

## APPENDIX D

### Capital Investment to Support Commuter Rail

The Wake County Transit Plan commits resources to construct the capital items needed to safely and efficiently operate commuter rail operations from the Greenfield Parkway area in Garner, through Downtown Raleigh and Downtown Cary to just south of where the North Carolina Railroad crosses NC Highway 54 in the Research Triangle Park, in Durham County. The conceptual plan and cost estimates developed by URS, Inc., under contract to Triangle Transit, include the capital improvements needed to operate commuter rail from the Greenfield Parkway area in Garner through the NC Highway 54 area in the Research Triangle Park to the Hillandale Road area in west Durham. Because the intention of including commuter rail in the Wake County Transit Plan is to provide a non-highway alternative for accessing the Research Triangle Park and Durham, all of the improvements needed for this connection are shown in this summary. The Wake County Transit Plan allocates funds only for the capital improvements located in the Greenfield Parkway to NC 54 section and for shared capital as designated.

This Appendix is a summary of the information and analysis conducted to scope the commuter rail connection from Garner to Durham. For more in-depth information please see <http://www.ourtransitfuture.org/index.php/projects/durham-wake/d-w-maps-reports#aa>

#### The North Carolina Railroad Company and the Freight Railroad Providers

The entire railroad corridor used for the commuter rail project, from Garner to Durham, is owned by the North Carolina Railroad Company and the North Carolina Railroad Company is owned by the State of North Carolina. Through historic and recent contracts and lease agreements the North Carolina Railroad Company grants other companies the right to operate on the North Carolina Railroad Company's tracks and right-of-way. The operating company usually agrees to do all track maintenance and improvements during the term of its lease. Currently the Norfolk Southern Company holds the operating lease on the North Carolina Railroad. The lease with the Norfolk Southern Company includes a provision allowing shared freight and passenger use of the North Carolina Railroad tracks so long

as the Norfolk Southern Company's capacity for freight service to existing and future businesses is protected. Adding complexity, all trains on the section of the North Carolina Railroad where commuter rail is proposed are dispatched (scheduled, monitored, directed) by a third company, the CSX Company. The CSX Company is involved because the portion of the track from Cary to Raleigh also connects non-North Carolina Railroad tracks that extend to the south and to the north.

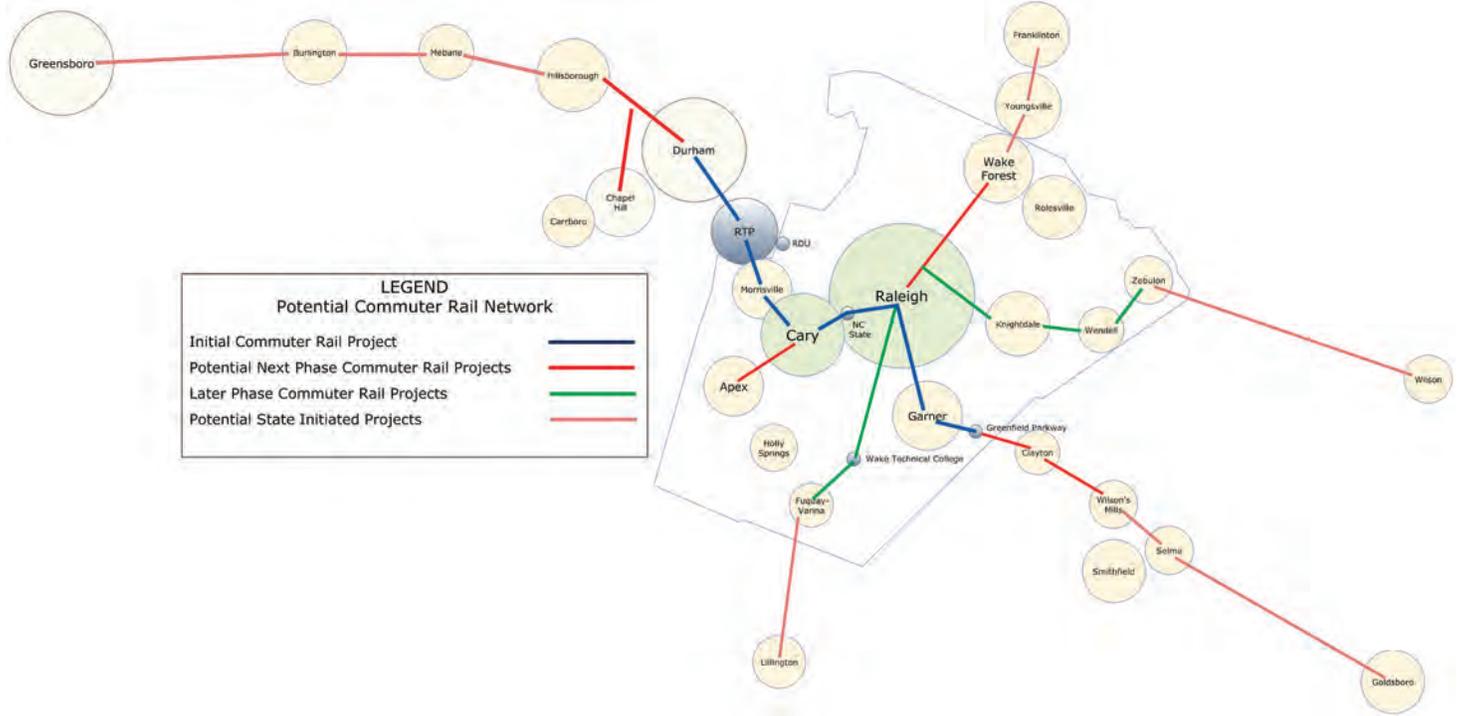
A 2008 study of commuter rail service conducted by the North Carolina Railroad Company identified the following key principles:

- 1) The North Carolina Railroad and the Norfolk Southern Company must maintain the ability to serve existing and future freight customers 24/7 without delay.
- 2) Safety is paramount—Some existing at-grade (vehicles cross the tracks) road crossings will need to be protected (signaled), eliminated (closed), or grade separated (bridges, under-passes constructed).
- 3) All passenger and freight trains must be dispatched by a single agency.
- 4) All passenger equipment must meet the Federal Railroad Administration's crash worthiness standards.

#### Future Extensions of Commuter Rail

The North Carolina Railroad Company, the North Carolina Department of Transportation and Wake County have ideas of potentially extending commuter rail beyond this first corridor from Garner to Durham. These ideas and how they might be implemented are important to this project because they can provide insight into the most efficient and long term places to invest in capital. For example, to operate commuter rail at the service frequency proposed, it is easiest to have the freight providers "wait" outside the commuter rail zone during peak hours. An understanding of long-term goals provides insight into the best place to construct these "waiting" areas. Figure C.1 shows the commuter rail connections being studied and considered. Although the Wake County Transit Plan is open to considering how these future projects may relate to capital investment, the focus of the plan is on the Garner to RTP to Durham Corridor.

### Commuter Rail System Diagram



### Relationship of Capital Needs to the Proposed Number of Trains and Hours of Operation

As noted in **Appendix C**, the programmed commuter rail service level and funding assumes that the commuter rail network will start with a high frequency of service from the first day of operation. Depending on a number of factors, including population and employment growth, the level of roadway congestion and funds available, Wake County and Durham County may choose to initiate service at a lower level initially. The lower service level could impact the timing of needed capital investment particularly related to bridging, parking, or street closings. The intent of the Wake County Transit Plan is to have all items programmed at the amounts needed for implementation and then allow future decision-makers and future information to determine the right implementation timing. It is also important to note that the commuter rail plan as proposed expects to provide the highest level of service practical at the proposed level of capital investment.

allow commuter rail service to operate. Wherever possible the Wake County Transit Plan aligns the capital investment of the rail improvements with the area’s bus goals and the expected bus capital investments. The details listed in this appendix are listed as minimum amounts, or the capital items that the Wake County Transit Plan funds could leverage alone. It is expected that the plan’s capital expenditures could be aligned with other planned municipal and state capital projects, especially related to future grade separations, road closings, or station designs, to exceed the minimums. The capital investment items included in the plan are categorized as follows:

- Platforms and Stations
- Bus Bays
- Park-and-Ride Lots
- Pedestrian Access Bridges
- Railroad Track Improvements
- Waterway /Road Crossings—Signals or Bridges
- Locomotives and Train Cars
- Commuter Rail Maintenance Facility

### Capital Investment Proposed

Capital items are physical objects such as structures, vehicles, railroad tracks, signage, signals or other items that support or

## Platforms and Stations

The Wake County Transit Plan commits resources to constructing the platforms, structures, railroad track spur line, access drive, and sidewalk improvements necessary to construct eight (8) commuter rail stations. The plan also commits resources to purchase property and fund the equipment, ticketing and logistic systems to allow the stations to operate. These stations are an essential part of a commuter rail system because these areas are where users purchase passes and access the system, and they provide a comfortable and safe location to wait or exit the vehicles. They also serve as highly visible centers of the system's connections and routes. The current conceptual

plan for the commuter rail proposes to use a mixture of center platforms and side platforms along the route. The plan also calls for using existing structures where possible (notably the recently constructed stations in Cary and Durham) and constructing platforms where needed. Although the Wake County Transit Plan has budgeted to construct the centers in their entirety, actual construction may partner with local communities and developers to create joint centers that further meet user needs. The exact location of the stations will be developed through future studies in coordination with the municipalities and the North Carolina Railroad.

### Platforms and Stations

	Station Location	Platform Type	Potential Site	Site Area Needs (Acres)
Wake County Proposed Improvements	Greenfield Parkway (Garner)	Center Platform	New Site	12.4 acres
	Downtown Garner	Side Platform	Redeveloped Site	5.5 Acres
	Hammond Road (Raleigh)	Side Platform	New Site	4.2 Acres
	Downtown Raleigh	Center Platform	Redeveloped Site	1.4 Acres
	NC State University	Side Platforms	NC State Site	0.0 Acres*
	West Raleigh	Center Platform	New Site	2.9 Acres
	Downtown Cary	Center Platform	Existing Cary Station	2.8 Acres
	McCrimmon Parkway (Morrisville)	Side Platforms	New Site	6.0 Acres
Durham County Proposed Improvements	Southern Research Triangle Park	Side Platforms	New Site	5.1 Acres
	Northern Research Triangle Park	Side Platform	New Site	4.1 Acres
	Downtown Durham	Center Platform	Existing Durham Station	3.8 Acres
	West Durham	Center Platform	New Site	5.1 Acres

\*The NC State Station is not programmed for land acquisition since NC State has ownership of all adjacent property.



## Bus Bays

The Wake County Transit Plan commits resources to construct bus bays or areas for buses to safely pick up and drop off passengers at the station locations. These bays will allow existing bus routes and the expanded bus routes in the plan to efficiently and effectively connect to the commuter rail system. The bus bays are an essential part of the user experience as they make it easier to connect to the next leg of transit to connect users on to their ultimate destination.

Center Platform Commuter Rail Station

**Bus Bays**

	<b>Station Location</b>	<b>Bus Bays</b>
Wake County	Greenfield Parkway (Garner)	4
Proposed	Downtown Garner	2
Improvements	Hammond Road (Raleigh)	2
	Downtown Raleigh	6
	NC State University	0*
	West Raleigh	0
	Downtown Cary	4
	McCrimmon Parkway (Morrisville)	4
Durham County	Southern Research Triangle Park	10
Proposed	Northern Research Triangle Park	6
Improvements	Downtown Durham	0
	West Durham	2

\*NC State Station not programmed for bus bays because NC State Wolfline will determine the best connecting locations.

**Park-and-Ride Lots**

The Wake County Transit Plan commits resources to expand and construct park-and-ride lots. Park-and-ride lots are the locations where users will drive their cars to meet the commuter rail. Park-and-ride lots are an essential part of the commuter rail user experience as they provide a regular place to safely park, and create a highly visible location for the commuter rail system. Although the Wake County Transit Plan has budgeted to construct the lots in their entirety, actual construction may partner with local communities and developers to create joint facilities that further meet user needs.

**Park-and-Ride Lots**

	<b>Location</b>	<b>Parking Spaces</b>
Wake County	Greenfield Parkway (Garner)	1000
Proposed	Downtown Garner	400
Improvements	Hammond Road (Raleigh)	300
	Downtown Raleigh	0
	NC State University	0
	West Raleigh	250
	Downtown Cary	200
	McCrimmon Parkway (Morrisville)	400
	Durham County	Southern Research Triangle Park
Proposed	Northern Research Triangle Park	200
Improvements	Downtown Durham	300
	West Durham	400

**Pedestrian Access Bridges**

The Wake County Transit Plan commits resources to construct pedestrian bridges above the railroad tracks. These bridges provide essential connections from parking areas, development areas or important access routes across the tracks to the station platforms. Through strategic location of the proposed stations near existing roadway bridges or tunnels, only a few dedicated pedestrian bridges are needed. The pedestrian bridges are an essential part of the user experience because they directly affect user access and safety.

**Pedestrian Access Bridges**

	<b>Station Location</b>	<b>Connects</b>
Wake County	Downtown Raleigh	South of the Railroad/ Platform/Station
Proposed Improvements		
Durham County	Southern Research	Parking Area/Platform
Proposed	Triangle Park	
Improvements	West Durham	Parking Area/Platform

**Railroad Track Improvements**

The Wake County Transit Plan commits resources to improve and add track along the North Carolina Railroad corridor. Except for very specific circumstances, all of the improvements shown will be available for the use of the freight rail roads and the intercity rail (Amtrak) as well as the commuter rail system. The commuter rail route runs about 24 of its 37 miles in Wake County. The plan commits resources to improving 3.2 miles of track within Wake County. NCDOT is currently working on another 7.6 miles of projects (tracks) in the County.

**Railroad Track Improvements**

	<b>Changes Proposed</b>	<b>Location</b>	<b>Miles</b>
Wake County Proposed Improvements	Add Commuter Rail Dual Tracks to Greenfield Parkway Station	From Auburn Road to Interstate 40	0.7
	Add Second Shared Commuter Rail/Freight Track	From Hammond Road to Dawson Street	1.3
	Add Commuter Rail Dual Tracks at Downtown Raleigh Station	From Dawson Street to Boylan Avenue	0.5
	Upgrade Existing Siding Track to Shared Commuter Rail/Freight Track	From Boylan Avenue to Pullen Road	0.8
	Realign Tracks in Downtown Cary	From East Durham Road to Harrison Avenue (By NCDOT)	0.5
	Add Second Shared Commuter Rail/Freight Track	From Harrison Avenue to Wake County Line (By NCDOT)	7.1
Durham County Proposed Improvements	Add Second Shared Commuter Rail/Freight Track	From Wake County Line to Church Street (By NCDOT)	0.4
	Straighten Hopson Road Curve—Two New Shared Tracks	From Church Street to NC 54 (By NCDOT)	0.7
	Add Second Shared Commuter Rail/Freight Track	From NC Highway 54 to Interstate 40 (By NCDOT)	0.5
	Add Second Shared Commuter Rail/Freight Track	From Interstate 40 to Glover Road	4.6
	Upgrade Existing Siding Track to Shared Commuter Rail/Freight Track	From Glover Road to Grant Street	3.2
	New Connection to Duke Belt Track	From Grant Street to Ramseur Street	0.2
	Add Second Shared Commuter Rail/Freight Track	From Grant Street to Downtown Durham Station	1.2
	Add Second Shared Commuter Rail/Freight Track	From Downtown Durham Station to 15th Street	1.3
	Relocate Existing Freight Track	From Downtown Durham Station to 9th Street	0.5
Add Commuter Rail Dual Tracks to West Durham Station	From 15th Street to Fulton Street	0.8	

**Waterway/Road Crossings—Signals or Bridges**

The Wake County Transit Plan commits resources to improving the road and waterway crossings along the North Carolina Railroad. There are currently 25 at-grade (where cars directly cross the tracks) road crossings and 12 crossings where the rail road goes over a road or waterway in the section of the North Carolina Railroad within Wake County. The Plan proposes to improve nine of these locations either with improved signals or new structures (bridges). NCDOT is currently working on projects that will improve another six of these crossing locations. As with the track improvements the crossing changes may also benefit the freight rail roads and the intercity rail (Amtrak).

**Waterway/Road Crossings—Signals or Bridges**

	<b>Crossing</b>	<b>Crossing Currently In Place</b>	<b>Changes Proposed</b>
Wake County Proposed Improvements	Interstate 40 East	Railroad Bridge (One Track)	Use Existing
	Jones Sausage Road	At Grade Crossing	Use Existing
	New Rand Road	At Grade Crossing	Use Existing
	St Mary’s Street (Garner)	At Grade Crossing	Use Existing
	Benson Road	Railroad Bridge (One Track)	Use Existing

**Waterway/Road Crossings—Signals or Bridges (con.)**

	<b>Crossing</b>	<b>Crossing Currently In Place</b>	<b>Changes Proposed</b>
Wake County	Vandora Springs Road	At Grade Crossing	Use Existing
(continued)	Yeagan Road	At Grade Crossing	Use Existing
	Rush Street	At Grade Crossing	Use Existing
	Walnut Creek (Waterway)	Railroad Bridge (One Track)	New 2 Track Bridge
	Blount Street	At Grade Crossing	Improve Crossing Signals
	Martin Luther King Boulevard	Railroad Bridge (One Track)	New Bridge (Two Tracks)
	McDowell Street	Railroad Bridge (One Track)	Widen Bridge (Two Tracks)
	South Street	Railroad Bridge (One Track)	New Bridge (Two Tracks)
	Lenoir Street	Railroad Bridge (One Track)	Widen Bridge (Two Tracks)
	Cabarrus Street	At Grade Crossing	Improve Crossing Signals
	NCSU Eastern Pedestrian Tunnel	Pedestrian Tunnel	Use Existing
	NCSU Center Pedestrian Tunnel	Pedestrian Tunnel	Use Existing
	NCSU Free Expression Tunnel	Pedestrian Tunnel	Use Existing
	Dan Allen Drive	Railroad Bridge (Two Tracks)	Use Existing
	Royal Street	At Grade Crossing	Use Existing
	Beryl Road	At Grade Crossing	Use Existing
	Blue Ridge Road	At Grade Crossing	New Bridge (Two Tracks) (NCDOT)
	Powell Drive	At Grade Crossing	Use Existing
	Business Access Drive	At Grade Crossing	Use Existing
	Nowell Road	At Grade Crossing	Use Existing
	Interstate 40 -West	Railroad Bridge (Two Tracks)	Use Existing
	SE Maynard Road	At Grade Crossing	Use Existing
	Durham Road	Railroad Bridge (One Track)	New Bridge (Two Tracks) (NCDOT)
	Walker Street	Does Not Cross	New Bridge (Two Tracks) (Cary)
	Academy Street	At Grade Crossing	Use Existing
	Harrison Avenue	At Grade Crossing	New Roadway Bridge
	Industrial Access Drive	At Grade Crossing	To Be Closed (NCDOT)
	Morrisville Parkway	At Grade Crossing	Use Existing
	Crabtree Creek (Waterway)	Railroad Bridge (One Track)	New Bridge (Two Tracks) (NCDOT)
	Morrisville Carpenter Road	At Grade Crossing	Use Existing
	Truss Builders	At Grade Crossing	To Be Closed (NCDOT)
	McCrimmon Parkway	At Grade Crossing	New Roadway Bridge (NCDOT)

**Waterway/Road Crossings—Signals or Bridges (con.)**

	<b>Crossing</b>	<b>Crossing Currently In Place</b>	<b>Changes Proposed</b>
Durham County Proposed Improvements	Church Street	At Grade Crossing	Use Existing
	Hopson Road	Railroad Bridge (One Track)	New Bridge (Two Tracks) (NCDOT)
	NC Hwy 54	Railroad Bridge (One Track)	New Bridge (Two Tracks) (NCDOT)
	Interstate 40	Railroad Bridge (One Track)	Widen Existing Bridge
	Cornwallis Road	At Grade Crossing	Improve Crossing Signals
	IBM Access Road	At Grade Crossing	Improve Crossing Signals
	Stirrup Creek Drive	At Grade Crossing	Improve Crossing Signals
	TW Alexander	Railroad Bridge (One Track)	Widen Existing Bridge
	Ellis Road—2	At Grade Crossing	Improve Crossing Signals
	Wrenn Road	At Grade Crossing	Use Existing
	Glover Road	At Grade Crossing	Use Existing
	Ellis Road—1	At Grade Crossing	Use Existing
	Driver Street	At Grade Crossing	Use Existing
	Plum Street	At Grade Crossing	Use Existing
	Alston Avenue	Railroad Bridge (Two Tracks)	Use Existing
	Grant Street	At Grade Crossing	Use Existing
	Fayetteville St	At Grade Crossing	Improve Crossing Signals
	Dillard St	At Grade Crossing	Improve Crossing Signals
	Roxboro St	Railroad Bridge (Two Tracks)	Use Existing
	Mangum St	At Grade Crossing	Improve Crossing Signals
	Blackwell /Corcoran Street	At Grade Crossing	To Be Closed (NCDOT)
	Chapel Hill Street	Railroad Bridge (One Track)	New Bridge (2 Tracks) (NCDOT)
	Duke Street	At Grade Crossing	Improve Crossing Signals
	Gregson Street	Railroad Bridge (One Track)	New Bridge (2 Tracks)
	South Buchanan Blvd	At Grade Crossing	Improve Crossing Signals
	Campus Drive	Railroad Bridge (One Track)	New Bridge (2 Tracks)
Swift Avenue	At Grade Crossing	Improve Crossing Signals	
9th Street/Erwin Drive	Railroad Bridge (One Track)	New Bridge (1 Track)	
15th Street	At Grade Crossing	Improve Crossing Signals	

**Locomotives and Train Cars**

The Wake County Transit Plan commits resources to purchase the train sets necessary to operate the system. The operating train sets will consist of a diesel powered locomotive and 1-3 passenger coaches based on demand. The train sets have a very long service life and are likely to be refurbished (new flooring , seating) rather than replaced. The plan also budgets the spare parts and equipment needed to maintain the train sets.

<b>Locomotives and Train Cars</b>	
<b>Type</b>	<b>Quantity</b>
Locomotives	5
Passenger Coaches	14

### Commuter Rail Maintenance Facility

The Wake County Transit Plan commits a portion of the resources to construct the commuter rail maintenance and operations facility. This facility will be the location where the train sets are stored, repaired, cleaned and fueled. The facility would also be where the trains would begin and end service. The concept plan has the facility located on a site that is currently owned by Triangle Transit in Durham County just off of Ellis Road.

Commuter Rail Maintenance Facility		
	Capacity	Site Size
Commuter Rail Maintenance Facility	5 Train Sets	18 Acres