



**Durham-Chapel Hill-Carrboro
Metropolitan Planning Organization**

Member Governments:

Town of Carrboro
Town of Chapel Hill
County of Chatham
City of Durham
County of Durham
Town of Hillsborough
N.C. Department of
Transportation
County of Orange

**2040 Metropolitan Transportation Plan
And
Comprehensive Transportation Plan**

Alternatives Analysis Report

August 17, 2012

(Revised September 5, 2012)

Direct Questions and Comments to:

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2040 MTP and CTP Alternatives -- Introduction

What is the 2040 MTP?

The 2040 Metropolitan Transportation Plan (MTP) is the guide for major transportation investments in the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC-MPO) area. The DCHC-MPO area covers the entire Durham County and the urbanized portions of Orange and Chatham Counties. The 2040 MTP recommends major transportation projects, policies and strategies designed to maintain existing transportation systems and serve the region's future travel needs. The 2040 MTP is also designed to support land use and air quality goals for the urban area, and must be prepared in accordance with Federal transportation and environmental requirements. Projects must be in the 2040 MTP to receive state and federal transportation funding in the North Carolina Transportation Improvement Program (TIP).

What is the CTP?

North Carolina General Statute 136-66.2 requires each municipality or Metropolitan Planning Organization (MPO), with the cooperation of the NCDOT, to develop a Comprehensive Transportation Plan (CTP) serving present and anticipated travel demand in and around the MPO. The principal differences between the MTP and CTP include:

- MTP lists only proposed highway improvements and transit services, whereas the CTP maps out both the current and proposed projects;
- MTP must be fiscally-constrained, i.e., the anticipated revenues must cover the anticipated costs, but the CTP has no fiscal element.

The development process for these two documents is very similar – each includes the use of a travel demand model and extensive public involvement. As a result, the DCHC MPO will complete the development process for both documents at the same time.

What are Alternatives?

The DCHC MPO plans to develop and evaluate several Alternatives in the process to create the 2040 Metropolitan Transportation Plan. Each Alternative will be a combination of a Transportation network, which includes a set of highway, transit and other transportation improvements, and a Land Use scenario that depicts the distribution of population and employment for the year 2040. These Alternatives will be run in the Triangle Regional Model (TRM) to produce a set of transportation performance measures that describe how the transportation system will meet the travel demand generated by a particular population and employment distribution in the year 2040. These performance

measures, such as the level of roadway congestion, average travel time, and transit ridership, will be used to evaluate and compare the various Alternatives.

It should be noted that it is very unlikely that one of the Alternatives in its entirety would be advanced as the Preferred Option. These Alternatives have been designed to emphasize a particular mode in meeting the future travel demands so that the public and technical staff can understand how the designated mode meets travel demand. In fact, it is unlikely that the Alternatives using the Highway Intensive and Transit Intensive networks are financially feasible.

How can Citizens Participate?

There are many opportunities for citizens to review and comment on the Alternatives and Preferred Option at a series of public workshops and public hearings that will take place from August through December 2012. The complete public involvement calendar for the Alternatives is displayed in the table on the next page. The DCHC MPO Web site will continue to post a detailed list of these public involvement opportunities in the Alternatives Analysis section of the Website – www.dchcmpto.org. For more information, citizens can also contact Andy Henry, (919) 560-4366, extension 36419, or andrew.henry@durhamnc.gov.

Public Hearing -- The MPO policy board, the Transportation Advisory Committee (TAC), will conduct a public hearing on September 12, 2012, 9AM, in the Committee Room on the 2nd Floor of Durham City Hall. The public can sign up to speak directly to the TAC on the Alternatives.

Where to Send Comments – Comments can be sent to the following email and postal address”

- andrew.henry@durhamnc.gov.
- Andrew Henry
City of Durham/Transportation Dept.
101 City Hall Plaza
Durham, NC 27701

Comment Period – The public comment period for the Alternatives will run from August 17, 2012 through October 10, 2012.

Alternatives Analysis – Public Involvement Calendar

| Jurisdiction | Elected Board | Planning Board | Transportation Board | Bicycle/Pedestrian Board | Transit Board | Public Workshops |
|-----------------------|---------------|-------------------------|----------------------|--------------------------|---------------|---|
| City of Durham | 9/20/2012 | 9/11/2012 | n/a | 8/21/2012 | n/a | 9/18 Durham Station Transportation Center* |
| Durham County | 9/24/2012 | 9/11/2012 | n/a | 8/21/2012 | n/a | |
| Chapel Hill | 9/24 or 10/8 | TBD | TBD | TBD (Active Living) | n/a | 9/20 (tentative) Chapel Hill Town Hall, 4-7pm |
| Carrboro | 9/11 & 10/2 | 9/20/12 | 9/20/12 | | | |
| Hillsborough | 9/24/12 | 9/20/12 | n/a | n/a | n/a | 9/13 “The Barn”, 4-7 pm |
| Orange County | 10/2/2012 | Invited to OUTBoard Mtg | 9/19/2012 | n/a | n/a | |
| Chatham County | 9/17/2012 | 9/11/2012 | 8/28/2012 | 8/23/2012 | n/a | n/a |

*One workshop will be focused for environmental justice organizations.

Notes: Check DCHC MPO Web site for any meeting date and time updates – www.dchcmo.org.
Check local government information to make sure the Alternatives is on the agenda.

What is the Next Step in the 2040 MTP Process?

In the next major step in the 2040 MTP development process, the public, elected officials and technical staff will use the evaluation and comparison of the Alternatives to create a single Alternative that best meets the MPO’s Goals and Objectives and the fiscal constraint requirements. The fiscal restraint requirements demand that the project costs do not exceed the expected funding revenues. This final Alternative is called the Preferred Option, and it will also go through a public review process similar to that of the Alternatives.

Development of Alternatives

The table below shows the combinations of transportation networks and land use scenarios that will be modeled for the 2040 MTP development process to produce each Alternative.

| Land Use/Network | Highway Intensive | Transit Intensive | Moderate |
|-----------------------|-------------------|-------------------|----------|
| CommPlan | Yes | Yes | Yes |
| All-in-Transit | No | Yes | Yes |

The land use scenarios are based on the following assumptions:

Community Plan

- Based on local comprehensive plans
- Used in Deficiency Analysis (June 2012)

All-in-Transit

- Based on local comprehensive plans, plus...
- Additional and enhanced transit oriented developments
- Additional development attraction to rail and premium transit

The table on the next page summarizes the highway and transit projects included in each of the three transportation networks. Section 7 provides a map and project list for each transportation network.

The remainder of this report is dedicated to presenting tables and maps that show the level to which each of the Alternatives meets the forecasted travel demand. Two additional Alternatives from the Deficiency Analysis are used for purposes of comparison. The MPO completed the Deficiency Analysis in June 2012 and the detailed results are available on the MPO Web page.

- 2010 – This is the current condition. It uses the current transportation network and current population and employment distribution.
- E+C (Existing plus Committed) – This is the no build alternatives. It uses the current transportation network (including any committed projects) and the forecasted population and employment.

Transportation Networks

| | Highway Intensive | Transit Intensive | Moderate |
|---------|---|--|---|
| Highway | <ul style="list-style-type: none"> • 2035 LRTP • CTP highway projects ➤ 410 new lanes miles ➤ \$3.9 billion highway costs ➤ <u>2,979</u> total lane miles in network | <ul style="list-style-type: none"> ➤ Basically, 2015 and 2025 tier ➤ No 2035 tier or CTP highway projects ➤ 120 new lanes miles ➤ \$1.2 billion highway costs ➤ <u>2,842</u> total lanes miles in network | <ul style="list-style-type: none"> ➤ Basically, 2035 LRTP (minus some minor highway projects) ➤ 261 new lanes miles ➤ \$2.5 billion highway costs ➤ <u>2,737</u> total lanes miles in network |
| Transit | <ul style="list-style-type: none"> • Current bus transit • No rail transit ➤ <u>2,028</u> bus transit line miles (Triangle) | <ul style="list-style-type: none"> • Current bus transit • County plans (based on ½ cent sales tax) • LRT between Durham and Wake (instead of CRT) • LRT and CRT extensions in Orange County • CRT addition between Cary and western RTP • All Bus Rapid Transit (BRT) in Chapel Hill ➤ <u>2,646</u> bus transit line miles (Triangle) ➤ 69,354 transit service miles (Triangle) ➤ 260 miles of rail transit alignment (Triangle) | <ul style="list-style-type: none"> • Current bus transit • County plans (based on ½ cent sales tax) • LRT and CRT (based on Locally Preferred Alternative) • MLK Blvd Bus Rapid Transit (BRT) in Chapel Hill ➤ <u>2,882</u> bus transit line miles (Triangle) ➤ 66,211 transit service miles (Triangle) ➤ 75 miles of rail transit line (Triangle) |

Notes: New lane miles only includes proposed widenings and new roadways in the Alternative.

Total lane miles includes all interstates, arterials and major collector streets in the Alternative network; most local streets are not included.

Transit line miles, service miles and miles of rail transit line are daily values and are for the entire Triangle region.

Summary of Alternatives

The Alternatives presented in this report can be summarized as follows:

2010 – This benchmark shows the current state of the transportation system. It assumes the 2010 highway and transit network and 2010 population and employment.

E+C (Existing plus Committed) – This is the no build benchmark – it shows the state of the transportation system in the year 2040 if no highway or transit improvements are made.

Highway Intensive – This transportation network assumes an emphasis on highway improvements and less investment in transit (e.g., does not include rail transit)

Transit Intensive – This transportation network assumes an emphasis on bus and rail investment, including the extension of light rail transit beyond the UNC-Chapel Hill area and the extension of commuter rail transit into Orange County. There are two Alternatives using this network:

- one assumes a year 2040 land use scenario with Transit Oriented Development (TOD) around proposed rail stations to take advantage of the synergy between the rail mode and concentrated station development – this land scenario is called All-in-Transit for this study.
- one assumes a 2040 land use scenario based on the local comprehensive plans – this scenarios is called Community Plan (CommPlan).

Moderate – This transportation network assumes a mix of highway projects, bus transit and rail transit that is very similar to that of the 2035 Long Range Transportation Plan (2035 LRTP). Like the Transit Intensive network, there are two Alternatives for this network – one for each of the All-in-Transit and Community Plan land use scenarios.

See the Alternatives Description and Socioeconomic Data sections of this report for detailed information on the transportation networks and land use scenarios used to create these Alternatives.

How is Report Organized?

This report presents the TRM model output first and then provides details on the land use scenarios and the Alternatives. The model output begins with the broad, system-wide Performance Measures and progressively moves toward more project based information such as the congestion maps (e.g., volume/capacity ration).

Who Can I Contact?

For more information, citizens can contact Andy Henry, (919) 560-4366, extension 36419, or send an email to andrew.henry@durhamnc.gov.

2040 MTP and CTP Alternatives – Performance Measures

Purpose of Performance Measures

Performance Measures provide a general indicator from a variety of perspectives such as mobility, travel time, congestion, mode choice, and air quality. The measures are not specific to a particular roadway or travel corridor but instead cover the entire transportation system, and therefore are useful for comparing the overall efficiency and effectiveness of the different transportation Alternatives. Most of the data used for calculating the Performance Measures comes from the Triangle Regional Model (TRM), which is a travel demand model that forecasts future travel statistics based on a set of assumptions concerning the highway network, transit service and other transportation facilities.

Presentation of Performance Measures

The first section is a table that presents all the Performance Measures for all of the Alternatives. Next a series of graphs compare key Performance Measures.

2040 MTP and CTP
Performance Measures

| | SE Data Scenario | 2010 | 2040 | CommPlan | CommPlan | AIT | CommPlan | AIT |
|----------|--|------------|------------|------------|------------|------------|------------|------------|
| | Transportation Network | 2010 | E+C | Highway | Moderate | Moderate | Transit | Transit |
| 1 | Performance Measures | | | | | | | |
| 1.1 | Total Vehicle Miles Traveled (VMT-daily) | | | | | | | |
| 1.1.1 | All Facility+C Connectors | 13,217,550 | 21,281,636 | 21,962,571 | 21,502,963 | 21,585,306 | 21,695,411 | 21,777,500 |
| 1.1.2 | All Facility (no C Connectors) | 12,430,435 | 19,842,072 | 20,556,024 | 20,094,102 | 20,181,272 | 20,293,561 | 20,380,325 |
| 1.2 | Total Vehicle Hours Traveled (VHT-daily) | | | | | | | |
| 1.2.1 | All Facility+C Connectors | 312,669 | 614,488 | 560,421 | 586,003 | 592,529 | 564,141 | 570,064 |
| 1.2.2 | All Facility (no C Connectors) | 260,012 | 517,982 | 466,092 | 491,532 | 498,375 | 470,137 | 476,364 |
| 1.3 | Average Speed by Facility (miles/hour) | | | | | | | |
| 1.3.1 | - Freeway | 63 | 55 | 61 | 58 | 58 | 60 | 60 |
| 1.3.2 | - Arterial | 42 | 37 | 39 | 38 | 38 | 39 | 39 |
| 1.3.3 | - All Facility | 53 | 46 | 50 | 48 | 48 | 50 | 50 |
| 1.4 | Peak Average Speed by Facility (miles/hour) | | | | | | | |
| 1.4.1 | - Freeway | 62 | 52 | 59 | 56 | 55 | 58 | 58 |
| 1.4.2 | - Arterial | 41 | 35 | 38 | 36 | 36 | 37 | 37 |
| 1.4.3 | - All Facility | 51 | 43 | 48 | 45 | 45 | 47 | 47 |
| 1.5 | Daily Average Travel Length - All Person Trips | | | | | | | |
| 1.5.1 | - Travel Time | 14.0 | 15.4 | 14.5 | 15 | 15 | 15 | 15 |
| 1.5.2 | - Travel Distance | 6.3 | 5.9 | 6.2 | 6 | 6 | 6 | 6 |
| 1.6 | Daily Average Travel Length - Work Trips | | | | | | | |
| 1.6.1 | - Travel Time | 17.7 | 19.4 | 18.0 | 19 | 19 | 18 | 18 |
| 1.6.2 | - Travel Distance - Work Trips | 9.1 | 8.0 | 8.5 | 8 | 8 | 8 | 8 |
| 1.7 | Peak Average Travel Length - All Person Trips | | | | | | | |
| 1.7.1 | - Peak Travel Time | 14.8 | 16.7 | 15.5 | 16 | 16 | 16 | 16 |
| 1.7.2 | - Peak Travel Distance | 6.7 | 6.1 | 6.5 | 6 | 6 | 6 | 6 |
| 1.8 | Daily Average Travel Length - All CV Trips | | | | | | | |
| 1.8.1 | - Travel Time | 15.0 | 17.2 | 15.7 | 16 | 16 | 16 | 16 |
| 1.8.2 | - Travel Distance | 8.3 | 8.5 | 8.5 | 9 | 8 | 8 | 8 |
| 1.9 | Daily Average Travel Length - Truck Trips | | | | | | | |

**2040 MTP and CTP
Performance Measures**

| | SE Data Scenario | 2010 | 2040 | CommPlan | CommPlan | AIT | CommPlan | AIT |
|----------|--|---------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Transportation Network | 2010 | E+C | Highway | Moderate | Moderate | Transit | Transit |
| 1.9.1 | - Travel Time | 15.3 | 17.4 | 16.0 | 17 | 17 | 16 | 16 |
| 1.9.2 | - Travel Distance | 8.5 | 8.8 | 8.7 | 9 | 9 | 9 | 9 |
| 1.1 | Hours of Delay (daily) | 27,446 | 139,455 | 77,308 | 107,973 | 112,912 | 85,895 | 90,309 |
| 1.10.1 | Truck Hours of Delay (daily) | 1,086 | 4,742 | 2,604 | 3,728 | 3,871 | 2,892 | 3,027 |
| 1.11 | Percent of VMT experiencing congestion - All Day | | | | | | | |
| 1.11.1 | - Freeway | 1.7% | 17.1% | 5.6% | 9.7% | 10.2% | 5.9% | 6.0% |
| 1.11.2 | - Arterial | 3.3% | 14.5% | 7.0% | 11.3% | 11.1% | 9.1% | 8.9% |
| 1.11.3 | - All Facility | 2.0% | 13.7% | 5.2% | 9.0% | 9.1% | 6.1% | 6.1% |
| 1.12 | Percent of VMT experiencing congestion - Peak | | | | | | | |
| 1.12.1 | - Freeway | 3.0% | 30.7% | 9.8% | 17.0% | 17.9% | 10.4% | 10.4% |
| 1.12.2 | - Arterial | 5.0% | 22.7% | 11.4% | 18.0% | 17.4% | 14.7% | 14.2% |
| 1.12.3 | - All Facility | 3.1% | 22.7% | 8.7% | 14.7% | 14.9% | 10.2% | 10.0% |
| 1.12.4 | - Designated truck routes | 5.0% | 16.6% | 6.7% | 10.5% | 11.2% | 9.1% | 9.8% |
| 1.12.5 | - Facilities w/bus routes | 3.8% | 20.0% | 9.7% | 14.6% | 14.9% | 10.1% | 10.0% |
| 2 | Mode Share Measures | | | | | | | |
| 2.1 | All Trips - Daily | | | | | | | |
| 2.1.1 | - Drive alone (single occupant vehicle -SOV) | 864,965 | 1,535,469 | 1,556,192 | 1,538,172 | 1,544,826 | 1,538,935 | 1,546,009 |
| 2.1.2 | - Carpool (Share ride) | 683,083 | 1,184,575 | 1,210,390 | 1,197,669 | 1,223,593 | 1,195,481 | 1,220,886 |
| 2.1.3 | - Bus | 50,579 | 71,588 | 74,672 | 63,559 | 63,772 | 68,848 | 68,788 |
| 2.1.4 | - Rail | - | - | - | 17,715 | 22,568 | 26,358 | 32,984 |
| 2.1.5 | - Non-Motorized (Bike and Walk) | 176,554 | 281,839 | 275,473 | 285,301 | 326,580 | 280,957 | 321,351 |
| 2.2 | Work Trips - Daily | | | | | | | |
| 2.2.1 | - Drive alone (single occupant vehicle -SOV) | 270,716 | 473,750 | 480,908 | 472,835 | 473,267 | 471,441 | 471,811 |
| 2.2.2 | - Carpool (Share ride) | 35,360 | 61,545 | 63,278 | 62,217 | 62,986 | 61,293 | 61,924 |
| 2.2.3 | - Bus | 12,852 | 19,080 | 20,448 | 17,800 | 17,968 | 21,067 | 21,096 |
| 2.2.4 | - Rail | - | - | - | 6,018 | 7,558 | 8,658 | 11,016 |
| 2.2.5 | - Non-Motorized (Bike and Walk) | 16,343 | 25,102 | 24,155 | 25,289 | 29,784 | 24,388 | 28,713 |
| 2.3 | All Trips - Peak Hours | | | | | | | |

2040 MTP and CTP
Performance Measures

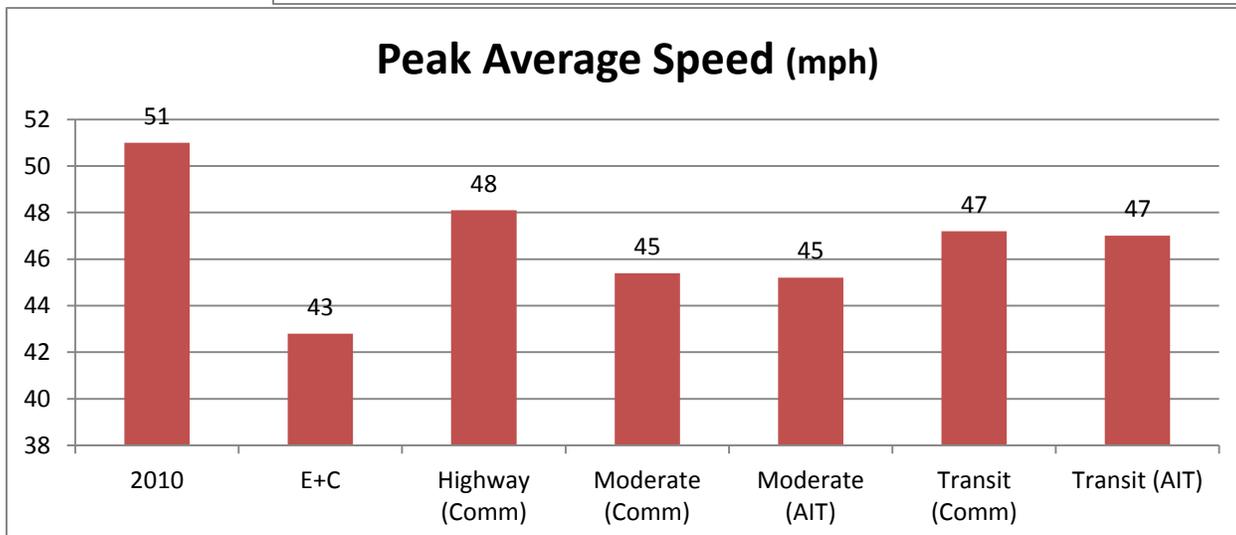
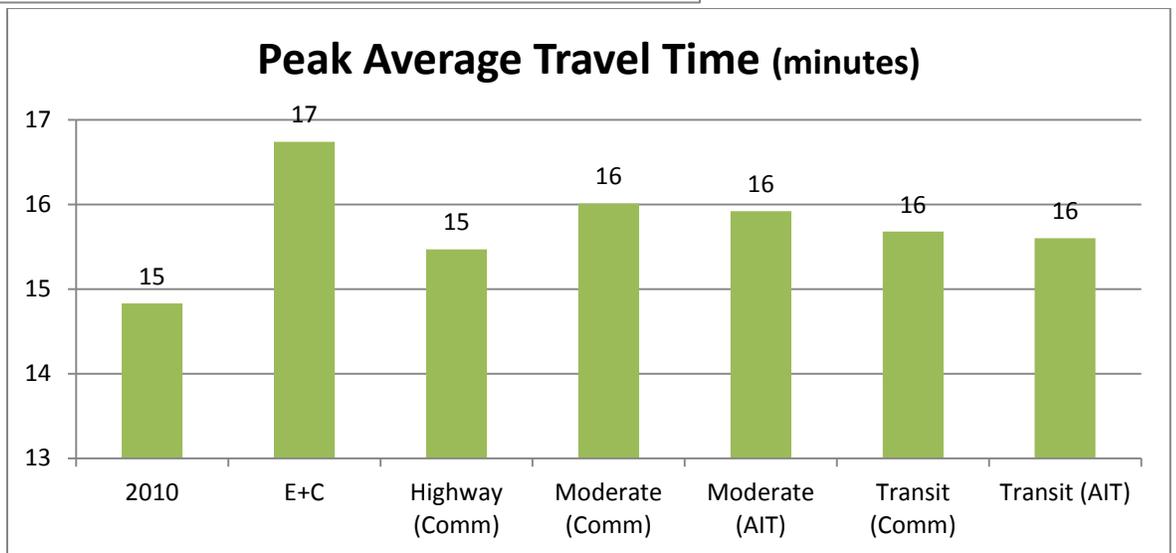
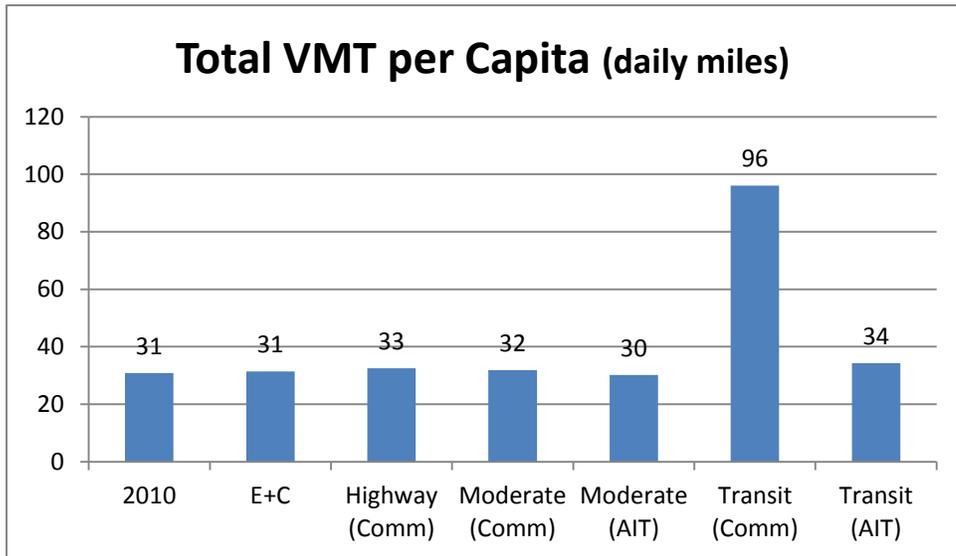
| | SE Data Scenario | 2010 | 2040 | CommPlan | CommPlan | AIT | CommPlan | AIT |
|---------------------------|--|---------|---------|----------|----------|----------|----------|---------|
| | Transportation Network | 2010 | E+C | Highway | Moderate | Moderate | Transit | Transit |
| 2.3.1 | - Drive alone (single occupant vehicle -SOV) | 483,159 | 845,886 | 865,655 | 851,055 | 853,630 | 853,307 | 856,148 |
| 2.3.2 | - Carpool (Share ride) | 411,958 | 704,589 | 727,434 | 717,874 | 735,120 | 718,686 | 735,640 |
| 2.3.3 | - Bus | 25,416 | 34,741 | 37,027 | 31,306 | 31,408 | 34,792 | 34,750 |
| 2.3.4 | - Rail | - | - | - | 9,915 | 12,420 | 14,836 | 18,534 |
| 2.3.5 | - Non-Motorized (Bike and Walk) | 101,821 | 165,869 | 158,458 | 164,869 | 188,870 | 161,197 | 184,556 |
| 3 Transit Measures | | | | | | | | |
| 3.1 | Transit Ridership by Prod. Ends | Total | Total | Total | Total | Total | Total | Total |
| 3.1.1 | - TTA (Including Rail) | 5,362 | 8,853 | 9,858 | 42,511 | 51,742 | 67,848 | 85,539 |
| 3.1.2 | - CAT | 16,639 | 22,957 | 24,986 | 42,727 | 45,323 | 44,437 | 47,630 |
| 3.1.3 | - CHT | 26,788 | 38,460 | 39,061 | 41,292 | 41,580 | 46,738 | 46,583 |
| 3.1.4 | - DATA | 17,637 | 25,924 | 26,614 | 22,714 | 22,490 | 24,197 | 24,109 |
| 3.1.5 | - NCSU | 12,147 | 21,332 | 21,403 | 16,725 | 18,116 | 16,814 | 18,255 |
| 3.1.6 | - DUKE | 14,007 | 17,358 | 17,631 | 16,282 | 16,533 | 16,247 | 16,402 |
| 3.1.7 | - OPT | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 3.1.8 | - CARY | 1,412 | 2,136 | 2,266 | 12,477 | 14,921 | 13,859 | 16,293 |
| 3.1.9 | Total | 93,988 | 137,015 | 141,816 | 194,724 | 210,702 | 230,135 | 254,808 |
| 3.2 | Ridership By Prod. Ends by Routes | | | | | | | |
| 3.2.1 | Rail CR CP EB (ID: 237) | | N/A | N/A | 2,093 | 2,702 | 600 | 990 |
| 3.2.2 | Rail CR CP WB (ID: 238) | | N/A | N/A | 8,241 | 11,021 | 1,824 | 2,205 |
| 3.2.3 | Rail LRT D-O 1 EB (ID: 239) | | N/A | N/A | 4,531 | 5,534 | 163 | 327 |
| 3.2.4 | Rail LRT D-O 1 WB (ID: 240) | | N/A | N/A | 8,372 | 9,682 | 248 | 479 |
| 3.2.5 | Rail LRT Wake 1 EB (ID: 241) | | N/A | N/A | 5,318 | 6,807 | 661 | 860 |
| 3.2.6 | Rail LRT Wake 1 WB (ID: 242) | | N/A | N/A | 8,603 | 10,232 | 1,330 | 1,753 |
| 3.2.7 | Rail CR Long EB (ID: 243) | | N/A | N/A | N/A | N/A | 2,018 | 2,759 |
| 3.2.8 | Rail CR Long WB (ID: 244) | | N/A | N/A | N/A | N/A | 7,840 | 9,739 |
| 3.2.9 | Rail CR West Cary NB (ID: 245) | | N/A | N/A | N/A | N/A | 708 | 840 |
| 3.2.10 | Rail CR West Cary SB (ID: 246) | | N/A | N/A | N/A | N/A | 436 | 484 |
| 3.2.11 | Rail LRT Apex-Cary NB (ID: 247) | | N/A | N/A | N/A | N/A | 3,413 | 4,658 |

2040 MTP and CTP
Performance Measures

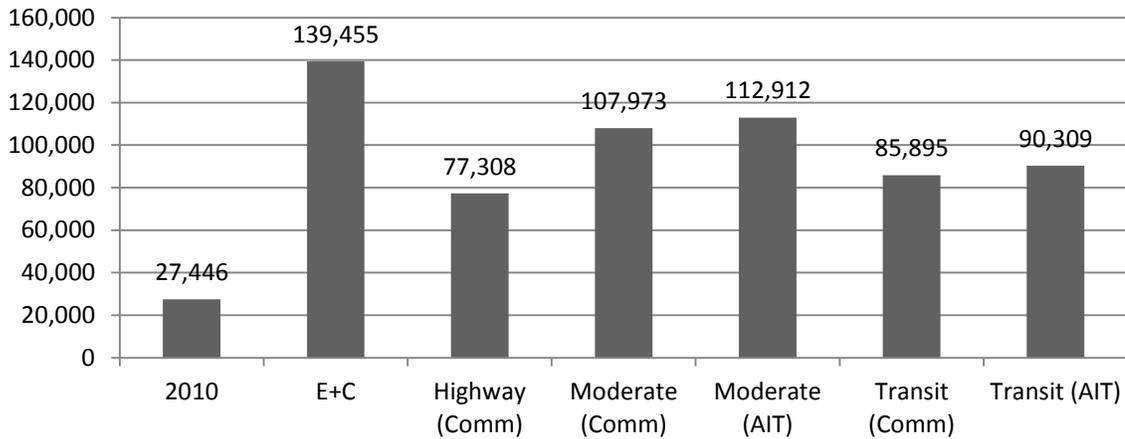
| | SE Data Scenario | 2010 | 2040 | CommPlan | CommPlan | AIT | CommPlan | AIT |
|---|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Transportation Network | 2010 | E+C | Highway | Moderate | Moderate | Transit | Transit |
| 3.2.12 | Rail LRT Apex-Cary SB (ID: 248) | | N/A | N/A | N/A | N/A | 1,669 | 2,417 |
| 3.2.13 | Rail LRT D-O 2 Long EB (ID: 249) | | N/A | N/A | N/A | N/A | 7,601 | 9,786 |
| 3.2.14 | Rail LRT D-O 2 Long WB (ID: 250) | | N/A | N/A | N/A | N/A | 14,964 | 18,790 |
| 3.2.15 | Rail LRT RDU Connection EB (ID: 251) | | N/A | N/A | N/A | N/A | 1,678 | 2,235 |
| 3.2.16 | Rail LRT RDU Connection WB (ID: 252) | | N/A | N/A | N/A | N/A | 520 | 887 |
| 3.2.17 | Rail LRT Wake 2 Long EB (ID: 253) | | N/A | N/A | N/A | N/A | 6,071 | 7,510 |
| 3.2.18 | Rail LRT Wake 2 Long WB (ID: 254) | | N/A | N/A | N/A | N/A | 10,831 | 13,130 |
| 3.2.19 | Rail LRT CHT Cnctr (ID: 301) | | N/A | N/A | N/A | N/A | | 86 |
| 3.3 | Total Rail Ridership | | N/A | N/A | 37,163 | 45,984 | 62,680 | 79,953 |
| 4 Demographics Measures | | | | | | | | |
| 4.1 | Population | 403,494 | 632,102 | 632,102 | 632,102 | 669,124 | 632,102 | 669,124 |
| 4.2 | Employment | 261,566 | 427,876 | 427,876 | 427,876 | 428,337 | 427,876 | 428,337 |
| 4.3 | Total Daily Person Trips | 1,775,182 | 3,073,472 | 3,116,728 | 3,102,417 | 3,181,340 | 3,110,581 | 3,190,019 |
| 4.3.1 | Work Person Trips | 335,271 | 579,478 | 588,790 | 584,162 | 591,565 | 586,849 | 594,562 |
| 4.4 | Total Daily CV Trips | 137,279 | 211,324 | 211,324 | 211,324 | 211,592 | 211,324 | 211,592 |
| 4.4.1 | Daily Truck Trips | 57,715 | 85,991 | 85,991 | 85,991 | 85,992 | 85,991 | 85,992 |
| 5 Other Measures | | | | | | | | |
| 5.1 | Lane Miles | 2,472 | 2,548 | 2,979 | 2,737 | 2,737 | 2,842 | 2,842 |
| CV = Commercial vehicles (which includes large and small trucks and vans). | | | | | | | | |
| Trucks = Subset of CV that includes only large trucks. | | | | | | | | |
| Transit <u>ridership</u> is higher than transit <u>trips</u> because transfers are counted multiple times in ridership numbers. | | | | | | | | |
| Average Speed (1.3 and 1.4), Percent of Congested VMT (1.11 and 1.12) and Hours of Delay (1.10) calculations do not include local streets or centroid connectors (which often represent local streets in modeling networks) | | | | | | | | |

2040 MTP and CTP

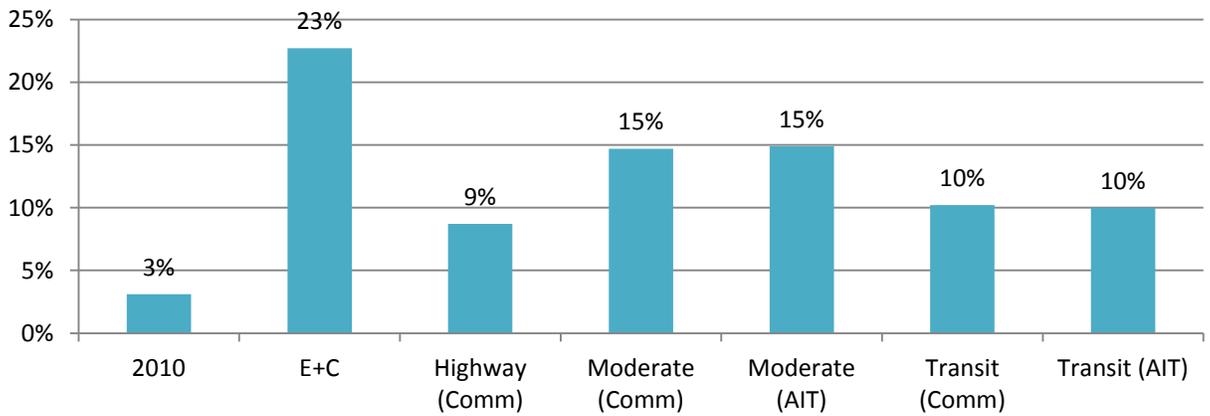
Performance Measures – Graphs



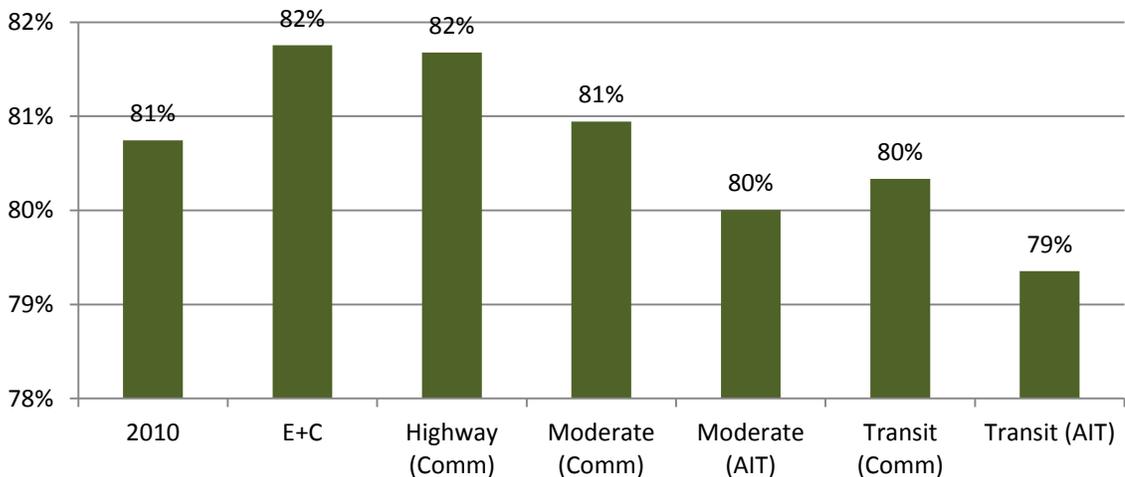
Hours of Delay (Daily)



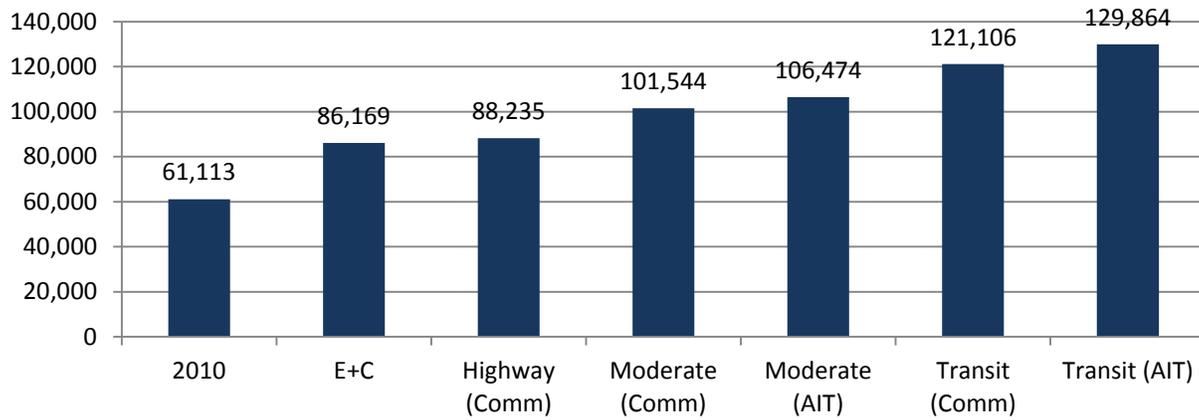
Percent VMT Experiencing Congestion (at Peak)



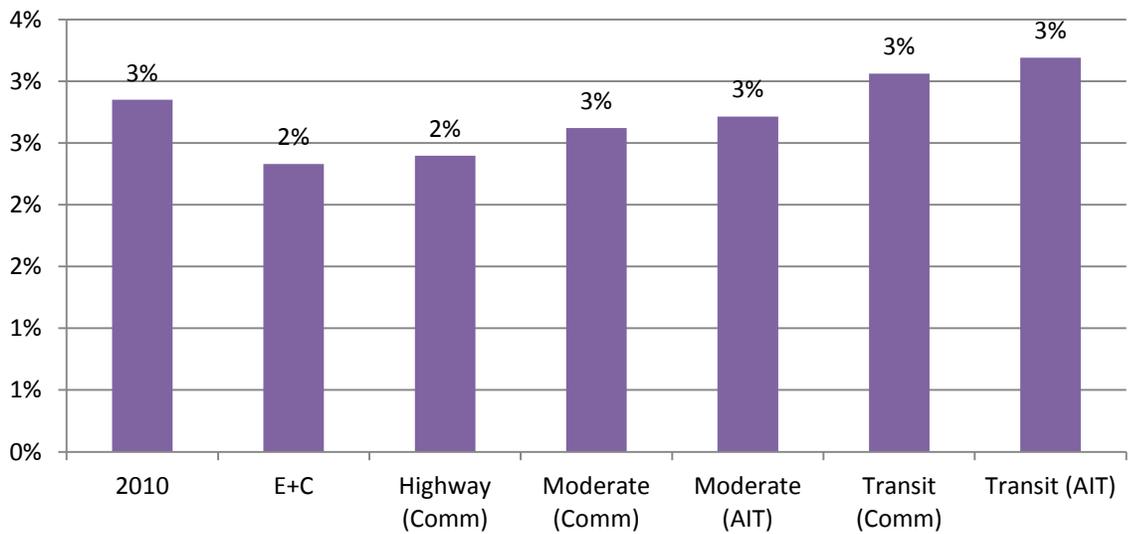
Percent SOV Trip Share (work trips)



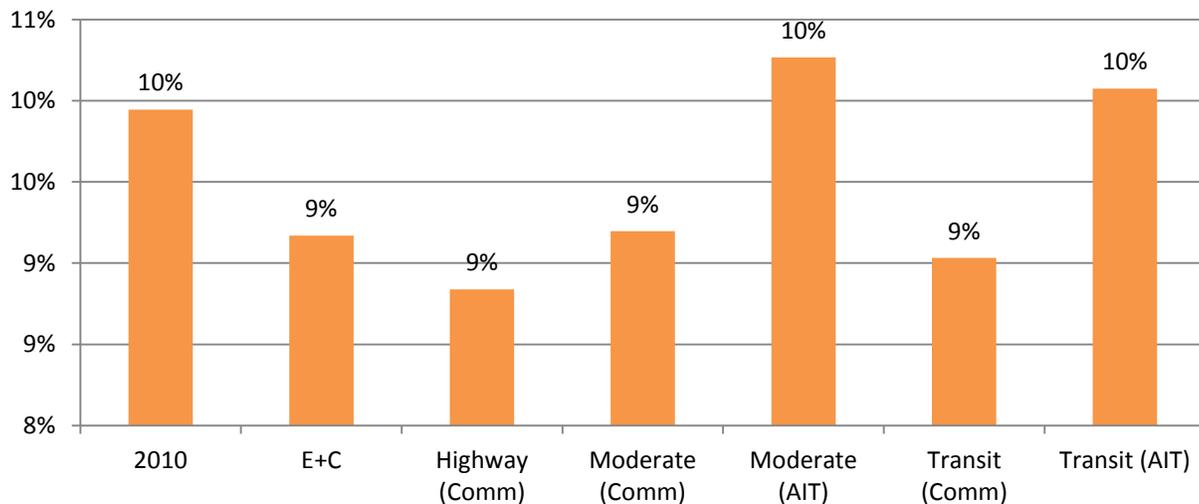
Transit Ridership



Transit Mode Share (daily)



Non-Motorized Trip Share (daily)



2040 MTP and CTP Alternatives – Travel Time

Purpose of Travel Time Measure

This measure calculates and compares the travel time between key activity centers in the Triangle for the afternoon peak period, which occurs from 3:30pm to 7:30pm. The six activity centers include:

- Downtown Durham
- Carrboro/Chapel Hill
- Downtown Hillsborough
- Research Triangle Park
- Downtown Raleigh, and
- Pittsboro

These centers attract a significant portion of the travel demand in the region and therefore the most important travel corridors are between these centers. The travel time impact that each Alternative has on these corridors indicates the effectiveness of that particular Alternative.

Presentation of Travel Time Measure

This section presents the travel time data by Alternative. A series of tables presents the travel time between the activity centers and then compares those values to the Existing plus Committed scenario (E+C). The E+C represents the no build alternative, and thus the comparison demonstrates how effective the particular Alternative reduces travel time from that worst case scenario. A map shows the travel time comparison, as well.

The first set of travel time tables and map show the 2010 and E+C scenario to help provide a baseline for comparison for the Alternatives.

Alternatives – Travel Time 2010 and E+C

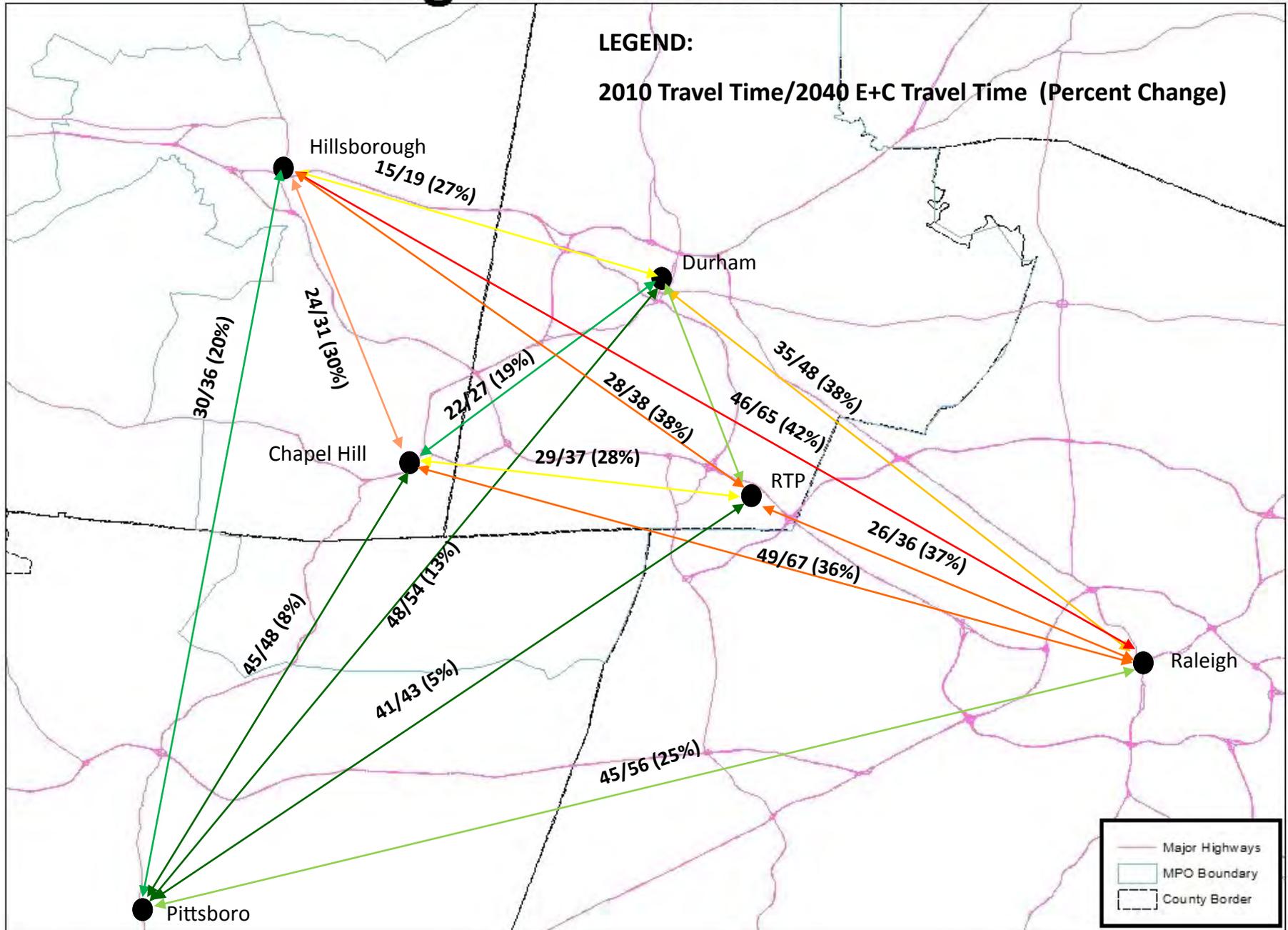
This series of tables compares the 2010 and E+C travel times. The E+C includes the 2040 population and employment with no improvements to the current transportation network. The comparison table (3rd) table shows the percent increase in travel time from 2010 to 2040, and shades the cells with an increasingly hot color as the percentage increases. Trips involving Raleigh and Hillsborough would experience the greatest percentage increase in trip time, while Pittsboro trips would experience the smallest percentage increase. These results reinforce the congestion maps that show the corridors between Raleigh and Hillsborough, such as I-40, US 70 and I-85, experiencing increasingly long delays.

| 2010 PM Peak Travel time (minutes) | | | | | | | | |
|---|--------------|-----------|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham | | 14 | 35 | 24 | 22 | 28 | 48 |
| | RTP | 16 | | 27 | 16 | 30 | 29 | 43 |
| | Raleigh | 35 | 25 | | 26 | 50 | 46 | 46 |
| | RDU | 23 | 14 | 27 | | 38 | 34 | 44 |
| | Chapel Hill | 22 | 28 | 49 | 38 | | 24 | 45 |
| | Hillsborough | 29 | 27 | 46 | 34 | 25 | | 31 |
| | Pittsboro | 48 | 39 | 44 | 42 | 44 | 29 | |

| E+C PM Peak Travel time (minutes) | | | | | | | | |
|--|--------------|-----------|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham | | 17 | 54 | 30 | 27 | 33 | 56 |
| | RTP | 20 | | 43 | 20 | 39 | 37 | 48 |
| | Raleigh | 43 | 29 | | 30 | 62 | 57 | 56 |
| | RDU | 28 | 15 | 40 | | 47 | 43 | 47 |
| | Chapel Hill | 26 | 35 | 72 | 48 | | 28 | 50 |
| | Hillsborough | 40 | 40 | 73 | 50 | 35 | | 41 |
| | Pittsboro | 51 | 39 | 56 | 43 | 46 | 31 | |

| Compare 2010 and E+C: PM Peak Travel time (percent increase) | | | | | | | | |
|---|--------------|-----------|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham | | 23% | 54% | 28% | 20% | 16% | 17% |
| | RTP | 27% | | 58% | 23% | 29% | 27% | 11% |
| | Raleigh | 23% | 15% | | 14% | 25% | 24% | 22% |
| | RDU | 22% | 8% | 49% | | 26% | 24% | 6% |
| | Chapel Hill | 18% | 26% | 47% | 29% | | 18% | 12% |
| | Hillsborough | 39% | 49% | 60% | 45% | 41% | | 34% |
| | Pittsboro | 8% | -1% | 28% | 1% | 4% | 6% | |

Regional Travel Time In Minutes



(based on afternoon peak travel time)

Alternatives – Travel Time

Highway Intensive/CommPlan

This series of tables uses the 2040 Highway Intensive transportation network with the Community Plan land use scenario to create an Alternative for comparison with the E+C travel times. The comparison table (3rd) table shows that trips to Raleigh and Chapel Hill, and trips from the RTP would experience the greatest percentage decrease in trip time (i.e., green shaded cells). The high level of existing and forecasted congestion and the concentration of highway improvements in the plan for these corridors produce these results.

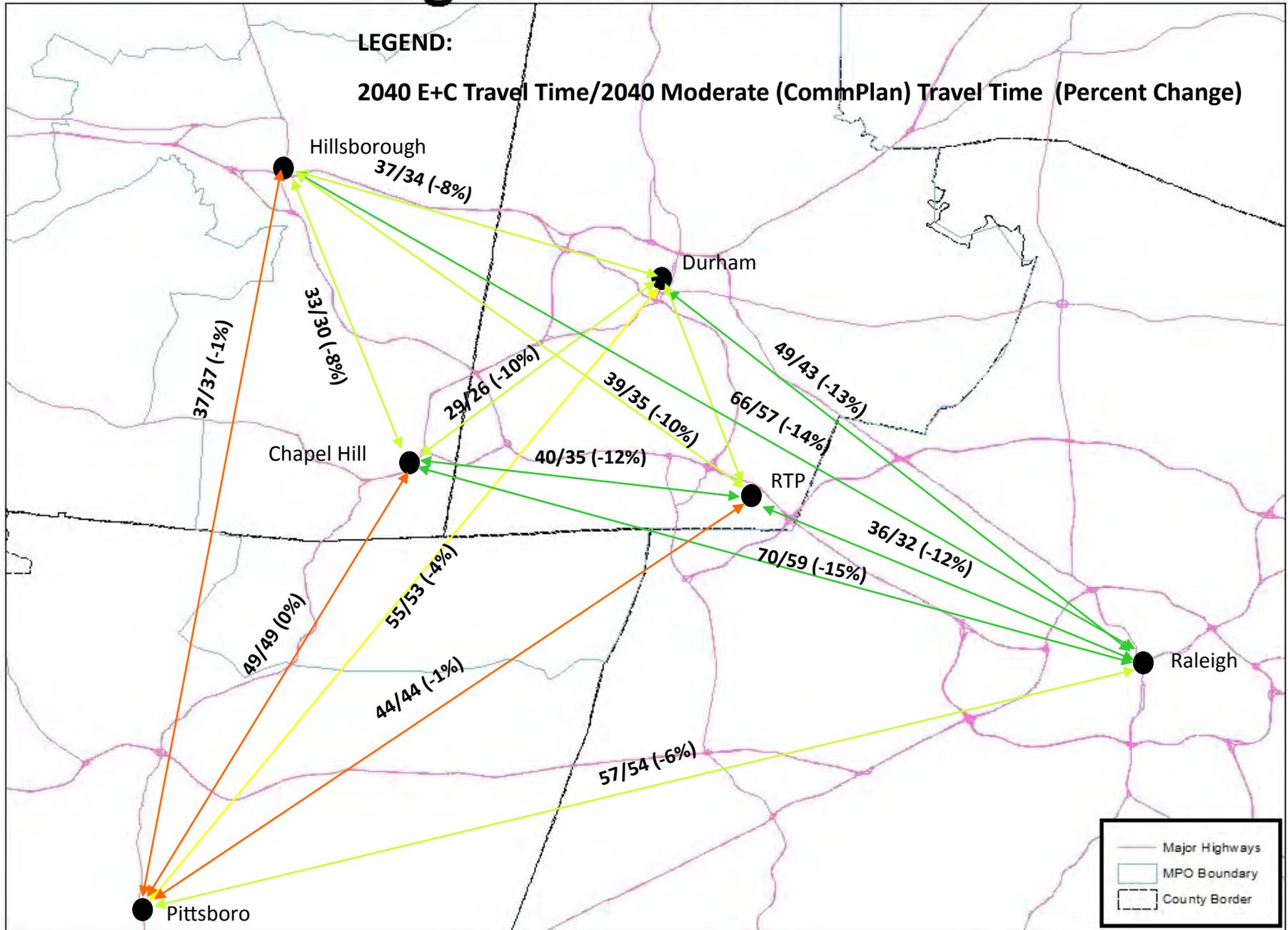
| E+C | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
|----------|--------------|--|------|---------|------|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 17 | 54 | 30 | 29 | 33 | 58 |
| | RTP | 21 | | 43 | 20 | 42 | 38 | 49 |
| | Raleigh DT | 44 | 29 | | 30 | 65 | 59 | 58 |
| | RDU | 29 | 15 | 40 | | 51 | 44 | 48 |
| | Chapel Hill | 28 | 37 | 74 | 50 | | 29 | 51 |
| | Hillsborough | 41 | 41 | 74 | 51 | 37 | | 43 |
| | Pittsboro | 52 | 39 | 57 | 44 | 47 | 32 | |
| | | | | | | | | |
| Hwy Int. | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 14 | 41 | 25 | 24 | 30 | 49 |
| | RTP | 16 | | 34 | 18 | 32 | 31 | 43 |
| | Raleigh DT | 37 | 28 | | 29 | 53 | 50 | 52 |
| | RDU | 23 | 14 | 32 | | 39 | 36 | 44 |
| | Chapel Hill | 25 | 31 | 58 | 41 | | 27 | 49 |
| | Hillsborough | 35 | 34 | 58 | 42 | 31 | | 38 |
| | Pittsboro | 46 | 38 | 48 | 42 | 48 | 32 | |
| | | | | | | | | |
| | | Compare E + C and Highway Intensive PM Peak Travel Time (percent increase) | | | | | | |
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | -18% | -24% | -17% | -18% | -10% | -15% |
| | RTP | -24% | | -22% | -10% | -24% | -18% | -12% |
| | Raleigh DT | -16% | -5% | | -3% | -18% | -15% | -10% |
| | RDU | -20% | -2% | -20% | | -22% | -17% | -9% |
| | Chapel Hill | -12% | -17% | -22% | -18% | | -5% | -4% |
| | Hillsborough | -15% | -17% | -23% | -17% | -15% | | -12% |
| | Pittsboro | -12% | -2% | -15% | -3% | 2% | -1% | |
| | | | | | | | | |

Alternatives – Travel Time Moderate/CommPlan

This series of tables has the 2040 Moderate transportation network that uses the Community Plan land use scenario Alternative in a comparison with the E+C travel times.

| E+C | | PM Peak Travel time (w/ Terminal Time) | | | | | | | |
|--------|--------------|--|-----|---------|------|-------------|--------------|-----------|--|
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | 17 | 54 | 30 | 29 | 33 | 58 | |
| | RTP | 21 | | 43 | 20 | 42 | 38 | 49 | |
| | Raleigh DT | 44 | 29 | | 30 | 65 | 59 | 58 | |
| | RDU | 29 | 15 | 40 | | 51 | 44 | 48 | |
| | Chapel Hill | 28 | 37 | 74 | 50 | | 29 | 51 | |
| | Hillsborough | 41 | 41 | 74 | 51 | 37 | | 43 | |
| | Pittsboro | 52 | 39 | 57 | 44 | 47 | 32 | | |
| | | | | | | | | | |
| ModCom | | PM Peak Travel time (w/ Terminal Time) | | | | | | | |
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | 17 | 45 | 29 | 25 | 31 | 56 | |
| | RTP | 18 | | 35 | 19 | 36 | 33 | 48 | |
| | Raleigh DT | 40 | 29 | | 30 | 57 | 53 | 56 | |
| | RDU | 25 | 14 | 33 | | 42 | 39 | 47 | |
| | Chapel Hill | 26 | 34 | 61 | 45 | | 28 | 50 | |
| | Hillsborough | 37 | 37 | 62 | 45 | 32 | | 42 | |
| | Pittsboro | 50 | 40 | 51 | 43 | 48 | 32 | | |
| | | | | | | | | | |
| | | Compare E + C and Moderate (Comm) PM Peak Travel Time (percent increase) | | | | | | | |
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | -3% | -17% | -6% | -13% | -6% | -3% | |
| | RTP | -14% | | -19% | -6% | -16% | -12% | -3% | |
| | Raleigh DT | -8% | -2% | | 0% | -14% | -9% | -3% | |
| | RDU | -13% | -1% | -18% | | -16% | -11% | -3% | |
| | Chapel Hill | -7% | -7% | -17% | -11% | | -4% | -1% | |
| | Hillsborough | -9% | -9% | -17% | -10% | -11% | | -3% | |
| | Pittsboro | -5% | 1% | -9% | -1% | 2% | 1% | | |
| | | | | | | | | | |

Regional Travel Time In Minutes



(based on afternoon peak travel time)

Alternatives – Travel Time

Moderate/All-in-Transit

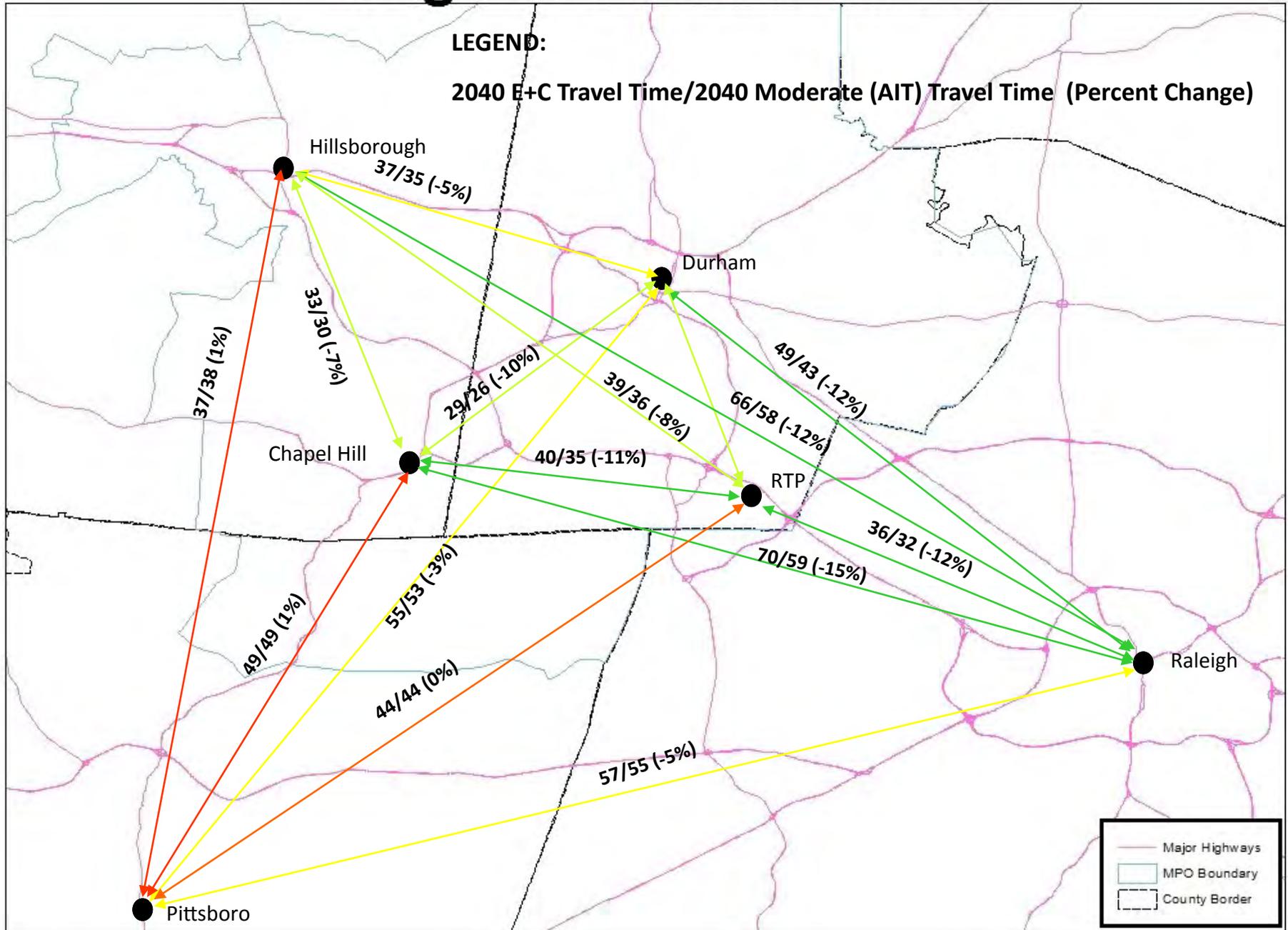
This series of tables has the 2040 Moderate transportation network that uses the All-in-Transit land use scenario Alternative in a comparison with the E+C travel times.

| E+C | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
|------|--------------|--|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 17 | 54 | 30 | 29 | 33 | 58 |
| | RTP | 21 | | 43 | 20 | 42 | 38 | 49 |
| | Raleigh DT | 44 | 29 | | 30 | 65 | 59 | 58 |
| | RDU | 29 | 15 | 40 | | 51 | 44 | 48 |
| | Chapel Hill | 28 | 37 | 74 | 50 | | 29 | 51 |
| | Hillsborough | 41 | 41 | 74 | 51 | 37 | | 43 |
| | Pittsboro | 52 | 39 | 57 | 44 | 47 | 32 | |

| ModAIT | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
|--------|--------------|--|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 17 | 46 | 29 | 26 | 32 | 57 |
| | RTP | 17 | | 35 | 19 | 36 | 34 | 48 |
| | Raleigh DT | 40 | 29 | | 30 | 57 | 53 | 57 |
| | RDU | 25 | 15 | 33 | | 43 | 39 | 47 |
| | Chapel Hill | 26 | 35 | 62 | 46 | | 28 | 51 |
| | Hillsborough | 38 | 38 | 63 | 47 | 33 | | 43 |
| | Pittsboro | 50 | 40 | 52 | 44 | 48 | 32 | |

| | | Compare E + C and Moderate (Comm) PM Peak Travel Time (percent increase) | | | | | | |
|------|--------------|--|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 1% | -15% | -5% | -12% | -3% | -1% |
| | RTP | -16% | | -19% | -5% | -16% | -10% | -2% |
| | Raleigh DT | -9% | -2% | | -1% | -13% | -9% | -2% |
| | RDU | -13% | 0% | -17% | | -16% | -10% | -1% |
| | Chapel Hill | -7% | -5% | -16% | -9% | | -3% | 0% |
| | Hillsborough | -7% | -6% | -15% | -8% | -10% | | -1% |
| | Pittsboro | -5% | 1% | -8% | 0% | 2% | 2% | |

Regional Travel Time In Minutes



(based on afternoon peak travel time)

Alternatives – Travel Time

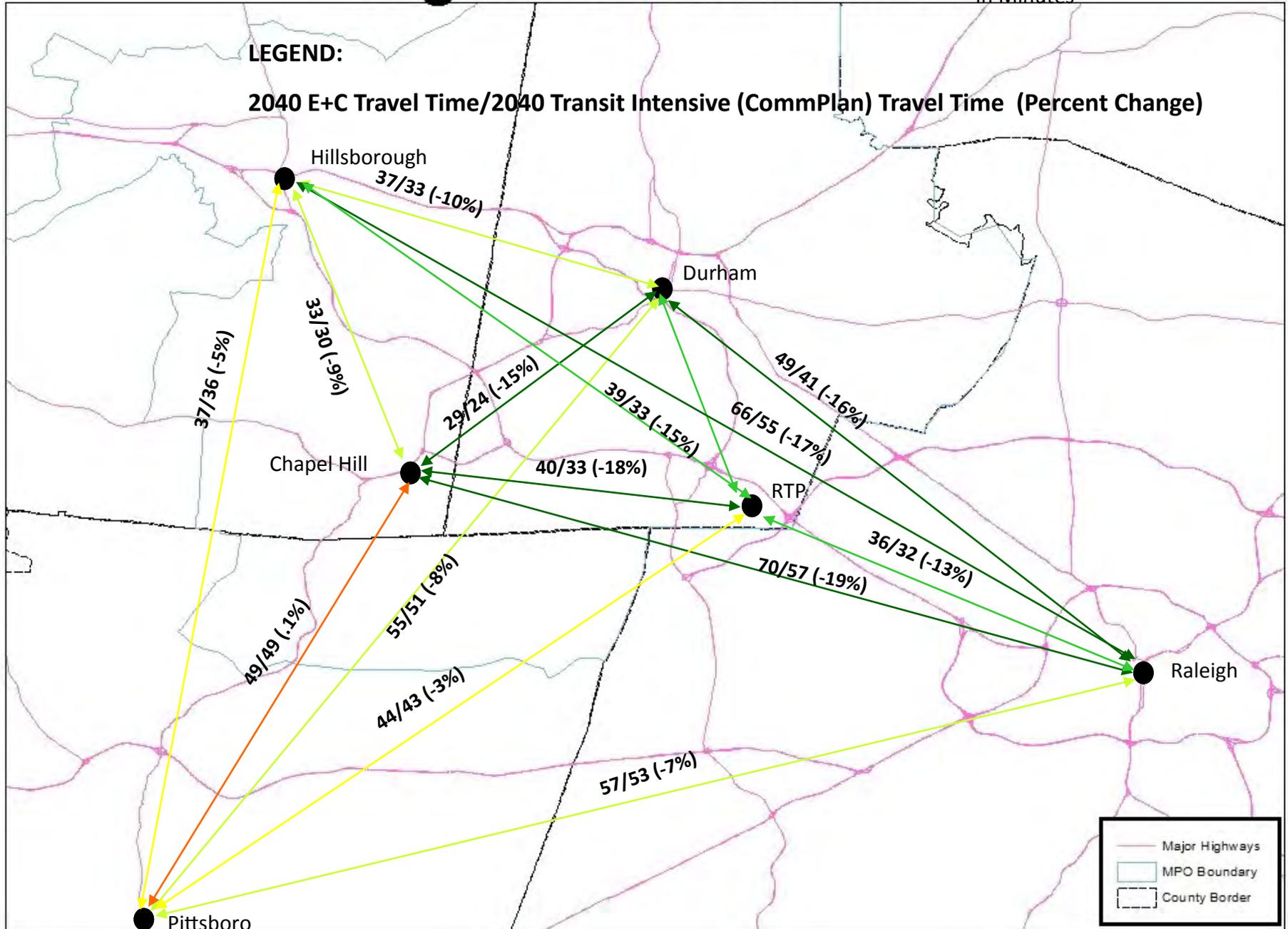
Transit Intensive/CommPlan

This series of tables has the 2040 Transit Intensive transportation network that uses the Community Plan land use scenario Alternative in a comparison with the E+C travel times.

| E+C | | PM Peak Travel time (w/ Terminal Time) | | | | | | | |
|-----------|--------------|--|------|---------|------|-------------|--------------|-----------|--|
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | 17 | 54 | 30 | 29 | 33 | 58 | |
| | RTP | 21 | | 43 | 20 | 42 | 38 | 49 | |
| | Raleigh DT | 44 | 29 | | 30 | 65 | 59 | 58 | |
| | RDU | 29 | 15 | 40 | | 51 | 44 | 48 | |
| | Chapel Hill | 28 | 37 | 74 | 50 | | 29 | 51 | |
| | Hillsborough | 41 | 41 | 74 | 51 | 37 | | 43 | |
| | Pittsboro | 52 | 39 | 57 | 44 | 47 | 32 | | |
| | | | | | | | | | |
| TransComm | | PM Peak Travel time (w/ Terminal Time) | | | | | | | |
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | 15 | 43 | 27 | 24 | 31 | 54 | |
| | RTP | 17 | | 35 | 18 | 33 | 32 | 47 | |
| | Raleigh DT | 39 | 29 | | 30 | 55 | 52 | 56 | |
| | RDU | 24 | 14 | 33 | | 40 | 37 | 47 | |
| | Chapel Hill | 25 | 32 | 58 | 42 | | 28 | 50 | |
| | Hillsborough | 36 | 34 | 59 | 43 | 32 | | 40 | |
| | Pittsboro | 48 | 39 | 51 | 43 | 47 | 32 | | |
| | | | | | | | | | |
| | | Compare E + C and Moderate (Comm) PM Peak Travel Time (percent increase) | | | | | | | |
| | | To | | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro | |
| From | Durham DT | | -11% | -20% | -12% | -17% | -8% | -7% | |
| | RTP | -19% | | -20% | -8% | -21% | -16% | -5% | |
| | Raleigh DT | -11% | -2% | | 0% | -16% | -12% | -4% | |
| | RDU | -16% | -2% | -18% | | -21% | -15% | -3% | |
| | Chapel Hill | -12% | -14% | -21% | -16% | | -3% | -3% | |
| | Hillsborough | -12% | -15% | -21% | -16% | -13% | | -8% | |
| | Pittsboro | -8% | -1% | -10% | -2% | 2% | 0% | | |
| | | | | | | | | | |

Regional Travel Time

In Minutes



(based on afternoon peak travel time)

Alternatives – Travel Time

Transit Intensive/All-in-Transit

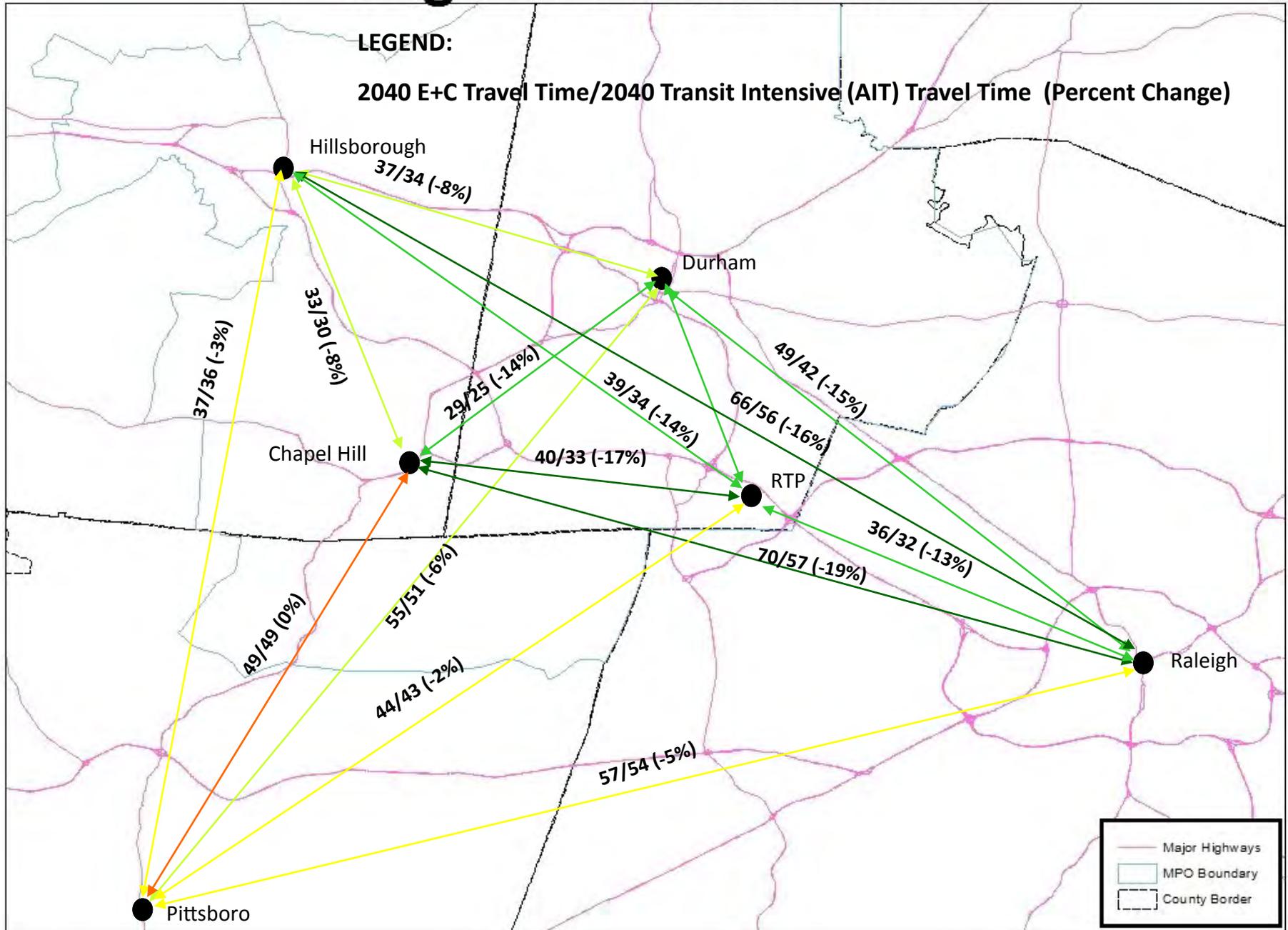
This series of tables has the 2040 Transit Intensive transportation network that uses the All-in-Transit land use scenario Alternative in a comparison with the E+C travel times.

| E+C | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
|------|--------------|--|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 17 | 54 | 30 | 29 | 33 | 58 |
| | RTP | 21 | | 43 | 20 | 42 | 38 | 49 |
| | Raleigh DT | 44 | 29 | | 30 | 65 | 59 | 58 |
| | RDU | 29 | 15 | 40 | | 51 | 44 | 48 |
| | Chapel Hill | 28 | 37 | 74 | 50 | | 29 | 51 |
| | Hillsborough | 41 | 41 | 74 | 51 | 37 | | 43 |
| | Pittsboro | 52 | 39 | 57 | 44 | 47 | 32 | |

| Transit/AIT | | PM Peak Travel time (w/ Terminal Time) | | | | | | |
|-------------|--------------|--|-----|---------|-----|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | 16 | 44 | 28 | 25 | 32 | 55 |
| | RTP | 17 | | 35 | 18 | 33 | 32 | 47 |
| | Raleigh DT | 39 | 29 | | 30 | 55 | 52 | 57 |
| | RDU | 24 | 15 | 33 | | 40 | 38 | 47 |
| | Chapel Hill | 25 | 32 | 59 | 42 | | 28 | 50 |
| | Hillsborough | 36 | 35 | 60 | 43 | 32 | | 40 |
| | Pittsboro | 48 | 39 | 52 | 43 | 47 | 32 | |

| | | Compare E + C and Moderate (Comm) PM Peak Travel Time (percent increase) | | | | | | |
|------|--------------|--|------|---------|------|-------------|--------------|-----------|
| | | To | | | | | | |
| | | Durham | RTP | Raleigh | RDU | Chapel Hill | Hillsborough | Pittsboro |
| From | Durham DT | | -7% | -18% | -10% | -16% | -5% | -5% |
| | RTP | -19% | | -20% | -7% | -21% | -15% | -4% |
| | Raleigh DT | -11% | -2% | | 0% | -16% | -11% | -2% |
| | RDU | -16% | 0% | -17% | | -21% | -13% | -2% |
| | Chapel Hill | -12% | -12% | -21% | -16% | | -3% | -2% |
| | Hillsborough | -10% | -14% | -20% | -14% | -12% | | -6% |
| | Pittsboro | -8% | 0% | -9% | -1% | 2% | 0% | |

Regional Travel Time In Minutes



(based on afternoon peak travel time)

2040 MTP and CTP Alternatives – Isochrones

Purpose of Isochrone Maps

Isochrone travel maps connect the points that have the same travel time from a specified center. They resemble contour maps. They are useful for illustrating the mobility from a specified center and for showing the labor, retail, residential and other markets in terms of travel time. These maps are based the average travel time for the afternoon peak period, which occurs from 3:30pm to 7:30pm. The four specified locations and presentation order are:

- Downtown Durham
- Carrboro/Chapel Hill
- Research Triangle Park, and
- Downtown Raleigh

These centers attract a significant portion of the travel demand in the region. Therefore, it is important to understand the impact that each Alternative has on the travel markets for these centers.

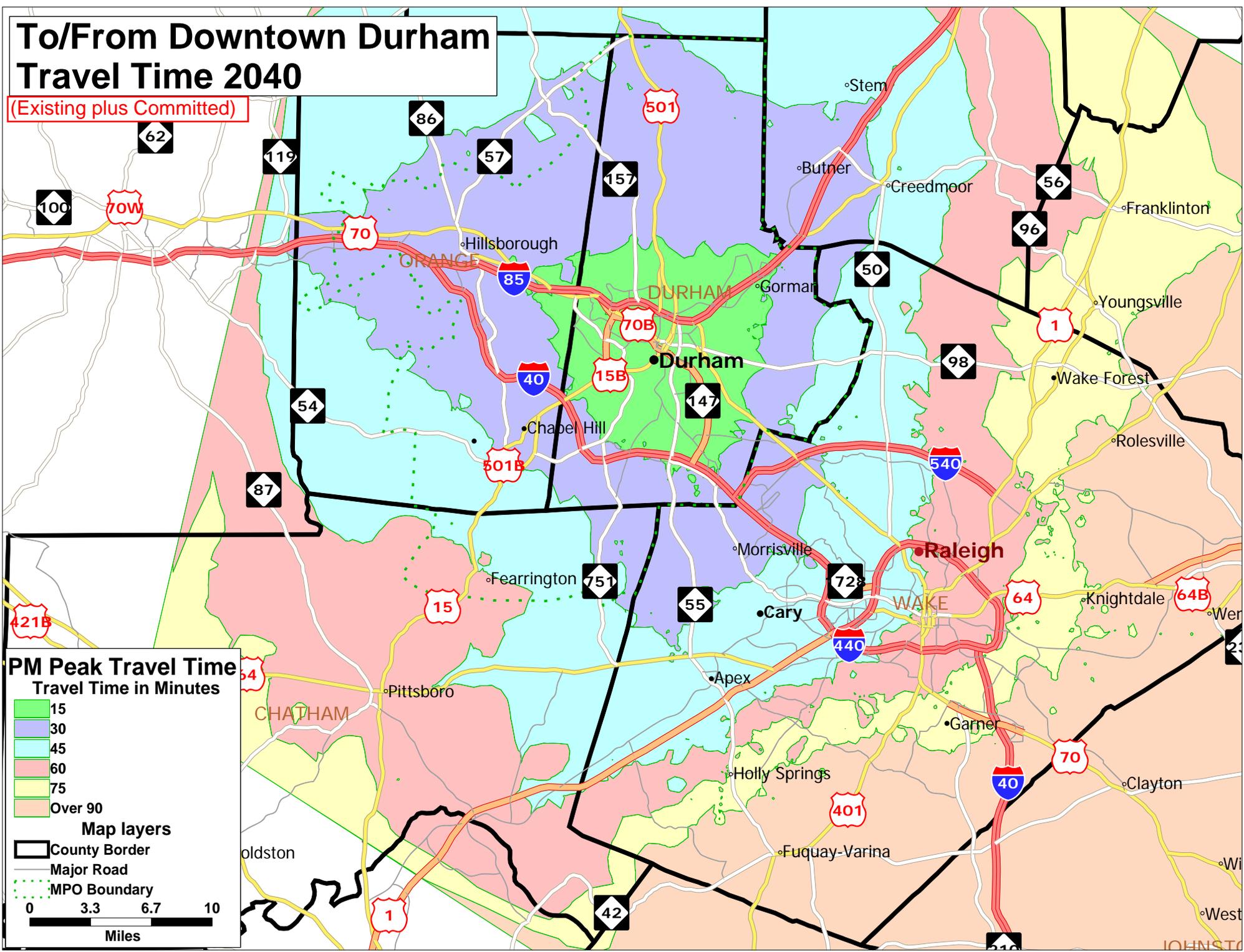
Presentation of Travel Time Measure

This section presents the set of four Isochrone maps by Alternative in the following order:

- E+C
- Highway Intensive/CommPlan
- Moderate/CommPlan
- Moderate/All-in-Transit
- Transit Intensive/CommPlan (will be added by 8/24/12)
- Transit Intensive/All-in-Transit

To/From Downtown Durham Travel Time 2040

(Existing plus Committed)



PM Peak Travel Time
Travel Time in Minutes

| | |
|------------|---------|
| Green | 15 |
| Light Blue | 30 |
| Cyan | 45 |
| Pink | 60 |
| Yellow | 75 |
| Orange | Over 90 |

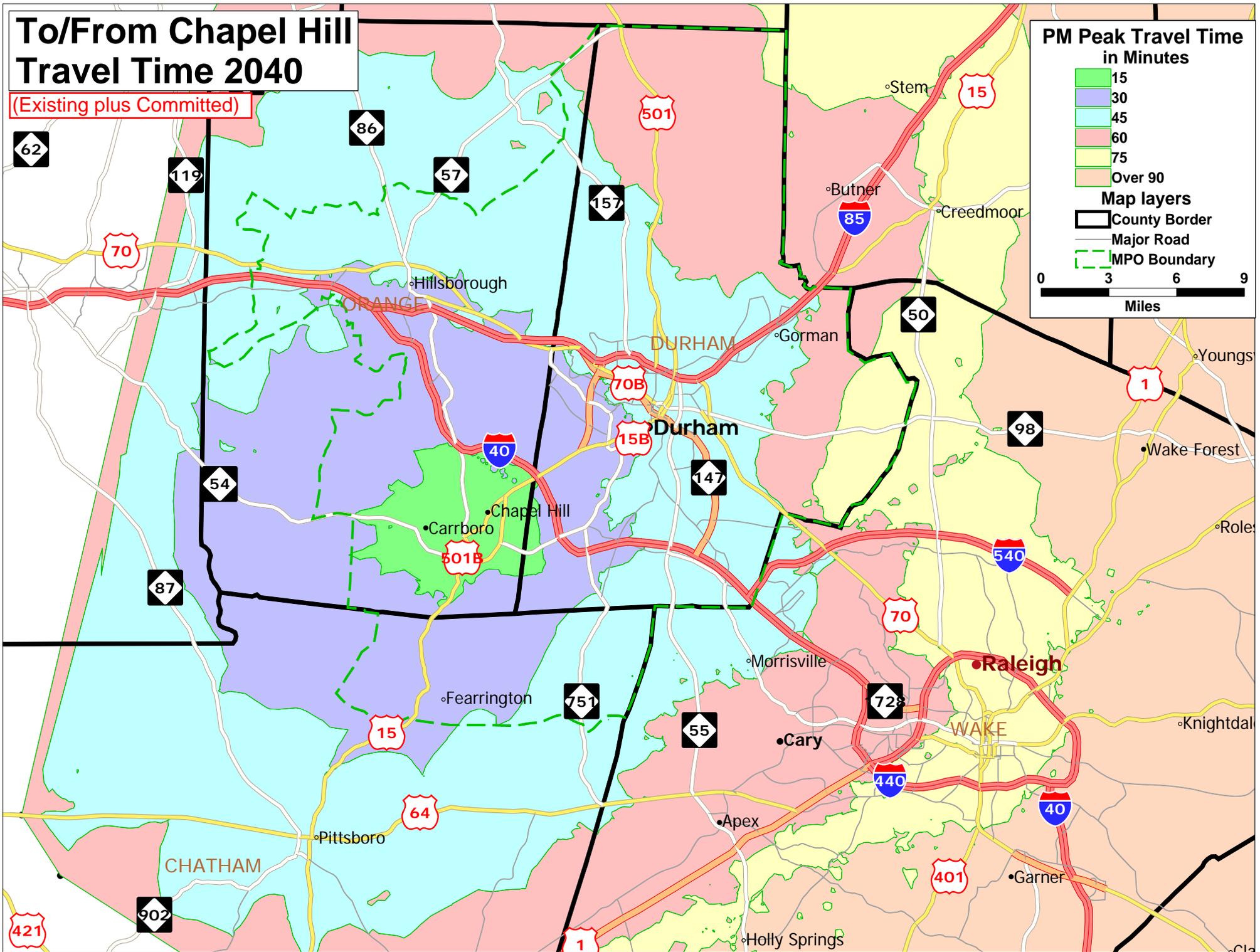
Map layers

- County Border
- Major Road
- MPO Boundary

0 3.3 6.7 10
Miles

To/From Chapel Hill Travel Time 2040

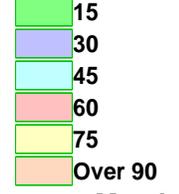
(Existing plus Committed)



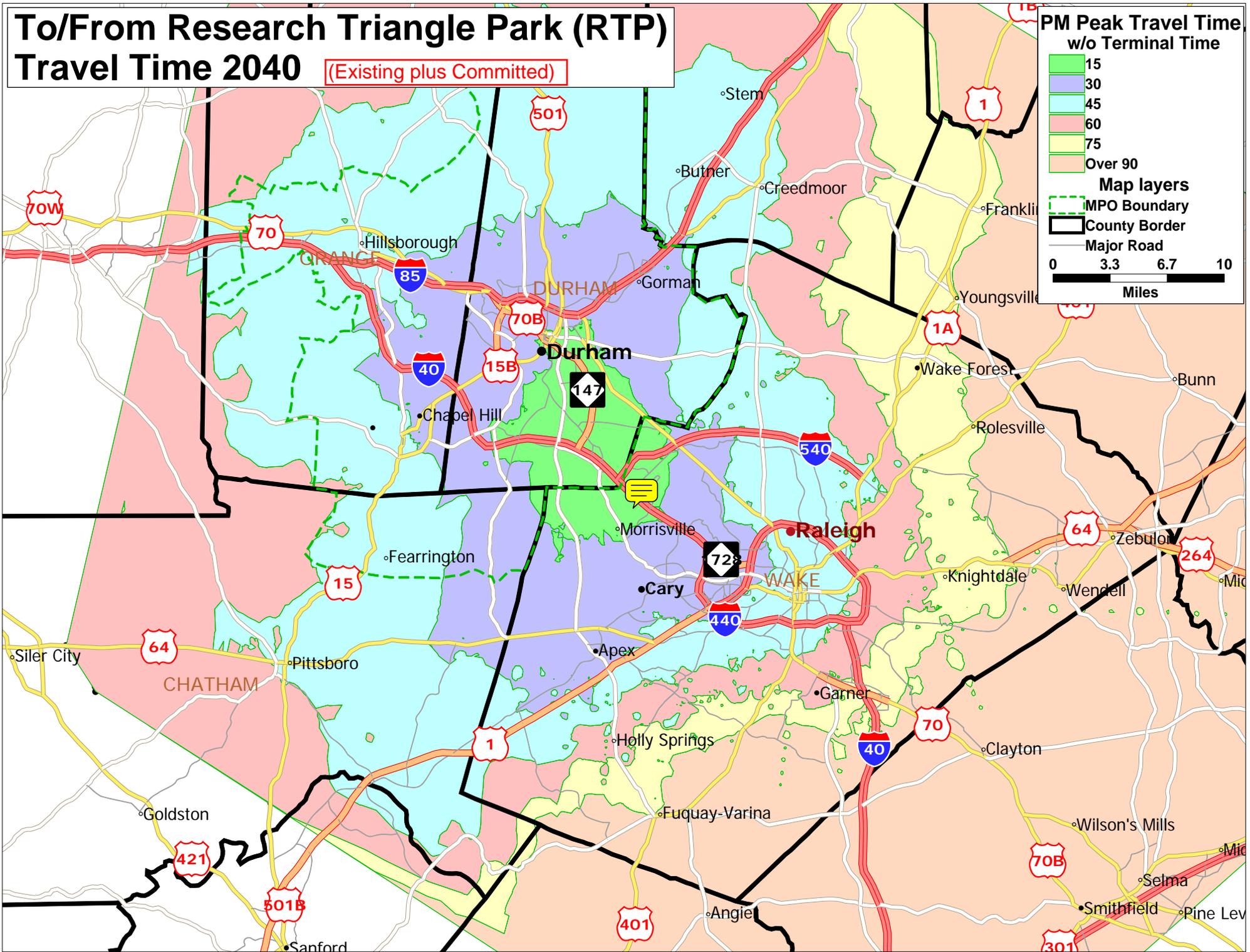
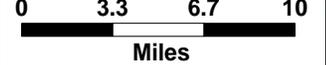
To/From Research Triangle Park (RTP) Travel Time 2040

(Existing plus Committed)

PM Peak Travel Time
w/o Terminal Time

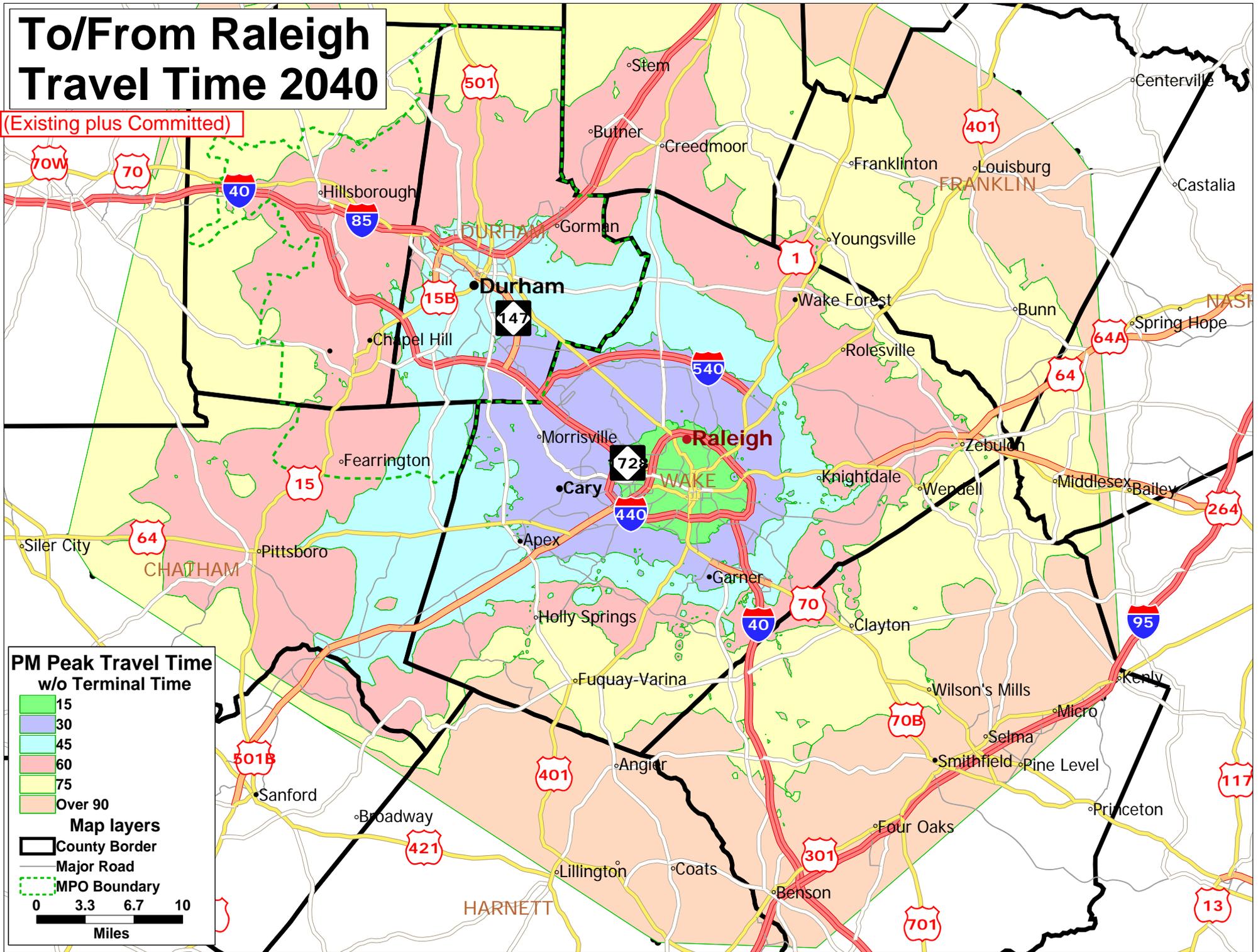


Map layers
 - MPO Boundary (dashed green line)
 - County Border (thick black line)
 - Major Road (thin white line)



To/From Raleigh Travel Time 2040

(Existing plus Committed)



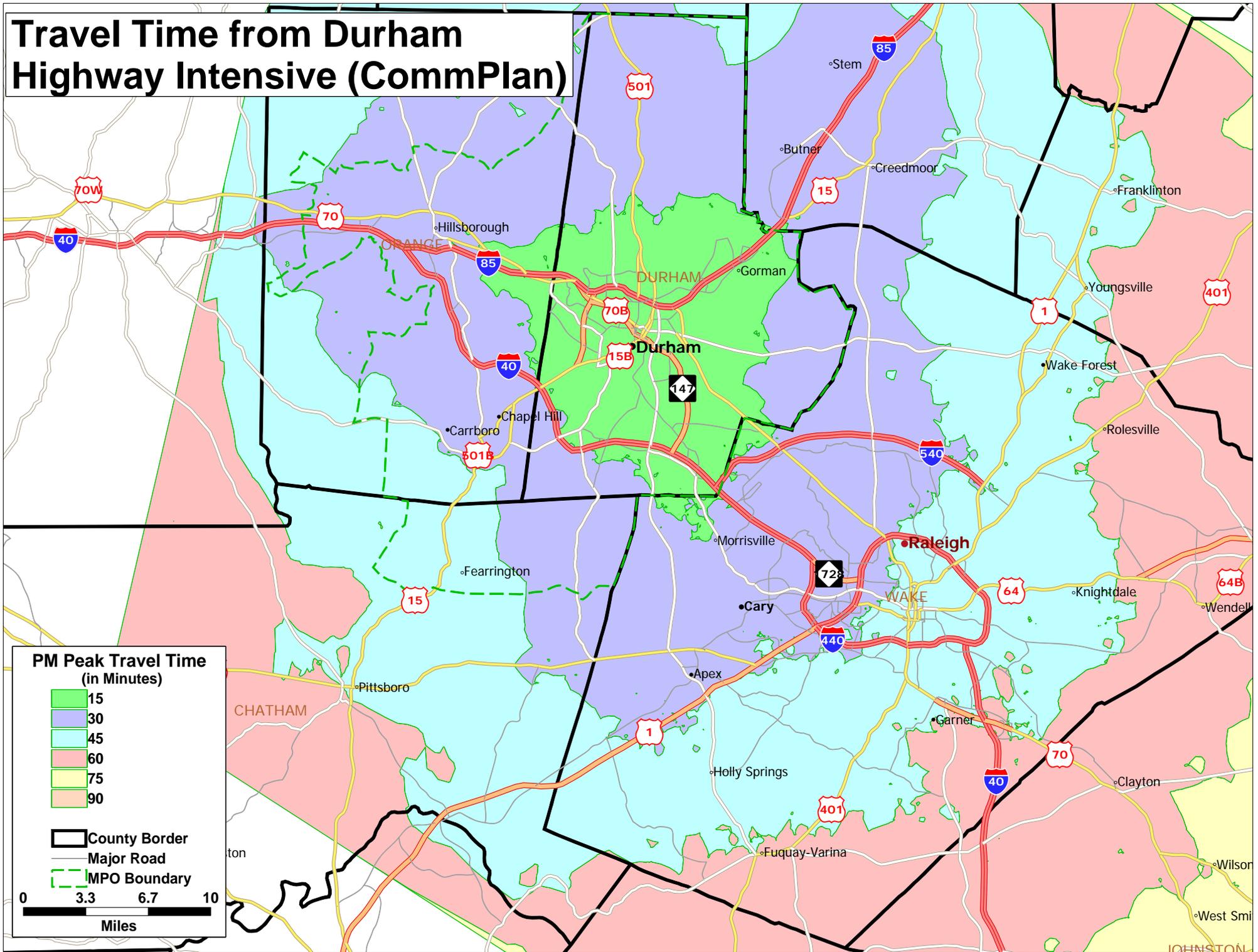
PM Peak Travel Time w/o Terminal Time

- 15
- 30
- 45
- 60
- 75
- Over 90

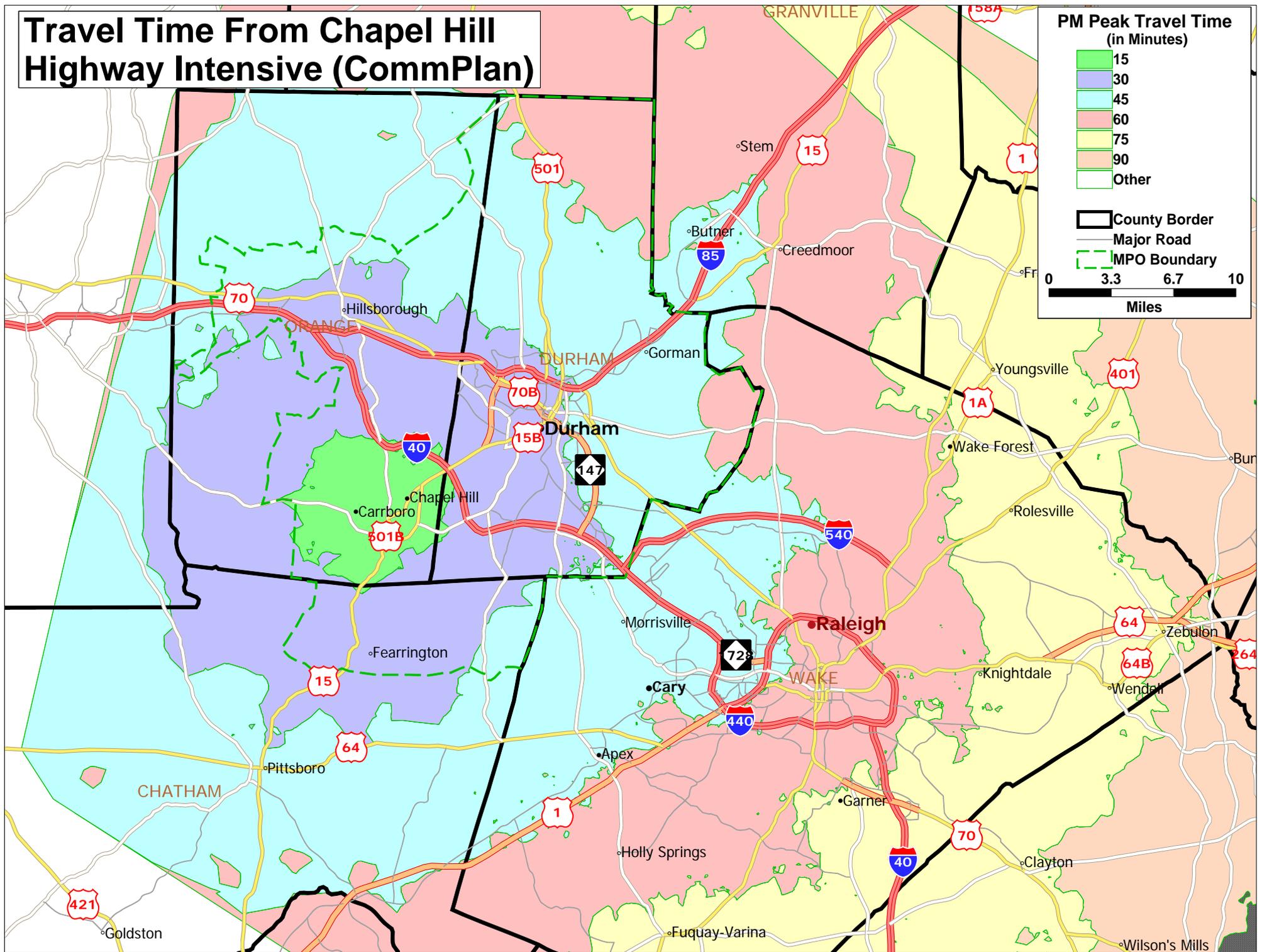
Map layers

- County Border
 - Major Road
 - MPO Boundary
- 0 3.3 6.7 10
Miles

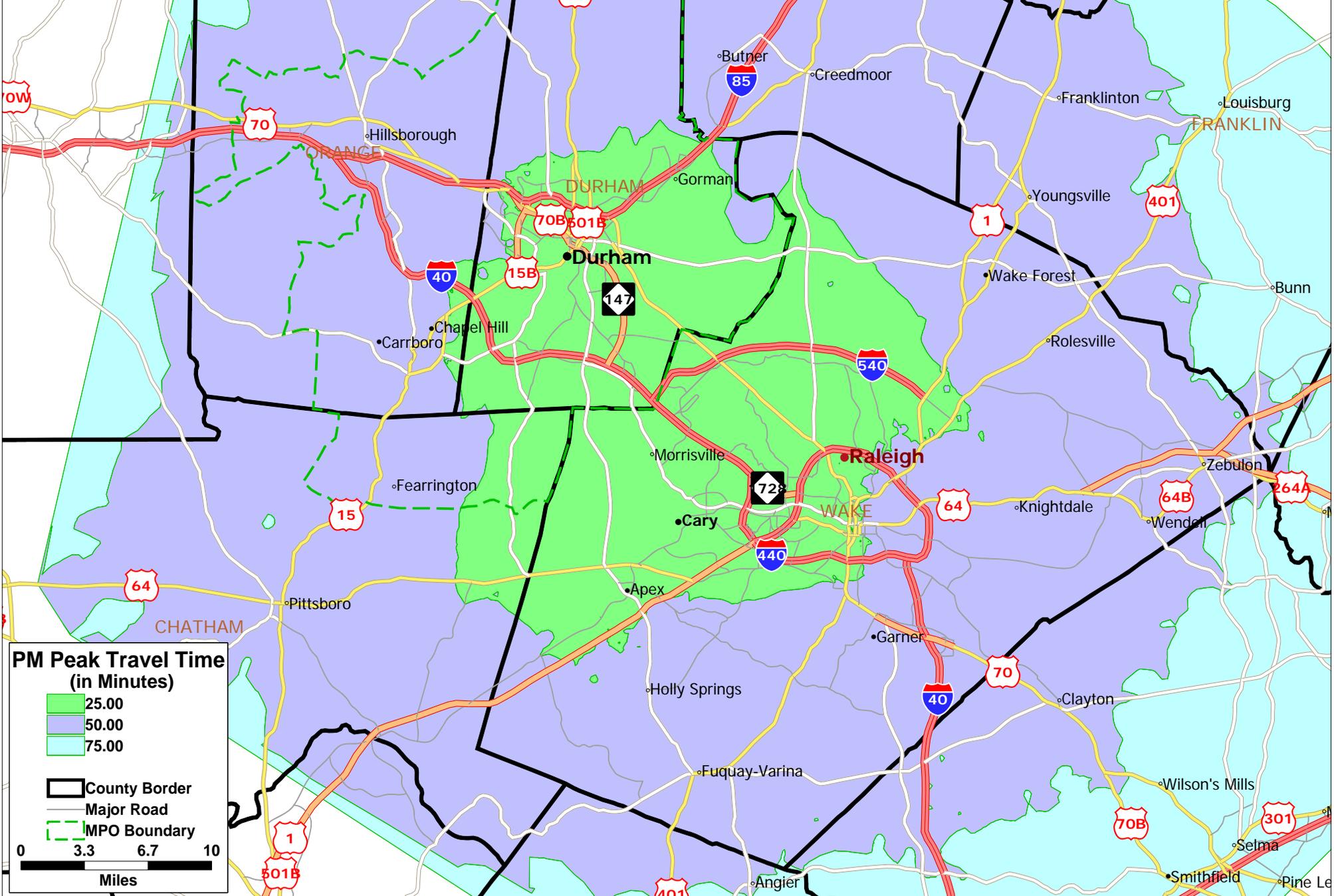
Travel Time from Durham Highway Intensive (CommPlan)



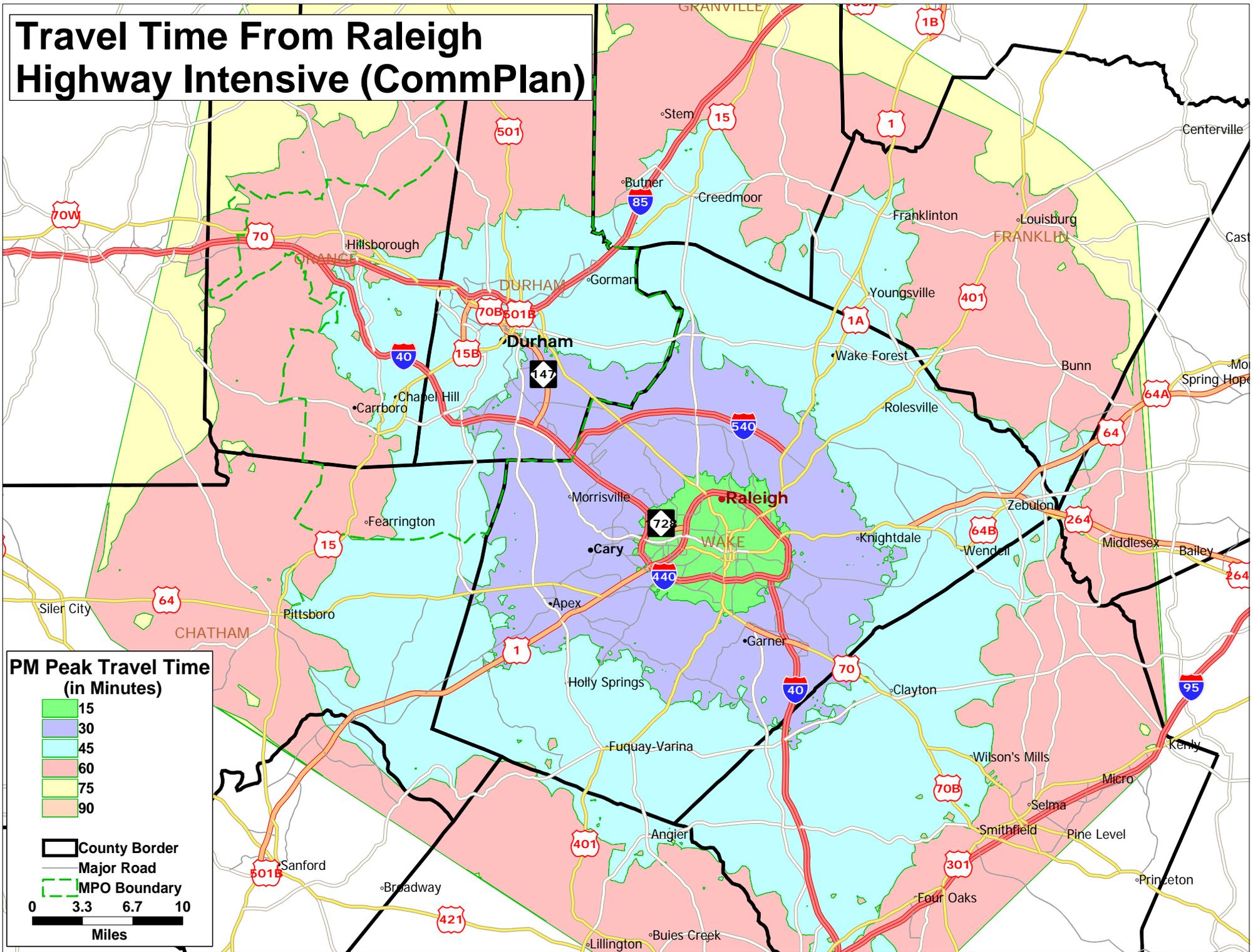
Travel Time From Chapel Hill Highway Intensive (CommPlan)



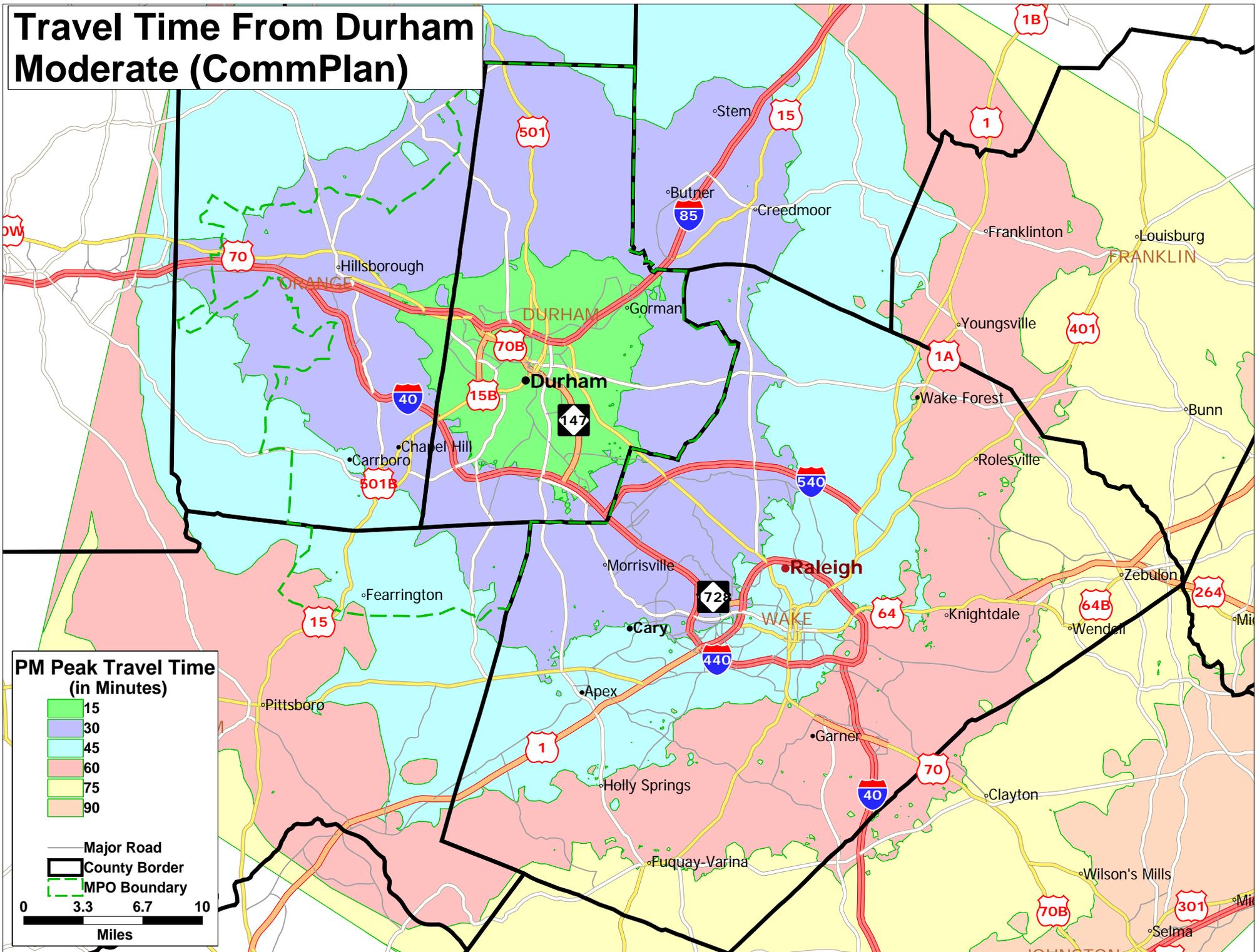
Travel Time From RTP Highway Intensive (CommPlan)



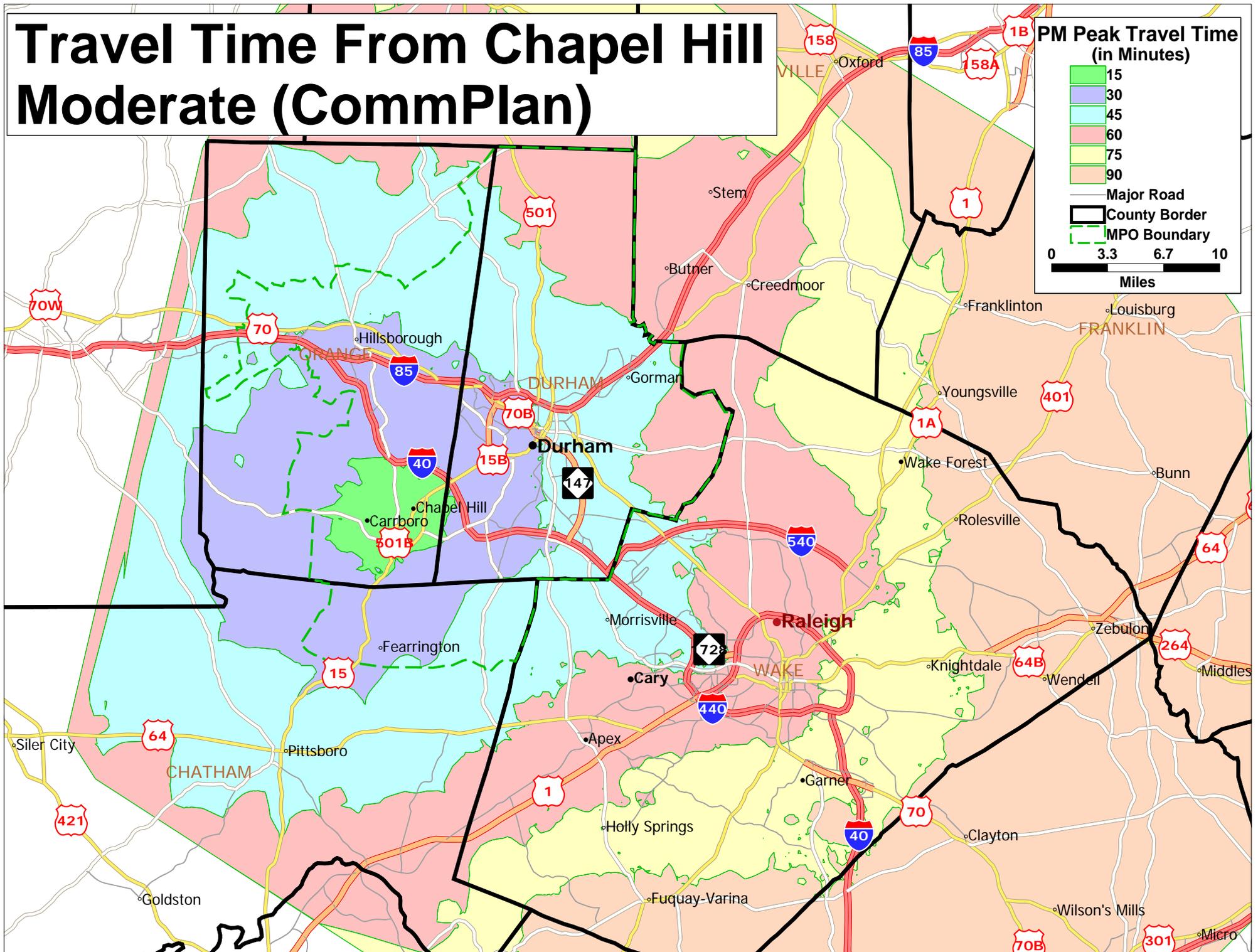
Travel Time From Raleigh Highway Intensive (CommPlan)



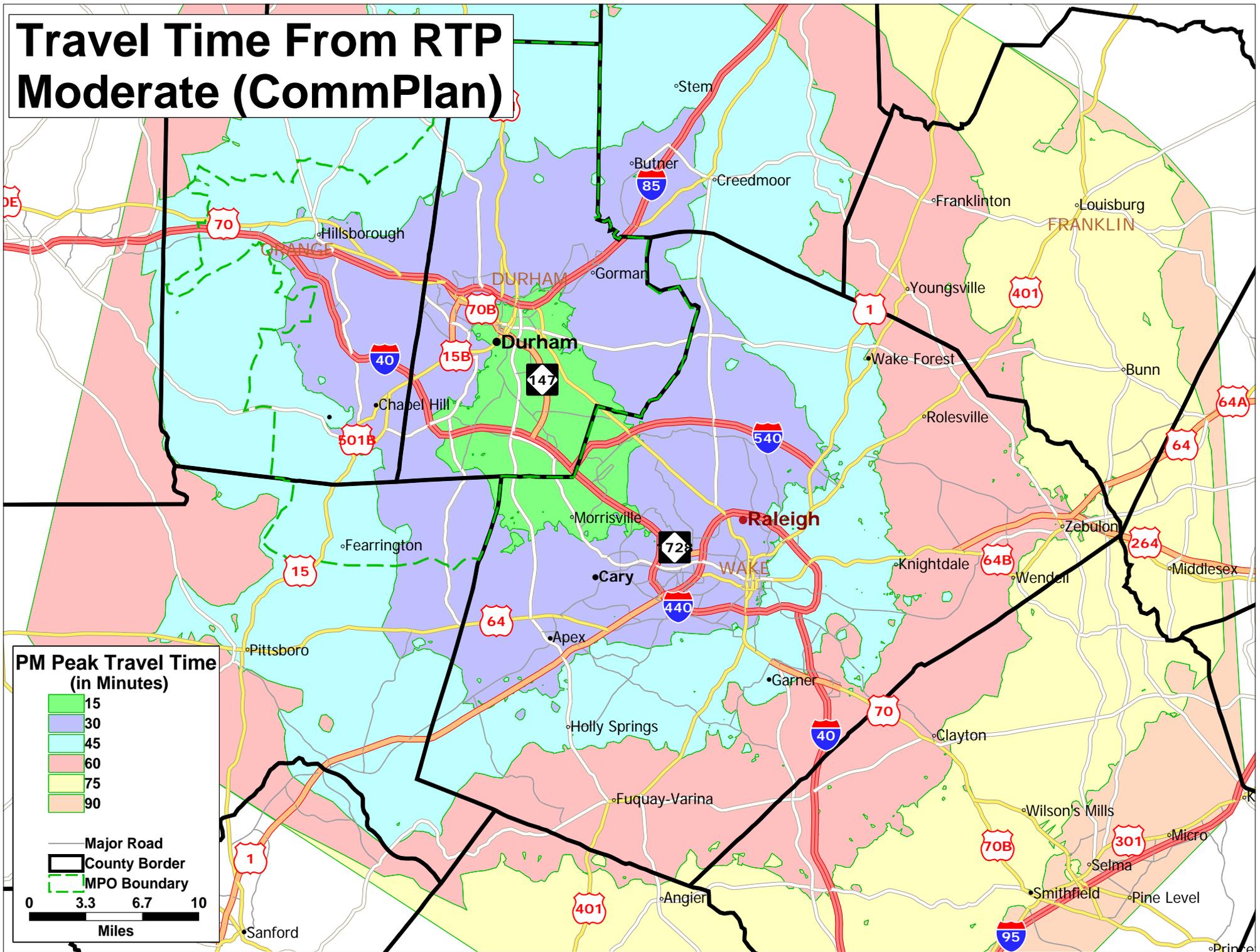
Travel Time From Durham Moderate (CommPlan)



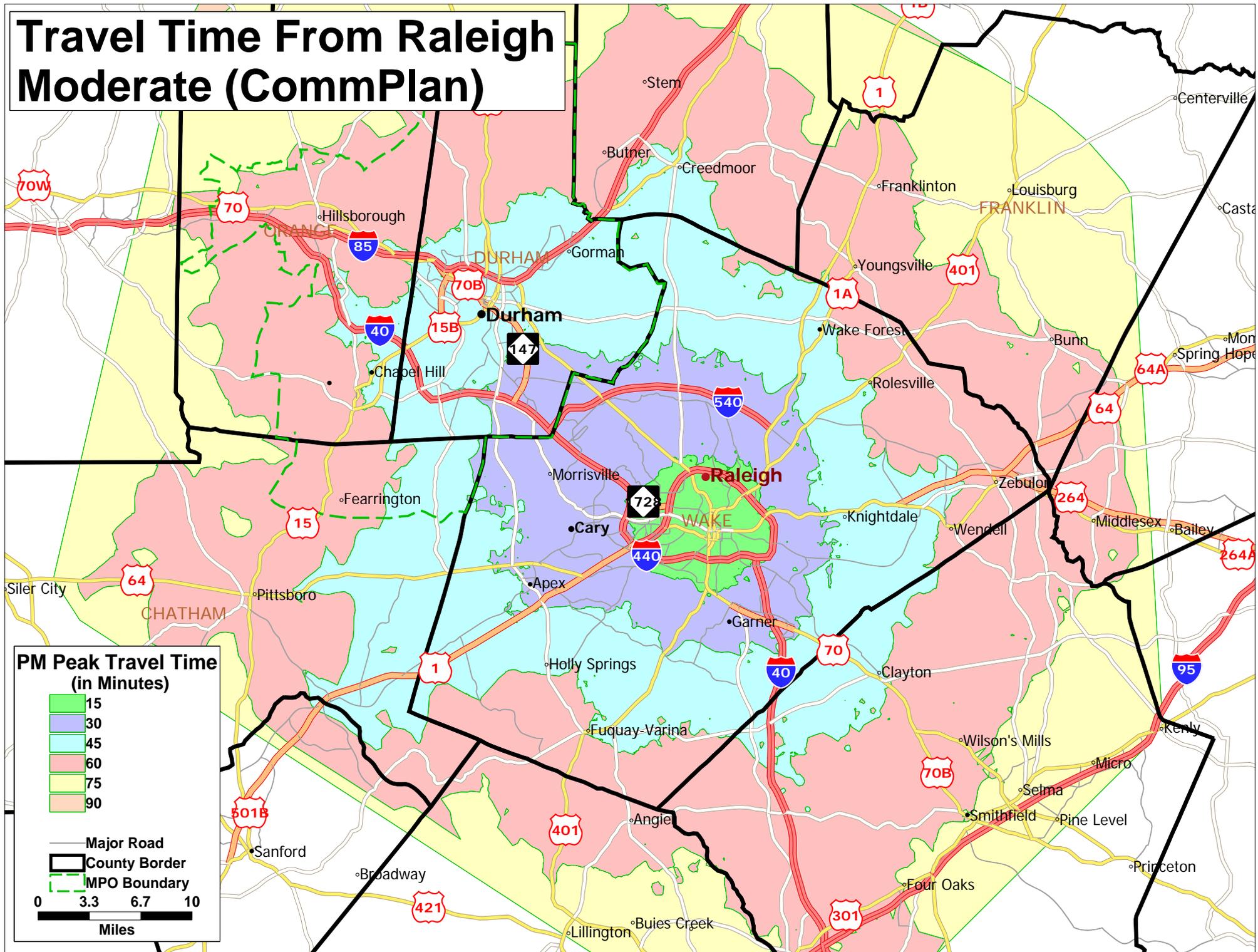
Travel Time From Chapel Hill Moderate (CommPlan)



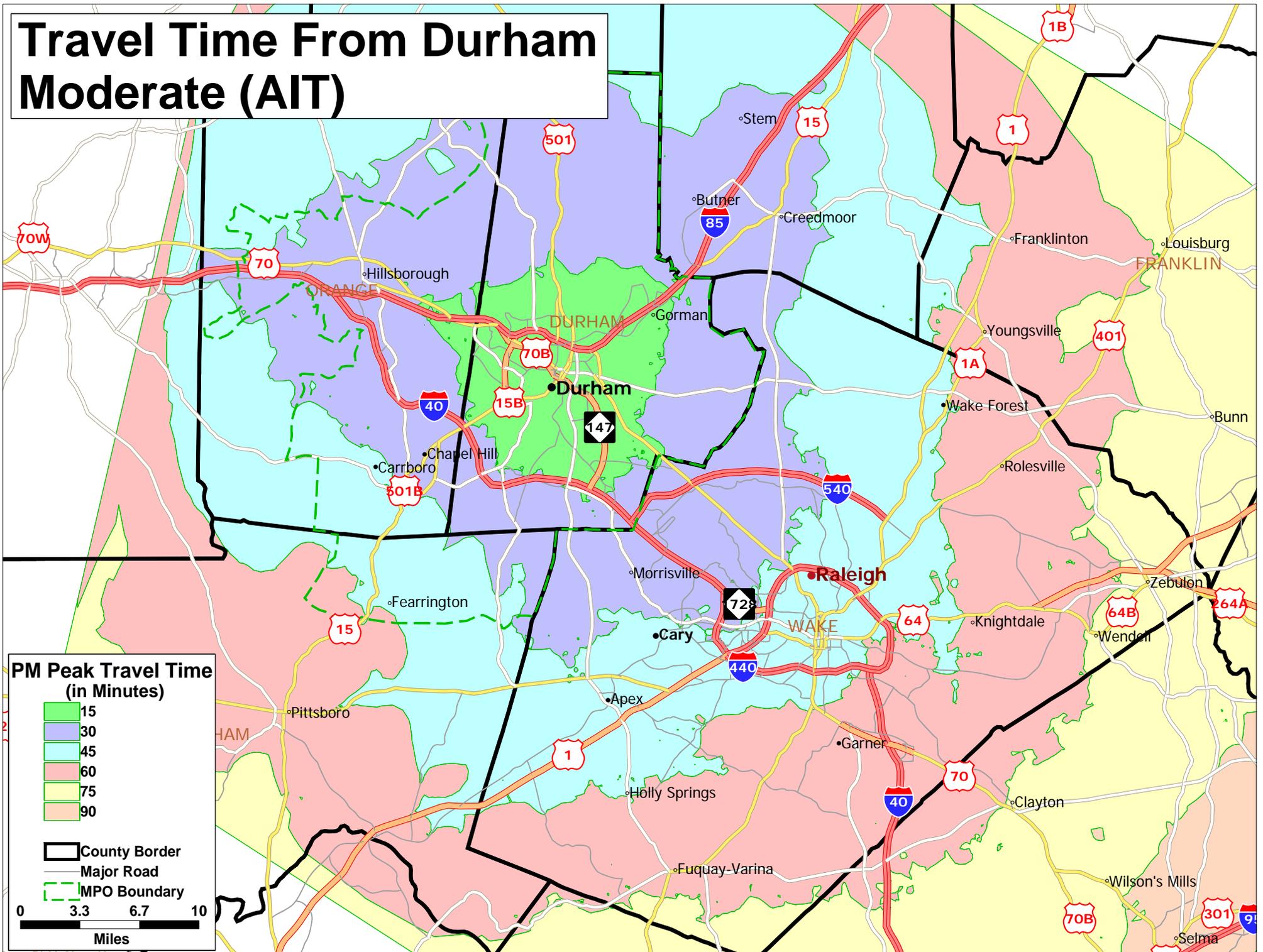
Travel Time From RTP Moderate (CommPlan)



Travel Time From Raleigh Moderate (CommPlan)



Travel Time From Durham Moderate (AIT)



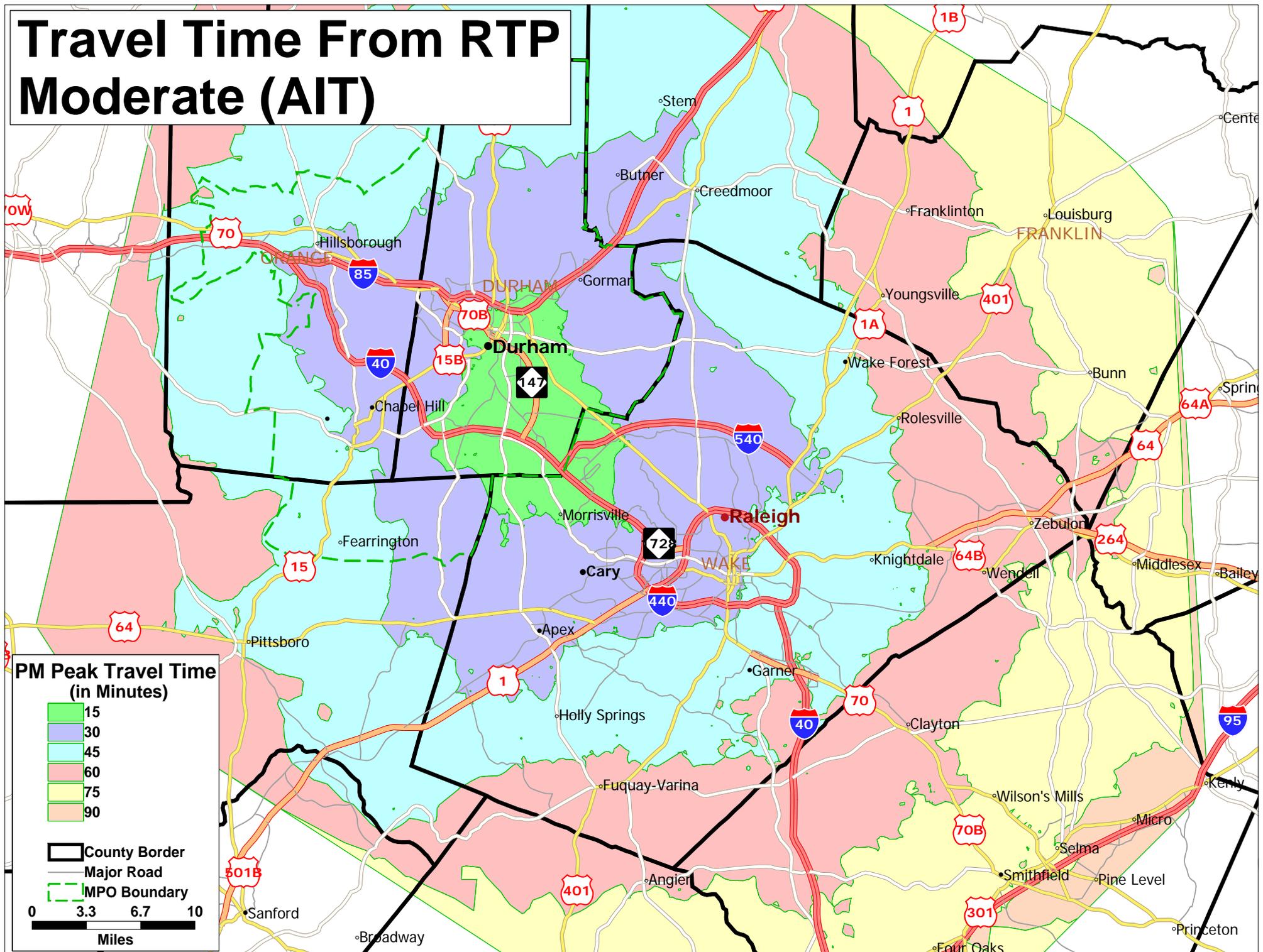
**PM Peak Travel Time
(in Minutes)**

| |
|----|
| 15 |
| 30 |
| 45 |
| 60 |
| 75 |
| 90 |

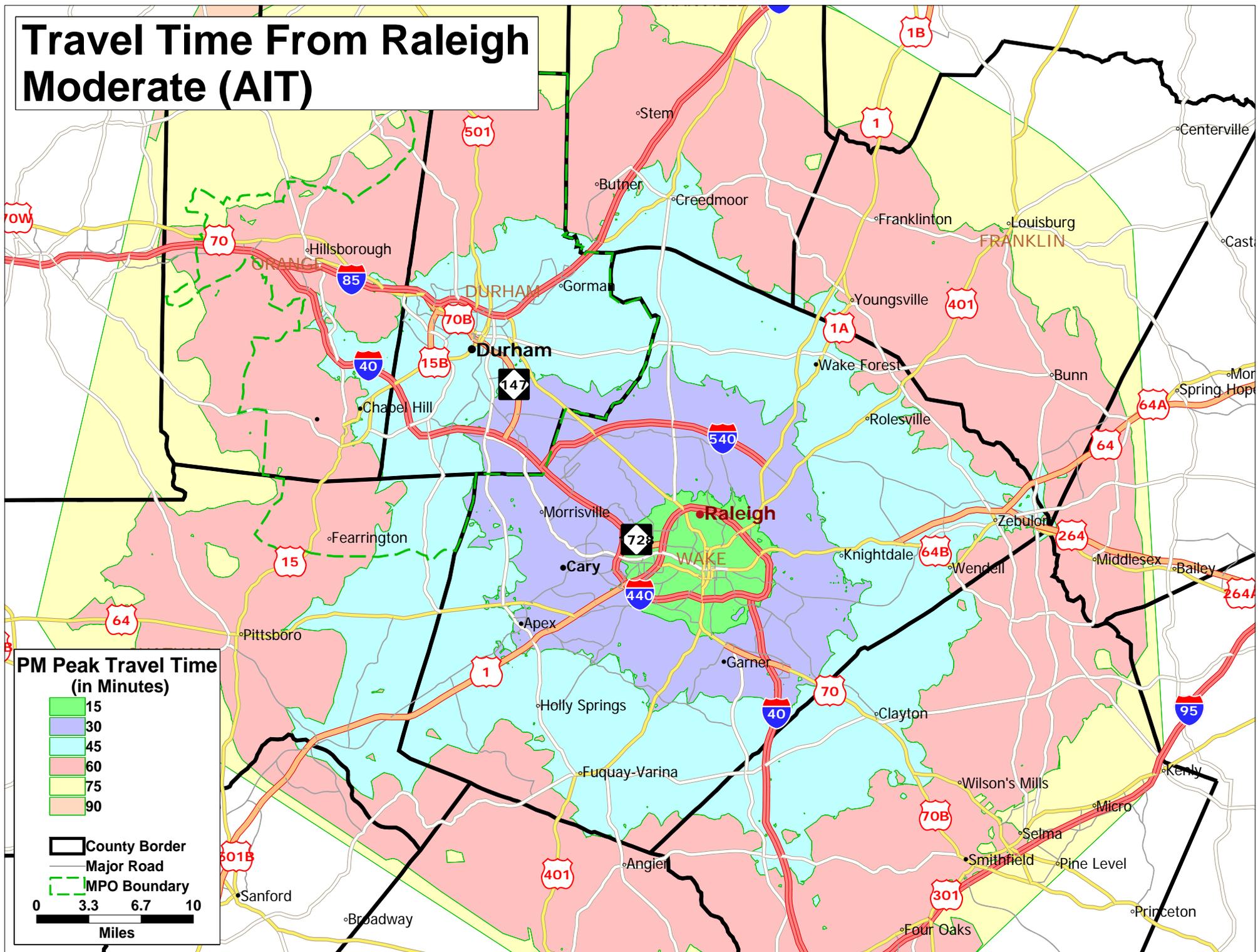
County Border
 Major Road
 MPO Boundary

0 3.3 6.7 10
Miles

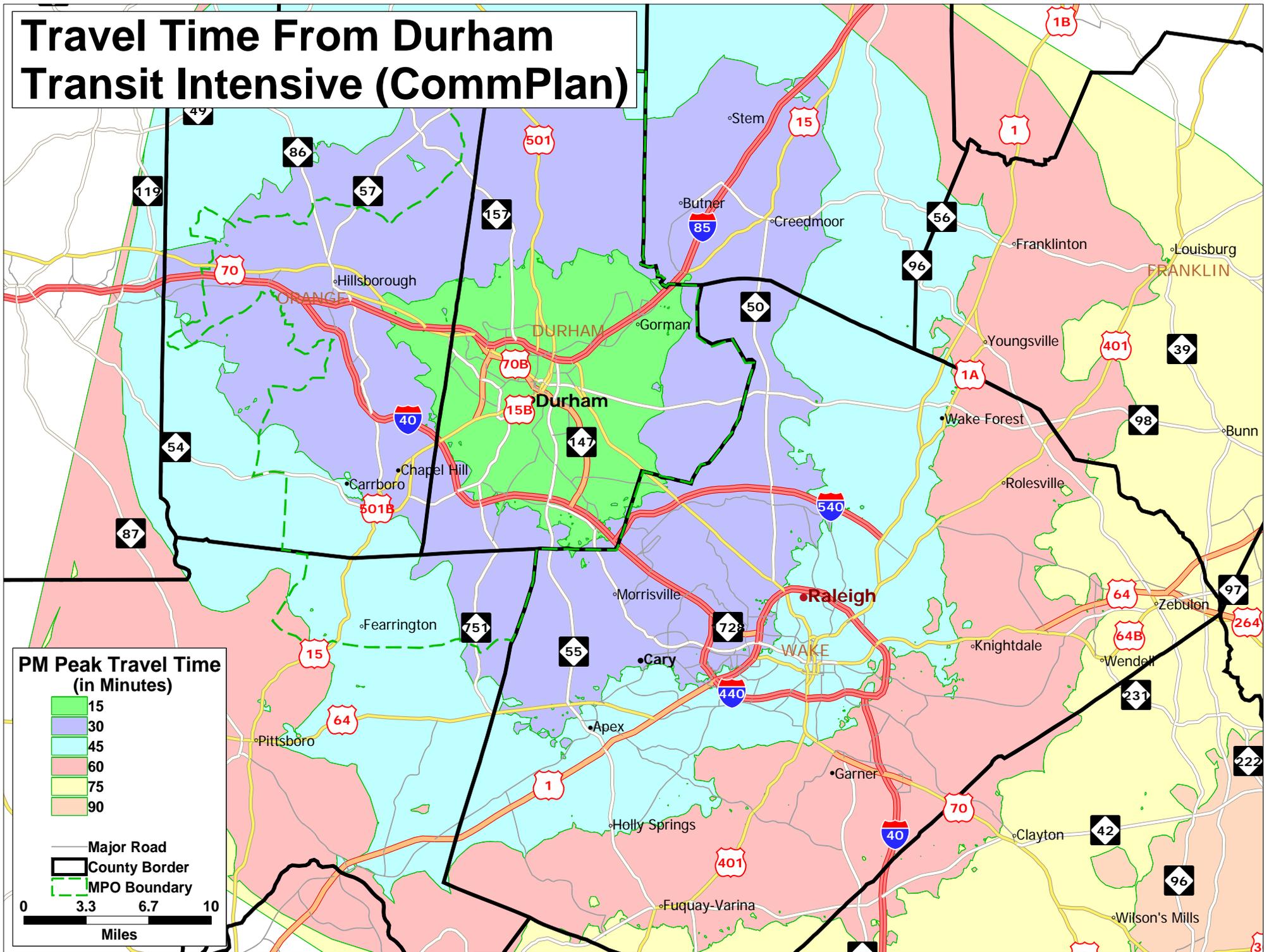
Travel Time From RTP Moderate (AIT)



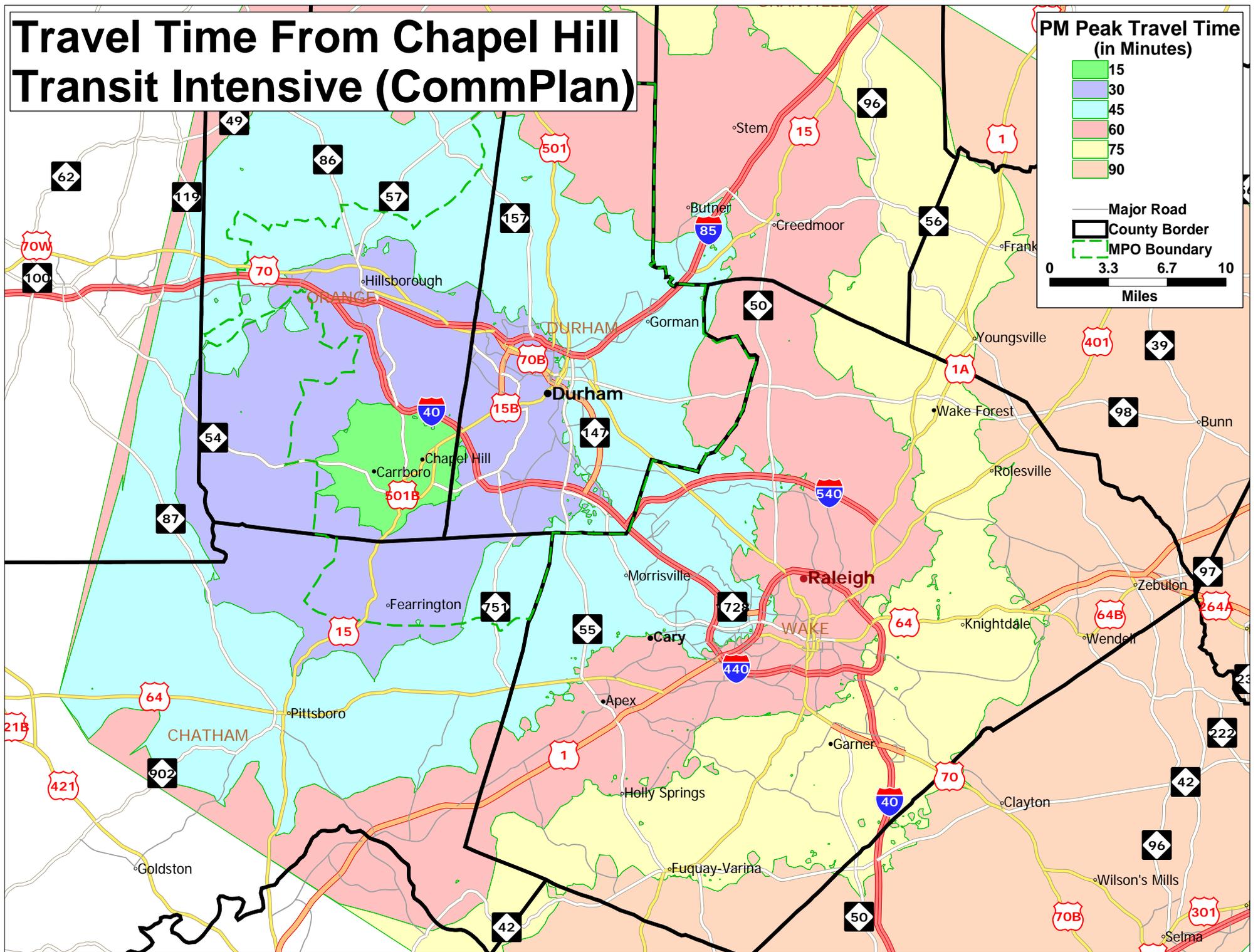
Travel Time From Raleigh Moderate (AIT)



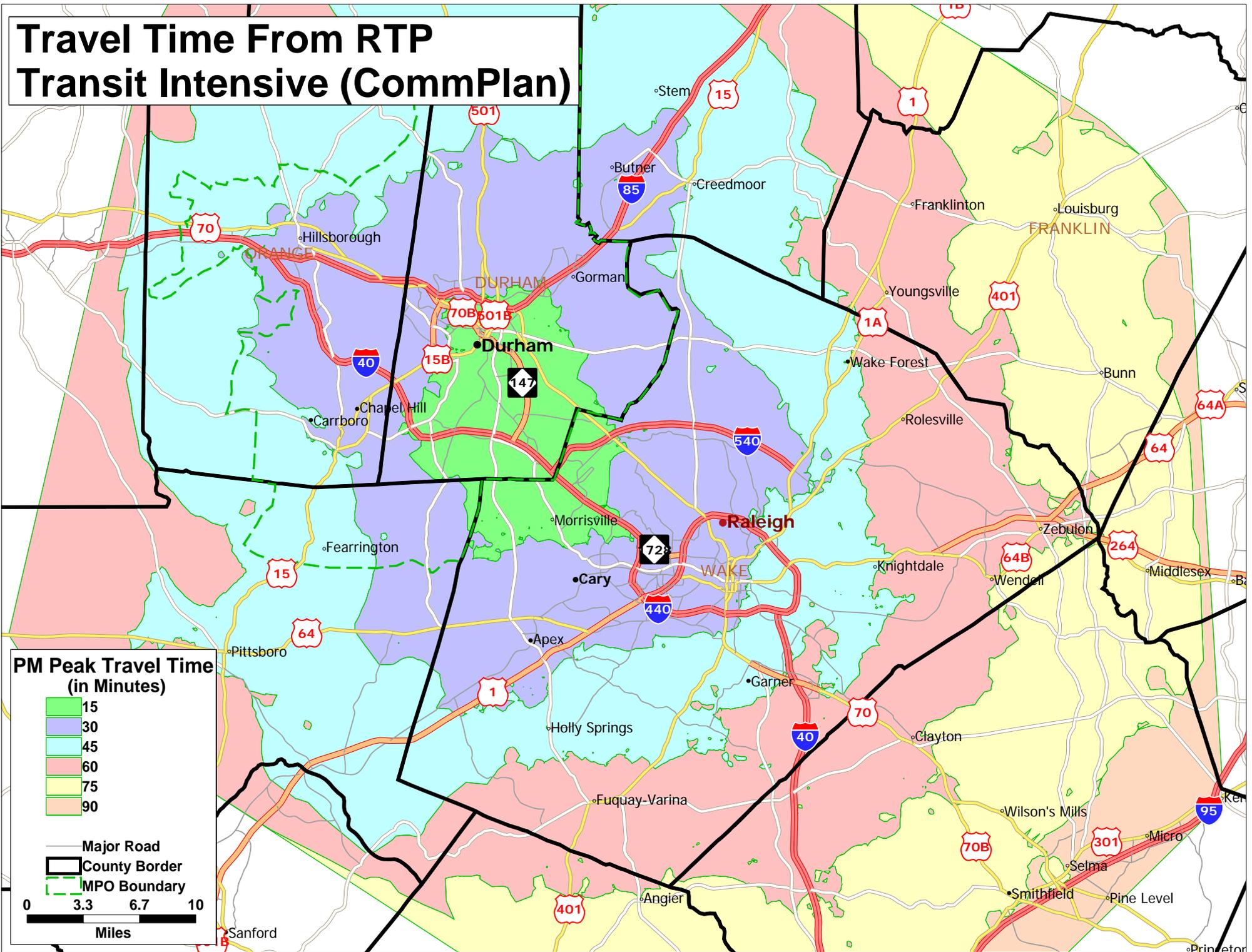
Travel Time From Durham Transit Intensive (CommPlan)



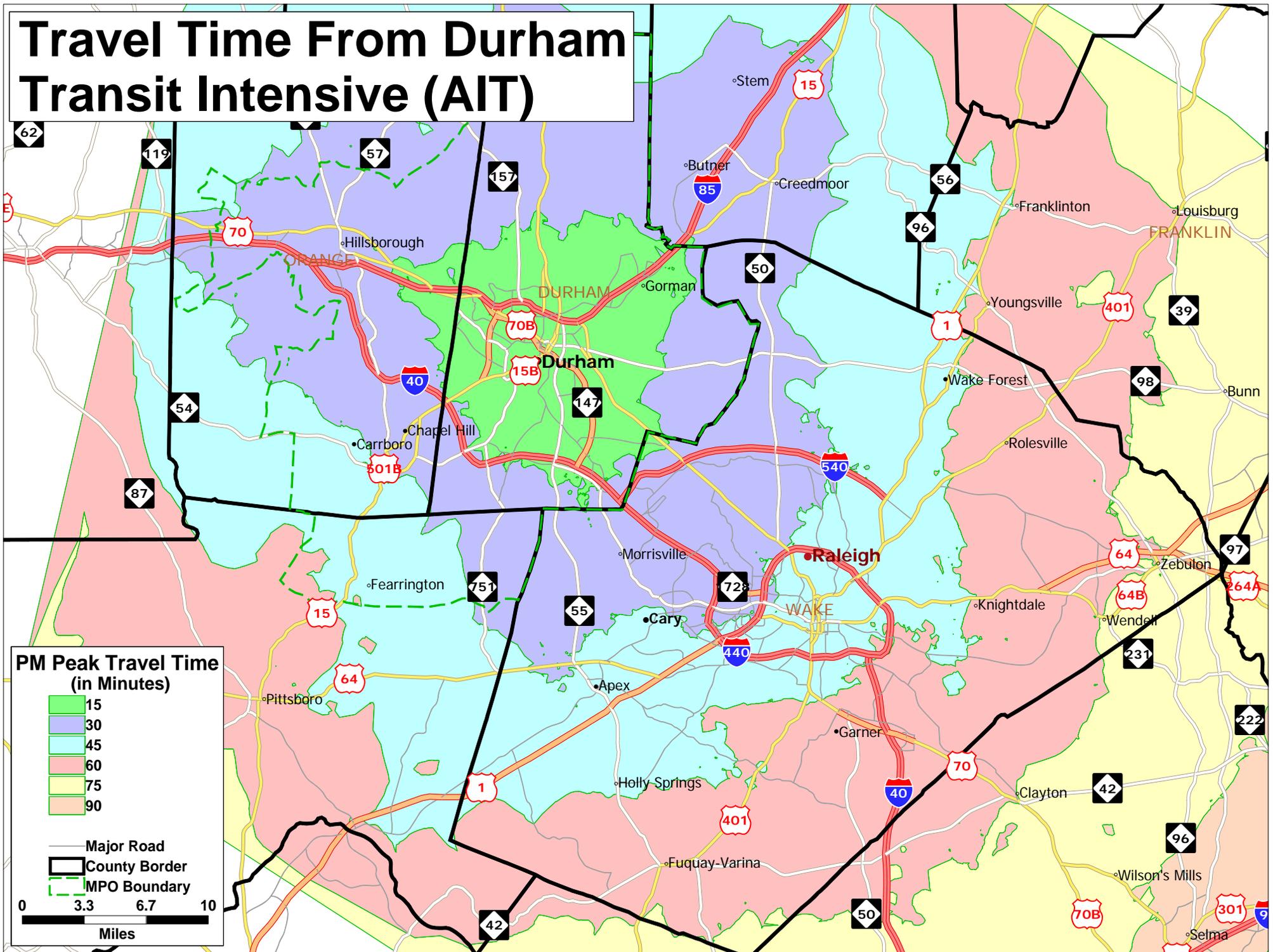
Travel Time From Chapel Hill Transit Intensive (CommPlan)



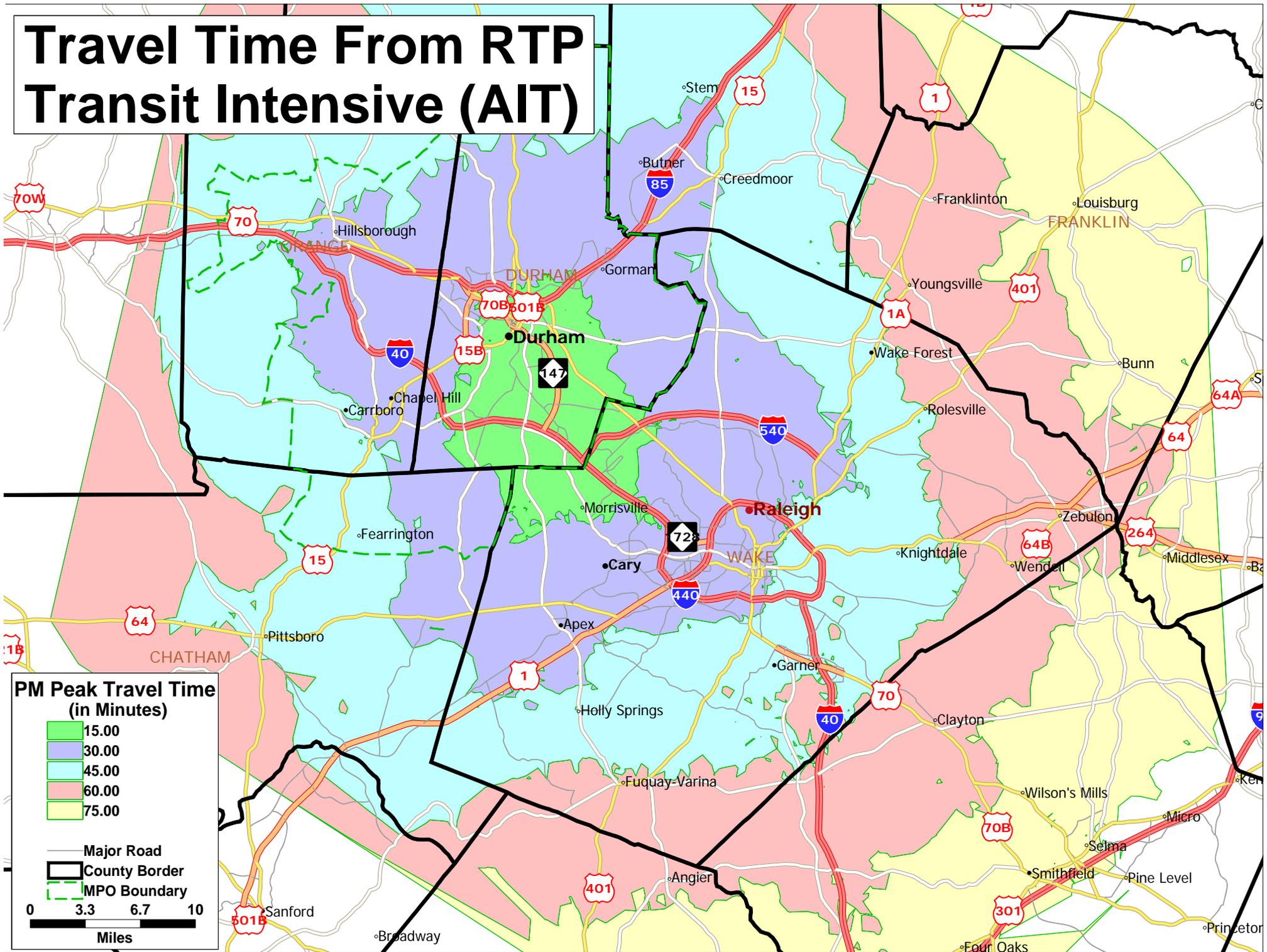
Travel Time From RTP Transit Intensive (CommPlan)



Travel Time From Durham Transit Intensive (AIT)



Travel Time From RTP Transit Intensive (AIT)



2040 MTP and CTP Alternatives – Congestion Maps (V/C maps)

Use of Congestion Maps

The Performance Measures provide a general indicator of the overall transportation system. On the other hand, the Congestion Maps show the forecasted level of service on specific road segments based on the average of the four-hour afternoon peak hour. These maps are sometimes called “V/C” maps (V over C maps) because the level of service, or existence of congestion, is derived by dividing the traffic volume by the traffic capacity of the road segment. For example, a volume of 9,000 vehicles on a road that is capable of carrying 10,000 vehicles will produce a V/C of 0.9. A V/C of 1.0 is equal to a Level of Service (LOS) of “E”, which can be described as:

Limit of acceptable delay, unstable flow, poor signal progression,
traffic near roadway capacity, frequent cycle failures.

It should be noted that these congestion maps show the average for the afternoon peak. The total volume for the four-hour afternoon peak period is divided by the total capacity for the same period. Thus, the V/C ratio for the afternoon peak is likely to be less than the one-hour peak, or peak-of-the-peak, often experienced by motorists.

Although the term traffic congestion is subjective in that it means different levels of delay to different people, it can be said that any road segment approaching a V/C of 1.0, which is indicated on the maps with an **orange color**, experiences some delays. A V/C greater than 1.0, which is indicated on the maps by the **red color**, means frequent delays for the motorist and as the V/C approaches a value of 1.1 most motorists experience what might be termed unacceptable travel delays.

The Triangle Regional Model (the travel demand model for the Triangle Region) uses travel behavior data for the Triangle Region, future transportation system networks, and future population and employment data, to forecast the volume and capacity values needed to produce these maps. The forecasts are for the year 2040. Each congestion map represents one of the Alternatives, which are comprised of a specific transportation network and land use scenario.

Review and comparison of the congestion maps for the various Alternatives will show how well a particular Alternative addresses travel demand on the key roadway segments and corridors in the MPO planning area.

Of particular importance is the comparison of any one Alternative with the **E+C map** (Existing plus Committed), which can be considered a benchmark. The E+C map uses a transportation network with the current roadways and transit services plus any others that have been committed to being implemented, and the Socioeconomic Data (i.e., population and employment) for the year 2040. This map shows the level of service to be

experienced if no additional roadways improvements or transit services are implemented, and thus helps to answer the question, “When we make our next transportation investment decision, where do we need to focus our investment?” Furthermore, by comparing the E+C Congestion Map with the other Alternatives, you can see how well the transportation investments in that Alternative address the congestion in the E+C.

The 2010 congestion map is provided, as well, to give an additional benchmark. The 2010 basically represents current conditions because it is based on the current transportation network and socioeconomic data.

Presentation of Congestion Maps

The 2010 and E+C congestion maps are presented first, followed by the Alternatives. Each Alternative provides the following map views:

- Durham County
- Close up for City of Durham
- Orange County
- Close up for Chapel Hill and Carrboro
- Chatham County

2010 Durham County V/C

Map layers

- County Boundary
- MPO Boundary

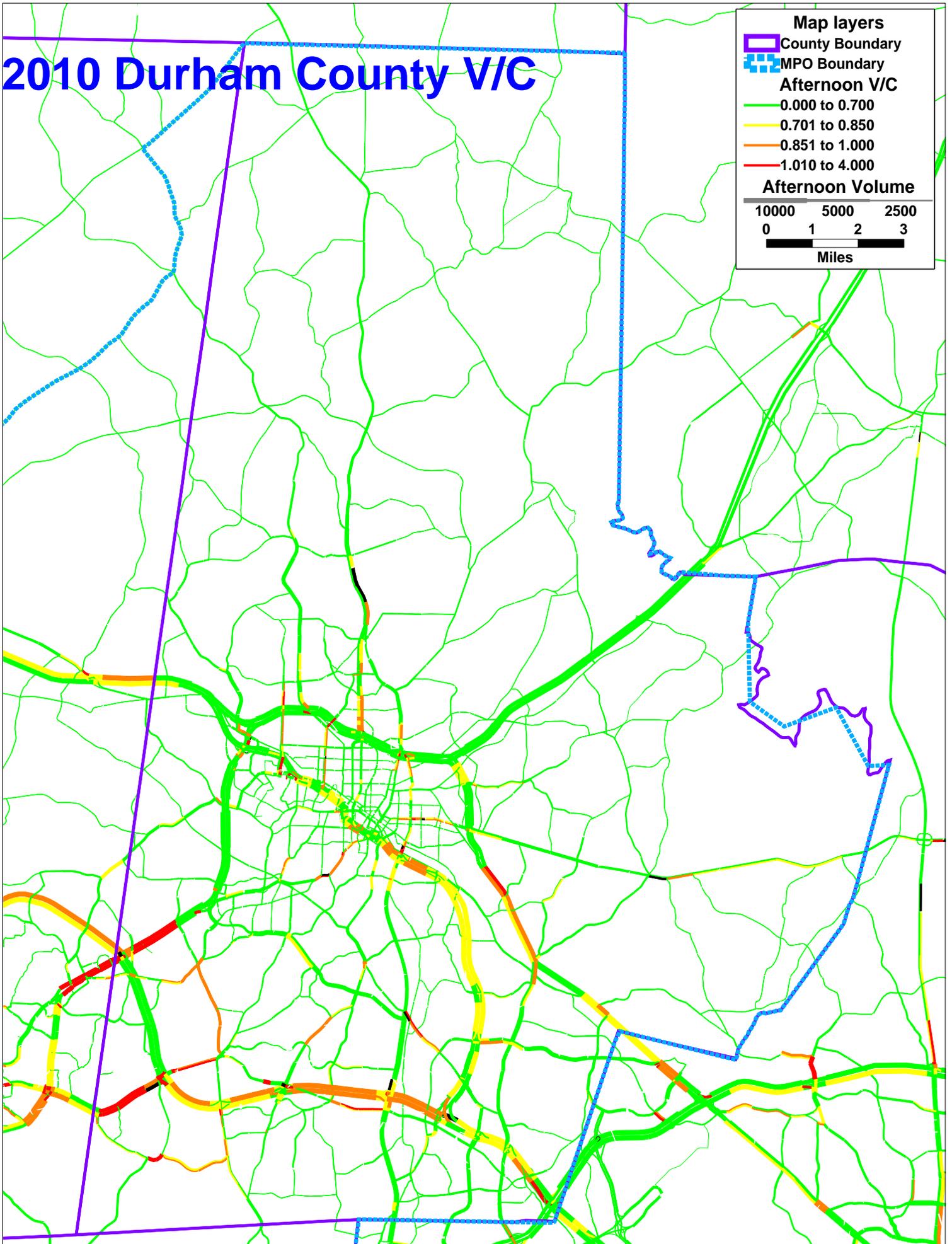
Afternoon V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 4.000

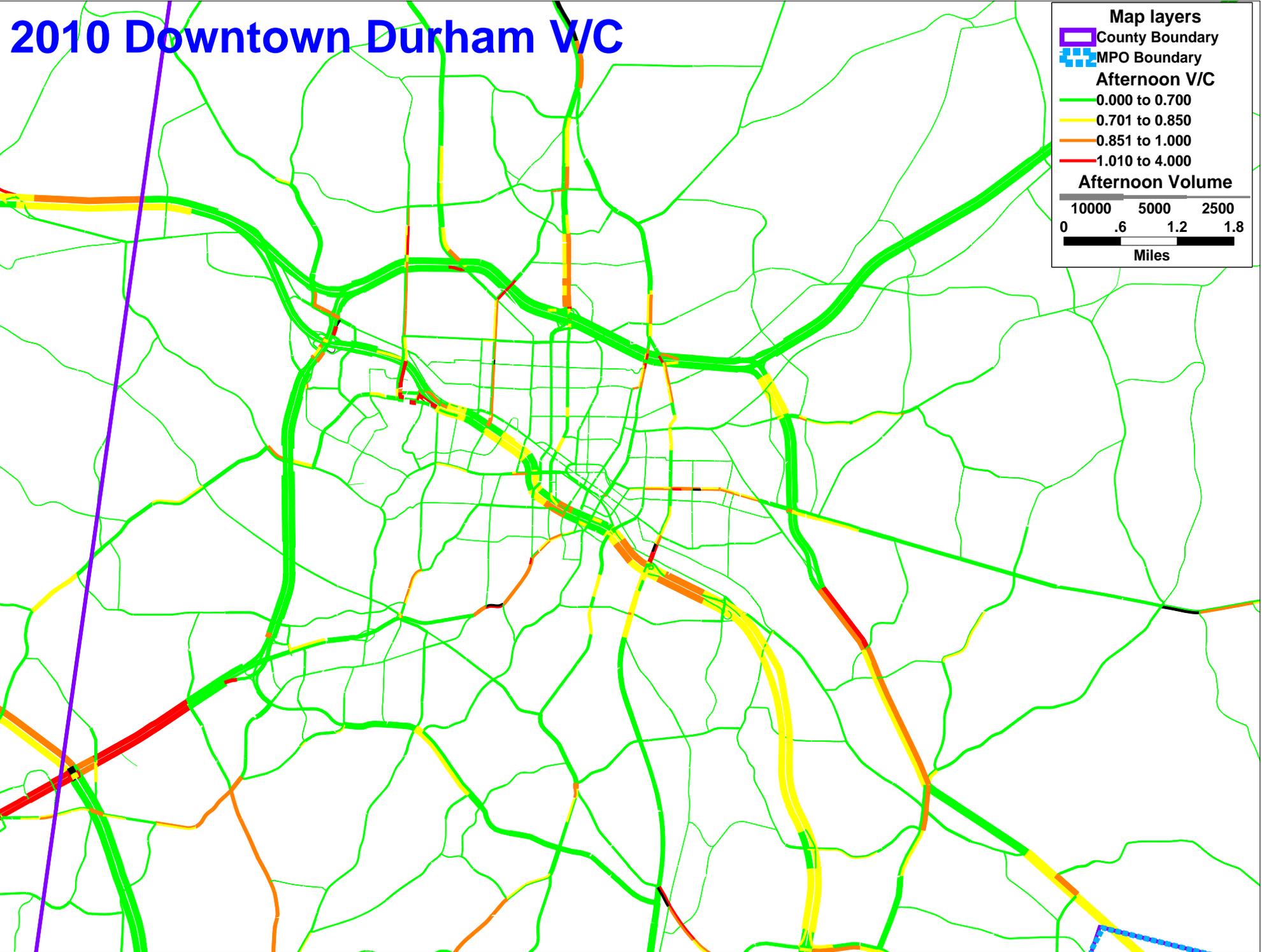
Afternoon Volume

| | | | |
|-------|------|------|---|
| 10000 | 5000 | 2500 | |
| 0 | 1 | 2 | 3 |

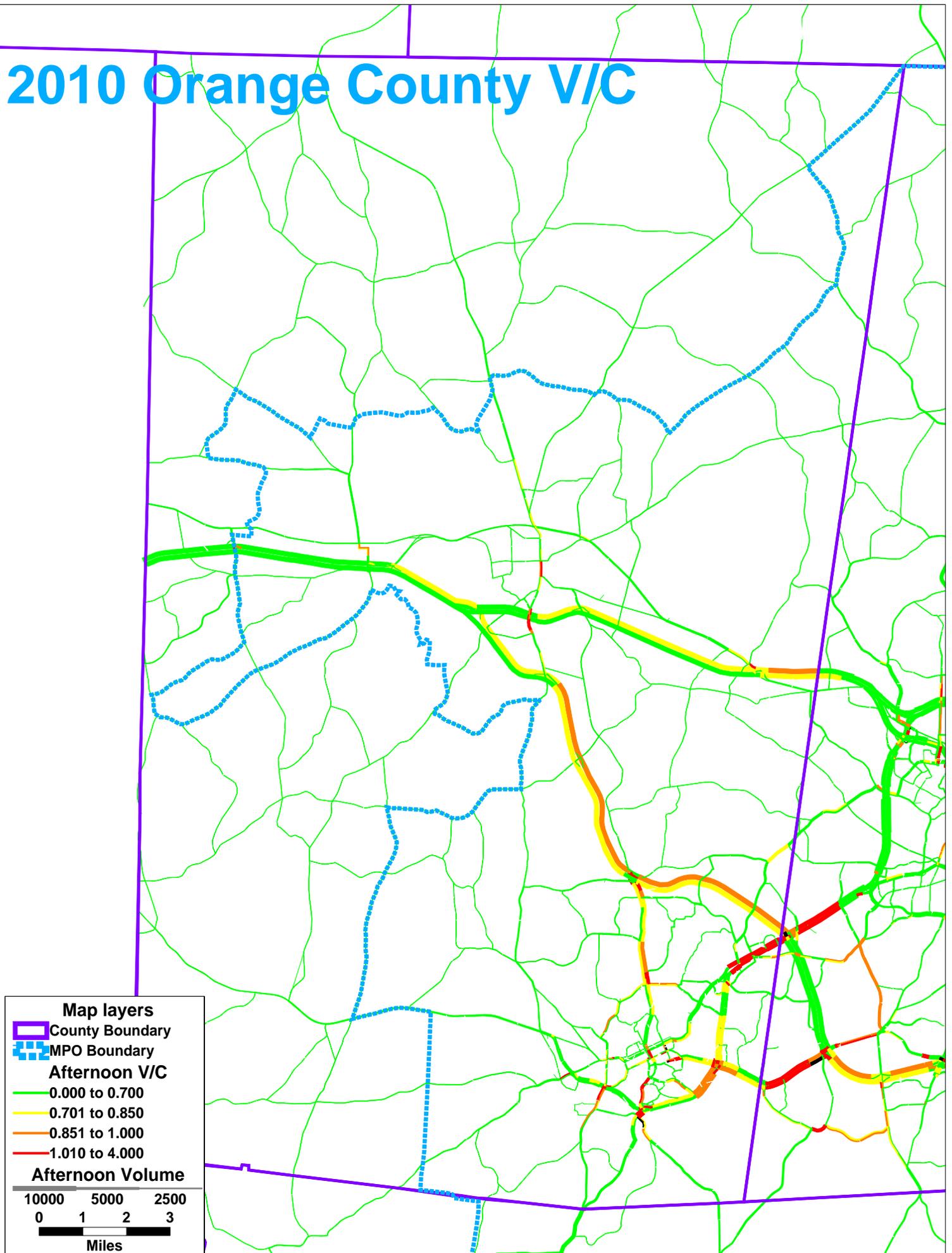
Miles



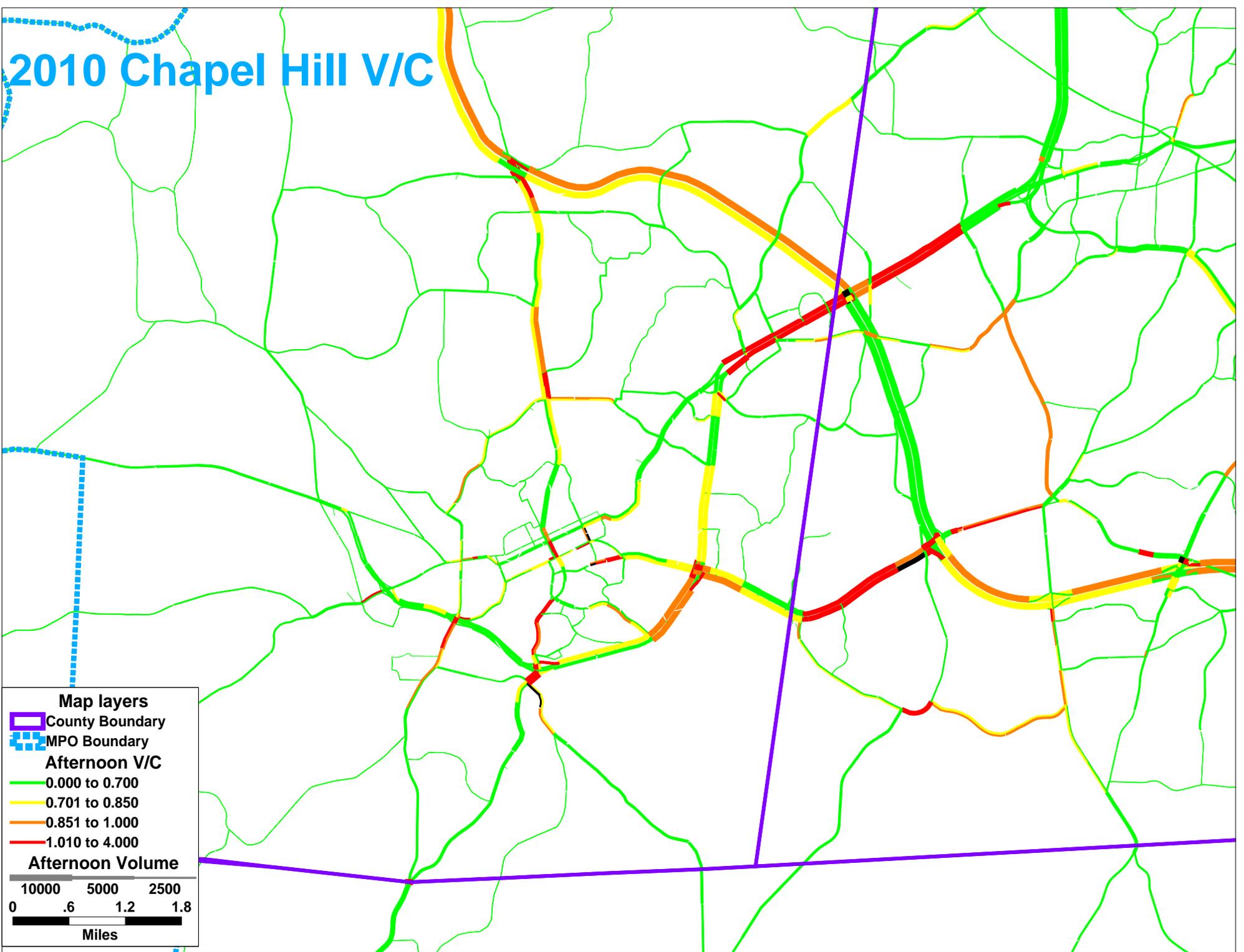
2010 Downtown Durham V/C



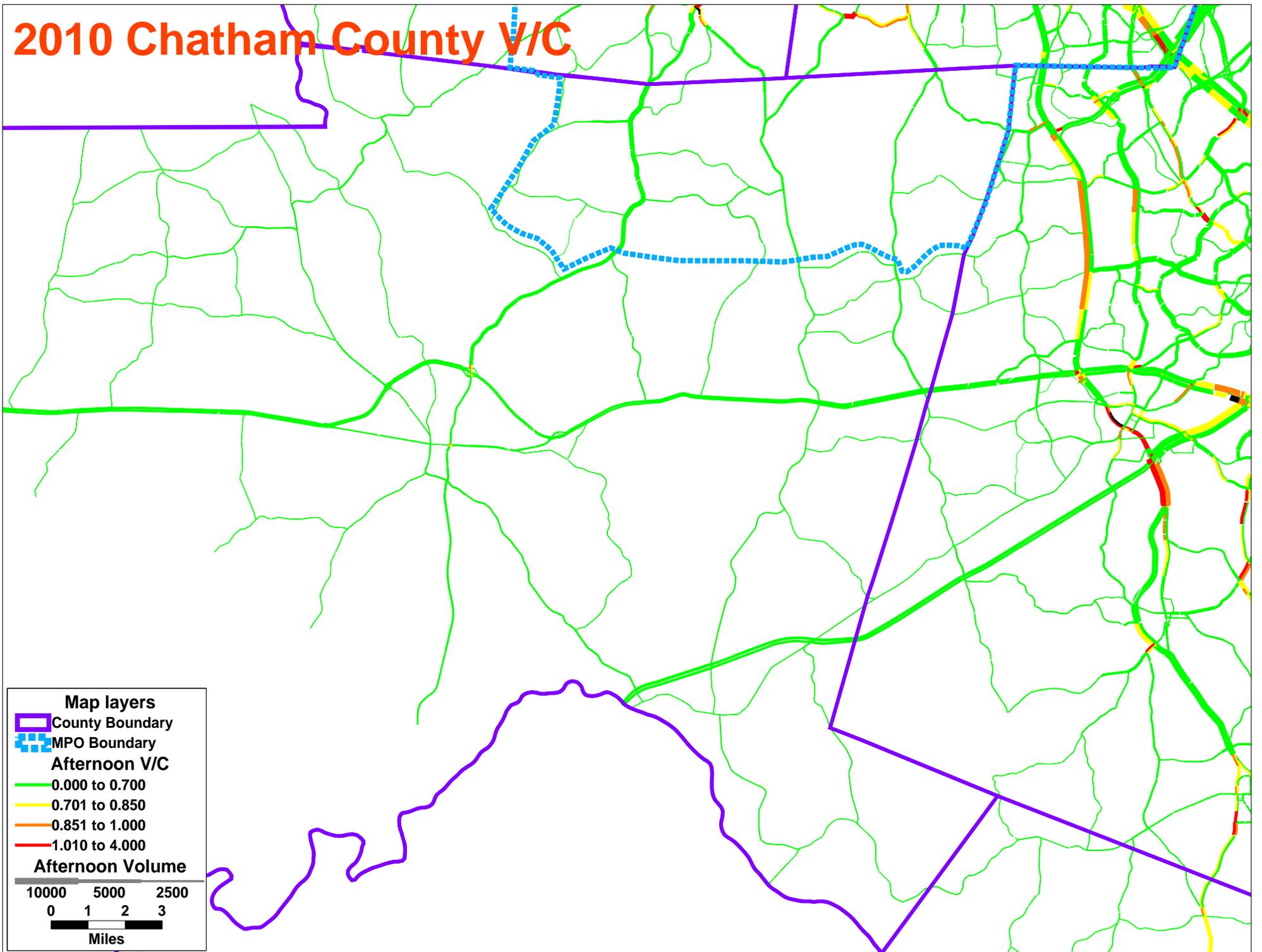
2010 Orange County V/C



2010 Chapel Hill V/C



2010 Chatham County V/C



2040 Durham County V/C

E plus C

Map layers

- County Boundary
- MPO Boundary

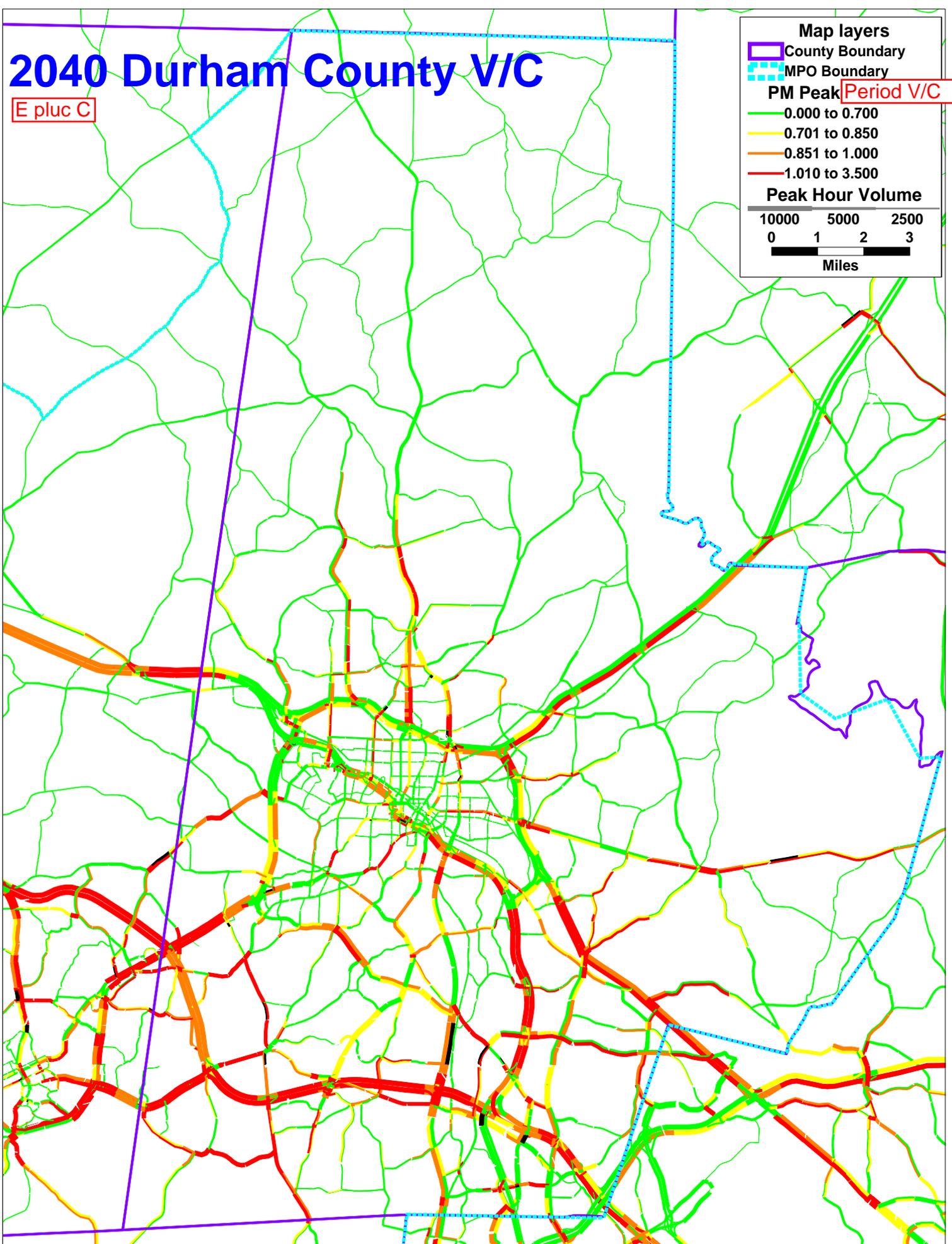
PM Peak Period V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 3.500

Peak Hour Volume

| | | | |
|-------|------|------|---|
| 10000 | 5000 | 2500 | |
| 0 | 1 | 2 | 3 |

Miles



2040 Downtown Durham V/C

E plus C

Map layers

- County Boundary
- MPO Boundary

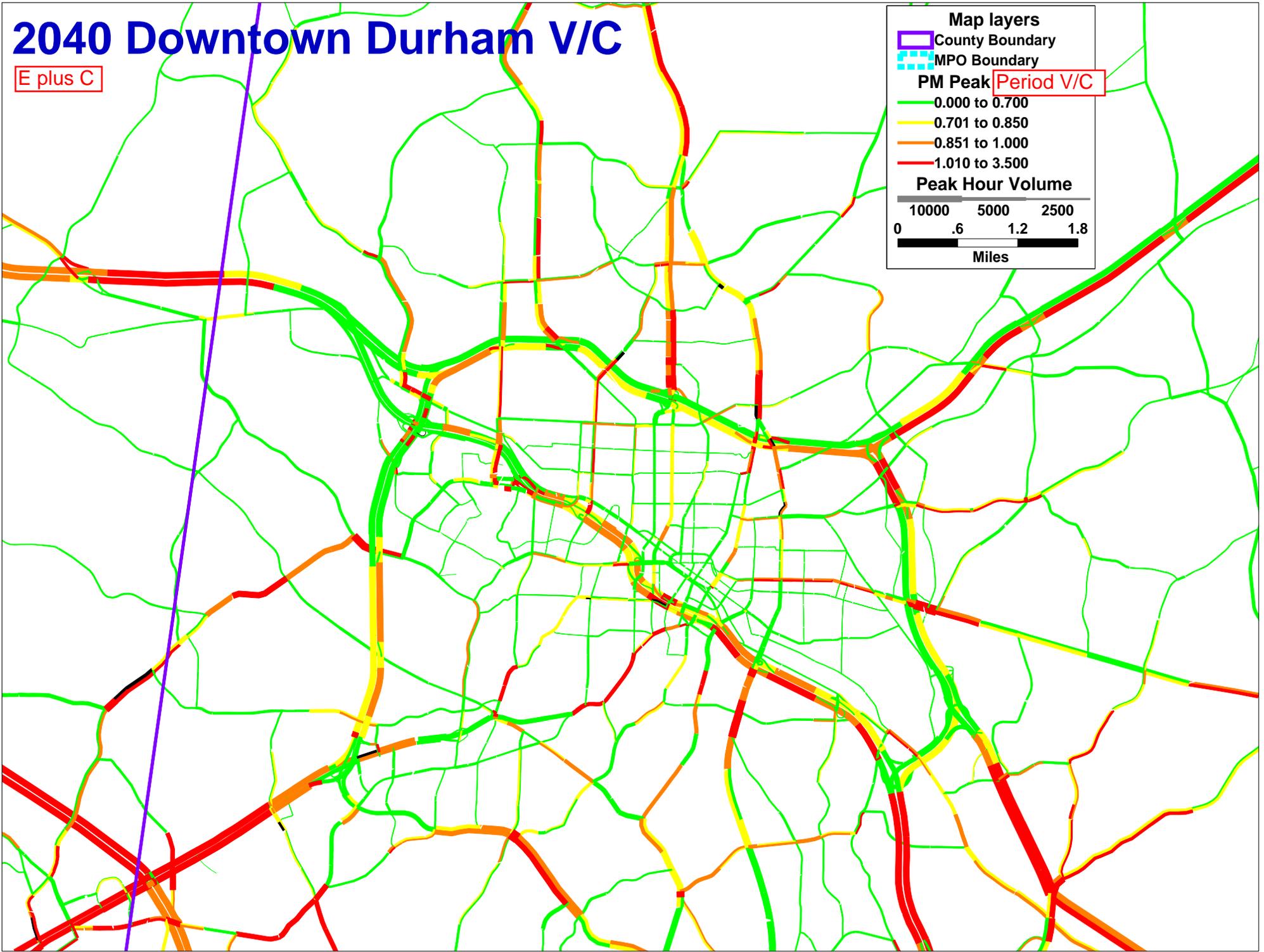
PM Peak Period V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 3.500

Peak Hour Volume

| | | |
|-------|------|---------|
| 10000 | 5000 | 2500 |
| 0 | .6 | 1.2 1.8 |

Miles



2040 Orange County V/C

E plus C

Map layers

- County Boundary
- MPO Boundary

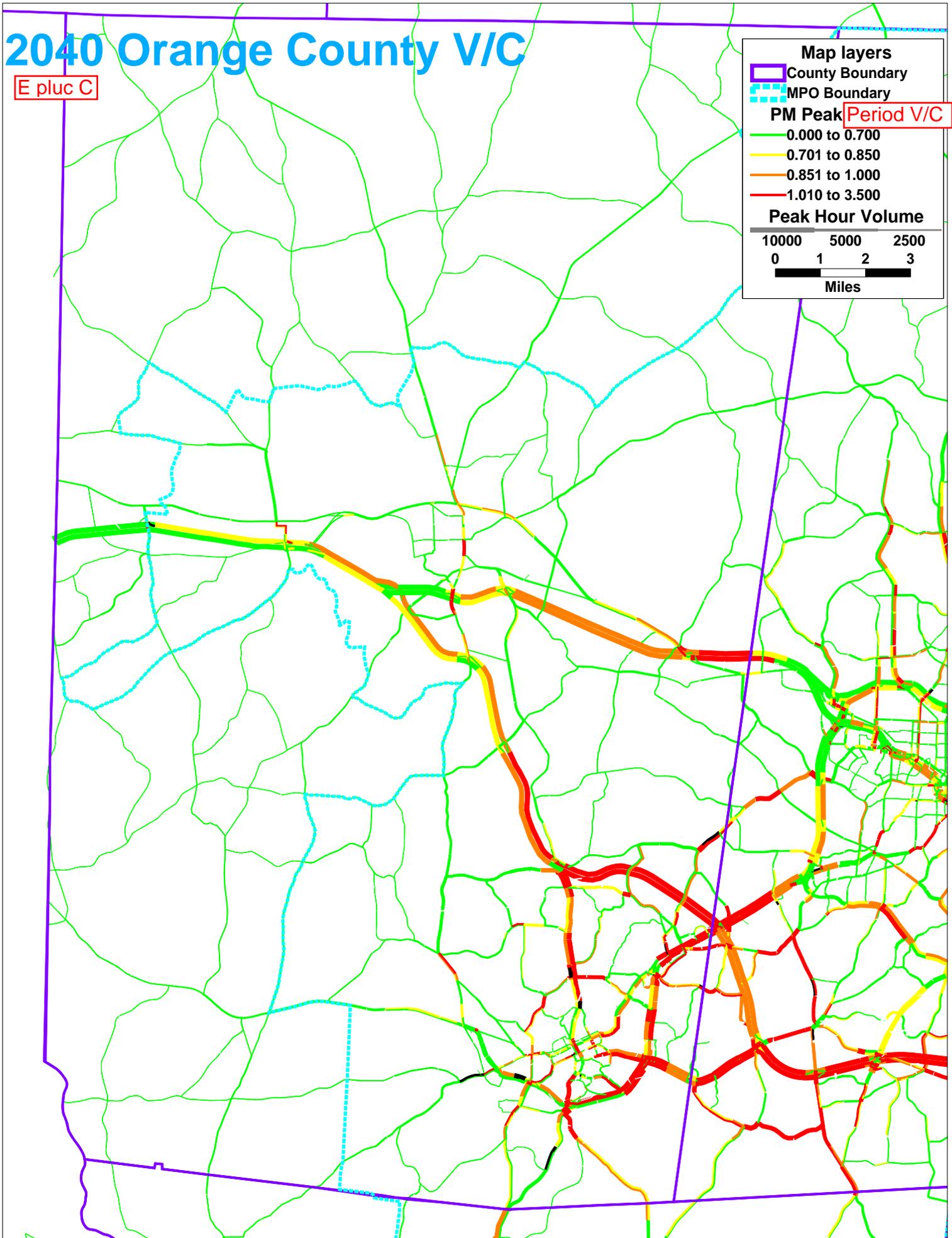
PM Peak Period V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 3.500

Peak Hour Volume

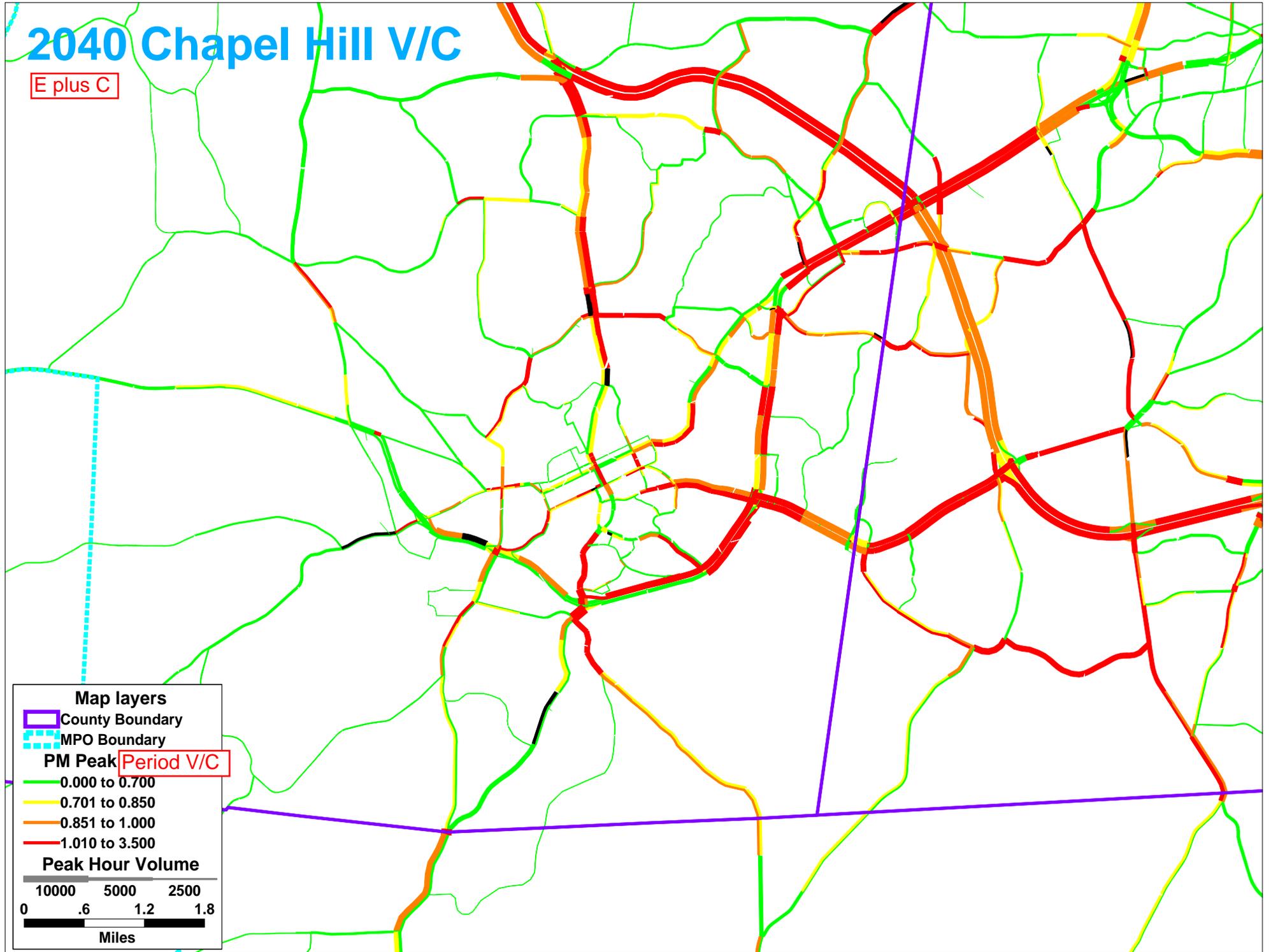
| 10000 | 5000 | 2500 | |
|-------|------|------|---|
| 0 | 1 | 2 | 3 |

Miles



2040 Chapel Hill V/C

E plus C



Map layers

- County Boundary
- MPO Boundary

PM Peak Period V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 3.500

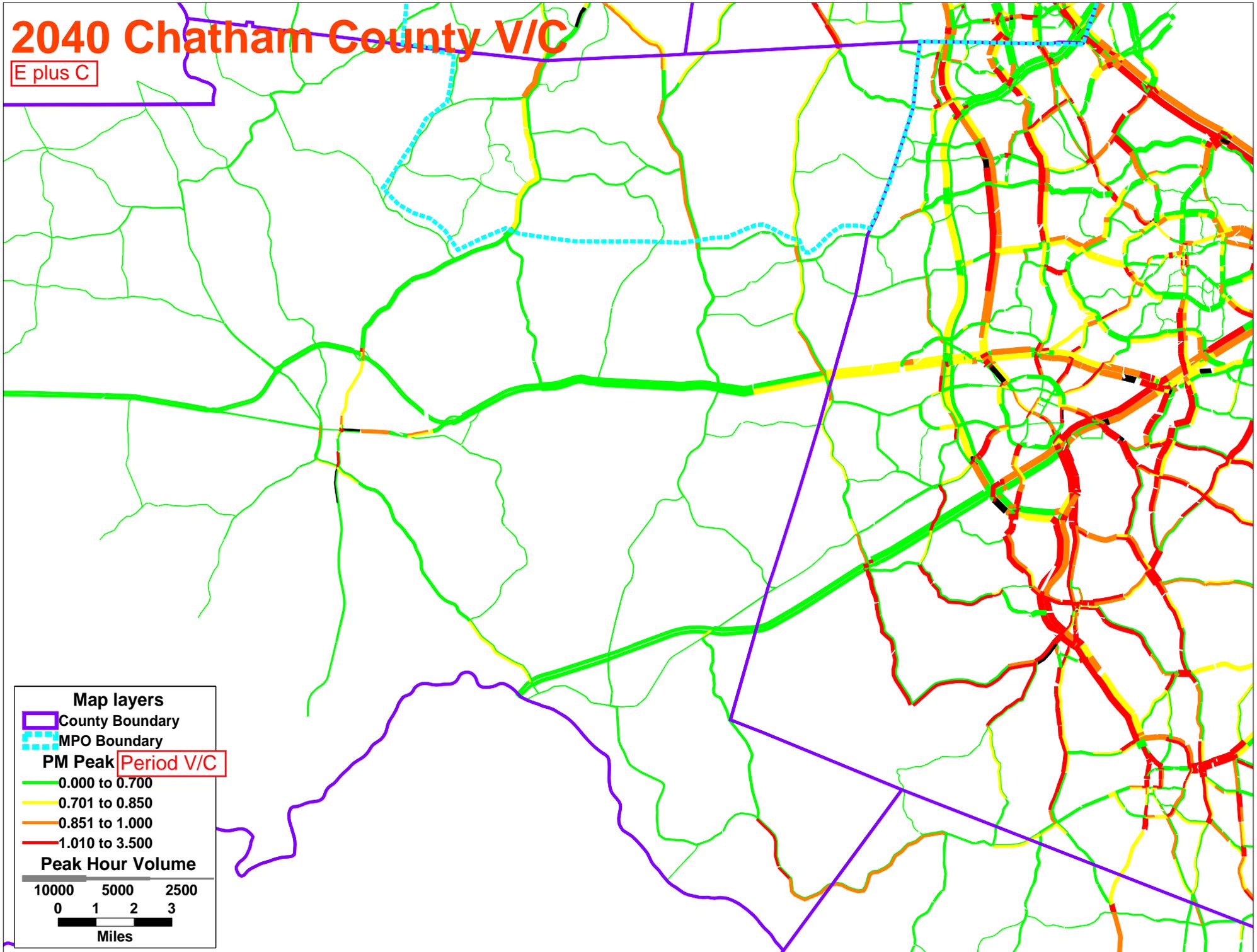
Peak Hour Volume

| | | | |
|-------|------|------|-----|
| 10000 | 5000 | 2500 | |
| 0 | .6 | 1.2 | 1.8 |

Miles

2040 Chatham County V/C

E plus C



Map layers

- County Boundary
- MPO Boundary

PM Peak Period V/C

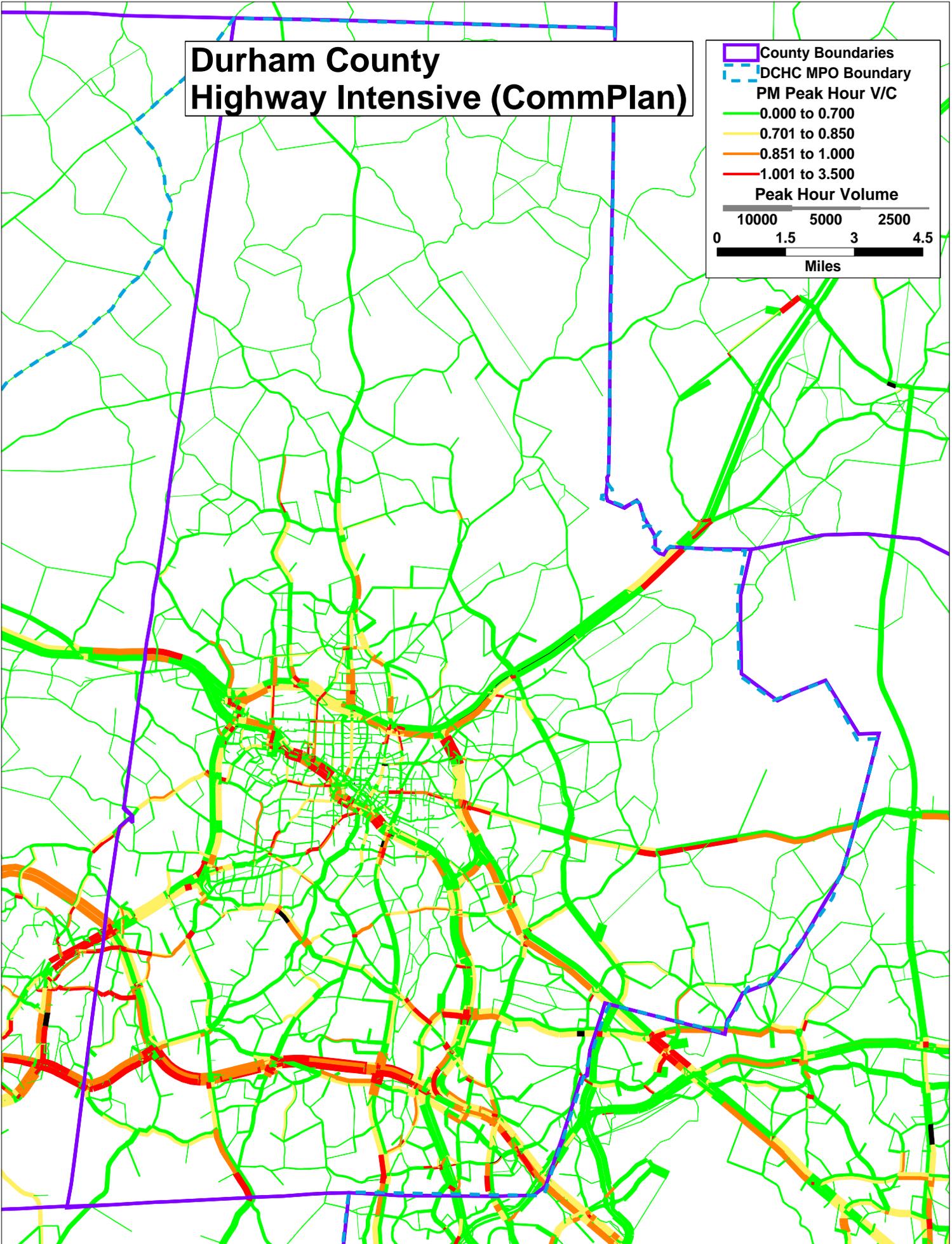
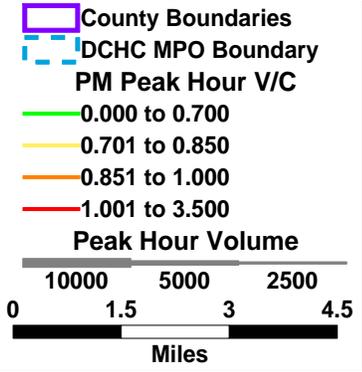
- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.010 to 3.500

Peak Hour Volume

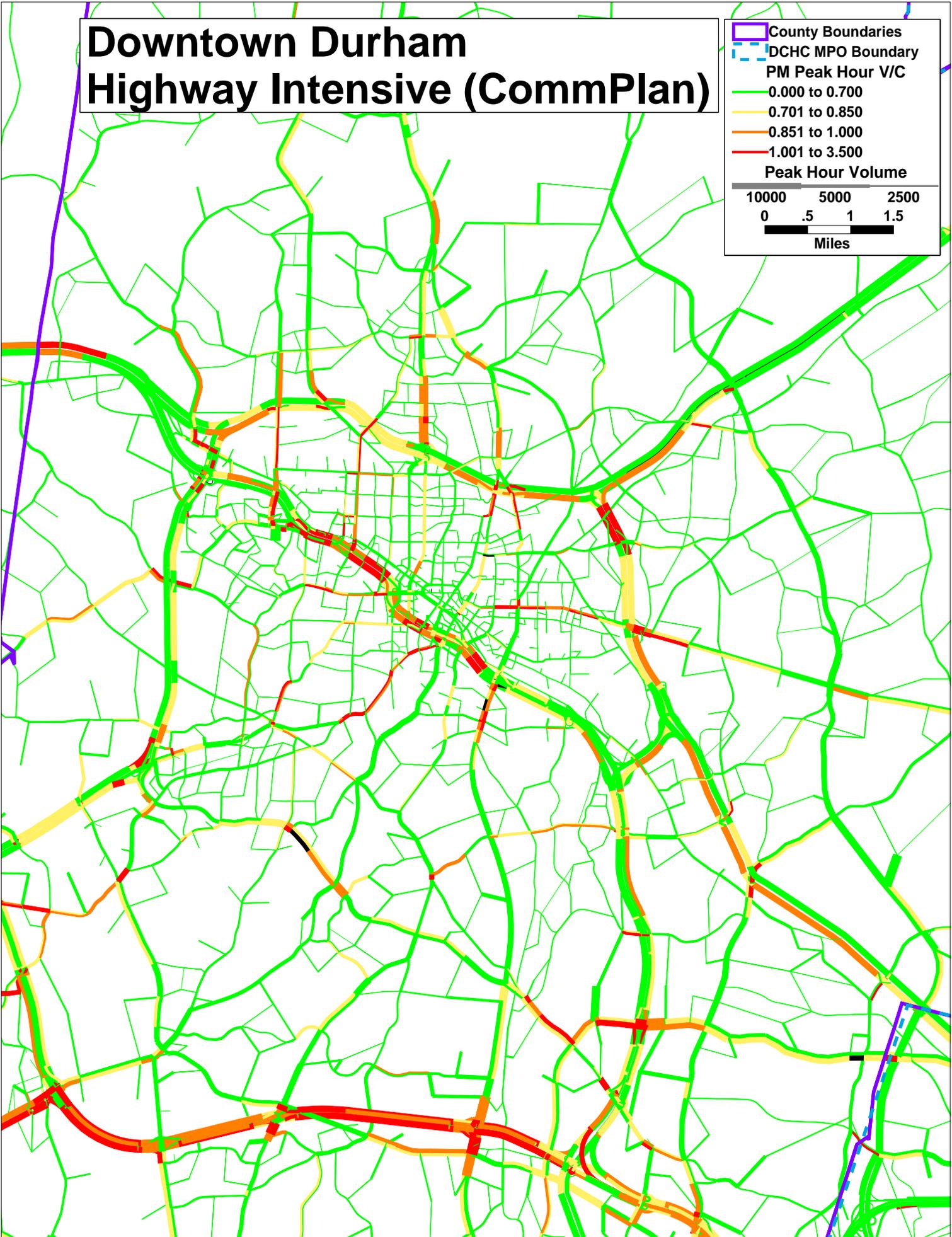
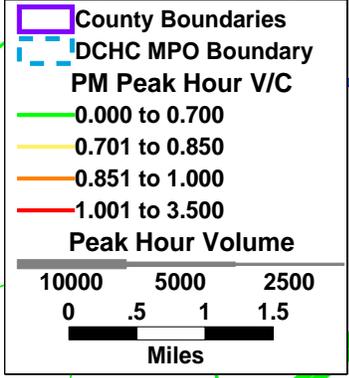
| | | |
|-------|------|------|
| 10000 | 5000 | 2500 |
| 0 | 1 | 2 3 |

Miles

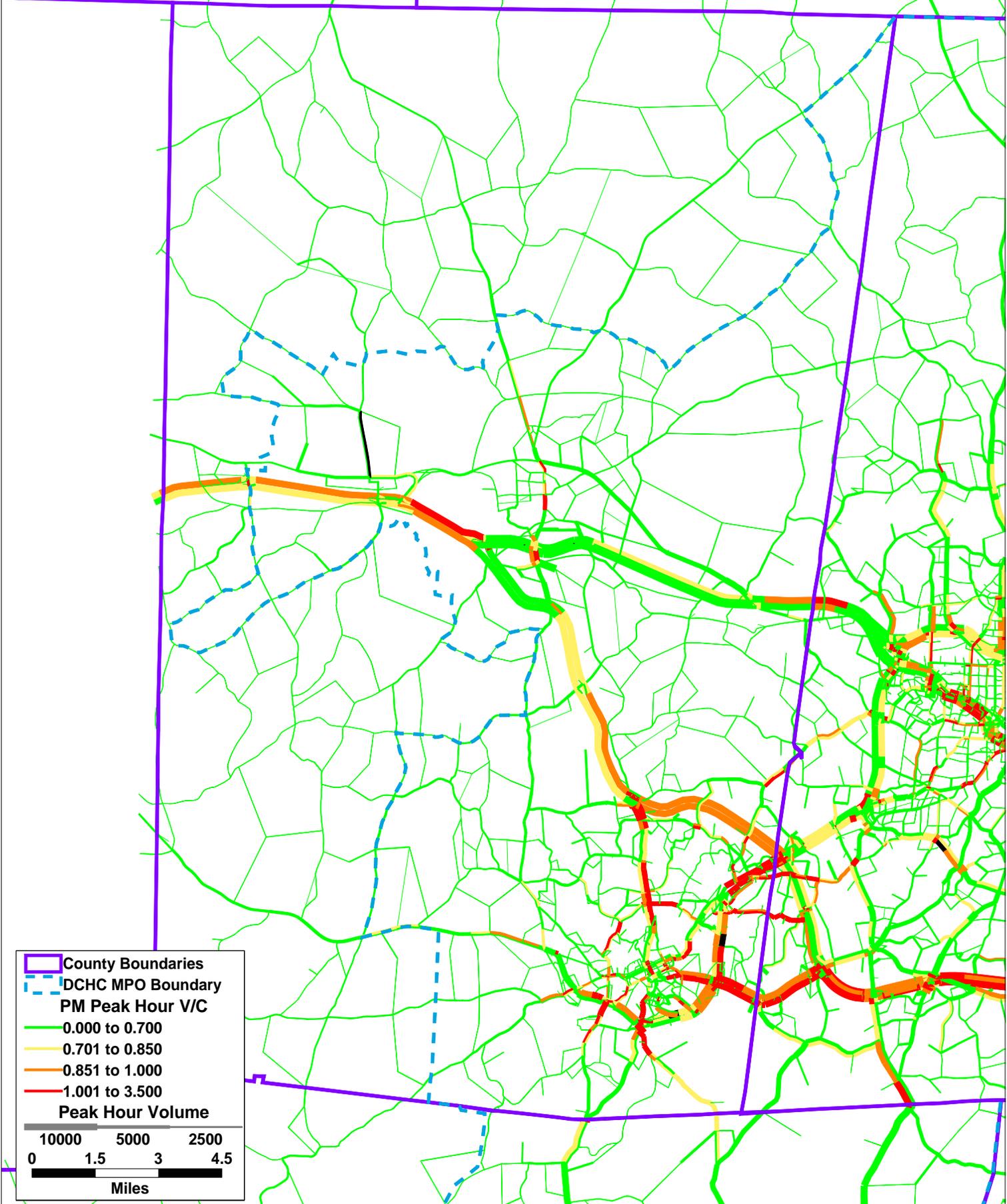
Durham County Highway Intensive (CommPlan)



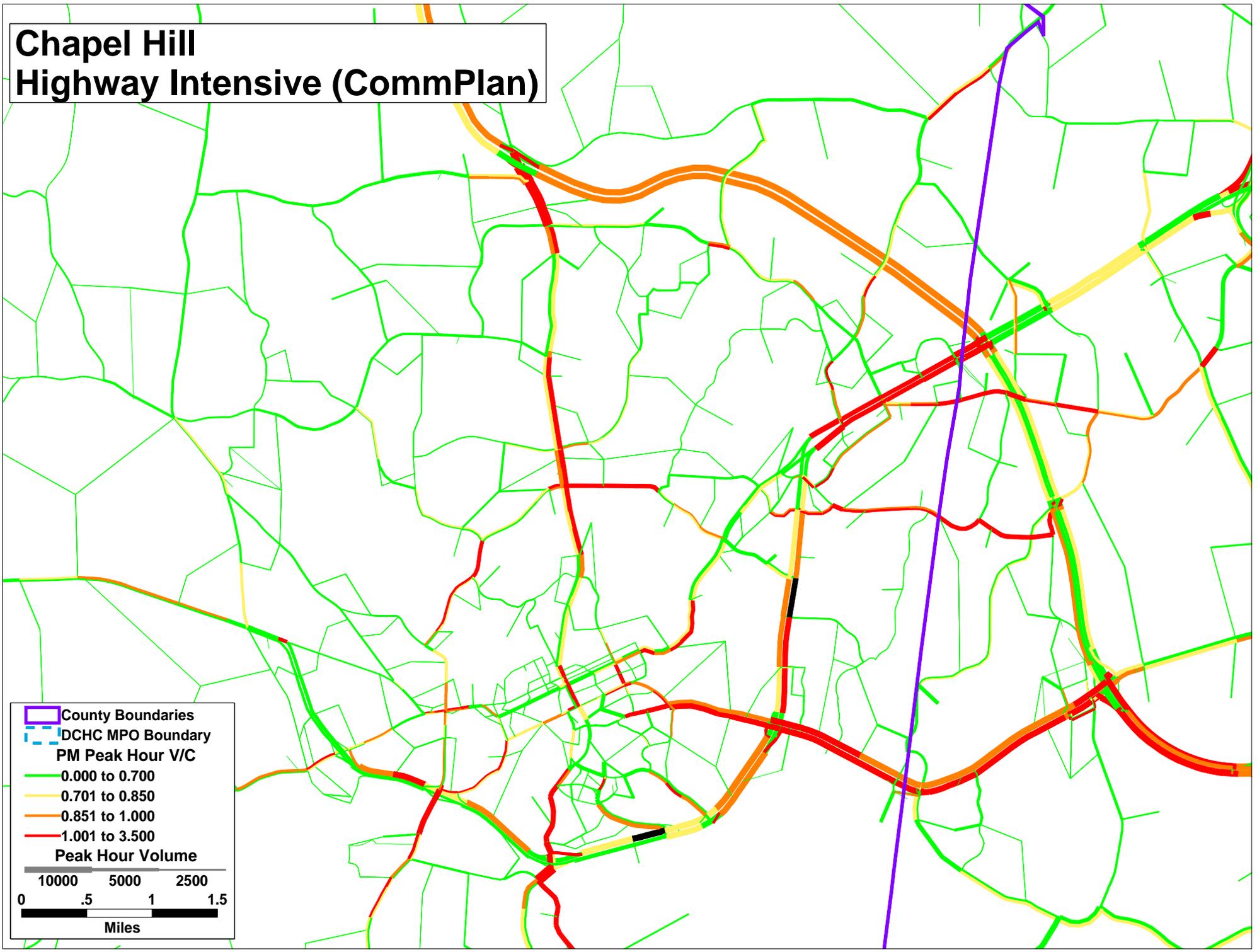
Downtown Durham Highway Intensive (CommPlan)



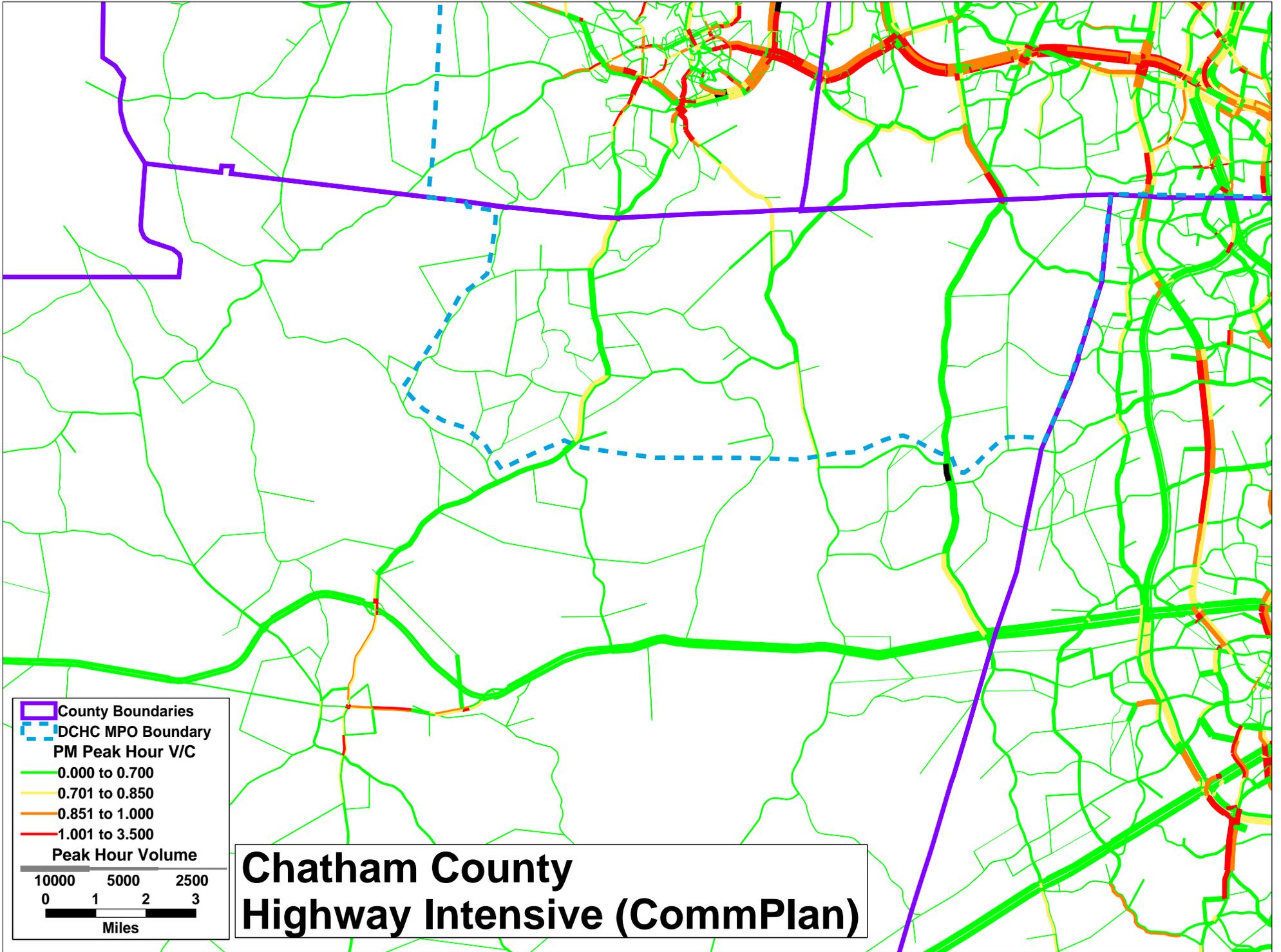
Orange County Highway Intensive (CommPlan)



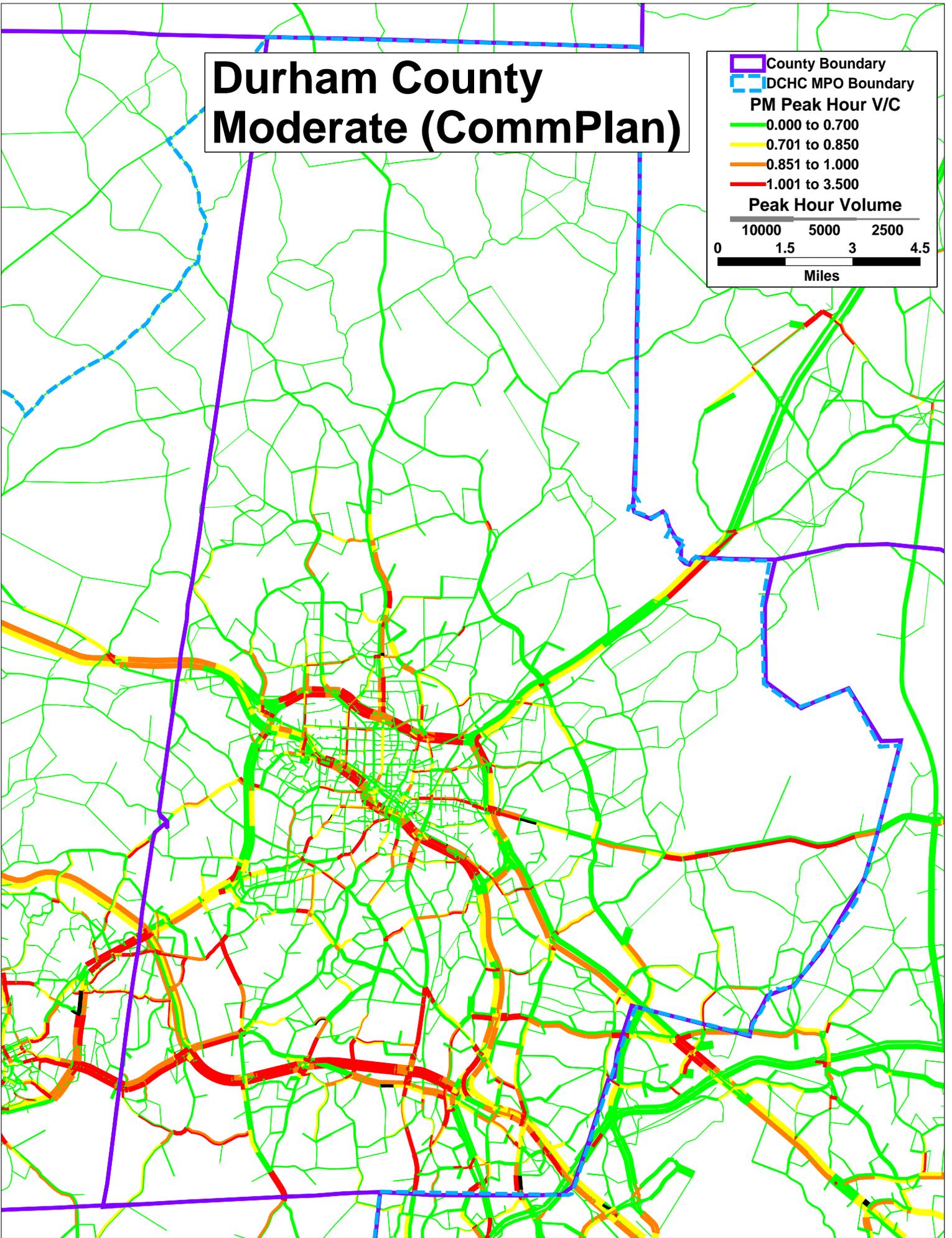
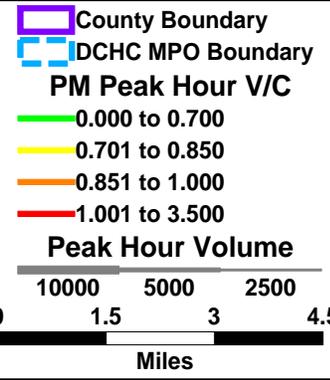
Chapel Hill Highway Intensive (CommPlan)



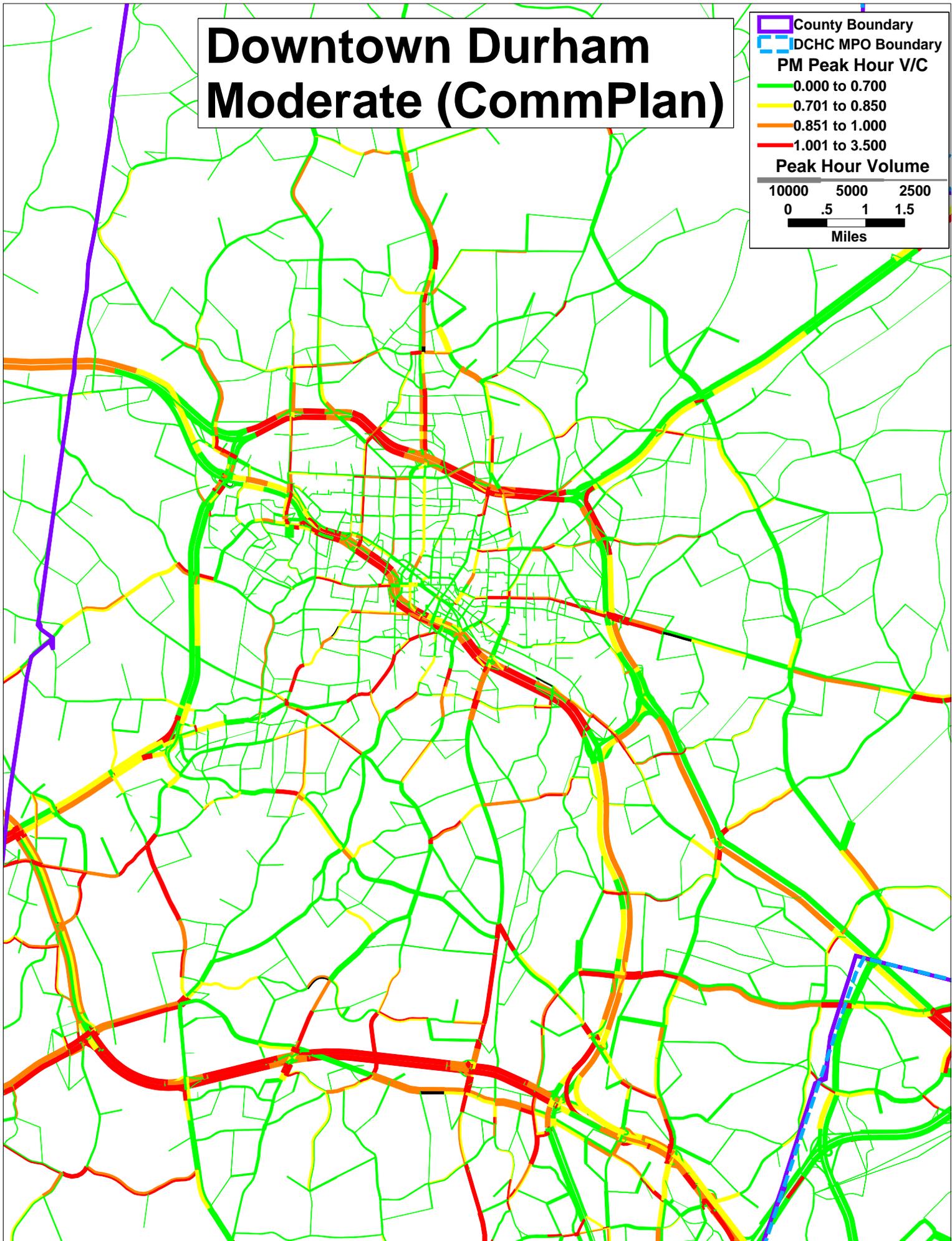
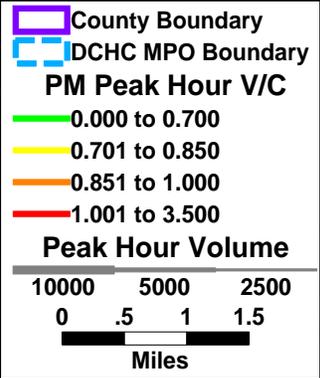
County Boundaries
DCHC MPO Boundary
PM Peak Hour V/C
0.000 to 0.700
0.701 to 0.850
0.851 to 1.000
1.001 to 3.500
Peak Hour Volume
10000 5000 2500
0 .5 1 1.5
Miles



Durham County Moderate (CommPlan)



Downtown Durham Moderate (CommPlan)



Orange County Moderate (CommPlan)

 County Boundary

 DCHC MPO Boundary

PM Peak Hour V/C

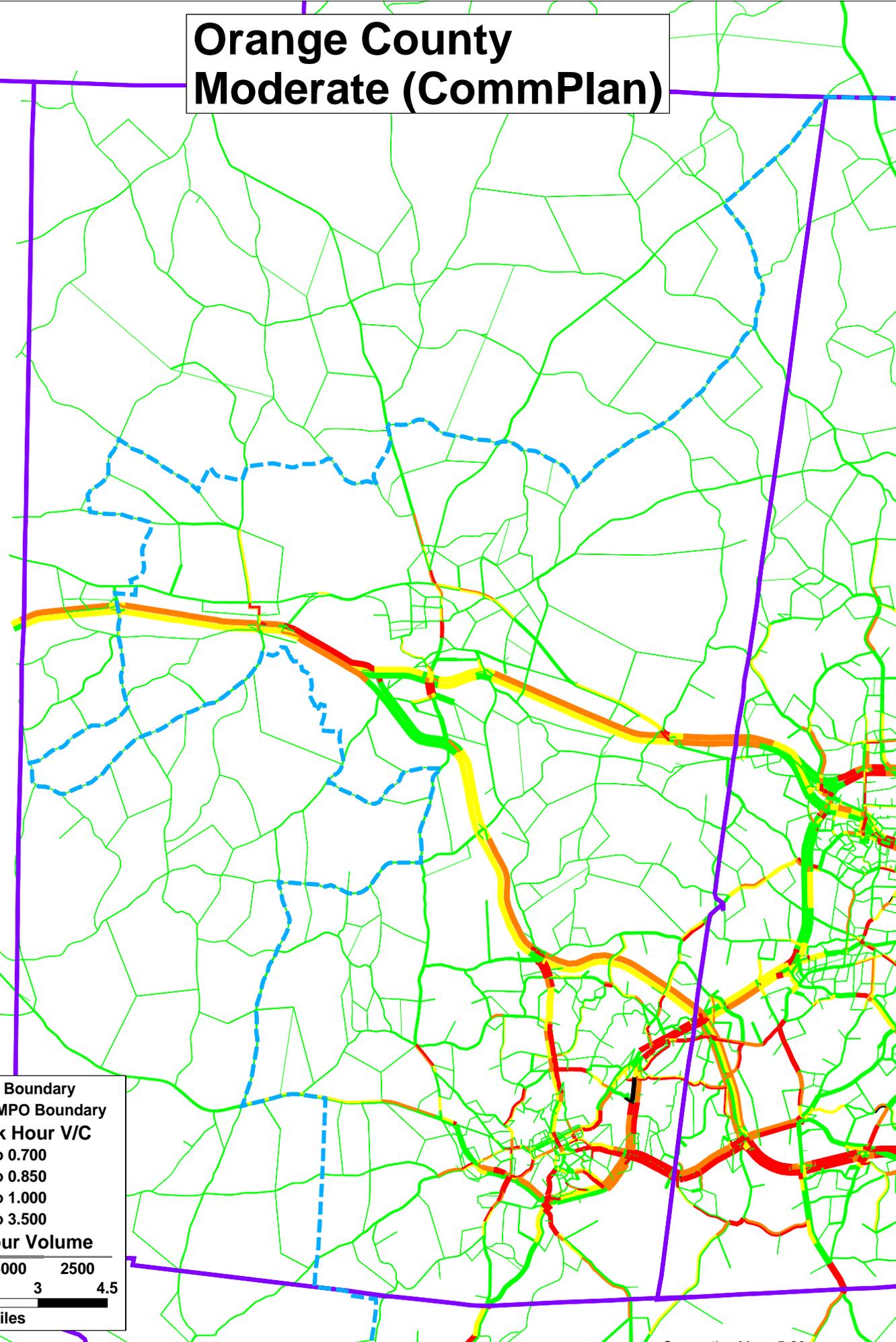
-  0.000 to 0.700
-  0.701 to 0.850
-  0.851 to 1.000
-  1.001 to 3.500

Peak Hour Volume

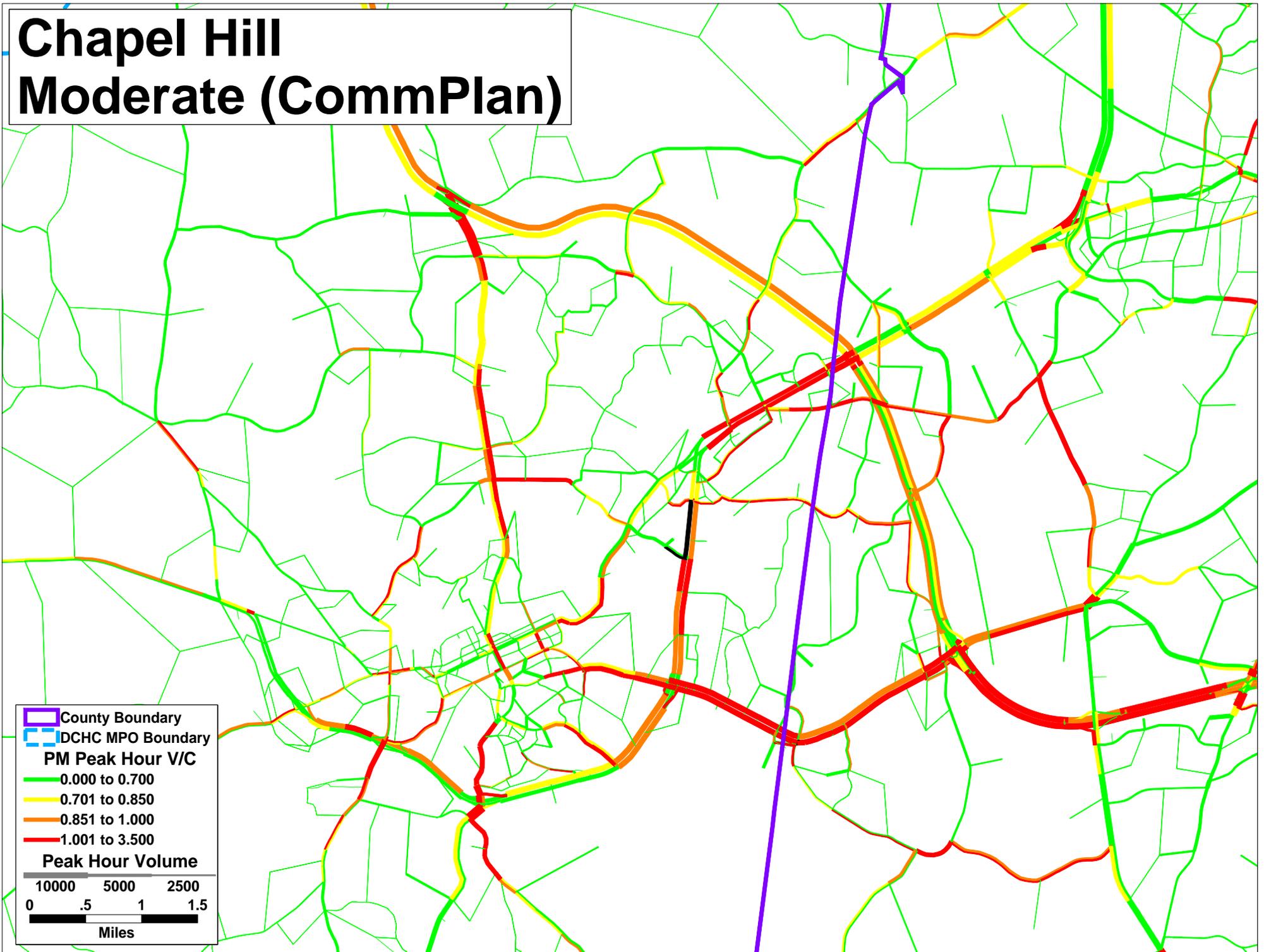
10000 5000 2500

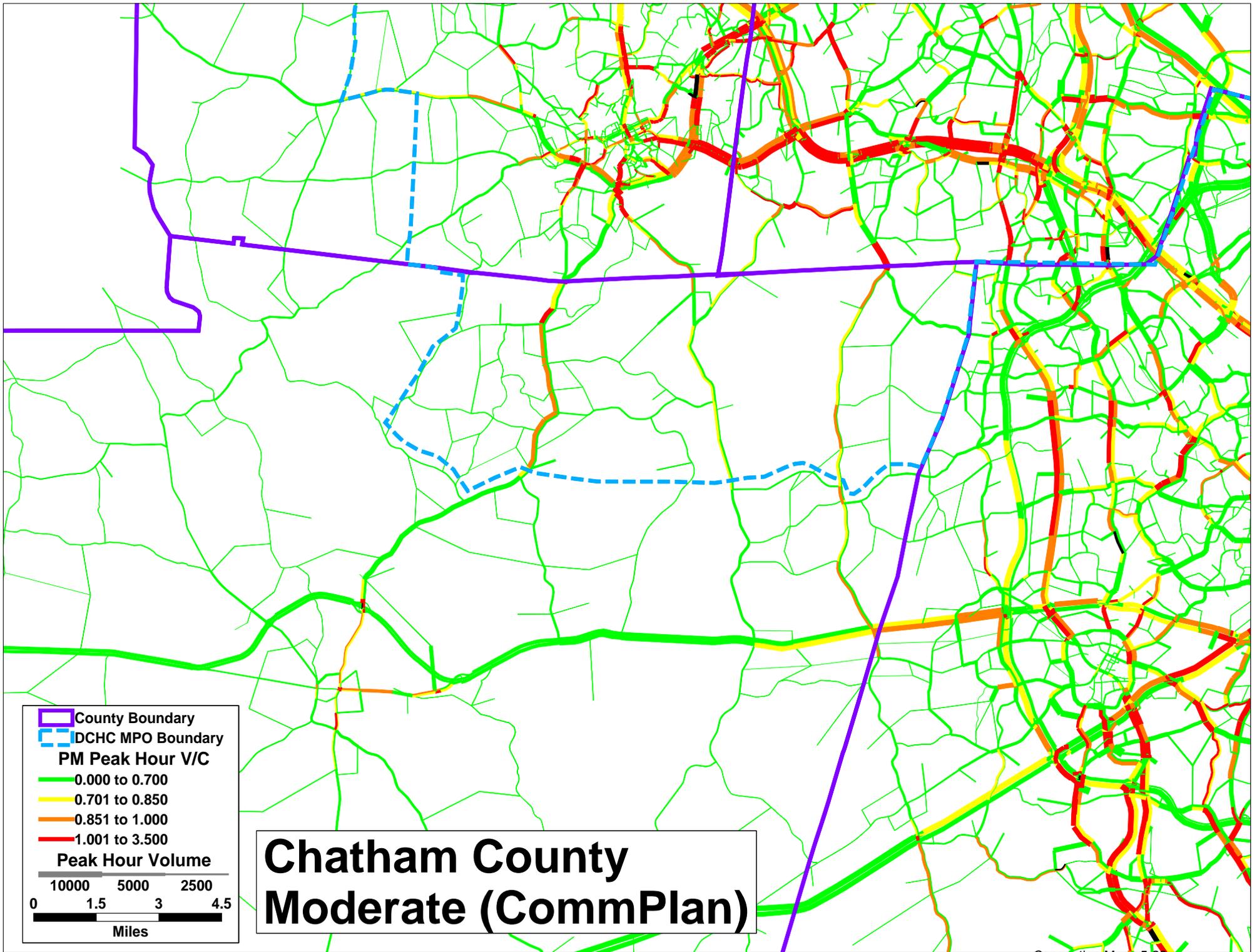
0 1.5 3 4.5

Miles

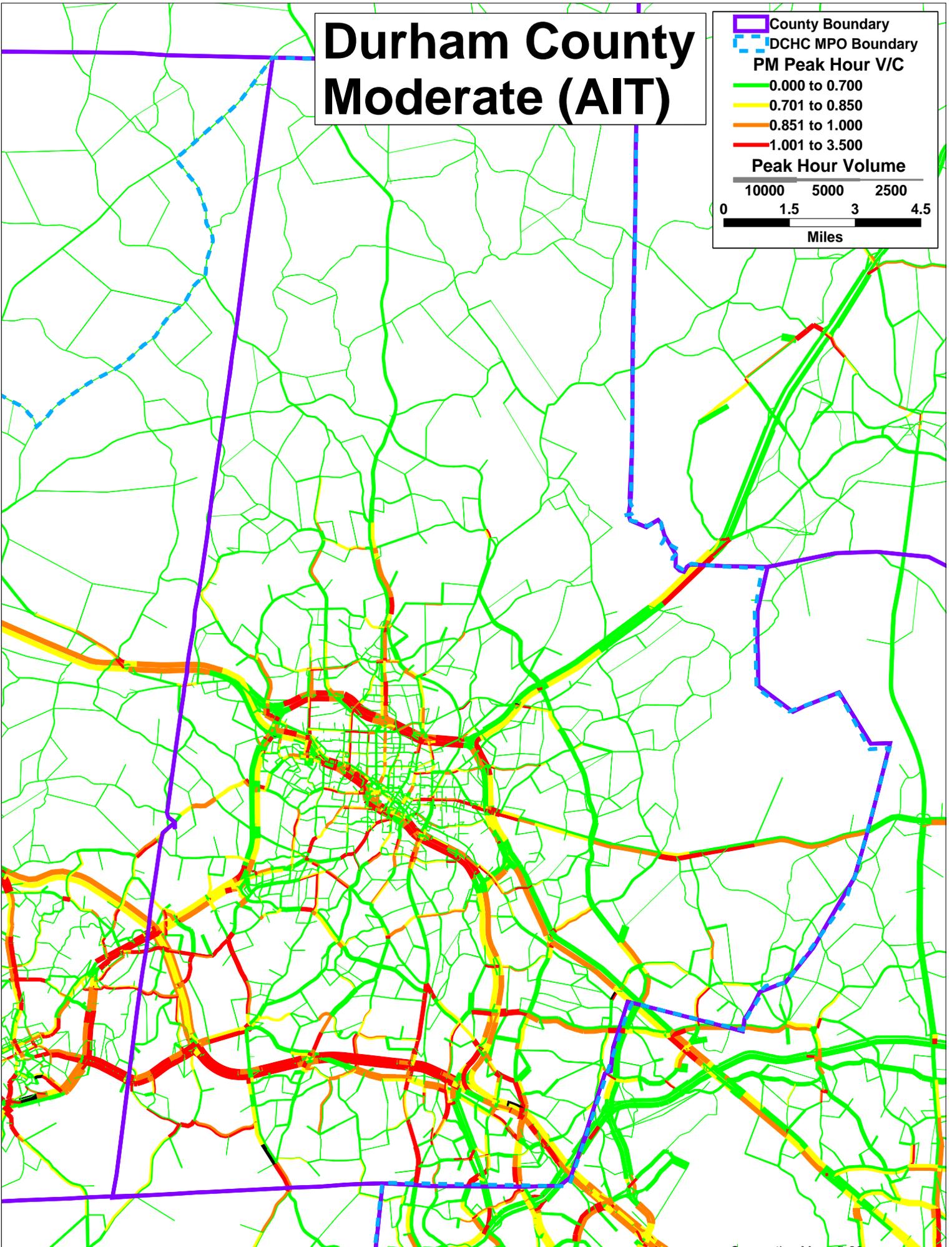
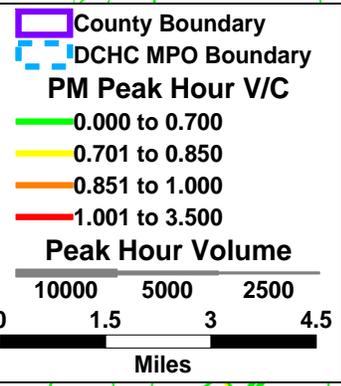


Chapel Hill Moderate (CommPlan)





Durham County Moderate (AIT)



Downtown Durham Moderate (AIT)

County Boundary
DCHC MPO Boundary

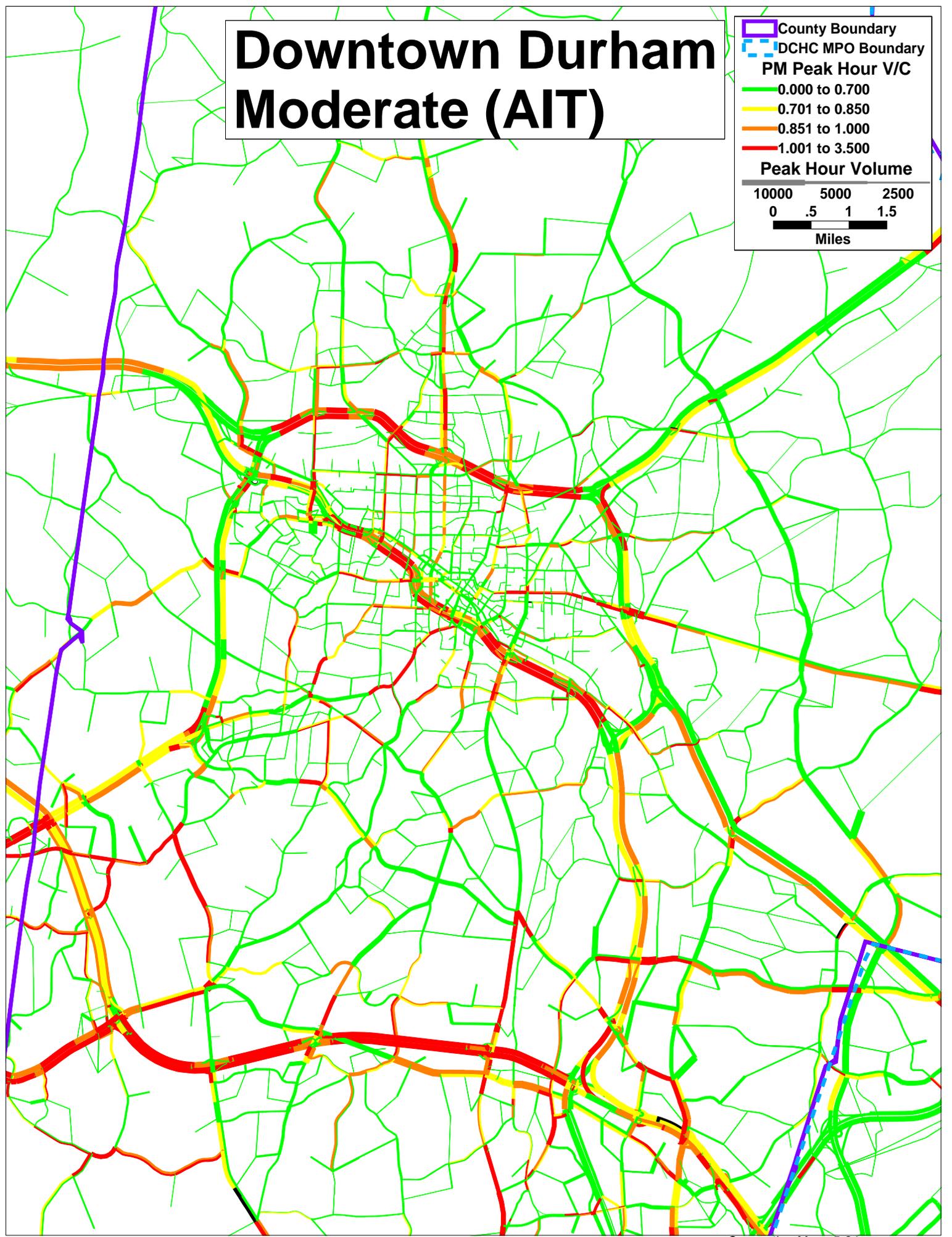
PM Peak Hour V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.001 to 3.500

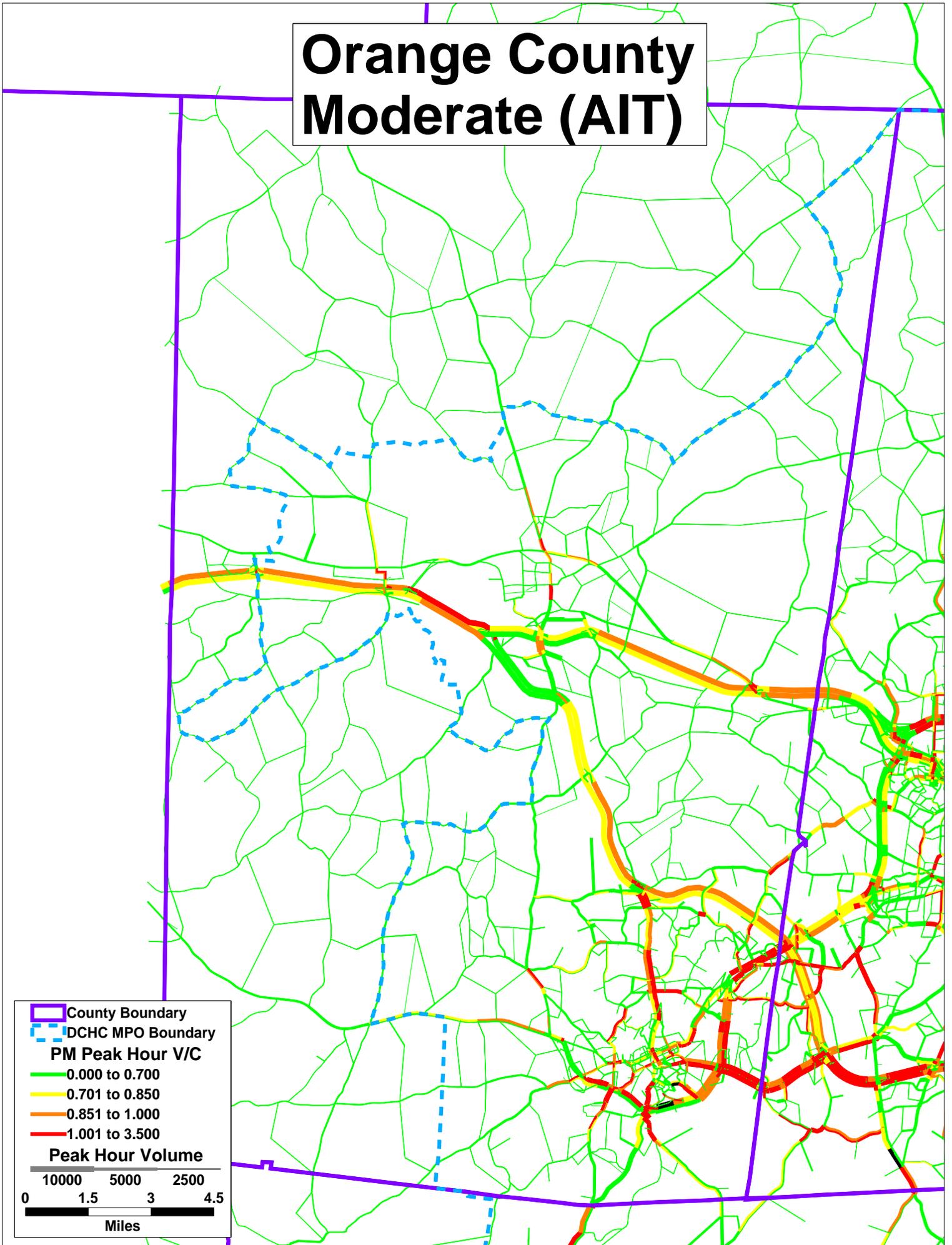
Peak Hour Volume

| | | | |
|-------|------|------|-----|
| 10000 | 5000 | 2500 | |
| 0 | .5 | 1 | 1.5 |

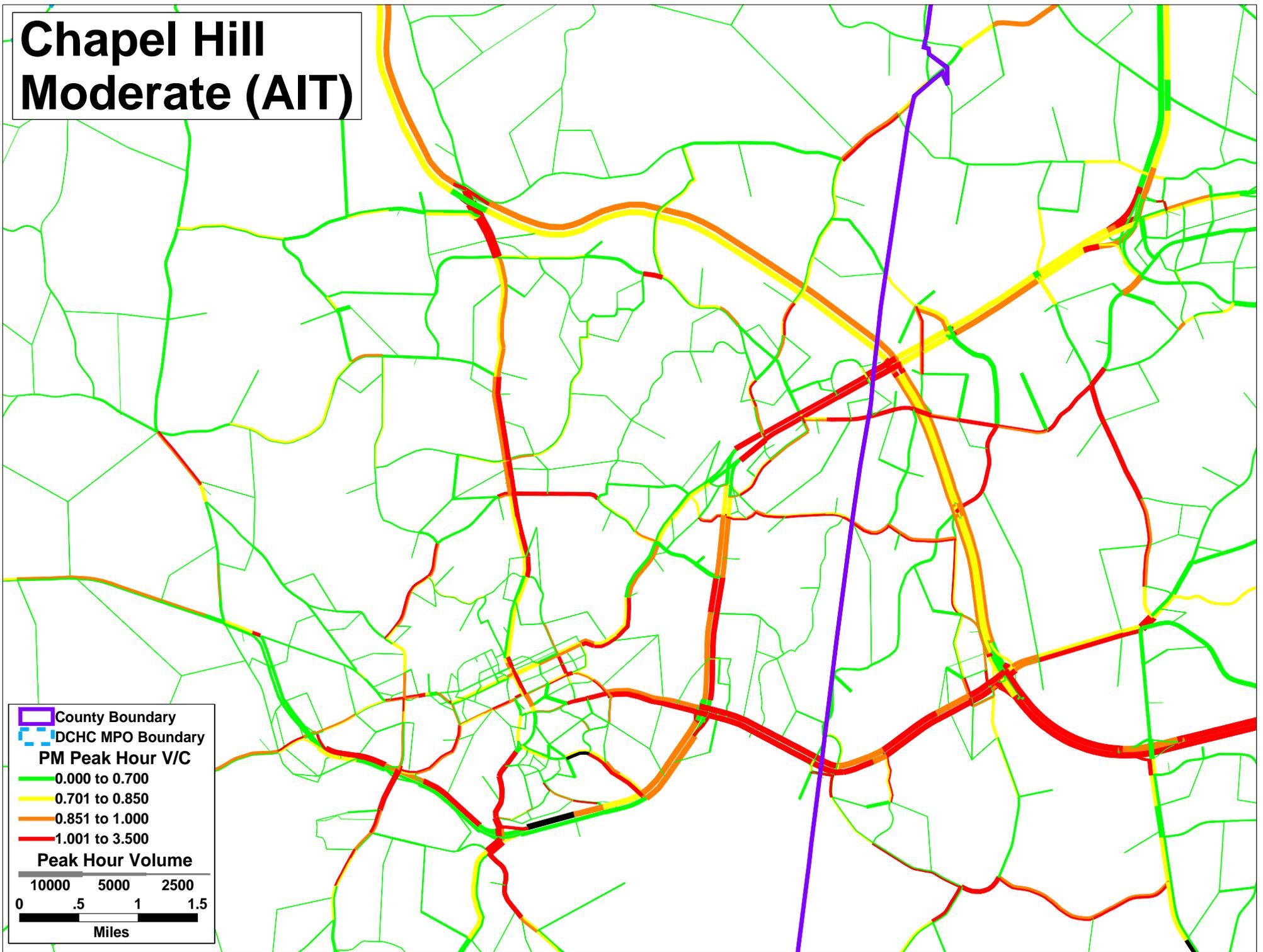
Miles

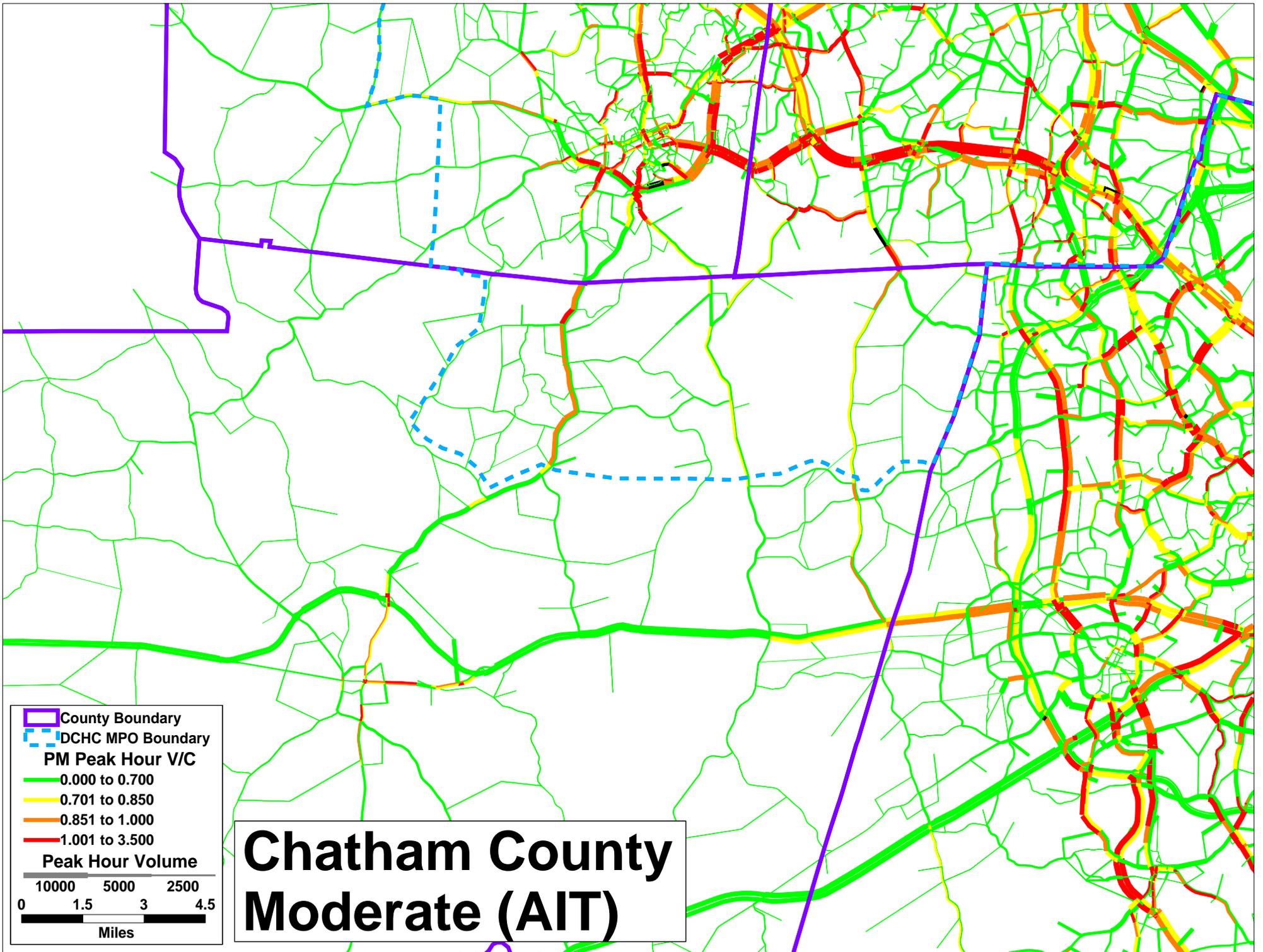


Orange County Moderate (AIT)

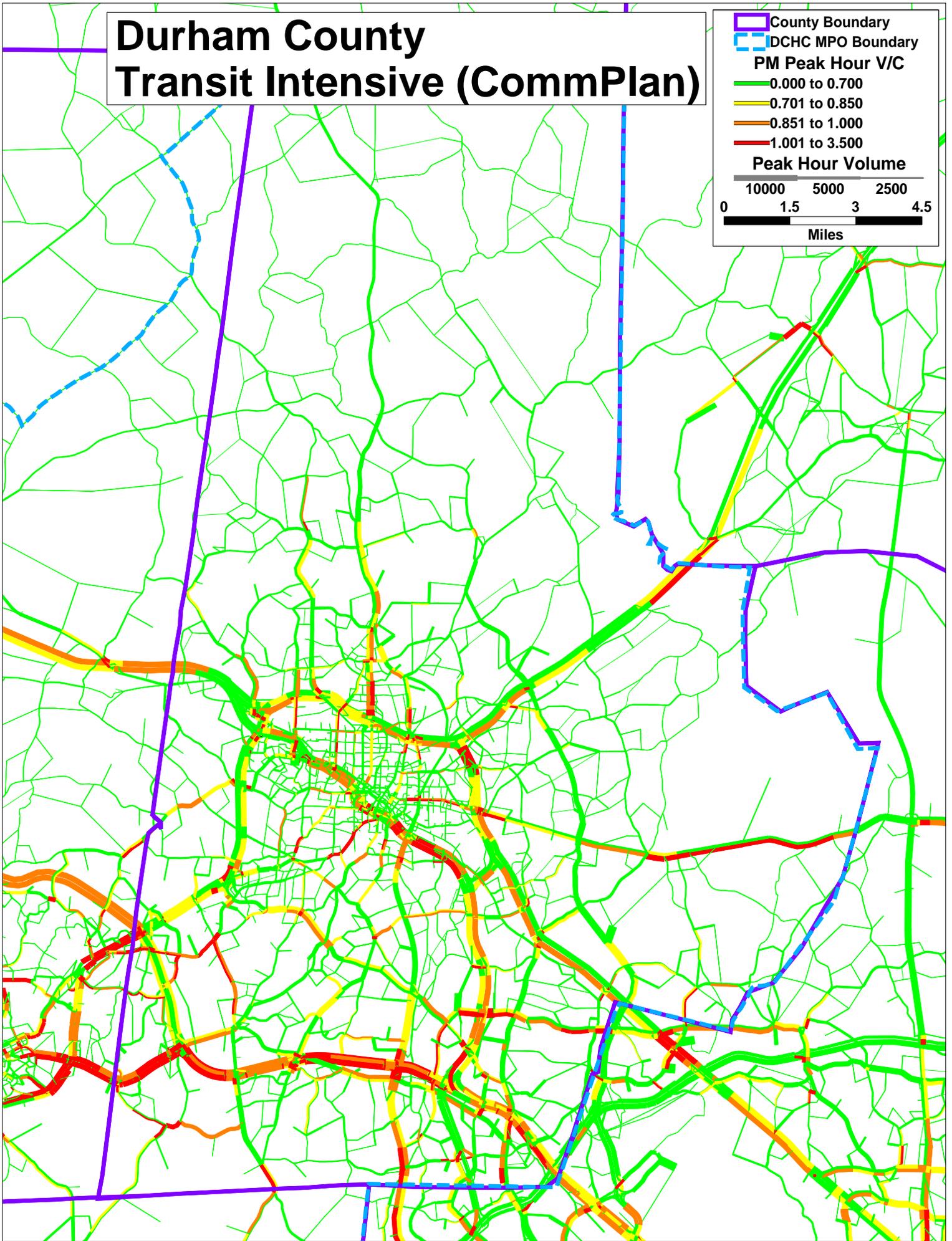
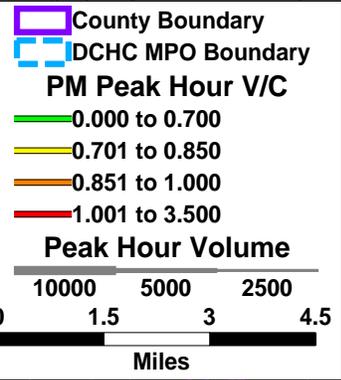


Chapel Hill Moderate (AIT)





Durham County Transit Intensive (CommPlan)



Downtown Durham Transit Intensive (CommPlan)

County Boundary
DCHC MPO Boundary

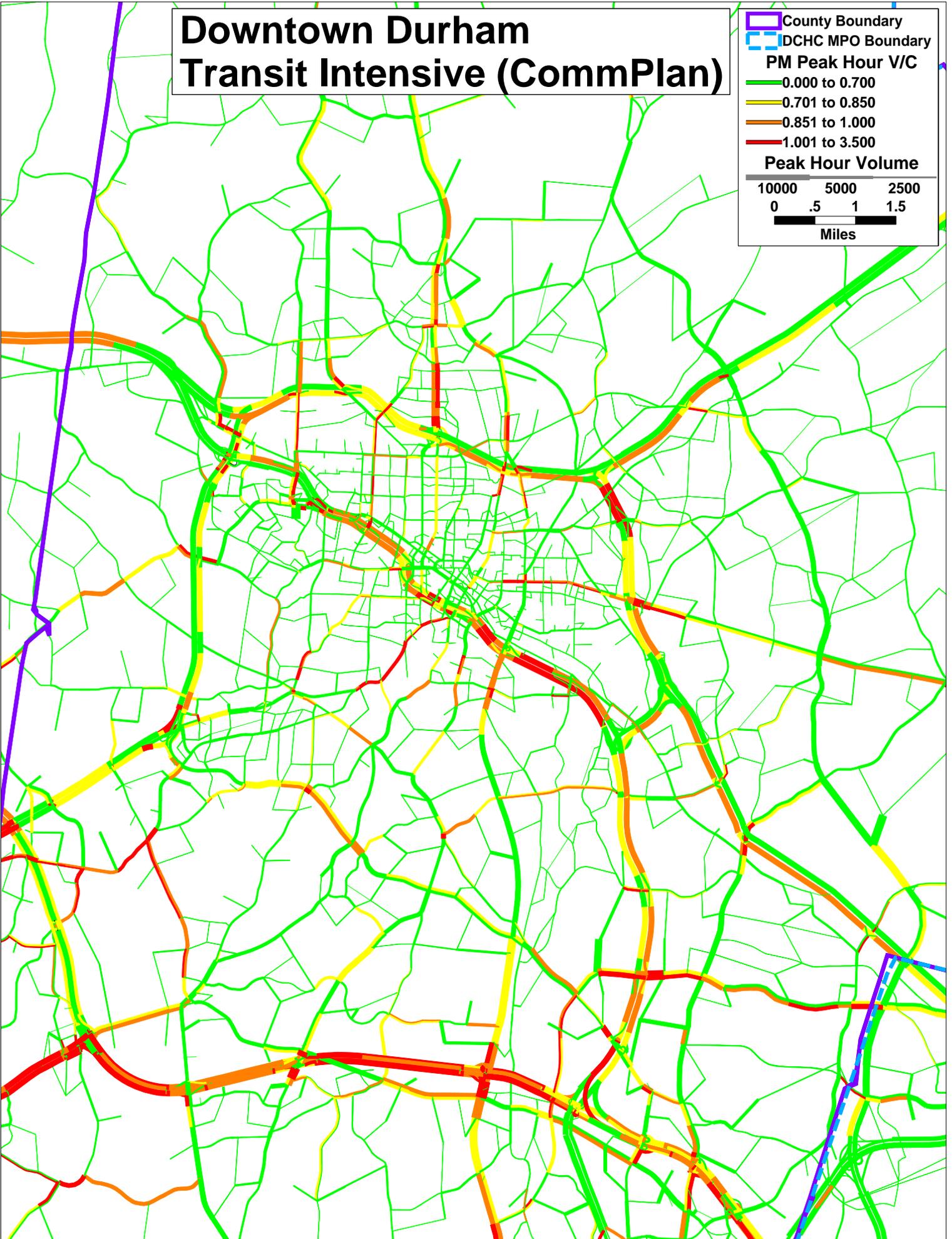
PM Peak Hour V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.001 to 3.500

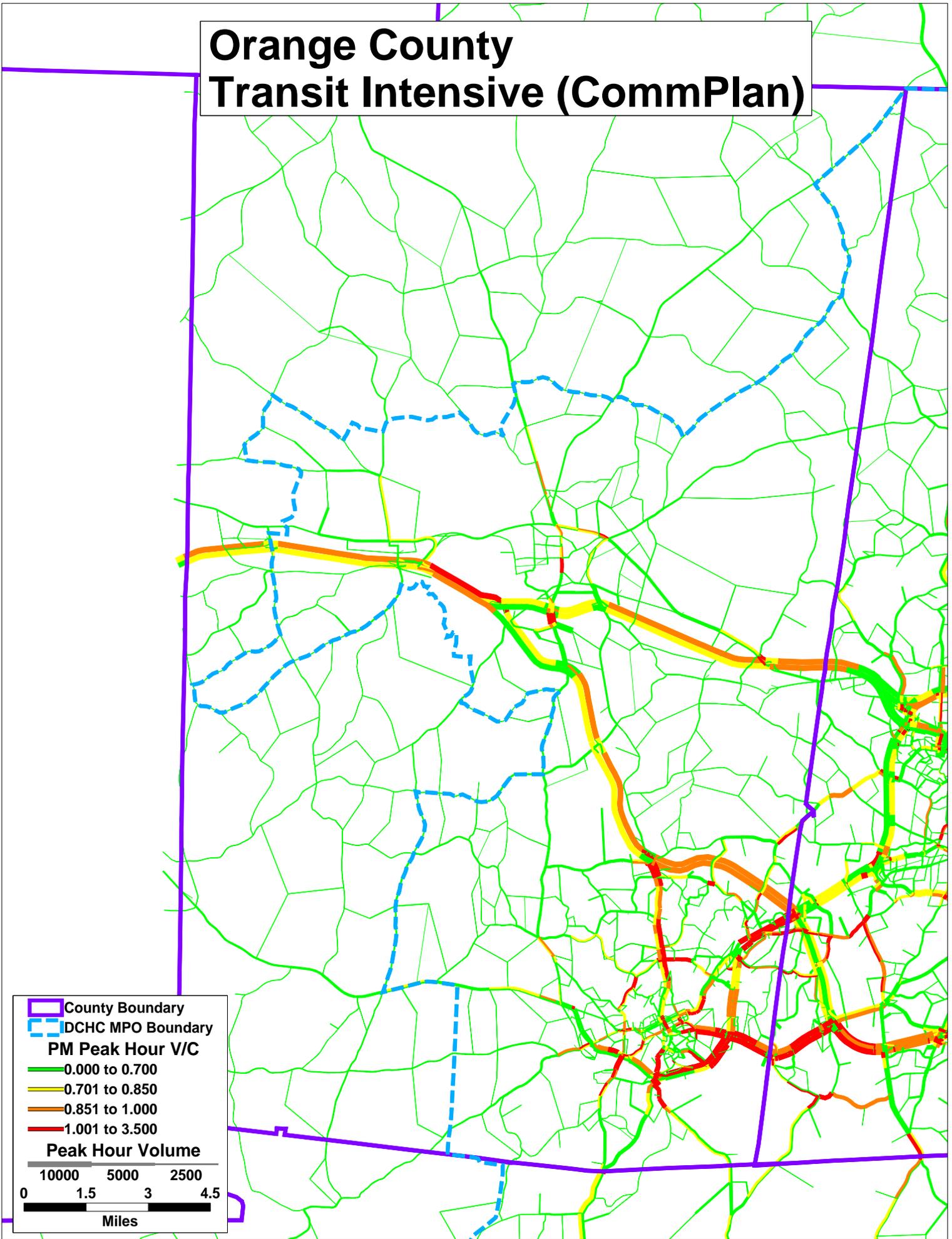
Peak Hour Volume

| | | | |
|-------|------|------|-----|
| 10000 | 5000 | 2500 | |
| 0 | .5 | 1 | 1.5 |

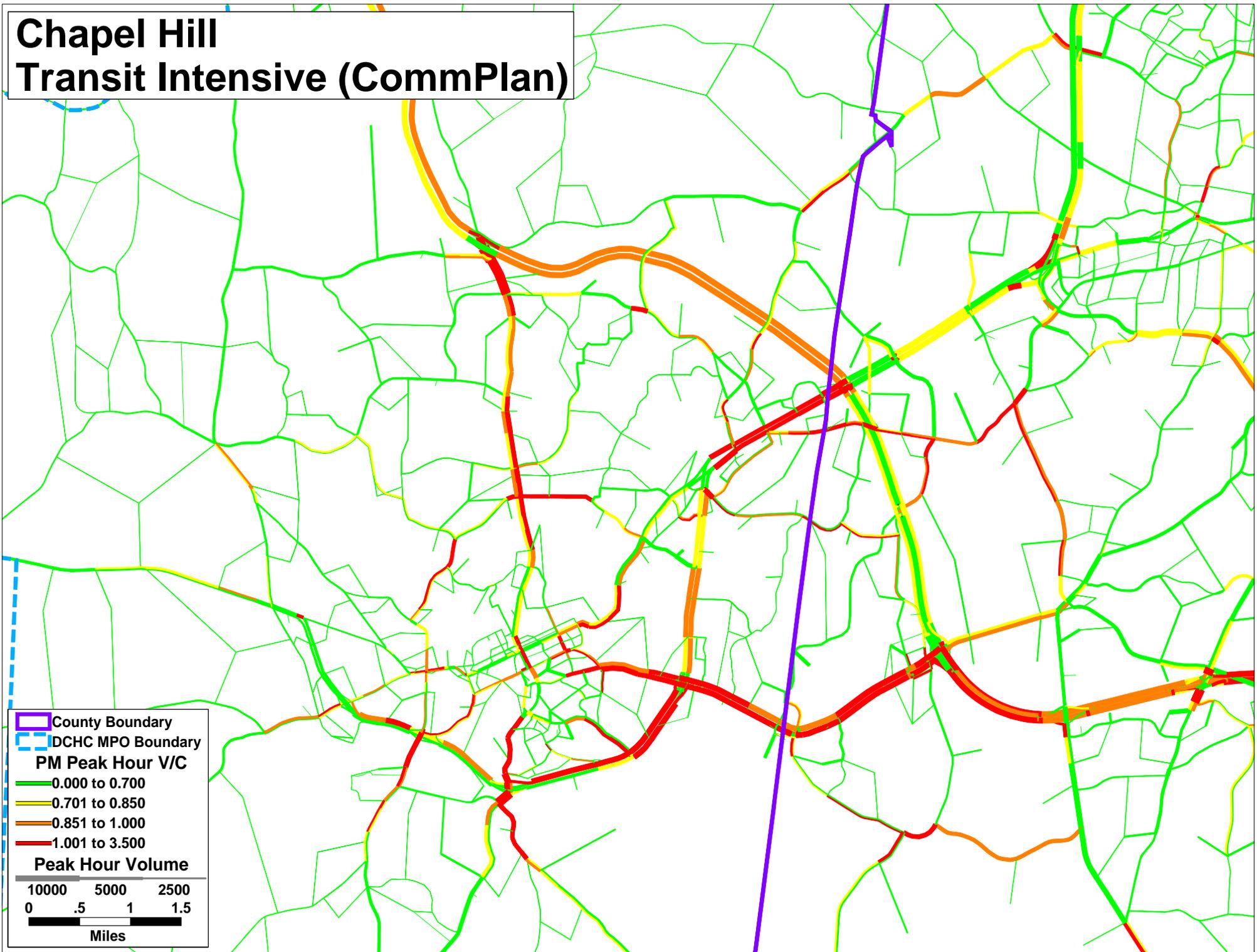
Miles

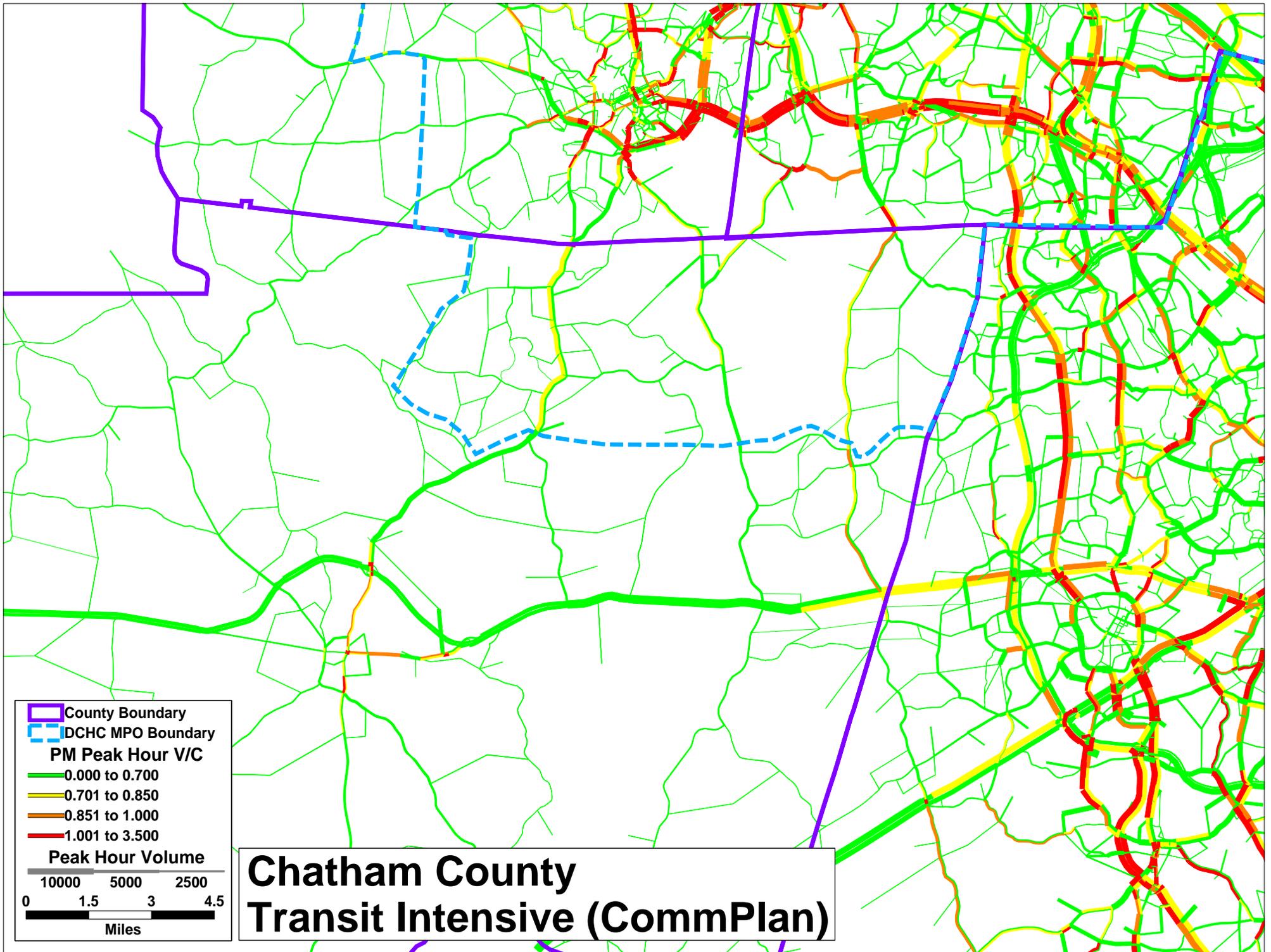


Orange County Transit Intensive (CommPlan)

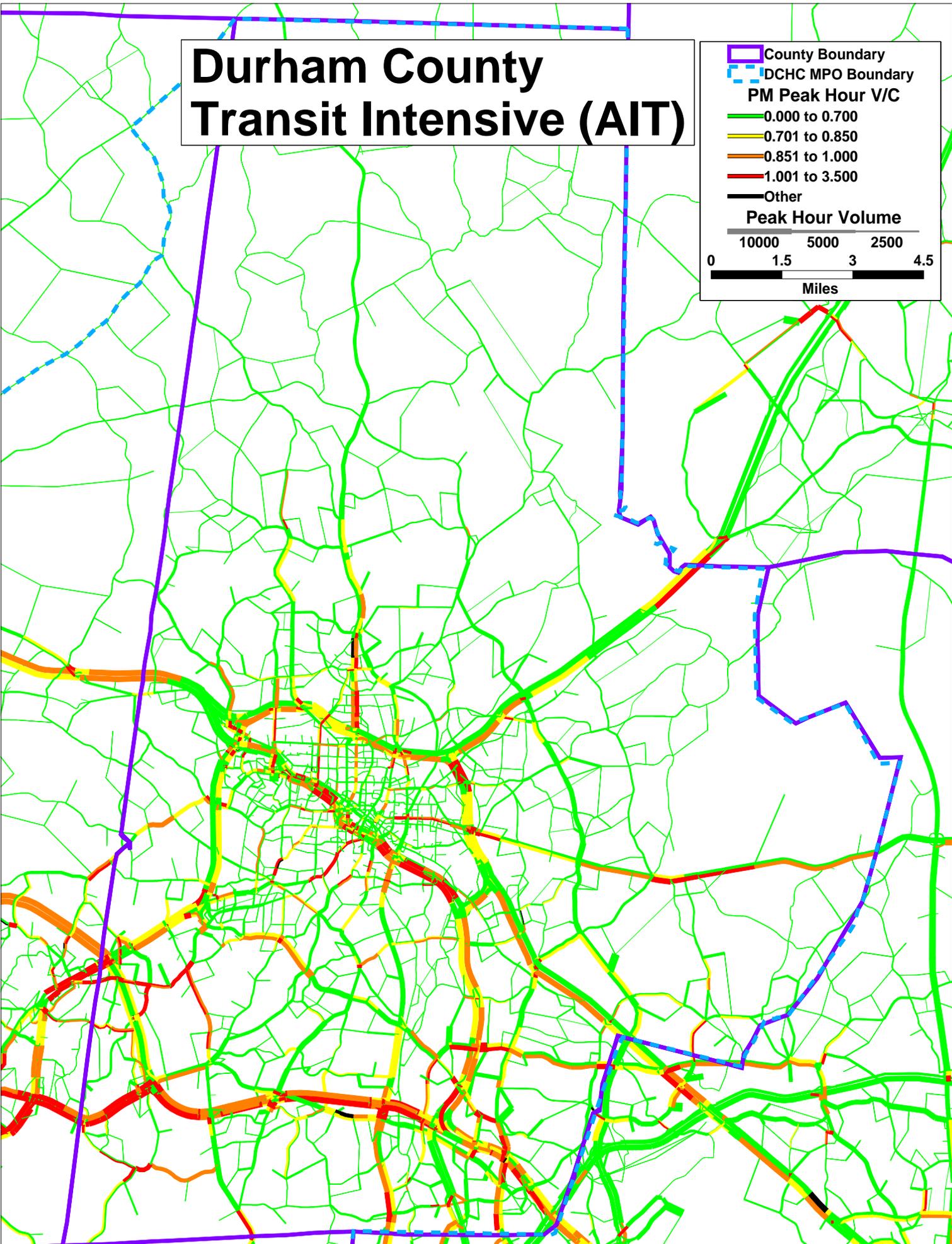
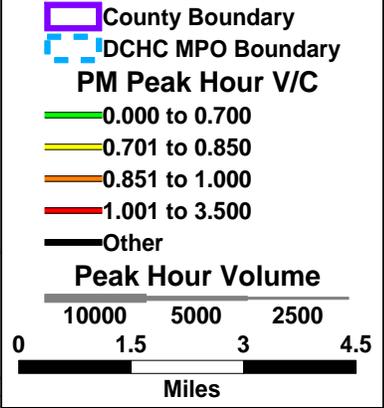


Chapel Hill Transit Intensive (CommPlan)





Durham County Transit Intensive (AIT)



Downtown Durham Transit Intensive (AIT)

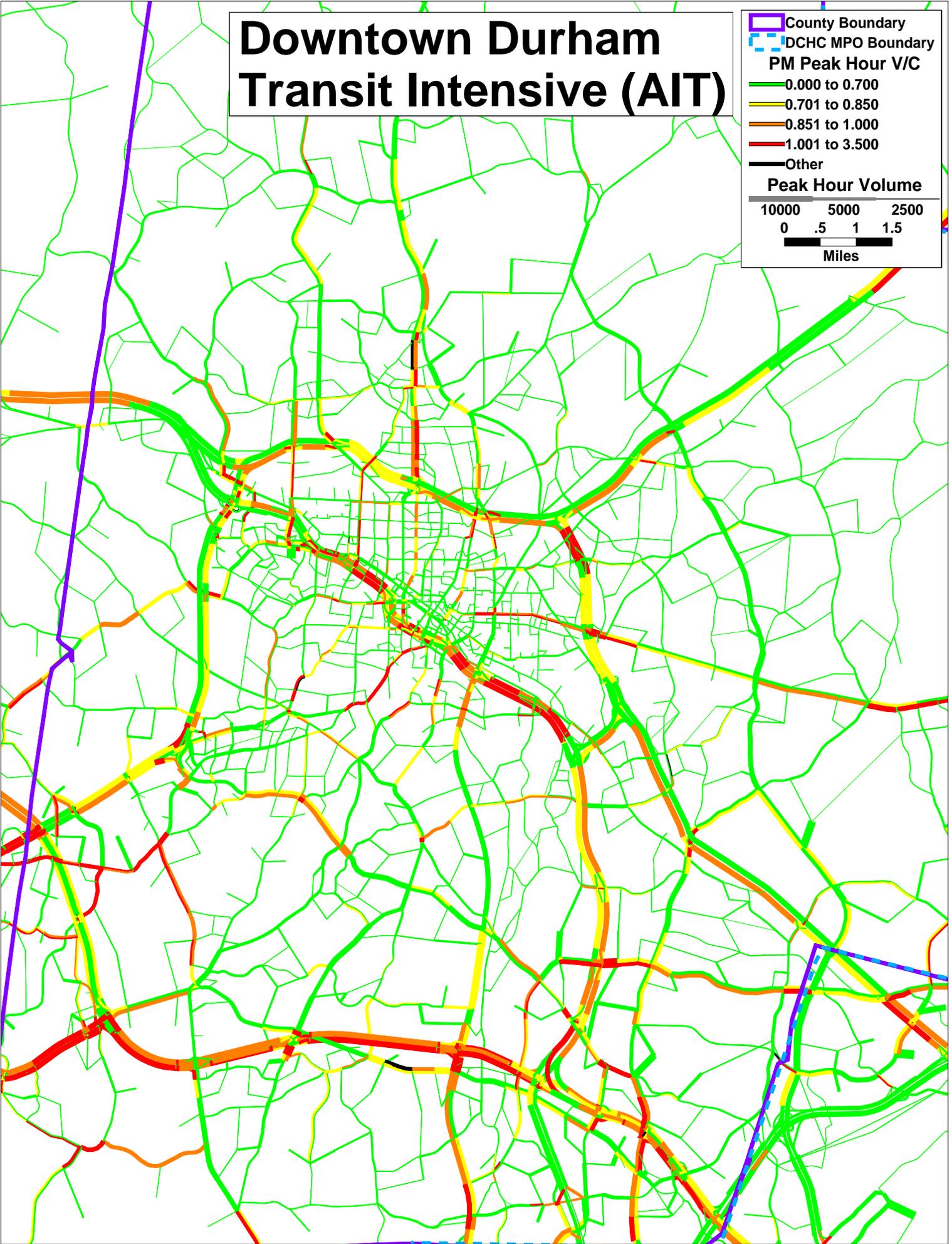
County Boundary
DCHC MPO Boundary
PM Peak Hour V/C

- 0.000 to 0.700
- 0.701 to 0.850
- 0.851 to 1.000
- 1.001 to 3.500
- Other

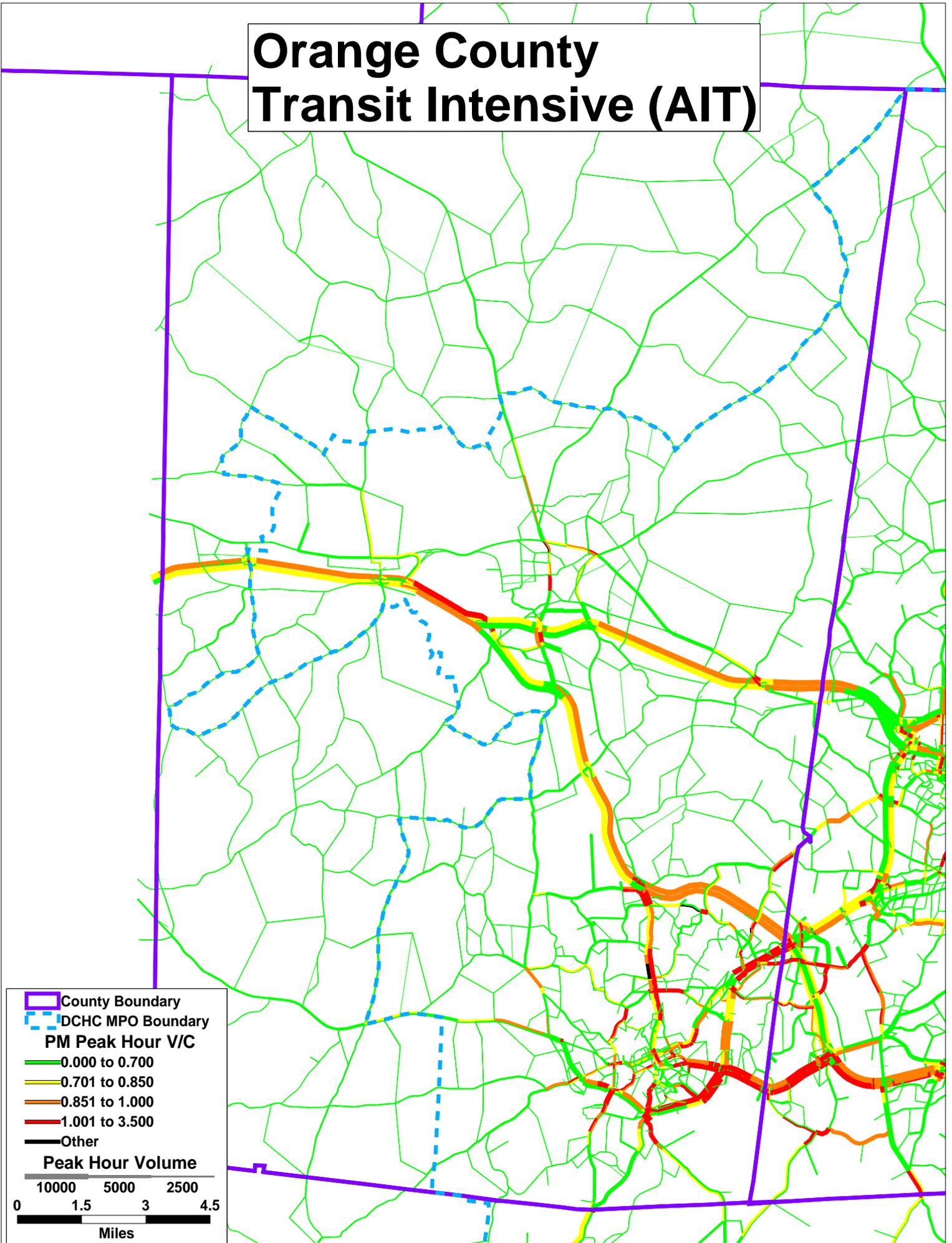
Peak Hour Volume

| | | | |
|-------|------|------|-----|
| 10000 | 5000 | 2500 | |
| 0 | .5 | 1 | 1.5 |

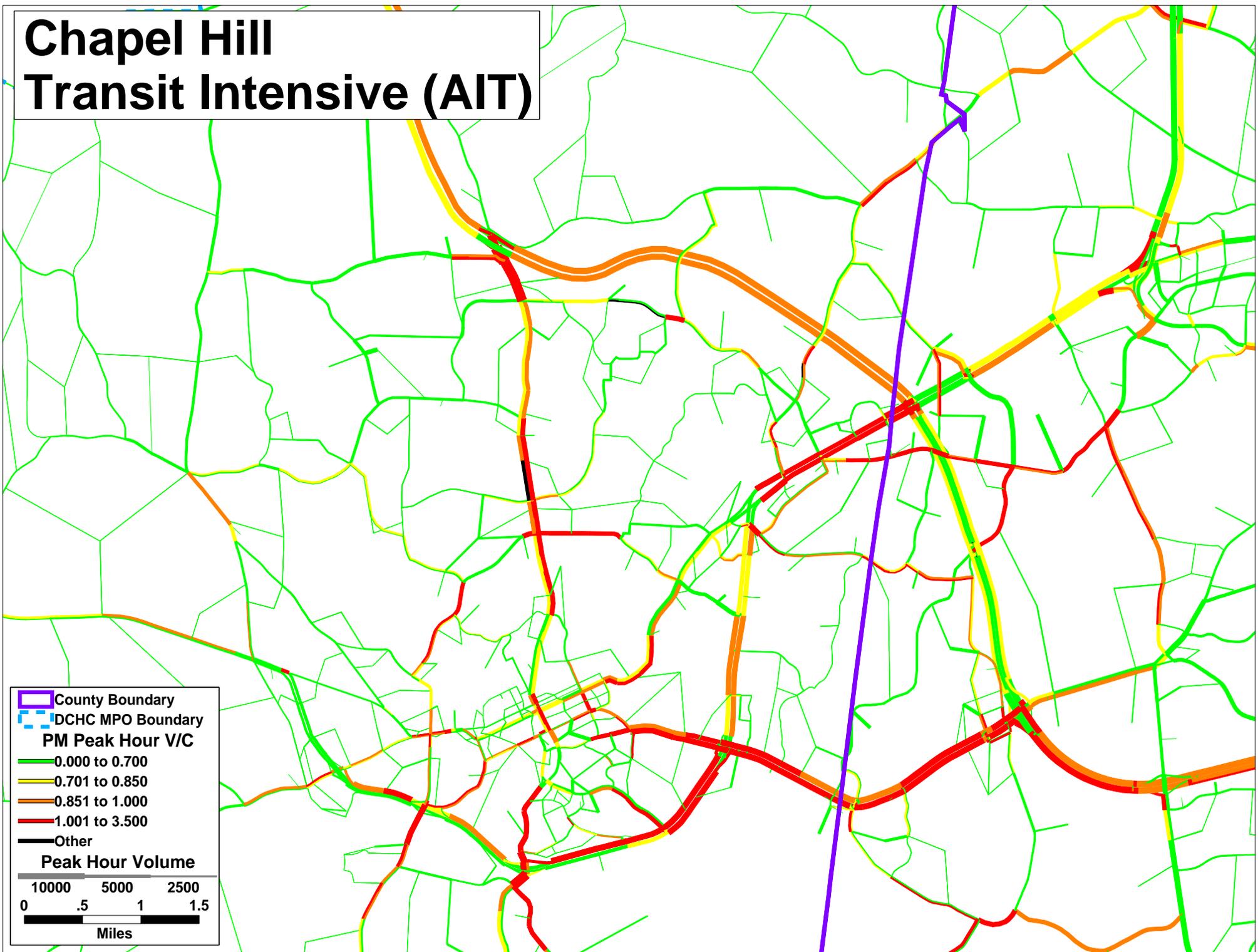
Miles

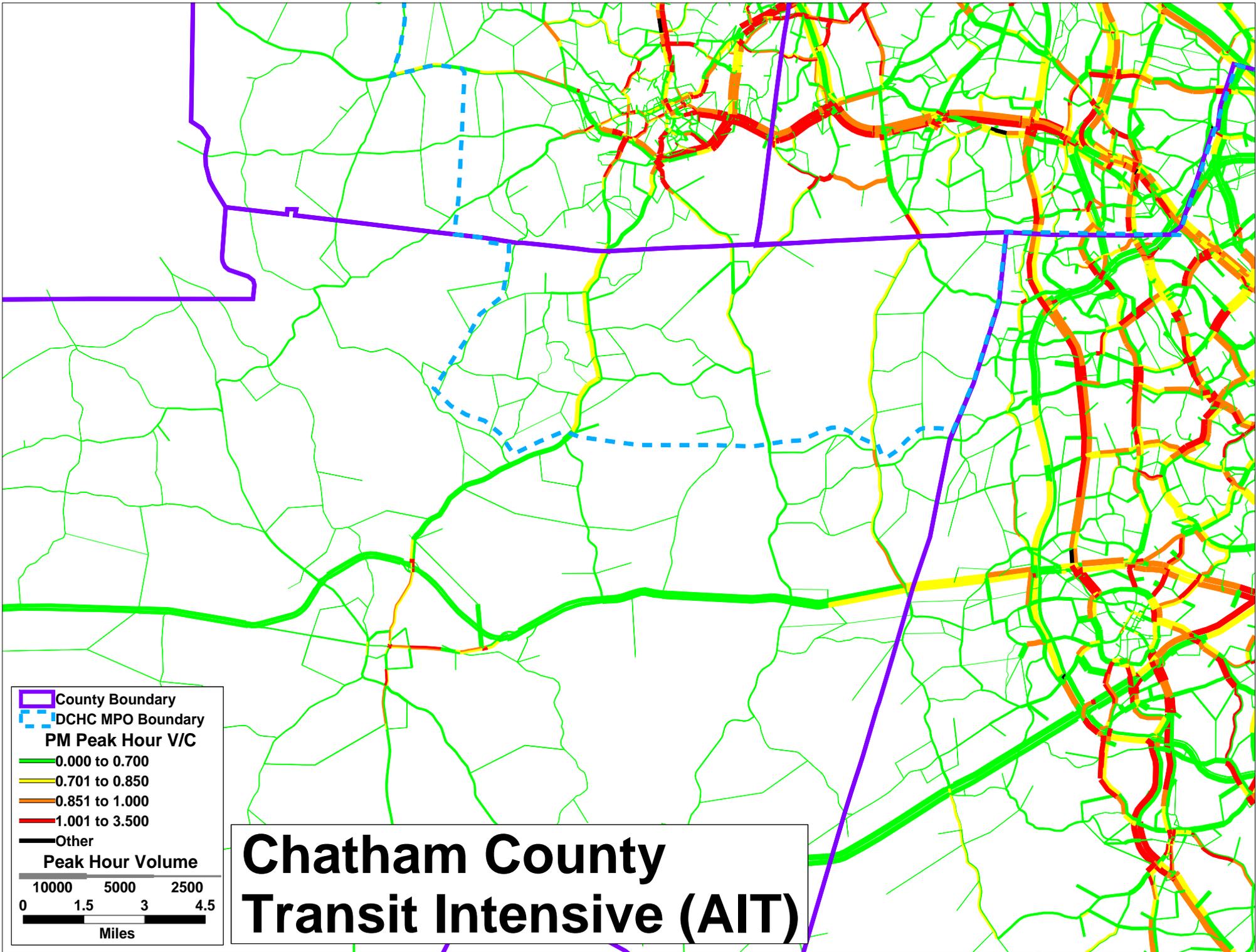


Orange County Transit Intensive (AIT)



Chapel Hill Transit Intensive (AIT)





2040 MTP and CTP Socioeconomic Data

Purpose of Socioeconomic Data

The socioeconomic data (SE Data) shows the location of the population and employment, median household income and other demographic data that drives the travel demand. The SE Data is among the most important inputs into the Triangle Regional Model (TRM) because the residential data is used to determine the number and type of trips and the employment data is critical for determining the destination for those trips. The distance between residential and employment centers, and the location of roads and transit service in relation to those house and jobs, will have a big impact on the travel distance, travel time, mode shares, and congestion in the TRM output.

Scenarios

The DCHC MPO and the Capital Area MPO partnered together in a process called *Imagine 2040* to create a land use model for the entire Triangle region that is capable of producing multiple land use scenarios. The GIS (geographic information system) software called *Community Visualization* provides the method and data bases for the scenarios. This partnership created two distinct SE Data scenarios for use in the Alternatives:

CommPlan – The Community Plan scenario is based on the comprehensive land use plans of the local jurisdictions and counties.

AIT – The All-in-Transit scenario starts with the comprehensive land use plans and adds transit oriented development (TOD) around the light rail and commuter rail stations. The TOD has higher density and more mixed land uses than the anticipated development in the CommPlan. In addition, the factors in this land use scenario that drive the attractiveness of the parcels (e.g., land use suitability) are weighted more positively for rail transit stations.

It is important to note that the county-level population and employment are the same between the two scenarios. The county-level guide totals established for each county earlier in the 2040 MTP process are used for both scenarios. The difference between the two scenarios is the location. The population and employment in the AIT scenario is more concentrated around the rail transit stations than in the CommPlan scenario.

Detailed Information

The DCHC MPO released draft SE Data for the 2040 MTP in March 2012 for public comment, and subsequently updated the draft SE Data in June 2012. As a result, the MPO's Web site, www.dchcmo.org, has ample information on the use of SE Data in travel demand modeling, the Community Visualization process, population and employment guide totals for the year 2040, and more on the project pages for Deficiency Analysis and Draft 2040 Socioeconomic Data.

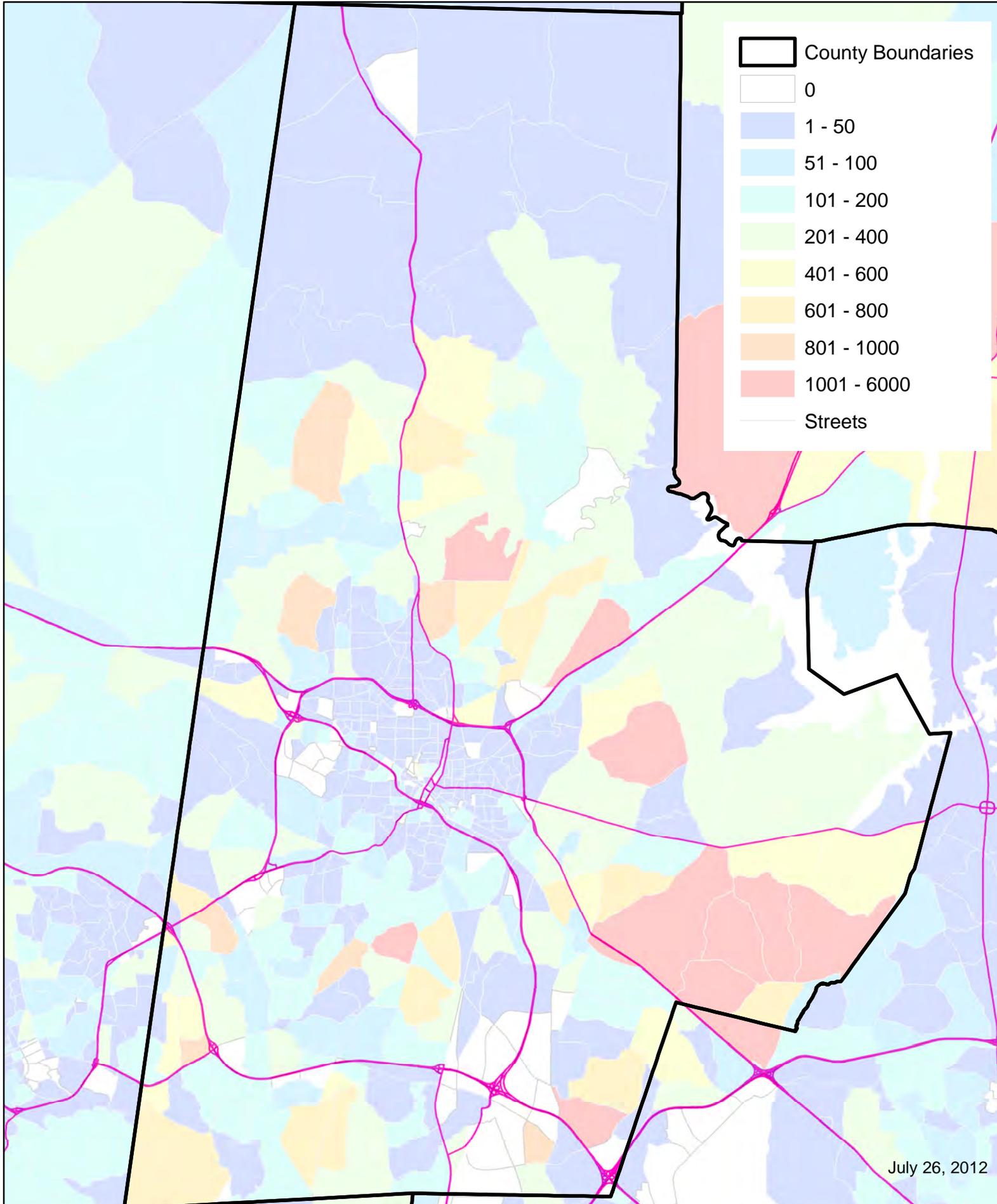
Presentation of SE Data

The maps on the ensuing pages show the household and employment growth from the year 2010 to 2040 for each scenario. The growth is broken out by traffic analysis zones (TAZs), which are the primary geographic input into the travel demand model. There are over 800 TAZs in the DCHC MPO and the TAZs are different sizes, tending to be small in the more urbanized area to account for the higher residential and employment concentrations. These are so-called heat maps – the color becomes “hotter” as the values increase. The maps views are by county. Close up maps for the City of Durham and Chapel Hill/Carrboro are available on the MPO Web site.

Durham County

SE Data 6-3

Community Plan--Dwelling Unit Growth 2010-2040

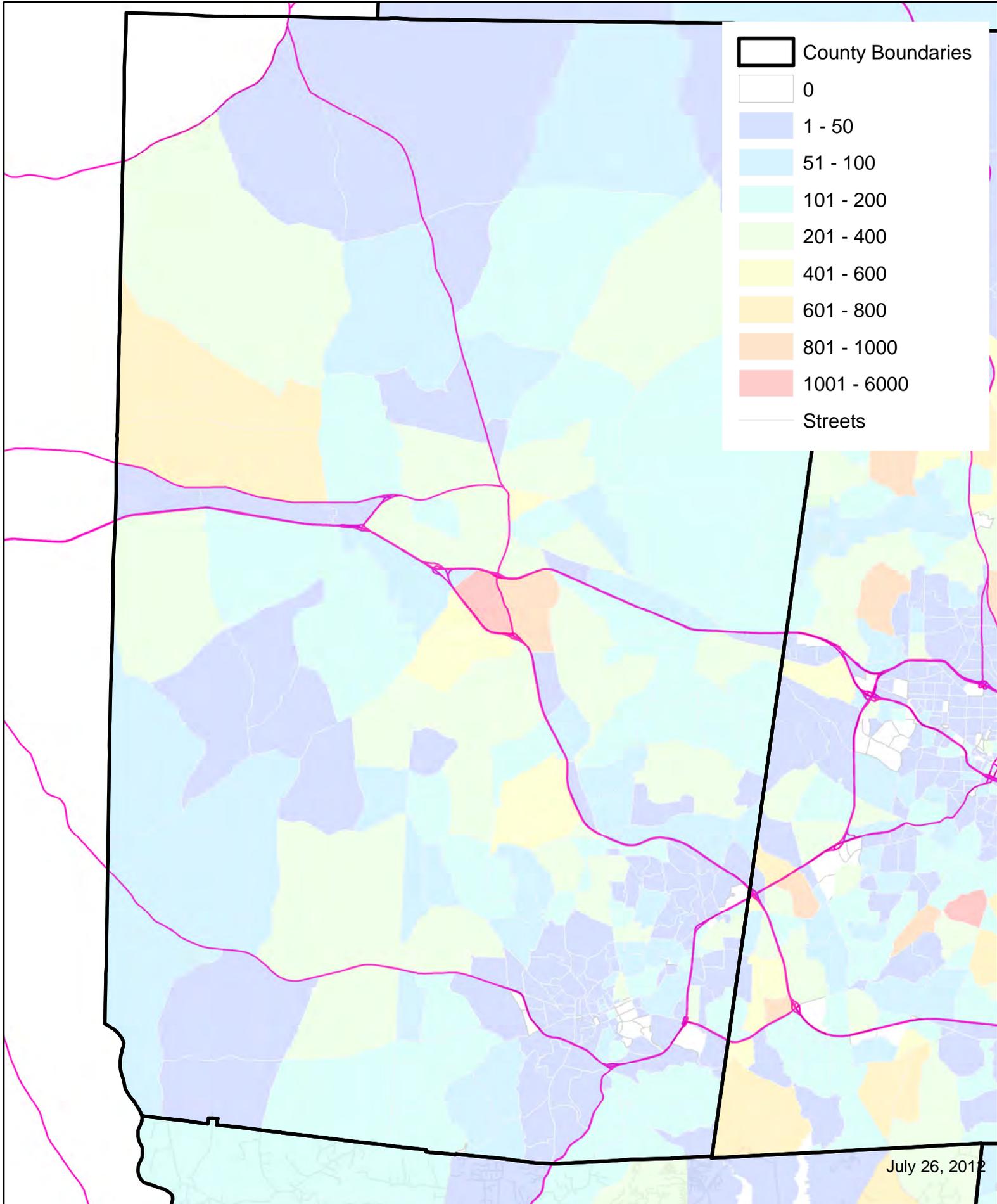


July 26, 2012

Orange County

SE Data 6-4

Community Plan--Dwelling Unit Growth 2010-2040

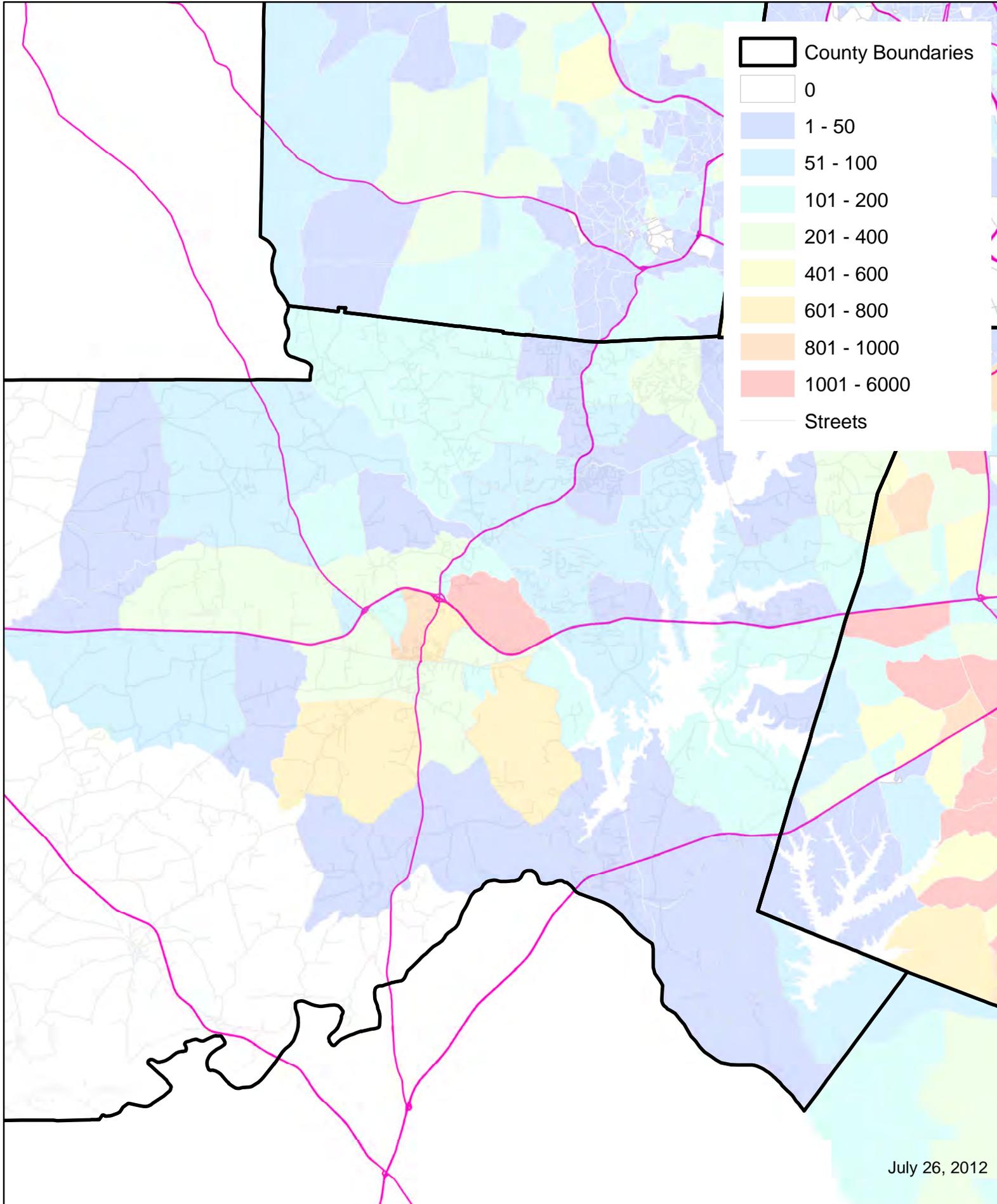


July 26, 2012

Chatham County

SE Data 6-5

Community Plan--Dwelling Unit Growth 2010-2040

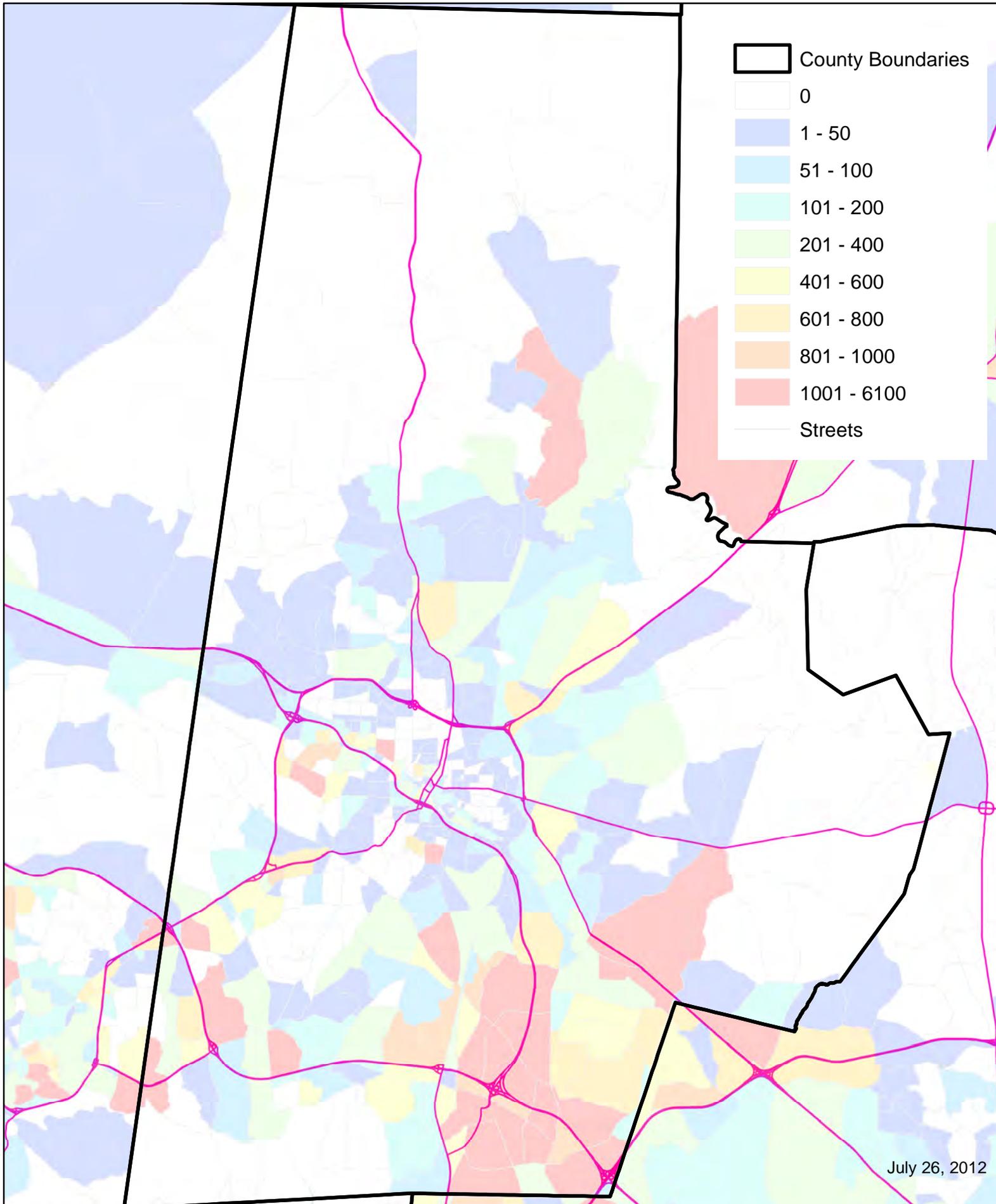


July 26, 2012

Durham County

SE Data 6-6

Community Plan--Employment Growth 2010-2040

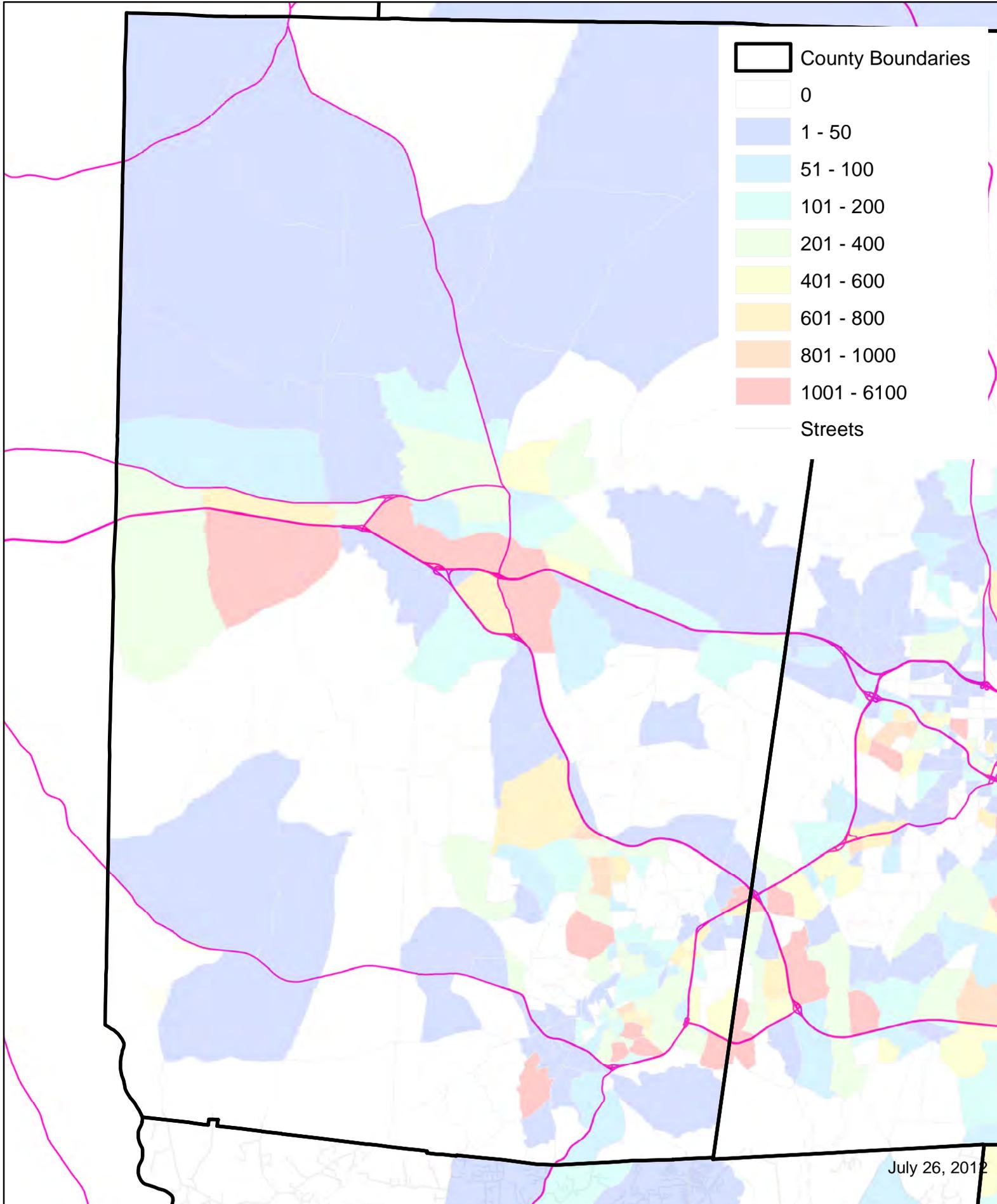


July 26, 2012

Orange County

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Community Plan--Employment Growth 2010-2040

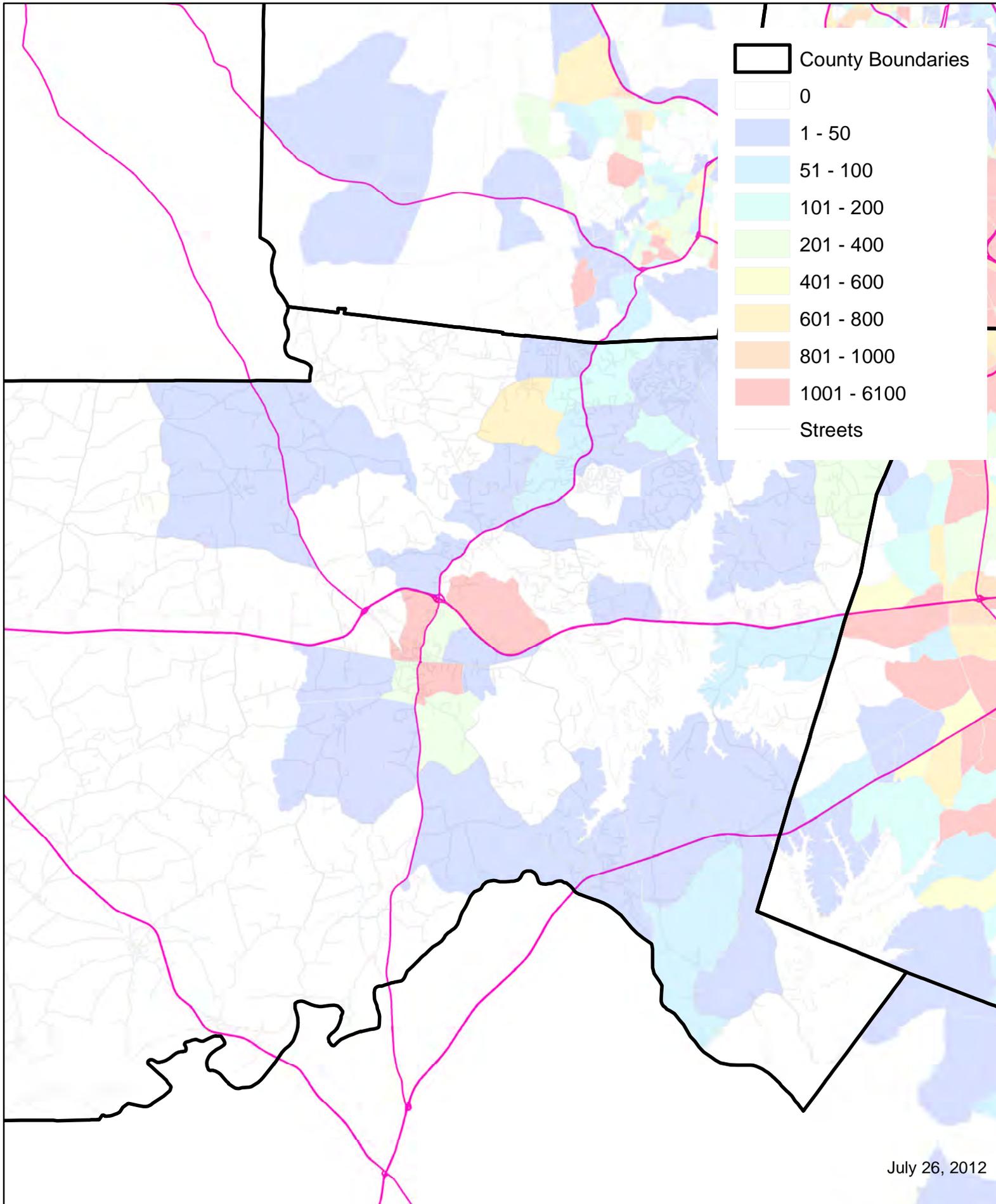


July 26, 2012

Chatham County

SE Data 6-8

Community Plan--Employment Growth 2010-2040

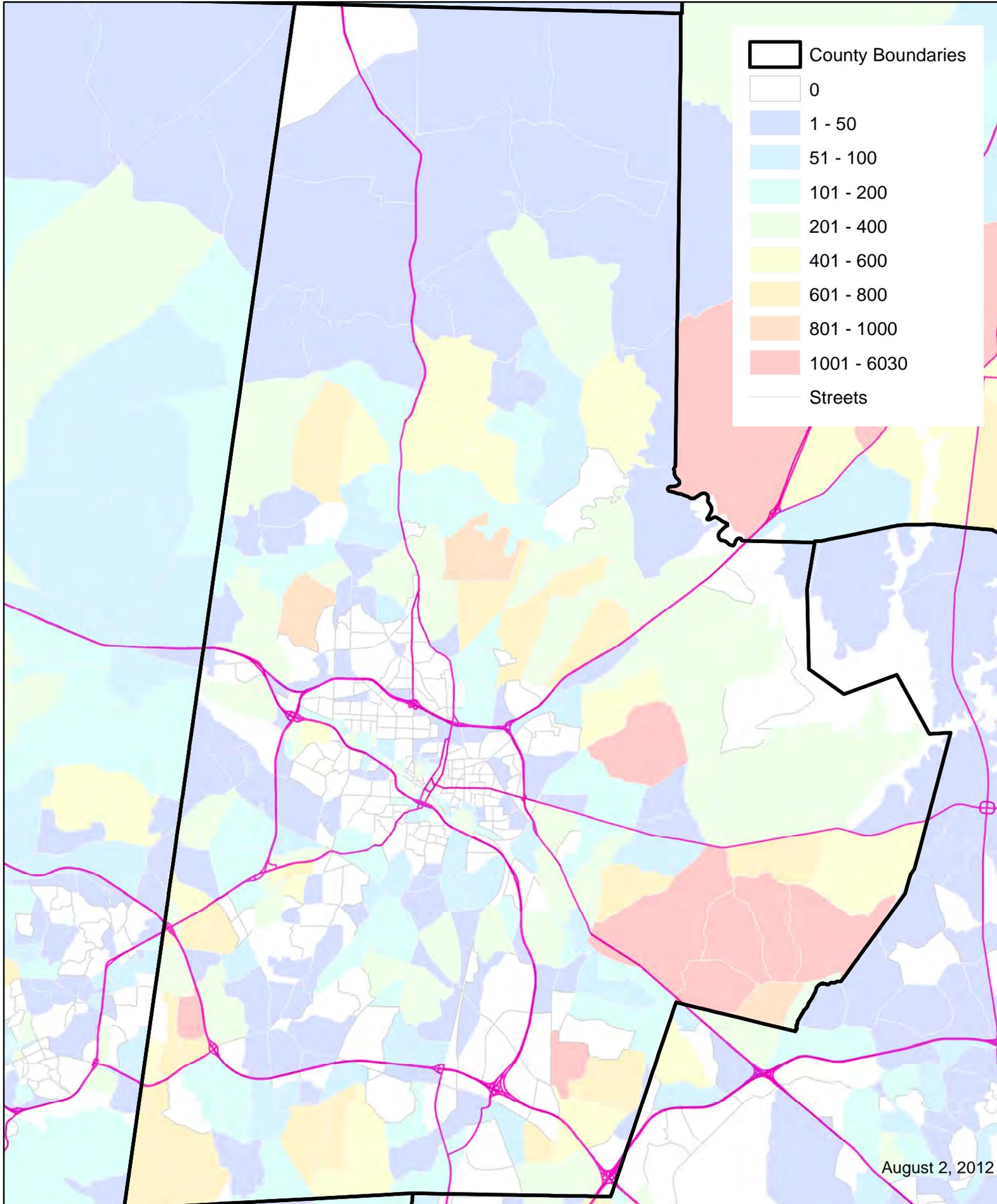


July 26, 2012

Durham County

SE Data 6-9

All In Transit--Dwelling Unit Growth 2010-2040

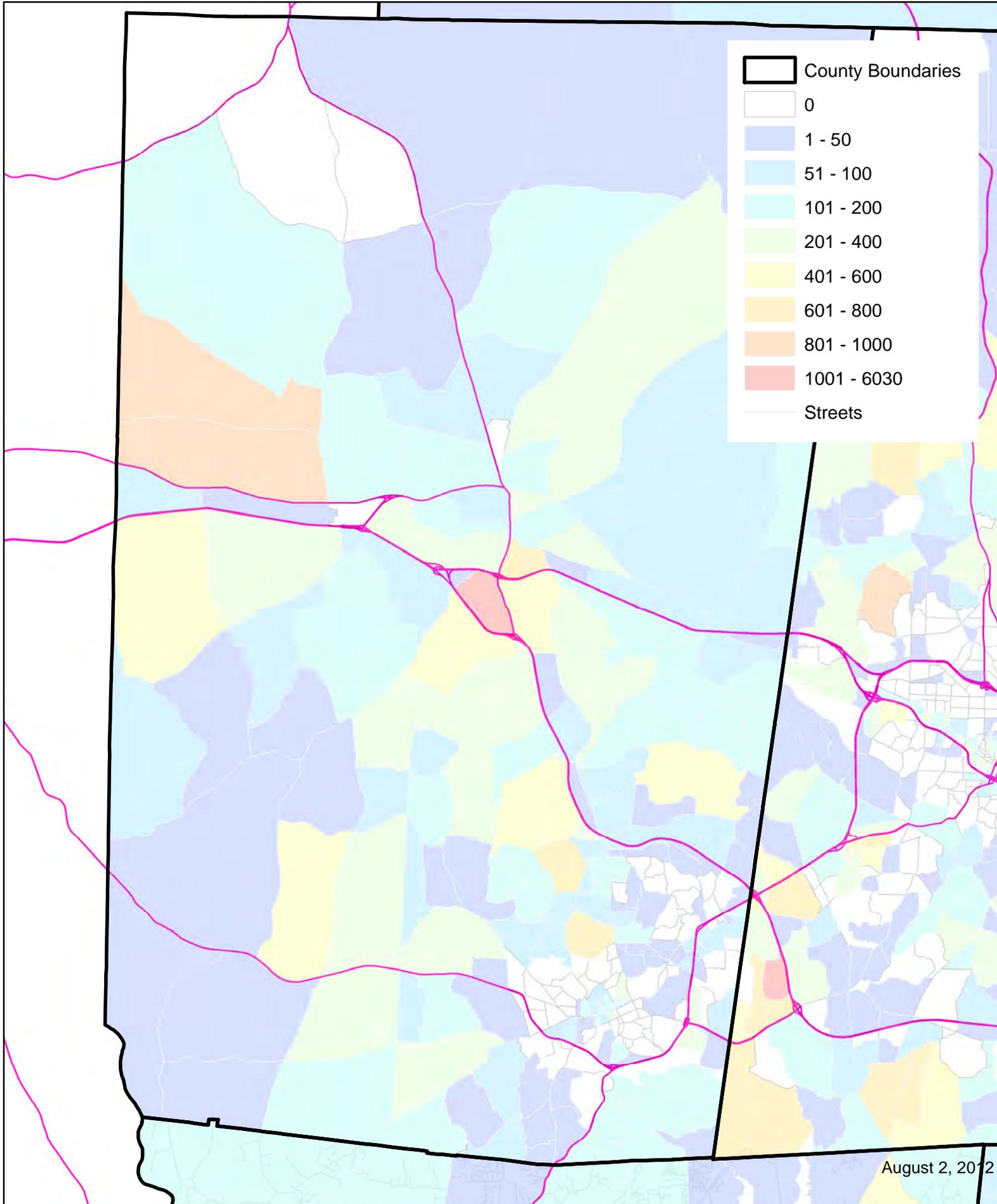


August 2, 2012

Orange County

SE Data 6-10

All In Transit-- Dwelling Unit Growth 2010-2040

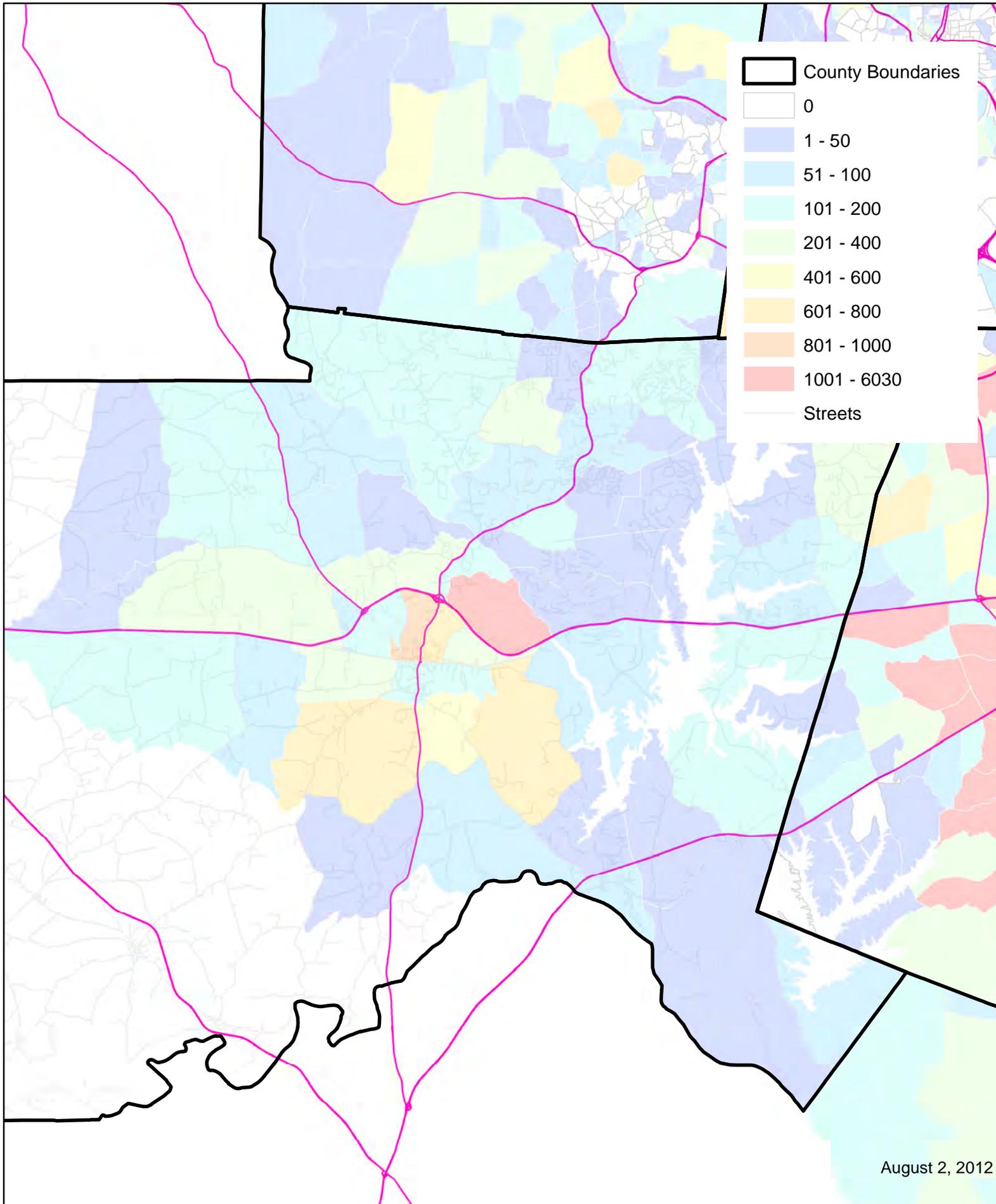


August 2, 2012

Chatham County

SE Data 6-11

All In Transit-- Dwelling Unit Growth 2010-2040

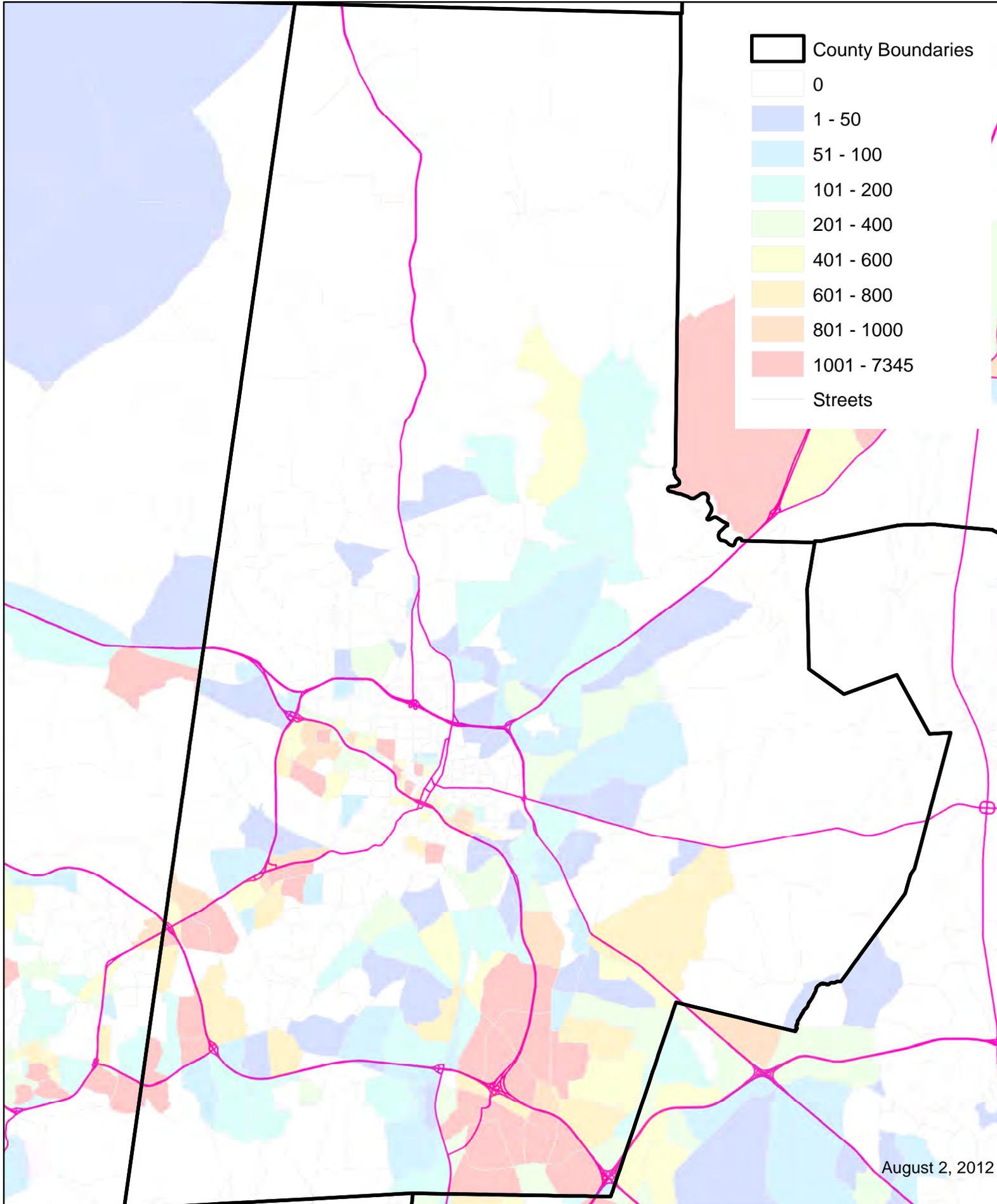


August 2, 2012

Durham County

SE Data 6-12

All In Transit--Employment Growth 2010-2040

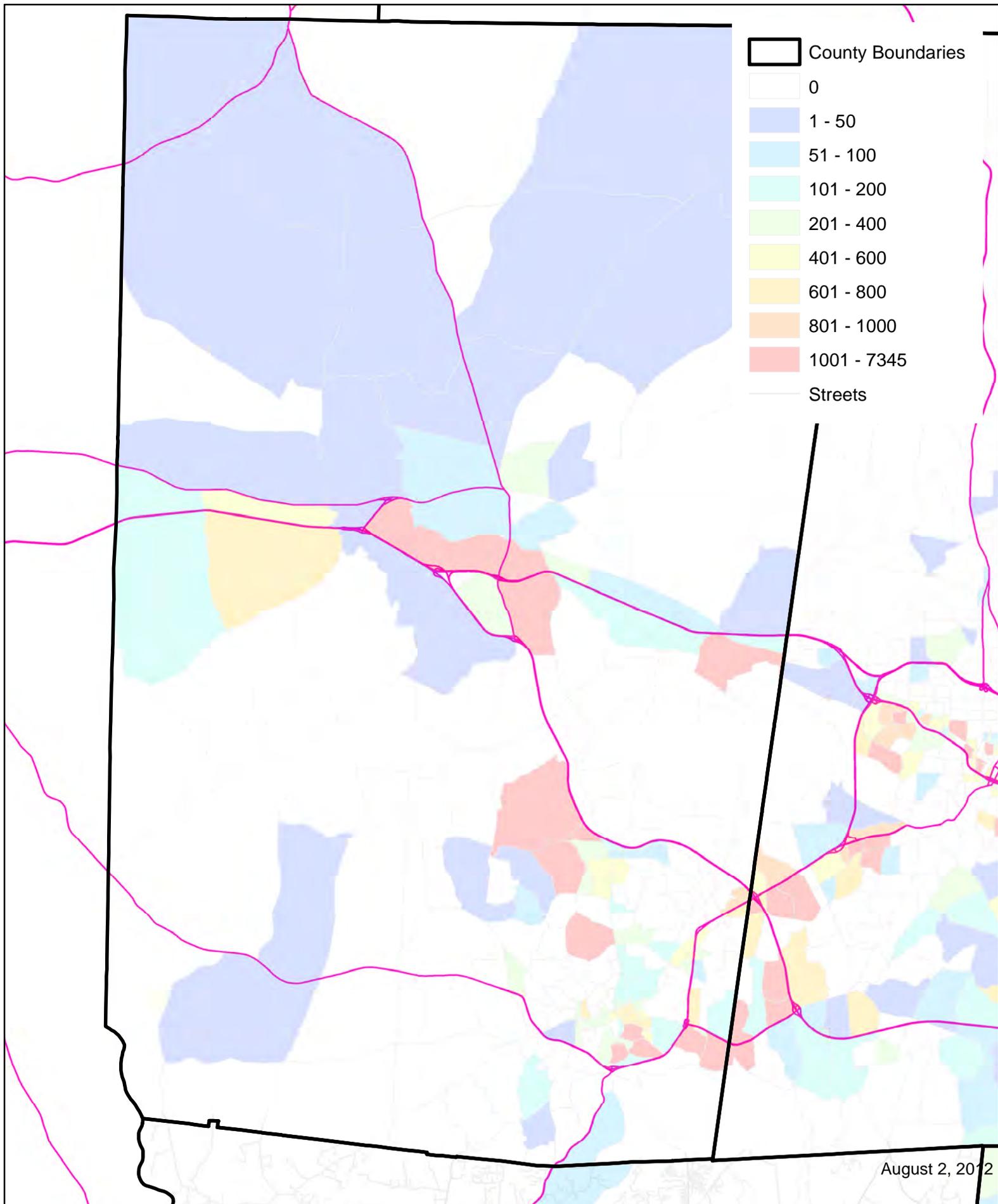


August 2, 2012

Orange County

SE Data 6-13

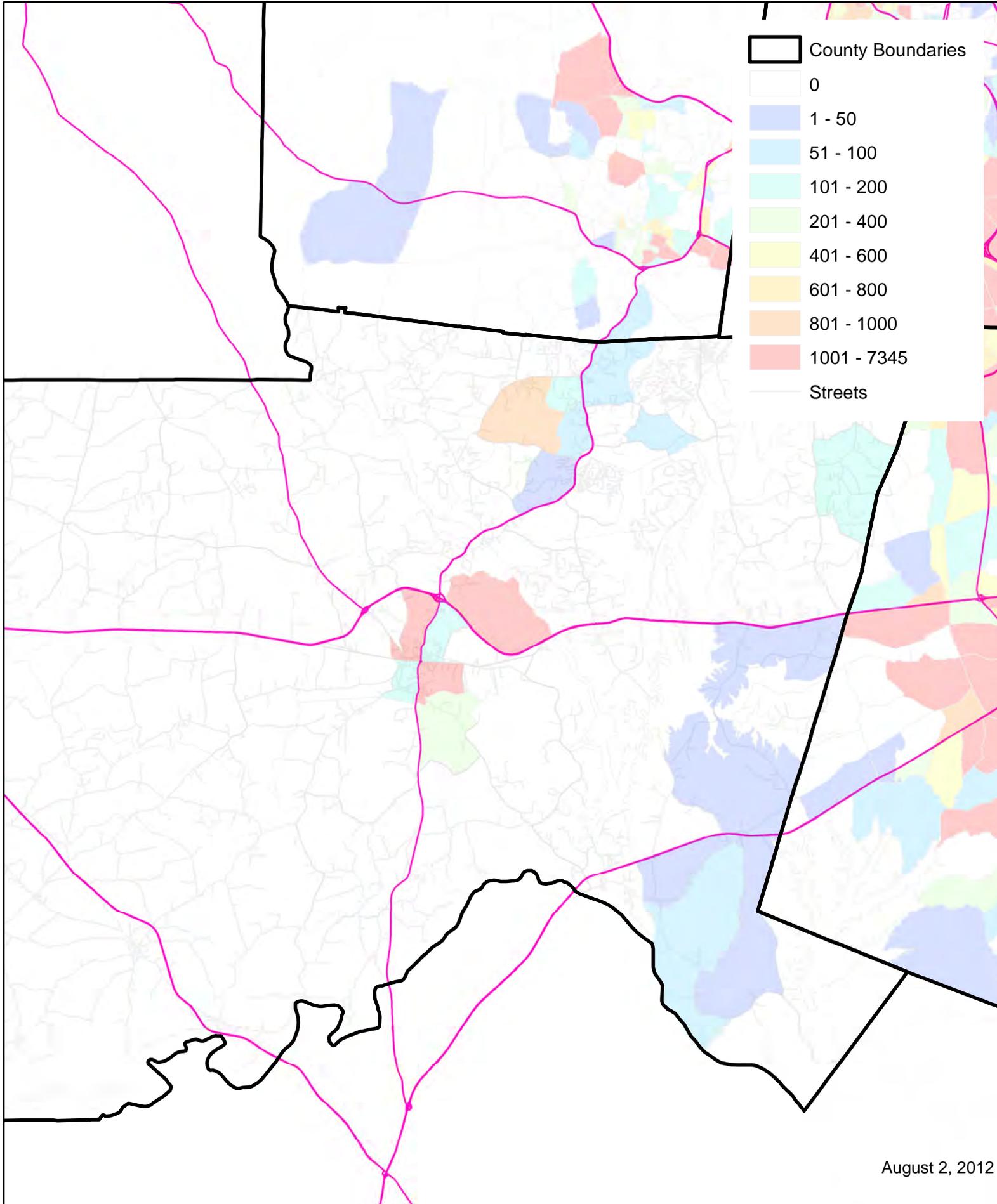
All In Transit--Employment Growth 2010-2040



Chatham County

SE Data 6-14

All In Transit--Employment Growth 2010-2040



August 2, 2012

2040 MTP and CTP Alternatives Description -- Highways

Highways in Alternatives

A different set of highway projects are assumed in each transportation network:

Highway Intensive – This is the Comprehensive Transportation Plan (CTP) highway network. It includes most of the projects in the current 2035 Long Range Transportation Plan (2035 LRTP) plus over fifty additional highway projects that will be proposed for the CTP.

Transit Intensive – This includes most of the highway projects in the 2015 and 2025 horizon years of the current 2035 LRTP. Except for the NC 54 widening in Durham County, it does not include large scale highway projects that provide mobility in the same corridor as the proposed light rail transit system between Durham and Orange counties.

Moderate – This includes most of the highway projects in the current 2035 LRTP.

Presentation of Highways

This section presents a list of highway projects and some key detailed data for each project such as the proposed segments to be improved (“to” and “from”) and the estimated cost. The subheadings indicate the horizon year and plan for which the highway is proposed, and a set of three columns indicate whether or not the project is assumed in each of the transportation networks. The table is followed by three maps that show the location of the highway projects for each network.

There are several terms used in the “Proposed Improvement” that require a definition:

- *Widening* – through lanes are added
- *New Location* – there is no existing roadway; this is new alignment or roadway
- *Modernization* – turn lanes at needed junctures, bicycle and pedestrian facilities are added; no consistent through lane is added
- *TSM* – Transportation System Management; capacity improvements to intersections and interchanges, and other relatively less costly measures that reduce delays and improve safety on existing roads and intersections

**2040 MTP and CTP
Roadway Project List**

| Project ID | Road Name | From | To | Existing # of Lanes | Proposed # of Lanes | Distance (miles) | Proposed Improvement | Project Total Cost (2012 \$) | Mode rate | Transit | Highway |
|-----------------|-------------------------------------|-----------------------|--------------------------|---------------------|---------------------|------------------|----------------------|------------------------------|-----------|---------|---------|
| 2020 MTP | | | | | | | | | | | |
| 1 | Alexander Dr | Cornwallis Rd | NC 147 | 2 | 4 | 1.00 | Widening | \$4,450,000 | 1 | 1 | 1 |
| 30 | Hillandale Rd. | I-85 | Carver | 2 | 4 | 0.7 | Widening | 11941000 | 1 | 1 | 1 |
| 59 | Miami Blvd. | Methodist Dr. | Angier Ave | 2 | 5 | 0.72 | Widening | (budget before 2012) | 1 | 1 | 1 |
| 9 | Carver St Ext | Armfield St | Old Oxford Rd | 0 | 4 | 0.73 | New Location | \$10,110,000 | 1 | 1 | 1 |
| 15 | East End Connector (EEC) | NC 147 | US 70 E; US 70:EEC to NC | 0 | 4 | 2.50 | New Location | \$153,981,250 | 1 | 1 | 1 |
| 202 | Hopson Rd | Davis Dr | NC 54 | 2 | 4 | 0.67 | Widening | \$6,026,000 | 1 | 1 | 1 |
| 43 | I-40 | US 15-501 | NC 86 | 4 | 6 | 4.10 | Widening | \$25,957,093 | 1 | 1 | 1 |
| 44 | I-40 | NC 86 | I-85 | 4 | 6 | 7.32 | Widening | \$46,342,907 | 1 | 1 | 1 |
| 70.4 | I-40/ NC 54 ramp | Farrington Rd. | I-40 | 0 | 1 | 0.20 | New Location | \$1,600,000 | 1 | 1 | 1 |
| 75 | NC 55 (Alston Ave) | NC 147 | NC 98 | 2 | 4 | 1.00 | Widening | \$31,024,000 | 1 | 1 | 1 |
| 92.1 | Roxboro/Latta/Infinity Intersection | Latta Rd. | Infinity Rd. | 4 | 6 | 0.50 | Widening | \$4,100,000 | 1 | 1 | 1 |
| 97 | Smith Level Rd | Rock Haven Rd | NC 54 bypass | 2 | 3 | 0.60 | Widening | \$8,199,000 | 1 | 1 | 1 |
| 98 | South Columbia St | NC 54 | Manning Dr | 2 | 2 | 0.70 | Modernization | \$7,860,000 | 1 | 1 | 1 |
| 119 | Weaver Dairy Rd | NC 86 | Erwin Rd | 2 | 3 | 2.80 | Widening | (budget before 2012) | 1 | 1 | 1 |
| | | | | | | | | \$311,591,250 | | | |
| 2030 MTP | | | | | | | | | | | |
| 40 | Carolina North network | Carolina North Campus | | 0 | 2 | 2.16 | New Location | \$16,851,580 | 1 | 1 | 1 |
| 12 | Cornwallis Rd | MLK | Alexander Dr | 2 | 4 | 1.07 | Widening | \$10,346,536 | 1 | 1 | 1 |
| 221 | S Elliot Rd Ext | Fordham Blvd | Ephesus Church Rd | 0 | 2 | 0.25 | New Location | \$1,950,414 | 1 | 1 | 1 |
| 17 | Estes Dr | NC 86 | Seawell School Rd | 2 | 2 | 0.71 | Modernization | \$3,123,567 | 1 | 1 | 1 |
| 17.1 | Estes Dr | Seawell School Rd | Greensboro Rd | 2 | 2 | 0.93 | Modernization | \$4,091,433 | 1 | 1 | 1 |
| 200 | Eubanks Rd | Old NC 86 | NC 86 | 2 | 2 | 2.64 | Modernization | \$9,652,000 | 1 | 1 | 1 |
| 222 | Eubanks Rd | Millhouse Rd | NC 86 | 2 | 4 | 0.80 | Widening | \$7,735,728 | 1 | 1 | 1 |
| 201 | Farrington Rd realignment | NC 54 | Wendell Rd | 0 | 2 | 0.85 | New Location | \$6,631,409 | 1 | 0 | 1 |
| 23 | Fayetteville Rd | Woodcroft Pkwy | Cornwallis Rd | 2 | 4 | 2.31 | Widening | \$21,314,000 | 1 | 1 | 1 |
| 24.11 | Garrett Rd | NC 751 | Old Durham Rd | 2 | 2 | 2.10 | Modernization | \$20,570,004 | 1 | 1 | 1 |
| 35 | Homestead Rd | High School Rd | NC 86 | 2 | 2 | 1.70 | Modernization | \$9,102,000 | 1 | 1 | 1 |
| 36 | Homestead Rd | Old NC 86 | High School Rd | 2 | 2 | 1.47 | Modernization | \$9,691,637 | 1 | 1 | 1 |
| 203 | I-40/NC 54 interchange | I-40 | NC 54 | 6 | 7 | 0.35 | Interchange | (part of #69.1) | 1 | 0 | 1 |
| 48 | I-85 | I-40 | the Durham Co line | 4 | 6 | 7.35 | Widening | \$214,665,000 | 1 | 1 | 1 |
| 49 | I-85 | US 70 | Red Mill Rd | 4 | 6 | 3.50 | Widening | \$102,515,000 | 1 | 1 | 1 |
| 50.11 | Jack Bennet Rd/Lystra Rd | US 15-501 South | Farrington Mill/Point Rd | 2 | 2 | 2.77 | Modernization | \$18,316,754 | 1 | 1 | 1 |
| 223 | Legion Rd Ext | Legion Rd | Fordham Blvd | 0 | 2 | 0.10 | New Location | \$780,166 | 1 | 1 | 1 |
| 69.1 | NC 54 | I-40 Interchange | NC 751 | 2 | 4 | 3.91 | Widening | \$115,400,000 | 1 | 1 | 1 |

**2040 MTP and CTP
Roadway Project List**

| Project ID | Road Name | From | To | Existing # of Lanes | Proposed # of Lanes | Distance (miles) | Proposed Improvement | Project Total Cost (2012 \$) | Mode rate | Transit | Highway |
|-----------------|--------------------------------------|------------------------|-----------------------------|---------------------|---------------------|------------------|----------------------|------------------------------|-----------|---------|---------|
| 69.2 | NC 54 | NC 751 | Fayetteville | 2 | 4 | | Widening | (see #69.1) | 1 | 1 | 1 |
| 69.3 | NC 54 | Fayetteville | Barbee | 2 | 4 | | Widening | (see #69.1) | 1 | 1 | 1 |
| 69.4 | NC 54 | Barbee | NC 55 | 2 | 4 | | Widening | (see #69.1) | 1 | 1 | 1 |
| 70 | NC 54 (widening; superstreet) | I-40 | Barbee Chapel Rd | 4 | 6 | 1.68 | Widening | \$16,024,000 | 1 | 0 | 1 |
| 70.1 | NC 54 superstreet (east) | Meadowmont Dr | Barbee Chapel Rd | 6 | 6 | 0.20 | Improvements | \$4,300,000 | 1 | 0 | 1 |
| 70.2 | NC 54/Farrington Rd grade separation | Farrington Rd | NC 54 | 0 | 6 | 0.00 | Improvements | \$6,500,000 | 1 | 0 | 1 |
| 73 | NC 54/US 15-501 Bypass | NC 54 | US 15-501 | 4 | 6 | 2.12 | Widening | \$25,180,578 | 1 | 0 | 1 |
| 77.1 | NC 751 | S Roxboro St | NC 54 | 2 | 4 | 0.70 | Widening | \$10,589,000 | 1 | 1 | 1 |
| 89.3 | Orange Grove Connector | Orange Grove Rd | US 70 | 0 | 2 | 0.40 | New Location | \$4,950,000 | 1 | 1 | 1 |
| 220 | Purefoy Rd Ext | Sandberg Ln | Weaver Dairy Rd | 0 | 2 | 0.60 | New Location | \$4,680,995 | 1 | 1 | 1 |
| 92 | Roxboro Rd (501N) | Duke St | Goodwin Rd | 4 | 6 | 2.65 | Widening | \$28,480,000 | 1 | 1 | 1 |
| 94 | Roxboro St | Cornwallis Rd | MLK Pkwy | 0 | 4 | 1.10 | New Location | \$20,489,000 | 1 | 1 | 1 |
| 102 | SW Durham Dr | Meadowmont Dr | I-40 | 0 | 2 | 1.55 | New Location | \$20,000,000 | 1 | 0 | 1 |
| 106 | SW Durham Dr | 15-501 | Mt Moriah Rd | 0 | 2 | 0.35 | New Location | \$3,922,805 | 1 | 1 | 1 |
| 116 | US 70 | Lynn Rd (Durham Co.) | Aviation Pkwy Ext (Wake Co) | 4 | 6 | 4.11 | Widening | \$237,400,000 | 1 | 1 | 1 |
| 123.11 | Woodcroft Pkwy Ext | Garrett Rd | Hope Valley Rd | 0 | 2 | 0.27 | New Location | \$2,504,002 | 1 | 1 | 1 |
| 204 | US 15-501/NC 54 Interchange | US 15-501 | NC 54 | 4 | 4 | 0.30 | Improvements | \$17,300,000 | 1 | 0 | 1 |
| | | | | | | | | \$975,057,608 | | | |
| 2040 MTP | | | | | | | | | | | |
| 5 | Alston Ave Ext | Holloway St | Old Oxford/Roxboro | 0 | 2 | 3.50 | New Location | \$27,305,801 | 1 | 0 | 1 |
| 22.1 | Fayetteville Rd | Renaissance Pkwy | NC 751 | 2 | 4 | 1.90 | Widening | \$18,426,000 | 1 | 0 | 1 |
| 26.11 | Globe Rd Ext (Brier Creek Pkwy) | Miami Blvd | Wake County Line | 0 | 2 | 2.18 | New Location | \$17,007,613 | 1 | 0 | 1 |
| 45 | I-40 HOV | Wake County Line | NC 54 | 0 | 2 | 10.63 | New Location | \$631,410,442 | 1 | 0 | 1 |
| 53 | Leesville Rd Ext | Northern Parkway | US 70/Page Rd Ext | 0 | 4 | 0.81 | New Location | \$6,319,343 | 1 | 0 | 1 |
| 64.13 | NC 147 General purpose widening | East End Conn | I-40 | 4 | 6 | 4.78 | Widening | \$44,500,000 | 1 | 0 | 1 |
| 70.3 | NC 54 superstreet (west) | Burning Tree | Meadowmont Dr | 6 | 6 | 0.55 | Improvements | \$4,900,000 | 1 | 0 | 1 |
| 77.2 | NC 751 | NC 54 | Renaissance Pkwy | 2 | 4 | 1.23 | Widening | \$11,915,000 | 1 | 0 | 1 |
| 77.3 | NC 751 | Renaissance Pkwy | Fayetteville/Scott King Rd | 2 | 4 | 1.94 | Widening | \$17,393,000 | 1 | 0 | 1 |
| 81.1 | NC 98 (Holloway St) | Oak Grove/Nichols Farm | Wake County Line | 2 | 4 | 5.94 | Widening | \$57,437,780 | 1 | 0 | 1 |
| 83 | Northern Durham Pkwy | US 70 E | I 85 N | 0 | 4 | 6.40 | New Location | \$71,731,296 | 1 | 0 | 1 |
| 84 | Northern Durham Pkwy | I 85 North | Old Oxford Hwy | 0 | 4 | 2.40 | New Location | \$66,693,606 | 1 | 0 | 1 |
| 85 | Northern Durham Pkwy | Old Oxford Hwy | Roxboro Rd | 0 | 2 | 5.38 | New Location | \$35,068,780 | 1 | 0 | 1 |
| 86 | Old NC 86 | I-40 | Lafayette Dr | 2 | 4 | 0.80 | Widening | \$7,735,728 | 1 | 0 | 1 |
| 87 | Old NC 86 | Lafayette Dr | US 70 Business | 2 | 4 | 1.70 | Widening | \$16,438,422 | 1 | 0 | 1 |
| 89 | Olive Branch Rd Ext | NC 98 | Wake County Line | 0 | 2 | 2.22 | New Location | \$17,319,680 | 1 | 0 | 1 |

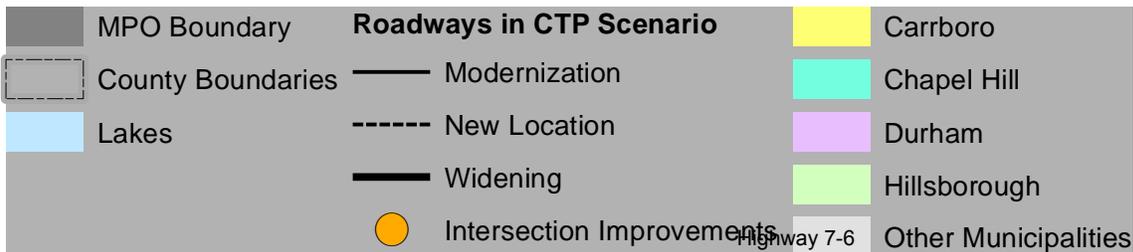
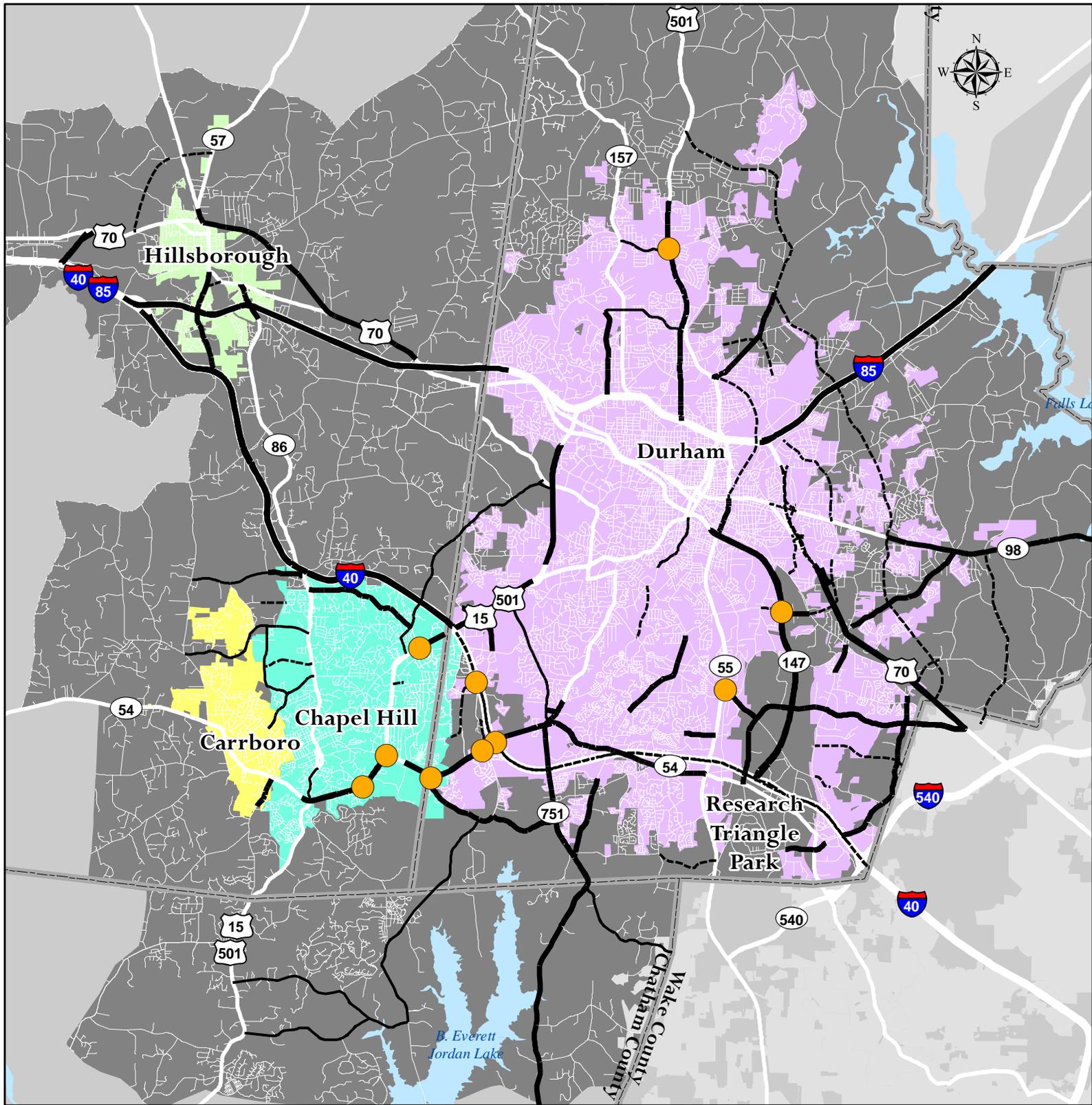
**2040 MTP and CTP
Roadway Project List**

| Project ID | Road Name | From | To | Existing # of Lanes | Proposed # of Lanes | Distance (miles) | Proposed Improvement | Project Total Cost (2012 \$) | Mode rate | Transit | Highway |
|--|---------------------------------|--------------------------------|-----------------------------|---------------------|---------------------|------------------|----------------------|------------------------------|-----------|---------|---------|
| 106.1 | SW Durham Dr | 15-501 | Mt Moriah Rd | 2 | 4 | 0.35 | Widening | \$3,922,805 | 1 | 1 | 1 |
| 104 | SW Durham Dr | Witherspoon Rd | Old Chapel Hill Rd | 2 | 4 | 0.62 | Widening | \$5,995,189 | 1 | 1 | 1 |
| 113 | US 15-501 (Freeway conversion) | US 15-501 Bypass | I-40 | 6 | 6 | 2.39 | Improvements | \$138,677,000 | 1 | 0 | 1 |
| 114 | US 15-501 Bypass | Pickett Rd | Morreene Rd | 4 | 6 | 2.69 | Widening | \$33,696,567 | 1 | 0 | 1 |
| | | | | | | | | \$1,233,894,054 | | | |
| Comprehensive Transportation Plan | | | | | | | | | | | |
| 2.1 | Alexander Dr | NC 147 | Miami Blvd | 4 | 6 | 0.70 | Widening | \$11,531,075 | 0 | 0 | 1 |
| 4 | Alexander Dr | NC 54 | Cornwallis Rd | 2 | 4 | 1.89 | Widening | \$32,389,388 | 0 | 0 | 1 |
| 5.3 | Barbee Chapel Rd | NC 54 | Farrington Mill Rd | 2 | 4 | 1.60 | Widening | \$13,750,642 | 0 | 0 | 1 |
| 8.2 | Carpenter Fletcher | Woodcroft Pewit Ext | NC 55 | 2 | 4 | 0.60 | Widening | \$5,156,491 | 0 | 0 | 1 |
| 13.11 | Cornwallis Rd Ext | Miami Blvd | Chin Page Rd | 0 | 2 | 0.54 | New Location | \$4,212,895 | 0 | 0 | 1 |
| 14.1 | Duke St (North) | I-85 | N Roxboro split | 4 | 6 | 2.30 | Widening | \$37,887,819 | 0 | 0 | 1 |
| 205 | Erwin Rd | NC 751 | US 15-501 | 2 | 2 | 5.66 | Modernization | \$22,977,000 | 0 | 0 | 1 |
| 19 | Farrington Mill Rd | Jack Bennett Rd | Durham Co line | 2 | 2 | 2.42 | Modernization | \$6,753,425 | 0 | 0 | 1 |
| 20 | Farrington Mill Rd | Barbee Chapel Rd | Chatham Co line | 2 | 2 | 2.04 | Modernization | \$5,684,339 | 0 | 0 | 1 |
| 21 | Farrington Rd | Barbee Chapel Rd | Stagecoach Rd | 2 | 4 | 0.40 | Widening | \$1,120,891 | 0 | 0 | 1 |
| 24.12 | Garrett Rd | Old Durham Rd | US 15-501 | 2 | 2 | 1.00 | Modernization | \$20,570,004 | 0 | 0 | 1 |
| 27 | Glover Rd | Glover Rd/NC 147 interchange | Angier | 2 | 4 | 0.64 | Widening | \$18,289,000 | 0 | 0 | 1 |
| 28.11 | Glover Rd | Angier | US 70 | 0 | 2 | 0.59 | New Location | \$4,602,978 | 0 | 0 | 1 |
| 31 | Hillandale Rd | Carver | Horton Rd | 2 | 4 | 1.74 | Widening | \$16,825,208 | 0 | 0 | 1 |
| 39 | Horton Rd | Duke St | Hillandale Rd | 2 | 2 | 1.90 | Modernization | \$18,372,354 | 0 | 0 | 1 |
| 41 | I-40/Farrington Rd interchange | I-40 | Farrington Interchange | 0 | 0 | 0.20 | New Location | \$28,700,475 | 0 | 0 | 1 |
| 45.2 | I-40 HOV/HOT | NC 54 | US 15-501 | 6 | 8 | 2.70 | New Location | \$40,500,000 | 0 | 0 | 1 |
| 45.3 | I-40 HOV/HOT | US 15-501 | NC 86 | 6 | 8 | 4.20 | New Location | \$63,000,000 | 0 | 0 | 1 |
| 49.1 | I-85 HOV/HOT | US 70 | Red Mill Rd | 6 | 8 | 5.68 | Widening | \$232,183,373 | 0 | 0 | 1 |
| 49.2 | I-85 | Red Mill Rd | Durham/Granville county lin | 6 | 8 | 1.20 | Widening | \$49,051,844 | 0 | 0 | 1 |
| 206 | I-85/US 70 Connector | I-85 (Interchange improvement) | US 70 | 4 | 4 | 0.41 | TSM | \$2,446,000 | 0 | 0 | 1 |
| 52 | Latta Rd | Guess Rd | Roxboro Rd | 2 | 2 | 1.20 | Modernization | \$11,603,592 | 0 | 0 | 1 |
| 57 | Lynn Rd Ext | US 70 | Existing Lynn Rd | 0 | 2 | 1.09 | New Location | \$8,503,807 | 0 | 0 | 1 |
| 207 | Lystra Rd | US 15-501 | Jack Bennet Rd | 2 | 2 | 4.55 | Modernization | \$10,300,000 | 0 | 0 | 1 |
| 58 | Mason Farm Rd Realignment | Near S Columbia St | | 2 | 2 | 1.10 | New Location | \$17,186,404 | 0 | 0 | 1 |
| 60 | Midland Terrace | NC 98 | Geer St | 0 | 2 | 1.80 | New Location | \$14,042,984 | 0 | 0 | 1 |
| 61 | Midland Terrace | Dearborn | Old Oxford Rd/Hamlin Junc | 0 | 2 | 0.95 | New Location | \$7,411,575 | 0 | 0 | 1 |
| 63 | MLK Pkwy (NC 55 interchange) | NC 55 | Cornwallis Rd connector | 0 | 4 | 0.49 | New Location | \$30,267,000 | 0 | 0 | 1 |
| 64.11 | NC 147 General purpose widening | Alston Ave | East End Connector | 4 | 6 | 1.84 | Widening | \$28,698,063 | 0 | 0 | 1 |

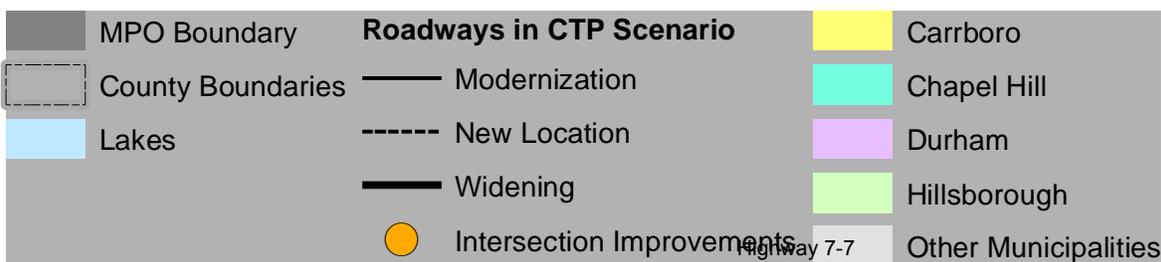
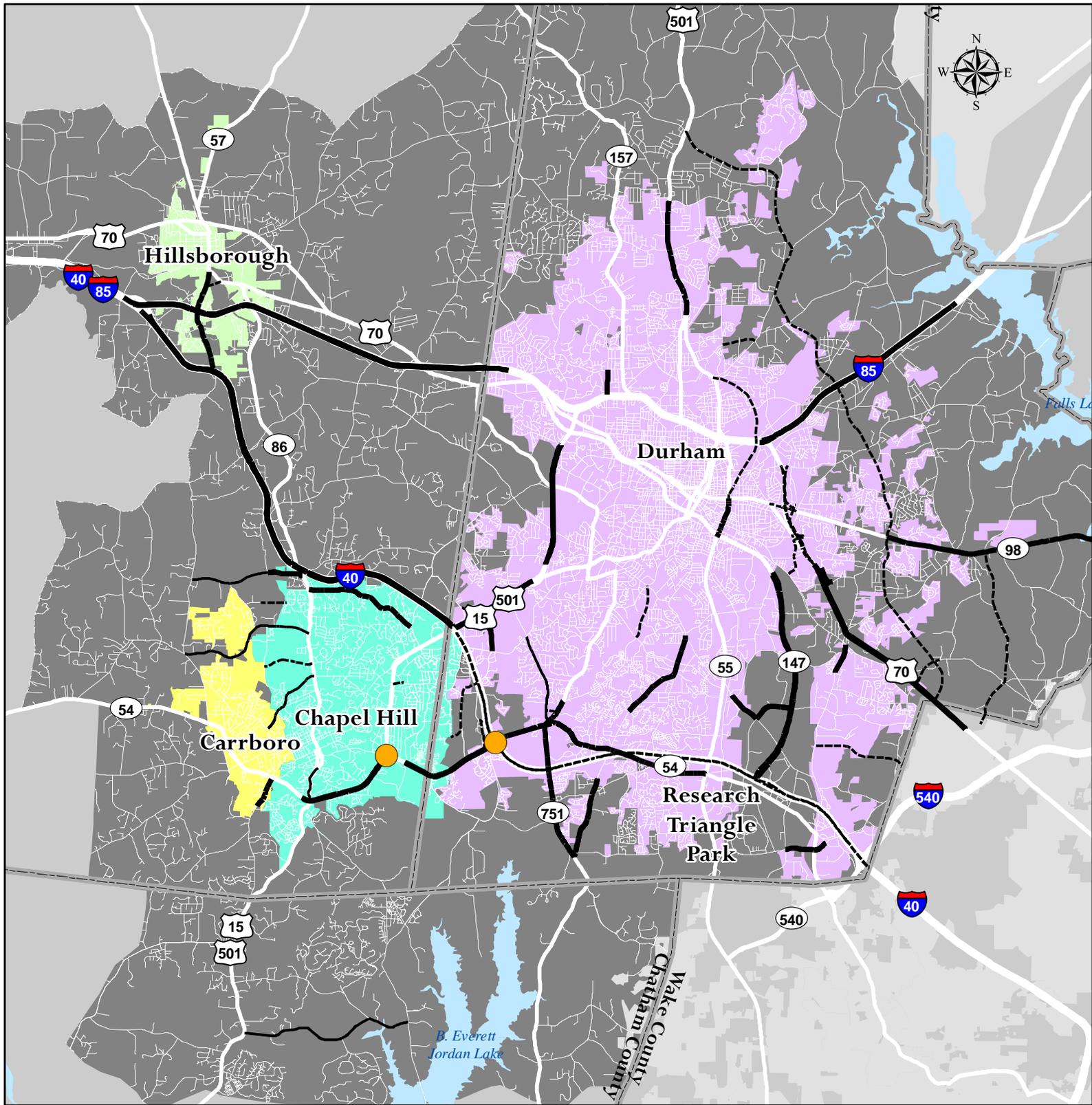
**2040 MTP and CTP
Roadway Project List**

| Project ID | Road Name | From | To | Existing # of Lanes | Proposed # of Lanes | Distance (miles) | Proposed Improvement | Project Total Cost (2012 \$) | Mode rate | Transit | Highway |
|------------|------------------------------------|--------------------|----------------------------|---------------------|---------------------|------------------|----------------------|------------------------------|-----------|---------|---------|
| 64 | NC 147 HOV/HOT | Alston Ave | East End Connector | 4 | 6 | 1.84 | Widening | \$75,214,332 | 0 | 0 | 1 |
| 65 | NC 147 HOV/HOT | East End Conn | I-40 | 0 | 2 | 4.78 | Widening | \$195,393,754 | 0 | 0 | 1 |
| 208 | NC 54/Barbee Chapel Rd interchange | NC 54 | Barbee Chapel Rd | 0 | 2 | 0.20 | Interchange | \$9,200,000 | 0 | 0 | 1 |
| 209 | NC 54/Falconbridge interchange | NC 54 | Falconbridge Rd | 0 | 4 | 0.20 | Interchange | \$9,800,000 | 0 | 0 | 1 |
| 76 | NC 751 | US 64 (MAB) | Durham Co. line | 2 | 4 | 7.00 | Widening | \$42,550,690 | 0 | 0 | 1 |
| 78 | NC 751 | O'Kelly Chapel Rd | Fayetteville/Scott King Rd | 2 | 4 | 0.74 | Widening | \$6,359,672 | 0 | 0 | 1 |
| 80 | NC 86 | Old NC 10 | US 70 Business | 2 | 4 | 0.90 | Widening | \$11,025,250 | 0 | 0 | 1 |
| 81 | NC 86 | US 70 Bypass | NC 57 | 2 | 4 | 0.42 | Widening | \$3,267,000 | 0 | 0 | 1 |
| 85.2 | O'Kelly Chapel Rd | NC 751 | Wake Co. line | 2 | 2 | 2.90 | Modernization | \$11,460,314 | 0 | 0 | 1 |
| 88 | Old Oxford Rd | Roxboro Rd | Northern Durham Parkway | 2 | 4 | 2.51 | Widening | \$24,270,847 | 0 | 0 | 1 |
| 90 | Page Rd | I-40 | Page Rd Ext | 2 | 4 | 3.27 | Widening | \$31,619,788 | 0 | 0 | 1 |
| 91 | Riddle Rd Ext | Ellis Rd | NC 147 | 0 | 2 | 0.49 | New Location | \$3,822,812 | 0 | 0 | 1 |
| 94.1 | Roxboro St South | Summit | E. Lakewood | 2 | 2 | 1.50 | Modernization | \$12,891,227 | 0 | 0 | 1 |
| 95.11 | Scott King Rd | Grandale Dr | Hopson Rd | 0 | 2 | 1.30 | New Location | \$10,142,155 | 0 | 0 | 1 |
| 210 | Seawell School Rd | Estes Dr | Homestead Rd | 2 | 2 | 1.91 | Modernization | \$7,548,000 | 0 | 0 | 1 |
| 96.1 | Sherron Rd | US 70 | NC 98 | 2 | 4 | 2.83 | Widening | \$27,365,138 | 0 | 0 | 1 |
| 101 | Stagecoach Rd | Farrington Mill Rd | NC 751 | 2 | 4 | 1.96 | Widening | \$18,070,177 | 0 | 0 | 1 |
| 107.1 | T. W. Alexander Dr | Miami Blvd | US 70 | 4 | 6 | 3.40 | Widening | \$39,771,235 | 0 | 0 | 1 |
| 211 | US 15-501 Superstreet | Sage Rd | E Lakeview Dr | 4 | 4 | 0.65 | TSM | \$2,178,000 | 0 | 0 | 1 |
| 212 | US 15-501/Manning Interchange | Manning Dr | Manning Dr | 4 | 4 | 0.20 | TSM | \$35,335,000 | 0 | 0 | 1 |
| 117 | US 70 Bypass | NC 86 | I-85 (exit 170) | 2 | 4 | 7.80 | Widening | \$21,857,378 | 0 | 0 | 1 |
| 120 | Western Bypass | US 70 | NC 86 | 0 | 2 | 2.60 | New Location | \$14,300,897 | 0 | 0 | 1 |
| 121 | Western Bypass | NC 86 | Stroud Creek Rd | 0 | 2 | 0.30 | New Location | \$1,650,103 | 0 | 0 | 1 |
| 123 | Woodcroft Pkwy Ext | Garrett Rd | Hope Valley Rd | 2 | 4 | 0.27 | Widening | \$2,320,421 | 0 | 0 | 1 |
| | | | | | | | | \$1,381,432,816 | | | |

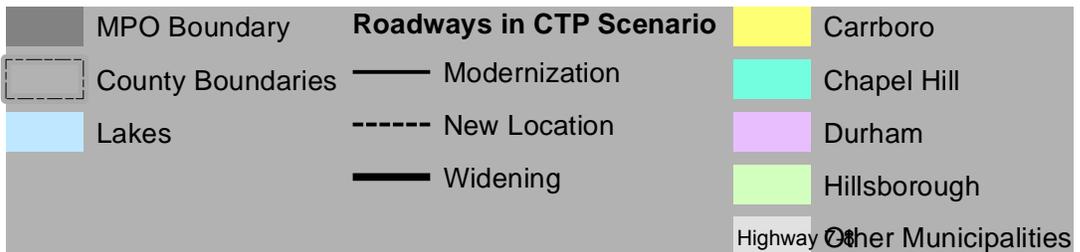
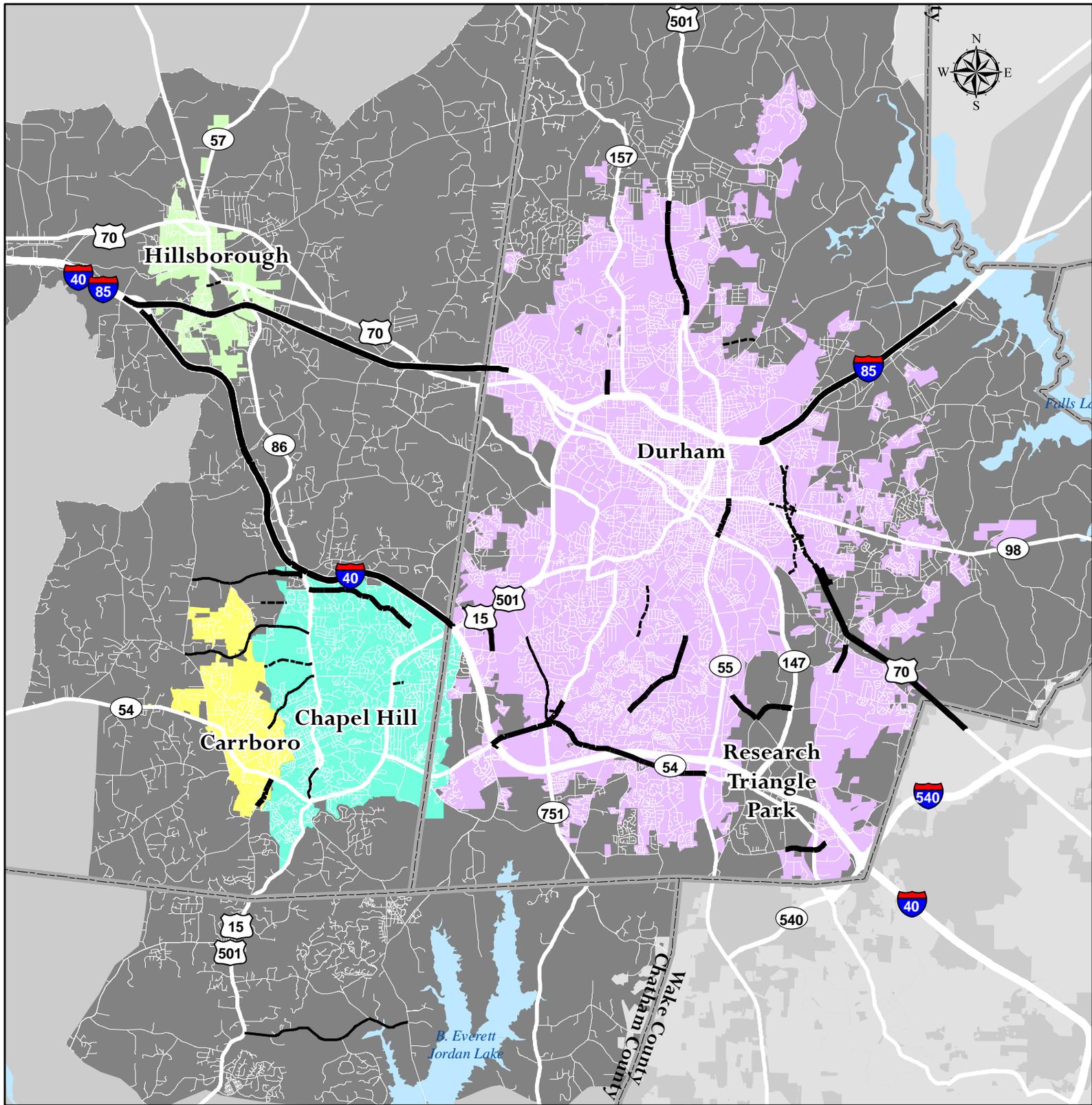
Durham Chapel Hill Carrboro Metropolitan Planning Organization Roadway Improvements in Highway Intensive Network



Durham Chapel Hill Carrboro Metropolitan Planning Organization Roadway Improvements in Moderate Network



Durham Chapel Hill Carrboro Metropolitan Planning Organization Roadway Improvements in Transit Intensive Network



2040 MTP and CTP Alternatives Description -- Transit

Transit in Alternatives

A different set of transit service is assumed in each transportation network:

Highway Intensive

- Current bus transit
- No bus transit improvements from the county plans (e.g., based on ½ cent sales tax)
- No rail transit

Transit Intensive

- Current bus transit
- Bus transit improvements in county plans (based on ½ cent sales tax)
- Light rail between Durham and Wake counties (in place of regional rail from the Locally Preferred Alternative)
- Light rail and regional rail extensions in Orange County
- CRT addition between Cary and western RTP
- Five Bus Rapid Transit (BRT) projects in Chapel Hill

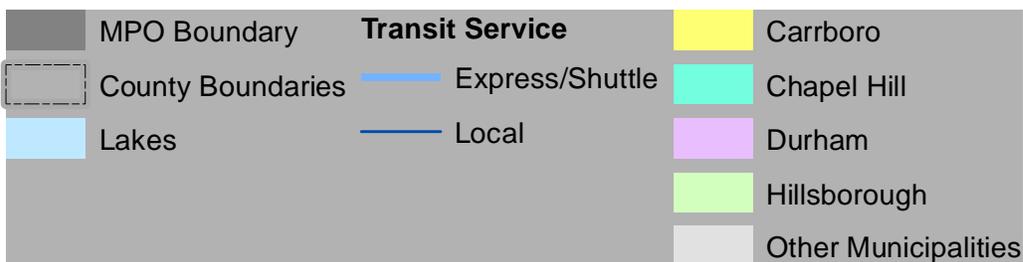
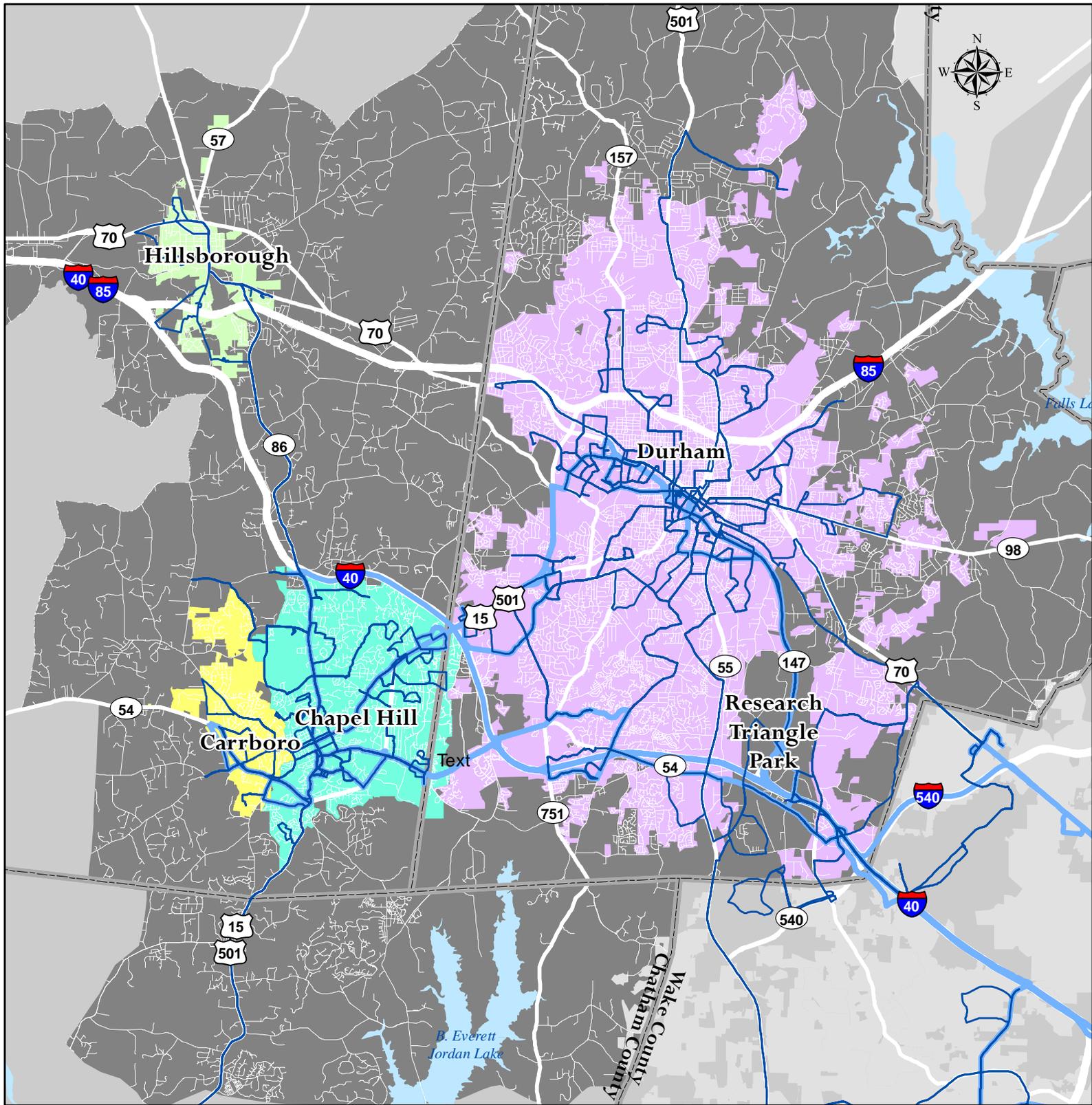
Moderate – This includes most of the highway projects in the current 2035 LRTP.

- Current bus transit
- Bus transit improvements in county plans (based on ½ cent sales tax)
- Light rail and regional rail (based on Locally Preferred Alternative)
- MLK Blvd Bus Rapid Transit (BRT) in Chapel Hill

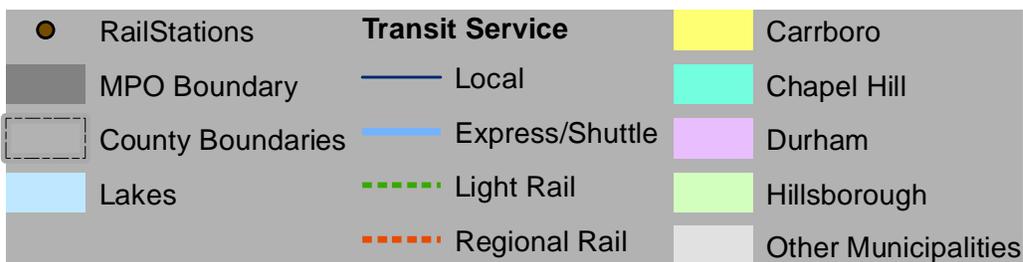
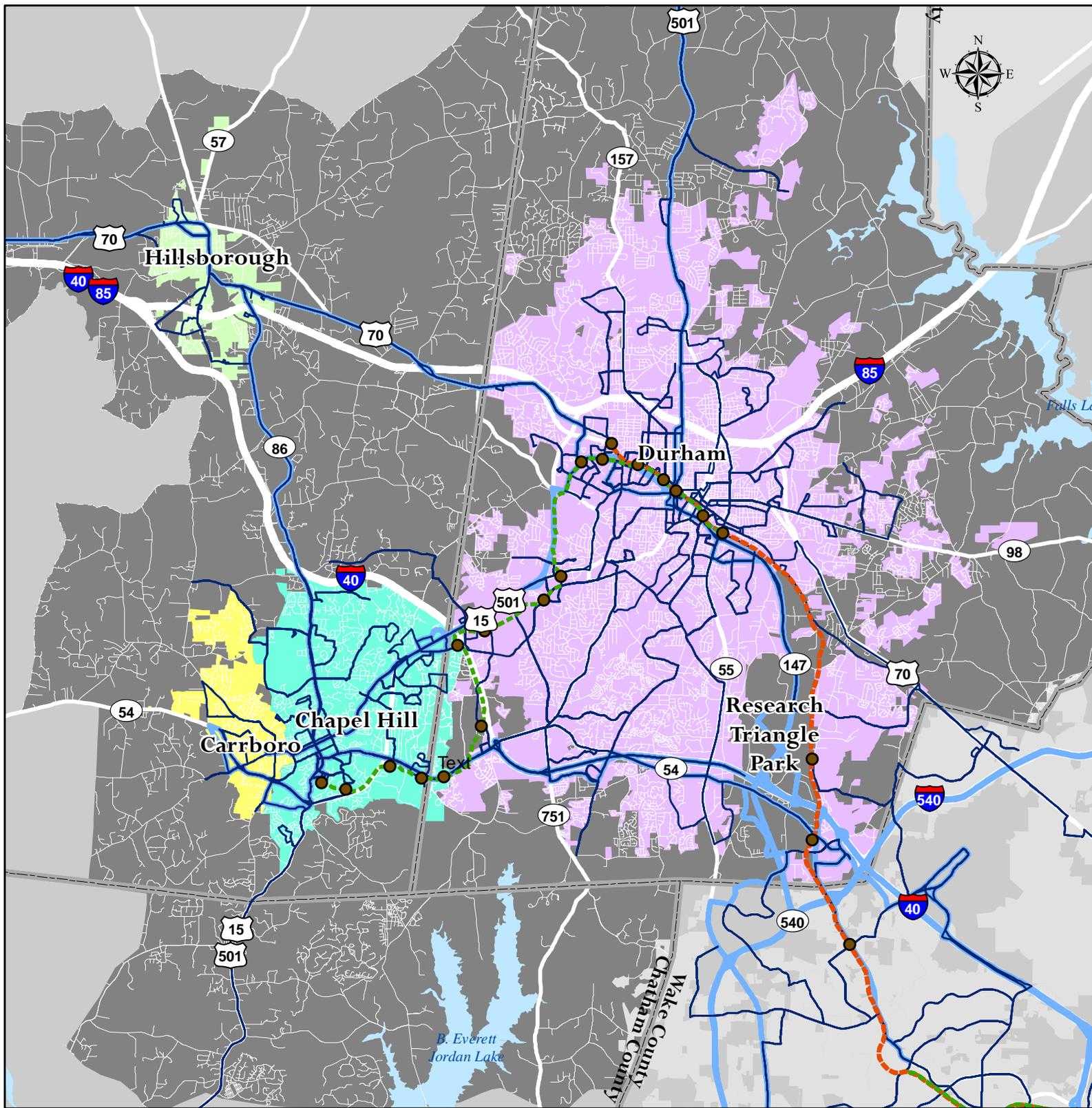
Presentation of Transit Service

This section presents a table of transit services and indicates in which Alternative the service is included. A series of maps shows the service coverage areas.

Durham Chapel Hill Carrboro Metropolitan Planning Organization Transit Service in Highway Intensive Network



Durham Chapel Hill Carrboro Metropolitan Planning Organization Transit Service in Moderate Network



Durham Chapel Hill Carrboro Metropolitan Planning Organization Transit Service in Transit Intensive Network

