

2045 MTP – Draft Preferred Option

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Goals and Objectives

Background

The MPO Goals and Objectives are notable for three reasons:

- Development process -- The Goals and Objectives were developed using an extensive public input process that included a public workshop, an MPO Board workshop, a public hearing and an online survey that received more than 800 responses. The following 2045 MTP Web page has detailed information on the development process:
<http://bit.ly/DCHC-MTP-Goals>
- Alignment -- The Goals and Objectives will be aligned with a set of performance measures and targets. For example, a performance measure such as “mobile energy consumption per capita” might be aligned with Objective 1A Reduce mobile source emissions. This alignment will make it easier to evaluate how the 2045 MTP meets the Goals and Objectives.
- Regional coordination – The DCHC MPO and Capital Area MPO (Raleigh area) have had a joint 2045 MTP development process and final plan for almost a decade. However, the Goals and Objectives have been separate. In this long-range update, the two MPOs will have the same Goals and Objectives.

2045 MTP Support of the Goals

The DCHC MPO strongly supports transit, non-motorized transportation modes such as bicycling and walking, and the transportation needs of low-income families, and endeavors to minimize transportation impacts on the environment. This support is clear in the language of the Goals and Objectives.

At the same time, federal rules that guide the development of these long-range plans require that the MTP use reasonable assumptions in the financial plan. This requirement effectively means that the financial plan needs to abide by the current North Carolina Strategic Transportation Investment (STI) law. The STI and the project prioritization methodology that implements the STI do not permit the MPO to completely carry out its Goals and Objectives. The STI, for example: limits state funding for fixed-guideway capital expenses to ten percent of the total project capital; limits non-highway funding to eight percent of total STI funding; and, favors highway projects over transit and other non-highway modes in the prioritization methodology.

In the Preferred Option, the MPO has endeavored to the greatest extent possible to make sure that the 2045 MTP transportation projects and budget reflect these Goals and Objectives despite the constraints imposed by the current STI.

2045 MTP Goals and Objectives

| Goals | Objectives |
|--|--|
| I. Protect Environment and Minimize Climate Change | <ul style="list-style-type: none"> A. Reduce mobile source emissions, GHG, and energy consumption B. Reduce the negative impacts on the natural and cultural environment |
| II. Connect People | <ul style="list-style-type: none"> A. Connect people to jobs, education and other important destinations using all modes B. Ensure transportation needs are met for all populations (especially the aging and youth, economically disadvantaged, mobility impaired, and minorities) |
| III. Promote Multimodal and Affordable Travel Choices | <ul style="list-style-type: none"> A. Enhance transit services, amenities and facilities B. Improve bicycle and pedestrian facilities C. Increase utilization of affordable non-auto travel modes |
| IV. Manage Congestion & System Reliability | <ul style="list-style-type: none"> A. Allow people and goods to move with minimal congestion and time delay, and greater predictability. B. Promote Travel Demand Management (TDM, such as carpool, vanpool and park-and-ride) C. Enhance Intelligent Transportation Systems (ITS, such as ramp metering, dynamic signal phasing and vehicle detection systems) |
| V. Improve Infra- structure Condition | <ul style="list-style-type: none"> A. Increase proportion of highways and highway assets in 'Good' condition B. Maintain transit vehicles, facilities and amenities in the best operating condition. C. Improve the condition of bicycle and pedestrian facilities and amenities D. Improve response time to infrastructure repairs |

| Goals | Objectives |
|---|--|
| VI. Ensure Equity and Partici-pation | <p>A. Ensure that transportation investments do not create a disproportionate burden for any community</p> <p>B. Enhance public participation among all communities</p> |
| VII. Promote Safety and Health | <p>A. Increase safety of travelers and residents</p> <p>B. Promote public health through transportation choices</p> |
| VIII. Stimulate Economic Vitality | <p>A. Improve freight movement</p> <p>B. Link land use and transportation</p> <p>C. Target funding to the most cost-effective solutions</p> <p>D. Improve project delivery for all modes</p> |

Land Use (Socioeconomic Data)

Background

The MPO forecasts socioeconomic data (SE Data), such as dwelling units, population and employment, to the year 2045 and uses that data as a key input into the travel demand model called the Triangle Regional Model, or TRM). The process starts with the 2045 guide totals, which are county- level population and employment projections for the year 2045, and proceeds to the Community Visualization (CommViz) model that distributes the dwelling units and employment to particular parcels based on land availability and suitability.

The following MPO Web page provides detailed information on the methodologies used for the guide totals and CommViz modeling process, as well as maps showing the projected population and employment distribution: <http://bit.ly/DCHC-MTP-LandUse>

Guide Totals

The MPO establishes the 2045 county-level population and employment to calculate the growth that the CommViz model process will distribute. The population is based on estimates and projections from the N.C. Office of State Budget and Management, and the employment projection is based on a private service from Woods-and-Poole Economics. The employment current employment estimate is based on employer data from InfoUSA that is verified and updated by local planners. The following table provides the guide totals:

| Population | | | | |
|--------------|----------------|----------------|----------------|------------|
| County | 2013 | 2045 | 2013-45 | % change |
| Chatham* | 41,543 | 72,110 | 30,567 | 74% |
| Durham | 286,210 | 475,091 | 188,881 | 66% |
| Orange | 139,289 | 194,867 | 55,578 | 40% |
| <i>Total</i> | <i>467,042</i> | <i>742,068</i> | <i>275,026</i> | <i>59%</i> |
| | | | | |
| Employment | | | | |
| County | 2013 | 2045 | 2013-45 | % change |
| Chatham* | 9,339 | 17,718 | 8,379 | 90% |
| Durham | 192,877 | 342,910 | 150,033 | 78% |
| Orange | 64,212 | 107,791 | 43,579 | 68% |
| <i>Total</i> | <i>266,428</i> | <i>468,419</i> | <i>201,991</i> | <i>76%</i> |

* Only includes portion of Chatham County in the modeling area.

Scenarios

The 2045 MTP uses the Connect 2045 Triangle area land use modeling process, which is based on a model called Community Visualization (or CommViz). The Connect 2045 team created two land use scenarios with the direct assistance of local land use planners throughout the Triangle area. In these scenarios, the CommViz model distributes the county-level guide totals of population and employment growth to a particular place.

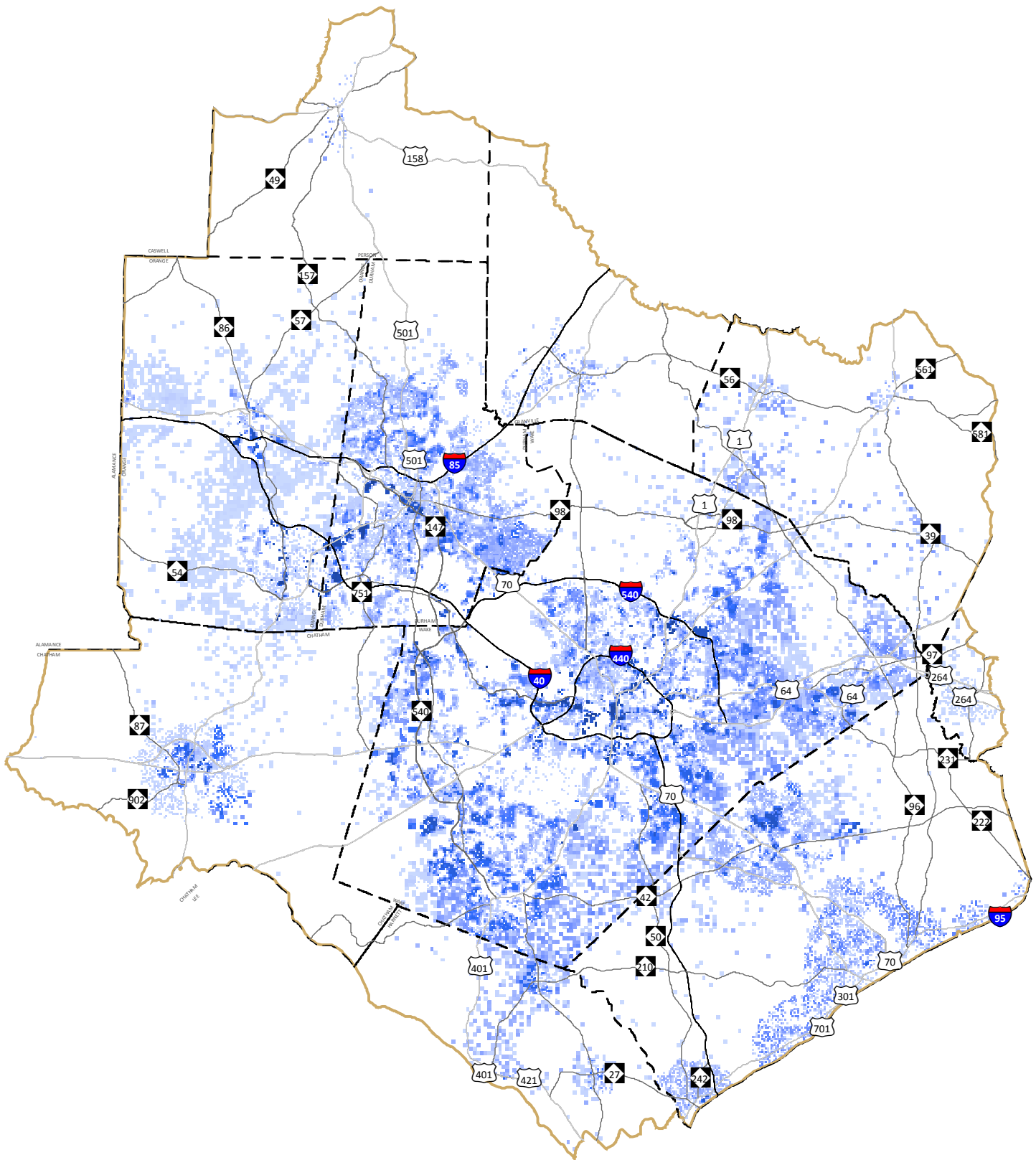
- Community Plan – This scenario is based on the local comprehensive plans and land use policies, and can be understood as the most likely scenario.
- AIM-High – This scenario uses the Community Plan scenarios as a base but increases the land use density and mix around the future light rail. It is based on draft data from an ongoing regional study on rail station development potential, and though it pushes the limits it is still market possible.

Preferred Option Uses AIM-High

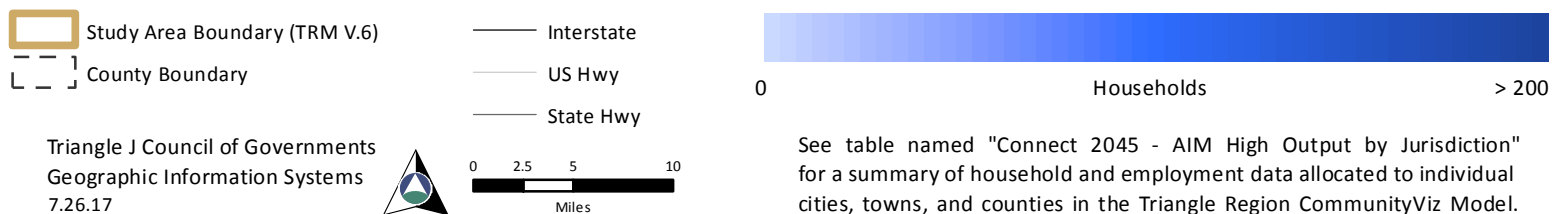
The MPO staff proposes using the AIM-High scenario for the Preferred Option. AIM-High is within the market possibilities of rail station development and it proved to have desired, positive impacts on the performance measures such as reduced overall congestion and delay.

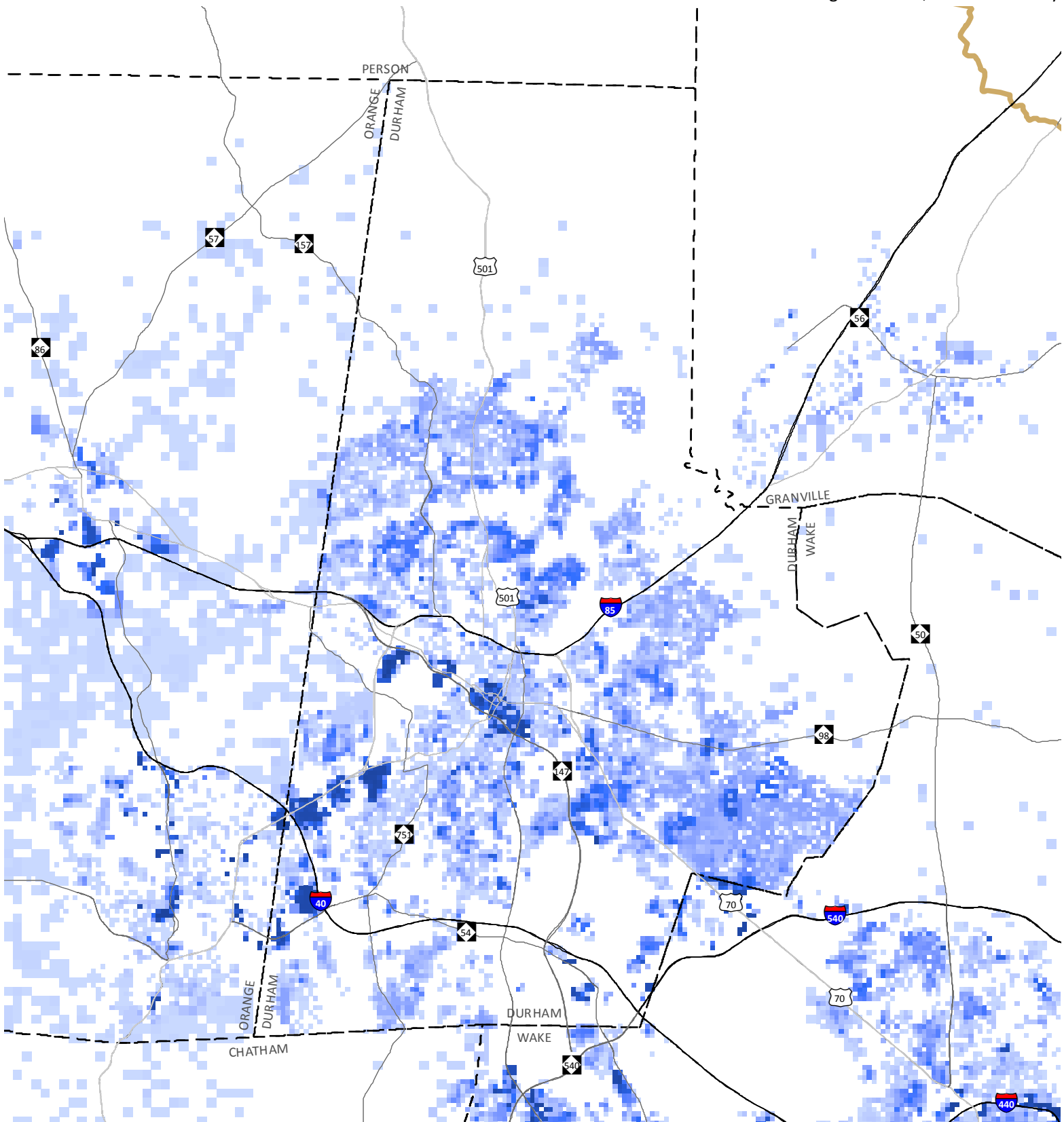
Maps

The maps on the following pages show the distribution of the growth of households and employment from 2013 through 2045 in the Triangle Region and the three counties in the MPO. The set of household maps are presented first, followed by the employment maps.

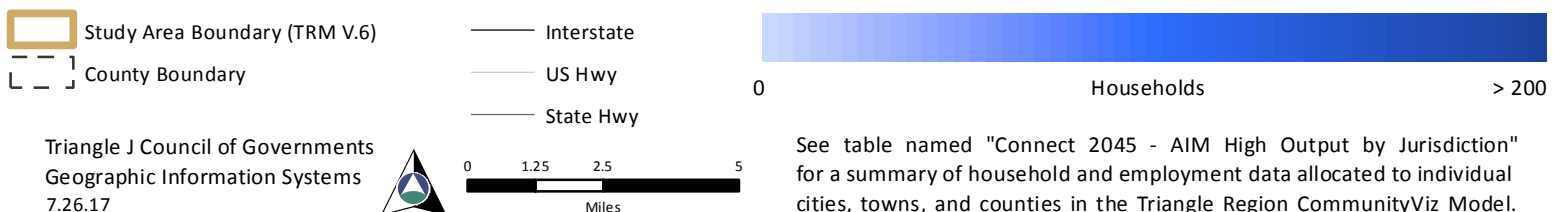


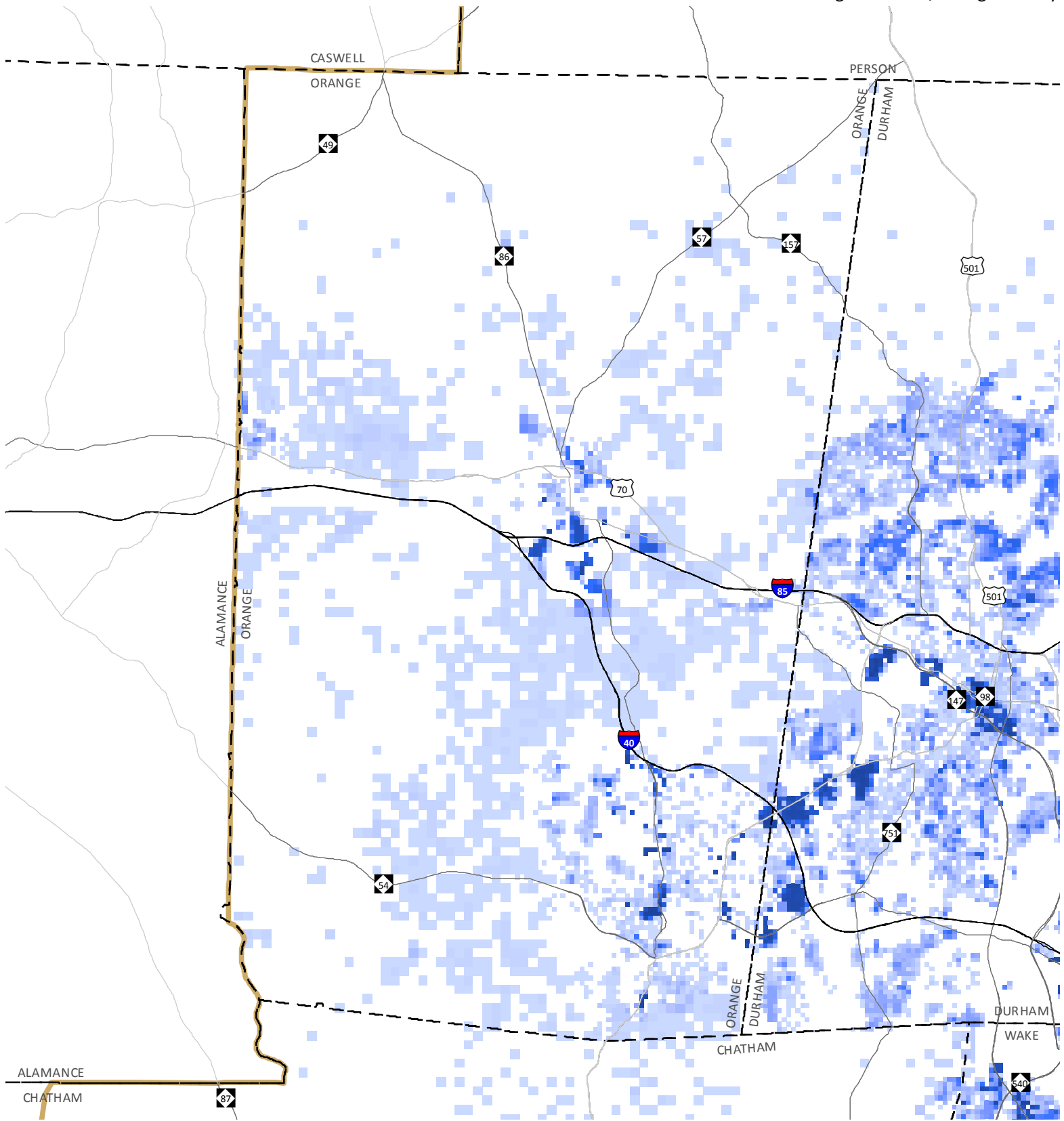
Regional Composite Map - New Household Distribution - 32-Year Forecast (2013-2045)





Regional Composite Map - New Household Distribution - 32-Year Forecast (2013-2045)

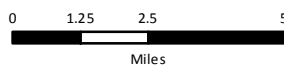




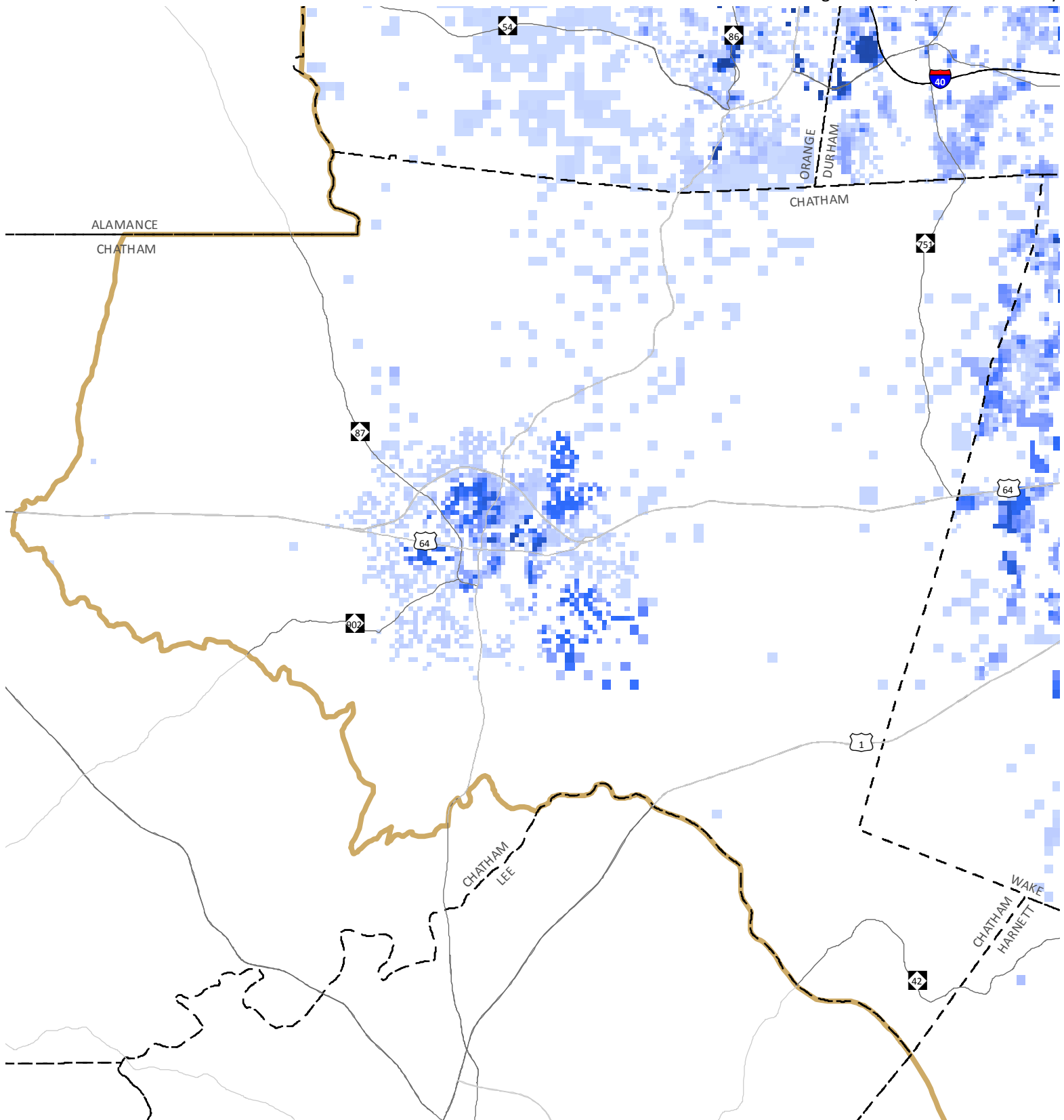
Regional Composite Map - New Household Distribution - 32-Year Forecast (2013-2045)

- Study Area Boundary (TRM V.6)
- County Boundary

- Interstate
- US Hwy
- State Hwy



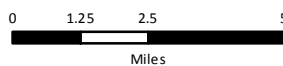
AIM High Scenario, Chatham County



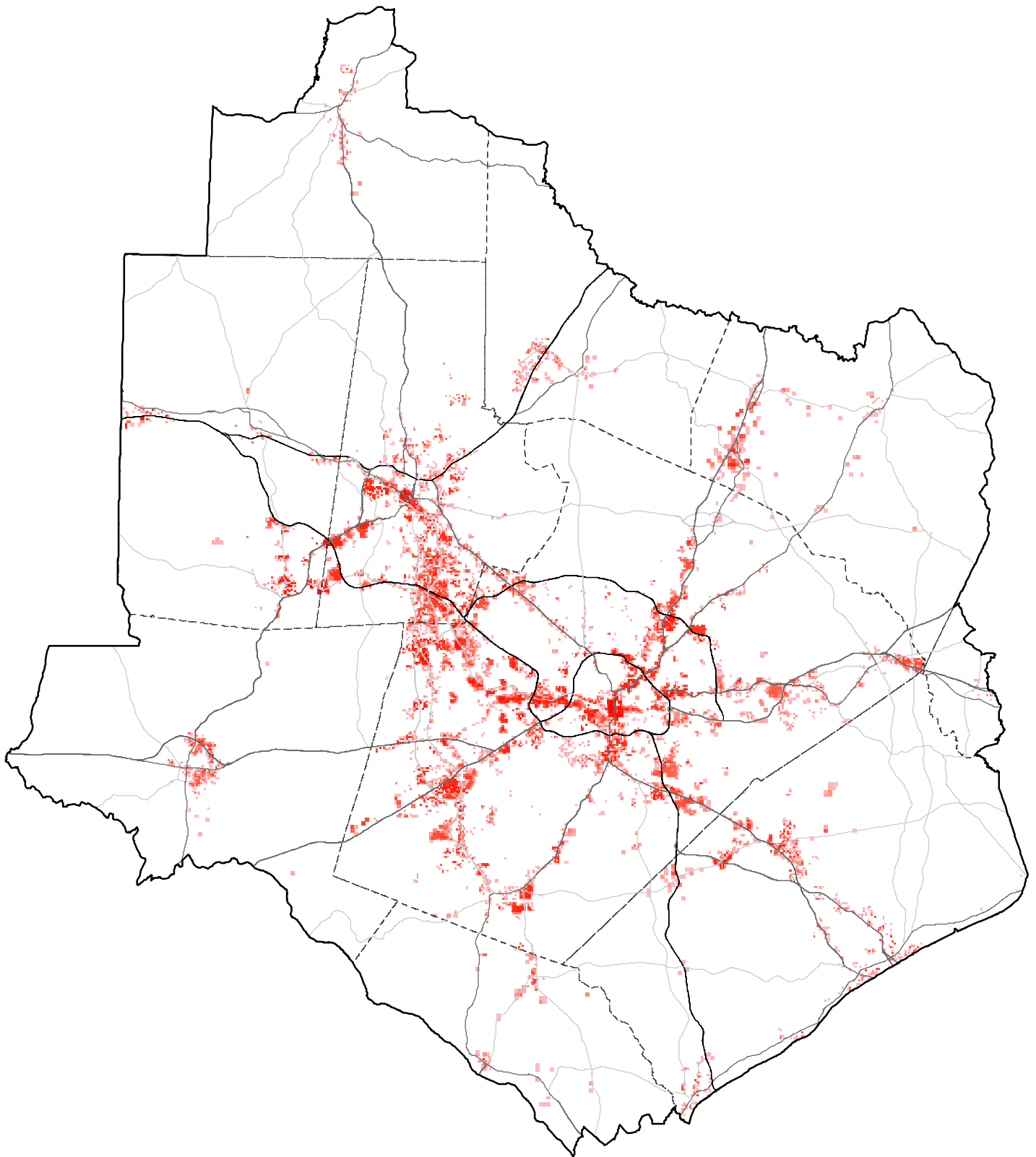
Regional Composite Map - New Household Distribution - 32-Year Forecast (2013-2045)

- Study Area Boundary (TRM V.6)
- County Boundary





- Interstate
- US Hwy
- State Hwy



See table named "Connect 2045 - AIM High Output by Jurisdiction" for a summary of household and employment data allocated to individual cities, towns, and counties in the Triangle Region CommunityViz Model.



Regional Composite Map - New Employment Distribution - 32-Year Forecast (2013-2045)

 County Boundaries
  Interstates/ Freeways
 US Highways
 NC Highways

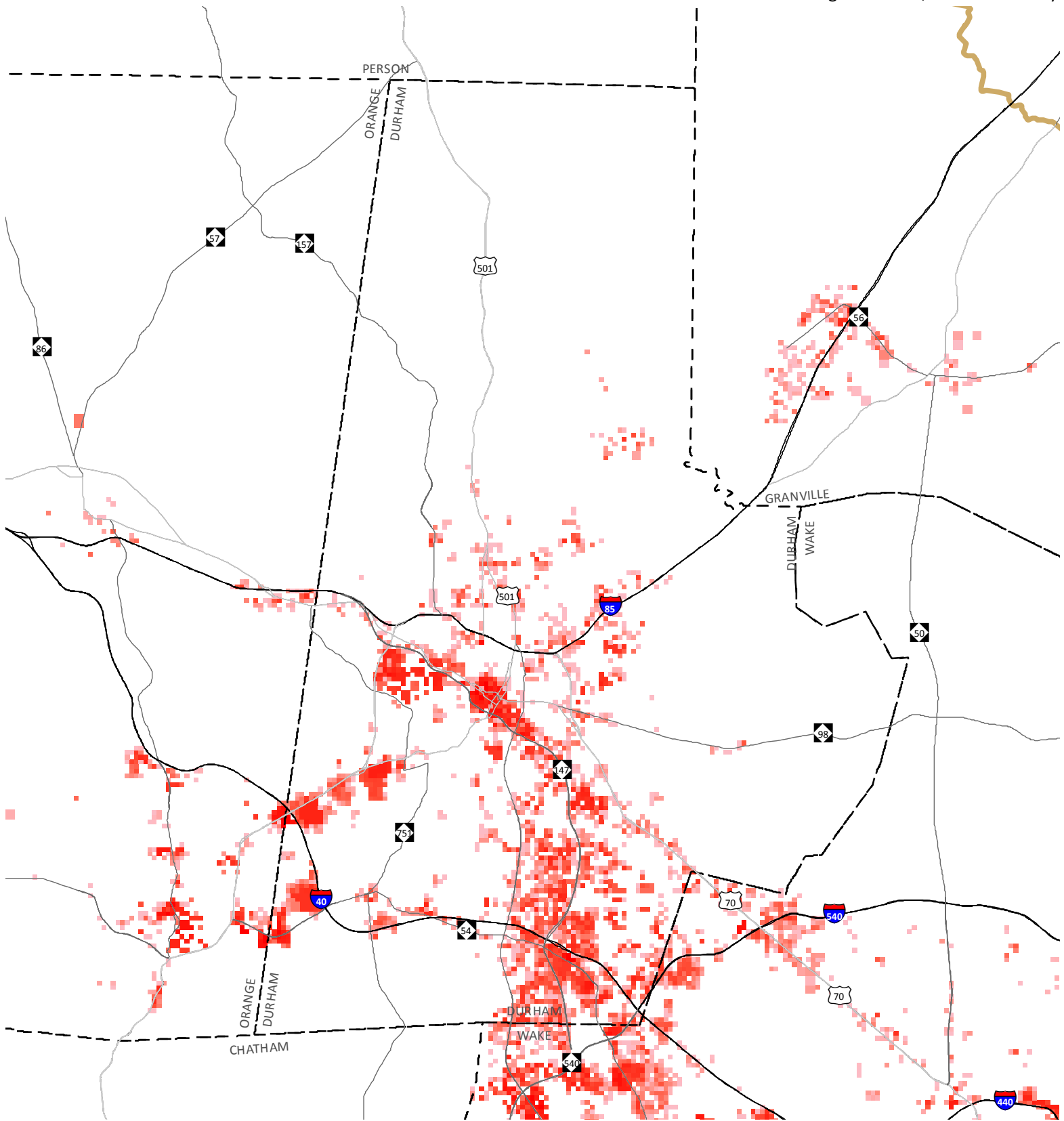

 0 Employees > 1000





Triangle J Council of Governments
Geographic Information Systems

0 2.5 5 10
Miles

See table named "Connect 2045 - AIM High Output by Jurisdiction" for a summary of household and employment data allocated to individual cities, towns, and counties in the Triangle Region CommunityViz Model.

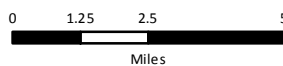


Regional Composite Map - New Employment Distribution - 32-Year Forecast (2013-2045)

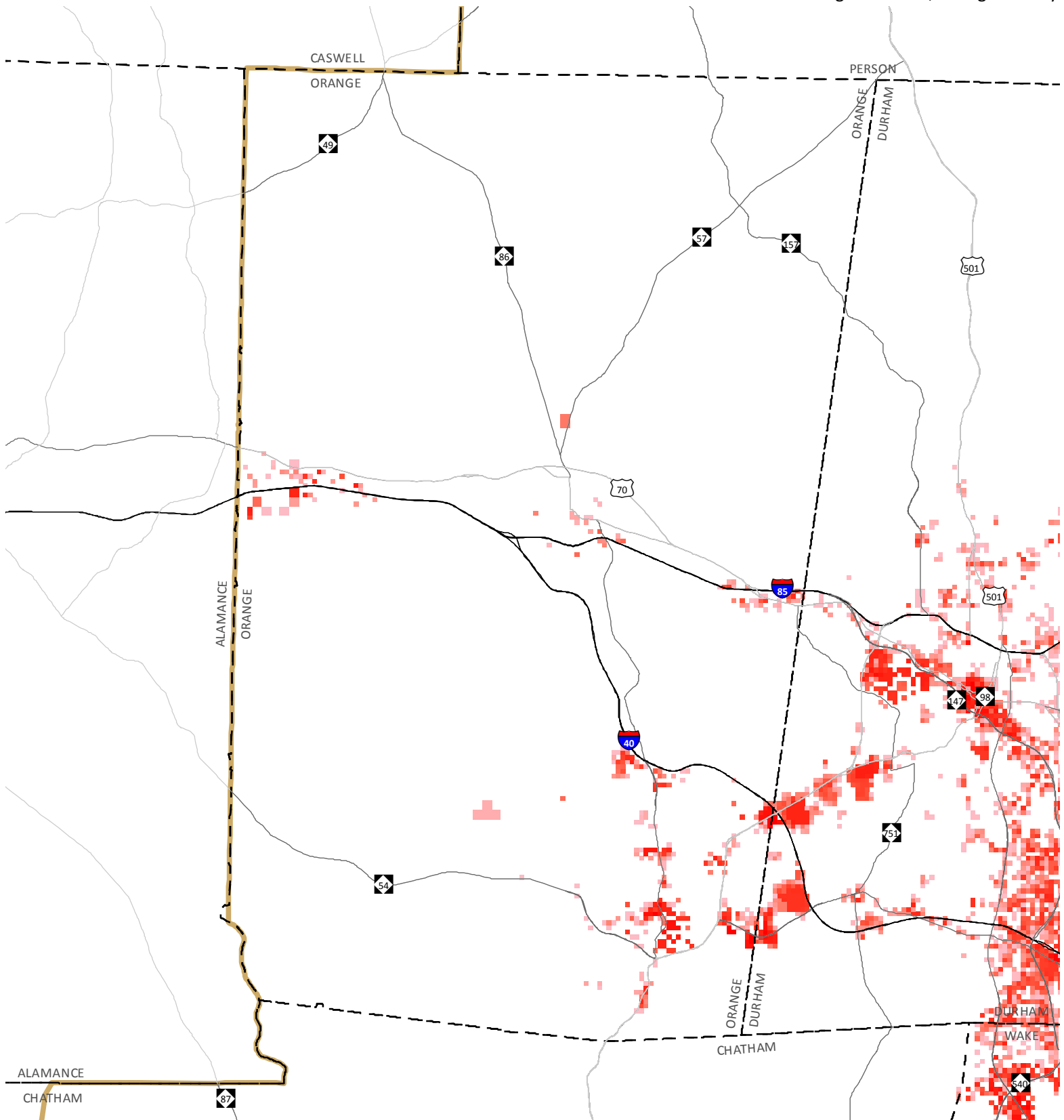
 Study Area Boundary (TRM V.6)
 County Boundary

— Interstate
 — US Hwy
 — State Hwy



 Employees
 0 1,000






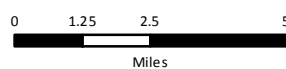
See table named "Connect 2045 - AIM High Output by Jurisdiction" for a summary of household and employment data allocated to individual cities, towns, and counties in the Triangle Region CommunityViz Model.



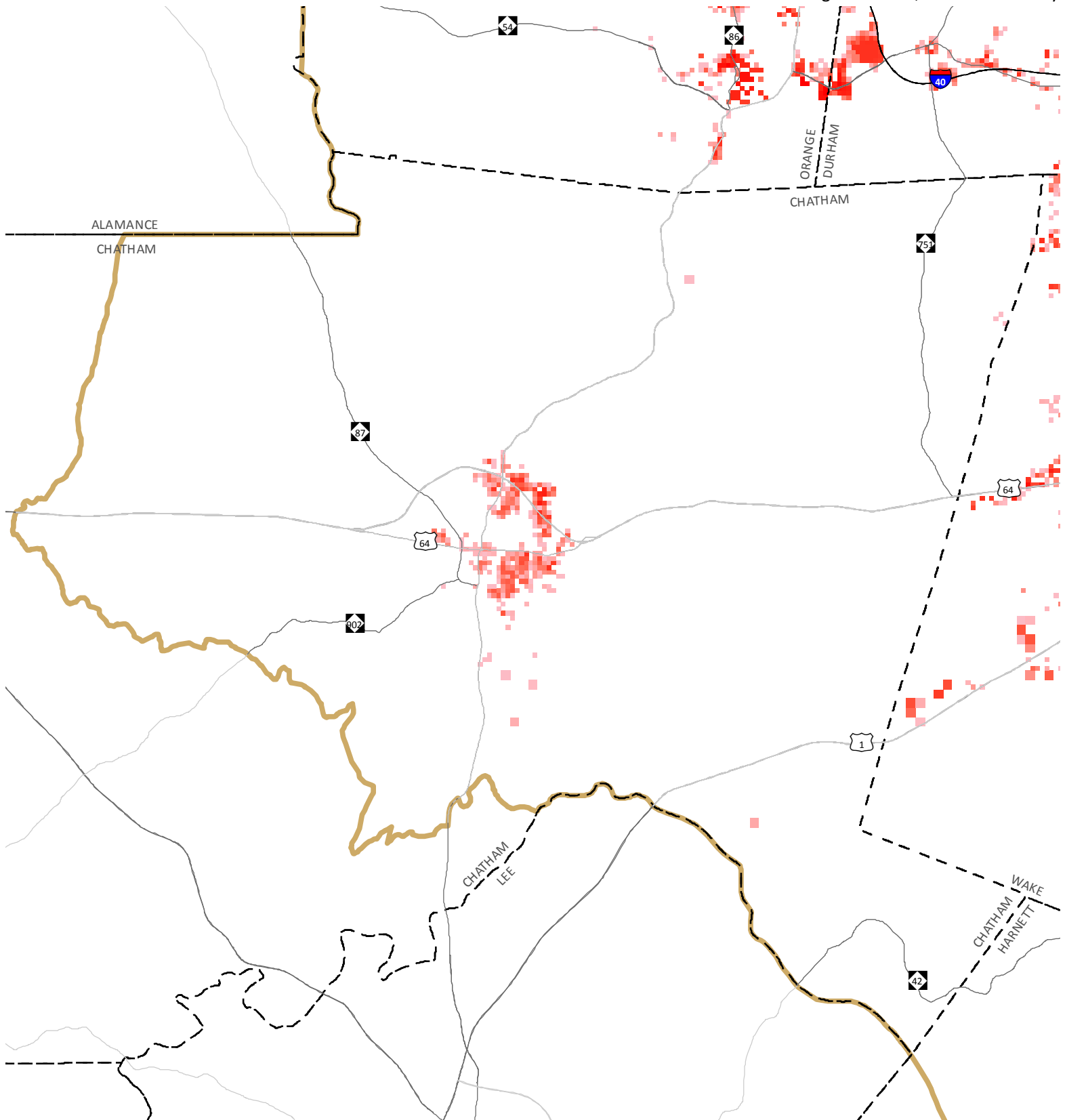
Regional Composite Map - New Employment Distribution - 32-Year Forecast (2013-2045)

-  Study Area Boundary (TRM V.6)
-  County Boundary

-  Interstate
-  US Hwy
-  State Hwy



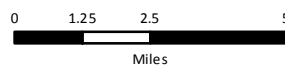
AIM High Scenario, Chatham County



Regional Composite Map - New Employment Distribution - 32-Year Forecast (2013-2045)

- Study Area Boundary (TRM V.6)
- County Boundary

- Interstate
- US Hwy
- State Hwy



Highways

Background

The highway and interchange projects to be included in the Preferred Option are shown in the maps and tables below. Projects were selected based on their ability to promote the MPO's draft Goals and Objectives and the expected availability of funding.

The MTP designates and funds the highway projects by the decade in which the project will be completed for operation, i.e., current to 2025, 2026 to 2035 and 2036 to 2045. This designation helps demonstrate that the MTP is accountable to the federal fiscal constraint requirement. The North Carolina Strategic Transportation Investments (STI) funding tiers, i.e., St = statewide, Reg = regional or Div = division, are identified to abide by the current state funding process.

For the most part, new and upgraded interchanges are assumed to be part of the highway projects that are listed and therefore are not commonly listed separately. However, the fiscal year 2018-2027 Transportation Improvement Program (TIP) has listed eight new or upgraded interchanges as separate projects from the highway project. The 2045 MTP highway map and table show these as separate projects, as well.

Highway Map

The highway map on the next page shows the proposed highway improvements for the 2045 MTP. An interactive online map is also available at the Preferred tab on the 2045 MTP Web page: www.bit.ly/DCHC-MTP

The DCHC MPO adopted a multimodal Comprehensive Transportation Plan (CTP) in May 2017, which contains a larger set of proposed projects because the CTP is not fiscally-constrained. See the interactive online map called Highways and Intersections at the following link to view the CTP highways that were considered for possible inclusion in the 2045 MTP: www.bit.ly/DCHCMPO-Adopted-CTP

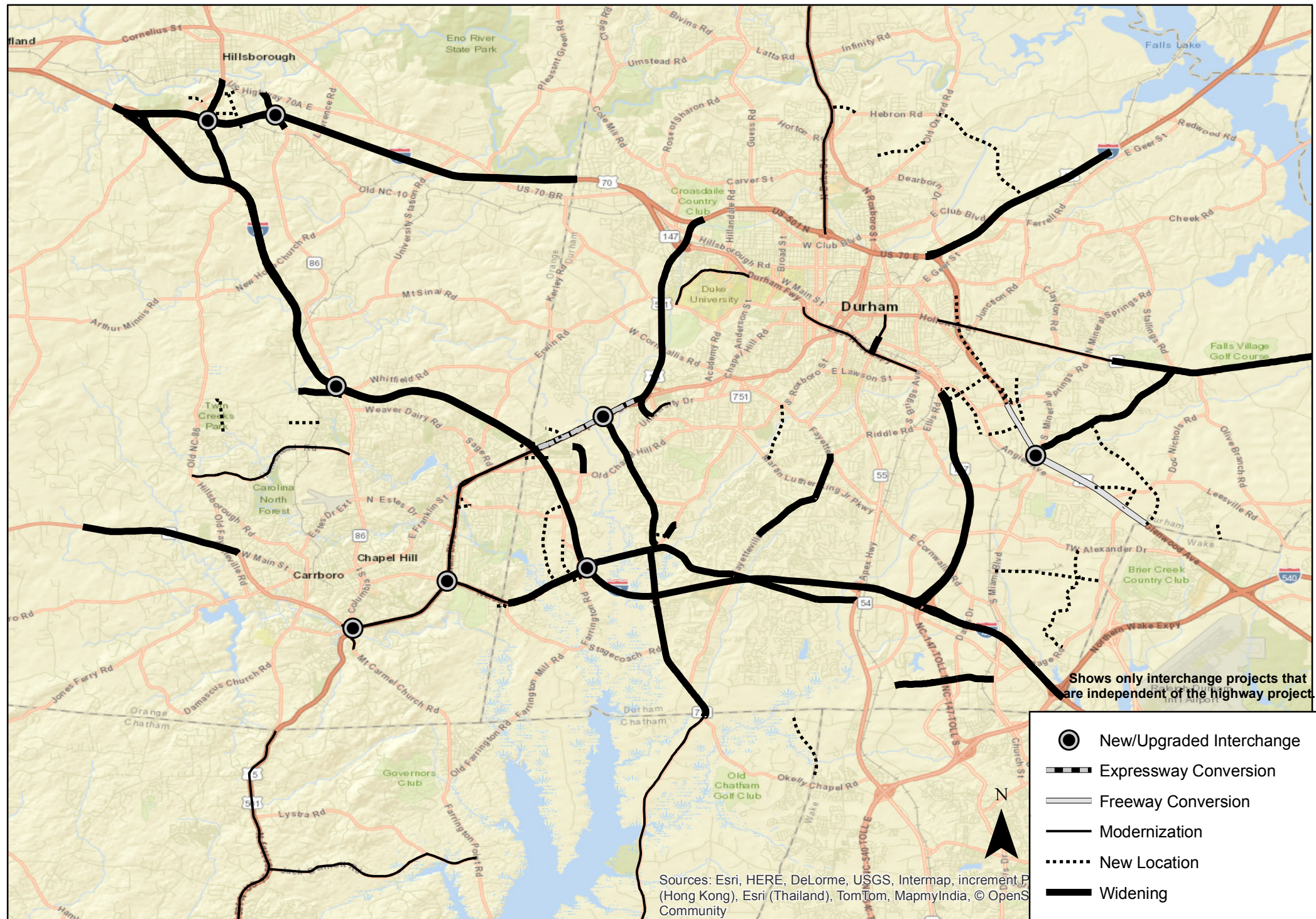
Highway Table

The highway table breaks the projects into the three funding decades, i.e., 2025, 2035 and 2045, and then lists them alphabetically.

2045 Metropolitan Transportation Plan (MTP)

Preferred Option -- Highways

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2045 Metropolitan Transportation Plan (MTP)

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Preferred Option -- Highway Project List

| Highway Project | From | To | Existing Lanes | Proposed Lanes | Improvement Type | Length (miles) | Estimated Cost | STI | Funding Source |
|-----------------------------------|---------------------|--------------------|----------------|----------------|------------------|----------------|----------------|-----|-----------------------|
| 2025 MTP | | | | | | | | | |
| Brier Creek Pkwy Extension | T.W. Alexander Dr | Andrew's Chapel Rd | - | 4 | New Location | 0.4 | 3,990,000 | Div | Private |
| Carver St Ext* | Armfield St | Old Oxford Rd | - | 4 | New Location | 1.0 | 8,185,000 | Div | State/Fed |
| East End Connector (EEC)* | NC 147 | US 70 | - | 4 | New Location | 3.6 | 140,700,000 | St | State/Fed |
| Eubanks Rd | MLK Blvd (NC 86) | Millhouse Rd | 2 | 4 | Widening | 0.8 | 7,487,000 | Div | State/Fed |
| Fayetteville Rd | Barbee Rd | Cornwallis Rd | 2 | 4 | Widening | 1.0 | 3,374,000 | Div | State/Fed |
| Fayetteville Rd | Woodcroft Pkwy | Barbee Rd | 2 | 4 | Widening | 1.3 | 4,661,000 | Div | State/Fed |
| Fordham Blvd (US 15-501) | I-40 | Franklin St | 4 | 4 | Modernization | 1.6 | 2,052,000 | St | State/Fed |
| Freeland Memorial Extension | S Churton St | New Collector Rd | - | 2 | New Location | 0.5 | 3,203,000 | Div | Private |
| I-40/NC 86 | Interchange | | - | - | Upgrade | N/A | 16,500,000 | St | State/Fed |
| I-40 (westbound auxiliary lane) | NC 147 | NC 55 | 6 | 7 | Widening | 1.2 | 3,850,000 | St | State/Fed |
| Legion Rd Ext | Legion Rd | Fordham Blvd | - | 2 | New Location | 0.1 | 1,500,000 | Div | Private |
| Lynn Rd/Pleasant Dr Connector | Lynn Rd | Pleasant Dr | - | 2 | New Location | 0.6 | 3,651,000 | Div | Private |
| NC 147 (Operational Improvements) | Briggs Ave | W Chapel Hill St | 4 | 4 | To Be Determined | 1.7 | 58,400,000 | St | State/Fed |
| NC 147 (possible Managed Lanes) | East End Conn | I-40 | 4 | 8 | Widening | 4.9 | 179,248,000 | St | State/Fed |
| NC 54 | Old Fayetteville Rd | MPO Boundary | 2 | 3 | Widening | 2.9 | 14,457,000 | Reg | State/Fed |
| NC 55 (Alston Ave)* | NC 147 | Main St | 2 | 4 | Widening | 0.4 | 13,934,000 | Reg | State/Fed |
| NC 55 (Alston Ave)* | Main St | NC 98 | 2 | 2 | Modernization | 0.5 | 17,252,000 | Reg | State/Fed |
| New Collector Rd | Orange Grove Rd Ext | Becketts Ridge Rd | - | 2 | New Location | 0.8 | 7,232,000 | Div | State/Fed/ Private |
| Orange Grove Connector | Orange Grove Rd | US 70 | - | 2 | New Location | 0.4 | 5,299,000 | Div | State/Fed |
| Purefoy Rd Ext | Sandberg Ln | Weaver Dairy Rd | - | 2 | New Location | 0.6 | 3,777,000 | Div | Private |
| S Elliot Rd Ext | Fordham Blvd | Ephesus Church Rd | - | 2 | New Location | 0.3 | 4,230,000 | Div | State/Fed/ Private |
| US 70 (freeway conversion) | Pleasant Dr | S Miami Blvd | 4 | 6 | Freeway | 1.6 | 111,020,000 | St | State/Fed |
| Woodcroft Pkwy Ext | Garrett Rd | Hope Valley Rd | - | 2 | New Location | 0.2 | 2,219,000 | Div | State/Fed |
| US 15-501/Garrett Rd | Interchange | | - | - | New Interchange | N/A | 71,200,000 | St | State/Fed |
| US 70/Miami Blvd | Interchange | | - | - | New Interchange | N/A | 46,621,000 | St | State/Fed |
| | | | | | | | | | |

2045 Metropolitan Transportation Plan (MTP)

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Preferred Option -- Highway Project List

| Highway Project | From | To | Existing Lanes | Proposed Lanes | Improvement Type | Length (miles) | Estimated Cost | STI | Funding Source |
|--|--------------------------|--------------------------|----------------|----------------|------------------|----------------|----------------|-----|-----------------------|
| 2035 MTP | | | | | | | | | |
| Danziger Dr Extension | Mt Moriah Rd | E Lakewood Dr | - | 2 | New Location | 0.4 | 5,127,000 | Div | State/Fed |
| Erwin Rd | Cameron Blvd | W Main St | 4 | 4 | Modernization | 1.8 | 12,025,000 | Div | Private |
| Falconbridge Rd Connector | Falconbridge Rd | Farrington Rd | - | 2 | New Location | 0.2 | 1,227,000 | Div | State/Fed |
| Falconbridge Rd Extension | Farrington Rd | NC 54 | - | 4 | New Location | 0.9 | 16,685,000 | Div | State/Fed/ Private |
| Farrington to I-40 eastbound slip ramp | Farrington Rd | I-40 | - | 1 | New Location | 0.1 | 1,600,000 | Div | State/Fed |
| Fordham Blvd (US 15-501) | NC 54 | Franklin Street | 4 | 4 | Modernization | 2.1 | 45,498,000 | St | State/Fed |
| Fordham Blvd (US 15-501) | NC 54 | US 15-501 | 4 | 4 | Modernization | 2.2 | 49,832,000 | St | State/Fed |
| Fordham Blvd/Raleigh Rd | Interchange | | - | - | Upgrade | N/A | 14,800,000 | St | State/Fed |
| Fordham Blvd/S Columbia St | Interchange | | - | - | Upgrade | N/A | 35,000,000 | St | State/Fed |
| Garrett Rd | NC 751 | Old Durham Rd | 2 | 4 | Widening | 2.1 | 16,064,000 | Div | State/Fed |
| Homestead Rd | Old NC 86 | Rogers Rd | 2 | 2 | Modernization | 2.1 | 10,234,000 | Div | State/Fed |
| Homestead Rd | Rogers Rd | NC 86 | 2 | 2 | Modernization | 1.3 | 6,855,000 | Div | State/Fed |
| Hope Valley Rd (NC 751) | S Roxboro St | Woodcroft Parkway | 2 | 4 | Widening | 0.3 | 2,716,000 | Reg | State/Fed |
| Hopson Rd | Davis Dr | S Miami Blvd (NC 54) | 2 | 4 | Widening | 0.7 | 5,200,000 | Div | State/Fed |
| I-40 | NC 86 | I-85 | 4 | 6 | Widening | 7.8 | 58,784,000 | St | State/Fed |
| I-40 | US 15-501 | NC 86 | 4 | 6 | Widening | 3.9 | 29,316,000 | St | State/Fed |
| I-40 Managed Lanes | Wake County Line | NC 147 | 8 | 10 | Widening | 7.0 | 446,464,000 | St | State/Fed |
| I-40/NC 54 | Interchange | | - | - | Upgrade | N/A | 94,100,000 | St | State/Fed |
| I-40/ NC 54 ramp | Farrington Rd. | I-40 | - | 1 | New Location | 0.2 | 1,600,000 | St | State/Fed |
| I-85/NC 86 | Interchange | | - | - | Upgrade | N/A | 16,488,000 | St | State/Fed |
| I-85/S Churton St | Interchange | | - | - | Upgrade | N/A | 20,700,000 | St | State/Fed |
| Jack Bennet Rd/Lystra Rd | US 15-501 South | Farrington Mill/Point Rd | 2 | 2 | Modernization | 4.1 | 20,567,000 | Div | State/Fed |
| Lake Hogan Farms Rd | Eubanks Rd | Legends Way | - | 2 | New Location | 0.7 | 4,407,000 | Div | State/Fed/ Private |
| Marriott Way | Friday Center Dr | Barbee Chapel Rd | - | 2 | New Location | 0.2 | 682,000 | Div | State/Fed |
| NC 54 | Fordham Blvd (US 15-501) | Barbee Chapel Rd | 6 | 6 | Modernization | 1.2 | 32,106,000 | Reg | State/Fed |
| NC 54 | I-40 Interchange | NC 751 | 2 | 4 | Widening | 1.2 | 32,000,000 | Reg | State/Fed |
| NC 54 | NC 751 | Rollingwood Dr | 2 | 4 | Widening | 1.5 | 21,600,000 | Reg | State/Fed |

2045 Metropolitan Transportation Plan (MTP)

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Preferred Option -- Highway Project List

| Highway Project | From | To | Existing Lanes | Proposed Lanes | Improvement Type | Length (miles) | Estimated Cost | STI | Funding Source |
|-------------------------------|-------------------|-------------------------|----------------|----------------|------------------|----------------|----------------|-----|-------------------|
| NC 54 | Fayetteville | Barbee | 2 | 4 | Widening | 1.0 | 46,800,000 | Reg | State/Fed |
| NC 54 | Barbee | NC 55 | 2 | 4 | Widening | 1.3 | 46,400,000 | Reg | State/Fed |
| NC 54 (widening; superstreet) | I-40 | Barbee Chapel Rd | 4 | 6 | Widening | 1.6 | 9,100,000 | Reg | State/Fed |
| NC 55 (Alston Ave) | Main St | NC 98 | 2 | 4 | Modernization | 0.5 | 1,000 | Reg | State/Fed |
| New Hope Commons Dr Extension | Eastowne Dr | New Hope Commons Dr | - | 2 | New Location | 0.4 | 4,588,000 | Div | State/Fed |
| Roxboro St | Cornwallis Rd | MLK Pkwy | - | 4 | New Location | 1.2 | 12,063,000 | Div | State/Fed |
| S Churton St | US 70 Business | I-40 | 2 | 4 | Widening | 2.4 | 31,825,000 | Div | State/Fed |
| Southwest Durham Dr | NC 54 | I-40 | - | 2 | New Location | 2.0 | 12,402,000 | Div | State/Fed |
| University Dr | MLK Parkway | Shannon Rd | 5 | 4 | Modernization | 0.5 | 768,000 | Div | Private |
| US 70 (freeway conversion) | S Miami Blvd | Northern Durham Parkway | 4 | 6 | Freeway | 2.5 | 173,469,000 | St | State/Fed |
| | | | | | | | | | |
| 2045 MTP | | | | | | | | | |
| Angier Av Ext | US 70 | Leesville Rd | - | 2 | New Location | 0.8 | 4,784,000 | Div | State/Fed |
| Angier/Glover Connector | Ellis Rd | Glover Rd | - | 2 | New Location | 1.4 | 8,625,000 | Div | State/Fed |
| Crown Pkwy/Roche Dr | Page Rd | T.W. Alexander Dr | - | 2 | New Location | 2.7 | 11,041,000 | Div | State/Fed |
| | | | | | | | | | |
| Eno Mountain Rd realignment | Mayo St | Eno Mountain Rd | - | 2 | New Location | 0.3 | 2,015,000 | Div | State/Fed |
| Garrett Rd | Old Durham Rd | US 15-501 | 2 | 4 | Widening | 1.0 | 7,761,000 | Div | State/Fed |
| Glover Rd | Angier | US 70 | - | 2 | New Location | 0.6 | 3,714,000 | Div | State/Fed |
| | | | | | | | | | State/Fed/Private |
| Hebron Rd Extension | Hebron Rd | Roxboro Rd (501 N) | - | 2 | New Location | 0.5 | 3,612,000 | Div | State/Fed/Private |
| Holloway St (NC 98) | Miami Blvd | Nichols Farm Dr | 4 | 4 | Modernization | 3.3 | 17,705,000 | Reg | State/Fed |
| Hopson Rd | Louis Stephens Dr | Davis Dr | 2 | 4 | Widening | 1.1 | 9,195,000 | Div | State/Fed |
| I-40 Managed Lane | NC 54 | US 15-501 | 6 | 8 | Widening | 2.9 | 85,621,000 | St | State/Fed |
| I-40 Managed Lanes | NC 147 | NC 54 | 6 | 10 | Widening | 6.4 | 250,290,000 | St | State/Fed |
| I-85 | US 70 | I-40 | 4 | 6 | Widening | 7.1 | 197,378,000 | St | State/Fed |
| I-85 | US 70 | Red Mill Rd | 4 | 6 | Widening | 8.2 | 215,940,000 | St | State/Fed |
| I-85 | Sparger Rd | US 70 | 4 | 6 | Widening | 3.0 | 39,118,000 | St | State/Fed |
| Leesville Rd Ext | US 70/Page Rd Ext | Leesville Rd | - | 2 | New Location | 0.4 | 2,644,000 | Div | State/Fed |
| Lynn Rd Extension | US 70 | Existing Lynn Rd | - | 2 | New Location | 1.1 | 6,862,000 | Div | State/Fed |
| Mt Carmel Ch Rd | US 15-501 | Bennett Rd | 2 | 2 | Modernization | 0.4 | 1,997,000 | Div | State/Fed |
| N Duke St (501 N) | I-85 | N Roxboro split | 5 | 4 | Modernization | 2.5 | 13,279,000 | Reg | State/Fed |

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Preferred Option -- Highway Project List

| Highway Project | From | To | Existing Lanes | Proposed Lanes | Improvement Type | Length (miles) | Estimated Cost | STI | Funding Source |
|---|----------------------|--------------------|----------------|----------------|------------------|----------------|----------------|-----|-------------------|
| NC 751 | Renaissance Pkwy | O'Kelly Chapel Rd | 2 | 4 | Widening | 2.7 | 21,697,000 | Reg | State/Fed/Private |
| NC 751 | Martha's Chapel Rd | O'Kelly Ch. Rd | 2 | 3 | Modernization | 5.4 | 9,648,000 | Reg | State/Fed |
| NC 751 | NC 54 | Renaissance Pkwy | 2 | 4 | Widening | 1.2 | 5,290,000 | Reg | State/Fed |
| NC 86 | Old NC 10 | US 70 Business | 2 | 4 | Widening | 0.9 | 7,259,000 | Reg | State/Fed/Private |
| Northern Durham Pkwy | US 70 E | Sherron Rd | - | 4 | New Location | 2.7 | 23,500,000 | Div | State/Fed |
| Northern Durham Pkwy | I 85 North | Old Oxford Hwy | - | 4 | New Location | 2.7 | 23,291,000 | Div | State/Fed |
| Patriot Dr Extension | S Miami Blvd | Page Rd | - | 2 | New Location | 1.9 | 13,086,000 | Div | State/Fed |
| Roxboro Rd (501 N) | Duke St | Goodwin Rd | 4 | 4 | Modernization | 2.7 | 14,574,000 | Reg | State/Fed |
| Sherron Rd | S Mineral Springs Rd | Stallings Rd | 2 | 4 | Widening | 3.1 | 25,003,000 | Div | State/Fed |
| Southwest Durham Dr | US 15-501 Business | Mt Moriah Rd | - | 4 | New Location | 0.4 | 3,667,000 | Div | State/Fed/Private |
| SW Durham Dr | Sawyer Dr | Old Chapel Hill Rd | 2 | 4 | Widening | 0.7 | 5,432,000 | Div | State/Fed |
| US 15-501 | Smith Level Rd | MPO Boundary | 4 | 4 | Modernization | 4.9 | 25,673,000 | St | State/Fed |
| US 15-501 (expressway conversion) | US 15-501 Bypass | I-40 | 6 | 6 | Expressway | 2.2 | 195,300,000 | St | State/Fed |
| US 15-501 Bypass | MLK Parkway | I-85 | 4 | 6 | Widening | 4.8 | 80,734,000 | St | State/Fed |
| Wake Forest Hwy (NC 98) | Nichols Farm Dr | Wake County Line | 2 | 4 | Widening | 6.0 | 48,474,000 | Reg | State/Fed |
| Yates Store Rd Extension | Yates Store Rd | Wake Rd | - | 2 | New Location | 1.4 | 11,519,000 | Div | State/Fed/Private |
| (1) East End Connector costs are \$35,175,000, and Alston Ave and Carver St costs are \$0 in the financial plan because the funding is before 2018. | | | | | | | | | |

Public Transportation

Summary

As a basis, the 2045 MTP adopts the transit services as approved in the county plans:

- Durham County Transit Plan, originally approved in 2011 and updated April 28, 2017. The detailed plan is available at <http://ourtransitfuture.com/plans/durham/>
- Orange County Transit Plan, originally approved in 2012 and updated April 28, 2017. The detailed plan is available at <http://ourtransitfuture.com/plans/orange/>

The plans include major projects such as Durham-Orange Light Rail Transit (D-O LRT) and Wake-Durham Commuter Rail (CRT), but do not include specific programmed bus facility or service projects beyond 2023. The bus services operating in the DCHC MPO in 2045 reflect the MPO's best predictions of transit services operating at that time.

The 2045 MTP makes two notable transit investments that exceed the county transit plans:

- The Wake-Durham Commuter Rail Transit (CRT) is extended from West Durham to Hillsborough in the 2045 timeframe; and,
- The Durham-Orange Light Rail Transit (LRT) is extended from Chapel Hill to downtown Carrboro.

Durham County Services

The program of projects and services in the Durham County Transit Plan include the following:

■ Bus Services

Already Implemented Additional Bus Service (including new routes, increases in frequency, etc.)

- GoTriangle, 7,640 annual service hours
- GoDurham, 24,350 annual service hours

Planned Additional Bus Service

- GoTriangle, 6,260 annual service hours
- Durham County Access, 7,896 annual demand responsive trips

The Durham County Transit Plan also supports the increased cost of existing GoDurham service – e.g., the increased cost of providing service that GoDurham provided before the transit plan was implemented. About 9,000 existing annual service hours are assisted with Durham County Transit Plan funds.

An anticipated 15,000 – 27,500 additional bus service hours may be available following implementation of D-O LRT. These “rail dividend hours” reflect bus service currently

operating in the D-O LRT corridor that could be redirected to meet other Durham County transit priorities.

■ **Bus Capital Projects**

The purchase of new vehicles (and subsequent replacement) to support the service funded by the Durham County Transit Plan.

Bus facility improvements to facilitate transit access and improve the customer experience, including new park-and-ride lots, stop improvements and other capital investments along transit emphasis corridors, new transit centers, and stop improvements.

- **Durham-Orange Light Rail Transit (D-O LRT)** – 2028 estimated completion date
Light rail transit service between UNC Hospitals in Chapel Hill and North Carolina Central University (NCCU) in Durham, providing 50,000 hours of transit service. Project includes bicycle, pedestrian and bus infrastructure improvements along the alignment.

- **Wake-Durham Commuter Rail (CRT)** – 2035 estimated completion date
Commuter rail service linking Durham, RTP, Cary, Raleigh and Garner. The service will be funded in coordination with Wake County.

- **Wake-Durham Commuter Rail Extension (CRT)** – 2045 estimated completion date
Commuter rail service will be extended from West Durham to Hillsborough, with a station at NC 10/US 70 area and S Churton St/US 70 Business. This extension is not in the Durham County Transit Plan. It will be financed in the last decade of the 2045 MTP by assuming that legislative restrictions that currently restrict funding that can be used for transit will be repealed.

Orange County Services

The program of projects and services in the Orange County Transit Plan include the following:

■ **Bus Services**

Already Implemented Additional Bus Service (including new routes, increases in frequency, etc.)

- Orange Public Transit, 4,500 annual service hours
- GoTriangle, 6,708 annual service hours
- Chapel Hill Transit, 6,427 annual service hours

Planned Additional Bus Service

- Orange Public Transit, 2,387 annual service hours
- GoTriangle, 1,492 annual service hours
- Chapel Hill Transit, 6,392 annual service hours

The Orange County Transit Plan also supports the increased cost of existing Orange Public Transit and Chapel Hill Transit services – e.g., the increased cost of providing Orange Public Transit and Chapel Hill Transit service that was provided before the transit plan was implemented. About 9,000 existing annual service hours are assisted with Orange County Transit Plan funds.

An anticipated 30,000 – 45,000 additional bus service hours may be available following implementation of D-O LRT. These “rail dividend hours” reflect bus service currently operating in the D-O LRT corridor that could be redirected to meet other Orange County transit priorities.

■ **Bus Capital Projects**

The purchase of new vehicles (and subsequent replacement) to support the service funded by the Orange County Transit Plan.

Bus facility improvements to facilitate transit access and improve the customer experience, including new park-and-ride lots, improved transit amenities, and access improvements (e.g. new sidewalks) to bus stops.

■ **Hillsborough Train Station – 2020 completion date**

The station will be served by two Amtrak passenger routes.

■ **North-South Bus Rapid Transit (N-S BRT) – 2023 estimated completion date**

Bus rapid transit service using a mix of dedicated and mixed-traffic lanes between the Eubanks Road and Southern Village park-and-ride facilities, with direct service to UNC Hospitals.

■ **Durham-Orange Light Rail Transit (D-O LRT) – 2028 estimated completion date**

Light rail transit service between UNC Hospitals in Chapel Hill and North Carolina Central University (NCCU) in Durham, providing 50,000 hours of transit service. Project includes bicycle, pedestrian and bus infrastructure improvements along the alignment.

■ **Durham-Orange Light Rail Transit Extension (D-O LRT) – 2045 est. completion date**

Light rail transit will be extended from the UNC Hospitals station to a station near Main Street in Carrboro. The route, along S Columbia St and W Cameron Ave, is a conceptual placeholder until further study can be completed. This extension is not in the Orange County Transit Plan. It will be financed in the last decade of the 2045 MTP by assuming that legislative restrictions that currently restrict funding that can be used for transit will be repealed.

■ **Wake-Durham Commuter Rail Extension (CRT) – 2045 estimated completion date**

Commuter rail service will be extended from West Durham to Hillsborough, with a station at NC 10/US 70 area and S Churton St/US 70 Business. This extension is not in

the Orange County Transit Plan. It will be financed in the last decade of the 2045 MTP by assuming that legislative restrictions that currently restrict funding that can be used for transit will be repealed.

Chatham County Services

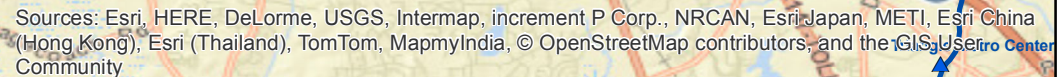
The express bus services from Pittsboro to UNC and the UNC Hospitals will be improved in frequency and service hours. Bus stops and stations will be increased and improved.

Fixed Guideway Maps

The following three pages are MPO-level, Durham close-up and Chapel Hill/Carrboro close-up maps of the fixed-guideway services in the Preferred Option. Fixed guideway includes light rail transit, commuter rail transit and bus rapid transit.

An interactive, online map is also available at the Fixed-Guideway map tile at the top of the following MTP Web page: www.bit.ly/DCHC-MTP-Preferred

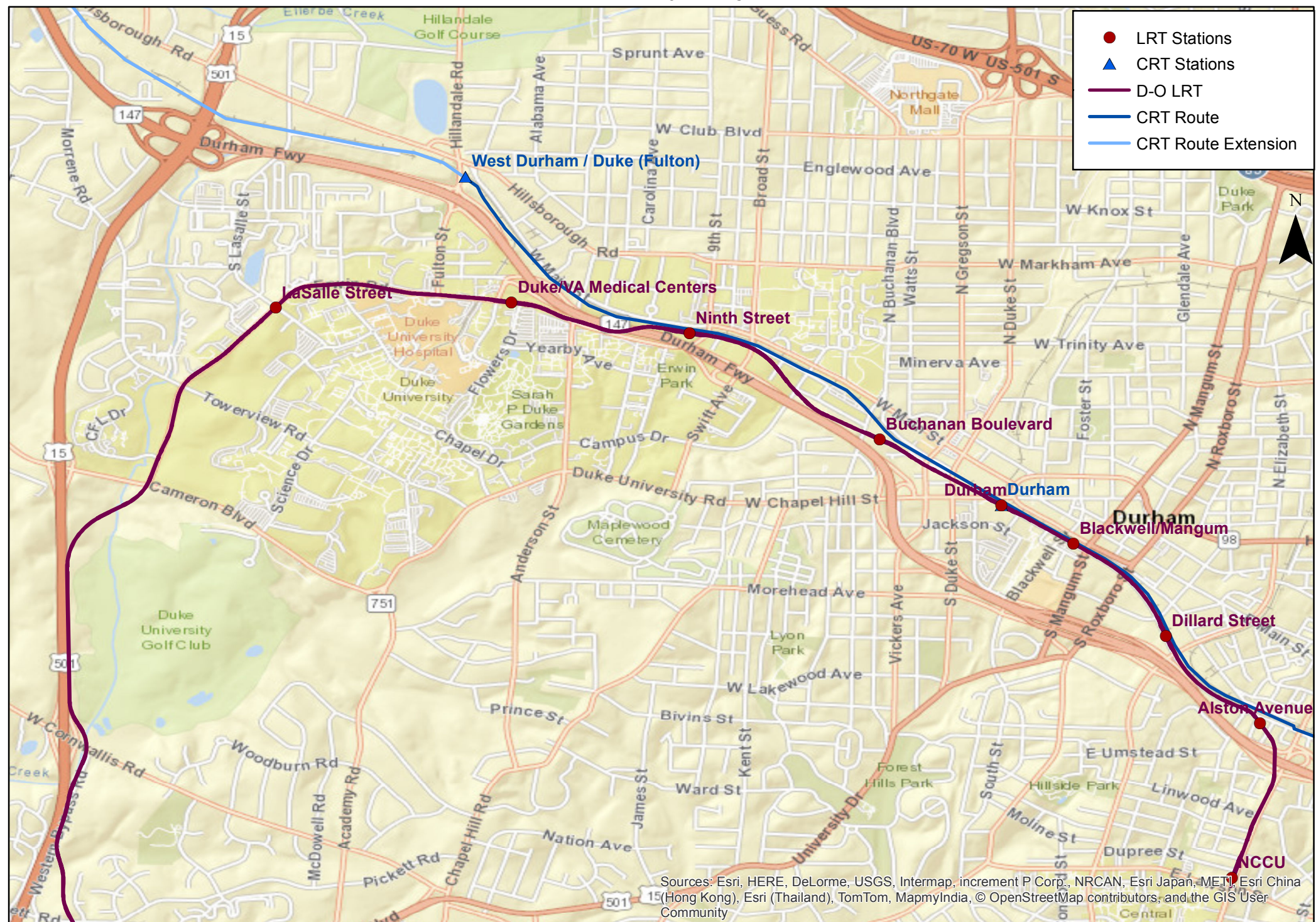
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2045 Metropolitan Transportation Plan (MTP)

Preferred Option -- Fixed Guideway Projects -- Durham Close up

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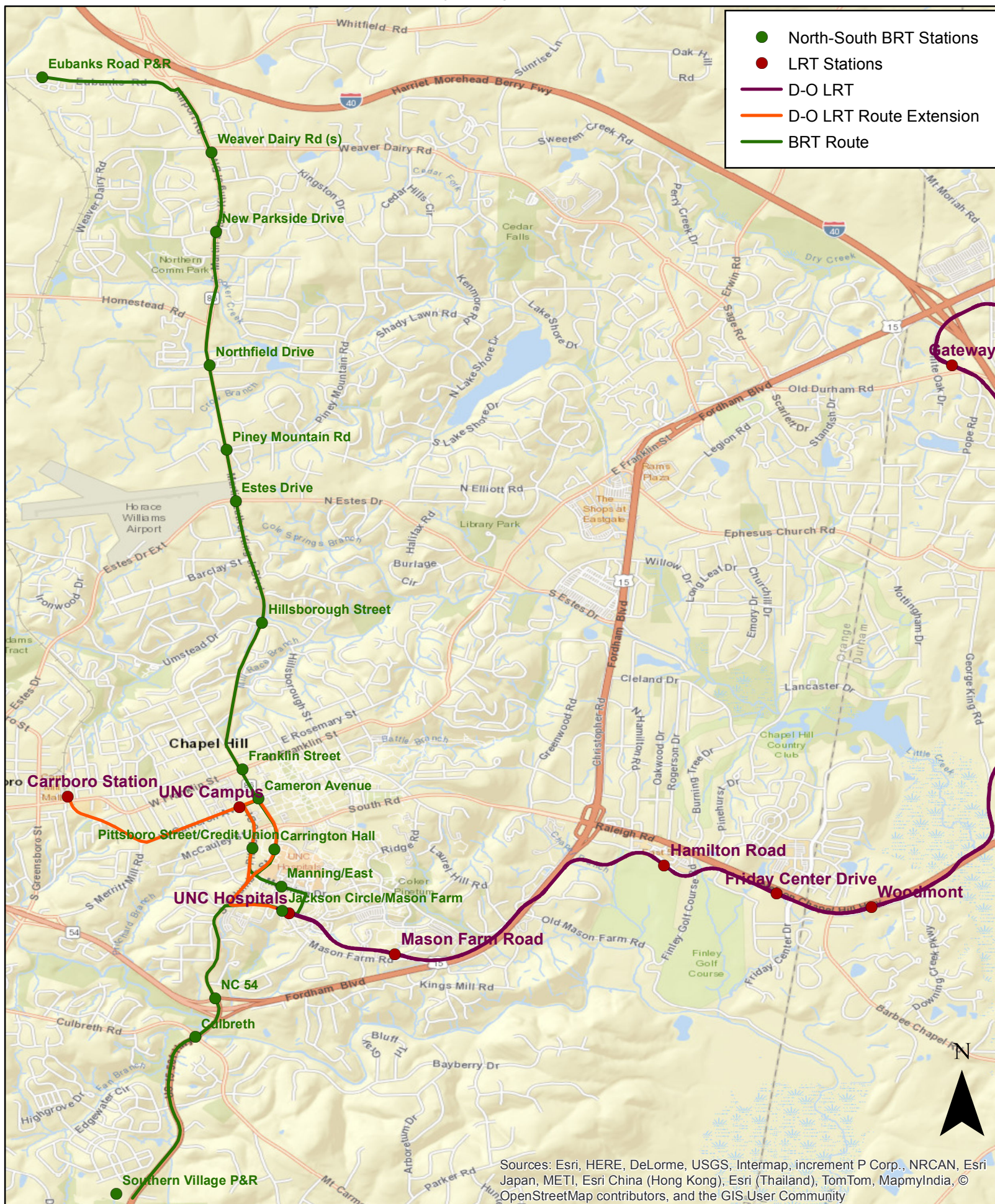


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Preferred Option -- Fixed Guideway Projects -- Chapel Hill/Carrboro Close-up



Bicycle, Pedestrian and Multiuse Paths

Summary

The 2045 MTP does not specifically list the bicycle and pedestrian projects. The local jurisdictions and counties have identified, and in many cases prioritized these projects and have coordinated their interaction in the jurisdiction boundary areas through the DCHC MPO. As a result, the 2045 MTP defers to those local governments. The financial plan provides \$225 million to implement these projects; that is \$75 million for each decade in the 2045 MTP.

Local Plans

Bicycle

The DCHC MPO adopted a Comprehensive Transportation Plan (CTP) in May 2017 in cooperation with the North Carolina Department of Transportation (NCDOT). The CTP lists all the local bicycle projects from the jurisdiction and county plans in the MPO area.

- CTP Web site: <http://bit.ly/DCHCMPO-Adopted-CTP>

The local plans provide details on the planned facilities at the following links:

- Carrboro Comprehensive Bicycle Transportation Plan (2009) -- <http://bit.ly/1PeRnsl>
- Chapel Hill Bike Plan (2014) -- <http://bit.ly/1uGbDZ5>
- Chatham County Bicycle Plan (2011) -- <http://bit.ly/1TSdlUv>
- Durham City and County Comprehensive Bicycle Plan (2006) -- <http://bit.ly/1UCSIDz>
- Hillsborough Community Connectivity Plan (2009) -- <http://bit.ly/1Uan3VO>

Pedestrian

Local pedestrian plans include:

- Chapel Hill Bicycle and Pedestrian Action Plan (2004) -- <http://bit.ly/28gbvqi>
- Durham Walks! Pedestrian Plan (2006) -- <http://bit.ly/1Y66mfG>
- Durham Bike+Walk Implementation Plan (2017) -- <http://bit.ly/2p2yHJS>
- Hillsborough Community Connectivity Plan (2009) -- <http://bit.ly/1Uan3VO>

MPO Policy

The MPO bicycle and pedestrian policy basically expects any roadway or other transportation project, whether it is a new or improved facility, to include appropriate pedestrian and bicycle accommodations. That policy provides extensive integration of bicycle and pedestrian needs into the design and construction of new and improved highway and other transportation projects. In addition, the “NCDOT Complete Streets Planning and Design Guidelines” and other

related guidelines provide planning and design guidance for use when building new projects or making changes to existing infrastructure.

Financial Plan

Background and Assumptions

The MPO created and reviewed three financial projections in the Alternatives Analysis: Constrained; Moderate; and, Optimistic (formerly known as Aspirational). The Preferred Option uses the Optimistic financial projection, and breaks out the Costs and Revenues by the funding decades, i.e., 2025, 2035 and 2045.

It is important to note that the financial plan abides by the North Carolina STI (Strategic Transportation Investment) legislation and policy in the first two decades, i.e., 2025 and 2035. In the third decade, 2045, the financial plan assumes that statewide and national policy would relax restrictions on the use of funding for transit projects, and permit the use of some traditional highway funding to be used to extend the Commuter Rail Transit (CRT) and Light Rail Transit (LRT) lines.

The text below provides notes for the financial table that follows the text. There are two graphs after the financial table that depict major financial themes.

Cost Table

Roadways and Alternative Transportation

The roadway costs are broken out by the three North Carolina STI (Strategic Transportation Investment) funding tiers to abide by the current state policy. The highway costs mostly use TIP estimates, recent feasibility studies, or the 2016 NCDOT highway cost workbook to calculate the individual project cost.

Maintenance costs are based on the STI and NCDOT statewide plan.

The estimated alternative transportation costs are shown for Bicycle and Pedestrian, Transportation Demand Management (TDM), Intelligent Transportation Systems (ITS), and Transportation System Management (TSM). These programs do not have individual projects listed in the 2045 MTP and thus the program cost is a single estimate rather than the sum of the listed projects. The assumed STI tier is also shown in parenthesis in the program title.

Transit

The transit costs and revenues are based on the Durham County Transit Plan and Orange County Transit Plan that were recently updated in 2017. The costs are broken out by existing and new/expanded services because of the policy of those plans and the funding restrictions of the revenue sources.

Additional Transit

These are costs that are not included in the county plan transit costs. The transit funding match is a regional cost for the state capital match for the Durham-Orange Light Rail Transit project.

The extension of the CRT and LRT are regional funds that the MPO assumes will be available for transit capital and other expenses in the last decade of the 2045 MTP. Currently, the STI regional funds are capped at 10% of the total project cost for transit projects, which would not allow the STI funding to be used for these extensions. However, the MPO assumes that this restriction would be repealed as urban areas like those in the MPO become increasingly reliant on public transportation to provide sustainable transportation.

Revenue TableSTI/Local/Private

The STI revenues are based on the Optimistic financial scenario and abide by the STI requirements and methodology throughout the entire 2045 MTP, or the year 2045.

Maintenance revenues match the costs. Local funding are estimates based on the current 2040 MTP and a modest growth rate. CMAQ funding is based on the STI. Private funding is mostly summed from the 2045 MTP highway projects that are expected to be constructed by private concerns.

Transit

The transit costs and revenues are based on the Durham County Transit Plan and Orange County Transit Plan that were recently updated in 2017.

Balance Table

This table is a tool to help guide changes in the project lists and financial plan during the public input period of the Preferred Option. It shows the balance (i.e., revenue minus cost) by STI tier and decade. The values in parenthesis are negative, meaning that the costs are greater than the revenues.

2045 Metropolitan Transportation Plan

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Draft Preferred Option -- Financial Plan

| COSTS | Uses Optimistic Financial Projection | | | |
|---|--------------------------------------|--------------|--------------|---------------|
| | (in millions \$) | | | |
| Roadways & Alternative Transportation | 2025 | 2035 | 2045 | Total |
| Roadways (statewide) | 480 | 1,048 | 1,090 | 2,618 |
| Roadways (regional) | 24 | 192 | 138 | 354 |
| Roadways (division) | 53 | 167 | 209 | 429 |
| Maintenance (all) | 874 | 1,242 | 1,409 | 3,525 |
| Bicycle & Pedestrian (division) | 90 | 90 | 90 | 270 |
| Transportation Demand Management (division) | 13 | 13 | 13 | 38 |
| Intelligent Transportation Systems (statewide) | 20 | 20 | 20 | 60 |
| Transportation System Management (all) | 40 | 40 | 40 | 120 |
| Total Roadway and Alternate | 1,592 | 2,812 | 3,009 | 7,414 |
| Transit | | | | |
| Continued Transit Funding to Support <u>Existing</u> Services | 386 | 482 | 482 | 1,350 |
| Funding for <u>New/Expanded</u> Transit Services | 1,261 | 1,207 | 471 | 2,939 |
| Additional Transit | | | | |
| Transit funding match, etc. (regional) | 95 | 96 | - | 191 |
| Extend CRT from West Durham to Hillsborough (regional) | - | - | 173 | 173 |
| Extend LRT from Chapel Hill to Carrboro (regional) | | | 75 | 75 |
| Total Transit | 1,742 | 1,785 | 1,201 | 4,728 |
| Total Costs | 3,334 | 4,597 | 4,210 | 12,141 |
| REVENUES | | | | |
| STI/Local/Private | 2025 | 2035 | 2045 | Total |
| STI (statewide) | 542 | 898 | 981 | 2,421 |
| STI (regional) | 132 | 373 | 423 | 928 |
| STI (division) | 122 | 228 | 256 | 606 |
| Maintenance (all) | 874 | 1,242 | 1,409 | 3,525 |
| Toll Revenue (statewide) | 0.1 | 196 | - | 196 |
| Local Funding (bicycle/pedestrian) (division) | 35 | 20 | 20 | 75 |
| Local Funding (roadway) (division) | 25 | 25 | 25 | 75 |
| Private Funds (division) | 27 | 30 | 24 | 81 |
| CMAQ Funding (division) | 17 | 18 | 15 | 49 |
| Total STI/Local/Private | 1,773 | 3,029 | 3,153 | 7,956 |

2045 Metropolitan Transportation Plan

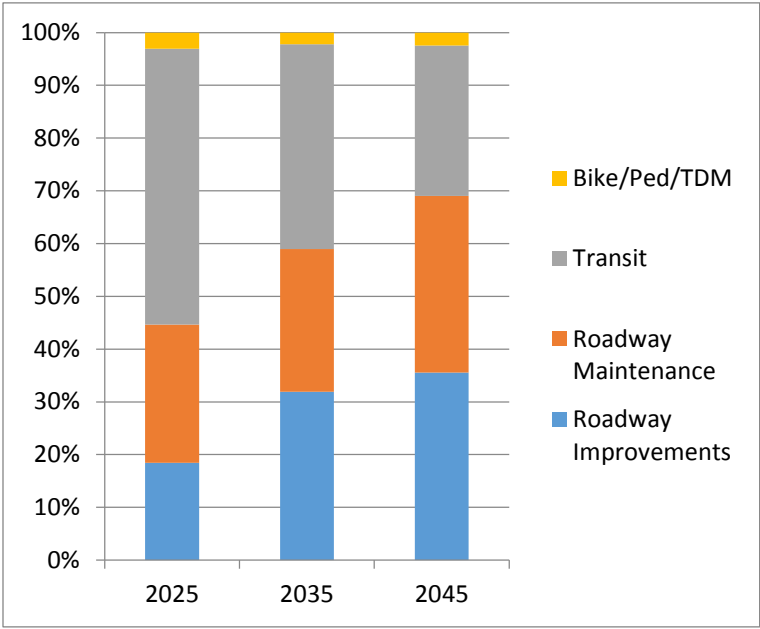
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Draft Preferred Option -- Financial Plan

| | | | | |
|--|-----------------------------------|--------------|--------------|---------------|
| Transit | | | | |
| Continued Transit Funding to Support Existing Services | 386 | 482 | 482 | 1,350 |
| Funding for New/Expanded Transit Services | 1,261 | 1,207 | 471 | 2,939 |
| Total Transit | 1,647 | 1,689 | 953 | 4,289 |
| | | | | |
| Total Revenues | 3,420 | 4,719 | 4,106 | 12,244 |
| | | | | |
| | (parenthesis are negative values) | | | |
| BALANCE | 2025 | 2035 | 2045 | Total |
| Statewide | 32 | 15 | (139) | (92) |
| Regional | (7) | 65 | 17 | 75 |
| Division | 61 | 41 | 18 | 120 |
| Total Balance | 86 | 121 | (104) | 103 |

Graphics

The bar chart below shows the percent of the total investment by mode for each of the three decades. Transit investments are relatively larger in the first two decades because of the large capital investments in light rail and commuter rail.



The pie graph below shows the percent of total investment, i.e., 2025, 2035 and 2045, by mode. Roadway improvements and roadway maintenance are the same. The transit, bicycle, pedestrian and TDM investment is less than one-half of the total, 42%. It is difficult to get these investments higher and continue to mostly abide to the STI funding restrictions.

