Triangle Mobility Hub and SPOKE Project

Attachment A – Supporting Documentation

Triangle Mobility Hub and SPOKE Project

A1 – Research Triangle Foundation Board Resolution

Research Triangle Park

RESOLUTION OF THE RESEARCH TRIANGLE FOUNDATION OF NORTH CAROLINA SUPPORTING THE TRIANGLE MOBILITY HUB SITE LOCATION AND PROJECT DELIVERY

WHEREAS, the Research Triangle Foundation of North Carolina (RTF) is the administrator, steward, and original developer of Research Triangle Park (RTP); and

WHEREAS, through its commitment to fostering connections, environmental stewardship, innovation and collaboration, RTF invests in programs that cultivate vibrant communities within the Park; and

WHEREAS, RTF has longstanding partnerships with regional transportation agencies, including GoTriangle, to address the region's and RTP's transportation challenges and needs; and

WHEREAS, RTF owns 19.4 acres on the south side of NC-54 in RTP, adjacent to the North Carolina Railroad and near South Miami Boulevard (Durham County PIN # 0747-36-2290 and 0747-36-4637); and

WHEREAS, this property has been envisioned for transit-oriented development (TOD) and as the site for a relocated regional transit center – now called the Triangle Mobility Hub – since at least the year 2000; and

WHEREAS, the Triangle Mobility Hub will foster connections through innovation, collaboration, and environmental stewardship in support of the Triangle as a vibrant and growing region; and

WHEREAS, creating a successful and convenient mobility hub to support transfers between all modes of transit will expand mobility within RTP and across the region and provide equitable and sustainable access to opportunity for all; and

WHEREAS, RTF has undertaken a TOD planning process to establish a TOD vision for this property, as anchored by the Triangle Mobility Hub, and the entire NC-54 corridor through RTP; and

WHEREAS, RTF has been advised that the GoTriangle Board of Trustees adopted a TOD policy in 2017 with the policy goals of Complete Communities, Sustainable Communities Strategy, Ridership, Value Creation/Value Capture, Transportation Choice, Affordability, and Collaboration; and

WHEREAS, TOD will support the Triangle Mobility Hub in becoming a vibrant and active connector that will anchor the Park and entire Triangle region as it continues to grow for decades to come.

NOW, THEREFORE, BE IT RESOLVED, that the Research Triangle Foundation fully supports GoTriangle placing the Triangle Mobility Hub at this location and delivering the project in coordination with RTF.

ADOPTED THIS 25th DAY of AUGUST 2023.

Jud Bowman
Chair

GO Triangle

Triangle Mobility Hub and SPOKE Project

A2 – Regional Transit Center Relocation Feasibility Study

GO Triangle

Regional Transit Center Relocation Study

Executive Summary

Prepared by:
Kimley»Horn

February 2023

Study Purpose

GoTriangle has occupied the current Regional Transit Center (RTC) at 4600 Emperor Boulevard in Durham since 2008, with the intention of relocating to a site more easily accessible from major highways, and adjacent to planned investments in bus rapid transit and rail service.

GoTriangle began the RTC Relocation Study in 2019 to evaluate opportunities for relocating the RTC to provide enhanced functionality, connectivity, reliability. In alignment with this purpose, the following goals were set:

- **Safety & Accessibility:**
  Improve safety and accessibility for all users and vehicles

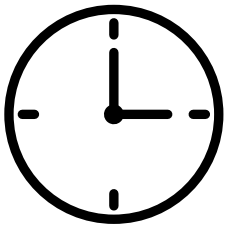
- **Access & Connectivity:**
  Increase transit access to regional destinations and multi-modal connections

- **Speed & Reliability:**
  Provide a better experience for riders and increase operational efficiency

Safety and Accessibility

Access & Connectivity

Speed & Reliability



Existing Conditions

The existing RTC is served by ten bus routes, with over 1000 riders passing through each day. In addition, there are more than 100 daily park and ride users that use this facility. The GoTriangle headquarters building is also located on-site and is owned by GoTriangle, while the park and ride and RTC facility are on leased property.

The current RTC has operational and access challenges, including delays due to congestion, a shared entrance, exit and circulation paths for buses and cars, and 1.5-mile distance through several signalized intersections to reach I-40, all of which contribute to reliability challenges for passengers and GoTriangle.

The number and layout of platforms are insufficient to serve the amount of activity at the RTC. The platform space is constrained with minimal separation between passengers and transit vehicles which poses safety challenges and presents an unconformable experience for riders. Lastly, the shelters are insufficient to protect riders from the elements and are unable to be expanded due to the proximity of overhead high-voltage transmission lines. All of the operational, access, and safety challenges contribute to the late arrival of buses at the RTC and cause issues for transit riders accessing bus routes. Adequate resolution of all of these existing challenges is not feasible on the current site without a complete reconstruction, but can be addressed through the development of a new facility.

1000 daily boardings

100 daily park and ride users

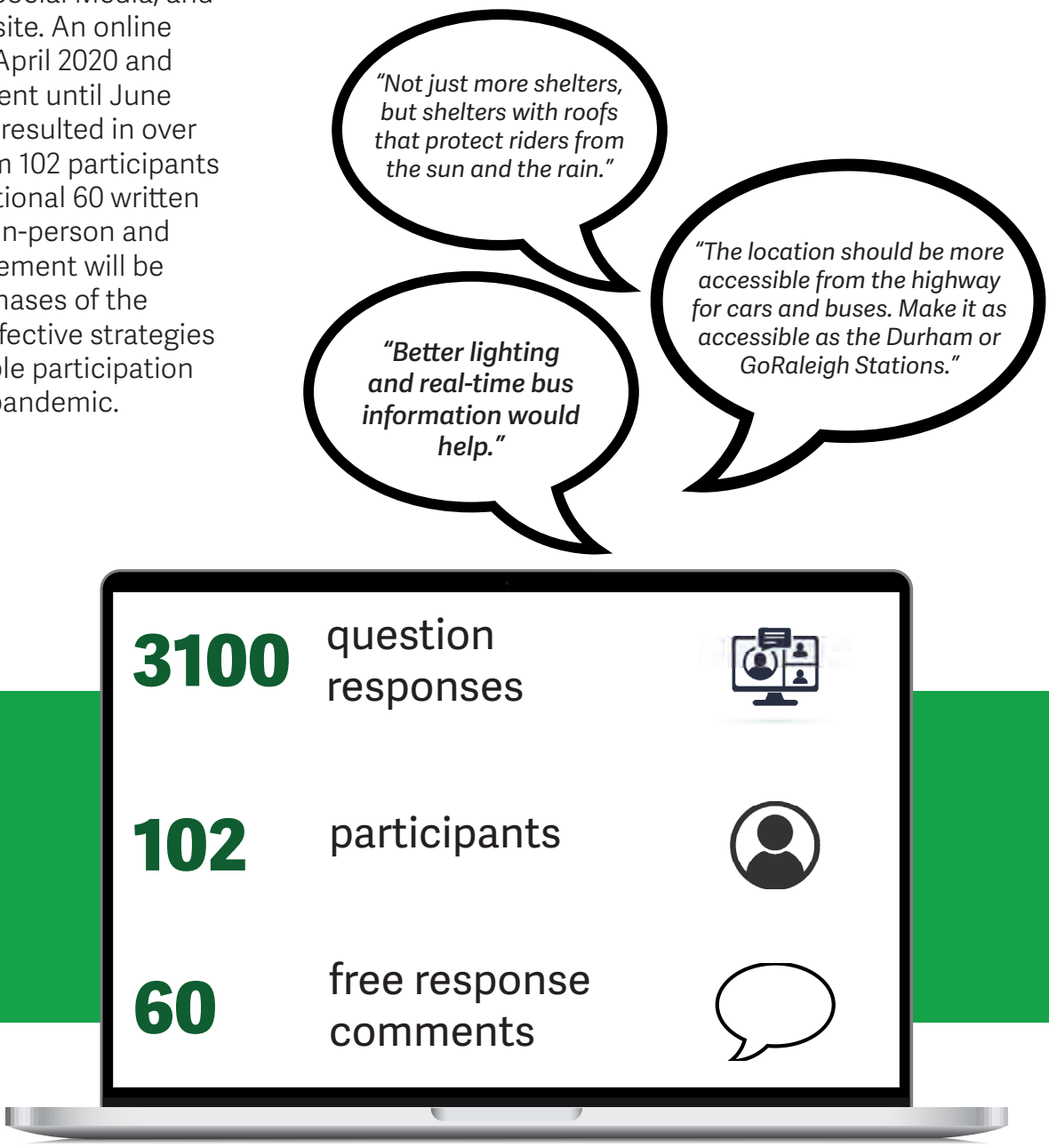
1.5 miles to I-40

7-10 minutes to I-40

Figure 1 - Existing RTC Location

Public Outreach

GoTriangle conducted several types of virtual public outreach in the Spring of 2020 as a result of the COVID-19 pandemic. Educational content was shared with the public through PowerPoint, Video, Social Media, and the GoTriangle website. An online survey launched in April 2020 and was open for comment until June 2020. This outreach resulted in over 3,100 responses from 102 participants who shared an additional 60 written comments. Robust in-person and online public engagement will be included in future phases of the project, including effective strategies for ensuring equitable participation learned during the pandemic.



Rider Experience

As a result of the virtual public outreach, the following feedback was gathered. This feedback was used to inform the evaluation criteria for site selection.

Missed a connection due to a bus delay

Would like to have shops and services near the RTC

Indicated bus speed is “Important” or “Very Important”

When asked what could improve rider experience at platforms, the survey respondents offered the following insights:

61%
more shelters

48%
wifi access

48%
wayfinding signage

44%
more benches

Site Selection Process

To assess possible locations, a parcel search was conducted resulting in initial list of 113 sites. Using an iterative and criteria-driven search process, including proximity to the highway network lease of access, and size of site, the list was eventually reduced to six potential sites.

Site Evaluation

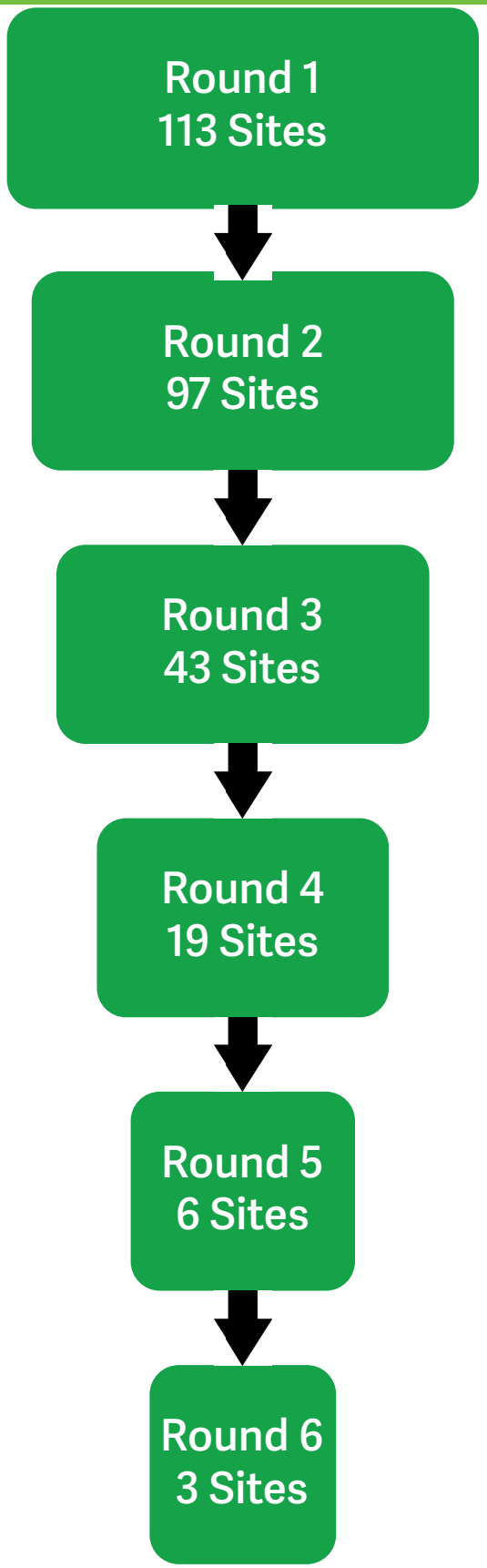
A scorecard was developed to evaluate the most likely RTC locations, including a no-build option to remain at the existing RTC location.

The categories included:

- **Mobility** - increase bus speed and reliability
- **Community** - proximity to shops, services, and opportunities for walkable redevelopment
- **Viability** - support for cost effective delivery of the project
- **Accessibility** - promote access to existing nearby jobs
- **Multimodal** - provide connections between planned investments in BRT and rail

The final three sites were the HUB, Park Point, and Triangle Metro Center (TMC), as shown on Page 7. Each of these sites were additionally identified as opportunities for public-private partnership to leverage the transit investment to support transit oriented development. The study team coordinated with NCDOT, RTP, and Durham County Transportation and Planning staff to assess the ability of the final three sites to meet the site evaluation criteria and support the components of the conceptual program.

The scorecard on page 8 shows the results of these criteria applied to the final three sites plus the existing regional transit center.



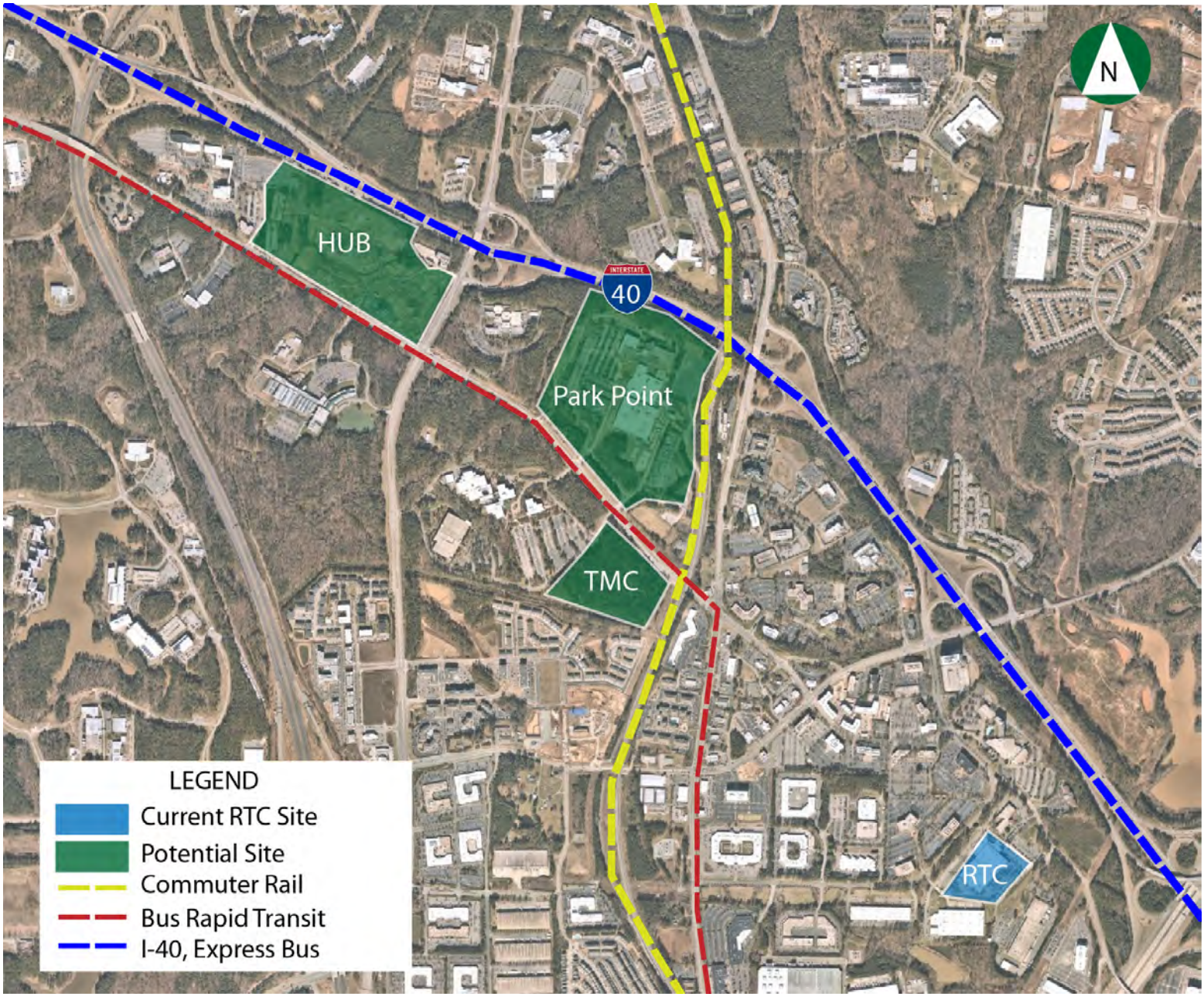


Figure 2 - Final Three Potential Sites

Goal	HUB	Park Point	TMC	Existing
Mobility Increase bus speed and reliabailiy				
Community Locate near shops, services, and opportunities for walkable redevelopment				
Viability Support cost effective delivery of the project				
Accessibility Promote access to existing nearby jobs				
Multimodal Provide connections between planned investments in BRT and rail				
Average	4.10	3.22	4.16	1.64

Figure 3 - Site Evaluation Scorecard Results

Conceptual Program

The conceptual program includes a passenger bus boarding platform with a canopy and several pedestrian crosswalks to the parking area. On-site amenities include an enclosed building with a 5,000 square foot multipurpose space, a drop-off loop for paratransit riders, microtransit (Morrisville's system will also connect here), and taxis, a pass sales booth, and a comfort station. The parking area will have a minimum of 50 parking spaces for passengers and employees with the option of growing to 150 spaces.

A future BRT line is planned to run along NC-54 as shown in the concept design. A signalized intersection is proposed for the bus-only entrance to facilitate efficient movements for the buses exiting the RTC. This signalized intersection will also be beneficial in the event that the BRT stops are located in the same vicinity, providing a safe and comfortable crossing of NC-54 between the BRT stops and the RTC. Connections to a proposed commuter rail station will be provided by a future commuter rail project.

The cost estimate for the conceptual program ranges from $25-30 million and will be refined as the conceptual program is finalized and engineering proceeds.

Figure 4 - Site Concept

Next Steps

A timeline for the next steps is shown here. Throughout concept design, the team will closely collaborate with NCDOT, the county transit plans, local service providers, and Research Triangle Park (RTP) to ensure that any overlapping projects are considered. This includes close coordination with the future commuter rail, bus rapid transit, and Triangle Bikeway projects, as a key feature of the preferred location is connectivity to other modes of transportation to enhance access to destinations in and around Research Triangle Park. To fund the facility, GoTriangle will secure local funding from the county transit plans and seek federal grants.

CONCEPT DESIGN	ENGINEERING	CONSTRUCTION
Coordination with NCDOT, RTP, and the Property Owner on land acquisition and future development potential Coordination with CRT and BRT studies Development of a federal grant strategy	Apply for federal grant funding Complete the final design Ongoing coordination with NCDOT, RTP, and the Property Owner	Construction

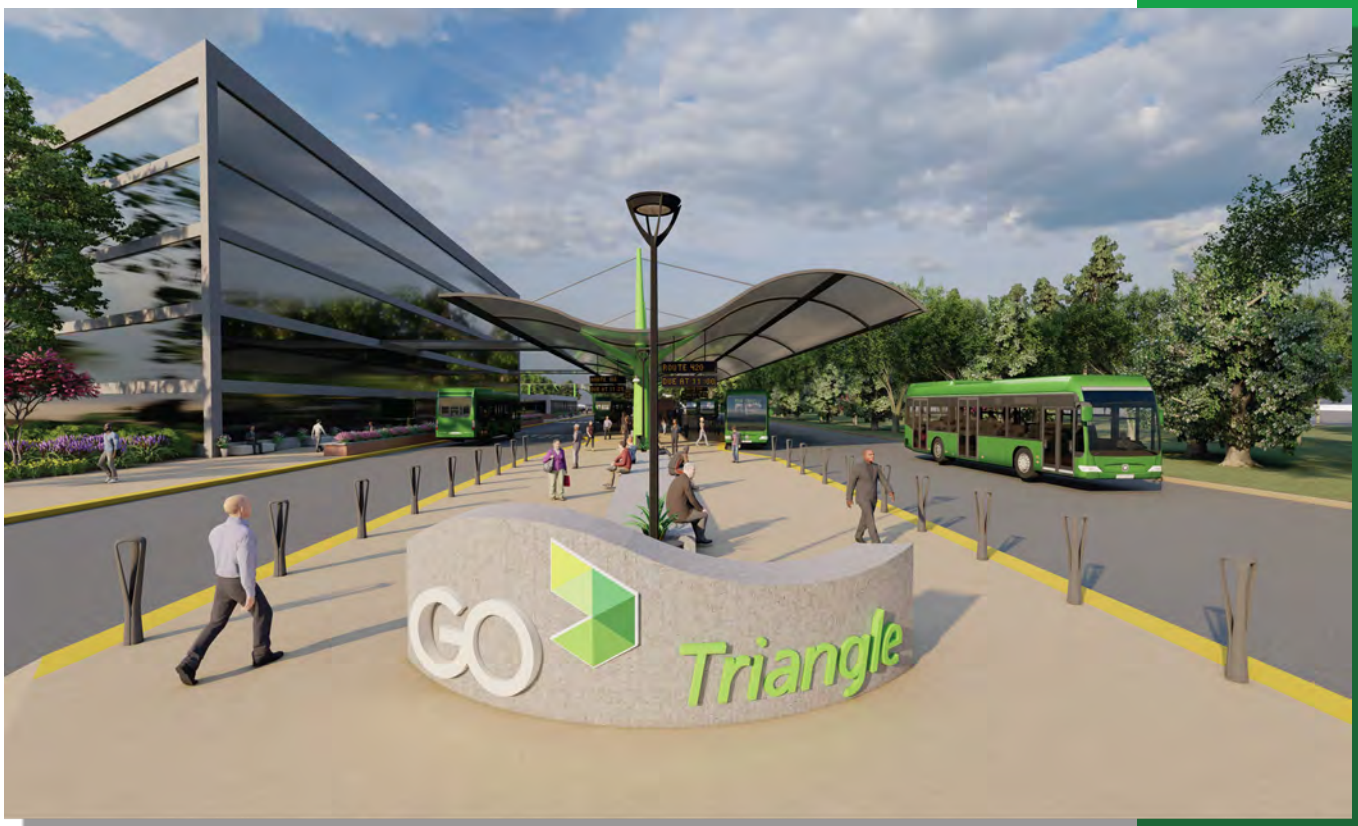


Figure 5 - Site Concept Renderings

GO Triangle


700 DOWNTOWN DURHAM
Connecting the Bull City
2018


2019
700 DOWNTOWN DURHAM
700
2019

Triangle Mobility Hub and SPOKE Project

A3 – TIP/STIP

DURHAM · CHAPEL HILL · CARRBORO
DCHC
METROPOLITAN PLANNING ORGANIZATION

MPO Board
June 9,2021

TIP Amendment #6 Summary Sheet

NCDOT

- **I-3306A I-40 Widening from I-85 to the Durham County Line**: Project to use GARVEE Bonds and description modified to reflect correct scope.
- **I-3306AC NC86 Upgrade to Superstreet from Northwood Drive to ramp at I-40 Interchange**: Project break re-added to schedule superstreet component for separate letting.
- **C-5600 Statewide CMAQ Projects:** Add engineering, ROW, construction, implementation and operations in FY21 and FY222 not previously programmed at the request of the Division of Planning and Programming.
- **C-5601 Statewide CMAQ Projects across Nonattainment and Maintenance Areas**: Add engineering, ROW, construction, implementation and operations in FY21 and FY222 not previously programmed at the request of the Division of Planning and Programming.

DCHC MPO FY21-22 Call for Projects

Surface Transportation Block Grant Direct Attributable

Agency	Project	S/TIP ID	Federal Funding	Local Match	Total	Phase
City of Durham	Neighborhood Bike Routes II	N/A	$160,000	$40,000	$200,000	Design/CON
City of Durham	Bike Lane Vertical Protection	N/A	$104,725	$26,181	$130,906	CON
Town of Chapel Hill	Fordham Blvd Sidepath	EB-5721	$250,000	$62,500	$312,500	CON
Town of Chapel Hill	NC 54 Pedestrian Safety/Transit Access Improvements	N/A	$170,000	$42,500	$212,500	Design/CON
Town of Chapel Hill (Chapel Hill Transit)	W. Franklin St Bus Islands	N/A	$230,884	$57,721	$288,605	CON

Surface Transportation Block Grant Direct Attributable (CRSSAA Funds)

Agency	Project	S/TIP ID	Federal Funding	Phase
City of Durham	NC 55 Sidewalks	EB-5835	$671,014	CON
City of Durham	Guess Road Sidewalks	EB-5834	$703,906	CON
City of Durham	Bike Lane Vertical Protection	N/A	$67,310	CON
Durham County	TBD Governance Study Related to Bike/Ped/Transit	N/A	$57,908	N/A
Town of Carrboro	S. Greensboro St Sidewalk	C-5650	$206,343	CON
Town of Chapel Hill	Estes Drive Bike-Ped	C-5179	$429,255	CON
Town of Hillsborough	Exchange Park Lane Bridge Repairs	N/A	$126,447	N/A

STBG-Competitive (Any Area and Unobligated FY20 STBGDA)

Agency	Project	Federal Funding	Local Match	Total	Project Phase
Town of Chapel Hill/Carrboro	NC 54 Pedestrian Safety/Transit Access Improvements	$808,000	$432,000	$1,240,000	CON
City of Durham	Foster Street Bike Lanes and Chapel Hill Street Bike Lanes	$429,476	$107,369	$536,845	CON
City of Durham	Neighborhood Bike Routes III: Grant, Lincoln, Plum, Lavender, Umstead)	$122,723	$30,681	$153,404	Design/CON

Regional Bicycle and Pedestrian Funding (Transportation Alternatives Funding and STBGDA)

- **EB-5904 Durham Belt Line Trail:** Add $2,273,501 and $568,375 in local matching funds to reflect a TAP and STBGDA funding award from DCHC MPO.

Chapel Hill Transit

- **N-S BRT**: Add project to the TIP and STIP at the request of Chapel Hill Transit.

GoTriangle

- **TD-5306 Regional Transit Center:** Add TD-5306 to the TIP and add local funds from Durham and Orange counties for feasibility study.

HANDOUT
ITEM N

REVISIONS TO 2020-2029 STIP

HIGHWAY PROGRAM

STIP MODIFICATIONS

DIVISION 7

*I-3306A	I-40 FROM I-85 TO DURHAM COUNTY LINE.	GARVEE ROW	FY 2021 -	$ 618,000 (NHP)
ORANGE	WIDEN TO SIX LANES, IMPROVE NC 86	GARVEE ROW	FY 2022 -	$ 618,000 (NHP)
PROJ. CATEGORY	INTERCHANGE, AND INSTALL ITS.	GARVEE ROW	FY 2023 -	$ 618,000 (NHP)
STATEWIDE		GARVEE ROW	FY 2024 -	$ 618,000 (NHP)
	PROJECT TO UTILIZE GARVEE BONDS. DESCRIPTION MODIFIED TO REFLECT CORRECT SCOPE.	GARVEE ROW	FY 2025 -	$ 618,000 (NHP)
		GARVEE ROW	FY 2026 -	$ 618,000 (NHP)
		GARVEE ROW	FY 2027 -	$ 618,000 (NHP)
		GARVEE ROW	FY 2028 -	$ 618,000 (NHP)
		GARVEE ROW	FY 2029 -	$ 618,000 (NHP)
		GARVEE ROW	POST YR -	$3,704,000 (NHP)
		RIGHT-OF-WAY	FY 2021 -	$2,400,000 (S)M))
		UTILITIES	FY 2021 -	$ 628,000 (NHP)
		GARVEE CON	FY 2021 -	$4,376,000 (NHP)
		GARVEE CON	FY 2022 -	$4,376,000 (NHP)
		GARVEE CON	FY 2023 -	$4,376,000 (NHP)
		GARVEE CON	FY 2024 -	$4,376,000 (NHP)
		GARVEE CON	FY 2025 -	$4,376,000 (NHP)
		GARVEE CON	FY 2026 -	$4,376,000 (NHP)
		GARVEE CON	FY 2027 -	$4,376,000 (NHP)
		GARVEE CON	FY 2028 -	$4,376,000 (NHP)
		GARVEE CON	FY 2029 -	$4,376,000 (NHP)
		GARVEE CON	POST YR-	$26,253,000 (NHP)
		CONSTRUCTION	FY 2021 -	$ 4,250,000 (S(M))
		CONSTRUCTION	FY 2022 -	$ 4,250,000 (S(M))
		CONSTRUCTION	FY 2023 -	$ 4,250,000 (S(M))
		CONSTRUCTION	FY 2024 -	$ 4,250,000 (S(M))
		CONSTRUCTION	FY 2021 -	$25,813,000 (NHP)
		CONSTRUCTION	FY 2022 -	$25,813,000 (NHP)
		CONSTRUCTION	FY 2023 -	$25,812,000 (NHP)
		CONSTRUCTION	FY 2024 -	$25,812,000 (NHP)
				$198,181,000

*I-3306AC	NC 86 UPGRADE TO SUPERSTREET FROM	RIGHT-OF-WAY	FY 2024 -	$ 550,000 (NHP)
ORANGE	NORTHWOOD DRIVE TO RAMP C/D AT I-40	UTILITIES	FY 2024 -	$ 450,000 (NHP)
PROJ. CATEGORY	INTERCHANGE.	CONSTRUCTION	FY 2026 -	$ 4,350,000 (NHP)
REGIONAL				$ 5,350,000
	PROJECT BREAK RE-ADDED TO SCHEDULE SUPERSTREET COMPONENT FOR SEPARATE LETTING.			

TRANSPORTATION PROGRAM

STIP MODIFICATIONS

STATEWIDE

* C-5600	VARIOUS, STATEWIDE CMAQ PROJECTS TO IMPROVE	ENGINEERING	FY 2020 -	$817,000	(CMAQ)
STATEWIDE	AIR QUALITY WITHIN NONATTAINMENT AND		FY 2020 -	$204,000	(S(M))
PROJ.CATEGORY	MAINTENANCE AREAS.		FY 2021 -	$817,000	(CMAQ)
EXEMPT	***ADD ENGINEERING, RIGHT OF WAY, CONSTRUCTION, IMPLEMENTATION, AND OPERATIONS IN FY 21 AND FY 22 NOT PREVIOUSLY PROGRAMMED, AT THE REQUEST OF THE DIVISION OF PLANNING AND PROGRAMMING.***		FY 2021 -	$204,000	(S(M))
			FY 2022 -	$817,000	(CMAQ)
			FY 2022 -	$204,000	(S(M))
		RIGHT-OF-WAY	FY 2020 -	$817,000	(CMAQ)
			FY 2020 -	$204,000	(S(M))
			FY 2021 -	$817,000	(CMAQ)
			FY 2021 -	$204,000	(S(M))
			FY 2022 -	$817,000	(CMAQ)
			FY 2022 -	$204,000	(S(M))
		CONSTRUCTION	FY 2020 -	$4,901,000	(CMAQ)
			FY 2020 -	$1,226,000	(S(M))
			FY 2021 -	$4,901,000	(CMAQ)
			FY 2021 -	$1,226,000	(S(M))
			FY 2022 -	$4,901,000	(CMAQ)
			FY 2022 -	$1,226,000	(S(M))
		IMPLEMENTATION	FY 2020 -	$817,000	(CMAQ)
			FY 2020 -	$204,000	(S(M))
			FY 2021 -	$817,000	(CMAQ)
			FY 2021 -	$204,000	(S(M))
			FY 2022 -	$817,000	(CMAQ)
			FY 2022 -	$204,000	(S(M))
		OPERATIONS	FY 2020 -	$817,000	(CMAQ)
			FY 2020 -	$204,000	(S(M))
			FY 2021 -	$817,000	(CMAQ)
			FY 2021 -	$204,000	(S(M))
			FY 2022 -	$817,000	(CMAQ)
			FY 2022 -	$204,000	(S(M))
				$30,633,000	

These items are for informational purposes only and subject to future NC Board of Transportation approval. It is anticipated that these items will be considered for NC Board of Transportation approval in 30 days.

*** INDICATES FEDERAL AMENDMENT**

TRANSPORTATION PROGRAM

STIP MODIFICATIONS

STATEWIDE

* C-5601	VARIOUS, CMAQ PROJECTS TO IMPROVE AIR QUALITY	ENGINEERING	FY 2020 -	$118,000	(CMAQ)
STATEWIDE	ACROSS MULTIPLE NONATTAINMENT AND		FY 2020 -	$29,000	(L)
PROJ.CATEGORY	MAINTENANCE AREAS.		FY 2021 -	$118,000	(CMAQ)
EXEMPT	***ADD ENGINEERING, RIGHT OF WAY, CONSTRUCTION, IMPLEMENTATION, AND OPERATIONS IN FY 21 AND FY 22 NOT PREVIOUSLY PROGRAMMED, AT THE REQUEST OF THE DIVISION OF PLANNING AND PROGRAMMING.***		FY 2021 -	$29,000	(L)
			FY 2022 -	$118,000	(CMAQ)
			FY 2022 -	$29,000	(L)
		RIGHT-OF-WAY	FY 2020 -	$118,000	(CMAQ)
			FY 2020 -	$29,000	(L)
			FY 2021 -	$118,000	(CMAQ)
			FY 2021 -	$29,000	(L)
			FY 2022 -	$118,000	(CMAQ)
			FY 2022 -	$29,000	(L)
		CONSTRUCTION	FY 2020 -	$704,000	(CMAQ)
			FY 2020 -	$176,000	(L)
			FY 2021 -	$704,000	(CMAQ)
			FY 2021 -	$176,000	(L)
			FY 2022 -	$704,000	(CMAQ)
			FY 2022 -	$176,000	(L)
		IMPLEMENTATION	FY 2020 -	$118,000	(CMAQ)
			FY 2020 -	$29,000	(L)
			FY 2021 -	$118,000	(CMAQ)
			FY 2021 -	$29,000	(L)
			FY 2022 -	$118,000	(CMAQ)
			FY 2022 -	$29,000	(L)
		OPERATIONS	FY 2020 -	$118,000	(CMAQ)
			FY 2020 -	$29,000	(L)
			FY 2021 -	$118,000	(CMAQ)
			FY 2021 -	$29,000	(L)
			FY 2022 -	$118,000	(CMAQ)
			FY 2022 -	$29,000	(L)
				$4,404,000	

These items are for informational purposes only and subject to future NC Board of Transportation approval. It is anticipated that these items will be considered for NC Board of Transportation approval in 30 days.

*** INDICATES FEDERAL AMENDMENT**

DURHAM - CHAPEL HILL - CARRBORO
DCHC
Metropolitan Planning Organization
FUNDING DATABASE

101 City Hall Plaza
Durham, NC 27701
919.560.4366

TIP Amendment Request - Regional Transit Center

Amendment Request Details

Type	New Project
Status	Initial Submission
Request Date	05/03/2021
Jurisdiction/Agency	GoTriangle
Requestor	Jay Heikes
Requestor E-mail	jheikes@gotriangle.org
DCHC Approval Date	

Proposed STIP	TIP 2020 - 2029 (Current)
Proposed TIP #	TD-5306

Project Information

Project Name	Regional Transit Center
Project Description	Construct new Regional Transit Center on new location, signalized site driveway on NC 54 with transit signal priority, transit operational improvements along NC 54 between site driveway and Miami Blvd and on Miami Blvd between NC 54 and I-40.
Additional Details	

Proposed Project Schedule

FY	Phase/Work	Funding Source	Federal Share	State Share	Local Share	Total
2020	Feasibility Study	L	$	$	$187,500	$187,500
2022	Acquisition	L	$	$	$350,000	$350,000
2022	PE/Design	L	$	$	$250,000	$250,000
2023	Construction	L	$	$	$1,125,000	$1,125,000
2024	Construction	L	$	$	$1,125,000	$1,125,000
		Funding Totals:	**$0**	**$0**	**$3,037,500**	**$3,037,500**

Explanation for Request

Note, this is a modification to an existing STIP project.

FY20-29 STIP presently includes TD-5306 which is the prior year local / Wake Transit funds for the Wake share ($312,500) of the Regional Transit Center feasibility study. This request 1) adds $187,500 of local funds (Durham and Orange Transit Plan) to prior years to show funding split in transit plans and 2) adds local DCHC funds for PE, ROW, and CON phases. CAMPO will also be updating to include the Wake FY22-24 shares for PE, ROW Acquisition, and Construction. (CAMPO / Wake Transit Plan local funds: FY22 PE = $875,000; FY22 ROW = $1,225,000; FY23 Con = $3,937,500; FY24 Con =$3,937,500)

DURHAM - CHAPEL HILL - CARRBORO
DCHC
Metropolitan Planning Organization
FUNDING DATABASE

101 City Hall Plaza
Durham, NC 27701
919.560.4366

TIP Amendment Request - North-South Bus Rapid Transit

Amendment Request Details

Type	New Project
Status	Initial Submission
Request Date	05/26/2021
Jurisdiction/Agency	Chapel Hill Transit (CHT)
Requestor	Matthew Cecil
Requestor E-mail	mcecil@townofchapelhill.org
DCHC Approval Date	

Proposed STIP	TIP 2020 - 2029 (Current)
Proposed TIP #	

Project Information

Project Name	North-South Bus Rapid Transit
Project Description	The Town of Chapel Hill's North-South BRT (NSBRT) Project is currently in Small Starts project development. NSBRT's 8.2-mile BRT route with 16 planned station locations will primarily operate in a curb-running dedicated guideway with transit signal priority along Martin Luther King Jr. Blvd, South Columbia Street, and US Highway 15-501 South in Chapel Hill, NC. NSBRT will have special branding and stations with raised platforms, covered seating, real-time departure signs, bicycle parking, and multiuse paths for cyclists and pedestrians. NSBRT will provide bidirectional service seven days a week and will operate in an existing highly used bus corridor serving a park and ride lot at each end with connections to downtown Chapel Hill, Chapel Hill Town Hall, and multiple residential developments, as well as major employers including the University of North Carolina (UNC) at Chapel Hill and UNC Hospital, in addition to providing connections to regional service providers.
Additional Details	

Proposed Project Schedule

FY	Phase/Work	Funding Source	Federal Share	State Share	Local Share	Total
		Funding Totals:	**$0**	**$0**	**$0**	**$0**

Explanation for Request

The NSBRT project is in the Small Starts Process with the FTA, and will hopefully be garnering an additional $35M in non-CIG funding in the upcoming SPOT 6.0 process, to compliment the $14.1M that we currently have in place. As the project is preparing to select a consultant to help us move from 30% design to 100% design and engineering in the summer of 2021, NSBRT Staff have been receiving several questions from FTA representatives as to why we are not in the TIP or STIP currently. Understanding that North Carolina adds projects to TIP and STIP differently than other states, it seems beneficial from the standpoint of NSBRT Staff to have a representation in the TIP for future FTA inquiries.

DURHAM-CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION BOARD

9 June 2021

MINUTES OF MEETING

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Board met on June 9, 2021, at 9:00 a.m. remotely via Zoom. The following people were in attendance:

Wendy Jacobs (Chair)	Durham County
Jamezetta Bedford (Member)	Orange County
Pierce Freelon (Member)	City of Durham
Pam Hemminger (Member)	Town of Chapel Hill
Karen Howard (Member)	Chatham County
Michael Parker (Member)	GoTriangle
Charlie Reece (Member)	City of Durham
Damon Seils (Member)	Town of Carrboro
Mark Bell (Alternate)	Town of Hillsborough
Javiera Caballero (Alternate)	City of Durham
Sally Greene (Alternate)	Orange County
Brenda Howerton (Alternate)	Durham County
Lydia Lavelle (Alternate)	Town of Carrboro
Amy Ryan (Alternate)	Town of Chapel Hill
Nimasheena Burns (Alternate)	Durham County
Ellen Beckmann	Durham County
Nishith Trivedi	Orange County
Zach Hallock	Town of Carrboro
Tina Moon	Town of Carrboro
Bergen Watterson	Town of Chapel Hill
Josh Mayo	Town of Chapel Hill
Matt Cecil	Chapel Hill Transit/Planning
Sean Egan	City of Durham
Bill Judge	City of Durham
Evan Tenenbaum	City of Durham
Brian Taylor	City of Durham
Evian Patterson	City of Durham
Cha'ssem	The University of North Carolina
Jay Heikes	GoTriangle
Meg Scully	GoTriangle
Joe Geigle	Federal Highway Administration
Rachel Stair	Raleigh-Durham Airport Authority
Iona Thomas	McAdams
Erich Melville	McAdams
Erik Landfried	Bike Durham
David Keilson	NCDOT Division 5

Richard Hancock	NCDOT Division 5
Patrick Wilson	NCDOT Division 7
Stephen Robinson	NCDOT Division 7
Bryan Kluchar	NCDOT Division 8
Julie Bogle	NCDOT TPD
John Grant	NCDOT TPD
Aaron Cain	DCHC MPO
Andy Henry	DCHC MPO
Anne Phillips	DCHC MPO
Brian Rhodes	DCHC MPO
Dale McKeel	DCHC MPO
Yanping Zhang	DCHC MPO
Casey Chae	DCHC MPO
Kayla Mathews	DCHC MPO
Dave Connelly	Resident
Heidi Perov	Resident
Wannetta Mallette	Burlington-Graham MPO

Quorum Count: 9 of 10 Voting Members

1. Roll Call

Chair Wendy Jacobs called the meeting to order at 9:00 a.m. The Voting Members and Alternate Voting Members of the DCHC MPO Board were identified through a roll call and are indicated above. Damon Seils made a motion to excuse the absences of Vice Chair Jenn Weaver and Lisa Mathis. Michael Parker seconded the motion. The motion passed unanimously.

PRELIMINARIES:

2. Ethics Reminder

Chair Wendy Jacobs read the Ethics Reminder and asked if there were any known conflicts of interest with respect to matters coming before the MPO Board and requested that if there were any identified during the meeting for them to be announced. There were no known conflicts identified by MPO Board Members.

3. Adjustments to the Agenda

Aaron Cain pointed out the following two adjustments to the agenda: 1) item #7 (TIP Amendment #6) will be removed from the Consent Agenda and moved to become action item #15, and 2) item #7 on the Consent Agenda will be replaced with a letter of support for a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant application from the City of Durham.

4. Public Comments

Erik Landfried, manager of the Transit Equity Campaign led by Bike Durham and four other organizations, shared the video "Challenges to Equitable Transit – A Durham Documentary," which was made by local videographers. Erik Landfried said the main goal of the Transit Equity Campaign is to hold the public agencies in charge of updating local transit plans accountable to ensure the needs of transit riders, transit workers, and low-wealth and BIPOC (Black, Indigenous, and People of Color) communities are the first priority in the transit plans. Erik Landfried said the most commonly received public comments expressed the need for more frequent, reliable, and direct bus service, safer walks to bus stops, accessible and comfortable bus stops, and expanded paratransit services.

5. Directives to Staff

Chair Wendy Jacobs said there were no new directives to staff.

CONSENT AGENDA:

6. May 12, 2021 Board Meeting Minutes

7. Letter of Support for Beltline RAISE Grant Application
Dale McKeel, LPA Staff

8. Transit Safety Targets
Andy Henry, LPA Staff

9. SPOT 6.0 Draft Local Input Points Methodology
Anne Phillips, LPA Staff

10. 2021 CRRSAA Section 5310 Project Selection
Felix Nwoko, LPA Manager

11. FFY21 American Rescue Plan Split Letter
Felix Nwoko, LPA Manager

Pam Hemminger made a motion to approve the revised Consent Agenda. Michael Parker seconded the motion. The motion passed unanimously.

ACTION ITEMS:

12. MPO Board Governance Committee
Damon Seils, Town of Carrboro

Damon Seils shared an update on the progress of the Governance Committee and the consultant firm Stantec. Damon Seils said stakeholder interviews have been conducted and the consultants reported that they received many consistent messages from the various groups that were interviewed. Damon Seils said Stantec will now begin to analyze DCHC MPO performances and practices to develop some recommendations.

This item was for informational purposes; no further action was required by the MPO Board.

13. Triangle Bikeway Study Update
Dale McKeel, LPA Staff

Dale McKeel introduced Iona Thomas with McAdams consulting firm to provide the update on the Triangle Bikeway Study. Iona Thomas shared the vision for the 18-mile corridor as a commuter facility connecting job centers in the region. Iona Thomas shared an overview of the feedback from the public engagement efforts that have been received through online surveys and focus groups. Iona Thomas highlighted the importance of collaboration with NCDOT on project U-5774 (NC 54 Improvements), of which certain segments will be upgraded with multiuse paths as part of a complete streets project. Iona Thomas shared a map of alternatives, the recommended alignment, and plans for upcoming public input. The next steps for the study include continued coordination with NCDOT, public meetings, and updated website launch, and Triangle Working Group (TWG) meetings.

Chair Wendy Jacobs said she appreciates the coordination with NCDOT and asked if there is an estimate of when the Triangle Bikeway could be built. Iona Thomas responded that as of now, this project is in the Metropolitan Transportation Plan (MTP) but not in the State Transportation

Improvement Program (STIP), and it may be several years until there is an opportunity to program this project into the STIP. Additionally, some form of a regional structure would be necessary to take ownership of project implementation as the study winds down. Iona Thomas mentioned that next steps for project implementation is on the TWG meeting agenda for June 17th to address the question of "what will be the force to keep the project moving once a funded study has been completed?". Chair Wendy Jacobs said the Triangle Bikeway project would meet many of the MPO's goals, including connecting people to jobs and environmental sustainability. Iona Thomas said that there will need to be regional coordination and leadership to move the project forward, and noted that Wake County is trying to get funding together to complete the National Environmental Policy Act (NEPA) documents for their side of the project, which would better position them for competitive federal funding opportunities.

Aaron Cain said MPO staff will strategically investigate grant opportunities and other funding opportunities and provide an update at the August MPO Board Meeting. Charlie Reece said he appreciates how the current vision for the Triangle Bikeway utilizes connections to NC 54, especially in the South Durham portion, that would increase accessibility for those who live and work in South Durham. Iona Thomas said that working with and around the existing NC 54 has been tricky but there are efforts to adopt plans with the Triangle Bikeway so that NCDOT has to interact with the proposed alignment during their development of U-5774.

This item was for informational purposes; no further action was required by the MPO Board.

14. 2050 MTP – Alternative Analysis
Andy Henry, LPA Staff

Andy Henry said that much coordination has occurred amongst transit systems, Triangle J Council of Governments (TJCOG), DCHC MPO and the Capital Area MPO (CAMPO), and local jurisdictions to put the alternatives analysis (scenario) data together. Andy Henry said the purpose of the alternatives analysis is to spark discussion on different land use and transportation possibilities that will help formulate the preferred option. The scenario framework produces four different scenarios, each at the

nexus of a particular development foundation (land use) and a particular mobility investment foundation. Andy Henry explained each foundation and each of the three scenarios that will be investigated with Triangle Regional Model (TRM) data. Andy Henry mentioned the TRM performance measures will be useful to compare the different scenarios, in addition to congestion maps, travel isochrones, and travel time matrices that will provide a more thorough analysis. Andy Henry said the format of upcoming public engagement efforts are yet to be determined, but will target efforts to solicit feedback from communities of concern.

Michael Parker recalled that during the 2045 MTP development process, changing land use regulations had a greater impact on congestion and Vehicle Miles Traveled (VMT) than investments in transit. Despite these trends, Michael Parker said he did not see any changes in land use regulations amongst the scenarios, which triggers a broader conversation about the MPO's involvement in the development of land use policies. Andy Henry said the opportunity places development foundation assumes changes in land use to emphasize key hubs, high capacity transit and Transit Oriented Developments (TODs). Michael Parker asked if land use assumptions vary across the alternatives such that the TRM data would show the impact of land use variations on the performance measures. Andy Henry responded that the community plans development foundation assumes land use continues as it exists now, while the opportunity places development foundation assumes different land use, so the two scenarios can be compared.

There was a discussion on the impact of investments during different decades included in the 2050 MTP. Michael Parker suggested breaking out the TRM performance measures by decade to see which investments have the greatest impact. Andy Henry mentioned that the next 10 years of fiscally feasible projects are already programmed into the STIP, and when the preferred scenario is developed, projects will be broken out by decade.

Chair Wendy Jacobs asked how the highly technical information included in this presentation will be conveyed to the public and what methods will be used to help the public understand the content so they can provide informed input. Andy Henry said each scenario will have a one-page description and there will be tables and graphs that compare scenarios. Chair Wendy Jacobs pointed out the value of the complete communities mobility investment foundation that has an aspirational vision for the community achieved by investing in everything except more roads.

Damon Seils made a motion to authorize MPO staff to release the Alternatives Analysis for public comment when the modeling and documentation are complete. Pam Hemminger seconded the motion. The motion passed unanimously.

15. Transportation Improvement Program Amendment #6
Anne Phillips, LPA Staff

Anne Phillips pointed out one change to TIP Amendment #6 related to the results of the FY21-22 Call for Projects, more specifically the Surface Transportation Block Grant – Direct Attributable (STBGDA) local discretionary funding awarded proportionally to jurisdictions. The Town of Chapel Hill has asked to reallocate some of their STBGDA funding from the West Franklin Street Bus Islands to the Estes Drive bicycle/pedestrian project. Anne Phillips explained that this change will allow the Estes Drive project to move into construction this summer.

Michael Parker made a motion to approve the updated TIP Amendment #6. Pam Hemminger seconded the motion. The motion passed unanimously.

REPORTS:

16. Report from the MPO Board Chair
Wendy Jacobs, Board Chair

Chair Wendy Jacobs noted that the joint MPO board meeting with CAMPO is tentatively scheduled for Wednesday, September 29, 2021 at 9:00 am. Chair Wendy Jacobs mentioned the

concerning article regarding increased speeding and pedestrian fatalities that was included in the recent news articles and updates informational item.

There was a discussion about when the MPO Board and other local jurisdictions will be moving to in-person meetings. Charlie Reece will reach out to City Manager Wanda Page to find out information about the plan for reopening City Hall. Chair Wendy Jacobs said she will follow up with Aaron Cain and Vice Chair Jenn Weaver to create a survey to get input from MPO staff and MPO Board members. It was decided that the August MPO Board Meeting will be held virtually.

17. Report from the Technical Committee Chair
Ellen Beckmann, TC Chair

Ellen Beckmann said the Durham and Orange Transit Plans are both proceeding and are scheduled for a public engagement period beginning in late June. Ellen Beckmann said the Durham and Orange County Transit Plan Governance Study is underway with consultant selection. Ellen Beckmann mentioned the Durham Staff Working Group met in June to discuss amendments to the FY22 Work Program and the SWG decided that amendments would be considered in the fall after the next round of public engagement and public input would be used to inform the consideration of amendment requests. Ellen Beckmann said that Durham City and County, as well as the Town of Chapel Hill, will be participating in a Vision Zero leadership institute in June.

18. Report from LPA Staff
Aaron Cain, LPA Staff

Dale McKeel provided a federal funding update to follow up on the presentation in May on the American Jobs Plan. Since then, talks between the White House and the Senate GOP have ended without an agreement, but some bipartisan proposals are still being worked on. Dale McKeel added that work is still being done on the Fixing America's Surface Transportation (FAST) Act reauthorization in various committees in the United States House of Representatives and the Senate.

Andy Henry said MPO staff is working with consultants for the 15-501 corridor study to define the final product. Andy Henry mentioned Comprehensive Transportation Plan (CTP) Amendment #3 will be brought before the MPO Board in August and project statements are still underway.

19. NCDOT Reports

Lisa Mathis, NC Board of Transportation

There was no additional report.

Brandon Jones (David Keilson/Richard Hancock), Division 5 - NCDOT

Richard Hancock said the Old Durham/Old Chapel Hill Road project is progressing well despite utility issues and final completion is anticipated in June 2022. Richard Hancock said the East End Connector project is running into issues with final railroad alignment on the US-70 end, and the Alston Avenue project is scheduled to reopen at Holloway Street at the end of June while the whole project is slated for completion in October 2022.

Wright Archer (Pat Wilson, Stephen Robinson), Division 7 - NCDOT

Pat Wilson said the Town of Chapel Hill made a request for lane changes and the addition of bike lanes along Culbreth Road that is scheduled for after the road is resurfaced in July. Amy Ryan thanked staff and NCDOT for their quick turnaround on this request. Sally Greene mentioned the Chapel Hill bikeways plan includes a paved connector that needs to be built in order to allow for greater connectivity.

Patrick Norman (Bryan Kluchar, Jen Britt), Division 8 - NCDOT

Bryan Kluchar had no additional report.

Julie Bogle, Transportation Planning Branch - NCDOT

Julie Bogle had no additional report.

John Grant, Traffic Operations - NCDOT

John Grant had no additional report.

Bryan Lopez, Integrated Mobility Division - NCDOT

There was no additional report.

INFORMATIONAL ITEMS:

20. Recent News, Articles, and Updates

There was no discussion on informational items.

ADJOURNMENT:

There being no further business before the DCHC MPO Board, the meeting was adjourned at 10:45 a.m.

Triangle Mobility Hub and SPOKE Project

A4 – GoTriangle Short-Range Transit Plan

GoTriangle – FY 2025 to FY 2028

Short Range Transit Plan

December 2023

NELSON NYGAARD

Overview

GOTRIANGLE OVERVIEW

GoTriangle is the regional transit provider in the Triangle Region, with service in Wake, Orange, and Durham Counties. GoTriangle provided over 1.5 million fixed route passenger trips annually in 2023[1].

The purpose of the GoTriangle SRTP is to:

- Guide service investments funded through the Wake, Durham, and Orange County Transit Plans.
- Reflect GoTriangle goals and objectives in the short-term and align with County Transit Plans objectives.
- Identify projects for programming and funding in operating and capital models.
- Engage members of the public to ensure their feedback and needs are included in transit investments.

This document brings together work completed for GoTriangle under the Wake Bus Plan and in Durham and Orange Counties after the completion of their respective Transit Plans, providing a schedule of investments for the next three years (Fiscal Years 2025 – 2028). Projects identified for investment between FY28 and FY30 are also referenced, but not detailed in the SRTP. Funding for identified projects is provided through multiple sources, including the GoTriangle general fund, the Wake Transit Plan, the Durham Transit Plan, and the Orange County Transit Plan.

THE WAKE TRANSIT PLAN

In 2016, voters in Wake County approved a tax package to invest $2.3 billion in public transit services over a 10-year period between 2017 and 2027. The combined investment strategy, branded as the Wake Transit Plan, reflects a vision for transit service development articulated through “Four Big Moves” which include:

- **Connect Regionally:** Create cross-county connections by developing a combination of regional bus and higher capacity transit investments.
- **Connect All Wake County Communities:** Connect all 12 municipalities in Wake County plus the Research Triangle Park (RTP) and Raleigh-Durham International Airport (RDU). This investment will include a combination of regional and express bus routes.
- **Frequent, Reliable Urban Mobility**: Develop a frequent transit network in Wake County’s urban core. The frequent transit network will include development of bus rapid transit services, plus high frequency bus services along major corridors in the County’s most developed communities.
- **Enhanced Access to Transit:** Directs investment to existing fixed-route services to make service more convenient. The investments include expanding transit operating hours, such as providing more service on weekend days or increasing services on weeknights. Enhancing access to transit also increases the frequency of service on many routes and develops demand-response services in lower density areas.

1 Source: National Transit Database (NTD) GoTriangle 2021 Agency Profile.

THE DURHAM TRANSIT PLAN

In 2011, Durham County voters approved a half-cent sales tax to fund public transportation improvements in Durham and the Triangle region. The Durham County Transit Plan, adopted in 2013 and subsequently updated in 2017 and 2023, contains a program of transit services and projects to be funded by the dedicated local revenues for transit in Durham County through 2040. The Governing Boards directing the implementation of the Durham Transit Plan are accountable for governing and overseeing implementation of the Durham Transit Plan. The Durham Transit Governing Boards include the Governance ILA parties, which consists of the Durham Board of County Commissioners, The Durham-Chapel Hill-Carrboro (DCHC MPO) Executive Board, and the GoTriangle Board of Trustees. The 2013 Interlocal Agreement (ILA), updated in 2023 created a Staff Working Group that includes representatives from Durham County, the City of Durham, GoTriangle, and DCHC MPO to review the Plan and prepare updates as needed, at least every 4 years. The 2023 Plan Update provides over $1 billion of local transit dedicated dollars to spend on transit improvements in Durham through 2040, guided by four main goals and objectives:

- Accessibility: Providing opportunities for all users to access transit.
- Connectivity: Providing a well-connected, multimodal transportation network.
- Convenience: Creating reliable transit options and providing dependable information to riders.
- Sustainability: Creating resilient infrastructure to meet the needs of existing and future populations.

The projects and priorities identified in the Durham Transit Plan guide the development of short-term planning efforts in Durham County, including the Short-Range Transit Plans for both GoTriangle and GoDurham. The Short Range Transit Plan provides detailed guidance to implement GoTriangle's projects and informs the annual work programs or budgets of the Durham Transit Plan, which are adopted jointly by the Durham Board of County Commissioners and the GoTriangle Board of Trustees.

THE ORANGE TRANSIT PLAN

In 2012, Orange County voters approved a half-cent sales tax to fund transit service and transit infrastructure improvements. These revenues go towards Orange County Public Transportation, Chapel Hill Transit, and GoTriangle. These funds are allocated based on the Orange County Transit Plan, first approved in 2012 and subsequently updated in 2017 and 2023. The Governing Boards directing the implementation of the Durham Transit Plan are accountable for governing and overseeing implementation of the Orange Transit Plan. The Orange Transit Governing Boards include the Governance ILA parties, which consists of the Orange Board of County Commissioners, The Durham-Chapel Hill-Carrboro (DCHC MPO) Executive Board, and the GoTriangle Board of Trustees.

The Orange County Transit Plan is guided by five core community values:

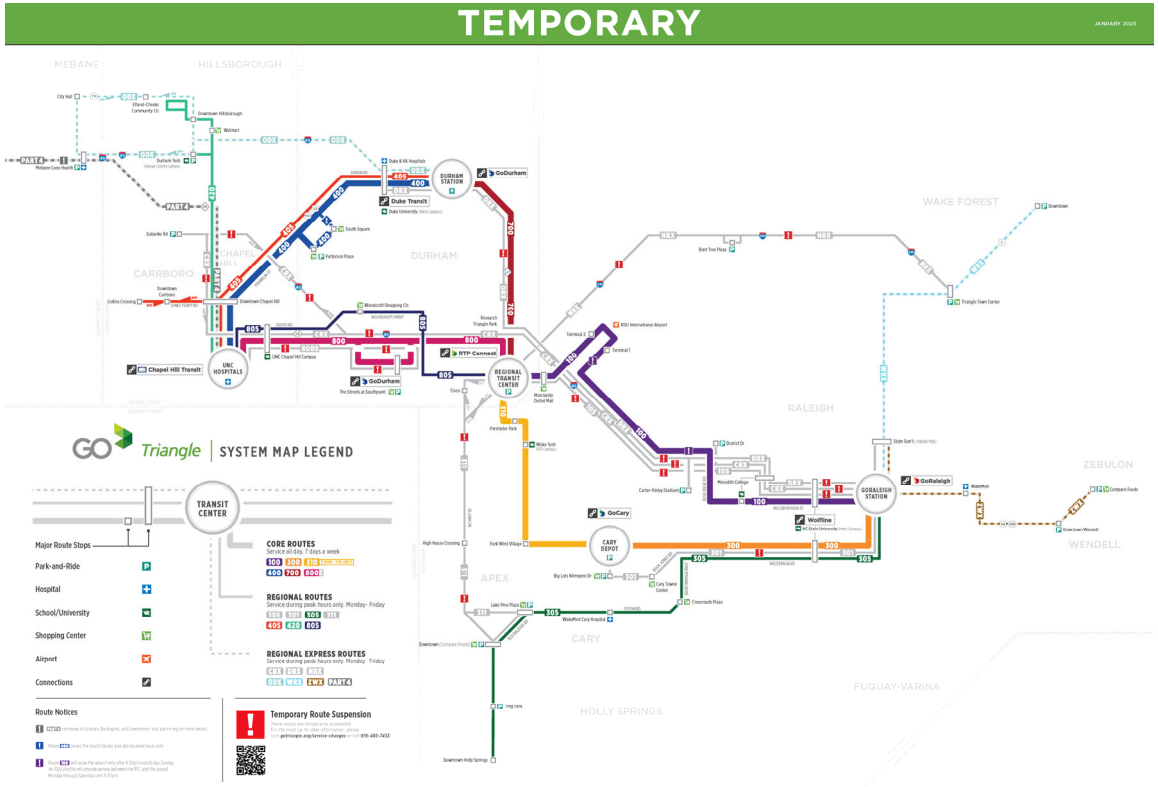
- Equity: Prioritize the transit needs of under-served for transit-dependent residents.
- Environmental Sustainability: Prioritize accessible and convenient transit service in areas with existing or planned higher density development.
- Economic Prosperity: Prioritize increasing access to jobs and opportunities.
- Affordable & Attainable Quality of Life: Prioritize transit service connections to affordable housing, recreation, and arts and cultural opportunities.
- Transportation & Access for All: Prioritize transit service that increases transit access for the most people to the most places.

Existing Conditions

EXISTING SERVICE

GoTriangle provides service throughout the Triangle region, filling in service gaps outside central urban areas and connecting across counties and communities and serving regional destinations (Figure 1). GoTriangle service includes 13 regional routes that operate during peak periods and seven core routes with all-day and weekend service. GoTriangle's network also plays a critical role providing regional connections between local and university systems. Two GoTriangle-sponsored regional express routes are operated by GoRaleigh (WRX and ZWX) and one GoTriangle-sponsored regional route is operated by Chapel Hill Transit (Route 420). As of December 2023, four peak-only regional routes were suspended.

Figure 1 Existing System Map

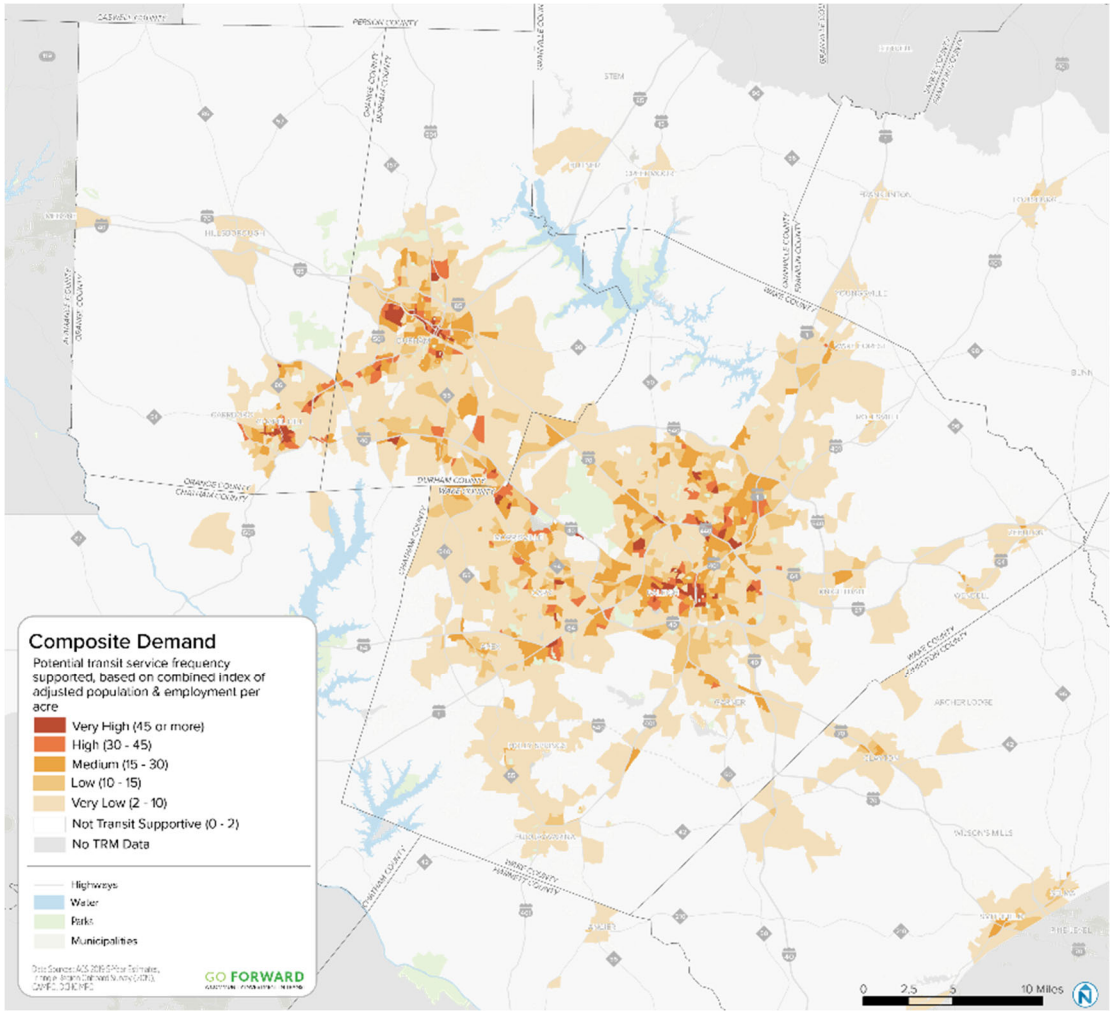


Source: GoTriangle

THE DEMAND FOR TRANSIT

A main factor in determining the demand and need for transit service is density: places where concentrations of people live and work. Generally, transit is accessible to people within walking distance of a bus stop, so the travel market—and the type and amount of service needed to serve this market—is dependent on the number of people who live, work, or visit within walking distance of a bus stop. GoTriangle serves areas across the spectrum of density and composite demand. Figure 2 shows the composite demand of the GoTriangle service area, which ties transit demand to service levels based on a combined index of adjusted population and employment per acre. This measure includes demographic factors linked to transit use, such as access to a personal vehicle, for example. GoTriangle serves many areas with high and very high composite demand, such as city and town centers, but also focuses on lower demand in surrounding towns. Service passes through areas that are not transit supportive to reach outlying very low and low demand areas and connect them to high demand nodes.

Figure 2 GoTriangle Service Area: Transit Demand



Sources: ACS 2019 5-Year Estimates, Triangle Region Onboard Survey (2019), CAMPO, DCHC MPO.

RIDERSHIP AND PERFORMANCE

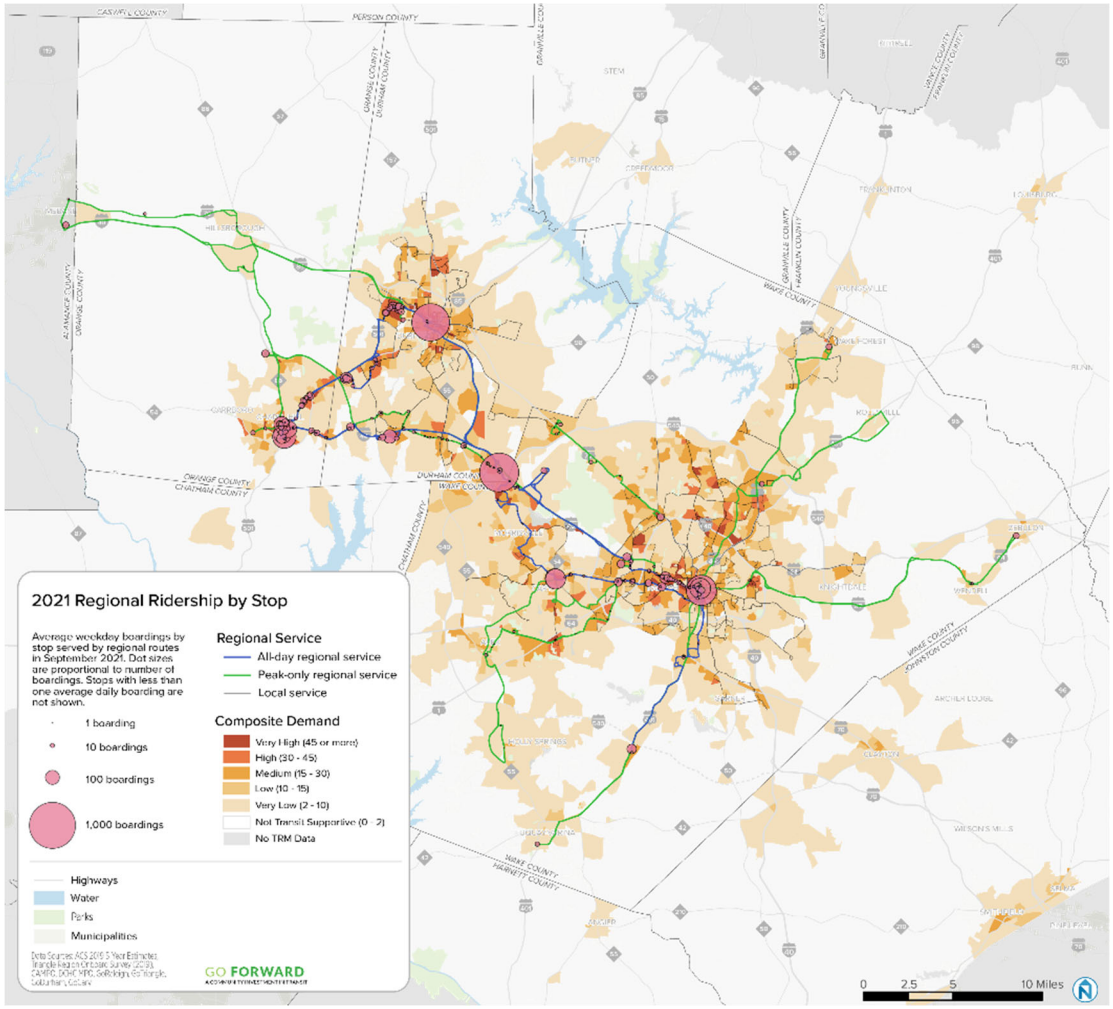
Ridership

Ridership on GoTriangle transit routes is in alignment with the underlying market, with the highest number of daily boardings at transfer locations, job centers, and in the downtowns of major municipalities (see Figure 3).

The following bus stops and transfer locations have the highest regional ridership (in order of highest average weekday boardings):

- The Regional Transit Center in Research Triangle Park
- Durham Station
- GoRaleigh Station / Moore Square
- Cary Depot (downtown Cary)
- UNC Hospitals (multiple stops)

Figure 3 Regional Ridership by Stop, 2021



Sources: CAMPO, GoRaleigh, GoTriangle, GoCary, GoDurham April 2021 ridership data adapted by Nelson\Nygaard Associates, ACS 2019 5-Year Estimates, Triangle Region Onboard Survey (2019), DCHC MPO.

PUBLIC ENGAGEMENT KEY FINDINGS

Wake County

The Wake Bus Plan Working Group conducted public engagement on the Wake Bus Plan project in the Spring 2022 and Winter 2023:

- In April and May 2022, the Wake Bus Plan shared initial service concepts with transit riders, stakeholders, and members of the community.
- In February 2023, the Wake Bus Plan shared draft final versions of the Wake Bus Plan with an emphasis on explaining service changes, including changes to individual routes and changes to the overall transit network.

Feedback collected in Spring 2022 showed that riders and residents want GoTriangle—and other regional service providers—to focus on transit fundamentals, such as reliability and predictability, travel time, and particularly a desire for more all-day service. Travel to work was still the most common use of transit, but service to shopping centers, medical facilities, and schools was also valued.

Durham and Orange Counties

The GoDurham and GoTriangle SRTP Working Group conducted additional stakeholder and community engagement activities to specifically focus on service changes developed and recommended for Durham and Orange counties. Engagement activities were conducted in Summer and Fall 2023; the first round focused on service improvement concepts and the second round shared recommended service changes. The team collected this information through surveys, pop-ups, focus groups, tabling at other events and information boards placed at high ridership bus stops.

Bus riders were generally in favor of both the service concepts and recommendations shared as part of the engagement. Transit riders were enthusiastic about increased service frequency, longer hours of operation, new crosstown routes, and more midday service. The Working Group adjusted draft concepts based on feedback collected through the engagement, including the following:

- Routes 100X and DRX: Continue to serve Duke and VA Hospital, Downtown Durham, NCSU, and Downtown Raleigh on all trips. In order to provide a faster all-day alternative to route 100X and faster midday trips between Duke, VA Hospital, and Downtown Raleigh, provide midday hourly service on Route DRX. Route DRX would run less frequently during peak times, about every 45 minutes, but route 100X would provide service on the same corridor every 15 minutes Monday-Friday until 7pm.
- Routes 400 and 405: Only designate AM Carrboro - Durham and PM Durham - Carrboro trips as 405, all other trips between Durham and Chapel Hill would be route 400 to provide consistent service, improve system legibility, and reduce confusion among routes 400 and 405.
- Route 420: Continue to provide direct service to Chapel Hill and UNC Hospitals from Hillsborough
- Route CRX: Improve access to Route CRX in the following ways
    - Include stops near the intersection of South Road and S Columbia St. in Chapel Hill to improve access to Downtown Chapel Hill and to improve transfers between Route CRX and Chapel Hill Transit
    - Work with Chapel Hill Transit to improve wayfinding, communication, and coordination between regional and local services so that riders are able to more easily access regional transit services from more locations in Chapel Hill and Carrboro.
    - Delay implementation of the service change until after the construction on I-40 is completed so that existing park rider users will have consistent overall travel times

before and after the alignment change from Eubanks to a new park and ride near the interchange of NC 54 and I-40.

  - Increase park and ride availability near the DRX stop in Durham to improve options for existing CRX riders from Hillsborough and points north and west to access express services to Raleigh.

- Route 800: Improve bus stops and pedestrian access to improve transfer opportunities between Route 800 and Route 805 as well as GoDurham Routes 5 and 12.
- Route ODX: Provide connections between Route ODX and Route 420 as well as Orange County Public Transit Routes at the new northern Hillsborough Park and Ride to provide continued access to Route 420 as well as the Durham Tech Orange County Campus.
- The team also made minor adjustments to alignments and expanded the hours of operation on some routes.

Recommended Projects

INTRODUCTION

The SRTP for GoTriangle is focused on service and capital improvements that address findings from the regional service assessment, reflect feedback heard by riders, service providers, and municipalities, and takes into consideration regional growth, changing demographics, and ridership recovery since the COVID-19 pandemic.

These strategies include:

- Ensuring reliable service
- Strengthening all-day regional connections
- Expanding the types of trips served by GoTriangle by adding midday, evening, and weekend service
- Adjusting peak-only services to reflect changing travel patterns
- Improving the rider's experience at stops and ensuring smooth transfers throughout the system and across modes.

The following operating and capital project sheets detail these strategies.

OPERATING PROJECTS

GoTriangle operating projects are funded based on the counties the service is located within, with some projects receiving support from multiple counties. The projects serving multiple counties were developed and prioritized based upon the transit planning processes in those counties.

For GoTriangle, projects funded by the Wake, Durham, and Orange County Transit Plans for FY2025 to FY2028 include:

- Extend the hours of operation for Route 300 Cary-Raleigh and improve reliability by shortening its travel path in downtown Raleigh.
- Add midday, evening, and weekend service on Route 305 between Apex and Raleigh, as well as phasing in midday and weekend service to Holly Springs.
- Increase weekday service frequency and add weekend service to Route 310 between Cary, Wake Tech and Regional Transit Center
- Improving bus service in South Durham and Orange Counties to reflect pandemic recovery ridership trends, provide all day connections, and streamline transit services:
  - Realign Route 800 to operate on NC-54 between Southpoint and RTC in conjunction with changes to GoDurham Route 12.
  - Shorten Route 805 and expand its service hours to run between Southpoint, Woodcroft, and UNC all day.
  - To accommodate this improved span, the pre-pandemic service on Route 800S would be discontinued.
- Improving bus service between Durham and Raleigh to reflect pandemic recovery ridership trends, increase frequency, provide all day connections, and expand hours of service:
  - Create a new route (Route 100X) connecting Raleigh, NCSU, Regional Transit Center, Hub RTP, Durham Tech, NCCU, and Durham Station with limited stop service every 15 minutes on weekdays, 30 minutes on weekday early evenings and weekends, and 60 minutes on weekend evenings and weekday late evenings.
  - Increase the hours of operation for the RDU Airport Shuttle with 30 minute-service to RDU Airport at all times,

providing timed connections to the Route 100X and other GoTriangle routes at the Regional Transit Center.

  - To accommodate these new and improved services, the pre-pandemic service on routes 100, 105, and 700 would be discontinued.
  - Expand the span of the express DRX route with hourly service in the midday and evening and every 45 minutes during the peak period

- Improve the connection between Downtown Durham and Chapel Hill with more direct service, higher frequency, and longer spans:
  - Realign Route 400 to be more direct, operate later at night, and time with the 405 to provide 15-minute service all day on weekdays, and add service every 30 minutes on weekday early evenings and on Sundays before 7pm.
  - Stagger timing of Route 405 to provide 15-minute service between the 400 and 405 and serve the same alignment at all times.
- Improve the ZWX Zebulon-Wendell Express with midday service and a route realignment to serve shopping, residential neighborhoods, and other destinations in Wendell Falls and Zebulon.
- Reinstate Route 311 between Apex and RTC as an hourly peak-period service.
- Re-align the 420 to take advantage of ongoing and future roadway projects and serve a new Park and Ride in Hillsborough.
- Re-align the CRX to make it more direct and improve reliability for riders.
- Re-align the ODX to make it more direct and improve speed and reliability for riders and serve a new Park and Ride in Hillsborough.

Lastly, GoTriangle Route NRX was suspended during the COVID-19 pandemic (starting in March 2020). This route had low performance prior to the pandemic and serves a peak-focused travel market that has not yet recovered from the pandemic. The Wake Bus Plan evaluated the restoration of this route, but this project had a low priority according to the Project Prioritization Policy, relative to the improvements listed above.

DURHAM, ORANGE AND WAKE COUNTIES: REGIONAL TRANSIT CENTER (RTC)

Facility Type: Transit Center

Location: Slater Road – Durham

Project Description: The GoTriangle Regional Transit Center (RTC) is the primary hub for GoTriangle regional services, offering connections to Wake, Durham, and Orange counties as well as the Raleigh Durham International Airport (RDU) and the Research Triangle Park (RTP). RTC will relocate the existing facility to a location with more convenient freeway access and better positioned to serve RTP.

Investment costs associated with this project include relocation costs as well as updates to the passenger amenities. The transit plans currently assume a local share of $27.7 million split 70-20-10 among the Wake-Durham-Orange transit plans. This $27.7 million will be used to match discretionary federal grants to support the full cost of the facility, which is assumed to be $58,200,000 in FY24, including purchase of vehicles. Ongoing schematic design will include revised cost estimates.

The Wake Bus Plan includes funding to support ongoing operating and maintenance costs associated with the facility. Ongoing operating costs will be included in the Wake Transit Plan when the RTC opens in FY28.

Services using Facility:

- RTP Connect
- GoTriangle Routes 100,105, 310, 311, 700, 800, 805, NRX

Representative image: project elements and design will vary by location.

Triangle Mobility Hub and SPOKE Project

A5 – Wake, Durham, and Orange County Transit Plans

Wake County Transit Plan Update

Wake County's Transit Investment Strategy (2021-2030)

Adopted by the CAMPO Executive Board - April 21, 2021
Adopted by the GoTriangle Board of Trustees - April 28, 2021

GO FORWARD
A COMMUNITY INVESTMENT IN TRANSIT

Chapter 2: Wake County Transit Plan Update

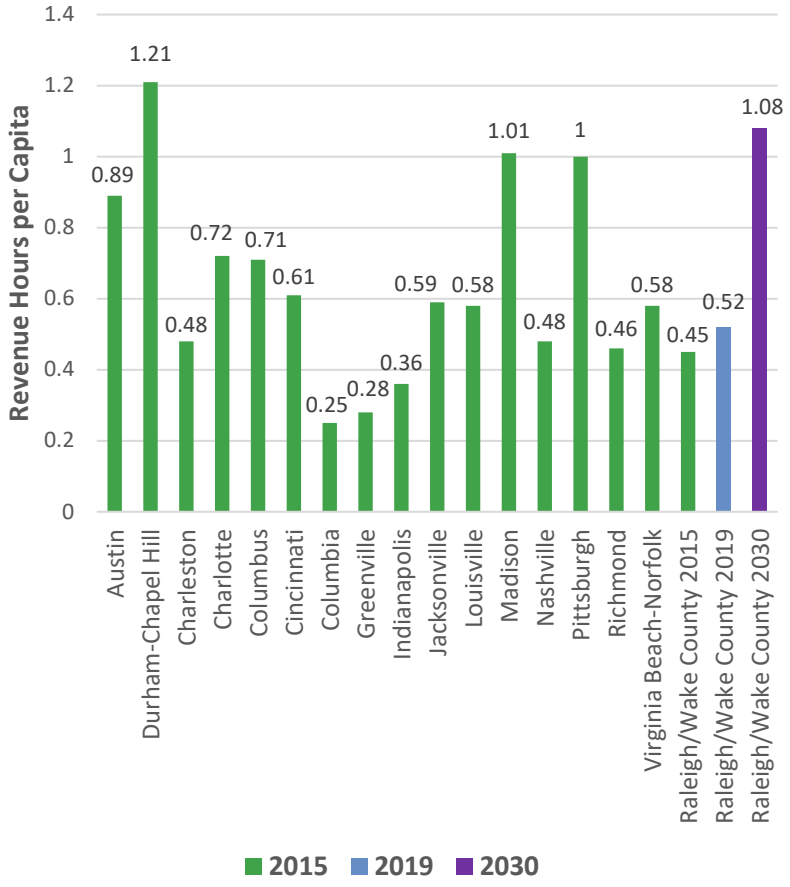
As discussed, the Wake County Transit Plan is built around Four Big Moves, which collectively create the framework for transit investment in Wake County. This section describes these Big Moves (including the type of investment and recommended modal technologies associated with each) and also compares the outlook for future transit services to existing services. Further, this section notes the progress made in the first four (4) years of implementation between 2016 and 2020 and any changes being made between the original Wake County Transit Plan and this plan update.

BIG MOVES: ENHANCED TRANSIT IN WAKE COUNTY

Wake County has had various forms of transit service over the years, with bus services operating in the County since the 1950s. As the region grew and developed, residents consistently expressed a desire and need for additional transit investment to make services more convenient, easier to use, and easier to understand. The Wake County Transit Plan responded to these needs with a funding and transit development plan to substantially expand and enhance the system and allow the County to catch up with current demand, anticipate future demand, and make notable improvements to the user experience. As shown in **Figure 4**, prior to the Wake County Transit Plan, Wake County was in the bottom range of its peers in terms of service hours provided per capita.

As shown in **Figure 4**, implementation of the Wake County Transit Plan through 2019 has increased Wake County's per capita transit service output from 0.45 to 0.52, or by 15.6%. The Wake County Transit Plan is anticipated to change its standing in terms of per capita investment in transit relative to peer regions by 2030. The recommended plan makes four Big Moves—major improvements in four (4) key areas, shown in the next four (4) sections.

Figure 4 Peer City Transit Abundance (Annual Revenue Hours per Capita)



Big Move 1: Connect Regionally

Cross-county connections will be strengthened with a variety of bus and rail investments. The Wake County Transit Plan will fund the Wake County share of a new commuter rail service from near Duke University in Durham to Garner in the North Carolina Railroad (NCRR) corridor. This commuter rail line may be extended to Clayton and other areas farther into Johnston County to the east with state, federal, and/or Johnston County support.

The Transit Plan will also enhance connections to Orange County, Raleigh-Durham International Airport (RDU), and other key destinations with more frequent express bus routes. Additionally, by 2030, Wake BRT is planned to extend to Research Triangle Park (RTP) and Clayton, furthering regional connections with all-day frequent service. These BRT extensions are additional investments beyond those envisioned in the original Wake County Transit Plan that were made possible with the acquisition of competitive state funding for regional high-capacity transit projects. Other agencies in adjacent counties and municipalities will participate in funding the interregional connections. **Figure 5** illustrates major elements of each connection across the region that are proposed to be implemented through 2030.

Unlike investments completely within Wake County, funding many of the investments for this Big Move will involve agreements with other counties. Although this plan makes reasonable assumptions about a Wake County share, the agreements are not yet in place, and the Wake County shares used in this plan should be viewed as approximate.

BIG MOVE 1: CONNECT REGIONALLY

Key Benefits:

Pre-Wake County Transit Plan (2016) – If you planned a trip from Durham to Raleigh at 5PM using NC 147 and I-40, an online mapping tool would indicate that the trip would take between 35 and 80 minutes. The variation in time and the potential for delay has huge impacts.

Proposed with Transit Plan – Traveling at peak times, the Commuter Rail will travel between Durham and Raleigh on a consistent and reliable 45-minute or faster schedule and with more stops along the corridor than existing express bus services.

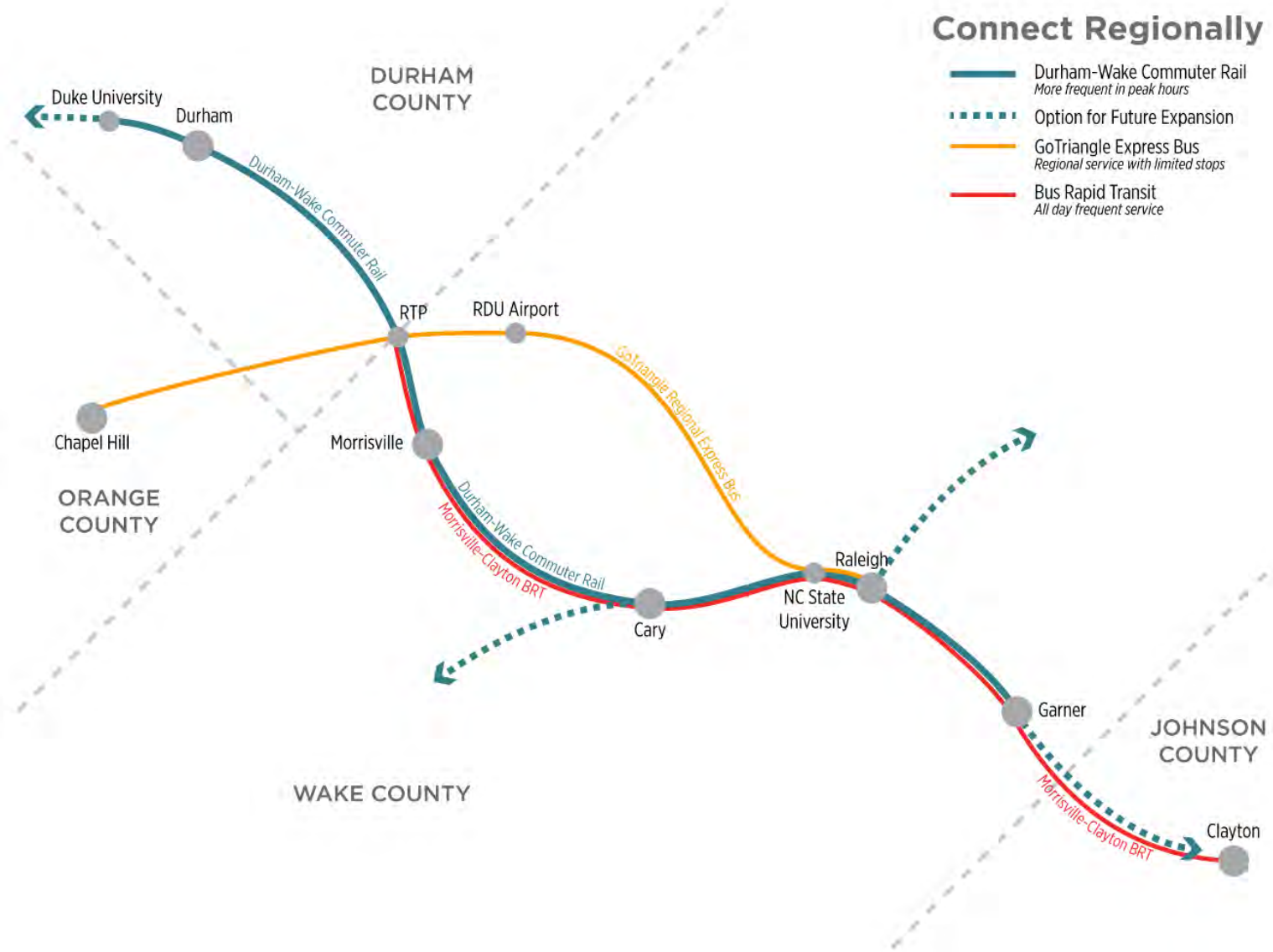
Key Investments:

- 37-mile commuter rail connecting Garner, Raleigh, North Carolina State University, Cary, Morrisville, RTP, Durham, and Duke University
- Enhanced connections to RDU and Chapel Hill

Transit Plan Updates:

- Improvements to express bus service between Wake and Durham Counties completed as of 2020
- Improvements to service to RDU completed as of 2020
- Commuter rail construction planned to be completed in the 2028-2030 timeframe, with potential extension to Clayton and operations beginning by 2030
- Wake BRT extensions to Research Triangle Park and Clayton added to plan to begin operations in the 2028-2030 timeframe

Figure 5 Big Moves: Connect Regionally



Big Move 2: Connect All Wake County Municipalities

The Wake County Transit Plan will connect all 12 municipalities in Wake County with transit service connections between individual communities and downtown Raleigh. Big Move 2 also includes connections between Wake County municipalities/communities and Research Triangle Park (RTP), the airport, and other major destinations (see **Figure 6**). New links are also provided between some of the smaller communities for employment, shopping, and medical trips. Connecting services will be provided through a combination of 30- and 60-minute all day service, peak-only service, and commuter rail.

Bus rapid transit services are planned to connect RTP, Morrisville, Cary, Raleigh, and Garner. Thirty-minute all-day services will connect RTP, the airport, Garner, and the Wake Tech campus on the northern edge of Fuquay-Varina. Apex will receive service that operates every 30 minutes during rush hour and 60 minutes the rest of the day. Sixty-minute all-day services will connect to Knightdale and Wake Forest. Peak-focused services, including the regional commuter rail, are provided to and between other communities and destinations. Additionally, BRT infrastructure such as dedicated busways, will benefit all buses using those routes. As the communities grow and change over time, it is anticipated that the transit connections will also change and grow.

BIG MOVE 2: CONNECT ALL WAKE COUNTY COMMUNITIES

Key Benefits:

- Network supports each municipality in Wake County with transit service
- Roadmap for how transit services can grow as communities grow
- Links communities to make multiple trips possible

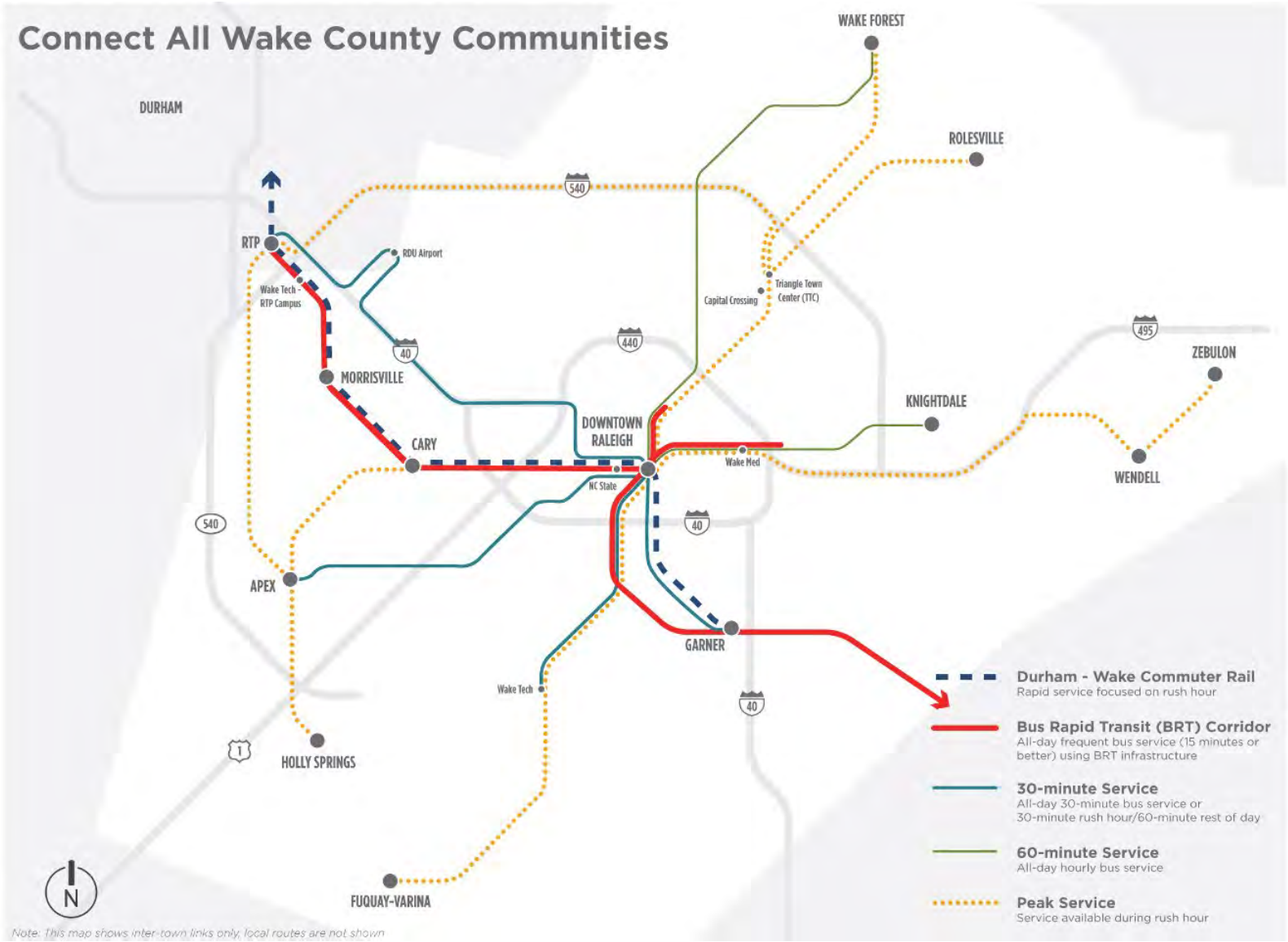
Key Investments:

- Service to all 12 municipalities, to RDU and RTP, and to Durham and Chapel Hill

Transit Plan Updates:

- As of 2020, all Wake County communities have been connected with fixed-route bus service
- Increased service to RTP and RDU has been implemented
- Further span and frequency improvements are planned for connections to Apex, Morrisville, and RTP
- Due to funding constraints identified through the transit plan update process and the overall desire of the Wake County community to fund the signature components of the original plan, a very small number of routes may not reach their originally planned buildout levels of service (e.g., full span and/or frequency) by 2030

Figure 6 Big Moves: Connect All Wake County Communities

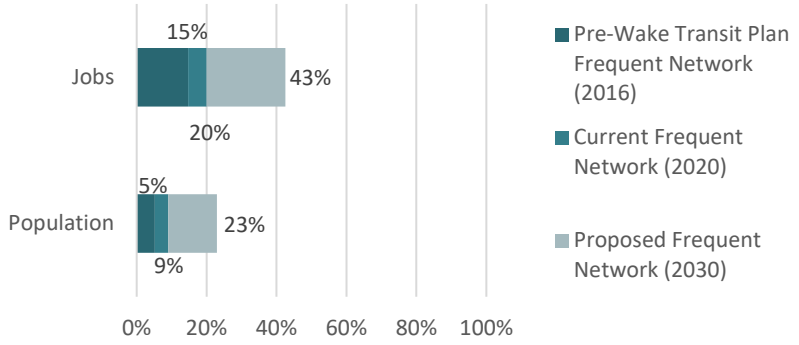


Big Move 3: Frequent, Reliable Urban Mobility

The size of the frequent transit network—service every 15 minutes or better all day—in Raleigh and Cary will increase from 17 miles to approximately 99 miles. The original Wake County Transit Plan invested in an increase from 17 to 83 miles. However, an additional frequent network route (Avent Ferry), as well as an extension of the originally planned network along Glenwood Avenue, were included through more in-depth implementation planning since the adoption of the original plan. Further, an extension of one of the BRT corridors envisioned in the original plan that is planned to operate at high frequencies has also been added to the planned frequent network (i.e., BRT from Cary to RTP). Frequent service generally follows patterns of high transit demand, characterized by higher densities, walkability, linearity, and proximity. Weekend and evening service hours will expand throughout the county, which is particularly important to people working in the service sector and other jobs that do not follow a traditional 9-to-5 weekday schedule. **Figure 8** shows the BRT and frequent transit network to be implemented by 2030.

BRT is a key element of enhancing urban mobility in the Transit Plan. Infrastructure investments include exclusive busways in many locations, as well as priority treatment at traffic signals and fixed stations with off-board fare collection to speed boarding. With these investments, the Wake County Transit Plan will increase the number of people and jobs with access to frequent transit by more than double and more than four times pre-Wake County Transit Plan levels, respectively (see **Figure 7**).

Figure 7 Population and Jobs within ¾ Mile of Frequent Service



BIG MOVE 3: FREQUENT, RELIABLE URBAN MOBILITY

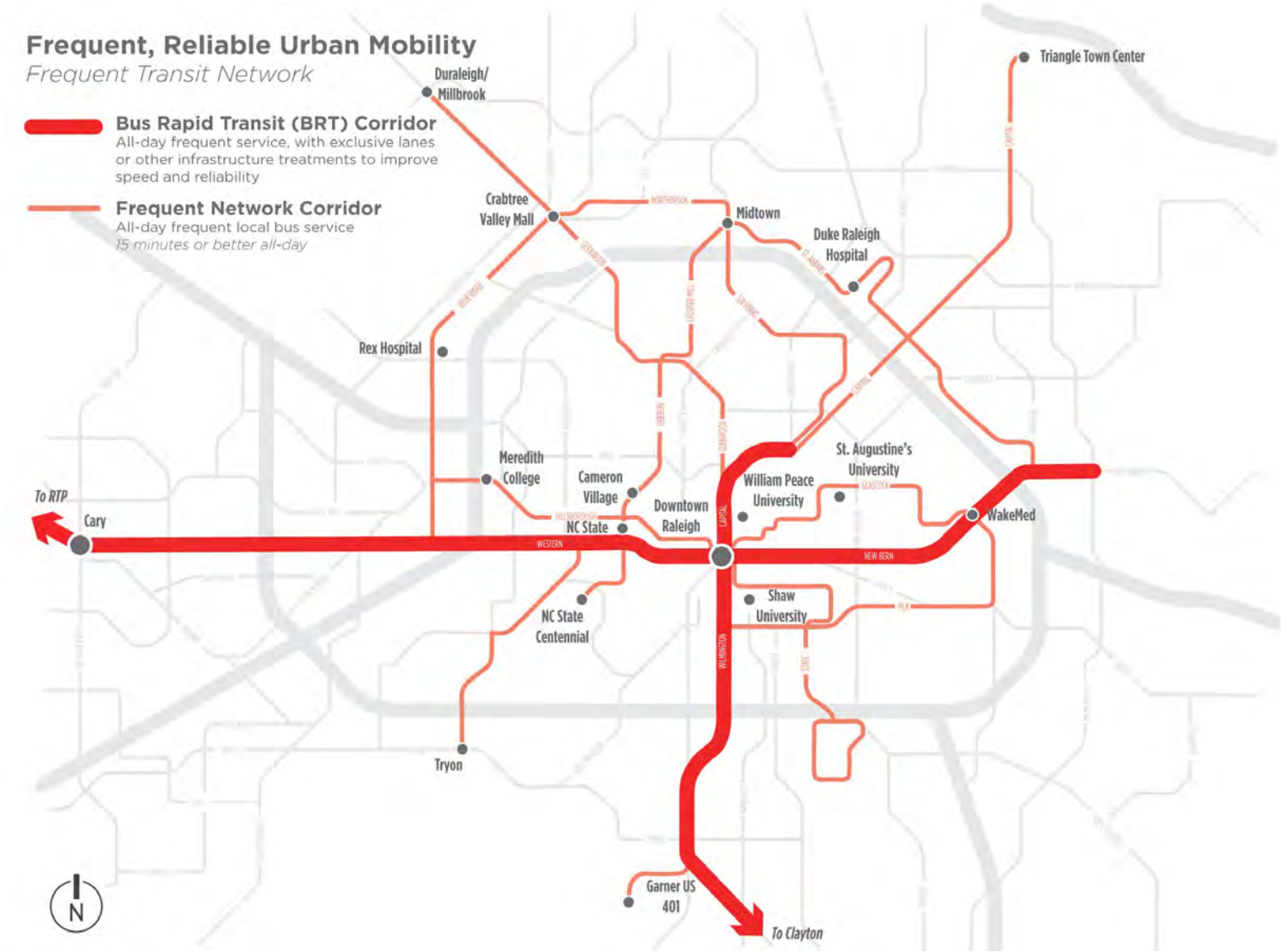
Key Investments:

- Approximately 99 miles of frequent network and up to 47 miles of BRT infrastructure

Transit Plan Updates:

- Expanded frequent and BRT networks beyond 83 miles to approximately 99 miles as a result of further study conducted after the adoption of the original Wake County Transit Plan, such as frequent service on GoRaleigh Route 11 Avent Ferry, extension of frequent service along Glenwood to Duraleigh Road, and the inclusion of a BRT extension to RTP
- New Bern BRT to begin operations in the 2023-2025 timeframe, Western BRT in the 2026-2028 timeframe, Southern BRT in the 2027-2029 timeframe, and Northern BRT in the 2028-2030 timeframe
- Wake BRT extensions to RTP and Clayton to begin operations in the 2028-2030 timeframe

Figure 8 Big Moves: Frequent, Reliable Urban Mobility

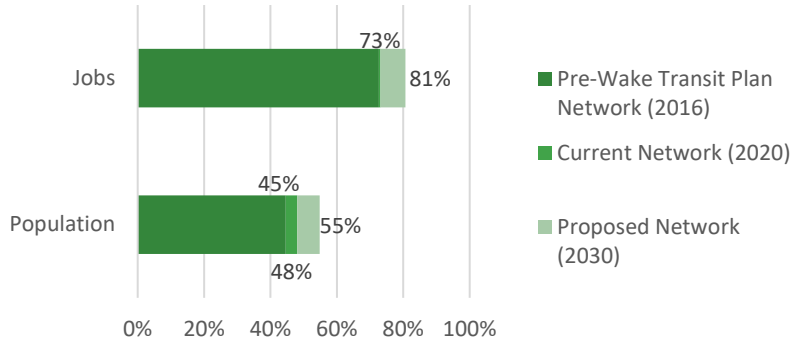


Big Move 4: Enhanced Access to Transit

The Transit Plan will improve fixed-route service by increasing span (hours of operation) on weekdays and weekends, increasing frequency, and expanding the extents of many fixed routes, especially in Raleigh and Cary. For non-fixed route service, the Plan will increase funding for GoWake Access and paratransit services. The Plan also includes a Community Funding Area Program that provides a 50% match for 10 Wake County towns and the RTP to plan, design, and operate transit services designed to meet local needs. The blue-shaded regions in **Figure 10** represent areas with relatively close access to transit service (within ¾ mile), and the green areas represent municipalities that are eligible for 50% match funding for local service through the Community Funding Area Program.

The Wake County Transit Plan increases access to transit through increased investment in Wake County demand-response service provided by GoWake Access, as well as increased investment in passenger and on-street infrastructure in the county. These investments include more and better stops, shelters, and access to stop facilities. The combined impact of these investments is measured by the number of people and jobs with access to all-day fixed-route transit services (see **Figure 9**).

Figure 9 Population and Jobs within ¾ Mile of All-Day Service



BIG MOVE 4: ENHANCED ACCESS TO TRANSIT

Key Benefits:

Pre-Wake Transit Plan (2016) – Some routes did not operate on weekends, many routes stopped operating at 6PM on weekdays, and many routes provided infrequent service in the middle of the day.

Proposed with Transit Plan – To date, many local routes have been improved to operate seven (7) days a week, hours of operation for many routes have been extended until later in the evening, and frequency of service on many local routes has been improved during midday periods. These improvements will be made to most other local routes by 2030.

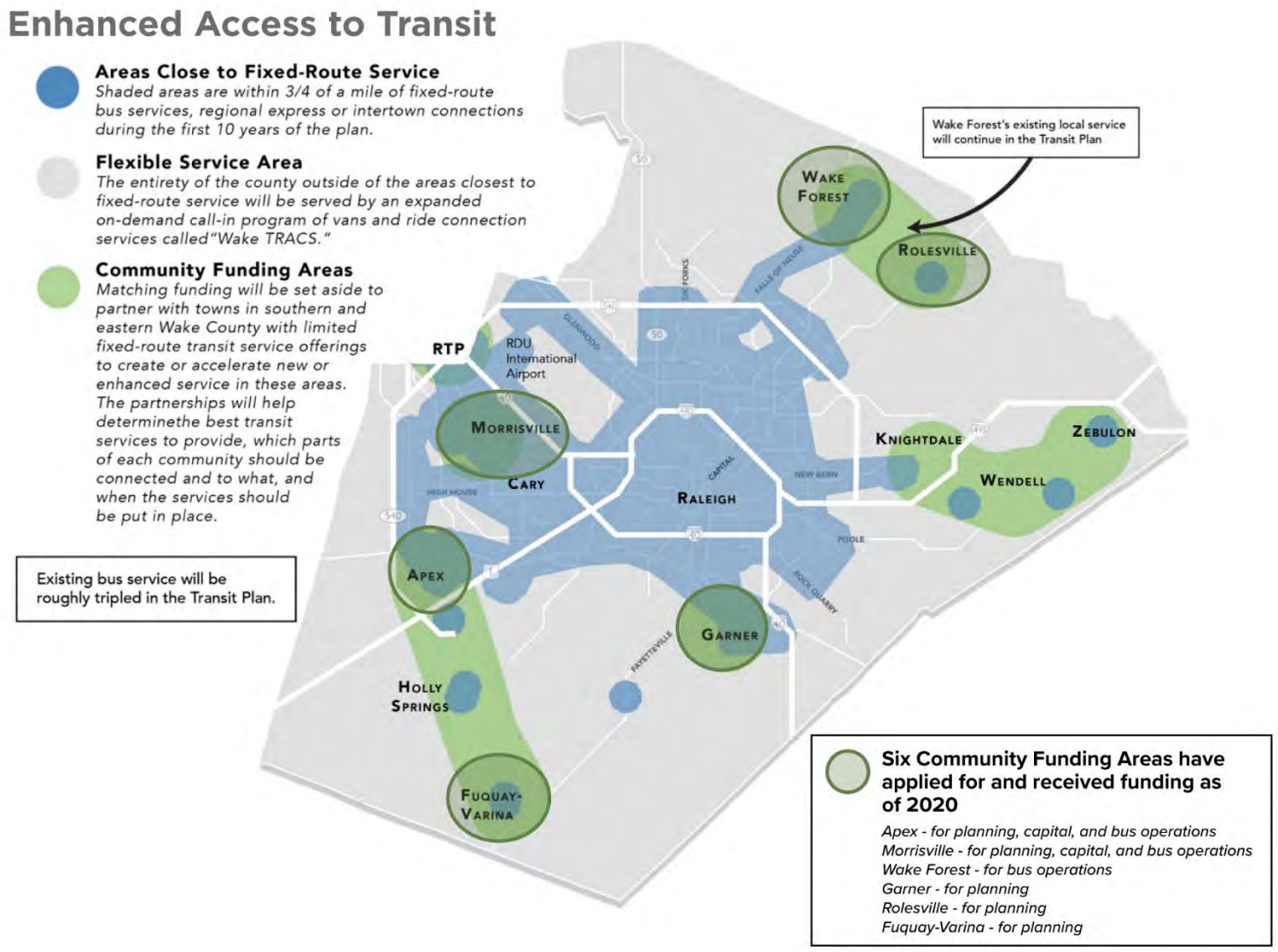
Key Investments:

- Roughly triple the amount of bus service available to residents of Wake County
- Increased hours of service on weekdays and weekends across the network
- Matching funds for community-based transit services in smaller municipalities

Transit Plan Updates:

- To date, 47% of all bus service expansion investment, measured in terms of the total amount of funding for expansion of bus service programmed for the original Wake County Transit Plan, has been implemented
- 100% of originally planned funding for Community Funding Area Program and GoWake Access services are still included
- Allows for over 90% of originally planned bus service expansion, measured in terms of total spending, to be funded within the 2030 horizon. Funding constraints identified through the transit plan update process and the overall desire of the Wake County community to fund the signature components of the original plan (e.g., BRT and commuter rail) resulted in some very limited reductions to originally planned bus service expansion.

Figure 10 Big Moves: Basic Lifeline Access to Transit



2023 DURHAM COUNTY TRANSIT PLAN

MAY 2023

01 EXECUTIVE SUMMARY

PARTNERS

The co-signatories of this Plan are the Durham-Chapel Hill-Carrboro (DCHC) Metropolitan Planning Organization (MPO), Durham County, and GoTriangle. The governing board of the DCHC MPO includes local, elected officials from the City of Durham, Town of Chapel Hill, Town of Hillsborough, Town of Carrboro, Durham County, Orange County, and Chatham County, as well as representatives from GoTriangle and the State Board of Transportation. The GoTriangle Board consists of appointed representatives from Durham, Orange, and Wake Counties, and the State Board of Transportation. The Project Team consists of DCHC MPO, Durham County, and City of Durham.

INTRODUCTION

The Durham County Transit Plan, also referred to as the "Plan," "updated Plan," "2023 Plan," and/or "Plan update," contains a program of transit services and projects to be funded by the dedicated local revenues for transit in Durham County through 2040. There are four dedicated revenue streams used toward funding the local share of projects and services in this Plan, referred to throughout the Plan as Tax District Revenues. These four dedicated Tax District Revenue streams are as follows:

- Article 43: Half-Cent Sales and Use Tax
- Article 50: Five-Percent Vehicle Rental Tax (portion allocated to Durham County by GoTriangle Board of Trustees)
- Article 51: Three-Dollar increase to GoTriangle Regional Vehicle Registration Fee
- Article 52: Seven-Dollar County Vehicle Registration Fee

According to the 2013 Interlocal Agreement (ILA), a Staff Working Group was created that included representatives from Durham County, GoTriangle, and DCHC MPO to review the Plan and prepare updates as needed, or at least every 4 years. These Staff Working Group representatives, and representatives from the City of Durham and City-County Planning Department, worked collaboratively as the Project Team in developing this plan update. The last updated Durham County Transit Plan was in 2017 and included funding for the Durham-Orange Light Rail Transit (DOLRT) project, which was discontinued in 2019. The funds previously allocated for the DOLRT project are reallocated as part of this updated Plan.

This Plan will provide over $1 billion of local transit dedicated dollars to spend on transit improvements in Durham through 2040. About half of the funding in this Plan will be used to continue the bus service improvements that were approved in the 2017 transit plan; no service improvements will be stopped because of the adoption of this Plan (GoDurham Route 20 was suspended in 2020 and permanently discontinued in 2022 due to low ridership). The other half of the funds will support new transit initiatives and projects throughout the County, as identified through the public involvement process.

CORE PRINCIPLES

The Project Team recognizes that certain groups of people have historically been underserved or disproportionately burdened by transportation decision-making outcomes. In an effort to intentionally include underserved communities while developing this Plan, two core principles to guide planning efforts were crafted based on the Listening and Learning sessions in held with the public in Winter of 2019: Equity and Community Trust. Below are the core principles and associated actionable steps to be taken by the Project Team.

EQUITY

Investing in underserved and transit-dependent communities.

- Prioritize transit access and investment for Environmental Justice (EJ) communities, including, but not limited to, minority race and ethnic populations (i.e., Black, Indigenous, Hispanic/Latinx, all racial and ethnic minorities), elderly populations, low-income households, Limited English Proficiency (LEP) communities, and zero-car households.
- Provide transit options and access to affordable housing developments.
- Improve access for people with mobility challenges.

COMMUNITY TRUST

Providing transparency throughout the planning and decision-making processes.

- Be transparent about how community feedback affects transit decisions.
- Account for how transit funds are spent and the cost of different types of services.
- Address what happened to recently discontinued or reduced services.
- Actively engage residents and empower them to influence decisions.
- Provide real opportunities for residents to impact service design.

GOALS AND OBJECTIVES

As the core principles guide the development of this Plan with overarching commitments to Durham County residents, the Plan's goals and objectives provide further direction for the Plan's development and final recommendations for transit improvements. The goals and objectives were based on community comments and vetted by the Plan's Technical and Outreach Committees. Below are a list of the Plan's goals and objectives:

ACCESSIBILITY

Providing opportunities for all users to access transit.

CONNECTIVITY

Providing a well-connected, multimodal transportation network.

CONVENIENCE

Creating reliable transit options and providing dependable information to riders.

SUSTAINABILITY

Creating resilient infrastructure to meet the needs of existing and future populations.

SUMMARY OF PLANNING PROCESS

This overview of the planning process describes the major milestones of the Plan's development. This holistic planning process is the culmination of meaningful community engagement, analysis by passionate and experienced transit professionals, and direction from dedicated community leadership. At each major milestone in developing the Plan, public feedback was synthesized and incorporated.

GOALS AND OBJECTIVES — 2019

The planning process started by establishing the Plan's principles, goals and objectives, shown on page 12. These were created using transit-related input gathered from annual on-board transit rider surveys, the Comprehensive Plan Update Listening and Learning Sessions, Phase I of the City of Durham Participatory Budgeting Process, and resident focus groups from the City of Durham's 2019 Annual Resident Survey.

EXISTING CONDITIONS — 2020

The next step was gaining an understanding of the transit needs and gaps in Durham County by performing in-depth existing conditions analysis.

TRANSIT OPTION PLANNING — 2021

This step involved developing three different illustrative transit options (or scenarios) that each addressed identified transit needs. Each transit option contained varying levels of investment in different types of projects and demonstrated benefits and tradeoffs associated with each. These options were presented to the public for feedback.

RECOMMENDED TRANSIT PLAN — 2022

This step involved building a single, cost-constrained, recommended transit Plan with the projects that were chosen as the highest priorities, based on public feedback on the options. This draft recommended transit plan was then presented to the public for feedback prior to finalizing.

FINAL PLAN AND APPROVAL — 2023

The final step of developing the Durham County Transit Plan was documenting the entire planning process and final recommendations, and presenting the final Plan to the approving bodies. The participating agencies will continue to work together implementing the recommended service improvements and projects identified in the Plan.

PUBLIC ENGAGEMENT

This Plan's development was centered on intentional, equitable, and representative public engagement and input. An Outreach Committee made up of staff from DCHC, City of Durham, Durham County, GoTriangle, and consultant team members led the planning and execution of three phases of engagement. Additionally, Aidil Ortiz of Aidilisms, a local public engagement specialist, led the recruitment, training, and management of the Engagement Ambassador Program. Engagement Ambassadors were intentionally recruited to be members of, or have direct access to people within one or more of the following communities:

- Low-income people and people who are housing insecure
- Justice-involved people
- Hispanic/Latinx
- Youth
- People with disabilities
- Seniors
- Transit riders

Engagement Ambassadors helped reach community members that staff and consultants are usually unable to reach. The following describes the three phases of engagement throughout the Plan development process, which the Engagement Ambassadors assisted with.

PHASE I

Phase I of public engagement focused on the existing system and confirming transit service improvement priorities previously expressed by Durham residents.

PHASE II

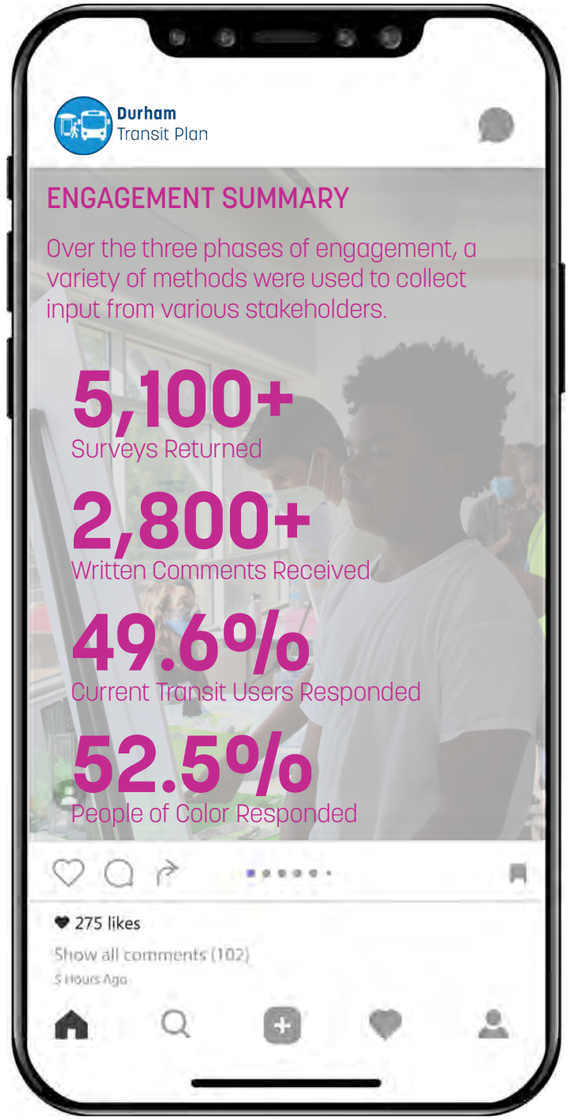
Phase II of public engagement presented three transit options to illustrate how funds could be invested differently. The public was presented the potential benefits of each transit option and asked to prioritize the capital and operating projects and varying levels of transit service.

PHASE III

Phase III of public engagement shared the draft recommended transit scenario containing the final recommended capital and operating transit improvements with the public, and asked for feedback.

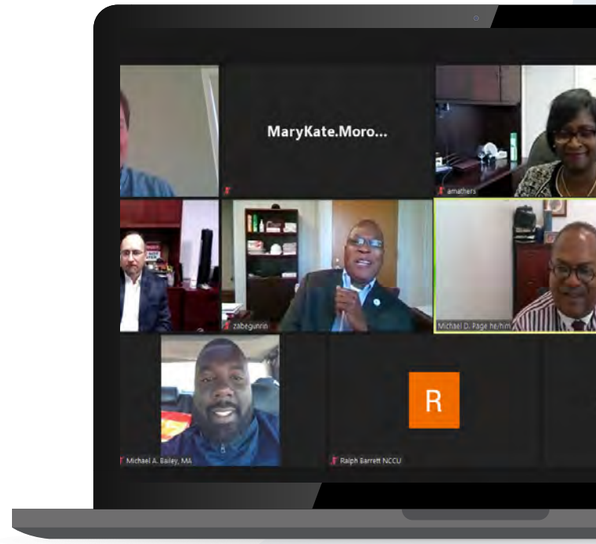
Public engagement was conducted before, during, and after the height of the COVID-19 pandemic using a mix of virtual and in-person outreach events, with an emphasis on transparency of the process. Community leaders, key stakeholders, and elected officials were also consulted throughout each major milestone of the engagement process.

All surveys published online were available in print, in English and Spanish. Links to the survey were posted on buses and at Durham Station to encourage the participation of transit riders.



"As I read the plan it looks as if the planners really listened to the underserved neighborhoods."

- Durham Transit Plan Public Comment



FINAL RECOMMENDED PLAN

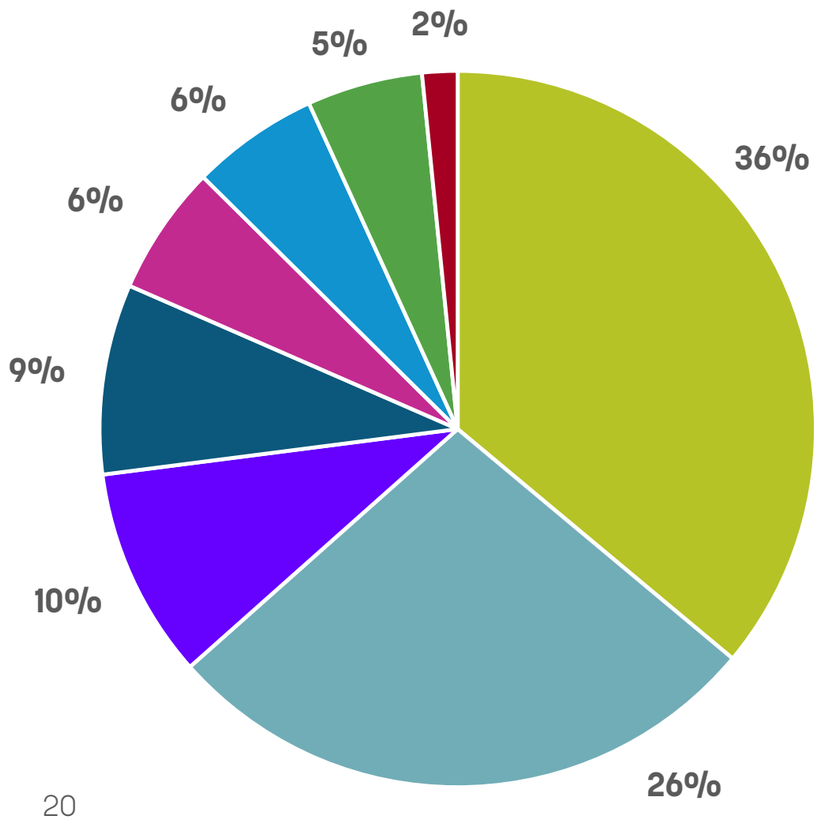
The final recommended Durham County Transit Plan contains capital and operating projects that address the needs identified and the priorities of the public. These priorities were gathered during intentional and in-depth stakeholder and public outreach. The needs and priorities were translated into key improvement themes used in the development of the final transit recommendations.

KEY IMPROVEMENT THEMES

- Improve the current bus system
- More transit projects sooner
- Connecting the region with quick and reliable service
- Better experience at stops and stations

In addition to key improvement themes, detailed project types were also developed. The following graphic breaks down the funding allocation by project type:

PERCENTAGE OF TOTAL FUNDING



PROJECT TYPES: (and percentage of total funding)

- Enhance and Extend Bus Service (36%)
- Quick and Reliable Regional Transportation Connections (26%)
- Bus Stop Improvements and Transit Centers (10%)
- More Routes Going More Places (9%)
- Administration and Accountability (6%)
- Faster, More Reliable Bus Service (6%)
- Operations and Maintenance (5%)
- Paratransit Improvements (2%)

PROJECT TYPES

ENHANCE AND EXTEND SERVICE

These projects allow all GoDurham routes to come every 30 minutes or sooner (some routes every 15 minutes), extends service to run later at night during the week and weekends, and allows certain GoTriangle routes come more often and run later at night.

QUICK AND RELIABLE REGIONAL TRANSPORTATION CONNECTIONS

Includes Durham County's financial contribution to build and begin running the commuter rail between Durham County and Wake County or provide other regional, fast, and reliable service improvements.

BUS STOP IMPROVEMENTS AND TRANSIT CENTERS

Enhances existing bus stops and transit centers with accessible landing pads at all stops. Also includes adding benches, shelters, signage, lighting, and/or sidewalks at certain bus stops.

MORE ROUTES GOING MORE PLACES

Adds new crosstown routes to go more places in Durham, adds vanpools, and adds GoDurham Connect (microtransit) zones.

ADMINISTRATION AND ACCOUNTABILITY

Adds dedicated staff positions to administer the Plan, implement projects, enhance equitable contracting, and lead transit-oriented development efforts.

FASTER, MORE RELIABLE BUS SERVICE

Includes projects to help buses stay on schedule, using methods such as traffic signal improvements and bus-only lanes. Also includes a study for potential bus rapid transit (BRT) routes to be identified.

OPERATIONS AND MAINTENANCE

Includes bus maintenance facility improvements and expansions, additional bus purchases and replacements (including new electric buses).

PARATRANSIT IMPROVEMENTS

Includes a GoTriangle and GoDurham paratransit (ACCESS) service improvement study, ACCESS service improvements/expansion, and a food access for seniors shuttle.

IMPLEMENTATION PLAN

The implementation of projects identified in the final Durham County Transit Plan will happen over the course of the Plan's 20-year lifespan. Operating and capital projects will begin in an order that meets the highest needs and priorities that can be afforded in that year. Projects that were identified as a high priority through the public input process were designated for early implementation when funding and delivery schedules allowed.

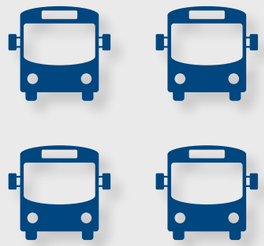
Over $140 million is planned to be spent on new projects in Durham County by 2027.

This Plan includes funding for the following projects to be delivered in the next 4 years (by 2027):

- New East Durham/The Village to NCCU Crosstown Route
- Extend Sunday service to midnight
- 30-minute service on all GoDurham routes in the evenings and Sundays
- Improve Route 4 to run every 15-minutes and extend to Danube/Hebron
- Improve Route 9 to run every 15-minutes
- Provide 15-minute all day service on the 15-501 corridor from Durham to Chapel Hill with Routes 400/405
- The Village and North Duke Crossing Transit Centers
- GoTriangle ACCESS and GoDurham ACCESS Improvement Study
- Construction of Durham Station Improvements
- Construction of Route 3 (Holloway) and Route 5 (Fayetteville) Bus Transit Corridors
- BRT and Bus Speed and Reliability Infrastructure Study

2023 DURHAM COUNTY TRANSIT PLAN FUNDING

This Plan includes much more funding for bus service than the 2017 Durham County Transit Plan. More than 70% of the 2023 Durham County Transit Plan funds will be used for bus projects.



74%
of funding for Bus Projects

26%
of funding for Quick and Reliable Regional Transportation Connections

PLAN OVERSIGHT

Consistent with the principle to focus on community trust, the partner agencies—Durham County, DCHC MPO, and GoTriangle—are committed to tracking and reporting Plan implementation in a way that is easily accessible to the public. The partners will develop a performance monitoring program to track progress on project implementation and Transit Plan goals. This Plan, along with the annual Transit Work Programs, will serve as the foundation documents for tracking the implementation of the proposed projects.

The annual Transit Work Program outlines the specific transit services, programs, and infrastructure projects that will be funded in the upcoming fiscal year (July to June). It also includes the multi-year investment strategy, which lists the service and infrastructure investments planned to be funded in future years covered by the Durham County Transit Plan. The partner agencies will review and update the progress of project implementation at least twice per year. The first scheduled update will occur in July/August at the start of the fiscal year. This update cycle will ensure that the elements of the Transit Work Program, adopted in June, are accurately represented. The second cycle will occur in January/February to capture any needed updates. Implementation metrics for tracking the progress of this Plan are described in Chapter 5.

FINAL PREFERRED TRANSIT SCENARIO

As described in Chapters 1–4, the resulting Final Preferred Transit Scenario is included in this 2023 Durham County Transit Plan. The Plan represents the County's transit vision through 2040 and proposes a set of transit services, infrastructure, facilities, and planning efforts to meet the variety of transit needs that exist Countywide. The Plan focuses operating dollar expenditures on implementing high-priority transit service as quickly as possible. The majority of improvements, including upgrades to 15-minute service frequency, later Sunday service, a new crosstown route, and others, are funded in the first 5 years of the Plan. The Plan also includes a financial contribution towards fast, reliable service to regional destinations through the commuter rail or other projects. In addition, the Plan will continue to fund existing transit services that were previously funded with transit sales tax and fees revenues (with the exception of Route 20, which is currently suspended and recommended for elimination due to low ridership).

The capital and operating investments presented in this chapter reflect the community values and high priority needs identified through extensive public engagement and technical analysis. To help ensure the Plan is responsive to these priorities, several types of projects are included that address four major themes. A summary is shown in Figure 15.

The GoTriangle Financial Model (described in Chapter 6) was used to help ensure these capital and operating investments will be financially feasible over the entire 20-year lifespan of the Plan. The following page shows the project types and descriptions for the projects included in the Plan. Figure 16 is a map of the proposed projects included in the Plan and Tables 12 - 13 describe the projects in greater detail.

FIGURE 15: FOUR MAJOR PROJECT THEMES

Improve the Current System	More Projects Sooner	Connect the Region with Quick and Reliable Service	Better Experience at Stops and Stations
More 15-Minute Bus Service	Bus Stop Improvements	Next Steps for Regional Service	Bus Stop Improvements
Evening/Weekend Service	GoDurham and GoTriangle Paratransit (ACCESS) Study and Improvements	Better On-Time Performance of Buses	Safer Access to Bus Stops
More Crosstown Routes	GoDurham Connect (Microtransit) Zones	Transit Signal Priority for Buses	Transit Centers Improvements

PROJECT CATEGORIES & DESCRIPTIONS

The projects included in the Plan were grouped into categories based on public priorities. The images below show the project categories with a brief description of the types of projects included in each.

ENHANCE AND EXTEND SERVICE

These projects allow all GoDurham routes to come every 30 minutes or sooner (some routes every 15 minutes), extends service to run later at night during the week and weekends, and allows certain GoTriangle routes come more often and run later at night.

QUICK AND RELIABLE REGIONAL TRANSPORTATION CONNECTIONS

Includes Durham County's financial contribution to build and begin running the commuter rail between Durham County and Wake County or provide other regional, fast, and reliable service improvements.

BUS STOP IMPROVEMENTS AND TRANSIT CENTERS

Enhances existing bus stops and transit centers with accessible landing pads at all stops. Also includes adding benches, shelters, signage, lighting, and/or sidewalks at certain bus stops.

MORE ROUTES GOING MORE PLACES

Adds new crosstown routes to go more places in Durham, adds vanpools, and adds GoDurham Connect (microtransit) zones.

ADMINISTRATION AND ACCOUNTABILITY

Adds dedicated staff positions to administer the Plan, implement projects, enhance equitable contracting, and lead transit-oriented development efforts.

FASTER, MORE RELIABLE BUS SERVICE

Includes projects to help buses stay on schedule, using methods such as traffic signal improvements and bus-only lanes. Also includes a study for potential bus rapid transit (BRT) routes to be identified.

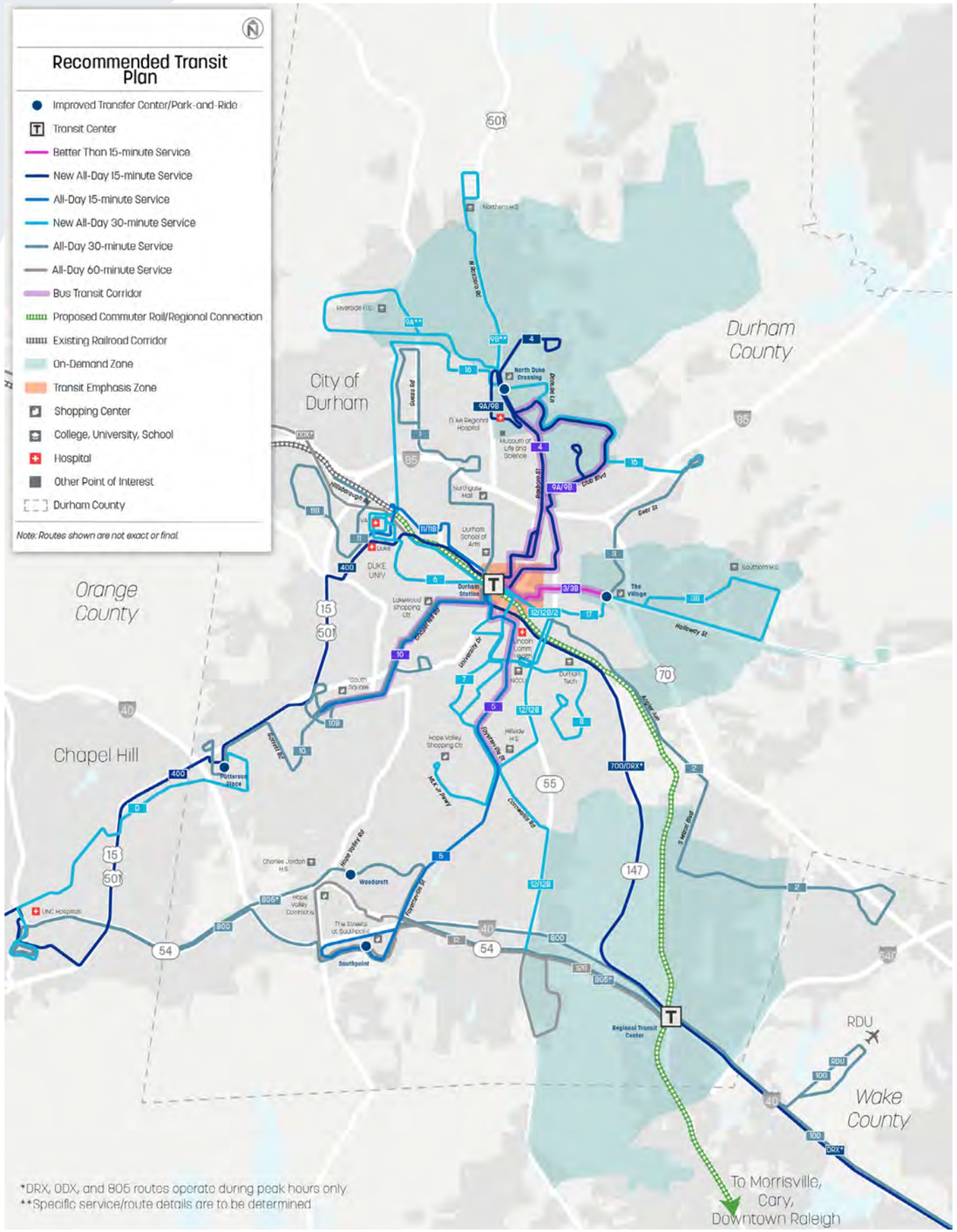
OPERATIONS AND MAINTENANCE

Includes bus maintenance facility improvements and expansions, additional bus purchases and replacements (including new electric buses).

PARATRANSIT IMPROVEMENTS

Includes a GoTriangle and GoDurham paratransit (ACCESS) service improvement study, further service improvements/expansion, and food access for seniors shuttle.

FIGURE 16: RECOMMENDED TRANSIT PLAN



*Approximately **$1.12 billion** is programmed for transit in Durham County between 2022-2040, including new and improved transit centers, 15-minute frequency bus routes, bus transit corridors, later evening and weekend bus service, and improved bus stops.*

DRAFT DATED JULY 25, 2022

2022

orange county transit plan update

A 20-year strategy for investing Orange County's transit tax revenues.

ORANGE COUNTY NORTH CAROLINA

DURHAM · CHAPEL HILL · CARRBORO DCHC METROPOLITAN PLANNING ORGANIZATION

Chapel Hill Transit

GO Triangle

ORANGE COUNTY
NORTH CAROLINA

executive summary.

quick•*take*

Start here to learn more about the Orange County Transit Plan Update's purpose and organization.

SECTION
00

WELCOME TO THE ORANGE COUNTY TRANSIT PLAN UPDATE! WE ARE GLAD TO HAVE YOU ON BOARD.

The Executive Summary provides you with an overview of the Orange County Transit Plan Update including a description of the plan's purpose and motivating values, a timeline of the planning process, a "map" of the plan's contents to help you find the information you need, and a summary of new investments in the County's transit system including Orange County's vision for the next generation of transit investments.

START HERE

WHAT IS THE ORANGE COUNTY TRANSIT PLAN UPDATE?

The Orange County Transit Plan Update allocates Orange County's **Transit Tax District** revenues over the next 20 years based on the community's needs, values, and priorities. It includes already programmed projects and investments described in previous plans (*Orange County Bus and Rail Investment Plan* (2012), *Orange County Transit Plan* (2017), and projects included in the County's annual transit work plans) and new projects to be funded with the revenue remaining after accounting for existing projects. The Orange County Transit Plan Update also ensures the benefits of public transportation investments support community members who are the most reliant on transit service and that public transportation investments support land use and development in Orange County that is resilient, sustainable, and attainable for all.

WHAT IS THE ORANGE COUNTY TRANSIT TAX?

In 2012, voters in Orange County approved a half-cent sales tax (Article 43) to fund transit service and transit infrastructure improvements. Funding for transit is also collected through a vehicle rental tax and vehicle registration fees. In 2022, Orange County generated $8,954,000 through these funding sources. The revenues support transit services provided by Orange County Public Transportation, Chapel Hill Transit, and GoTriangle. Revenues also help pay for infrastructure improvements related to transit in Orange County communities and support administrative and planning services.

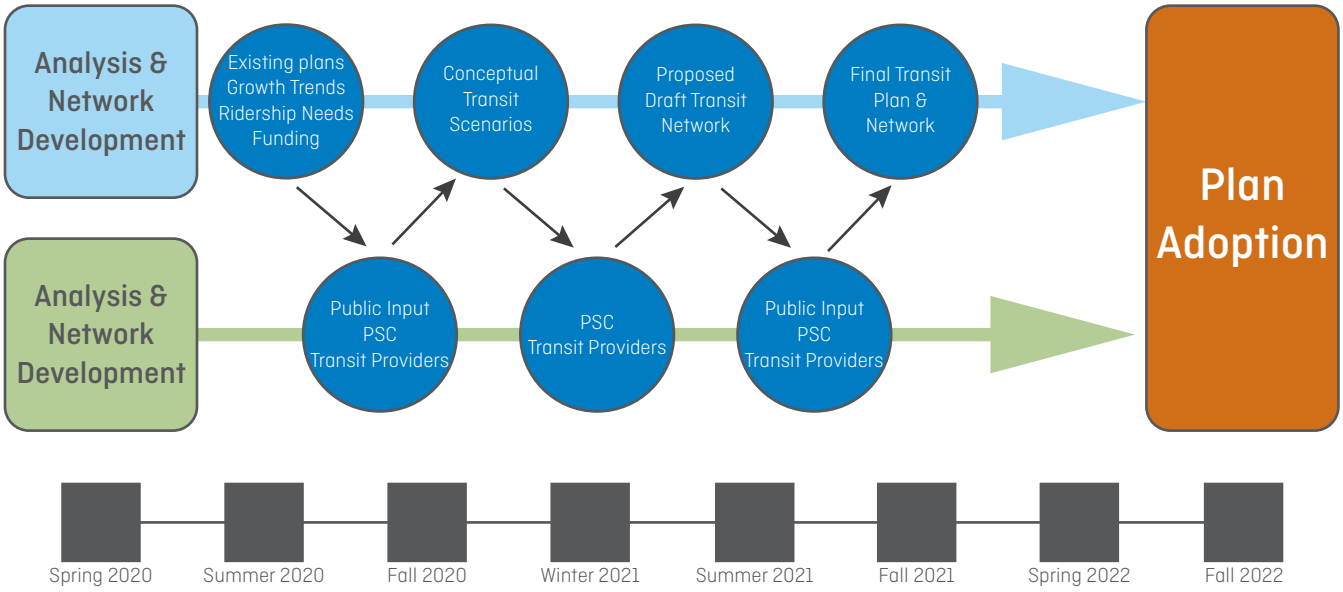
WHY IS IT IMPORTANT TO PLAN FOR TRANSIT?

Transit is more than just a way to get from one point to another. It connects people to employment opportunities, improves environmental outcomes by reducing the number of cars on the road, supports active transportation (walking, biking, rolling), and gives people the freedom to go *where* they want, *when* they want. Transit planning helps balance the needs of all transit riders and allocates available funding to meet these needs. Transit planning also guides important decisions in Orange County related to accommodating new growth and development and ensuring transportation options are available. These decisions directly and indirectly impact where people live, work, learn, shop, and play and the opportunities, services, and resources that are available.

HOW WAS THE TRANSIT PLAN UPDATE DEVELOPED?

The Orange County Transit Plan Update was developed between 2020 and 2022 and included reviewing existing transit, transportation, and land use plans; conducting public outreach and engagement; identifying and assessing transit projects; and creating an implementation plan, budget, and schedule for new transit projects.

PLAN TIMELINE



PLAN PARTNERS

The Plan Update was led by Orange County staff and a consultant team was hired to develop the plan. A Policy Steering Committee (PSC) of local elected officials was convened to guide the plan's policy direction. Municipalities (Carrboro, Chapel Hill, Hillsborough, and Mebane), the University of North Carolina at Chapel Hill, transit service providers (Chapel Hill Transit, Orange County Public Transportation, and GoTriangle), and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) were also closely involved in the plan's development.

PROJECT SELECTION

HOW WERE TRANSIT PROJECTS IDENTIFIED?

Transit projects were selected based on needs, priorities, and the recommendations of the public, local government staff, transit service providers, community stakeholders, and the Policy Steering Committee. The following were considered:

- Transit service provider's priority projects
- Public need
- Community values (equity, environmental sustainability, economic prosperity, affordable and attainable quality of life, and transportation and access for all)
- Regional connectivity
- Long-term transit vision.

WHAT VALUES GUIDED THE SELECTION OF PROJECTS?

The Orange County Transit Plan Update is guided by by five core community values.

EQUITY
Prioritize the transit needs of under-served or transit-dependent residents; includes historically disinvested communities of color, lower-income neighborhoods, seniors, and rural communities.

ENVIRONMENTAL SUSTAINABILITY
Prioritize accessible and convenient transit service in areas with existing or planned higher density development.

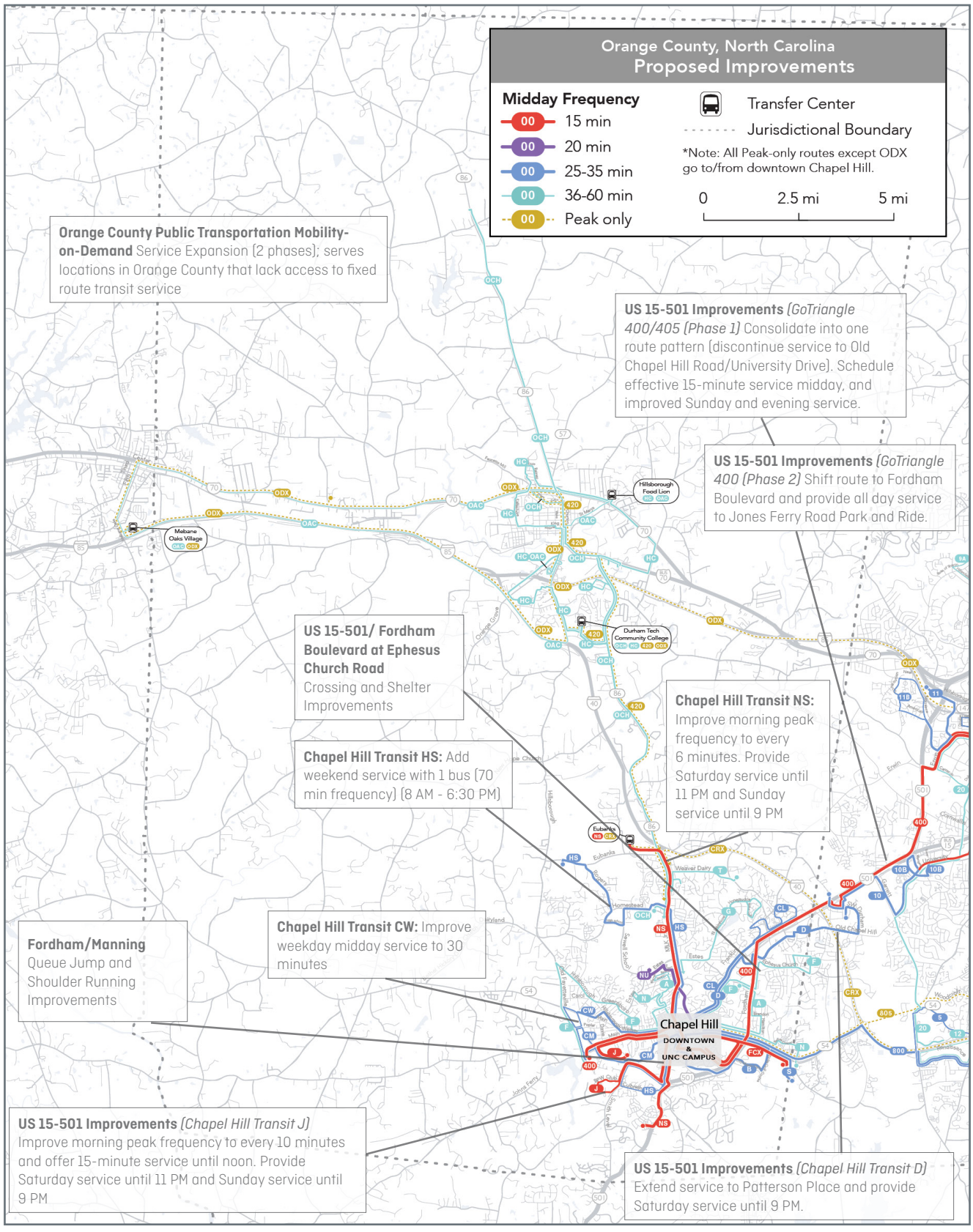
ECONOMIC PROSPERITY
Prioritize increasing access to jobs and opportunities.

AFFORDABLE & ATTAINABLE QUALITY OF LIFE
Prioritize transit service connections to affordable housing, recreation, and arts and cultural opportunities.

TRANSPORTATION & ACCESS FOR ALL
Prioritize transit service that increases transit access for the most people to the most places.

PROJECTS

The Orange County Transit Plan Update recommends five transit service improvement projects and two capital investment projects to enhance transit connections, access, and reliability.

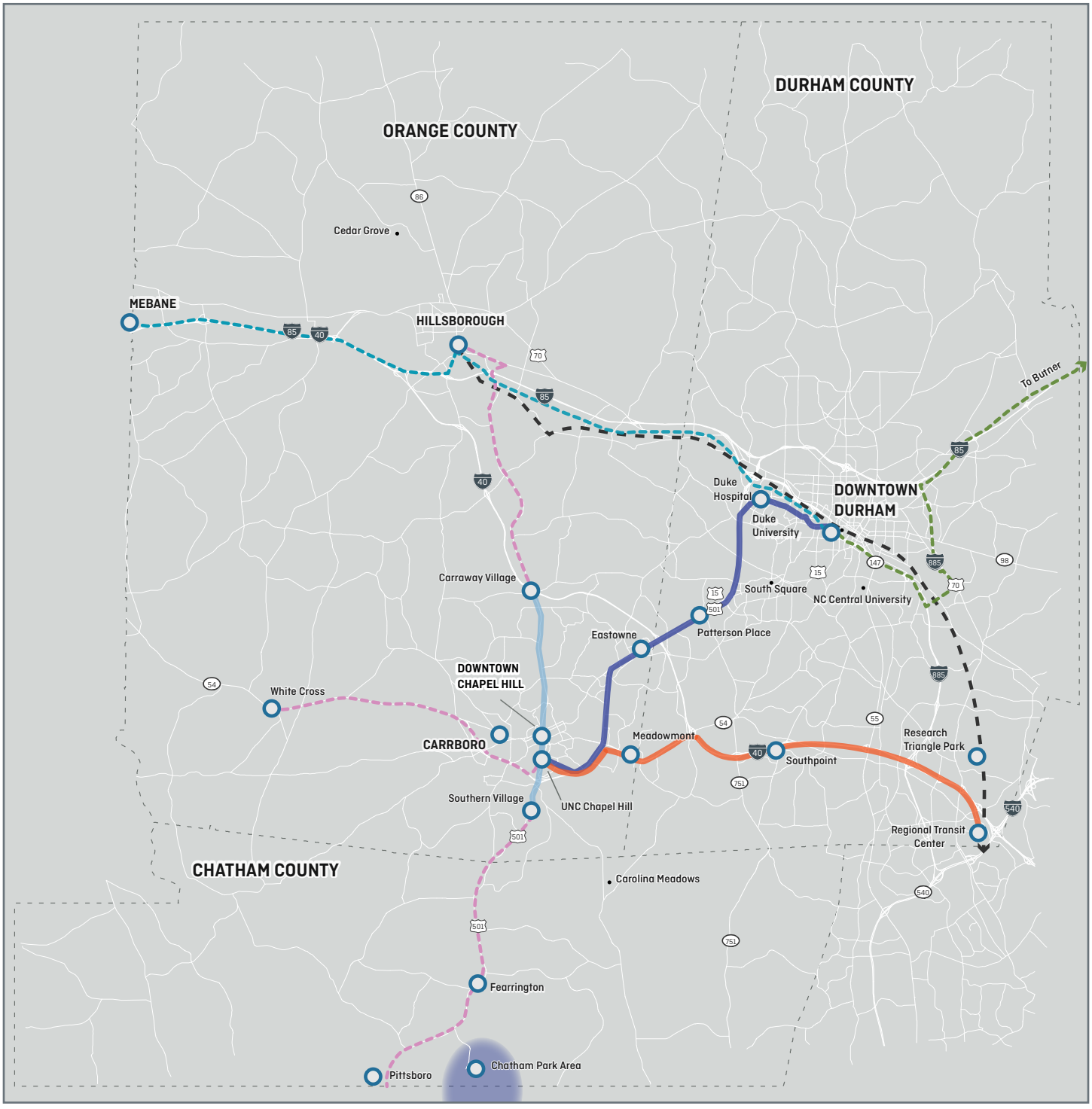


TRANSIT VISION

The Orange County Transit Plan Update also illustrates a long-term vision for "Next Generation" transit service and investments in Orange County.

LEGEND

- Commuter Rail Transit (CRT)
- North-South Bus Rapid Transit (N-S BRT)
- Durham/ Chapel Hill Bus Rapid Transit (BRT)
- Chapel Hill/ RTP Bus Rapid Transit (BRT)
- Express Bus Corridors (2040)
- Express Bus Corridors (2050)
- Express Bus to Mebane



GO Triangle

Triangle Mobility Hub and SPOKE Project

A6 – Connect 2050 – The Research Triangle Region's Metropolitan Transportation Plan

CONNECT 2050

The Research Triangle Region's Metropolitan Transportation Plan

Capital Area Metropolitan Planning Organization ❖ Durham-Chapel Hill-Carrboro Metropolitan Planning Organization

1. Executive Summary

Transportation investments link people to the places where they work, learn, shop and play, and provide critical connections between businesses and their labor markets, suppliers and customers.

This document contains the 2050 Metropolitan Transportation Plans (MTPs) for the two organizations charged with transportation decision-making in the Research Triangle Region: the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). These organizations, and the areas for which they are responsible, are commonly called "MPOs."

The Metropolitan Transportation Plans are the guiding documents for future investments in roads, transit services, bicycle and pedestrian facilities and related transportation activities and services to match the growth expected in the Research Triangle Region.

The areas covered by this plan are part of a larger economic region. Transportation investments should consider the mobility needs of this larger region and links to the other large metro regions of North Carolina and throughout the Southeast. The Triangle Region is expected to accommodate substantial future growth; we need to plan for the region we will become, not just the region we are today.

2020 and Forecast 2050 Population and Jobs	2020		2050		2020 to 2050 Growth	
	Population	Jobs	Population	Jobs	Population	Jobs
Capital Area MPO	1,360,000	660,000	2,200,000	1,270,000	840,000	610,000
Durham-Chapel Hill-Carrboro MPO	480,000	310,000	680,000	520,000	190,000	210,000
Areas outside Triangle MPO boundaries	180,000	70,000	310,000	100,000	130,000	30,000
Total for area covered by the region's transportation model	2,020,000	1,040,000	3,180,000	1,880,000	1,170,000	840,000

The Triangle has historically been one of the nation's most sprawling regions and current forecasts project both continued outward growth and infill development in selected locations, most notably in the central parts of Raleigh and Durham and the area between them, including a mixed use center currently being developed within the Research Triangle Park. A key challenge for our transportation plans is to match our vision for how our communities should grow with the transportation investments to support this growth.

No region has been able to "build its way" out of congestion; an important challenge for our transportation plans is to provide travel choices that allow people to avoid congestion where it cannot be prevented.

Our population is changing. The population is aging, more households will be composed of single-person and two-person households without children, the number of households without cars is increasing, and more people are interested in living in more compact neighborhoods with a mix of activities. Our plans are designed to provide mobility choices for our changing needs.

Our MPOs are tied together by very strong travel patterns between them; our largest commute pattern and heaviest travel volumes occur at the intersection of the MPO boundaries. Our MPO plans need to recognize the mobility needs of residents and businesses that transcend our MPO and county borders.

The region has a common vision of what it wants its transportation system to be:

a seamless integration of transportation services that offer a range of travel choices to support economic development and are compatible with the character and development of our communities, sensitive to the environment, improve quality of life and are safe and accessible for all.

The MPOs have jointly adopted goals and objectives to accomplish this vision and selected performance measures to track progress over time. Each MPO has targets that reflect the unique characteristics and aspirations of the communities within the MPO. *Connect 2050* commits our region to transportation services and development patterns that contribute to a more equitable and sustainable place where people can successfully pursue their daily activities.

To analyze our transportation investment choices, the MPOs followed a systematic process involving significant public engagement, with a greatly increased focus on traditionally under-represented voices. It began with understanding our communities' core values and priorities. Special emphasis was placed on identifying key activity centers in the region and investments and strategies that would connect these centers to neighborhoods with the most significant number of lower-income, BIPOC and zero-car households, providing these neighborhoods with a range of travel choices, especially transit.

Next, we used carefully documented analysis tools to forecast the types, locations and amounts of future homes and jobs based on market conditions and trends, factors that influence growth, and local plans.

Based on the forecasts, we looked at mobility trends and needs, and where our transportation system may become deficient in meeting these needs.

Working with a variety of partners and based on public input, we created land use and transportation system scenarios and analyzed their impacts, comparing the performance of system alternatives against one another and to performance targets derived from our goals and objectives.

The result of this analysis and extensive public engagement was a set of planned investments, together with a pattern of land development aligned with these investments. Additional studies were identified to ensure that the investments are carefully designed and effectively implemented. The core of the plan is the set of transportation investments described in Section 7:

- New and expanded roads where needed, and re-designed roads for safer, better multimodal travel;
- Local and regional transit facilities and services, including rapid bus and rail lines;
- Aviation and long-distance passenger and freight rail services;
- Bicycle and pedestrian facilities, both independent projects and in concert with road projects;
- Transportation Demand Management: marketing and outreach efforts that increase the use of alternatives to peak period solo driving;
- Technology-Based Transportation Services: the use of advanced technology to make transit and road investments more effective—including the advent of autonomous and connected vehicles; and

In addition to these investments, the plan includes a focus on three issues where the ties between development and transportation investments are most critical:

(i) transit corridor development – with an emphasis on equitable transit-oriented development and affordable housing strategies,

(ii) the development of "complete corridors" centered on major roadways but where multi-modal elements are especially beneficial, and

(iii) "safe & healthy streets" with designs that are sensitive to the neighborhoods of which they are a part and support the needs of a full range of users, including drivers, transit users, cyclists and pedestrians – these are often referred to as "context-sensitive complete streets" by transportation professionals.

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.

Three transit capital investments are part of a set of shared regional investments by both MPOs:

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		I-40 Durham: modernization Wake: managed freeway	
Aviation Parkway Durham: modernization Wake: new alignment		Triangle Transportation Demand Management Program	TRIANGLE TRANSPORTATION CHOICES

Although the plan includes a new emphasis on transit investment, 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.

One clear message from both elected official discussion and public engagement during the development of *Connect 2050* is that roadways need to be designed and engineered with much greater care than has been typical in the past, using more flexible and context-sensitive standards that have now been successfully implemented in many places. Especially in urban and urbanizing locations, designs should prioritize steady, safe, reliable, moderate-speed travel, rather than emphasize high-speed travel.

Parkway Design

Boulevard Design

Superstreet Design

Major roadway projects in each MPO are highlighted on the following pages; all projects are listed in Appendix 2 and available on interactive maps on-line. Section 7 of the Plan provides greater detail on planned roadway and transit investments.

7.5 Transit Facilities & Services

Extensive transit planning efforts have recently been completed or are underway, resulting in updated transit plans in Durham, Orange, and Wake Counties. The county plans provide dedicated revenues to finance transit improvements, including enhanced regular bus service, high-quality fixed-guideway projects, improved transit centers and stops, and services to connect job centers and equity-centered neighborhoods.

Among the projects identified in the county transit plans and included in this 2050 MTP are a variety of premium transit investments designed to provide faster, frequent, reliable service in major corridors. Two types of fixed-guideway transit investments are included in this 2050 MTP:

- Bus rapid transit (BRT) encompasses a variety of enhancements to regular bus service, such as large stations with off-board ticketing, dedicated lanes that allow buses to bypass congested automobile traffic and improve system reliability, priority treatment at traffic signals, and other improvements.
- Commuter rail transit (CRT) service operates in existing rail corridors, serving stations that generally are spaced farther apart than on light rail or bus rapid transit lines. Although originally oriented to conventional 9-to-5 commuters, most CRT systems in the US are increasingly expanding their focus to mid-day, evening, and weekend services to serve more diverse travel markets.

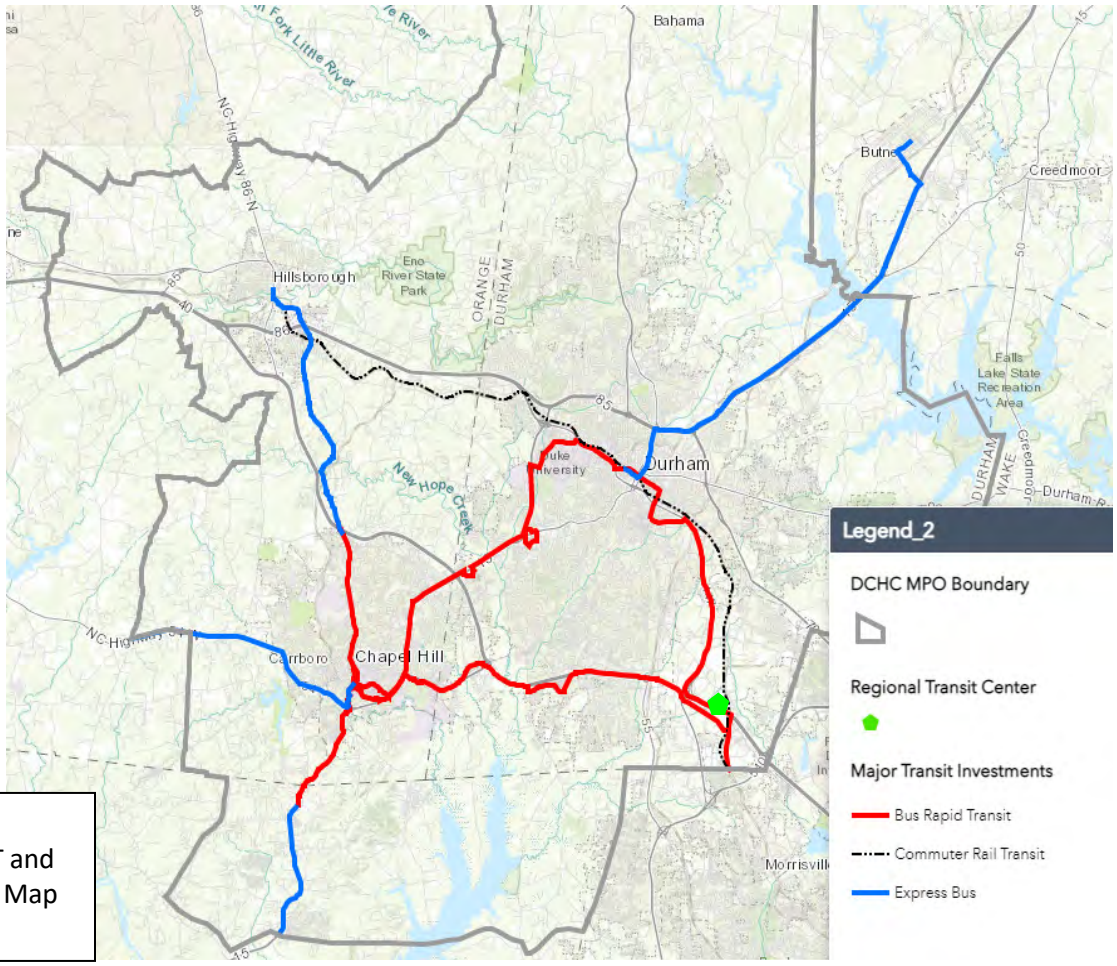
Figure 7.5.1 lists fixed guideway projects and Figures 7.5.2 and 7.5.3 depict interactive on-line transit maps.

Figure 7.5.1 Transit Fixed Guideway Projects

Project Title	Programming Description	MTP Horizon Year	MPO
Commuter Rail Transit (CRT)	CRT using the existing North Carolina Rail Company (NCRR) corridor. West Durham to Clayton by 2030, then extended to Hillsborough and Selma by 2050.	West Durham to Clayton, 2030 Hillsborough to Selma, 2050	DCHC CAMPO
Bus Rapid Transit – Chapel Hill North-South	BRT in Chapel Hill, from Eubanks Road, through the UNC Healthcare complex, and to Southern Village. Part on bus-only lanes and part in mixed traffic.	2030	DCHC
Bus Rapid Transit – Central Durham	BRT in central Durham, from the Duke University and Medical Center area, through downtown Durham and the central bus station, to the North Carolina Central University and Durham Tech area. Part on dedicated lanes and part in mixed-traffic.	2040	DCHC
Bus Rapid Transit – Durham/Chapel Hill	BRT between Durham and Chapel Hill, from UNC Health complex to the Duke University and Medical Center area, via US 15-501. Part on bus lanes or bus-on-shoulder-system (BOSS), part in mixed-traffic.	2050	DCHC
Bus Rapid Transit – Durham/RTP	BRT between central Durham and the Research Triangle Park (RTP), from the North Carolina Central University/Durham Tech area to the regional transfer center in the RTP, via NC 147. In mixed traffic, and part possibly on bus-on-shoulder-system (BOSS).	2050	DCHC
Bus Rapid Transit – Chapel Hill/RTP	BRT between Chapel Hill and the Research Triangle Park, from UNC Health complex to the regional transit center in the RTP, via NC 54 and I-40. Part in mixed traffic, and part bus-on-shoulder-system (BOSS).	2050	DCHC

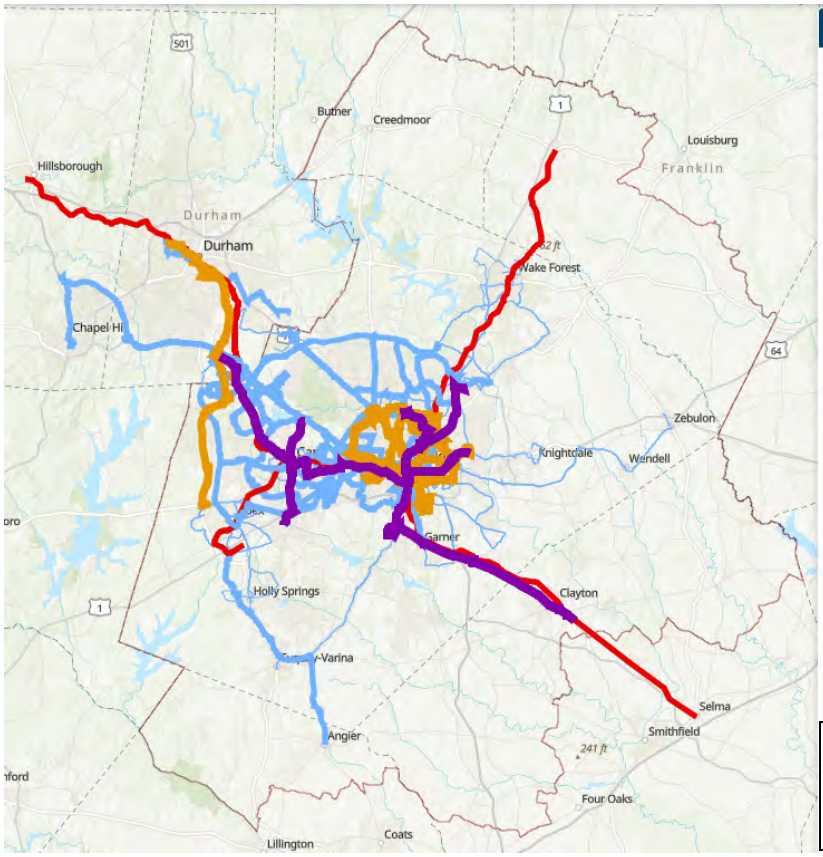
Project Title	Programming Description	MTP Horizon Year	MPO
Bus Rapid Transit – Wake New Bern	BRT - New Bern East - Downtown Raleigh to Stony Brook Rd - Fixed Guideway	2030	CAMPO
Bus Rapid Transit - Wake	BRT - New Bern East - Stonybrook Rd to New Hope Rd - Mixed Traffic	2030	CAMPO
Bus Rapid Transit - Wake	BRT – RTP Hub to Morrisville - Mixed Traffic	2030	CAMPO DCHC
Bus Rapid Transit - Wake	BRT - Morrisville to Downtown Cary - Mixed Traffic	2030	CAMPO
Bus Rapid Transit - Wake	BRT - Downtown Cary to Downtown Raleigh - Fixed Guideway	2030	CAMPO
Bus Rapid Transit - Wake	BRT - Downtown Raleigh to Midtown Raleigh/North Hills - Fixed Guideway	2040	CAMPO
Bus Rapid Transit - Wake	BRT – Harrison/Kildaire Farm, SAS Campus Dr. to and Regency Park, via Harrison Ave., Kildaire Farm Rd., and Regency Dr. - Fixed Guideway	2050	CAMPO
Commuter Rail – S-Line	CRT using the existing CSX S-Line corridor. Apex to Franklinton.	Apex to Franklinton, 2040	CAMPO

Figure 7.5.2 DCHC MPO Major Transit Project Maps



DCHC MPO 2050 Commuter Rail, BRT and Express Bus Service Map *Online here*

Figure 7.5.3 CAMPO Transit Projects Map



CAMPO 2050 Transit Corridors Map
Online here

Another type of fixed transit investment is a transit center – a place where multiple modes and routes come together to provide easy transfers between routes.

The MTP includes on-going and planned transit center development, including the Raleigh Union Station Bus Center, the relocation of the Regional Transit Center – a shared regional investment of both MPOs, improvements to the downtown Durham Transit Center and proposed additional centers that are anticipated to be part of the forthcoming Durham County Transit Plan update.

Figure 7.5.4 Transit Center Projects: Regional Transit Center Relocation (left) and RUS Bus (right)

Additional information related to transit capital projects is included in Appendix 3.

Although fixed guideway projects and transit centers may be some of the more visible transit investments, most transit use occurs in vehicles operating in "mixed traffic," that is, on general purpose roadway lanes that are shared with cars and trucks.

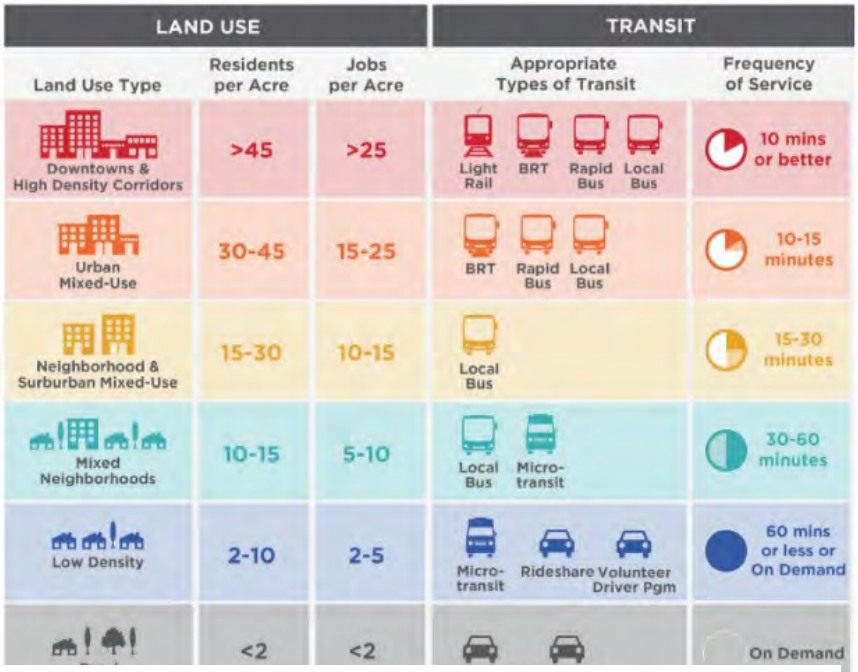


Figure 7.5.5 Land Use & Supported Types of Transit (credit: NelsonNygaard)

These services range from frequent scheduled transit services in high-density, high ridership corridors to on-demand microtransit services and, by their very nature, can adapt to changing conditions. Figure 7.5.5 depicts rules of thumb for the deployment of different types of services. This section discusses the two bookends of mixed-traffic transit services: (i) frequent scheduled transit services and (ii) on-demand microtransit services.

Where mixed-traffic transit services are deployed is determined by the County Transit Plans, which are incorporated in this MTP by reference and available at the websites below:

- 2021-2030 Wake County Transit Plan
- 2021-2040 Durham County Transit Plan (update to be completed in 2022; link is to plan website)
- 2021-2040 Orange County Transit Plan (update to be completed in 2022; link is to plan website)

The transit plans cover both local and regional transit operators; additional transit services are provided by the university-based Duke Transit and NC State University Wolfline systems. Based on these county transit plans, annual transit work programs are adopted each year detailing specific capital and operating funding. As part of the county plans, transit operators are placing an emphasis on alternatively fueled vehicles, such as electric, diesel/electric hybrid and compressed natural gas vehicles.

Transit investment is more than new buses; ensuring sound maintenance of transit assets and safe, inviting connections to transit facilities and services matter too. Both MPOs have transit asset performance targets, including for State-of-Good-Repair. First-mile, last-mile connections to transit services – such as sidewalks, bike lanes and street crossings -- are funded from both county transit tax revenues and other sources.

Frequent Scheduled Transit Services: A transit axiom is that "frequency is freedom." As service improves from 2 buses every hour (30-minute frequency) to 3 buses per hour (20-minute frequency) to 4 buses per hour (15-minute frequency), transit begins to serve people's lives rather than riders needing to plan their lives around transit. Frequent service is usually only cost-effective where densities are high and activity centers aligned along a route, so complementary land use policies are critical to success. Appendix 3, the MTP on-line maps and the County Transit Plans show transit frequency.

Demand-Responsive Microtransit Services: On the other end of the spectrum, where both land use density and conventional bus ridership is low, new app- and phone-based on-demand microtransit services can give users both more timely service and a wider range of destinations than is possible with fixed bus routes. In CAMPO, Morrisville recently launched its *SmartShuttle* service, and in DCHC MPO, Durham is piloting a micro-transit project and anticipates expanded microtransit services as part of the 2022 County Transit Plan update.

Triangle Mobility Hub and SPOKE Project

A7 – RTP 3.0

About Research Triangle Park

The Research Triangle Foundation of North Carolina is the nonprofit administrator and steward of RTP. Our mission has been the same since our founding in 1959:

Facilitate collaboration among the Triangle universities.

Promote cooperation between universities and industry.

Create an economic impact for residents of North Carolina.

RTP Today

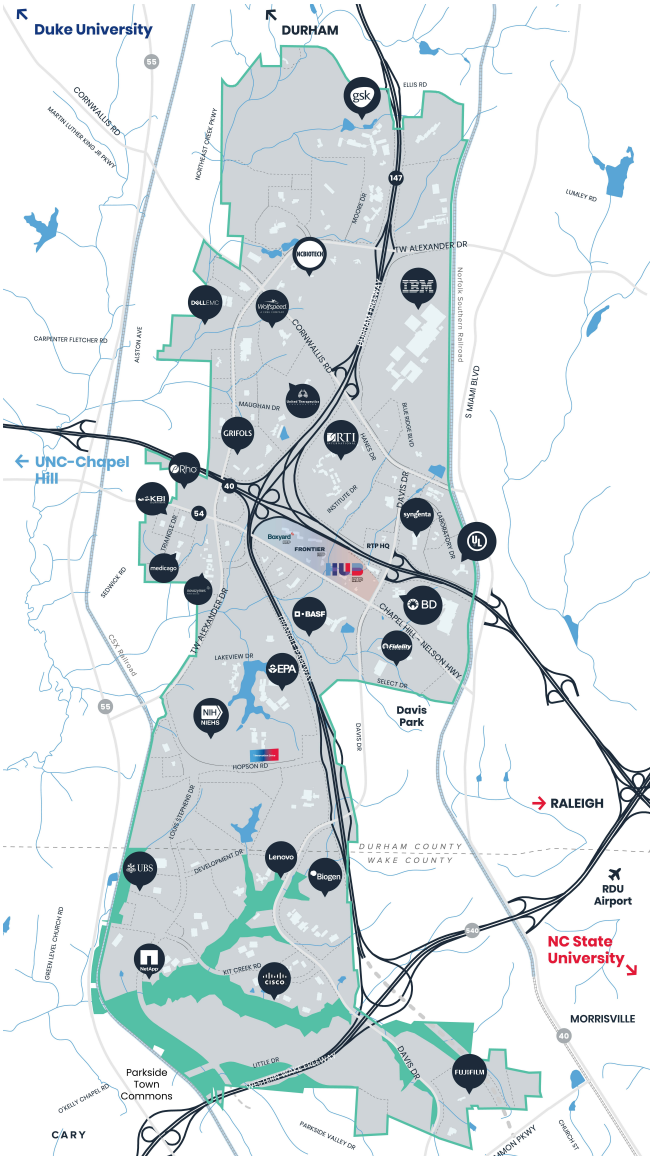
RTP is:

- 7,000 acres
- 55,000+ employees
- 375+ established and startup companies

For context, **7,000 acres is half the size of Manhattan Island**.

A few of our biggest names include:

- Apple
- IBM
- Biogen
- Cisco
- Eli Lilly
- Fidelity
- Fujifilm
- Wolfspeed
- United Therapeutics
- Syngenta
- BASF



Hub RTP

Hub RTP will be RTP's vibrant new downtown. Located just off of I-40 at the Davis Drive exit, Hub RTP is the first mixed-use project in RTP's history and will include the very first housing ever built in the Park. The Research Triangle Foundation is the master developer for this critical anchor for the future of RTP.

The first buildings at Hub RTP are under construction right now and are expected to open in fall 2024.

Hub RTP is planned to include:

- 1 M sf office & life science space
- 50K sf retail
- 1,200 residential units
- 279 hotel rooms
- 16 acres of greenspace

Hub RTP is a $1.5 billion investment in RTP's future.

Rendering of Horseshoe RTP, the heart of the Hub RTP development, with 30K sf of retail space anchored onto a spacious plaza, complete with a splash pad.

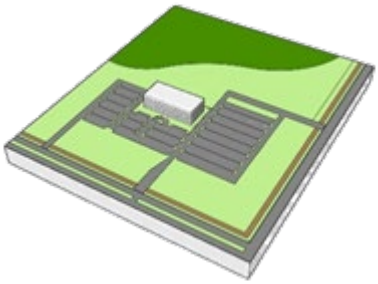
RTP 3.0

RTP, like other business parks, innovation districts, and office-anchored developments nationally, is at a critical moment in time. The emergence of **hybrid work**, the current **office market**, talent's demand for **amenitized work environments**, and **rapid growth pressures** in the Triangle region are significant threats to the future success and continued prosperity of RTP – and the economic benefits that RTP provides to North Carolinians.

The Research Triangle Foundation has undertaken its **RTP 3.0 initiative** to address these challenges. RTP 3.0 envisions enacting **a new land use governance framework and rezoning** RTP to create **a 21st century business park** with the amenitized work environments in-demand today to allow RTP to continue to **grow and prosper for the next 50 years**.

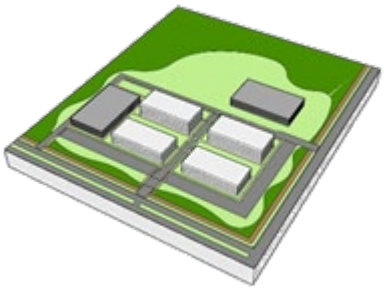
RTP 3.0 proposes to introduce **three new place types to RTP**. These new place types would provide RTP companies and landowners new options for land development to better position real estate assets to align with business needs and talent attraction and retention efforts.

Traditional Corporate Campus



- Very low-density
- 15% building coverage limit
- 100-foot buffers on all sides
- Surface parking is dominant land use

Enhanced Corporate Campus



- Denser infill development allowed
- Public-facing uses (restaurants, cafes, etc.) allowed
- Conversion to parking decks

Residential Neighborhood Development

- Medium-density residential housing allowed
- Supportive retail (grocery stores, restaurants, etc.) allowed
- Opportunity to live closer to work

Mixed-Use Density Node

- High density development allowed
- Mix of uses required (housing, retail, office)
- Builds on Hub RTP model of development

RTP Today

- Only one type of development allowed
- No housing, retail, or non-R&D commercial allowed
- Lack of amenitized, walkable environments that are in demand by companies and talent

Future RTP

- Multiple types of development allowed
- Housing, retail, and broader commercial uses allowed to support our R&D companies
- Creation of new amenitized, walkable environments to align RTP with market demands and peer markets

Getting to Implementation

The Research Triangle Foundation has been working with RTP companies and landowners and our government partners since fall 2021 on the RTP 3.0 initiative. Building on this nearly three years of work and coordination, we are seeking to have the RTP 3.0 vision enacted by the beginning of 2025.

We are specifically working toward three key milestones in 2024 to facilitate enactment of the RTP 3.0 vision.

April 2024

RTP seeks minor legislative changes to RTP special tax district legislation to support denser, mixed-use development in the Park.

June 2024

RTP companies vote to approve revised and amended land covenant to allow denser, mixed-use development in RTP.

Late Fall 2024

Durham and Wake County Commissioners adopt new RTP zoning to allow new place types.

Contact

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Travis Crayton, AICP

Senior Director of Planning
Research Triangle Foundation of North Carolina
crayton@rtp.org | 919-433-1679

Triangle Mobility Hub and SPOKE Project

A8 – RTP South Rezoning

Date: **February 7, 2024**

To: **Members of the Joint City-County Planning Committee**
Through: **Sara M. Young, AICP, Planning Director**
From: **Kayla Seibel, AICP, Senior Planner**
Subject: **RTP South Multimodal Zoning Map Change Scope**

Summary
In June 2023, JCCPC recommended that Planning Staff begin a staff-initiated zoning map change of the Research Triangle Park (RTP) South area between Davis Drive, Hopson Road, and South Miami Boulevard. The study would be staff-led, limited in scope, and focused on proposing zoning map changes to Compact Suburban Design (CSD) to encourage appropriate development in this future transit area. This memo shares a scope of work and schedule.

Recommendation
Staff recommends that the Joint City-County Planning Committee (JCCPC) receive this report and provide guidance.

Background
At the April 5, 2023 JCCPC meeting, staff presented the FY24 Planning Department Work Program. Staff heard interest from members about work plan item that coordinates land use planning with future transit infrastructure near RTP. In June, staff presented information on how such a project could be incorporated into the Work Program and heard feedback from JCCPC about potential elements they would like to see in this staff-initiated rezoning project.

In October, the City Council and Board of County Commissioners adopted Durham's new Comprehensive Plan. This plan gives guidance for how land should be developed in Durham through goals, place types, and policies. With this formal guidance in place, staff is now presenting a draft scope of work that implements the Comprehensive Plan, through a zoning map change, in this area **(Attachment A).**

Issues
The following is a scope of work and schedule for this staff-initiated rezoning:

Purpose

To change the zoning of properties in the RTP South area to the Compact Suburban Design District (CSD) to encourage transit-oriented development, support future publicly funded multimodal projects (like bus rapid transit, passenger rail, or bicycle and pedestrian improvements), and equitable development using the affordable housing density bonus. **Attachment A** shows a map of the area near Research Triangle Park (RTP) between Davis Drive, Hopson Road, and South Miami Boulevard.

This project will help to implement the Durham Comprehensive Plan to better align the Zoning

Map with the future vision shown on the Place Type Map. The RTP South area is designated as a Transit Opportunity Area (TOA) in the recently adopted Place Type Map. The last city-initiated rezoning process happened in 2019 for Patterson Place. The rezoning for Patterson Place was also Compact Suburban Design District Zoning. Since then, Durham has adopted a new Comprehensive Plan and initiated a new Unified Development Ordinance (UDO) and Zoning Map update.

While we wait for a new UDO, this project will give interim guidance for transit-oriented places in Durham. Staff will develop recommendations for this area, the Transit Opportunity Area Place Type more broadly, and zoning district regulations in the new UDO.

Scope

This is a limited-scope planning effort to change the zoning in the RTP South area from a combination of different zoning districts (Industrial Light (IL), Industrial Park (IP), Commercial Center (CC), Office and Institutional (OI), Commercial General (CG), Mixed Use (MU), Commercial Neighborhood (CN), Residential Compact (RC), Residential Urban –Multifamily (RU-M), and Residential Rural (RR)), shown in **Attachment B**, to one zoning district, Compact Suburban Design (CSD) with subdistricts (Core, Support 1 and Support 2). Depending on the planning needs for this area, staff may recommend a transportation network be built out with new development to meet mobility and connectivity goals. Additionally, staff will compile guidance from the new Comprehensive Plan for what our community wants to see from Transit Opportunity Areas. This background for the report may be helpful for future zoning efforts in other Transit Opportunity Areas.

The Planning Department prioritizes equitable engagement in project, plans, and initiatives. Staff will identify priority demographics from existing census and housing data to try to identify residents in the community who would be most impacted by future development in this area. Depending on this analysis, staff will design a community engagement plan to hear a diversity of voices in this rezoning effort guided by the goals in the Comprehensive Plan.

Deliverables

- Existing Conditions Report (includes environmental conditions, current zoning, existing land uses, infrastructure needs, points of interest, neighborhoods, and any market information from the Research Triangle Foundation)
- Demographics and Housing Information
- Transit-Oriented Development Policy Guidance pulled from the Durham Comprehensive Plan
- Community Engagement Plan
- Community Engagement Summary and Input spreadsheet
- Zoning Map Change Submittal, Agenda Items, and support for Public Hearing process

Schedule

Timeframe	General Activities
Spring 2024 (March – May 2024)	Develop initial deliverables, community engagement plan, and hold first neighborhood meeting
Summer 2024 (June – August 2024)	Begin rezoning submittal process, hold second neighborhood meeting
Fall 2024 (September – November 2024)	Revise submittal and prepare materials for Planning Commission Public Hearing
Winter 2024 (December-January 2025)	Public Hearings begin/continue

Staff Contact
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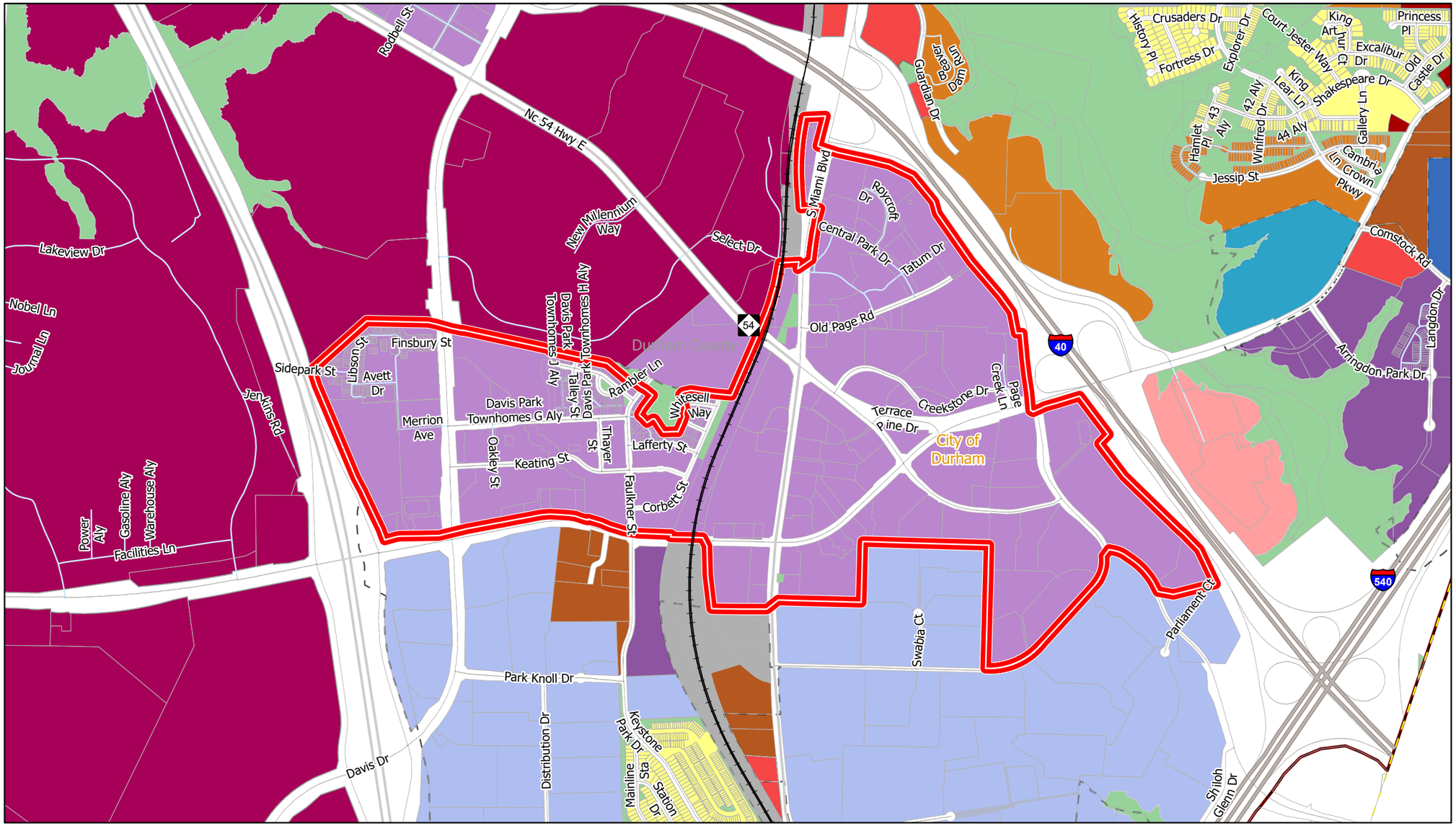
Attachments
Attachment A: RTP South Place Types
Attachment B: RTP South Zoning

Attachment A: RTP South

CITY OF DURHAM | DURHAM COUNTY

Planning

Place Type Map



0 500 1,000 2,000 Feet

Durham City-County Planning Department
January 24, 2024

Legend:

- City of Durham
- Durham County
- RTP South Case Area

Place Types

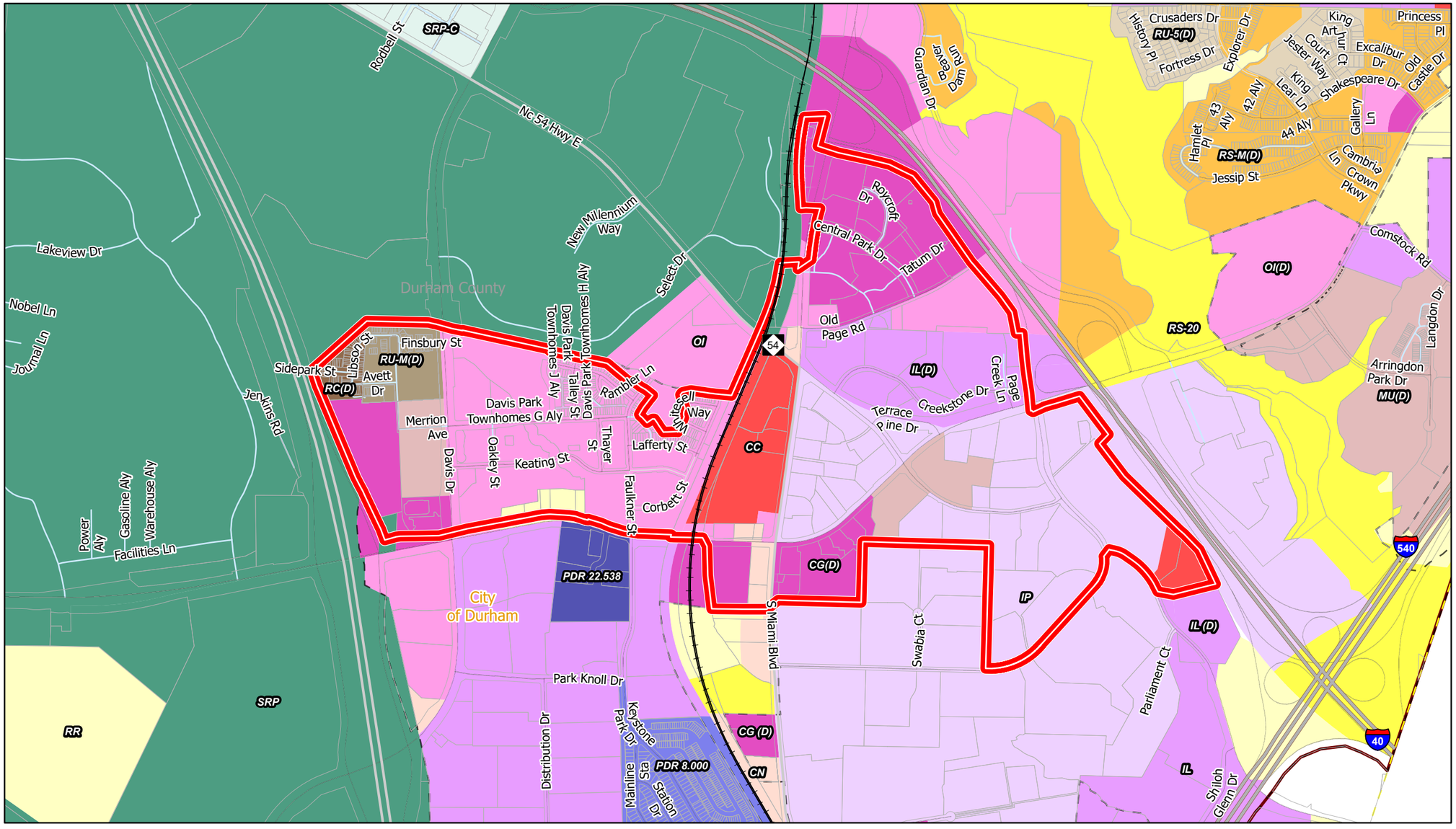
- Apartment & Townhouse Neighborhood
- Community Institution
- Employment Campus
- General Industrial
- Highway Commercial
- Institutional Campus
- Mixed Residential Neighborhood
- Mixed Use Neighborhood
- Neighborhood Services
- Planned Suburban Neighborhood
- Recreation & Open Space
- Suburban Commercial
- Transit Opportunity Area
- Utility & Public Works Facilities

Attachment B: RTP South

CITY OF DURHAM | DURHAM COUNTY

Planning

Zoning Map



0 500 1,000 2,000 Feet

Legend:

- City of Durham
- Durham County
- RTP South Case Area

Zoning

- PDR-HDR (8 - 12 du/ac)
- PDR-VHR (> 12 du/ac)
- RR
- RS-20
- RS-M
- RU-5
- RU-M
- RC
- CC
- CN
- OI
- CG
- IL
- IP
- MU
- SRP
- SRP-C

Durham City-County Planning Department
January 24, 2024

Triangle Mobility Hub and SPOKE Project

A9 – GoTriangle Zero Emission Transition Plan

Connecting all points of the Triangle

Zero-Emission Transition Plan

Introduction

GoTriangle's mission is to improve the Research Triangle Region's quality of life by connecting people and places through safe, reliable and easy-to-use travel choices. The transit system is an essential service connecting workers to employment, students to school, residents to healthcare, among many other destinations across the region.

GoTriangle operates a variety of regional bus services, paratransit service, ride matching, vanpool, and microtransit service. GoTriangle's primary service area is comprised of three counties in the Triangle region: Wake, Durham, and Orange counties. With 78 buses traveling 16 regional routes, GoTriangle provided about 6,500 daily passenger trips or about 1.8 million annual trips in 2019, removing 24 million passenger vehicle miles from Triangle highways.

Accelerating the transition from a diesel powered fleet to vehicles with zero tailpipe emissions is an important consideration for GoTriangle as the transportation sector makes up more than 40% of greenhouse gas emissions according to the 2022 North Carolina Greenhouse Gas Emissions Inventory. Converting to zero-emission vehicles contributes to cleaner air for people that ride the bus, drivers, as well as the communities served. This transition will reduce greenhouse gas emissions resulting from operating a regional transit system, which is critical to achieving the carbon reduction and sustainability goals of the state of North Carolina as well as the municipalities and counties served by GoTriangle.

In 2020, GoTriangle received a $943,000 Low or No Emission grant from the Federal Transit Administration that provided funds to procure the agency's first two battery-electric buses (BEBs). By deploying battery electric buses in place of the existing diesel vehicles, GoTriangle is reducing energy consumption and harmful emissions, including the release of greenhouse gases. For example, deploying a single battery-electric transit bus in place of a comparable diesel bus will prevent the release of 42 MTCO2e annually according to the FTA Bus Electrification Tool.

GoTriangle is continuing to expand the agency's incremental deployment of zero emission vehicles and charging infrastructure while developing long-range service plans and a long-term fleet composition plan to deliver reliable service using as many zero emission vehicles as practicable. GoTriangle brought two BEBs into service in January 2020 and is procuring five additional BEBs to be operational in 2025. GoTriangle has installed two depot chargers at the agency's Nelson Road Bus Operations and Maintenance Facility to charge the two BEBs in the current fleet.

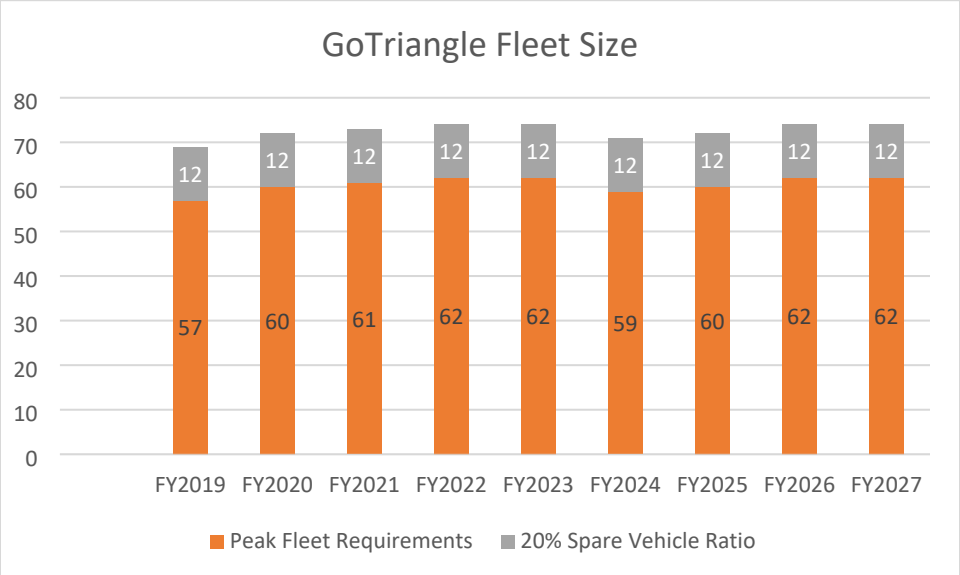
While GoTriangle's existing service delivers extensive benefits to the environment and supports efforts to reduce carbon emissions, the agency recognizes that more can be done to reduce the environmental impact of transportation in the Triangle region. Expanded and improved transit service will need to play a key role in meeting local, regional, and statewide sustainability goals. Local transit plans for Wake, Durham, and Orange counties include funding to increase transit service frequency, expand hours of operation, add more weekend service, and improve speed and reliability of service in the coming years. These investments strive to increase ridership, reduce auto trips, and provide equitable access to jobs, school, shopping, and other destinations – all of which will reduce the region's carbon footprint.

Transitioning from diesel buses, combined with service improvements and expansions, will reduce greenhouse gas emissions by expanding transit use and operating a more sustainable transit system. This plan outlines GoTriangle's approach for continuing the agency's fleet transition from diesel-powered vehicles to zero-emission vehicles.

Long-Term Fleet Management Plan

The Triangle region of North Carolina continues to be one of the fastest-growing regions in the United States. Each day, approximately 80 new residents call Wake, Durham, and Orange counties home. This growth remains strong and brings challenges and opportunities related to development, accessibility, and mobility. The goals of the county transit plans for Wake, Durham, and Orange counties include creating an exceptional public transportation system that provides greater access for residents and employers and positively affects mobility and air quality while supporting local development policies.

GoTriangle operates a mixed fleet of 78 buses consisting of 35-foot and 40-foot buses. Of the 78 buses, two buses are battery-electric buses and 76 buses are powered by clean diesel. The average bus age is 9.7 years old. The oldest buses in the fleet are 15 years old. The graph below illustrates the GoTriangle peak vehicle needs through fiscal year 2027 as modeled by the current GoTriangle Fleet Replacement and Repower Plan. The model assumes a 20% spare ratio.



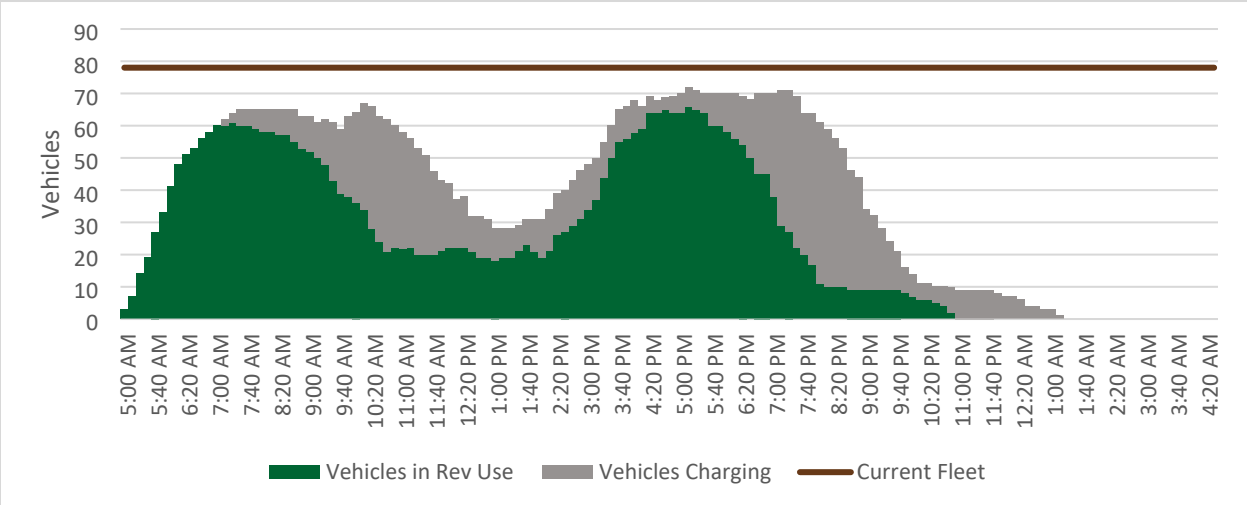
As part of GoTriangle's Regional Fleet and Facility Study, a preliminary battery-electric bus blocking analysis was conducted based on existing GoTriangle service plans. The purpose of the analysis is to assess high-level Diesel-to-BEB replacement needs within the context of the existing operating characteristics and fleet capacities of the GoTriangle transit system. The analysis will be refined to reflect future service changes included in ongoing updates to the Wake Bus Plan and the GoTriangle Short Range Service Plan. The refined analysis will also include a regional on-route charging analysis coordinated with local transit agencies. The Regional Fleet and Facility Study is ongoing through 2023 and the results will inform an update to this Zero-Emission Transition Plan.

Using base-year service information from GoTriangle's general transit feed specification (GTFS), with effective dates of July 6, 2020 through May 31, 2021, it is estimated that only 66 of 105 existing vehicle blocks can be served by depot-based charging. Similar to diesel fueling, it is important to send buses out for a full block of service without the need for refueling. Therefore, a redesign of schedules and blocking would be required to optimize the efficiency of depot charging. Blocks were reconfigured if they could not perform planned service under BEB battery limitations. The following assumptions were used, based on the region's pilot BEB project:

- 2.88 KW/Mile for battery drain
- 444 kWh battery BEB vehicle

After adjusting block designs to fit within BEB limitations[1], Figure 1 shows, in green, the vehicles in either revenue service or deadheading to/from revenue service throughout a typical weekday. The grey area indicates how many vehicles will return to the garage after revenue service and require recharging. The solid line shows the existing fleet of 78 vehicles. Due to the required recharge time, and required spare ratio, the number of vehicles needed to complete service exceeds the existing fleet size. This resulted in a Diesel to BEB vehicle replacement ratio of 1.12, after accounting for a 20% spare requirement (see Table 1). By applying the replacement ratio, a hypothetical 100% BEB conversion of the current 78 vehicle fleet without on-route charging would require a BEB fleet size of 87 vehicles[2].

Figure 1: Vehicles in Use (revenue or deadheading) or vehicles charging – Typical Weekday



[1] Charging assumptions were based on the battery used for each service block (2.88 kw/mile for a maximum operating range of 115 miles) and how long it would take to return the vehicle's battery to a full charge state using a 150 kw charger. To be conservative, the modeling also assumed only 75% of a vehicle's advertised battery capacity is useable (333 kwh of a vehicle with a 444 kwh battery). Modeling assumptions also assumed that charger output curve of 90% (a charger with an advertised output of 150 kW would produce 135 kW output in reality).

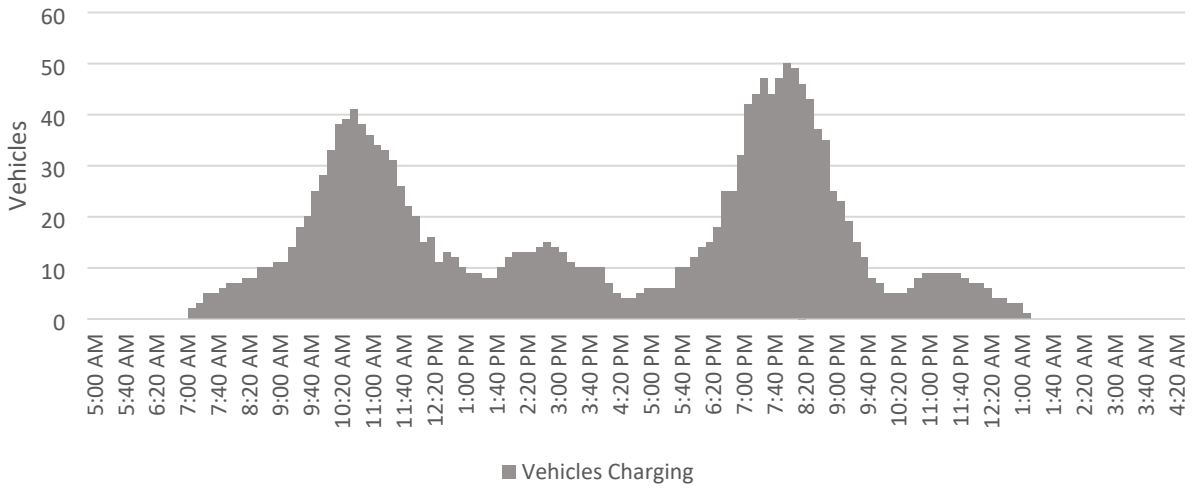
[2] The fleet size needed will change following adoption of the recommended Wake bus plan which will increase the amount of midday, evening, and weekend service – increasing the number of miles on average for a vehicle block and reducing opportunities for midday depot charging. This analysis will be refined to reflect the new service plans.

Table 1: BEB Block Analysis Results

Current Fleet Size (study used 2021 service and fleet assumptions)	**78**
Max Vehicles Unavailable (in service or charging)	**72**
Spare Ratio Assumption	**20%**
Needed BEB Fleet Size	**87**
Fleet Replacement Ratio	**1.12**

This analysis also revealed the minimum number of charging cabinets needed in order to maintain service. Assuming a 150 kW charging cabinet with a one (1) dedicated dispenser, the maximum number of vehicles in a charge state on a typical weekday would reach 50 vehicles (Figure 2). Therefore, the minimum number of charging cabinets required would be 50 charging cabinets. However, additional charging cabinets are recommended to account for redundancy and potential cabinet failures or outages. Cabinet sizing, dimensions, and capacity vary by make, model, and manufacturer. Charging infrastructure quantities may be able to be reduced pending technology advances as well as selection of preferred manufacturer.

Figure 1: Vehicles Charging - Typical Weekday



Resources to Meet Costs of Transition

GoTriangle receives approximately $3.2 million dollars per year in FTA funding, including Urbanized Area Formula funding among other sources, and matches this funding with approximately $640,000 dollars per year in local transit funds. These funds are primarily used for facilities, maintenance, and repairs, in addition to supporting fleet replacement. GoTriangle has instituted a level buying program with the goal of purchasing five vehicles each year and will use competitive funding to support this program.

GoTriangle also receives funding from the Wake, Durham, and Orange county transit plans, which are funded by a voter-approved local-option sales tax, to purchase replacement vehicles for the portion of GoTriangle services included in the county transit plans. The funding amount provided by the plans is based on the cost of purchasing a diesel bus in order to balance vehicle needs with expanded transit service, infrastructure, and other priorities identified in the plans. GoTriangle is exploring external competitive funding opportunities to help bridge the price gap between diesel and battery-electric buses.

GoTriangle debuted two BEBs in January 2020 that were purchased with FTA Low-No funds and matching funds provided by taxpayers in Wake, Durham, and Orange counties.

Policy and Legislation Impacts

At the State level, Governor Roy Cooper issued Executive Orders No. 80 and 246 highlighting North Carolina's commitment to fight climate change and lead North Carolina's transition to a clean energy economy. While the executive orders call for the state of North Carolina to protect North Carolina's environment while growing clean energy technologies, there are very limited funding opportunities at the state level for the purchase of zero-emission buses.

Fleet renewal and electrification is identified as a goal in statewide, regional and local transportation plans. North Carolina's Clean Energy Plan includes goals to reduce greenhouse gas emissions and attain carbon neutrality by 2050. At a regional level, the Triangle Regional Resilience Partnership calls for transitioning government fleets to be less dependent on fossil fuels. Wake, Durham, and Orange counties also have sustainability goals that transition to a zero-emission fleet would help achieve:

- Orange County: Commitment to achieve 100% renewable energy by 2050, including the County's fleet.
- Durham County: Commitment to achieve a 50% reduction in greenhouse gas emissions from 2005 levels by 2035, includes fuel-efficient, electric, or hybrid transit vehicles.
- Wake County: Commitment to achieve 100% clean energy by 2050, including the County's fleet.

At the federal level, with the signing of Executive Order 14008 and the passage of the Bipartisan Infrastructure Law, significant additional federal resources have been made available to transit agencies to encourage the transition of transit fleets to alternative fuel sources to support Climate Action goals. The Federal Transit Administration (FTA) has made funding available through the Low or No Emission program, a funding source available to transit agencies, for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities.

Transition of Existing and Future Facilities

GoTriangle plans to implement both depot-charging and on-route BEB charging (also known as opportunity charging) technologies at agency-owned facilities. Two facilities have been identified for near-term improvements to incorporate BEB charging equipment: the Nelson Road Bus Operations and Maintenance Facility and the under-construction Raleigh Union Station Bus Facility (RUS Bus). GoTriangle plans to install depot electric charging infrastructure at the Nelson Road facility and on-route fast-charging infrastructure at RUS Bus. This section discusses tradeoffs of depot-charging and on-route charging and provides details about the projects at the Nelson Road Facility and RUS Bus.

The cost of depot-charging is presently less than on-route opportunity charging infrastructure due primarily to the lower cost of equipment. However, the lower infrastructure cost is offset by the need to purchase additional vehicles and split blocks for vehicles with long in-service times. According to the analysis of existing system routes, comparing the expected range for BEBs and total platform miles, it is

estimated that only 66 of 105 existing blocks can be served by depot-based charging. Therefore, a redesign of schedules and blocking would be required to take advantage of more efficient depot charging, resulting in a need for 11 additional vehicles based on currently adopted service plans. This need for additional vehicles can partly be addressed though on-route charging. This figure will change and this analysis will be refined based on future service plans that are in development including the Wake Bus Plan and GoTriangle Short Range Service Plan.

GoTriangle plans to evaluate the installation of on-route charging infrastructure at key hubs, such as RUS Bus, that are served by multiple GoTriangle routes to maximize the time that a BEB is in service. The on-route chargers will allow for vehicles to recharge without deadheading back to the Nelson Road maintenance facility to charge in the middle of the day. This will increase the amount of time a vehicle is in service and reduce the overall number of vehicles relative to a BEB fleet that is 100% depot-charged.

One vulnerability of BEBs is the potential for electric outages that could prevent buses from being charged. GoTriangle will develop strategies for preventing outages and/or contingency options should outages occur. For both depot-charging and on-route opportunity charging technologies, it will be important for electric utilities to work with GoTriangle to ensure that adequate service and redundancy is available to ensure our ability to serve customers in the event of unexpected power outages. It will also be important to pursue partnerships with the electric utility and other measures such as battery storage to ensure affordable electricity rates during daytime periods when peak energy rates are in effect.

Nelson Road Operations and Maintenance Facility

Depot-charging buses can charge at the Nelson Road maintenance facility with minimal operational impacts. Plugging in buses to charge overnight is a change from the current practice of refueling buses in a matter of minutes and then parking them. GoTriangle currently has two depot-chargers installed at the Nelson Road facility for its two existing BEBs. To accommodate the deployment of five additional BEBs GoTriangle will install three multi-dispenser charging stations that will accommodate up to six charging dispensers adjacent to the two existing charging stations. This will require an upgrade to related electrical equipment including a transformer and control panel.

The Nelson Road Expansion and Modernization project will include additional parking, utility equipment, and infrastructure to support further BEB deployment. A facility condition assessment of the existing Nelson Road complex resulted in a TERM rating of Good, with a condition score of approximately 4.2. The existing facility is well maintained and appears to have adequate expansion space and clearances to support up to a 100% conversion of the vehicle fleet to BEBs through a facility renovation. The site opportunities and constraints for expansion are being evaluated and refined as part of the Regional Fleet and Facilities Study.

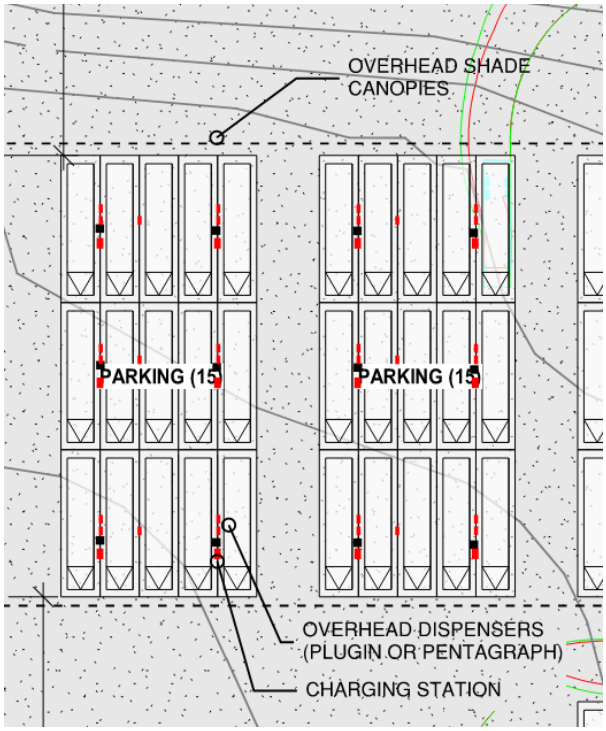
Transitioning to a 100% battery electric bus fleet at GoTriangle's Nelson Road facility would require the installation of electric power service from the local utility sized to handle the expected load, power transformers, switchgear, panel boards, chargers and dispensers. A fleet of 87 battery electric buses would require 10.44 MW of power if all 87 buses were charged at one time; however, the analysis above shows the maximum number of vehicles needing to be charged at one time is closer to 50 which would require 9 MW of power. The use of a charge management system would allow for controlled charging of the fleet over an extended overnight charging period resulting in reducing the overall power consumption by roughly half to 5.22 MW of power during the overnight charging period. This would avoid higher

daytime demand charges and would qualify for a lower Duke Energy rate during the off-peak periods. Based on the charging analysis, the peak charging of 50 buses at the same time would require 6.84 MW of power.

Preliminary assumptions of BEB implementation requirements include:

1. Based on current standards, the use of 150 kW chargers and one charger/dispenser per bus is anticipated for the current build out.
2. GoTriangle desires an overhead shade canopy over the facility's large fleet parking area. This shade structure would be advantageous to lower the onboard bus temperature (solar gain) during daytime hours as well as offering an opportunity for an elevated future PV array.
3. This shade canopy would allow for several charging options:
    a. Pantograph chargers suspended from the canopy system
    b. Plug-in dispensers lowered from canopy via a cable reel.
    c. Plug-in dispensers located in between buses, one on driver's side and curb side of the next bus.
4. Chargers can be located up to 450' from the dispensers. The dispenser cable (dispenser to bus port) has a maximum distance of 27'.
5. Charger locations should consider shade for the equipment.
6. 70 – 150kW chargers with Dispensers
7. Charge management software
8. Maintenance Bay bus hoists will need to be evaluated for lifting rating as BEBs are heavier than the current diesel fleets.

Figure 3: Example of Future Charging Station Layout for Nelson Road Facility

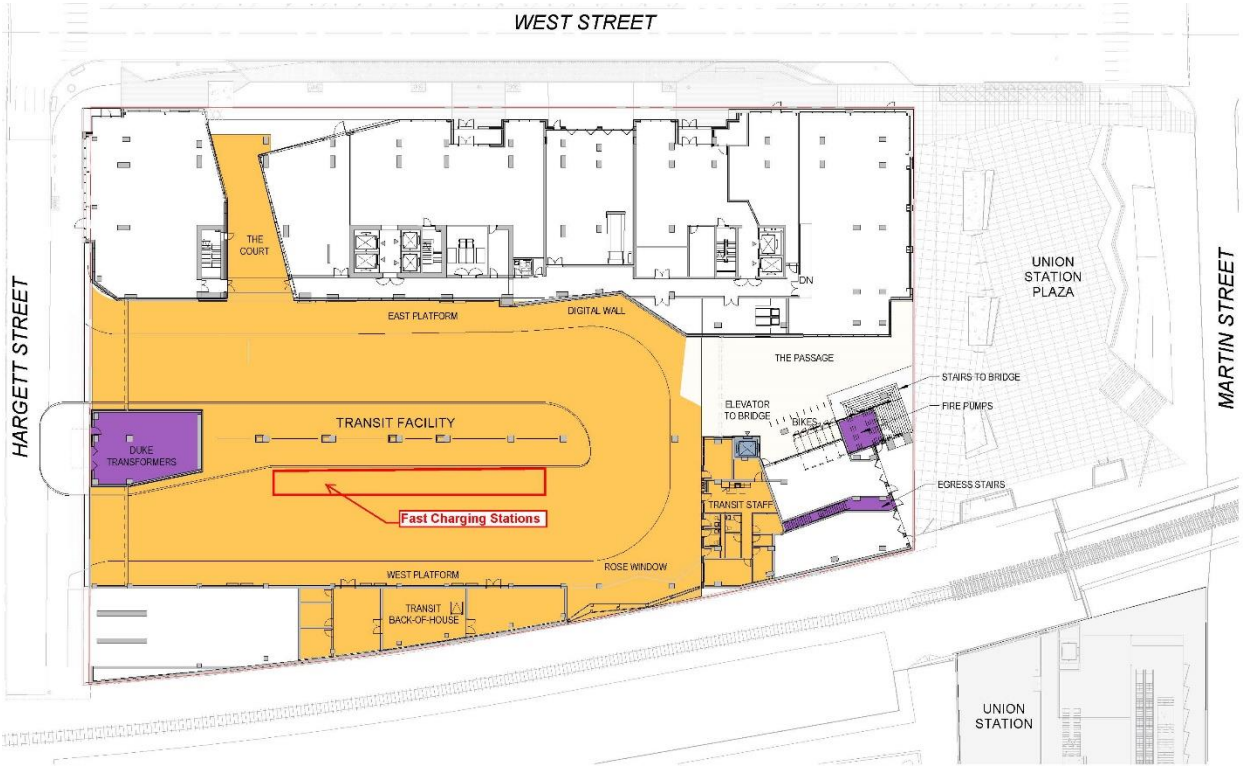


Raleigh Union Station Bus Facility (RUS Bus)

As a part of the RUS Bus project, GoTriangle incorporated charging infrastructure into the design of the facility which will be served by GoTriangle and GoRaleigh routes. The Raleigh Union Station Bus Facility (RUS Bus) is a new bus facility currently under construction that will open in 2025. The bus facility was partially funded through a USDOT 2018 BUILD grant. The BUILD grant scope includes planning for future installation of battery electric bus (BEB) charging equipment in the center Island of the bus facility, which will not be accessible to passengers. To accommodate the deployment and full utilization of five additional BEBs GoTriangle will purchase and install two overhead pantograph bus charger kits, two charging cabinet assemblies, and supporting infrastructure along with modifications to the facility to accommodate the chargers. Regional procurements for BEBs, including the five scheduled for deployment in 2025, will include charging rails on the roof to ensure compatibility with quick-charging infrastructure in the region.

On-route charging can increase the in-service time for a single vehicle by providing short charging sessions while buses layover at field transit stations. This, in turn, can help Go Triangle further reduce the estimated diesel replacement needs by increasing the length of time a bus can be in revenue service before returning to the depot for a full recharge. Installation of on-route charging infrastructure at RUS Bus and other hubs served by multiple GoTriangle routes will reduce the additional fleet required to support conversion to battery-electric buses.

Figure 4: Future Charging Station Layout for RUS Bus Facility



Partnership with Utilities

Duke Energy is the utility partner for GoTriangle and other transit agencies across the region. Duke Energy supports GoTriangle's continued electric bus deployment with an in-kind contribution of new transformers to support the new charging stations. This partnership has also extended to the installation of depot-charging stations at GoTriangle's Nelson Road facility in 2019. Managed or smart charging is critically important for the transportation fleet as it represents a significant new electrical load. GoTriangle will continue to collaborate with Duke Energy to determine the best rate option to mitigate any potential impacts on peak demand and energy consumption.

Regional Fleet and Facilities Study will develop a timeline for the multi-year phased renovation project at Nelson Road. The timeline for implementation of the renovation project will follow the installation of the three additional chargers in a location that will not be impacted by the renovation. The renovation timeline and the BEB procurement plan goals will be coordinated with Duke Energy to determine what and when utility infrastructure improvements are required to support the steps to convert more of GoTriangle's fleet to BEBs.

Duke Energy, headquartered in Charlotte, North Carolina, is an electric power holding company in the United States. Duke Energy owns 58,200 megawatts of base-load and peak generation in the United States, which it distributes to its 7.2 million customers. Duke Energy's service territory covers 104,000 square miles (270,000 km2) with 250,200 miles (402,700 km) of distribution lines.

Transition Impacts on Workforce Development

With five new BEBs set to arrive in 2025, GoTriangle will be developing a comprehensive workforce transition plan and coordinating with bus manufacturers and powertrain vendors to develop technical training modules and in-house training curriculum for all current and future maintenance, service, and facility personnel. GoTriangle has manufacturer warranty support active on the agency's two existing BEBs in operation. GoTriangle currently partners with higher educational institutions as well as manufacturers to conduct trainings. GoTriangle staff includes transit operators that directly operate and maintain GoTriangle's transit system. GoTriangle currently offers paid in-house trainings for operators, such as Commercial Driver License training and safety trainings.

Community College Partnerships

GoTriangle has partnered with Wake Technical Community College as part of the Wake Tech Workforce Continuing Education's Propel Program to implement curriculum courses related to bus operations and maintenance. Courses include training for bus operators/commercial driving license (CDL) and mechanics, as well as workplace preparedness to increase employability. GoTriangle supported the development of a curriculum manual in partnership with the college. In addition, GoTriangle is currently discussing training curriculums with other area community colleges, including historically black colleges and universities (HBCUs). GoTriangle will continue to develop curriculum as part of the workforce development program to train the next generation of operators in zero emissions technology.

Internships

GoTriangle has an internship program that provides opportunities for students to gain valuable onsite training skills. The agency's Mechanic Internship provides hands-on experience with a wide range of

maintenance and repair duties. The interns perform preventative maintenance services and repairs on agency vehicles under the direction of a mechanic to supplement the formal learning obtained as part of the curriculum of a local technical/trade school. GoTriangle will continue its internship program to provide opportunities for interns to gain hands-on experience with zero emissions technology.

Manufacturer Training

Current training is provided by the BEB manufacturer. All bus and facility maintenance personnel receive training on the BEB and facility electrical power systems before they are authorized to interact with and perform repairs on these systems. Operators learn how to optimize their energy usage (which is monitored by operations and maintenance supervision), taking advantage of their regenerative braking technology to potentially earn an energy-savings bonus.

GoTriangle management and has identified an initial skills and knowledge gap among the maintenance and service technicians supporting the current fleet of BEBs. This information, along with involvement from front-line staff, management coordination and OEM manufacturers, will help guide the workforce transition plan. All maintenance personnel will participate in extensive training programs to eliminate the potential for displacing workers as the fleet composition gradually transitions toward zero-emission. The comprehensive workforce transition plan will identify partnerships available for training. GoTriangle will continue to develop curriculum through partnerships with community colleges as part of the workforce development program to train the next generation of operators in zero emissions technology.

GoTriangle is committed to supporting Triangle communities by providing opportunities and pathways to employment. The comprehensive workforce transition plan will identify goals, opportunities, and activities to advance Black, Hispanic, Asian American, Native Hawaiian and Pacific Islanders, Native Americans, and other groups facing systemic barriers to employment. GoTriangle currently offers paid in-house trainings for operators, such as Commercial Driver License training and safety trainings. GoTriangle is committed to developing a Zero Emissions Training Program with partners to provide employment opportunities and support the transition to zero-emission fleet and facilities.

Conclusion

With improving technology, decreasing costs of non-diesel buses and funding opportunities, GoTriangle will continue to expand its zero-emissions fleet. The agency will continue to plan, design, build, and operate facilities that support a more sustainable transit system. Industry research has shown that converting to BEBs has significant benefits in reduced air and noise pollution and potential lifecycle net savings due to lower costs of maintenance, operations, and fuel. In the short term, however, BEBs and charging infrastructure cost significantly more than traditional diesel buses. These costs are incurred up front with a “breakeven point” occurring years in the future.

GoTriangle has been successful in installing charging infrastructure and securing a federal Low-No grant for the initial purchase of two BEBs. The agency has secured federal funding to support purchase of five additional BEBs and will deploy them in 2025. GoTriangle will continue to explore funding opportunities as they become available in order to reduce the projected incremental capital investment needed for the buses as well as the charging infrastructure. Transition to a zero emission GoTriangle fleet will contribute to cleaner air for people that ride the bus, drivers, as well as the communities served. GoTriangle will continue to build and operate a safe, efficient, and effective transit system now and in the future.