

A Better Place

*A Land Use Analysis
of the Triangle's Passenger Rail Corridor*



GoTriangle



Triangle J Council of Governments

April 2022

Rail Corridor Analysis

This is one in a series of reports examining travel, land use, affordable housing and economic development opportunities associated with new passenger rail service within the North Carolina Railroad Corridor (NCRR Corridor) between West Durham and Clayton in Johnston County. The overall rail planning is divided into two main parts:

1. A set of activities that focus on what happens **within** the corridor – a rail service analysis: the types and numbers and schedules for trains; the locations of station platforms, park-and-ride lots and train maintenance facilities; the ridership that is expected; the infrastructure investments – and their costs – that would be needed to support the service; and a host of operational and environmental considerations required for successful implementation. Called the Greater Triangle Commuter Rail (GTCR) Study, the current phase is the third part of a careful, deliberate step-by-step process to inform the decisions about whether to invest in passenger rail:
 - a. CRT Major Investment Study (MIS). Completed in May 2019, the CRT MIS examined existing conditions in the rail corridor between West Durham and Garner, looked at peer commuter rail systems, developed systems-level guidelines, and evaluated service scenarios based on the guidelines. The conclusion was that there were no fatal flaws in pursuing a passenger rail investment and that a more detailed analysis was warranted.
 - b. Greater Triangle Commuter Rail – Phase I. Completed in May 2020, Phase I looked at different corridor lengths (including extending into Orange and Johnston Counties) and operating scenarios to determine general costs and benefits and which, if any, scenarios would be competitive for federal funding. It concluded that scenarios involving 20 daily round-trip trains between West Durham and either eastern Garner or Clayton could be competitive investments. For more detail, visit: <https://www.readyforrailnc.com>.
 - c. Greater Triangle Commuter Rail – Phase II. Currently underway, Phase II is identifying additional infrastructure that is needed; analyzing different train technologies, examining station, park-and-ride and maintenance facility locations; developing cost and ridership estimates; and analyzing operational issues associated with adding regional passenger rail service to the freight and intercity trains in the corridor.
2. A set of activities that focus on what happens **along** the corridor – a corridor opportunity analysis: the travel markets that passenger rail could serve, the land use and development close to the corridor – both today and in the future, the affordable housing that exists and is planned near the rail line and how land use, affordable housing and travel patterns combine to define opportunities.

This rail opportunity analysis about what happens along the corridor recognizes that the key to a successful rail investment is not just about the trains, but what happens outside the windows of the trains – the jobs and households and economic development that trains could serve. It has five parts:

- A *Real Estate Market Analysis* and *Regional Economic Impact Analysis* prepared by HR&A Advisors, Incorporated;
- A *Travel Market Analysis* that looks at travel markets in the region, the rail corridor, and station study areas;
- A *Land Use Analysis* that focuses on station study areas and “first-mile-last-mile” locations, along with how community land use plans and standards align with the *Real Estate Market Analysis*;
- An *Affordable Housing Analysis* that addresses both publicly-supported and market-provided affordable housing; and
- An *Opportunity Analysis* that combines information from the other reports.

All of the corridor opportunity analysis reports and related technical information are located at:
<https://www.readyforrailnc.com/reports/>.

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Introduction

We don't invest in transit for the sake of transit. We do it to reflect our values and achieve our goals. To connect workers to jobs. To spur economic development. To provide choices to get to places that anchor our communities – universities, medical centers, cultural districts – while keeping our communities livable rather than traffic-choked.

This report looks at the places that could be served by a passenger rail investment within the North Carolina Railroad (NCRR) Corridor between West Durham at Duke University and Clayton in Johnston County. It focuses on important issues associated with land use in the region, corridor and commuter rail station study areas:

- Regionally consistent place types and the capacity for future growth in the rail corridor and station study areas
- Current local land use and development ordinance designations
- Development plans and issues related to anchor institutions, including universities and the Research Triangle Park
- The alignment of existing and planned land uses with a development market assessment
- Key local development standards, especially building set-backs from the railroad right of way (ROW)
- Opportunities for joint development and equitable Transit-Oriented Development.

The report is analytical: it looks at the evidence that can help us better understand land use and growth in the corridor, so that decision-makers can weigh this evidence in making informed decisions about whether to invest in transit to serve this corridor. The report is designed to help inform a variety of decision-makers who, working together, will determine how well we align our transit investments with land use and housing decisions: local elected officials, developers and builders, non-profit organizations, finance professionals, transportation agencies, and leaders in anchor institutions such as universities and medical centers.

The Big (and Better?) Picture

Growth is an increase in size – making something bigger. Development is an increase in quality – making something better. Our region’s history, and numerous population and job forecasts, make it clear that we will get bigger – by about another million people over the next generation. In one form or another, we will not be the place we are today. Aligning land use decisions with transit investments is one way to ensure that as we get bigger, we also get better.

GoTriangle and the region’s communities are working together to plan a network of high-quality bus and rail services to connect communities within Wake, Durham, Orange and Johnston Counties¹. With thoughtfully crafted land use along transit lines, more Triangle businesses and residents can be linked by a range of travel choices. And the more travelers that have fast, frequent, convenient, reliable transit service to use, the more cost-effective the transit service can be.

Even in the midst of the pandemic, the Research Triangle region has been in an enviable position, and real estate developers and investors know it. The region has climbed steadily over the years in the Urban Land Institute’s annual rankings of regions for overall real estate prospects, reaching the #1 ranking for 2021. And in a recent analysis of cities best positioned to recover economically from the pandemic, Raleigh and Durham were two of the cities on the top ten list, and the only ones in the Southeast US.²

This developer and investor confidence is based on our economic fundamentals: a stable employment foundation at universities, medical centers and state government; a workforce attractive to Science-Technology-Engineering-Math (STEM) employers; costs that are lower than peers in the Northeast or on the West Coast; and quality of life seen as better than peers in other parts of the country. One of the greatest opportunities to leverage these factors – rapid growth, anchor institutions, a STEM economy – is along the planned passenger rail line that connects three universities, three downtowns and the RTP.

The land use-transit relationship is more than a regional economic issue; it is also a pocketbook issue: average transportation costs for households living near transit are 10% lower than for those that live farther away and more



households are seeking to lower their transportation costs by living closer to jobs or transit.³ Most lower-income households spend about 55-60% of their income for housing and transportation combined; accepted affordability benchmarks suggest this cost should be less than 45%⁴.

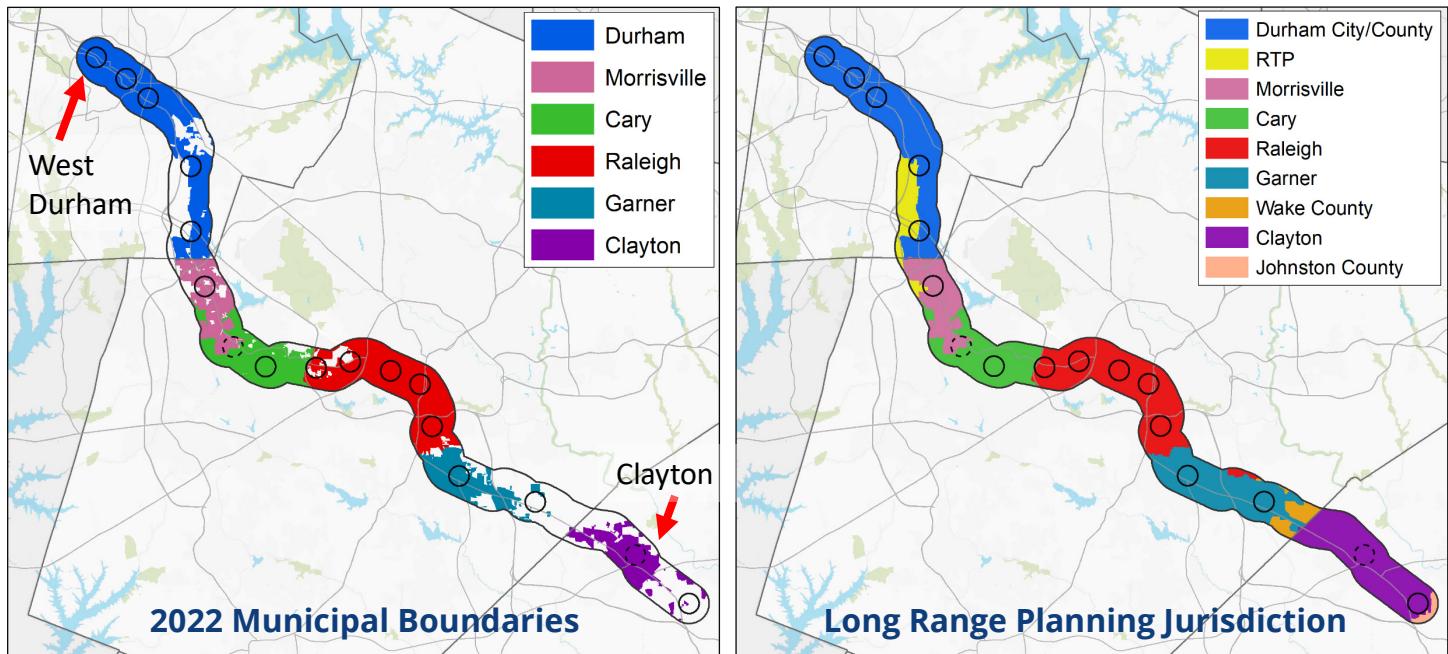
Finally, Triangle employers may increasingly need the region’s public transit system to get their employees to work each day; more than 35,000 households in Wake, Durham, Johnston and Orange Counties have no car available.⁵ Increased public transit in the region may help attract and retain companies seeking more travel choices for their employees.

The Triangle’s marketplace for low- and moderate-income housing is extensive, with a healthy mix of private, non-profit and public sector actors. Where public transit investments may significantly influence housing market values, it will take creativity and cooperation to ensure that all the region’s citizens can benefit from these investments. It is not enough to support more compact, walkable development with a mix of different uses – commonly termed “Transit Oriented Development” or TOD; the region will need to show how it can create and preserve *equitable* TOD, or eTOD.

At its most basic, land use is about people in buildings and buildings on land. The art is in aligning what the real estate market can provide with what community values aspire to -- determining the appropriate amounts, types and intensities of the buildings and the reasons that people are in them: to live, to work, to shop, to learn, to heal, to play.

The Land Use and Transit Connection

An enduring challenge is aligning land use decisions with transit investments, even though both are often made by local elected officials, just serving in different roles around different tables. This alignment is crucial, as the quotes from leading researchers and practitioners at the bottom of this page stress. Ensuring that different portions of the rail corridor take full advantage of the land use opportunities they may have implies a significant level of coordination and collaboration among several local governments. The map on the left below shows the current municipal boundaries within the two-mile wide corridor, while the map on the right shows long range planning jurisdictions. In the planning jurisdiction map, the Research Triangle Park is identified separately, although final authority for land use within the Research Triangle Park rests with Durham and Wake Counties in their respective areas.



What the experts say about the relationship between land use and transit:

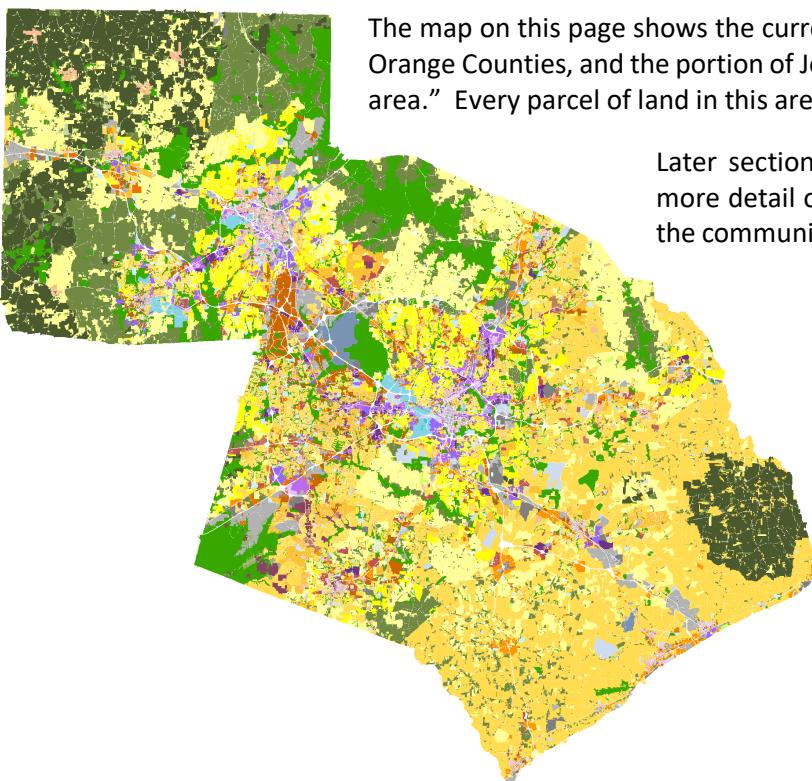
- **Author of *Trains, Buses, People*:** “A good transit corridor is one with high density where multiple centers line up, perhaps resulting in a bottleneck....A good corridor must be reasonably straight: people do not want to move in “U”s or circles or zig-zags. It is critical when identifying corridors to think about land use, not existing transportation infrastructure.”
- **Author of *Better Buses, Better Cities*:** “I don't think that buses are superior to trains. We need a lot of investment in trains. We need new subway extensions, commuter rail improvements and more light rail. We also need a lot more bus service to complement that. **We need a strong spine of high-capacity transit**, and then we have great arteries and bus lines running to many more neighborhoods than have good service today. It's all connected.”
- **Author of *Walkable City Rules*:** “Transportation systems beget land use patterns. Then land use patterns beget transportation systems. **If they are not addressed together...mobility and quality of life suffer.**”
- **Author of *Human Transit*:** “**Density is still an overwhelming force for determining the possibilities and outcomes of transit**, and we can't begin to make good transit decisions until we understand it.”

Places Defined

The Research Triangle Region is a complex and diverse metropolitan area. To help make sense of what it is today, and what it could become in the future, this analysis uses a consistent set of place types. These place types are aligned with local land use plan and zoning categories, which differ by county and municipality.

The region uses a growth forecasting model, called *CommunityViz*, that includes a palette of 40 different place types that tend to fit within four different development patterns – natural, rural, suburban and city & town – plus a cross-cutting set of place types that might occur in rural, suburban or city & town settings, as shown in the table below:

Pattern	Natural	Rural	Suburban	City & Town	Cross-Cutting
Place Types	Protected Green Space	Farms & Forestland	Larger Lot Residential	Urban Neighborhood	Light Industrial
		Rural Living	Midsized Lot Residential	Mid-Rise Residential	Heavy Industrial
		Rural Crossroads	Smaller Lot Residential	Urban Residential	Airport
		Conservation Neighborhood	Mixed Density Residential	High Rise Residential	Civic & Institutional
		Mobile Home Neighborhood	Multi-family Residential	Mixed Use Neighborhood	K12 Education Campus
			Office Center	Mixed Use Center I	Health Care Campus
			Lodging	Mixed Use Center II	University Campus
			Neighborhood Scale Commercial Center	Transit-Oriented Development Type I	University Campus - Residential
			Community Scale Commercial Center	Transit-Oriented Development Type II	University Campus - Neighborhood
			Regional Employment Center	Transit-Oriented Development Type III	Special Type
				Transit-Oriented Development Neighborhood	
				Urban Commercial/Office	
				Town Center	
				Metropolitan Center	



The map on this page shows the current distribution of place types for Wake, Durham and Orange Counties, and the portion of Johnston County west of I-95 – defined as the “analysis area.” Every parcel of land in this area is assigned one of the 40 place types.

Later sections of this report, and a technical appendix, provide more detail on the specific characteristics of these place types for the communities that lie along the planned commuter rail corridor:

- Durham
- Morrisville
- Cary
- Raleigh
- Garner
- unincorporated Wake County
- Clayton and
- unincorporated Johnston County

In addition, the Research Triangle Park (RTP) is treated as a “community” in the *CommunityViz* model, with the Durham and Wake County portions of the RTP treated independently.

Where We Get Our Information

Three main data sources are used in this analysis:

- i) the most recent CommunityViz place type data set maintained by the Triangle J Council of Governments;
- ii) the most recently adopted versions of the land use plans and development ordinances supplied by Durham City & County, Morrisville, Cary, Raleigh, Garner, Wake County, Clayton and Johnston County; and
- iii) the Development Market Assessment report prepared by HR&A Advisors for GoTriangle in 2021.

Triangle J COG CommunityViz Place Types

The parcel-level place type and development status data come from the third version of the CommunityViz growth allocation model maintained by the Triangle J Council of Governments. The data were based on the adopted 2045 Metropolitan Transportation Plan (MTP) place type data, which was updated and revised based on input from local planners during the spring and summer of 2020 to serve as the basis for creation of development and mobility scenarios for the 2050 MTP. Note that these data may be revised based on technical corrections as local land use changes over time. The current 2050 MTP version of the data, together with reference materials, can be accessed [here](#).

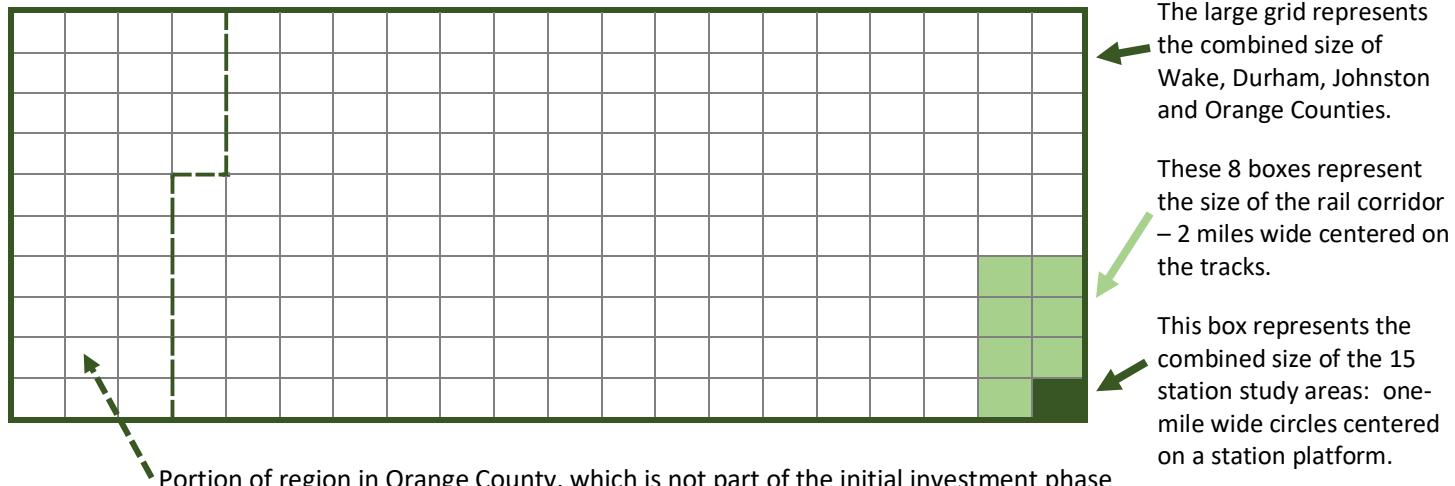
Local Land Use Plans and Development Ordinances

The CommunityViz data provides a consistent foundation for analysis across jurisdictions, but individual community land use plans and development ordinances provide important detail and policy context that the strictly quantitative nature of the CommunityViz data cannot. This more detailed level is especially important at locations in close proximity to potential passenger rail stations. The ordinances were also used as a source for determining any locally-required building setbacks from the NC Railroad Corridor. A later section of this report provides links to each community's land use plan and development ordinance, and indicates how each community treats building setbacks relative to the NCRR right-of-way.

HR&A Development Market Assessment

As part of Phase II of the Greater Triangle Commuter Rail Study, GoTriangle engaged HR&A Advisors to conduct a real estate market analysis and projections, and also a regional economic impact analysis. This report extracts information on the real estate product types contained in the assessment (office, retail, multifamily residential, industrial/lab and hotel) within the 17 subdistricts contained in the real estate market analysis and projections.

Data is usually summarized at three levels: the four-county region, the 2-mile-wide rail corridor between West Durham and Clayton, and station study areas, each about 500 acres, that use a half-mile walk radius around a possible rail stop. The graphic on this page depicts the relative size of the region, the corridor and the combined initial station study areas.

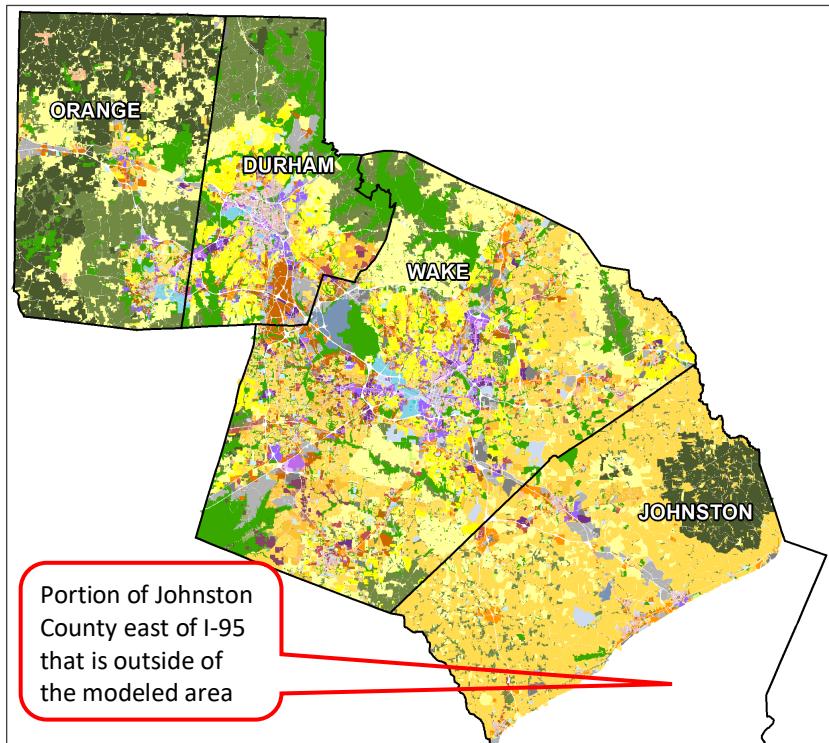


Places in the Region, Corridor and Station Study Areas

Although our data cover a large portion of the Research Triangle Region, it is especially important to understand the land use and development status within the planned passenger rail corridor, and particularly in the station study areas that could be most directly served by passenger trains.

Place-type and development status data cover all of Wake, Durham and Orange Counties, and the portion of Johnston County west of I-95. The maps and tables in this section summarize the distribution of land uses in this three-plus county region, and the amount of land in the region by place type that can accommodate additional growth.

Place Types in the Region

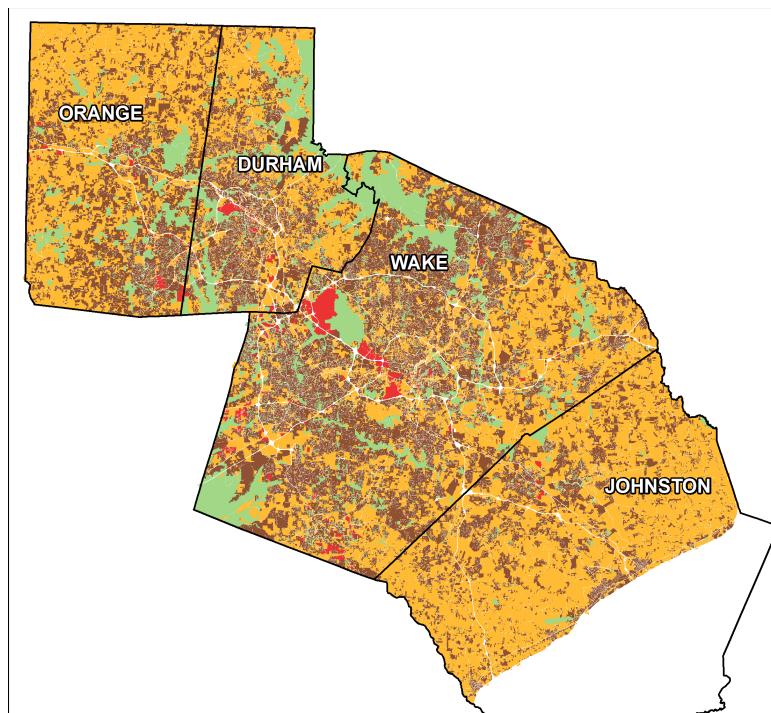


Most Prevalent Place Types	Acres	%
Smaller Lot Residential Neighborhood	299,000	25%
Larger Lot Residential Neighborhood	194,000	16%
Rural Living	139,000	11%
Protected Green Space	139,000	11%
Farms and Forest	136,000	11%
Midsized Lot Residential Neighborhood	65,000	5%
Mixed-Density Residential Neighborhood	34,000	3%
Light Industrial Center	34,000	3%
Community Commercial Center	17,000	1%
Civic and Institutional	16,000	1%
Multifamily Residential Neighborhood	15,000	1%
Transit-Oriented Development Neighborhood	14,000	1%

The map on this page shows the distribution of place types for over 600,000 parcels in Wake, Durham and Orange Counties, and the portion of Johnston County west of I-95. Parcels of land in this area were reviewed by local planners and assigned one of the 40 place types representing what the parcels were most likely to be in the year 2050. Local planners also designated a development status for each parcel, shown in the map at the top of the next page, representing the current status of the parcel relative to its future 2050 place type.

Of the more than 1.2 million acres (not including right-of-way land) in the three-plus county analysis area, the most prevalent place types, listed in the table above, cover just over 1.1 million acres, or 91% of the region.

Development Status of Parcels in the Region in 2020 (Relative to 2050 Place Type)



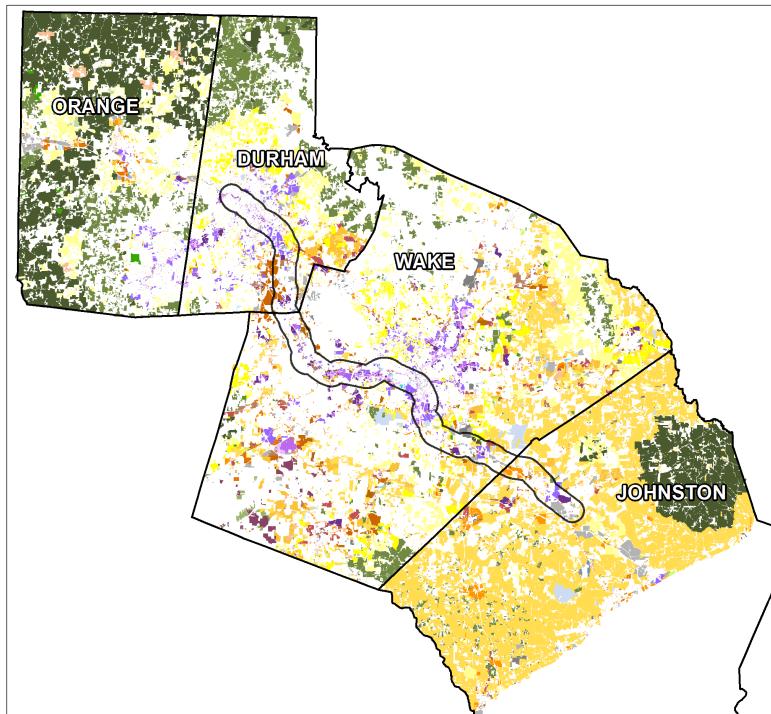
Development Status	Acres	%
Developed	427,000	35%
Committed or Asserted	21,000	2%
Protected Green Space or Water	151,000	12%
Redevelopable, Undeveloped or Under-developed	621,000	51%



	Regional Acres with Development Potential	%
Orange	139,000	22%
Durham	71,000	11%
Wake	190,000	31%
Johnston*	222,000	36%

Place Types in the Region **with Room for More Development** (Redevelopable, Undeveloped or Under-developed)

Place Type	Acres with development potential	%
Smaller Lot Residential	202,000	33%
Farms and Forest	128,000	21%
Larger Lot Residential	73,000	12%
Rural Living	71,000	12%
Midsized Lot Residential	28,000	5%
Mixed-Density Residential	18,000	3%
TOD Neighborhood	14,000	2%
Light Industrial Center	13,000	2%
Community Commercial Center	8,000	1%
Mixed-Use Neighborhood	7,000	1%

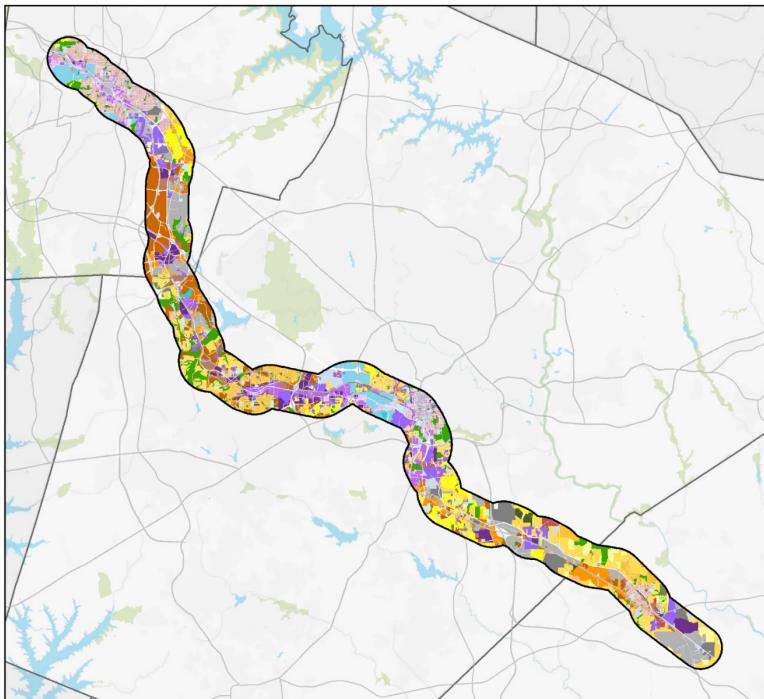


Half of the land in the three-plus county “modeled area” can accept additional development beyond the 2020 base year of the analysis. This includes both undeveloped land, and land that might be underdeveloped, meaning more buildings can be added to existing ones, or redevelopment, meaning existing obsolete buildings are likely to be replaced over the next thirty years. Much of this developable land is residential or is currently farmland, forestland or other rural land that might be converted as the region continues to grow. 85% of land with development potential is essentially residential in nature, which is one of the reasons that urban corridors such as the rail corridor are expected to continue to attract significant shares of future job growth. One point to keep in mind is that it is not uncommon for landowners to retain a residential zoning category while land remains undeveloped, even if commercial uses are contemplated, as residential land is typically assessed at lower values for property tax purposes.

Corridor Place Types and Development Status

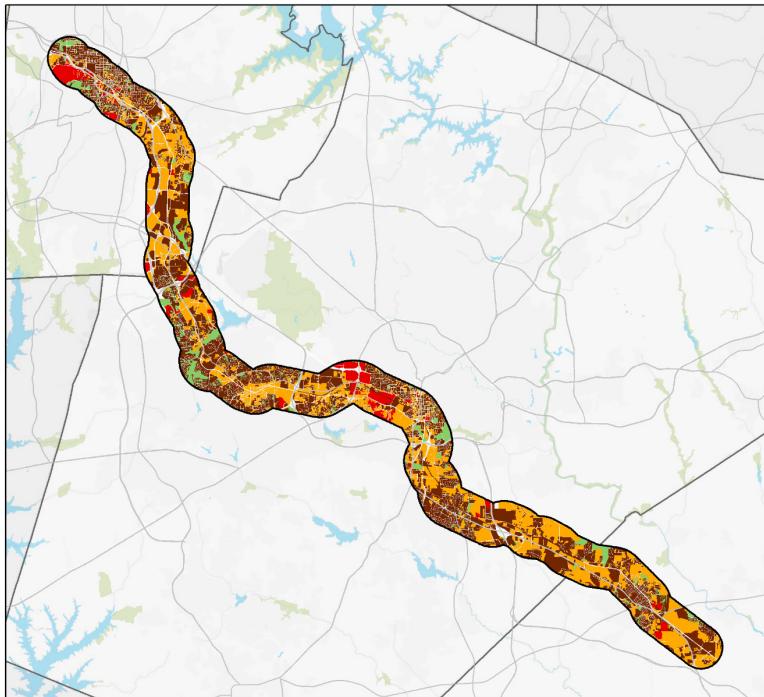
Compared to the three-plus county region in which the initial rail investment will be made, the rail corridor has a greater proportion of its land in more urban and suburban place types, as shown in the tables and maps below. All three counties have significant amounts of land within the corridor with additional capacity for future development. Much of the land with additional development capacity has residential place types, suggesting the corridor will be able to balance its current employment-based land use focus with more housing in the future.

Corridor Place Types



	Most Prevalent Place Types	Acres	%
Yellow	Smaller Lot Residential	7,000	13%
Grey	Light Industrial Center	6,000	11%
Purple	TOD Neighborhood	4,000	8%
Yellow	Protected Green Space	4,000	7%
Pink	Midsized Lot Residential	3,000	6%
Pink	Urban Neighborhood	3,000	6%
Orange	Mixed-Density Residential	3,000	5%
Teal	Regional Employment Center	3,000	5%
Cyan	University Campus	2,000	4%
Orange	Community Commercial Center	2,000	4%

Corridor Development Status



	Development Status	Acres	%
Brown	Developed	26,000	49%
Red	Committed or Asserted	3,000	6%
Green	Protected Green Space or Water	4,000	7%
Orange	Redevelopable, Undeveloped or Under-developed	20,000	38%

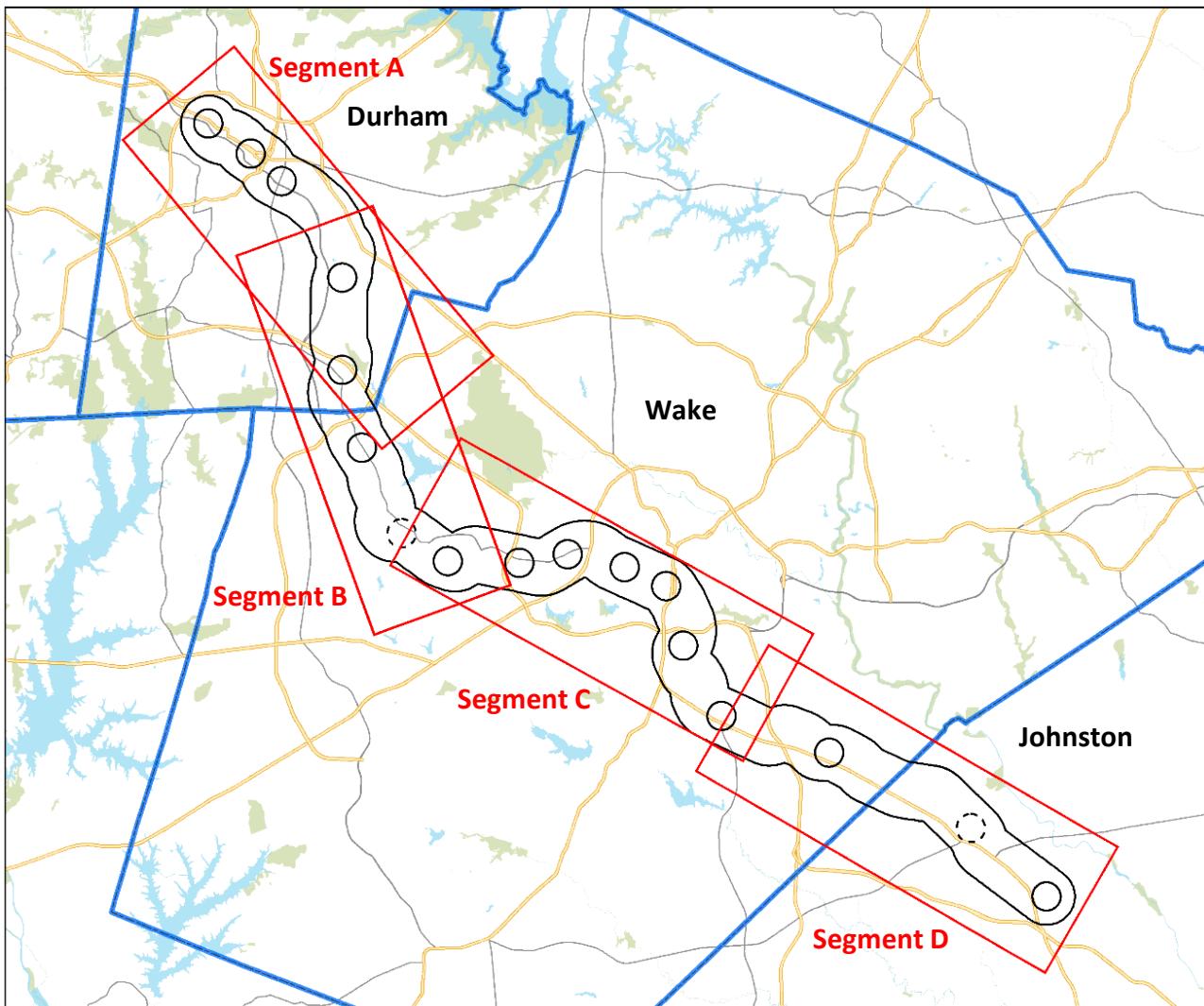


	Corridor Acres with Development Potential	%
Durham	5,100	25%
Wake	10,500	52%
Johnston	4,500	22%

Station Study Area Place Types and Development Status

Although the number and location of station study areas may shift as more detailed studies and engineering are undertaken, a look at the place types and development status of the 15 initial station areas plus two additional potential infill station locations show that there are more than 2,900 acres that can accept new development post-2020. An appendix to this report includes detailed mapping, place type and development status information for each of the station study areas.

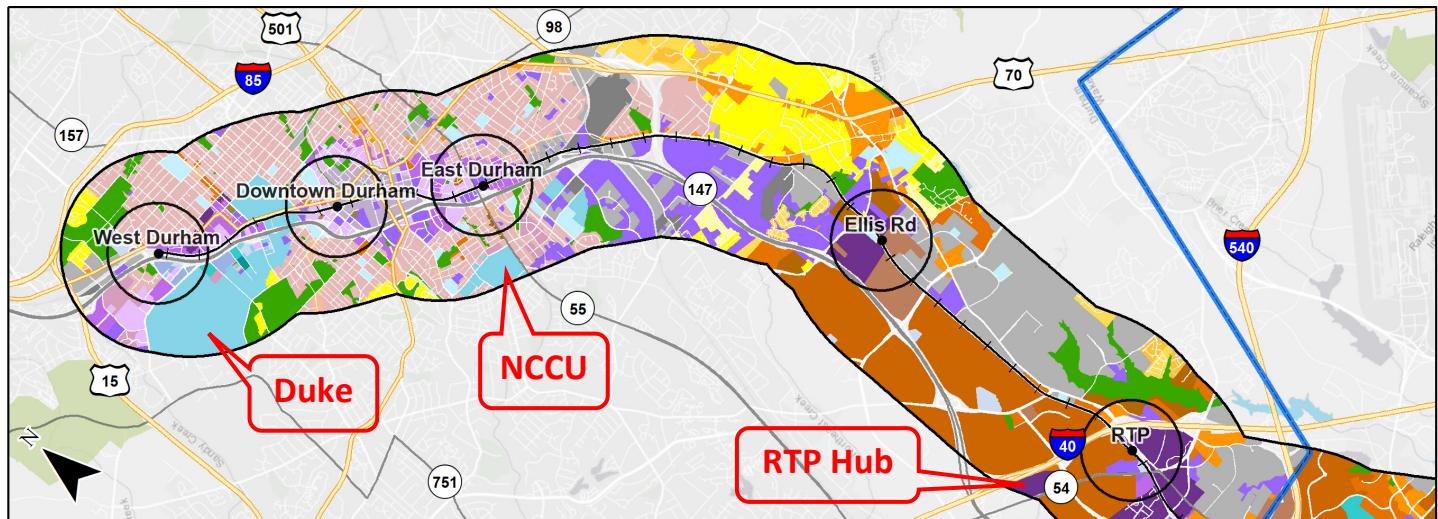
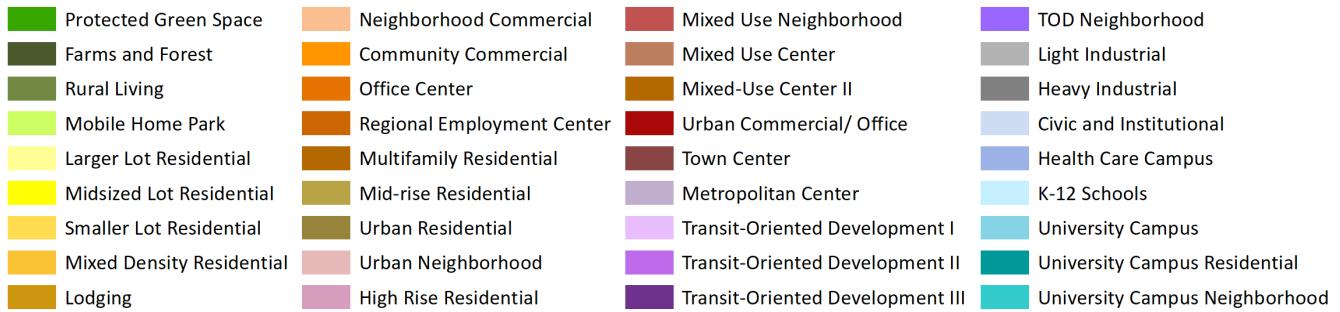
For this section of the analysis, the corridor was divided into four overlapping segments, and the place types and development status displayed for each segment. The segments are shown in the map below.



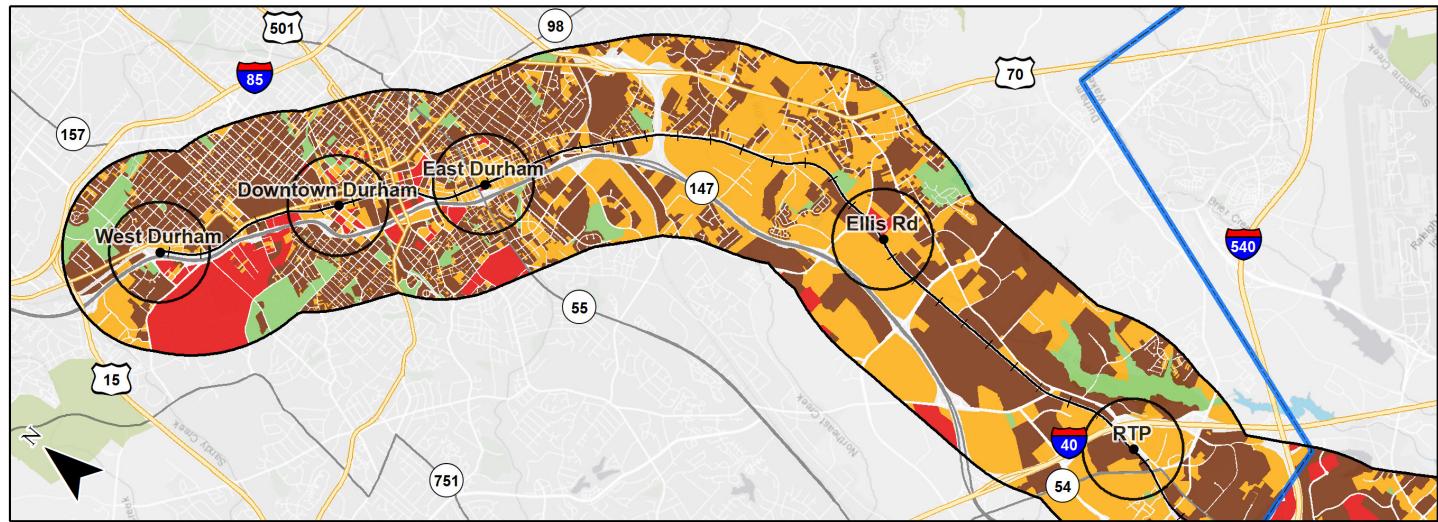
The following pages take a closer look at each of these segments, highlighting important activity centers, stations identified as primarily mixed-use neighborhood stations, stations where park and ride demand was identified in the first round of ridership modeling, and key transit connections in each segment.

As community land use and anchor institution plans change in the future, and as new development projects are approved and built, the parcel-level place type and development status inventories and mapping can be updated based on inputs from local communities.

Segment A -- Place Types

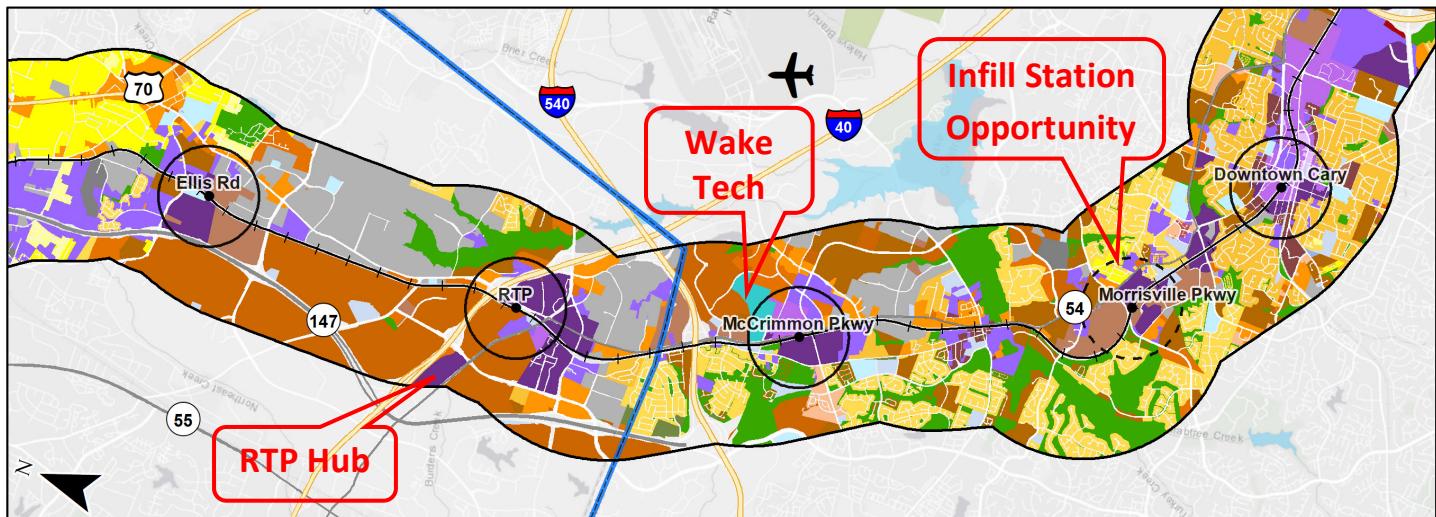
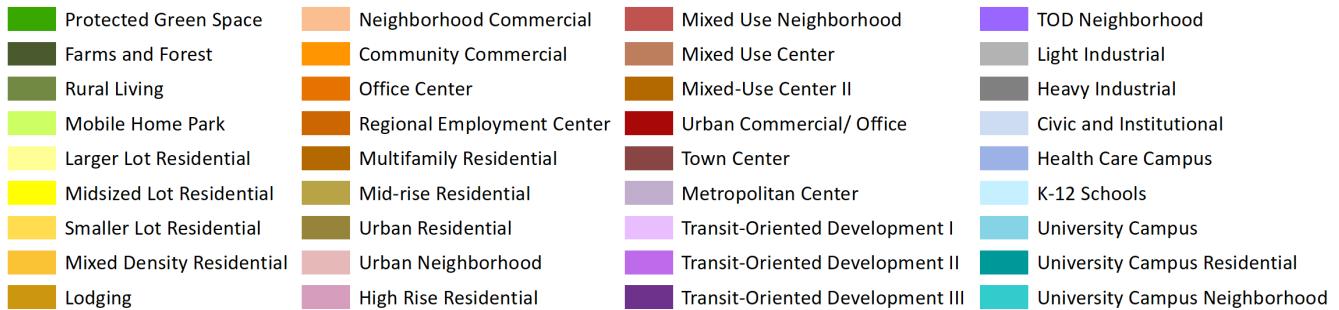


Segment A -- Development Status (2020)

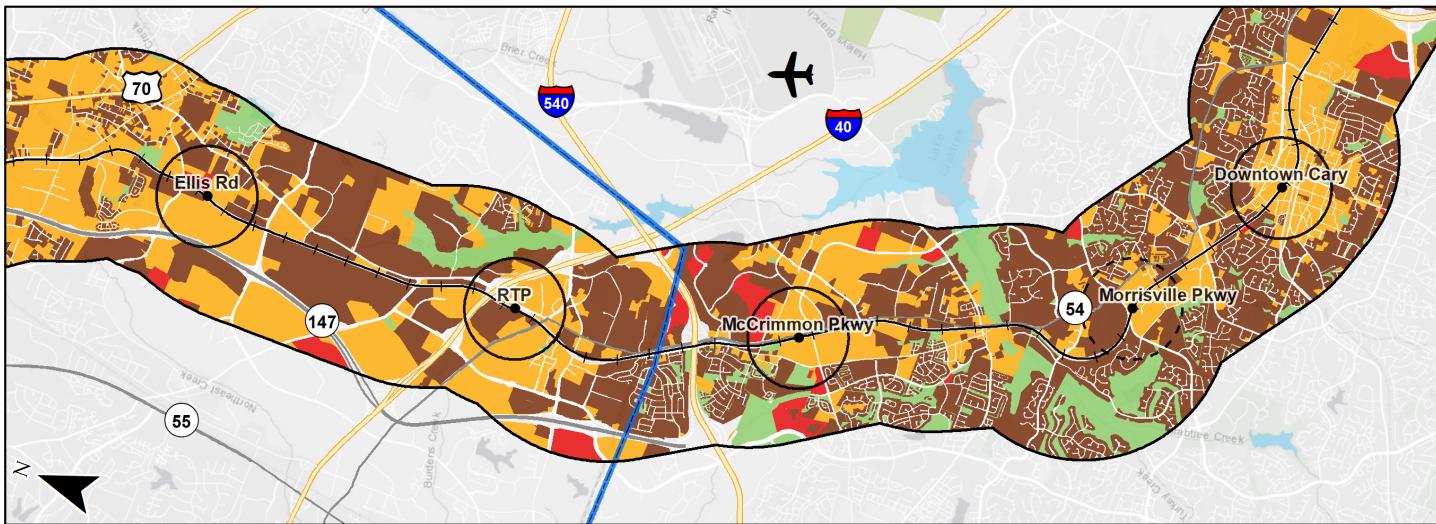


Activity Centers	Duke University, VA Medical Center, NCCU, Durham CBD, RTP Hub
Neighborhood Stations	Alston (established), Ellis (developing)
Park-Ride Stations	West Durham, East Durham, Ellis Road, RTP
Transit Connectors	Durham Transit Center, proposed relocated Regional Transit Center
Opportunity Areas	From East End Connector south to the Wake County Line

Segment B -- Place Types

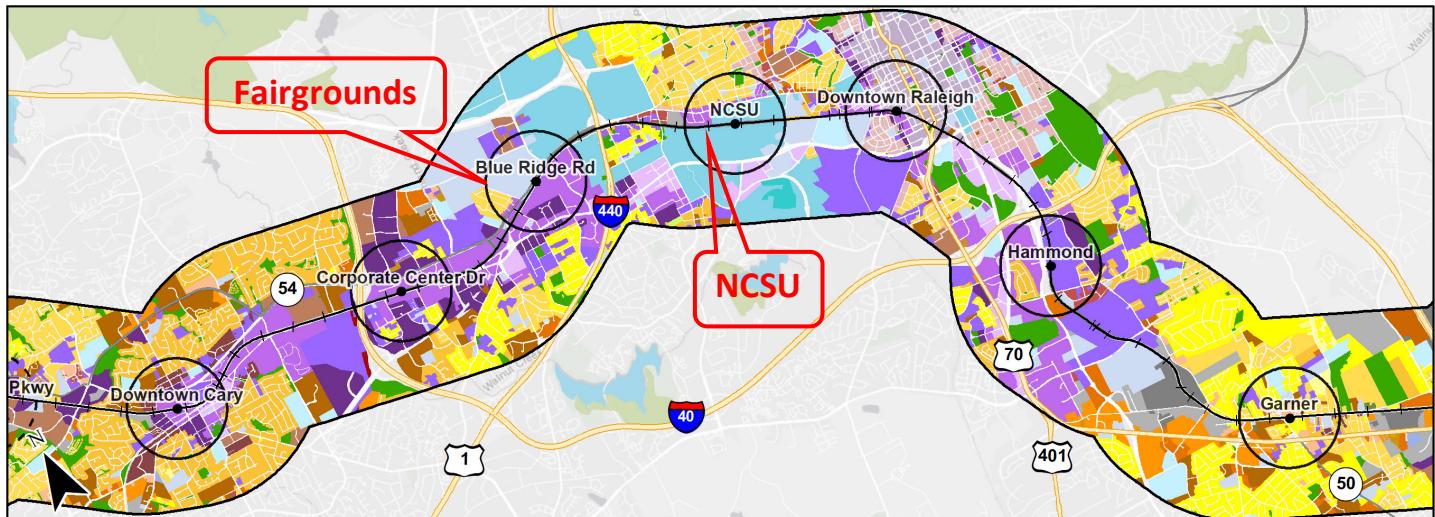
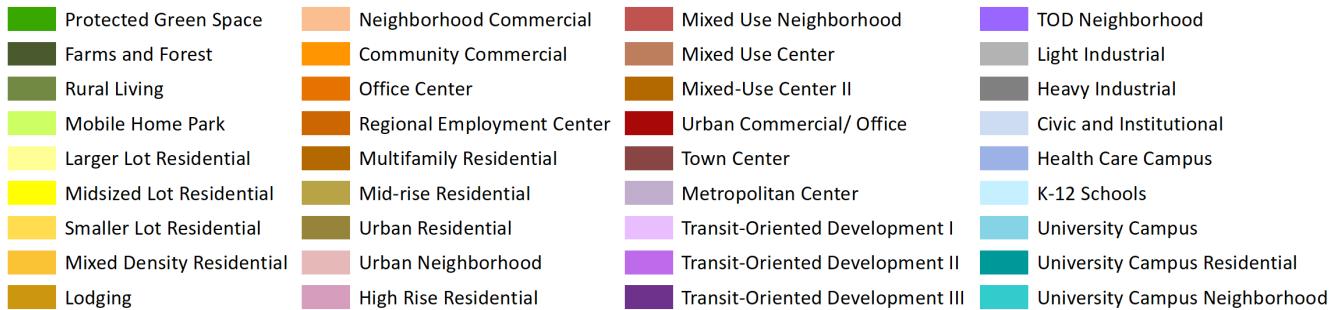


Segment B -- Development Status (2020)

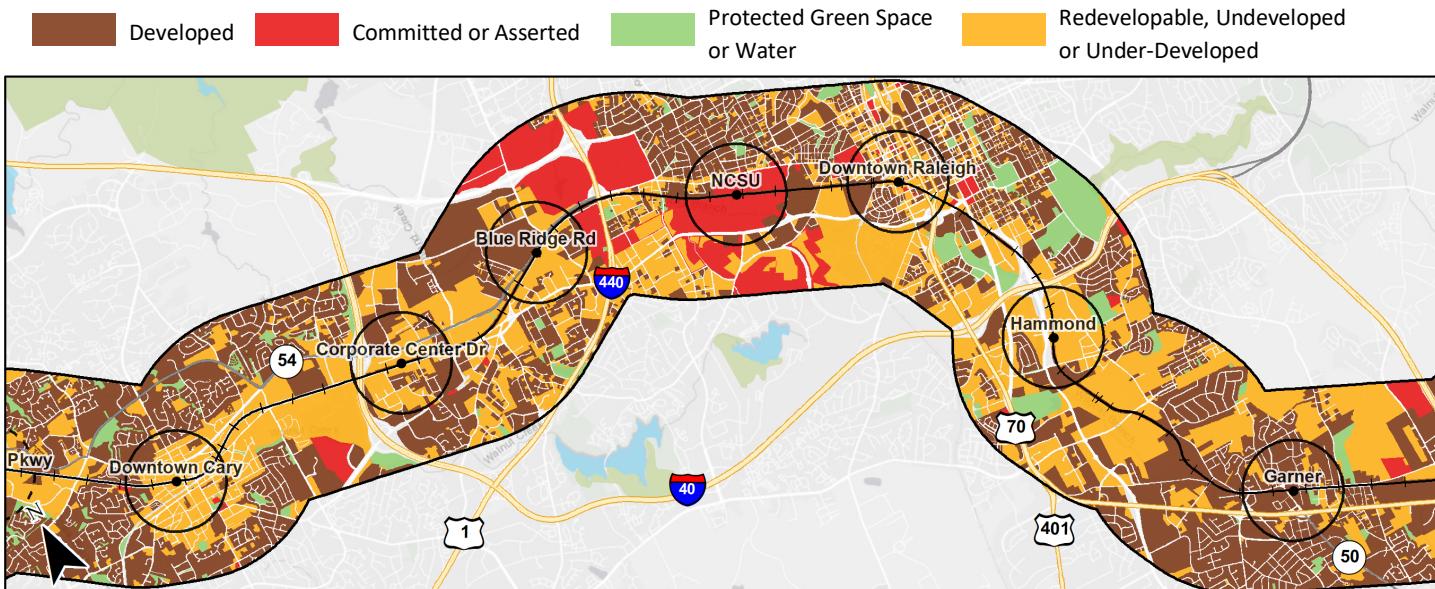


Activity Centers	RTP Hub, Cary CBD, Wake Tech
Neighborhood Stations	McCrimmon, Morrisville Parkway (infill)
Park-Ride Stations	RTP, McCrimmon, Cary
Transit Connectors	Cary Transit Center, RDU connectors at both McCrimmon and Regional Transit Center
Opportunity Areas	In and around the RTP and in north Morrisville and west Cary (infill station potential)

Segment C -- Place Types

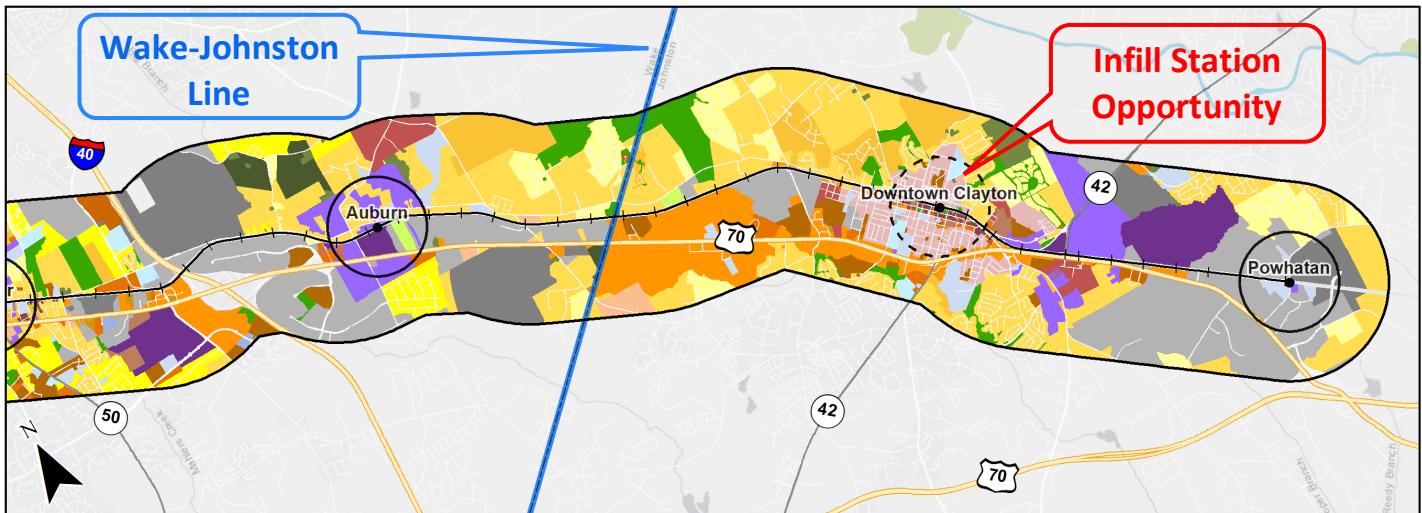
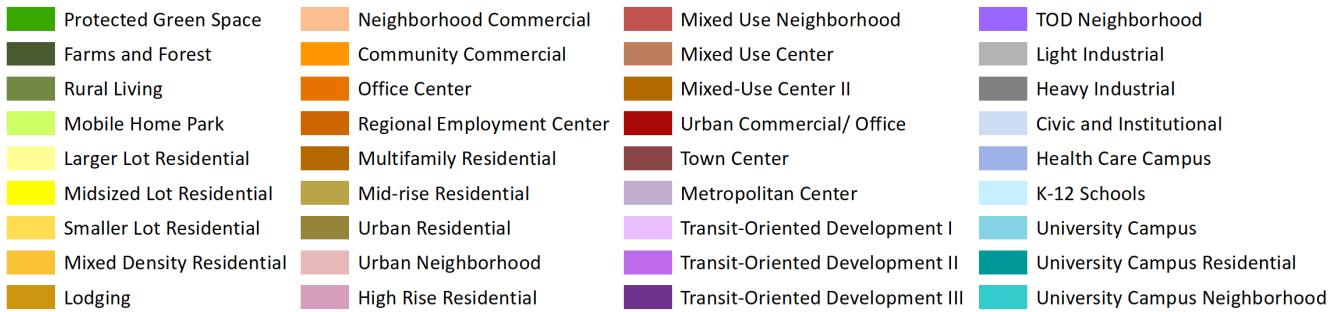


Segment C -- Development Status (2020)

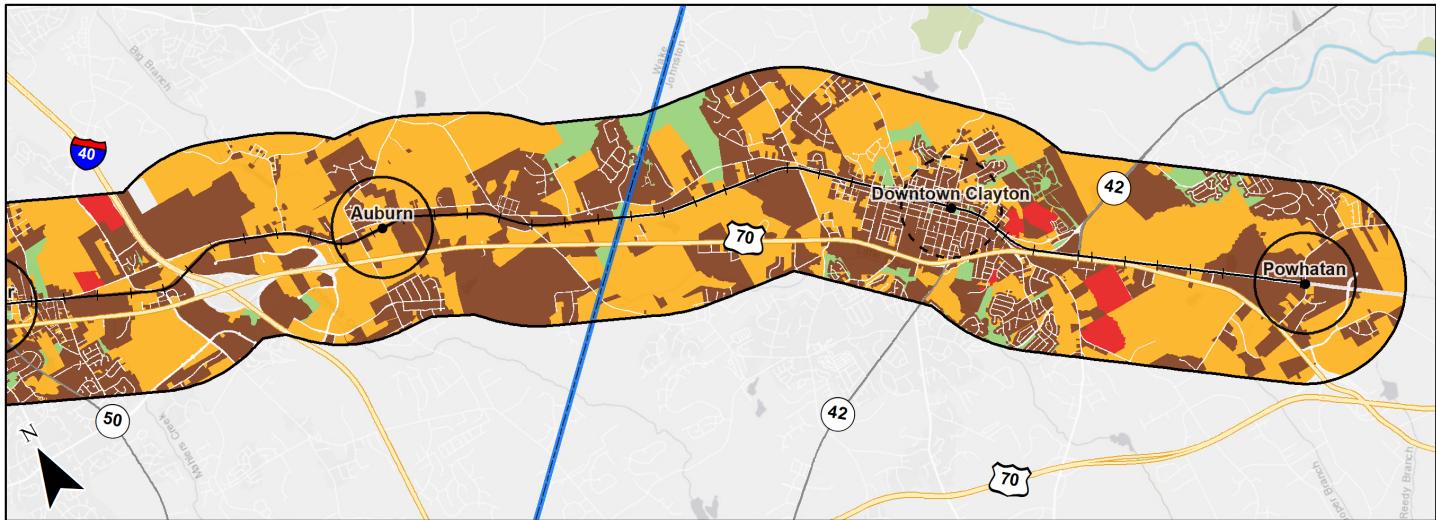


Activity Centers	Raleigh CBD, NC State University, Shaw University, State Fairgrounds/PNC Arena
Neighborhood Stations	Corporate Center Drive, Blue Ridge, Hammond
Park-Ride Stations	Corporate Center Drive, Blue Ridge, Hammond, Garner
Transit Connectors	Raleigh Union Station, intersecting BRT lines
Opportunity Areas	Cary/West Raleigh, Hammond, Garner

Segment D -- Place Types



Segment D -- Development Status (2020)



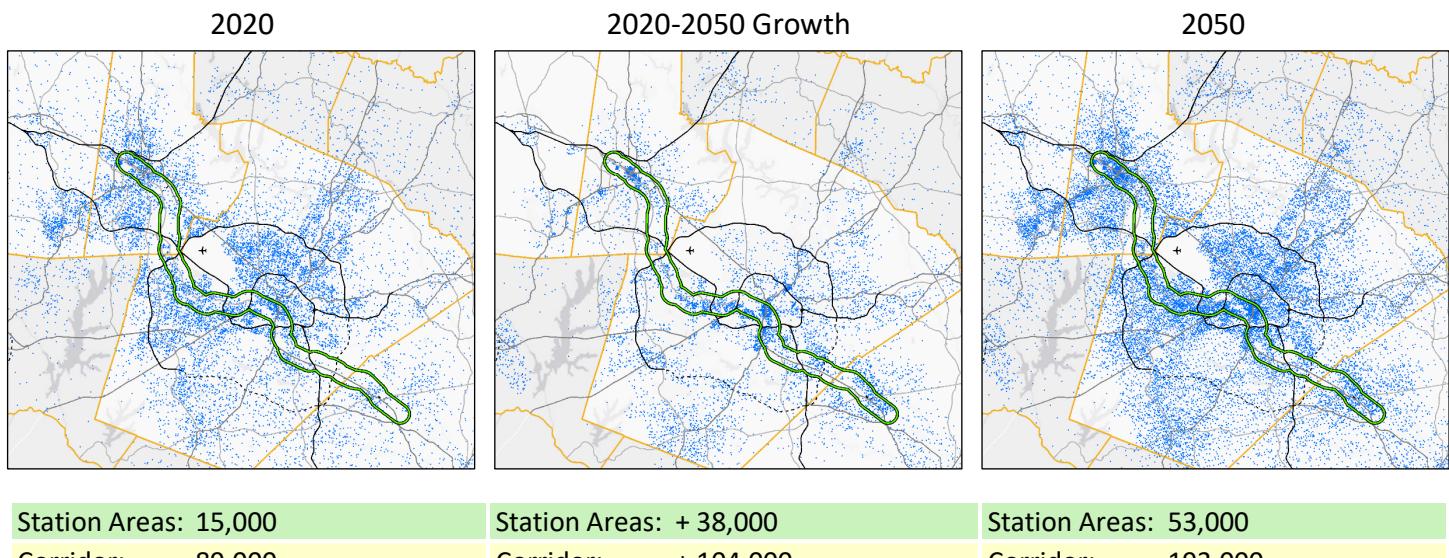
Activity Centers	Powhatan life sciences plants, Clayton CBD (potential infill station)
Neighborhood Stations	Auburn
Park-Ride Stations	Powhatan, Auburn
Transit Connectors	intersecting BRT line
Opportunity Areas	Throughout segment

Growth Capacities and Job and Household Forecasts

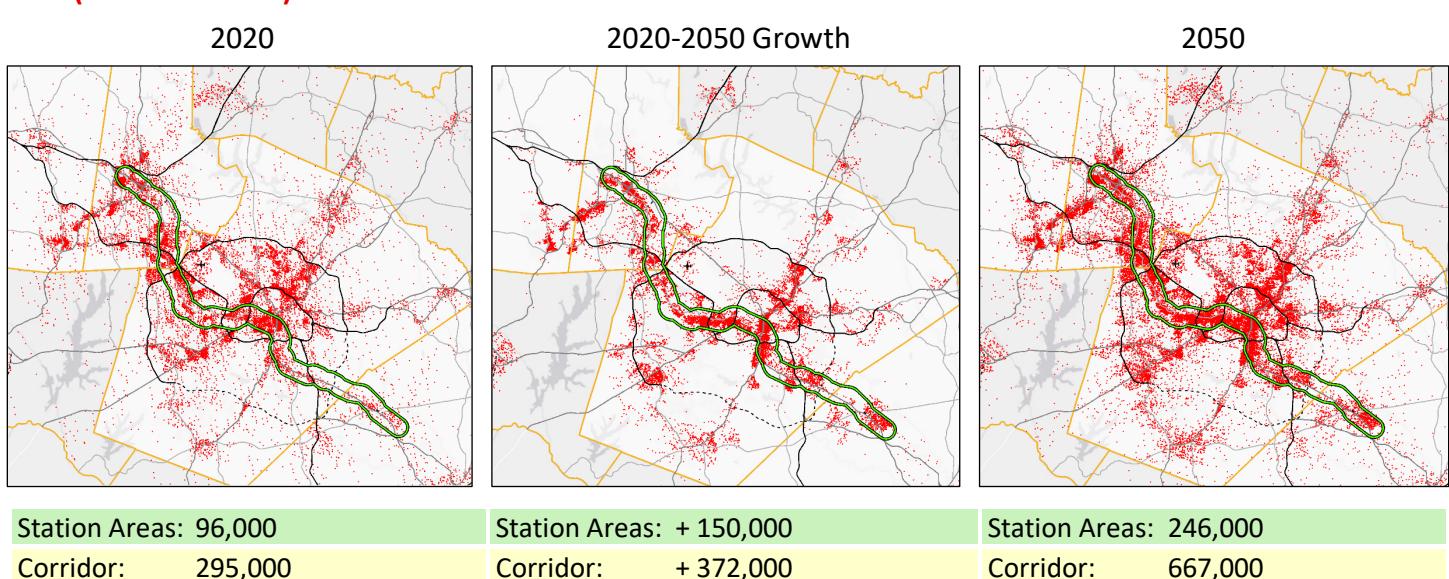
The previous section summarized the amount of land on which future growth can occur. This section translates that land into households and jobs based on the underlying residential densities and non-residential building intensities of each place type in each jurisdiction. Making this translation: from land, to buildings on the land, to people in the buildings – whether residents or workers – is somewhat speculative and always changing as communities alter land use plans, land owners seek rezonings and developers design buildings to align with shifting market forces. But at the level of the region and the corridor, these forecasts can serve as solid guideposts for the amount and direction of growth, even if details may change and the region may achieve these levels of growth a little sooner or a little later than 2050.

The following series of maps display household and job growth over time. Each series starts with the condition in 2020 in the map on the left. The location and amount of growth between 2020 and 2050 is shown in the center map. The map on the right shows the forecast condition in 2050; the map on the right combines the left and center maps.

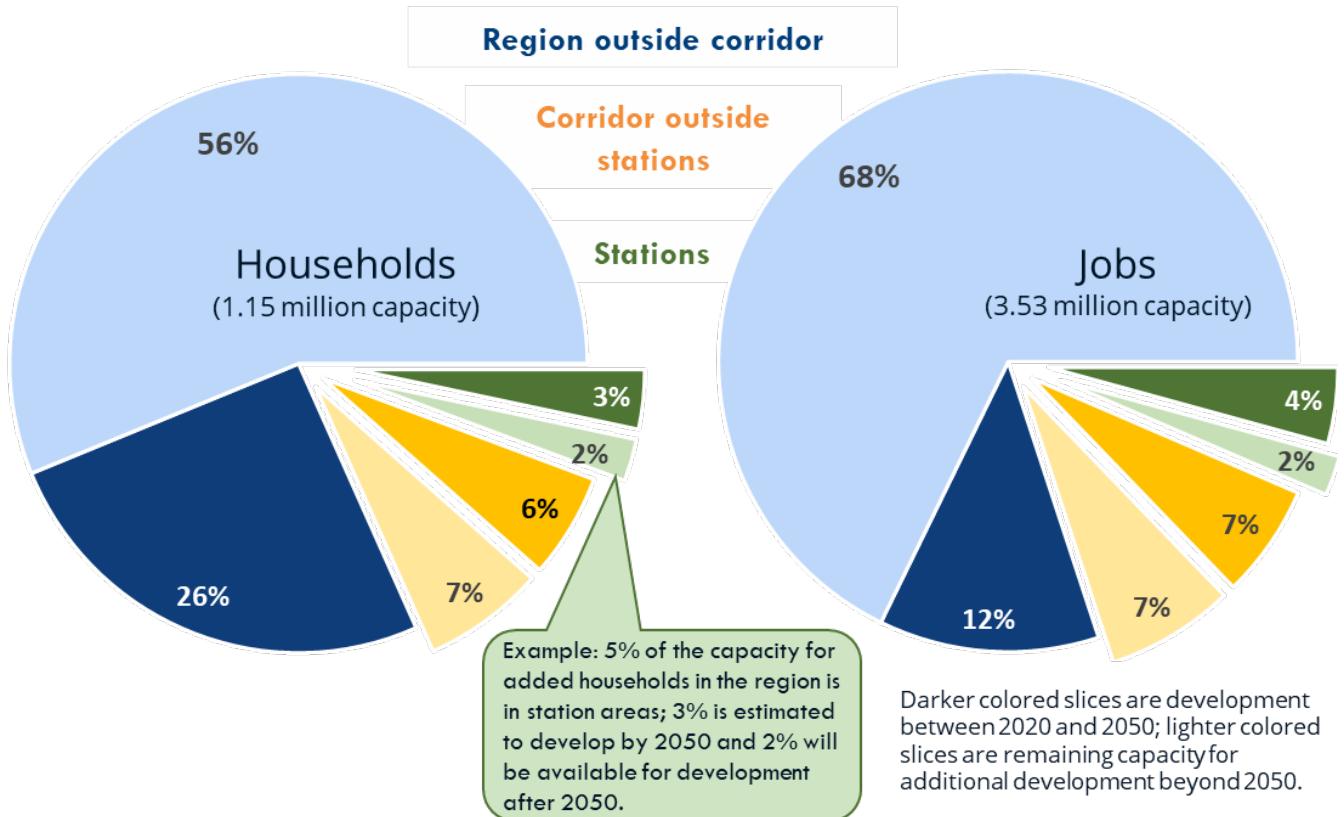
Households (1 Dot = 50 Households)



Jobs (1 Dot = 50 Jobs)



Another way to view the role of the station areas and the corridor in the region's future growth potential is shown in the pie charts below. Each full pie represents the additional households and jobs that could be accommodated in Orange, Durham and Wake Counties, and the portion of Johnston County west of I-95 between 2020 and 2050 – there is room for 1.15 million more households and 3.53 million more jobs. In the charts below, green represents the station areas, yellow the remainder of the corridor outside of the station areas, and blue the remainder of the region outside of the corridor. The dark green, yellow and blue show growth that is forecast to occur between 2020 and 2050, while the light green, yellow and blue show the remaining capacity for growth after 2050.



The charts show that even with the large amounts of development expected to occur over the next 30 years, the corridor as a whole, and the station areas collectively, are not forecast to fully develop, leaving room for additional growth in the future beyond 2050, as shown in the table below.

	Households			Jobs		
	Total Capacity	Forecasted Growth	Remaining Capacity	Total Capacity	Forecasted Growth	Remaining Capacity
Region Outside Corridor	936,000	292,000	644,000	2,825,000	434,000	2,391,000
Corridor Outside Stations	145,000	67,000	78,000	471,000	223,000	248,000
Stations	65,000	38,000	27,000	234,000	150,000	84,000
Study Area Total	1,150,000	397,000	753,000	3,530,000	807,000	2,723,000

Local Land Use Plans and Development Ordinances

This section of the report provides links to community land use plans and ordinances, and highlights building standards for land adjacent to the railroad right-of-way in development ordinances of the municipalities and counties along the rail corridor in Durham, Wake and Johnston Counties. Plans related to the Research Triangle Park are included; ordinance standards for the Research Triangle Park are within the Durham County and Wake County ordinances, as applicable.

Wake County

The comprehensive plan is known as “PLANWake” and can be found [here](#).

The future land use map or “Development Framework Map” can be found [here](#).

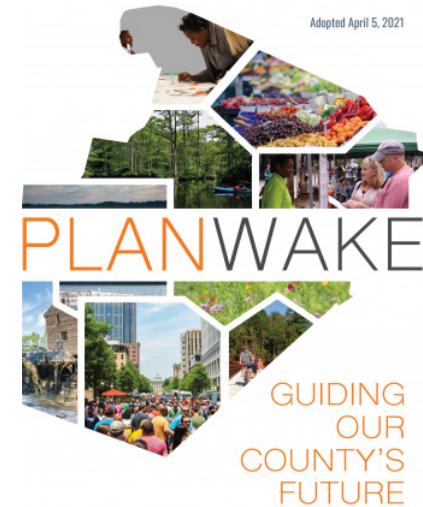
The principal development ordinance (UDO, zoning) can be found [here](#).

Regarding NCRR alignment specifically one should look [here](#).

The county currently treats railroad right-of-way as a privately owned adjacent property for residential lots where a standard side or rear setback is required. For commercial lots the UDO provides an exemption where no side or rear setback is required from the right-of-way for commercial structures.

A minimum side setback is not required when a railroad line is located on or along a lot line. A minimum rear setback is not required when a railroad line is located on or along a lot line.

A recent example at Wake Tech involved parking adjacent to the railroad right-of-way and it was determined that the same buffer applied to roadways would be applied to the railroad. This required a 10 foot wide planted buffer adjacent to the railroad.



Cary

“The Cary 2040 Community Plan” also known as the “Imagine Cary Community Plan” can be found [here](#).

The future land use map or “Future Growth Framework Map” can be found [here](#).

The principal development ordinance (UDO, zoning) is known as “Cary’s Land Development Ordinance (LDO)” and can be found [here](#).

Regarding NCRR alignment specifically one should look [here](#).



Regulating the right of way in the buffer section means that the buffer width and planting standard within the buffer will vary depending on the adjacent use. For example, the width could range from 0 feet (for properties within the “Mixed Use Overlay District”) or up to 50 feet depending on the adjacent uses.

Garner

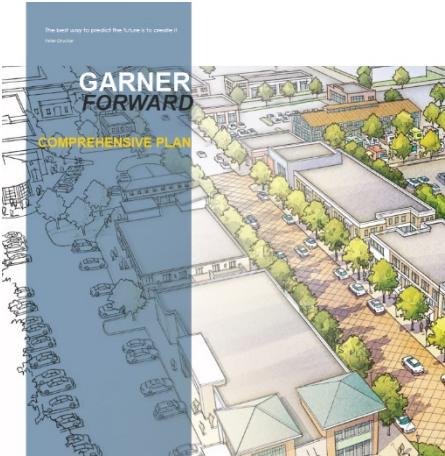
The “Garner Forward Comprehensive Plan” can be found [here](#).

The future land use map can be found [here](#).

The principal development ordinance (UDO, zoning) can be found [here](#).

Regarding NCRR alignment specifically one should look [here](#).

Railroad ROW (right-of-way) is treated like another parcel so an adjacent yard is either going to be a rear or side yard (unless there is a street running parallel with/in it). Please see the buffer classification chart in Section 7.1 of the UDO for specific language regarding “railroads.”



Raleigh

The “2030 Comprehensive Plan Update” can be found [here](#).

The future land use map can be found [here](#) or an interactive version is available [here](#). Select Planning and Development > Raleigh Planning and Development > Future Land Use.

The principal development ordinance (UDO, zoning) can be found [here](#).

Railroad right-of-way is treated as a private property line so the specific setback distance would be determined if it's a side or rear property line. Building type and zoning district also affect setback distance, and some historic properties are nonconforming (and can be revisited if warranted). Parcel maps do not always match the NCRR understanding of ROW (which is typically 200 feet of width). In the past, some parcels were improperly mapped, but discrepancies have been largely clarified.



Clayton

The “Think Clayton 2045 Comprehensive Growth Plan” can be found [here](#).

The future land use map can be found [here](#).

The principal development ordinance (UDO, zoning) can be found [here](#).

The ordinance does not address the railroad corridor directly and treats it as it would any parcel (so normal setbacks would apply).

Residential districts, side setback 6 – 15 feet, rear setback 20 – 30 feet.

Nonresidential districts (Main St Business District), side setback 0 – 20 feet, rear setback 0 – 40 feet.



Think CLAYTON.
2045 Comprehensive Growth Plan

Adopted November 15, 2021

Durham City and County

Durham is developing a new comprehensive plan; the effort can be followed [here](#).

The current future land use map can be found [here](#).

The principal development ordinance (UDO, zoning) can be found [here](#).

Regarding NCRR alignment specifically:

Side and rear yards can be eliminated if adjacent to a railroad right-of-way. They can be reduced to 30 feet if adjacent to permanently protected space and the building separation is at least 150 feet.



Morrisville

The comprehensive plan can be found [here](#).

The future land use map can be found [here](#).

The principal development ordinance (UDO, zoning) can be found [here](#).

Regarding NCRR alignment specifically:

The setback would follow the standard side/rear setback depending on the location of the railroad. Additionally, a buffer is required along all proposed uses and the railway. More specifically, all uses adjacent to a railway are required to install an "A" type buffer (30 or 50 feet in width) or a "B" type buffer (20 or 30 feet in width) depending on the proposed use.



Research Triangle Park (RTP)

A resource critical to understanding what the RTP is can be found [here](#). On this site you will find information about the history and future of the Research Triangle Park as well as current projects. The RTP is exploring creating a new plan for the Park; the plan for the under-development HUB RTP district, which is within the first-mile, last-mile distance of the planned RTP rail stop, can be found [here](#).

The 2021 Community Impact Report can be found [here](#).

A minimum side setback is not required when a railroad line is located on or along a lot line.

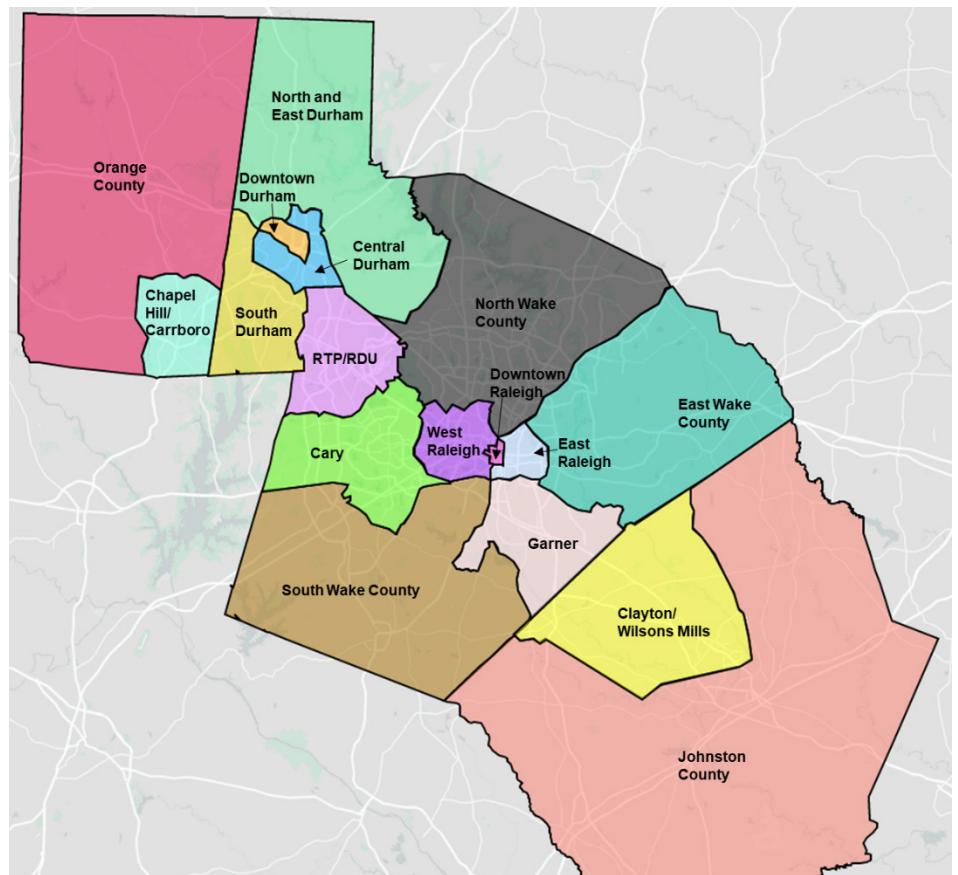
A minimum rear setback is not required when a railroad line is located on or along a lot line.



Development Market Assessment

As part of Phase II of the Greater Triangle Commuter Rail Study, GoTriangle engaged HR&A Advisors to conduct a real estate market analysis and projections, and also a regional economic impact analysis. This section is based on the information on the five real estate product types (office, retail, multifamily residential, industrial/lab space, hotel) in the 17 subdistricts contained in the real estate market analysis and projections, shown in the map on this page.

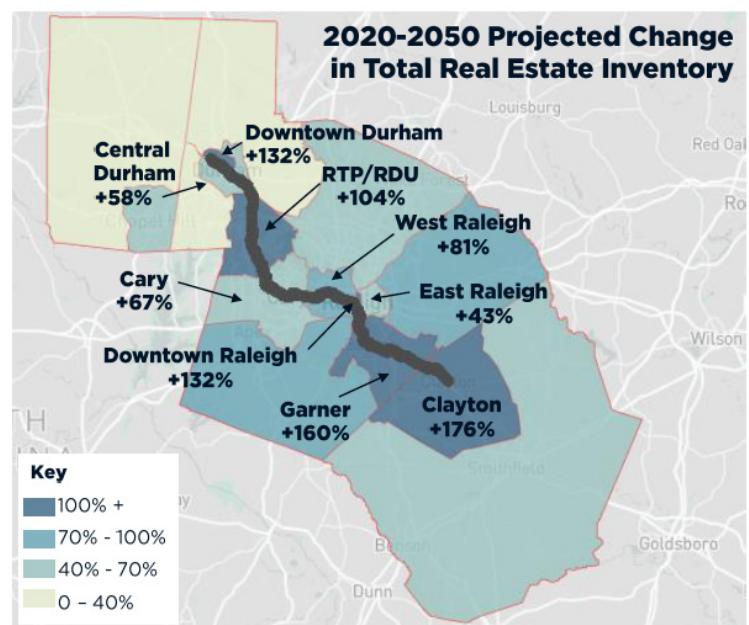
The CommunityViz place type information and local land use plan and development ordinance information in the previous sections address the “supply” side of real estate development: how much of what types of development in which locations can the analysis region and the rail corridor accommodate. This section focuses on the demand side: what might the market want to build given what is possible.



Nine of the 17 subdistricts in the four counties are substantially connected to the rail corridor:

1. Downtown Durham (which stretches west to include the Duke University/Medical Center area)
2. Central Durham (which wraps around the Downtown Durham district, and also includes NCCU)
3. RTP/RDU
4. Cary
5. West Raleigh
6. Downtown Raleigh
7. East Raleigh
8. Garner
9. Clayton/Wilsons Mills

HR&A's analysis indicated that the highest percentage growth would occur in the Garner and Clayton/Wilsons Mills districts on the eastern edge of the line, and that the downtowns of both Raleigh and Durham would experience 130% growth in real estate inventory over the next 30 years, more than doubling their 2020 square footage.



Note: Represents the Build scenario and include multifamily, condo, office, retail, hotel, and industrial development. Assumes 1,000 SF/residential unit and 500 SF/hotel room

Comparing this market assessment to the growth forecasts from the region's CommunityViz growth allocation model used in the 2050 Metropolitan Transportation Plan yielded the following insights:

- HR&A indicates there could be even stronger multifamily residential demand than forecast in the 2050 Metro Transportation Plan, in both downtown and adjacent districts and at the Clayton/Wilson's Mills districts.
- Similarly, HR&A indicates stronger office and industrial/lab space demand in the corridor, especially in the RTP/RDU district.
- University and Medical Center growth is not primarily based on local and regional market conditions, so these prominent corridor employers and service providers can influence corridor job and housing conditions.
- The HR&A demand forecasts are within the 2050 Plan capacities for new development, so a key take-away is that corridor districts may develop more quickly than the 2050 Plan envisions, especially around RTP.

The table below summarizes market demand for multifamily units and for office, industrial and retail space by district.

Multifamily + Condo Housing Units				Office, Industrial and Retail Square Footage		
Submarket	2020 Inventory	2020-50 change	2050 Projection	2020 Inventory	2020-50 change	2050 Projection
Cary*	19,725	15,816	35,541	28,230,000	15,920,000	44,150,000
Central Durham*	9,344	4,934	14,278	7,740,000	5,380,000	13,120,000
Chapel Hill & Carrboro	11,329	6,403	17,732	6,500,000	1,260,000	7,760,000
Clayton & Wilson Mills*	3,053	8,454	11,507	9,590,000	14,210,000	23,800,000
Downtown Durham*	6,088	11,772	17,860	10,230,000	9,330,000	19,560,000
Downtown Raleigh*	6,295	13,200	19,495	11,830,000	10,810,000	22,640,000
East Raleigh*	4,874	3,256	8,130	4,720,000	890,000	5,610,000
East Wake County	8,171	5,803	13,974	16,950,000	14,110,000	31,060,000
Garner*	6,104	7,248	13,352	14,340,000	25,980,000	40,320,000
Johnston County	2,792	819	3,611	14,830,000	9,200,000	24,030,000
North & East Durham	6,350	1,480	7,830	8,020,000	600,000	8,620,000
North Wake County	43,037	29,874	72,911	52,400,000	15,620,000	68,020,000
Orange County	2,526	1,365	3,891	5,110,000	640,000	5,750,000
RTP/RDU*	15,878	22,480	38,358	42,710,000	39,600,000	82,310,000
South Durham	18,134	7,110	25,244	11,610,000	2,270,000	13,880,000
South Wake County	8,061	10,345	18,406	17,970,000	9,000,000	26,970,000
West Raleigh*	17,247	17,416	34,663	15,400,000	8,500,000	23,900,000
Four-County Total	189,008	167,775	356,783	278,180,000	183,320,000	461,500,000

* indicates a district substantially connected to the rail corridor

Of special note is the demand for urban apartments and condos. The rail corridor passes through existing major job hubs, but developing the market for the home end of trips might be a challenge based on today's land use. The HR&A analysis indicates substantial multifamily residential demand in close proximity to the rail line. Together, the relatively compact Downtown and West Raleigh districts can accommodate 30,000 apartments and condos, and the analogous Downtown and Central Durham districts can absorb another 20,000 units. Those four districts could more than double their combined market-rate multi-family inventory from 2020, and account for 30% of new multifamily units between 2020 and 2050.

The HR&A analysis includes market demand for additional hotel rooms – which can be thought of as a special type of residence – a type of development that the CommunityViz growth allocation does not address. From 2020 to 2050, HR&A identified a market for an additional 22,000 hotel rooms in the 4-county region. Of these, almost 13,000 rooms would be in just five of the CRT corridor districts: the downtowns of Raleigh and Durham, the RTP area, Cary and West Raleigh.

Land Use in Key Neighborhoods and Hubs

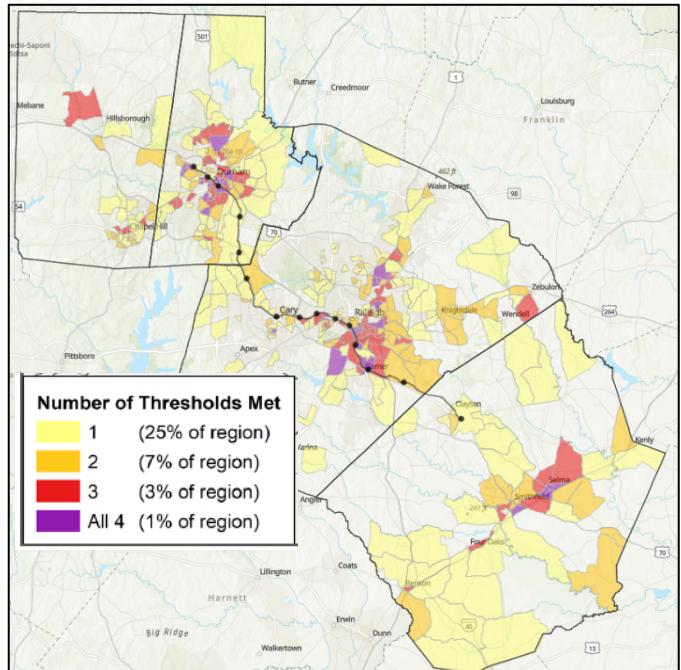
The Travel Market Report identified key neighborhoods and activity hubs in the region and along the rail corridor – places that are particularly important as sources and destinations of trips. The Travel Market Report focused on the characteristics of existing residents and jobs in these places – termed *REINVEST Neighborhoods*, and the commuter travel between key neighborhoods and hubs. REINVEST neighborhoods are identified based on four characteristics, each represented by two letters in RE-IN-VE-ST:

RE	Race/Ethnicity – the degree to which a neighborhood is home to people who are Black, Indigenous or People of Color (BIPOC).
IN	Income – the degree to which people in the neighborhood live in households with lower annual incomes.
VE	Vehicles – the degree to which households in the neighborhood report having no vehicles available
ST	Status – whether or not a neighborhood has a specific designation that makes it of particular interest for transportation investment. In this analysis, two neighborhood status characteristics are included, although either fewer or more criteria could be used: i) # of legally-binding, affordability-restricted (LBAR) housing units, and ii) designation as a federal Opportunity Zone

The travel market opportunity report provides greater detail, and the map at right shows places along the corridor that meet 2, 3, or 4 REINVEST Neighborhood standards, based on the same environmental justice criteria used for transportation plans and projects in the region.

An on-line version of the REINVEST Neighborhood map is available at <https://arcg.is/104mSq0>.

If the passenger rail project advances to the next phase, developing land use strategies for neighborhoods that meet REINVEST standards can be an important activity.



Key Hubs

Key hubs of activity in the region are represented by nautical terms: anchors and mainstays. The table below provides context and examples.

Hubs	Description	Examples
	Anchors Places with the highest concentrations of jobs and services, plus places with moderate intensity and an anchor institution that can influence mobility-based policy decisions	<ul style="list-style-type: none"> • Metropolitan Central Business Districts • Major University and College Campuses • Medical Centers • Research Triangle Park
	Mainstays Places with regionally significant concentrations of jobs, either outright or in comparison to their surroundings	<ul style="list-style-type: none"> • Many mid-sized town and city centers • Some suburban centers, often along major transportation corridors

Land use place types and growth forecasts, used in both this analysis and the region's new 2050 Metropolitan Transportation Plan, focus on key hubs as a critical foundation for successful transit service. Systematic collaboration on land use planning with universities, downtown districts and the Research Triangle Park will be important if the passenger rail project advances to the next phase.

Opportunities for Equitable TOD and Joint Development

There is a proverb, “where there is no vision, the people perish.” Increasingly, the vision that Triangle communities have for major transit investments, not just rail, is walkable, bikeable neighborhoods with a rich mix of housing, jobs and services accessed by transit – a pattern of land use that design practitioners refer to as “Transit-Oriented Development.”

Equitable Transit-Oriented Development (eTOD)

Transit-Oriented Development (TOD) is shorthand for a pattern of development that best supports people using transit and efficient transit operations. It typically combines elements such as:

- Greater density/intensity
- Mix of uses
- Mix of housing types
- Walkable and bikeable

Equitable TOD, or eTOD, means taking deliberate, meaningful actions to ensure that TOD neighborhoods include residents and businesses that reflect the diversity of the broader community. Because TOD remains a relatively small proportion of total development, and because it is popular with residents and business owners, the constrained supply of TOD locations means it can be difficult for traditionally disadvantaged residents and businesses to out-compete better resourced households and businesses for available space.

There is a growing body of research and examples for eTOD practices and projects, both within the Triangle Region and across the U.S. Locally, Raleigh has pursued eTOD along the planned Wake County Bus Rapid Transit (BRT) corridors through the Equitable Development Around Transit project, which includes a guidebook, a new TOD zoning district and specific station area planning along the New Bern Avenue BRT corridor. The latest information on the effort can be found at: <https://raleighnc.gov/equitable-transit-development>.

One common theme in eTOD approaches is the importance of using land already owned by the public or non-profit partners to leverage investments to preserve and create housing and jobs that serve equity-centered neighborhoods and businesses. For major transit capital investments like the proposed regional rail service, the federal “Joint Development” program provides a leverage opportunity.

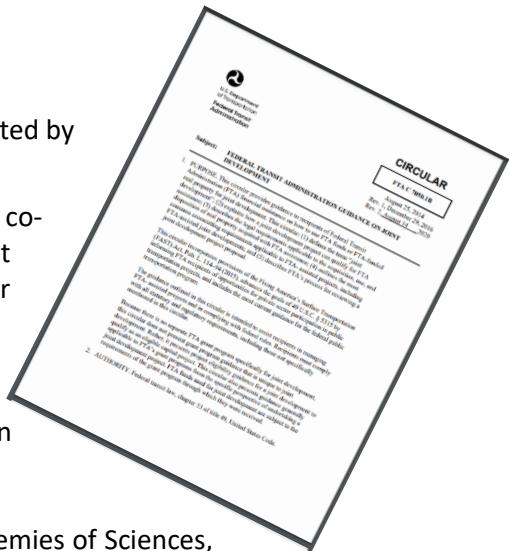
Joint Development

“Joint Development” has a very specific meaning for transit investments supported by federal funds:

“A public transportation project that integrally relates to, and often co-locates with commercial, residential, mixed-use, or other non-transit development. Joint development may include partnerships for public or private development associated with any mode of transit system that is being improved through new construction, renovation, or extension. Joint development may also include intermodal facilities, intercity bus and rail facilities, transit malls, or historic transportation facilities.”

A recent report from the Transportation Research Board of The National Academies of Sciences, Engineering and Medicine includes extensive guides, best practices and examples of joint development nationwide:

<https://nap.nationalacademies.org/catalog/26045/guide-to-joint-development-for-public-transportation-agencies>



The guidelines for participation in the Federal Transit Administration's Joint Development Program were revised in August 2020, expanding the potential for creative approaches to co-locating and funding development in collaboration with transit investments. The station study areas that are being explored as part of the commuter rail analysis raise some intriguing possibilities for joint development. Because of the complexity of many joint development partnerships, and the long lead time needed to analyze them, reach decisions and obtain federal approval, it can be crucial to begin detailed joint development planning while the related transit project planning is underway.

When included as part of a transit capital investment that involves federal funding, as the commuter rail project would, joint development costs are part of the overall project costs in the "Standard Cost Categories" spreadsheet that is used in federal Capital Investment Grant project applications (see example at right). Including joint development costs as part of the application has some distinct advantages:

- eligible costs associated with joint development are eligible for federal funding shares of the project.
- joint development costs are not counted against a project's cost-effectiveness score.

Eligible joint development project costs can include a wide range of activities; for example:

- Property acquisition, and the relocation of residents and businesses;
- Demolition of existing structures;
- Site preparation;
- Utilities, including utility relocation and construction;
- Building foundations, including substructure improvements for buildings constructed over transit facilities;
- Walkways, including bicycle lanes and pedestrian connections and access links between public transportation services and related development;
- Pedestrian and bicycle access to a public transportation facility;
- Construction, renovation, and improvement of intercity bus and intercity rail stations;
- Open space, including site amenities and related streetscape improvements;
- Facilities that incorporate community services such as daycare and health care;
- A capital project for, and improving, equipment or a facility for an intermodal transfer facility;
- Construction of space for affordable housing;
- Project development activities and professional services, including costs for professionals to perform the activities described above.

Standard Cost Categories for New Starts Projects	
(Rev.22, April, 2021)	
10 GUIDEWAY & TRACK ELEMENTS (route miles)	
10.01 Guideway: At-grade exclusive right-of-way 10.02 Guideway: At-grade semi-exclusive (allows cross-traffic) 10.03 Guideway: At-grade in mixed traffic 10.04 Guideway: Aerial structure 10.05 Guideway: Built-up fill 10.06 Guideway: Underground cut & cover 10.07 Guideway: Underground tunnel 10.08 Guideway: Retained cut or fill 10.09 Track: Direct fixation 10.10 Track: Embedded 10.11 Track: Ballasted 10.12 Track: Special (switches, turnouts) 10.13 Track: Vibration and noise dampening	
Joint Development	
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	
20.01 At-grade station, stop, shelter, mall, terminal, platform 20.02 Aerial station, stop, shelter, mall, terminal, platform 20.03 Underground station, stop, shelter, mall, terminal, platform 20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	
20.05 Joint development	
20.06 Automobile parking multi-story structure 20.07 Elevators, escalators	
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	
30.01 Administration Building: Office, sales, storage, revenue counting 30.02 Light Maintenance Facility 30.03 Heavy Maintenance Facility 30.04 Storage or Maintenance of Way Building 30.05 Yard and Yard Track	
40 SITEWORK & SPECIAL CONDITIONS	
40.01 Demolition, Clearing, Earthwork 40.02 Site Utilities, Utility Relocation 40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments 40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks 40.05 Site structures including retaining walls, sound walls 40.06 Pedestrian / bike access and accommodation, landscaping 40.07 Automobile, bus, van accessways including roads, parking lots 40.08 Temporary Facilities and other indirect costs during construction	
50 SYSTEMS	
50.01 Train control and signals 50.02 Traffic signals and crossing protection 50.03 Traction power supply: substations 50.04 Traction power distribution: catenary and third rail 50.05 Communications 50.06 Fare collection system and equipment 50.07 Central Control	
60 ROW, LAND, EXISTING IMPROVEMENTS	
60.01 Purchase or lease of real estate 60.02 Relocation of existing households and businesses	
70 VEHICLES (number)	
70.01 Light Rail 70.02 Heavy Rail 70.03 Commuter Rail 70.04 Bus 70.05 Other 70.06 Non-revenue vehicles 70.07 Spare parts	
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	
80.01 Project Development 80.02 Engineering 80.03 Project Management for Design and Construction 80.04 Construction Administration & Management 80.05 Professional Liability and other Non-Construction Insurance 80.06 Legal; Permits; Review Fees by other agencies, cities, etc. 80.07 Surveys, Testing, Investigation, Inspection 80.08 Start up	
90 UNALLOCATED CONTINGENCY	
100 FINANCE CHARGES	

In order to have any of the above joint development costs to be included in a transit project, four criteria must be met:

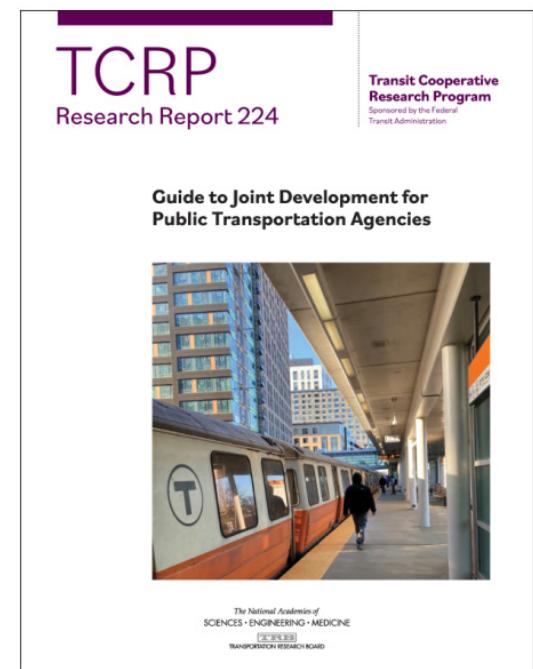
- Criterion 1 – Economic Benefit: Projects must either enhance economic development, or incorporate private investment
- Criterion 2 – Transit Benefit: Projects must either enhance the effectiveness of transit and be related physically or functionally to public transportation, or establish new or enhanced coordination between public transportation and other transportation
- Criterion 3 – Fair Share of Revenue: Projects must provide a fair share of revenue that will be used for public transportation.
- Criterion 4 – Fair Share of Costs: A person making an agreement to occupy space in a transit facility must pay the project sponsor a fair share of the costs of the facility through rental payments or other means.

There may be good opportunities for joint development with the Greater Triangle Commuter Rail project since three of the station study areas already contain intercity rail stops and two of them also have bus transfer facilities:

1. Raleigh – Raleigh Union Station Amtrak station and RUS-Bus facility
2. Durham – Durham Amtrak station and Durham Intermodal facility
3. Cary – Cary Amtrak station

In addition, GoTriangle owns existing property along the corridor, including key sites adjacent to planned stations in the downtown Durham, East Durham and Ellis Road station study areas. Other land adjacent to planned stations is owned by public and partner agency owners, which could also become part of specific joint development efforts.

Concerns about housing affordability in the region in general, and that major transit investments show tangible benefits for low and moderate-



income households in particular, suggest that special emphasis might be worthwhile to examine joint development partnerships with meaningful affordable housing components. The 2021 Transportation Research Board guide to joint development includes information and examples of joint development that includes affordable housing and identifies best practices.

Because of the complexity of joint development, the long lead times often needed to establish partnerships and to match transit investments with affordable housing subsidy programs, starting as early as possible to identify and analyze opportunities can be important for success.

BEST PRACTICES

Affordable Housing and JD

1. Promote affordable housing in JD projects. This may involve inclusionary requirements if the transit agency or zoning jurisdiction finds such measures appropriate.
2. Reflect the economics of affordable housing in setting or negotiating an acceptable land value.
3. Work with housing agencies to prioritize the site for applicable affordable housing subsidies.
4. Work with local jurisdiction to secure density bonuses and reduced parking requirements.

Measuring Performance

Tracking Data to Achieve Goals and Outcomes

The Triangle region is growing and changing, rapidly and in ways that we only partly understand. Our region a generation from now will be very different from our region today, just as today's region is very different from what it was just a generation ago. The pandemic, the rise in one- and two-person households, widespread housing affordability challenges and the emergence of micro-mobility, app-based transit technologies and connected and autonomous vehicles will continue to affect land use, affordable housing and transit interactions.

To better understand how our region is growing and changing, a systematic but focused attention to demographic, development and mobility data tracking and reporting can be an important component of nimble and effective decision-making. Based on both the passenger rail opportunity analysis and closely aligned 2050 Metropolitan Transportation Plan methods, a performance measurement system built on foundational data, goal and priorities metrics, and investment and trend analysis can be used to engage both the public and decision makers.

Foundational Data

Foundational data are the source data that are translated into the quantitative metrics that can be used to understand how our region is changing and the degree to which those changes align with our goals and priorities. Foundational data include decennial census data, annually updated American Community Survey data, housing data, Opportunity Zone data, local and anchor institution land use and building permit data and transit data such as route mapping, ridership and on-board survey.



Goal and Priorities Metrics

Goals and priorities metrics categorize and transform the foundational data into more readily usable information aligned with specific plan goals and regional transit, land use and affordable housing strategic priorities. Examples of metrics used in the passenger rail corridor opportunity analysis and/or MPO comprehensive and long-range metropolitan plans include:



- REINVEST Neighborhoods based on equity-centered demographic standards,
- Key Job Hubs based on employment densities, earnings levels and employment totals,
- Travel Choice Neighborhoods based on the availability of quality transit services,
- Housing Opportunity Sites based on the characteristics of publicly owned land, and
- Equitable TOD Areas based on capacity for added development around BRT and CRT stations and along frequent-bus lines.

Investment and Trend Analysis to Inform Engagement & Guide Decisions

The value of the goals and priorities metrics is in using them to show how places in the region are changing and how those changes align with our communities' visions and plans. This analysis can then inform engagement with the public and decision-makers on strategies and course corrections to better achieve the results that our plans and investments envision. The analysis can be linked to the performance metrics in the region's *Connect 2050* Metropolitan Transportation Plan along with other local and MPO comprehensive, small area and corridor investment plans.



Critical Considerations & Next Steps

Communities in the Triangle Region do not have deep pockets relative to larger and more prosperous regions that are investing significant amounts of public money to address land use, economic development and affordable housing needs along transit investments. And they are often hampered by state restrictions from applying innovative tools used successfully elsewhere to guide and leverage private sector decisions. In the passenger rail corridor itself, land use actions by major anchor institutions – universities and medical centers – can significantly influence success. In order to be most successful, leaders of good will likely need to collaborate voluntarily to do their part.

Success, in a word, will involve “Partnerships.” Sustained, systematic partnerships can lead to meaningful results.

The metrics and principles in this report can inform decisions about economic development, land use and affordable housing. For strategies to achieve their full potential, partnerships between interdisciplinary stakeholders can be created where they do not yet exist, and nurtured and strengthened where they do.

Two initial partnerships – one already existing and the other with a precedent in the region – might serve as cornerstones for collaboration:

- *The Triangle Housing Practitioners Group* – Consisting of stakeholders from the public, private and civic sectors with direct responsibility to fund, build, manage or regulate affordable housing, the practitioners group was created in 2017 and is convened by the Triangle J COG to examine techniques, learn about emerging issues, and share effective practices.
- A *Land Use-Housing-Transit Partnership* that can bring together expertise from different “silos” for a laser-like focus on the inter-related decisions that communities make on land use regulation, transit investment, and housing programs. A similar group was created by Triangle J COG to look at passenger rail, bus rapid transit, and frequent bus service corridors in the Wake Transit Plan. Using this precedent to create a regional group and sustaining it over time could lead to productive collaboration.

These two partnerships can support efforts not just in the passenger rail corridor, but along other public transit investments planned in the region.

In addition to partnerships, other actions might support an effective framework for pursuing strategies to align economic development, land use and affordable housing with transit investments; examples include:

1. Monitoring, Evaluation, and Reporting. Land use and housing conditions change constantly and sometimes rapidly. Tracking and reporting change can provide a common foundation to prepare for and react to change.
2. Periodic Development & Transit Investment Summits. Building on the work of the partnerships and the monitoring and evaluation effort, periodic summits can showcase what communities along major transit investment corridors are doing to meet their economic development, land use and affordable housing goals and introduce fresh ideas from people in the Triangle and experts from peer regions. A summit or similar event can be a way to partner with organizations with similar interests, such as the Urban Land Institute, and engage regional stakeholders.

This report is descriptive, relying on analysis and examples to indicate what is possible, not prescriptive, meaning it does not recommend what communities and their partners should do. But to turn opportunity into achievement, local governments may want to consider actions such as these to facilitate success.

What If ...

If partnerships are crucial to implementing strategies, what can help strengthen partnerships?

Partnerships need to be more than people sitting around a table discussing issues. Five pillars could provide a foundation:

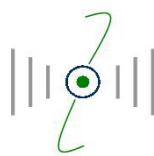
- Compelling Vision. What if we crafted a clear vision for regional transit and housing investments?
- Commitment. What if we created an “A Place For All” Resolution that communities could sign on to strengthen the connective tissue of regional partnerships?
- Recognition. What if we created a “Part Of The Solution” recognition program that rewards developers and communities that go the extra mile to implement the vision?
- Policy Advancement. What if we worked with the state to allow tried-and-true land use and affordable housing tools in carefully designated Transit-Oriented Development zones?
- Innovation. What if we created a Land Use-Transit-Housing Strategy Lab that brought together university, developer and community expertise to explore and test innovative approaches?
- eTOD. What if we partnered with communities, financial experts, and housing and transit authorities to advocate for state policies that better support eTOD and joint development?

Additional Resources

- GoTriangle Commuter Rail Website - <https://www.readyforrailnc.com>
- Connect2050, The Research Triangle Region's Metropolitan Transportation Plan – dchcmo.org; campo-nc.us
- Triangle J COG CommunityViz Growth Allocation Model resources – <https://www.tjcog.org/focus-areas-transportation-metropolitan-mobility-metropolitan-planning-organization-support>
- Triangle J COG Housing resources – <https://www.tjcog.org/focus-areas/housing>
- Federal Joint Development resource page – <https://www.transit.dot.gov/JointDevelopment>
- Center for Transit Oriented Development – www.ctod.org
- Denver TOD Fund – www.urbanlandc.org/denver-transit-oriented-development-fund/
- National Academies of Sciences, Engineering, and Medicine 2021. *Guide to Joint Development for Public Transportation Agencies*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26045>

This report was prepared by John Hodges-Copple, Jenna Kolling and Adam Spillman of the Triangle J Council of Governments. Special thanks to Katharine Eggleston, Jay Heikes and Margaret Scully for review and comment on drafts of the report and related products. For questions or comments, please contact Jenna Kolling at jkolling@tjcog.org. Copies of this report, along with supplementary material and additional mapping, are available for download from the GoTriangle Commuter Rail website at: <https://www.readyforrailnc.com/reports/>.

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Appendices

Appendix 1: Glossary of Terms and Acronyms

Term	Definition
Activity Center	A general term for an area of more intense development, often either job-focused or a mix of jobs and higher density residential. Station study areas in this analysis are characterized as different types of activity center.
Allocation (of growth)	In this analysis, growth allocation is the same as a growth “forecast:” the assignment of future jobs and housing to locations in the region between 2020 and 2050.
Anchor Institution	Hospitals, universities, and other institutions that have decision-making ability to affect the success of a strategy or investment.
Capacity (for growth)	In this analysis, growth capacity is the amount of future jobs and/or households that could be contained on a parcel of land based on the parcel’s place type, development status and jurisdiction-specific densities and intensities for the relevant place types. Future growth allocations can only be less than or equal to the capacity.
Committed (and Asserted) Development	Development after 2020 that is manually inserted into future growth forecasts, either because the development was underway but not completed in 2020 (“committed”) or because it was based on an anchor institution plan and would not rely on typical real estate market forces (“asserted”).
Communities of Concern	Groups that are identified through an equity lens, groups that have been traditionally under-represented in transportation decision-making based on such characteristics as race, ethnicity, disability, age and income.
<i>CommunityViz</i>	The region’s Geographic Information Systems (GIS) growth allocation model, which assigns future growth to locations in the region based on their capacity for and attractiveness to development.
<i>Connect 2050</i>	The title of the 2050 Metropolitan Transportation Plan adopted by the Capital Area MPO and Durham-Chapel Hill-Carrboro MPO in February 2022.
Corridor (rail)	As used in this report, the corridor is 2 miles wide, one mile on each side of the existing tracks within the North Carolina Railroad Company right of way
CRT (Commuter Rail Transit)	Defined by the Federal Transit Administration as an electric or diesel propelled railway for urban passenger train service consisting of local travel which operates between a central city and outlying areas. In this report, CRT is used interchangeably with “regional rail” or “rapid rail,” terms that do not imply a limitation to one type of traveler (a commuter going between home and work).
Development Status	The characteristics of development on a parcel of land in 2020 relative to the most likely place type the parcel would be in 2050.
Earnings (Low, Moderate, High)	Jobs and workers are classified into three earnings categories in the LEHD Origin-Destination Employment Statistics (LODES) data: Low: earnings of \$1,250 per month or less Moderate: earnings between \$1,251 and \$3,333 per month High: earnings of \$3,334 per month or more
Federal Transit Administration (FTA)	The agency within the US Department of Transportation that oversees transit programs and investments that use federal funds
First-mile, Last-mile	A transportation “rule of thumb” for the distance from a major transit investment where shuttle, bus or active transportation modes connecting to a station would be most influential for ridership.
Job Hubs/Key Hubs	Places in the region with the highest concentrations or number of jobs, including: 1) Block groups with very high (7,500-30,000 jobs per square mile) or extremely high (>30,000 jobs per square mile) job density. 2) Block groups with high (1,500-7,500 jobs per square mile) job density + more than 7,000 jobs.
Jobs (total and primary)	Total jobs are from the LEHD Origin-Destination Employment Statistics (LODES) work area characteristics dataset (all jobs for all workers), which includes all beginning-of-quarter (Q2) jobs from unemployment insurance covered employment (private and state- and local-government), and some Federal civilian employment. Primary jobs are a subset of total jobs, including only the highest paying job for workers holding two or more jobs in a given year. The count of primary jobs is the same as the count of workers.

Term	Definition
Joint Development	Local transit agencies can utilize the FTA's joint development program to support affordable housing projects near transit, including funds for property acquisition, demolition of existing structures, site preparation, relocation or construction of utilities, building foundations, walkways, and providing bike and pedestrian access between public transit and related development.
Land Use	The type and intensity of development that will occur on a parcel of land. Broad land use categories typically distinguish between residential, non-residential, and "mixed" uses, and often fall within a range of urban, suburban and rural intensities. In this analysis, land use (general) is categorized as one of 40 different "place types."
Legally Binding Affordability Restricted (LBAR) housing units	Housing that includes legally-binding agreements to keep it affordable, either permanently or for a set period of time. LBAR units can include both single family houses and apartments, or multi-family housing units that are made affordable by funding sources for households that meet specified income limits.
Metropolitan Planning Organization (MPO)	The federally-designated transportation planning and project programming organization for a region; there are two in the Triangle: the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.
Metropolitan Transportation Plan (MTP)	The federally-required long range transportation plan for a region. MTPs are developed and adopted by Metropolitan Planning Organizations.
Opportunity Zones	The Opportunity Zones Program was signed into legislation in December 2017 through the Tax Cuts and Jobs Act (H.R.1) that provides tax incentives for qualified investors to re-invest unrealized capital gains into low-income communities through a qualified Opportunity Fund.
Park-and-Ride	A station access mode of travel that is typically very important for longer corridors with more widely spaced stations, such as the planned passenger rail corridor of this analysis. Park and ride is often the only mode available for those who live greater distances from the corridor and where bus service is sporadic or non-existent. "Drop and ride" by friends or family or
Place Type	The type of place, also referred to as land use, that the CommunityViz growth allocation model assigns a parcel of land. Parcel-based place types were derived from local planners in 2019-20 and reflect the type of place (out of 40 choices) that is considered most likely in the Year 2050.
Region	In this analysis, the region is the 4 counties in the Greater Triangle containing the NCRR right-of-way: Orange, Durham, Wake and Johnston. Some land use information is only available for the portion of Johnston County west of I-95.
REINVEST Neighborhood	Neighborhoods, measured at the census block group level, with individual or household characteristics related to race, ethnicity, income, vehicle availability or affordable housing status that place them in the top 25% of all such block groups.
Segment (Corridor)	For ease of presentation, some of the mapping in this report shows information for four overlapping segments along the corridor. The segments are assigned letter designations of A, B, C and D.
Set-back (building)	The closest distance a building may be to edge of a property line. In this report, building set-back focuses on how close to railroad corridor property edges local communities allow new buildings to be constructed.
Station Study Area	A one-half mile radius area around a point that represents a potential rail station platform. A half-mile distance is a transit industry rule of thumb for a walking distance to transit.
Transit Propensity	The likelihood of a person with a particular characteristic to use transit as their commuting mode relative to the total population. A transit propensity greater than 1.0 means a person with the characteristic is more likely to use transit than the population as a whole.
Travel Market	Travel to particular places for specific purposes. This analysis focuses on employment trips to locations along the rail corridor.

Appendix 2: Station Study Areas

Appendix 2 contains a station summary table and individual station area metrics. Stations are categorized by what type of activity center they might grow to represent, from various kinds of mixed-use neighborhoods to anchor-institution-focused centers on up to dense metropolitan centers. Metrics may change as precise station locations are finalized and data are updated.

Stations	Center Type	% w/ Room for Dev ¹	2020 Jobs	2020-50 Job Growth ²	2020 House- holds	2020-50 HH Growth ²	2020 LBAR units	Planned Add'l LBAR units	2020 NOAH MF Units	Acres of AH Opp Sites ³
West Durham	Anchor Institution	17%	16,100	3,900	1,700	300	134	0	14	41
Downtown Durham	Metro Center	26%	12,100	14,400	2,300	6,100	214	337	143	7
East Durham	Mixed Use Neighborhood	42%	1,500	8,900	1,400	3,900	454	385	87	6
Ellis Rd	Mixed Use Neighborhood	65%	850	4,700	340	540	0	0	669	21
RTP	Job Center	68%	6,000	9,000	530	870	0	0	330	7
McCrimmon Parkway	Mixed Use Neighborhood	70%	2,800	8,200	120	2,800	0	0	0	3
Morrisville Parkway*	Mixed Use Neighborhood	58%	3,800	5,000	830	1,200	0	0	437	9
Downtown Cary	Town Center	37%	3,200	9,000	1,100	3,100	35	0	250	7
Corporate Center Dr	Mixed Use Neighborhood	54%	2,600	12,700	1,100	2,000	3	0	756	2
Blue Ridge Rd	Mixed Use Neighborhood	46%	2,900	14,200	490	1,800	0	0	97	0
NCSU	Anchor Institution	8%	14,700	2,800	810	610	72	0	37	0
Downtown Raleigh	Metro Center	40%	24,000	35,600	2,200	7,200	518	0	269	9
Hammond	Mixed Use Neighborhood	73%	1,300	12,000	500	3,000	0	0	178	0
Garner	Town Center	15%	1,300	1,500	800	760	111	0	201	5
Auburn	Mixed Use Neighborhood	55%	120	7,300	110	2,800	0	0	0	0
Downtown Clayton*	Town Center	16%	1,800	390	730	580	13	0	0	0
Powhatan	Job Center	25%	1,200	260	5	37	0	0	0	0

* Not part of initial station study areas, but identified as potential infill station.

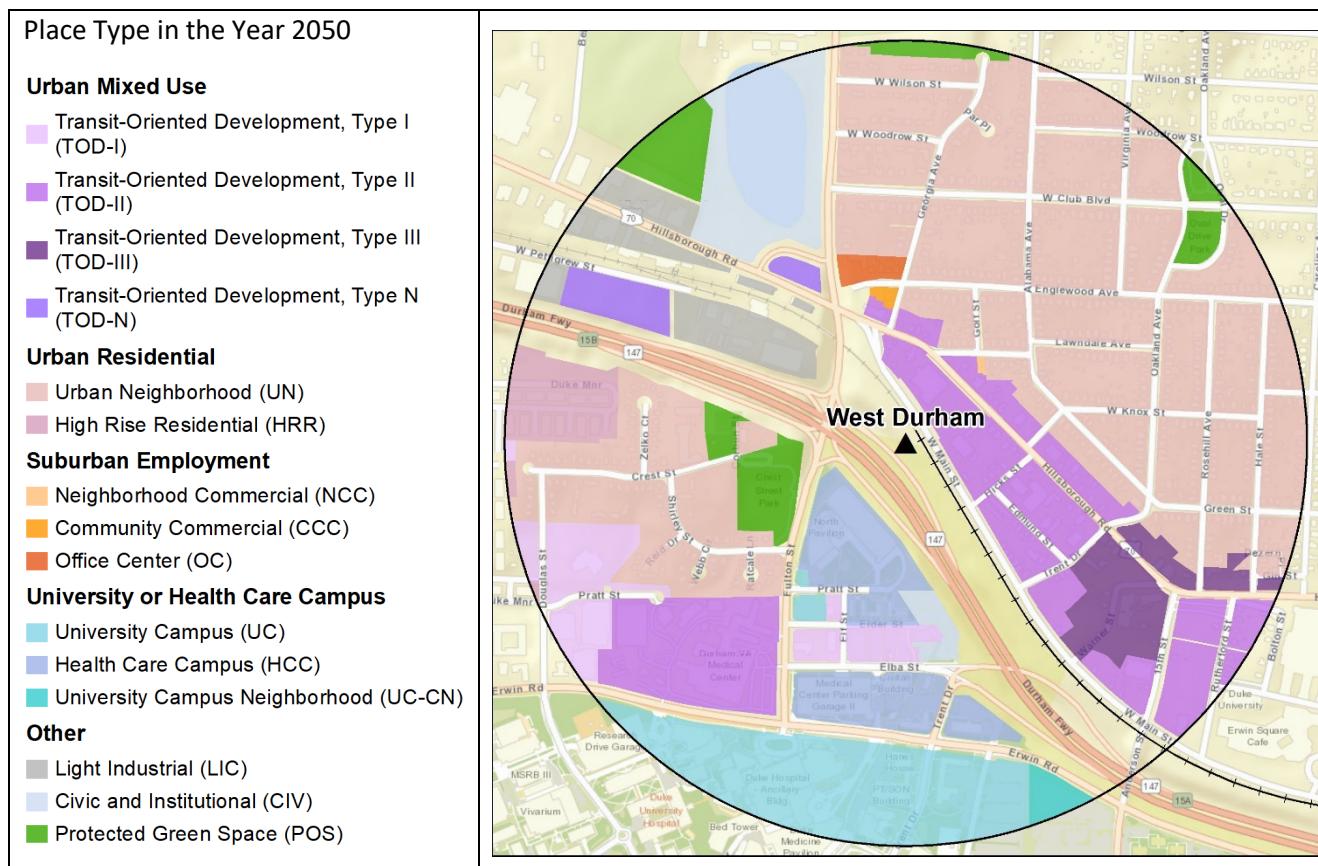
¹ Percent of acres in the station study area that have a redevelopable, under-developed or undeveloped development status.

² Based on the Opportunity Places regional growth scenario developed for the Connect 2050 Metropolitan Transportation Plan.

³ Acres of publicly-owned land in the station study areas that could be opportunity sites for affordable housing.

West Durham -- A Station Study Area Summary of land use, growth and affordable housing metrics

The West Durham station study area is classified as an **Anchor Institution Center**, with Duke Health System and VA Medical Center facilities in its southern section. Established areas include the historic Crest Street Community on its western edge and neighborhoods north and east of Main Street and Hillandale Road. Key future development decisions could focus on the now-vacant Duke Central Campus area and older, lower-intensity land uses along Main Street/Hillsborough Road. As an end of the line station, park and ride demand will likely hinge on ease of auto access.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	41		47	88
Urban Residential	144		13	157
Suburban Residential				
Suburban Employment	1		1	2
Industrial	14		1	15
University or Health Care Campus		58		58
K-12 Campus				
Civic & Institutional	24			24
Natural (Greenspace & Water)		17		17
Rights-of-Way		142		142
TOTAL DEVELOPMENT STATUS	383*	58	62	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

West Durham Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	16,100	40,000	# of 2020 households:	1,700	6,000
2020 capacity for additional jobs:	7,000	19,700	2020 capacity for additional households:	2,300	7,600
MTP forecast of added jobs 2020-2050:	3,900	12,400	MTP forecast of added households 2020-2050:	300	2,500
Remaining job capacity after 2050:	3,100	7,300	Remaining household capacity after 2050:	2,000	5,100

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	134	134
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	14	2,064
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	41	46

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area's parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

These summaries are one of several types of analysis documents that address land use, housing affordability and travel markets along the planned Commuter Rail Transit (CRT) Corridor in Durham, Wake and Johnston Counties. 2050 Place Type and Development Status information was developed as part of the region’s growth forecasts for the *Connect2050* Metropolitan Transportation Plan. For context, analysis and details, visit:

- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

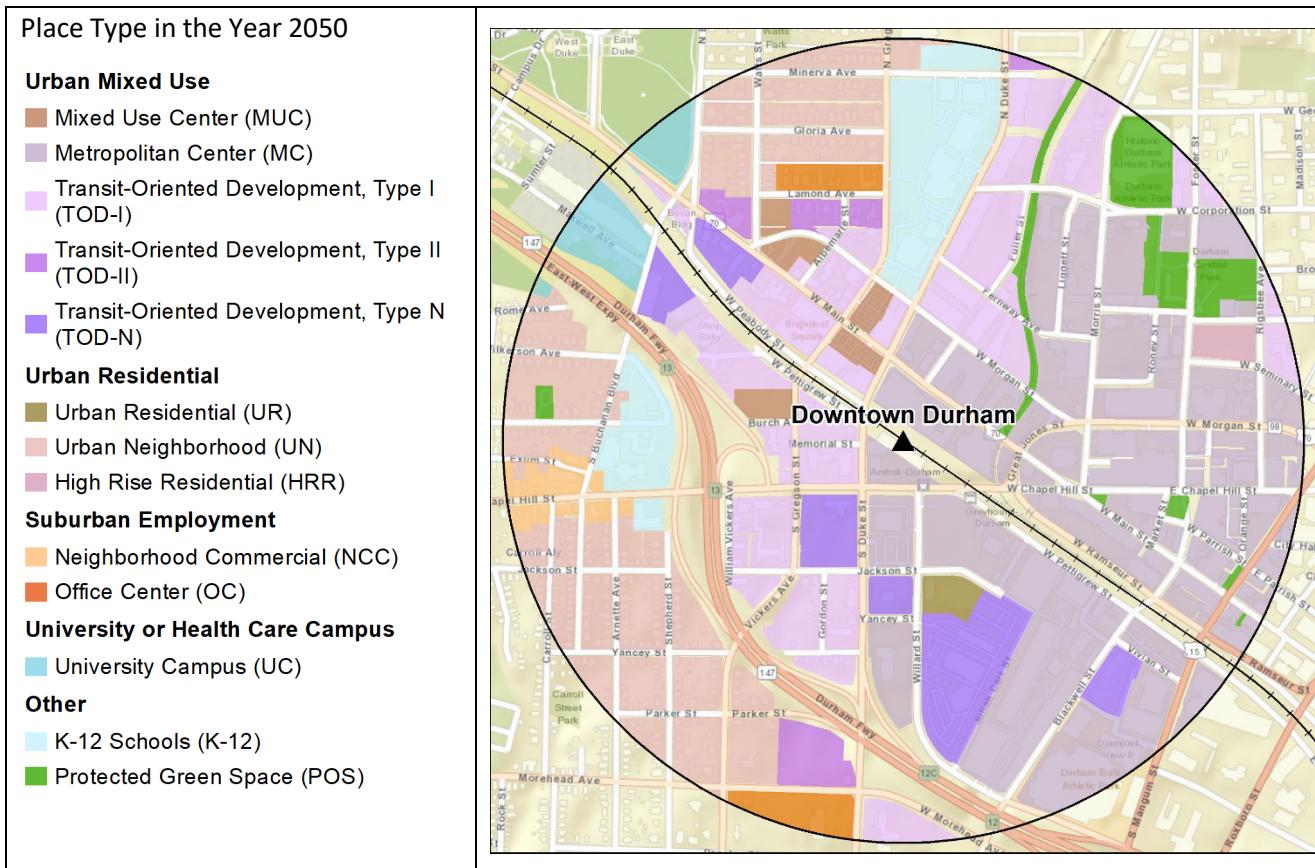
Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Downtown Durham

-- A Station Study Area Summary of land use, growth and affordable housing metrics

The Downtown Durham station study area is classified as a **Metro Center**, located near existing, underway and planned high-rise buildings. It is next to the Durham Transit Center bus station and the inter-city rail stop. The stop serves visitor destinations like the performing arts center and ballpark, and is the closest stop to City Hall and the County Courthouse. Several Durham Housing Authority sites are nearby. Key development decisions could focus on re-purposing publicly owned land and opportunities for joint development.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	114	20	84	218
Urban Residential	61		4	65
Suburban Residential				
Suburban Employment	10		1	12
Industrial				
University or Health Care Campus	3	6		9
K-12 Campus	25	2		27
Civic & Institutional				
Natural (Greenspace & Water)		15		15
Rights-of-Way		157		157
TOTAL DEVELOPMENT STATUS	385*	28	89	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Downtown Durham Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	12,100	22,200	# of 2020 households:	2,300	7,700
2020 capacity for additional jobs:	15,400	17,500	2020 capacity for additional households:	7,300	8,600
MTP forecast of added jobs 2020-2050:	14,400	15,400	MTP forecast of added households 2020-2050:	6,100	6,900
Remaining job capacity after 2050:	1,000	2,100	Remaining household capacity after 2050:	1,200	1,700

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	214	1,202
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	143	905
Planned additional LBAR units:	337	1,156
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	200	450
Acres of public land with potential to include affordable housing ³ :	7	34

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

These summaries are one of several types of analysis documents that address land use, housing affordability and travel markets along the planned Commuter Rail Transit (CRT) Corridor in Durham, Wake and Johnston Counties. 2050 Place Type and Development Status information was developed as part of the region’s growth forecasts for the *Connect2050* Metropolitan Transportation Plan. For context, analysis and details, visit:

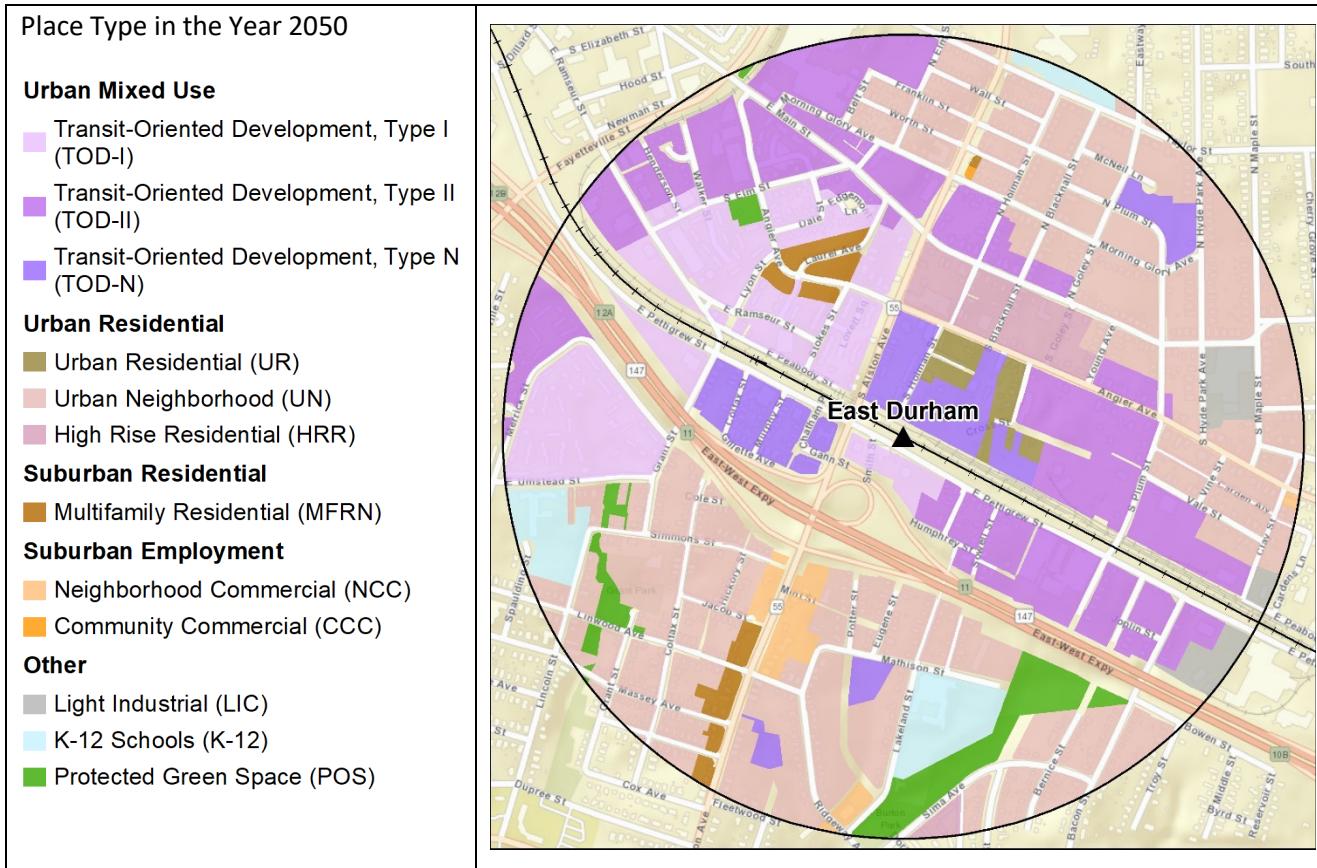
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

East Durham -- A Station Study Area Summary of land use and affordable housing metrics

The East Durham station study area is classified as a **Mixed Use Neighborhood Center**, surrounded by important legacy neighborhoods, including the historic Hayti Community. It is the closest stop to NC Central University and the main Durham Tech Campus, both of which would rely on seamless “first-mile, last-mile” connections. Equitable Transit Oriented Development strategies will be important around this station area, notably along the Fayetteville and Alston Street Corridors, and at Durham Housing Authority’s Fayette Place site.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	34	21	93	148
Urban Residential	110		42	152
Suburban Residential			7	7
Suburban Employment	4		3	7
Industrial	7			7
University or Health Care Campus				
K-12 Campus	14			14
Civic & Institutional				
Natural (Greenspace & Water)		13		13
Rights-of-Way		154		154
TOTAL DEVELOPMENT STATUS	337*	21	145	503

*Fully developed includes natural and right-of-way land because, while not “developed,” no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

East Durham Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	1,450	11,700	# of 2020 households:	1,400	5,500
2020 capacity for additional jobs:	10,700	22,600	2020 capacity for additional households:	5,900	13,900
MTP forecast of added jobs 2020-2050:	8,900	18,000	MTP forecast of added households 2020-2050:	3,900	9,200
Remaining job capacity after 2050:	1,800	4,600	Remaining household capacity after 2050:	2,000	4,700

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	454	1,579
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	87	204
Planned additional LBAR units:	385	1,221
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	200	450
Acres of public land with potential to include affordable housing ³ :	6	12

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

These summaries are one of several types of analysis documents that address land use, housing affordability and travel markets along the planned Commuter Rail Transit (CRT) Corridor in Durham, Wake and Johnston Counties. 2050 Place Type and Development Status information was developed as part of the region’s growth forecasts for the *Connect2050* Metropolitan Transportation Plan. For context, analysis and details, visit:

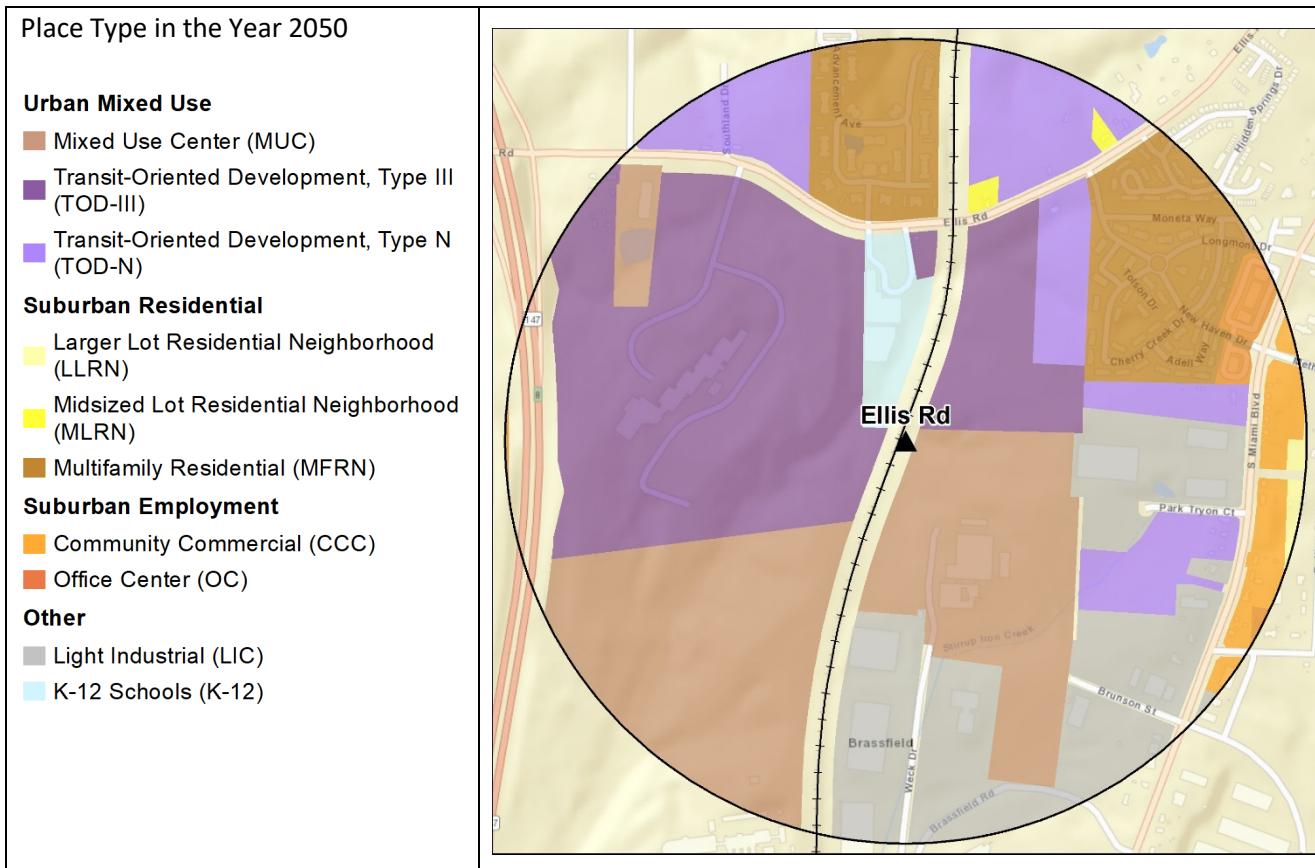
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Ellis Road -- A Station Study Area Summary of land use and affordable housing metrics

The Ellis Road station study area is classified as a **Mixed Use Neighborhood Center**, and is a rapidly evolving location for moderately priced single family and multifamily housing. Ellis Road also defines the northern edge of the Research Triangle Park; first-mile, last-mile service will be important to serve these job campuses. Key decisions might focus on joint development opportunities on the 21-acre site owned by GoTriangle at the rail stop; the 2050 Transportation Plan assumed 100 units could occur over the next 30 years.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use		21	269	290
Urban Residential				
Suburban Residential	56		1	57
Suburban Employment	8		7	15
Industrial	62		10	72
University or Health Care Campus				
K-12 Campus	10			10
Civic & Institutional				
Natural (Greenspace & Water)				
Rights-of-Way		59		59
TOTAL DEVELOPMENT STATUS	194*	21	287	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Ellis Road Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	850	10,800	# of 2020 households:	340	1,700
2020 capacity for additional jobs:	23,800	37,600	2020 capacity for additional households:	3,600	6,900
MTP forecast of added jobs 2020-2050:	4,700	7,100	MTP forecast of added households 2020-2050:	540	1,100
Remaining job capacity after 2050:	19,100	30,500	Remaining household capacity after 2050:	3,000	5,800

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	-
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	669	1,039
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	100	100
Acres of public land with potential to include affordable housing ³ :	21	21

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area's parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

These summaries are one of several types of analysis documents that address land use, housing affordability and travel markets along the planned Commuter Rail Transit (CRT) Corridor in Durham, Wake and Johnston Counties. 2050 Place Type and Development Status information was developed as part of the region’s growth forecasts for the *Connect2050* Metropolitan Transportation Plan. For context, analysis and details, visit:

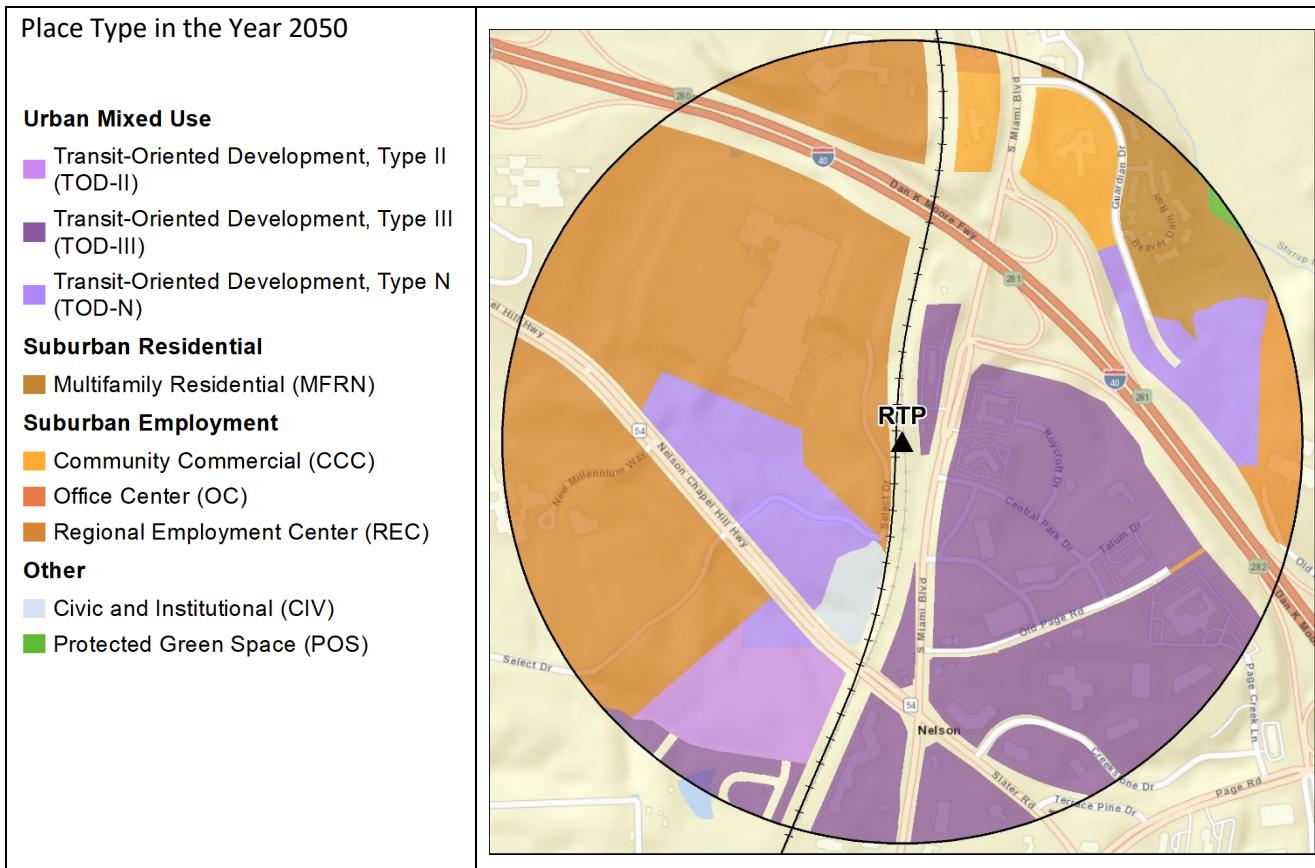
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

RTP -- A Station Study Area Summary of land use and affordable housing metrics

The Research Triangle Park (RTP) station study area is classified as a **Job Center** and is the middle of three stops – including Ellis Road and McCrimmon – that can serve RTP job campuses. Like many stations, first-mile, last-mile services will be critical, especially to connect to the HUB RTP development. Key decisions might focus on joint development at the station site, which is planned to be acquired by GoTriangle for both a rail stop and to relocate and expand the regional bus center; the 2050 Transportation Plan assumed 100 units could occur there.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	3		173	176
Urban Residential				
Suburban Residential	18			18
Suburban Employment	97		83	180
Industrial				
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	4			4
Natural (Greenspace & Water)		1		1
Rights-of-Way		124		124
TOTAL DEVELOPMENT STATUS	247*	0	256	503

*Fully developed includes natural and right-of-way land because, while not “developed,” no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

RTP Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	6,000	14,100	# of 2020 households:	530	2,400
2020 capacity for additional jobs:	13,100	25,900	2020 capacity for additional households:	1,500	3,100
MTP forecast of added jobs 2020-2050:	9,000	14,900	MTP forecast of added households 2020-2050:	870	1,500
Remaining job capacity after 2050:	4,100	11,000	Remaining household capacity after 2050:	630	1,600

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	-
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	330	1,224
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	100	100
Acres of public land with potential to include affordable housing ³ :	7	7

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

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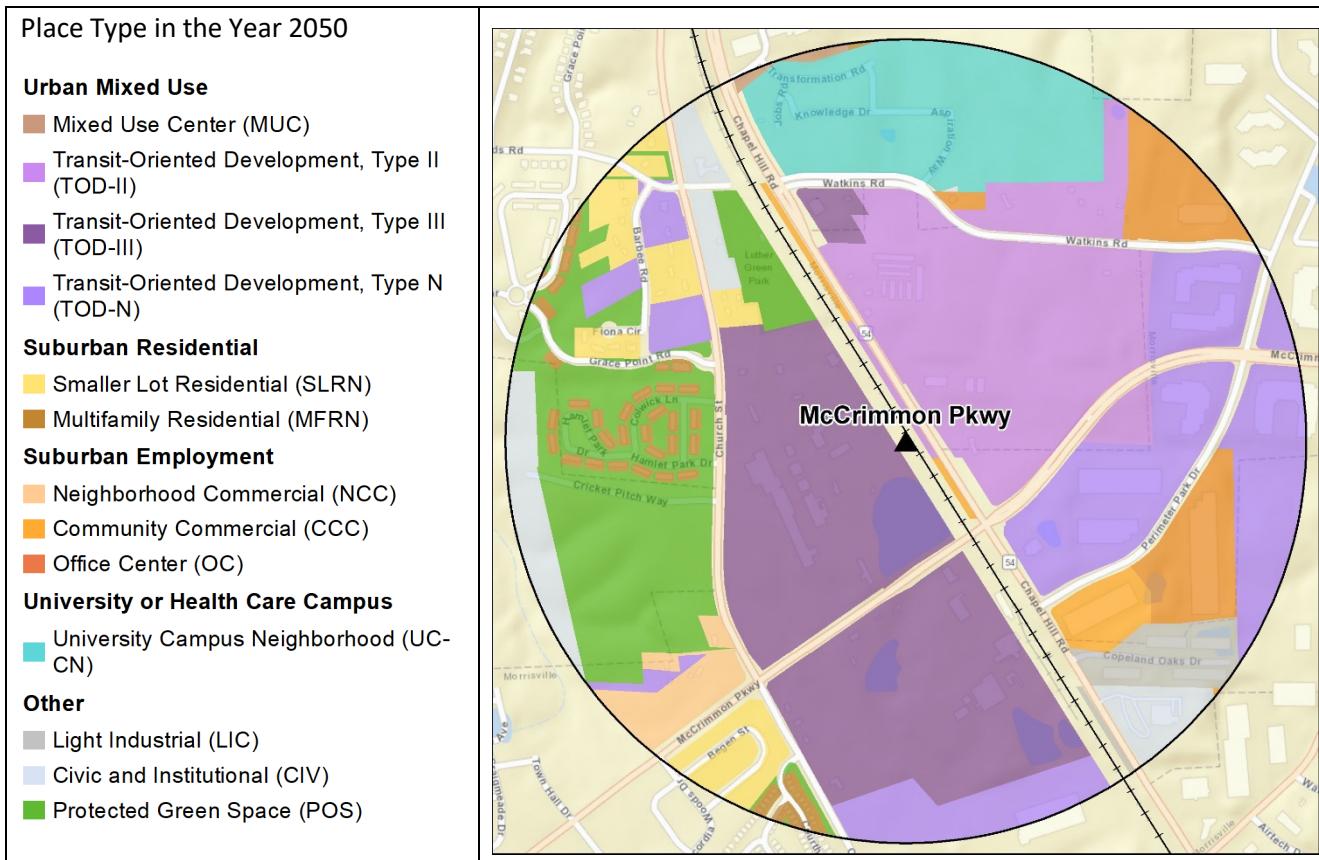
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

McCrimmon Pkwy -- A Station Study Area Summary of land use and affordable housing metrics

The McCrimmon Parkway station study area is classified as a **Mixed Use Neighborhood Center**. It serves nearby housing and is also close to a new Wake Tech campus and the southern portion of RTP. Morrisville has been proactive in both station area planning and planning for the McCrimmon corridor and key decisions are anticipated to be informed by those plans.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	4		240	244
Urban Residential				
Suburban Residential	21		5	26
Suburban Employment	26	6	5	37
Industrial	9		1	9
University or Health Care Campus		42		42
K-12 Campus				
Civic & Institutional	18		1	19
Natural (Greenspace & Water)		57		57
Rights-of-Way		68		68
TOTAL DEVELOPMENT STATUS	202*	48	252	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

McCrimmon Pkwy Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	2,800	11,500	# of 2020 households:	120	2,000
2020 capacity for additional jobs:	11,200	18,300	2020 capacity for additional households:	4,000	5,500
MTP forecast of added jobs 2020-2050:	8,200	10,900	MTP forecast of added households 2020-2050:	2,800	3,100
Remaining job capacity after 2050:	3,000	7,400	Remaining household capacity after 2050:	1,200	2,400

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	-
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	-	522
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	100	100
Acres of public land with potential to include affordable housing ³ :	3	10

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
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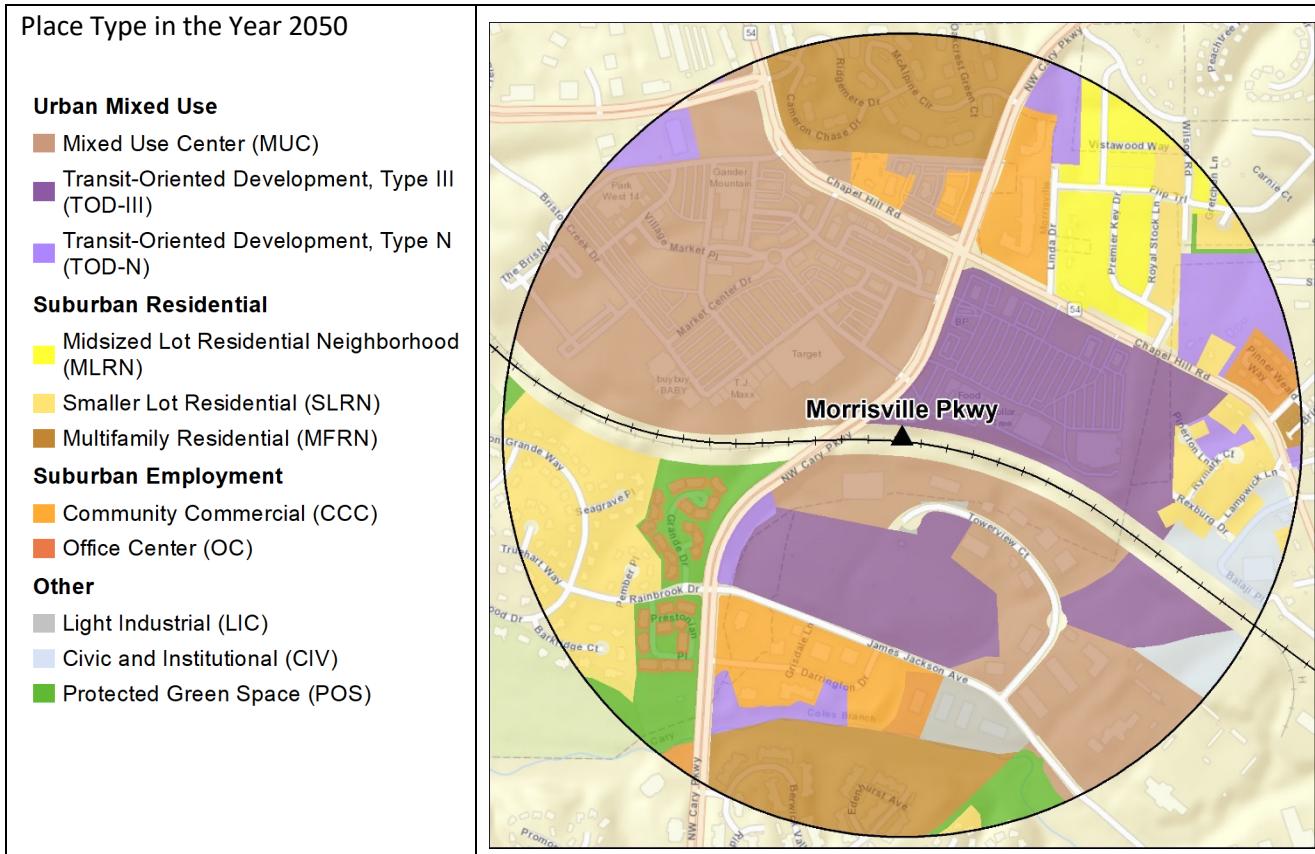
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Morrisville Pkwy -- A Station Study Area Summary of land use and affordable housing metrics

The Morrisville Parkway station study area is classified as a **Mixed Use Neighborhood Center**, anchored by the Park West Village center. This stop was not part of the previous Phase I analysis, but has been included in regional Transportation Plans and was included as a potential infill station in the opportunity analysis, partly due to nearby housing and retail and service jobs. Over the next 30 years, some of the lower-intensity, car-oriented development near the stop have the potential for more transit-oriented development.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	98		147	245
Urban Residential				
Suburban Residential	106		11	117
Suburban Employment	32		1	33
Industrial	5			5
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	11			11
Natural (Greenspace & Water)		19		19
Rights-of-Way		72		72
TOTAL DEVELOPMENT STATUS	343*	0	159	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Morrisville Pkwy Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	3,800	6,200	# of 2020 households:	830	4,100
2020 capacity for additional jobs:	7,600	13,700	2020 capacity for additional households:	2,400	4,600
MTP forecast of added jobs 2020-2050:	5,000	7,300	MTP forecast of added households 2020-2050:	1,200	2,000
Remaining job capacity after 2050:	2,600	6,400	Remaining household capacity after 2050:	1,200	2,600

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	72
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	437	1,937
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	9	10

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area's parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
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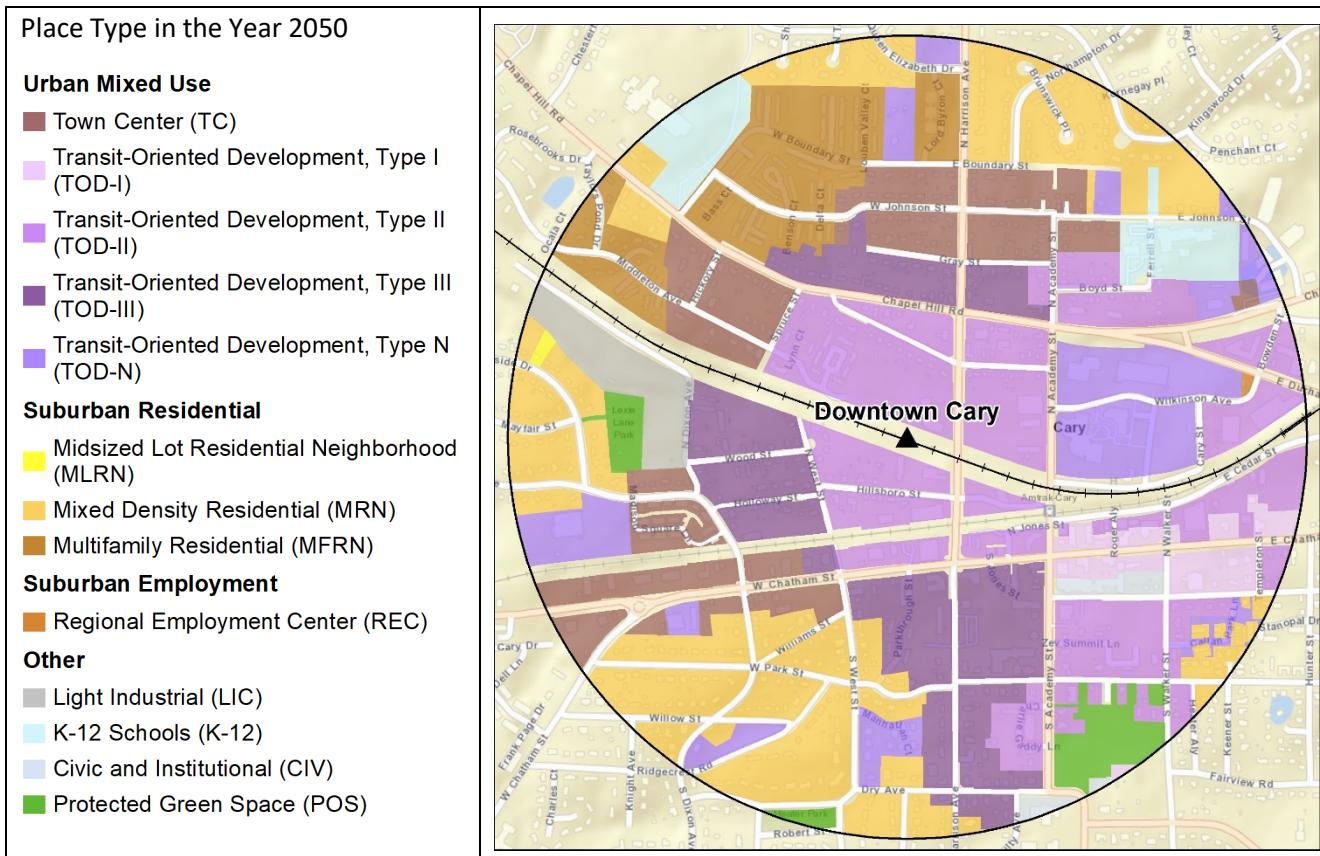
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Downtown Cary -- A Station Study Area Summary of land use and affordable housing metrics

The Downtown Cary station study area is classified as a **Town Center**, joining the Garner and potential Clayton infill station as opportunities to reinforce town center development and access. Like the Durham and Raleigh stations, this stop would connect to both intercity rail and bus facilities. The station also serves the Cary Town Hall and other public service and cultural facilities in the center of Town. Established neighborhoods ring the edge of the station area; safe and seamless walk and bicycle access can benefit these neighborhoods.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	8		228	236
Urban Residential				
Suburban Residential	70		48	118
Suburban Employment				
Industrial	9	1		10
University or Health Care Campus				
K-12 Campus	14		1	15
Civic & Institutional	3			3
Natural (Greenspace & Water)		11		11
Rights-of-Way		110		110
TOTAL DEVELOPMENT STATUS	225*	1	277	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Downtown Cary Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	3,200	6,300	# of 2020 households:	1,100	4,500
2020 capacity for additional jobs:	12,000	19,000	2020 capacity for additional households:	5,300	8,100
MTP forecast of added jobs 2020-2050:	8,900	12,400	MTP forecast of added households 2020-2050:	3,100	4,200
Remaining job capacity after 2050:	3,100	6,600	Remaining household capacity after 2050:	2,200	3,900

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	35	250
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	250	647
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	200	300
Acres of public land with potential to include affordable housing ³ :	7	19

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area's parcels.
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- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
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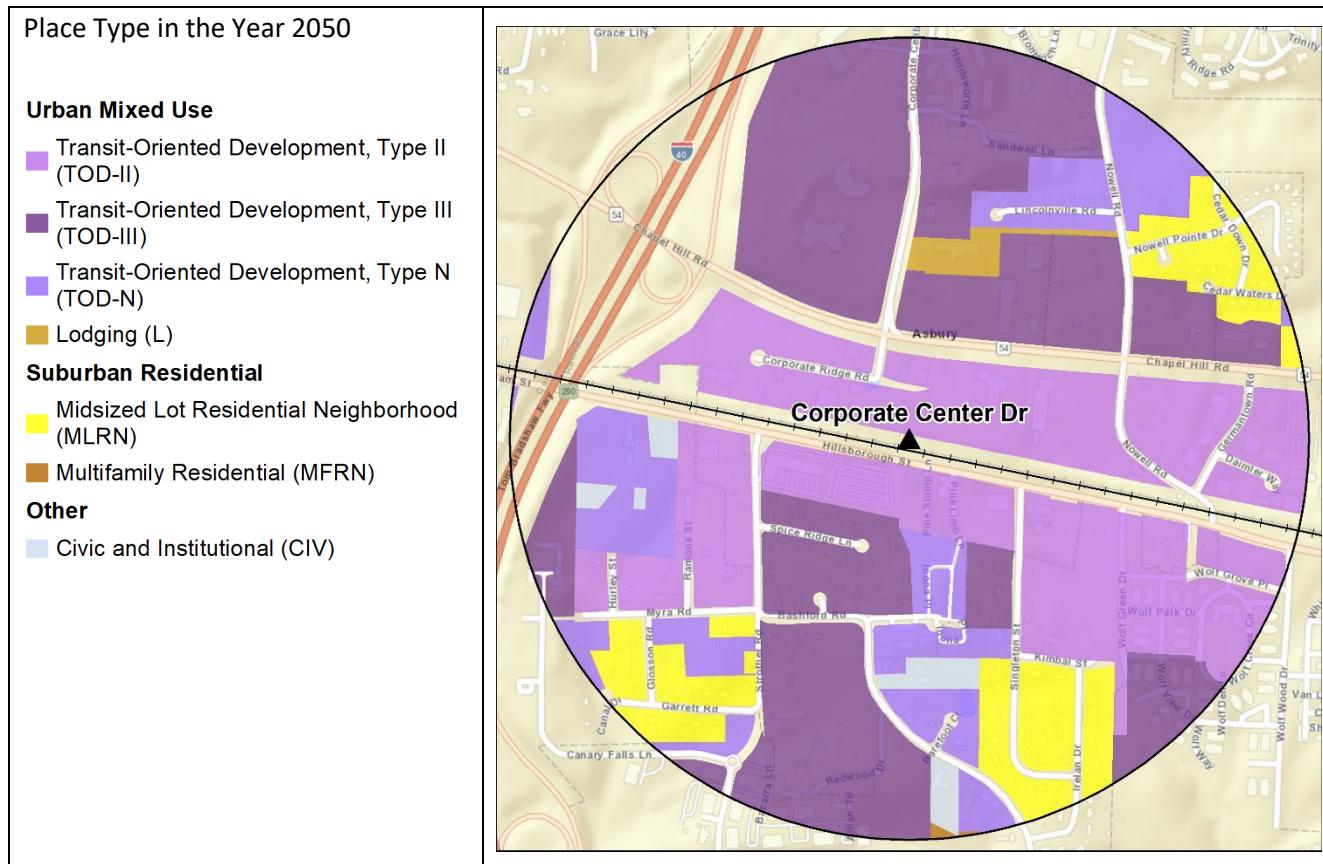
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Corporate Center Dr -- A Station Study Area Summary of land use and affordable housing metrics

The Corporate Center Drive station study area is classified as a **Mixed Use Neighborhood Center**. Perhaps more than other stations, significant land use transformation over the next 30 years would need to occur to fulfill the transit-oriented development land use envisioned along NC54 and Hillsborough Street in this station area, which currently consists primarily of lower-intensity employment sites. Established residential neighborhoods ring the station area and both context-sensitive development and safe walking and biking connections can benefit them.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	137		199	336
Urban Residential				
Suburban Residential	25		13	38
Suburban Employment				
Industrial				
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	5		2	7
Natural (Greenspace & Water)				
Rights-of-Way		122		122
TOTAL DEVELOPMENT STATUS	289*	0	214	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Corporate Center Dr Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	2,600	8,800	# of 2020 households:	1,100	4,600
2020 capacity for additional jobs:	24,000	66,100	2020 capacity for additional households:	4,200	10,100
MTP forecast of added jobs 2020-2050:	12,700	33,000	MTP forecast of added households 2020-2050:	2,000	4,500
Remaining job capacity after 2050:	11,300	33,100	Remaining household capacity after 2050:	2,200	5,600

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	3	75
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	756	2,738
Planned additional LBAR units:	-	56
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	100	200
Acres of public land with potential to include affordable housing ³ :	2	8

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
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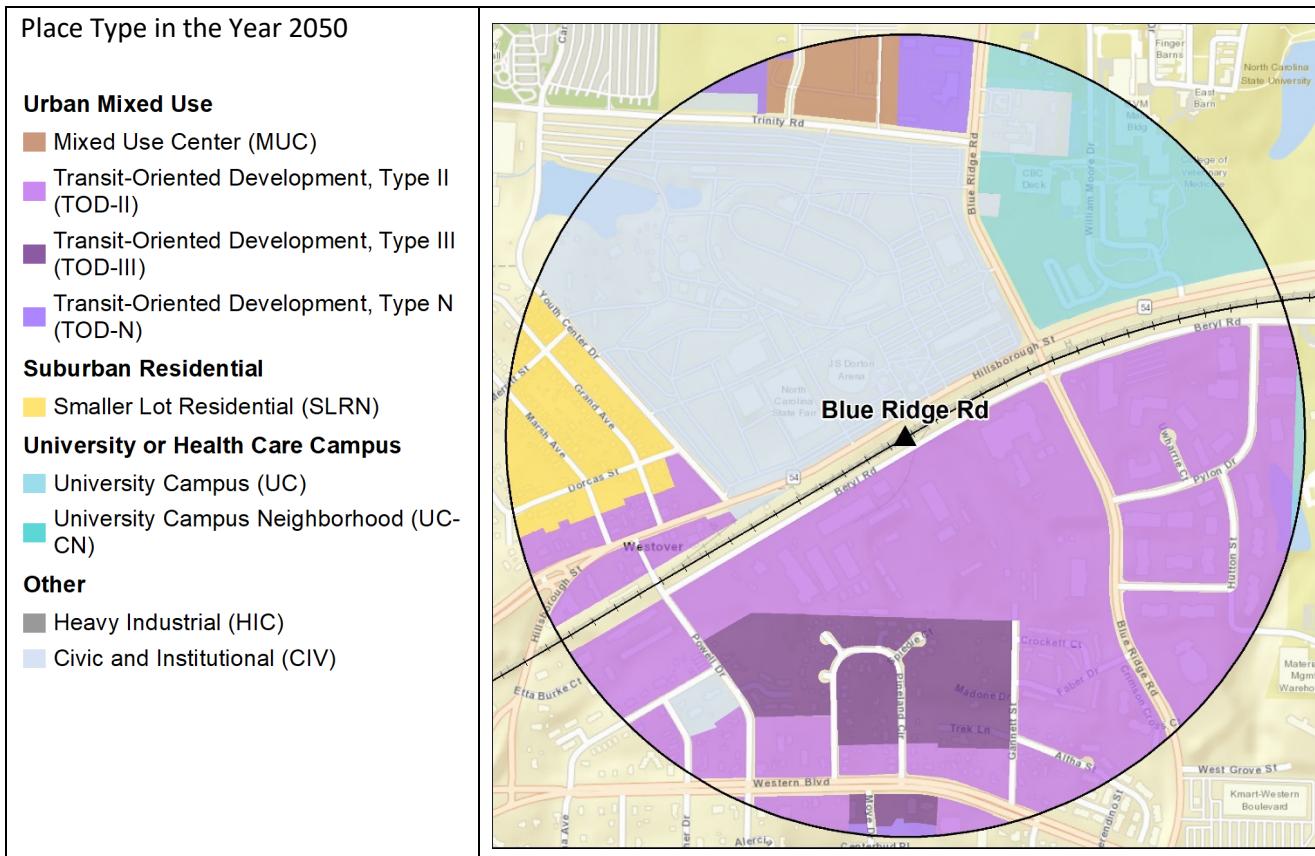
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Blue Ridge Rd -- A Station Study Area Summary of land use and affordable housing metrics

The Blue Ridge Road station study area is classified as a **Mixed Use Neighborhood Center**, anchored by the State Fairgrounds and serving PNC Arena and Carter-Finley Stadium. Like other nearby stations, the station area is both a mix of established neighborhoods and older commercial sites with redevelopment potential. Careful attention to connecting the station to special event venues beyond rule-of-thumb walking distances will be an important element of site planning in this station area.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	63		167	230
Urban Residential				
Suburban Residential	19		2	21
Suburban Employment				
Industrial				
University or Health Care Campus		13	34	47
K-12 Campus				
Civic & Institutional				
Natural (Greenspace & Water)		130		130
Rights-of-Way		74		74
TOTAL DEVELOPMENT STATUS	286*	13	203	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Blue Ridge Rd Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	2,900	7,700	# of 2020 households:	490	1,900
2020 capacity for additional jobs:	18,100	37,500	2020 capacity for additional households:	3,200	10,300
MTP forecast of added jobs 2020-2050:	14,100	26,700	MTP forecast of added households 2020-2050:	1,800	5,000
Remaining job capacity after 2050:	4,000	10,800	Remaining household capacity after 2050:	1,400	5,300

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	131
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	97	482
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	-	7

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area's parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

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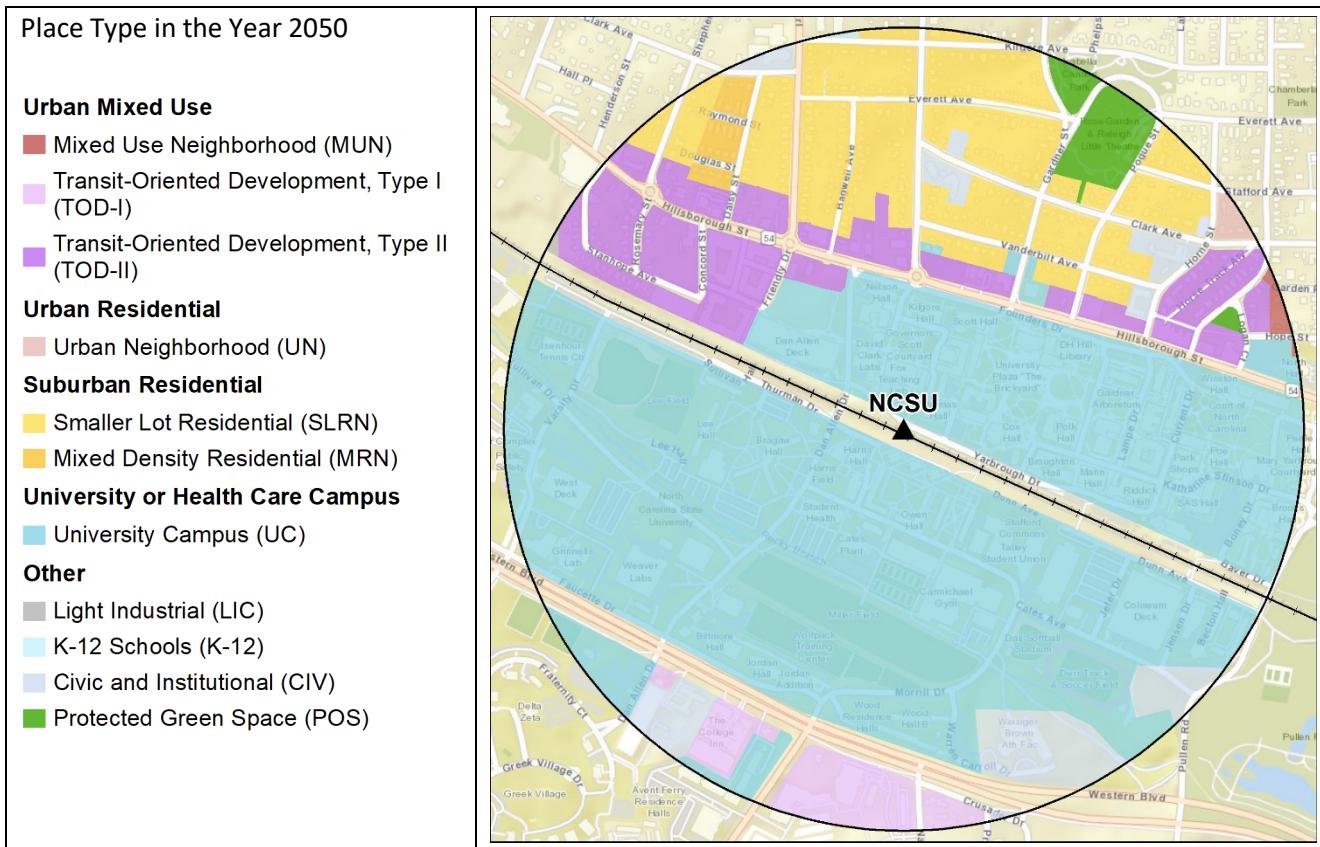
- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

NCSU -- A Station Study Area Summary of land use and affordable housing metrics

The NC State University station study area is classified as an **Anchor Institution Center**, anchored by NC State's main campus. Station area land use consists of essentially three layers: the campus being the largest layer, commercial and mixed uses a middle layer along Hillsborough Street, and established residential neighborhoods as the top layer to the north. Strong first-mile, last-mile connections to Centennial Campus will be important for serving potential users of this station.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	27		29	56
Urban Residential	1			1
Suburban Residential	65		1	66
Suburban Employment				
Industrial				
University or Health Care Campus		268	4	272
K-12 Campus				
Civic & Institutional	22			22
Natural (Greenspace & Water)		8		8
Rights-of-Way		78		78
TOTAL DEVELOPMENT STATUS	201*	268	33	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

NCSU Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	14,700	29,200	# of 2020 households:	810	5,500
2020 capacity for additional jobs:	5,300	21,100	2020 capacity for additional households:	2,100	9,700
MTP forecast of added jobs 2020-2050:	2,800	9,900	MTP forecast of added households 2020-2050:	600	3,500
Remaining job capacity after 2050:	2,500	11,200	Remaining household capacity after 2050:	1,500	6,200

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	72	297
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	37	824
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	-	1

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
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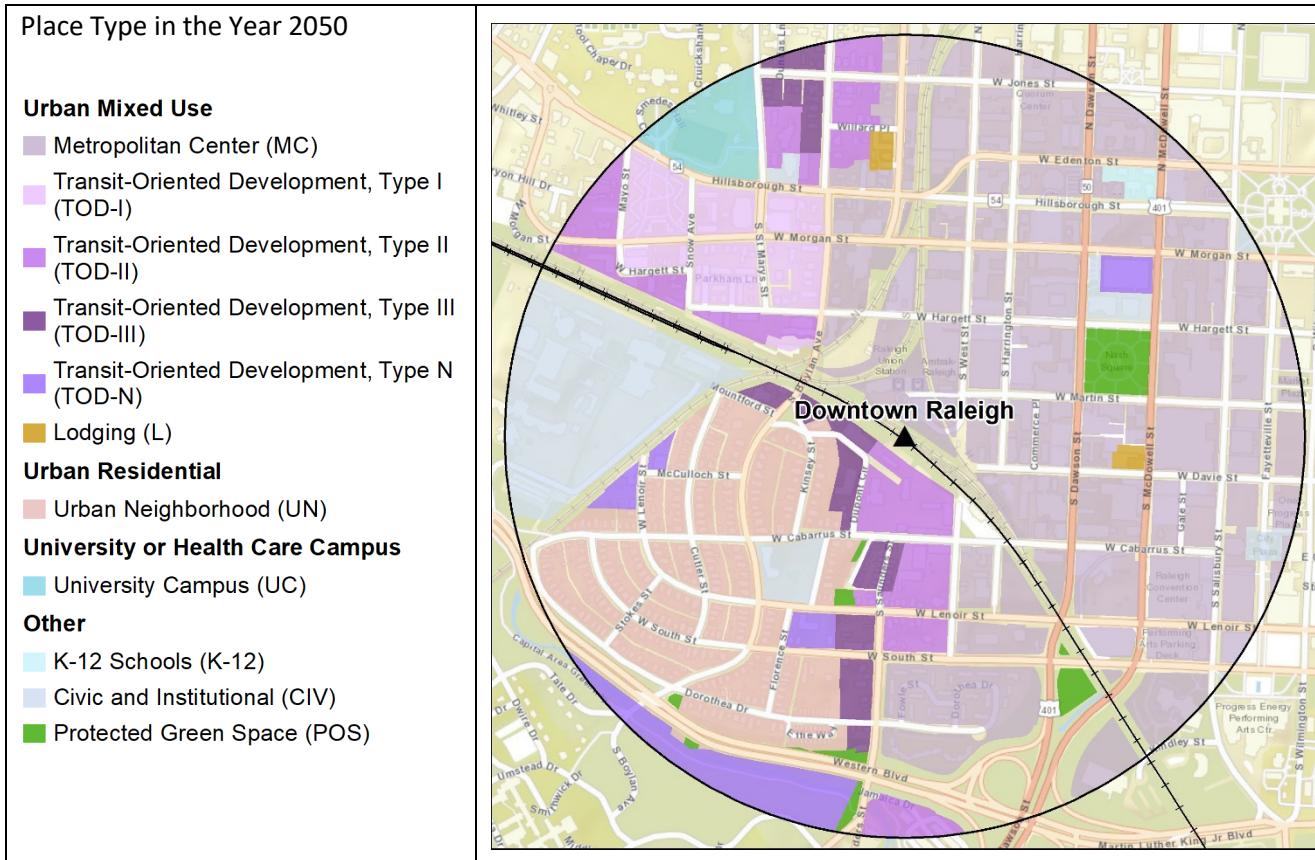
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Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Downtown Raleigh -- A Station Study Area Summary of land use and affordable housing metrics

The Downtown Raleigh station study area is classified as a **Metro Center**, with the most intense development along the corridor. In addition to extensive state and local government facilities and convention and event venues, the station serves Shaw University and several established neighborhoods. Redevelopment potential will be largely determined by market demand; so concepts of development “capacity” in the context of this station are likely to be fluid. Raleigh Union Station serves as a key transit and intercity rail hub in the station area.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	95	6	130	231
Urban Residential	47			47
Suburban Residential				
Suburban Employment				
Industrial				
University or Health Care Campus		8		8
K-12 Campus			1	1
Civic & Institutional	37		2	39
Natural (Greenspace & Water)		7		7
Rights-of-Way		169		169
TOTAL DEVELOPMENT STATUS	354*	15	134	503

*Fully developed includes natural and right-of-way land because, while not “developed,” no future development will occur on this land.

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² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Downtown Raleigh Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	24,000	55,100	# of 2020 households:	2,200	7,900
2020 capacity for additional jobs:	38,100	77,400	2020 capacity for additional households:	8,100	18,500
MTP forecast of added jobs 2020-2050:	35,600	66,300	MTP forecast of added households 2020-2050:	7,200	14,000
Remaining job capacity after 2050:	2,500	11,100	Remaining household capacity after 2050:	900	4,500

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	518	1,073
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	269	1,087
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	100
Acres of public land with potential to include affordable housing ³ :	9	18

What terms mean:

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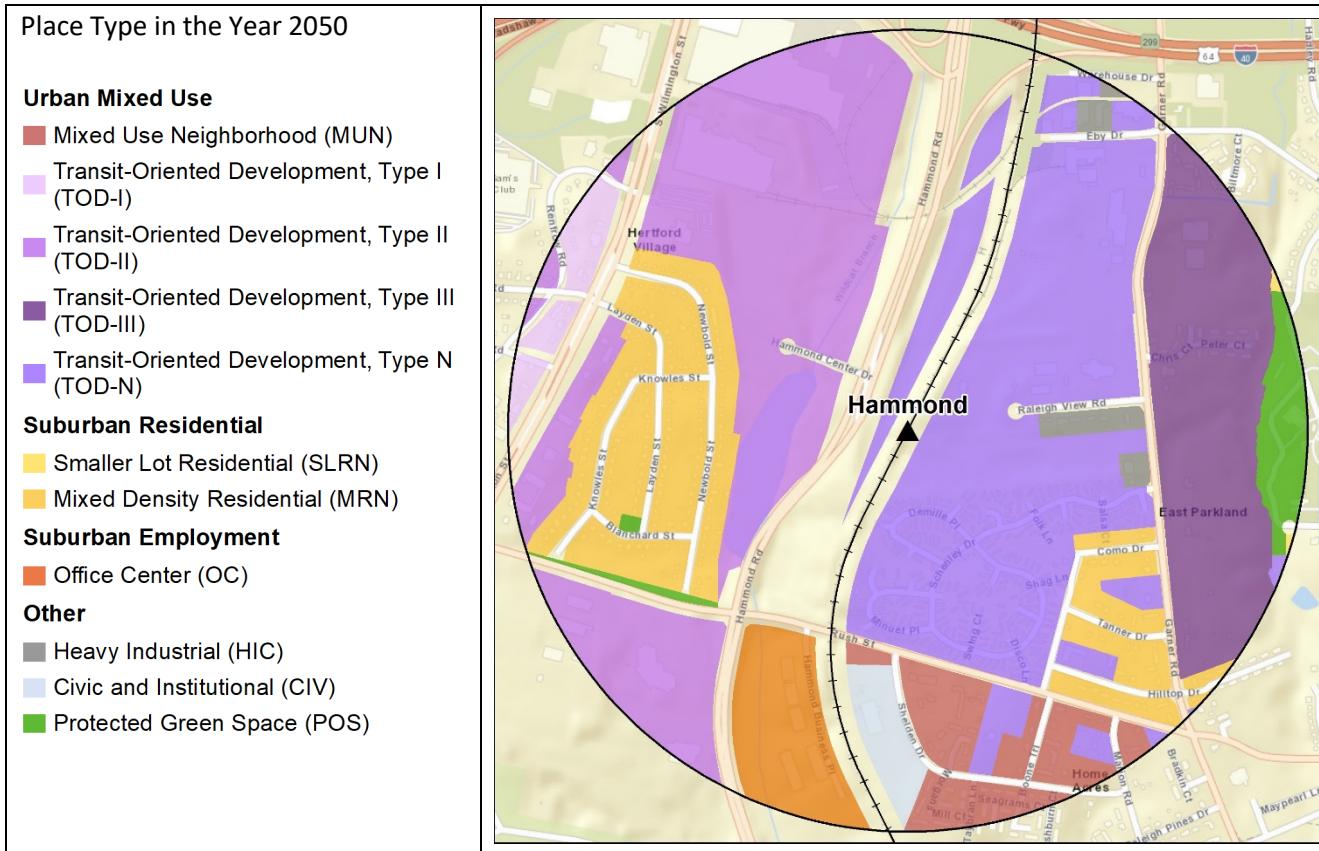
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Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Hammond -- A Station Study Area Summary of land use and affordable housing metrics

The Hammond Road station study area is classified as a **Mixed Use Neighborhood Center**, serving both established neighborhoods and potential redevelopment sites south of I-40. Like other stations farther east, there are extensive residential neighborhoods just beyond the station study area but still within the corridor. Park and ride access along with bus and active transportation services and facilities can be important to connect these neighborhoods to the job hubs along the rail line.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	28		267	295
Urban Residential				
Suburban Residential	39		12	52
Suburban Employment	17			17
Industrial			5	5
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	7			7
Natural (Greenspace & Water)		10		10
Rights-of-Way		116		116
TOTAL DEVELOPMENT STATUS	218*	0	284	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Hammond Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	1,300	4,800	# of 2020 households:	500	2,200
2020 capacity for additional jobs:	23,300	51,000	2020 capacity for additional households:	6,400	18,600
MTP forecast of added jobs 2020-2050:	12,000	23,900	MTP forecast of added households 2020-2050:	3,000	6,900
Remaining job capacity after 2050:	11,300	27,100	Remaining household capacity after 2050:	3,400	11,700

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	200
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	178	324
Planned additional LBAR units:	-	200
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	400
Acres of public land with potential to include affordable housing ³ :	-	19

What terms mean:

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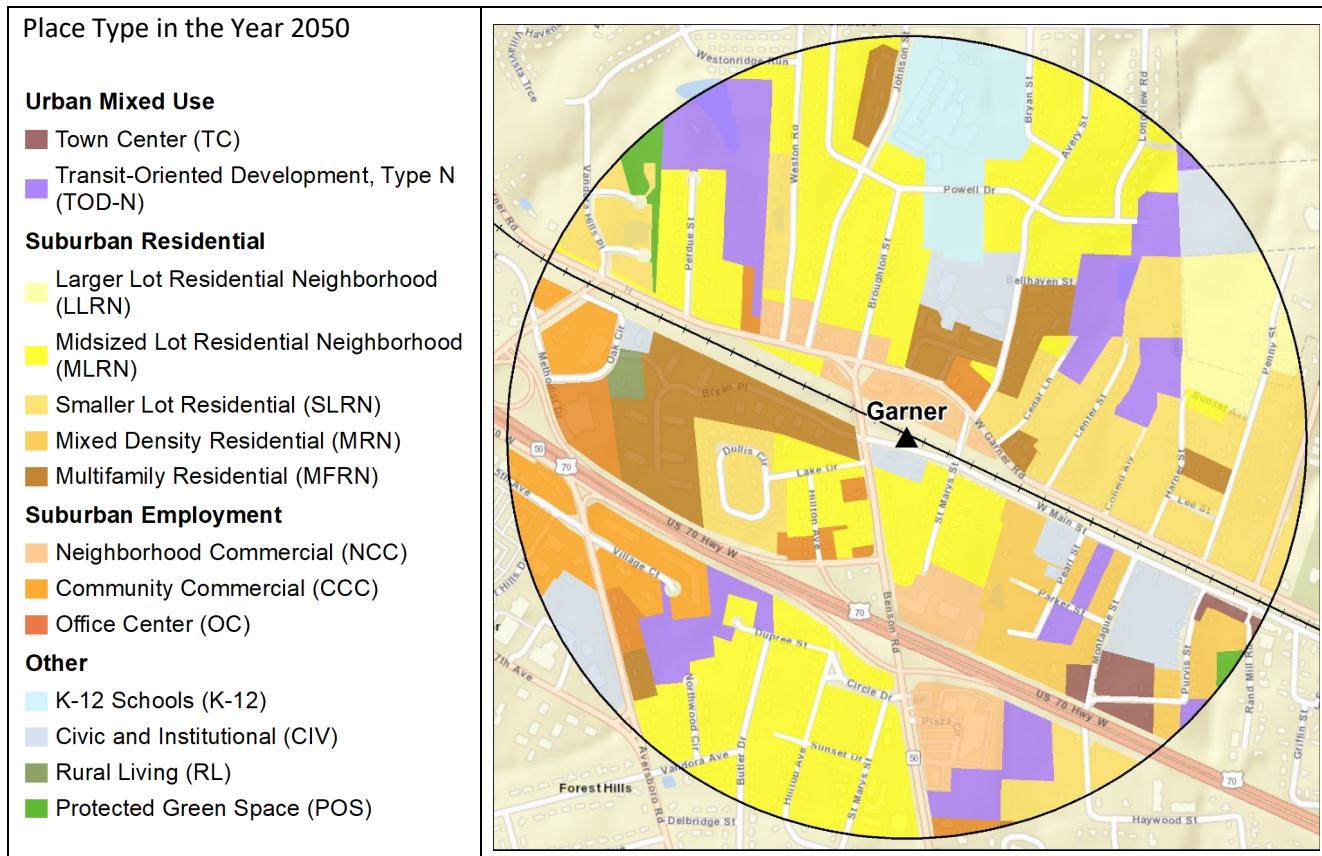
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Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Garner -- A Station Study Area Summary of land use and affordable housing metrics

The Garner station study area is classified as a **Town Center**. Compared to the other town center stations in Cary and at the potential infill station location in Clayton, the Garner station area is developed in more of a suburban pattern, with many established neighborhoods near the station. It is close to the Performing Arts Center and park and recreation center, but other traditional town center facilities like the Town Hall will require seamless first-mile, last-mile connections.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	2		44	46
Urban Residential				
Suburban Residential	226		15	241
Suburban Employment	50			50
Industrial				
University or Health Care Campus				
K-12 Campus	20			20
Civic & Institutional	26			26
Natural (Greenspace & Water)		9		9
Rights-of-Way		110		110
TOTAL DEVELOPMENT STATUS	443*	0	59	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Garner Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	1,300	4,300	# of 2020 households:	800	2,900
2020 capacity for additional jobs:	2,300	3,100	2020 capacity for additional households:	1,200	2,100
MTP forecast of added jobs 2020-2050:	1,500	2,200	MTP forecast of added households 2020-2050:	800	1,600
Remaining job capacity after 2050:	800	900	Remaining household capacity after 2050:	400	500

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	111	438
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	201	547
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	5	14

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
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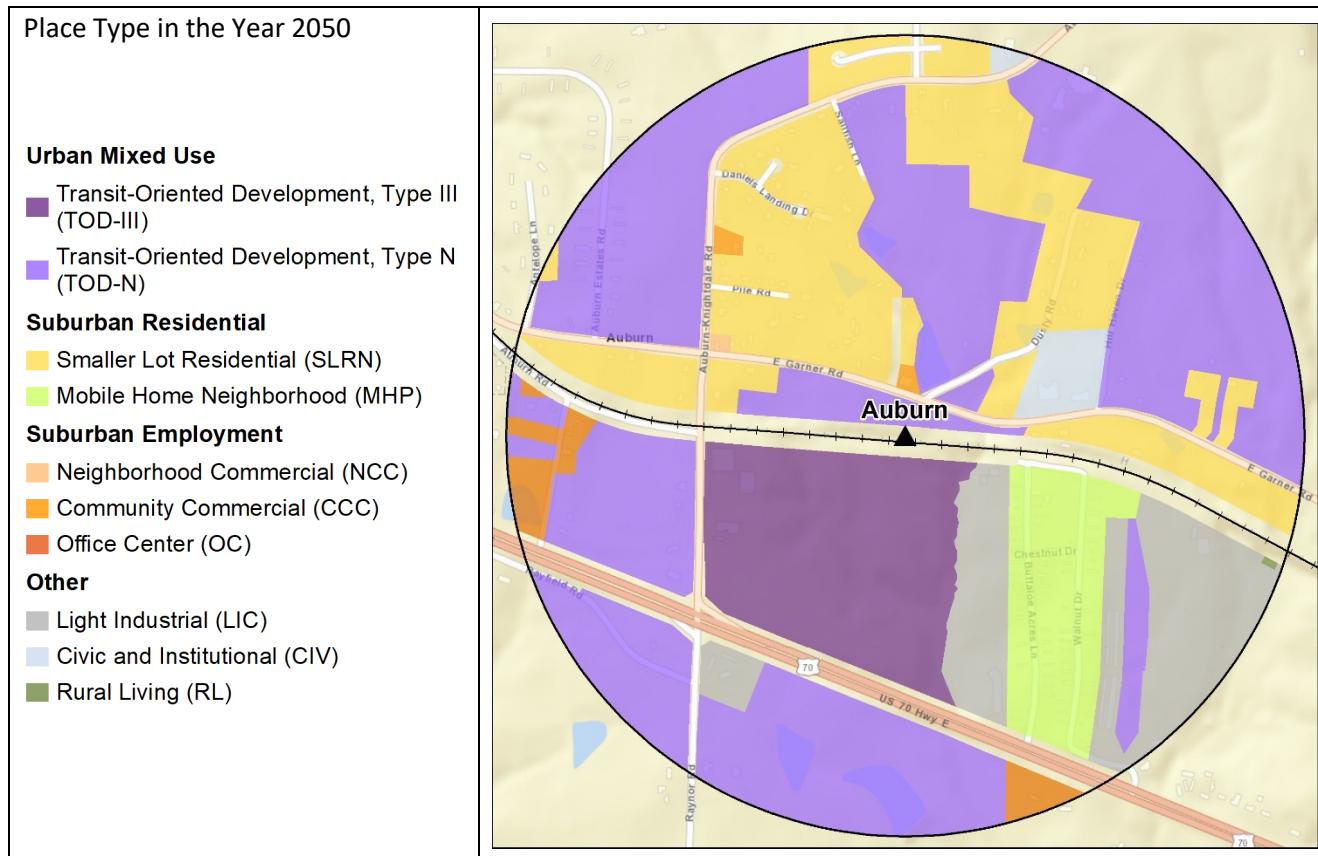
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Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Auburn -- A Station Study Area Summary of land use and affordable housing metrics

The Auburn station study area is classified as a **Mixed Use Neighborhood Center**. Due to its proximity to both I-40 and US 70, this station is envisioned as the most significant Park and Ride station along the rail line, which would require significant land. Although the current station study area has a mix of uses, the pattern is auto-oriented rural and suburban development, with low-density, separated land uses. More urban mixed use development would likely occur in the latter years of the Metropolitan Transportation Plan timeframe.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	6		249	255
Urban Residential				
Suburban Residential	121			121
Suburban Employment	7		3	10
Industrial	45			45
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	7			7
Natural (Greenspace & Water)				
Rights-of-Way		66		66
TOTAL DEVELOPMENT STATUS	251*	0	252	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Auburn Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	120	550	# of 2020 households:	110	610
2020 capacity for additional jobs:	18,700	30,300	2020 capacity for additional households:	6,800	8,900
MTP forecast of added jobs 2020-2050:	7,300	12,500	MTP forecast of added households 2020-2050:	2,800	3,800
Remaining job capacity after 2050:	11,400	17,800	Remaining household capacity after 2050:	4,000	5,100

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	-
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	-	248
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	-	1

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
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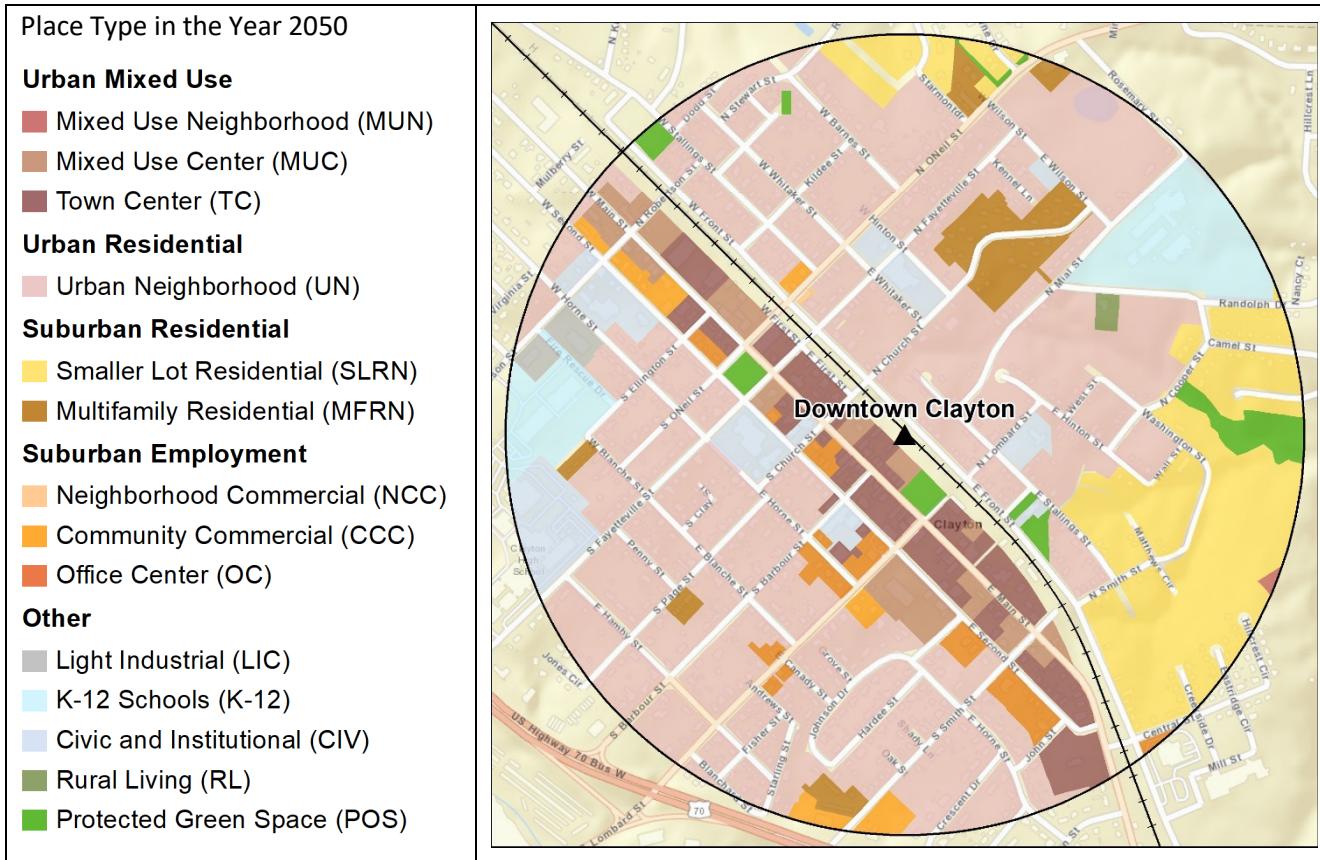
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³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Downtown Clayton

-- A Station Study Area Summary of land use and affordable housing metrics

The Downtown Clayton station study area is classified as a **Town Center**. This infill location wasn't included in the prior study phase, but if the eastern terminal station is shifted closer to the large life sciences plants, then both station spacing and established land use make this a viable location. Much of the current station study area is established and change would likely be incremental over time. Several important community facilities are within the study area, including Clayton High School, the Clayton Center and town facilities.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use	40			40
Urban Residential	175		32	207
Suburban Residential	43		30	73
Suburban Employment	15			15
Industrial	3			3
University or Health Care Campus				
K-12 Campus	24			24
Civic & Institutional	22			22
Natural (Greenspace & Water)		9		9
Rights-of-Way		108		108
TOTAL DEVELOPMENT STATUS	440*	0	62	503

*Fully developed includes natural and right-of-way land because, while not "developed," no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Downtown Clayton Station Study Area Growth and Affordable Housing Metrics

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	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	1,800	3,400	# of 2020 households:	730	2,300
2020 capacity for additional jobs:	560	2,900	2020 capacity for additional households:	610	3,200
MTP forecast of added jobs 2020-2050:	390	1,900	MTP forecast of added households 2020-2050:	580	2,600
Remaining job capacity after 2050:	160	1,000	Remaining household capacity after 2050:	30	600

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	13	50
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	-	688
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	200
Acres of public land with potential to include affordable housing ³ :	-	44

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
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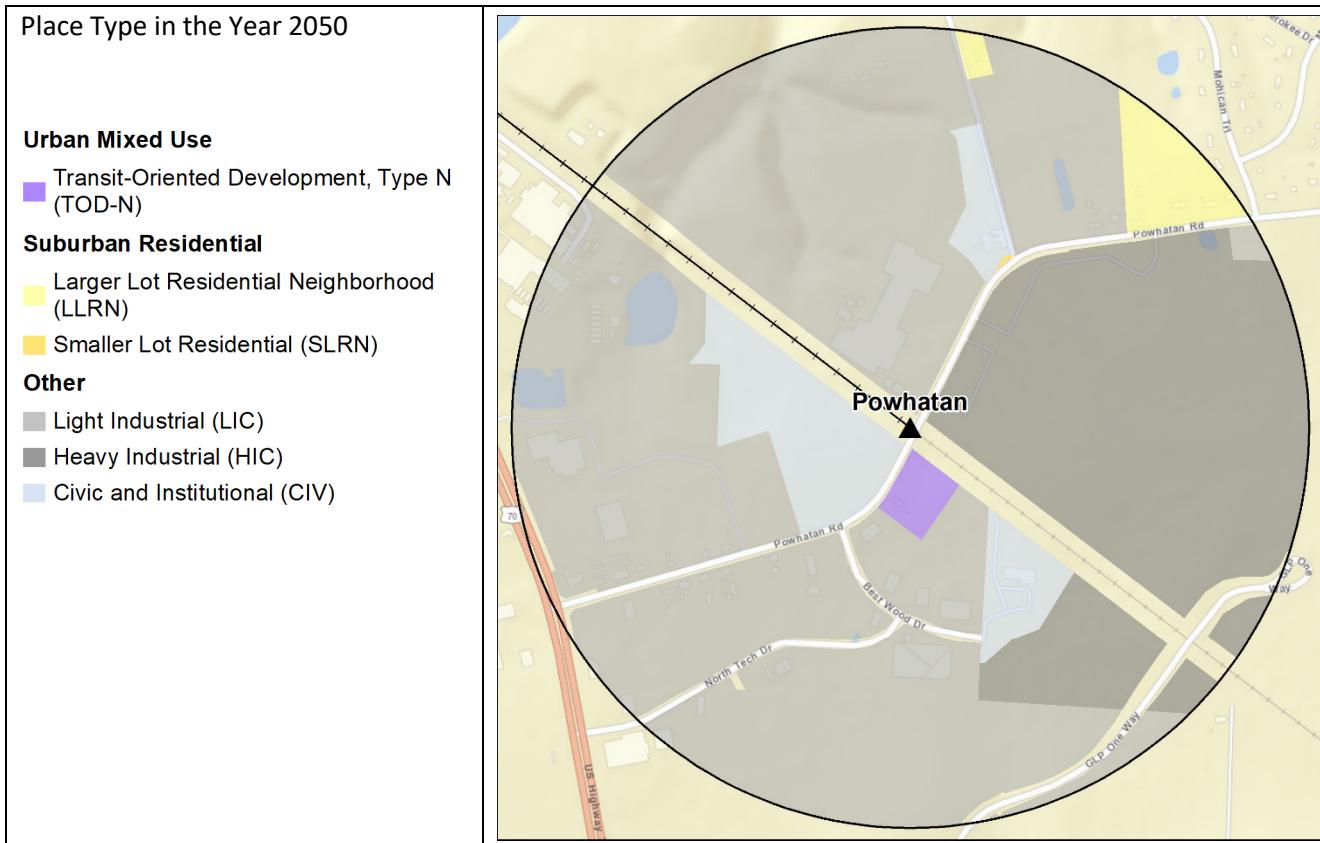
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³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Powhatan -- A Station Study Area Summary of land use and affordable housing metrics

The Powhatan station study area is classified as a **Job Center**, anchored by the large life sciences employers here. Additional growth and expansion is being planned. As a terminal station, park and ride land will be an important use and may result in more “two way” travel than is typical for consumer rail: with residents parking here to travel to job centers along the line and workers traveling to the large employers via rail from their homes farther west.



Year 2050 Place Types (acres)	Fully Developed	Development underway or committed ¹	Undeveloped or partially developed ²	Total Acres
Urban Mixed Use			4	4
Urban Residential				
Suburban Residential	3		9	12
Suburban Employment				
Industrial	307		99	406
University or Health Care Campus				
K-12 Campus				
Civic & Institutional	33		2	35
Natural (Greenspace & Water)				
Rights-of-Way		46		46
TOTAL DEVELOPMENT STATUS	389*	0	114	503

*Fully developed includes natural and right-of-way land because, while not “developed,” no future development will occur on this land.

¹ Includes parcels with committed or asserted development.

² Includes parcels with a redevelopable, under-developed or undeveloped development status.

Powhatan Station Study Area Growth and Affordable Housing Metrics

The tables on this page summarize households, jobs and affordable housing in the station study area. They align with the data used for *Connect2050*, the long-range Metropolitan Transportation Plan (MTP) adopted in February 2022 by the Durham-Chapel Hill-Carrboro MPO and the NC Capital Area MPO.

	Within ½ mile	Within 1 mile		Within ½ mile	Within 1 mile
# of 2020 jobs:	1,200	3,300	# of 2020 households:	5	110
2020 capacity for additional jobs:	2,100	12,600	2020 capacity for additional households:	120	970
MTP forecast of added jobs 2020-2050:	260	3,300	MTP forecast of added households 2020-2050:	40	590
Remaining job capacity after 2050:	1,900	9,300	Remaining household capacity after 2050:	80	380

	Within ½ mile	Within 1 mile
2020 Legally-Binding, Affordability Restricted (LBAR) housing units:	-	-
2020 Naturally Occurring Affordable Housing multifamily units (NOAH):	-	-
Planned additional LBAR units:	-	-
Additional LBAR units in the 2050 MTP “Opportunity Places” Scenario:	-	-
Acres of public land with potential to include affordable housing ³ :	-	-

What terms mean:

- Capacity: the amount of additional jobs or households beyond 2020 that can be accommodated in an area, based on the place types, development status and density/job intensity factors of the area’s parcels.
- MTP Forecast: the amount of jobs or households that are forecast to be added between 2020 and 2050 in the area; it is always less than or equal to the capacity.
- Legally-Binding Affordability Restricted (LBAR): housing where units have legally binding income restrictions, usually due to the requirements of funding or financing sources.
- Planned additional LBAR units: sites with initial plans or proposals for added LBAR housing.
- Naturally Occurring Affordable Housing (NOAH): Multifamily units that are currently affordable at 80% of the Area Median Income based on existing market conditions.
- Opportunity Places Scenario: The Opportunity Places Scenario differed from the base scenario in asserting more anchor institution growth and affordable housing investment, and increasing the capacity for growth in designated locations along major transportation corridors and at defined job hubs.
- Public land with affordable housing potential: a “first pass” of sites where affordable housing may be technically feasible based on site size, shape, current use and lack of severe environmental constraints.

About Station Study Area Summaries

These summaries are one of several types of analysis documents that address land use, housing affordability and travel markets along the planned Commuter Rail Transit (CRT) Corridor in Durham, Wake and Johnston Counties. 2050 Place Type and Development Status information was developed as part of the region’s growth forecasts for the *Connect2050* Metropolitan Transportation Plan. For context, analysis and details, visit:

- [Commuter Rail Transit \(CRT\) reports](#)
- [Connect2050 Support/CommunityViz web page](#)

Note: There are ~10,000 parcels in the station areas. These area summaries draw from long-term regional-scale forecasts; future place types may change as local land use plans, development ordinances and project mapping are revised. Future stages of rail corridor planning provide an opportunity for more detailed evaluation of initial and infill station areas.

³ Includes acres for LBAR units asserted in the *Connect2050* MTP “Opportunity Places” land use scenario.

Endnotes

¹ “Our Community Investment” (2020) GoForward: A Community Investment in Transit, <https://goforwardnc.org/>

² Kamins, Adam. *The Next Recovery: A Regional Perspective*. Moody’s Analytics, 4-28-20. Viewed on line, September 23, 2020.

³ “Realizing The Potential: Expanding Housing Opportunities Near Transit” (2007) www.reconnectingamerica.org

⁴ “H+T Affordability Index” (2013) Center for Neighborhood Technology. <http://htaindex.cnt.org/about>

⁵ US Census Bureau: American Community Survey, 1-year dataset for 2019. Data available from Triangle J COG.