

# Connect 2045

## The Metropolitan Transportation Plan

for the  
Capital Area Metropolitan Planning Organization  
and the  
Durham-Chapel Hill-Carrboro Metropolitan Planning Organization

*Final Review Draft*

**Version: 3-7-2018**

## Table of Contents

1. Executive Summary.....	1
2. What is the Plan? .....	4
2.1 Why Do We Need A Plan? .....	4
2.2 What Is In The Plan.....	5
2.3 How Will The Plans Be Used? .....	8
3. About Our Home .....	9
3.1 Our Region.....	9
3.2 Our People.....	10
3.3 Our Economy .....	11
3.4 Our Environment .....	12
3.5 Our Future .....	14
3.6 Our Challenge .....	14
4. Our Vision And How We Will Achieve It .....	17
4.1 Our Vision. ....	17
4.2 Goals and Objectives. ....	17
4.3 Performance Targets and Measures of Effectiveness. ....	18
5. How We Developed Our Plan.....	21
5.1 Who is Responsible for the Plan? .....	21
5.2 Stakeholder & Public Involvement Process.....	22
5.3 Triangle Region Transportation Model.....	27
5.4 Related Plans and Studies.....	28
6. Analyzing Our Choices.....	33
6.1 Land Use Plans and Policies.....	33
6.2 Socio-economic Forecasts .....	34
6.3 Trends, Deficiencies, and Needs.....	37
6.4 Alternatives Analysis.....	42
6.5 Performance Evaluation Measures .....	45
7. Our Metropolitan Transportation Plan .....	50
7.1 Land Use & Development.....	50
7.2 Roadways.....	51
7.3 Fixed Guideway and Premium Transit Services.....	52
7.4 Frequency- and Coverage-Based Bus Services .....	54
7.5 Bicycle and Pedestrian Facilities .....	55
7.6 Freight Movement.....	59
7.7 Transportation Demand Management (TDM).....	60
7.8 Transportation Technology & Intelligent Transportation Systems (ITS) .....	62
7.9 Transportation System Management (TSM) .....	63
7.10 Rail Investments .....	64
7.11 Air Transportation .....	66
7.12 Recommended Special Plans, Projects and Studies .....	66
8. Our Financial Plan .....	69
8.1 Costs .....	69
8.2 Revenues .....	70
8.3 Balancing Costs and Revenues .....	76
9. Critical Factors in the Planning Process .....	80
9.1 Transportation - Air Quality Conformity.....	84
9.2 Environmental Justice.....	85
9.3 Safety and Security .....	100
9.4 Critical Environmental Resources .....	103
9.5 The Fixing America’s Surface Transportation (FAST) Act and the 2045 MTP .....	105
10. Post-2045 Comprehensive Transportation Plan Projects .....	109

## Appendices

- Appendix 1: Road Projects List
- Appendix 2: [reserved for future use]
- Appendix 3: Transit Project List (Capital Area MPO)
- Appendix 4: Bicycle and Pedestrian Projects
- Appendix 5: Resources on Autonomous & Connected Vehicles
- Appendix 6: Complete Streets
- Appendix 7: Air Quality (MOVES output)
- Appendix 8: Public Comments and Plan Revisions
- Appendix 9: Acronyms
- Appendix 10: Detailed Transportation and Growth Maps
- Appendix 11: Year-of-Expenditure Financial Plan
- Appendix 12: Environmental Justice Maps and Critical Environmental Resource Maps

### Online Interactive Project Maps:

CAMPO: <http://arcg.is/2D0kMfj>

DCHC MPO: [www.bit.ly/DCHC-MTP-Adopted](http://www.bit.ly/DCHC-MTP-Adopted)

### A Note to Readers:

The heart of any transportation plan is the investments that will be made to serve the travel needs of our growing region's citizens, businesses and visitors. These investments take the form of road, transit, rail, cycling and walking facilities and services, together with related technologies. Maps are created to help visualize the nature of both the facilities in which we plan to invest and the existing and future population and jobs that the facilities are designed to serve. But the maps in this document are for illustrative purposes only and are subject to change and interpretation. The details of the investments are in the project lists that are included with this report.

Comments may be submitted to either of the MPOs through their websites:

NC Capital Area MPO: [www.campo-nc.us/](http://www.campo-nc.us/)

attention: Chris Lukasina

Durham-Chapel Hill-Carrboro MPO: [www.dchcmpo.org/](http://www.dchcmpo.org/)

attention: Andy Henry

Because this document addresses the official plans of both MPOs, the document is color-coded. Text and tables with a white background apply to both MPOs.

Text and tables highlighted in this green color apply only to the Durham-Chapel Hill-Carrboro MPO.

Text and tables highlighted in this yellow color apply only to the Capital Area MPO

# 1. Executive Summary

Transportation investments link people to the places where they work, learn, shop and play, and provide critical connections between businesses and their labor markets, suppliers and customers.

This document contains the 2045 Metropolitan Transportation Plans (MTPs) for the two organizations charged with transportation decision-making in the Research Triangle Region: the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). These organizations, and the areas for which they are responsible, are commonly called “MPOs.”

The Metropolitan Transportation Plans are the guiding documents for future investments in roads, transit services, bicycle and pedestrian facilities and related transportation activities and services to match the growth expected in the Research Triangle Region.

The areas covered by this plan are part of a larger economic region. Transportation investments should consider the mobility needs of this larger region and links to the other large metro regions of North Carolina and throughout the Southeast. The Triangle Region is expected to accommodate substantial future growth; we need to plan for the region we will become, not just the region we are today.

Estimated 2013 and Forecast 2045 Population and Jobs	2013		2045		2013 to 2045 Growth	
	Population	Jobs	Population	Jobs	Population	Jobs
Capital Area MPO	1,120,000	540,000	2,030,000	1,000,000	920,000	470,000
Durham-Chapel Hill-Carrboro MPO	400,000	260,000	620,000	450,000	210,000	190,000
Areas outside MPO boundaries	160,000	60,000	310,000	80,000	150,000	20,000
Total for area covered by the region’s transportation model	1,680,000	860,000	2,960,000	1,530,000	1,280,000	680,000

The Triangle has historically been one of the nation’s most sprawling regions and current forecasts project both continued outward growth and infill development in selected locations, most notably in the central parts of Raleigh, Durham and Chapel Hill and at community-defined activity centers like the planned mixed use center within the Research Triangle Park. A key challenge for our transportation plans is to match our vision for how our communities should grow with the transportation investments to support this growth.

No region has been able to “build its way” out of congestion; an important challenge for our transportation plans is to provide travel choices that allow people to avoid congestion where it cannot be prevented.

Our population is changing. The population is aging, more households will be composed of single-person and two-person households without children, the number of households without cars is increasing, and more people are interested in living in more compact neighborhoods with a mix of activities. Our plans are designed to provide mobility choices for our changing needs.

Our MPOs are tied together by very strong travel patterns between them; our largest commute pattern and heaviest travel volumes occur at the intersection of the MPO boundaries. Our MPO plans need to recognize the mobility needs of residents and businesses that transcend our MPO borders.

The region has a common vision of what it wants its transportation system to be:

*a seamless integration of transportation services that offer a range of travel choices to support economic development and are compatible with the character and development of our communities, sensitive to the environment, improve quality of life and are safe and accessible for all.*



The MPOs have jointly adopted goals and objectives to accomplish this vision and selected performance measures to track progress over time. Each MPO will have targets that reflect the unique characteristics and aspirations of the communities within each MPO. The *2045 Transportation Plan* commits our region to transportation services and patterns of development that contribute to a more sustainable place where people can successfully pursue their daily activities.

To analyze the transportation investment choices we have, the MPOs followed a systematic process involving significant public engagement. It began with an understanding of how our communities' plans envision guiding future growth. Community plans anticipate that five regional-scale centers in Raleigh, Durham, Cary, Chapel Hill and the Research Triangle Park are expected to contain large concentrations of employment and/or intense mixes of homes, workplaces, shops, medical centers, higher education institutions, visitor destinations and entertainment venues. Linking these activity centers to one another, and connecting them with communities throughout the region by a variety of travel modes can provide expanded opportunities for people to have choices about where they live, work, learn and play.



Next, planners used sophisticated software to forecast the types, locations and amounts of future population and job growth based on market conditions and trends, factors that influence development, and local plans.



Based on the forecasts, we looked at mobility trends and needs, and where our transportation system may become deficient in meeting these needs.

Working with a variety of partners and based on public input, we developed different transportation system alternatives and analyzed their performance, comparing the performance of system alternatives against one another and to performance targets derived from our goals and objectives.

The result of this analysis and extensive public engagement was a set of planned investments, together with a pattern of land development aligned with these investments. Additional studies were also proposed to ensure that the investments are carefully designed and effectively implemented. The core of the plan is the set of transportation investments described in Section 7, including:

- New and expanded roads;
- Local and regional transit facilities and services, including bus and rail;
- Aviation and long-distance passenger and freight rail services;
- Bicycle and pedestrian facilities, both independent projects and in concert with road projects;
- Transportation Demand Management: marketing and outreach efforts that increase the use of alternatives to driving alone;
- Technology-Based Transportation Services: the use of advanced technology to make transit and road investments more effective—including the advent of autonomous and connected vehicles; and
- Transportation Systems Management: road projects that improve safety and traffic flow without adding new capacity.

In addition to these investments, the plan includes a focus on three issues where the ties between development and transportation investments are most critical: transit station area development, major roadway access management and “safe & healthy streets” whose designs are sensitive to the neighborhoods of which they are a part and the needs of a full range of users, including drivers, transit riders, cyclists and

pedestrians. The two MPOs will work with their member communities, the state, and regional organizations on these three issues to match land use decisions with transportation investments.

The plan anticipates that the region will match its historic focus on roads with a sustained commitment to high-quality transit service as well, emphasizing four critical components:

- Connecting the region's main centers with fast, frequent, reliable rail or bus services;
- Offering transit service to all communities that have adopted local transit revenues;
- Providing frequent transit service in urban travel markets; and
- Supplying better transit access, from "first mile/last mile" circulator services within key centers to safe and convenient cycling and walk access to transit routes.

Although the plan includes a new emphasis on transit investment, it envisions significant additional roadway investment as well. Major road projects are shown below and all projects are listed in Appendix 1. Section 7 of the Plan provides greater detail on planned roadway and transit investments.

<b>Durham Chapel Hill-Carrboro MPO</b>		
<b>2018-25</b>	<b>2026-35</b>	<b>2036-45</b>
East End Connector will link US 70 to NC 147 (Durham Freeway) to form I-885	I-40 managed lanes (Wade Avenue in Wake County to NC 147)	I-40 managed lanes (NC 147 to US 15-501)
NC 147 (Durham Freeway) widened (East End Connector to I-40)	I-40 widening (US 15-501 to I-85)	I-85 widened (I-40 to Durham County)
US 70 lane addition and freeway conversion (East End Connector to Miami Blvd)	US 70 lane addition and freeway conversion (Miami Blvd to Wake County)	I-85 widened (US 70 to Red Mill Road)
	US 15-501 (Fordham Blvd) capacity improvements (Columbia St to I-40)	US 15-501 freeway conversion (I-40 to US 15-501 bypass)
<b>Capital Area MPO</b>		
<b>2018-2025</b>	<b>2026-2035</b>	<b>2036-2045</b>
I-40 widened from Wade Ave. to Lake Wheeler Road	I-40 widened from I-440 to NC 42 in Johnston County	I-87 widened from US 64 Bus to US 264
I-440 widened from Wade Avenue to Crossroads	I-87 widened from I-440 to US 264	NC 210 widened from Angier to Lassiter Pond Rd.
I-40 widened from I-440 to NC 42 in Johnston County	US 1 widened south from US 64 to NC 540	NC 50 widened from NC 98 to Creedmoor
US 64 W corridor improvements from US 1 to Laura Duncan Rd.	Managed lanes added to I-540 (Northern Wake Expressway) from I-40 to I-87	US 401 widened from Fuquay-Varina to MPO boundary in Harnett County
NC 540 toll road extended from Holly Springs to I-40 south of Garner	NC 540 completed as a toll road from I-40 to I-87/US 64 bypass	NC 96 widened from US 1 to NC 98
NC 50 widened and access management from I-540 to NC 98	Managed lanes added to I-40 from Durham County to MPO boundary in Johnston County	NC 56 widened from I-85 to MPO boundary in Franklin County