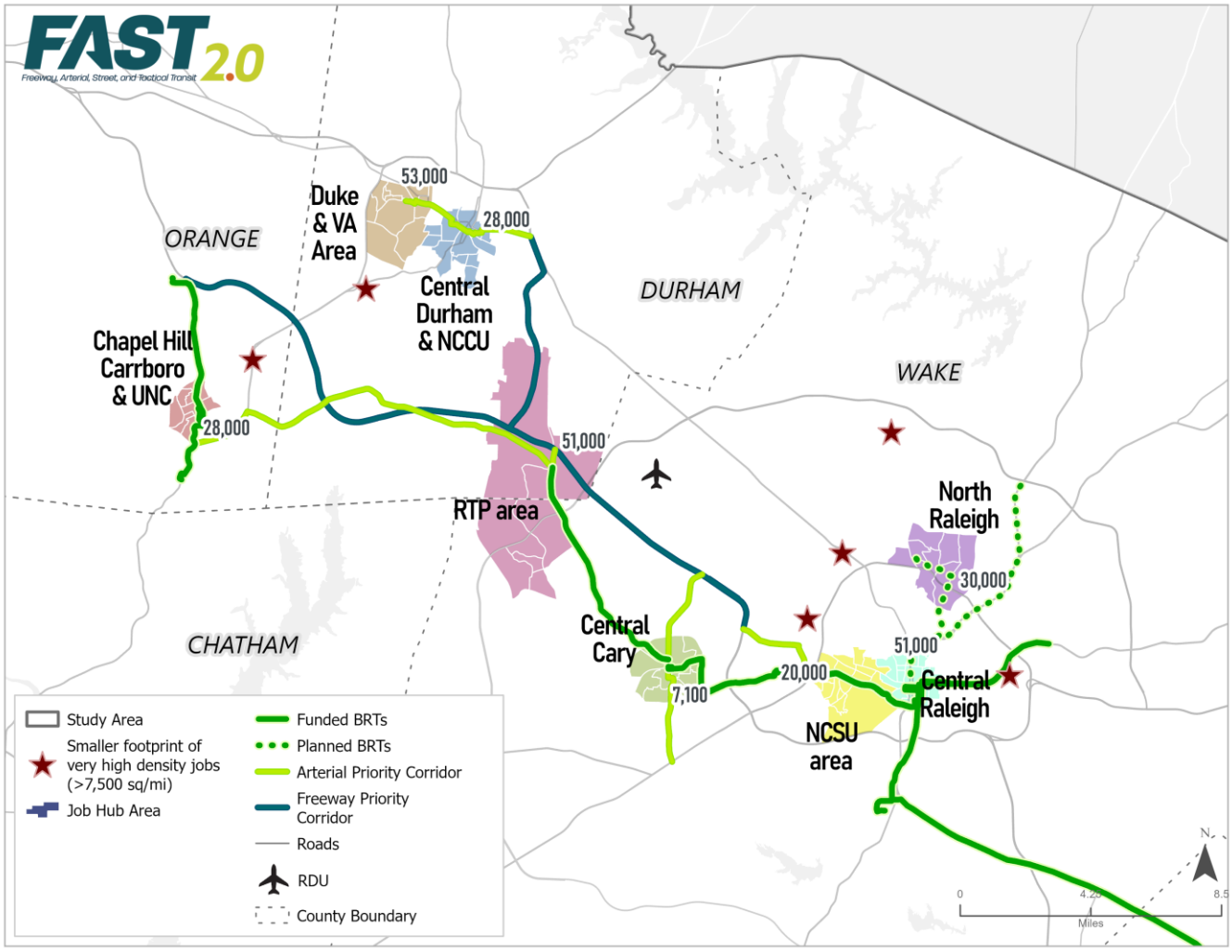


Figure 8: Priority Corridors and Key Job Hubs

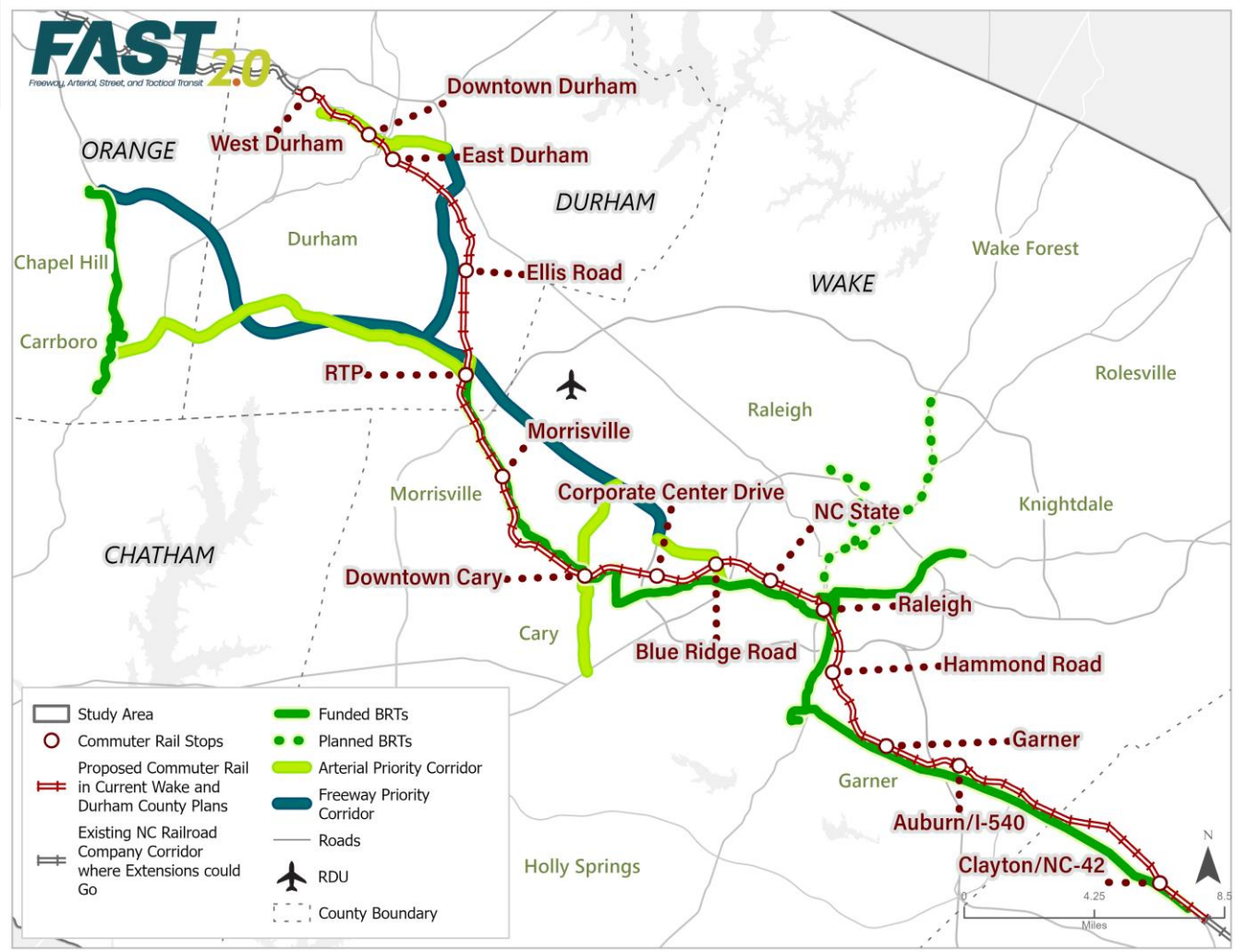


Figure 9: Priority Corridors and Commuter Rail Alignment

Conclusion

The FAST 2.0 study aims to advance the implementation of transit priority infrastructure throughout the Triangle Region's freeways and arterial roads. Identifying the regional network and priority corridors provides a first step in advancing the implementation of transit infrastructure by identifying corridors that are well suited for this infrastructure. In particular, the priority corridors provide the opportunity for near term advancement of enhanced transit infrastructure due to potential for collaboration with existing and planned projects along these corridors and the destinations served by these corridors.

Appendix F: Suite of Options Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

Suite of Options Memorandum

April 2025

CONTENTS

Introduction

This memo presents and evaluates a suite of transit infrastructure options that may be appropriate for implementation along primary transportation corridors in the Triangle. The suite of options is based on a review of transit infrastructure from enhanced transit projects, such as Bus Rapid Transit (BRT), already underway in the Study Area and from agencies across the United States. These options will be the basis for recommendations applied to the Priority Corridors (Figure 1) and Regional Network (Figure 2).

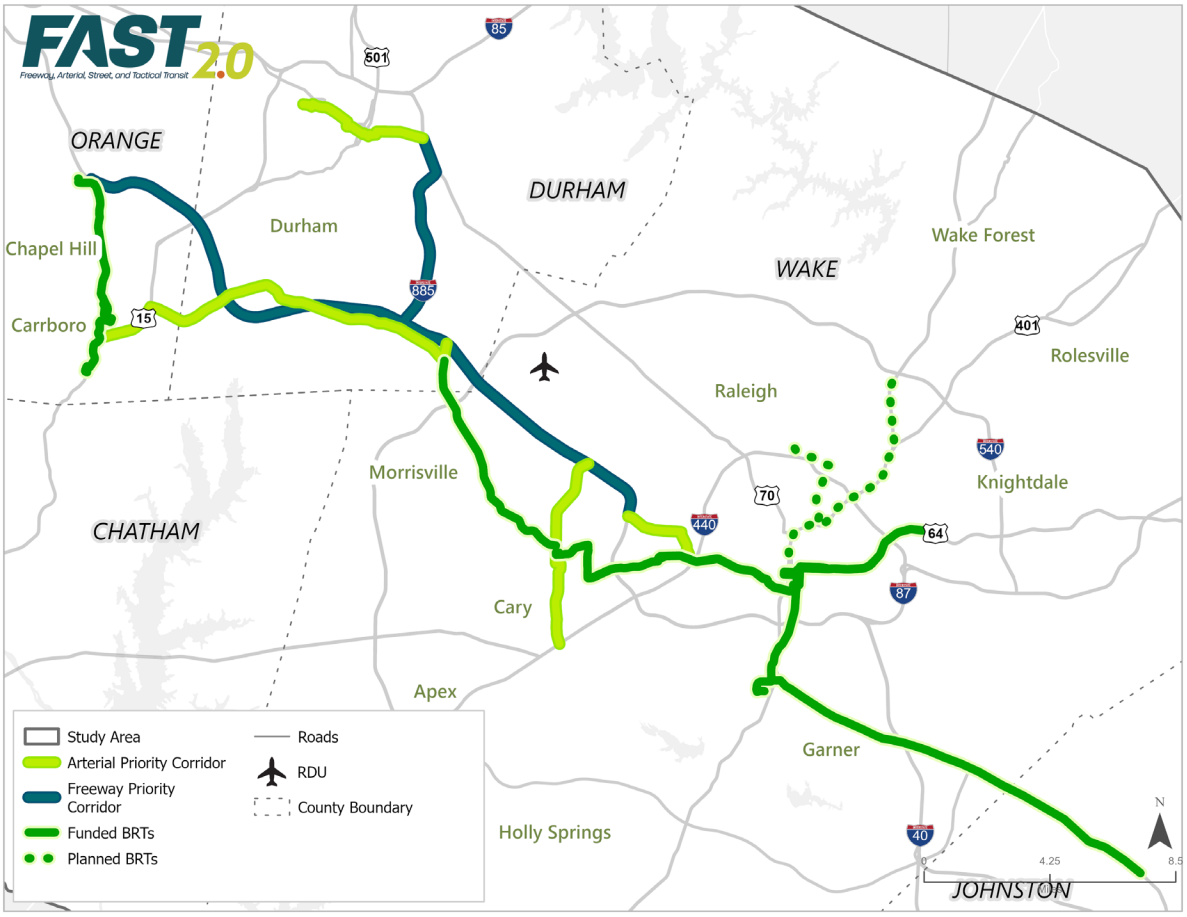


Figure 1: FAST 2.0 Priority Corridors

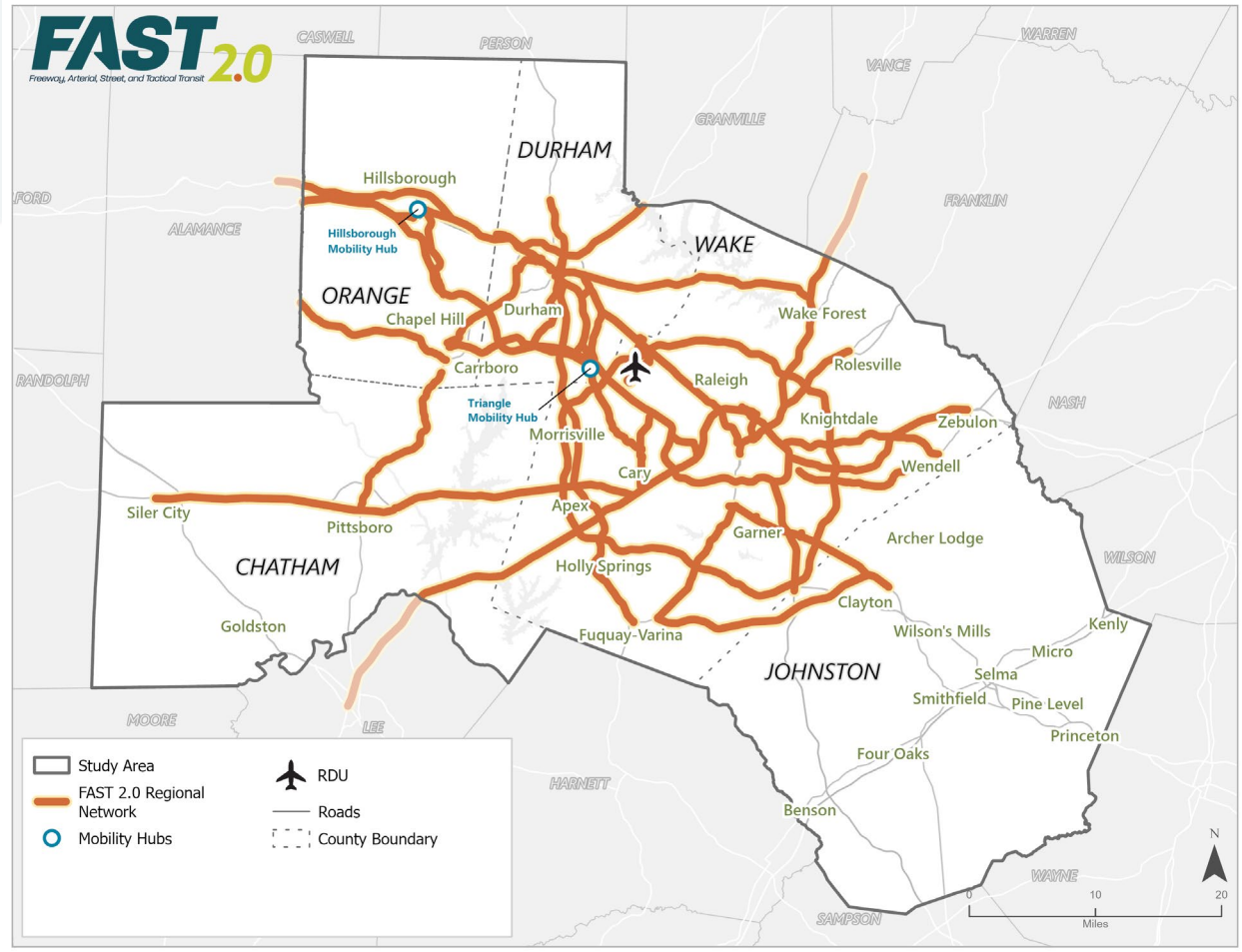


Figure 2: FAST 2.0 Regional Network

This memo expands upon FAST 1.0's *Triangle Implementation Playbook* by including additional factors that will help guide transit infrastructure investment and decisions, in addition to evaluating the suite of transit infrastructure investment options.

This memo is meant to be a resource for the region's planners, engineers, designers, policy and decision-makers. Findings from this memo will be applied to the FAST 2.0 Implementation Plan to identify transit infrastructure options that may be ready for implementation, along with identifying transit infrastructure options that need additional study and coordination to increase readiness.

Design guidance for the transit infrastructure options was taken from the following sources:

- North Carolina Department of Transportation (NCDOT)
- American Association of State Highway Transportation Officials (AASHTO)
- National Association of City Transportation Officials (NACTO)

How to Use This Memo

This Suite of Options memorandum provides an overview of an array of transit infrastructure that could be considered along the priority corridors and regional network. Each type of transit infrastructure is considered one treatment option within the suite of options for this study and is given its own section where a general overview and examples are provided. In addition, design and implementation considerations are explored for each option, including:

- Level of Transit Advantage,
- Physical Suitability,
- Agency Approval Probability,
- Value,
- Funding Probability,
- Public Visibility, and
- Rider Experience.

As an overall summary for each option, these considerations are scored from Fair to Excellent and then compared to similar types of options. For the comparisons, options are grouped based on the type of roadway facility the option would best be suited for and how that option would be applied to the facility. For example, the options were divided between freeways and arterials, then further divided on whether or not they would be applied along the mainline of that facility or as a way to improve access or reliability. In addition, there is a grouping for different types of bus stops. It should be noted that FAST 2.0 corridor recommendations will include multiple options that when combined together will produce greater benefit than a single option.

An introductory section for multimodal infrastructure is provided to highlight how fundamental multimodal access and transit stop infrastructure is to the success of any transit project and should be considered as baseline improvements for all transit projects. All the options in this memo, and how they are grouped together, include:

- Multimodal Infrastructure
  - Bicycle and Pedestrian Access Improvements
  - Bus Stop / Station Design
- Freeways (Facility)
  - Dedicated Freeway Transit Lanes
  - Dynamic Median Shoulder System (DMSS)
  - Bus-on-Shoulder System (BOSS)
  - Transit Use of Express Lanes
- Freeways (Access)
- Freeway Ramp Signals
  - Direct Transit Access Ramps
- Arterials (Facility)
  - Fully Dedicated Transit Lanes
  - Semi-Dedicated Transit Lanes
- Arterials (Signals and/or Access)
  - Queue Jump Lanes
  - Transit Signal Priority
- Types of Bus Stops/Stations
  - Enhanced Stop

- Super Stop
- Mobility Hub

In addition to the physical transit infrastructure noted above, there are technologies that the region could further advance to aid in the FAST 2.0 implementation. Many of these technologies are currently being investigated as part of ongoing planning efforts, so they were not explored further in this memo, but are an important part of successful transit operations. For example, GoTriangle is currently leading the Regional Technology Plan for the Research Triangle Region with 12 regional partners that include many of the FAST 2.0 stakeholders (GoTriangle, GoRaleigh, GoCary, GoDurham, Chapel Hill Transit, Wake County, Durham County, Orange County, CAMPO, Triangle West TPO (formerly DCHC MPO), Central Pines, and NCDOT). The Regional Technology Plan will focus on six different areas of transit technologies including:

- Passenger Real-Time & Trip Planning
- Transit Service Planning Tools
- Transit Signal Priority
- Regionally Integrated Payments
- Regional GTFS Publishing Standards
- Open Transit Data Portal

Multimodal Infrastructure

Bicycle and Pedestrian Access Improvements

Bus stop with a shelter, bench, trash can, wide sidewalk, pedestrian scale lighting, street trees, buffered bike lanes, and transit-supportive land uses. (Source: Alta Planning + Design)

GENERAL OVERVIEW

Description and Intention

Improvements for people walking and biking benefit transit in two ways: The first is by providing a safe and comfortable first-mile/last-mile connection to and from bus stops and stations. The second is by providing an alternative to transit, particularly for shorter trips or times of day when transit is not running as frequently.

Bicycle and pedestrian improvements also provide benefits beyond access to transit, such as increased economic activity along commercial corridors, improved health outcomes, and environmental benefits.

Location and Typology Application

Bicycle and pedestrian improvements to transit stops can be made along most arterial corridors. Specific improvements should be tailored to the roadway and land use context. Higher levels of physical separation, such as curbs, bollards, and berms may be required in higher-speed conditions.

Sidepaths or greenways may be more appropriate along limited-access highways and rural roads.

Level of Transit Advantage

Unlike some of the transit improvements considered in this study, bicycle and pedestrian improvements do not reduce delays or dwell time for the bus. However, safe and comfortable access to the stops is a critical element of a convenient transit system.

Safe, comfortable, and connected bicycle facilities and supporting infrastructure can also expand the range of transit trips, especially with the advent of e-bikes and scooters.

DESIGN CONSIDERATIONS

Physical Suitability

Bicycle and pedestrian improvements can generally be accommodated along most roads in the Triangle, though right-of-way availability may be a limiting factor. Safe street crossings are critical since most transit users will need to cross the street at least once to access a bus stop. Designs such as bus boarding islands and shared cycle track stops can mitigate conflicts between different modes.

Bicycle and pedestrian accommodations are not common along limited-use highways in North Carolina, so new design standards will need to be employed for future improvements like the Triangle Bikeway.

Agency Approval Probability

Bicycle and pedestrian improvements are standard for most new roads and many types of road retrofits in the Triangle region. Bicycle and pedestrian considerations are a key part of NCDOT's Complete Street policy and are included in the County Transit Plans.

Challenges can exist if there is no available right-of-way and cost sharing arrangements can be difficult for some entities, particularly along roads outside of municipal boundaries. Bicycle and pedestrian facilities along limited-access highways are not yet commonplace, such as those proposed for the Triangle Bikeway.

Value

On average, construction projects to improve bicycle and pedestrian facilities generate more jobs than auto-oriented projects and studies have shown increased business revenue along corridors with improved bicycle and pedestrian infrastructure.

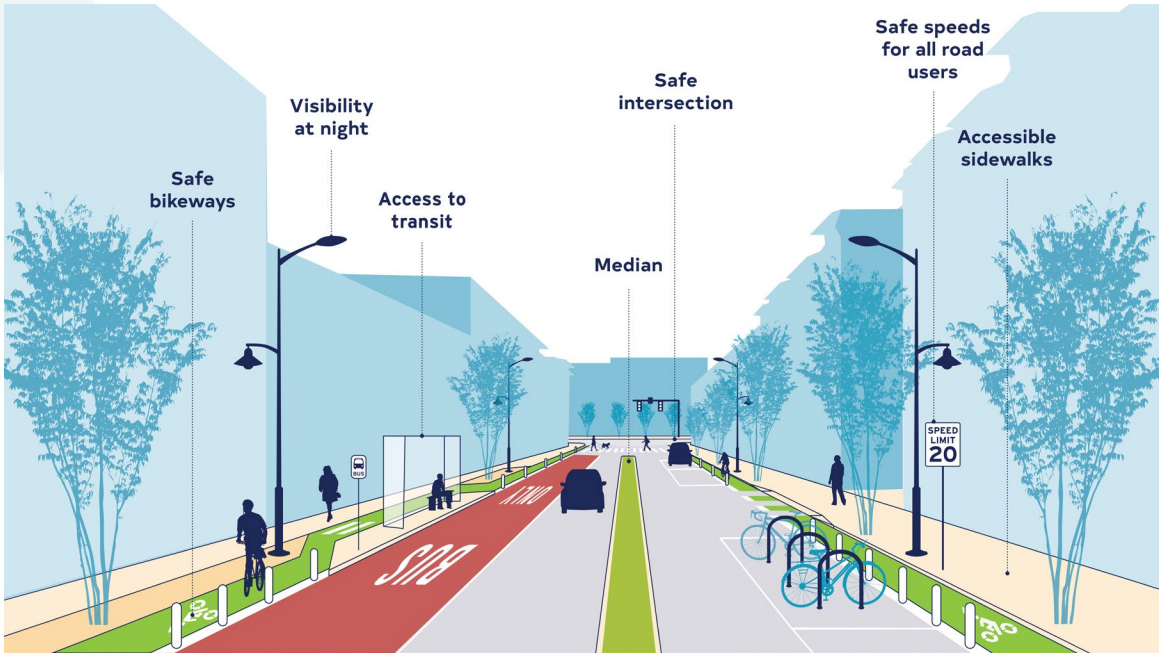
Bicycle and pedestrian improvements at bus stops or along transit corridors also provide value beyond access to transit by offering comfortable and safe forms transit access, direct access to jobs, education, recreation, and services.

Funding Probability

Municipalities throughout the Triangle are prioritizing bicycle and pedestrian improvements, often using local tax dollars to fund them, or to provide matches to outside funding sources. In addition, funding is available in the three County Transit Plans for access to transit projects.

While State funding for standalone pedestrian or bicycle projects is prohibited in North Carolina, improvements can still be made alongside other roadway projects. The region has also been successful in obtaining Federal funding, including CMAQ grants.

Transit stop design from the Walkable Winston-Salem Plan. (Source: Alta Planning + Design)



Elements of safe access to transit for people walking and biking. (Source: Alta Planning + Design)

IMPLEMENTATION EXPERIENCE

Public Visibility

Because they are smaller in scale and more ubiquitous, bicycle and pedestrian improvements are less visible than most other types of transit improvements considered in this study.

The visibility of bicycle and pedestrian projects can be improved with the addition of appropriately scaled lighting, street trees and other landscape elements, public art, and the addition of color such as green pavement markings for bicycles at intersections and driveways where appropriate.

Rider Experience

The rider experience does not just consist of the time spent on a bus. Most transit trips begin and end with walking or biking, so access to transit stops is a critical aspect of the rider experience.

Walking and biking can also be a substitute for shorter transit trips. Knowing that safe and comfortable alternatives exist can make the transit trip less stressful.

OPTION SUMMARY

Rating

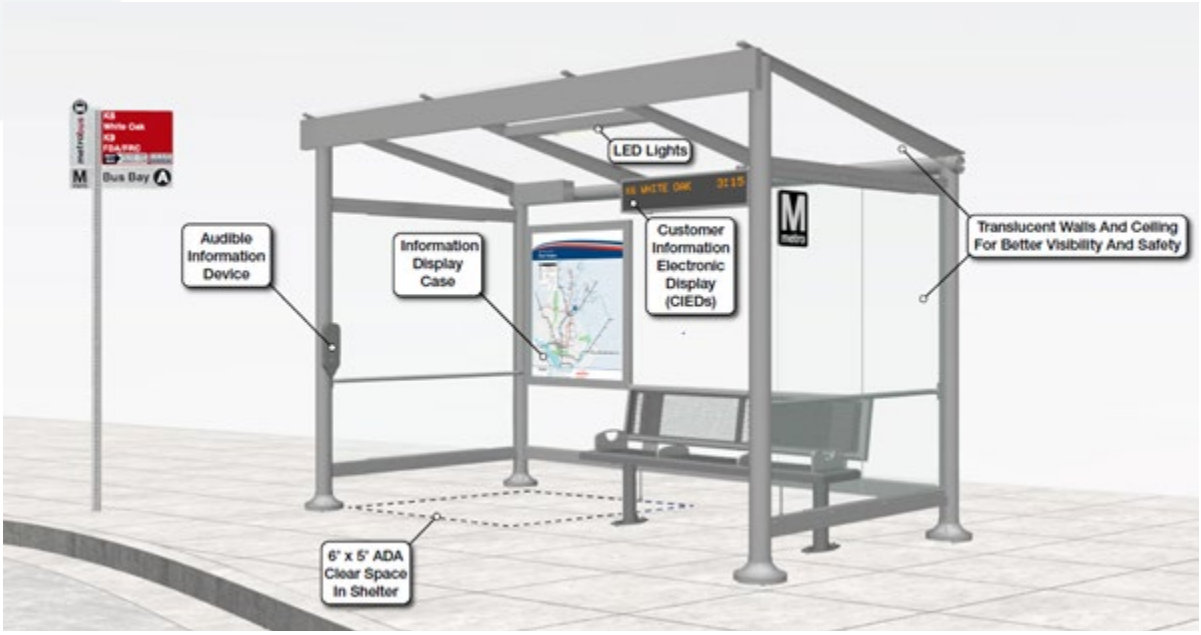
Most transit trips begin and end with walking and biking, so safe and comfortable access to bus stops is critical to high-quality regional transit.

Bicycle and pedestrian improvements are being prioritized throughout the Triangle, so despite funding challenges at the state and federal level, local funding sources are often available.

While these improvements are not as visible as others, making it safer to walk and bike can provide advantages beyond access to transit.

Bicycle and Pedestrian Access Improvements	
Physical Suitability	Great
Agency Approval Probability	Good
Level of Transit Advantage	Great
Value	Excellent
Public Visibility	Good
Funding Probability	Good
Rider Experience	Great

Bus Stop/Station Design



The graphic above highlights common elements of a bus stop. (Source: WMATA)

GENERAL OVERVIEW

Description and Intention

All transit trips begin and end at a designated bus stop or station, so it is important to provide safe and dignified spaces for riders to wait for their bus, ideally providing seating and shelter from the elements at a minimum. Agencies should consider designing a "kit-of-parts" for bus stops/stations, which would allow differing levels of amenities at bus stop/stations based on the ROW, ridership, or transit service type.

Location and Typology Application

Placement is generally recommended to be on the far side of an intersection to allow buses to use priority measures to clear the bus through the intersection with minimal delay. However, ROW and other considerations may require near side or midblock locations. Consideration should also be given to placing bus stops adjacent to pedestrian and bicycle infrastructure to allow riders to safely access the bus stop/station. Stop location and spacing along a route are determined by proximity to transit-supportive land use, transfer opportunities, and transit service type.

Level of Transit Advantage

Providing amenities at bus stops and stations can provide a more comfortable and convenient waiting environment for transit riders and improved passenger experience could help encourage more people to use transit and increase ridership.

DESIGN CONSIDERATIONS

Physical Suitability

The placement and design of each bus stop will be impacted by the availability of ROW. Using a "kit-of-parts" approach can help with scaling amenities for limited ROW locations.

To mitigate delays, bus pullouts should be avoided, and the bus should travel and stop in a curb-lane where on-street parking is not permitted. ADA considerations are paramount with landing pads and curb heights that allow passengers in wheelchairs to board.

Agency Approval Probability

Coordination with NCDOT is required where a bus stop is placed within NCDOT ROW; this approval is managed by the Integrated Mobility Division and the appropriate Division of Highways office.

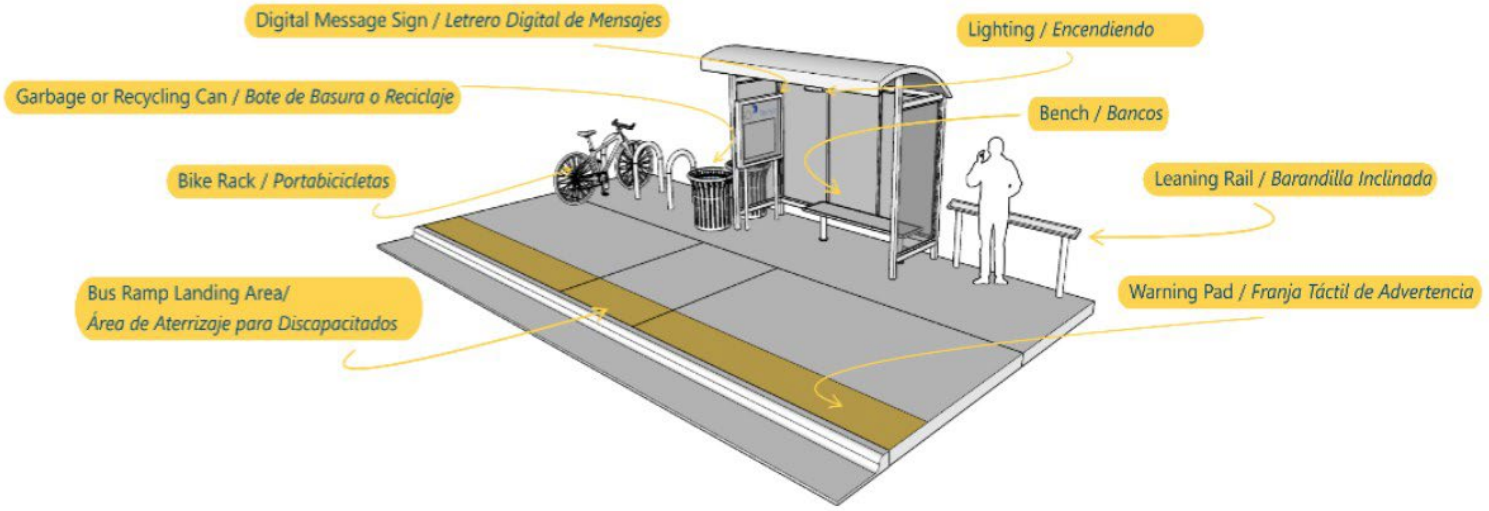
Value

Bus stop improvements are a relatively low-cost way to increase ridership by improving the riders' experience waiting for a bus. The route should not be overburdened by excessive bus stops, as this causes delays on high-capacity transit routes.

Funding Probability

Bus stops are most often funded with a combination of local and federal funding. Funding for bus stops can be bundled with larger transit priority corridor improvements or funded as stand-alone improvements.

In Chapel Hill, the stop on Franklin Street at Couch Road was upgraded with a shelter, a landing pad, a trash can, bike racks, and a solar light in 2024. (Source: GoTriangle)



GoDurham's Better Bus Project incorporated features of an enhanced bus stop to create a standard bus stop along their high ridership corridors, called Transit Emphasis Corridors, shown in the graphic above. (Source: GoDurham)

IMPLEMENTATION EXPERIENCE

Public Visibility

As the place where riders often start and end their transit trip, bus stops are exceptionally high visibility to riders. Including features such as lighting and comfortable amenities such as shelters and benches can encourage mode shift to transit.

Rider Experience

Providing seating and shelter from the elements can elevate the riders' experience, providing safe and dignified spaces for riders to wait for their bus. Real time information displays reduce anxiety as riders know when to plan for their bus arrival. A robust maintenance program should be implemented so that bus stops are regularly cleaned, and trash is removed in a timely manner.

OPTION SUMMARY

Rating

Enhancement of bus stops increases multimodal connectivity with improved bicycle and pedestrian connections to bus stops and can provide a more comfortable and convenient waiting environment for transit riders. All transit trips begin at a designated stop or station, so it is imperative to provide a safe, comfortable waiting area that riders can easily get to by multiple modes.

Bus Stop / Station Design	
Physical Suitability	Great
Agency Approval Probability	Great
Level of Transit Advantage	Great
Value	Good
Public Visibility	Great
Funding Probability	Great
Rider Experience	Great

Freeways (Facility)

Dedicated Freeway Transit Lanes

Dedicated freeway transit lanes on I-35 in Minneapolis. (Source: SEH)

GENERAL OVERVIEW

Description and Intention

Dedicated freeway transit lanes are transit-priority travel lanes, reserved exclusively for transit vehicles, with restrictions for other modes. These lanes are meant to optimize bus operations on a freeway corridor to maximize transit competitiveness and reliability by reducing delays caused by congestion.

Location and Typology Application

Dedicated freeway transit lanes could be applied to interstates and freeways where transit reliability is impacted by congestion. The locations well suited for dedicated freeway transit lanes would also be well suited for a dynamic median shoulder system (DMSS). On the priority corridors, a dedicated freeway transit lane is under consideration as part of the Reimagine Durham Freeway Project, on NC 147 between Fayetteville Street and Duke Street.

Level of Transit Advantage

Dedicated freeway transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a clear, unobstructed path, reducing travel times and improving schedule adherence. These lanes can improve reliability and performance to increase passenger convenience.

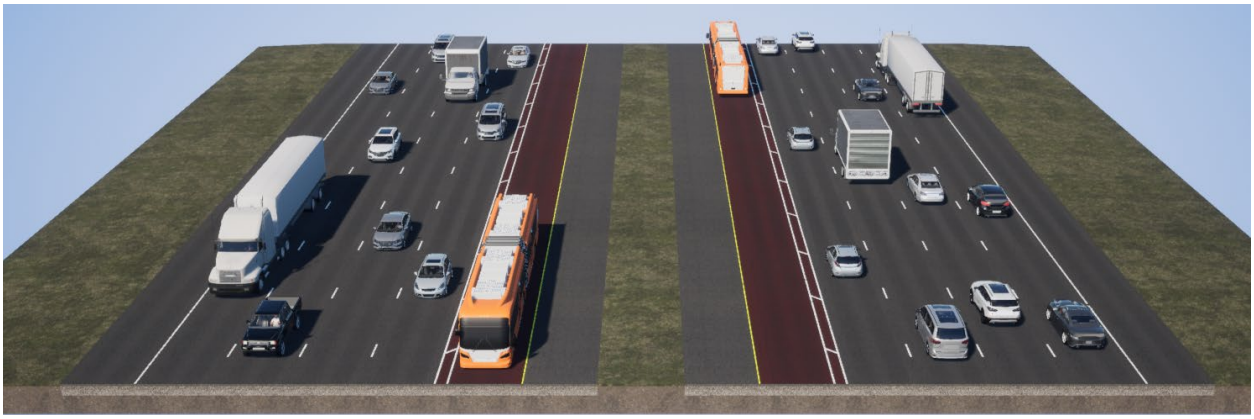
DESIGN CONSIDERATIONS

Physical Suitability
Dedicated freeway transit lanes can be placed on the outer or inner most lanes along a freeway or interstate, but their suitability may be limited by the availability of ROW as they could require adding an additional lane. The need to widen an existing roadway could be mitigated by restriping the existing roadway cross section to minimize the inside median width.

Agency Approval Probability
The use of dedicated freeway transit lanes would be new to the region and would require coordination with NCDOT to understand requirements for design and implementation.

Value
Unless there is an opportunity to repurpose a lane or shoulder, dedicated freeway transit lanes would require widening a roadway to add the desired number of transit lanes, which could require additional ROW and a large amount of funding.

Funding Probability
Dedicated freeway transit lanes could require adding a travel lane along a freeway or interstate, which would increase the cost of the project. These lanes would likely need to be a part of a larger roadway project, where there are multiple sources of funding, and the transit portion of the project would be paid for using transit funding, such as from a federal or local source.



Rendering of potential dedicated freeway transit lanes. (Source: WSP)

IMPLEMENTATION EXPERIENCE

Public Visibility

Dedicated freeway transit lanes are highly visible when applied to a roadway, with the lane markings and signage, being seen by all roadway users. Public education and enforcement can be important to ensure proper use and understanding of the lanes.

Rider Experience

Dedicated freeway transit lanes can greatly benefit the rider experience by helping to reduce travel times and improve schedule adherence. The experience can be excellent when transit vehicles using these lanes pass areas of congestion or gridlock. This can be especially helpful for regional routes that experience congestion along freeways and interstates.

OPTION SUMMARY

Rating

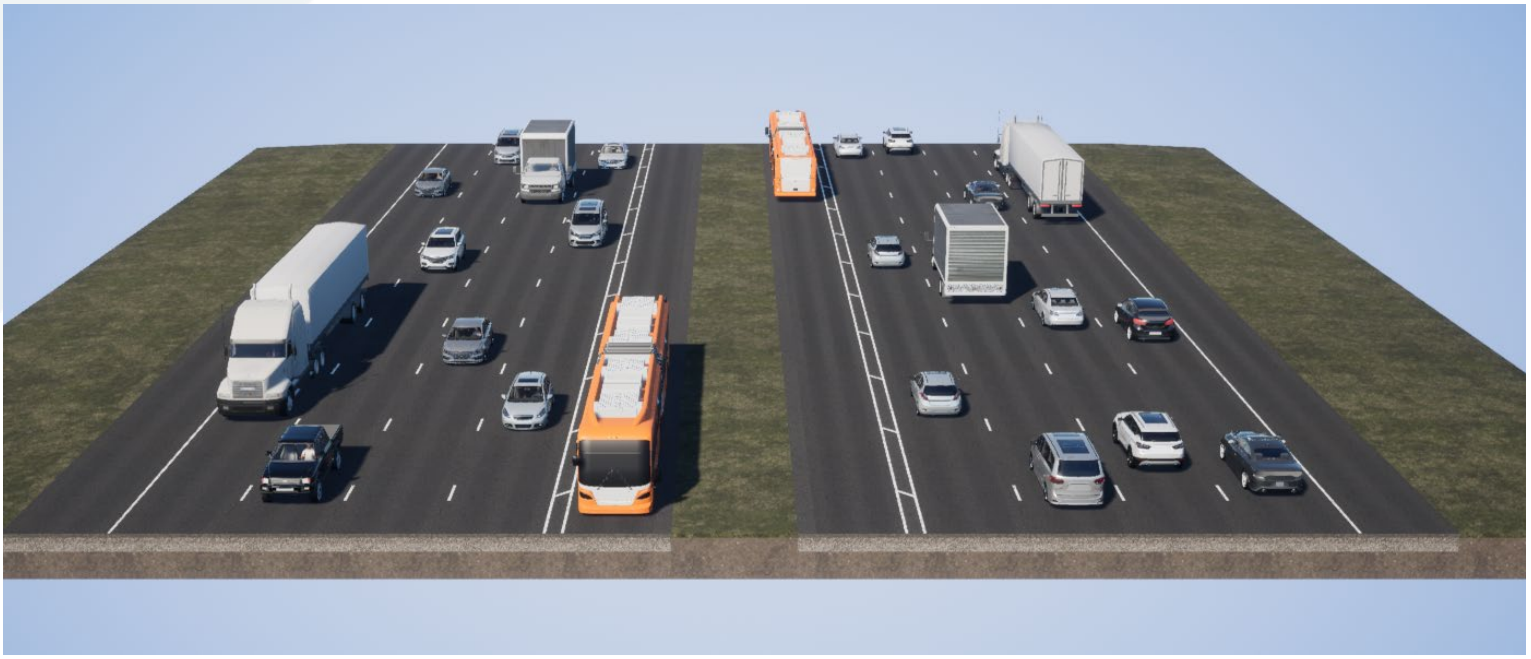
Dedicated freeway transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a clear, unobstructed path, reducing travel times and improving schedule adherence. These lanes are highly visible to the public and can greatly benefit the rider experience by improving reliability. Dedicated freeway transit lanes would require widening to implement within the Study Area, contributing to a high cost of implementation and lower physical suitability.

Dedicated Freeway Transit Lanes	
Physical Suitability	Good
Agency Approval Probability	Good
Level of Transit Advantage	Excellent
Value	Fair
Public Visibility	Excellent
Funding Probability	Good
Rider Experience	Excellent

Freeway (Facility) Rating Comparison

Option Type	Dedicated Freeway Transit Lanes	Dynamic Median Shoulder System	Bus-on-Shoulder System (BOSS)	Transit Use of Express Lanes
Physical Suitability	Good	Good	Excellent	Excellent
Agency Approval Probability	Good	Good	Excellent	Excellent
Level of Transit Advantage	Excellent	Good	Good	Great
Value	Fair	Great	Excellent	Excellent
Public Visibility	Excellent	Great	Great	Good
Funding Probability	Good	Good	Great	Fair
Rider Experience	Excellent	Great	Good	Good

Dynamic Median Shoulder System (DMSS)



Rendering of potential dynamic median shoulder system (DMSS). (Source: WSP)

GENERAL OVERVIEW

Description and Intention

A dynamic median shoulder system (DMSS) would allow buses to utilize the median or inside shoulder. These shoulders would be designed to allow general-purpose traffic to use them for emergencies during all hours of the day, along with allowing buses to travel on the shoulder during all hours of the day. This option is like Bus-on-Shoulder System (BOSS), but within the inside median shoulder. This strategy aims to alleviate congestion and improve bus transit efficiency by providing buses with a dedicated lane during high-traffic periods.

Location and Typology Application

DMSS could be applied to interstates and freeways with inside shoulders wide enough to accommodate buses. On the priority corridors, some possible locations for DMSS include:

1. I-40 between NC 86 and Cary Towne Boulevard
2. Wade Avenue between I-40 and Blue Ridge Road
3. I-885 between I-40 and NC 147

Level of Transit Advantage

DMSS can provide a transit advantage by allowing buses to bypass congested lanes, reducing travel time and improving schedule reliability. This can lead to more consistent and predictable transit service.

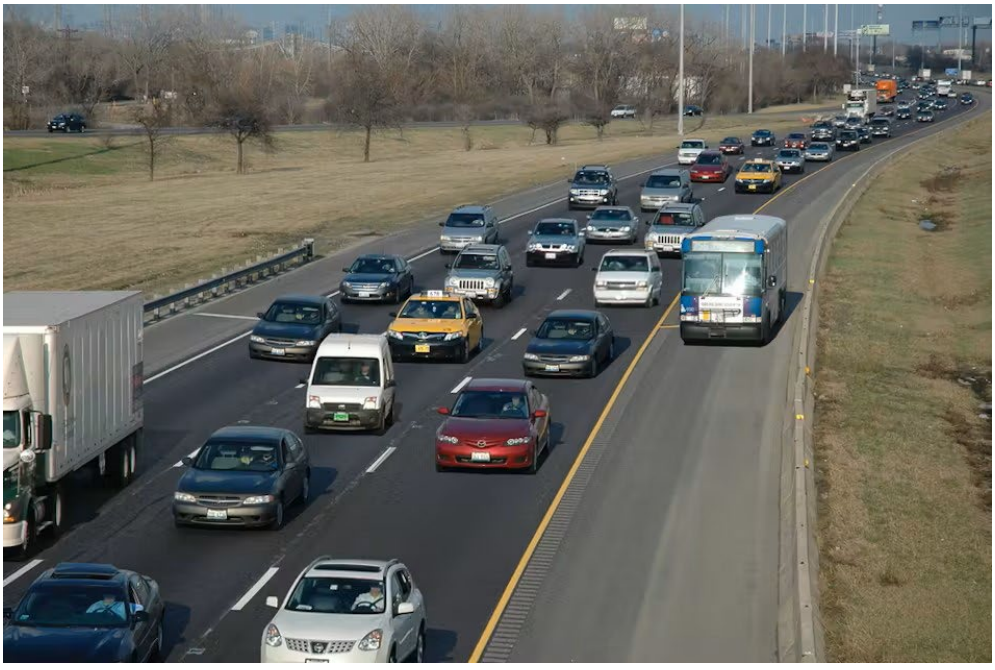
DESIGN CONSIDERATIONS

Physical Suitability
DMSS is most effective for urban and suburban freeway environments where congestion is prevalent and there is sufficient shoulder width to accommodate bus traffic. In cases where sufficient shoulder width is not available, roadway widening would be required and additional hardening may be required to accommodate transit vehicles.

Agency Approval Probability
While there are no current DMSS lanes along NCDOT roadways, there is a good probability of approval, especially since these lanes have been shown in express design projects along I-40. Signage and pavement markings would need to be discussed with NCDOT before implementation.

Value
DMSS can be cost-effective compared to adding new lanes by utilizing existing infrastructure, which could minimize construction costs. The shoulders have the potential to improve transit efficiency and reduce congestion.

Funding Probability
The probability for funding is good, as funding can be sourced from federal, state, and local transportation budgets, and regional focus shifts from train- to bus-based service. Grants and public-private partnerships may also be viable funding sources.



Pace Bus System utilizing the median shoulder on I-55 in Chicago. (Source: Mass Transit)

IMPLEMENTATION EXPERIENCE

Public Visibility

DMSS can provide good visibility to the public with buses being able to use the lanes during congested times. Signage will be prominent also enhancing the visibility. Public awareness campaigns will be necessary to educate drivers about the lane's dual use and ensure compliance.

Rider Experience

DMSS can enhance the rider experience by providing faster and more reliable bus service, reducing delays caused by traffic congestion.

Coordination with NCDOT Traffic Management would be critical to ensure breakdown vehicles are removed from the DMSS lanes.

OPTION SUMMARY

Rating

DMSS can provide a significant transit advantage by allowing buses to bypass congested lanes, reducing travel time and improving schedule reliability, improving the rider experience. However, DMSS would allow general-purpose traffic to use shoulders for emergencies during all hours of the day, periodically limiting the transit advantage that is provided. DMSS does not exist yet in North Carolina and could require widening of the shoulder to accommodate transit usage, which could limit physical suitability and may create the need for additional coordination with NCDOT in order to implement.

Dynamic Median Shoulder System	
Physical Suitability	Good
Agency Approval Probability	Good
Level of Transit Advantage	Good
Value	Great
Public Visibility	Great
Funding Probability	Good
Rider Experience	Great

Freeway (Facility) Rating Comparison

Option Type	Dedicated Freeway Transit Lanes	Dynamic Median Shoulder System	Expanded BOSS	Transit Use of Express Lanes
Physical Suitability	Good	Good	Excellent	Excellent
Agency Approval Probability	Good	Good	Excellent	Excellent
Level of Transit Advantage	Excellent	Good	Good	Great
Value	Fair	Great	Excellent	Excellent
Public Visibility	Excellent	Great	Great	Good
Funding Probability	Good	Good	Great	Fair
Rider Experience	Excellent	Great	Good	Good

Bus-on-Shoulder System (BOSS)

Existing BOSS on I-40 in Wake County (Source: NCDOT)

GENERAL OVERVIEW

Description and Intention

Bus-on-Shoulder System (BOSS) lanes are designated for buses to use the outside shoulder of the roadway during peak traffic hours. This strategy aims to reduce congestion and improve bus transit efficiency by allowing buses to bypass traffic jams and maintain a more reliable schedule.

Currently, BOSS is allowed on certain portions of I-40 and Wade Avenue in the study area. An expanded BOSS network would look at allowing BOSS on additional roadways in the study area.

Location and Typology Application

BOSS could be expanded on the roadways where it is currently allowed and on interstates and freeways with shoulders wide enough to accommodate buses. On the priority corridors, some possible locations for BOSS include:

1. On I-40 from US 15-501 to NC 86
2. On I-40 from Wade Avenue to Cary Towne Boulevard
3. On NC 147 from I-885 to Fayetteville Street

Level of Transit Advantage

BOSS can provide a high level of transit advantage by enabling buses to avoid congested lanes, thereby reducing travel time and improving schedule reliability, which can lead to more consistent and predictable transit service. However, there are limitations to the speed at which buses can travel while using BOSS.

DESIGN CONSIDERATIONS

Physical Suitability
Most effective on highways and major arterial roads where congestion is common, and the shoulder is wide enough to safely accommodate bus traffic. The shoulder must be structurally sound to support the weight and frequency of bus traffic.

Currently, BOSS is allowed on certain portions of I-40 and Wade Avenue in the study area, where the wider shoulders exist.

Agency Approval Probability
Expanding BOSS is likely to have a high probability of approval due to its existing use on NCDOT roadways in the study area and its ability to be implemented without additional infrastructure. Local transit agencies are likely to support expanded BOSS measures that enhance transit efficiency and reliability.

Currently BOSS is only used by select GoTriangle routes, so additional coordination with other transit agencies and NCDOT may be needed to ensure proper driver training and maintenance of roadway shoulders are in place. Local agencies and municipalities may be able to help fund additional maintenance of expanded BOSS to help ensure the lanes are cleared for use.

Value
BOSS can provide a cost-effective treatment option compared to adding new lanes and provides the potential for high return on investment through improved transit efficiency and reduced congestion. The ability for BOSS to utilize existing infrastructure can minimize construction costs.

Funding Probability
BOSS has a high probability of funding due to it being able to use existing shoulders. Any need to expand a shoulder to allow for BOSS could likely be funded from federal, state, and local transportation budgets, particularly those focused on congestion relief and public transit improvements.

BOSS being utilized in Minneapolis. (Source: Metro Transit)

Signage to note BOSS usage. (Source: FHWA)

IMPLEMENTATION EXPERIENCE

Public Visibility

BOSS can be highly visible to the public with buses passing congested traffic. Signage and public awareness campaigns will be necessary to educate drivers about the lane's purpose and to ensure compliance.

Rider Experience

BOSS can enhance the rider experience by providing faster and more reliable bus service, reducing delays caused by traffic congestion. This can help provide a more punctual and efficient transit service.

OPTION SUMMARY

Rating

Expanding BOSS around the Triangle could be a cost-effective treatment option to help reduce travel times and increase schedule reliability. BOSS is treatment already used in the region and would not require additional infrastructure to implement. However, it does not provide infrastructure fully dedicated to transit and its success could be dependent on conditions present at the time, such as friction from debris or stopped vehicles.

Bus-on-Shoulder System (BOSS)	
Physical Suitability	Excellent
Agency Approval Probability	Excellent
Level of Transit Advantage	Good
Value	Excellent
Public Visibility	Great
Funding Probability	Great
Rider Experience	Good

Freeway (Facility) Rating Comparison

Option Type	Dedicated Freeway Transit Lanes	Dynamic Median Shoulder System	Bus-on-Shoulder System (BOSS)	Transit Use of Express Lanes
Physical Suitability	Good	Good	Excellent	Excellent
Agency Approval Probability	Good	Good	Excellent	Excellent
Level of Transit Advantage	Excellent	Good	Good	Great
Value	Fair	Great	Excellent	Excellent
Public Visibility	Excellent	Great	Great	Good
Funding Probability	Good	Good	Great	Fair
Rider Experience	Excellent	Great	Good	Good

Transit Use of Express Lanes

Express lanes on I-77 in Charlotte, North Carolina. (Source: Charlotte Business Journal)

GENERAL OVERVIEW

Description and Intention

Express lanes are designed to manage traffic flow and reduce congestion by using tolls, vehicle eligibility, and dynamic pricing strategies. Transit vehicles can use these lanes to bypass congested general-purpose lanes, improving travel times and reliability. The intention is to provide a faster and more predictable route for buses, especially during peak traffic periods.

Location and Typology Application

Express lanes are typically located on interstates or freeways that experience high levels of congestion. In the Study Area, NCDOT is currently exploring the transit use of express lanes on US 1 in Raleigh between I-540 and Wake Forest.

Level of Transit Advantage

Express lanes can provide a high level of transit advantage by offering a faster, more reliable route for buses, especially during peak traffic periods. This can significantly reduce travel times and improve schedule adherence.

DESIGN CONSIDERATIONS

Physical Suitability
Express lanes are suitable for urban and suburban freeway environments with high traffic volumes. I-540 in the study area is an expressway and toll lanes also exist on I-77 in Charlotte. Unless the lanes are repurposed, roads would have to be widened to accommodate these lanes and would require infrastructure to support toll collection and dynamic lane management.

Agency Approval Probability
There is agency coordination needed to codify public transportation use of tolling facilities, and any costs required to operate in the facility.

Across the nation, transit vehicles are often exempt from the cost associated with the facility and use the toll lanes for free.

Value
Express lanes may be more cost-effective if existing infrastructure is repurposed, otherwise the cost is like adding or widening highway lanes. The cost of the express lanes may be offset from the revenue generated from tolls.

Funding Probability
While some initial planning is ongoing, there are no identified express lanes projects on the immediate horizon for the region, contributing to a low funding probability.

There are a variety of potential funding sources to build new express lanes, including toll revenues, federal and state transportation grants, and public-private partnerships. Transit funding alone would not rise to the level needed to build a new express lane infrastructure.

Bus using express lanes on I-405 in Seattle. (Source: Seattle Transit Blog)

Express buses utilizing I-77 Express Lanes in Charlotte (Source: WFAE)

IMPLEMENTATION EXPERIENCE

Public Visibility

Express lanes could provide good visibility for transit, particularly if transit is able to bypass congested traffic using the express lanes or have signage noting use by transit.

Rider Experience

Express lanes can enhance the rider experience by providing faster and more reliable transit service, reducing delays caused by traffic congestion in general purpose lanes. With the use of express lanes, riders could expect more punctual and efficient transit service, particularly during congested, rush hour periods. This improved rider experience is only possible if the express lanes have free flowing traffic.

OPTION SUMMARY

Rating

Transit use of express lanes can help transit vehicles bypass congested general-purpose lanes, improving travel times and reliability, but existing express lanes need to be present in order to implement this option. The exclusivity of express lanes provides a high level of transit advantage and operational benefits for riders. Bus routes in Charlotte, NC are able to operate in express lanes and planning efforts are underway in the Study Area to consider implementing new express lanes, which would include allowing use by transit vehicles.

Transit Use of Express Lanes	
Physical Suitability	Excellent
Agency Approval Probability	Excellent
Level of Transit Advantage	Great
Value	Excellent
Public Visibility	Good
Funding Probability	Fair
Rider Experience	Good

Freeway (Facility) Rating Comparison

Option Type	Dedicated Freeway Transit Lanes	Dynamic Median Shoulder System	Expanded BOSS	Transit Use of Express Lanes
Physical Suitability	Good	Good	Excellent	Excellent
Agency Approval Probability	Good	Good	Excellent	Excellent
Level of Transit Advantage	Excellent	Good	Good	Great
Value	Fair	Great	Excellent	Excellent
Public Visibility	Excellent	Great	Great	Good
Funding Probability	Good	Good	Great	Fair
Rider Experience	Excellent	Great	Good	Good

Freeways (Access)

Freeway Ramp Signals

Ramp metering in Phoenix, Arizona. (Source: Roads & Bridges)

GENERAL OVERVIEW

Description and Intention

Ramp metering involves traffic signals on freeway on-ramps to control the flow of vehicles entering the freeway, reducing congestion and improving safety. Bypass lanes on the ramps would allow transit vehicles to bypass the ramp meter, providing a faster entry onto the freeway and BOSS lanes. The intention of ramp meters overall is to manage the flow of traffic and pairing with bypass lanes would help prioritize transit vehicles entering a freeway.

Location and Typology Application

Ramp metering can be applied to controlled access freeways where congestion is prevalent, such as along I-540. Expanding ramp metering along I-40 has been explored in other planning efforts and was shown in NCDOT's 2024-2033 STIP, but is not included in the draft 2026-2035 STIP. One spot location for ramp metering could be suitable for ramp metering is I-40 and Harrison Avenue.

Level of Transit Advantage

Ramp metering can provide a moderate transit advantage by reducing delays at freeway on-ramps and improving overall travel times. This can enhance the efficiency and reliability of transit services, especially ones that utilize BOSS lanes.

DESIGN CONSIDERATIONS

Physical Suitability

Ramp metering is suitable for urban and suburban freeways that experience high traffic volumes and congestion at on-ramps. In the Triangle Region, ramp metering is present on I-540.

As ramp metering involves the use of traffic signals on existing ramps, no additional ROW is needed. Including bypass lanes for transit, may require widening the existing ramp.

Agency Approval Probability

Ramp metering is likely to have a high probability of approval, as there are existing locations with ramp metering in the study area on I-540. NCDOT have also conducted numerous studies on applying ramp metering in additional locations throughout the region, including along I-40.

Value

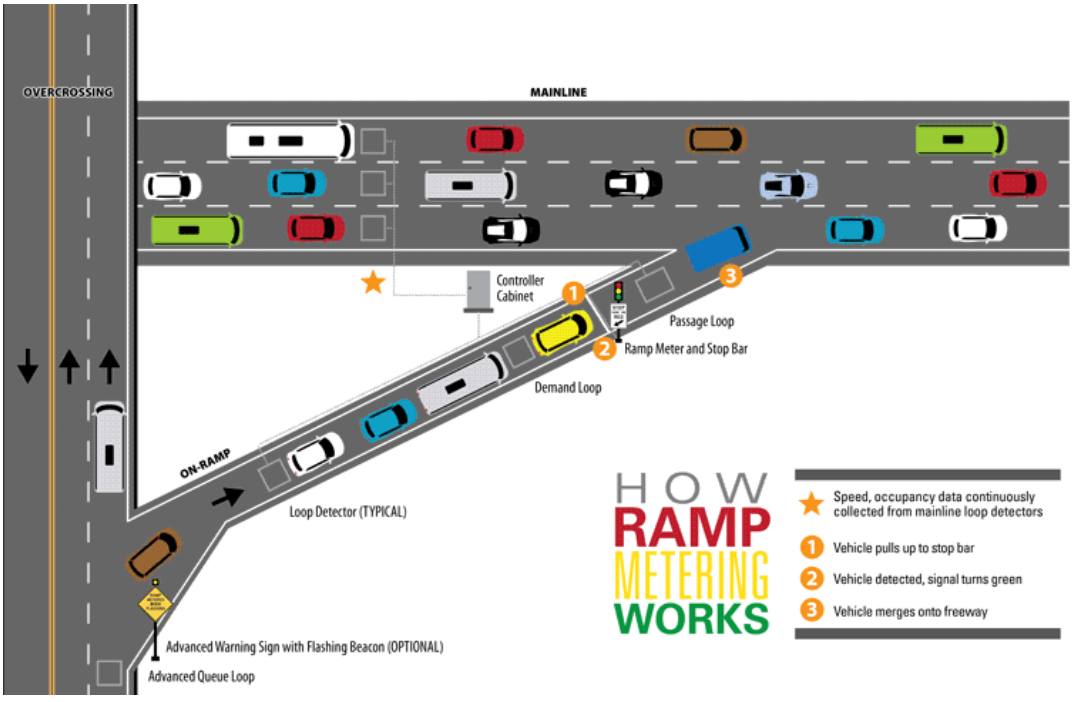
Ramp metering can be a very cost-effective option for congestion management as it uses existing infrastructure and requires minimal additional investment in the form of signals. According to FHWA "The widespread benefits of ramp metering, relative to its costs, make it one of the most cost-effective freeway management strategies."

Adding a bypass lane to increase the benefits for transit also provides a relative low-cost option due to the existing infrastructure present.

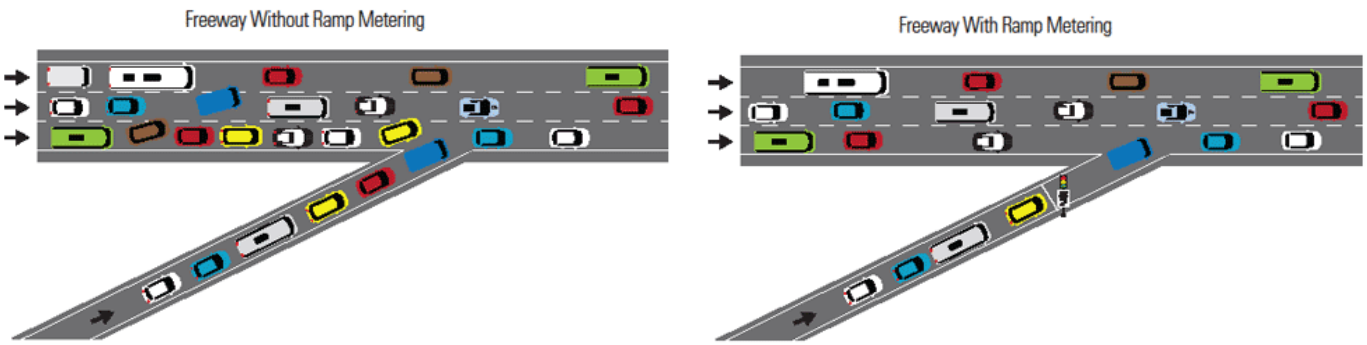
Funding Probability

As ramp metering is a treatment that is not transit specific, any projects would likely need to access larger and more varied funding sources, like federal and state roadway funding. Ramp metering does exist in the region, increasing the likely for funding of future projects.

In the 2024-2033 STIP, NCDOT had a project to introduce ramp metering along I-40 in the study area, but that project is currently not included in the draft 2026-2035 STIP, that is slated for adoption in summer 2025.



Ramp metering configuration (Source: FHWA)



Freeway congestion without ramp metering and freeway congestion with ramp metering. (Source: FHWA)

IMPLEMENTATION EXPERIENCE

Public Visibility

Ramp metering has good public visibility with signage and dedicated traffic signals noticeable to all freeway users. However, the visibility as a transit improvement may be poor without bypass lanes for exclusive transit use.

Rider Experience

Ramp metering can help improve the rider experience by reducing delays at on-ramps and helping with overall congestion on freeways. This can help improve the reliability of the transit service overall.

OPTION SUMMARY

Rating

Freeway ramp signals could help reduce delays at freeway on-ramps and improve overall travel times, which would benefit transit, but would be of most benefit to general traffic. This treatment is already being used in the region, leading to a high likelihood it could be expanded but the 2026-2035 Draft STIP no longer includes ramp metering along I-40 in the study area, making the funding probability in the near- to mid-term less likely.

Freeway Ramp Signals	
Physical Suitability	Great
Agency Approval Probability	Excellent
Level of Transit Advantage	Good
Value	Good
Public Visibility	Good
Funding Probability	Good
Rider Experience	Good

Freeway (Access) Rating Comparison

Option Type	Freeway Ramp Signals	Direct Transit Access Ramps
Physical Suitability	Great	Fair
Agency Approval Probability	Excellent	Good
Level of Transit Advantage	Good	Excellent
Value	Good	Fair
Public Visibility	Good	Excellent
Funding Probability	Good	Fair
Rider Experience	Good	Excellent

Direct Transit Access Ramp

Direct access ramp on I-90 in Bellevue, Washington. (Source: Google Earth)

GENERAL OVERVIEW

Description and Intention

Direct transit access ramps provide access for buses to directly enter and exit the inside median lanes, allowing these vehicles to avoid the need to weave across the other lanes of traffic. The location of direct transit access ramps can be coordinated with DMSS, dedicated transit lanes, or express lanes to increase bus freeway access.

Location and Typology Application

It is recommended that the direct transit access ramps be used to allow transit vehicles to enter and exit from the inside median lanes of a controlled access roadway to grade separated cross street, allowing the transit vehicles to get on and off the controlled access roadway without merging to the outside lane to exit. On the priority corridors, some possible direct transit access ramp locations include:

- I-40 at NC 54
- I-40 at Miami Boulevard
- I-40 at Harrison Avenue
- I-40 at Trinity Road

Level of Transit Advantage

Direct transit access ramps can improve safety, reduce congestion, save time, and increase travel time reliability for transit services on and around freeways.

DESIGN CONSIDERATIONS

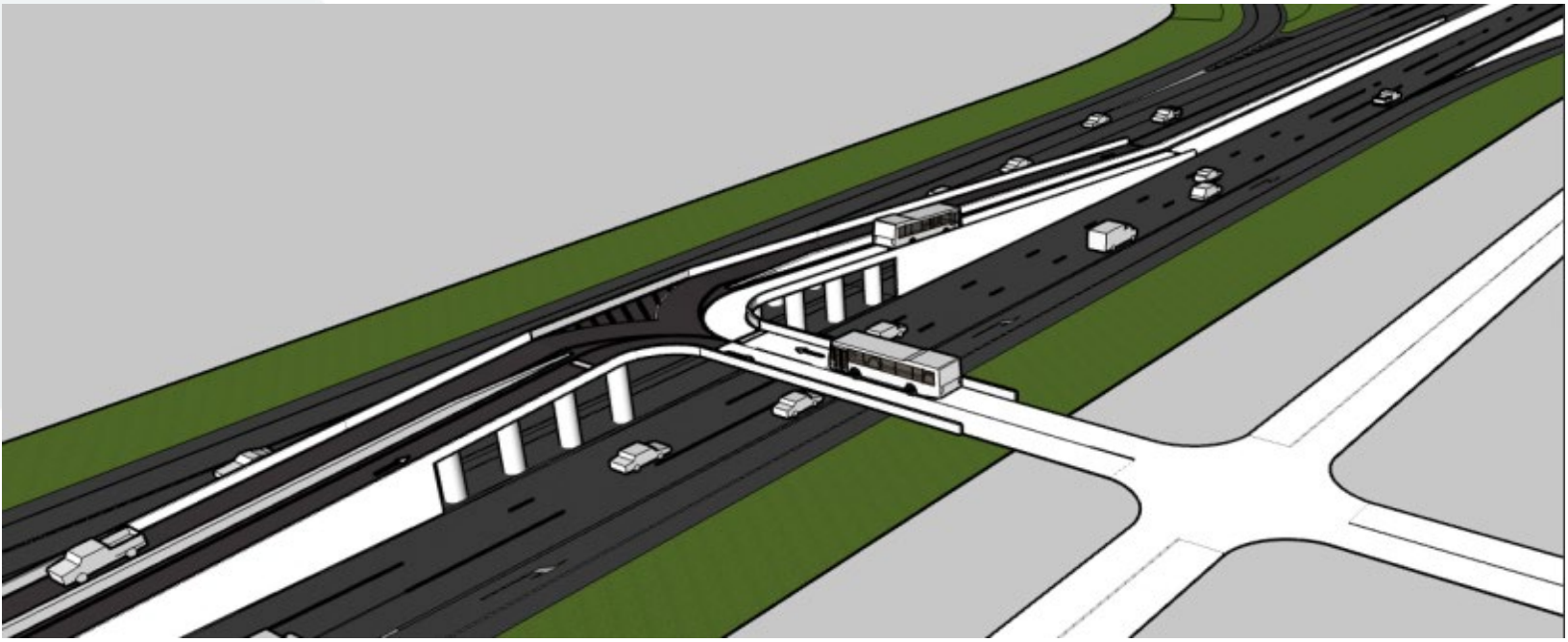
Physical Suitability
Direct transit access transit ramps will require additional ROW and freeway widening at limited locations along I-40, I-885, and NC 147 that will connect to arterial BRT service. To minimize complexity, direct transit access ramps would be designed to connect to existing overpass arterials. Direct transit access ramps could allow bus service from I-40 to quickly and easily connect with RDU airport.

Agency Approval Probability
The direct transit access ramps are federally supported, but the direct transit access ramp design is not in the NCDOT Roadway Design Manual and will require significant agency coordination. Coordination with transit providers, MPOs, and municipalities will also be required to be incorporated into proposed designs.

Value
Direct transit access ramps would require purpose-built structures and associated ROW. Opportunities for cost savings on design and construction can occur through coordination with interstate widening and interchange improvement projects.

Funding Probability
NCDOT STIP Projects do not have direct transit access ramps as part of the design, so no current funding is available. However, federal, state and local transit funding could be combined with highway funding for coordinated roadway widening or resurfacing projects.

Rendering of potential direct transit access ramp. (Source: WSP)



Rendering of direct transit access ramp from FAST 1.0. (Source: NCDOT)

IMPLEMENTATION EXPERIENCE

Public Visibility
Direct transit access ramps would be highly visible at these locations to anyone on the interstate. A Direct transit access ramp at RDU would also be visible to anyone traveling to and from the airport, emphasizing that there is significant transit investment in the region.

Rider Experience
Direct transit access ramps would further enhance the benefits of DMSS, dedicated transit lanes, and express lanes by allowing buses to quickly and reliably enter and exit the freeway without any interference from general purpose traffic.

OPTION SUMMARY

Rating

Direct transit access ramps could provide a highly visible piece of transit infrastructure that could reduce delays and increase travel time reliability for transit services on and around freeways. However, the direct transit access ramps would require widening to accommodate the ramp and would be very costly to implement. Robust coordination would be with NCDOT, as this type of infrastructure does not exist in the region and is not included in the NCDOT *Roadway Design Manual*.

Direct Transit Access Ramps	
Physical Suitability	Fair
Agency Approval Probability	Good
Level of Transit Advantage	Excellent
Value	Fair
Public Visibility	Excellent
Funding Probability	Fair
Rider Experience	Excellent

Freeway (Access) Rating Comparison

Option Type	Freeway Ramp Signals	Direct Transit Access Ramps
Physical Suitability	Great	Fair
Agency Approval Probability	Excellent	Good
Level of Transit Advantage	Good	Excellent
Value	Good	Fair
Public Visibility	Good	Excellent
Funding Probability	Good	Fair
Rider Experience	Good	Excellent

Arterials (Facility)

Fully-Dedicated Transit Lanes

Fully-dedicated curbside transit lane. (Source: NACTO)

GENERAL OVERVIEW

Description and Intention

Fully dedicated transit lanes are a transit-priority travel lane, reserved exclusively for transit vehicles, with restrictions for other modes. These lanes are meant to optimize bus operations in a corridor to maximize transit competitiveness and reliability, by reducing delays caused by mixed traffic.

Locally, these lanes are sometimes referred to RED lanes, as in CAMPO's *RED Lanes Study*.

Location and Typology Application

Fully dedicated transit lanes are recommended for arterial roadways, either in the median or where there are limited curb cuts. These lanes are planned along the Wake BRT corridors, such as New Bern Avenue, Southern Corridor and Western Corridor. Along the priority corridors, possible locations of fully dedicated transit lanes include:

- Harrison Avenue between I-40 and Chapel Hill Road
- Renaissance Parkway between Fayetteville Road and NC 751

Level of Transit Advantage

Fully dedicated transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a clear, unobstructed path, reducing travel times and improving schedule adherence. These lanes can improve reliability and performance to increase passenger convenience.

DESIGN CONSIDERATIONS

Physical Suitability
Fully dedicated transit lanes can be used on the curb side or median of a roadway and are suitable for urban and suburban environments with high transit vehicle volumes and frequent congestion.

Agency Approval Probability
Fully dedicated transit lanes are part of existing projects in the region, creating a higher probability that this treatment would be approval on other roadways throughout the region. However, the roadway owner may differ from the transit agency operating within the lanes and may not want to repurpose general purpose lanes.

Fully dedicated transit lanes are part of the Wake BRT: New Bern Corridor design, in Raleigh, that has gone through the NCDOT review process and is currently being bid for construction. These lanes are also planned for the other Wake BRT corridors (Southern and Western) and the North-South Bus Rapid Transit (NSBRT) project in Chapel Hill.

Value
Fully dedicated transit lanes can be a cost-effective strategy as they often use existing roadway infrastructure and require minimal additional investment, while providing benefits of reduced delays. If these lanes are not able to be incorporated into an existing roadway cross section, the cost is similar to road widening to add the desired number of transit lanes.

Funding Probability
Fully dedicated transit lanes are a common transit infrastructure across the country and eligible for a wide range of funding, including federal funding. Local transit funding is also a likely funding source.

Bus using a fully-dedicated transit lane on Hennepin Avenue in Minneapolis. (Source: City of Minneapolis)

Fully-dedicated transit lane on Renaissance Pkwy in Durham. (Source: GoDurham)

IMPLEMENTATION EXPERIENCE

Public Visibility

Fully dedicated transit lanes are highly visible when applied to a roadway, with the lane markings and signage, being seen by all roadway users. Public education can be important to ensure proper use and understanding of the lanes.

RED lanes are critical to the region's planned BRT projects to enhance transit visibility throughout the region to maintain a safe, convenient, and efficient multimodal system.

Rider Experience

Fully dedicated transit lanes can greatly benefit the rider experience by helping to reduce travel times and improve schedule adherence. The experience can be excellent when transit vehicles using these lanes pass areas of congestion or gridlock.

OPTION SUMMARY

Rating

Fully dedicated transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a clear, unobstructed path. The lanes are highly visible to the general public and provide benefits for riders by reducing travel times and improving schedule adherence. These lanes are planned along several BRT corridors within the Study Area but could require more space to build than semi-dedicated lanes.

Fully Dedicated Transit Lanes	
Physical Suitability	Good
Agency Approval Probability	Good
Level of Transit Advantage	Excellent
Value	Great
Public Visibility	Excellent
Funding Probability	Good
Rider Experience	Excellent

Arterials (Facility) Rating Comparison

Option Type	Fully-Dedicated Transit Lanes	Semi-Dedicated Transit Lanes
Physical Suitability	Good	Great
Agency Approval Probability	Good	Great
Level of Transit Advantage	Excellent	Great
Value	Great	Excellent
Public Visibility	Excellent	Great
Funding Probability	Good	Great
Rider Experience	Excellent	Great

Semi-Dedicated Transit Lanes

Semi-dedicated transit lanes allow right turns. (Source: Massachusetts Bay Transportation Authority (MBTA)

GENERAL OVERVIEW

Description and Intention

Semi-dedicated transit lanes are lanes that reserved for transit travel but allow general purpose vehicles to use the lanes for accessing businesses or to make a turn. These lanes are also often referred to as Business Access & Transit Lanes (BAT Lanes).

These lanes are able provide a dedicated travel lane for transit while maintaining access to businesses and cross streets.

Location and Typology Application

Semi-dedicated transit lanes are suited for arterials where access to businesses is still needed. These lanes are planned along the Wake BRT corridors, such as New Bern Avenue. Along the priority corridors, possible locations of semi-dedicated transit lanes are recommended include:
Trinity Road between Edwards Mill Road and Blue Ridge Road
Harrison Avenue between I-40 and Chapel Hill Road
In Central Durham

Level of Transit Advantage

Semi-dedicated transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a semi-exclusive path, while still providing access to businesses. Semi-dedicated transit lanes can help reduce travel times and improve schedule adherence. These lanes can improve reliability and performance to increase passenger convenience.

DESIGN CONSIDERATIONS

Physical Suitability
Semi-dedicated transit lanes can be used on the curb side of a roadway and are suitable for urban and suburban environments where dedicated transit infrastructure is desired, but where there also may be lots of driveways or cross streets that are not able to be closed to allow for a fully dedicated transit lane.

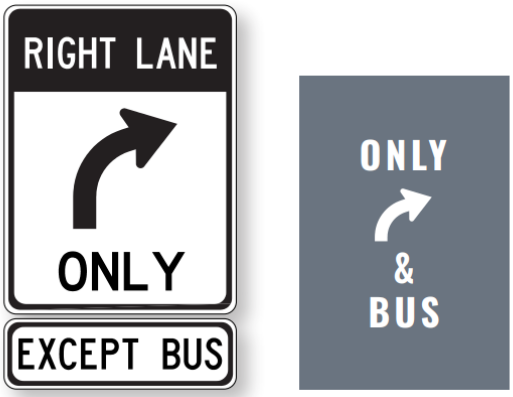
Agency Approval Probability
Similar to fully dedicated transit lanes, semi-dedicated transit lanes are part of existing projects in the region, creating a high probability that this treatment would be approval on other roadways throughout the region.

Semi-dedicated transit lanes are part of the Wake BRT: New Bern Corridor design, in Raleigh, that has gone through the NCDOT review process and is currently being bid for construction.

Value
Semi-dedicated transit lanes can be a cost-effective strategy as they often use existing roadway infrastructure and require minimal additional investment, while providing benefits of reduced delays and limiting impacts to existing access of businesses.

Funding Probability
Semi-dedicated transit lanes are a common transit infrastructure across the country and eligible for a wide range of funding, including federal funding. Local transit funding is also a likely funding source.

Motorists use these lanes to access businesses and make right turns at intersections.



Motorists use these lanes at intersections to make right turns into the nearest through-traffic lane.

Signage used for BAT lanes in Lane County, Oregon. (Source: Lane Transit District)

Semi-dedicated transit lane in Seattle. (Source: King County Metro)

IMPLEMENTATION EXPERIENCE

Public Visibility

Semi-dedicated transit lanes are highly visible when applied to a roadway, with the lane markings and signage, being seen by all roadway users. Public education can be important to ensure proper use and understanding of the lanes.

Rider Experience

Semi-dedicated transit lanes can greatly benefit the rider experience by helping to reduce travel times and improve schedule adherence. The experience can be excellent when transit vehicles using these lanes pass areas of congestion or gridlock.

OPTION SUMMARY

Rating

Semi-dedicated transit lanes provide a high level of transit advantage by ensuring that transit vehicles have a semi-exclusive path, while still providing access to businesses. The level of transit advantage may not be as high as fully dedicated transit lanes but can still help reduce travel times and improve schedule adherence. These lanes are planned along several BRT corridors within the Study Area.

Semi-Dedicated Transit Lanes	
Physical Suitability	Great
Agency Approval Probability	Great
Level of Transit Advantage	Great
Value	Excellent
Public Visibility	Great
Funding Probability	Great
Rider Experience	Great

Arterials (Facility) Rating Comparison

Option Type	Fully-Dedicated Transit Lanes	Semi-Dedicated Transit Lanes
Physical Suitability	Good	Great
Agency Approval Probability	Good	Great
Level of Transit Advantage	Excellent	Great
Value	Great	Excellent
Public Visibility	Excellent	Great
Funding Probability	Good	Great
Rider Experience	Excellent	Great

Arterials (Signals and/or Access)

Transit Signal Priority

TSP allows buses to communicate with signals to move through intersections. (Source: City of Minneapolis)

GENERAL OVERVIEW

Description and Intention

Transit signal priority (TSP) involves periodically modifying traffic signal timings to give priority to transit vehicles at intersections, reducing delays and improving schedule adherence. TSP allows transit vehicles to communicate with traffic signals along their routes and can work, for example, by extending the green light for a few seconds, allowing a bus to continue moving through that signalized intersection. The intention of TSP is to enhance the efficiency and reliability of transit services by minimizing delays at signalized intersections.

Location and Typology Application

TSP is suitable for use on arterial and surface streets and can be applied to isolated signal locations or along an entire corridor. It is best used directly before or after a bus stop/station to allow a bus to access and exit the stop/station, as well as in congested areas that can regularly impact buses' travel times. Within the study area, TSP is planned along the Wake BRT corridors in Raleigh and the City of Durham recently completed installing TSP technology at 13 traffic lights along Fayetteville Street between Lakewood Avenue and Riddle Road to assist multiple GoDurham routes traveling along Fayetteville Street.

Level of Transit Advantage

TSP can provide a high level of transit advantage by reducing delays at signalized intersections and improving overall travel times. This can significantly enhance the efficiency and reliability of transit services.

DESIGN CONSIDERATIONS

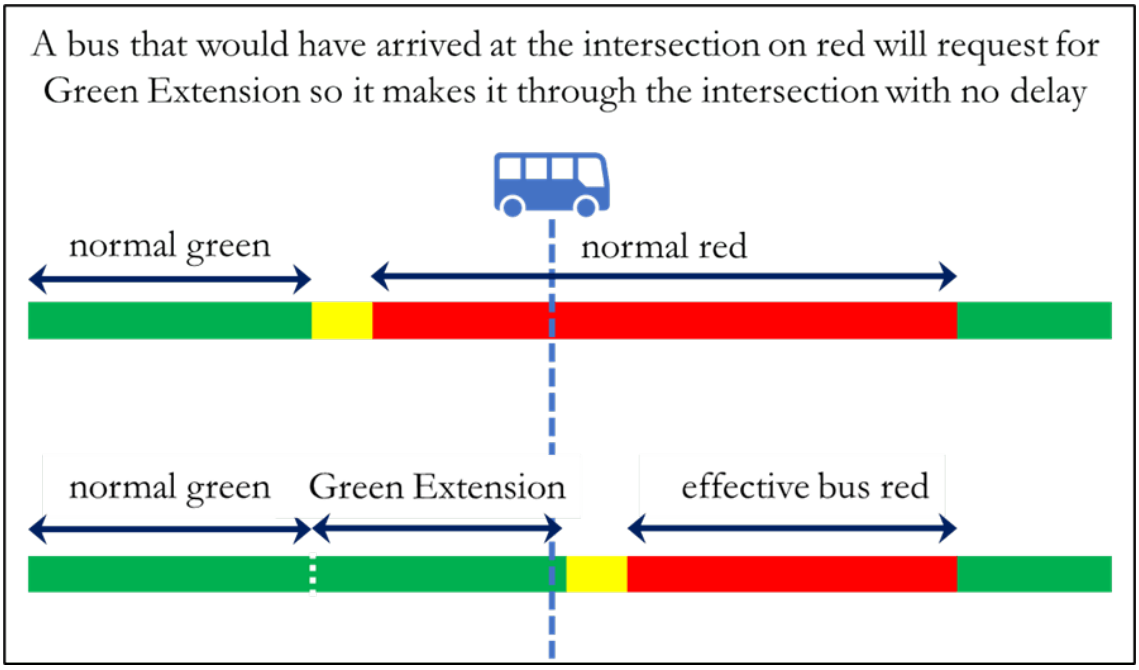
Physical Suitability
TSP can be suitable for urban and suburban environments with frequent signalized intersections and high transit vehicle volumes. It can be used along corridors or in spot locations, where transit vehicles maybe frequently delayed.

Agency Approval Probability
TSP has a high probability of approval, as this infrastructure is starting to be implemented throughout the region. Local municipalities, transit agencies, and NCDOT have all been involved in the planning of TSP throughout the region, so there is familiarity among different agencies. The region is also thinking about how to coordinate TSP efforts and identify opportunities for interoperability between different agencies, such as in GoTriangle's ongoing Regional Technology Plan efforts.

Value
TSP can be a cost-effective treatment as it uses existing traffic signal infrastructure and requires minimal additional investment, while providing notable benefits in terms of reduced delays and improved schedule adherence. The cost of implementing TSP can depend on the size of a traffic signal network and number of traffic signals that are upgraded to include TSP.

Funding Probability
TSP has a high probability of funding due to its cost-effectiveness and ability to be funded from a variety of funding sources.

TSP can be paid for with CMAQ or LAPP funding and can be easily added to planned roadway or signal projects.



This graphic shows how TSP can provide a green extension to buses. (Source: Northeastern University)

IMPLEMENTATION EXPERIENCE

Public Visibility

While some nuances in changing light cycles might be noticed, TSP is not likely to have much, if any, public visibility due to the limited infrastructure used for TSP. There are no special signals, markings, or signage that would indicate to the general public that TSP is in use.

Rider Experience

TSP can enhance the rider experience by reducing delays at intersections, improving overall travel times and providing a more reliable transit service. TSP may provide benefits without even being noticeable by the rider.

OPTION SUMMARY

Rating

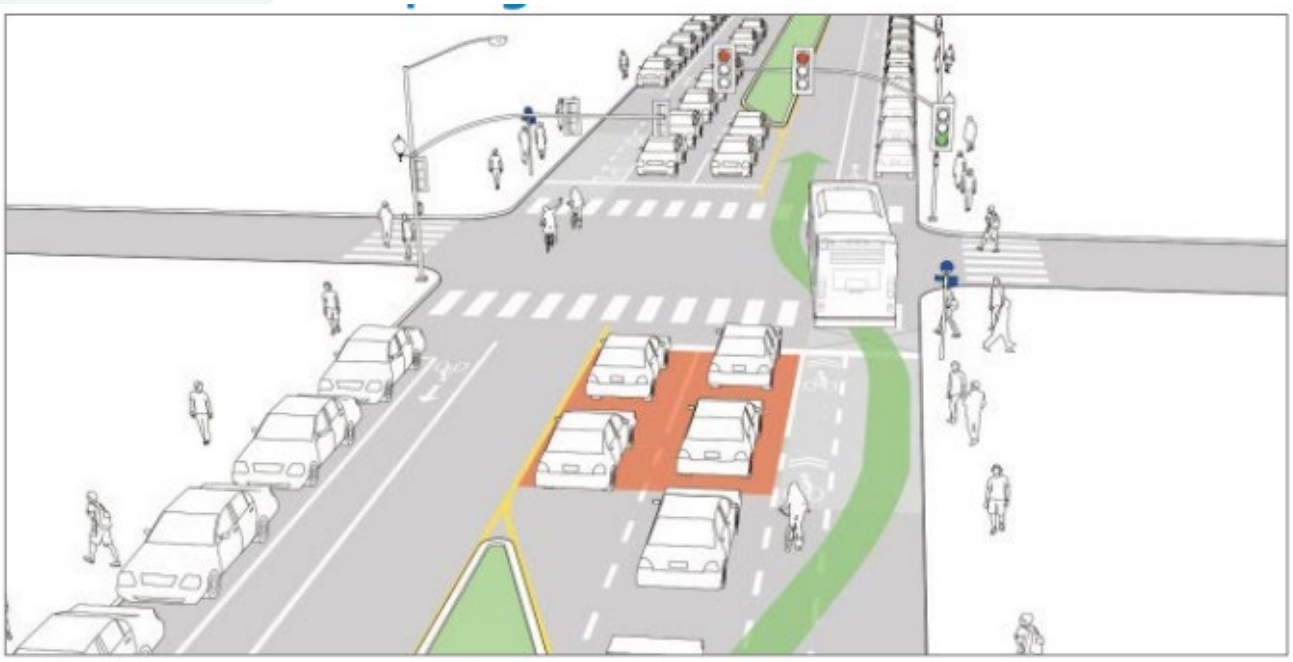
TSP is a well-known treatment option by NCDOT and regional stakeholders, contributing to a high agency approval probability. In addition, TSP ties into existing traffic signal infrastructure, requiring little to no additional physical space to implement. While TSP may not be easily noticeable by riders or the public, it can provide notable benefits in terms of reduced delays and improved schedule adherence.

Transit Signal Priority (TSP)	
Physical Suitability	Excellent
Agency Approval Probability	Excellent
Level of Transit Advantage	Good
Value	Excellent
Public Visibility	Fair
Funding Probability	Great
Rider Experience	Good

Arterials (Signals and/or Access) Rating Comparison

Option Type	Queue Jump Lanes	Transit Signal Priority (TSP)
Physical Suitability	Great	Excellent
Agency Approval Probability	Great	Excellent
Level of Transit Advantage	Good	Good
Value	Great	Excellent
Public Visibility	Great	Fair
Funding Probability	Good	Great
Rider Experience	Good	Good

Queue Jump Lanes



Queue jumps provide buses with a head start at congested intersections. (Source: NACTO)

GENERAL OVERVIEW

Description and Intention

A queue jump lane is a short stretch of bus lane combined with traffic signal priority, allowing buses to bypass waiting vehicles at intersections by getting an early green signal to jump ahead of traffic. The early green signal allows buses to safely merge back into traffic, ahead of waiting vehicles. The intention is to reduce delays at congested intersections and improve the operational efficiency of the transit system.

Some transit systems, like Muni in San Fransico, also allow emergency vehicles to use queue jumps.

Location and Typology Application

A queue jump lane is suitable for use on arterial and surface streets, particularly at congested intersections. Along the priority corridors, possible locations of queue jump lanes include:

- Trinity Road at Blue Ridge Road and at Edwards Mill Road
- NC 54 at several locations (NC 55, Barbee Road, and Fayetteville Road)
- Downtown Durham

Level of Transit Advantage

Queue jump lanes can provide a moderate level of transit advantage by reducing delays at congested intersections and improving overall travel times. This can enhance the efficiency and reliability of transit services.

DESIGN CONSIDERATIONS

Physical Suitability

Queue jump lanes can be suitable for urban and suburban locations with frequent signalized intersections and high transit vehicle volumes. Queue jumps are most suitable for congested intersections where transit might be frequently delayed.

Queue jump lanes need to be big enough to allow the bus to wait at a signalized intersection, in a space separated from vehicle lanes, which can often be accommodated with a space the size of a right-turn lane pocket or several parking spaces.

Agency Approval Probability

Queue jump lanes can be a cost-effective treatment that enhances transit efficiency and reduces delays. While they only require a small amount of space for implementation, local agencies have noted queue jumps need to be considered in proximity to bus stops.

Within the study area, queue jump lanes are planned along the Wake BRT corridors in Raleigh.

Value

Queue jump lanes can be a cost-effective treatment for transit as it often uses existing roadways and traffic signal infrastructure and requires minimal additional investment. Even with lower cost, queue jump lanes can provide great benefits to transit service through reduced delays and improved schedule adherence.

Funding Probability

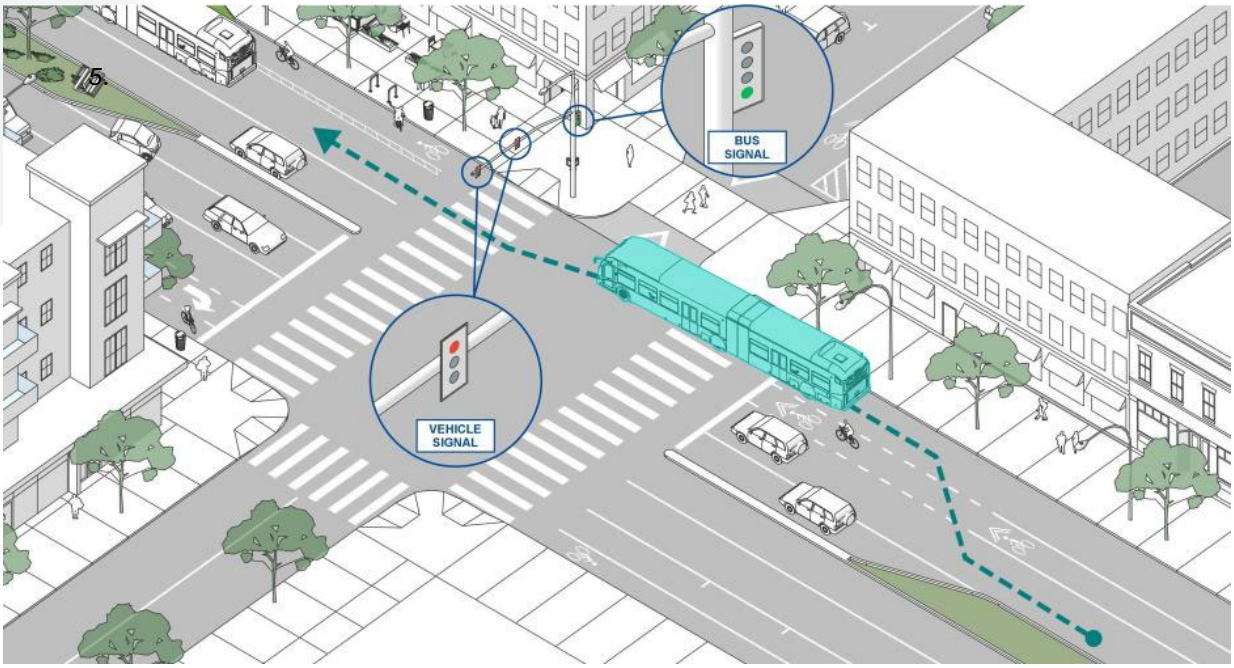
The probability for funding is good as queue jump lanes often use existing roadway and traffic signal infrastructure and requires minimal additional investment. These lanes could use a variety of federal, state, or local funding, including local transit funding. A project to add queue jumps or queue jump lanes could also be a part of a larger signal improvement or roadway project.

The graphic from the City of Madison, shows the special traffic signals used for queue jumps in their system and highlight the meaning of each:

[Red traffic light] [White horizontal line] – This means everyone is stopped at the intersection.

[Red traffic light] [White vertical line] – Buses may go, but all other traffic stays stopped.

[Green traffic light] [White horizontal line] – All traffic may go, buses must merge into the regular flow of traffic.



Buses have a special bus signal that allows them to queue jump at congested intersections. (Source: Valley Transportation Authority)

IMPLEMENTATION EXPERIENCE

Public Visibility
Queue jump lanes are moderately visible, with special traffic signals just for buses, and seeing buses pass in front of waiting traffic.

Rider Experience
Queue jump lanes can enhance the rider experience by reducing delays at intersections, improving overall travel times and providing a more reliable transit service.

OPTION SUMMARY

Rating

Queue jump lanes can be a cost-effective treatment they often use existing infrastructure and require minimal additional investment. Even with lower cost and minimal space needed, queue jump lanes can reduce delays and improve schedule adherence, adding to the rider experience.

Queue Jump Lanes	
Physical Suitability	Great
Agency Approval Probability	Great
Level of Transit Advantage	Good
Value	Great
Public Visibility	Great
Funding Probability	Good
Rider Experience	Good

Arterials (Signals and/or Access) Rating Comparison

Option Type	Queue Jump Lanes	Transit Signal Priority (TSP)
Physical Suitability	Great	Excellent
Agency Approval Probability	Great	Excellent
Level of Transit Advantage	Good	Good
Value	Great	Excellent
Public Visibility	Great	Fair
Funding Probability	Good	Great
Rider Experience	Good	Good

Types of Bus Stops and Stations

Enhanced Bus Stops and Stations

A BRT stop in Minneapolis with enhanced bus stop elements. Source: City of Minneapolis

GENERAL OVERVIEW

Description and Intention

Enhanced bus stops and stations include features such as shelters, seating, real-time arrival information, lighting, and accessibility improvements. The intention is to provide a more comfortable and convenient waiting environment for transit riders. While some of the features maybe common at existing bus stops, an enhanced bus stop and station would include all the features and make them standard for these types of stops and stations.

Location and Typology Application

Enhanced bus stops are standard along BRT corridors and are only suited for arterial roadways, as some of the specific design elements of enhanced bus stops are dependent on the speed of the roadway, such as level boarding, curb height, and setbacks.

In the study area, enhanced stops are planned along the Wake BRT corridors, such as New Bern Avenue, Southern Corridor and Western Corridor.

Level of Transit Advantage

Enhanced bus stops and stations provide a more comfortable and convenient waiting environment for transit riders, rather than provide operational improvements, and the improved passenger experience could help encourage more people to use transit and increase ridership. Some elements of an enhanced bus stops and stations may be able to improve the speed and reliability of the transit service by:

- Reducing merging delays of buses
- Reducing passenger boarding delays by providing level boarding and off-board fare collection

DESIGN CONSIDERATIONS

Physical Suitability

Enhanced bus stops and stations can be suitable for urban and suburban locations with high transit vehicle volumes or where higher frequency service is planned.

While these stops and stations have a relatively small footprint, some urban locations may have limited right-of-way to accommodate these stops. Also, the proximity of buildings and existing utilities, particularly in urban areas or older suburban areas, may limit the physical suitability of these stops and stations.

Agency Approval Probability

The planning, design and installation of enhanced stops and stations often require agency coordination between transit agencies and the roadway owner, which may be a local jurisdiction or NCDOT.

Value

Enhanced bus stops and stations can be a cost-effective improvement aimed at increasing ridership and rider satisfaction. The availability and cost of right-of-way required to install the enhanced bus stops and stations maybe a limiting factor in their cost-effectiveness.

Funding Probability

Enhanced bus stops and stations can be funded with a combination of local and federal funding. Federal funding can help construct these stops and stations as part of larger, new transit projects or as stand-alone improvements.

Rendering of a BRT station along Wake BRT: New Bern Avenue in Raleigh. (Source: Raleigh)

The graphic above highlights elements of an enhanced bus stop. (Source: Spokane Transit Authority)

IMPLEMENTATION EXPERIENCE

Public Visibility

Enhanced bus stops and stations are highly visible to the public and are likely best suited for higher volume or higher density environments, where transit ridership is higher, which would improve the overall visibility of these stops.

Rider Experience

Implementation of enhanced bus stops and stations can yield marked improvements to the rider experience by providing a more comfortable and convenient waiting environment. Riders can expect better protection from the elements and more information about their transit trip with real-time information.

OPTION SUMMARY

Rating

Enhanced bus stops and stations are highly visible to the public and provide a more comfortable and convenient waiting environment for transit riders. Enhanced stations could provide fewer multimodal connections as a mobility hub but possibly at a lower cost. These stations are able to be funded with a variety of funding sources and are already within the Study Area, leading to higher funding and agency approval probabilities.

Enhanced Bus Stops and Stations	
Physical Suitability	Excellent
Agency Approval Probability	Excellent
Level of Transit Advantage	Great
Value	Excellent
Public Visibility	Great
Funding Probability	Excellent
Rider Experience	Excellent

Bus Stops and Stations Rating Comparison

Option Type	Enhanced Bus Stops and Stations	Super Stop Bus Stop	Mobility Hubs
Physical Suitability	Excellent	Great	Good
Agency Approval Probability	Excellent	Excellent	Great
Level of Transit Advantage	Great	Great	Excellent
Value	Excellent	Excellent	Good
Public Visibility	Great	Great	Excellent
Funding Probability	Excellent	Great	Good
Rider Experience	Excellent	Excellent	Excellent

Super Stop Bus Stop

A recently constructed Super Stop on Western Boulevard, used by both GoCary and GoRaleigh. (Source: WSP)

GENERAL OVERVIEW

Description and Intention

A Super Stop bus stop is a stop that is served by multiple routes that have enhanced amenities, such as larger or multiple shelters and real-time information. In addition to multiple routes, a Super Stop could be a location where there is a local bus stop and a BRT station at a single location. These stops are also used to switch between different transit service providers.

The *Wake Bus Plan Short Range Transit Plan* refers to Super Stops as “Enhanced Transfer Points”.

Location and Typology Application

A Super Stop was recently built on Western Boulevard at Jones Franklin Road in Raleigh. These stops are also well suited along BRT corridors, where there are additional local bus routes serving the stop, or at high ridership locations that serve many different routes, such as hospitals or universities.

Level of Transit Advantage

Super Stops are able to provide a more comfortable and convenient waiting environment for transit riders by providing enhanced amenities, which may help boost ridership. These stops can also help improve bus speed and reliability by bringing together multiple routes in one location.

DESIGN CONSIDERATIONS

Physical Suitability

Super Stops can be suitable for stops with multiple routes and transfer opportunities between service providers.

Super Stops have a larger footprint than a traditional bus stop, so locations with limited right-of-way may not be able to accommodate these stops. Also, the proximity of buildings and existing utilities, particularly in urban areas or older suburban areas, may limit the physical suitability of these stops and stations.

Agency Approval Probability

The planning, design and installation of enhanced stops and stations often require agency coordination between transit agencies and the roadway owner, which may be a local jurisdiction or NCDOT. Super Stops are already implemented within the Study Area, highlighting a high likelihood of their approval in the future.

Value

Super Stops can be a cost-effective improvement aimed at increasing ridership and rider satisfaction, while also providing amenities to serve multiple routes and service providers at a single location. The availability and cost of right-of-way required to install the super stop maybe a limiting factor in their cost-effectiveness.

Funding Probability

Enhanced Super Stops can be funded with a combination of local and federal funding. Federal funding can help construct these stops and stations as part of larger, new transit projects, such as a BRT station, or as stand-alone improvements.

On Renaissance Parkway at Southpoint Mall in Durham, this stop was upfitted with two new shelters, benches, an ADA concrete pad, a bus bay, and a bus lane. It is served by both GoTriangle and GoDurham. (Source: GoTriangle)

IMPLEMENTATION EXPERIENCE

Public Visibility

Super Stops are highly visible to the public, especially when multiple buses are present at the stop. These stops are likely best suited for higher volume or higher density environments, where transit ridership is higher and there are multiple bus routes, which would improve the overall visibility of these stops.

Rider Experience

The implementation of Super Stops can yield marked improvements to the rider experience by providing a more comfortable and convenient waiting environment to facilitate transfers. With the use of enhanced amenities, riders can expect better protection from the elements and more information about their transit trip with real-time information.

OPTION SUMMARY

Rating

Super Stops provide a more comfortable and convenient waiting environment for transit riders and can help improve bus speed and reliability by bringing together multiple routes in one location. Super Stops are able to provide connections between multiple routes and transit agencies within a relatively small physical footprint but may be larger than an enhanced stop. There are several super stops already existing in the Study Area, leading to a high agency approval probability.

Super Stop	
Physical Suitability	Great
Agency Approval Probability	Excellent
Level of Transit Advantage	Great
Value	Excellent
Public Visibility	Great
Funding Probability	Great
Rider Experience	Excellent

Bus Stops and Stations Rating Comparison

Option Type	Enhanced Bus Stops and Stations	Super Stop Bus Stop	Mobility Hubs
Physical Suitability	Excellent	Great	Good
Agency Approval Probability	Excellent	Excellent	Great
Level of Transit Advantage	Great	Great	Excellent
Value	Excellent	Excellent	Good
Public Visibility	Great	Great	Excellent
Funding Probability	Excellent	Great	Good
Rider Experience	Excellent	Excellent	Excellent

Mobility Hubs

Rendering of the Triangle Mobility Hub, RTP (Source: GoTriangle)

GENERAL OVERVIEW

Description and Intention

Mobility hubs are spaces where public, shared and active travel modes are co-located alongside improvements to the public realm. Mobility hubs enable people to make smooth and safe transfers between modes, transferring from public transit to other modes such as park and ride lots, shared vehicles, bikes, scooters, or walking. Increasingly, mobility hubs are integrating transportation with other public and business services, such as coworking facilities, shopping, or social and community facilities.

Location and Typology Application

Mobility hubs should be in active areas such as downtown or business centers, neighborhood centers or major activity centers. Mobility hubs currently in the planning stage include:

- Village Transit Center, Durham
- Downtown Cary Multimodal Center, Cary
- Triangle Mobility Hub, RTP
- S-Line Mobility Hubs, various locations in the Triangle

Level of Transit Advantage

Mobility hubs can significantly boost convenience for multi-modal trips and increase travel speed and reliability by bringing together transportation options in one location. They can also connect multiple transit routes and providers to facilitate easy transfers. At a properly designed mobility hub, passenger transfers between modes, e.g. bike-share and bus services, should be speedy and seamless.

DESIGN CONSIDERATIONS

Physical Suitability
Planning for a Mobility Hub should first include definition of the transportation modes which will converge at the facility and the size requirements. A site search will include assessment of the physical suitability of candidate sites and will include elements such as distance from activity centers, topography, land ownership, ROW of adjacent roadways and zoning.

Agency Approval Probability
Agency coordination will be required between the project sponsor, the municipality, transit agencies serving the mobility hub, and local and federal funding partners.

Value
Approximate cost of mobility hubs is dependent on the transportation modes served by the facility. Incorporation of rail track, platform and signal improvements can significantly increase the cost of the project.

Value elements provided by mobility hubs can include:
- Reduced traffic congestion
- Improved air quality
- Community development
- Technology Integration

Funding Probability
Mobility hubs can be funded with a combination of local and federal funding. Public Private Partnerships for Mobility Hubs should be considered to leverage private investment and encourage complementary, adjacent Transit Oriented Development opportunities.

Transit center in San Bernardino, California. (Source: WSP)

IMPLEMENTATION EXPERIENCE

Public Visibility

Mobility hubs are highly visible to the public as they are placed in busy areas such as Downtown centers. Adjacent uses such as retail, dining, day care or health care centers also increase the visibility of the mobility hub. Design elements such as clear and prominent signage, and wayfinding elements along major pedestrian routes and intersections can also increase visibility of the hubs.

Rider Experience

Implementation of mobility hubs can yield marked improvements to the rider experience. Creating protected spaces for riders and pedestrians reduces conflict with vehicular traffic. Safe, well-lit, and active spaces for waiting and transferring can reduce the anxiety riders feel when transferring between modes of transportation.

OPTION SUMMARY

Rating

Mobility hubs can greatly improve the rider experience and boost convenience for multi-modal trips by bringing together transportation options in one location. Given the geographic reach of the FAST 2.0 Study Area, mobility hubs can also provide opportunities for comfortable and accessible regional transfers.

Mobility Hubs	
Physical Suitability	Good
Agency Approval Probability	Great
Level of Transit Advantage	Excellent
Value	Good
Public Visibility	Excellent
Funding Probability	Good
Rider Experience	Excellent

Bus Stops and Stations Rating Comparison

Option Type	Enhanced Bus Stops and Stations	Super Stop Bus Stop	Mobility Hubs
Physical Suitability	Excellent	Great	Good
Agency Approval Probability	Excellent	Excellent	Great
Level of Transit Advantage	Great	Great	Excellent
Value	Excellent	Excellent	Good
Public Visibility	Great	Great	Excellent
Funding Probability	Excellent	Great	Good
Rider Experience	Excellent	Excellent	Excellent

Appendix G: Airport Exchange Platform Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

AIRPORT EXCHANGE PLATFORM MEMO

May 2025

Introduction

FAST 2.0 Transit Study

NCDOT and Triangle regional partners are continuing efforts to improve roads for public transportation with the Freeway, Arterial, Street and Tactical (FAST) Transit Study. Known as FAST 2.0, the study will make recommendations to create a more timely and efficient public transportation system in the Triangle region (Durham, Orange, Wake, Chatham, and Johnston Counties). The FAST 2.0 regional network frames out a larger, long-term network for transit in the study area, by including many of the major thoroughfares within the study area, as shown in Figure 1.

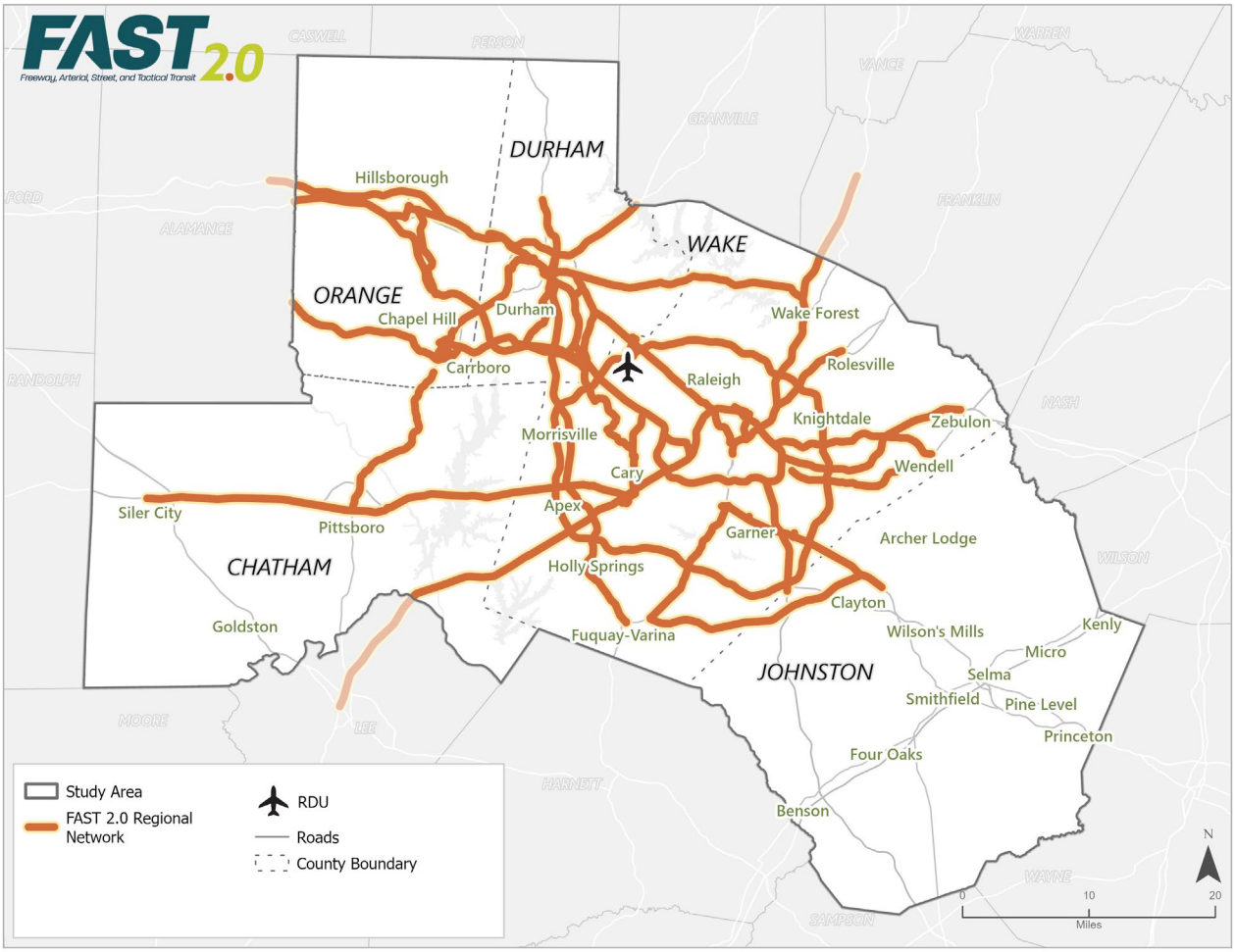


Figure 1: FAST 2.0 Regional Network

The study will include a high-level review of existing and planned transit routes/corridors in the Triangle region and identify a set of infrastructure improvements that could provide transit with faster and more reliable service. The infrastructure improvements will be better defined for a set of priority corridors, including direct access from I-40 to Raleigh-Durham International Airport (RDU), as shown in Figure 2.

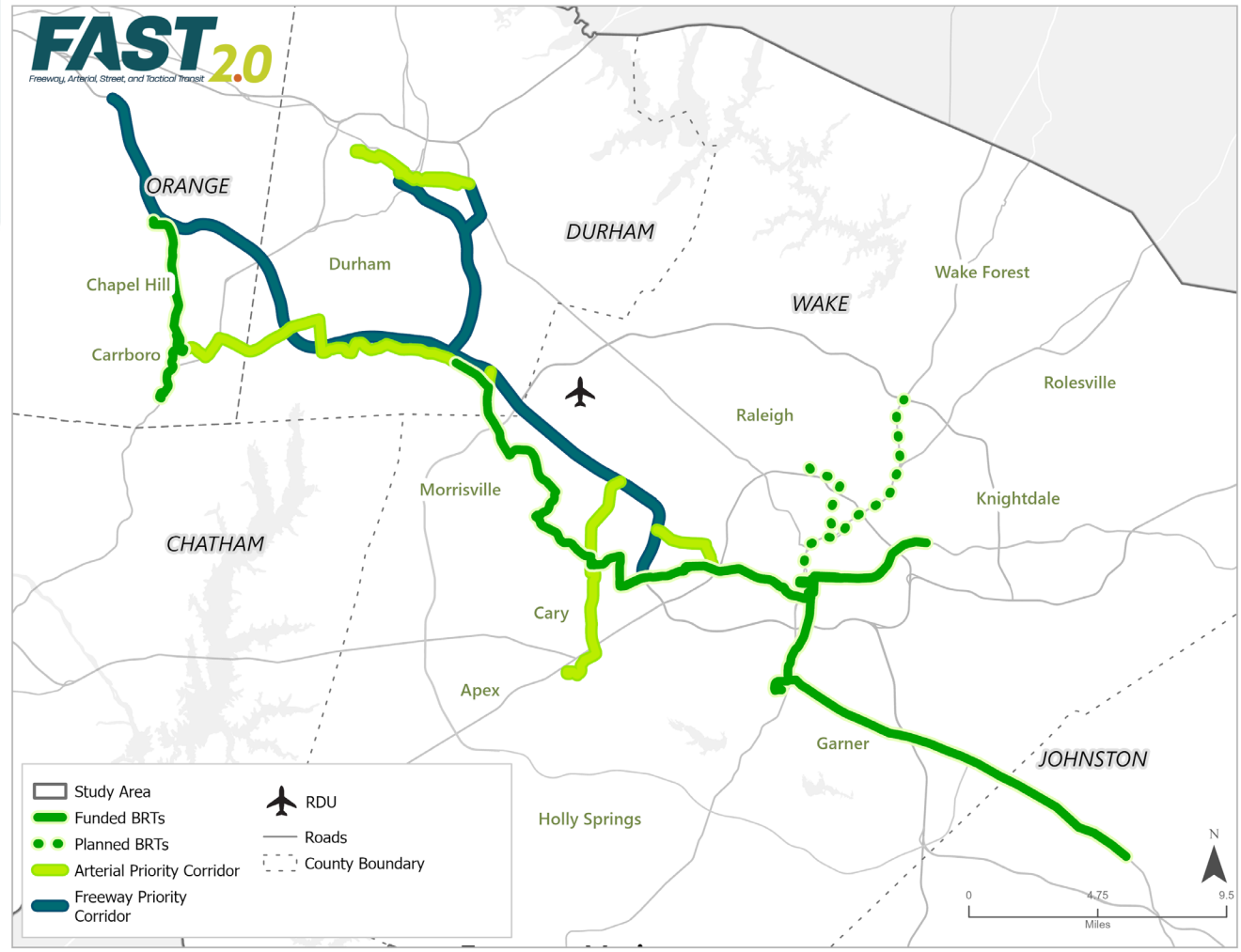


Figure 2: FAST 2.0 Priority Corridors

Purpose of the Memo

This memo provides an overview of the conceptual siting and design of a new regional transit airport exchange platform (APE) to directly connect the Triangle region's transit service to RDU, located in the approximate center of the Triangle region, directly on top of I-40, as shown on Figure 3. A cost estimate for the APE will be included in further stages of the FAST 2.0 project.

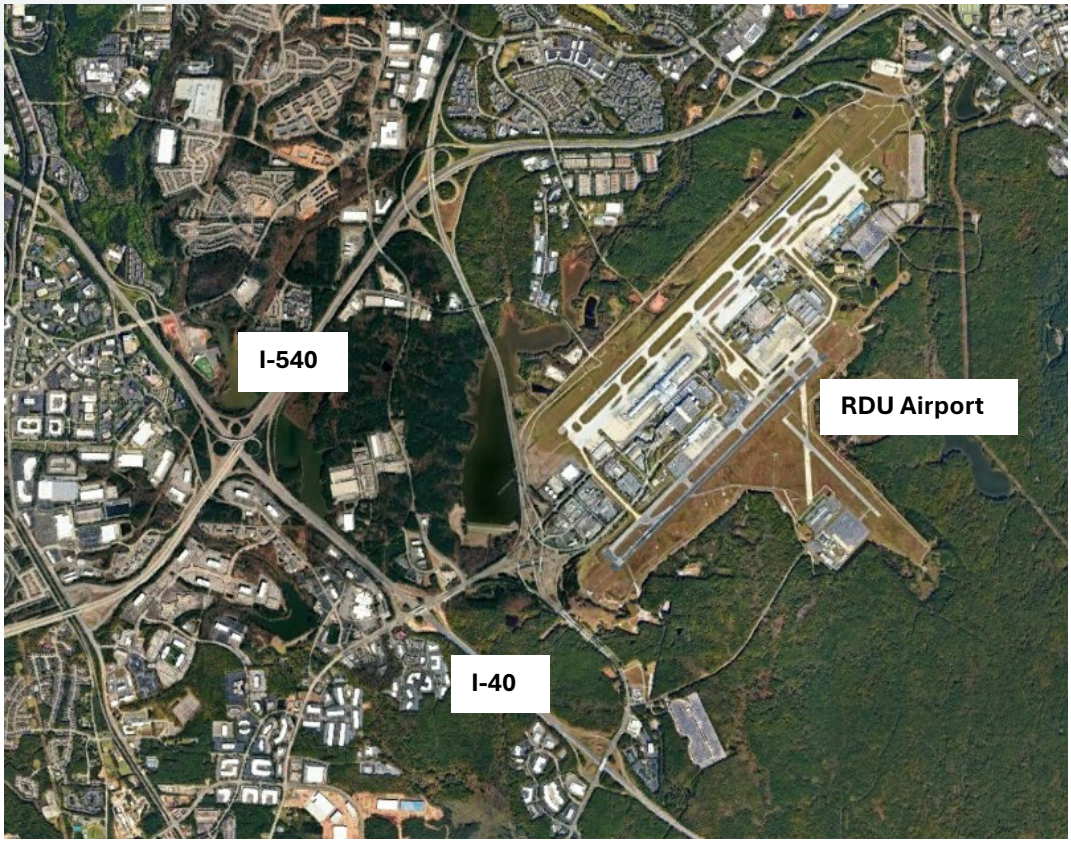


Figure 3: RDU

Overview of the Project

The proposed APE is a critical transit infrastructure project designed to provide a direct bus-based connection between the Triangle region's transit services and RDU. By facilitating seamless travel for passengers between RDU and regional transit systems, the APE will improve accessibility, reduce travel times, and support the Triangle region's broader transportation goals of enhancing transit infrastructure and supporting service. The project aims to create a modern, efficient, and user-friendly APE that is strategically located to maximize convenience and accessibility.

It will serve as a vital link between the regional transit system and RDU, providing a direct link for passengers from municipal downtowns, regional mobility hubs, and arterial BRT service to RDU. The design of the station will prioritize ease of use, with clear signage, comfortable waiting areas, and an efficient transfer point with RDU. By enhancing access to RDU, the APE will support regional tourism and business travel.

Project Background

Context and Need for the Airport Transit Platform Exchange

The Triangle region has previously worked on a plan to create a commuter rail line to connect major destinations in the region. One element of the commuter rail planning that was never completed was the provision of a direct transit connection to RDU. This direct connection has been identified as a necessity by the public and championed by the business community. The region has moved away from commuter rail and is now planning for a regional transit

system to connect major destinations with bus-based service: shuttles, regional buses, express buses, and BRT. The region has a robust transportation system for cars and the FAST 2.0 Transit Study aims to identify infrastructure improvements that would provide transit an advantage or priority over vehicular traffic, such as dedicated transit lanes, transit signal priority, etc.

The new APE will address the need for a direct bus link between regional transit and RDU, thereby improving the overall transportation network and meeting the needs of the public and business community. GoTriangle currently provides two services to RDU. Route 100 directly connects RDU to the GoTriangle Regional Transit Center and downtown Raleigh. The RDU shuttle provides direct service between the GoTriangle Regional Transit Center and RDU. The goal of the APE is to provide a direct interface with RDU for all regional transit routes to provide a one-seat rider from the region's downtowns.

As the regional population and employment continues to grow, the need to enhance the transit infrastructure becomes increasingly critical. The current regional transit options to RDU are limited and could be greatly improved with the introduction of the APE and other transit infrastructure improvements along the region's major arterials and interstates.

While transfers between different regional transit routes could occur at the APE, the intent is to facilitate direct transfers for passengers between the regional transit services and RDU.

Stakeholders Involved

The FAST 2.0 Transit Study stakeholders include RDU, RTA, Research Triangle Foundation, local and regional transit agencies, county governments, metropolitan/transportation planning organizations, and NCDOT, as shown in Figure 4. At the beginning of the study, stakeholder involvement was primary aimed at the RDU executive leadership team, to understand the needs of RDU and any restrictions on the placement or design of the APE. After receiving input from RDU staff, the draft siting location and conceptual design were shared with the full FAST 2.0 Transit Study stakeholders for review and comment.

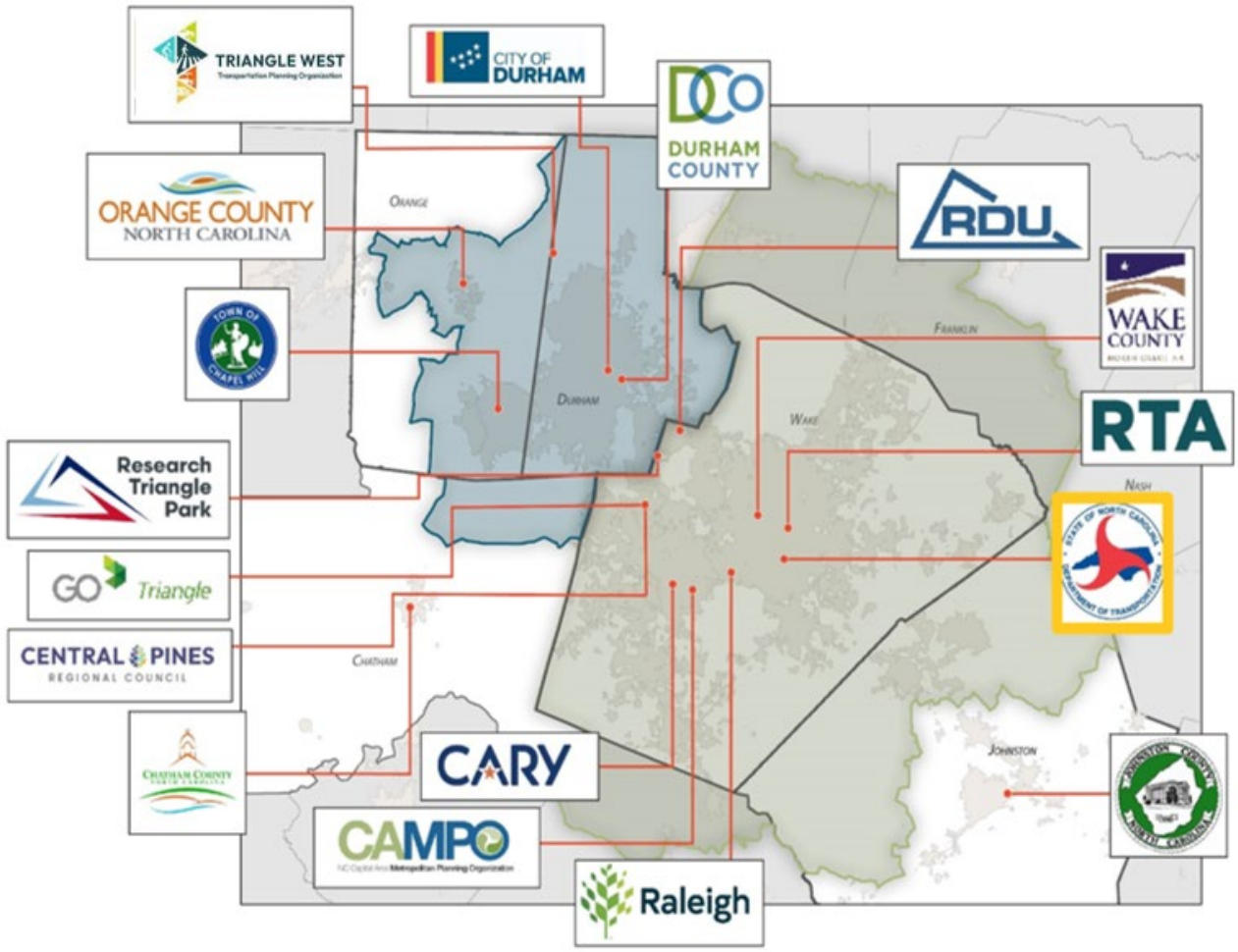


Figure 4: FAST 2.0 Regional Partners

Siting and Design Requirements

The following siting and design requirements were identified as important elements by the project team and RDU staff input that should be considered to ensure the APE is functional. They include:

- Minimize Delays for Regional Buses Leaving I-40
- Consider Scalability of the Site: BOSS & DMSS
- Site the Exchange Station on Top of I-40
- Ensure Site is Seen as "Regional" by Key Partners
- Avoid Siting the Exchange Station Below the Extended Runway Lines
- Connect to RDU Terminals with Autonomous Shuttles
- Minimize Total Travel Time Between Exchange Station and Airport
- Minimize Required Walking/Pedestrian Travel Distance for Patrons

Minimize Delays for Regional Buses Leaving I-40

Minimizing delays for regional buses leaving I-40 is crucial for maintaining efficient transit operations and ensuring timely service for passengers. The design should incorporate direct transit access ramps (DAR) that allow regional buses to bypass general traffic congestion. These ramps should be strategically placed to provide direct and unobstructed routes from I-40 to the APE. Additionally, the ramps should serve both the existing Bus on Shoulder System (BOSS) lanes, located on the outside shoulder and the proposed Dynamic Median Shoulder System (DMSS) lanes, located on the inside shoulder; buses can use these lanes under certain conditions to avoid congestion along I-40 as shown in Figures 5, 6, and 7. The FAST 2.0 Suite of Options memo provides more information about BOSS, DMSS, and DAR.

The placement of the APE waiting area should be in close proximity to the direct transit access ramps to minimize the distance buses need to travel off I-40. This ensures a quicker transition to the station and allows buses going to other points after RDU to maintain schedule adherence.

Figure 5: Existing Bus on Shoulder System (BOSS) Lanes

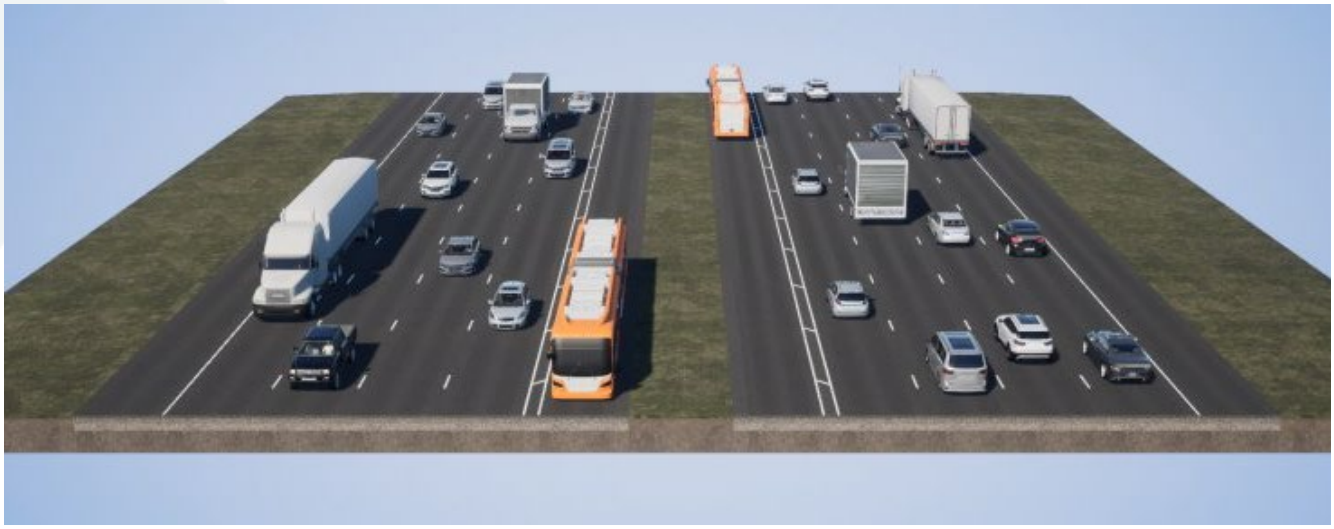


Figure 6: Dynamic Median Shoulder System (DMSS) lanes

Figure 7: Direct Transit Access Ramp from DMSS lanes

Consider Scalability of the Site: BOSS & DMSS

The design should consider the scalability of the site to accommodate future growth and expansion. This involves planning for flexible and adaptable infrastructure that can support increased passenger volumes and additional transit and autonomous shuttle services. The design should incorporate direct transit access ramps to connect to both existing BOSS lanes along I-40 as well as the planned DMSS lanes to provide efficient and scalable transit operations.

Site the Exchange Station on Top of I-40

RDU staff stated at initial meetings that the APE placement should minimize use of airport property. Siting the APE on top of I-40 can provide several benefits, including maximizing land use efficiency and enhancing connectivity. The design should consider structural and engineering requirements to ensure that the APE can be safely and effectively built on top of the I-40. This may involve elevated platforms, bridges, and support structures to accommodate the

station's infrastructure. The placement should prioritize ease of access for buses and passengers, with dedicated entry and exit points to facilitate smooth transitions between I-40 and the station.

The ultimate design should consider features such as noise dampening systems to minimize the impact of I-40's traffic and RDU's flights on the station environment. These measures will help to create a comfortable and quiet environment for passengers. Additionally, the design should consider the use of green spaces and landscaping, and/or indoor elements, to enhance the aesthetic appeal of the station and provide a pleasant environment for passengers.

Ensure Site is Seen as "Regional" by Key Partners

Ensuring that the site is seen as a "regional" hub by key partners, specifically the major transit agencies in the region (Chapel Hill Transit, GoDurham, GoCary, GoRaleigh, and GoTriangle) is vital for garnering support and recognition for the project. The proposed location should be easily accessible for buses coming from North, South, East, and West of RDU without adding unnecessary travel to regional routes. Placement of the APE on top of I-40, on the southwestern edge of RDU, provides the best intersection with existing and planned regional transit routes.

Avoid Siting the Exchange Station Below the Extended Runway Lines

To ensure safety, traveler comfort, and compliance with aviation regulations, the exchange station should not be sited below the extended runway lines of RDU, as approximately shown in Figure 8. The design should prioritize areas that are outside the critical zones affected by aircraft operations. This includes considering factors such as noise pollution, air quality, and potential disruptions caused by airport activities. The APE's placement should ensure a comfortable environment for passengers, minimizing exposure to noise and other disturbances associated with airport operations.

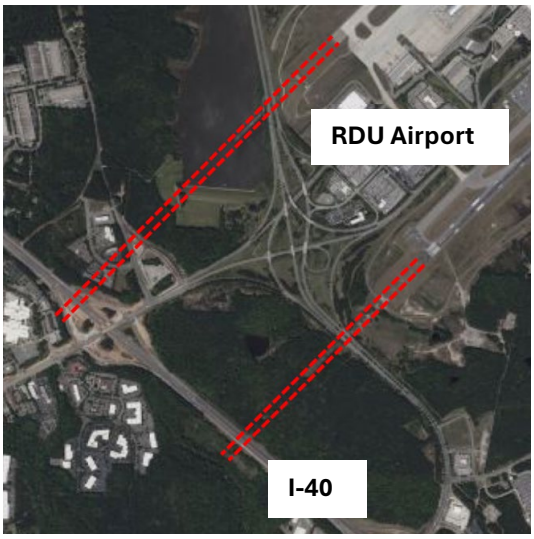


Figure 8: Extended RDU Runway Lines

Connect to RDU Terminals with Autonomous Shuttles

RDU is in discussions with autonomous vehicle vendors to complement the existing park and rider shuttle fleet. Connecting the exchange station to RDU terminals with autonomous shuttles can provide a modern and efficient transit solution. The use of autonomous vehicles can reduce travel time, enhance safety, and provide a convenient transit option for passengers.

The design should prioritize direct and unobstructed routes for autonomous vehicles, minimizing travel time between the exchange station and airport terminals. The design should incorporate dedicated guideway and transit lanes, transit signal priority, and other infrastructure to support autonomous shuttle operations. Real-time information systems should be integrated to provide passengers with up-to-date information on vehicle schedules and availability.

Future collaboration with technology providers and transportation authorities will be essential to ensure that the design meets all operational and safety requirements. This includes charging stations, maintenance facilities, and communication systems to ensure seamless connectivity.

Minimize Total Travel Time Between Exchange Station and Airport

Minimizing the total travel time for the autonomous shuttles between the APE and RDU terminals is essential for enhancing passenger convenience and efficiency. The design should prioritize locations that can provide direct and unobstructed routes between the APE and RDU terminals. This may involve dedicated guideways and transit lanes, transit signal priority, and an efficient interface between the RDU property and the APE. Additionally, the APE should be equipped with real-time information systems that provide passengers with up-to-date information on transit schedules and travel times.

Minimize Required Walking/Pedestrian Travel Distance for Patrons

The design should minimize the required walking and pedestrian travel distance for patrons to enhance accessibility and convenience. This involves strategically placing key amenities and transit connections within close proximity to each other. The layout should prioritize direct and unobstructed pathways, with clear signage and wayfinding to guide passengers between the regional buses and autonomous shuttle. Accessibility features such as should be incorporated to ensure that the APE is fully accessible to people with disabilities.

Weather protection is another important consideration for minimizing pedestrian travel distance. The design should include covered walkways, shelters, and/or indoor waiting areas to protect passengers from adverse weather conditions. Comfortable seating and well-lit areas will also enhance the overall pedestrian experience, making the station a more pleasant and welcoming environment.

Site Analysis

Location Description

The proposed site for the APE is strategically located above I-40, within NCDOT right-of-way, along the RDU property frontage. This location will maximize accessibility and convenience for passengers by allowing regional transit service to leave I-40 with a direct transit access ramp, quickly pick-up/drop-off passengers on the APE and return to I-40 with a direct transit access ramp.

RDU will be able to use the existing airport campus shuttle system as well as the planned future autonomous shuttle system to move passengers between the APE and the two terminals. The on-airport shuttle system concept is noted, but this memo does not include any detailed design.

Existing Conditions

A high-level existing conditions analysis, along I-40, in the vicinity of the Airport Boulevard and Aviation Parkway interchanges, included consideration of land use, traffic patterns, geographic location, flight path restrictions, environmental factors, and existing/planned infrastructure. This analysis was based on readily available digital information (GIS mapping, environmental features, traffic counts, etc.), conversations with RDU and NCDOT staff, and review of planned projects in the area. This information was used as data to evaluate the siting and design requirements.

Design Concept

This project is limited to the conceptual siting and design of the APE. However, this effort assumes the following general design concept elements that will be refined in future phases of the project.

Functional Requirements

The APE will be designed to accommodate high volumes of passengers and provide efficient, safe, and comfortable transit services. Key functional requirements include ample seating, clear signage, accessibility features, and integration with regional transit service and RDU facilities. The design will prioritize ease of use and convenience for all passengers and provide a pleasant and convenient environment for transferring between regional transit and the airport autonomous shuttle.

Passenger crowding will be optimized using spacious waiting areas, limited distance between bus/shuttle bays, and clear directional signage. This integration will ensure that passengers, including those with disabilities, can transfer quickly and easily between different modes of transportation. Additionally, the design will prioritize safety and security, with well-lit areas, surveillance cameras, and emergency response protocols.

Architectural Vision

The architectural vision for the APE emphasizes functionality, aesthetics, and sustainability. The design will feature modern, innovative elements that enhance the passenger experience while reflecting the Triangle Region and RDU's unique character. The station will serve as a landmark, seen by all drivers along I-40, showcasing the region's commitment to forward-thinking design and enhancing transit access to the airport.

Regional Transit Route Integration

The APE will be a critical element of the existing and planned regional transit network and enhance the overall connectivity of the Triangle region's transportation system. The design will prioritize ease of access and convenience for passengers. Collaboration with regional transportation authorities and transit agencies will be essential to ensure that the integration is successful.

Conceptual Design

The maps and diagrams developed for the FAST 2.0 study are highly conceptual in nature, are not for design purposes, and subject to further review and refinement in following phases. The design was prepared in a manner to verify the approximate siting location, identify a concept that is usable by transit vehicles and autonomous shuttles, and develop an initial cost estimate.

Future phases of the project will include more detailed analysis, refined site plans, architectural drawings, cost estimate, and visualizations to support the APE.

Proposed Siting Location

Figure 9 shows the three proposed siting locations, above I-40, that will require further environmental evaluation and discussion with RDU before identifying a single location:

1. Southeast of I-40/Airport Boulevard interchange
2. Northwest of I-40/Aviation Parkway interchange
3. Southeast of the I-40/Aviation Parkway interchange and adjacent to the RDU Park and Ride Lot 3

The airport platform exchange is primarily located within NCDOT right-of-way, though minimal acquisition of RDU property, or a permanent easement, would be required.

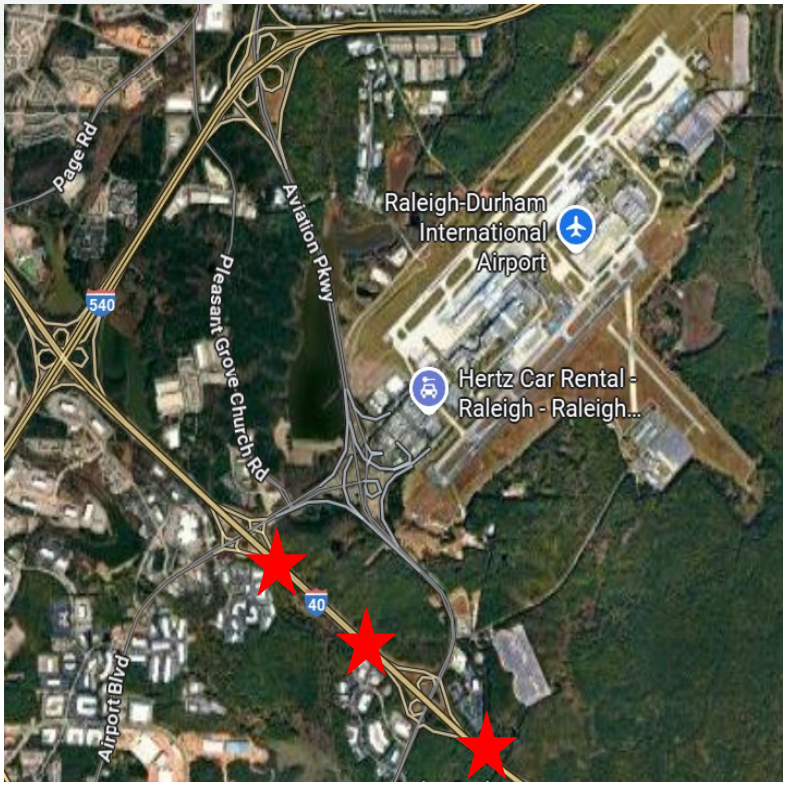


Figure 9: Proposed Siting Locations

Conceptual Design

The APE has several key elements of design as seen in Figure 10. Two types of ramps are utilized to allow bus access to the platform exchange: BOSS ramps and direct access ramps servicing both the eastern and western side. One unique aspect of the APE is the clockwise traffic movements. This allows the platform to be accessed by right door buses. The RDU shuttles would enter from a private airport entrance in the northern roundabout. It is recommended that there is a gate for this entrance to prevent other vehicles from entering RDU property outside of the APE. An elevated bus platform should be included for passengers to use to get from their bus to the RDU autonomous shuttle.

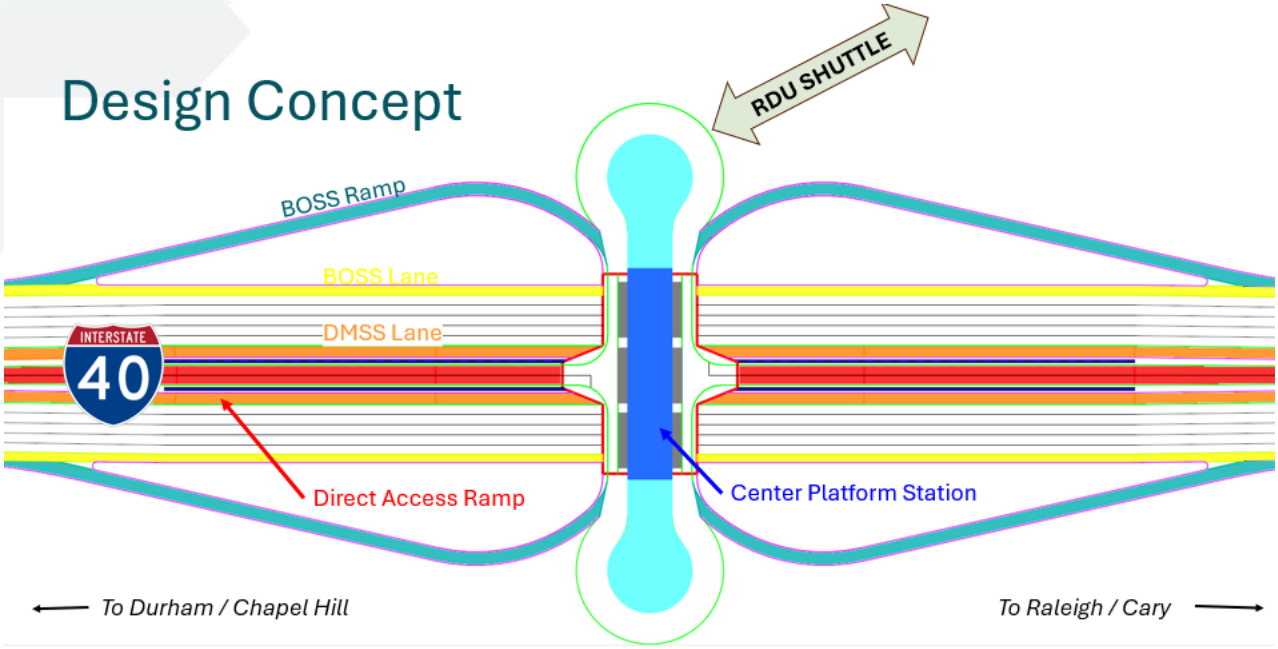


Figure 10: Key Elements of the APE

The APE design provides six (6) bus bays along the center platform with room for an enclosed waiting area. The enclosed waiting area would serve as an exchange station for passengers to connect among various transit routes and the RDU airport shuttle service. Access between transit/shuttle services would occur along the longitudinal elements of the station (the bridge over I-40). The roadway would be two lanes wide along the bridge (the inside lane would be the transit station bays, while the outside lane would be for clockwise circulation) and a single lane along the roundabouts. The station width along the bridge would be sufficient for waiting passengers for routes on both sides of the station, while still allowing for passenger movement in the center between bays and to access any amenities or services within the two roundabout bulbs. It should be noted that no passenger amenities are depicted in these visualizations.

Appendix H: Concept Design Memo

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

CONCEPT DESIGN MEMO

July 2025

TABLE OF CONTENTS

Introduction

The FAST 2.0 study focuses on ways to advance the implementation of transit priority infrastructure throughout the study area. The purpose of this memo is to highlight the recommended transit priority infrastructure improvements along the priority corridors, that were previously identified with the project stakeholders.

Figure 1 shows the priority corridors and Table 1 lists each corridor and their limits.

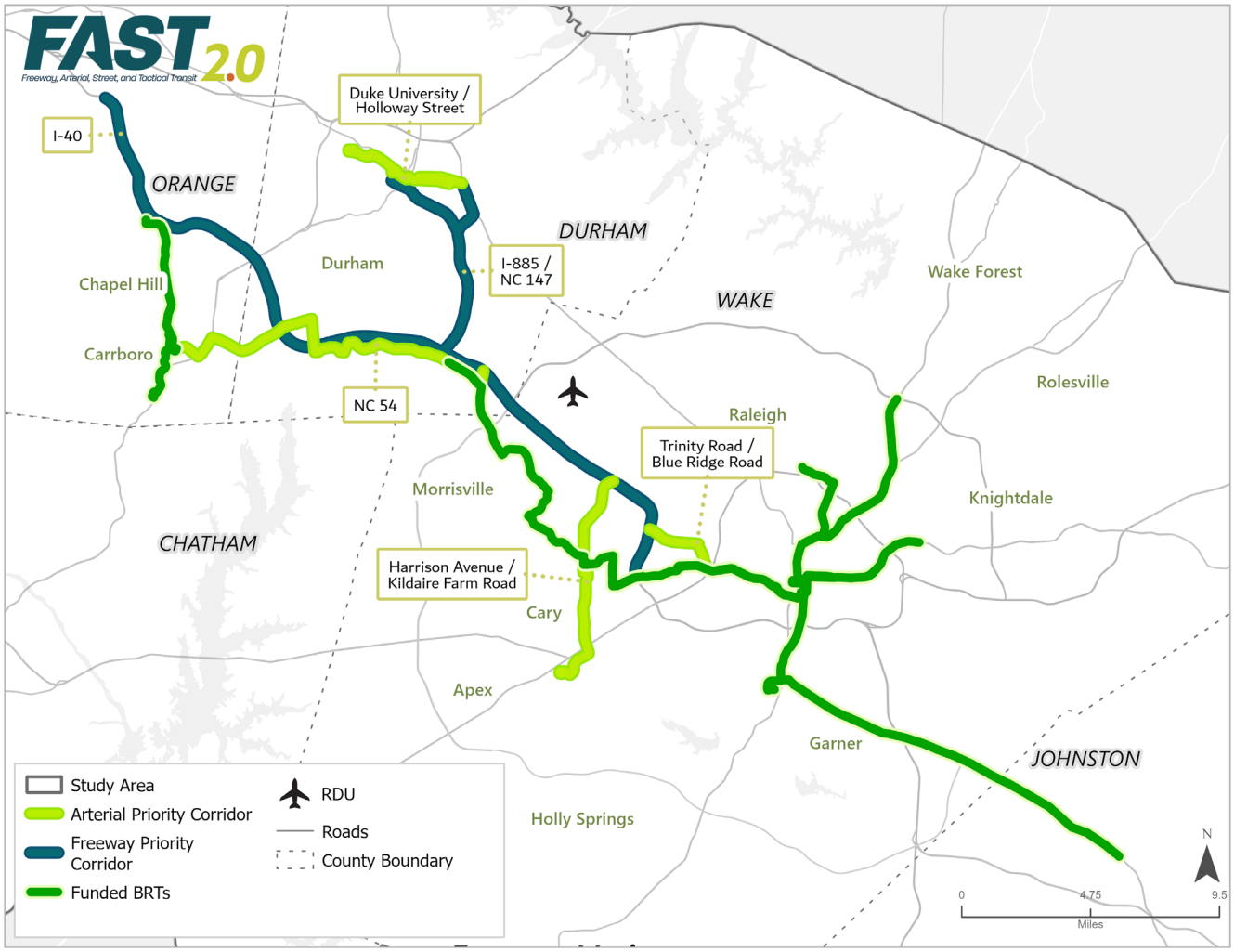


Figure 1: Priority Corridors

Table 1: Priority Corridors

Priority Corridor Name	Corridor	From	To	Corridor Type
I-40	I-40	Cary Towne Blvd	Old NC 86	Freeway
I-885 / NC 147	I-885	NC 98	I-40	Freeway
	NC 147	I-885	Duke St	
	Harrison Avenue	I-40	US 64	Arterial

Harrison Avenue/ Kildaire Farm Road	Dry Avenue	South Harrison Ave	Kildaire Farm Rd	
	Kildaire Farm Road	Dry Ave	Tryon Rd	
	Tryon Road	Kildaire Farm Rd	Regency Pkwy	
	Regency Parkway	Tryon Rd	Koka Booth Amphitheatre	
Duke University / Holloway Street	Erwin Road	Duke University Hospital	West Main St	Arterial
	West Main Street (US 70 Business)	Erwin Rd	North Gregson St (Southbound) / North Duke St (Northbound)	
	North Gregson Street (Southbound)	West Main St (US 70 Business)	West Chapel Hill St	
	North Duke Street (Northbound)	West Main St (US 70 Business)	West Chapel Hill St	
	West Chapel Hill	North Gregson St (Southbound) / North Duke St (Northbound)	West Pettigrew St (Eastbound) / Ramseur St (Westbound)	
	West Pettigrew Street (Eastbound)	West Chapel Hill St	North Roxboro St (US 15 Business)	
	Ramseur Street (Westbound)	West Chapel Hill St	North Roxboro St (US 15 Business)	
	North Roxboro Street (US 15 Business)	West Pettigrew St (Eastbound) / Ramseur St (Westbound)	Liberty St	
	Liberty Street (Bidirectional)	North Roxboro St (US 15 Business)	Elizabeth St	
	Elizabeth Street (Westbound)	Liberty St	Holloway St	
	Liberty Street (Eastbound)	Elizabeth St	North Miami Blvd	
	Holloway Street (Westbound)	Elizabeth St	Raynor St	
	Raynor Street (Westbound)	Holloway St	North Miami Blvd	
	North Miami Boulevard	Raynor St	Liberty St	
Trinity Road / Blue Ridge Road	Trinity Road	Blue Ridge Rd	I-40	Arterial
	Blue Ridge Road	Western Blvd	Trinity Rd	
NC 54	Miami Boulevard	NC 54	I-40	Arterial
	NC 54	South Miami Blvd	Fayetteville Road	
	Fayetteville Road	NC 54	Renaissance Pkwy	
	Renaissance Pkwy	Fayetteville Rd	NC 751	
	NC 751	Renaissance Pkwy	NC 54	
	NC 54	NC 751	Fordham Blvd (US 15-501)	
	Fordham Boulevard (US 15-501)	NC 54	Manning Drive	
	Manning Drive (Bidirectional)	Fordham Blvd (US 15-501)	East Dr/Jackson Cir/Mason Farm Rd	

	East Drive/Jackson Circle/Mason Farm Road	Manning Drive	S Columbia St (NC 86)	
	South Columbia Street (NC 86)	Mason Farm Road	Manning Drive	
	Manning Drive (Eastbound)	S Columbia St (NC 86)	East Dr/Jackson Cir/Mason Farm Rd	

The table below provides a general overview of the types of improvements being recommended and how those improvements are shown in the concept designs within this memo.

Table 2: Concept Design Improvements

Symbol	Recommendation	Definition
	Dedicated Transit Lane (Arterials)	A fully dedicated transit lane is a transit-priority travel lane, reserved exclusively for transit vehicles, with restrictions for other modes. These lanes are meant to optimize bus operations in a corridor to maximize transit competitiveness and reliability, by reducing delays caused by mixed traffic A semi-dedicated transit lane is a lane that is reserved for transit travel but allows general purpose vehicles to use the lane for accessing businesses or make a turn into driveways or side streets. These lanes are also often referred to as Business Access & Transit Lanes (BAT Lanes). These lanes are able provide a dedicated travel lane for transit while maintaining general purpose access to businesses and cross streets.
	Dedicated Transit Lane (Freeways)	A dedicated freeway transit lane is a transit-priority travel lane, reserved exclusively for transit vehicles, with restrictions for other modes. These lanes are meant to optimize bus operations on a freeway corridor to maximize transit competitiveness and reliability by reducing delays caused by congestion.
	Transit Signal Priority (TSP)	Transit signal priority (TSP) involves periodically modifying traffic signal timings to give priority to transit vehicles at intersections, reducing delays and improving schedule adherence. TSP allows transit vehicles to communicate with traffic signals along their routes and can work, for example, by extending the green light for a few seconds, allowing a bus to continue moving through that signalized intersection. The intention of TSP is to enhance the efficiency and reliability of transit services by minimizing delays at signalized intersections.
	Queue Jump at Intersections	A queue jump lane is a short stretch of bus lane combined with traffic signal priority, allowing buses to bypass waiting vehicles at intersections by getting an early green signal to jump ahead of traffic. The early green signal allows buses to safely merge back into traffic, ahead of waiting vehicles. The

		intention is to reduce delays at congested intersections and improve the operational efficiency of the transit system.
	Mobility Hub	Mobility hubs are spaces where public, shared and active travel modes are co-located alongside improvements to the public realm. Mobility hubs enable people to make smooth and safe transfers between modes, transferring from public transit to other modes such as park and ride lots, shared vehicles, bikes, scooters, or walking.
	Super Stop	A super stop is a bus stop that is served by multiple routes that have enhanced amenities, such as larger or multiple shelters and real-time information. In addition to multiple routes, a Super Stop could be a location where there is a local bus stop and a BRT station at a single location. These stops are also used to switch between different transit service providers.
	Park and Ride	A park and ride is a strategically located parking lot that is free of charge to anyone who parks a vehicle and commutes by transit or in a carpool. These are often located at the end of routes or intersections with regional roadways, such as interstates.
	Dynamic Median Shoulder System (DMSS)	A dynamic median shoulder system (DMSS) allows buses to utilize a freeway median or inside shoulder. The DMSS is designed to allow general-purpose traffic to use for emergencies, along with allowing buses to travel on the shoulder during all hours of the day. This strategy aims to alleviate congestion and improve bus transit efficiency by providing buses with a dedicated lane during high-traffic periods.
	Bus on Shoulder System (BOSS)	A bus on shoulder system (BOSS) allows buses to use the outside shoulder of a freeway or major arterial during peak traffic hours. This strategy aims to reduce congestion and improve bus transit efficiency by allowing buses to bypass congestion and maintain a more reliable schedule.
	Direct Access Ramps (DAR)	A direct access ramp (DAR) provides access for buses to directly enter and exit the inside median lanes, from arterial overpasses, allowing these vehicles to avoid the need to weave across the other lanes of traffic. The location of direct transit access ramps can be coordinated with DMSS, dedicated transit lanes, or express lanes to increase bus freeway access.

The improvement recommendations included in the concept design for each priority corridor are based on the type of corridor (freeway or arterial), along with the physical environment of the roadway, such as number of general purpose lanes, right-of-way (ROW) width, and traffic operations. In general, the recommendations are as follows:

- Mixed flow is the default runningway type for locations where there are not enough general purpose lanes to repurpose for a dedicated transit lane or there is insufficient ROW to widen for a dedicated transit lane.
- Business Access & Transit Lanes (BAT Lanes) are recommended where outside curbs or right turn lanes have enough capacity to accommodate transit vehicles along with turning general purpose vehicles.

- Dedicated transit lanes are recommended where general purpose lanes could be repurposed or where the roadway could be widened with no or minimal additional ROW.
- DMSS is recommended where freeways have median or inside shoulder lanes that are wide enough, or can be widened, to accommodate transit vehicles.
- BOSS is recommended where freeways or major arterials have outside shoulder lanes that are wide enough, or can be widened, to accommodate transit vehicles.
- DARs connect arterial priority corridors to freeways and also to mobility hubs, such as the Triangle Mobility Hub or the Raleigh-Durham International Airport (RDU) airport platform exchange.

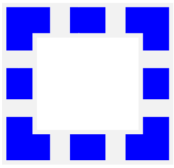
Pedestrian and Bicycle Improvements

The table below provides a general overview of the types of pedestrian and bicycle improvements being recommended and how those improvements are shown on the concept designs within this memo. The assumption for pedestrian and bicycle improvements is that there should be a continuous pedestrian and bicycle network along all the arterial corridors in the FAST 2.0 priority network to provide safe and comfortable access to all transit stops in each corridor. Intersection or mid-block crossing improvements are assumed at any proposed transit stop location and approximately every ½ mile along each arterial corridor in the FAST 2.0 priority network.

Pedestrian and bicycle improvements are shown on their own maps and not included on the concept design maps, but they are included in the cost estimates. As the corridor designs are advanced, further investigation is required to confirm the specific locations, designs, and ROW requirements of pedestrian and bicycle improvements.

Table 3: Pedestrian and Bicycle Improvements

Symbol	Recommendation	Definition
Linear Improvements		
	Triangle Bikeway mode-separated sidepath	The Triangle Bikeway is a proposed multi-use sidepath for the FAST 2.0 priority corridors along I-40. While the cross-section would likely change along its path, for planning purposes it is assumed to be a 16-foot separated pathway for people walking and biking as envisioned in the study and is included along any FAST 2.0 priority corridor segment that does not already have an existing multi-use path.
	Sidepath	A 12-foot multi-use sidepath is proposed along any portion of an arterial priority corridor that does not currently have pedestrian and bicycle facilities. In some circumstances, individual municipalities may opt to construct separated bicycle and pedestrian facilities instead. Sidepaths are assumed to be on one side of the street only.
	Separated Bike Lane	Because most of the improvements are proposed outside of the curb, only a few on-street separated bike lanes are proposed, but the number of these could increase along certain corridors if municipalities prefer sidewalks and separated bike lanes over sidepaths.
	Walking lane (on bridge)	Emulating the Cornwallis Road bridge over I-885, walking lanes are proposed on two existing bridges over highways where space is available.

	Sidewalk	While sidepaths are proposed in most segments of the priority arterial corridors where safe pedestrian infrastructure does not exist, sidewalks may be needed on one side of the street if a sidepath is provided on the other or if there are existing, safe on-street bicycle facilities.
Intersections/Crossings		
	Minor mid-block crossing with RRFB	Mid-block crossings may be needed at major transit stop locations and other currently unsignalized locations. A minor mid-block crossing is defined as one that could be constructed across narrower (2-3 lanes of traffic) and lower speed (less than 40mph) and streets and may be designed with Rectangular Rapid Flashing Beacons (RRFBs).
	Major mid-block crossing with PHB/HAWK	A major mid-block crossing is defined as one that could be constructed across wider streets (4+ lanes of traffic) and higher speed (greater than 40 mph) streets and may be designed with a pedestrian refuge island and Pedestrian Hybrid Beacon (PHB)/HAWK signal.
	Major Intersection Improvements	A major intersection is one where at least one leg of the intersection is at least 75 feet across for a pedestrian to cross. Elements for major intersection improvements may include concrete curb extensions, Leading Pedestrian Intervals (LPIs), pedestrian refuge islands, and high-visibility crosswalks. Mountable truck aprons may also be appropriate at specific locations.
	Minor Intersection Improvements	A minor intersection is one where at least one leg of the intersection is between 50-75 feet across for a pedestrian to cross. Elements for a minor intersection may include striped curb extensions with flexposts, Leading Pedestrian Intervals (LPIs), and high-visibility crosswalks.

I-40

Purpose

The I-40 freeway priority corridor would be a regional transit backbone that provides frequent and reliable transit connections between Raleigh, Cary, Research Triangle Park (RTP), Durham, and Chapel Hill. The I-40 corridor would include dedicated transit infrastructure, BOSS, and DMSS, to allow transit vehicles to reliably move along I-40 and connect to priority arterial corridors in each jurisdiction, along with the Triangle Mobility Hub, through a series of DARs. The corridor would also include a DAR at RDU that is discussed under a separate memorandum.

Limits	I-40 from Old NC 86 in Orange County to Cary Towne Boulevard in Wake County
Length	***Orange County***: 9.0 Miles ***Durham County:*** 11.4 Miles ***Wake County:*** 7.0 Miles
Length by Runningway Type	***Orange County:*** 9.0 Miles (BOSS) ***Durham County***: 8.8 Miles (DMSS); 2.6 Miles (BOSS) ***Wake County:*** 7.0 Miles (DMSS)
Anticipated Number of BRT Stations	N/A
Anticipated Number of BRT Buses	N/A
Assumed Service Type	Freeway Bus Rapid Transit
Location	Orange, Durham, and Wake Counties
MPO	Triangle West Transportation Planning Organization (TWTPO); Capital Area Metropolitan Planning Organization (CAMPO)
NCDOT Division	Division 5; Division 7

Concept Design

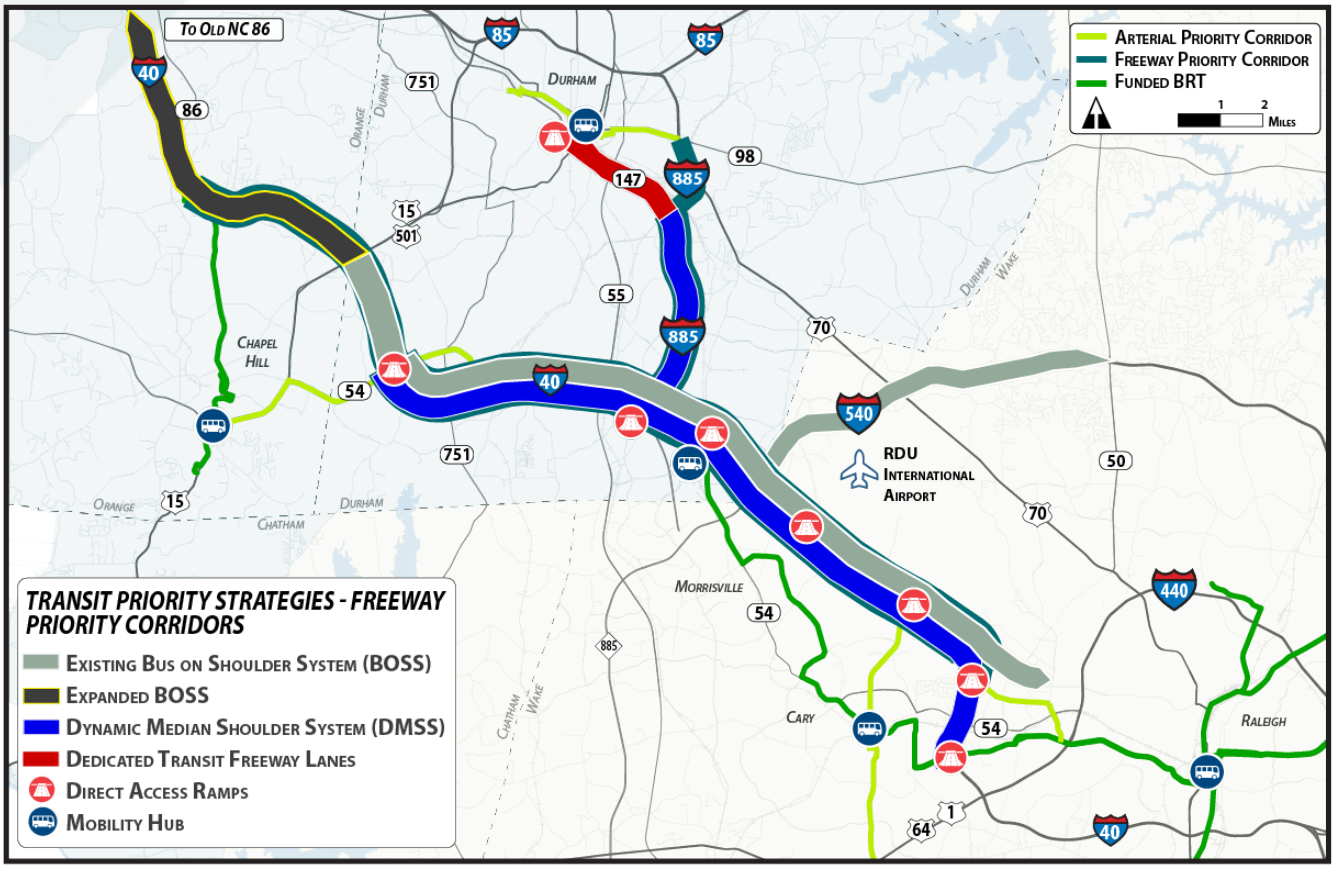


Figure 2: I-40 Concept Design

Proposed Design Elements

Treatments on the I-40 corridor would further prioritize dedicated transit space along freeways in the Triangle region of North Carolina. These freeway segments are some of the highest-traveled corridors in the entire state, connecting key destinations and municipalities in Orange, Durham, and Wake Counties. The design intends to expand the existing BOSS on I-40, Wade Avenue, and I-540 to connect to arterial priority corridors and funded BRT projects. Constructing dedicated transit-priority infrastructure like DMSS and DARs would indicate that there is significant investment and priority for transit in the state.

Runningway by Section

Expanded Bus on Shoulder System (BOSS)

- I-40 from US 15-501 to Old NC 86
    - *Widening to the outside to provide 12' BOSS lanes on both sides*

Dynamic Median Shoulder System (DMSS)

- I-40 from NC 54 to Cary Towne Boulevard
    - *Widening to the inside to provide 14' DMSS lanes with a 3' median barrier*
    - *Some widening to the outside to keep existing shoulder widths*

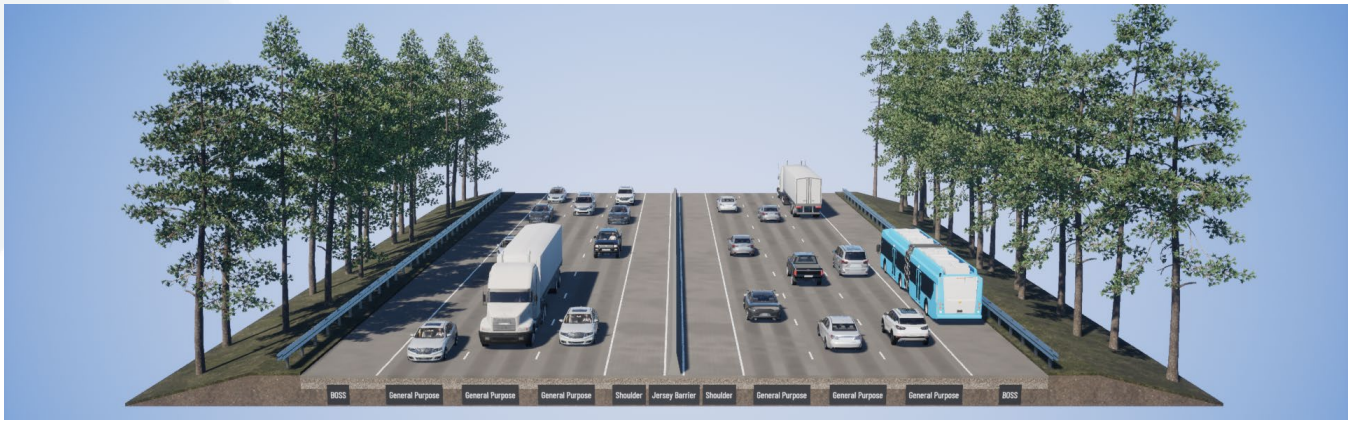


Figure 3: I-40 Near Erwin Rd

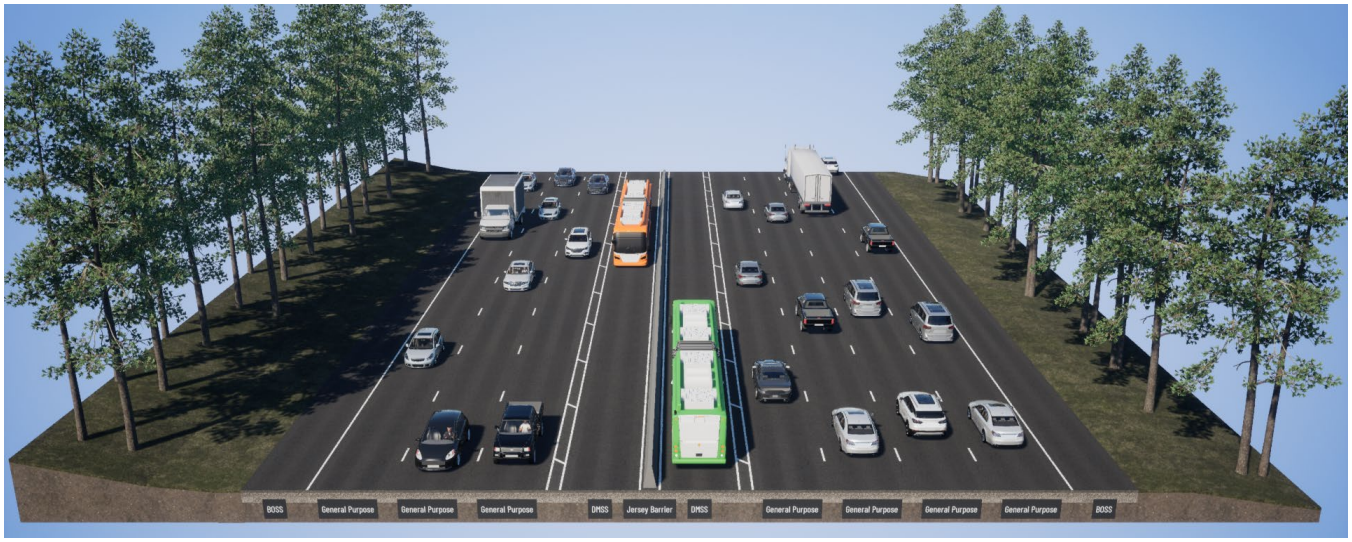


Figure 4: I-40 Near NC 55

Figure 5: I-40 Near Lake Crabtree

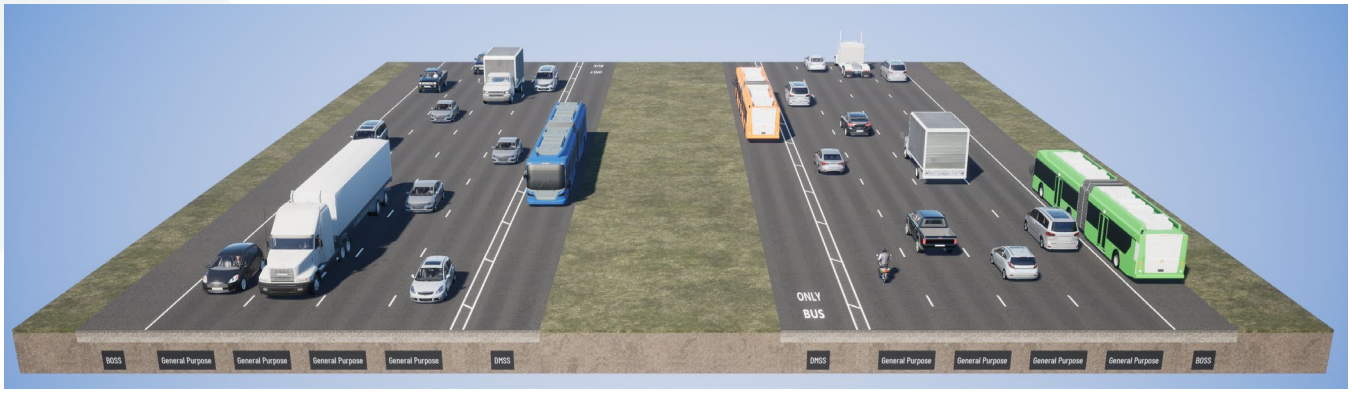


Figure 6: I-40 Near Trinity

Interstate Direct Access Ramps

- I-40 at NC 54 (Exit 273)
- I-40 at Triangle Mobility Hub, west of Miami Boulevard interchange (Exit 281)
    - Figure 7 shows the DAR that would provide access to the Triangle Mobility Hub via NC 54. The DAR would utilize dedicated transit lanes on a new alignment to access NC 54 and would include a new signal at NC 54 that would include TSP and a queue jump.
- I-40 at RDU, north of Aviation Parkway (Exit 285)
- I-40 at Harrison Avenue (Exit 287)
- I-40 at Trinity Road overpass, north of NC 54 (Exit 290)
- I-40 at Western Boulevard/Cary Towne Boulevard (Exit 291)

Station and Transfer Locations

- Triangle Mobility Hub near the intersection of Miami Boulevard and NC 54 to connect with GoTriangle regional transit services and Wake BRT: Western Rapid Bus Extension Project
- Connection to NC 54 arterial priority corridor at NC 54 (Exit 273)
- Connection to Harrison Avenue/Kildaire Farm Road arterial priority corridor (Exit 287)
- Connection to Trinity Road arterial priority corridor (north of NC 54 (Exit 290)
- Connection to Wake BRT: Western Corridor (Exit 291)

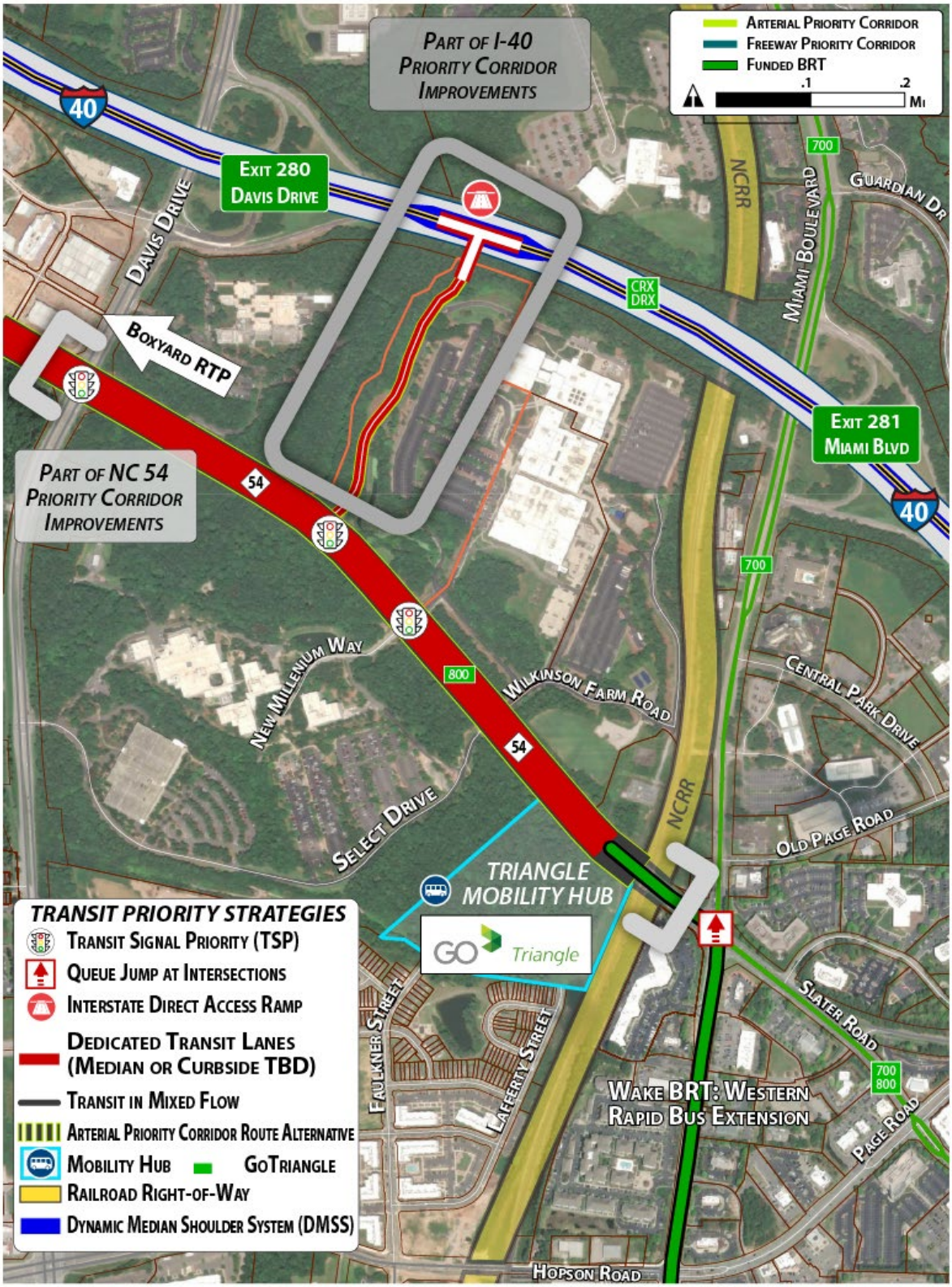


Figure 7: Direct Access Ramp to Triangle Mobility Hub via NC 54

Proposed Pedestrian and Bicycle Accommodations

When implementing the proposed improvements, it is recommended to coordinate with the Triangle Bikeway project sidepath along I-40 between NC-54 in Durham County and Wade Avenue in Wake County.

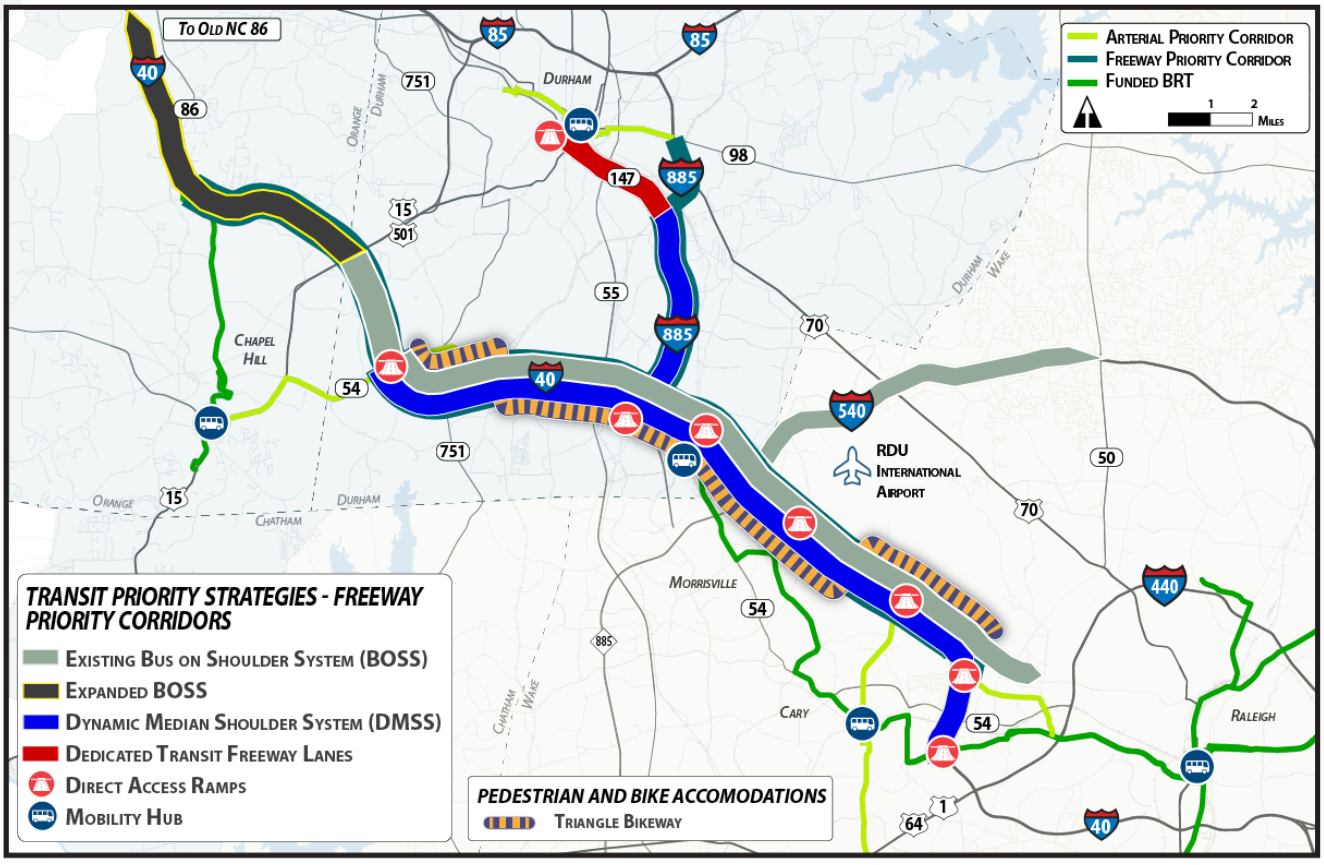


Figure 8: Proposed Pedestrian and Bicycle Accommodations on the I-40 Corridor

Other Considerations

Top Destinations Along the Corridor

I-40 is the key transportation facility connection between most of the job hubs in the area and serves as a regional transit backbone. While some of the key job hubs are not directly connected to I-40, like Chapel Hill, Durham, and Cary, the other arterial priority corridors help connect I-40 to these destinations and provide enhanced transit service. In addition to key job hubs, I-40 is critical in connecting to the regions' colleges and universities, such as UNC Chapel Hill, Duke University, North Carolina Central University (NCCU), and NC State University.

Key destinations adjacent to I-40 include:

- UNC Hospitals Hillsborough Campus
- Southpoint Mall
- RTP
- RDU
- Lenovo Center
- North Carolina State Fairgrounds
- WakeMed Soccer Park
- Fenton

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
  - Route 100
  - Route 800
  - Route 805
  - Route CRX
  - Route DRX

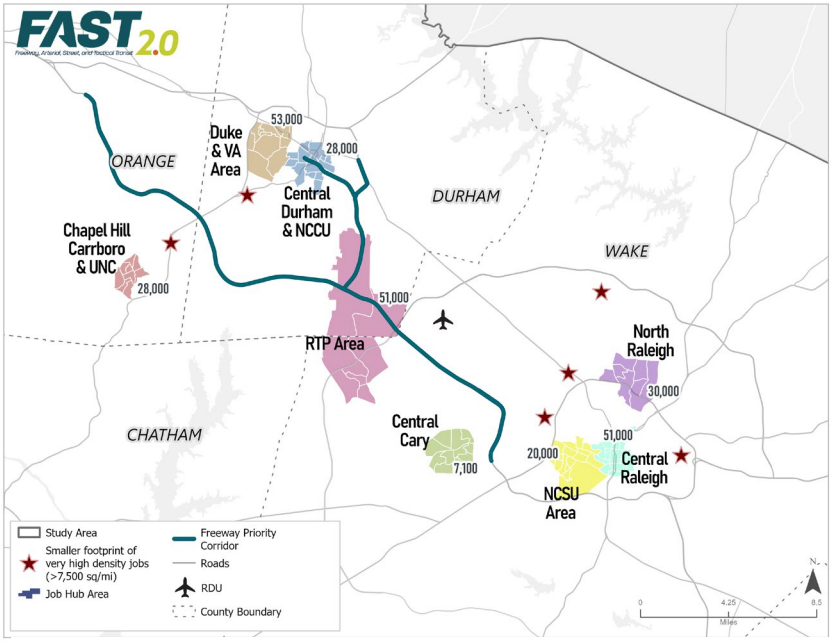


Figure 9: Key Job Hubs in the Study Area

- GoDurham Routes:
  - Route 5

In addition to the existing routes, Chapel Hill Transit is currently advancing the design of the North-South BRT project, which terminates at the Eubanks Park and Ride, adjacent to I-40. Piedmont Authority for Regional Transportation (PART) operates along I-40 between Mebane and Chapel Hill, connecting the Triad Region to UNC. Orange County Public Transit operates the Orange-Alamance Connector Route that travels along Old NC 86 and I-40.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- Projects in the NCDOT 2024-2033 STIP:
  - I-5701, which will add lanes on I-40 from I-440 / US 1 / US 64 to SR 1370 (Lake Wheeler Road). Construction is scheduled to begin in 2027.
    - This project is included in the draft 2026-2035 STIP, with construction scheduled to begin in 2027.
  - I-5707, which will construct a westbound auxiliary lane on I-40 from NC 55 (Alston Avenue) to I-885 (Durham Freeway). ROW is scheduled to begin in 2025 and construction in 2027.
    - This project is included in the draft 2026-2035 STIP, with ROW scheduled to begin in 2025 and construction in 2027.
  - U-5774F, which will construct interchange improvements at the I-40 / NC 54 interchange, including upgrading NC 54 from east of Little Creek to east of I-40. ROW is scheduled to begin in 2028 and construction in 2031.

        - This project is included in the draft 2026-2035 STIP, with ROW scheduled for 2030 and construction in 2033.
    - I-5966, which will construct auxiliary lanes in both directions, along I-40 from SR 1002 (Aviation Parkway) to SR 1652 (Harrison Avenue). ROW is slated to begin in 2028 and construction in 2031.
        - This project is included in the draft 2026-2035 STIP, with ROW slated to begin in 2029 and construction in 2032.
    - I-5993, which will rehabilitate pavement, from US 15 / US 501 to east of NC 147. Construction is currently slated to begin in 2026.
        - This project is included in the draft 2026-2035 STIP, with construction slated to begin in 2026.
    - I-5995, which will rehabilitate pavement on I-40 from east of NC 147 to SR 1728 (Wade Avenue).
        - This project is included in the draft 2026-2035 STIP, with construction slated to begin in 2026.
    - I-6006, which will convert I-40 and SR 1728 (Wade Avenue) to a managed freeway with ramp metering and other Active Traffic Management (ATM) / Intelligent Transportation Systems (ITS) components from NC 54 (Exit 273) to SR 1728 (Wade Avenue) on I-40 and from I-40 to SR 1664 (Blue Ridge Road) on SR 1728 (Wade Avenue). This project is currently only funded for preliminary engineering.
        - This project is not included in the draft 2026-2035 STIP.
    - U-6101, which will convert I-40 to a managed freeway, including ramp metering, from SR 1728 (Wade Avenue) to NC 42. The project is currently not funded.
        - This project is not included in the draft 2026-2035 STIP.

> *The FAST 2.0 study assumes that projects listed in the NCDOT 2024-2033 STIP, but not included in the 2026-2035 STIP could return in future STIPs. While their likely return is dependent on additional NCDOT funding, it is important to consider these projects in the future planning and design of the I-40 freeway priority corridor.*

- This corridor provides a connection to GoTriangle's Triangle Mobility Hub on NC 54, near Miami Boulevard, which received a $25 million federal RAISE grant to support the design and construction of the facility and is slated to open in 2029. The Triangle Mobility Hub also has funding programmed in the county Transit Plans - Wake, Durham and Orange.
- The *2035 Wake Transit Plan Update* is underway to identify the priorities of Wake Transit Plan funding over the next ten years. The April 2025 update includes studying BRT along I-40 connecting Raleigh to the Regional Transit Center, along with DARs at Trinity Road and RDU.
- Projects in *Connect 2050 MTP:*
    - TWTPO
        - I-40 Managed Roadway (MTP ID 45.1) proposes to modernize I-40 from the Wake County Line to NC 54. This project has a horizon year of 2040 and has a TIP number (I-6006).
        - I-40/NC 54 Interchange (MTP ID 2040) proposes to upgrade the interchange at I-40 and NC 54. This project has a horizon year of 2040 and has a TIP number (U-5774F).
    - CAMPO
        - I-40 Corridor Improvements (Project ID F112a) proposes to widen I-40 from 8 lanes to 10 lanes from Aviation Parkway to Harrison Avenue. This project has a horizon year of 2040 and has a TIP number (I-5966).
        - I-40 Corridor Improvements (Project ID F112b) that proposes to widen I-40 from 8 lanes to 10 lanes from Harrison Avenue to Wade Avenue. This project has a horizon year of 2040.

  - I-40 Managed Lanes (Project ID F40) that proposes adding tolls lanes on I-40 from the Durham County line to Wade Avenue by widening from I-40 8 lanes to 10 lanes. This project has a horizon year of 2050.
  - I-40 Widening (Project ID F81a), with a horizon year of 2040, proposes to widen I-40 from 6 lanes to 8 lanes from Wade Avenue to US 1/64.
  - I-40 Managed Lanes (Project ID F41), with a horizon year in 2050, proposes to add toll lanes on I-40 from Wade Avenue to Johnston County by widening I-40 from 8 lanes to 10 lanes.
- As of Summer 2025, CAMPO and TWTPO are in the process of updating the 2055 MTP called *Destination 2055*. The CAMPO executive board selected a preferred scenario in June 2025 that includes freeway-based BRT along the I-40 corridor.

Traffic Considerations

The proposed transit infrastructure along the I-40 corridor would not alter the existing general purpose lanes and would be operationally feasible based on the analysis of the proposed general purpose traffic conditions. Under existing conditions, there are several locations that can be congested with slower traffic speeds, particularly during PM peak periods. The proposed DARs, DMSS lanes, and BOSS lanes would allow buses bypass both recurring and non-recurring congestion, improving travel time reliability and overall system performance.

Table 4 summarizes the proposed general purpose lanes included in the concept design, along with corresponding existing 2023 Annual Average Daily Traffic (AADT) data and posted speed limits. As the corridor design is advanced, close coordination with multiple NCDOT departments and divisions would be required to integrate the proposed transit infrastructure with existing and planned general purpose conditions.

Table 4: Traffic Characteristics on I-40 Corridor

Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
	To	From			
I-40	US 15-501 (Exit 270)	NC 86 (Exit 266)	3	73,500	65
I-40	NC 54 (Exit 273)	US 15-501 (Exit 270)	3	96,500	65
I-40	NC 751 (Exit 274)	NC 54 (Exit 273)	3	120,000	65
I-40	Fayetteville Rd (Exit 276)	NC 751 (Exit 274)	3	117,000	65
I-40	NC 55 (Exit 278)	Fayetteville Rd (Exit 276)	3	124,000	65
I-40	NC 147 (Exit 279)	NC 55 (Exit 278)	3	131,000	65
I-40	Davis Dr (Exit 280)	NC 147 (Exit 279)	3	88,500	65
I-40	Miami Blvd (Exit 281)	Davis Dr (Exit 280)	4	168,000	65
I-40	Page Rd (Exit 282)	Miami Blvd (Exit 281)	4	179,000	65
I-40	I-540 (Exit 283)	Page Rd (Exit 282)	4	183,000	65
I-40	Airport Blvd (Exit 284)	I-540 (Exit 283)	4	147,000	65
I-40	Aviation Pkwy (Exit 285)	Airport Blvd (Exit 284)	4	143,000	65

I-40	Harrison Ave (Exit 287)	Aviation Pkwy (Exit 285)	4	164,000	65
I-40	Wade Ave (Exit 289)	Harrison Ave (Exit 287)	5	159,000	65
I-40	NC 54 (Exit 290)	Wade Ave (Exit 289)	4	98,000	65
I-40	Cary Towne Blvd/Farm Gate Rd (Exit 291)	NC 54 (Exit 290)	4	116,000	65

Notable Projects

NCDOT Express Design H184316

NCDOT Division 5 completed an Express Design project in April 2023 to widen I-40 between Miami Boulevard and Alston Avenue that includes adding median dynamic shoulders. NCDOT plans to investigate additional sections of I-40 within the FAST 2.0 network to further add median dynamic shoulders.

I-885 / NC 147

Purpose

The I-885 / NC 147 freeway priority corridor provides another piece to the regional freeway transit backbone that, with transit priority improvements, such as DMSS, would provide frequent and reliable transit connections between I-40, RTP, and Durham. The NC 147 portion would provide dedicated transit infrastructure to allow transit vehicles to reliably connect to Downtown Durham.

Limits	• I-885 from NC 98 to I-40 • NC 147 from I-885 to Duke Street
Length	***I-885:*** 5.8 Miles ***NC 147:*** 3.7 Miles
Length by Runningway Type	***I-885:*** • 0.1 Miles (Fully Dedicated) • 3.9 (DMSS) • 1.8 (Mixed Flow) ***NC 147:*** • 3.1 Miles (Fully Dedicated) • 0.1 (DMSS) • 0.5 (Mixed Flow)
Anticipated Number of BRT Stations	N/A
Anticipated Number of BRT Buses	N/A
Assumed Service Type	Freeway Bus Rapid Transit
Location	Durham County
MPO	TWTPO
NCDOT Division	Division 5

Concept Design

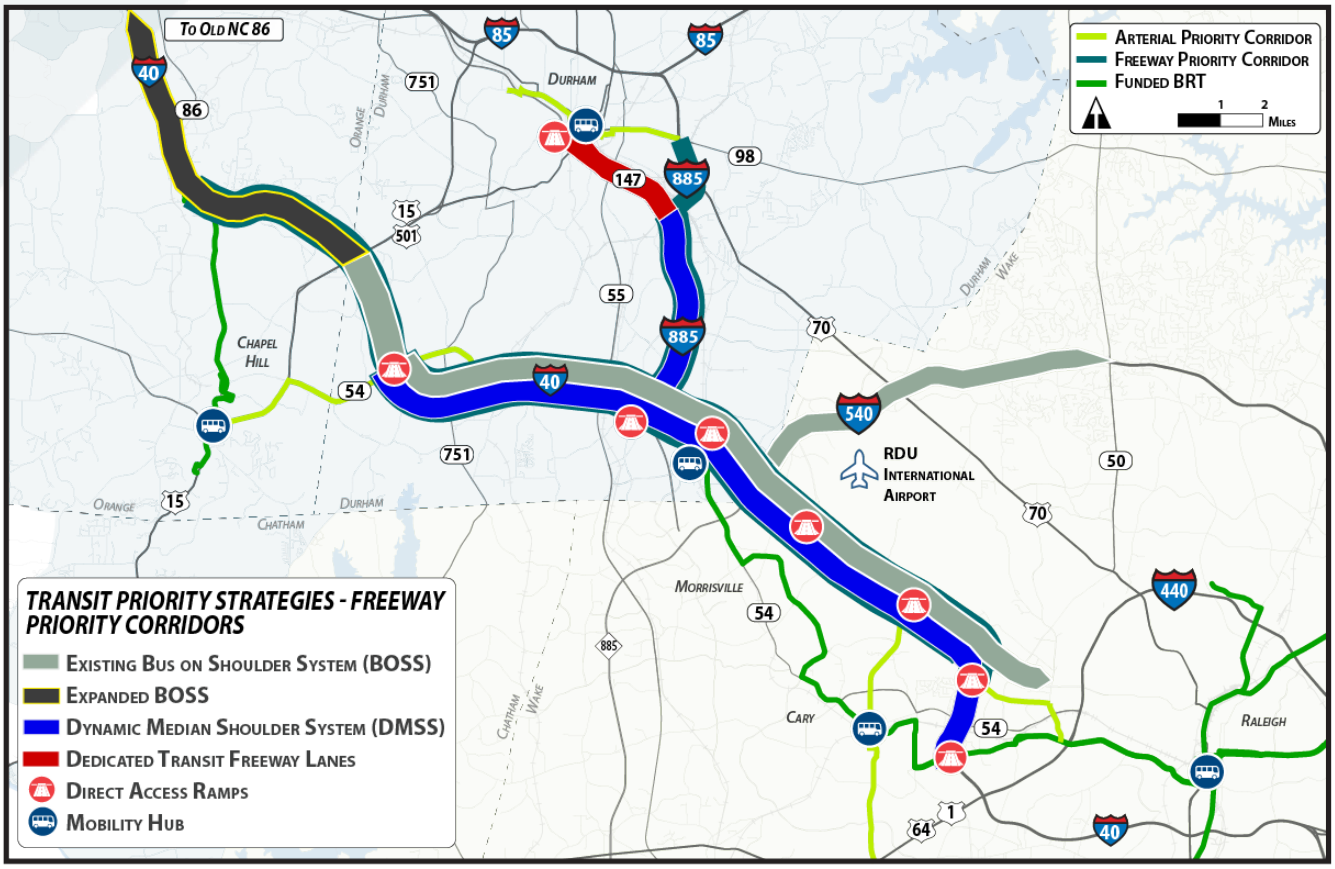


Figure 10: I-885 / NC 147 Concept Design

Proposed Design Elements

Treatments on the I-885 / NC 147 corridor would further prioritize dedicated transit space along freeways in the Triangle region of North Carolina. The design would include DMSS on I-885 between the I-40 Interchange and I-885's interchange with the NC 147. On NC 147 between the I-885 Interchange and Downtown Durham at Duke Street, the design would include dedicated transit freeway lanes as to provide separate space for transit service connecting to Durham Station and the Duke University / Holloway Street arterial priority corridor.

Runningway by Section

Dedicated Freeway Transit Lanes

- NC 147 between I-885 and Duke Street
    - *Widening to the inside to provide 14' lanes on both sides*

NC 147 / I-885 Interchange

- *Northbound NC 147 would go under the bridge alongside the general purpose lanes*
- *Southbound NC 147* would *use a new flyover bridge through the interchange*

Dynamic Median Shoulder System (DMSS)

- I-885 between I-40 and NC 147 interchange

- *Widening to the inside to provide 14' lanes on both sides*

Mixed Flow

- I-885 between NC 147 and NC 98

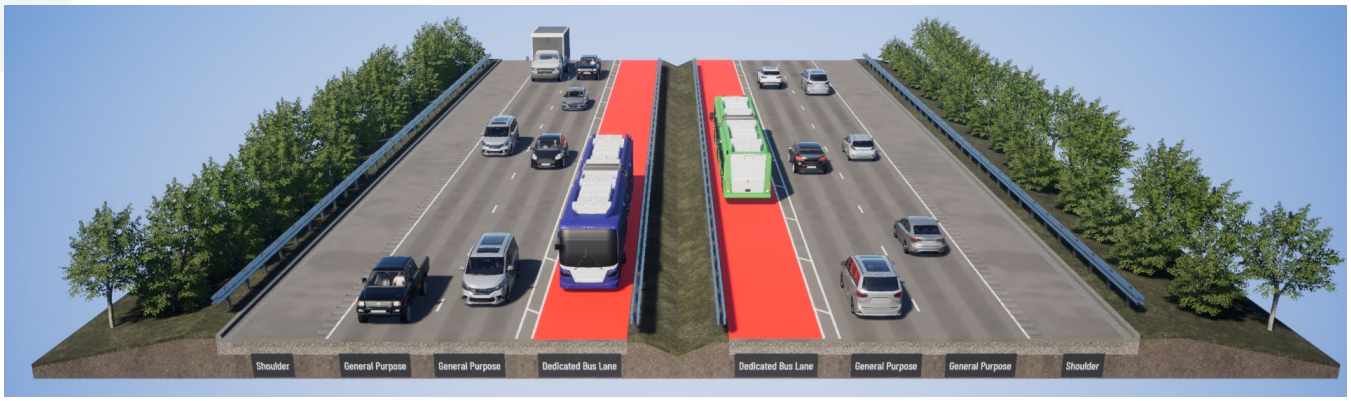


Figure 11: NC 147 near Alston Avenue

Figure 12: I-885 near Ellis Road

Interstate Direct Access Transit Ramp

- NC 147 at Duke Street (Exit 3C)
- I-885 at NC 54, overpass south of I-40/I-885 Interchange (Exit 5B)

Station and Transfer Locations

- Durham Station near Duke Street to connect with GoDurham service, GoTriangle regional transit services, and the Duke University / Holloway Street arterial priority corridor.

Other Considerations

Top Destinations Along the Corridor

The corridor's northern limits are in Downtown Durham. There are numerous destinations along the corridor that provide employment and educational opportunities, along with venues that host large, special events. These include:

- RTP
- Hayti Heritage Center

- Durham Technical Community College
- Downtown Durham
    - Durham Performing Arts Center
    - Durham Bulls Athletic Park
    - American Tobacco Campus
- North Carolina Central University (NCCU)
- Durham Station and Durham Amtrak Station

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
    - Durham-Regional Transit Center – Route 700
    - Durham-Raleigh Express – Route DRX
- All GoDurham Routes at Durham Station

Durham Station, in Downtown Durham, is a local and regional mobility hub for GoDurham, GoTriangle, and intercity bus services. GoTriangle buses use NC 147 and I-885 to connect to the Regional Transit Center and other urban centers in the Region and having dedicated transit freeway lanes and DMSS for those services could improve operational speed and reliability of service. This freeway priority corridor also provides multiple connections in Downtown Durham and near I-885 to the Duke University / Holloway Street arterial priority corridor. In addition to the existing routes, the City of Durham is also completing the Reimagine Durham Freeway Study that may change the roadway characteristics of NC 147 in Downtown Durham.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- Projects in the 2024-2033 STIP include:
    - U-5934 on I-885 between I-40 and NC 147, that will add lanes, rehabilitate pavement, and prioritize the addition of transit accommodations. The current timing of the project, which is currently slated to begin ROW in 2028 and begin construction in 2029, provides a great opportunity to advance the planning of transit accommodations along I-885.
        - The draft 2026-2035 STIP, which is expected to be adopted in Summer 2025, includes U-5934, but the construction year is shown as 2030.
    - U-5937, which will construct auxiliary lanes and operational improvements, on NC 147 (Durham Freeway) from SR 1127 (West Chapel Hill Street) to Briggs Avenue. This project is funded for preliminary engineering only.
        - This project is not included in the draft 2026-2035 STIP.
- Projects in *Connect 2050 MTP:*
    - NC 147 (possible boulevard conversion (MTP ID 64.13) proposes a modernization on NC 147 from Swift Avenue to the East End Connector. This project has a horizon year of 2040.
    - Bus Rapid Transit (NCCU to RTP) which utilizes NC 147.
    - Bus Rapid Transit (Duke-Downtown Durham-NCCU) which mostly utilizes NC 147 and E Main Street.

Special Event Considerations

This freeway priority corridor connects the region to Downtown Durham. As mentioned above, there are numerous destinations along the corridor, and these places and venues frequently host events that are major traffic generators along the corridor. Durham Bulls Athletic Park is a baseball stadium that hosts professional and college games. Durham Performing Arts Center hosts concerts and shows throughout the year.

Traffic Considerations

The proposed transit infrastructure along the I-885 / NC 147 corridor would not alter the existing general purpose lanes and would be operationally feasible based on the analysis of the proposed general purpose traffic conditions. Although some segments experience slower speeds, particularly during PM peak periods, the proposed DARs, Dedicated Transit Lanes, DMSS lanes, and BOSS lanes would allow buses to bypass both recurring and non-recurring congestion, enhancing transit reliability and reducing delays.

Table 5 summarizes the proposed general purpose lanes included in the concept design, along with corresponding existing 2023 AADT data and posted speed limits. As the corridor design is advanced, close coordination with multiple NCDOT departments and divisions would be required to integrate the proposed transit infrastructure with existing and planned general purpose conditions.

Table 5: Traffic Characteristics on I-885 / NC 147 Corridor

Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
	To	From			
I-885	I-40	Cornwallis Rd	3	72,000	65
I-885	Cornwallis Rd	T W Alexander Dr	3	70,000	65
I-885	T W Alexander Dr	Ellis Rd	3	76,000	65
I-885	East End Connector	Briggs Ave	2	73,000	
NC 147	Briggs Ave	NC 55 / Alston Ave	2	69,000	55
NC 147	NC 55 / Alston Ave	Fayetteville St	2	84,000	55
NC 147	Fayetteville St	Roxboro St	2	65,000	55
NC 147	Roxboro St	Duke St	2	65,000	55

Notable Projects

Reimagine Durham Freeway

The City of Durham Transportation Department has kicked off the Reimagine Durham Freeway Study. The first phase of this work aims to develop a community-led vision for the Durham Freeway corridor (also known as NC 147) through central Durham. Findings from this vision plan may suggest changes to the operations and characteristics of NC 147 in Downtown Durham. Future phases of the project are expected to include engineering and traffic operations analysis and design of the freeway, which may include transit priority improvements identified in FAST 2.0. NCDOT Division 5 Staff have been active technical stakeholders in the first phase of work and continue to be involved throughout the lifespan of the project.

Harrison Avenue/Kildaire Farm Road

Purpose

The Harrison Avenue / Kildaire Farm Road arterial priority corridor would provide quick and reliable north/south transit connections in Cary, connecting I-40, SAS campus, Downtown Cary, including the Cary Depot, WakeMed Cary, US 1, and Koka Booth Amphitheatre. The corridor provides the opportunity for a potential park and ride lot at the southern terminus, includes a direct access ramp to I-40 at the existing Harrison Avenue interchange, and would connect to the Wake BRT: Western Corridor.

Limits	• Harrison Avenue from I-40 to Dry Avenue • Dry Avenue from South Harrison Avenue to Kildaire Farm Road • Kildaire Farm Road from Dry Ave to Tryon Road • Tryon Road from Kildaire Farm Road to Regency Parkway • Regency Parkway from Tryon Road to Koka Booth Amphitheatre
Length	8.3 Miles
Length by Runningway Type	• 2.99 Miles (Fully Dedicated) • 2.45 Miles (BAT) • 2.86 (Mixed Flow)
Anticipated Number of BRT Stations	11
Anticipated Number of BRT Buses	10 Total (8 peak; 2 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Wake County
MPO	CAMPO
NCDOT Division	Division 5

Concept Design

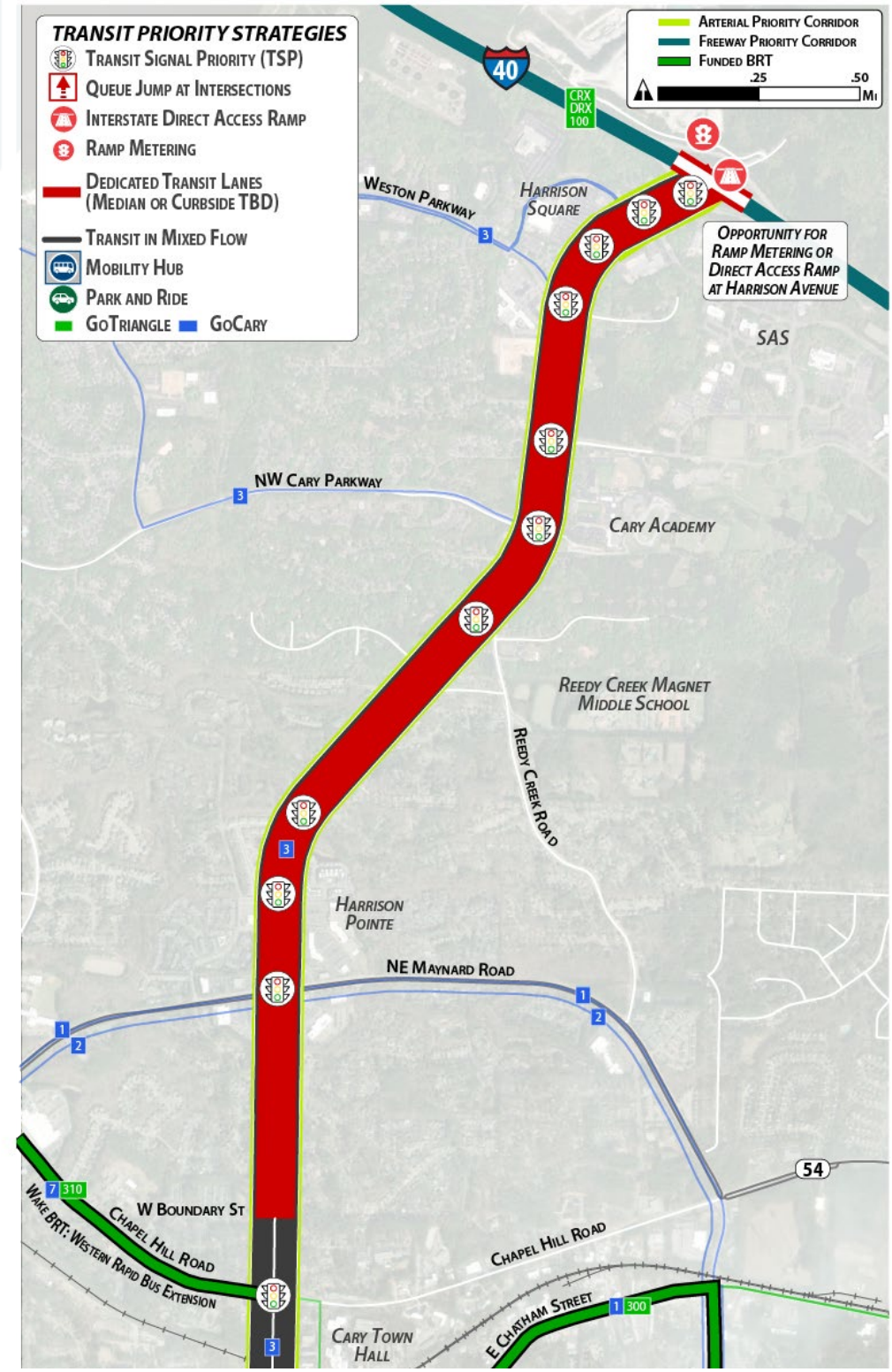


Figure 13: Harrison Avenue / Kildaire Farm Road Concept Design North of Downtown Cary

Figure 14: Harrison Avenue / Kildaire Farm Road Concept Design in Downtown Cary

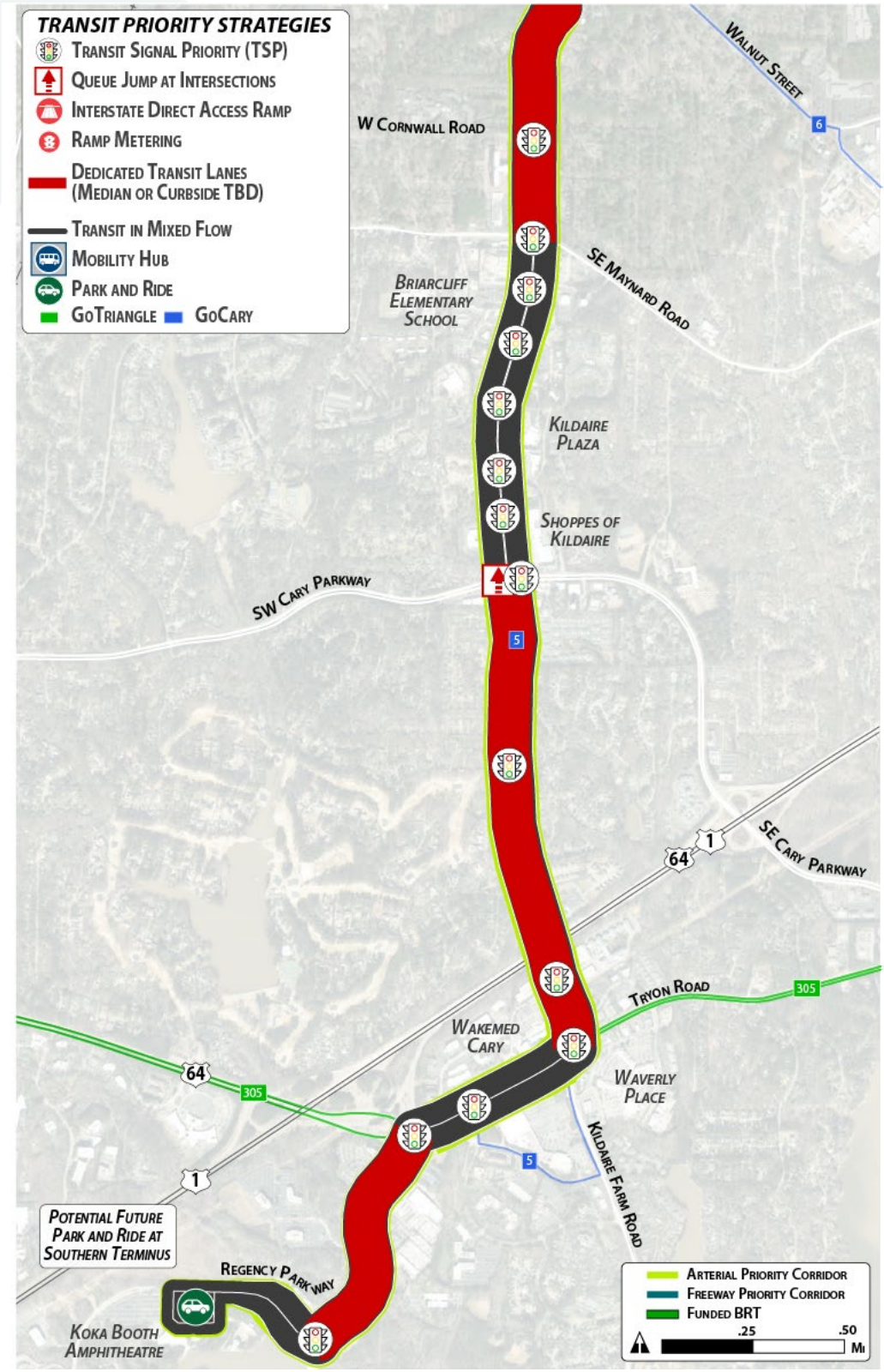


Figure 15: Harrison Avenue / Kildaire Farm Road Concept Design South of Downtown Cary

Proposed Design Elements

This arterial priority corridor in Cary runs primarily north and south along Harrison Avenue and Kildaire Farm Road on dedicated transit lanes and in some areas, mixed traffic flow. The corridor travels through Downtown Cary and intersects the Wake BRT: Western Corridor and its Rapid Bus Extension that connects Downtown Cary, Raleigh, and Morrisville at the future Downtown Cary Multi-Modal Center. The corridor utilizes funded Wake BRT: Western Corridor runningway where the two corridors overlap, along Harrison Avenue in Downtown Cary. Treatments on this corridor would prioritize transit connections along a central north-south spine in the Town of Cary, and would connect to GoCary, GoTriangle, and Amtrak rail Routes, as well as serve destinations like Koka Booth Amphitheatre, Cary Town Hall, Downtown Cary Park, SAS Campus, Cary Depot, WakeMed Cary Hospital, and other employment and commercial destinations.

Runningway by Section

Dedicated Transit Lanes

- Harrison Avenue from I-40 to Saint Charles Place
  - *Widening to both the inside and outside where necessary to keep same number of general purpose lanes*
  - *ROW is needed in several locations along this segment*
- Harrison Avenue from Saint Charles Place to West Boundary Street
  - *Repurposing center lane in each direction to create dedicated lanes*
- Kildaire Farm Road from Shirley Drive to SE Maynard Road
  - *Some widening to the outside along this segment*
  - *Repurposing right lane to be a BAT lane, both directions*
- Kildaire Farm Road from SW Cary Parkway to Tryon Road
  - *Widening in both directions*
  - *Repurposing right lane to be a BAT lane, both directions*
- Regency Parkway from Tryon Road to Koka Booth Amphitheatre
  - *Some widening in both directions*
  - *Repurposing right lane to be a BAT lane, both directions*

Mixed Flow

- Harrison Avenue from West Boundary Street to Chatham Street
- Chatham Street from Harrison Avenue to Academy Street
- South Academy Street from Chatham Street to Dry Avenue
- Dry Avenue from South Academy Street to Kildaire Farm Road
- Kildaire Farm Road from Dry Avenue to Shirley Drive
- Kildaire Farm Road from SE Maynard Road to SW Cary Parkway
- Tryon Road from Kildaire Farm Road to Regency Parkway

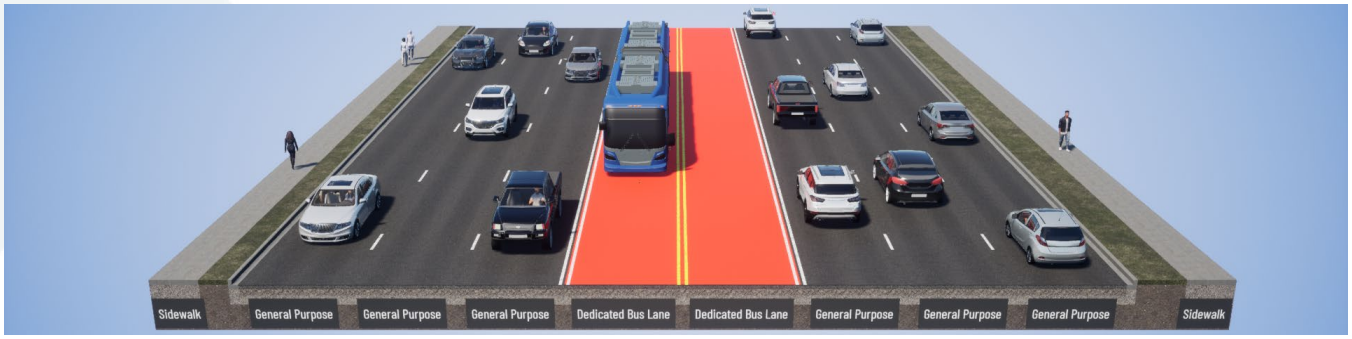


Figure 16: Harrison Avenue at Weston Parkway

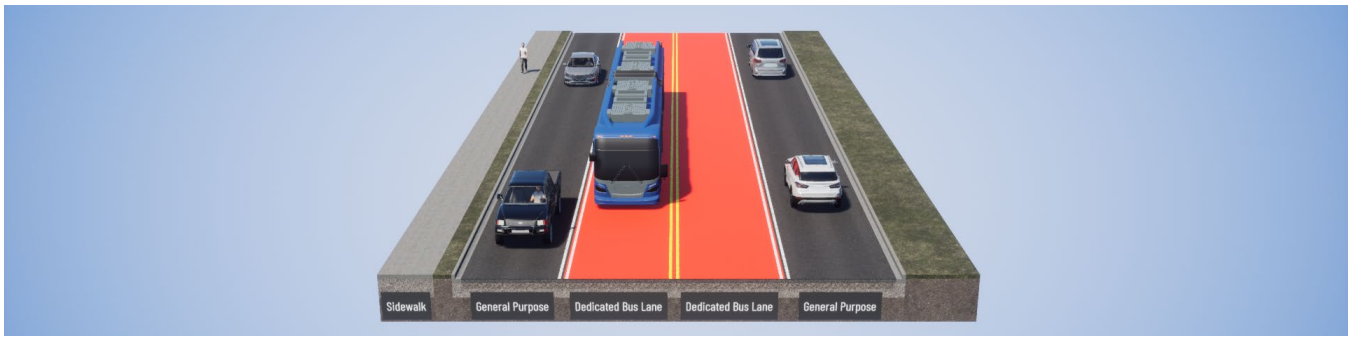


Figure 17: Harrison Avenue at Ashley Drive

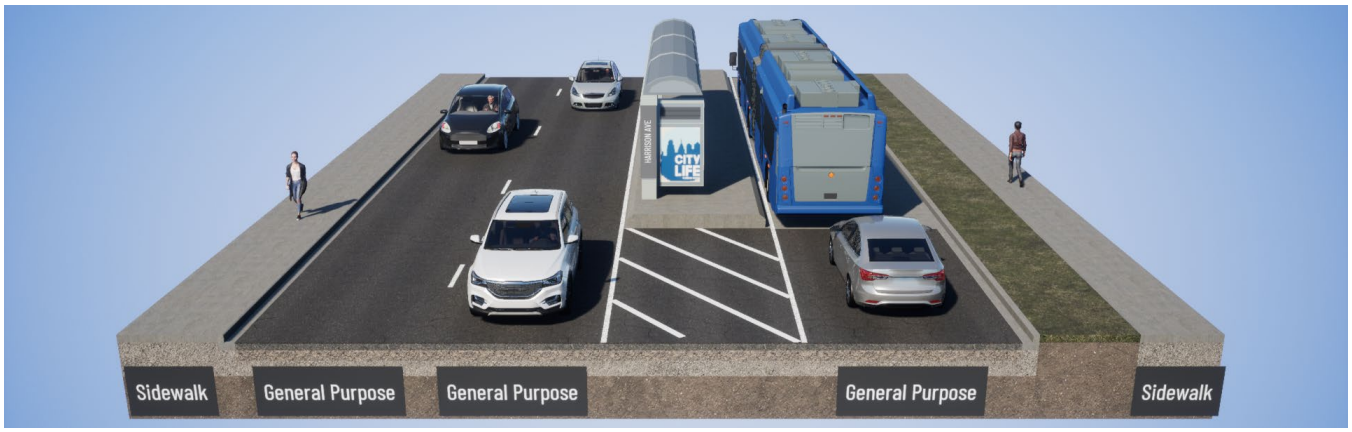


Figure 18: Harrison Avenue at Proposed Downtown Cary Multi-Modal Center

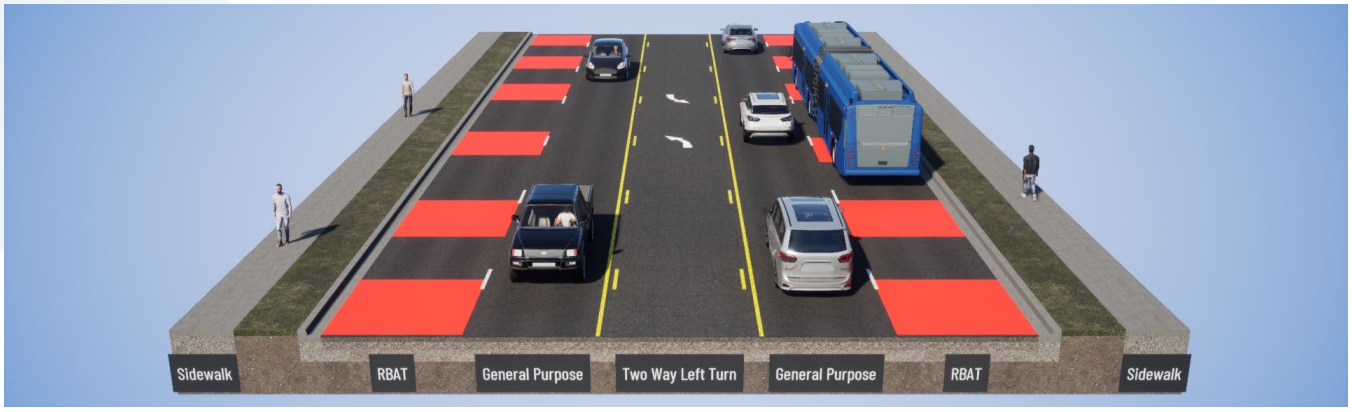


Figure 19: Kildaire Farm Road at Shirley Drive

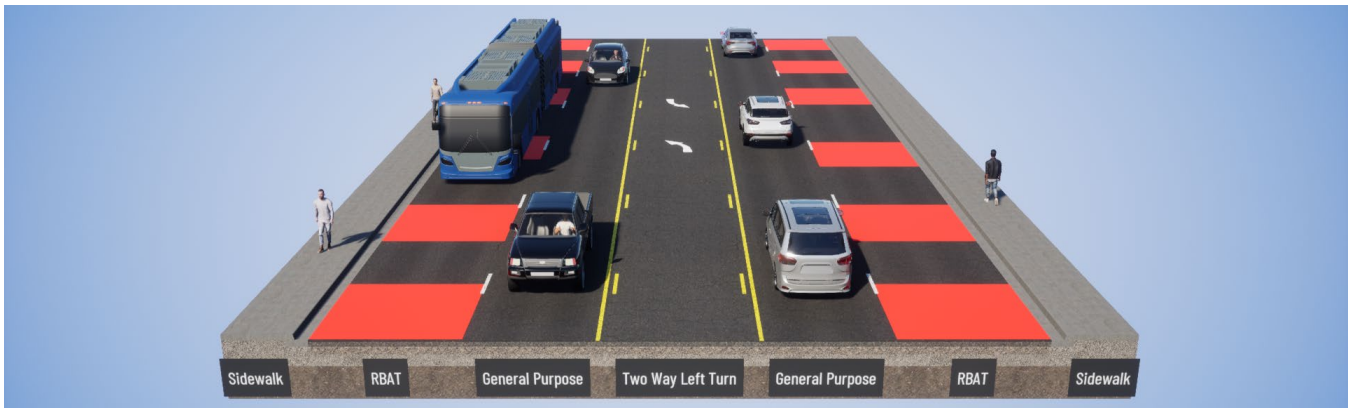


Figure 20: Kildaire Farm Road at Glasgow Road

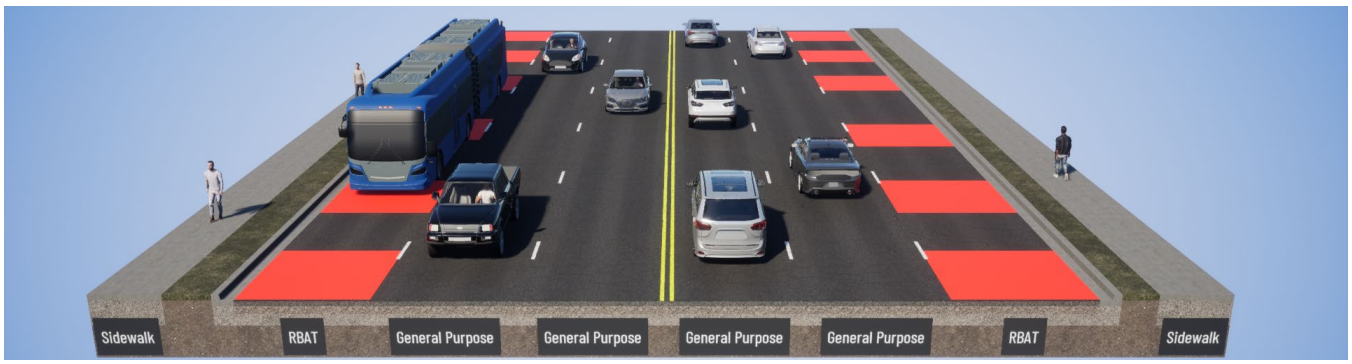


Figure 21: Regency Parkway at Regency Forest Drive

TSP Locations

- Harrison Avenue at I-40 Interchange
- Harrison Avenue at SAS Campus Drive
- Harrison Avenue at Bass Pro Lane
- Harrison Avenue at Weston Parkway
- Harrison Avenue at Research Drive
- Harrison Avenue at NW Cary Parkway
- Harrison Avenue at Reedy Creek Road
- Harrison Avenue at Dynasty Drive
- Harrison Avenue at Harrison Pointe Drive
- Harrison Avenue at NE/NW Maynard Road
- Harrison Avenue at Chapel Hill Road
- Harrison Avenue at Chatham Street
- South Academy Street at Dry Avenue
- Kildaire Farm Road at Walnut Street

- Kildaire Farm Road at Cornwall Road
- Kildaire Farm Road at Maynard Road
- Kildaire Farm Road at Kilmayne Drive
- Kildaire Farm Road at Commonwealth Court
- Kildaire Farm Road at Wrenn Drive
- Kildaire Farm Road at High Meadow Drive
- Kildaire Farm Road at Shoppes of Kildaire Shopping Center
- Kildaire Farm Road at Cary Parkway
- Kildaire Farm Road at Queensferry Road
- Kildaire Farm Road at Wake Medical Drive/Kildaire Park Drive
- Kildaire Farm Road at Tryon Road
- Tryon Road at Crescent Green
- Tryon Road at Regency Parkway
- Regency Parkway at Ederlee Drive

Queue Jump Lane Locations

- Kildaire Farm Road at SW/SE Cary Parkway

Station and Transfer Locations

- Mobility Hub and park and ride at the Cary Depot and future Downtown Cary Multi-Modal Center in Downtown Cary to connect to the Wake BRT: Western Corridor and Rapid Bus Extension, GoCary and GoTriangle Service, and Amtrak.
- Potential future park and ride lot near Koka Booth Amphitheatre, near US 1 and US 64, at the southern terminus of the arterial priority corridor.

Proposed Pedestrian and Bicycle Accommodations

The assumption for pedestrian and bicycle improvements is that there should be a continuous pedestrian and bicycle network along all the arterial priority corridors in the FAST 2.0 network to provide safe and comfortable access to all transit stops in each corridor. Below are pedestrian and bicycle improvements that could be implemented along the corridor to provide safe, comfortable access along the corridor:

- Add sidepath along:
  - Harrison Avenue from I-40 to Kingswood Drive
  - Harrison Avenue between Kingswood Drive and Chatham Street
  - Kildaire Farm Road between Shirley Drive and Tryon Road
  - Tryon Road between Kildaire Farm Road and Regency Parkway
  - Regency Parkway from Tryon Road and Ederlee Drive
- Add major intersection improvements at:
  - Harrison Avenue and SAS Campus Drive
  - Harrison Avenue and Weston Parkway/Richard Drive
  - Harrison Avenue and NW Cary Parkway
  - Harrison Avenue and Maynard Road
  - Kildaire Farm Road and Maynard Road
  - Kildaire Farm Road and Wrenn Drive/Farmington Woods Drive
  - Kildaire Farm Road and Cary Parkway
  - Kildaire Farm Road and Queensferry Road and McEnroe Court
  - Kildaire Farm Road and Tryon Road
  - Tryon Road and Regency Parkway
- Add major mid-block crossings at:
  - Harrison Avenue and Reedy Creek Greenway
  - Harrison Avenue and Kingswood Drive

- Add a minor intersection improvement at Harrison Avenue and Chapel Hill Road
- Add sidewalk along one side of Regency Parkway between Tryon Road and first office driveway
- Add walking bridge on Kildaire Farm Road over US-1/64

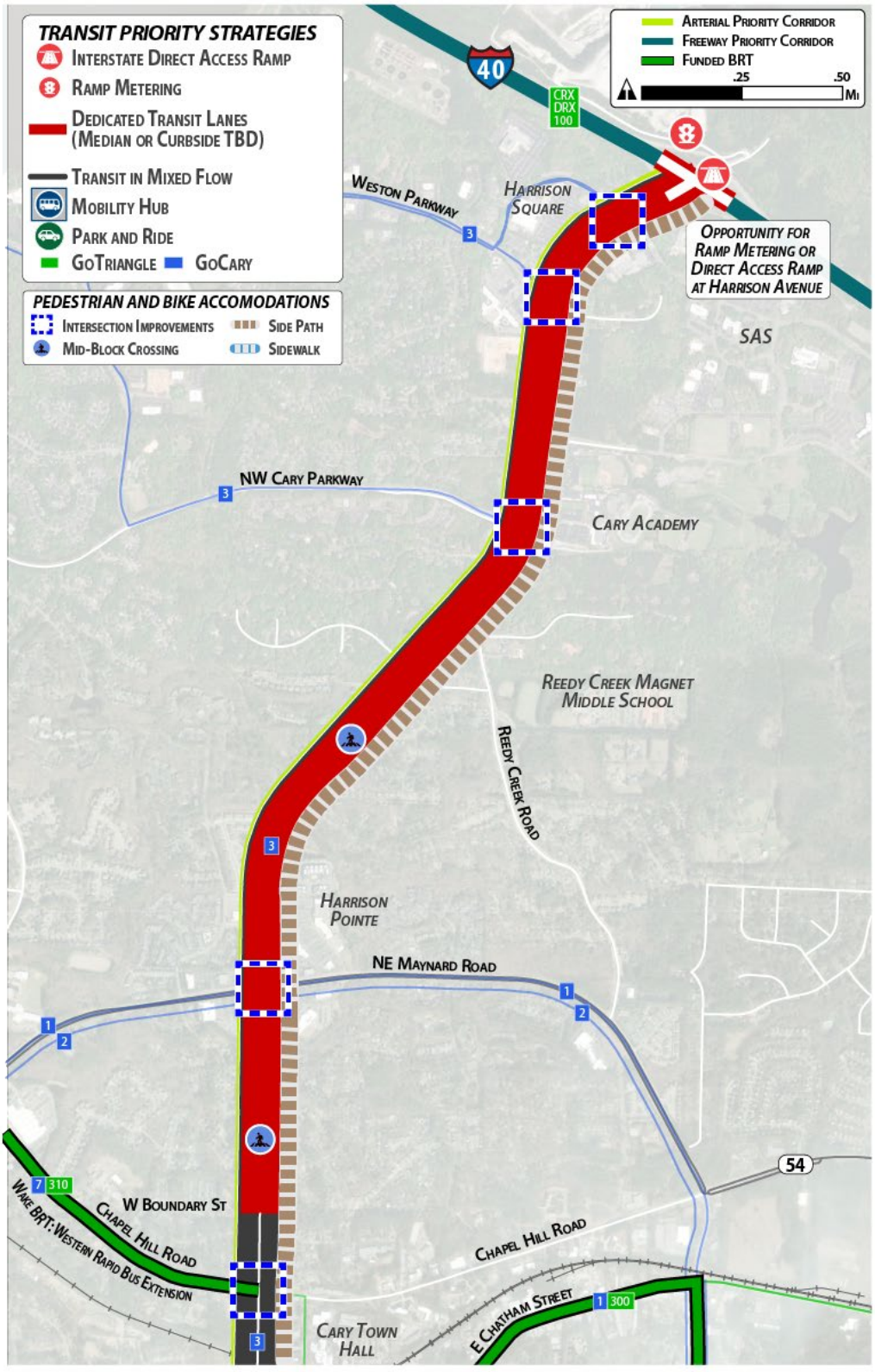


Figure 22: Proposed Pedestrian and Bicycle Accommodations North of Downtown Cary

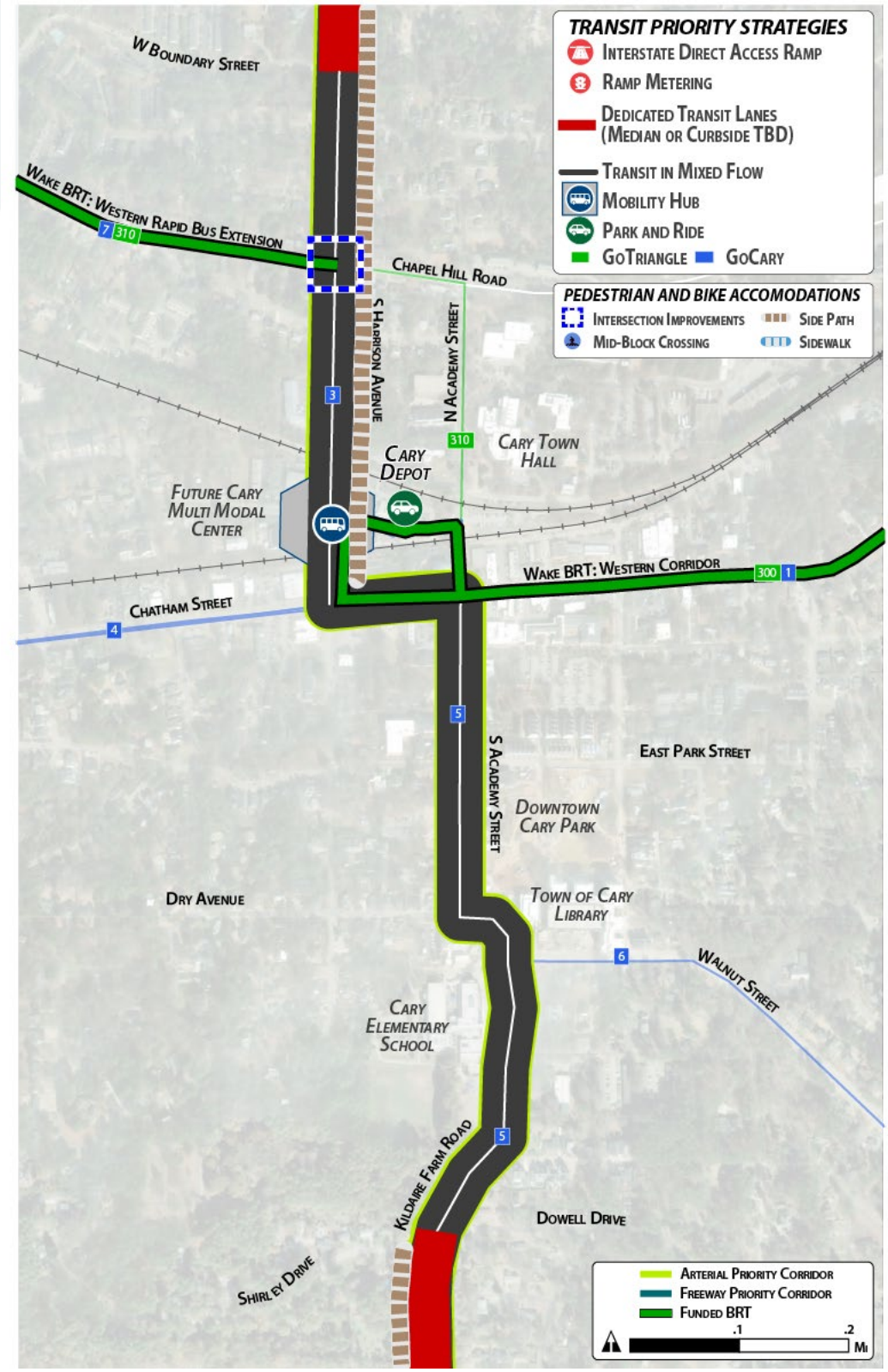


Figure 23: Proposed Pedestrian and Bicycle Accommodations in Downtown Cary

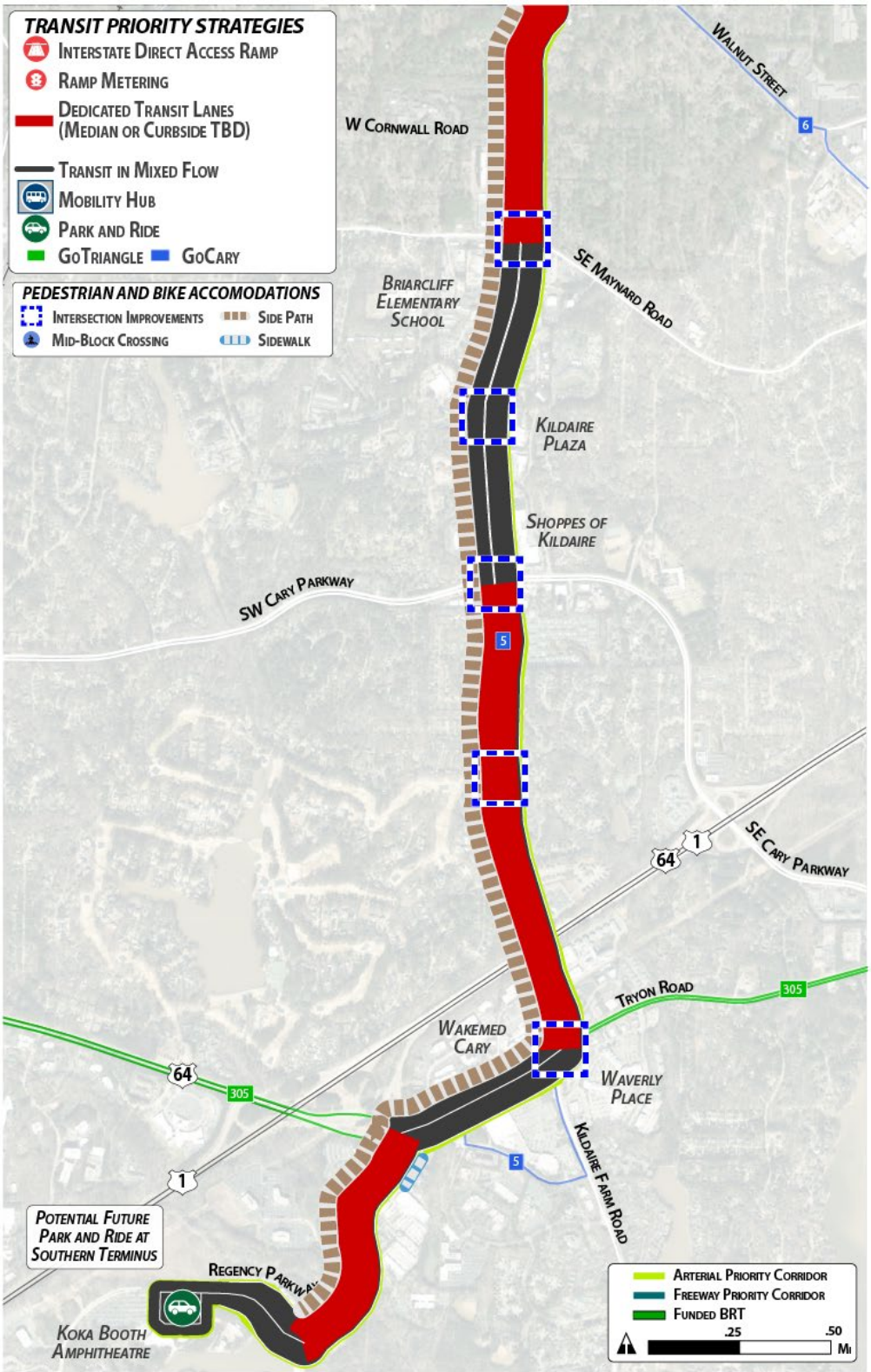


Figure 24: Proposed Pedestrian and Bicycle Accommodations South of Downtown Cary

Other Considerations

Top Destinations Along the Corridor

The corridor includes several key destinations that provide employment opportunities, along with commercial, medical, and recreational resources. Some of these destinations are also venues that host large, special events. These include:

- SAS
- Downtown Cary
- Downtown Cary Park
- WakeMed Cary Hospital
- Koka Booth Amphitheatre

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
  - Route 300
  - Route 305
  - Route 310
- GoCary Routes:
  - 1 - Crossroads
  - 3 – Harrison
  - 4 – High House
  - 5 – Kildaire Farm
  - 6 – Buck Jones
  - 7 – Weston
  - Downtown Loop
  - Apex-Cary Express

The presence of numerous transit agencies provides the opportunity for enhanced transfer locations, such as a super stop, to allow passengers the ability to easily transfer between systems. In addition to the existing routes, GoRaleigh is currently advancing the design of the Wake BRT: Western Corridor, which would connect with the corridor at the Cary Depot.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- Projects in *Connect 2050 MTP:*
  - North Harrison Avenue (MTP ID A240a) proposes widening Harrison Avenue from Reedy Creek Road to Weston Parkway from 5 lanes to 6 lanes. This project has a horizon year of 2040.
  - Harrison Turn Lane (MTP ID A565) proposes adding a center turn lane on Harrison Avenue from Chatham Street to Dry Avenue. This project has a horizon year of 2030.
  - South Harrison Avenue proposes constructing a new 2-lane roadway from Dry Road to Kildaire Farm Road
  - Cary-Apex (MTP ID T152b) is a BRT project that runs the extent of this corridor.
- This corridor would provide a connection from the funded Wake BRT: Western Corridor project, which is currently in the final design phase, to the I-40 freeway priority corridor.

Special Event / Traffic Considerations

There are several destinations along the corridor, including Downtown Cary and Koka Booth Amphitheatre that often hold large events and could be major traffic generators along the corridor. In addition to event traffic, the presence of WakeMed Cary presents unique traffic conditions that should be considered during implementation, such as access to hospital facilities and shift-change traffic patterns.

Traffic Considerations

The proposed transit infrastructure along the Harrison Avenue / Kildaire Farm Road corridor is generally considered operationally feasible based on the analysis of the proposed general purpose traffic conditions, including 2023 AADT volumes, travel time reliability, vehicle speeds, and levels of congestion. Table 6 summarizes the proposed general purpose lanes included in the concept design, along with corresponding existing 2023 AADT data and posted speed limits. As the corridor design is advanced, further investigation is required to confirm specific locations and designs for the conceptual runningway, TSP, and queue jump locations, especially where STIP or MTP projects are identified.

Table 6: Traffic Characteristics on Harrison Avene / Kildaire Farm Road Corridor

Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
	To	From			
Regency Pkwy	Koka Booth Amphitheatre	Ederlee Dr	2	N/A	35
Regency Pkwy	Ederlee Dr	Tryon Rd	2	N/A	40
Tryon Rd	Regency Pkwy	Cary Pkwy	2	26,000	45
Kildaire Farm Rd	Cary Pkwy	Farmington Woods Dr	2	27,500	45
Kildaire Farm Rd	Farmington Woods Dr	SE Maynard Rd	2	22,000	35
Kildaire Farm Rd	SE Maynard Rd	Walnut St	1	22,000	35
Kildaire Farm Rd	Walnut St	Academy St	1	11,000	35
Academy St	Dry Ave / Kildaire Farm Rd	Chatham St	1	9,800	35
Chatham St	Academy St	Harrison Ave	1	9,800	45
Harrison Ave	Chapel Hill Rd	Boundary St	2	13,000	45
Harrison Ave	Boundary St	Maynard Rd	1	13,000	45
Harrison Ave	Maynard Rd	Reedy Creek Rd	2	12,000	45
Harrison Ave	Reedy Creek Rd	NW Cary Pkwy	2	13,000	45
Harrison Ave	NW Cary Pkwy	Weston Pkwy	2	23,000	45
Harrison Ave	Weston Pkwy	I-40	3	28,500	45

Notable Projects

Downtown Cary Multi Modal Center Transit Facility

The Town of Cary is planning for a new Downtown Cary Multi-Modal Center to accommodate a variety of existing and future transit modes and services, including local and regional bus service, BRT, future commuter rail service, and Amtrak intercity passenger rail services. The project's feasibility study is complete, and concept planning is consistent with the vision set out in the *Imagine Cary Community Plan* with the goal of creating a vibrant and connected public space within Downtown Cary.

Duke University / Holloway Street

Purpose

The Duke University / Holloway Street arterial priority corridor would provide quick and reliable transit connections between Duke University, Duke University Hospital, Durham VA Health Care System, and Downtown Durham, including Durham Station, the Village Shopping Center, and GoDurham's Route 3 family (3/3B/3C), which is both the City's highest ridership and most productive route family in the GoDurham system.

Limits	• Erwin Road from Duke University Hospital to West Main St • West Main Street (US 70 Business) from Erwin Rd to North Gregson St (Southbound) / North Duke St (Northbound) • North Gregson Street (Southbound) from West Main St (US 70 Business) to West Chapel Hill St • North Duke Street (Northbound) from West Main St (US 70 Business) to West Chapel Hill St • West Chapel Hill from North Gregson St (Southbound) / North Duke St (Northbound) to West Pettigrew St (Eastbound) / Ramseur St (Westbound) • West Pettigrew Street (Eastbound) from West Chapel Hill St to North Roxboro St (US 15 Business) • Ramseur Street (Westbound) from West Chapel Hill St North to Roxboro St (US 15 Business) • North Roxboro Street (US 15 Business) from West Pettigrew St (Eastbound) / Ramseur St (Westbound) to Liberty St • Liberty Street (Bidirectional) from North Roxboro St (US 15 Business) to Elizabeth St • Elizabeth Street (Westbound) from Liberty St to Holloway St (Westbound) • Liberty Street (Eastbound) from Elizabeth St to North Miami Blvd • Holloway Street (Westbound) from Elizabeth St to Raynor St • Raynor Street (Westbound) from Holloway St to North Miami Blvd • North Miami Boulevard from Raynor St to Liberty St • Holloway Street from North Miami Boulevard to I-885
Length	4.8 Miles
Length by Runningway Type	• 0.4 Miles Fully Dedicated • 0.4 Miles BAT • 4.0 Miles Mixed Flow
Anticipated Number of BRT Stations	8
Anticipated Number of BRT Buses	6 Total (5 peak; 1 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Durham County
MPO	TWTPO
NCDOT Division	Division 5

Concept Design

Figure 25: Duke University / Holloway Steet Concept Design near Duke University

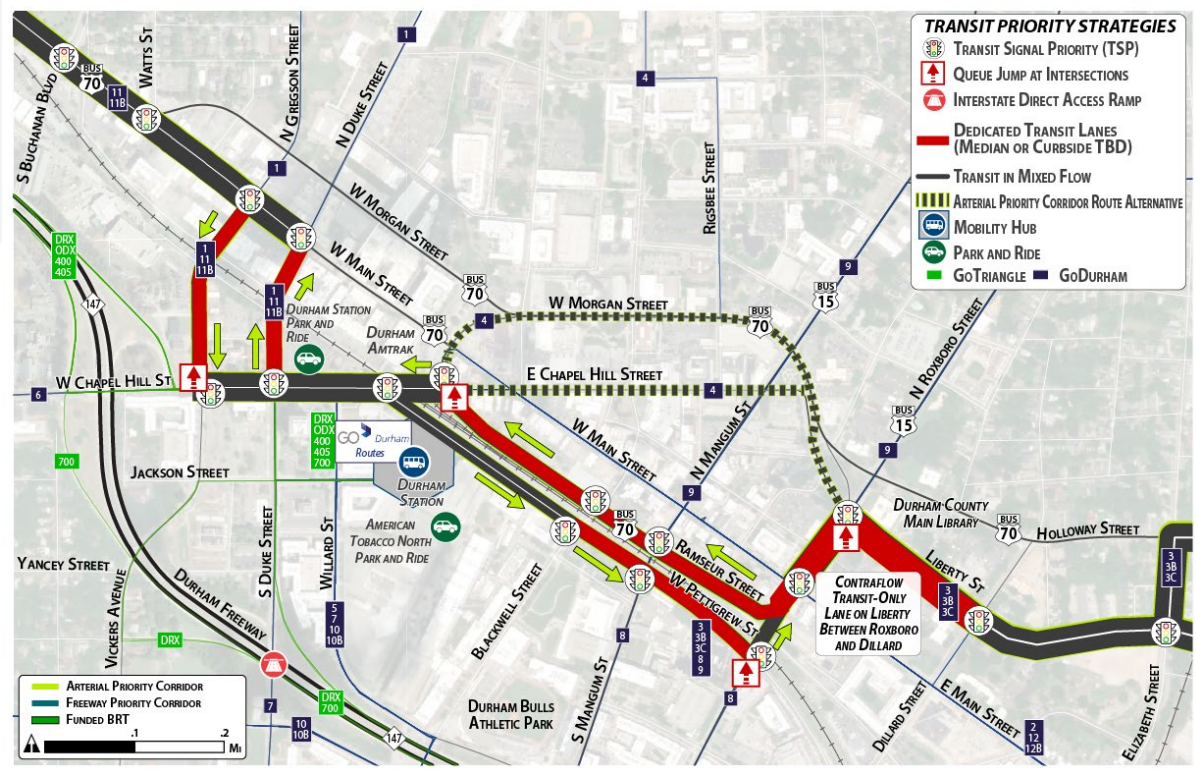


Figure 26: Duke University / Holloway Steet Concept Design in Downtown Durham

Figure 27: Duke University / Holloway Steet Concept Design along Holloway Street and Liberty Street

Proposed Design Elements

This corridor connects Downtown Durham to Duke University Hospital to the west and the Village Shopping Center and I-885 freeway priority corridor to the east, with opportunities to expand the corridor's limits in both directions in the future. Treatments on this corridor would prioritize east-west transit reliability for some of GoDurham's most productive routes in its system using TSP, queue jumps, and dedicated transit lanes.

Runningway by Section

Dedicated Transit Lanes

- Elba Street from Elf Street to Trent Drive
  - *Repurposing eastbound right lane to be a BAT lane*
- North Gregson Street (Southbound) from West Main Street (US 70 Business) to West Chapel Hill Street
  - *Repurposing right lane to be a BAT lane*
- North Duke Street (Northbound) from West Main Street (US 70 Business) to West Chapel Hill Street
  - *Repurposing left lane to be a BAT lane*
- West Pettigrew Street (Eastbound) from Blackwell Street to North Roxboro Street (US 15 Business)
  - *Remove parking to create a BAT lane*
- Ramseur Street (Westbound) from West Chapel Hill Street to North to Roxboro St (US 15 Business)
  - *Remove parking to create a contraflow lane that aligns with the GoDurham Better Bus Project*
- North Roxboro Street (US 15 Business) from West Pettigrew Street (Eastbound) / Ramseur Street (Westbound) to Liberty Street
  - *Eastbound is in mixed flow*
  - *Westbound is repurposing lane to create a contraflow lane that aligns with the GoDurham Better Bus Project*
- Liberty Street (Bidirectional) from North Roxboro Street (US 15 Business) to N Dillard Street
  - *Eastbound is in mixed flow*
  - *Westbound is repurposing lane to create a contraflow lane that aligns with the GoDurham Better Bus Project*

Mixed Flow

- Fulton Street from Elba Street to Erwin Road
- Trent Drive from Erwin Road to Elba Street
- Erwin Road from Duke University Hospital to West Main Street
- West Main Street (US 70 Business) from Erwin Road to North Gregson Street (Southbound) / North Duke Street (Northbound)
- West Chapel Hill from North Gregson Street (Southbound) / North Duke Street (Northbound) to West Pettigrew Street (Eastbound) / Ramseur Street (Westbound)
- West Pettigrew Street (Eastbound) from West Chapel Hill Street to Blackwell Street (Eastbound)
- Liberty Street from Dillard Street to Elizabeth Street
- Liberty Street from Elizabeth Street to North Miami Boulevard (Eastbound)
- Elizabeth Street (Westbound) from Liberty Street to Holloway Street (Westbound)
- Holloway Street (Westbound) from Elizabeth Street to Raynor Street
- Raynor Street (Westbound) from Holloway Street to North Miami Boulevard
- North Miami Boulevard from Raynor Street to Liberty Street

- Holloway Street from North Miami Boulevard to I-885

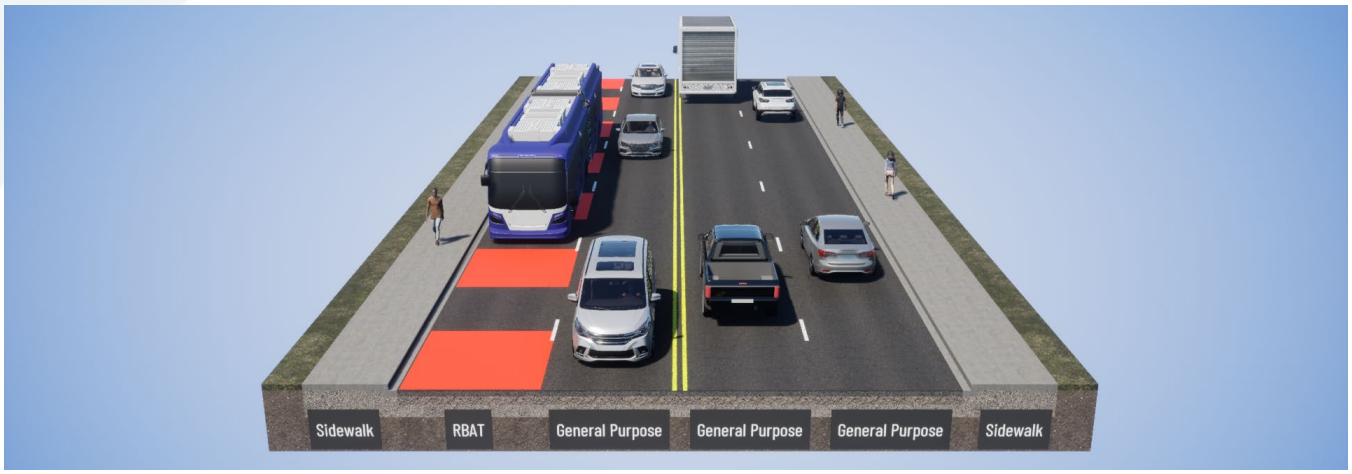


Figure 28: Elba Street

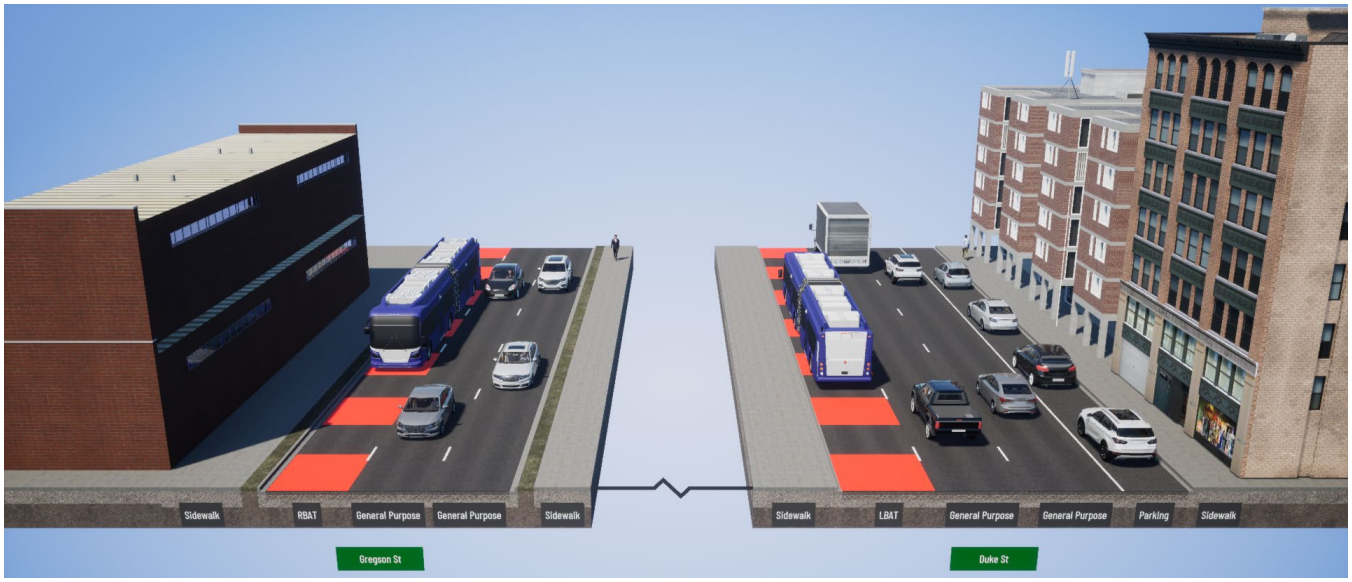


Figure 29: Gregson Street and Duke Street

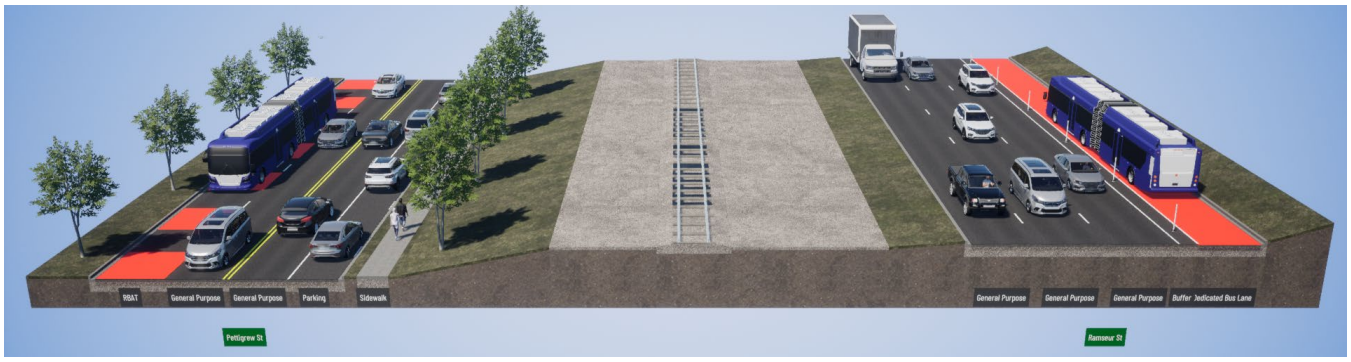


Figure 30: Pettigrew Street and Ramseur Street

Figure 31: Roxboro Street

Figure 32: Liberty Street between Roxboro Street and Dillard Street

TSP Locations

- Erwin Road at Fulton Street
- Erwin Road at Trent Drive
- Erwin Road at 15th Street
- Erwin Road at Main Street/9th Street
- Main Street at Broad Street
- Main Street at Campus Drive
- Main Street at North Buchanan Boulevard
- Main Street at Watts Street
- Main Street at North Gregson Street
- Main Street at North Duke Street
- West Chapel Hill Street at South Gregson Street
- West Chapel Hill Street at South Duke Street
- West Chapel Hill Street at West Pettigrew Street
- West Chapel Hill Street at Ramseur Street
- West Pettigrew Street at Blackwell Street

- West Pettigrew Street at South Mangum Street
- West Pettigrew Street at South Roxboro Street
- Ramseur Street at Blackwell Street
- Ramseur Street at North Mangum Street
- South Roxboro Street at East Main Street
- North Roxboro Street at Liberty Street
- Liberty Street at Dillard Street
- Liberty Street at Elizabeth Street
- Liberty Street at North Alston Avenue
- Liberty Street at North Hyde Park Avenue
- Liberty Street at North Guthrie Avenue
- Liberty Street at Raynor Street
- Liberty Street at North Miami Boulevard
- Holloway Street at I-885 Interchange
- Holloway Street at North Hardee Street
- North Miami Boulevard at Holloway Street
- Holloway Street at North Alston Avenue
- Holloway Street at North Hyde Park Avenue
- Holloway Street at North Guthrie Avenue
- Holloway Street at Raynor Street

Queue Jump Lane Locations

- Trent Drive at Erwin Road
- South Gregson Street at West Chapel Hill Street
- Ramseur Street at West Chapel Hill Street
- West Pettigrew Street at South Roxboro Street
- Liberty Street at North Roxboro Street

Station and Transfer Locations

- Mobility Hub and park and ride lot at Durham Station in Downtown Durham to connect to local GoDurham services, regional GoTriangle service, and intercity bus service. There is also the additional American Tobacco North park and ride lot between Durham Station and American Tobacco Campus, as well as the Durham Amtrak Station in Downtown Durham. A DAR is also proposed on NC 147 at South Duke Street to improve access and operations between Durham Station and the I-885 / NC 147 freeway priority corridor.
- Future Mobility Hub at the Village Shopping Center in the eastern terminus of the arterial priority corridor. The Village bus stops where the Mobility Hub would be located are the most used bus stops in the GoDurham system behind Durham Station. This Mobility Hub would serve as a transfer point between GoDurham routes and proposed regional routes that will use the I-885 / NC 147 freeway priority corridor.

Proposed Pedestrian and Bicycle Accommodations

The assumption for pedestrian and bicycle improvements is that there should be a continuous pedestrian and bicycle network along all the arterial priority corridors in the FAST 2.0 network to provide safe and comfortable access to all transit stops in each corridor. Below are pedestrian and bicycle improvements that could be implemented along the corridor to provide safe, comfortable access along the corridor:

- Add separated bike lanes along:
  - Erwin Road between Flowers Drive and Fulton Street
  - Fulton Street between Erwin Road and Elba Street
  - Westbound Main Street between Buchanan Boulevard and Watts Street/Morgan Street
- Add minor intersection improvements at:
  - Erwin Road and Trent Drive
  - Main Street and Buchanan Boulevard
  - Chapel Hill Street and Pettigrew Street
  - Liberty Street and N Guthrie Avenue

- Add major intersection improvements at:
  - Erwin Road and Fulton Street
  - Erwin Road and Anderson Street
  - Main Street and Broad Street/Swift Avenue
  - Chapel Hill Street and Great Jones Street/Ramseur Street
  - Roxboro Street and Liberty Street
  - Liberty Street and Elizabeth Street
  - Holloway Street and N Miami Boulevard/Gary Street
- Add sidewalks along:
  - North side of Ramseur Street between Main Street and the Corcoran Street Parking Garage
  - North side of Ramseur Street between Corcoran Street and Mangum Street
  - South side of Pettigrew Street between Blackwell Street and Mangum Street
- Add sidepaths along:
  - N Miami Boulevard between Raynor Street and Liberty Street
  - Holloway Street between N Miami Boulevard and I-885

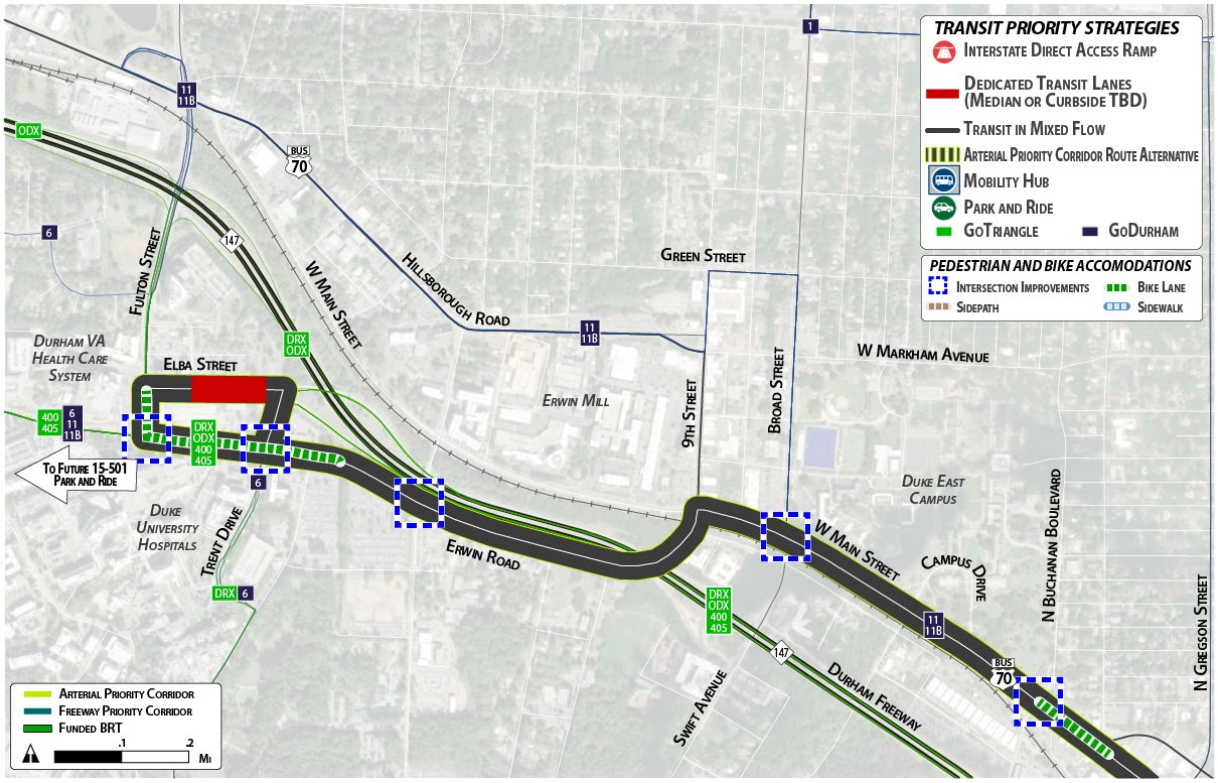


Figure 33: Proposed Pedestrian and Bicycle Accommodations near Duke University

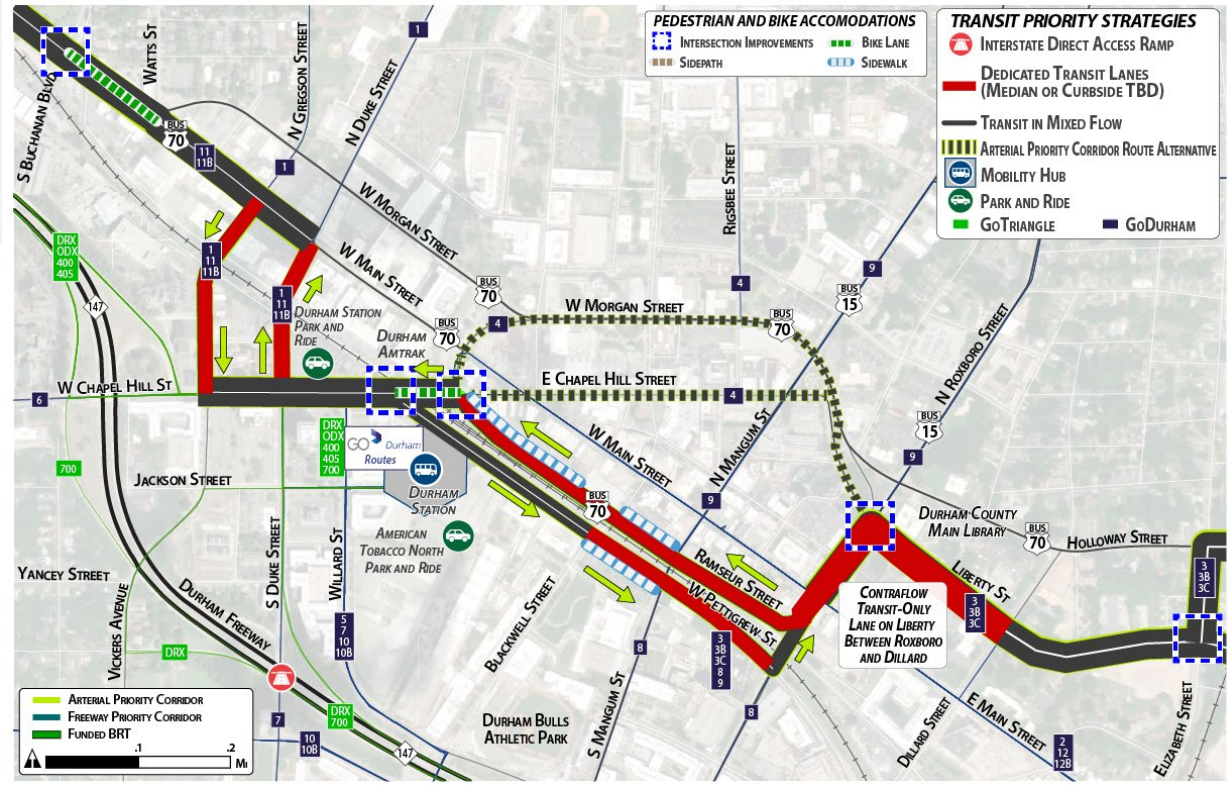


Figure 34: Proposed Pedestrian and Bicycle Accommodations in Downtown Durham

Figure 35: Proposed Pedestrian and Bicycle Accommodations along Holloway Street and Liberty Street

Top Destinations Along the Corridor

The corridor includes several key destinations that provide employment opportunities, along with educational, commercial, medical, cultural, and recreational resources. Some of these destinations are also venues that host large, special events. These include:

- Duke University
- Duke University Hospital
- Durham VA Health Care System
- Downtown Durham
  - Durham Performing Arts Center
  - Durham Bulls Athletic Park
- Durham Station and Durham Amtrak Station

Other Considerations

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
  - 400
  - 405
  - 700
  - ODX
  - DRX
- All GoDurham Routes at Durham Station, but in particular, routes along the corridor:

- 1
- 3/3B/3C
- 4
- 5
- 6
- 7
- 8
- 9
- 11 / 11B
- 12/12B

The presence of numerous transit agencies provides the opportunity for enhanced transfer locations, such as a super stop, to allow passengers the ability to easily transfer between systems. Along with enhanced transfer locations, the Durham Station is a local and regional mobility hub for GoDurham, GoTriangle, and intercity bus services. It is also across the street from the Durham Amtrak Station, allowing easy connections to passenger rail services. GoTriangle buses use NC 147 and I-885 to connect to the Regional Transit Center and other urban centers in the Region and having dedicated transit freeway lanes and DMSS for those services could improve operational speed and reliability of service.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- Projects in *Connect 2050 MTP:*
  - N Gregson St / Vickers Ave (MTP ID 123) proposes a two-way conversion on N Gregson Street / Vickers Avenue from W Club Blvd to University Dr. This project has a horizon year of 2040.
  - Duke St (MTP ID 124) proposes a two-way conversion on Duke St from I-85 to W Lakewood Ave. This project has a horizon year of 2040.
  - Mangum St (MTP ID 121) proposes a two-way conversion from W Lakewood Ave to N Roxboro St. This project has a horizon year of 2040.
  - Roxboro St (MTP ID 122) proposes a two-way conversion from W Lakewood Ave to W Markham Ave. This project has a horizon year of 2040.
  - W Morgan / W Ramseur (MTP ID 120) proposes a two-way conversion from N Roxboro St to W Main St. This project has a horizon year of 2040.
  - Holloway St (NC 98) (MTP ID 434) proposes modernization of Holloway Street (NC 98) from Miami Blvd to Nichols Farm Dr. This project has a horizon year of 2050.
- This corridor aligns with a portion of Duke-Downtown Durham-NCCU BRT, which is noted in *Connect 2050 MTP*, between Duke University, Downtown Durham, and NCCU.
- Part of this corridor aligns with the City of Durham's Holloway Street Transit Emphasis Corridor, which received federal funding for pedestrian and bus stop improvements along Holloway Street.
- The *2035 Wake Transit Plan Update* is underway to identify the priorities of Wake Transit Plan funding over the next ten years. The April 2025 update shows BRT along I-40 connecting Raleigh to the Regional Transit Center and then to Durham, utilizing I-885 and NC 147.

Special Event Considerations

The corridor is home to major destinations that frequently host major events that are major traffic generators along the corridor, including Duke University and Downtown Durham. Athletic events throughout the year, move-in weekend, and graduation weekend, can bring large volumes of traffic to the corridor near Duke University. Along with hosting festivals and events throughout the year, Downtown Durham is home to the Durham Performing Arts Center and Durham Bulls Athletic Park, that regularly host events, bringing large volumes of traffic to Downtown Durham.

In addition to event traffic, the presence of Duke University Hospitals and the Durham VA Healthcare System also presents unique traffic conditions that should be considered during implementation, such as access to hospital facilities and shift-change traffic patterns. The project utilizes Erwin Road and Fulton Road, which are the main roads that provide access to the medical facilities, including the emergency room entrance.

Traffic Considerations

The proposed transit infrastructure along the Duke University / Holloway Street corridor would be generally operationally feasible based on the analysis of the proposed general purpose traffic conditions, including 2023 AADT volumes, travel time reliability, vehicle speeds, and levels of congestion. Table 7 summarizes the proposed general purpose lanes included in the concept design, along with corresponding existing 2023 AADT data and posted speed limits. As the corridor design is advanced, further investigation is required to confirm specific locations and designs for the conceptual runningway, TSP, and queue jump locations, especially where STIP or MTP projects are identified.

Table 7: Traffic Characteristics on Duke University / Holloway Street Corridor

Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
	To	From			
Fulton St	Elba St	Erwin Rd	2	13,500	35
Elba St	Fulton St	Trent Dr	2	N/A	N/A
Trent Dr	Erwin Rd	Elba St	3	N/A	N/A
Erwin Rd	Fulton St	Trent Dr	2	9,100	35
Erwin Rd	Trent Dr	Anderson St	2	9,100	35
Erwin Rd	W Main St	Anderson St	1	7,000	35
W Main St	Broad St/Swift Ave	9th St	1	13,000	35
W Main St	Buchanan Blvd	Broad St/Swift Ave	1	9,600	35
W Main St	W Morgan St	Buchanan Blvd	1	7,900	25
W Main St	Gregson St	W Morgan St	1	6,200	25
W Main St	Gregson St	Duke St	1	6,400	25
S Gregson St	W Chapel Hill St	W Main St	2*	6,300	25
S Duke St	W Main St	W Chapel Hill St	2*	7,900	25
W Chapel Hill St	S Duke St	S Gregson St	1	10,000	35
W Chapel Hill St	W Pettigrew St	S Duke St	1	9,300	35
W Chapel Hill St	W Pettigrew	Ramseur St	1	7,800	35
W Pettigrew St	Roxboro St	W Chapel Hill St	1	2,700	35
Roxboro St	E Main St	W Pettigrew St	2*	7,900	25
Roxboro St	Liberty St	E Main St	4*	9,100	25
Liberty St	N Dillard St	Roxboro St	1*	3,700	35
Liberty St	N Miami Blvd	N Dillard St	1	3,700	35
N Miami Blvd	Raynor St	Liberty St	2	3,400	35
Raynor St	Holloway St	N Miami Blvd	1	N/A	N/A

Holloway St	Park Ave	Raynor St	1	8,600	35
Holloway St	N Alston Ave	Park Ave	1	9,100	35
Holloway St	N Elizabeth St	N Alston Ave	1	5,800	35
N Elizabeth St	Liberty St	Holloway St	1	12,000	35
Ramseur St	S Mangum St	W Chapel Hill St	2*	2,200	25
Ramseur St	Roxboro St	Mangum St	2	2,200	35

*General Purpose lanes are only in one direction

Notable Projects

The City of Durham is designing improvements for Holloway Street and plans for a Transit Center near the Village Shopping Center that will provide safe access to bus stops, enhance comfort at bus stops, and improve bus service. The proposed concept design is compatible with the design alternatives proposed as part of the Holloway Street improvements.

Trinity Road / Blue Ridge Road

Purpose

The Trinity Road / Blue Ridge Road arterial priority corridor would provide quick and reliable transit connections between Downtown Raleigh, North Carolina State University (NCSU), NC State Fairgrounds, Carter Finley Stadium, and Lenovo Center, which is planning to redevelop into an 80-acre mixed-use entertainment district along Trinity Road between Blue Ridge Road and I-40. The corridor includes a DAR to I-40 at the existing Trinity Road overpass. BRT service would traverse Western Boulevard from Blue Ridge Road to connect to GoRaleigh Station and GoTriangle RUSBUS in Downtown Raleigh.

The concept design utilizes the existing capacity of the roadways that is available outside of large events or NC State Fair traffic. During large events, police/traffic control could temporarily allow general purpose traffic in the dedicated transit lanes. The regional transit agencies would coordinate with police/traffic control to ensure priority is given to BRT at locations traffic flow is manually controlled.

Limits	• Trinity Road from I-40 to Blue Ridge Road • Blue Ridge Road from Trinity Road to Western Boulevard
Length	2.9 Miles
Length by Runningway Type	• 1.55 Miles (BAT) • 1.34 Miles (Mixed Flow)
Anticipated Number of BRT Stations	4
Anticipated Number of BRT Buses	10 Total (8 peak; 2 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Wake
MPO	CAMPO
NCDOT Division	Division 5

Concept Design

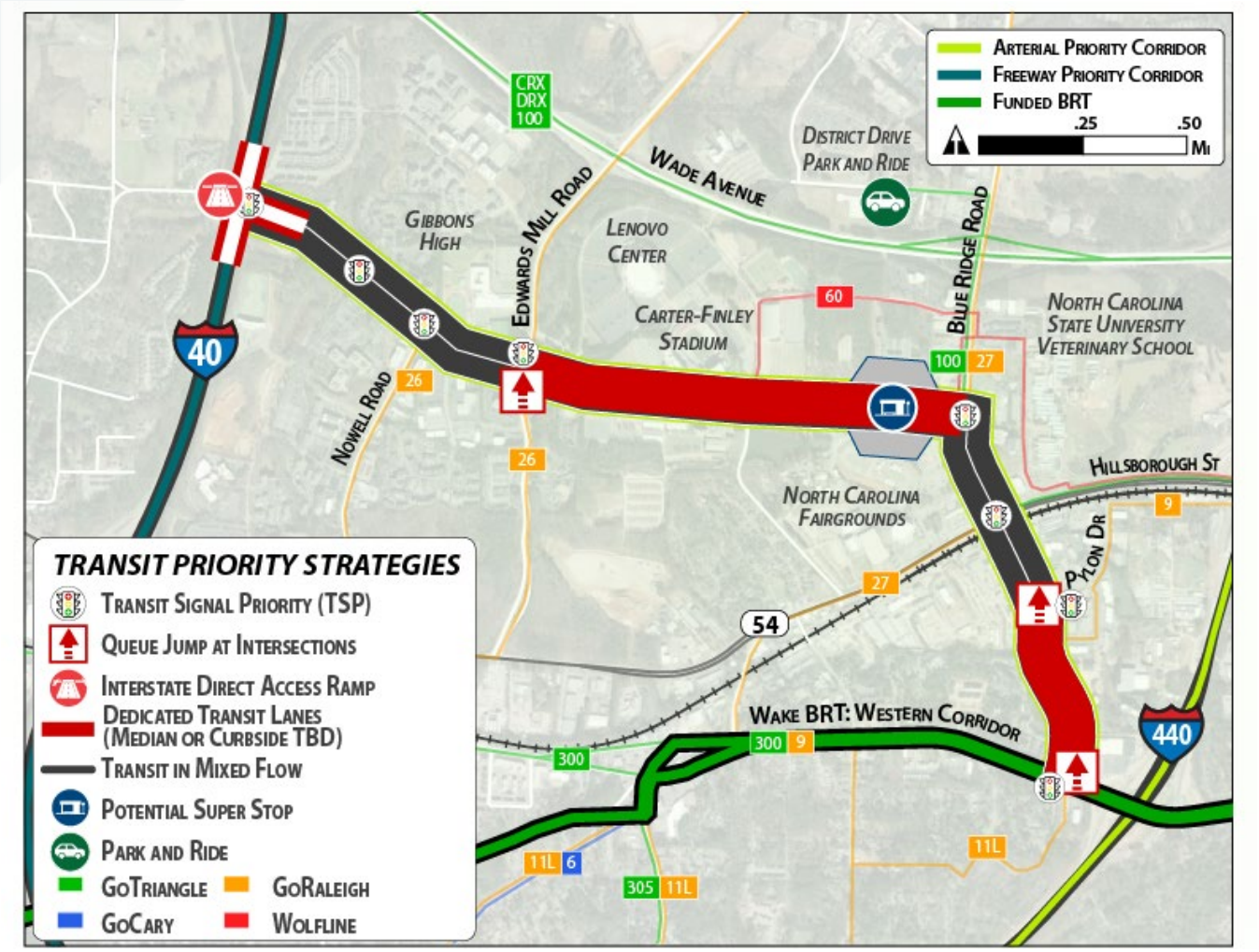


Figure 36: Trinity Road / Blue Ridge Road Concept Design

Proposed Design Elements

This corridor connects the Wake BRT: Western Corridor and I-40's DAR via Blue Ridge Road and Trinity Road with limited Business Access & Transit lanes along the outside curb (RBAT). Treatments on this corridor would prioritize transit connections for Wolfline, GoRaleigh, and GoTriangle Routes, as well as serve key regional destinations like the Lenovo Center, Carter-Finley Stadium, and the NC State Fairgrounds.

Runningway by Section

Dedicated Transit Lanes

- Trinity Road from Edwards Mill Road to Blue Ridge Road
  - *Repurposing right outside lanes to RBAT.*
  - *During special events, vehicles might operate mixed flow in RBAT with police traffic control.*
- Blue Ridge Road from Pylon Drive to Western Boulevard
  - *Repurposing lanes to accommodate RBAT while being mindful of ROW constraints. See Figure 37 for example.*

Mixed Flow

- Trinity Road from I-40 to Edwards Mill Road
- Blue Ridge Road from Trinity Road to Pylon Drive

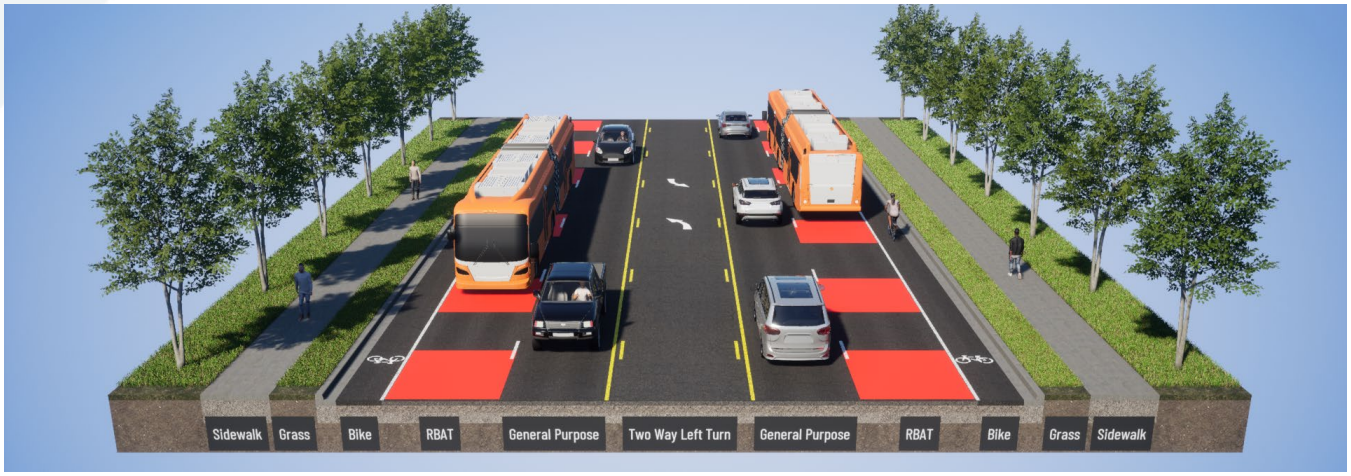


Figure 37: Proposed Blue Ridge Road Cross Section

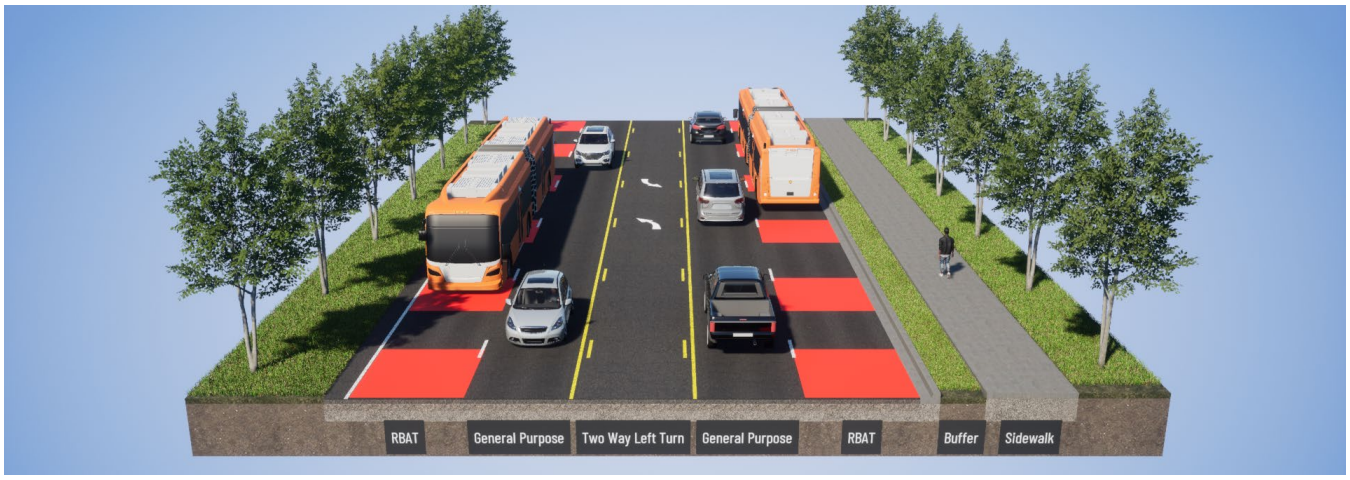


Figure 38: Proposed Trinity Road Cross Section

TSP Locations

- Trinity Road at Corporate Center Drive
- Trinity Road at Nowell Road
- Trinity Road at Edwards Mill Road
- Trinity Road at Blue Ridge Road
- Blue Ridge Road at Hillsborough Street
- Blue Ridge Road at Western Boulevard
- Blue Ridge Road at Pylon Drive
    - *Pylon Drive signal being installed as part of U-4437, which is currently under construction.*

Queue Jump Lane Locations

- Trinity Road at Edwards Mill Road

- Blue Ridge Road at Pylon Drive
- Blue Ridge Road at Western Boulevard

Station and Transfer Locations

- Super stop near the intersection of Trinity Road and Blue Ridge Road to connect GoTriangle, GoRaleigh, and Wolfline Routes.

Proposed Pedestrian and Bicycle Accommodations

The assumption for pedestrian and bicycle improvements is that there should be a continuous pedestrian and bicycle network along all the arterial priority corridors in the FAST 2.0 network to provide safe and comfortable access to all transit stops in each corridor. Below are pedestrian and bicycle improvements that could be implemented along the corridor to provide safe, comfortable access along the corridor:

- Add sidepaths along:
  - Trinity Road between Wade Park Boulevard and Edwards Mill Road
  - Trinity Road between Hurricane Alley Way and Blue Ridge Road
  - Blue Ridge Road between Trinity Road and Hillsborough Road (note: some of this may be addressed by the current grade separation project)
- Add sidewalks along:
  - One side of Trinity Road between Wade Park Boulevard and Nowell Road
  - One side of Blue Ridge Road between Hillsborough Road and Faber Drive
  - One side of Blue Ridge Road between Trinity Road and the new connecting road to Hillsborough Road
- Add a minor intersection improvement at Trinity Road and Nowell Road
- Add a major intersection improvement at Blue Ridge Road and Western Boulevard
- Add major mid-block crossings at future transit stops at:
  - Trinity Road near the Lenovo Center
  - Trinity Road just west of Blue Ridge Road
  - Blue Ridge Road near Ligon Street

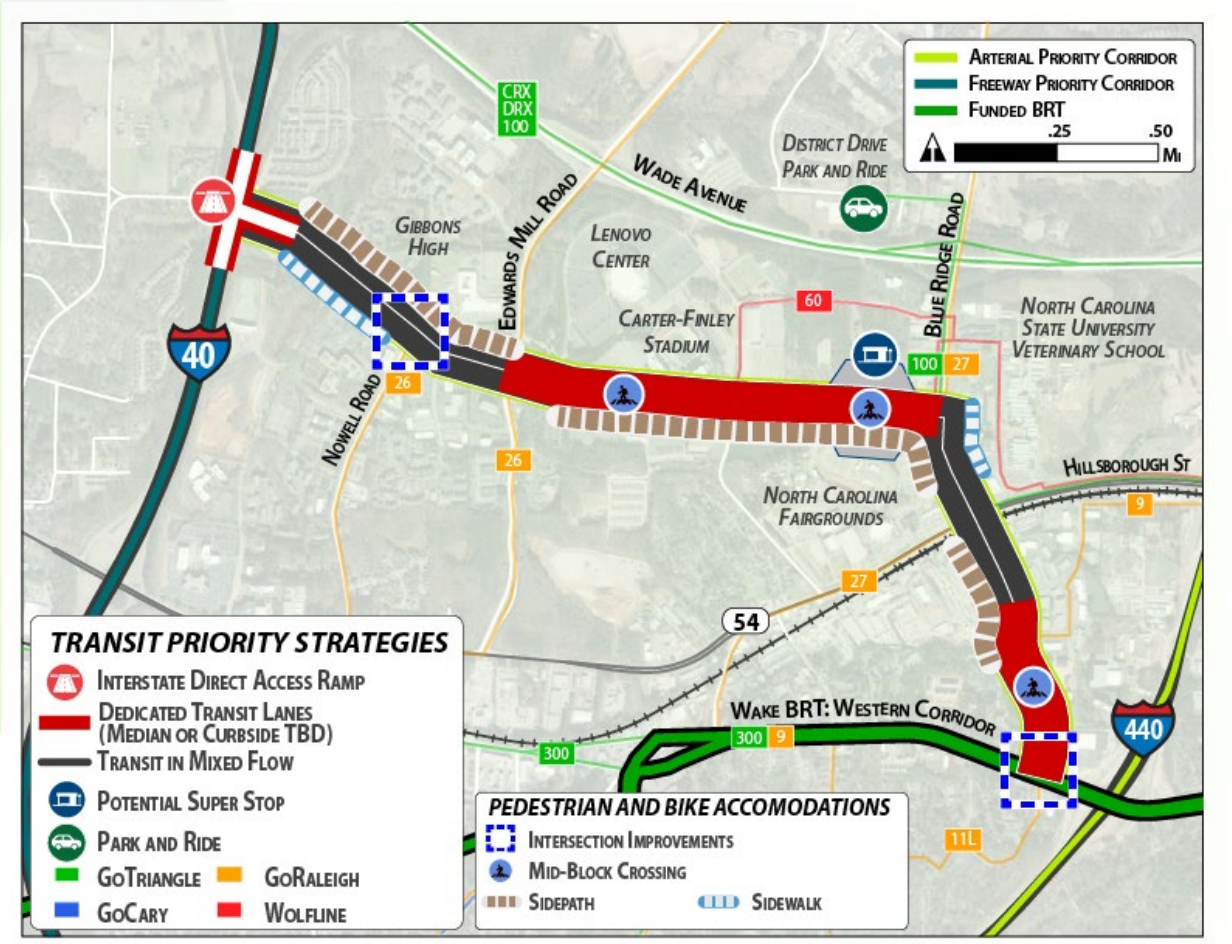


Figure 39: Proposed Pedestrian and Bicycle Accommodations on the Trintiy Road / Blue Ridge Road Corridor

Other Considerations

Top Destinations Along the Corridor

The corridor includes several key destinations that provide employment and educational opportunities, along with venues that host large, special events. These include:

- North Carolina State Veterinary School
- North Carolina State Fairgrounds
- Lenovo Center
- Carter-Finley Stadium

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
  - Route 300
  - Route 100
- GoRaleigh Routes:

  - Route 26
  - Route 9 and 27
- Wolfline Routes
  - Route 60

The presence of numerous transit agencies provides the opportunity for enhanced transfer locations, such as a super stop, to allow passengers the ability to easily transfer between systems. In addition to the existing routes, GoRaleigh is currently advancing the design of the Wake BRT: Western Corridor, which will connect with the corridor at the intersection of Blue Ridge Road and Western Boulevard.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- *Connect 2050 MTP* lists a roadway widening along Trinity Road from Edwards Mill Road Extension to Wake Park Boulevard in the 2030 Horizon Year (A231a). The timing of this roadway project presents the opportunity to consider how enhanced transit infrastructure may be incorporated into the roadway project.
- *Connect 2050 MTP* includes the Blue Ridge Connector, a project to construct a protected bike lane along Blue Ridge Road. The horizon year for this project is 2050.

Special Event Considerations

The corridor is home to major destinations that frequently host major events that are major traffic generators along the corridor. At the Lenovo Center, those events include NHL games, concerts, and NC State basketball games and at Carter-Finley Stadium those events include NC State football games and concerts. The NC State Fairgrounds are most well-known for hosting the NC State Fair each fall, that attracts visitors from around the state but also host large trade shows throughout the year.

Notable Projects

This corridor would connect to the Lenovo Center property, formerly PNC arena, which is currently planning to redevelop as an entertainment district, with new development on the existing surface parking lots surrounding the Lenovo Center arena. In April 2025, the Raleigh City Council approved the rezoning of the site, which covers roughly 80 acres and provides the ability to build more than 4,000 dwelling units and approximately 3 million square feet of non-residential space.

Traffic Considerations

The proposed transit infrastructure along the Trinity Road / Blue Ridge Road corridor would be generally operationally feasible based on the analysis of the proposed general purpose traffic conditions, including 2023 AADT volumes, travel time reliability, vehicle speeds, and levels of congestion. Table 8 summarizes the proposed general purpose lanes included in the Trinity Road concept design, along with corresponding existing 2023 AADT data and posted speed limits. As the corridor design is advanced, further investigation is required to confirm specific locations and designs for the conceptual runningway, TSP, and queue jump locations, especially where STIP or MTP projects are identified.

Table 8: Traffic Characteristics on Trinity Road / Blue Ridge Road Corridor

Direction	Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
		To	From			
EB	Blue Ridge Rd	Western Blvd	Pylon Dr	1	11,500	45
WB	Blue Ridge Rd	Western Blvd	Pylon Dr	1	11,500	45
EB	Blue Ridge Rd	Pylon Dr	Trinity Rd	2	17,500	45
WB	Blue Ridge Rd	Pylon Dr	Trinity Rd	2	11,500	45
EB	Trinity Rd	Blue Ridge Rd	Edwards Mill Rd	1	8,000	45
WB	Trinity Rd	Blue Ridge Rd	Edwards Mill Rd	1	9,500	45
EB	Trinity Rd	Edwards Mill Rd	I-40	1	9,500	45
WB	Trinity Rd	Edwards Mill Rd	I-40	1	5,900	45

NC 54

Purpose

The NC 54 arterial priority corridor would provide quick and reliable transit connections between Chapel Hill and south Durham, connecting UNC, UNC Hospitals, Southpoint Mall, RTP, and the Triangle Mobility Hub. The corridor includes a DAR to I-40 at the existing NC 54 interchange and another providing access to I-885. The portion of the corridor in Chapel Hill serves similar markets to the previously planned Durham-Orange Light Rail alignment and connects to the North-South BRT project at UNC Hospitals.

Limits	• NC 54 from Triangle Mobility Hub to Fayetteville Road • Fayetteville Road from NC 54 to Renaissance Pkwy • Renaissance Pkwy from Fayetteville Rd to NC 751 • NC 751 from Renaissance Pkwy to NC 54 • NC 54 from NC 751 to Fordham Blvd (US 15-501) • Fordham Boulevard (US 15-501) from NC 54 to Manning Drive • Manning Drive from Fordham Blvd (US 15-501) to East Dr/Jackson Cir/Mason Farm Rd • East Drive/Jackson Circle/Mason Farm Road from Manning Drive to S Columbia St (NC 86) • South Columbia Street (NC 86) from Mason Farm Road to Manning Drive • Manning Drive (Eastbound) from S Columbia St (NC 86) to East Dr/Jackson Cir/Mason Farm Rd
Length	***Orange County***: 3.4 Miles ***Durham County:*** 11.3 Miles
Length by Runningway Type	***Orange County:*** • 0.9 Miles (Fully Dedicated) • 1.3 Miles (BAT) • 1.2 (Mixed Flow) ***Durham County***: • 3.8 Miles (Fully Dedicated) • 2.0 Miles (BAT) • 5.5 (Mixed Flow)
Anticipated Number of BRT Stations	13
Anticipated Number of BRT Buses	16 Total (13 peak; 3 spare)
Assumed Service Type	Arterial Bus Rapid Transit
Location	Orange and Durham Counties
MPO	TWTPO
NCDOT Division	Division 5; Division 7

Concept Design

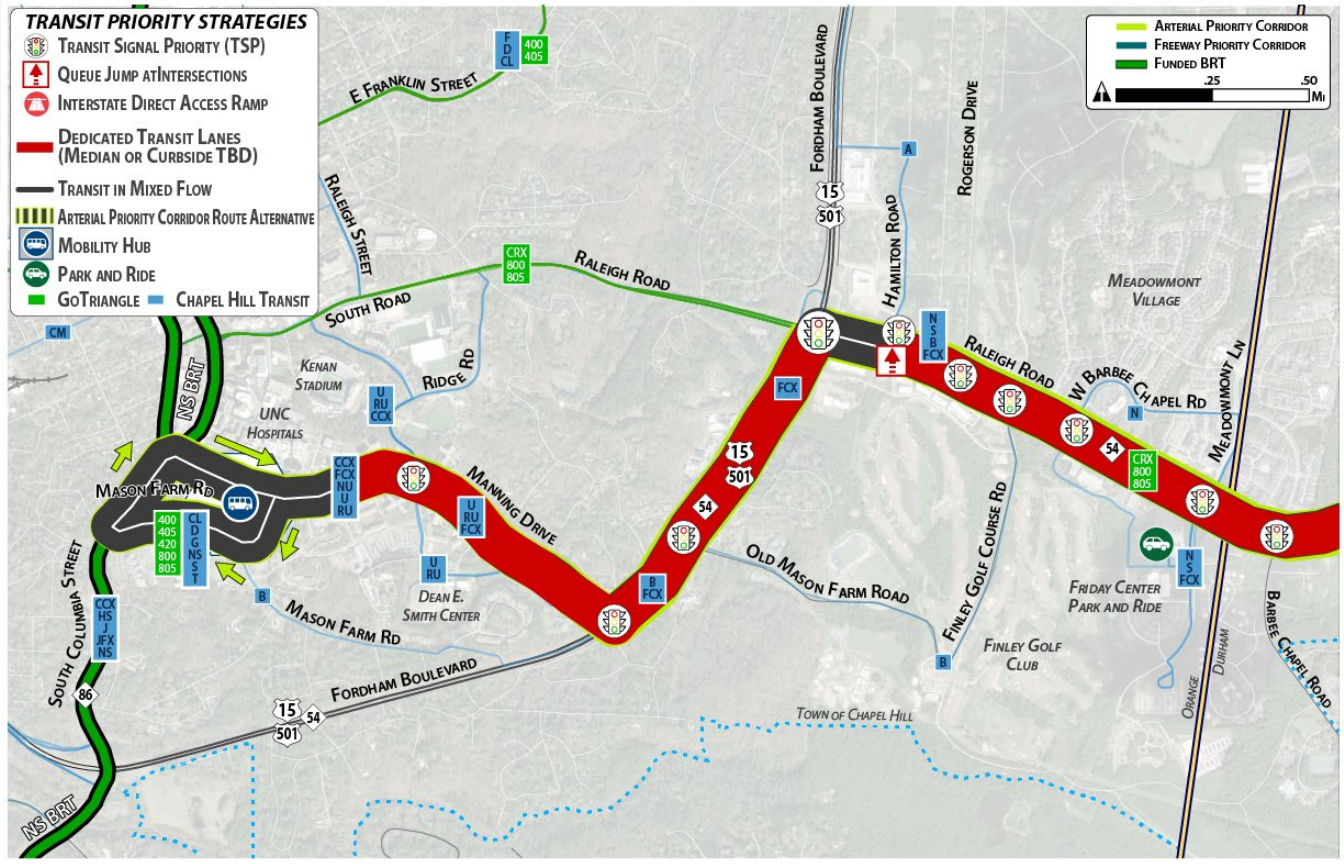


Figure 40: NC 54 Concept Design in Orange County

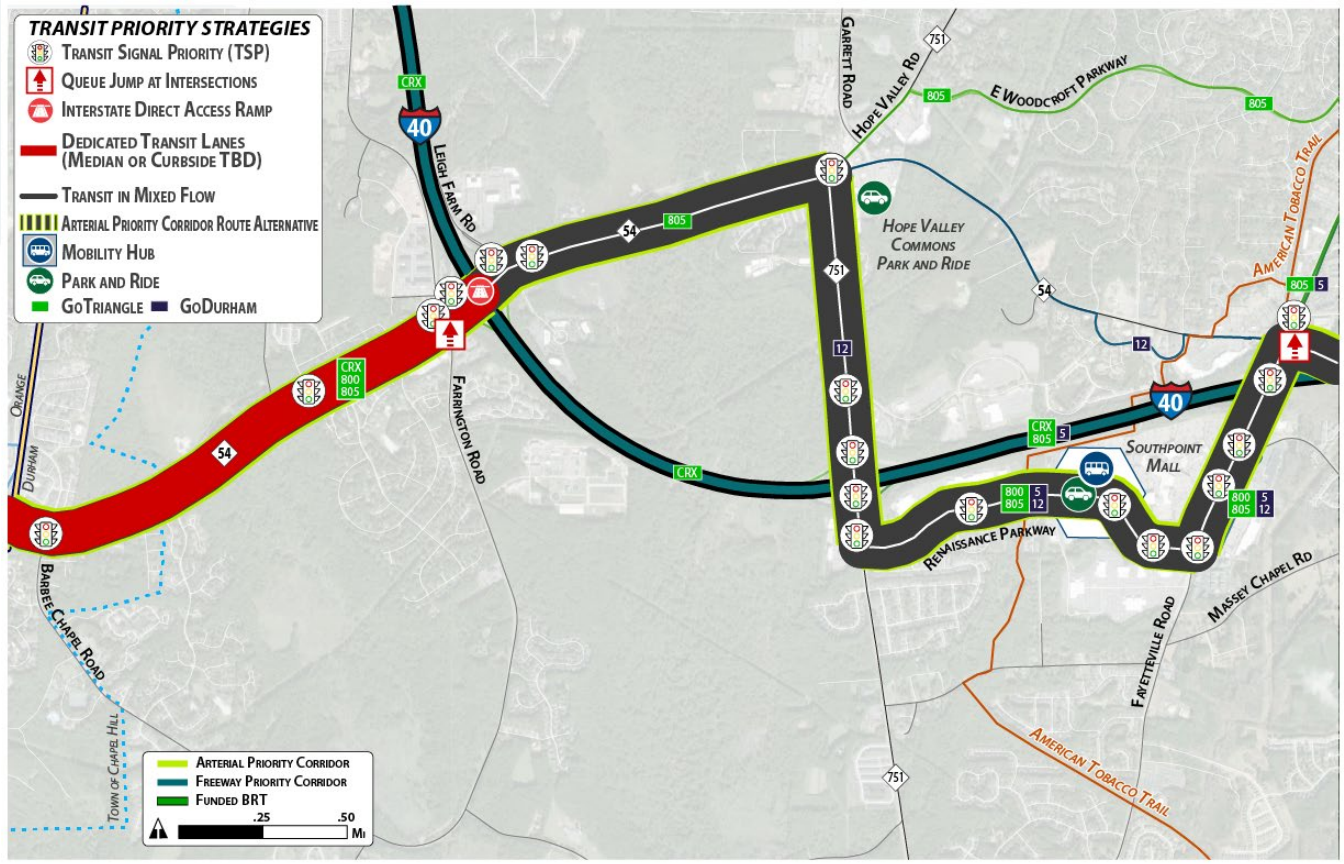


Figure 41: NC 54 Concept Design in Durham County

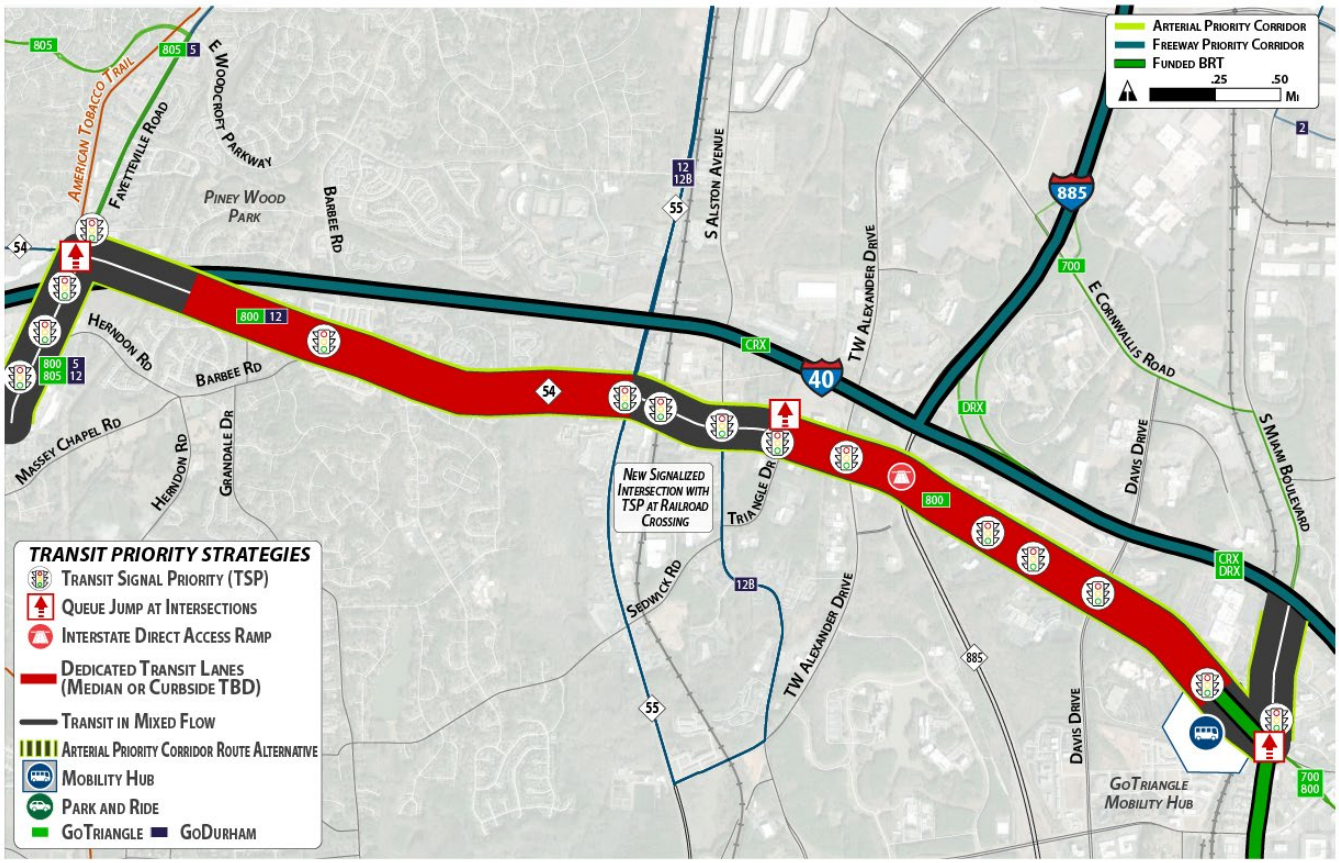


Figure 42: NC 54 Concept Design in RTP

Proposed Design Elements

This corridor runs along NC 54 between GoTriangle's Triangle Mobility Hub near South Miami Boulevard to UNC Hospitals at UNC Chapel Hill. The corridor intersects the North-South BRT at UNC Hospitals and utilizes funded North-South BRT runningway where the two corridors overlap, along South Columbia Street and Manning Drive near UNC Hospitals. Transit priority strategies including dedicated transit lanes, queue jumps, and TSP on this corridor would prioritize east-west transit reliability to and from the Triangle Mobility Hub to major employment, commercial, educational, and entertainment locations in Durham and Orange Counties. This arterial priority corridor also links the most park and ride lots and mobility hubs of all arterial priority corridors.

Runningway by Section

Dedicated Transit Lanes

- Manning Drive from Paul Hardin Drive to Fordham Boulevard South
  - *Repurposing right lane in each direction to create BAT lane*
- Fordham Boulevard South from Manning Drive to Raleigh Road (NC 54)
  - *Some widening necessary to add BAT lane in each direction*
- Raleigh Road (NC 54) from Hamilton Road to I-40
  - *Some widening to both the inside and outside to allow center running along this segment*
- NC 54 from Fayetteville Road to Southpoint Professional Center
  - *Repurposing pavement to create BAT lane for the westbound direction*

- NC 54 from Boulder Road to NC 55
    - *Some widening is needed to allow for BAT lane in each direction as well as a general purpose lane in each direction*
- NC 54 from Triangle Drive to Triangle Mobility Hub
    - *Widening to the outside to allow for center running lanes*

Mixed Flow

- East Drive from Manning Drive to Mason Farm Road
- Mason Farm Road from East Drive to South Columbia Street (NC 86)
- South Columbia Street (NC 86) from Mason Farm Road to Manning Drive
- Manning Drive from South Columbia Street (NC 86) to Paul Hardin Drive
- Raleigh Road (NC 54) from Fordham Boulevard South to Hamilton Road
- NC 54 from I-40 to NC 751
- NC 751 from NC 54 to Renaissance Parkway
- Renaissance Parkway from NC 751 to Fayetteville Road
- Fayetteville Road from Renaissance Parkway to NC 54
- NC 54 from Fayetteville Road to Boulder Road
- NC 54 from NC 55 to Triangle Drive
- NC 54 from New Millennium Way to South Miami Boulevard
- South Miami Boulevard from NC 54 to I-40

Interstate Direct Access Ramps

- NC 54 Interchange at I-40 near Farrington Road (Exit 273)
- NC 54 south of I-885/I-40 Interchange (Exit 279)

TSP Locations

- Manning Drive at Ridge Road/Skipper Bowles Drive
- Manning Drive at Fordham Boulevard South
- Fordham Boulevard South at Old Mason Farm Road
- NC 54 at Fordham Boulevard South
- NC 54 at Hamilton Road
- NC 54 at Rogerson Drive
- NC 54 at Finley Golf Course Road
- NC 54 at West Barbee Chapel Road
- NC 54 at Meadowmont Lane
- NC 54 at Barbee Chapel Road
- NC 54 at Huntingridge Road
- NC 54 at Farrington Road
- NC 54 at I-40 Eastbound Interchange
- NC 54 at I-40 Westbound Interchange
- NC 54 at Leigh Farm Road/Quadrangle Drive
- NC 54 at Hope Valley Road (NC 751)
- NC 751 at Southpoint Autopark Boulevard
- NC 751 at I-40 Westbound Interchange
- NC 751 at I-40 Eastbound Interchange
- NC 751 at Renaissance Parkway
- Renaissance Parkway at Knoll Circle
- Renaissance Parkway at Southpoint Mall
- Renaissance Parkway at Rolando Drive
- Renaissance Parkway at Fayetteville Road
- Fayetteville Road at Herndon Road
- Fayetteville Road at I-40 Interchange
- Fayetteville Road at NC 54
- NC 54 at Barbee Road
- NC 54 at NC 55
- NC 54 at CSX Railroad Crossing
- NC 54 at South Alston Avenue
- NC 54 at Triangle Drive

- NC 54 at TW Alexander Drive
- NC 54 at Rodbell Street
- NC 54 at Davis Drive
- NC 54 at New Millennium Way
- NC 54 at South Miami Boulevard

Queue Jump Lane Locations

- NC 54 at Hamilton Road
- NC 54 at Farrington Road
- Fayetteville Road at NC 54
- NC 54 at Triangle Drive
- NC 54 at South Miami Boulevard

Station and Transfer Locations

- Mobility Hub near UNC Hospitals to connect to North-South BRT, GoTriangle, and Chapel Hill Transit services. This mobility hub provides access to UNC-Chapel Hill as an employment, medical, and educational hub, as well as major venues like Kenan Stadium and the Dean E. Smith Center for cultural and sporting events.
- Connection to the existing Friday Center park and ride lot for commuters accessing UNC Chapel Hill's campus. This park and ride lot is also serviced by GoTriangle and Chapel Hill Transit routes.
- Connection to the Hope Valley Commons park and ride lot. This park and ride lot is serviced by GoTriangle and GoDurham.
- Mobility Hub and park and ride lot near Southpoint Mall. Southpoint mall is a regional commercial destination near I-40. Multiple GoTriangle and GoDurham routes already serve this destination. Southpoint Mall also is near the American Tobacco Trail, a 20+ mile rail trail that connects Durham, Chatham, and Wake counties.
- Triangle Mobility Hub near the intersection of Miami Boulevard and NC 54 to connect with GoTriangle regional transit services and Wake BRT: Western Rapid Bus Extension Project.

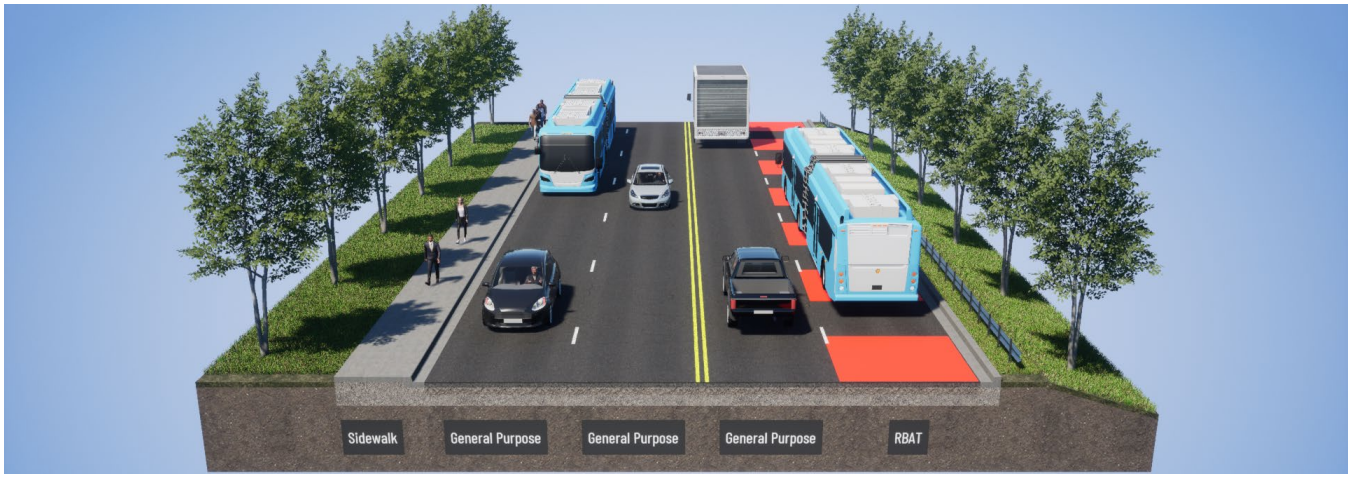


Figure 43: Manning Drive

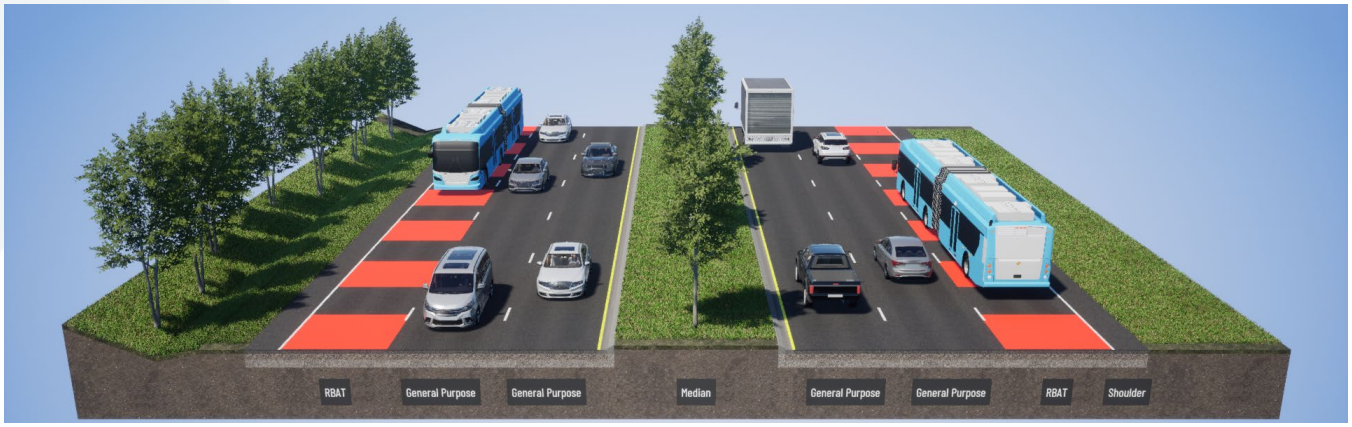


Figure 44: Fordham Boulevard

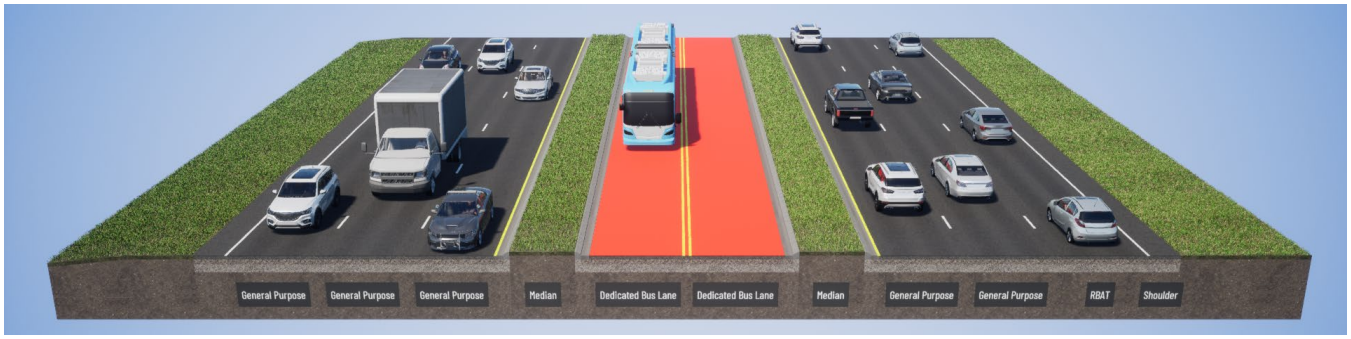


Figure 45: Raleigh Road near Barbee Chapel Road

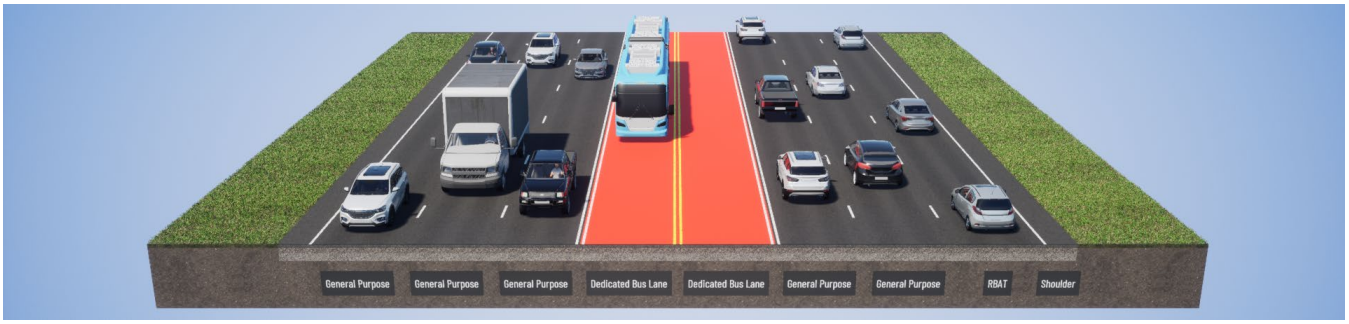


Figure 46: NC 54 near Falconbridge Road

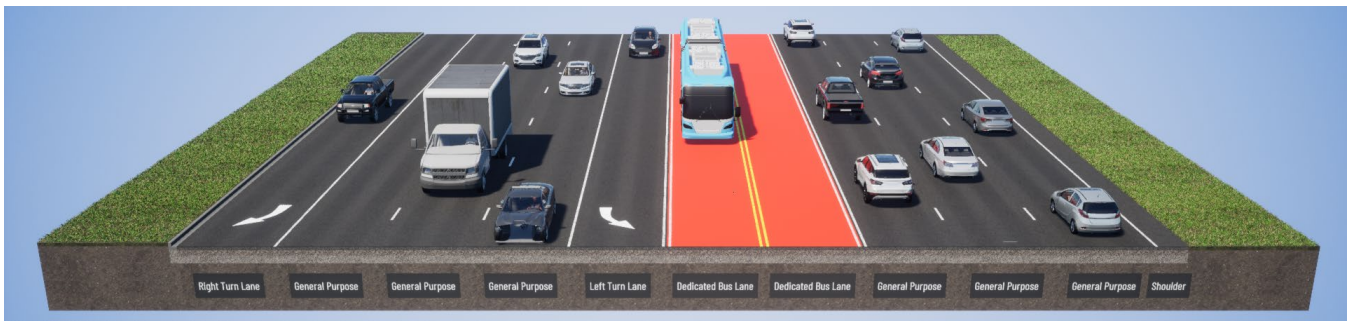


Figure 47: NC 54 near Farrington Road

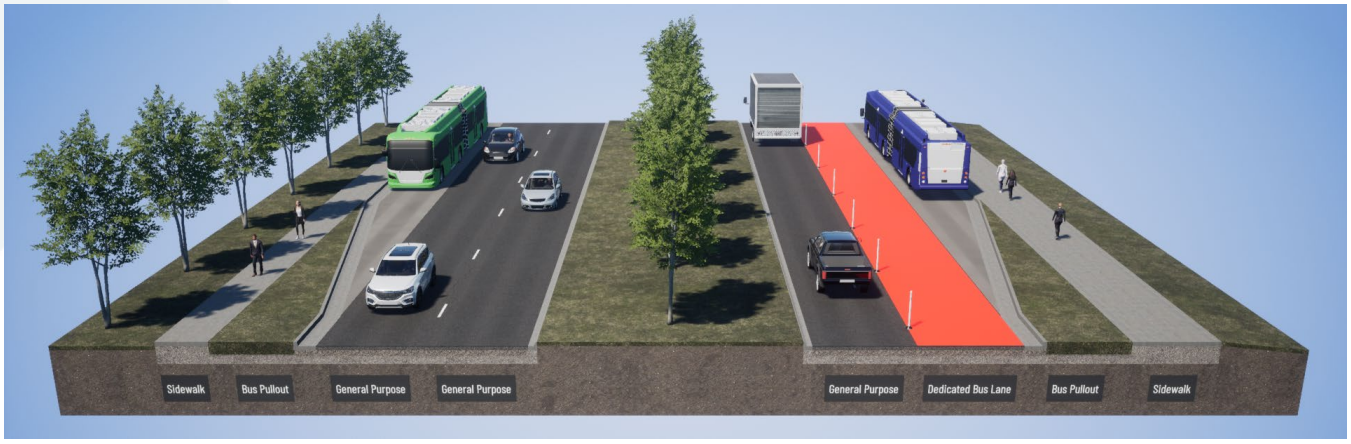


Figure 48: Renaissance Parkway

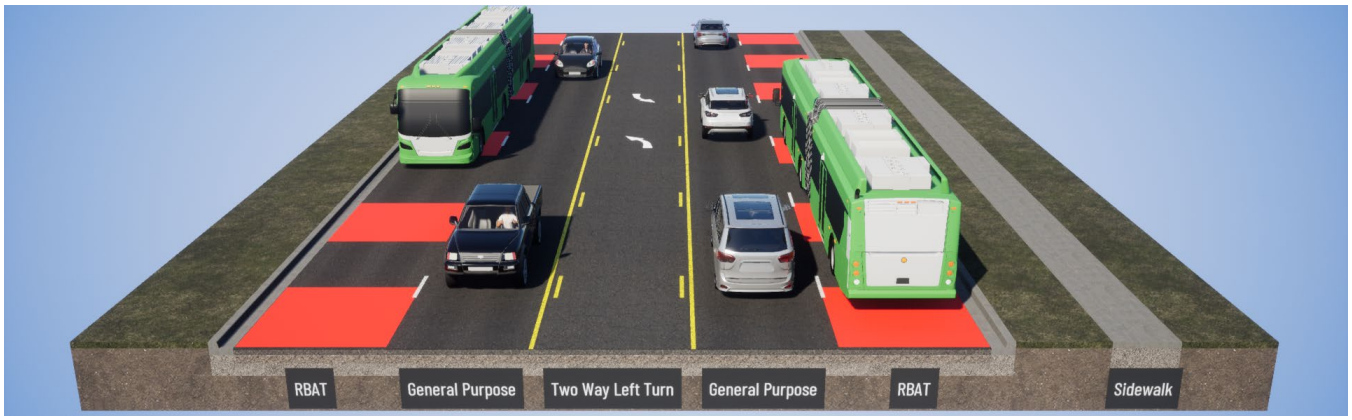


Figure 49: NC 54 at Amhurst Road

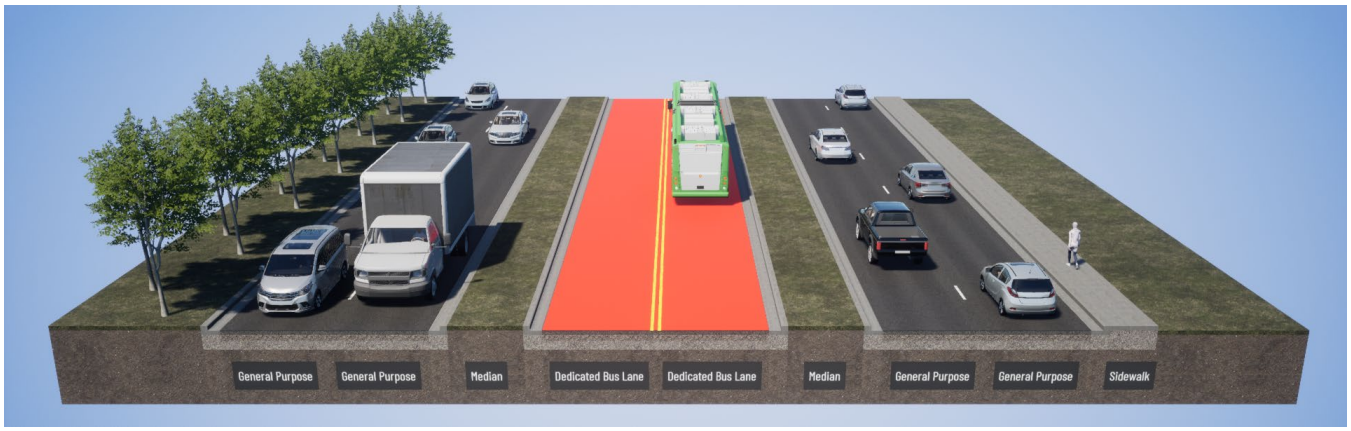


Figure 50: NC 54 at Park Drive

Proposed Pedestrian and Bicycle Accommodations

The assumption for pedestrian and bicycle improvements is that there should be a continuous pedestrian and bicycle network along all the arterial priority corridors in the FAST 2.0 priority network to provide safe and comfortable access to all transit stops in each corridor. Below are pedestrian and bicycle improvements that could be implemented along the corridor to provide safe, comfortable access along the corridor:

- Coordinate with the Triangle Bikeway sidepath along:
  - NC 54 between Fordham Boulevard and Hamilton Road
  - NC 54 between E Barbee Chapel Road and I-40
  - NC 54 between Davis Drive and Miami Boulevard
- Add sidepaths along:
  - Manning Drive between East Drive and Fordham Boulevard
  - Fordham Boulevard between Manning Drive and NC 54 / Raleigh Road
  - NC 54 between I-40 and NC 751
  - NC 751 between NC 54 and Renaissance Parkway
  - Fayetteville Road between Renaissance Parkway and northern mall entrance
  - NC 54 between Fayetteville Road and Triangle Drive
- Add major intersection improvements at:
  - Manning Drive and Ridge Road/Skipper Bowles Drive
  - Manning Drive and Fordham Boulevard
  - Fordham Boulevard and Old Mason Farm Road/Carmichael Street
  - NC 54 and Hamilton Road
  - NC 54 and W Barbee Chapel Road
  - NC 54 and E Barbee Chapel Road
  - NC 54 and Huntingridge Road
  - NC 54 and Leigh Farm Road/Quadrangle Drive
  - NC 54 and NC 751
  - NC 751 and Southpoint Autopark Boulevard
  - NC 751 and Renaissance Parkway
  - Renaissance Parkway and Knoll Circle
  - Renaissance Parkway and the main mall entrance
  - Renaissance Parkway and Fayetteville Road
  - Fayetteville Road and Herndon Road
  - Fayetteville Road and NC 54
  - NC 54 and Revere Road
  - NC 54 and NC 55
  - NC 54 and S Alston Avenue
  - NC 54 and TW Alexander Drive
  - NC 54 and Davis Drive
  - NC 54 and new intersection to access I-40 DAR
  - NC 54 / Slater Road and Miami Blvd
- Add a minor intersection improvement at NC 54 and Barbee Road
- Add sidewalks along one side of NC 54 between Fayetteville Road and Rodbell Street (note: there are some existing sidewalk segments)
- Add a major mid-block crossing across NC 54 at the future Triangle Mobility Hub

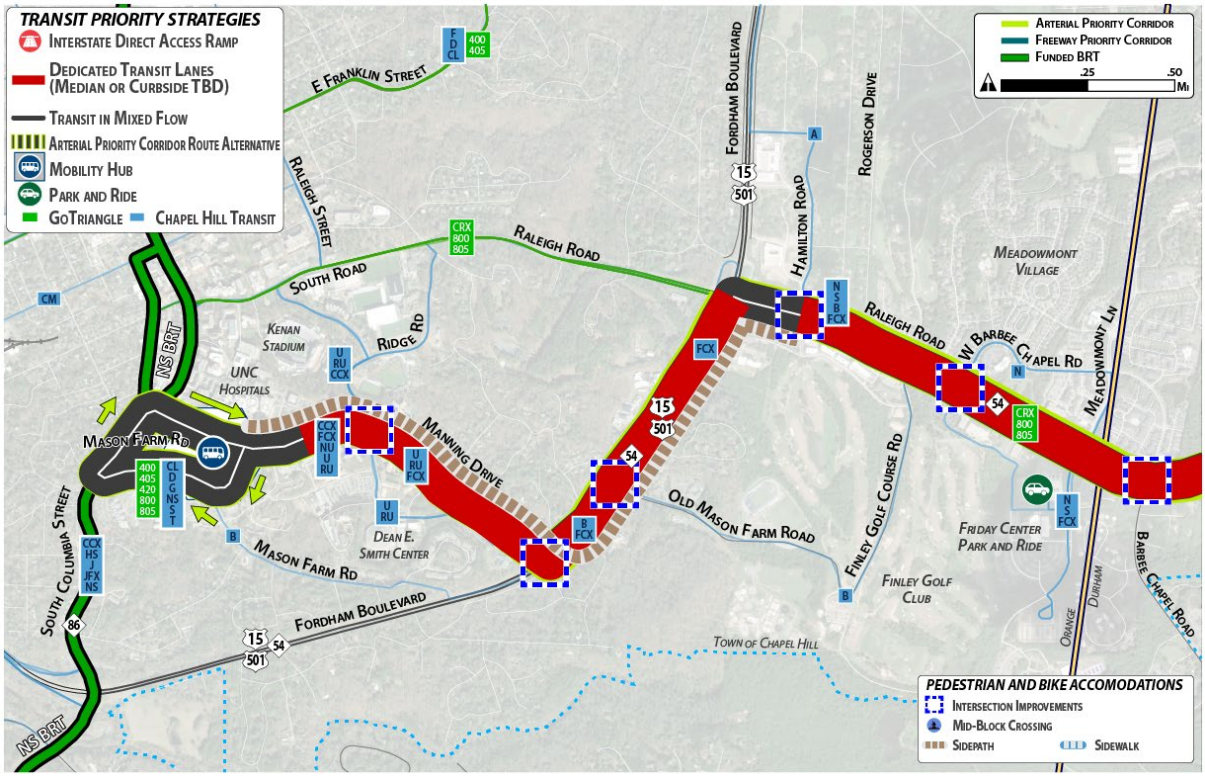


Figure 51: Proposed Pedestrian and Bicycle Accommodations in Orange County

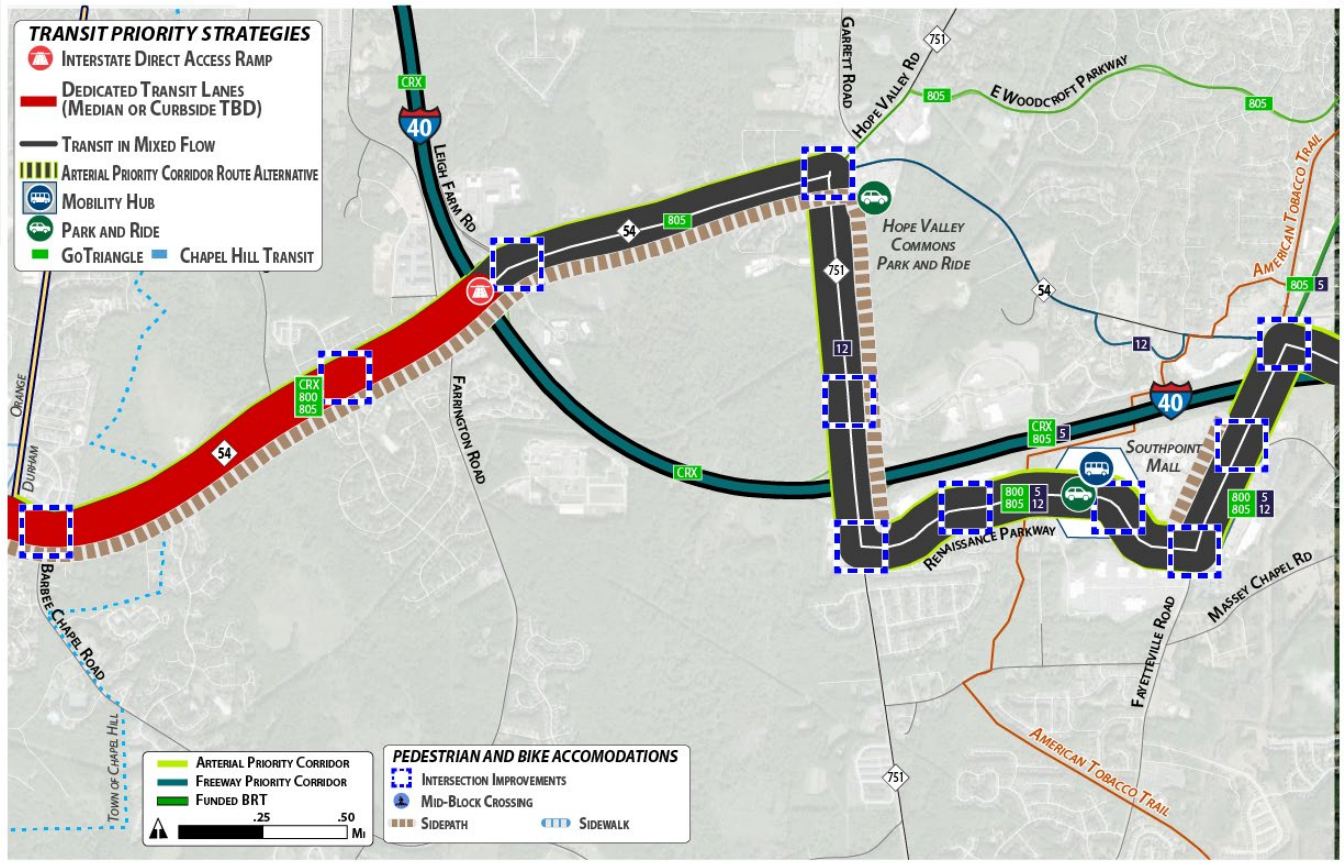


Figure 52: Proposed Pedestrian and Bicycle Accommodations in Durham County

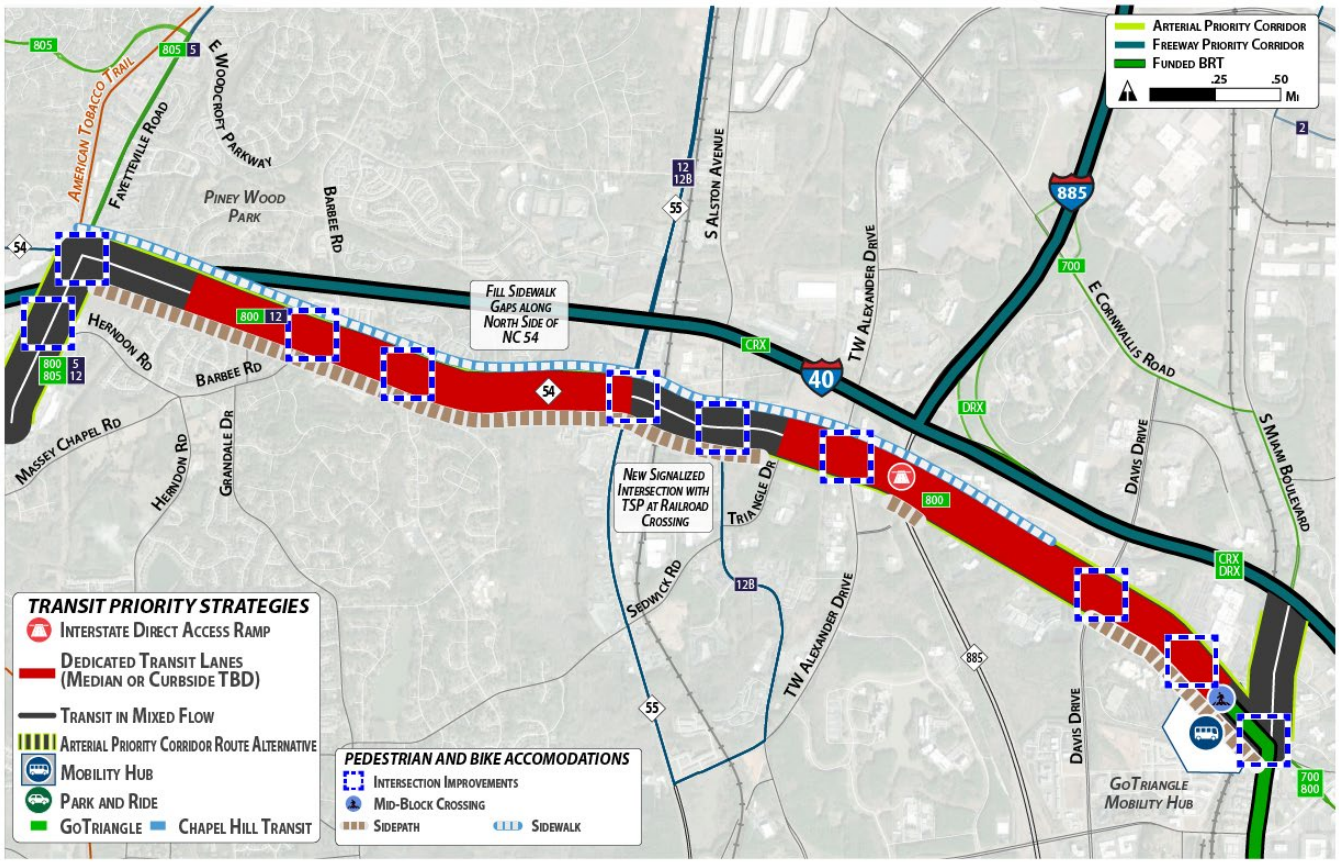


Figure 53: Proposed Pedestrian and Bicycle Accommodations in RTP

Other Considerations

Top Destinations Along the Corridor

The corridor includes several key destinations that provide employment opportunities, along with educational, commercial, medical, and recreational resources. Some of these destinations are also venues that host large, special events. These include:

- University of North Carolina at Chapel Hill (UNC)
  - Kenan Stadium
  - Dean E. Smith Center
- UNC Hospitals
- Friday Center
- Southpoint Mall
- RTP

Existing and Planned Transit Along the Corridor

Several agencies serve the corridor with existing transit, including:

- GoTriangle Routes:
  - 400
  - 405
  - 425

  - 800
  - 805
  - CRX
- GoDurham Routes
  - 5
  - 12 / 12B
- Chapel Hill Transit Routes:
  - A
  - B
  - CCX
  - CL
  - D
  - FCX
  - G
  - HS
  - J
  - JFX
  - N
  - NS
  - NU
  - RU
  - S
  - T
  - U

The presence of numerous transit agencies provides the opportunity for enhanced transfer locations, such as a super stop, to allow passengers the ability to easily transfer between systems. Currently, UNC Hospitals is served by numerous Chapel Hill Transit, GoTriangle, and PART routes, providing the opportunity for transit riders to connect to urban centers across the region, from the Triad to Raleigh. In addition to the existing routes, Chapel Hill Transit is currently advancing the design of the North-South BRT, which will connect with the corridor at UNC Hospitals.

Planned Projects Along Corridor

There are several planned projects along the corridor that may provide opportunities to incorporate the transit priority improvements recommended in this study with the planning and design phases of the ongoing projects, including:

- Projects in the 2024-2033 STIP include:
  - U-5304B, which includes capacity improvements, with sidewalks, wide outside lanes and transit accommodations, along US 15 / US 501 from NC 86 (South Columbia Street) to NC 54 (Raleigh Road). This project is currently not funded.
    - This project is included in the draft 2026-2035 STIP and is not funded.
  - U-5304E, which will convert the at-grade intersection at SR 1902 (Manning Drive) on US 15 / US 501 to an interchange. This project is currently not funded.
    - This project is included in the draft 2026-2035 STIP and is not funded.
  - U-5774B, which will upgrade the roadway corridor on NC 54 from west of US 15 / US 501 to east of SR 1110 (Barbee Chapel Road). The project is funded for preliminary engineering only.
    - This project is included in the draft 2026-2035 STIP and is not funded.
  - U-5774C, which will upgrade the roadway corridor on NC 54 from east of SR1110 (Barbee Chapel Road) to east of Little Creek. The project is funded for preliminary engineering only.
    - This project is included in the draft 2026-2035 STIP and is not funded.
  - U-5774F, which will construct interchange improvements at the I-40 / NC 54 interchange, including upgrading NC 54 from east of Little Creek to east of I-40. ROW is scheduled to begin in 2028 and construction in 2031.
    - This project is included in the draft 2026-2035 STIP, with ROW scheduled for 2030 and construction in 2033.
- This corridor provides a connection to GoTriangle's Triangle Mobility Hub on NC 54, near Miami Boulevard, which received a $25 million federal RAISE grant to support the design and construction of the facility and is slated to open in 2028.

- Projects in *Connect 2050 MTP:*
    - Fordham Blvd (US 15-501) (MTP ID 73) proposes modernization on Fordham Blvd (US 15-501) from NC 54 to NC 86 (S Columbia St). This project has a horizon year of 2040 and has a TIP number (U-5304B).
    - NC 54 (MTD ID 70.3) proposes modernization on NC 54 from Fordham Blvd (US 15-501) to Barbee Chapel Road. This project has a horizon year of 2040 and has a TIP number (U-5774B).
    - NC (MTP ID 70) proposes modernization on NC 54 from I-40 to Barbee Chapel Rd. This project has a horizon year of 2040 and has a TIP number of U-5774C.
    - NC 54/Farrington Rd proposes a new grade separation at the intersection of NC 54 and Farrington Rd. This project has a horizon year of 2040 and has a TIP number of U-5774F.
    - NC 54 (MTP ID 69.11) proposes modernization on NC 54 from the I-40 interchange to NC 751. This project has a horizon year of 2040 and a TIP number of U-5774G.
    - NC 54 (MTP ID 69.31) proposes modernization on NC 54 from Fayetteville Rd to Barbee Rd. This project has a horizon year of 2040 and a TIP number of U-5774I.
    - NC 54 (MTP ID 69.41) proposes modernization on NC 54 from Barbee Rd to NC 55. This project has a horizon year of 2040 and a TIP number of U-5774J
    - Bus Rapid Transit (Chapel Hill to RTP) proposes bus rapid transit between Chapel Hill and RTP that uses NC 54 in Chapel Hill and Renaissance Parkway in Durham.

Special Event Considerations

The corridor is home to major destinations that frequently host major events that are major traffic generators along the corridor. At UNC, those events include UNC football and basketball games, at Kenan Stadium and the Dean Smith Center, respectively. During the academic school year, move-in weekend and graduation weekend, also bring large volumes of traffic to the corridor.

In addition to event traffic, the presence of UNC Hospitals presents unique traffic conditions that should be considered during implementation, such as access to hospital facilities and shift-change traffic patterns. The project utilizes Manning Drive, which is the main road that provides access to UNC Hospitals, including the emergency room entrance.

Traffic Considerations

The proposed transit infrastructure along the NC 54 corridor would be generally operationally feasible based on the analysis of the proposed general purpose traffic conditions, including 2023 AADT volumes, travel time reliability, vehicle speeds, and levels of congestion. Table 9 summarizes the proposed general purpose lanes included in the concept design, along with corresponding existing 2023 AADT data and posted speed limits. As the corridor design is advanced, further investigation is required to confirm specific locations and designs for the conceptual runningway, TSP, and queue jump locations, especially where STIP or MTP projects are identified.

Table 9: Traffic Characteristics on NC 54 Corridor

Road	Limits		Proposed General Purpose Lanes Per Direction	2023 AADT	Existing Posted Speed
	To	From			
Manning Dr	Mason Farm Rd	NC 86	2	8,600	25
NC 86	Manning Dr	Mason Farm Rd	2	10,500	35
Mason Farm Rd	NC 86	Manning Dr	1	6,400	25
Manning Dr	Mason Farm Rd	Skipper Bowles Dr	1	14,000	25
Manning Dr	Skipper Bowles Dr	US 15-501	2	14,000	25
US 15-501	Manning Dr	NC 54	2	52,000	45
NC 54	US 15-501	Finley Golf Course Rd	3	44,500	45
NC 54	Finley Golf Course Rd	Barbee Chapel Rd	3	47,000	45
NC 54	Barbee Chapel Rd	Huntingridge Rd	2	41,500	45
NC 54	Huntingridge Rd	I-40 (Chapel Hill)	3	43,000	45
NC 54	I-40 (Chapel Hill)	NC 751	1	13,500	45
NC 751	NC 54	Renaissance Pkwy	1	16,000	35
Renaissance Pkwy	NC 751	Fayetteville Rd	2	15,500	35
Fayetteville Rd	Renaissance Pkwy	Herndon Rd	2	16,000	45
Fayetteville Rd	Herndon Rd	NC 54	2	30,500	35
NC 54	Fayetteville Rd	Barbee Rd	1	15,000	45
NC 54	Barbee Rd	Blanchard Rd	1	17,000	45
NC 54	Blanchard Rd	NC 55	1	20,500	45
NC 54	NC 55	S Alston Ave	2	17,000	45
NC 54	S Alston Ave	NC 147	2	15,000	45
NC 54	NC 147	Davis Dr	2	14,000	45
NC 54	Davis Dr	S Miami Blvd	2	10,000	45

Notable Projects

This corridor terminates at GoTriangle's Triangle Mobility Hub on NC 54, near Miami Boulevard, which received a $25 million federal RAISE grant to support the design and construction of the facility and is slated to open in 2029. GoTriangle announced in May 2025 the selection of a Master Developer for the hub. The Triangle Mobility Hub will include:

- A multi-modal transit center, including covered boarding bays, covered loading zones for paratransit, microtransit and rideshare vehicles, air-conditioned waiting areas and additional passenger amenities;
- A mix of residential and commercial offerings – including new headquarters for GoTriangle – designed to bring energy and activity to the district, with housing seamlessly integrated alongside retail, office and public spaces; and
- A hotel to welcome travelers and visitors.

Along the corridor is the Hub RTP, which is a mixed-use campus along NC 54 between the Triangle Expressway and Davis Drive, that when fully built out will offer:

- 1,200 residential units,
- 1M+ square feet of office and lab space,
- 50,000 square feet of retail,
- 250 hotel rooms, and
- 16 acres of parks and greenspace.

The first building of apartments, which are the first apartments in RTP, opened in Fall 2024 and the Horseshoe, which offers 35,000 sf of restaurant and retails space, 121,000 square feet of office space and a 1-acre courtyard is slated to open in 2025. The development of Hub RTP will boost the density of residential, commercial, and employment opportunities along this section of the corridor.

Appendix I: Implementation Plan

FAST 2.0

Freeway, Arterial, Street, and Tactical Transit

IMPLEMENTATION PLAN

August 2025

Introduction

Throughout FAST 2.0 study, the regional partners have gathered together to define a vision and set of goals to activate the region's freeways and arterials to facilitate increased transit use throughout our region. This memo defines an actionable plan to begin implementing the transit priority infrastructure identified in the study. The plan comes at a pivotal point in the Triangle region's growth. Population growth in the region is robust and has brought all too familiar traffic jams on the region's roadways. The region is on the cusp of premium transit services with the construction of the first of four Bus Rapid Transit (BRT) corridors in Wake County and one BRT corridor in Orange County. Moving towards a truly regional transit network will take commitment and working together to advance the projects recommended under FAST 2.0 - this implementation plan lays out the roadmap for how to get there. The roadmap consists of two elements:

- Element 1: Implement Six Priority Corridors
- Element 2: Recommended changes to NCDOT Transit Planning and Design

Element 1

The first element of the implementation roadmap is implementing the six priority corridors that have conceptual designs. The subsections below layout steps for advancing those corridors by:

- Presenting planning level cost estimates;
- Outlining steps to continue advancing the planning and design of the corridors; and
- Providing funding considerations.

Cost Estimates

Planning level cost estimates were developed for the priority corridors are shown in 2025 dollars and broken out by county and MPO boundaries, in order to aid in adding the corridors to local transportation plans. The cost estimates used the latest Federal Transit Administration (FTA) Standard Cost Categories (SCC) workbook along with bid tabs from NCDOT and other BRT project estimates. The cost estimates included: construction cost, right-of-way (ROW), vehicles (arterial priority corridors only), professional services, and contingency. Designs considerations for the cost estimates may change and will need to be updated as further local planning and design efforts occur.

Table 1 shows the costs for the four arterial priority corridors. The cost for the arterial priority corridors are broken out by segments that are between county boundaries.

Table 1: Arterial Priority Corridor Cost Estimates

Location	County	MPO	Cost	Miles	Cost/Mile
Total Arterial Priority Corridor Costs					
Duke University / Holloway Street	**Durham**	**TWTPO**	**$81,800,000**	**4.8**	**$17,000,000**
NC 54 Total		**TWTPO**	**$254,700,000**	**14.8**	**$17,300,000**
NC 54 (Orange County)	*Orange*	*TWTPO*	*$65,400,000*	*3.3*	*$20,100,000*
NC 54 (Durham County)	*Durham*	*TWTPO*	*$189,300,000*	*11.5*	*$16,500,000*
Harrison Avenue / Kildaire Farm Road	**Wake**	**CAMPO**	**$155,000,000**	**8.3**	**$18,700,000**
Trinity Road / Blue Ridge Road	**Wake**	**CAMPO**	**$49,600,000**	**2.9**	**$17,100,000**

Arterial Priority Corridor Total	**$541,100,000**	**30.8**	**$17,600,000**
Arterial Priority Corridor Costs within TWTPO			
Orange County	*$65,400,000*	*3.3*	*$20,100,000*
Durham County	*$271,100,000*	*16.3*	*$16,600,000*
TWTPO	**$336,500,000**	**19.6**	**$17,200,000**
Arterial Priority Corridor Costs within CAMPO			
Wake County	*$204,600,000*	*11.2*	*$18,300,000*
CAMPO	**$204,600,000**	**11.2**	**$18,300,000**

Table 2 shows the cost for the two freeway priority corridors. The cost for the freeway priority corridors are broken out by segments that are between major roadways, county boundaries or Direct Access Ramps (DARs).

Table 2: Freeway Priority Corridors Costs

Location	From	To	County	MPO	Cost	Miles	Cost/Mile
Total Freeway Priority Corridor Costs							
I-885 / NC 147					**$129,400,000**	**7.2**	**$18,000,000**
NC 147	*Duke DAR*	*I-885 Interchange (Western Edge)*	*Durham*	*TWTPO*	*$104,100,000*	*2.6*	*$40,100,000*
NC 147	*I-885 Interchange (Western Edge)*	*I-885 Interchange (Eastern Edge)*	*Durham*	*TWTPO*	*$2,700,000*	*0.6*	*$4,600,000*
I-885	*NC 147 Interchange*	*NC 54 DAR (Eastern)*	*Durham*	*TWTPO*	*$22,600,000*	*4.0*	*$5,600,000*
I-40					**$207,700,000**	**27.3**	**$7,600,000**
I-40	*Old NC 86*	*Orange/Durham County Line*	*Orange*	*TWTPO*	*$-*	*9.0*	*$-*
I-40	*Orange/Durham County Line*	*NC 54 DAR (Western)*	*Durham*	*TWTPO*	*$11,100,000*	*2.6*	*$4,300,000*
I-40	*NC 54 DAR (Western)*	*GoTriangle Mobility Hub DAR*	*Durham*	*TWTPO*	*$78,800,000*	*7.0*	*$11,300,000*
I-40	*GoTriangle Mobility Hub DAR*	*Durham/Wake County Line*	*Durham*	*TWTPO*	*$17,900,000*	*1.8*	*$9,900,000*
I-40	*Durham/Wake County Line*	*RDU APE DAR*	*Wake*	*CAMPO*	*$17,400,000*	*2.5*	*$6,900,000*
I-40	*RDU APE DAR*	*Harrison DAR*	*Wake*	*CAMPO*	*$51,600,000*	*1.0*	*$53,700,000*
I-40	*Harrison DAR*	*Trinity DAR*	*Wake*	*CAMPO*	*$23,200,000*	*2.0*	*$11,800,000*
I-40	*Trinity DAR*	*Cary Towne DAR*	*Wake*	*CAMPO*	*$7,700,000*	*1.5*	*$5,000,000*
Freeway Segment Total					***$ 337,100,000***	***34.5***	***$9,800,000***
Freeway Priority Corridor Costs within TWTPO							
Orange County					*$ -*	*9.0*	*$ -*
Durham County					*$ 237,200,000*	*18.6*	*$75,800,000*
TWTPO					**$237,200,000**	**27.5**	**$8,600,000**
Freeway Priority Corridor Costs within CAMPO							
Wake County					*$99,900,000*	*7.0*	*$14,300,000*
CAMPO					***$ 99,900,000***	***7.0***	***$14,300,000***

Table 3 shows the cost for the DARs along the freeway priority corridors, with the cost broken out by each freeway priority corridor. Figure 1 shows the location of the direct access ramps.

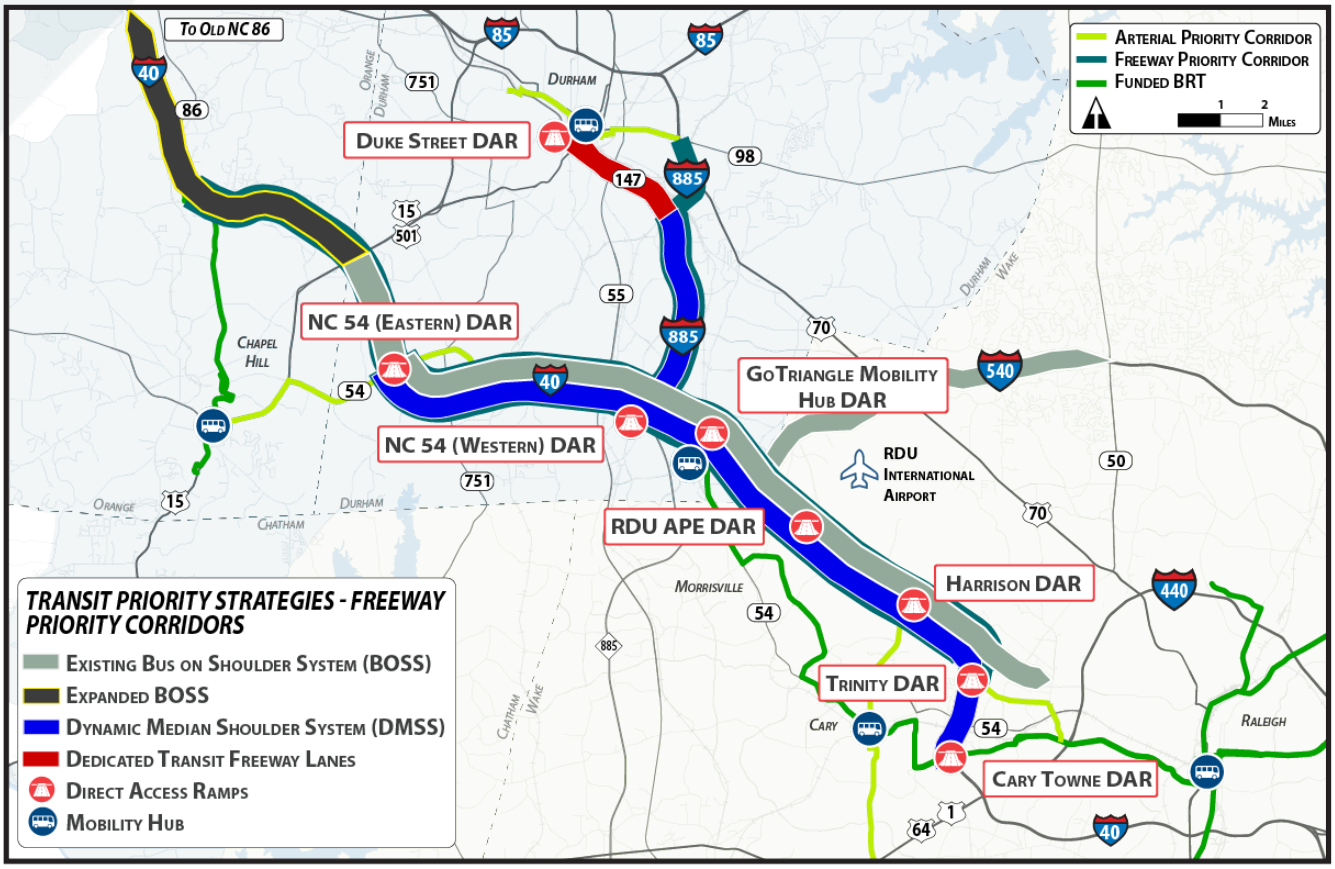


Figure 1: Direct Access Ramp Locations

Table 3: Direct Access Ramp Costs

Location	Roadway	County	MPO	Cost
Total Direct Access Ramp Costs				
I-885 / NC 147				**$67,100,000**
Duke Street	*NC 147*	*Durham*	*TWTPO*	*$26,200,000*
NC 54 (Eastern)	*I-885*	*Durham*	*TWTPO*	*$40,900,000*
I-40				**$217,000,000**
NC 54 (Western)	*I-40*	*Durham*	*TWTPO*	*$41,100,000*
GoTriangle Mobility Hub	*I-40*	*Durham*	*TWTPO*	*$55,300,000*
Harrison	*I-40*	*Wake*	*CAMPO*	*$57,900,000*
Trinity	*I-40*	*Wake*	*CAMPO*	*$34,400,000*
Cary Towne	*I-40*	*Wake*	*CAMPO*	*$28,300,000*
Total Direct Access Ramp Cost				**$284,100,000**
Direct Access Ramp Costs within TWTPO				
Orange County				*$ -*
Durham County				*$163,500,000*
TWTPO				**$163,500,000**

Direct Access Ramp Costs within CAMPO	
Wake County	*$120,600,000*
CAMPO	**$120,600,000**

Table 4 shows the cost for the Airport Platform Exchange (APE) along I-40 at Raleigh-Durham International Airport (RDU).

Table 4: RDU APE Cost

Location	Roadway	County	MPO	Cost
		Total RDU APE Cost		
RDU APE	**I-40**	**Wake**	**CAMPO**	**$ 114,100,000**
Total RDU APE Cost				**$ 114,100,000**
		RDU APE Cost within TWTPO		
Orange County				*$ -*
Durham County				*$-*
TWTPO				**$-**
		RDU Cost within CAMPO		
Wake County				*$114,100,000*
CAMPO				**$114,100,000**

Table 5 shows the total costs associated with the FAST 2.0 concept design work. The costs are broken out by the type of project.

Table 5: Total FAST 2.0 Costs

Study Element	Cost	Miles	Cost/Mile
	Total FAST 2.0 Costs		
Arterial Priority Corridors	**$541,100,000**	**30.8**	**$17,600,000**
Freeway Priority Corridors Total	**$621,200,000**	**34.5**	**$18,000,000**
Freeway Segments	*$337,100,000*	*34.5*	*$9,800,000*
Direct Access Ramps	*$284,100,000*		
RDU APE	**$114,100,000**		
FAST 2.0 Total	**$ 1,276,400,000**	**65.3**	**$19,600,000**
	FAST 2.0 Costs within TWTPO		
Orange County	*$65,400,000*	*12.2*	*$5,400,000*
Durham County	*$671,800,000*	*34.9*	*$19,300,000*
TWTPO	**$737,200,000**	**47.1**	**$15,700,000**
	FAST 2.0 Costs within CAMPO		
Wake County	*$539,200,000*	*18.2*	*$29,600,000*
CAMPO	**$539,200,000**	**18.2**	**$29,600,000**

Advancing Priority Corridors Locally

Incorporate priority corridors into ongoing planning efforts:

Throughout the course of the FAST 2.0 Study, local stakeholders have continued advancing planning studies that aim to identify enhanced transit and BRT corridors within their jurisdictions. Some of these projects include:

- Chapel Hill transit High Capacity Transit Study
- Durham BRT Vision Plan
- GoTriangle Regional Blueprint
- 2035 Wake Transit Plan Update
- US 15-501 Corridor Study

As these projects get underway, it is recommended that the priority corridors from the FAST 2.0 study be incorporated into these studies. This will provide a jump start of the planning for BRT along the priority corridors within each of these plans and further planning these corridors at the local level. Incorporating the priority corridors into local planning efforts, continues to solidify these corridors as a priority for advancing BRT and helps to further their path to implementation for adoption into local transit plans and MTPs.

Incorporate into Local Transit Plans / MTPs / CTPs

Along with including the priority corridors in ongoing planning efforts, the next step to implementation is to include the priority corridors within local transit plans, CTPs, and MTPs, where funding can be applied to the projects. In the *Concept Design Memo*, information about each corridor was provided that would allow these corridors to be identified within these plans. This information includes the location, route, termini, mode, and basic operating information, such as estimated number of stations and number of vehicles. This information, along with the costing provided above, allows the stakeholders to identify these corridors as projects going forward.

Advance Planning and Design on Priority Corridors with Locally Funded Plans and Studies

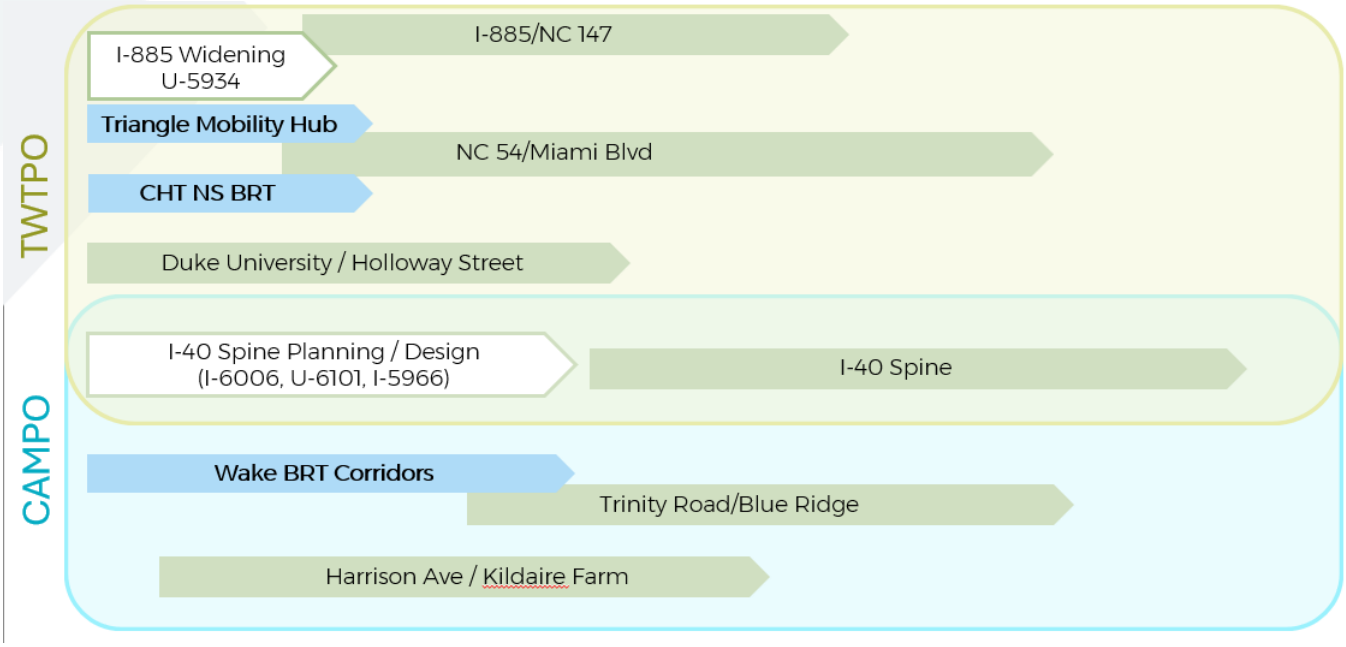
To continue momentum from the FAST 2.0 study and advancing the concept designs, it is recommended that stakeholders advance planning and design of the priority corridors with locally funded plans and Major Investment Studies (MIS). These studies will be able to further design work and stakeholder engagement, coordinating with ongoing roadway projects, while also performing more in-depth operations and service planning analyses. The operations and service planning analyses can help identify potential agency responsibilities and needs for the priority corridors. The Draft 2035 Wake Transit Plan Investment Strategy, presented in June 2025, includes several of the priority corridors as part of the 2035 BRT network and notes plans to advance further studies in the coming years:

> *A major investment study (MIS) is funded to plan and design the proposed I-40 and an additional potential Harrison BRT service. Part of the scope of the study will be to consider the feasibility of related investments, for example, $50 million has been set aside to build an airport transfer facility near the I-40/BRT corridor. If deemed feasible, the cost estimate will be adjusted, and initial design elements would be a finding of the MIS.*

Potential Sequencing of Priority Corridors

As the priority corridors continue to advance, there are elements of certain priority corridors that may need to happen before the priority corridors are constructed. For example, the NC 54 corridor terminates at the Triangle Mobility Hub, so that hub should be constructed before the improvements on NC 54 are constructed. It is recommended that the

Implementation Committee work to prioritize the priority corridors in more detail, but below highlights several ongoing projects that should be considered prior to implementing the priority corridors:



Continue to Build Momentum for Transit Infrastructure with Implementation on Funded BRT projects in Orange and Wake Counties

Visibility is an important part of building support for enhanced transit infrastructure. The region has several BRT corridors in construction or nearing design completion, so it is important to continue supporting the implementation of these corridors to lay the groundwork for BRT across the region. Once these corridors are operational, it can help provide local examples that can garner additional support from the public and stakeholders.

Identify BRT Project in Durham County

In July 2025, the City of Raleigh awarded the first construction contract to begin construction on the Wake BRT: New Bern Corridor and as of May 2025, Chapel Hill Transit is advancing their North-South BRT towards 90% design and anticipating construction starting in 2027. With these active BRT projects in Orange and Wake Counties, it is recommended that a BRT corridor in Durham County be identified and begin advancing into planning and design. This would provide active BRT projects in the core counties within the Triangle Region and begin building out a BRT network within each county, that can be connected by advancing the FAST 2.0 priority corridors.

Funding Considerations

Utilize Local Funding to Fund Alternative Analyses (AA) and Major Investment Studies (MIS)

As noted above, to continue advancing the concept design work, it is recommended that stakeholders advance planning and design of the priority corridors with locally funded plans. Using local funds to continue advancing the concept designs, can help prepare the project to be ready for future funding opportunities and keep the project moving, limiting schedule delays and cost increases. Continuing to advance projects locally, is particularly crucial as

federal grant opportunities change and evolve, allowing Stakeholders to be prepared for different funding opportunities to arise and ways to move forward, instead of waiting for funding opportunities to begin more planning and design.

Monitor Federal Grant Landscape for Funding Opportunities

With a changing federal transportation funding landscape, including the expiration of the Infrastructure Investment and Jobs Act in 2026 and anticipated changes to Capital Infrastructure Grant (CIG) program criteria, there are unknowns in what federal grant programs and funding levels will be available in the coming years. It is recommended that Stakeholders monitor the changes in federal funding and stay up to date on new and changing funding opportunities that could be used for FAST 2.0 project elements. While this uncertainty can make it difficult to anticipate federal funding opportunities for projects, Stakeholders can prepare for funding opportunities by advancing projects locally to increase the Project Readiness for when funding opportunities arise. Many federal grant programs ask for information about the status of a project including the level of planning and design, status of needed permits, and inclusion of the project in transportation plans. In addition, these grant programs often require project budget information to be provided with details given on the different project elements, level of design the cost estimates are based off of, and contingency levels. By advancing projects locally, Stakeholders can be prepared for funding opportunities that arise by having projects that are shown to be a local priority and have updated materials, highlighting the ability to continue moving the project forward with additional funding.

Evaluate Opportunities for Cost Sharing with NCDOT Projects

Throughout the FAST 2.0, NCDOT STIP projects that interact with the priority corridors have been identified. Stakeholders should continue coordinating with NCDOT during the planning and design of STIP projects to identify the ability to include transit infrastructure within those project designs. The ability to include transit infrastructure early on in the design can help save costs by allowing construction to happen at once and prevent the need to go back and construct transit infrastructure shortly after roadway construction.

Element 2

Another element of the implementation roadmap is to consider ways that NCDOT could help accelerate the implementation of transit infrastructure in the region. Some of the recommendations that could help to do that include:

- Evaluate and modify the current process for review and approval of transit infrastructure projects through IMD coordination with other planning/design departments and divisions
- Identify and evaluate potential changes to the NCDOT Roadway Design Manual, through IMD coordination with other planning/design departments and divisions

Review of Transit Infrastructure Projects

As more transit infrastructure is being built in the region and statewide, NCDOT may want to consider how different transit infrastructure is reviewed, both as a standalone request and as part of a larger roadway project. Some things to consider include:

- Developing internal guidance for transit elements along NCDOT roadways that may be part of IMD reviews (i.e. bus bulb outs vs bus pull outs; queue jumps). This guidance could also include national and state examples of similar infrastructure for reference.

Changes to NCDOT Roadway Design Manual

It is recommended that updates be made to the NCDOT Roadway Design Manual to incorporate more transit infrastructure within the Manual, allowing the improvements to be more easily included along NCDOT roadways and providing a point of reference for local municipalities. Some of the recommended updates include:

- Referencing FAST 2.0 study and the suite of transit infrastructure options that were explored during the study, similar to how the State Freeway and Street-based Transit (FAST) Network Implementation Playbook was referenced.
- Using experience from on-going BRT projects in the region, update elements of the RDM including:
    - Clear Zone and Offset widths at stations
    - Platform heights and adjacent curbs
    - Lane widths
    - Bus stop amenity crashworthiness
    - Transit signal priority and communications
    - Station crash walls
    - Transit-specific markings, signings, and signal heads
    - Runningway types – ex. fully dedicated, semi-dedicated, contraflow, bi-directional, etc.
    - Pedestrian and bicycle facilities to access stations
    - Pavement thickness and material
    - Horizontal roadway element transitions
    - Menu of transit design vehicles – ex. Standard, articulated, left vs. right door, etc.

Changes to NCDOT Complete Streets Implementation Guide

It is recommended that updates be made to the NCDOT Complete Streets Implementation Guide to incorporate more transit language within the Guide, allowing the improvements to be more easily included along NCDOT roadways and during the planning process. Some of the recommended updates include:

- Adding “transit” or “access to transit” to the list of needs, list of improvements and list of facilities.
    - Include a definition for “transit facilities” that is referenced in 7.1 Complete Street Cost Share.
- Reference policies within the NCDOT Roadway Design Manual include elements related to transit infrastructure, which may include the references to FAST.

Similar changes are recommended on some of the other Complete Street documents, including the NCDOT Complete Streets Review Assessment (CSRA) form and the Complete Streets Project Sheet. For those items, it is recommended that NCDOT consider the following changes:

- NCDOT Complete Streets Review Assessment (CSRA):
    - Under the Initial Screening and Data Input section, consider adding a separate intake box for whether there is existing or planned transit in the project area or whether existing transit stops are accessible by walking or biking.
    - Under the Facility Selection section, consider adding separate intake boxes for Preferred Transit Facility/Facilities, Transit Alternatives, and Transit Considerations or consider adding a box for Access to Transit Considerations to make sure they are being considered along with the Pedestrian and/or Bicyclist Considerations.
- Complete Streets Project Sheet:

- Under the existing public transit improvements listed, consider adding elements that improve access to transit by bicycle. Options could include bus boarding islands, shared cycle track stops, and connections to bicycle facilities such as bike lanes and multi-use paths/sidepaths.