PURPOSE AND NEED STATEMENT

For

ADMINISTRATIVE ACTION
ENVIRONMENTAL IMPACT STATEMENT

Triangle Expressway Southeast Extension
Wake and Johnston Counties

STIP Project Nos. R-2721, R-2828, and R-2829
State Project Nos. 6.401078, 6.401079, and 6.401080
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1 INTRODUCTION

To address transportation needs in the project study area and the surrounding region, the North Carolina Turnpike Authority (NCTA), in cooperation with the Federal Highway Administration (FHWA), proposes transportation improvements with a focus on the consideration of an extension of the Triangle Expressway (NC 540) from NC 55 Bypass near Holly Springs to the US 64/US 264 Bypass south of Knightdale. This project is designated as three projects in the North Carolina Department of Transportation (NCDOT) *2009-2015 State Transportation Improvement Program* (STIP)—R-2721, R-2828, and R-2829. Together, these STIP projects would combine to complete the 540 Outer Loop around the Raleigh metropolitan area. **Figure 1** shows the general project setting.

The purpose of this report is to describe the proposed action and present information as to why the action is needed, explaining what transportation problems exist and what needs the action will address. The project purpose and need as defined in this report will serve as a keystone in the process of identifying reasonable alternatives or solutions aimed at meeting those needs.

The content of this document conforms to the requirements of the Council on Environmental Quality (CEQ) guidelines, which provide direction regarding implementation of the procedural provisions of NEPA, and the Federal Highway Administration's Guidance for Preparing and Processing Environmental and Section 4(f) Documents (Technical Advisory T 6640.8A, October 1987).

2 PURPOSE AND NEED FOR ACTION

2.1 PROPOSED ACTION

The proposed action is located near the Raleigh, North Carolina metropolitan area. More specifically, the project study area is located south and southeast of the City of Raleigh between the towns of Holly Springs to the west and Knightdale to the east. The project study area extends as far south as NC 42 between Fuquay-Varina and Clayton. While most of the project study area is within Wake County, a small portion of western Johnston County is also included. **Figures 1 and 2** depict the general project setting and project study area respectively. The development of the project study area is described in **Section 3.1**.

To address transportation needs in the project study area, the NCTA, in cooperation with FHWA, proposes transportation improvements with a focus on the consideration of an extension of the Triangle Expressway (NC 540) from NC 55 Bypass near Holly Springs to the US 64/US 264 Bypass south of Knightdale. Referred to as the Triangle Expressway Southeast Extension, the purpose of the proposed action is to improve transportation mobility for trips within, or traveling through, the project study area during the peak travel period. A second purpose of the proposed action is to reduce forecast congestion on the existing roadway network within the project study area. The proposed action is currently in the Capital Area Metropolitan Planning Organization (MPO) and Durham-Chapel Hill-Carrboro MPO joint *2035 Long Range Transportation Plan* (LRTP) as a 2025 horizon year project. It is also in the Capital Area MPO *2009 – 2015 Metropolitan Transportation Improvement Program* (MTIP). In addition, the proposed action is included in the state's system of Strategic Highway Corridors (SHC) aimed at providing a safe, reliable, and high-speed network of highways within North Carolina. The proposed action is also included in the NCDOT STIP. The City of Raleigh, Wake

County, and five towns in southern Wake County have all passed resolutions in support of completion of the 540 Outer Loop as a means to ensure long-term mobility in the region (**Appendix A**).

Traditionally, North Carolina roads have been publically financed through gas and vehicle taxes either through the state or through the federal government via federal-aid highway funds. However, given current financial resources at both the state and federal level, these traditional sources of funding are not available in the near foreseeable future to pay for all of North Carolina's transportation needs. Based on a toll feasibility study previously completed at the request of local governments, in addition to limited traditional state and federal funding, we will include toll alternatives as part of the alternatives screening process.

2.2 SUMMARY OF NEED FOR PROPOSED ACTION

A summary of transportation needs relevant to this study is provided below. A full description of existing and future transportation conditions in the project study area used to support the discussion on project needs is provided in the *Southern and Eastern Wake Expressway Final Traffic Forecast Report* and the *Southern and Eastern Wake Freeway Final 2008 Existing, 2011 and 2035 No-Build Traffic Capacity Analysis Report*, both prepared by HNTB in December 2009. A key finding of these reports was that many of the major roadways in the project study area are expected to operate at unacceptable levels of service and over capacity in 2008 and 2011 and the majority of roadways are expected to operate at LOS E or F in 2035.

Need #1 – Mobility for the Movement of People and Goods

- The goal for the region's overall transportation system (as defined in the Capital Area MPO and Durham-Chapel Hill-Carrboro MPO Joint LRTP) is to provide a cost-effective system that, among other things, maintains long-term mobility for people and the movement of goods.

- In large part, this mobility-related need is driven by past and projected future rapid growth in Wake County and in western Johnston County in and around the town of Clayton. In recent decades, the populations of Wake and Johnston counties and the town of Clayton have grown much faster than the State average. Local governments predict continued rapid growth in these areas over the next decades (Section 7.1).

Need #2 – Limited Transportation Options to Provide Sufficient Capacity for Efficient, High-Speed Local and Through Travel between Rapidly-Growing Communities South and East of Raleigh and Major Employment and Activity Centers along the 540 Outer Loop and Along Roadways Connecting to the Outer Loop, such I-40, NC 147, and US 1/64

- Varying from a four- to eight-lane facility, I-40 is the primary limited access freeway corridor for regional connectivity between the project study area and many of the Triangle Region's major employment and activity centers, such as RTP, RDU, the Brier Creek area, Durham, and Cary.

- Traveling west from Knightdale, motorists can also use I-440 or I-540 through northern Wake County to reach area employment/activity centers and to travel through the region.

- Regional through traffic between areas south and east of Raleigh and areas west of Raleigh, including interregional truck traffic, is generally limited to traveling on I-40/I-440 south of Raleigh. Since these routes serve high volumes of local traffic, interregional traffic limited to traveling on these same routes adds additional traffic volumes and also faces inefficient travel across the region.

- Communities south and east of Raleigh, such as Holly Springs, Fuquay-Varina, Clayton and Knightdale, have experienced rapid population growth since 1990 and are forecast to continue this rapid growth. Many residents of these communities commute to major employment and activity centers along the 540 Outer Loop and along roadways connecting to the Outer Loop, such as I-40, NC 147, and US 1/64. For residents in these rapidly growing areas of southern and southeastern Wake County and western Johnston County, other transportation options to these employment and activity centers are available but they include primary and secondary roads with lower posted speed limits, no control of access and traffic signals:

    - The primary east-west routes in southern Wake County, Ten-Ten Road (SR 1010) and NC 42, are currently used to access employment/activity centers such as RTP, Durham, and Cary, via NC 55 and US 1/64; and
    - Routes providing north-south travel in this area, including US 401, NC 50 and US 70, provide access to Raleigh and I-40.

- Statewide, I-40 is the backbone of North Carolina's interstate system, providing the connection between southeastern North Carolina including Wilmington and other coastal towns (i.e., Wilmington) and western North Carolina, including Greensboro, Winston-Salem and Asheville. Therefore, in addition to being a key transportation corridor for local freight and commuter traffic, I-40 through the Triangle Region is also a key corridor for long distance travelers. I-40 also serves a substantial amount of motorist traffic travelling to and from eastern North Carolina on US 64 and US 264.

- There are limited transit options in the area, primarily consisting of a small number of fixed bus routes along the northern edge of the project study area. These routes operate on congested roadways.

- A portion of the project area lies within the ten-mile emergency planning zone (EPZ) for the Harris Nuclear Plant. Existing evacuation routes within this area are generally arterial highways and rural roadways without controlled access.

Need #3 – Existing and Projected Poor Levels of Service (LOS)

- Based on 2008 traffic data, poor levels of service (defined for this study as LOS E and F) already occur in and near the project study area on the following roads:

    - LOS E or F on I-40 between NC 147 and Lake Wheeler Road and most segments of I-40 between White Oak Road and NC 42,
    - LOS E on most of NC 42 between NC 55 and the US 70 (Clayton) Bypass, and
    - LOS E on segments of NC 50 between NC 42 and US 70.

- By 2011/2012, several key transportation projects will be completed, including:

    - widening of I-40 from Wade Avenue to US 1/64, and

- construction of the Triangle Expressway, which includes Triangle Parkway (NC 147 Toll) from NC 540 to I-40 and Western Wake Freeway (NC 540 Toll) from NC 55 near Holly Springs north to NC 55 near RTP.

Even with these facilities in place, LOS E or F is also projected for:

- segments of Ten-Ten Road (SR 1010), and
- segments of US 1/64 between NC 55 and I-40.

- With increases in traffic volumes projected in the future, a substantial portion of the roadway network in and near the project study area will deteriorate to LOS E or F by 2035 (see Section 6 of this report for a detailed discussion of existing and projected LOS on the area roadway network).

2.3 PURPOSE OF PROPOSED ACTION

Based on the identified transportation needs, the purpose of the proposed action is to improve transportation mobility for trips within, or traveling through, the project study area during the peak travel period. A second purpose of the proposed action is to reduce forecast congestion on the existing roadway network within the project study area.

Based on state and local plans, a desirable outcome of the project will be to improve system linkage in the roadway network in the project study area. As included in state and local plans, the proposed action would be the final link in the 540 Outer Loop envisioned for more than 40 years, completing a controlled-access, high-speed circumferential facility around the outskirts of Raleigh. The facility would benefit not only the local commuters living south and east of Raleigh, but also longer distance motorists and trucks that are passing through the Triangle Region to and from points south and east.

3 PROJECT BACKGROUND

3.1 PROJECT SETTING

As shown in **Figure 1**, the general project setting is south and southeast of the City of Raleigh between the towns of Holly Springs to the west and Knightdale to the east. The project study area, shown in **Figure 2**, was developed in conjunction with resource and regulatory agencies. It was designed to encompass the area within which reasonable and feasible alternatives for meeting the elements of the project purpose could be developed. The existing terminus of I-540 at US 64/US 264 Bypass in Knightdale and the current planned terminus of the Triangle Expressway (NC 540) at NC 55 Bypass near Holly Springs generally coincide with the respective eastern and western boundaries of the project study area. The northern boundary, which roughly follows the southern outskirts of Raleigh and Cary, and the southern boundary, which generally follows NC 42, were particularly influenced by the project purpose of reducing congestion on the existing roadway network within the project study area, North of this northern boundary and south of this southern boundary, alternatives would be unlikely to draw as much traffic off of these existing facilities. While most of the project study area is within Wake County, a small portion of western Johnston County is also included.

Portions of eight incorporated municipalities—Apex, Holly Springs, Cary, Fuquay-Varina, Garner, Raleigh, Knightdale and Clayton—and numerous unincorporated communities are located within the project study area.

Wake and Johnston counties lie at the eastern point of the area known as the Triangle Region of North Carolina. The City of Durham/Durham County and the Town of Chapel Hill/Orange County form the Triangle's other two points. The Research Triangle Park (RTP), one of the oldest and largest science parks in North America, lies at the center of the Triangle and is the region's major economic engine. RTP is a 7,000 acre development housing more than 170 companies and employing over 42,000 full-time and 10,000 contract employees (Research Triangle Park website: www.rtp.org/.

The 540 Outer Loop is part of the Raleigh and Triangle Region core transportation network. Other elements of this network include I-440, I-40, NC 147, US 70, US 1, US 64, US 401, and US 264. The project study area encompasses a relatively small portion of the larger core transportation network for the region. However, from a transportation perspective, this element of the system has regional wide implications for traffic service and system operations. The Capital Area MPO and Durham-Chapel Hill-Carrboro MPO have jointly included this project as an element of their *2035 Long Range Transportation Plan* (LRTP). Through the MPO long range transportation planning process, consideration has been given to alternative transportation approaches to meet the overall social, economic, environmental, and mobility needs in the region. While this study builds upon the regional planning efforts and utilizes a regional perspective for traffic forecasting, the focus of this study is on the sub-regional area known as the project study area.

Most of the project study area lies within the Neuse River basin, with a small portion of the southwestern corner of the project study area in the Cape Fear basin. Much of Wake County features gently rolling hills, with the topography becoming flatter in southeastern Wake County and into Johnston County. Elevations within the project study area range from approximately 500 feet near Apex to approximately 150 feet northeast of Clayton. Wake and Johnston counties have a moderate subtropical climate, featuring temperate conditions in spring, fall and winter, and hot and humid summers.

3.2 PROJECT HISTORY

The 540 Outer Loop was first identified as a regional need in the 1968 *Greater Raleigh Thoroughfare Plan*. Although a location for the loop freeway was not originally specified, later updates to the plan included different variations in an alignment. As the Raleigh metropolitan area's population continued to rapidly grow through the 1970's and into the 1980's, the Capital Area MPO requested that NCDOT refine a corridor for the entire Outer Loop for use in area land use planning. A general alignment for the Outer Loop was described in the 1984 update of the *Greater Raleigh Thoroughfare Plan*.

The northern part of the Outer Loop, from NC 55 near northwestern Cary and Morrisville to US 64/US 264 Bypass near Knightdale, was the first to be constructed, with the final segment of the northern Outer Loop open to traffic in 2006. The remainder of the Outer Loop is known as the Triangle Expressway (NC 540 Toll). The Western Wake Freeway segment of the Triangle Expressway (**Figure 1**), from NC 55 near Holly Springs north to NC 55 near RTP, is currently under construction and scheduled to open to traffic in 2012.

In the late 1980's, the state passed into law the Transportation Corridor Official Map Act (Map Act) which allows the preservation of roadway corridors when specific conditions are met in accordance with G.S. 136-44.50 through 136.54. During the early 1990's, NCDOT used the Map Act to evaluate potential corridors for preservation purposes for Phase I of the Southeast Extension from NC 55 near Holly Springs to I-40 near the Wake/Johnston county line. Several alternative corridors were developed and analyzed, and public hearings were held to present the corridor proposed for protection. As a result, the North Carolina Board of Transportation formally adopted a preserved corridor for the 8-mile segment between NC 55 and US 401 (STIP project R-2721) in August 1996, and for the 9-mile segment between US 401 and I-40 (STIP project R-2828) in March 1997.

In December 2005, mayors of five Wake County towns (Cary, Apex, Holly Springs, Fuquay-Varina, and Garner) requested that the NCTA conduct a financial feasibility study for completing the 540 Outer Loop as a toll road (**Appendix A**). NCTA initiated the planning and corridor study for the Triangle Expressway Southeast Extension in late 2009 with FHWA's issuance of a Notice of Intent (NOI) to prepare an environmental impact statement (EIS) for the project on November 30, 2009.

4 EXISTING TRANSPORTATION SYSTEM

4.1 ROADWAY NETWORK

There are several major travel routes through the project area as shown in **Figure 2**.

Interstate 40

Varying from a four- to eight-lane facility, I-40 is one of the primary limited access freeway corridors for regional connectivity between the project study area and major employment /activity centers in the region such as the City of Raleigh, RDU Airport, RTP, Durham and Chapel Hill. As such, it is heavily used by commuter traffic traveling within the project study area. Particularly in eastern Wake County, motorists can alternatively travel northwest, outside of the project study area, on the I-440 partial loop freeway (Raleigh Beltline) or the I-540/NC 540 freeway towards the Raleigh-Durham area.

Statewide, I-40 is the backbone of North Carolina's interstate system, providing the connection between southeastern North Carolina (i.e., Wilmington), the Triangle Region, and western North Carolina including Greensboro, Winston-Salem and Asheville. The entire I-40 corridor in North Carolina is designated as a Strategic Highway Corridor, a system of critical highway facilities in the state (Strategic Highway Corridors website: *http://www.ncdot.org/doh/preconstruct/tpb/shc/overview/*). I-40 around Raleigh also receives a substantial number of motorists travelling to/from eastern North Carolina on US 64 and US 264 as well as I-95, the primary north-south interstate corridor that runs along the eastern United States from Florida to Maine. Therefore, in addition to being a important transportation corridor for local freight and commuter traffic, I-40 around Raleigh is a key corridor for long distance travelers. Characteristics of I-40 and other major roads in the study area are shown in **Table 1**; the locations of these roads are shown in **Figure 2**.

Table 1. Characteristics of Major Project Area Roadways

Route	Lane Configuration	Posted Speed Limit
I-40	4- to 8-lane freeway	60-65 miles per hour
US 64/US 264 Bypass	6-lane freeway	65 miles per hour
US 1/64	6-lane freeway	65 miles per hour
US 70 Bypass	4-lane freeway	65 miles per hour
US 70 Business	4-lane freeway	65 miles per hour
US 401	4-lane arterial	45-55 miles per hour
Ten-Ten Road (SR 1010)	2-lane rural roadway	45 miles per hour
NC 42	5-lane arterial/2-lane rural roadway	35-55 miles per hour
NC 50	2-lane rural roadway	55 miles per hour
NC 55	2-lane arterial	35-45 mph

US 64

In its entirety, US 64 is also a designated Strategic Highway Corridor and is another important east-west controlled access freeway through central Wake County. In the northeast portion of the section of the project study area, near Knightdale, the US 64/US 264 Bypass provides access to I-540 and I-440. Further east of Raleigh, US 64 also accesses I-95.

West of Raleigh, US 64, also signed as US 1, continues to the southwest from I-40 just north of the project study area.

US 70

The US 70 Bypass, part of North Carolina's Strategic Highway Corridor system, is a controlled access freeway from US 70 Business in western Johnston County to I-40 in the southern portion of the project study area at the border of Johnston and Wake counties. From its interchange with I-40, motorists in the project study area can either travel north on I-40 towards Raleigh or travel south on I-40 with access to NC 42. Within the project study area, US 70 Business also provides access to I-40 closer to the Raleigh metropolitan area.

Western Wake Freeway (NC 540 Toll) – Under Construction

The North Carolina Turnpike Authority is also in the process of constructing the Western Wake Freeway, a new multi-lane toll facility from existing NC 540 in western Wake County south of I-40 to NC 55 Bypass in Holly Springs, with a length of 12.6 miles. Interchange connections are proposed for access at NC 55, Green Level Road, US 64, Old US 1, US 1 and ending at the NC 55 Bypass near Holly Springs. The Western Wake Freeway is scheduled to open to traffic in 2012, forming the western portion of the 540 Outer Loop around Raleigh. It will be designated as NC 540.

Other roadways in the project study area include US 401, Ten-Ten Road (SR 1010), NC 42, NC 50 and NC 55. These existing thoroughfares, with no control of access, are primarily multi-lane facilities with 35, 45, or 55 mile per hour speed limits. For residents in rapidly growing areas of southern/southeastern Wake County and western Johnston County, these roadways can be used in conjunction with other roads to access activity centers near in the Raleigh/Durham area but they have lower posted speed limits and traffic signals. Ten-Ten Road and NC 42 lead to many of the same employment/ activity centers via NC 55 and US 1/64. Commuters also have the option of traveling northward on US 401, NC 50 or US 70 toward Raleigh and connecting to I-40.

4.2 PUBLIC TRANSIT

Several transit operators provide service in the Raleigh area. Within the project study area, both Triangle Transit (formerly Triangle Transit Authority) and Capital Area Transit (CAT) have fixed route bus service to activity centers south of the Raleigh metropolitan area, but these routes are limited. The Town of Cary's C-Tran transit service also operates fixed route bus service near the project area. For all three systems, fix route bus routes are some of the area's most congested roadways. Maps of fixed public transit routes in the project area are shown in **Appendix B**.

Triangle Transit

Triangle Transit provides regional bus, paratransit, vanpool and ridesharing services within the three-county Research Triangle area including Wake County (Triangle Transit website: *http://triangletransit.org/*). The bus route that extends furthest south into Wake County is the 102 service from downtown Raleigh to Garner, the Forest Hills Shopping Center Park-and-Ride lot on US 70, and the White Oak Shopping Center. Based on the 2008 *Triangle Transit Short Range Transit Plan*, this route has consistently been the lowest-performing regional route in the entire system. One of the potential near-term changes to this route proposed in the plan is to extend the route southeast to Clayton and park-and-ride facilities in Johnston County. Bus Route 311 connects Apex to RTP, with park and ride lots at Galaxy Ford near downtown Apex and Lake Pine Plaza.

In January 2010, a new express bus route was opened for riders traveling between downtown Raleigh and Knightdale to the east. The Knightdale to Raleigh Express (KDX) route is the result of a partnership between Triangle Transit, CAT, and the Town of Knightdale.

Capital Area Transit

Capital Area Transit is owned and operated by the City of Raleigh, providing bus service throughout the city as well as an Accessible Raleigh Transportation Program (ART) for persons with disabilities. The only CAT routes within the project study area are: 1) an express bus service between Raleigh and Wake Technical Community College just south of Ten-Ten Road off of US 401 (CAT Route 40e), and 2) bus service between Raleigh and Garner with park-and-ride lots at two shopping centers on US 401 (CAT Route 7).

Town of Cary C-Tran

The Town of Cary's transit service, C-Tran, operates six fixed bus routes, including one just north of the project area. C-Tran also operates door-to-door transit service for Cary residents who are at least 60 years old or disabled.

Transit improvements included in the Capital Area MPO and Durham-Chapel Hill-Carrboro MPO joint 2035 LRTP include expansion of bus service throughout the region as well as light rail and commuter rail service. Light rail between north Raleigh (near I-540 and Triangle Town Center), downtown Raleigh, Cary, RTP, Durham, and Chapel Hill is included as a 2025 horizon year project. An extension of the light rail system from Cary to Apex is included as a 2035 horizon year project. Commuter rail between Wake Forest, downtown Raleigh, and Clayton is included as a 2025 horizon year project. A map showing the locations of these proposed transit improvements is displayed in **Figure 3**.

4.3 AIRPORTS

The Raleigh Durham International Airport (RDU) is located approximately 10 miles northwest of Raleigh with easy access off of I-40 and I-540. RDU is one of the nation's fastest growing airports in the United States as reported by Airports Council International. In 2009, more than 9 million passengers travelled through RDU. The Triple W Air Park, located east of US 401 just north of Fuquay-Varina, is a small airport serving private aircraft.

4.4 RAIL

One major rail line is located within the project study area, along the US 70 Bypass between Raleigh and Clayton. Owned by the North Carolina Railroad (NCRR), this corridor hosts several Amtrak passenger trains and has seen increasing freight traffic over the past several years. In addition to Amtrak, Norfolk Southern Railway operates trains along the NCRR corridor under a lease agreement with NCRR. NCDOT plans to make track improvements in this corridor between Raleigh and Selma primarily for improving train and vehicular safety and improving passenger train speed and ride quality.

Amtrak operates several trains daily along the Piedmont route, connecting stations in downtown Raleigh and Cary to Charlotte. The Carolinian Route travels daily between Charlotte and New York City, with stops in Raleigh and Cary. Daily Amtrak service along the Silver Service and Palmetto routes also includes stops in Raleigh and Cary, connecting the area to Florida to the south and New York City to the north.

5 COMMUTING PATTERNS

The 2000 US Census indicates that approximately 83 percent of commuters in the project study area drive alone as opposed to taking transit or carpooling. Public transportation accounted for less than 1 percent of the commuter travel mode, while carpooling was used by approximately 12 percent of area commuters. Walking, bicycling and other modes accounted for the remaining 4 percent. In looking at specific block groups within the project study area, two block groups along the northern boundary of the project study area (in the Town of Garner) exhibited a notably different commuting pattern – a much higher percentage of carpooling (30 percent for one block group and 44 percent for the other) and 7 percent of workers in one of the block groups used public transportation.

Between 1980 and 2000, the number of people in Wake and Johnston counties that crossed a county boundary every day to get to work grew from 57,000 to 180,000. According to the Wake County Planning Department, commuter traffic is a main source of vehicular traffic within the county. This includes workers from surrounding counties, including Johnston, Harnett and Chatham to the south of Raleigh, commuting to Wake and Durham counties in increasing numbers. In portions of those counties closest to Wake County, it is estimated that upwards of 50 percent of workers commute to Wake County.

One of the major employment centers in the Raleigh metropolitan area includes RTP; more than 25 percent of residents within the project study area commute to RTP. Other important employment

centers are located within the City of Raleigh, the Raleigh-Durham Airport, Durham and the University of North Carolina at Chapel Hill.

The 2000 US Census also found a substantial increase (+4.8 minutes) in median commuter travel time in the Raleigh area between 1990 and 2000. The Raleigh-Cary metropolitan statistical area (MSA) had the fourth highest increase in that time period after Atlanta, Miami and West Palm Beach MSAs. In 2006, the average commute time for commuters in Wake County was 23.4 minutes (US Census, 2006 American Community Survey).

6 TRAFFIC VOLUMES AND LEVEL OF SERVICE

An analysis of existing and future conditions on the roadway network was completed for this study in order to establish baseline traffic conditions without construction of the proposed project. These baseline conditions, also referred to as No-Build conditions, will then be used as a comparison to various "build conditions" developed as part of the alternatives analysis for the study. Existing conditions reflect conditions on the roadway network in the year 2008. The 2011 No-Build scenario assumed completion of the following scheduled improvements:

1. Widening of I-40 from Wade Avenue to US 1/64,
2. Triangle Parkway (NC 147 Toll), and
3. Western Wake Freeway (NC 540 Toll)

For the 2035 No-Build scenario, the following additional scheduled roadway improvements are assumed to be complete:

1. Widening of I-40 from US 70 to NC 42, and
2. Widening of Ten-Ten Road (SR 1010) from US 1 to Graham Newton Road.

Existing and future traffic volumes are presented in terms of Annual Average Daily Traffic (AADT), or the average number of vehicles on the road on a given day. AADT is commonly used as a measurement of how busy a road is. Existing (2008) volumes were based on traffic counts completed on the roadway network in 2008. Using an approved travel demand model (TransCAD Triangle Regional Model 2008, version 4), future traffic volumes were predicted for both a 2011 No-Build condition and a 2035 No-Build condition. A detailed discussion of the methodologies used to predict traffic volumes and the results of the analysis are presented in the *Southern and Eastern Wake Freeway Final Traffic Forecast Report* prepared by HNTB in July 2009.

In addition, using North Carolina Level of Service (NCLOS) software (Version 2.0), a level of service (LOS) and traffic capacity analysis was completed for existing (2008), 2011, and future (2035) No-Build conditions. This effort evaluated level of service (LOS) and volume to capacity ratios (V/C) for roadway segments within a slightly larger area (traffic analysis area) than the project study area. The traffic analysis area extends into eastern Durham County and northern Wake County and includes the primary employment and housing areas in the wider Raleigh region. The analysis focused on LOS since it is a relatively intuitive way to qualitatively describe how well (or poorly) traffic is flowing on a road. This system uses letter designations between A and F where LOS A represents free flow traffic conditions and LOS F represents extremely unstable stop-and-go conditions. A full discussion of this analysis is provided in the Southern and Eastern Wake Freeway *Final 2008 Existing, 2011, and 2035 No-Build Capacity Analysis Report* (December 2009, HNTB) prepared for this study.

The results from these two traffic reports, for key roadway segments in the traffic analysis area, are summarized in **Table 2**. For purposes of this study, a desirable level of service is defined as LOS D or better – conversely, an unacceptable level of service is defined as LOS E or F. LOS characteristics are generally established on a case-by-case basis to meet project-specific goals. For Triangle Expressway Southeast Extension, providing LOS D for a freeway segment in the worst-case peak hour in the design year provides acceptable overall traffic operations by maintaining high-speed mobility and providing excess traffic capacity along the facility. Based on the Highway Capacity Manual (HCM 2000), LOS D for a freeway segment indicates a slight decline in free-flow operations and maneuverability as traffic density increases. LOS E, at its highest density value, describes freeway operation at capacity with volatile operations because virtually no usable gaps exist in the traffic stream. At LOS E, maneuverability is extremely limited, the level of physical and psychological comfort afforded the driver is poor and therefore, it is not a desirable design year LOS for the project.

Table 2. Traffic Volumes and Level of Service (LOS): Existing and Future No-Build Conditions

		2008 No-Build		2011 No-Build		2035 No-Build	
Roadway	**Segment Link**	**AADT**	**LOS**	**AADT***	**LOS**	**AADT**	**LOS**
I-40	From NC 147 to Wade Ave.	166,900	F	172,900	F	175,600	F
	From Wade Ave. to US 1/64	104,900	F	115,700	E	150,000	F
	From US 1/64 to Lake Wheeler Rd.	116,100	E	124,900	F	170,100	F
	From Lake Wheeler Rd. to Rock Quarry Rd.	118,000	C	125,300	D	182,400	F
	From Rock Quarry Rd. to I-440	106,700	C	110,300	C	151,500	D
	From I-440 to US 70	102,000	F	104,000	F	114,400	F
	From US 70 to NC 210	60,200	D	61,600	D	74,600	C*
I-440	From I-40 to Jones Franklin Road	92,600	D	92,900	D	137,000	F
	From I-40 to US 64/US 264 Bypass	95,600	C	103,100	C	154,900	E
	From US 64/US 264 Bypass to US 64 Business	87,400	D	90,400	D	126,700	F
US 64/US 264 Bypass	From I-440 to I-540	59,200	C	64,100	C	110,300	F
	From I-540 to US 64 Business	59,000	C	67,300	D	125,100	F
US 1/64	From US 1 to Cary Parkway	87,800	D	95,100	D	129,100	F
	From Cary Parkway to Walnut Street	117,700	E	124,600	F	163,600	F
	From Walnut Street to I-40	81,000	C	84,500	C	107,700	E
US 70 Bypass	From I-40 to NC 42	18,300	A	38,600	C	61,100	D
US 70 Business	From Tryon Rd. to I-40	32,900	C	34,100	C	57,700	D
	From I-40 to Guy Rd.	51,100	D	54,900	D	76,500	F
US 401	From NC 55 to NC 42	36,300	C	40,200	C	55,900	D
Ten-Ten Road	From Holly Springs Rd. to NC 50	17,500	B	22,000	E	58,300	F
NC 42	From US 401 to Old Drug Store Rd.	11,500	E	14,200	E	26,500	E
	From Old Drug Store Rd. to I-40	28,000	F	29,900	F	37,000	F
	From I-40 to Bratton Dr.	13,300	D	15,700	D	22,300	D
	From Bratton Dr. to US 70 Bypass	14,500	E	16,300	E	26,800	E
NC 50	From Cleveland Rd. to New Rand Rd.	23,000	E	25,700	E	36,600	F
	From New Rand Rd. to US 70	11,500	A	11,500	A	31,200	F
NC 55	From Main St. to Wake Chapel Rd.	25,000	B	31,100	C	66,000	F
	From Wake Chapel Rd. to US 401	13,700	D	15,700	F	14,200	D

Notes: Annual Average Daily Traffic – highest AADT along roadway segment is reported.
* LOS forecast to improve despite increased volume because roadway will be widened.

The analysis indicates that in both the 2008 and 2011 No-Build conditions, several key roadway segments within traffic analysis area operate at an unacceptable LOS (**Figures 4** and **5**). A LOS E or

F currently exists on most of NC 42, portions of NC 50, and I-40 between US 70 and I-440. In addition, most of I-40 between Raleigh and RTP operates at a LOS E or F. Even with planned improvements included in the 2011 No-Build scenario, a LOS E or F is still projected on those road segments as well as segments of Ten-Ten Road.

In general, by 2035, traffic volumes will increase substantially throughout the traffic analysis area with noticeable effects on roadway LOS. As shown in **Figure 6**, much of the roadway network in the traffic analysis area will deteriorate to LOS E or F by 2035.

7 SOCIAL AND ECONOMIC CONDITIONS

7.1 POPULATION CHARACTERISTICS

Encompassing 860 square miles, Wake County consists of thirteen municipalities including Raleigh. Eight of these municipalities are in the project study area. It is the second-most populous county in North Carolina with an estimated 866,410 persons in 2008 (US Census). It had the largest population increase in North Carolina between 2000 and 2007 and was the State's fastest growing county during that time period, growing by 33 percent. Johnston County encompasses 792 square miles and has also been experiencing rapid growth. As shown in **Table 3**, both counties' growth rates have been consistently increasing over the past four decades.

Table 3. Wake and Johnston County Population – Percent Growth by Decade

Period	Population		Percent Growth	
	Wake County	Johnston County	Wake County	Johnston County
1970 - 1980	301,429	70,599	32	12
1980 - 1990	423,280	81,306	40	15
1990 - 2000	627,846	121,965	48	50
2000 - 2010	940,122*	174,876	50	43

Sources: US Census, Wake County projections, NC Office of State Budget and Management projections.

Between July 1, 2007 and July 1, 2008, Wake County ranked: 1) seventh in the nation among the 25 U.S. counties with the largest numeric increase in population, and 2) twenty-second in the nation among the 100 fastest growing U.S. counties with a population greater than 10,000 (US Census). During this time period, Johnston County ranked thirty-first in the nation among the 100 fastest growing U.S. counties with a population greater than 10,000. The 2007 to 2008 growth rate was 4.4 percent for Wake County and 4.2 percent for Johnston County, as compared to 2.0 percent for North Carolina as a whole.

The Wake County Planning Department predicts that the County's population will exceed 1,000,000 by 2012. Johnston County also predicts continued growth. According to the *Johnston County 2030 Comprehensive Plan*, approved in 2009, much of the County's growth is occurring in and around the Town of Clayton, along the border with Wake County. Proximity to RTP and the Triangle Region is cited as a strong driver of the County's growth. Johnston County's future land use plan continues to focus future growth in Johnston County along its western border with Wake County.

As shown in **Table 4**, the 2007 to 2008 growth rate for the individual cities and towns within the project study area are generally higher than the counties as a whole, reflecting the relatively high growth rates in this part of the Raleigh metropolitan area. Many of the communities in the project

study area have become increasingly popular locations for suburban development as people commuting to jobs in RTP, Raleigh, and other employment centers in the region seek affordable housing, open space, and the quality of life offered by southern Wake County and Johnston County.

Table 4. Project Study Area Municipality Annual Growth Rates – 2007-2008

Municipality	Percent Growth
Apex	5.0
Cary	6.9
Clayton	6.0
Fuquay-Varina	11.5
Garner	5.9
Holly Springs	6.2
Knightdale	9.3
Raleigh	4.2

Source: US Census

In the same one-year time period, between July 2007 and July 2008, the Raleigh-Cary MSA was ranked first in the United States as the fastest growing MSA. The Raleigh-Cary MSA saw its population climb 4.3 percent to over 1.1 million.

7.2 ECONOMIC CONDITIONS

The Triangle Region's economy is relatively diverse, with a large percentage devoted to government, education and healthcare sectors. State government has always been the foundation of the area's job base, but biotechnology, information technology, higher education, and health care are also important and growing components of the area's employment mix. Similar to the region, Wake County has a robust and diversified economy featuring many of the State's largest employers.

The January 2010 unemployment rates in Wake and Johnston counties were 9.2 percent and 10.9 percent respectively. This is slightly lower than the statewide unemployment rate of 11.1 percent. **Table 5** lists the proportions of total employment in various sectors for both Wake and Johnston counties based on North Carolina Employment Security Commission data.

Table 5. Project Study Area Employment Distribution by Industrial Sector

Sector	Wake County	Johnston County	Raleigh-Cary MSA
Government	17.2%	19.7%	17.5%
Education/Healthcare	15.7%	17.8%	16.0%
Trade/Transportation/Utilities	15.4%	17.6%	15.5%
Professional/Business Services	15.0%	17.8%	16.0%
Leisure/Hospitality	8.0%	8.2%	8.0%
Public Administration	7.2%	4.3%	7.0%
Construction	5.8%	7.2%	6.0%
Financial Activities	4.7%	2.0%	4.4%
Manufacturing	4.3%	12.2%	5.3%
Information	3.0%	0.7%	2.8%
Other	3.6%	3.8%	3.5%

Source: Employment Security Commission, Labor Market Information

The area is somewhat unique in that more than 50 percent of the workforce over 25 years of age has at least a bachelor's degree, providing a desirable workforce for a variety of businesses. Major employers

in the City of Raleigh, defined as 10,000+ employees, are the State of North Carolina and Wake County Public Schools. In comparison, major employers in the Triangle Region to the west of Raleigh are Duke University & Medical Center, the University of North Carolina-Chapel Hill, and IBM (Source: Raleigh Economic Development). Approximately 140 businesses and agencies located within the Research Triangle Park alone employ more than 40,000 full-time and contract workers. Despite the recent economic downturn, Raleigh ranked 10th on Kiplinger's 2009 Best Cities list that focused on places across the United States with stable employment and robust job markets. According to the Wake County Planning Department, growth in Wake County is attributable to the area's strong job market.

7.3 LAND USE PLANS

The following sections include a brief discussion of relevant planning documents and initiatives in the Southeast Extension project study area. These plans will be further reviewed in the Indirect and Cumulative Effects Assessment to be conducted in the future.

Wake County. The *Wake County Land Use Plan*, last updated in March of 2004, establishes policies designed to influence the timing, type, location, and quality of future development in Wake County's planning jurisdiction. These policies are intended to accommodate growth of urbanized areas within or adjoining the County consistent with the Plan's goals and strategies. The Plan includes several small area land use plans. Two of these plans cover areas within the Southeast Extension project study area. East Raleigh-Knightdale Area Land Use Plan identifies areas along a representative corridor for Phase II of the Southeast Extension with a Special Transportation Corridor designation. The Fuquay-Varina–Garner Area Land Use Plan identifies areas along the protected corridor for Phase I and a representative corridor for Phase II as a Special Highway Overlay District. The *Wake County Land Use Plan* also includes a special Land Management Plan for Swift Creek. The Land Management Plan identifies the Swift Creek basin's Watershed Critical Area and watershed buffer areas, within which development activities are limited, and appropriate low-density land use categories for the surrounding areas.

The *Wake County Transportation Plan* (2003) identifies mobility needs in unincorporated parts of Wake County. It identifies the Southeast Extension ("Outer Loop") as a primary transportation need for the area, indicating that completion of the Outer Loop was a stated objective of the Citizen Advisory Group involved in Plan development. The Outer Loop is identified as a primary travel corridor for Wake County.

Raleigh. The City of Raleigh adopted a new *2030 Comprehensive Plan* in November of 2009. The Plan is the City's key policy document shaping all aspects of the community's physical development and influencing related economic and social issues. One of the goals of the Plan is to enhance land use and transportation coordination. The Southeast Extension is not specifically mentioned in the Plan, although the Plan does identify an objective of coordinating transportation planning and funding with neighboring jurisdictions and local transportation agencies so that sufficient right-of-way for future transportation corridors may be preserved.

Cary. The Town of Cary *Comprehensive Plan* is a compilation of several separate plans and elements that together describe the Town's official vision for Cary's future. The plan addresses issues including growth, land use, transportation, and housing. The Town of Cary *Land Use Plan*, adopted in 1996 and last amended in 2009, is the land use component of the Comprehensive Plan. The Land Use

Plan presents the Town's official policy regarding the form and pattern of future development. One of its functions is to direct provision of public infrastructure. The Land Use Plan Map identifies the protected corridor for Phase I of the Southeast Extension as "Planned Outer Loop Right of Way."

The Town's *Comprehensive Transportation Plan* (CTP), adopted in 2001 and last revised in 2007, identifies goals and recommendations for provision of transportation facilities in the Town. The CTP identifies the Triangle Expressway as a planned project, but does not specifically identify the Southeast Extension.

Apex. The Town of Apex adopted its *Comprehensive Plan* in 2004 with a goal of presenting a vision of the community's future to inform development decisions. The Plan includes a map illustrating proposed land uses in the Town in 2025. The map designates several activity centers—key areas to accommodate higher-density, mixed-use growth. One of the proposed activity centers is just north of the western terminus of the Southeast Extension at NC 55. Office space in larger buildings is envisioned as a key element of this activity center.

Some of the transportation-related goals of the *Comprehensive Plan* include "efficient traffic circulation" and "infrastructure that helps achieve land use and growth management objectives."

Garner. Garner's *Comprehensive Growth Plan* (2006) is intended to provide a long-range vision for land development and redevelopment opportunities, community infrastructure decisions and community image. Measures to address water quality issues in the Lake Benson area are especially prominent in the Plan. The Plan identifies several activity centers, where commercial, higher density residential, and mixed uses can be located. The area surrounding the intersection of US 401 and the protected corridor for Phase I of the Southeast Extension is identified as an activity center.

The *Garner Transportation Plan* (1999) was developed to help guide local decisions on land use development and roadway improvements. This Plan designates both phases of the Southeast Extension ("Outer Loop") as a future freeway facility through the Garner area. The Transportation Plan states that failing to construct the Outer Loop will be detrimental to traffic congestion in Garner and that the facility "…will be critical to keeping through traffic from clogging roadways in Garner."

Holly Springs. *Vision Holly Springs* (2008) is the Town of Holly Springs Comprehensive Plan. The Plan seeks to establish and enhance a townwide identity, encourage economic development, and promote livability. It establishes a future land use strategy, including a map of planned future land uses. The Plan identifies regional centers for mixed use development along major transportation routes through the town to ensure the best possible access while minimizing negative impacts on area residential development. One of these regional centers, surrounding the intersection of Kildaire Farm Road and Holly Springs Road, is in the vicinity of the protected corridor for Phase I of the Southeast Extension.

Vision Holly Springs includes a transportation element, which establishes a vision for the future transportation system in the town. The transportation element identifies the Southeast Extension ("Wake Freeway") as the largest and most significant planned road improvement that will impact the town. The plan identifies the Southeast Extension as a future freeway facility through the Holly Springs area.

Knightdale – The Town of Knightdale *2027 Comprehensive Plan*, adopted in 2003, is a direct response to the community's rapid growth, creating the building blocks for the Town's future

development. It includes a section outlining the Town's vision for its future and sections addressing individual topics including land use and transportation.

The transportation element of the *2027 Comprehensive Plan*, titled the Transportation Master Plan, seeks to encourage the development of a transportation network that disperses traffic while connecting and integrating the Town's neighborhoods. I-540 is identified as an important regional roadway facility that will both provide access to all parts of the Triangle Region and influence development in Knightdale; however, the Plan's discussion of I-540 focuses on the portion north of US 64/US 264 Bypass.

Johnston County – The *Johnston County 2030 Comprehensive Plan*, adopted in March 2009, is organized around seven goals for County growth including managing growth and infrastructure, expanding economic opportunities, preserving farmland and rural character, and enhancing mobility. The Plan indicates that the County's growth patterns have typically been driven by the location of major transportation facilities and that the County will continue to support key roadway improvements. While promoting future growth the County seeks to protect area farming operations both for community character and economic benefits.

The Southeast Extension is shown as a planned transportation improvement in the Comprehensive Plan. The Swift Creek watershed area, east of Clayton, is shown as an Environmental Sensitive Zone.

Clayton – The Town of Clayton adopted a *Strategic Growth Plan* in March 2008 to prepare for increasing population growth and its effects on transportation, open space, and other community features. The Plan addresses the incorporated town as well as its extraterritorial jurisdiction, which extends approximately two miles around the town limits. The Plan indicates that the fact that many Clayton residents commute to jobs in Raleigh and other surrounding areas contributes to local traffic congestion. The Plan includes a map designating proposed land uses within the town and its extraterritorial jurisdiction. The Southeast Extension is shown as a proposed freeway on this map. Parts of the project study area within Clayton are generally designated for moderately dense residential development, with areas along US 70 Business designated for commercial development.

8 TRANSPORTATION PLANS AND INITIATIVES

8.1 NCDOT 2009-2015 STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

The STIP outlines the State's transportation priorities for the next 7 years. The first four years of the 7-year plan are financially constrained based on the amount of funding programmed and available. The proposed action is designated in the current STIP as three separate projects listed below. Each project is designated as a freeway facility on new location.

- R-2721 – 7.8 miles from NC 55 to US 401,
- R-2828 – 8.7 miles from US 401 to I-40, and
- R-2829 – 10.8 miles from I-40 to US 64/US 264.

Other STIP capacity projects located in the general vicinity of the proposed project are shown in **Figure 7** and listed below:

Project R-2635 – Western Wake Freeway, from NC 55 Bypass near Holly Springs to NC 55 near RTP. Freeway on new location; total project length is 12.6 miles. Under construction.

Project U-4763A – Triangle Parkway, from McCrimmon Parkway to NC 540. Freeway on new location; total project length is 1.2 miles. Under construction.

Project U-4763B – Triangle Parkway, from NC 540 to I-40 at NC 147. Freeway on new location; total project length is 3.5 miles. Under construction.

Project R-2609 – Widen US 401 from north of Fayetteville to Fuquay-Varina. Planning/design is underway; construction unfunded.

Project I-4744 – Add lanes to I-40 from Wade Avenue to I-440/US 1/64; total project length is 4 miles. Under construction.

Project I-5111 – Add lanes to I-40 from I-440/US 64 to US 70 Clayton Bypass; total project length is 9 miles. Planning/design is underway; right-of-way acquisition for Wake County portion is scheduled for fiscal year 2014; construction unfunded.

Project I-4739 – Access improvements to I-40 in the vicinity of the existing NC 42 interchange. Planning/design underway; construction unfunded.

Project R-2540 – Upgrade existing NC 55 from US 421 in Harnett County to US 401 in Wake County. Right-of-way and construction unfunded.

Project U-2823 – Upgrade US 70 (Glenwood Avenue) from west of SR 1664 (Duraleigh Road) to west of SR 2876 (Triangle Drive) to improve capacity, safety and traffic operations, including an interchange at Lynn Road; total project length is 3.3 miles. Right-of-way and construction unfunded.

Project U-3111 – Tryon Road Extension from SR 1004 (Old Garner Road) to SR 2543 (Rock Quarry Road). Multiple lanes on new location; total project length is 2.9 miles. Right-of-way and construction unfunded.

Project U-3343 – Add lanes to SR 1002 (Aviation Parkway) from NC 54 to I-40; total project length is 2.6 miles. Right-of-way and construction unfunded.

Project U-3344 – Add lanes to SR 3015 (Airport Boulevard) from NC 54 to I-40; total project length is 1.9 miles. Right-of-way and construction unfunded.

Project U-3441 – Add lanes to SR 2233 (North Smithfield Road) from Carrington Drive to SR 2049 (Forestville Road); total project length is 1 mile. Right-of-way and construction unfunded.

Project U-3607 – Widen New Rand Road from Timber Drive to US 70 to three lanes; total project length is 1.1 miles. Right-of-way and construction unfunded.

Project U-5024 – Green Oaks Parkway from SR 1152 to NC 55 Holly Springs Bypass. Multiple lanes on new location; total project length is 1.4 miles. Under construction.

Project U-4703 – Timber Drive East Extension, NC 50 to White Oak Road. Multiple lanes on new location; total project length is 1.3 miles. Right-of-way acquisition is underway, construction scheduled for fiscal year 2011.

Project R-2552 – Clayton Bypass from I-40 in Wake County to US 70/70 Business in Johnston County. Freeway on new location; total project length is 9.5 miles. Construction of most segments is complete.

Project R-3410/R-3825 – Widen NC 42 from NC 50 to SR 1003; total project length is 14 miles. Planning/design is underway; construction unfunded.

Project R-3618 – Shotwell Road from west of US 70 to NC 42 east of Clayton. Multiple lanes on new location; total project length is 3 miles. Planning/design underway; construction unfunded.

8.2 NCDOT STRATEGIC HIGHWAY CORRIDORS INITIATIVE

North Carolina's Strategic Highway Corridors Initiative "represents a timely effort to protect and maximize the mobility and connectivity on a core set of highway corridors throughout North Carolina, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods." The primary purpose of the Strategic Highway Corridors initiative is to provide a network of high-speed, safe, reliable highways throughout North Carolina. Approximately 5,400 miles of existing and proposed roadways in North Carolina are designated as Strategic Highway Corridors. These highways are considered vital to moving people and goods within and just outside of North Carolina. While these roads account for only 7 percent of the State's highway system, they carry 45 percent of the State's traffic.

Strategic Highway Corridors within the project study area and surrounding region include I-40, I-440, I-540, NC 540, US 1, US 64, US 401, and US 70. The entire Raleigh 540 Outer Loop, including the proposed action, is included on the Strategic Highway Corridors Vision Plan as a planned freeway facility.

8.3 CAPITAL AREA MPO AND DURHAM-CHAPEL HILL-CARRBORO MPO JOINT 2035 LRTP

Prepared jointly by the two MPOs in the Triangle Region, this joint LRTP was adopted in May 2009. It outlines a long range plan for multimodal transportation investments in the future (through the year 2035) to match the expected growth in the region, balancing the needs of growth, mobility and sustainability. The goal of the overall transportation system as articulated in the plan is to have: "a safe, sustainable, efficient, attractive, multimodal transportation system that supports local land use; accommodates trip-making choices; maintains mobility; protects the environment and neighborhoods; and improves the quality of life for urban area residents." The 540 Outer Loop was first identified as a regional need in the 1968 *Greater Raleigh Thoroughfare Plan*. CAMPO first described a general alignment for the Outer Loop in the 1984 update of the *Greater Raleigh Thoroughfare Plan*.

All three STIP project segments that comprise the proposed action are in the 2035 LRTP for the region, as a 2025 horizon year project.

8.4 CAPITAL AREA MPO 2009-2015 METROPOLITAN TRANSPORTATION IMPROVEMENT PROGRAM (MTIP)

The Capital Area MPO Transportation Advisory Committee (TAC) approved the Fiscal Year 2009-2015 MTIP in August 2008. The MTIP identifies and priorities transportation improvement projects over the next seven years. All three STIP project segments that comprise the proposed action are in the MTIP. Each of the three STIP projects is listed as in the planning/design phase, with right-of-way and construction unfunded.

8.5 LOCAL JOINT RESOLUTIONS

The Towns of Cary, Apex, Holly Springs, Fuquay-Varina and Garner (as well as the Regional Transportation Alliance) passed a joint resolution titled: *Resolution to Support a Study of Toll Funding to Accelerate the Construction of I-540 in Southwestern Wake County.* This resolution includes a section of the proposed action. The resolution - which includes the western section currently under construction and the southern section between NC 55 and I-40 that is part of the proposed action – notes that the western and southern sections of the I-540 loop freeway will provide a high speed travel option that will save time and money as well as preserve economic competitiveness in Wake County.

In October 2007, the City of Raleigh, the Town of Garner, and Wake County approved a joint resolution (#2007-381) concerning the proposed Eastern Wake Expressway (STIP Project R-2829) from I-40 to the US 64/US 264 Bypass. Specifically noting that the completion of the 540 Outer Loop is essential for ensuring long-term economic vitality and mobility in and around the City of Raleigh, Wake County and the greater Triangle Region, this resolution made two requests to NCDOT:

1) That NCDOT file for corridor protection of the Eastern Wake Expressway pursuant to the provisions of the Transportation Corridor Official Map Act; and

2) That NCDOT expedite the development of the Environmental Impact Statement for the project and to include these municipalities as stakeholders in the process.

These two resolutions are shown in **Appendix A**.

8.6 FEDERAL SUSTAINABILITY AND LIVABILITY GOALS

In 2009, U.S. Transportation Secretary Ray LaHood committed to uphold principles of sustainability as they relate to infrastructure investments. The U.S. Department of Transportation (USDOT) joined the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (USEPA) in an interagency Partnership of Sustainable Communities aimed at working together to ensure that housing and transportation goals are met while protecting the environment, promoting equitable development, and addressing climate change. This partnership established six livability principles including the enhancement of economic competitiveness through "reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers as well as expanded business access to markets."

The proposed action has the potential to decrease commute times for residents in southern and eastern Wake County and western Johnston County, which would enhance the livability and sustainability of the Triangle Region.

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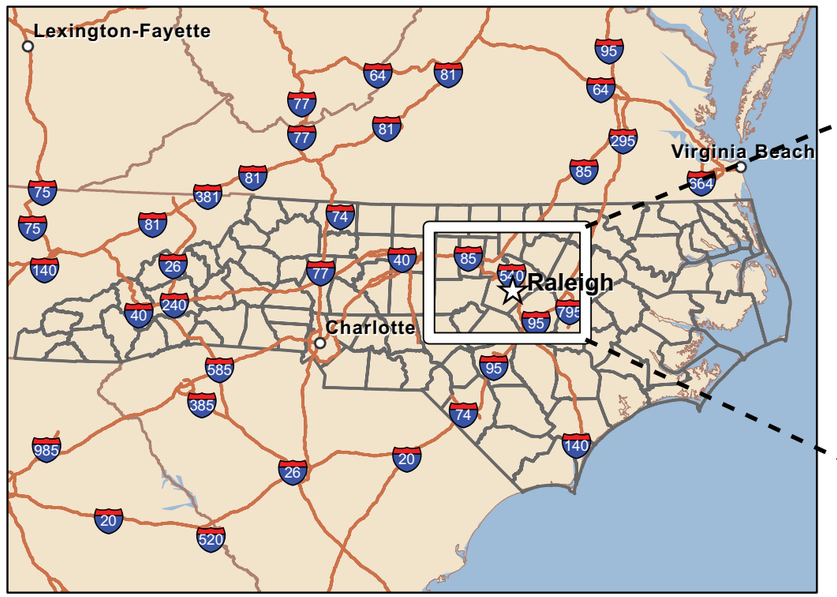
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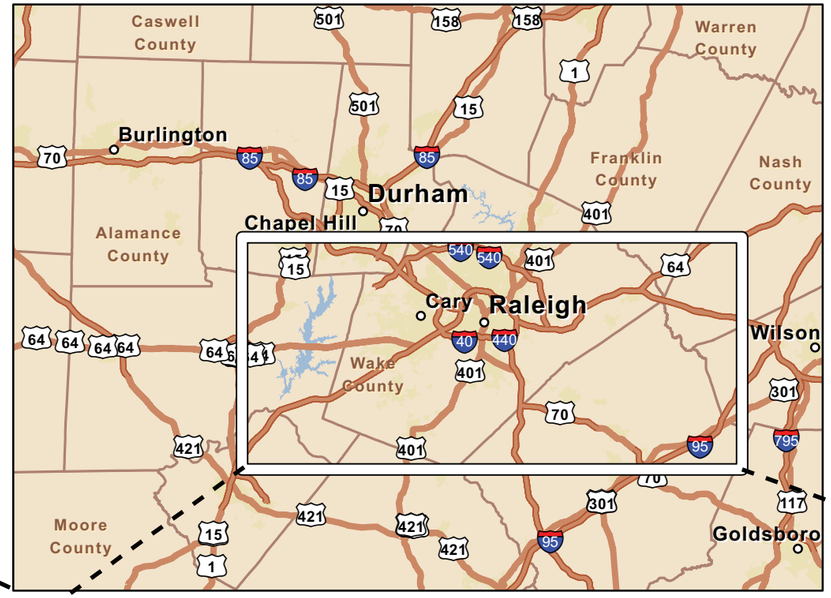
Charlotte


Caswell County
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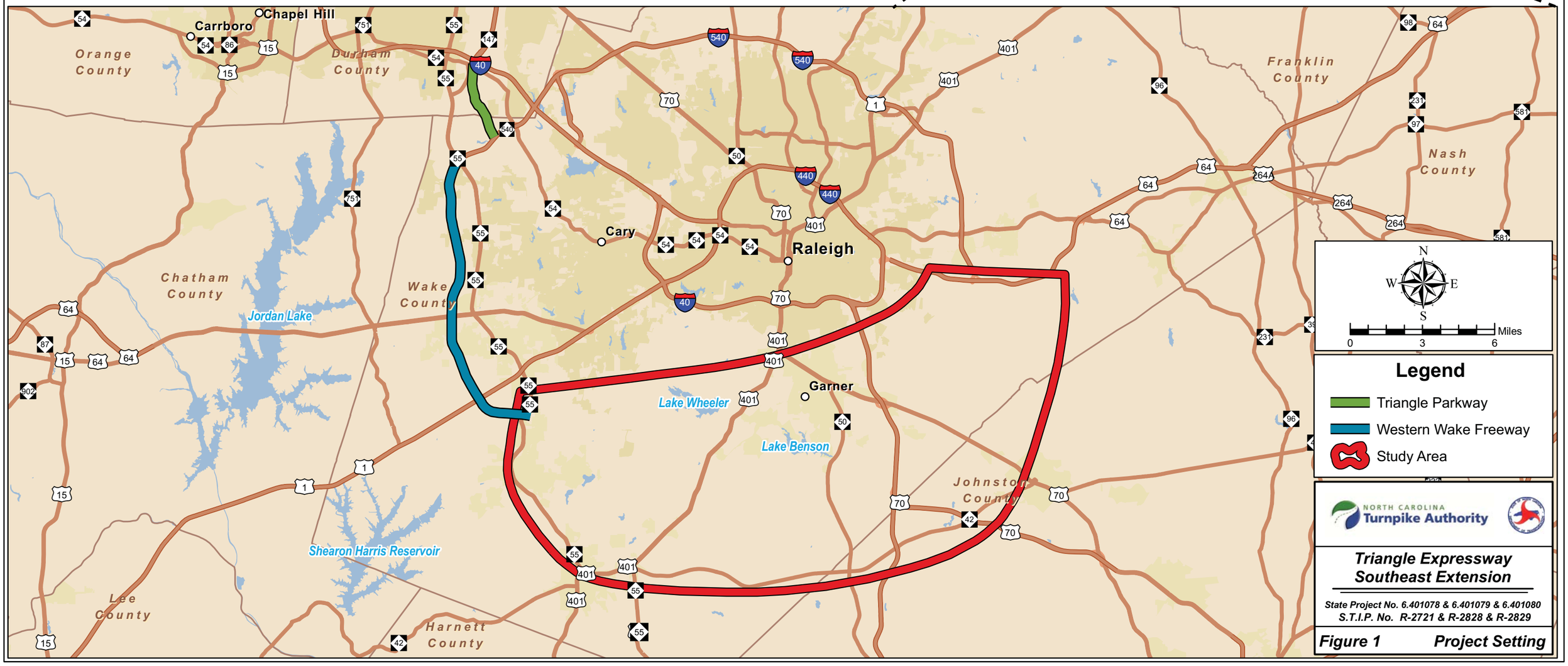
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Wake County
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Lake Benson
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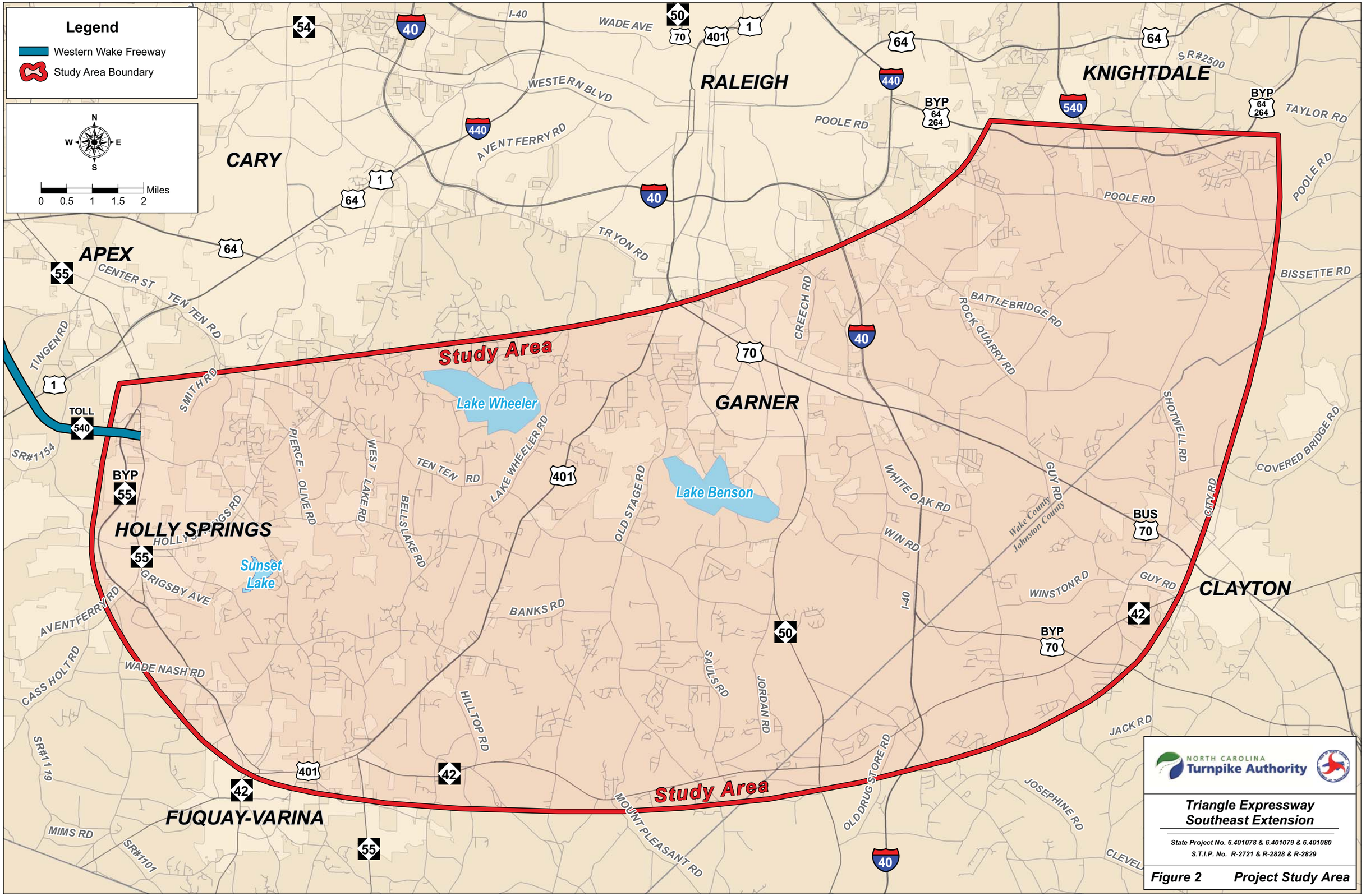
Legend
Triangle Parkway
Western Wake Freeway
Study Area
NORTH CAROLINA Turnpike Authority
Triangle Expressway Southeast Extension
State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829
Figure 1 Project Setting



NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 2 Project Study Area

NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

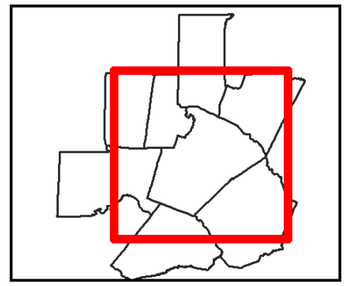
State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 3 — 2035 LRTP Transit Service Plan

DCHC — DURHAM-CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION

2035 Long Range Transportation Plan

April 21, 2009



Transit Service Plan

- * Light Rail Transit: 2025
- Light Rail Transit: 2035
- Commuter Rail: 2025

Local Bus Service

- Existing
- 2015
- 2025
- 2035
- Regular Bus
- Express Bus

* Light rail alignment subject to further study

N

This map was compiled using the best available data, however, the Capital Area MPO is not responsible for errors, omissions, and/or misuse.

Map created on April 21, 2009 by the Capital Area MPO.

Miles

0 2 4 8 12

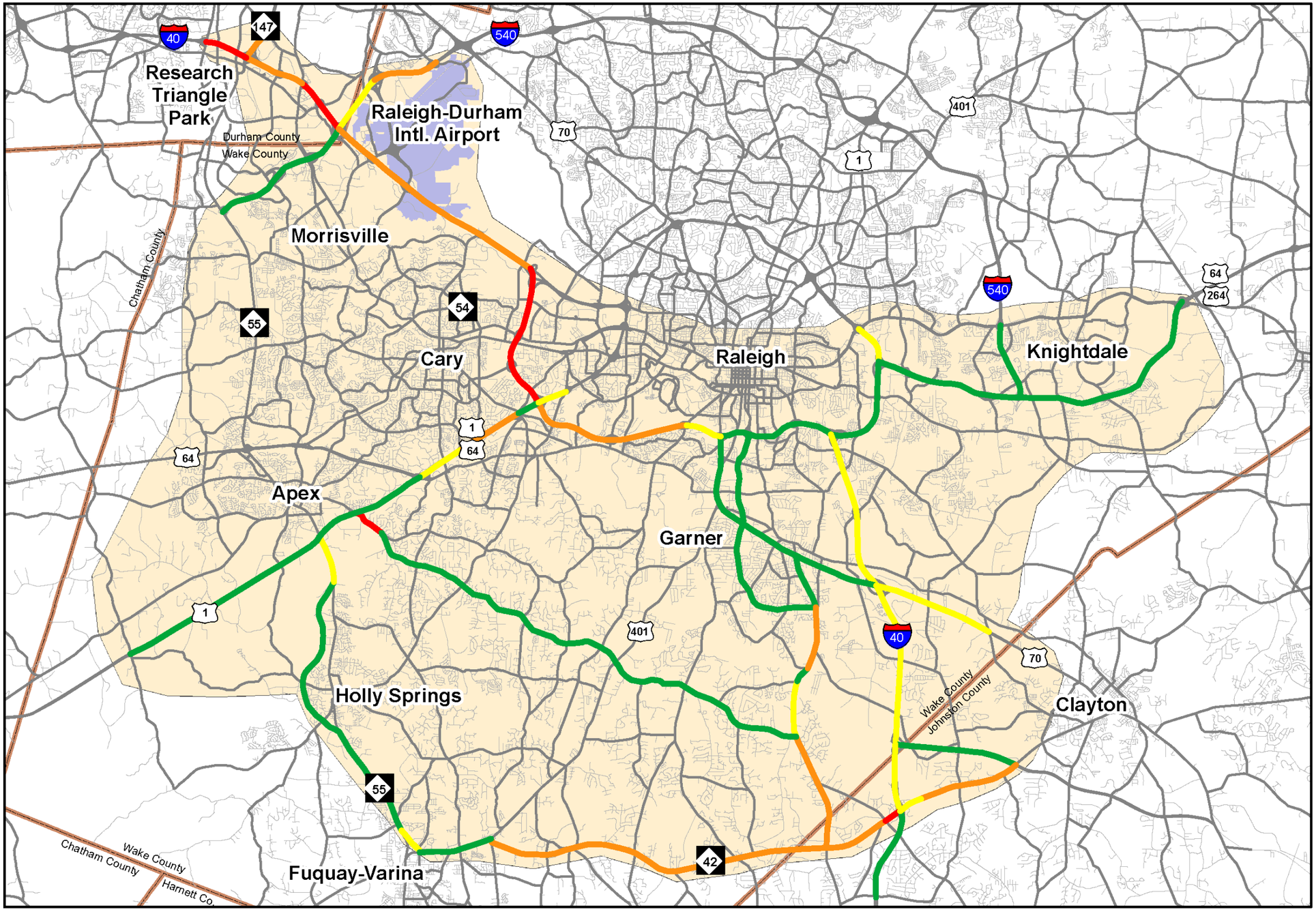
Capital Area Metropolitan Planning Organization

NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 4 — *Existing Traffic Levels of Service (2008)*



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- LOS A-C
- LOS D
- LOS E
- LOS F

Legend

- 2008 Highway Network
- Counties
- Study Area

LOS = Level of Service
V/C = Volume to Capacity

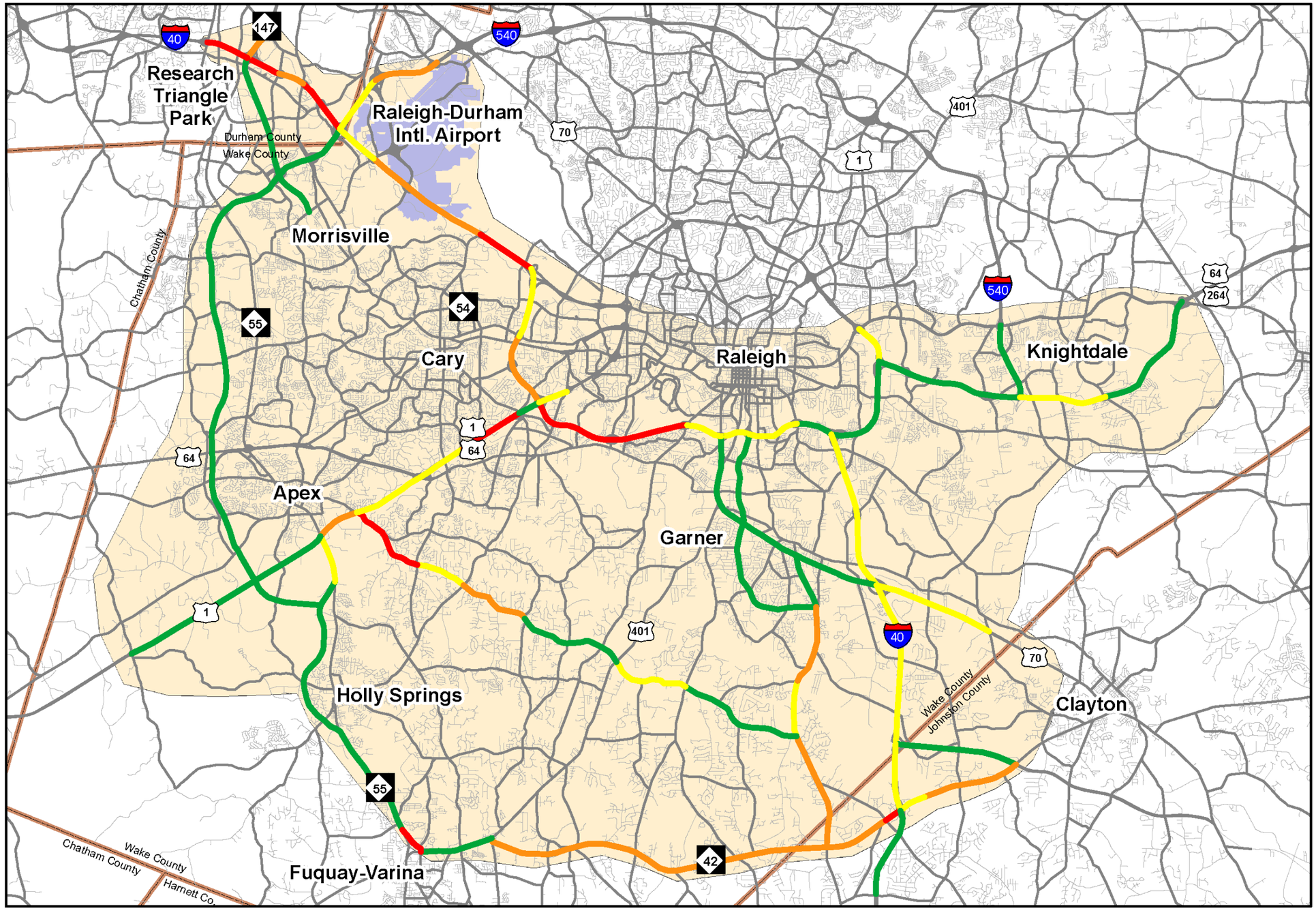
0 1 2 3 4 5 Miles

NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 5 — **Base Year Traffic Levels of Service (2011)**



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- LOS A-C
- LOS D
- LOS E
- LOS F

Legend

- 2008 Highway Network
- Counties
- Study Area

LOS = Level of Service
V/C = Volume to Capacity

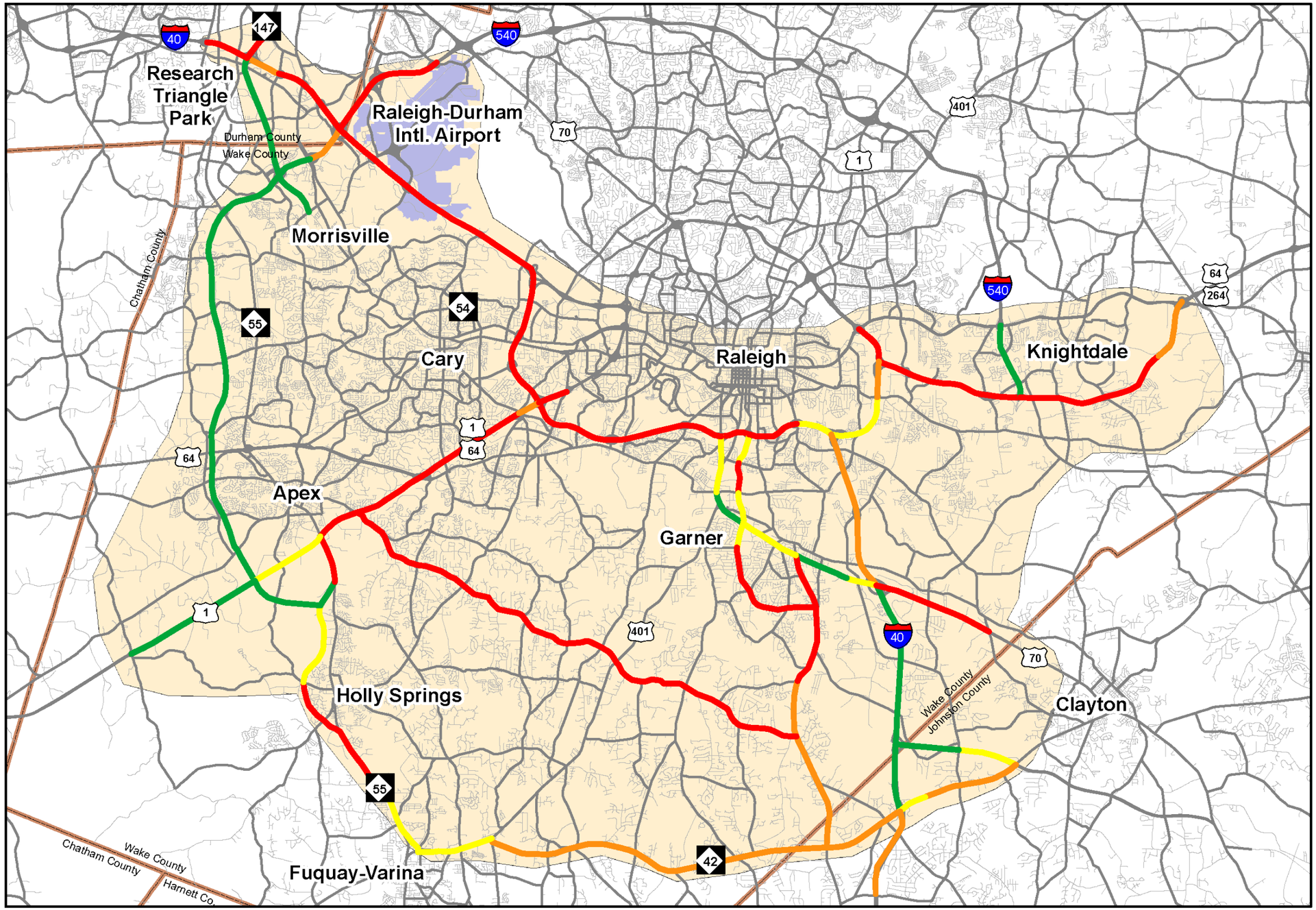
0 1 2 3 4 5 Miles

NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 6 — ***2035 No-Build Traffic Levels of Service***



N
W E
S

- LOS A-C
- LOS D
- LOS E
- LOS F

Legend

- 2008 Highway Network
- Counties
- Study Area

LOS = Level of Service
V/C = Volume to Capacity

0 1 2 3 4 5 Miles

DURHAM
Durham County
U-4763B
U-3344
U-2823
70
50
1
401
55
54
40
U-4763A
U-3343
MORRISVILLE
Raleigh-Durham International Airport
Franklin County
64
264
ZEBULON
Jordan Lake
440
RALEIGH
540
U-3441
751
64
KNIGHTDALE
BYP
64
264
WENDELL
I-4744
CARY
Chatham County
R-2635
64
1
64
APEX
40
U-3111
GARNER
Lake Wheeler
70
1010
U-4703
Lake Benson
R-3618
1
HOLLY SPRINGS
401
I-5111
CLAYTON
42
U-5024
R-2552
BUS
70
Shearon Harris Reservoir
Johnston County
BYP
70
I-4739
R-3410/R-3825
WILSON'S MILLS
42
50
FUQUAY-VARINA
1010
42
R-2609
R-2540
55
Harnett County
401
40

N
W
E
S
Miles
0 1 2

Legend
- Study Area
- Rural Project
- Urban Project
- Improvements Project

NORTH CAROLINA Turnpike Authority

Triangle Expressway Southeast Extension

State Project No. 6.401078 & 6.401079 & 6.401080
S.T.I.P. No. R-2721 & R-2828 & R-2829

Figure 7 — ***Project Area STIP Projects***

APPENDICES

APPENDIX A
Local Government Resolutions

RESOLUTION TO SUPPORT A STUDY OF TOLL FUNDING TO ACCELERATE THE CONSTRUCTION OF I-540 IN SOUTHWESTERN WAKE COUNTY

WHEREAS the growth in western and southern Wake County and surrounding areas has already overwhelmed the existing highway system in the southern Triangle; and

WHEREAS the proposed western and southern sections of the I-540 Wake freeway loop will provide a high speed, signal-free travel option that will save time, money, and lives throughout the region and preserve economic competitiveness in western and southern Wake County; and

WHEREAS increasing demands on scarce transportation funds is an unfortunate reality that has delayed the western section of I-540 by years and the southern section of I-540 indefinitely; and

WHEREAS the North Carolina General Assembly created the NC Turnpike Authority in October 2002 in order to speed the implementation of needed transportation improvements and to help meet more transportation needs than NCDOT could otherwise afford; and

WHEREAS the potential may exist to accelerate the opening of the entire western Wake freeway – to the US 1 freeway and the Holly Springs bypass – by several years, even with the additional $8 million devoted to the project in the recent federal highway legislation; and

WHEREAS the potential may also exist to accelerate the opening of the southern Wake freeway – to I-40 and the Clayton freeway bypass – by 15 or more years, perhaps a generation faster; and

WHEREAS there needs to be consideration and study of the potential for toll user fees to leverage our existing Highway Trust Fund loop funding authorizations to gain more control over our mobility future by reducing uncertainties in funding timetables for I-540;

BE IT THEREFORE RESOLVED that the undersigned members of the elected and business community request that the NC Turnpike Authority conduct a detailed feasibility study to determine the true viability of, and expected timesavings associated with, accelerating the construction of both the western and southern portions of the I-540 Wake freeway loop as two phases of a single potential Turnpike project in southwestern Wake County.

BE IT FURTHER RESOLVED that the undersigned members of the elected and business community will require assurances that this feasibility study include the following considerations: that the provisions of General Statute § 136-89.196 – which require the removal of tolls upon fulfillment of the Turnpike's revenue bonds – are adhered to, and that toll revenue generated by this toll road be used exclusively for pay down of the Turnpike's revenue bonds associated with this Turnpike project.

Signed,

Mayor Ernie McAlister
Town of Cary

Mayor Keith Weatherly
Town of Apex

Mayor Dick Sears
Town of Holly Springs

Mayor John Byrne
Town of Fuquay-Varina

Mayor Ronnie Williams
Town of Garner

Joe Freddoso, 2005-06 Chair
Regional Transportation Alliance

CITY OF RALEIGH RESOLUTION 2007 – 381

A Joint Resolution Concerning the Proposed Eastern Wake Expressway
NCDOT TIP Project R-2829

WHEREAS, the completion of the Raleigh Outer Loop is essential for ensuring long-term economic vitality and mobility in and around the City of Raleigh, Wake County, and the greater Triangle Region; and,

WHEREAS, the Eastern Wake Expressway is a major segment of the Raleigh Outer Loop, which proposes to extend Interstate 540 south of the US 64 Bypass to I-40 at the US 70 Bypass near the Johnston County line; and,

WHEREAS, the proposed Eastern Wake Expressway is an adopted element of the transportation plans for the City of Raleigh, the Town of Garner, Wake County, the Capital Area Metropolitan Planning Organization (CAMPO), and the North Carolina Department of Transportation (NCDOT); and,

WHEREAS, the proposed Eastern Wake Expressway is an adopted element of the CAMPO 2030 Long Range Transportation Plan; and,

WHEREAS, the proposed Eastern Wake Expressway is currently included in NCDOT's adopted 2007-2013 Transportation Improvement Program as an unfunded project (TIP Project R-2829); and,

WHEREAS, the Environmental Impact Statement (EIS) necessary for this project has not been fully initiated, nor does NCDOT plan to complete it within the next seven years; and,

WHEREAS, there is no preliminary corridor established for the proposed Eastern Wake Expressway that can be protected from, or reserved by, private and public development; and,

WHEREAS, in an absence of formal corridor protection or a completed EIS, new development encroachment in this area may impact the location of the freeway corridor and the cost of future right-of-way acquisition, or it may subsequently jeopardize the constructability of the freeway.

THEREFORE BE IT RESOLVED, the City of Raleigh, and the Town of Garner, and Wake County jointly request the North Carolina Department of Transportation files for corridor protection of the Eastern Wake Expressway pursuant to the provisions of General Statute Chapter 136, Article 2E, "Transportation Corridor Official Map Act."

BE IT FURTHER RESOLVED, the City of Raleigh, and the Town of Garner, and Wake County urge NCDOT to expedite the development of the Environmental Impact Statement for the Eastern Wake Expressway (TIP Project R-2829), and to include Raleigh, Garner and Wake County as stakeholders in the EIS development process.

Adopted by the City of Raleigh October 16, 2007

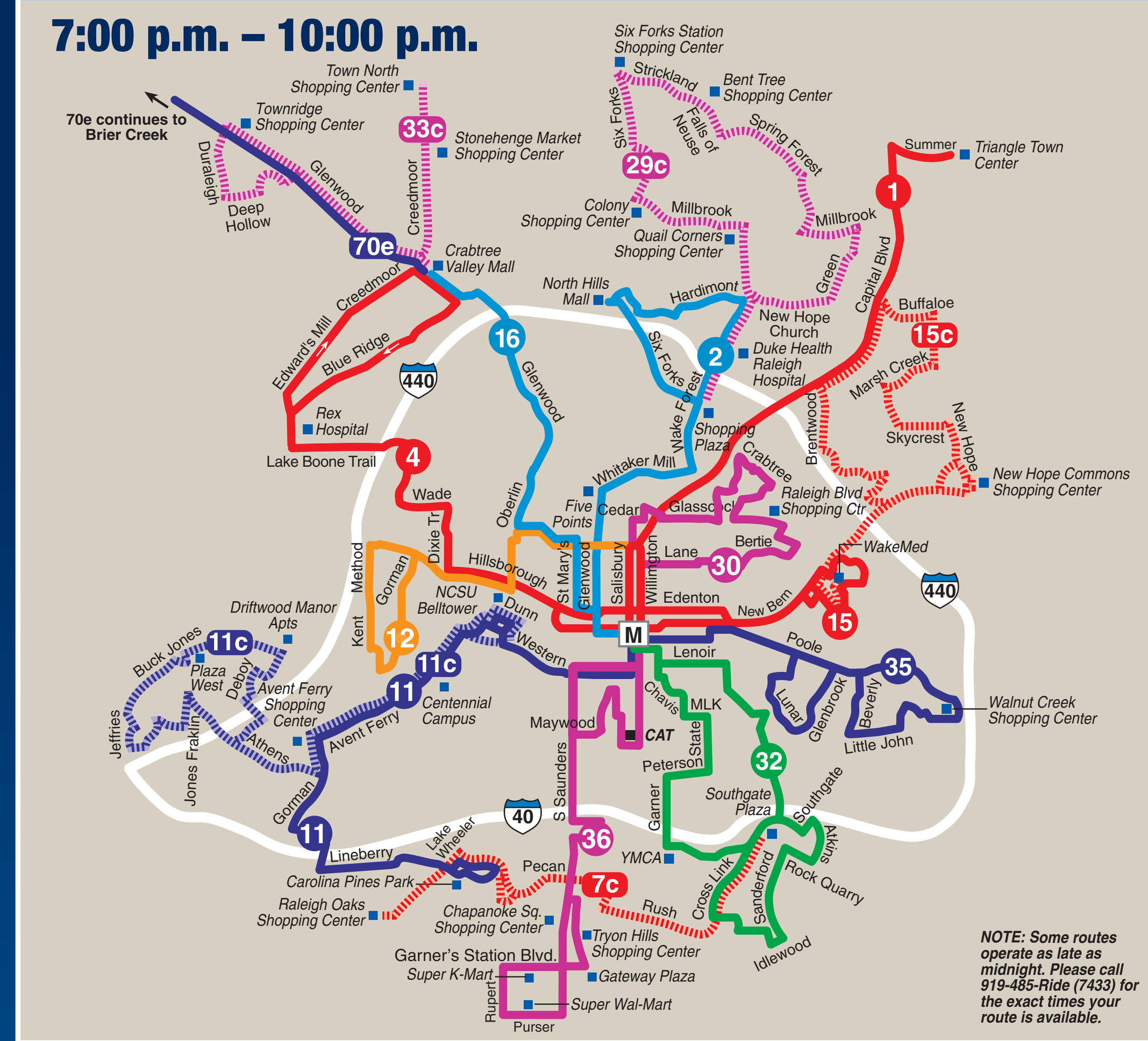
APPENDIX B
Transit Route Maps

Early Morning Service / *Servicio Temprano en la Mañana*

4:30 a.m. – 5:30 a.m.

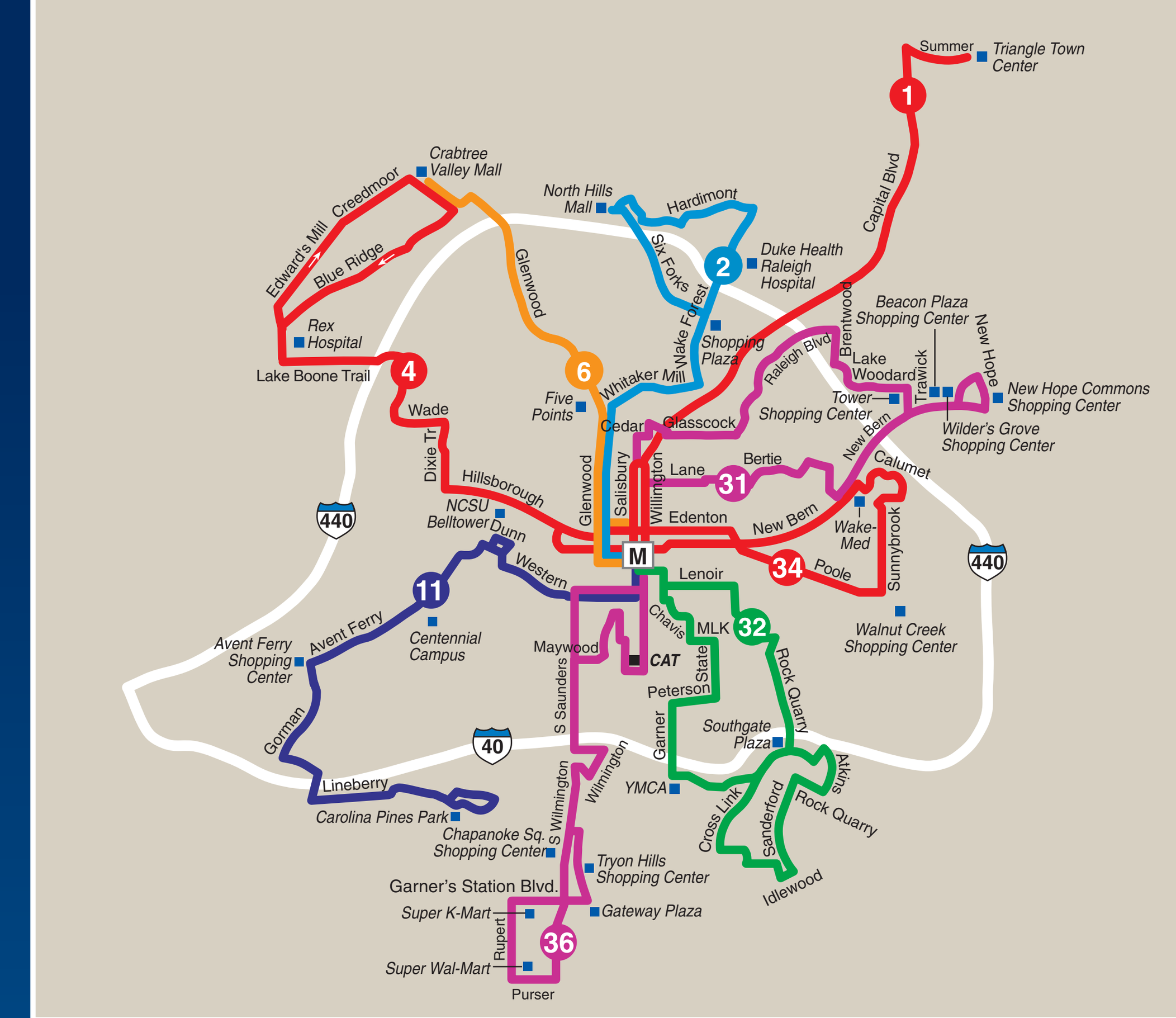
Evening Service / *Servicio de la Tarde*

7:00 p.m. – 10:00 p.m.



Sunday Service / *Servicio de la Domingo*

8:00 a.m. – 8:00 p.m.



ROUTE / Rutas

Radial Routes / Rutas Radiales

- 1 Capital
- 2 Falls of Neuse
- 3 Glascock
- 4 Rex Hospital
- 5 Biltmore Hills
- 6 Crabtree
- 7 South Saunders
- 8 Northclift
- 10 Longview
- 11 Avent Ferry
- 12 Method
- 13 Chavis Heights
- 15 WakeMed
- 16 Oberlin
- 18 Worthdale
- 19 Apollo Heights
- 21 Caraleigh
- 22 State Street

CAT Connector Routes / Rutas Del Conector

- 7c Carolina Pines / Rush
- 8c Sawmill
- 11c Buck Jones
- 15c Trawick
- 23c Millbrook
- 24c North Crosstown
- 25c Triangle Town Center

Express Routes / Rutas del Exprese

- 40e Wake Tech Express
- 70e Brier Creek Express

Regional Routes / Rutas de TTA

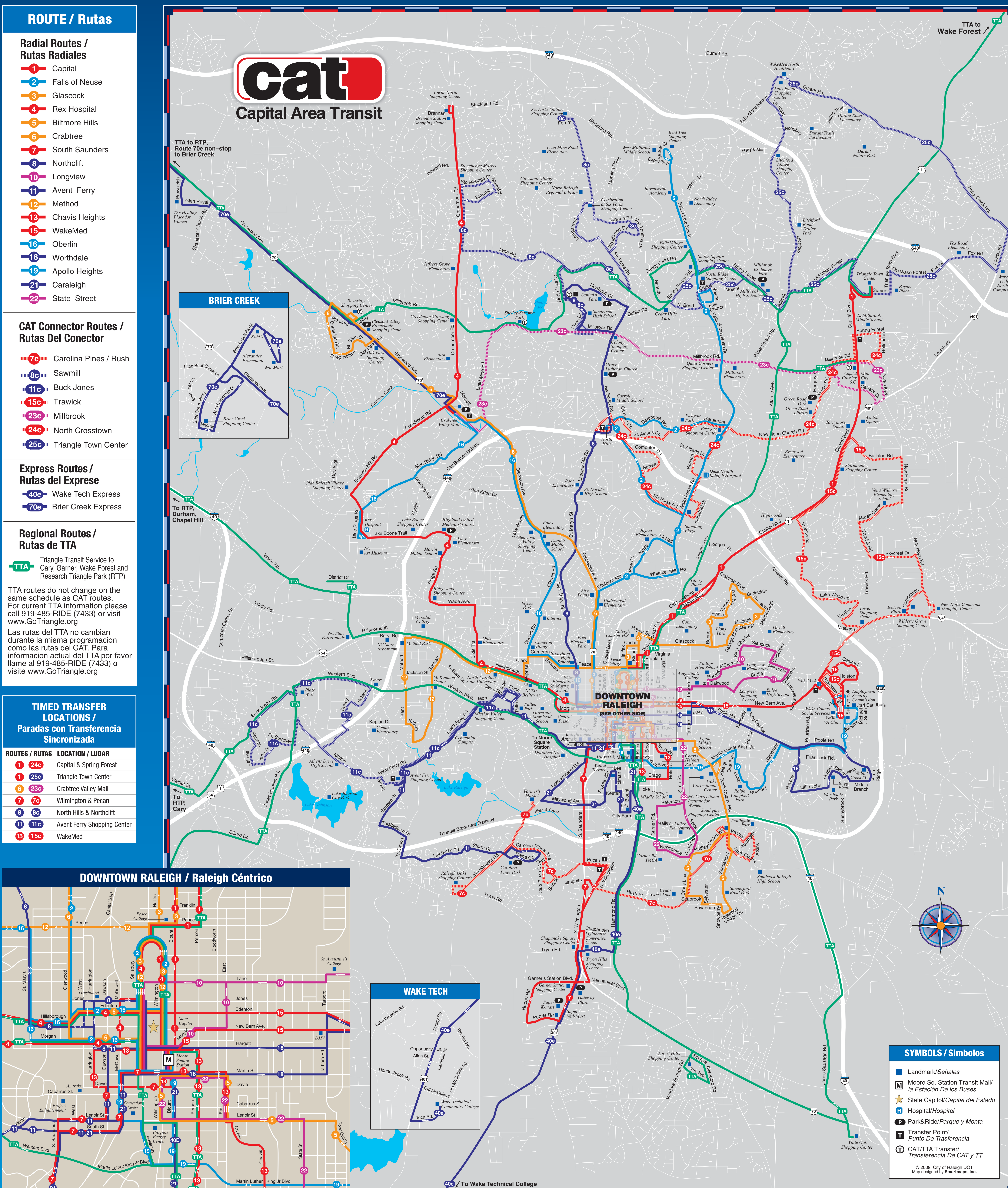
- TTA Triangle Transit Service to Cary, Garner, Wake Forest and Research Triangle Park (RTP)

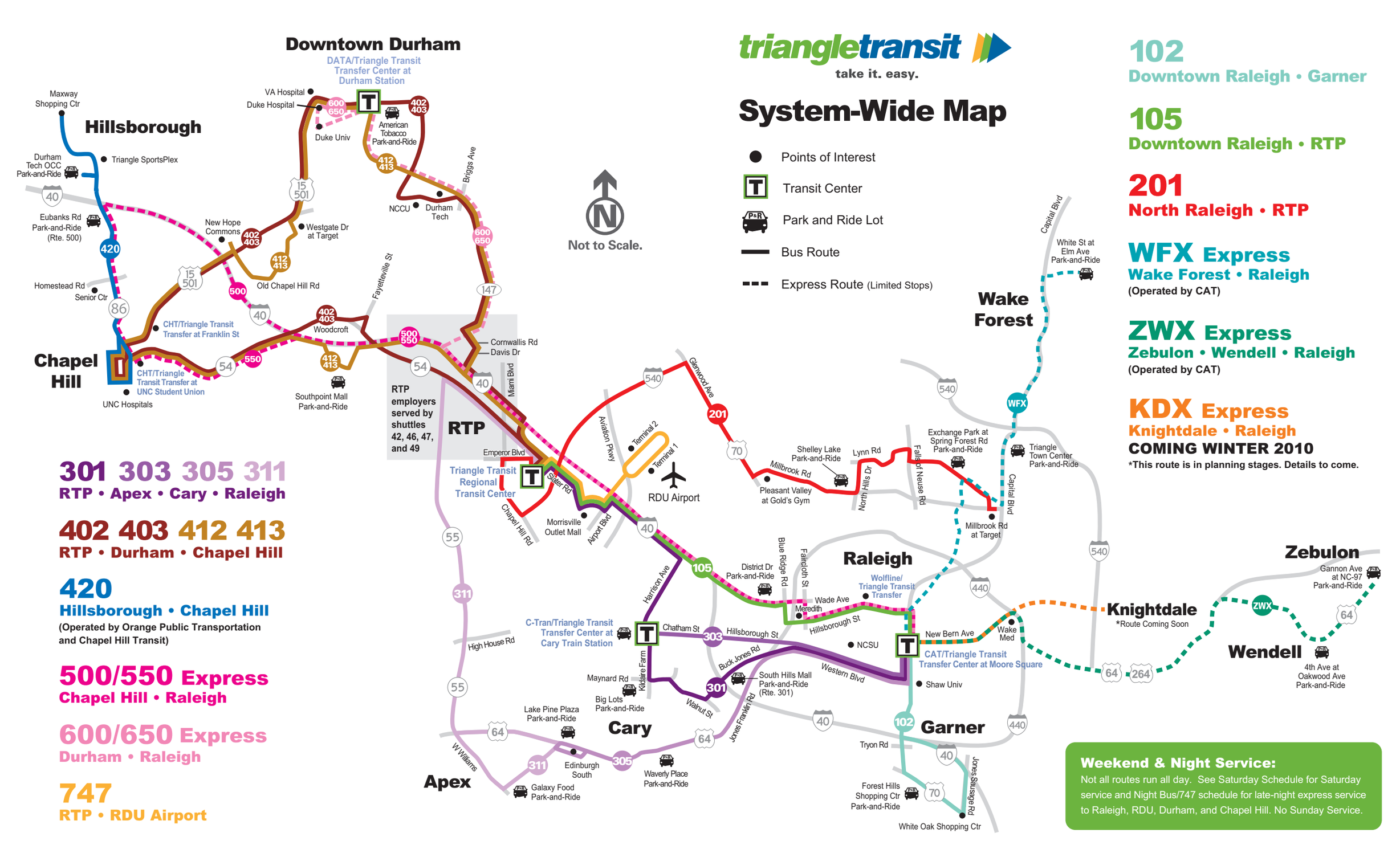
TTA routes do not change on the same schedule as CAT routes. For current TTA information please call 919-485-RIDE (7433) or visit www.GoTriangle.org

Las rutas del TTA no cambian durante la misma programacion como las rutas del CAT. Para informacion actual del TTA por favor llame al 919-485-RIDE (7433) o visite www.GoTriangle.org

TIMED TRANSFER LOCATIONS / Paradas con Transferencia Sincronizada

ROUTES / RUTAS	LOCATION / LUGAR
1 24c	Capital & Spring Forest
1 25c	Triangle Town Center
6 23c	Crabtree Valley Mall
7 7c	Wilmington & Pecan
8 8c	North Hills & Northclift
11 11c	Avent Ferry Shopping Center
15 15c	WakeMed




triangletransit
take it. easy.
System-Wide Map
Points of Interest
Transit Center
Park and Ride Lot
Bus Route
Express Route (Limited Stops)
Not to Scale.
Downtown Durham
DATA/Triangle Transit Transfer Center at Durham Station
VA Hospital
Duke Hospital
Duke Univ
American Tobacco Park-and-Ride
NCCU
Durham Tech
Briggs Ave
Maxway Shopping Ctr
Hillsborough
Triangle SportsPlex
Durham Tech OCC Park-and-Ride
Eubanks Rd Park-and-Ride (Rte. 500)
New Hope Commons
Westgate Dr at Target
Old Chapel Hill Rd
Fayetteville St
Homestead Rd
Senior Ctr
CHT/Triangle Transit Transfer at Franklin St
Chapel Hill
CHT/Triangle Transit Transfer at UNC Student Union
UNC Hospitals
Woodcroft
Southpoint Mall Park-and-Ride
RTP employers served by shuttles 42, 46, 47, and 49
RTP
Cornwallis Rd
Davis Dr
Miami Blvd
Emperor Blvd
Triangle Transit Regional Transit Center
Chapel Hill Rd
Slater Rd
Morrisville Outlet Mall
Aviation Pkwy
Airport Blvd
Terminal 2
Terminal 1
RDU Airport
Glenwood Ave
Millbrook Rd
Pleasant Valley at Gold's Gym
Shelley Lake Park-and-Ride
Lynn Rd
North Hills Dr
Falls of Neuse Rd
Exchange Park at Spring Forest Rd Park-and-Ride
Millbrook Rd at Target
Capital Blvd
White St at Elm Ave Park-and-Ride
Wake Forest
Triangle Town Center Park-and-Ride
Raleigh
District Dr Park-and-Ride
Blue Ridge Rd
Faircloth St
Wolfline/ Triangle Transit Transfer
Wade Ave
Meredith
Hillsborough St
Harrison Ave
Chatham St
C-Tran/Triangle Transit Transfer Center at Cary Train Station
High House Rd
NCSU
New Bern Ave
Wake Med
CAT/Triangle Transit Transfer Center at Moore Square
Shaw Univ
Western Blvd
Buck Jones Rd
South Hills Mall Park-and-Ride (Rte. 301)
Maynard Rd
Kildaire Farm
Big Lots Park-and-Ride
Walnut St
Lake Pine Plaza Park-and-Ride
Cary
Jones Franklin Rd
W Williams
Edinburgh South
Waverly Place Park-and-Ride
Galaxy Food Park-and-Ride
Apex
Garner
Tryon Rd
Forest Hills Shopping Ctr Park-and-Ride
Jones Sausage Rd
White Oak Shopping Ctr
Knightdale
*Route Coming Soon
Zebulon
Gannon Ave at NC-97 Park-and-Ride
Wendell
4th Ave at Oakwood Ave Park-and-Ride
102
Downtown Raleigh • Garner
105
Downtown Raleigh • RTP
201
North Raleigh • RTP
WFX Express
Wake Forest • Raleigh
(Operated by CAT)
ZWX Express
Zebulon • Wendell • Raleigh
(Operated by CAT)
KDX Express
Knightdale • Raleigh
COMING WINTER 2010
*This route is in planning stages. Details to come.
301 303 305 311
RTP • Apex • Cary • Raleigh
402 403 412 413
RTP • Durham • Chapel Hill
420
Hillsborough • Chapel Hill
(Operated by Orange Public Transportation and Chapel Hill Transit)
500/550 Express
Chapel Hill • Raleigh
600/650 Express
Durham • Raleigh
747
RTP • RDU Airport
Weekend & Night Service:
Not all routes run all day. See Saturday Schedule for Saturday service and Night Bus/747 schedule for late-night express service to Raleigh, RDU, Durham, and Chapel Hill. No Sunday Service.

(919) 481-2020
www.townofcary.org

C-Tran CARY TRANSIT

LEGEND

- Route 1 (Maynard Loop)
- Route 2 (Maynard Loop)
- Route 3 (Harrison Ave)
- Route 4 (High House Rd to Hwy 55)
- Route 5 (Kildaire Farm Rd to Crescentcommons Rd)
- Route 6 (Buck Jones Rd/Raleigh connection)
- 301 Triangle Transit Regional Peak Bus Routes (301, 305, 311)
- 303 Triangle Transit Regional Midday Bus Route
- CT Transfer Point to C-Tran Bus Route
- TT Transfer Point to Triangle Transit Bus Route
- CAT Transfer Point to Capital Area Transit
- 11C Capital Area Transit Bus Route 11C

- Lake
- Park
- Cary Town Limit
- C-Tran Bus Stop
- Shopping Center
- School
- Wake Medical Center
- Point of Interest
- Fire Department
- U.S. Postal Office
- Public Library

PLOTTED: 08/10/09