



GO FORWARD A COMMUNITY INVESTMENT IN TRANSIT

Existing Conditions Report

September 2021

FINAL

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

Table of Contents

1	Introduction	1-1
	Project Purpose Document Organization	1-1 1-1
2	Previous Plans and Studies	2-1
	Plans Relevant to Southern RAPID BUS Extension Plans Relevant to Western RAPID BUS Extension Regional Plans	2-1 2-8 2-16
3	Study Areas	3-1
	Southern RAPID BUS Extension Western RAPID BUS Extension	3-1 3-3
4	Travel Market Analysis	4-1
	Southern RAPID BUS Extension Western RAPID BUS Extension	
5	Environmental Review	5-1
	Southern RAPID BUS Extension Western RAPID BUS Extension	5-1 5-6
6	Network Opportunities	6-1
	Southern RAPID BUS Extension Western RAPID BUS Extension	6-1 6-6
7	Findings and Next Steps	7-1
	Southern Rapid bus extension Challenges and Opportunities Western RAPID BUS EXTENSION Challenges and Opportunities	7-1 7-1
APF	PENDIX A: TIP / STIP Projects of Relevance	7-1

List of Tables and Figures

Figure 1 Wake County Planned Intercity Transit Services	1-2
Figure 2 Clayton Future Land Use Map	2-2
Figure 3 Garner Forward Land Use Map	2-3
Figure 4 Garner Forward Transit Recommendations	2-5
Figure 5 Southern Corridor Alternatives	2-6
Figure 6 Town of Cary Future Growth Framework	2-9
Figure 7 Town of Morrisville Existing and Proposed Transit	.2-11
Figure 8 Town of Morrisville Future Land Use Map	.2-13
Figure 9 Chapel Hill Road Corridor	.2-14
Figure 10 RTP Future Transit	.2-15
Figure 11 RTP Existing and Proposed Road Network	.2-16
Figure 12 MTP 2045 Adopted Transit Corridors and Projects	.2-17

CAMPO Rapid Bus Extension MIS and AA

1 INTRODUCTION

The Capital Area Metropolitan Planning Organization (CAMPO) is conducting a major investments study (MIS) and alternatives analysis (AA) for rapid bus extensions that will build upon the Wake BRT: Southern Corridor and the Wake BRT: Western Corridor, which are both under development as separate projects. The study is referred to as the Wake BRT: Rapid Bus Extensions Study. Both corridors are identified in CAMPO's 2045 Metropolitan Transportation Plan (MTP) and 2020 – 2029 Transportation Improvement Program (TIP). The extension of rapid bus service and transit priority treatments would span between Cary and Research Triangle Park (RTP) and between Garner and Clayton, respectively. The extensions would build upon the Southern and Western BRT corridors shown in Figure 1 (currently under development) and are subject to the availability of State-programmed funding.

PROJECT PURPOSE

This MIS and AA will identify and evaluate potential alignments for rapid bus extensions and transit priority treatments from the planned Southern and Western termini. The AA process establishes a framework that relies on data collection as well as quantitative and qualitative analyses to:

- Develop a reasonable set of conceptual alternatives to address mobility needs in the study area(s);
- Define evaluation criteria and metrics for comparative analysis of potential benefits and tradeoffs; and
- Facilitate informed decision-making that sets the stage for implementation of future rapid transit investments.

The outcome of this process will be a set of preferred alternatives for local adoption, along with phased implementation and potential program funding opportunities.

This existing conditions report is part of a series of documents describing the alternatives analysis process followed for the two proposed corridor extensions.

DOCUMENT ORGANIZATION

This Existing Conditions Report is divided into the following chapters:

- 1. Review of Past Plans and Studies: distills relevant past studies and planning documents to identify associated findings and recommendations for capital improvements supporting potential rapid transit service in the study areas.
- 2. Study Area Conditions: provides an overview of the corridor extents and boundaries, major roadways that could support rapid bus operations, as well as the planned changes in the local and regional fixed-route transit network (bus and rail) within the corridors.
- 3. Travel Market Analysis: considers existing and future demographic and land use trends, traffic volumes on roadways, and the projected travel patterns of where people are and where they want to go within the study areas, as well as regional trips to and from the study areas.

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

- 4. High-Level Environmental Review: identifies potentially environmentally sensitive areas, critical constraints, or fatal flaws within the study areas that could result in unfavorable or unacceptable impacts to populations or resources.
- 5. Network Opportunity Scan: assesses the existing built infrastructure and traffic operations along roadways within the study areas that may be capable of supporting rapid bus operations, and transit network conditions to identify cost-saving opportunities
- 6. Next Steps: summarizes key findings, challenges, and opportunities in each study area in preparation for the next steps of the study.

The results of this Existing Conditions Report will inform the alternatives evaluation framework through the identification of mobility needs and physical characteristics within the study area corridors that may support or constrain opportunities to extend transit speed and reliability treatments, where appropriate.

Data collected and analyzed may also be referenced in the development of specific rapid bus alternatives or speed and reliability components, as well as through evaluation of potential implementation constraints or cost-saving cooperative opportunities with planned capital improvements.



Figure 1 Wake County Planned Intercity Transit Services

2 PREVIOUS PLANS AND STUDIES

The project team reviewed relevant documents pertaining to the potential rapid bus corridors including: transit service plan updates, corridor studies, system plans, and other long-range and strategic plans. The purpose of reviewing past plans within the two identified study areas (Western and Southern) is to develop transit recommendations and identify opportunities that are consistent with past planning efforts. Transportation conditions, past study recommendations, as well as policy directives of relevance identified from local and regional planning documents are highlighted within the following sections.

PLANS RELEVANT TO SOUTHERN RAPID BUS EXTENSION

Clayton Comprehensive Plan

The Clayton Comprehensive Plan describes specific goals, objectives, and strategies for implementing the Town's vision. This plan serves as a policy document to guide development that will result in opportunities to improve the quality of life for Clayton residents. Clayton is located southeast of downtown Raleigh and is a suburban-rural town that is focused on becoming a regionally recognized arts and recreation community. The development of this plan included five phases: project initiation, inventory and assessment, plan development, recommendations and implementation strategies, and plan documentation.

This plan calls for promoting adaptive re-use and infill development for new commercial activity while emphasizing the importance of placemaking and keeping the existing historic fabric and style of downtown areas (Figure 2). In doing this, Clayton will have a strong downtown core with better accessibility to existing neighborhoods and activity centers through new bicycle and pedestrian facilities. The Town of Clayton would like to see a reduction in traffic congestion and auto-oriented neighborhoods by working with North Carolina Department of Transportation (NCDOT) and Capital Area Metropolitan Planning Organization (CAMPO) to assist in funding and constructing sidewalks, bike lanes, and public transit facilities. These improvements will enhance mobility within the town limits and improve Clayton's accessibility to the rest of the Research Triangle region.

Relevant Recommendations:

This plan contains several recommendations that impact the identification of the most suitable rapid bus corridor within the identified study area. These include:

- Recommendations on establishing a multimodal transportation system to improve connections to the Raleigh-Durham area
- Implementing a street system to increase accessibility to downtown Clayton from adjacent neighborhoods
- Strengthening the greenways to increase connectivity throughout Clayton that can be utilized for recreation or to access activity centers

Overall, these recommendations place an emphasis on the Town's vision to increase multimodal transportation use, which would further facilitate or enhance the town's utilization of transit along the US 70 Business corridor.



Figure 2 Clayton Future Land Use Map

Garner Forward Comprehensive Plan

The Garner Forward Comprehensive Plan is a vision for future land use and transit-oriented development, guiding future growth in the town of Garner. This plan specifically focuses on development through the growth of existing nodes and transit corridors in the area that will encourage use of transit, bicycle, and pedestrian facilities. The Garner Forward plan includes five selected opportunity sites (Auburn Station, Fifth Avenue, Garner Station, Downtown Garner, and Northeast Gateway). Each opportunity site includes renderings to visualize development concepts that highlight specific details for lot density, design, and use.

This plan aligns investments in the town of Garner with the growth of regional transit corridors (e.g., I-40, I-70) and existing transit network by tying together land use, commercial opportunities, jobs, schools, and parks (Figure 3). The Town of Garner's strategies to improve transportation include: heavily relying on public transportation to manage congestion, improving connectivity, building complete streets, and managing parking standards.

CAMPO Rapid Bus Extension MIS and AA



Figure 3 Garner Forward Land Use Map

Relevant Recommendations:

This plan contains several recommendations that impact the identification of the most suitable rapid bus corridor within the identified study area. Specifically, the Garner Forward Comprehensive Plan recommends implementing additional pedestrian and bicycle facilities to improve neighborhood accessibility, adopting complete street guidelines, and supporting trunk line bus services on US 401 and US 70.

These recommendations support additional transit services within the Southern study area for rapid bus, specifically along the US 70 Business corridor, by increasing the presence of bicycle and pedestrian facilities to connect with regional transit services. In addition, this plan outlines future objectives to connect Garner to the Raleigh via commuter rail, frequent fixed-route service

to downtown Raleigh, and establishing rapid bus services to join the western side of Garner to downtown Raleigh.

Garner Forward Transportation Plan

The Garner Forward Transportation Plan is a multimodal plan that focuses on future mobility improvements and investments in Garner. Throughout this plan, key issues are used to develop recommendations for all modes of transportation that impact the area including railways, bicycle and pedestrian facilities, roadways, and transit. The plan provides both long-term and short-term goals, as well as implementation strategies.

This plan emphasizes the importance of strong connections due to the town's proximity to downtown Raleigh. The plan includes a brief history of the Garner area and describes the major role transportation has had over time (i.e., railroads, North Carolina's Central Highway). More importantly, this plan provides context for how the town should expand existing infrastructure and how improvements to the regional transportation infrastructure can adequately link communities to one another.

The town of Garner has a heavy reliance on automobiles which has led to an increase in congestion, vehicle crashes, and uncomfortable conditions for pedestrians and cyclists. In addition to poor roadway conditions, the town of Garner has limited east-west connections and poor access management. Traffic and road capacity is one of the biggest challenges faced by Garner. Some of the recommendations to improve these conditions include creating a collector system in less-developed areas, extending arterial roads, and redesigning intersections.

Although there is a focus on improving roadways for vehicles, the Garner Forward Transportation Plan recommends designing roadways for all modes of transportation by increasing capacity to include transit, pedestrian, and bicycle facilities along corridors (Figure 4). This will allow for increased connectivity to major destinations such as schools, parks, and shopping areas.

Relevant Recommendations:

The Garner Forward Transportation Plan includes several recommendations to improve accessibility to the rest of the Raleigh-Durham region, but specific recommendations that are critical to identifying a suitable rapid bus corridor include:

- Expanding GoTriangle and GoRaleigh services in Garner (e.g., new Park-and-Ride facilities, new BRT and commuter rail systems) to reach new residential developments and the Garner Technology Center (GTC)
- Coordinating peer ridesharing, car-sharing, and demand-response route deviation technology with expanded public transit services to increase overall mobility
- Adopting a town-wide complete streets policy using NCDOT's complete street guidelines.

This transportation plan includes recommendations to expand the existing transportation network to support future growth necessary for establishing high-frequency transit.

CAMPO Rapid Bus Extension MIS and AA



Figure 4 Garner Forward Transit Recommendations

Transit Recommendations

2016 Transit Location Recommendations

- 🛅 Bus Stops
- Park & Ride
- Rail Station

---- Transit Loop Route Recommendation 30 or 60 Minute (Contraflow)

Wake County Transit Plan Recommendations

- Bus Rapid Transit (BRT)
- Commuter Rail

Fixed Route - 30 Minute

Wake Bus Rapid Transit (BRT): Southern Corridor Alternatives Selection Memo

The Wake BRT: Southern Corridor alternatives selection memorandum summarized the analysis and selection of a Locally Preferred Alternative (LPA) from among six alignment alternatives along the Wake BRT: Southern Corridor between downtown Raleigh and Purser Drive in Garner (Figure 5). Alternatives were identified by the Wake BRT major investment study (MIS).



Figure 5 Southern Corridor Alternatives

The southern corridor alternatives include:

- Alternative 1 South Street to South Saunders Street to Wilmington Street Extension
- Alternative 2 South Street to South Saunders Street to Fayetteville Road

- Alternative 3 Martin Luther King Jr Boulevard to South Saunders Street to Wilmington Street Extension
- Alternative 4 Martin Luther King Jr Boulevard to South Saunders Street to Fayetteville Road
- Alternative 5 South Wilmington Street to Wilmington Street Extension
- Alternative 6 South Wilmington Street to Fayetteville Road

This memo reviewed and further analyzed each BRT alignment alternative identified by the MIS. The analysis performed for each alternative included existing ridership on routes within a quartermile of the proposed alignment and ridership within a quarter-mile of proposed stations, existing and future population growth, employment, demographics, environmental features, and built environment features. In addition, available right of way (ROW) and travel times were analyzed, as well as other plans, studies, and projects that align with each alternative. Lastly, this memo summarizes the impact the future Wake BRT alignment would have on regional plans such as the City of Raleigh Southern Gateway Corridor Study, as well as the Town of Garner's Comprehensive Plan and Transportation Plan. Alternative 5, as shown in the map above, was selected as the locally preferred alternative for the Wake BRT: Southern Corridor.

The factors playing into the analysis of potential alignments covered by this memo for BRT service and infrastructure between Raleigh and Garner are important to consider as potential criteria for an evaluation of potential rapid bus extension alignments between Garner and Clayton. Doing so would allow the full extent of the service and supporting infrastructure between Raleigh and Clayton to better align with certain corridor-wide goals and would ensure a greater degree of compatibility for how rapid bus service and infrastructure interacts with environments along the full corridor.

CAMPO Southeast Area Study

The Capital Area Metropolitan Planning Organization (CAMPO) Southeast Area Study (SEAS) is used to define the region's strategies to accommodate existing and future travel needs that will enhance economic vitality and improve quality of life for residents, as well as regional connectivity. The Southeast Area Study includes portions of Wake and Johnston Counties and 11 municipalities. The study was also used to update CAMPO's Comprehensive Transportation Plan and the 2045 Metropolitan Transportation Plan (MTP).

This plan uses existing conditions (e.g., market and land use, transportation, cycling) to analyze the current state of the study area and develop recommendations for adjusting the policy frameworks in existing regional plans. Significant findings from the existing conditions included the growth of the Raleigh-Durham business market in recent years, which is the largest market for retail and offices within the region. Additionally, the study discusses the complexities of the area's suburban and rural nature, which has resulted in an auto-centric built environment. Due to the rapid population growth of the region in recent years, the area has begun investing in various multimodal transportation strategies.

The CAMPO Southeast Area Study includes a planning framework and guiding principles to guide regional growth and development. This framework includes stakeholder and public engagement strategies that were used throughout the plan's development. Additionally, the guiding principles reflect the community's vision and priorities for the study area. Some of these principles include sustainable growth, economic vitality, livability, and increased active transportation.

Lastly, this plan includes scenario planning using a digital growth model to explore future growth patterns, to inform recommendations, and to analyze growth distribution, quality of place, and regional transportation. This study recommends creating an implementation toolkit, conducting "hot spot" studies, and ensuring that all the municipalities within the study area carry out projects using a unified approach.

Relevant Recommendations:

Within this plan are recommendations that should be taken into consideration when determining the most suitable rapid bus corridor within the identified study area. These include:

- Establishing requirements that all Southeast Area municipalities require developers to provide accommodations for bicyclists and pedestrians with all new developments and any re-developments
- Establish BRT service between Raleigh and Garner
- Establish local transit funding programs for community-based transit services

These recommendations support the expansion of transit services in the southern part of the region by putting an emphasis on funding and developing multimodal transportation infrastructure.

PLANS RELEVANT TO WESTERN RAPID BUS EXTENSION

Cary 2040 Community Plan

The Cary 2040 Community Plan focuses on the expansion of the town of Cary and its extraterritorial jurisdiction that is intended for future growth. The town of Cary is experiencing rapid growth due to an increase in population and market employment opportunities. The town currently faces many challenges including limited land for development, increasing transportation demand, and future fiscal challenges due to declining revenue growth. Throughout this plan, challenges and opportunities regarding the town's livability, commercial activity, and transportation needs are addressed.

This community plan includes a framework for future growth (Figure 6) to help alleviate some of the issues the town is facing. Plan recommendations include the Town of Cary placing greater emphasis on intensifying land uses and focusing on infill and redevelopment opportunities. The framework sets a vision for Cary in 2040 and provides long-term recommendations for development, capital improvements, and community investments. This framework categorizes different areas throughout Cary by primary and secondary land uses, determines the characteristics of existing and future development, and identifies special planning areas that have the potential for new development.

Relevant Recommendations:

The Cary 2040 Community Plan contains specific recommendations that align with the study of future rapid bus corridors within the Western study area. These recommendations include:

- Implementing new development patterns using the future growth framework that will allow for greater intensity and new mobility opportunities
- Developing transit-oriented communities along the Maynard Loop that will support additional GoCary service on existing routes

 Implementing a complete streets framework that will encourage residents to use other transportation options (e.g., walking, biking, transit)

These recommendations support the use of multimodal transportation along High House Road and NC 54 that will connect downtown Cary to Morrisville and RTP. Additionally, the future growth framework established by this plan aims to reduce vehicle miles traveled and encourages the development and use of a multimodal transportation network.

Figure 6 Town of Cary Future Growth Framework



Morrisville Comprehensive Transportation Plan

The Morrisville Comprehensive Transportation Plan (CTP) focuses on enhancing the town's transportation network and identifies multimodal projects to do so. This plan serves as a roadmap to multimodal transportation in Morrisville and is an update from the 2009 plan. The CTP includes an analysis of current socioeconomic characteristics, plans and policies, and transportation infrastructure (roadways, bicycle and pedestrian, regional partnerships).

The plan highlights that the town of Morrisville is centrally located to Research Triangle Park and that over the past 15 years, the town has seen tremendous growth. It notes that the visions and recommendations within the plan reflect the town's ability to adapt as one of the fastest growing municipalities in North Carolina.

Throughout this plan, guiding statements are used to prioritize recommendations and guide the planning process. Some of these statements include making travel more efficient, supporting the local economy, enhancing the town's quality of life, and providing a balanced transportation system between modes. This plan discusses several accessibility issues, specifically the limited active transportation facilities and transit service in town. Existing transit service is provided by GoTriangle, the Research Triangle Park (RTP) shuttle, and the Town of Morrisville's node-based Smart Shuttle, but the town is most easily accessible using private vehicles on major roadways (e.g., NC 54, I-40, and I-540).

Mobility in Morrisville has traditionally been very limited due to a lack of overall roadway connectivity within the town and limited transit service, and most pedestrian and bicycle facilities are disjointed. Many of the existing and on-going projects support active transportation and the enhancement of bicycle and pedestrian facilities through the development of new shared-use paths and greenways. In addition to improving pedestrian and bicycle facilities, this plan outlines the expansion of transit services and new transit facilities that will support commuter rail (Figure 7).

Relevant Recommendations:

Throughout the Morrisville CTP, the plan addresses Morrisville's residents' limited access to public transit. Because of this, the Town of Morrisville has committed to expanding its current transportation network and infrastructure that directly aligns with the rapid bus corridor study. Some of these recommendations include promoting the Triangle Bikeway and working with NCDOT to connect facilities in Morrisville to regional activity centers, as well as conducting a transit study to evaluate potential routes, stop locations, and potential ridership and cost for service expansion. The Town of Morrisville completed the aforementioned transit study in 2019 and launched a node-based microtransit service, known as the Morrisville Smart Shuttle, in October of 2021. In addition to the recommendations described, the plan outlines transit-oriented development opportunities at the intersection of McCrimmon Parkway and NC 54 that support creating a hub for regional transit via the Durham-Wake Commuter Rail. These recommendations and future opportunities would support the development of high-frequency transit in Morrisville and support the development of multimodal transportation facilities.

CAMPO Rapid Bus Extension MIS and AA



Figure 7 Town of Morrisville Existing and Proposed Transit

Morrisville Land Use Plan

The Morrisville Land Use Plan is the official policy document to guide the town's land use and development. This document informs future decision-making for transit investments and expansion in the town of Morrisville. This plan includes a review of past plans and studies related to town planning and a summary of existing conditions. Morrisville is in the heart of the Research Triangle Park community and has a significant draw for new businesses and residential developments. Some of the goals described within this plan include expanding housing diversity, developing a strong community image, increasing economic development opportunities, and establishing an efficient multimodal transportation system.

This plan focuses on the significant relationship between land use and transportation systems (Figure 8). This relationship is necessary to create strong activity centers and increased connectivity throughout the region. As such, this land use plan establishes design principles that balance car and pedestrian accessibility by requiring buildings to be street-oriented, creating a strong sense of place throughout the community. In turn, this will encourage mixed-use and transit-oriented development that is accessible by active modes of transportation. In addition to design principles, this plan addresses the need for improved transportation infrastructure in Morrisville so that land uses are aligned with future bicycle, pedestrian, and transit facilities.

Relevant Recommendations:

The Morrisville Land Use Plan establishes guidelines that would support the extension of rapid bus along the NC 54 corridor by supporting transit-oriented development (TOD) north of downtown Morrisville at McCrimmon Parkway and by increasing density and mixed uses. Following up from the adoption of the plan, the Town has adopted amendments to its Unified Development Ordinance to implement key parts of the plan and has rezoned the McCrimmon Parkway extension area and established a new overlay district for this area with various design standards geared toward creating a pedestrian-friendly environment and ensuring a mix of land uses. The Town also amended its TOD standards and rezoned the northeast, northwest and southwest corners of NC 54 and McCrimmon Parkway to the TOD district. Other recommendations that support high-frequency transit and increase utilization of a multimodal transit system include:

- Establishing land use and design principles that will support future transit services and support system viability
- Working with regional partners to support proposed regional commuter rail with service along North Carolina Railroad
- Working with regional partners to support a proposed BRT route

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

Figure 8 Town of Morrisville Future Land Use Map

Future Land Use Map

The Future Land Use Map establishes the foundation for the use and development of land within the Town of Morrisville over the next 10 to 20 years. All land parcels within the Town's planning jurisdiction are assigned one of 13 future land use designations, each defining preferred uses, a desired density and character of development. Elements such as future streets, landscape buffers, private open spaces, tree preservation areas and other important considerations, though not illustrated here, are discussed in this and subsequent chapters.

Low Density Residential Low Density Residential includes neighborhoods of single-family detached homes, typically 4.5 or less dwelling units per acre. These areas are characterized by large lots and the lowest residential density in Morrisville

Medium Density Residential Medium Density Residential includes neighborhoods of single-family attached and detached homes, typically between 4.5 and 7.5 dwelling units per action to the second second second second second second second to the second secon These areas are characterized by medium-sized lots and a moderate density of development.

High Density Residential

High Density Residential includes neighborhoods of single-family attached and detached homes as well as multi-family developments, typically 7.5 or greater dwelling units per acre. These areas are characterized by small lots and the highest residential density in Morrisville.

Neighborhood Activity Center

Neighborhood Activity Center features a mix of uses that provide convenient, walkable retail and service options for adjacent neighborhoods. These areas include commercial, residential, entertainment, and office uses that are compatible with the scale and intensity of adjacent areas.

Business Activity Center

Business Activity Center features a mix of uses that provide convenient, walkable retail and service options for adjacent offices and employment centers. These areas include commercial, residential, and office uses in mixed-use centers that are compatible with the scale and intensity of adjacent areas.

Regional Activity Center

Regional Activity Center features a mix of uses that create regional destinations, typically located at key intersections along major transportation corridors. These areas include concentrations of large regional employers, commercial, entertainment, and high density residential along with education and healthcare facilities.

General Commercial

General Commercial includes commercial centers that provide a variety of goods and services to meet local and regional needs, typically located along primary transportation corridors.

Town Center

Town Center features a vibrant mix of uses near Morrisville's historic crossroads that create a destination and focal point for the community. This includes a dense, urban concentration of uses, including residential, commercial, office, entertainment, cultural, and institutional uses with a focus on mixed-use development.

Office

Office includes a broad spectrum of local and regional employment centers in high quality and desirable nvironments.

Industrial

Industrial includes light- and heavy-industrial uses that contribute to employment opportunities and Morrisville's tax base. Location, visibility, and compatibility with adjacent areas are critical to industrial uses.

Institutional

Institutional accommodates public and semi-public activities such as government buildings, schools, and places of worship.

Parks & Open Space Parks, Greenways, and Open Space includes all parcets of land exclusively used for outdoor green spaces, recreational areas, and environmental amenities. These provide recreational opportunities to residents and enhance the Town's character. This category does not include private parks and open spaces that are incorporated as supporting uses on larger properties or developments or greenways.

Transit Oriented Development

Transit Oriented Development features a critical mass of development and mix of uses necessary to support nearby transit options. Uses include commercial, residential, institutional, and employment concentrated in pedestrian-scaled environments, with a focus on mixed-use development.



Town of Cary Chapel Hill Road Mobility Study - Existing Conditions

The existing conditions element of the Town of Cary's Chapel Hill Road Mobility Study provides background information necessary to improve Chapel Hill Road into a complete street. Chapel Hill Road serves as the gateway to the town of Cary, and plans for Chapel Hill Road include improving traffic flows, creating better connectivity, and improving pedestrian and cyclist safety. The existing conditions element includes information on existing conditions, concept designs, recommendations for street alignments, and policy recommendations.

Chapel Hill Road runs north of downtown Cary and extends through two subareas, North Academy and East Chatham (Figure 9). These subareas were identified in the 2040 Cary Community Plan and are planned for major investments in the future. In particular, this plan calls for Chapel Hill Road to become a throughfare that anchors high-density, mixed-use development with an improved streetscape to prioritize active transportation over vehicular movement. In addition to improving bicycle and pedestrian improvements, the plan calls for a Bus Rapid Transit (BRT) route to be implemented from Cary Towne Boulevard to downtown Cary, and then continuing west towards Morrisville and RTP via Chapel Hill Road. The preferred alignment would utilize Cary Towne Boulevard, Maynard Road, and Chatham Street.



Figure 9 Chapel Hill Road Corridor

Relevant Recommendations:

The existing conditions for Chapel Hill Road describe various roadway characteristics and identify the different transit network opportunities that would be suitable along the corridor. Furthermore, this document aligns with area transit plans that would increase transit in Cary and western Raleigh to identify the best corridor for high-frequency transit. The existing conditions focus on increasing the safety, accessibility, and intensity of land uses on Chapel Hill Road. Within the corridor context, the study identifies constraints along the corridor such as the narrow ROW and

lack of traffic-calming measures, which suggest the need for additional multimodal elements such as trees, lighting, ADA accessibility, and additional pedestrian facilities that are needed to create a safe multimodal environment on Chapel Hill Road for bicycles, vehicles, and pedestrians. Considerations include investment to widen the facility between NE Maynard Road and NW Maynard Road, including the segment of the proposed Western extension between N Harrison Avenue and NW Maynard Road.

The Research Triangle Park Master Plan

The Research Triangle Park (RTP) Master Plan discusses the challenges faced by the park that have been caused by competing pressures, the need to preserve the park's natural setting, and the constraints with accessing the area. Many of the nation's top employers are located within

Figure 10 RTP Future Transit



RTP, and this plan outlines how the park is adapting to the region's recent population growth. The RTP Master Plan addresses planning solutions and

regional opportunities to improve access and transit to the park.

RTP is considered to have excellent transportation access, but traffic congestion during peak periods, specifically on I-40, has caused the region and RTP to discuss transit improvements to mitigate the problem. Currently, the majority of trips to RTP are by singleoccupancy vehicles with less than 2% of trips being by transit. Most transit stops are located along Park Road and not near building entrances in RTP, which makes the mode less attractive to riders and causes first-mile and last-mile problems within RTP.

In response to the existing low-density character of RTP, this plan calls for planning principles that prioritize dense, mixed-use development clusters throughout the park. Additionally, the plan calls for a new light rail alignment to improve transit accessibility that connects the region to clusters within the park and a new station for proposed commuter rail at North RTP (Figure 10).

Relevant Recommendations:

The RTP Master Plan establishes guidelines that would support the extension of multimodal services to the park to alleviate congestion on I-40 and improve accessibility. Recommendations that support high-frequency,

multimodal transit include locating new cluster developments near planned transit stops to maximize transit-oriented development opportunities, changing permitted land uses to allow for

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

the highest intensity of development at the core of clusters in the park, and establishing a multimodal node at RTP North Station that links

the proposed light rail and regional bus service.

Figure 11 RTP Existing and Proposed Road Network

REGIONAL PLANS

The Research Triangle Region's Metropolitan Transportation Plan (Connect 2045)

The Research Triangle Region's Metropolitan Transportation Plan (MTP) is a guiding document drafted by the Research Triangle's two metropolitan planning organizations (MPOs), the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). This plan discusses the region's transportation investments and community plans for regional activity centers (e.g., Durham, Cary, Chapel Hill, Raleigh, Research Triangle Park). Some of these investments include expanding roads, local and regional transit facilities, bicycle and pedestrian facilities, technology-based



transportation services, and transportation systems management.

This plan identifies where mobility improvements need to be made to improve accessibility throughout the region and recommends ways to improve mobility and mitigate congestion on interstates and arterial roads. This plan calls for connecting people, managing congestion, and improving infrastructure, while ensuring equity is considered. Specific projects that have been identified include Durham Orange Light Rail Transit (now discontinued); Chapel Hill's North-South corridor BRT (8-mile, 16-station project in Chapel Hill); a rapid rail system linking Garner, Raleigh, and Cary; a BRT system connecting Garner, Cary, Raleigh, Morrisville, and RTP; a north-south BRT corridor in Cary; and an extension of dedicated fixed guideway for initial BRT corridors in Wake County (Figure 12).

Relevant Recommendations:

The MTP Connect 2045 plan looks to improve mobility to populations that do not drive or do not have access to private vehicles; diversify the modal mix in the region, while reducing the reliance on single-occupancy vehicles; and establish guidelines to increase the capacity of facilities rather than physically expanding them. These recommendations support the development of high-frequency transit in the region. More specifically, the document identifies projects in the Western rapid bus extension study area that should be considered for the rapid bus extensions study, which includes a rapid rail system (connecting Garner, Raleigh, Cary, Morrisville, and RTP) and a regional BRT system connecting the same municipalities.

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

Figure 12 MTP 2045 Adopted Transit Corridors and Projects



CAMPO Transportation Improvement Program/NCDOT State Transportation Improvement Program

The 2020-2029 CAMPO and North Carolina Department of Transportation State Transportation Improvement Program (STIP) is a multi-year funding program that includes various transportation improvement projects throughout the state. North Carolina's program is updated every two years. Projects that are included in the STIP must meet several requirements; a few of these requirements include the full program of projects must be fiscally constrained, public comment must be invited and considered in response to the draft STIP document, and the program of projects must be reviewed by the Federal Highway Administrations (FHWA) and the Federal Transit Administrations (FTA). Projects included in the NCDOT STIP that are located within the Wake BRT: rapid bus extension study areas can be found in Appendix A. The projects listed within each study area may influence the alignment chosen for the rapid bus extensions. This is particularly true for improvements to roadways, bicycle and pedestrian facilities, and public transit.

3 STUDY AREAS

Study areas identified for the Southern and Western Rapid Bus Extensions were refined from the respective corridor catchment service areas developed by the Wake Transit Plan. The corridor study areas encompass a subset of CAMPO-defined transportation analysis zones (TAZs) in proximity to major corridors, neighborhoods, and commercial areas between Garner and Clayton, and between Cary and RTP, respectively. For this report, the project team has evaluated the existing conditions for each of these study areas, and the characteristics of each area are assessed in comparison to Wake County and the CAMPO/DCHC MPO planning areas.

SOUTHERN RAPID BUS EXTENSION

Corridor Study Area

The Southern Corridor Rapid Bus Extension study area ("Southern study area") includes the area between Garner and Clayton, which primarily follows the US 70/US 70 Business corridor from Fayetteville Road to US 70 just south of Clayton (Figure 13). The proposed service would extend from the terminus of the Wake BRT: Southern Corridor (Raleigh to Garner) segment, near the Shoppes at Garner south of the US 401/US 70 interchange.



Figure 13 Southern Rapid Bus Extension Study Area

Garner's major commercial and retail areas include along Fayetteville Road, downtown Garner, and White Oak Crossing near the US-70/I-40 interchange. The rest of the town is primarily low-density, single family residential areas. The corridor is unincorporated east of I-40 between Garner and Clayton and is characterized by very low density residential and commercial uses. Downtown Clayton consists of a low-to-moderate density of a mix of uses. Just southeast of downtown is the Powhatan business corridor.

Potential service alignment options for this study area include segments of Garner Road, US 70/US 70 Business, Old US Highway 70, and an extension to Powhatan past Clayton.

Transit Network

GoRaleigh currently operates three routes on the western side of the Southern study area: Route 20-Garner, 7 South-Saunders, and 40X-Wake Tech Express in Garner. Route FRX also runs through the study area but does not stop in Garner. As of 2019, average daily ridership near Garner Station is relatively high, while ridership along Route 20, serving most of Garner to the US 70/I-40 interchange, is relatively low (Figure 14).



Figure 14 Southern Study Area Existing Ridership

WESTERN RAPID BUS EXTENSION

Corridor Study Area

The Western Corridor Rapid Bus Extension study area ("Western study area") includes the area between Cary and RTP, with the following boundaries: NC 55 to the west, I-40 to the north and east, and Cary Parkway to the south (Figure 15). The proposed service would extend from the terminus of the Wake BRT: Western Corridor at Cary Depot.



Figure 15 Western Rapid Bus Study Area

The Western study area consists of a mix of retail, commercial, and residential uses in downtown Cary and Morrisville, plus a high concentration of offices near and in RTP. Outside of these areas, there are primarily low-density single-family homes. Potential service alignment options for this study area include segments of Chapel Hill Road, High House Road, Davis Drive, Evans Road, and McCrimmon Parkway.

Transit Network

All eight of GoCary's bus routes currently serve the study area, operating radially outward from Cary Depot. GoTriangle Routes 300, 301, and 310 also serve Cary. On the northwest side of the study area, the Regional Transit Center (RTC) serves as GoTriangle's primary hub, with seven routes operating from there, and several more routes with direct service to RTP. The RTC and

CAMPO Rapid Bus Extension MIS and AA

Cary Depot are two of the highest ridership stops in the regional transit network. Other stops in the study area have very low ridership (Figure 16).

Figure 16 Western Study Area Existing Ridership

Note: GoCary 2021 fixed route transit network shown may not align directly with 2019 bus stop locations illustrated with ridership volumes. Additionally, the high ridership shown at Cary Towne Center is due to the NC State Fair shuttle site located at there in October 2019, when this ridership data was taken.

4 TRAVEL MARKET ANALYSIS

Before planning for rapid bus extension services, it is important to understand the underlying travel market for transit. To help understand that question, this chapter provides analyses of population and employment density, major activity centers, and travel patterns. For the purposes of demographic and travel market analyses, the characteristics of each corridor are assessed in comparison to Wake County and the CAMPO/DCHC MPO planning areas.

SOUTHERN RAPID BUS EXTENSION

Population

The population of the Southern study area, located in both Wake and Johnston Counties, is expected to more than double between 2020 and 2045, from approximately 56,000 people to 121,000 people. This growth is anticipated to be much more pronounced than that of Wake County and the region (Table 1).

Table 1 Southern Study Area Population Growth

Population	2020	2045	% Change
Study Area	56,000	121,000	116%
Wake County	1,085,000	1,723,000	59%
CAMPO/DCHC MPO Planning Areas	1,936,000	2,967,000	53%

Source: 2045 and 2050 CAMPO/DCHC MPO Metropolitan Transportation Plan (MTP)

Despite the projected high growth rate, this corridor is expected to remain primarily low-density residential over the next few decades. As shown in Figure 17, population is currently concentrated (though still low density) in Clayton and Garner, with much of the unincorporated area between the two towns having less than two residents per acre. By 2045, the density of the whole area is projected to increase slightly, with a high concentration of people near the southern terminus of the core Wake BRT: Southern Corridor service in Garner (Figure 18).

CAMPO Rapid Bus Extension MIS and AA

Figure 18 Southern Study Area Population Density (2045)

Employment

Similar to population, the study area also has a high projected rate of job growth, at 114% compared to 47% in the region as a whole (Table 2). Despite the large increase, the absolute number of jobs is relatively low, representing about 5% of the total employment in the region.

Tabla	2	Couthorn	Ctudy	A	Employ		Crowth
Iable	4	Southern	Sluuy	Alea	Emplo	yment	Growin

Employment	2020	2045	% Change
Study Area	37,000	80,000	114%
Wake County	615,000	939,000	53%
CAMPO/DCHC MPO Planning Areas	1,041,000	1,531,000	47%

Source: 2045 and 2050 CAMPO/DCHC MPO Metropolitan Transportation Plan (MTP)

Jobs are currently concentrated in Garner near the Garner Station terminus of the core Wake BRT: Southern Corridor, and along US 70 at White Oak and in downtown Clayton (Figure 19). By 2045, a high concentration of jobs is projected along Fayetteville Road at the northern part of the study area, as well as more job density near the I-40 and US 70 interchange. Clayton also shows projected increases in job density extending south towards the Powhatan area (Figure 20).

CAMPO Rapid Bus Extension MIS and AA

Major Activity Centers

Figure 21 shows the major activity centers—social services, major employers, medical facilities, recreation facilities, schools, shopping and grocery stores, and transit hubs—in the Southern study area. These major trip generators are concentrated in Garner and Clayton, primarily along the US 70/US 70 Business corridor. Powhatan, at the southeastern tip of the study area, has some major employers but no other major activity centers.

CAMPO Rapid Bus Extension MIS and AA

Figure 21 Southern Study Area Major Activity Centers

Travel Flows

Travel flows show the estimated number of trips between two locations (a trip 'origin' and 'destination' or "O-D pair") regardless of mode and help to highlight where new transit services may be beneficial. As shown in Figure 22, the project team divided the study area into Travel Flow Analysis Zones by grouping MTP 2045-defined TAZs by approximate towns and communities. Within the study area, 2016 travel patterns are strongest locally around Clayton. By 2045, travel patterns are strongest between Garner Station (in the northwestern part of the town), White Oak, and to the southwest of downtown Clayton, as well as from downtown Clayton to the south and east.

Figure 23 shows the estimated travel flows in 2016 and 2045 between the study area and other areas in the region, which are aggregated into larger analysis zones. Total trips are increasing between 2016 and 2045, with the strongest and growing flows between downtown Raleigh and Garner Station, and from the largely residential areas of southern Wake County and northern Johnston County to Garner Station and White Oak.

CAMPO Rapid Bus Extension MIS and AA

Figure 22 Southern Study Area Travel Flows (2016 v. 2045)

CAMPO Rapid Bus Extension MIS and AA

WESTERN RAPID BUS EXTENSION

Population

The Western study area is located in a relatively populous part of Wake County, with over 116,000 residents in 2020. The study area partially extends into Durham County near the RTP terminus, as well. The population is expected to increase by 17% by 2045, at a rate lower than the rest of Wake County and the region (Table 3).

Table 3 Western Study Area Population Growth

Population	2020	2045	% Change
Study Area	116,000	136,000	17%
Wake County	1,085,000	1,723,000	59%
CAMPO/DCHC MPO Planning Areas	1,936,000	2,967,000	53%

Source: 2045 and 2050 CAMPO/DCHC MPO Metropolitan Transportation Plan (MTP)

As shown in Figure 24 and Figure 25, the distribution of population in the study area is projected to remain similar between 2020 and 2045. Parts of Cary, Morrisville, and south of RTP have the highest population density. The rest of the area generally has low population density.

Figure 24 Western Study Area Population Density (2020)

CAMPO Rapid Bus Extension MIS and AA

Figure 25 Western Study Area Population Density (2045)

Employment

Employment in the study area, located mostly in Wake County and partially in Durham County, is projected to grow at a faster rate than population, with a 47% increase projected between 2020 and 2045. This employment growth rate is slightly lower than the Wake County rate, but on par with the regional CAMPO/DCHC MPO Planning Areas employment growth rate (Table 4).

Table 4	Western	Study	Area	Emplo	vment	Growth
		- coord			J	

Employment	2020	2045	% Change
Study Area	120,000	177,000	47%
Wake County	615,000	939,000	53%
CAMPO/DCHC MPO Planning Areas	1,041,000	1,531,000	47%

Source: 2045 and 2050 CAMPO/DCHC MPO Metropolitan Transportation Plan (MTP)

In 2020, jobs in the study area are concentrated in RTP, around Raleigh-Durham International airport (RDU), and in parts of Morrisville and Cary (Figure 26). By 2045, the same areas are projected to have even higher job density, with increased job density all along the NC 54 corridor (Figure 27).

CAMPO Rapid Bus Extension MIS and AA

Figure 27 Western Study Area Employment Density (2045)

Nelson\Nygaard Consulting Associates, Inc. | 4-10

Major Activity Centers

Major activity centers potentially draw high levels of transit demand since they are locations that current and new transit riders may frequent. As shown in Figure 28, activity centers are scattered throughout the area. Major employers are primarily in and around RTP. Shopping and grocery centers and medical facilities are along the NC 54 corridor and west of Morrisville and Cary.

Travel Flows

Travel flows show predicted travel behavior across all modes. Figure 29 shows the predicted travel flows in the study area in 2016 and 2045. In 2016, the strongest flows are surrounding southern Morrisville area. By 2045, the strongest flows are between RTP and the neighborhoods just southwest of RDU, between southern Morrisville and western Morrisville, and between southern Morrisville and northern Cary. Figure 30 shows the flows between the study area and the rest of the region. The strongest and growing regional flows are between RTP and southern Durham County, between Apex/southwestern Wake County and the areas south/west of Morrisville, and between southern Wake County and southern Cary.

CAMPO Rapid Bus Extension MIS and AA

Figure 29 Western Study Area Travel Flows (2016 v. 2045)

CAMPO Rapid Bus Extension MIS and AA

5 ENVIRONMENTAL REVIEW

For each study area, the project team conducted a high-level environmental review to identify natural and community resources and constraints. This initial review was designed to identify potential issues early in the screening process. A more thorough environmental review will be needed once a preferred alternative is selected and is advanced towards design and construction.

This initial environmental review consists of two components:

- Environmental Screening baseline conditions based on locations of libraries, schools, fire stations, law enforcement stations, medical facilities, parks and recreation facilities, hazardous waste sites, public water supply sources, cemeteries, historic and cultural resources, hydrology, chances of flooding, and wetlands.
- Environmental Justice Screening areas with high concentrations of marginalized populations, specifically residents in poverty, people of color, households without access to vehicles, and limited English households.

SOUTHERN RAPID BUS EXTENSION

Environmental Screening

Within the Southern study area, community resources such as libraries, schools, and parks are clustered near Clayton and just southeast of Garner along US 70 (Figure 31). There are many public water supply sources along US 70 Business, close to the county border. There are also some small areas of high flood risk along the wetland areas south of the highway. Several hazardous waste sites are clustered on the western side of Garner and at the terminus of the core Wake BRT: Southern Corridor, as well as along US 70 Business in Johnston County. Parts of Garner and Clayton are designated as historic/cultural districts as well.

CAMPO Rapid Bus Extension MIS and AA

Environmental Justice Screening

As shown in Figure 32, the highest poverty neighborhoods are concentrated at the northwestern end of the study area, near Garner Station and the proposed downtown Garner commuter rail station with 33% or more residents with incomes below 150% of the poverty level. There are neighborhoods with 13% or more residents below 150% of the poverty level all along US 70/70 Business and Old US Highway 70.

Neighborhoods with the highest percentage of residents of color are mainly located at the northern end of the study area, north of US 70, and along I-40 (Figure 33). The southernmost end of the study area has the lowest proportion of residents of color (includes all Hispanic and non-white residents), at less than 21% of the population.

Vehicular access among households is high in most of the study area (Figure 34). Along the west side of I-40, the population has relatively lower rates of access to a vehicle, as well as around US 401 and along a stretch of US 70 Business north of NC 42 in Johnston County.

CAMPO Rapid Bus Extension MIS and AA

Figure 32 Southern Study Area Poverty Level

Figure 33 Southern Study Area Residents of Color

CAMPO Rapid Bus Extension MIS and AA

Figure 34 Southern Study Area Vehicle Access

Additionally, as shown in Figure 35, neighborhoods in the western and southern areas of Garner have higher percentages of households with limited levels of English proficiency. There are also higher levels of limited English proficiency households north of the proposed Auburn commuter rail station and in Johnston County along US 70 Business and west of NC 42. Spanish-speaking households represent the highest proportion of limited English households. As shown in Figure 36, the distribution of Spanish-speaking households generally aligns with that of all limited English households.

CAMPO Rapid Bus Extension MIS and AA

Figure 36 Southern Study Area Limited English, Spanish-Speaking Households

WESTERN RAPID BUS EXTENSION

Environmental Screening

The Western study area has community resources such as schools and recreation spread throughout the corridor rather than concentrated together. There are significant areas with a 0.2% annual chance of flooding, especially at the north end of the corridor and along the wetlands near Morrisville. Hazardous waste sites exist throughout the study area, mainly along NC 54 and in the Durham County portion of the study area.

Environmental Justice Screening

As shown in Figure 38, the eastern parts of the town of Cary have the highest proportion of residents with incomes below 150% of the poverty level in the study area. Other neighborhoods in northern and southern Cary also have more than a quarter of residents in poverty. Other large areas with poverty rates above 13% include north of downtown Morrisville on the east side of NC 54 and along the western edge of the study area between Morrisville Carpenter Road and the Wake and Durham County border.

The neighborhoods between RTP and Morrisville, as well as western Cary, have high percentages of residents of color (Figure 39). Only a few small neighborhoods have fewer than 20% residents of color, primarily along the southern edge of the study area.

Most households in the study area have access to at least one vehicle. Areas where over 21% of households do not have access to a vehicle include north of downtown Morrisville on the east side of NC 54 and areas near downtown Cary (Figure 40). Additionally, limited English speaking households are largely located in Cary and Morrisville (Figure 41). Neighborhoods with higher percentages of Spanish speaking households with limited English proficiency are concentrated in the southern portion of the study area, notably in neighborhoods bordering the core Wake BRT: Western Corridor (Figure 42).

CAMPO Rapid Bus Extension MIS and AA

Figure 40 Western Study Area Vehicle Access

CAMPO Rapid Bus Extension MIS and AA

Figure 42 Western Study Area Limited English, Spanish-Speaking Households

6 NETWORK OPPORTUNITIES

As noted in Chapter 3, rapid bus service within the Southern and Western rapid bus extension study areas is most likely to operate along primary arterials and major thoroughfares offering the fastest potential travel speeds and connectivity with surrounding activity centers and O-D trip generators.

This chapter provides an assessment of (existing and/or planned future) roadway and transit network conditions within the proposed corridor study areas to identify potential opportunities for rapid bus and other transit priority, speed, and reliability treatments. The project team assessed the physical characteristics of each corridor including roadway geometry, signalization, traffic operations and turning movements, interchanges, and other physical constraints that are relevant to the roadway capacity or capability of supporting rapid bus service extensions.

SOUTHERN RAPID BUS EXTENSION

Traffic Conditions

The Triangle region is expected to grow rapidly over the next few decades, resulting in increased travel volumes by 2045. Within the Southern study area, I-40 and parts of Garner are currently heavily congested. By 2045, most major highways and corridors west of the planned I-540 extension (west of existing Guy Road) are expected to be heavily congested, including US 70, I-40, Fayetteville Road, and Garner Road (Figure 43). On the eastern half of the study area around Clayton, congestion is expected to be much lower, with moderate levels of congestion on segments of Old US Highway 70 and US 70 Business.

CAMPO Rapid Bus Extension MIS and AA

Potential Roadway Segments

The proposed roadway segments described below are included within this analysis of existing conditions to identify and convey roadway features on existing facilities that may be considered for rapid bus service extensions in the future. The purpose of this analysis is to determine which roadway segments within each study area have features that support Rapid Bus service and utilization.

The Southern Corridor primarily follows the US 70/US 70 Business corridor from Fayetteville Road to US 70 just south of Clayton (Figure 13). Garner Road, between Yeargan Road and downtown Clayton, parallels US 70 and US 70 Business as a potential alternate roadways for routing of rapid bus service, as shown in Figure 44. Several options for routing of rapid bus service between the Garner Station terminus of the core Wake BRT: Southern Corridor segment and the primary US 70/US 70 Business or Garner Road segmentation may be considered; as well as extension of service south of the town of Clayton to reach the potential employment center anchor in Powhatan.

Figure 44 Southern Rapid Bus Extension Roadway Segmentation

US 70/US 70 Business

Table 5Table 5 Primary Southern Rapid Bus Extension Roadway Segmentation – US 70 describes the segments of US 70/US 70 Business within the Southern Extension study area, segmented by relevant changes in lane configuration and roadway features potentially affecting implementation of rapid bus service. The US 70 segment, west of the US 70/US 70 Business

split, varies from 2 to 3 lanes in each direction, with a paved median and protected turning movements. As the segments transition from US 70 to US 70 Business, it becomes a limited access 2 x 2 lane facility in both directions with an unimproved divided median and no at-grade intersections to allow left turns, with a few exceptions at major interchanges such as Coldwater Drive/Loop Road, Jones Sausage Road/White Oak Road, and NC 42.

The lane configuration along US 70 Business expands to 3×3 with protected left turn movements and signalized intersections as the roadway approaches the town of Clayton but constricts back to 2×2 east of the NC 42 interchange as it continues southeast to employment centers in the Powhatan area. For most of its length, the corridor is divided by a grass median, and left turns are also limited.

Roadway	Begin	End	Lane Configuration	Roadway Features
	Mechanical Boulevard	Coldwater Drive/ Loop Road (Garner Towne Square)	3 x 3 highway with paved median	 protected left turns
US 70	Coldwater Drive/ Loop Road (Garner Towne Square)	New Rand Road	2 x 2, divided at-grade with unimproved median	 no left turns highway (clover leaf) interchanges
	New Rand Road	Jones Sausage Road / White Oak Road	3 x 3, divided with paved median	 protected left turns
US 70	Jones Sausage Road / White Oak Road	Shotwell Road	2 x 2, divided with paved median	 includes I-40 interchange lane drops no left turns no signals from I-40 to Guy Road
Business	Shotwell Road	NC 42	3 x 3, paved median with breaks	 includes Downtown Clayton drops to two lanes in SB direction from Amelia Church Rd to Lombard St
	NC 42	Powhatan Road	2 x 2, divided with unimproved median	 protected left turn lanes

					•		
Table 5 Primary	v Southern Ra	nid Bus	Extension	Roadway	Seamen	tation – US 7	70
	,		=/((0))01011	itoaanay			-

Commercial development and access needs along the US 70 corridor between the Garner Station terminus to the I-40 interchange may discourage opportunities for dedicated transit lanes in the median. Facility widening to accommodate new transit-only lanes (TOLs) is possible but may also be disruptive to existing resources and uses. The high level of auto traffic and congestion may also make it challenging to convert existing general purpose traffic lanes to TOLs. Speed and reliability investments in the segment may be limited to technology (e.g., transit signal priority) and location-specific transit priority treatments such as transit queue jumps and/or business access and transit (BAT) lanes.

The unimproved median dividing the US 70 Business corridor between I-40 and the Guy Road interchange may potentially support dedicated median transit lanes through a heavily congested segment of the corridor. Lane drops and median turning movements from Guy Road to Shotwell Road may preclude the extension of a median-dedicated busway; however, speed and reliability technology investments could improve rapid bus operations though the area. Moderate traffic

conditions and expanded travel lane capacity through the town of Clayton could support continuation of location-specific speed and reliability investments and technology.

Should rapid bus service extend beyond Clayton and towards Powhatan, the low traffic congestion along this segment of US 70 Business (with the exception of the NC 42 interchange) may not require installation of dedicated transit facilities to maintain speed and reliability performance goals but may still accommodate improvements such as transit signal priority (TSP), improved station area accessibility infrastructure, and preservation of right of way for future improvements.

Garner Road

Table 6 describes the segmentation, by lane configurations and roadway features, of potential routing of the southern extension along Garner Road (or Old US Highway 70). A potential Southern rapid bus extension along Garner Road would operate along the undivided, 1 x 1 lane configuration facility until its intersection with US 70 Business, south of downtown Clayton. Transit service may continue south along US 70 Business, where the lane configuration is 2 x 2 to Powhatan Road. The US 70 Business segment of the corridor also features dedicated median turn lanes and right turn lanes.

For most of its length, there are curb openings for access to adjacent residential and commercial developments. The segments identified in the table are used to describe the lane configurations and roadway features along the corridor and at major intersections.

Roadway	Begin	End	Lane Configuration	Roadway Features
Mechanical Boulevard	US 70	McCormick Street	1 x 1, divided with striped median turn lane	 lane drops after McCormick St
Mechanical Boulevard/S Garner Loop Road	McCormick Street	Yeargan Road	1 x 1, undivided	 missing road segment over Timber Drive right turn lane NB
Yeargan Road	Mechanical Boulevard	W Garner Road	1 x 1, undivided	 railroad crossing
W Garner	Yeargan Road	St Mary's Street	1 x 1, undivided	 signaled intersection at Vandora Springs Road and Benson Road left turn lanes SB
Nudu	St Mary's Street	New Rand Road	1 x 1, divided with striped median turn lane	 pedestrian facilities
E Garner Road	New Rand Road	Rock Quarry Road	1 x 1, undivided	 lane drops right turn lanes NB Rock Quarry Road merges with E Garner Road
	Rock Quarry Road	Pine Hallow Drive	1 x 1, undivided	 lane drops

Table 6 Southern Rapid Bus Extension Roadway Segmentation – Garner Road

CAMPO Rapid Bus Extension MIS and AA

Roadway	Begin	End	Lane Configuration	Roadway Features
Old US Hwy 70	Pine Hallow Road	Irondale Drive	1 x 1, undivided	 signaled intersection at Shotwell Road and Lombard Street
W Main Street/E Main Street	Irondale Drive	Champion Street	1 x 1, undivided	includes Downtown Claytonon street parking
US 70 Business	Champion Street	Powhatan Road	2 x 2, divided with paved median	 protected left turn lanes pedestrian facilities at Champion Street intersection

The single-lane configuration of Garner Road would require widening to support installation of dedicated transit lanes. The ability to widen Garner Road is constrained on the south side along the majority of the corridor by the existing North Carolina Railroad (NCRR) right of way. The highly undeveloped land uses on the north side of Garner Road may be able to accommodate widening; however, the existing residential and commercial stakeholders may be impacted. Relatively low traffic volumes along the facility may support reliable travel speeds; however, when combined with limited signalized intersections and lack of existing pedestrian facilities, pedestrian safety and access to transit are potential risks. Rapid bus station platforms construction would also require new pedestrian crossing protection, supporting utility infrastructure, and additional accessibility amenities.

Should rapid bus service extend beyond Clayton and towards Powhatan, the low traffic congestion along this segment of US 70 Business (with the exception of the NC 42 interchange) may not require installation of dedicated transit facilities to maintain performance goals but may still accommodate improvements such as transit signal priority (TSP) and improved station area accessibility infrastructure.

WESTERN RAPID BUS EXTENSION

Traffic Conditions

As if 2016, there are some pockets of congestion throughout the study area, as well as I-40 heavily congested. By 2045, traffic volumes are high along the highways (I-540, I-40, and NC-54) that border the study area (Figure 45). Within the study area, congestion is relatively high along major arterials between Cary and RTP including Chapel Hill Road, parts of Evans Road and Davis Drive. Smaller streets generally have lower congestion.

CAMPO Rapid Bus Extension MIS and AA

Figure 45 Western Study Area Traffic Congestion (2016 v. 2045)

Potential Roadway Segments

The proposed service would extend from the terminus of the core (Raleigh to Cary) Wake BRT: Western Corridor at Cary Depot to the proposed Regional Transit Center site in RTP near the intersection of NC 54 and S Miami Boulevard, as well as a possible terminus at the NC 54 and Davis Road intersection. Potential rapid bus service routing options for this study area include (but are not limited to) segments of Chapel Hill Road, High House Road and Davis Drive, and Evans Road.

Figure 46 Western Rapid Bus Extension Potential Roadway Segments

Chapel Hill Road

Table 7 describes the western extension's routing options utilizing Chapel Hill Road, segmented by major intersection as well as relevant changes in lane configuration and roadway features potentially affecting implementation of rapid bus service between Cary and RTP. After departing the Cary Depot terminus of the Wake BRT: Western Corridor segment, the western extension's most direct routing option is along Chapel Hill Road via N Harrison Avenue.

The Chapel Hill Road corridor currently varies between an undivided, 1 x 1 lane configuration to a 2 x 2 lane configuration with a striped or raised median in both directions to allow left turn movements. Traffic striping currently delineates lane transitions and drops within the corridor. For most of its length, the corridor has a variety of roadway features such as pedestrian facilities, protected turn lanes, and bicycle facilities.

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

Roadway	Begin	End	Northbound/Southbound Lane Configuration	Roadway Features
	N Harrison Avenue	Middleton Avenue	1 x 1, undivided	 right turn lanes
	Middleton Avenue	NW Maynard Road	1 X 2, undivided – two lanes NB	 signaled intersection and crosswalks at Maynard Road
	NW Maynard Road	Premier Key Drive	1 x 1, divided with paved median	 lane drop after Maynard Road NB
	Premier Key Drive	NW Cary Pkwy	1 x1, undivided	 signaled intersection at Cary Parkway
Chapel Hill Road	NW Cary Pkwy	Rise Drive	2 x 2, undivided	 signaled intersections at Market Center Drive and Morrisville Parkway with pedestrian facilities
	Rise Drive	Watkins Road	1 x 1, divided with striped median turn lane	 lane drops
	Watkins Road	NC 540	1 x 2, divided with paved median – two lanes NB	 pedestrian facilities (e.g., sidewalks, crosswalks) lane drops
				 I-540 interchange
Chapel Hill Road/Miami Boulevard	NC 540 Interchange	NC 54	2 x 2, divided with stripped median turn lane	 right turn lanes
S Miami Boulevard/NC 54	Chapel Hill Road	Davis Drive	2 x 2, divided with striped median turn lane	 Pedestrian facilities

Table 7 Primary Western Rapid Bus Extension Roadway Segmentation – Chapel Hill Road

Based on the segment roadway features described in Table 7, transit priority opportunities for the Chapel Hill Road segments include queue jumps and dedicated bus lanes. The narrow right of way of the existing roadway between N Harrison Avenue and NC 540 would challenge the potential to support any dedicated transit priority lanes (TPL) without facility widening. The corridor is largely signalized, supporting opportunities for installation of TSP speed and reliability treatments, where appropriate. Additional opportunities include intermodal and multimodal bus stop connectivity infrastructure at major destinations along the corridor, such as at Park West Village and Q2 Solutions headquarters.

As identified in Chapter 2 and below (Figure 9) however, the Chapel Hill Road Mobility Study is considering a significant investment to widen the facility between NE Maynard Road and NW Maynard Road, including the segment of the proposed Western extension between N Harrison Avenue and NW Maynard Road. Capital investments in pedestrian and multimodal treatments near potential rapid bus station locations, in addition to the possibility of adding new travel lanes, could leverage programmed funding to provide placemaking for future high-capacity transit investments.

CAMPO Rapid Bus Extension MIS and AA

Buck Creek Greenwy Reach Weith Park Complete Hill Reach Complete Hill

Figure 9 Chapel Hill Road Corridor

The 2 x 2 lane configuration with divided median extending north to approximately Rise Avenue supports continuation of opportunistic speed and reliability improvements such as TSP, station platform boarding areas, and transit queue jumps, leveraging the existing built environment. Miami Boulevard from Carrington Mill Boulevard to the site of the proposed Regional Transit Center in RTP and Davis Road terminus would also support similar treatments. As the corridor narrows to an undivided 1 x 1 or 1 x 2 lane configuration north of Rise Avenue to Carrington Mill Boulevard, there are limited opportunities for transit priority or speed and reliability improvements as well as existing pedestrian infrastructure to support potential rapid bus station access.

Evans Road

The potential segments of Evans Road that may be considered for rapid bus service begin at N Harrison Avenue, operating along Evans Road and McCrimmon Parkway until its intersection with Chapel Hill Road. The Evans Road corridor has a 2 x 2 lane configuration in both directions with the exception of the McCrimmon Parkway and Watkins Road segment, located near the northern terminus at RTP, where the lane configuration is 1 x 1. This segment is currently under construction, and final configuration will need to be assessed for rapid bus compatibility once it is complete. Furthermore, the corridor includes many multi-modal features such as pedestrian and bicycle facilities consistently along its alignment.

Rapid bus service may consider several routing options when traveling the 2 to 3-mile distance between approximately NC 54 and McCrimmon Parkway to the proposed terminus at NC 54 and Davis Drive. Optional routing may utilize:

- Chapel Hill Road/S Miami Boulevard/NC 54 between McCrimmon Parkway and Davis Drive (similar to the Chapel Hill segmentation); or
- Airport Boulevard to NC 54 to Davis Drive, which would also serve the existing Regional Transit Center (RTC) at 901 Slater Road.

The segmentation for these roadway options is described in Table 8.

CAMPO Rapid Bus Extension MIS and AA

Roadway	Begin	End	Lane Configuration	Roadway Features
N Harrison Avenue	Chapel Hill Road	NE Maynard Road	2 x 2, undivided	right turn laneslane drops
NW Maynard Road	N Harrison Avenue	Evans Road	2 x 2, divided with unimproved median	 mid-block crosswalks
	NW Maynard Road	Quade Drive	2 x 2, divided with striped median turn lane	 NB/SB shared bike lane (sharrows)
Evans Road	Quade Drive	Sage Commons Way	2 x 2, undivided	 lane drops left turn lanes signaled intersection at Weston Parkway
	Sage Commons Way	Aviation Parkway	2 x 2, divided with paved median	 mid-block crosswalks (Hatcher Creek Greenway)
McCrimmon Parkway (under construction but substantially complete)	Aviation Parkway	Chapel Hill Road	2 x 2, divided with paved median	 protected left turn lanes
	McCrimmon Parkway	Watkins Road	1 x 1, divided with stripped median turn lane	 lane drops
Chapel Hill Road	Watkins Road	NC 540 Interchange	1 x 2, divided with paved median	 pedestrian facilities (e.g., sidewalks, crosswalks) lane drops I-540 interchange
	NC 540 Interchange	NC 54	2 x 2, divided with stripped median turn lane	 right turn lanes
S Miami Boulevard	Chapel Hill Road/Miami Boulevard	Davis Drive	2 x 2, divided with stripped median turn lane	 pedestrian facilities
Airport Boulevard	McCrimmon Parkway	Slater Road	2 x 2, divided with stripped median turn lane	 right turn lanes

Table 8 Western Rapid Bus Extension Roadway Segmentation – Evans Road

CAMPO Rapid Bus Extension MIS and AA

Roadway	Begin	End	Lane Configuration	Roadway Features
NC 54	Airport Boulevard	Davis Drive	1 x 1, undivided	 limited 2 x 2 segments at major employers (Airport Boulevard, Carrington Mills, and Emperor Boulevard)

Based on the segment roadway features described in Table 8, transit priority opportunities for the Evans Road roadway segments could include dedicated bus lanes and bus stop infrastructure at major destinations along the corridor such as the Southport Business Park. With projected congestion levels at or exceeding capacity, existing signalization within the segments would also support location-specific speed and reliability treatments such as TSP and transit queue jump lanes, if a dedicated lane solution is not recommended.

Similar to the Chapel Hill route, potential roadway segmentation along Chapel Hill Road/S Miami Boulevard/NC 54 north of McCrimmon Parkway have limited opportunities for transit priority or speed and reliability improvements as well as minimal existing pedestrian infrastructure to support potential rapid bus station access. The optional route along Airport Boulevard and NC 54 is lightly traveled and signalized, which may support reliable travel times in the absence of the ability to install more substantial transit priority treatments.

High House Road

Potential routing of rapid bus along High House Road begins at Harrison Avenue, operating along High House Road (via W Chatham Street) and Davis Drive to the intersection with NC 54. The route would circulate to the HUB Research Triangle Park (RTP) area along NC 54. Without introducing specific route deviations from Davis Drive (at Hopson Road, NC 54, or other parallel facility), the High House Road roadway segments would not directly serve the existing or proposed Regional Transit Center (RTC) locations. Table 9 describes the roadway segmentation for the western extension.

The roadway segmentation has a 2 x 2 lane configuration in both directions, with the exception of the first two segments along Harrison Avenue and W Chatham Street near the southern terminus of the Wake BRT: Western Corridor, where the lane configuration is 1 x 1. For most of its length, the corridor has a variety of roadway features such as pedestrian facilities, protected left turn lanes, bicycle facilities, signaled intersections, and designated right turn lanes.

Roadway	Begin	End	Lane Configuration	Roadway Features
W Chatham Street	Harrison Avenue	Old Apex Road	1 x 1, undivided	 right turn lanes roundabout with crosswalks at Old Aped Road NB/SB shared bike lanes (sharrows)
	Old Apex Road	High House Road	1 x 1, divided with stripped median turn lane	 NB/SB shared bike lanes (sharrows) four-way stop and crosswalks at High House Road intersection
High House Road	W Chatham Road	Old Apex Road	2 x 2, divided with raised or paved median	 NB/SB shared bike lane (sharrows) mid-block crosswalks with pedestrian refuge on median left turn lanes

Table 9 Western Rapid Bus Extension Roadway Segmentation – High House Road

CAMPO Rapid Bus Extension MIS and AA

Roadway	Begin	End	Lane Configuration	Roadway Features
				 railroad crossing and signaled intersection at Old Apex Road
	Old Apex Road	Cary Parkway	2 x 2, divided with paved median	 NB/SB shared bike lane (sharrows) signaled intersection at Maynard Road
	Cary Parkway	Davis Drive	2 x 2, unimproved median	 signaled intersections SW Cary Parkway with pedestrian facilities NB/SB shared bike lane (sharrows) lane drops
	High House Road	Parkside Valley Drive	2 x 2, divided with paved median	left turn laneslane dropspedestrian facilities
Davis Drive	Parkside Valley Drive	Park Knoll Drive	2 x 2, divided with grass median	protected left turn lanesmedian width varies
	Park Knoll Drive	NC 54	2 x 2, divided with paved median	left turn laneslane dropspedestrian facilities
NC 54	Davis Drive	S Miami Boulevard	2 x 2, divided with stripped median turn lane	 pedestrian facilities

Multiple segments of High House Road and Davis Drive are projected to experience traffic congestion or operate near their planned capacity in the future. The possibility of converting existing mixed traffic lanes to dedicated bus lanes may be challenged due to the high traffic volumes. The majority of these roadways also have established residential and commercial land uses along them, limiting the ability to widen facilities without impacts to existing stakeholders.

The constrained built environment reinforces the need for installation of transit speed and reliability improvements to support potential rapid bus service such as TSP and transit queue jump lanes (where appropriate) if a dedicated lane solution is not recommended. The presence of sidewalk and signalized intersections throughout the corridor also supports strategic location of rapid bus station platforms and passenger accessibility to potential stations.

7 FINDINGS AND NEXT STEPS

The existing and future demographic profile, along with the infrastructure and traffic operating conditions of the study corridors, will inform priorities for incorporation of potential transit priority speed and reliability elements into future roadway projects. It will also highlight opportunities for infrastructure sharing, if necessary, to support operation of BRT or other rapid transit services.

The potential routing options identified within this assessment of existing conditions will be refined and screened during future phases of this study for evaluation of detailed alternatives.

SOUTHERN RAPID BUS EXTENSION CHALLENGES AND OPPORTUNITIES

Building upon Wake BRT: Southern Corridor from Garner to Clayton would support the explosive population growth projected for the corridor that would otherwise continue to generate strong auto-oriented travel through the area. It is an opportunity to provide reliable transit connectivity to activities of daily living centered in Clayton, as well as connect communities in the Johnston County to job centers in Garner and Raleigh and for communities of color and low-income, transit-dependent households east of Garner Station with limited access to mobility services.

US 70/US 70 Business

US 70/US 70 Business is a corridor that has the potential to accommodate rapid transit operations due to the facility footprint, wide median, lane capacity, and direct alignment between Garner Station and Clayton. Some of the opportunities for transit priority may include dedicated bus lanes and infrastructure at major destinations (e.g., Garner Towne Square, White Oak Crossing). As noted above, the corridor has several lane drops as the configuration transitions from 3 to 2 lanes in multiple locations. Transit signal queue jumps may be considered at signalized intersections where lane drops occur.

There are features along the corridor that may pose challenges to station area development and passenger accessibility, such as the lack of pedestrian facilities (e.g., sidewalks, crosswalks), signalized intersections, and lane drops along the corridor.

Garner Road (Old US Highway 70)

Based on the segment roadway features described in Table 6, transit priority opportunities for the Garner Road corridor may include roadway expansion, queue jumps, and bus stop infrastructure in downtown Clayton. Although this segmentation is suited for bus travel, there are roadway features along the corridor that decrease its attractiveness, such as the railroad crossing at Yeargan Road the lack of pedestrian facilities (e.g., sidewalks, crosswalks) and signalized intersections, and the 1 x 1 configuration.

WESTERN RAPID BUS EXTENSION CHALLENGES AND OPPORTUNITIES

Extension of rapid bus service through the Western rapid bus extension study area would create an important rapid transit connection between the core Wake BRT: Western Corridor service and regional employment centers near Research Triangle Park. Residents in the Durham area may also utilize the service as a point of entry into the GoRaleigh transit network to connect to activity centers in the city of Raleigh or access the larger regional transit network. Depending on the phased timing of other capital investments in the regional high-capacity transit network, the Western extension may consider various station locations for its northern terminus, including the existing RTC, the HUB RTP site, and future employment centers at the NC 54 and Davis intersection.

Chapel Hill Road

The multimodal investments proposed by the Town of Cary along the southern end of the Chapel Hill Road segmentation would support rapid bus operations and location-specific speed and reliability improvements. However, the variable (and often narrow) right of way width and lane configurations along the northern segments of Chapel Hill Road and NC 54/S Miami Avenue may present challenges to the installation of continuous and consistent dedicated bus lanes and transit priority treatments. The presence of the NCRR along the west side of NC 54 between NC 540 and Park West Village may also affect the future transit-oriented development (TOD) potential and station area accessibility along segments of the corridor.

Evans Road

Potential roadway segments along the Evans Road option support the extension of transit operations to RTP. Although many segments are projected to experience moderate to high levels of congestion in the future, the existing infrastructure can accommodate installation of transit speed and reliability signal technology and queue jumps where appropriate. The Evans Road roadway segmentation also includes several sub options as service approaches the northern extent of the corridor that may provide flexibility to accommodate connections with major employers outside of the NC 54 catchment, as well as existing RTC services and facilities.

High House Road

Based on the segment roadway features described in Table 9, transit priority opportunities for the High House and Davis Road roadway segmentation includes dedicated bus stop infrastructure at existing pedestrian facilities and at major destinations and employers along the corridor such as the Bradford Shops, Davis Park, and Davis Commons Shopping Center. Opportunistic transit speed and reliability investments, capitalizing on existing infrastructure (signalization and lane configurations), may also be supported.

APPENDIX A: TIP / STIP PROJECTS OF RELEVANCE

Southern Corridor NCDOT STIP Projects

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
U-5943	Southern	CLAYTON	CLAYTON SIGNAL SYSTEM	HIGHWAY	JOHNSTON	2,305	2025
R-3410	Southern	NC 42	NC 50 TO US 70 BUSINESS WIDEN TO MULTI-LANES	HIGHWAY	JOHNSTON	76,059	2029
U-6113	Southern	US 70	GREENFIELD PKWY TO NC 42. UPGRADE RDWY TO SUPERSTREET	HIGHWAY	WAKE, JOHNSTON	56,000	
W-5805H	Southern	SR 1004 GARNER ROAD; TIMBER EAST	SR 2539 (YEARGAN ROAD), SR 2564 (CREECH ROAD), AND SHENSTONE BOULEVARD INTERSECTIONS IN GARNER. UPGRADE TRAFFIC SIGNALS	HIGHWAY	WAKE	75	2023
U-6194	Southern	VARIOUS	GARNER CITYWIDE SIGNAL SYSTEM	HIGHWAY	WAKE	2,529	2028
U-5744	Southern	US 70/NC 50	SR 2026 (HAMMOND ROAD) / SR 2812 (TIMBER DRIVE) IN GARNER. CONVERT AT-GRADE INTERSECTION TO INTERCHANGE	HIGHWAY	WAKE	16,190	2027
B-5987	Southern	US 401	REPLACE BRIDGES 910115 AND 910117 OVER NORFOLK SOUTHERN RAILROAD AND AN UNNAMED CREEK	BRIDGE	WAKE	18,180	2024

CAMPO Rapid Bus Extension MIS and AA

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
U-6116	Southern	US 401	SR 1375 (SIMPKINS ROAD) TO SR 2538 (MECHANICAL BOULEVARD) IN GARNER. WIDEN TO 6 LANES AND CONVERT TO SUPERSTREET	HIGHWAY	WAKE	48,400	2029
U-5302	Southern	US 401	SOUTH OF SR 1006 (OLD STAGE ROAD) TO SOUTH OF SR 2538 (MECHANICAL BOULEVARD) / GARNER STATION BOULEVARD IN GARNER. CONVERT TO SUPERSTREET	HIGHWAY	WAKE	30,027	2022
U-6099	Southern	SR 5220 (JONES SAUSAGE ROAD)	SR 1004 (EAST GARNER ROAD) TO I-40 IN GARNER. WIDEN ROADWAY FROM SOUTH OF SR 2585 (WILMINGTON ROAD) TO I-40, INCLUDING ACCESS POINT IMPROVEMENTS, AND CONSTRUCT IMPROVEMENTS AT SR 1004 INTERSECTION AND I-40 INTERCHANGE	HIGHWAY	WAKE		
EB-6016	Southern	EAST CLAYTON CONNECTOR GREENWAY	SR 2851 (EAST FRONT STREET) TO SR 1902 (GLEN LAUREL ROAD). CONSTRUCT GREENWAY.	BICYCLE AND PEDESTRIA N	JOHNSTON	1,510	2028
U-6223	Southern	SR 1560 (RANCH ROAD EXTENSION)	US 70 BUS/NC 42 TO SR 1560 (RANCH ROAD) IN CLAYTON. NEW LOCATION EXTENSION OF RANCH ROAD	HIGHWAY	JOHNSTON	9,558	2022

CAMPO Rapid Bus Extension MIS and AA

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
P-5738	Southern	NORTH CAROLINA RAILROAD / NORFOLK SOUTHERN H LINE	SR 2713 (VANDORA SPRINGS ROAD) IN GARNER. CONSTRUCT GRADE SEPARATION AND CLOSE CROSSING 735324J.	RAIL	WAKE	13,300	2028

Existing Conditions Report CAMPO Rapid Bus Extension MIS and AA

Western Corridor NCDOT STIP Projects

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
TO-6166	Western	VARIOUS	BUS RAPID TRANSIT SERVICE, MORRISVILLE TO CLAYTON. CONSTRUCT INFRASTRUCTURE, PURCHASE VEHICLES, AND ESTABLISH SERVICE	PUBLIC TRANSIT	WAKE, JOHNSTON	115,001	2028
HO- 0001AA	Western	NCSU CAMPUS	CONNECTED VEHICLE INFRASTRUCTURE, TRAFFIC SIGNAL SYSTEM IMPROVEMENTS, SAFETY APPLICATION AND SYSTEMS ENGINEERING	HIGHWAY SAFETY	WAKE	1,777	2021
HO- 0001AB	Western	NCSU CAMPUS	TRANSIT SIGNAL PRIORITY APPLICATION AND DATA COLLECTION AND MANAGEMENT	HIGHWAY SAFETY	WAKE	1,048	2022
HO-0001	Western	VARIOUS	NCDOT MULTIMODAL CONNECTED VEHICLE PILOT PROGRAM, NORTH CAROLINA STATE UNIVERSITY CAMPUS IN RALEIGH	HIGHWAY SAFETY	WAKE	538	2022
HO- 0001AC	Western	NCSU CAMPUS	ECO DRIVING APPLICATION	HIGHWAY SAFETY	WAKE	7,788	2023
EB-5718	Western	SR 1012 (WESTERN BOULEVARD)	CONSTRUCT BICYCLE / PEDESTRIAN TUNNEL IMMEDIATELY WEST OF SR 1321 (AVENT FERRY ROAD) IN RALEIGH.	BICYCLE AND PEDESTRI AN	WAKE	4,000	2023
U-4437	Western	NC 54 (HILLSBORO UGH STREET)	SR 1664 / SR 3074 (BLUE RIDGE ROAD) IN VICINITY OF NC RAILROAD (CSX CORPORATION AND NORFOLK SOUTHERN) IN RALEIGH. CONSTRUCT GRADE SEPARATIONS AND ACCESS ROAD BETWEEN NC 54 AND SR 1664 / SR 3074.	HIGHWAY	WAKE		UNDER CONSTRU C-TION
I-5873	Western	I-40	NC 54 IN RALEIGH. INTERCHANGE IMPROVEMENTS	HIGHWAY	WAKE		UNDER CONSTRU CTION

CAMPO Rapid Bus Extension MIS and AA

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
W-5522	Western	SR 1656 (TRINITY ROAD)	SR 1658 (YOUTH CENTER DRIVE) INTERSECTION IN RALEIGH. CONSTRUCT PEDESTRIAN TUNNEL UNDER SR 1656 (TRINITY ROAD).	HIGHWAY SAFETY	WAKE		UNDER CONSTRU CTION
I-5943	Western	I-40	SR 1728 (WADE AVENUE) TO I-440 / US 1 IN RALEIGH. PAVEMENT AND BRIDGE REHABILITATION.	HIGHWAY	WAKE	5,871	2025
U-6101	Western	I-40; I-87; I- 440; US 1 / US 64	I-40 FROM SR 1728 (WADE AVENUE) TO NC 42, I-440, I-87 FROM I-40 TO I-540, US 1 FROM NC 540 TO I-40. CONVERT FACILITIES TO MANAGED FREEWAYS, TO INCLUDE RAMP METERING.	HIGHWAY	WAKE	130,293	2029
TD- 5264B	Western	CARY TRANSIT / C- TRAN	CONSTRUCT BUS MAINTENANCE FACILITY AT TOWERVIEW COURT IN CARY.	PUBLIC TRANSIT	WAKE	7,000	2020
P-5734	Western	NORTH CAROLINA RAILROAD / NORFOLK SOUTHERN H LINE / CSX S LINE	SR 1655 (TRINITY ROAD) IN CARY. CONSTRUCT GRADE SEPARATION AND CLOSE CROSSING 630657S.	RAIL	WAKE	37,700	2028
EB-5894	Western	BLACK CREEK GREENWAY	PHASES I, II AND V, WEST DYNASTY DRIVE TO OLD REEDY CREEK ROAD IN CARY. CONSTRUCT GREENWAY.	BICYCLE AND PEDESTRI AN	WAKE	6,231	2022
C-5168	Western	CRABTREE CREEK GREENWAY	CONSTRUCT GREENWAY CONNECTING EXISTING GREENWAY IN CARY THROUGH MORRISVILLE, INCLUDING REPLACEMENT OF TRAIN TRESTLE.	Congest Ion Mitigati On-Hwy	WAKE		UNDER CONSTRU C-TION

CAMPO Rapid Bus Extension MIS and AA

TIP	MIS RAPID BUS CORRIDOR	ROUTE	DESCRIPTION	MODE	COUNTY	COST (x\$000)	YEAR
U-5811	Western	SR 1002 (AVIATION PARKWAY)	NC 54 TO I-40 IN MORRISVILLE. WIDEN TO MULTILANES WITH INTERCHANGE MODIFICATIONS AT I-40.	HIGHWAY	WAKE	34,681	2029
U-5747B	Western	NC 54	SR 1635 (MCCRIMMON PARKWAY) IN MORRISVILLE. CONVERT AT-GRADE INTERSECTION TO GRADE SEPARATION, INCLUDING GRADE SEPARATION OF NORTH CAROLINA RAILROAD.	HIGHWAY	WAKE	30,315	2023
U-5750	Western	NC 54	NC 540 TO PERIMETER PARK DRIVE IN MORRISVILLE. ADD LANES.	HIGHWAY	WAKE	29,631	2023
EB-5838	Western	SR 1637 (CHURCH STREET)	SR 3014 (MORRISVILLE-CARPENTER ROAD) TO DURHAM COUNTY LINE IN MORRISVILLE. CONSTRUCT SIDEWALKS TO FILL IN GAPS.	BICYCLE AND PEDESTRI AN	WAKE	1,700	2022
TD-5287	Western	GO TRIANGLE	PARK AND RIDE LOT AT SR 1774 (DISTRICT DRIVE). ADD SPACES, IMPROVE LIGHTING AND CONSTRUCT SHELTERS.	PUBLIC TRANSIT	WAKE		UNDER CONSTRU C-TION
U-5966	Western	NEW ROUTE	SR 1613 (MCCRIMMON PARKWAY) TO NC 540 IN MORRISVILLE. CONSTRUCT MULTILANE FACILITY ON NEW LOCATION.	HIGHWAY	WAKE	62,789	2028