



# Wake County Transit Plan Update

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

February 2021 – PUBLIC REVIEW DRAFT

## Table of Contents

|   | Page      |
|---|-----------|
| <b>Foreword.....</b>  | <b>1</b>  |
| <b>Chapter 1: Background and Plan Development Process .....</b> | <b>3</b>  |
| Wake County Transit Plan.....                                   | 3         |
| Wake County Transit Plan Update.....                            | 5         |
| Transit Investment Implementation in Wake County .....          | 9         |
| <b>Chapter 2: Wake County Transit Plan Update.....</b>          | <b>11</b> |
| Big Moves: Enhanced Transit in Wake County .....                | 11        |
| Wake County Transit Plan Investment Priorities .....            | 20        |
| Wake County Transit Plan and Community Goals .....              | 23        |
| Implementation and Measuring Success.....                       | 24        |
| Vision for the Future: Beyond 2030.....                         | 28        |
| <b>Chapter 3: 2020 Market Reassessment .....</b>                | <b>31</b> |
| Transit Demand Based on Density .....                           | 31        |
| Other Factors Affecting Transit Demand .....                    | 40        |
| Travel Patterns.....  | 41        |
| Congestion .....  | 44        |
| Transit Ridership .....   | 44        |
| Transit Market Conclusion.....                                  | 44        |
| <b>Chapter 4: Financial Plan .....</b>                          | <b>48</b> |
| Financial Plan Details .....                                    | 48        |
| Sources of Revenue .....  | 48        |
| Planned Expenditures .....                                      | 52        |
| <b>Appendices .....</b>   | <b>55</b> |

# Foreword

**Our population of some 1.1 million continues to grow rapidly, adding some 62 people per day, or roughly 22,000 people per year.** As Wake County continues to grow into one of America’s most dynamic and desirable urban areas, transportation needs also grow.

Population growth is outpacing the capacity of our infrastructure, leading to impacts such as:

- Worsening congestion – Wake County has increased its investments in roadways but cannot keep pace with the demand for travel. Public transportation offers an alternative to move people efficiently.
- Increasing demand for public transit – The demand for urban lifestyles in places like downtown Raleigh is creating densely populated neighborhoods and areas suited to public transit. Indeed, many people are moving to urban spaces because they offer a convenient lifestyle that is not dependent on car travel.
- Widening accessibility gap between opportunities and certain segments of Wake County’s population - Many jobs, educational opportunities, and services are only accessible by car, making them difficult or impossible to access for people who are not able to drive or don’t own a car. Investments in public transit work to ensure the opportunities and benefits of the region’s growth are available to all residents of Wake County.

People want and need more ways to travel. The original Wake County Transit Plan, adopted in 2016, and this first update to the plan (the Wake Transit Vision Plan Update) lay out a strategy to expand travel choices and options. Wake County is home to an economically, socially, and demographically diverse population, and the needs of residents and employees in the County are equally varied. The original Wake County Transit Plan and this subsequent update provide a strategy to diversify the region’s transportation investments, increase travel choices to improve access to jobs and educational opportunities, and improve the overall mobility of Wake County residents.

The Wake County Transit Plan and this 2021 update are built around four “Big Moves” that collectively connect the region across county lines; link Wake County communities to the transit network; provide frequent, reliable urban mobility to the densifying areas of the county; and enhance access to transit across Wake County. Achieving the Big Moves requires significant investment – roughly tripling bus service in Wake County, investing in bus rapid transit (BRT) infrastructure to enhance speed and reliability for transit customers, building commuter rail, and improving the transit customer experience.

Transit investments were designed to ensure Wake County remains one of the best places to live and work in the country. Both the Wake County Transit Plan and this plan update use transit investment to create long-term benefits. High-quality transit service encourages people to locate near these services, which creates more efficient development patterns such as mixed-use neighborhoods with clusters of housing, retail and office space, and a range of travel choices. Access to high-quality transit means these neighborhoods will have access to regional employment, educational opportunities, and critical services like medical and recreation facilities. Combined, the transit investments will help Wake County remain competitive in a global economy by making it easier for employees to get to their jobs, thus helping businesses attract and retain talent.

The original Wake County Transit Plan, adopted in 2016, programmed a total investment in transit expansion of approximately \$2.3 billion in the first 10 years of implementation, from 2018 through 2027. The primary funding source for these investments is a half-cent sales tax increase that was approved by voters in November of 2016. The transit revenue package also includes additional taxes, such as vehicle registration and vehicle rental tax revenues. Regional transit investments will also be supported by federal and state funding programs, local revenues that were invested in Wake County’s pre-existing transit services, and fares paid by passengers.

This first update to the Wake County Transit Plan extends the financially constrained horizon of the plan an additional three (3) years through 2030. Following this first update to the plan, the Wake County Transit Plan will be

updated every four (4) years to continue to extend its planning horizon during which further investments that have been identified as needs can be made. This first update to the Wake County Transit Plan can be considered a relatively minor update that takes stock of the transit investments and projects originally planned through 2027, considers the impacts and performance of investments accomplished to date, and reevaluates the remaining transit investments in light of:

- Available financial resources and schedule feasibility through the extended 2030 horizon;
- Priorities and attitudes toward expected outcomes from transit investments that are informed by transit implementation partners and robust public and stakeholder input; and
- The current and future market demand and associated need for transit investments.

This first update to the Wake County Transit Plan is not a wholesale re-visioning of the transit investments envisioned in the original 2018-2027 plan. While the plan update revisited certain project delivery assumptions for new

investments identified in the original Wake County Transit Plan, as well as market assumptions that drive transit propensity and that have the effect of redirecting priorities for planned investments, this plan update does not change the overarching goals that drive the four Big Moves established in the original plan.

This plan is divided into the following chapters:

- Chapter 1: Background and Plan Development Process - Summarizes the purpose of and processes undertaken to develop the plan and this subsequent plan update.
- Chapter 2: Wake County Transit Plan Update - Details the transit plan's investment mix and associated goals, objectives, and targets.
- Chapter 3: 2020 Market Reassessment - Describes the most recent population, employment, and transportation trends in Wake County and what they mean for further transit investment.
- Chapter 4: Financial Plan - Discusses the implementation and funding strategy for the next 10 years of the plan.

# Chapter 1: Background and Plan Development Process

The original Wake County Transit Plan was commissioned in 2014, developed throughout 2015, and adopted by the Capital Area Metropolitan Planning Organization (CAMPO), GoTriangle, and Wake County governing boards in May and June of 2016. The primary funding source for the plan (a countywide ½% sales tax) was approved by the voters of Wake County via referendum on November 8, 2016. The original Wake County Transit Plan and voters' approval of the sales tax set into motion a community-transformative vision that was developed as part of a comprehensive and participatory process that included an assessment of the type and scale of transit services needed in Wake County, as well as the values and priorities of residents, employers, and regional stakeholders. The Plan was successful, in part, because it was built with extensive community involvement and with active participation in prioritizing the underlying trade-offs associated with transit service development. Once priorities were clear, the Wake County Transit Plan identified transit investment decisions that reflected these goals.

The original Wake County Transit Plan covered a financially constrained period of ten (10) years from 2018 through 2027. It is anticipated that updates to the plan will occur every four (4) years to continue to extend the plan's horizon, refine assumptions for financial conditions and project delivery, reassess plan goals and priorities that are informed by robust community and stakeholder engagement, and identify further investments to be made with available financial capacity in light of those reassessed goals and priorities.

As depicted in **Figure 1**, this first update to the Wake County Transit Plan extends the financially constrained plan horizon through 2030. This update to the Wake County Transit Plan can be considered a relatively minor update that was designed to re-evaluate the recommended mix of transit investments and associated implementation schedules set out by the original plan within the context of updated community development patterns and demographic trends; changing project cost assumptions and overall financial conditions, particularly as a result of the COVID-19 pandemic; project performance and the region's experience implementing the plan through fiscal year (FY) 2020; investment priorities informed by robust community engagement; and available financial resources through 2030.

Figure 1 Extension of Wake Transit Plan Horizon



## WAKE COUNTY TRANSIT PLAN

As mentioned, the original Wake County Transit Plan focused on establishing community priorities for transit service. This approach reflects an underlying understanding that there is not one right way to build an enhanced transit system. Instead, investment decisions were centered around two primary trade-offs:

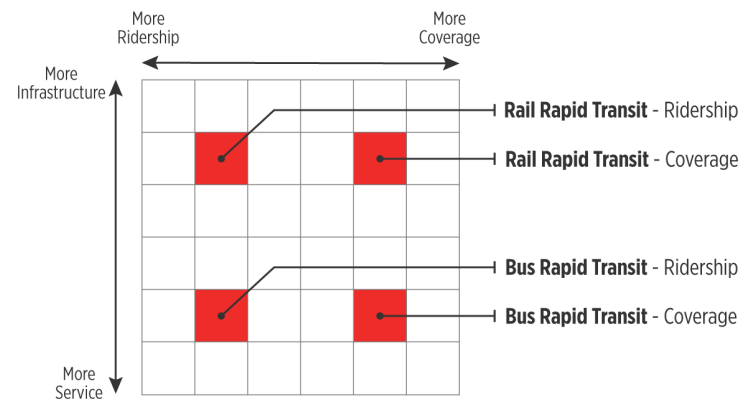
- **Ridership versus Coverage.** A ridership goal designs a system that would carry the maximum number of people. This involves focusing service in areas with higher densities and communities with higher concentrations of individuals more likely to use transit (i.e., individuals with lower incomes, racial minorities, individuals with disabilities and older adults, households with no vehicle available, etc.). A coverage goal designs a system to provide access to as broad an area as feasible. It focuses on making sure most parts of the region have access to transit service, even if service is less convenient because it is operated with low frequencies.

- **Infrastructure versus Service.** An infrastructure goal designs a system where more money is spent on up-front capital expenditures like dedicated bus lanes, rail infrastructure, newer vehicles, and more passenger amenities. Spending on infrastructure competes, to a degree, with funding for transit services resulting in lower investments in service operations (i.e., service frequency and hours of operations). The infrastructure versus service trade-off can be partially mitigated if the infrastructure is focused on making service faster and more reliable, because faster service is less expensive to operate.

## Public and Stakeholder Input and Scenario Development

As part of developing the original Wake County Transit Plan, these choices and trade-offs were shared with the public and stakeholders via a survey that asked residents and employers to reflect on where Wake County is on the spectrum of each question. This survey revealed some preference for ridership over coverage (70% ridership, 30% coverage) and an even balance between infrastructure and service (50% each). Rather than building a transit plan based on one (1) round of input, the plan development team developed four (4) intentionally different transit investment scenarios that offered different ways for how the two (2) sets of trade-offs can be applied within Wake County. Each scenario balanced the trade-offs between the ridership/coverage and infrastructure/service spectrums in different ways (see **Figure 2**). The scenarios also gave citizens a second chance to consider their priorities. As part of these conversations, Wake County residents and stakeholders were asked to give their opinions on the best direction for the county's transit future. People did not vote on any particular scenario but rather questioned and voiced support for individual elements of the scenarios. Through this exercise, Wake County residents and stakeholders confirmed the ridership/coverage and infrastructure/service investment targets as reflected in the prior survey.

**Figure 2 The Four Scenarios**



## Corridor Assessment

Another premise of the original Wake County Transit Plan was that transit investments should consider existing development plans and future development patterns, including transit-oriented and transit-conductive development. The 2016 Wake County Transit Plan team prepared a detailed “transit suitability analysis” that looked at historic (2010) and estimated future (2040) conditions for population, employment, zero-car households, income, congestion, and major activity centers across Wake County.

This analysis considered existing congestion levels, existing trip frequency and design of land uses and used a mapping and numeric scoring for potential enhanced transit routes. This process allowed the team to evaluate individual corridors and evaluate their propensity for transit services both now and in the future. This evaluation helped inform the planning process by supporting an analysis and evaluation of alternative corridors for both infrastructure and service. While this evaluation identified corridors that were ripe or were projected to be ripe for more intensive transit investment as of the 2015-2016 timeframe, the 2021 Wake Transit Plan Update market reassessment reconfirmed the most notable corridors identified through that process and identified additional corridors that may be ripe for more intensive transit investment in the future beyond the 2030 plan update horizon.

## Plan Development Outcome

Final recommendations of the 2016 Wake County Transit Plan reflected extensive outreach, education, and input on these trade-offs, including two (2) rounds of public outreach, a statistically valid survey, feedback from a 76-member advisory committee, and a series of small group meetings with stakeholders representing various demographic groups. Trade-off data was combined with Wake County travel data, development patterns, socio-economic and demographic characteristics, and financial analyses that examined the relationship between different revenue streams and “affordability” of different investment scenarios.

Ultimately, the Wake County Transit Plan created a transit investment framework centered around four (4) “Big Moves” that balance the trade-offs and structures the transit plan around community priorities. More detail on the Wake County Transit Plan Four Big Moves is provided in Chapter 2.

## WAKE COUNTY TRANSIT PLAN UPDATE

### Plan Update Goals and Purpose

As part of developing the original Wake County Transit Plan, community leaders reserved opportunities for stakeholders and residents to revisit their priorities for transit investments based on progress to date, changes to underlying assumptions, and/or changes in community priorities and values, particularly as the plan is continually updated every four (4) years to consider additional investment beyond the original 10-year horizon. This update to the plan is the first of these opportunities. It reflects an 18-month planning process that re-assessed the underlying assumptions for transit investments included in the original Wake County Transit Plan, development patterns, investment priorities, and available funding. The planning process also reconsidered the appropriate trajectory of project implementation in light of the aforementioned and within the context of the region’s four (4) years of experience implementing the Wake County Transit Plan. With these goals in mind, the Wake County Transit Plan Update followed an effort focused on seven (7) themes:

The following terms will be used to describe investments in this transit plan update:

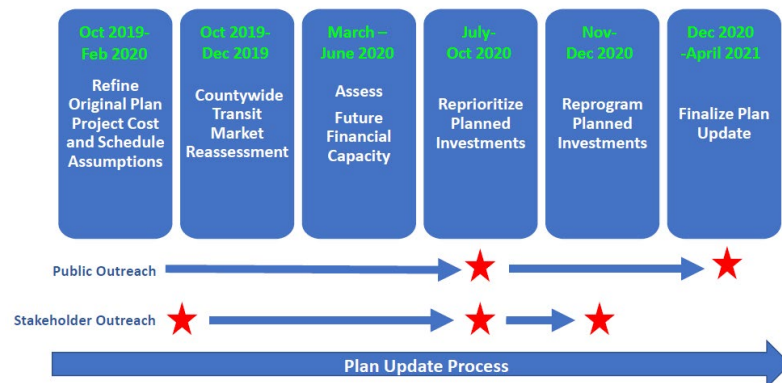
- **Bus Rapid Transit (BRT):** A range of speed and reliability improvements such as dedicated busways and fixed stations with off-board fare collectors.
- **Commuter Rail Transit (CRT):** A train operating on shared tracks with freight and Amtrak vehicles in the freight right-of-way.
- **Fixed-route:** Transit routes that operate on the same route on a published schedule.
- **Demand-responsive/On-demand:** Transit service that varies each trip based on the need of the individual users.

1. Extending the Wake County Transit Plan’s investment schedule to 2030, three (3) years beyond the original plan horizon that ends in 2027.
2. Updating the transit market analysis to reflect the region’s understanding of the demand and need for transit services based on the most recent demographic, socioeconomic, and transportation data (travel patterns, congestion, transit ridership, and intersection density) (see Chapter 3 and **Appendix B: Transit Market Reassessment Report**).
3. Updating and re-evaluating the schedule and cost feasibility of major capital projects associated with the original Wake County Transit Plan’s five (5) major capital investments (Commuter Rail and four [4] BRT lines). This process updated assumptions for project costs and implementation schedules within the context of impacts to the overall financial capacity of the Wake County Transit Plan. More information on this reevaluation is included in **Appendix A: Major Capital Cost and Schedule Feasibility Memo**.



4. Reassessing anticipated revenues through 2030, particularly in light of the economic impacts of the COVID-19 pandemic on assumed local revenue collections. More information is included in Chapter 4 and **Appendix C: Recommended Financial Assumptions for Wake County Transit Plan Update**.
5. Revisiting stakeholder and community priorities for transit service and infrastructure investments. More information is included in **Appendix F: Community Engagement Report**.
6. Reprioritizing the full range of investments recommended by the original plan and subsequent implementation plans using community input, as well as guidance developed throughout the first three (3) full years of implementation, to inform priorities. This update to the plan was the first such effort to reprioritize all planned investments relative to one another. More information is included in **Appendix D: Project Prioritization/Reprogramming Guidance Memo**.
7. Reprogramming the transit implementation schedule based on reassessed priorities, the updated assessment of project cost and schedule feasibility, project implementation performance to date, and available Wake County Transit Plan revenues. More information is included in **Appendix E: FYs 2021-2030 Programming of Wake County Transit Plan Update Investments**.

**Figure 3 Wake Transit Plan Update Process**



The Capital Area Metropolitan Planning Organization (CAMPO), working closely with a number of local government, state, and transit agency partners, led the development of the update to the Wake County Transit Plan. It was guided by a Core Technical Team (CTT) comprised of representatives from individual Wake County municipalities, local and regional transit agencies, North Carolina Department of Transportation (NCDOT), North Carolina State University, and other regional stakeholders. The team also engaged members of the public and regional stakeholders to comment on progress to date, consider and evaluate priorities, and weigh in on investment decisions. A summary of the plan update process is depicted in **Figure 3**.

## Plan Update Development Process

### Plan Update Kickoff

The Wake County Transit Plan Update was heavily informed by participation and input from members of the public and community stakeholders as it strived to refine priorities for Wake County's transit vision. The community engagement process began in the fall of 2019 with plan development partners (CAMPO, transit agencies, and members of the Wake County Transit Planning Advisory Committee [TPAC]) holding a plan update kickoff event at the Raleigh Union Station with a set of targeted stakeholders representing a range of community interests from throughout the county. This kickoff event was a showcase of progress made toward the first two (2) years of implementation of the original Wake County Transit Plan and the efforts that would be undertaken to update the plan and extend its horizon an additional three (3) years through 2030. As part of the kickoff meeting, participants were asked to submit open-ended questions or comments regarding plan implementation efforts to date and plan development partners' approach toward executing the ensuing plan update.

Following the initial kickoff event, the plan development team completed a countywide transit market reassessment, updated schedule and cost assumptions for the plan's most significant capital projects, and reassessed financial conditions, including identifying projected financial capacity for additional investment through 2030. These steps, as well as the initial



conversations with community stakeholders in the fall of 2019, occurred before the onset of the COVID-19 pandemic and its associated economic impacts left broad and deep impacts on Wake County, including reductions to anticipated sales tax revenues available to support transit expansion.

Preceding the onset of the pandemic, financial forecasting by the plan development team indicated potential capacity for additional investment in the years added to the planning horizon beyond what the 2016 plan committed. However, the impacts of the pandemic led the plan development team to revisit assumptions for sales tax collections and other local revenue sources through the new 2030 horizon that were tempered by the immediate and potential lasting impacts of the pandemic. This resulted in a set of planning scenarios that foretold that it is very unlikely there will be funding available to support investments beyond what the 2016 plan committed and that it is likely that some investments originally envisioned in the original Wake County Transit Plan and through subsequent implementation planning would need to be deferred from the 2030 horizon of the plan update.

## Community Priorities Input

Within this vein, plan development partners refocused their attention toward better understanding investment priorities amid limited available financial resources and launched a campaign in the late summer of 2020 to solicit input on these priorities from the Wake County community. The pandemic and associated public health concerns impacted the study team's methodology for community engagement. Plan update engagement relied on a combination of an online survey and virtual meetings to collect feedback. The plan development team published a survey that was available throughout August; in total, the team collected 1,704 survey responses, with over 2,500 views to the Wake Transit Priorities Survey Site. Of the survey respondents, 48% and 39% identified themselves as transit users (have used transit within the previous year) or possessed a characteristic of a disadvantaged, underrepresented, or vulnerable group (i.e., racial minority, individuals with low incomes, individuals with disabilities, and people aged younger than 18 or older than 65), respectively.

The survey was deployed as a check-in with the Wake County community to confirm and better understand goals and investment priorities from the original Wake County Transit Plan and to help understand the community's preferences and priorities for outcomes of transit investment that can be linked to specific projects. Survey responses received from the public demonstrated preferences for:

- Ridership, or productivity-oriented services, over coverage-oriented services;
- Speed and directness of travel over greater access to transit service with more stops;
- Regional service (between cities and towns) over local service (within cities and towns); and
- Investment in service over investment in infrastructure.

When prompted to prioritize among a list of five (5) types of potential service investments that could be implemented under the plan, both coverage- and frequency-related service improvements scored very high, while improvements associated with the span of service (i.e., times services are available throughout the day) ranked lowest. When prompted to prioritize among a list of five (5) types of potential infrastructure investments, those investments that would improve transit speed and reliability (e.g., dedicated bus lanes, rail transit, traffic signal priority to buses at intersections, etc.) and that would more safely and comfortably connect users to transit opportunities (e.g., sidewalks, crosswalks, bike paths) scored highest, while investments in transit vehicle upgrades and facilities (e.g., new/upgraded bus stops, transit centers, park-and-rides, etc.) scored lower. More detailed information on those reached through the summer engagement and on the survey results is provided in **Appendix F: Community Engagement Report**.

## Stakeholder Priorities Input

A set of three (3) virtual stakeholder meetings held in September of 2020 included representation from Wake County municipalities, county government, higher education institutions, the business community, citizens, and non-profit organizations. These meetings consisted of the plan

development team presenting information about the plan update process, sharing the results of the August community survey, and posing a series of interactive polling questions similar to those asked in the community survey. The polling results showed that stakeholders prioritized investment tradeoffs very similarly to the public at large with one notable exception. Based on aggregate results, stakeholders slightly prioritized investments in infrastructure over investments in service.

When prompted to prioritize among the same list of potential service investments as provided through the public survey, frequency-related service improvements ranked highest, while investments in locally- or community-oriented service improvements, as opposed to regionally-oriented service improvements, scored lowest. When prompted to prioritize among the same list of potential infrastructure investments as provided through the public survey, investments that would improve speed and reliability scored highest, while vehicle upgrades scored lowest, which substantially matched the public input results.

An additional question posed to stakeholders in the September meetings asked them to prioritize among specific modal investments, including BRT, commuter rail, high-frequency bus services, and coverage bus services. Among these modes, in the aggregate, stakeholders prioritized BRT the highest, followed by commuter rail. Coverage bus services ranked slightly higher than high-frequency bus services, but the spread between their rankings was nominal. More detailed information on stakeholder participation and on the results from the aforementioned polling exercises is provided in **Appendix F: Community Engagement Report**.

## Prioritizing and Rescheduling Investments

Following the community and stakeholder engagement campaign to solicit input on investment priorities, the plan development team developed an investment prioritization and reprogramming (rescheduling) methodology that was heavily informed by the input received. It was also heavily informed by input from those designated to implement various investments (i.e., transit providers, municipalities, etc.) based on goals and needs represented by their constituents. Further, it was also heavily informed by adopted program-level

prioritization policies and guidance developed through implementation planning undertaken since the adoption of the original Wake County Transit Plan. Other influences included prior performance toward the delivery of Wake County Transit Plan investments implemented to date, readiness for certain investments to move forward, and cost-benefit analyses of various investments relative to one another. This methodology was the primary driver for determining the investments to include, along with their implementation schedules, within the new 2030 financially constrained planning horizon amid more constrained assumed financial resources. A full explanation of this prioritization and reprogramming guidance is included as **Appendix D: Project Prioritization/Reprogramming Guidance Memo**. The ultimate results of this prioritization and reprogramming effort are portrayed throughout Chapter 2 and are further detailed in **Appendix E: FYs 2021-2030 Programming of Wake Transit Plan Update Investments**.

Following the plan development team's reprioritization and rescheduling of investments, additional virtual stakeholder meetings were held in November of 2020 to solicit participants' level of satisfaction with the plan development team's proposed priority and programming framework and its impact on investment rescheduling. In response to the priority framework, all participating stakeholders voted that they were very satisfied, satisfied, or neutral. In response to the framework's impact on investments associated with the Wake County Transit Plan's Four Big Moves, all participating stakeholders voted that they were very satisfied, satisfied, or neutral with respect to Big Moves 1-3 (i.e., Connecting Regionally, Connecting All Wake County Municipalities, and Frequent and Reliable, Urban Mobility). Most participating stakeholders voted that they were very satisfied, satisfied, or neutral with respect to Big Move 4 (i.e., Enhanced Access to Transit), with the exception of 8% of the participants, who were unsatisfied. This result was not unexpected, given that the Big Move most impacted by the results of the reprioritization of investments was Enhanced Access to Transit, primarily because some limited reductions to previously planned bus service expansion would need to be made under the new 2030 financial constraint. More investment emphasis on productivity-oriented services, local services, and infrastructure was cited as the source of unsatisfaction. More detailed

information on the November stakeholder outreach is included in **Appendix F: Community Engagement Report**.

## TRANSIT INVESTMENT IMPLEMENTATION IN WAKE COUNTY

Wake County is served by five (5) independent public transit providers: GoCary (operated by the Town of Cary), GoRaleigh (operated by the City of Raleigh), GoTriangle, GoWake Access (operated by Wake County), and North Carolina State University's Wolfline service. The Wake County Transit Plan brought the public transit agencies together and encouraged collaboration and cooperation through a shared transit investment plan, revenue stream, and implementation schedule. While each of the public agencies continue to conduct their own transit planning and community engagement, they also collaborate and coordinate on both transit planning and community engagement strategies with regards to refining and advancing the Wake County Transit Plan.

### Plan Implementation Governance

Along with the adoption of the original Wake County Transit Plan in 2016 was the simultaneous adoption of a structure that would govern the ongoing implementation and management of the plan. This structure was institutionalized through an interlocal agreement executed among CAMPO, Wake County, and the Research Triangle Regional Public Transportation Authority (GoTriangle). The interlocal agreement created the Wake County Transit Planning Advisory Committee (TPAC), which is a 22-member staff-level advisory committee comprised of representatives from all transit agencies operating and local governments with jurisdiction in Wake County. The TPAC is charged with coordinating planning and implementation aspects of the Wake County Transit Plan, such that all investment decisions made using local revenues that support the plan are reviewed and vetted by the TPAC before they are forwarded to the CAMPO and GoTriangle governing boards. The interlocal agreement made the CAMPO and GoTriangle governing boards responsible for ongoing technical and financial decisions related to plan implementation.

## Annual Wake Transit Work Plans

Wake Transit Work Plans are the vehicle created by the interlocal agreement for more detailed and immediate transit plan investment decisions to be made and are created and considered on an annual basis. Annual Wake Transit Work Plans are created by the TPAC in cooperation with two lead agencies, CAMPO and GoTriangle, assigned to manage and coordinate the overall implementation of the plan and to guide investment decisions. Work Plans are comprised of annual operating and capital budgets for transit investments, updates to financial assumptions guiding the solvency of the plan, multi-year operating and capital programs guiding the planning for investments to be made in future years, and project-level agreements. These Work Plans are substantially developed and are released for public review and comment every winter preceding the ensuing fiscal year that they are intended to cover. Feedback received through the public review process is considered and incorporated into a final Work Plan that is recommended by the TPAC and considered for adoption by the CAMPO and GoTriangle boards in the spring and early summer of each year. Annual Wake Transit Work Plans have been produced and adopted for FYs 2018, 2019, 2020, and 2021 to date, and the Work Plan development, review, and adoption process is anticipated to continue through the years covered by this plan update.

### Implementation Planning to Date

The interlocal governance agreement also charged the TPAC and its supporting lead agencies with the development of a number of deliverables designed to flesh out more granular implementation details for the transit plan. These include, but are not limited to:

- A bus service implementation and capital improvements plan to strategically phase bus service expansion investments recommended by the transit plan;
- Alternatives analyses and feasibility study (i.e., major investment study) for the BRT corridors and commuter rail corridor identified in the transit plan;
- A program management plan to establish policy and to govern the administration of a Community Funding Area Program that provides

transit funding assistance to municipalities in Wake County outside of Raleigh and Cary;

- A public engagement policy to guide and coordinate efforts to engage the Wake County community in making ongoing investment decisions;
- A project prioritization policy to guide investment decisions over the course of plan implementation;
- Periodic updates to the Wake County Transit Plan; and
- A verification of compliance process for implementation of significant infrastructure projects to manage risks associated with interjurisdictional requirements and interests.

These implementation planning and program management tools were developed shortly after adoption of the original transit plan and have been put to substantial use over the past couple of years. Further, various agencies designated as project sponsors to deliver the investments included in the transit plan have undertaken further project-specific planning to better define projects, understand their cost and schedule feasibility, identify risks, and position them for delivery. This includes additional feasibility study and alternatives analyses for BRT, commuter rail, transit centers, and other facilities. Results from multiple years of plan implementation to date that have been guided by this range of deliverables have heavily informed the direction of investment recommended by this Wake County Transit Plan Update as further described in Chapter 2.

## Chapter 2: Wake County Transit Plan Update

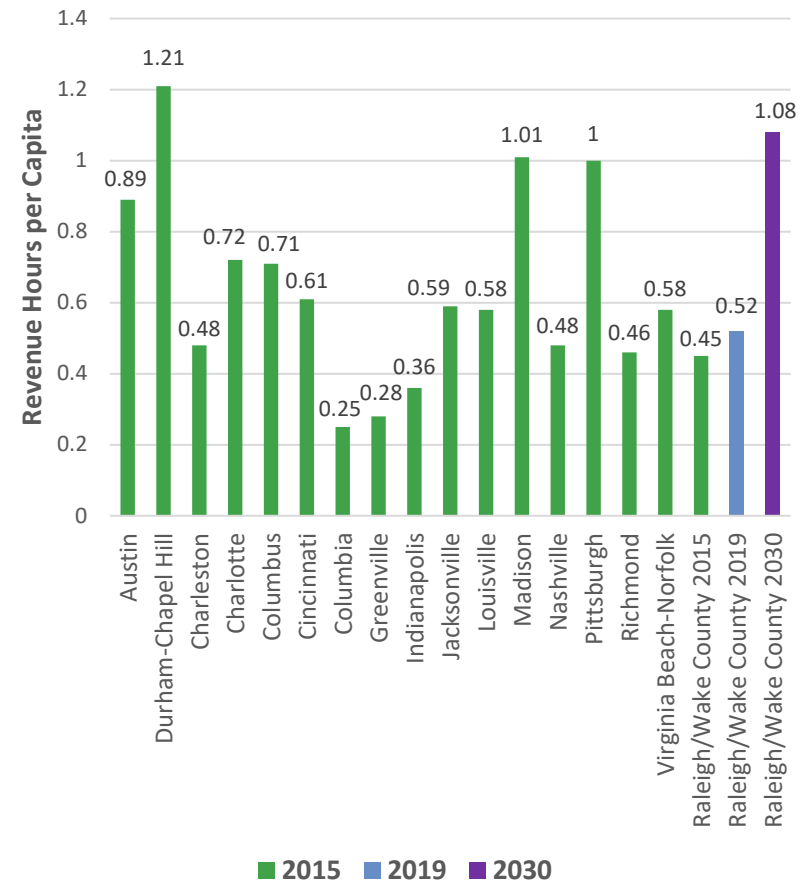
As discussed, the Wake County Transit Plan is built around Four Big Moves, which collectively create the framework for transit investment in Wake County. This section describes these Big Moves (including the type of investment and recommended modal technologies associated with each) and also compares 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 (NCR) 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:

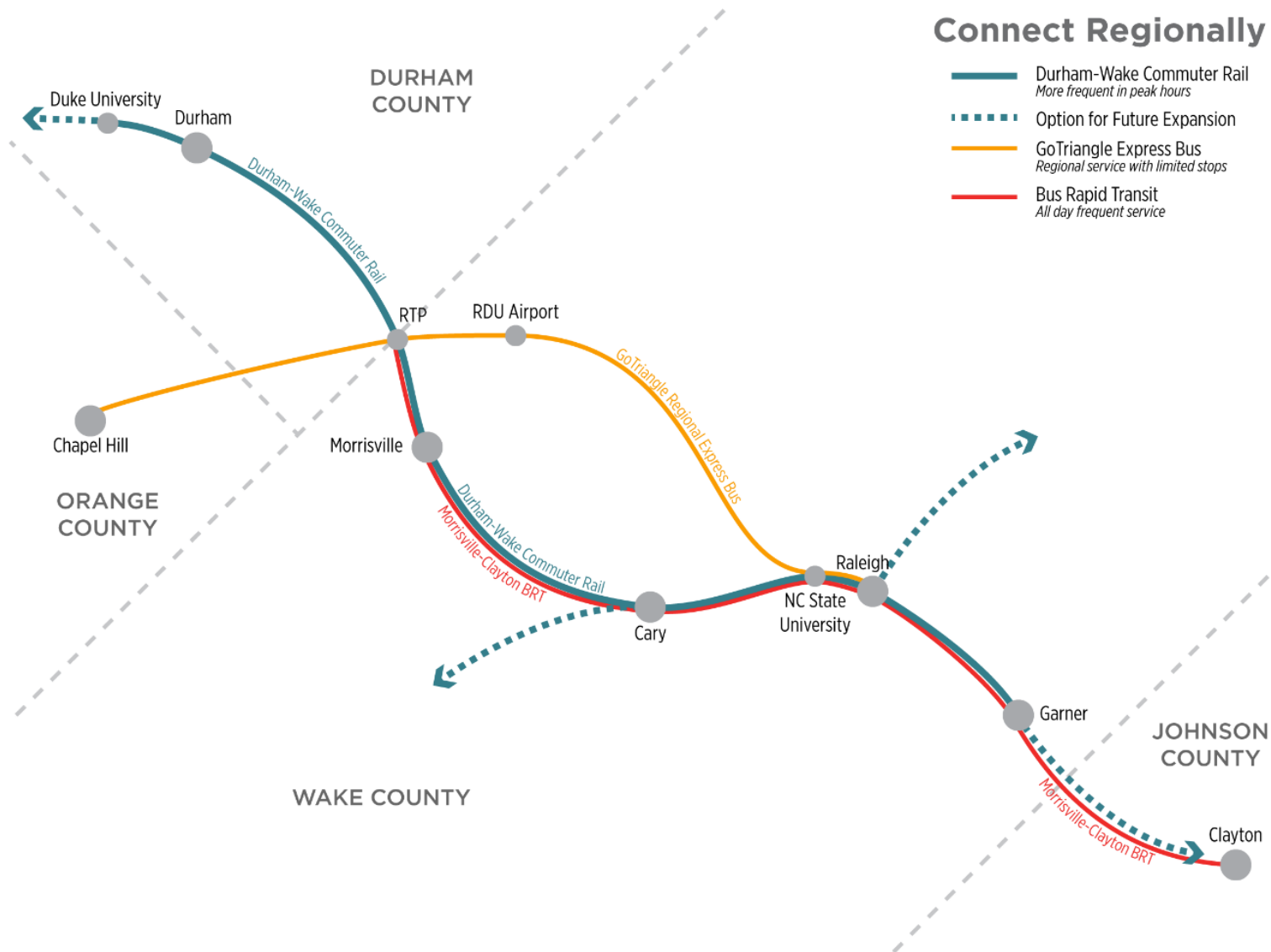
- 37-mile commuter rail connecting Garner, Raleigh, North Carolina State University, Cary, Morrisville, RTP, Durham, and Duke University
- Enhanced connections to RDU and Chapel Hill

#### 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

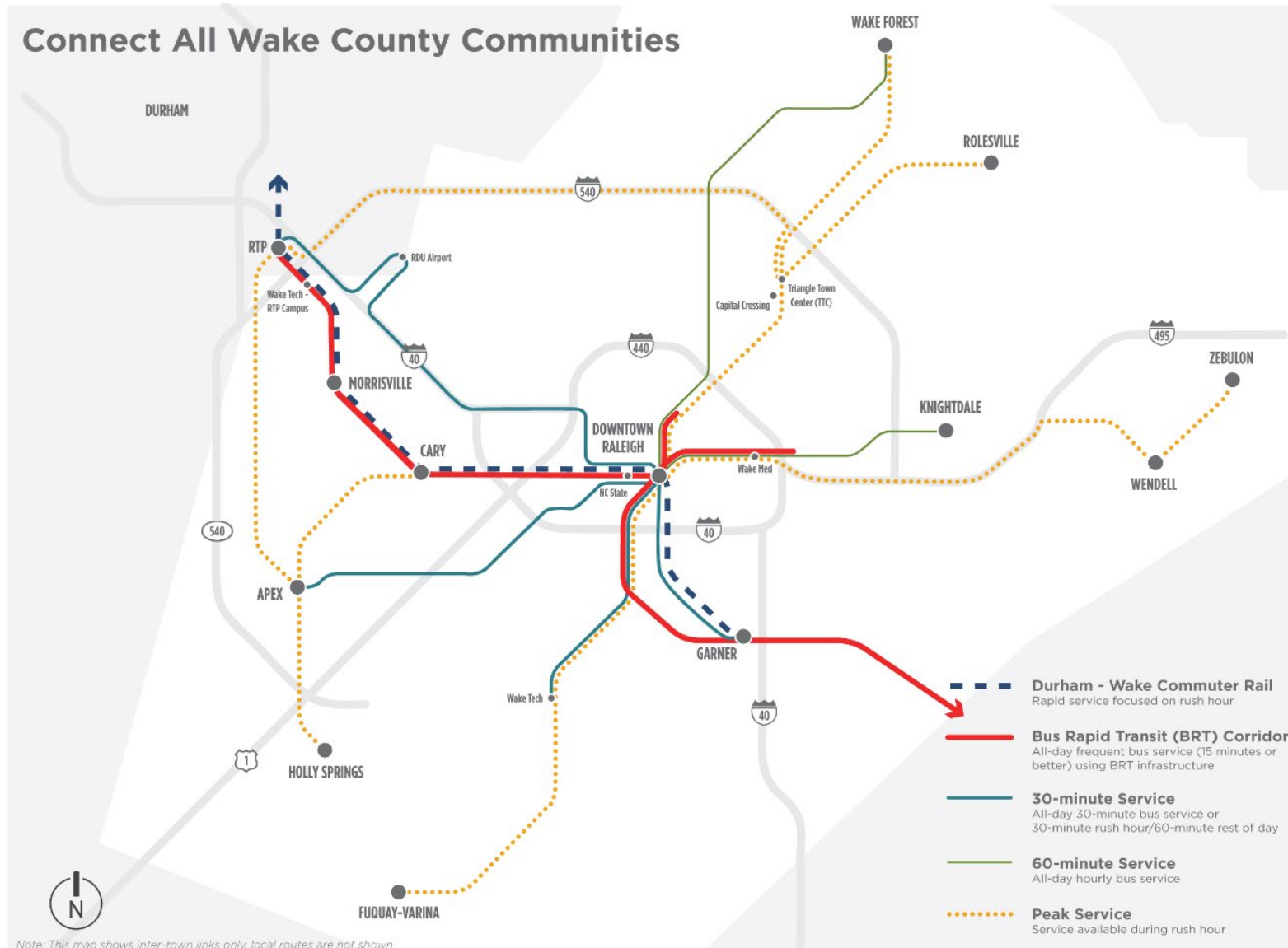
#### Key Investments:

- 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

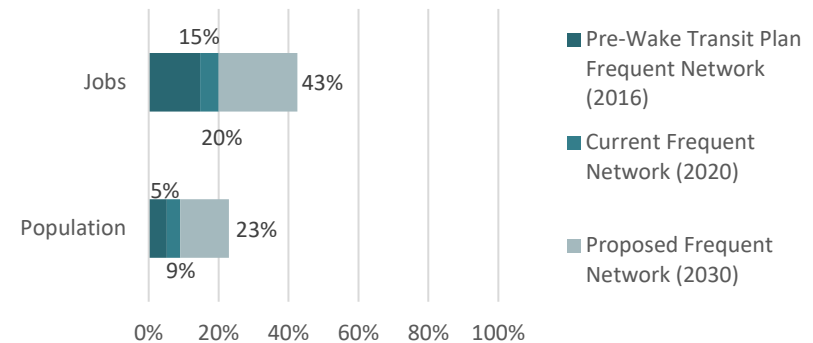


## Big Move 3: Frequent, Reliable Urban Mobility

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  $\frac{3}{4}$  Mile of Frequent Service



### BIG MOVE 3: FREQUENT, RELIABLE URBAN MOBILITY

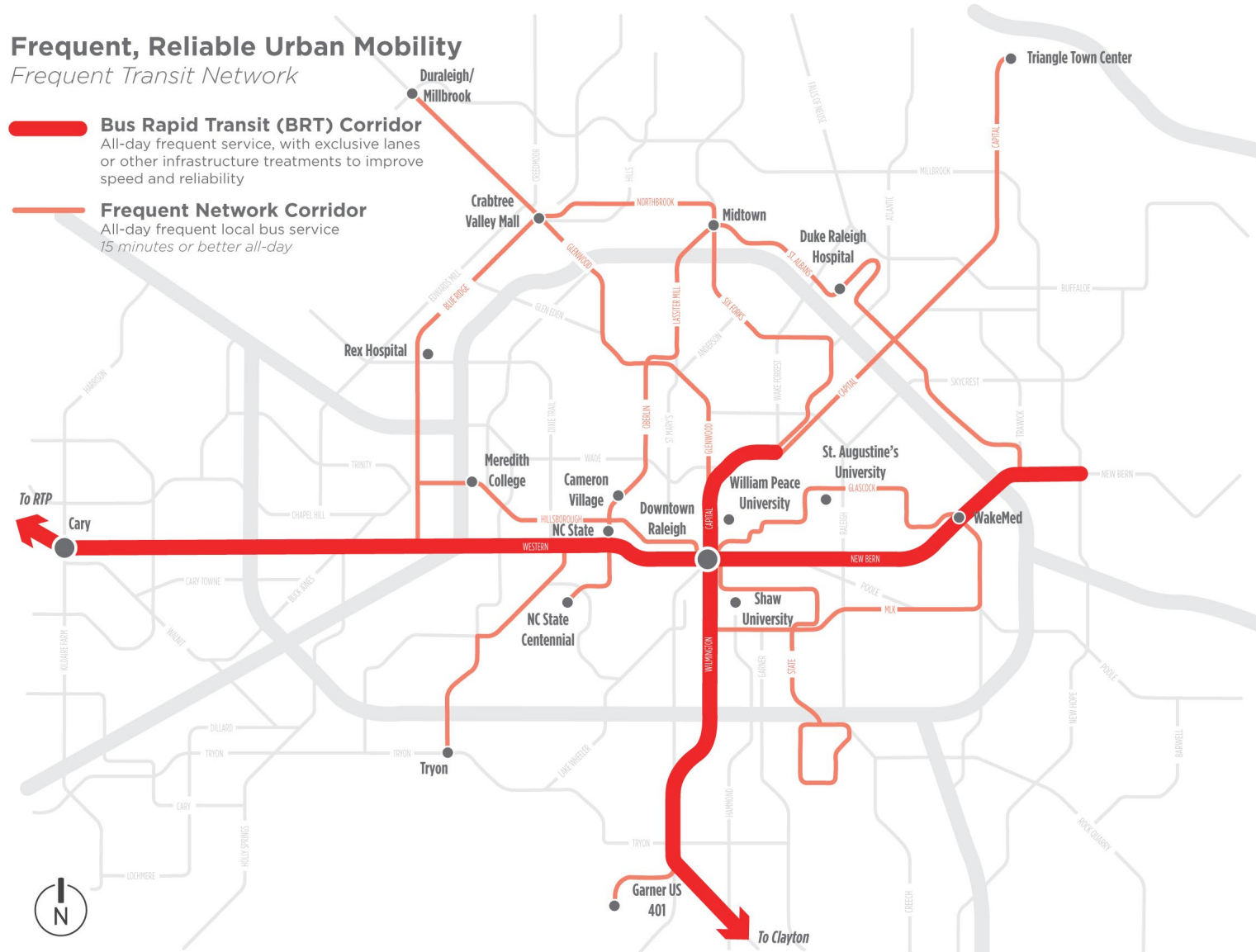
#### Key Investments:

- 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

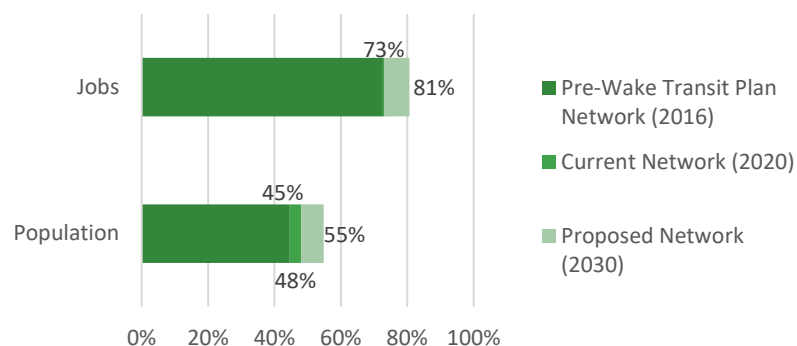


## Big Move 4: Enhanced Access to Transit

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  $\frac{1}{4}$  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  $\frac{1}{4}$  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

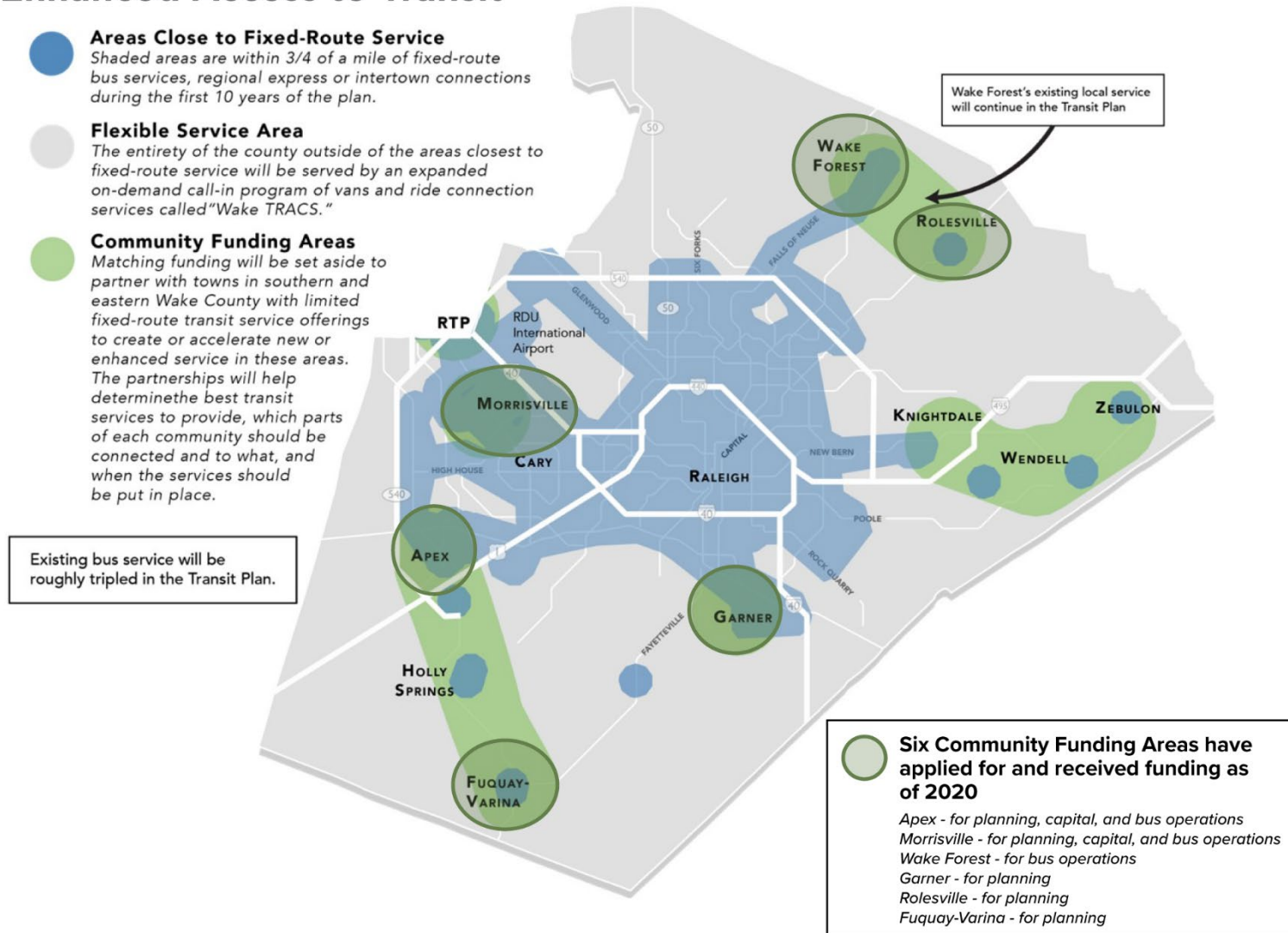
#### Transit Plan Updates:

- 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

## Enhanced Access to Transit



## WAKE COUNTY TRANSIT PLAN INVESTMENT PRIORITIES

As discussed, the Wake County Transit Plan was developed through a process that first clarified and then asked Wake County residents and stakeholders to prioritize a series of trade-offs. The investment schedule reflected a balancing of these priorities that ultimately guided development of the Four Big Moves. The Wake County Transit Plan Update revisited these trade-off decisions by posing similar trade-off questions to residents and stakeholders. The plan update generally reaffirmed the region's 2016 priorities with a renewed commitment to focus significant investment on ridership- and productivity-oriented services with continued support for high-capacity and frequent-network transit investments, including commuter rail and bus rapid transit.

The plan update retains these trade-offs as a reference to the fundamental framework guiding and supporting the Wake County Transit Plan.

### Ridership versus Coverage

The original Wake County Transit Plan balanced ridership goals (maximum ridership, directness and speed of travel, fare revenue, vehicle trip reduction) with coverage goals (improved access and lifeline services, including access to every town). Recommendations for the Four Big Moves included devoting about 70% of the Transit Plan's operating dollars to services justified by high ridership and productivity and about 30% to coverage services.

- **Ridership-justified routes include commuter rail, key regional express bus routes, BRT services, and the frequent local bus network in Raleigh and Cary.** These types of routes serve areas with higher population or employment density and often are designed to bypass congestion and other motorist delays.
- **Coverage routes are generally lower frequency routes that extend across the County, serving lower-density places where high transit ridership is not a realistic outcome.** These services include links to outer towns, coverage of low-density areas, paratransit services, and more community-centric local services. It is understood that

coverage services will not have high ridership as that is not their purpose. Instead, their purpose is to provide basic access across the County, even in areas of low demand.

This Wake County Transit Plan Update retains the same ratio of ridership-oriented services to coverage-oriented services as an overarching goal for transit expansion throughout the county.

### Infrastructure versus Service

The second trade-off balanced investments in infrastructure with service. The Wake County Transit Plan placed equal emphases on infrastructure that improves the speed and reliability of operations, as a strategy to maximize the impact of service investments, and on service.

- **Infrastructure investments primarily focused on the CRT and BRT corridors.** Additional funds are designated for park and ride lots, bus stops and signs, sidewalks, and other supporting infrastructure.
- **Service-focused expenditures help increase span and frequency of service (the number of hours the transit vehicles operate and how often transit serves locations, respectively) across the network.** Investments allow for additional frequency on many existing and new routes.

### Regional versus Local Service

An additional tradeoff that was examined through the process to update the Wake County Transit Plan was an investment focus on regional services versus local services. Engagement with targeted stakeholders and the Wake County community at large revealed a slightly higher preference or emphasis on regional services over local services.

- **Regional service investments are those that connect different cities and towns throughout the county and to locations in surrounding counties and/or serve longer distance trips.** Commuter rail, BRT services, and regional and express bus routes generally fall within this category.

- **Local services operate within cities and towns and/or tend to serve shorter distance trips.** Local bus routes connecting different neighborhoods within cities and towns generally fall within this category.

## Speed/Directness of Travel versus Greater Access/More Stops

Another trade-off examined through the process to update the Wake County Transit Plan was an investment focus on speed and directness of travel versus greater access with more stops. Routes and services can be designed to make travel times between origins and destinations as short as possible and doing so requires routes and services to travel along direct or straight alignments and to have limited stops, which can slow the pace of travel between those origins and destinations. Routes and services can also be designed to collect as many people as possible by serving more neighborhood streets and by providing more stops or points of access. However, this approach jeopardizes the speed and directness of travel between origins and destinations. Engagement with stakeholders and the Wake County community at large revealed a stronger preference or emphasis on services that are faster and more direct versus those that provide greater access and more stops.

- **Investments that are designed to provide faster and more direct trips are frequent-network and express bus routes, BRT, and commuter rail.**
- **Investments that are designed to provide greater access with more stops are local bus routes, some inter-community bus routes, and demand-responsive services.**

## Transit Modes, Technologies, and Infrastructure

The Wake County Transit Plan recommends a range of technologies and service modes. Some of these are part of the existing Wake County transit system, but several are improvements above and beyond the pre-Wake

County Transit Plan 2016 network. Following are descriptions of the service modes to be delivered under the plan and progress updates on their implementation to date:

- **Commuter Rail Transit (CRT) is a train operating on shared tracks with freight and Amtrak vehicles in the freight right-of-way. Within the 2030 horizon of this plan update, it is envisioned to operate eight (8) trips each way in each direction during each four (4)-hour peak period, with two (2) trips during the midday and evening hours.** CRT would be expected to have a speed advantage over bus transit, but the initial operating scenario identified through further study and that is assumed for this plan update would not run as frequently as many bus routes. CRT stations would generally be spaced 2-5 miles apart to boost speed of service, although more closely spaced stations may be necessary to serve key neighborhoods and activity centers if future study indicates it would boost ridership. The plan recommends 37 miles of CRT on the NCRR corridor from Garner, Raleigh, NC State, Cary, Morrisville, RTP, and through Durham to near Duke University. The plan also acknowledges a possible extension into Johnston County. For the purposes of establishing an assumed cost for this plan update, approximately two-thirds of the total assumed cost for the commuter rail mileage between Garner and Durham is considered the Wake County share, and 50% of eligible costs are assumed to be supported by federal funds. This cost share is based on approximately two-thirds of the proposed mileage for a Garner to Durham extent being in Wake County. The actual Wake Transit Tax revenues needed will depend on: 1) The final scope of the investment that is selected, 2) The federal funds that can be acquired, and 3) Agreement on a fair allocation of costs between the counties and other possible funding partners that are served. The CRT line from Durham to Garner is planned to be built as one complete project to provide the greatest usefulness and link to the existing and planned transit network in Durham.

Robust planning to identify the best way to deliver the commuter rail project to serve the corridor most competitively and to refine cost and implementation schedule feasibility information has occurred to

date. More intensive planning and design for the commuter rail corridor will continue over the next two (2) to three (3) years before a multi-year period of construction can begin. This Wake County Transit Plan Update assumes operations may begin in the 2028-2030 timeframe.

**Figure 11 Typical Arterial Today**



**Figure 12 Arterial with Potential Center-Running BRT**



- **Bus Rapid Transit (BRT) includes a range of speed and reliability improvements, including but not limited to dedicated busways, priority treatment at traffic signals, and fixed stations with off-board fare collectors to speed boarding.** Frequency is typically every 15 minutes or better in the peak and off-peak periods, and speed is dependent on the level of capital improvements and distance between stops. Stations are generally located farther apart than for local bus routes, typically about every  $\frac{1}{2}$  to  $\frac{3}{4}$  miles. A simulation of what BRT infrastructure might look like is shown in **Figure 11** and **Figure 12**.

**The Wake County Transit Plan includes approximately 47 miles of varying levels of BRT-related infrastructure improvements.** The BRT network would be built incrementally. Four (4) initial BRT routes, totaling approximately 20 miles, were identified in the original Wake County Transit Plan. With further study, these four (4) corridors are now planned to total approximately 24 miles. Two (2) extensions, to be supported by competitive state funding and totaling approximately 23 miles, were added through this Wake County Transit Plan Update. Each of these is an independent project, although longer routes that connect to more destinations typically are more successful when applying for federal grants. Within each BRT corridor, some of the improvements can be made incrementally. For example, priority treatment at traffic signals can be implemented separately from dedicated busways, or dedicated busways can be built in phases.

To date, a preferred alternative has been selected and preliminary design has been completed for one of the four (4) initial BRT corridors, the New Bern Avenue corridor. The New Bern Avenue BRT corridor is expected to begin operations in the 2023-2025 timeframe. A preferred alternative has been selected for a second corridor, the Wake BRT: Western Corridor, with preliminary design commencing at the beginning of 2021. Further planning and design for the remaining two (2) initial corridors and the BRT extensions to RTP and to Clayton in Johnston County continues.

- **Frequent Network.** While all BRT routes are expected to provide frequent transit service, many other bus lines will provide frequent service within the highest density areas of the community, including links among colleges and universities, employment centers, hospitals, dense residential areas, and major downtowns. **The plan dramatically increases the Wake County year-round frequent network from 17 miles to approximately 99 miles.** To date, six additional miles of frequent service have been implemented since 2016, totaling approximately 23 miles countywide.
- **Conventional Local Bus Service. Routes running every 30 to 60 minutes provide coverage across Raleigh, Cary, and any other municipalities.** Some of these routes have the potential to grow into Frequent Network services in the future. Where possible, these routes would make timed connections with each other to minimize waiting. To date, approximately 47% of all bus service expansion investment, including all types of bus service and 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.
- **Intertown Links, connecting every town in the County to the core, minimally with peak express service.** To date, all towns in Wake County have been connected with peak-period fixed-route service.
- **Express bus service, similar to what GoTriangle operates today.** These routes are geared toward commuters during typical rush hours. They travel relatively long distances with few stops along the route. To date, a number of frequency improvements to existing express bus services have been made, and new express services have been implemented.
- **Expanded demand-responsive service, for increased access across the lower density areas of the county.** Additional funds will be available for GoWake Access, which provides demand-responsive paratransit service mostly within unincorporated Wake County. Also, GoRaleigh's and GoCary's ¾-mile demand-responsive Americans with Disabilities Act (ADA) paratransit service areas will widen as new routes venture into unserved territory, and service hours will be

extended to match expanded service hours for fixed-route operations. To date, GoWake Access has received sustained funding to support approximately 10,000 additional demand-response trips annually.

## WAKE COUNTY TRANSIT PLAN AND COMMUNITY GOALS

The Wake County Transit Plan (2016) and the Wake County Transit Plan Update (2021) incorporated other community goals emphasized by citizens, stakeholders, and elected officials:

- Ensuring a safe and comfortable rider experience is a critical part of the Wake County Transit Plan. This goal will be met with investments at individual bus stops and improvements to fare payment and customer information systems.
- Providing safe and comfortable pedestrian connections to bus stops and transit stations and centers (identified as an emphasis through transit plan update process).
- Improving service reliability and speed through investments in dedicated bus lanes and rail tracks. Service frequency is also a key part of improving transit speed and reliability. Investments include increased service frequency during peak hours.
- Creating an extensive frequent network sufficient to change how people travel in the urban core, making it easy to reach many Raleigh and Cary destinations from anywhere in the County.
- Investing in high-capacity transit to promote denser land uses and economic development in areas that already have strong demand and promote development in new areas.
- Strengthening connections to major destinations such as universities and colleges, hospitals, the airport, and major employment centers.
- Providing more frequent rail service or increased frequency for passenger rail may be considered as part of Wake County's future



transit planning studies along with possible rail service toward Wake Forest and into Johnston County.

- Identifying and taking advantage of opportunities to invest in transit-supportive infrastructure that provides operational benefits for transit along roadways that are otherwise targeted for capacity improvements (identified as an emphasis through transit plan update process).
- Ensuring financial sustenance for certain infrastructure, facilities, and resources that are needed to support future expansion of the transit system or to maintain a general state of good repair and operations as the foundation and backbone of the transit system. Such infrastructure resources, and facilities may include replacement vehicles, transit operations and maintenance facilities, critical transit centers and transfer hubs, etc. (identified as an emphasis through transit plan update process).

## IMPLEMENTATION AND MEASURING SUCCESS

Transit investments are typically measured according to a handful of performance measures, including service productivity (such as cost per rider or riders per hour). Experience with transit investment demonstrates that new or expanded transit routes require a ‘ramp up’ period before their expected productivity is reached. As new routes are added, ridership will start off slow but will grow as people change their travel patterns. As frequency and span increase, riders will begin to consider using the expanded system for more of their needs. Success of the recommended Wake County Transit Plan will be measured in a range of ways, with individuals and stakeholders (riders, transit agencies, municipalities, other taxpayers) prioritizing these criteria differently. The key ideas are:

- Ridership and Productivity
- Coverage and Access
- Speed and Reliability (facilitated by investment in infrastructure)
- Enhanced Customer Experience

It is important to note that the governing boards for implementation of the Wake County Transit Plan, the CAMPO Executive Board and GoTriangle Board of Trustees, adopted bus service standards for Wake Transit-funded bus services, including standards and targets for riders per hour, cost per rider, farebox recovery, and on-time performance, in 2018.

## Key Idea: Ridership and Productivity

**Align service investments with underlying demand (commuter service and frequent network).**

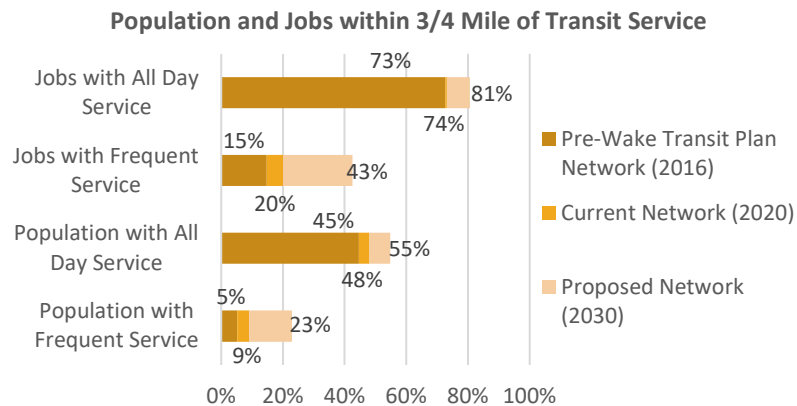


One way of measuring the system’s ability to attract riders over time is the accessibility of the service to residents and jobs. The Wake County Transit Plan examined the proposed network’s reach or coverage via the same criteria used to evaluate the four (4) proposed network alternatives/scenarios referenced in Chapter 1:

- How many people and jobs are near any all-day transit service? This tells us how extensive the total reach (thus coverage) of the system is.
- How many people and jobs are near Frequent Network service? This tells us how many people are close to the most useful services, which are most competitive with other modes.

The Wake County Transit Plan measured access by comparing the current network to the region’s distribution of population and jobs. This update to the Wake County Transit Plan further examined progress to date toward increased accessibility of the transit network in terms of access to both all-day service and frequent service. Accessibility was measured for the original service level (pre-Wake County Transit Plan), the current network (2020), and the network proposed for 2030 (see **Figure 13**). Before the Wake County Transit Plan, transit services in Wake County were largely coverage-oriented (approximately 70% of total investment versus approximately 30% for ridership-oriented services). As a result, while Wake County Transit Plan investments are increasing access to jobs and for residents, they are having the most significant impact on access to frequent service. This is true for the 2020 network and investments scheduled through



**Figure 13 Proposed Network Coverage**

2030. While the impact of the planned investments on providing better proximity to population and jobs to all-day service is less profound than their proximity to frequent service, compared to 2016, those services are likely to come more often, operate for more hours, and run in both directions on the same street.

Wake County contains a vast range of development types, from dense urban cores to rural areas. These differences imply dramatically different transit needs and demands. The Wake County Transit Plan and this update to the plan include investments that reflect these diverse needs and demands. Where high or increased ridership is the objective, the Wake County Transit Plan has focused investment on the following services:

- Peak-hour commuter express service is successful when it bypasses congestion and provides access to major employment centers. The Wake County Transit Plan includes commuter service investments, including commuter rail and regional express services. While commuter rail will address the Raleigh-NC State-RTP-Durham express market, express buses remain important to connect RDU to all the major cities of the region and to provide long-distance commuter services within Wake County. GoTriangle will continue to provide

express services between Wake County and adjacent major destinations such as RTP, Durham, and Chapel Hill.

- All-day Frequent Network routes (service every 15 minutes or better all day, operating late into the evening and on weekends) following development patterns that provide an abundant market. These patterns tend to feature:
  - Density – higher density means more potential customers around each stop.
  - Walkability – transit functions well only where people can walk to the stop.
  - Linearity – operating straight, direct routes means traveling along the fastest path between destinations and allows transit agencies to focus service investments on a smaller number of routes and operate these routes with higher frequencies.
  - Proximity – frequent transit functions well when areas of high density are close together. Towns with moderately high density but that are far away from other dense areas can run local services that connect people to the frequent network.

Many transit agencies are now branding their Frequent Networks as a distinctive layer in the larger system (see **Figure 14**).

**Frequent Service has many distinct benefits, including the following:**

- It transforms the experience of using transit, from “I have to build my life around the schedule” to “transit is there whenever I need it.”
- Where frequent lines cross, transferring between them is fast. Frequency allows local routes to feed into a network.
- Frequent service to places with other favorable land-use indicators (density, walkability, mixed uses, proximity to established desirable markets) is compelling enough to attract investments, further strengthening ridership.

Figure 14 Transit Agency Frequent Network Branding Examples from Portland, Minneapolis, and Bellingham, WA



- Larger cities find that Frequent Network service is sufficient to support densification and is augmented by policy changes such as fewer parking requirements, reflecting lower car ownership rates in areas with high quality transit.

Although the Frequent Network focuses on urbanized areas in Raleigh and Cary, it can be extended as areas develop the necessary density and pedestrian infrastructure. Proposed transit service with 30-minute service is provided on many routes across Raleigh, Cary, Morrisville, and Garner, recognizing that these corridors have the potential to densify and attract additional transit investments.

## Key Idea: Coverage and Access

**For coverage, provide essential links and support local initiatives.**



Coverage services exist to ensure that all communities are served and do not necessarily anticipate high ridership. Because only 30% of plan resources are devoted to coverage service, the Transit Plan is careful to apportion this service equitably, as well as to meet the greatest need. To this end, the plan provides:

- Links from the outer towns not served by other service (Holly Springs and Rolesville) and increased frequency and hours of operation for

others into the Raleigh-Cary core. Since the adoption of the original Wake County Transit Plan, both Holly Springs and Rolesville have been connected by peak-period, fixed-route service.

- Lower frequency routes retaining current coverage to lower density parts of Raleigh and Cary (using, in part, City of Raleigh and Town of Cary funds already devoted to this purpose).
- A Community Funding Area match program for towns other than Raleigh and Cary. Under this program, the plan makes available sufficient funds to provide half the cost of a local bus service in each town with participating towns paying the other half. Each local government will be free to pursue the program or not. Since the adoption of the original Wake County Transit Plan, the Towns of Wake Forest, Apex, and Morrisville have received funding to augment or initiate new community-centric transit services. Further, the Towns of Garner, Rolesville, and Fuquay-Varina have completed in-depth planning to support future investment in community-centric transit services.
- Expanded funding for GoWake Access demand-responsive service for lifeline needs to all the rural areas of the County.

## Key Idea: Speed and Reliability (Spending on Infrastructure)

**Capital expenditures improve transit trip speed and reliability.**



Commuter rail transit (CRT) is train service focusing primarily on longer-distance travel, predominantly for commuters and mostly serving the peak hours. Trains operate on multiple tracks shared with freight and Amtrak services. Commuter rail has speed advantages over bus transit but does not operate at the same level of frequency as most of the bus services in the Transit Plan.

BRT encompasses a wide range of tools that can help keep buses on schedule. The most intensive form of BRT provides dedicated lanes for buses. Other interventions might include:

- Modifications at intersections that allow buses to bypass traffic stopped at signals.
- Signal timing adjustments that give a small advantage to a bus when it is present; an advantage often undetectable by motorists.
- Station-like stops with tools to speed boarding such as ticket machines that allow customers to pay before they board. Some of these stations also provide easier boarding for wheelchairs and other mobility devices.

The Transit Plan envisions that these tools would be deployed along the following corridors:

- Western Boulevard/Western Boulevard extension/Cary Towne Boulevard/Maynard Road/Chatham Street between downtown Raleigh and downtown Cary
- On or near Capital Boulevard between downtown Raleigh and Crabtree Boulevard (this short segment would be used by several converging bus routes from the north)
- Along New Bern Avenue between downtown Raleigh and New Hope Road
- Along South Wilmington Street between downtown Raleigh and Garner Station

This update to the Wake County Transit Plan includes further BRT investments in the next decade, extending Wake BRT from downtown Cary towards Morrisville and RTP to the west and from Garner towards Clayton to the south.

In each case, the mix of tools to be used would be based on a segment-by-segment analysis of each street, with the goal of achieving the greatest possible reduction in bus delay at the lowest cost. Where large numbers of boarding passengers are expected, stations or stops would be designed to increase the safety and comfort of waiting passengers, as well as the speed at which they can board transit vehicles.

## Key Idea: Enhanced Customer Experience



### Capital and service expenditures to enhance the customer experience.

Both the 2016 Wake County Transit Plan and this update to the plan envision a system in Wake County where the following principals are held as paramount: Accessibility, Comfort, Security, Reliability, Cleanliness, Courtesy, Convenience, and Communication/Wayfinding. Funding is provided in the plan to support all of these measures, including enhanced stop amenities, better access to stops, better lighting, new vehicles, more drivers, new customer-friendly technologies, and additional signage.

In the first few years of Wake County Transit Plan implementation, robust investment has been made across the system to improve bus stops with additional passenger amenities and better connect them with pedestrian infrastructure, acquire new and more comfortable energy-efficient vehicles, standardize fare structures, and introduce improved fare technologies (i.e., mobile ticketing). This update to the plan continues these investments. Further, considerable investment has been made in new programs that incentivize and make transit more accessible and convenient to youth populations (i.e., Youth GoPass) and older adults (i.e., free rides for seniors).

## VISION FOR THE FUTURE: BEYOND 2030

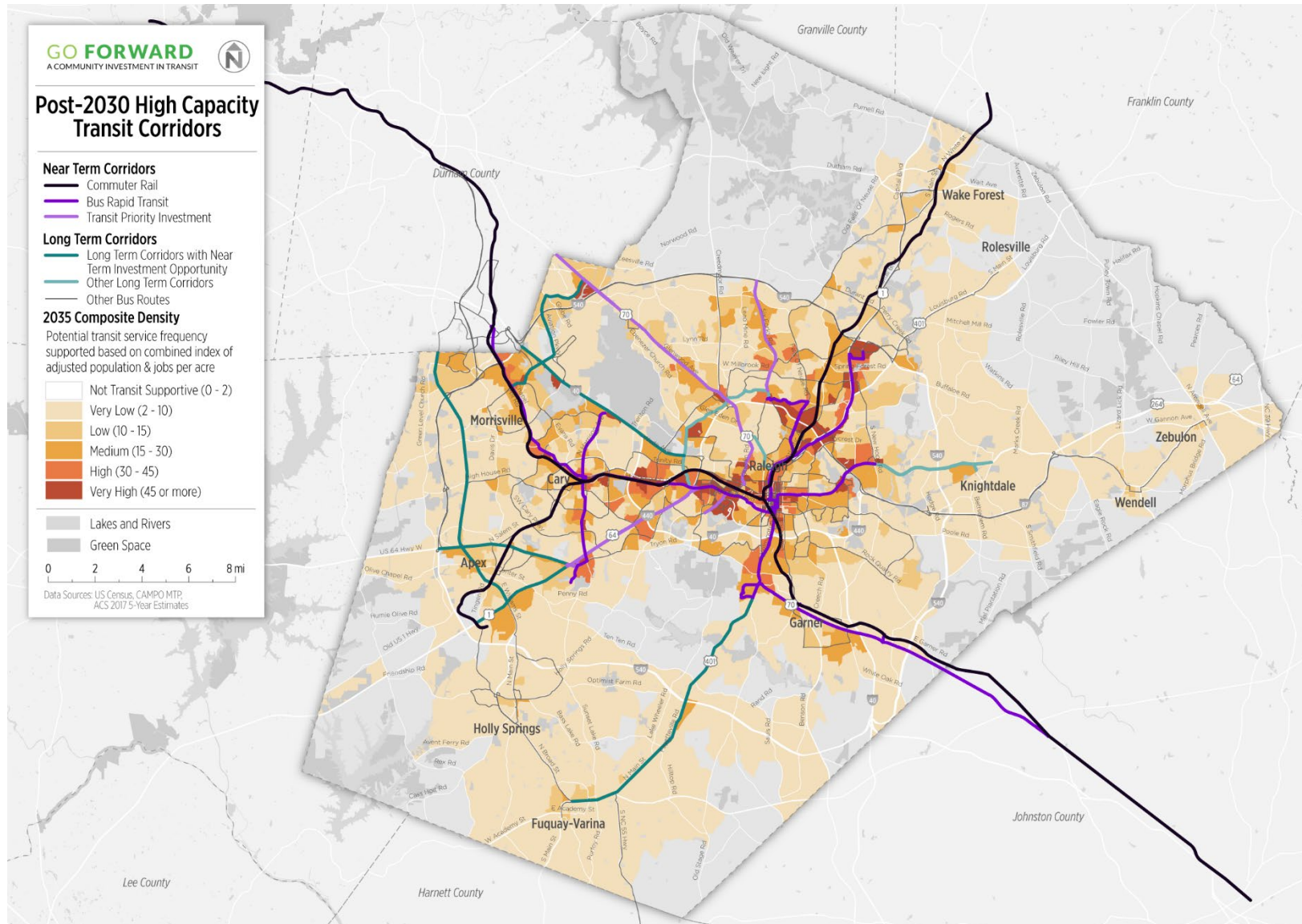
As part of the original Wake County Transit Plan, residents and stakeholders expressed a need for ongoing transit investment beyond the initial 10-year plan horizon and the horizon of this update to the plan, which extends the investment schedule through 2030. The Wake County Transit Plan created a sustained dedicated revenue stream to strengthen and improve transit in response to demand and need. As Wake County Transit Plan investments—CRT, BRT, and expanded frequent network—are successful, the county's transit providers will be able to leverage their success to secure additional state and federal funds to increase regional transit investments.

This Wake County Transit Plan Update does not include a detailed investment schedule after the 2030 horizon. However, the planning process suggested the following elements:

- Improve corridors with 30-minute headways to add them to the Frequent Network (15 minutes or better). Likewise, corridors and routes with 60-minute services could be improved to 30-minute routes.
- Add new bus routes within the county and increase frequency and duration of connections to municipalities.
- Add commuter rail service on the northern (CSX) rail corridor, potentially as far north as Wake Forest (may be constrained due to freight operations).
- Increase frequency on the east-west rail corridor (may be constrained due to freight and Amtrak operations if infrastructure assumed to be funded within the 2030 financial constraint for the first phase is not or cannot be sized to permit service expansion).
- Extend the east-west (NCRR corridor) CRT line past Garner into Johnston County (Wake County funds would be spent only for the County's share), and/or past Durham into Orange and Alamance Counties.
- Extend BRT improvements further along the first four (4) corridors or make additional infrastructure improvements on the initial corridors and add BRT improvements along other candidate corridors. In the immediate post-2030 term, candidate corridors include, but are not limited to: 1) extensions of BRT infrastructure to Triangle Town Center and BRT infrastructure and service to North Hills in northern Raleigh; and 2) BRT infrastructure and service on Harrison Avenue and Kildaire Farm Road from I-40 to the WakeMed Cary campus at U.S. 1/64 in southern Cary.
- Continue to improve bus stops and access to bus stops (identified as an emphasis through the transit plan update).



Figure 15 Potential Post-2030 High-Capacity Transit Corridors



- Continue to Identify and take advantage of opportunities to invest in transit-supportive infrastructure that provides operational benefits for transit along roadways that are otherwise targeted for capacity improvements (identified as an emphasis through transit plan update process).

While extensions of BRT infrastructure to Triangle Town Center and BRT infrastructure and service to North Hills have been identified as possible post-2030 investments, the actual extent of the Wake BRT: Northern Corridor to be implemented by 2030 may incorporate one or some part of one of these extensions. Further study for the Wake BRT: Northern Corridor, which is scheduled to occur within the next couple of years, will determine the actual extent of both BRT service and infrastructure.

This update to the Wake County Transit Plan also identified specific corridors, at a regional scale, for additional high-capacity transit services or associated improvements. These corridors were identified through stakeholder input, reviews of other regional and sub-regional plans with transit recommendations, and by analyzing projected population and job density growth along major corridors (see **Figure 15**). High-capacity transit investments may include a range of technologies, including CRT and BRT, as

well as various elements of speed-and reliability-enhancing infrastructure such as dedicated transit lanes, signal priority, bus on shoulder, queue jumps for transit vehicles, transit use of managed lanes, and transit access points on limited access highways.

While they are not identified in **Figure 15**, it is important to note that a number of other facilities that serve more local, rather than regional, needs will likely also be ripe for investment in speed- and reliability-enhancing infrastructure improvements, such as RED lanes. RED lanes are bus priority lanes adjacent to general purpose travel lanes, typically in more constrained urban environments, that provide speed and reliability benefits to transit vehicles while facilitating right and left turns from adjacent land uses for regular traffic. A number of streets in the urban core of Wake County, particularly in Raleigh, have been identified for this potential type of investment.

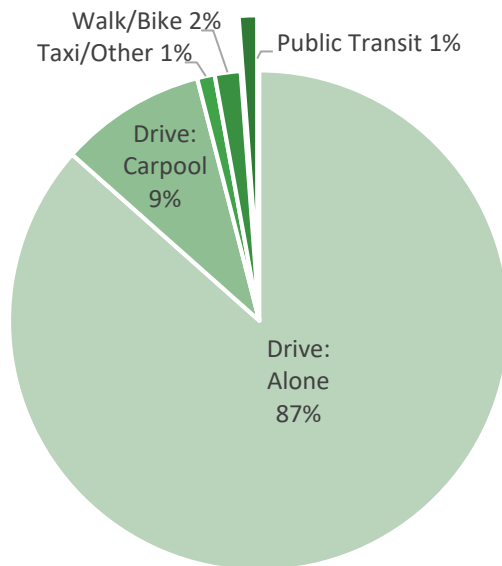
Additional detail on the regionally serving corridors identified for post-2030 investment is included in **Appendix G: Post-2030 Unconstrained High-Capacity Transit Corridors**. These corridors will be considered for potential investment in the both the near-term and long-term through the development of the transit elements for the 2050 CAMPO Metropolitan Transportation Plan and comprehensive transportation plan updates, respectively.



## Chapter 3: 2020 Market Reassessment

Because of Wake County's rapid population and job growth, the transit market throughout the county has the potential change very quickly. As the county grows, certain areas grow denser and become more amenable to supporting higher intensity transit service. Other previously undeveloped areas are developed, creating new origins and destinations to serve throughout the county. Accordingly, periodic updates to the Wake County Transit Plan require a refreshed look at the countywide transit market with the most recent available data to stay apprised of these changes and their implications for transit investment.

**Figure 16 Means of Transportation to Work in Wake County**



Source: ACS 2017 5-Year Estimates

Wake County, like much of the United States, was developed around a transportation network reliant on private automobiles. Reliance on this single mode of travel shapes current travel patterns. In 2017, 87% of Wake County residents drove alone to work, 9% carpool, 2% walked or biked, and 1% took transit (see **Figure 16**). Though much of the county is rural or suburban, transit can be an attractive and reliable option in denser areas or between dense areas.

The Wake County Transit Plan and this plan update used a transit market analysis to understand where there is demand and need for public transit to ensure that investments continue to be matched with need and to identify any emerging markets that are ripening for more intensive investment in transit. The analysis also helps identify areas where improvements can encourage more people to use transit services. The complete analysis can be found in **Appendix B: Transit Market Reassessment Report**.

### TRANSIT DEMAND BASED ON DENSITY

Population and employment density are the most important factors that determine the underlying demand for transit due to the following reasons:

1. Most people are willing to walk between one-quarter and one-half of a mile, or five to ten minutes, to get to a transit stop, and potentially longer distances to heavy rail services.<sup>1</sup> The travel market is directly related to how many people live and work close to transit stops.
2. In order to serve the greatest number of people, transit service levels must be matched with demand. Providing frequent service in the areas with the highest demand can get more people to their destinations faster and more reliably.




























<sup>1</sup> FHWA Pedestrian Safety Guide for Transit Agencies 2013

- To attract travelers who often drive, transit must be able to get most people to the places with the highest demand in a cost- and time-competitive manner.

Additionally, the street environment affects people's access to transit. Transit services are most effective when paired with sufficient and well-lit sidewalks and crosswalks that allow people to safely reach bus stops. Even in the places with the highest density, people may not use transit services if stops are not in a walkable environment.

Lastly, it is important to recognize that areas without some level of population and employment density may not provide an environment where fixed-route transit can generate enough ridership to succeed.

**Figure 17 Land Use and Supported Types of Transit**

| LAND USE  |                    |               | TRANSIT   |  |
|---|--------------------|---------------|---|--|
| Land Use Type   | Residents per Acre | Jobs per Acre | Appropriate Types of Transit  | Frequency of Service   |
| <br>Downtowns & High Density Corridors | >45                | >25           |     |  10 mins or better              |
| <br>Urban Mixed-Use                    | 30-45              | 15-25         |      |  10-15 minutes                  |
| <br>Neighborhood & Suburban Mixed-Use | 15-30              | 10-15         |   |  15-30 minutes                 |
| <br>Mixed Neighborhoods              | 10-15              | 5-10          |     |  30-60 minutes                |
| <br>Low Density                      | 2-10               | 2-5           |      |  60 mins or less or On Demand |
| <br>Rural                            | <2                 | <2            |     |  On Demand                    |

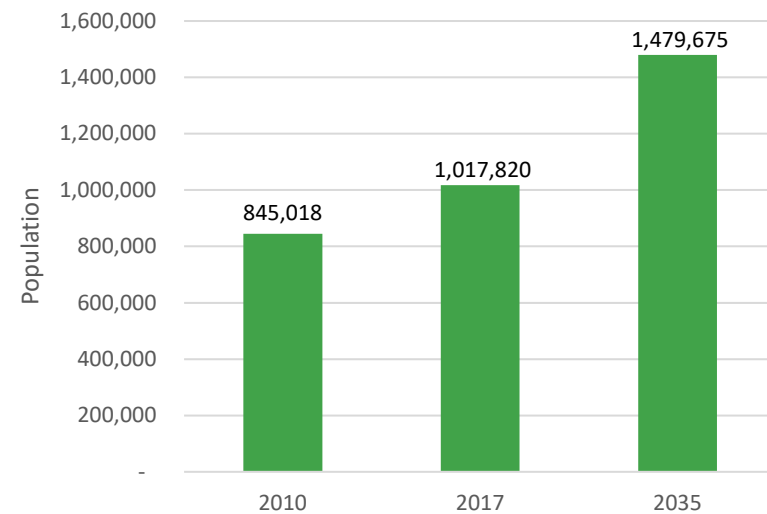
Source: Thresholds based on research by Nelson\Nygaard.

In these instances, Wake County and its partners can explore alternative types of transit, such as shared mobility solutions. Different levels of residential and employment density are supportive of different levels of transit. Most of the land area of Wake County is low density or rural (**Figure 17**).

## Population Density

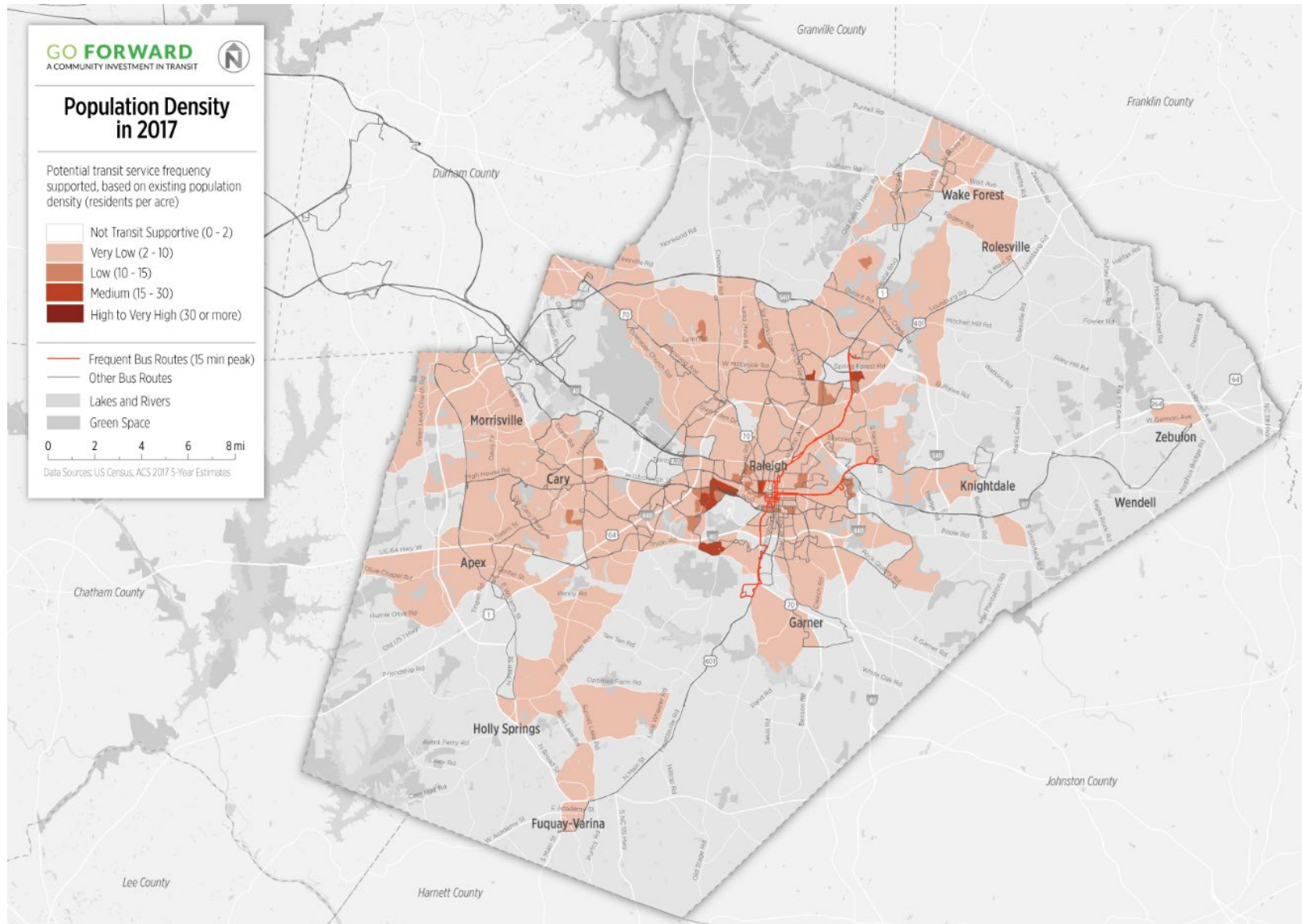
Wake County is rapidly growing, but most of the county still has very low population density, except for Downtown Raleigh, the western part of Raleigh near North Carolina State University, and parts of northeastern Raleigh. Between 2010 and 2017, the population of Wake County grew by 20.5% from 845,000 residents to 1,018,000 residents, and it is expected to grow by another 45% by 2035 (**Figure 18**). Much of this population growth was in the smaller, outer-area towns of Wake County, such as Apex, Morrisville, and Wake Forest (**Figure 19**).

**Figure 18 Wake County Population in 2010, 2017, and 2035**



Source: ACS 5-Year Estimates, CAMPO MTP

Figure 19 Wake County Population Density in 2017



## Transit Propensity

In addition to population density, socioeconomic characteristics influence people's propensities toward using transit. Many population groups often have a higher propensity for transit than the overall population. This generally includes groups that are more disadvantaged in society, such as communities of color, foreign-born residents, low-income families, and people without access to personal vehicles.

When a significant number of people from these socioeconomic groups live in clustered areas, the underlying demand for transit in these areas may be higher than is captured by just looking at population density. Conversely, in areas where transit-supportive groups have lower representation, the transit demand may be lower than what is captured purely by population density.

Taking these factors into account, the project team calculated a measure called the **Transit Propensity Adjustment Factor**, which measures how many times more likely certain demographic groups or residents in an area are to use transit to get to work as compared to the general population. Findings are as follows:

- **Race and Ethnicity:** Black residents of Wake County are 2.1 times more likely, and Asians and Latinos 1.4 times more likely, to use transit to get to work than the average resident, likely due to more limited resources for transportation and denser neighborhoods closer to the city center.
- **Foreign-Born Residents:** Residents born outside of the United States are 1.5 times more likely to use transit than the average resident in Wake County.
- **Poverty Level:** People who live below the poverty level are 4.2 times more likely to use transit to get to work in Wake County.
- **Car Availability:** Workers who live in households without a car are 15.8 times more likely than the average worker to use transit to get to work in Wake County.

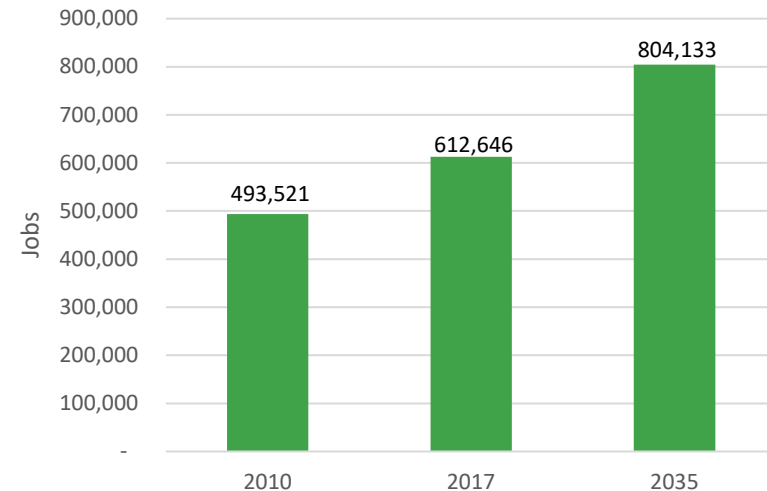
**Figure 21** shows the Transit Propensity Adjustment Factors applied to different areas of Wake County, based on their demographic makeup. Raleigh has the

highest transit propensity, especially towards the south, northeast, and west towards Cary. The Highway 1 corridor to Wake Forest and the Highway 264 corridor to Zebulon also have high transit propensity factors. Other than town centers, most of the rest of Wake County has low transit propensity factors. These transit propensity factors can be applied to the prior population density map to get an adjusted population density that better fits transit demand.

## Employment Density

The number of jobs in Wake County increased by 24% between 2010 and 2017, from 494,000 to 613,000 jobs (**Figure 20**). By 2035, it is expected to increase to 804,000 jobs in the county. Jobs are most highly concentrated in Raleigh and Cary, with notable levels of job density in Morrisville/RTP as well (**Figure 22**). Within Raleigh, jobs are concentrated along major corridors and the I-440 loop. Between 2010 and 2017, job density increased in Morrisville/RTP and northeastern Raleigh.

**Figure 20 Wake County Jobs in 2010, 2017, and 2035**



Source: ACS 5-Year Estimates, CAMPO MTP



### Figure 21 Transit Propensity Adjustment Factor Map

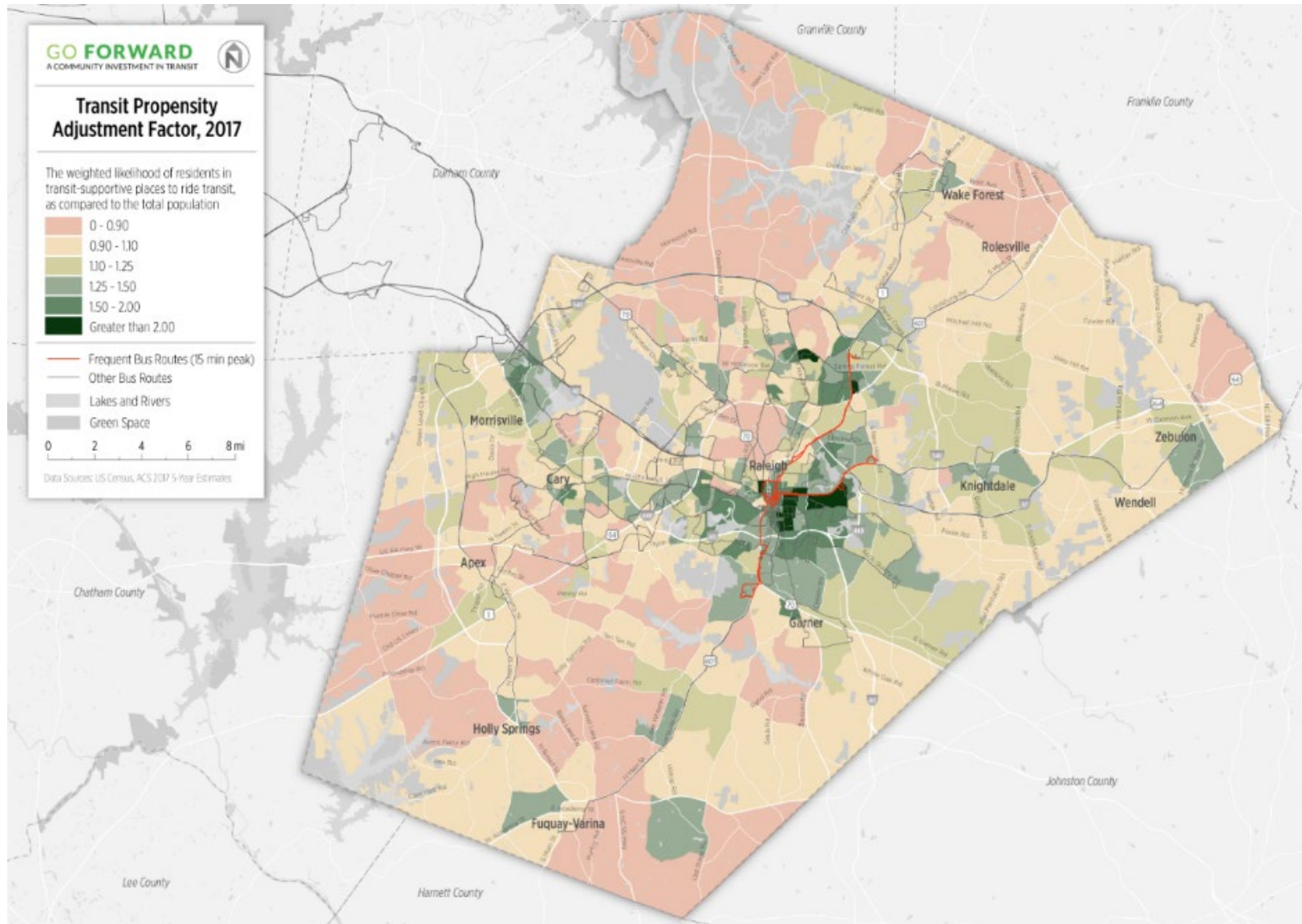
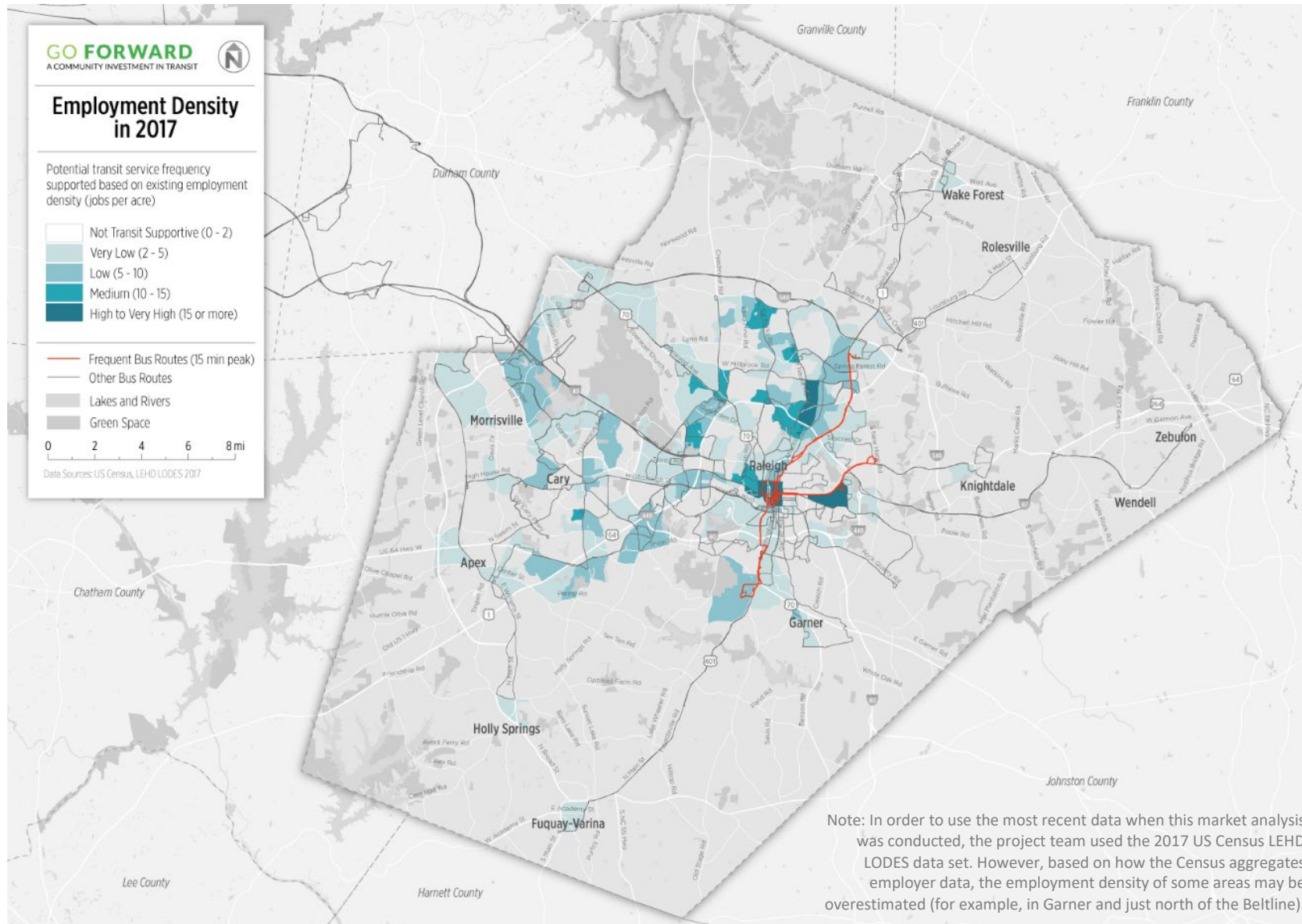


Figure 22 Employment Density in 2017





Though this analysis only considers the total number of jobs, it is important to note that some groups of workers, such as those with low wages and people of color, rely on transit to get to work more heavily than other groups. Additionally, the urban form of employment centers is important when considering the viability of transit. For example, transit can better serve a dense downtown with good walking conditions compared to a suburban office park without sidewalks.

## Composite Density

Population density, socioeconomic characteristics, and employment density all play a role in the demand for public transit. The following map combines these factors into a **Composite Density**, showing the total transit demand in an area based on where people live and work. The composite density is equal to the population density, adjusted by the transit propensity adjustment factors, plus twice the employment density, which accounts for both the workers themselves and customers who visit the job sites.

The composite density map (**Figure 23**) shows some level of density in most of the incorporated cities and towns in Wake County. Density is most heavily concentrated in Raleigh, especially downtown, the southeastern region, the northeastern region, and west to Cary.

## Looking Ahead to 2035

By 2035, Wake County's population is projected to nearly have doubled from 2010 and grown by another 462,000 people from 2017. This assumed growth is represented throughout the county, both in already dense areas and in areas currently without much transit demand. There is a projected increase in the rural and suburban population, especially in the southern half of the county: Holly Springs, Fuquay-Varina, Garner, Knightdale, and Wendell. Similar to the change in population, Wake County also expects a large increase in the number of jobs by 2035. Between 2010 and 2035, employment is projected to increase by over 63% to about 804,000 jobs.

Combining the adjusted population and employment densities in 2035 into a composite density shows a clear projected increase in transit demand in Wake County in the future, as seen in **Figure 24**. Though most of the county is projected to still have very low density, the more dense and urban areas show an increased need for transit.

Composite density is concentrated in the following areas:

- Downtown Raleigh and the area immediately surrounding downtown
- Northeastern Raleigh along Capital Boulevard
- Eastern Raleigh along New Bern Avenue
- Southern Raleigh along Wilmington Street
- Northern Raleigh along I-440 loop
- Between Raleigh and Cary along Western Boulevard
- Between Cary and Morrisville/RTP
- Parts of Apex, Garner, and far northwestern Raleigh around Brier Creek

Figure 23 Composite Density in 2017

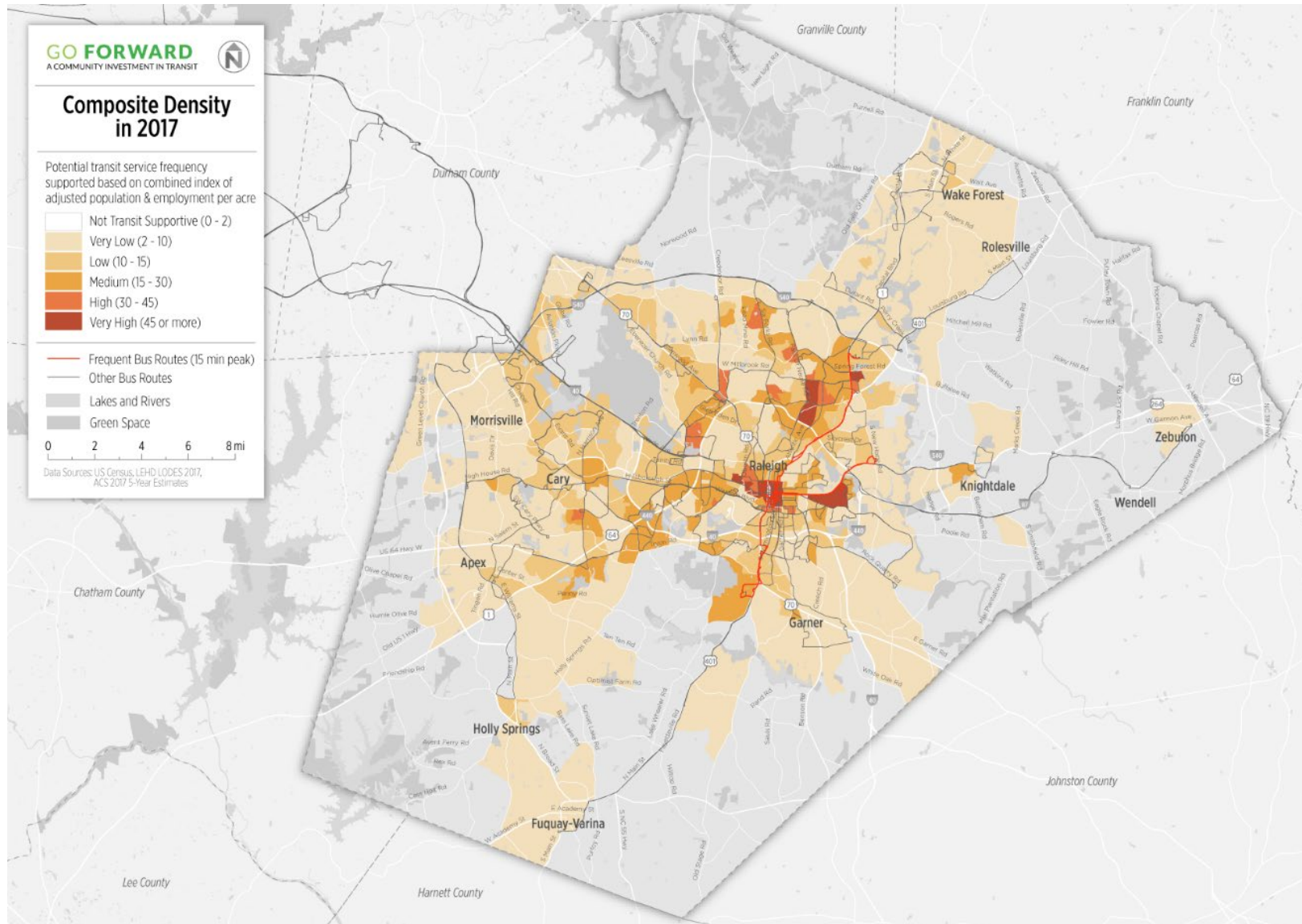
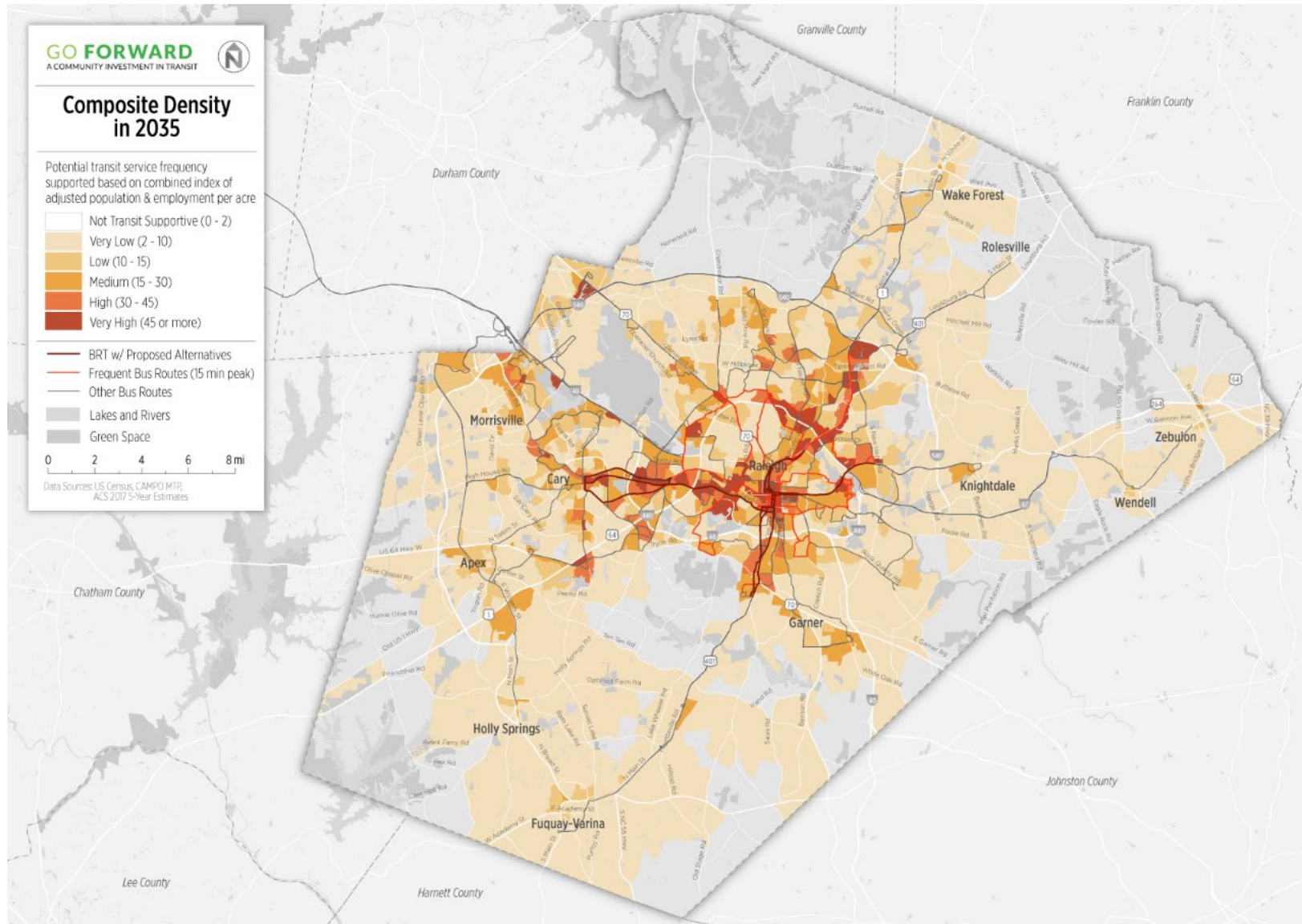


Figure 24 Composite Density in 2035



## OTHER FACTORS AFFECTING TRANSIT DEMAND

### Pedestrian Environment

The pedestrian environment is a major consideration for transit usage since most transit riders walk between their origin or destination and their bus stop. A safe, comfortable, walkable environment is more conducive to transit ridership. Additionally, buses run faster and more reliably when they can stop on a major street rather than weave in and out of parking lots, but for the former to be convenient for riders, the final destinations must be within a reasonable walking range and environment to the bus stop. Factors that affect walkability and transit ridership include, but are not limited to:

- Sidewalks, crosswalks, and lighting
- Proximity to diverse sets of housing, services, offices, and other employment sites
- Intersection density, or the number of intersections within an area
- Transit availability and parking prices

Downtown Raleigh, parts of northern Raleigh, and parts of Cary have the greatest intersection density and are currently relatively well served by transit services. Most other areas of the county have low intersection density, and thus have pedestrian environments that may be difficult to serve via transit without additional pedestrian infrastructure improvements.

### Activity Centers

Some activity centers generate additional demand for transit that are not captured by the previous density analyses. Wake County's major activity centers and points of interest include, but are not limited to:

- Hospitals, such as WakeMed Cary and Duke Health Raleigh Hospitals
- Shopping centers, such as Crabtree Valley Mall and Triangle Town Center Mall
- Major employers and job centers, such as in Research Triangle Park

Colleges and universities are also major activity centers and are discussed in the following section. In general, these activity centers differ in terms of their environment and ability to be served by transit. For example, WakeMed Hospital in Raleigh and UNC Rex Hospital have relatively walkable urban fabrics and can be well served by fixed-route transit. In contrast, Research Triangle Park is more difficult to serve with fixed-route transit due to its office park nature and the requirement that 50% of each lot is preserved as woodlands.

Since many of these activity centers are in rural and suburban areas, otherwise without much transit demand, fixed-route buses may not be the best option. Demand response services or circulators are potential ways to serve these areas.

### Colleges and Universities

Trips to education facilities are a major travel purpose in Wake County, second only to travel to jobs. Wake County has eight post-secondary institutions, including the Wake Technical Community College which has numerous campuses. Of the eight post-secondary institutions, North Carolina State University (NCSU) has the highest enrollment by far at 35,479 students. Most colleges and universities in Wake County are clustered close to downtown Raleigh, though there are also large Wake Tech campuses to the north and south. Every post-secondary institution is currently served in some capacity by fixed-route transit, except for the Wake Tech Western Wake Campus in southern Cary.

It is important to note that colleges and universities are also major employment centers. Compared to traditional employment trips, however, trips to schools are less likely to follow a conventional morning and afternoon peak schedule. There is likely a larger spread of times in which travel to education facilities occurs, due to varying class times and the academic calendar.



## TRAVEL PATTERNS

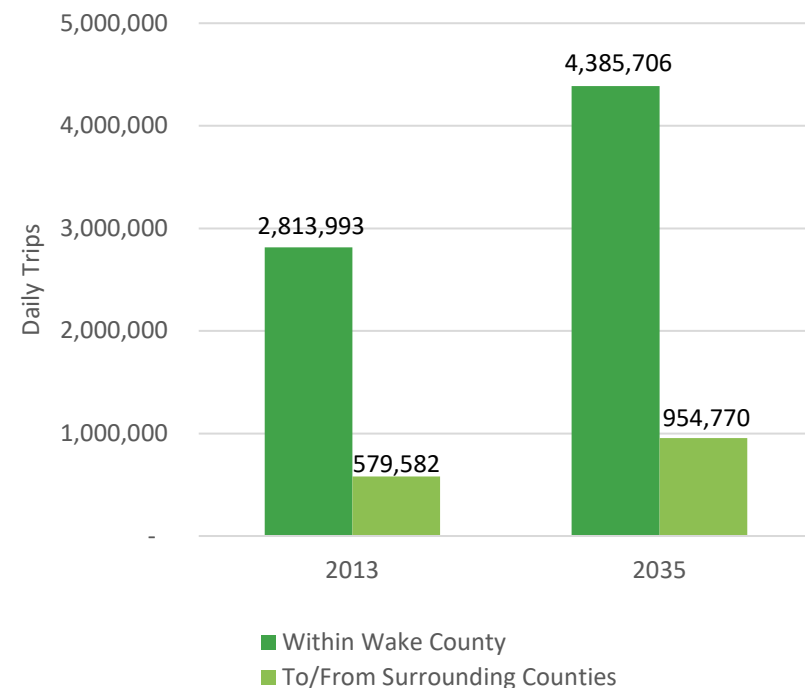
Travel flows show the places that people travel between, within, and outside of Wake County. The total number of daily trips for Wake County is projected to increase by 57% between 2013 and 2035 (**Figure 25**). For this analysis, the project team divided the county into travel zones based on existing towns, cities, and neighborhoods. **Figure 26** and **Figure 27** show the average daily trips made on all transportation modes within or between the zones, with 2013 as the base year. Visualizing these flows can provide an understanding of where travel markets exist for transit to potentially capture.

In 2013, Cary and the northwestern and northeastern parts of Raleigh exhibited the greatest number of intra-zone flows. Between zones, flows were strongest coming into and out of Cary and the northeastern part of Raleigh.

By 2035, there will be an all-around increase in intra-zone flows, especially in the western part of Raleigh (NC State), Downtown Raleigh, the eastern part of Raleigh, Garner, and Fuquay-Varina. Flows between zones also increase county-wide, especially in zones and towns in the southern half of the county. Though Raleigh has the greatest number of flows, the flows into and out of Cary are also very strong. Garner also emerges by 2035 as an area with a greater number of daily trips.

Additionally, between 2013 and 2035, flows between areas of Wake County and the surrounding counties will also increase, especially to Durham County, Harnett County, and Johnston County.

**Figure 25 Wake County Daily Trips in 2013 and 2035**



Source: CAMPO MTP

Figure 26 Intra-Zone Travel Flows in 2013

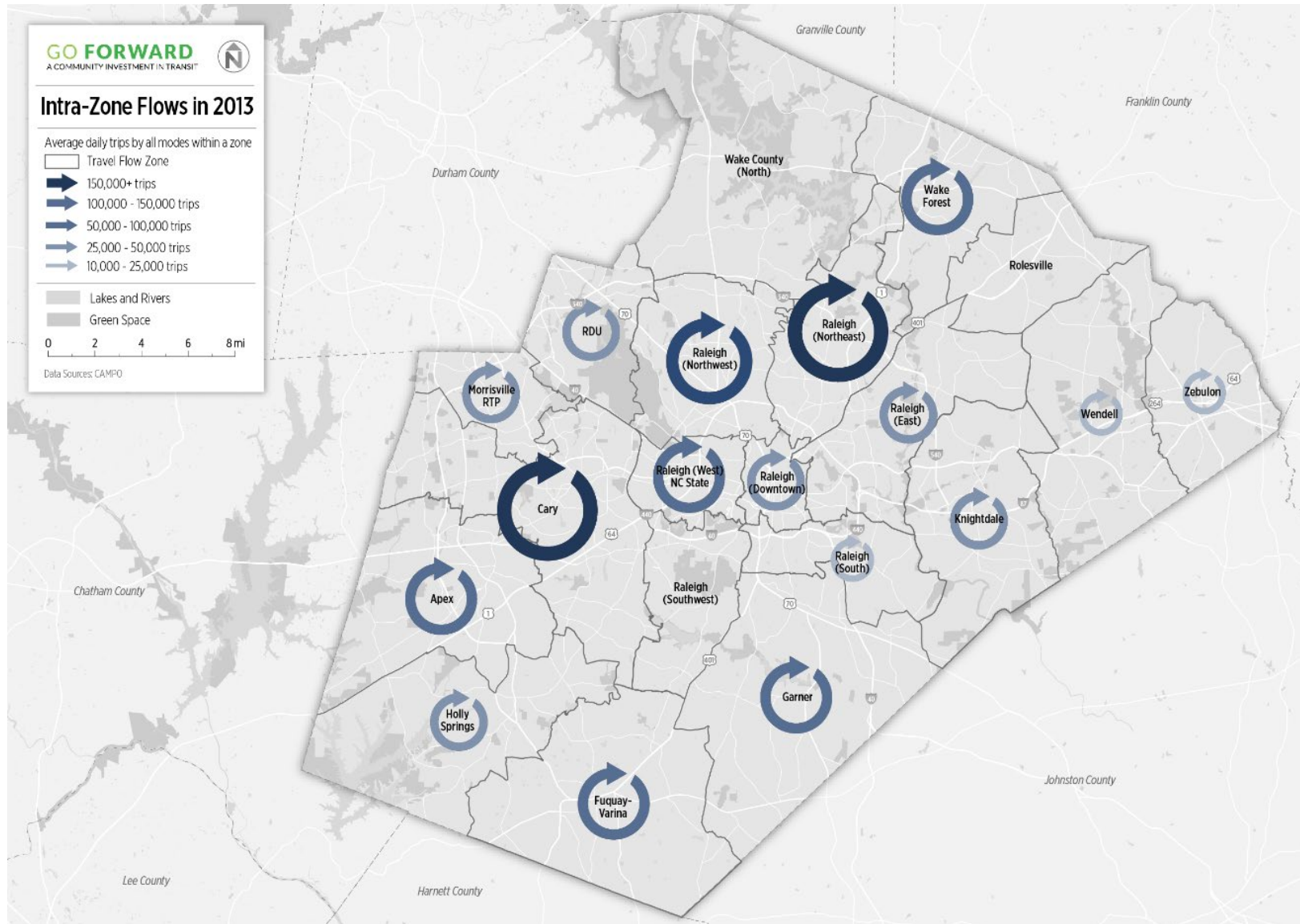
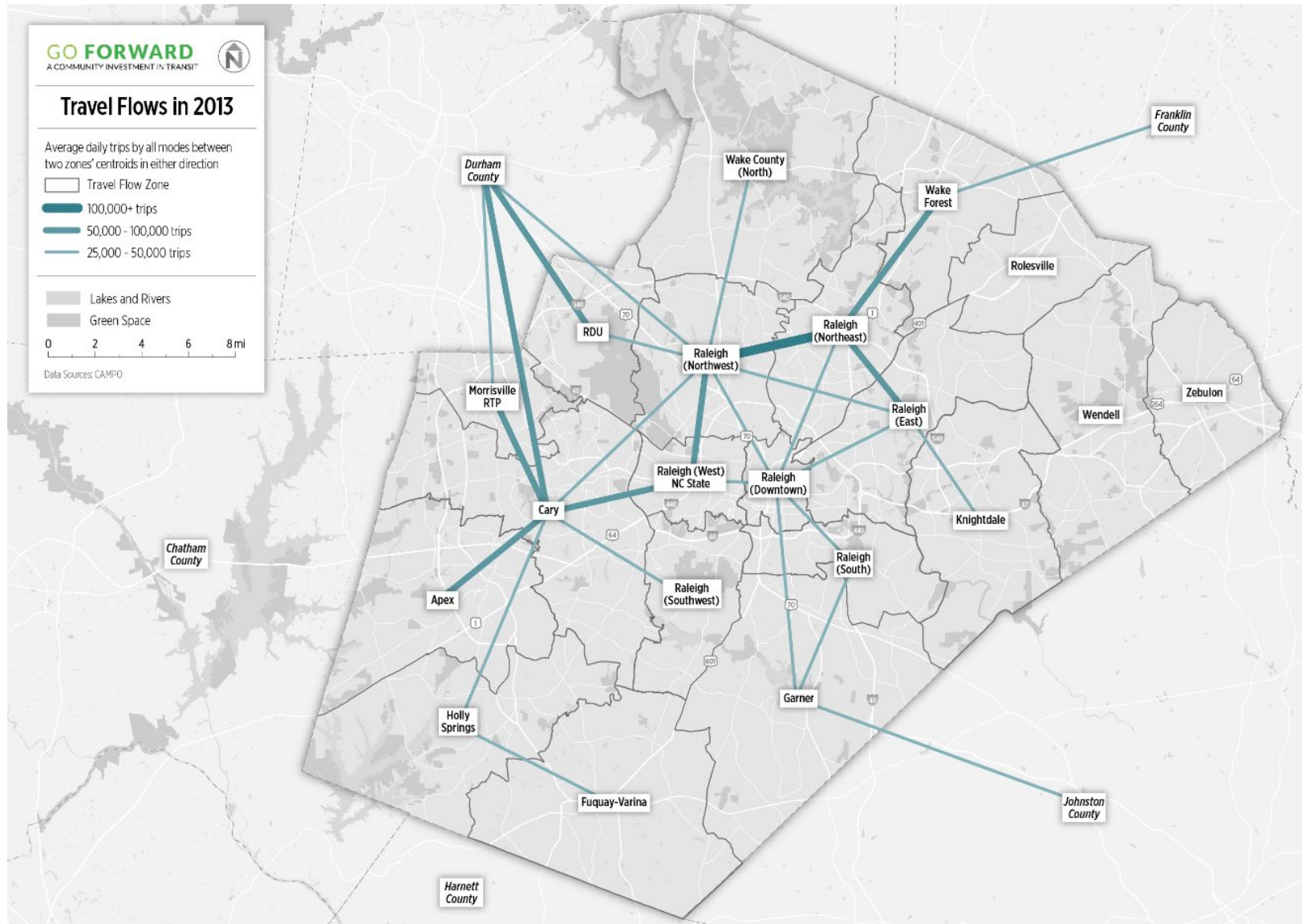




Figure 27 Inter-Zone Travel Flows in 2013



## CONGESTION

**Figure 28** and **Figure 29** compare the congestion in 2013 with predicted congestion in 2035. As expected with population and employment growth, congestion gets significantly worse. In 2013, most local roads were below capacity. Highways are mostly at capacity, except for parts of I-40, I-440, Highway 1, and Highway 401, which are above capacity. By 2035, most highways and major arterials are above capacity, and local roads are at a mix of at-capacity and below capacity.

These congestion maps highlight the importance of planning and policy that prioritizes reliable and frequent transit so that people have a high-quality option for transportation other than driving. On key corridors and highways with high congestion, there is a need for dedicated rights-of-way for transit so that buses can get to stops and stations in a timely manner. These maps also highlight the importance of linking transportation and land use decisions, since concentrating development in areas where people do not have to drive can greatly ease congestion.

## TRANSIT RIDERSHIP

Public transit currently represents a small share of commuting travel in Wake County, so analyzing current ridership patterns can help determine improvements for transit in the future. On an average weekday in 2018, GoTriangle served about 7,000 trips, GoRaleigh served about 22,000 trips, and GoCary just under 1,000 trips. The highest ridership stops in Wake County are GoRaleigh Station, the Regional Transit Center (RTC), and NC State.

**Figure 30** shows transit ridership by stop overlaid on the 2017 Composite Density layer (stops with fewer than 10 boardings per day are not shown). In general, transit ridership is highest in downtown Raleigh and along corridors with frequent bus routes. The stops with higher ridership generally match the places with relatively higher composite densities. Some notable areas with relatively higher composite density that do not have high ridership include:

- Cary outside of downtown Cary and Cary Towne Center
- Northwestern Raleigh from I-440 to Brier Creek

Ridership may be low in these areas as a result of many possible factors, including a lack of adequate pedestrian infrastructure, low frequency or limited hours provided for existing transit service, or lower than usual demand.

## TRANSIT MARKET CONCLUSION

Continued implementation of the investments envisioned in the original Wake County Transit Plan and the limited new investment included with this transit plan update comport with many of the needs identified by this refreshed market outlook. However, market conditions and trends point to the need for additional investment beyond the 2030 horizon of this plan update. A more involved assessment of additional investments to fill these needs will be examined through subsequent updates to the transit plan. However, the ‘Vision for the Future: 2030 and Beyond’ section of Chapter 2 and Appendix G: Post-2030 Unconstrained High-Capacity Transit Corridors identify many candidate high-capacity transit investments that are geared toward addressing these needs based on current market projections.

Figure 28 Congestion 2013

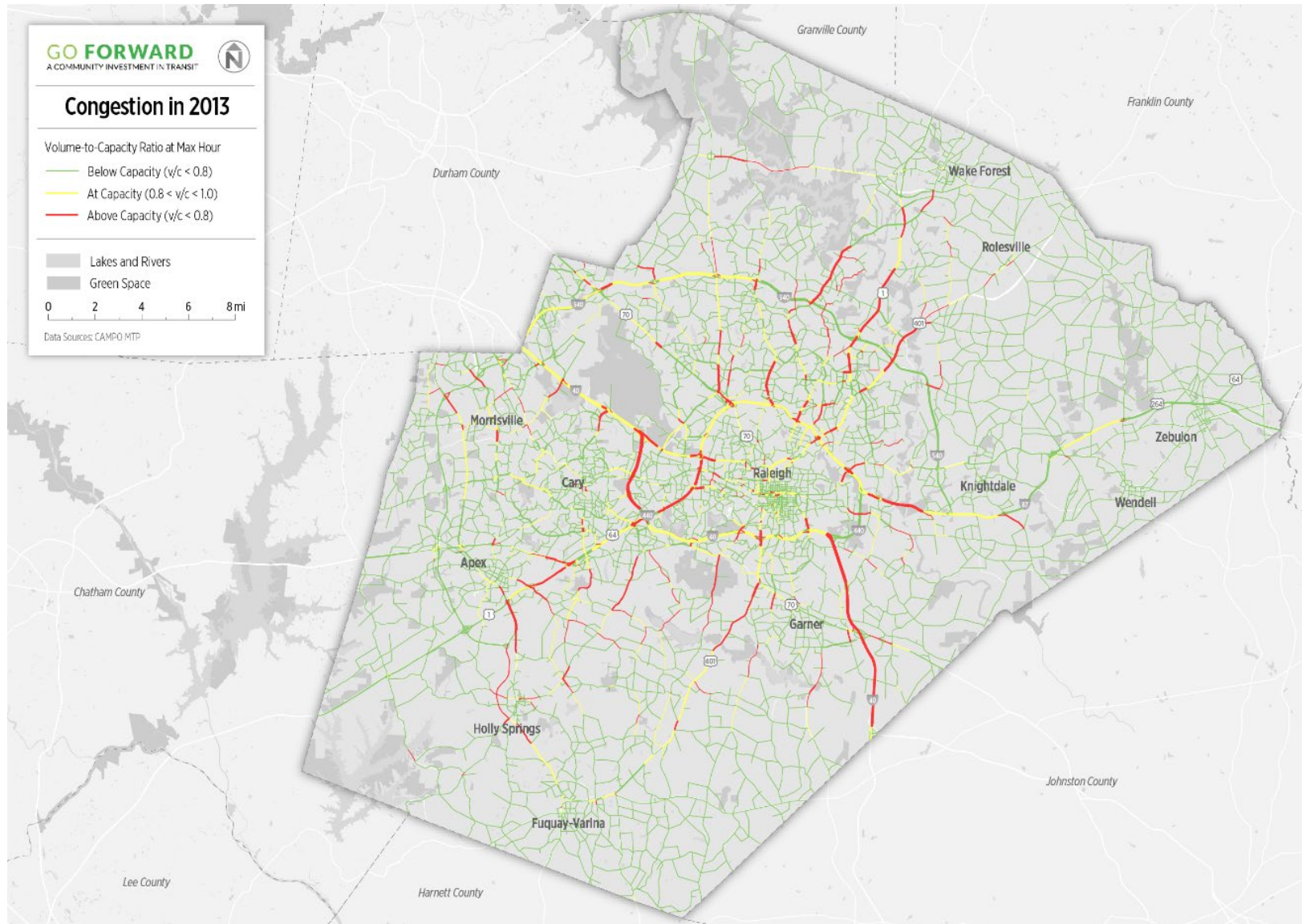




Figure 29 Congestion in 2035

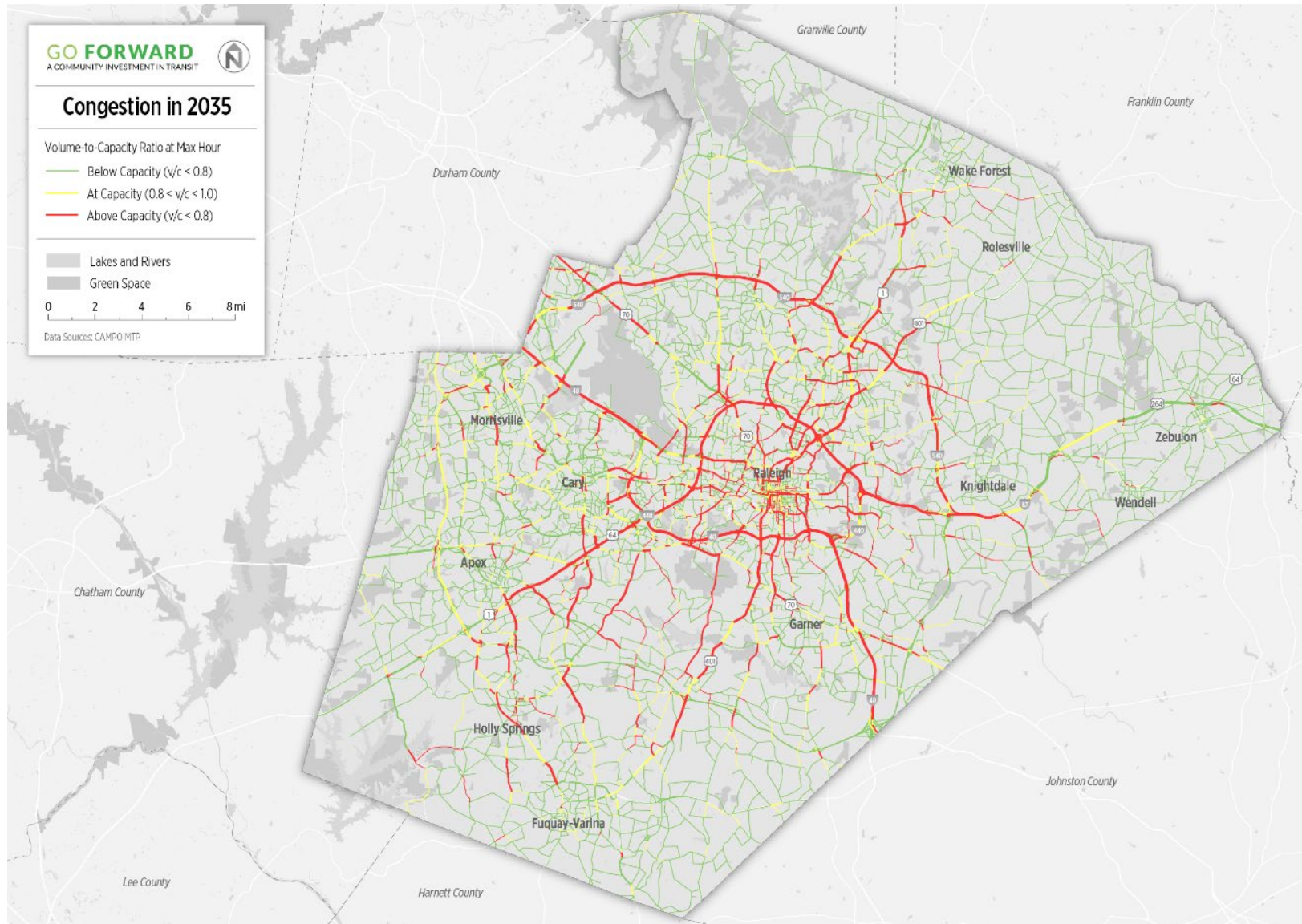
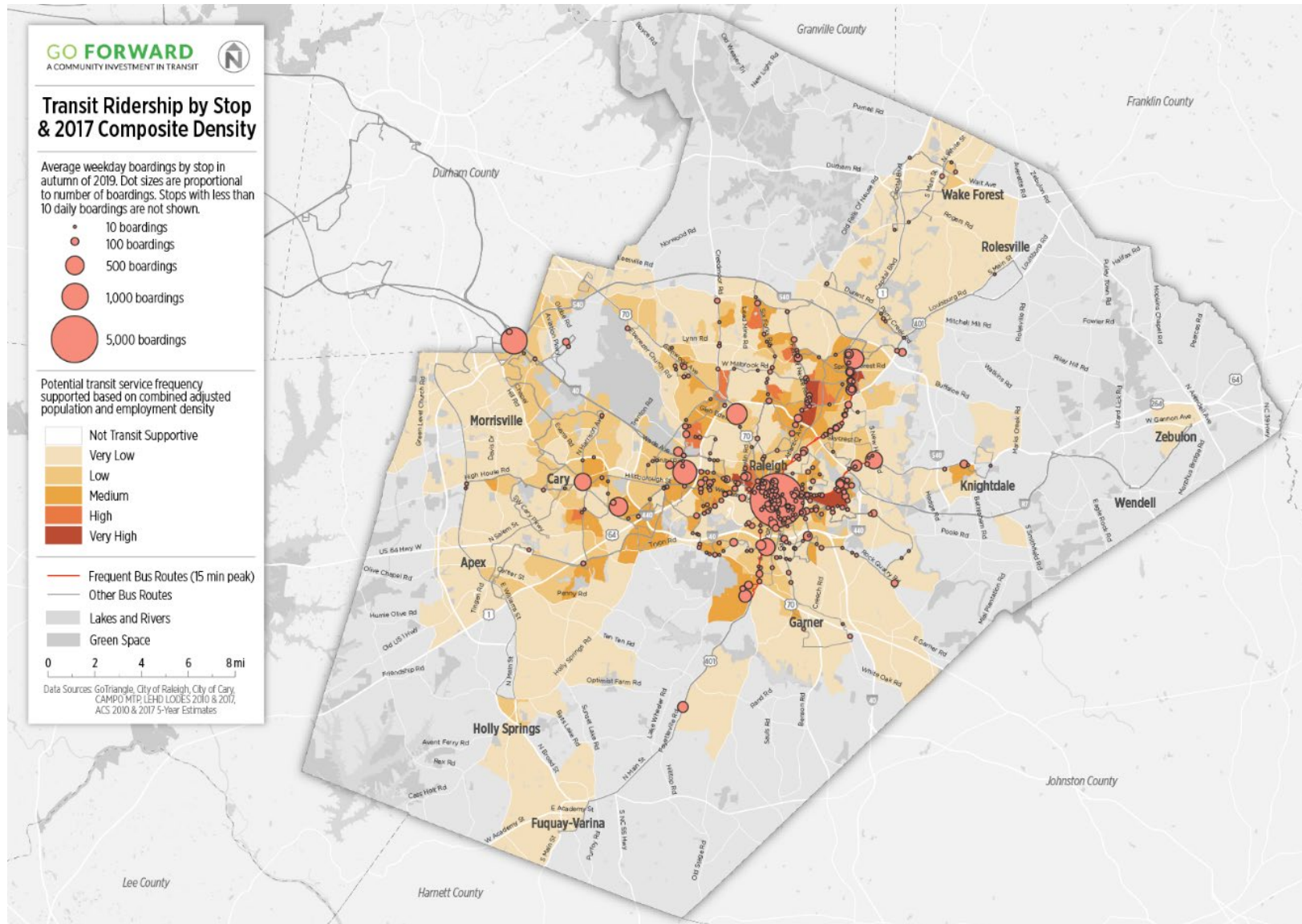


Figure 30 Transit Ridership by Stop and 2017 Composite Density



# Chapter 4: Financial Plan

## FINANCIAL PLAN DETAILS

The Wake County Transit Plan and this subsequent update are fiscally constrained and are contingent on a variety of financial assumptions coming to fruition. This update to the Wake County Transit Plan extends the original 2027 financial constraint through 2030. These assumptions evolve as better information becomes available for various investments, and projections are updated to reflect actual results. Many projects included in the original Wake County Transit Plan have undergone further feasibility study, and new cost and implementation timeline information has been used to modify and refine assumptions that were originally made for the plan adopted in 2016. As implementation progresses, projects included in the transit plan will continue to be studied, and new information will continue to influence their cost and timing. Additionally, overall inflation assumptions, availability of local sources of revenue and their growth assumptions, competition for federal funding for projects and successful access to capital markets, and regional partnerships will continue to influence the overall financial outlook of the transit plan. The following sections detail current assumptions and provide a comparison to assumptions made for the original Wake County Transit Plan.

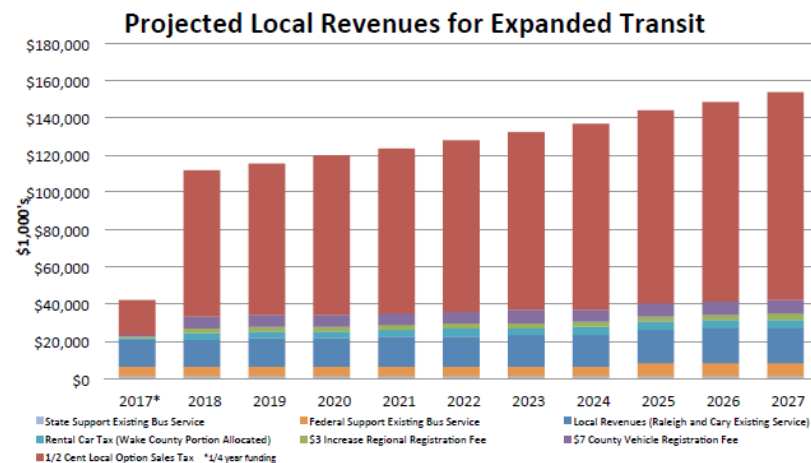
## SOURCES OF REVENUE

### Half-Cent Sales Tax for Transit (Article 43)

The largest recurring local revenue source supporting the Wake County Transit Plan is a half-cent local option sales tax, as authorized by NCGS Chapter 105 Article 43. This tax was approved by the voters of Wake County on the general election ballot in November of 2016. Collection of these revenues began in the spring of 2017.

For the original Wake County Transit Plan that was adopted in 2016, sales tax collections were projected using actuals for Wake County's Article 39 local option sales tax gross revenues, with fiscal year 2015 serving as the base, less 10%, as Article 39 collections include food purchases, which are prohibited to be taxed as part of Article 43 (public transportation sales tax). Then, it was assumed that the local sales tax revenue would be half of that amount, as Article 39 is one (1) percent of applicable sales transactions and Article 43 is one-half (1/2) percent. Using the County's same assumption for sales tax growth that was used in the County's debt and capital financial model, this amount was grown annually by 4%. Accordingly, the alternatives included an assumption that the half-cent sales tax revenue available for new transit would be \$78.5 million in FY 2018 and would grow by 4% annually thereafter. These original assumptions are depicted in **Figure 31**.

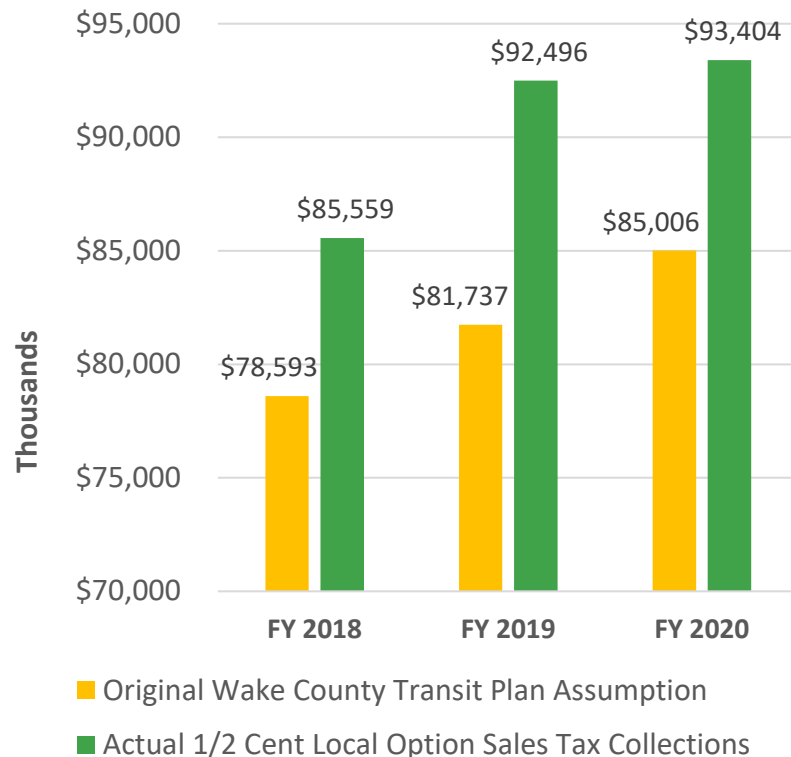
**Figure 31 Projected Local Revenues for Expanded Transit for Original Wake County Transit Plan (2016)**





As depicted in **Figure 32**, the original Wake County Transit Plan assumptions proved to be rather conservative in the first three (3) full fiscal years of sales tax collections. Collections exceeded original projections by approximately \$3.9 million, \$7.6 million, and \$5.1 million in FYs 2018, 2019, and 2020, respectively. While actual sales tax collections initially exceeded original projections, and actual growth from FY 2018 to FY 2019 was slightly more than double (8.1%) the original year-over-year growth assumption of 4%, actual growth from FY 2019 to FY 2020 slowed to slightly less than 1%, likely as a result of the economic impacts of the Coronavirus Disease 2019 (COVID-19) pandemic during the latter half of FY 2020.

**Figure 32 Comparison of Actual Sales Tax Collections to Original Transit Plan Assumptions**

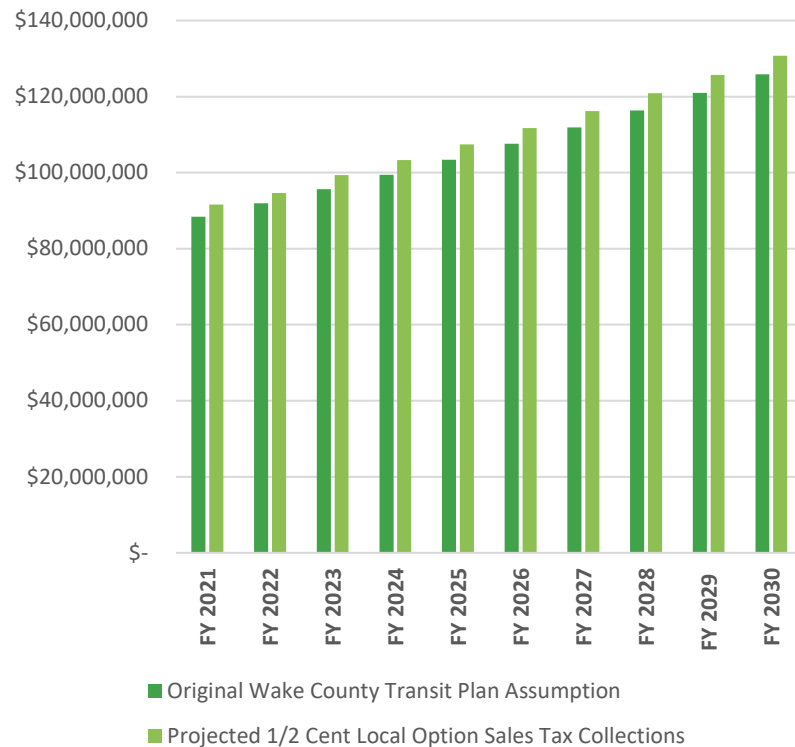


As explained in Chapter 1, the TPAC, in cooperation with CAMPO and GoTriangle, develops an annual Wake Transit Work Plan that includes periodic refinement of financial assumptions as a major component. Every year, assumptions for both anticipated revenues and expenses for various investments are reevaluated and adjusted based on progress to date and an examination of current and future market conditions. Because sales tax collections for FYs 2018 and 2019 were much higher than originally anticipated, and market conditions suggested a more optimistic than originally anticipated future outlook, sales tax collection assumptions were adjusted upward. Further, this assumed additional revenue was rebalanced with additional expenses or assumed increases in expenses for projects already included in the plan.

With social distancing and ‘stay-at-home’ measures to control the spread of COVID-19 imposed on residents statewide in March and April of 2020, economic activity in Wake County slowed immediately and in dramatic fashion. While it is known that sales tax collections to support transit investments decreased by a significant margin during the 4<sup>th</sup> quarter of FY 2020 (April-June), and collections have since experienced a substantial rebound, uncertainty surrounding downstream future-year impacts of the pandemic continues. Consequently, in the midst of the development of this plan update and shortly after the onset of the pandemic, Wake County Transit Plan implementation partners revisited what were previously assumed before the pandemic to be more optimistic conditions (based on actual collections and market conditions) compared to original transit plan assumptions.

Prior to the COVID-19 pandemic, projections that were adjusted for more optimistic conditions than the original transit plan assumed a total of \$1,192,453,000 in sales tax collections from FY 2021 through FY 2030. With a re-evaluation of growth assumptions that tempered projections to account for revenue reductions as a result of the pandemic, new projections assumed a total of \$1,101,442,705 in sales tax collections from FY 2021 through FY 2030. This is a \$91 million, or 7.6%, reduction in assumed sales tax collections between the two scenarios. A more detailed summary of the assumptions used for sales tax collections for this Wake County Transit update and its comparison to pre-pandemic assumptions is included in **Appendix C: Recommended Financial Assumptions for Wake Transit Plan Update**.

**Figure 33 Comparison of Transit Plan Update Sales Tax Projections to Original Transit Plan Assumptions**



While adjustments to assumed expenditures had to be made to account for this reduction, the new assumption of sales tax revenue growth fell very closely in line with the collection assumptions made in the original transit plan through FY 2030 as depicted in **Figure 33**.

## Other Local Revenue Sources

Increases to vehicle registration taxes also are included in the assumptions for local revenue sources. Prior to the adoption of the original Wake County Transit Plan, GoTriangle collected a tax of \$5 per registration throughout

Wake, Durham, and Orange Counties that is used to support transit activities in this three-county service area. This tax was increased by \$3, for a total of \$8 per registration. Further, a new \$7 vehicle registration tax that did not exist prior to the adoption of the original Wake County Transit Plan was assessed by the Wake County Board of Commissioners, as authorized by NCGS 105-509. Together, the vehicle registration taxes were projected by the original Wake County Transit Plan to generate approximately \$8.5 million a year in fiscal year 2018 and were projected to grow 2% a year thereafter. This resulted in an assumed \$95.2 million of collections from 2018 through 2027.

Although not as elastic to impacts as sales tax, vehicle registration taxes were also affected by the economic impacts of the COVID-19 pandemic. Operating under more optimistic conditions (based on actual collections) prior to the pandemic, a total of \$106.2 million in collections was assumed between FY 2021 and FY 2030. With a re-evaluation of growth assumptions that tempered projections to account for revenue reductions as a result of the pandemic, new projections assumed a total of \$102.6 million in vehicle registration tax collections from FY 2021 through FY 2030. This is a \$3.6 million, or 3.4%, reduction in assumed registration tax collections between the two scenarios.

A vehicle rental tax also is included as a revenue source in the transit plan. GoTriangle currently levies a 5% tax on vehicle rentals in Wake, Durham, and Orange Counties. GoTriangle's Board of Trustees has an existing policy that 50% of rental revenues are dedicated to expanding transit options in the region, while the other 50% is used by GoTriangle for operations and capital needs of the current system. To determine the amount allocated to each county, GoTriangle dedicates vehicle rental revenues based on percent of total population. GoTriangle's current allocation percentages are 68% for Wake County, 21.5% for Durham County, and 10.5% in Orange County. As such, the Wake County portion of all vehicle rental revenues is, compared to the total collected, 34%. The original transit plan included an assumption that rental car tax revenue available for new transit programs would be \$3.6 million in FY 2018, which would grow by 2.5% annually. This resulted in an assumed \$40.3 million of collections from 2018 through 2027.

Vehicle rental tax revenues have proven to be the most elastic to impacts associated with the COVID-19 pandemic. Operating under more optimistic

conditions (based on actual collections) prior to the pandemic, a total of \$50.6 million in collections was assumed between FY 2021 and FY 2030. With a re-evaluation of growth assumptions that tempered projections to account for revenue reductions as a result of the pandemic, new projections assumed a total of \$39.5 million in rental tax collections from FY 2021 through FY 2030. This is an \$11.1 million, or 21.9%, reduction in assumed rental vehicle tax collections between the two scenarios.

A more detailed summary of the assumptions used for vehicle registration and rental tax collections for this Wake County Transit update and its comparison to pre-pandemic assumptions is included in **Appendix C: Recommended Financial Assumptions for Wake Transit Plan Update**.

The transit plan also includes local revenues from the City of Raleigh, Town of Cary, and GoTriangle for existing bus operations. Local bus operations that existed in their respective service areas prior to adoption of the original Wake County Transit Plan will continue, and bus operations in the transit plan were designed considering those existing resources. Accordingly, the transit plan assumed that the local contribution from each agency would equal approximately \$15 million in 2018 and that this contribution would increase at 2.5% each year, the assumed rate of operating inflation.

## Federal and State Contributions

The original Wake County Transit Plan and this plan update assume federal and/or state funding for many planned projects. Significant contributions from federal sources are assumed for the capital costs for both CRT and BRT. A total of 50% in federal share is assumed for CRT and three (3) of the four (4) original core BRT corridors. A total of 60% in federal share is assumed for one (1) of the four (4) original core BRT corridors. For the four (4) original core BRT corridors envisioned in the original Wake County Transit Plan, the projects are assumed to successfully compete through the FTA Capital Investment Grants Small Starts program such that an estimated total of approximately \$244 million in federal funds will be secured. The capital cost of the two (2) BRT extensions to RTP and to Clayton are assumed to be covered 100% by approximately \$115 million in state funding.

For commuter rail, it is assumed that, through a regional partnership by extending the line into neighboring counties, the project would successfully compete for 50% federal funding (estimated at \$600 million, the Wake County share included in the Financial Plan). Approximately \$27 million of federal funds to support bus infrastructure improvements is assumed in the plan.

Federal funds toward operating expenses also are assumed in the Wake County Transit Plan. These funds come from assumed growth in federal formula transit grants for expended bus service and the initiation of BRT services. This revenue is assumed to begin two (2) years after the implementation of applicable services based on the methodology used by the Federal Transit Administration (FTA) to calculate formula funding to be allocated.

State funds for operating expenses are primarily limited to a very small amount of support for bus, BRT, and commuter rail operations once those services are in place. To be fiscally conservative, the Wake County Transit Plan does not include state funds toward the capital costs for the original four (4) core BRT corridors or commuter rail. However, the County and its partners would work to achieve such funding for those projects or for certain components of those projects.

## Farebox Revenue

Farebox revenue varies by type of service and by service provider. A farebox recovery ratio of 20% is assumed for BRT and CRT operations. Assumed farebox recovery for GoRaleigh, GoCary, and GoTriangle local and regional bus services begin at 0.7%, 2.0%, and 1.6% in FY 21, respectively, and ramp up to just under 14% by 2030 for all three. Farebox recovery for local services implemented via the Community Funding Area Program is assumed to be 0%.

## Long-Term Bond Proceeds

Shown as revenues, with corresponding debt service expenses, certain capital projects are assumed to be debt funded. Commuter rail is assumed to be 35% debt funded, BRT is 25% debt funded, and bus infrastructure projects (e.g., transit centers, bus stop improvements, park-and-rides, etc.) are 10% debt

funded. A portion of future projects modeled after 2030 are also assumed to be funded with debt.

Debt will be structured in a manner consistent with the useful life of related projects, not to exceed a final maturity of 30 years. Principal amortization will be level debt service or faster, except for deferrals of principal in connection with construction period financing or short-term financing related to future receipt of federal and/or state funds. Debt for the commuter rail project is anticipated to include a final maturity of 30 years with a gradual interest rate increase to 5.25% in FY29. All other long-term debt includes a final maturity of 20 years with a gradual rate increase to 4.75%.

By using long-term debt, it is important that the model adhere to several key metrics, including adequate operating and capital fund balances to demonstrate sufficient liquidity to rating agencies and the capital markets. The Wake County Transit Plan was developed within the context of adhering to two key measures: 1) maintaining near-term capacity to service debt from recurring net revenues, and 2) gross debt service coverage. Given the transit plan's focus on capital and significantly increasing local bus service, a key measure for the transit plan is a projection of the ongoing ability to pay annual debt service given projected revenue, planned capital, and recurring operating expenses. The transit plan maintains net debt service coverage of revenues less operating expenses greater than 1.25 times annual debt service and maintains a gross debt service coverage of revenues more than three (3) times annual debt service expenses. Wake Transit Plan implementation financial policies, which includes these parameters, were adopted by the CAMPO Executive Board and GoTriangle Board of Trustees shortly after implementation of the original Wake County Transit Plan commenced. As plan implementation continues, these metrics and calculations may be revisited and updated.

## PLANNED EXPENDITURES

### Planned Expenditures and Inflation

To ensure fiscal constraint, the Wake County Transit Plan includes inflation estimates for project estimates and operating costs. For this update to the transit plan, project estimates for BRT, commuter rail, bus infrastructure, and buses were estimated in 2019 or 2020 dollars. Projects were then programmed according to planned project schedules, and then escalated to year of expenditure using an inflation factor of 4% per year. Local bus operating hours were calculated in 2020 dollars, and then escalated at 2.5% per year. Operating costs for commuter rail and BRT were estimated in 2019 dollars, and then inflated to the year the projects would begin, again using an

**Figure 34 Capital Cost Summary and Comparison to Original Plan**

| Capital Investment Type             | 2016 Transit Plan Cost Assumption (in thousands) | Updated Transit Plan Cost Assumption (in thousands) |
|-------------------------------------|--|---|
| Commuter Rail                       | \$886,500  | \$1,200,000   |
| Bus Rapid Transit                   | \$347,000  | \$511,020*  |
| Vehicle Acquisition and Replacement | \$114,700  | \$161,101   |
| Bus Infrastructure                  | \$208,400  | \$173,801   |
| Other Capital Projects              | \$24,500   | \$16,803  |

**Note:** Expenses are expressed in year of expenditure dollars. Some of the increase in assumed expenditures is a result of inflation associated with spending occurring in later years than originally assumed.

\*Assumed expenses for BRT extensions to RTP and Clayton, which were not included in the original transit plan, are included in this figure.

inflation factor of 2.5% per year. A full programming of all Wake County Transit Plan Update investments, including all operating and capital expenses, is provided as **Appendix E: FYs 2021-2030 Programming of Wake Transit Plan Update Investments**.

The original Wake County Transit Plan contemplated approximately \$1.6 billion of capital projects by 2027. This update to the plan contemplates a total of approximately \$2.1 billion of capital projects by 2030, with approximately \$106.7 million of that having been allocated through FY 2020. A major component of the plan update process was a re-evaluation of the cost and schedule feasibility of major capital projects associated with the Wake County Transit Plan's five (5) major capital investments (Commuter Rail and four [4] BRT lines), particularly given that the corridors have had the benefit of undergoing further project-specific study since the adoption of the original Wake County Transit Plan. This reassessment revealed assumed increases in expenditure assumptions for both commuter rail and the full program of BRT corridors, mainly as a result of refined assumptions for the nature of the projects themselves. It also revealed that realistic implementation timelines for these projects may be longer than originally assumed when original assumptions were made without the benefit of further feasibility study. A full analysis for this assessment is included in **Appendix A: Major Capital Cost and Schedule Feasibility Memo**. A summary of all updated capital expenditures and their comparison to assumptions in the original Wake County Transit Plan is shown in **Figure 34**.

## Commuter Rail Capital Expenditures

The Commuter Rail capital expenditures include an estimated Wake County share for a multi-county commuter rail investment. Within the 2030 horizon of this plan update, it is envisioned to operate eight (8) trips during the AM and PM peak periods, with two (2) mid-day and two (2) evening trains in each direction (8-2-8-2). Further study of the corridor since the adoption of the original transit plan has revealed that this service pattern is the minimum that is likely competitive for discretionary federal grant programs with ridership projections that compare favorably with nationwide peers. The final service hours and frequencies will be determined through further alternatives and

feasibility study. To be conservative, included in the fiscal plan is an estimated 8-2-8-2 commuter rail service pattern, which would operate from West Durham to Garner within the existing Norfolk Southern Railroad corridor (owned by NCRR Company) by adding additional tracks and facilities. The project is contingent on funds from Durham County, other potential funding partners, and a federal funding award.

## BRT Capital Expenditures

The BRT capital expenditures include the four (4) core BRT corridors envisioned in the original Wake County Transit Plan, as well as the BRT extensions to RTP and Clayton. These total approximately \$511 million. Expenses programmed including planning and design, construction, and acquisition of vehicles for the corridors.

## Other Capital Expenditures

Significant resources are allocated for capital infrastructure to support a rapidly growing local bus network. Expenses for bus infrastructure, which includes transfer stations, park-and-ride lots, bus stop improvements, bus maintenance facilities, sidewalk access and streetside facilities, and other improvements, are assumed to total \$173.8 million through 2030. A total of \$161.1 million is allocated toward the acquisition and replacement of buses. Further, approximately \$16.8 million is allocated toward other capital, which includes funding for transit technology improvements and ongoing implementation planning for the full Wake Transit program.

## Debt Service and Debt Service Reserve Fund

As debt is issued for capital projects, principal and interest will be paid on these projects. These dollars represent the corresponding debt service on commuter rail, BRT, and various bus infrastructure projects that are required during the first 20 years of the Wake County Transit Plan.

A Debt Service Reserve Fund ("DSRF") will be established for each debt issuance if the DSRF creates a lower cost of funds and does not exceed the

minimum amount permitted under federal tax law. The fund will incorporate amounts needed to ensure full and timely payments that coincide with the anticipated final maturity of the debt issued. This Wake County Transit Plan Update includes a reliance on debt-funded capital projects that include debt service costs exceeding the 10-year horizon covered in the plan.

## Operating Fund Balance Allocation

To ensure adequate operating liquidity, the Wake County Transit Plan was developed with a target that the operating fund balance minimum would be equal to 25% of annual sales tax revenues. This update to the plan maintains that standard. The dollars allocated to this purpose are the minimum allocation necessary to meet this requirement.

## Capital Fund Balance Allocation

To demonstrate credit strength to manage risk, the Wake County Transit Plan also was developed with a target of having a capital fund balance of 5% of capital projects cost. Through the process to update the plan, the capital fund balance or reserve rate was increased to 10% of the cost of those BRT projects assumed to be partially funded by federal sources. A 5% rate was maintained for all other capital projects. This put the total rate for the full outlay of expenditures at approximately 6.2%. This capital fund balance is over and above individual capital budgets, which may have their own project contingencies. Maintaining sufficient liquidity during construction activity is an important credit strength indication for rating agencies. The capital fund balance allocation is timed to when significant debt issuances would begin for capital projects funded in the Wake County Transit Plan.

## Operating Expenses

There is a total of five (5) categories of operating expenses. The first is local/regional fixed-route bus service, which the original Wake County Transit Plan assumed to increase from \$22 million in FY 2018 to \$85 million by FY 2027 (both inclusive of pre-existing transit provider bus operations expenses). This

update to the plan assumes total recurring expenses for local/regional fixed-route bus service in FY 2030 of \$68.8 million.

Added to that is BRT service, with operations assumed to be initiated on various corridors beginning in FY 2024 and ramping up to service on all of the corridors by FY 2030. The total FY 2030 recurring expense for BRT operations is assumed to be approximately \$19.2 million. Commuter rail is shown starting in 2029, with an FY 2030 annualized recurring cost of approximately \$27.3 million. A total of approximately \$6 million in recurring operating expenses is assumed for tax district and transit plan administration in FY 2030. These expenses support management and staffing for implementation of the plan. Further, a total of \$14.2 million is assumed for other expenses associated with bus service, including maintenance of bus facilities, paratransit service, matching funds for the Community Funding Area Program, special fare programs, park-and-ride leases, etc. All operating expenses are grown at 2.5% to account for inflation. The supporting financial model for the plan assumes that by 2030, approximately \$135 million of operations will be in place. A summary of 2030 operating costs and their comparison to assumptions in the original Wake County Transit Plan is shown in **Figure 35**.

**Figure 35 Operating Expense Summary and Comparison to Original Plan**

| Operating Investment Type                    | Original Transit Plan FY 2030 Cost Assumption (in thousands) | Updated Transit Plan FY 2030 Cost Assumption (in thousands) |
|--|--|---|
| Local/Regional Bus Services                  | \$91,859   | \$68,763  |
| Bus Rapid Transit                            | \$15,615   | \$19,173  |
| Commuter Rail                                | \$21,646   | \$27,291  |
| Tax District and Transit Plan Administration | --   | \$5,985   |
| Other Bus Operations/Maintenance             | \$10,123   | \$14,247  |



# Appendices

- A. Major Capital Cost and Schedule Feasibility Memo**
- B. Transit Market Reassessment Report**
- C. Recommended Financial Assumptions for Wake Transit Plan Update**
- D. Project Prioritization/Reprogramming Guidance Memo**
- E. FYs 2021-2030 Programming of Wake Transit Plan Update Investments**
- F. Community Engagement Report**
- G. Post-2030 Unconstrained High-Capacity Transit Corridors**